OneOcean

OneOcean
SeaTab User Guide
Version 5.0.5

Introduction

What is SeaTab?

A turn-key solution providing instant situational awareness and portable ENC viewing. SeaTab's easy-to-use interface provides live vessel position with AIS Pilot Plug or GPS unit to identify where the vessels are in the vicinity on official ENCs.

SeaTab, as a portable solution, is an ideal tool for tendering groups of passengers, giving the crew instant visibility, situational awareness, and confidence of navigating on official electronic charts even away from the bridge.

The combination of enhanced kernel capability to render ENC faster and Official ENCs on a portable device provides instant navigational visibility in real time. It can also be an effective portable training tool shore-side and seamlessly connects with the ecosystem of OneOcean products for efficient collaboration between vessel and office.

What it enables

Visibility - Greater efficiency and visibility in navigational emergencies

Portable and available - Keep abreast of the passage wherever located on a vessel

Emergency response tool - Supports emergency response actions with a 50NM situation awareness, enabling navigation to safety and avoiding potential collisions

Paper free -Reduces paper chart inventory, saving time and money

How it does this

Easy-to-use interface -Simple to use with no training required

Live positioning -Live vessel position with AIS Pilot Plug or GPS unit

Video and audio communication -Video and audio recording capability for ship to shore communication

Simulation -Aid in collision avoidance decision making in case of a navigational emergency

Mitigate cyber threats -Greatly limits the risk of cyber threats as a portable device with a locked version of windows and pre-loaded software**.**

How to use this guide

This comprehensive user guide is organized around the Tabs at the base of the SeaTab application. Throughout this guide there are Tips (in green) and Notes (in blue) to advise and warn about key features of OneOcean SeaTab.

- Navigate - Display marine charts and navigation objects
- Status - Status bar showing important information
- AIS - View current AIS targets
- Routes – View, edit routes and waypoints
- Settings - Adjust settings to control operation of the application
- Quick – User customized menu of commonly used settings
- Files - Manage marine charts and other data files

Change Log

Section	Description	Version
3.4 Chart Sources	Obtaining updates from OneOcean Data Server	5.0.5
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1.0 Navigate Tab

The Navigate Tab is used to display the current sets of charts along with any additional objects, such as waypoints, routes, AIS targets, and your vessel's position.

SeaTab works like most applications using the standard gestures for panning, zooming, and rotating the display.

When you first open SeaTab you will see the base chart of the world. Any charts you have downloaded will show up as light magenta outlines on the display. You can see the chart by zooming into the display.

SeaTab uses **chart quilting** algorithms to automatically select which charts to display depending on what charts are covered by the area of the display, the scales of the charts, and how far zoomed in you are. Additionally, most vector charts provide **SCAMIN** information that tells SeaTab at what scale different features should show up. This helps reduce clutter and provides vector charts with **smooth scaling**.

The chart display conforms to the **International Hydrographic Organization (IHO)** standards. Symbols and other display characteristics are from the **S-52 standard**. Symbols are specifically generated for your display's characteristics.

Several aspects of the chart display can be changed according to your preferences. These include units for depth soundings, colours to assign different water depths, and colour modes to protect your night vision. See the **Settings section** for more information.

Details for this Location

If you want to know what the symbol represents you can double tap it and select **Details for this Location**. You will be presented with a list of symbols near where you touched and what feature is represents. Most features have more information and you can read it by selecting the detail button on the row.

We encourage new users to become familiar with this feature. Many mariners may not be aware how much information is stored in vector charts, as most chart plotters either remove this information or don't make it accessible. SeaTab attempts to make it easy for you to access all information.

1.1 Scale Bar

On the left side of the display is a scale bar indicating the current display scale. In some circumstances, the entire scale bar may not be visible.

If the scale bar is black and grey, then it represents **10nm** in length. It's divided into 5 segments of equal length.

If the scale bar is orange and grey, it represents **1nm** in length. It's divided into 10 segments, each one **cable 0.1nm** in length.

1.2 True North Compass

The top left corner of the Navigation tab is an orange compass rose indicating direction of True North on the display. If you rotate the display, this symbol will also rotate.

If you want to rotate back to True North-up, you can touch this symbol and the display will rotate back to True North-up.

1.3 Follow Vessel and Course-Up Mode

If you have a GPS fix, the display will show your vessel's current location. If course information is also available, it will also show this with an arrow. If you want the display to follow your vessel location, you can touch the grey arrow in the top right of the display. It will turn magenta and centre your vessel on the display.

You can enter Course-Up Mode from Follow Vessel Mode by touching the arrow again. The magenta arrow will change to pointing upwards and the display rotated so the vessel's current course is also upwards.

1.4 Status Bars

SeaTab has two status bars that are used to present sensor data and other information to the user. The top status bar appears on the top of the navigation display, while the right-hand status bar appears on the right side of the navigation display. They are similar as the right-hand status bar includes many advanced features not available in the top status bar. The bars can be controlled through the **Status Bar** section of the Settings tab.

Blue buttons with white chevrons on the top and right-hand side are used to control which status bar, if any should be displayed. On smaller devices, for example smart phones, the right-hand status bar cannot be used when in portrait mode, due to the lack of screen space.

1.4.1 Side Status Bar

The side status bar is more advanced. In addition to displaying basic sensor data, it includes several other context-sensitive display features. All the information is displayed in **Panels** which include related groups of information. Some panels are only shown if enabled by the user, either explicitly though a setting or implicitly through other actions. For example, when an AIS target is selected, a panel will be shown containing information about that target.

- **Connection:** Provides the source of the data being presented. Either Internal, NMEA, AIS, Virtual (Virtual Boarding), or Simulator. If dusk or night mode is enabled, battery level and time can also be displayed.
- **Virtual Board:** Displayed when Virtual Boarding feature is enabled. Indicates which vessel has been **boarded** and whether information is available for that target.
- **Position:** Displays current latitude and longitude, along with related information such as the horizontal position error (HPE). This can be disabled in the Status Bar settings.
- **Depth:** Displays depth information, if available from a NMEA WiFi feed.
- **Water Level:** Displays information on the most recently selected water level station. This will include the name of the station, the reported time for the water level, the actual water level, and the reference for the water level, for example MLLW for Mean Low Water.
- **Verify:** Displays latitude and longitude information. This panel is only enabled if using a NMEA/AIS WiFi feed and the NMEA/AIS Verify GPS Position setting has been enabled.
- **Anchor:** Displayed only if the anchor monitor is enabled. Shows the distance and bearing to the anchor, as well as the Scope and Alarm settings.
- **Heading/ROT:** Shows the Heading (HDG) and Rate-of-Turn (ROT.
- **Course/Speed:** Shows the Course (COG) and Speed (SOG).
- **Estimated Squat:** Only displayed, when the Show Estimated Squat is enabled in the Status Bar settings. Shows estimates of the squat for confined and open water areas.
- **Estimated Pivot Point:** Shows the pivot point's position relative to Own-Ship. Only displayed if the Show Pivot Point setting is enabled on the Status Bar settings.
- **Swept Path:** Only displayed, if the Show Swept Path setting is enabled on the Vessel settings. Shows the Drift angle, Beam width, and Effective Beam width.
- **HDG and STW:** Shows the Heading (HDG) and boat Speed Thru Water (STW).
- **Docking:** Only displayed, if Docking mode is enabled. Shows distance to dock and speed for bow and stern.
- **Motion:** Only displayed, if Show Vessel Motion is enabled in the Status Bar settings. Shows the speed and direction of movement (port/starboard) of the bow and stern, and the speed ahead/astern. If ROT is not available, only the lateral speed will be shown, in place of the bow/stern speeds.
- **Tacking:** See Sailing Settings Help information
- **Apparent Wind:** Shows apparent wind speed and direction, if sensor data is available.

- **True Wind:** Shows true wind speed and direction, if sensor data is available.
- **Current:** Shows derived current direction and speed, if required sensor data is available.
- **AIS:** Shows information about current AIS target.
- **EBL/VRM:** Shows information about currently selected EBL/VRM.
- **Waypoint:** Shows information about active waypoint and related information such as ETA.
- **Speed Required:** Provides information about the speed required for the current goal. Requires a Goal Time to be set on one of the future waypoints in the current route.
- **Own-Ship Dimensions**: Only displayed, if Show Own-Ship Dimensions is enabled in the Status Bar Settings.

If there is sensor data that is not displayed in one of the panels listed above, additional panels will be added with simple formatting for those sensors.

1.4.2 Top Status Bar

The top of the display provides a list of common sensor readings. Most require a GPS fix. Depending on the screen width of your device, all the values may be displayed at once, or you may need to scroll through them by touching the status bar and then sliding through the values.

Below are the items listed in the status bar. Only data which has appropriate sensor readings are displayed:

- **CON:** Connection, either internal GPS or NMEA (external NMEA)
- **FIX:** Type of location fix (usually GPS)
- **LAT:** Latitude
- **LON:** Longitude
- **AAD:** Anchor Alarm Drift
- **HPE:** Horizontal Position Error
- **HDP:** Horizontal Dilution of Position

Side Status Bar

- **HDG:** Vessel Heading
- **ROT:** Vessel Rate-of-Turn
- **STW:** Speed Thru Water
- **COG:** Course Over Ground
- **SOG:** Speed Over Ground
- **RSA:** Rudder Sensor Angle (Main/Starboard)
- **RSP:** Rudder Sensor Angle (Port)
- **AWS:** Apparent Wind Speed
- **AWA:** Apparent Wind Angle
- **TWS:** True Wind Speed
- **TWA:** True Wind Angle
- **WPN:** Waypoint Name
- **BTW:** Bearing To Waypoint

- **DTW:** Distance To Waypoint
- **XTD:** Cross Track Distance
- **VMG:** Velocity Made Good
- **TTG:** Time to Goal
- **ETA:** Estimated Time of Arrival
- **NLC:** Next Leg Course
- **CDT:** Current Direction True
- **CSP:** Current Speed
- **DPT:** Depth
- **DBT:** Depth Below Transducer
- **DBK:** Depth Below Keel
- **VAR:** Magnetic Variation
- **GSV:** GPS Satellites in View

Units and display modes for these depend on Settings which can be changed. For example, bearings may use either True North or Magnetic North. Distances may be in nautical miles, statute miles or kilometres etc.

2.0 Routes

Routes and waypoints can be edited either in the Routes area, and graphically on the Navigate tab. The following settings are available for routes and waypoints.

2.1 Settings

- **Route/Waypoint Display:** Select whether you wish to view all routes, no routes, or only the active route/waypoint. If no route or waypoint is active, no routes or waypoints will be shown. This setting is intended for users with many routes/waypoints, to reduce clutter.
- **Lock Waypoints from Graphical Editing:** When enabled, waypoints cannot be moved graphically. You can edit their position numerically and change other related settings. Also, new waypoints can be created. This setting can be used to prevent inadvertently moving your waypoints.
- **Use Small Symbols & Thin Lines:** When enabled, the routes and waypoints are drawn using smaller symbols and a thinner line, rather than the standard IHO S-52 styles. This can be useful if you find the standard presentation obscures the chart details.
- **Show Line to Next Waypoint:** When enabled, a line is shown from Own-Ship to the active waypoint in the route.
- **Show Info for Active Route:** When enabled, the length and course of each leg in your route is displayed. If not enabled, the same information can be displayed by selecting the route.
- **Auto Active Route:** When enabled, a prompt is displayed asking to activate a route when Own-Ship is near it. Own-Ship must be moving at least 2kn, within 1NM of the route, and within 30° of the route's course. You will be prompted at a maximum of once every 5 minutes.
- **Show Wheel-Over Lines:** When enabled, wheel over-lines are shown on waypoints. They are shown 1 ships length prior to waypoints. The segment they are on must be at least 4 ships lengths.

2.1.1 Waypoint Advance

- **Waypoint Advance Notification:** When enabled, an alert is generated when advancing waypoints in the active route.

2.1.2 Arrival Notification

- **Arrival Alarm:** When enabled, an alarm is generated when Own-Ship is within Arrival Distance (a separate setting) of the current waypoint. In the event of waypoints with a Turning Radius, the distance is to the beginning of the turn, not the waypoint itself. The alarm dismisses itself after 5 seconds.
- **Arrival Distance:** Distance from Own-Ship to current waypoint at which the arrival alarm will activate.

2.1.3 Cross-Track Distance (XTD)

- **XTD Alarm:** When enabled, an alarm is generated when the XTD setting (below) is exceeded. The alarm activates every 2 minutes.
- **Default XTD:** Maximum distance Own-Ship may be from the route before the XTD alarm activates. This can be overridden by route-specific or segment-specific XTD .
- **Show XTD Lines on Active Route:** When enabled, red and green lines are shown to port/starboard of the active or selected route.
- **Fill XTD Area on Active Route:** When enabled, semi-transparent light-green colour is used to fill in the route.
- **Show XTD for Bow & Stern:** When enabled, the XTD is shown for the bow & stern of Own-Ship.

- **Show XTD in Top Status Bar:** When enabled, route XTD information is shown in the top status bar. The XTD is longer be shown in the side status bar, If Bow and Stern XTD has been enabled, the normal XTD is shown in the top, along with Bow and Stern on the right.
- **Show XTD for Next Segments:** When enabled, the XTD for the next 2 route segments are shown in the status bar. The XTD is calculated by extending the segment out 20NM prior the first waypoint.

2.1.4 Speed Limit

- **Speed Limit Alarm:** When enabled, an alarm is generated when Own-Ship exceeds a speed limit on the current active route segment. The alarm activates every 2 minutes.
- **Speed Limit Delta:** Own-Ship must exceed the speed limit by at least this amount for the speed limit alarm to activate. This can be used to allow for variability in sensor readings.

2.1.5 Planned Speed

- **Planned Speed Enable:** When enabled, the planned speed will be enabled for planning purposes.
- **Planned Speed:** When Enable Planned Speed is turned on, this speed will be used for planning purposes for Own-Ship on the current route.

2.1.6 Manage

- **Routes:** Select to view and edit all routes.
- **Waypoints:** Select to view and edit all waypoints.
- **Import:** Import routes and waypoints. See **Import/Export Help** for more information.
- **Erase All Routes & Waypoints:** Erases all routes and waypoints, after confirming this is what you want to do. This cannot be undone.

2.2 Waypoints

You can create a waypoint graphically by double tapping in the Navigate tab and selecting Add Waypoint. You will then be presented with a dialog box to edit the waypoints name, description, latitude, longitude, and enable Go-To mode. In SeaTab Pilot, you can also set a goal time to arrive a waypoint and see the last time the waypoint was passed.

When creating a waypoint, you can add the new waypoint to an existing route or create a new route with the waypoint. When graphically adding a waypoint to a route, the best location in the route is selected for the waypoint. This is based on the relative locations of the other waypoints already in the route.

You can move a waypoint after it is created. Single tap to select the waypoint you want to edit. Then touch and drag the waypoint to the new location. The latitude and longitude are displayed next to the waypoint whilst it's dragged.

You can double tap on a selected waypoint to display a dialog to edit the waypoint, to change the name, Cross-Track Distance (XTD), change the description, add it to a route, manually edit the location or delete it.

You can also view all waypoints by selecting the Route tab and selecting the settings button and choose Waypoints.

2.3 Routes

Create and edit routes either graphically or through menus. A route is created graphically by:

1. Single tap to select the first waypoint.
2. Double tap at location of second waypoint and select **Add New Route**.
3. While the route remains selected, double tap and select **Add New Waypoint to Route**.

4. Repeat the previous step to add further waypoints.

When a route is selected:

- It will be highlighted
- Bearings and distanced between waypoints in the route are displayed
- Waypoints can be moved in the route by touching and dragging them
- When new waypoints are created, they will be added to the selected route, at the location SeaTab selects the best location (you can edit the order of waypoints manually by going to the Route tab and selecting the route.

The route tab lists all the routes you have created. You can also edit a route by selecting it and editing the waypoints in the route using the **Edit** button and moving or removing waypoints in the route.

If you want to follow a route, select the route and select the **Follow** button. You can select the **Advance** button to advance to the next waypoint in the route. The waypoints in the current route are coloured red and the current active waypoint will have a second inner circle.

2.4 Waypoint Edit

The following settings are available for waypoints.

- **Name:** The name of the waypoint.
- **Description:** A description of the purpose, location of the waypoint.
- **Latitude & Longitude:** The location of the waypoint. The format used depends on the Units Settings.
- **Turn Radius:** When not zero, any route using this waypoint will use the provided turning radius for this waypoint. Additionally, tick marks are made at the centre of the implied circle and the beginning and end of the turn. A wheel-over line is shown 1 ship-length prior to the turn. After setting an initial turn radius, you can adjust the radius graphically by selecting the route and dragging/dropping the centre point of the turn.
- **Goto:** Indicates whether this waypoint is the current goal waypoint.
- **Monitor:** Indicates whether this waypoint should be monitored in the right-hand status bar. When monitored, the DTG and ETA are displayed.
- **Goal Time:** Indicates if there is a goal time to arrive at this waypoint. This is used for calculating Speed Required information in the status bar.
- **Time Passed:** This shows the last time Own-Ship has passed the waypoint.
- **Logbook:** When enabled, a logbook entry will be created automatically when passing the waypoint.
- **Minor:** When enabled, the waypoint is presented less prominently than other waypoints. This can be used to reduce clutter in routes with many waypoints close together.
- **In Routes:** A summary of the routes containing this waypoint.
- **Add to a Route:** You can use this to select a route to add this waypoint to.
- **Split for Routes:** This is only shown when a waypoint is shared by more than one route. You can split the waypoint into duplicates that in each of the routes. This is useful if, for example, you need to create a similar route where some of the waypoints differ slightly, for instance, when reversing a route.

2.5 Route Segment Edit

Each section of a route between two waypoints is called a route segment. Exactly how waypoints may have attributes, each segment in a route may have optional attributes also.

- **XTD Port and XTD Starboard:** These can be used to set a cross track distance (XTD) for a segment. Both port and starboard XTD can be set (or not set) independently of each other. When either of these are not set, that XTD will default to the Route XTD or the app-global XTD Alarm Range.
- **Speed Limit:** Indicates the speed limit for a route segment. When calculating ETA, location of meeting points, and required speeds for goal times, it is assumed that Own-Ship and AIS targets observe speed limits.
- **Passing Restricted:** This flag is used to indicate segments of routes where passing of vessels is restricted. An alert is generated when a meeting point with another vessel is detected for a route segment where passing is restricted. These alerts are only generated for vessels that exceed the Small Vessel Length.

3.0 Settings

The Settings tab is used to control operation of SeaTab. Virtually all settings can be accessed from this table and/or its sub-tables.

- **Store:** Select this to purchase an in-app Upgrade to enable premium features, or to restore the upgrade if already purchased.
- **Display:** Settings related to display.
- **Presets:** When enabled, a bar of 5 preset buttons are shown on the base of display. This can be used to swiftly jump back and forth between different locations. They can be assigned to objects such as AIS targets and Own-Ship and in these cases, the view follows the object.

> ***Note: Presets***
>
> *A preset saves both the location and the display scale. Selecting the preset also changes the display scale. You can save different presets for the same object at different display scales.*
>
> *Long-select on a button to set a position and display scale. Selecting that button centres the display on that location and display scale.*
>
> *If an AIS target, Own-Ship, Mariners Tool, or waypoint is selected when setting the preset, then this object is used for the preset. The button uses the name of that object and **follows** the object as it moves. The object is automatically selected when you select the button.*
>
> *If a preset is **not** attached to an object, it has the name **Preset N**, where N is the number 1, 2, 3, etc. If you want to name a location, you can do this by creating a View (double-tap / Add Tool / Add View), enter the view a name, selecting the view, and then creating a Preset for that view.*
>
> *You can clear a preset by jumping to the preset and then long-selecting the button.*

- **Status Bar:** Control behaviour and appearance of the status bar.
- **Use Virtual Keyboard:** Turn this on to display virtual keyboard when you touch a text area. This is only used on **Microsoft Windows** touch screen devices.
- **Units:** Select units to use for depth, distance, speed, degrees, etc.

3.1 Pilot

- **Pilot Setup:** Settings to adjust when boarding vessel.
- **Logbook:** Maintain logbook.
- **Pilot Card:** Select to fill view and edit all waypoints.

3.2 Vessels

- **Vessel Display:** Settings for display of Own-Ship and AIS targets.
- **Own-Ship:** Settings related to the display and size of Own-Ship.
- **Follow Mode:** Follow Mode causes display to automatically track Own-Ship.
- **Routes & Waypoints:** Settings related to use and display of Routes and Waypoints.
- **Meeting Points:** Control display and alarms for AIS Target **Meeting Points.**
- **Mariners Tools:** Manage Mariners Tools. These include the following: Mariners Notes, Variable Range Markers, Electronic Bearing Lines, Clearing Lines, Fenders, Views, and Groups. A user can add **User Maps** under the **Manage** and **Import** option. These are shown as a symbol and an optional text. A wide choice of symbols is provided, including various informational symbols, symbols for aids-to-navigation, obstructions, fishing, diving areas, etc. You can also associate lines, polygons, and/or media files with Mariners Notes.)

- **Tracks:** Tracks record the movement of Own-Ship.
- **Docking:** Control display of Docking Aids to assist in docking large vessels.

3.3 Chart Settings

- **Vector Charts:** Manage appearance of vector charts.
- **Raster Charts:** Control display of Raster Charts, BSB and KAP files. This includes charts based on satellite imagery.
- **IHO S-63 Charts:** Set-up and manage charts in the S-63 format.
- **Bathymetry & Overlays:** Control settings related to depth information and overlays.

3.4 Chart Sources

Download and update S-63 charts from OneOcean

SeaTab periodically checks with the OneOcean data server to establish if there are any new updates available. A notification will be displayed when chart updates are available. However, charts are not updated unless you request the updates by pressing the Update button.

Pressing the **Update** button will download the updates and when complete the updates will be installed automatically.

To use this feature, you need an account with OneOcean which also involves one of your allotted S-63 User Permits to be registered with OneOcean.

Settings

OneOcean Web Site

- **Display Charts: Control whether OneOcean charts are displayed.**
- **Chart Files: View currently downloaded chart files.**

  From time to time, you may wish to remove old update files in the OneOcean Charts. After deleting these files, it's recommended to perform an Update so SeaTab can download any parts of those files that may still be required.

Chart Status

Displays a status of the cells as follows:

- The number of cells in your permit
- Which week the cells are updated to compared with the dates in the **Products.txt** file
- Which cells have expired or are due to expire

Download Updates

You must be connected to the internet and have an account registered with OneOcean to download updates. The update is performed in the background. This function can be used for your initial chart download as well as for periodic updates.

A status is shown to display the download progress. complete, a notification is given.

The download can be quite large, and this is dependent on the number of cells you have in your permit. You may want to wait until you are connected to a high speed internet connection before downloading updates for your charts.

Manage

- **Restore from Backup:** Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- **Erase All OneOcean Charts:** This button erases all your OneOcean chart files and this cannot be undone, although you can download the files again. You can erase chart files individually by going to the Charts listing and pressing Edit.

  This may be useful when changing accounts to clear out old files. Also, we recommend performing this periodically to reduce the number of update files present on your device.

Deprecated

- **User Permit:** Select which S-63 User Permit to submit to OneOcean when requesting information about chart updates. Normal corresponds to the permit in the User Permit entry in the S-63 Settings. Extra corresponds to the user permit entered in the Extra User Permit field.
- **PRIMAR:** Download and update S-63 charts from PRIMAR.
- **Admiralty AVCS (UKHO):** Download and update AVCS charts from your ENC provider.
- **Generic FTP:** Download and update charts from an FTP (File Transfer Protocol) server. This can be used if you have an account on an FTP server and you wish to automatically synchronize data with it. All the files to download should be contained in the main folder; sub-folders are not downloaded.
- **Import from CD/DVD:** Import charts from CD/DVD.

3.5 NMEA & AIS

- **AIS Sharing:** Connect to SeaTab's global AIS feed over the Internet.
- **NMEA & AIS:** Set-up and manage an external NMEA or AIS feed over WiFi.
- **AIS Network Feed:** Allows you to connect to a specific AIS network feed over the Internet.
- **Navicom Dynamics PPUs:** Settings related to configuring Navicom Dynamics PPUs.
- **AD Navigation PPUs:** Settings for configuring AD Navigation PPUs.
- **Virtual Board:** Allows an AIS target to be treated as Own-Ship.

3.6 Other

- **Tides & Currents:** Manage settings related to tides and currents.
- **Waterway Guide**: Enable this in order to display **Waterway Guide** markers. A database of markers will be downloaded. The markers are displayed when at display scale **1:500,000** or greater. You can turn off the setting to temporarily disable the display of the markers.

The following types of markers are shown:

- **Marinas**
- **Services**
- **Navigation Aids**
- **Anchorages**
- **Bridges**
- **Locks**

Single-tap on a marker to select it. Double-tap to open more details. You can choose **View in Browser** to view the web page on the Waterway Guide. The markers can be used when offline. The final step of viewing the Waterway Guide web page requires an internet connection.

This database may be updated as often as once per day.

- **Weather:** Download and display weather data and GRIB files.
- **Sailing:** Aids for use when sailing.
- **Alarms & Sounds:** Control over alarm settings.
- **Anchor Monitor:** Set-up and manage an anchor monitor.
- **Feeds:** Manage automatically downloaded internet data.
- **Simulator:** Simulate operation of vessel's anywhere in the world, with optional simulated drift.

3.7 About

- **Application:** Shows the specific software version installed.
- **Version:** The current version of SeaTab.
- **SeaTab Web Site:** A link to the **http://SeaTab.com** web site.
- **Review in Store:** Rate this app in the AppStore.
- **Enterprise Subscription:** Manage SeaTab account.
- **Administration:** This sub-menu is used for customization and backup/restore.
- **Advanced Settings:** Additional settings that are not needed by the typical user.

4.0 Display

These settings control colour, brightness, and other elements of the display.

4.1 Settings

- **Colours:** Choose either Day (normal), Dusk, or Night colour modes, depending on the current lighting conditions. You may want to use Calibrate Brightness in combination with this to fine tune the brightness level. A related setting is to Use Green for Dusk/Night under the Status Bar settings, which controls the colour for the status bar in Dusk/Night modes. When Night mode is selected, red badges on the bottom tab bar showing the number of AIS targets are disabled, as is the system status bar along the top.
- **Brightness Adjustment:** When enabled, a panel is displayed on the Navigation tab with a slider and the current display brightness level. Move the slider to set the desired brightness. This affects the device's overall brightness level.

> ***Note: Brightness adjustment***
>
> ***IOS devices*** *- if the brightness level changes* ***unexpectedly****, check if IOS Settings/Wallpapers & Brightness/Auto-Brightness is enabled. You may have to turn this setting off.*
>
> ***Windows devices*** *- this may not function on certain Windows devices. If the brightness level changes* ***unexpectedly****, check if Settings/Display/Change Brightness Automatically is turned on. You need to turn this setting off.*

- **Use Green for Dusk/Night:** When enabled, green colours are used for the status bar (and other non-chart data) when Dusk or Night colour mode is selected.
- **Alternate Colour Palette:** Enabling this changes to an alternate colour palette. This is still based on S-52 colours but has a different conversion to display. Only change this if needed and contact **OneOcean Technical Support** for assistance to change this setting.
- **Full Screen:** Select to toggle full-screen mode on or off.

4.1.1 Side-Bar

- **Narrow Side-Bar:** When enabled, the side bar is made slightly narrower. This is to allow more display area to be used for charts.
- **Side-Bar Side:** Select side for side bar. The default is right side.

4.1.2 Keep Awake

- **Keep Awake:** When enabled, your device will not go to sleep when SeaTab is running and SeaTab will keep running in the background. If you want your device to go to sleep, you can disable the Keep Awake mode or stop the SeaTab app.
- **Keep Awake Always:** This is only for **IOS devices**. When enabled along with Keep Awake, should never go to sleep, even when running in the background for long periods. You will need to allow access to Location Services and warning will be shown if this is not available.

  When enabling this (and Keep Awake is also on), hardware GPS is turned on and always left on, even when not needed for positioning. This usually affects battery life.

4.1.3 Multi-Window

- **Split Screen:** Toggle split-screen mode. The chart display is split vertically.
- **Status Pane:** Enable this to add a small chart display at the bottom of the status bar. Certain information normally included in chart windows may not be shown in this display, because of the reduced screen size.
- **Show Overlay in Status Pane:** Enable this to show bENC overlays in in status bar chart display. To avoid clutter, bENC's are not displayed when this is not enabled.
- **New Window:** Select to add an extra chart window.

> ***Note:*** *New Window is* ***only*** *available on* ***Windows*** *and* ***MacOS*** *devices.*

4.1.4 Resolution

- **Display DPI:** Dots-per-inch (DPI) is a measure of your display's resolution. It is normally only necessary to set this on Microsoft Windows devices, as often these do not report accurate DPI.
- **Reset DPI:** Selecting this button reverts to default system DPI.

4.1.5 Advanced

- **Disable Rotation Gestures:** Enable this to prevent rotating chart display through touch gestures.
- **Disable Graphics Framebuffer:** SeaTab makes use of a graphics framebuffer to optimize display performance. On some platforms, the use of a framebuffer can cause problems and you may wish to disable it. Examples include some lower specification Android tablets. Normally, disabling the framebuffer slow down display performance. Only change this if needed and contact **OneOcean Technical Support** for assistance to change to this setting.
- **Disable Graphics Anti-aliasing:** SeaTab uses antialiasing to make lines appear smooth. On some platforms, this can cause problems such as slow display performance, and you may wish to disable it. Examples include some lower-end Android tablets and Windows laptops. Only change this if needed. Contact **OneOcean Technical Support** if you require to change to this setting.
- **Disable Graphics Point-Sprites:** SeaTab uses so-called point sprites to improve performance for graphics. On some platforms, this can cause problems such as incorrect display, and you may wish to disable it. Only change this if needed and contact **OneOcean Technical Support** for assistance to change to this setting.

5.0 Status Bar

SeaTab uses status bars for presenting sensor data and other information on the **Navigate** display.

There are two different status bars: a vertical bar on the right side of the display and a horizontal bar on the top of the display.

- **Vertical Status Bar:** This is shown along the right-hand side of the display. Available data is logically grouped together, and font-size is used to highlight more important information. Data is also shown in a context-sensitive fashion. For example, when AIS is enabled the most recently selected AIS target will be displayed. You can drag the status bar to scroll it up and down.
- **Horizontal Status Bar:** This is shown along the top of the display. It displays COG, SOG, HDG, and ROT.

5.1 Settings

These settings control which status bars are displayed. You can also select these using the buttons on the top and right of the Navigate tab.

- **Edit Status Bar:** When enabled, the panels in the vertical status bar can be graphically reordered. After turning this on, go to the status bar, re-order the panels, then turn this setting to off. Only the current visible panels may be reordered.

> ***Note:*** *This is automatically* ***disabled*** *whenever SeaTab restarts.*

5.1.1 Own-Ship Panels

- **Show Lat & Lon:** This controls whether the GPS position should be displayed in the status bar on the side of the display. It can be useful to not have latitude and longitude displayed in order to reduce clutter. This setting also controls the GPS validation data.
- **Show GPS Diagnostics:** This controls display of GPS diagnostic information, such as the fix type (GPS, DGPS, etc), HDOP, HPE, number of satellites, etc.
- **Show GPS Satellites:** This controls display of GPS satellite information (when available). This information is normally only available when using a NMEA feed with **xxGSV sentences**.
- **Precise Heading:** When enabled, heading is displayed with an extra degree of precision (359.9°). This should only be enabled if you know the heading sensor has the required level of precision. When this is enabled and Settings / Alarms / Heading Tick is enabled, then the ticks are made of 1/2°.
- **Precise Course**: When enabled, course is shown with an extra degree of precision (359.9°). This should only be enabled if you know your course sensor has the required level of precision.
- **Precise Rate of Turn:** When enabled, ROT is shown with an extra degree of precision (10.1°/m). This should only be enabled if you know your ROT sensor has the required level of precision.
- **Vessel Motion:** This controls whether to display a section in the status bar displaying vessel motion. It provides the bow and stern speeds to port/starboard and the vessel's speed ahead/astern. The estimated speed accounts for the position of the antenna, course and speed (COG/SOG), heading (HDG), and rotation of the vessel (ROT). All these sensors must be available.

  Normally, a single digit of precision is displayed. If **Precise Rate of Turn** is enabled, then 2 digits of precision are shown.

  If all the settings are not present, but at least COG, SOG, and HDG are present, a simplified analysis is shown that only has 1 lateral speed in place of the bow and stern that corresponds to the lateral speed of the GPS antenna. In this case, **GPS** is shown for the lateral motion and **NA** for where the stern motion would have been shown.
- **Show Radius-of-Turn:** When enabled, a panel is shown with the radius of turn based on current SOG and ROT of Own-Ship. A maximum turn radius of **5nm** is displayed.

- **Beam/Length/Draft:** This controls whether to display a panel with length, width, and draft for Own-Ship.
- **Show Bow-Waypoint Range:** When enabled, a panel is shown with the distance along the route from bow to the next waypoint. For waypoint with a turning radius, the waypoint is the mid-point of the curve. In cases where the bow has passed the next waypoint, but the waypoint has not advanced, a negative distance is shown.
- **Wind Direction:** Choose format for presenting wind direction (true and apparent) relative to Own-Ship heading (+/- 180) or with absolute bearing (0-360).

  Wind direction is normally reported as a direction relative to Own-Ship's heading. To convert to absolute bearing, heading data must be available. If not, the wind is reported as relative values.

- **Squat (Estimated):** Squat is a hydrodynamic effect that occurs as large vessels move through shallow water. Depending on various factors, the vessel may sit deeper in the water than its draft while stationary. This extra depth is called **Squat**.

> ***Note: Squat calculations***
>
> *The values calculated for squat are only rough estimates for the actual squat. Many other factors not accounted for in the estimate may affect squat, such as movement of other vessels in a confined channel. This feature should only be used by Pilots familiar with squat, the formulas described below, and their correct use. If you are unsure,* ***you should leave this feature disabled****.*

When this setting is enabled, a panel is shown with the estimated squat for both open water and confined channels. A confined channel is generally considered to be a channel less than 3 times as wide as the vessel's beam. The estimated squat value is only displayed in the status bar and is not otherwise used in SeaTab.

Estimating squat require that the **Block Coefficient** be set for Own-Ship (see **Own-Ship settings**).

Open Water: Squat = $1/100 \cdot C_b \cdot V^2$

Confined Channels: Squat = $1/50 \cdot C_b \cdot V^2$

In the formulas above, **Squat** is calculated in meters and *V* is the vessel speed in knots.

- **Pivot Point (Estimated):** The pivot point is the point around which the ship appears to be turning for an observer standing on board the ship. The location of the pivot point is not constant and depends on external factors acting on the ship such as use of tugs, bow thruster, ship's rudder, ship motion ahead or astern, wind forces, current, and water resistance. Having an estimate of the pivot point can provide insight into a vessel's motion.

When enabled, this feature presents a panel with the current position of the pivot point. The estimated pivot point is calculated with the following formula: **lateral speed** */ ROT*.

Lateral speed is the component of the vessel's motion amidships transverse to the centreline (motion to port/starboard) in **metre/second**. ROT is the vessel's rotation in **radians/second**. The result is the position along the centreline forward/aft of amidships, in **metres**. This calculation assumes the centre of gravity is amidships (50% of length of the vessel).

This assumption **could be** different if there is a large difference between the fore and aft draft.

The pivot point is presented relation to various positions on the vessel, depending on its location:

- **AMIDSHIPS:** at most **0.5m** forward or aft of amidships, the middle of the vessel.
- **BOW:** at most **0.5m** forward or aft of the bow, the foremost end of the vessel.
- **STERN:** at most **0.5m** forward or aft of the stern, the after end of the vessel.
- **FWD OF BOW:** The pivot point is forward of the bow, outside the vessel. Distance is measured from the bow.
- **AFT OF BOW:** Between amidships and the bow. Distance is measured from aft from the bow.
- **FWD OF STERN:** Between the stern and amidships. Distance is measured forward from the stern.
- **AFT OF STERN:** The pivot point is aft of the stern, outside of the vessel. Distance is measured from the stern.

> ***Note: Pivot point***
> *The estimated pivot point should only be used by pilots familiar with the concept of pivot point, the calculation above, the assumption regarding the centre of gravity being amidships, and correct uses of pivot point.*
> *If you are unsure,* ***you should leave this feature disabled.***

5.1.2 Options

- **Show Time:** When enabled, the current local time is displayed at the top of the side status bar.
- **Lock Onto AIS Targets:** The default behaviour is to show a panel for an AIS target only if selected. When enabled, the most recently selected AIS target is always shown in the status bar.
- **Lock Onto Waypoints:** The default behaviour is to show a panel for a waypoint only if selected. When enabled, the most recently selected waypoint remains displayed in the status bar.
- **Return Order of Status Bar to Default:** Selecting this button reverts SeaTab to using the default status bar ordering.

6.0 Units

These settings control units to represent various types of values:

- **Depth Unit:** Metres, Feet, or Fathoms. Depth values for raster charts are determined by the chart and the units are shown in the bottom right corner of the display (or can be found by querying the Chart Details).
- **Horizontal Unit:** Metres, Feet, or Yards. Like Depth but used for horizontal measurements.
- **Use Metres for Own-Ship:** This is used to override other settings. This can be useful for users who wish to use feet except when configuring Own-Ship, which is often specified in metres. When disabled, the Own-Ship units are the same as for other horizontal distances.
- **Distance Unit**: Nautical miles, Miles, or Kilometres. Horizontal units are used for distances less than a threshold (default 0.25NM).
- **Speed Unit:** Knots, Miles-per-hour, or Kilometres-per-hour.
- **Bearing Type:** True North or Magnetic North.
- **Lat & Lon Format:** DDMMSSFF or DDMMFFFF (FF is fractions of seconds/minutes).
- **Date Format for Month/Day:** Select MM/DD or DD/MM.
- **Temperature Unit:** Select Celsius or Fahrenheit.

6.1 Small Distances

- **Use Horizontal Units for Small Distances:** When enabled, horizontal units are used for distance up to the threshold below. This is enabled by default and a threshold of **0.25NM** is used.
- **Threshold for Small Distances:** Distances below this value are displayed using **Horizontal Lengths** rather than **Distance** units. Values range from **0NM** to **1NM**. The default value is **0.25NM**.

6.2 Other

- **Use Horizontal Units for XTD:** When enabled, horizontal units (metre/ft) are used for XTD. The default is for XTD to be a distance (NM/mi/km).
- **Use m/s for Wind Speed:** When enabled, **m/s** is used for displaying wind speeds instead of normal speed units.
- **Antenna Offsets from Beam:** When enabled, antenna offsets are shown/measured from ship's beam. When disabled, antenna offsets are measured outside from centreline.

6.3 Internationalization

- **Locale:** Locale specifies the language to use.

> ***Note: Languages***
>
> *English is the default and official language used in SeaTab. In many cases, translations are contributed by other SeaTab users. If concerned about the accuracy, we recommend using our default translations. New translations are checked on a weekly basis and automatically downloaded and installed.*
>
> *Please contact **OneOcean Technical Support** if you are interested in contributing translations for your language(s).*

7.0 Pilot Setup

Pilots perform common duties whilst on board a vessel. The purpose of this menu is to combine all these duties into one area. These settings are duplicates of those available in **Own-Ship Settings** and **Bathymetry Settings**.

Enable **Open When Own-Ship Change**, if you want these settings to be displayed whenever AIS reports a different Own-Ship.

7.1 Settings

- **Open When Own-Ship Changes:** When enabled, the Pilot settings are presented whenever Own-Ship MMSI changes.
- **NMEA/AIS Summary:** Overview of overall NMEA network configuration.

7.1.1 Own-Ship Size

- **Name:** Name used for save/load.
- **Source:** Select AIS or manual size.
- **Length:** Manual setting for the Own-Ship length.
- **Beam:** Manual setting for the Own-Ship beam.

7.1.2 AIS Antenna Position

- **Source:** Select AIS or manual offset position.
- **Distance to Bow:** Manual setting for GPS antenna position. Indicates how far behind the bow the antenna is.
- **Distance from Centreline:** Manual setting for GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centreline.

7.1.3 Ext GPS Antenna Position

- **Distance to Bow:** Manual setting for External GPS antenna position. Indicates how far behind the bow the antenna is. This is used for PPU's with integrated GPS.
- **Distance from Centreline:** Manual setting for External GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centreline. This is used for PPU's with integrated GPS.
- **Use as Conning Position:** When enabled, the external GPS Antenna distance to bow is used as the position on Own-Ship for predicted course vectors, beam lines, EBL/VRM/CL, XTD, etc. The conning position will always be on the centreline of the vessel.
- **Unmangle AIS Information:** This option is used on the vessel where the AIS antenna position reports a position different than where the SOG and COG is being calculated for. This causes incorrect prediction vectors to be displayed, most noticeably when vessel is rotating.

When this option is enabled, the antenna position is **moved** to the Ext GPS Antenna position. This change only affects the prediction vectors and associated data; the position of the vessel is unchanged.

If you are unsure how to use this setting, **you should leave it disabled.**

7.1.4 Own-Ship Draft

- **Source:** Select AIS or manual draft setting.
- **Draft:** Manual setting for draft of the vessel. This can be used to configure **Safety Depth** and **Safety Contour**.

7.1.5 Own-Ship Air Draft

- **Air Draft:** Manual setting for air draft of the vessel. This is used to display the container gantry in certain ports.

7.1.6 Heading Adjustment

- **Heading Offset:** Depending on how the product is oriented on the vessel, it may be necessary to set a heading correction.

Use these instructions to amend the following:

- Select the Heading Offset setting
- Select one of the common orientations or enter a value
- Confirm resulting heading is correct
- Adjust with +/- buttons if necessary
- Return to the Navigate tab to verify correctness of the setting

7.1.7 Chart Settings

- **Calculated Depth & Contour Settings:** This is the calculated Shallow Contour, Safety Depth, Safety Contour, and Deep Contour, based on the draft, UKC, and deltas.
- **Current Depth & Contour Settings:** This shows the current value(s) for the Shallow Contour, Safety Depth, Safety Contour, and Deep Contour These are the same as given on the **Vector Charts** settings. If the values are equal, they are ignored.
- **Update Chart Settings:** Select this button to change current Shallow Contour, Safety Depth, Safety Contour, and Deep Contours values to the calculated ones.

7.1.8 Tidal Adjustment

- **Tidal Adjustment:** Provide adjustment to depths based on current tides. See below for more information.
- **Fill Tidal Adjustment:** This allows you to fill based on currently selected tide adjustment. Requires an object to be selected with tidal data.

8.0 Vessel Display (Own-Ship & AIS)

These control how your vessel and other vessels (AIS targets) are shown on the Navigation display. Most settings apply equally to your vessel and to AIS targets. Your vessel will only **be shown** if its location is known from the devices integrated GPS or from GPS information supplied from an external NMEA feed.

8.1 Settings

- **Course Vectors:** The speed vector controls how long of a course vector to display for all vessels. You can disable course vectors entirely or select **1**, **3**, 6**, 12**, or **60 minutes**. A final option is to use a vector corresponding to **1 day**. The vector is displayed to show where the vessel moves in the given amount time if it maintains current course, speed, and rate-of-turn. For **1 day** course length, a straight vector is used.
- **Variable Course Predictor:** When enabled, a panel at the bottom of the navigation display can be used to adjust the length of the predicted courses, measured in minutes.
- **Use Straight Course Vectors:** When enabled, course vectors for all vessels are straight (no turning). This setting only affects course vectors and no other similar item such as swept path, docking paths, etc. This is intended to be used in situations where incorporating rate-of-turn into course vectors may be confusing, for example, when there is strong drift and slow vessel speed.
- **Show Course from Bow & Stern:** When enabled, course vectors for all vessels are shown from both bow and stern, instead of centre or conning position. The dual vectors are only shown if enough information is available, such as **ROT** and **HDG**, for the two vectors to be useful. This does not affect **Trial ROT**, which is only shown from centre/conning.
- **One Minute Ticks:** Enable this to display tick symbols on course vectors at positions corresponding to every minute.
- **Six Minute Ticks:** Enable this to display tick symbols on course vectors at positions corresponding to every **6 minutes**.
- **Show Vessel Heading:** When enabled, heading lines are displayed.
- **Show Beam Lines:** When enabled, beam lines are drawn amidships perpendicular to the vessel's heading.
- **Use Fill for Vessels:** When enabled, vessel (**Own-Ship and AIS**) use fill in addition to outlines. This makes them easier to identify. Use with caution as this may obscure features beneath the vessels.

8.1.1 True-scale

- **Use True-scale When Small:** Vessels are normally only displayed in in True-scale when the scaled vessel on the display is at least **6mm** long. When enabled, the threshold is reduced to **1.5mm**, which means True-scale is used at much smaller sizes.
- **Use Course When Heading Unavailable:** Normally, **True-scale** is only be used if the vessel's heading is known. When this setting is enabled, the vessel's course is used if the heading is not known. In many cases a vessel's course **may not** match its heading, resulting with an inaccurate display.

8.1.2 Own-Ship

- **Use Recreational Outline for Own-Ship:** When enabled, a different outline is used for Own-Ship.
- **Show Predicted Position:** Show predicted position of Own-Ship.
- **Buffer Around Own-Ship:** When enabled, a buffer is drawn around Own-Ship.
- **True-scale History:** When enabled, a recent history of Own-Ship True-scale positions is displayed.

- **Show Side-Heading Lines:** When enabled, additional heading lines are displayed on either side of Own-Ship's heading, extending **2NM** from the centre of the vessel. You can choose relative bearings of **3°**, **5°**, or **10°**.
- **Show Swept Path:** When enabled, swept path of Own-Ship is shown. The swept path is indicated by lines that begin from the current outermost extremities of the vessel to port and starboard from the current course of the vessel. This is useful primarily when the vessel is drifting, due to current or wind, and the effective beam may be significantly higher than the beam. The length of the swept path is same as the predicted course length, but at most **6 minutes**.

  When Swept Path is enabled, the vertical status bar includes a panel with Own-Ship's beam width, drift (crab) angle, and effective beam width at the current time.

Finally, when Electronic Bearing Line (EBL) is selected which is between Own-Ship beam and length, the EBL panel in the status bar is shown the maximum drift possible for Own-Ship's effective beam to be at-most the length of the EBL. This is the **maximum angle** and assumes the vessels COG approaching the EBL is a right angle.

> ***Note: We recommend the following is observed***
>
> - *The calculations used assume the vessel is rectangular.*
> - *The swept path uses the beam and length information supplied by AIS or the values in the Own-Ship settings. Typically, correspond to the LOA and the moulded beam. If you prefer the **LWL** and the beam (at waterline), you can adjust the Own-Ship settings.*
> - *The effective beam width is for the current moment in time. It may change if the vessel's **HDG** or **COG** changes.*
> - *The predicted swept path assumes ROT has a similar effect on course as heading. However, as a vessel turns in the presence of current or wind, the course and heading are normally not affected the same.*

- **Trial Rate-of-Turn:** When enabled, a slider appears below the main navigation panel. You can use this to set a Trial ROT of up to **30°/m** in either direction. An orange coloured course vector is displayed (in addition to the normal black one) that shows the vessel's predicted course at that rate-of-turn. The Trial ROT is displayed above the slider along with the turning radius at the current SOG, **if the vessel speed is moving at least 1kn.**

  Likewise, if following a route, the goal waypoint is shown with an additional turning radius corresponding to the current SOG.

You can zero the Trial ROT by selecting the **O** button above the slider. You can disable it by selecting the **X** button.

A switch labelled **CHL** (Curved Heading Line) is also available. CHL controls the behaviour of the course vector when approaching waypoints/turns. When CHL is enabled and Own-Ship is within **3NM** of a turn, the predicted course straightens when it reaches the bearing for the next course leg. CHL is automatically disabled, when **Use Drift in Course Predictions** is enabled.

- **Trial Speed:** When enabled, a slider appears below the main navigation panel. You can use this to set a Trial SOG of up to **25kn**. The slider value is used for all calculations related to Own-Ship speed. Because of the pervasive effect of this setting, the panel for the slider has a magenta background.

  Example uses include testing for effects of changing on ETA, CPA, or meeting points with other vessels.

  As opposed to Trial ROT, this does not create a new predicted course vector. However, the Trial SOG is used in both the normal predicted course vector and in the Trial ROT course vector (if enabled).

This mode is disabled by selecting the **X** button in the panel.

- **True-scale Status:** Shows current status of True-scale for Own-Ship. This is used for trouble-shooting why Own-Ship may not be displayed in true-scale. See above for the list of conditions that are required for True-scale display of a vessel. Similar information is available in **True-scale Outline** diagnostic for an AIS target.
- **Show Own-Ship Wind & Drift:** When enabled (and appropriate sensor data is available from a NMEA feed), vectors are shown for apparent wind, true wind, and drift. The vectors originate from the centre of Own-Ship. The apparent wind has one set of **tails**; the true wind has two sets of tails. The drift has an arrowhead pointing away from Own-Ship. The vectors only indicate direction, not speed. In some cases, not all vectors may be shown.

> ***Note: Sensor data***
> *Normally the sensor data required for this feature is not available from the AIS Pilot Plug that pilots use, so turning this on has no effect.*

- **Use Ship Shape for Unscaled Own-Ship:** When enabled, a ship image is used for unscaled Own-Ship. This is used instead of the concentric circles specified by **IHO S-52 standard**.
- **Use Green Fill for Own-Ship:** When enabled, the True-scale image for Own-Ship has green fill instead of the normal IHO S-52 black colour. See **Settings/Raster** for further options that can affect Own-Ship colouring.

8.1.3 AIS Targets

- **Use Red for Targets:** When enabled, AIS targets are drawn using a **red colour**, users find contrasts better than the standard **blue colour**. This only affects AIS targets from your main feed. Targets from AIS Network Feed and AIS Sharing are **coloured orange**.
- **Target Labels:** Settings for control of labels on AIS targets.
- **Flag AIS Targets by Type:** When enabled, each AIS target with is shown with a flag that has colour according to its type:
    - Blue - Passenger vessels
    - Green - Cargo ships
    - Red - Tankers
    - Yellow - High-speed vessels
    - Medium Blue - Tugs, Pilot boats, etc
    - Magenta - Yachts, Other
    - Brown - Fishing boats
- **Show AIS CPA:** When you select an AIS target, an information box appears with details about the Closest Point of Approach (CPA) with Own-Ship. This information is also displayed on the vertical status bar. You can also enable Show AIS CPA to have the CPA positions displayed visually. The positions of the AIS target and Own-Ship when they are at the estimated CPA are marked with magenta circles. Dotted magenta lines show the path of vessels to the CPA and connect the positions. This can be helpful to understand the relative positions of the vessels when they are at the CPA.

  CPA provides distances based on centre of Own-Ship and target. This assumes vessels maintain course (COG & SOG), regardless of current ROT.
- **Show AIS BCR:** When you select an AIS target, an information box appears with details about the Bow Crossing Range (BCR) with Own-Ship. This information is also displayed on the vertical status bar. You can also enable Show AIS BCR in order to have the BCR positions displayed visually. The positions of the AIS target and Own-Ship at the estimated point are marked with **orange circles**. Dotted orange lines show the path of vessels to the BCR and connect the positions. This can be helpful to understand the relative positions of the vessels.

  BCR provides distances for centres of Own-Ship and target, not their bow or stern. The calculation assumes vessels maintain (COG & SOG), regardless of the current ROT.
- **Hide Course Vectors for Tugs:** When enabled, course vectors for AIS targets marked as tugs are not displayed. This can be helpful when tugboats are surrounding Own-Ship and their course vectors clutter the display.
- **Hide AIS Aids-to-Navigation:** When enabled, AIS Aid-to-Navigation (ATON) are not displayed. This does not affect chart symbols, only symbols resulting from AIS. Some mariners find AIS ATON unhelpful.
- **Hide Recreational Vessels:** When enabled, AIS targets identified as recreational vessels are not displayed. This capability relies on the vessel type information reported by AIS.

  Recreational vessels include the following types (again, as identified by AIS): Diving, Sailing, and Pleasure vessels.

Recreational vessels **Settings/Meeting Points/Small Vessel Length** are displayed, regardless of this setting.

- **Hide Fishing Vessels:** When enabled, AIS targets identified as fishing vessels are **not** displayed. This capability relies on the vessel type information reported by AIS.

Fishing vessels a **Settings/Meeting Points/Small Vessel Length** are displayed, regardless of this settings.

- **Hide Gantry Cranes:** When enabled, gantry cranes will **not** be shown. Currently, this only applies to special AIS binary broadcast for Hamburg Harbour.

8.2 True-scale Vessel Display

When zoomed in appropriately, SeaTab will display vessels (both Own-Ship and AIS targets) scaled and positioned to their approximate size. This can be useful in many situations, such as when navigating in small areas.

For True-scale display to be used for a given vessel, the following conditions must be present.

- The current position of the vessel must be known.
- The vessel's heading (HDG) must be known. Alternatively, if the setting **Use course if heading is not available is ON**, the vessel's course over ground (COG) will be used when HDG is not available.

> ***Note:*** *The course may not match the heading, and this may result in an incorrect representation.*

- The size of the vessel must be known. This size information includes the relative location on the vessel of the GPS antenna.
- The display must be zoomed in appropriately far for the displayed vessel to be at least **8mm** in size. This threshold is **2.0mm** when **Show True-scale when small is ON**.

The size of Own-Ship may come from the local AIS feed (in **AIVDO** sentences) or can be set manually by the user. The settings in the AIS feed are given preference, unless **Override AIS for Own-Ship Size is set to ON** True-scale Vessel Display, in which case the manual settings will always be used.

For AIS targets, the size information is reported less frequently than the vessel's position so there may be a delay after a vessel is first displayed before the shape is available. SeaTab saves this information to prevent the delay when the same vessel is encountered again.

8.3 Frequently Asked Questions

- **Why is my vessel not being displayed in True-scale?**

  Answer - See the condition listed above, that need to be met for True-scale display of a vessel. See the Status field under the **Own-Ship** settings for the current status of True-scale for your vessel. This will explain why or why not True-scale is being used.

- **Why is an AIS target not being displayed in True-scale?**

  Answer - See above, and the **True-scale Outline** diagnostic field for the AIS target.

- **Why are some vessels displayed in True-scale and some not?**

  Answer - It may be the case that some vessels meet the conditions required for True-scale display and some do not. For instance, a large vessel may large enough to meet the **6mm** size requirement at the current zoom, while a small vessel does not.

- **Why is a vessel being shown in the incorrect position?**

  Answer - SeaTab requires accurate information to display vessels correctly. It is unfortunately common for AIS information, especially the size and location of GPS antenna, to be incorrectly configured in the AIS transponder.

  You can see the information that is being reported by looking in the Diagnostics information for an AIS target. Another source of error can occur if the **Use course if heading is not available is ON**. If course is used, due to the lack of heading data a vessel may be being shown with an inaccurate orientation. If you consider the display is incorrect, contact **OneOcean Technical Support** for further assistance.

8.4 Vessel True-scale Predictor

- **Show Predicted Position:** Show predicted position of Own-Ship. Predicted positions account for rate-of-turn, when available.
- **Number of Predicted Positions:** A maximum of **4 predicted positions** can be displayed, each representing a fixed interval according to the **Predicted Vessel Position Interval**. Predicted positions account for rate-of-turn, when available.
- **Predicted Vessel Position Interval:** Interval between predicted vessel positions.
- **Use Fill for Predicted Position:** When enabled, fill is used for predicted vessel position.

8.5 Vessel True-scale Buffer

These options control display of a buffer line around Own-Ship.

8.5.1 Settings

- **Buffer Enable:** When enabled, a buffer is drawn around Own-Ship.
- **Buffer Range:** When buffer is enabled, this is the range to use. The default range is **10m**. If the buffer Monitor Safe Water are both enabled, then the buffer zone is included in the safe water area.

8.6 Own-Ship Acceleration

Note: This feature requires an Enterprise Subscription.

These settings control the derivation of acceleration and display of related data.

- **Derive Acceleration:** This controls whether to derive acceleration of Own-Ship.

  When decelerating, a panel in status bar shows time-to-stop (TTS) and distance-to-stop (DTS).
- **Dampening:** This controls how much dampening to use when deriving acceleration of Own-Ship. The acceleration rate is estimated based on an average of the previous **30**, **60**, or **120 seconds**. Longer durations may be more accurate but less-responsive to changes, and vice-versa. The default is **60 seconds**.
- **Show Speed Marks on Route:** When enabled, following a route, SOG is at least **1kn** and decelerating at least **1kn/min**, markers are placed at the estimated stopping position.
- **Show Extra Prediction With Acceleration:** When enabled, a separate prediction line is shown that incorporates acceleration. The prediction is only shown if acceleration is at least **0.25kn/minute**. The ticks on the prediction line correspond to speeds of **1kn** (thin) and **5kn** (thick). The vector ends with an arrow if Own-Ship is predicted as still moving at the end.

9.0 AIS Target Label Options

9.1 Settings

- **Show Labels for Targets:** Choose method for determining whether AIS labels are shown.

  Off - labels are not shown unless the vessel is selected.

  On - each AIS vessel is normally labelled with the vessel name.

  Auto - labels are shown according to an algorithm to detect when the display is cluttered. For instance, vessels with SOG less than **2kn** normally do not have labels shown.

- **Use Fill for Labels:** When enabled, labels are shown with solid background. This can make labels easier to read but can obscure other objects. Labels for selected objects always use solid background.
- **Hide Labels for Small Vessels:** When enabled, labels are shown for small vessels, those less than the **Meeting Point / Small Vessel Length**, unless selected by the user.

9.1.1 Fields

- **Show Pilot on Labels:** When enabled, labels are visible, and a pilot's name is available, and is displayed on the label. Pilot names are only available on **Hi-Res PPU targets** (Settings / AIS Sharing / Hi-Res PPU Targets).
- **Show HDG on Labels:** When enabled and labels are visible, each AIS target is shown with its HDG.
- **Show COG on Labels:** When enabled and labels are visible, each AIS target is shown with its COG.
- **Show SOG on Labels:** When enabled and labels are visible, each AIS target is shown with its SOG.
- **Show Draft on Labels:** When enabled and labels are visible, each AIS target is shown with its draft.
- **Show Destination on Labels:** When enabled and labels are visible, each AIS target is shown with its destination displayed, when available.
- **Show CPA on Labels:** When enabled and labels are visible, each AIS target within **10nm** of Own-Ship is shown with its Closest Point of Approach (CPA).

  CPA provides distances based on centre of Own-Ship and target. This assumes vessels maintain course (COG & SOG), regardless of current ROT.

- **Show BCR on Labels:** When enabled and labels are visible, each AIS target within **10nm** of Own-Ship is shown with Bow Crossing Range (BCR).

  BCR provides distances for centres of Own-Ship and target, not their bow or stern. The calculation assumes vessels maintain (COG & SOG), regardless of the current ROT.

10.0 Own-Ship Settings

These settings define the characteristics of Own-Ship. They are used for displaying Own-Ship in True-scale and other features that depend on the dimensions, for Own-Ship.

10.1 Settings

10.1.1 Dimensions

- **Name:** Name used for save/load.
- **Alarm When AIS Changes:** When enabled, changes to Own-Ship information reported by AIS triggers warning dialogs.
- **True-scale Status:** Shows current status of True-scale for Own-Ship. This is used for trouble-shooting why Own-Ship may not be displayed in true-scale. See above for the list of conditions that are required for True-scale display of a vessel. Similar information is available in **True-scale Outline** diagnostic for an AIS target.

10.1.2 Size

- **Source:** Select AIS or manual size.
- **Length:** Manual setting for the Own-Ship length.
- **Beam:** Manual setting for the Own-Ship beam.

10.1.3 Antenna Position

- Image showing position of antenna relative to Own-Ship.

AIS Antenna Position

- **Source:** Select AIS or manual offset position.
- **Distance to Bow:** Manual setting for GPS antenna position. Indicates how far behind the bow the antenna is.
- **Distance from Centreline:** Manual setting for GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centreline.

Ext GPS Antenna Position

- **Distance to Bow:** Manual setting for External GPS antenna position. Indicates how far behind the bow the antenna is. This is used for PPU's with integrated GPS.
- **Distance from Centreline:** Manual setting for External GPS antenna position. Indicates how far to Port or Starboard the antenna is relative to the centreline. This is used for PPU's with integrated GPS.
- **Use as Conning Position:** When enabled, the external GPS Antenna distance to bow is used as the position on Own-Ship for predicted course vectors, beam lines, EBL/VRM/CL, XTD, etc. In these circumstances, the conning position is **always** placed on the centreline of the vessel.
- **Unmangle AIS Information:** This option is used on the occasional vessel where the AIS antenna position reports a position different than where the SOG and COG is being calculated for. This causes incorrect prediction vectors to be displayed, most noticeably when vessel is rotating.

When this option is enabled, the antenna position is **moved** to the Ext GPS Antenna position. This change only affects the prediction vectors and associated data; the position of the vessel is unchanged.

If you are unsure how to use this setting, **you should leave it disabled.**

10.1.4 Draft

- **Source:** Select AIS or manual draft setting.
- **Draft:** Manual setting for draft of the vessel. This can be used to help configure Safety Depth and Safety Contour.

10.1.5 Air Draft

- **Air Draft:** Manual setting for air draft of the vessel. This is used with display of container gantry in certain ports.

10.1.6 Heading Adjustment

- **Heading Offset:** Depending on how the product is oriented on the vessel, it may be necessary to set a heading correction.

Use the below to amend the heading offset:

- Select the Heading Offset setting
- Select one of the common orientations or enter a value
- Confirm resulting heading is correct
- Adjust with +/- buttons if necessary
- Return to the Navigate tab to further verify correctness of the setting

10.1.7 Block Coefficient

- **Block Coefficient:** This value is used to estimate Squat. It must be in the range **0** to **1**. You must manually enter a value for the current vessel. **See Settings / Status / Squat for more information**.

10.1.8 Other

- **List All:** List all vessel records.
- **Import:** Import vessels.
- **Export All:** Export all vessels.
- **Turbine:** Settings to display an oversize wind turbine as cargo on Own-Ship. if you are carrying this cargo item.

11.0 Heading Offset

These settings control an offset to Own-Ship heading. The offset is an adjustment added to the heading sensor data for Own-Ship. This can be useful in situations where the heading value being received is inaccurate. Also, it is needed to be used with some PPU devices (typically multi-pod devices) where the orientation of the two pods affects the received heading.

11.1 Settings

- **Heading Offset:** The heading offset is added to the sensor value to generate the heading to use. The default heading offset is **0°** (no change). Negative values correct to Port and positive values correct to Starboard. Normally the desired setting is either **90°** or -**90°**.

> ***Note: Heading offset***
> *The heading offset is associated with vessels (according to their MMSI). Once changed, the Heading Offset maintains its value. It will be necessary to change the setting back to **0°** when you no longer need it.*

- **Calculated Heading:** This shows the current (possibly corrected) value of the heading.
- **Add 1 Degree:** Adjust by **1°** to starboard.
- **Subtract 1 Degree:** Adjust by **1°** to port.
- **Add 10 Degrees:** Adjust by **10°** to starboard.
- **Subtract 10 Degrees:** Adjust by **10°** to port.

11.1.1 Common Orientations

- **Slave is Forward:** Set heading correction to **0°** (no correction). This corresponds to the slave being ahead.
- **Slave is to Port:** Set heading correction to **90°**. This corresponds to the slave being to port.
- **Slave is to Starboard:** Set heading correction to **-90°**. This corresponds to the slave being to starboard.
- **Slave is Astern:** Set heading correction to **180°**. This corresponds to the slave being directly astern.

11.1.2 Automatic

- **Automatic Heading Offset:** When enabled, the **user Heading Offset** will be automatically be prompted select a new heading offset when it differs from AIS heading by more than **30°**. When the offset setting is within **10°** of cardinal direction (**0° / 90° / -90° / 180°**) then the cardinal direction is used instead.

12.0 Follow Mode

These settings control how vessel **Follow Mode** operates. When enabled, Follow Mode cause the display screen to follow the movement of your vessel. You enter this mode by tapping the arrow in the top-right of the display. Tapping a second time changes to course-up display. You can exit **Follow Mode** by tapping the arrow again or (if **Sticky mode** is not enabled) by panning or zooming the display.

12.1 Settings

- **Use Offset in Follow Mode:** When enabled and in Follow Mode, the vessel is offset backwards so that a larger part of the display area is in front of it. Otherwise, the vessel is in the centre of the display.
- **Follow Mode is Sticky:** When disabled, any manual movement of the display (panning, zooming, rotation) immediately disables Follow mode. When enabled, Follow mode remains enabled after you pan/zoom/rotate the display, but is temporarily disabled. If you have not adjusted the display for **30 seconds**, Follow mode re-centres the display on your vessel.
- **Preferred Orientation:** When in offset or heads-up mode, you can choose to orient using the vessel's course (COG) or heading (HDG). Normally these are very similar, but when moving slowly or astern they can be quite different.

13.0 Meeting Points

When an AIS target is following the same route, it can be useful to estimate where they may meet along the route. This is called their **Meeting Point**.

If traveling opposite directions, the meeting point is where the two vessels pass each other. When the vessels are in the same direction the vessel behind is overtaking the vessel in front, the meeting point is the location where they are overtaken.

This feature is commonly used when navigating rivers and similar confined channels, where the vessels can be expected to follow the course of the river. SeaTab will estimate the time until they meet and the approximate point of meeting along the route. The meeting point is displayed as a magenta circle along with the name of the target.

The **AIS** tab has an option called **Route Traffic** for organizing targets on your current route along with their meeting points.

> ***Note: Meeting points***
> *The meeting point estimate uses several assumptions, such as that the vessels are following the same route, they maintain current speed, etc. The estimate is only accurate to the degree that the assumptions hold. In situations of vessels with similar speeds overtaking each other, the estimate may have a significant amount of error.*

The following conditions must be met for a meeting point to be displayed:

- **Own-Ship must** be following a route.
- **The target must** be moving at least **1kn**.
- **Both vessels must** be within a maximum distance from the route. The default maximum is *1nm*, but this can be adjusted in the settings below.
- **Each vessel must** be within **25 degrees** of the direction of the route segment it is on.
- To be displayed on the chart, the **meeting point must** be a minimum range from Own-Ship. This is done to avoid clutter. The default minimum range is **0.25NM**.
- **The meeting point must** be anywhere along the route.

You can see the time to meeting by viewing the AIS record. The current status is displayed under **Route Meeting Point.** If there is no meeting point, the status provided will help you understand why not. The possible status values for meeting points are:

- Vessels meet in time
- Own-Ship overtakes Target in time
- Target overtakes Own-Ship in time
- Vessels moving apart
- Own-Ship pulling away from Target
- Target pulling away from Own-Ship
- Own-Ship/Target not on route
- Speed for Target below **1kn** threshold
- No position for Target/Own-Ship
- No course for Target/Own-Ship
- No speed for Target/Own-Ship
- Vessels meet past end of route Meeting Points

13.1 Settings

- **Show Meeting Points:** This enables the display of Meeting Points for AIS targets.
- **Show Lines for Meeting Points:** When enabled, lines are shown at meeting points perpendicular to the route.
- **Distance Threshold:** This is the maximum distance Own-Ship or an AIS target may be from the current route and still considered to be following the route. Further conditions for a vessel to be considered following a route are in the **Meeting Point** overview.
- **Small Vessel Length:** AIS targets less than this length have meeting points shown with green **Meeting Point** symbols. This can be used to identify smaller vessels.

13.1.1 Display Filters

- **Only Show Selected AIS Target:** When enabled, only show the meeting point for the currently selected AIS target.
- **Minimum Range:** Only display the meeting points that are at least this far from Own-Ship. This can help in reducing clutter and distractions around Own-Ship. The default minimum range is **0.25NM**.

13.1.2 Alarms

- **Meeting Point Alarm:** Alarm activated when new vessels appear on your route with a meeting point.
- **Passing Restriction Alarm:** Alarm when a meeting point is detected along active route segment where passing is restricted. This is only done for vessels larger than **Small Vessel Length**.

14.0 Tools

Tools are graphical objects that appear on top of marine charts and are used for measuring distances/bearings, keeping notes, or other purposes.

The following types of tools are supported:

- **Electronic Bearing Line (EBL):** These appear as a line on the display from a given point and following a certain bearing.
- **Clearing Line:** These are like EBL's, but they terminate in a perpendicular line, like a **T**. You can graphically adjust the length of the two lines in the **T**.
- **Variable Range Marker (VRM):** These appear as circles showing all points that are a given distance from the centre.
- **Mariners Note (MARNOT):** These are shown as a symbol and an optional text. A wide choice of symbols are provided, including various informational symbols, symbols for aids-to-navigation, obstructions, fishing, diving areas, etc. You can also associate lines, polygons, and/or media files with Mariners Notes.
- **Fender:** These are used to identify wharves or edges of navigable areas, for example turning basins. When Docking mode is enabled, distances and angles to fenders are displayed graphically and in the status bar.
- **View:** These are used to identify common areas you wish to display. They store both the location and the specific scale to use. After you have created at least one view you can view a list of them to jump to by double tapping and selecting **Jump to View**.
- **Group:** These are used to group collections of tools together. Visibility for all tools in the group can be controlled by enabling/disabling the Group tool or double-tapping and selecting **Toggle Group.** Each tool can be in at most one group. Exporting a Group will include all associated tools within it.
- **Vessel:** These are used to display vessels for various purposes. When created, the vessel has the same size as Own-Ship. Open the details of the vessel to adjust its size. Select bow/stern and drag/drop to rotate the vessel. Select centre and drag/drop to move the vessel around. When a vessel tool is selected and docking aids are enabled, then it will be used as a docking target, showing distances and other approach information for Own-Ship.

Select **Add Manoeuvre** to create a multi-step manoeuvre for the vessel. This will open a panel at the bottom of the display where STW, Bow, and Stern speed vectors can be edited with sliders. Select the add (+) and delete (-) buttons to add and remove steps from the manoeuvre. You can Select the advance and backup buttons (or tap other steps) to move between steps on the manoeuvre. If docking aids are enabled, then distances to nearby fenders will be shown.

Tools are used by mariners in various ways to help reference and manage chart information.

14.1 Creating and Manipulating Tools

Create a Mariners Note, View, or Group by double tapping anywhere on the navigation display and selecting **Add Tool**, then **Add Mariners Note, Add View**, or **Add Group**.

EBLs, VRMs, Clearing Lines, and Fenders are similar but first select a point on the display and then double tap on a second position and select **Add EBL, Add Clearing Line**, **Add Fender,** or **Add VRM**. For EBLs and Clearing Lines, the first position is the beginning of the EBL and the second is the end. For VRMs, the first position is the centre of the circle and the second position indicates the radius.

Tools are graphically edited by first tapping on the object to select it. Once selected, you can move them by touching near the object and dragging it. For EBLs, you can move either end of the EBL to a new location, causing the range and bearing to be adjusted accordingly. If you drag the line, the range and bearing will remain the same, but the origin of the EBL will be moved accordingly. Clearing Lines are like EBLs, except that you can also drag the ends of the **T** to adjust its length. For VRMs, if you move the centre, this will adjust the centre position, but the radius will remain the same. If you drag the circle, the radius will be adjusted without moving the centre.

You can attach an EBL, VRM, or Clearing Line to a vessel from either **Own-Ship** or an **AIS target**, or a waypoint. This is done by dragging the object until the origin of the EBL/CL or the centre of the VRM is on the desired vessel. The

default is to attach a tool to the centre of the vessel and if you are zoomed in appropriately, you can drop it specifically on the bow or stern of the vessel. Once attached, the object will move along with the given vessel. You can also drag the object off by selecting it and moving it. Only EBLs, VRMs, and Clearing Lines may be attached to other objects.

Any tools can be manually edited by selecting it and double tapping on them. A dialog will appear showing the attributes of the tool. In the top-right there is a delete button and a button for exporting/forwarding that object via email, File transfer, or opening it in another application. See **Import and Export** for further information.

14.2 Display

Mariners Notes are only displayed when the display scale is at least **1:100,000** or when they are associated with an area, see below.

Mariners Notes can be associated with areas or lines on the chart. To do this, select the Mariners Note by single tapping on it and then double tapping and selecting **Add Point to Mariners Note**. When at least 3 points have been added, the polygon they identify will be shown with partially transparent fill. You can also select **Fill Colour, Line Colour,** and **Line Style**. Fill can be disabled; in which case the line is displayed as a line segment.

Fenders are only displayed when the scale is at least **1:100,000**. More information about fenders can be found in **Docking Help.**

14.3 Settings

The following settings apply to tools:

- **List All Tools:** Displays a table of all tools, grouped by type. You can select tools to edit them.
- **List All Groups**: Displays a table of all Groups.

14.3.1 Display

- **Show Mariner Notes:** Mariners Notes are only shown if this is enabled. The default is on.
- **Show Electronic Bearing Lines (EBL):** EBLs are only shown if this is enabled. The default is on.
- **Show Clearing Lines:** Clearing Lines are only shown if this is enabled. The default is on.
- **Show Variable Range Markers (VRM):** VRMs are only shown if this is enabled. The default is on.
- **Show Fenders:** Fenders are only shown if this is enabled. The default is on.
- **Show Views:** Views are only shown if this is enabled. The default is on.
- **Show Groups:** Group tools are only shown if this is enabled. This only affects the graphical group symbol, not the tools included in the group. The default is on.
- **Show Vessel Tools:** Vessel tools are only shown if this is enabled. The default is on.

14.3.2 Manage

- **Erase All:** This button erases all tools. A confirmation dialog asking for confirmation will be shown. This action cannot be undone.
- **Export:** Export all Tools using whatever method you select. See **Import and Export** for further information.
- **Import:** This is used to import tools. See **Import/Export Help** for further information.

14.4 Import and Export

There are several options for importing and exporting tools. The options are like those for routes and waypoints.

> ***Tip: Import and Export***
> *We recommend reading the Import/Export Help section to become familiar with this function.*

Tools can be exported as a group, using **Export** or **Export Mariners Notes**. or individually using the forwarding button in the tool edit dialog. Tools can be exported using email, File Transfer, or opened in another application. Only the SeaTab application can import them.

When exporting a **Group** tool, all tools in that group will be included.

There is no industry standard format for Tools as there is for GPX. SeaTab uses an XML based format, so they can be edited as a text file, if required. However, other programs may not be able to import them.

15.0 Tracks

Tracks are used to record and display the path Own-Ship has taken. In addition, the position is stored every **30 minutes** with a timestamp and a marker you can select to determine the position and time at that point.

15.1 Settings

These settings control recording and display of Own-Ship's tracks.

- **Enable Tracks:** When enabled, the past course Own-Ship is monitored and displayed. This does not apply to AIS vessels.
- **Save & Restart Tracks:** This button saves the current tracks and restart them.
- **Restart When Own-Ship Changes:** When enabled, tracks are restarted whenever Own-Ship changes. Old tracks are saved in the Files tab.
- **Less Conspicuous Tracks:** When enabled, the tracks are shown as thin lines.

15.1.1 Manage

- **Erase Tracks:** This button erases the current stored tracks.
- **Export:** This button exports the current tracks via email, file sharing, or direct transfer to another application. See **Import/Export Help** for further information.
- **Imported Files:** Tracks can be imported using the GPX format. The file must have a .**gpx** or **.GPX** suffix. You can transfer the file using File Transfer. Then select **Imported Files** and choose the desired GPX file. Files are listed along with the number of track points they have.

  You can add as many files as needed. When files are added, they are listed on the upper section. If you want to remove an active tracks file that has been imported, you can select it to remove it. See **Import/Export Help** for further information.

16.0 Docking Aids

SeaTab includes support for displaying extra data when docking vessels. This features are intended to be useful for large commercial vessels (100+ metres) with accurate Rate-of-Turn (ROT) sensor data. It is not intended for use with small recreational craft.

This feature attempts to provide as accurate of information as possible. Additionally, it accounts for the location of the GPS antenna on the vessel and ROT, and their effects on the movement of different parts of the vessel.

When first using this feature, we recommend trying it with the Simulator to become familiar on how it works.

To use this feature, you will need to define one or more **fenders**. A fender may correspond to a wharf your vessel will be docking alongside or mark the boundaries of navigable areas.

As Own-Ship approaches fenders, fenders will automatically be selected for display, as described below.

16.1 Settings

- **Show Docking Aids:** Enable to display docking information in the Navigate tab. For docking information to be displayed, fenders will need to be created.
- **Status:** This displays the current status of Docking mode.
- **List All Docking Fenders:** This displays a table of all fenders.

16.1.1 Alternate Manoeuvres

- **Use VRMs as Single Point Mooring:** When enabled (and Docking Aids are enabled), the closest VRM is treated as a single point mooring. The VRM must have a radius of at most **400m** and its centre must be within **1NM** from the bow of Own-Ship.
- **Use VRMs as Turning Circle:** When enabled (and Docking Aids are enabled) and Own-Ship is inside a VRM, the VRM is treated as a turning circle. The distance of Own-Ship centre to VRM is displayed in centre of VRM. Also, distance to outside of VRM is shown as though it were a fender. The VRM must have radius at most **1000m** and the centre of Own-Ship must be inside the VRM for this to be active.
- **Use Vessel as Docking Target:** When enabled (and Docking Aids are enabled), an AIS target can be used as a possible fender. The target is treated as though it had a fender beginning at the bow on nearest side to Own-Ship. It extends aft the length of the vessel and a further **0.5nm** aft of the vessel. This can be used as an aid when pulling alongside another vessel. The bow of the vessel is used as **0** mark to allow relative position of bow and stern to be determined.

  The use of this is

  1. the currently selected **AIS target**, or
  2. the closest vessel at least as the Small Vessel threshold for Meeting Points (Settings / Meeting Points / Small Vessel Length).

     For item **1**, you can enable Settings / Status Bar / Lock onto AIS Targets so that the AIS target is not lost when you select other items.

> ***Note:*** *Own-Ship and AIS target is incorporated into the estimate of closing speed with target. Rotational motion of AIS target (if available) is not used.*
>
> *Additionally, when this is enabled, the closest Vessel Mariners Tool will be used as a docking target. In the case of Vessel Tool, the fenders are located to position Own-ship in the position of the target.*

- **Use Closest Vessel Tool as Docking Target:** Additionally, when this is enabled the closest Vessel Mariners Tool is used as a docking target. For this purpose, fenders are placed to position Own-ship over the target (not alongside). If a Vessel Tool is selected, then that takes precedence as the target.

16.1.2 Options

- **Use Fender Corners:** When enabled, docking mode shows distances to fender **corners** from points on Own-Ship. When disabled, distances to fenders are only shown when the closest point is not a corner. The default is to use corners.
- **Inset Shoulders Points:** When enabled, shoulder points of vessel are **15%** from bow/stern. The default is enabled. When disabled, shoulder points of vessel are corners of the **rectangle** indicated by the length and beam. Note that distances always treat the vessel as a rectangle, regardless of the shape drawn on the display.
- **Only Show Distances:** The default is to show speed, TTG, and angle to the wharf. Enable this if you only want the distance to be shown.
- **Use Speed Units:** The default for docking velocity is to use Settings / Units / Horizontal Units. Enable this to use Settings / Units / Speed Units instead.
- **Prefer cm/s Instead of m/s:** Prefer **cm/s** instead of **m/s**. This only applies when **Use Speed Units** is not enabled, and **Horizontal Units** is set to **Metre**.

16.2 Instructions

Instructions to configure and use Docking Aids:

1. Set up NMEA/AIS and true-scale support for your vessel.
2. Open the **Navigate** tab and identify the wharf you intend to dock alongside.
3. Create one or more fenders to identify the wharf you will be docking alongside or to mark boundaries of navigable areas. Single tap to mark one point of the fender, then double tap a second point, select **Add Tool**, then select **Add Fender**. You can select a fender, then graphically adjust it or double tap another location and select **Add Point to Fender**. The new point will be inserted into the fender at the best location that can be determined.
4. Turn Docking Mode on.
5. When your vessel approaches the fenders, you should see the Docking Aids displayed as described below.

16.3 Display

The following docking aids are visible on the Navigate tab.

> ***Note: Docking aids** are only shown at display scale of at least **1:20,000**.*

- Additional predicted course lines are drawn as black dotted lines. These predict the movement of various points on the vessel, showing how it's moving over the next 6 minutes. The lines account for ROT. The points predicted are the bow, stern, and 4 shoulders (15% from bow/stern on either side). Predicted courses are only provided if there is adequate sideways movement away from the vessel.
- Minimum distances and velocity of change are given between key points on the vessel (bow, stern, 4 shoulders) and fenders. The lines for these distances are drawn as black dashed lines. The distance is given in metres. Velocity is given in **metres/second** unless you enable **Use Speed Units**, in which case the units normally shown for speed will be used. Positive speed means distance from fender is increasing; negative is decreasing.
- Information about the **wharf** that Own-Ship is approaching is displayed in the right hand status bar under **Docking**. The fender selected as the wharf is the closest fender less than **250m** and with an angle to Own-Ship of at most **30°**. If all fenders have an angle greater than **30°**, the closest fender is shown.
- The interior angle between the vessel and the fender. This is always an angle between **0** and **90** degrees. This is only shown for the **wharf** fender (see above). It is only shown on the chart display when at most **100m** from the wharf.

16.4 Creating Fenders from Charts

New fenders can also be created by extracting it from vector chart features. The advantage of this approach is that:

- It's automatic
- the placement is based on chart features have been carefully surveyed

You can create a fender by double tapping on a wharf. Select **Details for this Location**. Then look for a **Shore-line Construction** feature and select that. Then select **Add as Fender**. This will create a new fender object placed along the wharf. You should double check that the fender placement is appropriate.

> ***Note: We recommend the following is observed***
>
> - *This capability requires that IHO S-57 **Shore-line Construction features** are included in your chart.*
> - *This feature only works on vector charts. In situations with matched raster and vector charts such as **NOAA charts for USA**, where raster charts are preferred, you can try switching to the vector charts, creating any fenders you want, then switching back to the raster charts.*
> - *Some chart features contain sequences of points that are all nearly in line with each other. When points are detected that are at most **2.5m** from the being **in line** with adjacent points, those points are removed to avoid clutter.*
> - *Some charts divide a wharf into multiple chart Shore-line Construction chart features. When this is detected, those features are combined into a single fender.*

16.5 Single Point Mooring and Variable Range Markers

To aid docking with a single point mooring (SPM), you can use a Variable Range Marker (VRM) to indicate the location where you are docking.

The following information is displayed in a block named **Docking-SPM** in the right-hand-status bar when docking to a SPM is enabled:

- The distance from Own-Ship's bow to the closest point of the VRM. If the bow is inside the VRM then OK is displayed.
- The velocity component of the bow in the direction of the closest point of the VRM. A negative velocity indicates the bow is approaching the VMR and a positive velocity means it is moving away.
- The angle between Own-Ship's centreline and the line from the bow to the closest point on the VRM.

The following conditions must be met for the SPM information can be displayed.

- The VRM must have a range of at most 500m.
- The VRM must have a fixed location or be attached to a waypoint. It cannot be attached to Own-Ship or to an AIS target.
- The distance from the bow to the centre of the VRM must be at most 1nm.
- When more than one VRM meets these requirements, the closest to the bow is chosen.

17.0 Vector Charts

These settings customize the display of vector charts.

Settings related to depth customize the chart display to your vessel. These control how water areas, contours, and depth soundings are displayed. It can even produce wrecks and other obstructions to be displayed differently, depending on these settings and the depth of the object. The idea is that by setting these appropriately for your vessel, it will be easier for you to identify possible dangers to your vessel.

- **Display Categories:** Allows selection of which categories of features to display. The options are as defined in the IHO S-52 standard.
- **All:** Shows all features that are normally displayed.
- **Standard:** Shows standard features.
- **Display Base:** Shows only essential features.
- **Use Simplified Points:** When enabled, charts are displayed with simplified symbols for buoys and other aids-to-navigation.
- **Use Plain Areas:** When enabled, charts are displayed with simple boundaries that may decrease clutter in some situations.
- **Identify Features with Extra Info:** When enabled, features that have extra information associated with them are highlighted with a special symbol. You can access this information by double tapping the feature and selecting **Details for this Location**.
- **Use National Text:** Use national text when available in the chart.

17.1 Depths

- **Number of Depth Shades:** When enabled, only two shades of blue are used to colour depth areas.
- **Safety Depth:** The safety depth primarily controls the colouring of depth soundings. Depths at least as shallow as the safety depth are black; deeper soundings are grey. If **Red Safety Contour and Depths** is on, then red is used instead of black.
- **Shallow Contour:** Areas at least this shallow are coloured dark blue.
- **Safety Contour:** Areas at least this shallow are coloured medium blue. Additionally, Safety Contour value causes the contour next shallower to that depth to be highlighted.
- **Deep Contour:** Areas at least this shallow are coloured light blue.
- **Shallow Pattern:** When enabled, any areas shallower than the Safety Contour have a hash pattern drawn on them to highlight the possible danger. This is particularly useful for the night colour modes (see below).
- **Red Safety Contour & Depths:** When enabled, the following changes are made to display of chart contours and soundings:
    - The Safety Contour is shown in red and 50% thicker than specified by IHO-52.
    - If Shallow Pattern is also enabled, the hash pattern is in red. The Shallow Pattern is shown for depths shallower than the Shallow Contour, which may not be the same as the Safety Contour.
    - Soundings at most the Safety Depth are in red instead of black. Note that in many cases the Safety Depth is different from the Safety Contour.
- **Soundings Range:** When enabled, only soundings inside this range are displayed.

The range of soundings that are displayed accounts for tidal adjustment. Consider if sounding range is **10m** to **20m** and the chart has a **9m** sounding. If the tidal adjustment is **0m** then the **9m** sounding is outside the range and is not shown. With a tidal adjustment of **2m**, the sounding is displayed as **11m**.

17.2 Lights

- **Full Light Sectors:** When enabled, light features are shown on charts with lines extending to their nominal range.
- **Show Light Descriptions:** When enabled, light features are shown with textual characteristics.
- **Show Descriptions for Sector Lights**: When enabled along with **Show Light Descriptions**, descriptions for sector lights are shown. In cases with multiple sector lights, only the attributes shared by all sector lights are shown. Attributes that differ between lights are not included in the description.

> ***Note:*** *This is a non-standard feature and should be used with caution.*

- **Always Show Name for Lights:** When enabled, extra effort is used to show a name for lights. This may be useful when lights are on features (such as Piles) whose names are not normally displayed.

> ***Note:*** *This is a non-standard feature and should be used with caution.*

17.3 Date Dependent

- **Ignore Date:** When enabled, all features are shown regardless of current date.
- **Highlight Date-Dependent:** When enabled, features that are only shown during certain dates are highlighted.
- **Advanced Settings:** Advanced settings for charts.

18.0 Sounding Ranges

These options control the Soundings display.

18.1 Settings

- **Automatically Set Range:** When enabled, shallow and deep sounding ranges are automatically set using the Shallow and Deep Contour settings.
- **Shallow Sounding Range:** Soundings shallower than this depth are not displayed. If this is set to **0** then negative soundings are displayed. For example, only **Deep Sounding Range** cause soundings to be hidden.
- **Deep Sounding Range:** Soundings deeper than this depth are not displayed.

19.0 Vector Charts Advanced

19.1 Settings

- **Shorten Names for Aids-to-Navigation**: When enabled, aids-to-navigation with long names are shortened to avoid clutter. When names are long, only the last word in the name is shown. For example: by **San Francisco Main Ship Channel Lighted Whistle Buoy 8** becomes **by 8**.
- **Hide bn & by Prefixes for ATONs:** When enabled, hide **bn** and **by** prefixes for Aids to Navigation. Also, **Nr** prefix for berths are removed.
- **Norwegian Coast Style Chart Display:** In **Norwegian Coast** presentation, shoals are presented without danger circles **DANGER01** & **DANGER02** (ref. Colour & Symbol specifications for ECDIS, 4TH edition July 1997). Shoals are presented only with upright digits: no brackets or additional symbols, for example **+**. Soundings are presented with italic digits, with an inclination of **17° (ref INT 1, Chapter II, number 10**. Shoals shallower than safety depth have bold digits.
- **Disable Hash-Fill for Precautionary Areas:** When enabled, Precautionary Areas are not shown with a hash fill. This is a non-standard format and should be enabled only with care.
- **Disable Display of Bottom Surface Type:** When enabled, information about bottom surface **NATSUR**, **NATQUA** are not displayed.
- **Disable Display of Water Turbulence:** When enabled, water turbulence **WATTUR** features are not displayed.
- **Disable Display of Tidal Stream:** When enabled, tidal stream **TS_FEB** features are not displayed.
- **Disable Display of Ferry Routes:** When enabled, Ferry Routes are not shown.
- **Show Zone-of-Confidence:** When enabled, Zone-of-Confidence data is displayed.
- **Use SCAMIN:** Vector charts contain information about the range of scales that each feature should be displayed at. These attributes are called **SCAMIN** and **SCAMAX** (scale minimum and maximum). Disabling this causes scale to be disregarded. It is recommended this is left enabled.
- **Disable Display of System of Marks Outline:** When enabled, borders identifying Navigational Systems of Marks are not displayed.
- **Disable Display of Dredged Area Patterns & Related Items:** When enabled, the dot patterns in dredged areas are not shown. The appearance is like that of normal depth areas. This also prevents display of outlines for Fairway features, which are commonly shown around dredged areas. This is typically enabled in order to reduce clutter on the display.
- **Disable Display of Deep Depth Contours:** When enabled, depth contours deeper than the Deep Contour setting are not shown. This is typically enabled in order to reduce clutter on the display.

  To be hidden, a contour must be deeper than all contour settings, Shallow, Safety, and Deep Contour.
- **Show Isolated Dangers:** When enabled, isolated dangers in areas shallower than the Safety Contour are marked.
- **Isolated Danger in Shallow Areas:** When enabled and **Show Isolated Dangers**, isolated dangers in areas shallower than the Safety Contour are marked.
- **Disable Large Overscale:** When enabled, a large **Overscale** warning is not shown in the centre of the chart display. This does not affect Overscale warning in the bottom left.
- **Warn About Old Charts:** When enabled, a large **Old Chart** warning is shown in the centre of the chart display if the chart's **Issue Date** is at least 3 months old.

You can establish the date of the chart by double tapping in a location, selecting **Details for this Location** and then selecting **Chart Information**.

- **Use Fill for Shoreline Construction:** When enabled, shoreline constructions features are shown with semi-transparent fill.

- **Use Fill for Bridges:** When enabled, bridge features are shown with semi-transparent fill.
- **Show Bollard Names:** When enabled, bollard and similar **MORFAC** names are shown. Also, promotes features to the Standard display category.
- **Show Soundings:** Select method for determining whether Soundings are shown. When **Off**, soundings are never shown. When **On**, soundings are always shown. When **Auto**, soundings are shown according to other settings, such as **Display Categories**. This only affects chart soundings, not overlays.
- **Disable Display of Various Navigation Lines:** When enabled, various types of navigation lines are not displayed. The lines include recommended tracks, recommended traffic lanes, recommended route centrelines, ferry route, deep-water route part, deep-water route centrelines, are not displayed. This should be used with care. It is typically enabled in order to reduce clutter on the display.
- **Disable Display of Coverage Outlines:** When enabled, coverage outlines for chart cells are hidden. This can be used to reduce clutter on charts.
- **Disable Display of Restricted Area Symbols:** When enabled, symbols corresponding to restricted areas **RESARE** are not displayed. This is normally selected in order to reduce clutter. Any outlines and patterns are still shown (as selected by other options).
- **Reduce Text Clutter:** When enabled, many chart features with text are not shown with the text. Specifically, all text items with text group greater than **20** are not shown.
- **Red Shallow Shading:** When enabled, any areas shallower than the Safety Contour have a red shading to highlight the possible danger.
- **Hide Chart Outlines:** When enabled, chart outlines are not shown. This can be used to reduce screen clutter. This applies to both raster and vector charts.

20.0 Raster Charts

Electronic charts are normally one of two types, vector or raster charts. SeaTab is primarily intended for use with vector charts.

However, in certain situation raster charts can be useful. Two examples are:

- when vector charts are not available for the desired areas
- when using specialized raster charts such as those generated from satellite imagery

20.1 Settings

- **Prefer Raster (BSB/KAP) Charts:** When enabled, raster charts are preferred over vector charts. Otherwise vector charts are preferred. One exception is that the vector SeaTab Base Chart of the Earth is always used.
- **Use Red for Own-Ship:** When enabled and viewing raster charts, a red colour is used for Own-Ship (and related objects) in place of the normal black colour. See Settings / **Vessels** for other settings that can affect the display of Own-Ship.
- **Alternate Own-Ship Dusk Colours:** When enabled and viewing raster charts in **Dusk** colour mode, a black colour is used instead of the normal white colour. This is useful when viewing NOAA raster charts which use light background for dusk. This option is enabled by default. Note that **Use Red for Own-Ship** takes precedence over this setting. See Settings / **Vessels** for other settings that can affect the display of Own-Ship.

21.0 S-63 Charts

S-63 is an International Hydrographic Organization (IHO) standard for distributing **S-57 vector charts**. S-63 prevents unauthorized copying of charts and provides confidence that the charts have not been tampered with.

SeaTab can use S-63 charts from any source. The simplest method is to use one of the automatic chart download and updater for charts from **PRIMAR** or use **Admiralty (AVCS) charts**. In addition to making the initial download easy, these methods will also automatically check for updates and prompt you when they are available.

When installing S-63 charts, it is important to install both the chart file(s) and the S-63 cell permit file(s). The chart files contain the charts and associated data; cell permit files contain keys and other information required to process the charts.

Cell permits can be installed in any of these types of files:

- **PERMIT.TXT:** The standard S-63 file name.
- **ABC_PERMIT.TXT:** Any file that ends with PERMIT.TXT
- **AVCSPermits.zip:** A zip file distributed for Admiralty AVCS (UKHO). This archive contains PERMIT.TXT which will automatically be used
- **ENC.zip:** A zip file distributed by Australian Hydrographic Office (AHO). This archive contains PERMIT.TXT which will automatically be used

If you use a service that distributes cell permits in an archive format, contact **OneOcean Technical Support** for further information.

21.1 Settings

21.1.1 User Permits

- **Request:** Selecting this button requests to register your device for a User Permit. Your device must be connected to the internet.
- **User Permit:** This shows the S-63 user permit for SeaTab on this device. Each piece of hardware has its own unique S-63 user permit, which normally needs to be provided to your S-63 chart vendor so they can create register your permits. Tapping on this selection allows you to export the user permit in number of ways.
- **Extra User Permit:** This allows you to enter a secondary user permit. The S-63 standard allows charts purchased for a **Data Client** such as **SeaTab** on one device to be used with the same Data Client on another device (IHO S-63, v1.1.1, April 2012, section 10.5.3). If you purchased charts for SeaTab on another device, you could enter the other device user permit and allow those charts to be viewed.
- In cases where chart permits are packaged in a zip file with information about the corresponding user permit(s), this entry may not be required. SeaTab attempts to automatically determine the correct user permit to use.

User permits for SeaTab always end with **4539**.

21.1.2 Certificates

- **Use Default Certificates**: S-63 requires you to have a certificate to confirm that the charts you are using are authentic. SeaTab comes with embedded certificate files and the default is to use those. Disable this if you do not want to use these certificates. In which case you will need to download your own certificates. When processing charts, SeaTab checks all available certificates and accepts the chart only if one certificate authenticates the chart data.
- **Download IHO Certificate:** This allows you to download a certificate from IHO. This is used to verify charts signed using the IHO certificate.

  SeaTab comes with the default PRIMAR and IHO certificates. This is only required if you disable **Use Default Certificates** because you wish to download them yourself.

- **Download PRIMAR Certificate:** This allows you to download a certificate from PRIMAR. This is used to verify charts signed using the PRIMAR certificate.

  SeaTab comes with the default PRIMAR and IHO certificates. This is only required if you disable **Use Default Certificates** because you wish to download them yourself.

- **Diagnostics:** Displays list of all charts you have installed permits for and lists the status and any errors/warnings.

You can find diagnostics by going to the **Settings** tab, selecting **S-63 Data Protection**, and then **Diagnostics**. You will be presented with detailed information about the import status of each chart cell.

22.0 Bathymetry

Bathymetry is the study of underwater depth. The settings here affect how underwater features are displayed. Note that other settings, such as the **Safety Depth, Safety Contour, Shallow Contour** and **Deep Contour** also affect display of underwater features.

> ***Note:*** *These features are to be used with caution. Incorrect use can result in confusing displays of depth related information. If you are unsure about the correct use of these features, you should leave the settings at their default values.*

22.1 Settings

22.1.1 Bathymetric ENCs

- **Show bENC Overlays:** Enables display of Bathymetric overlays **bENCS**. See detailed information below.
- **Hide Unsurveyed Area Features in bENCs:** When enabled, causes Unsurveyed Area (**UNSARE**) features to not be displayed in bENC overlays. This allows features from an underlying ENC to be shown. In some situations, this can combine ENC and bENC features where the boundaries are hard to distinguish.

22.1.2 S-102 bENCs

- **Show IHO S-102 bENCs:** When enabled, IHO S-102 bENCs will be displayed.
- **Style:** Select between vector and raster style presentation for S-102 bENCs. Vector display is normally recommended.
- **Sun Illuminated Raster:** When enabled, the raster display of charts will be shaded to give idea of the sea-bed contour. This option is only effective when in raster mode and using day-time colour palette.
- **Contour Interval:** Set contour interval for S-102 bENCs. The minimum allowed value is 0.25m.
- **Precise Mariner Contours:** When enabled, contour lines for precise value of Safety Contour, Shallow Contour, and Deep are added to the display. This ensures that the colouring of depth areas is precise. However, this also means that there may be more contours than otherwise indicated by the differences in depth. If any of the mariner-designated contours does not exactly match the regular intervals, then an extra contour is added at exactly that depth.
- **Align to Safety Contour:** When enabled, contours are all aligned to the safety contour for S-102 bENCs.

  For example, if the Safety Contour is 6.75m and the contour interval is 1m then all contours will be X.75m.
- **Interpolate Contour Lines:** When enabled, contour lines will be interpolated to their estimated location within grid squares. This can cause the contour lines to be adjusted up to one grid contour from their location specified in the data file. Without this option enabled, the contours follow the grid squares.
- **Disable Hi-Res Cells:** When enabled, S-102 chart cells with 5x5m or higher resolution will be disabled and not used. This can help in situations where highest resolution cells may have patch-work coverage from use of lower resolution survey methods. The patch-work coverage can result in a display that mariners find unhelpful. Lower resolutions cells will be used instead, which normally will not exhibit the patch-work coverage.
- **Heat Map:** Show recent changes as a so-called heat map. Areas of shoaling are displayed as red. Areas of deepening are shown in blue. Areas of no or very small change are shown in green.

  When Sun Illuminated Raster option is enabled, the areas are shaded according to their relative depths (increasing depth is shown as valleys, decreasing depths are shown as hills. The height differences are emphasized with a 5x increase in differences.
- **Heat Map Duration:** Maximum age of a chart in days to be included in the heat map presentation. Default is 0 days (no limit).

22.1.3 Tide

- **Tidal Adjustment:** Provide adjustment to depths based on current tides. See below for more information.
- **Fill Tidal Adjustment:** This allows you to fill based on currently selected tide adjustment. Requires you have selected an object with tidal data.
- **Tidal Adjustment Warning:** When enabled and tidal adjustment is active, a large warning is shown in the lower centre of the display, similar to warnings at the lower-right. The large display is only shown if the display size is large enough.

22.1.4 Safety Depth & Contour

- **Draft:** Manual setting for draft of the vessel. This can be used to help configure Safety Depth and Safety Contour.
- **Under Keel Clearance:** You can specify how much additional UKC you want to use. The UKC can be either as a fixed depth or a percentage of the vessel's draft. For instance, in some locations, it's common practice to use **10%** of a vessel's draft as UKC.
- **Shallow Contour Delta:** When set, this is subtracted from Safety Contour to set the Shallow Contour.
- **Deep Contour Delta:** When set, this is added to Safety Contour to set the Deep Contour.
- **Calculated Depth & Contour Settings:** This is the calculated Shallow Contour, Safety Depth, Safety Contour, and Deep Contour, based on the draft, UKC, and deltas.
- **Current Depth & Contour Settings**: This shows the current value(s) for the Shallow Contour, Safety Depth, Safety Contour, and Deep Contour These are the same as provided on the **Vector Charts** settings. When values are equal, they are omitted.
- **Update Chart Settings:** Select this button to change current Shallow Contour, Safety Depth, Safety Contour, and Deep Contours values to the calculated ones.
- **Automatic Update:** When enabled, the Shallow Contour, Safety Depth, Safety Contour, and Deep Contours are updated automatically when Own-Ship draft is changed.

  Additionally, the current Safety Contour is always shown in the bottom-right of the chart display.

22.1.5 Overlays

- **Show Overlays:** When enabled, overlays are displayed.
- **Declutter Soundings:** When enabled, soundings in overlay files (Autocad DXF, Shapefile, and XYZ files) are decluttered using a proprietary algorithm. This algorithm applies SCAMIN values to each sounding so as you zoom in/out the most important soundings are displayed.

> ***Note:*** *This feature is considered experimental and should only be used with caution. If uncertain, leave this feature* ***disabled****.*

22.1.6 Admiralty Information Overlays

- **Enable:** Enabling this allows AIO overlays to be shown when available. In most cases, the AVCS AIO cell permits are required and the current AIO distribution should be installed.

  AIO notices will be shown based on the AVCS ENC's that are currently active. To read the information in the notice, you can double tap in a notice and select the item(s) marked with (AIO).
- **Allow Unencrypted (Only SEAiq Pilot):** Enabling allows AIO overlays to be used with unencrypted cells. The default is to only allow encrypted cells from GB (UKHO AVCS) data server. This option is only provided for testing purposes, as AIO is required to only be used with charts licensed from UKHO.

22.2 Tidal Adjustment

In situations where tidal height is important to navigation the mariner may find it useful to adjust display of bathymetric features to account for the current tide.

This feature works both with and without bENCs.

The default setting is **0**, which causes all bathymetric information to be displayed unmodified. This value may be changed to positive or negative values. Whatever value is selected will be **added** to the depth in the chart. If this is set to **10m**, then a **15.3m** sounding will be changed in the display to **25.3m**.

Since depth information are typically reference a low tide datum, you will normally use positive adjustments that correspond to a higher tidal state. A situation where a negative adjustment would make sense is an extremely low tide.

After changing the setting, SeaTab will proceed to update any chart you display, in order to reflect the adjustment. There may be some delay as the chart is re-processed.

> ***Note:*** *If you are unsure about using this feature, we recommend the setting is left to the default value of* ***0****.*

- When enabled, you will see **Tidal Adjustment** in the bottom-right corner of the display.
- If you need to change back to the default setting, edit this setting back to the original setting of **0**.
- All other depth related display information is updated accordingly, including Shallow, Safety, and Deep Contours. Soundings are reprocessed to account for the new effective Safety Depth.
- When **Sounding Range** and **Tidal Adjustment** are both used, then the **Tidal Adjustment** is applied to a sounding before determining if the sounding should be displayed. Changing the Tidal Adjustment may affect what soundings are displayed.
- This feature must be used with caution as tides change on an hourly basis.
- This is a static setting. SeaTab does not attempt to dynamically track tidal changes. If you want to change it further, because the tidal height has changed, you will need to do this manually.
- This setting is global in effect. Although correct use may cause display of bathymetric information in one area to be more accurate. However, display of information in most other locations is likely to be less accurate.
- It is the mariner's responsibility to check the vertical datum to determine the correct reference datum to use when setting the adjustment.
- Only depth related features are affected by this setting. Any shore features (such as the height of lights) are not affected.
- When interrogating meta-data information using **Details for this Location**, the meta-data is displayed unmodified (no tidal adjustment).

22.3 Safety Depth / Contour

The following settings are used to update the values of the **Safety Depth** and **Safety Contour** chart display settings. This feature is used to simplify calculations for the **Safety Depth** and **Safety Contour** settings. It is always possible to set the values directly by going to the **Vector Charts** settings and editing the values there.

Before using these settings, you should normally ensure the dimensions for Own-Ship have been set in the **Own-Ship** settings the **Draft**.

22.4 Display Bathymetric ENCs (bENCs)

In some areas of navigation where detailed depth information is required, for safe navigation, special digital charts called Bathymetric ENCs (bENCs) have been created. bENCs contain detailed information about depth not available on the normal charts for these areas. The bENCs are specialized in that they only contain bathymetric information and do not include other navigation information such as aids to navigation or bridges. Using both the bathymetric information and navigation requires displaying information from both bENCs and the corresponding ENCs.

When this setting is enabled, SeaTab modifies display of standard ENCs to replace underwater features (such as depth soundings, underwater contours, underwater depth areas, and dredged areas) with data from a bENC chart. Note that ENC navigation features are layered above bENC so that items such as buoys remain visible.

> ***Note:*** *We recommend this feature is used with caution as in some situations it can be confusing. If you are uncertain about the accuracy of the display, we recommend* ***disabling*** *this feature.*

> ***Tip:***
> *When enabled, you will see (bENC Enabled) in the bottom-right corner of the display.*
> *Enabling and disabling the feature will trigger SeaTab to reprocess the charts. There may be a delay while this happens.*
> *bENCs must not overlap each other, even if they have different compilation scale. The bENC charts, if there is more than one loaded, should normally be at the same compilation scale.*

23.0 PRIMAR Charts

The settings here are for users with S-63 charts from **PRIMAR**. If you are using PRIMAR charts, you can enable occasional checks to see if you have any chart updates. When chart updates are available, you can download there directly from PRIMAR using an automatic download feature.

To use the remote update features from PRIMAR, you must have registered a S-63 user permit with PRIMAR that matches your S-63 **User Permit** or your **Extra User Permit**. You must select which user permit is registered with PRIMAR using the **User Permit** setting.

23.1 Settings

- **PRIMAR Web Site:** A link to the PRIMAR website.
- **Display Charts:** Control whether PRIMAR charts are displayed.
- **Chart Files:** View currently downloaded chart files.

Now and again, you may wish to remove old update files in the PRIMAR Charts. After deleting these files, ensure you perform an **Update** so SeaTab can download any parts of those files that might still have been needed.

23.1.1 Download & Update

- **User Permit:** Select which S-63 User Permit to submit to PRIMAR when requesting information about chart updates. **Normal** corresponds to the permit in the **User Permit** entry in the S-63 Settings. **Extra** corresponds to the user permit entered in the **Extra User Permit** field.
- **Check for Updates:** Enabling this causes updates to be checked for your charts from PRIMAR. When charts are available, you receive an alert. However, charts are not updated unless you request updates by selecting the **Update** button. This feature occasionally attempts to contact the PRIMAR update server to check on the availability of charts. This may involve using some of your cellular data bandwidth.
- **Download Updates:** Selecting this commences an attempts to download charts from PRIMAR. You must be connected to the internet and have an account registered with PRIMAR. The update continues in the background.

This capability can be used for your initial chart download as well as for periodic updates. For your initial chart download you may find it easier to download base or update zip files from **PRIMAR**: **https://www.primar.org/enc-download**.

You can see the status being updated as the download proceeds. When complete, a notification is provided.

As chart updates can be quite large, you may want to wait until you are connected to a high speed internet connection before downloading updates for your charts. If there is a problem during the download, the update will recommence from the previous position.

- **Status:** Status of PRIMAR updates.
- **Update Tracker:** PRIMAR's website provides a service you can use to review chart changes in your updates. We recommend reviewing changes prior to making an update.
- **ENC Improver:** Selecting this link will open PRIMAR's website to provide feedback on ENCs.

23.1.2 Manage

- **Restore from Backup:** Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- **Erase All PRIMAR Charts:** This button erases all your PRIMAR chart files, after confirmation. This cannot be undone. You can download the files again. You can erase chart files individually by opening the **Charts listing** and selecting **Edit**. This may be useful when changing accounts to clear out old files. We recommend this is performed periodically to reduce the number of update files on your device.

24.0 FTP

This section explains how to download the initial charts and then subsequent updates via **File Transfer Protocol** (FTP).

24.1 Settings

- **Display Charts:** Control whether FTP charts are used.
- **Chart Files:** View currently downloaded chart files.

Now and again, you may wish to remove old update files. After deleting these files, ensure you select **Update** so SeaTab can download any parts of those files that may still be required

24.1.1 Account

- **Username:** Enter the username registered with the FTP account.
- **Password:** Enter your FTP password.
- **Server:** The host name or IP address of your FTP server.

24.1.2 Download & Update

- **Download Updates:** Commences the download of charts from the FTP server. You must be connected to the internet and have an account registered with the FTP service. The update will continue in the background.

  This capability can be used for your initial chart download as well as for periodic updates.

  You can see the status being updated as the download proceeds. A notification is provided when complete.

  As the updates can be quite large, it may be suitable to wait until you are connected to a high speed internet connection before downloading updates for your charts.
- **Status:** Status of FTP updates.

24.1.3 Manage

- **Restore from Backup:** Prior to installing updated charts, a copy is made of your current set of charts. If there is a problem after an update, you can restore to the previous version.
- **Erase All Charts:** This button erases all your FTP charts, after confirmation. This cannot be undone, and you will need to download the files again. You can erase chart files individually by opening the **Charts** listing and selecting **Edit**.

  This may be useful when changing accounts to remove any old files. We recommend this is performed periodically to reduce the number of update files on your device.

25.0 Import from Media

The settings are for users with charts they wish to import from CD or DVD. This feature is only available on laptops such as Windows and Apple MacBook.

25.1 Settings

- **Chart Files:** View the current downloaded chart files.

Regularly, you may wish to remove old update files. After deleting these files, ensure you select **Update** so SeaTab can download any parts of those files that may still be required

- **Import Media:** This is used to import charts, normally from a CD or DVD.

  This feature can be used for your initial base chart installation as well as for periodic updates.

  Prior to importing the charts from CD/DVD, you must ensure the permits have been imported. This is done by dragging and dropping your PERMIT.TXT file into the program.

  The import status will be visible, and this process will take some time. When complete a notification will be displayed.

- **Status:** Status of imports.
- **Erase All Charts:** Erases all charts that were imported from the CD/DVD. This process cannot be undone, and you will need to reimport the files again.

  You can erase chart files individually by opening the **Charts listing** and selecting **Edit**.

26.0 AIS Sharing

SeaTab AIS Sharing is an easy way to receive AIS information for many parts of the world.

AIS Sharing has two sources of data. First, it provides access to all the feeds from **AIS Hub**. AIS Hub is a collaborative way to receive AIS data. Organizations setup permanent AIS antennas and provide their feed to AIS Hub. In return AIS Hub sends the feed to the organizations. If you want to add AIS coverage for your area and it is not already provided, AIS Hub is an ideal solution.

26.1 Settings

- **AIS Sharing:** Enable connection to **AIS Sharing** server.
- **Diagnostics:** See diagnostics information on your connection to **AIS Sharing**.

26.1.1 Hi-Res PPU Data

- **Transmit Own-Ship:** Enabling this causes your Own-Ship information to be transmitted to other vessels.

  This differs from normal AIS data as it does not require AIS support for your vessel. Also, the information transmitted includes any amendments you have made to the vessel's size and/or antenna offsets. The name of the pilot is also included in the data that is shared.

  If this option is enabled on more than one instance SeaTab on the same vessel, then you can view other images for Own-Ship. This can be helpful if you have several pilots with their own PPUs on a vessel and they want to cross-check their positions with each other. If the devices are using the same PPU, then the additional instances only create clutter and you may want to turn off **Transmit Own-Ship** for all but one.
- **Show Vessels:** Enabling this causes other vessels sharing Hi-Res PPU data to be received and displayed, however you will not be able to see your own data. This only has an effect if someone else is transmitting data.
- **Hide Matching AIS:** Enabling this causes the AIS targets matching a Hi-Res PPU to be suppressed. This is done to reduce clutter. The AIS data is only suppressed when Hi-Res PPU information about a vessel is complete: it should contain GPS position, COG, SOG, HDG, ROT, size, and antenna offset.
- **Hi-Res AIS Targets Panel:** When enabled, a bar of 5 buttons is shown on the bottom of the display for AIS Hi-Res targets that are ahead of Own-Ship on the active route and up to **50nm**. The vessels are displayed in order of distance from Own-Ship, up to 5 vessels.

  For this to be displayed, AIS Sharing / Hi-Res Targets / Show Vessels must be enabled.

26.1.2 Alternate Server

- **Use Alternate Service:** Use alternate **AIS Sharing** server. This is normally left disabled unless you are using an alternate service.
- **Service:** Use this service name to choose an alternate AIS service. This is not normally required, and you should not change this without instructions from your administrator.
- **Username:** Username to login to an alternate AIS service. This is not normally required.
- **Password:** Use this password to login to alternate AIS service. This is not normally required.

26.2 Frequently Asked Questions

- **Can I use AIS Sharing without having my own AIS hardware?**

  Answer - Yes.

- **Can I use AIS Sharing while also using my own AIS hardware?**

  Answer - Yes.

- **Can I use AIS Sharing with my own AIS hardware but not share my own feed?**

  Answer - No. When both WiFi NMEA/AIS and AIS Sharing are on, SeaTab will always attempt to share your AIS feed with other users. If other users are not in range, they may be sharing their feed with you.

- **What if a target is listed in both my WiFi AIS feed and AIS Sharing?**

  Answer - Your WiFi AIS feed always has precedence over AIS Sharing.

- **What data is shared about my vessel?**

  Answer - Your own vessel's location is only shared when SeaTab is connected to an AIS feed for your vessel's AIS transponder. In this case, your AIS transponder is already broadcasting your vessel's position on VHF or other AIS internet data services may be listening to your AIS broadcasts on VHF. If you have an AIS receiver, not a transponder, only data received over VHF for other vessels is shared.

- **How do I both connect to a WiFi NMEA/AIS and use cellular internet connection?**

  Answer – Refer to the following section, **27.0 NMEA & AIS**.

27.0 NMEA & AIS

NMEA is a marine industry standard for communicating information between on-board devices. Automatic Identification System (AIS) is a standard for exchanging vessel location and other information using VHF radio signals. AIS data is typically shared between on-board devices using NMEA.

SeaTab supports using external NMEA/AIS information over **WiFi** and **Bluetooth**. SeaTab can also be configured to act as an NMEA server, forwarding own its information to other devices.

With the correct configuration settings, in SeaTab you can do the following:

- Display AIS targets on the Navigation tab and access information about vessels reporting AIS information under the AIS tab.
- Use your vessel's onboard GPS in place of your device's internal GPS.
- Access and display numerous sensors from your on-board systems.
- Use GPS on devices that do not include integrated GPS.
- Forward GPS from one device to another, if you have several devices, and some do not have GPS hardware.

AIS uses a NMEA data feed to communicate its data, therefore NMEA will need to be configured to use AIS.

Numerous alarms are provided for NMEA data. These include an alarm to indicate data corruption.

When at least **5%** and or **10 sentences** within 5 minutes have checksum errors, an alarm will be activated and will be shown once every 5 minutes.

27.1 Settings

This section describes how to connect your device to an NMEA data feed over WiFi. Before adjusting these settings, ensure your NMEA data feed and this device are connected to the same network.

- **Enable:** This switch turns on NMEA support. Normally, you should enable this only after first setting the other configuration items.
- **Inactivity Alarm:** When enabled, an alarm is generated after **15 seconds** of inactivity during which no NMEA data was received. After selecting OK, the alarm is disabled for **60 seconds**. If no data has still been received, it will activate again.
- **Inactivity Alarm Reminder:** When enabled, a warning is generated when data is received from NMEA and the Inactivity Alarm is disabled. A warning is shown confirming if you would like to enable the Inactivity Alarm. Selecting **Alarm**, enables the inactivity alarm. Selecting **OK** disables this warning for **5 minutes**.

This also function is similar on **Extra NMEA Connection**, if this is enabled.

- **AIS Alarm:** When enabled, alarms reported from AIS are shown. Alarms cause the display to flash with a warning message. After cancelling the alarm, no further AIS alarms are reported for at least **2 minutes**.

  If alarms are not enabled, recent alarms from AIS can be viewed under Settings / NMEA and AIS / Diagnostics.
- **HDOP Alarm:** When enabled, an alarm is generated if GPS HDOP exceeds **5.0**.

  HDOP is an abbreviation for Horizontal Dilution of Precision, an estimation of the accuracy of GPS positions. If an alarm occurs, it is disabled for a further **60 seconds**.

  This alarm requires an HDOP value from NMEA/AIS. Usually, this information is not available from a basic WiFi AIS Pilot Plug. If no HDOP is received, no alarm is activated.
- **Own-Ship Data Alarm:** When enabled, an alarm is generated when the data source for Own-Ship GPS, COG, SOG, HDG, or ROT is lost or changes that may reduce data quality. Also, a listing of the source of these sensors data is shown in the Source panel of the status bar.

- **Show Device GPS:** When enabled, the device's internal GPS position is displayed along with position from NMEA/AIS. A circle marked **INT** indicating the radius of Horizontal Position Error is shown. The position is intended to be used to help validate GPS information reported from NMEA/AIS.

  If other GPS positions are available but were not used for display of Own-Ship, they are also shown. Other positions include **AIS, NMEA** (for Primary NMEA), and **EXTRA** (for Extra NMEA).

- **NMEA Verification Alarm:** When enabled, an alarm activates if NMEA/AIS and GPS positions differ by at least **100m**. After acknowledging an alarm, it is disabled for **60 seconds**.

The alarm incorporates the relative positions of the NMEA and GPS antennas in determining the alarm distance. See **Own-Ship settings**.

27.1.1 AIS Derive ROT

- **Derive ROT from HDG:** When enabled, Rate-of-Turn (ROT) information from AIS for Own-Ship is replaced with values derived by SeaTab. This can be useful when AIS reports accurate heading but not Rate-of-Turn or if the Rate-of-Turn information has a problem. If AIS/NMEA reports accurate Rate-of-Turn information, you should **not** use this feature. This feature is only supported with live Own-Ship data from NMEA/AIS. It is not supported with Virtual Boarding, NMEA Playback, or simple (non-AIS) NMEA feeds.
- **ROT Dampening:** This controls how much dampening to apply to the **Derive ROT from HDG** feature above. Dampening is used to decrease the impact of occasionally spurious data, that may be less responsive. Normally, more dampening results in more accurate ROT but longer delay in detecting it. Equally, less dampening results in less accurate ROT but faster responsiveness. Three levels can be selected. This setting has no effect unless **Derive ROT from HDG** is enabled.

27.1.2 Connection

- **Connection Type:** Select WiFi or Bluetooth connection to external GPS device.
- **WiFi Setup:** Set-up and manage an external NMEA/AIS data feed over WiFi.
- **Bluetooth Setup:** Set-up and manage an external NMEA/AIS data feed over Bluetooth.
- **Status & Diagnostics:** This display diagnostics describing the current status of your NMEA/AIS configuration.

27.1.3 Extra Connection (Advanced)

- **Enable:** This switch turns on NMEA support for an additional data feed. Normally, you should enable this after first setting the other configuration items.

> ***Note:*** *You should only use this feature if you require it, as an* ***Enterprise Subscription*** *is required.*

- **Connection Type:** Select WiFi or Bluetooth connection for extra GPS device.
- **WiFi Setup:** Set-up and manage an extra NMEA/AIS data feed over WiFi.
- **Bluetooth Setup:** Set-up and manage an extra NMEA data feed over Bluetooth
- **Status & Diagnostics:** This shows diagnostics describing the current status of your Extra NMEA/AIS configuration, if enabled.
- **Inactivity Alarm:** When enabled, an alarm is generated after **15 seconds** of inactivity during which no NMEA data was received. After an alarm is acknowledged, it is disabled for **60 seconds**. If no data has still been received, it will then activate.

27.1.4 Saved Devices

- **Load Device: Load** NMEA WiFi and Bluetooth settings for a saved device. Select **EDIT** to remove configurations that are no longer required.
- **Save Device:** Select this button to save your NMEA WiFi and Bluetooth settings.
- **Configuration Name:** This is the name of the current configuration.
- **Advanced:** Advanced settings for NMEA and AIS.

27.2 NMEA Server

SeaTab supports forwarding GPS information to other devices as a new NMEA data feed.

The SeaTab NMEA server does **not** currently forward AIS data, only GPS-related data (location, course, speed, etc).

28.0 NMEA/AIS WiFi

28.1 Settings

The following settings can be used to connect your tablet to NMEA/AIS over WiFi. Before adjusting them, first ensure this device and your source of NMEA/AIS data are connected to the same network.

- **Host:** This is used to set the IP address of a TCP-based NMEA data feed. You can specify either a hostname or IP address (decimal and dot). IP addresses are preferred because they do not require a Dynamic Name Server (DNS) to be configured.

  This field is not normally used for UDP feeds. For UDP, it can be set to an IP address in decimal and dot format. When set, only data from the given address is accepted. Currently, this is only required for Trelleborg CAT ROT v3 devices.

- **Port Number:** This is used to specify the port number for your NMEA data feed. It is required for both TCP and UDP based feeds. It is an integer number in the range **1-65535**.

- **Connection Type:** This setting selects whether to use TCP (the default) or UDP connections. Most devices only support TCP. For devices that support UDP, UDP is normally preferred.

Products that support UDP include the Digital Yacht iAIS and Trelleborg CAT ROT (all versions) and CAT I.

> ***Note: Using UDP***
> *If your device has a **firewall**, you will need to disable it or open these ports.*

- **Status:** Current status of your connection.

28.2 Configurations

Below are configuration settings for devices from other vendors.

Pilots TECH AIS Pilot Plug WiFi

SeaTab supports the **Pilots TECH** AIS Pilot Plug WiFi. Use the configuration below. Older units may need to use port **60000** instead of **8888**.

- **Host:** 192.168.1.1
- **Port Number:** 8888 (see above)
- **Connection Type:** TCP

29.0 NMEA/AIS Bluetooth

SeaTab supports connecting to AIS and NMEA devices using Bluetooth. Bluetooth is supported on Windows and MacOS (Macbooks and iMacs). Bluetooth can be used on Android with **helper apps** to connect to Bluetooth. See below regarding various platforms.

Platform Notes

> ***Note: Paired devices***
> *For some devices, it is important only one SeaTab device be paired with a Bluetooth PPU. A nearby device that is paired may also cause problems. If you see repeated or occasional loss of connection, check that no other devices nearby are paired with the PPU. If they are, turn **off Bluetooth** on these devices or **unpair** them.*

- Turn on your Bluetooth PPU device.
- Ensure no other programs or apps are using the device.
- Pair with your device:
    - Open Android Settings / Bluetooth on your Android device.
    - Turn on Bluetooth.
    - Locate your PPU device and pair it. You may need to enter a passcode. For many devices, the passcode is 0000.
- Configure SeaTab:
    - Run SeaTab.
    - Go to Settings / NMEA & AIS.
    - Choose **Blue** for Connection Type
    - Go to Bluetooth Setup / Bluetooth Devices.
    - If you do not see your device, Select the **Start** button to begin scanning and wait for your device to appear. Your device may take up to 2 minutes to appear.
    - Choose your device and select the Select button.

29.1 Settings

These settings are used to connect your device to NMEA/AIS over Bluetooth. Before adjusting them, first ensure this device and your source of NMEA/AIS data feed has been paired.

- **Bluetooth Device:** Specify name of device to use. You can enter it here or choose from the list of available devices.

On Windows, this is normally a **COM port**, for example **COM8**. You can find this by pairing with your Bluetooth device. Select the Bluetooth symbol on your toolbar. Choose **Open Settings** and **COM Ports**. Locate the Bluetooth device you are using and the COM port for **Outcoming** data. For COM ports higher than 9, SeaTab automatically translates **COMXX** into the **\\.\COMXX** format.

- **Bluetooth Devices:** List of Bluetooth devices (and serial ports).
- **Status:** Current status of your connection.
- **Baud Rate:** Baud rate for a serial port, typically USB. Bluetooth devices normally do not require any amending as usually the default is **19200**. Typical baud rate values are 4800, 9600, 14400, 19200, and 38400.

  Other possible values are 110, 300, 600, 1200, 2400, 56000, 57600, 115200, 128000, and 256000.

29.2 Configurations

Below are configuration settings for devices for other vendors.

GlobalSat BU-353-S4

The GlobalSat BU-353-S4 is a USB Bluetooth puck. As it uses a USB port, it can be used only on Windows and MacOS.

In Settings / NMEA & AIS (under Connection):

- **Connection Type:** Blue

In Settings / NMEA & AIS / Bluetooth Setup:

- **Bluetooth Device:** Select Using Devices Menu
- **Baud Rate:** 4800

29.3 NMEA & AIS Advanced

29.3.1 Settings

- **Hybrid NMEA/AIS & Internal GPS:** When this is enabled, then the location information used is a combination of NMEA/AIS and Internal. HDG and ROT come from NMEA/AIS. All other location data come from the internal GPS. This can be useful in situations where the internal GPS is more accurate than the location information from NMEA/AIS.
    - When this feature is active, **Hybrid** is displayed in the status bar as the location data source.
    - On IOS, enable **Use Accurate Location** in conjunction with this feature
    - Your device's position is normally different from Own-Ship's GPS antenna, so they require different offsets for True-Scale display. When this feature is enabled, the Ext GPS Position offsets are used instead of the AIS position offsets.
    - Your device's position is normally different from Own-Ship's GPS antenna, so they require different offsets for True-Scale display. When this feature is enabled, the Ext GPS Position offsets are used instead of the AIS position offsets.
- **Only Use AIS Targets:** When enabled, the NMEA feed is only used for AIS targets. No other sensor (wind, etc) data from NMEA is used. This is normally enabled if you are using an AIS feed that does not provide GPS or other sensor data.
- **Support for GNS2000:** When enabled, special commands are sent to the serial port to configure a **GNS2000** device. These commands prevent the device from entering **Static Mode** when your vessel is moving slowly. While other devices should ignore and not be affected by the commands that are sent, we recommend this is left disabled unless you have one of the affected devices.
- **RSA Azipod Mode:** When enabled, and rudder sensor data are available from NMEA, the status bar displays rudder position differently, showing azipod images instead of rudder lines. This is the only effect; since AIS pilot plugs do not normally provide rudder sensor angles, this setting normally has no effect. Full-scale simulators can often provide rudder/azipod information.
- **RSA Offset:** This value is added to RSA values to correct for variations in expected orientation. This only affects the graphical orientation of the rudder angle display. When the offset is negative, the rudder value is negated afterwards. This is used to reverse the direction of orientation so that decreases in rudder angle result in clockwise rotation.

COG/SOG Derivation

- **Always Derive COG/SOG:** This forces SeaTab to always derive COG/SOG from GPS position for the Primary and Extra NMEA feeds. Note that COG/SOG is normally derived from the GPS position, using the GPS hardware instead of SeaTab. It's preferred the GPS hardware make this calculation since the hardware has access to the most complete information about position. If uncertain, **you should not enable this option.**
- **Derive COG/SOG When Needed:** If your device sometimes does not provide course and speed sensor data (COG/SOG), you can enable this setting and SeaTab derives this data based on GPS latitude and longitude data. When enabled and COG/SOG data from NMEA is not available, SeaTab uses the derived value.

  This is normally only used with the Navicom Dynamics Channel Pilot product.

- **Derive COG/SOG When Slow:** When enabled, COG/SOG will always be derived from the GPS position when speed is less than a given threshold.

  As COG/SOG is normally derived from GPS position, it uses the GPS hardware instead of SeaTab. It's preferred the GPS hardware make this calculation since that hardware has access to the most complete information about position. If uncertain, **you should not enable this option.**
- **Slow Threshold:** Use this to set a threshold speed for deriving COG/SOG from GPS position. When estimated speed is below this threshold, then the derived value will be used. The default value is **3kn**.
- **Derive COG/SOG from GPS Dampening:** This controls how much dampening to use when COG/SOG from GPS. The speed is estimated based on an average of the previous **10 seconds** (the default), **15, or 20 seconds.** Longer durations may be more accurate but less responsive to changes, and vice-versa.

Sensor Masking

- **Ignore HDG from AIS Own-Ship:** When enabled, HDG (Heading) from AIS is ignored. This can be used when the HDG data from AIS is inaccurate or suspected to be of poor quality. This has no effect on HDG from other sources which may have similar settings for ignoring HDG.

In instances where HDG has a constant (non-changing or very slowly changing) error, you may choose to use Settings / Own-Ship / **Heading Offset** instead**.**

- **Ignore ROT from AIS Own-Ship:** When enabled, ROT (Rate-of-Turn) from AIS is ignored. This can be used in cases where the ROT data from NMEA is inaccurate or suspected to be of poor quality. This has no effect on ROT from other sources, which may have similar settings for ignoring ROT.
- **Ignore HDG from NMEA:** When enabled, HDG (Heading) from Primary NMEA feed is ignored. This allows HDG from AIS to be used instead (or no HDG to be used if none is available from AIS). This can be enabled in cases where the HDG data from Primary NMEA is inaccurate or suspected to be of poor quality. This has no effect on HDG from other sources, which may have similar settings for ignoring HDG.

In instances where HDG has a constant (non-changing or very slowly changing) error, you may choose to use Settings / Own-Ship / **Heading Offset** instead.

- **Ignore ROT from NMEA:** When enabled, ROT (Rate-of-Turn) from Primary NMEA feed is ignored. This allows ROT from AIS to be used instead (or no ROT to be used if none is available from AIS). This can be enabled in cases where the ROT data from NMEA is inaccurate or suspected to be of poor quality. This has no effect on ROT from other sources, which may have similar settings for ignoring ROT.
- **Ignore HDG from NMEA Extra:** When enabled, HDG (Heading) from Extra NMEA feed is ignored. This allows HDG from another source (AIS or Primary NMEA) to be used instead (or no HDG to be used). This can be enabled in cases where the HDG data is erroneous or suspected to be of poor quality. This has no effect on HDG from other sources, which may have similar settings for ignoring HDG.

In instances where HDG has a constant (non-changing or very slowly changing) error, you may choose to use Settings / Own-Ship / **Heading Offset** instead.

- **Ignore ROT from NMEA Extra:** When enabled, ROT (Rate-of-Turn) from Extra NMEA feed is ignored. This allows ROT from another source (AIS or Primary NMEA) to be used instead (or no ROT to be used). This can be enabled in cases where the ROT data from NMEA Extra is inaccurate or suspected to be of poor quality. This has no effect on

ROT from other sources, which may have similar settings for ignoring ROT.

Data Transfer

- **Transmit Waypoints: (All but SeaTab Pilot)** This is used to send waypoints to your chartplotter. Waypoints are transferred at a rate of **2/sec** using NMEA "$GPWPL" sentences. Note that special characters in the waypoint name may be replaced with underscores ('_'). No route information is transferred.
- **Transmit Current Goal: (All but SeaTab Pilot)** This is used to inform other devices on your vessel of the route you are on. It sends NMEA "$GPBWW", "$GPXTE", and/or "$GPRMB" sentences.

NMEA Server WiFi

- **Server Enable:** Enable this if you want to share location information with other devices on the network.
- **Server Port:** Port to use for sharing location information. It's an integer number in the range of **1-65535**.
- **Status:** Current status.

NMEA Server Serial

- **Enable:** Enable this if you want to share location information with other devices. This feature is intended for use with USB to AIS pilot plug adaptors as a form of training. It allows connection of an AIS pilot plug adaptor (available from companies such as PilotsTech) to a laptop, into which a normal pilot plug may be connected. This allows simulations of the system without boarding a vessel.
- **Serial Device:** Specify name of device to use. You can enter or choose from the list of available devices.

On Windows, this is normally a **COM** *port*, for example **COM8**. You can find this by pairing with your Bluetooth device. Select the Bluetooth symbol on your toolbar. Choose **Open Settings** and **COM Ports**. Locate the Bluetooth device you are using and the COM port for **Outcoming** data. For COM ports higher than 9, SeaTab automatically translates **COMXX** into the **\\.\COMXX** format.

- **Serial Devices:** List of serial devices (including Bluetooth).
- **Baud Rate:** Baud rate for a serial port, typically USB. Bluetooth devices normally do not require any amending as usually the default is **19200**. Typical baud rate values are 4800, 9600, 14400, 19200, and 38400.

  Other possible values are 110, 300, 600, 1200, 2400, 56000, 57600, 115200, 128000, and 256000.
- **Status:** Current status.

AIS

- **Show AIS Tracks:** When enabled, tracks are shown for AIS targets so you can see the recent path of each vessel. Important caveats are listed below:
  - Tracks are kept for **60 minutes**.
  - New track segments are only kept when the vessel has moved at least **0.05NM** or it has been **6 minutes** since the last segment was added.
  - To limit clutter, tracks are only shown for vessels that are currently on or near the area of display.
  - To limit clutter, tracks are only shown for a maximum of **150** vessels.
  - For targets from AIS Sharing, the tracks may be reset if the target leaves the screen.
  - The tracks position used for vessels is their AIS antenna position.
  - Occasionally, the data used for vessels may change between different sources, such as when a vessel comes within range of your vessels AIS. In these instances, the amount of tracks information and specific data may also change.
- **Prefer AIS Met Data from Internet:** When enabled, meteorological AIS data from the internet is preferred over that from a PPU. This can be useful in situations where AIS VHF connection is not very reliable.

- **AIS Lost Time:** Number of minutes of inactivity before an AIS target is marked as lost.
- **AIS Forget Time:** Number of minutes of inactivity before an AIS target is discarded.
- **Interrogate Closest AIS Target:** When enabled, the closest AIS target, up to **5nm**, will be interrogated every second.

This feature should be used with caution, as it requires a PPU and AIS system that allows transmission of AIS Interrogation requests (**message type 15**). It requests class A position reports (**message type 3**) from the vessels.

Other

- **Detect External Simulator:** When enabled, operation from an external simulator, for example a full-bridge simulator is detected. A full-bridge simulator is detected when the SSID of the WiFi network begins with the text **SIM Bridge**.
- AIS Sharing is disabled.

This feature has no relationship to the built-in Simulator function.

30.0 AIS Network Feed

Automatic Identification System (AIS) is a standard for exchanging vessel location and other information. These settings control access to a data feed over a network.

This feature allows you to connect to an AIS feed over the internet. It can be used in conjunction with primary NMEA/AIS connections and with AIS Sharing, but it is treated to some extent differently.

- Data is used in this order of preference.
  1. Primary NMEA/AIS feed
  2. AIS Network feed
  3. AIS Sharing
- Only AIS data is used from your AIS Network feed. Non-AIS data (ie, generic NMEA) is ignored.
- Targets from the AIS Network feed are not counted in the count on the AIS tab at the bottom of the display.
- Data for Own-Ship will only be recognized from the primary NMEA/AIS feed. Any Own-Ship data (for example **!AIVDO** sentences) from the AIS Network feed will be treated as generic AIS targets.
- AIS Virtual Boarding can be used with any type of AIS target.
- AIS Network feed data will not be sent to AIS sharing (only AIS data from primary NMEA/AIS is used).
- AIS Network feeds are only supported using the TCP protocol. UDP is not supported.

30.1 Settings

- **Enable:** This switch turns on the AIS network feed. Normally, you would enable it only after first setting the other configuration items.
- **Host:** This is used to set the IP address of an AIS network feed. You can specify either a hostname or IP address.
- **Port:** This is used to specify the TCP port number for your NMEA data feed. It's an integer number in the range of **1-65535**.
- **Status:** Current status.
- **Status:** Current status of your connection.

30.1.1 Authentication

- ***Authentication*:** Select method to use for authentication. Either connection ID
- **Username/Password**: The username/password is for **SAAB CoastWatch AIS Network Solution**.
- **Export Unique ID:** This is used to register this instance of SeaTab with an external AIS network feed.

This exports a file that contains the unique ID used by SeaTab when connecting to AIS network feeds. This can be used to register your copy of SeaTab with that service. Currently, this is only intended for use with the Marine Exchange of Alaska (**http://www.mxak.org**).

- **Username:** Use this username to login to an AIS service. This is not normally required.
- **Password:** Use this password to login to an AIS service. This is not normally required.

Diagnostics

- **Diagnostics:** This shows diagnostics describing the current status of your configuration.

31.0 Virtual Board

Use this to **virtually board** an AIS target. This will treat that AIS target as though it is Own-Ship. While virtually boarded, you can enable many of the features that are available only for Own-Ship, such as docking modes.

Common uses for virtually boarding include:

- As an aid for training. You can experiment with features whilst not actually boarding a ship.
- To monitor a ship prior to boarding it. When boarding a vessel that you have virtually boarded, the virtual boarding will automatically be disabled.
- For monitoring ships from shore.

> ***Note:***
> *Due to how AIS works, information about AIS targets is not updated as frequently as for Own-Ship when connected to a pilot plug directly. Virtual Boarding is not considered suitable for navigation or piloting where predictable and reliable position updates are required. You should connect directly to PPU or AIS Pilot Plug. A warning is displayed at start-up to alert the user of this.*
> *An alternative method to Virtual Board an AIS target is to select the target and view its **Full Details**. You will see an option to Virtual Board the vessel.*

You can disable virtual boarding by selecting the **X** in the **Virtual Boarding** status bar panel. When virtual boarding is enabled, it takes precedence over all other features except the vessel simulator.

31.1 Settings

- **Virtual Board Status:** The current status of Virtual Boarding. advises you if, for instance, the vessel you selected for Virtual Boarding is no longer known.
- **Virtual Board:** Presents list of current AIS targets. You can select one you want to virtually board. If virtual boarding is active, the first option listed is to disable virtual boarding.

You can also virtually board another vessel by selecting it on the Navigate tab, to display full details and selecting **Virtually Board This Vessel**.

- **Automatic Board:** When enabled, the user is prompted to board a vessel when nearby. The user is prompted when the following conditions are met:
    - No Own-Ship is available, your device is within **0.25NM** from a vessel.
    - Your device's course is within **2kn** of vessel's course.
    - The vessel is not a **pilot boat**, **port tender**, **tugboat**, or **recreational** vessel.

You can be asked to board at most once every **5 minutes**.

This feature requires an internal GPS in your device. Enabling this causes the internal GPS to always be on, which may affect battery life.

- **Quick Boarding:** When enabled, selecting an AIS target immediately activates virtual boarding. Dialog boxes that are normally shown are disabled. The intention is to provide a mode where vessels may be interrogated swiftly, and this is intended for use by pilot stations and similar situations.

> ***Note:** This feature is **experimental** and may be removed.*

32.0 AIS Target Label Options

32.1 Settings

- **Show Labels for Targets:** Select this option for determining whether AIS labels are shown.
  - **Off** - labels are not shown unless the vessel is selected.
  - **On** - each AIS vessel is normally labelled with the vessel name.
  - **Auto** - labels are shown according to an algorithm, to detect when the display is cluttered. For instance, vessels with SOG less than **2kn** normally do not have labels shown.
- **Use Fill for Labels:** When enabled, labels are shown with solid background. This can make labels easier to read but can obscure other objects. Labels for selected objects always use solid backgrounds.
- **Hide Labels for Small Vessels:** When enabled, labels are shown for small vessels, those less than the Meeting Point / Small Vessel Length, unless selected by the user.

32.1.1 Fields

- **Show Pilot on Labels:** When enabled, labels are visible, a pilot's name is available, and it's displayed on the label. The pilot names are only available on Hi-Res PPU targets (Settings / AIS Sharing / Hi-Res PPU Targets).
- **Show HDG on Labels:** When enabled and labels are visible, each AIS target is shown with its HDG.
- **Show COG on Labels:** When enabled and labels are visible, each AIS target is shown with its COG.
- **Show SOG on Labels:** When enabled and labels are visible, each AIS target is shown with its SOG.
- **Show Draft on Labels:** When enabled and labels are visible, each AIS target is shown with its draft.
- **Show Destination on Labels**: When enabled and labels are visible, each AIS target is shown with its destination displayed (when available).
- **Show CPA on Labels:** When enabled and labels are visible, each AIS target within **10nm** of Own-Ship is shown with its Closest Point of Approach (CPA).

  CPA provides distances based on centre of Own-Ship and target. This assumes vessels maintain course (COG & SOG), regardless of current ROT.
- **Show BCR on Labels:** When enabled and labels are visible, each AIS target within **10nm** of Own-Ship is shown with Bow Crossing Range (BCR).

  BCR provides distances for centres of Own-Ship and target, not their bow or stern. The calculation assumes vessels maintain (COG & SOG), regardless of the current ROT.

33.0 Vessel Select

Vessel Select is used to select AIS targets to use as Own-Ship. This is used onboard a vessel and using a PPU that does not connect directly into the vessels AIS pilot plug. By selecting a vessel, SeaTab will determine which AIS target is Own-Ship and use this to identify name and size of the vessel. The MMSI number is used to save specific per-ship settings in a database to be used if you board the vessel again.

The most common PPU devices supported by this feature are as follows:

- **Navicom Dynamics:** Channel Pilot, Harbour Pilot
- **AD Navigation:** ADX XR, ADX DUO
- **Trelleborg:** CAT III
- **PilotsTech:** KSN-55

Other situations where Vessel Select may be helpful include:

- Using an AIS pilot plug for GPS position and it is not connected to Own-Ship socket. It may be beneficial to have the ships name and size automatically be populated from AIS. In this scenario, AIS data would need to be from an internet source, since your plug is not connected to the vessels system.
- Using internal GPS of your tablet/laptop. Like above, it may be beneficial to have the ships name and size automatically be populated from AIS. In this scenario, AIS data would need to be from an internet source, since your plug is not connected to the vessels system.

Vessel Select is different from **Virtual Boarding**. With Vessel Select, the position, course and other **dynamic** information come from your PPU and the static information is from the AIS target you select. With Virtual Boarding, no PPU information used and all information is from the AIS target.

To manually select a vessel, you select the AIS target and view its **Full Details**. An option to Select the vessel will be available.

33.1 Settings

- **Vessel Select:** Vessel Select is used to associate Own-Ship with an AIS target in order to determine vessel name, size, and other information. For further information, see **Vessel Auto-Select** and **Suppress Selected Vessel**.
- **Vessel Auto-Select:** When enabled, the user is prompted to select a vessel when nearby. The user is prompted when the following conditions are met:
    - The target is not a **pilot boat**, **port tender**, **tugboat**, or **recreational vessel.**
    - You are within **0.25NM** from vessel.
    - Your device's course is within **2kn** of the vessel's course.

  You can be asked to select a target at most once every **5 minutes**.

If you already have a target selected, you must be at least **2NM** away from the current target before another target is suggested.

- **Suppress Selected Vessel:** When enabled, an AIS target corresponding to the selected vessel is not displayed. This is to prevent duplicate images for the same vessel from being shown.

34.0 Tides

SeaTab includes support for various forms of tidal data. It is always important to consider the source of your data. This is not intended as a complete description of tidal/current data. There are numerous references and other forms of documentation, including from the various data sources that SeaTab employs.

- **Official/Unofficial data:** Some of the tidal/current data is official and some is Unofficial.
- **Online/Offline:** Online data requires an internet connection in order to access. Offline predictions do not require an internet connection: they use so-called harmonic analysis to predict tide/current at certain times. There are numerous potential sources of error in tidal predictions. Note that real-time tidal data may also come from AIS broadcasts; this is like online data source but uses AIS over VHF broadcast and does not require internet connection.
- **Reference/Subordinate Stations.** For predictions, stations are divided into reference and subordinate stations. Reference stations have full harmonic analysis and may maintain permanent sensor on station. Subordinate stations are defined in terms of a reference station, typically with some time offsets, level offsets, with or without multipliers. All tidal predications should be viewed cautiously, particularly from subordinate stations, because they are often estimates of estimates.

34.1 Initial Settings

Tidal predictions from **NOAA** and **CHS** may be downloaded in advance so they are available even when you are offline. When you choose to download the data, it downloads at least several weeks of data.

The procedure is:

- Ensure you are connected to the internet.
- Create a VRM that includes all the stations you wish to download. This VRM should be in a fixed location, not attached to a vessel.
  1. You can create a VRM by either single tapping to select a centre location
  2. Double-tap a second location and choose Add Tool / Add VRM
  3. Provide your new VRM a descriptive name such as **Tidal VRM** to identify it
  4. Adjust the position of the VRM as need
- Choose **Select Stations** here and pick the VRM you just created.
- Select **Update** to download the data. This may take some time, depending on the number of stations in the VRM.
- When complete, you can see how far in advance your predictions have been downloaded by viewing the **Status.**
- Periodically, you may want to **Update** your data to ensure you have required predictions.

34.2 Tide and Current Settings

The following settings control operation of tides and currents.

34.2.1 Labels

- **Show Labels:** Show labels for tide stations. Not all tide sources are supported.
- **Use Fill for Labels:** Show labels with solid background makes them easier to see but may obscure other details.

34.2.2 Automatic Selection

- **Track Nearby Tide Stations:** When enabled, the next and previous tide stations along your route are calculated. Own-Ship must be following a route. To be selected, a station must meet the following conditions:
    - Within the **Distance Threshold** from the route.
    - No more than **20NM** from Own-Ship along the route.
    - It must have a tide reading no more than **1 hour** old.

- **Distance Threshold:** This is the maximum distance a tide station may be from the current route to be automatically selected for Own-Ship. The default setting is **1NM**.

- **Interpolate Tide for Own-Ship:** When enabled, the water level at Own-Ship is estimated using linear interpolation based on relative positions along the route. Interpolation is based on the closest position of the route to the station. If a station is past the end of a route then then interpolation is based on the end-point of the route.

> ***Note:***
> *Depending on conditions, linear interpolation may not be an accurate method to estimate tides. Knowledge of local conditions should be used to evaluate the accuracy of estimates.*
> *The following conditions must be observed.*
> *- Track Nearest Tide Stations **must** be enabled*
> *- A next and previous station **must** be identified*
> *- The times of most recent readings reported at the two stations **must** be **no more** than **15mins** apart*
> *- The two stations **must** report the same reference level*

- **Dynamic Tidal Adjustment:** When enabled and a tidal value is present for the current position of Own-Ship, an adjustment is made to chart display.

  Alternately, a tide station can be opened, and Select for Tide Adjustment selected to manually select a tide station. This is disabled by selecting the disable **(X)** button in the status panel. The tidal adjustment is applied globally to all charts based on the estimated value at Own-Ship's current position. Therefore, viewing any chart showing water with different tidal levels displays incorrect data.

  This has the similar effect as manually editing Settings / Bathymetry / Tidal Adjustment. For further information, refer to that section. When this feature is **enabled**, the tidal adjustment is automatically updated (eliminating any prior value). When this feature is **disabled**, the tidal adjustment is reset to **0**, regardless of any prior value.

  Dynamic tidal adjustment is only used if the sensor data is no older than **15mins**.

> ***Note:** This feature must be used with caution.*

When the value is changed, it is rounded down (never up) to the next lowest **5cm** value. The chart display then only changes when the current estimated level is less than the adjusted value or more than **10cm** above it. This indicates the adjustment is always less than the estimated water level and is no more than **10cm** less.

- **Tide Sensor Timeout:** Maximum age for real-time tide data, after which the sensor data is coloured red in the status bar and is no longer used for dynamic tidal adjustment. The default setting is **15mins**.

34.2.3 Own-Ship Set & Drift (Advanced)

- **Use Set & Drift in Own-Ship Predictions:** When enabled, a panel is displayed with sliders for set and drift for current. This allows Own-Ship course predictions to account for set and drift, potentially increasing the accuracy. AIS targets are not affected. The set and drift are assumed to be an existing component of Own-Ship's COG/SOG. This option only has an effect when the vessel turns as the set and drift component stay fixed, but the remaining components turn.

Enabling this feature disables the **Trial Rate-of-Turn CHL** feature.

- **Set Follows Route:** When enabled along with **Use Drift in Course Predictions** and following a route, the bearing of

the route closest to Own-Ship is used for the **set**. This can be useful in rivers or other areas where drift is expected to generally follow the direction of the route.

Note the set has a single fixed value for a certain position of Own-Ship at the current time and predicted movement of Own-Ship does not affect various course predictions. Therefore, predictions do not change set when, for example, Own-Ship is following a curve.

34.2.4 Sources

- **USA (NOAA) Online Tides/Currents:** Enables downloading a list of **NOAA** tide and current stations. You can select a station to get a link to official online data.

  NOAA indicates tidal current predictions as being in **Beta**.

  An internet connection is required to access the data, although, you can download predictions, so they are available when off-line.

- **NOAA PORTS:** Enables download and display of NOAA PORTS data for numerous ports in the USA. The stations are identified using red diamonds with **P**. An attempt is made to update the stations every **6 minutes.**

- **NOAA NBDC Buoy Data**: Enables download of environmental data from **NOAA National Buoy Data Center (NBDC)** stations. The stations are located around the world, but mainly around the **USA**, **United Kingdom**, and **South Korea**. The stations appear as yellow diamonds on the display. These are updated every **15 minutes** when connected to the internet.

- **Canada (CHS) Tides**: Enables downloading a list of CHS tide stations. Selecting a station enables a link to be obtained to the official online data.

  An internet connection is required to access the data, although you can download predictions, so they are available when off-line.

- **Canada SPINE Levels (CHS):** Enables periodic downloading of tide interpolations that CHS creates. These are made using the SPINE method, described by CHS as follows:

  - Water level forecast and interpolation web service - also called SPINE is a system allowing access to obtain water levels at any time whilst in the St. Lawrence navigation channel between Saint-Joseph-de-la-Rive and the Port of Montreal.

  The requested position of the forecasts corresponds to the locations of buoys along the St Lawrence Seaway, which are treated as virtual tide stations. An internet connection is required to access the data, and an attempt is made to update every 5 minutes.

  When SPINE is enabled, AIS water level values are ignored due to the Track Nearby Tide Stations and related features.

- **Australian Tide Stations (AHO):** Enables the download of stations for **Australia**, **Antarctic**, and the **South Pacific**. The stations are displayed as symbols with links to online data. When enabled, an attempt is made to update these **every day**.

  An internet connection is required to access the data.

- **Pegel Online Tides (Germany):** Enables download of real-time water level data from **PegelOnline** (**https://www.pegelonline.wsv.de**). An internet connection is required to access the data, and an attempt is made to update every **10 minutes**.

- **Norway Online Tides:** Enables downloading a list of stations for Norway. You can select a station graphically to obtain a link to the official online tidal data.

  An internet connection is required to access the data

- **Port of London:** Enables download and display of real time water level for a few stations near the Port of London. Currently, there are two stations available, each of which are displayed in 2 locations. An internet connection is required to access the data, and an attempt is made to update every **2 minutes**.

- **Port of Rouen (France):** Enables download and display of real time water level for stations near the Port of

Rouen. An internet connection is required to access the data, and an attempt is made to update every **2 minutes.**

- **AyeTides:** Enables integration with the **AyeTides** and **AyeTides XL** applications. You can select a station graphically to obtain a link the station.

  Selecting the link switches to the AyeTides application and shows you data for that station. When done, you can select the back button in AyeTides to return to SeaTab.

This requires a purchase of AyeTides or AyeTides XL application. An internet connection is initially required to load the stations. Once stations are downloaded, AyeTides can be used offline.

- **Open AyeTides:** Tapping this item switches to the AyeTides or AyeTides XL to view tidal information. The current position in the chart display is given to AyeTides so it shows tidal stations in your area. When complete, you can select the back button in AyeTides to return to SeaTab.

34.2.5 Prediction Download

- **Select Stations:** A Variable Range Marker is used to identify the area where you want stations data downloaded. Every station contained within the VRM is attempted to be downloaded.
- **Update Stations:** Select the **Update** button to begin downloading station data.
- **Status:** Status of downloaded stations. You can view the download status for all stations here.
- **Erase Downloaded Data:** Select the **Erase** button to erase all downloaded prediction data.

34.2.6 Experimental

- **USA Offline Tides/Currents:** Enables downloading harmonics for USA tides and currents. This data is based on NOAA developed harmonic constituents, but the harmonics may be out of date and should not be considered official.

> ***Note:***
> *This use of tidal data from **XTide** - **http://www.flaterco.com/xtide**. It is advertised as **Not for navigation** and for having **Absolutely no warranty**. Further information can be obtained in the diagnostics information for individual stations.*

- **Global Offline Tides/Currents:** Enables downloading a harmonics file for stations covering most of the world. The harmonics file predictions are based on is not maintained.

> ***Note:** The above feature is to be **used at your own risk**.*

35.0 Weather

SeaTab supports overlaying weather data on charts. The data that is displayed can be either automatically downloaded (requires an internet connection) or manually installed. Wind direction/strength and pressure can be displayed.

Wind is shown using arrows showing the direction and speed of the wind at various data points. The location corresponding to the prediction is indicated with a tiny circle at the mid-point of the arrow. Speed is shown using feathers along the shaft of the arrow. Knots are always used for wind speed, regardless of other display settings you may have set. There may be any number of long feathers, each indicating **10kn** of wind speed. A short feather indicates an additional **5kn** of wind speed. Speeds are rounded up to the next **5kn**. **22kn** is displayed the same as **25kn**: 2 long feathers and 1 short one.

If you require the original information from a data point, you can double tap on the centre of an arrow and select **Details for this Location**. Along with other information about the GRIB file, you will see the direction and speed predicted for the location you selected.

> ***Note:*** *The times shown for weather data are in local time unless specified otherwise.*

35.1 Settings

- **Show Weather Data:** Enable this to show weather data.
- **Automatic Download:** Enable this to automatically download weather data for the area you are viewing. An internet connection is required to access the data
- **Status:** Current status of the weather display.

35.1.1 Manual

- **GRIB File:** Select a GRIB file to display.
- **Request GRIB from SailDocs:** An email to request data from SailDocs a GRIB file for the required displayed area. See the body of the email for more information.

35.1.2 Settings

- **Show Wind:** Enable this in order to show wind data.
- **Show Pressure:** Enable this in order to show pressure data.

35.2.1 Automatic Download

Automatic download is the preferred method when you have a reliable internet connection. SeaTab will automatically download weather data for the areas that are visible on the chart display. As you pan the display, it will automatically download data for new areas that are displayed.

Weather

Procedure for using this feature:

- Set **Show Weather Data** to **ON.**
- Set **Automatic Download** to **ON.**
- Open the **Navigate** tab and as the data is downloaded, it will be displayed. You should see the time corresponding to the GRIB data in the centre of the display. The time is provided as a date (in local time) as well as the time relative to now (plus or minus number of days and hours).

- At the top of the display are buttons to move forward and backward in the forecasts to see weather patterns evolve over time.

  SeaTab downloads the NOAA GFS **0.5x0.5** degree forecasts from **http://nomads.ncep.noaa.gov**. These forecasts are updated every 6 hours. Data is downloaded for **10x10** degree blocks for the visible area of the display. After current data for the visible area is displayed, it progressively downloads more forecasts, in 6 hour increments, for up to 7 days.

> ***Note: Automatic download***
> *Whenever automatic download is enabled, SeaTab is using internet bandwidth to download and update the GRIB data. Once SeaTab has downloaded all forecasts for the current display, it will stop downloading, until you move the display to a new area or new forecasts become available.*

35.2.2 Manual Download

> ***Tip: Manual Download***
> *We recommend testing this feature before heading out on passage to ensure there are no foreseen issues. Ideally, you should test it using your SSB/Pactor, as you would at sea.*

This method of viewing GRIB files is useful for situations when you do not have a normal internet connection, but you do have an alternate method of acquiring GRIB files. For example, Single Sideband radio with Pactor Modem or Satellite phone. Weather data is exchanged using files in a standard format called GRIB. GRIB stands for **Gridded Binary**. **SeaTab requires GRIB files to end in ".GRB" or ".grb".**

You can request GRIB files via email from **SailDocs** following their instructions. If you are at sea, you will want to use the AirMail program to request the data. Other weather data is included as well as wind and isobar, but only wind and isobar will be shown.

The instructions below presume you will use an email formatted by the **Request GRIB from SailDocs** button in SeaTab. If you are using a different method, you can skip the first few steps.

- Download a GRIB file. Go to **Settings**, then **Weather**. Select **Request GRIB from SailDocs**. SeaTab will create a valid request to **SailDocs** for the 10-by-10 degree area at the centre of your current display. You will see some instructions below the line describing the format. Create any further amendments, if required, then select **Send**.

- Open the Mail application and wait for the email response from **SailDocs.** Select the **GRIB** attachment and choose to open it with this app. Alternatively, if you are using a different method to obtain a GRIB file, you could, for example, transfer it from your laptop using the **File Transfer**.

Return to **Settings**, then **Weather**.

Select **GRIB** File and select the GRIB file you want to display.

Set **Show Weather Data** to **ON**.

Set **Automatic Download** to **OFF**.

Open the **Navigate** tab. You should see the time corresponding to the GRIB data in the centre of the display

36.0 Alarms

Alarms are used to notify you of important events.

On mobile devices, best practice is to leave the app running in the foreground, with **Keep Awake** turned on.

Other alarms are available and can be configured in the respective setting panels.

Routes

- **Waypoint Advance:** Alerts you when advancing to the next waypoint on the active route.
- **Waypoint Arrival:** Activates when arriving within designated distance from the next waypoint.
- **Route XTD Alarm:** Activates when Own-Ship Cross Track Distance (XTD) exceeds the designated distance from the active route.
- **Speed Limit Alarm:** Activates when Own-Ship is following a route segment with a speed limit and speed exceeds the limit.

NMEA/AIS

- **Inactivity Alarm:** Indicates when no recent data has been received.
- **Inactivity Alarm Reminder:** Prompts you when data has been received but the Inactivity Alarm is disabled**.**
- **AIS Alarm:** Indicates when an alarm is reported via AIS.
- **HDOP Alarm:** Activates when HDOP (Horizontal Dilution of Precision) has been received that exceeds 2.0.
- **NMEA Verification Alarm: Ac**tivates when NMEA/AIS and GPS position differ by at least 100m.

Meeting Points

- **New Meeting Point:** Indicates when a new meeting point has been detected for an AIS vessel.
- **Passing Restricted Meeting Point:** Indicates when a meeting point has been detected in a route segment marked as Passing Restricted.
- **Anchor Alarm:** Generate an alarm when Own-Ship moves too far from anchor position.

36.1 Settings

- **Recent Alarms:** A table of alarms that have activated recently.
- **Use Voice for Alarm:** Enable to get a voice alarm. This also requires that the volume on your device not be muted.
- **Speed for Spoken Alarms:** Control how fast spoken text is. This is a number from 1-100%. The default is 50%.

36.1.1 Own-Ship

- **Heading Tick:** Enable to get a tick every time Own-Ship heading (HDG) **changes1°**. If Settings / Status Bar / Precise Heading is enabled, the ticks are every **1/2°**. If Settings / Status_Bar / Use Course When Heading Unavailable is enabled, then COG may be used for generating ticks.

36.1.2 Wind Speed

- **Wind Speed Alarm:** Enable to create alarm if the speed is exceeded. Alarms activate every **60 seconds.** Both a text and voice alert are presented, although the message only appears for **3 seconds**. If the speed is exceeded during this time, then another warning is generated using the maximum speed since the last alarm was generated.
- **Wind Speed is True:** Enable to base alarm on true wind speed. When disabled, the alarm is activated by apparent wind speed.
- **Wind Speed:** Set this to the speed when the alarm activation is required.

36.1.3 Wind Direction

- **Wind Direction Alarm:** Enable to create alarm if wind direction is outside the designated range. Alarms usually activate every **60 seconds**. Both a text and voice alert are presented. The message only appears for **3 seconds.** If the speed is exceeded during this time, then another warning is generated using the maximum speed since the last alarm was generated.
- **Wind Direction Port:** The bearing to port where an alarm is generated.
- **Wind Direction Starboard:** The bearing to starboard where an alarm is generated.

36.1.4 Depth

- **Depth Alarm:** Enable to generate an alarm if a lower depth is reported. The message only appears for **3 seconds**. If the speed is exceeded during this time, then another warning is generated using the maximum speed since the last alarm was generated.

  This alarm requires a sensor reporting Depth Below Keel and This alarm does not use the depths reported by charts.
- **Depth:** Set this to the depth when an alarm is required.

36.1.5 Own-Ship COG/SOG

- **Speed Alarm:** Enable to create alarm if Own-Ship speed exceeds a designated amount. Alarms activate at every **60 seconds**. Both a text and voice alert are presented. The message only appears for **3 seconds**. If the speed is exceeded during this time, then another warning is generated using the maximum speed since the last alarm was generated.
- **Speed:** Set this to the speed when an alarm is required.
- **Off Course Alarm:** Enable to create alarm if Own-Ship course is outside a designated range. Alarms activate every **60 seconds**. Both a text and voice alert are presented, although the message only appears for **3 seconds**.
- **Course Bearing Port:** The bearing to port beyond when an alarm is generated.
- **Course Bearing Starboard:** The bearing to starboard beyond when an alarm is generated.

36.1.6 AIS

- **New AIS Vessel Alarm:** When enabled, an alarm activates whenever a new vessel appears.

36.1.7 Diagnostics

- **Test Alarm:** Activate an alarm after **10 seconds**.

37.0 Anchor Alarm

The Anchor Monitor can estimate the location of the anchor on the seabed and activate an alarm when it detects Own-Ship is moving too far from that location.

This monitor improves on the simple alarm most mariners are accustomed to. When setting your anchor, the monitor estimates the actual location on the seabed where the anchor is set. It does this by accounting for the GPS antenna's position relative to the bow, your current heading, and the extent you have let out. After the anchor is set, the estimated location is displayed, along with the predicted circle of swing and alarm circle.

The extra accuracy can be useful to check if your anchor is dragging. You can see the location and orientation of your vessel relative to the original estimated anchor location and swing circle. Improved accuracy may allow the use of a smaller alarm radius, so you receive an earlier warning when dragging begins. It can also be useful when manoeuvring your vessel's bow above the anchor to raise it.

All calculations are based on the location where the anchor (normally) attaches to your vessel at the bow. The Monitor uses your vessel's size, position of GPS antenna, (as specified in the Vessel True-scale settings) and heading to identify the location of your bow. It’s most effective when using your vessel's GPS with a fixed antenna location on your vessel. When using a mobile device, the results may vary as the device is moved within the vessel.

You can use a value of zero for **Scope**, then the **Alarm Distance** can be used in similar fashion to a basic anchor alarm. You may also want to use a zero scope in more complex anchoring situations, for example, when using multiple anchors.

37.1 Important

- The advanced features for tracking the location of your anchor are intended to **improve** the accuracy of information available to help determine if the anchor is dragging. There are still many sources of error.
- This feature is primarily focused on helping to determine if the anchor is dragging. It attempts to track the movement of the vessel's bow, where the anchor is normally attached. In particular, the dashed alarm circle on the **Navigate** display indicate the maximum swing of the bow.
- The term **scope** is intended to correspond to the horizontal distance of the bow from the anchor. This does not account for the vertical drop to the seabed and so may be somewhat less than the actual amount of chain/rode that has been let out.

37.2 Instructions

37.2.1 Setup

For effective results, we recommend setting the size of Own-Ship vessel and location of your cockpit or the location of your GPS antenna (if you are using an NMEA data feed from your vessel). This allows SeaTab to understand the position of the bow and factor that into initial anchor placement and alarms.

37.2.2 While Anchoring

We recommend setting the anchor position during the normal process of anchoring, at the point when the anchor has been physically set into the seabed and Own-Ship. The rode should be straight, and the bow pointed toward where the anchor is set. At that point you should also know approximately how much scope has been let out.

- Set the **Scope Radius** according to how much chain/rode you have let out. As discussed above, this value is the horizontal swing radius and should be somewhat lower to account for the depth in which you are anchoring.
- Switch the **Set Anchor** switch to **ON**. SeaTab will then estimate the location of the anchor in the seabed based on Own-Ship's current position, shape, heading, and the scope you specified above. This also enables the alarm below.

- If necessary, adjust the **Alarm Length** to indicate the additional distance beyond the **Scope Radius** should cause an alarm to be activated. This amount can be used to account for inaccuracies in the **Scope Radius**, GPS, and other factors. If you are receiving **false alarms**, you may need to increase the **Alarm Length**. In many cases, this value can remain the same between uses.
- Set the **Enable Alarm** switch to **ON**. An alarm will now be generated when the bow moves more than the **sum** of the **Scope Radius** and **Alarm Length** from the estimated location of the anchor.
- If using the alarm, check that the **Keep Awake** setting is **ON**.

37.2.3 Display

The Navigate tab will show:

- A black anchor symbol at the estimated location of the anchor.
- Two black dotted circles. The inner circle indicates the scope radius which is the expected range of the bow. The outer circle shows the swinging radius of the stern.
- A dashed circle for the alarm radius. An alarm will activate if the bow moves beyond this circle.

You need the scale to be at least 1:20,000 for circles to be shown.

37.2.4 Changing Alarm

After setting the anchor, you can change it by single-tapping on the anchor to select it and dragging it to a new location. You can also graphically adjust the scope and alarm distance by tapping them and dragging them to a new distance.

37.2.5 Alarms

If an alarm is generated, you will first want to ensure the vessel is safe. If you feel the alarm was generated unnecessarily, you may need to increase the **Alarm Length**.

37.3 Settings

- **Set Anchor:** Enabling this sets an anchor monitor.
- **Enable Alarm:** Enable this if you want an alarm generated if Own-Ship moves too far from where the anchor was set.
- **Scope:** This is the estimated scope or swing radius currently used for your anchor.

While Anchoring

- **Alarm Length:** This is the extra distance the bow can move beyond the scope, beyond which an alarm is generated.
- **Use Shackles:** Enable this if you want to use Shackles for your anchor-related units.

38.0 Administration Settings

The settings assist with the installation of the software.

38.1 Settings

- **Reset Settings to Defaults:** Reset your settings to system defaults. If you have an Enterprise Subscription and a template has been created, those settings are used.
- **Check for Software Update:** Check if an update is available.
- **Disable Automatic Check for Software Updates:** When enabled, automatic checking for software updates is disabled. You can still manually check for and install updates.

38.1.1 Customization

- **Edit Quick Settings:** This determines which settings are displayed in the **quick list**. It allows you to make certain features you use often easily available. We recommend turning this on, review all the settings, whether they are locked or not and when complete to then turn this setting off. Each setting can be individually locked, including sub-menus.

  When this is turned on, you can edit which settings should be in the quick list. When this is turned off, the **default mode**, those settings you have added will be in the Quick menu.

  This automatically disables itself whenever SeaTab restarts.

- **Edit Visible Settings:** This is turned on to control which settings are visible. It allows you to hide features you do not use or need to adjust on a normal basis. The method of use is to turn this on, then review all the settings, marking them as being shown or hidden. When done, this is turned off and the hidden settings disappear.

  Each setting, including sub-menus, can be individually shown/hidden. Whether a setting is shown or hidden has no effect on its value.

  When this is turned on, you can edit which settings should be shown or hidden. While editing, all settings are shown along with a selector. The selector has two choices, **S** and **H**, for show and hide. You can adjust these values so your own preference

  When this is turned off, the **normal mode**, all settings marked as hidden are no longer shown. To view or access these settings, you need to turn this back on.

  This automatically disables itself whenever SeaTab restarts.

- **Show All Settings:** Enable this to temporarily make all settings visible. This does not affect your selection of which should be hidden. Disable this again to hide settings.

Reset Hidden Settings: Select **Reset** to clear all your hidden settings. All settings are marked as visible. This cannot be undone.

- **Manage Hidden Settings:** List all hidden settings.

38.1.2 Backup & Restore

- **Backup Settings:** Use this to save your settings, which you can be loaded onto another device or restored at a later moment in time.

  Most of the settings are saved. Saved items do not include **routes**, **waypoints**, **tools**, or **databases of vessel information**. These settings have other methods for restoring.

- **Restore Settings:** Restore settings you had previously saved. We recommend restarting SeaTab after restoring your settings.

38.1.3 Locking

- **Lock Settings:** When turned on, any settings you have locked can no longer be modified.
- **Password:** When a password is set and the lock is enabled, the password must be re-entered to unlock the settings.
- **Edit Locked Settings:** This is turned on to control which settings are locked. It allows you to lock features you do not use or need to use on a regular basis. Turn this setting on, review all the settings, enabling them as locked or unlocked, and when complete turn the setting off.

  Each setting can be individually locked. When this is turned on, you will be able to edit which settings should be locked.

When this is turned off, the normal **mode**, all settings marked as locked cannot be changed. To modify those settings, you need to turn this back on.

This automatically disables itself whenever SeaTab restarts.

- **Reset Locked Settings:** Select **Reset** to reset locks on all settings. All settings are marked as unlocked. This cannot be undone.
- **Manage Locked Settings:** Lists all locked settings.

39.0 Enterprise Account

These settings allow you to view and manage your account information. For further information on Enterprise accounts, contact **OneOcean Technical Support**.

39.1 Settings

- **Account:** Name of the account your copy is licensed under.
- **Username:** User's name for your account.
- **User Email:** Email address associated with your user account.
- **Account Status:** Status of your account.
- **Server Status:** Status of last check on your account.

39.1.1 Manage

- **Import:** Import credentials for your SeaTab account.
- **Manual Login:** You can use these to manually enter your account details. This should match the information in your account email. You must enter the information exactly as it appears in your account email.
- **Update:** Update your account status. This forces an immediate account update with the SeaTab account servers
- **Stop:** Cancels your account credentials.
- **Use Account to Sign-in to AIS Sharing:** This only has an effect when used with an Alternate AIS Sharing server. When enabled, your Enterprise Subscription account credentials are used to sign into your AIS Sharing server. With matching configuration on the server, this eliminates the need to manage separate credentials for an AIS Server.

39.1.2 Automatic Import & Export

- **Use Settings from Server:** When enabled, settings installed for your Enterprise Subscription account are automatically adopted.
- **Use Quick Tab from Server:** When enabled, the Quick Tab from your Enterprise Subscription account is automatically adopted. This only has an effect if **Use Settings from Server** is also enabled. Turning this on causes your current Quick Tab to be lost and cannot be undone.
- **Use Routes from Server:** When enabled, routes from your Enterprise Subscription account are automatically adopted. No changed to routes or waypoints can be made if the setting remains enabled. Any routes you have are replaced. A copy is placed in Settings / Advanced / Archive.
- **Show Mariners Tools from Server:** When enabled, Mariners Tools from your Enterprise Subscription account are shown, in addition to any tools you have created. No changes are made to your tools.
- **Use Chart Files from Server:** When enabled, chart, overlay and other types of files are automatically downloaded from your account server.

  This features requires the feature has been activated for your account. File updates are checked every **30 minutes** if you are connected to the internet. You can also select the **Update** button to force an immediate check for changed files.

  When downloading, your device needs to be connected to the internet and have an active account. Once started, the update continues in the background. You can see the status being updated as the download proceeds and when complete, a notification is displayed. As the updates can be quite large, it may be preferable to wait until you are connected to a high speed internet connection before downloading updates for your charts.

  If files are removed from the server, they are removed also from your device, at the last step of the update.

39.1.3 Files from Server

- **Chart Files:** View currently downloaded files from server.
- **Status:** Status of downloads/updates.

39.1.4 Debug

- **Age (Debugging):** Artificially advances the time by 4 days.

40.0 Advanced Settings

The settings are not normally used. They should not be used without first carefully understanding the documentation below. Any items listed here may be changed or removed in future versions.

40.1 Settings

40.1.1 Position

- **Monitor Safe Water:** When enabled, the predicted swept-path of Own-Ship is monitored for any depth areas (or dredged areas) that are shallower than then Safety Contour setting.

  If Vessel the Buffer is enabled, the buffer area is added to the size of the safe area. Only ENCs with scale at least **1:30,000** are used for the calculation of safe water. When Bathymetric ENCs are in use, they are used in preference to ENCs. Any areas that overlap only use data from the bENC. At least **12 minutes** of predicted course are monitored.

  Raster charts and non-ENC overlays (such as Autocad DXF, Shapefile, XYZ, and GML data) are not considered when checking for safe-water. When areas are detected in the predicted path, an alarm is generated at least every **30 seconds.** Areas in a predicted path are identified as potentially unsafe water are outlined in red. Safety scans are calculated periodically, every **5 seconds**. You may notice there is a small delay before unsafe areas are updated.

  When executing turning manoeuvres, there may be small areas at edge of Own-ship's swept path that are not included in the monitoring for safe water.

  This feature is intended as an aid and is not a substitute for careful monitoring of Own-Ship's course.

- **Check Route for Obstructions:** When enabled, charts are analysed for dangers with the active route.

  Only ENCs with scale at least **1:100,000** are used for the calculation of safe water. When Bathymetric ENCs are in use, they are used in preference to ENCs. Any areas that overlap only use data from the bENC. For areas where bENCs are used, only features in the bENCs are included in the analysis (none from ENCs in the overlapping areas).

  Raster charts and non-ENC overlays (such as Autocad DXF, Shapefiles, XYZ, and GML data) are not considered when checking for safe-water.

  When determining which items to highlight, the Safety Contour is used for Depth Areas and Depth Contours. The Safety Depth is used for Soundings. The current tidal offset is incorporated into the analysis.

  Analysing the charts can be processing-intensive and you may experience program delays, especially on older devices.

  The results are presented graphically on the chart display, with potentially unsafe areas marked in red. The most detailed chart information for each area is used for the analysis: when not zoomed into the most detailed chart, the features of the lower scale charts may not match those of the more detailed charts and in many cases features such as soundings may not be available. Occasionally, Scale-Minimum (SCAMIN) attributes on features may prevent display of features (such as soundings). In these instances, you can zoom in further until they are displayed, or you can turn off SCAMIN in Settings / Vector / Charts / Advanced.

  Results can also be viewed in tabular format by selecting the sub-menu. Any items that are detected as possible problems are listed in approximate order based on position along the route.

  This feature is intended as an aid and is not a substitute for careful analysis of a route for safety.

- **Use Accurate Internal GPS:** Normal behaviour when using IOS location services is to only display updates when the vessel has moved at least **5m** and/or heading has changed at least **5°**. This is done to conserve battery usage of the device. When this option is enabled, these minimum thresholds are not used. This may result in more accurate display of location (especially when moving slowly), at the cost of increased battery usage.

- **Internal GPS Alarm:** Generate an alarm if the internal GPS position has not been received for **30 seconds** or has a horizontal position error of at least **25m**. An alarm is generated every **2 minutes**.

- **Use Internal Heading Sensor:** When enabled, the heading sensor/compass is used to display the vessel's orientation. We normally recommend against enabling when the device is not on a fixed mount. This setting has no effect when course information is received from an external NMEA/AIS data feed.
- **Bluetooth Accessories:** List connected accessories.
- **Use Goto Waypoint for XTD:** When enabled, the XTD displayed is for the route segment ending with the current go to waypoint. If the current go to waypoint is the next waypoint in the route, XTD is not affected. When disabled, the XTD is for the current position of Own-Ship on the active route.

When showing XTD for other than the segment Own-Ship is closest to, the route segment is straight, and any turning radius is ignored. The **Default XTD Alarm** *Range* is used for scaling the XTD bar, even if the route or route segment has a separate maximum XTD assigned to it. The XTD panel is highlighted in magenta to visually indicate the different calculation is being used. The XTD is calculated as though the route segment were extended backwards **20NM**, so Own-Ship must be within this distance of the route segment.

Enabling this causes 3 buttons to be displayed in the **Waypoint** status bar panel: Back, Own-Ship, and Advance. These cause the current go to waypoint to be adjusted forward, back, or reset to the current position of Own-Ship.

- **Prefer Distances Along Route:** When enabled, and a user selects a location near (within Settings / Meeting Point / Distance Threshold) the active route, then distances are shown from Own-Ship's current position along the route.
- **Use Rhumb Lines for Routes:** When enabled, the route planning uses Rhumb Line (**RL**) as the default calculations. If not enabled all the route planning is done as Great Circle (**GC**) calculations.
- **Substitute Heading for Course:** When enabled, vessel HDG is substituted for COG. This may be useful in situations where COG is inaccurate. **This is experimental and may be removed.**
- **Scale for Manned Model Simulations:** When enabled, Own-ship SOG is scaled by **5** and ROT is scaled by **1/5**. This is for use in manned model simulations with scale **1/25**.
- **Display Own-Ship as Rectangle:** When enabled, Own-ship is shown as a rectangle instead of the normal vessel shape.
- **Use GPS Antenna for Default Conning:** When enabled, the default conning position is the amidships at the GPS position. When not enabled, the default conning position is the centre of Own-Ship. This can be overridden with Settings / Own-**Ship / Use Ext GPS as Conning**.
- **Long Beam Lines for Own-Ship:** When enabled and beam lines are enabled, the beam lines for Own-Ship are **2NM** in length. When not enabled, the size is based on a fixed display size.
- **Show Relative Courses:** When enabled, predicted courses for AIS targets are shown relative to the course for Own-Ship. Additionally, the Own-Ship predicted course vector is not shown.

When this option is enabled, the course vectors for AIS targets no longer represents the courses for the targets, only the positions relative to Own-Ship. Because of this, a warning **Relative Courses**, is displayed in the bottom-right corner of the display.

- **Auto-configure PPU (Experimental):** Auto-config for selected PPU models. When enabled and certain models of PPU are detected, various settings may be adjusted. This only has effect after a connection is first made to the PPU. Therefore, it is necessary to first configure NMEA settings.

Current devices that are supported include:

- **AD Navigation ADQ2.** The following changes are made:
    - Set Heading Offset to 0
    - Turn off Automatic Heading Offset
    - Turn off Vessel Auto-Select
    - Turn off Vessel Select / Suppress Selected Vessel
    - Turn on ADQ-2 Alarms
    - Turn off ADX DUO, XR, & XR Lite Alarms

- **AD Navigation ADX DUO, ADX XR, and ADX XR Lite**. The following changes are made:
    - Turn on Automatic Heading Offset
    - Turn on Vessel Auto-Select
    - Turn on Vessel Select / Suppress Selected Vessel
    - Turn off ADQ-2 Alarms
    - Turn on ADX DUO, XR, & XR Lite Alarms
- **Own-Ship Acceleration:** Advanced settings for charts.

40.1.2 Other

- **Simulated Canada SPINE Levels:** Enables simulated data sources for CHS SPINE forecasts. This setting has no effect unless **Canada SPINE Levels (CHS)** is also turned on.

Additionally, all sensors can be used when out-of-date for dynamic tidal adjustment and similar features.

> ***Note:*** *This is not limited only to SPINE sensors.*
> *This prevents correct operation of SPINE. It should only be used if participating in a simulation involving SPINE.*

- **Disable FTP Proxy:** When enabled, FTP requests can take longer.
- **Elbe River Speed Limit (Experimental):** Enable to track speed limit on the Elbe River based on estimated high water. The speed limit is based on estimates of current based on time to next/previous high-water event. The speed limit alarm is only shown when Own-Ship SOG exceeds the speed limit by **Speed Limit Delta**

> ***Tip:*** *For further information, see* ***Settings / Routes and Waypoints / Speed Limit Delta).***

- **Elbe River Speed Limit Alarm:** This feature is for the Elbe River. Enable for an alarm to be generated when Own-Ship SOG exceeds the speed limit by **Speed Limit Delta** (see Settings / Routes and Waypoints / Speed Limit Delta). *This* feature has no effect unless the overall **Elbe River Speed Limit** is enabled.
- **Offset AIS Target Labels from Route (Experimental***)*: When enabled, labels for targets on the active route are moved off the route and connected with a line. The XTD is used to determine how far to move labels away from the route.
- **Show Magenta Disk Under Targets:** When enabled, AIS targets are drawn with a magenta disk underneath them. This can make it easier to identify targets in a cluttered display.
- **Default Turning Radius:** This is the default turning radius to use for all waypoints. It may be overridden by setting the turning radius in a specific waypoint.

40.1.3 Diagnostics

- **Diagnostics:** Displays internal diagnostics information.
- **Graphics Diagnostics:** Displays internal diagnostics information about graphics.
- **Locale Debugging:** When enabled, all strings affected by the locale setting are surrounded by brace or bracket symbols. This can help translators identify strings available for translation.
- **Chart Update:** SeaTab determine when your set of charts has changed and automatically recalculate them. Selecting this button forces an update.

> ***Note:*** *We recommend using this only if you believe your charts are not being updated properly. If you use this setting, contact* ***OneOcean Technical Support*** *for further assistance.*

- **Archived Files:** View archived files. These may be created from time to time.
- **Keep Activity Log:** When enabled, a log of system activity is maintained. This is stored and then is available for export. Enabling this requires storage to be available for the log.

- **Erase Cache:** When enabled, all **data caches** associated with SeaTab are erased. When complete, the switch automatically turns off. This switch does not erase any charts, waypoints, routes, or other user data.

  SeaTab stores various types of temporary data to reduce processing. For instance, prior to viewing a vector chart, there is extensive processing being performed before the chart is displayed. These results are saved in the cache to be used later. The space used is usually no more than 100MB. Also, the data is identified so that the system does not backup this data. Therefore, it may automatically erase it if needed (on systems which support this). In some cases, you may want to explicitly remove all extra cache data, which is the purpose of this switch.

  Erasing the cache **does not** speed up SeaTab.

  We recommend using this only if you want to erase temporary data associated with the application to free up storage space.

- **Demo Mode:** When enabled, the program randomly selects around any charts that are loaded.
- **Feature Activation**: This is used to activate special features.
- **Chart Listing:** List your currently installed chart cells, along with a summary for each chart.

40.1.4 Debugging

- **Randomly Talk:** When enabled, the device will randomly talk.
- **Simulate Panic:** Selecting this button causes SeaTab to panic (process an unrecoverable error). This is used to validate crash reporting.
- **Simulate Crash:** Selecting this button causes SeaTab to crash (unexpected unrecoverable error). This is used to validate crash reporting.
- **Simulate Error:** Selecting this button causes SeaTab to crash based on an internal consistency error. This is used to validate crash reporting.
- **Simple Dialog:** Selecting this button causes SeaTab to generate a dialog. This is used to validate dialogs.
- **Alarm Dialog:** Selecting this button cause SeaTab to generate an alarm dialog that automatically dismisses itself. This is used to validate dialogs.
- **Downgrade:** This enables SeaTab to perform as if it was not upgraded.

40.1.5 Deprecated

- **Use Old Geographic Calculations:** SeaTab now uses a new set of geographic calculations. This may improve accuracy in certain situations. There can be significant computational overhead for these new calculations.

> ***Note:*** *Only change this setting if required. Contact* ***OneOcean Technical Support*** *for assistance.*

- **Use Old Geodesic Intersect:** SeaTab will use a new set of geographic calculations. This may improve accuracy in certain situations. There can be significant computational overhead for these new calculations.

> ***Note:*** *Only change this setting if required. Contact* ***OneOcean Technical Support*** *for assistance.*

- **Use Old S-52 Rules:** When enabled, the IHO S-52 v3.4 chart presentation rules are used. The default is to use **4.01**. This only affects vector charts.

> ***Note:*** *There should be no reason to use v3.4 unless there is an issue with version* ***4.01****. Contact* ***OneOcean Technical Support*** *for assistance.*

41.0 AIS

Automatic Identification System (**AIS**) is a standard for exchanging vessel location and other information using VHF radio signals.

SeaTab can acquire information about vessels either from VHF-based AIS receiver/transponder, or indirectly over the internet via **SeaTab AIS Sharing**. Additionally, SeaTab Pilot supports connection to a separate network feed. Note that SeaTab allows any or all these AIS data acquisition methods to operate at the same time.

AIS targets from Settings / NMEA & AIS are coloured a blue or red colour (depending on Settings / Vessels / Use Red for Targets). Targets from Settings / AIS Network Feed and AIS Sharing are coloured orange.

On this tab, you can see AIS targets. Tap on an AIS target to view detailed information.

Once you have AIS configured, you should be able to see vessels on your Navigation Tab that are reporting their position via AIS. You may notice that after first turning on AIS, the ships are shown according to their MMSI number. After a brief period, you should see the ships name appear rather than the MMSI number. The delay is because the detailed vessel information is not broadcast as often as the vessel's location information.

The number of current AIS targets is displayed as an indicator on the AIS tab.

The Settings / Vessels menu affects display of AIS vessels, as well as your own vessel. For instance, enabling Beam Lines will turn on Beam Lines for your vessel and for AIS vessels.

If you enable the True-scale Display under Vessel settings, then you can see the actual shape of the ship as adjusted for antenna location, but only when zoomed in sufficiently close for the ship to be at least 6mm long.

You can see all AIS targets by selecting the AIS tab. The targets are listed according to the distance from your vessel, with closest being first. By selecting one of the vessels, you can access all the detailed information that is reported by AIS.

You can select a vessel by single tapping it. A selection box will highlight the vessel and information about the vessel will appear in a box next to it. The vertical status bar will display information about this vessel until you select a different AIS target. Double tapping the selected vessel provides detailed AIS data for that vessel. More detail can be found by selecting Full Information.

Alternatively, you can double tap a vessel and select **Details for this Location**. You will the vessel listed along with other nearby features.

41.1 Target Information

The following data is available on an AIS target vessel. In many situations, only some of the data may be available for a certain target.

General

- **Vessel Name:** Name of the vessel (for Vessels)
- **ATON Name:** Name of the aid-to-navigation (for ATONs).
- **MMSI:** MMSI stands for Maritime Mobile Service Identity. This is a unique 9 digit number assigned to the vessels and other maritime related entities.
- **Call Sign:** Radio call sign
- **Ship Type:** Type of vessel, for example cargo vessels. Also, may include information hazardous cargo.
- **Aid Type (only for ATONs):** Type of ATON
- **Fixed/Floating (only for ATONs):** Whether ATON is fixed or floating.
- **Real/Virtual (only for ATONs):** Whether ATON is real or virtual.
- **Off Position (only for floating ATONs):** Indicates if the ATON is off-position.

Status

- **Status:** Current operational status. For example, **Underway using engine** or **at anchor**. It is common for the status to be inaccurate.
- **Bearing:** Bearing from Own-Ship
- **Distance:** Distance from Own-Ship
- **Closest Approach:** Estimated Closest Point of Approach to Own-Ship. The estimate uses both vessel's current, course, speed, and relative position. The estimate does not account for Rate-of-Turn.
- **Latitude:** Vessel's latitude (LAT)
- **Longitude:** Vessel's longitude (LON)
- **Course Over Ground:** Current course (COG)
- **Speed Over Ground:** Current speed (SOG)
- **Heading:** Current speed (HDG)
- **Rate-of-Turn:** Current Rate-of-Turn (ROT)
- **Destination:** Current Destination. It is common for this the destination information to be incorrect.
- **ETA:** Current Estimated Time of Arrival (ETA). As this information is manual entered by the crew, it is common for it to be out-of-date or even incorrect.
- **Manoeuvre:** Indicates whether vessel is under a special manoeuvre.

Vessel

- **Length:** Length of vessel
- **Width:** Width of vessel
- **Draft:** Draft of vessel
- **IMO Number:** International Maritime Organization (IMO) numbers are unique identifiers for ships and for registered ship owners and management companies.

Diagnostics

- **Vendor ID:** Vendor of AIS hardware.
- **Fix Type:** Type of position fix.
- **RAIM:** Receiver autonomous integrity monitoring (RAIM) is a technology developed to measure the integrity of global positioning system (GPS) signals in a GPS receiver system. This field indicates whether RAIM is in use.
- **Accuracy:** Indicates the expected level of accuracy of position information.
- **Report:** The type of the last AIS report (message) that was received for this vessel.
- **Age:** Time since receipt of the last report.
- **True-scale Outline:** Indicates the scale at which a True-Scale outline will be used to for this vessel. Or if True-scale is not enabled, it provides diagnostics listing any required missing information.
- **To Bow:** Distance from the GPS antenna to bow of the vessel.
- **To Stern:** Distance from the GPS antenna to the stern of the vessel.
- **To Port:** Distance from the GPS antenna to the port side of the vessel.
- **To Starboard:** Distance from the GPS antenna to the starboard side of the vessel.

- **Accurate Rate-of-Turn:** Indicates whether this vessel appears to have an accurate

  Rate-of-Turn indication. ROT is considered **accurate** if a non-zero ROT has been reported in the last 6 minutes. Vessels that have only reported non-numerical **To Starboard, To Port,** and **Zero ROT** are considered **inaccurate**.

  That this is not an evaluation of the actual accuracy of the ROT being reported, only whether the vessel seems to be reporting values indicating it has an accurate ROT sensor.

  The accuracy information is used to determine how course information for vessels is displayed. If ROT is inaccurate, the course vector is drawn from the GPS antenna position along the centreline of the vessel. If ROT is accurate (and other conditions are met), the course vector is drawn from the centre of the vessel (which requires accurate ROT information to correct the COG/SOG for any rotational movement of the GPS antenna.

41.2 Organization of Targets

Vessels can be organized in several different ways. The current format is indicated in a button on the toolbar at the top. Different formats may be selected by selecting the button.

- **Default:** The default format organizes targets according to estimates of importance in the current situation.
- **Vessel Name:** Vessels are listed according to their name
- **Distance from Own-Ship:** Vessels are listed according to their distance from Own-Ship
- **CPA: Closing/Opening:** Vessels are grouped depending on whether they are approaching Own-Ship or moving separately.
- **Route Traffic:** Vessels are listed according to their position along the current route, with items included also for waypoints and vessel meetings points.

41.2.1 Default

AIS targets are listed in multiple groups. The targets are assigned to groups in this order of precedence:

- **Dangerous:** Targets at most **0.1nm** from your vessel.
- **Approaching:** Targets at most **0.5nm** from your vessel with a TCPA of at least 5 minutes.
- **Lost Target (Close):** Targets that have not reported their position in the last 10 minutes and at a maximum of **10nm** from Own-Ship.
- **Unknown Position:** Targets with no known position. Note that this is not necessarily an error. At Times, targets report their general information before reporting their position.
- **Nearby:** Targets at most **5nm** from your vessel.
- **Other:** All other targets.

41.2.2 Vessel Name

Vessels are listed in alphabetical order according to the vessel name. Vessels whose names are unknown are listed in a separate section at the bottom according to their MMSI number.

41.2.3 Distance from Own-Ship

Vessels are listed according to their distance from Own-Ship, with closer vessels listed first. For vessels whose distance is unknown, they are listed in a separate section at the bottom.

41.2.4 CPA: Closing/Opening

Vessels are listed in three different groups:

- **Closing:** The vessel is approaching Own-Ship, with a CPA at where the vessels are at most *5nm* apart.
- **Opening:** The vessel is moving away from Own-Ship, but the current distance between vessels is at a maximum of **5nm**.
- **Other:** All other vessels, listed in order of their distance from Own-Ship.

41.2.5 Route Traffic

The Route Traffic display is intended for use when you are following a route. The idea is to display information about Own-Ship, Waypoints, AIS Targets, and **Meeting Points** with AIS Targets in a simple format.

If you are not currently following a route, no useful information will be shown.

All information is displayed in a table format. The table is oriented according to the position on the route relative to the location and direction that Own-Ship is following. Each item other than Own-Ship itself is shown with distance from Own-Ship. Except for waypoints, only objects from **10nm** astern of Own-Ship to **50nm** ahead of it are displayed.

Own-Ship and AIS targets are shown using unscaled icons that are oriented relative to the direction of the route. For example, a vessel that is crossing the route at 90 degree angle will be shown on the table oriented sideways, regardless what the direction of the route is at that point. A vessel that is following the route exactly will be shown oriented vertically.

Each row in the table corresponds to one of the following items:

- **Own-Ship:** Shown as a black symbol, along with COG, SOG, LOA, and XTD. Own-Ship is at position **0**.
- **Waypoint:** Waypoint along the route. Tapping on the row will bring up information about the Waypoint.
- **AIS Target:** Shown as a triangular symbol, along with COG, SOG, LOA, XTD, and information about meeting point with Own-Ship. Tapping on the row will bring up all details about the AIS target.
- **Meeting Point:** Shown as a magenta or green symbol indicating the type of meeting point (overtake or passing) and textual description of when the meeting point will occur. Tapping on the row will change the location displayed in the **Navigate** tab to centre on the location of the meeting point.

41.2.6 Route ETA (with Enterprise Subscription)

The Route ETA display is intended for use in monitoring ETA of vessels at certain waypoints in a route. Two waypoints can be specified, an Incoming and an Outgoing waypoint. The route does not need to be your active route.

All information is displayed in a table format in 3 sections. The first section shows ETA's of vessels at the Incoming waypoint. The second section shows ETA's of vessels at the Outgoing waypoint. The final section allows you to specify the route and two waypoints.

Only vessels moving in the direction of the route are listed as Incoming. Only vessels moving in the opposite direction of the route are listed as Outgoing. Vessels must be at least the Meeting Point, **Small Vessel Length,** to be listed. This allows small vessels to be filtered out.

Vessels outside the actual route may be listed. Their position must be in a **270** degree arc centred on the direction of the first or last segment in the route. The vessels course must be within **30** degrees of the first/last waypoint.

42.0 Files

SeaTab is the only marine navigation application that allow use of any marine charts in a wide variety of standard formats on your Microsoft Surface device.

SeaTab is not installed with any marine charts, and therefore these will need to be installed by the user. Charts are installed in the form of zip files, which are special files that contain other files. They are useful for packaging many files together that can then be treated as a single unit.

There are several ways to transfer charts into SeaTab, including download directly from the, transferring from Email or another application, for example **DropBox**, and using File Transfer.

The remainder of this help information is structured as follows:

- **Supported Chart Formats**
  - S-57 and Inland ENC Charts
  - S-63 Charts
  - KAP/BSB Raster Charts
- **Creating Zip Files**
  - Microsoft Windows
- **Transferring Charts to your tablet**
  - Installing from the Web
  - Installing from Email or other applications
  - File Transfer
- **FAQ and Troubleshooting**

42.1 Supported Chart Formats

This section describes the chart formats that are supported by SeaTab and how they must be packaged in order to be correctly recognized.

> ***Note: Chart formats***
>
> *SeaTab supports numerous chart formats. However, due to the wide range of available charts, there could be some formats we have not fully tested.*
>
> *We recommend you test your charts before upgrading and if there are any issues contact **OneOcean Technical Support** for further assistance.*

42.1.1 S-57 and Inland ENC Charts

S-57 and Inland ENC Charts are similar formats, Inland ENCs have slightly different displays as it is intended for navigation on inland waterways. For the purposes of this document, we use the S-57 to refer to both standards.

S-57 charts are normally distributed in a Zip file with a folder named **ENC_ROOT**, which in turn should contain a file **CATALOG.031** along with the charts (normally in sub-folders). This is normal for S-57 charts and if you have valid S-57 charts, they should include the **CATALOG.031** file along with the charts. The **ENC_ROOT** folder should normally either be the so-called root folder of the Zip file or there may be a single folder that contains the **ENC_ROOT** folder. SeaTab will accept *Zip* files that do not contain a **CATALOG.031** file but include S-57 chart datasets. You can also install .**000**, .**001**, ..., .**015** files directly.

However, we usually recommend using Zip files to package sets of charts together, along with a **CATALOG.031** file, since this can avoid several errors, such as neglecting to install an update file.

42.1.2 S-63 Charts

Charts in the **IHO S-63** format are essentially the same as **S-57** but use encryption. If you use charts from **PRIMAR**, you can view the relevant settings for downloading and updating them. Open Settings / S-63 Charts for the settings related to S-63, as well as the detailed help information.

42.1.3 BSB/KAP Raster Charts

The BSB/KAP formats were developed by MapTech and are a commonly used format for raster charts. This format is used by NOAA for their raster charts. Also, the **ge2kap** program is used by many mariners to generate KAP files from satellite imagery, usually from **Google Earth**.

> ***Note:*** *SeaTab by default does not display any raster charts. You must change the Display Raster Charts switch in the Raster Chart Settings to **ON** for Raster Charts to be displayed.*

BSB files are catalogs listing the associated KAP files. KAP files contain the actual raster chart image data. KAP files can be used standalone without a BSB file. There are several options for how charts can be installed in SeaTab:

- Chart sets with both BSB and KAP files can be used as part of Zip files. The Zip file must contain a single folder named **BSB_ROOT**, which in turn contains BSB catalog files with the .**BSB** suffix and the corresponding *.KAP* files. The raster files distributed by NOAA has this format.
- Simple chart sets in zip files composed only of KAP files. The zip file may only contain files with the .**kap** or .**KAP** suffix. If any other non-KAP files are in the zip file, the file will not be accepted.
- Individual KAP files can be installed directly (not packaged in a zip file).

42.2 Creating Zip Files

These are instructions to package your charts in a Zip file. Many charts are already distributed as Zip files. If you have charts that are structured as described above then you can skip this section.

42.21 Instructions for Microsoft Windows

For Windows, we recommend the free 7-Zip utility for creating zip files **http://www.7zip.org**

Below are the procedures to create a Zip file of your charts using 7-Zip.

1. Open the folder containing the folder named **ENC_ROOT**.
2. Right click on the **ENC_ROOT** folder.
3. Select 7-Zip sub menu (if it's not there, then there may have been a problem installing 7-Zip).
4. Select **Add** to **ENC_ROOT.zip** option.
5. When done compressing, you should now have a file called **ENC_ROOT.zip**.
6. Rename the file if you are installing multiple Zip files, because each Zip file must have a different name.
7. Follow the steps below for installing the Zip file onto your tablet.

42.3 Transferring Charts to Your tablet

Once you have your charts in the appropriate format, you can now transfer them to your tablet. Most users will transfer their charts from their laptop using a USB drive. However, you can also download charts directly from the web into SeaTab using the Web browser.

42.3.1 From the Web

If you have link to a chart zip file that is formatted correctly, you can download and install the file in one step, without using any other source. Click on the link and after downloading onto your tablet, you can drag and drop the compressed file onto SeaTab application.

Once SeaTab has started, select the Files tab and check that the charts were imported without errors.

42.3.2 From Email or other Application

This is very similar to installing from the Web. Select a Zip file, drag and drop the compressed file onto SeaTab application, and then check that it has been imported correctly.

42.4 Frequently Asked Questions Troubleshooting

- **I don't see the File Sharing section on the Apps window.**

  Answer - The frame scrolls separately from the application listing. You may need to click outside the application listing list.

- **I don't see SeaTab listed in the File Sharing section.**

  Answer - Check that you installed SeaTab or SeaTab Pilot on this device.

- **After installing charts, SeaTab shows the zip file and displays Zip file appears to be corrupt.**

  Answer - This means the file you transferred did not appear to be a valid Zip file.
  - Did you wait until the transfer completed? Check that the transfer is complete, then select the Navigate tab, and then the **Chart** tab again.
  - Try transferring the Zip file again.
  - Try transferring the Zip file back to your computer using the Save To... button below File Sharing. Then unzip the file on your computer to see if the contents are the same as what you started with. If not, then something was corrupted along the way.
  - Try creating the Zip file again and transferring to the device.

- **After installing charts, SeaTab shows the zip file and displays Zip file does not contain ENC_ROOT/ folder.**

  Answer - This means SeaTab was able to open the Zip file, but it did not appear to contain a folder named **ENC_ROOT.** Try unzipping the file on your computer. Everything should unzip into a folder named **ENC_ROOT**.

- **After installing charts, SeaTab shows the zip file and displays Invalid S-57 zip file.**

  Answer - This means SeaTab was able to open the Zip file and found the **ENC_ROOT** folder but did not find the file named **CATALOG.031** in the **ENC_ROOT** folder. Try unzipping the file on your computer. There should be an **ENC_ROOT** folder containing **CATALOG.031** and further file and folders containing charts. We recommend that you not modify **ENC_ROOT** folders before Zipping them because the catalog file specifies exactly where the files should be. If you move them SeaTab may not be able to find them.

- **I installed the charts, and everything seems fine. Now what?**

  Answer - Click on the Navigate tab to return to the chart display. There should be light magenta outlines for the charts you installed. You can pan and zoom using normal gestures. If you only installed a few charts or they are for very small areas, then zoom in to the area and you will able to see the charts.

43.0 Import/Export

SeaTab supports several methods for importing/exporting waypoints, routes, and tracks. Some of the uses for this feature include:

Backup your Waypoints, Routes, or Tracks to your laptop.

Send a Route or Tracks to a friend.

Transfer your Waypoints and Routes to SeaTab on another tablet. This example is explained in detail below (see: Example: Transferring between SeaTab on Different devices.

Transfer your Waypoints, Routes, and Tracks from SeaTab to another app (or vice-versa).

Display your Tracks in Google Earth.

You may find it useful to install other data sharing applications such as DropBox and FileApp.

For instance, with DropBox you can save your data to their online storage and share it with others.

FileApp provides other methods to transfer data to/from your laptop. These apps (as well as others) support the Copy To method to transfer data back and forth with SeaTab.

To begin, you need to determine the following things about what you want to do:

- Which **direction** will the transfer be in? - Export from SeaTab or Import into SeaTab
- Which **object(s***)* do you want to transfer? - Waypoints, Routes, or Tracks
- Which **format** will data be transferred in? - GPX (.gpx), KML (.kml), Transas (.rt3), Maris (.rtu), Mona Lisa 2.0 (.rtz), SevenCs Lisy (.rte), NACOS Platinum (.nacos), and Sam Electronics ECDIS (.sam or .dat).
- Which **method** will you use to transfer the data?: - Email, Save File, or Copy To another app

In many cases you will be both exporting and importing. For instance, if you want to transfer a route from SeaTab on one tablet to SeaTab on another tablet, there are several options available that involve exporting from your first tablet and then importing into your second tablet.

The following objects can be transferred.

- All Routes and Waypoints
- Individual Route
- Individual Waypoint
- Tracks

The following formats are supported:

- GPX routes and tracks (suffix: .gpx). GPX is a standard format for transferring geolocation data. Many marine charting applications support GPX format. Google Earth supports GPX (though KML is preferred -- see below). SeaTab supports both import and export of data in GPX format.
- JRC ECDIS (suffix: .rta or .rtn): This is a format for exchanging individual routes. SEAiq supports only import in this format. Note that not all route information may be included during the import.
- KML data (suffix: .kml). KML is a format created for Google Earth. The name stands for "Keyhole Markup Language". For KML data, SeaTab only supports exporting (not import).

- Maris (suffix: .rtu). This is a format for exchanging individual routes. SeaTab supports only import in this format. Note that not all route information may be included.
- Mona Lisa 2.0 (.rtz). This is a format for exchanging individual routes. SeaTab supports both import and export of files in this format. Not all route information will be included.
- NACOS Platinum (suffix: .nacos). This is a format for exchanging individual routes. SeaTab supports both import and export of files in this format. Note that not all route information may be included. Files in this format normally use the generic .xml suffix and may need to be renamed with .nacos in order to be imported in SeaTab.
- SAM Electronics ECDIS (suffix: .sam or .dat). This is a format for exchanging individual routes. SeaTab supports only import in this format. Note that not all route information may be included. SevenCs Lisy (.rte). This is a format for exchanging individual routes. SeaTab supports import in this format. Note that not all route information may be included.
- Transas routes (.rt3). This is a format for exchanging individual routes. SeaTab supports both import and export of files in this format. Note that not all route information may be included.

Below is a summary of supported route formats:

Name	Suffix	Import	Export	Information
Comma Separated Value	.csv	N	Y	Single Route and Waypoints
GPX	.gpx	Y	Y	Waypoints, Routes and Tracks
JRC	.rtu or .rtn	Y	N	Single Route and Waypoints
KML	.kml	N	Y	Waypoints, Routes and Tracks
Maris	.rtu	Y	N	Single Route and Waypoints
Mona Lisa 2.0	.rtz	Y	Y	Single Route and Waypoints
NAVCOS Platinum	.nacos	Y	Y	Single Route and Waypoints
SAM Electronics	.sam or .dat	Y	N	Single Route and Waypoints
SevenCs Lisy	.rte	Y	N	Single Route and Waypoints
Transas	.rt3	Y	Y	Single Route and Waypoints

The following data transfer methods are supported:

- Email. This method allows you to email the data to someone else (or even to yourself). Email normally requires internet access.

43.1 Exporting

The following objects can be exported:

- Tracks
- All Routes and Waypoints
- Individual Route
- Individual Waypoint

To export tracks, open the Settings tab and find the **Export Tracks** item. Selecting the **Export** button will present you with a choice of how to export the tracks.

To export all waypoints and routes, go to the Route tab and select the **forwarding arrow** button on the top bar.

To export a route or waypoint, go to the Route tab, select object and select the **forwarding arrow** button on the top bar.

When exporting objects, you will be presented with a dialog of method you can use. You need to select **Export with Email**.

For the Email and Save to a file, SeaTab always exports the data in both GPX and KML formats.

43.1.1 Export with Email

Email export allows you to send the data and email attachments. You will be presented with a standard email display. To do this, enter the email addresses you want to send the data to, and select **Send**.

Note that you will normally need internet access to send or receive email.

43.2 Importing

SeaTab supports importing Routes, Waypoints, and Tracks in the GPX (.gpx) format. Routes can also be imported in the Transas (.rt3), Maris (.rtu), Mona Lisa 2.0 (.rtz), SevenCs Lisy (.rte), NACOS Platinum (.nacos), and Sam Electronics ECDIS (.sam or .dat) formats. Data in KML (.kml) format cannot be imported.

There are two methods for importing data: **Copy To** and **drag-drop** File Sharing. Importing from an email uses the **Copy To** method.

43.2.1 Copy To

This method is used when any other app has route data that you want to share with SeaTab, including general purpose data sharing apps such as DropBox and FileApp. When you export route data from another app, you should see SeaTab listed. If you select SeaTab, then it will start SeaTab and immediately import the routes and waypoints.

This method is used when route data has been emailed to you. Open the email, select the route attachment, then select SeaTab as the app to open the data with.

When using **Copy To** from Mail, you should do a long tap on the attachment to open

The last step is to import the objects into SeaTab.

For Waypoints and Routes:

1. Open the Settings tab in SeaTab and then select **Routes and Waypoints**.
2. Select Import.
3. You will see a list of possible files to import (.gpx, .rt3, .rtu, .rtz, .rte, .nacos, .sam, and .dat).
4. Select the file you want to import.

For Tracks:

1. Open the Settings tab in SeaTab and then select Tracks.
2. Select Imported Files.
3. You will see a list of possible GPX files to import.
4. Select the file you want to import.

43.2.2 Importing Duplicate Waypoints and Routes

When importing waypoints and routes, if a duplicate already exists SeaTab will use the version it already has and not create another copy. If you export all your waypoints and routes and then re-import them immediately, no new waypoints or routes will be imported as they are duplicates.

If an object with the same name already exists but is not an exact duplicate, SeaTab will choose a new name for the object being imported.

43.3 Example: Transferring Between SeaTabs on Different Devices

A common use of this feature is to transfer waypoints/routes from one SeaTab application to another SeaTab application on a different device.

There are two ways to perform this, as follows:

The easiest is to export via email and send the exports to yourself. On the other device, select the attachment to import it. Email will normally only work if you have a connection to the internet.

The other method, which does not require an internet connection, is a two-step process. The first step is to export to your laptop. The second step is to import to your other device using a USB drive.

43.4 Troubleshooting

- **When I import waypoints/routes from the Mail app, I get a black screen?**

  When importing from Mail it's easiest if you long-tap on the attachment. Otherwise, Mail can become confused and appear to lock the screen. This is usual, as Mail is trying to display the data but

Follow the below to resolve the above:

1. Single tap on the centre of the screen.
2. A bar will appear on the top of the display, with a Done button and a Forwarding button in the top-left and top-right, respectively.
3. Select the forwarding button to open the GPX data in SeaTab.