

7.6 How to Install C-MAP DL (Dynamic Licensing) Charts

Register the eToken if it has not already been registered. See section 7.4.1.

7.6.1 How to generate and order an update file

To update the C-MAP chart database, you have to create an update file and e-mail the file directly to C-MAP. The update file defines coverage of charts you can display on your chart system.

1. Insert a USB flash memory to the USB port on the Control Unit.
2. Get into the Chart maintenance mode then click the [License] button on the InstantAccess bar.
3. Click the [C-MAP] tab to show the [Licenses] dialog box for C-MAP.
4. Click the [Order Update File] button. A file name (C-MAP system ID and chart type) is automatically created, with the extension .ord.
5. Select the USB flash memory.
6. Click the [Save] button to save the order file to the USB flash memory.
7. Send the order file to updates@c-map.no.

Within a few minutes you will receive a file that includes the terms for using the chart service and the chart updates. Save the file to a USB flash memory and apply it as shown in the next section.

7.6.2 How to apply the update file

1. Insert the USB flash memory that contains the update file (.ans extension) into the USB port on the Control Unit.
2. Get into the Chart maintenance mode then click the [License] button on the InstantAccess bar.
3. Click the [C-MAP] tab to show the [Licenses] dialog box for C-MAP.
4. Click the [Update from File] button.
5. Find the update file on the USB flash memory then click the [Open] button.

Note: If the .ans file does not update the status of all shared C-MAP DL charts, reset the power of all processor units.

7.6.3 How to enable and set up the C-MAP DL

1. Get into the Chart maintenance mode then click the [License] button on the InstantAccess bar.
2. Click the [C-MAP DL] tab to show the [Licenses] dialog box for C-MAP DL.

License Name	Database	Expiry Date	Reported
C1210011	ENC	01 Jun 2012	Unissued

3. Check [Enable Dynamic License] to enable the dynamic licensing.

You now have access to all the charts contained within the selected subscription zones - both already licensed charts and new charts.

Settings, indications on the Licenses dialog box for C-MAP DL

- Set your annual credit limit with [Credit Limit]. A permanent warning is given if your credit goes below this value. A new chart cannot be enabled if it causes the credit to go below this value.
- [Credit Rest] shows the amount of credit remaining and is updated each time you receive a confirmation answer for your request via e-mail.
- [Next Report Date] is the date when the next report should be sent to Jeppesen. If charts are not reported before the mandatory report date, access to all non-reported charts is discontinued and can be resumed only after the confirmation answer allowing use of the charts is received via e-mail.
- [Confirmation Date] is the date when you receive the confirmation answer for your request via e-mail.
- [Confirm before open new chart], if checked, a confirmation window asks for confirmation before opening charts that require issuing a new license. A chart denied is added to the list of protected charts, so the confirmation request will not be repeated for that chart. Those charts cannot be opened until they are removed from the list of protected charts.
- [Protected], if checked, shows the protected charts in the cell list. To remove a chart from protection, select it then click the [Release] button. Then, when an attempt is made to open that chart, the confirmation window appears. Note that multiple confirmation windows open when releasing multiple charts from protection.

7.7 How to Export a List of Charts

Get into the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar to show the [Manage Charts] dialog box. Check the charts to add to the list. Click the [Export List] button to export the checked charts to a USB flash memory, in .txt format.

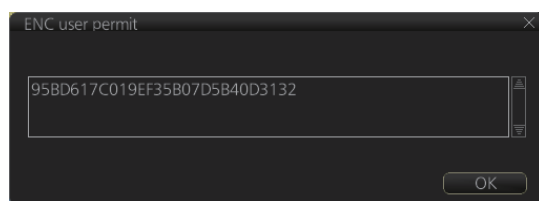
7.8 How to Export a List of Specific Licenses

You can export a list of your ENC or C-MAP (excluding C-MAP DL) licenses to a USB flash memory, in .txt format.

1. Set a USB flash memory in the USB port on the Control Unit.
2. Get into the Chart maintenance mode then click the [License] button.
3. Click the [ENC] or [C-MAP] tab.
4. Click the [Export List] button.
5. Change the file name at [File Name] if desired.
6. Select the USB flash memory then click the [Save] button.
7. Click the [OK] button to finish.

7.9 How to Show the ENC Permit

1. Get into the Chart maintenance mode then click the [License] button.
2. Click the [ENC] tab.
3. Click the [ENC User Permit] button to show the ENC permit.



4. Click the [OK] button to finish.

7.10 How to Backup, Restore Licenses

You can make backup copies of your ENC and AVCS (AIO) licenses and save them to a USB flash memory. If re-installation of the licenses becomes necessary, you can re-install them from the USB flash memory. The backup and restore functions are not available with C-MAP charts.

To backup licenses:

1. Insert a USB flash memory into the USB port on the Control Unit.
2. Get into the Chart maintenance mode, then click the [License] button on the InstantAccess bar to show the [Licenses] dialog box.
3. Click the [Backup Licenses] button.
4. Select the USB flash memory then click the [OK] button to save the licenses.

To restore licenses:

1. Insert the USB flash memory that has the licenses into the USB port on the Control Unit.
2. Get into the Chart maintenance mode, then click the [License] button on the InstantAccess bar to show the [Licenses] dialog box.
3. Click the [Restore Licenses] button.
4. Select the licenses from the USB flash memory then click the [OK] button.

7.11 How to View Permit Expiration Date

Permits are used to control the right to use chart data in this chart system. A permit is connected to the edition of a chart. Permits are issued in two different types:

- **Subscription permit:** This type of permit includes updates for subsequent 3, 6, 9 or 12 months.
- **One-Off permit:** This type of permit includes only updates up to the issue date of the permit.

The expiry date of a permit controls the installation of Base charts and their updates to the chart. The system will warn you when you are installing charts or updates that are issued less than 30 days before the expiration date of a permit. If a permit has expired, it is impossible to install a chart or its update that was issued after the expiration date of the permit. The user has a right to view a chart forever, except C-MAP charts that have viewing periods which end two months after the expiry date of the license. If the charts are not updated regularly it will not complete the requirements for having up-to-date charts. To view the permit status of a chart, click the [License] button on the InstantAccess bar and then click the applicable "chart" tab ([ENC], [C-MAP] or [C-MAP DL]).

The example below shows the status of ENC charts. The expiration date of each cell appears in the [Expires] window.

Cell Name	Expires	DataServer	Subscription
NO4G3039	30 Jun 2013	GB	Yes
TR53131D	30 Jun 2013	GB	Yes
LV613250	30 Jun 2013	GB	Yes
UA4T3406	30 Jun 2013	GB	Yes
JP551E13	31 Oct 2011	JP	Yes
JP551E13	30 Jun 2013	GB	Yes
NO4E2225	30 Jun 2013	GB	Yes
SE5F18PA	30 Jun 2013	GB	Yes
GB603683	30 Jun 2013	GB	Yes
RU5M6MNO	30 Jun 2013	GB	Yes

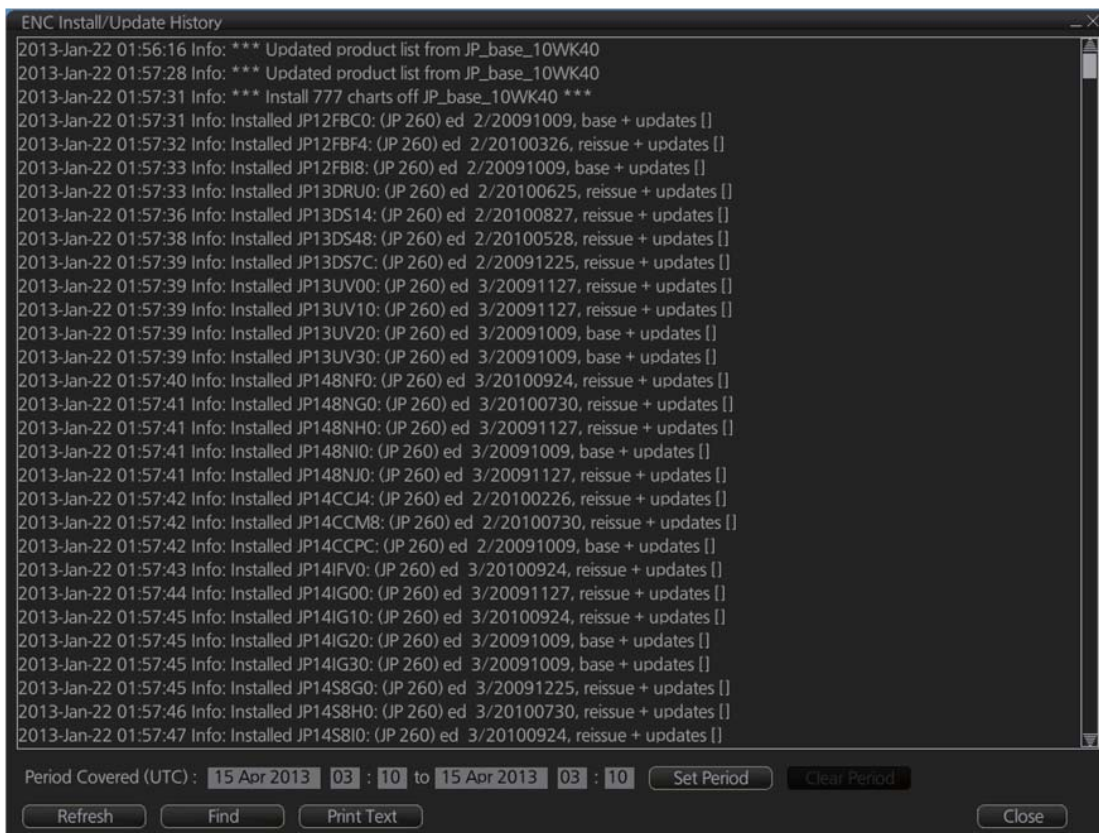
Subscription warnings for RENC

If you have at least one subscription-type permit, the system will automatically warn you about the expiration date of your subscription license, in the Permanent warning box.

Note: If you change service provider for some reason, it is recommended that you remove all the charts from this chart system before installing new charts of new service provider.

7.12 How to Display Install/Update History

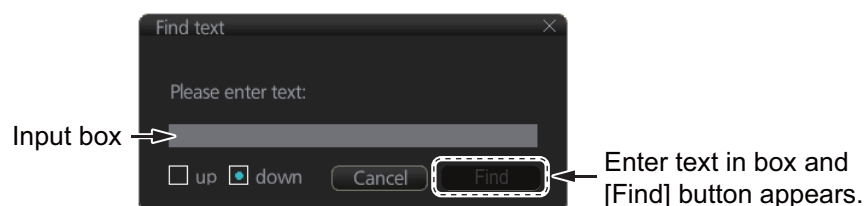
You can see a history of chart installations and updates. On the InstantAccess bar, click the [Record] and [Chart Log] buttons followed by the [ENC] or [C-MAP] button. The example below shows the install/update history for ENC charts.



You can filter the log with [Period Covered (UTC)]. Enter the period to display then click the [Set Period] button. Click the [Clear Period] button to display all entries. The [Refresh] button updates the list. [Print Text] prints hard copy of the history.

The [Find] button searches required text string as follows:

1. Click the [Find] button to show the [Find text] box.

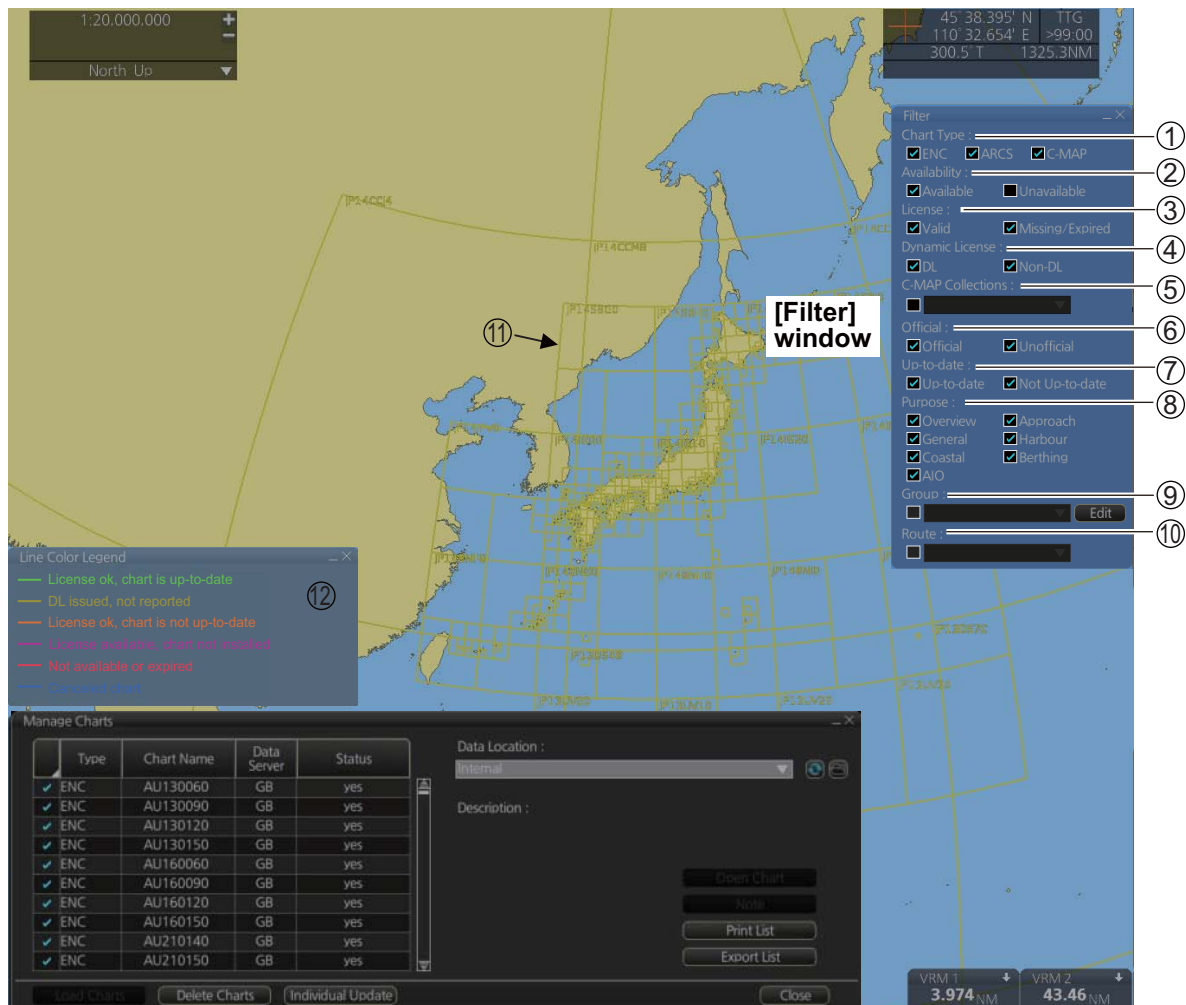


2. Click the input box then enter the text to search.
3. Select the search direction with the [up] or [down] radio button.
4. Click the [Find] button. The first matching text is highlighted in yellow at the top of the screen.
5. To continue the search click the [Find] button. To cancel the search, click the [Cancel] button.

7.13 Catalog of Chart Cells

A catalog is used to view graphical coverage of the charts stored in your SSD, available in a named "medium". Available charts are displayed using their limits of charts. Note that sometimes the real coverage of the charts may be considerably less than the declared limits of it.

To display the catalog, get into the Chart maintenance mode then click the [Manage Charts] button on the InstantAccess bar. The [Filter] window lets you select what to display. Check or uncheck items as appropriate.



- 1) [Chart Type]
[ENC]: Display ENC charts.
[ARCS]: Display ARCS charts (no use).
[C-MAP]: Display C-MAP charts.
- 2) [Availability]
Display available or unavailable charts.
- 3) [License]
[Valid]: Cell with valid license.
[Missing/Expired]: Cell with missing or expired license.
[Valid] + [Missing/Expired]: Display cell regardless of license.
Uncheck both: Hide all cells.
- 4) [Dynamic License]
Display DL or non-DL C-MAP charts.

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5) [C-MAP Collections]

A collection is a pre-defined dataset, the contents of which can be defined by zone, individual chart or any of those combinations. Applicable to C-MAP charts also.

6) [Official]

Display official or unofficial charts.

7) [Up-to-date]

Display charts which are or are not up to date.

8) [Purpose]

Display chart according to its purpose - [Overview], [General], [Coastal], [AIO], [Approach], [Harbour], [Berthing].

9) [Group]

See the next section for how to group charts.

10) [Route]

Show or hide chart area with route.

11) Chart boundary boxes

Define the area covered by a chart and are color-coded according license and permit status.

12) [Line Color Legend]

The line color legend provides information about license validity.

Color	Message
Green	License ok, chart is up-to-date
Yellow	DL issued, not reported
Orange	License ok, chart is not up-to-date
Magenta	License available, chart not installed
Red	Not available or expired
Blue	Canceled chart

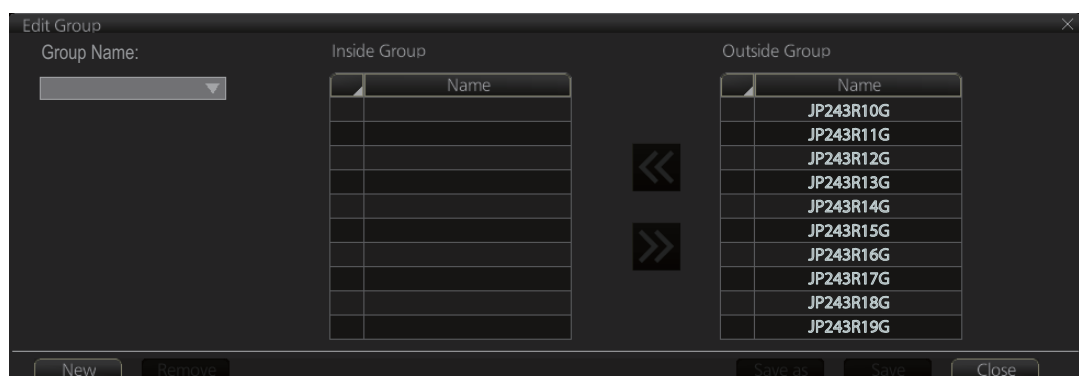
7.13.1 How to group chart cells

You can define groups of like-format chart cells. This means you can collect related charts, for example, all cells that cover a route from Liverpool to New York or all cells available from a National Hydrographic Office.

You can make a group and define charts from the [Edit Group] dialog box.

How to make a new group of chart cells

1. In the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar.
2. Click the [Edit] button in the [Filter] window to show the [Edit Group] dialog box.



3. Click the [New] button.
4. In the [Outside Group] window, click the box to the left of the chart cell you want to add to the group to show a checkmark. (A context-sensitive menu with [Select All] and [Deselect All] functions is available by right-clicking the box to the left of [Name], in either window.)
5. After you have selected the cells to add to the group, click the [<<] button to move the names of the selected cells to the [Inside Group] window. If you want to remove a chart from the group, select it then click the [>>] button.
6. Click the [Save] button.
7. Enter a name for the group, using the keyboard on the Control Unit or software keyboard, then click the [OK] button.
8. Click the [Close] button to finish.

How to edit a group of chart cells

You can edit a group of chart cells from a group as follows:

1. In the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar to show the [Filter] window.
2. Click the [Edit] button.
3. Select the name of the group with the pull-down list at the item [Group Name].
4. In the [Inside Group] window, click the box to the left of the chart cell you want to remove from the group to show a checkmark. (A context-sensitive menu with [Select All] and [Deselect All] functions is available by right-clicking the box to the left of [Name].)
5. After you have selected the charts to remove to the group, click the [>>] button to remove the selected charts cells from the group.
6. Click the [Save] button.
7. Click the [Close] button to finish.

How to delete a group of chart cells

You can delete group of chart cells as follows:

1. In the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar to show the [Filter] window.
2. Click the [Edit] button.
3. Select the name of the group with the pull-down list at the item [Group Name].
4. Click the [Remove] button.
5. Click the [OK] button.
6. Click the [Close] button to finish.

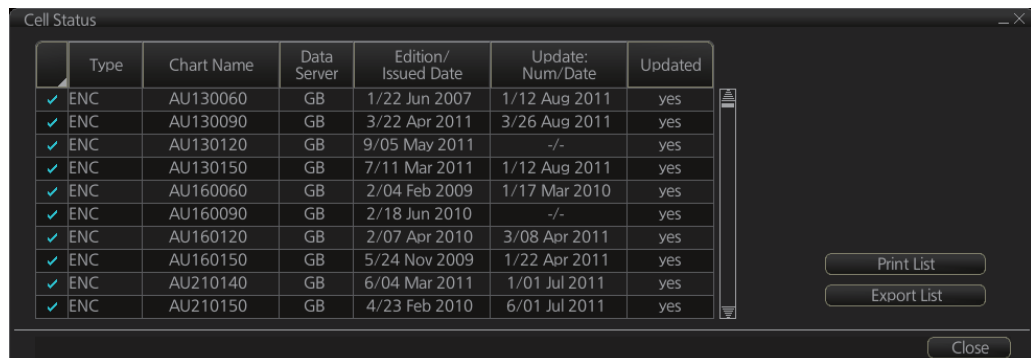
How to select the group to view

1. In the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar to show the [Filter] window.
2. Select the group to view from the pull-down list at [Group].
3. Click the [Close] button to finish.

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7.13.2 How to view status of chart cells

The [Cell Status] dialog box shows the status of the chart cells stored in the system. To show this dialog box, get into the Chart maintenance mode then click the [Cell Status] button on the InstantAccess bar.



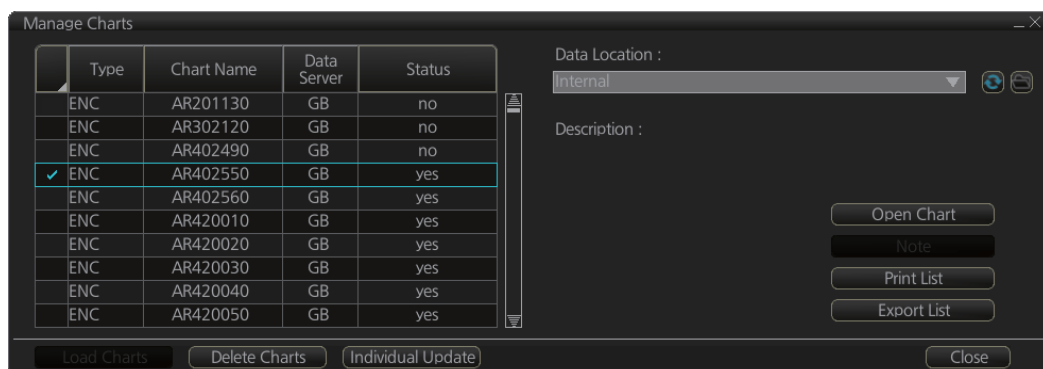
The Cell Status dialog box displays a table with the following columns: Type, Chart Name, Data Server, Edition/Issued Date, Update: Num/Date, and Updated. The table contains 10 rows of data, all with 'ENC' as the Type and 'GB' as the Data Server. The 'Updated' column shows 'yes' for all entries. To the right of the table are buttons for 'Print List', 'Export List', and 'Close'.

Type	Chart Name	Data Server	Edition/Issued Date	Update: Num/Date	Updated
✓ ENC	AU130060	GB	1/22 Jun 2007	1/12 Aug 2011	yes
✓ ENC	AU130090	GB	3/22 Apr 2011	3/26 Aug 2011	yes
✓ ENC	AU130120	GB	9/05 May 2011	-/-	yes
✓ ENC	AU130150	GB	7/11 Mar 2011	1/12 Aug 2011	yes
✓ ENC	AU160060	GB	2/04 Feb 2009	1/17 Mar 2010	yes
✓ ENC	AU160090	GB	2/18 Jun 2010	-/-	yes
✓ ENC	AU160120	GB	2/07 Apr 2010	3/08 Apr 2011	yes
✓ ENC	AU160150	GB	5/24 Nov 2009	1/22 Apr 2011	yes
✓ ENC	AU210140	GB	6/04 Mar 2011	1/01 Jul 2011	yes
✓ ENC	AU210150	GB	4/23 Feb 2010	6/01 Jul 2011	yes

- [Type]: Type of chart cell, ENC or C-MAP.
- [Chart Name]: Chart name
- [Data Server]: The name of the data server where the chart was downloaded from.
- [Edition/Issued Date]: Edition no. and issued date of the chart cell.
- [Update: Num/Date]: No. and date of the update of the chart cell.
- [Updated]: [yes] is shown if the cell is up-to-date, [no] if the cell is not up-to-date, [maybe] means the cell has not been updated from more than one month.

7.14 How to Open Charts

In the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar to display the dialog box shown below. Select the chart to open then click the [Open Chart] button.



The Manage Charts dialog box displays a table with the following columns: Type, Chart Name, Data Server, and Status. The table contains 10 rows of data, all with 'ENC' as the Type and 'GB' as the Data Server. The 'Status' column shows 'no' for the first three rows and 'yes' for the remaining seven rows. The row with Chart Name 'AR402550' is selected. To the right of the table are buttons for 'Open Chart', 'Note', 'Print List', and 'Export List'. At the bottom are buttons for 'Load Charts', 'Delete Charts', 'Individual Update', and 'Close'.

Type	Chart Name	Data Server	Status
ENC	AR201130	GB	no
ENC	AR302120	GB	no
ENC	AR402490	GB	no
✓ ENC	AR402550	GB	yes
ENC	AR402560	GB	yes
ENC	AR420010	GB	yes
ENC	AR420020	GB	yes
ENC	AR420030	GB	yes
ENC	AR420040	GB	yes
ENC	AR420050	GB	yes

7.15 How to Print Chart List, Cell Status List

7.15.1 How to print the chart list

1. In the Chart maintenance mode, click the [Manage Charts] button on the InstantAccess bar to show the [Manage Charts] dialog box.
2. Check the charts to print.
3. On the [Filter] window, check the information to print.
4. Click the [Print List] button to print. (If you have selected more than 30 charts, the message "The number of page is 1. Do you want to continue?." appears. Click the [OK] button to continue, or the [Cancel] button to escape.)

Chart Management Report			
Ship Name:		Call Sign:	
IMO Number:		MMSI Number:	
Printing Date:	2013-06-18 21:14:00		
Data Location:	Internal		
Filter			
Chart Type:	ENC/ARCS/C-MAP	Availability:	Available
License:	Valid/Missing/Expired	Dynamic License:	DL/Non-DL
Official:	Official/Unofficial	Up-to-date:	Up-to-date/Not Up-to-date
Purpose:	Overview/General/Coastal/Approach/Harbour/Berthing		
Group:	test_all		
Status Summary			
yes		1251/1884	
no		633/1884	
Type	Chart Name	Data Server	Status
ENC	AU130060	GB	yes
ENC	AU130090	GB	yes
ENC	AU130120	GB	yes
ENC	AU130150	GB	yes

Example

Description of chart list printout

Item	Description
[Ship Name]	Name of ship
[IMO Number]	Ship's IMO number
[Call Sign]	Ship's call sign
[MMSI Number]	Ship's MMSI number
[Printing Date]	Date list printed
[Data Location]	Location of charts; normally [Internal].
[Filter]	Settings of the items in the [Filter] window.
[Status Summary]	[yes]: charts with yes status/total number of charts [no]: charts with no status/total number of charts

7.15.2 How to print the cell status list

1. In the Chart maintenance mode, click the [Cell Status] button on the InstantAccess bar to show the [Cell Status] dialog box.
2. Check the charts to print.
3. On the [Filter] window, check the information to print.
4. Click the [Print List] button to print. (If you have selected more than 30 charts, the message "The number of page is 1. Do you want to continue?." appears. Click the [OK] button to continue, or the [Cancel] button to escape.)

Cell Status Report

Ship Name:Call Sign:

IMO Number:MMSI Number:

Printing Date: 2013-06-18 21:12:12

Filter

Chart Type: ENC/ARCSOfficial: Official

Status Summary

yes1205/1717

no512/1717

Type	Chart Name	Data Server	Edition/ Issued Date	Update: Num/Date	Updated
ENC	AU130080	GB	1/22 Jun 2007	1/12 Aug 2011	yes
ENC	AU130090	GB	3/22 Apr 2011	3/26 Aug 2011	yes
ENC	AU130120	GB	9/05 May 2011	-/-	yes
ENC	AU130150	GB	7/11 Mar 2011	1/12 Aug 2011	yes

Example

Description of cell status printout

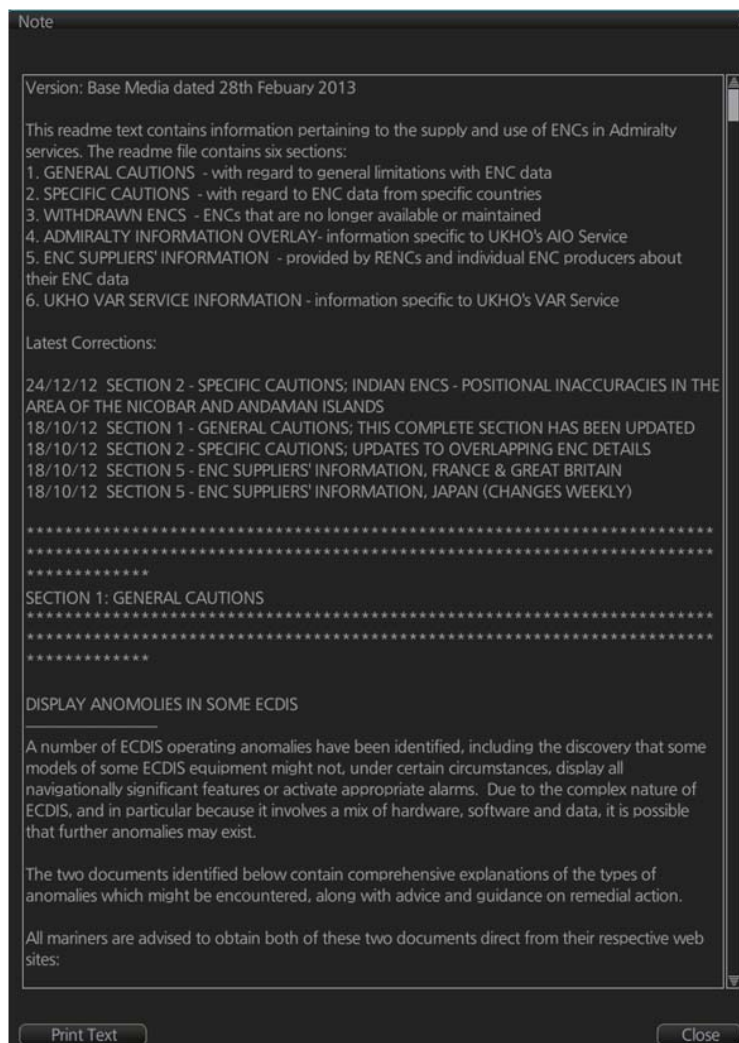
Item	Description
[Ship Name]	Name of ship
[IMO Number]	Ship's IMO number
[Call Sign]	Ship's call sign
[MMSI Number]	Ship's MMSI number
[Printing Date]	Date list printed
[Filter]	Settings of the items in the [Filter] window.
[Status Summary]	[yes]: charts with yes status/total number of charts [no]: charts with no status/total number of charts

7.16 How to Delete Charts

1. Click the [Manage Charts] button to show the [Manage Charts] dialog box.
2. Click the block to the left of the chart to remove to show a checkmark. A context-sensitive menu with [Select All] and [Deselect All] functions is available by right-clicking the block to the left of [Type].
3. Click the [Delete Charts] button to delete the charts selected.
4. Click the [Close] button to finish.

7.17 How to Show Publishers Notes for ENC Charts

You should read the text file associated with each catalog, which you can view when installing a chart from a medium. Click the [Note] button in the [Manage Charts] dialog box. You can print a hard copy with the [Print Text] button.



7.18 How to Find the Chart Type

The electronic chart system can display more than one ENC chart cell at a time. This feature is called multi-cell display. If one ENC chart cell does not cover the whole display, the system opens more ENC chart cells for display, if appropriate cells for the displayed area are available. The Own ship functions box shows information about ENC chart cells displayed on the electronic chart display area. When automatic TM reset is active, the information is displayed with reference to your ship's position. If TM reset is OFF, the information is displayed with reference to current cursor position.

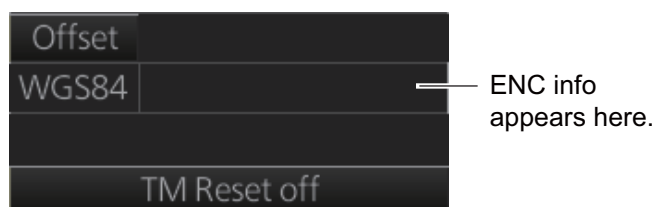


Chart type indication

No indication (Official ENC chart)

"Non-ENC data" (Unofficial ENC chart, indication in yellow)

"ENC data available" (Currently, RNC chart is in use, but ENC material is available. Indication shown in yellow.)

7.19 How to Update ENC, C-MAP Charts Manually

Manual update may include deleting an already existing object, modifying a position or other characteristics of an already existing object or inserting of a new object. In this system, manual updates are stored in a common database.

Mariners cannot permanently remove any of the official objects from the chart display. If a mariner needs to make obsolete any of the official objects, he "deletes" them.

Then, in practice, the deleted objects are still visible, but a diagonal line on the object indicates it is a deleted object.

However, a mariner can remove objects that he has inserted himself.

Note that the manual updates have no automatic connection to any automatic update received later for charts. If a manual update itself became obsolete, because the official chart has been updated to include the update defined as a manual update, the mariner must himself delete the obsolete manual update in question.

The system records complete usage of manual updates. All deletions, modifications and insertions are recorded and time stamped. If the mariner wishes to see what kind of manual updates he had in the past, for example, two weeks ago, he uses Update History to specify the relevant date range. For information on how to set Display date and Approved until dates, see paragraph 9.2.3.

7.19.1 How to insert update symbols

An update symbol can be added as shown in the procedure below.

Note 1: If the system freezes when updating the drawing type [Area], reset the power.

Note 2: An update symbol that straddles the international date line cannot be edited. In this case, insert the same symbol on each side of the line.

1. Go to the Voyage navigation mode.
2. Click the [Manual Update] button on the InstantAccess bar to open the [Manual Update] dialog box.
3. Click the [Planning] tab.

4. Click the [Add] button.
Note: This window can also be shown from the context-sensitive menu. Right-click the display area then select [Manual Update] and [Add New].

5. Use the [Drawing Type] pull-down list to select drawing type: [Point], [Line] or [Area].
6. Click desired object.
7. Put the cursor on the location where to insert the symbol then left click. The [Manual Update] dialog box shows:

- [Object]
- [Drawing Type]
- [Display Until] (display until date*) * Set as desired; default setting is three months from date of entry.

Attribute	Latitude	Longitude
1	35° 21.698' N	139° 34.260' E

8. You can add a comment related to a manual update object in the [Description] box.

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9. To add textual information to an attribute, select the attribute from the [Attributes] window then add text in the [Edit Attribute's Value] window.
10. Click the [Commit] button to add all selected objects to the chart.

Note: A manual update object is displayed until the display until date entered for it has passed. If the object remains on the screen after the display until date, do some operation on the screen to refresh the screen to erase the object.

7.19.2 How to delete update symbols

Manually entered update symbols cannot be deleted until the display until date arrives or is changed. However, you can mark the symbol to indicate that it can be ignored.

1. Put the cursor on the symbol then right-click to show the context-sensitive menu.
2. Select [Manual Update] and [Delete].

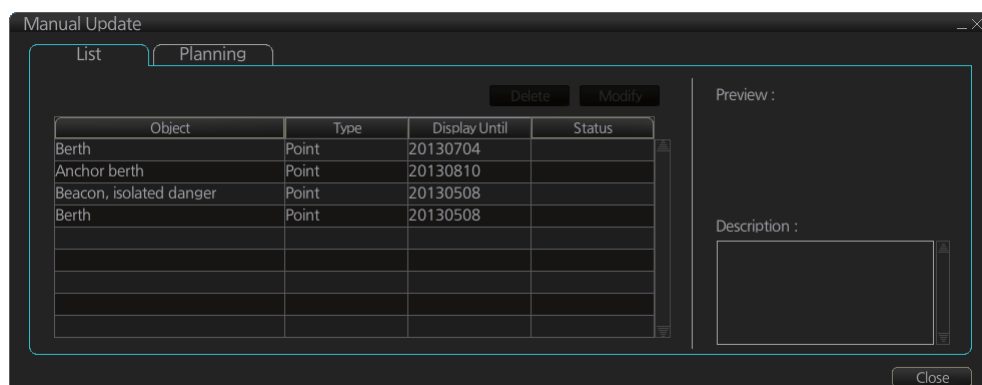
The symbol is marked with a diagonal line.

Note: A symbol can also be deleted from the [Manual Update] dialog box. Follow steps 1-2 in paragraph 7.19.1, click the [List] tab, select the symbol to delete then click the [Delete] button.

7.19.3 How to modify existing update symbols

The position, display until date and description of an update symbol can be modified. A symbol that is marked as “deleted” cannot be modified.

1. Follow steps 1-2 in paragraph 7.19.1 to display the [Manual Update] dialog box.
2. Click the [List] tab.



3. Select the object to modify then click the [Modify] button. The [Planning] dialog box appears.
4. Modify the object referring to steps 8-9 in paragraph 7.19.1.
5. Click the [Commit] button.

7.20 How to Synchronize Chart Data

This section shows you how to synchronize chart data between FMD-3xx0 and FAR-3xx0 units, so that all units share the same chart data. Synchronization can be done automatically or manually (see paragraph 7.20.2), however all units selected for synchronization must be powered to complete the synchronization. Synchronization includes the following actions:

- Synchronize public keys
- Synchronize chart permits and licenses
- Synchronize chart data
- Synchronize manual updates

Note 1: Before synchronizing chart data, confirm that all units selected for synchronization are powered. (Do not turn off a unit during synchronizing.) If a unit is turned off during the synchronizing, do the following on the unit which contains the medium:

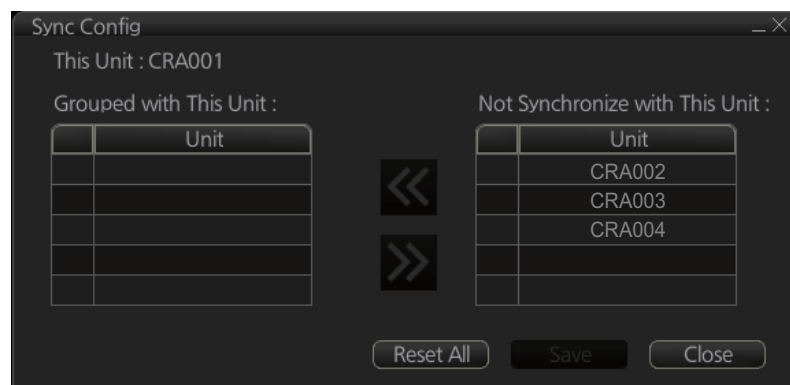
- Open the [Sync Status] dialog box then click the [Disable Sync] button to disable synchronization. Power all units registered for synchronization, then click the [Urge Sync] button on the [Sync Status] dialog box on the unit containing the media to forcibly synchronize.
- Make a group of all the units currently powered, referring to paragraph 7.20.1, and register the group with [Grouped with This Unit]. Reset the power on all units selected for synchronization.

Note 2: C-MAP charts are not automatically synchronized. C-MAP charts are only synchronized immediately after installing or updating the C-MAP database. If the system has several FCRs or FMDs, make a group of associated units before you install C-MAP charts.

7.20.1 How to select the units to synchronize

Do as follows to select the units to synchronize.

1. Get into the Chart maintenance mode. On the InstantAccess bar, click [System] followed by [Sync Config] to show the [Sync Config] dialog box.



[Grouped with This Unit]: This window shows the units currently selected for synchronization.

[Not Synchronize with This Unit]: This window shows the units not selected for synchronization.

2. **To select a unit for synchronization:** Put a checkmark next to the unit's name in the [Not Synchronize with This Unit] window then click the [<<] button. That

unit's name is moved to the [Grouped with This Unit] window.

To deselect a unit from synchronization: Put a checkmark next to the unit's name in the [Grouped with This Unit] window then click the [>>] button. That unit's name is moved to the [Not Synchronize with This Unit] window.

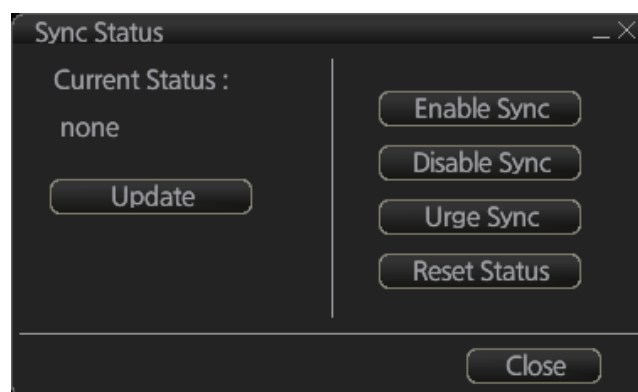
To deselect all units, click the [Reset All] button.

3. Click the [Save] button to finish.
4. Restart the power on applicable units to apply synchronization configuration changes.

7.20.2 How to check synchronization status

You can check chart synchronization status on the [Sync Status] dialog box. Chart synchronization operations also are available from this dialog box. Normally, chart synchronization is done automatically, according to the sync settings on the [Sync Config] dialog box. Use the [Sync Status] dialog box to manually synchronize chart data when there is network failure, for example.

Get into the Chart maintenance mode. On the InstantAccess bar, click [System] followed by [Sync Status] to show the [Sync Status] dialog box.



[Current Status]: Displays current synchronization status. The table below shows all the synchronization status messages.

Sync status	Meaning
[disabled]	Synchronization is disabled.
[must receive]	This chart radar will receive chart data from another FMD-3xx0 or FAR-3xx0 series.
[must send]	This chart radar will send chart data to another FMD-3xx0 or FAR-3xx0 series.
[none]	No synchronization task ready.

[Update] button: Click this button to update [Current Status].

[Enable Sync] button: Enables synchronization. The confirmation message "Attention: Do you want to enable sync?" appears. Click the [OK] button to enable synchronization. Synchronization is always enabled when chart radar starts. A progress bar indicates progress in synchronization. The bar is erased within five minutes after completion of synchronization.

[Disable Sync] button: Disables synchronization function temporarily. Use this feature to enable chart administration in case of network failure, for example. The confirmation message "Attention: Do you want to disable sync?" appears. Click the [OK] button to temporarily disable synchronization.

Note 1: In normal operation do not disable synchronization. If you accidentally disable synchronization, try to synchronize by clicking the [Enable Sync] button. If that does not work, reset the power of all units selected for synchronization then click the [Urge Sync] button to synchronize.

Note 2: With synchronization disabled, the message "Synchronization disabled" may appear twice when installing a license. This does not affect installation of a license.

[Urge Sync] button: Does immediate synchronization. The confirmation message "Attention: Chart data in other units will be overwritten by this unit. Do you wish to continue?" appears. Click the [OK] button to synchronize. If synchronization is not successful, restart applicable units and try again.

[Reset Status] button: Reset synchronization status to recover from synchronization status conflict. The confirmation message "Attention: Do you want to reset sync status? This unit may be synchronized from the other unit." appears. Click the [OK] button to reset.

7.20.3 Manual updates and synchronization

If you are synchronizing multiple FAR-3xx0 units while manual updating is being done on one of the units, the message "File not found" may appear, meaning the manual update data was deleted. If this occurs, follow the procedure below to synchronize the FAR-3xx0 units. The procedure uses CRA001 and CRA002 as an example.

1. At the CRA001, get into the Chart maintenance mode, then click [System] and [Sync Config] on the InstantAccess bar.
2. Add CRA002 to [Grouped with This Unit] then click the [Save] button.
3. Reset the power on the CRA001 and CRA002.
4. At the CRA001, get into the Chart maintenance mode, then click the [System] and [Sync Status] buttons on InstantAccess bar to show the [Sync Status] dialog box.
5. Click the [Urge Sync] button to synchronize charts between CRA001 and CRA002.
6. To confirm synchronization, do as follows:
 - 1) At the CRA001, get into the Voyage navigation mode, then click the [Manual Update] button on the InstantAccess bar to open the [Manual Update] dialog box.
 - 2) Click the [Planning] tab followed by the [Add] button.
 - 3) Insert an object at the CRA001.
 - 4) At the CRA002, move the cursor or change the chart scale. Confirm that the chart is updated.

7.21 How to Reconvert All SENC Charts

If you unintentionally installed outdated SENC charts, you can reconvert those charts to the latest SENC charts. Click the [System] and [Reconvert] buttons on the InstantAccess bar to reconvert all your SENC charts.

Note: All manual updates are removed in the reversion.

7. HOW TO MANAGE CHARTS

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8. HOW TO CONTROL CHART OBJECTS

This chapter provides the information necessary for controlling chart features.

8.1 How to Browse Your Charts

You can view your charts using different positions and different scales. The basic tools for browsing charts are the **RANGE** key, chart offcenter, and scroll.

RANGE - and **RANGE +** change the chart scale. (The scrollwheel also can change the chart scale. Spin to change.) If true motion reset is active, ZOOM IN and ZOOM OUT keep the relative position of your ship with respect to the display. If true motion reset is off, ZOOM IN and ZOOM OUT keep the relative position pointed by the cursor with respect to the display. The system automatically selects next larger or smaller scale. If a chart with larger compilation scale is available at your current viewing position, the message "Larger scale ENC available" appears.

The own ship position can be easily relocated to the screen center in the Navigation voyage and Navigation planning modes. Further, in the Navigation voyage mode, the own ship position can be put at the cursor position.

To move the own ship mark to the screen center, put the cursor in the chart area and right-click [Ship on center]. **To move the own ship mark to a location**, right-click the position on the chart where to put the own ship mark then right-click [Ship off center]. ([Ship off center] is not available in the Voyage planning mode.)

To scroll your chart, simply drag and drop.

8.2 How to Control Visibility of Chart Objects

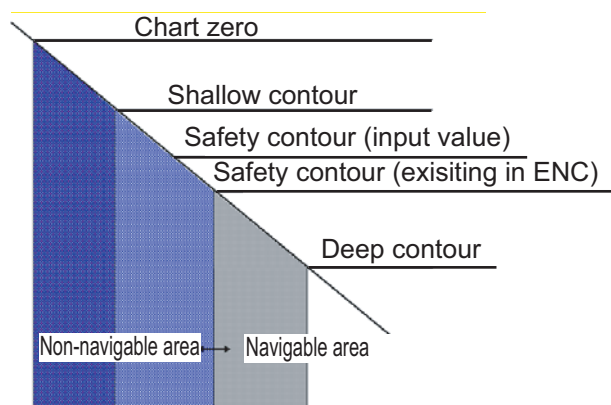
The [Chart Display] menu has several pages of chart features that you may show or hide as appropriate. To display this menu, click the [DISP], [SET] and [Chart DISP] buttons on the InstantAccess bar.

8.2.1 How to set value for shallow contour, safety depth, safety contour and deep contour

You can set values for shallow contour, safety depth, safety contour and deep contour, on the [Chart Alert] dialog box (sequence: [DISP], [SET], [Chart Alert]). Colors used for depth presentation on the electronic chart are controlled by setting values for shallow contour, safety depth, safety contour and deep contour. Soundings on the electronic chart, which are equal to or less than the value of safety depth, are highlighted. See the illustrations on the next page for multi-color presentation and two-color presentation. Selection of multi- and two-color presentations can be done by selecting from list box of [Depths] on the [Basic Setting] menu.

Note: The shallow contour cannot be set higher than the safety contour.

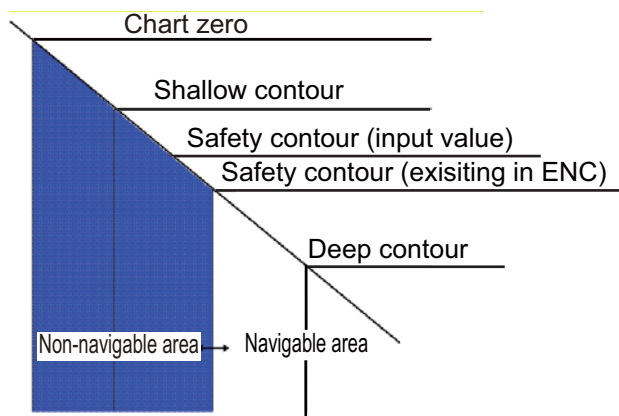
MULTI-COLOR presentation



In the multi-color presentation four colors are used for depths. If the value entered as the safety contour does not exist in the electronic chart, the system automatically selects the next available deeper depth contour as the safety contour. For example, the input value is 8 m, but there is no 8 m depth contour in the electronic chart. Then, the system automatically selects the next available deeper depth contour (10 m) as the safety contour. The depth contour value of 10 m is used as the safety contour in the electronic chart.

Shallow contour shows visual color change inside an unsafe water area. An unsafe water area is all areas shallower than the safety contour. Set the value for the shallow contour less than the value of the safety contour.

TWO-COLOR presentation

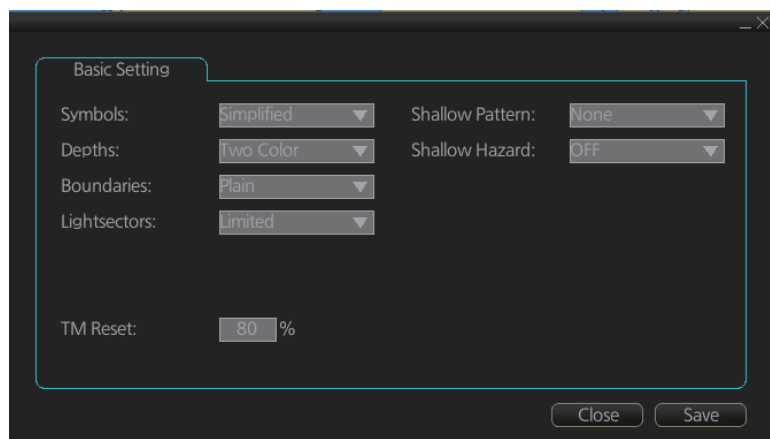


In the two-color presentation, unsafe water is shown in blue and safe water is shown in white. The safety contour is used to qualify unsafe water (depth shallower than safety contour) and safe water (depths deeper than safety contour).

If the value entered as the safety contour does not exist in the electronic chart, the system automatically selects the next deeper available depth contour as the safety contour, the same as with the multi-color presentation.

8.2.2 Basic Setting menu

To display this menu, click [DISP], [SET] and [Basic Setting] on the InstantAccess bar.



[Symbols]: Select how to display chart symbols. The options are:

[Simplified]: The shape of symbols is of modern design and the sea mark symbols are filled in a color.

[Paper Chart]: The shape of symbols imitates traditional symbols used in paper charts.

[Depths]: Set how to display different depth zones on the chart display.

[Two Color]: The chart display uses only two colors:

- Deeper than safety contour
- Shallower than safety contour

[Multi Color]: The chart display uses four different colors for contours:

- Deeper than user-selected deep contour
- Between deep contour and user-selected safety contour
- Between safety contour and user-selected shallow water contour
- Between shallow water contour and coastline

[Boundaries]: Set how to display boundaries of some chart features. The options are:

[Plain]: The line styles are limited to plain solid and dashed lines.

[Symbolized]: Some of the line styles use symbols to highlight the purpose of a line.

[Lightsectors]: Set how to display light sectors. The options are:

[Limited]: The length of a light sector is fixed at 25 mm independently of the displayed scale.

[Full]: The length of a light sector represents its nominal range as defined by the chart producer.

[Shallow Pattern]: Set how to display shallow water area. The options are:

[None]: Shallow water areas are not shown.

[Diamond]: Provided to distinguish shallow water at night.

[Shallow Hazard]: Show or hide the shallow hazard symbols (⚡).

[TM Reset]: In the true motion mode, own ship moves until it reaches the true motion reset borderline (set here), and then it jumps back to an opposite position on screen based on its course. Set the limit for TM reset (in percentage). For example, "80" resets the position when the own ship marker is at a location which is 80% of the range.

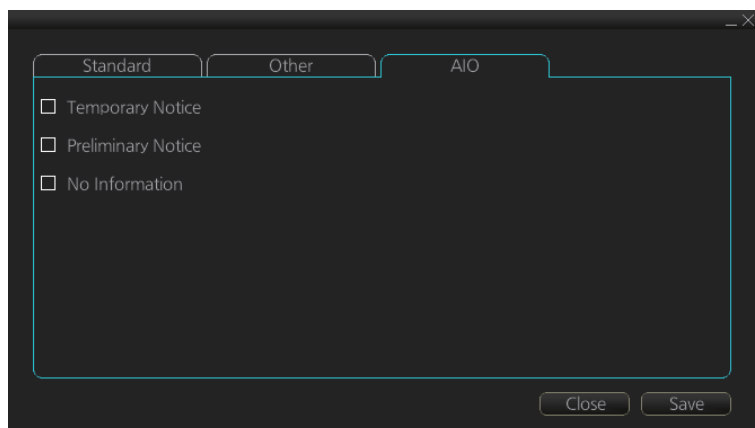
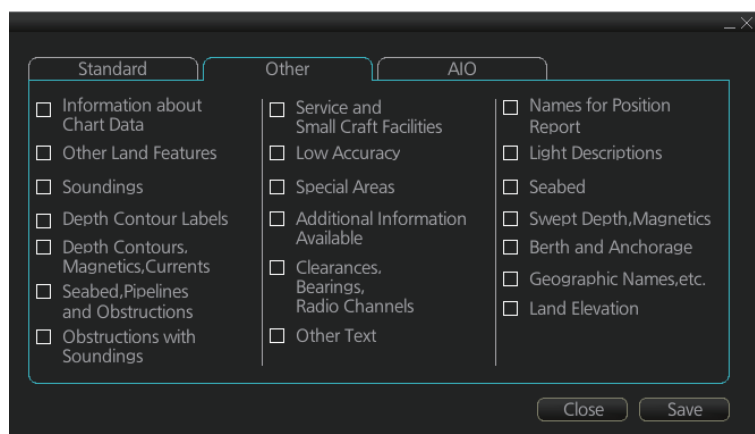
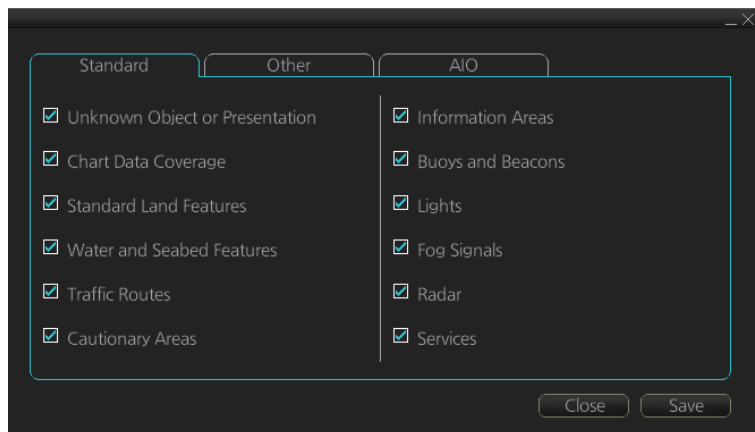
8.2.3 Chart Display menu

To access this menu and its pages, click [DISP], [SET] and [Chart DISP] on the InstantAccess bar then open the [Standard], [Other] or [AIO] page as appropriate.

The [Standard] page contains chart features defined by IMO that comprise a standard display. You can recall the standard display at any time in a single action; click the [STD DISP] button on the Status bar to get the standard display.

The [Other] page contains chart features for which you can control visibility and that are not part of IMO-defined standard display.

The [AIO] page controls what to display on the Admiralty Information Overlay.



Note: To display the information for the cursor-selected object, the associated chart feature must be turned on from the [Standard], [Other] or [AIO] page.

8.2.4 Display base

A subset of chart features is called the “display base”. As required by IMO, these features cannot be made invisible. To get the display base, uncheck all items on the [Standard] and [Other] pages in the [Chart Display] menu.

The display base consists of the following chart features:

- Coastline (high water)
- Own ship's safety contour, which is selected by the user
- Indication of isolated underwater dangers of depths less than the safety contour that lie within the safe waters defined by the safety contour
- Indication of isolated dangers that lie within the safe water defined by the safety contour such as bridges, overhead wires, etc., and including buoys and beacons whether or not these are being used as aids to navigation.
- Traffic routine systems
- Scale, range, orientation and operating mode
- Units of depth and height

8.3 How to Control Visibility of Symbols, Features

Control of symbols and features is divided into five pages in the [Symbol Display] menu, which you can access by clicking the [DISP], [SET] and [Symbol DISP] buttons on the InstantAccess bar.

[General] page: Controls own ship and target related items.

[Tracking] page: Controls past tracks and some other features.

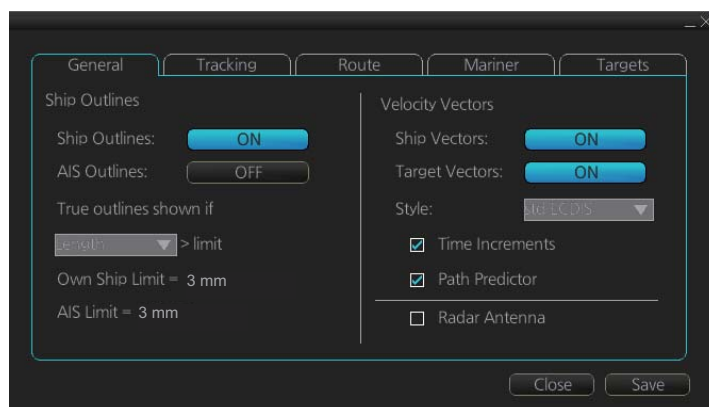
[Route] page: Controls planned and monitored route.

[Mariner] page: Controls user charts.

[Targets] page: Controls TT and AIS targets.

The user can define settings for chart details that are displayed over the chart area.

8.3.1 General page



[Ship Outlines]

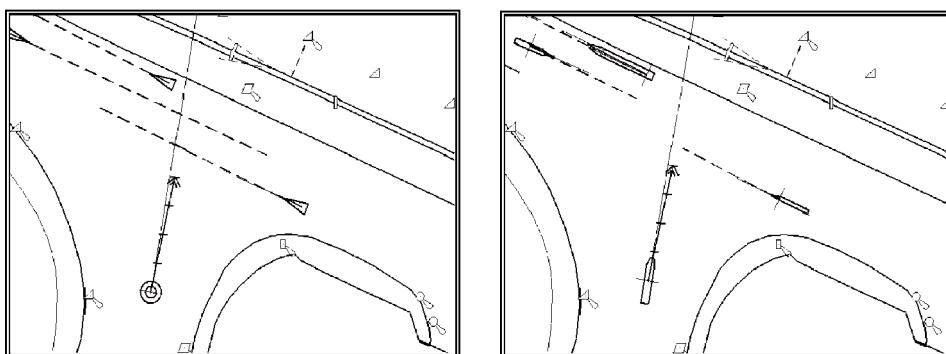
[Ship Outlines]: Select [OFF] or [ON] to show minimized or scaled symbol, respectively.

[AIS Outlines]: Select [OFF] or [ON] to show AIS targets in same size or scaled symbol, respectively.

8. HOW TO CONTROL CHART OBJECTS

[True outlines shown if]: If the length or width of the own ship mark is greater than 3 mm, the own ship mark is shown with the true scale symbol. Select [Length] or [Beam width].

The right illustration in the figure below shows own ship mark and AIS targets with scaled symbols. The left illustrations shows own ship mark and AIS targets with point symbol. AIS targets are displayed as true scale symbol if the displayed chart scale is larger than set with "Outlines" limit (length>3 mm) on the [General] page in the [Symbol Display] menu and your own ship are displayed as true symbol scale if the size of the true scale symbol is larger than 3 mm on the chart display.



[Velocity Vectors]

[Ship Vectors]: Show or hide own ship vector.

[Target Vectors]: Show or hide target vectors.

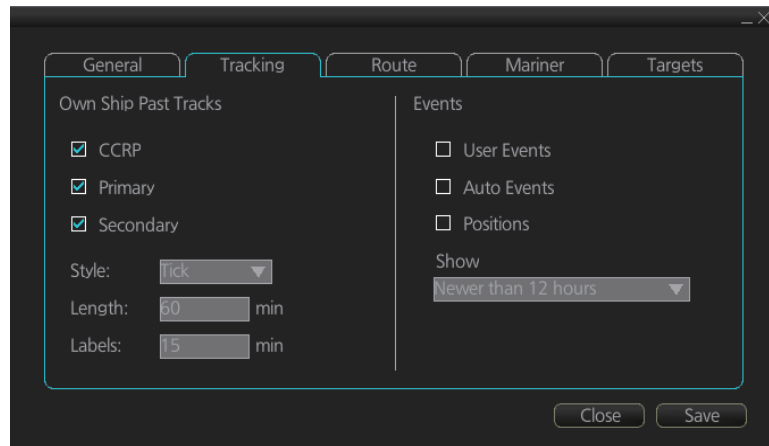
[Style]: Select the vector style. The [std ECDIS] vector is a speed-referenced vector symbol. [Conventional] is a simplified symbol.

[Time Increments]: Check to show ticks of velocity vector. This controls both own ship and targets ticks. If ticks are too tightly spaced, they will be automatically removed from the display, until spacing between ticks is sufficient to distinguish them separately. This depends on display scale and speed of vessel and target.

[Path Predictor]: Check to show the path predictor. The path predictor is a single dashed line originating at the CCRP and drawn at a length to represent the distance and path own ship will travel over the ground in the user-selected time interval for own ship speed vector.

[Radar Antenna]: Check to mark position of radar antenna (with "x").

8.3.2 Tracking page



[Own Ship Past Tracks]

[CCRP]: Check to plot CCRP position.

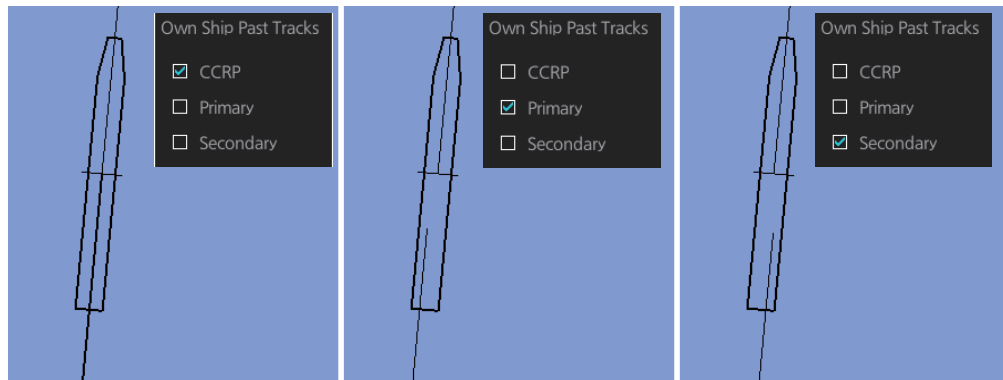
[Primary]: Check to plot own ship's past track with position fed from sensor with highest priority.

[Secondary]: Check to plot own ship's past track with position fed from sensor with second highest priority.

[Style]: Select time stamp position for past track (indicated by [Tick] or [Point]).

[Length]: Select length of past track.

[Labels]: Select label interval.



[Events]

Events marks are based on the [Voyage] log records.

[User Events]: Display event symbols on the chart. User events are recorded by clicking [Record], [Event Log] and [User Event] on the InstantAccess bar.

[Auto Events]: Display automatically entered event symbols, where the system has recorded an event based on conditions you have set. Auto events are recorded every 1-4 hours.

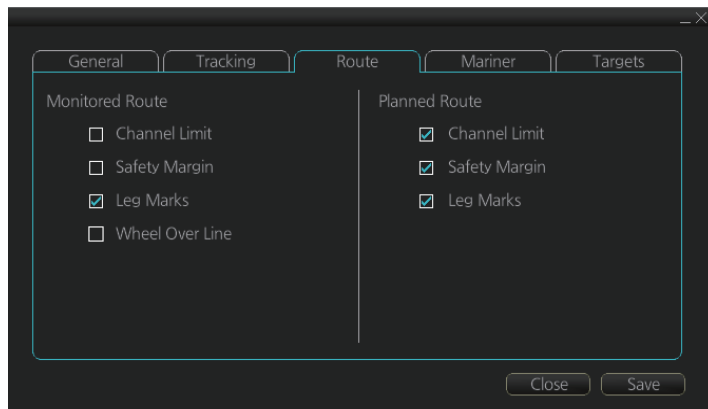
[Positions]: Display the latitude and longitude of an event, recorded by clicking [Record], [Event Log] and [POSN Event] on the InstantAccess bar.

Note 1: A MOB event is visible always.

Note 2: You can select the period of time to display event marks, from the [Show] list box. [Newer than 12 hours], [Newer than 24 hours], [Newer than 1 week], [Newer than 2 weeks], [Newer than 1 month], [Newer than 3 months], or [All].

8.3.3 Route page

The [Route] page selects the route parts of the monitored and planned routes to show on the chart.

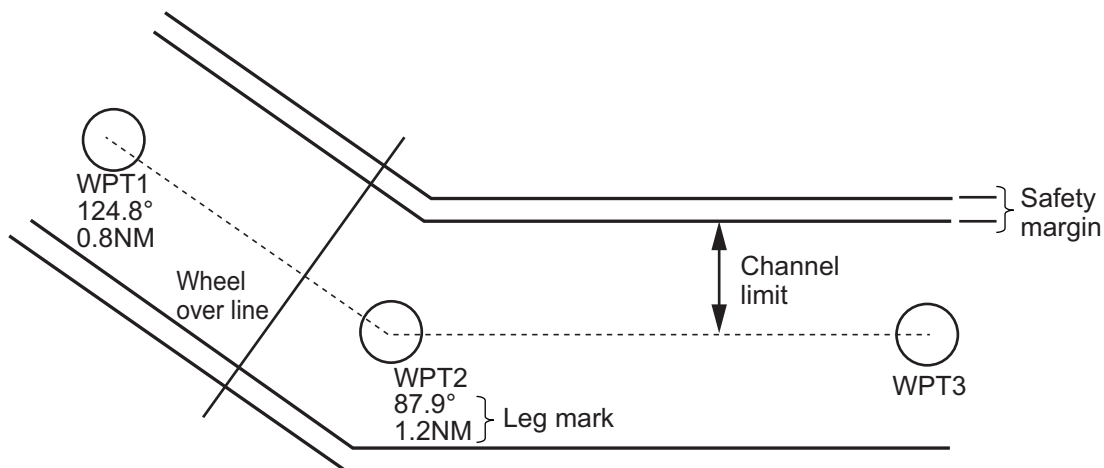


[Channel Limit]: The distance from the centerline to one side of the nav lane.

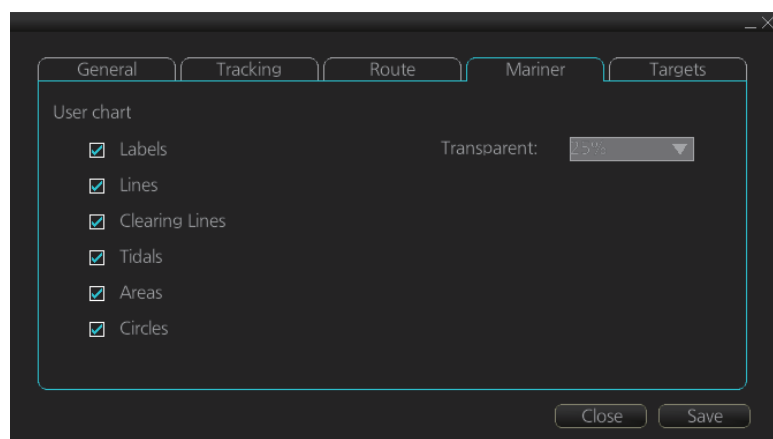
[Safety Margin]: The distance from one side of the channel limit to the safety margin distance.

[Leg Marks]: Indications of waypoint no. and range and bearing to next waypoint.

[Wheel Over Line]: The location where the ship turns toward new course.



8.3.4 Mariner page



[User chart]

[Labels]: Check to show labels on user charts.

[Lines]: Check to show lines on user charts.

[Clearing Lines]: Check to show clearing lines (for marking dangerous areas) on user charts.

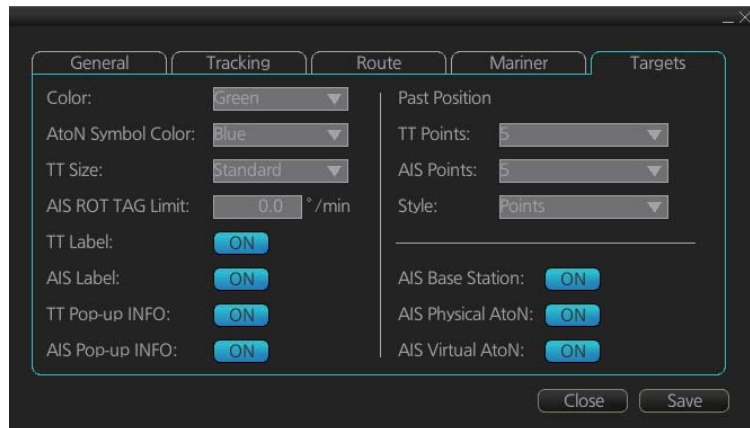
[Tidals]: Check to show symbols and tidsals on user charts.

[Areas]: Check to show areas on the user charts.

[Circles]: Check to show circles on user charts.

[Transparent]: Set the degree of transparency for the user chart objects. Color fill for the areas can be selected as transparent from 25%, 50%, 75% and as [No color fill]. If [No color fill] is selected, only the boundaries of the areas are visible.

8.3.5 Targets page



[Color]: Select color of target (TT and AIS, common) from the list box.

[AtoN Symbol Color]: Select the color for AtoN symbols.

[TT Size]: Select symbol size for tracked targets, [Standard] or [Small].

[AIS ROT TAG Limit]: ROT (°/min.), limit to display AIS target with curved speed vector. (Source of ROT must be ROT gyro on target vessel.)

[TT Label]: Show or hide the TT label (target no.).

[AIS Label]: Show or hide the AIS label (ship's name).

[TT Pop-up INFO]: Show or hide the TT pop-up, which is shown by right-clicking a TT.

[AIS Pop-up INFO]: Show or hide the AIS pop-up, which is shown by right-clicking an AIS target.

[AIS Base Station]: Show or hide AIS base stations.

[AIS Physical AtoN]: Show or hide AIS physical AtoN.

[AIS Virtual AtoN]: Show or hide AIS virtual AtoN.

TT(04)	NAME VOYA...
COG: 235.0°T	COG: 324.0°T
SOG: 6.1kn	SOG: 8.1kn
CPA: 0.23NM	CPA: 0.12NM
TCPA: -10:18	TCPA: -19:18

TT pop-up info

AIS pop-up info

[Past Position]

[TT Points]: Select the number of TT past position points to display.

[AIS Points]: Select the number of AIS past position points to display.

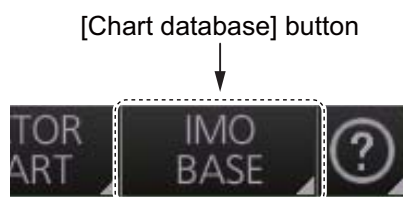
[Style]: Select style of presentation of target's past position.

8.4 Control of Predefined IMO Chart Display Settings

There are three sets of predefined chart display settings that can be used to display charts with certain chart features. The predefined chart display settings are

- [IMO BASE]
- [IMO STD] (STANDARD)
- [IMO ALL]

You can change the chart display setting in use with the [Chart database] button on the Status bar.



9. VECTOR (S57) CHARTS

Theoretically a chart can be coded for use on a computer as a vector chart. Vector-coded charts are coded using a variety of techniques. One technique is called S57ed3 and it has been chosen by IMO as the only alternative for SOLAS compliant electronic charts. If an S57ed3-coded chart is published by a government-authorized Hydrographic Office, then it is called "ENC". You can read more about ENC and related legal issues in this chapter. Hereafter, all references to vector chart material are referred to as "S57 charts" regardless of their source.

Sometimes you may wish to manually add Notices to Mariners or Navtex warnings into your S57 charts. This is called "manual updates". Also, manual updates are valid for all scales so that you don't need to repeat them for charts published in different scales from the same area.

9.1 Introduction to S57 Charts

An ENC chart is encrypted to prevent unauthorized use so the user needs a permit to view the ENC. This permit could be entered manually from the Control Unit, loaded from a USB flash memory.

Any new ENC must be loaded into the system. Some parts of the charts may be date dependent, i.e., they are visible after a set date or they are visible only for a limited period, etc. In the electronic chart system, you control all date-dependent objects with Display date and Approved until dates. In the paper chart world, the Preliminary and Temporary Notices to Mariners represent the date dependency described above for S57 charts.

An important part of ENCs are the updates. Hydrographic Offices can issue two kinds of updates:

1. Incremental updates, which are small additions to original base cells.
2. Reissues and new editions, which are complete replacements of previous base cells and their updates.

All updates are date stamped and they may also contain date-dependent parts. You control usage of updates in the electronic chart system from Display date and Approved until dates. Using Display date and Approved until dates, you can view your charts correctly drawn on any date in the past or in the future.

Chart material will be stored in media such as DVD ROMs, CD ROMs and USB flash memory or electronically through from LAN (Local Area Network) in which it could have arrived in DVD ROMs, CD ROMs or USB flash memories. Such material can contain only basic cells, cells and updates or only updates. The electronic chart system contains as standard the software required to access a medium.

Each S57 chart may contain additional links to textual descriptions or pictures, besides the chart itself. Typically additional textual descriptions and pictures contain important sailing directions, tidal tables and other traditional paper chart features that do not have any other method to be included into the S57 chart. This system copies these textual descriptions and pictures into its SSD so the user may cursor-pick them for viewing purposes.

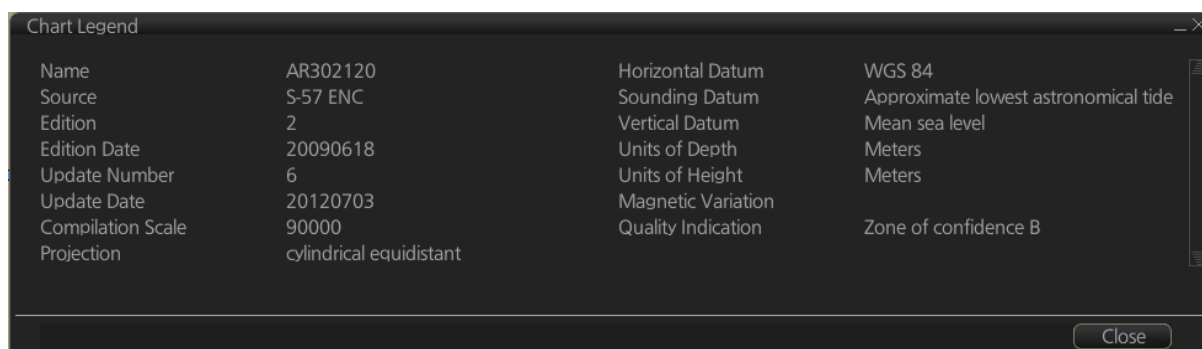
9.1.1 Definitions of terms

Cell	A cell is a geographical area containing ENC data and it is the smallest division of ENC data. Each cell has a separate unique name. Hydrographic Offices divide their responsibility area by the cells that they publish.
S57 chart	A database, standardized as to content, structure and format, is issued for use with this system without any authority of government-authorized Hydrographic Office.
ENC	A database, standardized as to content, structure and format, is issued for use with this system on the authority of government-authorized Hydrographic Offices. The ENC contains all the chart information necessary for safe navigation and may contain supplementary information in addition to that contained in the paper chart (e.g., sailing directions) that may be considered necessary for safe navigation. The name of the coding standard for ENC is S57ed3.
SENC	A database resulting from the transformation of the ENC by the system for appropriate use, updates to the ENC by appropriate means, and other data added by the mariner. It is this database that is actually accessed by the system for display and other navigational functions. The SENC may also contain information from other sources.

9.1.2 Chart legend for S57 charts

The chart legend provides various data about the chart currently displayed. To find info for current position, turn on TM reset, then click the [Chart INFO] button on the InstantAccess bar followed by the [Chart Legend] button, in the Voyage planing mode or Voyage navigation mode. To find info for a specific location, put the cursor on the location then right-click and select [Chart Legend]. Click the [Close] button to close the display.

This system is capable of showing more than one S57 chart at a time. This feature is called the multi-chart display. If one S57 chart does not cover the whole display, the system will open more S57 chart cells for display, if appropriate cells for the displayed area are available. The chart legend shows information about S57 charts displayed on the electronic chart display area.



Name	AR302120	Horizontal Datum	WGS 84
Source	S-57 ENC	Sounding Datum	Approximate lowest astronomical tide
Edition	2	Vertical Datum	Mean sea level
Edition Date	20090618	Units of Depth	Meters
Update Number	6	Units of Height	Meters
Update Date	20120703	Magnetic Variation	
Compilation Scale	90000	Quality Indication	Zone of confidence B
Projection	cylindrical equidistant		

Close

[Name]: Name of chart.

[Source]: Source of chart.

[Edition]: Edition number of the chart.

[Edition Date]: Date the edition was published.

[Update Number]: Update number.

[Update Date]: Date of update.

[Compilation Scale]: The scale of the original paper chart is shown here.

[Projection]: Projection of current chart.

[Horizontal Datum]: Horizontal datum used with current chart.

[Sounding Datum]: Datum used to create sounding data.

[Vertical Datum]: Vertical datum used with current chart.

[Units of Depth]: Unit of depth used with current chart.

[Units of Height]: Unit of measurement used to measure height of objects above sea level.

[Magnetic Variation]: Amount of magnetic variation. A positive value indicates a change in an easterly direction and a negative value indicates a change in a westerly direction.

[Quality Indication]: Quantitative estimate of the accuracy of chart features, given by the chart producer.

9.1.3 Permanent warnings for S57 charts

Permanent warnings help you keep the S57 charts up-to-date and these are shown at the bottom of the screen. Permanent warnings appear if the system detects a condition that may cause a chart to be not up-to-date.

Message	Meaning, Remedy
Display date is not current	Display date is not the current date. Set Display date and Approved until date to the current date.
ENC: permits have expired	The system found an expired permit for a chart. Remove the chart or renew subscription for the permit.
ENC: Product list not up to date	The product list is not up to date. Update the product list.
ENC: AIO product list not up to date	The AIO chart is not be up to date. Load updated material.
No connection to dongle	The dongle is not inserted. Insert the dongle to erase the message.
Not up to date (SSE 27): XXXXXXXX (Chart name appears at location of Xs.)	At least one chart is not up to date. Load updated material.
Permit expired (SSE 25): XXXXXXXX (Chart name appears at location of Xs.)	You have an expired permit for a chart. Remove the chart or renew subscription for the permit.

Note: The system can assist in keeping RENC-received charts up-to-date. For charts that have been loaded from sources other than an RENC, the system is unable to know the exact up-to-date situation.

9.2 Chart Viewing Dates and Seasonal Features of the S57 Chart

9.2.1 Introduction

S57 charts contain date-dependent features. Updating in general, including reissues, new editions and updates, creates date dependency. In addition to the obvious date dependency, some features of the S57 charts create additional date dependency. These features include "Date Start", "Date End", "Seasonal date start" and "Seasonal date end". Hydrographic Offices use these features to publish Temporary and Preliminary Notices to Mariners, as their paper chart equivalent updates are called. "Seasonal date start" and "Seasonal date end" are used for seasonal chart features such as summer-only sea marks, seasonal yacht race areas, etc.

You can efficiently use chart viewing date dependency in order to use the valid data for any given date applicable for your navigation or planning purposes. For example, you can check for existence of changes and restrictions weeks before they became valid. Date dependency is a part of the new electronic method to keep your chart up-to-date and valid for your intended use. Normally you should set Display date and Approved until once per week to keep your chart up-to-date.

9.2.2 How to approve and highlight S57 chart updates

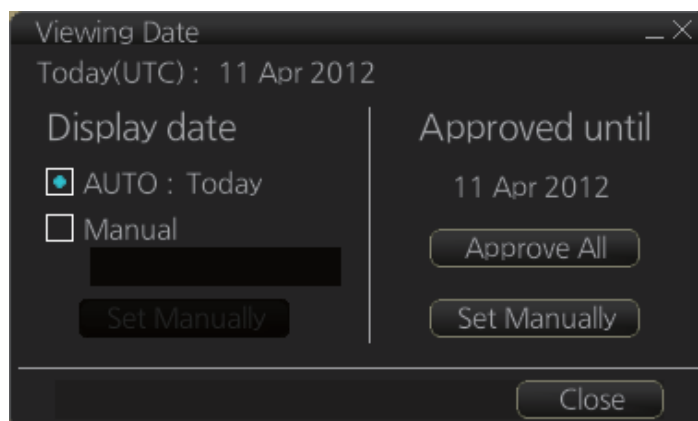
Before you approve updates, you can display (highlight) updates that are included into S57 charts. Normally you have selected for automatic after the SENC conversion. In this case, after all the SENC conversions have been finished, all updates are automatically highlighted and you can view and approve them after viewing. See the next section for how to set Display date and Approved until dates.

If you want to review updates after the initial approval of the updates do the following:

1. Use [Approved until] to set the begin date for the update highlight.
(See paragraph 9.2.3.)
2. Use [Display date] to set the end date for the update highlight.
(See paragraph 9.2.3.)
3. Review the changes. Added features are highlighted with orange circles. Removed features are highlighted with orange slashes. Changed features are highlighted with both orange circles and slashes.
4. After reviewing, set [Approved until] and [Display date] back to the current system date.

9.2.3 How to set Display date and Approved until dates

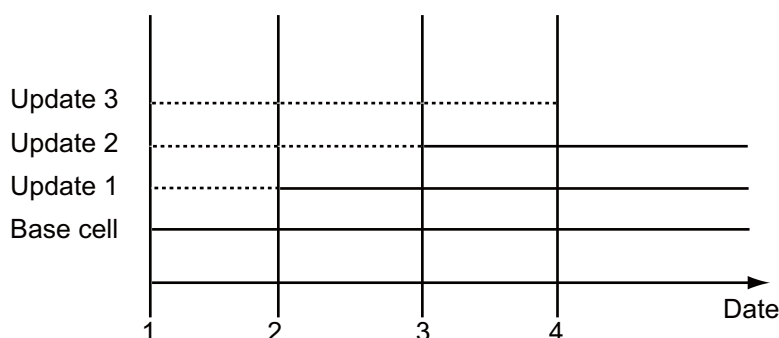
Click the [Chart INFO] and [Viewing Dates] button on the InstantAccess bar to show the [Viewing Date] dialog box. Set desired dates then click the [Close] button.



9.2.4 About chart viewing date dependency of S57 standard

How the issue date of updates changes the visibility of the changes

Study the example below to understand the behavior of updates relative to date.



The figure above shows how updates are dependent Chart viewing dates set in Display/Approved date settings by user. Actions 1 to 4 areas as follows:

1. Base cell including three updates is converted into SENC. Display date is set as current date of the system. Approve date has to be set to current date.
2. The date in which update 1 was issued. Display and Approved dates have to be set to correct date in order to see the chart with update 1.
3. The date in which update 2 was issued. Display and Approved dates have to be set to correct date in order to see the chart with update 1 and update 2.
4. The date in which update 3 was issued. Display and Approve dates have to be set to correct date in order to see the chart with update 1, update 2 and update 3.

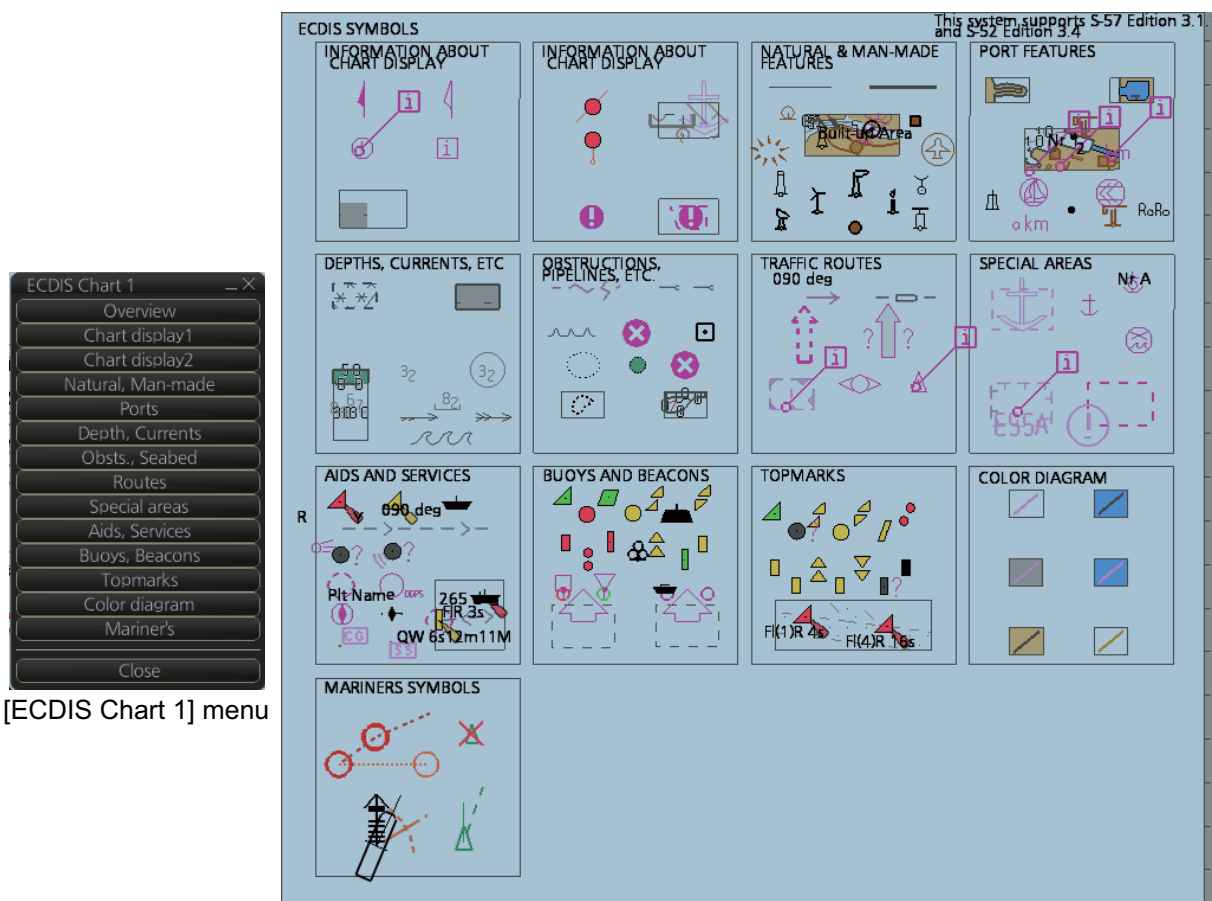
Note 1: In order to display charts with correct updated situation, always use current date during your voyage. If your voyage lasts more than one week, set current date at least once per week during your voyage.

Note 2: In order to display charts with correct updated situation during route planning, always use planned date of each waypoint to check your plan.

9.3 Symbology Used in S57 Charts

You can familiarize yourself with the symbology used by browsing IHO Chart 1, which is included in this system. Note that it behaves as any S57 chart and it follows your selections. See section 8.2.

1. Click the [Chart INFO] and [Chart 1] buttons on the InstantAccess bar to show to the [ECDIS Chart 1] menu, shown below.
2. Click a chart feature to show detailed information about the feature. Click [Overview] to show a compilation of all features, shown below.



9.3.1 Presentation library used for S57 chart features

The system uses the official IHO presentation library to draw S57 charts. The presentation library is replaceable, but this feature is only intended to be used by qualified service personnel and type approval authorities.

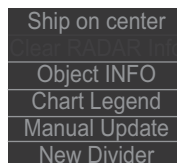
When this manual was published the official presentation library was "pslb03_4.dai", known as "Official IHO presentation library for system Ed 3 revision 1, Edition: 3.4".

9.4 How to Find Information About S57 Chart Objects

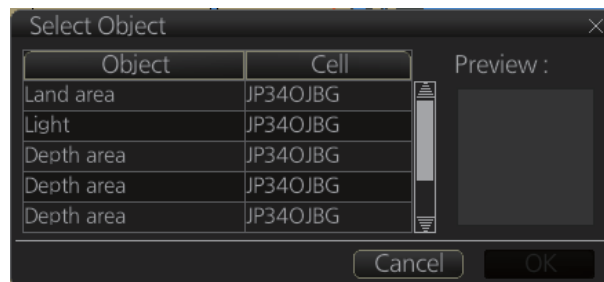
The ability to cursor-pick an object to find additional information about the object is an important function of the system. However, an unprocessed cursor pick, which does not discriminate or interpret and merely dumps on the interface panel all the information available at that point on the display, will normally result in pages of unsorted and barely intelligible attribute information.

Do the following to find information about a chart object.

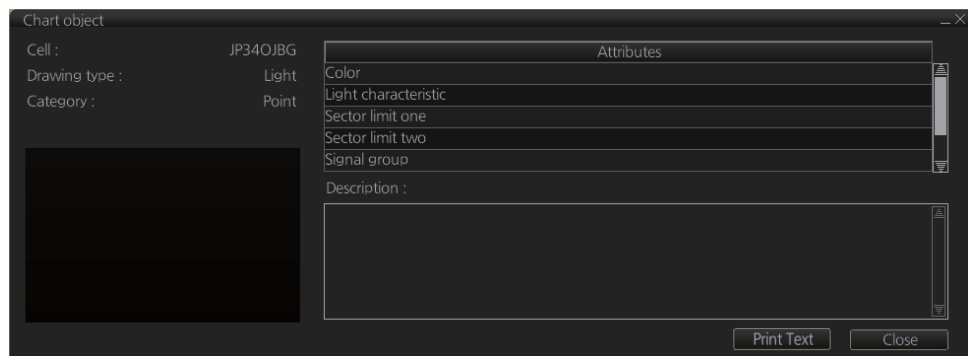
1. Get into the Voyage navigation mode or Voyage planning mode then right-click an object to show the context-sensitive menu.



2. Click [Object INFO] to show the [Select Object] dialog box.



3. Click the object for which you want to know its details then click the [OK] button.



Note: If another window is active, the preview window may be partially obscured by that window. Move the window to display the entire preview.

4. To print the chart object information, click the [Print Text] button. Below is a sample chart object printout.

```

Chart object

Cell: US1GC09M
Drawing type: Caution area
Category: Area

Scale minimum: 3000000
Textual description: USNOTES3.TXT
  
```

9.5 Admiralty Information Overlay (AIO)

The Admiralty Information Overlay includes all Admiralty Temporary and Preliminary Notices to Mariners (T&P NMs) and provides additional navigationally significant information from UKHO's ENC validation programme. The AIO is displayed as a single layer on top of the basic ENC and is available free of charge as part of the Admiralty S57 Chart Service and within Admiralty Value Added Resellers' services.

The AIO has been developed to ensure mariners can simply view the information they need - in addition to the standard chart - to navigate safely and compliantly. By clearly showing where important Temporary or Preliminary changes may impact a voyage, the Admiralty Information Overlay will give seafarers the same consistent picture of the maritime environment on their charts as they have always had.

The AIO license is free of charge for AVCS license holders.

9.5.1 Installation

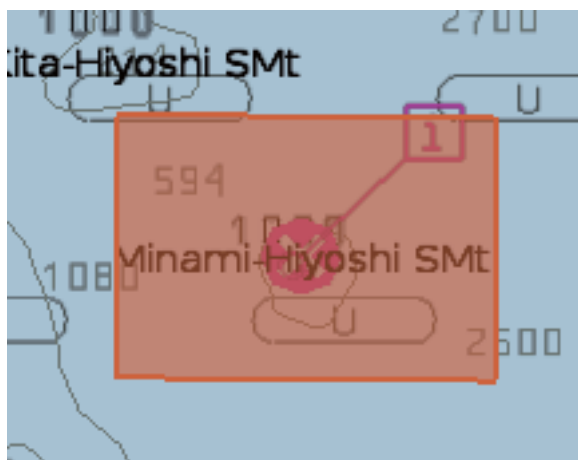
Installation is the same as that for the ENC chart. See section 7.2.

9.5.2 How to display the AIO

Click the [DISP], [AIO] and [ALL] buttons to show the AIO. To hide the AIO, click the [DISP], [AIO] and [OFF] buttons.

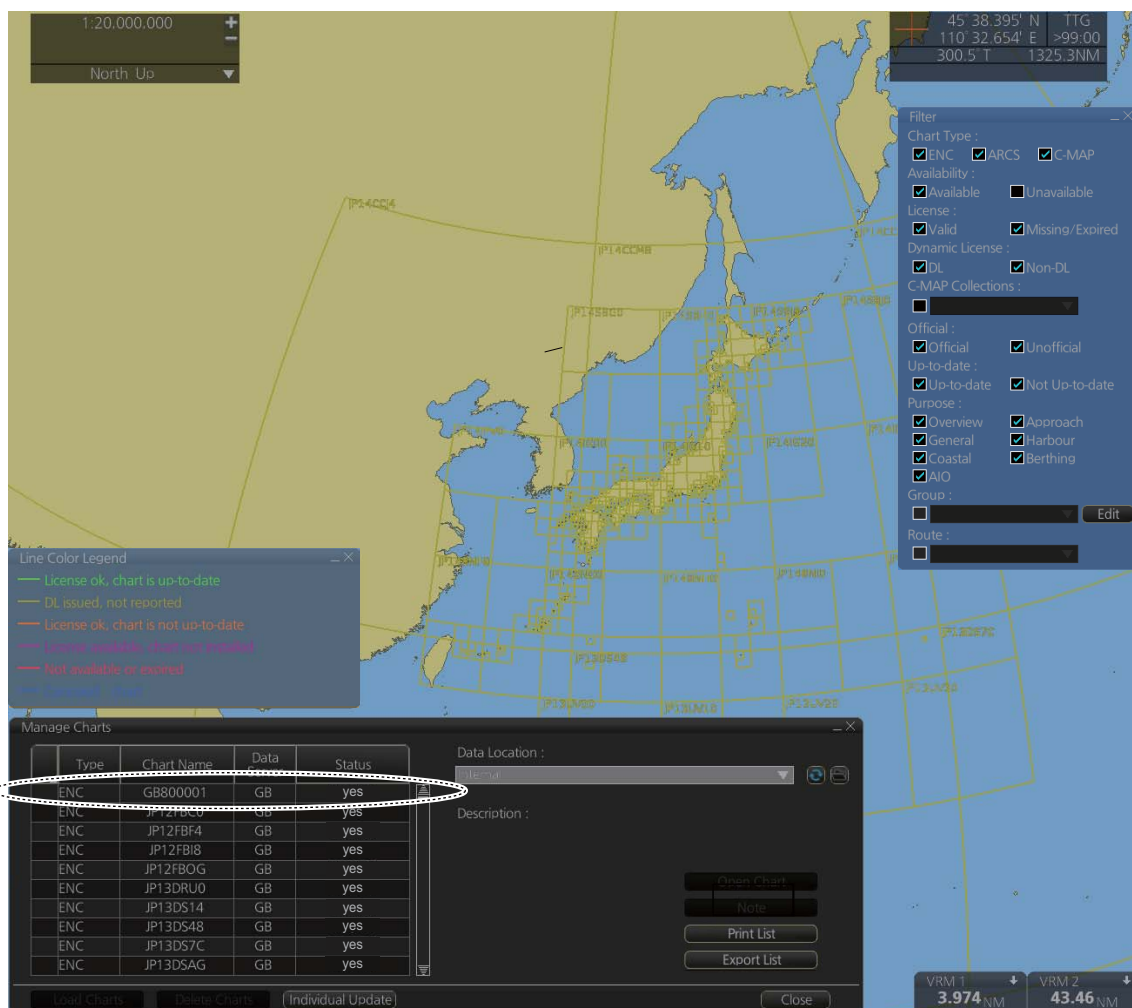


The area(s) that contain temporary or preliminary changes are marked with a hatched red rectangle.



9.5.3 Catalog of AIO cells

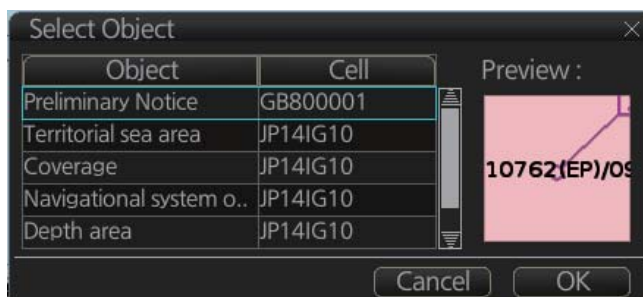
A catalog of AIO cells is maintained in the [Manage Charts] dialog box. To show this box, get into the Chart maintenance mode then click the [Manage Charts] button on the InstantAccess bar. The AIO cell is GB800001.



9.5.4 How to find AIO chart object information

Do the following to find chart object information contained in the AIO.

1. Right click a red hatched area in the chart area, then select [Object INFO] to show the [Select Object] dialog box.



9. VECTOR (S57) CHARTS

2. Click [Preliminary Notice] in the dialog box to show the [Chart object] dialog box.



The [Chart object] dialog box shows the following information:

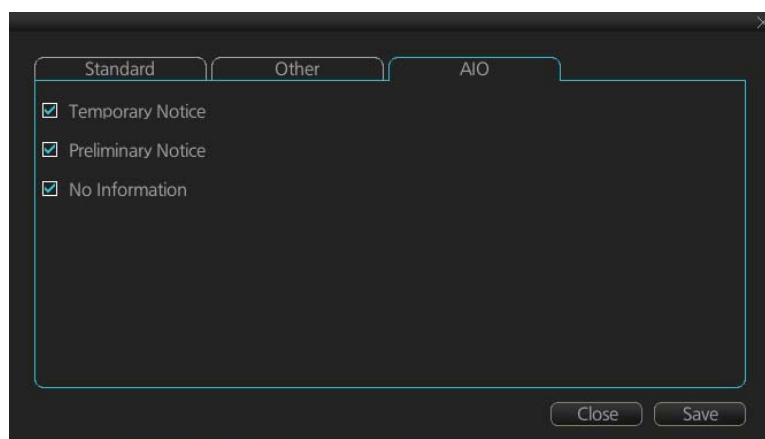
- Cell (name)
- Drawing type (Preliminary Notice, Temporary Notice)
- Category (AIO)
- The preview box provides a scaled-down image of the area selected. Click the image to enlarge it.
- The [Attribute] window shows the attributes for the AIO area selected. To find information about an attribute, click it to show its information in the [Description] box.
 - [Information]: Description of area (for example, danger area).
 - [Object name]: Object name (number)
 - [Pictorial representation]: Associated diagram when applicable.
 - [ENC affected]: ENC affected by the NM
 - Textual description: Full text of the Notice to Mariners (NM) appears below [ENC Affected].

To print the chart object information, click the [Print Text] button.

9.5.5 How to select the information to display

Select what type of notices to display as follows:

1. Click the [DISP], [SET] and [Chart DISP] buttons on the InstantAccess bar.
2. Click the [AIO] tab.



3. Check or uncheck items as appropriate.
4. Click the [Save] button to save settings then click the [Close] button to close the menu.

10. C-MAP CHARTS

The descriptions in this chapter apply to the CM-93/3 charts. (This system does not support CM-93/2 charts.)

10.1 C-MAP Cartographic Service

Your chart system has the capability of using and displaying the latest C-MAP world-wide vector chart database. These charts are fully compliant with the latest IHO S-57 3.1 specifications.

In order to prepare the system for use with the C-MAP database, there are a number of things that must be done.

10.2 How to Register the System at C-MAP Norway

Your system has the capability to use the C-MAP database. To do so an Aladdin eToken (supplied by C-MAP) must be connected to the system. The eToken provides the system with a unique System ID that enables C-MAP to issue correct licenses. The actual System ID can be found on the eToken itself, on the back of the installation CD box or on a sticker placed on the equipment. This ID must be provided on all chart orders, by e-mail (license@C-MAP.no).

10.3 How to Order Charts

A chart order may be sent together with system registration as described above. It is essential that the required information be sent to C-MAP when ordering charts for a system. C-MAP issues order forms specifying the information that is required, and contains vital information that will allow C-MAP to monitor and maintain your licenses throughout the lifetime of the system. Charts can be ordered by Zone, Area or Cell and these can be seen on the C-MAP web site or by downloading the Chart Product catalog also available on the web site. Price quotations can be obtained via your chart dealer or direct from your local C-MAP office. Once the license order has been prepared it should be emailed to license@C-MAP.no.

10.4 How to Apply for Licenses

Once the order has been received at C-MAP, a license will be generated and transmitted back to the operator. This may be in the form of a single alphanumeric string (16 characters), or in the form of a file called PASSWORD.USR. Once this license has been received it should be input using the License Administrator software designed and supplied by the chart manufacturer. There are two types of licenses, purchase and subscription. Purchase licenses are valid indefinitely while subscription licenses need to be renewed every 12 months from the start of the subscription. Failure to renew a subscription will result in the charts becoming unavailable.

10.5 Troubleshooting

If you are having problems installing your software or charts please check the following before contacting C-MAP:

- Check that the charts are available, with the chart management function.
- Check that the license is correctly installed, with the license function.

Contact Information: For information or help please call your nearest C-MAP Office (details can be found on the reverse side of the C-MAP chart CO box) or contact C-MAP Norway. E-mail: technical@C-MAP.no

10.6 Chart Subscription Services

10.6.1 C-MAP services

The C-MAP DL service is an ENC service available on DVD or online, in C-MAP SENC format. The C-MAP DL service ensures immediate access to ENC licenses whenever they are needed. ENC licenses available in seconds automatically via online C-MAP service providers. Cost is controlled via pre-set budgets and spending limits, giving shipowners a true "pay-as-you-go" service. For further details about C-MAP DL, contact a C-MAP provider.

Note 1: CM-ENC is available. If you change CD-ROM service to DVD service, you need to also have a new license for the DVD service. Contact your chart agent or C-MAP for details.

Note 2: PC and internet connection with e-mail are required. Further it is necessary to access Jeppesen approx. once every two weeks.

10.6.2 What is ENC delivery?

ENCs can be distributed as ENC delivery or SENC delivery. Both deliveries can be used in this system.

In ENC delivery, charts are distributed directly from source like PRIMAR, IC-ENC, JHA, etc. They are delivered onboard in ENC format (using S-57 and S-63) then charts are loaded into the system.

In SENC delivery, charts are converted from ENC to SENC before delivery to onboard and loading to the system. A CM-ENC delivery is SENC delivery.

Important notices

- If you are using both services (ENC and SENC deliveries) having the same chart name loaded into the system through both deliveries, priority of displaying the chart is in ENC delivery.
- Chart updates for ENC delivery are only for charts of ENC delivery and chart updates for SENC delivery is only for charts of SENC delivery. You have to keep charts up-to-date separately.
- If you change from ENC delivery to SENC delivery, remove old charts from the system before loading charts from new delivery.

10.7 Chart Display

10.7.1 Introduction

C-MAP charts are S57 charts displayed together with ENC (S57) and CM93/3 charts. These charts have the priority order shown below.

1. CM- ENC
2. C-MAP 93/3 Prof and C-MAP 93/3 Prof+

If the same navigational purpose charts are available over an area, priority is as shown above. Areas where ENC is not available CM-ENC charts are shown. Where C-MAP Prof or CM93 Prof+ are available, CM 93/3 charts are displayed.

The chart legend provides various data about the chart currently displayed. To find info for current position, click the [TM/CU Reset] button then click the [Chart INFO] button on the InstantAccess bar followed by the [Chart Legend] button. To find info for a specific location, put the cursor on the location then right-click and select [Chart Legend]. Click the [Close] button to close the display.

This system is capable of showing more than one chart at a time. This feature is called the multi-chart display. If one chart does not cover the whole display, the system will open more chart cells for display, if appropriate cells for the displayed area are available. The chart legend shows information about charts displayed on the electronic chart display area.

Chart Legend			
Name	NO1A3000	Horizontal Datum	WGS 84
Source	C-MAP ENC	Sounding Datum	Lowest astronomical tide
Edition	1	Vertical Datum	Mean sea level
Edition Date	20100103	Units of Depth	Meters
Update Number	2	Units of Height	Meters
Update Date	20100103	Magnetic Variation	
Compilation Scale	1500000	Quality Indication	Zone of confidence U (data not asse..
Projection	cylindrical equidistant		

[Name]: Name of chart.

[Source]: Source of chart.

[Edition]: Edition number of the chart.

[Edition Date]: Date the edition was published.

[Update Number]: Update number.

[Update Date]: Date of update.

[Compilation Scale]: The scale of the original paper chart is shown here.

[Projection]: Projection of current chart.

[Horizontal Datum]: Horizontal datum used with current chart.

[Sounding Datum]: Datum used to create sounding data.

[Vertical Datum]: Vertical datum used with current chart.

[Units of Depth]: Unit of depth used with current chart.

[Units of Height]: Unit of measurement used to measure height of objects above sea level.

[Magnetic Variation]: Amount of magnetic variation. A positive value indicates a change in an easterly direction and a negative value indicates a change in a westerly direction.

[Quality Indication]: Quantitative estimate of the accuracy of chart features, given by the chart producer.

10.8 Permanent Warnings

Permanent warnings help you keep the C-MAP up-to-date and these are shown at the bottom of the screen. Permanent warnings appear if the system detects a condition that may cause a chart to be not up-to-date.

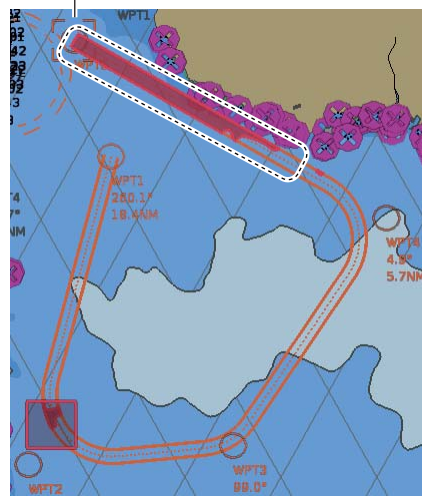
Message	Meaning, Remedy
C-MAP: Database not up to date	Database is not up to date. Update the data base.
C-MAP: Dynamic license reporting overdue	The time for the "Next Report Date" has passed. This occurs once every 12 hours if the condition continues. Get into the Chart maintenance mode then click the [License] button. Click the [C-MAP] tab then the [Order Update File] button.
C-MAP: Dynamic licensing credit limit	You have exceeded the allotted credit limit. Raise credit limit.
C-MAP: No connection to eToken	eToken dongle is not connected (inside the Processor Unit).
C-MAP: permits have expired	You have an expired permit for a chart. Remove the chart or renew subscription for the permit.
No connection to dongle.	Dongle not connected. Connect dongle.
Permit expired (SSE 25): XXXXXXXX (Chart name replaces Xs.)	You have an expired permit for a chart. Remove the chart or renew subscription for the permit.

11. CHART ALERTS

The chart radar can detect areas where the depth is less than the safety contour or detect an area where a specified condition exists. If prediction of own ship movement goes across a safety contour or an area where a specified condition exists, the system does the following:

- Highlights warning alert objects in red (route checked in route planning, and route navigation)
- Provides visual alerts in the [Alert] box for warning alert objects (route navigation)
- Sounds an aural alarm for warning alert objects (route navigation)

Warning (highlight) chart object



For this function, the chart radar utilizes the chart database (S57 charts) stored on the SSD in SENC format. **Note that the chart radar calculates dangerous areas using the largest scale chart available, which may not be the visualized chart.**

You can select objects that are included for calculation of danger area (for example, restricted areas). A dialog box lists the various areas that activate danger warnings.

You can also define your own safe area by creating a user chart area. The system can utilize these areas when calculating chart alerts.

- The system can check the following for you:
 - Predicted movement area of own ship
 - Planned route with an easy to use locator function to find dangerous areas
- The system will highlight the following for you
 - Dangerous areas inside predicted movement area of the own ship
 - Dangerous areas inside your monitored route
 - Dangerous areas inside your planned route

11.1 Chart Alerts

Official S57 chart material contains depth contours that can be used for calculation of chart alerts. A chart database also includes different types of objects that the operator can use for chart alerts. The procedure for setting chart alerts is outlined below.

1. Select suitable safety contour for your own ship. See paragraph 11.1.1 for how to set the safety contour.
2. In the Voyage planning mode, define a new route or select an existing one. Make a chart alert calculation of the route if there are indications of danger areas in the route. Modify your route if necessary and do the chart alert calculation again. To modify an existing route see section 12.4.
3. Select route as monitored route.
4. Set check area for your own ship.

The system is now ready for chart alert calculation of monitored route and estimated own ship position.

11.1.1 How to set safety contour

Select safety contour suitable for the own ship.

1. Click the [DISP], [SET] and [Chart Alert] buttons on the InstantAccess bar to show the [Chart Alert] page.



2. Enter desired depth at [Safety Contour] then click the [Save] button.

A depth contour is created on the chart according to the safety contour value entered.

Note: If the chart does not contain chosen depth contour, the system will automatically select next deeper contour.

11.1.2 How to select objects used in chart alerts

You can also include calculation areas that have to be noted when sailing (for example, restricted areas). To include these areas in chart alerts, do the following:

1. Click the [DISP], [SET] and [Chart Alert] buttons on the InstantAccess bar to show the [Chart Alert] page.



2. Click a checkmark to select the alert choice ([Warning] or [Caution]). In the example above, [Restricted Area] and [Military Practice Area] are selected to [Caution] and all other times are set for [Warning].
3. Click the [Save] button to finish.

Note: C-MAP Pro+ charts may take several minutes to identify danger areas.

List of areas

There are the areas that the chart radar detects and provides the audible alert and/or visual alert if estimated own ship position or planned or monitored route crosses the area defined on the [Chart Alert] page. You can select from the following areas:

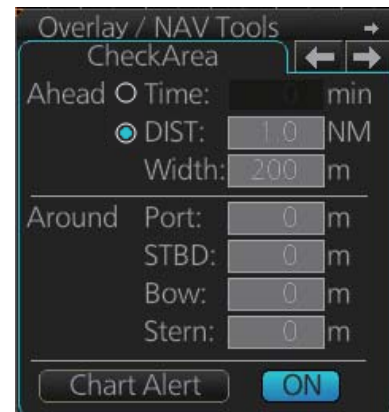
- Safety Contour
- Areas To Be Avoided
- User Chart Danger
- Traffic Separation Zone
- Inshore Traffic Zone
- Restricted Area
- Caution Area
- Offshore Production Area
- Military Practice Area
- Seaplane Landing Area
- Submarine Transit Lane
- Anchorage Area
- Marine Farm/Aqua Culture
- PSSA Area
- UKC
- Non-official ENC
- No Vector Chart
- Not Up-to-date
- Permit Expired

11.2 How to Activate Own Ship Check

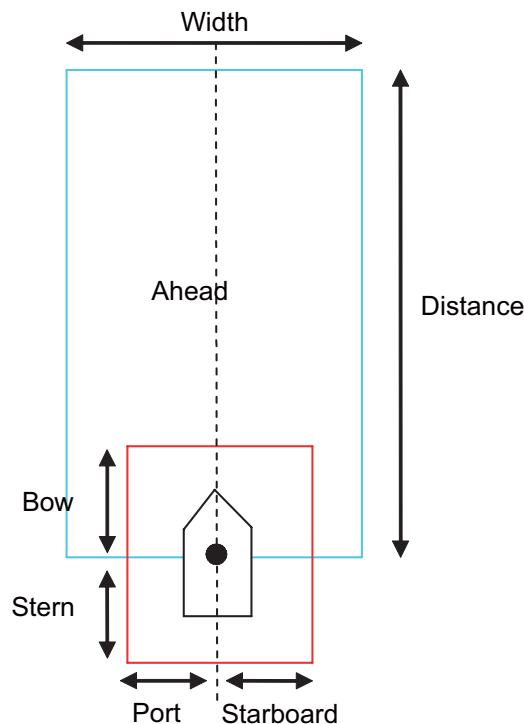
Calculation of own ship predicted movement area is done using a check area about own ship position. Set the check area as follows:

1. Select the [Check Area] page from the [Overlay/NAV Tools] box.

Note: The [ON] button may not be shown depending on installation setting.



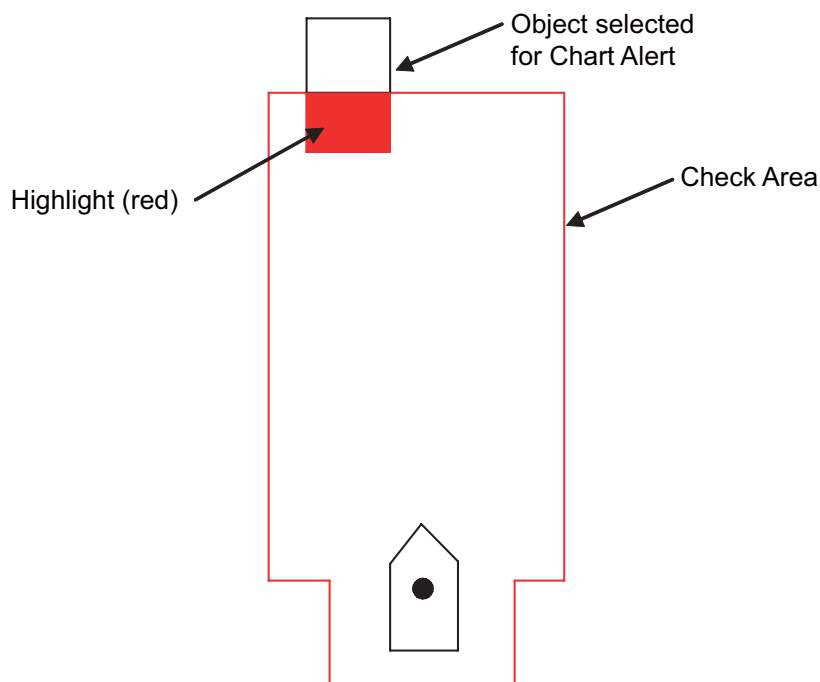
2. Set the ahead time or distance and ahead width, referring to the figure below. Also, set the "Around" figures: port, starboard, bow and stern check distance. The reference point is the conning position (CCRP).



3. To select the objects to use in chart alerts, click the [Chart Alert] button and see paragraph 11.1.2.
4. To show or hide the chart alert area figure, click the button ([ON] or [OFF]) to the right of the [Chart Alert] button at the bottom of the [Check Area] page.

Note: When the button to the right of the [Chart Alert] button is not displayed, this means that the own ship check is active always.

When an object having a Warning setting enters the Check Area, the object is highlighted in red and the aural alarm sounds.



11.3 Route Planning

The system will calculate chart alerts using user-defined channel limit for routes. Danger areas are shown highlighted if safety contour or user-chosen chart alert areas are crossed by the planned route. For more information on route planning, see chapter 12.

Note: If your voyage is going to take a long time or you are planning it much earlier than it is to take place, use the Display date and Approved until dates corresponding to the dates you are going to sail.

11.3.1 Chart alerts for route planning

You can generate a list of chart alerts that cross by the planned route. This can be done as follows:

1. Enter safety contour you want to use.
2. Plan a route; define waypoints and other necessary information. See chapter 12 for route planning.
3. Select dangerous objects to be monitored during route monitoring, on the [Alert Parameters] page in the [Route Plan] dialog box, shown below.
 - a) Click the [PLAN], [Planning] and [Route] buttons.
 - b) Click the [Alert Parameters] tab.
 - c) Click the alert to process. Show a red circle for visual and aural alerts, or yellow circle for visual alert. Note that the safety contour is always shown in red.

11. CHART ALERTS

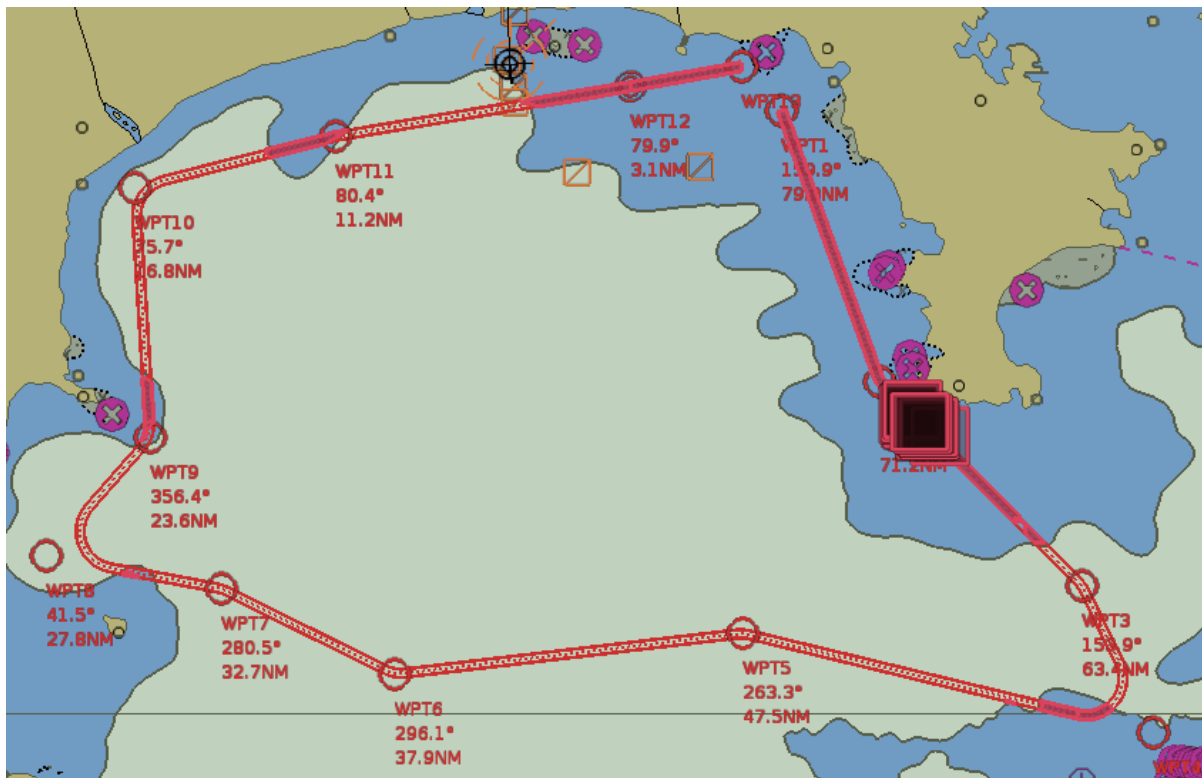


- Click the [Check Route] button to generate a list of chart alerts. The results appear on the [Check Results] page.



The figure above shows the alerts to be monitored. If there are alerts included in the planned route, check alerts leg by leg, or check alerts by using category of alert.

11.4 Route Monitoring



- When the ship enters a check area specified as a caution alert, a visual alert is generated. Neither the object in the area or the route is highlighted.
- When the ship enters a check area specified as a warning alert, a visual alert is generated and the object and route are highlighted.
- A red box(es) indicates an area having several highlighted objects.

The system has a route monitor that facilitates safe use of routes. You can check your route plan for safe water and you can attach a user chart and Notes that you intend to use together with a route plan. To show the [Route Information] dialog box, get into the Voyage navigation mode, then click the [Route] and [Route INFO] buttons. Click the [Waypoints] tab.

Route Information
Route : 001

Waypoints User Chart

To WPT : 2 GO Distance : 246.6NM Departure : 14:06 22 Oct 2012
Actual Average SPD : 20.0kn

WPT	Name	Latitude	Longitude	ETA	Plan SPD
1		35° 17.193' N	139° 50.305' E		
2		35° 15.986' N	139° 50.428' E	02:26 23 Oct 2012	20.0
3		35° 13.877' N	139° 50.438' E	02:32 23 Oct 2012	20.0

Total WPTs : 3 Total Distance : 3.3NM Not checked against ENC Chart

Check ETA

WPT : 2
Distance : 246.6NM
Plan : 02:26 23 Oct 2012
Actual : 02:26 23 Oct 2012
Off Plan : 00:00
SPD Calculation : 14 : 5 22 Oct 2012
Start Calculate
Suggested SPD : 0.0kn
Close

11. CHART ALERTS

This page is intentionally left blank.

12. ROUTES

12.1 Route Planning Overview

A route plan defines the navigation plan from starting point to the final destination. The plan includes:

A route plan defines the navigation plan from starting point to the final destination. The plan includes:

- Route name
- Name, latitude and longitude of each waypoint
- Radius of turn circle at each waypoint
- Safe channel limits
- Chart alarm calculation based on channel limits against chart database and user chart danger
- UKC calculation
- Deadband width, nominal deadband width used for the chart operating modes with moderate accuracy and economical sailing behavior
- Minimum and maximum speed for each leg
- The navigation method (rhumb line, great circle)
- Fuel saving
- ETD for the first waypoint
- ETA for the last waypoint
- Ship and environmental condition affecting the ship speed calculation
- Name of the user chart to use during route navigation together with the planned route
- Name of the Notes to use during route navigation together with this planned route, in the user chart dialog box

Using the above-mentioned data, the system calculates speed, course and length for each leg, ETAs for each waypoint, fuel consumption and WOP. It also calculates safe water areas based on user-defined channel limits. The calculated data is displayed in tabular form, which can be printed as a documented route plan and also stored in a file for later use.

Main functions of route planning are:

- Define waypoints
- Define turnings for each waypoint
- Define channel limits for each leg (a leg is the line connected between two waypoints). The channel limits are used to detect chart alerts when you are planning or monitoring your route.
- Define the speed for each leg
- Calculation for ETD and ETA
- Calculation for most economical sailing

Note 1: If you have small scale chart(s) on display having the whole eastern/western (0-180°E/0-180°W) hemisphere and a part of the other hemisphere on display, there is a limitation to display a route. To avoid this, set chart center so that the whole eastern/western hemisphere is not on the display. A maximum of five routes can be edited simultaneously.

Note 2: If a planned route's Safety Margin or Channel Limit contains excessive land masses, the chart radar may freeze during a route check. If this occurs, reset the chart radar, then adjust the Channel Limit and Safety Margin settings in the Route Plan dialog box's Waypoints so that land mass is not included in the route.

12.2 Main Menu for Route Planning

The main parameters for the route planning are:

- Latitude and longitude of the waypoint
- Channel limits to the waypoint
- Turning radius of the waypoint
- Maximum speed limit and planned speed for each leg

There are two phases for a route: Route Plan and Route Monitor. Route plan is used for planning the route and route monitor is used to control a route for monitoring.

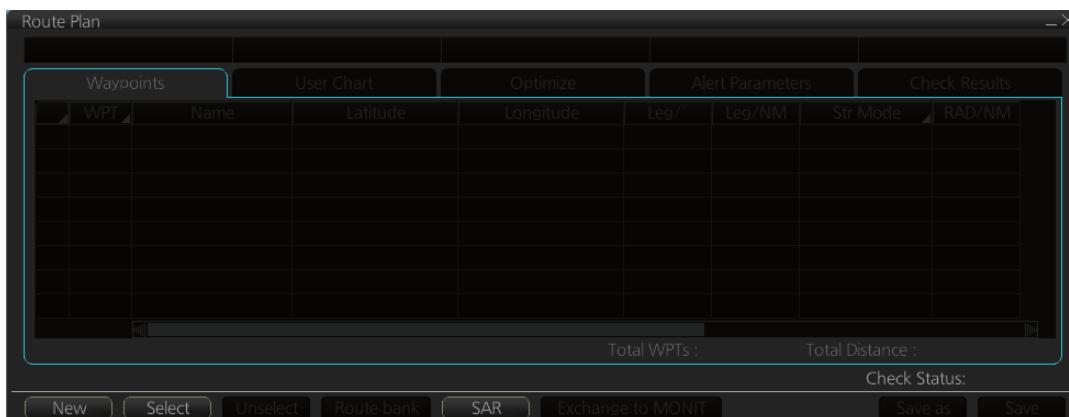
To complete route planning, do the following.

1. Create a new route or select an existing one. See section 12.3.
2. Modify your route if necessary. See section 12.4.
3. Make chart alert (safe water) calculation. See section 12.3.5.
4. Optimize your route. See section 12.7.

12.3 How to Create a New Route

To make a complete route for a voyage, do the following:

1. Click the [PLAN] button on the Status bar to activate the Voyage planning mode.
2. On the InstantAccess bar, click the [Planning] button followed by the [Route] button to open the [Route Plan] dialog box.



3. Click the [New] button.
4. Use the cursor to select a position for the first waypoint then push the left mouse button. A waypoint mark appears on the position selected, and the latitude and longitude of the position, etc. are entered into the [Route Plan] dialog box. After entering a waypoint, edit Name, Steering mode ([Rhumbline] or [Greatcircle]), Radius, Channel limit, Plan SPD, SPD Max and Margin as appropriate in the [Route Plan] dialog box, using the keyboard on the Control Unit or the software keyboard.
To change the settings of items other than L/L position: Put the cursor on an item to show up and down arrows then click required arrow.
To change L/L position: Put the cursor on the digit to change and roll the scroll-wheel.

Note: A guide box that shows the range and bearing between waypoints as you drag the cursor is available. You can show or hide the box with the [Guide Box] button on the InstantAccess bar. Click the button to show its background color in light-blue to display the guide box.



5. Repeat step 4 to enter other waypoints.
6. After you enter the final waypoint, right-click the display area to show the context-sensitive menu then select [Finish].
7. Click the [Save] button. Enter a name (max. 53 alphanumeric characters) for the route, using the keyboard on the Control Unit or the software keyboard. Click the [OK] button to finish.
8. Use the [Alert Parameters] page to define the safety contour and other specified conditions for checking the route. Click a "block" under a safety item to show a red circle to get check boxes and highlights or yellow circle to get the highlight. A parameter can also be assigned globally to all legs from the context-sensitive menu. See section 12.3.4 for how to use the [Alert Parameters] page.
9. Use the [Check Route] button on the [Alert Parameters] page to detect areas where the depth is less than the safety contour or where specified conditions exist. The results appear on the [Check Results] page. This system can examine chart database against planned route to make a list of alerts where a route crosses a safety contour or specified areas used in chart alerts.
10. Use the [User Chart] page to link, de-link a user chart(s) with the route. See section 12.3.2.
11. Use the [Optimize] page to enter parameters for route optimization. See section 12.3.3.



How to use the Undo feature

The Undo feature, available when creating a route and a user chart, can be accessed from the [UNDO] button on the InstantAccess bar. In route creation the feature is used with waypoint and text input as follows:

Waypoint input: Delete last-entered waypoint.

Text input: Erase last-entered character or character string.

Note: The [UNDO] button is not displayed on the FURUNO 19-inch monitor unit.

12.3.1 How to use the Waypoints page

Route Plan							
Waypoints		User Chart	Optimize	Alert Parameters		Check Results	
WPT	Name	Latitude	Longitude	Leg/°	Leg/NM	Str Mode	RAD/NM
1		35 ° 25 .997 'N	140 ° 08 .248 'E				
2		35 ° 20 .354 'N	140 ° 14 .044 'E	139.9	7.4	Rhumblne ▼	1.00
3		35 ° 37 .882 'N	140 ° 26 .732 'E	30.6	20.3	Rhumblne ▼	1.00
4		35 ° 39 .323 'N	140 ° 03 .392 'E	274.3	19.1	Rhumblne ▼	1.00
5		35 ° 34 .160 'N	140 ° 13 .417 'E	122.2	9.7	Rhumblne ▼	1.00
6		35 ° 32 .720 'N	139 ° 52 .271 'E	265.2	17.3	Rhumblne ▼	1.00
7		35 ° 29 .958 'N	139 ° 56 .030 'E	131.9	4.1	Rhumblne ▼	1.00
8		35 ° 26 .477 'N	139 ° 53 .211 'E	213.5	4.2	Rhumblne ▼	1.00

Total WPTs : 80 Total Distance : 677.6NM

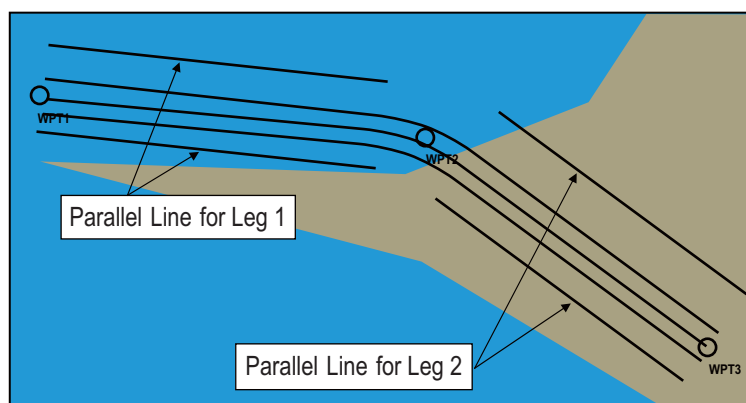
Check Status: Checked

New Select Unselect Route Bank SAR Exchange to MONIT Save as Save

The following fields and boxes can be found in the [Waypoints] page. Scroll the list rightward to see hidden items.

[WPT]: Each waypoint has a number.
 [Name]: You can name each waypoint.
 [Latitude]: WPTs latitude coordinate is displayed in WGS-84 datum.
 [Longitude]: WPTs longitude coordinate is displayed in WGS-84 datum.
 [Leg/°]: Bearing of leg
 [Leg/NM]: Length of leg (nm).
 [Str Mode]: Define steering mode for each leg - rhumb line or great circle. Click to select [Rhumblne] or [Greatcircle].
 [RAD/NM]: Define turning radius for each waypoint. To change a radius, put the cursor in this column to show up and down arrows. Click the arrows to set the radius.

[Ch Limit/m]: Define channel limit for each leg.
 [Plan SPD]: Define planned speed to use with a leg.
 [SPD Max]: Define maximum speed to use with a leg.
 [Margin/m]: Define extension for channel to be checked against selected alerts.
 [PL 1/m, PL 2/m]: One or two sets of parallel lines, colored orange, can be drawn on a route. Set the distance (in meters) to offset the lines from the route, from -99999 to 99999. Parallel lines allow the navigator to maintain a given distance away from hazards. See the illustration on the next page.

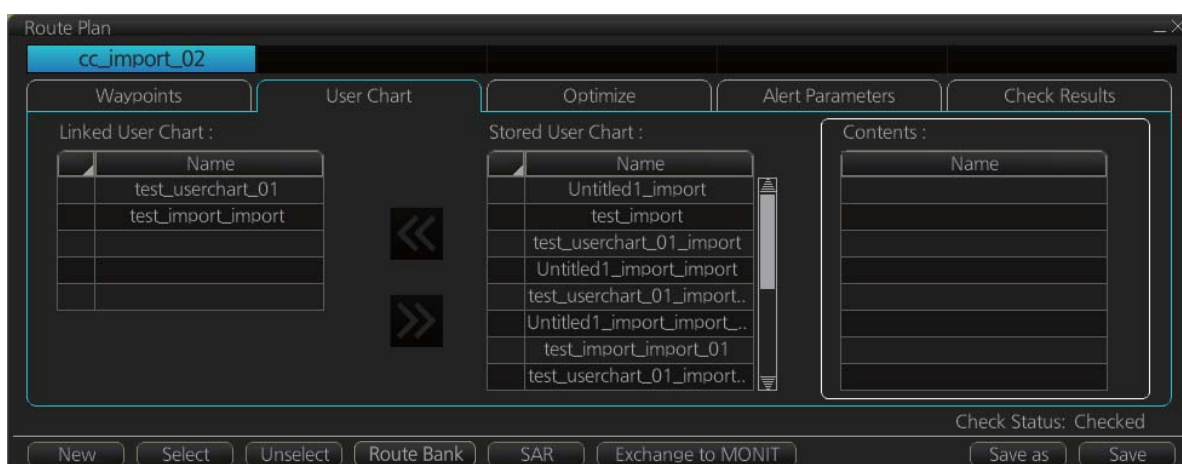


Note: You can select the route information data to display on the [Waypoints] page with the context-sensitive menu. Right-click an item from [WPT] to [PL 2/m] then select [Edit Columns] to show the context-sensitive menu. Check or uncheck items as appropriate then click the [OK] button.



12.3.2 How to use the User Chart page

The [User Chart] page lets you link user charts to routes. To link a user chart, click the box to the left of the user chart name in the [Stored User Chart] list to show a checkmark. Click the [<<] button to copy that name to the [Linked User Chart] list. To de-link a user chart, click the box to the left of the user chart name in the [Linked User Chart] list then click the [>>] button to erase the name. The contents of each user chart are shown in the [Contents] window.



[Linked User Chart]: List of user charts linked with selected route.

[Stored User Chart]: List of stored user charts.

[<<] button: Link a stored used chart. Check the chart in the [Stored User Chart] list then click this button. The user chart name is then copied to the [Linked User Chart] list.

[>>] button: Click to remove selected (checked) user chart from the [Linked User Chart] list.

[Contents]: Lists the objects saved to the user chart selected.

12.3.3 How to use the Optimize page

After all waypoints are inserted and you have made safe water calculation, you can optimize your route, on the [Optimize] page. If not selected, then optimization will be done automatically with max. speed. If you want do optimization with a specific strategy, see section 12.7 for how to optimize a route.

[Type]: Select optimization strategy: maximum speed, time table, maximum profit, or minimum cost.

[Set ETD]: Set date, time and waypoint to start from.

[Parameters]: Set the parameters for optimization, speed limit and income (max profit).

[Edit Cost Parameters] button: Enter fuel consumption figures. See section 21.3.

[Set ETA]: For the type [Time table], set the date and time that you want to arrive at the waypoint selected.

[Optimized Speed/ETA]: The optimized speed for the date and time entered at [Set ETA] appears here, after clicking the [Calculate] button.

[Calculate] button: Click to calculate optimization.

12.3.4 How to use the Alert Parameters page

The [Alert Parameters] page sets the alert conditions to use when checking a route. Put a red circle for an item to highlight. The relevant alerts are shown in the [Check Results] page.

You can select the safety contour and chart alerts used to check the safety of the route. This allows you to check the safety with conditions different from those selected n for system use. This is useful when making a route for different loading or sailing conditions.

Click each box to show one of the following:

- Red circle (Item highlighted in red)
- Yellow circle (No highlight)

Radio buttons, input boxes		Alert items	
Item	Description	Item	Description
[Check type]	Check how to apply the alerts, to every leg or individual leg. (Only [Draught] can be applied to every leg.)	[Draught/m]	Ship's draught
[Safety Contour]	Set the safety contour (in meters).	[Safety Contour]	Safety contour
[UKC Limit]	Under keel clearance limit.	[Areas to be Avoided]	Areas to be avoided
[Date (UTC)]	A chart may have date-dependent features. Enter the actual data of embarkation to know date-dependent features.	[User Chart Danger]	User chart danger area
[Copy from Default Alert] button	Copy the default alert settings to this route.	[Traffic Separation Zone]	Traffic separation zone
[Copy to Default Alert] button	Copy the alert settings for this route as default alert settings.	[Inshore Traffic Zone]	Inshore traffic zone
[Check Route] button	Click to check route for safe navigation. The results appear on the [Check Results] page.	[Restricted Area]	Restricted area
[Leg]	Leg number	[Caution Area]	Caution area
		[Offshore Production Area]	Offshore production area
		[Military Practice Area]	Military practice area
		[Seaplane Landing Area]	Seaplane landing area
		[Submarine Transit Lane]	Submarine transit lane
		[Anchorage Area]	Anchorage area
		[Marine Farm Aquaculture]	Marine farm aquaculture
		[PSSA Area]	Particularly Sensitive Sea Area
		[UKC Limit]	Under keel clearance limit
		[Non-official ENC]	No official ENC data
		[No Vector Chart]	No vector chart for area
		[Not Up-to-date]	Chart not up to date.
		[Permit Expired]	Permit for chart has expired.

Context sensitive menus

A context-sensitive menu for setting the draught is available on the [Alert Parameters] page. Right-click [Draught/m] to show the menu. [Set "ALL" setting to all legs] applies the draught value of [Check type: All Legs] to all legs. [Clear setting] restores previous settings for each leg.

Set "ALL" setting to all legs
Clear setting

12.3.5 How to use the Check Results page

The [Check Results] page allows you to make safe water calculation for your route. Click the [Check Route] button to do the check. After the button is operated, the alert type and latitude and longitude position of the alert appear for applicable legs on the route.



Note 1: In order to display charts with correct updated situation, always use current date during your voyage. If your voyage lasts more than one week, set current date at least once per week during your voyage.

Note 2: A route check can take longer with C-Map or CM-ENC charts. Wait until the completion of the check.

12.4 How to Modify an Existing Route

12.4.1 How to change waypoint position

To change position of a waypoint you have the following choices:

- Drag and drop waypoint using the left button.
- Enter latitude and longitude on the [Waypoints] page in the [Route Plan] dialog box.

How to drag and drop waypoint to new position

1. Put the cursor on the route waypoint to move then push the right button to show the context-sensitive menu.
2. Select [Edit].
3. Press and hold down the left button while rolling the trackball to move the cursor to a desired position. Release the button when the cursor is at the desired position. Right-click the display area to show the context-sensitive menu then select [Finish].

How to change latitude and longitude from the Waypoints page

1. Show the [Waypoints] page.
2. Put the cursor on the digit to change in the Latitude or Longitude field.
3. Enter position from the Control Unit's keyboard, or spin the scrollwheel.

12.4.2 How to change other waypoint data

Other data of a waypoint, such as name, steering mode, turning radius, min/max speed, can be edited from the [Waypoints] page. Select the route to edit and open the [Waypoints] page. Put the cursor on a desired field and spin the scrollwheel to change data. (Push the left button to change steering mode.)

12.4.3 How to add a new waypoint at the end of a route

How to add a new waypoint at the end of a route from the electronic chart area

1. Put the cursor on the current last waypoint of the route.
2. Right-click the display area to show the context-sensitive menu then click [Edit].
3. Put the cursor to the new location for the last waypoint then push the left button.
4. Right-click, then click [Finish].

How to add a new waypoint at the end of a route from the Waypoints page

Open the [Waypoints] page then right-click the last waypoint. Select [Insert after]. A waypoint is added at the end of the list. Edit the Latitude, Longitude, etc. as necessary.

12.4.4 How to insert a waypoint

How to insert a waypoint between waypoints from the electronic chart area

1. Put the cursor anywhere on the route where you want to insert a waypoint.
2. Right-click to show the context-sensitive menu then click [Edit].
3. Put the cursor on the leg where you want to insert a waypoint.
4. Right-click, then click [Insert WPT].
5. Right-click, then click [Finish].

How to insert a waypoint from the Waypoints page

Open the [Waypoints] page then right-click the waypoint to process. Select [Insert after] or [Insert before] as appropriate. A waypoint is added after or before the waypoint selected. Edit the Latitude, Longitude, etc. as necessary.

12.4.5 How to delete a waypoint

How to delete a waypoint from the electronic chart area

Put the cursor on the waypoint to delete. Push the right button to show the context-sensitive menu then select [Edit] followed by [Delete WPT].

How to delete a waypoint from the Waypoints page

Open the [Waypoints] page. Right-click the waypoint you want to delete then select [Delete WPT].

12.4.6 Geometry check of route

When you add a new waypoint, modify a waypoint or change other waypoint data, the message "Impossible turn at WPT" may appear (in red). It means that the geometry of route makes it impossible for the ship to sail along a certain leg. Typically it is enough if you do the following, on the [Waypoints] page.

- Decrease the radius of turn of the waypoint or one of its neighbors.
- Increase the radius of turn of the waypoint or one of its neighbors.
- Change lat/lon position of the waypoint or one of its neighbors.

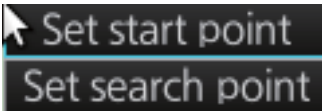
Note: If the above-mentioned remedies do not remove the "Impossible turn at WPT" indication, try changing the planned speed.

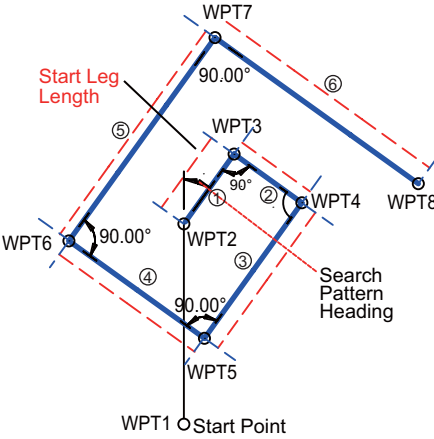
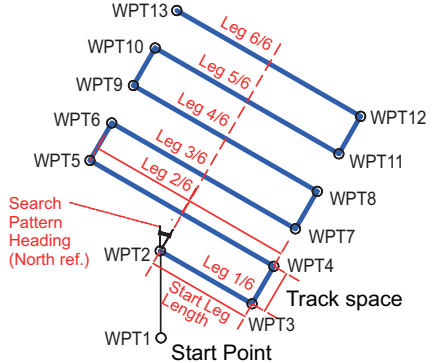
12.5 SAR Operations

The SAR feature facilitates search and rescue operations for MOB.

To use the SAR feature, get into the Voyage planning mode then do the following:

1. Click the [Planning] and [Route] buttons on the InstantAccess bar to show the [Route Plan] dialog box then click the [SAR] button.

2. Enter your start point. To enter current position, click the [Ship Position] button. (The start point can also be entered directly on the screen. Put the cursor on the start point, right-click the chart to show the context-sensitive menu shown right then click [Set start point].) 
3. Enter your ship's speed and turn radius, current UTC date and time.
4. At [Search Point], enter the estimated position of the object to search. (The search point can also be entered directly on the screen. Put the cursor on the search point, right-click the chart to show the context-sensitive menu shown at step 2 then click [Set search point].)
5. Enter drift speed, drift direction, and the UTC date and time of the estimated position.
6. At the [Search Setting] window, select and set the search type, referring to the table on the next page.

Search type	Options	Sample pattern
[Expanding square]	Search Setting Search Type : Expanding square Direction : ☒ Clockwise ☐ Anticlockwise Search Pattern Heading : 0.0 ° Start Leg Length : 0.1 NM Number of Legs : 1 legs [Direction]: Set the direction to start the search, [Clockwise] or [Anticlockwise]. [Search Pattern Heading]: See the right figure. [Start Leg Length]: Enter the start leg length. [Number of Legs]: Enter the number of legs to use. Starting at the probable location of the target, the search vessels expand outward in concentric squares.	
[Parallel tracks]	Search Setting Search Type : Parallel tracks Direction : ☒ Clockwise ☐ Anticlockwise Search Pattern Heading : 0.0 ° Start Leg Length : 0.1 NM Track Space : 0.1 NM Number of Legs : 1 legs [Direction]: Select the direction to start the search, [Clockwise] or [Anticlockwise]. [Search Pattern Heading]: See the right figure. [Start Leg Length]: Enter the start leg length. [Track Space]: Enter the length of the short legs in the route. [Number of Legs]: Enter the number of legs to use. The parallel tracks pattern is usually the first pattern used in undertaking a search operation, since it assumes that the object to be searched.	

Search type	Options	Sample pattern
[Sector search]	Search Setting Search Type : Sector search Direction : ☒ Clockwise ☐ Anticlockwise Search Pattern Heading : 0.0 ° Search Radius : 0.1 NM Number of Sectors : 1 [Direction]: Select the direction to start the search, [Clockwise] or [Anticlockwise]. [Search Pattern Heading]: See the right figure. [Search Radius]: Enter the search radius (in NM). [Number of Sectors]: Enter the number of sectors to use. The sector search is used when the position of the body is known accurately and the search has to be done over a small area. It is normally carried out in the area, where the casualty or the object has been sighted.	

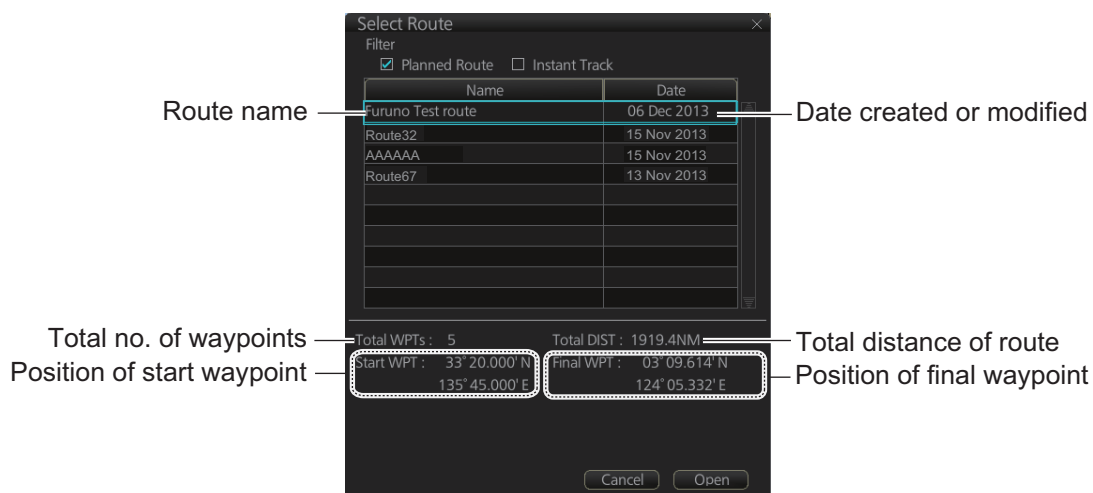
7. Click the [OK] button. The [Route Plan] dialog box appears and the system draws the search and rescue route on the screen according to the search and rescue settings.
 8. To follow the route, click the [Exchange to MONIT] button.

Note: To monitor the route the following conditions must be met:

 - The route must have at least two waypoints.
 - The route must have no impossible turns.
 - The route must have been checked.
 9. To save the route, click the [Save] button and enter a name for the route, using the keyboard on the Control Unit or the software keyboard.
- If necessary you can drag waypoints to new position, like with an ordinary route.

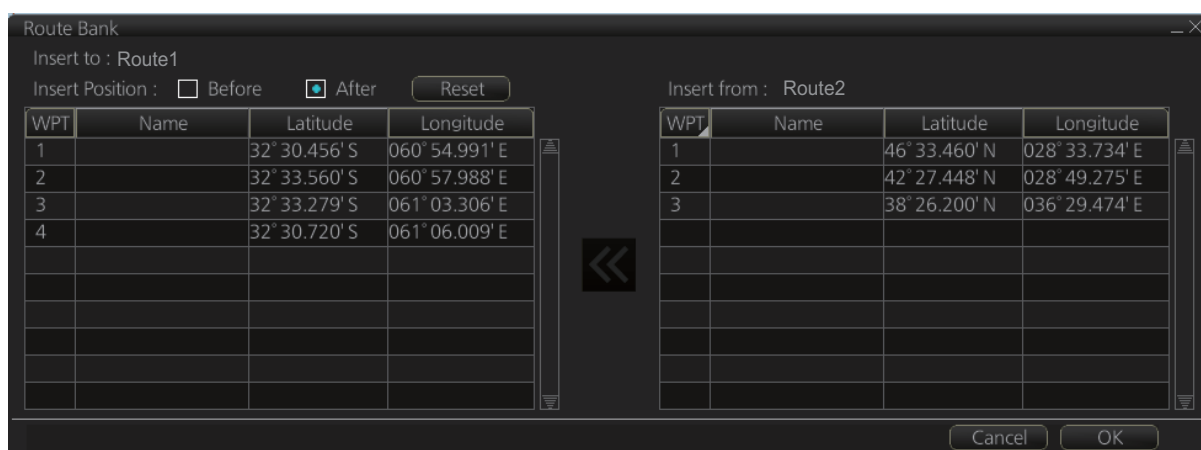
12.6 Route Bank

The route bank stores all the routes you have created. To show the route bank, in the Voyage planning mode, select [Planning], [Route], [Route Bank] in [Route Plan] dialog box:



In the Voyage planning mode, the waypoints of a route can be inserted into the route currently selected.

1. Show the dialog box shown above.
2. Select the route for which you want to copy its waypoint(s) in the active route. For example, select Route2.
3. Click the [Open] button.



4. At [Insert Position], select where you want to insert waypoints into the active route, [Before] or [After] the waypoint selected in the next step. The [Reset] button restores the route to the original condition.
5. In the left-hand column set the cursor on the waypoint where to insert waypoints from the inactive route.
6. At the right-hand column, select the waypoint(s) to add to the active route. A context-sensitive menu is available by right-clicking [WPT] in the inactive route. The options available are [Select All], [Deselect All] and [Reverse] (reverse the order of the waypoints in the inactive route).

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- Click the [<<] button to insert the waypoint(s) from the inactive route to the active route. In the example below, WPT1 of the inactive route is inserted at the end of the active route, becoming its waypoint 5.

The screenshot shows the 'Route Bank' dialog box. On the left, 'Insert to : Route1' is selected. Below it, 'Insert Position : ☐ Before ☒ After' is shown, along with a 'Reset' button. A table lists waypoints for Route1:

WPT	Name	Latitude	Longitude
1		32° 30.456' S	060° 54.991' E
2		32° 33.560' S	060° 57.988' E
3		32° 33.279' S	061° 03.306' E
4		32° 30.720' S	061° 06.009' E
5		46° 33.460' N	028° 33.734' E

In the center, a large '<<' button is visible. On the right, 'Insert from : Route2' is selected. A table lists waypoints for Route2:

WPT	Name	Latitude	Longitude
1		46° 33.460' N	028° 33.734' E
2		42° 27.448' N	028° 49.275' E
3		38° 26.200' N	036° 29.474' E

At the bottom right, there are 'Cancel' and 'OK' buttons.

- Click the [OK] button to finish.

12.7 Route Optimization

12.7.1 Available route optimization strategies

After all waypoints are inserted, the route is optimized from the [Optimize] page in the [Route Plan] dialog box. If no optimization strategy is selected, the optimization is done with "max. speed," defined in ship parameters. Optimization calculates all parameters for route steering (course and distance between two waypoints, maneuvering start point, WOP, etc.). There are four methods for optimization:

[MAX speed]: This calculation uses the maximum speed defined in the ship parameters and multiplies by all reduction factors (weather, ice, fouling, etc.) together with speed limits given for each waypoint to generate ETA. ETA may be entered, however it is calculated with user-entered ETD and speed limit.

[Time table]: Calculates the speed required in order to arrive at destination at required ETA. Maximum speed is never exceeded. The user enters ETD and ETA to calculate speed to use. If, the user-entered ETA is earlier than that found with the Max. Speed calculation, the Max. speed -calculated ETA will be indicated below the Time Table ETA calculation figure. The calculated speed is shown on the [Route Information] box as [Plan Speed].

[MAX profit]: Based on ETD, this calculation takes in account the fuel cost and the fixed cost of the ship and calculates the most profitable speed (highest profit per time unit).

[MIN cost]: Based on ETD, this calculation takes in account the fuel cost and the fixed cost of the ship and calculates the speed that gives the minimum total cost. You need to set [Cost Parameters] beforehand to use this feature.

12.7.2 How to optimize a route

You can define Estimated Time of Departure (ETD), desired number of waypoints and Estimated Time of Arrival (ETA) on the [Optimize] page in the [Route Plan] dialog box to optimize your route.

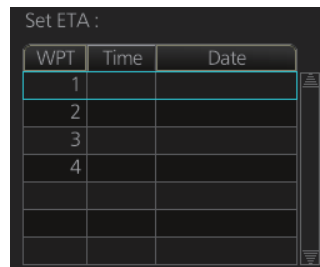
1. Click the [Optimize] tab to open the [Optimize] page.

2. At [Type], click the drop-down list to select desired optimization strategy, referring to paragraph 12.7.1 "Available route optimization strategies".
3. Do the following:
 - 1) At the [Set ETD] window, enter starting WPT and date and time of departure. For entry of the date, the [Set date] window, shown right, appears. Click the applicable date in the calendar if you are going to depart during the current month, or click the applicable arrow on the month/year button to select a different date. Click the [OK] button to save the ETA and close the window.
 - 2) At the [Waypoints] window in the [Route Plan] dialog box, enter the maximum speed to use. For the Type [MAX profit], enter [Income] value. If necessary, click the [Edit Cost Parameters] button to enter fuel consumption values.

Speed kn	Heavy Fuel Oil ton/h	Diesel Oil ton/h
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000

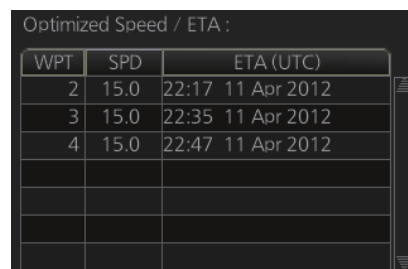
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- 3) For [Time table], the [Set ETA] window appears. Set the ETA to use for each waypoint. To enter the Time and Date, click the [Date] window to show the [Set date] window. Click the appropriate date. The date entered appears in the [Set ETA] window.



WPT	Time	Date
1		
2		
3		
4		

4. Click the [Calculate] button to calculate optimal route. The [Optimized Speed/ETA] dialog box shows the results of the calculation.



WPT	SPD	ETA (UTC)
2	15.0	22:17 11 Apr 2012
3	15.0	22:35 11 Apr 2012
4	15.0	22:47 11 Apr 2012

5. To apply the information to the route, click the [Apply to Route] button.
6. To save all optimization settings, click the [Save] button.
Note that the ETA used in route reports is the first-entered ETA.

12.7.3 How to plan a speed profile

A speed profile is defined by general max. speed and optimization types. These values are given while planning a route. You can define speed limit and optimize type in the [Optimize] page of the [Route Plan] dialog box and in the [Waypoints] page you can give planned and max. speed for each leg. The table below demonstrate how different optimize types and speed limits influence speed.

WPT	MIN cost	MAX profit	Time table	MAX speed
1	4.8	10.9	10.0	10
2	4.8	12.9	15.0	15
3	4.8	12.9	16.2	20
4	4.8	12.9	16.2	20
5	6.0	12.9	15.0	15
6	6.0	12.9	16.2	20
7	4.8	12.9	16.2	20
8	4.8	12.9	16.2	20
9	6.0	12.9	16.2	17
10	4.8	8.0	8.0	8