FURUNO

TELKO

TELchart ECS

User Manual

version 1.32 EN

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Table of contents

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Introduction

This user manual is intended to give you a basis for using the vessels TELchart ECS-unit in accordance with good maritime navigation customs and the governing rules and regulations.

Navigating the user manual

The user manual is divided into:

- A main section with 7 chapters explaining the different functions and menu choices TELchart ECShas
- 6 appendixes that outline different use-scenarios, optional add-on functionality and the TECDIS Setup software. This is also where you will find the terminology section and the document revision history.

Textboxes

This user manual uses two textboxes for special information:

> NOTE: The red box gives important information/alerts on correct use

> TIP: The blue box gives tips and advice for advanced use

Help and support

To find out more on how to use your TELchart ECS you can:

- contact your local Furuno Norway dealer
- contact Furuno Norway directly
- download the latest version of the TELchart ECS documentation on our (Telko AS) website: http://telko.no/site/Support/TELchart-ECS

An overview of Furuno Norway's dealer network can be found on the following website: http://www.furuno.no/en/index.php/forhandlere

An overview of the employees at Furuno Norway and their contact information can be found on the following website: http://www.furuno.no/en/index.php/kontakt

Reservations

The TELchart ECS -system and its navigational aid software, including electronic chart display and automatic navigation, is an aid in safe maritime navigation.

All such maritime navigation aids are subject to certain inaccuracies and deviations that, if used carelessly, can result in maritime accidents or events, which could be followed by the loss of lives, vessels and cargo, and by environmental damage.

Hence the navigator should not account solely on one single navigation aid (including the TELchart ECSsystem) for safe navigating of the vessel.

The sensible navigator will collect navigation information from several sources, cross-checking all information for any possible flaws or deviations, when deciding the vessel position, course, speed and planned route.

Compliance of the manual

This version of the manual is published together with TELchart ECS version **3.7.x.32**

If you are currently using an earlier version of TELchart ECS, we recommend that you update this to version 4.7.x.32.

If you are using a newer version of TELchart ECS than 4.7.x.32, then we recommend that you download our latest manual or the feature guides release since this manual was released, for information on deviating functionality.

> Download newer versions of the **TELchart ECS User Manual** and the **TELchart ECS Feature Guides** from http://telko.no/site/support/TECDIS

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TELchart ECS at a glance

In this chapter you will get an insight in what electronic chart systems are, and what a TELchart ECS system is.
In short TECDIS is an electronic chart system for maritime navigational aid. It is a supplement to approved navigation tools such as ECDIS systems or paper charts.

1.1: The ECS system
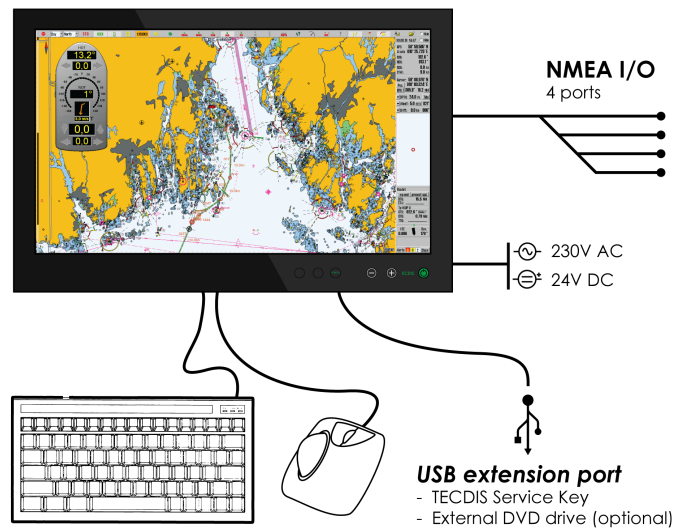
TELchart ECS is designed and developed in tandem with TECDIS, and emphasizes on simple and user-friendly operations without compromising the functional require-ments.

TELchart ECS collects information from instruments and sensors for:

- Position
- course
- Speed
- Depth

- Wind
- AIS
- Radar etc. (ARPA, EBL, ROT)
- NAVTEX

Position and information both for the own vessel and other vessels appear on officially approved charts **[Electronic Navigation Chart (ENC)]** or commercial grade Professional+ charts.

Scheduled Voyage Route is displayed and checked for depth and other hazards.

The voyage is monitored by:

- controlling position in relation to the Route Plan
- controlling safe passage
- controlling collision dangers

TELchart ECS offers several advanced features, such as:

- Dynamic licensing of ENC charts (pay-per-view)
- Detailed weather overlay with customizable display and integration with the voyage planner
- C-routes - Automatic generation of routes between a multitude of positions and harbours.
- Powerful voyage planning tool, with both primary and secondary routes
- Automatic antigrounding system with safety contour and safe depth settings that are both adjustable by the navigator
- Tight integration with AIS and ARPA radar

- Advanced sensor filters
- Flexible saving of routes, tracks, symbols, objects and log-files
- User friendly, customizable and feature-rich alarm system
- Highly adjustable chart presentation
- Custom made conning and docking modules
- Automatic storage of all navigational data for playback at a later time
- Radar overlay with Furuno radars
- Track Control with adaptive autopilot

0.1 Charts at a glance

TELchart ECS is using chart data from multiple vector map databases simultaneously and seamlessly. Typically it is using CM93/3-format, provided by Jeppesen (C-MAP) of a Professional + (World) chart as basis, as it provides global coverage of all relevant scales.

> S57 og S63 charts are identical, however the S63 charts are encrypted.

TELchart ECS automatically displays the best available charts. Jeppesen C-MAP ENC (SENC) is preferred and is shown where it is available, otherwise charts from Jeppesen C-MAP Professional+ (CM-93/3) are used.

> Important: The TELchart ECS program will from version 3.7.x.18 start even if no chart database is installed/selected.

1.1.1: Positions / Chart Datum

The Chart Datum is a mathematical model used by the chart producer to adapt the earth's surface curvature.

In the TELchart ECS system, position reference always use the datum with references to the "World Geodetic System 1984" (WGS84). This format is considered the most accurate chart datum available. All charts and chart objects in TELchart ECS are shown in the "World Geodetic System 1984" (WGS-84) and all the inputs for position data to TELchart ECS (GPS) must use this datum.

Any translation (recalculation) can easily be made with tools for "Maritime calculations"

> All sensor inputs with position references must use the WGS-84 format.

1.1.2: About Chart Databases and Simplified ENC Distribution

ENC data (S-57 format) is not used directly in the ECDIS system. ENC files are compiled into a seamless database [System ENC (SENC)] that contains all the required ENCs and are optimized for operational use on board.

All charts displayed in TECDIS are saved in C-MAP SENC (System Electronic Navigational Chart) format. The charts can either be received in this format from the supplier, or it can be generated from other formats such as S-63.

Distribution of ENC in SENC -format has been approved under CHRIS meeting in Athens in April 2002. A number of hydrographic organizations (HO) admits that it facilitates access to official digital cartography, and that it has no negative effect on compliance (accordance) with IMO.

C-MAP provides official data in SENC format in accordance with the "IHO amendment two paragraph 3.3 of S-52" and a new "Technical Resolution A3.11", adopted by the IHO's 16th International Hydrographic Conference. C-MAP CM-93/3 SENC distribution system was also type approved by the Norwegian VERITAS (DNV) in March 2003, as required by the IHO. The distribution system includes Real Time Updating infrastructure that allows users of this system to download chart corrections directly online.

ENC data, from states / countries that still have not approved the distribution of data in the SENC format, are distributed in the S-63 format and converted on board.

The basics

In this chapter we will give you the basics of how TELchart ECS is used, in the following sub-chapters:

Helptext:

 If you do not already know how to use your TECDIS, enabling the "helptext" feature is a useful tip. By moving the pointer over any toolbutton or parameter value, the system will show an explanatory text on a yellow base.
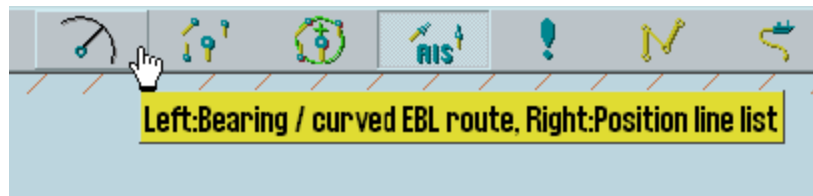
2.1: Keyboard and trackball/mouse

TELchart ECS can be operated with both keyboard and trackball/mouse. For most functions you can select which peripheral to use yourself.

2.1.1: Trackball/mouse

All functions and operations can be controlled by moving the pointer across the monitor with the trackball/maouse, and using the right and left mouse buttons to call to action. Functions can be activated and deactivated, and the chart can be panned and zoomed.

1. The left mouse button is used to operate primary functionality for all tools, functions and icons. In addition you zoom inwards in the chart with this button, centred on the point you have placed the pointer.
2. The right mouse button is used to operate secondary functionality for all tools, functions and icons, in addition to zooming outwards in the chart.
3. The centre mouse button, alternatively the scroll wheel, centres the chart at the point where the pointer is placed.

If you have a trackball with a scroll wheel as the middle button, you can configure TELchart ECS to zoom by scrolling the wheel. See *7.1: The Setup menu*(see page 155).

2.1.2: Keyboard

The keyboard that is supplied with TELchart ECS is pre-configured with combination commands for the most important functions. In addition a digital keyboard will appear on-screen, and this is operated by the mouse and pointer when keyboard input is needed. The combination commands are as follows:

F1: Info on chart functions

F2: Chart query by cursor

F3: Name search (add-on)

F4: Chart Legend

F5: Settings menu

F6: Route menu

F7: Mariner symbol object menu

F8: Mariner line/area object menu

F9: Timestamp past track

F10: Man over board (MOB)

F11: Own ship position fix

F12: Event mark

1. Screen day/night colours

2. Display orientation

3. STD S52 AUTO presentation

4. "USER" presentation

5. Conning display

6. Værdisplay (opsjon)

7. Radaroverlay (opsjon)

8. EBL/VRM functions

9. ARPA

0. AIS

W-A-B-C-D-E-F-G: Chart levels

S: simulated position and DR

Arrow keys: Move chart

Page Up: Zoom out at selected level

Page Down: Zoom in at selected level

- : Zoom out auto level

Ins: Move cursor/chart to a position

Del: S52 chart presentation + auto-positioning

Enter: Left mouse key at cursor position

/ or **<:** Darker screen colours

* or **>:** Brighter screen colours

Esc/space: Alarm off (list/sequential)

Ctrl +PrtScr: Save present screenshot

Ctrl+ Alt +Shift + T: Monitor calibration test

2.1.3: Other peripherals

TELchart ECS can be equipped with alternative keyboards and trackballs. Contact your local Furuno Norway dealer or Furuno Norway for more information and purchase.

In addition you can expand the functionality by using custom keyboards/keypads:

- TELchart ECS Keypad, a 21-digit fast access keypad custom made for TELchart ECS, that can be mounted in the TELchart ECS-console or on the armrest for easy access to the most important features.

More information about TELchart ECS Keypad can be found in appendix B.

2.2: Navigating menus and tools

TELchart ECS has icon based tools, and all user-controlled settings are placed in menu tabs. Below is a description of how to navigate your TELchart ECS.

2.2.1: Chart panning/centering

When you move the cursor to one of the edges of the chart view, it will change shape to a directional arrow, and by left clicking the mouse you will move the chart view in the arrow's direction. Alternatively you can pan the chart with the arrow keys on your keyboard.

To move a point in the chart view to the centre of the chart view, you move the pointer to that point and click the middle mouse button.

2.2.2: Zooming in the chart

To zoom into the chart, you place the pointer where you want the centre-point of the new chart display to be, and click on the left trackball button.

To zoom out from the current chart display, click on the right trackball button. The new chart display will centre around the point where the mouse-pointer was.

2.2.3: Activating functions/tools

Activating tools and functions in TELchart ECS is done by moving the pointer to the icon of that function/tool, and left-clicking. Some icons have secondary functionality; this functionality is accessed by right-clicking the icon.

Both the primary and secondary function associated with an icon is displayed in the help-text that appears when you let the pointer hover over the icon.

Some icons are connected directly to a specific tool/function, while others are connected to a menu for a specific tool group, such as the route tool menu.

2.2.4: Dropdown menus

Dropdown menus are opened by clicking the small arrow icon on the right side of the dropdown menu. Choose between available values by left-clicking the desired value. Arrow keys and the enter key on the supplied keyboard can also be used. Use the tab key to switch between function fields.

In dropdown menus for date selection a calendar will appear as illustrated. Right and left arrow are used to cycle between months. By clicking the month name you will also be able to select the month in a dropdown list.

To change the year, simply click on the year displayed and select using the displayed up and dawn arrows.

When you click on the desired day/date, the calendar will close and you have selected that date.

2.2.5:   **Popup windows**

All popup windows opened in the TELchart ECS program can be moved around in the chart view. Place the pointer on the header-part of the window, left-click and hold, and pan the window to the desired position.

Windows with the TELchart ECS icon in the header, can be resized by dragging the window borders to the desired positions.

2.3: The TELchart ECS screen

The TELchart ECS system starts directly to the chart program. The TELchart ECS screen that appears looks as follows:

2.3.1: Parts of the screen
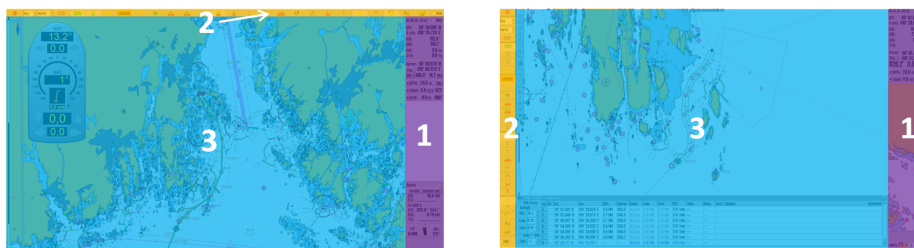
The program is divided into three main areas:

1. The information panel
    *   Placed to the right of the screen. Displays position data and navigation data, along with the system settings menus when they are open.

2. The main Toolbar
    *   Placed at the top or to the left of the screen, depending on the configured setting. This is configured in TELchart ECS setup, see *A.3 Vessel settings (Specification)*(see page 187)

3. The chart view
    *   Covers most of the screen. Chart, symbols, routes and past track are some of the functionality displayed here.

> When you access tools or functions in TECDIS, they may open other windows or toolbars. These windows/toolbars are displayed on top of the chart view.

2.3.2: Screen light setting: Day - dusk - night
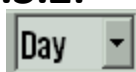
The colours displayed on the screen can be adjusted for different lighting conditions. The screen light setting is found on the main toolbar. By pressing the text or the arrow besides it the dropdown menu will open. Select the screen lighting option that suits the conditions with the left mouse button.
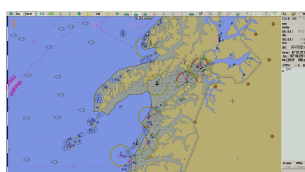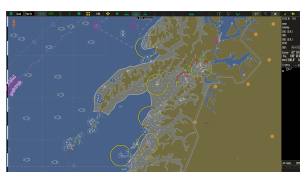
Day	Dusk	Night
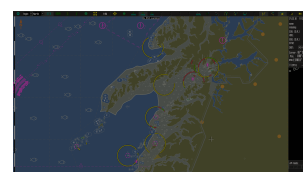
The selected configuration will remain visible in the dropdown menu when it is closed, for quick review of the selected mode.

> For optimal lighting the monitor has to be calibrated - See chapter 7.9 monitor calibration on page 208 for more information.

2.3.3:   Own vessel position

Own vessel position is displayed graphically with the shape that is set in the Ship menu *7.3.3: Viewing the double circle*(see page 166)

Beam line & Heading line   Double circle   Ship contour
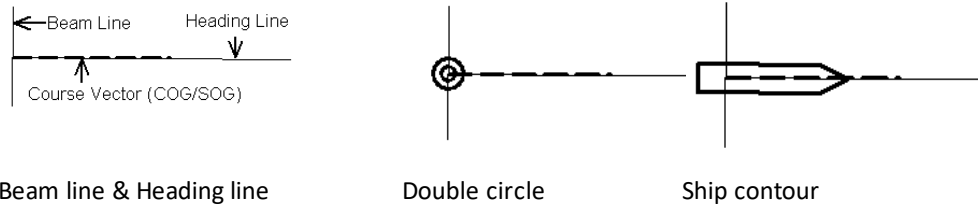
- Heading line indicates the present vessel heading.
- Beam line is perpendicular to the Heading line.
- The Course Vector indicates the current vessel course over ground (COG). The end point of this line shows where the vessel will be if the appointed course it is followed - after a certain time (minutes), specified in the Ship menu.
- If Show Double Circle is selected in the Ship menu, the vessel position will be marked with a double circle.
- If Show ship contour is selected in the Ship menu, the vessel's relative size compared to the chart scale will be displayed.[1] This is only available if the heading is known.

If both the double circle and ship contour is selected, the system will automatically select which of the two symbols to display. When the vessel symbol becomes to small, TELchart ECS automatically switches to the circle symbol; and opposite when a smaller scale is selected.

In all chart orientations except *Head* the charts will be static and the vessel will move (true movement). When the chart orientation is set to *Head* the vessel will have a fixed position on the screen while the charts move (relative movement).

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[1]*The double circle will be displayed instead if the vessel if shown to scale is smaller than 3 mm on the screen.*

2.3.4:   The information panel

The information panel on the right side of the chart display include:

1. **Date and time** (the top line)
2. **Sensor data for navigation** (GPS, gyro, log and a trip counter that you can reset)
   - **The sensor navigational status as received from the source can be viewed by hovering over the sensor label.**
   - **If the received status is either caution, unsafe or not valid, the sensor name will be displayed in yellow.**
   - By clicking with the cursor another place in this field, you enlarge the text size.

3. **Cursor information** (cursor position, bearing and distance from ship to cursor)
   By pressing the "Pos" button, you center the chart in the entered position. By pressing "BRG T" you can switch between true (BRG T) and relative (BRG R) bearing. By clicking with the cursor another place in this field, you enlarge the text size. By pressing the "NM" button, you cycle between displaying units in NM or meters.

4. **Depth and Tide information** (expandable)
5. **Wind speed** (True or Relative, expandable)
6. **Drift** (Calculated based on COG, SOG, HDG and STW, expandable)
7. **Chart display for the anti grounding system**
8. **Menus** (available from the menu button on the main toolbar, or by moving the cursor to the bottom edge of the anti grounding chart display)
9. **Voyage information and/or Autopilot information** (displayed during sailing of active routes)
10. **Alarms, warnings and notifications**
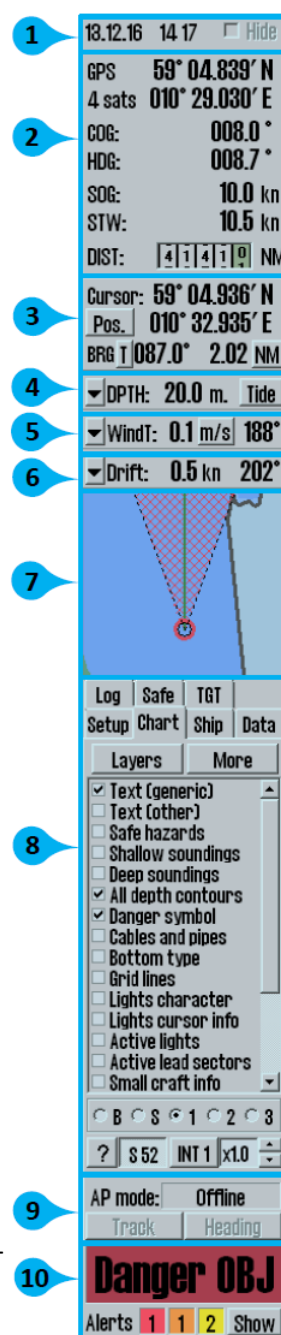
2.3.4.1: Expanded sensor information

By pressing the arrow button to the left of the sensor information for wind, depth and drift, you can expand the information displayed, with an added graphical presentation.
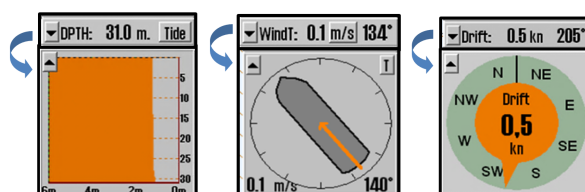
2.3.4.2: Cursor information

The cursor Information Panel contains several tools connected to the cursor:

- position of the cursor
- bearing and distance to cursor from own vessel
- EBL/VRM
- bearing and distance for route/line/circle

These are detailed in the sections below:

Cursor info panel

Cursor: 75° 00.673' N Pos. 016° 39.882' E BRG 076.8° 100.2 NM	Cursor: 74° 48.279' N Pos. 015° 07.692' E 082.0° 74.6 NM	Cursor: BRG T DIST Pos. 073.4° 83.9 NM	Cursor: BRG T DIST 083.0° 3.33 NM
Cursor position and bearing/ distance from own vessel position	Cursor position and enlarged bearing/distance from own vessel position	Cursor bearing/ distance from own vessel position	Enlarged cursor bearing/distance from own vessel position

These panels always show the bearing and distance from the vessel to the cursor. The four cursor panels share the same location, and you toggle between them by clicking on the panel itself. One of the panels is always displayed.

EBL/VRM panel
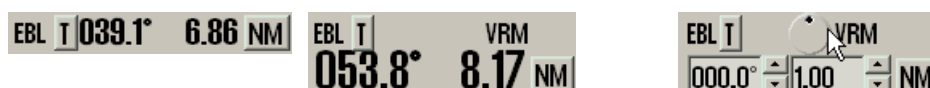
EBL T 039.1° 6.86 NM	EBL T VRM 053.8° 8.17 NM	EBL T VRM 000.0° 1.00 NM
Bearing and distance for the EBL/VRM tool	Enlarged view of bearing and distance for the EBL/VRM tool	Configurable bearing and distance for the EBL/VRM tool

The three EBL/VRM panels share the same location, and you toggle between them by clicking on the panel itself. The panels are only displayed when the EBL/VRM tool is activated.

The third panel allows you to set a bearing that is not attached to the cursor. You can modify the bearing and range/distance with the arrow buttons, by text input, and the bearing can be set with the bearing circle; click and hold your cursor on it and when you move the cursor the bearing moves as well.

Route/line/circle panel
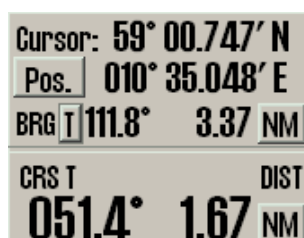
Cursor: 59° 00.747' N Pos. 010° 35.048' E BRG T 111.8° 3.37 NM CRS T DIST 051.4° 1.67 NM	The course and distance from the circle centerpoint or last plotted point on lines/routes. The route/line/circle panel is non-configurable.

2.3.5:   **The main toolbar**

At the top of the screen you find the main toolbar, which gives access to main system functions. This section contains a brief description of the different functions.
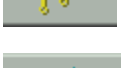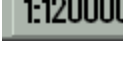
STOP	Stop TELchart ECS		**AUTO**	Auto chart repositioning
Day	Monitor colour palette		**?**	Query cursor
North	Chart orientation			EBL/VRM Bearing
STD	Left click to get STD S52 chart presentation, right click to remove extra information			Show ARPA targets
USER	USER configured chart present-ation		**AIS**	Show AIS targets
	Conning and anchorwatch			MOB symbol / eventmarker
	Weather overlay			Route planner
	Radar overlay			Past Track
	Video switching			User-created symbols
	Zoom in			Maritime calculations/LOP
1:120000	Chart scale			NAVTEX
	Zoom out			Settings menu
	Show overview chart		☐ Hide	Hide the main toolbar

Chart scales:

	A 3000	B 1000	C 300	D 100	E 30	F 10	G 3

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The chart view

In this chapter we will look closer at how charts are presented in TELchart ECS, and how you move around in the charts.

3.1: Moving around in the chart

3.1.1: Chart panning

When you move the pointer to one of the chart view edges, it will change shape to a directional arrow. By left-clicking you will then move the chart view in the arrows direction.

Alternatively you can pan the chart with the arrow keys on your keyboard.

> If you move the pointer to a corner in the chart view, you will be able to pan diagonally in the chart.

3.1.2: Set chart center - visually

To move a point in the chart view to the centre of the chart view, you move the pointer to that point and click the middle mouse button.

3.1.3: Set chart center - enter position

The chart center can be moved to a given position by pressing the **Pos.** button in the sensor field in the *information panel.*

In the window that appears in the left upper side of the display, you enter the desired position in the fields. The **Ins** button on the keyboard will also open this window.

You can enter the position in either degrees, minutes and decimals, or in degrees, minutes and seconds. To switch between these modes, you press the button to the far left of the position window.

To show an on-screen keyboard, press the downward pointing arrow to the right in the window.

When you are finished entering the desired chart center position, you press the **Chart center** button to pan the chart view to that position, and the position is indicated in the chart. This function is also very useful when placing objects (symbols, lines, areas) in given positions.

When a symbol, line or area is selected for placing, and you have selected which colour to use, simply enter the position in the Pos. window and press the **Chart Center** button. Press again on the same button, now called **Save**. Exit the window by pressing the **OK** button.

3.2: Automatic Chart Centering

TELchart ECS¨can automatically ensure that the chart is oriented so that own vessel always is visible (the chart is moving according to the vessel).

This function is activated by clicking on the **Auto** button on the *Main Toolbar*, the **Home** key on the keyboard or by clicking with the cursor anywhere in the *Sensor Data* field in the *Information panel*.

	Auto chart switch is **Off**.
	Auto chart switch is **Off**, but Auto function will remain active when zooming with mouse clicks in the chart area.
	Auto chart swich is **On** until zooming with mouse clicks in the chart area.
	Auto chart switch is **On**, and will not be deactivated when zooming with mouse clicks in the chart area.

Setting the *Chart Scale* and *zoom* level by using the **Zoom** buttons on the Main Toolbar, **will NOT turn off Auto mode**. Locking the Auto mode is done by clicking **Auto** with the *right mouse button*.

> **Auto sensitivity** (how often shall the chart view be redrawn to keep up with the vessel movement) and **Ship symbol offcenter** (how much of the chart view shall be in front of the vessel) can be adjusted in the *Ship menu.*

3.3: Chart scale

The chart scale and orientation is visible all the time, through the following two elements in the chart display:

- North arrow, indicating the direction of magnetic north when the chart is rotated
- Chart scale ruler on the left side of the chart display
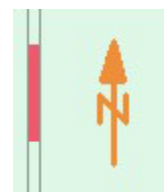
The scale ruler will change colour based on scale and distance between colour-segments(units):

Scale interval:	Colour:	Units:
1:1 – 1:7500	Yellow / White	0,1 Nm (0,1')
1:7501 – 1:100 000	Red / White	1 Nm (1')
1:100 001 – 1:2 000 000	Black / White	10 Nm (10')
1:2 000 001 – 1:100 000 000	Blue / White	60 Nm (1°)

If the generation of a new chart display (after panning or zooming) takes 6 seconds or longer, an indicator for expected generation time will appear in the upper left corner of the chart display. This indicator will only be displayed on chart displays with extremely high information density.

3.3.1: Chart zooming - automatic scaling

- To zoom into the chart, you place the pointer where you want the centre-point of the new chart display to be, and click on the left trackball button.
- To zoom out from the current chart display, click on the right trackball button. The new chart display will centre around the point where the mouse-pointer was.

Alternatively you can use the +, - , page down and page up keys on the keyboard to change zoom levels.

> The program will automatically select the appropriate chart-type for the selected chart scale. The pointer will now be moved to the chart centre.

3.3.2: Automatic zooming during route sailing

For version 3.7.x.19 and above it is possible to configure automatic zooming to given scales for each waypoint in a route. This is done in the voyage planner, by adding the following shortcode in the text field of the wanted waypoint: **Scale 1:xxxxx**, where xxxxx is replaced by the wanted scale.

3.3.3: Chart zooming with manual scaling

From the main toolbar you can select the chart scale directly. The numbers represent the scale times 1000. You select the scale by clicking on one of the buttons on the main toolbar. Alternatively you can set the scale directly from the keyboard, using the letter for the wanted chart scale keys (**W, A, B, C, D, E, F or G**).

When the letter of the different scale buttons is displayed with yellow text and a green background, it indicates that official charts are available at this scale level. These official charts will always be prioritized.

If the system is in auto mode, the displayed chart scale is at the position of your own vessel. If you manually navigate the charts, the displayed chart scale is for the centre of the chart display. If your own vessel is outside the chart display, the displayed chart scale is for the centre of the chart display. The button indicating the presently selected chart scale.

Under the main toolbar, text warnings are shown for the following situations:
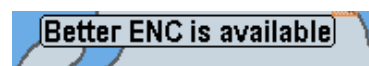
- No ENC available
- Better ENC available
- No charts are available, refer to paper charts
- Not official chart display
- Over-scaled

3.3.4: Zooming without changing chart scale

The zoom buttons on the main toolbar can be used to change the scale the chart is viewed in. If you use the **Zoom in** or **Zoom out** buttons with the <u>left</u> mouse

button, the chart view automatically changes so that details are viewed using the most appropriate chart database.
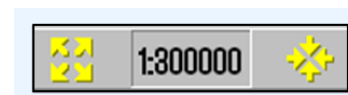
If you use the <u>right</u> mouse button on the *Zoom* buttons, the details will be viewed using the chart scale last used before you zoomed in or out. The number in the centre shows the current scale.

If you hover the mouse pointer over the middle field, a yellow help text line will appear, showing you the original scale for the currently shown chart. By clicking in the field you will set the current chart scale to the displayed original scale.

This function can be overridden by charts from another chart database. TELchart ECS uses several types of charts, but will always prioritize official charts.

3.3.5: NB! Overscale and underscale

When the lowest scale available in the chart database is reached, you can still zoom further into the chart, but this will only be a graphical enlargement and there is no more refinement in displayed chart information. This is called **overscale.**

Any flaws that might be in the charts will be enlarged together with the chart display. The field that indicates your currently selected scale will be displayed in orange when the chart display is in overscale mode.

> Overscale will in addition be displayed with vertical lines on the chart. When parts of the displayed chart is in overscale, only these parts are marked with vertical lines.

When you zoom out from your current chart display, you may enter a state of **under-scale**. The chart information display can then be to dense and chart information may not be displayed. The field that indicates your currently selected scale will be displayed in green when the chart display is in underscale mode.

3.4: Chart presentation

By pressing the two buttons STD and USER you can easily select or change between two types of chart presentations: ECDIS Standard or user defined.

3.4.1: Standard presentation mode (STD)

STD displays the official standard presentation for ECDIS, S52. This is a standard set by IMO, with certain colours, symbols and contents. TECDIS integrates this feature in the STD button;

By left-clicking the STD button, the charts switch to the IMO-defined S52 presentation

By right-clicking the STD button, all extra windows, symbols, tracks, targets, supplementary layers and more are removed from the chart view. The chart view will now only display the chart, own vessel symbol and currently sailed route.

3.4.2: User defined presentation mode (USER)

The *USER Mode* displays the customizable chart presentation. The configuration is done in the *Chart menu*tab.

The *main section of the chart menu* handles shortcuts to common chart view settings, and some special settings.

By pressing the **More** button you can access the Viewing Group panel, which lets you select what chart information to display, based on the standardised IHO Viewing Groups.

You can include information in the chart view by selecting it in the shortcut list or the Viewing Group panel; if you remove the selection the information will be hidden.

The shortcut list and the Viewing group panel are linked, so changes made to one will be presented on the other as well.

On the button row below the main section you will find five different presets for the USER Mode:

- Base displays a bare minimum of chart information.
- Standard contain the same chart information as STD Mode.
- 1, 2 and 3 are user customizable presets.

On the bottom line you can select if you want to use S52 or INT1 presentation modes.
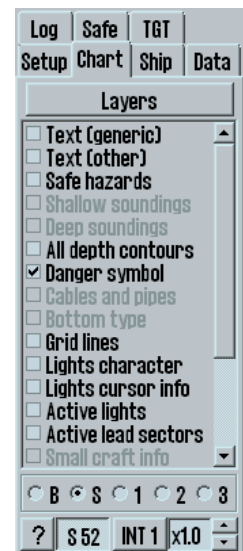
> When using INT1 a warning is given: **Not official presentation.**

The button to the far right determines the size of text and symbols in the chart. In STD Mode this is set to 1.0.

3.4.3: Full hazards display

With **Full hazards display** on the hazards placed (displayed) within safety contour and the isolated dangers placed outside the safety contour, which are deeper than "Safe" depth. In STD mode this is turned off as standard, but it can also be activated from the **Chart** menu tab.

3.4.3.1: Full safe hazards on anti grounding alarms

In TELchart ECS it is possible to set the system to turn on full safe hazards when an anti grounding alarm is generated. Depending on other settings in the Safe menu, you will then be warned in good time before a grounding, and get all necessary information for situation evaluation.

Auto safe hazards and **Shallow soundings** can be turned on for anti grounding alarms in the **Safe** menu tab. See *7.6.3: Auto Safe Hazard display setting*(see page 173).

3.4.3.2: Danger symbol

The setting **Danger Symbol** marks any hazard on the chart with a danger symbol. This setting is active by default in STD mode and when the *Safe Hazards* is activated in STD mode, all risks (including those within safety contour) are marked with danger symbols. When this is deactivated, only isolated dangers outside the safety contour is shown with danger symbols.
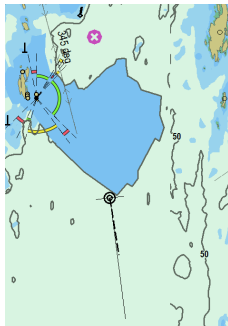
Safe hazards OFF

Danger symbol ON

Dangerous objects outside safety contour are displayed with danger symbol.

Dangerous objects within safety contour are not displayed.

Hazards deeper than safety depth are not displayed.
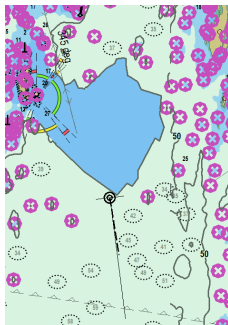
Safe hazards ON

Danger symbol ON

Dangerous objects outside safety contour are displayed with danger symbol.

Dangerous objects inside safety contour are displayed with danger symbol.

Hazards deeper than safety depth are displayed normally.
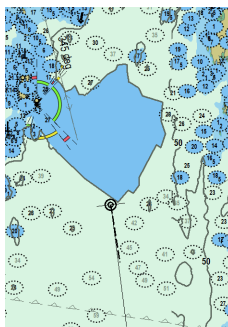
Safe hazards ON

Danger symbol OFF

Dangerous objects outside safety contour are displayed normally (with black text).

Dangerous objects within safety contour are displayed normally.

Hazards deeper than safety depth are displayed normally (with gray text)

> NB: In STD mode, hazards deeper than the safety depth are not displayed, regardless of "Safe hazards" settings!

3.5: Chart symbols - own objects

It is easy to insert your own symbols in TECDIS. You have the following types of chart symbols available:

- Lines
- Areas
- Point symbols

Symbols can be used to mark a danger zone not present in any chart or chart update, or to mark fishing grounds. Lines and areas can be connected to the alarm system in TELchart ECS, and it can be colour coded in 5(6) available colours.

At a glance you can set symbols where you want, to mark what you want. In the following subchapters we will explain how you place symbols in the chart, how you change them and what attributes can be set for them.

3.5.1: MOB symbol / eventmarker

These two functions are the quickest to place. They are available on the MOB button in the main toolbar.

- A **MOB** symbol (Man OverBoard) is placed in the position of the vessel by *left clicking the icon*, or by pressing the F10 key on the keyboard. TELchart ECS automatically starts a bearing from the vessel to the MOB symbol. The symbol is removed by pressing the F7 key on the keyboard, or by removing it like you would remove other symbols.
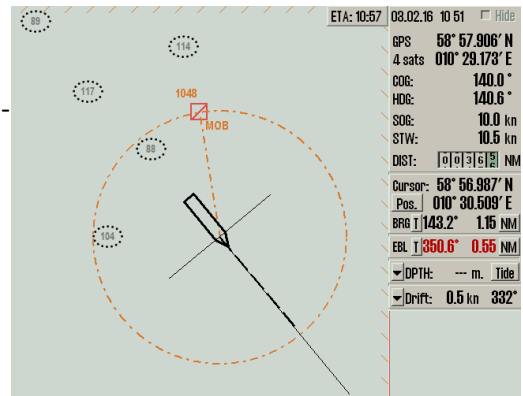
- An **event marker** symbol is placed in the position of the vessel by *right clicking the icon*, or by pressing the F11/F12 key on the keyboard. This symbol marks an event, and you can enter text for it in the chart inspector.

> You can undo the placing of an MOB symbol by pressing the MOB button one more time within 20 seconds from the first placement.

3.5.2: Opening the symbol menu

By clicking on the **Symbol** button (or the **F7** key on the keyboard) a window opens titled *Mariner Objects*.

From here you can **edit**, **select** and **add** different objects (*symbols, lines and areas*) that will be displayed on the chart. It is also possible to filter previously entered objects on a time line and by colour.

3.5.2.1: Selecting and displaying objects (symbol, line and area)

Mariner objects are displayed in the chart by clicking on the "**Show**" button and removed from the screen with "**Hide**" button. When Mariner objects are visible, the icon button from Main Toolbar is activated.

The upper frame of the dialogue box provides control over which Mariner objects to be displayed.
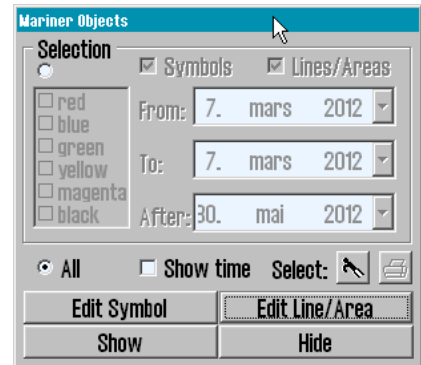
- Check "**All**" to display all Mariner objects (tick the box when add or modify symbols/line/area).
- Uncheck **All** to display objects filtered by:
    - Colour
    - Symbol type
    - If the **Show time** box is checked, display is limited to symbols:
        - that where made after the From data, but before the To date
        - that where made after the After date

Note that only the first two date conditions ("*From*" and "*To*"), or only the third condition ("*After*") must be satisfied, for an object to be displayed. For example, if the operator wants to display only symbols created in a certain previous time period, the time period can be introduced in "*From*" and *"To*" date fields, whiles "*After*" is set to a future date.

In addition, the **boat hook** button is used to select a single line or area object by selecting the name or directly clicking on it in the chart. Circular areas are selected by clicking on the circle center mark.

Selected objects appear highlighted in the chart and the **print** button in the dialog window is activated and can be used to create a position/waypoint list for the selected objects. This list can be saved to external media or printed (if a printer is connected).

3.5.3:   Add new, modify or delete symbol (objects)

By pressing **F7** or **Edit Symbol** in the *Mariner Objects* window, a new (vertical) toolbar appears on the left side of the chart display. The top three buttons functions are:

- Delete object symbol
- Change/Move object symbol
- Add new symbol.

The rest of the buttons enables the use of different objects symbols and colors.

Delete symbols: enable Delete function/mode by clicking on the "Delete" button. The button will now be activated while the deletion mode is active. Delete individual symbols by clicking the left mouse button with the cursor over the icon.To exit the Delete function/mode click "OK" or right mouse button.

Change / Move symbols: enable Edit / Move mode by clicking the "Change / Move" button. The button will now be activated while the modification mode is active. By clicking the left mouse button with the cursor over a symbol on the chart, this will be changed,moved and /or colored, to currenly selected symbo/color in the vertical toolbar.The new symbol will move with the cursor until is placed in the desired position by clicking the left mouse button again (the previous position and appearance of the symbol will be marked as deleted). To exit the Edit /Move mode click "OK" or the right mouse button.

Add New Symbol: enable New Symbol mode by clicking on the "New Symbol" button.The button will now be activated while the mode is active. In this mode, a new icon/symbol will be placed on the chart, with the selected shape and color (from the vertical toolbar), by clicking left mouse button in the desired position.
A window will open in the lower part of the chart. Information about the new object, can be introduced here. This is stored as a short visible text displayed in the chart and as a detailed text not visible in the chart. Click the left mouse button or the "OK" button when data is entered, to close the window.

OK: This button will terminate any of the three active modes described above. If none of the modes are activated, this button will exit the symbol menu.

17 Symbol Buttons: There are a total of 17 icons available in the toolbar, where the currently selected symbol is marked as inactive.

Note: The top four symbols are fixed, cannot be changed and will always be presented in orange

Open Symbols Selection: Symbols, other than those found in the menu, can be accessed from the symbol library. Open symbol selection with the folder icon. First select the symbol that will be replaced in the toolbar. Then select the new symbol from the symbol library, by clicking it. The new symbol will now appear in the toolbar. Close symbol library by clicking the folder icon

First select the symbol you want to replace in the toolbar. Then select the tool you want replace it with in the symbol library.

6 color selection buttons: These buttons show color choices available symbol colors. The selected color appears as a activated button.
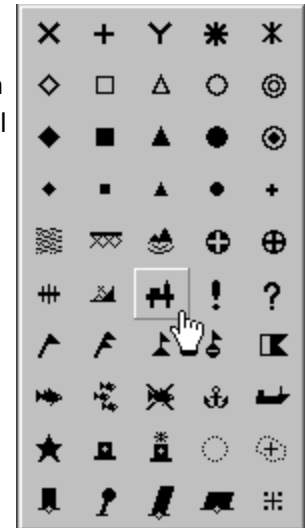
The above mentioned functions only work with symbols added by you.
Symbols placed in the charts by the chart provider cannot be edited.

3.5.4: Add new, modify or delete custom lines / areas

By pressing the **F8** key or **Edit line/Area** in the *Mariner objects* window, a different (vertical) toolbar appears on the left edge of the chart display. This toolbar provides access to functions that enables the *creation, modification and deletion of lines and areas* on the chart. Toolbar functionality is the same type as in the previous chapter.

Position list: Gives an overview of the different positions for the points the line/are is made of. You can also edit the point placement by inserting new values directly into the list. Position is given in degrees and decimal minutes.

Delete (lines and areas): The Delete feature is enabled by clicking on the "Delete" button. The button will now be activated. Delete custom lines / spaces, by clicking on the left mouse button with the cursor over the line symbol or on the center of circular areas. Exit delete mode by clicking "OK" or right mouse button.

Edit line /change color (modify / move lines and areas): This feature is only available for multipoint lines and areas. Enable the modify /move mode by pressing the **Edit line/change color** button. The button will now be activated and several operations can be performed:

- to move/modify a corner: left-click on the corner. Move it to the new location and left-click once again to anchor it.
- to add a new corner to a straight line: left-click on a straight line. Move it in the desired location and left–click to anchor it.
- to delete a corner: right-click the point to delete.
- OK button to exit the mode.

Add new line/area: you can insert the following lines/areas:

- Lines
- Multi-point areas
- Circular areas
- Rectangular areas

The selected function will be displayed with a light background when activated. Simple lines, circular and rectangular areas' extent / size are set in by another click on the left mouse button. For multi-point lines or areas, each click of the left mouse button will place a new 'grip' point. Click the **OK** button or right mouse button to finish the line.

When you begin to draw an item, a window will open in the lower part of the chart. Here you can register a brief or detailed information text about the new object. The short text is visible on the chart whilst the detailed description is hidden. Press **Enter** or **OK** button when data is entered, to close the window.

Position Line (bearing line): To mark a bearing position in the chart, select *Position line* drawing feature and activate the drawing mode by clicking on the **Draw new** icon. When the start point of the bearing position is placed on the chart - by clicking the left mouse button a small window opens where a specified angle can be entered and so locking the bearing line. Left-click again to place the end point of the bearing position and a new window will open in the lower part of the chart, where a brief or detailed information text, about the new formed object, can be entered.
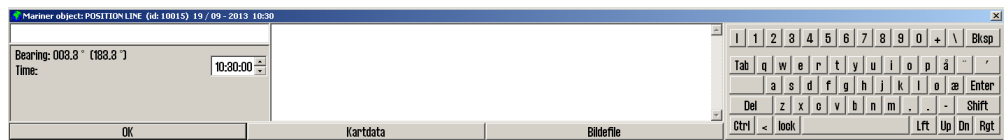
Click the left mouse button or the **OK** button when data is entered, to close the window.

Marked area (multi-point area): This button is used to enter multi-point/multiple-line areas. After the first point is placed in the chart a window pops up at the bottom of the chart where a brief or detailed information text, about the new object, can be entered. The short description is visible on the chart whilst the detailed description is hidden. Also, in the same pop-up window by checking the feature box **Fill**, the newly created surface can be shaded. Click the left mouse button or the **OK** button when data is added, to close this window.

6 colour selection buttons: These buttons show available colour choices for lines and areas. Red colour indicates danger and the red objects will generate alarms when anti-grounding alarm zone is overlapping with the object. Red objects are also displayed regardless of symbol visibility, status and filtering.

> The above mentioned functions only works with symbols added by you.
> Symbols placed in the charts by the chart provider cannot be edited.

3.6: Chart orientation

In TELchart ECS you can change the chart orientation freely between up to 5 modes.

By clicking either the text or the arrow besides it you will open a dropdown list where you can select the orientation you want:

- NORTH(standard)
    - stands for "north up", and means that north will always be towards the top of the monitor, regardless of own vessel course. Will automatically be selected by the system if placed in STD mode

- COURSE
    - stands for course up, meaning that the current course the vessel is travelling at will be shown towards the top of the display. It will not change even if the vessel later changes course.

- HEAD
    - stands for head up, meaning that the vessels bow will always be shown towards the top of the display. The vessel will have a fixed position on the display, and the chart view will alter during sailing (relative motion)

- Radar
    - means that the chart orientation always will follow the connected radar orientation. If you change the orientation or the range of the radar, TELchart ECS will automatically reorient itself with the same chart view and chart scale as the radar.

- (RADAR 2)
    - Only appears if two radars are connected to TELchart ECS.

Navigation

In this chapter we will look closer at how TELchart ECS can be used during planning and performing voyages. You will also get an in-depth view of how TELchart ECS works as an anti-grounding system, and how you can maintain a safe voyage even if all sensors are lost.

4.1: Route planning

Route planning in TELchart ECS is easy to master, and at the same time it is a powerful toolset.

> Knowledge of navigation in general, and approved training in the use of Electronic Chart Systems is a prerequisite for correct use of TELchart ECS in route planning and navigation.

4.1.1: An introduction

Route planning is a key activity that forms the base of any safe voyage. A route plan is a comprehensive, port to port guide, developed by and utilized by the vessels navigators to find the best route, to identify potential dangers or issues along the voyage, and to commit the day to day decisions to a plan with safety for the vessel and crew at its core.

During route planning those parts of a route that has the highest potential risks involved, should be reviewed an extra time. During those reviews restrictions for ensuring safe sailing should be outlined. This should be done before sailing begins.

4.1.2: Starting the route planning tool

The route planning button is placed in the main toolbar. It activates the route planning toolbar on the left side of the display.

When a route is selected, or activated for sailing, this toolbar will appear automatically when the cursor is hovered over the upper left corner of the display. The route planning toolbar is automatically hidden by the system if it has not been in use within the last minute.

The toolbar has the following functions:

Make new routes
- Draw a new route directly in the charts
- Make a route with coordinates directly in the voyage planner
- Activate the selected route
- C-routes automatic route generation
- Search And Rescue (SAR)

Organizing the routes
- Primary and secondary routes
- Route selector and route search, with route export
- Delete selected route
- Voyage planner
- Save and export the route list

Modify existing routes
- Extending a route
- Modify waypoints directly in the charts
- Merge routes
- Copy selected route
- Great circle route

Chapter 4:Navigation

- Add index lines
- Undo route modification/route creation

4.1.3: Draw a route directly in the charts
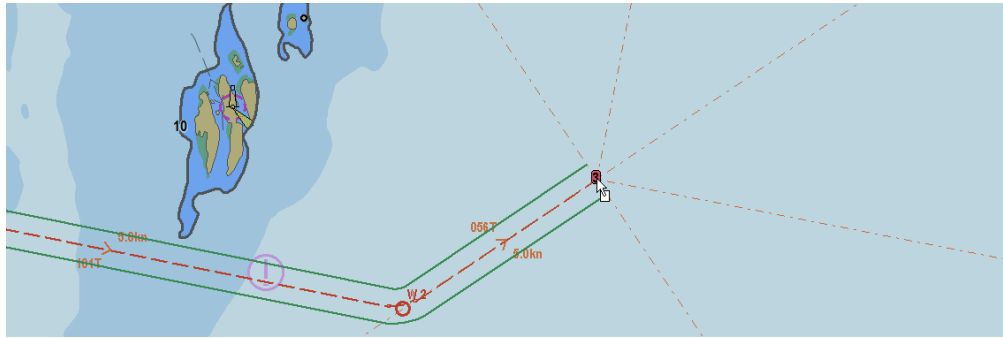
Press the **Make a new route** button to start the process of creating a route.

1. The cursor is placed on the position in the charts where you want to place the first waypoint. Press the left mouse button to set the first waypoint(W1). This will start the voyage planner, and a new window will appear at the bottom of the display. In it you can enter the route name and several describing tags ? (from, to, owner, tags) This information is used in *route search* and the *route organiser*

2. Continue drawing the route by moving the cursor to the desired location for the next waypoint, and press the left mouse button to place the waypoint. A line will now appear between the two waypoints, indicating the route leg. You are now ready to place the next waypoint. Continue placing waypoints until you are satisfied with the route displayed in the chart.Sightlines straight ahead, 45 degrees from the bow, 90 degrees from the bow and straight behind are there to aid you in visual route creation.

3. Finish drawing the route by pressing the right mouse button, or by selecting **OK** in the route planner toolbar. A route can contain up to 500 waypoints.

> The corridor width is set in the voyage planner as described in *4.1.10: Voyage planner*(see page 61). The corridor can be switched off.

> If a turn radius is deemed invalid by the system (if it is too big), the turn will not be drawn in the chart, and a warning will be given each time the route is selected.

> The last route edit operation that was saved can be undone. For this, use the **UNDO** button in the *Route* tool.

Waypoint coordinates can be entered manually with the keyboard.

4.1.3.1: How to change the chart view during route drawing

To move the chart view during waypoint placing, use the middle mouse button to recenter the chart to the position where the cursor is. Alternatively you can move the cursor to the chart view edges, and press the left mouse button when the cursor

changes form to an arrow.

Chart scale is changed in the main toolbar, alternatively by using the scroll wheel (if available). Navigating the charts can with great benefit also be done by using the scale shortcuts on the keyboard, see *3.3: Chart scale*(see page 33).

4.1.3.2: How to separate a new route from existing routes in the chart view.

When you are drawing a new route, or modifying an existing, all other existing routes are shown in the chart view as well, but in grey.

> If active lead se*ctors are turned on* (in the Chart menu tab*), l*ead sectors are shown by the cursor position.

> Preview of existing routes in the chart view can be switched on or off by *right-clicking* the buttons **Make a New Route** or **Modify Route**.
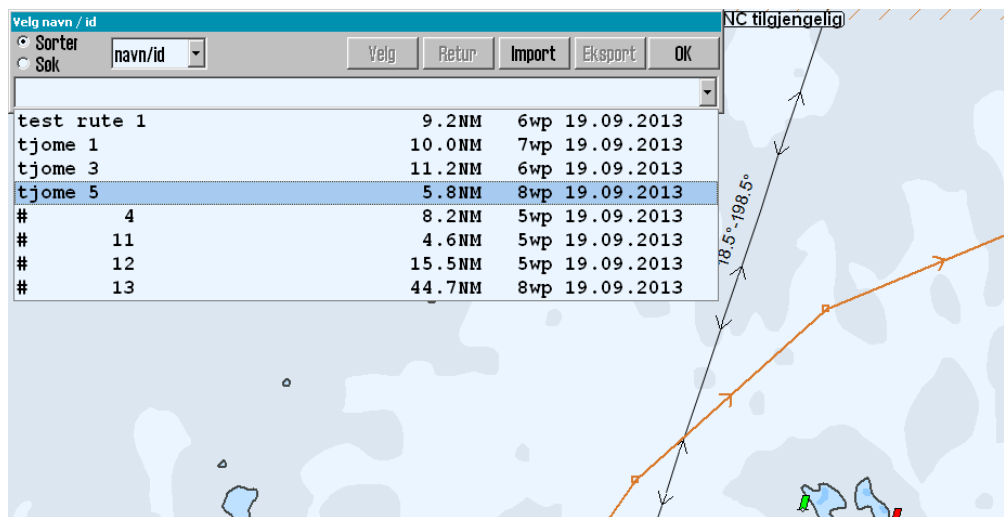
The selected route is marked by a red line with directional arrows. Each waypoint is shown on that red line with a circle and a waypoint number(W1,2, etc) On the line between waypoints, you can select to have planned course and speed displayed.

4.1.3.3: Route check
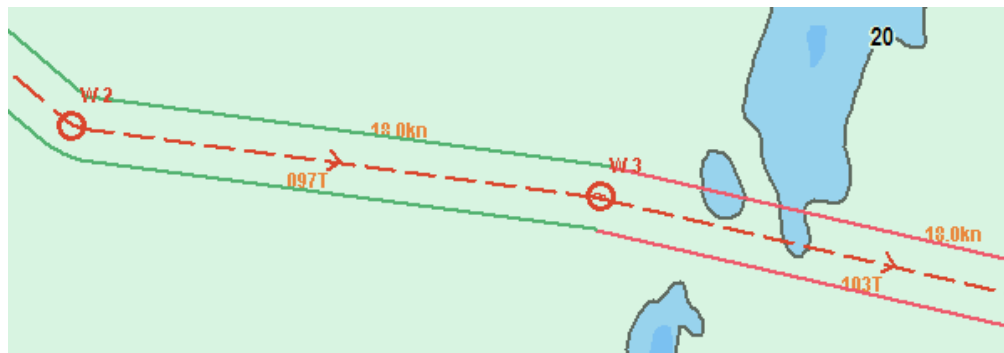
When the last waypoint in the route is set, the route will automatically be checked for

dangers. The lines of the voyage corridor has different colours, displaying the route leg safety status:

Corridor colour	Explanation
Green	The route leg is safe and there are no warnings for this route leg/turn.
Yellow	Chart objects with warnings are found in this route leg/turn.
Red	Danger objects are found in this route leg/turn.
Grey	The safety check for this route leg has failed. Split the route leg in two.

If the last waypoint is within a distance of 0,1 Nm from the first waypoint, the route will be generated as a circle.

Automatic route check only happens if Auto route activation is selected in the Safe menu tab.

The route check excludes unoffical overview charts in the Professional+ chart database (1:3 Mill, 1:20 Mill, improved overview charts)

4.1.3.4: Manual assesment of the route

You always have to perform a manual check of the route. Use the *danger list* for the route to assess the different dangers and warnings along the route.

The danger list is found in the *Route Tool* menu.

Read more about how to use the danger list in the *Notifications and alarms* chapter (*(see page 78)*)

4.1.4: Activating the selected route

You can activate you selected route in several ways, both automatically and manually. This table provides an overview:

Automatic activation when inside the route corridor	For this to be possible the **auto route activation** has to be selected in the **Safe** menu tab.
Manual activation when inside the route corridor	Press the **activate route** button on the route planner toolbar.
Automatic activation, with placing of additional waypoint creating a route leg from the vessel position to a user selectable place on the route	For this to be possible the **auto route activation** has to be selected in the **Safe** menu tab, and **Allow route activation entry lane** has to be selected in *TELchart ECS Setup*.
Manual activation, activation, with placing of additional waypoint creating a route leg from the vessel position to a user select-able place on the route	For this to be possible **Allow route activation entry lane** has to be selected in TELchart ECS Setup. Press the **activate route** button on the route planner toolbar.

Note: If you have configured route activation with placing of additional waypoint creating a route leg from the vessel position to a user selectable place on the route, you can from version 4.7.x.23 select any point on the route leg. You are not restricted to only selecting existing waypoints. Note that a new waypoint will be created in that position if there is not one there already.

4.1.5:   Automatic route generation with C-Routes

C-Routes is distributed as an integrated part of the C-Map Professional+ chart database, and is therefore only available on TELchart ECS units with **Professional+** installed and activated. In addition there has to be valid chart licenses for the entire area you intend to create routes in.

4.1.5.1: About C-Routes

The C-Routes automatic route generation tool includes functionality for automatic generation of route proposals to/from a wide array of ports and user defined positions. The system utilises a grid of predefined route legs all over the world, and combines them in to one route for you. Some sea areas and ports are not part of the grid, contact *C-Map* if you experience that your desired port/location is not available.
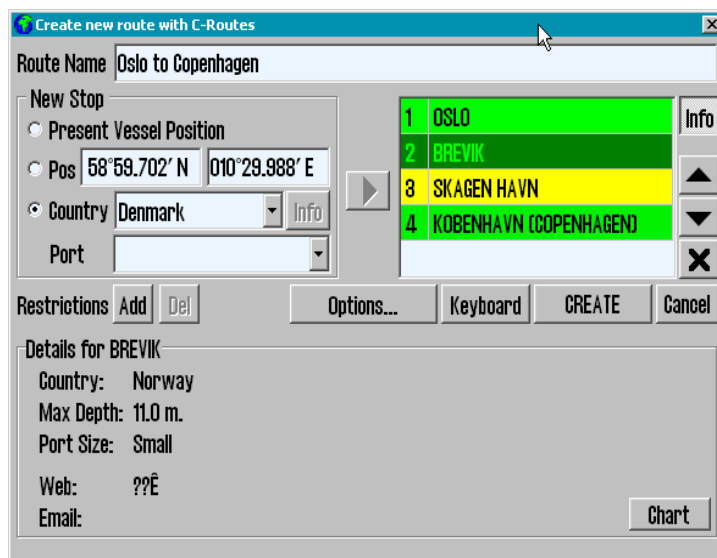
The route proposition takes traffic separation systems into account, along with all other chart functions and the vessel draught, when calculating the route. This functionality can shorten the route planning process and help minimise the navigator workload significantly.

The *C-Routes* library is developed by C-Map and aids the navigator in the route planning process. The most important feature is the ability to swiftly calculate the shortest possible route between two ports. The route calculation is based on matching requirements given by the vessel with the territorial limitations along the planned route.

4.1.5.2: Start C-Routes

In the route planning toolbar, press the **C-Routes** button. A window will open with the C-Routes planning tool

The planning tool is divided in to several fields:

- Route name
- New Stop
- Add restrictions
- Options
- Keyboard
- CREATE

4.1.5.3: Route name

In this field you add the name you want for your route. Use terminology that makes it easy for others to pick up the route later.

4.1.5.4: Enter a new stop for the voyage

This is done in the field **New Stop**. You can select between three ways to specify the stop:

Own ship position	Often used to set the first waypoint for the voyage.
Specified position	If this is selected, and you press the Set button, you can then left click with the cursor in the position in the chart where you want to place the way-point. You can also enter a position directly with the keyboard.
Select from port list	Used to select ports that are found in t*he C-Routes port list.* The list is divided in to nationalities, and you thererfore have to first select the cor-responding country for the port you want to add i the first dropdown list, and then select the port in the second, lower dropdown list. In the drop-down list it is also possible to enter the first letter for the country/port.

When the port/position is specified, use the **Play** button to transfer the entry to the port-of-call list.

4.1.5.5: Port-of-call list

Next to the New Stop field, there is a *Port-of-call* list. As you add ports for your voyage, this list will fill up. When you have added all ports of call you desire, you can edit their order with the arrow buttons next to the list. You can delete a port of call by pressing the **X** button nexct to the list.

You can also get more information about the port of call you have selected in the list, by pressing the **Info** button. Information that is displayed includes (among other) the maximum draught for vessels entering the port. This information is displayed at the bottom part of the *C-Routes* window.

Ports marked in red in the port-of-call list: These ports have a maximum draught that exceeds the capacity of the port. This port must either be deleted, switched for an alternative port nearby, or the navigator has to select ignore ship draft in the *C-Routes Options* button.

Ports marked in yellow in the port-of-call list: The port database does not have information on depth for the port.

To display a port from the port-of-call list in the chart view, press the Chart button at the bottom of the C-Routes window. Pressing this button will center the chart on the selected port.

4.1.5.6: Restrictions - add and delete

When a sea area, bridges, canals, objects or places, are considered obstructions for the own vessel, it can be inserted restrictions in the form of a red slash across those

areas which C-Routes will not take into the route calculation. Adding and deleting these restrictions is done using the **Add** and **Del** buttons.
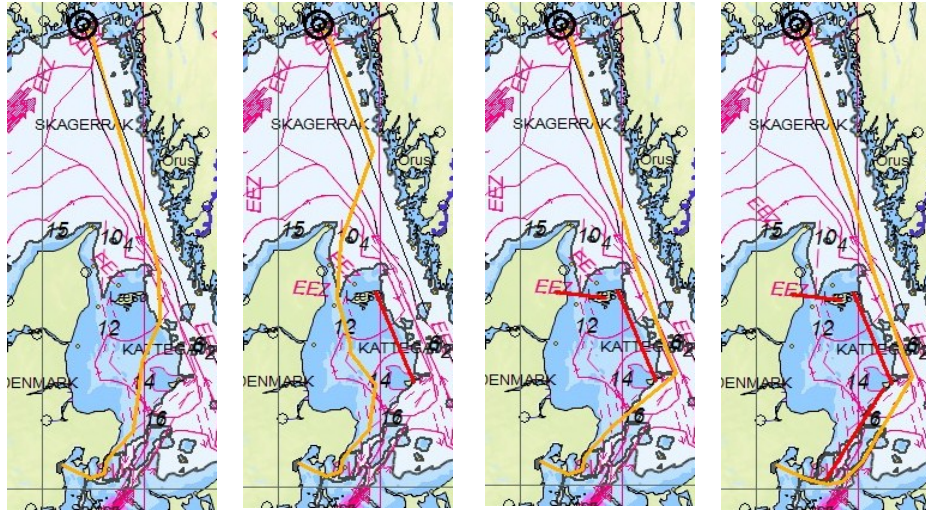
In an early planning stage, you should zoom out in the chart so that the entire route can be visible. When minimum two ports of call are set, the *C-Route* is drawn as an orange preliminary route.

When the **Add** button is pressed, the cursor will change and with a left click in the desired position in the chart, the first point of a red restriction line is set. The other end of the restriction line is set by moving the cursor to the desired location and left click again. There is no limit to the number of restriction lines that can be deployed.

A click on the **Del** button allows you to delete restrictions. You can select whichever restritction you want for deletion, and in any order.

4.1.5.7: Options

The C-Routes can be adjusted to avoid planning the route through fairways and / or channels. To restrict or prohibit certain passages through the fairways and / or channels, remove the checkmark in front of the fairway or channel's name, in the *Passages Allowed* field.

The fairway / channel's name that is checked (highlighted) in the Passages Allowed field, will be indicated on the chart with a red marker.
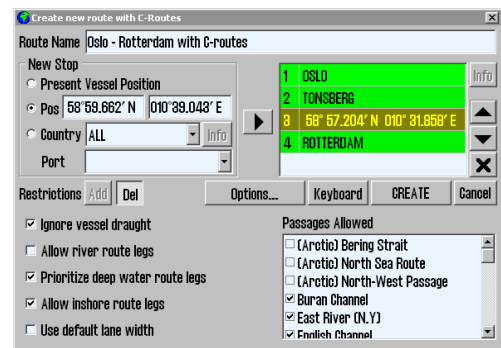
Furthermore, when planning a route, C-Routes can be adjusted to consider the following options:

- Ignore ship draft; when checked, C-Routes will generate a route without taking into consideration the own vessel draft. The new generated route must be reviewed in detail before it is used!
- Allow river route legs; when checked, the C-Routes will generate routes using inland waterways where it makes sense.
-

- Prioritize deep water route legs; when checked, C-Routes generates routes preferably in the open ocean.
- Allow inshore route legs; when checked, C-Routes can use the fairways within the shoreline for navigation plan. In that case, a route can be plotted outside the traffic separation schemes and be shorter.
- Use default lane width; when checked, C-Routes uses TELchart ECS standard corridor width, instead of corridor width from C-Routes that are highly variable per leg.

Any routes that are generated with **Ignore ship draft** activated have to be reviewed in detail before they are used.

4.1.5.8: Create Port-of-call list with the on-screen keyboard

By pressing the **Keyboard** button you bring up an on-screen keyboard. This way you have easy access to the route generation tool without a physical keyboard.
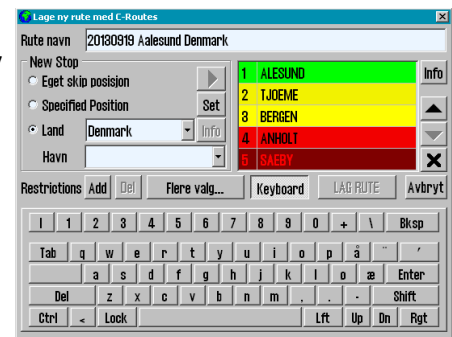
4.1.5.9: Create the route

When all ports of call are placed in the list, and are displayed in either yellow or green colours (or draft is ignored), you can press the **CREATE** button to start the route generation.

What has been an orange line indicating the route, now is converted in to a preliminary route with waypoints, sailing corridor, speed annotation, direction and is registered in the Route Organiser menu. Further work on the route is done via the *Route Planning Toolbar* before the route is actually used the navigator must check it both, automatically and manually.

4.1.6: Search and Rescue - SAR

TELchart ECS has built in support for generation of search and rescue patterns directly in the chart view.

There are four types of SAR patterns to choose between, and they can be defined either as symbols placed in the charts, or as routes with full track steering compatibility. When you press the **SAR** button, a new SAR window opens where you can set settings such as type, start position and symbol colour. In the chart view a live preview of the default SAR pattern is shown:
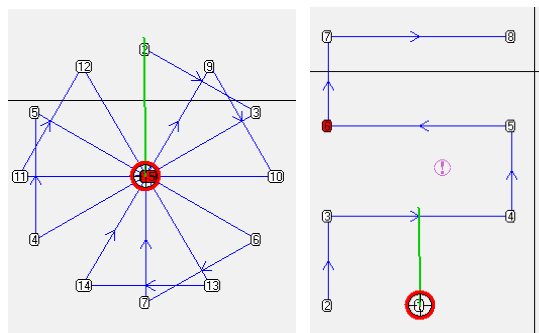
This is how you set up a SAR pattern:

1. Select the search pattern type you want to use.
2. Select the search pattern's anchoring point; own vessel's position or the chart center.
3. Depending on which search pattern is selected, you now have to set some search pattern adjustments. The search direction, length of line, number of lines and the distance between lines are all adjustable.
4. Choose if you want the pattern to become a symbol(line) or a route. If you select route the search pattern will generate a route that is activated automatically for route sailing.
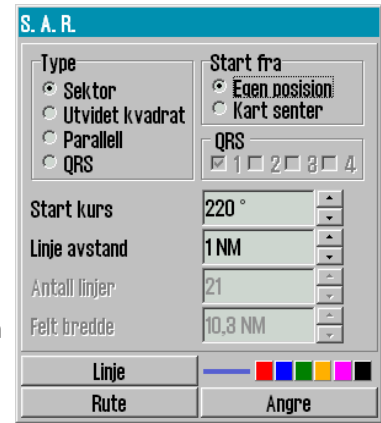
4.1.6.1: Special conditions for the QRS pattern type

The QRS search pattern differs from the other because is not a continuous line and thus cannot be converted to a route.

QRS is a numbered grid where the anchor point, the start and the leg distance can be selected. Everything else is fixed and cannot be edited.

Up to four QRS search patterns can be visible on the chart simultaneously.

To remove the QRS search pattern, return to the SAR window and deselect the checkbox of those patterns that will be removed.

4.1.7: Primary and secondary routes

In TELchart ECSyou can set up for fast switching between routes for sailing by utilizing primary and secondary routes. When you select/draw a route in , the default is that it is selected/drawn as primary route.TELchart ECS Then the **route 1** button in the route planning toolbar is marked. The route will be shown with a red line in the chart view.

If you press the **route 2** button and then select/draw a route, this is then set as secondary route, and will be displayed with a dotted orange line in the chart view.

You can switch which of these two routes are primary and secondary. This is done with the route switch button **1:2**.

Only the primary route can be activated. If you switch routes while in voyage mode, you have to confirm that you want to cancel the active route. Then you have to check and activate the new primary route, as described earlier.
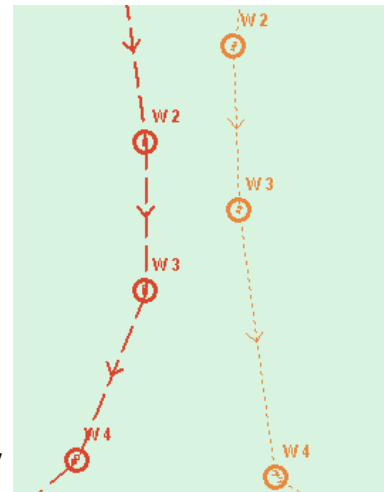
4.1.8: Route organizer

The route selection button opens the route organiser tool. This toolbox is primarily used to sort, search through and select routes. It is also used for export and import of

CSV(export only) and LST files. In addition all routes in the route organiser are now displayed in the chart view.

4.1.8.1: Route selector and route search

There are three ways to select routes:
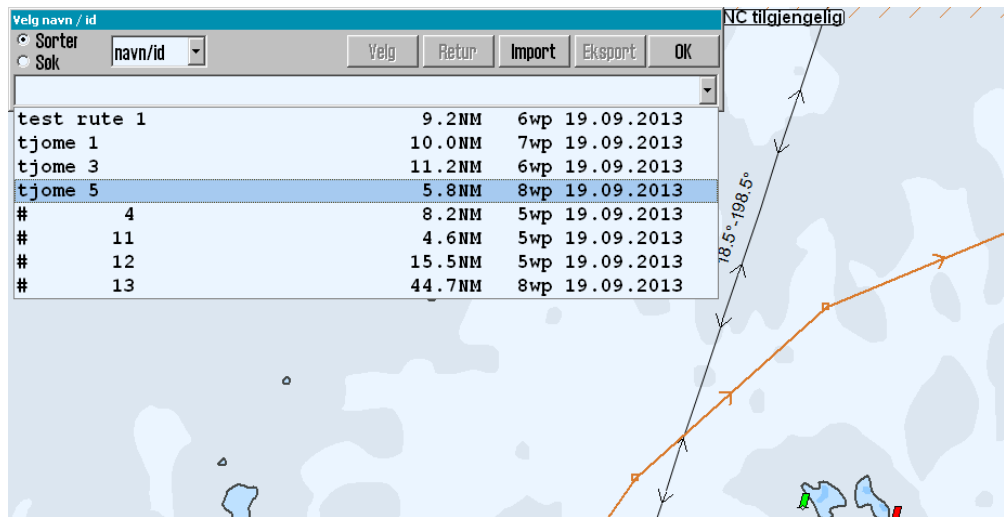
Use the route dropdown list with sort activated. The list can then be sorted by different parameters such as *owner*, *to*, *from*, and *name/ID*. These parameters are chosen between in a separate dropdown list appearing besides the sort/search selector. When you have found the desired route in the dropdown list, you simply press it, and then press

  a. **OK** to select that route for sailing.
  b. To select the same route, but with opposite direction of travel, press the **Return** button.

Use the route dropdown list with search activated. Now a search field is available next to the sort/search selector. In it you write the desired search term, and use the dropdown list (now consisting of search parameters) to set the parameters for the search. The dropdown list will fill up with search results as you type. When you have found the desired route in the dropdown list, you simply press it, and then press

  a. **OK** to select that route for sailing.
  b. To select the same route, but with opposite direction of travel, press the **Return** button.

Use the route selector tool directly in the charts. With the route organiser window open, the cursor changes shape to a boathook and all available routes are shown in the charts. You can now find the desired route in the chart, and select it using the cursor.

  a. **Left click** to select the route for sailing.
  b. **Right click** to select the same route, but with opposite direction of travel.

> The direction of the selected route is shown with arrows placed on the route line.

> Note that if you have switched route preview off, your routes will not be displayed in the chart view for selection. *Right click* the **route selection** button to re-enable route preview.

4.1.8.2: Exporting routes

Routes can be exported in the formats

*.csv	*.lst	*.txt

To export a route to csv/lst, select that route in the route organiser, then press the Select button, and then the **Export** button.

In the export window that appears you select export location and file format. Csv files allows you to view route details in *Microsoft Excel* and similar software. Lst files do not contain index lines.

> When saving for export you can use *file type* to filter which file types are displayed in the folders. **This changes the file format** for the file you save, even though the change is not reflected in the displaed file mane at the top of the window. If there is a difference between the two, you will be asked for a confirmation on what file type to save as.

see *Saving and exporting a route list* on page 63 see Saving and exporting routelist on page 1.

4.1.8.3: Importing routes

TELchart ECS can import files in the *.lst file format.

To import an lst file, press the **import** button in the route organiser. A new import window appears, and here you select the file and file location of import.

4.1.9: Delete selected route

If you want to delete a route from the route database, you use the Delete button om the route planning toolbar.

If a route is selected or activated, then it will be deleted. If no routes are selected or activated, all routes in the chart will be shown and the cursor will change to the route selector.

Now you can select a route for deletion. You have to confirm that you want to delete the selected file. Press **OK** to confirm, or **abort** to stop the deletion.

4.1.10:   Voyage planner

The Voyage planner button gives access to a voyage planner window with detailed information and settings for the selected route and all its waypoints.

When you press the voyage planner button you activate a table with detailed waypoint-information. This table is displayed in the lower part of the screen.

The following abbreviations are used in the waypoint table:

WP   Waypoint number

GC   Great circle route leg

Lat.   Waypoint latitude

Lon.   Waypoint longitude

Dist.   Distance to next waypoint

Course   Course to next waypoint

Speed   Planned speed

Lane   Lane/corridor width

Radius   Turn radius

ROT   Rate Of Turn

Arrival   ETA to waypoint

Delay   Stop time at waypoint (min)

Text   Waypoint name and additional information

You can move from cell to cell in the voyage planner by using the **TAB** key on your keyboard.

NB! When the Route Planner is in edit waypoint mode, the route monitoring function is turned off (the route control signals will not be generated to the autopilot).

NB! By clicking one of the data fields in the list belonging to a waypoint that is not displayed, the chart will center at the specified waypoint. This feature is disabled if the Auto Chart Reposition is enabled.

4.1.10.1: Changing values in the waypoint list - Default values
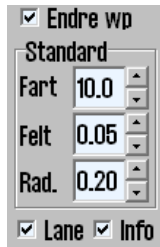
Default vaules for speed, corridor width and ROT can be specified in the *Default* field to the left of the waypoint list. The values listed here is used for the entire route, except for those waypoints where you have locked a custom value. Custom values are viewed in black.

> To quickly change custom values back to default values, right click them, and they will be unlocked and available for default changing. To lock a value, right click that value agian. (This only applies to custom values, default values will be changed).

Below these default values there are three parameters that can be set:

Lane	With this activated the specified lane/corridor width will be displayed in the chart.
Info	With this activated both planned speed and course will be displayed for each routeleg in the chart.
Zone	Here you can specify the time zone for the route.

4.1.10.2: Changing values in the waypoint list - single waypoint

Speed, corridor width, ROT, arrival time, delay time and waypoint text can all be modified for each waypoint separately, even during voyage mode.

If you set a value to 0 then it will revert to the default value. If another value is set then this will override the default value and be displayed in black. You can add values by using your keyboard, or by using the scroll wheel on your trackball(if available).

4.1.10.3: Edit waypoint/route information

By clicking the text field for a waypoint the following window will appear above the voyage planner:
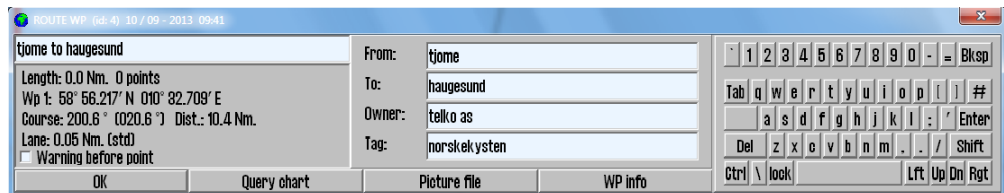
Here you can change information about the route/waypoint.

> NB! If you have selected the first waypoint in the list, you will open the route info window. All other waypoints open in to the *waypoint info* window. In the route info window you can enter information such as port of destination, port of call, route owner, and a general tag you want to set to get a custom search term when selecting routes. To change to the waypoint info window you press the button **WPinfo**. If you are in that window, you can change to the route info window by pressing the same button, only now it will be labeled **Route info**.

In the waypoint info window you can do the following:

a. change route name
b. set a warning before point, for that waypoint

    c. set a chart scale for that waypoint (enter the following: Scale 1:xxxxx, and replace xxxxx with desired chart scale)
    d. insert relevant information (text and image) for the waypoint/leg.

4.1.10.4: ETA - calculation during route planning
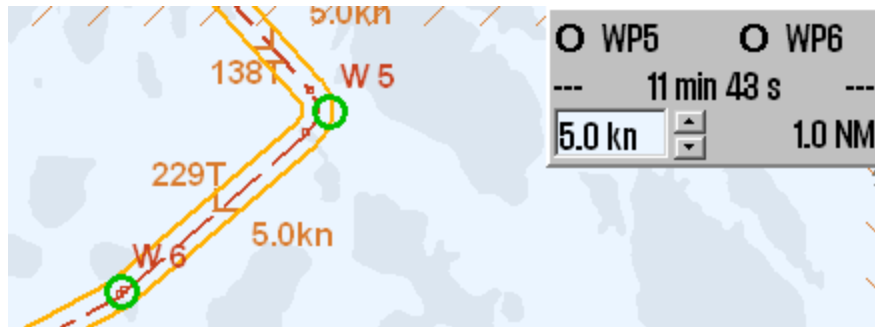
When you draw a route, you can calculate ETA, speed and distance between two waypoints. By right-clicking two different waypoints

- In the chart
- In the Voyage planner
- In the ETA list (see *Calculation of the voyage duration* on page 69)

a calculator appears, where you can set the desired speed and it calculates the expected time use.

The selected waypoints are colored green. When the tool starts, the last waypoint of the route is set as one of the two waypoints.

To exit the calculator, right click one of the selected waypoints.

4.1.11: Saving and exporting a route list

By pressing the save, edit a**nd print route list button a new window w**ill appear with a route list with waypoint details, total voyage distance and tot*al voyage time.* This list can be saved as a txt, lst or csv file.

When saved, the file can be transferred to another computer for:

    a. printing
    b. sending to the shipping company
    c. assessment in excel or similar software
        - (only the csv file)
    d. loading in to DNV Navigator
        - (only txt files)
    e. loading in to a TELchart ECS Planning Station
        - (only lst files)

> **Important:** When saving you can use file type to filter which file types are displayed in the folders.**This changes the file format** for the file you save, even though the change is not reflected in the displaed file mane at the top of the window. If there is a difference between the two, you will be asked for a confirmation on what file type to save as.

4.1.12: Extending a route

A route that has only been partially finished before, can be extended by selecting it, and then selecting the route extension tool from the route planning toolbar. This will reactivate the route edit mode and you will get the opportunity to add waypoints atfer the last added from the previous session.

4.1.13: Modify waypoints directly in the charts

To change an existing route, select the desired route to be changed, and then press the route modify button on the route planning toolbar. This will reactivate the *route edit mode* and you will get the opportunity to do the following:

Move a waypoint	**Left click** with the cursor placed on the desired waypoint, move the cursor to the new position, and **left click** again to set the waypoint placement.
Delete a waypoint	**Right click** with the cursor placed on the desired waypoint.
Add a waypoint on a route leg	**Left click** in the route leg line between two waypoints to add a waypoint. Move the cursor to the desired position for that waypoint and **left click**.
End edit mode	Press the **OK** button in the route planning toolbar.

> An active route can also be edited without exiting vouage mode, but the three waypoints closest ahead of the vessel are locked for editing.

4.1.14: Merge routes

Two or more routes can be combined to one new route.

To do this, first select one of the routes to be combined.

When the first route has been selected, you can start the route merging. Left click the **merge** button, and select the route to merge the first route with.

> If you instead want to draw a new route to later on connect to a previously drawn route, simply draw that route, and as all routes are displayed in grey when drawing routes, you will be able to see the route to merge it with during route drawing.

Waypoints in selected route and the one you are adding, are controlled against each other so that the routes are joined in intersecting or coinciding waypoints as shown below. This gives flexible opportunities for merging routes.

Example 1: expanding a route

The last waypoint coincides with the first on the other route, or a connection is made between them.

Example 2: one intersecting waypoint (<0,1Nm)

When one intersecting waypoint is present, the result is a combination of the two routes. The route legs not in use are discarded.

Example 3: two intersecting waypoints (<0,1Nm)
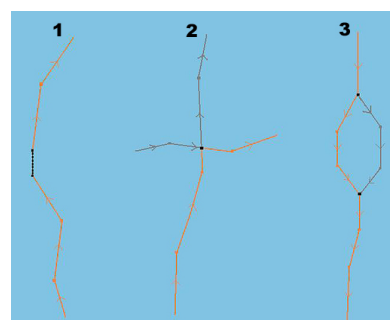
When both the first and last waypoint of a new route part intersects waypoints on the original route, the original route part in between those intersections is replaced by the new route part.

4.1.14.1: Save the new merged route

The merged routes will appear a a new route, and TELchart ECS will automatically reset the waypoint numbering. You can now save the route as a new route, by pressing the **Copy active route to new route** button.

4.1.15: Copy selected route

If you want to create a new route based on an existing one, a copy of the original route can be created using the *Copy active route to new route* function.

First, the existing route should be selected. When pressing the **Copy active route to new route** button, a dialogue box opens ; click **OK** button to confirm copying and saving of the original route. The route that appears on the screen is a copy with an independent status and can be modified in the usual way, and it will be saved as a new route.

4.1.16: Great circle route

Routes in TELchart ECS can be configured as great circle routes. This is done in the voyage planner (requires that you have entered it through starting *route edit mode*).

In the column *for* GC (Great circle) in the voyage planner you can select if a route leg should be a great circle leg or a loxodrome leg. This is changed by **left**

clicking in the **GC** column for the starting waypoint of that route leg. *A requirement is that the route leg has to be longer than 300 NM.*

If great circle leg is selected the symbol in this field will be a curved line in edit mode and dotted line in finished/active mode. The colour of the symbol will also set the security status, having the same colour code as the route corridor.

> The Great Circle route generate additional waypoints on the table, which are intermediate waypoints on the Great Circle. This means that the Great Circle is recorded as a series of Loxodrome route legs. Such additional waypoints can not be modified in the table and are automatically removed if the route leg presentation is switched back to Loxodrome route type.

4.1.17:   Add index lines

When a route is is fully drawn and the route hazards and alerts have been reviewed and accepted, Index Lines can be added for even safer navigation.

An *Index Line* is launched by first selecting the **Index line** button function from the Route Planning Toolbar, then move the cursor in the middle of the Route Leg and **left click** to release an Index Line.

The Index Line is displayed in magenta colour and is parallel to the Route Leg from which it was generated. The Index Line now follows the cursor movement, and while still parallel with the Route Leg, it can be placed in the desired position in the chart with a mouse left click.

The distance from the route line to the index line is presented in NM at the center of the index line.
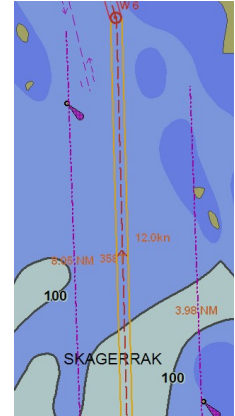
An overview of which route legs that have index lines is found on the route planner, where route legs with index lines are marked with IX in the text field.

If you want to see the distance from the route to the index line more clearly, hover the cursor over distance label of the index line in the chart.

4.1.17.1: Change index line length

The end of each Index Line is marked with a square symbol. A **left click** on one of these square symbol enables the extension /shortening of Index Line. Lock the Index Line in to position by **left clicking again**. The distance from route to Index Line is given in NM at the Index Line middle point.

4.1.17.2: Deleting and restoring index lines

To delete an index line you simply **right click** with the cursor placed on an end point of the index line.

To undo last deletion and restoring the last deleted line is achieved by **double clicking** the route leg line that indexline belongs to.

4.1.18:   Sight lines

Sight lines are shown straight ahead of the vessel, at 45 and 90 degree angles from the ship bow, and straight behind the vessel, when you are placing waypoints in the chart. The sight lines are also available after the route has been drawn, by hovering the cursor over the selected waypoint.
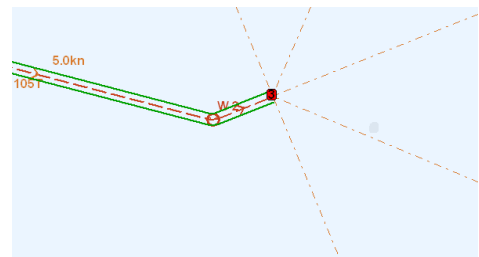
4.1.19: Undo the last route modification

By pressing the **UNDO** button on the route toolbar you can undo the *last saved route modification*. The following are examples of what you can undo:

- The last route deletion you performed
- The last route modification you performed
- The last route drawing action you performed
- The last modification of index lines you performed

> The undo function only works with actions that are saved, so you will be brought to the last saved state before you pressed *undo*.

4.2: Route navigation

When activating a selected route, TELchart ECS enters navigation mode, giving you all necessary information to steer the vessel according to the route you have created.

4.2.1: Navigation information

When a route is activated and you have entered navigation mode, an information window will appear in the bottom of the information panel.

1	Route name text field	see *Route name text field* on page 69	Tjome - Wolfwille
2	WP end / WP X	Opens the ETA list, that lets you see all ETA times, and lets you select which waypoint you want ETA and DTG to be displayed for.	wp end | planned spd. DTG: 2.67 NM ETA: 02. 14:01
3	Planned speed / Present speed	Lets you switch between planned and present speed for ETA calculation.	Turn WP 5 CTS: 300.5 ° 356.1° DTG: 1.14 NM TTG: 9 min 45 s
4	DTG	Remaining distance (Distance To Go)	XTE 1.08 Dev. 46 °
5	ETA	Estimated time of arrival	
6	CTS	Course to steer by and course for next route leg	
7	DTG	Remaining distance to the next route leg	
8	TTG	Time to the next Wheel Over Point (Time To Go)	
9	Position in the route leg corridor	The vessels position in the corridor is shown with red for port side, and green for the starboard side.	
10	XTE	Indicates Cross track error for the current course, measured in the same unit as the cursor range, see see *EBL/VRM Bearing* on page 73	
1	Dev	Deviation from course	

4.2.2:   Larger CTS values

If the size of the CTS values needs to be enlarged, this is achieved by clicking the field they are in with the cursor.

In addition the Rate Of Turn (ROT) is displayed, while the graphic representation of the current heading, is removed with only the XTE (X-cross Track Error) value is presented.

```
┌─To WOP 2──────────┐
│ CTS:      190.1°  │
│ ROT: 46°/m  CTS: 230° │
│ TTG:    4 min 34 s │
├───────────────────┤
│ XTE     0.005 NM  │
└───────────────────┘
```

4.2.3:   Route name text field

In the **route name** text field either waypoint text or routename is displayed, with the following priority:

1. Text for next waypoint

2. Text for ETA waypoint

3. Route name

4. Route ID

```
┌─────────────────────┐
│ Text for WP3        │
├─────────────────────┤
│ Text for WP5        │
├─────────────────────┤
│ Route Name          │
├─────────────────────┤
│ #506530008          │
└─────────────────────┘
```

4.2.4:   Calculation of the voyage duration

There are two ways in which you can calculate ETA for the route

Planned speed	Planned speed uses the speed values listed in the route planner.
Present speed	Present speed calculates ETA from the actual speed the vessel is sailing with when the calculation happens. The exception is if a speed value listed in the route planner is locked by the navigator. Then the system will calculate the ETA based on a combination of current speed and planned speed. Locked route leg speeds are shown with black text in the speed column in the route planner.

The navigation information window shows ETA/DTG either for the last waypoint or for a user selected waypoint. To switch between these modes, press the **EP end / WP X button**.

When you press the WP end button, the ETA list opens. It gives you an overview of all the waypoints in your route and their ETA.
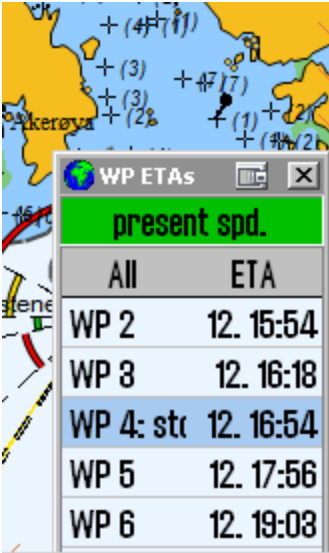
The ETA list displays the following information:

- If ETA is calculated from planned or from present speed
- The waypoint number
- Notes for the waypoint if added
- ETA with date and time
- Alternatively it can display TTG and DTG.

You can switch between the modes by pressing the title (ETA, TTG, DTG)

The ETA list has multiple display modes:

- All waypoints
- Only waypoints with text (notes)
- Only waypoints with planned stops (delays added to the routeleg)

You can switch between the display modes by pressing the title (All, text, stop)

The ETA time also has multiple display modes:

- ETA displayed in the same timezone as TELchart ECS
- ETA displayed in UTC time
- ETA dispplayed in the time zone selected for the route (set in the voyage planner)

You can switch between the display modes by pressing the ETA title.

When WP end is active, the button will display *WP end*. The same adheres to the *planned speed* button.

To calculate DTG/ETA between waypoints during route planning, see *4.1.10.4: ETA - calculation during route planning*(see page 63).

4.2.5:   Primary and secondary routes

In TELchart ECS you can use two routes simultaneously, allowing you to easily switch between routes when in navigation mode. When set up, you can have a primary route that is active, and a secondary that is checked and pre-activated, available for switching on demand. For more information, see chapter *4.1: Route planning*(see page 48).

4.2.6:   Notify Waypoint / Critical Point on the voyage

If a critical WP on the route is of particular interest, TELchart ECS can provide an warning at a pre-determined distance.

To use this feature, enable the Chart object inspector function (from the Main Toolbar) and click on the **WP** where the warning is to be placed.

An information window, that provides details on the selected waypoint, opens in the lower part of the chart. In the lower left corner of this window, check (activate) "Warning before point" feature and specify the time or the distance before the particular waypoint, when the warning should be given. Put a **checkmark** in the box

to the left, and then when point shall be notified in time or distance. A critical waypoint is marked with four red exclamation marks.

When the predetermined limit for a critical point is reached, an **Point Info alarm** is activated and the info window for this critical waypoint, appears at the bottom of the chart. Any info text entered previously to describe this critical waypoint, will also be visible in the information window.

> NB: Critical waypoint warning is triggered when the vessel moves within the specified range from any heading, not just along the route. When the warning has been raised, the marking of the critical waypoint in the chart will change in to four green exclamation marks.
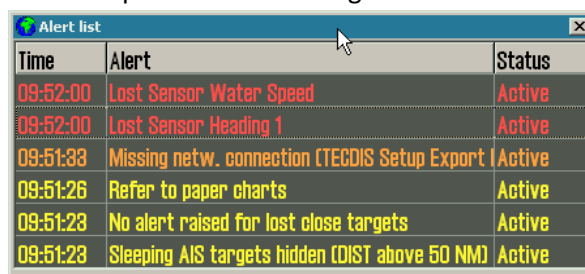
To delete a critical waypoint, click it with the **Chart object inspector** and deselect the **Warning before point** checkbox.

4.2.7: Hazards and alerts on a route

When a new route is created, or when an existing route is selected, the system will conduct a safety check of the route and generate a list of all hazards and warnings for the entire route.

you get access to the list of hazards and alerts by clicking on the List route dangers and cautions button on the **Route Planning Toolbar**. This button can either be displayed as an exclamation mark or as a question mark. An exclamation mark indicates that the safety check of the route must be done again.

Click this button to start the security check of the route, which will start and run in the background. While security is running, a reminder of this is shown in the upper part of the anti-grounding chart. A question mark indicates that the route safety check has been completed and the dangers and cautions list can be displayed.

The list of hazards and alerts (Route Alerts) it is a table where:

- The first column contains the identification number of each waypoint the warning/danger relates to, accompanied by the "=" sign indicates that the warning applies to the route leg between two waypoints, while the "+" sign shows that the warning is concerning a turn (wheel over) with a single waypoint.
- -the second column gives a short description of the item, followed by the object's depth (if available).
- -the last column gives information about the chart database where the object originated.

> When you open the list the chart display will automatically move and zoom to display the nearest route leg. The first route alert for the route leg will be marked in the list.
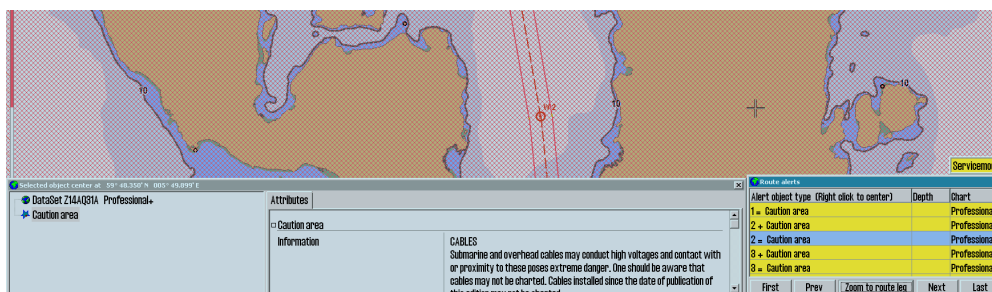
The dangers, highlighted in red, are listed first. Then follows a list of all the cautions on the route, which are highlighted in yellow. By clicking on one of the yellow cautions, an information window with more info details and a description of that caution/area opens.

All the dangers are marked on the chart display(with red markings) when clicking on the notification in the list. This is the modality to get a quick visual overview of where the dangers are.

> If the current waypoint is outside the displayed section the chart will move automatically, if the auto function is not activated.

4.2.7.1: Walk the route - a rapid inspection of the route

With the First, Prev, Zoom to route leg, Next and Last buttons you can rapidly asses the different dangers associated with a route leg. Walk the route is a supplement to a complete and thorough route inspection, and can be used to review the dangers on a specific route leg. This makes it a good tool during route sailing.
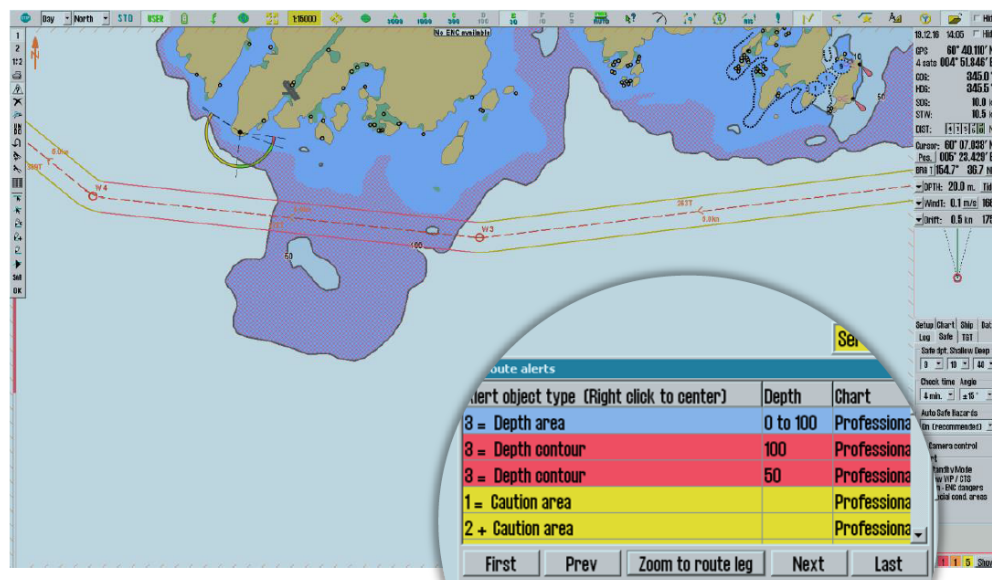
4.3: EBL/VRM Bearing

TELchart ECS has an electronic bearing line that allows you to make bearings both from the vessel position and from any point in the chart.

The bearing tool is activated form the main toolbar.

> The bearing tool displays CPA/TCPA or ETA information for the bearing point, at the top of the chart view, as long as the vessel is in movement. You switch between CPA/TCPA and ETA by clicking on the information display.

> When the bearing is anchored in the vessel it will follow the vessel movements dynamically

4.3.1: General about EBL / VRM operation
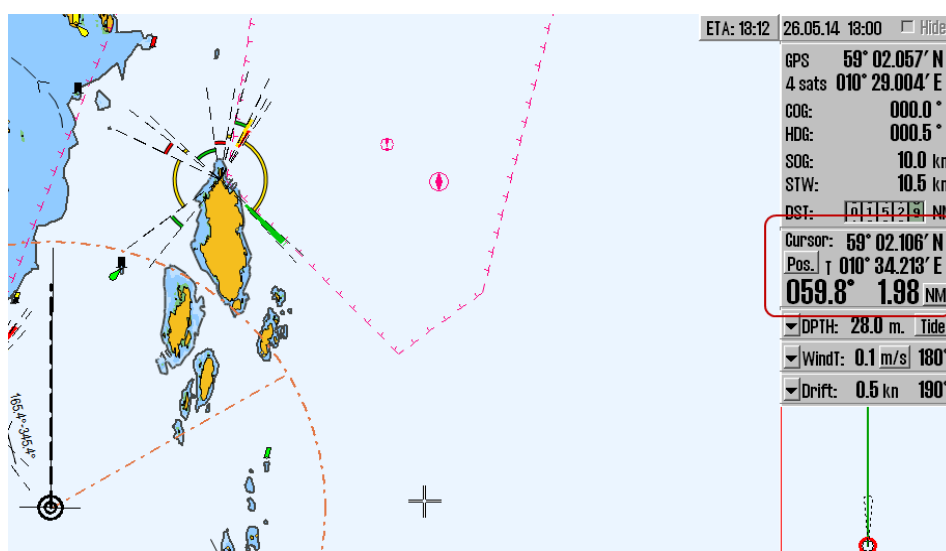
Left click in the chart	The anchor point of the bearing line is placed on cursor location.. Estimated time to go from anchor point to bearing point (with current speed) is displayed in a small window at the top right of the chart.
left click on own vessel symbol	The EBL/VRM origin point can be moved back to own vessel's position
Right click in the chart	Anchor point placed on the chart: Place the bearing target on cursor position.
	The EBL/VRM origin point will no longer follow the cursor movements. To go back to normal EBL/VRM operation, restart bearing tool.
	Anchor point placed on own vessel: The target point is locked to cursor position. A bearing will be placed. ETA to the bearing point(with current SOG) is displayed in a small window at the top right corner of the chart view.

The bearing can be *locked to a fixed heading* by entering a value between 0 and 360 degrees in the small window by the bearing line anchor point.

4.3.2: Bearing and range information

Bearing and range information is displayed in the cursor info panel, when the bearing tool is active. Here are the three EBL/VRM panels in the cursor info panel:

EBL T 039.1° 6.86 NM	EBL T 053.8° VRM 8.17 NM	EBL T 000.0° VRM 1.00 NM
Bearing and distance for the EBL/VRM tool	Enlarged view of bearing and distance for the EBL/VRM tool	Configurable bearing and distance for the EBL/VRM tool

The three EBL/VRM panels share the same location, and you toggle between them by *clicking on the panel itself*.

The third panel allows you to set a bearing that is not attached to the cursor. You can modify the bearing and range/distance with the arrow buttons, by text input, and the bearing can be set with the bearing circle; click and hold your cursor on it and when you move the cursor the bearing moves as well.

The measure unit for the distance is indicated in the lower right corner, and can be switched between nautical miles (NM) and meters (m) by pressing it.

> You can also add range to the bearing by clicking the middle trackball button with the cursor hovering over the radar cursor.

4.3.3: Bearing modes

The current bearing mode is indicated on the button that precedes the bearing numeric value.

EBL T	a given, true bearing is displayed in the chart
EBL R	a relative bearing is shown

Bearing mode is set back to 'true' mode (EBL T) each time the anchor point is moved outside own vessel's position.

4.3.4: Temporary route - with route monitoring in three clicks.

The EBL/VRM function can also be used to generate a temporary route, with the vessels own position as starting position(WP1).

With the EBL/VRM function enabled, press the **left mouse button** when you have placed the cursor where you want the *second waypoint* to be placed(WP2) and finish creating the route by pressing the **right mouse button** when you have placed the cursor where you want the *last waypoint* to be placed(WP3).

You will now be asked to confirm that you want to activate the route. When confirmed, you start sailing the route.

4.3.5: Storage and export of Bearing Position and of Line Of Position (LOP)

To save and export bearing lines, right click on **Bearing EBL / VRM** icon, on the Main Toolbar, to open the *Bearing list* window. All stored bearings will be displayed in the chart view.
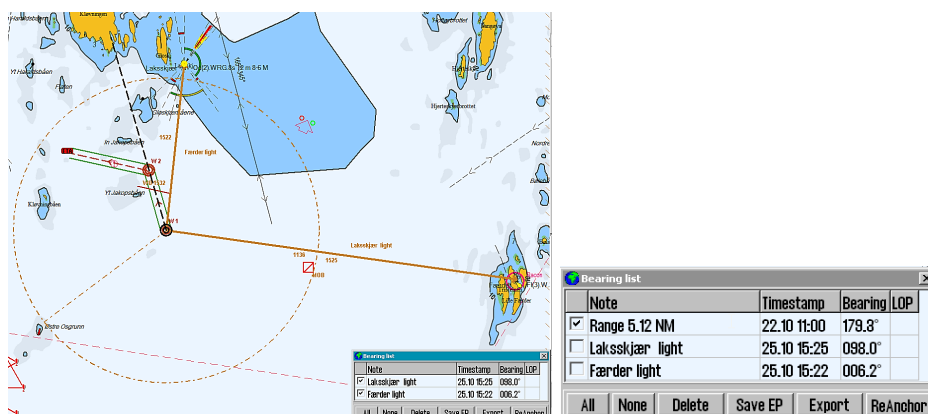
All saved bearing lines are displayed on the chart. On the far left of the window is the *column for line selection.* The selected lines are displayed on the chart with a bold line and text.

In the **Note** field you can enter a name/description for the bearing line.

> By adding Range to the Note field, TELchart ECS calculates and inserts the distance to the bearing point.

At the bottom of the *Bearing list* window, buttons are provided with functions necessary to amend the status of bearing lines:

1	select All lines
2	select No lines
3	delete the selected lines
4	Save EP (calculate and display the position of 2 and 3 position lines)
5	export the selected lines
6	move lines individually

ReAnchor - when this command is activated, the cursor must be positioned over the anchor point or over the arrowhead of the bearing line, and then left click to retreive it. The bearing line now follows the cursor movement,without changing the angle (parallel shift), and can be placed by clicking again the left mouse button.

New bearing lines can be added to the *Bearing list* by left clicking on the **Bearing EBL / VRM** icon (if the function is not activated).

Print the bearing list to a text file with the *Print* button. This option requires no additional formatting for later printout.

 To save a bearing line, click on the middle mouse button. Then the bearing line appearance changes from *dashed* to *solid line*. This modification indicate that the bearing line is saved and is visibile as long as the *Bearing list* window is active. Here

the bearing line's data and status can be modified. This process can be repeated as many times as desired.

	A	B	C	D	E	F	G	H	I	J	K
1	From lat.	From lon.	To lat.	To lon.	Date	Time	LOP	Type	Brg	Dist mtr.	Note
2	58.903405	010.571202	58.973400	010.641603	18.05.2012	12:12:52	0	1	027.4	8787	Peiling
3	59.022440	010.686358	59.033847	010.764302	18.05.2012	12:13:34	1	2	074.1	4653	Stedlinje uten klokke
4	59.000394	010.930751	58.969764	010.835206	18.05.2012	12:14:11	1	2	238.1	6467	Stedlinje med klokke
5	58.918650	010.541676	58.869900	010.760782	18.05.2012	12:19:57	1	1	113.4	13749	ReAnchored Peiling
6	58.962479	010.590870	58.918568	010.692895	18.05.2012	12:21:16	1	2	129.8	7643	ReAnchored Stedlinje

To save data from the *Bearing list* for later use or for transport to another computer, use the **Export** function,. The Bearing Positions and / or the Lines of Position data that will be exported, must be selected with a tick in the checkbox.

Data is exported to the location and under file name which is specified in the *Save As* window. The file format is not selectable; it is saved in the *.csv format, which is a text file readable in Excel and other spreadsheet programs.

> When the *Bearing List* is empty, exported bearings can be re-imported. The **Export** button now displays as **Import**.

In the table above such a *.csv file is illustrated opened in Excel and some formatting is made for easier readability. The positions are specified in decimal grades and the time is indicated in the Date and Hour separate columns. LOP is indicated either by a "0" or "1", where "0" indicates a Bearing Line while "1" indicates a Line of Position. In the Type column the following is set:

1	Bearing
2	LOP or a moved bearing
3	NMEA data received from the optical sounding instrument
4	NMEA data received from VHF

In the column labeled **Brg** the bearing of the line is indicated, while in the column marked **Dist mtr.** the length of the line in meters is specified. The last column contains the text that was entered in the **Notes** field in the Bearing list window.

All bearings and / or Lines of Position are saved and available in the Bearing list, until they are removed by operator. Deletion of data is performed using the **Delete** function and *it can be done without further verification*.
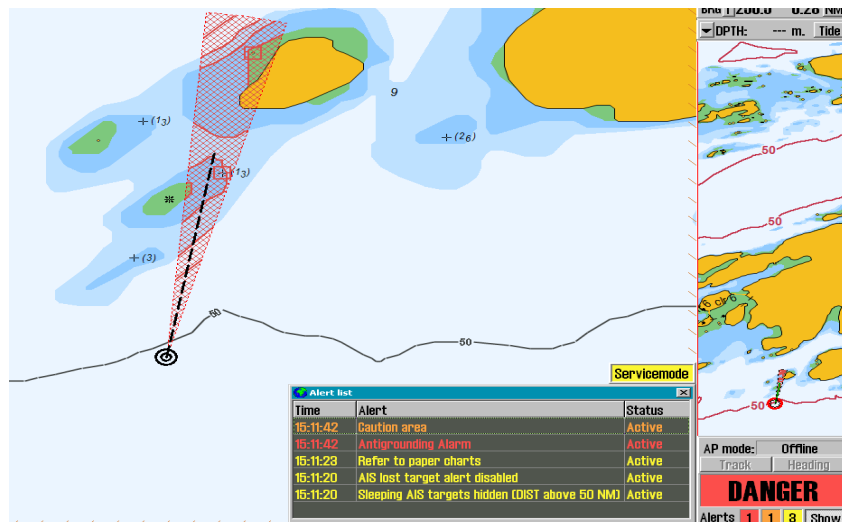
4.4: Anti grounding

When the vessel's speed over ground (SOG) is over 1.0 knots, the system will oversee a safety zone in front of the vessel and notify all the hazards objects and areas with special conditions. The angle and extent of this security zone is set up in the *Safe* menu.

The vertical menu includes an anti-grounding chart display, showing the safety zone at all times is fixed to course –up mode.

If any hazards are detected, the following actions are triggered:

- an anti grounding alarm starts
- the anti-grounding chart will highlight the dangerous chart objects within the safety zone
- the safety zone will be in the main chart display
- if the main chart display has been repositioned away from the own vessel position, the chart center will be moved back to the own vessel position.
- if *Auto Safe Hazards* is set to "**Auto On**" or "**Auto On+Off**", then the *Safe Hazards* and *Shallow Soundings* options, in the *Chart* menu, are turned on at the first warning, if they were not selected already.
- Until the anti-grounding alarm has been examined, the alerted areas in the safety zone will also be marked in the main chart view.

By entering the alarm list and selecting one of the notifications, a separate list of anti-grounding warnings is shown. When clicking a warning in the anti-grounding list, the selected danger zone will be marked in the chart with red markings, and the chart will center around it.

4.5: Notifications and alerts

A range of situations will lead to events where TELchart ECS generates alarms, warnings, cautions or notifications. These alerts are displayed in the lower right corner of the screen.

> All alarm and notification settings that are set in *TELchart ECS Setup*, are set from the tab **Specification**.

This area contains:

- a warning field with large text
- system status field with counters for alarms, warnings and notifications.
- In the lower right corner of the system status field, the show button gives access to the complete list of active warnings and alerts.

The list of active warnings, alarms and notifications shows which notices that require confirmation from the navigator. If there aren't any active notices in need of confirmation, but an alarm is still active, this alarm will still be shown.

If several confirmed alarms are active, the warning field will show the text *ALARMS*. When no alarms are active, and no notices require confirmation by the navigator, the warning field will be blank.

When several notices require confirmation, they are presented for confirmation in the following order:

1. Alarms
2. Warnings presented with audible signal (warnings)
3. Warnings presented without audible signal (cautions)

Each warning group is sorted chronologically. Messages do not require confirmation.

Alarms, warnings and notifications are presented in the following manner:

	Warning field	Alarm list	Audible signal
Unconfirmed alarm	Background alternating between red and dark red, with static black text	Background alternating between red and dark red, with static black text	3 short beeps every 8 seconds
Confirmed alarm	Red background with black text	Red text	No
Unconfirmed warning	Background alternating between orange and dark orange, with static black text	Background alternating between orange and dark orange, with static black text	2 short beeps every 4,8 minutes
Confirmed warning	Orange background with black text. Displayed for 30 seconds after warning is confirmed	Orange text	No
Caution	Yellow background black text. Displayed for 30 seconds after caution appears	Yellow text	No

> The colour palette will change when screen is set to dusk and night mode.

For unconfirmed alarms/warnings an audible signal will be presented through the sound source specified in TELchart ECS Setup.

> *Areas with special conditions* are by default classified as **Warnings with audible signals**. This can be changed by the navigator, in the *Safe* meny(see *The Safe menu* on page 172)

Note that it is possibble to activate **Standby Mode**, if this is marked as allowed in TELchart ECSSetup. In this mode, no audible signals will be generated. A protruding and blinking standby mode window will be shown in the chart view when Standby Mode is activated. Standby Mode can be limited in time and speed, see *The Safe menu* on page 172.

4.5.1: Confirm alarms and warnings

Alarms and warnings will remain unconfirmed until they are confirmed by the navigator, and will be visible as long as the alarm and/or warning state is active.
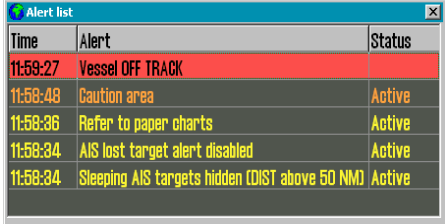
Notifications require no confirmation by the navigator. Events can be confirmed one by one separately by clicking the text in the warning field, or by pressing the space key on the keyboard. If a TECDIS Keypad is connected, events can be confirmed by pressing the ALARM ACK key.

> Several unconfirmed warnings can be *confirmed at once* by **clicking in the chart view** or by **pressing the ESC key 3 times** on the keyboard. The first key press will bring up the complete alarm list, the second key press will confirm all warnings, and the third will close the alarm list again.

Warnings can also be confirmed from an external alarm central, if connected. During the installation the technician can configure TELchart ECS Setup so that the confirmations from the external alarm central closes only for alarm sound or closes when the alarm is actually confirmed.

4.5.2: Alert list

The number of active alarms, warnings and alert messages are specified in the *notification field*. By clicking the **Show** button a window opens with a list of all alerts, including information about triggered time, alert type and status.

When the warnings and the alerts are confirmed, they will still be shown in the list as long as they are active. Some notifications contain detailed information that is visible when you click the notification list.

For added detail information "Anti-grounding" alert and "Possible danger" alert show its own list of dangerous objects. When you click on each of the dangerous objects in the list, its graphic representation is highlighted on the chart.

> Note that alerts listed with grey background are not visible in Standard (STD) presentation mode.

4.5.3: Alarm texts

Alarm text	Description
! DANGER !	Anti grounding. Click to open list.
OFF TRACK	For this route voyage, the vessel has moved outside the route corridor.
New WP	New waypoint, if this alarm is activated.
Last WP	The vessel has reached the last WP in the active route.
Lost Sensor! Position 1	TELchart ECS is no longer receiving data from sensor to Position 1.
Lost Sensor! Position 2	TELchart ECS is no longer receiving data from sensor to Position 2.
Sensor Error! Pos.1 Wrong Datum	Sensor for Position 1 sends a different datum than WGS84
Sensor Error! Pos.2 Wrong Datum	Sensor for Position 2 sends a different datum than WGS84
Pos sensors difference limit exceeded	The course deviation between the sensors Position 1 and Position 2 is greater than the limit set in TECDIS Setup. (Only for Track Control).
MONITOR	TECDIS has lost serial communication with the monitor.
AUTOPILOT	TECDIS has lost communication with the autopilot. (Only for Track Control)
Danger OBJ	Own /designated object with danger mark in the security zone.
Chart license expired Check license status	Alarm for expired licenses is triggered if more than half of the licenses have expired for less than 30 days ago. Check the license status and contact chart provider.
Dynamic licensing update deadline	Only for dynamic licensing. If it's been a long time since last update, perform an online chart update, and restart TECDIS.
Dynamic licensing out of credits	Only for dynamic licensing. If the credit limit is exceeded, contact Jeppesen Marine to update your subscription. Perform an online chart update, and then restart TECDIS.
ALARM	Other alarm conditions, check the alarm list.
ALARMS	Appears when there are two or more active alarms and all alarms and warnings have been confirmed.

4.5.4: Warning text

Warning text	Description
Area with special	The vessel is entering a new area where special conditions

conditions	applies. Clicking on the alert in the alert list, the danger object is highlighted with red in the chart.
Lost Sensor! Heading 1	TELchart ECS is no longer receiving data from sensor for Heading 1, and the system cannot change to a valid alternative sensor
Lost Sensor! Heading 2	TELchart ECS is no longer receiving data from sensor for Heading 2, and the system cannot change to a valid alternative sensor
Lost Sensor! Water Speed	TELchart ECS is no longer receiving data from sensor for water speed
Lost Sensor! Radar Arpa 1	TELchart ECS is no longer receiving data from sensor for Radar Arpa 1
Lost Sensor! Radar Arpa 2	TELchart ECS is no longer receiving data from sensor for Radar Arpa 2
Lost Sensor! Radar Cursor 1	TELchart ECS is no longer receiving data from sensor for Radar Cursor 1
Lost Sensor! Radar Cursor 2	TELchart ECS is no longer receiving data from sensor for Radar Cursor 2
Lost Sensor! AIS	TELchart ECS is no longer receiving data from sensor for AIS
Lost Sensor! Depth	TELchart ECS is no longer receiving data from sensor for Depth
Lost Sensor! Route	TELchart ECS is no longer receiving data from sensor for Route
Possible Danger	Anti grounding. Possible dangerous objects in the safety zone
Point Info	The vessel has reached a WP with a notice before waypoint /Critical WP.
Lost backup link to other TECDIS	Error in transferring active route between primary and secondary TELchart ECS.
Chart license expiring - check license status	One or more chart licenses will expire in less than 14 days. Check the license status and contact chart provider.
Dynamic licensing update deadline	Only for dynamic licensing. If it's been a long time since last update, perform an online chart update, and restart TELchart ECS .
Dynamic licensing credits low	Only for dynamic licensing. The credit limit is about to be exceeded, contact Jeppesen Marine to update your subscription. Perform an online chart update, and then restart TELchart ECS.
Missing netw. connection (TELchart ECS Setup Export IP)	The physical network connection to another TELchart ECS device does not work. Check the connection.
Target buffer use > 95% Reduce AIS range	TELchart ECS receives too many AIS targets, reduce the AIS area
Target buffer full! Reduce Ais range	TELchart ECS receives too many AIS targets, reduce the AIS area
WARNING	Other warning, check the alarm list.

4.5.5: Caution text

Warning text	Description
Lost Sensor! Heading 1	TELchart ECS detects a heading 1 sensor loss and automatically changes to a valid alternative sensor
Lost Sensor! Heading 2	TELchart ECS detects a heading 2 sensor loss and automatically changes to a valid alternative sensor
Lost Sensor! Relative Wind	TELchart ECS is no longer receiving data from sensor for Relative Wind

4.5.6: Text messages

Text message	Description
Refer to paper charts	Unofficial chart is displayed.
Refer to paper charts or S52 presentation	The chart is not shown in S52 presentation.
AIS range is limited	AIS targets outside the specified range are not displayed.
Sleeping Ais class B vessels are hidden	Sleeping AIS class B targets are not displayed.
No alarm raised for lost close targets	Alarm for lost AIS target has been disabled,
All time limited chart objects shown	All time-limited chart objects are displayed.

4.6: Past track lines

In TELchart ECS you can see your past track lines (also known as a towbar), which displays your voyage history. Past track lines selected with the query cursor is displayed in red in the chart view.

The Past track menu is divided in four:

The button to open the past track tool/menu is in the main toolbar. This button gives access to the past track lines of previous voyages.

- Primary pos. source gives you control of the past tracks generated by the primary position sensor
- Secondary pos. source gives you control of the past tracks generated by the secondary position sensor
- Convert past track to route
- The Show and Hide button control the display of the tracks you have selected

4.6.1: Primary position source

The Primary pos. source field enables display of the previous routes (Past Tracks), from primary position sensor. The selected Past Tracks can be displayed with name (if previously entered, using the query cursor/chart inspector) and the performing date.

> If the Timemark feature is selected the Past Tracks are displayed with time indicators. You can set the interval at which these are displayed next to the checkbox.

Which past track to display in the chart view is selected by setting the time interval in the date selectors. Here you can set up two independent intervals. One with the From and To date, and one with the After date(creating an interval from that date until today).

Alternatively you can select a preset in the dropdown at the bottom of the date field, with display of tracks from a period of:

- One hour
- a given number of days
- a given number of weeks
- a given number of months

or you can select All. Time marks are displayed for all visible routes, as long as only routes from the past month is displayed.

The information field Total displays the number of Past Tracks that appear for the selected time interval.

The Past Track Select function is used to select and edit (colour change) a previous track. It can also be used to select a specific track for display even with a non-specified age.

Activating the colour function is indicated by the cursor changes to an arrow with a small sheet icon to the edge. Left click with this arrow positioned over a track, will change its colour (assuming that INT 1 chart presentation is activated). Right click anywhere in the chart to exit this mode.

The Past Track Delete function is activated when the cursor changes to a 'cross' (same functional behaviour as the Delete function in the past track menu). Left click with this 'cross' positioned over a track to deleted it. Note that only the tracks older than 90 days can be deleted. Right click anywhere in the chart to exit this mode.

4.6.2: Secondary position source

The field labelled Secondary position source enables display of the previous routes (Past Tracks), from secondary position sensor. In this frame the operator can choose whether the Past Tracks are visible on the chart and for how long time they will be displayed (1 or 12 hours). If the Timemark feature is selected the Past Tracks are displayed with time indicators. You can set the interval at which these are displayed next to the checkbox.

> The Past Tracks from the secondary sensor position are always displayed in grey.

4.6.3: Convert past track to route

Tecdis has capability to convert a previous track to a sailing route. If Allow is ticked, a user can select a previous track instead of a route with the cursor. A new route will be generated following this track. Route accuracy (WP-density) is governed by allowed max deviation.

4.6.4: Show and Hide buttons

When the Show function is selected, the Past Track lines that match the criteria in the date fields, are displayed on the chart.

The Show button will appear in the active mode, until the Hide button is selected in the Past Track menu.

4.7: Maritime calculations

Pressing the **Maritime calculations** button on the top menu opens the *Maritime calculations* window in the lower left corner of the screen.

This window has two functions as selectable tabs;

- a Calculate Tab which is a maritime calculator
- a LOP Tab (Lines of Position) which is an interface for entering manual positions using bearing and/or distance observations

4.7.1: Calculate

In the tab Calculate you can make maritime calculations based on:

- a From position, and
- data for Distance and bearing, or
- a To position.

If the To position is known, all fields in the Distance and bearing field will be filled with correct data when you press the **Calculate** button in the area where the data is calculated.

4.7.1.1: Setting calculating position to chart center

The position fields also have a feature where the position is set to the center of the current chart view. This can be used by pressing:

- the **Chart Center** button in the **From** field, or
- the **Center** button in the **To** field

The position is then set automatically.

4.7.1.2: Set a great circle route

In the Distance and bearing there is a selector button for great circle route (GC) and loxodrome route (RL). The distance values can be specified either in NM or meters.

4.7.1.3: Calculation of time

In the Time field information about the start time and end time for the intended voyage is displayed. Here you can set one value manually, then the second will update itself automatically from the prerequisites of the voyage.

Time and date values are initially set to the current time and date when you started the calculating tool.

By entering a value for speed, the <u>sailing time</u> is shown in the field below Speed. Time- and date fields can be adjusted, and the time/date value that you have set will be adjusted accordingly to show the correct duration of the voyage.

4.7.1.4: Datum

The Datum field at the bottom of the calculator makes it possible to translate both From and To positions between different datum.

The positions in the From and To fields will always be set to the datum selected in the Datum field directly below. If another datum is selected with the dropdown menu, the numeric values for the corresponding position value changes immediately to reflect the changed datum choice.

Some examples of how "Maritime calculations" may be used:

- Calculation of a new and unknown position based on the distance and bearing from a given position. Move the chart center to the From position by clicking with the middle mouse button with the cursor over the point on the chart that you want to select as From position, or place it in by entering values directly in the fields of Lat and Lon. Select RL or GC in the Distance and bearing field and enter the appropriate values for distance and bearing. Click on the Calculate button in the To field to calculate the To position.
- Calculation of distance and the distance between two points. Move the chart center to the first position by clicking with the middle mouse button with the cursor over the desired place, and do the same with the second point. Altern-atively you can enter values directly in the fields of Lat and Lon. Click on the Cal-culate button in the Distance and bearing field to calculate both loxodrome/great circle distance and routed distance.
- Calculate the time spent on a voyage between two points in a given speed. Move chart center to the first position by clicking with the middle mouse but-ton with the cursor over desired place in the chart and do the same with the second point. Alternatively you can enter values directly into the fields of Lat and Lon. Add Speed value in the field Time and the time it takes for a voyage between two points is shown in the box below.
- Convert a position to WGS 84 datum. Choose the datum which the known pos-ition is stated as in the Datum field, and enter position values as above. Change datum to WGS84 in the lower Datum field and the position is then con-verted to the WGS84 datum.

4.7.2: Lines of Position (LOP)

If it is determined that both the primary and the secondary position sensor fails or produces the wrong position, you can take advantage of positioning based on manual observations and dead reckoning.

In the tab LOP you can determine the ship's position based on observations made with Bearings and/or Distance.

The bulk of this tab is set aside for registration of bearing and distance observations. Up to three of each can be recorded on each recording line.

Each entry contains the following control set and information (from left to right):

- An * button to set a record
- A check box to select whether registration should be displayed on the chart or not
- The value of the recorded bearing/distance
- Time of registration
- Age of the registration
- Text that describes the registration (eg. Observational method)

4.7.2.1: **Register observations**

1. Press the * button on the desired entry line.
2. Place the cursor over the target (the chart object the bearing or distance is measured to) on the chart which is observed, and click the left mouse button.
3. An EBL / VRM function (electronic bearing line and variable distance marker) is now enabled anchored to the target.
4. The observed value can now be entered into the the small field near the anchor point (distances are entered in Nm).
5. If a numeric value is not entered, adjust the EBL / VRM so that the correct observation value is shown on the registration line. For bearing lines, the line should extend throughout the area where the ship can be.
6. Press the left mouse button to exit the placing of the observation in the chart.
7. If the observation was made more than one minute ago, set the time of observation in the registration line.
8. Write a brief description of the observation in the text box on the registration line (optional).

When an observation is made, it will appear on the chart, and labeled with the name and date of observation.

Two versions of each observation will be visible on the chart. The first version remains where the observations were recorded. The second (bold) version is tweaked in real time according to current dead reckoning parameters (course, speed). This ensures that observations made at different times can be used together to provide a position.

4.7.2.2: **Features of the LOP tab**

The buttons in the LOP tab works as follows:

The **Minimize** button minimizes the entire Maritime calculations window, but retains all the keys for function selection and registered values and any DR.

The **Auto 2xLOP** button opens to put out two bearings immediately after another without having to move the cursor back to the * button in the LOP tab between the bearings.

The **Auto DR** button is selectable when the Auto 2xLOP button is selected. DR starts immediately when the two intersecting bearings are set out in chart view.

The **Extended LOPs** option extends the bearing lines to the outside of the visible map image, regardless of scale.

The **Move** button allows you to parallel displace a bearing. When the Move button is active, the cursor placed over the anchor point for any of the original bearing line (the one that is standing still and is made with thin line), the end of the bearing line is marked with a circle, and click the left mouse button .

The **Mark EP** button manually places an estimated position symbol in the chart. After pressing the button, the cursor is placed on the chart on the vessel's estimated position. The EP-symbol can now be placed in the chart by clicking the left mouse button. The EP symbol is marked with the date of entry. A window will pop up at the bottom of the screen so that the operator can enter text that is visible on the chart, and complementing information that is displayed when viewed with the object inspector. The EP symbol is stored in the system and can be deleted later using the symbol editor.

Select EP for DR is used to select one of the previously registered EP symbols as base for dead reckoning. After pressing the button, place the cursor on one of the previously mentioned EP marks on the chart and press the left mouse button. Dead reckoning will now be initiated and the vessel symbol is moved to the selected position.

The **Auto DR** button is only available when two or more observations are made and selected for display. When this button is pressed, the system will use the top two registration lines to automatically calculate and place an estimated position symbol. As for the **Mark EP** button, a window is displayed so that the operator can enter text that is visible on the chart, and complementing information that is displayed when viewed with the object inspector. Dead reckoning is immediately initiated with the calculated position as a starting point.

The **DR off** button can be used to disable dead reckoning mode and lets you return to use the position sensor data to position the vessel. But this presupposes that dead reckoning was initiated from the LOP tab using either the **Select EP for DR** or the **Auto DR** buttons. Note that this button will be unavailable if both position sensors are lost.

The **Reset** button removes all observations from the LOP tab and selected observations from the chart.

> Note that when dead reckoning has been initiated using the LOP-tab, all input from the primary and secondary position sensors are ignored until dead reckoning is deactivated in the same tab!

Details on using the LOP tab to generate estimated positions and position observations are logged. To access these logs, use the **DR fix** button in the Log menu.

Other functions

In this chapter we will look closer at other tools and functions TECDIS offers.

5.1: Query cursor

The query cursor is a general tool in TELchart ECS, with multiple functions depending on which tool you use it together with.

In common for all use areas is that the tool gives information beyond what is normally displayed. It's name is derived from it's main function - to display extra information about elements you select with your cursor.

When the query cursor tool is activated, the cursor changes. It now displays both a cursor and a question mark. Now you can left click any point in the chart view, and a chart inspector window will appear.

5.1.1: The chart inspector window

While the query cursor is active, a click anywhere in the chart view will open the chart inspector window at the bottom of the screen. The cursor position is displayed in the window headline.

The left part of this window will give a list of all chart objects near the cursor position. The first entry in this list gives details of the chart cell the objects are connected to. Each entry is marked with a symbol indicating if the object is a *point, line* or a *geometric area*. Entries that have been changed or added through chart corrections, will be displayed with symbols with *yellow* backgrounds.
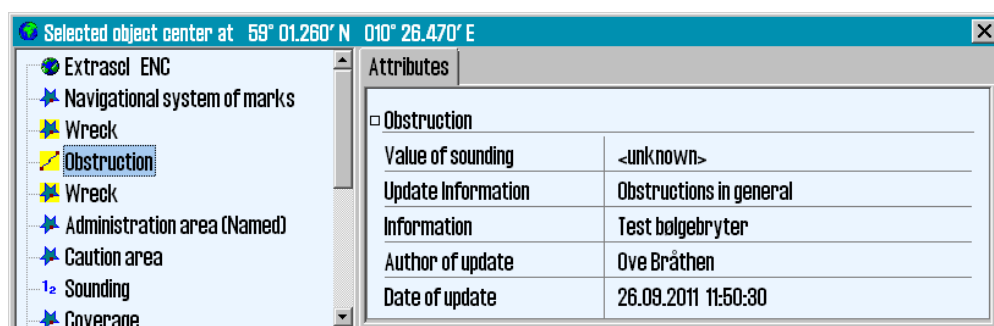
By clicking each single entry in the list you will view more information about that object in the right part of the window, and the object is displayed with a red contour in the chart view.

5.1.2: Inspecting past tracks, routes, own symbols, etc.

The query cursor can also be used to inspect own objects added to the chart view, for example

- past track lines
- routes
- own symbols
- route recording
- etc

When such objects are selected, another window (*Mariner object*) will be displayed at the bottom of the screen.

Unlike the chart inspector, values in this window can be manipulated/changed. For example you can edit the text displayed in the chart view for a symbol you have added.

> The text displayed in the chart view can contain up to 30 letters. Added text can contain up to 4800 letters. Own objects containing additional information is marked with an exclamation mark in the chart view.

If the Mariner object window is displayed, but you wanted *access to the chart inspector window*, you can easily switch by pressing the **Chart data** button at the bottom of the window.

JPEG image files on the system hard drive, can be attached to own objects in the chart. *To attach an image* you press the **Image file** button, and select the image. The text in the Mariner object window will now include the name of the image file. The image is shown by pressing the Image file button.

5.2: Conning and anchor-watch

The **Conning Display** button in the Main Toolbar is used to display a mini conning image in the lower left corner of the screen. Alternatively an anchor-watch display can be selected by right-clicking the icon.

5.2.1: Conning display for mooring

By left-clicking the **Conning Display** button in the main toolbar a *mini conning display* is shown.

The feature gives excellent viewing of

- movement
- course
- wind information

that is essential to manoeuvring when mooring.

If placing the pointer in the conning image, outside the number areas, left-clicking and holding will allow you to move the conning image position to other parts of the display.

The wind direction can be toggled between the 'true' and 'relative' mode, by clicking on the wind vane.

When the true wind direction is shown this is indicated with a "T" next to wind speed frame and so for the relative direction with a "R". The wind speed can be changed from meters per second (m / s), knots (kn) and Beaufort (B), by clicking on the wind speed frame.
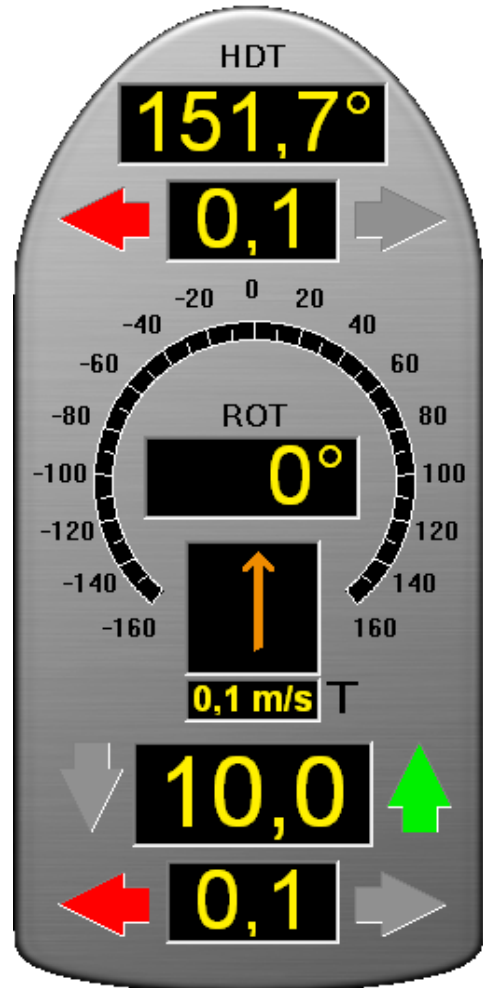
5.2.2: Conning Anchorguard

By <u>right-clicking</u> the **Conning Display** button in the main toolbar an anchor-watch conning display is shown.

The anchor-watch displays

- drifting
- heading in relation to the anchor point
- wind information

The *Anchorguard* feature has the same functionality as Docking display in relation to the wind.

The anchor point is automatically set to the center position of the vessel. This can be manually changed by pressing the **Move** button.

The anchor point is then attached to your cursor, and the location of your cursor the next time you click the left mouse button, is where the anchor point is placed. If you do not wish to move the anchor point, you can simply press the **Move** button once more.

Select the alarm mode with the slider situated in lower left corner. In the following table the alarm display modes are presented. The anchor watch function-ality has to be deactivated manually.
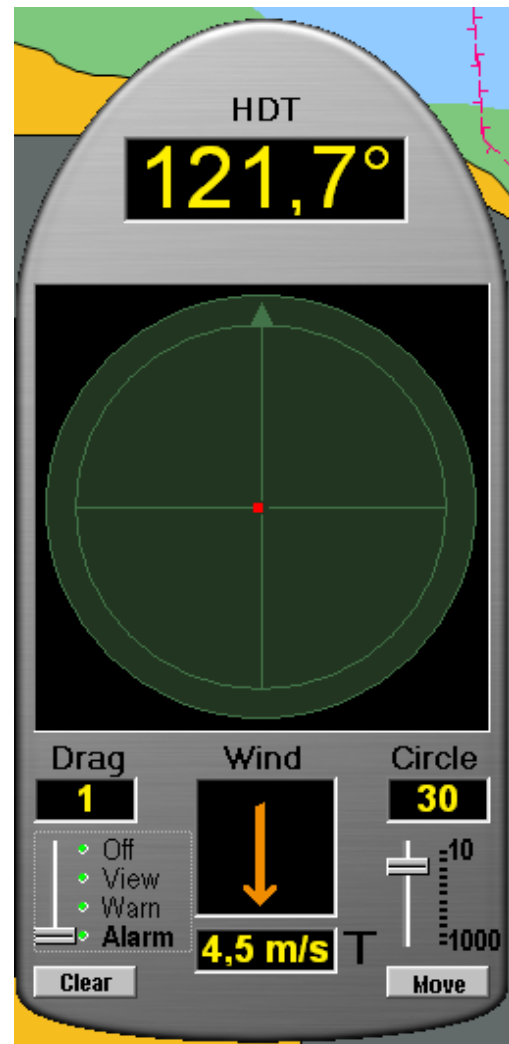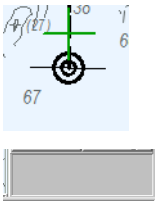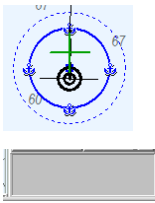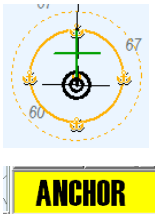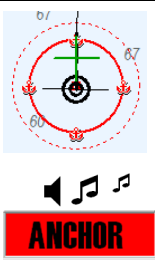
Chart view and the warning field		Description
Off		The **Off** option turns off all *Anchorguard* functionality and removes any Anchorguard circle from the chart.
View		The **View** option selects a blue *Anchorguard* circle in the chart, with a radius having the dimension displayed in the *Circle* frame and so the plotting begins with yellow plot (past positions) in a*Safe radius* circle.
Warn		The **Warn** option has the same functionality as the *View* option but is marking with a *yellow Anchorguard* circle in the chart display and will also trigger an yellow visual warning.
Alarm		The **Alarm** option has the same functionality as the *Warn* option, but a *red Anchorguard* circle will appear in the chart, in addition to a visual (red signal) as well as *auditive alarm notification*.

5.3: Radar and radar targets

You can connect up to two radars to TELchart ECS, and display Radar targets for both. Display of radar echo and radar cursor is also available. TELchart ECSsupports the following radars:

- Furuno EC-100/FCR 2xx7
- Furuno EC-3000/FCR 2xx9*

* Support for EC-3000/FCR 2xx9 requires custom installation by Furuno Norway.

To activate radar functions in the chart view, simply press one of the two **Radar target** buttons on the *main toolbar*:

1. By left clicking the Radar target buttons, the targets will be shown in the chart.
2. By right clicking the buttons you activate radar echo and radar cursor. Activation of this will alter the button to be displayed as shown in the illustration to the left.

The help text displayed when you hover over these buttons is the same as the name set for that radar in TELchart ECS Setup, and allows for easy differentiation.

All tracked radar targets are shown as green rings with course vectors.

Deactivated/sleeping radar targets are shown without the green tracking ring and vector.

> Radar targets that share MMSI number with AIS
> targets, will be displayed as AIS targets by default. See more in chapter *5.4.2: (see page 98)*

The target ID or name, if available, is displayed in the chart view when you hover over it with the cursor.

> Shown ID number is the ID number from the radar plus 1000 or 3000 for targets from Radar 1, or plus or 2000 or 4000 for targets from Radar 2.

By clicking on a radar tracked target, a detailed *Target information window* will be displayed together with *CPA* information.

The tracked target (past positions) can be

- saved (click **Save** button)
- deleted (click **Delete** button).

The target can be enabled/disabled by check-/unchecking the **Enable** box.

The CPA marking is shown in the chart by checking the **CPA** box. Click the **OK** button to close the window.

The behaviour of the radar targets is affected by the settingssee *The TGT (target) menu* on page 175 the Target/TGT menu tab, see *TGT menu*.

5.4: AIS - operation

With AIS in TELchart ECS you get access to displaying AIS targets in the chart view, expanded vessel information, and an AIS list of all vessels equipped with AIS within range.

Display of *AIS targets* is activated by <u>left clicking</u> the **AIS** button in the main toolbar.

The *AIS list* will appear when you <u>right click</u> the **AIS** button.

When AIS targets are displayed, you also have access to other AIS features, such as:

- detailed AIS information from other vessels
- detailed AIS information from own vessel
- AIS broadcast messages to all vessels within range
- AIS direct messaging to selected vessel

To set AIS settings, see *The TGT (target) menu* on page 175

5.4.1: Displaying AIS information from other vessels

AIS targets are presented in the chart view as green triangles. Non-activated targets have smaller triangles, and no vectors, past track or name/MMSI number are shown and they point up in the chart view if information about course and heading is missing.

Activated targets point in their heading direction and have past track displayed, along with heading and course vector. The points indicating past track are placed with a 1 minute interval.

If *The Ship menu*(see page 166)is selected in the *The Ship menu*(see page 166), *then* the true ship contour is shown for the displayed targets[1].
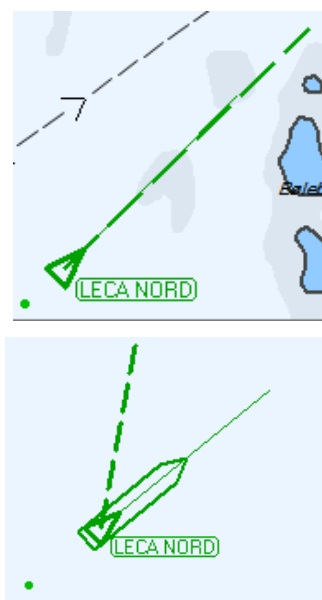
A sleeping/non-activated AIS target can be activated temporarily by placing the pointer over it. This will also display the vessel name/MMSI number in the chart view. When the pointer is removed from the sleeping AIS target, it will again be de-activated and appear as standard for sleeping mode.

AIS targets are displayed with distance CPA and time CPA on mouse hover.

All targets within range can be activated by selecting **No Limit** in the dropdown list for *Active* in the *The TGT (target) menu*(see page 175).

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[1]*True ship contour is only available for AIS targets when the target heading is known.*
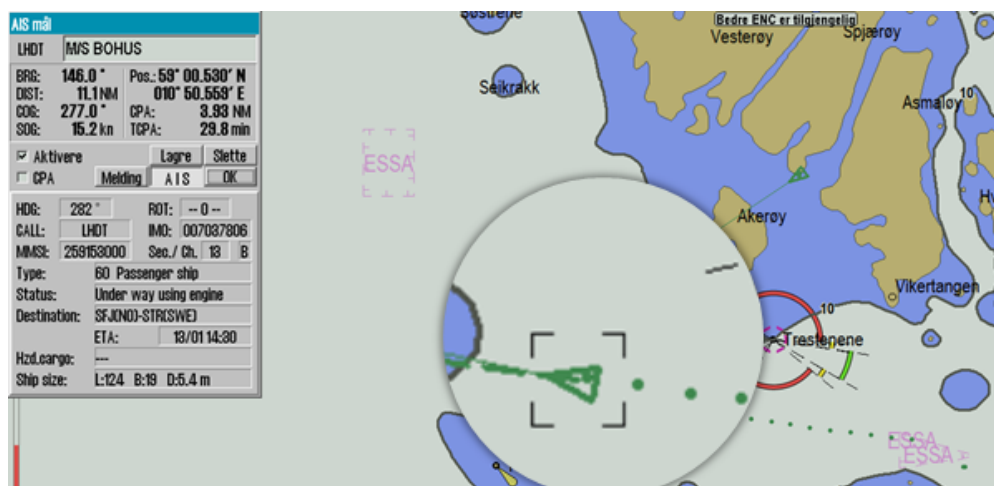
An AIS target is **selected** by left clicking it(it will then be marked in the chart view with a black rectangle), and a window will appear, showing detailed information about the target, in the upper left corner of the chart view.

The chosen target can be activated by checking the **Activate** box. In addition the CPA information for the target can be displayed in the chart view by checking the **CPA box**.

Past track can be saved by pressing the **Store** button, or deleted by pressing the **Delete** button.

The **Message** button gives access to AIS message log for the selected target and allows sending of new messages to the vessel.

The **AIS** button expands the information window so that it now also shows details such as destination, status, vessel type etc.

The *AIS target window* can be removed form the chart view by pressing the **OK** button.

5.4.2: Overlapping, repeating or associated targets

If there are several AIS targets in the same position, as a result of the selected scale and/or vessel density, click the same position several times and the AIS window will cycle between the overlapping AIS targets.

If the target source is a repeater, this will be displayed in the *title of the AIS window*:
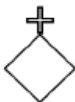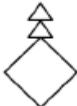
Repeated	Repeated one time
Repeated x times	AIS target repeated multiple times (max 3)
Repeat x	AtoN target repeated mutiple times (max 3)

If the targets share MMSI numbers with radar targets, they are associated and will be displayed as one target. The target window can display information form both target sources, with switching of source with the **Associated** button.

> By default any target with both radar and AIS sources will be displayed as AIS targets. This can be changed in the *TGT Menu*.

5.4.3:   Aids to Navigation

Here is an overview of the different AtoN symbols that can be presented in TECDIS:

Name	Physical	Virtual
Basic shape	◇	◇+
Racon	◉◇	-
Emergency wreck mark	✝◇	✝◇+
North cardinal mark	▲◇	▲◇+
East cardinal mark	◈◇	◈◇+
South cardinal mark	▽◇	▽◇+
West cardinal mark	⋈◇	⋈◇+
Port hand mark	▫◇	▫◇+
Starboard hand mark	△◇	△◇+
Isolated danger	𝟠◇	𝟠◇+

Safe water		
Special mark		
Off position		
Lights failure		
Racon failure		
Intended location of missing AtoN		

The AtoN type can be displayed with an auxiliary symbol above the main AtoN symbol.

5.4.4: Displaying AIS information from own vessel
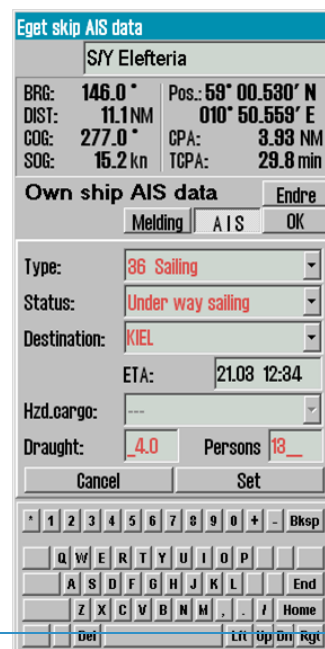
Access to own vessel AIS information is gained by clicking on your own vessel in the chart view. This brings up the window for *Own Ship AIS data*:

Information such as;

- Status
- Type
- Destination
- ETA
- Hzd. cargo
- Draught
- Persons

can be changed by pressing the **Change** button. The ETA information is initially set from AIS data, but can be configured to only broadcast a partial ETA, by setting different ETA value sections to "---".

To change information, simply write in the new information in the fields and press the **Set** button. Values that are changed will appear in red writing.

> Notice that earlier saved *Destination* values are available in the dropdown menu for easy and quick selection.
> Draught values larger than 25,5 meters will be reset to 25,5 meters.

To finish and close the window without making changes, press **Cancel**.

5.4.5:   AIS messages - broadcast and direct to vessel

- You can send an AIS broadcast message (message to all vessels within VHF range) by entering **Own ship AIS data**(see above) and press the **Message** button.
- The AIS can also be used for sending direct messages to other vessels. This functionality is available from the AIS window of the vessel you wish to communicate with, when you press the **Message** button.

A new message is written by pressing the **New** button.

When you have inserted your message text, press **Send** to send the message.

To confirm that you have received a message, press the **ACK** button.

> You can review your earlier messages in the dropdown list in the upper part of the message tool. **Note:** messages older than three months, will be automatically deleted.

5.4.6:   AIS target list

To quickly find an AIS target you can use the *AIS target list* function. This tool gives you a table of all AIS targets within range.

The *AIS target list* is opened by right clicking the AIS button.

The table can be sorted by the following criteria:

- **Name** (A-Z)
- **Distance** (closest vessels first)
- **CPS distance** (closest vessels first)
- **CPS time** (closest first, grouped so that all vessels coming towards own vessel is shown first).

To change which criteria the table is sorted by, click the heading of the wanted column. The selected criteria will be displayed with blue text in the table.

When you have found the vessel you are seeking, you can show the information in two different ways:

1. **Right click** on vessel name in AIS target list to open the AIS information window for the vessel.
2. **Left click** the vessel name in AIS target list to open the AIS information window for the vessel, *and display the AIS target centred in the chart view.*

5.4.6.1: Static mode

When you scroll down the list, it will automatically enter static mode. In that mode only AIS target information is refreshed, not the list itself. The targets keep their

position in the list, and no new targets are added to the list.

With this functionality you can monitor vessels directly from the AIS target list for shorter periods. After 3 minutes of inactivity the list returns to dynamic(normal) mode, and the list is updated as before.

This also happends when you scroll back to the top of the list and when you press one of the column headers.

5.5: Tidal information

TELchart ECS can use and display tidal information from Jeppesen's Tidal service. This service gives access to information about the tidal movements for a large part of the world.

> Note: Tides require Professional+ or Jeppesen PRIMAR chart to function. Contact Jeppesen for information about the coverage in the Tides service for your voyages.

The tidal information is displayed in a separate window inside TECDIS. This window is opened by pressing the Tide button to the right of the depth sensor display in the TECDIS information panel.

The tides are displayed for the tidal station closest to the vessel, or closes to the chart view center if the vessel is outside the chart view. The tidal information is available independently of the depth sensor.
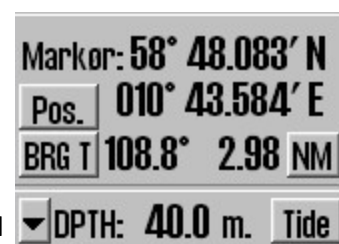
5.5.1: Tides

The tidal window gives a graphical display of the tides for the next 24 hours. The name of the tidal window is the same as the name of the tidal station shown. Time and level of the highest and lowest tide of the viewed period, along with the current tidal levels are presented in the lower part of the window.
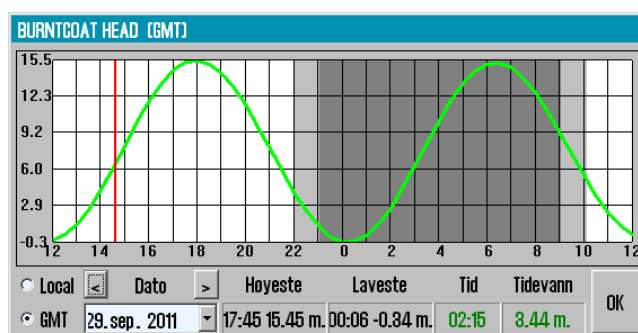
The time can either be shown in GMT or in local standard time for the forecast point. Tides for other dates may also be selected for display. By placing the cursor on the curve in graphic presentation, the corresponding time and tide levels are displayed with green numeric values in the lower right part of the notification window.

As long as a tide notification window is opened in the chart, the other near forecast points are marked in the chart with a yellow symbol. Left click on the symbol to expose the tide data from that particular forecast point.

5.5.2:   Tidal current
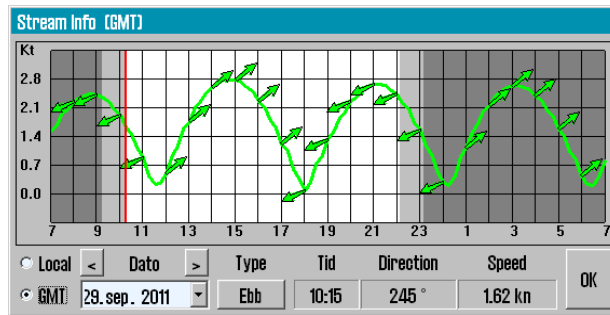
In addition, as long as the tidal window is shown in the chart view, yellow tidal current indicator arrows will be displayed. These arrows reflect the present direction and speed of the tidal current.

By placing the cursor over one of these arrows a tidal power indicator window opens, that works in the same way as the tidal notification window.

5.5.3:   Tidal forecast points for ebb and flow

In TELchart ECS it is also possible to control when the tide changes direction, through forecast points for ebb and flow. To view this display mode, press the Flood/Ebb **button (**if available).
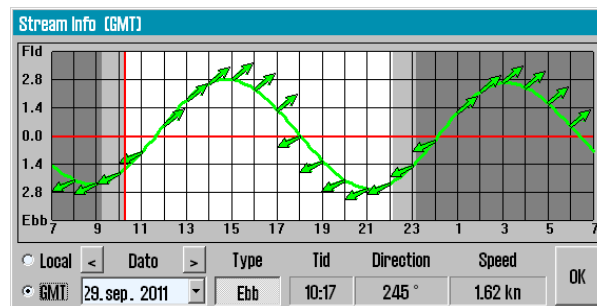
With this functionality activated, the crosshairs for the next flow or ebb is displayed. The tidal graph displayed will also change shape, and now displays the difference between the median sea level and the current sea level. When the crosshairs align with this new tidal curve, the tidal direction changes.

5.6: Dead Reckoning Mode

The loss of both primary and secondary position activates automatically *Dead Reckoning Mode*.

Dead Reckon Mode can also be activated manually by inserting **LOP's (Lines of Position)**

Data from log and gyro are used when available, or values must be entered manually.
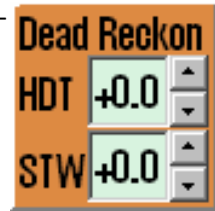
> A vessel position is inserted or updated to the position shown in the center of the chart display by pressing the **S** key on keyboard.

5.7: NAVTEX

If a NAVTEX receiver is connected to TECDIS, the **Navtex** button will be available on the main toolbar.

Navtex messages in the chart are displalyed with the MSI symbol (Maritime Safety Information).

First you have to select the Navtex stations. This is done from the overview charts, *so start by zooming out*.

Press the **Navtex** button and the Navtex stations are displayed over the charts in gray. **Left click a station to select it**. *Selected stations are displayed in blue.* TELchart ECS will only shown information for the selected Navtex stations.

In the Navtex window you can select which data to display.

You can display the *Navtex stations* in the chart without keeping the *Navtex window* open by:

- right-clicking the **Navtex** button
- closing the *Navtex window* with the **x** button in the top of the window.

5.7.1: Message types

In the field at the top left you select the message types for display.

Nav.	Navigation warnings
Met.	Meteorological warnings and alerts
Ice	Ice rapports
SAR	Search and rescue, piracy, and armed robbery information
Other	Other messages (system messages, other navigational aids)

5.7.2: Radio channels

In the mid left field you select which radio stations to retrieve data from. all frequencies relate to the standard frequencies as NAVTEX and are given in KHz.

The international frequency is 518KHz where messages in English is transmitted, while the 490KHz is used for local language transmissions and 4209,5 KHz is intended for tropical waters, but not much used.

5.7.3: Older messages

In the bottom left field you can set display of:

NEW	Only unread messages are displayed
66 hr.	Only messages from the last 66 hours are displayed
All	All messages are displayed

5.7.4: Show messages

Messages are displayed when you press the entry for that message in the NAVTEX window. Messages are closed again by pressing their entry once again.
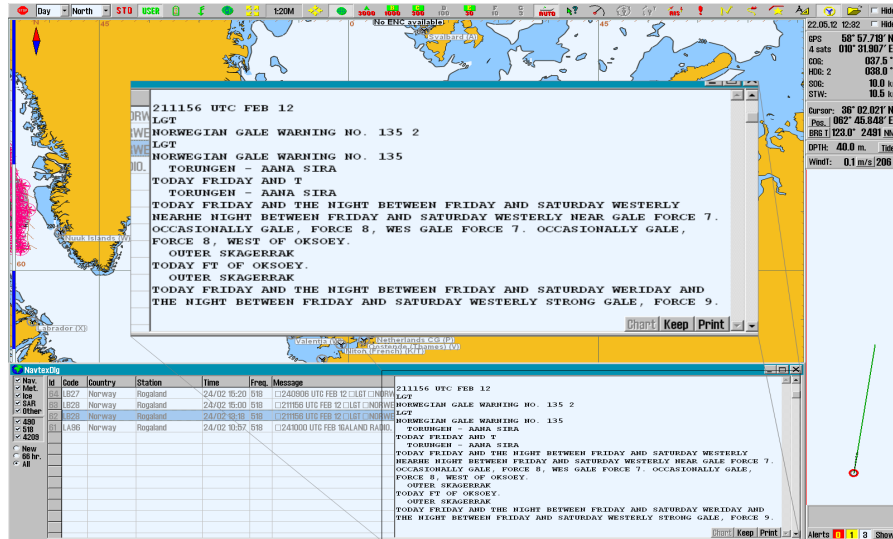
By pressing the **Chart** button in the *Navtex window* you can move the chart display to the position given in the message. If the message contains more than one position, a navtex symbol will appear in the chart for all valid positions.
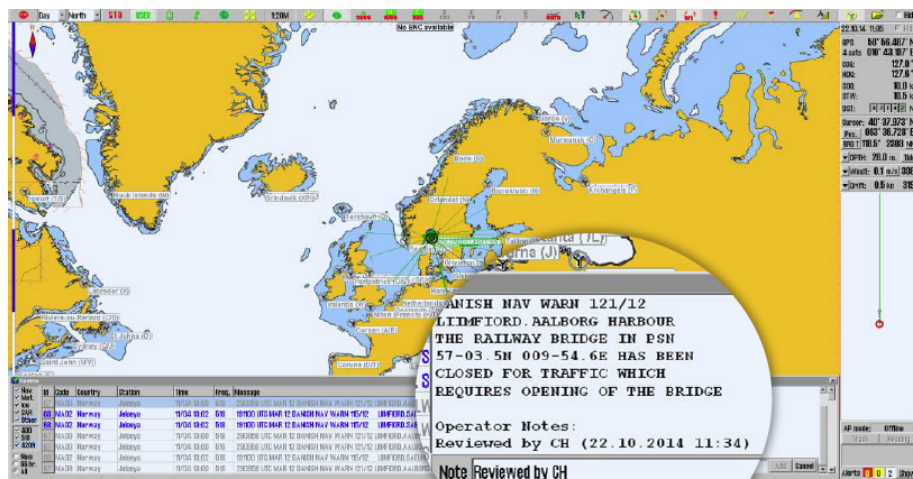
You can add *notes* to your navtex messages, by pressing the **Note** button below the displayed message.

Chart installation and maintenance

In this chapter you will find the procedures for installing and maintaining your charts.TELchart ECS
In this chapter you will also receive important information about chart licenses and chart corrections.

6.1: Installing chart databases

Chart databases can be installed in several ways in TELchart ECS.

The standard method of chart installation is with S63 Chart Loader. The S63 Chart Loader is available inside TECDIS and as a separate program in Windows.

All charts that are compatible with TELchart ECS can be installed in S63 Chart Loader. Some charts are compatible with an easier quick installation feature in S63 Chart Loader:

- Charts from Jeppesen (ENC, Primar & Professional+)
- Charts from Navtor (with the Navstick service)
- Charts from Nautisk Forlag (with the Neptune service)

The quick installation feature is automatically selected by the system if available.

> Also, charts from Jeppesen (ENC, Primar Professional+) have an alternative quick installation feature available in TELchart ECS Setup. See chapter 6.1.1.

In the following subchapters you will get an overview of the different chart installation methods.

6.1.1: Alternative installation with Jeppesen SENC charts

If you use charts from Jeppesen C-Map, TELchart ECS offers an alternative chart install-ation procedure in the TELchart ECS Setup program.

This procedure is the same for:

- Jeppesen ENC
- JeppesenPRIMAR
- Jeppesen Professional+

The procedure is as follows:

1. Insert a TELchart ECS *Service Ke*y in an available usb port in the TECDIS unit.
2. Wait until the text label Servicemode appears in the lower right corner of the chart view.
3. Exit TELchart ECS
4. Insert CD or usb dongle with the chart database that you want to install, in the TELchart ECS unit.
5. Start TELchart ECS *Setup*.
6. Go to the Cha*rt installation/Misc tab*.
7.

   Press the Copy chart Database to Harddisk button. A new window appears in SeTELchart ECStup.

8. Select source(CD, usb dongle) where the chart database you want to installed is placed. If you use a usb dongle, the chart database has to be placed on the root folder of that dongle.

9.

```
Alternatives:                              Start
⊙ Update
   Update existing Database with new CD.
○ Remove
   Delete this Database from the harddrive.
○ Set as Default
   Set this Database as default.
```

Select one of the alternatives install, update, remove or Set as Standard.

- Select *install* if available.
- Selec
  t updat

e if available.

10. Press **the S**tart button to start installation.
11. When the system is finished with the automated part of the chart installation, a window will appear. Press OK in that window.

6.1.2:   Quick installation with Navtor Navstick

If you use charts from Navtor, with the Navstick
service, TELchart ECS offers a quick chart installation
from the S63 Chart Loader.

Before you begin - acquire Cell Permits

Installation of charts with S63 Chart Loader requires Cell Permits for licensing.

Cell Permits are received from your chart provider. For your chart provider to
give you correct cell Permits you have to prepare and send your unique User
Permit to your provider.

The procedure for preparing and sending User Permits can be found in the
cha*6.1.4: Create the User Permit file*(see page 116)crate user *permit*.

The procedure for installation is as follows;

Inside TELchart ECS:

1. Open the **settings menu** in TELchart ECS
2. Select the **Setup** tab
3. In the *Chart Utilities* dropdown list, select **Load Charts**

In the separate S63 Chart Loader program:

1. Insert a TELchart ECS *Service Key* in an available usb port in the TECDIS
    unit.
2. Wait until the Service mode label appears in the bottom right corner of
    the chart view, and then you exit the TELchart ECS program.
3. Start the S63 Chart Loader program.

---

1. Insert Navtor Navstick in the TELchart ECS unit.
2. Navigate the file structure until you find and select Navstick.
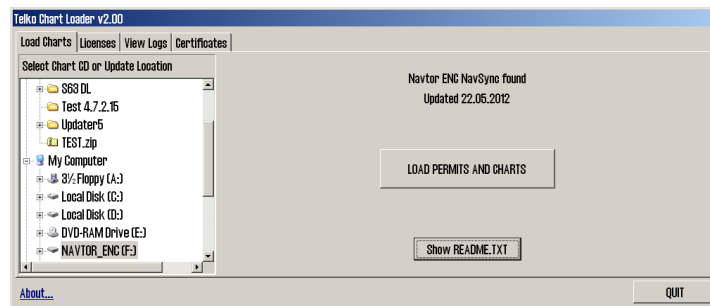
3.

The system automatically recognizes Navtor Navstick. Press the LOAD PERMITS AND CHARTS button to start loading cell permits and charts into TELchart ECS.
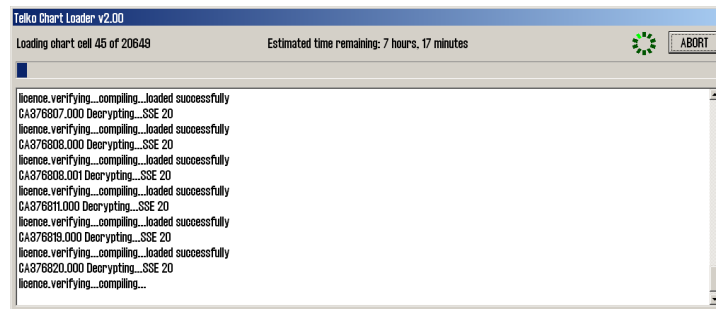
4.

The cell permits and charts are now loaded, and a progress window appears. You can abort the loading at any time by pressing the ABORT button **in th**e top right corner. In the progress window information about the chart cells that are loaded is displayed.
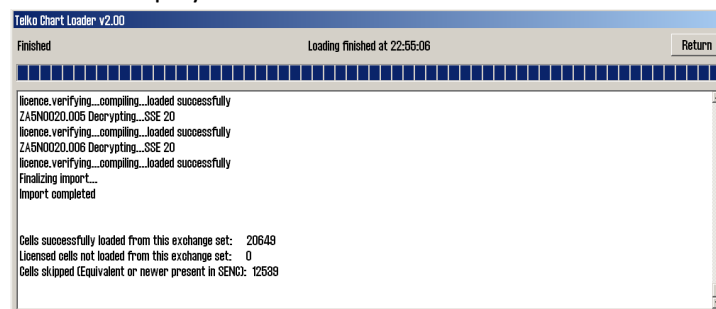
5.

When the chart loading is complete, Import Complete is displayed in the progress window. The window will also display loading details. The chart loading process is finished by pressing the Return button.

6. Press the Show RE**ADME.txt button** to read the release notes for the chart.
7. The loaded charts are now available in TELchart ECS in a separate chart database.

Note: The chart loading log has to be inspected when chart loading is finished. The log contains details of all error messages and warnings. Read more in the next chapter.

6.1.3: Quick installation with Neptune from Nautisk Forlag

If you use charts from Nautisk Forlag, with the Neptune service, TELchart ECS offers a rapid chart installation from the S63 Chart Loader program.

Before you begin - acquire Cell Permits

Installation of chart with S63 Chart Loader requires Cell Permits for licensing.

Cell Permits are received from your chart provider. For your chart provider to give you correct cell Permits you have to prepare and send your unique User Permit to your provider.

The procedure for preparing and sending User Permits can be found in the chapter*6.1.4: Create the User Permit file*(see page 116)***create user permit.***

The procedure for installation is as follows;

Inside TELchart ECS:

1. Open the **settings menu** in TELchart ECS
2. Select the **Setup** tab
3. In the *Chart Utilities* dropdown list, select **Load Charts**

In the separate S63 Chart Loader program:
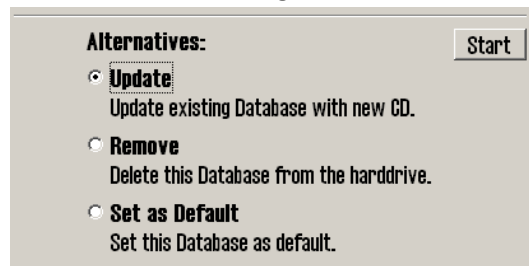
1. Insert a TELchart ECS *Service Key* in an available usb port in the TECDIS unit.
2. Wait until the Service mode label appears in the bottom right corner of the chart view, and then you exit the TELchart ECS program.
3. Start the S63 Chart Loader program.

---

1. Navigate the file structure until you locate and select the USB dongle.
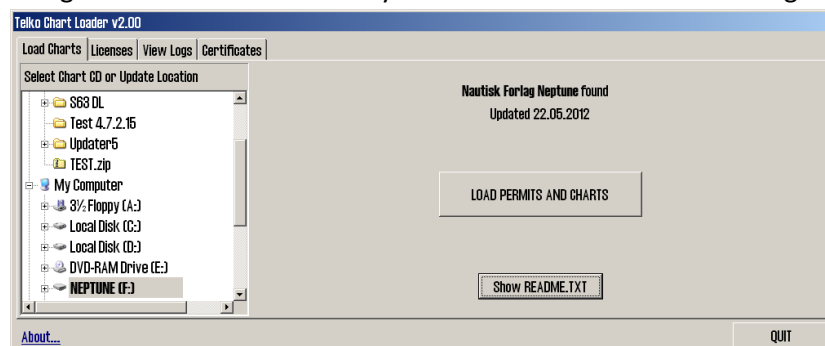
2. The system automatically recognizes the files from Nautisk Forlag. Press the LOAD PERMITS AND CHARTS button to start loading cell permits and charts into TELchart ECS.
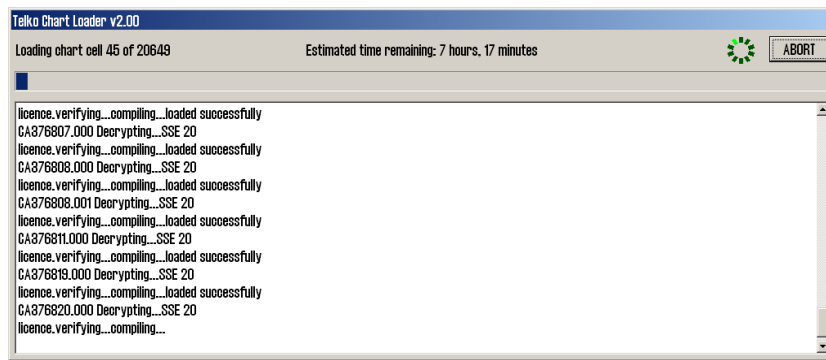
3.

The charts are now loaded, and a progress window appears. You can abort the loading at any time by pressing the ABORT button **in th**e top right corner. In the progress window information about the chart cells that are loaded is displayed.

4.
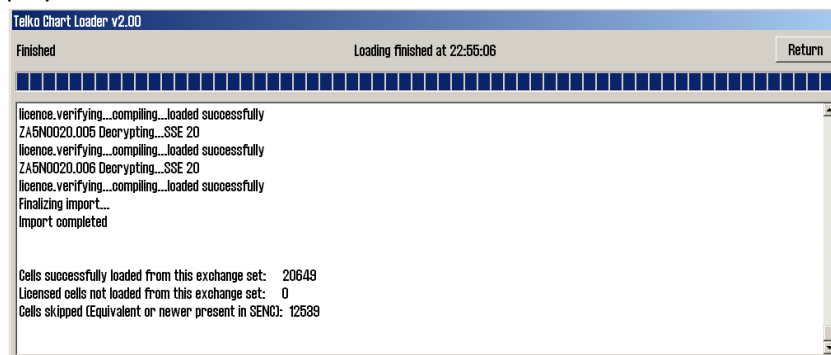
When the clart loading is complete, Import Complete is displayed in the progress window. The window will also display loading details. The chart loading process is finished by pressing the Return button.

5. Press the **Show README.txt button** to read the release notes for the chart.
6. The loaded charts are now available in TELchart ECS in a separate chart database.

Note: The chart loading log has to be inspected when chart loading is finished. The log contains details of all error messages and warnings. Read more in the next chapter.

6.1.4: Create the User Permit file

If you are using Navtor Navstick or the Neptune service by Nautisk Forlag, you can use this procedure when creating User Permits for the rapid installation. The same applies to chart loading in the S63 Chart Loader in general.

Cell Permits are the chart licenses used for chart cells added to TELchart ECS in an S63 chart database.

Before a chart provider can issue **Cell Permit** files for your S63 chart databases, a **User Permit** file has to be created.

The TELchart ECSUser Permit file is unique for each unit, and is generated by the *S63 Chart Loader*. In this process encrypted data from your license key is used.

The chart provider has to receive your unique User Permit file to create Cell Permits for your charts.

To create a User Permit, do the following:

Inside TELchart ECS:

1. Open the **settings menu** in TELchart ECS
2. Select the **Setup** tab
3. In the *Chart Utilities* dropdown list, select **Load Charts**


In the separate S63 Chart Loader program:

1. Insert a TELchart ECS *Service Key* in an available usb port in the TECDIS unit.
2. Wait until the Service mode label appears in the bottom right corner of the chart view, and then you exit the TELchart ECS program.
3. Insert Navtor Navstick in the TELchart ECS unit.
4. Start the S63 Chart Loader program.

---

1. Go to the *Licenses tab*.
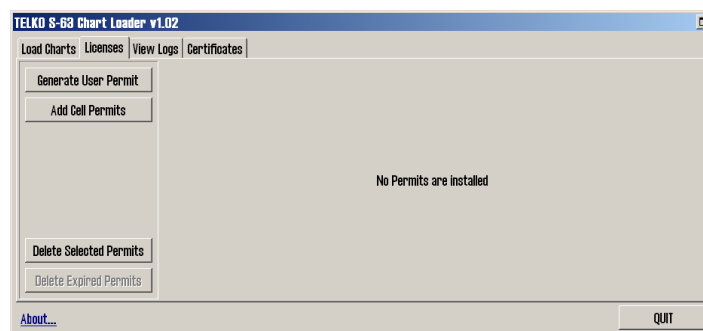
2.

Press the Generate User Permit button.

A
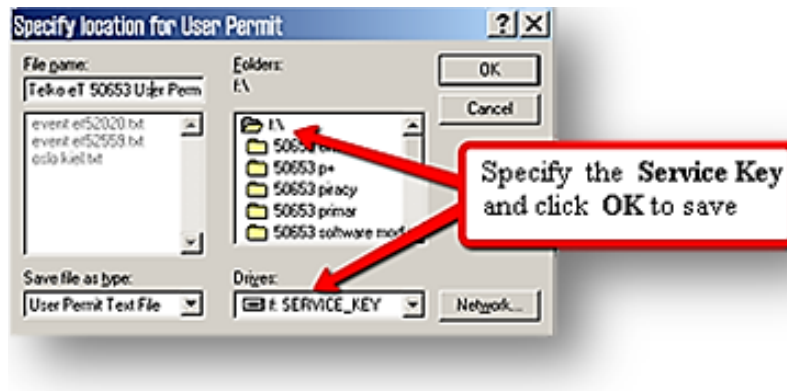
3.

new window appears. Here you need to select where you want to store the User Permit file. Select the location for the **Service Key**.TELchart ECS

4. Press **OK** to save the file on the TECDIS Service Key.
5. Close the S63 Chart Loader, remove the TELchart ECS Service Key from the unit, and repeat the process on the other TELchart ECS units.
6. Send all **User Permit files** to your chart provider together with a confirmation of which chart areas you want Cell Permits for.

> Contact your chart provider if you need advice about which chart areas you should purchase.

6.1.4.1: View your User Permit

In *the S63 Chart Lo*ader, in the L*icenses tab, you can press the **About** button in the bottom left corner to open a new window with the User Permit displayed in clear text.*
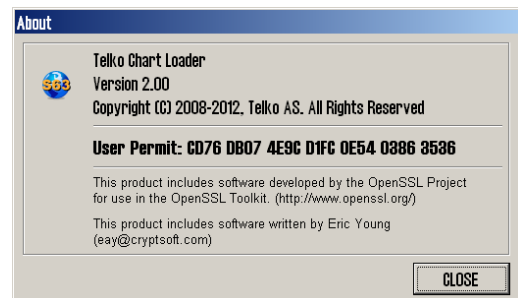
6. Standard chart installation with S63 Chart Loader

ENC charts are installed in the S63 Chart Loader program. The program is bundled with all TELchart ECS installations.

A shortcut to the program is found on the Windows desktop.

> If you use charts from one of the following providers, a rapid installation procedure is available:
>
> - Jeppesen - chapter *6.1.1: (see page 110)*
> - Navtor (Navstick) - chapter *6.1.2: (see page 112)*
> - Nautisk Forlag (Neptune) - chapter *6.1.3: (see page 114)*

Encrypted charts are delivered by chart providers on one or more CD/DVD-ROM, alternatively on USB sticks. The chart loading process uses Cell Permits to decrypt chart cells, confirm their contents against the S57 standard, and compile them to SENC format (CM93/3) which is used by TECDIS to display the charts.

> **Before you begin - acquire Cell Permit**s
>
> Installation of chart with S63 Chart Loader requires Cell Permits for licensing.
>
> Cell Permits are received from your chart provider. For your chart provider to give you correct cell Permits you have to prepare and send your unique User Permit to your provider.
>
> The procedure for preparing and sending User Permits can be found in the cha*6.1.4: Create the User Permit file*(see page 116)crate user *permit*.

6.1.5.1: Adding Cell Permits

The procedure is as follows:

> Inside TELchart ECS:
>
> 1. Open the **settings menu** in TELchart ECS
> 2. Select the **Setup** tab
> 3. In the *Chart Utilities* dropdown list, select **Load Charts**

> In the separate S63 Chart Loader program:
>
> 1. Insert a TELchart ECS *Service Key* in an available usb port in the TECDIS unit.
> 2. Wait until the Service mode label appears in the bottom right corner of the chart view, and then you exit the TELchart ECS program.
> 3. Start the S63 Chart Loader program.

1. Insert CD/DVD/usb dongle with the desired chart database into the TELchart ECS unit.

2. Go to the *Licenses tab*.
3. Press the **Add Cell Permits** button.
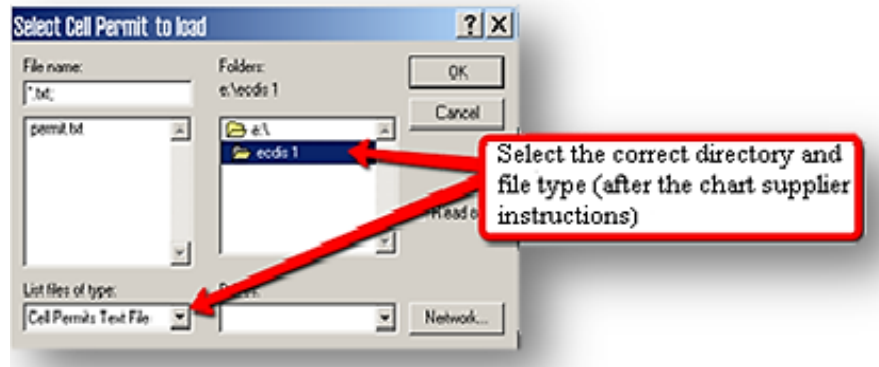
4. A new window appears. Here you navigate to the location your chart provider has announced your cell permit is placed. If the Cell Permit is not in the txt file type, remember to select the correct file type in the dropdown list to display it. Press OK when the desired Cell Permit is selected.
5. Press the Add Cel**l Permits button** again.
6. If the Cell Permit file contains the identity of the chart provider, loading of the Cell Permits will start automatically, and you can go directly to step 12 in this procedure.
7. If the Cell Permit file does not contain the identity of the chart provider, a dialogue will appear. In it you can select you chart provider from a list, and press the Select and Continue button.
8. If the chart provider is not listed, you can use the Use the following data server code field. Check the box besides it and enter the dataserver code in the field (two digits) and confirm by pressing Select and Continue.
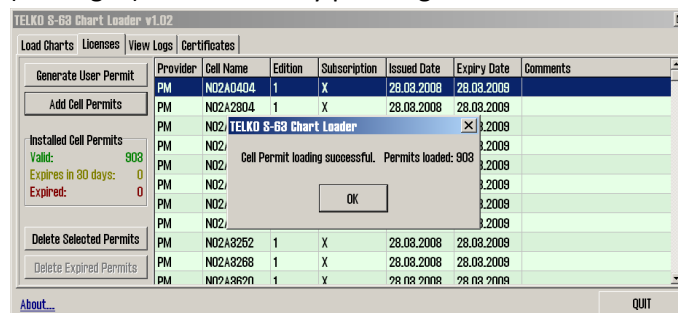
9. When all loading has finished a message stating that the Cell Permit Loading was successful is displayed. Here the number of loaded Cell Permits is displayed. Press OK to close this message and confirm loading of Cell Permits.
10. The left field of the License tab will now display details of the loaded Cell Permits, colour coded by expiry status:

An overview of all Cell Permits installed on the unit is found in the file Permits.txt in C:\Program Files\TECDIS\S63SYS.

6.1.5.2: Deleting Cell Permits

If you want to delete a cell permit, that is done from the Licenses tab.

Select the cell permit you want to delete, and then press the Delete Selected Permits button.

6.1.5.3: **Adding S63 charts**

S63 charts are encrypted and is delivered oin a CD/DVD or can be downloaded to a usb dongle.

The chart provider delivers two types of chart media: BASE and UPDATE.

If you have received both and you are loading charts for the first time, you have to add BASE first, then UPDATE, unless another procedure is stated by the chart providor.

> Note that the first chart loading process with a new chart provider can be time consuming, and it may even take hours.
>
> Loading of UPDATE media takes less time. For example; loading all Norwegian ENC cells will take about 30 minutes to 1 hour in TELchart ECS (depending on hardware).
>
> Adding an UPDATE CD for the same selection usually takes about 20 to 40 minutes in TELchart ECS.

Below is the procedure for loading BASE charts.

The procedure is the same for both BASE and UPDATE, and is as follows:

1. Start the S63 Chart Loader.
2. Insert CD/DVD/usb dongle labeled BASE.
3.
   From the tab Load Charts, navigate to the file catalogue My Computer.
4. Double click it.
5. A connected drive (CD/DVD/usb) appears. Double click it.
6.
   Now the chart media is being read, and the authenticity information appear in
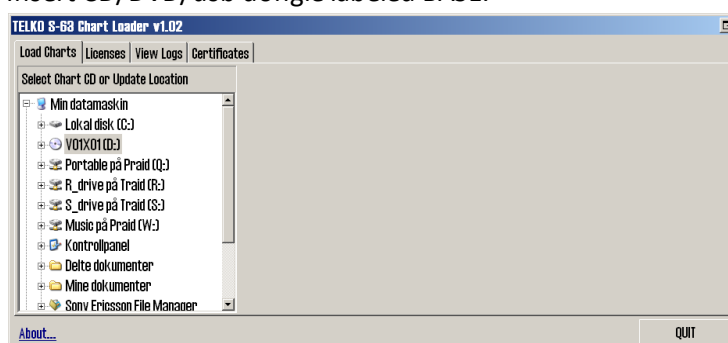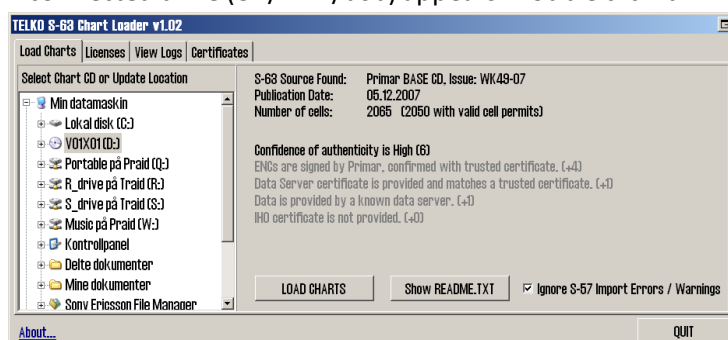
S63 Chart Loader. Confidence of authenticity decides the next steps:

A. Confidence of authenticity is high(6-10) means that the source is secure and no further assessment is necessary. Go to step 7.

B. Confidence of authenticity is medium(4-5) means that the system does not recognize the source as very secure, and the information stated in grey below has to be considered by the navigator. If the source is considered safe by the navigator, you can continue to step 7. If this cannot be considered safe, please contact your chart provider for further support.

C. Confidence of authenticity is low (1-3) means that the system recognizes the source as quite unsecure, and the information stated in grey below has to be considered by the navigator. If the source is considered safe by the navigator, you can continue to step 7. If this cannot be considered safe, please contact your chart provider for further support.

D. If confidence of authenticity is 0, you will not be able to load the charts. Please contact you chart provider for support.

7. Press the Show README.txt button to read the release notes for the chart.
8. Start the chart loading by pressing the LOAD CHARTS button.

If the **Ignore S-57 Import Errors/Warnings** selection is marked, chart loading will continue automatically independent of the S57 verification and error handling. If any critical errors occur with a chart in the chart loading, the chart will be discarded. The chart loader window will tell you that any error messages are logged.

---

9. If confidence of authenticity is below 6, a dialogue will now appear. In it you have to confirm that you have performed a manual safety assessment of the chart source, and that you want to continue. Press the Yes button to continue installation.
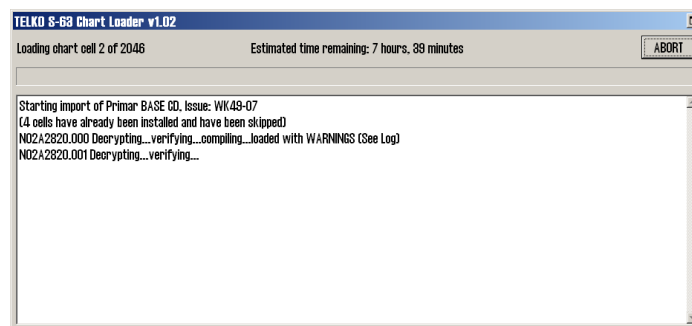
10.

The charts are now loaded, and a progress window appears. You can abort the loading at any time by pressing the ABORT button in the top right corner. In the progress window information about the chart cells that are loaded is displayed.

11. If an error occurred during download this is displayed in a separate log window. From this window you can select if you want to:

A. load the chart cell despite the warning.
B. skip the chart cell and continue chart loading.
C. Stop the chart loading.

> If you are unsure if S57 error messages or warnings affect the chart validity and/or navigation, you should consult with your chart provider.

12. When all chart cells are loaded, the program has to update the chart coverage area, and internal data. In the progress window this is shown as Finalizing import. This can be time consuming, and might take up to an hour. It cannot be aborted.
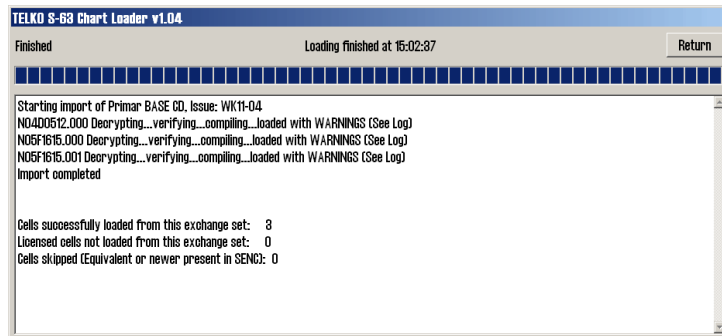
13. When the clart loading is complete, Import Complete is displayed in the progress window. The window will also display loading details. The chart loading process is finished by pressing the Return button.
14. The loaded charts are now available in TELchart ECS in a separate chart database. TELchart ECS creates a unique chart database for each chart provider loaded with S63 Chart Loader. The database is named S63-XX, where *XX represents the chart providers Data Server Code.

Note: The chart loading log has to be inspected when chart loading is finished. The log contains details of all error messages and warnings. Read more in the next chapter.

6.1.5.4: Review of the chart loading log
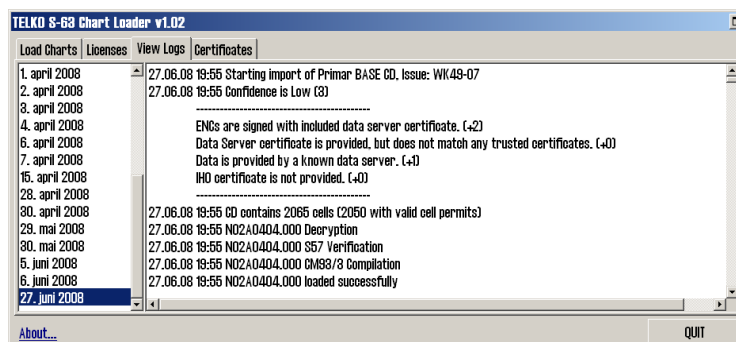
1. Start the S63 Chart Loader.
2. Open the View Logs tab.
3. To the left in the window, a date list is displayed. Select the date in the list that corresponds to the update you want to review.
4. The S63 chart loading log will now be displayed. The window can be enlarged if needed.

6.1.5.5: **Considering authenticity information**

In the authenticity information field, a calculated trust factor is displayed in the headline. A trust factor of 0-3 is considered low, while a factor of 4-5 is considered medium. A trust factor of 6-10 is considered high and does not require any manual consideration/assessment.

If the trust factor(Confidence of authenticity) equals 0. it is not possible to load the supplied charts. The trust factor is to be used by the navigator to decide if the chart media is authentic and can be trusted to originate from the chart provider.

A detailed overview of how the trust factor is calculated and the criteria for the different assessment points is given in the table on the next page:

Value	Text in the Load Charts tab	Explanation
Line 1	Does the chart CD contain a signature for each chart and have these signatures been verified by the chart loader?	
+0	No certificates verify ENC signatures, data authenticity cannot be confirmed!	If the ENCs are not properly signed, the chart CS is not valid according to the S63 standard specification.
+2	ENCs are signed with included data server certificate.	If ENCs are signed and this is confirmed with a certificate included on the media. This only confirms that the signature is technically in order. Since the certificate is included with the data, the origin of the data are not independently confirmed.
+4	ENCs are signed by XXX, confirmed with trusted certificate.	If the ENCs are signed by the provider, and this is confirmed with a preinstalled certificate, the authenticity of the data is independently confirmed, and the data can be trusted.
+7	ENCs are signed by IHO, confirmed with trusted certificate.	If the ENCs are signed by IHO and this is confirmed with a preinstalled certificate, the authenticity of the data is independently confirmed, and the data can be trusted.
Line 2	Does the chart CD contain a Data Server Certificate issued by the chart provider?	
+0	Data Server certificate is not provided.	The Data Server certificate is not included on the chart media, and authenticity has to be assessed manually
+0	Data Server certificate is provided, but does not match any trusted certificates.	A Data Server certificate is included on the chart media, but it is not identical to a preinstalled and approved certificates. Ask your chart provider for a valid certificate, and install this as described in chapter 6.9.7.
+	Data Server certificate is provided and matches a trusted certificate.	This is an additional confirmation of the chart media authenticity.

Line 3	Is the chart provider (Data server code) preregistered in TECDIS?	
+0	Data is not provided by a known data server.	The chart provider (Data Server) is not registered in TECDIS. The chart provider has to be assessed manually.
+1	Data is provided by a known data server.	The chart provider (Data Server) is registered in TECDIS.
Line 4	Is a valid IHO certificate included on the chart media?	
+0	IHO certificate is not provided.	Authenticity has to be assessed manually.
+0	IHO certificate is provided, but does not match trusted IHO certificate.	IHO certificate is provided, but does not match trusted IHO certificate. Authenticity has to be assessed manually.
+1	IHO certificate is provided and matches trusted IHO certificate.	IHO certificate is provided and matches trusted IHO certificate. This is a very positive sign.
Line 5	Additional authentication information that is only displayed if necessary.	
-1	ENC signature files are not present.	ENC signature files are not present, and the validity of the chart data cannot be confirmed. Authenticity has to be assessed manually.
-1	ENC signature file checksums are invalid.	ENC signature file checksums are invalid. The signature files might have been manipulated and unreliable. Authenticity has to be assessed manually.

6.2: Updating chart databases

Keeping the chart databases updated is the navigators responsibility, to ensure safe sailing.

Contact your chart provider for more information about how often you should update your charts, and what chart update services they can provide for you.

TELchart ECS offers the following update methods:

1. All chart databases can be updated in the S63 Chart Loader.
2. Jeppesen SENC (ENC, Primar and Professional+) can also be updated in the C-Map chart update.

Both these methods are available inside TELchart ECS. The S63 Chart Loader is also available as a separate program in Windows.

6.2.1: Updating charts - Jeppesen SENC

With charts from Jeppesen (SENC) you have access to chart updates directly from the TELchart ECS program from two tools; the C-Map chart update tool and the S63 Chart Loader. The S63 Chart Loader update process is explained in chapter 6.2.2 (next chapter)

This chart update can be done without setting the TELchart ECS unit in Service Mode.

Procedure for updating charts from Jeppesen is as follows:

1. In the TELchart ECS program, open the Setup menu, and select **C-Map chart update** in the *Chart Utilities* dropdown list.
2. A new window appears. Here you can select between three actions:
   A. **Auto Updating** lets you perform an automatic update of the installed charts. TELchart ECS will then collect the needed information from Jeppesens server by itself. Go to step 3.
   B. **Semi Auto updating** lets you perform a semi-automatic chart update. The system will create order files for the charts you select, and you can send the files from another computer to Jeppesen. The answer files are then imported into TELchart ECS. Go to step 4.
   C. **Updating Log -Review Updates** gives you an overview of all changes made to the chart databases.
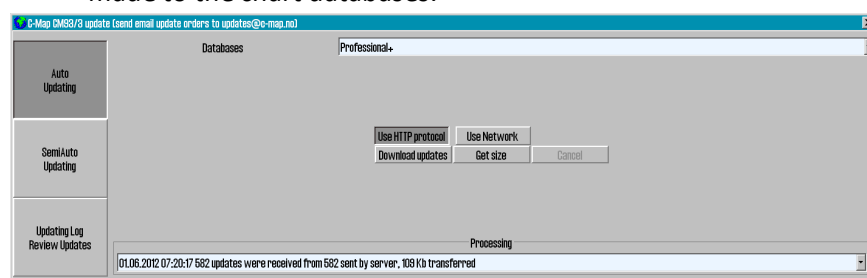
3. For *automatic update* do the following:
   A. Select the desired chart database from the dropdown list.
   B. Make sure **Use HTTP Protocol** is selected
   C. Press the **Download Updates** button

D. The progress will now be displayed in the dropdown list at the bottom of the window. A confirmation window appears when the update is complete. Press **OK** to finish the update tool.

E. Repeat steps A-D under step 3 for all other chart databases. When finished, go to step 5.

4. For
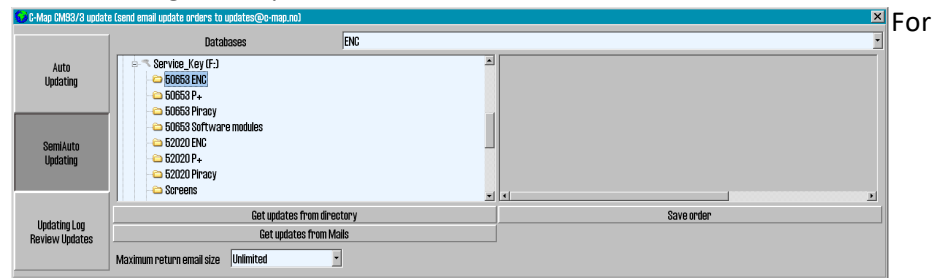
semi-automatic update do as follows:

A. Insert a TELchart ECS Service Key in an available usb port.

B. Select the desired chart database from the dropdown list in the semi-automatic update window.

C. Select which folder on TELchart ECS Service Key the order files should be saved.

D. Press the **Save order** button

E. Move TELchart ECS Service Key to a computer with email access.

F. Send an email with the order files to *updates@c-map.no*

G. *Updates* is an automated service, and C-MAP will reply within 5 minutes. The answer file has to be copied to the TECDIS, so transfer the files to the TELchart ECS Service Key and insert it in an available usb port.

H. In the semi-automatic update window, select the file location, and press the **Get updates from directory** button.

I. The progress will now be displayed in the dropdown list at the bottom of the window. A confirmation window appears when the update is complete. Press **OK** to finish the update tool.

J. Repeat steps A-I under step 4 for all other chart databases. When finished, go to step 5.

5. Close the update window for the changes to take effect.

6.2.2: **Updating charts - S63 Chart Loader**

In TELchart ECS you have access to 1-click chart updates. This is supported for all charts except S57.
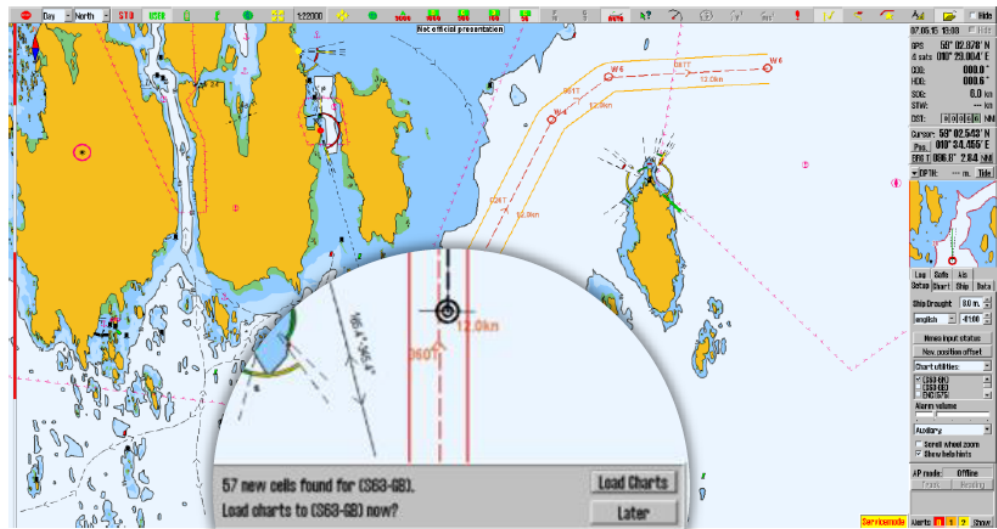
When charts have been loaded manually the first time, you can later just insert new chart media (Navstick, C-Map DVD, S63 base media), and the system will auto-detect if there are updates or new chart cells. When you have Navtor AVCS with AIO, the AIO data will also be updated when you update the charts.

If the chart media is on a network drive, TECDIS will check for updates every hour.

> Note: Chart licenses have to be entered manually. The exception is if you are using Navtor *Navstick* or Nautisk *exchange sets* with bundled cell permits.

6.3: Chart corrections

TELchart ECS offers several ways of inserting chart corrections.

The general method for inserting elements in the charts is with manual chart corrections.

In addition TELchart ECS has three semi-automatic methods for temporary and preliminary notices from Notice to Mariners:
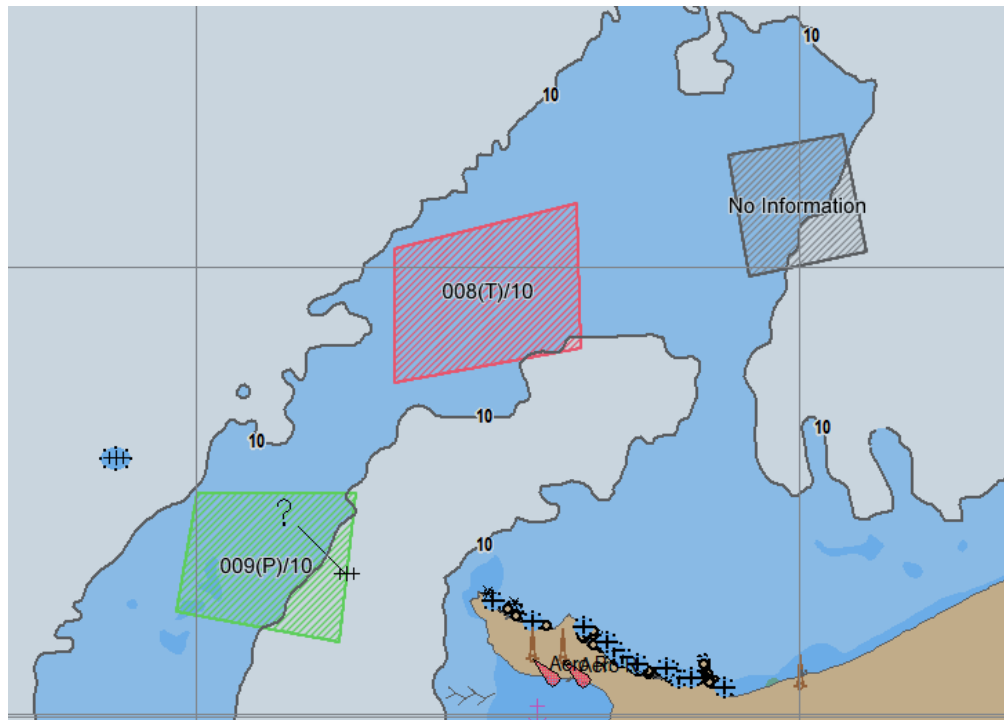
1. Most chart providers include T&P notices in their ENC charts. It is however not possible to separate the display of these notices from the regular chart data. Contact your chart provider for more information.
2. With charts from Jeppesen you get access to T&P as a separate layer.
3. With AVCS charts from UKHO you et access to T&P as a separate layer called Admiralty Information Overlay(AIO)

6.3.1: T&P for charts from Jeppesen

In TELchart ECS you can, with charts from Jeppesen, get access to temporary and preliminary notices, from Notice to Mariners. This information is available as a separate layer for the desired Jeppesen database, see chapter 7.3.2 for more information on layers.

> With charts from Jeppesen this functionality is only available from TECDIS SW ver. 4.7.2.15 and newer.

T&P form Jeppesen is automatically loaded in TELchart ECS when you load chart updates.
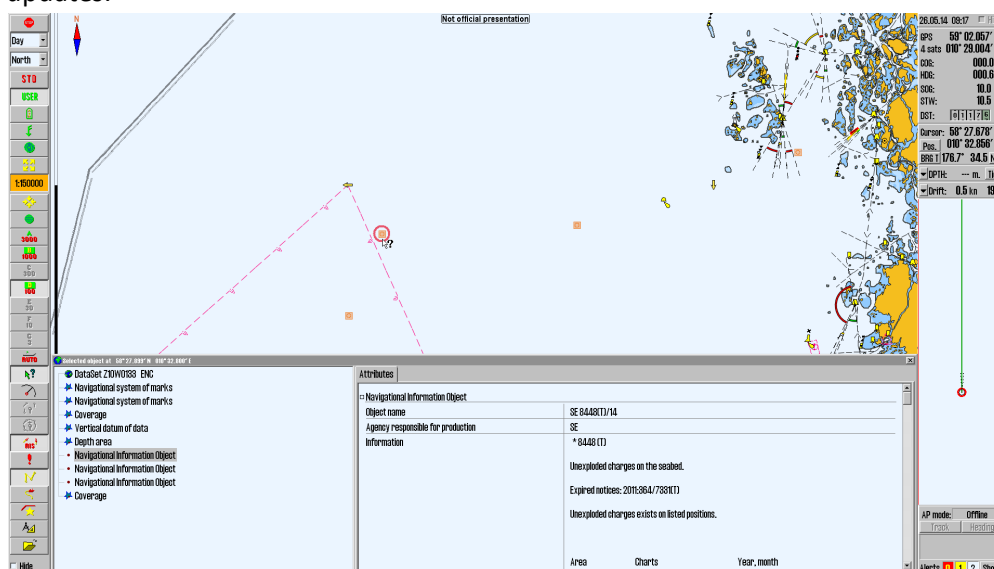
Open the query cursor and select the chart object you want to inspect. The selected chart object is displayed in the chart view with a red ring around it, and a Selected Object window appears, as displayed in the image above.

By activating Navigational Information Object in the list, the attributes for the chart object is displayed in the Attribute tab in the window.

Text in the chart view for the different T&P notices are displayed when Text (other) is selected in the Chart Menu tab.

6.3.2: AIO for AVCS charts

In TELchart ECS you can, with AVCS charts from UKHO, get access to temporary and preliminary notices, from Notice to Mariners. This information is available as a separate layer for the S63-GB database, see *7.2.3: Selectable layers*(see page 163) for more information on layers.

> With AVCS charts this functionality is only available from TECDIS SW ver. 4.7.2.23 and newer. In addition TECDIS AIO Update has to be installed.

6.3.2.1: Loading AIO

AIO is loaded in TELchart ECS with the S63 Chart Loader. Follow the same procedure as for standard chart installation with S63 Chart Loader

The only difference is that when you have selected the correct AIO source in the file tree, the source is automatically recognized as AIO, and this is displayed in the name of the installation media:
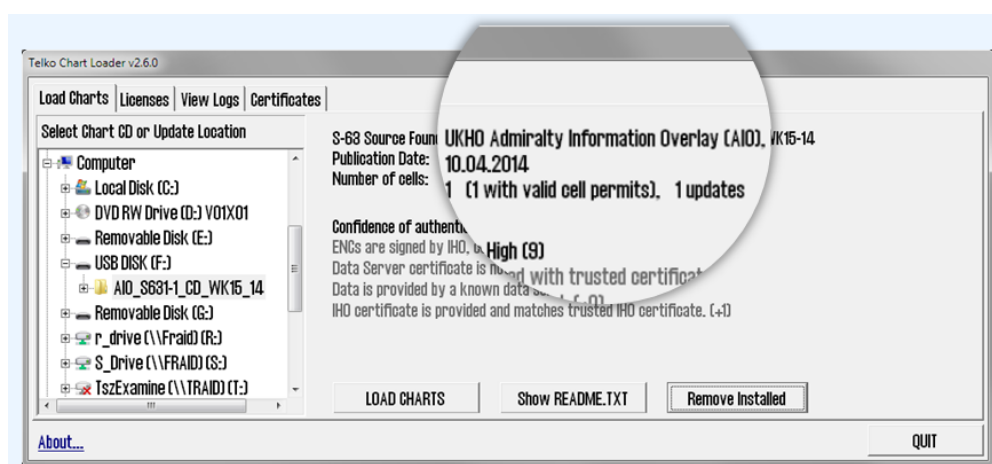
6.3.2.2: Remove AIO notices

AIO notices can also be removed. This is done in the S63 Chart Loader. To delete installed AIO notices, a source containing new notices has to be recognized by the system.

When recognized, the Remove Installed button will become available, as shown in the image below. You also have to confirm that you want to remove the AIO notices.
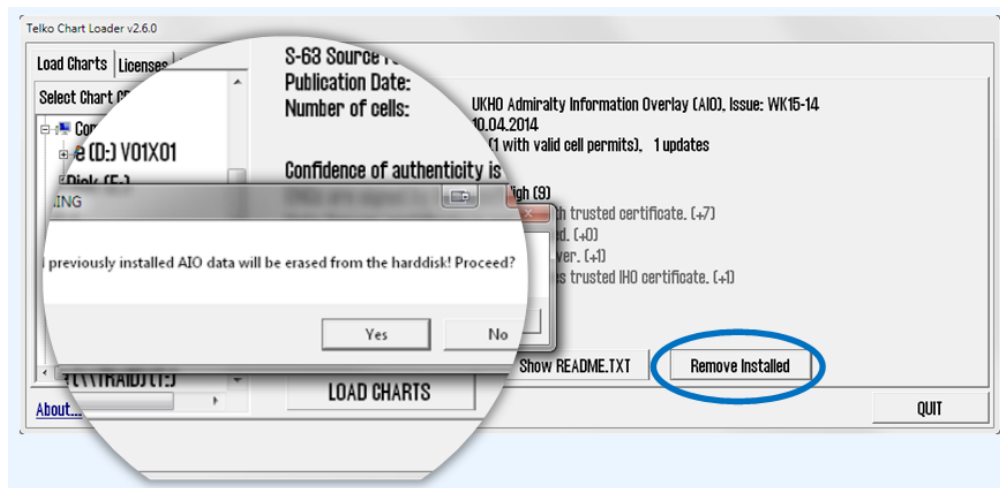
6.3.2.3: AIO: types and display

The AIO service contains four different object types:

Temporary objects Placed in the chart to mark a temporary change in conditions affecting navigation.	
Preliminary objects Placed in the chart to mark important changes affecting navigation, that are either planned for the future, or are implemented but with lacking information. It is also used to alert to changes that are so complex that new chart editions are needed to give full information.	
ENC preliminary objects Preliminary notices that are specific to certain ENCs. Displayed with the same colors as Preliminary notices, but with "EP" instead of "P" in the name. Vises med EP i navnet.	
No Information objects Indicates an area on an ENC where there is no equivalent BA chart coverage of the area.	
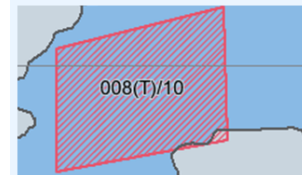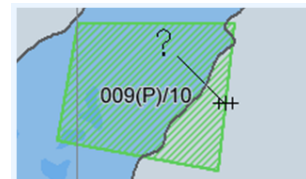
The AIO objects can be displayed in different manners:

Text	
Area box with fill	
Area box without fill	
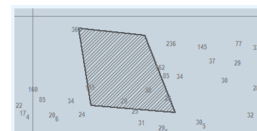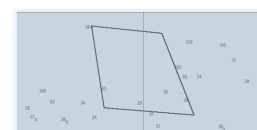
These display forms can be combined as you wish, and they are set in the options-panel in the AIO viewer. Note that when details of an AIO notice are viewed, this selected notice will be shown with all display manners activated and a red additional fill

- red crosshatched lines are displayed in the area
- the title of the AIO object is displayed with larger text

Note that AIO objects are only displayed in the charts tey are specified for. This means that a chart sheet that is in a bigger scale than the object is scaled for, will not display the object

6.3.2.4: Review AIO information using AIO viewer

When the query cursor tool is used on an AIO object, the AIO viewer is opened, with a separate window for the different tools and settings for AIO.
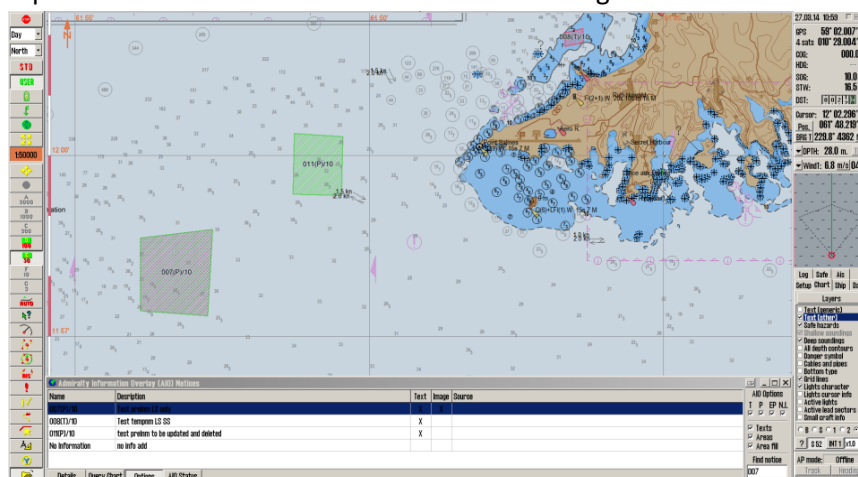
The AIO viewer has several parts:

AIO object list

This list gives an overview of all AIO objects displayed in the current chart view.

Query chart

This button opens the regular query cursor tool, and allows you to view information about other objects in the chart that are placed in the same position as the AIO object.

Detailed view

When you press the Details button, a more detailed view of the attributes and attached text/images is shown. You cycle between attributes, text and images by selecting their appropriate tab.

| Information/attributes | Text | Image |
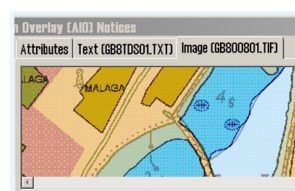
> Images can be zoomed in and out on; this is done with the zoom buttons to the right of the image display.

AIO Status

By pressing the AIO Status button, you will enter the status mode, giving you information on the current update status of all loaded AIO data. Dette viser status for når all AIO data sist ble oppdatert.

6.3.2.5: AIO Options panel

The AIO Options panel is opened by clicking the Options button.
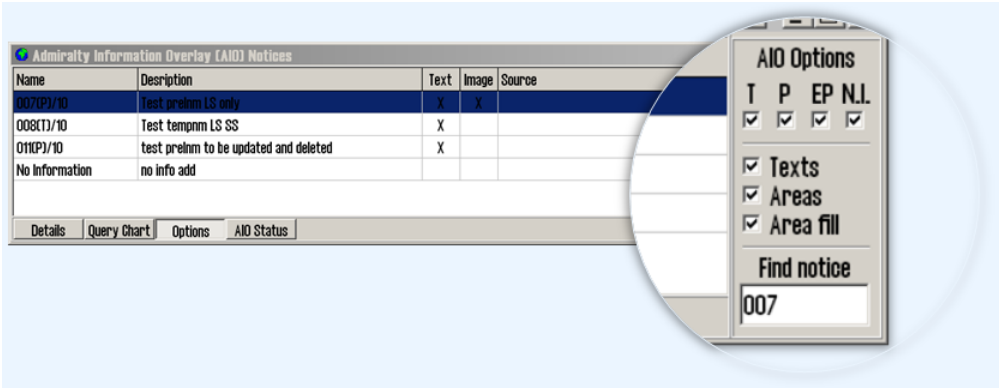
In the options panel you can:

Select which AIO objects to display	T = Temporary notices
	P = Preliminary notices
	EP = ENC-specific preliminary notices
	N.I. = No information
Select how to display the AIO objects	see *AIO: types and display* on page 131
Search for objects/notices	In this field you can enter a search phrase and search for any AIO notice installed in TELchart ECS. Press Enter to start the search.
	NB! By entering / in the search field all installed AIO objects are displayed.

6.3.3:   Manual chart corrections

> Note: When two TECDIS units are connected, make sure to perform the same chart corrections on both units

TECDIS has full support for automatic chart corrections, but the manual corrections functionality is still important, as local report on changes to charts can be left out of the official Notices to Mariners that are used as base for the automatic chart update.

An example is that the SOLAS convention requires all charts to be updated for the planned voyage. Before you plan your voyage it is strongly recommended that both the automatic and manual chart correction functionality is used to keep the chart updated.

6.3.3.1: Display of manual chart corrections in the chart view

All manual chart corrections are drawn in the chart with <mark>orange markings</mark>.

When you use the query cursor to display chart information in the cursor position, a Chart Object Inspector window opens and manual corrections are shown with <mark>yellow markings</mark> in the chart view.

In the field to the right information about the selected object is displayed.

Every change made to the object is shown in a separate entry in the list, below the object. By clicking one of the entries the object is displayed as it was in the selected configuration.
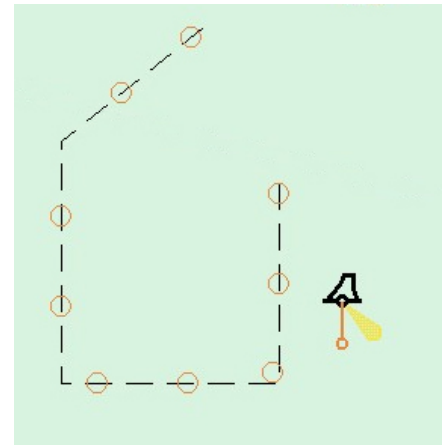
6.3.3.2: **Enter manual chart corrections**

The procedure for adding manual chart corrections is as follows;

1. In the TELchart ECS program, open the Setup menu tab, and select Manual chart corrections in the Chart Utilities dropdown list,
2. A new window appears. In this window you perform all manual chart corrections, an you gain access to all previous corrections and changes to them. The window can also be displayed by using the query cursor tool.
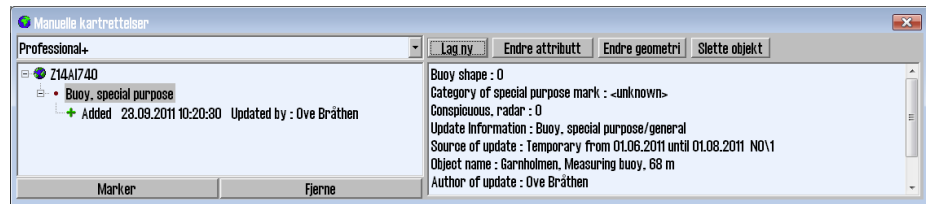
3. Press the Create New button
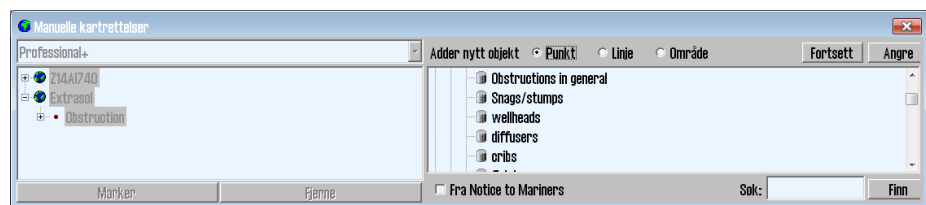
4. Now a new field is opened, with an object list. Select type of object from the list. Alternatively you can search in the bottom right corner of the window.
5. If the object you are adding is from Notice to Mariners, mark this checkbox now. With it selected the correction will only be displayed for the active chart.
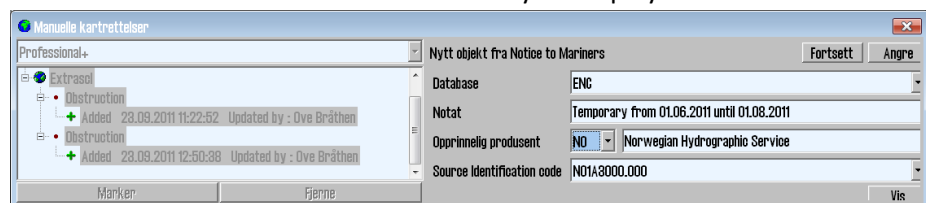
6. In the window that appears you have to fill inn:
   - Chart database
   - Provider
   - Name of the chart sheet(source identification code)
   - Source information in the Notes field

7. When you have selected the object type in the list, you can press Continue.
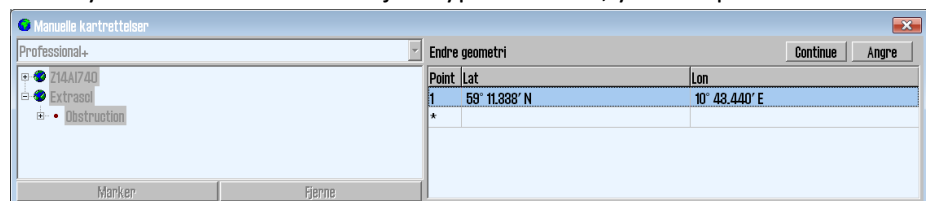
8. Now a new field opens, for entering positions. Here both longitude and latitude can be entered by typing or by visual insertion.
9. Press the Continue button.
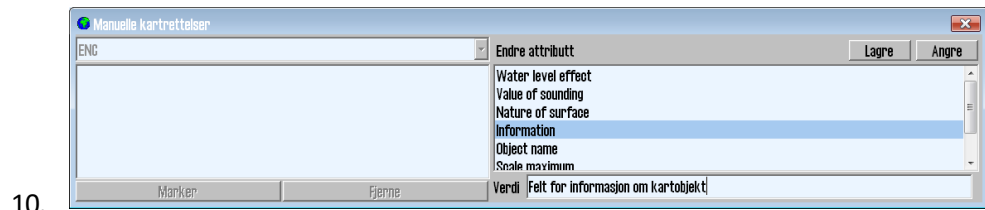
10.

Now a last field is opened. Here you set values for

- depth
- text information
- min/max scale

11. Finishnby pressing the Save button.

12. Register the name/initials of the navigator that has performed the correction.

6.3.3.3: Change the correction

1. Open the chart corrections window, and select the chart correction you want to change. Open the Setup menu tab, and select Manual chart corrections in the Chart Utilities dropdown list,
Press one of the following buttons:

2.

A. The Change Geometry button for changing position data for the object:
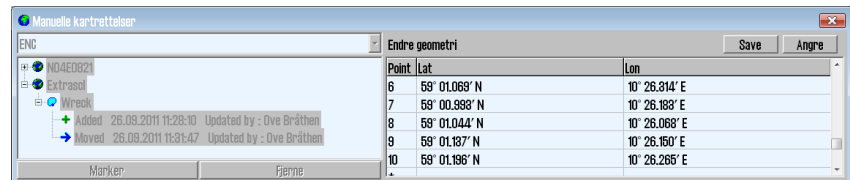
- The TAB key and Shift+TAB moves the cursor between lat and lon for a point.
- The Enter key sets a new position after the marked position.
- Arrow up and arrow down keys move the cursor between positions.
- The Insert key inserts a new position in front of marked position.
- The Delete key deletes the marked position.

B. The Change attribute button to change the attributes of the object.
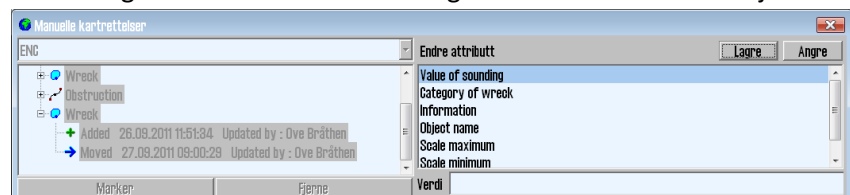
- Select the attribute you want to change in the list, and insert the desired value in the Value field below. For some attributes you can select values from a dropdown list, and some feature a locked selection.

3. When the desired changes have been made, press the Save button.

4. Register the name/initials of the navigator that has performed the change.

Chart corrections can also be selected for changing/deleting by selection with the query cursor.

6.3.3.4: Delete chart corrections
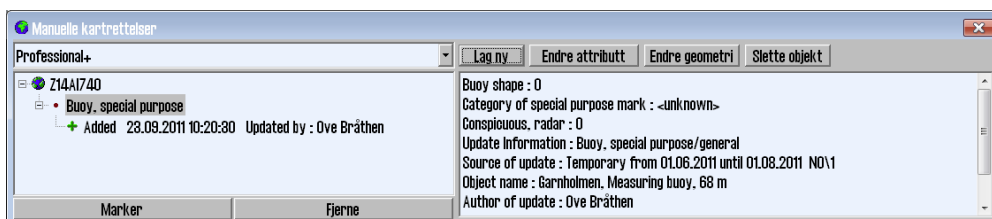
The remove button deletes the entire update history for the selected object(s) in a selected chart sheet. The Remove button is found at the bottom left side of the manual chart corrections window.

This functionality is only available while in Servicemode.

6.3.4: Update log

To see all updates made to your charts, you can review them in the update log. The update log also logs chart corrections.

1. In the TELchart ECS program, open the Setup menu, and select C-Map chart update in the Chart Utilities dropdown list.
2. A new window appears. Here you select Updating Log Review Updates which gives you an overview of all changes made to the chart databases.
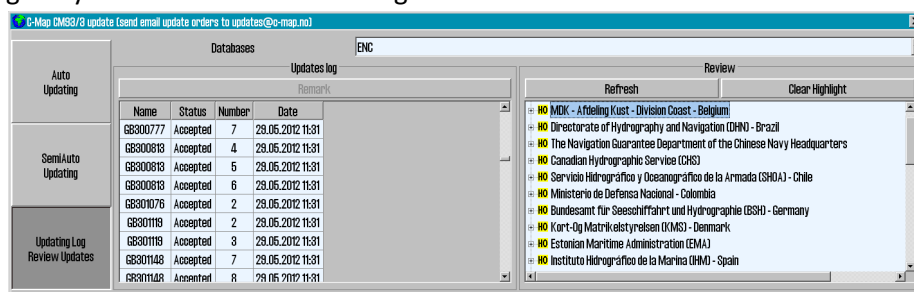
3.

To see the update log do the following:
   A. Select the desired chart database in the dropdown list
   B. The field Updates Log now displays a list of all updated that have been added.
      - Name, Status, Number and Date are all shown for each update.
      - The Status column will either contain Accepted or Rejected.
      - De oppdateringene som er Rejected har blitt avvist eller fjernet. If the Remark button is active, an update note will be displayed by pressing it.
   C. The Review field contains a tree structure of all the chart updates, sorted under the update publisher, chart sheet and book number where the

correction was published

- Under each book number you will find information in cue-form about all changes objects

- Point objects are marked with a red circle in the charts, lines are draw in red, and areas are cross-hatched in red.
- By double clicking on an object in the list the chart view will move to that object, and it will be marked in red.
- Under each book number you will find information in cue-form about all changed objects.
- Point objects are marked with a red circle in the charts, lines are draw in red, and areas are cross-hatched in red.

D. When a new CD from C-Map is isntalled, all previous updates will be removed.
E. Manual rejection of updates:
- Left click the desired update in the list, and then right click it. Select Reject Update.

4. Close the update log window for the changes to take effect.

6.4: Delete chart databases

Chart databases are deleted/removed in the *Chart Library*(see chapter 6.6). Select the chartset you want to delete, and the **Remove Dataset** button will become available. By pressing this button, you will delete the dataset.

Alternatively, chart databases can be deleted in the C-Map Chart Manager program. This program is accessed by opening TELchart ECS Setup.

NOTE: This should only be performed by a qualified technician. If the procedure is not followed accurately, it may result in the loss of all chart data.

Do the following:

1. Insert a TELchart ECS *Service Ke*y in an available usb port in the TECDIS unit.
2. Wait until the text label Servicemode appears in the lower right corner of the chart view.
3. Exit TELchart ECS
4. Start TELchart ECS *Setup*.
5. Go to the Cha*rt installation/Misc tab*.
6. Press the Start C-Map Chart Manager button. The C-Map Chart Manager program starts.
7. Select the database you want to delete by clicking on the entry for it in the Registered databases table.
8. Press the Unregister database button. The database is now deleted.
9. Close C-Map Chart Manager and TELchart ECS Setup.
10. Start the TELchart ECS program.

6.5: Chart Licenses

There are several ways to administrate chart licenses in TELchart ECS.

Type	Supplier/base name	Tool
Jeppesen SENC	Jeppesen PRIMAR, ENC and Professional+	These use license keys that are administered in TELchart ECS **Setup**, or in C-**Map Chart Manager.**
S63	Navtor, Nautisk Forlag, and others	These use Cell Permits for licensing. This is administered in **S63 Chart Loader**.
S57		These do not use any form of licensing. The charts are loaded in **S63 Chart Loader.**

- Read more a*6.1.5: Standard chart installation with S63 Chart Loader*(see page 118)rmits in cha**pter** Standard chart installation with S63 Chart Load*er*.

- Read more a*6.5.2: Chart licenses - Jeppesen SENC*(see page 142) chapter **Ch**art licenses - Jeppesen SENC*.*
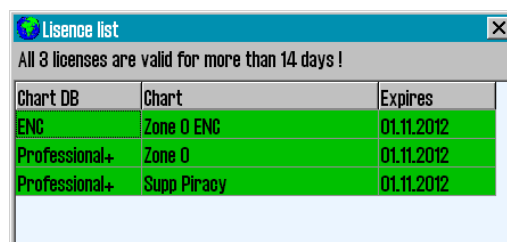
6.5.1: View your chart licenses in the TELchart ECS program.

Chart licenses are viewed in TELchart ECS by go*ing to the menu tabs*. Here you select the Setup menu tab.

There yo*u will* find a *dropdown list* called Chart U*tilities.* In that list, select Ch**eck licenses.**

A new window appears, and displays a list of all chart licenses entered in the TECDIS system.

- Licenses with a green background are valid more than 14 days beyond today.
- Licenses with a yellow background will expire within the next 14 days.
- Licenses with a red background are expired.

6.5.2:   Chart licenses - Jeppesen SENC

All functionality described in this chapter is valid for chart databases in the CM93/3 format distributed by Jeppesen(C-Map). For chart databases in other formats (S63), see chapter*6.5: Chart Licenses*(see page 141) for more information.

Licenses for Jeppesen SENC is administered from the TELchart ECS Setup program.

6.5.2.1: Adding a chart license

To add a chart license, do the following:

1. Insert a TELchart ECS *Service Ke*y in an available usb port in the TECDIS unit.
2. Wait until the text label Servicemode appears in the lower right corner of the chart view.
3. Exit TELchart ECS
4. Insert CD or usb dongle with the chart license(s) received from Jeppesen in the TELchart ECS unit. If you have received a license code instead of a license file, skip this part.
5. Start TELchart ECS *Setup*.
6. Go to the Lic*enses tab*.
    1. If you have received a license file, continue to the next step.
    2. If you have received a license code, skip to part 10
7. Press the Add lic**ense from file button.**
8. This opens a new window, where you navigate to the location of the license file (password.usr). Select the file, and confirm adding it by pressing t**he OK button.**
9. All chart licenses for all chart databases and all areas included in your purchased license, is now activated. You have now finished adding the license. If more licenses are to be added, repeat the procedure.
10. Press the Add lic**enses manually button**.
11. The field to the right og the button is now opened and you can now set:
    1. The chart database for the license you want to add in the Databases dropdown list.
    2. Chart areas for the license you want to add in the Data Set or Area Name.
12. Enter the received license code in the Licen**se String fiel**d.
13. Press the **All Licens**e button.
14. Repeat this process for each chart area and each license code in each chart database.

6.5.2.2: Administrating the chart licenses

The other functions in the Licensing tab helps you in administering your Jeppesen SENC licenses.

The Get expired licenses button gives you access to an overview of all licenses that has expired within a selected date (month and year).

The Licenses list button gives you access to a list of valid licenses, sorted by chart database.

The License order button gives you access to a tool for easy generation of a license order summary that you can send to Jeppesen.

6.5.3:   Certificate for chart providers

Certificates are used by the S63 Chart Loader to verify signatures and authenticity of chart cells and chart media.

> Two certificates, from IHO and Primar, are preinstalled in TECDIS. If charts from other hydrographic offices/chart providers are to be used, it is strongly advised that the certificate from the chart provider is installed before you start the chart loading process.

S63 Chart Loader requires two files to install a certificate:

- a*.CRT certificate file
- a *.txt public license key file

These files should be acquired from your chart provider. They should both be named with the chart providers name in capital letters.

Use the following procedure to load the certificates:

1. Place the certificate files from the chart provider in a TELchart ECS Service Key and insert it in a free usb port.
2. Start TELchart ECS to Windows desktop (Service Mode).
3. Start the S63 Chart Loader program.
4. Go to the Certificates tab.
5.
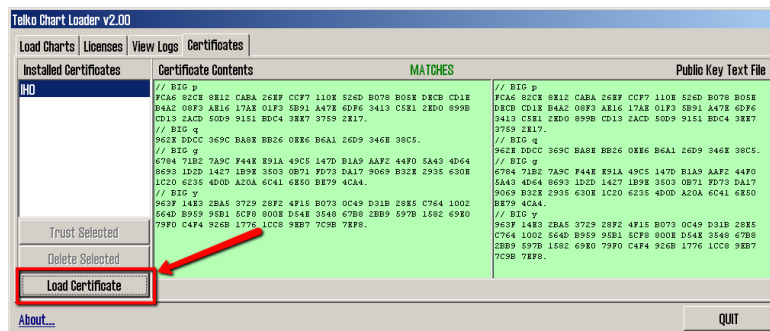
An overview of all installed certificates is shown in the left column. To load a new certificate, press the Load Certificate button.

6.
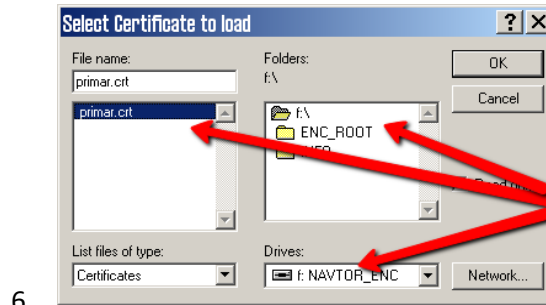
A new window appears. Here you select the correct location for your certificate. At this point it is the *.CRT file you should select.

7. Press the OK button.

8. If the system finds a public license key file in the same folder as the *.CRT file you just selected, this is installed automatically. If not, you will receive a message about this, and you have to find the file manually. If so, repeat steps 6 and 7, but select file type *.txt.

9.
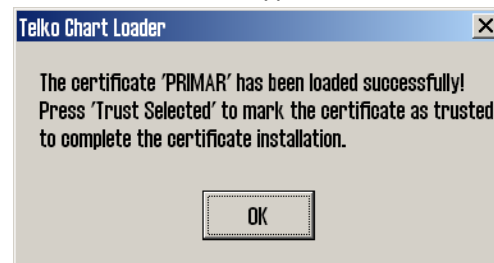
When both files are loaded, and the system recognizes the certificate and public license key as valid, a confirmation is shown. Press the **O**K button.

10.
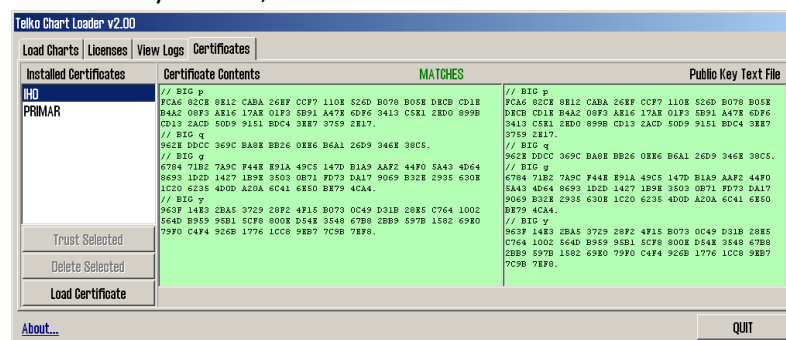
The certificate information is now displayed in the S63 Chart Loader, and authenticity confirmation remains. When the contents of the columns Certificate contents and Public key text file match, they are shown with green backgrounds. A confirmation of 100% match is displayed when the text MATCHES over the columns turn green.

11.
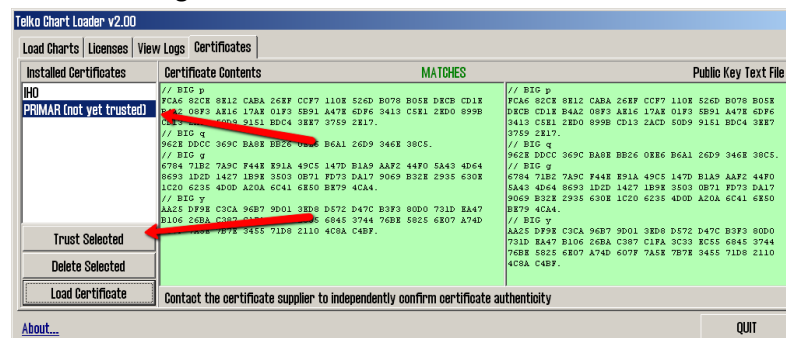
When you are confident of the authenticity of the certificate, either through

the information matching, or through contact with the certificate issuer, you can press the Trust selected button to the left in the window. By pressing you confirm that the certificate can be used to approve S63 charts for loading.

12. Press OK
13. The certificate loading is now completed.

6.5.4: Dynamic Licensing

Dynamic licensing function in TECDIS includes full support for "Jeppesen Marine Dynamic Licensing" for ENC and JeppesenPRIMAR charts in C-MAP SENC format.

Dynamic licensing provides a cost effective method to ensure a continuous ENC chart coverage with minimal administrative costs.

Dynamic licensing is a subscription agreement between the vessel operator and Jeppesen Marine, which provides instant access to charts within the subscription limits.

Vessel operator doesn't supports any cost at the time of subscription to dynamic licensing. However, the vessel gets immediate access to all charts within the subscription restrictions, for use of route planning or actual voyage, without specifying any license codes..

6.5.4.1: Credit Limit

To prevent uncontrolled license costs, the subscription include an annual credit limit based on estimated annual costs for the vessel. When a chart is used by TECDIS system, the chart licensing cost is charged within the subscription and the remaining credit is reduced accordingly.

The credit limit can be extended if necessary.

6.5.4.2: Automatic Licensing

When a new chart is needeed (accordingly with the vessel's voyage), TECDIS enables immediately a three-month license for that chart.

If the vessel needs again the same chart after this period, a new 3 month license active. This means that a chart subscriptions is charged from the time the vessel actually need the chart, with a 3 month license period.

6.5.4.3: Reporting user

The active chart licenses are automatically reported back to Jeppesen Marine, when "Auto Updating" or "Semi Auto Updating" functions, in "C-MAP chart update" option in the "Setup" menu, is used to download chart updates for ENC or JeppesenPRIMAR-charts.

So, to update a chart is a necessary for the 'paperless navigation' and involves no extra work for the navigators..

6.5.4.4: Billing

Based on the actual chart use, Jeppesen Marine will charge the vessel operator for accrued chart license.

This can either be done at regular intervals, or when the total outstanding amount exceeds the credit limit defined in the Subscription Agreement.

All matters relating charts, licensing of charts and chart subscriptions is between Jeppesen Marine and vessel operator.

6.5.4.5: Use of Dynamic Licensing in TECDIS

After Dynamic Licensing agreement draft between Jeppesen Marine and ship operator, the function is automatically enabled in TECDIS when then next chart update is completed.

The chart is automatically licensed within a specified distance from your vessel. This ensures chart coverage in the vessel's current position and that the route planning or fake chart requests do not result in Chart License costs.

The status of the Dynamic License (credit limit, last usage report and the next reporting date) can be monitored by opening the "License list" in "Check chart licenses" option in the "Setup" menu and click on the dynamic license entry in the list.
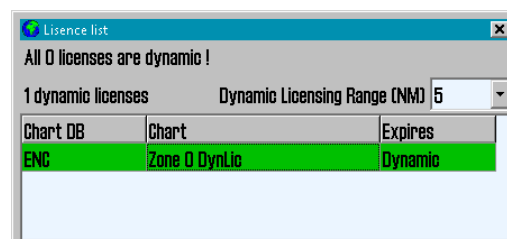
Once the credit limit is lower than 200 "credits" or the deadline for the next reporting is less than 3 days, TECDIS will issue a warning about this. Lists of chart dynamic license (both reported and unreported) opens the "C-Map Chart Manager" started from "Chart Installation / Misc" folder in TECDIS Setup.

6.5.4.6: Adjustment for automatic ENC licensing

Adjustment for automatic ENC Licensing is performed in "License list." With "TECDIS Service Key" connected, by opening this window is it possible to adjust the threshold value "Dynamic Licensing Range (NM)" (see illustration above).

6.5.4.7: Route Planning using ENC diagrams

Since only chart within a given distance is licensed automatically in the default mode, it is possible to plan a voyage, in advance, without being charged for extra chart license costs.

When it is determined that the voyage will take place, the route should be checked against the charts to meet the government requirements for 'paperless navigation'.

"TECDIS Service Key" is required to license a chart outside the parameters which are set in the "Dynamic Licensing Range (NM)." When "TECDIS Service Key" is pluged in a USB port, a "Payment" button will be available in the "Chart" folder in the "Menu" folder. By clicking this button activates the payment mode.

In the payment mode, all requested chart cells are licensed, including outside "Dynamic Licensing Range (NM)."

A clear warning is displayed on the screen to show that the payment mode for the chart opening, is active.

A route check can now be performed and all hazards / precautions from the charts will be displayed. The route can also be adjusted manually using the charts.

When route check is performed, the payment mode is disabled either by clicking the "Checkout" button again, or by removing the "TECDIS Service Key".
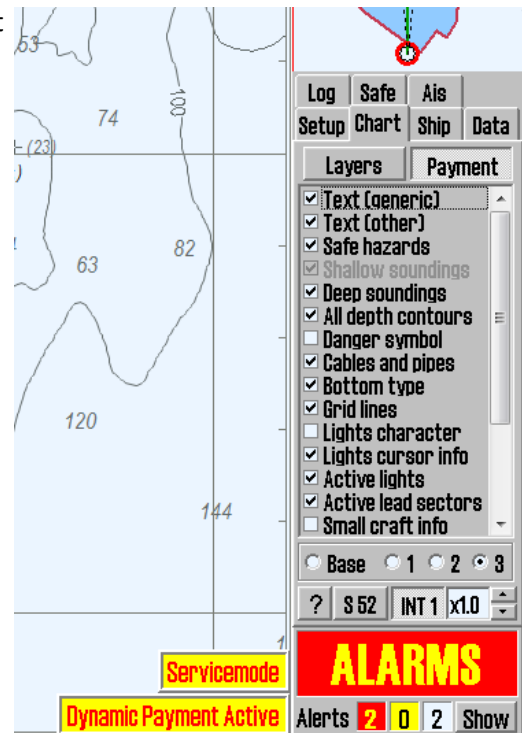
6.6: IHO Chart library

The Chart library selection in the Chart Utilities opens a chart library window displaying an overview of installed chart databases in the TECDIS computer.
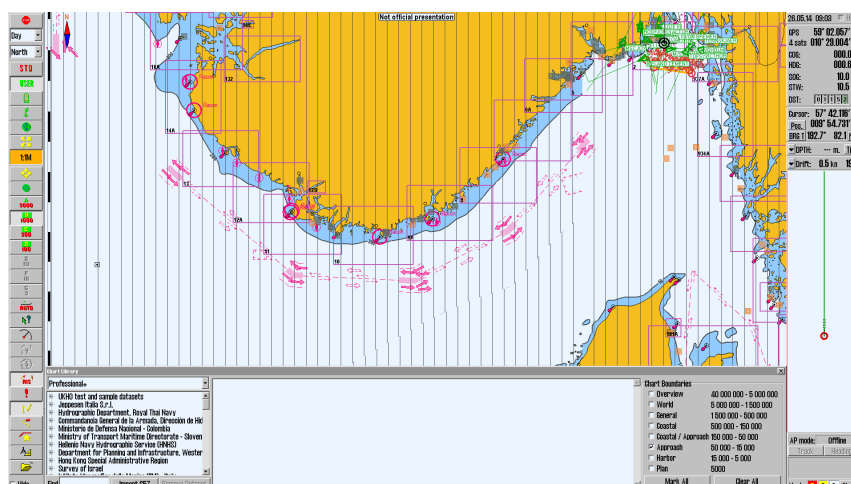
By selecting a database from the dropdown list , a list of all licensed charts is opened, and it is sorted by hydrographic organisations.

Select a chart in the list to get access to more information. This information is displayed in the middle field.

By double clicking a chart in the list, it will be displayed in the chart view if it is licensed. If own vessel is moving, the chart view will automatically be changed back to the vessel (unless Auto is turned off)

> Note: The chart library only displays the chart databases selected for viewing in the setup menu tab.

To the right in the chart library window you find the Chart boundaries function. This draws rectangles outlining the charts in the database for the selected scale.

> The scales match the overview chart scale and the A-G scales on the main toolbar.

- Licensed charts are outlined with a magenta line
- Unlicensed charts are outlined with a black line

The name of the chart is displayed in the bottom left corner of its rectangle.

6.6.1: Importing S57 data

> Note: When two TECDIS units are connected, make sure both units are updated simultaneously.

An S-57 database consists of datasets (chart sheets). ENC data is sold as ENC cells in S57 format, and when these are imported to a database, each ENC cell is converted to a dataset.

This process involves two steps:

1. Verification (validity check)
2. Compilation (convert ENC cell to dataset)

Import of s57 data is done in the chart library. Use the following procedure:

1. Select chart database in the dropdown list.
2. Click the Import S57 button A folder structure is displayed.
3. Select the drive you want to collect data from in the Import S57 data from.. field. Data is imported to a database named with the prefix S57.
   - If no S57 database exist, a new one is auto-matically made. Create a new s57 database manually by clicking the Create new Data-base button. You can now enter a name for the new base.
   - The S57 database will automatically be added and selected for display in the Setup menu.
4. When the drive containing the data is selected, the Start button becomes avail-able. Click the Start button to initiate import. The data is verified automatically.
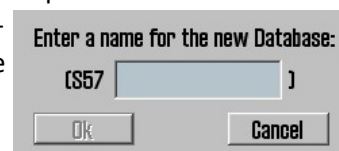
If errors occur, am S57 Error Report appears. Here it is shown which imported file the error applies to, and if the error is critical or non-critical. Files with critical errors are not imported. Files with non-critical errors (potential irregularities of data) can be manually imported or rejected, by clicking Continue or Skip.

5. The import process can be cancelled by clicking the Stop button. If the Disable error report option is selected before data import is started, the entire import process goes automatically. S57 import files with critical errors will be omitted, while files with non-critical errors are imported.

NB: When using the Disable error report, there is no possibility to see detailed information about the causes and error of ENC cells that cannot be imported.

6. An import log will be created. This log can also be viewed by selecting the appro-priate dataset in the Chart Library by scrolling down to the S57 import log in the information field.
7. If there are imported chart updates in S57 format, these can be viewed in C-MAP chart update, under Updating log - review updates. Read more in *6.2.1: Updating charts - Jeppesen SENC*(see page 125).
8. *6.2.1: Updating charts - Jeppesen SENC*(see page 125)
   - *6.2.1: Updating charts - Jeppesen SENC*(see page 125)
   - *6.2.1: Updating charts - Jeppesen SENC*(see page 125)

6.6.2:   Delete S57 and S63 chart databases

In a database containing S57/S63 data is selected in the dropdown list, the Remove Dataset button will delete the selected chart.

System settings

In this chapter we will look closer at the various system settings that can be set in the TELchart ECS program.

7.1: The Setup menu

In the Setup menu several generic settings are controlled. The Setup menu contains:
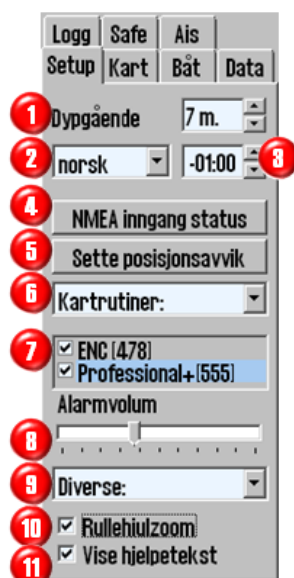
1. Ship draught
2. Language
3. Time zone adjustment
4. NMEA input status
5. Navigation position offset
6. Chart utilities (dropdown menu)
7. Chart library field (control which chart databases are viewed and the version number for the available chart databases)
8. Alarm volume adjustment bar (only available when alarm is set to speaker or keyboard in TECDIS Setup)
9. Auxilary (dropdown menu):
10. Scroll wheel zoom
11. Display help text (see chapter 1)

The dropdown menu chart utilities contains:

1. IHO Chart library
2. Manual chart corrections
3. C-Map chart update
4. Check licenses
5. INT-1 Dictionary
6. Radar overlay setup
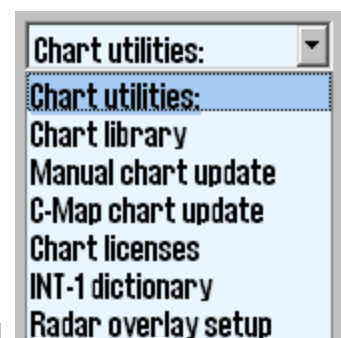
The dropdown menu Auxilary contains:

1. Recalibrate screen
2. Conning harbour mode
3. Conning backward mode
4. Export DB status
5. F1 F2 key functions
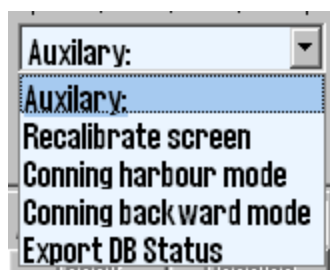
7.1.1: Ship draught

Here you can set a value(with intervals of 0,1 meter) that is between minimum draught and maximum draught. On system startup, TECDIS uses the maximum draught as standard, but this can be changed in the Setup menu to match changes in vessel loading conditions.

There is therefore no need to make changes in the TECDIS Setup program after loading or unloading the vessel. The value for the draft is used by TECDIS to interpret sonar data, automatic routing and eventual display in Conning image.

7.1.2:   Language

Standard language for a TECDIS unit is English, which is also consistent with the language of the Windows Operating System.

But for normal operation of TECDIS it is also possible to switch languages in the Operator Controls, Tools and menus to Norwegian.

French and German may be available depending on the SW version.

Language can be changed during navigation and will not affect the Chart Data.

7.1.3:   Time zone adjustment

Standard time in TECDIS corresponds to the time received from the GPS satellites, which corresponds to UTC time.

If a vessel sailing across one or more time zones, the time zone adjustment is used to adjust the clock shown on TECDIS with + / - ten minute intervals relative to UTC.

7.1.4:   NMEA input status

"NMEA Input Status" button opens a list of:

- which ports the various sensor data are retrieved from
- what kind of NMEA sentences are used
- input description (if entered in TELchart ECS Setup)

The **Status** column indicates whether the data is received or not.
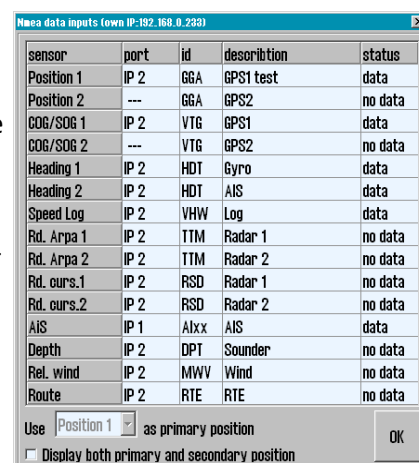
This is only a info summary; any changes to these settings are made in TECDIS Setup

Primary positioning method

In the NMEA Data Input window both sources for positioning appears, and can be selected which one shall be primary, and whether the secondary position is shown or not on chart display.

In case of failure of the primary source, the secondary source is automatically used.

sensor	port	id	descibtion	status
Position 1	IP 2	GGA	GPS1 test	data
Position 2	---	GGA	GPS2	no data
COG/SOG 1	IP 2	VTG	GPS1	data
COG/SOG 2	---	VTG	GPS2	no data
Heading 1	IP 2	HDT	Gyro	data
Heading 2	IP 2	HDT	AIS	data
Speed Log	IP 2	VHW	Log	data
Rd. Arpa 1	IP 2	TTM	Radar 1	no data
Rd. Arpa 2	IP 2	TTM	Radar 2	no data
Rd. curs.1	IP 2	RSD	Radar 1	no data
Rd. curs.2	IP 2	RSD	Radar 2	no data
AiS	IP 1	AIxx	AIS	data
Depth	IP 2	DPT	Sounder	no data
Rel. wind	IP 2	MWV	Wind	no data
Route	IP 2	RTE	RTE	no data

Use Position 1 as primary position

☐ Display both primary and secondary position   OK

If the secondary source also fails, the TELchart ECS system automatically change to Dead Reckoning Modus (Log+ Gyro). When switching primary position sensor from position 1 to position 2, COG 1 and SOG 1 will be switched to COG 2 and SOG 2 in the information panel.

7.1.5: Navigation position offset

The Setting Position Deviation button opens a small window at the upper right corner of the chart display, where a fixed value for position deviation can be entered. The vessel representation will be adjusted automatically when you change the position deviation value.
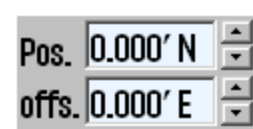
In some areas old chart positions are somewhat offset to WGS84 datum. It is possible to compensate for this type of error at the TECDIS system entering a position offset.

To close the window and disable the position error, click again on **Setting position dev**iation. The system will then utilize the primary position sensor again.

7.1.6: Chart utilities

Most of the functions available in this dropdown list are explained in chapter 6 Chart *Installation and Administration.*

They can be found on the following pages:

- Chart library *(see page 149)*
- Manual chart corrections *(see page 134)*
- C-Map chart update *(see page 125)*
- Check Chart licenses see *Chart Licenses* on page 141

7.1.6.1: INT-1 Dictionary

When selecting this, you open a dictionary in a new window, listing INT-1 abbreviations for chart objects.

7.1.6.2: Radar overlay setup

This option will enable the Radar overlay and display the radar overlay setup panel.

> Note: TECDIS Radar Overlay is made to play against Furuno Radar FAR-2107/2807 series. Primary TECDIS computer chart, secondary TECDIS computer chart and connected IP-based collection devices must be configured with IP addresses in 172.31.xxx IP address space, to receive data from the radar.

Radar: This value determines the radar system to be connected. This number must match "RADAR NO" value in the Setup menu for Furuno radar.
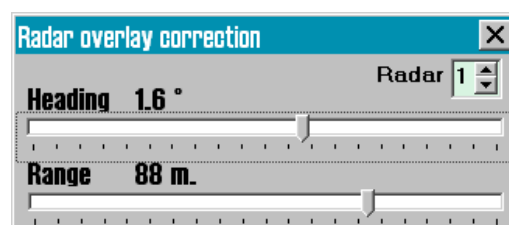
Heading (bearing): This sliding-controller is used to adjust the radar orientation relative to the chart display.

Range (distance): This sliding-controller is used to adjust the radar range so that it matches the chart display.

7.1.7: Installed Charts on the computer

Under "Chart Utilities " field in the "Setup" menu folder a list with chart databases

that are installed on the computer is displayed.

Mark with a tick in the box next to the databases which to use.

- ENC: official ENC in C-MAP SENC format
- World: non-official C-MAP charts.(CD)
- Professional+: non-official C-MAP chart (DVD)
- S57: official charts in S57 format
- S63: official charts in S63 format

> NB! This field does not appear if you only have one chart database installed.

7.1.8: Alarm volume

Alarm volume is adjustable by sliding controller in the range between 65 to 90 dBA (only displayed when alarm sound is set to PC speaker or keyboard in TECDIS set*up).*

> It is not possible to reduce alarm volume completely, which would also be against the certification of the equipment and IMO requirements.

7.1.9: Auxilary

The dropdown menu Auxilary contains the following functions:

Recalibrate screen	Resets the monitor display to correctly calibrated values.
Conning harbour mode and Backwards conning	Control commands to any connected Conning display. Backwards conning is used for a TECDIS unit that is positioned facing the stern of the vessel, and displays the vessel up-side-down on the conning monitor.
Export DB Status	This add-on functionality is only used in agreement with Telko or Furuno Norway.
F1 and F2 key settings	See next section for more information.
Scroll wheel zoom	When the "Scroll Wheel Zoom" check box is enabled, the scroll wheel, if available, is used to change the chart scale.

7.1.9.1: F1 and F2 key settings

Selecting this opens the F1 F2 key settings tool.

If a Furuno RCU-018 or a TECDIS Keypad is connected to the chart system, the operator will here be able to assign the F1 and F2 keys found on those control units.

The F1 and F2 function keys can be configured as the following:

Function	Description
Chart scale W 1:100M	Set the chart scale to 1:100.000.000
Chart scale W 1:20M	Set the chart scale to 1:20.000.000
Chart scale A: 1:3M	Set the chart scale to 1:3.000.000
Chart scale B: 1:1M	Set the chart scale to 1:1.000.000
Chart scale C: 1:300.000	Set the chart scale to 1:300.000
Chart scale D: 1:100.000	Set the chart scale to 1:100.000
Chart scale E: 1:30.000	Set the chart scale to 1:30.000
Chart scale F: 1:10.000	Set the chart scale to 1:10.000
Chart scale G: 1:3.000	Set the chart scale to 1:3.000
Chart content	Show chart content for the current chart view
Chart Basic	Set the chart view to basic mode
Chart selection 1	Set the chart view to user defined mode 1
Chart selection 2	Set the chart view to user defined mode 2
Chart selection 3	Set the chart view to user defined mode 3

ESCAPE function	Emulates the ESCAPE key on the keyboard
Insert manual position	Allows the navigator to move the chart display to a specified position
Next menu page	Toggles between the menu pages
Day Dusk Night	Toggles between the day-, dusk- and night monitor color modes
Position Mark	Inserts a position mark in the vessel position

7.2: The Chart menu

The chart menu is also described in chapter *3.4: Chart presentation*(see page 36).

In the chart menu, you set the configuration for chart presentations, such as:

- Which information is displayed in the charts
- How information is displayed in the charts
- What additional information layers are displayed in the charts

7.2.1: Chart information

In addition to two predefined chart information modes, you can select three user definable information modes. In the second lowest field of the chart menu you select between these 5 information modes:

- **B (base)** gives a chart with a minimum a visible chart objects and configuration options.
- **S (standard)** gived the same chart view as STD mode, but with full display of dangers, and all dangers within the safety contour.
- The modes **1**, **2** and **3** gives the user access to setting display of chart objects. Do this by checking the boxes in the shortcut list,or by checking the boxes in the viewing group panel (press the **More** button to access).

Read more about the chart information options in chapter *7.2.4: Overview of available chart information*(see page 163).
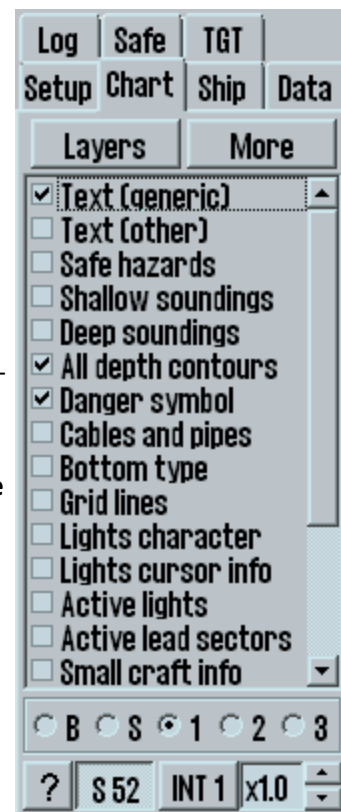
7.2.2: Chart presentation

In the field at the bottom of the chart menu tab you can select between S52 and INT1 chart presentation.

With INT 1 selected, a warning will be shown, stating: *Not official view*. With the arrow buttons to the right of INT 1, you can adjust the size of text and symbols. The magnification factor is displayed besides the arrows. Se kapittel 4.7 for mer informasjon og illustrasjoner.

7.2.3: Selectable layers

Some chart databases contain information in selectable layers. These layers are accessed for display by pressing the **Layers** button in the chart menu. This opens a new window with selectable layers. At the top of the window you select the database you want to activate/deactivate layers for.
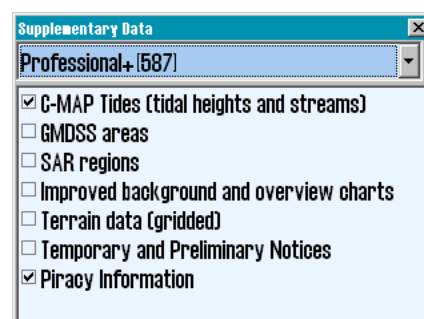
The layers that are available is as follows:

	S63(GB)	ENC+	ENC	Professional+
Temporary and preliminary notices		x	x	x
Admiralty Information Overlay	x			
Improved background and overview charts		x		x
C-MAP Tides		x		x
GMDSS areas		x		x
SAR regions		x		x
Terrain data (gridded)		x		x
Piracy information		x		x

The list above is not exhaustive, and there may be other layers available from your chart provider that is compatible with your TELchart ECS system.

7.2.4: Overview of available chart information

Chart information can be set in either the shortcut list in the main panel of the Chart menu, or in the IHO Viewing Group panel, accessed by pressing the **More** button in the menu.

Shortcut list

Function name	Description
Text (standard)	When enabled, displays all the standard text in the chart as countries, cities, islands, and other place names.
Text (other)	Shows chart view informations other than that referred to above.
Full hazards display	Shows the hazards placed (displayed) within safety contour and the isolated dangers placed outside the safety contour, which are deeper than "Safe" depth.
Shallow soundings	Shows soundings shallower than "Safe" depth.
Deep soundings	Shows soundings deeper than "Safe" depth.
All depth contours	Shows all depth contours, even within the safety contour.
Hazard symbols	Sets the rule that all obstacles shallower than safety contour will appear with a special UNDERWATER HAZARD symbol.
Cables and pipes	Shows registered cables and pipelines.

Bottom type	Shows information about bottom types.
Grid	Shows information about chart grid.
Lights character	Shows light character information in the chart. NB: some lights, for example those with periods longer than 15 seconds, are accompanied with text instead of active blinking.
Light cursor info	Shows lights character information in a textbox when the cursor is placed over a light.
Active lights	Shows lights blinking with right sequence and color, as seen from own vessel.
Active lead sectors	Extension of lead sectors (covering the vessels current position) out from the light
Small vessels/-boats info	Shows useful information for light and small vessels, such as port info etc.
Simplified symbols	Shows simplified S52 standard chart symbols. (not INT 1)
Chart Quality Labels	Shows labels for quality on chart.
Simple border drawing	In the chart, shows all lines and boundaries as simple lines.
National name	Show the location names in the language the chart was produced in.
Additional info «!»	Marks objects in the chart, with "!", where additional inform-ation is available.
All time-limited	Showing all temporary, periodic or otherwise time-limited chart objects, with no link to the current date / time.

IHO Viewing Groups

Standard display	Other
General information	General information
Coastal features	Natural features
Swept area	Currents, Tides, etc
Seabed dangers	Seabed Information
Routes and tracks	Administrative areas
Restricted and Cautionary Areas	Services
Buoys, Beacons, other navigation aids	
Services	

7.2.5: Chart Legend

By clicking on the **"?"** button in the bottom left corner of the *Chart* menu, a new information window is open, showing the chart legend.

There is a tab for each available chart on display. The area corresponding to each chart is shaded in red on the display when their respective tab is selected.

IHO presentation library version number is displayed as standard text on the title bar of the window (here: "Chart legend, preslib v3.4").

The version number of the chart engine of TELchart ECS is also displayed(Here: CMap v5.2.1.23), and your version of the TELchart ECS program (Here: 4.7.2.23).

The chart database the chart you are viewing belongs to is shown at the bottom of the list (here: ENC).

Chart legend, preslib 3.4, CMap 5.2.1.23, AIO	☒
DE110000	N02B0416	DK2NORSO	DK2SKARK	◀ ▶

TECDIS software	Ver. 4.7.2.23 #55003 0-1-0
Dataset	DK2SKARK.000
Producer	Kort-Og Matrikelstyrelsen (KMS) - De
Quality	Map centered in zone of confidence B
Rating	Official
Compilation scale	1:180000
Depth units	Metres
Height units	Meters
Sounding datum	Mean sea level
Magnetic variation	Not specified
Projection	MERCATOR
Vertical datum	Mean sea level
Horizontal datum	WGS 84
Edition date	24.10.2013
Update date	27.03.2014
Edition number	17
Update number	5
Safety depth	9
Safety contour	10
Chart database	ENC

7.3: The Ship menu

7.3.1: Ship symbol offcenter

Here you define how much of the charts are to be displayed in front of the vessel when in Auto Mode.

This functionality is only available while in Auto mode.

7.3.2: Auto sensitivity

Here you adjust the sensitivity of the automatic chart redraw

7.3.3: Viewing the double circle

With this selected the own vessel position is displayed with a double circle in the charts.

7.3.4: View vessel contour
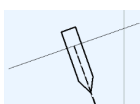
With this selected, the vessel size displayed in the charts are relative to the chart scale and zoom level.

7.3.5: Course vector

Indicates the vessel course and speed in the charts, by a dotted line in front of the vessel. In the dropdown list you select how many minutes of travel at the current speed the line should reach. The end point of the line is where the vessel will be after the selected time.

7.3.6: ROT curved

When this is selected, the course vector is drawn as an arc when the vessel is approaching a waypoint with a course change and wheelover is set to a different value than 0.

7.3.7: Auto route activation

Automatically activates the new route. If conbined with Allow route activation entry lane in TECDIS Setup, a route leg will be placed between the new route and the vessel position as well. Default setting for this option is **of**f. Read more about route activation alternatives in chapte*4.1: Route planning*(see page 48)route planning.

7.3.8: Wheelover

Indicates at what distance from the next route leg a new rudder angle should be given. This is an important setting for correct Track Control turn behaviour.

Selec**t "**---" to disable the Wheelover view.
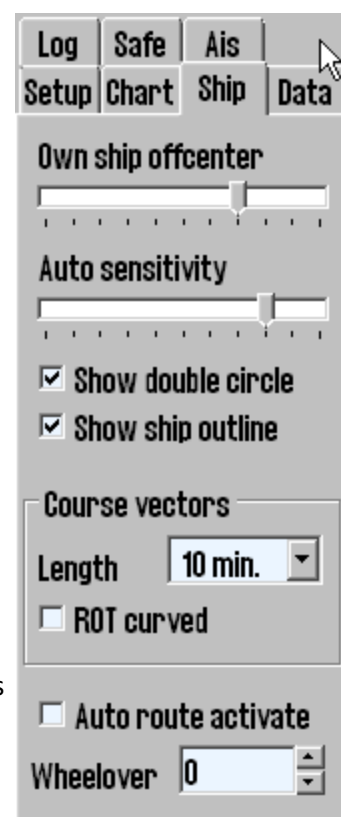
7.4: **The Data menu**

Backing up own data is very important. Individual data important to keep are: routes, tracks, symbols, information and lines / areas.

The data backup is done by copying data to hard drive / CD or memory stick for safe keeping.

It may also be necessary to copy data from one machine to another, both for backup and daily use.

7.4.1: Select databases

TECDIS is equipped with 6 databases for user content. You select one database as your current database, and you can select which other databases to display data from. The selected current database is where new symbols/tracks/routes are saved.

Select your current database by clicking on the circular selector boxes - only one database can be selected at a time.

Select which other databases to display with the square selector boxes. Your currently selected database will not be available.

7.4.2: Select data function

In this drop-down list you can choose from the following actions:

- **Read in from file** - add user data to the TECDIS. The user data (routes/symbols/tracks) is stored in the **current** user database.
- **Copy out to file** - make a backup or export data to another TECDIS system.
- **Delete** - Deletes the selected user data (see next chapter for data selection)
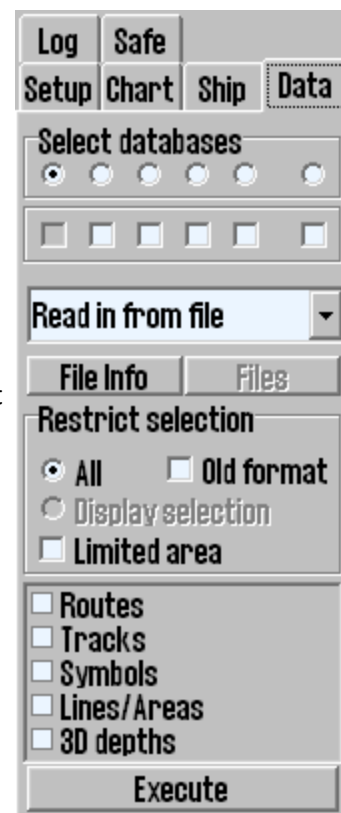
7.4.3: Restrict selection - time/area

In this field you can specify what data to be copied in to/out of TELchart ECS.The field is dynamic and changes according to selected function in the field above.

The **All** option includes all relevant data. For some functions you can also restrict the data selection with a from-date.

The **Limited area** option includes all data within a rectangle. You will be prompted to draw the rectangle in the chart view after this option is selected.

> If data from TECDIS vers 4.7.1.10 or earlier has been stored or copied out / in, then the box for **Old Format** must be selected for the data to be read it by the

newer version of TECDIS SW. *The wrong choice in this box will result in an error, and should be changed before retry.*

7.4.4: Restrict selection - data type

You can now select which data you want to copy in/out of the TELchart ECS unit.

7.4.5: Execute

When you now have selected the function you want to use, and added restrictions if needed, you can start the copy process.

To start the process, press the **Execute** button at the bottom of the *Data* menu tab. A save/open dialogue opens and you can select the file destination you want, and finish the process.

7.5: The Log menu

TECDIS stores data for position, course and speed of a vessel, ARPA and AIS targets, every minute. History from a specified date can be displayed in several ways.

7.5.1: Log text

In the **Date** dropdown list you can select the date for the log you want to review.

The **20 min** button opens a list of position, course and speed for every twenty minutes for the date selected in the upper field.

The **Noon** button opens a list of position, course and speed for each hour, from 12.00 the previous day to 12.00 the day selected in the upper field. For every 4 hours is displayed sailed distance (*Distance Watch*), and on the bottom appears total sailed distance(*Distance total*).

The **Details** button opens a window with a detailed log of the hours,beginning with the time set in *00.00* field.
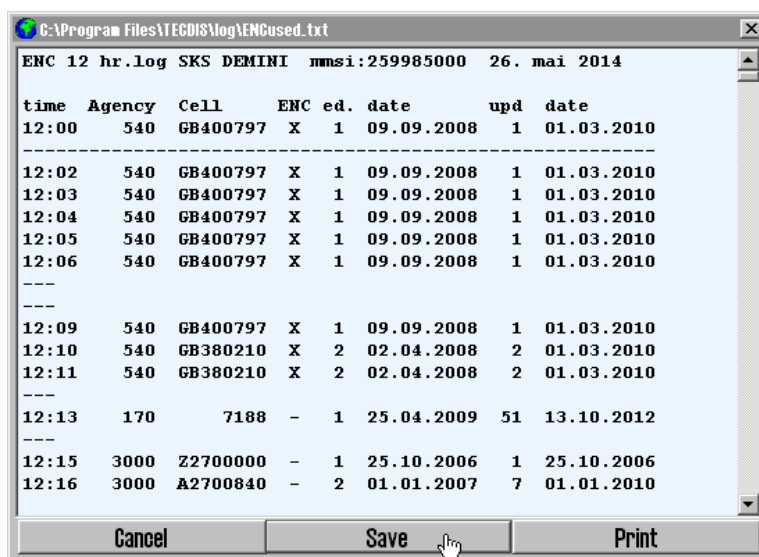
The log contains detailed information for every minute, of vessel's position, course and speed, on the chart display that is used:

the chart center and the scale are represented by a cross if:

- Auto Mode was active
- the type of chart used (" ENC "," S52 ")
- if the Primary Position Source was used (" PRI ");
- if the GPS position encoder was ok ("X");

if the position was corrected manually, it is shown on a separate, third line ("Offset") Se illustrasjon.

The **12.t ENC** button shows what kind of chart data has been displayed on the screen, every minute in the last 12 hours.

the **DR fix** button is active and selectable if L.O.P. functionality was used to determine the position on the selected date. *Clicking* the *DR fix* button, opens a log of completed performed positional decisions, with all associated observational data. All log files can be saved or printed.

7.5.2: Visual Replay

The **Replay voyage** button opens a *Replay* window where earlier voyages log data can be simulated on the chart showing own ship, AIS and Arpa Target position for the date and time specified.

The **Show Positions** button opens the view of the situation on the chart, as it was at the chosen time.

The **Start** button starts replaying the situations, as specified in the log, with 1 minute interval.

The **Use DR** option allows Dead Reckon Mode for positions between each saved minute and vessels will be shown with new calculated positions every second. Replay speed is set with the slider at the bottom of the window.

Click on the *Replay voyage* button again to stop the playback of a certain earlier plot and return to the present situation.
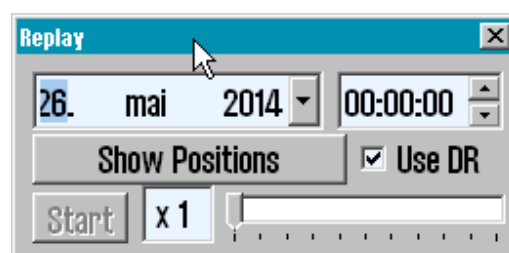
7.5.3: AIS ship data

"Query AIS database " button opens up the possibility to make queries against a vessel database where all previously received AIS targets are stored under a name and registered with MMSI, IMO, Call Sign, and date of last reception from the vessel.

Enter the name of the vessel when the window is opened, then click on the "Enter" button.

Last date for stored location is displayed on the <u>Date</u> button. Clicking on this button the situation is displayed on the chart and "Replay" window opens automatically.

> Replay of the situation can also be started from the "Replay" window as described in *Visual Replay* (see page 170)

Click on "Query ais database " button again to close the "AIS database" window and return to the present situation.

7.5.4:   Delete Old Log Data

"Delete old data" button deletes log data older than a year if the deletion is confirmed in the subsequent "Delete log files older than one year" window.

7.5.5:   Screenshots

Display screenshots from TECDIS can be generated at any time by pressing the **Screen-shots** button at the bottom of the *Log* menu. When pressing it, you enter the screenshot menu, allowing you to make the following actions:

- Take screenshots
- See a list of all taken screenshots, with date and time in the file name
- See a preview of the screenshots by clicking on them in the list
- Export the screenshots to a user definable destination(*multi screenshot export is supported*)

7.6: The Safe menu

In the Safe menu you set the safety settings in TELchart ECS. Here you adjust the different depth contours that are always shown in the charts, and select settings for hazard display and anti grounding.

7.6.1: Safe, Deep and Shallow

In the chart view you will always see four depth areas with depth contours:

Safe Safe dpt	All areas in the chart shallower than the safe depth are marked in blue, and the contour is highlighted. All areas outside the depth contour for safe depth is considered safe waters by TELchart ECS. An anti grounding alert will sound if the vessel safety zone crosses the depth contour for safe depth.
Shallow Shallow	All areas in the chart that are shallower than the shallow depth are marked in dark blue. Shallow depth can be used to separate shoals within the safe depth zone.
Deep Deep	All areas in the chart that are shallower than the deep depth are marked in a light grey-blue color.
Not defined	All areas in the chart that are deeper than the deep setting. Marked in a lighter gray-blue color.

- The value of the Safe Depth field can be set manually, but now lower than the Draught Max or Safe Depth Min values in TECDIS Setup.

- Deep and shallow can be changed freely.

> When you start TELchart ECS the system automatically checks for the set Draught Max and Safe Depth Min values.
>
> If either of these values are higher than the Safe Depth setting in the Safe menu, that Safe Depth value will be changed to the highest value.

> In charts without the selected safe depth contour, the next deeper contour is displayed. Some chart areas can contain incomplete data, and even if displayed, **non-closed contours can not be used as safety contours**.

7.6.2: Check time and angle (anti grounding parameters)

The specified values set a safety zone ahead of the vessel where dangerous objects will generate an alarm. See chapter *4.4: Anti grounding* (see page 77) for details.

7.6.3: Auto Safe Hazard display setting

The Auto safe hazard display settings determine how TECDIS displays danger objects within the safety contour during anti grounding alarm situations.

When an anti grounding alarm situation occurs this setting will determine if Safe hazard display and shallow soundings *7.2: The Chart menu*(see page 162) is to be activated or not.
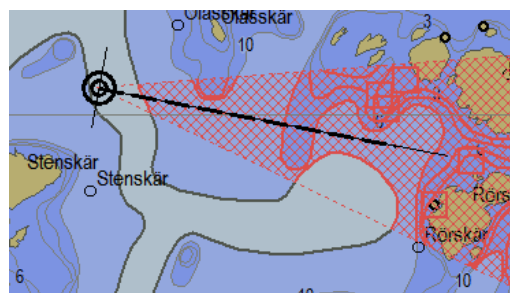
The available settings are:

Disabled	The selections for Safe hazards and Shallow Soundings in the chart menu determine the hazard display.
On (recommended)	The display of Safe hazards and Shallow Soundings are activated when an anti grounding alarm occurs, and requires manual deactivation when the dangerous situation is passed.
On and Off	The display of Safe hazards and Shallow Soundings are activated when an anti grounding alarm occurs, and are automatically set back to their previous setting when the dangerous situation is passed.

7.6.4: Camera control (formerly FLIR)
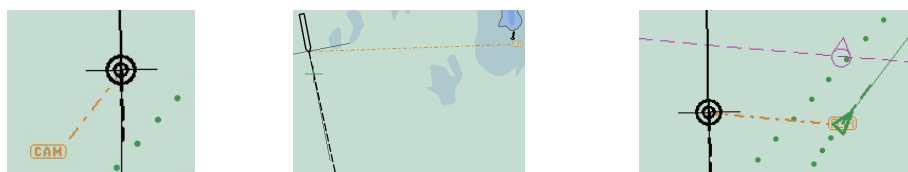
When Camera Control is activated in the Safe menu (Installation of Camera control in TECDIS Setup is required), a CAM symbol is shown at the end of a 0,5 NM long vector originating in the Conning position.

The operator can control the camera by placing the cursor over the CAM symbol and right click. The appearance of the CAM symbol changes, ant it is now highlighted. It will now follow the cursor movements in the chart, and the camera unit itself will be moved.

The camera can now be locked at a fixed position in the charts, such as to a reef or a light, by placing the CAM symbol in the desired position and right clicking.

In addition the CAM symbol can be placed over an ARPA or AIS target, and will then both lock on to and follow the movements of the target.

7.6.5: Alarm

The operator can choose some of the alarm functions. See **chapter *4.5: Notifications and alerts*(see page 78)** for a more detailed description of the alarm system.

Function name	Description
Standby mode	This mode is only available if made so by a service technician.

When this option is selected no audible alarms will be triggered. It is displayed with a large warning notice in the bottom right part of the charts.

STANDBY MODE
No audible alarms !

Standby Mode can be limited with the following parameters:

Time (min): Add a maximum time for Standby Mode before deactivation.

Speed (knots): Add a maximum speed for Standby Mode before deactivation.

New WP/CTS	When the vessel is approaching a new waypoint (WP) on active sailing route, an alarm is triggered when the wheelover line is crossed.
Non-ENC dangers	When ENC charts are available, Anti-grounding System and Route Check will always verify ENC data.
	By selecting this option it is possible to verify unofficial chart data, if there is no ENC chart coverage in the control area.
	When this option is enabled, the Route Check will trigger an alarm both from ENC and unofficial chart data.

7.7: The TGT (target) menu

The target (TGT) menu is where you specify the configuration of your target display and behavior. The table below lists the possible configurations of each menu item.

Function	Description
Active range	Filters which targets are shown as active based on the distance to own vessel. This makes it possible to view all targets with course, COG-vector and past track line. To remove the distance limit and display all targets as active, select No limit. When targets are outside the distance limit, they will change to sleeping mode. This can be overridden in the target window, by selecting Activate.
Track	Track specifies the length of the past track lines for the targets. It is specified in minutes of travel.
CPA pos.	**Manual:** Displays CPA positions manually for each target from the target window. If the target window is open, the CPA position will be displayed regardless if the CPA is in the past or future. When it is closed, only future CPA will cause CAP position to be displayed. **Dangers:** Same as above, but in addition CPA position will be displayed for all targets the radar classifies as dangerous. **All active:** CPA position is displayed for all active targets with CPA in the future. If you open a target window, only the CPA for that vessel will be displayed, and CPA positions will be displayed even if CPA is in the past.
Hide sleeping AIS	
DIST above	Hides sleeping AIS targets beyond this radius
Hide class B	Removes the display of all class B targets beyond the active range

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	distance setting
	Lost active targets
Dist. limit	Select if the function should be on or off, and the distance limit for Alert when lost
Alert when lost	Turns on an alert when active AIS targets are lost
AIS AtoN	Turns on the display of Aids to Navigation (AtoN) symbols
AIS-SART	Turns on the display of Search And Rescue Transmitter (SART) symbols
Active target names	When selected, displays target names on all active targets
Relative COG vector	Sets all AIS target COG vectors to be relative to own vessel movement. If not selected, targets use true course and speed.
Show associated as AIS	This displays targets associated with both AIS and radar as AIS targets.

7.7.1: Lost active targets

AIS targets within the range specified in the Area field is marked with a black cross when the target data ends.

If **Alert when lost** is enabled, this will also provide an alert.

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TELchart ECS Setup

In this chapter we will look closer at the system settings that are only available in TELchart ECS Setup.

A.1 TELchart ECS Setup at a glance

TELchart ECS Setup contains the most important settings in TELchart ECS.

These settings are divided in to 4-5 tabs, depending on the system add-ons you have purchased.

NMEA Data(see page 181)

Here you set all in and output sensor settings. These are sent as NMEA sentences over either comports or an IP network.

Vessel settings (Specification)(see page 187)

Here you set the vessel size and sensor placement.

Chart installation/ Misc(see page 191)

From this tab you can maintain your chart database if you use charts from Jeppesen.

Here you also check the monitor calibration status.

Licences(see page 193)

From this tab you can administrate your licenses, both for charts and purchased add-ons.TELchart ECS

> Note that only Jeppesen chart licenses are administrated from this tab.
> Licenses for other chart providers are administered from the S63 Chart Loader program.

A.2 NMEA Data

The NMEA *Data tab in TELchart ECS Setup contains all controls and configurations for input and output in the* TELchart ECS system.
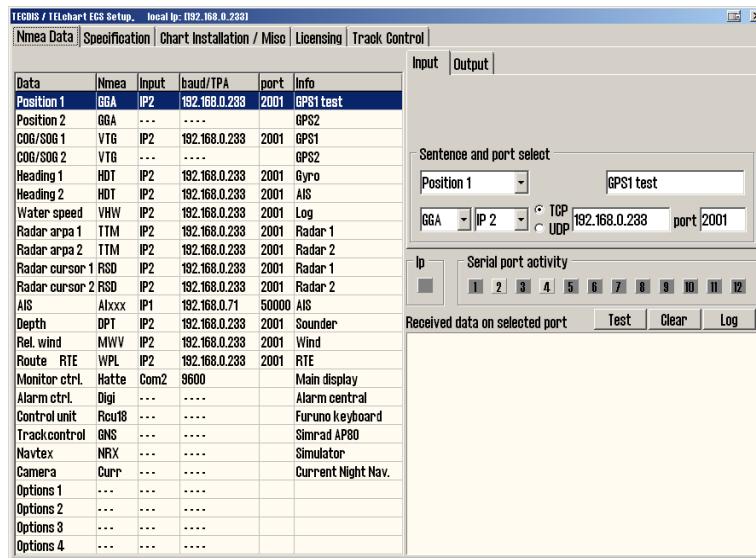
The table on the left of the tab displays the current configuration, and is immediately updated if alterations are made to the **input** and **output** tabs in the *upper right part* of the NMEA Data tab.

The dropdown list for the *input* field will impact the display of available alternatives in the other dropdown lists in the input tab, aiding you in setting the configurations correctly.

> Note: Descriptions in this chapter are presented as information only. Only authorized service technicians should reconfigure the settings in the NMEA Data tab.

A.2.1 NMEA Input

> Note: All positions sent to TELchart ECS from external sensors have to be in the WGS-84 format.

Use this tab in the NMEA Data tab to configure input signals.

Select the data-type you want to configure. This is done by selecting it in the table to the left, or by selecting the data-type from the correct dropdown list. When you have selected the data-type, the entry for that data-type in the sensor table to the left is shown with a blue background colour.

A.2.1.1: Info text

Then you enter a description in the *info* field, to identify the type of sensor/data later. This can be used as the label for the sensor, as it will be visible in any alarms in TELchart ECS related to the sensors functTELchart ECSion.

A.2.1.2: NMEA sentence

In the dropdown list for NMEA sentence you select the NMEA sentence your sensor is sending data in. Available NMEA sentences in the dropdown list will change according to the selected data-type/sensor-type.

When a given sensor can send out more than one of the supported NMEA sentences, the highest placed alternative in the list below should be used:

Position 1 og Position 2

1. $??GNS GNSS fix data
2. $??GGA GPS fix data
3. $??GLL Geografic position (Lat/Long)
4. $??RMC Recommended minimum specific GNSS Data
5. !AIVDO AIS own ship position. UAIS VHF Data link own-vessel report

COG/SOG 1 and COG/SOG 2

1. $??VTG Course and speed over ground
2. $??RMC Recommended minimum specific GNSS data
3. $??OSD Own ship data
4. !AIVDO AIS own ship position. UAIS VHF Data link own-vessel report

Heading 1 and Heading 2

1. $??THS True heading and status
2. $??HDT Heading true
3. $??OSD Own ship data
4. $??VHW Water Speed and Heading
5. !AIVDO AIS own ship position. UAIS VHF Data link own-vessel report

Radar targets 1 and Radar targets 2

1. $??TTM Tracked Target Message
2. $??TTD Tracked Target Data

Radar Cursor 1 and Radar Cursor 2

1. $??RSD Radar System Data

AIS

1. !AI??? AIS UAIS VHF Data Link

Depth

1. $??DPT Depth
2. $??DBT Depth below transducer

A.2.1.3: Input port

In the dropdown menu **Input port**, the physical serial port/IP-port for the chosen sensor is selected.

TECDIS has 6-12 COM-ports and 4 IP-ports.

When the desired input port is selected, the letter for the entry in the sensor table for this sensor will become:

- unaltered(white) if the sensordata received do not match the configuration in TECDIS Setup.
- green if the sensordata match the specified sensor
- red if the port is already selected for another sensor

An example:

To obtain position data from a GPS, the settings can be as follows:

1. Select **Position 1** or **Position 2** in the *Select sensor* column
2. Select the port(COM or IP) where you have connected the GPS, in the ***port*** field.
3. Select the NMEA sentence type the GPS transmits
4. It could also be beneficial to describe the sensor as a GPS in t*he Sensor description field.* If the system loses connection to the sensor during sailing, TECDIS will sound an alarm. The alarm will display both data-type(eg position 1), port (eg COM 3) and the description ent*ered(eg GPS).*

IP ports

For each IP port an IP address and an IP port number has to be given.

The test button enables a connection to the IP server with the chosen address/port number and in the field **Received data on selected port** the received data will be displayed.

A.2.1.4: The Baud/TPA field

In the **Baud/TPA** field the data transfer speed for the selected/active COM port is shown. The speed is changed by selecting a different value in the dropdown list.

The NMEA standard is 4800 (low speed), but note that some sensors require different speeds. The following speeds are available in the TELchart ECS system:

- 4800
- 9600
- 19200
- 38400

> AIS generally use *NMEA high speed*, 38400 baud. (Select AIS in the *data field*, and check that the *Baud/TPA* field is set at 38400 baud).

A.2.1.5: Serial port activity

In the **serial port activity** field all data from the selected serial port is displayed. A serial port receiving data will blink with **green** color. The indicators are for COM ports 1-12 in increasing order from left to right.

A.2.1.6: Received data on selected port

In the *Received data on selected port* field the data that are being received from the COM port that is marked with blue in the sensor table. If received data is valid NMEA sentences, the line will flash in green.

If IP ports are used, data for all sensors attached to that port are shown. The sensors will then all flash green when valid.

When changing to another COM-port, the data displayed will change and the data for that port will be shown.

A.2.1.7: COM-port for Alarm *ctrl*

Select the COM port that should be used for the alarm central interface (if used). If an alarm interface is not connected, set this port to "----".

In the "NMEA"-sentence pull-down menu there are two choices; "Digi" and "ALR".

- "ALR" will set the port up to serial NMEA communication with the alarm central.
- "Digi" option should be used when connected to a proprietary alarm interface TEA-01, which is an open/close relay contact.

A.2.1.8: COM-port for CAM control

Select the COM-port where you have connected a gyro-stabilized camera. If a camera control interface is not connected. set the port to "----".

A.2.2   NMEA Output
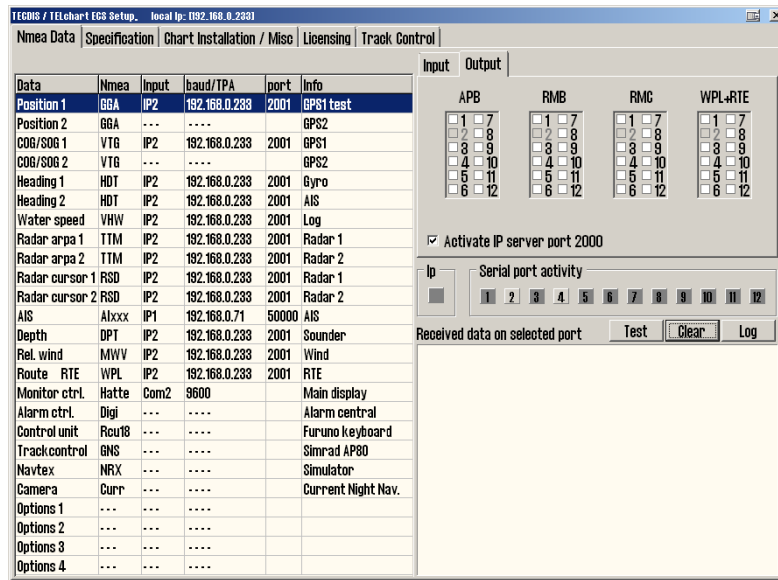
In the Output tab in the top right corner of the NMEA Data settings panel, you will find the following NMEA sentences that TELchart ECS can transmit:

- APB
- RMB
- RMC
- WPL+RTE

For each of the outputs, there are choices of which of the physical COM-ports the output should be directed trough.

A.2.3   **Supported NMEA sentences**

TECDIS supports communication with external equipment using the following NMEA sentences, as specified by the NMEA standard and IEC 61162-1 (Ed. 3.0):

NMEA sentence	Description	Send / Receive
ABK	(AIS) AIS addressed and binary broadcast acknowledgment	R
ABM	(AIS) AIS Addressed Binary and Safety Related Message	S
ACK	Acknowledge Alarm	S
ALR	Set Alarm State	R
APB	Heading/Track Controller (Autopilot) Sentence "B"	S
BBM	(AIS) AIS Broadcast binary message	S
DBT	Depth Below Transducer	R
DPT	Depth	R
DTM	Datum reference	R
GGA	Global Positioning System (GPS) Fix Data	R
GLL	Geographic Position – Latitude / Longitude	R
GNS	GNSS fix data	R
HDT	Heading, True	R
MTW	Water temperature	R
MWV	Wind Speed and Angle	R
OSD	Own Ship Data	R
RMB	Recommended Minimum Navigation Information	S
RMC	Recommended minimum specific GNSS Data	S+R
ROT	Rate of Turn	R
RSA	Rudder Sensor Angle	R
RSD	Radar System Data	R
RTE	Routes	S+R
THS	True heading and status	R
TTM	Tracked Target Message	R
TTD	Tracked Target Data	R
VDM	(AIS) AIS VHF Data-link Message	R
VDO	(AIS) AIS VHF Data-link Own-vessel Report	R
VBW	Dual Ground/Water Speed	R
VHW	Water Speed and Heading	R
VSD	(AIS) AIS Voyage Static Data	S
VTG	Course Over Ground and Ground Speed	R
VWR	Relative (Apparent) Wind Speed and Angle	R
WPL	Waypoint Location	S+R
ZDA	Time and date	R

A.3 Vessel settings (Specification)

> Note: Descriptions in this chapter are presented as information only. Only authorized service technicians should reconfigure the settings mentioned in this chapter.
>
> The exception from this is *Allow route activation entry lane*, that can be set by the navigator.

In this tab the dimensions of the vessel and sensor placement is specified. In the table below some selected settings are listed, and what effect those settings have on the TELchart ECS system.

Field name and illustration	Description
Ship size	Length, beam, draught and height of the vessel, measured in meters.
	For "Length"- and "Beam"-fields the ship's largest dimension value for length and beam should be used.
	For "Draught" and "Height" the largest possible height and draught taking load conditions into consideration should be entered.
	For safe depth min, enter the wanted minimum safe depth for the vessel. This value overrides the draught min/max as basis of the safe depth settings in the TELchart ECS**Ship** menu tab. Navigators cannot set a shallower safe depth than this inside TELchart ECS.
Other TELchart ECS unit(s) data export	If your TELchart ECSinstallation consists of two or more units, the name and IP-address for the connected units are entered in this field.
	The name you choose is used to identify the unit in the Data menu tab in TELchart ECS. If text is entered in this field when no unit is connected, an alarm will be turned on when TELchart ECS is started.
	This function allows the possibility to transfer data (objects, past track lines, routes) to the other units.
Radar use true EBL reference	When this checkbox is marked, it is assumed that bearings lines received from the radar(s) are true referenced. If this option is not marked, TELchart ECSwill perform the necessary adjustments.
Radar is conning referenced	When this checkbox is marked, it is assumed that target information from a radar is already adjusted to the navigator position.
	If it is not marked, TELchart ECS will perform the necessary adjustments.
Monitor size, main menu	**Monitor inch diagonal** is the monitor screen size in inches, measured diagonally.
	Backward (gyro-180º) this flips the heading values given by the gyro 180 degrees.
	In the **Main menu** dropdown list you can select where you want to place the main toolbar. There are two options; horizontal along the top of the monitor(default), and vertical along the left side of the monitor.
Alarm	**Allow Standby Mode**: In this mode no audible alarms will sound. Activation of this mode is done in the Safe menu tab. *Allow standby mode* will also allow deactivation of CPA alarms in TELchart ECS.
	Remote silence only: Only available for systems connected to

an alarm central. If an alarm is acknowledged on the alarm central with this function activated, only the alarm sound will be turned off. The alarm will still remain in TELchart ECS.

Keyboard alarm is the built in alarm sounder in the Furuno RCU-018 Keyboard. (available on select TELchart ECS models)

Allow route activation entry lane ☑ Allow route activation entry lane	With this selected, TELchart ECSwill ask the navigator which waypoint to connect a route leg to. This route leg will start in the own vessel position. This question will be asked when a route is selected for activation and voyage.
Erase Secondary past track Erase Secondary past track	If two positioning methods are in use, pressing this button will remove the past track line from the secondary position sensor.
Name Name SKS DEMINI	Here you write the name of the vessel.
MMSI MMSI 259985000	Here you write the MMSI number of the vessel.
Restore saved default values Restore saved default values	Here you can restore all settings TELchart ECSSetup to the settings that were present the last time TELchart ECSSetup was closed.
Depth below transducer Depth transducer 30 m. from bow 0.0 m. above keel	Here the distance from the keel to the sensor can be set in steps of 0,1 meter.

A.3.1   More about restoring saved default values

When you restore settings from a backup file on the TELchart ECS Service Key, you have to follow this procedure:

1. Press the **restore saved default values** button
2. A dialogue window called _Restore to xxxxx: Locate setup-file to restore from, and click OPEN_ is opened.

> xxxxx is the eToken/system ID for your TELchart ECS. An example of an eToken number is eT 55001.

3. Navigate the folders until you find TELchart ECS Service Key The file that contains all settings, is called T-**setup-xxxxx.tsz.**
4. Select this file, and press the **OK** button

A.3.2   More about T-setup/TSZ files

A **T-setup xxxxx.tsz** file is generated every time you start and stop TELchart ECS Setup.

The file is saved by:

1. entering a USB dongle in the TELchart ECS unit.
2. stopping the TELchart ECS program
3. starting the TELchart ECS Setup program
4. stopping the TELchart ECS Setup program
5. removing the USB dongle

T-setup xxxxx.tsz files can be used by Telko in an analysis of the system settings. This aids in most support cases.

A.4 Chart installation/ Misc

The procedure for installing charts in TELchart ECS Setup is explained in *6.1.1: Alternative installation with Jeppesen SENC charts*(see page 110).
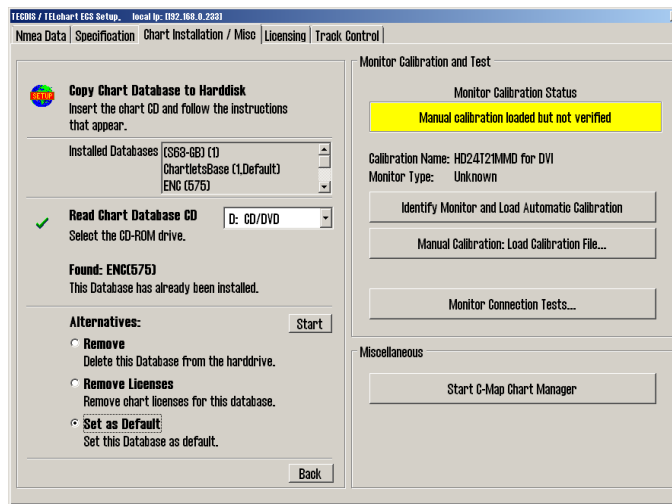
The tab Chart installation/Misc contains the following:

Copy Chart Database to Harddisk	Gives access to updating, removing and reinstalling chart databases
Enter Vessel Information	Here you have to state the vessel and owner information. This information is necessary for chart licensing and warranty purposes.
Send Regis-tration	Saves the information entered in Vessel Information on the TELchart ECSunit harddrive. The file can now be transferred to another computer with inter-nett access for sending to Telko at support@telko.no.
Monitor Cal-ibration and Test	This field reports on the current monitor calibration status, and gives access to methods of updating the monitor calibration and monitor serial con-nection diagnostics.
Start C-Map Chart Man-ager	Gives access to the C-Map chart databases, licensing and diagnostics tool for the chart databases in a separate program made by Jeppesen.

A.4.1 More about Monitor Calibration

The correct monitor calibration is necessary to ensure correct colour rendition in the charts.

To recalibrate the monitor, first try automatic calibration by pressing **Identify Monitor and Load Automatic Calibration**.

If this is unsuccessful, perform a manual calibration by pressing the **Manual Calibration: Load Calibration File...** button and select the correct calibration file for the connected monitor.

If you cannot find a calibration file on the hard drive, this can be acquired by support@telko.no or an authorized dealer.

The field *Monitor Calibration Status* reports the current status for the monitor calibration. The possible status reports are given in the table below along with actions required if you experience issues.

Status	Action
No serial line to monitor!	Connect the monitor to a COM-port
Calibration not performed!	Perform automatic or manual calibration
Wrong manual calibration file loaded!	The loaded manual calibration file does not match the connected monitor Acquire the correct calibration file from support@telko.no and perform manual calibration again.
Monitor contains wrong automatic calibration!	Contact support@telko.no or an authorized dealer.
Automatic calibration loaded but not verified	Calibration was successful, but the monitor type has to be manually verified.
Manual calibration loaded but not verified	Control that the calibration is correct by comparing the model name on the monitor itself and the name given in Calibration Name.
Automatic calibration loaded and verified	Calibration of the monitor was successful and verified
Manual calibration loaded and verified	

Calibration Name reports the name of the manually or automatically loaded calibration file.

Monitor Type is the name of the monitor model, as reportd by the monitor itself.

Identify Monitor and *Load Automatic Calibration* start an automated identification of the monitor type and then tries to automatically load the correct calibration file from the monitor to the computer.

Manual Calibration: Load Calibration File... allows for manual loading of monitor calibration files form the folde *C:\Drivers\TECDIS*.

Monitor Connection Tests... gives access to tests for verifying that the monitor serial connection to the computer is correct (testing buzzer sound, adjusting background lighting and performing a monitor identification test).

A.5 Licences

In this tab you will find information about your system licenses and Jeppesen C-MAP licenses.
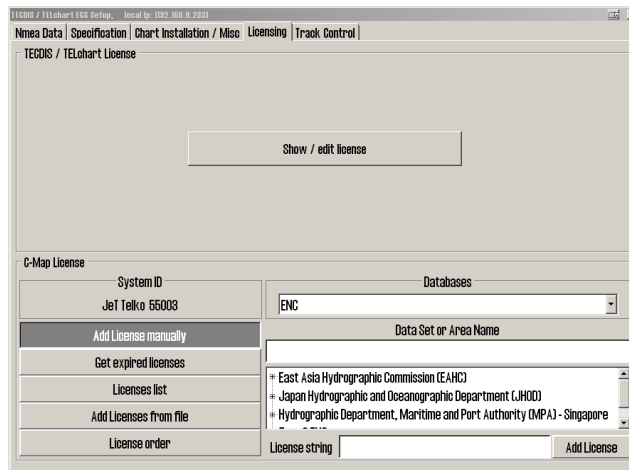
TELchart ECS uses eToken codeplugs from Jeppesen as the system ID. Without the correct eToken connected to your unit, TELchart ECS will not start.

A.5.1 System licenses (TELchart License)

Information about your system licenses, such as what options are activated for your TELchart ECS unit, can be found by pressing the **Show / Edit license button**
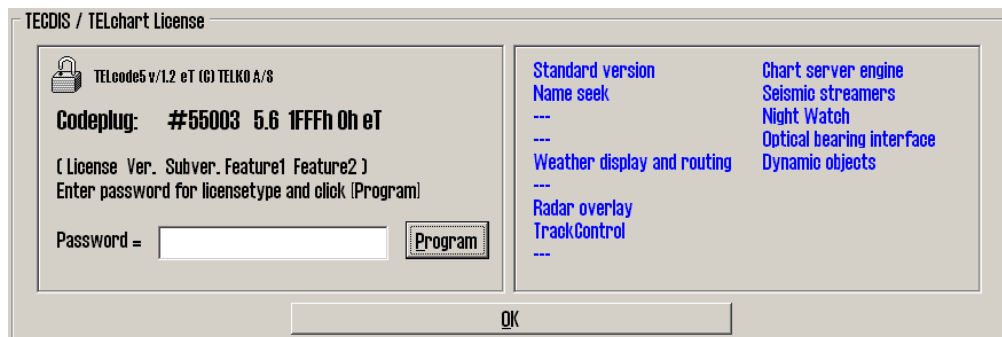
This information includes licenses number and version information, and a list of installed add-ons. The add-ons are displayed in blue writing in the right field.

A.5.1.1: **Activating add-ons**

To activate add-on functions, do the following:

1. Contact your *Furuno Norway* dealer to get an updated license code. The license in your system will be reprogrammed when adding a feature, so you have to report which other features you already have and want to keep.
2. The license code you receive is entered in the Password field.
3. Press the **Program** button to reprogram the license.
4. Press the **OK** button to exit the license tool.
5. Press the **Show / Edit license** button again, to check that the add-on list is updated with the correct add-ons.

A.5.2   Jeppesen licenses (C-Map License)

All functionality described in this chapter is valid for chart databases in the CM93/3 format distributed by Jeppesen(C-Map). For chart databases in other formats (S63), see chapter *6.1: Installing chart databases*(see page 110) for more information.

A.5.2.1: **Add license manually**

1. The **Add license manually** button opens a field to the right where the license code issued by Jeppesen can be entered in the License String field
2. In the dropdown menu labeled *Databases* you have to select the chart data-base or the function the license code is valid for.
3. In the *Data Set or Area Name* field you select the chart area or the functionality the license code is valid for.
4. Then you enter the received license code in the License String field. The license code is received from either Jeppesen (charts) or support@telko.no (function).
5. Finish and exit by pressing the **Add License button**.
6. Repeat this process for each chart area and each license code in each chart database.

A.5.2.2: **Get Expired licenses**

The **Get expired licenses** button gives you access to an overview of all licenses that has expired within a selected date (month and year).

A.5.2.3: License list
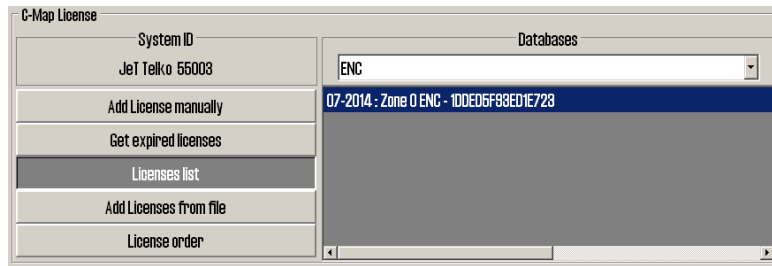
The **Licenses list** button gives you access to a list of valid licenses, sorted by chart database.

A.5.2.4: Add license from file
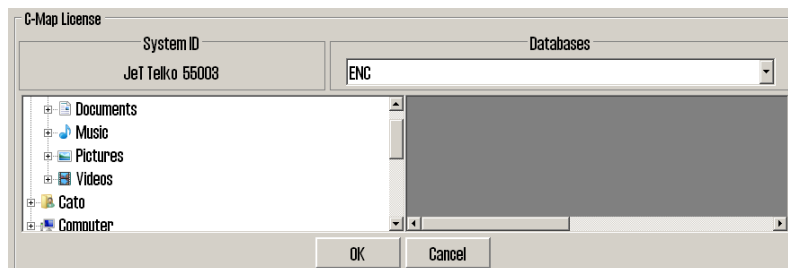
1. The **Add License from file** button opens a new field.
2. There you navigate in the file structure to the left of the field until you find the password.usr file you have received.
3. Select the file, and confirm adding it by pressing the **OK** button.

> All chart licenses for all chart databases and all areas included in your purchased license, is now activated.

A.5.2.5: License orde
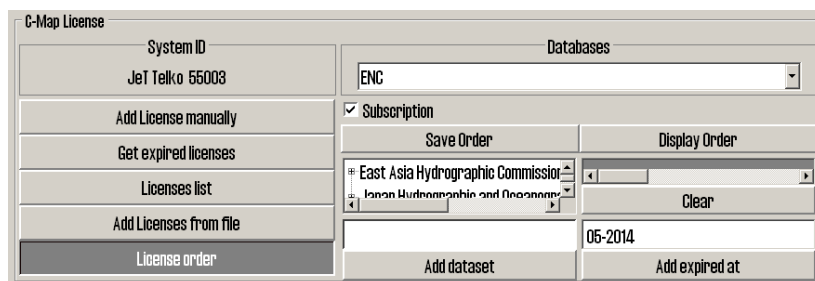
The License order button gives you access to a tool for easy generation of a license order summary that you can send to Jeppesen.

Troubleshooting

In this chapter you will find error codes and system warnings you may encounter in TELchart ECS. You will also find plausible causes and one or more solutions.

Appendix D:Troubleshooting

D.1 Trobleshooting - general

In this section you will find possible solutions for general issues in TELchart ECS.

Experienced issue	Cause	Solution
TECDIS is unresponsive	TECDIS has stopped working temporarily due to heavy tasks. This is indicated by the colon in the main clock in TECDIS; it stops flashing when TECDIS is unresponsive.	Wait for any other error messages. If none appear, the issue can be ignored.
	the chart engine has stopped working. In addition to the main clock not flashing, a counter will appear.	Wait for any other error messages. If none appear, the issue can be ignored.
I can't activate the route	Route activation alternatives are not set up correctly.	For more information, see chapter **4.1.7 on page 75**.
My TECDIS certificate has expired.	The TECDIS certificate (MED-B) only has to be valid until the unit is installed. If new hardware is installed (example: monitor), an updated certificate has to be downloaded from http://telko.no/site/support.	
I can't access the Tides function.	Tides in TELchart ECS is a service by Jeppesen.	Install and <u>activate viewing of</u> the following chart databases: •Professional+ •JeppesenPrimar
Routes are not transferred correctly from one TELchart ECS to the other.	Your route database might be corrupted.	Contact us at support@telko.no for further instructions.
I get an error message when I try to save the route		
I can't save my past track	Your track database might be corrupted.	
I get the message "not official display" when I use INT1 chart view.	INT1 is not approved as the sole mode of presentation of charts.	If you have any doubts about the chart information you are viewing in INT1 mode, switch to S52 mode for confirmation. S52 is the only presentation method approved as standalone. You can still use other presentation modes as long as you have the option of switching back to S52 when you desire.
The AIS button on the main toolbar is greyed	This requires that an add-on is:	a) contact your Furuno Norway dealer for purchase

out/does not work		
The Radar button(s) on the main toolbar is greyed out/does not work	a. purchased b. activated	b) Check that your TELchart ECS license has the add-on(s) activated. See appendix *A.5 Licences*(see page 193)
The Weather Overlay button on the main tool-bar is greyed out/does not work		
AIS targets are displayed with MMSI number and not their names.	TELchart ECS has not received the name of the vessel yet	Wait until the AIS transmitter on the tar-geted vessel has sent the vessel name. This will not take long.
I cannot place a MOB symbol in the chart	To place MOB symbols the vessel has to travel at a speed lower than 0.5 knots.	
I don't have access to the Replay functionality	The replay functionality requires that the vessel is not moving. The vessel speed has to be lower than 0.5 knots.	

D.2Troubleshooting - connection issues

D.2.1General tests

A	**Check your subscription** Make sure your subscription hasn't expired.
B	**Try another connection method** If you are using internet through the Furuno Network, try downloading by email. If you are already using email, try another email service. If you now get access, you have verified that the issue is with the network connection, and not the TELchart ECS system or the service you are using.
C	**Try to update the TELchart ECS software** Telko AS provide you with free software updates for your TELchart ECS. These contain both new functionality and big fixes. The issue you are experiencing might have been corrected in an update. Software updates are available at http://telko.no/site/support.

D.2.2Connection tests for internet

D	**Make sure the internet connection is activated** Approved TELchart ECS installations configured with direct internet access must have on/of switch for internet.
E	**Verify that you have access to the servers** *http://distribution.c-map.no* *http://datacenter.c-map.no* *http://datacenter.jeppesen.com* These are all opened in Internet Explorer. Connection OK = The error is in your DNS settings
F	**If E failed, you can connect to the servers with their IP addresses** http://80.239.21.75 http://80.239.21.103 Connection OK = The error is in your DNS settings
G	Of F failed, check that the firewall does not block you connection

D.2.3Connection tests for email

H	Check that the answer mail has not been placed in the spam folder
I	Try a lower max size for attachments (in the different function menus)
J	Make sure you are not trying to send/load old files
K	Only update one unit at a time If both are updated at the same time it is easy to mix the files.

D.3Troubleshooting - S63 Chart Loader

Each time the S63 Chart Loader is unable to load charts, an error message is displayed. The table below explains the different error messages.

Error message	Cause	Action
Format error loading installed cell permits	The saved Cell Permit files are not readable by the system.	Stop Chart S63 Loader, delete the file "C: \ Program Files \ TECIDS \ S63SYS \ PMT.DAT" and load all Cell Permits again.
Failure to access cell permit storage	The saved Cell Permit files are not readable by the system.	
No eToken detected	No TELKO eT (code plug) is connected to TECDIS or is defective.	Check that TELKO eT (code plug) is connected to the system and that a small red light is showing on it. Take it out of the usb port, and set it back in again. If this did not help, try another usb port. If this still does not help, contact a TECDIS servicepartner.
SSE 11 - Cell Permit file not found. Load the permit file provided by the data supplier.	*During loading*: The required Cell Permit file was not found or could not be loaded. *Under erasure:* The required Cell Permit file was not found or is already deleted.	*During loading:* Check that the file exists and is readable by copying it to a temporary location. *Under erasure: S*top and restart Chart S63 Loader and check the Cell Permit list under the Lic*enses ta*b. If the Cell Permit which was deleted is still visible in the Cell Permit list, delete this file: "C: \ Program Files \ TECIDS \ S63SYS \ PMT.DAT" and download all the Cell Permits again.
SSE 11 - Cell Permit file contains no permits. Contact your data supplier and obtain a new permit file.	The specified Cell Permit file contains no Cell Permit	Contact the Cell Permit supplier and ask for a new Cell Permit file. Load the new Cell Permit when the file is received.
SSE 12 - Cell Permit format is incorrect. Contact your data supplier and obtain a new permit file.	During S63 startup: The saved Cell Permit has become unreadable. *During loading:* The Cell Permit have errors or is incorrectly formatted.	During S63 startup: Stop Chart S63 Loader, delete the file "C: \ Program Files \ TECIDS \ S63SYS \ PMT.DAT" and load all the Cell Permit again. During loading: Check that the file is actually a Cell Permit file. If this is confirmed, contact the Cell Permit

SSE 13 - Cell Permit is invalid (checksum is incorrect). Contact your data supplier and obtain a new permit file.	During S63 startup: The saved Cell Permit has become unreadable. *During loading:* The Cell Permit have errors or is incorrectly formatted.	During S63 startup: Stop Chart S63 Loader, delete the file "C: \ Program Files \ TECIDS \ S63SYS \ PMT.DAT" and load all the Cell Permit again. During loading: Check that the file is actually a Cell Permit file. If this is confirmed, contact the Cell Permit supplier and ask for a new Cell Permit file.
SSE 14 - Incorrect system date, check that the computer clock (if accessible) is set correctly or contact your system supplier.	The system date has been reset.	Set the correct system date. If the problem persists, contact an authorized TECDIS service partner.
SSE 21 - Decryption failed no valid cell permit found. Permits may be for another system or new permits may be required, please contact your supplier to obtain a new licence.	A S63 encrypted chart cell file is corrupted or incorrect and / or an outdated Cell Permit is in use.	Obtain a valid Cell Permit from the chart supplier and enter them in the S63 Chart Loader. Try loading the charts again. If it is still not functional, contact your chart provider.
SSE 19 - Permits are not valid for this system. Contact your data supplier to obtain the correct permits.	Cell Permit for one or more S63 chart cells do not contain the correct decryption keys.	
SSE 15 - One or more ENC subscriptions in this cell permit file have expired. Please contact your data supplier to renew the subscription licence.	One or more of the Cell Permits have expired.	Obtain a valid Cell Permit from the chart supplier and enter them in the S63 Chart Loader.
SSE 15 - All ENC subscriptions for this ENC media have expired. Please contact your data supplier	All Cell Permits for ENC cells which are available on chart media (CD-ROM, USB memory stick, etc.) are expired.	

to renew the subscription licence.		
SSE 15 - Subscription for this ENC has expired. Please contact your data supplier to renew the subscription licence.	Cell Permit for the specified chart cell is expired and ENC cell has not been loaded.	
WARNING: SSE 15 - One or more ENC subscriptions have expired. Contact your data supplier for a subscription renewal.	*During S63 startup:* One or more of the installed Cell Permits are expired. *During loading*: One or more of the Cell Permits have expired.	
WARNING: SSE 20 - One or more ENC subscriptions will expire in less than 30 days. Contact your data supplier for a subscription renewal.	*During S63 startup:* One or more of the installed Cell Permits will expire in less than 30 days. *During loading*: One or more Cell Permits for ENC cells which are available on chart media (CD-ROM, USB memory stick, etc.) will expire in less than 30 days.	Obtain a valid Cell Permit from the chart supplier and enter them in the S63 Chart Loader.
SSE 20 - Subscription for this ENC will expire in less than 30 days. Please contact your data supplier to renew the subscription licence.	Cell Permit for the specified chart cell expires in less than 30 days.	
SSE 26 - This ENC is not authenticated by the IHO acting as the Scheme Administrator.	The chart cell is signed by the chart supplier, but not by the IHO, as the S-63 standard requires.	Although the S-63 standard specifies that the chart cells should be signed by the IHO, in the current practice, this signature is done by the chart suppliers themselves. This message informs the user about this and should not be considered a failure.
Specified path does not contain	The specified location does not contain valid S-	Verify that the specified location contains an S-63 data source.

valid S63 data	63 data.	
This system does not support the S63 version of specified data	The S63 Chart Loader supports S63 data format version 1.0 and 2.0 of the S63 standard. The specified S63 data source uses a different version.	Contact the chart supplier to obtain S-63 chart media according to version 1.0 or 2.0 of the S-63 standard.
This system does not support this cell permit version	The S63 Chart Loader supports S63 data format version 1.0 and 2.0 of the S63 standard. The specified Cell Permit file uses a different version.	Contact the chart supplier to obtain S-63 Cell Permit according to version 1.0 or 2.0 of the S-63 standard.
SA digital certificate has not yet been trusted	The IHO certificate is loaded, but is not verified for authenticity.	Inspect the certificate and confirm the authenticity accordi*6.5.3: Certificate for chart providers*(see page 143)Map Update (ENC Update CD).
Certificate has not yet been trusted	A certificate is loaded, but is not verified for authenticity.	

D.4 Troubleshooting - Weather overlay

This chapter provides some guidelines for troubleshooting connection errors for the weather overlay, and contains a list of error messages and descriptions of their cause and/or solution.

D.4.1 Connection errors

For any problems occurring during the download of weather data, regardless of the connection type used, TECDIS service partner and / or C-Map will be able to provide very useful assistance in tracking down the cause of weather download problems.

C-Map's servers have logs that show whether the weather download attempts actually achieved contact with C-Map's servers or if the weather download procedure was successful. They will also be able to confirm whether the subscription is intact.

In order to provide help and assistance, C-Map will need your **System ID / TELKO eT/JeT number**.

Make sure your subscription is valid. The expiration date can be viewed in the weather window by pressing: **Data**, **New Download**, and **Show Subscription** buttons.

D.4.2 Error messages

The following list displays some of the error messages that can be experienced in the weather overlay functionality.

Error message	Description
Current weather data lacks parameters set in active alarm conditions. Review alarm settings.	This is not an error. It is simply an indication that the currently loaded Weather data file does not contain all of the weather parameters you have specified in your selected alarm conditions.
No current weather forecasts are available.	This is not an error. It is simply an indication that you have no current Weather data files on the system.
No cyclones in effect at last download.	This is not an error. It is a message to inform you that the Cyclone presentation is not available because there are no cyclones at this time.
Communication Error	There was a problem during the Weather data download.
You must be in show checkbox mode to set this date	This message is due to a known error. Update TECDIS software to the latest version
ERROR: Weather components are not initialized	There is a problem with C-Map System files in the installation. Contact TECDIS service support for assistance.
Weather Data Error: The internal component processing the weather	There is a problem with C-Map System files in the installation. Contact TECDIS service support for assistance.

data cannot be created.	
Cyclone Data Error: The internal component processing the weather data cannot be created.	There is a problem with C-Map System files in the installation. Contact TECDIS service support for assistance.
Weather Data Error: License interface cannot be obtained.	There is a problem with C-Map System files in the installation or with the license in the "System ID / TELKO eT"(codeplug). Contact TECDIS support for assistance.
Cyclone Data Error: License interface cannot be obtained.	There is a problem with C-Map System files in the installation or with the license in the "System ID / TELKO eT"(codeplug). Contact TECDIS support for assistance.
Weather Data Error: File is not found.	The Weather data file is missing from the system.
Weather Data Error: Corrupted or wrong format file.	The Weather data file has become corrupted or is not provided by Jeppesen Marine.
Weather Data Error: The file data cannot be accessed.	The system cannot access the Weather data file.
Weather Data Error: Problems with weather data licensing.	The Weather data file does not appear to be licensed to this system.
Cyclone Data Error: File is not found.	The Cyclone data file is missing from the system.
Weather Data Error: Corrupted or wrong format file.	The Cyclone data file has become corrupted or is not provided by Jeppesen Marine.
Cyclone Data Error: Wrong format of cyclones data.	The Cyclone data file has become corrupted or is not provided by Jeppesen Marine.
Cyclone Data Error: Wrong point values in cyclones.	The Cyclone data file has become corrupted or is not provided by Jeppesen Marine.
Cyclone Data Error: The file data cannot be accessed.	The system can not access the Cyclone data file.
Cyclone Data Error: Problems with weather data licensing.	The Cyclone data file does not appear to be licensed to this system.
The specified file did not have a .grb or .xml extension.	The Import feature can only load files with a *.grb or *.xml file extension. Import of a file with another extension was attempted.
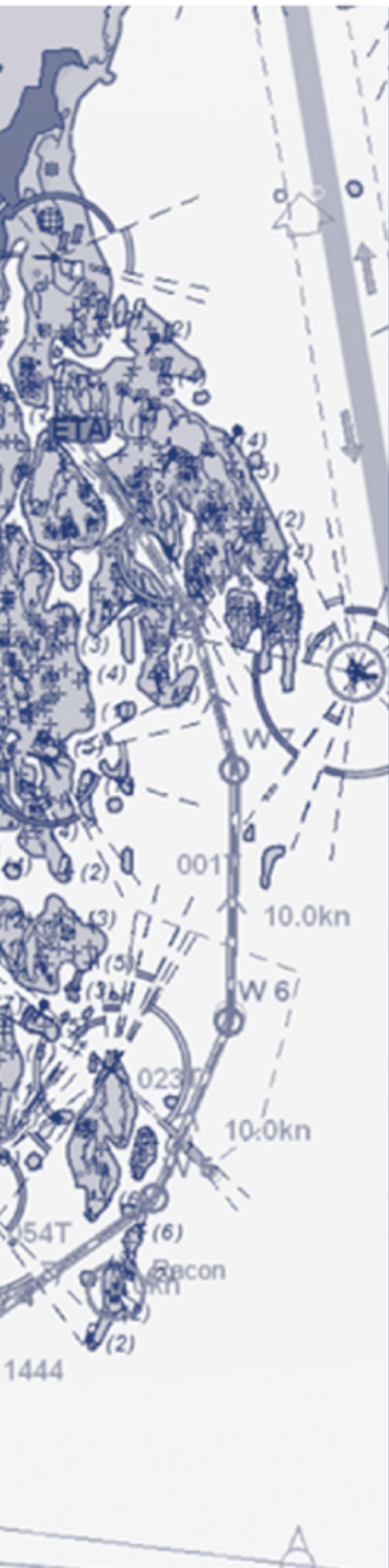
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