RAVEN

MARINE

Wheelhouse II Operation Manual

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Change History

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L	05/03/2011	Updated to reflect Version 3.2 functionality, re-organized
K	11/23/2010	Logo changed to Raven Aerostar Division
J	06/29/2010	Updated to reflect Version 3.1 functionality
I	03/23/2009	Updated to reflect Version 2.5 functionality
H	01/11/2009	Updated to reflect Version 2.4 functionality
G	01/23/2008	Updated to reflect Version 2.x functionality
F	01/26/2007	Applied feedback from reviewers
E	12/19/2006	Updated features of latest software, WH2 v1.32.
D	06/16/2006	Updated based on feedback and new features
C	05/19/2006	
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1 General Information

Wheelhouse II (WHII) is a navigation aid program for professional marine pilots that can run on a variety of computing devices, such as a laptop computer.

Figure 1: Laptop Running Wheelhouse II Program

Wheelhouse II addresses the navigation aid needs of professional marine pilots in various areas, including but not limited to the following:

- Pilot-configurable layering of chart data: ACOE (Army Corps Of Engineers), Coast Guard, NOAA S57
- GPS positioning using either Raven high-performance GPS, third-party GPS, and/or AIS GPS
- Special features such as intercept and vessel info-sharing via SEND

The Raven Marine Navigation Aid System was developed in close cooperation with professional marine pilots. There are hundreds of Raven systems currently in service.

This manual describes Wheelhouse II version 3.2, which supersedes earlier versions of the Wheelhouse II program. After running the installer, click the PG WH2 icon on the desktop to start the program.

'PG' in the desktop icon stands for Pilot Group. If you have previously installed a beta version of Wheelhouse II, its icon is named 'WH2-B'. If a previous version (non-beta) of Wheelhouse II was installed when you installed version 3.2, the previous version's icon is renamed 'OLD'.

1.1 New or Enhanced Features

Wheelhouse II version 3.2 includes a number of new or enhanced features. The following list provides short descriptions. ***Refer to Appendices A and B for full information about these items.***

- New factory start up option, [STARTUP] SHOW.SPECIALEDITVESSEL=True, provides the following:
    - Startup sequence does not require pilots to enter vessel particulars or antenna offset.
    - **Edit Vessel** screen allows no, or partial entries. This enables quicker program startup.
    - If the Raven GPS loses communication, the Wheelhouse II (WHII) program automatically switches to an AIS position source and displays an intentionally obtrusive notification of the switch. Press the space bar to clear the message. The program automatically switches back to the Raven GPS as soon as communication is re-established.
    - Pressing ATL+O allows you to view and edit the vessel information for the vessel using the Raven GPS. This removes ambiguity of which vessel data is being edited.

- New factory option, 'SPECIALETACOLUMNS=True' changes the **ETA Waypoint Selection** screen to remove sorting by column title and adding the options of expanding column widths, and automatically sorting by distance to the ETA waypoint along the route. Waypoints behind the vessel are indicated as dashes.
- "Ship's GPS" replaced by "AIS GPS" in the chart [F1] window and Operational Status Window [F3].
- In the chart [F1] window data panel, "Next" has been changed to "Range", depending on enabled settings.
- When AC power is lost, an intentionally obtrusive notification is now displayed. Press the space bar to clear the message.
- The **Own Vessel** indicator (a colored dot within a black circle) has been updated. The colored dot now fills the black circle, improving visibility. Day and night colors are customizable.
- Course over ground (COG) vector value font size has been increased from 10 to 14 to improve visibility.
- Heading vector added to an un-scaled vessel. (The COG vector does not have an arrowhead or time-to-point value because the location of the bow of the ship is unknown).
- New option added to turn off the AIS vessel halo.
- In **Chart Setup** [F5] under **F1 Display**, a "Distance to 2 Decimals" option has been added.
- Added an alternate COG/SOG screen
- Added option of pressing F11 to open **Main Menu**.
- **Help** screen updated to list: H – Hot Keys and F11 – Main Menu
- **The Bluetooth Pilot Interface (BPI)** screen updated to scan for data on PPI (Pilot Port Interface) wire pairs other than pins 1 - 4 (expected pair), if data cannot be found on pins 1 – 4.

- Added **Back** or **Done** buttons to secondary dialog screens, such as the Route Selection and Waypoint Selection screens.
- In the **Traffic Monitor** screen under Overtaking Traffic, a Source column, which lists the type of vessel, has been added.
- On the **Vessel** screen, you can now type the name of a new vessel (one not in the database), and then click New to automatically invoke the **Edit Vessel** dialog box, populated with the new vessel name.

2 Program Installation and Normal Mode Startup

This section provides information about the installation process and an overview of starting the program in Normal Mode and with all settings set to factory defaults. More information about individual screens, features, options and customizable options is provided in subsequent sections of this manual.

NOTE

Wheelhouse II is a highly customizable program. Information about options is provided throughout this manual. Refer to Appendix A for more information about the enhancements and features added with version 3.2 and any special settings or functions provided by them.

2.1 Installation

1. Access the media (CD, memory device, or Raven Aerostar Web site) and then double-click the installer file. Follow the prompts to complete the installation.

2. After installation, click the Wheelhouse II icon to start the program.

3. If the Wheelhouse II software has not already been registered on the computer, a registration screen appears. Call Raven Aerostar Marine at the number indicated and then provide the number in the **Validation Code** field to receive the **Registration Key**.

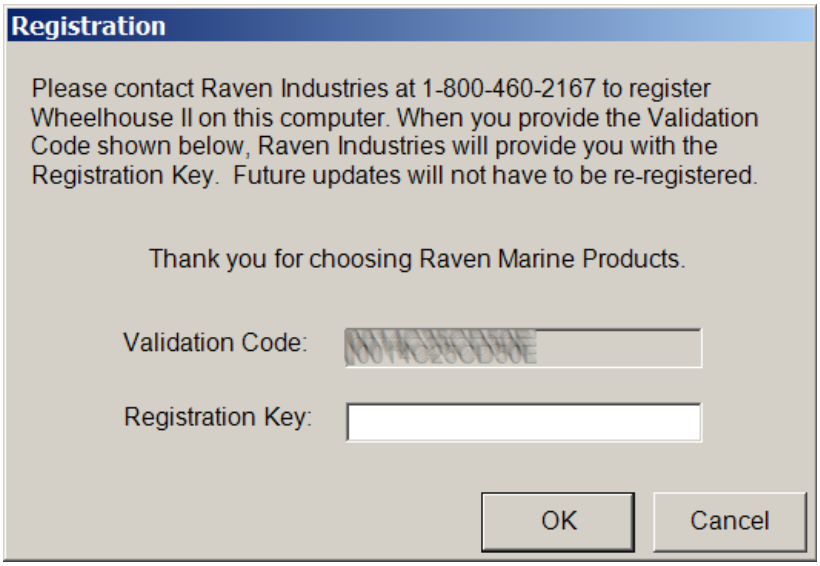


Figure 2: Registration Screen

4. Enter the Registration Key that is provided to you.

2.2 Program Startup in Normal Mode

Perform the following steps to start the Wheelhouse II program in Normal Mode.

1. The first time the Wheelhouse II program is started, the **License Agreement** dialog box appears. Click **I ACCEPT** to accept the terms and launch the program. The License Agreement dialog box does not appear on subsequent starts of the program.

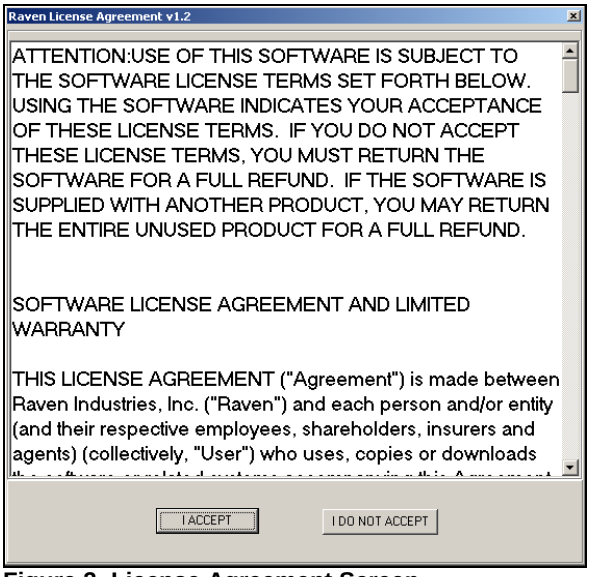


Figure 3: License Agreement Screen

2. The **Safety Reminder Screen opens**. To operate the system you must agree to the terms of this screen by typing **Y**. If you do not agree, terminate the program by typing **N** or **Q**.

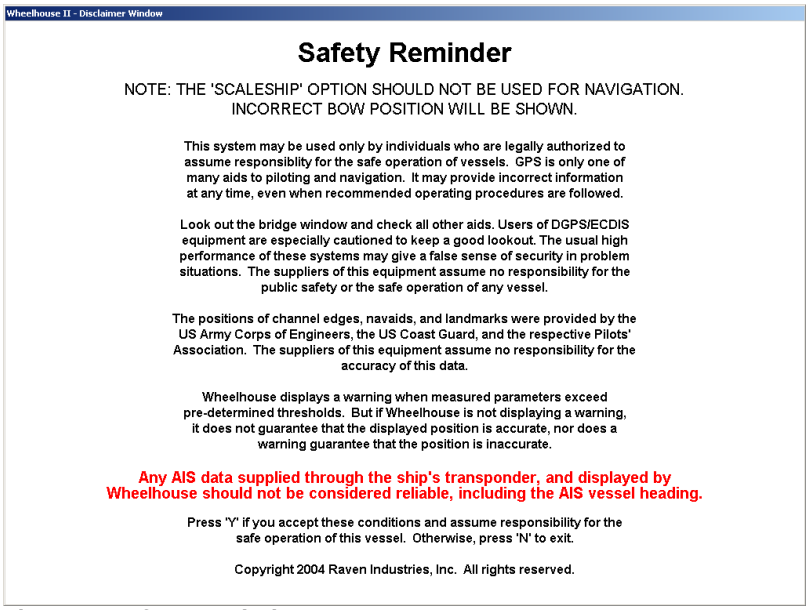


Figure 4: Safety Reminder Screen

3. The WH-II 3.2 – Select Mode dialog menu appears. For normal program use, click **Normal Start.** The other options on this menu are described in subsequent sections of this manual

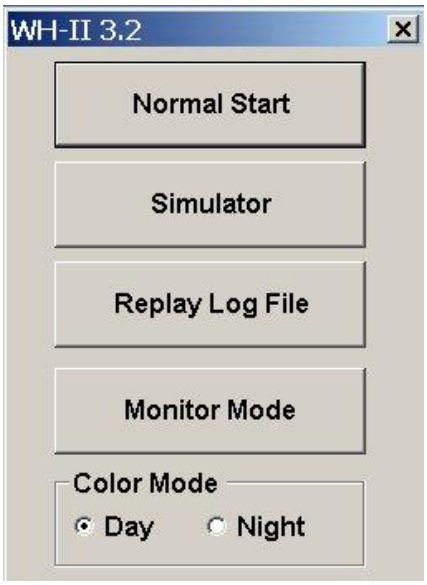


Figure 5: Select Mode Dialog

4. When the program starts, the SendClient and the AisClient Windows open and automatically minimize to the taskbar. Do not adjust the settings in the AisClient or SendClient windows. These two programs run in the background of Wheelhouse II to handle hardware devices and provide vessel information to Wheelhouse II.

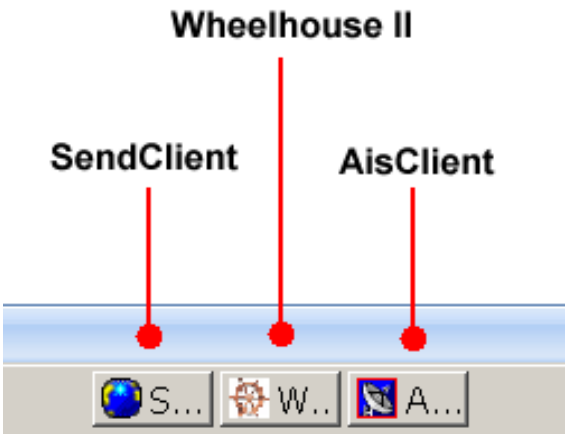


Figure 6: Taskbar Icons

5. The **Trip and Own Vessel Information** screen opens in front of the WHII window.
    - This screen allows you to enter, select, and edit Pilot Name, Destination, GPS position source, and vessel particulars.
    - At any time during navigation, to open this screen, press the F6 key or click **Menu** and then click **Select Vessel [F6]**.
    - If your system is equipped with a Raven Bluetooth Pilot Interface (BPI) wireless connection to the AIS Pilot Port Interface, this screen provides information about the BPI.
    - Use the Feet/Meters button to toggle between units of measure.

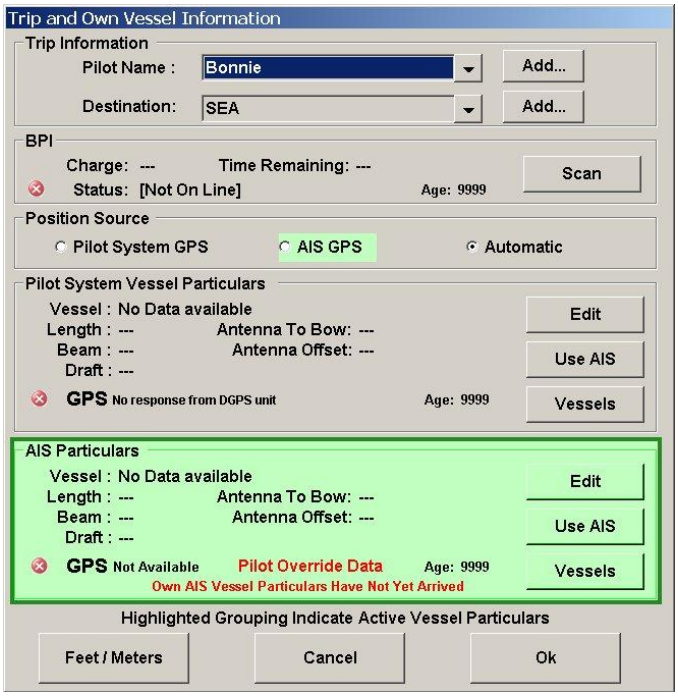


Figure 7: Trip and Own Vessel Information Screen

6. In either the **Pilot System Vessel Particulars** box or the **AIS Particulars** box, to view the database list of vessels stored in the Wheelhouse II program, click **Vessels**.

7. The **Select Vessel** screen opens and allows the pilot to perform operations on the vessels database, including selecting a vessel for use.

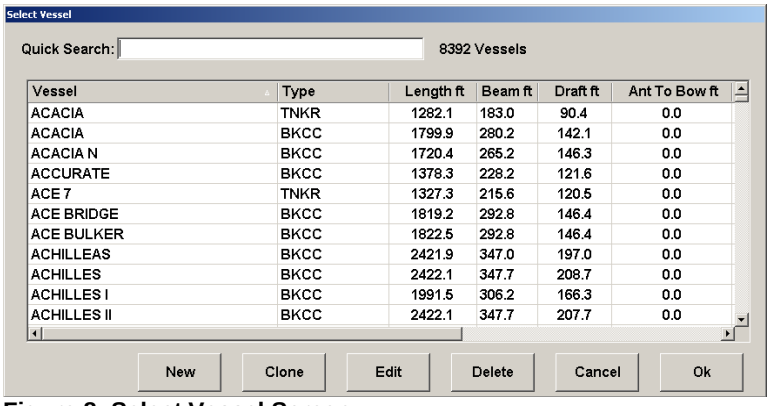


Figure 8: Select Vessel Screen

The Select Vessel screen has been designed to make selecting vessels intuitive. Features:

- Quick Search filters the list based on any the alphabetical occurrence of the entered text in the vessel name.
- The list can be sorted by any column, in ascending or descending order by clicking on the column heading. Click on the heading again to reverse the sore order.
- If you highlight a vessel and then click New, Edit, or Clone, a screen appears in which you can manually enter the vessel parameters or you can import the vessel parameters from the Ship's AIS.

8. To select a vessel, double-click on a vessel entry or click once on a vessel entry and then click **Ok**. You are returned to the Trip and Own Vessel Information screen.

9. After all appropriate information is displayed in the **Trip and Own Vessel Information** screen, click **Ok**.

10. The **Route Selection** screen appears. Select the route of your choice. Double-click the appropriate route or in the **Enter a route number** field, type the route number and then click **OK**.

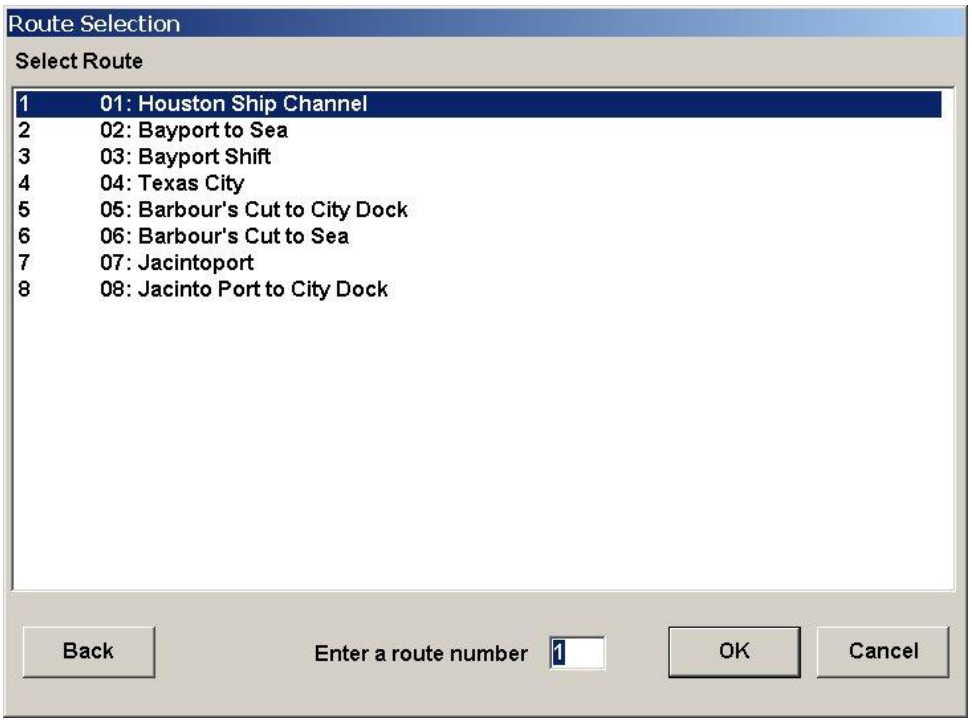


Figure 9: Route Selection Screen

11. The **Waypoint Selection** screen opens and displays waypoints for the route selected in the previous step.

    a. From the **Select Destination (ETA) Waypoint** drop-down menu, select the appropriate waypoint.

    b. If desired, click to select the **Pan to Destination** check box.

    c. Click **OK**.

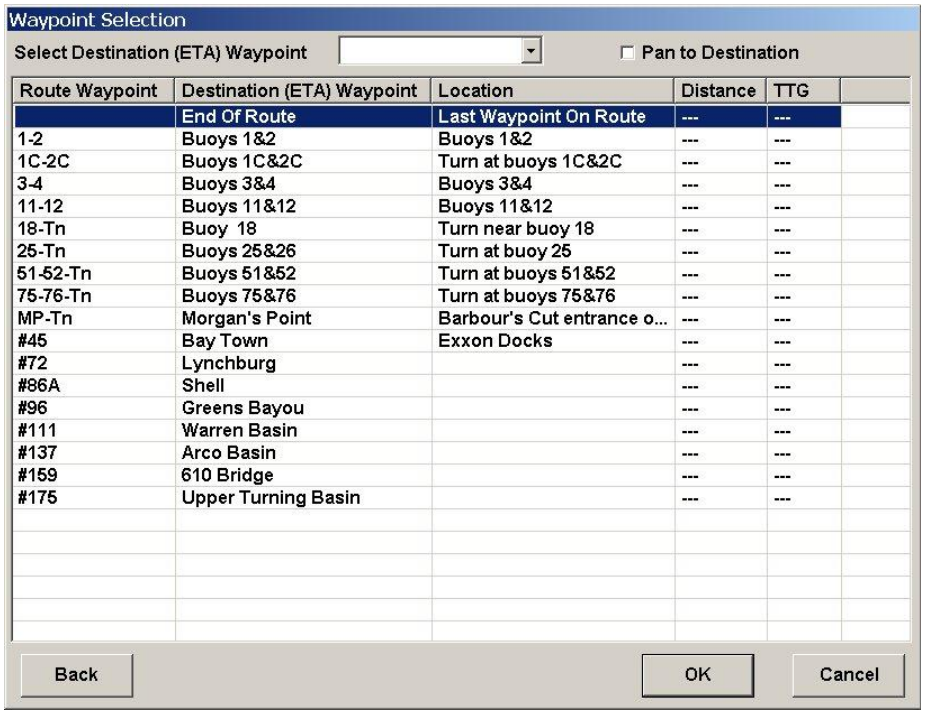


Figure 10: Waypoint Selection Screen

The program is fully launched and displays the chart [F1] window (see graphic on next page). Some functions of the chart [F1] window are:

- Ship icon showing position and direction of travel on the chart
- Ship scaling – ship is drawn to scale
- Graphical display of the route, with various features identified including, but not limited to, buoys, bridges, and channel edges
- Icons to turn functions on or off, informational messages, a data panel and Menu button for accessing more functions and features.

The graphic below provides information about the features of the chart window.

Figure 11: Chart Window

3 Using the Program

This chapter describes the program functions and explains how to configure settings for individual use.

3.1 Main Menu

The Main Menu provides buttons to the main options within the Wheelhouse II program. As indicated in the button names, many of the options can be accessed directly by pressing keys on the keyboard.

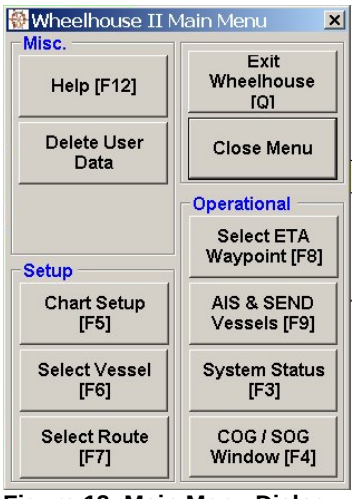


Figure 12: Main Menu Dialog

3.2 Help Window [F12]

Pressing the **Help [F12]** button on the Main Menu or directly accessing it by pressing the F12 key at any time opens the Help Window. The Help Window displays all the shortcut key strokes for functions within the program.

Figure 13: Help Dialog

3.3 General Startup Features

3.3.1 Vessel Particulars Always Start Empty

During startup, in the **Trip and Own Vessel Information** [F6] screen, the fields in the Pilot System Vessel and AIS Particlulars boxes are empty (as shown below). This makes it obvious to the pilot that vessel particulars need to be entered.

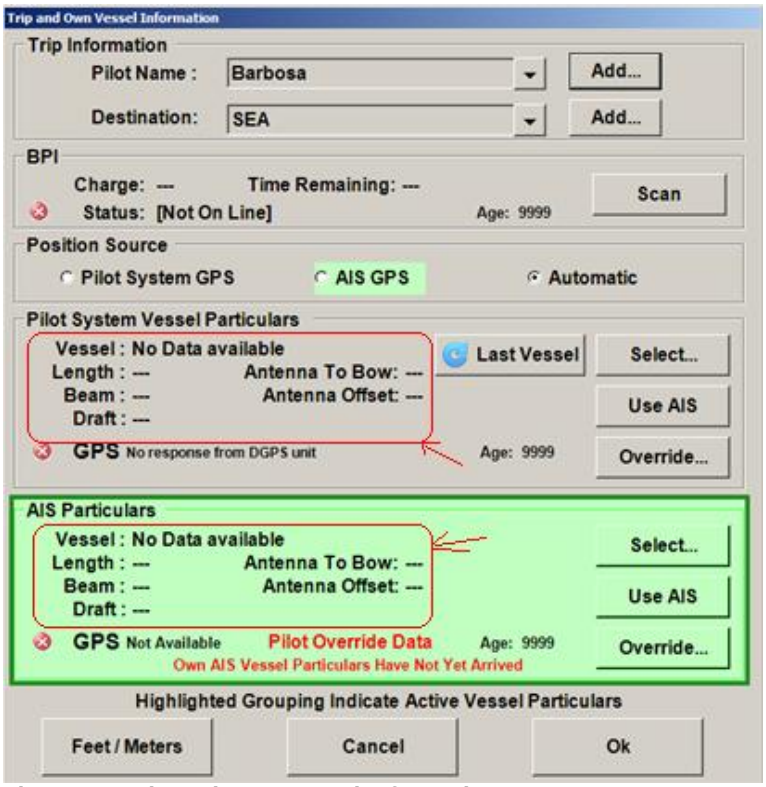


Figure 14: Trip and Own Vessel Information Screen

If the **Last Vessel** button is present (see graphic above), this indicates that there are valid particulars for a previously used vessel. One advantage of using this button is that it allows the pilot to enter and save the pilot system vessel particulars on this screen prior to boarding the vessel and then to retrieve the vessel particulars during startup.

- The Last Vessel button only appears if WHII can determine there are valid particulars for a previously used vessel.
- The Last Vessel button disappears if it is selected or if vessel particulars are entered by clicking **Select**, **Use AIS**, or **Override**.

3.3.2 Prompt for Vessel Particulars

Depending on settings, when the pilot acknowledges a position source change by pressing the Space Bar, WHII may display the Trip and Own Vessel Information [F6] screen to remind the pilot to supply the vessel particulars for the desired position source. If you don't want the Trip and Own Vessel Information [F6] screen to appear after pressing the Space Bar, you can turn this feature off, as described below.

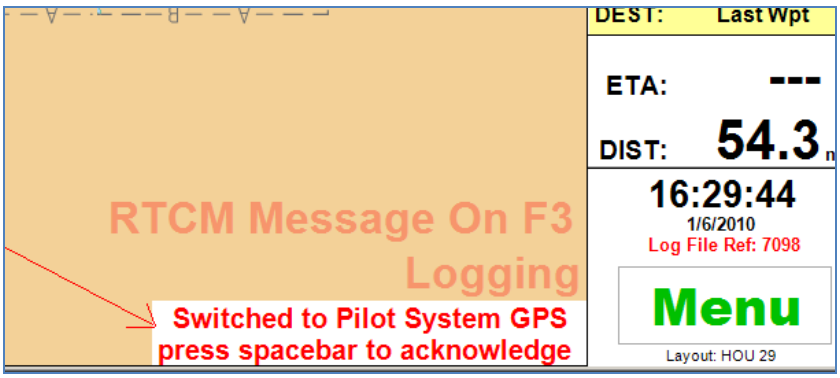


Figure 15: Position Source Change Message

1. Press F5 | System Options | Notifications.

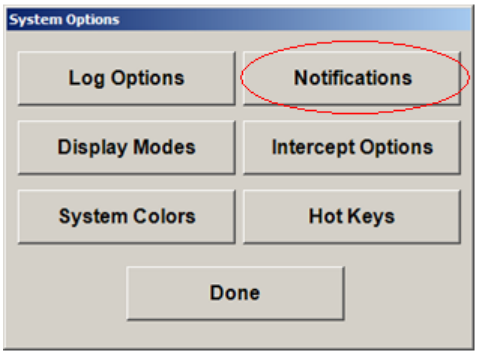


Figure 16: Notifications on System Options Menu

2. The System Notifications Options screen opens. If there is no check mark in the Position check box, click to select (check) the box.

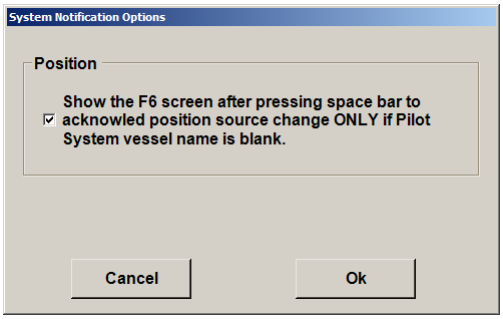


Figure 17: System Notifications Options Screen

3. Click **Ok**.

4. A prompt to press the space bar to acknowledge the position source change appears on the screen. Press the space bar.

5. The Trip and Own Vessel Information [F6] screen opens ONLY if the Pilot System Vessel name field in the Trip and Own Vessel Information [F6] screen is blank.

3.3.3 Prompt for Log File Cleanup at Startup

In WHII versions prior to 3.x, the log file cleanup screen below appears at startup if log files are present which exceed the age limit.

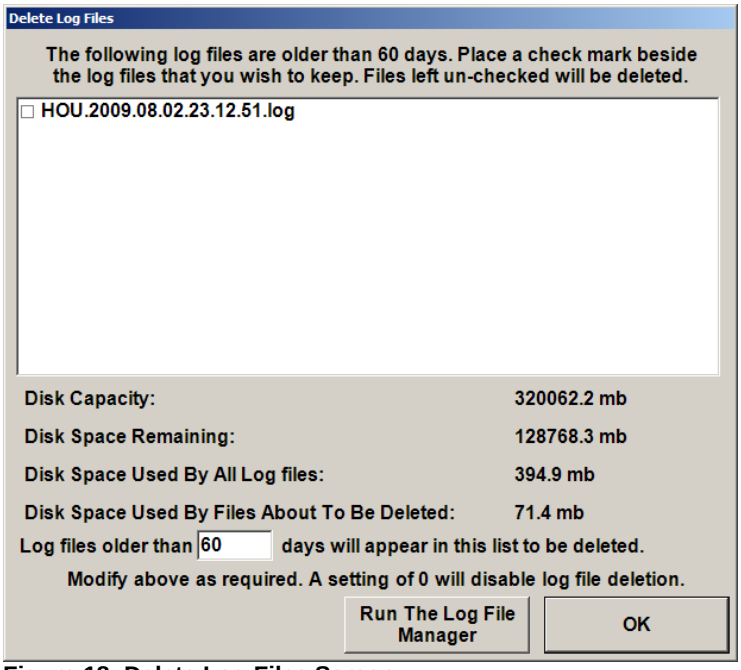


Figure 18: Delete Log Files Screen

Since some pilots find the prompt for log files obtrusive, we have added the option at 'F5 | System Options | Log Options'. Be aware that if the box is not checked, the log file cleanup prompt still occurs if the free disk space goes below 1 gigabyte.

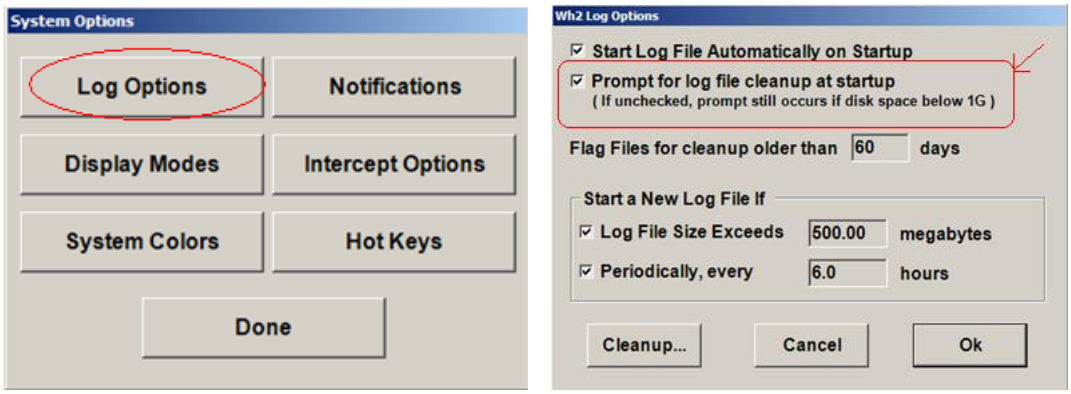


Figure 19: Screens to Access Log File Cleanup

3.3.4 Import New Charts at Startup

After a software update, the pilot is given the option to import new charts during startup. Importing new charts takes less than 1 minute. In the future we hope to remove the need to import new charts.

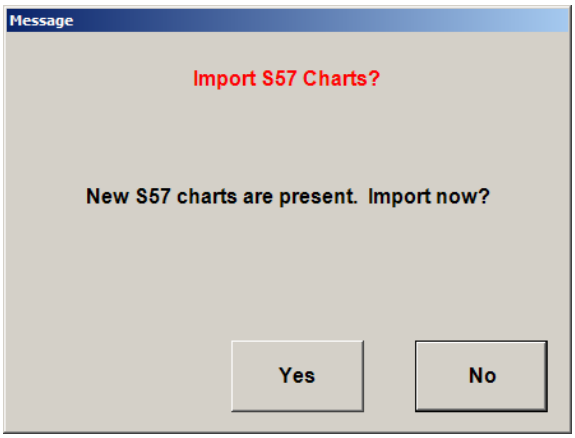


Figure 20: Import New Charts Message Screen

3.3.5 Raven GPS Identified on Trip and Own Vessel Information [F6]

If the Raven GPS receiver is present, in the **Trip and Own Vessel Information** [F6] screen some items change to reflect the Raven GPS

- **Position Source** box: **Pilot System GPS** is changed to **Raven System GPS.**
- Box name for **Pilot System Vessel Particulars** is changed to **Raven System Vessel Particulars**.

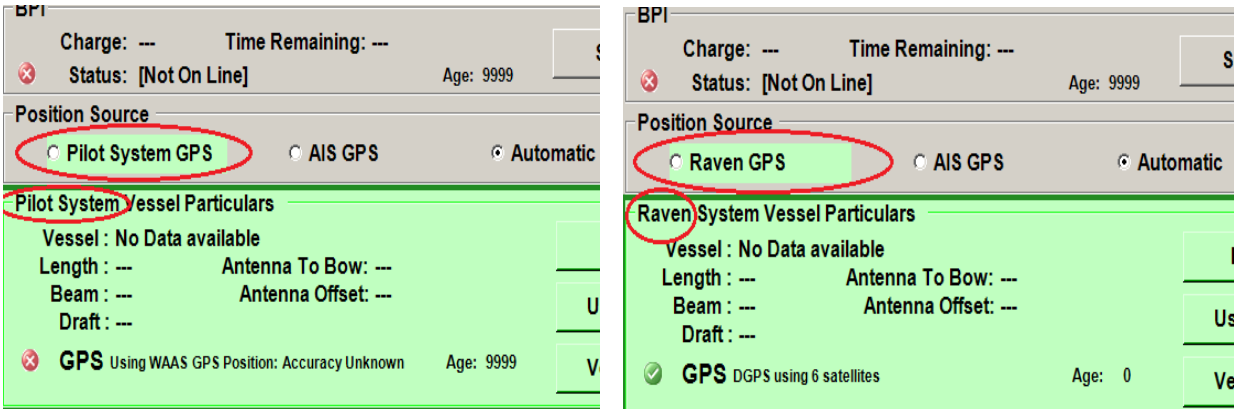


Figure 21: Differences with Raven GPS Not Present (left) and Present (right)

3.3.6 Tab-Order Option for Edit Vessel Screen

On the **Edit Vessel** screen in the **Tab Order Select** box, select the units of measure for the vessel particulars. The option defaults to **Meters fields** but, if changed, the program saves the selected option.

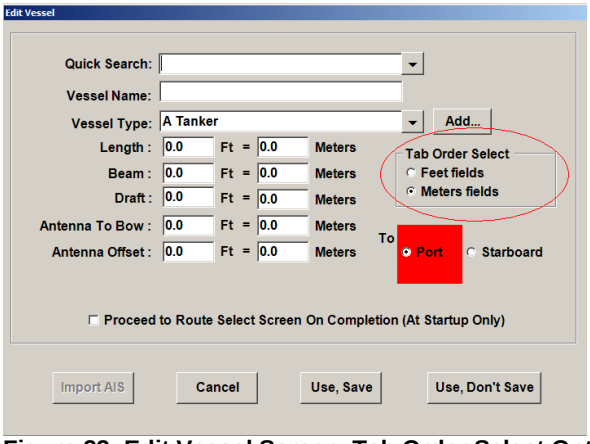


Figure 22: Edit Vessel Screen, Tab Order Select Options

3.4 Charting Capabilities

Wheelhouse II has 6 pilot-configurable view buttons on the chart screen that allow pilots to layer ACOE Vector Data, Coast Guard navigation aid data, and NOAA S57 chart data as desired. The pilot can control which S57 data items and which ACOE and Coast Guard data items are displayed within each view (1 – 6). After defining the items to appear in each of the views the pilot can select the appropriate view during navigation based on current need. The following graphic shows ACOE vector data without any S57 data.

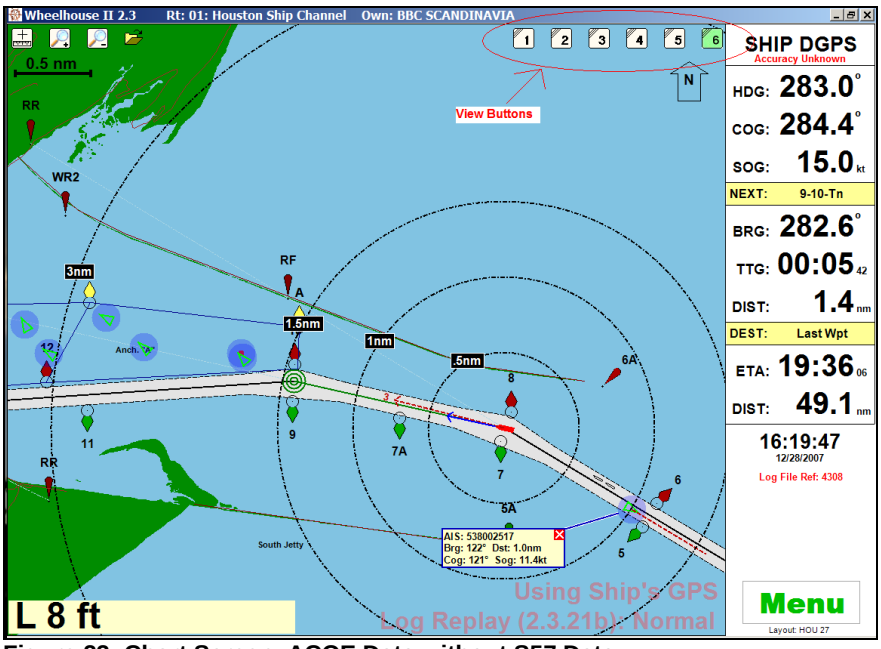


Figure 23: Chart Screen, ACOE Data without S57 Data

The following graphic shows S57 data with ACOE and Coast Guard data layered on top.

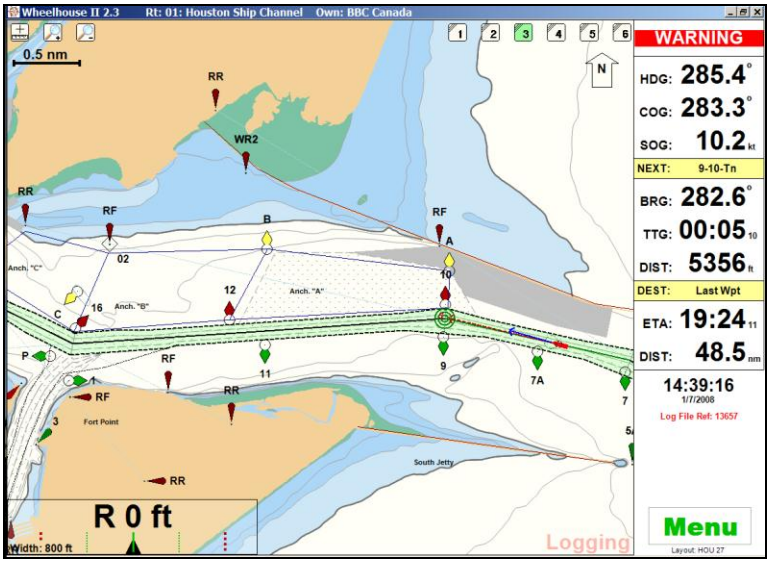


Figure 24: Chart Screen, ACOE Data with S57 Data

3.5 Importing S57 Charts

For a newly installed Wheelhouse II (WHII) system, S57 files must be imported in order for the view buttons to work properly. This can be done when prompted at WHII startup or can be done later as follows:

1. From the chart [F1] screen, press **F5 | S57 Charts Listings.**

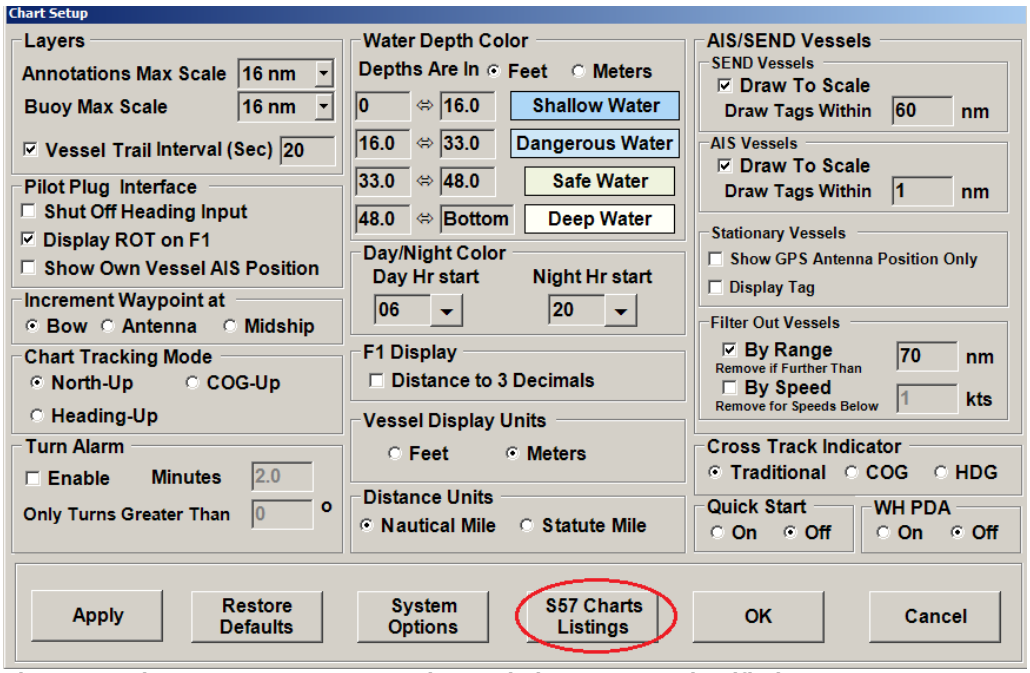


Figure 25: Chart Setup Screen, S57 Charts Listings Button Identified

2. In the S57 Chart List screen, click **Import S57 Files**. Importing the files only takes a few seconds.

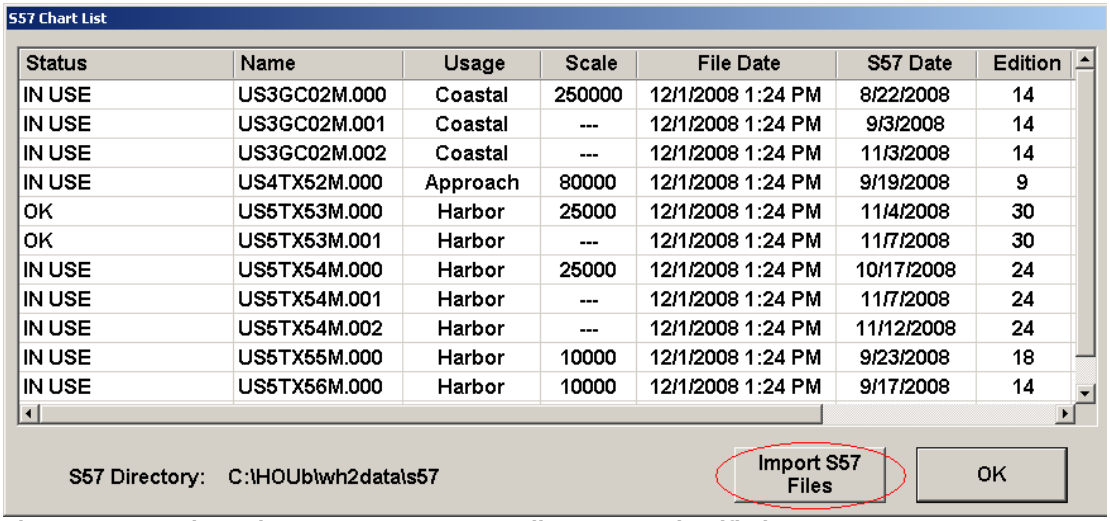


Figure 26: S57 Chart List Screen, Import S57 Files Button Identified

Status of the S57 importation is shown in the lower right corner of the chart [F1] window.
You can take inventory of the S57 charts on your system by pressing S57 Charts Listings from the Chart Setup [F5] screen. The graphic above shows an example of the resulting list.

- The File Date column indicates the date on the S57 chart file, and indicates the date the file was downloaded from NOAA.
- The S57 Date is the date NOAA last updated this file.

3.6 Configuring View Buttons

View buttons are located on the chart [F1] window. The upper right corner is the default location, for the buttons, but their location can be changed as described later in this section.

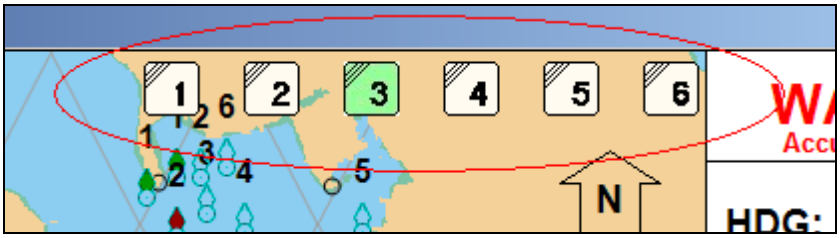


Figure 27: Chart Screen View Buttons

To configure the view provided by each button, open the Show/Hide Display Groups dialog box by selecting **F5 | System Options | Display Modes**.

In the **Show/Hide Display Groups** dialog box, specify which buttons are displayed (outlined in graphic below) and where on the chart [F1] window they are displayed (lower section of graphic).

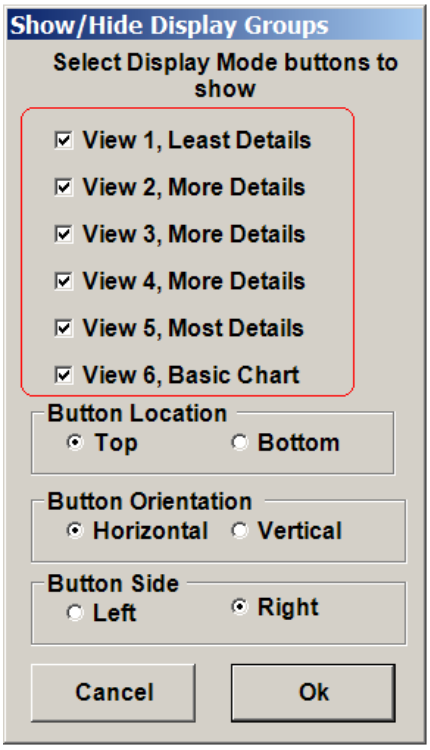


Figure 28: Show/Hide Display Groups, Button Checkboxes Outlined

3.7 Configuring Views

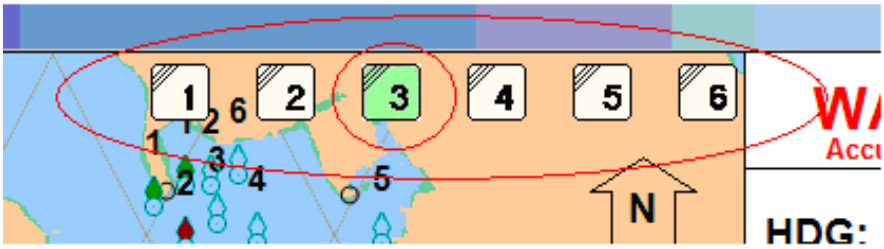


Figure 29: Chart Screen View Buttons

In the chart [F1] window, when you select a View button, it turns green. To make changes to this buttons options, right-click the button to open the **Mode Display Options** screen.

The **Mode Display Options** screen allows you to:

- Change the **Display Mode** description.
- Select whether or not to **Display S57 Charts in this Mode**. If S57 charts are active, there are numerous S57 items to select from and control for display in the selected view.

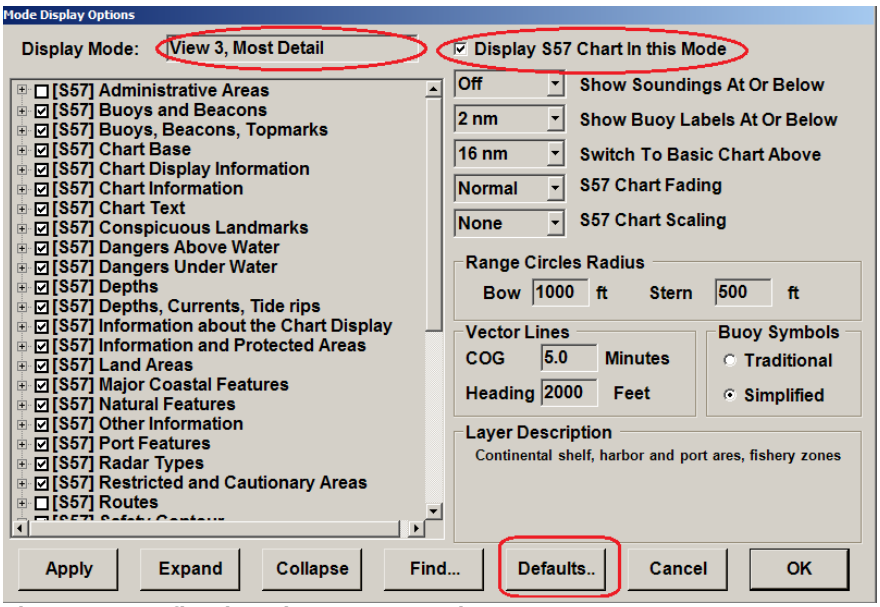


Figure 30: Configuring View Button Settings

- Any selected (high-lighted) item in the left pane has a long description in the **Layer Description** box on the lower right.

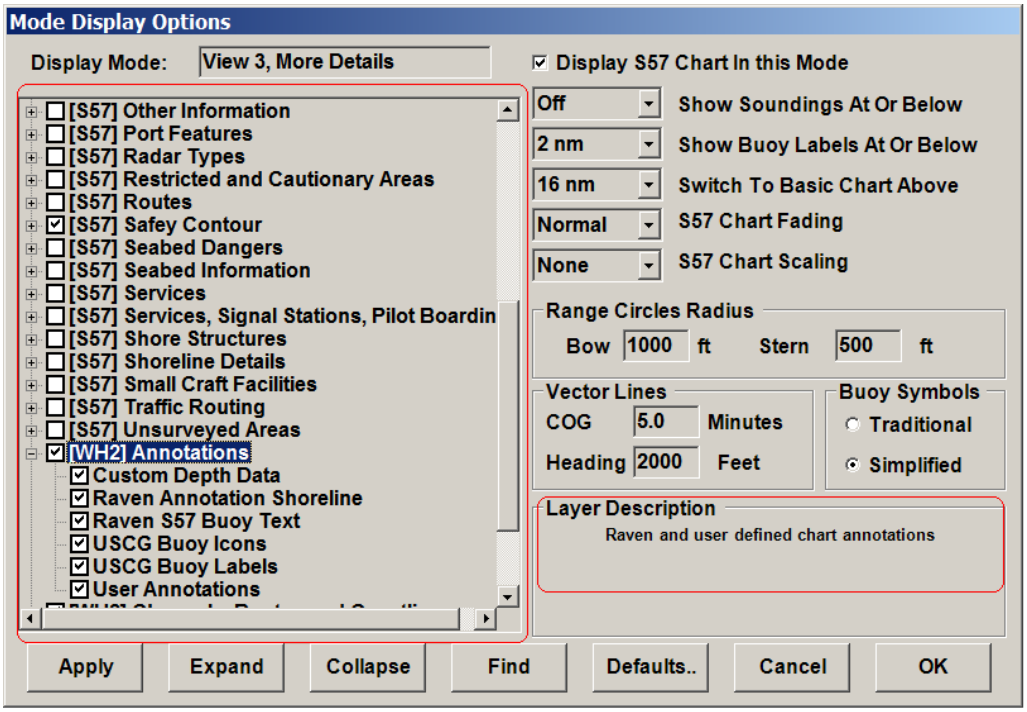


Figure 31: Short and Long Option Descriptions

- In the **Mode Display Options** screen, if you click **Defaults**, the **Manage Mode Defaults** window appears as shown below. This window allows you to specify an existing template for the options. Click **Done** to return to the Mode Display Options screen.

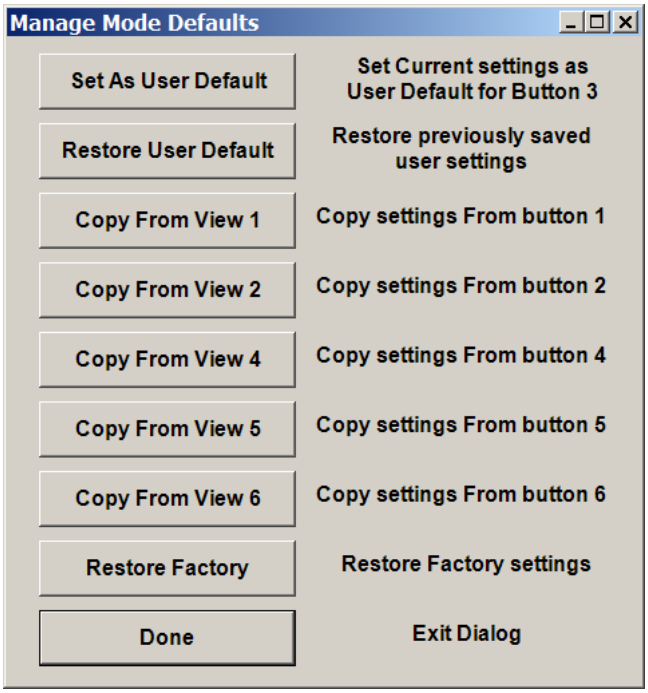


Figure 32: Manage Mode Defaults Window

- For a given view, you can also specify options such as at what zoom level buoy labels appear.

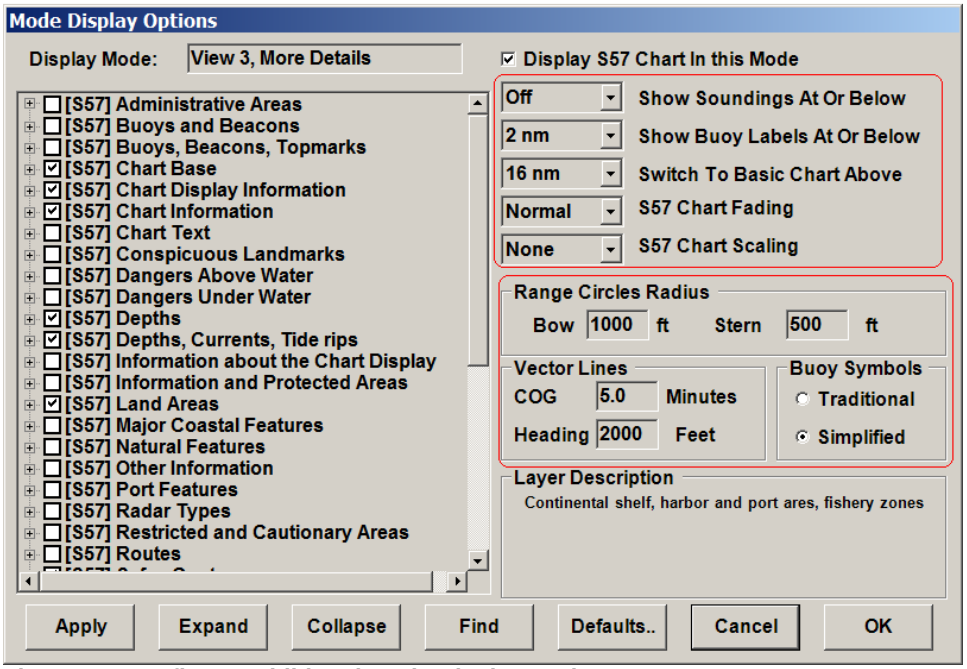


Figure 33: Configure Additional Mode Display Options

3.7.1 USCG Buoys and S57 Buoys

WHII supports both S57 buoys and labels and buoy data acquired from the USCG and converted for use with WHII. In the **Mode Display Options** screen, Raven Aerostar recommends usage of **USCG Buoy Icons** and **USCG Buoy Labels** only for cases where the S57 buoys and labels are not available.

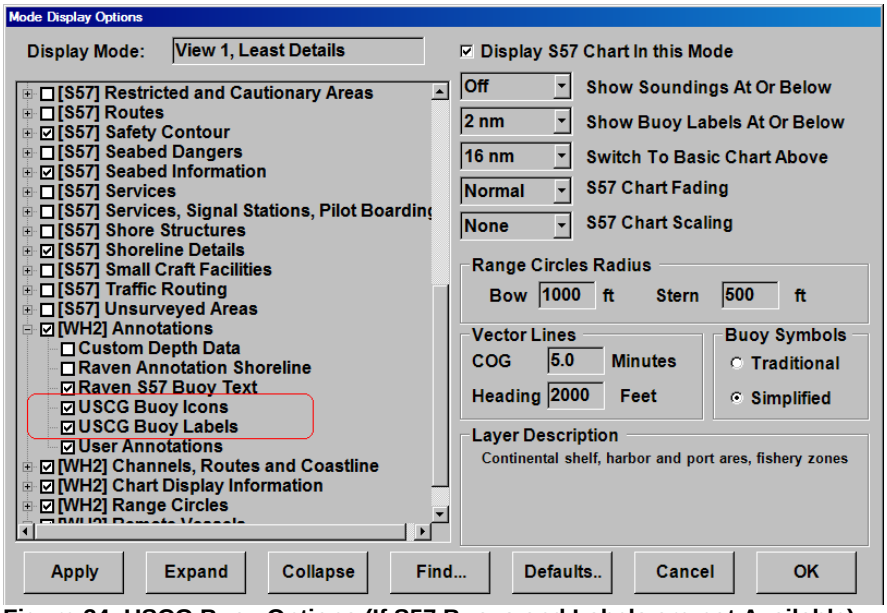


Figure 34: USCG Buoy Options (If S57 Buoys and Labels are not Available)

3.7.2 Independent Own and Remote COG Vectors

For a given view, you can select to turn off remote COG vectors while keeping your own COG vector turned on, or vice-versa. You can control the length of the COG vectors in terms of time, but this applies to both own and remote vessels. Each view can be configured differently, which allows a change of views to turn COG vectors on and off. You can also use the Hot Key assigned to toggling COG vectors to turn COG vectors on and off. Refer to section, Hot Keys.

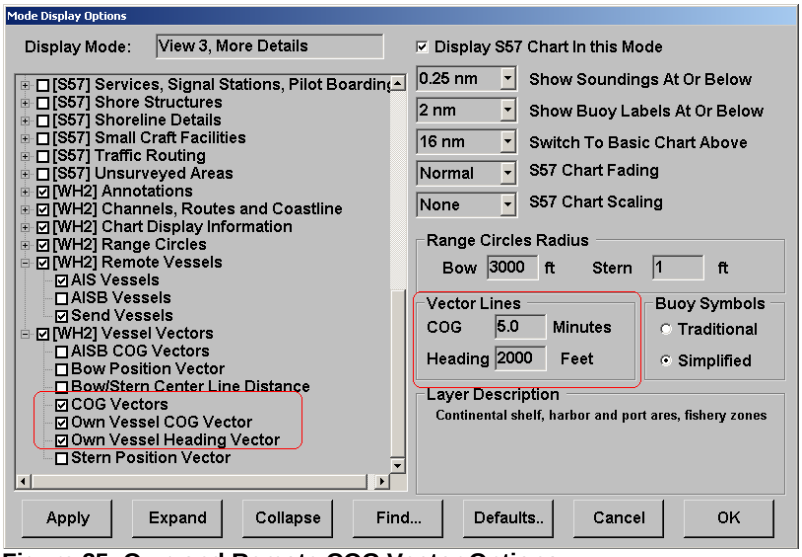


Figure 35: Own and Remote COG Vector Options

3.8 Positioning Capabilities

Wheelhouse II can get its position information from either a Raven high-performance GPS receiver or from the low-performance GPS receiver used in the ship's AIS transponder. The Status section at the top of the of the chart [F1] window data panel indicates which positioning source is being used.

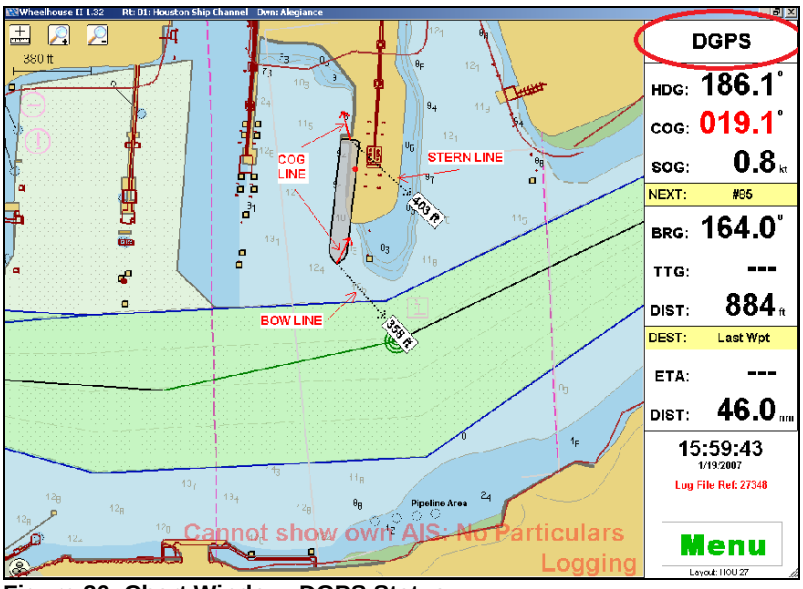


Figure 36: Chart Window, DGPS Status

The vessel shown in Figure 38 is docking using the Raven GPS receiver. The status, **DGPS** in the chart window's data panel, indicates the Raven GPS receiver is receiving differential corrections from a Coast Guard beacon.

The **Wheelhouse II - Operational Status Window** [F3] indicates the status of the Pilot System GPS subsystem.

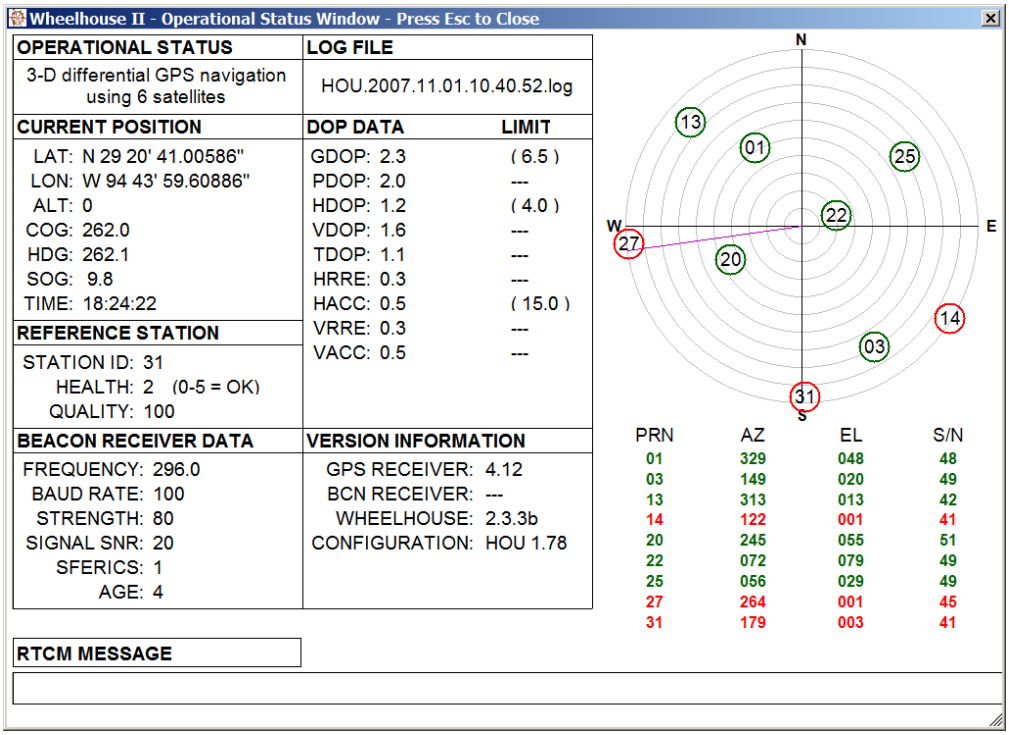


Figure 37: Operational Status Window

3.9 Rate of Turn

The heading available from the ship's AIS transponder is not usable because it is either 0 or pegged. Therefore, Raven Marine has developed an algorithm that derives heading from the 1-second, whole degree heading values coming from the AIS transponder to calculate Rate of Turn (ROT).

ROT (Rate of Turn) is displayed in the data panel on the chart [F1] window as show below if it has been enabled on the Chart Setup [F5] screen.

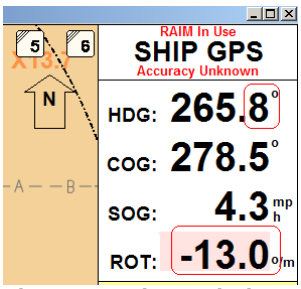


Figure 38: Chart Window Data Pane, ROT Identified

In the **Chart Setup** [F5] screen **Pilot Plug Interface** box, select the **Display ROT on F1** check box to display ROT on the chart [F1] window.

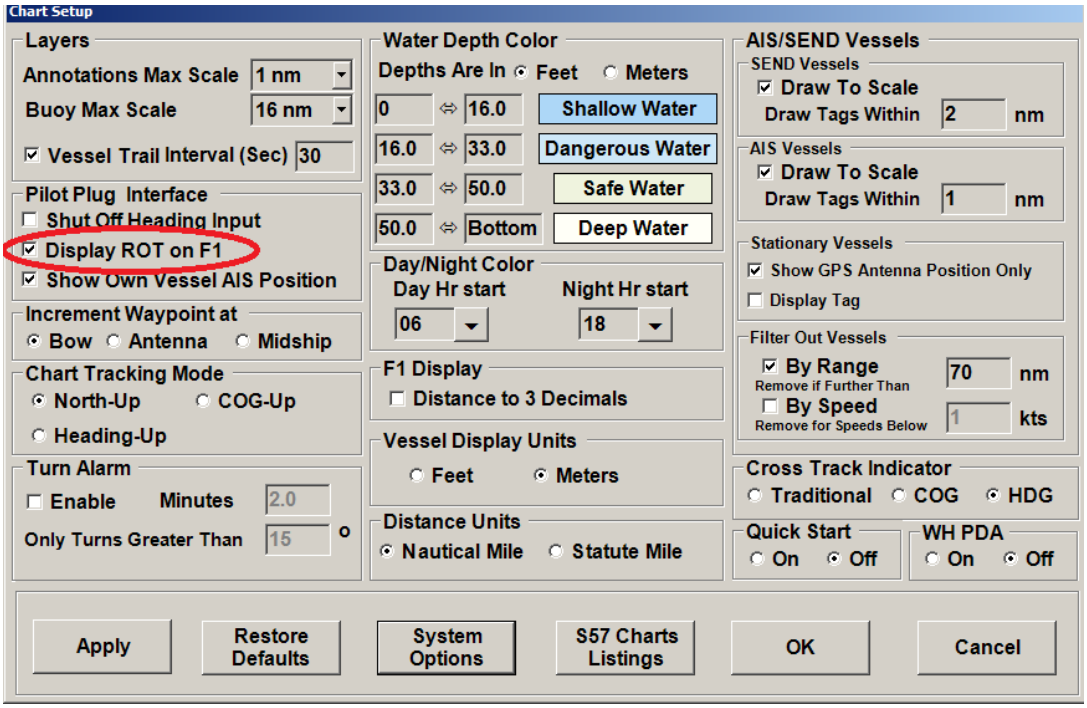


Figure 39: Configuring ROT Display Option

NOTE

Raven's ROT Accuracy Statement:
"From our simulation, ROT accuracy is substantially better than 1 degree per minute for rates above 5 degrees per minute; below that, accuracy degrades to about 2 degrees per minute. There seems generally to be no significant lag. The algorithm puts out heading in tenths of degrees and rate of turn in whole degrees per minute."

Regardless of the above statement, some pilots report that the Raven ROT lags the ship's ROT display greater than 2 degrees per minute. However, pilots are comparing the Raven ROT to the ship's ROT display. A cross-check of the ship's ROT display can be done manually by counting the seconds between whole heading-degrees changes.

3.10 Special Features

Wheelhouse II has many features that are described in detail in subsequent sections of this manual. Below we mention a couple of features as part of the overview.

Wheelhouse II supports on-route and off-route intercept computation. The graphic below shows that the vessel below will meet the selected vessel in 1 min, 45 sec.

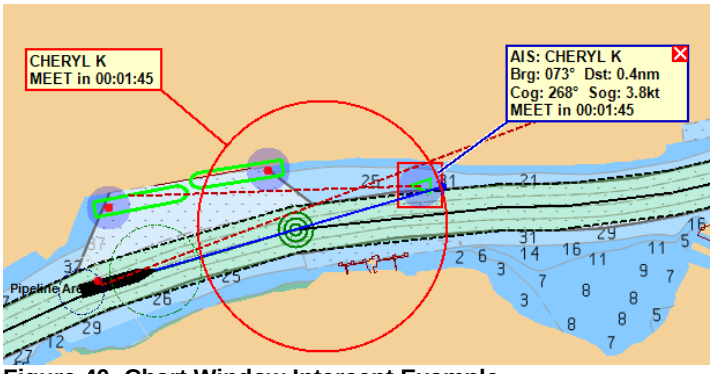


Figure 40: Chart Window Intercept Example

Wheelhouse II can share vessel information (via the internet-based Raven SEND network) with other vessels equipped with Raven systems. The **AIS and SEND Vessels** [F9] screen below shows a list of remote vessels, including AIS and AIS Class B vessels.

- You can sort on any column by left-clicking on that column.
- You can select to see only vessels from a certain source, as indicated by the check boxes in the **Display** box.
- In this example graphic, in the **Display** box if the **SEND** check box was also selected, then SEND vessels would also be listed. Refer to chapter **14 - AIS and SEND Vessels [F9]**, for more detail.

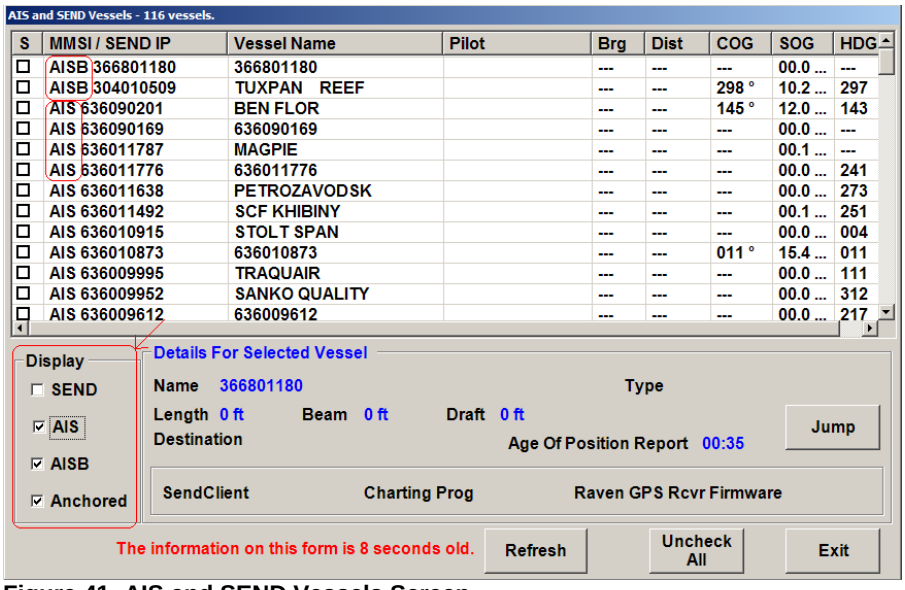


Figure 41: AIS and SEND Vessels Screen

3.10.1 AIS Class B Support

Perform the following steps to enable AIS Class B support and to view the vessels in chart Views.

1. Open the AisClient main screen, and then select the **Process AIS Class B Messages** checkbox.

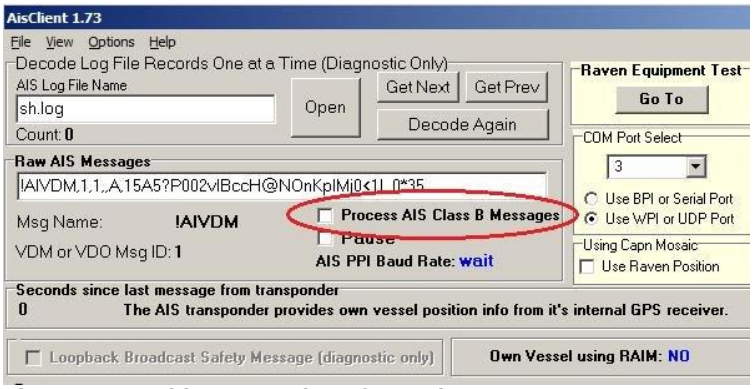


Figure 42: Enable processing of AIS Class B Messages

2. Minimize the AisClient screen.

3. On the Wheelhouse II chart screen, right-click a View button to open its **Mode Display Options** screen, and then specify the display of AIS Class B vessels for the View button.

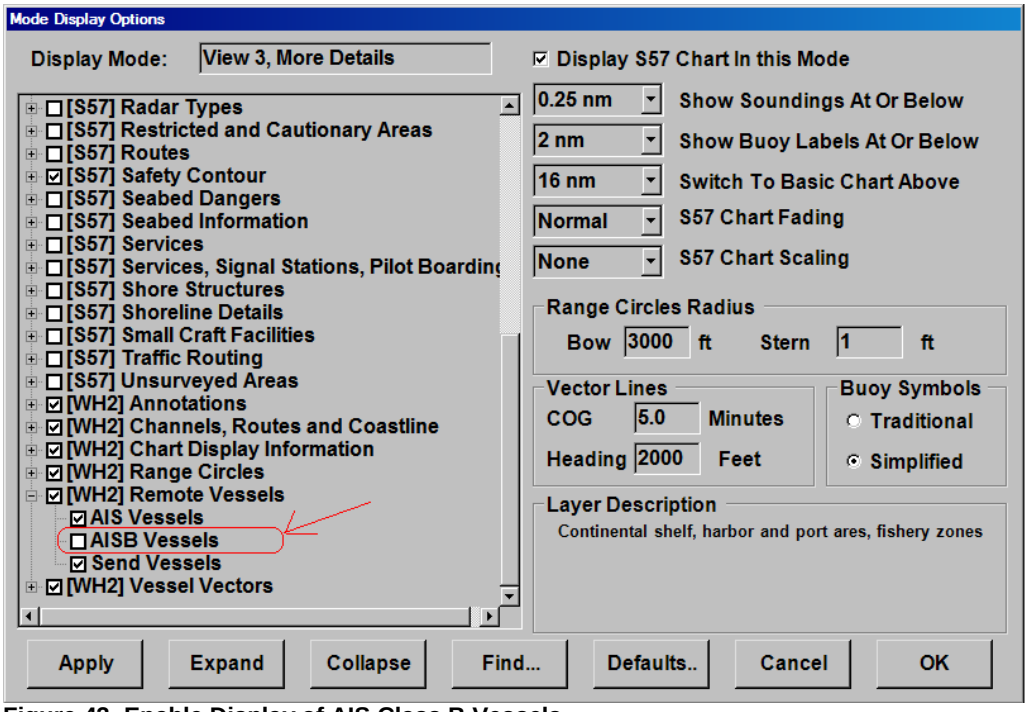


Figure 43: Enable Display of AIS Class B Vessels

4. Repeat for other View buttons you want to be able to see AIS Class B Vessels in.

3.10.2 Editing a Nav Aid Label

Perform the following steps to edit a Nav Aid Label.

1. Hover the mouse cursor over an S57 buoy label and then press Shift+Left-Click.

2. In the **Nav Aid Label** dialog box that opens (see graphic below), you can edit text alignment and location setting. You cannot edit the Display Text unless you have special access information available only to designated data set developers.

3. Click the **Set Font and Colors button**.

4. In the **Set Label Font/Color** dialog, changes you make to the font and colors apply to all S57 buoy labels.

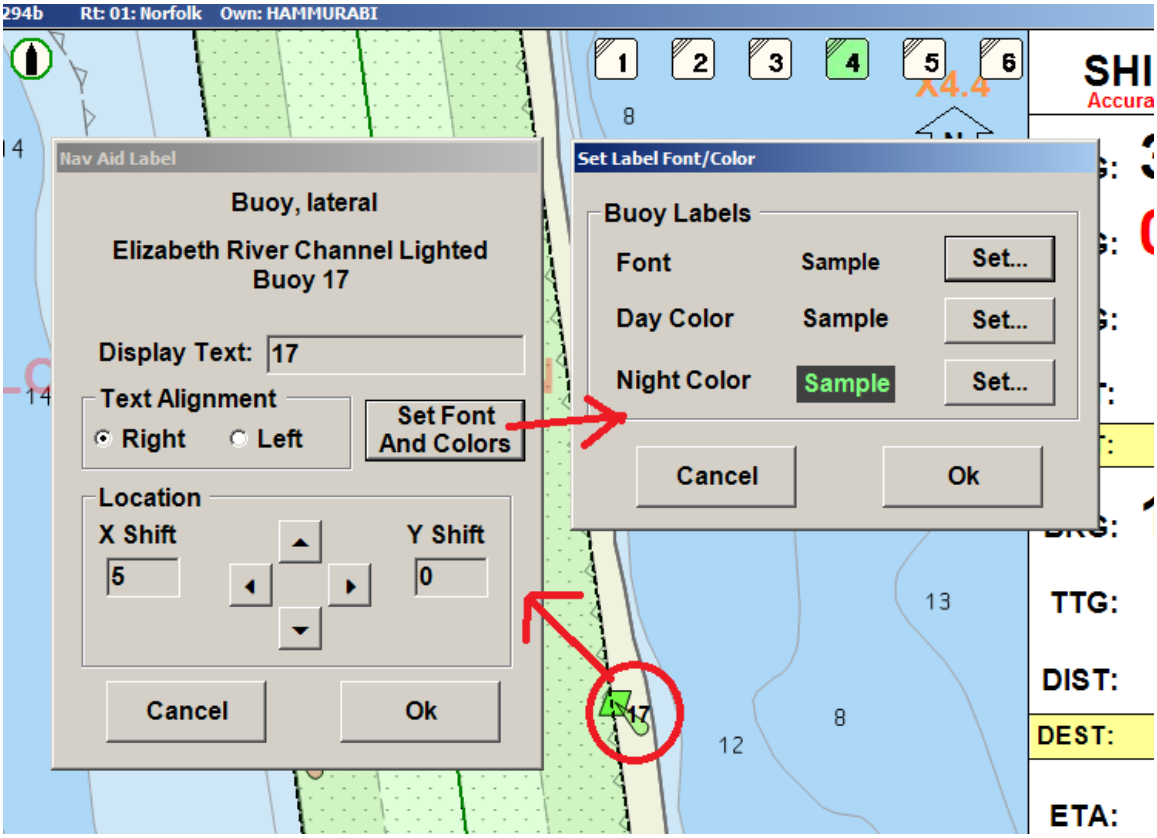


Figure 44: Editing a NAV Aid Label

3.11 SendClient and AisClient

The Raven software support modules, SendClient and AisClient, support both the old WhIP charting program and the new Wheelhouse II charting program.

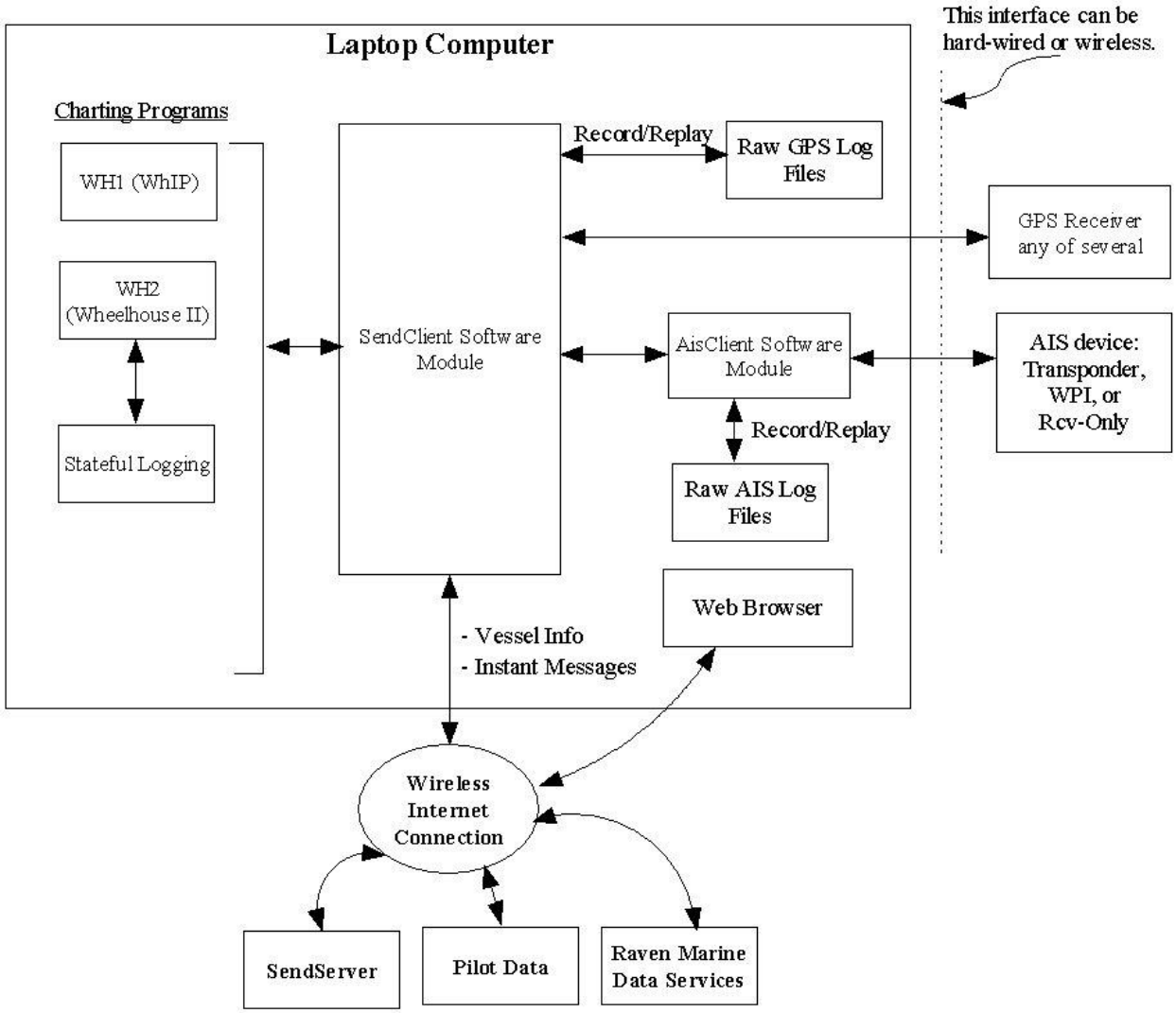


Figure 45: The Raven Marine Platform Architecture

SendClient and AisClient configure and get data from the Raven GPS or Pilot System GPS receiver, the AIS transponder, and Internet SEND vessels. SendClient then provides the resultant data in a normalized way to the charting program. When you start Wheelhouse II in Normal, Quick Start, or Monitor mode, Wheelhouse II automatically loads SendClient and AisClient.

'SendClient' flashes on the screen and then minimizes to the taskbar. Pre-configured SendClient needs no user action. It is loaded to support Wheelhouse II.

To get to SendClient Pilot System GPS data source configuration options, click the **Misc Options** button.

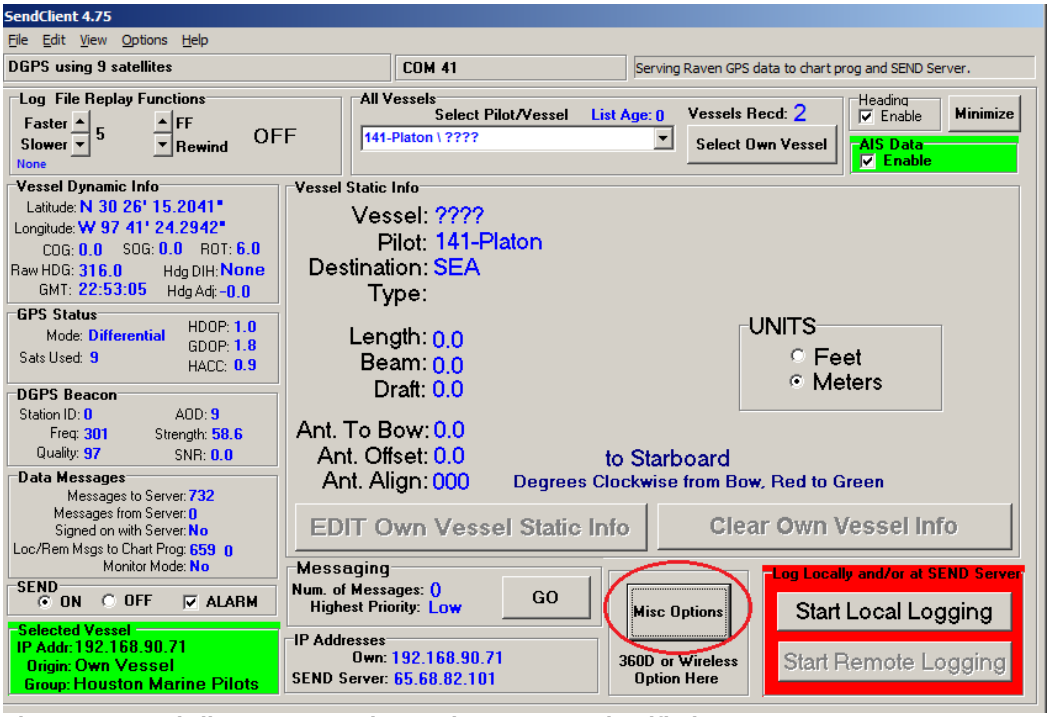


Figure 46: SendClient Screen, Misc Options Button Identified

To configure the SendClient GPS data source for use with a Raven WiFi GPS receiver, select the 'Use UDP Port' option. For GPS data from a Serial or Bluetooth COM Port select 'Use Hard-Wire or Bluetooth Serial Port' or select the COM Port from the drop-down list. Bluetooth COM Port 41 is typically used for communication with a Bluetooth GPS receiver. SendClient saves the setting you select.

Figure 47: COM Port Select Options

AisClient flashes on the screen and then minimizes to the taskbar. AisClient typically needs no user action. It is loading to support Wheelhouse II.

To configure the AisClient GPS data source for use with a Raven WPI, select 'Use WPI or UDP Port'. For GPS data from a Serial or Bluetooth COM Port select the COM port from the drop-down list. The COM port for Bluetooth is typically 40. AisClient saves the setting you select.

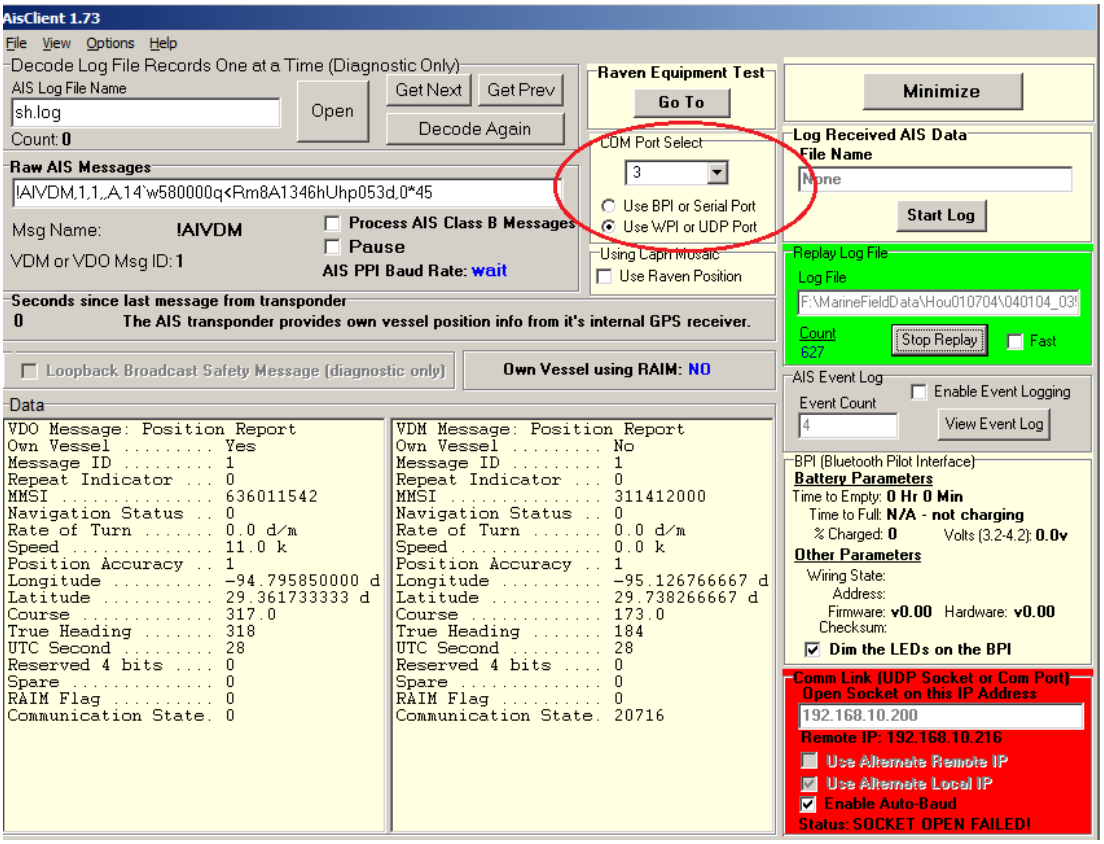


Figure 48: AisClient Screen, COM Port Select Options Identified

To get AIS data from the BPI (Bluetooth Pilot Interface) via USB cable, select BPI USB from the AisClient COM Port drop-down list.

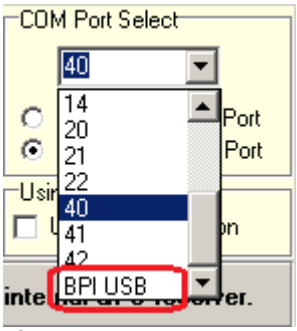


Figure 49: COM Port Drop-Down List

For more information on SendClient and/or AisClient, see SEND/AIS Operation Manual.

3.12 Quick Start

The Quick Start option is located on the Chart Setup [F5] screen.

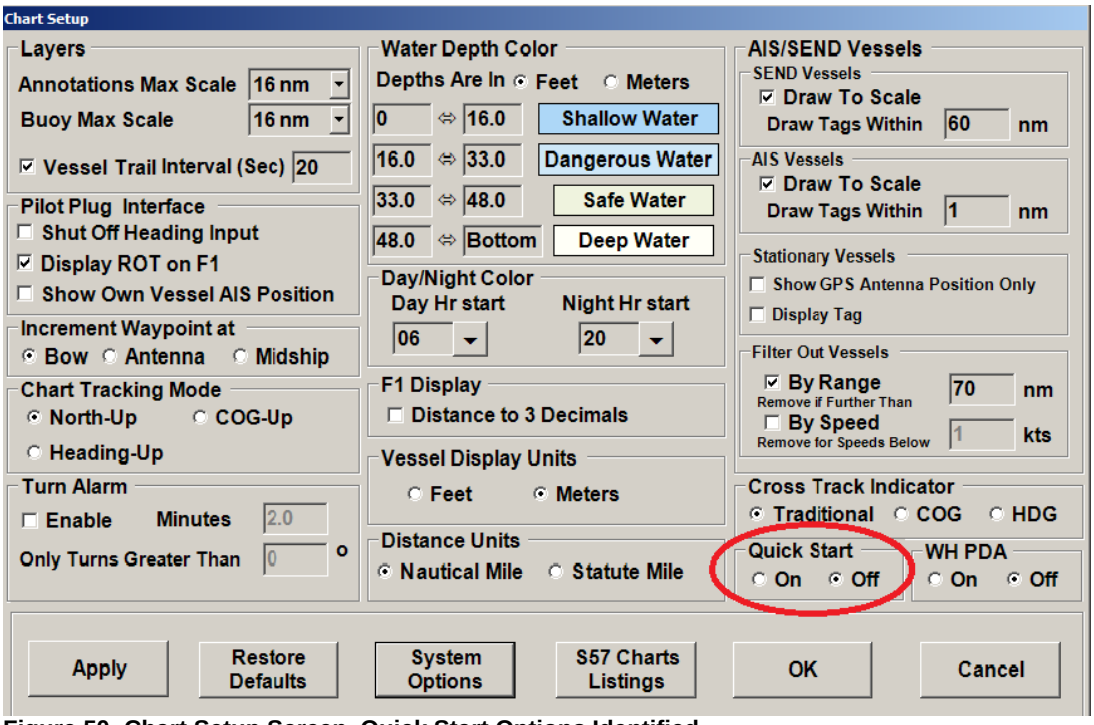


Figure 50: Chart Setup Screen, Quick Start Options Identified

If Quick Start mode is set to On, the next time Wheelhouse II (WHII) is started, you are prompted to affirm the Safety Reminder screen, the program then defaults to the first route listed in the Route Selection [F7] screen, and then advances directly to the chart [F1] window.

NOTE

The Color Mode on the Select Mode startup menu is automatically selected per options on the Chart Setup [F5] screen. The user can manually change the automatic selection, if desired.

After starting in Quick Start mode, preliminary tasks, such as getting a GPS fix from the AIS transponder, and taking time to set up the Raven or other GPS receiver provided with the system, can be performed before entering vessel particulars and selecting route and destination waypoint.

From the chart [F1] window, to enter vessel particulars, access either the Edit Vessel [Alt+O] or Trip and Own Vessel Particulars [F6] screen. To select route and then destination waypoint, access the Route Selection [F7] screen, make selections and then press OK to automatically open the Waypoint Selection [F8] screen.

3.13 Trip Information

The top part of the Trip and Own Vessel Information [F6] screen allows you to select from a list or add the Pilot Name and the Destination.

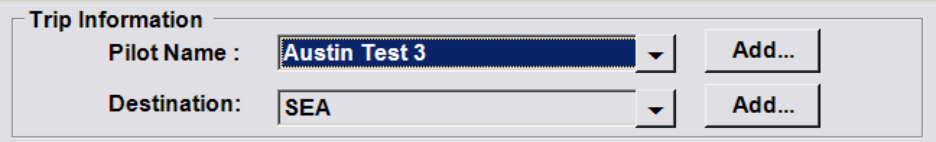


Figure 51: Trip Information Box

3.14 Position Source

This area displays all the information about where Wheelhouse II is obtaining position information.

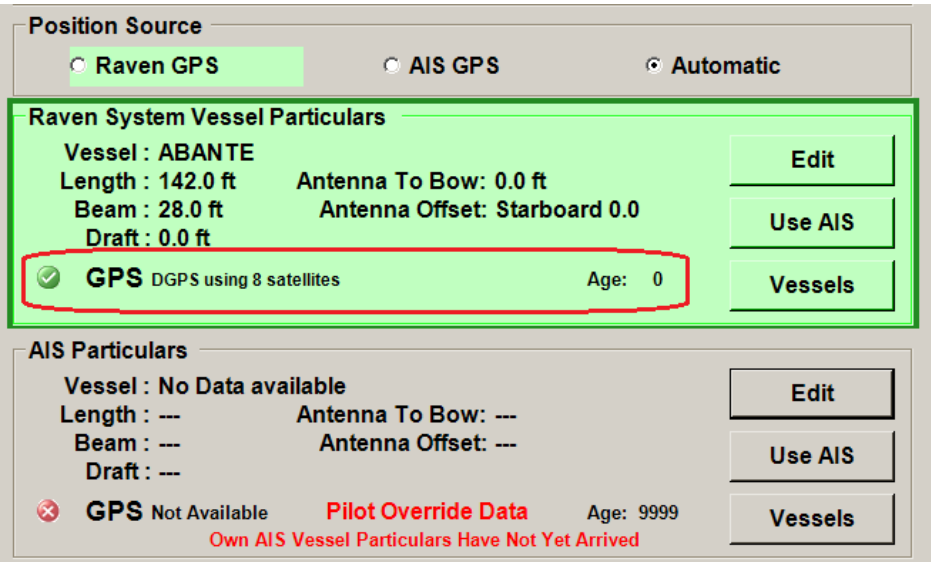


Figure 52: Position Source Box

The icon shows the status of the GPS source:

Table 1: Position Source Icons

Icon	Meaning
	GPS Source is available
	Source has a warning condition
	Source is not available

In the example above, Position Source selection is in Automatic mode and both position sources are available. The system has chosen to use 'Pilot System GPS'. You manually force Ship's GPS by selecting the Ship's GPS radio button.

The position source can be either Pilot System GPS or AIS GPS. The row of labeled radio buttons shows position sources. The active position source is highlighted in green, whether in

automatic or manual mode. In the example above, the system is in Automatic mode, and the active position source is ‘Pilot System GPS’ as denoted by the green highlight.

Table 2: Position Source Information

Source	Description
Pilot System GPS or Raven GPS	If this radio button is selected, the system always uses the Pilot System GPS.
Ship’s GPS	If this radio button is selected the system always uses the Ship’s GPS.
Automatic	If this radio button is selected, the program automatically selects the position source, preferring the Pilot System GPS.

The Age value shows how many seconds have elapsed since the last valid position fix for this source. Time is displayed in seconds.

IMPORTANT

Automatic position source selection has the following logic:

- ***At startup use the Ship’s GPS until the Pilot System GPS has achieved DGPS, then use the Pilot System GPS. Subsequently, if the Pilot System GPS loses DGPS, continue using the Pilot System GPS, as long as it is connected. This prevents switching position sources when DGPS is lost due to a normal blocking of the sky, such as going under a bridge.***
- ***If the Pilot System GPS is not communicating, use the Ship’s GPS.***

3.15 Notification of Position Source Change

A position source change notification occurs when the Trip and Own Vessel Information [F6] screen Position Source option is set to Automatic and the position source changes. The pilot must press the space bar on the keyboard to clear the notification. If the Trip and Own Vessel Information [F6] screen is selected when the position source changes, there is no notification.

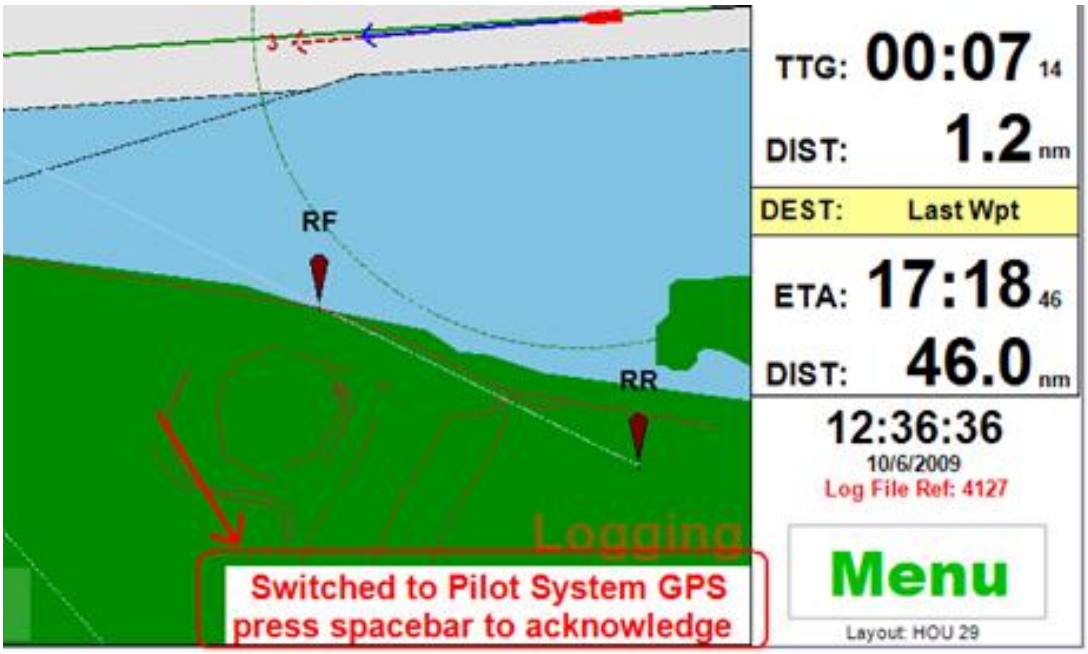


Figure 53: Position Source Change Message

3.16 BPI Status

The Bluetooth Pilot Interface (BPI) provides a wireless, battery-powered interface to the ship's AIS pilot plug. This section of the Trip and Own Vessel Information [F6] screen provides information about battery life and AIS pilot plug wiring. If the BPI battery power is 10% or less, Wheelhouse II displays a warning, on the chart [F1] window, as indicated below.

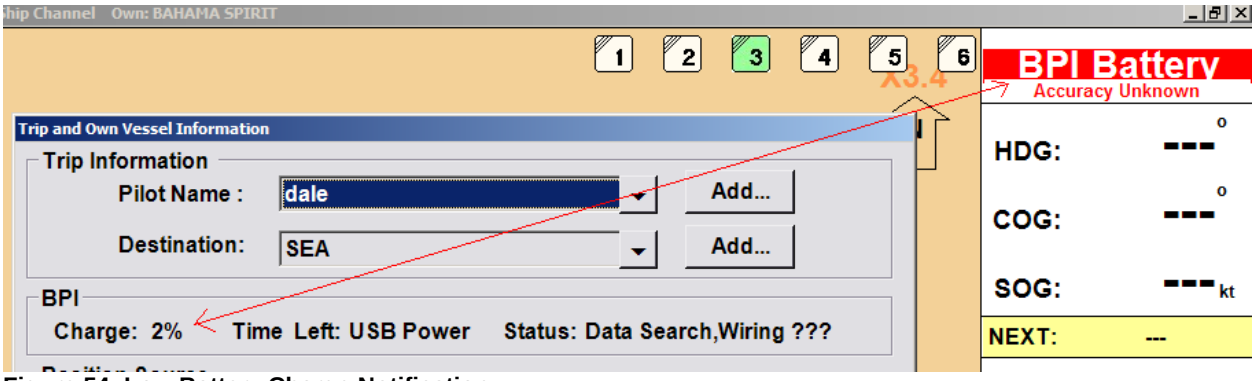


Figure 54: Low Battery Charge Notification

Table 3: BPI Box Information (Trip and Own Vessel Information Screen)

Section	Description
Charge	Remaining charge, from 0-100%.
Time Left	Approximate amount of time, in hours and minutes until the battery is discharged, or the type of power the BPI is operating on. In this example, the BPI is operating on USB power.
Status	PPU wiring status.

3.17 Vessel Particulars

You can select the vessel particulars for either the Pilot System position or the AIS position by selecting from the 3 buttons.

- 'Edit' lets you enter vessel particulars.
- 'Use AIS' lets you use vessel particulars coming from the ship's AIS transponder. The AIS antenna parameters are not included when you select this option, since Pilot System/Raven GPS and AIS antenna parameters are expected to be different. This function is only available if AIS particulars have been received. In the above screen notice that, "Own AIS Vessel particulars Have Not Yet Arrived". If the position source is AIS GPS (also referred to as Ship's GPS) and vessel particulars have not arrived, you can use a vessel from the database or manually enter the data via override until AIS data arrives.
- 'Vessels' lets you manage the vessels database.

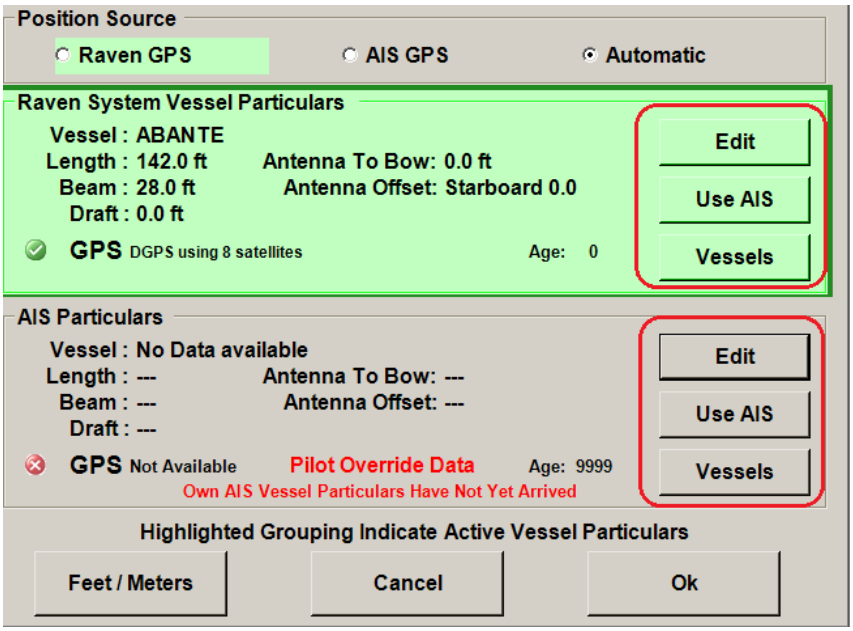


Figure 55: Position Source Box

3.17.1 Vessel Particulars Source Messages

Pilot Override Data - Pilot has overridden the values from the AIS device. The overriding values are not saved in the database.

3.17.2 Pilot System/Raven GPS May Not Match AIS Data

The system automatically compares current vessel parameters against the values received from the AIS transponder. If these values do not match, a warning is displayed, as shown below: '**Values in Red do not match AIS Particulars**'.

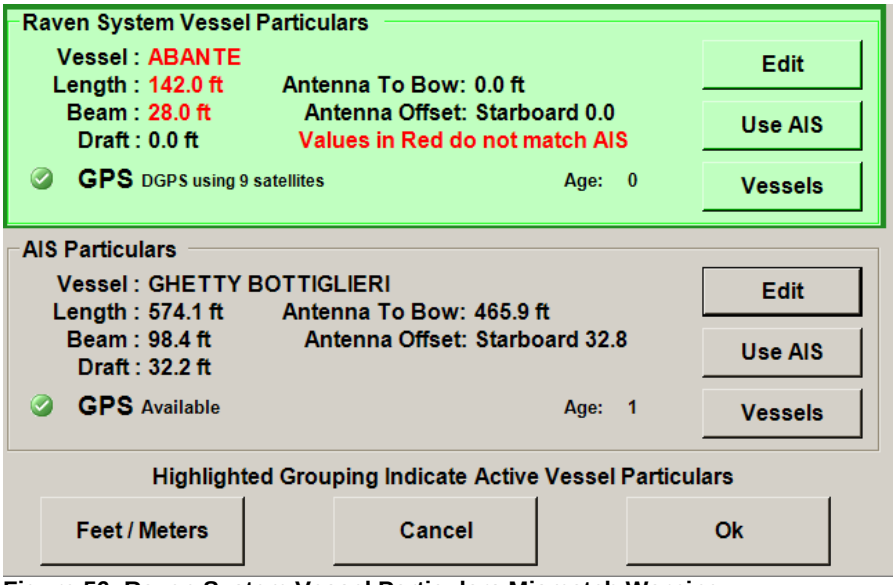


Figure 56: Raven System Vessel Particulars Mismatch Warning

Wheelhouse II verifies the following fields:

- Name
- Length
- Beam

IMPORTANT

Any parameter, including AIS antenna parameters can be overridden. Be aware that incorrect antenna offset information results in an error in the displayed position of the vessel on the navigation chart. Be sure to provide the correct 'Antenna Offset' and 'Antenna to Bow' values for the Pilot System GPS. The system also allows the Ship's GPS antenna position to be overridden in the case of an incorrectly programmed AIS transponder.

Following is a description of all fields:

Table 4: Vessel Particulars

Field	Meaning
Position Source	Source of GPS position information: Ship's AIS GPS or Pilot System GPS
Name	Vessel Name
Length	Vessel Length
Beam	Vessel Beam
Draft	Vessel Draft
Antenna To Bow	Distance from the Bow to the GPS Antenna
Antenna Offset	Distance from the GPS antenna to the vessel centerline.

In this example, the Vessel Display Units on the Chart Setup [F5] screen is set to Feet. Refer to section 10.0 - Chart Setup [F5] Screen for more information.

3.18 The F6 'Edit' Function

On the Trip and Own Vessel Information [F6] screen, under either Pilot System (or Raven GPS) Vessel Particulars or AIS Particulars, press the Edit button to open the Edit Vessel screen.

Use this screen to select a vessel for the Pilot System/Raven GPS position source or a vessel for the AIS position source. If you type the vessel name into the Quick Search box, the vessel with the closest match to that name appears. If the vessel name does not match any in the database, the name remains in the Vessel Name field so you can manually enter the remaining fields.

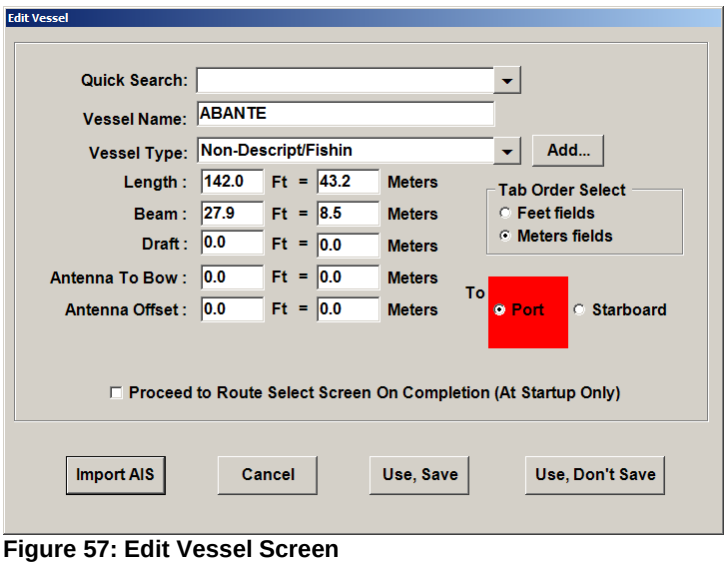


Figure 57: Edit Vessel Screen

If you check the Proceed to Route Select Screen on Completion (At Startup Only) check box, when you press one of the Use buttons, the Route Select screen opens instead of returning to the Trip and Own Vessel Information [F6] screen.

3.19 The F6 'Vessels' Function

In the Trip and Own Vessel Information [F6] screen, pressing the Vessels button opens the Select Vessel screen. The Select Vessel screen allows the pilot to perform operations on the vessels database, including selecting a vessel for use.

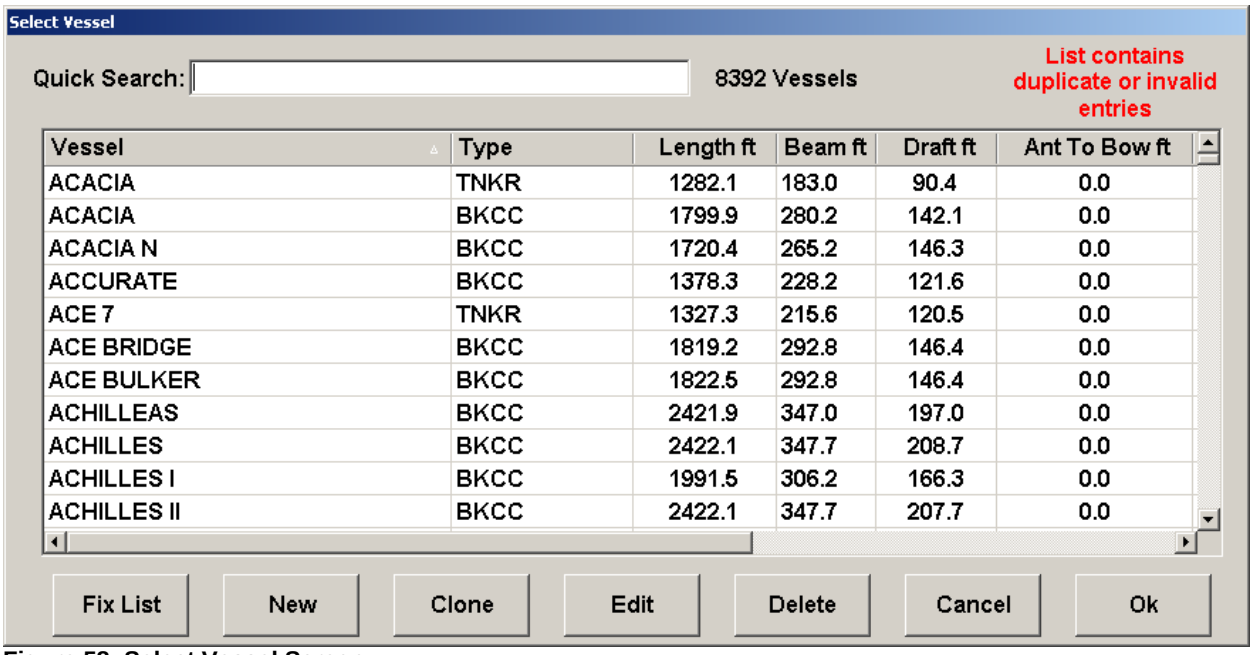


Figure 58: Select Vessel Screen

The vessel selection screen has been designed to make selecting vessels intuitive. Highlights:

- Quick search filters the list based on any alphabetical occurrence of the entered text in the vessel name.
- The list can be sorted by any column, in ascending or descending order by clicking on the column heading. Click on the heading again to reverse the sort order.
- To select a vessel you can double click-on a vessel, or click once on the vessel and then press OK.

If you highlight a vessel and then press **New**, **Clone** or **Edit**, an Edit Vessel screen opens. In the Edit Vessel screen, the vessel parameters can be manually entered or can be imported from the ship's AIS after the AIS transponder has reported them, which can take a few minutes.

- New – Only the Vessel Type field is populated. If a vessel name that is not in the database is entered into the Quick Search box, the Vessel Name field is automatically updated (so the name does not need to be typed twice) and the other parameters of the vessel are cleared. When all particulars are correctly entered or imported, press OK.

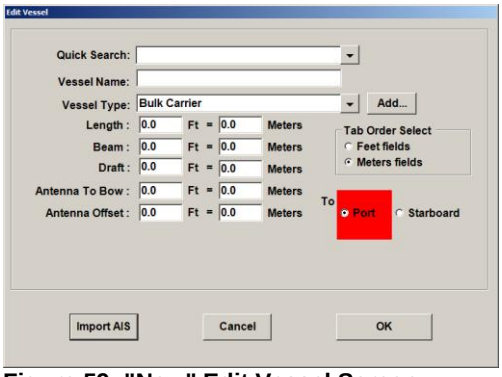


Figure 59: "New" Edit Vessel Screen

- Edit – Change the values in an existing vessel database record. Typically, an existing vessel is edited to enter the antenna placement parameters. Click

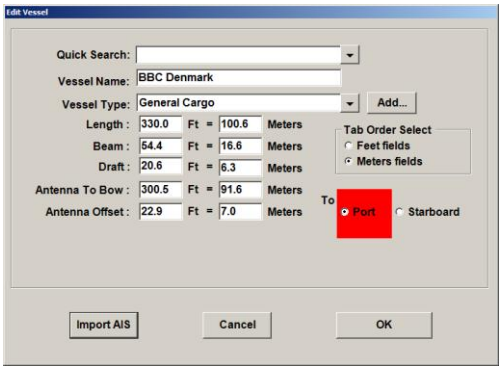


Figure 60: "Edit" Edit Vessel Screen

- Clone - Use an existing vessel's particulars as a template, make changes, and then press OK to create new vessel in the database. Creating a clone does not affect the template vessel information.

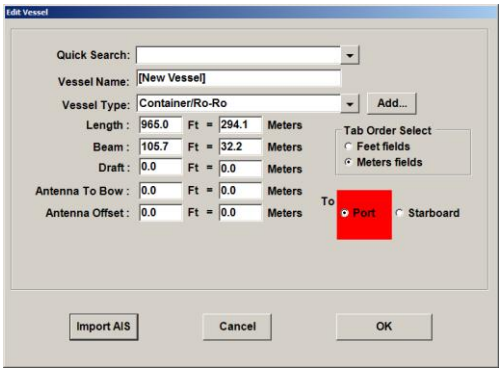


Figure 61: "Clone" Edit Vessel Screen

3.19.1 Hot Key to Edit In-Use Vessel Particulars

From the chart [F1] window, you can press Alt+O to open the Edit screen for the currently in-use vessel.

NOTE

It is possible to change the function of hot keys, such as Alt+O, or to assign functions to a new hot key. If a hot key does not perform as expected or if a different hot key is desired for a function, refer to section 10.16.6 Hot Keys for more information.

The **Route Selection** screen appears. Select the route of your choice. Double-click on the appropriate route or in the **Enter a route number** field, type the route number and then click **OK**.

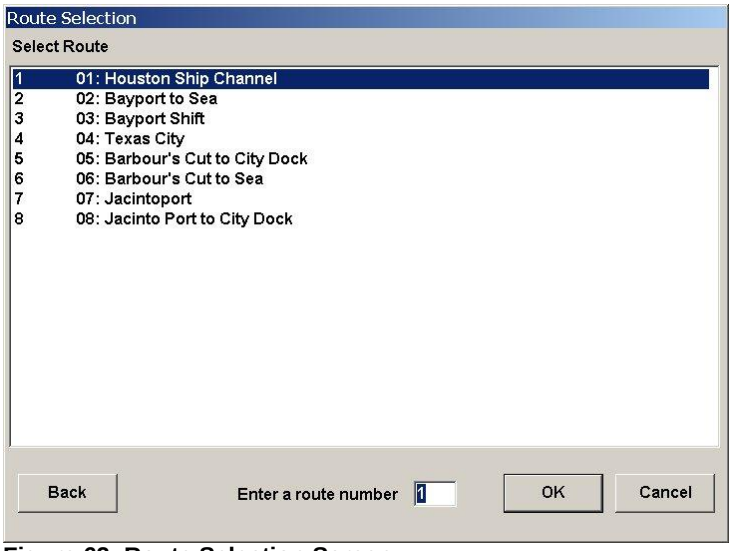


Figure 62: Route Selection Screen

Route direction is automatically determined by vessel movement. The system needs to know the direction to properly display the cross-track error. At low speeds, typically less than 1 knot, it is necessary to tell the system the direction when there is no heading and the speed is too slow for a reliable COG. From the chart [F1] window, press Alt-D to manually set the route direction below a specific speed. You can specify the speed threshold above which you would like the system to automatically determine the direction. The program remembers the speed threshold the next time you use it.

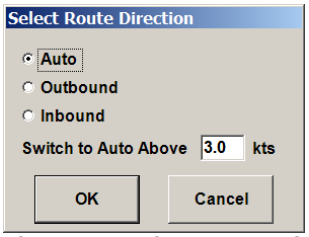


Figure 63: Select Route Direction Screen

Select a destination ETA waypoint to be used by Wheelhouse II to calculate the Estimated Time of Arrival (ETA) along your chosen route. The selected ETA is displayed on the data panel of the chart [F1] window. The Route Waypoint column contains route waypoints that are closest to the ETA waypoint. An ETA waypoint is any pre-designated point along the route. The Waypoint Selection [F8] screen starts with waypoints ordered from sea to port. You can sort the column headings during navigation by double left-clicking on the column title.

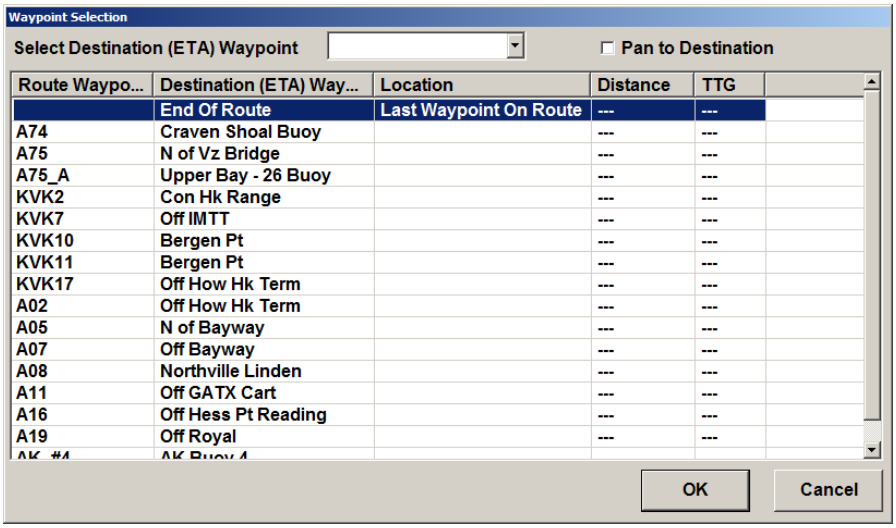


Figure 64: Waypoint Selection Screen

After you click OK, you are returned to the chart [F1] window and your position appears on the chart.

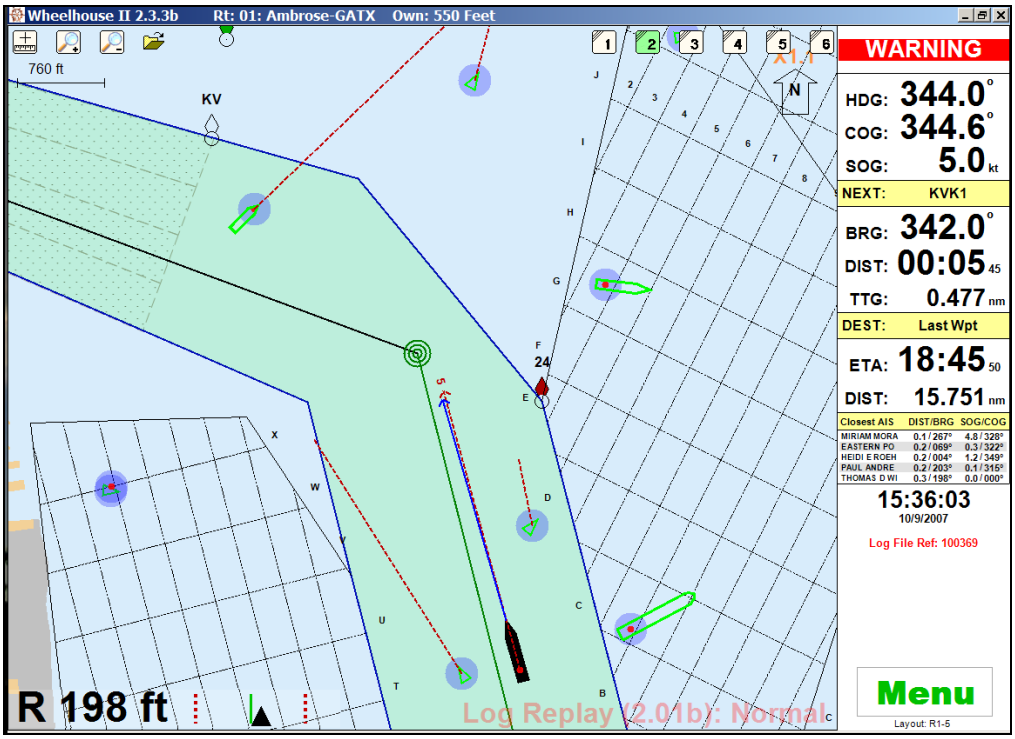


Figure 65: Chart Window

If COG is unknown due to low speed and there is no heading, the ship orientation is unknown, and its icon cannot be drawn. In this case, the program draws the local vessel as a large red dot inside a black circle, as shown below.

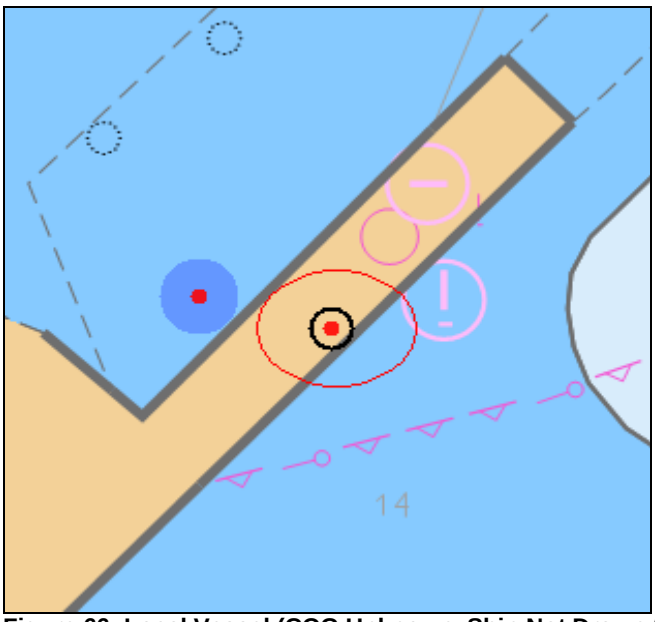


Figure 66: Local Vessel (COG Unknown, Ship Not Drawn to Scale)

If the heading and vessel particulars are known, the ship is drawn to scale; even if the speed is less than 1 knot (the COG is unreliable at less than 1 knot).

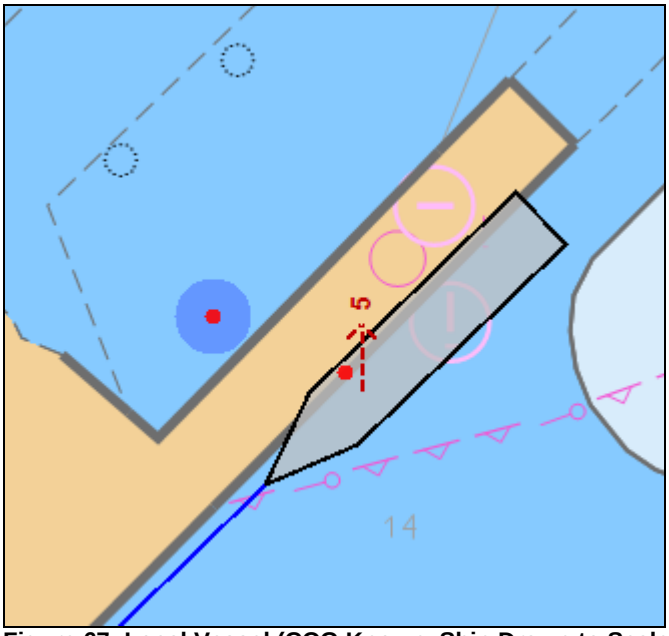


Figure 67: Local Vessel (COG Known, Ship Drawn to Scale)

3.20 Pan Screen to Selected Waypoint

If the pilot checks the indicated box, on selecting the ETA waypoint, the chart screen automatically pans to the location selected. This allows the pilot to view the activity at the destination. When finished, the pilot can press the ship icon in the upper left of the chart [F1] window to return to the own-vessel location.

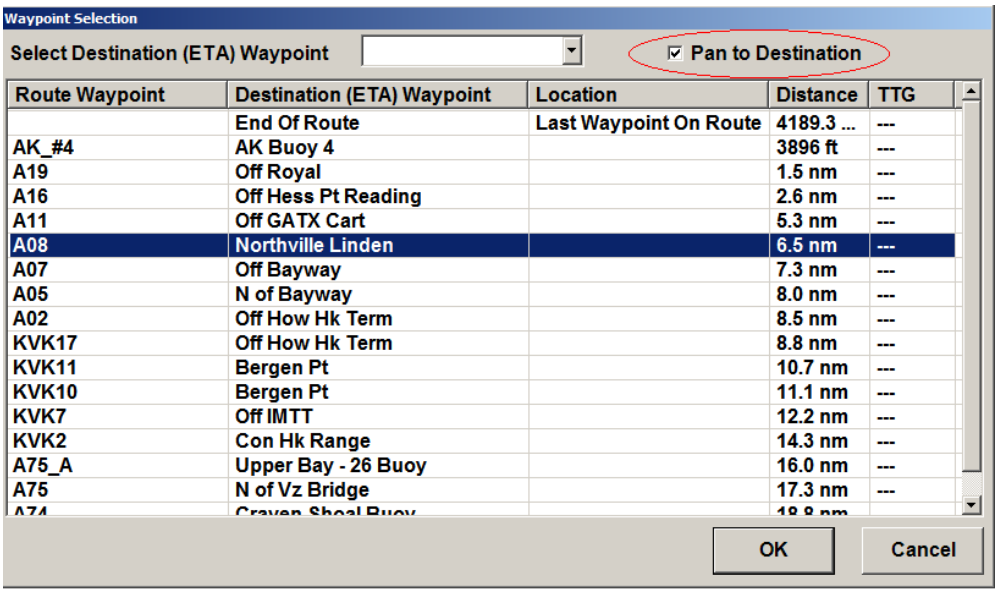


Figure 68: Waypoint Selection Screen, Pan to Destination Checkbox Identified

3.19.1 Quick Search for ETA Waypoints

Some data sets have a great number of ETA waypoints. We've added an option that allows the pilot to quickly search for a Destination ETA waypoint in a long list.

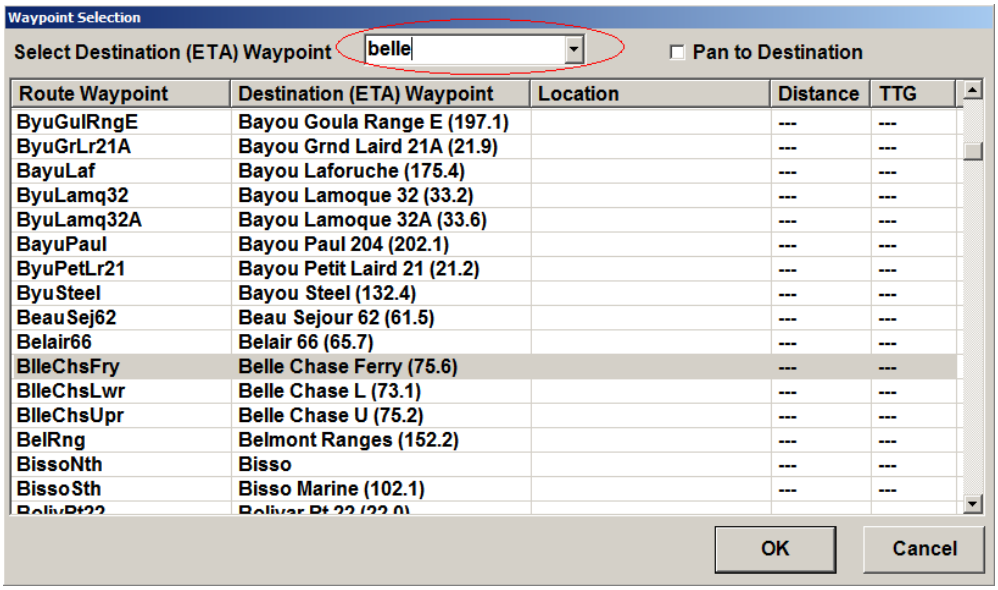


Figure 69: Waypoint Selection Screen, Select Destination (ETA) Waypoint List Identified

4 Simulator Start

Wheelhouse II has a simulator that allows you to maneuver your vessel on the chart by using the up/down and left/right arrow keys. This allows for offline demonstration of the navigation area and features of the Wheelhouse II program. The simulator supports simulation of only the local vessel. It does not simulate remote vessels.

1. Click the Wheelhouse II icon on your computer desktop.

2. Select Simulator as the operating mode.

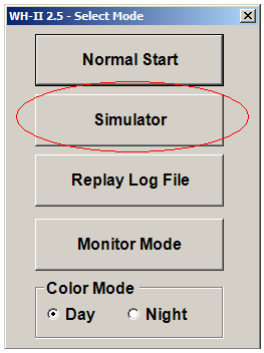


Figure 70: Select Mode Dialog Box, Simulator Button Identified

NOTE

The Color Mode is automatically selected per options on the Chart Setup [F5] screen. The user can manually change the automatic selection, if desired.

3. You can position the vessel anywhere by selecting the Measure Tool, moving the cursor to the desired location, and pressing Enter. When the Measure Tool Completion dialog appears, select 'Set Own Location'.

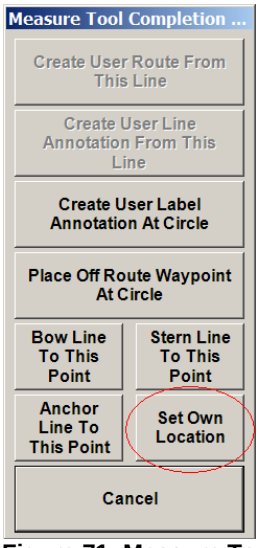


Figure 71: Measure Tool Completion Dialog, Set Own Location Button

4. Maneuver on the chart using the keyboard arrow keys.

   - Up – Increase speed
   - Down – Decrease speed
   - Left – turn counter clockwise
   - Right – turn clockwise

5. You can create a remote vessel at the mouse cursor by pressing both left and right mouse buttons simultaneously. If you have an external mouse with a center button, position the mouse and press the center button. You can then select the type of remote vessel you wish to create.

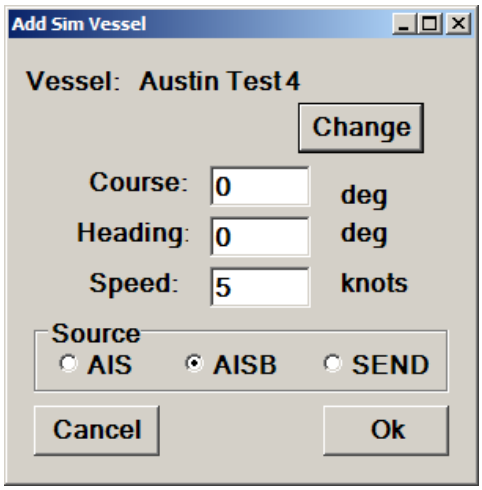


Figure 72: Add Sim Vessel Window

5 Replay Log File Start

Wheelhouse II allows for the replay of trip log files in both real-time and fast-time replay. The replay includes the position and change of position of your vessel and remote AIS and SEND vessels consistent with the logging options described in the previous section.

1. Click the Wheelhouse II icon on your computer desktop.

2. Select Replay Log File as the operating mode.

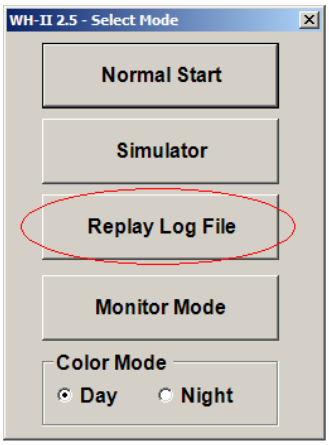


Figure 73: Select Mode Dialog, Replay Log File Button

NOTE

The Color Mode is automatically selected per options on the Chart Setup [F5] screen. The user can manually change the automatic selection, if desired.

3. Select the log file to replay. Log files are stored in the folder, C:\wh2logs.

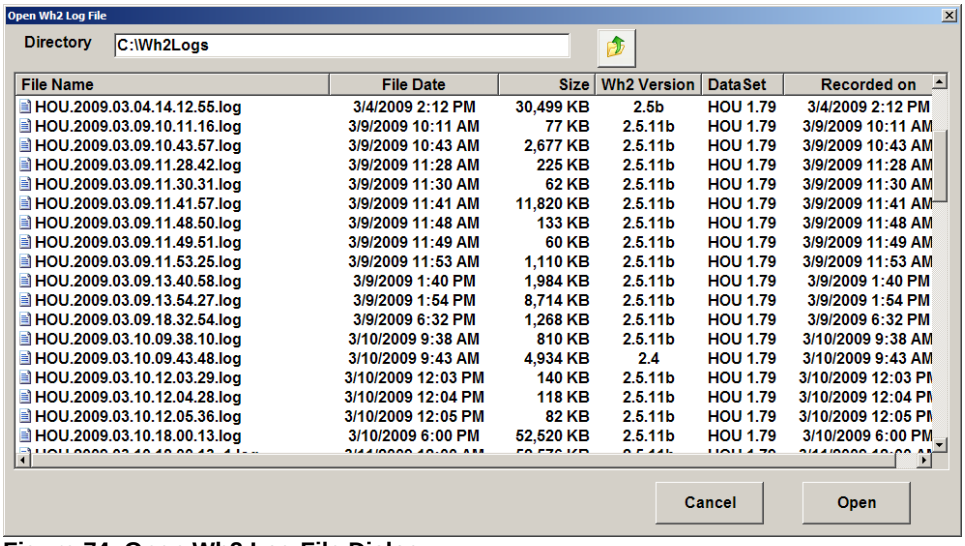


Figure 74: Open Wh2 Log File Dialog

4. Wheelhouse II starts replaying the selected file. On the data panel of the chart [F1] window, in the lower right corner, notice 'Log File Ref: nnn'. You can use this numerical reference to locate a place of interest in the log file.

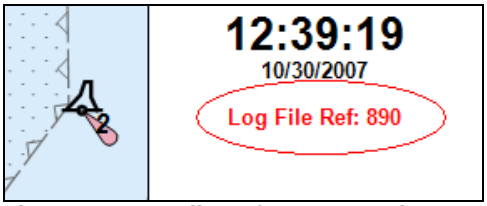


Figure 75: Log File Reference Number

5. Control the speed and position of the replay by using the arrow keys on your keyboard:

   - Up / Down Arrow Keys = Increase / Decrease Replay Speed Replay speeds are indicated in the lower right corner of the chart [F1] window and include: **Fast Rew, Rew, -20x, -10x, -5x, -2x, -1x, -1/2x, 1/2x, 1x, x 2x, 5x, 10x, 20x, FF, Fast FF.** As you decrease the speed, you can cause the vessel to move backwards in time, as indicated by the negative numbers, above.

   - Left / Right Arrow Key = Rewind / Fast Forward (FF) the position in time of the replay. These keys are not really necessary, since you can also use the up and down arrows to rewind and fast forward. If you press the down arrow enough, it causes the vessel to enter reverse playback mode, as indicated by the message below.

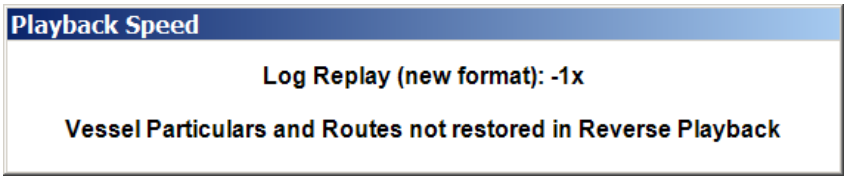


Figure 76: Playback Speed Screen

   - When in reverse mode, route-selection changes and vessel particulars changes cannot be un-done.

When replaying a log file, notice the folder icon that appears in the upper left corner of the screen. Left-click this icon to select a different log file to replay.

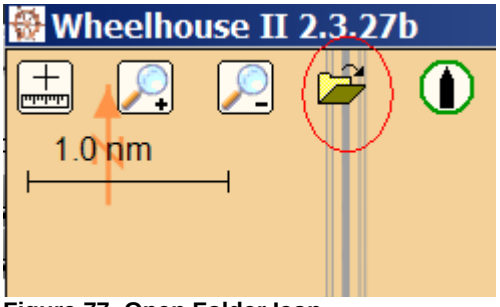


Figure 77: Open Folder Icon

The version and the replay speed of the log file are indicated in the lower right corner of the chart [F1] screen.

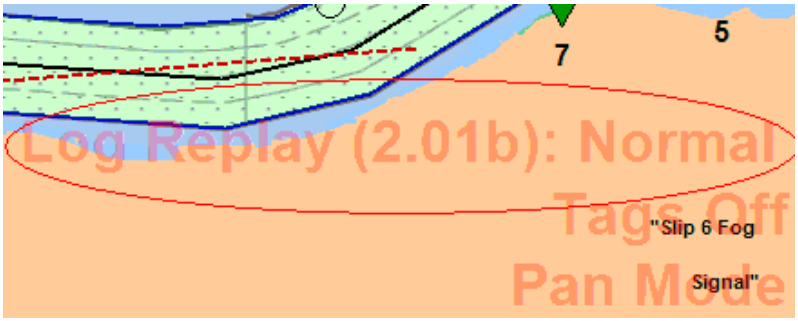


Figure 78: Log Replay Information

Stateful Logging - Log file replay reflects the options selected at the time the log file was made. Options on the Chart Setup [F5] screen are grayed out, except for cases of replaying very old log files made with Wheelhouse II v1.x. If the pilot makes Chart Setup [F5] option changes, or changes the vessel info during the logging session, those changes are reflected when the log file is replayed.

Operational Status Messages - During normal operation SendClient sends PERATIONAL_STATUS messages to Wheelhouse II and it displays this info in the status area at the top right of the chart [F1] window. Wheelhouse II records OPERATIONAL_STATUS messages to the log so the playback accurately depicts what the status was at the time of the recording.

Time of Day - When Wheelhouse II plays back a log file, the time of day clock on the chart [F1] window shows the time of day when that spot in the log was originally recorded.

Logging of SEND Vessels - Most pilot groups do not want SEND vessels recorded to the log file. This feature is Raven pre-programmable. Contact your Raven representative to change this option.

AIS/SEND Vessels Range Filter - There is a range filter applied to AIS/SEND vessels that determines whether or not the vessel is recorded in the log file. Vessels that are beyond this distance from the “own vessel” are not recorded to the log. See ‘Wh2 Log Options’ dialog earlier in this section.

5.1 Log File Options

To access log file options, press F5 to open the Chart Setup screen. Click the System Options button to open the System Options Menu, and then click Log Options.

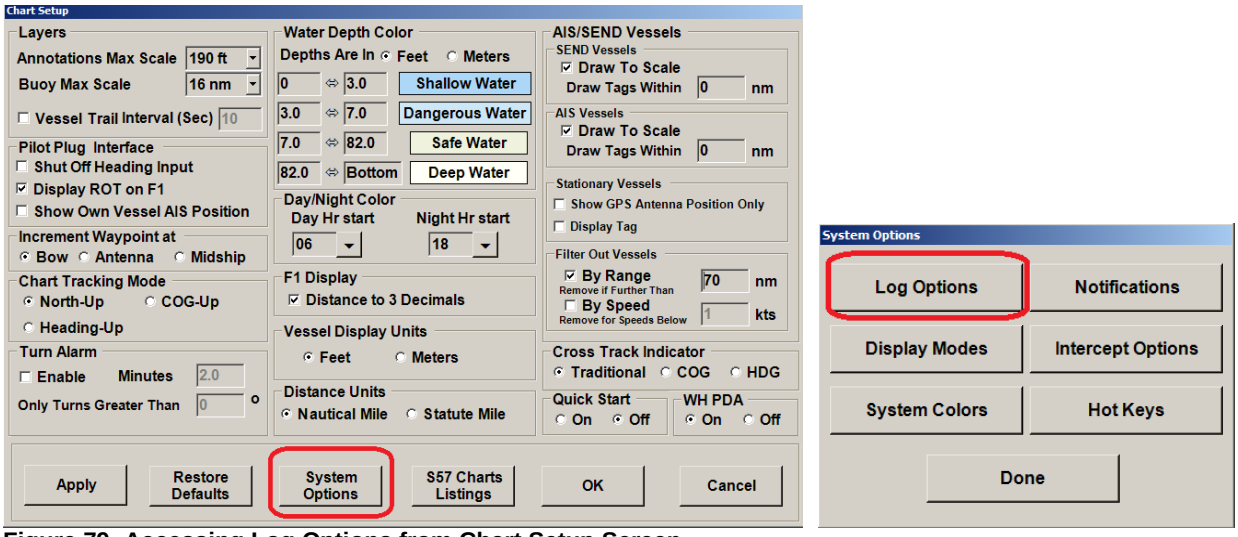


Figure 79: Accessing Log Options from Chart Setup Screen

The Wh2 Log Options screen provides options for configuring log file storage, cleanup, and when to start new files based on file size or elapsed time.

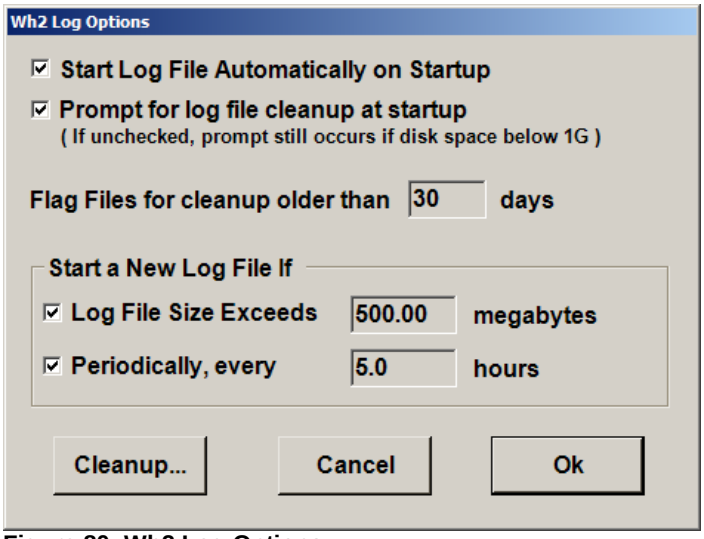


Figure 80: Wh2 Log Options

The ‘Chart Setup | SEND/AIS Vessels | Filter Out Vessels’ options prevents the display of AIS and SEND vessels beyond a certain range or under a specified speed. Vessels that are not displayed are not logged.

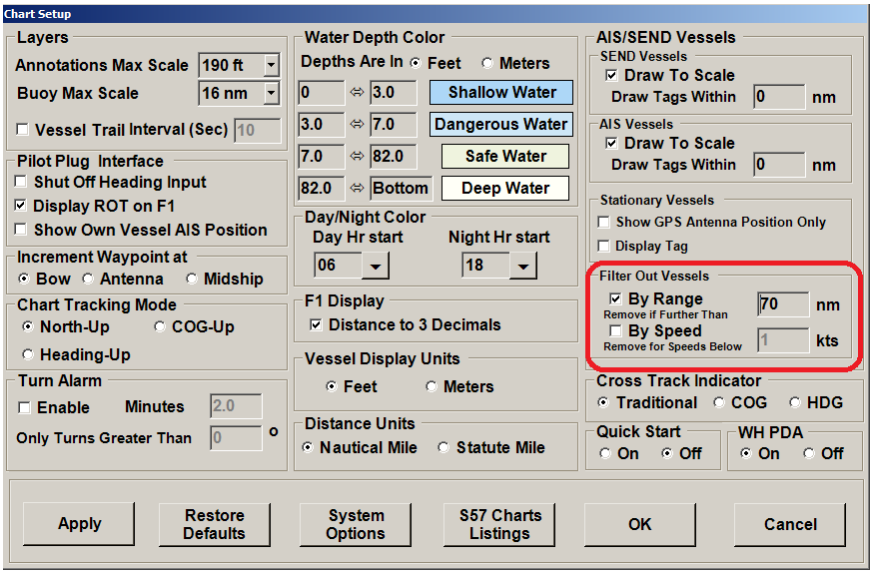


Figure 81: Chart Setup, Filter Out Vessels Options

IMPORTANT

SEND vessels are shown if they were logged, but they may not have been logged. There is a non-user accessible option that prevents the logging of SEND vessels. If your organization has requested that SEND vessels not be logged, then SEND vessels do not appear in the replay. Typically this option is set to disable logging of SEND vessels.

5.1.1 Continuous Log Mode

Continuous Log mode is a Raven pre-programmable function meant to be used by those customers using Wheelhouse II on a single vessel where they always want to record log files. Continuous mode differs from normal mode as follows:

1. Log files are named differently.
    - On program startup the user is prompted to enter a voyage number, N.
    - The log file is named voyageN.YYYY.MMM.DD.HH.MM.SS.log

2. The log file is always on.
    - Wheelhouse II starts with logging on.
    - The user cannot turn logging off using the L hot key.

5.2 Log File Auto-Delete

Wheelhouse II can log each trip to be replayed at a later time. Log files can be hundreds of megabytes in size. To avoid using all of the disk storage space, Wheelhouse II automatically deletes log files older than the specified age of log files in days. Wheelhouse II prompts you at startup prior to deleting any log files, and gives you a chance to keep them by placing a check in the check box beside the file name.

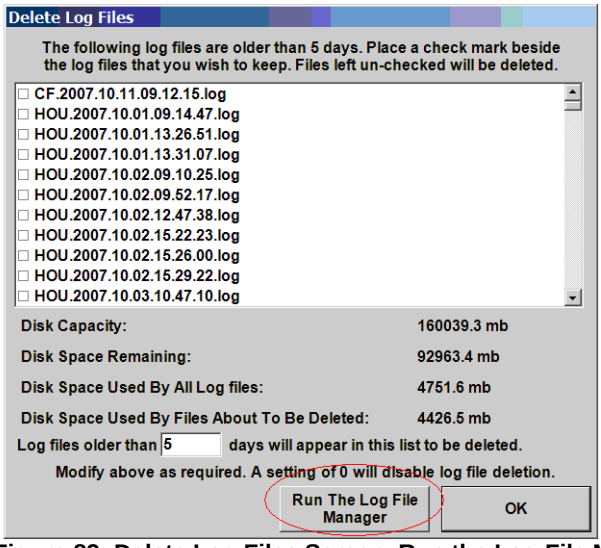


Figure 82: Delete Log Files Screen, Run the Log File Manager Button

You can also select to run the Log File Manager, described in the next session.

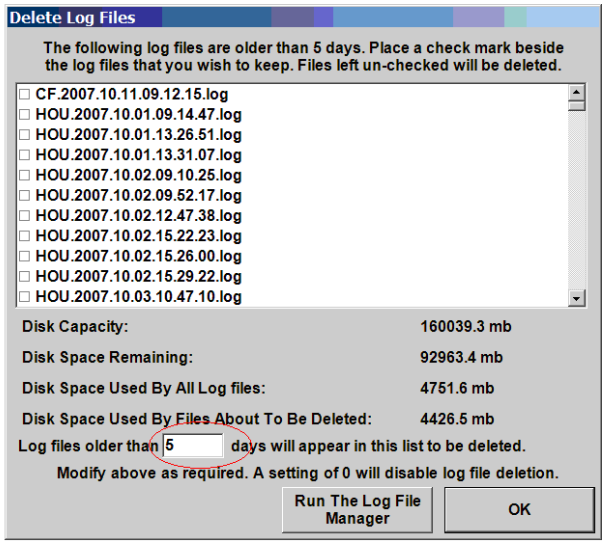


Figure 83: Delete Log Files Screen, Log Files Older Than Field

You can set the Max Log File Age on the Delete Log Files dialog box, above. The program saves this setting. You can also change this setting by selecting F5 | Log Options from the chart [F1] window, as shown below.

The Max Log File Age is also settable in the Wh2 Log /Options box. The program saves this setting. As indicated earlier, to access log file options, press F5, System Options, then Log Options.

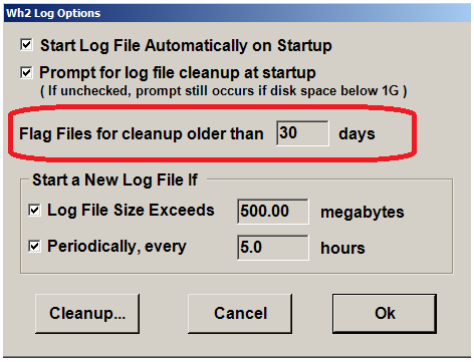


Figure 84: Wh2 Log Options, Flag Files for Cleanup Older Than Field

You can control the maximum size of log files by specifying values for the 'Start a New Log File If' options, shown above.

5.3 Log File Manager

You can use the log file manager (LogMan) to keep, delete, and compress log files. Wheelhouse II does not delete kept or compressed log files. You can select to run LogMan from the Delete Log File dialogue, or you can open the Laptop Admin folder on the desktop and double-click the WH II Log Mgr icon.

Figure 85: Wheelhouse II Log Manager Icon

In the LogMan window, the files in the left pane are de-compressed. The files in the right pane are compressed.

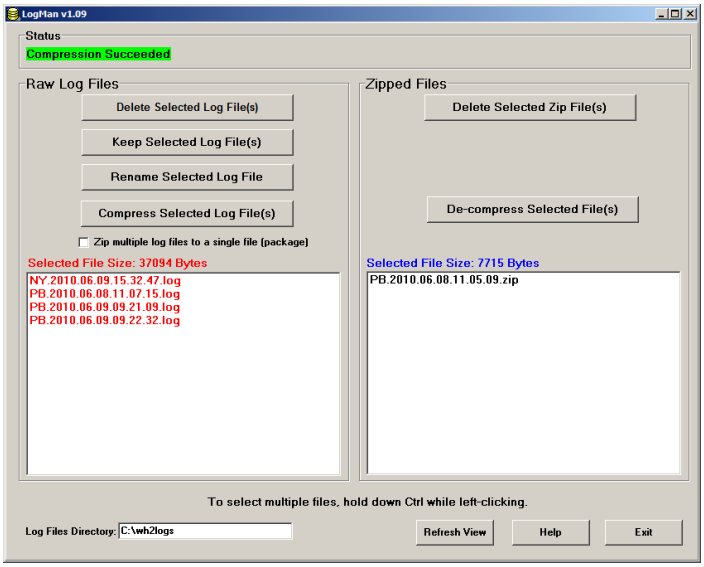


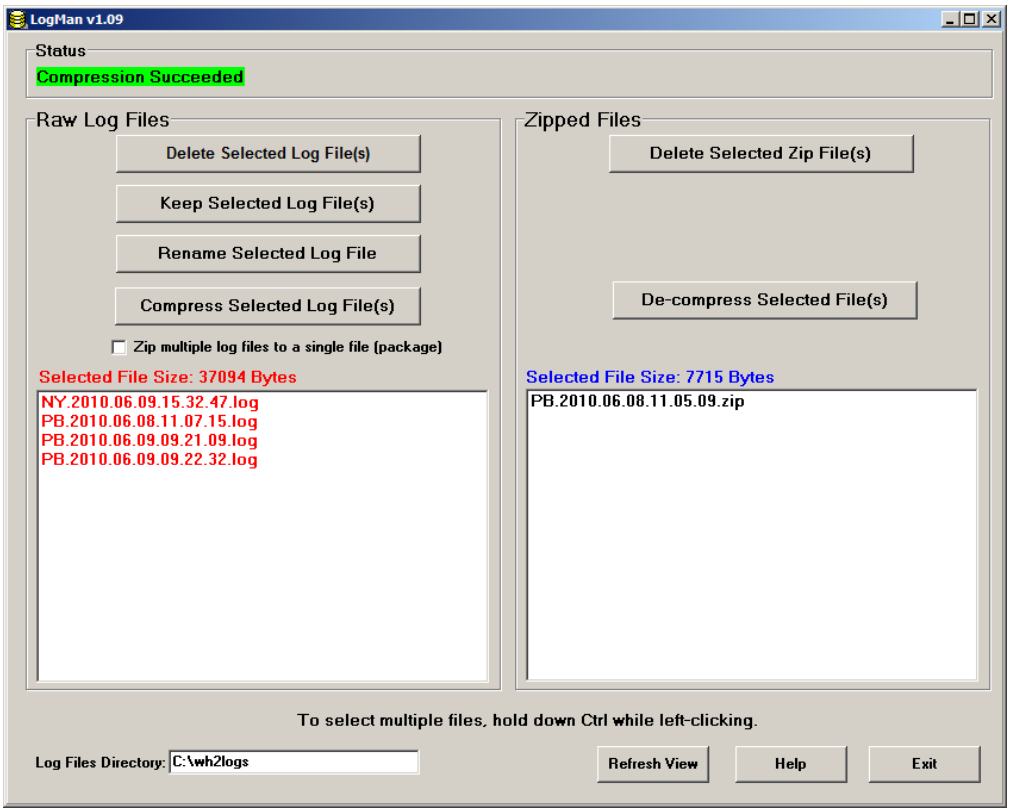
Figure 86: LogMan Window

To compress a file, highlight the desired log file in the left pane. Then press Compress Selected Log File. This moves the file over to the right pane, indicating that the file is now compressed. To de-compress a zipped file, highlight the desired file in the right pane and press De-compress Selected File. The file moves over to the left pane.

NOTE

Large files may take several seconds to compress. Compression is on-going when the blue Selected File Size value is increasing. You can start compressing a second file before the first file has finished.

To keep a file for longer than Max Age Days, highlight the desired file and click on Keep Selected Log File. This keeps Wheelhouse II from deleting it in the future.



You can rename or delete a selected file by pressing the button associated with the selected file.

LogMan 1.09 allows zipping and unzipping multiple log files. Unlike LogMan 1.08, LogMan 1.09 creates zip files that are compatible with Windows zip files.

6 Monitor Mode Start

Monitor Mode is intended to be used to monitor vessels from some fixed location, such as the Pilot House. You can specify your fixed location by placing the Measure Tool cursor over a particular location on the chart, pressing Enter, and then selecting 'Set Monitor Location' from the Measure Tool Completion dialog.

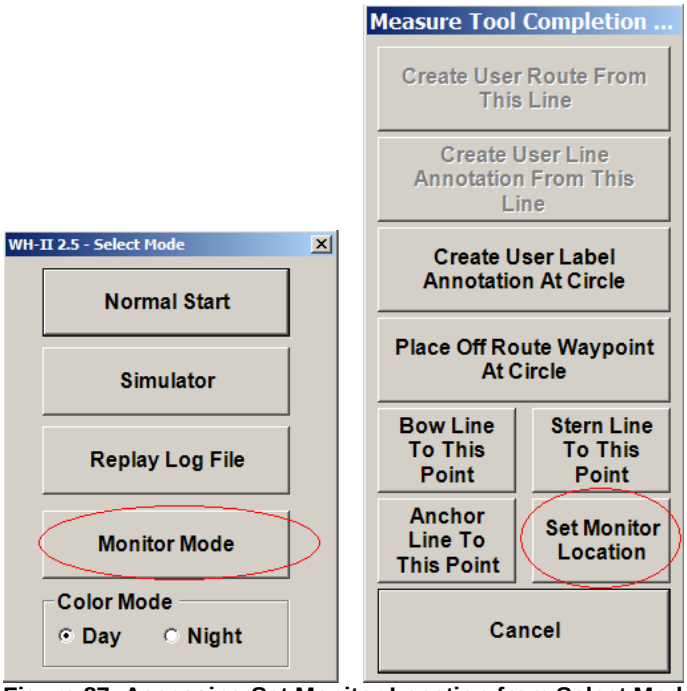


Figure 87: Accessing Set Monitor Location from Select Mode Menu

When operating in the Monitor Mode, the word, Monitor, is indicated beneath the dashed-out operational status word. On request, Raven can supply a special configuration of your files where there is no data panel, as shown below.

Figure 88: Wheelhouse II Program Running

7 Chart [F1] Window Layouts

This chapter shows the various WHII screen layouts currently in use. The most commonly used layout is R1.

Figure 89: Chart Window, R1 Layout

IMPORTANT

When SOG = 0 or some speed under 1.0 knot, then COG cannot be determined. If there's no COG and no heading, then the vessel orientation is not known and, therefore, cannot be drawn. In such a case, the own vessel icon is displayed as a large red dot inside a black circle.

Notice the Chart Scale Indicator, or Scale Bar, in the upper left of the chart [F1] window. The length of the Scale Bar indicates the amount of distance on the screen represented by the numerical designation below.

7.1 Layout HOU 29

This layout does not have a 'closest vessel list' at the bottom or on the side panel. To see the closest vessel, pilots using this layout would press 'i' to see the Traffic Monitor.

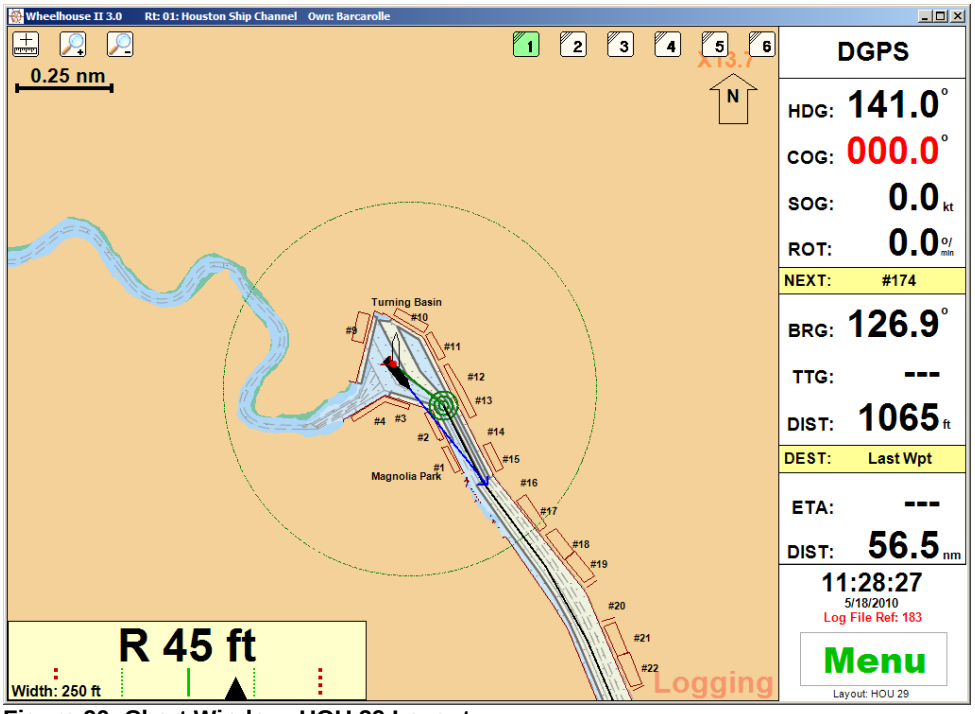


Figure 90: Chart Window, HOU 29 Layout

Traffic Monitor:

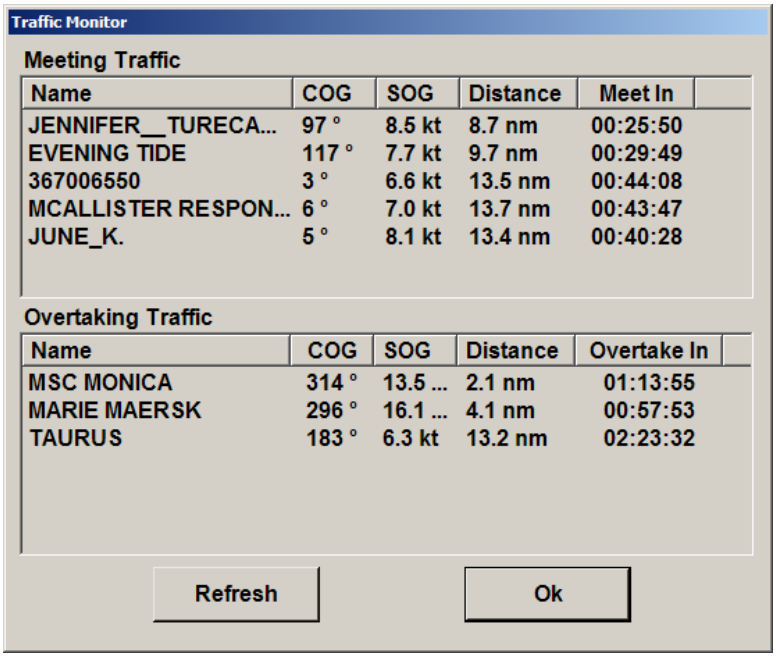


Figure 91: Traffic Monitor Screen

7.2 Layout R1-8

This layout has a Closest AIS vessel list on the data panel. This is the most commonly-used layout.

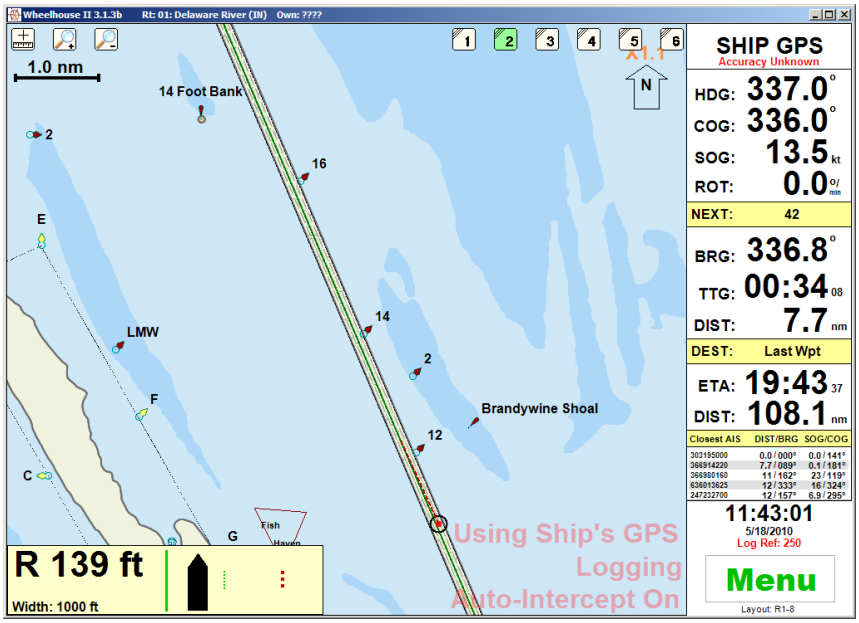


Figure 92: Chart Window, R1-8 Layout

7.3 Layout R2-6

This layout has a Closest Vessel (AIS) list at the bottom. The list shows the closest vessel automatically. If you select or hover the mouse over a specific vessel, the Closest Vessel (AIS) list shows that vessel information.

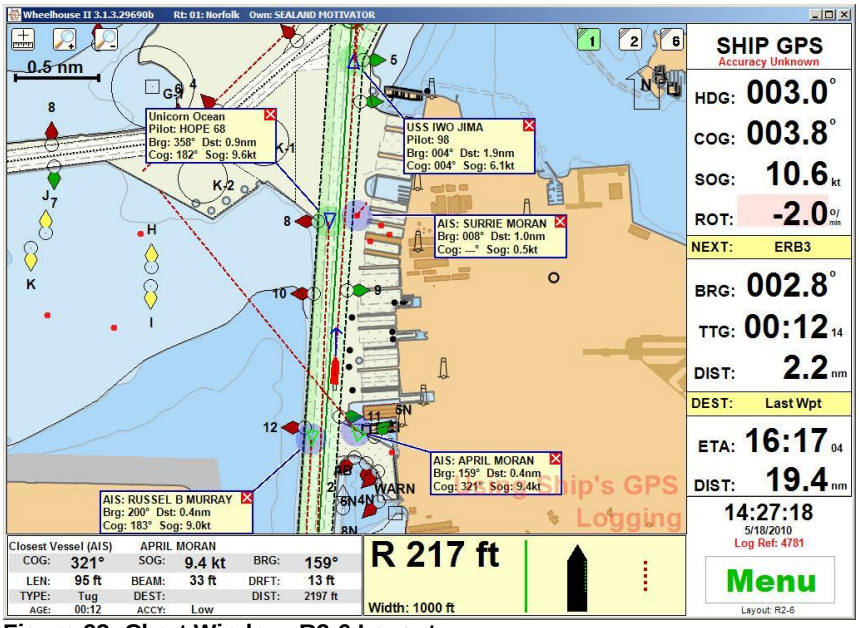


Figure 93: Chart Window, R2-6 Layout

7.4 Layout R3-7

This layout has a Closes AIS vessel list on the data panel. It is similar to R1-8, but the data panel has BRG, DIST, and TTG instead of BRG, TTG, and DIST.

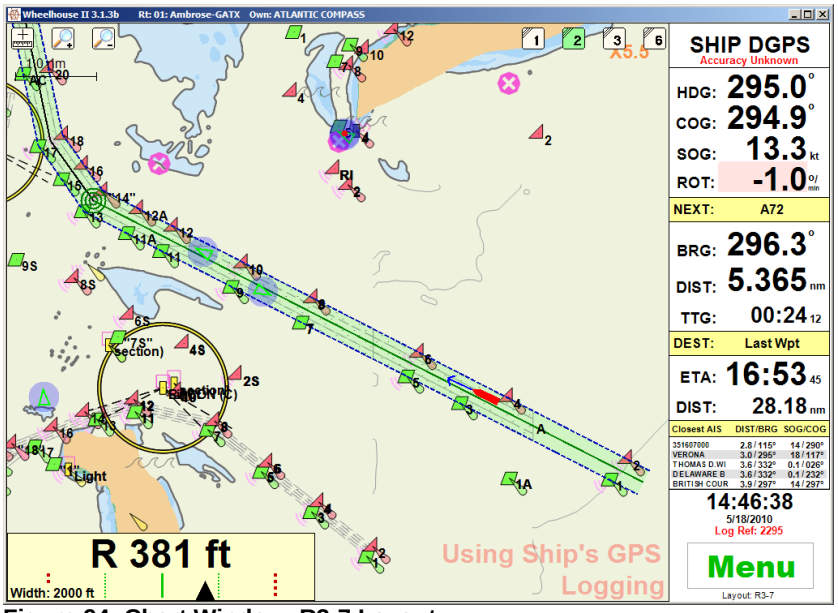


Figure 94: Chart Window, R3-7 Layout

7.5 Layout R4-1

This layout has a Closest AIS vessel list on the data panel. It also has font sizes and colors selected especially for visual cueing.

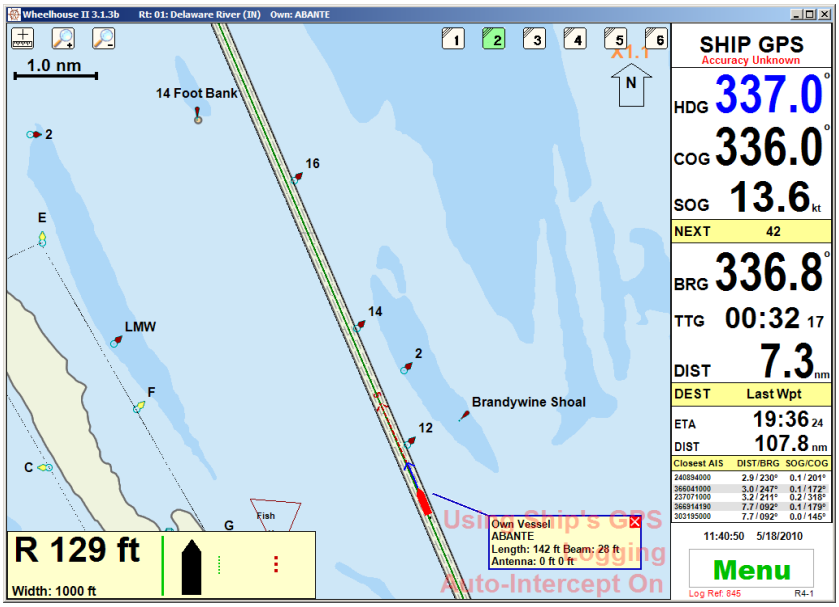


Figure 95: Chart Window, R4-1 Layout

7.6 Cross-Track Panel at Bottom – No Closest Vessel List

For the screen layout below, you can toggle through five different states of transparency for the cross-track display indicator by left-clicking on the cross-track display indicator. The state progression is: State 1, State 2, State 3, State 4, State 5, and then back to State 1.

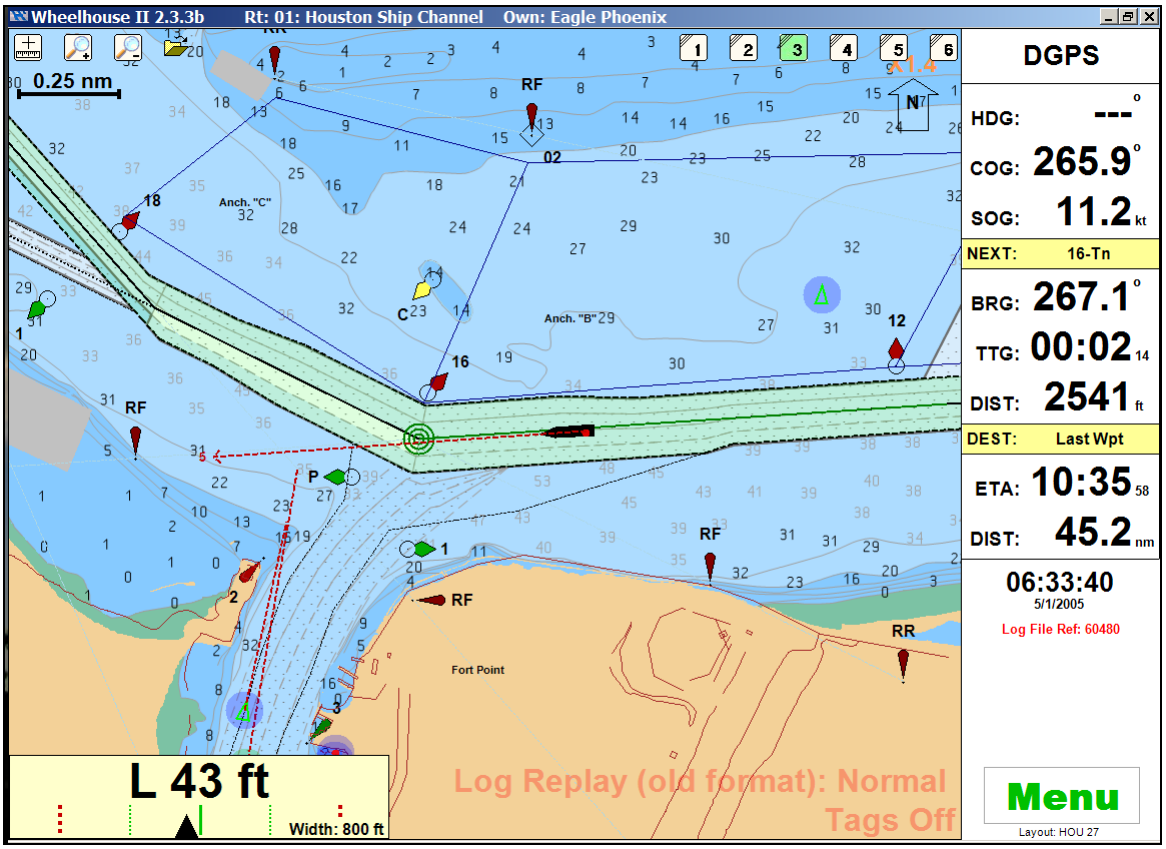
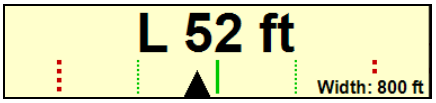


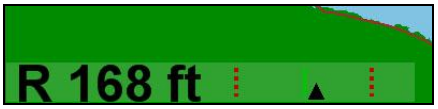
Figure 96: Chart Window with Cross Track Indicator (CTI)

The following graphics show examples of the transparency states for the cross-track indicator.



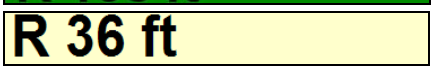
State 1, opaque, large

State 2, transparent, large



State 3, transparent, smaller

State 4, smaller



State 5, opaque, smallest

Figure 97: CTI Display States

7.6.1 Cross-Track Indication and Waypoint Selector

The user can press N (next) and P (previous) or Home (current route segment) to select different route waypoints. This affects BRG, TTG, and DIST on the chart [F1] window data panel, as well as the cross-track distance indication at the bottom of the chart [F1] window. If the selected waypoint is the waypoint at the end of the current route segment, indicated by concentric green circles around a particular waypoint, then the cross-track distance is measured relative to the current route segment. If the waypoint selected is not the waypoint at the end of the current route, then the Waypoint Selector is red concentric circles, and the cross-track distance is measured with respect to the route segment terminated by the selected waypoint and BRG, TTG, and DIST is computed relative to the selected waypoint.

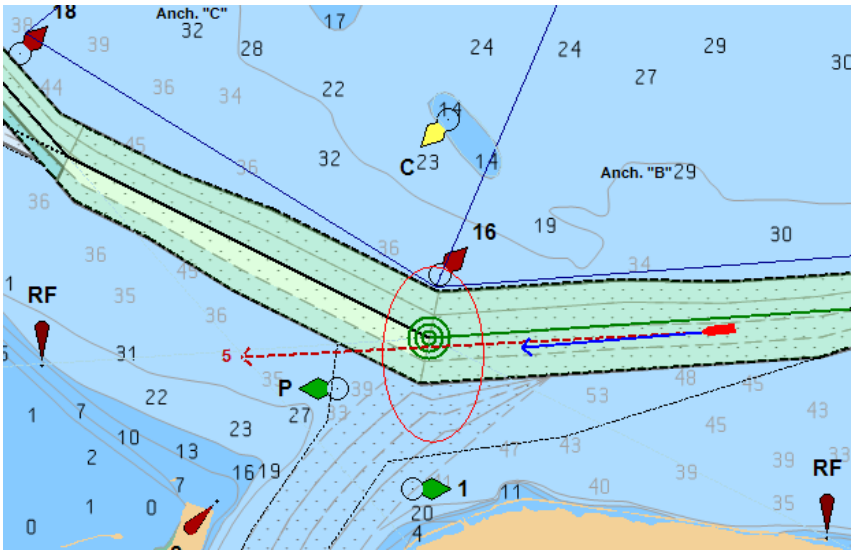


Figure 98: Next Waypoint on Route Selected (Green Waypoint Indicator)

The selected waypoint is the next waypoint on route. The waypoint selector is green.

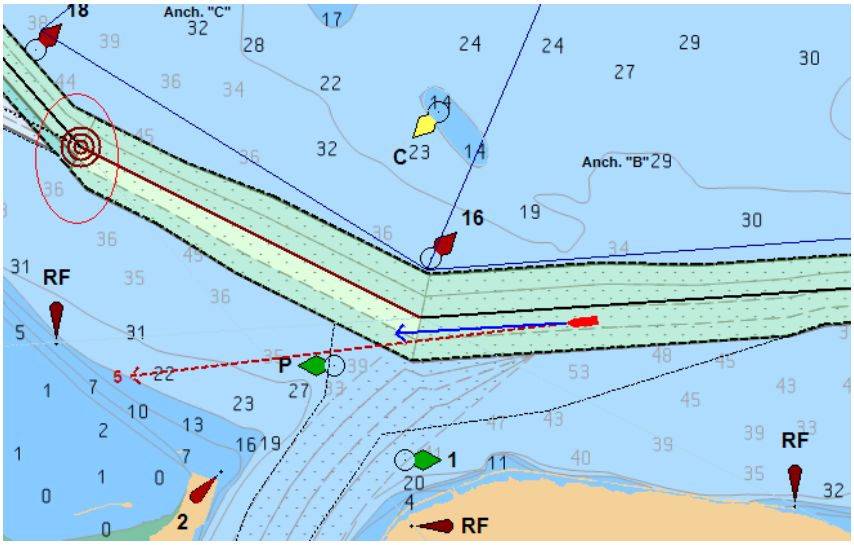


Figure 99: Waypoint Selected is Not Next on Route (Red Waypoint Indicator)

The selected waypoint is NOT the next waypoint on route. The waypoint selector is red. This condition also causes the BRG, TTG, and DIST on the data panel to turn red.

7.6.2 Automatic Waypoint Selector Advancement

The selected waypoint, as described in the previous section, if it hasn't been manually moved, automatically moved along the route as the vessel passes each waypoint. Currently, the waypoint selector advances when either the bow, antenna, or midship arrives at the route waypoint. This is configurable on the Chart Setup [F5] screen.

IMPORTANT

When the route waypoint automatically advances, the cross-track distance is computed with respect to the next route segment. This can sometimes seem incorrect if the antenna is still over the previous route segment.

7.7 Reminder Messages

Reminder messages appear in transparent red letters in the lower right corner of the chart [F1] window in the charting area.

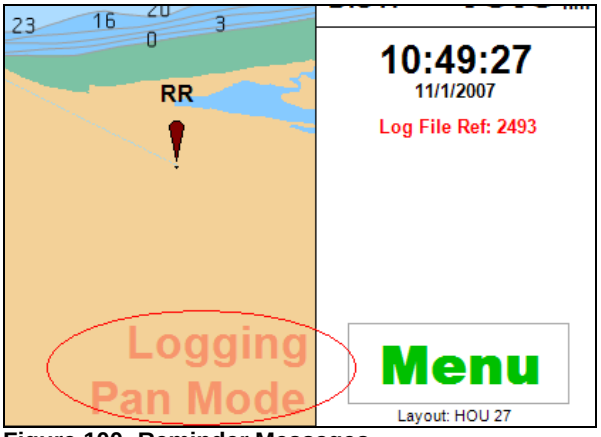


Figure 100: Reminder Messages

- **Pan Mode -** This indicates that the chart has been panned (using the right mouse button). In this state the chart no longer follows along with your own vessel. Click on the small green and black vessel icon at the top left of the chart [F1] window to exit pan mode. The Pan Mode message is displayed as semi-transparent text overlaying the chart in the chart [F1] window.
- **De-clutter -** This indicates that the chart is in de-clutter mode. To exit de-clutter mode press the de-clutter hot-key (usually "C" is defined as the de-clutter hot-key). The De-clutter message is displayed as semi-transparent text overlaying the chart in the chart [F1] window.
- **R WARN / L WARN -** This indicates that the vessel is greater than 3046ft off the route centerline. The R WARN or L-WARN message is displayed inside the Cross Track Indicator.
- **RTCM Message on Operational Status Window [F3] -** When an RTCM message is received from the Coast Guard differential beacon, an audible alarm sounds for 5

seconds and 'RTCM Message on F3' appears in the reminder messages. The audible alarm is different from the warning system audible alarm. The message is cleared from the message stack by pressing the F3 key.

- **No COG/HDG -** There is no COG, due to low speed, and there is no heading. When this occurs, the vessel cannot be drawn regardless of having correct dimensions.
- **Logging -** Logging is on; saving the trip information to file that can be replayed later.
- **TURN -** The vessel is approaching a turn. Not all configurations contain this Raven-programmable option.
- **Tags Off -** Using Alt-T you have toggled to the tags mode, 'Tags Off'. Press Alt-T again to get the tags to go to the next depiction mode.
- **ROT Not Available -** ROT is not available during an operation where it is needed, such as future vessel position.
- **Manual Inbound or Manual Outbound -** Manual inbound route direction is active or manual outbound route direction is active. You can press Alt-D to access the route direction options, and is described in section, Normal Start, Step 6.
- **Using Ship's GPS -** 'Chart Setup | Use Ship's GPS' is selected, and 'Use Ship's AIS Vessel Info' is selected. Thus, the program uses all AIS vessel static info, including antenna offsets.
- **Cannot show own AIS: No Particulars -** 'Chart Setup | Show Own Vessel AIS Position' is selected, but AIS vessel particulars have not arrived from the AIS transponder.
- **Position Prediction Stopped: ROT=+/-720 -** The Future Position Prediction function has been selected (press F for most configurations), but the future positions cannot be drawn because the Rate of Turn (ROT) is invalid.
- **Position Prediction Stopped: No ROT -** The Future Position Prediction function has been selected (press F for most configurations), but the future positions cannot be drawn because the Rate of Turn (ROT) is not available from the AIS transponder.

7.8 Center-Screen Messages

Certain important messages can appear across the center of the overlaying the chart in the chart [F1] window in transparent red lettering, as shown below.

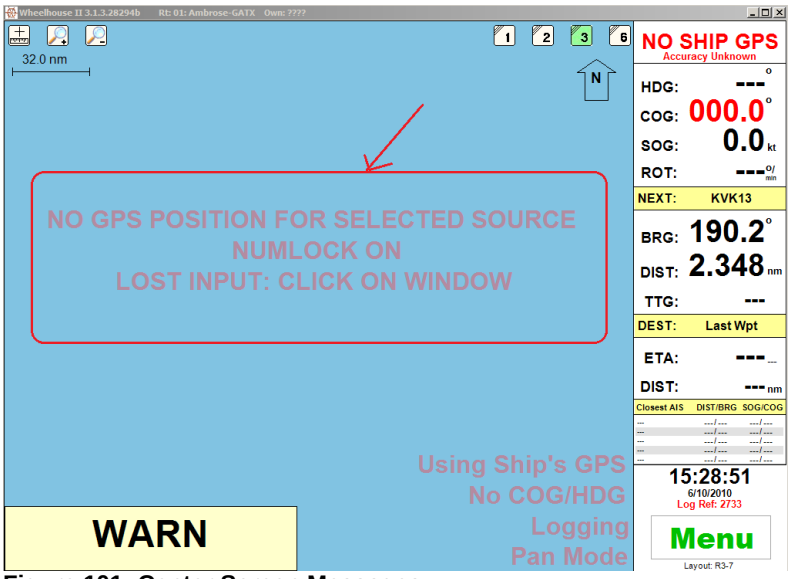


Figure 101: Center Screen Messages

- **NO GPS POSITION FOR SELECTED SOURCE -** This message indicates that the system is not receiving messages from the expected position source, which could be Pilot System/Raven GPS, AIS GPS, or either, depending on the Trip and Own Vessel Information [F6] screen position source selection.
- **NUM LOCK ON** - This message indicates that the keyboard Num Lock is active. When Num Lock is on, some keyboard keys are mapped to numbers instead of letters, effectively disabling some of the one-key functions. If this occurs, toggle Num Lock off by pressing the Num Lock key.
- **LOST INPUT: CLICK ON WINDOW -** This message means that another program has mouse and keyboard input focus.

7.9 Main Menu

At the bottom of the data panel in the chart [F1] window, if you click the Menu button, the Main Menu appears.

Click these buttons or use the shortcut keys referenced on the menu buttons at any time to access program functions.

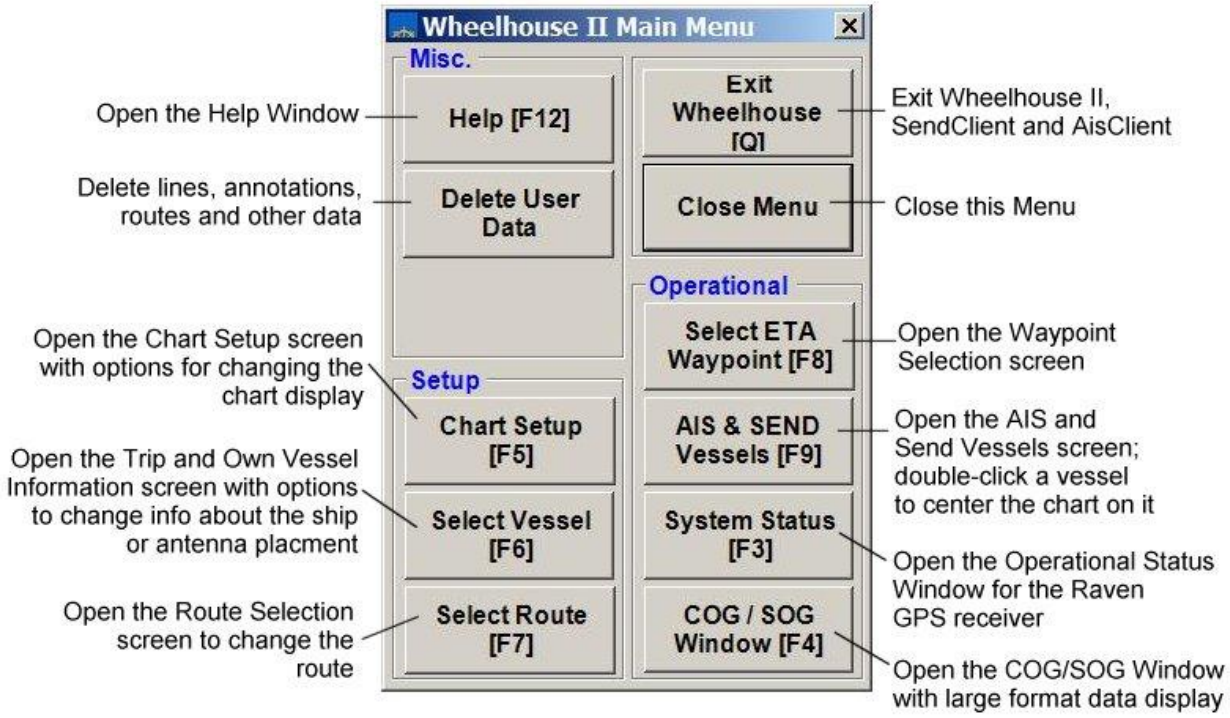


Figure 102: Wheelhouse II Main Menu Dialog

7.10 Panning Around On Chart

To move to another area of the chart, place the cursor over the point you would like to be in the center of the screen and right-click the mouse. Continue to right-click to move new points to the middle of the screen.

To return to having your vessel in the center, click on the vessel icon that appears in the upper left of the screen when you are in the pan mode.

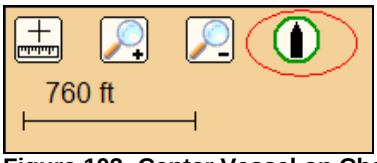


Figure 103: Center Vessel on Chart Icon

IMPORTANT

When panned, own vessel re-center rules do not apply. So when in the pan mode, your own vessel can move off the screen.

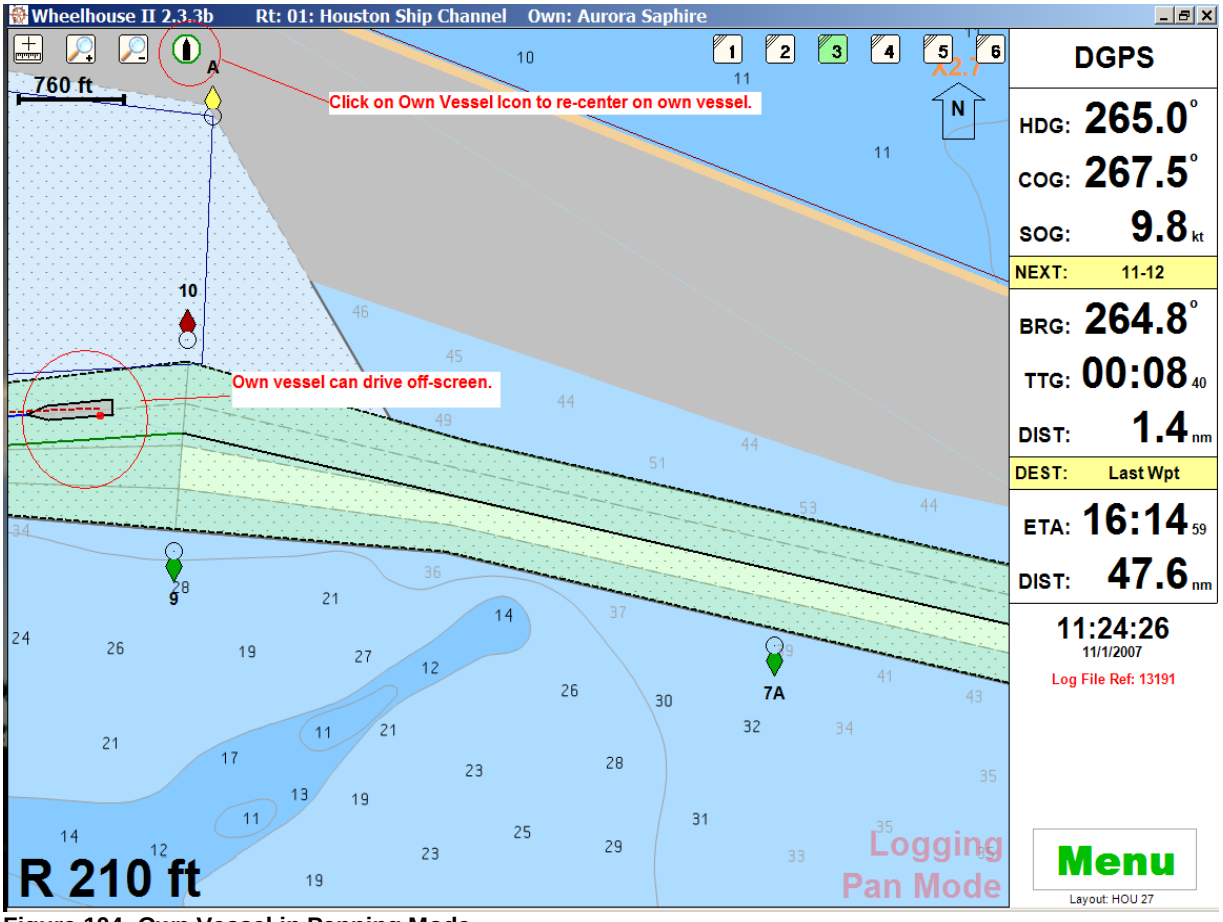


Figure 104: Own Vessel in Panning Mode

7.11 Measuring Distance with the Measure Tool

To activate, click on the Measure Tool icon in the upper left corner of the chart [F1] window.

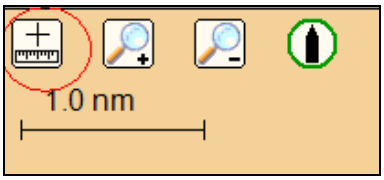


Figure 105: Measure Tool Icon

Click the Measure Tool icon, which turns green when in use. Notice that the cursor becomes crosshairs within a circle. An info box that provides latitude, longitude, bearing, range and time to go appears at the top, center of the screen. As you move the cross-hair icon, the info box changes position relative to your own vessel. If you press the CTRL key, the Measure Tool box changes from opaque to transparent. If you press the CTRL key again, the Measure Tool box disappears. Press CTRL again and the box becomes opaque.

IMPORTANT

The program restores the last state of this box each time it starts. The last state could be 'off'.

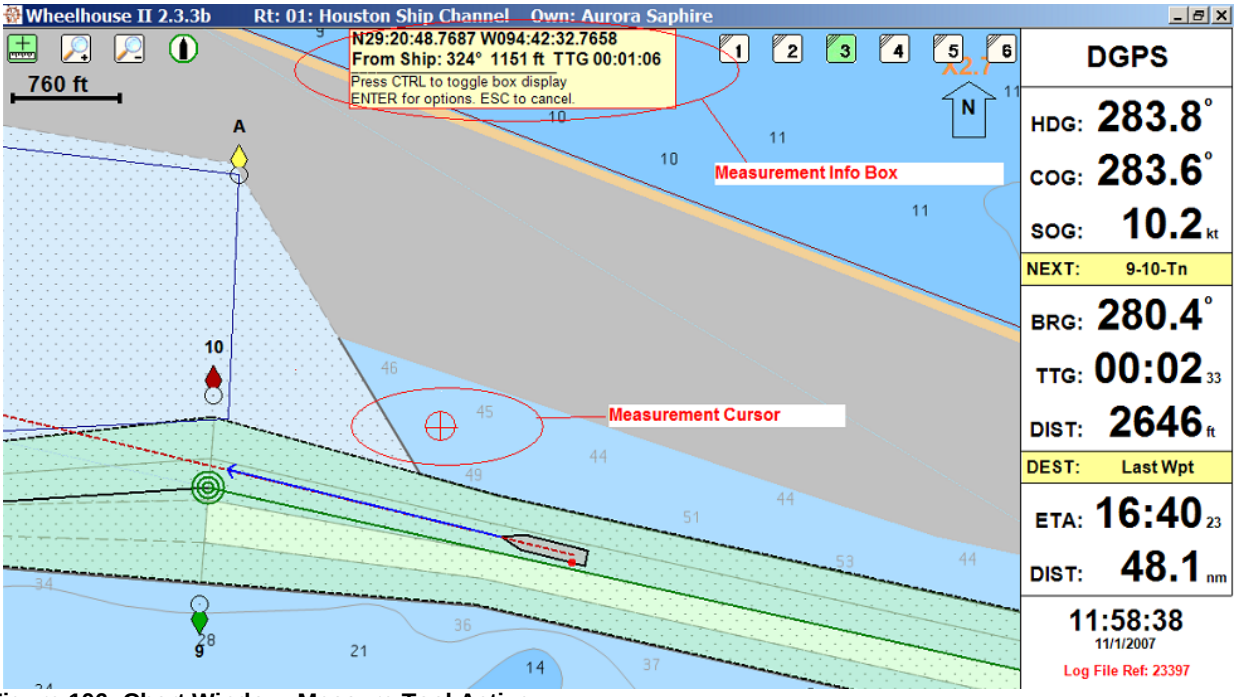


Figure 106: Chart Window, Measure Tool Active

To measure between two areas of the chart click the Measure Tool icon, double left-click over a starting point and then move a measurement line to an end point. To end the segment, double left-click the end point. Press ESC to exit the Measure Tool.

7.12 Creating Anchor, Bow, and Stern Lines

Anchor, bow and stern line segments connect from the bow and stern centerline of your vessel to a location on the chart. They are useful for determining clearance while docking and un-docking.

IMPORTANT
Anchor, bow, and stern lines are only available when a heading is available.

Click the Measure Tool icon from the upper left of the chart [F1] window. Place Measure Tool crosshairs over the chart area from which you wish to measure. Press enter on the keyboard and a menu appears from which you can select the anchor, bow, or stern line to this point. An anchor line shows distance and bearing, whereas a bow line only shows distance.

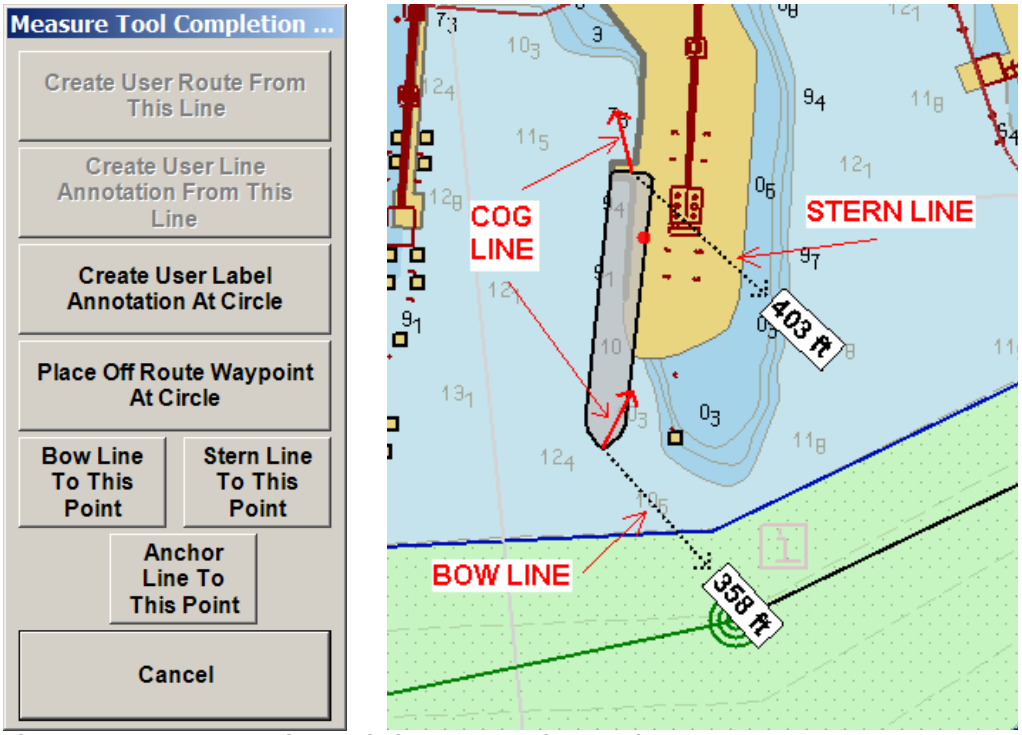


Figure 107: Measure Tool Completion Menu and Examples

A bow line is drawn from the bow to the charted position with a distance data flag on the line showing the continual distance from the bow or stern to the area.

NOTE
You can press ESC to cancel bow and stern lines or any Measure Tool function.

Only when bow and/or stern lines are in effect are two solid red COG lines drawn at speeds below 5 knots; one for the bow and one for the stern. The COG lines do not appear at speeds above 5 knots.

The example below is using both bow and stern lines with bow and stern range circles. You can establish range circles by right-clicking on a view button and checking '[WH2] Range Circles'.

NOTE

The COG is red on the data panel below. This is because when SOG is below one knot, the COG is unreliable.

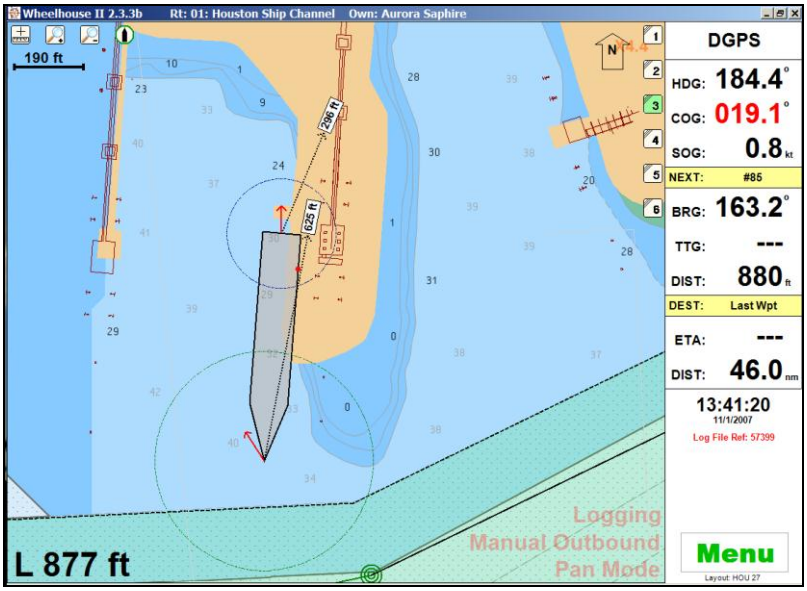


Figure 108: Bow and Stern Lines and Range Circles

To cancel the bow and stern lines, select 'Menu | Delete User Data | Delete Bow and Stern Lines', or press ESC.

'Anchor Line to This Point' includes both distance and bearing info.

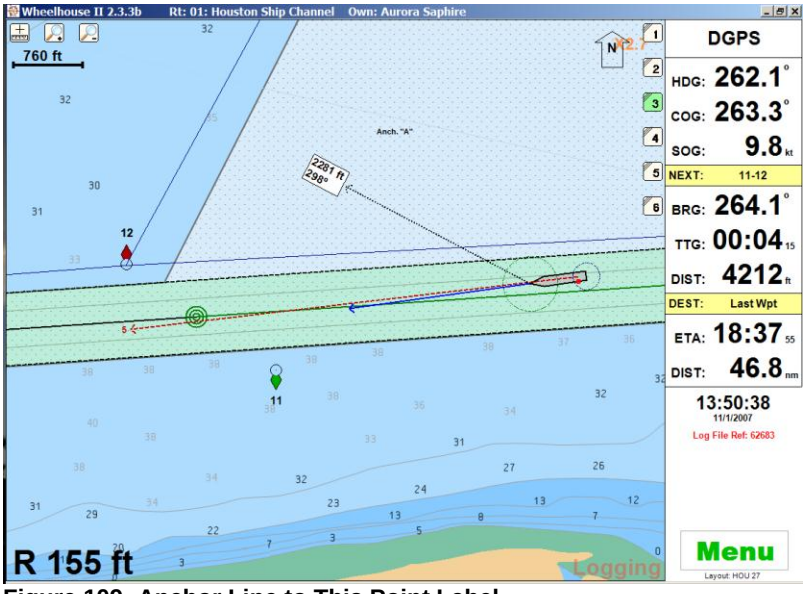


Figure 109: Anchor Line to This Point Label

To delete any user data, such as bow and stern lines, select Menu | Delete User Data.

7.13 Along Route and Off Route Waypoints

If you double left-click along the route, an Along Route Wpt (waypoint) box appears if you have a vessel position. You can click on the Speed Planner to determine speed in order to arrive at a given time. You can click on or off the route to open the Along Route Wpt box. Wheelhouse II defines an off-route waypoint as a waypoint that is 2 times the channel width from the channel center line.

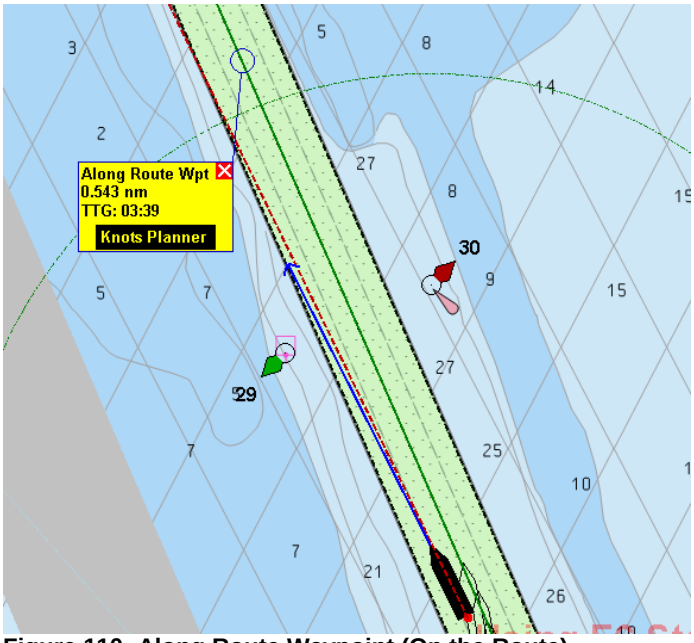


Figure 110: Along Route Waypoint (On the Route)

Below is an Off Route Waypoint created by double left-clicking off the route when you have a vessel position.

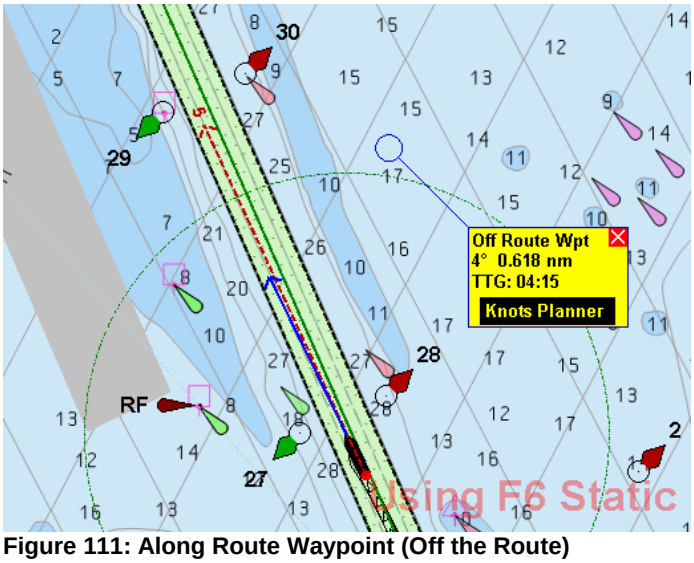


Figure 111: Along Route Waypoint (Off the Route)

7.14 Intercepting Other Vessels

Pilots can accurately predict vessel intercepts for vessels that are on or off of the currently selected route.

Intercept positions are marked on the chart [F1] window with a red circle and corresponding tag showing intercept conditions. In addition, conditions are also reported on the selected vessels tag.

If no intercept is present, then no circle is drawn and the reason for the condition is placed on the vessel tag.

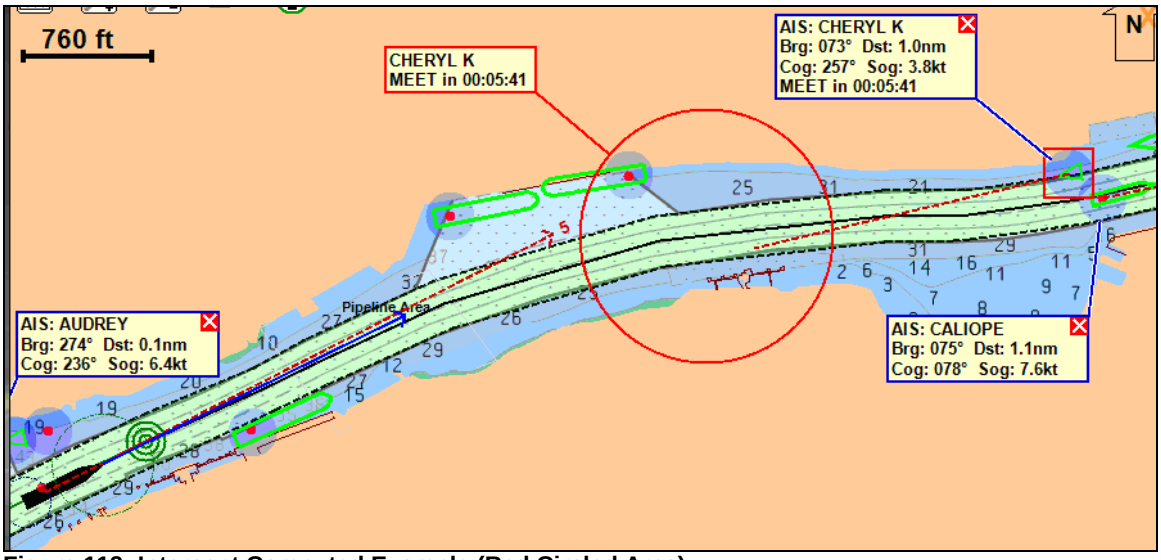


Figure 112: Intercept Computed Example (Red Circled Area)

A remote vessel is considered on the currently selected route if:

- Any point on the remote vessel is within one channel width of the channel center line for the selected route. For example, if the channel is 500 feet wide, the vessel must be within 500 feet of the channel centerline.
- The remote vessel course must be within 45 degrees of the channel center line. For example, if the route is due north-south, the vessel course must be either 315-45 or 135-225 to be considered on the currently selected route.

Off-route remote vessels are those that do not meet either of the 2 above criteria for on-route vessels. Off-route intercepts are more complicated because of the difficulty in anticipating future vessel movements. Because of this, Wheelhouse II prompts the pilot for more information regarding the future movements of the selected vessel.

Wheelhouse II defines the following intercept types for ***on-route*** vessels. Intercepts require valid COG vectors for both own and remote vessels.

- **MEET -** Own and remote vessels are on the same route moving towards each other. Intercept times are calculated using bow positions for both vessels.
- **OVERTAKE -** Own and remote vessels are travelling on the same route in the same direction (inbound or outbound) with one vessel (potentially) overtaking the other. Wheelhouse II shows ‘passing’ and ‘passed’ conditions. Intercept times are calculated

using on-route predictions from the bow of the vessel overtaking to the stern position of the vessel being overtaken.

Wheelhouse II defines the following intercept types for ***off-route*** vessels:

- **CROSS -** Selected remote vessel is traveling on a course that will intersect the channel and will not change course after intercepting the channel. This type of intercept is appropriate for cross traffic, such as ferries or where inter-coastal waterways intersect the channel. Intercept times are calculated from the time the crossing vessel crosses the route center-line and the time own vessel takes to reach that position. Both times are reported.
- **MERGE-INBOUND -** Selected remote vessel is outside the channel, but will merge into the channel at a point near where the vessel's course intercepts the channel and will begin moving inbound on selected channel. This type of intercept is very common where two channels intersect. Calculated intercept is displayed either as a MEET or OVERTAKE, depending on own vessel course and speed.
- **MERGE-OUTBOUND -** Similar to MERGE-INBOUND, except after merging into the channel the selected vessel begins traversing to sea.
- **FORCE-ONROUTE -** The selected remote vessel is not in the channel, but is trailing the channel. This type of intercept is very common on narrow waterways where vessel traffic is restricted to moving along a very restricted course. Examples include rivers, canals and inter-coastal routes. Either a MEET or an OVERTAKE intercept is calculated, depending on own vessel direction.

7.15 Intercepting On-Route Vessels

Compute an intercept interval for an on-route vessel by left-clicking the desired vessel in the chart. The intercept circle appears along the track between the vessel and your location with the minutes until intercept displayed. The intercept point is near or about the center of the displayed circle assuming the current course and speeds of both vessels are maintained. De-select the vessel by left-clicking it a second time.

Own vessel will MEET the CHERYL K in 5 minutes, 41 seconds.

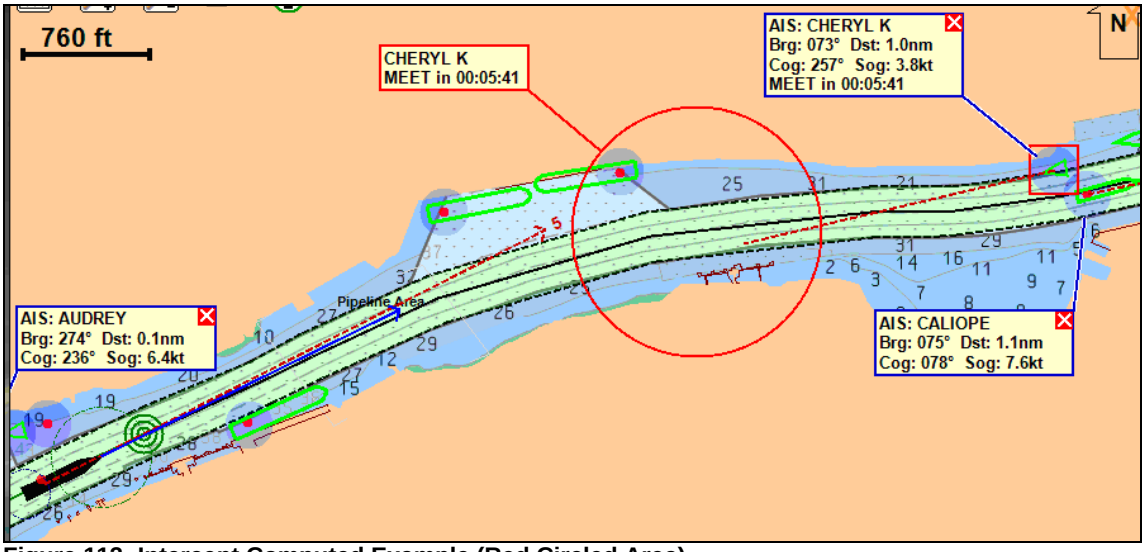


Figure 113: Intercept Computed Example (Red Circled Area)

Below are the subsequent phases of an on-route MEET intercept.

Own vessel is passing the CHERYL K.

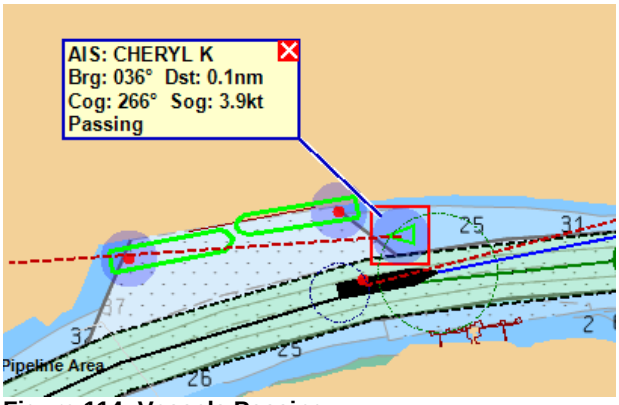


Figure 114: Vessels Passing

Own vessel has passed the CHERYL K.

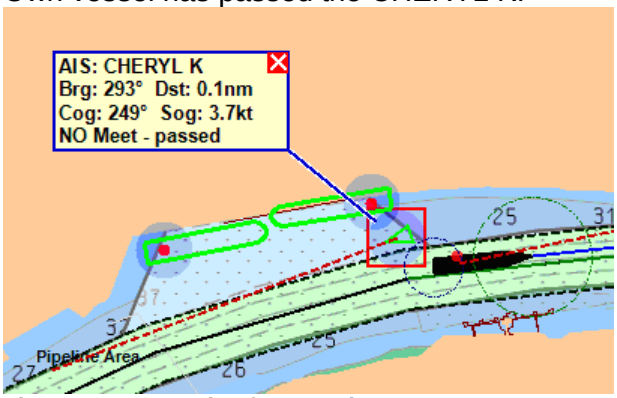


Figure 115: Vessels after Passing

Below, own vessel will not be overtaken by the GENE HUFFTY because GENE HUFFTY is moving too slowly.

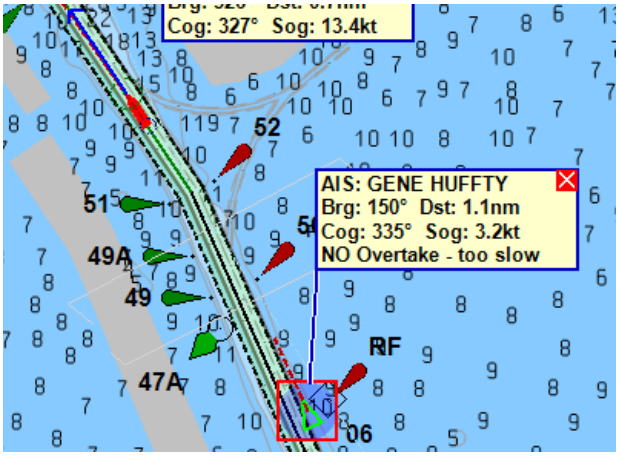


Figure 116: NO Overtake Message

7.16 Intercepting Off-Route Vessels

In order to compute the correct intercept for off-route vessels, Wheelhouse II prompts the pilot for the type of intercept to calculate for off-route vessels. This prompt only appears for vessels the program has determined are not on the currently selected route. If the pilot de-selects an off-route vessel, Wheelhouse II remembers the intercept option previously chosen by the pilot.

When you select an off-route remote vessel, the following intercept options are presented:

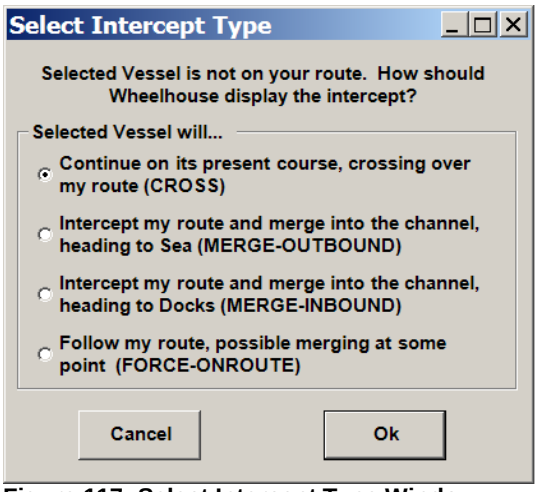


Figure 117: Select Intercept Type Window

You may choose to not be presented with the choices on the above screen by setting intercept options. See earlier section**, Intercept Options**.

Below are examples of the 3 types of off-route intercepts: CROSS, MERGE-OUTBOUND, MERGE-INBOUND.

The Amba Bhavane will CROSS own vessel's path in 8 minutes, 25 seconds.

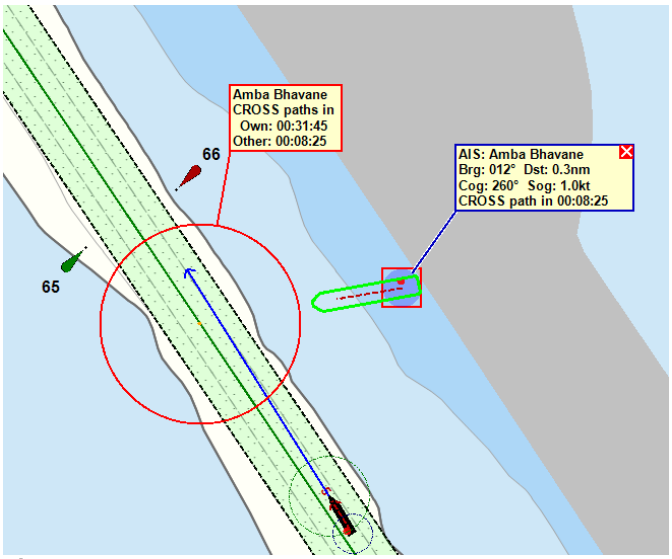


Figure 118: Intercept Type CROSS

Selecting MERGE-INBOUND or MERGE-OUTBOUND results in a CROSS path computation, as in the example below. The intercept automatically changes into a MEET, OVERTAKE, or a passed MEET.

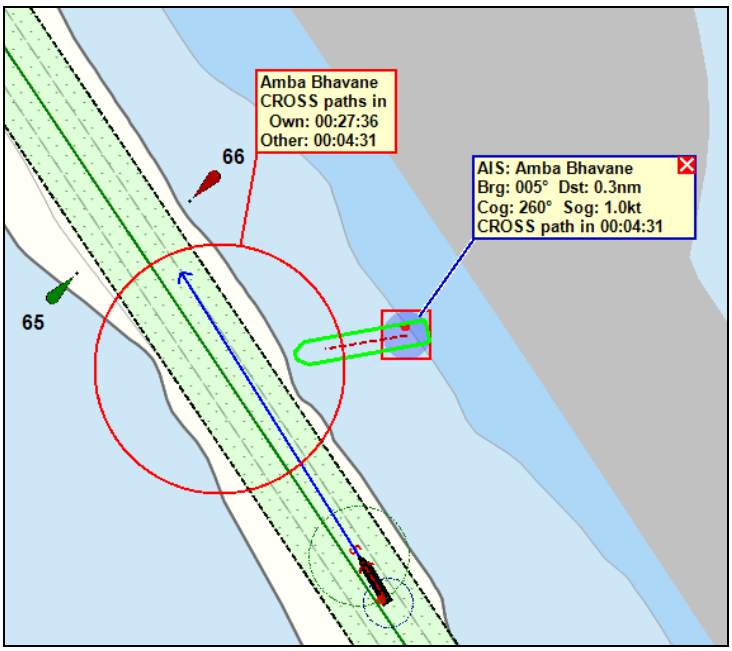


Figure 119: MERGE-INBOUND or MERGE-OUTBOUND Computes as CROSS

Selecting FORCE-ONROUTE results in an OVERTAKE computation, as indicated below.

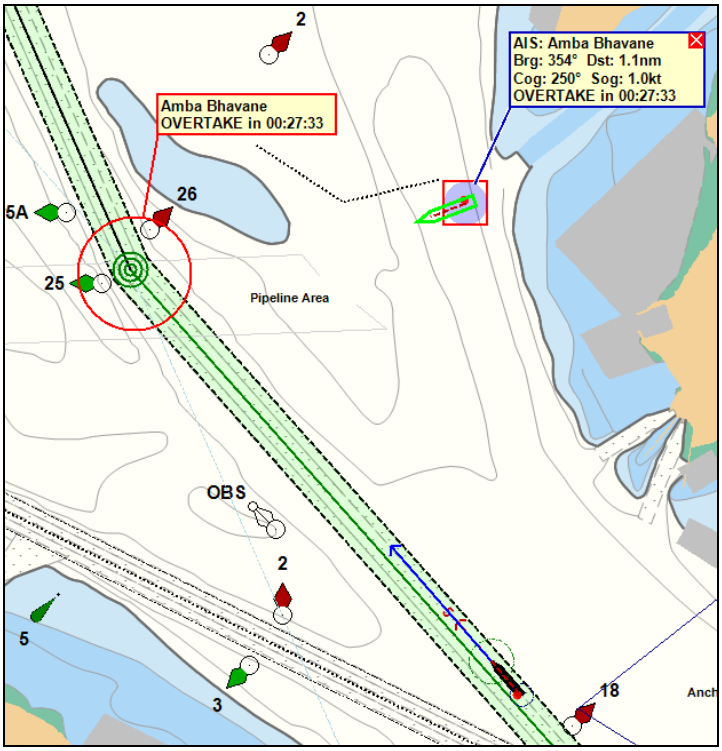


Figure 120: FORCE-ONROUTE Computes as OVERTAKE

7.17 Route Intercept Options

The Route Intercept Options allows for automatic computation of intercept locations of meeting and overtaking vessels. Access this screen at 'F5 | System Options | Intercept Options'.

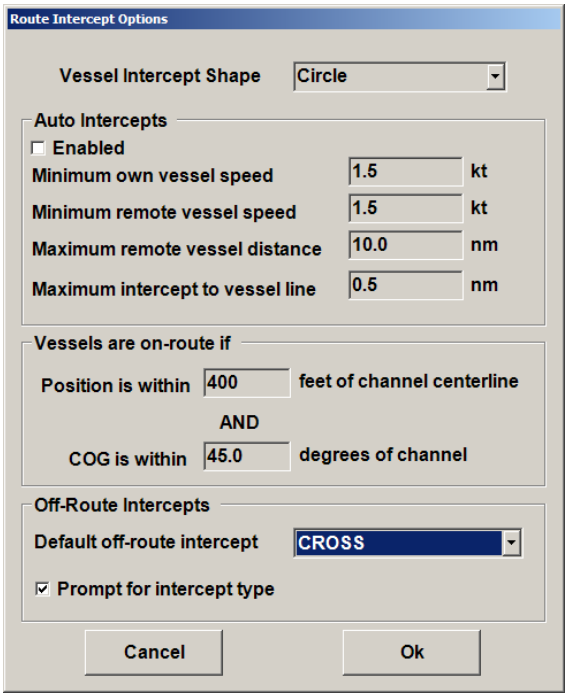


Figure 121: Route Intercept Options Screen

If you press H from the chart [F1] window, the hot key list appears, as shown below. You can toggle auto-intercepts on and off by pressing ALT+J. If you press H, the Hot Keys list showing ALT+i assigned to 'Toggle Auto-Intercept' is displayed.

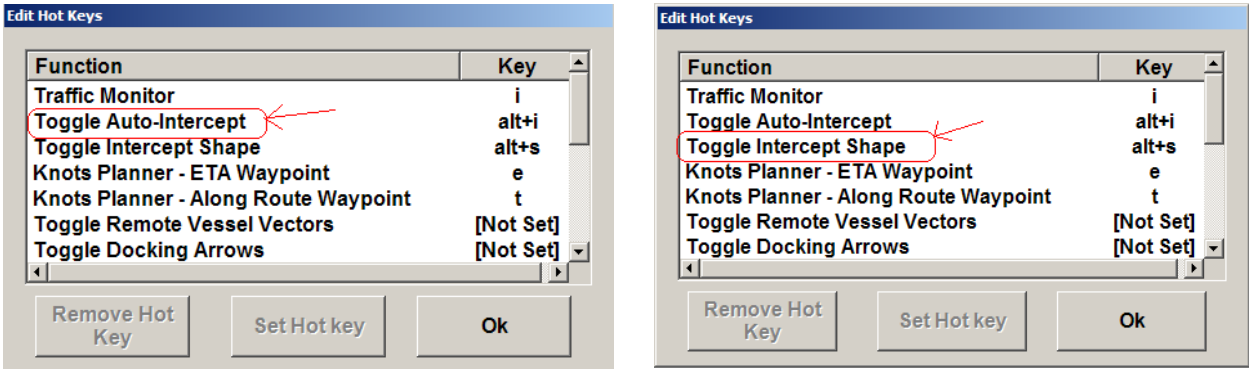


Figure 122: Edit Hot Keys Options and Key Combinations

You can toggle between lines and circles for intercepts by pressing alt-s. You can assign these functions to other hot keys if desired.

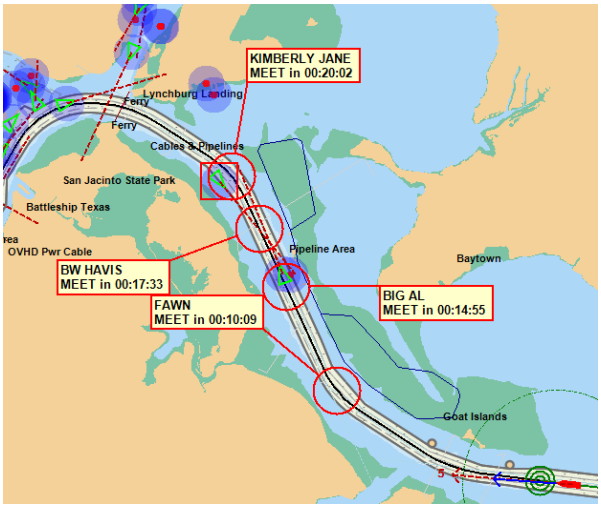


Figure 123: Intercept Shape Displayed as Circles

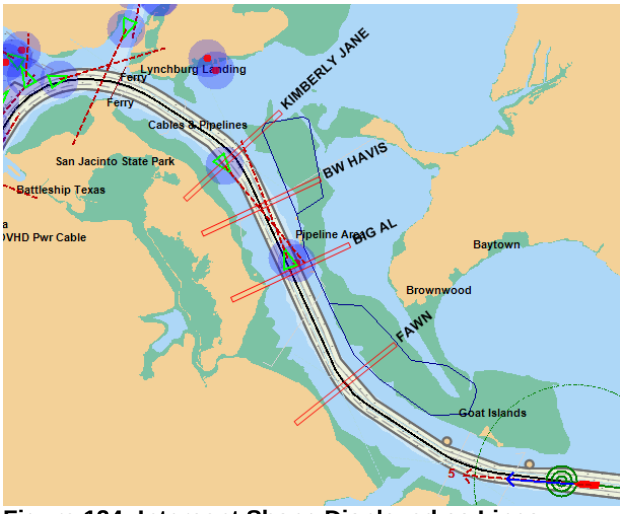


Figure 124: Intercept Shape Displayed as Lines

As indicated previously, you can press ALT+S to alternate between intercept circles and intercept lines.

If auto-intercept is on, an Auto-Intercept On message is displayed in the lower right of the chart [F1] window.

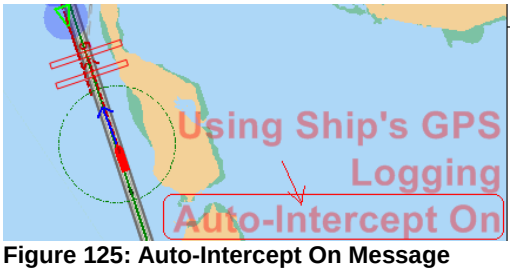


Figure 125: Auto-Intercept On Message

When an intercepting vessel is within a configurable distance (typically 0.5NM) of own vessel, WHII draws a line from the vessel to the intercept area. Also, if you hover the mouse ***over the intercept line or the text*** *area* at the end of the intercept line, a square appears around the intercept vessel. In the example below, also notice that the name of a meeting vessel is 'BILLY GENE' and it is 0.8NM distant from own vessel and will meet in 2 minutes, 36 seconds.

NOTE

The zoom level at which the vessel name appears for line intercepts is 0.5NM. The detailed meet or overtake info appears at 0.25. (Use D to zoom down or U to zoom up.)

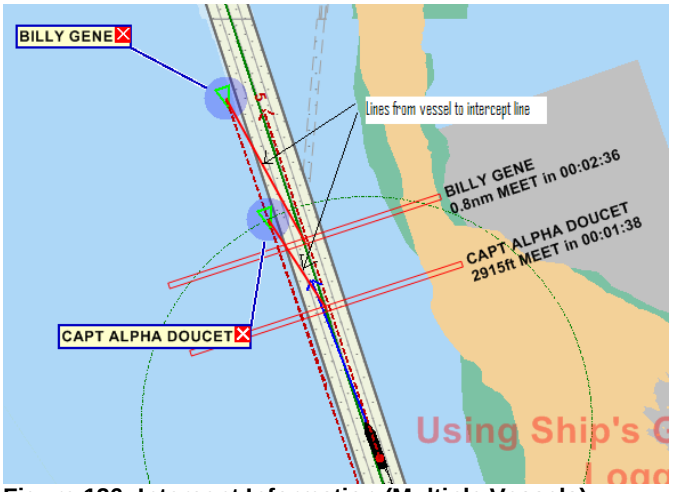


Figure 126: Intercept Information (Multiple Vessels)

7.18 Calculate Speed for Desired Arrival Time

1. To calculate the speed you need to arrive at a particular point along the route, double left-click along the track and an Along Route Wpt box with a 'Speed Planner' button appears.

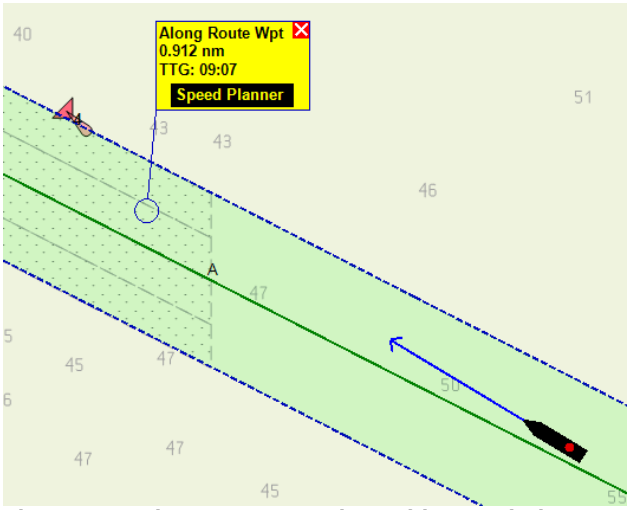


Figure 127: Along Route Wpt box with Speed Planner Button

2. Click the Speed Planner button in the box.

3. In the screen that opens, enter the desired time to go to the selected location and then click Calculate Required Speed. The required speed is displayed at the bottom of the box in blue.

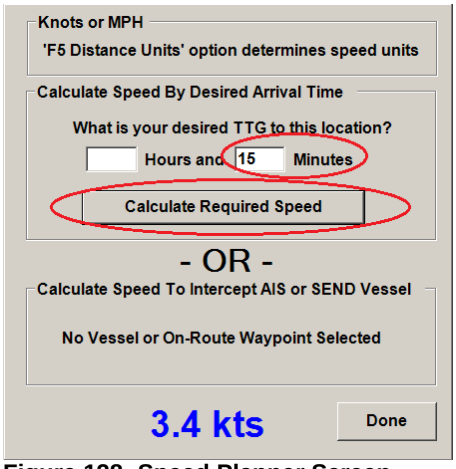


Figure 128: Speed Planner Screen

4. Click Done to close the screen.

7.19 Calculate Speed for Desired Meet Time

1. To calculate the speed you need to meet another vessel at a particular point along the route, select the remote vessel of interest and then double left-click along the track and a yellow 'Along Route Waypoint' box appears.

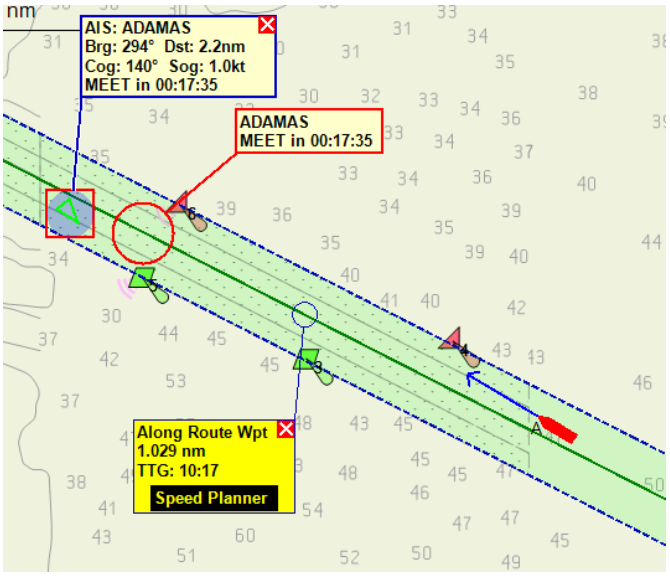


Figure 129: Example of Calculating Speed to Meet

2. Select a remote vessel of interest by left-clicking on it. Click the Speed Planner and enter the desired time to go to the selected location, click on Calculate Required Speed, and the required speed is displayed at the bottom of the box in blue. Alternatively, you could click on 'Intercept ADAMAS at this location' and the required speed would be displayed.

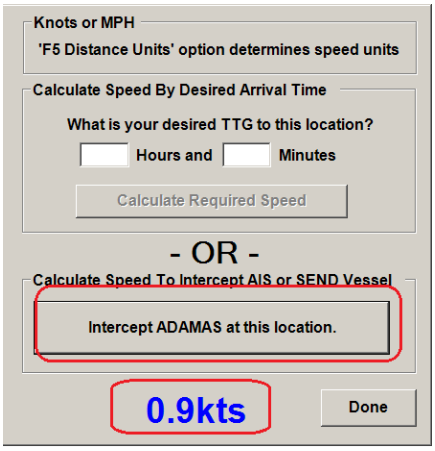


Figure 130: Calculate Speed to Meet AIS or SEND Vessel

7.20 User-Defined Routes

You can create your own custom routes, which are then saved in the system and added to the list of routes route selection screen.

To start your User Route, click the Measure Tool icon (upper left of chart [F1] window) and then double left-click to drop points along the new route. If your route needs to go to a chart location not being displayed, right-click on the chart near the edge of the screen in the direction you need to go to make the chart pan in that direction.

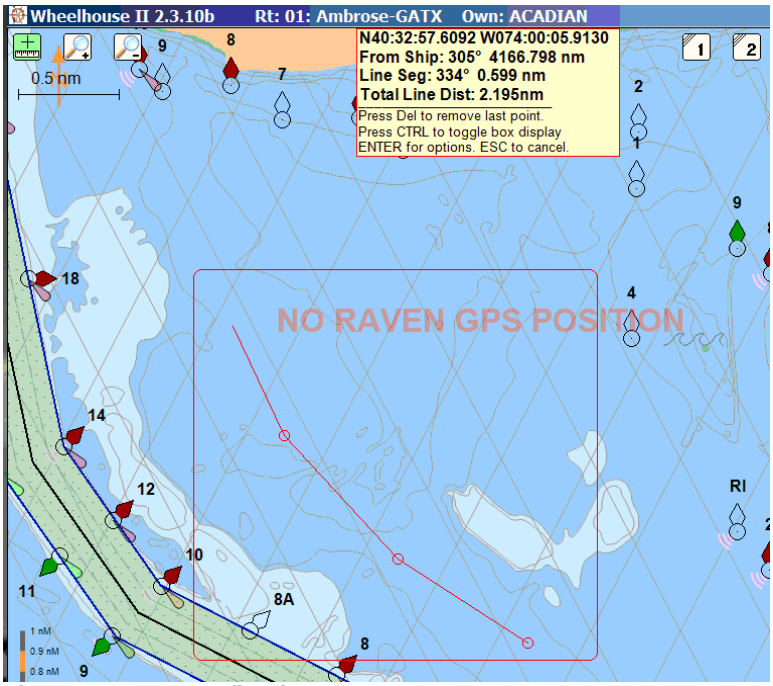


Figure 131: User Defined Route

When the route segments are complete, press enter on the keyboard and then select “Create User Route From This Line” from the menu.

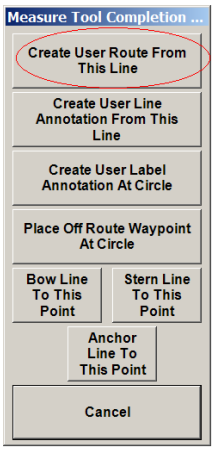


Figure 132: Measure Tool Completion, Create User Route From This Line Button

You are prompted to enter a name for your new route. You can load the new route by clicking on the Menu button, and then clicking on Select Route. The new route appears in the list of all routes. The channel width of a user-defined route is 500 meters or 1640 feet.

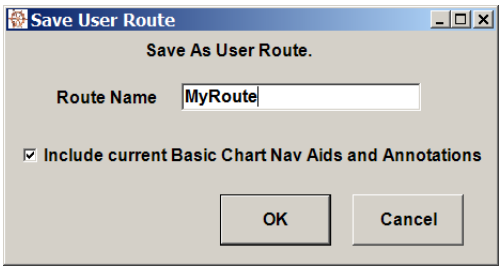


Figure 133: Save User Route Window

7.21 User-Defined Annotations

Wheelhouse II allows for the creation of labels called “User Annotations” on the Chart. You create these by placing the Measure Tool (upper left of chart [F1] window) cursor over the desired location for the annotation and clicking “Enter” on the keyboard. A menu appears and you then click ‘Create User Label Annotation at Circle’.

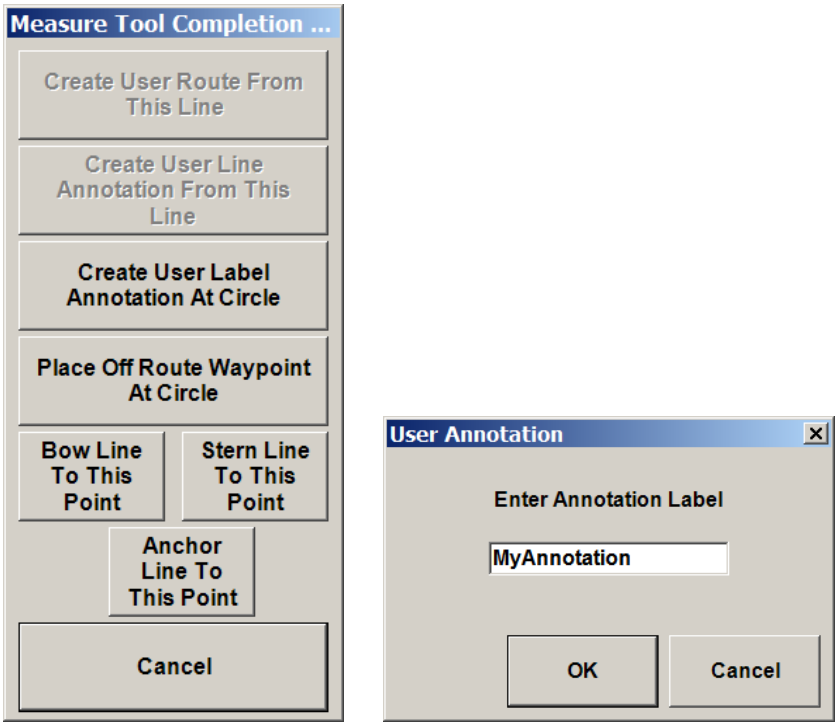


Figure 134: Accessing User Annotation from Measure Tool Completion Window

7.22 User-Defined Line

Similar to creating a user-defined route, you can create a user defined line by using the Measure Tool. Position the Measure Tool cross-hairs over the chart and double left-click to drop a point. Then move the cross-hairs to the next position for another point.

In this way you can make a line with several segments or a closed polygon. To finish the drawing, press Enter.

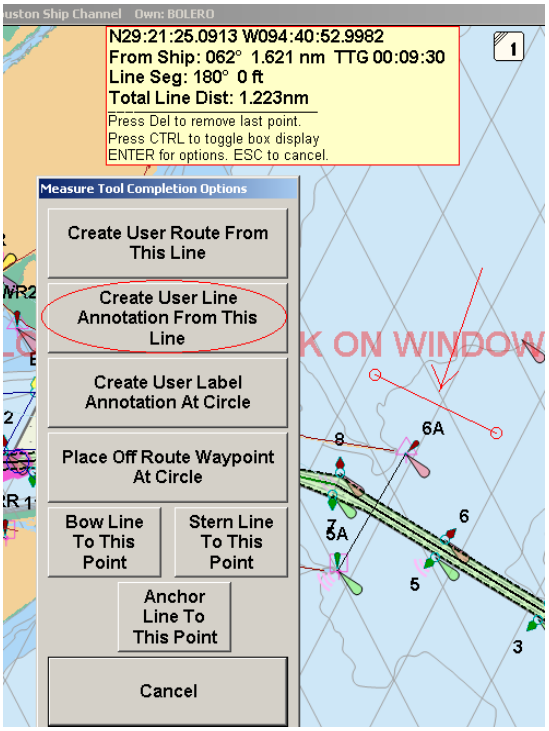


Figure 135: Accessing Create User Line Annotation from Measure Tool Completion Window

7.23 Deleting User Annotation Data

To delete a user-defined data, click on the Menu button and select Delete User Data. You are provided the following menu from which you select Delete User Annotation and then select the Annotation from the list and delete it.

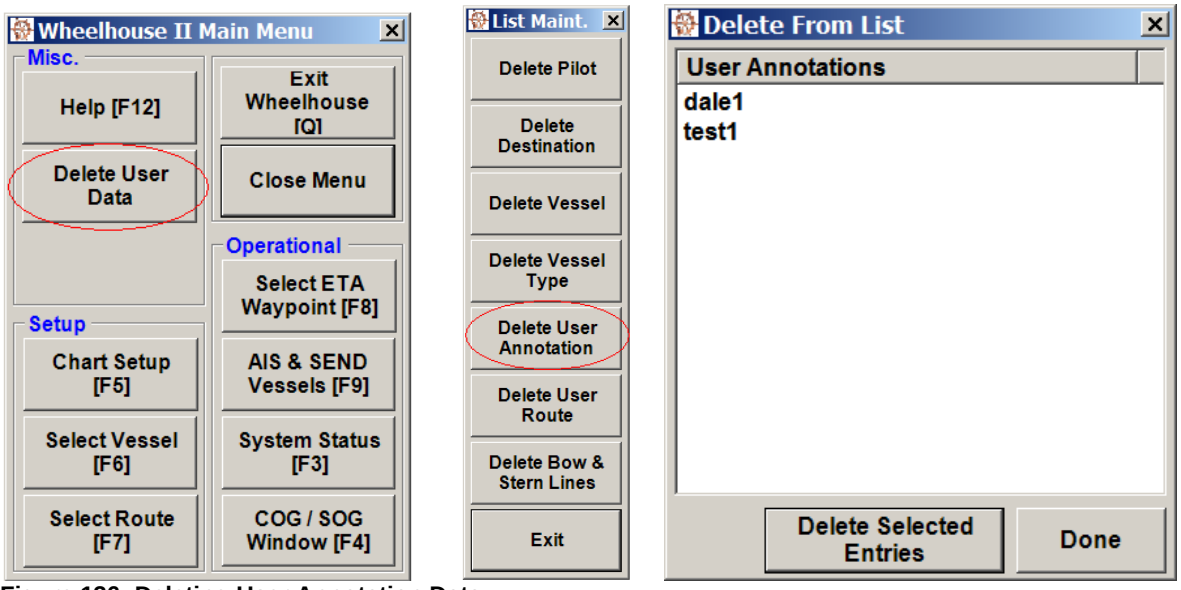


Figure 136: Deleting User Annotation Data

7.24 Future Position Display

IMPORTANT

This feature uses the Raven ROT algorithm, which requires that heading is available from the AIS transponder.

Press the “F” key to get the Position Prediction menu. Choose the amount of time in seconds between each drawing of the future vessel position. Then set how many positions in the future to draw.

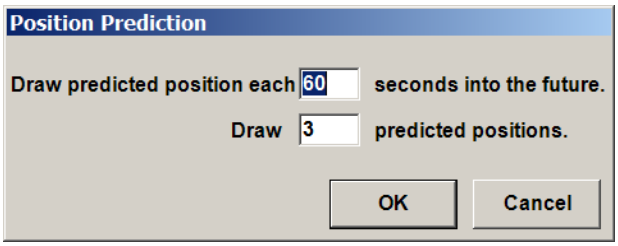


Figure 137: Position Prediction Screen

Future Position requires heading and ROT (Rate of Turn) information. If there is no heading or ROT from the AIS transponder the future positions are not drawn. Messages appear in the lower right of the chart screen when ROT is invalid or unavailable.

“Position Prediction Stopped: ROT=+/-720 (Invalid ROT)
“Position Prediction Stopped: No ROT” (ROT not available)

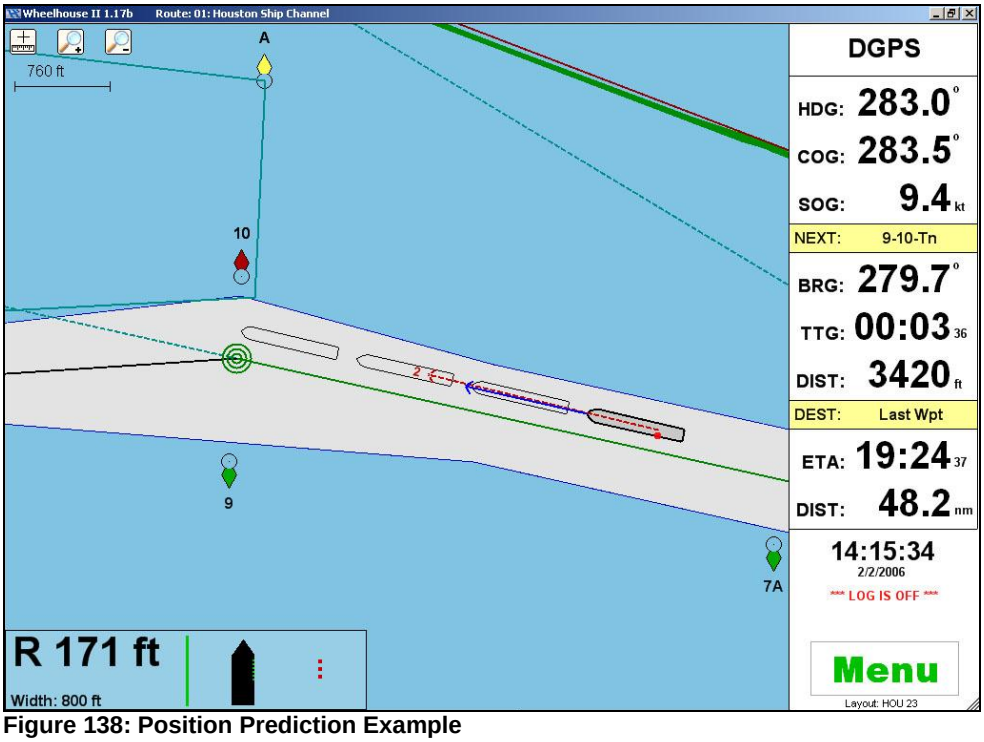


Figure 138: Position Prediction Example

7.25 Traffic Monitor

To see meeting and overtaking traffic, press ‘i’, a pre-assigned hot key. See earlier section, Hot Keys, for more information regarding hot keys and the functions to which hot keys can be assigned. The Traffic Monitor does not include vessels with a speed under 1 knot.

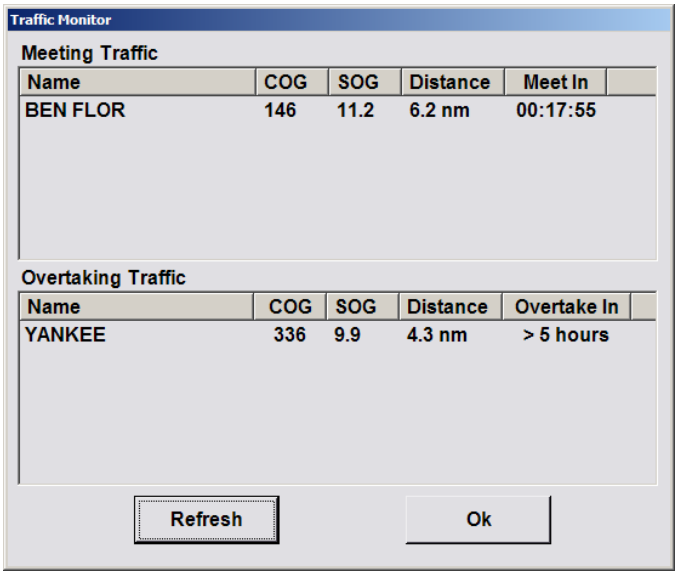


Figure 139: Traffic Monitor Screen

7.26 Object Inspector

If you position the mouse cursor over an object, such as a bridge or wreck, and then left-click the mouse while holding down the Shift key, a window pops up that describes the object under the mouse. This function can be assigned a hot key, as described in the earlier section, Hot Keys.

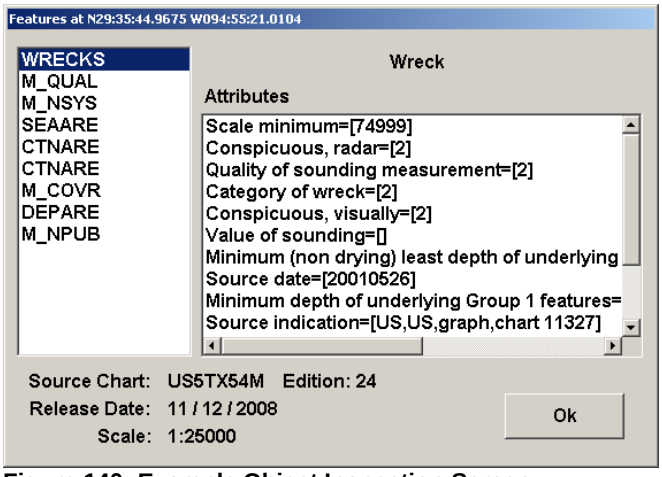


Figure 140: Example Object Inspection Screen

8 Operational Status Window [F3]

This chapter provides information about the features of the Operational Status Window.

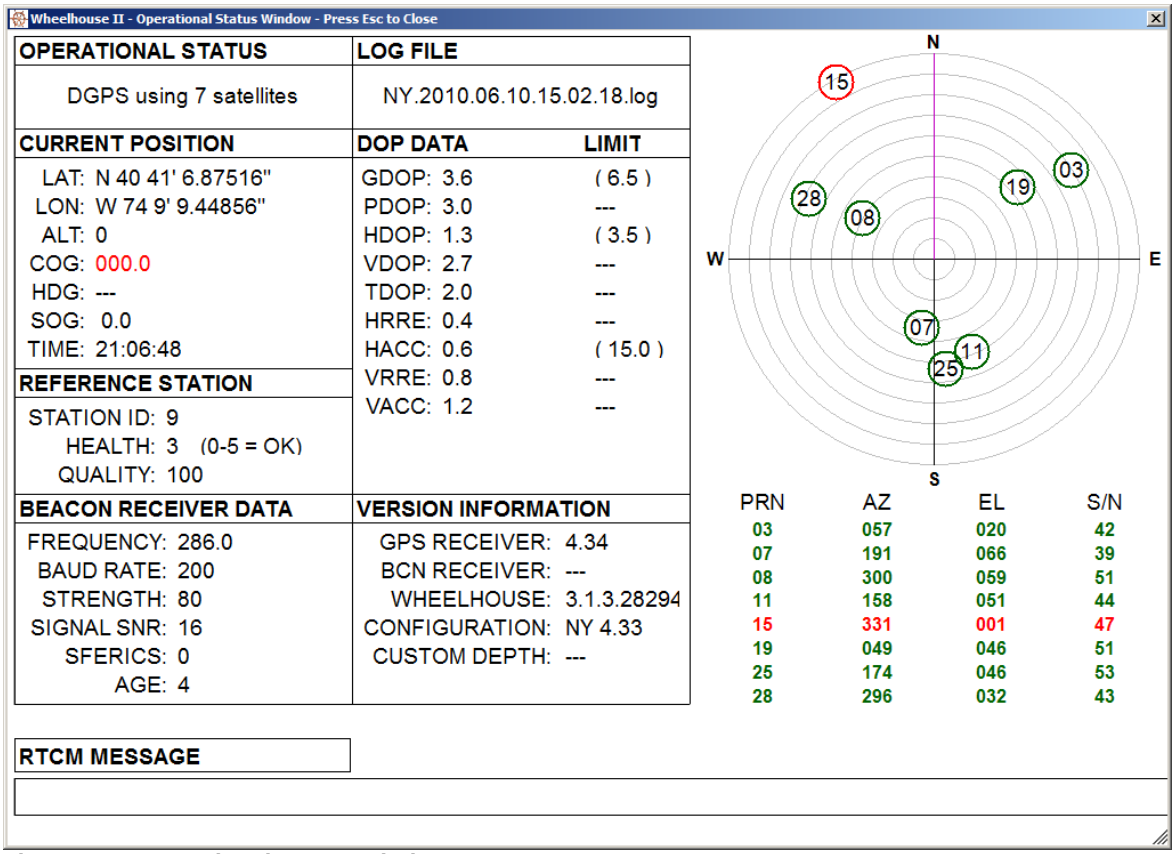


Figure 141: Operational Status Window

8.1 Operational Status

The **Operational Status** window contains an English description of the condition causing the visual alarm. A 'WARNING' exists when the Operational Status on the Chart Screen reads anything other than 'DGPS', and the system accuracy cannot be guaranteed. The Raven GPS receiver must be using 5 satellites or more for a warning-free operational status. Used satellites are indicated in green in the Operational Status Window [F3] satellite map. Unused satellites are indicated in red.
Also appearing in the operational status window is a short-hand description of the GPS mode and satellites being used.

8.2 Current Position

The **Current Position** window contains the latitude and longitude of the vessel's current position, as well as altitude, Course Over Ground, Speed, and GMT (same as UTC) time. (Altitude is geoidal and not processed for MSL reference.)

8.3 Reference Station

The Reference Station window Reference station ID, health, and quality of the beacon data as measured at the station and transmitted to your location.

- If the station health exceeds 5, it is displayed in red. 1-5 = OK, 6 = unmonitored, 7 = unhealthy
- The station quality is displayed as a percentage of a given volume of successfully decoded messages. Normal is 100 percent.

8.4 Beacon Receiver Data

The **Beacon Receiver Data** window contains the reference station frequency, baud rate, signal strength, signal to noise ratio, sferics, and age of data.

Normal signal strength is 20 or more. If the SNR is 10 or more, you should have good reception unless the sferics is high.

The sferics is a measure of 'impulse' electrical activity interfering with reference station reception. The 'pops' and 'clicks' caused by lightning when listening to an AM radio station are examples of this type of interference. The spark plugs from a running gasoline engine can also radiate impulse noise. Normal is less than 500, high is 501-30,000. Usually, this type of interference does not cause data errors, but you should try to reduce this type of noise by moving the antenna, if possible.

Care is required in evaluating the effect of sferics. For example, sferics can be high while SNR is also high, indicating sferics is not affecting reception. However, if SNR is low and sferics is high, it is likely that sferics is affecting reception.

The age of data value should not be higher than 10 (seconds).

8.5 RTCM Message

The **RTCM Message** window contains the last RTCM message received from the reference station until the new message replaces it or the program is terminated. When an RTCM message first arrives, an audible alarm sounds. To silence the audible alarm, press the Space bar.

8.6 LOG File

In Normal and Quick Start modes, this window contains the name of the log file if logging is on. If logging is off, this window contains 'Logging Off'. In Replay Log mode, this window indicates the log file being replayed. In Simulator mode, this window indicates 'Logging Off'.

8.7 DOP DATA

The **DOP Data** window contains DOP data, range residual error, horizontal and vertical accuracy data. Items with pre-configured limits turn red when their limit is exceeded.

These items are defined as follows:

- GDOP – Geometric Dilution of Precision, computed from HDOP, TDOP, and VDOP.
- PDOP – Position Dilution of Precision, computed from HDOP and VDOP.
- HDOP – Horizontal Dilution of Precision
- VDOP – Vertical Dilution of Precision
- TDOP – Time Dilution of Precision
- HRRE – Horizontal Range Residual Error - This error is computed only when there are at least 5 satellites used in the position computation. HRRE is a measure of how well the actual satellite measurements match the derived solution in the horizontal direction. It is a relative indicator of position uncertainty in the horizontal direction similar to, but not the same as, HDOP.
- HACC – Horizontal Accuracy, computed from HDOP and HRRE, used to detect multi-path and RFI (Radio Frequency Interference) events. HACC is a unit-less value that is designed to detect errors NOT caused by satellite geometry (DOP error), primarily multi-path and RFI. Wheelhouse combines HDOP with HRRE for all used satellites to compute a value that is then compared to a pre-programmed alarm threshold value, usually set at 15. The Wheelhouse formula for the HACC displayed on the Operational Status Window[F3] is:
    - HACC = HRRE*SQRT(n/(n-4)), where SQRTsquare root and n=number of sats
    - If the HACC value exceeds the threshold, an alarm occurs. Consider position information unreliable during the alarm.

- VRRE – Vertical Range Residual Error – This error is computed only when there are at least 5 satellites used in the position solution. VRRE is a measure of how well the actual satellite measurements match the derived solution in the vertical direction. Wheelhouse only displays this value, but does not otherwise use it.
- VACC – Vertical Accuracy, computed from VDOP and VRRE. Wheelhouse only displays this value, but does not otherwise use it.

8.8 Version Information

The **Firmware/Software Version** window displays:

- Firmware version for the GPS receiver
- Firmware version form the beacon receiver, if applicable
- Software version for the Wheelhouse II program
- Data set configuration version being used by the system (surveyed route data)

8.9 Satellite Map

The **Satellite Map** window shows satellites and their identification numbers are displayed on a grid of concentric circles. The circles advance from 0 to 90 degrees in 10-degree increments from the outside to the center. The center of the circles represents directly overhead or 90 degrees, and the outer-most circle represents 0 degrees, or the horizon. Satellites which are being used in the position solution are green. Those not being used are red. The satellite map can be useful in determining that the antenna cannot 'see' part of the sky.

8.10 Satellite Data

The **Satellite Data** window shows the satellite data appears beneath the satellite map, and includes the satellite identification number (PRN), azimuth (AZ), elevation (EL), and signal-to-noise ratio (S/N). If an asterisk appears by the PRN, the satellite is being used in the solution, and the satellite is green. If no asterisk appears by the PRN, the satellite is not being used, and the satellite is red.

8.11 Custom Depth Data

Custom depth data is depth data that is more recent than the depth data in the S57 chart. Raven gets custom depth data from the Army Corps of Engineers and makes it available for download from the Raven Marine FTP server. The currency of the custom depth data is indicated in after the 'Custom Depth' label on the Operational Status Window [F3].

9 COG/SOG WINDOW [F4]

The COG/SOG Window [F4] displays the Heading (HDG), Course Over the Ground (COG) and Speed Over the Ground (SOG). It also displays the position of the vessel relative to the channel centerline and the distance from the vessel to the center line. ‘R 61 ft’ means 61 feet to the right of the centerline. The channel width is also indicated as 2625 feet.

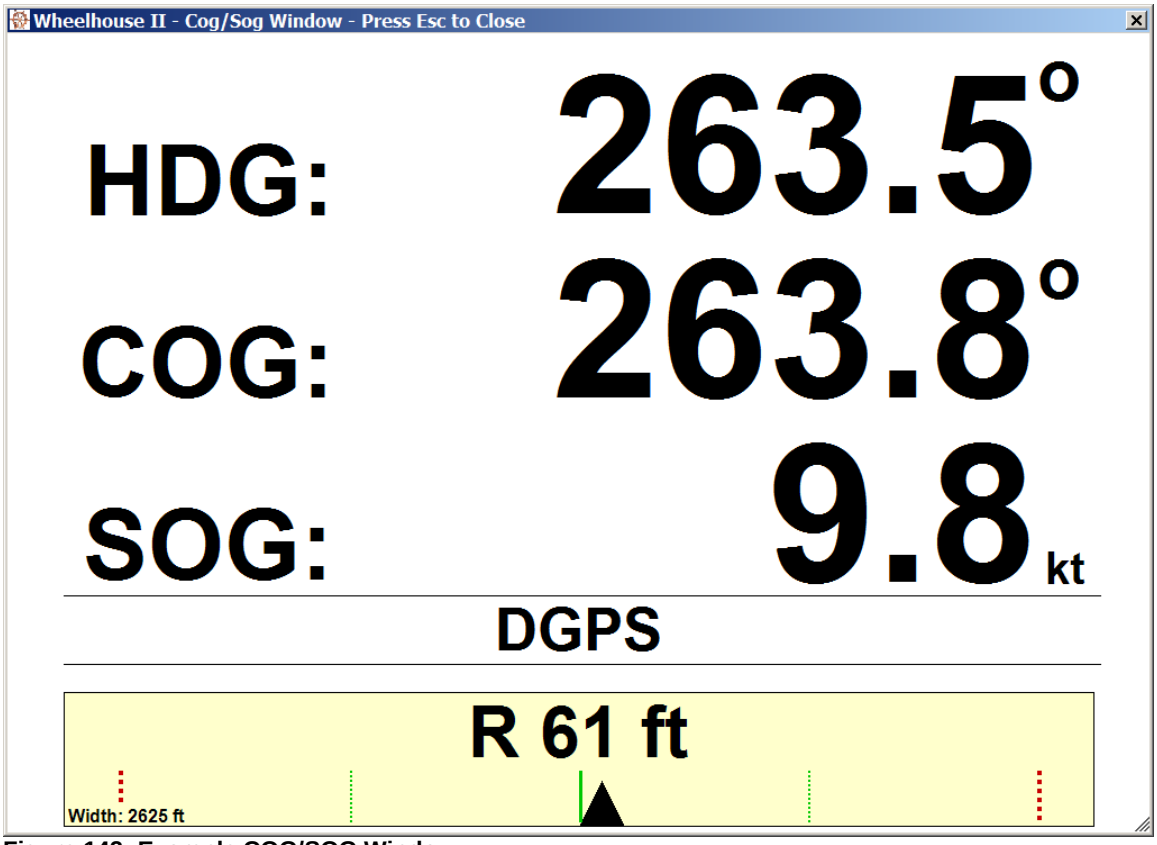


Figure 142: Example COG/SOG Window

10 Chart Setup [F5] Screen

This Chapter provides information about the features of the Chart Setup Screen, which can be accessed by pressing the F5 key.

Settings you select on this screen are saved for the next time you use the program.

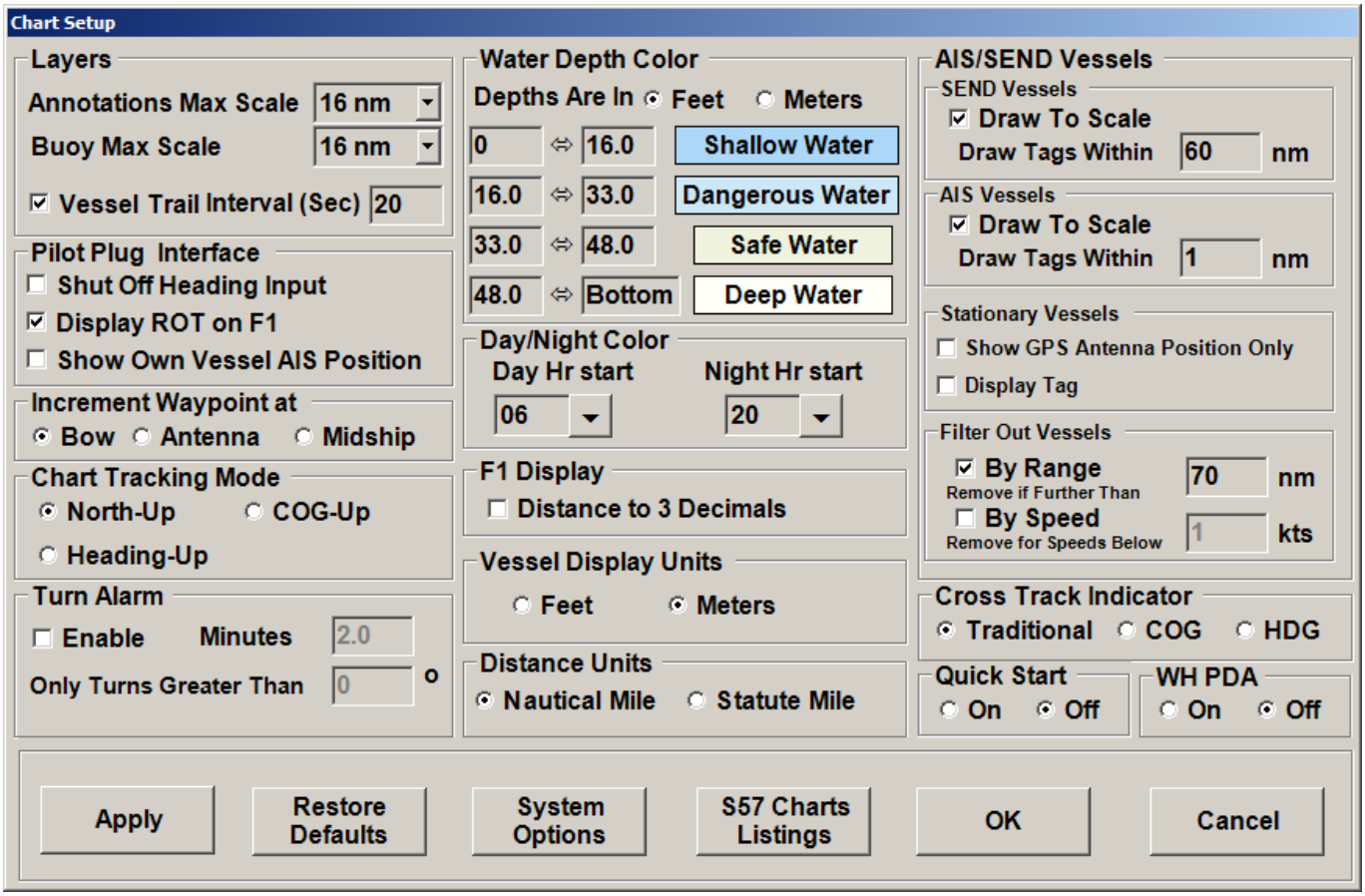


Figure 143: Chart Setup Screen

The sections below provide information about the options within each box or area of the Chart Setup screen.

10.1 Layers

- **Annotations Max Scale -** This is the zoom level at or above which you do not want to display annotations, such as anchorages. The zoom level is *displayed* in the upper left corner of the chart [F1] window.
- **Buoy Max Scale -** This is the zoom level at or above which you do not want to display buoys, Coast Guard or S57.
- **Vessel Trail Interval (Sec) -** This allows you to enable or disable the drawing of a vessel trail and to specify the interval in seconds between trail icons.

NOTE

WHII limits the number of vessel traces to the most recent 360, which equates to 2 hours of traces for 20-second trace intervals.

10.2 Pilot Plug Interface

- **Shut Off Heading Input** - Allows you to turn off the heading if it is wrong. Be aware that you can correct a steady-state error in heading by using Alt-H and entering the correct heading, as described earlier.
- **Display ROT on F1** - Allows you choose to add or remove the ROT display on the data panel in the chart [F1] window. To get this option to take effect, you have to restart WHII.
- **Show Own Vessel AIS Position** - Used to show the AIS own vessel on the screen when Use Ship's GPS has not been checked.

IMPORTANT

The AIS vessel is only shown when the Raven GPS vessel is being drawn to scale. When you zoom up to the red vessel then AIS vessel is not shown.

10.3 Increment Waypoint At

Select the point on the vessel at triggers the waypoint selector to advance. The options are Bow, Antenna (GPS antenna), or Mid-ship. When the point on the vessel you selected reaches a waypoint, the waypoint selector advances to the next waypoint on the route.

10.4 Chart Tracking Mode

You can select one of three chart tracking modes: North-Up, COG-Up, or Heading Up. When North-Up is not selected, the arrow in the upper right corner of the chart [F1] window rotates to indicate North as the vessel and chart orientation change. COG-Up and Heading-Up are only available for the basic chart. They are not available for S57 charts.

10.5 Turn Alarm

- **Enable** - Allows you to enable or disable a turn alarm, which is a visual and audible alarm that occurs the specified minutes before a turn greater than the specified angle.
- **Minutes** - Allows you to specify the minutes before the turn to activate the alarm.
- **Only Turns Greater Than -** Allows you to specify the alarm only for turns larger than the specified degrees relative to the current range.

10.6 Water Depth Color

This allows you to control, within limits of the depth contour data in the S57 chart, the colors used to indicate different depths of water.

IMPORTANT

Depth contours are defined by NOAA and embedded in the S57 chart. For example, the

S57 chart may define a contour which contains depths from 25 to 38 feet. Wheelhouse II colors the contour depending on the shallowest depth in the contour. Thus, you only have as much control as the depth data in the S57 chart allows.

To set water depth color, right-click on the desired area, such as 'Shallow Water', and select the colors from the dialog that appears. The colors are not updated until either you restart Wheelhouse II or re-import the S57 charts. Re-import is very fast after the initial installation.

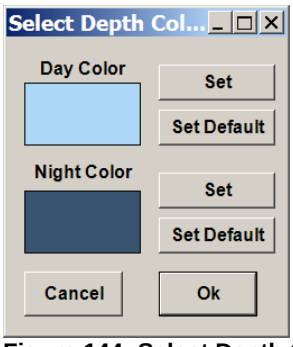


Figure 144: Select Depth Color Window

10.7 Day/Night Colors

You can specify the start hour for day and night colors. You can also manually toggle day and night colors by pressing the B key on the keyboard from the chart [F1] window.

10.8 F1 Display

If you check Distance to 3 Decimals:

- Distances are displayed in nautical miles (NM) to three decimal places for distances greater than or equal to 0.1 NM.
- Distances are displayed in feet below 0.1 NM. The following displayed distances are affected:
  - Chart [F1] window Waypoint distance
  - Chart [F1] window ETA Waypoint distance
  - Chart [F1] window Measure Tool distance

10.9 Vessel Display Units

Select the desired length and beam units to be displayed on the chart [F1] window for your own vessel tag.

10.10 Distance Units

- **Nautical Miles** – Use nautical miles for distance units on various displays, such as the chart [F1] window data panel and Measure Tool.
- **Statute Miles** – Use statute miles for distance units on various displays, such as the chart [F1] window data panel and Measure Tool.

10.11 AIS/SEND Vessels

10.11.1 SEND Vessels

Allows you to enable or disable the display of SEND vessels.

- **Draw To Scale** - Allows you to either draw the SEND vessel to scale when the zoom level permits or to draw the vessel as a non-scaled triangle.
- **Draw Tags Within** - Allows you to specify vessel tags for SEND vessels only within a certain range.

10.11.2 AIS Vessels

Allows you to enable or disable the display of AIS vessels.

- **Draw To Scale -** Allows you to either draw the AIS vessel to scale when the zoom permits or to draw the vessel as a non-scaled triangle.
- **Draw Tags Within -** Allows you to specify vessel tags for AIS vessels only within a certain range.

10.11.3 Stationary Vessels

- **Show GPS Antenna Position Only -** Allows you to display stationary vessels as a red dot, reducing screen clutter.
- **Display Tag -** Allows you to display the tag or not display the tag.

10.11.4 Filter Out Vessels

Allows you to specify the range beyond which, or the speed below which, you do not want to display SEND or AIS vessels.

10.12 Cross-Track Indicator

You can specify one of three types of cross-track indicators: Traditional, COG, or HDG. With Traditional, the icon always points up. With COG, the icon points in the direction of the COG relative to the center line. With HDG, the icon points in the direction of the heading relative to the centerline.

10.13 Quick Start Option

Refer to section 3.12 - Quick Start.

10.14 WH PDA (Method to Enable)

WHII can share own vessel data with a hand-held PDA, such as the Apple iPhone or iPod Touch. The shared data includes heading, COG, SOG, Cross-Track Distance, and Docking Lines. To enable this data-sharing, select 'On' on the Chart Setup [F5] screen, as shown below.

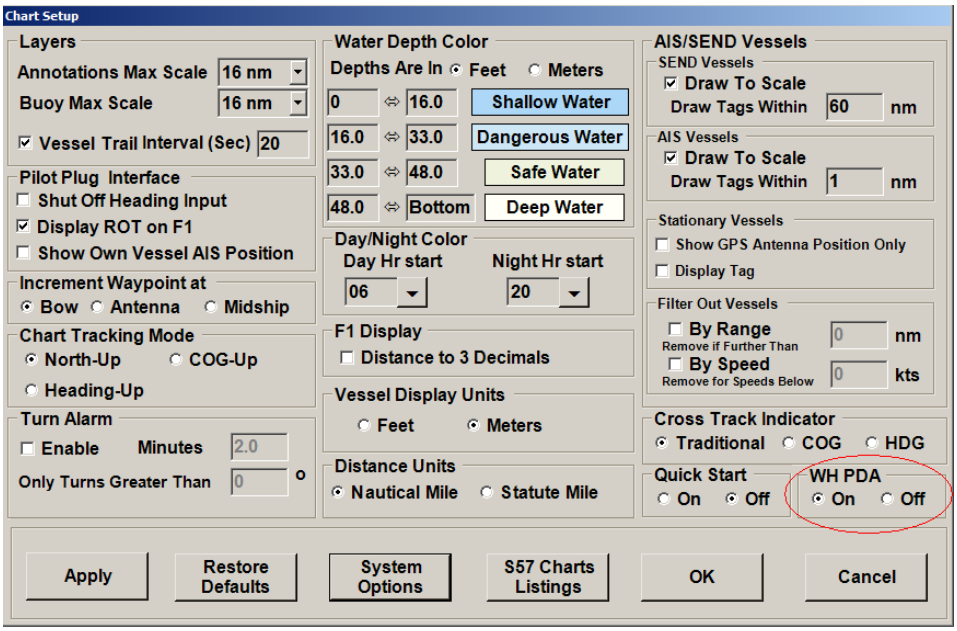


Figure 145: Chart Setup, WH PDA Box

10.15 Restore Defaults

The 'Restore Defaults' button restores the default settings for Chart Setup, Intercept, and Log Options.

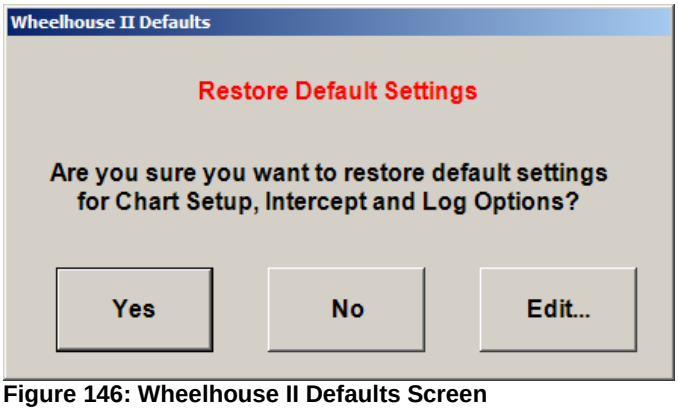


Figure 146: Wheelhouse II Defaults Screen

The Edit button is for use by authorized personnel only, and requires a user name and password.

10.16 System Options

The ‘System Options’ button invokes the menu below.

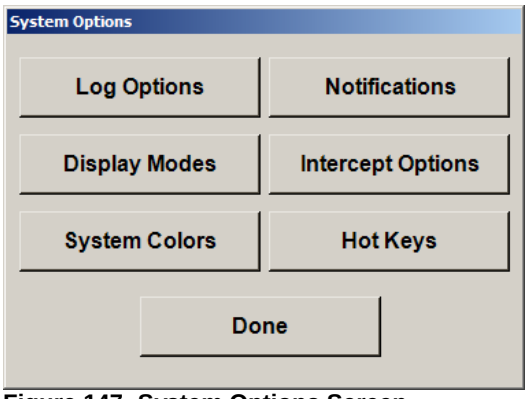


Figure 147: System Options Screen

10.16.1 Log Options

Start Log File Automatically on Startup allows you to enable or disable logging when the program starts. You can press L to toggle logging on and off during navigation.

Flag Files for cleanup older than allows you to specify how long you want to keep log files before they are automatically deleted at startup. The system prompts you before deleting any log files.

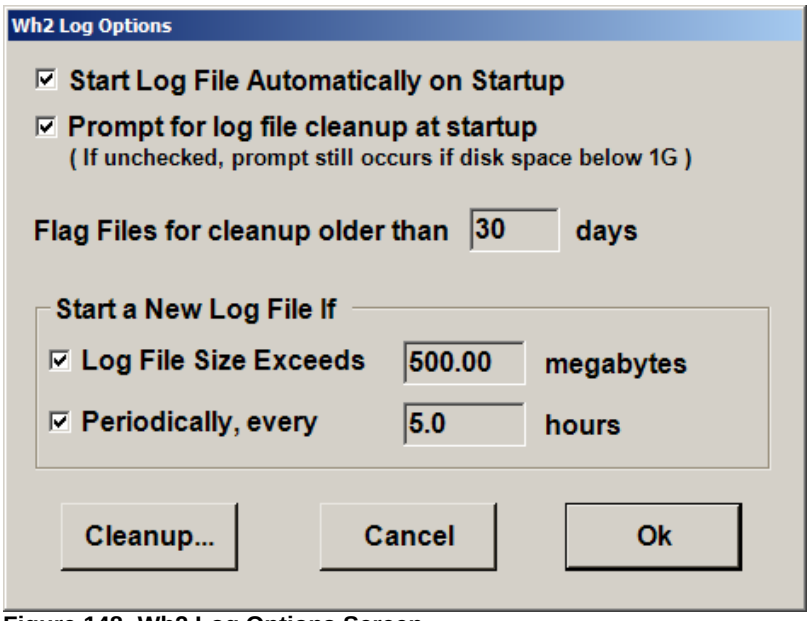


Figure 148: Wh2 Log Options Screen

See also previous sections, **‘Prompt for Log File Cleanup at Startup’** and ‘**Log File Auto-Delete’**.

10.16.2 Display Modes

The Display options control which view buttons appear on the chart [F1] window, and on what part of the screen they are displayed. For information regarding view buttons, see earlier section, Configuring View Buttons.

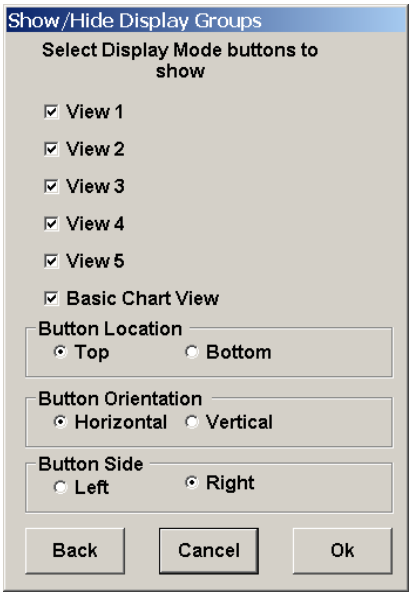


Figure 149: Show/Hide Display Groups Screen

10.16.3 System Colors

You can change any of the Wheelhouse II-defined system colors, those that Wheelhouse II uses to draw, for both day and night mode. You cannot change colors defined by the S57 standard. Colors which are changed are stored in the user folder, in SystemColors.xml. These colors override the colors specified in screens.xml.

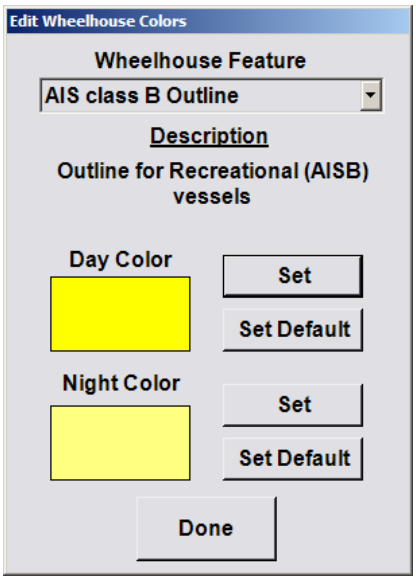


Figure 150: Edit Wheelhouse Colors Screen

The following colors can be modified:

Table 5: Modifiable Wheelhouse Colors

Name	Description
userannotation	User annotations, such as piers, anchorages and traffic designators
predictedvessel	Predicted future positions for own vessel
dockingarrows	Bow/Stern movement vectors shown when anchor lines are visible
dockinglines	Lines drawn from bow/stern to selected anchor points
buoylabel	Raven USCG Buoy Labels";
aisballoonframe	Outline color for AIS Vessel tags
aisvessel	Outline color for AIS vessels
aisvesselcircle	Antenna circle color for AIS vessels
aisvesseltoscale	Outline color for AIS vessels drawn to scale
sendvessel	Outline color for SEND vessels";
sendvesselcircle	Antenna circle color for SEND vessels
sendvesseltoscale	Outline color for SEND vessels, when drawn to scale
selectedvesselsquare	Selected vessel designator color
gpsantenna	GPS Antenna location color
ownvesselaisshadow	Color to draw AIS shadow of Own vessel, when using non-ship's GPS
aisballoon	Text color for AIS vessel tags
aisballoonbackcolor	Background color for AIS vessel tags
route	Raven supplied route outline color
currentrange	Current route segment centerline
manualrange	Manually advanced route segment center line
s57channelfill	Raven route fill color, when S57 charts are being displayed
channelfill	Raven channel edge color when NOAA shorelines are hidden
channeledgeshorelinesoff	Raven route fill color in Basic chart mode
channeledge	Raven channel edge color
ownvesselfill	Own vessel fill color
ownvesselnottoscale	Own vessel outline color, when not drawn to scale
rangecirclebow	Bow range circle ring color
rangecirclestern	Stern range circle ring color

Table continued on next page

Modifiable Wheelhouse Colors (continued)

Name	Description
vectorcog	Course-Over-Ground (COG) vector arrow color
vectorhdg	Heading vector arrow color
rangerings	Radar range ring colors
rangeringslabel	Radar range ring label color
ownvesselcrumb	Own vessel history vessel outline color
aisinterceptballoonframe	Intercept tag frame color
etaballoonframe	ETA tag frame color
etaballoon	ETA tag foreground color
etaballoonbackcolor	ETA tag background color
measuretool	Measure Tool color
measuretoolballoon	Measure Tool tag foreground color
measuretoolballoonbackcolor	Measure Tool tag background color
declutterwarning	Declutter warning warning
water	Basic chart view water color
misclabels	Miscellaneous label colors
otherroutes	Other route colors
otherchannelsedges	Other channel edge colors
scalebar	Scale bar color
shore	Shoreline color in basic chart view
compassarrow	North-up arrow color
trackmode	North-up Text

Color Transparency – After selecting the color, the **Color Transparency** dialog opens and allows you to select the transparency level for the color. This feature is useful for certain fill colors, such as route fill and land. If a color is not transparent, it obscures features drawn below that item, such as the base S57 chart

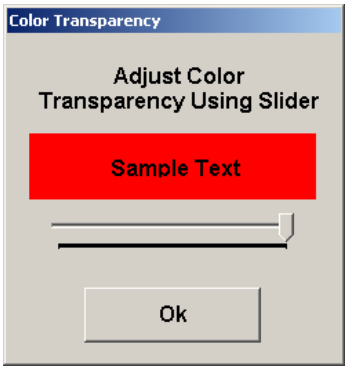


Figure 151: Color Transparency Screen

10.16.4 Notifications

Refer to section, 3.17 - Vessel Particulars.

10.16.5 Intercept Options

If you un-check 'Prompt for intercept type', the program does not prompt you for intercept options when you select an off-route remote vessel. It forces the type of intercept that you select in the drop-down list. Also see subsequent section, **Auto-Intercepts**.

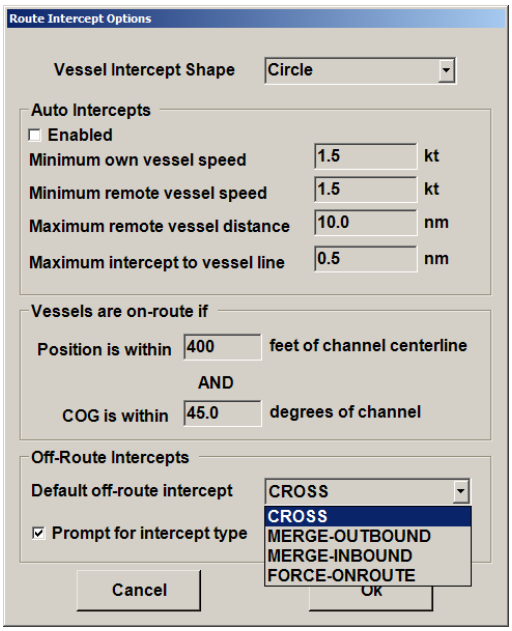


Figure 152: Route Intercept Options Screen

10.16.6 Hot Keys

You can customize certain Hot Keys on the system. A Hot Key is a key that acts as a shortcut to perform a particular action. To customize keys select 'System Options' from the Chart Setup [F5] screen, then press System Options.

By default, some keys have already been defined, such as 'i' for Traffic Monitor and 'h' to see the currently assigned hot keys.

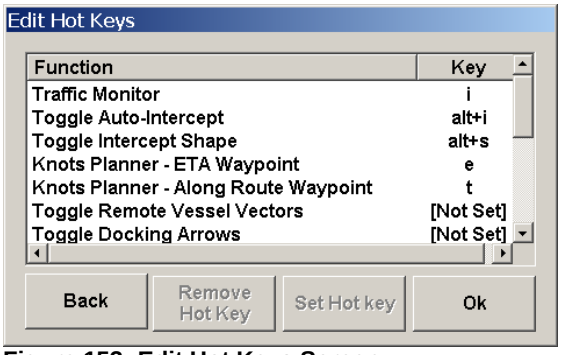


Figure 153: Edit Hot Keys Screen

The screen above shows the current key associations and allows you to remove or change these associations. Removing a hot key changes the function to [Not Set], but does not remove the function entry from the list.

You may assign key combinations using Alt, Ctrl, or Shift in combination with another key. Some keys, as indicated on the Help [F12] screen, are already in use by Wheelhouse II, and cannot be re-assigned. The following single-key Hot Keys are not already assigned to specific single-key functions, and are available:

Table 6: Hot Key Information

Name	Default Key	On by Default	Function
Traffic Monitor	i	Yes	Brings up the Traffic Monitor Screen
Speed Planner - ETA Waypoint	e	Yes	Brings up the Knot's Planner for the selected ETA route waypoint. (ETA waypoints are selected on the Waypoint Selection [F8] screen).
Speed Planner - Along Route Waypoint	t	Yes	Brings up the Knot's Planner screen for the Along Route waypoint. The along route waypoint is created by clicking twice on the screen on the current route.
Toggle remote vessel (AIS/SEND) Vectors	alt+v	No	Turns AIS COG vectors on and off. Toggling these vectors is available only if the AIS COG Vector display layer is turned on for the current display mode (view button settings).
Toggle Docking Arrows	Not Set	No	Turns docking arrows and vectors on and off. Toggling docking lines is available only if docking lines are turned on for the current display layer.
S57 Data under Cursor	w	Yes	Display detailed information for the S57 data under the cursor (equivalent to shift+left-clicking on the screen).
Deselect All Vessels	Not Set	Yes	Deselect all selected vessels. Cannot be undone.
Toggle Feet/Meters	Not Set	No	Toggles vessel units between feet and meters.
Toggle Knots/Mph	Not Set	No	Toggles between knots and MPH on the chart [F1] window.
Show Hot Key Dialog	h	Yes	Displays the Hot Key Editor.
Override Vessel Info	alt+o	Yes	Change own vessel particulars
Display System Events	alt+e	Yes	Used for troubleshooting

The following actions are available:

Table 7: Edit Hot Keys Options

Button	Action
Remove Hot Key	Clear the hot key for this action
Set Hot Key	Bring up a dialog to set the hot key for this action
Ok	Exit the dialog

Set Hot Key Dialog - This dialog allows you to set the key for an action. To set the hot key, simply press the key on the keyboard you want to assign to this action, and then click **Ok**.

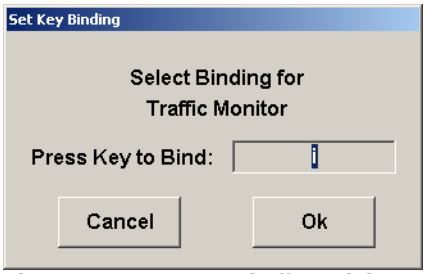


Figure 154: Set Key Binding Dialog

10.17 S57 Charts Listings

From the chart [F1] window, press F5 to display the Chart Setup screen and then click **S57 Charts Listings.**

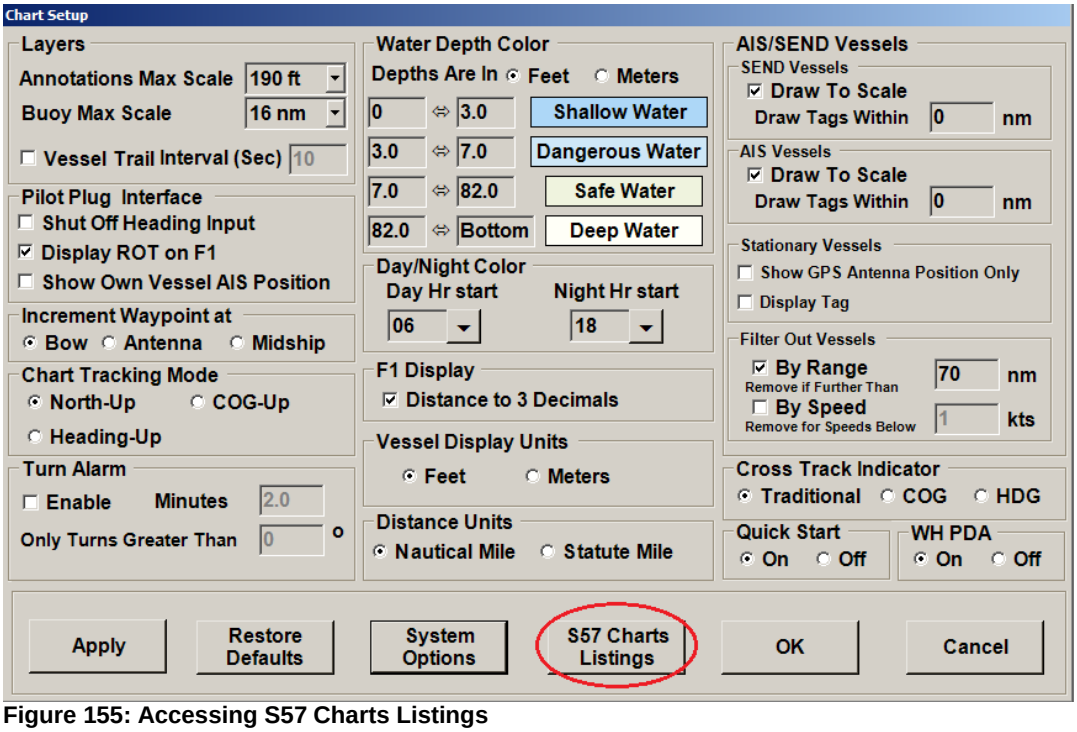


Figure 155: Accessing S57 Charts Listings

Use the **S57 Chart List** screen to view and import S57 Files. The list portion of the screen displays the S57 charts installed on the system and when they were downloaded from the NOAA web site

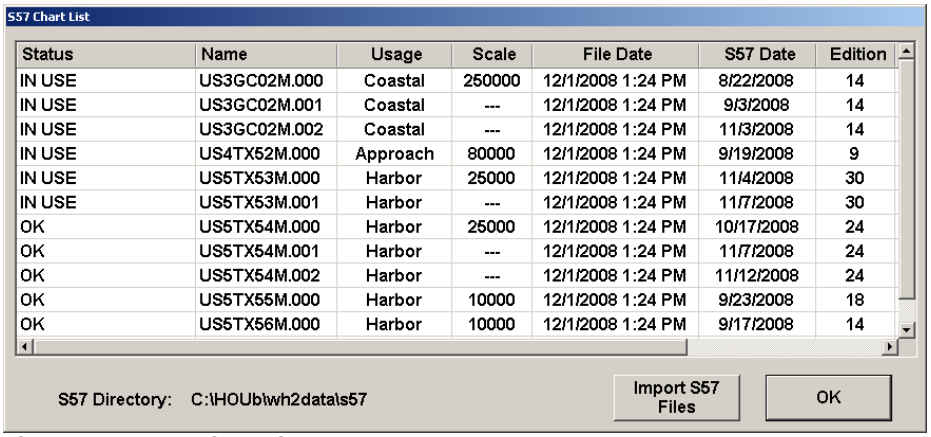


Figure 156L S57 Chart List Screen

Import S57 Files – Pressing this button allows you to convert raw NOAA S57 files into files usable by Wheelhouse II. Import is necessary after you update the NOAA S57 charts with a Raven program installer or S57 update installer.

10.17.1 S57 Charts Settings

S57 Chart options can be accessed by right-clicking a view button in chart [F1] window. The **Mode Display Options** screen opens (shown below). For a given view, S57 charts may be disabled by clearing the **Display S57 Charts in this Mode** check box.

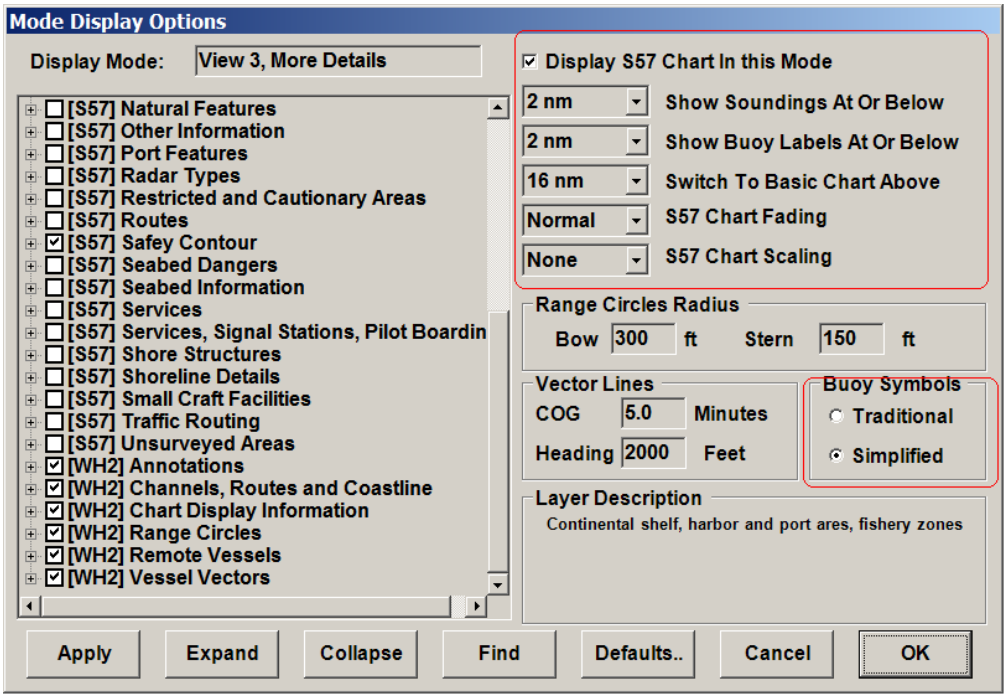


Figure 157: S57 Chart Options for a Specific Chart View

List pane options:

- **Buoy Symbols** – Allows you to select Traditional or Simplified, the other type of S57 buoy renderings. From the list pane, you can control the display of S57 buoys under **[S57]Buoys and Beacons**.
- **USCG Buoy Icons** - An option that can be selected from **[WH2]Annotations**. US Coast Guard buoy data, as provided here, is not part of the S57 data set.
- **ACOE Channel Data** - Can be controlled from **[WH2]Channels,Routes, and Coastline**, letting you overlay Army Corps of Engineers channel edges over the S57 chart.

Other options:

- **Show Soundings At Or Below** - Allows you to control the zoom level beneath which soundings appear. This function is affected by 'Declutter At Or Below', above.
- **Show Buoy Labels At or Below** - Controls zoom level uat or below where buoy labels appear.
- **Switch to Basic Chart Above** - Controls the zoom level above which the S-57 chart display is replaced by the basic chart display.
- **S57 Chart Fading** - Controls the saturation level of the S57 chart colors.
- **S57 Chart Scaling** - Controls the size of text on the S57 chart; the larger the percentage, the smaller the text.

11 Trip and Own Vessel Information [F6]

This screen allows you to enter or select Pilot Name, Destination, GPS position source, and vessel particulars. You can press F6 at any time during navigation if you need to change something. If your system is equipped with a Raven BPI wireless connection to the AIS Pilot Port Interface, this screen gives you information about the BPI.

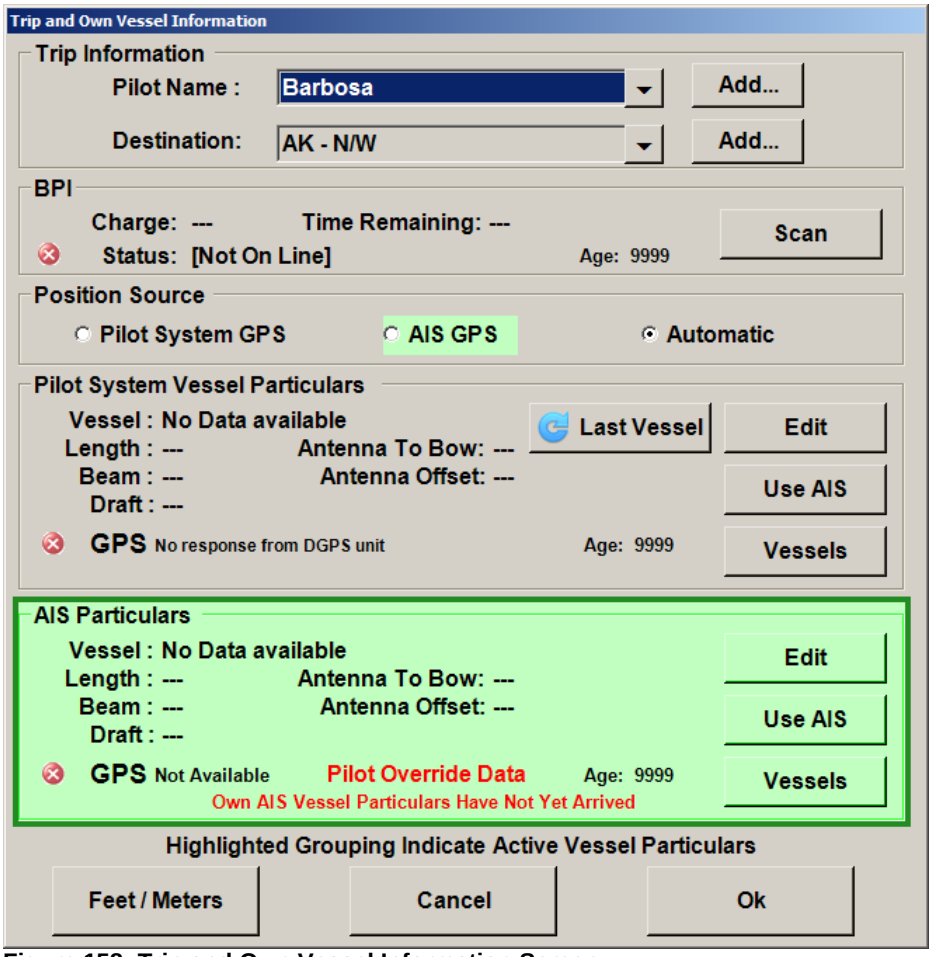


Figure 158: Trip and Own Vessel Information Screen

See the earlier section, **Normal Start,** for detailed information on how to use this screen.

12 Route Selection [F7] Screen

This screen allows you to enter or select a route. You can press F7 at any time during navigation if you need to select a different route. See the earlier section, **Normal Start**, for information on selecting a route as part of a normal start.

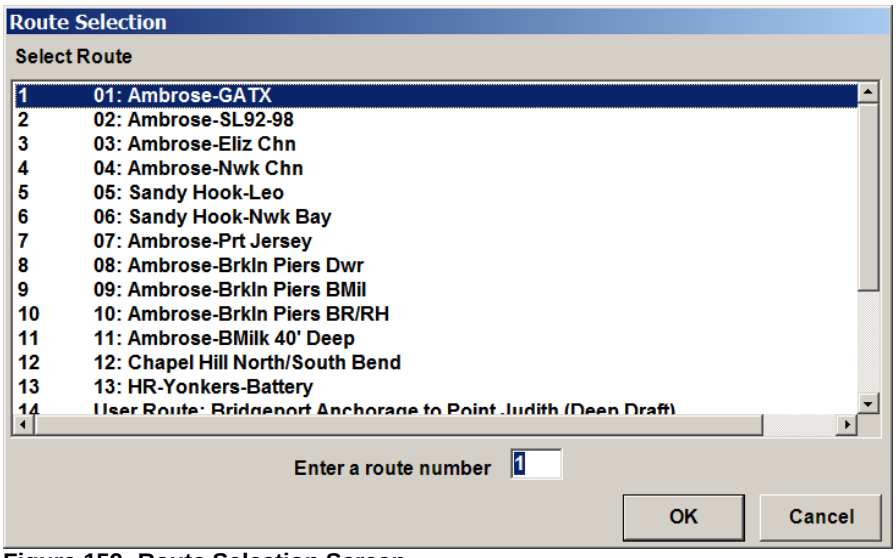


Figure 159: Route Selection Screen

13 Waypoint Selection [F8] Screen

This screen allows you to enter or select an ETA (Estimated Time of Arrival) waypoint. You can press F8 at any time during navigation if you need to select a different ETA waypoint. See the earlier section, **Normal Start,** for information on selecting an ETA waypoint as part of a normal start.

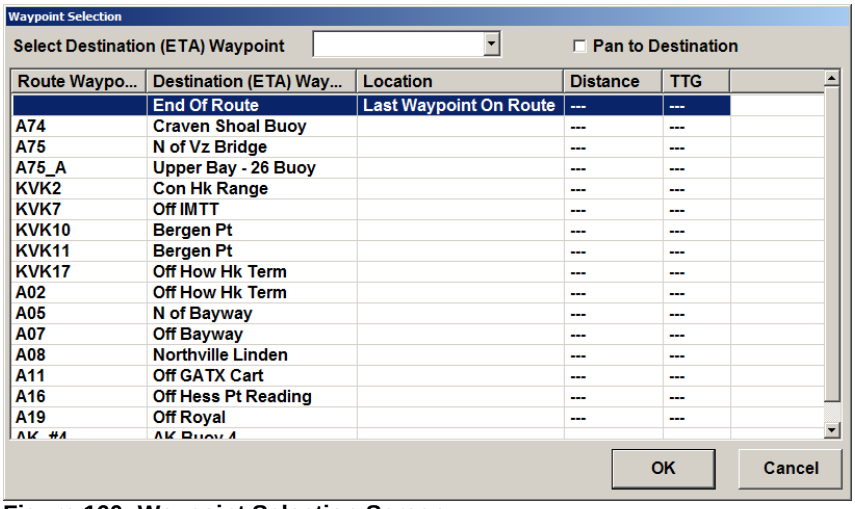


Figure 160: Waypoint Selection Screen

This list is ordered by waypoints ahead of the vessel. The waypoints behind the vessel are indicated by dashes (---) for the Distance and Time To Go (TTG) values. The ETA on the chart [F1] window data panel reflects ETA selection made here. When there is no own vessel position, the waypoints are ordered starting at the sea going into port.

After selecting an ETA waypoint, from the Waypoint Selection [F8] screen, an ETA waypoint box appears at the selected ETA waypoint.

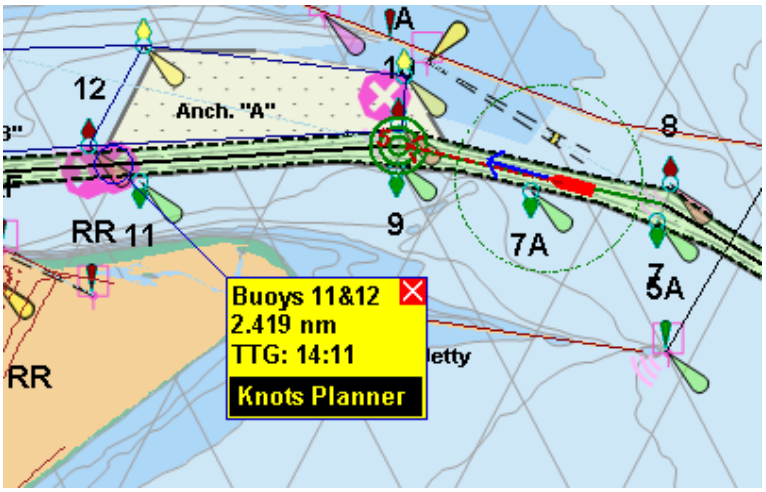


Figure 161: ETA Waypoint Box

See also the earlier sections **'Pan Screen to Selected Waypoint'** and **'Quick Search for ETA Waypoints'**.

14 AIS and SEND Vessels [F9] Screen

Using the AIS and SEND Vessels screen, you can select to see only vessels from a certain source, as indicated by the check boxes in the **Display** box.

To center the chart [F1] window in relation to a remote AIS or SEND vessel, press F9, highlight a vessel with the mouse, and then press Enter or double left-click on your selection. The vessels can be sorted on a given column by left-clicking on the column heading.

The Refresh button is provided for updating the information on this screen. This screen is not updated automatically.

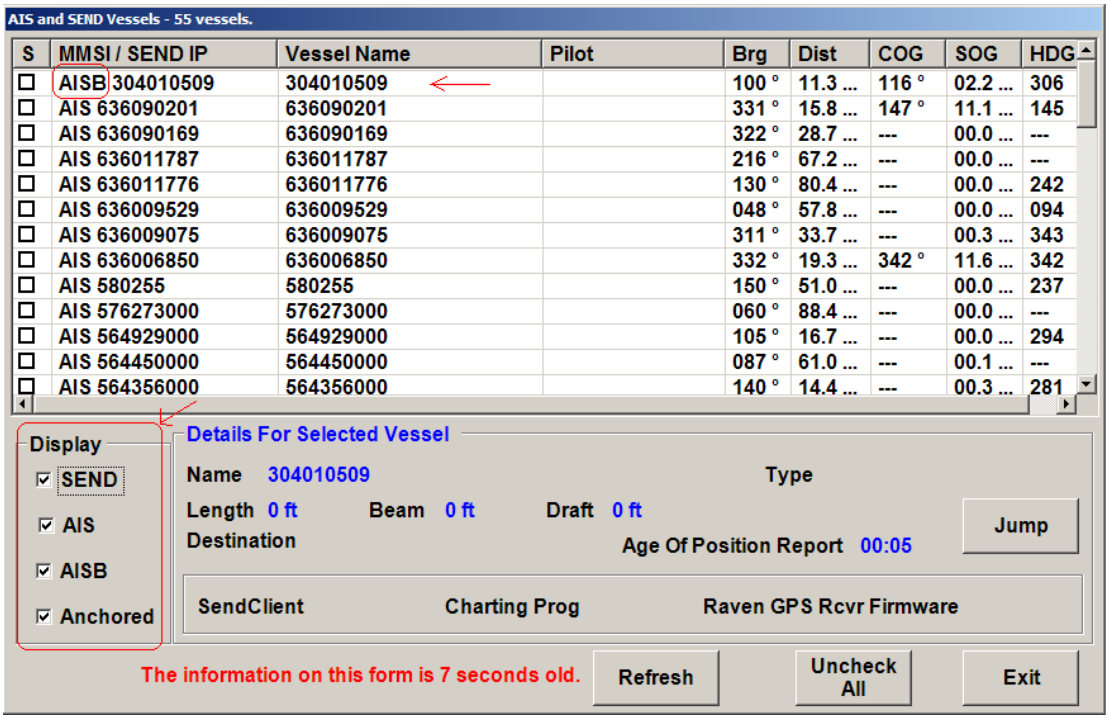


Figure 162: AIS and SEND Vessels Screen

There are two methods for getting remote vessel Information.

- Method #1: Hover the cursor over the remote vessel and the AIS vessel label appears.

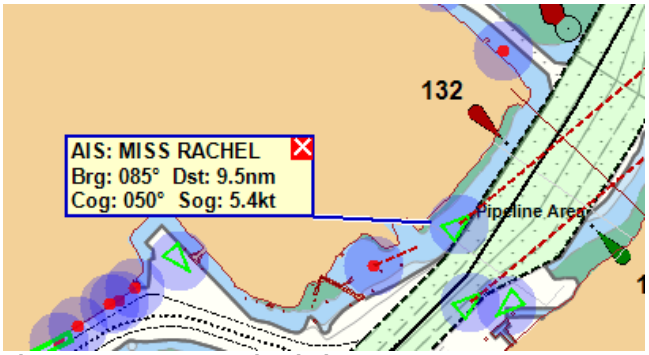


Figure 163: AIS Vessel Label

- Method #2: Press F9 (or F1 | MENU | AIS & SEND Vessel List) and then in the AIS and SEND Vessels screen, select a vessel from the remote vessel list. The Details For Selected Vessel section of the screen changes to the selected vessel and the chart window centers on the selected vessel. The AIS and SEND Vessels [F9] screen contains significantly more information for a given vessel than its Charting [F1] screen vessel label displays.

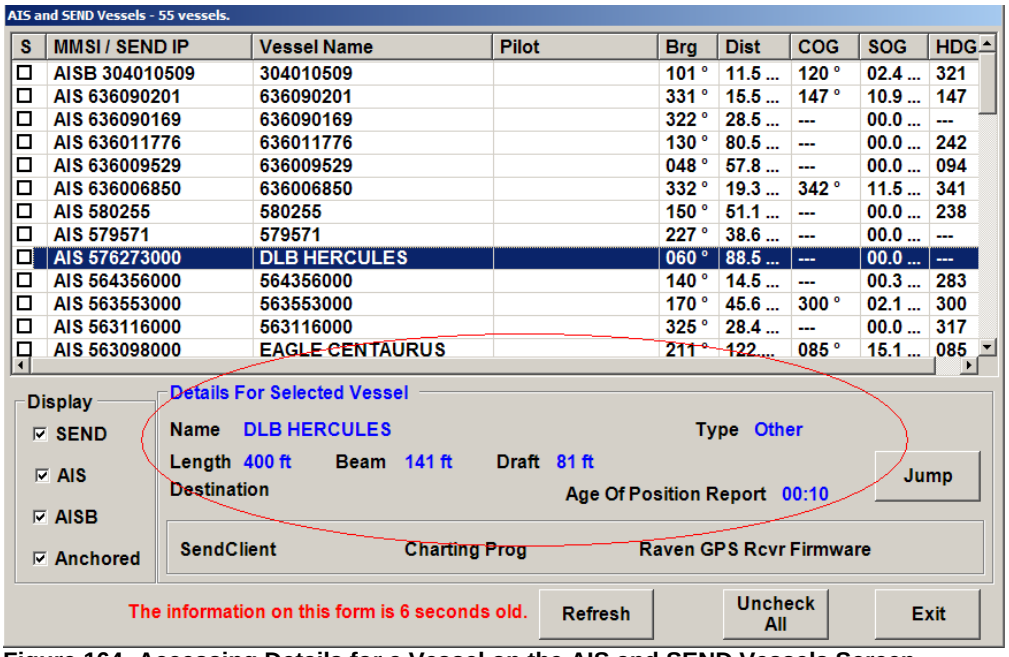


Figure 164: Accessing Details for a Vessel on the AIS and SEND Vessels Screen

Buttons on the AIS and SEND Vessels screen:

- **Jump -** Pressing this button “jumps” the display to center it on the vessel in the “Details for Selected Vessel” area. In the example above pressing “Jump” would center the display on the DLB HERCULES.
- **Uncheck All -** This button removes the user selection from all vessels.
- **Exit -** This button closes the screen.

15 Help [F12] Window

The Help Window shows all of the keys used for quick access to the program functions. The shortcut key assignments shown below may vary, depending on user preference, since they are Raven pre-programmed.

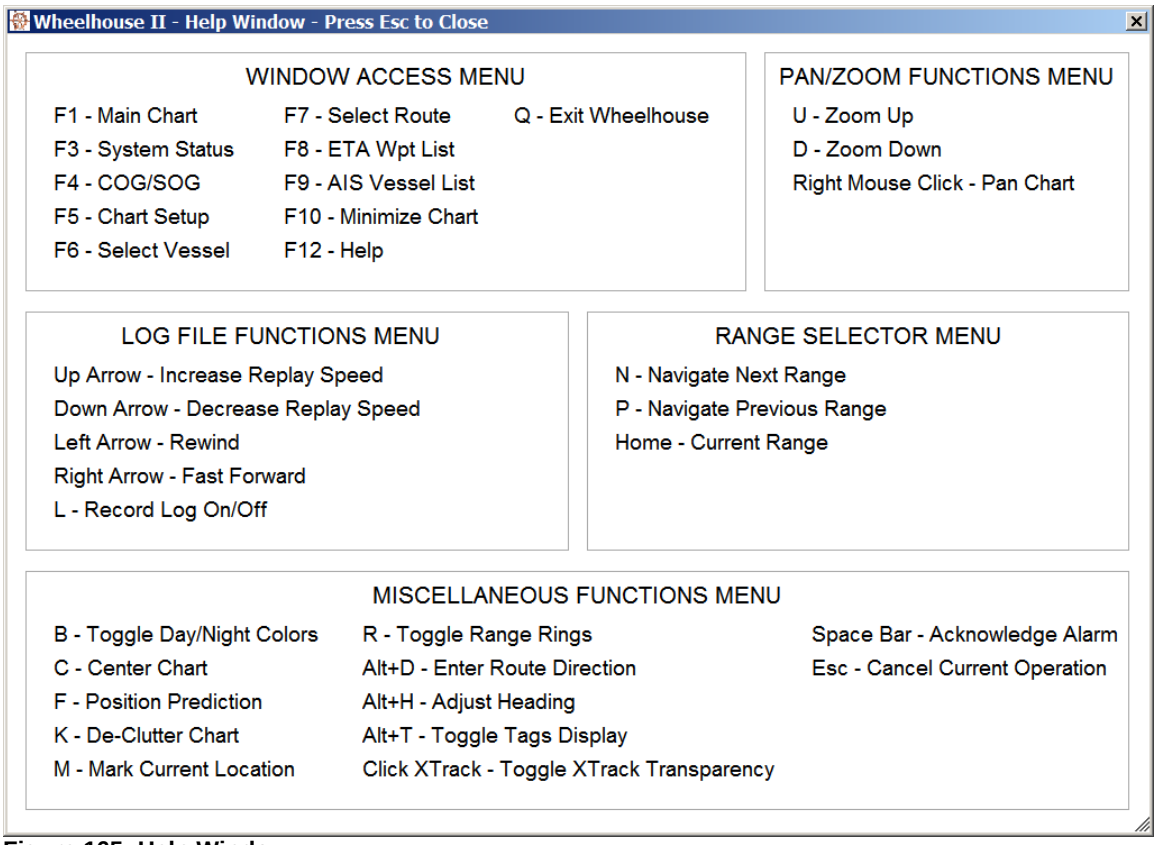


Figure 165: Help Window

The Help Window identifies operations that you can perform usually by pressing a single key, such as K to de-clutter the chart. A few of the operations require a combination of keys, such as Alt-H to adjust heading.

15.1 Window Access Menu

F1 - Main Chart, shows local and remote vessels on the selected chart.

F2 - Unassigned

F3 - Operational Status Window, shows operational status of the GPS subsystem. You can also access this screen by selecting ‘F1 | Menu | System Status’.

F4 - COG/SOG Window and large cross track indicator screen. You can also access this screen by selecting ‘F1 | Menu | COG/SOG Window’.

F5 - Chart Setup, provides options for Wheelhouse II charts and other parameters. You can also access this screen by selecting ‘F1 | Menu | Chart Setup’.

F6 - Vessel Select, lets you edit your own vessel information. If you moved your GPS antenna and needed to change the antenna offset value, you could press F6 to enter the new antenna offset value. You can also access this screen by selecting 'F1 | Menu | Select Vessel'.

F7 - Route Selection, lets you view or change your route. You can also access this screen by selecting 'F1 | Menu | Select Route'.

F8 - Destination ETA Waypoint, lets you view or change your destination ETA waypoint. The program uses this selection to calculate your ETA displayed on the data panel of the chart [F1] window. You can also access this screen by selecting 'F1 | Menu | Select ETA Waypoint'.

F9 - SEND and AIS Vessel List, lets you view expanded data regarding AIS and SEND vessels. You can select one of these remote vessels for display on the chart [F1] window. When a remote vessel is being displayed, the data panel, the Operational Status Window [F3] and the COC/SOG Window [F4] still pertain to the local vessel. You can also access this screen by selecting 'F1 | Menu | AIS & SEND Vessels List'. Also see section, **Getting Remote Vessel Info**.

F10 - Minimize Wheelhouse II

F11 – Open Main Menu.

F12 – Help Screen, containing a list of all Wheelhouse II key functions.

Q – Exit Wheelhouse II, SendClient, and AisClient. You can also exit the programs by selecting 'F1 | Menu | Exit Wheelhouse'. Below is the prompt that appears when you press Q.

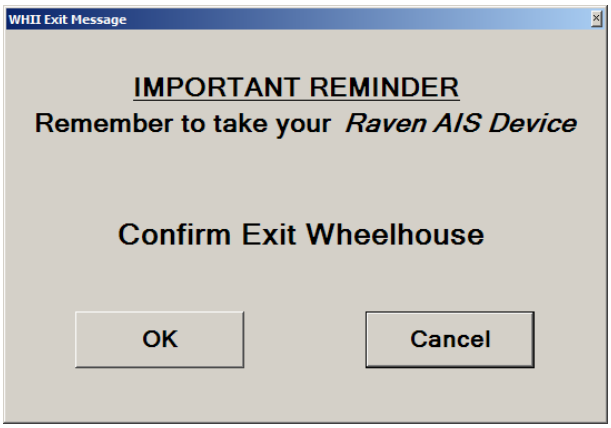


Figure 166: Important Reminder and Exit Confirmation Screen

15.2 Pan/Zoom Functions Menu

This section of the Help Window provides shortcuts for some of the icons located in the upper left of the chart [F1] window.

From left to right, the icons are the Measure Tool, Zoom In, Zoom Out and, when panning, the Own Ship Icon appears. These shortcuts don't apply to the Measure tool; refer to section 7.11 for information about the Measure Tool.

Zooming:

- U – Zoom up; shows more geographic area, but smaller objects. This is the same as using the magnifier - icon.
- D – Zoom down; shows less geographic area, but larger objects. This is the same as using the magnifier + icon.

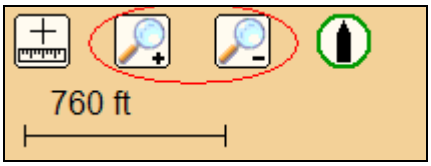


Figure 167: Chart Window Zoom Icons

Panning:
You can right mouse-click on the Chart to pan the chart view. This centers the chart view to where you clicked. Panning causes the Own Ship icon to appear in the upper left of the Chart Screen. Clicking the Own Ship icon returns your own vessel to the center of the Chart view. For more information on the Own Ship icon, see section **7.10 – Panning Around on Chart**.

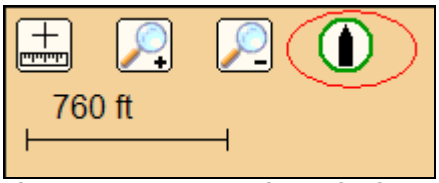


Figure 168: Own Vessel Icon (Only Appears When Panning)

15.3 Log File Functions Menu

This box in the Help Window provides shortcuts for replaying a log file and for toggling log recording on and off. For a full description of log file use, refer to **Chapter 5 – Replay Log File Start.**

There are two methods for controlling starting and stopping the recording of a log file:

- F5 | System Options | Log Options| Start Log file Automatically on Startup.
- Press L to toggle log recording on and off*.

*Except if continuous logging is programmed; see section 5.1.1 for more information about continuous logging.

15.4 Range Selector Menu

This box provides shortcuts for using the Range Selector function on the chart [F1] window.

- N - Moves the range selector forward to the next waypoint. The Chart window data panel shows TTG and bearing to the selected waypoint. You can also double left-click on any point along the route to see TTG to any point along the route.
- P - Moves range selector back one waypoint.
- Home - moves range selector to the closest waypoint in front of the vessel.

15.5 Miscellaneous Functions Menu

This box provides shortcuts for functions not covered in the boxes in the Help Window.

- C - Centers the chart on the local vessel. Key assignments are configurable by Raven. For example, some pilot groups use the space bar, not C, to center the chart.
- K - De-clutter, toggles on/off such chart details as navigation aids and annotations. This can make it easier to see the channel when desired. See section, S57 Chart Settings, for settings that affect this operation.
- M – Creates a user annotation on the chart. The annotation is named with the current day/time. Use this to quickly create a marker at some point of interest, such as man overboard. You can remove marks by pressing Menu | Delete User Data | Delete User Annotation.
- B - Toggles on or off day or night colors.
- R – Toggles on or off range rings around the vessel. These are not the same as range circles that are located in under Mode Display Options displayed when you right-click on a view button.
- F – Selects Position Prediction dialogue box. This feature stops working or works sporadically when the vessel is turning.

IMPORTANT

This feature requires a reliable ROT, which is currently not available from the AIS transponder.

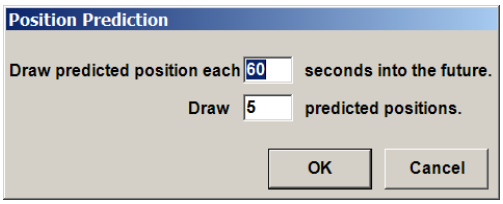


Figure 169: Position Prediction Dialog

- ESC – Cancels the current menu, screen, or dialog box.
- Alt+H – Apply a steady-state heading adjustment. If the desired heading is 300 degrees, type 300 into the box and then press OK.

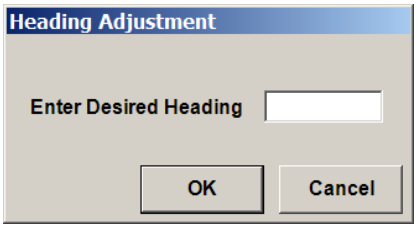


Figure 170: Heading Adjustment Dialog

- Space bar - Turns off audible alarms. For some configurations, the Space bar is assigned the re-center function.
- Left-click the Cross Track Indicator (CTI) to toggle through views. Not applicable to configurations with Closest Vessel Panel at bottom of screen.
- Alt+D – Manually enter route direction. See Normal Start.

- Alt+T – Advances through the different remote vessel tag modes; full tag description, short tag description, or Tags Off. The following three graphics show examples of these three modes.

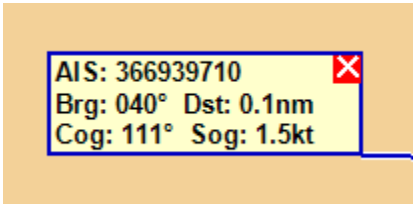


Figure 171: Example of Remote Vessel Tag, Full Tag Description

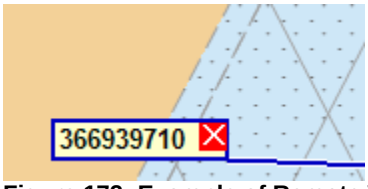


Figure 172: Example of Remote Vessel Tag, Short Tag Description

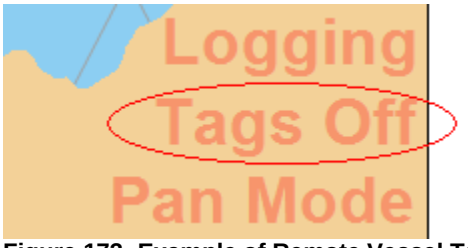


Figure 173: Example of Remote Vessel Tag, Tags Off

16 Warnings Overview

Wheelhouse II displays warning messages to the user in several places. GPS status messages are shown at the top right of the chart [F1] window and top left of the Operational Status Window [F3]. The chart [F1] window may say WARNING, so the user then goes to the Operational Status Window [F3] to get a more complete description of the warning condition. In addition, the program can display other operational warning conditions not related to the GPS subsystem usually as semi-transparent text across the center of the chart [F1] window. For example, if the Num Lock is on, this condition is indicated in semi-transparent letters across the middle of the chart [F1] window. (Num Lock on changes the meaning of some keys, and needs to be turned off)

16.1 Audible Alarms

There are three types of audible alarms, each with its own distinctive sound.

- WARNINGS - This type of audible alarm is described in its own section, below.
    - Raven Pre-Programmed: Delay=default 5 secs, Duration=default 5 secs
    - Cancel: Space Bar
    - Enabled: Yes, by default

    The purpose of the delay prior to sounding the warning is to prevent an audible warning when a momentary visual alarm occurs.

- RTCM – Occurs when an RTCM message from a Coast Guard beacon first arrives.
    - Raven Pre-Programmed: Delay=none, Duration=default 5 seconds
    - Cancel: Space Bar and F3
    - Enabled: Yes, by default

- TURN – Sounds alarm at pre-programmed time prior to turn.
    - Raven Pre-Programmed: Delay=none, Duration=default 5 seconds, Turns greater than angle=default 0 degrees
    - Cancel: Space Bar
    - Enabled: No, by default

16.2 Visual and Audible Alarms

A visual alarm is indicated by the system ‘short’ status in the upper right corner of the chart [F1] window, as previously discussed. If your system is configured for it, the audible WARNING alarm accompanies a visual alarm.

- When a visual alarm first occurs, the system waits for a pre-programmed number of seconds before turning on the audio alarm. A typical pre-programmed delay value is 5 seconds.
- If the visual alarm goes away before the delay is elapsed, the audible alarm does not occur.
- If the visual alarm exists after the delay has elapsed, audio is produced for a pre-programming duration. A typical pre-programmed duration is 5 seconds.
- If the audio expires or is cancelled, it is not activated again until the visual alarm condition terminates and then another instance of a visual alarm occurs.

- If an existing visual alarm changes type, it does not cause a new audio alarm. For example, if the alarm changes from “Position data not available” to “High GDOP”, this does not generate a new audible alarm. To get a new audible alarm the system has to go to a ‘no alarm’ condition first.

16.3 GPS Operational Status Warnings

GPS status messages are displayed at the top right of the chart [F1] window and top left of the Operational Status Window [F3]. The chart [F1] window shows a short form message and the Operational Status [F3] screen shows a more detailed message. Whenever you see a warning message on the chart [F1] window, select the Operational Status [F3] screen to see the detailed message.

There is a different set of warnings depending on whether you are using a Raven GPS receiver or the Ship’s GPS receiver (inside the AIS transponder). In Wheelhouse II, under Menu | Chart Setup | Use Ship’s GPS, you can select to use the position provided by the GPS receiver inside the ship’s AIS transponder.

16.4 Raven GPS Receiver Warnings

When using a Raven GPS receiver, the chart [F1] window upper right indicates DGPS or WARNING. The Operational Status Window [F3] indicates one of the messages listed below.

DGPS
“DGPS using x satellites”

NOCOM
“No response from DGPS unit”

NOPOS or NOFIX
“Position data not available”

WARNING
“COM1 not initialized”
“Beacon ID being received is not in approved list”
“The GPS engine is not in differential mode”
“High HACC and DOP”
“High HDOP and GDOP”
“High HDOP”
“High GDOP”
“High horizontal accuracy error”
“Too few satellites to determine accuracy”
“Beacon health exceeds 5: unmonitored or unhealthy”
“AC Power is off” (This message intentionally does not appear for Wireless Invicta systems.)
"GPS receiver antenna fault"
"GPS receiver low power"
"GPS receiver has recently powered up"
"GPS receiver flash memory fault"
"GPS receiver RAM memory fault"
"GPS receiver old magnetic model"

16.5 Using Ship's GPS Receiver Warnings

In the Chart Setup [F5] screen, when the **Using Ship's GPS** option is selected, the operational status shown at the top of the data panel on the chart [F1] window can indicate any of the status information shown in the table below.

Table 8: Warning Messages Only Associated with 'Using Ship's GPS' Option

Chart [F1] Window Data Panel Status Box	Operational Status Window [F3] Operational Status Box	Comments
SHIP DGPS Accuracy Unknown	Ship's DGPS: Accuracy Unknown	NA
SHIP GPS Accuracy Unknown	Ship's GPS: Accuracy Unknown	NA
NO SHIP GPS Accuracy Unknown	Local vessel data not being received	This message occurs when the Ship's GPS is not operational or has not acquired enough satellites for navigation.

16.6 Warnings Regardless of Position Source

The following Operational Status Window [F3] status messages can appear when using a Raven GPS receiver or when using the Ship's GPS receiver:

Table 9: Warnings Associated with Any Type of Position Source

Chart [F1] Window Data Panel Status Box	Operational Status Window [F3] Operational Status Box	Comments
No Data	SendClient Not Responding	No message has been received from SendClient in over 2.5 seconds.
No GPS	Local vessel data not being received	No local vessel record has been received from SendClient in more than 2.5 seconds.
BPI Battery	The BPI (Bluetooth Pilot Interface) battery is low.	Press the Space Bar to clear this warning.

16.7 Operational Status Table

The GPS operational status short description is shown at the top of the data panel in the upper right corner of the chart [F1] window.

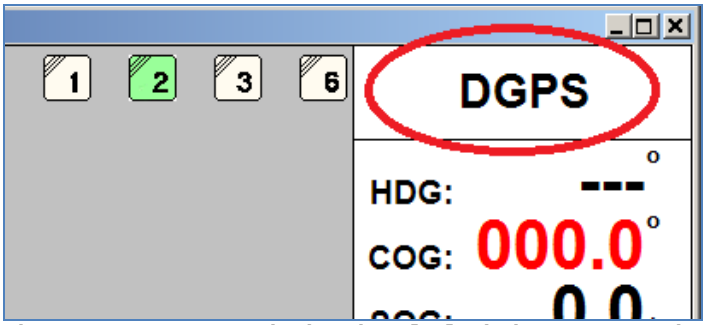


Figure 174: Status Box in the Chart [F1] Window Data Panel

There is a long description of the GPS operational status on the Operational Status Window [F3], upper left corner.

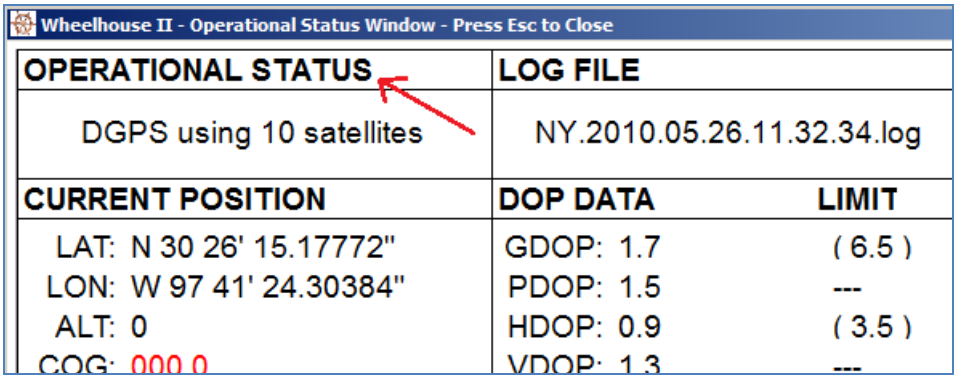


Figure 175: Operational Status Box in Operational Status Window

Below is a table showing operational statuses regardless of position source and what to do when the status occurs.

Table 10: Operational Statuses Associated with Any Type of Position Source

Position Source	Chart [F1] Window Data Panel Status Box	Operational Status Window [F3] Operational Status Box	Action
Any	No Data	SendClient Not Responding	Follow instructions for this message in next section: **How to Handle a Warning**
Any	No GPS	Local vessel data not being received	Follow instructions for this message in next section: **How to Handle a Warning**
Any	BPI Battery	The BPI (Bluetooth Pilot Interface) battery is low	Follow instructions for this message in next section: **How to Handle a Warning**

Below is a table showing operational statuses for a given position source and what to do when the status occurs.

Table 11: Operational Statuses Associated with a Specific Type of Position Source

Position Source	Chart [F1] Window Data Panel Status Box	Operational Status Window [F3] Operational Status Box	Action
Pilot System GPS or Raven GPS	DGPS	DGPS using x satellites	None Needed
Pilot System GPS or Raven GPS	NO COM	No response from DGPS unit	Follow instructions for this message in next section: **How to Handle a Warning**
Pilot System GPS or Raven GPS	NO POS	Position data not available	Follow instructions for this message in next section: **How to Handle a Warning**
Pilot System GPS or Raven GPS	WARNING	"COM1 not initialized" "Beacon ID being received is not in approved list" "The GPS engine is not in differential mode" "High HACC and DOP" "High HDOP and GDOP" "High HDOP" "High GDOP" "High horizontal accuracy error" "Too few satellites to determine accuracy" "Beacon health exceeds 5: unmonitored or unhealthy" "AC Power is off" (This message intentionally does not appear for Wireless Invicta systems.) "GPS receiver antenna fault" "GPS receiver low power" "GPS receiver has recently powered up" "GPS receiver flash memory fault" "GPS receiver RAM memory fault" "GPS receiver old magnetic model"	Follow instructions for this message in next section: **How to Handle a Warning**
AIS GPS	SHIP DGPS	Ship's DGPS: Accuracy Unknown	None Needed
AIS GPS	SHIP GPS	Ship's GPS: Accuracy Unknown	None Needed
AIS GPS	NO SHIP GPS	Local vessel data not being received	Follow instructions for this message in next section: **How to Handle a Warning**

16.8 How to Handle a Warning

The following table provides information about how to handle warnings displayed by the Wheelhouse II program.

Table 12: Warning Response Information

Warning	How to Handle
COM x not initialized	The COM x hardware has probably failed or the COM port has become mis-configured. Call for support.
Beacon ID being received is not in approved list	A geographically remote beacon with a frequency in the beacon receiver's scan list is stronger than any local beacon. The remote beacon is identified by the fact that its ID is not in the approved list pre-configured into the Wheelhouse data set for your operating area. (Some systems may be configured without an approved list.) Position accuracy cannot be guaranteed, but may still be useful. The condition clears when you start receiving from a beacon in your area.
Position data not available	The DGPS unit cannot compute a position. The system may be in the process of acquiring satellites or the system may be experiencing RFI if it has 5 or more satellites. (See satellite map in Operational Status Window [F3].) If the condition persists, check antenna connections at the antenna and at the GPS receiver. Make sure the antenna has a good view of the sky. If none of these steps resolves the problem, call for support.
Too Few Satellites to Determine Accuracy	The system requires at least 5 used satellites to determine accuracy. Any fewer than 5 satellites with generate this warning. Try moving the antenna if the condition persists.
No response from DGPS unit	The Raven laptop software is not getting a response from the DGPS unit. Check to see that the power light on the DGPS unit is on. For hard-wired DGPS units, check that the data cable from the DGPS unit to the computer is connected. If the problem persists, call for support.
The GPS engine is not in differential mode	The system is not receiving beacon corrections. Refer to the Beacon Receiver Data box in the Operational Status Window [F3] for information regarding the beacon receiver. If the problem persists, call for support.
High HACC and DOP	Position accuracy is not reliable. The system is likely experiencing multi-path or RFI. This condition is very rare. If the antenna is in an optimal location, wait for the condition to clear. Otherwise, move the antenna to an optimal location. If the problem persists, call for support.
High HDOP and GDOP	Position accuracy is not reliable due to poor satellite geometry. If the antenna is in an optimal location, wait for the condition to clear. If the antenna is not in an optimal location, moving it might allow acquisition of more satellites, removing the DOP problem. If the problem persists, call for support.

Table continued on next page.

Warning Response Information (continued)

High HDOP	Position accuracy is not reliable due to poor satellite geometry. . If the antenna is in an optimal location, wait for the condition to clear. If the antenna is not in an optimal location, moving it might allow acquisition of more satellites, removing the DOP problem. If the problem persists, call for support.
AC Power is off	Check AC Power outlet, power cords, and data cables. The reason for checking the data cables is that power and data are both in the same cable for many systems.
GPS receiver antenna fault	Check antenna, antenna connections, and antenna cable.
GPS receiver low power	Check power connections. If the problem persists, call for support.
GPS receiver flash memory fault	Call for support.
GPS receiver RAM memory fault	Call for support.
GPS receiver has recently powered up	This usually only happens after first applying power to the system. If it happens at other times, power is being interrupted to your receiver. Try using another AC outlet to narrow down the problem. If the problem disappears with another AC outlet, it was likely the first AC outlet that was the problem. If the problem follows the system, check the power adapter cable and connections. If these steps do not correct the problem call for support.
GPS receiver old magnetic model	Call for support.
Sendclient Not Responding	The charting program gets its data from Sendclient. This warning message indicates that no message has been received from SendClient in over 2.5 seconds. Try restarting the laptop. If this does not work, call for support.
Local vessel data not being received	First check the position source on the Trip and Own Vessel Information [F6] screen. If the position source is AIS, you could get this message if there is no AIS data, even though you do have a Pilot System/Raven GPS position. Select the Automatic position source to remove any doubt. Sometimes The charting program is not getting data from the Pilot System/Raven GPS or from the AIS GPS. Check these 2 position sources by checking that the BPI or WPI is properly connected to the ship's AIS Pilot Plug Interface and that the Pilot System/Raven GPS receiver is properly set up. If all else fails, try restarting the laptop. If this does not work, call for support.
The BPI (Bluetooth Pilot Interface) battery is low	This message appears when the BPI battery falls to 10 percent or less. If this message appears you can press F6 to see the BPI charge state. Connect the BPI mini-UDB cable to the BPI, allowing it to charge. The USB cable can be plugged into the laptop or to a special AC adapter included with the BPI from Raven.

17 RAIM In-Use Flag

The AIS position report includes a RAIM Flag, indicating if RAIM (Receiver Autonomous Integrity Monitoring) is in use by the GPS receiver inside the AIS transponder. If RAIM is in use and if 'Use Ship's GPS' has been selected, Wheelhouse II displays 'RAIM in Use' in the upper right of the chart [F1] window. The presence of the RAIM flag gives no indication as to the accuracy of the AIS GPS receiver.

More on RAIM

RAIM can be used to compute the following integrity value:

The Horizontal Integrity Limit (HIL) or Horizontal Protection Limit (HPL) is a figure which represents the radius of a circle which is centered on the GPS position solution and is guaranteed to contain the true position of the receiver to within the specifications of the RAIM scheme.

The HPL is calculated as a function of the RAIM threshold and the satellite geometry at the time of the measurements. The HPL is compared with the Horizontal Alarm Limit (HAL) to determine if RAIM is available.

The Raven system does not apply any RAIM-associated algorithms because we are reluctant to claim a specific accuracy boundary for liability reasons. The Raven system only displays whether or not RAIM is in use by the AIS Transponder GPS.

18 Common GPS Operational Statuses

18.1 DGPS Operation

The WHII chart [F1] window indicates DGPS using a pilot system/Raven GPS receiver in differential mode.

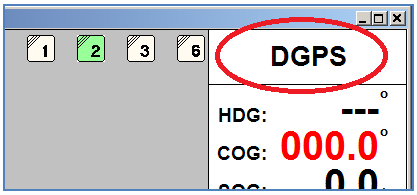


Figure 176: Status Shown as DGPS

The corresponding WHII Operational Status Window [F3] shows DGPS operational parameters.

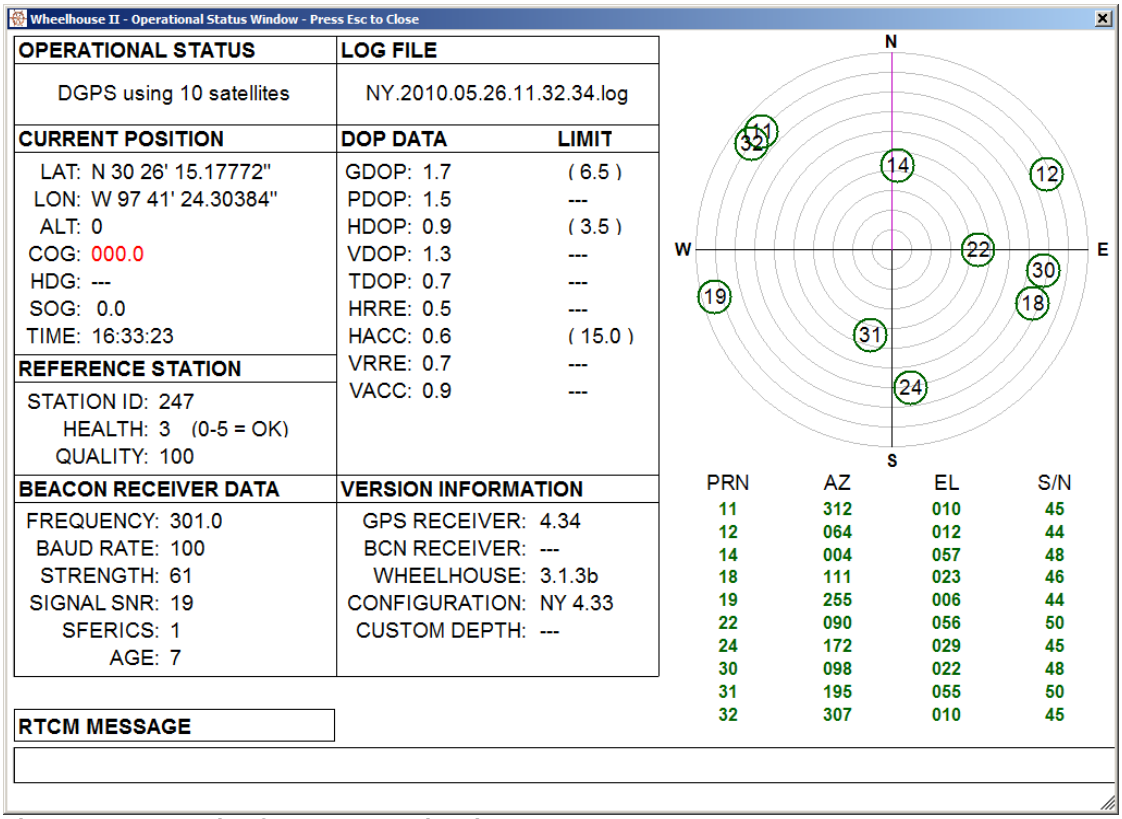


Figure 177: Example of DGPS Operational Parameters

If the status lights on the Raven GPS receiver are visible, they may be interpreted as follows:

- The green LED on the Raven GPS receiver flashes once for each satellite it is tracking.
- The yellow LED is on solid to indicate the Raven receiver is receiving differential corrections.

18.2 Antenna Fault

The WHII chart [F1] window indicates WARNING when there is an antenna fault.

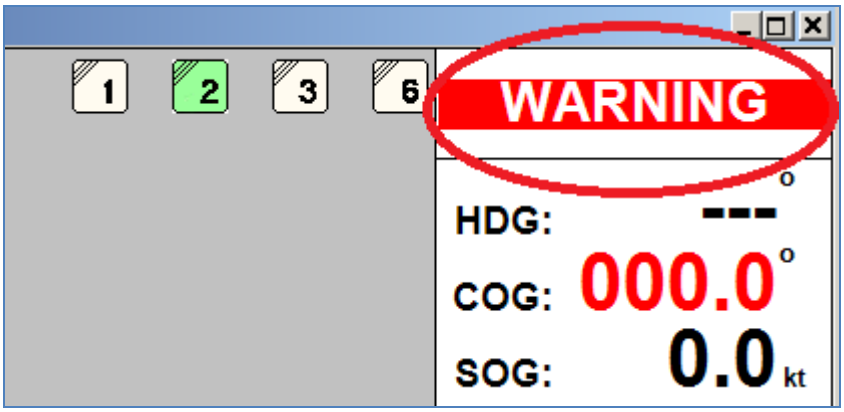


Figure 178: Status Warning

The graphic below is of the WHII Operational Status Window [F3] showing an antenna fault.

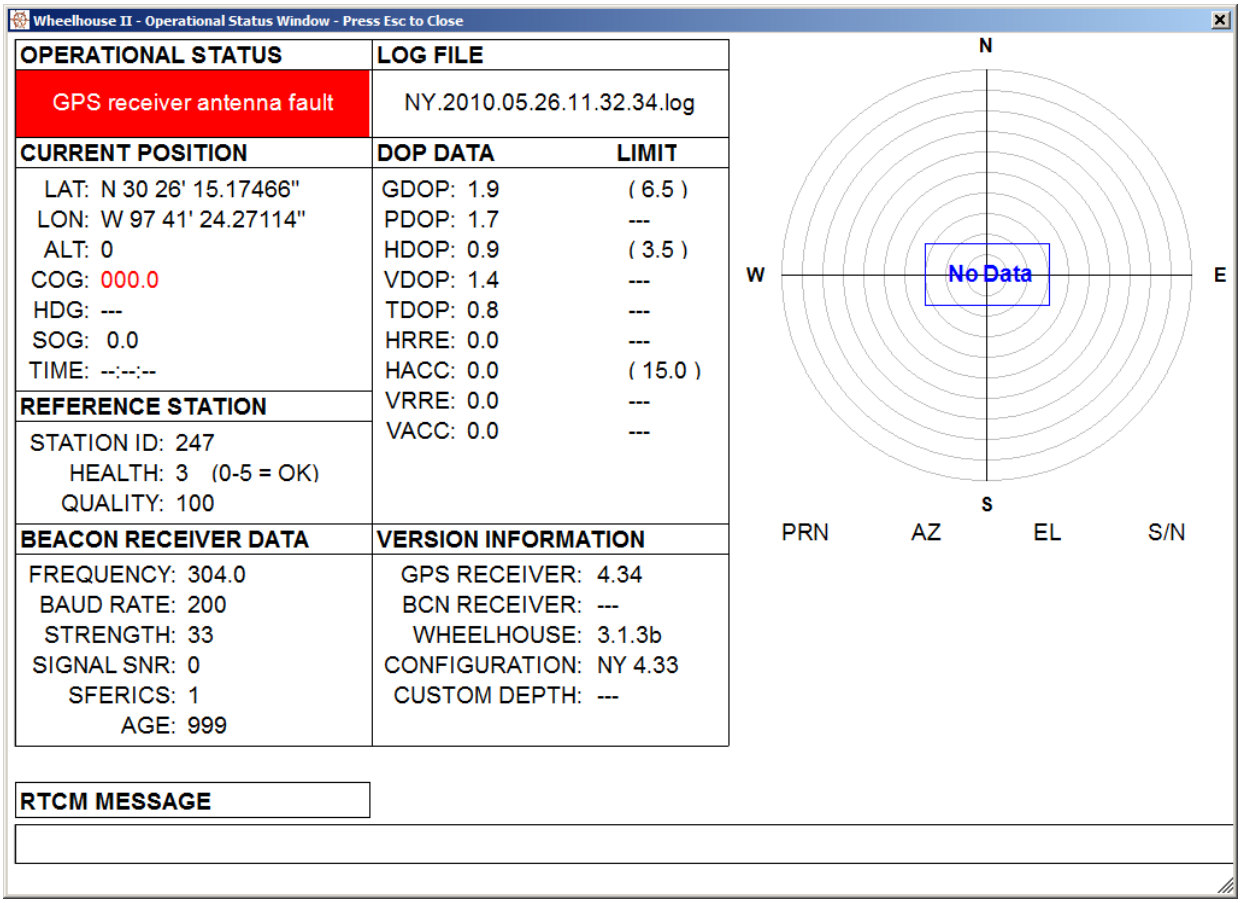


Figure 179: Example Antenna Fault

If the status lights on the Raven GPS receiver are visible, they may be interpreted as follows:

- The green LED on the Raven GPS receiver is dark.
- The yellow LED is flashing rapidly.

18.3 GPS Receiver Power Loss - Raven GPS Position Source

If the Raven GPS receiver loses power, its red LED is dark. On the Trip and Own Vessel Information [F6] screen, if the position source is 'Raven GPS' (below left), the chart [F1] window status displays Warning (below right).

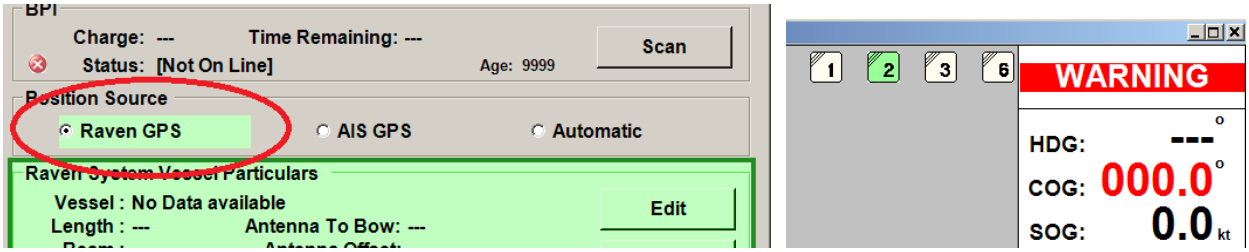


Figure 180: GPS Receiver Power Loss Warning when Position Source is 'Raven GPS'

The corresponding Operational Status Window [F3] shows 'No response from the DGPS unit'.

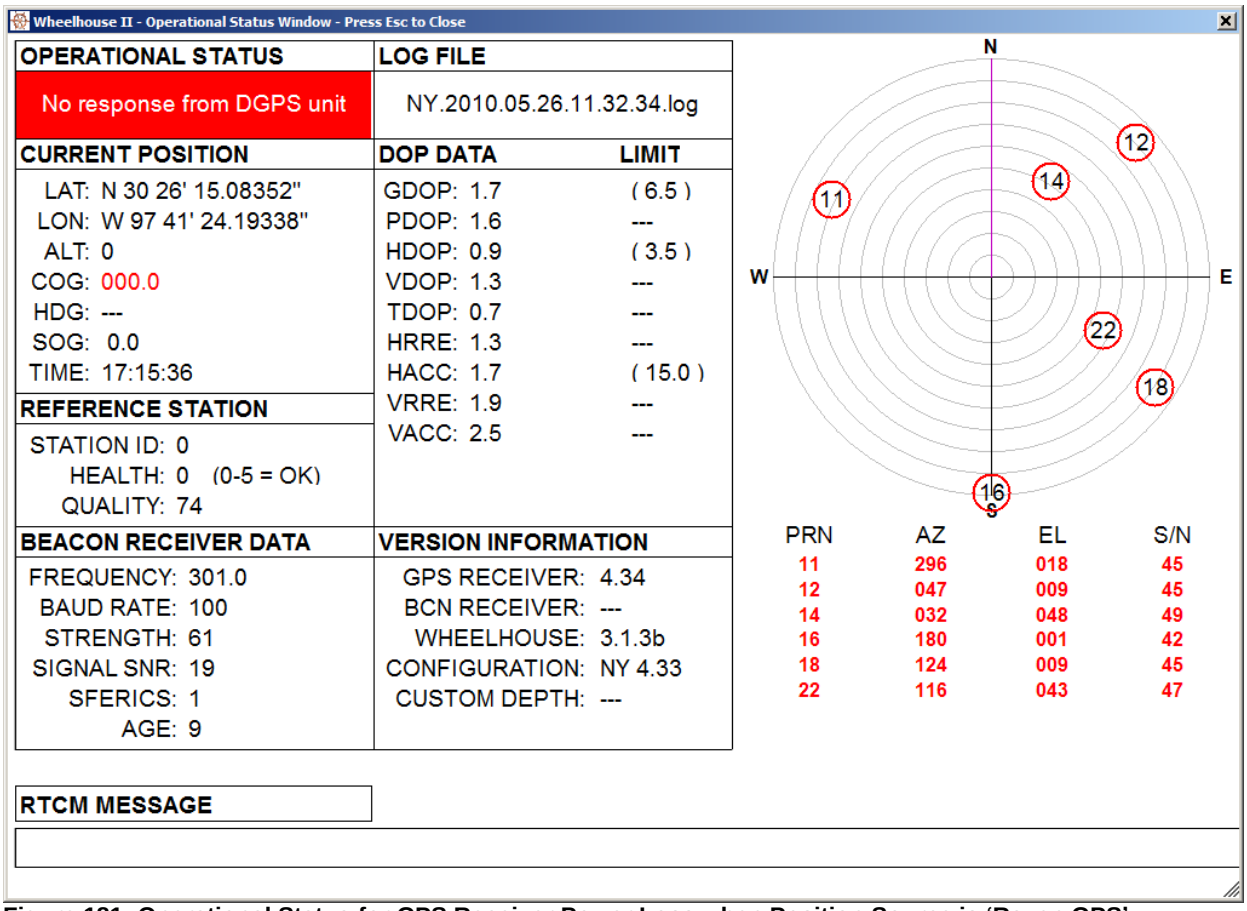


Figure 181: Operational Status for GPS Receiver Power Loss when Position Source is 'Raven GPS'

When power is restored to the GPS receiver, the chart window status and Operational Status Window [F3] warnings shown below persist for 1 minute.

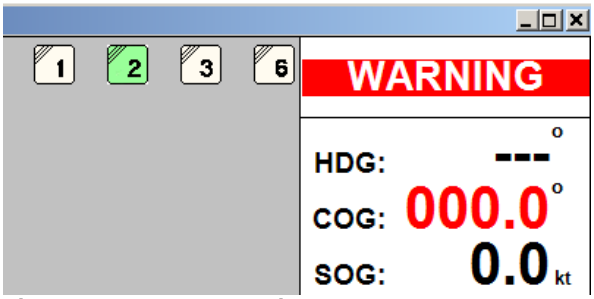


Figure 182: Status Warning

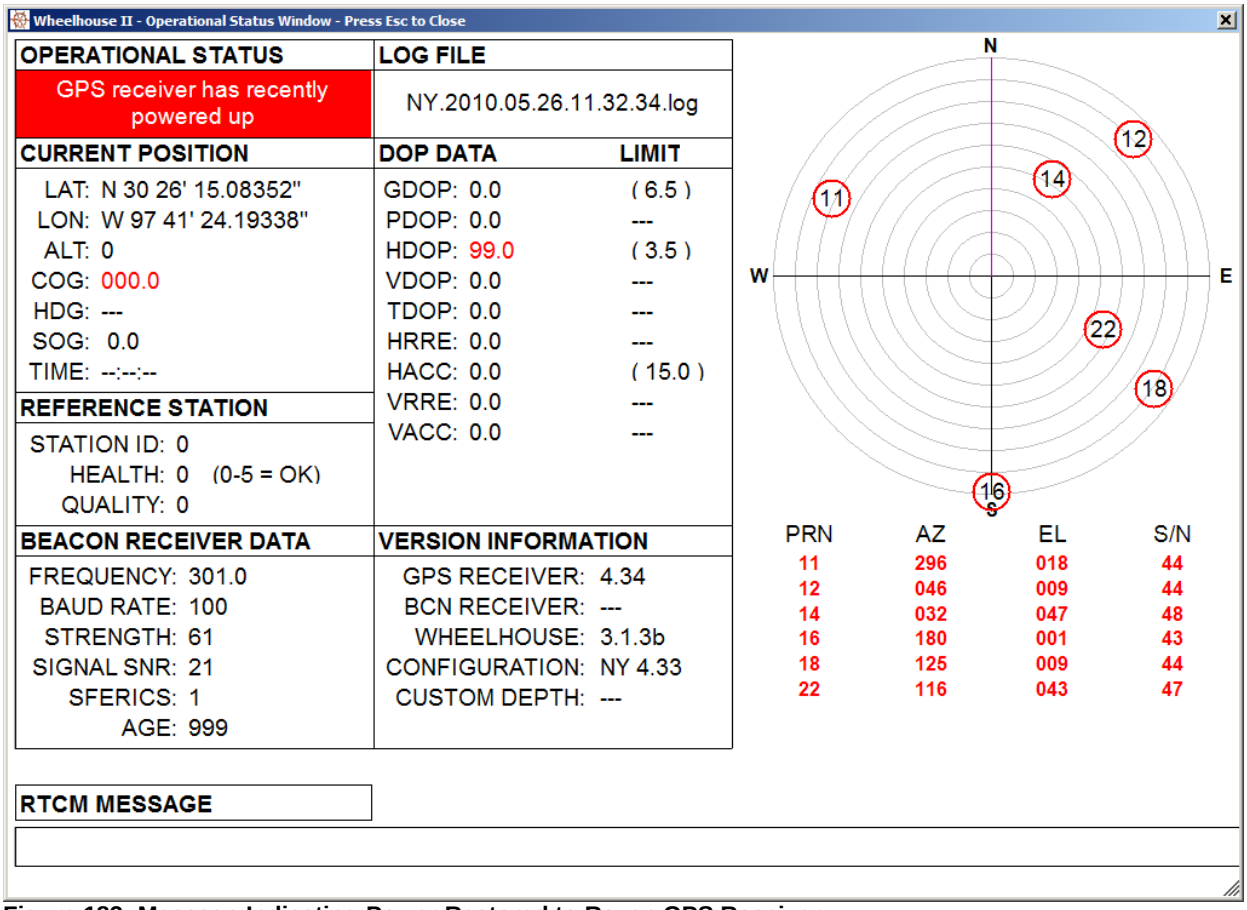


Figure 183: Message Indicating Power Restored to Raven GPS Receiver

18.4 GPS Receiver Power Loss - Automatic Position Source

If the Raven GPS receiver loses power, its red LED is dark. On the Trip and Own Vessel Information [F6] screen, if the position source is set to 'Automatic' (below left) when the Raven GPS Receiver power is lost, the position source automatically switches to the AIS GPS within 3 seconds. If there is no AIS position source, the chart [F1] window status displays a warning message (below right).

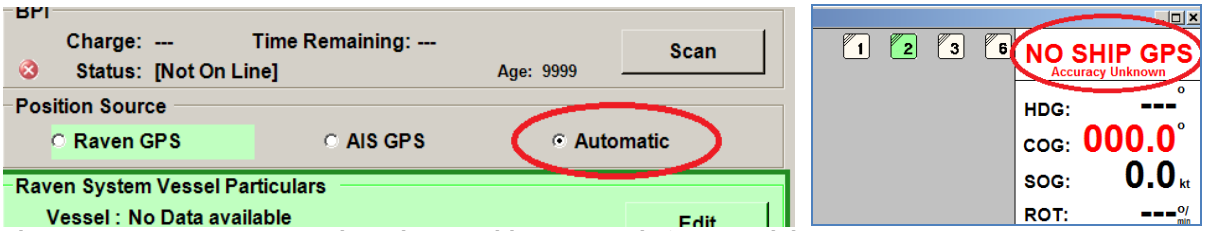


Figure 184: Power Loss Warning when Position Source is 'Automatic'

The corresponding Operational Status Window [F3] message is shown below. This message persists for 1 minute after power is returned to the receiver, giving the receiver a chance to stabilize before WHII uses the position.

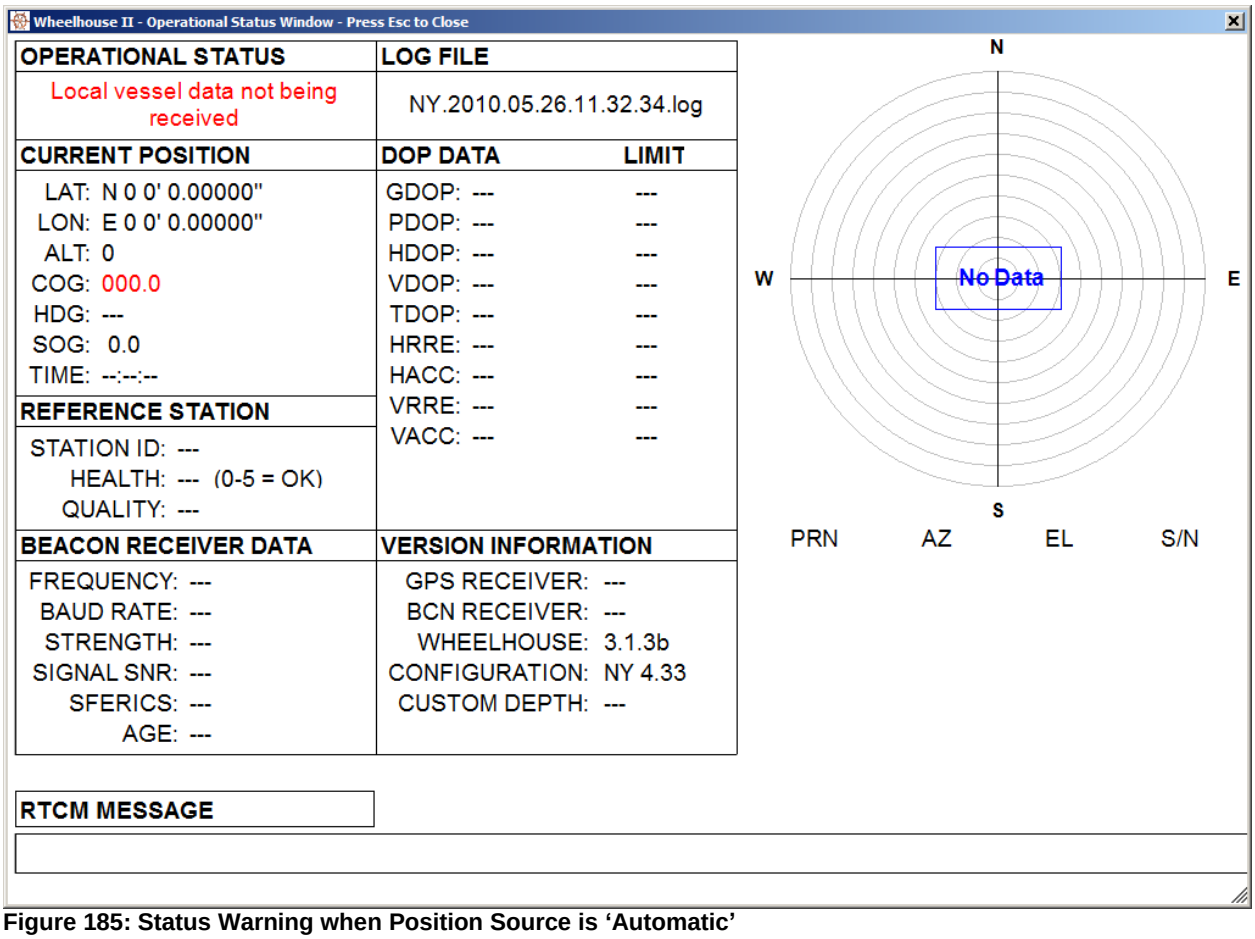


Figure 185: Status Warning when Position Source is 'Automatic'

19 System Event Log

The Wheelhouse II program tracks events of interest within the system. System events include things like
Setting alarms, clearing alarms, messages displayed to the pilot and the results of any internal error checking. By default, the system event dialog is assigned the default hot key of ALT+E. (Press H to see list of hot key assignments.) The event log only stores the last 100 system event messages.

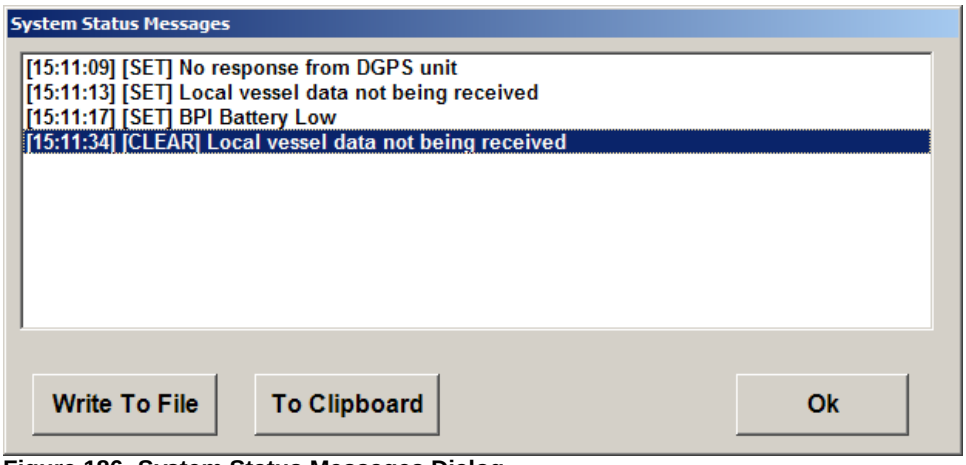


Figure 186: System Status Messages Dialog

Write To File
Click this button to write the entire system event log to the file, RavenSystemEvents.log" in the same directory as Wh2.exe.

To Clipboard
This button copies the entire system event log onto the clipboard. Pilots can then paste the event log into an e-mail or Word document, using the paste function of Windows (CTRL+V by default).

20 Disclaimers

20.1 Wheelhouse Warnings

The system displays a warning when measured parameters exceed pre-determined thresholds. If Wheelhouse is not displaying a warning, it does not guarantee that the displayed position is accurate. Conversely, a warning does not guarantee that the position is inaccurate.

20.2 Data Set Usage

Raven produces the Raven Marine Navigation Aid System, which uses differential GPS (DGPS) and highly accurate map data. These systems show the waterway channel centerline and channel edges along with various navigation aids. Raven normally receives this data from the user, such as a ship pilot organization, which in turn receives it from the controlling organizations such as the US Army Corps of Engineers and the US Coast Guard. Reception of the data through the user is an important part of the Raven system as it insures that the users have control over what is displayed by Raven software. It also places the responsibility for the data with the user, the only entity qualified to manage it.

Raven is not liable for the accuracy or usability of the data displayed in the navigation system, since that data is provided and controlled by the user. Raven's function with respect to the data is limited to editing it under direction. This effort is similar to a secretary writing a letter for a supervisor.

For evaluation purposes, Raven may sometimes collect data using raster charts, which may not have come directly from the user, and/or is not surveyed data. Users accept full responsibility for this type of data.

Users of the Raven Marine Navigation system understand that the data is not provided with any guarantee of accuracy or warranty of usability. Raven provides the data at the request of the user and cannot be held liable for the damages that might result.

21 GPS-Related Definitions

GPS - GPS is a satellite-based global navigation system created and operated by the United States Department of Defense (DOD). Originally intended solely to enhance military defense capabilities, GPS capabilities have expanded to provide highly accurate position and timing information for many civilian applications.
An in-depth study of GPS is required to fully understand it, but not to see how it works or appreciate what it can do. Twenty four satellites in six orbital paths circle the earth twice each day at an inclination angle of approximately 55 degrees to the equator. This constellation of satellites continuously transmits coded positional and timing information at high frequencies in the 1.5 Gigahertz range. GPS receivers with antennas located in a position to clearly view the satellites pick up these signals and use the coded information to calculate a position in an earth coordinate system.
GPS is the navigation system of choice for today and many years to come. While GPS is clearly the most accurate worldwide, all-weather, navigation system yet developed, it still can exhibit significant errors. GPS receivers determine position by calculating the time it takes for the radio signals transmitted from each satellite to reach earth based on "Distance = Rate x Time". Radio waves travel at the speed of light (Rate). Time is determined using an ingenious code-matching technique within the GPS receiver. With time determined, and the fact that the satellite's position is reported in each coded navigation message, by using a little trigonometry the receiver can determine its location on earth.
Position accuracy depends on the receiver's ability to accurately calculate the time it takes for each satellite signal to travel to earth. This is where the problem lies. There are primarily four sources of errors which can affect the receiver's calculation.

These errors consist of:

1) Ionosphere and troposphere delays on the radio signal
2) Multi-path interference and Radio Frequency Interference (RFI)
3) Receiver clock biases
4) Orbital satellite (ephemeris) position errors

NOTE

Selective Availability (SA) used to be a major source of error, and was cancelled by differential corrections. Since the government turned off SA, this is no longer a source of error. Professional users still need differential correction, which allows the position to be sub-meter as opposed to about 10 meters of error.

DGPS - DGPS works by placing a high-performance GPS receiver (reference station) at a known location. Since the receiver knows its exact location, it can determine the errors in the satellite signals. It does this by measuring the ranges to each satellite using the signals received and comparing these measured ranges to the actual ranges calculated from its known position. The difference between the measured and calculated range is the total error. The error data for each tracked satellite is formatted into a correction message and transmitted to GPS users. The correction message format follows the standard established by the Radio Technical

Commission for Maritime Services, Special Committee 104 (RTCM-SC104). These differential corrections are then applied to the GPS calculations, thus removing most of the satellite signal error and improving accuracy. The level of accuracy obtained is a function of the GPS receiver. Sophisticated receivers like the Raven Invicta 210 series can achieve accuracy on the order of 1 meter or less.

DGPS Unit - The Raven Marine Navigation System may use more than one type of DGPS (Differential Global Positioning System) unit. The DGPS unit must be a Raven Invicta, or possibly some other future Raven DGPS unit. Dual antenna heading systems use 2 Raven receivers.

Multi-Path Interference - Interference of the GPS signal often caused by the bouncing or reflecting of the signals from surrounding objects. Its effect is similar to "ghosting" on a television screen. It occurs when some of the signals arriving at an antenna have followed an indirect path. A signal taking the longer path gives a larger distance measurement to the satellite. This means that it also gives an inaccurate carrier phase value. It can be the most serious error to affect GPS positioning. While some multi-path conditions cause errors of a few centimeters, others cause errors of a few meters. Bad multi-path conditions can cause a short static session to fail completely. (A ‘static’ session is one where the antenna does not move while a program plots the position. Theoretically, the position is always the same spot. It is easy to see large position errors in a static test.)

Radio Frequency Interference (RFI) - RFI is interference from devices, including all types of radio transmitters, which emit electro-magnetic waves in the radio frequency range.

Raven HACC Detects Multi-Path and RFI - Multi-Path and RFI can be detected by the HACC value shown on the Operational Status Window [F3]. If the HACC exceeds its threshold value, it generates a warning. This warning is a special feature of the Raven system. Other systems would typically not report this type of position integrity problem.

22 Wheelhouse II Configuration Files

Wheelhouse II uses the files indicated below for data and configuration storage. ‘nnn’ indicates the pilot group abbreviation, such as VIR, HOU, NY, NE, PB, NOC, ABP, etc.

22.1 Common Folder

This folder is shared by the primary software and the beta software. This way, a pilot using the beta system does not lose info in the primary system, such as adding a ship to the ship’s data base.

c:\nnnWh2Common

Example: c:\HouWh2Common

1) S57DisplayModes.xml - view buttons, factory default
2) user_S57DisplayModes.xml - view buttons, user default
3) KeyBindings.xml - hot key assignments (press H in WH2 to see these)
4) vessels.xml - vessels database
5) userAnnotations.xml - user annotations, including mile markers
6) pilots.xml - pilots database
7) destinations.xml - destinations database
8) systemColors.xml - system colors (colors of non-S57 objects, such as remote vessels)
9) userRoutes.xml - user-defined routes
10) CompatibilityModes.xml - used for log file replay for log files created prior to WHII with view buttons (not needed for master set, but okay if included)

22.2 Main Program Folder

c:\nnn

Example: c:\HOU

wh2.sendclient.ini - Chart Setup [F5] screen options

22.3 S57 Charts Folder

c:\nnn\wh2data\s57

Example: c:\HOU\Wh2data\S57

PointLabels.xml - contains S57 navigation aid labels, including font size and color

22.4 User Default Configurations Folder

c:\nnn\UserGeneratedFiles

Example: c:\HOU\UserGeneratedFiles

Contains files with default settings, such as S57SisplayModes.xml, vessels.xml, destinations.xml, etc.

23 Sharing AIS Data with Other Programs

See the SEND/AIS Operation Manual, Rev L or later.

Appendix A - Enhanced Features

ETA Waypoint Selection Screen

Changes:

1. Remove the ability to sort all columns by clicking on the column title.

2. Expand all columns to the width of the widest entry or the width of the column title, whichever is larger.

3. Automatically sort by distance to the ETA waypoint along the route. Waypoints behind the vessel are indicated as dashes, as shown below.

This behavior requires WHII factory option, 'SPECIALETACOLUMNS=True'.

'Ship's GPS' Replaced with 'AIS GPS'

The term, 'Ship's GPS', was replaced with 'AIS GPS' on the F1 and F3 screens.

'Range' Instead of 'Next'

Changed 'Next' to 'Range' on the F1 data panel. Range names, not waypoint names are shown here.

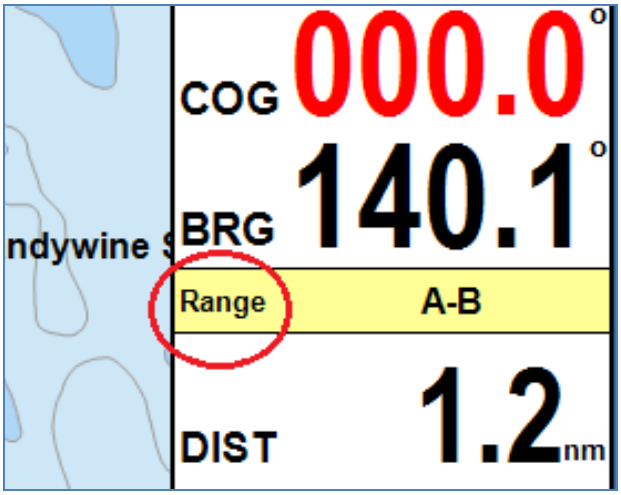


Figure 187: Data Panel Update

More Visible Own Vessel Circle

With the previous version of Wheelhouse II, when own vessel could not be drawn as scaled vessel, it was drawn as a dot within a black circle, which could be hard to see (as shown below).

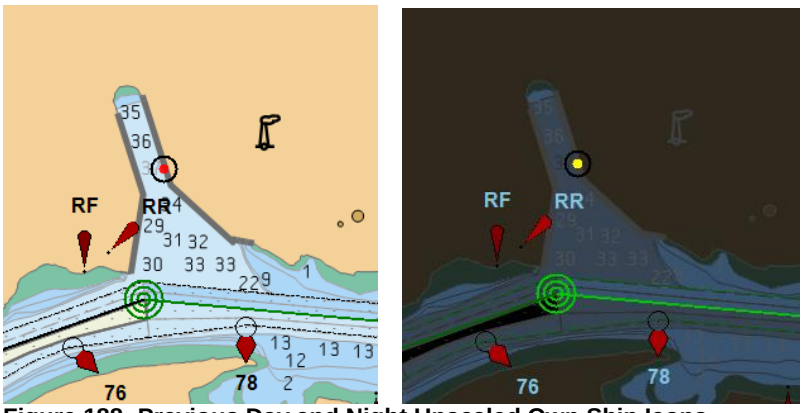


Figure 188: Previous Day and Night Unscaled Own Ship Icons

With this release of Wheelhouse II, the Own Ship dot is much larger to increase visibility.

Figure 189: Current Version Day and Night Unscaled Own Ship Icons

The day and night colors are configured in the Edit Wheelhouse Colors dialog. Open this dialog at 'F5 | System Options | System Colors'.

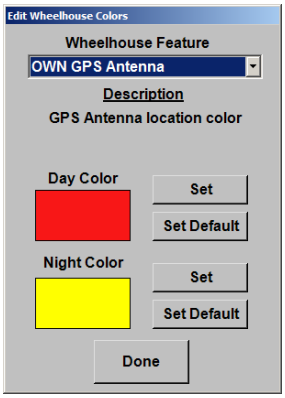


Figure 190: Edit Wheelhouse Colors Dialog

COG Vector Value Font Size Increased

The COG vector value font size has been changed from Arial 10 to Arial 14 for better visibility. In the graphics below, the CPG vector value is the red number ‘5’ at the end of the red dotted COG vector line.

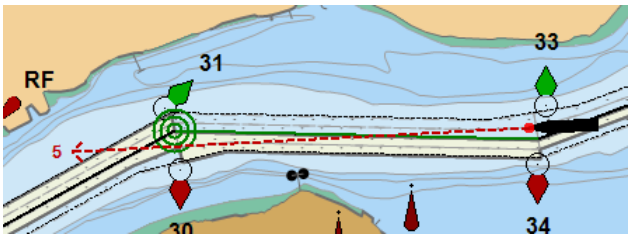


Figure 191: Previous COG Vector Value Size Arial 10

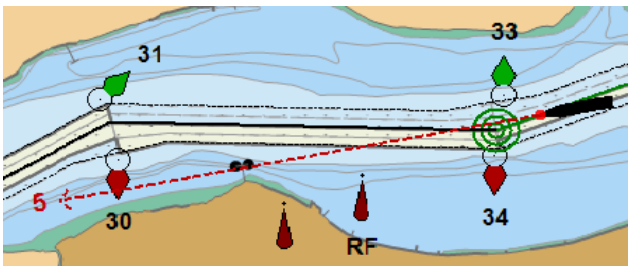


Figure 192: Current Version COG Vector Value Size Arial 14

Added Heading Vector to Unscaled Vessel

Previously, if the vessel was unscaled, the heading vector was not shown. With this version of Wheelhouse II, the blue heading vector is added to an unscaled vessel.

The graphic below is a current version rendering of an unscaled vessel that has a valid heading shown by the blue heading vector. However, notice that the red dashed COG vector still does not have an arrowhead and there is no COG time-to-point value. This is because the location of the ship’s bow is not known in the unscaled condition.

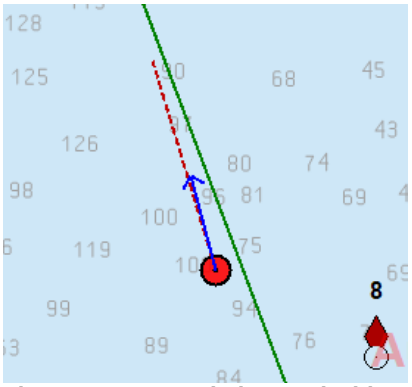


Figure 193: Unscaled Vessel with Heading Vector

Added F1 Distance to 2 Decimals Option

Added Distance to 2 decimal places on the F1 data panel. Unlike Distance to 3 decimal places, which switches to feet at 0.1 nm/sm, Distance to 2 decimal places switches to feet at 1.0 nm/sm. The checkboxes on the F5 screen are mutually exclusive and cannot both be checked at the same time. If neither is checked, then the distance is to one decimal place and the value switches to feet at 1.0 nm/sm.

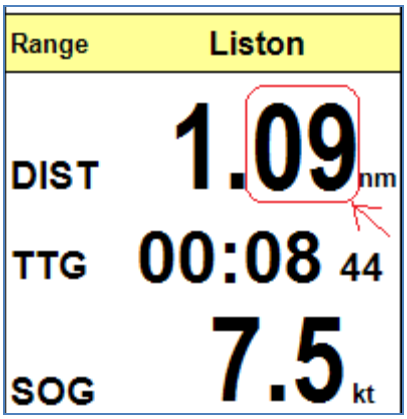


Figure 194: Distance Value Shown with 2 Decimal Places

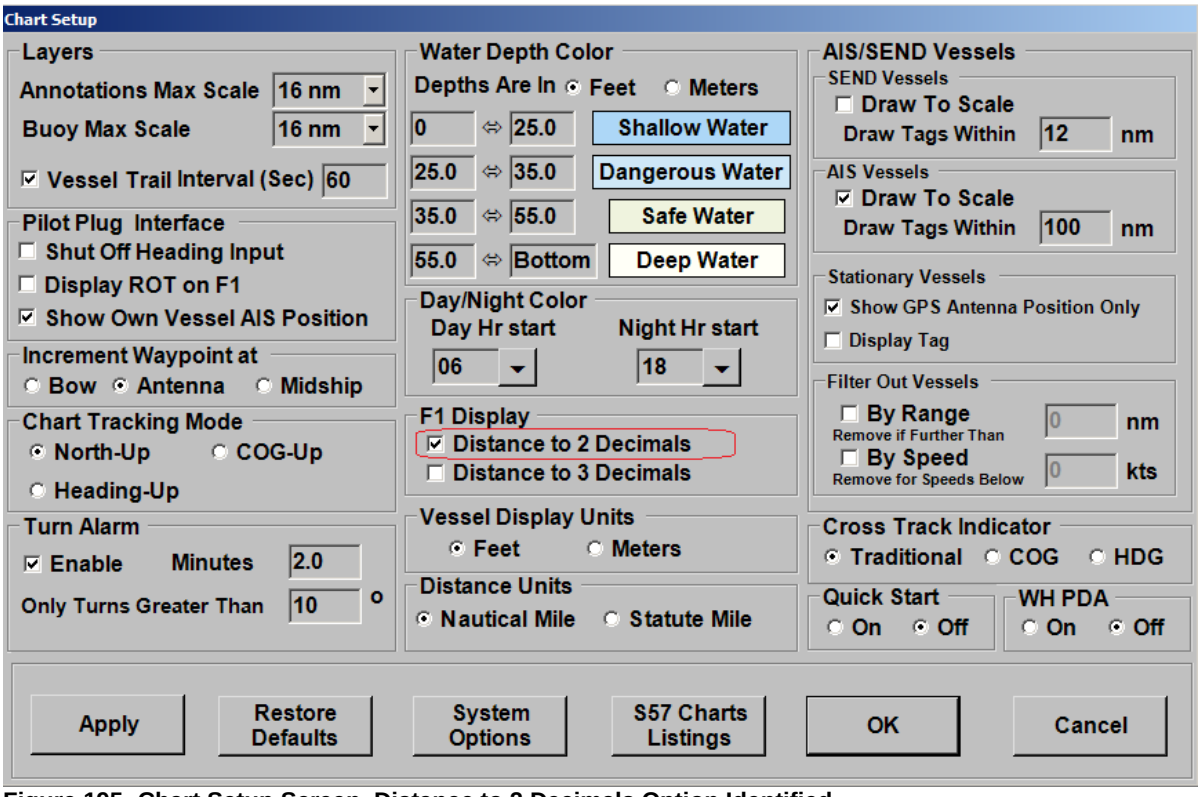


Figure 195: Chart Setup Screen, Distance to 2 Decimals Option Identified

Updated Help [F12] Screen

Two new items were listed to the Help screen: H – Hot Keys and F11 – Main Menu.

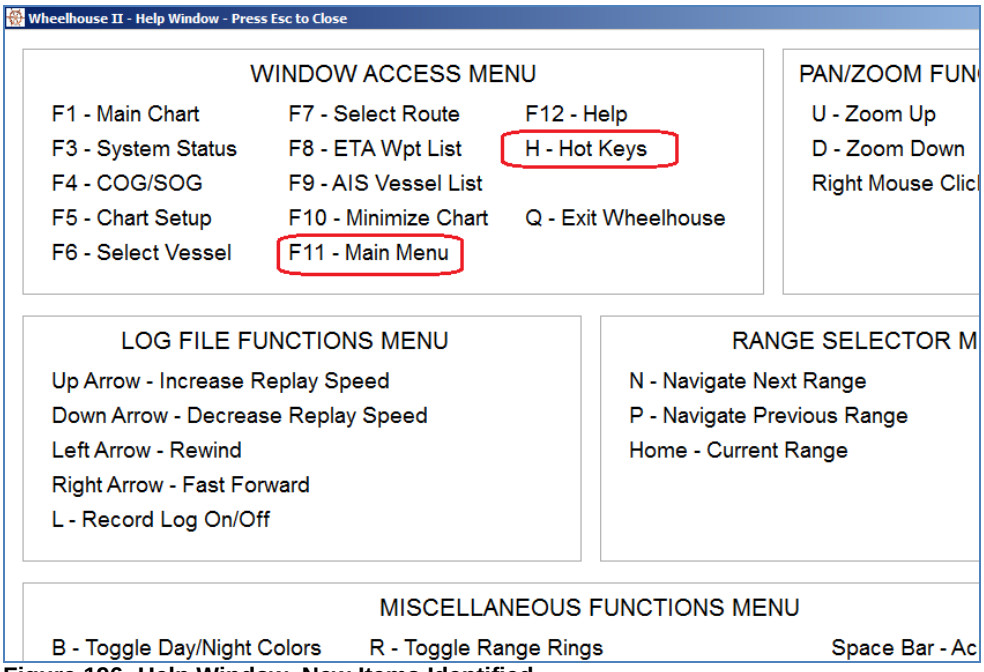


Figure 196: Help Window, New Items Identified

Changed BPI Scan Screen

From the Trip and Own Vessel Information [F6] screen, the BPI Scan function did not work properly because the BPI firmware version 0.38 changed the number of fields in the scan message.

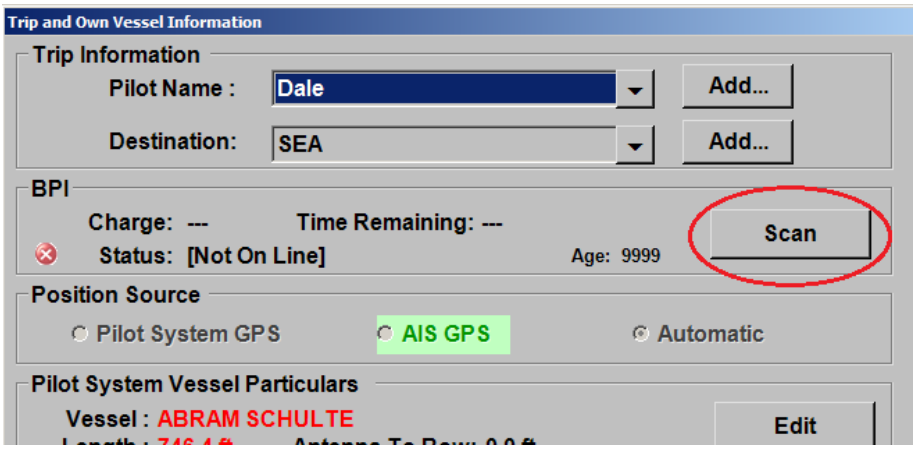


Figure 197: BPI Scan Button on Trip and Own Vessel Information Screen

This has been corrected. Now when the Scan button on the Trip and Own Vessel Information [F6] screen is clicked, a data search on Pilot Port Interface (PPI) default wire pins 1-4 is conducted first. If the BPI cannot find data via this wire pin pair, a search of different Pilot Port

Interface (PPI) wire pin pairs is initiated. The graphic below shows information provided by the BPI Scan Status dialog.

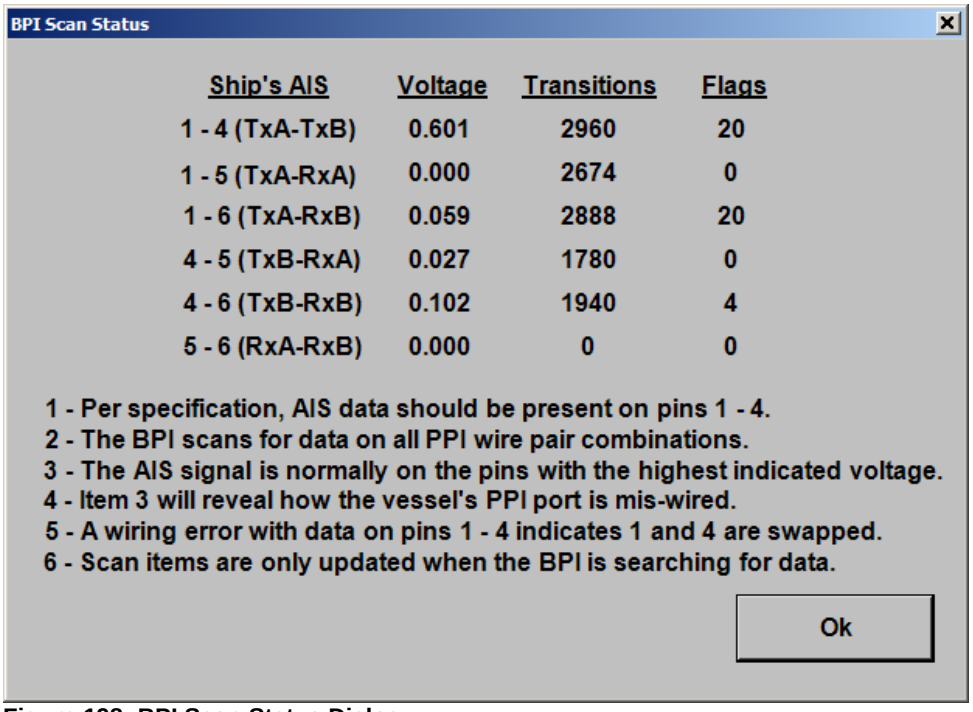


Figure 198: BPI Scan Status Dialog

Added 'Back' or 'Done' to Dialog Screens

'Back' buttons added to the Route Selection [F7] and Waypoint Select [F8] screens for improved usability.

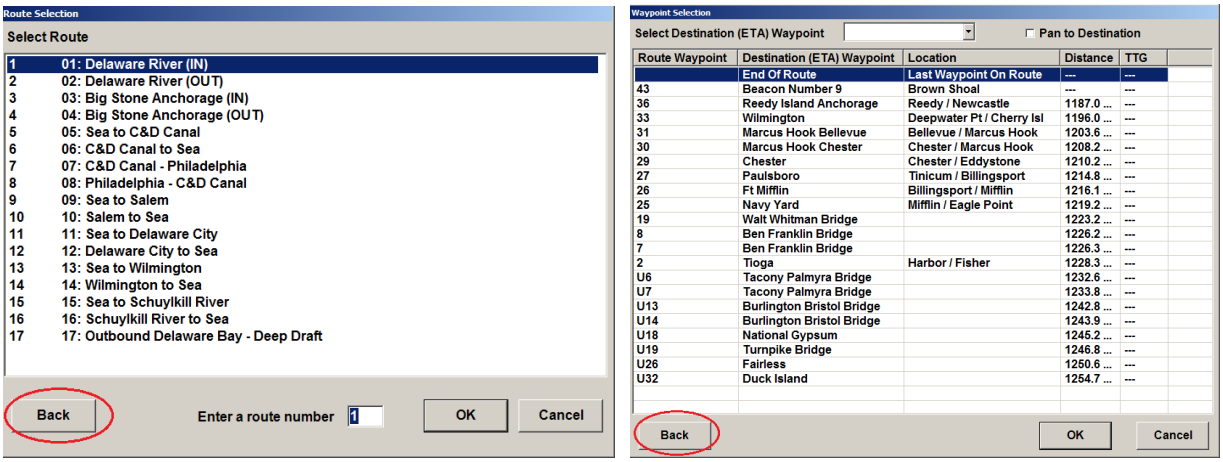


Figure 199: Back Buttons added to Route Selection and Waypoint Selection Screens

A Done button has been added to the System Options menu (F5 | System Options). In addition, a 'Done' or 'Back' button has been added to each of the dialogs that open from the Systems Options menu. Clicking 'Done' or 'Back' returns you to the previous screen.

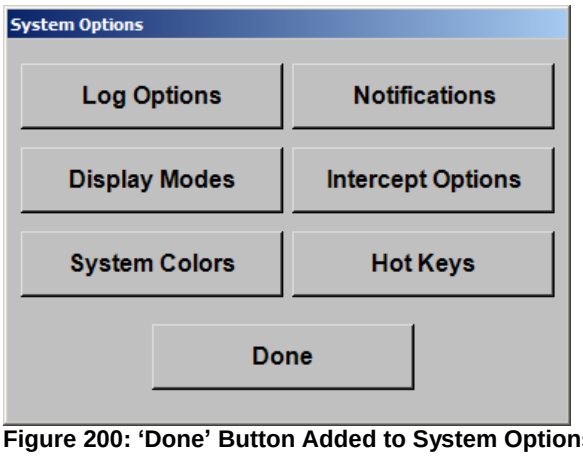


Figure 200: 'Done' Button Added to System Options Menu

Added 'Source' to Traffic Monitor

When 'i' is pressed, the Traffic Monitor appears. The 'Source' column has been added to allow the pilot to see the type of vessel.

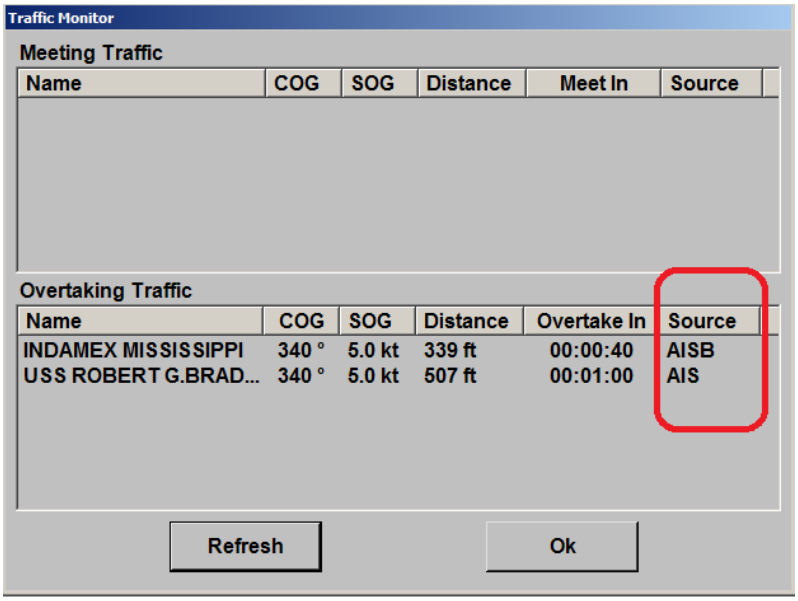


Figure 201: 'Source' Column Added to Traffic Monitor Screen

Hotkey F11 Now Invokes Main Menu

Pressing F11 now invokes the Main Menu.

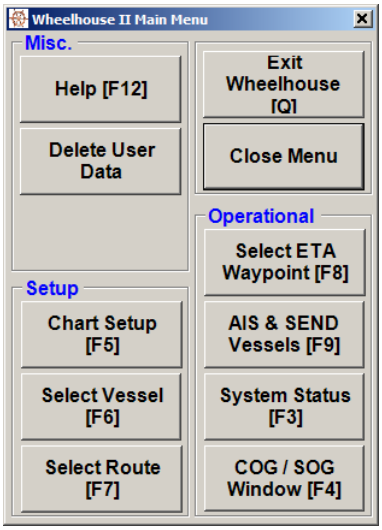


Figure 202: Wheelhouse II Main Menu

The Main Menu can also be invoked using the Menu button at the lower right of the chart [F1] screen.

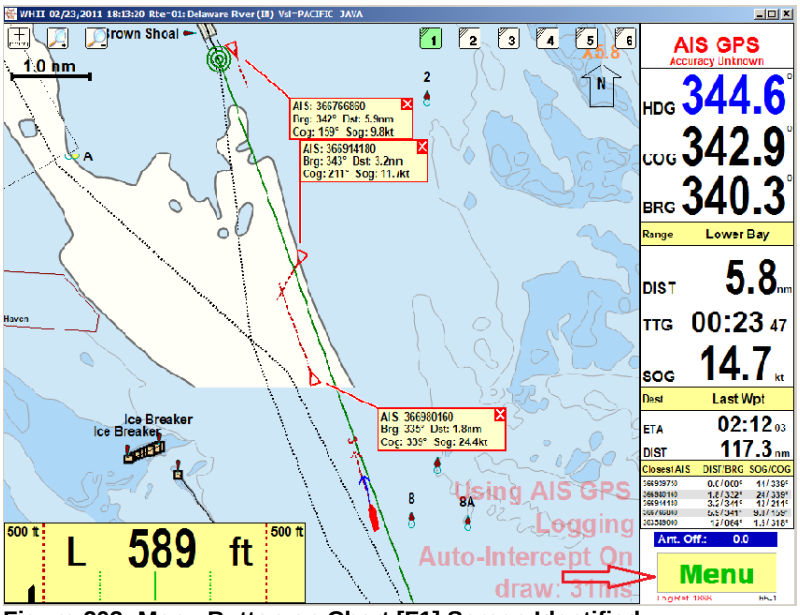


Figure 203: Menu Button on Chart [F1] Screen Identified

Pre-Entered Vessel Name

In the Vessels screen (F6 | Vessels button) you can type a vessel name that is not in the database into the Quick Search field and then click the New button.

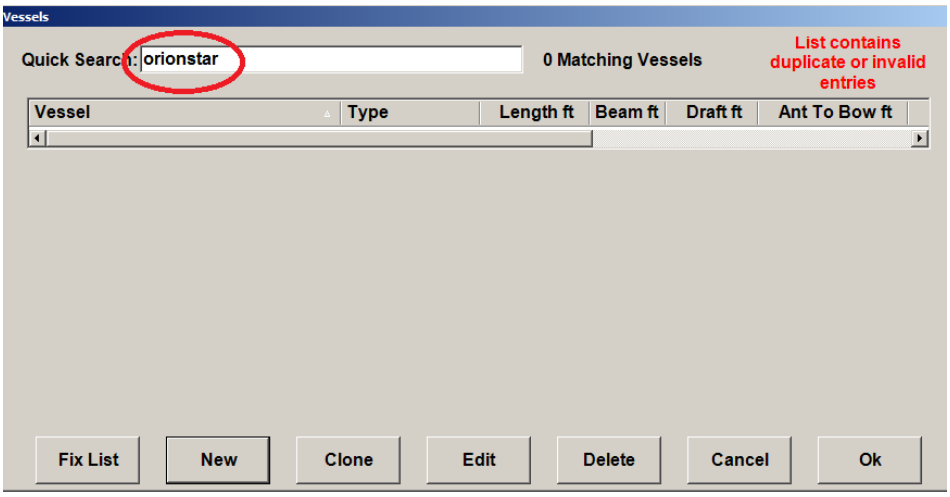


Figure 204: Example of Adding a New Vessel Name Using the Vessels Screen

The Edit Vessel dialog opens with the new vessel name you typed already populated. You can then enter the rest of the vessel information.

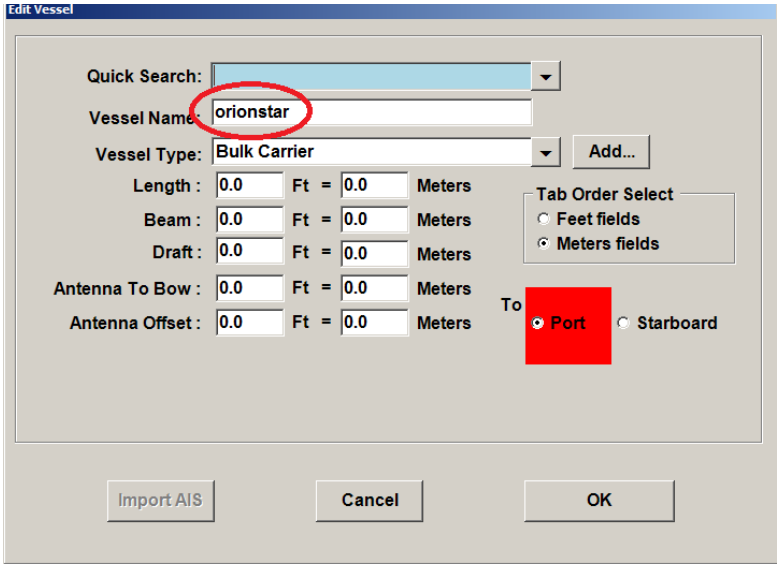


Figure 205: Edit Vessel Dialog with New Vessel Name Populated

Disabled Segmented Log Files

To insure that all voyage info is kept in a single collection where parts cannot be accidentally lost, Wheelhouse II version 3.2 no longer creates segemented log files. Voyage data for a single trip is now kept in a single file. The options in the Wh2 Log Options dialog (F5 | System Options | Log Options) for specifying segmented log files have been removed.

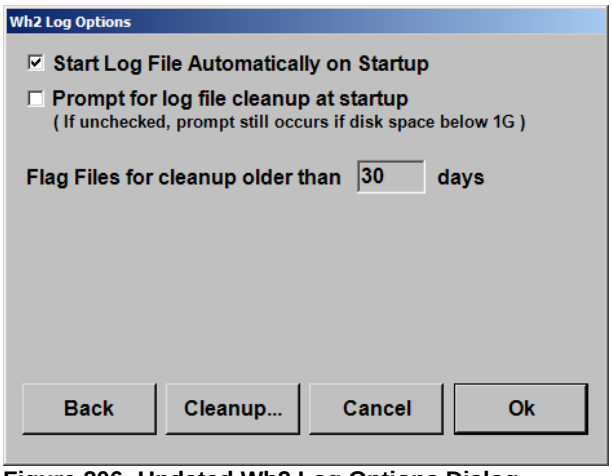
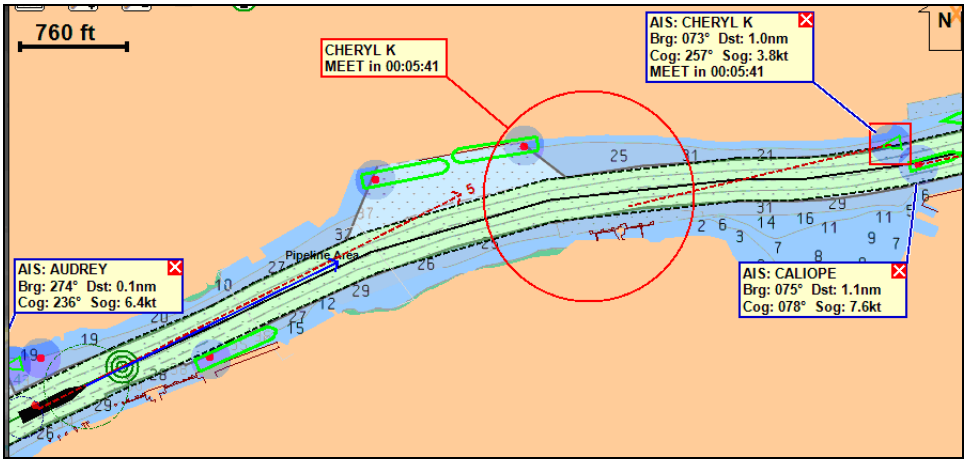


Figure 206: Updated Wh2 Log Options Dialog

Changed Selected Vessel Tag Display

Previously, the vessel tag for a selected vessel did not stay on for a vessel outside of the 'F5 | Draw Tags Within' range value. Per field feedback, we made the tag stay for a selected vessel regardless of the range value.



F6 Corrected Inadvertent Position Source Change

In versions of Wheelhouse II prior to version 3.2, in the Trip and Own Vessel Information [F6] screen, it was possible to inadvertently change the Position Source selection by clicking on a blank area inside the 'Pilot System Vessel Particulars' box or inside the 'AIS Particulars' box. This could cause the system to not work on a subsequent invocation because the Position Source was not on Automatic, as the pilot expected.

With Wheelhouse II version 3.2, you can only change the 'Position Source' by clicking on one of the designated radio buttons.

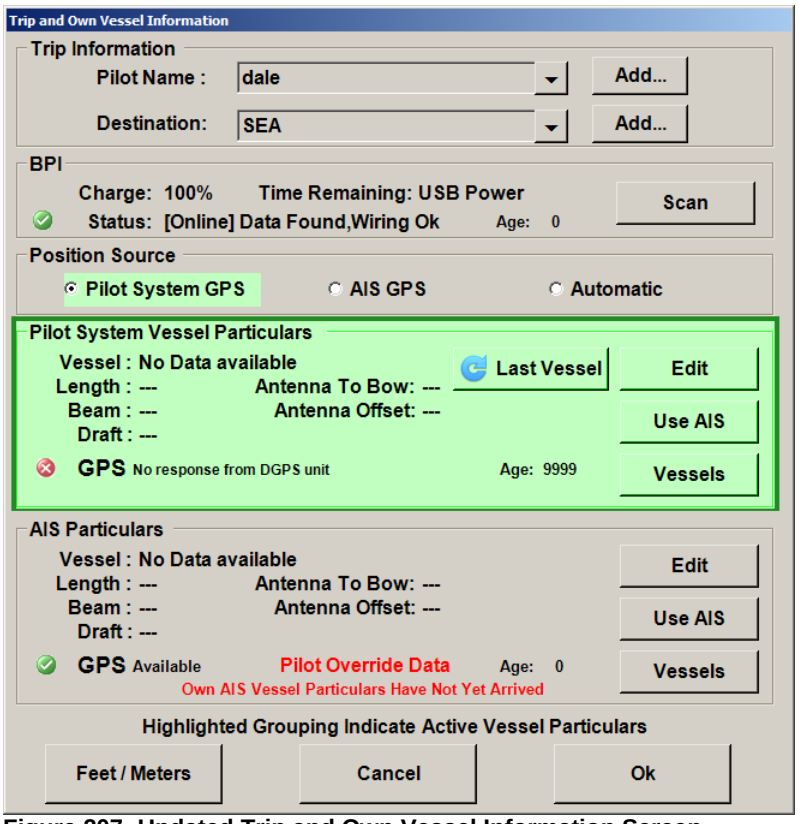


Figure 207: Updated Trip and Own Vessel Information Screen

NOTE

This discussion does not apply to systems which are configured so Position Source is not user-selectable via the following factory option, [STARTUP] SHOW.SPECIALEDITVESSEL=True.

Appendix B - New Factory Optional Features

Startup Sequence

This feature best suits pilots who are using a Pilot System GPS receiver and want a flexible startup sequence that allows them to enter no vessel particulars or antenna offset if they so choose. The following changes only apply when the following WHII factory option is set as shown:

[STARTUP] SHOW.SPECIALEDITVESSEL=True

1. After selecting 'Normal Start' or 'Simulator', the 'Edit Vessel' screen appears. In the previous software version, the 'F6 - Trip and Own Vessel Information' screen would have appeared.

2. The Edit Vessel screen accepts a blank vessel name and non-zero values for length or beam, except when 'Use, Save' is pressed, which causes WHII to perform integrity-checking on vessel particulars.

3. The Edit Vessel screen highlights the selected field.

4. If you press 'Use, Don't Save' or Cancel, WHII progresses to the Route Selection screen, regardless of the Edit Vessel screen values. In addition, pressing Cancel clears any values you may have entered.

5. The data you enter into the Edit Vessel screen at startup always applies to the Pilot System GPS position source. If you want to override the AIS GPS, select the Edit Vessel button from the AIS particulars section of the F6 screen.

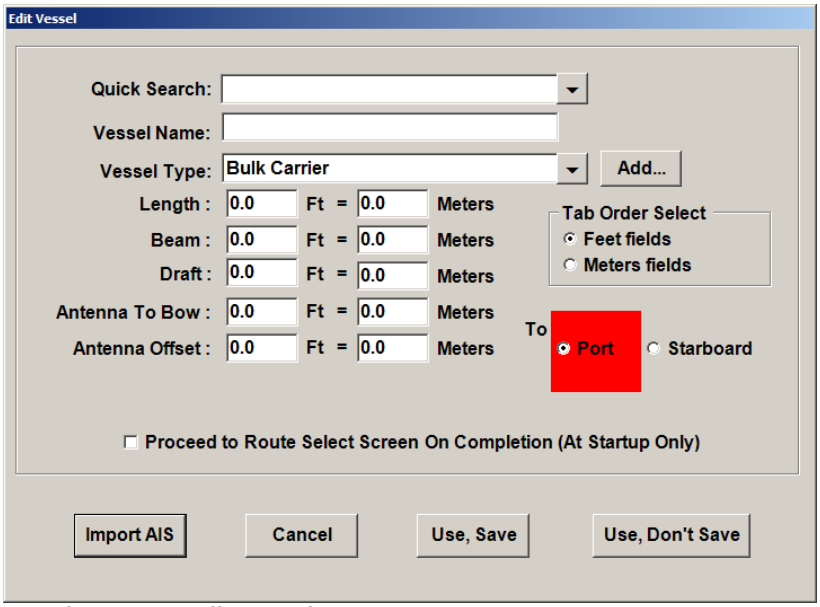


Figure 208: Edit Vessel Screen

Edit Vessel Changes

The following changes only apply when the following WHII factory option is set as shown:
[STARTUP] SHOW.SPECIALEDITVESSEL=True

In the interest of starting quickly, the Edit Vessel screen has been change to allow for no, or partial entries.

1. Behavior of the Edit Vessel Dialog with Use, Don't Save. The behavior below applies only when the position source is the Raven GPS receiver.

    a. With all values 0 and no entries made, the vessel is shown un-scaled.

    b. If the pilot enters an antenna offset, but all vessel dimensions are 0, the Edit Vessel dialog accepts the data. However, the Edit Vessel screen still checks for an antenna offset that extends beyond the vessel if the beam is non-zero.

    c. With all values non-zero and a valid antenna offset value is entered, the antenna offset is shown as entered. The vessel is shown scaled.

    d. With all values non-zero and an antenna offset value is entered that extends beyond the vessel, the program returns an 'Antenna Offset is too big' message, and stays on the Edit Vessel Screen.

2. Behavior of the Edit Vessel Dialog with Use, Save.

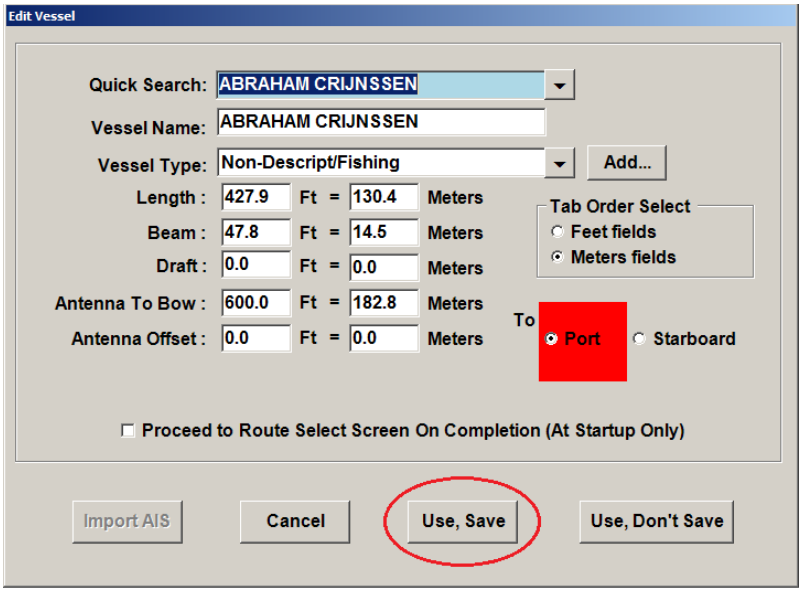


Figure 209: Edit Vessel Screen, 'Use, Save' Button Identified

a. With all values 0 and no entries made, a prompt to supply a vessel name and make valid numerical entries appears. If the antenna offset extends beyond the vessel, a prompt to change or keep the entry appears. The program uses and saves the invalid or valid antenna offset value. The vessel is shown un-scaled (same as original).

b. With all values 0 and an antenna offset value is entered, the antenna offset is shown as entered. The program responds the same as in 1.a.

c. With all values non-zero and a valid antenna offset value is entered, the antenna offset is shown as entered. The vessel is shown scaled.

Trip and Own Vessel Information Screen

The following changes only apply when the following WHII factory option is set as shown:
[STARTUP] SHOW.SPECIALEDITVESSEL=True

This option causes the Position Source on the F6 screen to be under the control of the program, not the user, as described below.

1. Select this screen by pressing F6 or clicking on ‘Menu | Select Vessel’.

2. Selection of position source is limited to ‘Automatic’. The other two selections are grayed-out.

3. AIS is used if the Raven GPS receiver is not communicating. Whenever AIS is being used, the status in the upper right of the WHII F1 screen is ‘AIS GPS’ or ‘AIS DGPS’ with ‘Accuracy Unknown’ below.

4. When the Raven receiver gets differential, position source switches and a notification message is displayed until the pilot presses the space bar. ‘Using AIS GPS’ is displayed in the lower right of the F1 screen and ‘AIS GPS: Accuracy Unknown’ or ‘AIS DGPS: Accuracy Unknown’ is shown on the F3 screen.

5. As long as the Raven receiver is communicating, WHII does not switch position sources. This prevents switching to a possibly unreliable AIS position when going under a bridge.

6. If WHII loses communication with the Raven receiver, it switches to the AIS position source and notifies the pilot with an obtrusively large message. If WHII regains communication with the Raven receiver, WHII switches back to the Raven receiver and displays the unobtrusive notification in the lower right of the F1 screen, as shown in the next section.

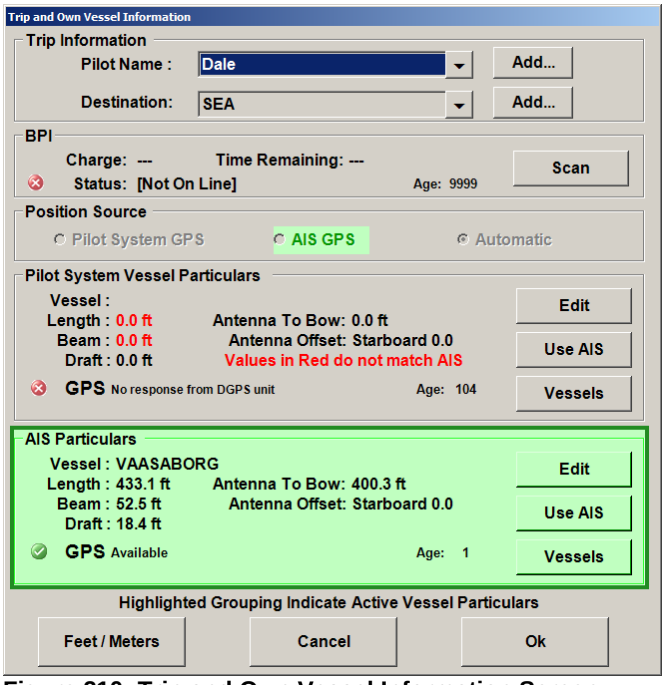


Figure 210: Trip and Own Vessel Information Screen

Edit Vessel Behavior

The following changes only apply when the following WHII factory option is set as shown:

[STARTUP] SHOW.SPECIALEDITVESSEL=True

To prevent ambiguity as to which vessel data you are editing, press Alt-O so the vessel data displayed always pertains to the vessel using the Raven GPS position. You are still able to change the AIS GPS vessel data by pressing F6 and clicking on the Edit button within the AIS Particulars box.

Alternate COG/SOG Screen

Added an alternate COG/SOG screen.

Requires WHII factory option, [OTHER] ALTERNATECOGSOGSCREEN=AltCogSog. (Default is 'Factory'.)

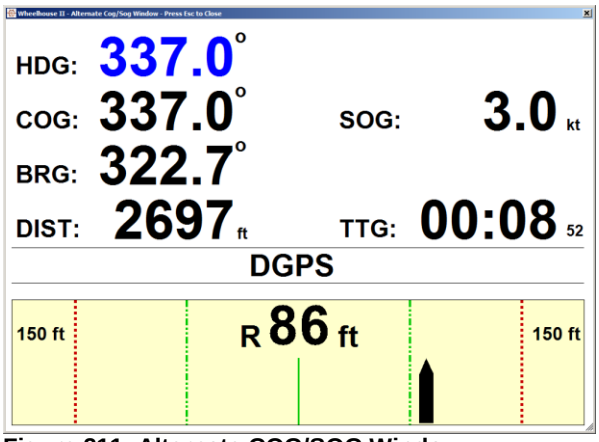


Figure 211: Alternate COG/SOG Window

Notification of Change of Position Source

The notification when switching to the AIS position source is an intentionally obtrusive notification.

Requires WHII factory option, [WARNINGS] BIGWARNAISGPS=True.

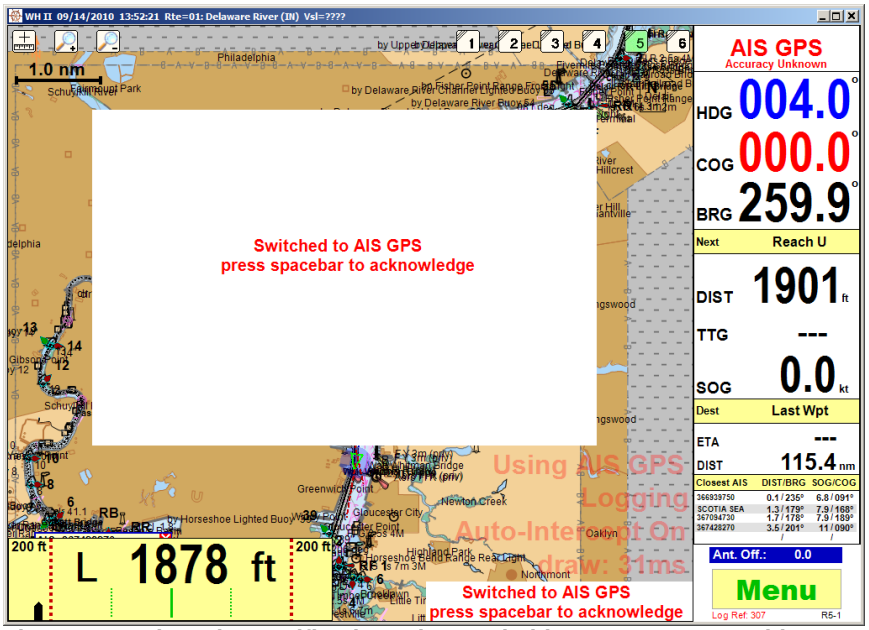


Figure 212: Obtrusive Notification When Switching to AIS GPS Position Source

The notification on switching back to the Raven GPS position source is not obtrusive.

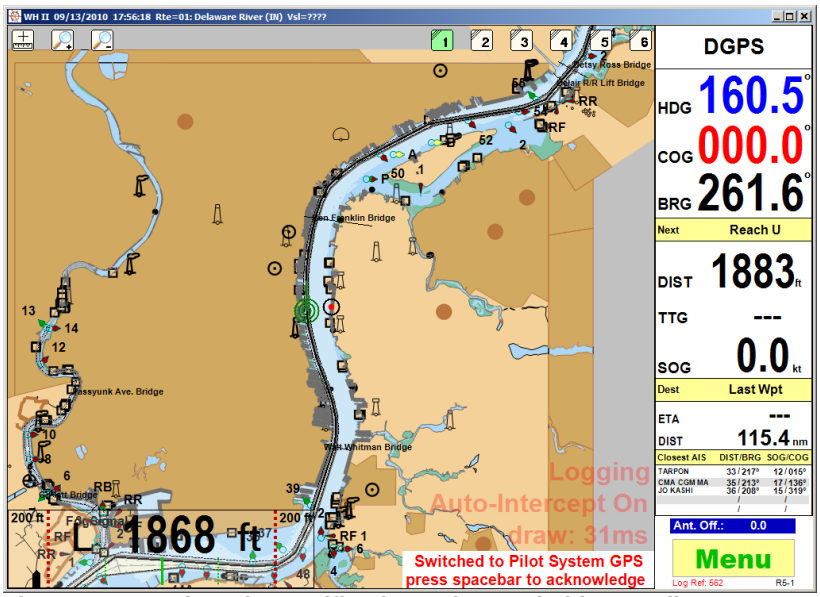


Figure 213: Unobtrusive Notification, When Switching to Pilot System Position Source

Obtrusive Notification For of Loss of AC Power

If your system is configured for an obtrusive warning for 'No AC Power', when the AC power is lost, there will be an obtrusive notification of this fact on the F1 charting screen, as shown below. You can clear the obtrusive message by pressing the space bar, and it will not come back unless the power is restored and then lost again.

By default, WHII is configured for an unobtrusive warning for 'No AC Power' by the factory option below.

[WARNINGS]BIGWARNNOACPOWER=YES (NO by default)

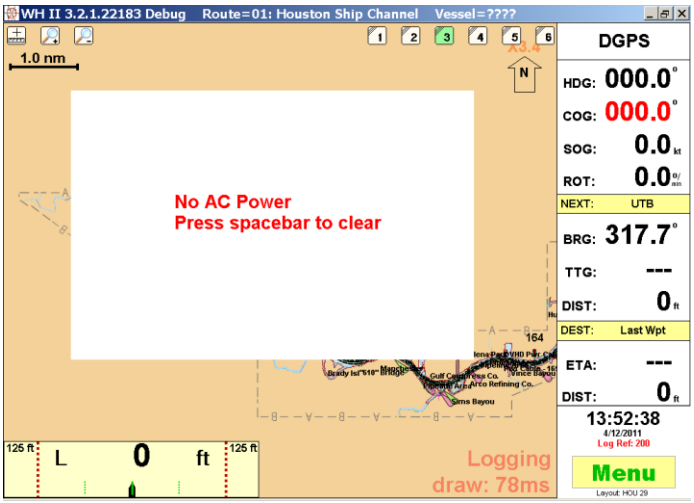


Figure 214: Obtrusive 'No AC Power' Warning

This is an example of the defualt unobtrusive setting:

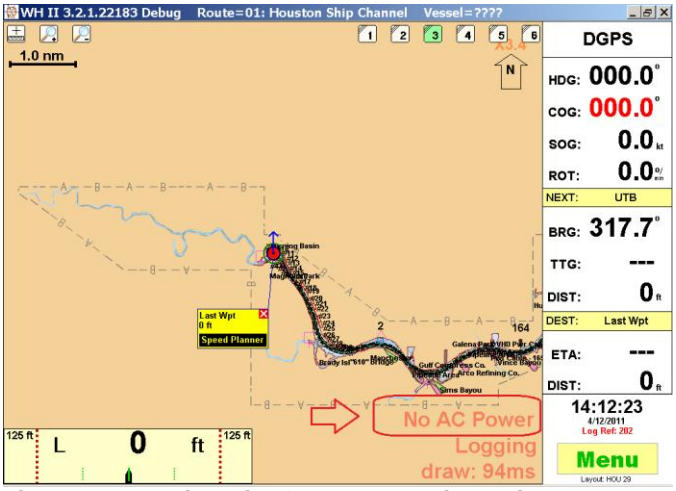


Figure 215: Unobtrusive 'No AC Power' Warning

This feature is separate from the current warning system, which also warns of AC power loss in the upper right of the F1 data panel and on the F3 screen. Clearing the obtrusive warning will not remove the F1 or F3 warning for loss of AC power. The warnings on the data panel persist until the power is restored. Also be aware that an AC power warning on the data panel might be masked by another warning. The separate warning system AC power option is in sendclient.ini as follows: [SendClientInfo] ShowAcPower=1.

Added Option to Remove AIS Halo

There is now an option to turn off the AIS vessel halo. The graphic below is an example of AIS vessels with halos.

Requires WHII factory option, [CHART-LAYERS] AISHALO=False

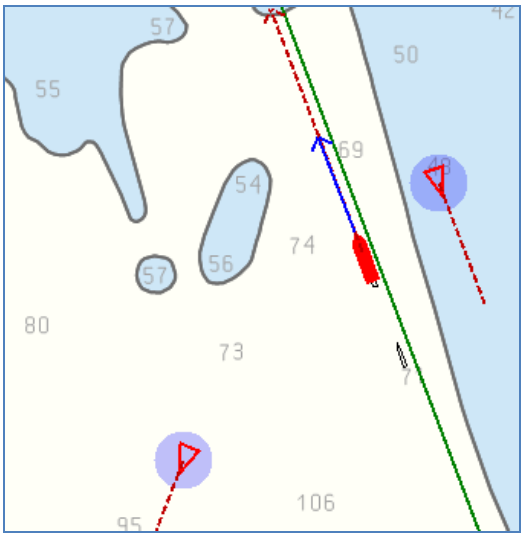


Figure 216: AIS Vessel with Halo

This graphic is an example of AIS vessels without halos.

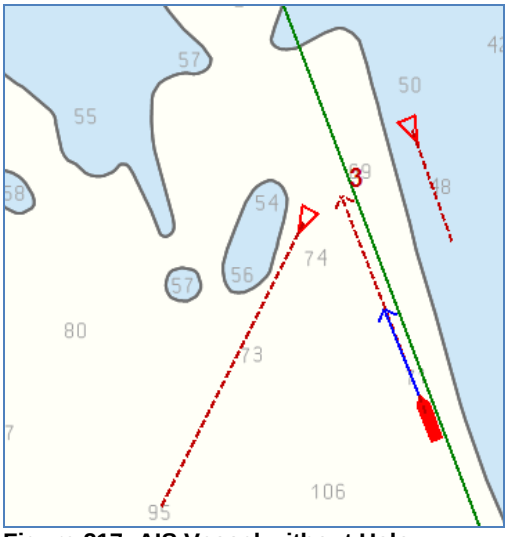


Figure 217: AIS Vessel without Halo

Edit Vessel Antenna Offset Change

If the pilot enters an antenna offset, but no vessel parameters, the Edit Vessel dialog accepts this data. However, the Edit Vessel screen still checks for an antenna offset that extends beyond the vessel, if the beam is non-zero.

Requires WHII factory option, [STARTUP] SHOW.SPECIALEDITVESSEL=True, as described in the Factory Options section.

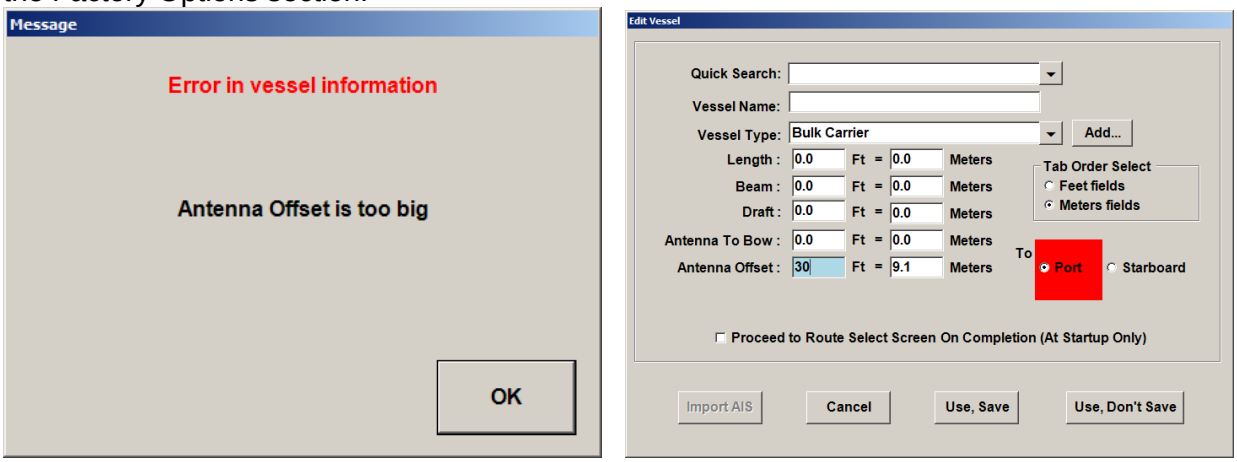


Figure 218: Antenna Offset Error Message and Edit Vessel Screen