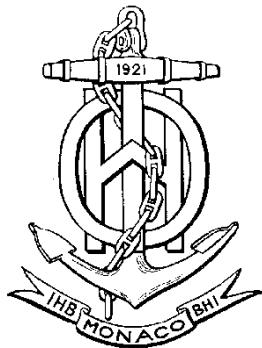


INTERNATIONAL HYDROGRAPHIC ORGANIZATION



## IHO TEST DATA SETS IN ECDIS

Edition 3.0.1 - June 2015

### INSTRUCTION MANUAL for the use of IHO TEST DATA SETS IN ECDIS

## IHO Publication S-64

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International Hydrographic Organization  
MONACO

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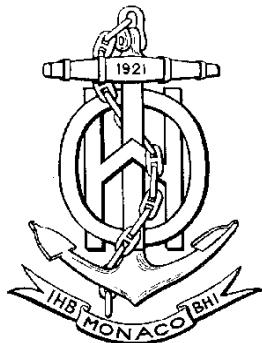
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INTERNATIONAL HYDROGRAPHIC ORGANIZATION



Publication S-64

## IHO TEST DATA SETS FOR ECDIS

Edition 3.0.1 - June 2015

### INSTRUCTION MANUAL for the use of IHO TEST DATA SETS IN ECDIS

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# IHO ENC Test Data Sets for ECDIS

## 1 Introduction

### 1.1 Change Control History

Version Number	Date of Issue	Author(s)	Brief Description of Change(s)
2.0.0	01/01/2011		Additional test 7.1 added
3.0.0	09/01/2015		Comprehensively expanded and updated to reflect revised S-52 Presentation Library – Edition 4.0.0
3.0.1	JJ/MM/2015		Clarifications and corrections agreed by the ENC Standard Maintenance Working Group

### 1.2 Introduction

The International Hydrographic Organization (IHO) Test Data Sets (TDS) for Electronic Chart and Display Information System (ECDIS) have been produced to fulfil the requirement for a data set necessary to accomplish all ECDIS testing requirements as outlined in the IEC 61174 standard. The TDS has been published as IHO Publication Number 64 and consists of numerous data sets required for testing as well as this guide, the TDS Instruction Manual (TIM). The TIM provides supporting documentation about the organization, understanding, and use of the ENC TDS and is intended to be used along with the data sets included in the TDS. It aims to provide appropriate comments about each test including the information about the most suitable data elements, their location and the expected test results.

### 1.3 Acknowledgements

This document has been developed by IIC Technologies Inc under contract to the National Oceanic and Atmospheric Administration (USA). Edition 3.0.1 was produced with assistance from BSH, Furuno, Jeppesen, Transas and UKHO.

### 1.4 Acronyms and Terms

This publication makes extensive use of terms and acronyms described in the IHO S-32 Standard. Additionally, the following acronyms are frequently used:

TDS – Test Data Sets

TIM - TDS Instruction Manual

EUT – Equipment Under Test

### 1.5 References

This publication provides tests based on the requirements documented in IHO standards. References to the source for a specific test are provided within this document. As specified in the IEC 61174 standard the tests provided are used to ensure conformance to the ECDIS requirements laid out in the IMO performance standard for ECDIS.

Normative References:

IHO S-52 - Specifications for Chart Content and Display Aspects of ECDIS

IHO S-57 - Transfer Standard for Digital Hydrographic Data

IHO S-62 - List of Data Producer Codes

IHO S-63 - Data Protection Scheme

## IHO ENC Test Data Sets for ECDIS

### Informative References:

IHO S-32 - Hydrographic Dictionary (provides ECDIS related definitions)

IHO S-65 – ENC Production Guidance

### 1.6 Key Documents Organizations and Relationships

The development and application of the TDS involves several organizations and related specifications (see Figure 1). The TDS was produced by the IHO to allow for the complete testing of ECDIS equipment (hardware and software) vis-à-vis the ECDIS Performance Standard. The ECDIS Performance Standard is specified by the International Maritime Organization (IMO) in MSC.232(82), and methods for testing this standard are the responsibility of the International Electrotechnical Commission (IEC) which publishes these requirements in document IEC 61174.

All standards are subject to revision. Therefore, users of these standards must use the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid international standards.

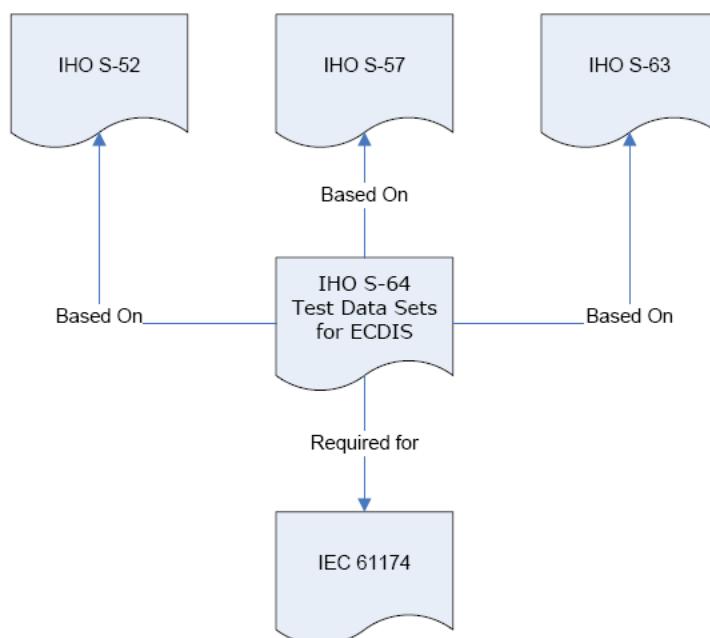


Figure 1 – The TDS and its relationship to other standards

The S-64 test data set contains both encrypted and unencrypted data. The inclusion of an encrypted dataset, conforming to the ENC encryption standard S-63, is so that ECDIS data loading and management operations can be tested under IEC 61174. There is also an unencrypted dataset which tests visualisation and operation aspects of the ECDIS.

### 1.7 Structure of the Instruction Manual

This document consists of an introduction followed by tests arranged over 6 sections in a task based layout. All tests are listed in a common format which is shown in the example below:

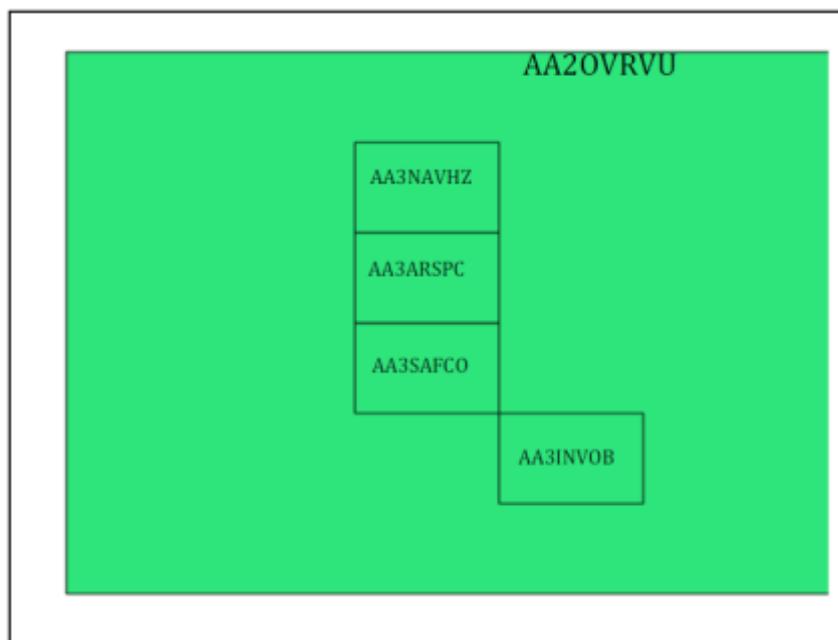
## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	(S-64 reference)	<b>IHO Reference</b>	(S-52 Part I/S-52)*
<b>Test description</b>			
A short description of what the test covers.			
<b>Setup</b>			
<i>The configuration required to perform the test including cells to be loaded, settings to be applied and any other information as required. Where appropriate this should use the form centre the display on “location” set scale to “scale value”.(within this document the scale value assumes the EUT has a screen of the minimum specified size)</i>			
<b>Action</b>			
<i>The action which the test executor must perform.</i>			
<b>Results</b>			
<i>The result which the test executor must observe to complete the test.</i>			

\* References to S-52 without brackets are to Annex A - Part I; references in square brackets refer to the main S-52 document itself.

### 1.8 Organization and Coverage of the TDS

The TDS contains a folder/directory for each section of the TIM which requires test data. Depending on the test requirement, the folder may also contain an ENC\_ROOT directory containing the files of the exchange set (CATALOG.031.000, plus any updates or other optional/related files, e.g. .TIF, .TXT necessary). Each ENC\_ROOT directory also contains a README.TXT file, which may have additional information regarding the content or usage of the files. The TDS data for encrypted data, located in section 2.5, contains multiple exchange sets, each with their own ENC\_ROOT directory and full test scripts describing how to use the data. The location (or path) of ENC exchange set and/or ENC cell will be indicated using italic notation, e.g. 2.1.1 Power Up\ENC\_ROOT\GB4X000.000. The manual frequently refers to test data “location” using a drive prefix of “D:” – this is because usually the test data is loaded from a hard media drive on the ECDIS but this may vary between systems and according to how the data is being imported onto the ECDIS. To conform to the directory structure as defined in S-57 Appendix B.1 Section 5.4.3, the ENC\_ROOT directory should be located in the media’s root directory. This should be viewed as a requirement. However, in practical terms, many systems can “browse” and load files from almost any location and removable media. Consult with the equipment manufacturer for further information.



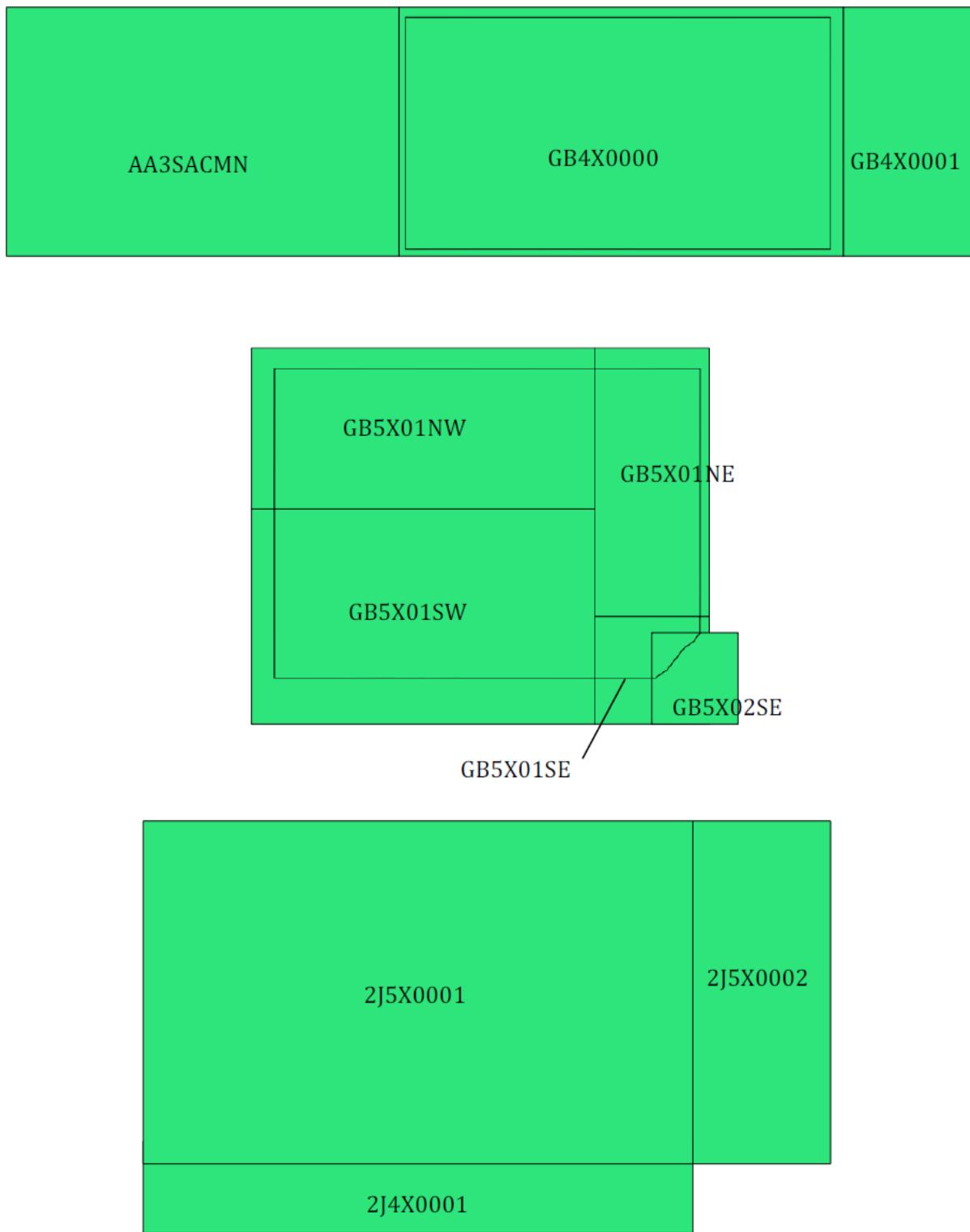


Figure 2 – ENC TDS Cell Coverage

### 1.9 Required Test Items and Use of the TDS

This section lists the items required for the execution of Tests specified in this document and how the TDS should be used. The following items are required:

1. IHO ECDIS Presentation Library contained in S-52, Annex A including an ECDIS Chart 1 and colour differentiation diagrams. If the manufacturer provides his own presentation library, Chart 1 has to be adapted accordingly.

## IHO ENC Test Data Sets for ECDIS

2. *IHO S-64 test data sets for ECDIS which includes ENC data, both encrypted and unencrypted, and its updates, together with the associated instruction manual.*
3. *SENC test data sets, if supported from each SENC distributor.*

The first item in the list, the IHO ECDIS Presentation Library (S-52, Annex A) including an ECDIS Chart 1 and colour differentiation diagrams must be acquired and installed on the equipment under test (EUT) by the manufacturer, prior to the beginning of the tests.

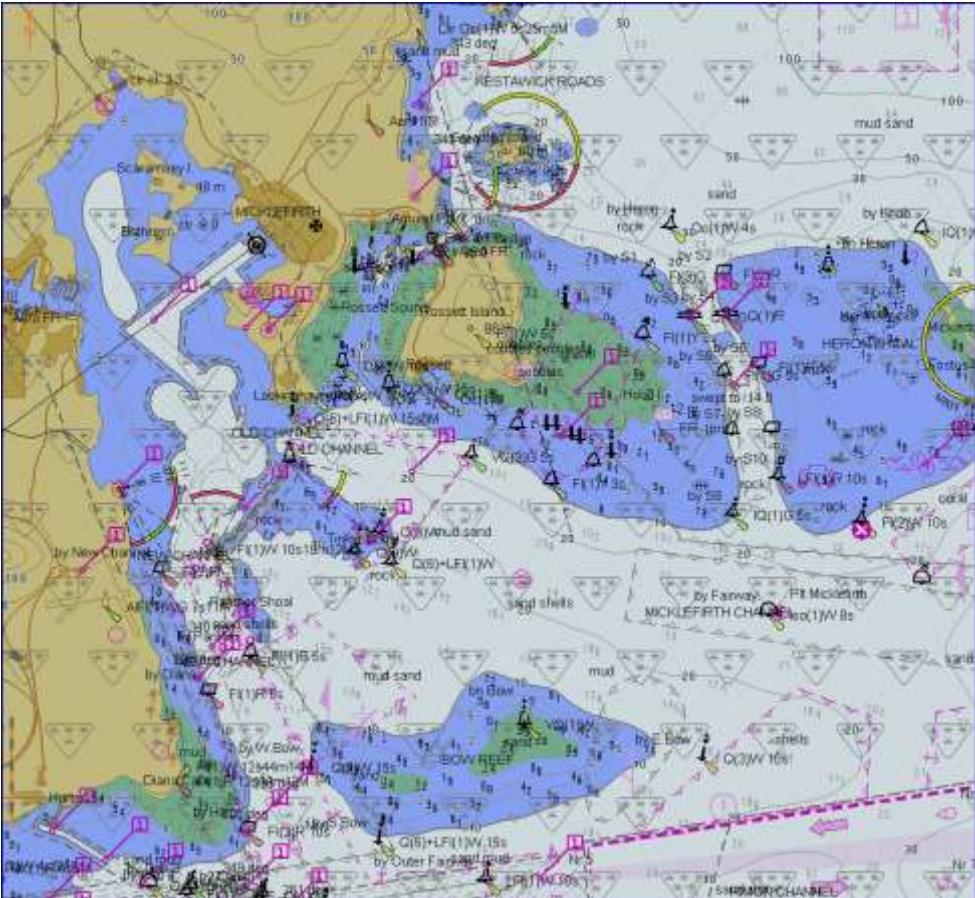
The second item, the IHO TDS, is provided as part of S-64, including the encrypted data and its test scripts. This document is to be considered the “Instruction Manual”. The IHO TDS may be upgraded from time to time to correct residual anomalies and ensure that the results of the tests conform to the description in this Manual. It is important to ensure that the tests are conducted with the latest version posted on the IHO web site at <http://www.ihonet.org> > (ENCs & ECDIS). The version number (3.0.1) will remain the same as long as the corrections do not impact this document.

The third item on the list, SENC test data set, if supported, must be provided by the manufacturer.

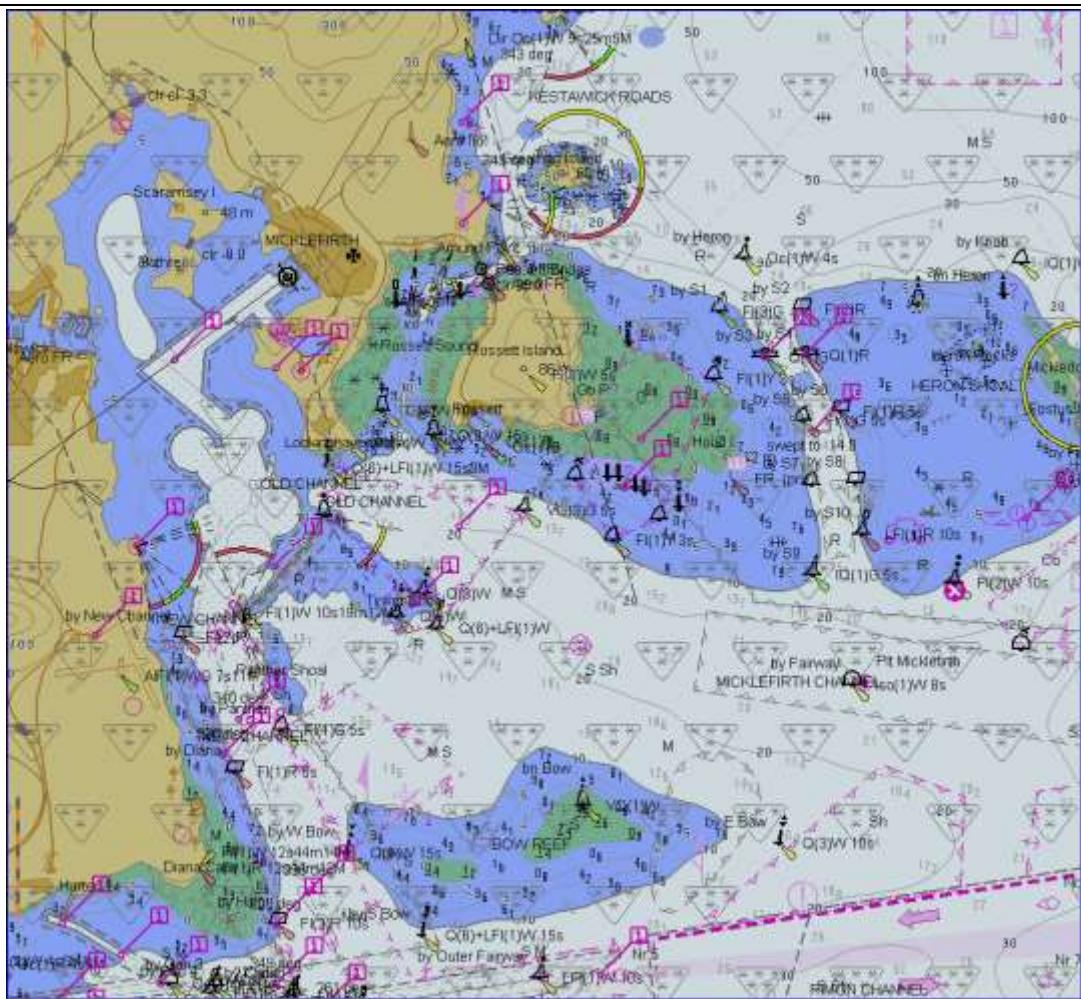
## 2 Chart Loading and Updating

### 2.1 Chart Loading of Unencrypted ENCs

#### 2.1.1 Preparation and Power Up

Test Reference	2.1.1	IHO Reference	IEC 61174/ 4.4.1
<b>Test description</b>			
<i>Loading of initial datasets and indication of own ship stationary position.</i>			
<b>Setup</b>			
<p><i>Load cells</i></p> <p>2.1.1 Power Up\ENC_ROOT\GB4X0000.000</p> <p>2.1.1 Power Up\ENC_ROOT\GB5X01NW.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 8 m</p> <p>Set the safety depth value to 8 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Ship position 32°29.66'S, 060°55.86'E</p> <p>Heading 234.0 degrees</p>			
<b>Action</b>			
<i>Load cells and view the chart display.</i>			
<b>Results</b>			
<i>With the charts displayed the own ship shall be placed at the jetty in Micklefirth.</i>			
			
<p>After loading of GB4X0000.000, displayed scale 1:50 000</p> <p>Note: Screen plot above is based on the full text NATSUR attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the NATSUR attribute is recommended (see screen plot on next page).</p>			

# IHO ENC Test Data Sets for ECDIS



## IHO ENC Test Data Sets for ECDIS



After loading of GB5X01NW.000, displayed scale 1:20 000

## IHO ENC Test Data Sets for ECDIS

### 2.1.2 Number and date in chart library

<b>Test Reference</b>	2.1.2	<b>IHO Reference</b>	IEC 61174/ 4.4.1																																			
<b>Test description</b>																																						
<i>Loading of initial datasets and confirmation of information in chart library.</i>																																						
<b>Setup</b>																																						
<i>Load all cells from 2.1.1 Power Up\ENC_ROOT</i>																																						
<b>Action</b>																																						
Check that in the chart library the information about the cells is provided as follows																																						
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>ENC</th><th>Edition (EDTN)</th><th>Update number (UPDN)</th><th>Update Application Date (UADT)</th><th>Issue Date (ISDT)</th></tr> </thead> <tbody> <tr><td>GB4X0000.000</td><td>2</td><td>0</td><td>20010409</td><td>20010409</td></tr> <tr><td>GB5X01NE.000</td><td>1</td><td>0</td><td>20010406</td><td>20010406</td></tr> <tr><td>GB5X01NW.000</td><td>2</td><td>0</td><td>20010406</td><td>20010406</td></tr> <tr><td>GB5X01SE.000</td><td>1</td><td>0</td><td>20010406</td><td>20010406</td></tr> <tr><td>GB5X001SW.000</td><td>1</td><td>0</td><td>20010408</td><td>20010408</td></tr> <tr><td>GB5X002SE.000</td><td>1</td><td>0</td><td>20010407</td><td>20010407</td></tr> </tbody> </table>				ENC	Edition (EDTN)	Update number (UPDN)	Update Application Date (UADT)	Issue Date (ISDT)	GB4X0000.000	2	0	20010409	20010409	GB5X01NE.000	1	0	20010406	20010406	GB5X01NW.000	2	0	20010406	20010406	GB5X01SE.000	1	0	20010406	20010406	GB5X001SW.000	1	0	20010408	20010408	GB5X002SE.000	1	0	20010407	20010407
ENC	Edition (EDTN)	Update number (UPDN)	Update Application Date (UADT)	Issue Date (ISDT)																																		
GB4X0000.000	2	0	20010409	20010409																																		
GB5X01NE.000	1	0	20010406	20010406																																		
GB5X01NW.000	2	0	20010406	20010406																																		
GB5X01SE.000	1	0	20010406	20010406																																		
GB5X001SW.000	1	0	20010408	20010408																																		
GB5X002SE.000	1	0	20010407	20010407																																		
<b>Results</b>																																						
<i>The information in the chart library shall be identical to the above table.</i>																																						

### 2.1.3 Load additional cell and check chart library

<b>Test Reference</b>	2.1.3	<b>IHO Reference</b>	IEC 61174/ 4.4.1
<b>Test description</b>			
<i>Loading additional cell and confirmation of its addition to the chart library.</i>			
<b>Setup</b>			
<i>As for test 2.1.2</i>			
<b>Action</b>			
<i>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 Check that in the chart library the details of the cell have been added.</i>			
<b>Results</b>			
<i>The information in the chart library shall reflect the cell removed and the chart coverage shall have changed accordingly.</i>			

### 2.1.4 Remove cell and check chart library

<b>Test Reference</b>	2.1.4	<b>IHO Reference</b>	IEC 61174/ 4.4.1
<b>Test description</b>			
<i>Removing a cell and confirmation of its removal from the chart library.</i>			
<b>Setup</b>			
<i>As on completion of test 2.1.3</i>			
<b>Action</b>			
<i>Remove the following cell GB4X0001.000 Check that in the chart library the details of the cell have been removed.</i>			
<b>Results</b>			

## IHO ENC Test Data Sets for ECDIS

*The information in the chart library shall reflect the cell removed and the chart coverage shall have changed accordingly.*

**2.1.5 Loading of Corrupted Data**

<b>Test Reference</b>	2.1.5	<b>IHO Reference</b>	IEC 61174/ 4.4.1
<b>Test description</b>			
<i>Loading corrupt data.</i>			
<b>Setup</b>			
-			
<b>Action</b>			
<i>Load the following cell: 2.1.5 Loading Corrupt Data\ENC_ROOT\GB5X01NE.000</i>			
<b>Results</b>			
<i>The EUT shall generate a warning when loading of this file is attempted and reject installation.</i>			

## 2.2 Automatic updates of Unencrypted ENCs

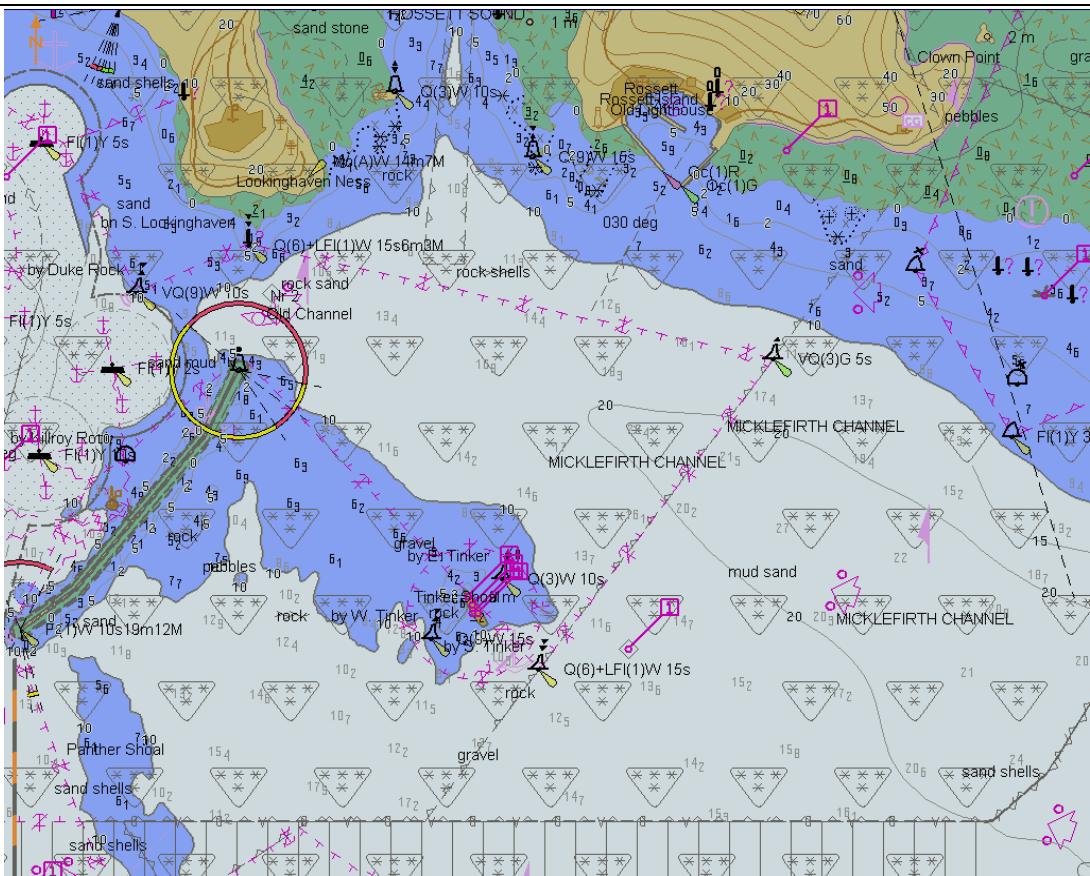
### 2.2.1 Loading corrupted update

<b>Test Reference</b>	2.2.1	<b>IHO Reference</b>	S-52 appendix 1/ 3.4.1f, 3.4.2d and IEC 61174/ 4.4.2
<b>Test description</b>			
<i>Loading corrupt update files.</i>			
<b>Setup</b>			
<i>Load the following cell: 2.1.1 Power Up\ENC_ROOT\GB5X01SW.000</i>			
<b>Action</b>			
<i>Load the following updates: 2.2.1 Corrupt Update\ENC_ROOT\</i>			
<b>Results</b>			
<i>The update process shall stop, the update flagged as invalid, and the user provided with an appropriate message.</i>			

### 2.2.2 Loading sequential update

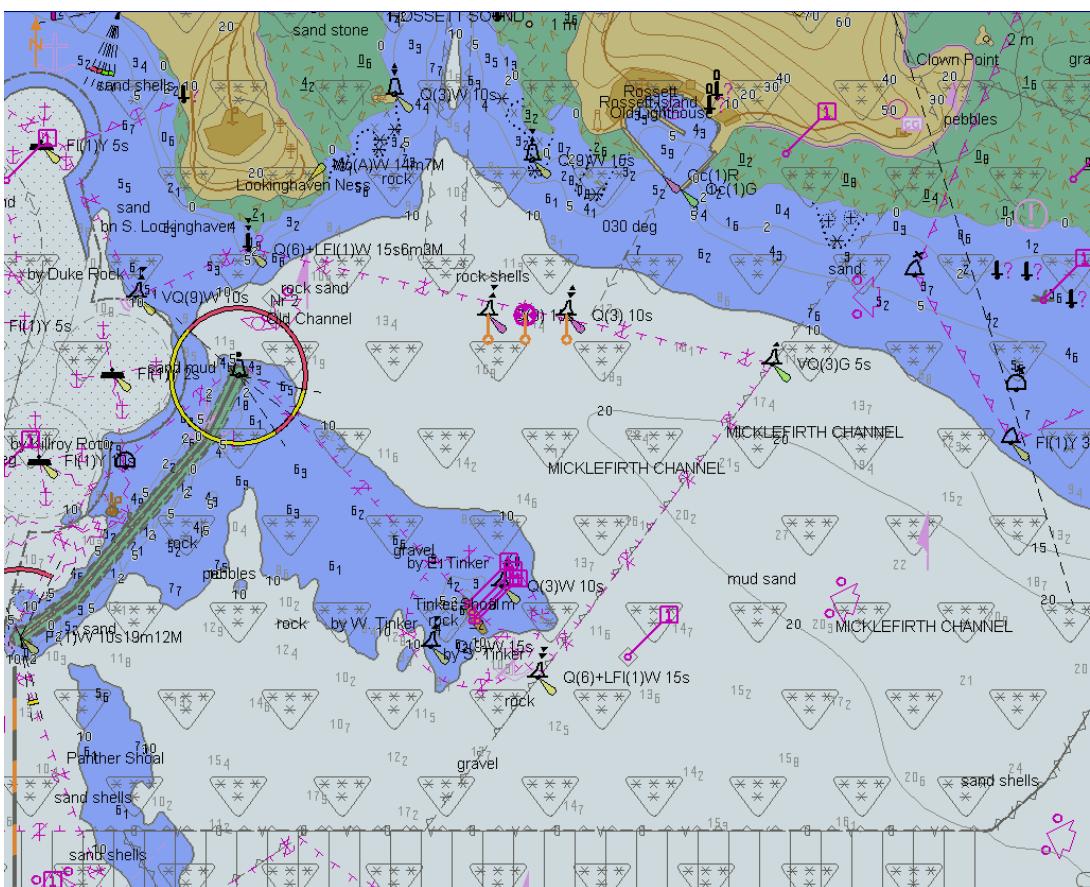
<b>Test Reference</b>	2.2.2	<b>IHO Reference</b>	S-52 appendix 1/ 3.4.2f and IEC 61174/ 4.4.2
<b>Test description</b>			
<i>Loading correct sequential update files.</i>			
<b>Setup</b>			
<i>As for test 2.1.2</i>			
<b>Action</b>			
<i>Load the following five updates: 2.2.2 Loading of Updates\ENC_ROOT\</i>			
<b>Results</b>			
<i>The update process shall install all updates (up to update no. 5) and indicate it in an appropriate summary report which shall contain the following information:</i>			
<ul style="list-style-type: none"> <li>- identification of issuing authority;</li> <li>- update numbers of the update files;</li> <li>- cell identifiers of cells affected;</li> <li>- edition number and date of cell involved;</li> <li>- number of updates in the affected cells.</li> </ul>			
<i>Review of updates shall be performed after the update process is completed and the updates have been applied to the SENC. Review the updates by selecting the given date range and confirm that display is as available in the corresponding screen plot.</i>			

## IHO ENC Test Data Sets for ECDIS



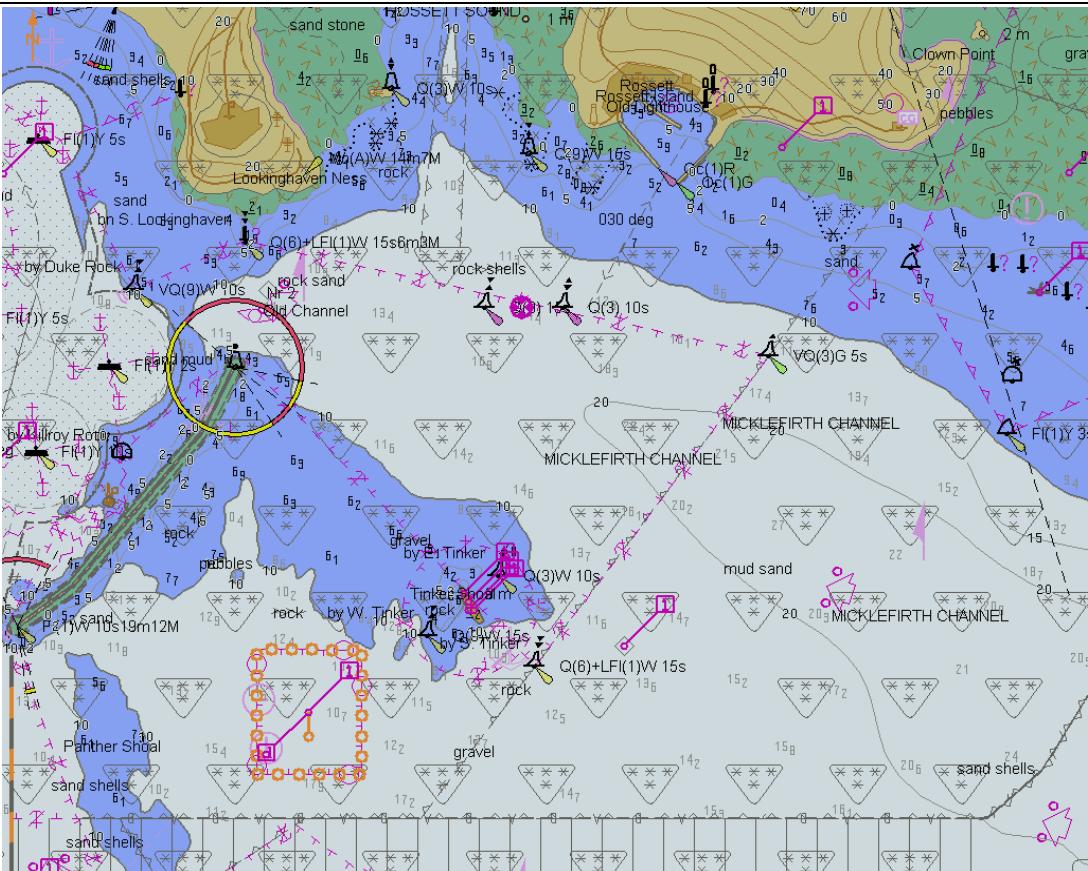
*Before loading of updates, displayed scale 1:20 000*

*Note: Screen plots are based on the full text NATSUR attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the NATSUR attribute is recommended.*

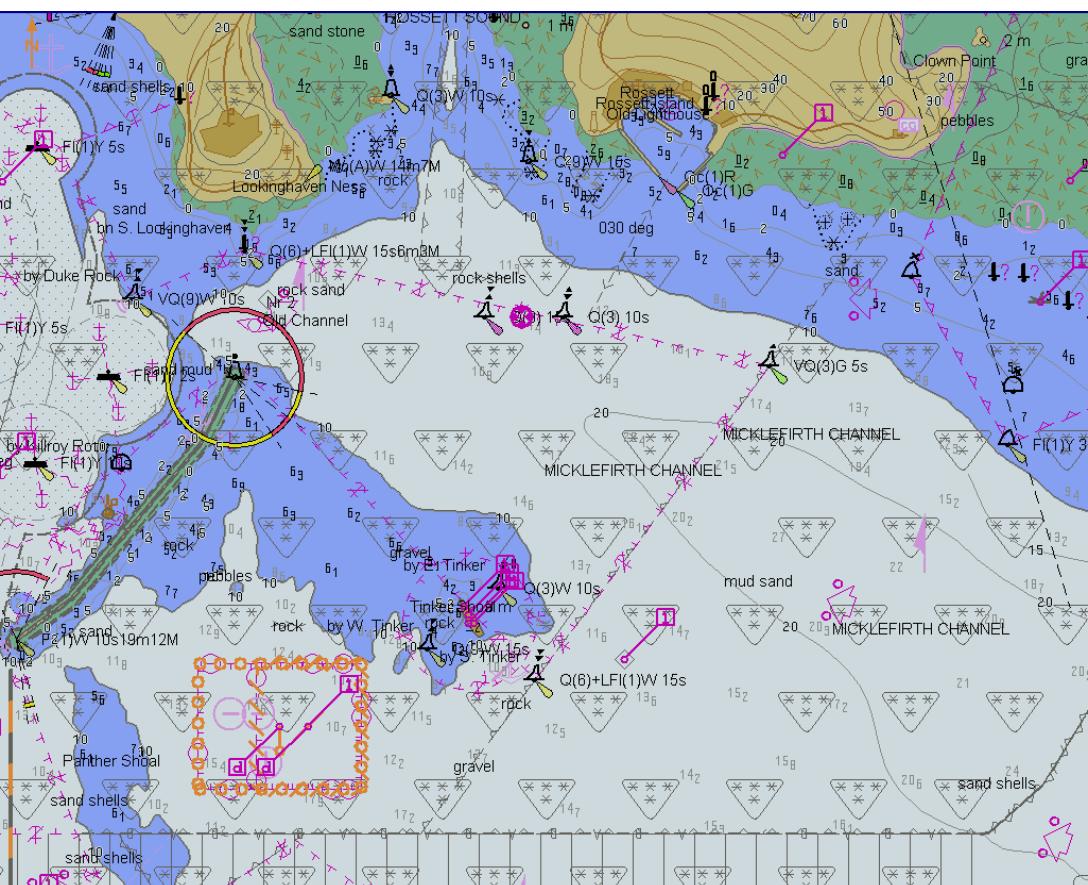


*After loading of GB5X01SW.001, displayed scale 1:20 000, date range include 9thMay 2001*

## IHO ENC Test Data Sets for ECDIS

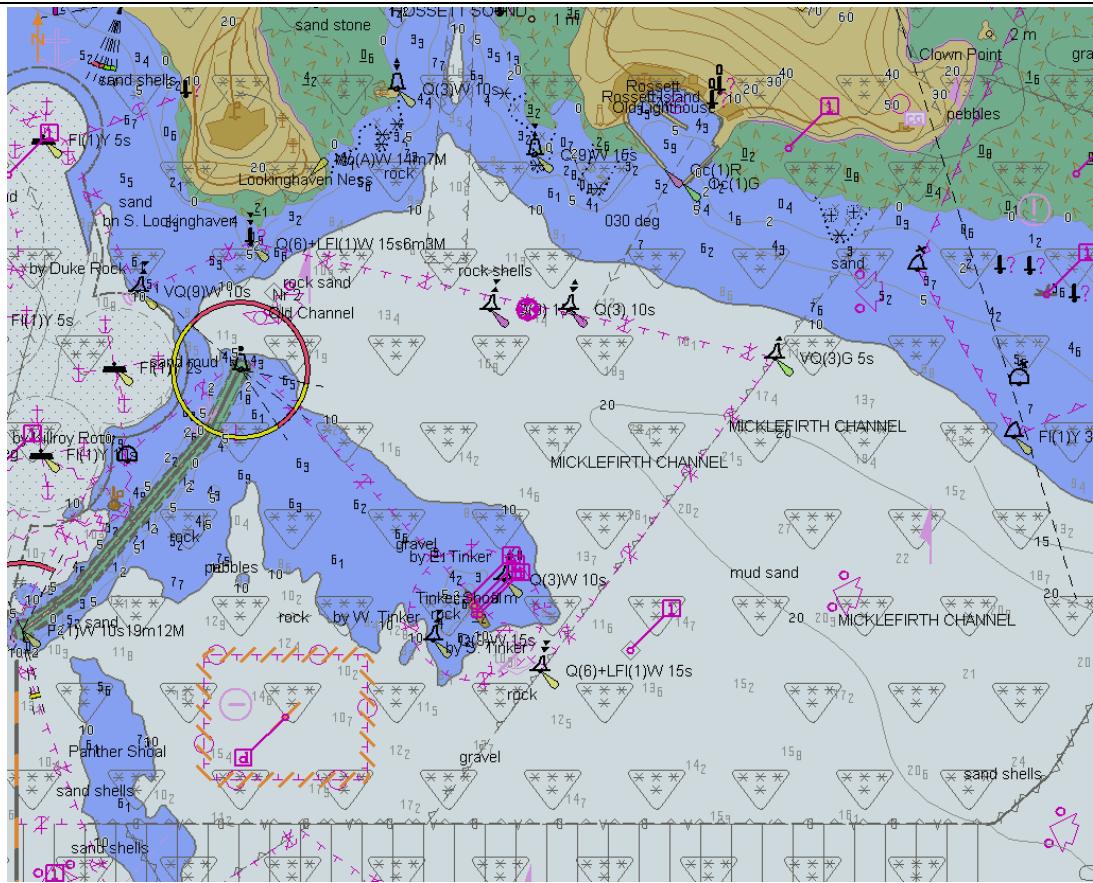


After loading of GB5X01SW.002, displayed scale 1:20 000, date range 1st Jan 2005 - 21st Feb 2005

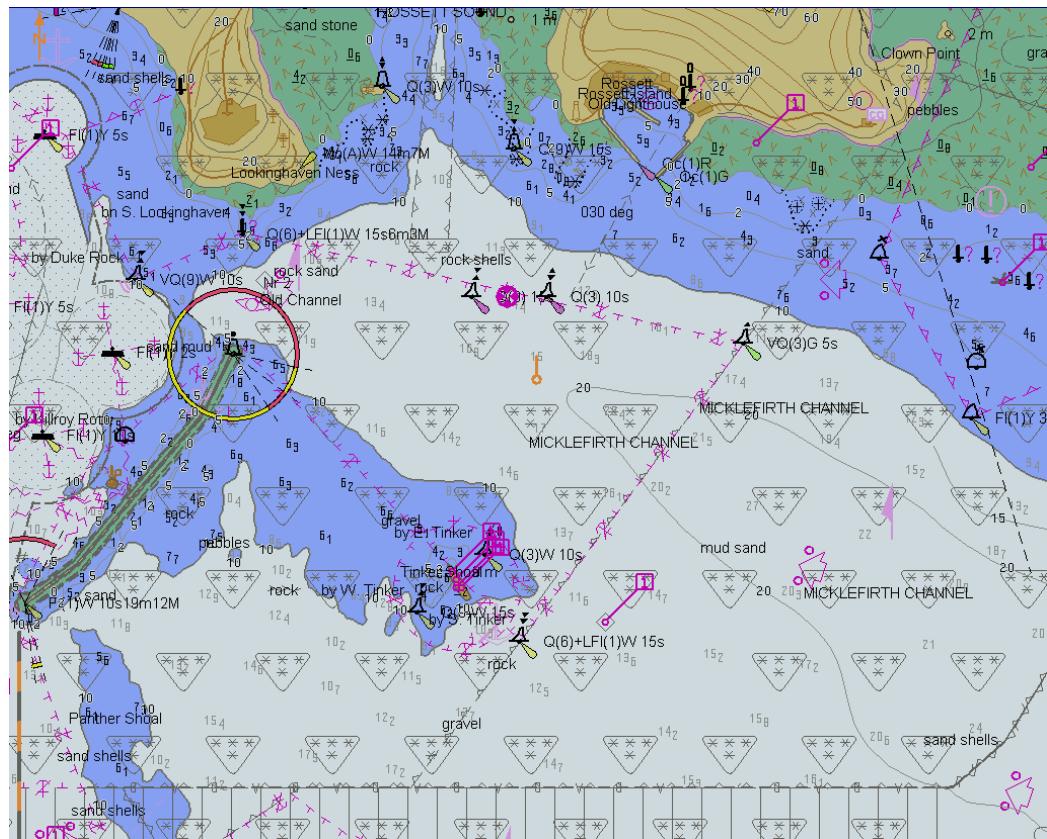


After loading of GB5X01SW.003, displayed scale 1:20 000, date range include 8th Sep 2005

## IHO ENC Test Data Sets for ECDIS



After loading of GB5X01SW.004, displayed scale 1:20 000, date range include 22nd Sep 2005



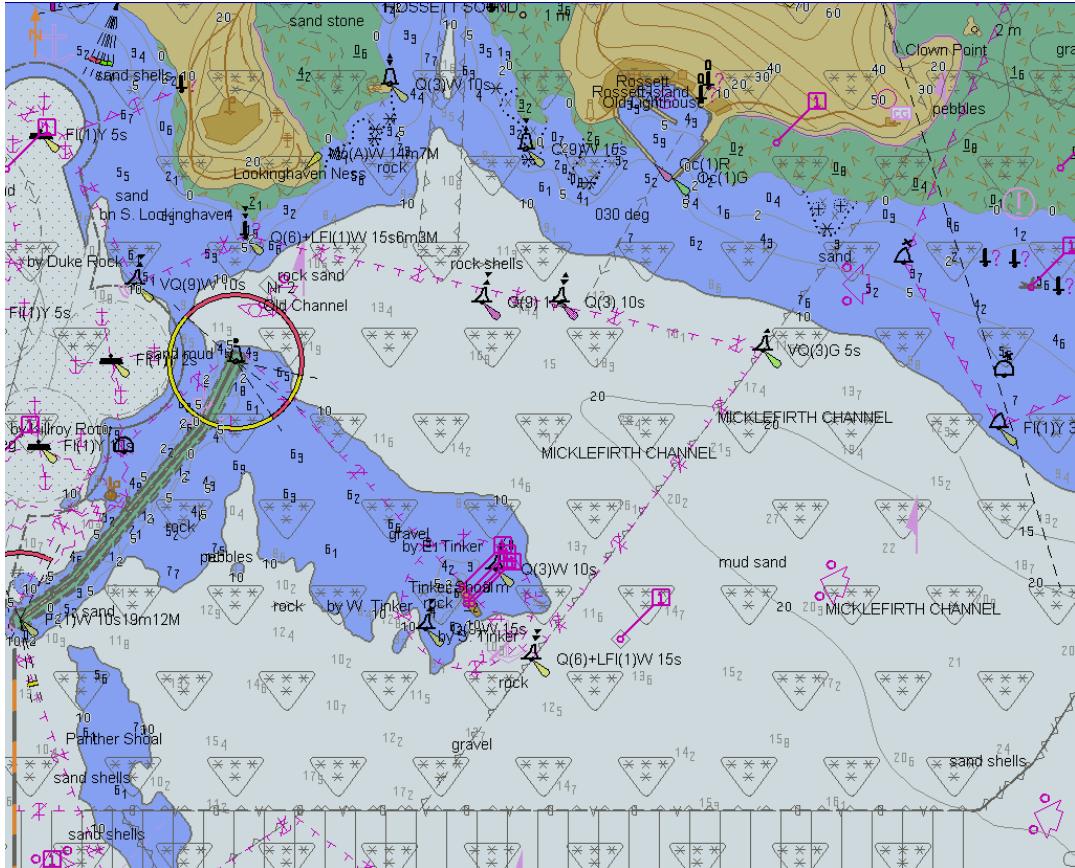
After loading of GB5X01SW.005, displayed scale 1:20 000, date range include 6th Oct 2005

### 2.2.3 Loading update in an invalid sequence

<b>Test Reference</b>	2.2.3	<b>IHO Reference</b>	S-52 appendix 1/ 3.4.2c and IEC61174/ 4.4.2
<b>Test description</b>			
<i>Loading update files in an invalid sequence.</i>			
<b>Setup</b>			
<p><i>As result of test 2.2.2</i>  <i>Load the following cell:</i>  <i>2.1.1 Power Up\ENC_ROOT\GB5X01SW.000</i></p>			
<b>Action</b>			
<p><i>Load the following five updates:</i>  <i>2.2.3 Loading of Invalid Sequence\00x\ENC_ROOT\ with x=1, 2, 3, 4, 5</i></p>			
<b>Results</b>			
<p><i>The update process shall install the updates up to update no. 3 and reject the installation of updates no. 4 and 5 with a permanent indication, “Chart information not up-to-date” when this chart is in use (either displayed or used as largest scale available for the chart related alerts and indications) until the not up-to-date situation is removed by successful application of a re-issue, a new edition or complete sequence of updates.</i></p>			

# IHO ENC Test Data Sets for ECDIS

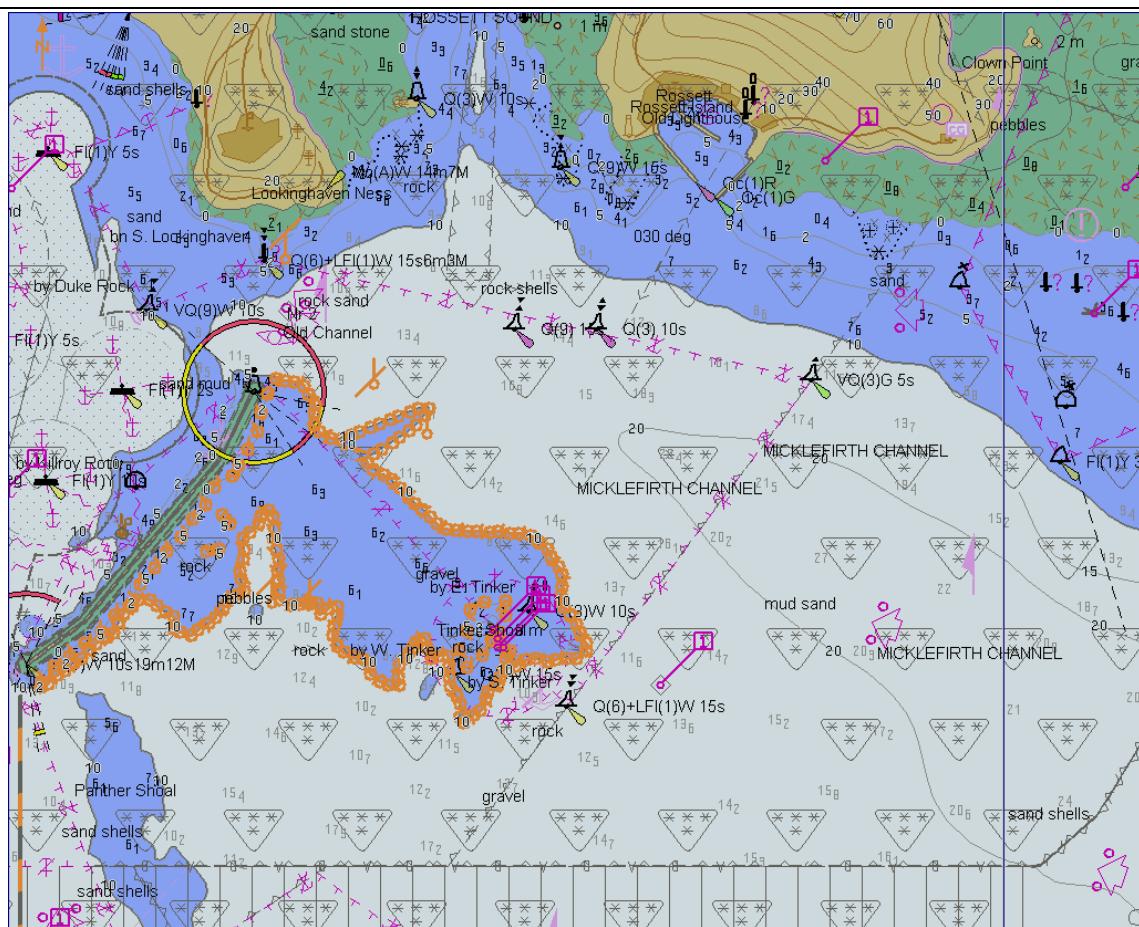
## 2.2.4 Loading update of newer edition

Test Reference	2.2.4	IHO Reference	S-52 appendix 1/ 3.4.2c and IEC 61174/ 6.8.16.1
<b>Test description</b>			
Loading update file of a newer edition than base cell installed.			
<b>Setup</b>			
As result of test 2.2.3 Load the following cell: 2.1.1 Power Up\ENC_ROOT\GB5X01SW.000 (edition 1)			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1. Load the following update: 2.2.4 Loading of New Update\ENC_ROOT\GB5X01SW.001 (edition 2)</li> <li>2. Display installed chart.</li> <li>3. Install the following base cell: 2.2.5 Good Base Cells\ENC_ROOT\GB5X01SW.000 (edition 2); and load the following update: 2.2.4 Loading of New Update\ENC_ROOT\GB5X01SW.001 (edition 2)</li> <li>4. Display installed chart.</li> </ol>			
<b>Results</b>			
<ol style="list-style-type: none"> <li>1. The update process shall refuse to install the update and inform the user that chart data of a newer edition are available.</li> <li>2. A permanent indication "Chart information not up to date" shall be available in the chart display area when such a chart is in use (either displayed on chart area or used as largest scale available for chart related alerts and indications).</li> <li>3. Base cell and update shall be installed without any warning or error.</li> <li>4. The "Chart information not up to date" message no longer displayed.</li> </ol>			
			

## IHO ENC Test Data Sets for ECDIS

After loading of GB5X01SW.000 2nd edition, displayed scale 1:20 000

Note: Screen plot is based on the full text NATSUR attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the NATSUR attribute is recommended.



After loading of GB5X01SW.001 2nd edition, displayed scale 1:20 000

### 2.2.5 Loading update of older edition

Test Reference	2.2.5	IHO Reference	S-52 appendix 1/ 3.4.2c and IEC 61174/ 4.4.2
<b>Test description</b>			
Loading update file of an older edition than base cell installed.			
<b>Setup</b>			
Load the following cell: 2.2.5 Good Base Cells\ENC_ROOT\GB5X01SW.000 (edition 2)			
<b>Action</b>			
Load the following update: 2.2.5 Old Update\ENC_ROOT\ (edition 1)			
<b>Results</b>			
The update shall not be applied successfully and the system shall provide an indication (either on screen or in an error log) the reason the update was not applied, e.g. "Incorrect Edition Number 1 [of update]: expecting 2"			

### 2.2.6 Loading a re-issue of a data set

Test Reference	2.2.6	IHO Reference	S-52 appendix 1/ 3.4.1a and IEC 61174/ 4.4.2
<b>Test description</b>			

# IHO ENC Test Data Sets for ECDIS

*Loading a re-issue of a data set.*

## Setup

*As result of test 2.1.1*

*Load the following cell:*

**2.1.1 Power Up\ENC\_ROOT\GB5X01SW.000 (edition 1)**

## Action

*Load the following updates in sequence:*

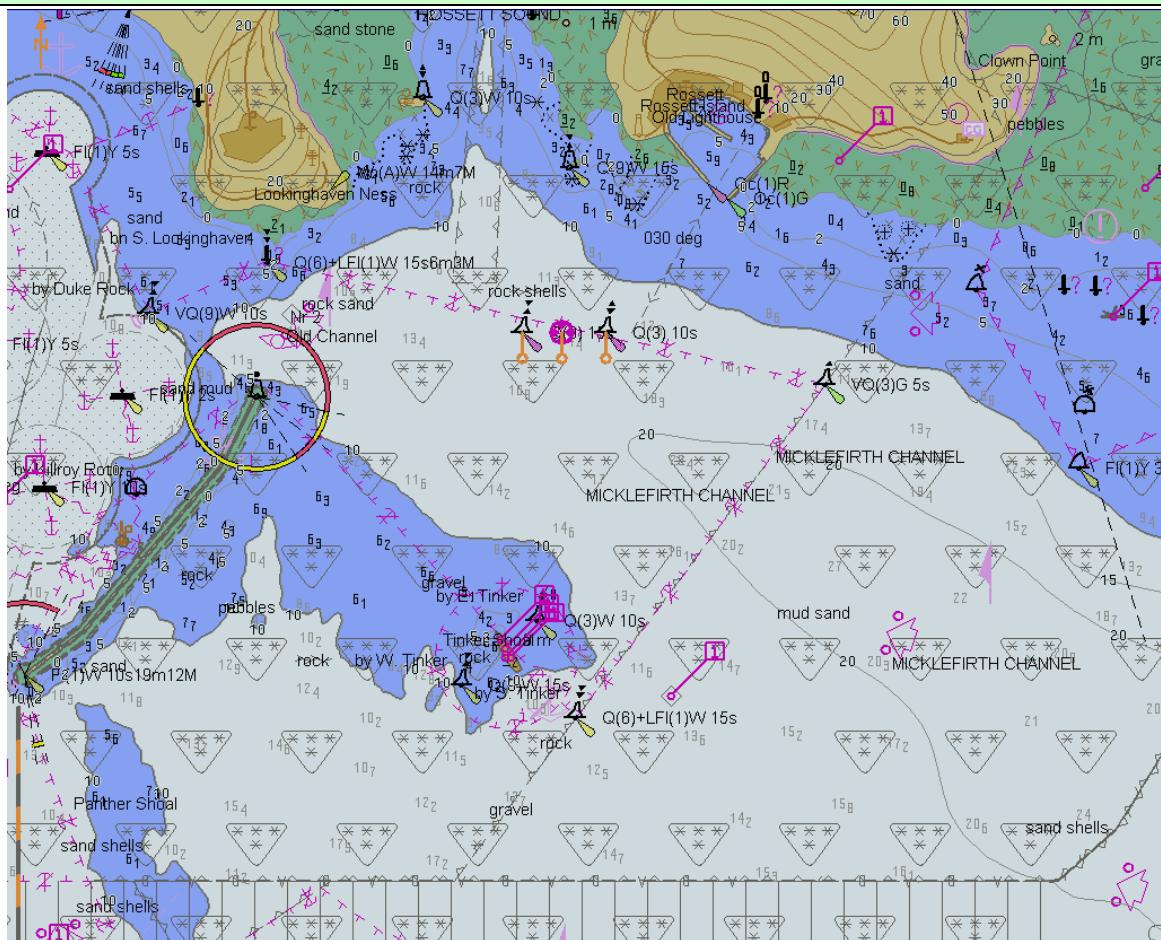
**2.2.6 Re-issue\GB5X01SW\_001\ENC\_ROOT\GB5X01SW.001 (edition 1)**

**2.2.6 Re-issue\GB5X01SW\_RE-ISSUE\ENC\_ROOT\GB5X01SW.000 (re-issue, edition 1, update 3 included)**

**2.2.6 Re-issue\GB5X01SW\_004\ENC\_ROOT\GB5X01SW.004 (edition 1)**

*Note: Data for updates 2 and 3 of GB5X01SW are included within the reissue GB5X01SW.000 and therefore GB5X01SW.002 and GB5X01SW.003 are not included in the dataset.*

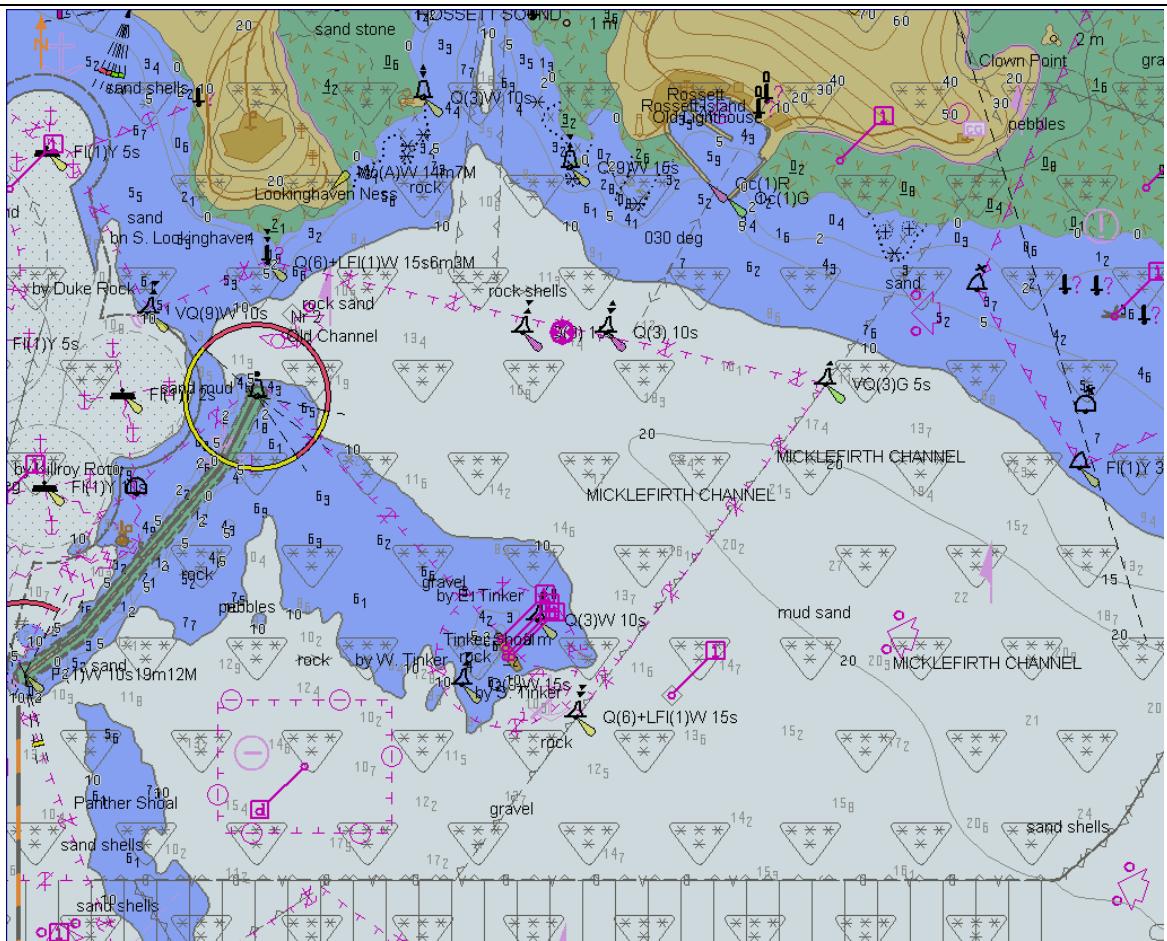
## Results



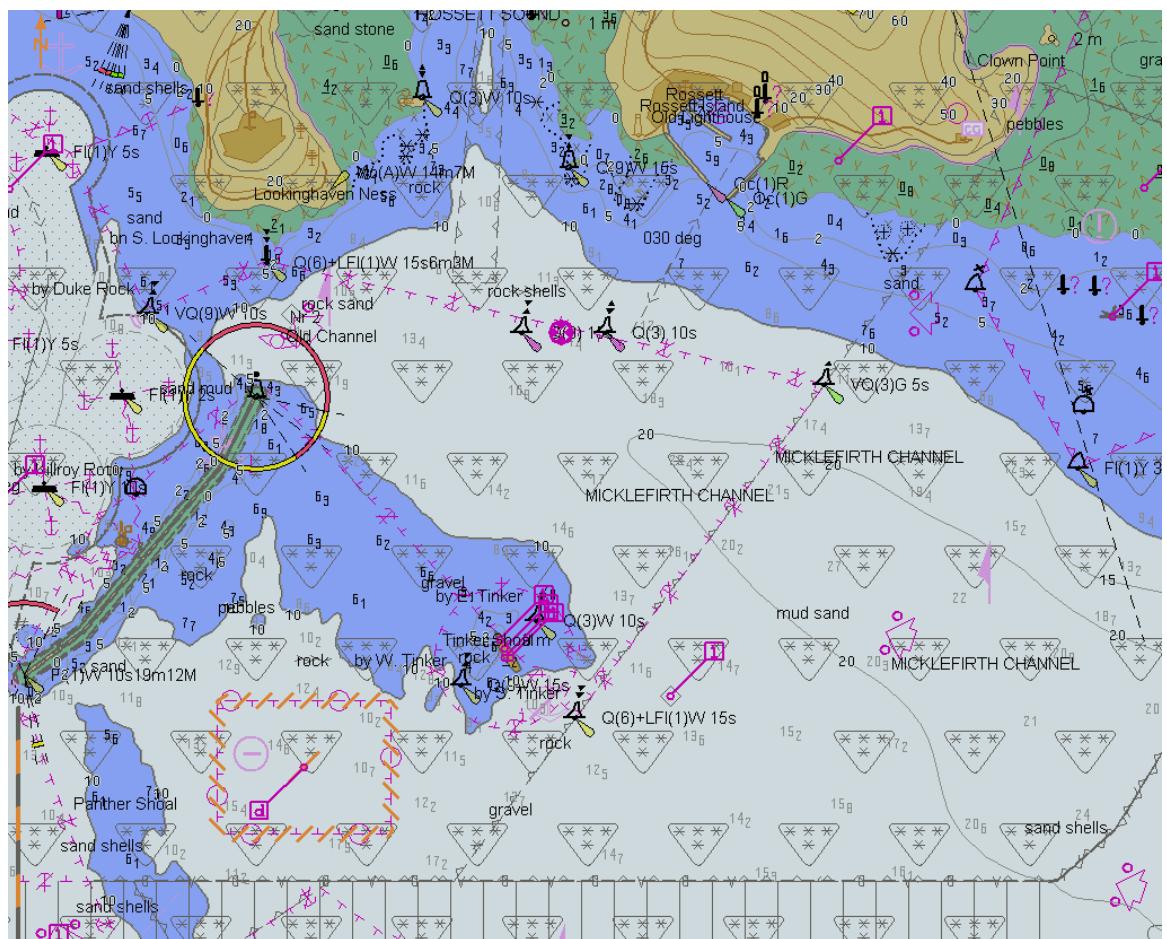
*After loading of GB5X01SW.001 1st edition, displayed scale 1:20 000*

*Note: Screen plot is based on the full text NATSUR attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the NATSUR attribute is recommended.*

# IHO ENC Test Data Sets for ECDIS



After loading of GB5X01SW.000 re-issue, edition 1, update 3, displayed scale 1:20 000



After loading of GB5X01SW.004, displayed scale 1:20 000
---

## 2.2.7 Loading cancellation update

<b>Test Reference</b>	2.2.7	<b>IHO Reference</b>	S-52 appendix 1/ 3.4.1a and IEC 61174/ 4.4.2
<b>Test description</b>			
<i>Loading cancellation update.</i>			
<b>Setup</b>			
<i>Load the following cell: 2.1.1 Power Up\ENC_ROOT\GB4X0000.000</i>			
<b>Action</b>			
<i>Load the following update: 2.2.7 Cancellation\ENC_ROOT\GB4X0000.001</i>			
<b>Results</b>			
<i>The system shall report any cell(s) that have been identified as cancelled at load time. A message shall be displayed informing the user of the cell name. Depending on the method adopted by the OEM for managing cancelled cells one of the following conditions must be observed:</i>			
<i>1. The cancelled cell cannot be viewed in the ECDIS 2. The cancelled cell can be viewed in the ECDIS with the warning message defined in S-63 and specified below: “Cell &lt;name&gt; has been cancelled and may not be up to date. Under no circumstances should it be used for primary navigation”.</i>			
<i><b>Clarification:</b> Systems that remove cells without consulting the user do not have to provide a warning message at load time.</i>			

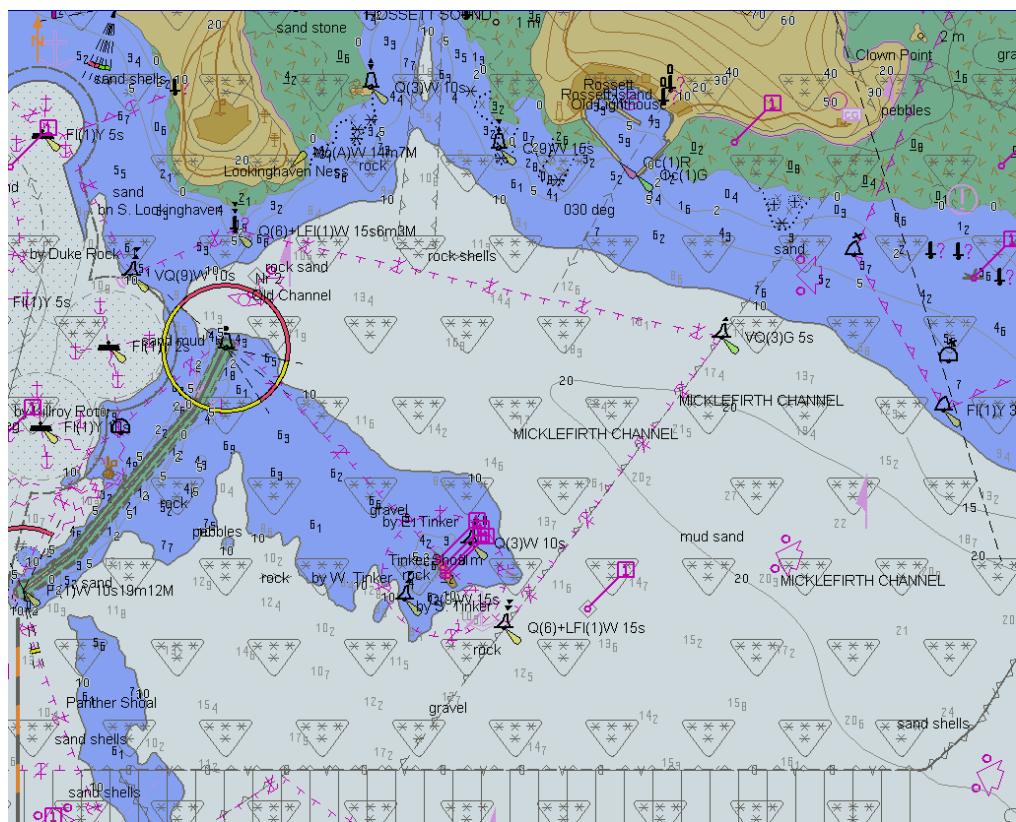
## 2.2.8 Rejection of automatic update

<b>Test Reference</b>	2.2.8	<b>IHO Reference</b>	S-52 appendix 1/ 3.4.2h and IEC 61174/ 4.4.2
<b>Test description</b>			
<i>Manual rejection of an automatic update.</i>			
<b>Setup</b>			
<i>As result of test 2.1.1 Load the following cell: 2.1.1 Power Up\ENC_ROOT\GB5X01SW.000 (edition 1)</i>			
<b>Action</b>			
<i>Load the following update: 2.2.2 Loading of Updates\ENC_ROOT\GB5X01SW.001 (edition 1, update 1) After loading of the update, manually annotate the objects of the update as rejected using the deletion available in the manual update method.</i>			

## IHO ENC Test Data Sets for ECDIS

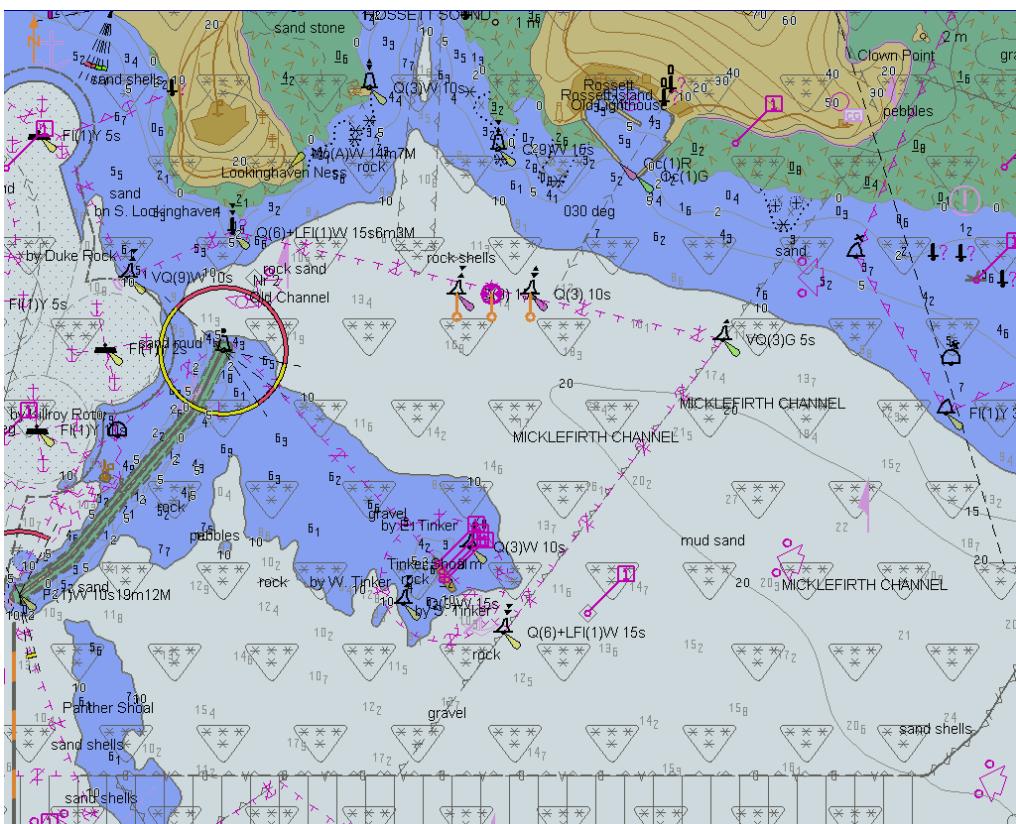
### Results

The objects from the update shall remain in display as annotated by the deletion mark of the manual update method.

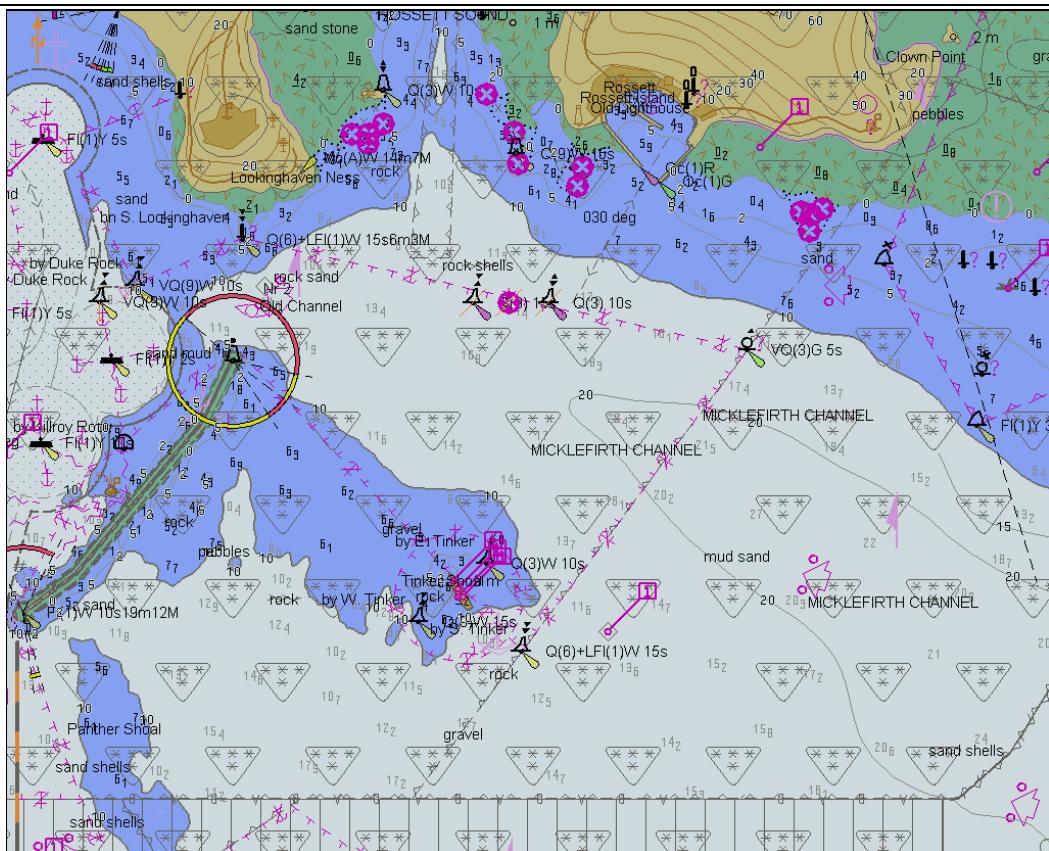


Before loading of update, displayed scale 1:20 000

Note: Screen plot are based on the full text NATSUR attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the NATSUR attribute is recommended.



After loading of GB5X01SW.001, displayed scale 1:20 000



After update 1 has been manually annotated as rejected by the Mariner, displayed scale 1:20 000

### 2.3 Manual Updates

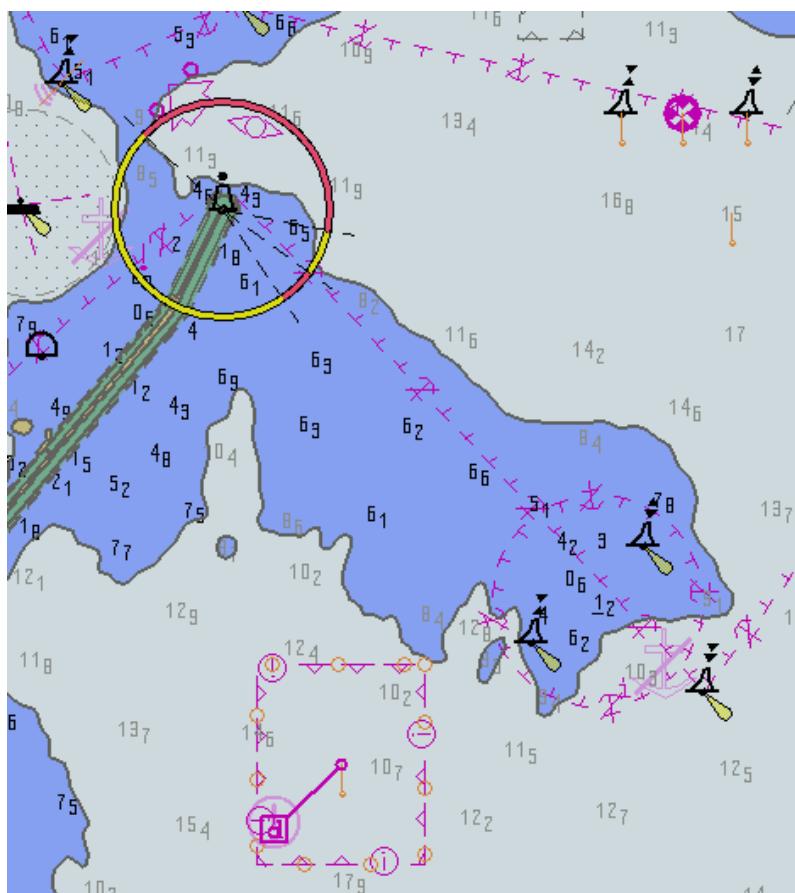
Test Reference	2.3	IHO Reference	S-52 appendix 1/ 3.4.4 and IEC 61174/ 6.8.17
<b>Test description</b>			
<i>Manual updates</i>			
<b>Setup</b>			
<p><i>Load the following cell:</i></p> <p>2.1.1 Power Up\ENC_ROOT\GB5X01SW.000</p>			
<b>Action</b>			
<p>1. Using the editing tools available with the EUT, make the following changes and include a short textual description of the action to a-g:</p> <ol style="list-style-type: none"> <li>insert a dangerous wreck near: 32 31.5S, 60 57.3E</li> <li>insert East Cardinal buoys near: 32 31.5S, 60 57.46E</li> <li>insert West Cardinal buoy near: 32 31.5S, 60 57.16E;</li> <li>insert a prohibited entry area between Panther and Tinker Shoals timed to come into force at 20150220;</li> <li>insert a cautionary area in the same location being in force from date of issue to 20150220;</li> <li>insert 15 metre sounding at 32 31.7S, 60 57.4E.</li> <li>delete fog signal of cardinal buoy at 32 31.444S, 60 55.842E</li> </ol> <p>2. Set viewing date before 201150220. Display chart cell with manual updates.</p> <p>3. Set viewing date after 201150220. Display chart cell with manual updates.</p> <p>4. Using the editing tools available with the EUT, make the following changes and include a short textual description of the action to h-j:</p> <ol style="list-style-type: none"> <li>extend western limits of the prohibited entry area;</li> <li>delete cautionary area;</li> </ol>			

## IHO ENC Test Data Sets for ECDIS

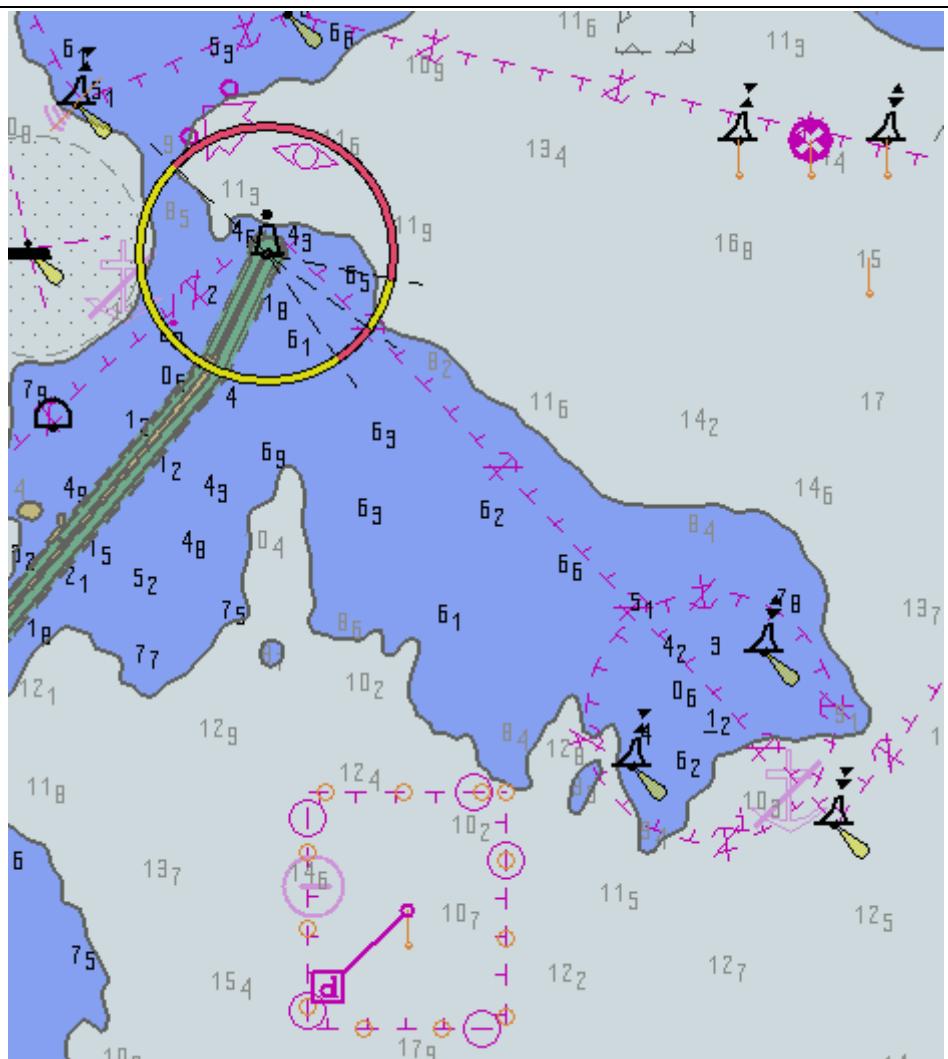
- j. move cardinal buoy at 32 31.444S, 60 55.842E, including top mark and light, to 32 31.500S, 60 55.700E.
- 5. Set viewing date before 201150220. Display chart cell with manual updates.
- 6. Set viewing date after 201150220. Display chart cell with manual updates.
- 7. Review manual updates.
- 8. Retrieve textual description from record.
- 9. Remove all manual updates from display and review them (system time and date may need to be adjusted for verification).

### Results

- 2. Set viewing date before 20150220. The ENC in the ECDIS should match the corresponding graphical plot shown below. Manual updates shall be distinguishable as described in S-52, 2.3.4.

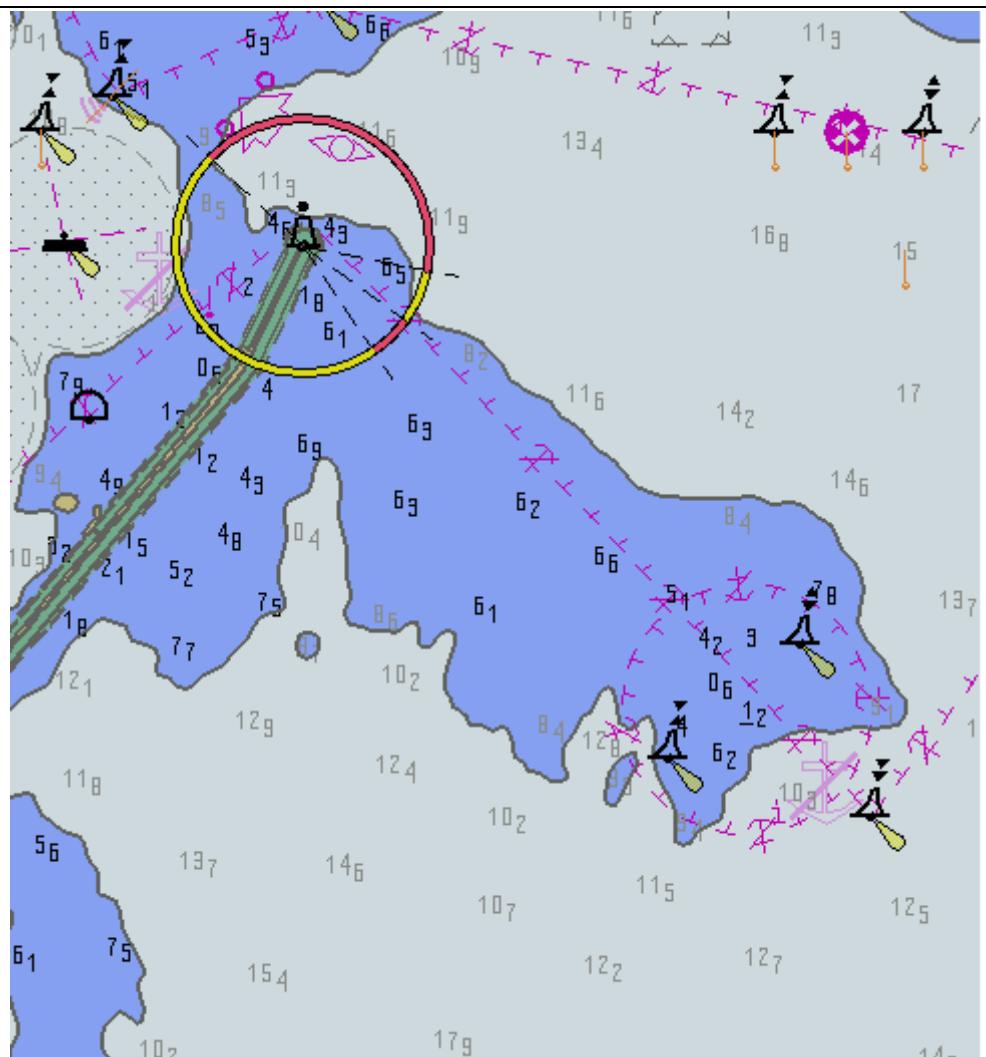


## IHO ENC Test Data Sets for ECDIS



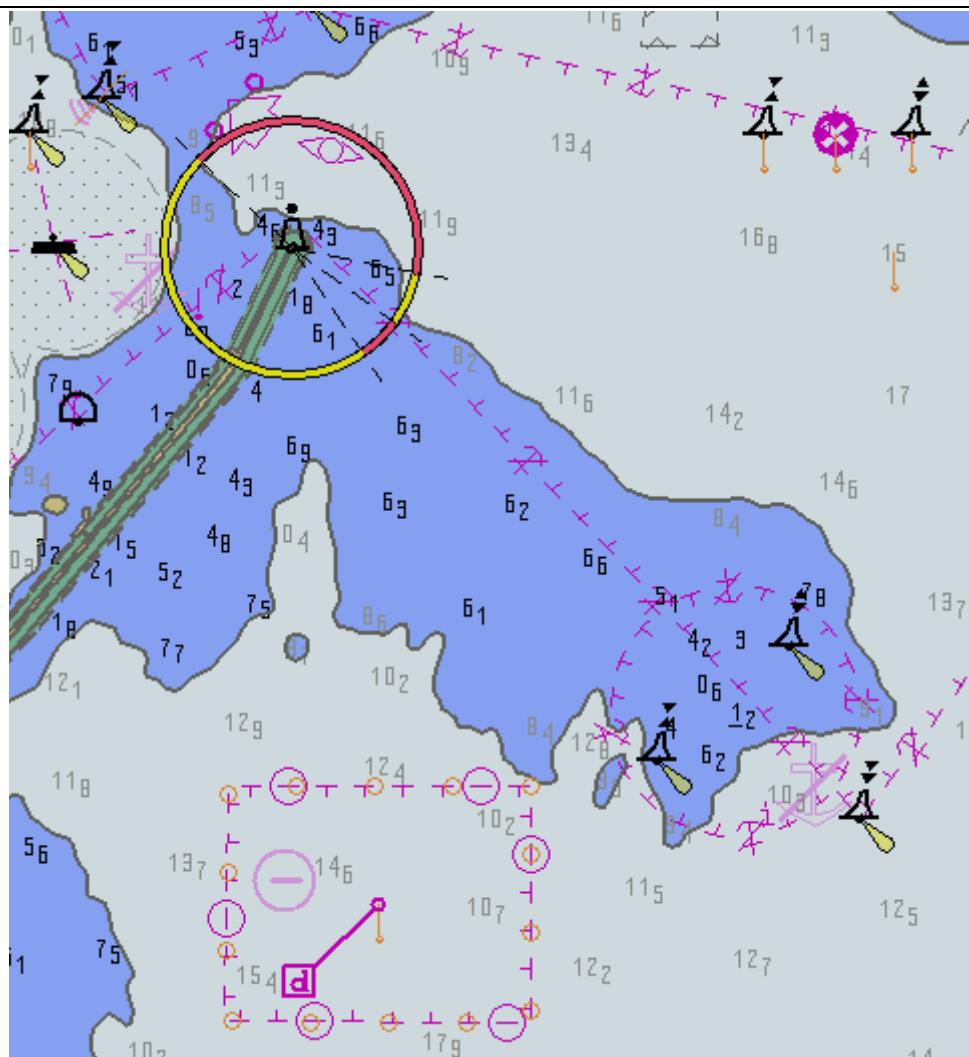
3. Set viewing date after 20150220. The ENC in the ECDIS should match the corresponding graphical plot shown above.

## IHO ENC Test Data Sets for ECDIS



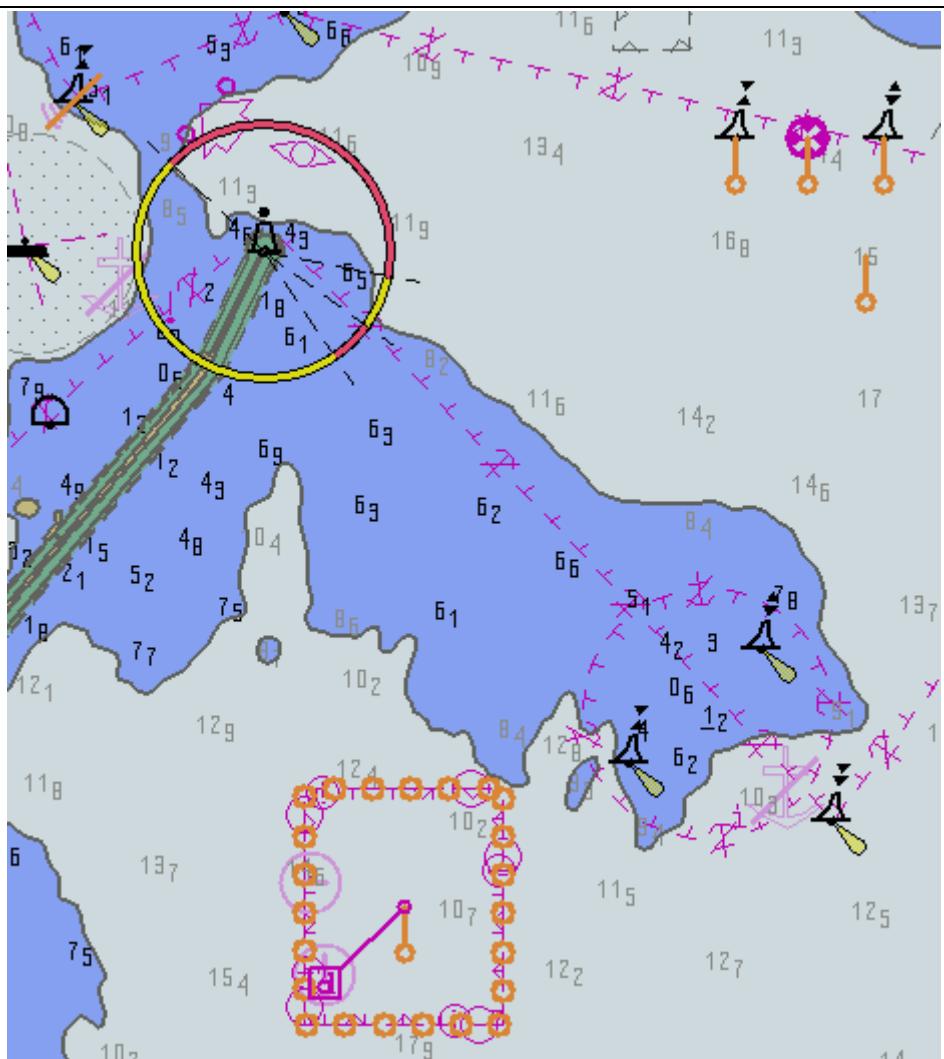
4. Set viewing date before 20150220. The ENC in the ECDIS should match the corresponding graphical plot shown above.

## IHO ENC Test Data Sets for ECDIS



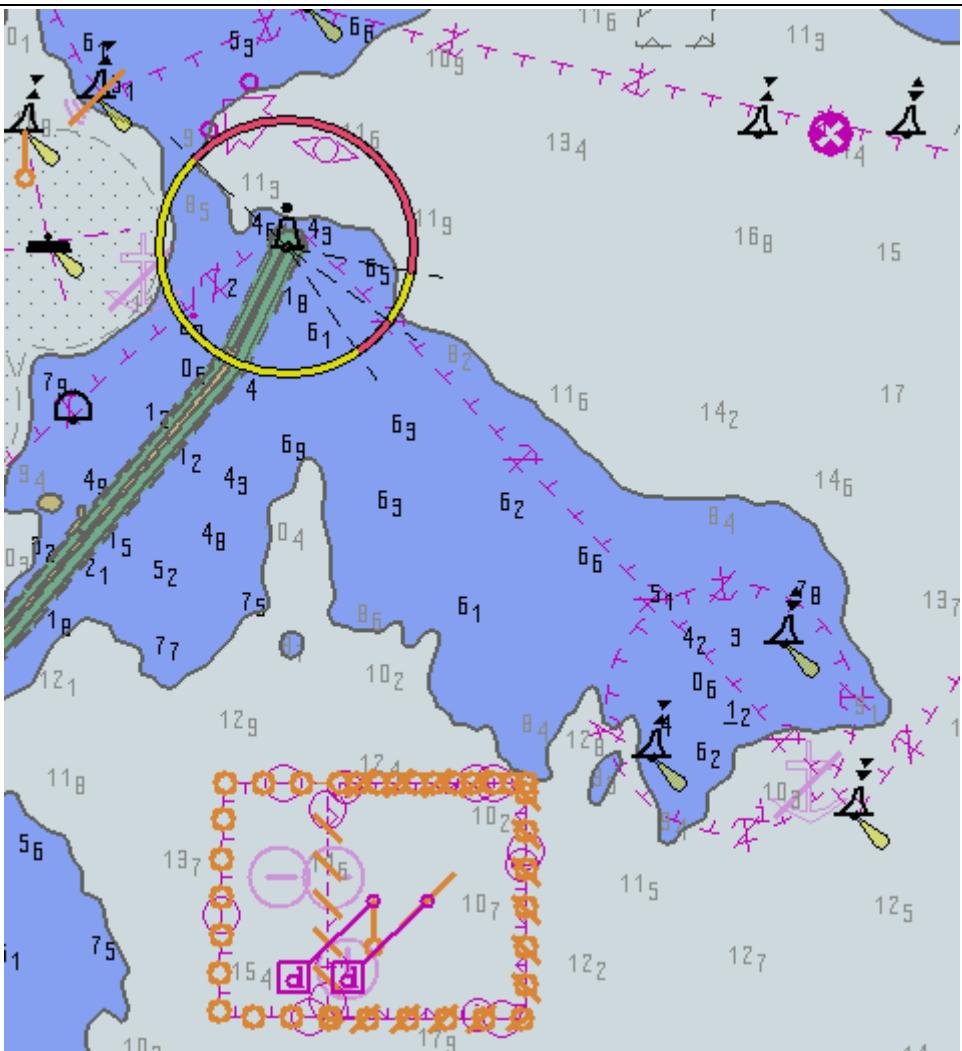
5. Set viewing date after 20150220. The ENC in the ECDIS should match the corresponding graphical plot shown above.

## IHO ENC Test Data Sets for ECDIS



6. Review of manual updates shall be available on demand. Above is review of updates a-g.

## IHO ENC Test Data Sets for ECDIS



7. Review of manual updates shall be available on demand. Above is review of updates h-j.
8. Textual description of manual update shall be retrievable from record.
9. Manual updates removed from the display during the last 3 months period shall be retained and shall be available for review.

## 2.4 Loading and Updating using SENC delivery (if provided)

<b>Test Reference</b>	2.4	<b>IHO Reference</b>	IEC 61174/ 6.8.16
<b>Test description</b>			
<i>Loading and Updating using SENC delivery (if provided).</i>			
<b>Setup</b>			
<p>If the ECDIS supports SENC delivery (accepting a SENC resulting from conversion of ENC to SENC ashore, in accordance with IHO Resolution 4/2002 as amended (see IHO Publication M-3), then the manufacturer shall supply a SENC version of the IHO S-64 test data set for each SENC format for which SENC delivery is to be approved.</p> <p><i>Note: The test data sets should be provided by the SENC producers for each SENC distributor approved for use with the EUT.</i></p>			
<b>Action</b>			
<p>For each SENC delivery format perform the following tests from section 2.1 and 2.2 :</p> <p>2.1.1, 2.1.2, 2.1.3, 2.1.4, (2.1.5);  (2.2.1), 2.2.2, 2.2.3, 2.2.4, 2.2.5, 2.2.6, 2.2.7, 2.2.8</p>			
<b>Results</b>			
<p>For each SENC test data set supplied, there shall be compliance with the corresponding test results noting that the outcome of each resultant update stage should be identical to that which results from application of the updates supplied in the above mentioned tests.</p> <p>The ECDIS shall provide an update mechanism for delivered SENCs that is not inferior to the update mechanism of ENCs.</p>			

## 2.5 Loading and Updating of Encrypted ENCs

### 2.5.1 Organization of the Encrypted TDS

The tests for loading encrypted data are stored in the root directory “IHO S-64 [S-63 TDS v1.2.1]”. The tests are subdivided into seven categories. Each category contains a number of tests which have corresponding test scripts provided in this section.

There are additional tests provided in “7 ENC Data Management [Optional]”. These are provided to assist manufacturers who have included additional ENC Data Management functions into their systems and are fully described in sections 2.5.7i), 2.5.7j) and 2.5.7k).

Test Definitions

Default test data parameters

The ENC permits that accompany the encrypted ENC test data have been generated for the User Permit specified below. To carry out the tests described in this document manufacturers will have to create a hard lock device or program their software with the following manufacturer information and hardware ID (HW\_ID).

Manufacturer ID: (M_ID)	=	10 (or 3130 hexadecimal)
Manufacturer Key: (M_KEY)	=	10121 (or 3130313231 hexadecimal)
Hardware ID: (HW_ID)	=	12345 (or 3132333435 hexadecimal)
USERPERMIT	=	66B5CBFDF7E4139D5B6086C23130

This is the official manufacturer information issued for and by the Scheme Administrator (IHB) and is provided expressly for the purpose of producing encrypted ENC test data. This data is provided specifically for the following purposes:

- OEM Type approval against the S-64 Test Data for Encrypted ENCs (This document).
- OEM and Data Server self certification of their systems against the S-63 Data Protection Scheme.

Test Certificate and Public Key

The official IHO Scheme Administrator Certificate (IHO.CRT) should be used in the test data unless a different certificate or public key file is specified in the test description.

**2.5.2 ENC Licensing – Permit Management****2.5.2 a) Check permit string availability**

<b>Test Reference</b>	2.5.2 a)	<b>IHO Reference</b>	S-63 10.5.1
<b>Test description</b>			
<i>Test how the system performs when loading a non-compliant permit file. Verify that the ECDIS returns the correct error message.</i>			
<b>Setup</b>			
<p>No pre-installed permits.</p> <p>Test data used:</p> <ol style="list-style-type: none"> <li>1) PERMIT.TXT file (empty file)</li> <li>2) TEXT.TXT file (wrong name)</li> </ol> <p>Test data location:</p> <p>D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licencing\Test 2a</p>			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1) Attempt to load a PERMIT.TXT file with no cell permits listed.</li> <li>2) Attempt to load a non compliant text file.</li> </ol>			
<b>Results</b>			
<p>Security Scheme Error (SSE 11) and accompanying description is displayed in the system at permit installation.</p> <p>i.e. SSE 11 – <b>Cell permit not found</b></p>			

**2.5.2 b) ENC cell permit string incorrect format**

<b>Test Reference</b>	2.5.2 b)	<b>IHO Reference</b>	S-63 4.3 and 10.5.2
<b>Test description</b>			
<p>ENC Licensing – Permit Management</p> <p>ENC cell permit string incorrect format</p> <p>Test how the system performs when loading a PERMIT.TXT file with an incorrectly formatted permit string. Verify that the ECDIS returns the correct error message.</p>			
<b>Setup</b>			
<p>No pre-installed permits or ENCs in the SENC.</p> <p>Test data used:</p> <ol style="list-style-type: none"> <li>1) PERMIT.TXT</li> <li>2) b) V01X01 (Exchange Set - GB100001, GB100002 plus updates)</li> </ol> <p>Test data location:</p> <p>D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licencing\Test 2b</p>			
<b>Action</b>			
Load the permit file (PERMIT.TXT) and then the exchange set (V01X01) from the location above.			
<b>Results</b>			
<p>Security Scheme Error (SSE 12) and accompanying description is displayed in the system at permit installation. That is, GB100012, “<b>SSE 12 – Cell permit format is incorrect</b>” GB100002, valid to 31st Dec 2018 installed OK</p> <p>(This message is only intended as indication of what should be displayed when a valid permit is installed.) Only GB100002 (edition #13 update # 5) and updates should be loaded into the SENC. The permit string for GB100001 is the wrong length [The cell name has been shortened to GB10001 hence the expected result will return GB100012 because the software should pick up the first character of the expiry date]. The permit string for GB100002 is the correct length and is valid.</p>			

**2.5.2 c) Validate permit CRC**

<b>Test Reference</b>	2.5.2 c)	<b>IHO Reference</b>	S-63 10.5.4
<b>Test description</b>			
<i>ENC Licensing – Permit Management Validate permit CRC:</i>			
<i>Test how the system performs when installing an ENC permit with an invalid checksum. Verify the system checks for a valid permit checksum and reports the appropriate message.</i>			
<b>Setup</b>			
No pre-installed permits Test data used: <i>PERMIT.TXT</i> Test data location: a) D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licensing\Test 2c\1 b) D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licensing\Test 2c\2			
<b>Action</b>			
Attempt to load the <i>PERMIT.TXT</i> file from locations (a) and (b) above into the ECDIS.			
<b>Results</b>			
The system reports a CRC failure on GB100001 accompanied by the appropriate error message as follows: <b>“SSE 13 – Cell Permit is invalid (checksum is incorrect)”</b> In both cases the permit for GB100002 imports without any error or warning.			
1) Cell GB100001 has had its CRC changed from 714AB61CA474BF64 to 714AB61CA474CF64. 2) Cell GB100001 has had the encrypted cell keys 1 & 2 altered slightly. 3) Cell GB100002 has a valid CRC value for both tests.)			

**2.5.2 d) Check remaining permit expiry period**

<b>Test Reference</b>	2.5.2 d)	<b>IHO Reference</b>	S-63 10.5.5
<b>Test description</b>			
<i>Test how the system performs when loading permits that expire within the next 30 days. Verify that the ECDIS returns the correct warning message.</i>			
<b>Setup</b>			
No pre-installed permits. Test data used: <i>PERMIT.TXT</i> The expiry date set in this test permit is 20121231 (31st December 2012). Test data location: D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licensing\Test 2d			
<b>Action</b>			
<b>Set the computer Date/Time properties to 3rd Dec 2012</b>			
Install the <i>PERMIT.TXT</i> file:			
<b>Results</b>			
The system must return a SSE 20 warning message as follows: <b>“SSE 20 – Subscription service will expire in less than 30 days. Please contact your data supplier to renew the subscription licence.”</b>			

## IHO ENC Test Data Sets for ECDIS

### 2.5.2 e) Check for expired permits

<b>Test Reference</b>	2.5.2 e)	<b>IHO Reference</b>	S-63 10.5.5
<b>Test description</b>			
Test how the system performs when installing permits which have expired. Verify that the ECDIS returns the correct warning message.			
<b>Setup</b>			
No pre-installed permits. Test data used: <i>PERMIT.TXT</i> The expiry date set in this test permit is 20121231 (31st December 2012). Test data location: <i>D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licencing\Test 2e</i>			
<b>Action</b>			
Load the <i>PERMIT.TXT</i> file. [Note The expiry dates for these permits are set to 31st Dec 2012. <b>Set the computer Date/Time in advance of 1st Jan 2013 and install the PERMIT.TXT file]</b>			
<b>Results</b>			
The system must report the correct SSE 15 warning message as follows: <b>“SSE 15 – Subscription service has expired. Please contact your data supplier to renew the subscription licence.”</b> It should be possible to install expired permits but the system must display a permanent warning message to the user as described in 10.5.5 of S-63.			

### 2.5.2 f) Permit installation and reporting

<b>Test Reference</b>	2.5.2 f)	<b>IHO Reference</b>	S-63 4.3 & 10.5
<b>Test description</b>			
Test how the system performs when a valid set of ENC permits, with more than 30 days until expiry, is loaded. Confirm that the ECDIS installs valid permits and offers the user a meaningful report at the end of the process.			
<b>Setup</b>			
No pre-installed permits. Test data used: <i>PERMIT.TXT</i> Test data location: <i>D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licencing\Test 2f</i>			
The expiry dates for these permits are set to 31st Dec 2018. <b>Set the computer Date/Time prior to 1st Dec 2018 and install the PERMIT.TXT file.</b>			
<b>Action</b>			
Load the file <i>PERMIT.TXT</i> in the location stated above.			
<b>Results</b>			
The permit file must import without any errors or warnings. A report dialog should be available to the user so that they can confirm the successful import.  (10 ENC Cell permits are provided for this test created using the IHB manufacturer hardware ID and M_KEY.)			

## IHO ENC Test Data Sets for ECDIS

### 2.5.2 g) Management of permits from multiple data servers.

<b>Test Reference</b>	2.5.2 g)	<b>IHO Reference</b>	S-63 4.3.3 & 10.5.6
<b>Test description</b>			
<i>Test how the system performs when loading permit files from two different data servers. Confirm that the ECDIS manages permits supplied from different data servers correctly and stores them independently of one another.</i>			
<b>Setup</b>			
<p>No pre-installed permits.</p> <p>Test data used:</p> <p>PERMIT.TXT</p> <p>Test data location:</p> <p>a) D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licensing\Test 2g\DS1</p> <p>b) D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licensing\Test 2g\DS2</p>			
<p><i>There are two ENC cells common to both PERMIT.TXT files. These common permits have been created using different encryption keys.</i></p>			
<b>Action</b>			
<p>Load the PERMIT.TXT file at the test data location (a) above.</p> <p>Load the PERMIT.TXT file at the test data location (b) above.</p>			
<b>Results</b>			
<p><i>The two independently supplied permits should be stored in a Data Server specific location within the ECDIS. These permits must be available to view the contents at the user's request. (There are two ENC cells common to both PERMIT.TXT files. These common permits have been created using different encryption keys.)</i></p>			

### 2.5.2 h) Management of installed permits

<b>Test Reference</b>	2.5.2 h)	<b>IHO Reference</b>	S-63 4.3
<b>Test description</b>			
<i>Test whether the system enables user to manage their permit holdings. Confirm that users have the ability to selectively remove permits from the system.</i>			
<b>Setup</b>			
<p>Use the pre-installed permits from the previous test 2.5.2g</p> <p>Test data used:</p> <p>PERMIT.TXT files loaded in the previous test 2.5.2g</p> <p>Two permit files have been supplied with this test imitating two different Data Servers (DS). These have been designated GB and PM.</p>			
<b>Action</b>			
<p>Attempt to remove one of the installed sets of permits from the system leaving the other one intact.</p>			
<b>Results</b>			
<p><i>The user must be able to delete permits from the system. Suitable warnings/confirmations must be given.</i></p>			

**2.5.3 Not currently used****2.5.4 ENC Authentication Part 1****2.5.4 a) Install and validate the SA certificate and/or public key**

Test Reference	2.5.4 a)	IHO Reference	S-63 10.6.1 & 10.6.2
<b>Test description</b>			
<i>Confirm that the system can import a valid certificate/public key and supply the user with confirmation. Validate it against the SA signature contained in the ENC signature files of the supplied exchange set.</i>			
<b>Setup</b>			
<p>No pre-installed permits, Certificate/Public Key or ENC data.</p> <p><i>Test data used:</i></p> <ol style="list-style-type: none"> <li>1) UKHO.CRT and/or UKHO.PUB</li> <li>2) PERMIT.TXT</li> <li>3) V01X01 (Exchange Set)</li> </ol> <p><i>Test data location:</i></p> <p>D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4a</p>			
<p><i>The signature files within this Exchange Set contain the UKHOs self signed certificate. The SSE 26 warning is displayed because this certificate has not been provided by the Scheme Administrator (IHO). Validation can be carried by the system against the file name and/or the “Issuer” if the certificate file is pre-installed.</i></p> <p><i>The certificate expiry date is 16/08/2010. Set the computer Date/Time prior to 16th Aug 2010.</i></p>			
<b>Action</b>			
<p><i>Depending on the system install the certificate and/or the public key file(s). Install the PERMIT.TXT and install the exchange set from the location above</i></p>			
<b>Results</b>			
<ol style="list-style-type: none"> <li>1) <b><i>The appropriate warning must be displayed “SSE 26 - This ENC is not authenticated by the IHO acting as the Scheme Administrator”. The certificate or public key file must be installed and a message displayed informing the user that the file has been installed successfully.”</i></b></li> <li>2) <b><i>The permit file installs without error</i></b></li> <li>3) <b><i>When the exchange set is authenticated the system must display the SSE 26 warning, once, to alert the user as in (1) above. The exchange set must load without any authentication failures.</i></b></li> </ol>			

**2.5.4 b) Change and update installed certificate**

<b>Test Reference</b>	2.5.4 b)	<b>IHO Reference</b>	S-63 10.6.1 & 10.6.2
<b>Test description</b>			
<i>Confirm that the system can import a new certificate/public key and return a report informing the user of the fact. Validate it against the SA signature contained in the ENC signature files of the supplied exchange set.</i>			
<b>Setup</b>			
<i>Use the pre-installed information and data from the previous test 2.5.4a.</i>			
<i>Test data used:</i>			
1) IHO.CRT and/or IHO.PUB			
2) PERMIT.TXT			
3) V01X01 (Exchange Set)			
<i>Test data location:</i>			
<i>D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4b</i>			
<i>IHO Public key used for this is the same as that posted on their website at the time this test data was produced.</i>			
<b>Action</b>			
<i>Note: The certificate or public key file should be manually checked against the corresponding files on the IHO website (<a href="http://www.ihonet.int">www.ihonet.int</a>). See 10.6.1.1 in S-63.</i>			
<i>Depending on the system install the certificate and/or public key file(s).</i>			
<i>Install the PERMIT.TXT and Install the exchange set from the location above.</i>			
<b>Results</b>			
1) The new certificate or public key file should load without error or warning, i.e. no SSE 26 message. A message should be displayed informing the user that the new file has been installed successfully.			
2) The exchange set loads without any authentication failures.			
<i>ENC cell GB100004 (Edition #7, Update #1) installed without error or warning</i>			
<i>ENC cell GB100005 (Edition #3, Update #2) installed without error or warning</i>			

**2.5.4 c) No pre-installed certificate/public key on the system**

<b>Test Reference</b>	2.5.4 c)	<b>IHO Reference</b>	S-63 10.6.2
<b>Test description</b>			
<i>Test how the system performs when there is no pre-installed certificate. Confirm that the correct SSE 05 error message is displayed and that the system does not progress to the decompress/decrypt stage.</i>			
<b>Setup</b>			
<i>No pre-installed certificate, permits or ENC data.</i>			
<i>Test data used:</i>			
1) PERMIT.TXT			
2) V01X01 (Exchange Set)			
<i>Test data location:</i>			
<i>D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4c</i>			
<i>IHO Public key used for this is the same as that posted on their website at the time this test data was produced.</i>			

## IHO ENC Test Data Sets for ECDIS

Action
<i>Install the permit file followed by the exchange set stored in the location above.</i>
Results
<p><i>The system must report a SSE 05 error message similar to the one below.</i></p> <p><b>“SSE 05 – SA Digital Certificate file is not available. A valid certificate can be obtained from the IHO website or your data supplier.”</b></p> <p><i>The system must abort at this point and not continue to install ENCs.</i></p> <p><i>ENC cell GB100001 (Edition #3, Update #6) not installed. “SSE 05” Error Message</i></p> <p><i>ENC cell GB100002 (Edition #13, Update #5) not installed. “SSE 05” Error Message</i></p>

### 2.5.4 d) Check SA Certificate Expiry Date

<b>Test Reference</b>	2.5.4 d)	<b>IHO Reference</b>	S-63 10.6.2
<b>Test description</b>			
<i>Test how the system performs if the IHO digital certificate (IHO.CRT) has expired. To confirm that the correct SSE 22 error message is displayed and that the system does not progress to the decompress/decrypt stage.</i>			
<i>Note: This test is only intended for those systems that authenticate against the .CRT encoding of the certificate file which contains an expiry date.</i>			
<b>Setup</b>			
<p><i>No pre-installed certificate, permits or ENC data.</i></p> <p><i>Test data used:</i></p> <p><i>IHO.CRT PERMIT.TXT</i></p> <p><i>V01X01 (Exchange Set)</i></p> <p><i>Test data location:</i></p> <p>a) D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4d\Expired</p> <p>b) D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4d\Current</p> <p><i>The IHO.CRT (Expired) certificate expired on 31st December 2004</i></p> <p><i>The IHO.CRT (Current) certificate expires on 29th August 2013</i></p>			
<b>Action</b>			
<p><i>There are two folders one contains an expired certificate, an exchange set and a set of permits, the other a current certificate, an exchange set and a further set of permits. The system date should be set to a date between the expiry dates for (a) and (b) above.</i></p> <ol style="list-style-type: none"> <li>1) <i>Install the certificate and permits at location (a) above then attempt to load the exchange set.</i></li> <li>2) <i>Then install the certificate and permits at location (b) above then attempt to load the exchange set (this test should result in the certificate &amp; ExSet loading correctly). (Permits for this test expire on 31st Dec 2021)</i></li> </ol>			

Results
1) When installing the expired certificate the system must report a SSE 22 error message similar to the one below. <b>"SSE 22 – SA Digital Certificate file has expired. A new SA Public Key (certificate) can be obtained from the IHO website or your data supplier."</b> When attempting to install the exchange set the system must report the required SSE 05 message stating that no valid certificate is installed in the ECDIS.
2) When installing the current certificate this should install OK and load the ExSet without error or warning.
Current
ENC cell GB100001 (Edition #3, Update #6) installed without errors and warnings ENC cell GB100002 (Edition #13, Update #5) installed without errors and warnings
Expired
ENC cell GB100001 (Edition #3, Update #1) not installed. "SSE 22 & 05" Error Messages ENC cell GB100002 (Edition #12, Update #7) not installed. "SSE 22 & 05" Error Messages

#### 2.5.4 e) Incorrectly formatted certificate and public key files

<b>Test Reference</b>	2.5.4 e)	<b>IHO Reference</b>	S-63 10.6.2
<b>Test description</b>			
Test how the system performs if the IHO digital certificate (IHO.CRT) is incorrectly formatted. Confirm that the correct SSE 08 error message is displayed and that the system does not progress to the decompress/decrypt stage.			
<b>Setup</b>			
<p>No pre-installed certificate, permits or ENC data.</p> <p>Test data used:</p> <p>IHO.CRT/IHO.PUB</p> <p>PERMIT.TXT</p> <p>V01X01 (Exchange Set)</p> <p>Test data location:</p> <p>D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4e</p>			
<p>1) The last hexadecimal pair, "F8", has been removed from the public key string (Big y) in the certificate file (IHO.CRT).</p> <p>2) The last hexadecimal pair, "F8", has been removed from the public key file (IHO.PUB).</p>			
<b>Action</b>			
Depending on which file the system uses install the relevant IHO.CRT and/or IHO.PUB file(s). Then attempt to load the exchange set using the permits provided.			
<b>Results</b>			
<p>The system must report a SSE 08 error message similar to the one below.</p> <p><b>"SSE 08 – SA Digital Certificate file incorrect format. A valid certificate can be obtained from the IHO website or your data supplier".</b> When attempting to install the exchange set the system must report the required "SSE 05 – SA Digital Certificate file is not available. A valid certificate can be obtained from the IHO website or your data supplier."</p> <p>ENC cell GB100001 (Edition #3, Update #6) not installed. "SSE 08 &amp; 05" Error Messages ENC cell GB100002 (Edition #13, Update #5) not installed. "SSE 08 &amp; 05" Error Messages</p>			

**2.5.4 f) Check certificate parameter values**

<b>Test Reference</b>	2.5.4 f)	<b>IHO Reference</b>	S-63 10.6.1.1
<b>Test description</b>			
Test how the system performs if the IHO digital certificate (IHO.CRT) or Public Key file is incorrectly formatted. Confirm that the correct SSE 08 error message is displayed and that the system does not progress to the decompress/decrypt stage. Note that this test is only intended for those systems that authenticate against the .CRT encoding of the certificate file			
<b>Setup</b>			
No pre-installed certificate, permits or ENC data.			
Test data used:			
<b>Data Server 1 (DS1)</b>	<b>Data Server 2 (DS2)</b>		
IHO.CRT [024100 Parameter]	IHO.CRT [0240 Parameter]		
PERMIT.TXT	PERMIT.TXT		
V01X01 (Exchange Set)	V01X01 (Exchange Set)		
Test data location:			
a) D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4f\DS1			
b) D:\IHO S-64 [S-63 TDS v1.2.1]\4 Authentication_Part1\Test 4f\DS2			
Note: This test is designed only for those systems using the IHO.CRT file to authenticate the SA signed data server certificate in the ENC signature file.			
<b>Action</b>			
Depending on which file the system uses install the relevant IHO.CRT and/or IHO.PUB file(s). Then attempt to load the exchange set using the permits provided.			
<b>Results</b>			
<b>Data Server 1</b> certificate must install without error or warning. The exchange set should authenticate and import without error or warning.			
<b>Data Server 2</b> is using a non SA Certificate. The certificate should install but with the appropriate SSE 26 warning displayed. The exchange set should authenticate and import without error but a further SSE 26 warning ("SSE 26 - This ENC is not authenticated by the IHO acting as the Scheme Administrator". The certificate or public key file must be installed and a message displayed informing the user that the file has been installed successfully.") should be displayed prior to import (See Test 2.5.4a).			
<b>DS1</b>			
ENC cell GB58932B (Edition #1, Update #0) Installed without errors or warning			
ENC cell GB60242T (Edition #2, Update #0) Installed without errors or warning			
ENC cell GB61011A (Edition #1, Update #1) Installed without errors or warning			
<b>DS2</b>			
ENC cell GB60242T (Edition #2, Update #0) Installed without error. "SSE 26" Warning Message			
ENC cell GB61011A (Edition #1, Update #1) Installed without error. "SSE 26" Warning Message			
ENC cell GB61021A (Edition #1, Update #1) Installed without error. "SSE 26" Warning Message			
ENC cell GB61021B (Edition #1, Update #1) Installed without error. "SSE 26" Warning Message			
ENC cell GB61032A (Edition #1, Update #2) Installed without error. "SSE 26" Warning Message			
Note: When loading DS2, systems should report "already installed" messages for cells GB60242T and GB61011A as they are already installed from DS1			

## IHO ENC Test Data Sets for ECDIS

### 2.5.5 ENC Authentication

#### 2.5.5 a) Invalid SA signature in the ENC Signature File

<b>Test Reference</b>	2.5.5 a)	<b>IHO Reference</b>	S-63 10.6.2
<b>Test description</b>			
To test how the system performs when an invalid certificate element of an ENC signature file is authenticated against the installed IHO certificate and/or public key. Confirm the correct SSE 06 message is returned by the ECDIS.			
<b>Setup</b>			
<p>No pre-installed certificate, permits or ENC data.</p> <p>Test data used:</p> <ul style="list-style-type: none"> <li>1) IHO.CRT / IHO.PUB</li> <li>2) PERMIT.TXT</li> <li>3) V01X01 (Exchange Set)</li> </ul> <p>Test data location:</p> <p>D:\IHO S-64 [S-63 TDS v1.2.1]\5 Authentication_Part2\Test 5a</p> <p>The signature file associated with update GB61021A.001 contains the data servers self signed key (SSK) and not the SA signed data server certificate. GB61021A.000, GB61021B.000 and GB61021B.001 contain valid certificates.</p>			
<b>Action</b>			
Install the IHO.CRT and/or IHO.PUB, Permits and exchange set from the location above.			
<b>Results</b>			
<p>The system must report the appropriate message as follows for ENC file GB61021A.001:</p> <p><b>“SSE 06 - The SA Signed Data Server Certificate is invalid. The SA may have issued a new public key or the ENC may originate from another service. A new SA public key can be obtained from the IHO website or from your data supplier”</b></p> <p>The system should validate each certificate in turn and not halt at an error. Some systems may report an SSE 03 which is acceptable (similar validation)</p> <p>ENC cell GB61021A (Edition #1, Update #1) Update 1 is not installed (SSE 06 message )</p> <p>ENC cell GB61021B (Edition #1, Update #1) base cell and update installed without error or warning.</p>			

#### 2.5.5 b) Authentication against a non SA certificate/public key

<b>Test Reference</b>	2.5.5 b)	<b>IHO Reference</b>	S-63 10.6.2.1
<b>Test description</b>			
<p>Test that the system will authenticate against an alternative certificate/public key stored on the system which is not issued by the Scheme Administrator.</p> <p>Test that the correct SSE 26 warning is displayed informing the user that the ENC data is not authenticated by the SA.</p>			

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<b>Setup</b>
No pre-installed certificate/public key, permits or ENC data.
<i>Test data used:</i>
1) NONSA.CRT/.PUB
2) PERMIT.TXT
3) V01X01 (Exchange Set - GB61021A, GB61021B, GB61032A)
<i>Test data location:</i>
D:\IHO S-64 [S-63 TDS v1.2.1]\5 Authentication_Part2\Test 5b
<i>This test uses an installed certificate/public key file which is the same as the public key contained in the signature file of the exchange set.</i>
<b>Action</b>
Install certificate and/or public key, permit file and exchange set stored in the location above.
<b>Results</b>
The system must authenticate the exchange set against the certificate and/or public key stored on the system. The system must identify that the data has been authenticated against a public key not issued by the IHO acting as the SA. A warning must be displayed as follows: <b>“SSE 26 – ENC is not authenticated by the IHO acting as the SA”</b>
This test should not prevent the exchange set from being loaded.
<ul style="list-style-type: none"> <li>- ENC cell GB61021A (Edition #1, Update #1) Cells import without error but with a “SSE 26” Warning Message</li> <li>- ENC cell GB61021B (Edition #1, Update #1) Cells import without error but with a “SSE 26” Warning Message</li> <li>- ENC cell GB61032A (Edition #1, Update #2) Cells import without error but with a “SSE 26” Warning Message</li> </ul>

### 2.5.5 c) ENC signature validation

<b>Test Reference</b>	2.5.5 c)	<b>IHO Reference</b>	S-63 5.3 & 10.6.3
<b>Test description</b>			
Test how the system responds when validating an incorrectly signed cell file. Confirm that the correct SSE 09 message is displayed.			
<b>Setup</b>			
No pre-installed certificate/public key, permits or ENC data.			
<i>Test data used:</i>			
1) IHO.CRT			
2) PERMIT.TXT			
3) V01X01 (Exchange Set)			
<i>Test data location:</i>			
D:\IHO S-64 [S-63 TDS v1.2.1]\5 Authentication_Part2\Test 5c			
ENC Signature GBK01620.000 is in the correct format but the signature is invalid. ENC Signature GBK01640.000 is in the correct format and is valid.			
<b>Action</b>			
Install the IHO.CRT file, PERMIT.TXT and ENC exchange set from the location described below.			

<b>Results</b>			
<i>The system must display the correct SSE 09 error message for cell GB301620 as follows: “<b>SSE 09 – ENC Signature is invalid.</b>”</i>			
<i>The system must not load this cell as its integrity may have been compromised.</i>			
<i>The system should validate the signature file for GB01640 and load this cell in the normal way.</i>			
<i>ENC cell GB301620 (Edition #3, Update #0) Not installed. Error message SSE 09</i>			

### 2.5.5 d) ENC signature format validation

<b>Test Reference</b>	2.5.5 d)	<b>IHO Reference</b>	S-63 5.4.2.7 & 10.6.3
<b>Test description</b>			
<i>Test how the system responds when validating against an incorrectly formatted ENC signature. Confirm that the correct SSE 24 message is displayed.</i>			
<b>Setup</b>			
<i>Use data installed from the previous test (2.5.5c)</i>			
<i>Test data used:</i>			
<i>V01X01 (Exchange Set)</i>			
<i>Test data location:</i>			
<i>D:\IHO S-64 [S-63 TDS v1.2.1]\5 Authentication_Part2\Test 5d</i>			
<i>GBK01620.000 has a valid ENC signature and is correctly formatted. GBK01660.000 has an invalid ENC signature format (deliberately corrupted).</i>			
<b>Action</b>			
<i>Load the exchange set from the location above.</i>			
<b>Results</b>			
<i>The system displays the correct SSE 24 error message for cell GB301660 as follows: “<b>SSE 24 – ENC Signature format is incorrect.</b>”</i>			
<i>The system must not load this cell as its integrity may have been compromised.</i>			
<i>The system should validate the signature file for GB301620 and load this cell in the normal way.</i>			
<i>Some systems may report an SSE 09 (ENC Signature is invalid) error this is acceptable as the expected outcome is the same, i.e. the data file is rejected.</i>			
<i>ENC cell GB301620 (Edition #3, Update #0) installed without error or warning</i>			
<i>ENC cell GB301660 (Edition #5, Update #0) is not installed. Error message SSE24</i>			

### 2.5.5 e) Check authentication is continuous and complete

<b>Test Reference</b>	2.5.5 e)	<b>IHO Reference</b>	S-63 5.3, 5.4.2.7 & 10.6.3
<b>Test description</b>			
<i>Tests that the system authenticates all signature files individually and continuously without hanging at an error. Check that the SSE 09 and SSE 24 messages are reported correctly.</i>			

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<b>Setup</b>	
Use data installed from the previous test (2.5.5d, with GB301620 & GB301640 already installed)	
<i>Test data used:</i>	
1) PERMIT.TXT	
2) V01X01 (Exchange Set)	
<i>Test data location:</i>	
D:\IHO S-64 [S-63 TDS v1.2.1]\5 Authentication_Part2\Test 5e	
GB301820.000/GBK01820.000 (invalid signature) GB301860.001/GBK01840.001 (Incorrect signature format)	
<b>Action</b>	
Load the PERMIT.TXT file and exchange set from the location above.	
<b>Results</b>	
The system must authenticate each ENC signature continuously in turn. It must report the following errors at the end of the process:	
<b>"GB301820.000 – SSE 09 – ENC Signature is invalid."</b>	
<b>"GB301860.001 – SSE 24 – ENC Signature format is incorrect."</b>	
The system must load all ENC data files with authenticated signatures but not those that do not.	
<b>Some systems may report an SSE 09 (ENC Signature is invalid) error for both GB301820.000 &amp; GB301860.001.</b> This is acceptable as the expected outcome is the same, i.e. the data file is rejected.	
Note: GB301860.002 should also return a sequential update error as it was not possible to install GB301860.001.	
e.g	
ENC cell GB301620 (Edition #3, Update #0) installed without error or warning	
ENC cell GB301640 (Edition #4, Update #0) installed without error or warning	
ENC cell GB301660 (Edition #5, Update #0) installed without error or warning	
ENC cell GB301820 (Edition #3, Update #0) is not installed. Error message SSE09	
ENC cell GB301840 (Edition #8, Update #1) installed without error or warning	
ENC cell GB301860 (Edition #3, Update #2) Base cell is installed without error or warning. Update #1 is not installed. Error message SSE 24	

### 2.5.5 f) Single exchange set with ENC signature files signed by multiple data servers

Test Reference	2.5.5 f)	IHO Reference	S-63 5.3
<b>Test description</b>			
To test how the system performs when an exchange set contains signature files from multiple data servers. That is, signed with different data server private keys and containing different SA signed certificates.			
<b>Setup</b>			
No pre-installed certificates, permits or ENCs.			
<i>Test data used:</i>			
1) IHO.CRT/IHO.PUB			
2) PERMIT.TXT			
3) V01X01 (Exchange Set)			
<i>Test data location:</i>			
D:\IHO S-64 [S-63 TDS v1.2.1]\5 Authentication_Part2\Test 5f			
<b>ENC Signature File components</b>		<b>ENC Signature File components</b>	
<b>Signed by Data Server 1 (DS1)</b>		<b>Signed by Data Server 2 (DS2)</b>	
<b>DS1 "s SA signed certificate</b>		<b>DS2 "s SA signed certificate</b>	
GB301620.000, GB301640.000,		GB301840.001	
GB301660.000, GB301820.000,		GB301860.000,001 & 002	
GB301840.000		GB302020.000 & 001	
<b>Action</b>			

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<i>Install the certificate, permits and exchange set from the location above.</i>
<b>Results</b>
<i>The seven cells and accompanying updates must authenticate, decrypt and import to the ECDIS without any error or warning messages.</i>
<i>ENC cell GB301620 (Edition #3, Update #0) installed without error or warning</i>
<i>ENC cell GB301640 (Edition #4, Update #0) installed without error or warning</i>
<i>ENC cell GB301660 (Edition #5, Update #0) installed without error or warning</i>
<i>ENC cell GB301820 (Edition #3, Update #0) installed without error or warning</i>
<i>ENC cell GB301840 (Edition #8, Update #1) installed without error or warning</i>
<i>ENC cell GB301860 (Edition #3, Update #2) installed without error or warning</i>
<i>ENC cell GB302020 (Edition #4, Update #1) installed without error or warning</i>

### 2.5.6 ENC Decryption

#### 2.5.6 a) Install ENCs when pre-installed permits have expired

<b>Test Reference</b>	2.5.6 a)	<b>IHO Reference</b>	S-63 10.7.1 & 10.7.1.1
<b>Test description</b>			
<i>To test how the system performs when importing new ENCs where the previously installed permits have expired.</i>			
<b>Setup</b>			
<i>Only the PERMIT.TXT and IHO.CRT/IHO.PUB files installed from the location below.</i>			
<i>Test data used:</i>			
1) IHO.CRT/IHO.PUB			
2) PERMIT.TXT			
3) V01X01 (Exchange Set - GB61021A & GB61021B)			
<i>Test data location:</i>			
<i>D:\IHO S-64 [S-63 TDS v1.2.1]\6 ENC Decryption\Test 6a</i>			
<b>Action</b>			
<i>Install the exchange set from the location above.</i>			
<i>Note: The computer clock must be in advance of 31st Dec 2012.</i>			
<b>Results</b>			
<i>The system must display the SSE 15 warning when importing the exchange set as follows:</i>			
<b>“SSE 15 – Subscription service has expired. Please contact your data supplier to renew the subscription licence”, (list affected cells)</b>			
<i>The system must display the following SSE 25 warning when viewing cells with expired permits:</i>			
<b>“SSE 25 – The ENC permit for this cell has expired. This cell may be out of date and MUST NOT be used for NAVIGATION”.</b>			
<i>(Permits for this test are set to expire on 31st Dec 2012.)</i>			
<i>GB61021A (edition # 1 update # 1) should be installed.</i>			
<i>GB61021B (edition # 1 update # 1) should be installed.</i>			

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### 2.5.6 b) Permit expiry within 30 days

<b>Test Reference</b>	2.5.6 b)	<b>IHO Reference</b>	S-63 10.7.1.2
<b>Test description</b>			
To test how the system performs when importing new ENCs where the installed permits expire within 30 days.			
<b>Setup</b>			
No ENC data installed but with PERMIT.TXT and IHO.CRT/IHO.PUB installed for previous test (2.5.6a).			
Test data used:			
1) IHO.CRT/IHO.PUB (already installed) 2) PERMIT.TXT (already installed) 3) V01X01 (Exchange Set - GB61021A & GB61021B)			
Test data location: D:\IHO S-64 [S-63 TDS v1.2.1]\6 ENC Decryption\Test 6b			
<b>Action</b>			
Set the computer clock between 1st Dec 2012 and 31st Dec 2012. Install the exchange set from the location above.			
<b>Results</b>			
The system must import the exchange set but display the appropriate SSE 20 warning message as follows (Permits in this test are set to expire on 31st Dec 2012): <b>“SSE 20 – Subscription service will expire in less than 30 days. Please contact your data supplier to renew the subscription licence.”</b>			
GB61021A (edition # 1 update # 1) should be installed (with “SSE 20”). GB61021B (edition # 1 update # 1) should be installed (with “SSE 20”).			

### 2.5.6 c) Incorrect cell keys encrypted in the ENC permits

<b>Test Reference</b>	2.5.6 c)	<b>IHO Reference</b>	S-63 10.7.3
<b>Test description</b>			
1) Test how the system responds when loading ENCs encrypted with cell keys that are different to those used to generate the permits. Confirm that the correct SSE 21 error message is displayed.			
2) Test that the system does not permanently halt for a single/multiple failures.			
3) Test that the system reports the number of successful/unsuccessful imports.			
<b>Setup</b>			
No pre-installed permits or ENCs. Certificate/Public key from previous tests, 2.5.6a and 2.5.6b.			
Test data used:			
1) IHO.CRT/IHO.PUB (Pre-installed) 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB58910B, GB58910C, GB58911A, GB58911B, GB58913A, GB58932A & GB58932B)			
Test data location: D:\IHO S-64 [S-63 TDS v1.2.1]\6 ENC Decryption\Test 6c			
<b>Action</b>			
Install the permits and load the exchange set from the location above.			

<b>Results</b>	
<p>The system must check each installed permit in turn to see if there is a valid decryption key. If no valid key is available the system must report the appropriate SSE 21 error message as follows:</p> <p><b>"SSE 21 – Decryption failed no valid cell permit found. Permits may be for another system or new permits may be required, please contact your data supplier to obtain a new licence."</b></p> <p>(Permits created from a different set of cell keys from those used to encrypt the test ENCs are as follows:- <b>GB58911A &amp; GB58911B.</b>)</p> <p>The system must not halt at an error but continue on to the next ENC.</p> <p>The system must report on successful/unsuccessful imports.</p> <p>GB58910B (edition # 1 update # 0) should be installed (without error or warning).</p> <p>GB58910C (edition # 2 update # 1) should be installed (without error or warning).</p> <p>GB58911A (edition # 1 update # 1) should not be installed (with "SSE 21").</p> <p>GB58911B (edition # 1 update # 0) should not be installed (with "SSE 21").</p> <p>GB58913A (edition # 1 update # 0) should be installed (without error or warning).</p> <p>GB58932A (edition # 1 update # 0) should be installed (without error or warning).</p> <p>GB58932B (edition # 1 update # 0) should be installed (without error or warning).</p>	

## 2.5.6 d) Validate ENC data file integrity

Test Reference	2.5.6 d)	IHO Reference	S-63 10.7.4
<b>Test description</b>			
Confirm that the system correctly validates decrypted ENCs and checks the integrity of each ENC data file. Confirm that the system reports the correct SSE 16 error message when the calculated CRC is incorrect or does not agree with the value contained in the corresponding CATALOG.031 record. Also determine whether the system correctly reports the SSE 23 (sequential update error).			
<b>Setup</b>			
IHO.CRT/IHO.PUB from previous test (2.5.6c) but no pre-installed permits or ENCs.			
Test data used:			
1) IHO.CRT/IHO.PUB (Pre-installed)			
2) PERMIT.TXT			
3) V01X01 (Exchange Set – GB40162A, GB40162B, GB40162C & GB40164A)			
Test data location:			
D:\IHO S-64 [S-63 TDS v1.2.1]\6 ENC Decryption\Test 6d			
<b>Action</b>			
Install the ENC cell permits and exchange set from the location above.			
<b>Results</b>			
1) The system must validate the CRC of each cell in the exchange set. The system must report the appropriate error message for all ENC files (see additional comments below) which fail to validate as follows: <b>"SSE 16 – ENC &lt;Cell Name&gt; CRC is incorrect. Contact you data supplier as ENC(s) may be corrupt or missing data".</b>			
2) The system must also report an error message for any validated ENC files that cannot be imported resulting from (1) as follows: <b>"SSE 23 – Non sequential update, previous update(s) missing try reloading from the base media. If the problem persists contact your data supplier".</b>			
(GB40162B.000 – CRC altered manually in CATALOG.031 file GB40164A.003 – ENC data intentionally corrupted.)			
GB40162A (edition # 9 update # 3) should be installed (without error or warning).			
GB40162B (edition # 2 update # 1) should not be installed (with "SSE 16" followed by "SSE 23").			
GB40162C (edition # 1 update # 1) should not be installed (with "SSE 21").			
GB40164A (edition # 1 update # 5) should be installed with only two updates (edition # 1 update # 2) (with "SSE 16" followed by "SSE 23").			

**2.5.6 e) Missing ENC update**

<b>Test Reference</b>	2.5.6 e)	<b>IHO Reference</b>	S-63 10.7.4
<b>Test description</b>			
<i>Confirm that the system correctly identifies a missing update within a delivered exchange set and outputs the correct error message.</i>			
<b>Setup</b>			
<i>IHO.CRT/IHO.PUB from previous test (2.5.6d) but no pre-installed permits or ENCs.</i>			
<i>Test data used:</i>			
1) IHO.CRT (Pre-installed) 2) PERMIT.TXT 3) V01X01 (Exchange Set – FR5TEST2)			
<i>Test data location:</i>			
<i>D:\IHO S-64 [S-63 TDS v1.2.1]\6 ENC Decryption\Test 6e</i>			
<b>Action</b>			
<i>Install the ENC cell permits and exchange set from the location above.</i>			
<b>Results</b>			
<i>The system must identify that the exchange set contains a base cell but no update even though one is specified in the PRODUCTS.TXT. Update 1 is included in the PRODUCTS.TXT but not delivered in the data.</i>			
<i>Install the ENC cell permits and exchange set from the location above. Select cell FR5TEST2 for display. The following error message must be output :</i>			
<b>“SSE 27 - ENC&lt;cell name&gt; is not up to date. A New Edition, Re-issue or Update for this cell is missing and therefore MUST NOT be used for Primary NAVIGATION”.</b>			

## 2.5.7 ENC Data Management

### 2.5.7 a) Encrypted ENCs supplied by different Data Servers

<b>Test Reference</b>	2.5.7 a)	<b>IHO Reference</b>	S-63 6
<b>Test description</b>			
<i>To test how the system performs when loading ENCs from two different data servers who have their own unique SA signed certificates and encrypt using their own unique encryption keys.</i>			
<b>Setup</b>			
<i>IHO.CRT/IHO.PUB from previous test (2.5.6d) but no pre-installed permits or ENCs.</i>			
<b>a) Data Server 1 (DS1)</b>			
<i>Test data used:</i>			
1) IHO.CRT/IHO.PUB [Pre-installed]			
2) PERMIT.TXT			
3) V01X01 (Exchange Set - GB281600, GB281800, GB282000 & GB283000)			
<i>Test data location:</i>			
D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7a\DS1			
<b>b) Data Server 2 (DS2)</b>			
<i>Test data used:</i>			
4) IHO.CRT [Pre-installed]			
5) PERMIT.TXT			
6) V01X01 (Exchange Set - GB283000, GB283100, GB283200 & GB283300)			
<i>Test data location:</i>			
D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7a\DS2			
<b>Action</b>			
<i>Install the permits and exchange set for Data Server 1 (DS1), then install the permits and exchange set for DS2 from locations above.</i>			
<b>Results</b>			
<i>Both exchange sets must authenticate against the same installed public key. The DSs' permits must be stored independently and decrypt the relevant exchange sets when loaded.</i>			
<i>(In this test both Data Servers (DS) have ENC cell GB283000 common to both. DS1 has GB283000.000 – 002 and DS2 has GB283000.000 – 004.</i>			
<i>This test scenario considers how the ECDIS performs when a user obtains ENCs from two independent data providers.)</i>			
<i>The system should be up to date as follows:</i>			
<i>after installation of cells from DS1 (a):</i>			
GB281600 (edition # 1 update # 1)			
GB281800 (edition # 1 update # 0)			
GB282000 (edition # 1 update # 0)			
GB283000 (edition # 1 update # 2)			
<i>after installation of cells from DS2 (b):</i>			
GB281600 (edition # 1 update # 1)			
GB281800 (edition # 1 update # 0)			
GB282000 (edition # 1 update # 0)			
GB283000 (edition # 1 update # 4)			
GB283100 (edition # 1 update # 3)			
GB283200 (edition # 1 update # 0)			
GB283300 (edition # 1 update # 0)			

**2.5.7 b) Loading additional ENC cell permits and cells from a different data provider**

<b>Test Reference</b>	2.5.7 b)	<b>IHO Reference</b>	S-63 6
<b>Test description</b>			
Check that a pre-existing licence subscription is not overwritten by the ECDIS for any subsequent additions. Confirm that any data already stored on the system is unaffected by any newly imported permits.			
<b>Setup</b>			
Use the data installed for test 2.5.7a for DS1 & 2 (assuming that the data loaded as per the expected results)			
Test data used:			
1) IHO.CRT/IHO.PUB [Pre-installed]			
2) PERMIT.TXT			
3) V01X01 (Exchange Set - GB255000, GB270000, GB281600, GB281800, GB282000 & GB283000)			
Test data location:			
D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7b			
<b>Action</b>			
Install the permit file from the location above followed by the exchange set at the same location.			
<b>Results</b>			
The permit file must be merged with the previously installed one for the correct data server [DS1 - GB]. The exchange set must install all new cells as well as the updates for the previously installed ones [GB281600 & GB281800]. The expected SENC Status is listed below.			
The ENC cells loaded during test 2.5.7a for data server 2 [DS2] must still be viewable in the ECDIS to their expected state of correctness. The expected SENC status listed below shows the expected results against 2.5.7a [DS2].			
The permit file <b>only</b> contains new permits for cells GB255000 & GB270000. The exchange set contains the new cells and the cells from the previous test, 2.5.7a [DS1] plus additional updates.			
This test scenario considers how the ECDIS performs when presented with a subset of new additional ENC permits from a specific data provider.			
The system should be up to date as follows:			
after installation of cells from DS1:			
GB255000 (edition # 3 update # 3) new cell should be installed.			
GB270000 (edition # 1 update # 1) new cell should be installed.			
GB281600 (edition # 1 update # 2) updated.			
GB281800 (edition # 1 update # 1) updated.			
GB282000 (edition # 1 update # 0)			
GB283000 (edition # 1 update # 4)			
installation of cells from DS2 unchanged from 2.5.7a:			
GB281600 (edition # 1 update # 2)			
GB281800 (edition # 1 update # 1)			
GB282000 (edition # 1 update # 0)			
GB283000 (edition # 1 update # 4)			
GB283100 (edition # 1 update # 3)			
GB283200 (edition # 1 update # 0)			
GB283300 (edition # 1 update # 0)			

**2.5.7 c) Test that the system operates correctly in a multiple data provider environment**

<b>Test Reference</b>	2.5.7 c)	<b>IHO Reference</b>	S-63 6
<b>Test description</b>			
Check that ENCs existing within both subscriptions do not cause corruption across service providers. Confirm that both providers information is managed independently without conflict.			
<b>Setup</b>			
IHO certificate/public key installed from previous tests 2.5.7a & 2.5.7b. No pre-installed permits or ENCs.			
<b>a) Data Server 1 (DS1)</b>			
Test data used:			
IHO.CRT/IHO.PUB [Pre-installed] PERMIT.TXT V01X01 (Exchange Set - GB281600, GB281800, GB282000 & GB283000)			
Test data location:			
D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7c\DS1			
<b>b) Data Server 2 (DS2)</b>			
Test data used:			
IHO.CRT/IHO.PUB [Pre-installed] PERMIT.TXT V01X01 (Exchange Set - GB281600, GB281800, GB282000, GB283000, GB283100 & GB283200)			
Test data location:			
D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7c\DS2			
<b>Action</b>			
1) Install the ENC permit file from location (a) above. 2) Load the ENC Exchange Set (V01X01) from (a). 3) Load the ENC Exchange Set (V01X01) from (b). 4) Install the ENC permit file from location (b). 5) Load the ENC Exchange Set (V01X01) from (b). This exchange set contains new base cells and updates to previously installed cells. One cell is already installed with no updates. This test scenario considers how the ECDIS performs when the user changes from one data provider to another.			
<b>Results</b>			
1. ENC permits at (a) shall install without error or warning. 2. ENC Exchange Set (V01X01) at (a) shall load without error or warning. 3. ENC Exchange Set (V01X01) at (b) must <u>not</u> load as there are no valid permits for data server 2 [DS2] installed in the ECDIS. A SSE 10 warning must be displayed stating “ <b>SSE 10 – Permits not available for this data provider</b> ”. 4. ENC permits at (b) shall install without error or warning. 5. ENC Exchange Set (V01X01) at (b) shall install the new bases and updates. Warning messages relating to “cells/updates already installed” may be displayed.			
The content of the ECDIS SENC must be the same as that described below			
The system should be up to date as follows:			
after installation of cells from DS1:			
GB281600 (edition # 1 update # 1) GB281800 (edition # 1 update # 0) GB282000 (edition # 1 update # 0) GB283000 (edition # 1 update # 2)			
After installation of cells from DS2:			
GB281600 (edition # 1 update # 2) GB281800 (edition # 1 update # 1) GB282000 (edition # 1 update # 0) GB283000 (edition # 1 update # 4) GB283100 (edition # 1 update # 3) GB283200 (edition # 1 update # 0)			

**2.5.7 d) ECDIS management of cancelled cells**

<b>Test Reference</b>	2.5.7 d)	<b>IHO Reference</b>	S-63 6.4.1.1 & 6.4.1.2
<b>Test description</b>			
<i>To test how the system responds when a cell is cancelled in an S-63 encrypted ENC service. Confirm that the system operates correctly as defined in the S-63 standard.</i>			
<b>Setup</b>			
<i>IHO certificate/public key installed from previous test 2.5.7c. No pre-installed permits or ENCs.</i>			
<i>Test data used:</i>			
1) IHO.CRT/IHO.PUB [Pre-installed]			
2) PERMIT.TXT			
3) V01X01 (2 Exchange Sets - GB251200/GB255000/GB280200/GB301620)			
<i>Test data location:</i>			
a) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7d			
b) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7d\Base			
c) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7d\Update			
<b>Action</b>			
<i>Install the ENC permits at location (a) above. Load the base exchange set at (b) and then update using the exchange set at (c).</i>			
<i>Attempt to view all imported cells in the ECDIS and determine their status.</i>			
<b>Results</b>			
<i>The system shall report any cell(s) that have been identified as cancelled at load time. (Cell GB280200 is cancelled.)</i>			
<i>A message shall be displayed informing the user of the cell name.</i>			
<i>Depending on the method adopted by the OEM for managing cancelled cells one of the following conditions shall be observed:</i>			
1. <i>The cancelled cell cannot be viewed in the ECDIS</i>			
2. <i>The cancelled cell can be viewed in the ECDIS with the warning message defined in S-63 and specified below:</i>			
<i>"Cell &lt;name&gt; has been cancelled and may not be up to date. Under no circumstances should it be used for primary navigation".</i>			
<i>Clarification: Systems that remove cells without consulting the user do not have to provide a warning message at load time.</i>			
<i>The system should be up to date as follows: after installation of cells from 2.5.7d [Base]:</i>			
<i>GB251200 (edition # 1 update # 4)</i>			
<i>GB255000 (edition # 2 update # 2)</i>			
<i>GB280200 (edition # 2 update # 0)</i>			
<i>GB301620 (edition # 2 update # 1)</i>			
<i>After installation of cells from 2.5.7d [Update]:</i>			
<i>GB251200 (edition # 1 update # 8)</i>			
<i>GB255000 (edition # 3 update # 0)</i>			
<i>GB280200 (edition # 2 update # 1); cancelled cell (GB280200) should be reported by the system and either removed from the SENC or displayed with the appropriate warning.</i>			
<i>GB301620 (edition # 2 update # 4)</i>			

## IHO ENC Test Data Sets for ECDIS

### 2.5.7 e) ECDIS Display of Replacement ENC Cells

<b>Test Reference</b>	2.5.7 e)		<b>IHO Reference</b>	S-63 6.2.3.3		
<b>Test description</b>						
<i>To test how the system responds when a cell is cancelled and replaced in an S-63 encrypted ENC service. Confirm that the system operates correctly as defined in the S-63 standard.</i>						
<i>GB380620 is cancelled and replaced by GB383710 &amp; GB383720 GB380720 is cancelled and replaced by GB389320</i>						
<b>Setup</b>						
<i>Status as per successful completion of test 2.5.7 d) Test data used: 1) IHO.CRT / IHO.PUB [Pre-installed] 2) PERMIT.TXT 3) V01X01 (2 Exchange Sets - GB380620, GB380720, GB40162A, GB40162B &amp; GB40182A) Test data location: a) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7e b) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7e\Base c) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7e\Update</i>						
<b>Action</b>						
<i>Install the ENC permits at location (a). Load the base exchange set at (b) and then update using the exchange set at (c). Attempt to view all imported cells in the ECDIS and determine their status.</i>						
<b>Results</b>						
<i>The system must report any cell(s) that have been identified as cancelled at load time. A message must be displayed as specified in test 2.5.7 d). If any replacement cells have been encoded in the PRODUCTS.TXT file then this must be presented to the user as defined in S-63 and as follows: “Cell &lt;name&gt; has been cancelled and has been replaced by cell(s), &lt;name1&gt;; &lt;name2&gt;. Please contact your data supplier to obtain the additional ENC permits”.</i>						
Test	Cell Name	Exchange Set Content		Expected SENC Content		Notes
		Edition N°	Update N°	Edition N°	Update N°	
2.5.7e [Base]	GB380620	2	0	2	0	All ENC cells installed without error or warning
	GB380720	2	0	2	0	
	GB40162A	8	3	8	3	
	GB40162B	1	1	1	1	
	GB40182A	1	4	1	4	
2.5.7e [Update]	GB251200	1	8	1	8	Cells from the previous test 2.5.7d (same status)
	GB255000	3	0	3	0	
	GB280200	2	1	2	1	
	GB301620	2	4	2	4	
	GB380620	2	1	2	1	
	GB380720	2	1	2	1	Messages should be displayed as for 2.5.7d plus message relating to replaced cells: GB380620 is cancelled and replaced by GB383710 & GB383720 GB380720 is cancelled and replaced by GB389320
	GB40162A	9	0	9	0	
	GB40162B	2	1	2	1	
	GB40182A	1	5	1	5	

## IHO ENC Test Data Sets for ECDIS

### 2.5.7 f) ECDIS management of ENC re-issued cells

<b>Test Reference</b>	2.5.7 f)	<b>IHO Reference</b>	S-63 6.2.3			
<b>Test description</b>						
To test how the system responds when a cell is published as a re-issue. Confirm that the system operates correctly as defined in the S-63 standard. (The PRODUCTS.TXT file has “Base cell update number” field in each cell record that identifies and flags the update that carries any re-issued cell)						
<b>Setup</b>						
IHO certificate/public key installed from previous test 2.5.7e. No pre-installed permits or ENCs. Test data used: 1) IHO.CRT / IHO.PUB [Pre-installed] 2) PERMIT.TXT 3) Base [Exchange Set – GB303040] 4) Update [Exchange Set – GB303040 & GB50162D] Test data location: a) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7f b) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7f\Base c) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7f\Update						
<b>Action</b>						
Install the ENC permits at location (a) above. Load the base exchange set at (b) and then update using the exchange set at (c).						
<b>Results</b>						
The system must load the base exchange set and then the re-issued cells (GB303040 & GB50162D) on the update as though they were a new data set or a new edition of a data set. The system must also install the subsequent updates GB303040 [Ed 11 Up10] and GB50162D [Ed 6 Up 6].						
GB50162D is a straight re-issue with no previous history, i.e. new cell. GB303040 is a re-issued cell with history, i.e. base cell already installed in the ECDIS. Both re-issued cells have subsequent updates to test the loading sequence is continuous.						
Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition N°	Update N°	Edition N°	Update N°	
2.5.7f [Base]	GB303040	11	9	11	9	Edition 11 of GB303040 installed with updates 1-9
2.5.7f [Update]	GB303040	11	10	11	10	GB50162D is a straight re-issue with no previous history, i.e. new cell. GB303040 is a re-issued cell with history, i.e. base cell already installed in the ECDIS.
	GB50162D	6	6	6	6	

### 2.5.7 g) ECDIS management of Base and Update Exchange Sets

<b>Test Reference</b>	2.5.7 g)	<b>IHO Reference</b>	S-63 6.5.1
<b>Test description</b>			
To confirm the user is informed when there is incompatibility between installed ENCs and the applied update exchange set.			

# IHO ENC Test Data Sets for ECDIS

Setup						
<p>No permits or ENCs installed</p> <p>Test data used:</p> <ol style="list-style-type: none"> <li>1) IHO.CRT/IHO.PUB [Pre-installed from previous tests]</li> <li>2) PERMIT.TXT</li> <li>3) BASE 1 WK23_07, BASE 2 WK30_06 &amp; BASE 3 WK27_07</li> <li>4) UPDATE WK37_07</li> </ol> <p>Test data location:</p> <p>D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management\Test 7g</p>						
Action						
<p>Install permits and load the Update and Base media at the location above.</p>						
Results						
<p>The ENC bases should load without error. However when the update media set is loaded the system should install the band 3 (Coastal) and band 5 (Harbour) ENC updates without error but the system must return the following warning:</p> <p><b>The Update Media is not compatible with currently installed ENCs. Please install “Base 2 issued in week 25/07 and dated 21 June 2007”and then continue with the update process,</b></p> <p>[The system will also display continuity errors as a result of non sequential loading when attempting to load and install the updates for GB40162A, GB40184A, GB40186D &amp; GBGB40202A.]</p> <p>Base media 2 used in this test is dated 20 July 2006 and pre dates the latest Base media 2.</p>						
Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition N°	Update N°	Edition N°	Update N°	
2.5.7g [BASE 1 WK23_07]	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	
2.5.7g [BASE 2 WK30_06]	GB40162A	9	0	9	0	Cells installed for this base but with the incompatibility warning
	GB40184A	2	3	2	3	
	GB40186D	1	1	1	1	
	GB40202A	4	0	4	0	
2.5.7g [BASE 3 WK27_07]	GB50162B	10	7	10	7	
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	2	1	2	1	
2.5.7g [UPDATE WK37_07]	GB302840	23	4	23	4	NE installed from WK37/07 Update
	GB303220	4	7	4	7	
	GB303420	3	12	3	12	
	GB303460	11	1	11	1	
	GB40162A	9	5	9	0	Cells not updated due to incompatible BASE 2
	GB40184A	3	5	2	3	
	GB40186D	1	7	1	1	
	GB40202A	5	2	4	0	
	GB50162B	11	0	11	0	NE installed from WK37/07 Update
	GB50162C					No updates for this cell
	GB50162D					No updates for this cell
	GB50182A	2	2	2	2	

## IHO ENC Test Data Sets for ECDIS

### 2.5.7 h) ENC Update Status Report

Test Reference	2.5.7 h)	IHO Reference	S-63 Annex C
<b>Test description</b>			
Confirm that the ECDIS is capable of executing the ENC Update status report as documented in S-63 edition 1.2.0 Annex C.			
<b>Setup</b>			
Pre-installed permits and data from previous test (2.5.7f). IHO certificate from previous tests.			
<b>Set system time to 10th February 2009</b>			
Test data used:			
1) IHO.CRT/IHO.PUB [Pre-installed] 2) PERMIT.TXT 3) Base [Exchange Set – GB303040] 4) Update [Exchange Set – GB303040 & GB50162D]			
Test data location:  D:\IHO S-64 [S-64 V 1.2.1]\7 ENC Data Management\Test 7f D:\IHO S-64 [S-64 V 1.2.1]\7 ENC Data Management\Test 7f\Base D:\IHO S-64 [S-64 V 1.2.1]\7 ENC Data Management\Test 7f\Update			
<b>Action</b>			
Ensure ECDIS has S-63 data installed as per test (2.5.7f). Locate and execute the ENC Update Status Report and inspect output. If ECDIS also supports route filtering of the ENC Status Report then construct a route intersecting with the cells loaded and run the ENC Status Report with the route filtered option.			
<b>Results</b>			
The ECDIS should report the status of all ENCs loaded in accordance with S-63. It should use the issue date of the exchange set as the reference date and should display its reference date as 2nd September 2009 (the SERIAL .ENC date of the last update loaded). The cells should show in the report as “up to date”. Then reset the system time to a 1st April 2010 – rerun the report, all the cells should show as “out of date”.			

### 2.5.7 i) ECDIS management of multiple exchange sets

Test Reference	2.5.7 i)	IHO Reference	S-63 6.5.1 & Sect 5 Appendix 2
<b>Test description</b>			
<b>ONLY FOR SYSTEMS THAT USE THE LATEST UPDATE EXCHANGE SET TO MANAGE THE IMPORT OF ENCs ACROSS MULTIPLE BASES</b>			
This optional test checks a system's ability to use the PERMIT.TXT;PRODUCTS.TXT & STATUS.LST file to manage the efficient loading of ENCs. Confirm the system provides intuitive prompts to the user when installing the ENC update and base media.			
<b>Setup</b>			
No ENC permits or ENC cells installed.			
Test data used:			
1) IHO.CRT/IHO.PUB [Pre-installed from test 2.5.7g] 2) PERMIT.TXT 3) Update Exchange Set (UPDATE WK19_07) 4) Base Exchange sets (BASE 1 WK28_06, BASE 2 WK30_06 & BASE 3 WK32_06)			
Test data location:			
D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management [Optional]\Test 7i]]			

## IHO ENC Test Data Sets for ECDIS

Action						
Results						
Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition N°	Update N°	Edition N°	Update N°	
7i [BASE 1 WK28_06]	GB302840	22	0	22	0	
	GB303220	4	1	4	1	
	GB303420	3	4	3	4	
	GB303460	10	3	10	3	
7i [BASE 2 WK30_06]	GB40162A	9	0			No ENC permits
	GB40184A	2	3			
	GB40186D	1	1			
	GB40202A	4	0			
7i [BASE 3 WK32_06]	GB50162B	10	3			No ENC permits
	GB50162C	9	1			
	GB50162D	5	1			
	GB50182A	1	5	1	5	
7i[UPDATE WK19_07]	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	NE installed from WK19/07 Update
	GB40162A	9	3			
	GB40184A	3	3			No ENC permits
	GB40186D	1	6			
	GB40202A	5	1			
	GB50162B	10	7			
	GB50162C	9	5			
	GB50162D	5	2			
	GB50182A	2	1	2	1	NE installed from WK19/07 Update

## IHO ENC Test Data Sets for ECDIS

### 2.5.7 j) ECDIS management of multiple exchange sets and multiple purchases

<b>Test Reference</b>	2.5.7 j)	<b>IHO Reference</b>	S-63 6.5.1 & Sect 5 Appendix 2		
<b>Test description</b>					
<b>ONLY FOR SYSTEMS THAT USE THE LATEST UPDATE EXCHANGE SET TO MANAGE THE IMPORT OF ENCs ACROSS MULTIPLE BASES</b>					
<i>This optional test is similar to Test 2.5.7i but covers the scenario where the user purchases additional ENC cells.</i>					
<b>Setup</b>					
No ENC permits or ENC cells installed.					
<i>Test data used:</i>					
<i>Purchase 1</i>					
1) IHO.CRT / IHO.PUB [Pre-installed]					
2) PERMIT.TXT					
3) UPDATE WK19_07					
4) Base Exchange set 1					
<i>Purchase 2</i>					
1) IHO.CRT [Pre-installed]					
2) PERMIT.TXT					
3) UPDATE WK37_07					
4) Base Exchange sets (2 & 3)					
<i>Test data location:</i>					
a) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management [Optional]\Test\7j\Purchase 1					
b) D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management [Optional]\Test\7j\Purchase 2					
<b>Results</b>					
In each instance the system should respond similar to the previous test (2.5.7i) and prompt the user to load the appropriate media and install the following ENC cells.					
Purchase 1 – The system will prompt for BASE 1 WK28_06 and install four cells [GB302840, GB303220, GB303420 and GB303460].					
Purchase 2 – (BASE1 has no new cells, new editions or updates. If the system maintains an up to date product listing the user should not be prompted to install this base). The system will prompt for BASE 2 WK25_07 [GB40162A & GB40184A] and finally BASE 3 WK27_07 [GB50162D].					
The results should be as specified in the table below. See additional comments in table below.					
Purchase 2, BASE 1 has no new cells, new editions or updates. If the system maintains an up to date product listing the user should not be prompted to install this base.					
<b>Test</b>	<b>Cell Name</b>	<b>Exchange Set Content</b>		<b>Expected SENC Content</b>	<b>Comments</b>
		<b>Edition N°</b>	<b>Update N°</b>	<b>Edition N°</b>	
7j – Purchase 1 [BASE 1 WK28_06]	GB302840	22	0	22	0
	GB303220	4	1	4	1
	GB303420	3	4	3	4
	GB303460	10	3	10	3
7j – Purchase 1 [BASE 2 WK30_06]	GB40162A	9	0		No ENC permits
	GB40184A	2	3		
	GB40186D	1	1		
	GB40202A	4	0		
7j – Purchase 1 [BASE 3 WK32_06]	GB50162B	10	3		No ENC permits
	GB50162C	9	1		
	GB50162D	5	1		
	GB50182A	1	5	1	
				5	

# IHO ENC Test Data Sets for ECDIS

7j – Purchase 1 [UPDATE WK19_07]	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	<i>NE installed from WK19/07 Update</i>
	GB40162A	9	3			<i>No ENC permits</i>
	GB40184A	3	3			
	GB40186D	1	6			
	GB40202A	5	1			
	GB50162B	10	7			
	GB50162C	9	5			
	GB50162D	5	2			
	GB50182A	2	1	2	1	<i>NE installed from WK19/07 Update</i>
7j – Purchase 2 [BASE 1 WK23_07]	GB302840	22	16	22	16	<i>There are no new cells, new editions or update</i>
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	
7j – Purchase 2 [BASE 2 WK25_07]	GB40162A	9	3	9	3	<i>New permit</i>
	GB40184A	3	3	3	3	<i>No ENC permits</i>
	GB40186D	1	6			
	GB40202A	5	1			
7j – Purchase 2 [BASE 3 WK27_07]	GB50162B	10	7			
	GB50162C	9	5			
	GB50162D	5	2	5	2	<i>New permit</i>
7j – Purchase 2 [UPDATE WK37_07]	GB302840	23	4	23	4	
	GB303220	4	7	4	7	
	GB303420	3	12	3	12	
	GB303460	11	1	11	1	
	GB40162A	9	5	9	5	<i>No ENC permits</i>
	GB40184A	3	5	3	5	
	GB40186D	1	7			
	GB40202A	5	2			
	GB50162B	11	0			<i>No updates for this cell</i>
	GB50162C					
	GB50162D					
	GB50182A	2	2	2	2	

**2.5.7 k) ECDIS management of multiple exchange sets**

<b>Test Reference</b>	2.5.7 k)	<b>IHO Reference</b>	S-63 6.5.1 & Sect 5 Appendix 2			
<b>Test description</b>						
<b>ONLY FOR SYSTEMS THAT USE THE LATEST UPDATE EXCHANGE SET TO MANAGE THE IMPORT OF ENCs ACROSS MULTIPLE BASES</b>						
Confirm the system displays a relevant warning when installing a base media that is newer than the latest installed update exchange set.						
<b>Setup</b>						
No ENC permits or ENC cells installed. <i>Test data used:</i> 1) IHO.CRT / IHO.PUB [Pre-installed] 2) PERMIT.TXT 3) WK19_07 Update Exchange Set 4) Base Exchange sets (Bases 1-3)						
<i>Test data location:</i> D:\IHO S-64 [S-63 TDS v1.2.1]\7 ENC Data Management [Optional]\Test 7k						
<b>Action</b>						
Install the permits at the location above then load the “UPDATE WK19_07” exchange set. Load the base exchange sets as prompted by the system, i.e.: BASE Media 1 dated 06 July 2006 BASE Media 2 dated 20 July 2006 BASE Media 3 dated 03 August 2006 [Not available] Attempt to load BASE 3 WK24_07 instead of the recommended BASE 3 (unavailable) above. Install WK19/07 Update to bring all ENC up to date.						
<b>Results</b>						
The system should read the permit file and the full products listing from the WK19/07 Update. The system should read the product listing to determine where all licenced ENC base [EN] cells are located, then using the STATUS.LST file prompt users to install the appropriate BASE media similar to test 7h. For example, The system should report a warning message when attempting to load BASE 3 WK27_07 similar to the following example: “This base media is not compatible with the currently installed Update media. Please install “Base media 3 dated 03 August 2006”. The system can load all ENCs (base and updates) from Base 3 but when finally installing the WK19/07 update it would be useful if a message is displayed informing the user of the following: “A newer update is available not all ENCs may be up to date”  The Base 3 exchange set used in this test is dated 21 July 2007 which is newer than the latest available update exchange set.						
Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition N°	Update N°	Edition N°	Update N°	
7k [BASE 1 WK28_06]	GB302840	22	0	22	0	
	GB303220	4	1	4	1	
	GB303420	3	4	3	4	
	GB303460	10	3	10	3	
7k [BASE 2 WK30_06]	GB40162A	9	0	9	0	
	GB40184A	2	3	2	3	
	GB40186D	1	1	1	1	
	GB40202A	4	0	4	0	
7k [BASE 3 WK24_07]	GB50162B	11	0	11	0	BASE 3 is newer than the installed WK19/07 Update.
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	1	5	1	5	

## IHO ENC Test Data Sets for ECDIS

<i>7k</i> <i>[UPDATE</i> <i>WK19_07]</i>	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	
	GB40162A	9	3	9	3	
	GB40184A	3	3	3	3	
	GB40186D	1	6	1	6	
	GB40202A	5	1	5	1	
	GB50162B	10	7	11	0	
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	2	1	2	2	
						These ENC Cells are installed from WK24/07 Base 3

## IHO ENC Test Data Sets for ECDIS

### 2.5.8 Data Exchange Media

#### 2.5.8 a) Exchange Set and Media Delivery

<b>Test Reference</b>	2.5.8 a)	<b>IHO Reference</b>	S-63 7 & S-63 Appendix 2
<b>Test description</b>			
<i>To check that the system can import a single exchange from a CD-ROM or from any other interface or data storage media that may be supplied to the ECDIS for that purpose.</i>			
<b>Setup</b>			
Certificate/Public Key as installed for test 2.5.7a. No pre-installed permits or ENCs. Test data used: 1) IHO.CRT / IHO.PUB [Pre-installed] 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB301620, GB301640 and GB301660) Test data location: D:\IHO S-64 [S-63 TDS v1.2.1]\8 Data Exchange Media\Test 8a			
<b>Action</b>			
1. Install the permits and certificate/public key stored in the location above. 2. Copy the exchange set [formatted as described in section 7 of the standard] from the same location to the following media: a) Hard Drive (e.g. C:\) b) CD-ROM c) DVD d) USB Memory Stick e) Other [e.g. Bluetooth or other remote means] 3. Load the exchange set into the system using those options available to the ECDIS.			
<b>Results</b>			
All ENCs install correctly without error regardless of media or method. After installation without errors or warnings the system should be up to date as follows: GB301620 (edition # 3 update # 0) GB301640 (edition # 4 update # 0) GB301660 (edition # 5 update # 0)			

#### 2.5.8 b) Single Media containing Multiple Exchange Sets

<b>Test Reference</b>	2.5.8 b)	<b>IHO Reference</b>	S-63 7 & S-63 Appendix 2
<b>Test description</b>			
<i>To check that the system can import a multiple exchange sets from the media defined in test 2.5.8a. Confirm that the system imports all test exchange sets without error or omission.</i>			
<b>Setup</b>			
Certificate/Public Key as installed for test 2.5.8a. No pre-installed permits or ENCs. Test data used: 1) IHO.CRT / IHO.PUB [Pre-installed] 2) PERMIT.TXT 3) M01X01 - Media Exchange Set containing the following: Base Exchange Set 1 [B1]: GB100001, GB100002 & GB100004 Base Exchange Set 2 [B2]: GB281600, GB281800, GB282000 & GB283000 Base Exchange Set 3 [B3]: GB301620, GB301640 & GB301660 Test data location: D:\IHO S-64 [S-63 TDS v1.2.1]\8 Data Exchange Media\Test 8b			
<b>Action</b>			
Install permits and load all exchange sets contained on the media. Uninstall and repeat for all media types.			

Results
All three exchange sets and their associated ENC cells shall be loaded into the ECDIS without error or omission.
The system should be up to date as follows:
After installation of 8b [B1]: GB100001 (edition # 3 update # 6) GB100002 (edition # 13 update # 5) GB100004 (edition # 7 update # 1)
After installation of 8b [B2]: GB281600 (edition # 1 update # 1) GB281800 (edition # 1 update # 0) GB282000 (edition # 1 update # 0) GB283000 (edition # 1 update # 4)
After installation of 8b [B3]: GB301620 (edition # 3 update # 0) GB301640 (edition # 4 update # 0) GB301660 (edition # 5 update # 0)

### 2.5.8 c) Multiple exchange sets across multiple media sets

Test Reference	2.5.8 c)	IHO Reference	S-63 7 & S-63 Appendix 2
<b>Test description</b>			
To test how the system manages multiple exchanges sets across several media sets. Confirm that the system is intuitive and guides the user through the cell loading process as defined in S-63.			
<b>Setup</b>			
Certificate/Public Key as installed for test 2.5.8b. No pre-installed permits or ENCs.			
Test data used:			
1) IHO.CRT / IHO.PUB [Pre-installed]			
2) PERMIT.TXT (Valid cell permits for GB100001, GB100002, GB100004, GB281600, GB281800, GB301660, GB40162A & GB61021B)			
3) M01X01 – Update Media set containing various NE & updates for cells below.			
4) M01X02 – Base Media Sets containing the following:  Base Exchange Set 1 [B1]: GB100001, GB100002 & GB100004 Base Exchange Set 2 [B2]: GB281600, GB281800, GB282000 & GB283000 Base Exchange Set 3 [B3]: GB301620, GB301640 & GB301660 M02X02 - Media Exchange Set containing the following: Base Exchange Set 1 [B4]: GB40162A, GB40162B & GB40162C Base Exchange Set 1 [B5]: GB58911B, GB58913A, GB58932A & GB58932B Base Exchange Set 1 [B6]: GB61011A, GB61021A, GB61021B & GB61032A			
Test data location:			
a) D:\IHO S-64 [S-63 TDS v1.2.1]\8 Data Exchange Media\Test 8c			
b) D:\IHO S-64 [S-63 TDS v1.2.1]\8 Data Exchange Media\Test 8c\UPDATE MEDIA			
c) D:\IHO S-64 [S-63 TDS v1.2.1]\8 Data Exchange Media\Test 8c\BASE MEDIA			
<b>Action</b>			
Install permits from the location at (a) above and then insert the update media set at (b). The system should then guide the user through the rest of the ENC installation process. The base media is held in (c).			

**Results**

*The system shall read the MEDIA.TXT file on the update media and prompt the user to install the appropriate media based on installed valid permits. All licenced ENCs and updates shall be installed (see the expected system status below).*

*(BASE MEDIA 1 was re-issued in WK 40/07 (20071004) containing a re-issue of “Base Exchange Set 1”). Licenced permits are only a subset of ENC cells contained within the base exchange sets across both media.*

*The system should be up to date as follows:*

*After installation of 8c [B1]:*

*GB100001 (edition # 3 update # 6)  
GB100002 (edition # 13 update # 5)  
GB100004 (edition # 7 update # 1)*

*After installation of 8c [B2]:*

*GB281600 (edition # 1 update # 1)  
GB281800 (edition # 1 update # 0)  
GB282000 (no permit).  
GB283000 (no permit)*

*After installation of 8c [B3]:*

*GB301620 (no permit)  
GB301640 (no permit)  
GB301660 (edition # 5 update 0)*

*After installation of 8c [B4]:*

*GB40162A (edition # 9 update # 3)  
GB40162B (no permit)  
GB40162C (no permit)*

*After installation of 8c [B5]:*

*GB58911B (no permit)  
GB58913A (no permit)  
GB58932A (no permit)  
GB58932B (no permit)*

*After installation of 8c [B6]:*

*GB61011A (no permit)  
GB61021A (no permit)  
GB61021B (edition # 1 update # 1)  
GB61032A (no permit)*

*After installation of 8c [U1]:*

*GB100001 (edition # 3 update # 7)  
GB100002 (edition # 13 update # 7)  
GB100004 (edition # 8 update # 0). New edition is installed from update media.  
GB281600 (edition # 1 update # 2)  
GB281800 (edition # 1 update # 1)  
GB301660 (edition # 5 update # 1)  
GB40162A (edition # 9 update # 5)  
GB61021B (edition # 1 update # 2)*

## IHO ENC Test Data Sets for ECDIS

### 2.5.8 d) Media validation of encrypted ENC service status

Test Reference	2.5.8 d)	IHO Reference	S-63 7 & S-63 Appendix 2
<b>Test description</b>			
<i>To confirm that the system performs a check of the update media to establish whether the system has the latest base data installed. Check that the system displays an appropriate warning when identifying a base exchange set that is newer than the installed version.</i>			
<b>Setup</b>			
<i>All data installed from the previous test (2.5.8c).</i>			
<i>Test data used:</i>			
<i>M01X01 (WK48/07 Update Media) &amp; M01X02 (new WK40/07 Base Media)</i>			
<i>Test data location:</i>			
<i>D:\IHO S-64 [S-63 TDS v1.2.1]\8 Data Exchange Media\Test 8d</i>			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1) Load the UPDATE media from the location above.</li> <li>2) When the warning message is displayed proceed to install available updates.</li> <li>3) Load the correct BASE media as prompted by the ECDIS at the same location.</li> <li>4) Load the UPDATE media again to bring all licenced cells up to date.</li> </ol>			
<b>Results</b>			

- 1) The system must return a warning stating that one of the base exchange sets has been re-issued as follows:  
**"The Update Media is not compatible with currently installed ENCs.**  
**Please load the latest version of 'BASE MEDIA 1 – Week 40/07 - dated 04 October 2007' and continue with the update process".**
- 2) When continuing the following errors must be reported:  
 Updates '9' cannot be installed for cell **GB100002** (sequential error reported) [Edition 13, Updates 1 to 8 issued on the new B1].  
 Update '2-10' cannot be installed for cell **GB100004** (sequential error reported) [Edition 8, Update 1-7 issued on the new B1].  
**GB40162A.006** must update without error.
- 3) Additional updates load from 'Base Exchange Set 1'
- 4) All licenced ENC cells are updated without errors as described in the expected SENC status below.

The system should be up to date as follows:

After installation of 8d [U1] initial load:

**GB100002** (edition # 13 update # 7). Data set (edition # 13 update # 9).

**GB100004** (edition # 8 update # 0). Data set (edition # 8 update # 10).

**GB40162A** (edition # 9 update # 6)

After installation of 8d [New Media 1of2 – New B1 Exchange Set]:

**GB100001** (edition # 3 update # 7)

**GB100002** (edition # 13 update # 8)

**GB100004** (edition # 8 update # 7)

After installation of 8d [B2]:

**GB281600** (edition # 1 update # 2)

**GB281800** (edition # 1 update # 1)

**GB282000** (no permit).

**GB283000** (no permit)

After installation of 8d [B3]:

**GB301620** (no permit)

**GB301640** (no permit)

**GB301660** (edition # 5 update # 1)

After installation of 8d [U1] final update:

**GB100002** (edition # 13 update # 9)

**GB100004** (edition # 8 update # 10)

**GB281600** (edition # 1 update # 2)

**GB281800** (edition # 1 update # 1)

**GB301660** (edition # 5 update # 1)

**GB40162A** (edition # 9 update # 6)

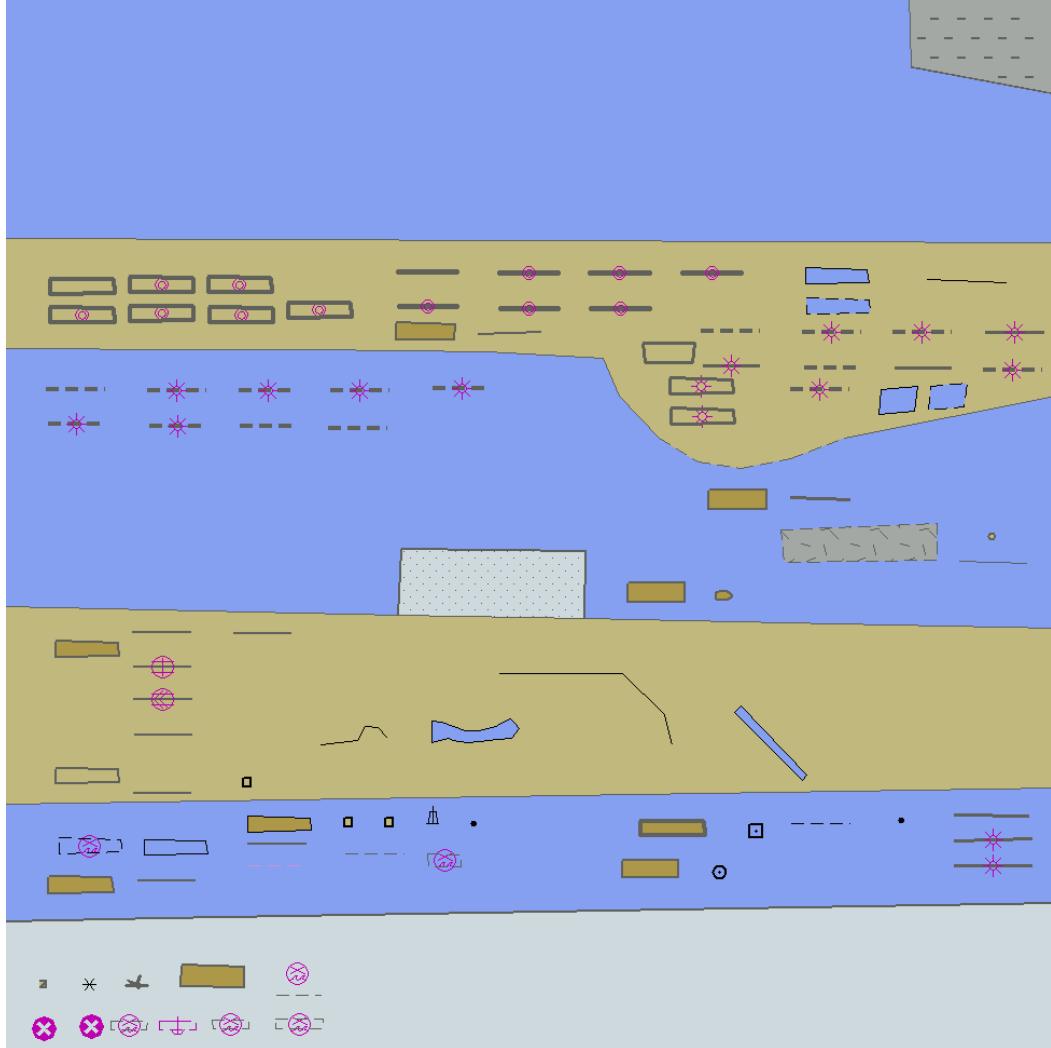
**GB61021B** (edition # 1 update # 2)

# IHO ENC Test Data Sets for ECDIS

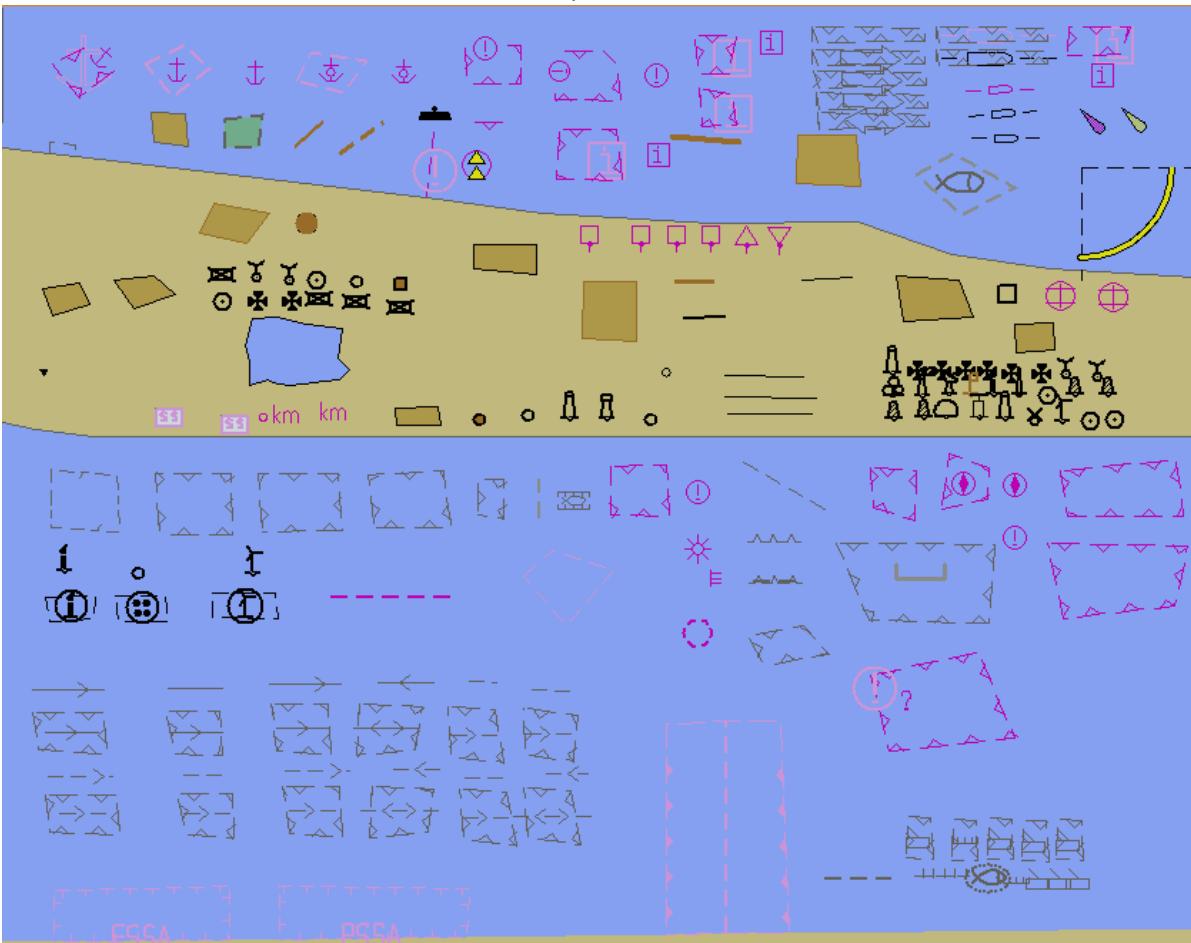
## 3 Chart Display

### 3.1 Display of ENC data

#### 3.1.1 Display Base category

Test Reference	3.1.1	IHO Reference	S-52 14.3
<b>Test description</b>			
<p>The purpose of the test is to verify by observation that ECDIS correctly displays all ENC objects included in the IMO Display Base category. The test is performed by loading to ECDIS test S-57 cell and checking display against graphical plots. The test ENC cell AA5DDBASE.000 contains all ENC objects belonging to Display Base according to the IHO S-52 Presentation Library.</p>			
<b>Setup</b>			
<p>Load cell AA5DDBASE.000 from 3.1 ENC Display\Base\ENC_ROOT with the following settings:</p> <ul style="list-style-type: none"> <li>Select Viewing group layer Base</li> <li>Set the safety contour value to 10 m</li> <li>Set the safety depth value to 10 m</li> <li>Select Symbolized Boundaries</li> <li>Select Text Display Off</li> </ul>			
<b>Action</b>			
<p>Check ENC symbols shown in the ECDIS against the graphical plot.</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should be shown like in the picture below.</p> 			

### 3.1.2 Standard Display category

<b>Test Reference</b>	3.1.2	<b>IHO Reference</b>	S-52 14.3
<b>Test description</b>			
<p>The purpose of the test is to verify by observation that ECDIS correctly displays all ENC objects included in the IMO Standard Display category. The test is performed by loading to ECDIS test S-57 cell and checking display against graphical plots.</p> <p>The test ENC cell AA5STNDR.000 contains depth and land areas from Display Base plus all ENC objects belonging to Standard Display according to the IHO S-52 Presentation Library. The objects belonging to Standard Display are to be shown if Standard Display is selected in ECDIS HMI and should be disappearing in the Display Base mode.</p>			
<b>Setup</b>			
<p>Load cell AA5STNDR.000 from 3.1 ENC Display\Standard\ENC_ROOT with the following settings:</p> <p>Select Viewing group layer Standard Display</p> <p>Set the safety contour value to 10 m</p> <p>Set the safety depth value to 10 m</p> <p>Select Symbolized Boundaries</p> <p>Select Simplified Points</p> <p>Select Text Display Off</p> <p>Set Scale min Off</p>			
<b>Action</b>			
<p>Switch on Standard Display. Check ENC symbols shown in ECDIS against graphical plot.</p>			
<b>Results</b>			
<p>Confirm that depth and land areas from Display Base are shown</p> <p>The ENC in the ECDIS should be shown as in the picture below.</p> 			

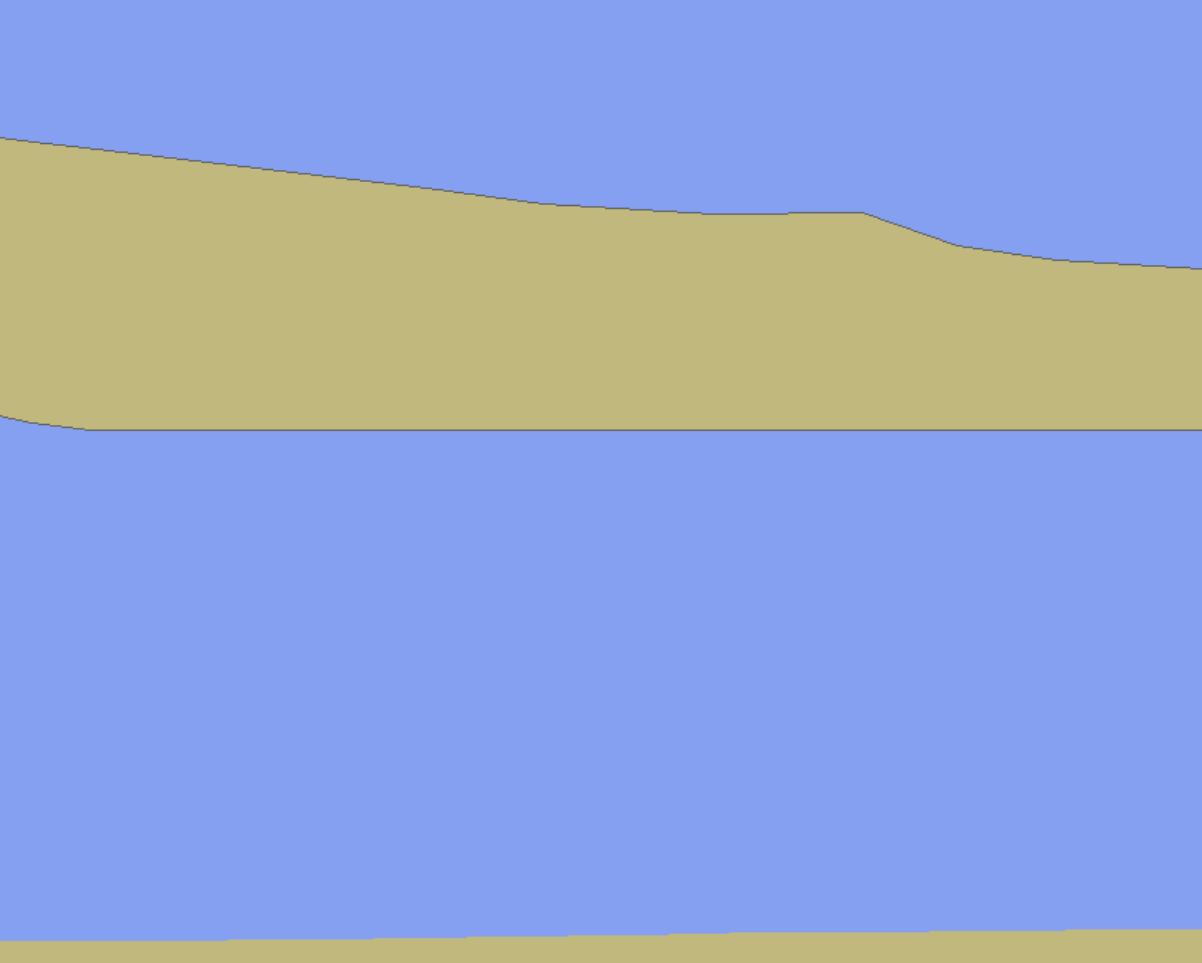
## IHO ENC Test Data Sets for ECDIS

Action
Select all Text groups. Check ENC symbols shown in ECDIS against graphical plot.
Results
The ENC in the ECDIS should be shown as in the picture below.

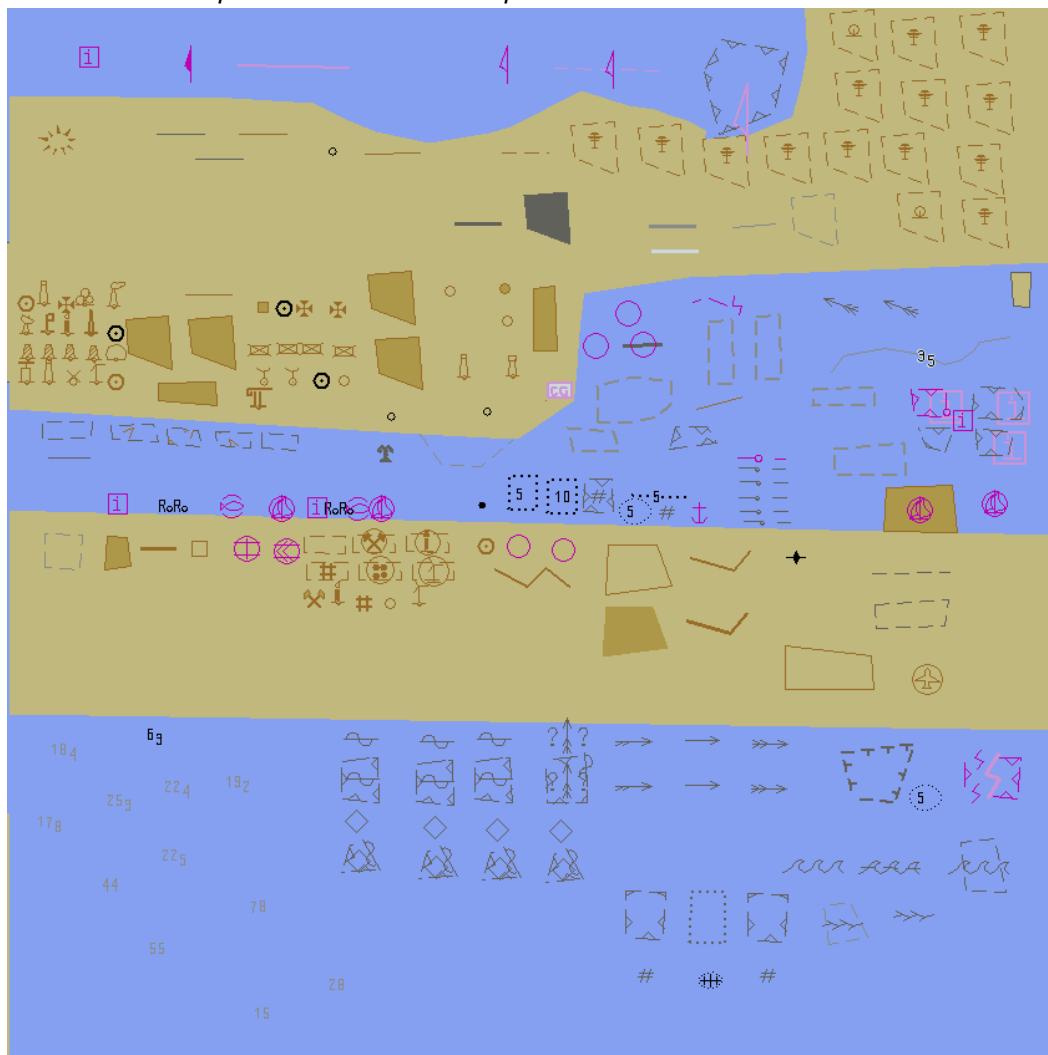
The ENC in the ECDIS should be shown as in the picture below.

## IHO ENC Test Data Sets for ECDIS

Action
<i>Switch on Display Base. Check ENC symbols shown in ECDIS against graphical plot.</i>
Results
<i>The ENC in the ECDIS should be shown as in the picture below.</i>



### 3.1.3 Other Display category

Test Reference	3.1.3	IHO Reference	S-52 14.3
Test description			
<p>The purpose of the test is to verify by observation that ECDIS correctly displays all ENC objects included in the IMO Other Display category. The test is performed by loading to ECDIS test S-57 cell and checking display against graphical plots.</p> <p>The test ENC cell AA50THER.000 contains depth and land areas from Display Base plus all ENC objects belonging to Other Display according to the IHO S-52 Presentation Library.</p> <p>The objects belonging to Other Display are to be shown if Other (or All) display is selected in ECDIS HMI and should be disappearing in the Display Base or Standard Display modes</p>			
Setup			
<p>Load cell AA50THER.000 from 3.1 ENC Display\Other\ENC_ROOT with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 10 m</p> <p>Set the safety depth value to 10 m</p> <p>Select Symbolized Boundaries</p> <p>Select Text Display Off</p> <p>Select Shallow water dangers Off</p> <p>If provided, select optional Contour label</p>			
Action			
<p>Switch on Other Display. Check every ENC symbol shown in ECDIS against graphical plot.</p>			
Results			
<p>The objects are shown as presented in the screen plot below</p> 			

## IHO ENC Test Data Sets for ECDIS

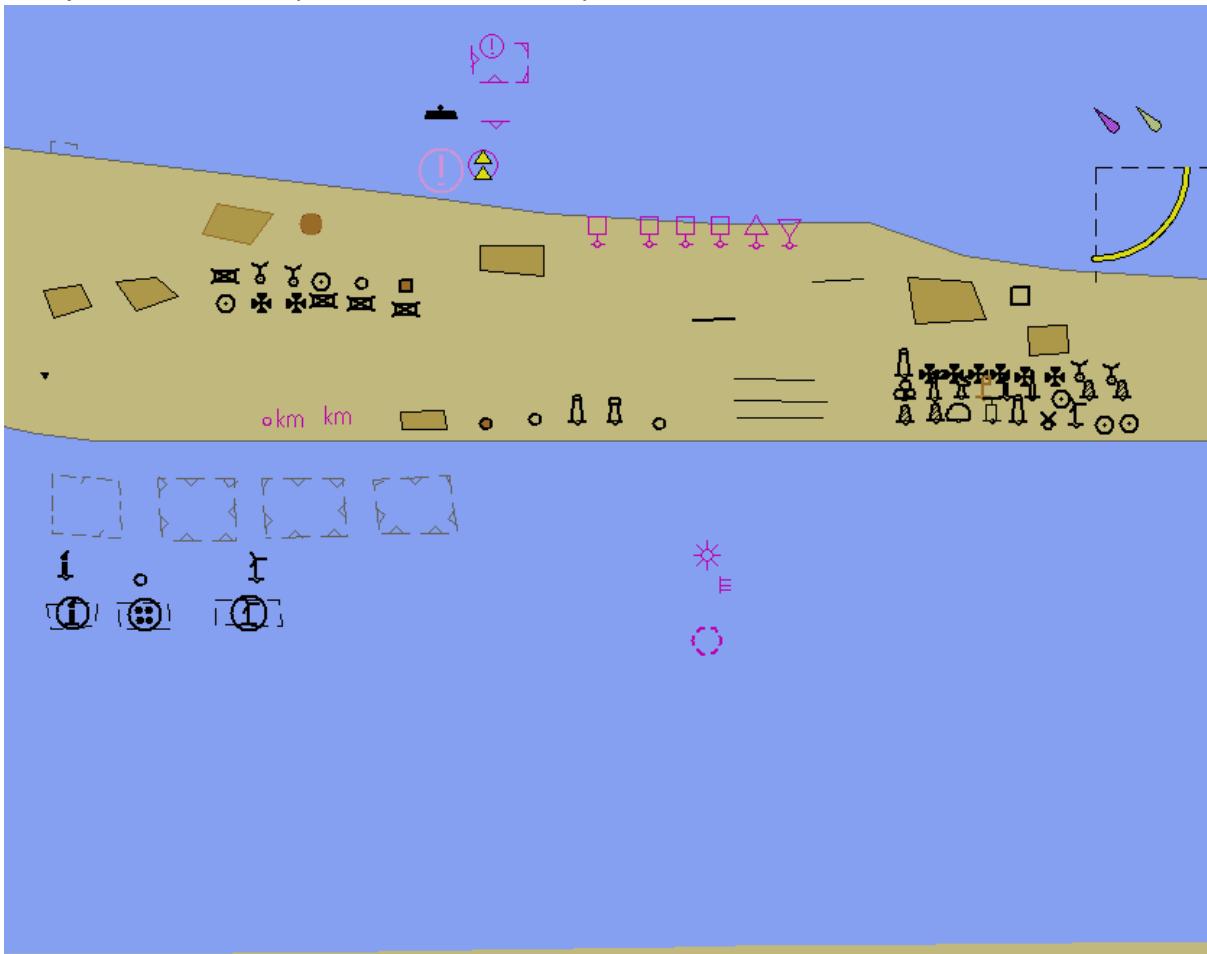
Action
<i>Switch on Display Base. Check ENC display in ECDIS against graphical plot</i>
Results
<i>The ENC in the ECDIS should be shown as in the picture below.</i>



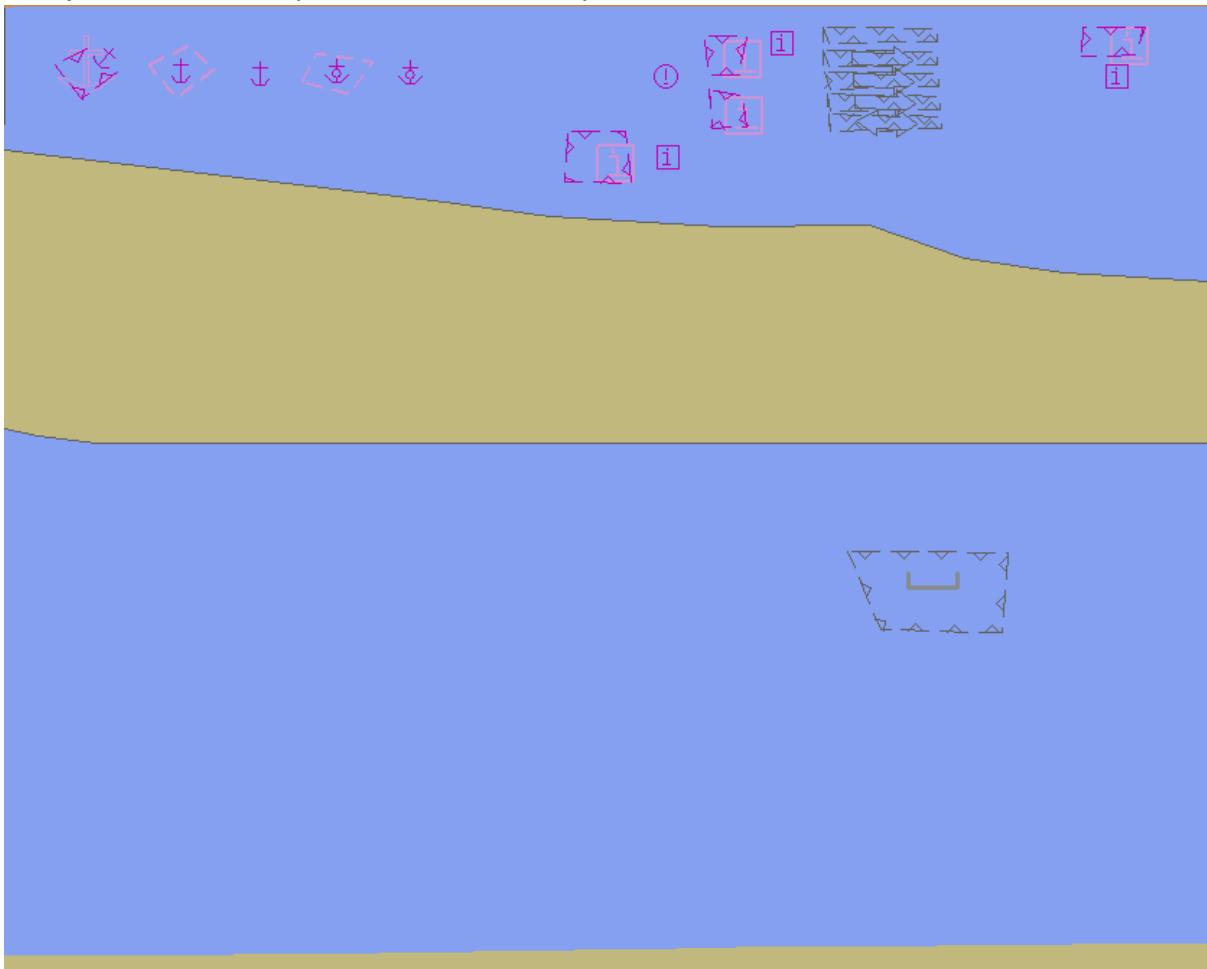
**3.1.4 ECDIS Viewing groups names. Standard Display**

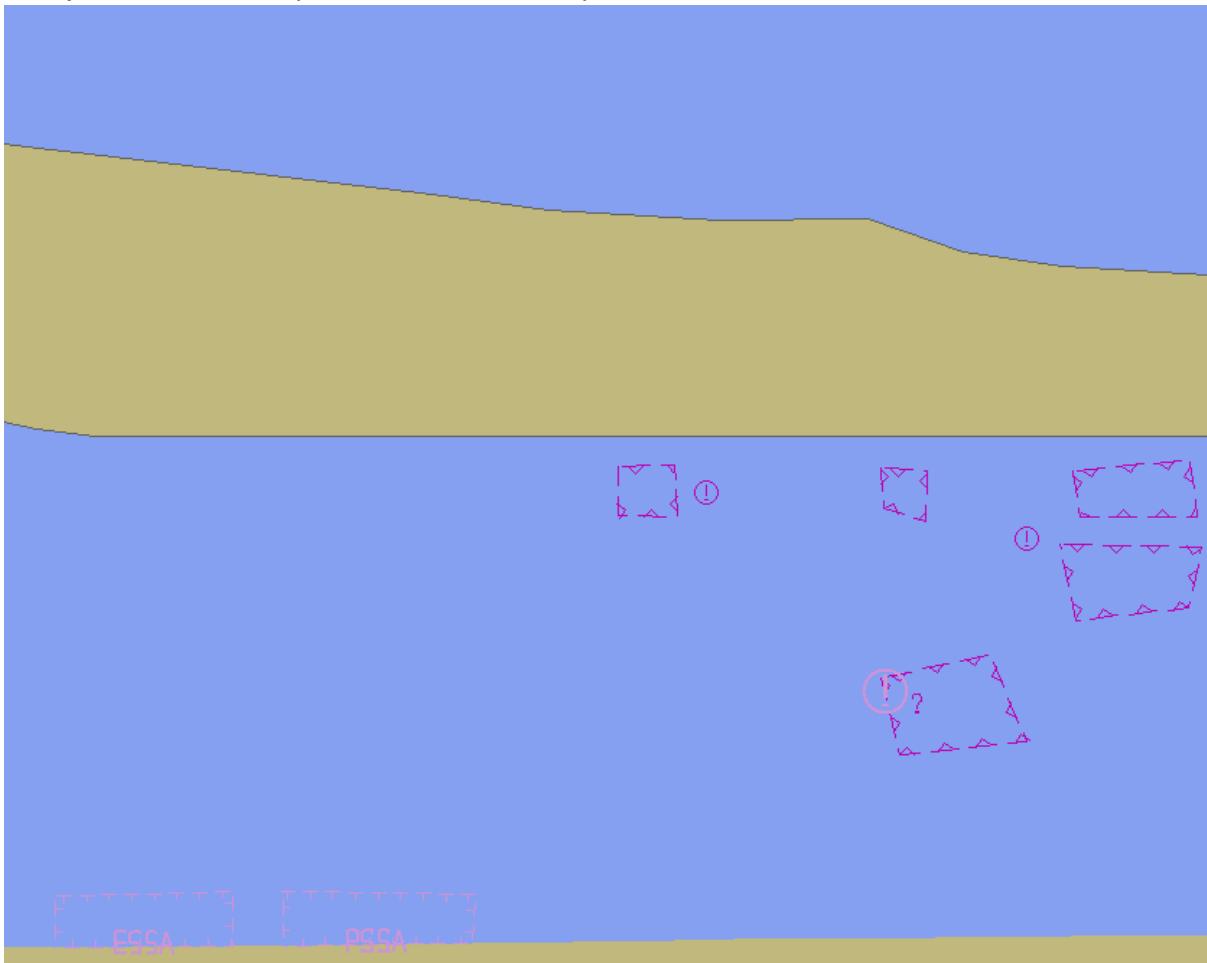
<b>Test Reference</b>	3.1.4	<b>IHO Reference</b>	S-52 14.3
<b>Test description</b>			
<p><i>The purpose of the test is to verify that ECDIS is able to change ENC display settings by standardized controls. Names of the controls, located under the Standard Display section of ECDIS should switch on and off certain viewing layers and should comply with requirements of IHO S-52 Presentation Library Edition 4.0.</i></p>			
<b>Setup</b>			
<p>Load cell AA5STNDR.000 from 3.1 ENC Display\Standard\ENC_ROOT with the following settings:</p> <p>Select Viewing group layer Standard</p> <p>Set the safety contour value to 10 m</p> <p>Set the safety depth value to 10 m</p> <p>Select Symbolized Boundaries</p> <p>Select Simplified Point Symbols.</p>			
<b>Action</b>			
<p>Switch on Standard Display. Check that ECDIS HMI contains standardized controls that can switch on and off certain objects from the chart</p>			
<b>Results</b>			
<p>Confirm that the following controls are available at ECDIS HMI</p> <p>Drying line</p> <p>Buoys, beacons, aids to navigation</p> <p>    Buoys, beacons, structures</p> <p>    Lights</p> <p>Boundaries and limits</p> <p>Prohibited and restricted areas</p> <p>Chart scale boundaries</p> <p>Cautionary notes</p> <p>Ships' routeing systems and ferry routes</p> <p>Archipelagic sea lanes</p> <p>Miscellaneous</p>			

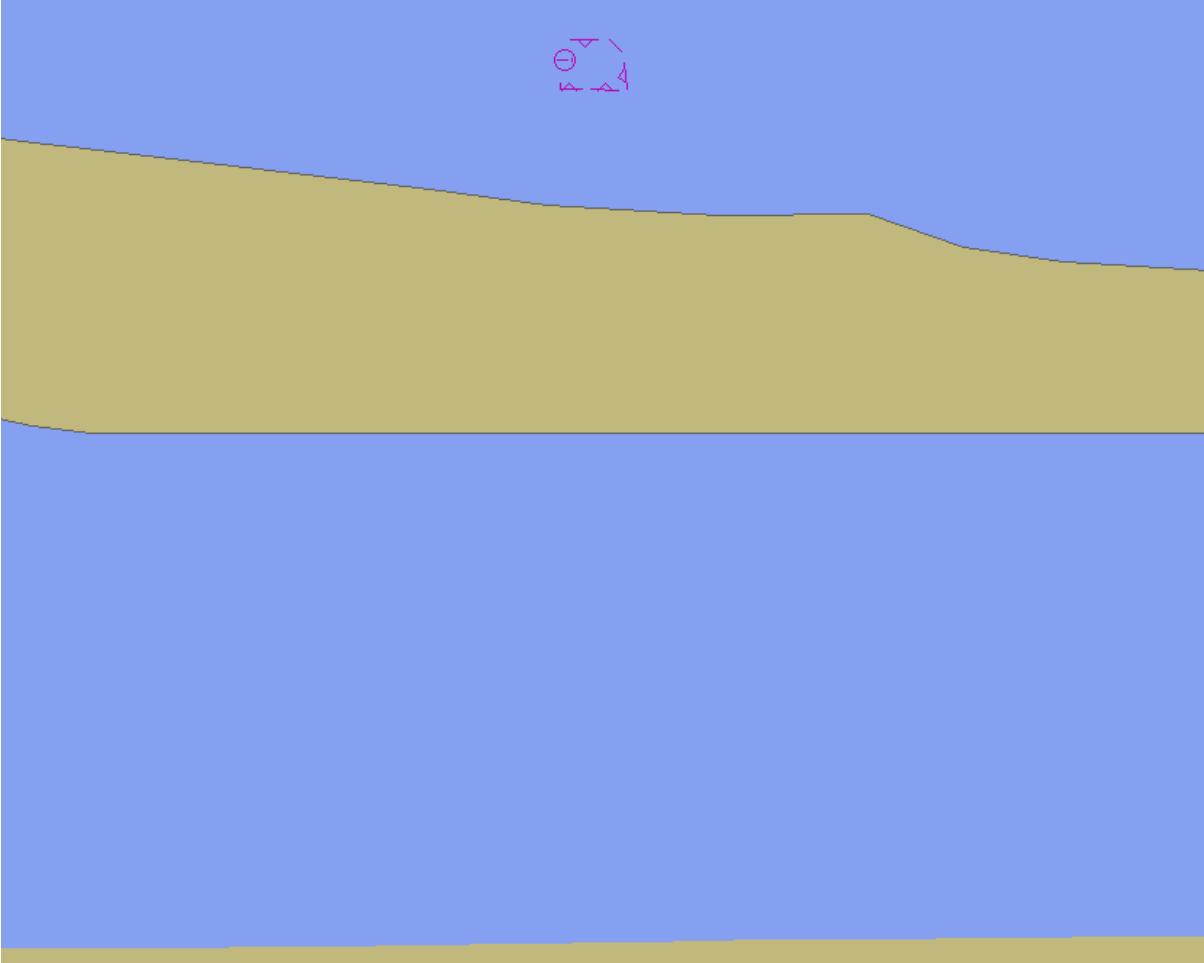
Action
<p>Switch off all controls and switch on only the “<b>Drying line</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Buoys, beacons, aids to navigation</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

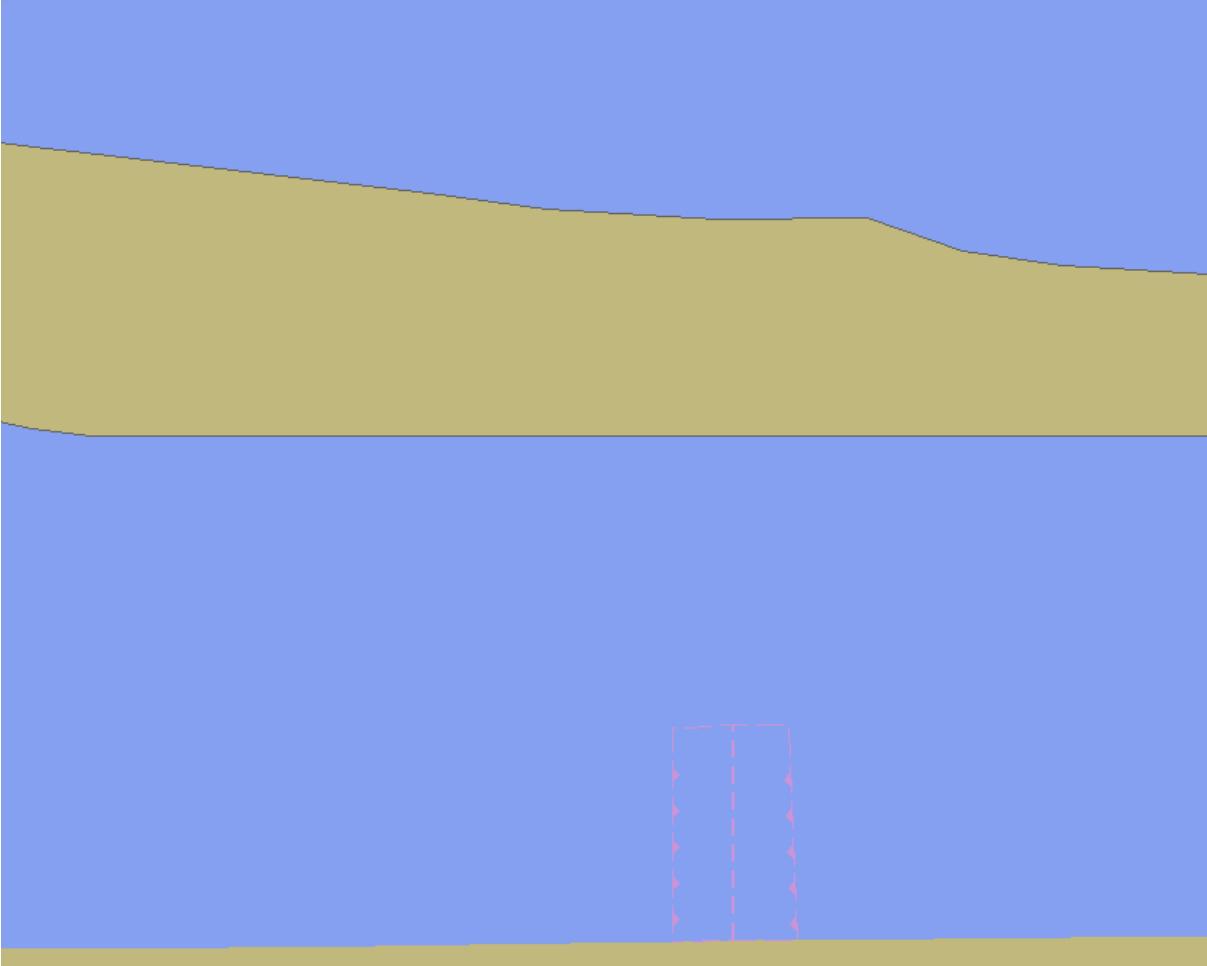
## IHO ENC Test Data Sets for ECDIS

Action
<p>Switch off all controls and switch on only the “<b>Boundaries and limits</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

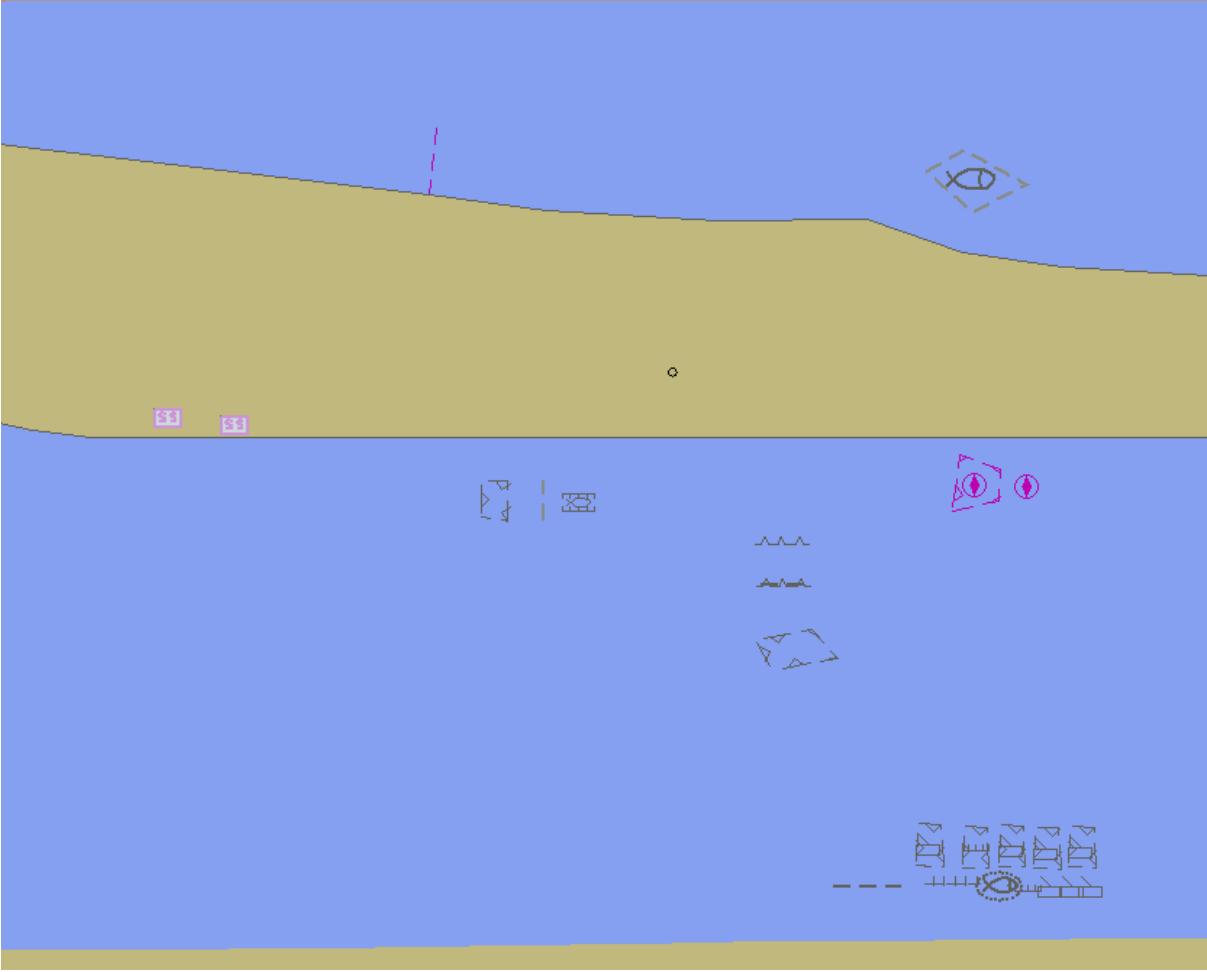
Action
<p>Switch off all controls and switch on only the “<b>Prohibited and restricted areas</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Cautionary notes</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Ships’ routeing systems and ferry routes</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Archipelagic sea lanes</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below.</p> 

Action
Switch off all controls and switch on only the “ <b>Miscellaneous</b> ” control. Verify that the objects are displayed correctly as presented in the plot.
Results
The objects are shown as presented in the screen plot below.



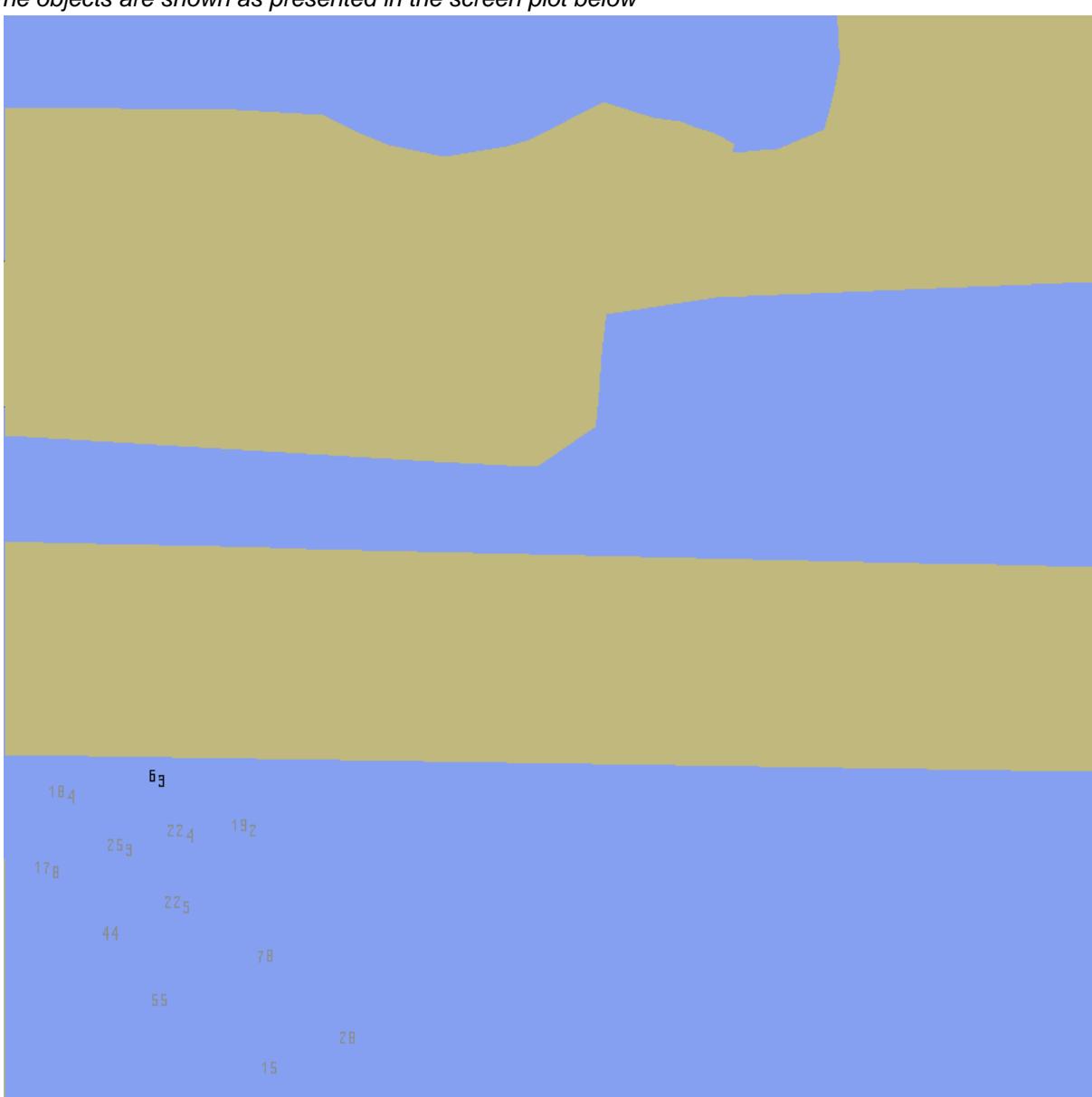
## IHO ENC Test Data Sets for ECDIS

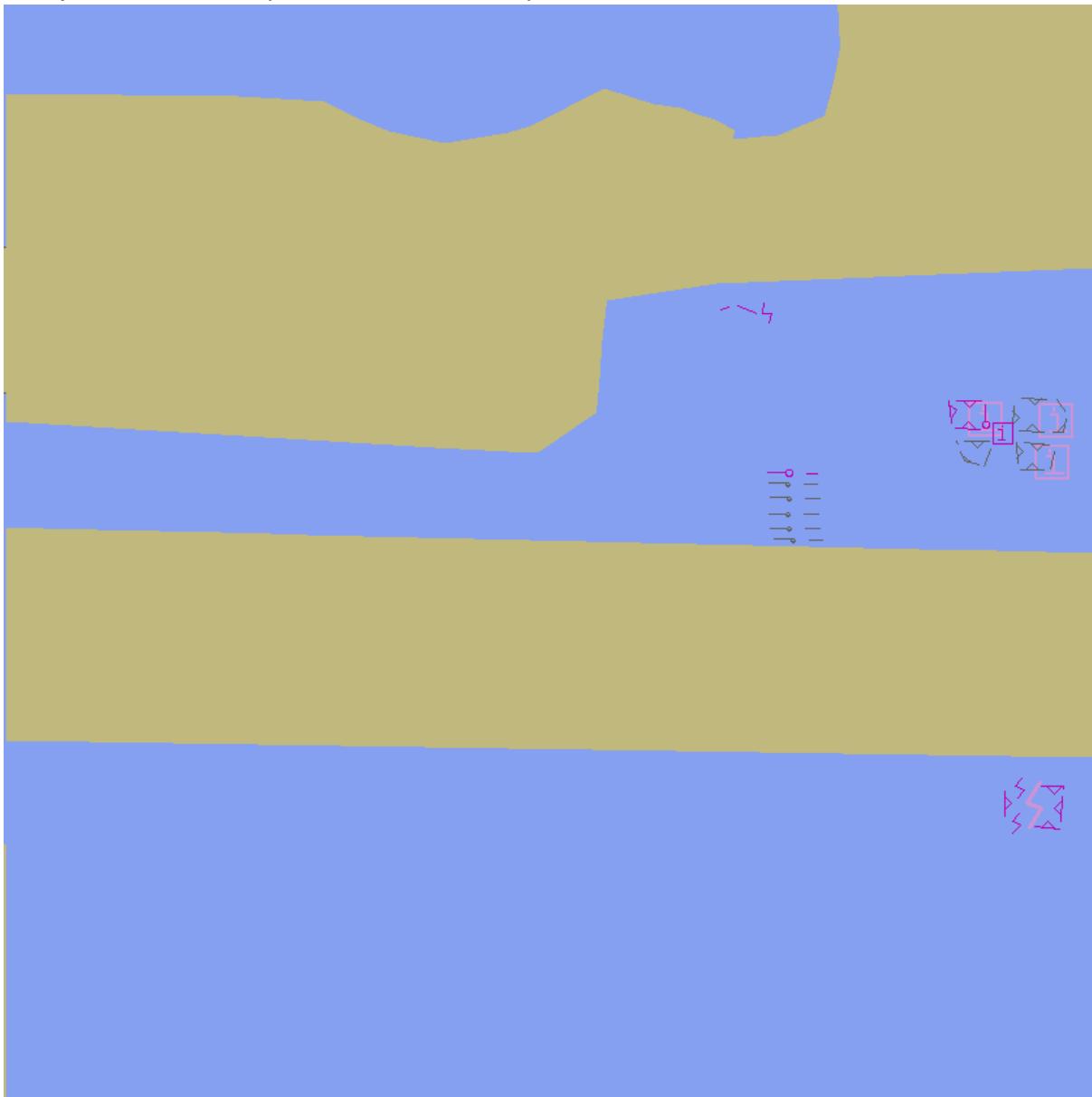
Action
<p>Load all cells from 2.1.1 Power Up\ENC_ROOT</p> <p>Centre the display on position 32°28.500' S 60°59.000' E and then zoom in to a scale of 1:20,000</p> <p>Switch off all controls and switch on only the “<b>Chart scale boundaries</b>” control.</p> <p>Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

### 3.1.5 ECDIS Viewing Layers. Other Display

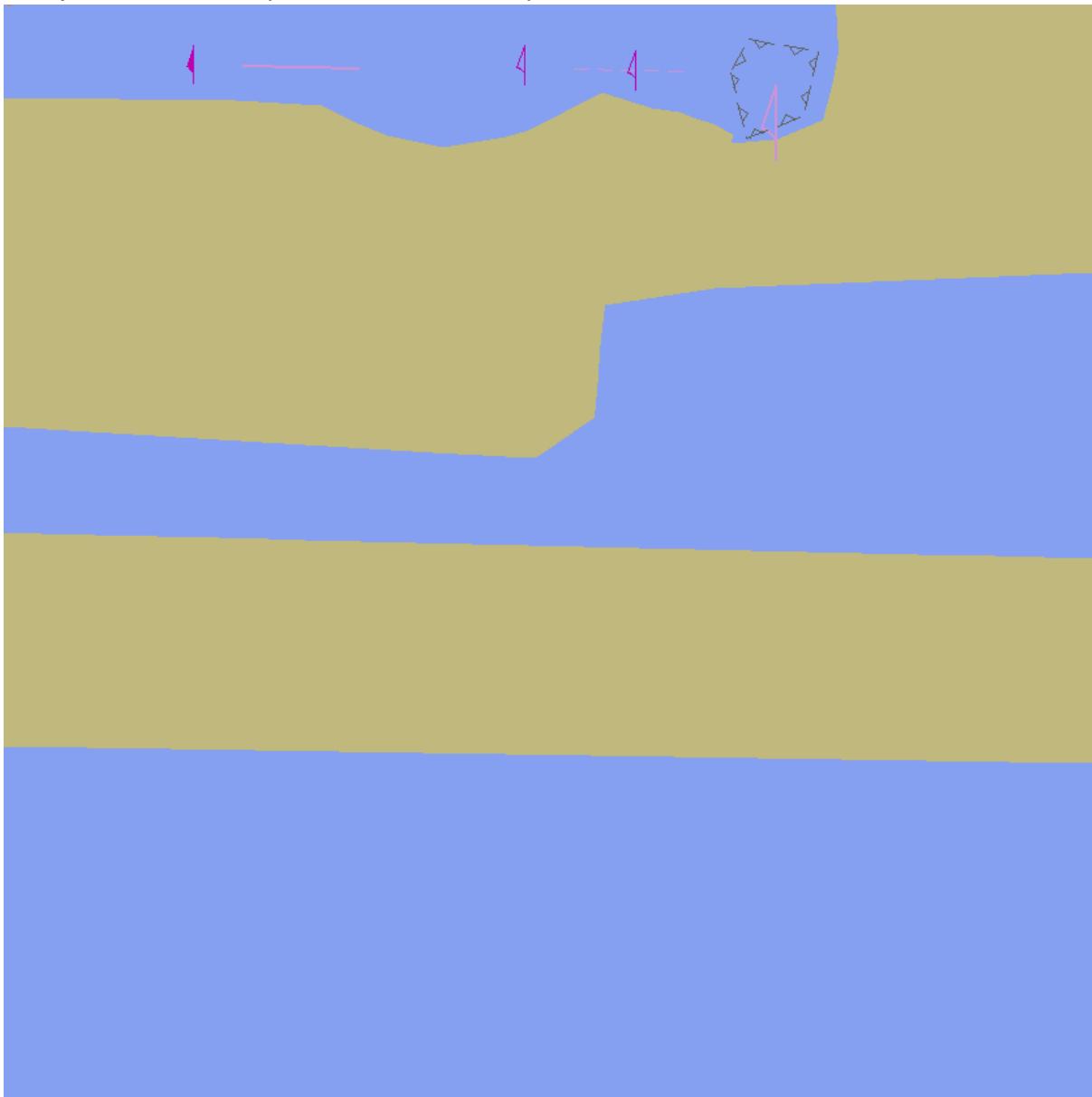
<b>Test Reference</b>	3.1.5	<b>IHO Reference</b>	S-52 14.3
<b>Test description</b>			
<p><i>The purpose of the test is to verify that ECDIS is able to change ENC display settings by standardized controls. Names of the controls, located under the Other Display section of ECDIS should switch on and off certain viewing layers and should comply with requirements of IHO S-52 Presentation Library Edition 4.0.</i></p>			
<b>Setup</b>			
<p>Load cell AA50OTHER.000 from 3.1 ENC Display\Other\ENC_ROOT with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 10 m</p> <p>Set the safety depth value to 10 m</p> <p>Select Symbolized Boundaries</p>			
<b>Action</b>			
<p>Switch on Other Display Check that ECDIS HMI contains standardized controls that can switch on and off certain objects from the chart</p>			
<b>Results</b>			
<p>Confirm that the following controls are available at ECDIS HMI under the Other display section</p> <p>Spot soundings</p> <p>Submarine cables and pipelines</p> <p>All isolated dangers</p> <p>Magnetic variation</p> <p>Depth contours</p> <p>Seabed</p> <p>Tidal</p> <p>Miscellaneous</p>			

## IHO ENC Test Data Sets for ECDIS

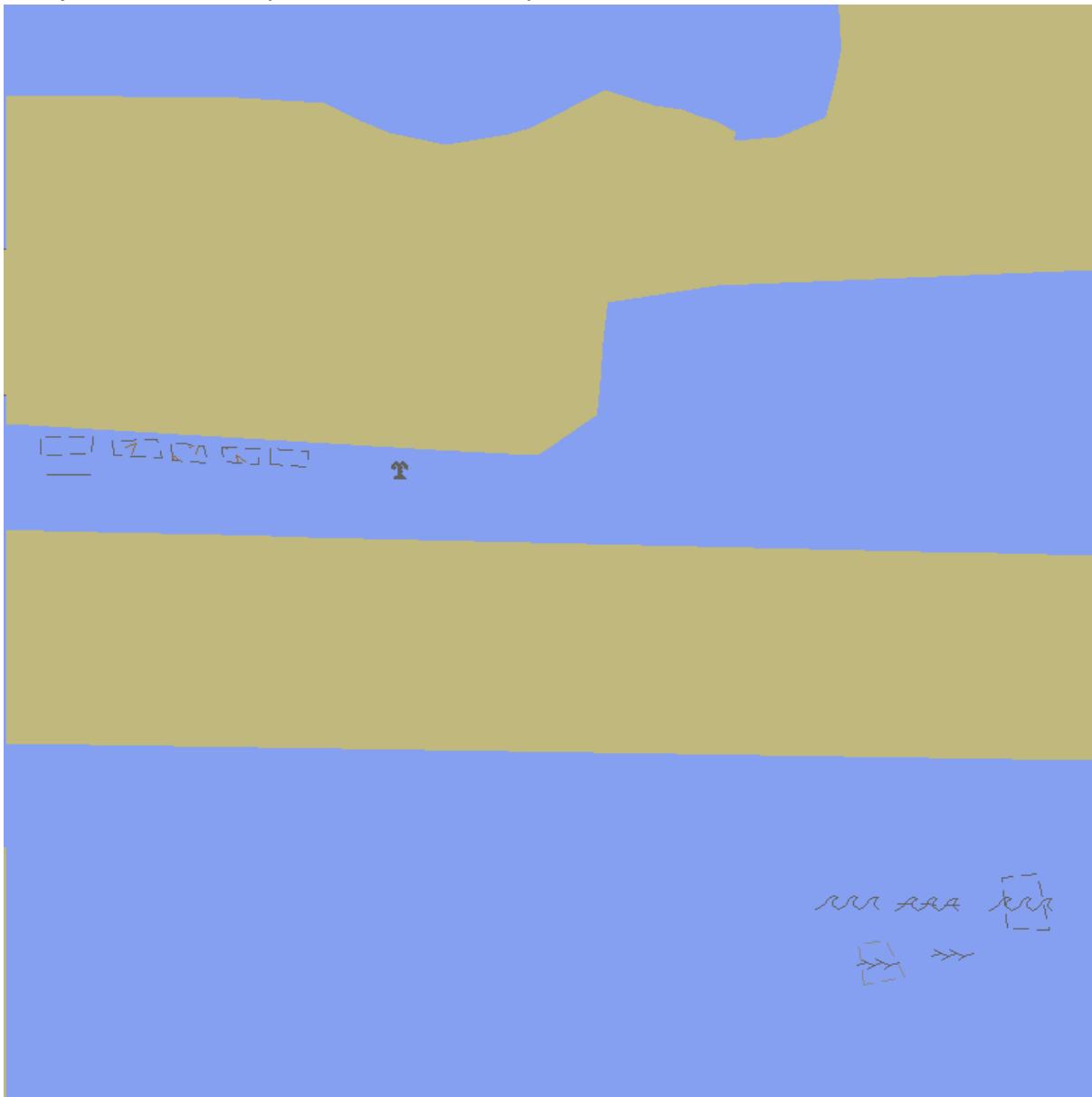
Action
<p>Switch off all controls and switch on only the “<b>Spot soundings</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

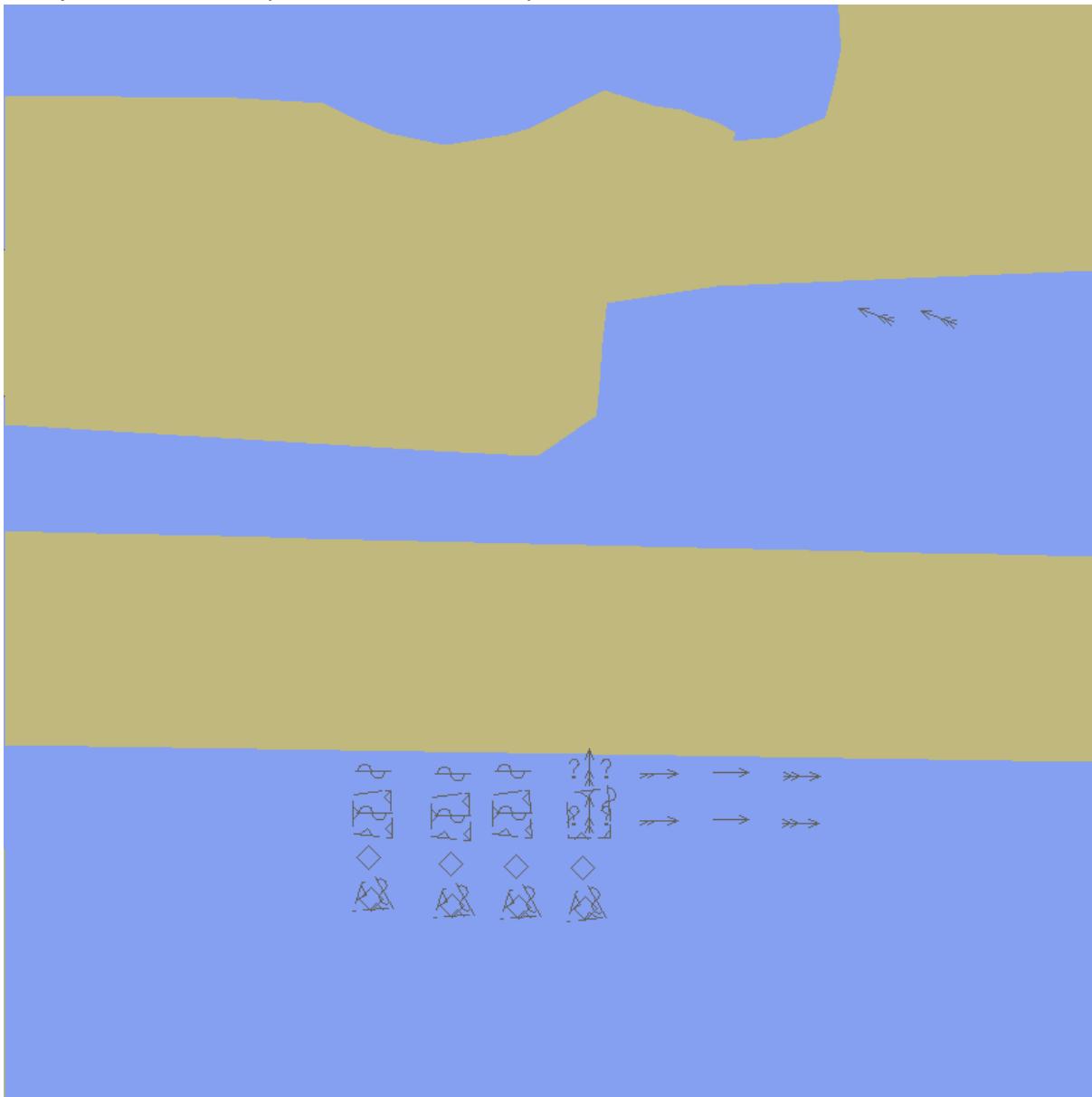
Action
<p>Switch off all controls and switch on only the “<b>Submarine cables and pipelines</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>All isolated danger</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p>

Action
<p>Switch off all controls and switch on only the “<b>Magnetic variation</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Depth Contours</b>” control. If provided, select optional Contour label. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Seabed</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
<p>Switch off all controls and switch on only the “<b>Tidal</b>” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

Action
Switch off all controls and switch on only the “ <b>Miscellaneous</b> ” control. Verify that the objects are displayed correctly as presented in the plot.
Results
The objects are shown as presented in the screen plot below

The image shows a complex ECDIS plot with the following key elements:

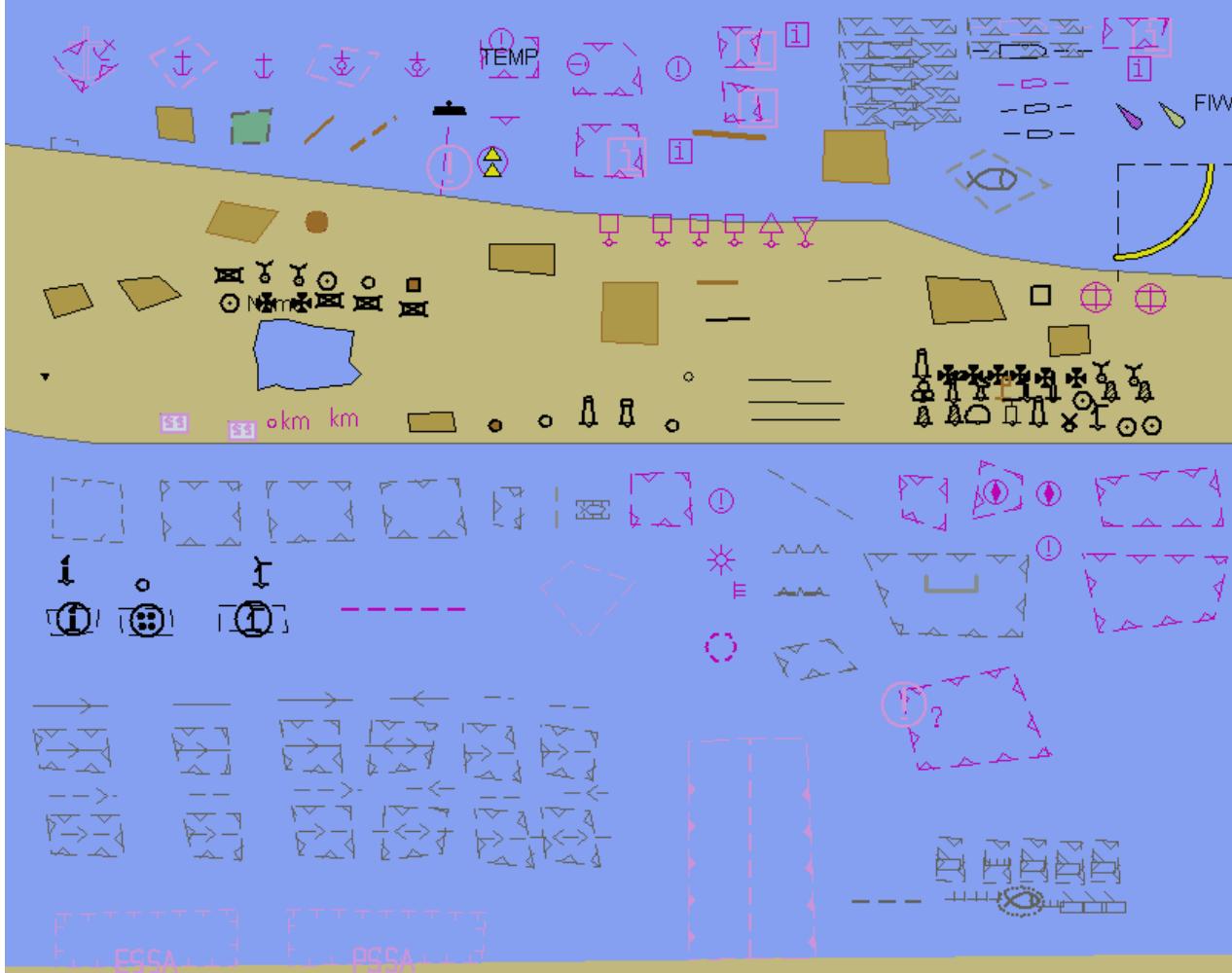
- Legend:** Located in the bottom-left corner, it includes:
  - A white square with a black border and a black cross inside, labeled "RoRo".
  - A yellow square with a black border and a black cross inside, labeled "RoRo".
  - A circle with a black border and a black cross inside.
  - A circle with a black border and a black circle inside.
  - A circle with a black border and a black dot inside.
  - A circle with a black border and a black asterisk inside.
  - A circle with a black border and a black circle inside, labeled "RoRo".
  - A circle with a black border and a black dot inside, labeled "RoRo".
- Water:** Large areas of blue represent water, with some darker blue sections indicating deeper water or specific features.
- Land:** A large yellow area represents land or a coastal zone.
- Objects:** Numerous symbols are scattered across the plot, including:
  - Yellow rectangles of various sizes.
  - Black rectangles.
  - White circles with black outlines.
  - Black circles with white outlines.
  - Black dots.
  - Black crosses.
  - Black asterisks.
  - Black lines.
  - Black arrows.
  - Black numbers (e.g., 100).
  - Black symbols like a compass rose.
- Labels:** There are several small labels in pink and purple, such as "100", "RoRo", and "RoRo".

### 3.1.6 Text Grouping

Test Reference	3.1.6	IHO Reference	S-52 14.4, 14.5
<b>Test description</b>			
<p><i>The purpose of the test is to verify that ECDIS is able to change text display settings and display text in accordance with the requirements of IHO S-52 Presentation Library Edition4.0. Minimum two text display categories should be available in the ECDIS HMI</i></p>			
<b>Setup</b>			
<p>Load cells AA5DBASE.000, AA5STNDR.000 and AA5OTHER.000 from 3.1 ENC Display with the following settings:</p> <p>Select Viewing group layer Standard Display</p> <p>Set the safety contour value to 10 m</p> <p>Set the safety depth value to 10 m</p> <p>Select Symbolized Boundaries</p> <p>Set Scale min Off</p>			
<b>Action</b>			
<p>Switch on Other Display. Check that ECDIS HMI contains standardized controls that can switch on and off certain objects from the chart</p>			
<b>Results</b>			
<p>Confirm that the following controls are available at ECDIS HMI under the Other display section:</p> <p>Important Text</p> <p>Other Text</p> <p>More text display controls may be available, however all the additional controls should be subdivision of one of the above controls</p>			

Action
<p>View cell AA5DBASE.000          Switch off all text group controls and switch on only the “<b>Important Text</b>” control.          Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p>  <p>Legend:</p> <ul style="list-style-type: none"> <li>— sf clr 15.0, sf clr 10.0, clr 10.0</li> <li>— sf clr 15.0, clr 10.0</li> </ul> <p>Labels:</p> <ul style="list-style-type: none"> <li>— sf clr 15.0, sf clr 10.0, clr 10.0</li> <li>— sf clr 15.0, clr 10.0</li> </ul>

Action
<p>View cell AA5STNDR.000</p> <p>Switch off all text group controls and switch on only the “<b>Important Text</b>” control.</p> <p>Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p>

Action
<p>View cell AA5STNDR.000</p> <p>Switch off all text group controls and switch on only the “<b>Other Text</b>” control.</p> <p>Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

## IHO ENC Test Data Sets for ECDIS

Action
<p>View cell AA50THER.000</p> <p>Switch off all text group controls and switch on only the “Other Text” control.</p> <p>Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p>

## IHO ENC Test Data Sets for ECDIS

Action
<p>View cell AA50THER.000</p> <p>Switch off all text group controls and switch on only the “Names” control located under the “Other Text” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p>

Action
<p>View cell AA5STNDR.000</p> <p>Switch off all text group controls and switch on only the “<b>Light description</b>” control located under the “Other Text” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p> 

## IHO ENC Test Data Sets for ECDIS

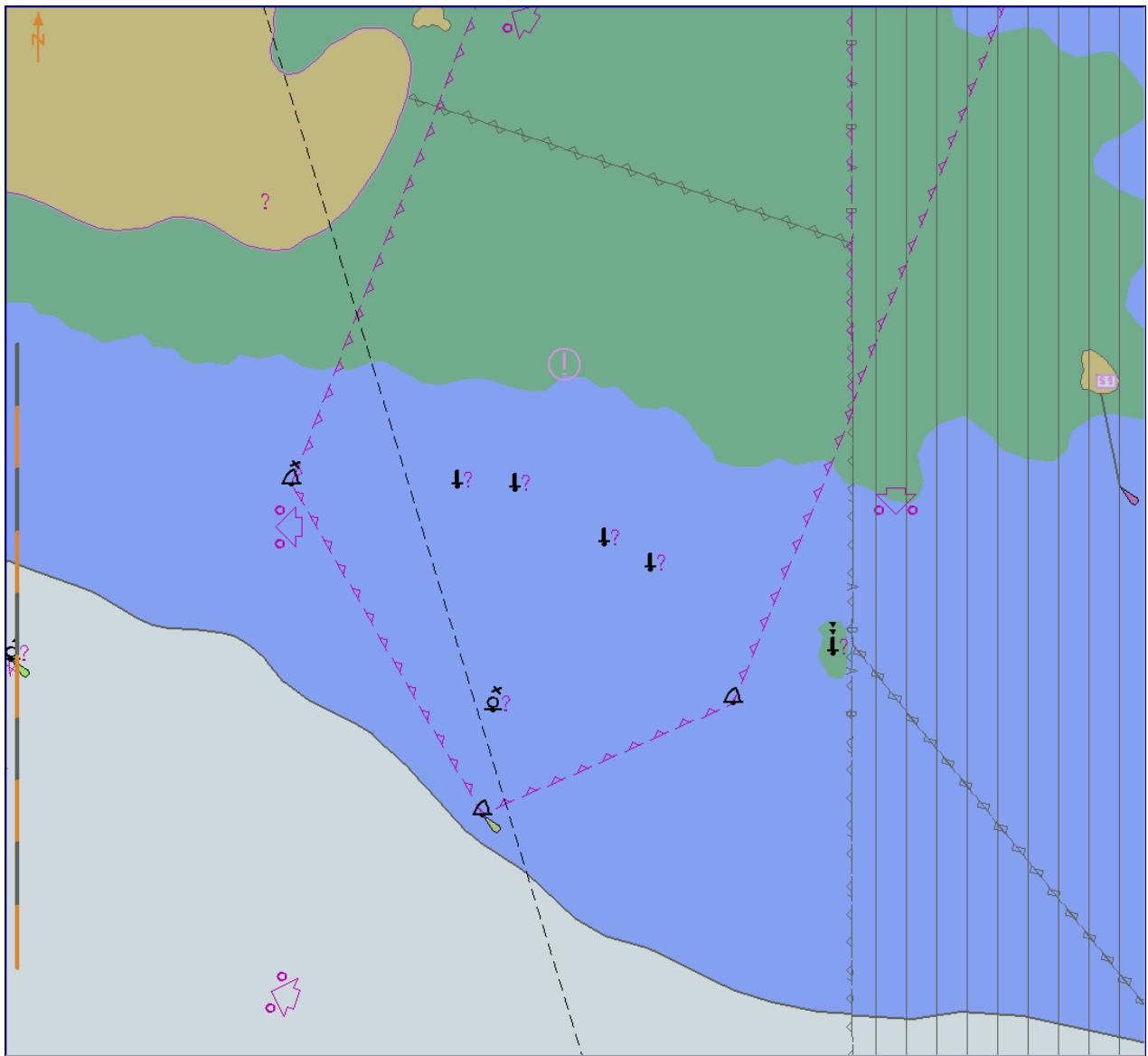
Action
<p>View cell AA50THER.000</p> <p>Switch off all text group controls and switch on only the “All other” control located under the “Other Text” control. Verify that the objects are displayed correctly as presented in the plot.</p>
Results
<p>The objects are shown as presented in the screen plot below</p>

### 3.2 Invalid objects

#### 3.2.1 Display of Invalid Objects

<b>Test Reference</b>	3.2.1 a)	<b>IHO Reference</b>	S-52 10.3.3.4
<b>Test description</b>			
<i>Display of objects with unknown object class or display of objects for which available or not available attribute(s) cause special presentation.</i>			
<b>Setup</b>			
<p>Load the following cell 3.2 Invalid Object\ENC_ROOT\AA3\NVOB.000</p> <p>Select Safety Contour = 0 metres</p> <p>Select Display Mode as "Other"</p> <p>Select Colour Palette as "DAY"</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Select Unknown On</p> <p>Deselect Highlight info</p>			
<b>Action</b>			
View chart at scale 1:50 000			
<b>Results</b>			
<p>Confirm that the symbol SY(QUESMRK1) is displayed as below for following cases:</p> <p>a) unknown object class, point geometry</p> <p>b) unknown object class, line geometry</p> <p>c) unknown object class, area geometry</p> <p>d) known object class for which missing attribute cause presentation of additional symbol SY(QUESMRK1)</p>			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	3.2.1 b)	<b>IHO Reference</b>	S-52 10.3.3.4
<b>Test description</b>			
Display of objects with unknown object class or display of objects for which available or not available attribute(s) cause special presentation.			
<b>Setup</b>			
<p>Load the following cell 3.2 Invalid Object\Invalid Base\ENC_ROOT\GB5X01NE.000</p> <p>Select Safety Contour = 10 metres</p> <p>Select Display Mode as "Standard Display"</p> <p>Select Colour Palette as "DAY"</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p>			
<b>Action</b>			
View chart at scale 1:10 000			
<b>Results</b>			
Confirm that all objects display as shown in the following screenshot			
			

### 3.2.2 Invalid Object Pick Report Display

<b>Test Reference</b>	3.2.2 a)	<b>IHO Reference</b>	S-52 10.8.6
<b>Test description</b>			
<i>Display of pick report information for objects with unknown object class.</i>			
<b>Setup</b>			
As for test 3.2.1 a)			
<b>Action</b>			
<p>1. Select the following objects:</p> <ul style="list-style-type: none"> <li>- 39°29.000'N, 104°44.000'W</li> <li>- 39°29.000'N, 104°43.000'W</li> <li>- 39°28.000'N, 104°41.000'W</li> </ul> <p>2. Remove pick report information from display.</p>			
<b>Results</b>			
<p>1a. Pick report associated with chart object is displayed only when object is selected.</p> <p>1b. First example has 2 attributes (Orientation is 45.0 deg; Information is Wreck).</p> <p>1c. Second example has 1 attribute (Information is danger line).</p> <p>1d. Third example has 1 attribute (Information is See regulation "Jussland fishing act" paragraph 42).</p> <p>2. Pick report associated with chart object is removed from the display.</p>			

<b>Test Reference</b>	3.2.2 b)	<b>IHO Reference</b>	S-52 10.8.6
<b>Test description</b>			
<i>Display of pick report information for objects with unknown object class.</i>			
<b>Setup</b>			
As for test 3.2.1 b)			
<b>Action</b>			
<p>1. Select the following object 32°30.924'S, 60°58.719'E</p> <p>2. Remove pick report information from display.</p>			
<b>Results</b>			
<p>1a. Pick report associated with chart object is displayed only when object is selected.</p> <p>1b. This example has no attributes. Only unknown object and its position is available in the pick report.</p> <p>2. Pick report associated with chart object is removed from the display.</p>			

<b>Test Reference</b>	3.2.2 c)	<b>IHO Reference</b>	S-52 10.8.6
<b>Test description</b>			
<i>Display of pick report information for known objects which has unknown attribute(s).</i>			
<b>Setup</b>			
As for test 3.2.1 a)			
<b>Action</b>			
<p>1. Select the following objects:</p> <ul style="list-style-type: none"> <li>- 39°29.000'N, 104°44.000'W</li> <li>- 39°29.000'N, 104°43.000'W</li> <li>- 39°28.000'N, 104°41.000'W</li> </ul> <p>2. Remove pick report information from display.</p>			
<b>Results</b>			

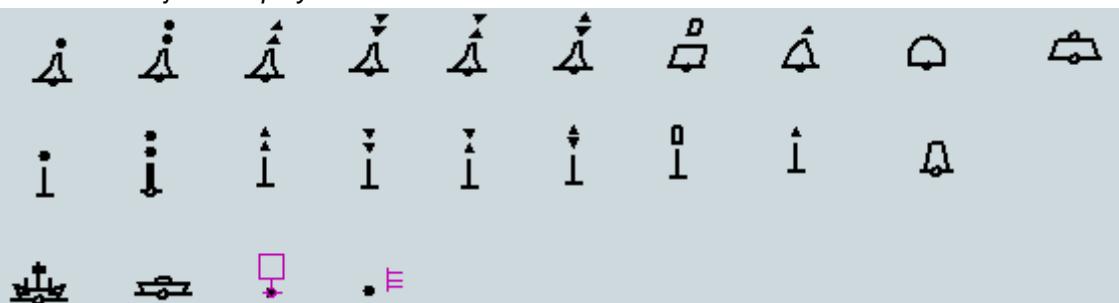
## IHO ENC Test Data Sets for ECDIS

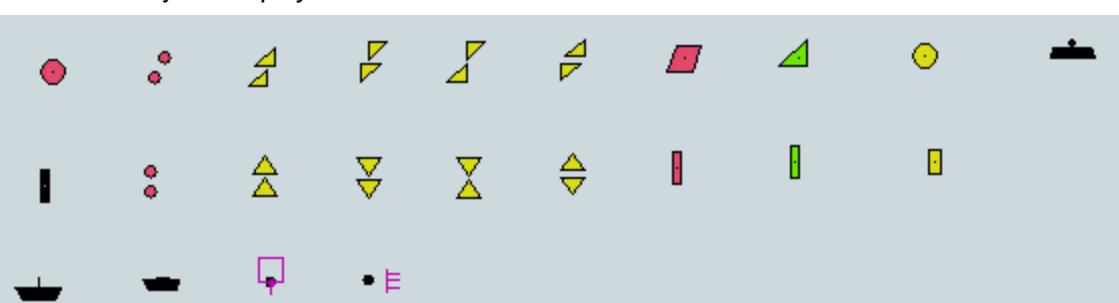
- 1a. Pick report associated with chart object is displayed only when object is selected.  
 1b. First example is a wreck and it has 1 unknown attribute and 1 known attributes (Water level effect is Covers and uncovers).  
 1c. Second example is an obstruction and it has 1 unknown attribute and 1 known attribute (Value of sounding has no value).  
 1d. Third example is a restricted area and it has 1 unknown attribute  
 2. Pick report associated with chart object is removed from the display.

Test Reference	3.2.2 d)	IHO Reference	S-52 10.8.6
<b>Test description</b>			
Display of pick report information for known objects for which available or not available attribute(s) cause special presentation.			
<b>Setup</b>			
As for test 3.2.1 b)			
<b>Action</b>			
1. Select the following objects: - 32°31.737'S, 60°59.153'E - 32°31.379'S, 60°59.084'E - 32°31.383'S, 60°59.193'E - 32°31.472'S, 60°59.364'E - 32°31.511'S, 60°59.452'E - 32°31.646'S, 60°59.800'E 2. Remove pick report information from display.			
<b>Results</b>			
1a. Pick report associated with chart object is displayed only when object is selected. 1b. First example is a buoy and it has 2 known attributes (Category of special purpose mark is target mark; Colour is yellow) 1c. Second example is a beacon and attribute Beacon shape has no value 1d. Third example is a beacon and attribute Beacon shape has no value 1e. Fourth example is a beacon and attribute Beacon shape has no value 1f. Fifth example is a beacon and attribute Beacon shape has no value 1g. Sixth example is a beacon and attribute Beacon shape has no value 2. Pick report associated with chart object is removed from the display.			

### 3.3 Independent Mariner Selections

#### 3.3.1 Paper chart and simplified symbols

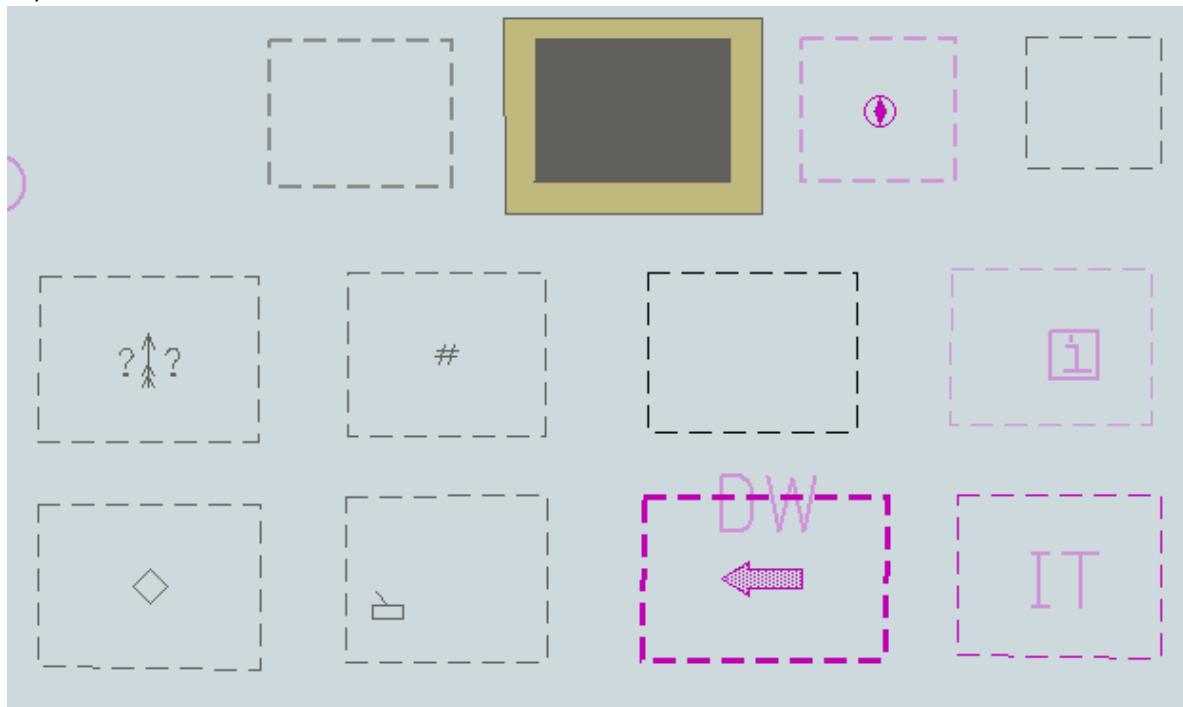
<b>Test Reference</b>	3.3.1 a)	<b>IHO Reference</b>	S-52 App B-F
<b>Test description</b>			
Display of objects with paper chart symbols.			
<b>Setup</b>			
Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings: Select Viewing group layer Other Select Symbolized Boundaries Select Paper chart symbols Deselect Accuracy Safety Contour = 10 metres Safety Depth = 10 metres			
<b>Action</b>			
View the objects at position 32° 37.280' S 61° 21 .000' E and then zoom in to a scale of 1:10,000.			
<b>Results</b>			
Confirm that the objects display as follows:			
			

<b>Test Reference</b>	3.3.1 b)	<b>IHO Reference</b>	S-52 App B-F
<b>Test description</b>			
Display of objects with paper chart symbols.			
<b>Setup</b>			
As for test 3.3.1 a) Select Simplified Symbols			
<b>Action</b>			
View the objects at position 32° 37.280' S 61° 21 .000' E and then zoom in to a scale of 1:10,000.			
<b>Results</b>			
Confirm that the objects display as follows:			
			

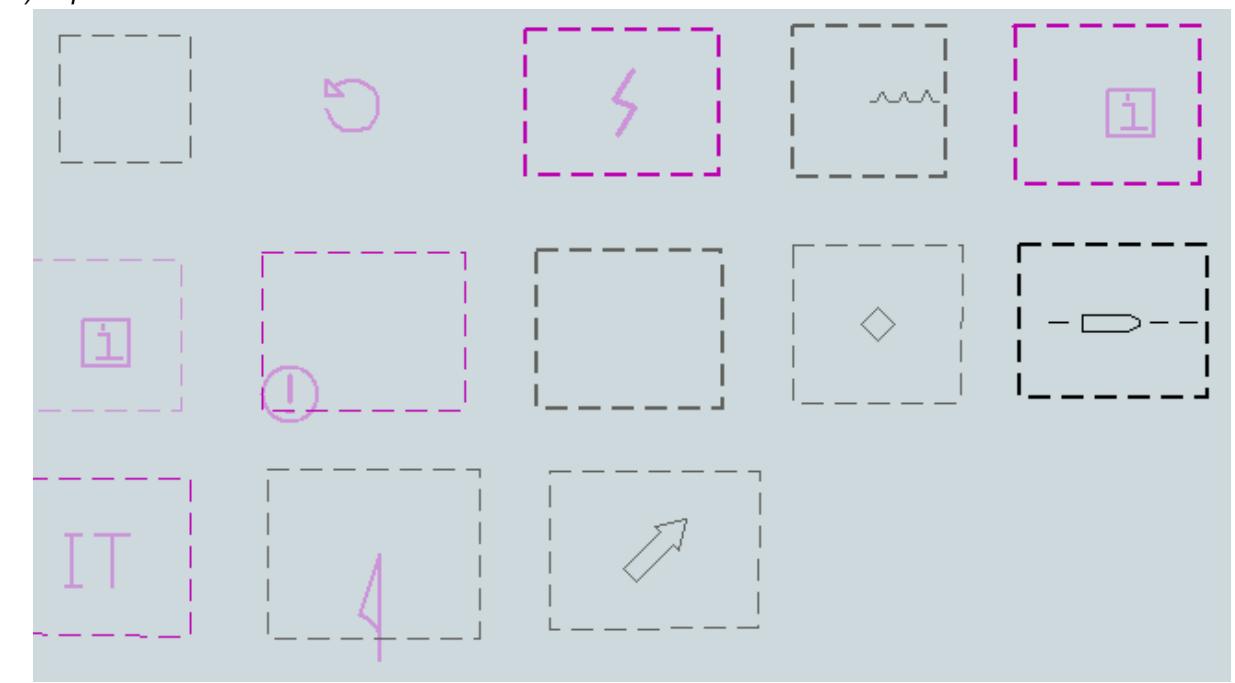
### 3.3.2 Symbolized and plain boundaries

Test Reference	3.3.2 a)	IHO Reference	S-52 App B-F
<b>Test description</b>			
Display of objects with plain boundaries.			
<b>Setup</b>			
<p>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Select Plain Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Deselect Highlight document</p> <p>Safety Contour = 10 metres</p> <p>Safety Depth = 10 metres</p>			
<b>Action</b>			
<p>Zoom into 1:5 000 and View the objects at position</p> <ol style="list-style-type: none"> <li>1) 32°36.900'S 61°20.840'E</li> <li>2) 32°36.900'S 61°21.400'E</li> <li>3) 32°36.900'S 61°21.950'E</li> </ol>			
<b>Results</b>			
Confirm that the objects display as follows:			
1) at position 32°36.900'S 61°20.840'E:			

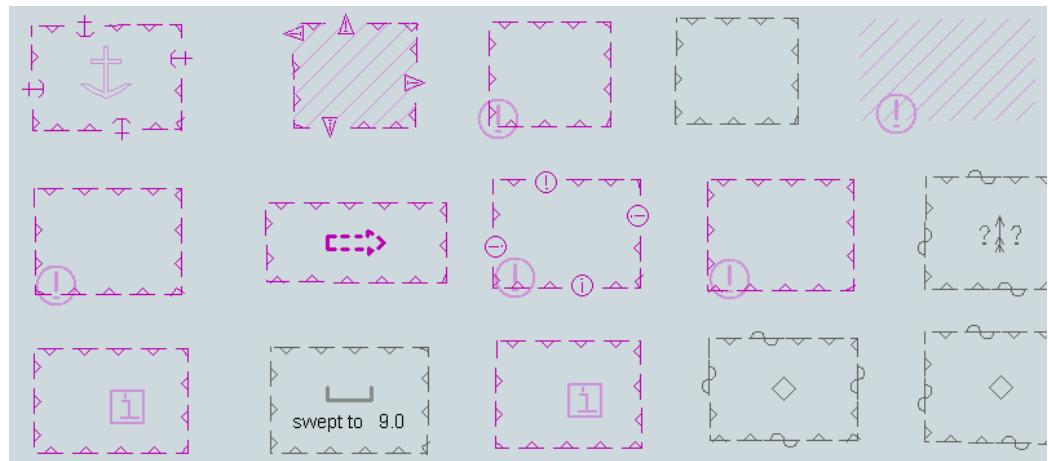
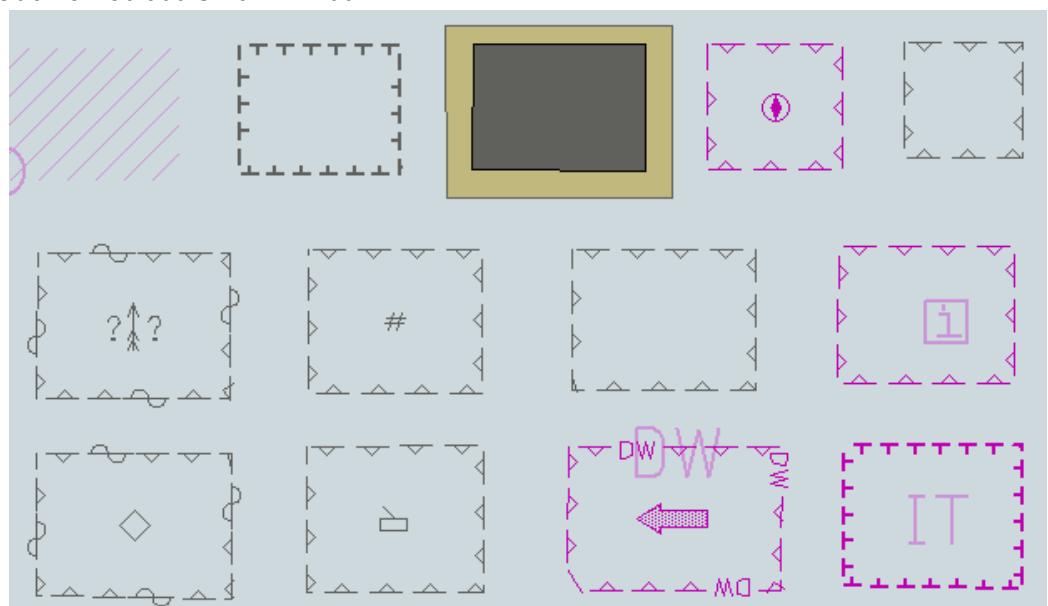
2) at position 32°36.900'S 61°21.400'E:



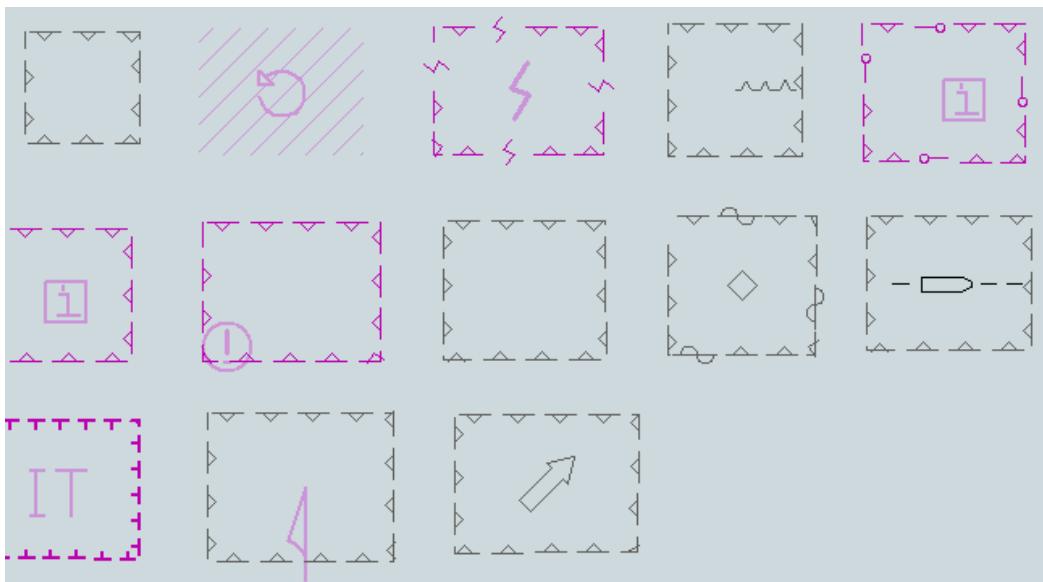
3) at position 32°36.900'S 61°21.950'E:



<b>Test Reference</b>	3.3.2 b)	<b>IHO Reference</b>	S-52 App B-F
<b>Test description</b>			
<i>Display of objects with symbolized boundaries.</i>			
<b>Setup</b>			
As for test 3.3.2 a) and Select Symbolized Boundaries			
<b>Action</b>			
Zoom into 1:5 000 and View the objects at position			
1) 32°36.900'S 61°20.840'E			
2) 32°36.900'S 61°21.400'E			
3) 32°36.900'S 61°21.950'E			

<b>Results</b>
Confirm that the objects display as follows:
1) at position 32°36.900'S 61°20.840'E:

2) at position 32°36.900'S 61°21.400'E:


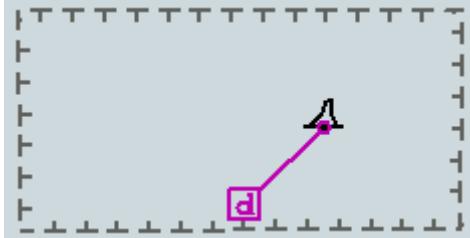
3) at position 32°36.900'S 61°21.950'E:

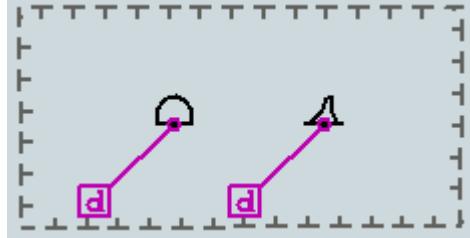


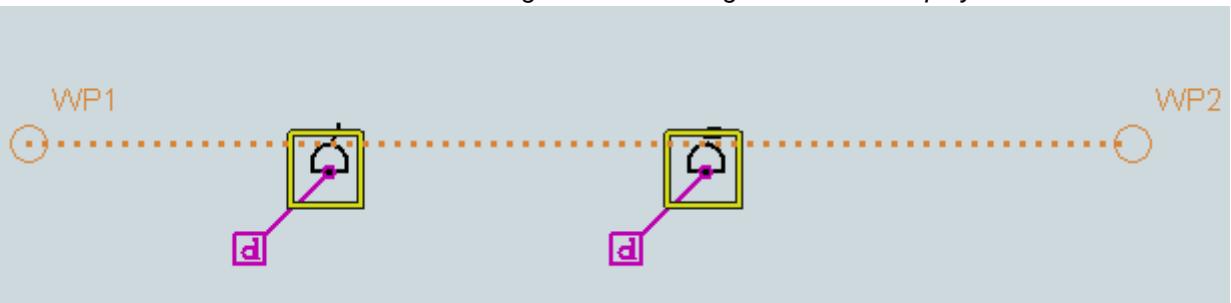
### 3.3.3 Date Dependent Display and Functionality

#### 3.3.3.1 DATSTA/DATEND on buoys

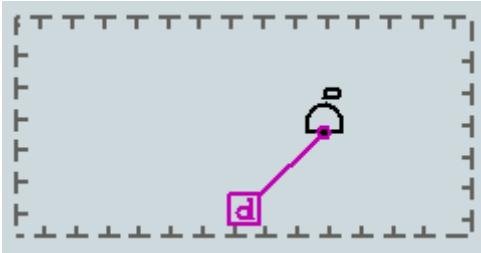
Test Reference	3.3.3.1 a)	IHO Reference	S-52 10.4.1
<b>Test description</b>			
Display of date dependent objects, current date. (DATSTA and DATEND)			
<b>Setup</b>			
<p>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Deselect Highlight document</p> <p>Safety Contour = 10 metres</p> <p>Safety Depth = 10 metres</p> <p>Select Highlight date dependent</p> <p>Ensure that the viewing date is set to the current date and time (any date after 20131201).</p>			
<b>Action</b>			
Centre the display on position 32°36.450'S 61°20.900'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the object displays as in the image below:			

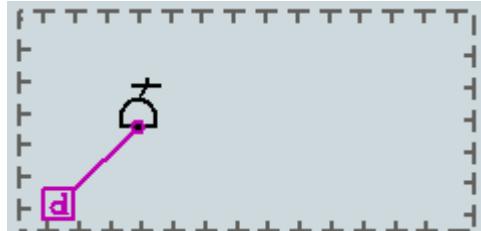
<b>Test Reference</b>	3.3.3.1 b)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, set date. (DATSTA and DATEND)</i>			
<b>Setup</b>			
As for test 3.3.3.1 a) Select <i>Highlight date dependent</i> Ensure that the viewing date is set to 18.02.2012			
<b>Action</b>			
As for test 3.3.3.1 a)			
<b>Results</b>			
Confirm that the object displays as in the image below and that a permanent indication is shown as specified in S-52 10.4.1:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

<b>Test Reference</b>	3.3.3.1 c)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, date range. (DATSTA and DATEND)</i>			
<b>Setup</b>			
As for test 3.3.3.1 b) Set the viewing date range as follows: Start viewing date= 01.02.2012 End viewing date= 01.12.2012			
<b>Action</b>			
As for test 3.3.3.1 a)			
<b>Results</b>			
Confirm that the object displays as in the image below and that a permanent indication is shown as specified in S-52 10.4.1:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

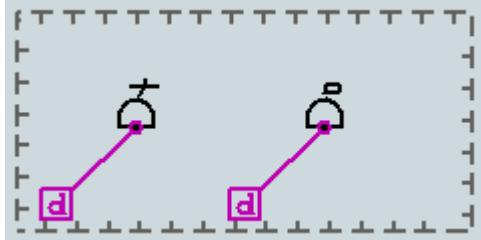
<b>Test Reference</b>	3.3.3.1 d)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Route checking of date dependent objects, date range. (DATSTA and DATEND)</i>			
<b>Setup</b>			
As for test 3.3.3.1 c) Deselect Miscellaneous (Other) Select scale 1:10 000			
<b>Action</b>			
As for test 3.3.3.1 a) Create a route from 32°36.425'S 61°20.335'E to 32°36.425'S 61°21.400'E with a cross track distance of 0.10NM set for Starboard and for Port.			
<b>Results</b>			
Check the route and confirm that the following indications are given and the display is as shown:			
 <p>Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.</p>			

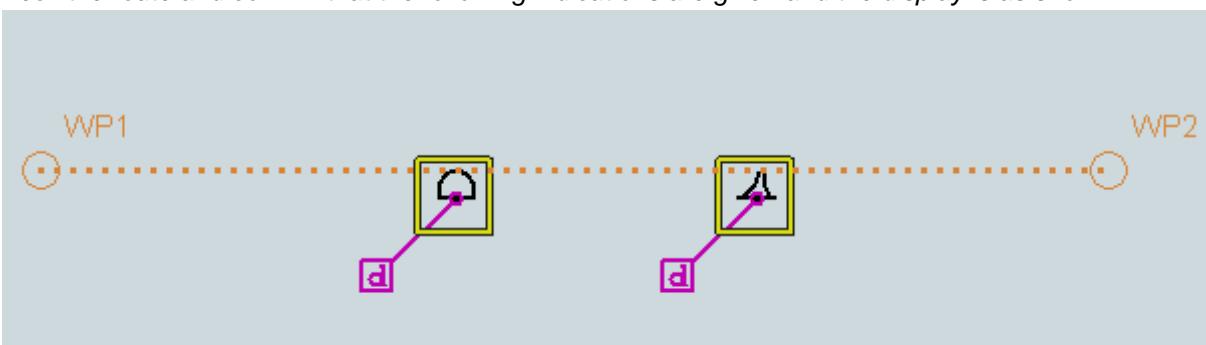
### 3.3.3.2 PERSTA/PEREND on buoys

<b>Test Reference</b>	3.3.3.2 a)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, current date. (PERSTA and PEREND)</i>			
<b>Setup</b>			
<p>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Deselect Highlight document</p> <p>Safety Contour = 10 metres</p> <p>Safety Depth = 10 metres</p> <p>Select Highlight date dependent</p> <p>Ensure that the viewing date is set to the 01.11.2013</p>			
<b>Action</b>			
Centre the display on position 32°36.450'S 61°21.900'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the object displays as in the diagram below:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

<b>Test Reference</b>	3.3.3.2 b)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, set date. (PERSTA and PEREND)</i>			
<b>Setup</b>			
<p>As for test 3.3.3.2 a)</p> <p>Select Highlight date dependent</p> <p>Ensure that viewing date is set to 18.03.2013</p>			
<b>Action</b>			
As for test 3.3.3.2 a)			
<b>Results</b>			
Confirm that the object displays as in the image below and that a permanent indication is shown as specified in S-52 10.4.1:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

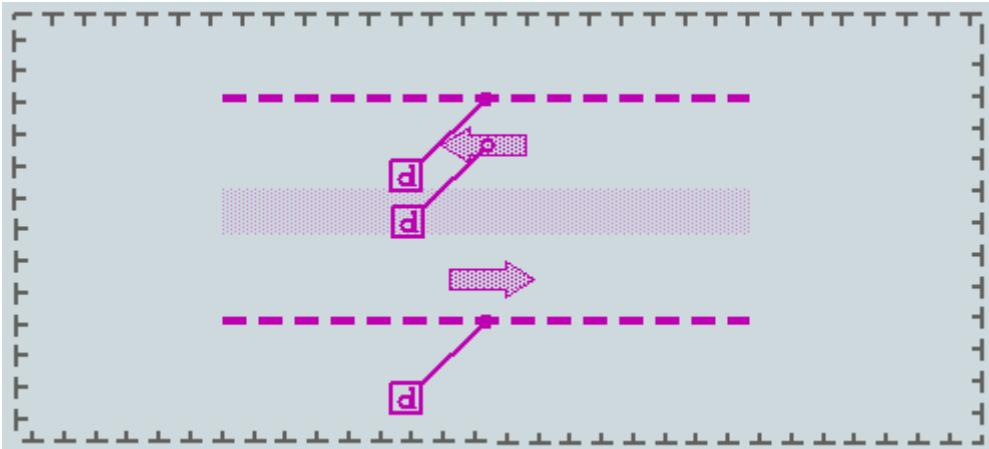
## IHO ENC Test Data Sets for ECDIS

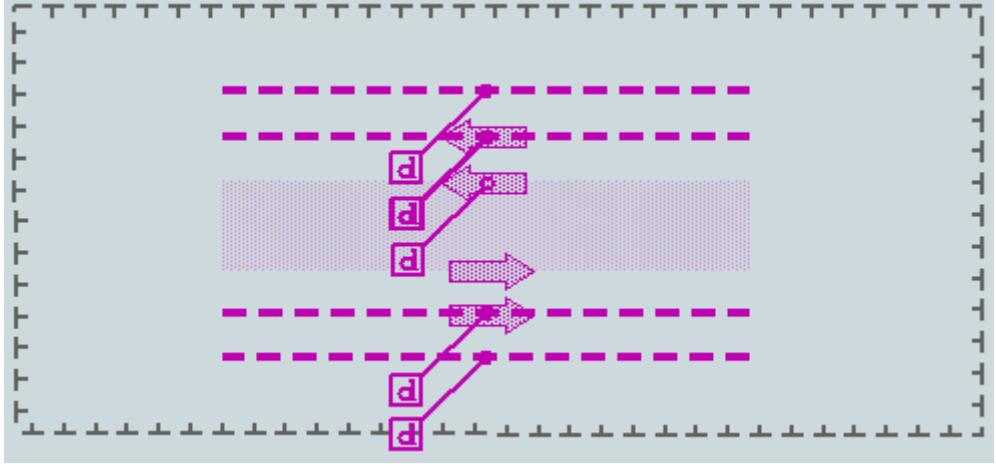
<b>Test Reference</b>	3.3.3.2 c)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
Display of date dependent objects, date range. (PERSTA and PEREND)			
<b>Setup</b>			
As for test 3.3.3.2 b) Set the viewing date range as follows: Start viewing date= 01.02.2012 End viewing date= 01.11.2012			
<b>Action</b>			
As for test 3.3.3.2 a)			
<b>Results</b>			
Confirm that the object displays as in the image below and that a permanent indication is shown as specified in S-52 10.4.1:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

<b>Test Reference</b>	3.3.3.2 d)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
Route checking of date dependent objects, date range. (PERSTA and PEREND)			
<b>Setup</b>			
As for test 3.3.3.2 c) Deselect Miscellaneous (Other) Select scale 1:10 000			
<b>Action</b>			
As for test 3.3.3.2 a) Create a route from 32°36.425'S 61°21.400'E to 32°36.425'S 61°22.500'E with a cross track distance of 0.10NM set for Starboard and for Port.			
<b>Results</b>			
Check the route and confirm that the following indications are given and the display is as shown:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

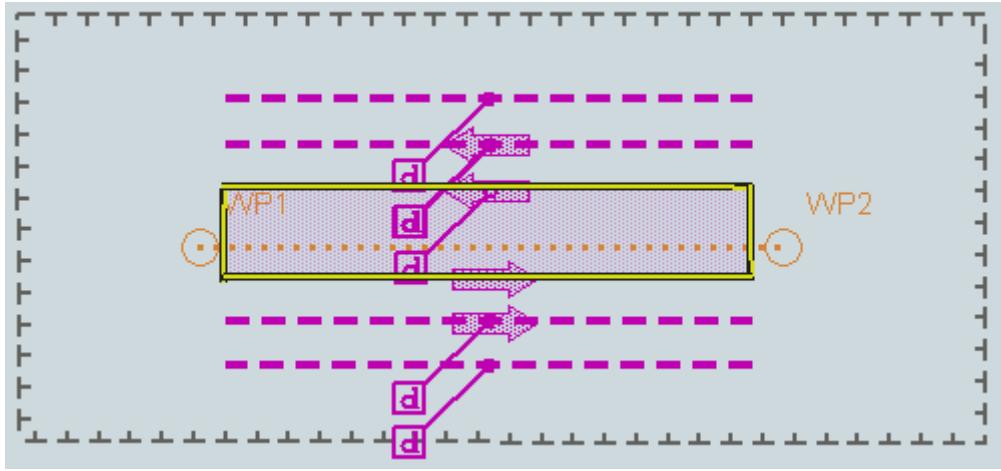
**3.3.3.3 DATSTA/DATEND on Traffic Separation Schemes (TSS)**

<b>Test Reference</b>	3.3.3.3 a)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, current date. (DATSTA and DATEND)</i>			
<b>Setup</b>			
<p>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Deselect Highlight document</p> <p>Safety Contour = 10 metres</p> <p>Safety Depth = 10 metres</p> <p>Select Highlight date dependent</p> <p>Ensure that the viewing date is set to the current date and time (any date after 20131201).</p>			
<b>Action</b>			
Centre the display on position 32°35.300'S 61°21.380'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the object displays as in the image below:			

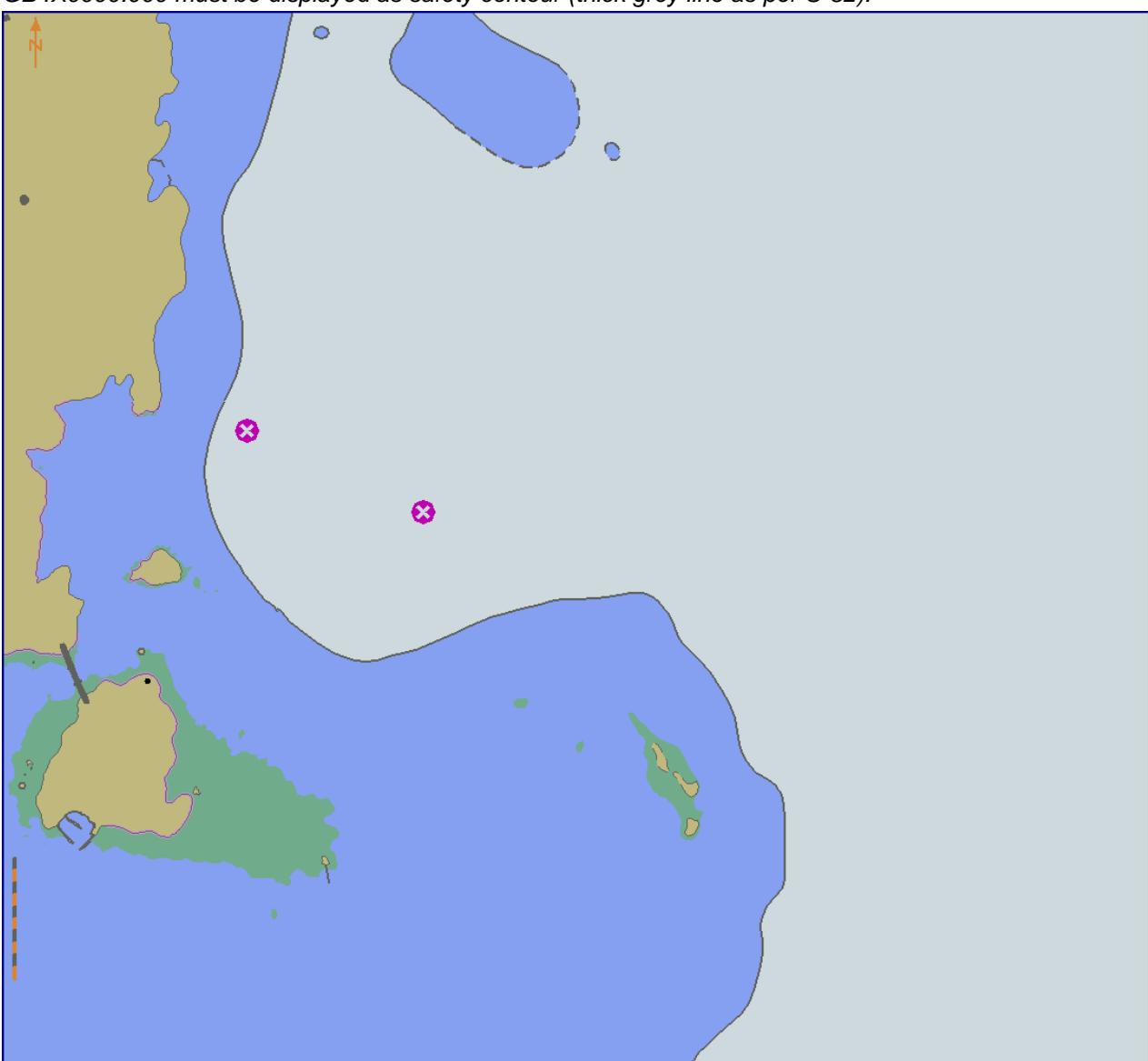
<b>Test Reference</b>	3.3.3.3 b)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, set date. (DATSTA and DATEND)</i>			
<b>Setup</b>			
As for test 3.3.3.3 a) Select <i>Highlight date dependent</i> Ensure that viewing date is set to 30.11.2013			
<b>Action</b>			
As for test 3.3.3.3 a)			
<b>Results</b>			
Confirm that the object displays as in the image below and that a permanent indication is shown as specified in S-52 10.4.1:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

<b>Test Reference</b>	3.3.3.3 c)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
<i>Display of date dependent objects, date range. (DATSTA and DATEND)</i>			
<b>Setup</b>			
As for test 3.3.3.3 b) Set the viewing date range as follows: Start viewing date= 01.11.2013 End viewing date= 01.12.2013			
<b>Action</b>			
As for test 3.3.3.3 a)			
<b>Results</b>			
Confirm that the object displays as in the image below and that a permanent indication is shown as specified in S-52 10.4.1:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

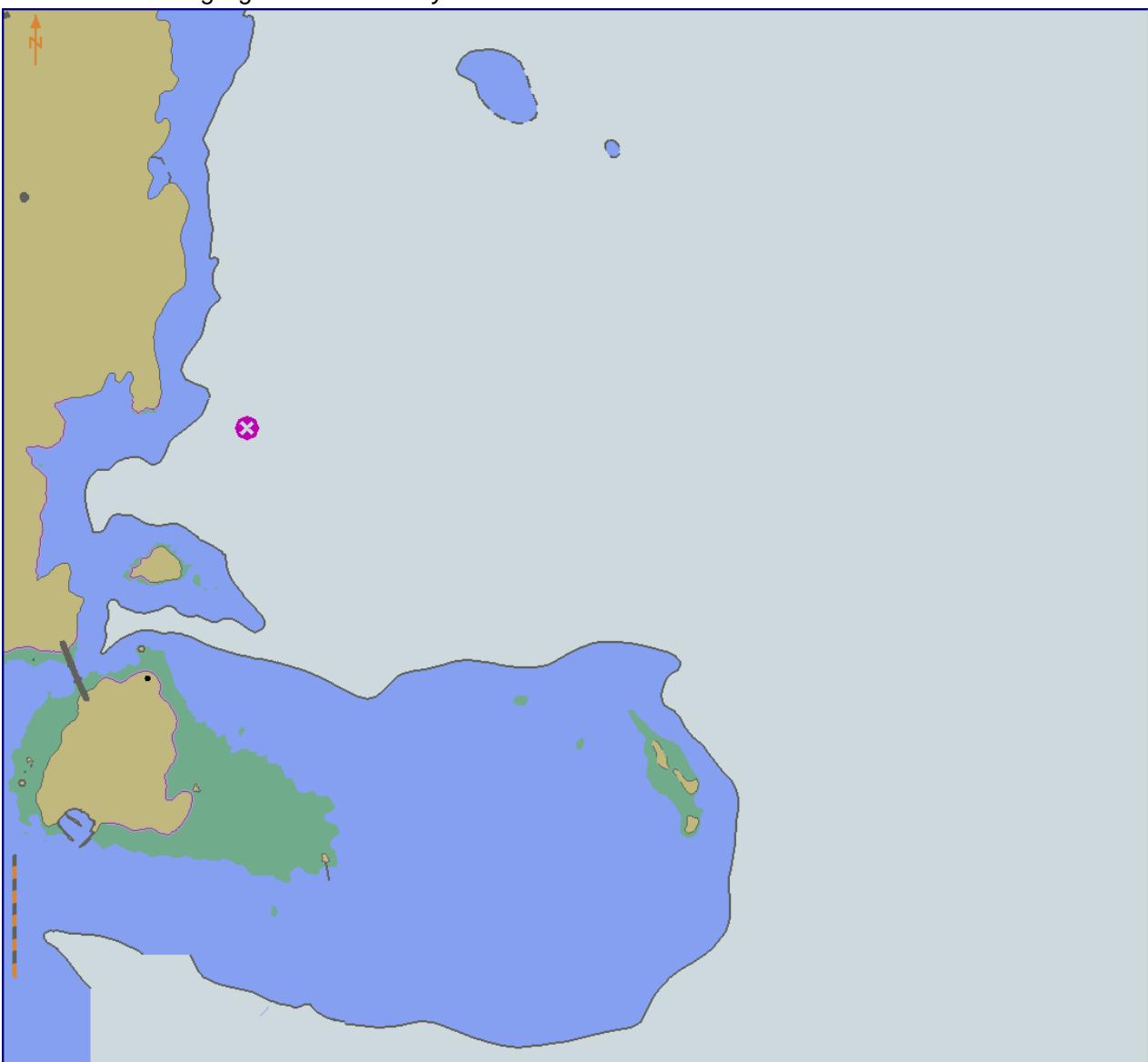
## IHO ENC Test Data Sets for ECDIS

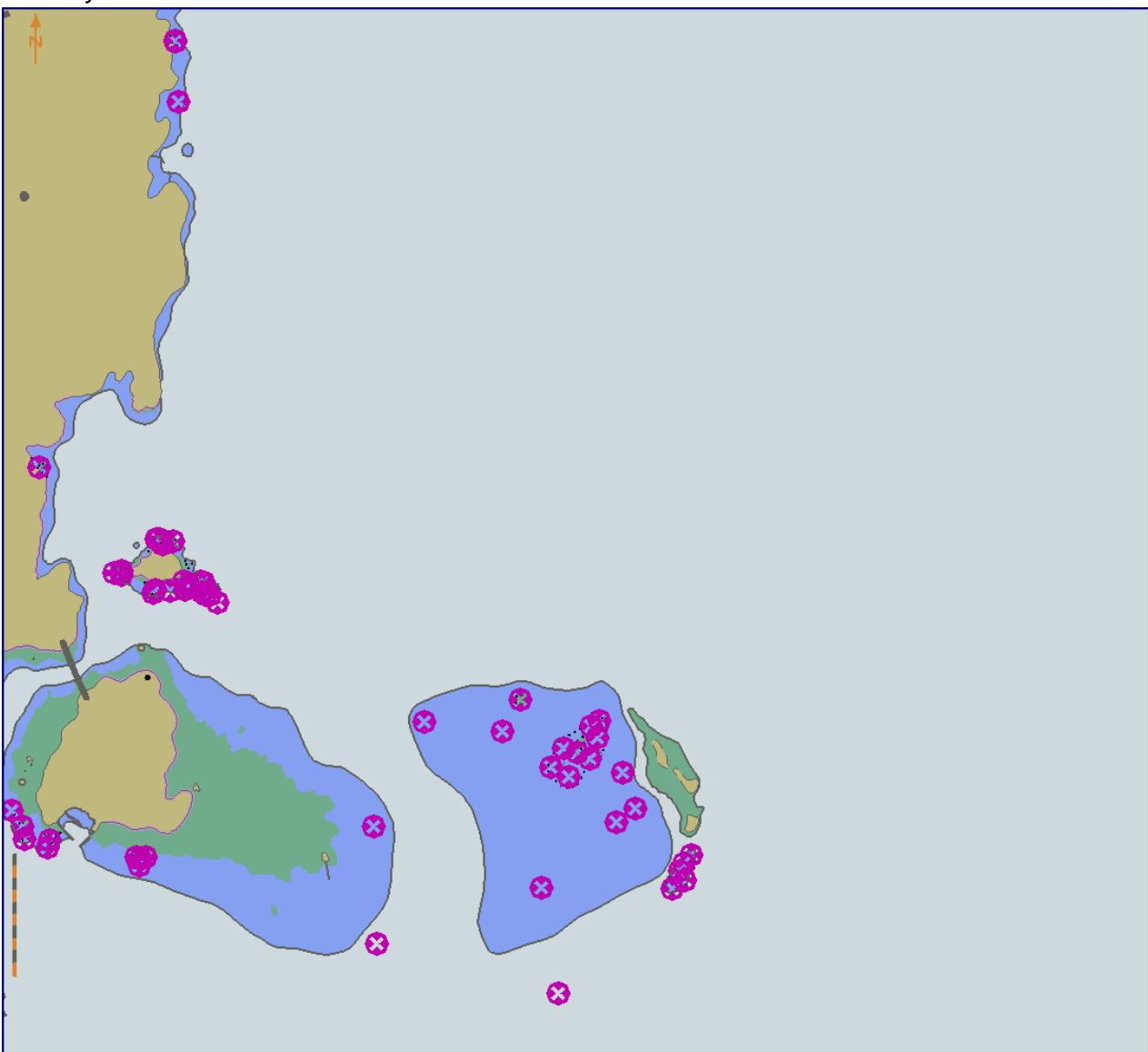
<b>Test Reference</b>	3.3.3.3 d)	<b>IHO Reference</b>	S-52 10.4.1
<b>Test description</b>			
Route checking of date dependent objects, date range. (PERSTA and PEREND)			
<b>Setup</b>			
As for test 3.3.3.3 c)			
<b>Action</b>			
As for test 3.3.3.3 a)			
Create a route from 32°35.325'S 61°20.800'E to 32°35.325'S 61°21.960'E with a cross track distance of 0.20NM set for Starboard and for Port.			
<b>Results</b>			
Check the route and confirm that the following indications are given and the display is as shown:			
			
Note: A permanent indication that the date has been adjusted should be shown as specified in S-52 10.4.1.			

### 3.3.4 Safety contour

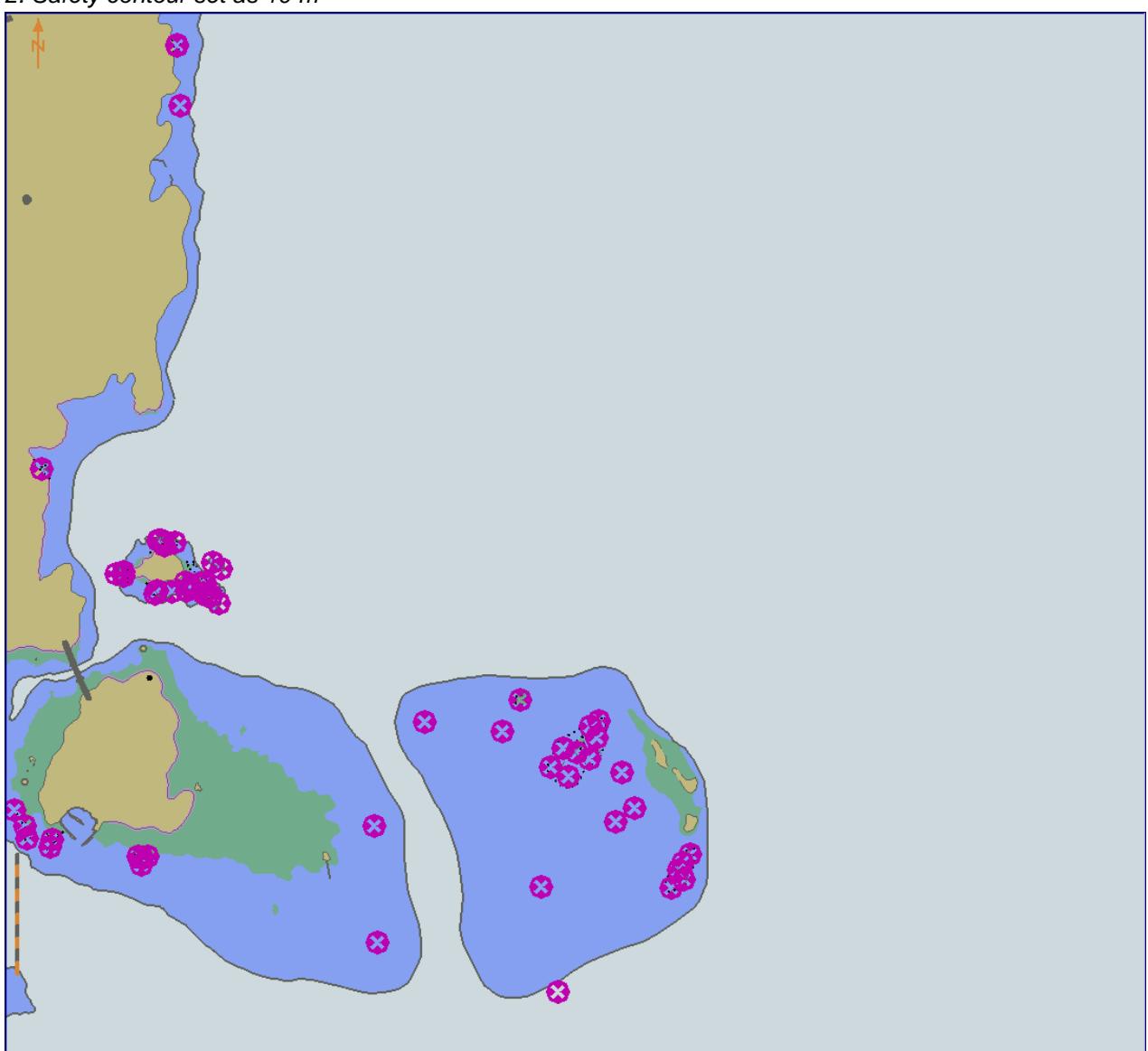
<b>Test Reference</b>	3.3.4 a)	<b>IHO Reference</b>	S-52 10.6.2 S-52 10.13.2
<b>Test description</b>			
<i>Display of default safety contour</i>			
<b>Setup</b>			
Switch on EUT without setting safety contour value (factory default setting). Load all cells from 2.1.1 Power Up\ENC_ROOT			
<b>Action</b>			
Display loaded cell GB4X0000.000 at compilation scale (1:52 000), select Display Base.			
<b>Results</b>			
The safety contour value must be set to 30m and the 30m contour in chart GB4X0000.000 must be displayed as safety contour (thick grey line as per S-52).			
			

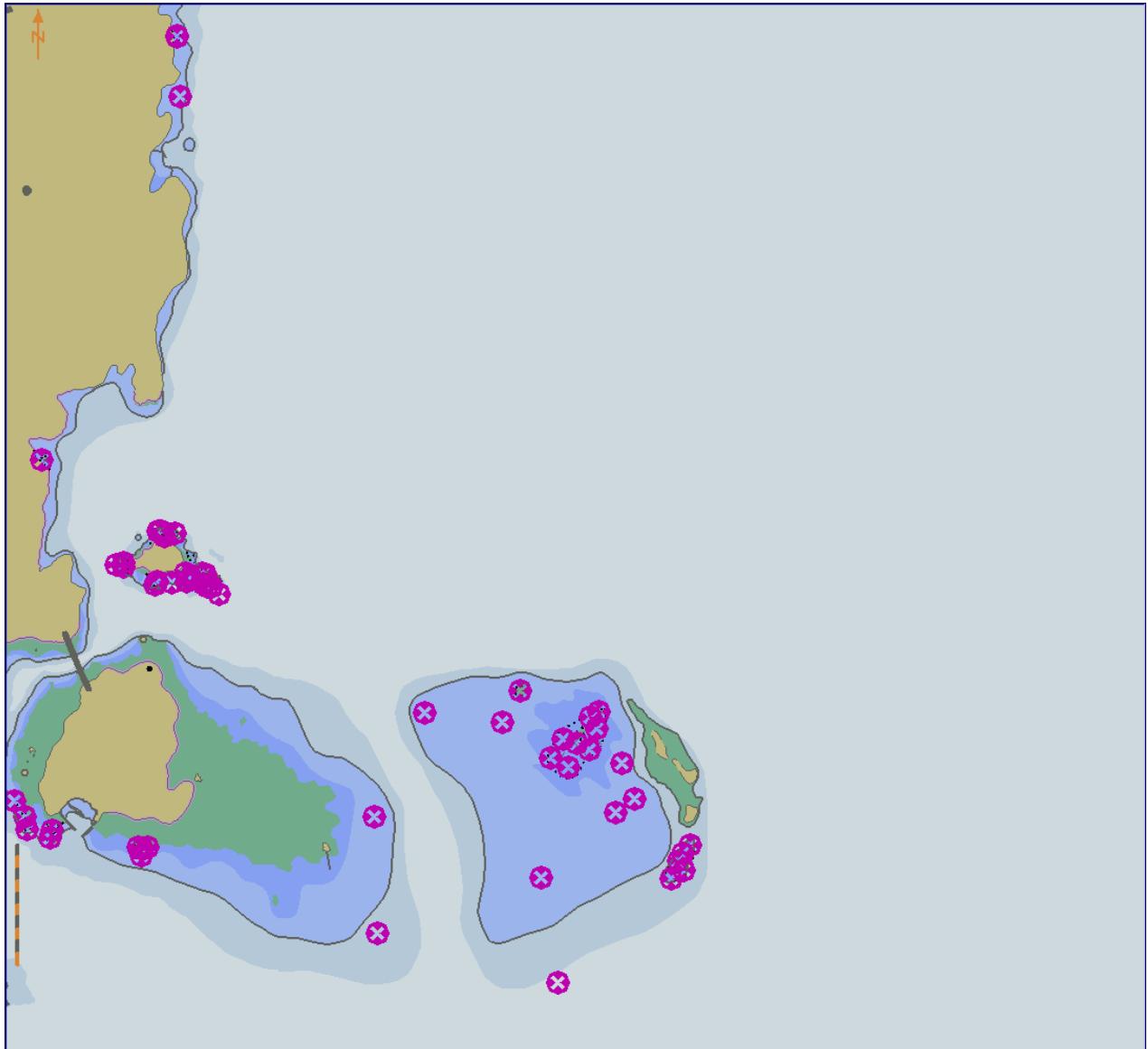
## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	3.3.4 b)	<b>IHO Reference</b>	S-52 10.6.2 S-52 10.13.2
<b>Test description</b>			
Display of safety contour			
<b>Setup</b>			
As for test 3.3.4 a)			
<b>Action</b>			
<p>1. Select a safety contour value of 15m. None of the ENCs (with the exception of GB5X01SE.000) have a 15m contour.</p> <p>2. other values should also be investigated. The harbour charts (i.e. GB5*****.000) contain 0, 2, 5, 10, 20m contours, and the contour intervals on the approach chart (i.e. GB4X0000.000 are 0, 2, 5, 10, 20, 30, 50, 100, 200, 300, and 400m.</p>			
<b>Results</b>			
<p>1. In cell GB5X01SE.000 the 15m contour and in the other cells the 20m contour must be highlighted as the safety contour.</p> <p>2. If the selected value of safety contour is not available as a depth contour in the chart, the next deeper contour must be highlighted as the safety contour.</p>			
			

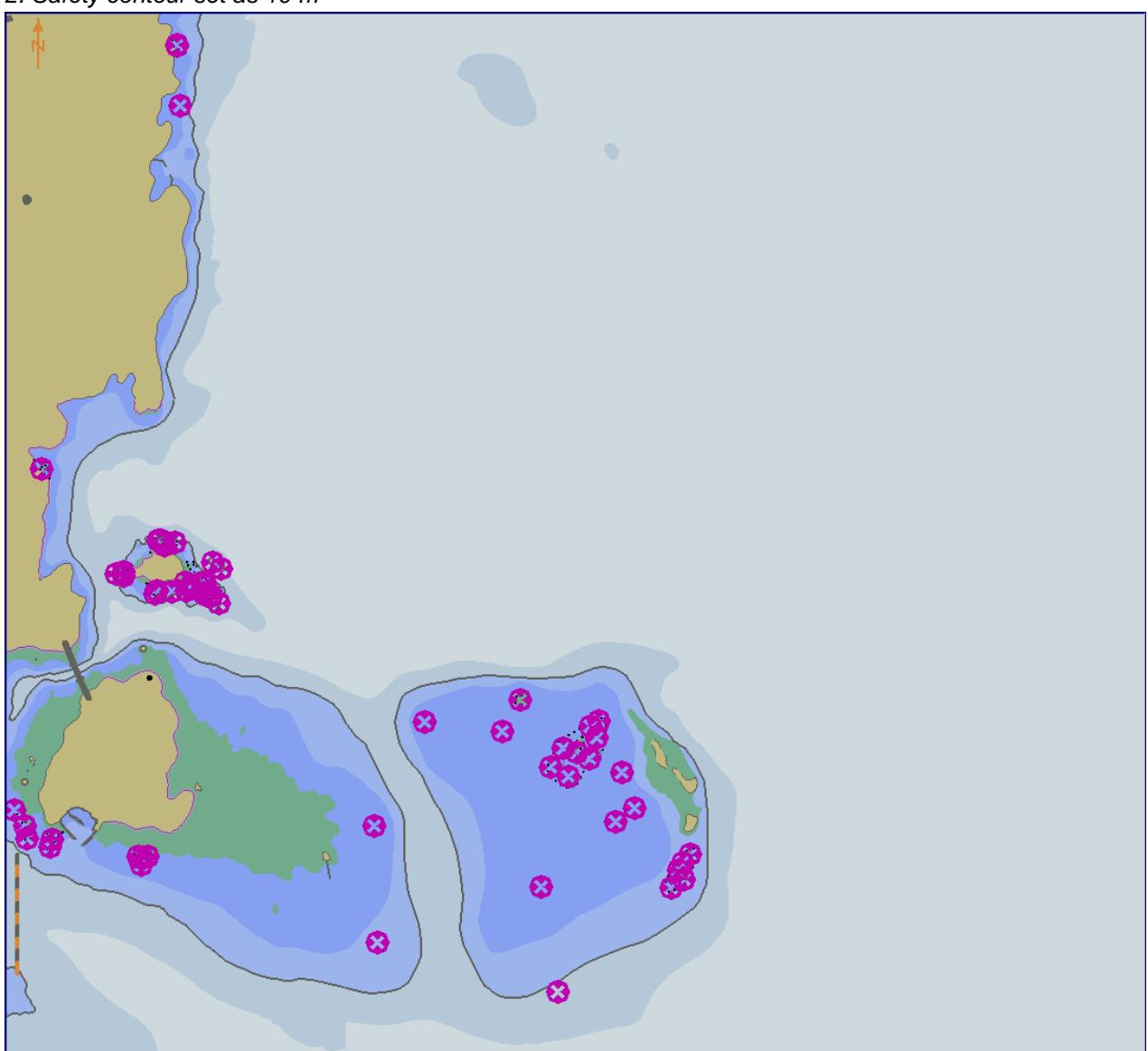
<b>Test Reference</b>	3.3.4 c)	<b>IHO Reference</b>	S-52 13.2.19 S-52 10.3.4.4 S-52 13.2.24
<b>Test description</b>			
<i>Display of safety contour and isolated dangers within the safe water enclosed by the ship's safety contour.</i>			
<b>Setup</b>			
As for test 3.3.4 a)			
<b>Action</b>			
Select Shallow water dangers for display			
1. Set the safety contour value to 5m			
2. Set the safety contour value to 10m.			
<b>Results</b>			
<i>The safety contour must be emphasised and the isolated dangers within the safe water enclosed by the ship's safety contour must be displayed as shown in the image below</i>			
1. Safety contour set as 5 m			
			

2. Safety contour set as 10 m



<b>Test Reference</b>	3.3.4 d)	<b>IHO Reference</b>	S-52 13.2.19 S-52 10.3.4.4 S-52 13.2.24 S-52 14.2
<b>Test description</b>			
<b>If the equipment under test supports four colour depth shades the following test shall also be performed.</b>			
Display of safety contour and isolated dangers within the safe water enclosed by the ship's safety contour using four shades for depth areas.			
<b>Setup</b>			
As for test 3.3.4 a)			
<b>Action</b>			
Select Shallow water dangers for display			
1. Set the safety contour value to 5m (shallow contour 2m, deep contour 10m).			
2. Set the safety contour value to 10m (shallow contour 5m, deep contour 20m).			
<b>Results</b>			
The safety contour must be emphasised and the isolated dangers within the safe water enclosed by the ship's safety contour must be displayed as shown in the image below			
1. Safety contour set as 5 m			
			

2. Safety contour set as 10 m



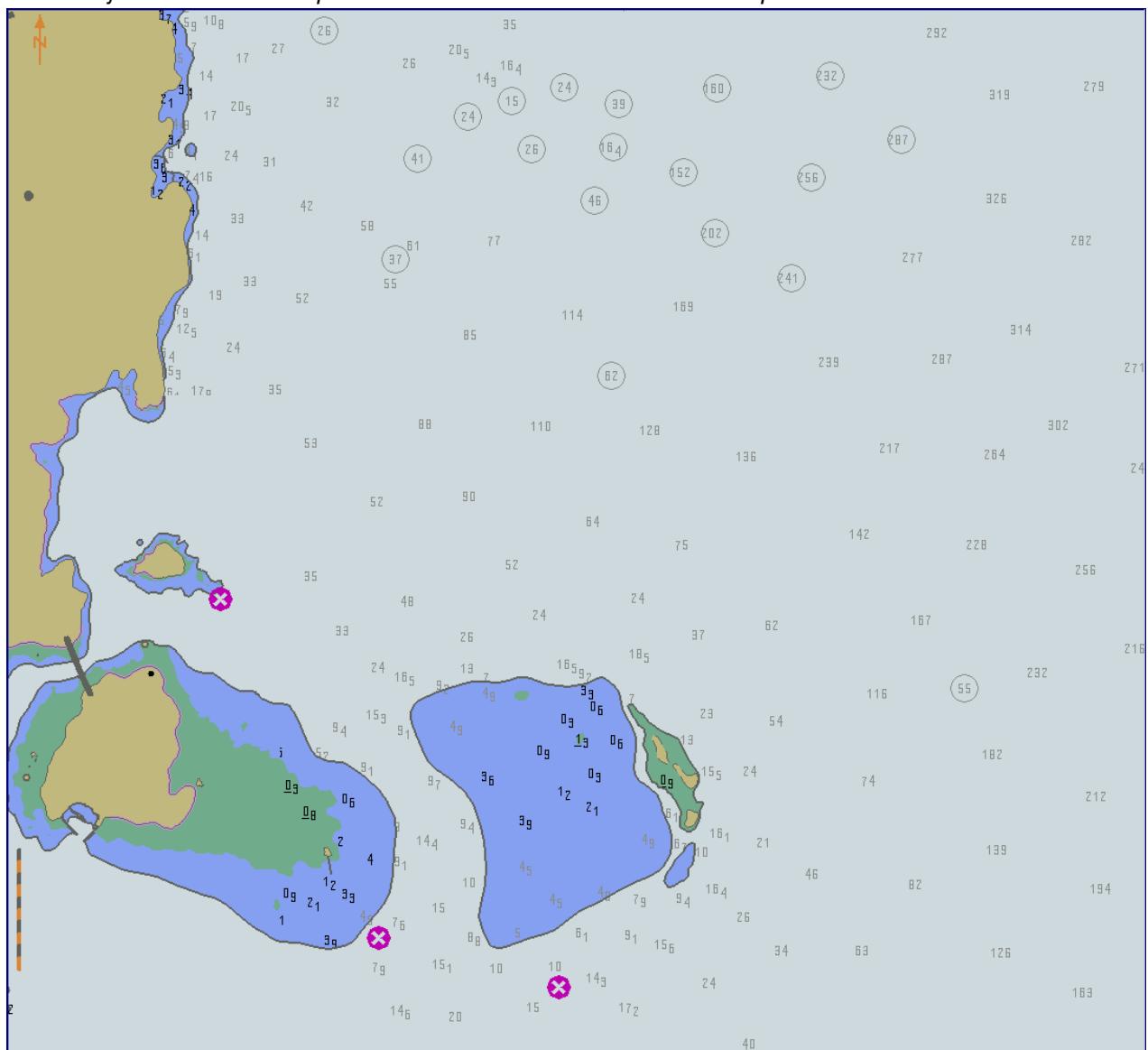
# IHO ENC Test Data Sets for ECDIS

## 3.3.5 Safety depth

Test Reference	3.3.5	IHO Reference	S-52 13.2.15
<b>Test description</b>			
Display of objects with respect to value of safety depth			
<b>Setup</b>			
As for test 3.3.4 a) Display of spot soundings shall be switched on.			
<b>Action</b>			
1. Set the safety depth value to 10m (safety contour 30m). 2. Set the safety depth value to 4m (safety contour 5m). 3. Set the safety depth value to 7m (safety contour 10m). 4. Set the safety depth value to 12m (safety contour 10m).			
<b>Results</b>			
1. The objects shown with depth values shallower than 10m must be emphasised.			
			

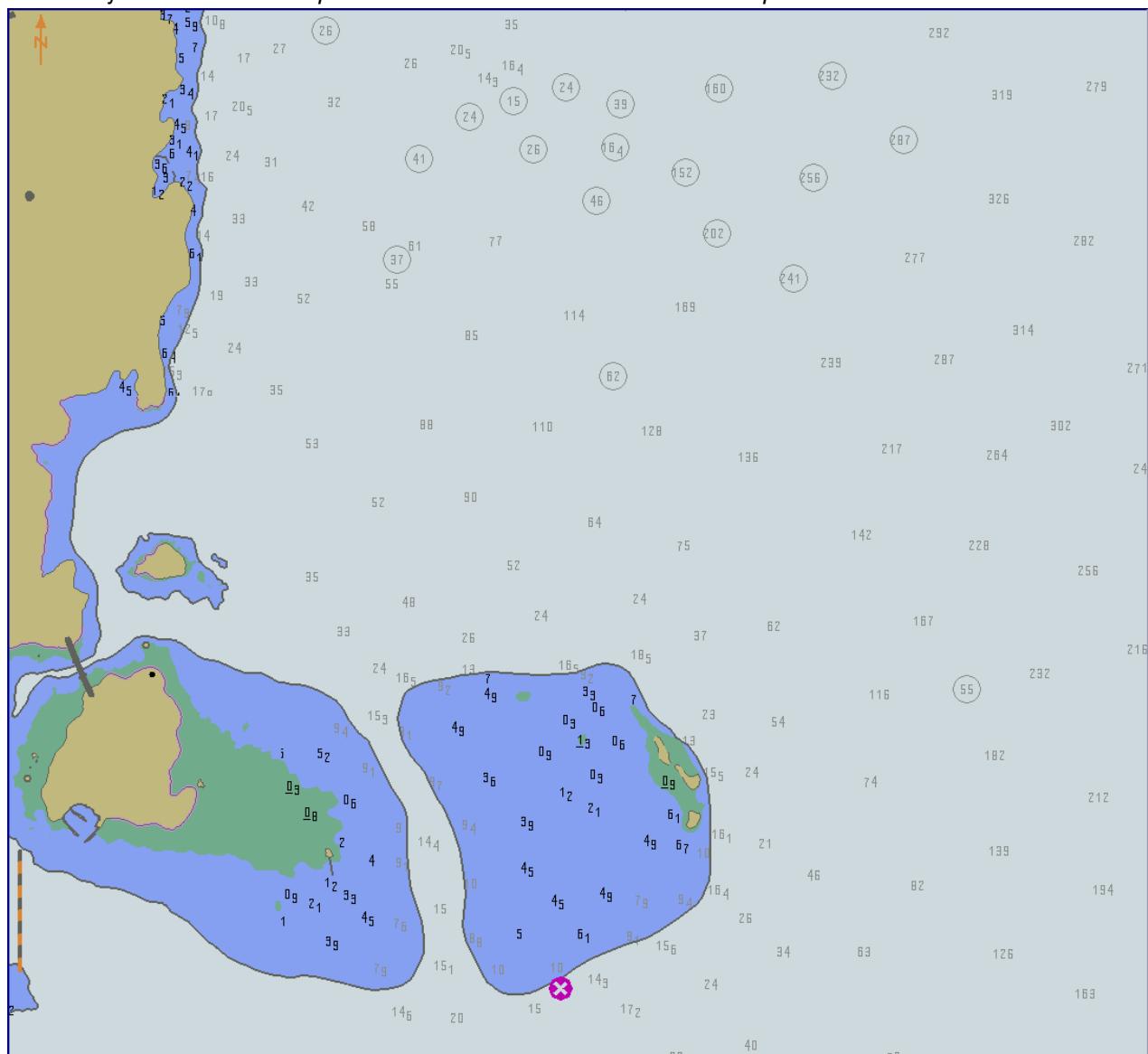
## IHO ENC Test Data Sets for ECDIS

2. The objects shown with depth values shallower than 4m must be emphasised.



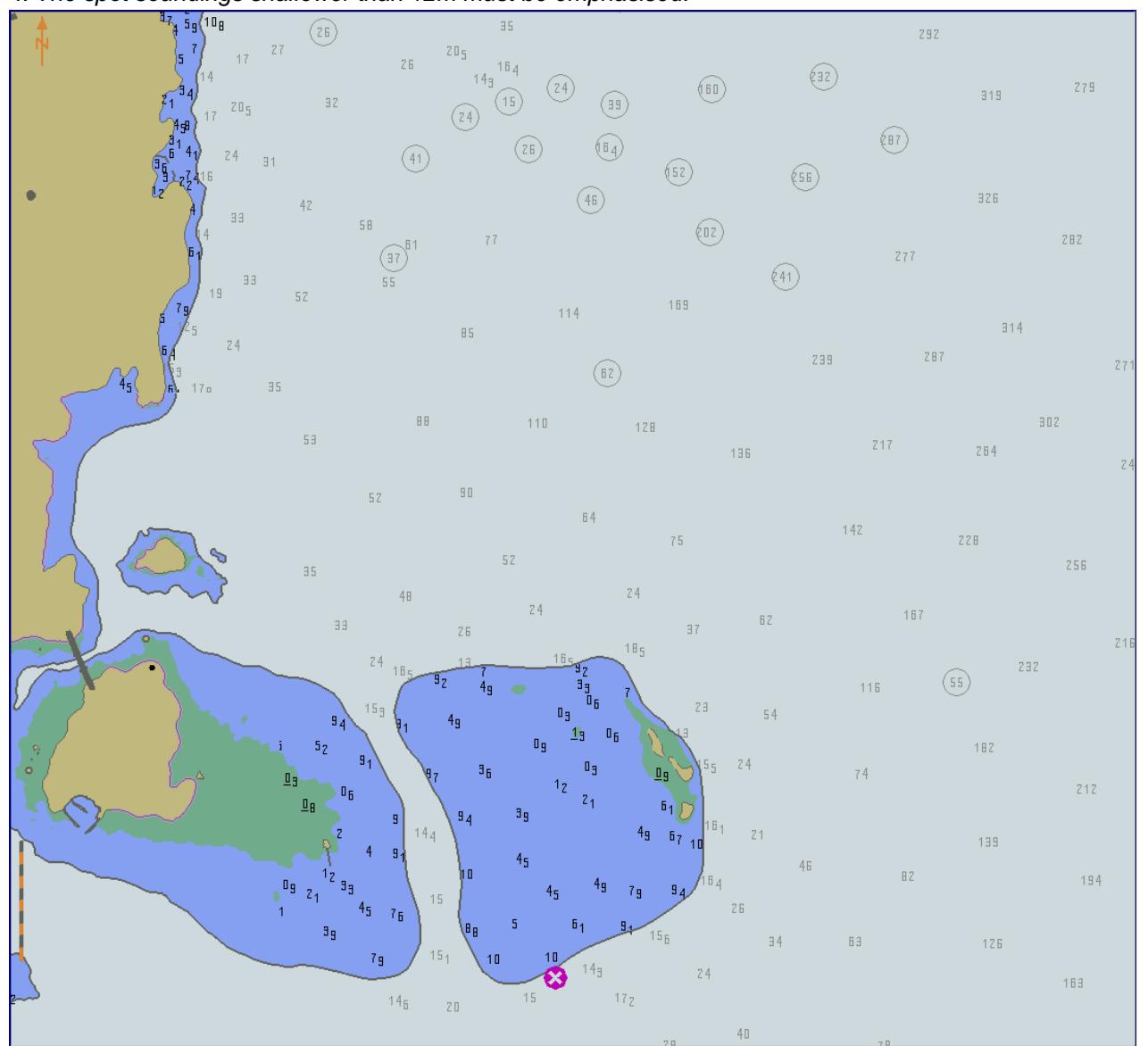
## IHO ENC Test Data Sets for ECDIS

3. The objects shown with depth values shallower than 7m must be emphasised.

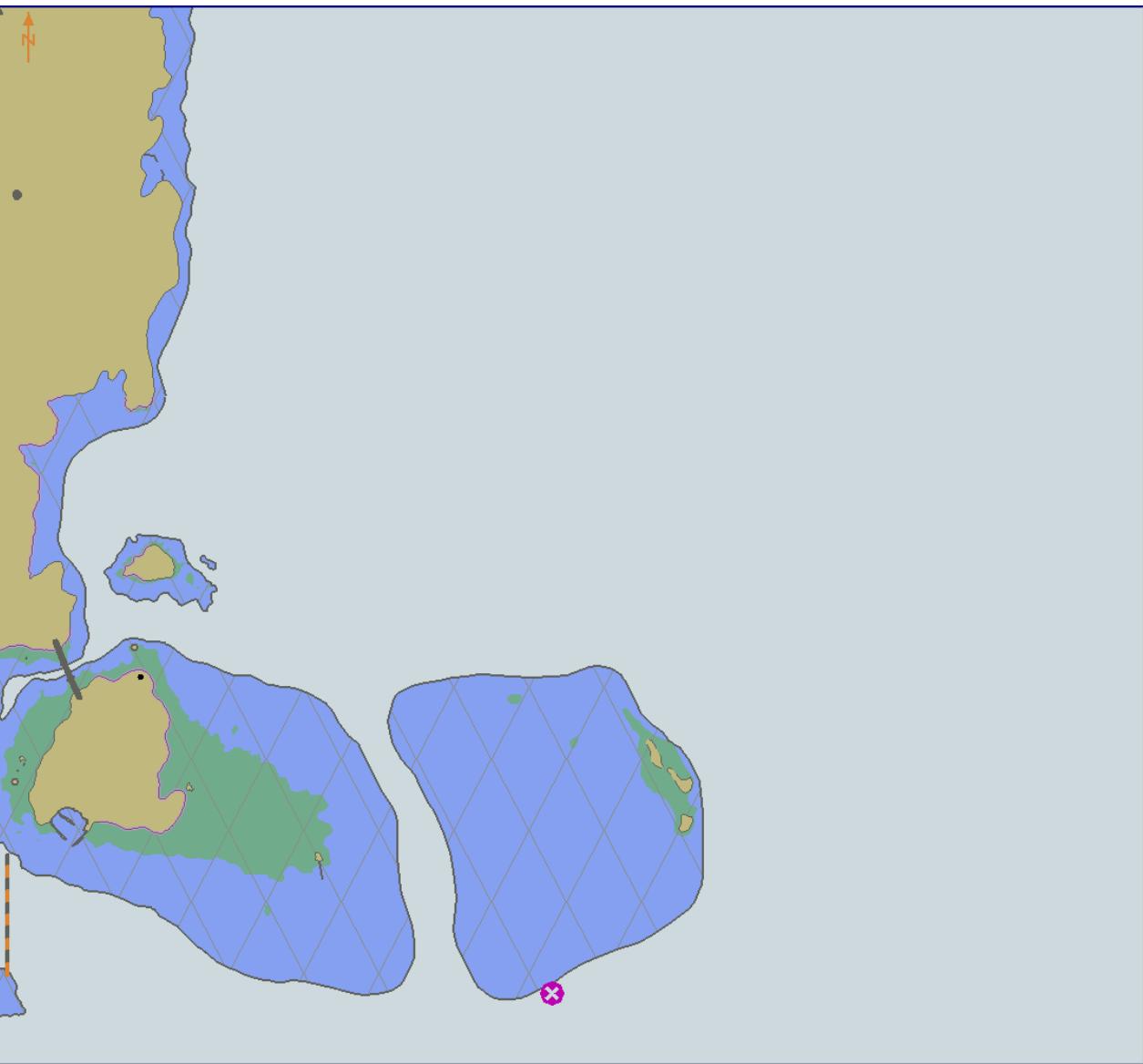


## IHO ENC Test Data Sets for ECDIS

4. The spot soundings shallower than 12m must be emphasised.



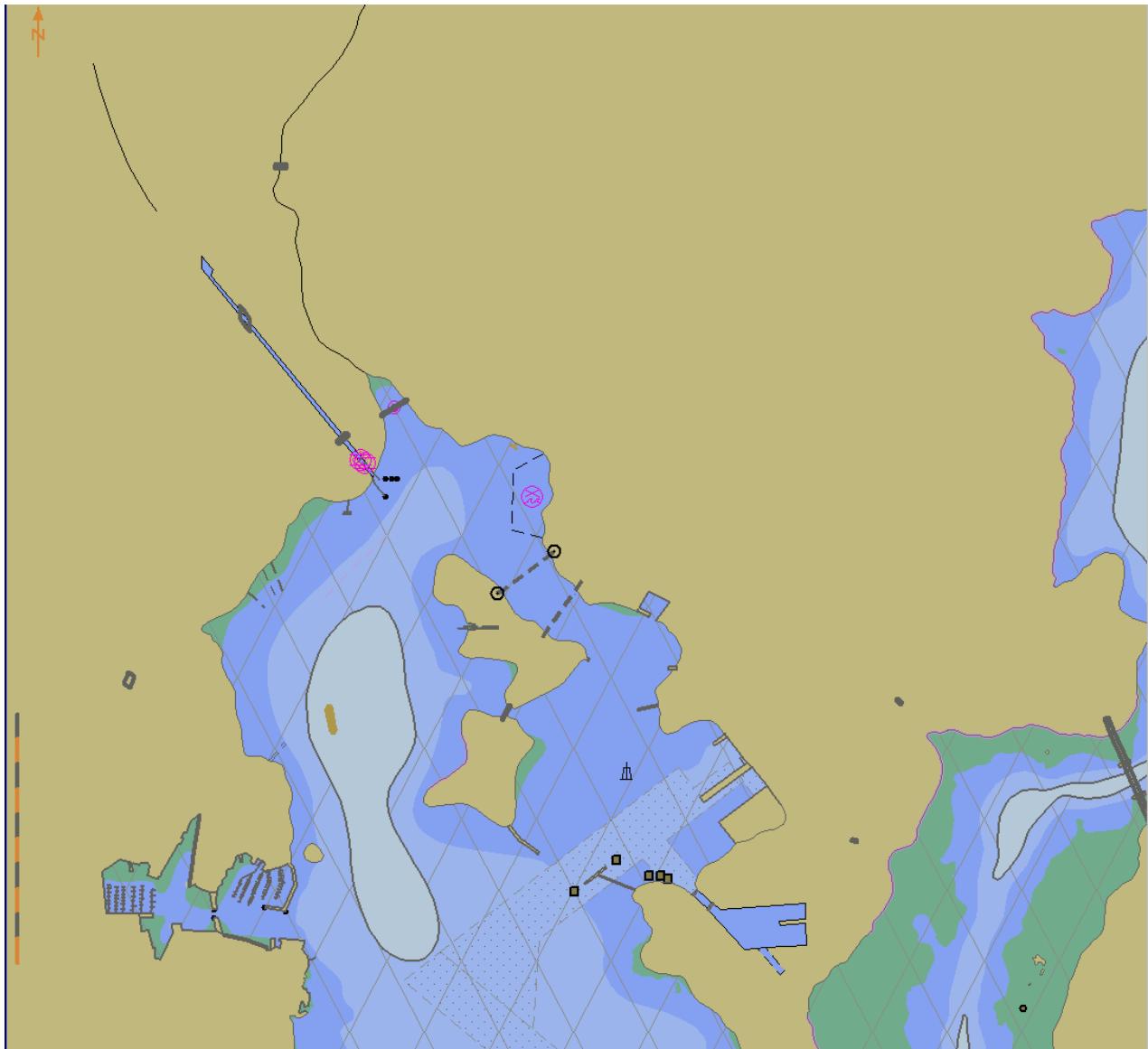
### 3.3.6 Shallow pattern

<b>Test Reference</b>	3.3.6	<b>IHO Reference</b>	S-52 10.5.7 S-52 10.3.4.4
<b>Test description</b>			
<i>Display of shallow pattern.</i>			
<b>Setup</b>			
<p>Load all cells from 2.1.1 Power Up\ENC_ROOT with the following settings:</p> <p>Safety Contour = 10 metres</p> <p>Shallow Pattern = On</p>			
<b>Action</b>			
Display loaded cell GB4X0000.000 at compilation scale (1:52 000), select Display Base			
<b>Results</b>			
Confirm that the diamond shallow pattern is displayed as follows:			
			

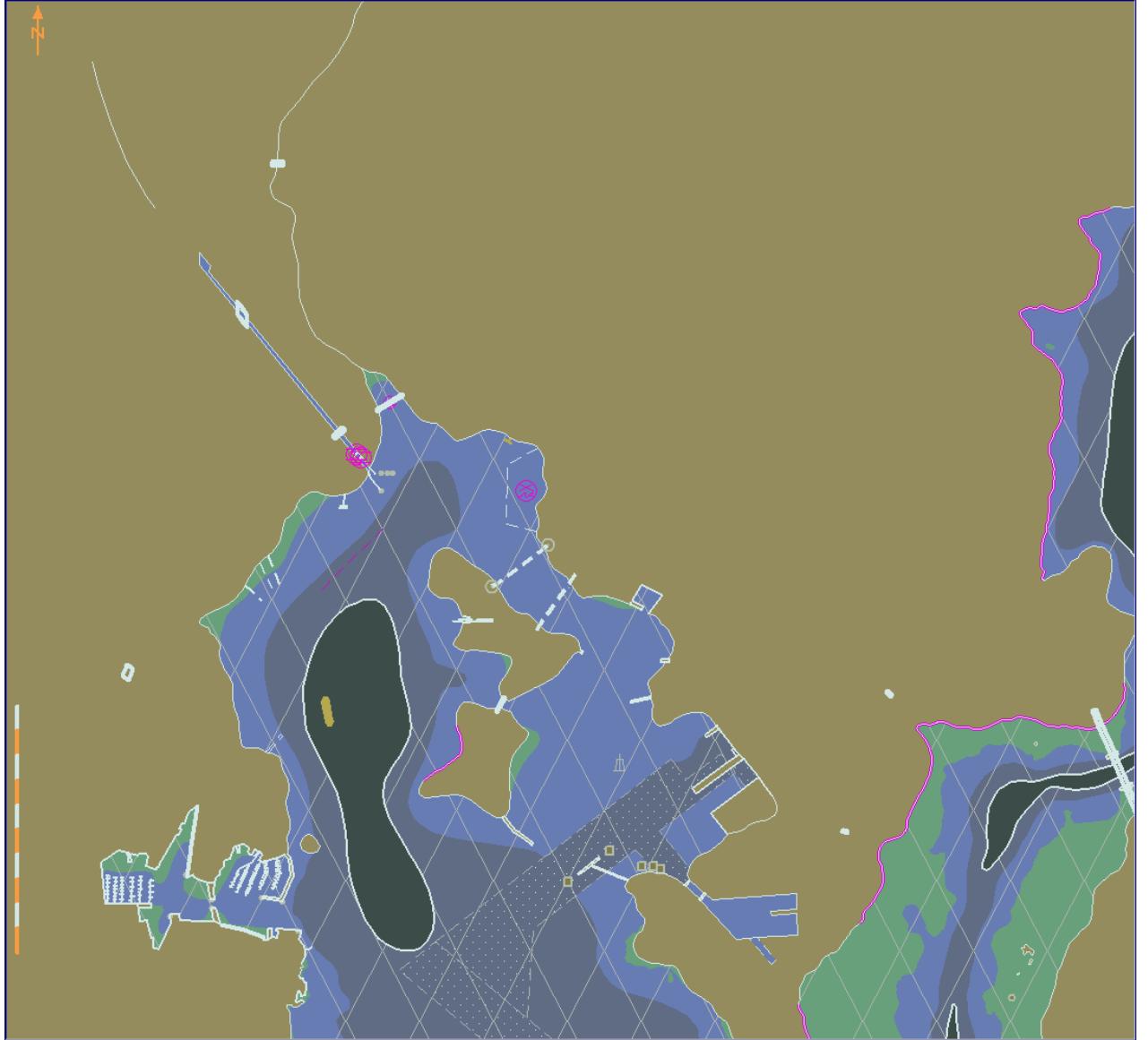
### 3.3.7 Contour labels

<b>Test Reference</b>	3.3.7	<b>IHO Reference</b>	S-52 10.3.4.4
<b>Test description</b>			
Contour labels is an optional Mariners' selection. This test shall be performed, if the contour label option is provided.			
<b>Setup</b>			
<p>Load all cells from 2.1.1 Power Up\ENC_ROOT with the following settings:</p> <p>Select Safety Contour = 10 metres</p> <p>Select Display Mode as "DISPLAY BASE"</p> <p>Select Colour Palette as "DAY"</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Select Other Depth contours</p> <p>Select Contour labels</p>			
<b>Action</b>			
Display loaded cell GB5X01NE.000 at compilation scale (1:25 000)			
<b>Results</b>			
Confirm that the objects display as follows			

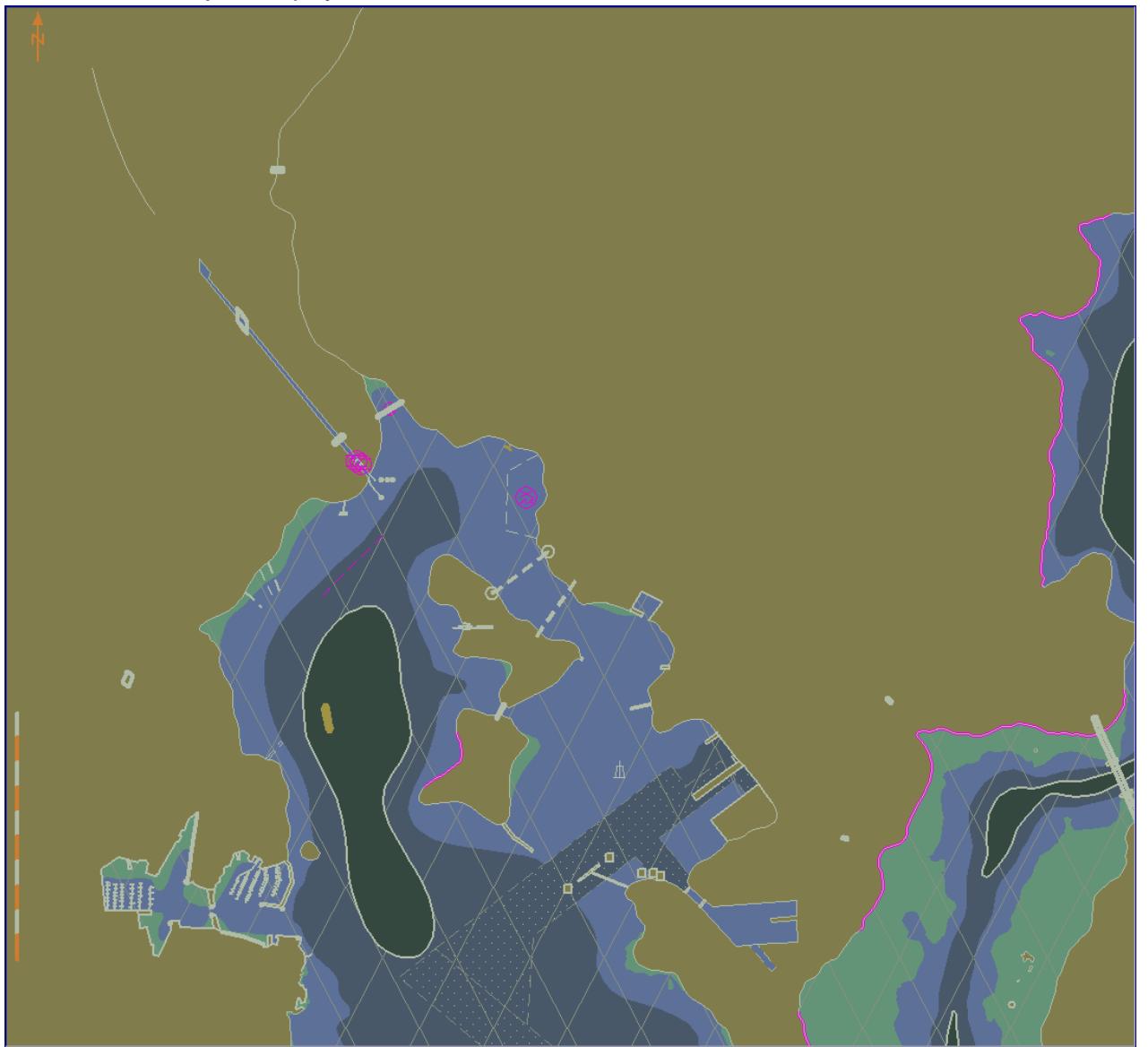
### 3.3.8 Colour palettes

Test Reference	3.3.8 a)	IHO Reference	S-52 App A
<b>Test description</b>			
Display of ENC in Day palette			
<b>Setup</b>			
<p>Load all cells from 2.1.1 Power Up\ENC_ROOT with the following settings:</p> <p>Safety Contour = 10 metres</p> <p>Safety Depth = 10 metres</p> <p>Shallow contour = 5 m</p> <p>Deep contour = 20 m</p> <p>Display Mode = "DISPLAY BASE"</p> <p>Colour Palette = "DAY"</p> <p>Symbolized Boundaries = On</p> <p>Depth Shades = 4</p> <p>Shallow Pattern = On</p>			
<b>Action</b>			
Display loaded cell GB5X01NW.000 at compilation scale (1:25 000)			
<b>Results</b>			
Confirm that the objects display as follows:			
			

## IHO ENC Test Data Sets for ECDIS

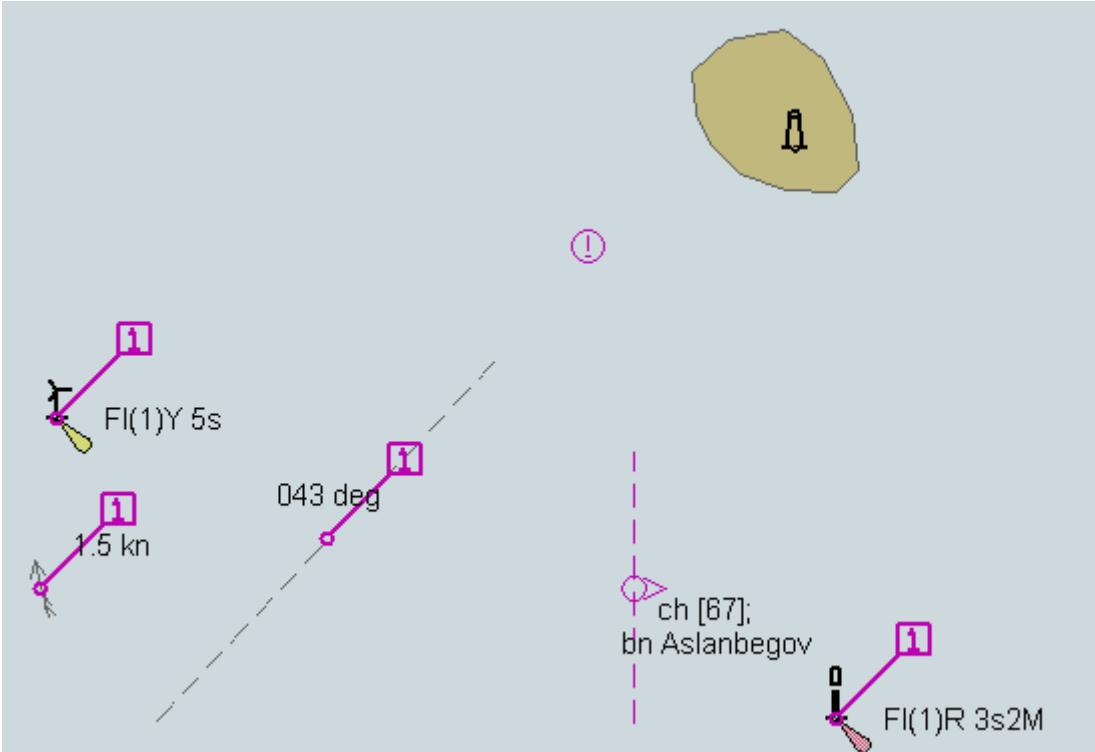
<b>Test Reference</b>	3.3.8 b)	<b>IHO Reference</b>	S-52 App A
<b>Test description</b>			
Display of ENC in Dusk palette			
<b>Setup</b>			
As for test 3.3.8 a) Colour Palette = "DUSK"			
<b>Action</b>			
Display loaded cell GB5X01NW.000 at compilation scale (1:25 000)			
<b>Results</b>			
Confirm that the objects display as follows:			
			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	3.3.8 c)	<b>IHO Reference</b>	S-52 App A
<b>Test description</b>			
Display of ENC in Night palette			
<b>Setup</b>			
As for test 3.3.8 a) Colour Palette = "NIGHT"			
<b>Action</b>			
Display loaded cell GB5X01NW.000 at compilation scale (1:25 000)			
<b>Results</b>			
Confirm that the objects display as follows:			
			

**3.3.9 Display of additional Chart Information Symbol**

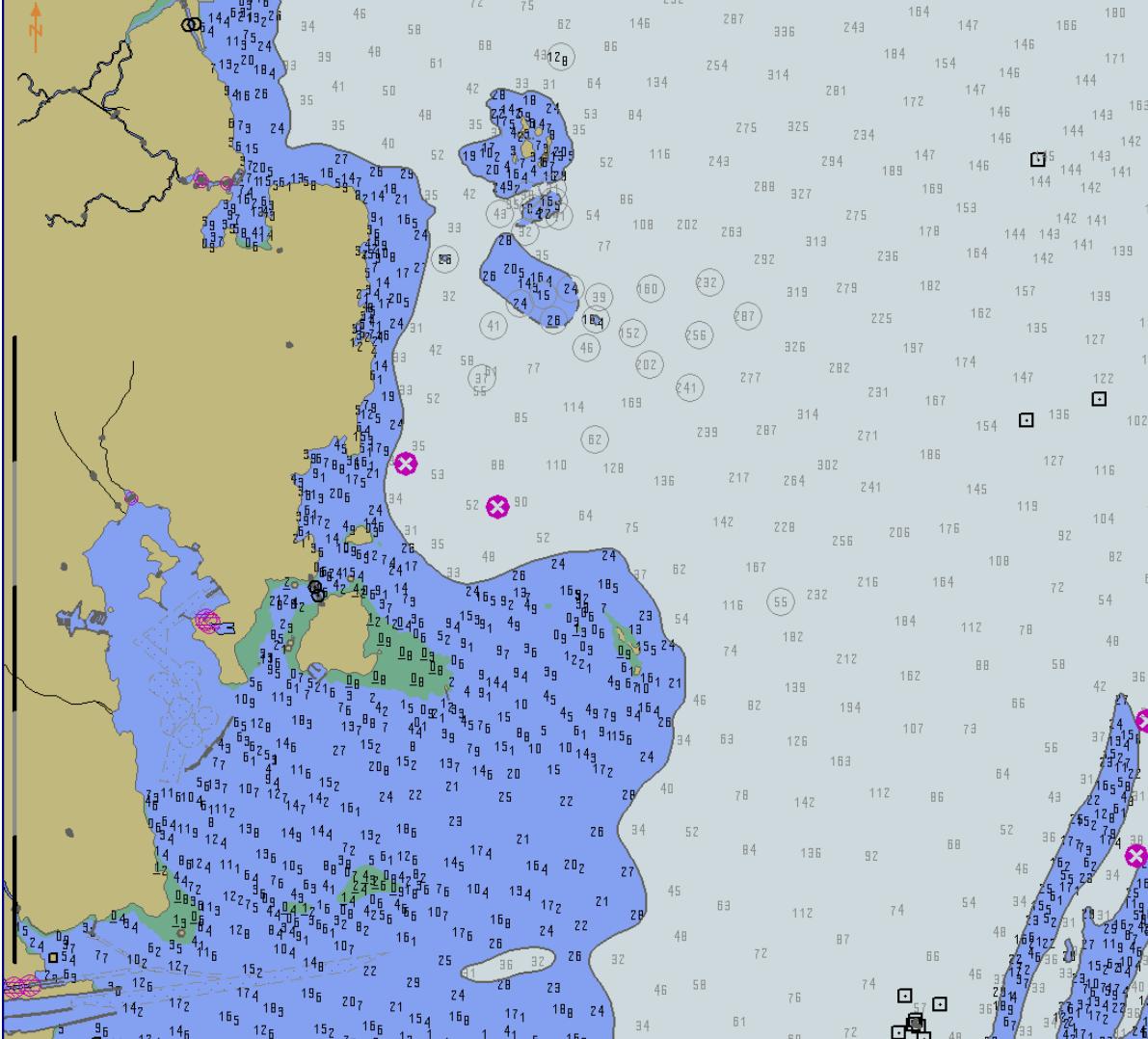
<b>Test Reference</b>	3.3.9 a)	<b>IHO Reference</b>	S-52 10.6.1.1
<b>Test description</b>			
Display of additional chart information symbol (INFORM).			
<b>Setup</b>			
Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings: Select Viewing group layer Other Select Symbolized Boundaries Select Paper chart symbols Deselect Accuracy Deselect Highlight info Deselect Highlight document Ensure that the system date is set to the current date and time.			
<b>Action</b>			
Centre the display on position 32°34.000'S 61° 21.705'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the objects display as in the image below:			
Note: the display should show all of the objects above without the chart information symbols.			

<b>Test Reference</b>	3.3.9 b)	<b>IHO Reference</b>	S-52 10.6.1.1
<b>Test description</b>			
Display of additional chart information symbol (INFORM).			
<b>Setup</b>			
As for test 3.3.9 a) Select Highlight info			
<b>Action</b>			
As for test 3.3.9 a)			
<b>Results</b>			
Confirm that the objects display as in the image below:			
			

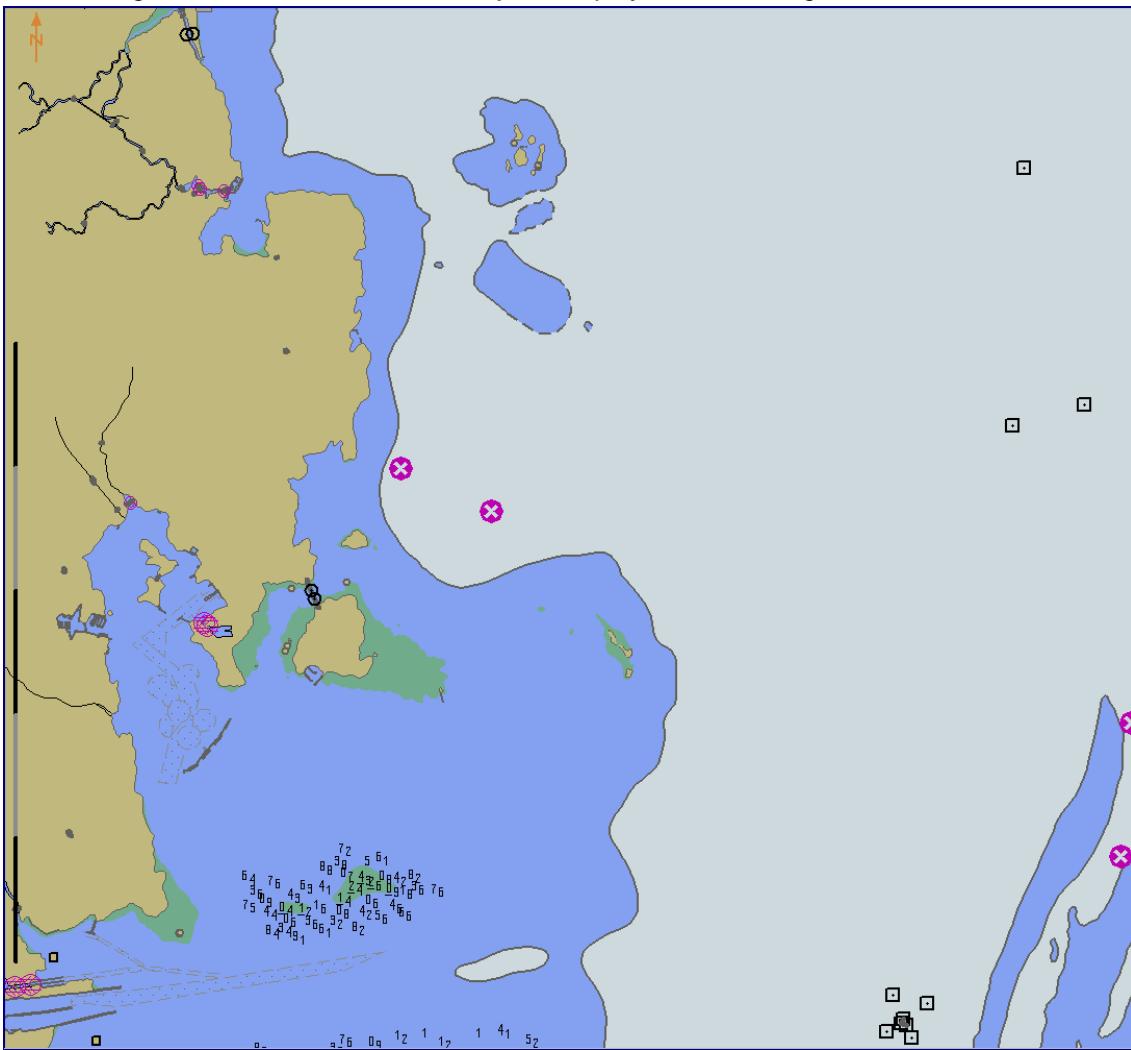
<b>Test Reference</b>	3.3.9 c)	<b>IHO Reference</b>	S-52 10.6.1.1
<b>Test description</b>			
Display of additional chart information symbol (INFORM).			
<b>Setup</b>			
As for test 3.3.9 a) Select Highlight document			
<b>Action</b>			
As for test 3.3.9 a)			
<b>Results</b>			
Confirm that the objects display as in the image below:			

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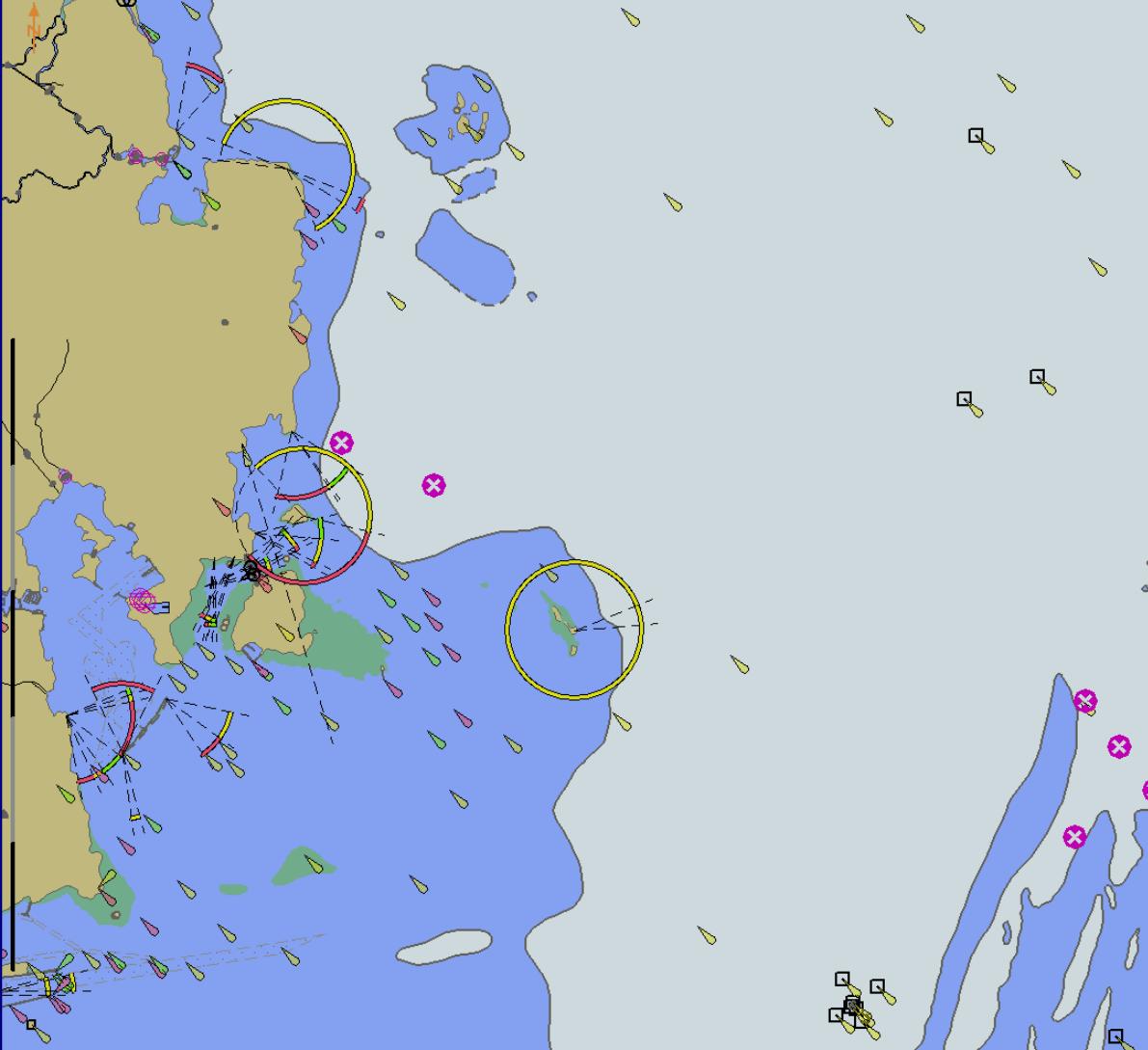
## 3.3.10 Scale minimum

Test Reference	3.3.10	IHO Reference	S-52 10.4.2
<b>Test description</b>			
Disabling Scale Minimum using the Scale min Mariner's Selection			
<b>Setup</b>			
Load the following cell 2.1.1 Power Up\ENC_ROOT\GB4X0000.000 with the following settings:			
Select Viewing group layer Display Base			
Set the safety contour value to 30 m			
Set the safety depth value to 30 m			
Select Symbolized Boundaries			
Select Paper chart symbols			
Select Spot soundings			
Deselect Accuracy			
Deselect Highlight info			
Deselect Highlight document			
Deselect Scale min			
<b>Action</b>			
Centre the display on position 32°28.600'S 61° 02.800'E and then zoom in to a scale of 1:100,000.			
1. Observe the display.			
2. Select Scale min			
<b>Results</b>			
1. Confirm that the objects display as in the image below:			
			

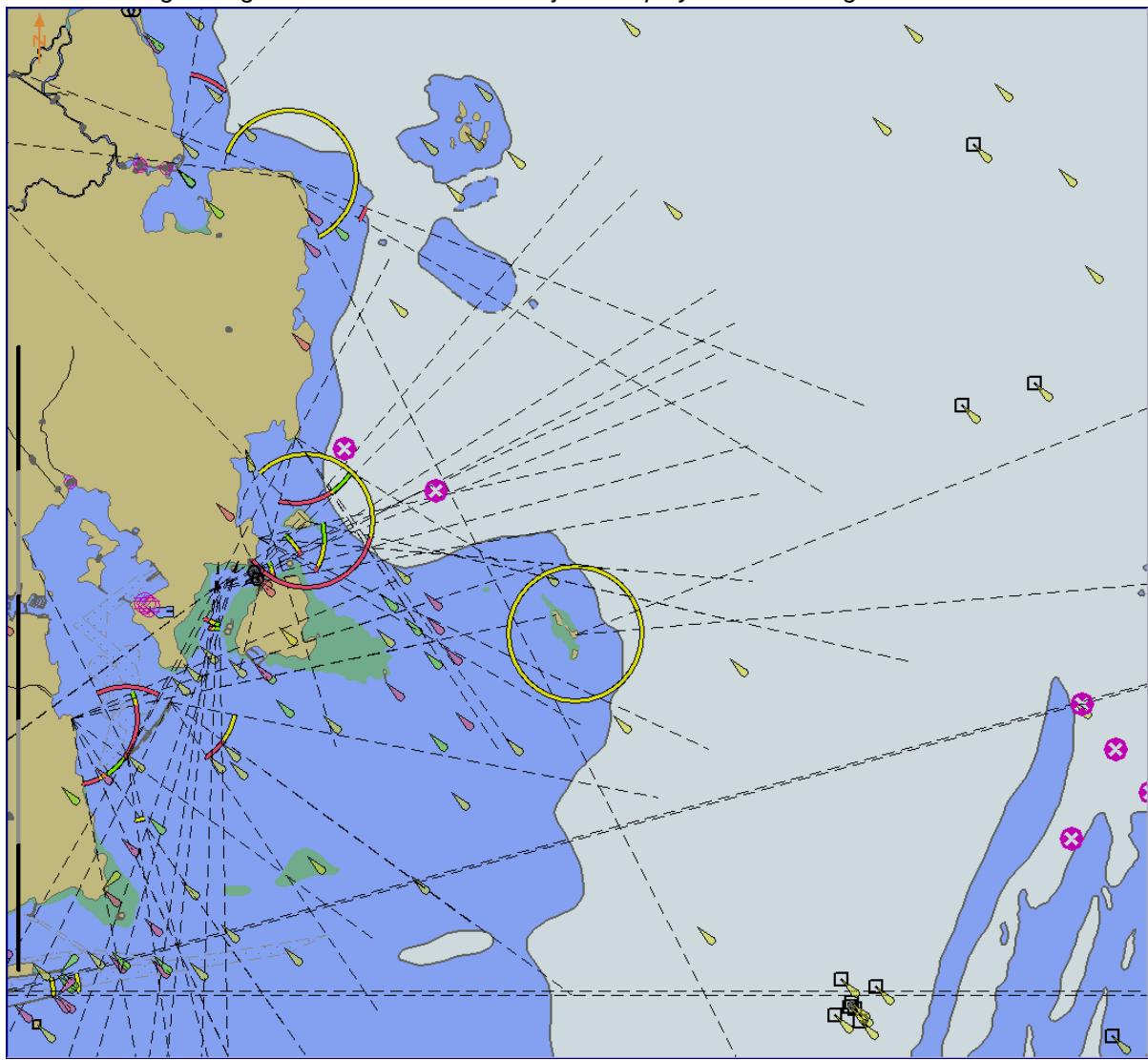
2. After selecting Scale min confirm that the objects display as in the image below:



### 3.3.11 Full Light Lines

<b>Test Reference</b>	3.3.11	<b>IHO Reference</b>	S-52 13.2.7
<b>Test description</b>			
<i>Disabling Full light lines using the Full light lines Mariner's Selection</i>			
<b>Setup</b>			
<p>Load the following cell 2.1.1 Power Up\ENC_ROOT\GB4X0000.000 with the following settings:</p> <p>Select Viewing group layer Display Base</p> <p>Set the safety contour value to 30 m</p> <p>Set the safety depth value to 30 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Select Lights</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Deselect Highlight document</p> <p>Deselect Full light lines</p>			
<b>Action</b>			
<p>Centre the display on position 32°29.000'S 61° 04.000'E and then zoom in to a scale of 1:100,000.</p> <ol style="list-style-type: none"> <li>1. Observe the display.</li> <li>2. Select Full light lines</li> </ol>			
<b>Results</b>			
<p>1. Confirm that the objects display as in the image below:</p> 			

2. After selecting Full light lines confirm that the objects display as in the image below



### 3.3.12 National Language

<b>Test Reference</b>	3.3.12	<b>IHO Reference</b>	S-52 10.6.1.2
<b>Test description</b>			
<i>Selecting the display of text in National language.</i>			
<b>Setup</b>			
<p>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight document</p> <p>Deselect National language</p>			
<b>Action</b>			
<p>Centre the display on position 32°34.700'S 61° 22.300'E and then zoom in to a scale of 1:10,000.</p> <ol style="list-style-type: none"> <li>1. Observe the display.</li> <li>2. Select National language</li> </ol>			
<b>Results</b>			
<p>1. Confirm that the objects display as in the image below:</p> 			
<p>2. After selecting National language confirm that the objects display as in the image below:</p> 			
<p><i>Note: This object has name in national language (NOBJNM) and information in national language (NINFOM)</i></p>			

### 3.4 Non-Official Data

<b>Test Reference</b>	3.4 a)	<b>IHO Reference</b>	S-52 10.1.7
<b>Test description</b>			
<i>Loading and display of non-official data.</i>			
<b>Setup</b>			
<i>Load the following cell 3.4 Non-Official Data\ENC_ROOT\1B5X01NE.000</i>			
<i>(The producer code of this cell has been changed from GB to 1B and the agency code (AGEN) has been modified from 540 to 65535 as specified in S-57 clauses 4.3.1 and 2.1.)</i>			
<b>Action</b>			
<i>Visually inspect the cell.</i>			
<b>Results</b>			
<i>Confirm that the cell displays bounded by the LC(NONHODAT) symbol as defined in the Presentation Library and that an indication to refer to the official chart is provided.</i>			

### 3.5 Area of No Data

<b>Test Reference</b>	3.5	<b>IHO Reference</b>	S-52 10.1.8
<b>Test description</b>			
<i>Loading and display of areas of no data.</i>			
<b>Setup</b>			
<i>Load the following cell 2.1.1 Power Up\ENC_ROOT\GB4X0000.000</i>			
<b>Action</b>			
<i>View a display area for which no ENC data is present, the area around the edge of the cell.</i>			
<b>Results</b>			
<i>Confirm that the “no data” area symbolization defined in the Presentation Library is displayed in the appropriate area.</i>			

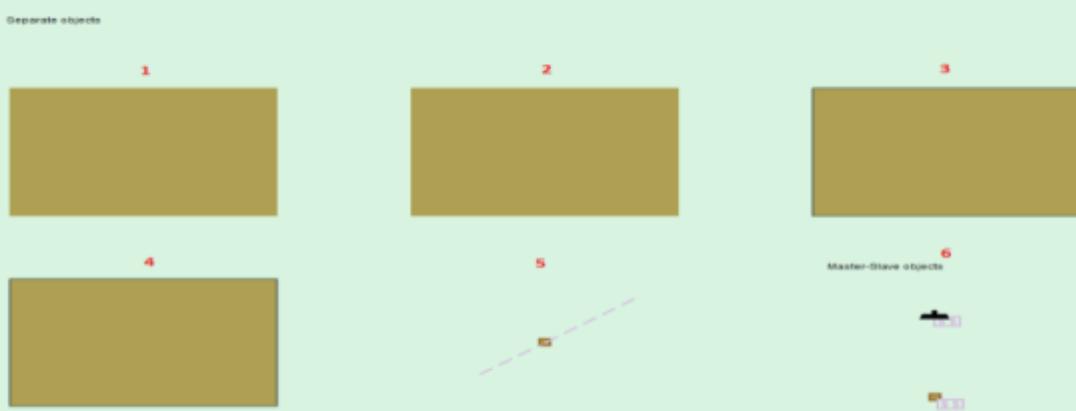
### 3.6 Display priority

#### 3.6.1 Different priority

<b>Test Reference</b>	3.6.1	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Different priority and different geometry</i>			
<b>Setup</b>			
<i>Load the following cell 3.6 Display priorities\ENC_ROOT\2J5X0001.000 with the following settings:</i>			
<i>Safety Contour = 30 metres</i>			
<i>Display Mode = “OTHER”</i>			
<i>Text display = On</i>			
<i>Shallow pattern = On</i>			
<i>Information indication = On</i>			
<i>Symbolized Boundaries = On</i>			
<i>Simplified Symbols = Off</i>			
<b>Action</b>			
<i>View the objects at position 32°20.400'S 61°20.650'E scale 1:5000</i>			

**Results**

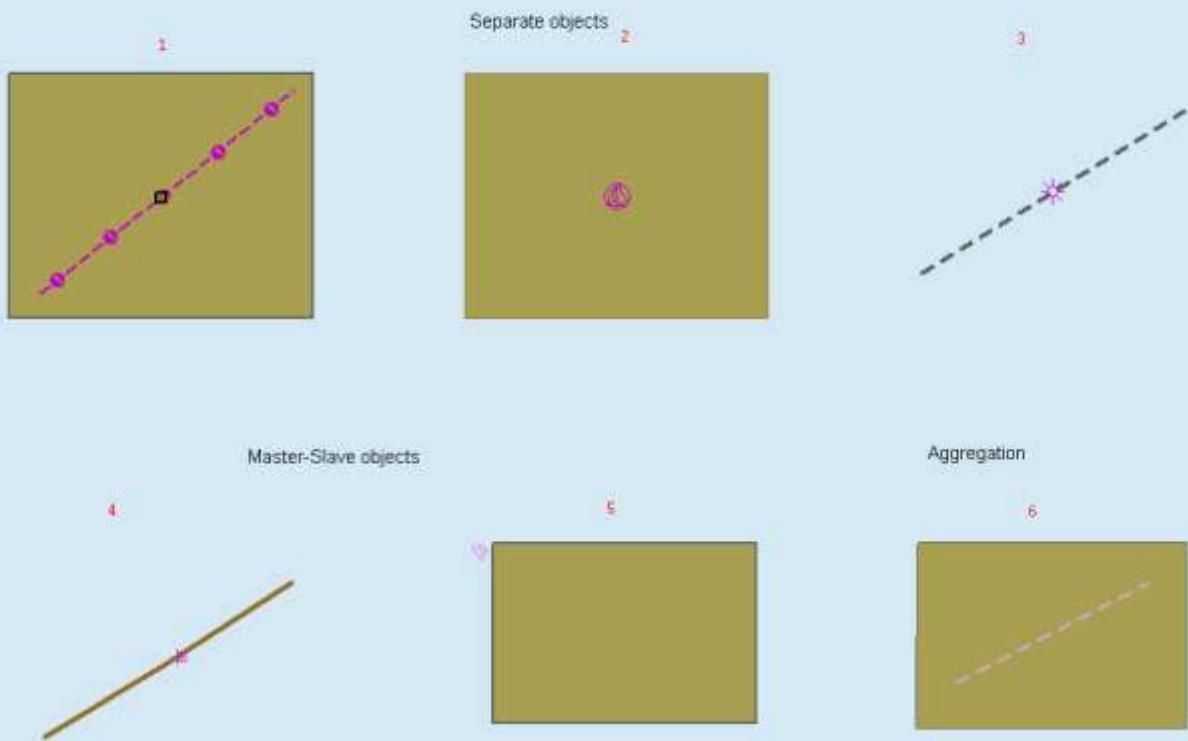
Confirm that items 1-6 display as shown in the graphic below:

**3.6.2 Same priority**

<b>Test Reference</b>	3.6.2	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
Same priority and different geometry			
<b>Setup</b>			
As for test 3.6.1			
<b>Action</b>			
View the objects at position 32°20.400'S 61°21.900' E scale 1:5000			
<b>Results</b>			

Confirm that items 1-6 display as shown in the graphic below:

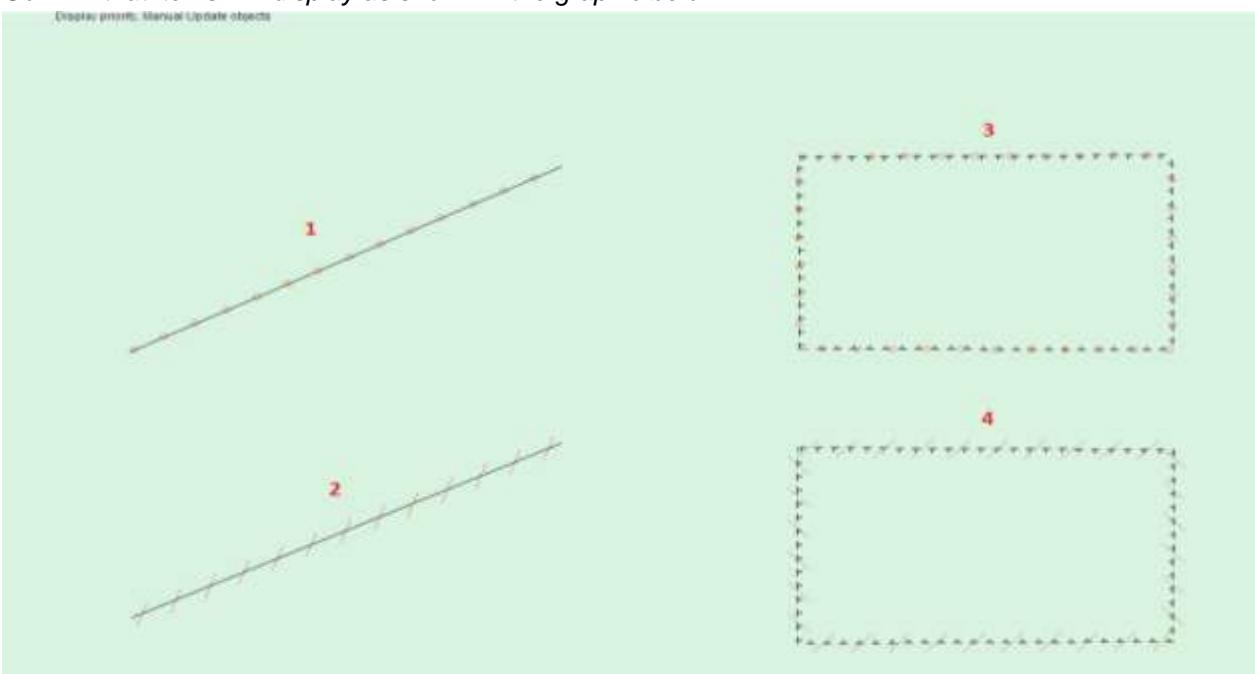
<sup>1</sup>Display priority, same priority - different geometry



### 3.6.3 Line Suppression

Test Reference	3.6.3	IHO Reference	S-52 10.3.4.1
<b>Test description</b>			
<i>Line suppression</i>			
<b>Setup</b>			
As for test 3.6.1			
<b>Action</b>			
View the objects at position 32°20.400'S 61°23.150' E scale 1:5000			
<b>Results</b>			
Confirm that items 1-16 display as shown in the graphic below:			
<p>The diagram illustrates the display priority for line suppression across four categories:</p> <ul style="list-style-type: none"> <li><b>Lines objects:</b> Includes dashed lines (e.g., 1, 2) and solid lines (e.g., 5, 6).</li> <li><b>Line and Area objects:</b> Includes a solid line with a cross-hatch pattern (e.g., 5, 6), a dashed line with a cross-hatch pattern (e.g., 7, 8), and a dashed line with a small circle symbol (e.g., 12).</li> <li><b>No suppression group (Point, patterns):</b> Includes a point with a circle symbol (e.g., 13), a point with a cross symbol (e.g., 14), and a point with a square symbol (e.g., 15).</li> <li><b>Area objects:</b> Includes a solid brown rectangle (e.g., 3) and a dashed rectangle containing small airplane symbols (e.g., 4, 9, 11).</li> </ul> <p>Each object is labeled with a red number from 1 to 16, indicating its specific type and rendering characteristics.</p>			

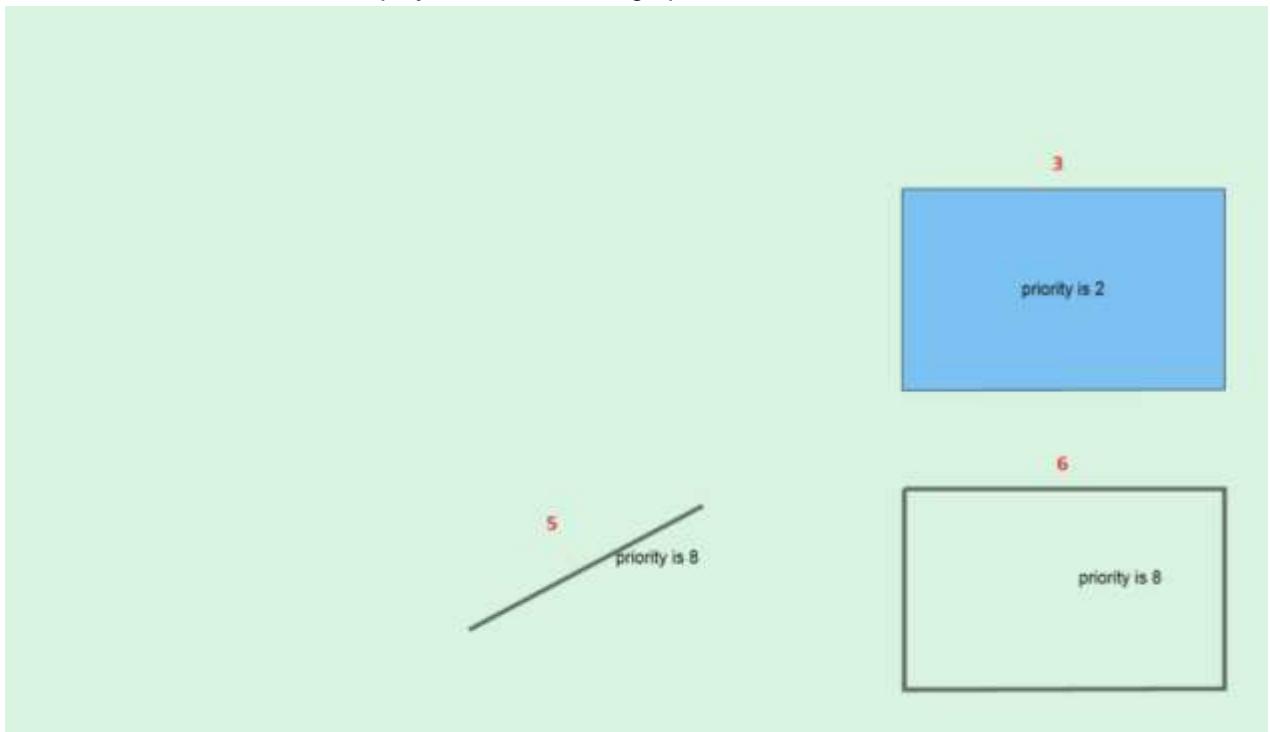
### 3.6.4 Manual Updates

Test Reference	3.6.4	IHO Reference	S-52 10.3.4.1
<b>Test description</b>			
<i>Manual updates</i>			
<b>Setup</b>			
As for test 3.6.1			
<b>Action</b>			
View the object at position 32°21.100'S-61°20.650'E scale 1:5000			
<b>Results</b>			
Confirm that items 1-4 display as shown in the graphic below:			
			

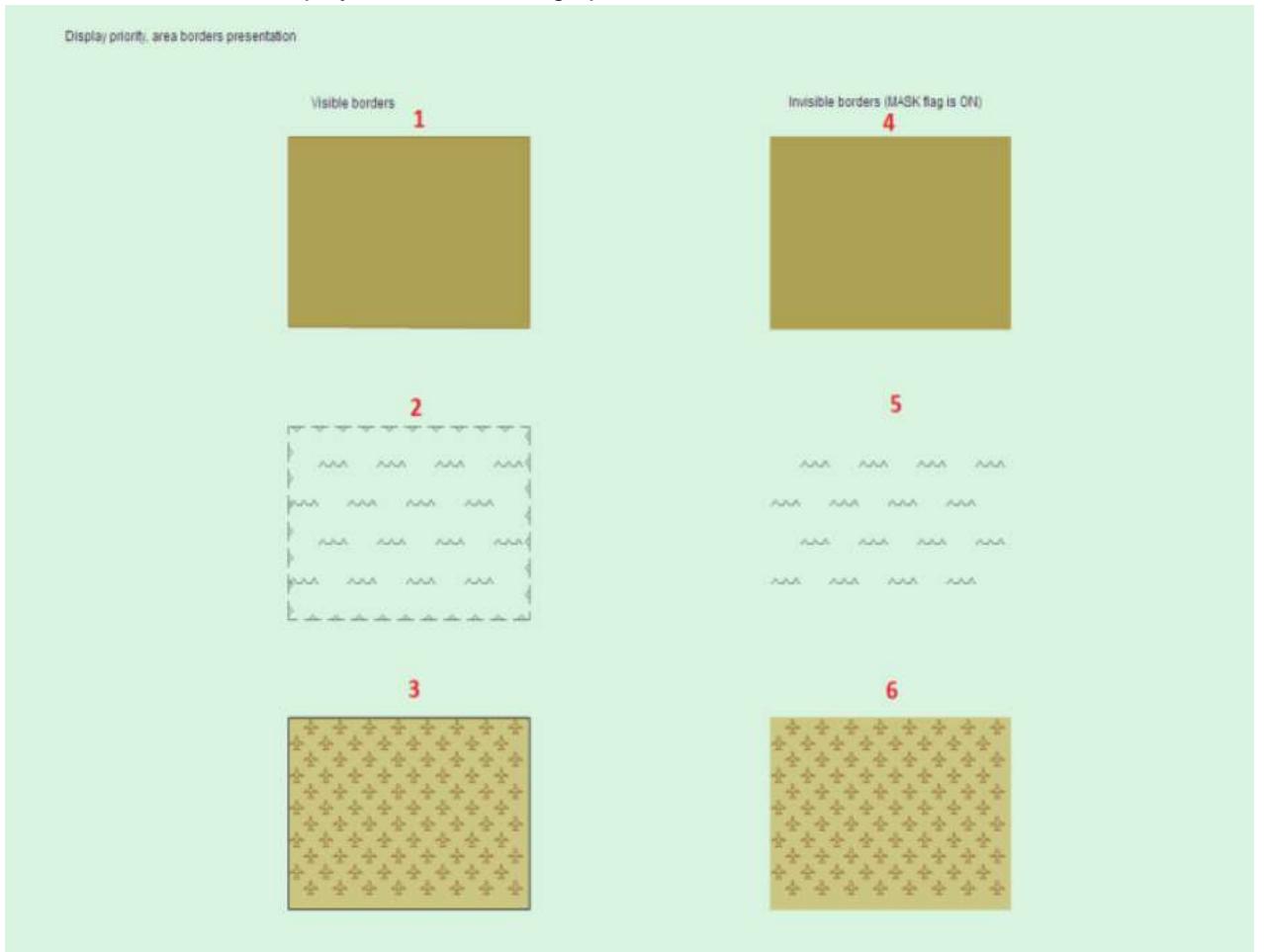
**3.6.5 Text Display**

<b>Test Reference</b>	3.6.5 a)	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Text display</i>			
<b>Setup</b>			
As for test 3.6.1			
<b>Action</b>			
View the objects at position 32°21.100'S 61°21.900'E scale 1:5000			
<b>Results</b>			
Confirm that items 1 to 6 display as shown in the graphic below:			
<p>Display priority, text presentation</p>			

<b>Test Reference</b>	3.6.5 b)	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Text display</i>			
<b>Setup</b>			
As for test 3.6.5 a) except Display Mode = "STANDARD"			
<b>Action</b>			
View the objects at position 32°21.100'S 61°21.900'E scale 1:5000			
<b>Results</b>			
Confirm that items 1 to 6 display as shown in the graphic below:			
<p>Display priority, text presentation</p>			

<b>Test Reference</b>	3.6.5 c)	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Text display</i>			
<b>Setup</b>			
As for test 3.6.5 b) except Display Mode = "BASE"			
<b>Action</b>			
View the objects at position 32°21.100'S 61°21.900'E scale 1:5000			
<b>Results</b>			
Confirm that items 3,5 and 6 display as shown in the graphic below:			
			

### 3.6.6 Display of area borders

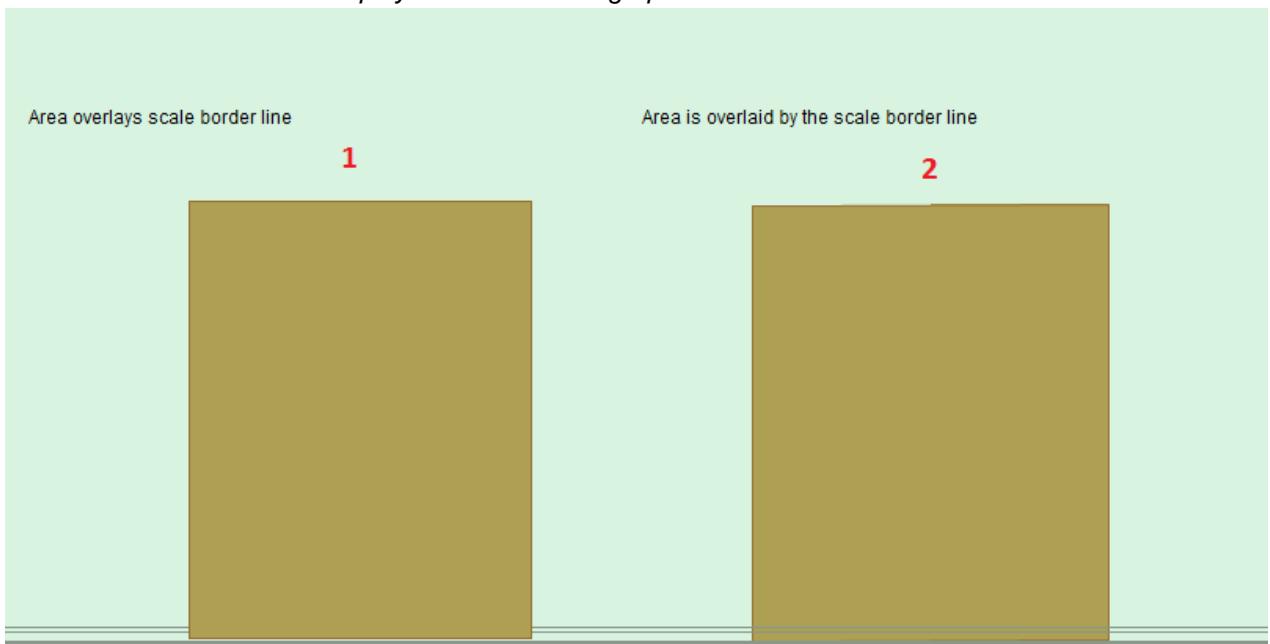
<b>Test Reference</b>	3.6.6	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Display of area borders</i>			
<b>Setup</b>			
As for test 3.6.5 c) except Display Mode = "OTHER"			
<b>Action</b>			
View the objects at position 32°21.100'S 61°23.150'E scale 1:5000			
<b>Results</b>			
Confirm that items 1-6 display as shown in the graphic below:			
<p>Display priority: area borders presentation</p> 			

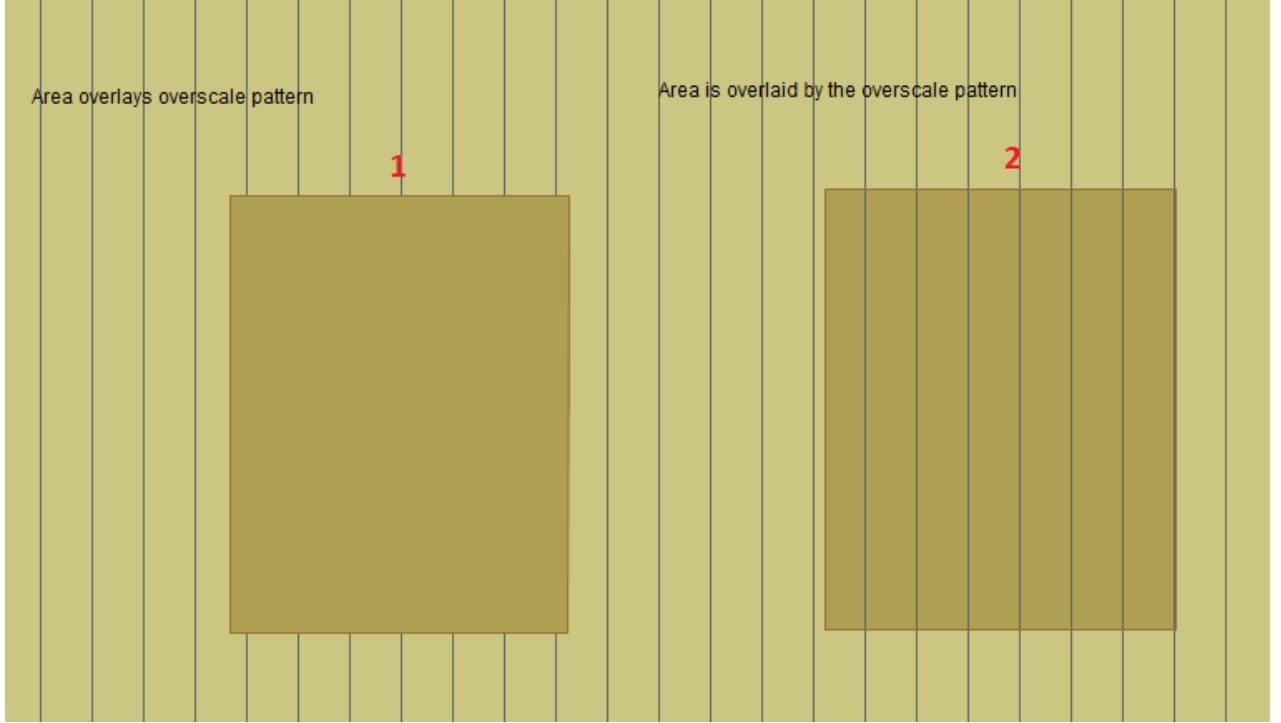
### 3.6.7 Display of unknown symbols

<b>Test Reference</b>	3.6.7	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Display of unknown symbol</i>			
<b>Setup</b>			
As for test 3.6.6			
<b>Action</b>			
View the objects at position 32°21.850'S 61°20.650'E scale 1:5000			
<b>Results</b>			
Confirm that items 1-6 display as shown in the graphic below :			

### 3.6.8 Boundary display for unofficial data

<b>Test Reference</b>	3.6.8.1	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Unofficial data boundary display</i>			
<b>Setup</b>			
As for test 3.6.6 and in addition, load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000			
<b>Action</b>			
View the objects at position 32°22.450'S 61°24.250'E scale 1:5000			
<b>Results</b>			
Confirm that items 1 and 2 display as shown in the graphic below:			

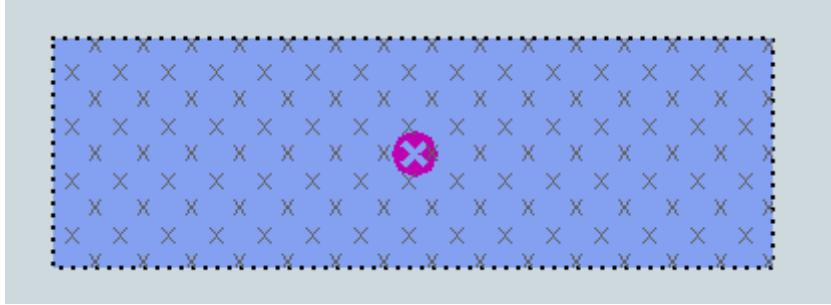
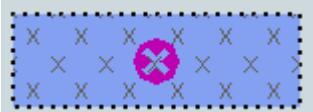
<b>Test Reference</b>	3.6.8.2	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
Scale boundary display			
<b>Setup</b>			
As for test 3.6.6 and in addition, Load the following cell 3.6 Display priorities\ENC_ROOT\2J4X0001.000 Chart scale boundaries = On			
<b>Action</b>			
View the objects at position 32°22.450'S 61°23.800'E scale 1:5000			
<b>Results</b>			
Confirm that items 1 and 2 display as shown in the graphic below:			
 <p>Area overlays scale border line      Area is overlaid by the scale border line</p> <p style="text-align: center;">1    2</p>			

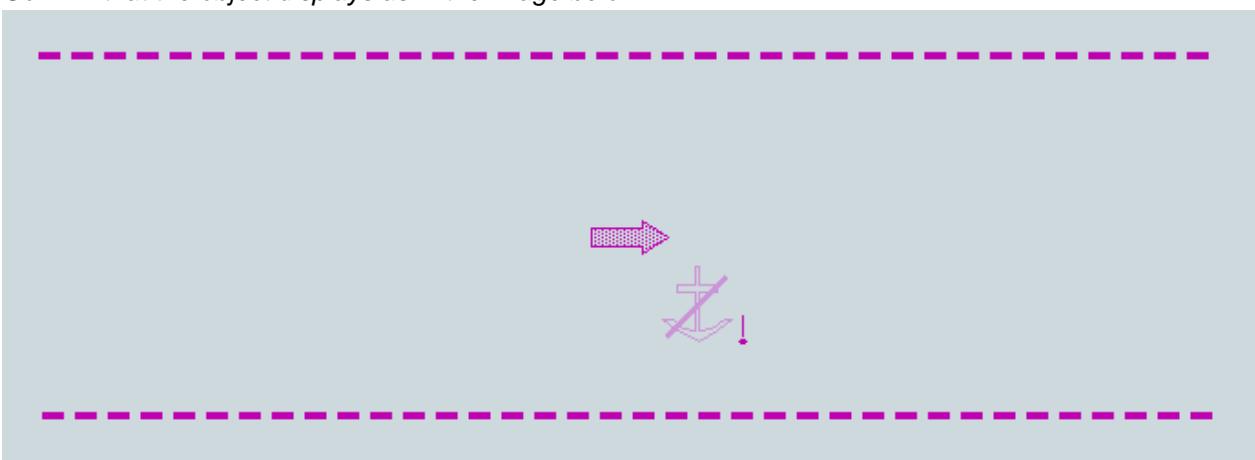
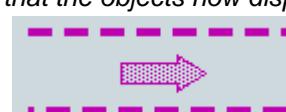
<b>Test Reference</b>	3.6.8.3	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Overscale pattern display</i>			
<b>Setup</b>			
As for test 3.6.8.2 and in addition:			
Overscale indication = On			
<b>Action</b>			
View the objects at position 32°22.450'S 61°23.800'E scale 1:5000			
<b>Results</b>			
Confirm that items 1 and 2 display as shown in the graphic below:			
			

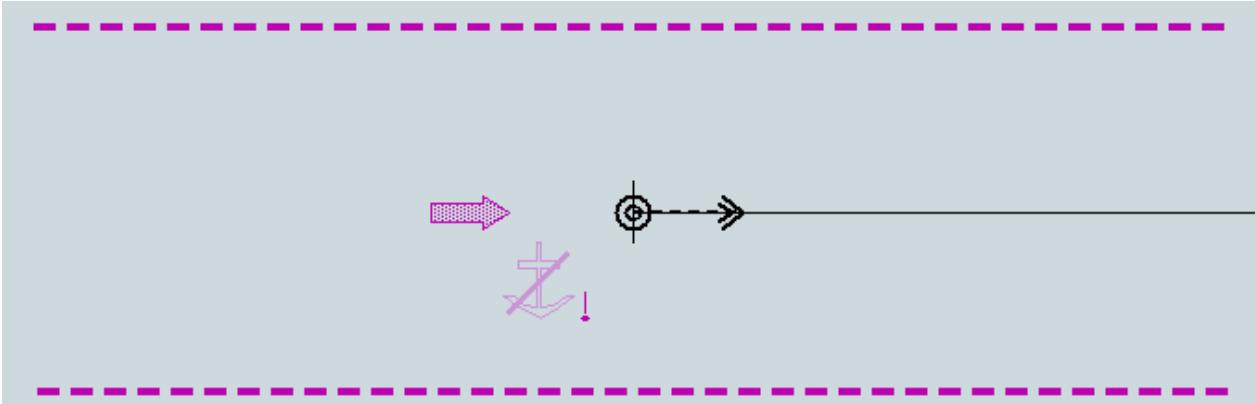
### 3.6.9 Display of objects affected by CSPs

<b>Test Reference</b>	3.6.9	<b>IHO Reference</b>	S-52 10.3.4.1
<b>Test description</b>			
<i>Display of objects with priority affected by conditional symbology procedures</i>			
<b>Setup</b>			
As for test 3.6.1			
<b>Action</b>			
View the objects at position 32°21.850'S 61°23.150'E scale 1:5000			
<b>Results</b>			
Confirm that items 1-12 display as shown in the graphic below :			
<p>Display priority. CSP changes priority</p> <p>Lower Area object overlays higher Area object</p> <p>Higher Area object overlays Lower Area object</p> <p>1 2 3 4 5 6 7 8 9 10 11 12</p>			

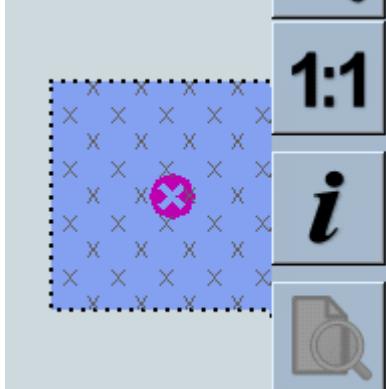
### 3.6.10 Display of Centred Symbols

<b>Test Reference</b>	3.6.10 a)	<b>IHO Reference</b>	S-52 8.5.1
<b>Test description</b>			
<i>Display of centred symbol in the centre of an area.</i>			
<b>Setup</b>			
<p>Load the following cell 3.3 Settings\ENC_ROOT\GB4X0001.000 with the following settings:</p> <p>Select Viewing group layer Other</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p>			
<b>Action</b>			
Centre the display on position 32°32.805'S 61° 21.290'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the object displays as in the image below:			
			
Zoom out to scale 1:50 000 and confirm that the objects now display as follows:			
			

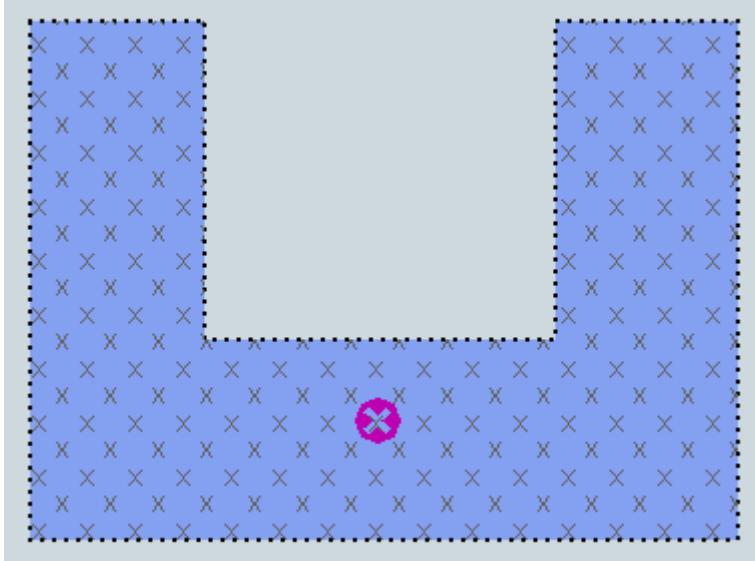
<b>Test Reference</b>	3.6.10 b)	<b>IHO Reference</b>	S-52 8.5.1
<b>Test description</b>			
<i>Display of centred symbol(s) offset.</i>			
<b>Setup</b>			
As for test 3.6.10 a)			
<b>Action</b>			
Centre the display on position 32°32.085'S 61° 21.415'E and then zoom in to a scale of 1:10,000.			
<b>Results</b>			
Confirm that the object displays as in the image below:			
			
Note: the display should show the centred symbol(s) offset.			
Zoom out to scale 1:50,000 and confirm that the objects now display as follows:			
			
Note: the display should only show the arrow as above without the centred symbol(s) offset.			

<b>Test Reference</b>	3.6.10 c)	<b>IHO Reference</b>	S-52 8.5.1
<b>Test description</b>			
<i>Display of centred symbols which conflict with the own ship symbol.</i>			
<b>Setup</b>			
As for test 3.6.10 a)			
<b>Action</b>			
Centre the display on position 32°32.085'S 61° 21.415'E and then zoom in to a scale of 1:10,000. Simulate own ship on position 32°32.085'S 61° 21.415'E			
<b>Results</b>			
Confirm that the object displays as in the image below:			
			
Note: the display should show own ship symbol centred with the arrow and restriction symbol(s) offset.			

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<b>Test Reference</b>	3.6.10 d)	<b>IHO Reference</b>	S-52 8.5.1
<b>Test description</b>			
Display of centred symbols when area is partially off screen.			
<b>Setup</b>			
As for test 3.6.10 a)			
<b>Action</b>			
Centre the display on position 32°32.805'S 61° 21.290'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the object displays as in the image below:			
			
Note: the display should show the centred symbol in the centre of the visible area.			

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<b>Test Reference</b>	3.6.10 e)	<b>IHO Reference</b>	S-52 8.5.1
<b>Test description</b>			
<i>Display of centred symbols within complex areas.</i>			
<b>Setup</b>			
As for test 3.6.10 a)			
<b>Action</b>			
Centre the display on position 32°30.970'S 61° 21.330'E and then zoom in to a scale of 1:20,000.			
<b>Results</b>			
Confirm that the object displays as in the image below:			
			
<p><i>Note: the display should show the centred symbol within the OBSTRN area. The display may be different from the example shown above as long as the centred symbol remains within the OBSTRN area.</i></p>			

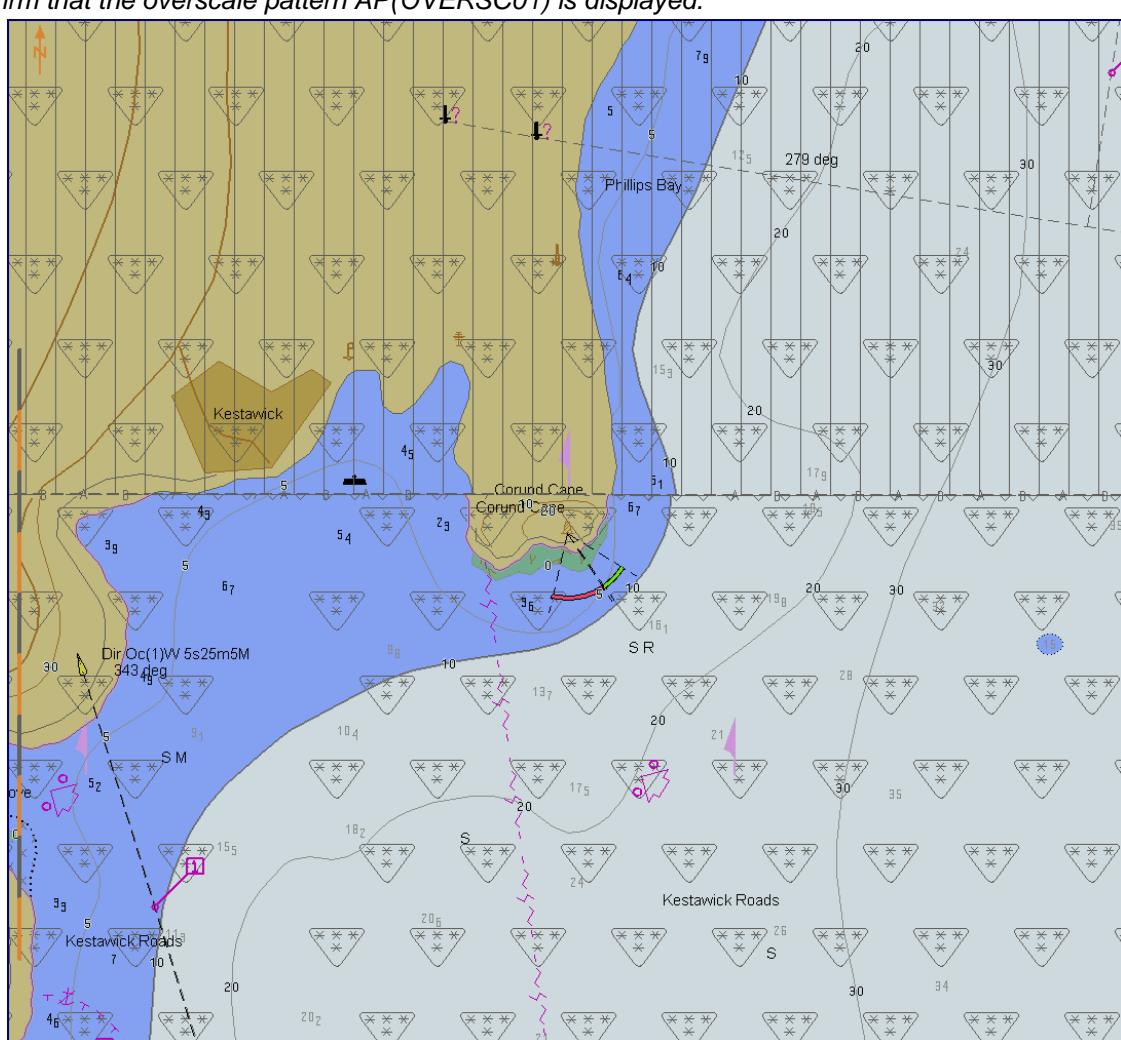
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## 3.7 Scale and navigation purpose

### 3.7.1 Display of overscale indication

<b>Test Reference</b>	3.7.1 a)	<b>IHO Reference</b>	S-52 10.1.10.1
<b>Test description</b>			
Display of overscale indication.			
<b>Setup</b>			
Load the cells from 2.1.1 Power Up\ENC_ROOT			
<b>Action</b>			
Zoom in beyond 1:25,000. This is the compilation scale of the harbour usage band cells.			
<b>Results</b>			
Confirm that an overscale indication is provided.			

<b>Test Reference</b>	3.7.1 b)	<b>IHO Reference</b>	S-52 10.1.10.2
<b>Test description</b>			
Display of overscale pattern.			
<b>Setup</b>			
Load the cells from 2.1.1 Power Up\ENC_ROOT			
<b>Action</b>			
Set chart center at the lighthouse in the Corund Cape 32°27.447'S, 060°58.599'E.			
Zoom in beyond 1:10,000. This is the compilation scale of the harbour usage band cells.			
<b>Results</b>			
Confirm that the overscale pattern AP(OVERSC01) is displayed.			

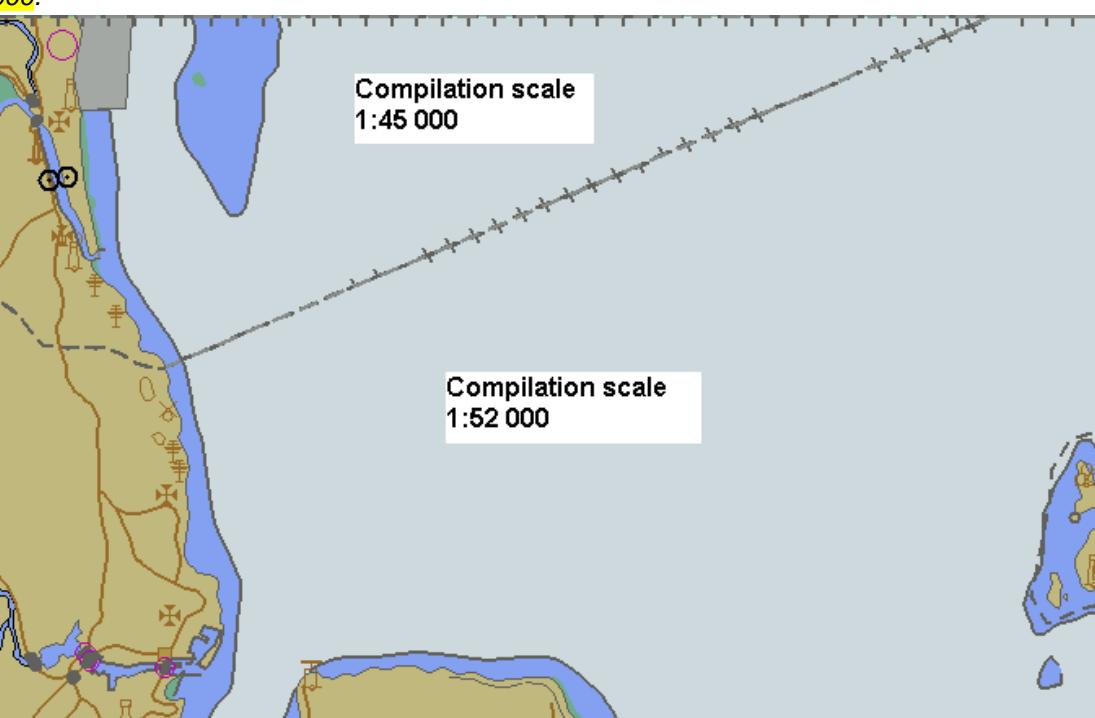


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### 3.7.2 Indication of larger scale data

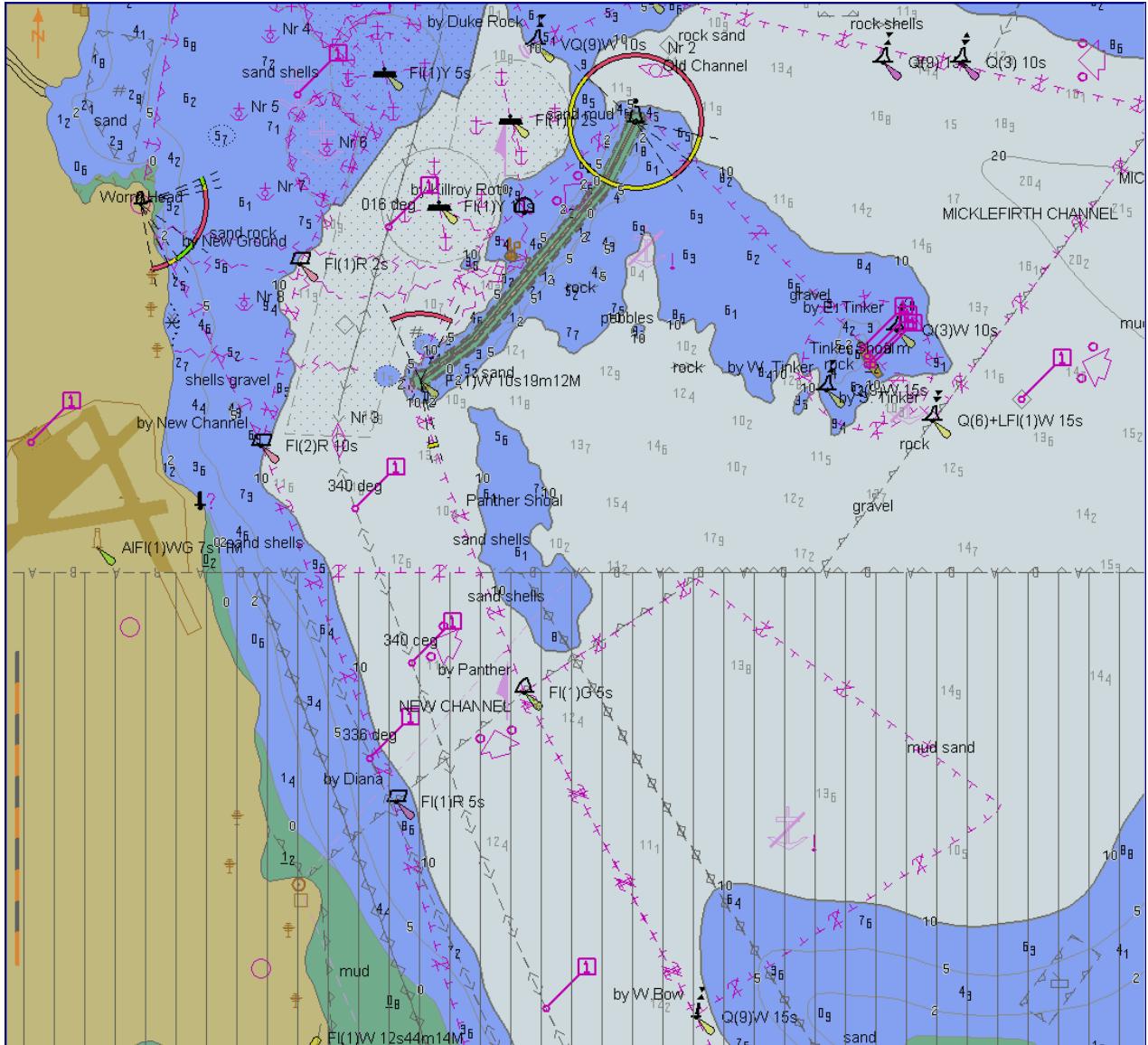
<b>Test Reference</b>	3.7.2	<b>IHO Reference</b>	S-52 10.1.10.3
<b>Test description</b>			
<i>Indication of better (larger) scale data being available.</i>			
<b>Setup</b>			
<p>Load the following cells:</p> <p>2.1.1 Power Up\ENC_ROOT\GB4X0000.000      2.1.1 Power Up\ENC_ROOT\GB5X01NW.000</p> <p>Position the own ship at 32°29.668'S, 060°55.864'E with a heading of 234.0 degrees. This will place the ship at the jetty in Micklefirth.</p>			
<b>Action</b>			
Select the less detailed navigational purpose cell (GB4X0000.000). Observe this cell.			
<b>Results</b>			
Confirm that an indication is provided that more detailed navigational purpose data is available.			

### 3.7.3 Boundaries between compilation scales

<b>Test Reference</b>	3.7.3	<b>IHO Reference</b>	S-52 10.1.9.1
<b>Test description</b>			
<i>Boundaries between compilation scales.</i>			
<b>Setup</b>			
<p>Load the following cell:</p> <p>2.1.1 Power Up\ENC_ROOT\GB4X0000.000</p>			
<b>Action</b>			
Centre de display on 32°21.010'S, 060°57.920'E and zoom to 1:45,000			
<b>Results</b>			
Confirm that either the LS(SOLD,1,CHGRD) or LC(SCLBDY51) is shown for the diagonal limit across the cell. Also confirm that the overscale indication is provided <b>for the area in which compilation scale is 1:52 000</b> .			
			

## IHO ENC Test Data Sets for ECDIS

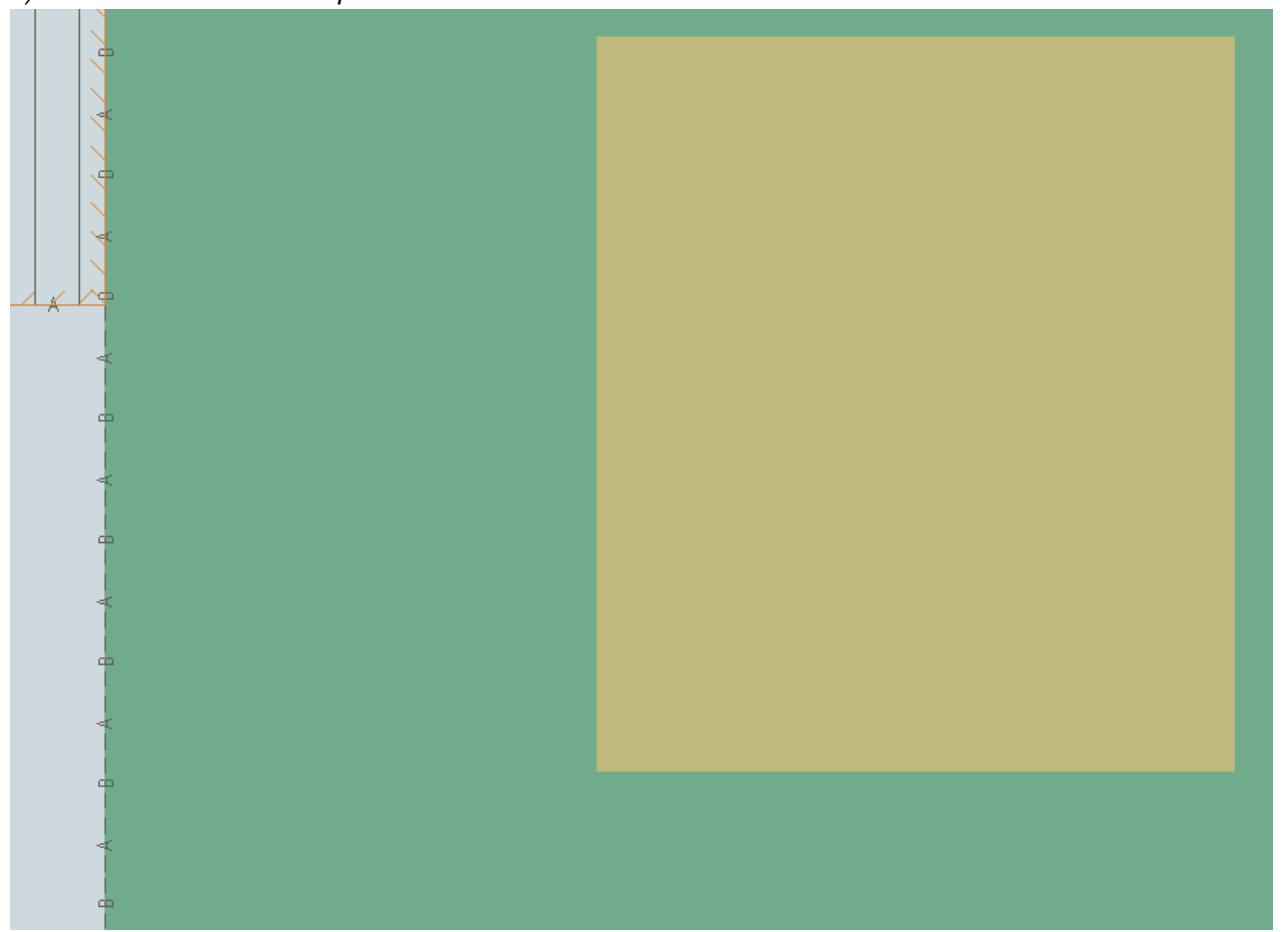
### 3.7.4 Display of data from another navigational purpose

Test Reference	3.7.4 a)	IHO Reference	S-52 10.1.4
<b>Test description</b>			
Display of data from a smaller scale navigational purpose to completely cover the display.			
<b>Setup</b>			
<p>Load all cells from 2.1.1 Power Up\ENC_ROOT</p> <p>Select Display mode = Other</p> <p>Select Safety Contour = 10 metres</p> <p>Select Safety Depth = 10 metres</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p>			
<b>Action</b>			
<p>Centre the display at 32°33.000'S 60°56.000'E</p> <p>Select scale 1:20 000 so that harbour detail (buoyage, lights) is shown.</p>			
<b>Results</b>			
<p>Confirm that south of 32°33.141'S data from the smaller navigational purpose is shown.</p> <p>Note: Screen plot is based on the full text NATSUR attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the NATSUR attribute is recommended.</p> 			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	3.7.4 b)	<b>IHO Reference</b>	S-52 10.1.3
<b>Test description</b>			
<i>Display of overlapping data.</i>			
<b>Setup</b>			
<p>Load cell from 3.7 Overlap\ENC_ROOT</p> <p>Load cell from 3.7.7 Scale minimum\ENC_ROOT</p> <p>Select Display mode = Other</p> <p>Select Safety Contour = 10 metres</p> <p>Select Safety Depth = 10 metres</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Display cell GB30VRLP at compilation scale (1:90 000)</p>			
<b>Action</b>			
Centre the display on position 32°23.000'S 60°40.000'E			
<b>Results</b>			
<p>Confirm that only one cell is displayed in a given area. In this case displays as shown in a) or b) are acceptable.</p> <p>Confirm also that a permanent indication "overlap" is provided.</p> <p>a) Chart AA3SCAMN overlaps chart GB30VRLP</p>			

b) Chart GB30VRLP overlaps chart AA3SCAMN



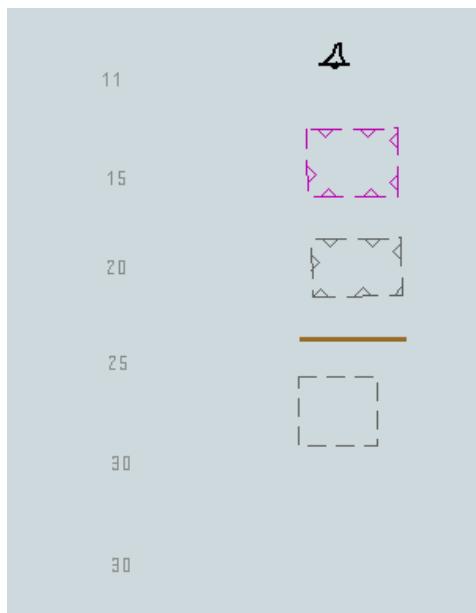
### 3.7.5 Display of graphical index

Test Reference	3.7.5	IHO Reference	S-52 10.1.7
<b>Test description</b>			
Display of graphical index of cell boundaries.			
<b>Setup</b>			
Load the cells from 2.1.1 Power Up\ENC_ROOT			
<b>Action</b>			
Navigate to a graphical index of cell boundaries.			
<b>Results</b>			
Confirm that a graphical index of the cell boundaries is displayed and access to the edition number and date of each cell is available.			

### 3.7.6 Change of display scale

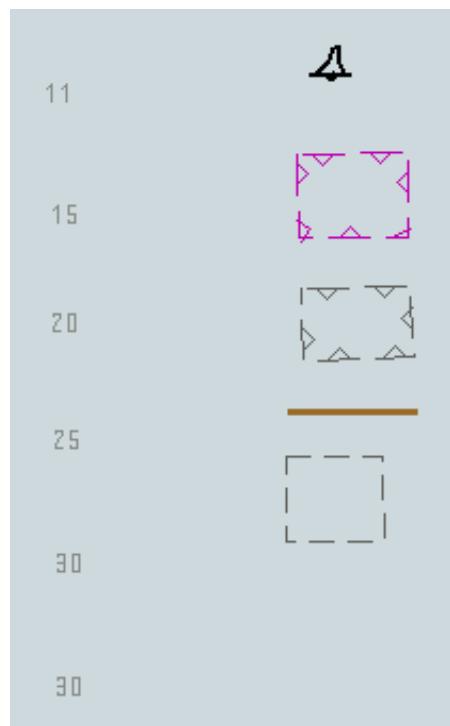
<b>Test Reference</b>	3.7.6	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Change of display scale by chart scale values and by increments of displayed range values in nautical miles.</i>			
<b>Setup</b>			
<i>Load the cells from 2.1.1 Power Up\ENC_ROOT</i>			
<b>Action</b>			
<i>Change display scale by chart scale values and by increments of displayed range values in nautical miles.</i>			
<b>Results</b>			
<i>Confirm that the display changes accordingly.</i>			

### 3.7.7 Impact of SCAMIN on display

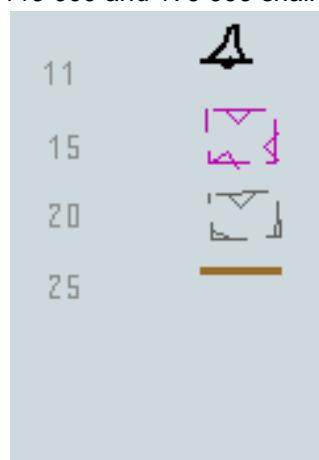
<b>Test Reference</b>	3.7.7	<b>IHO Reference</b>	S-52 10.4.2 S-52 10.3.4.4
<b>Test description</b>			
<i>Impact of SCAMIN values on display of charted objects.</i>			
<b>Setup</b>			
<i>Load the cell AA3SCAMN.000 from 3.7.7 Scale minimum\ENC_ROOT</i>			
<i>Select Display mode = Other</i>			
<i>Select Safety Contour = 10 metres</i>			
<i>Select Safety Depth = 10 metres</i>			
<i>Select Symbolized Boundaries</i>			
<i>Select Paper chart symbols</i>			
<i>Deselect Accuracy</i>			
<i>Display cell AA3SCAMN at compilation scale (1:90 000)</i>			
<b>Action</b>			
1. Centre the display on position 32°24.000'S 60°20.500'E			
2. Change scale to 1:100 000			
3. Change scale to 1:200 000			
4. Deselect Scamin			
<b>Results</b>			
1. All objects shall be shown.			
			

## IHO ENC Test Data Sets for ECDIS

2. All objects shall be shown



3. The objects with SCAMIN values of 119 000 and 179 999 shall not be shown.



4. All objects shall be shown



### 3.8 Additional Display Functions

#### 3.8.1 Mariners' objects

<b>Test Reference</b>	3.8.1	<b>IHO Reference</b>	S-52 Part II
<b>Test description</b>			
<i>The display of Mariners' Features.</i>			
<b>Setup</b>			
<i>Load the following cell 2.1.1 Power Up\ENC_ROOT\GB4X0000.000</i>			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1. Create a Mariner's object of type point.</li> <li>2. Create 10 Mariner's object of type line.</li> <li>3. Create a Mariner's object of type area.</li> <li>4. Specify a fill style as described in S-52, 2.3.1b for the created area object.</li> <li>5. Add 25 characters of text on a Mariner's object.</li> </ol>			
<b>Results</b>			
<p><i>Check that all information added by the Mariner (items 1-5) is distinguishable.</i></p> <p><i>Check that all of these objects can be added to the SENC.</i></p> <p><i>Recall them from the SENC and check that they may be deleted.</i></p>			

#### 3.8.2 Adjustment of depth information by tidal height

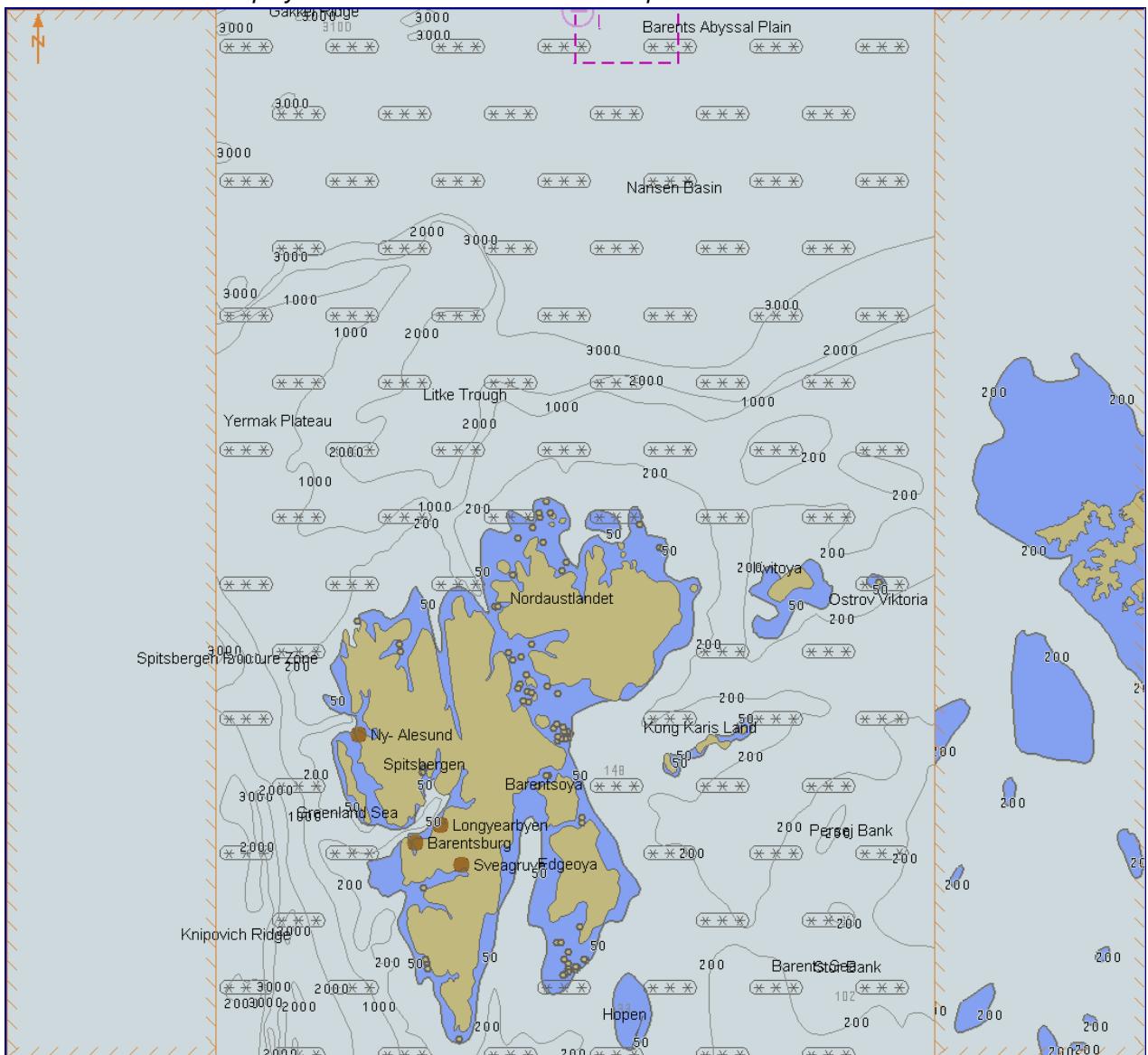
<b>Test Reference</b>	3.8.2	<b>IHO Reference</b>	S-52 Part II
<b>Test description</b>			
<i>Depth information is not affected by tidal height information.</i>			
<b>Setup</b>			
<i>Load the following cell 2.1.1 Power Up\ENC_ROOT\GB4X0000.000</i>			
<b>Action</b>			
<i>Confirm by analytical evaluation that depth information is not affected by tidal height.</i>			
<b>Results</b>			
<i>Depth information is not affected by tidal height.</i>			

## IHO ENC Test Data Sets for ECDIS

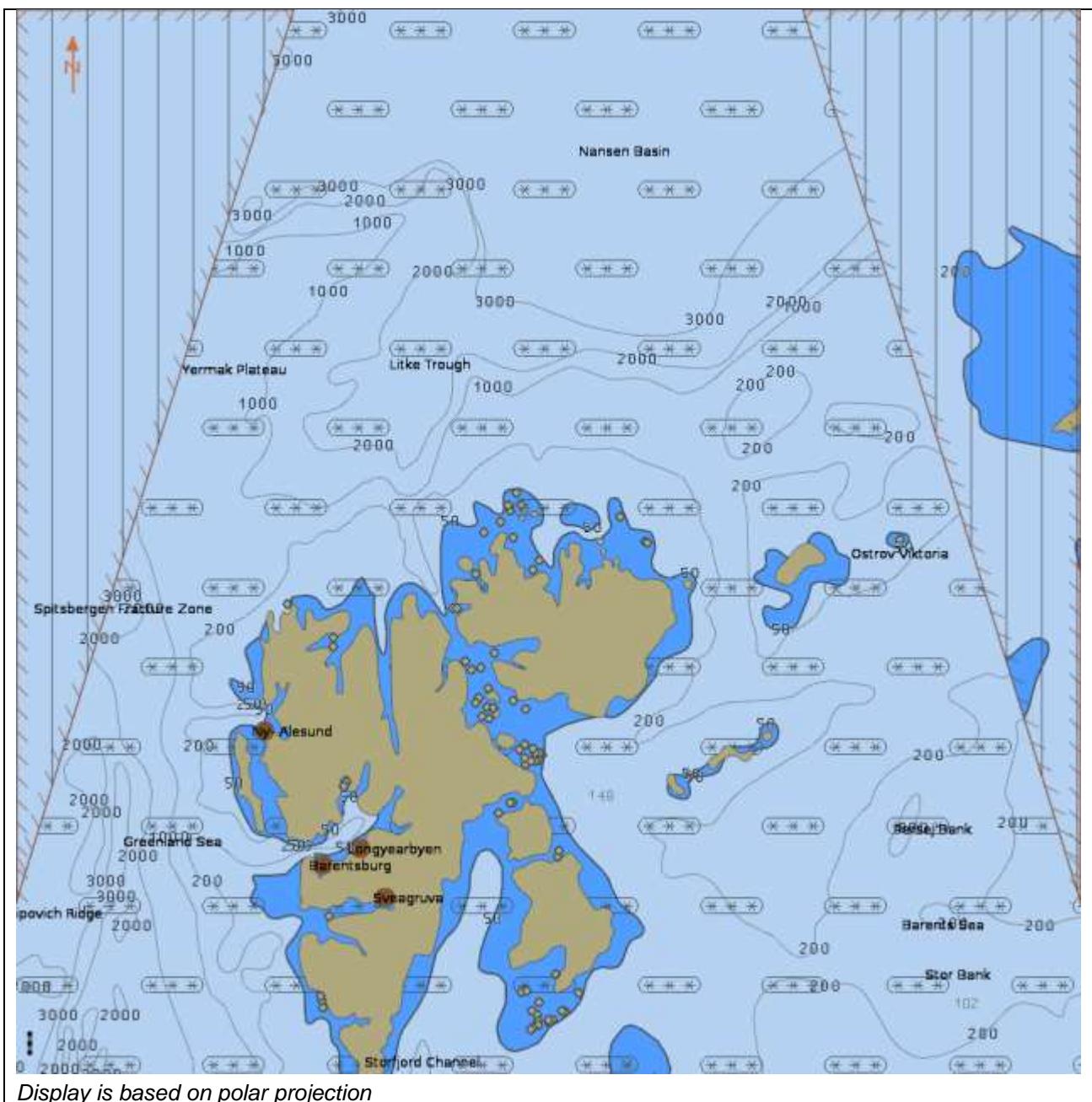
### 3.9 Display of ENC covering Polar Regions

The following tests are optional and should only be carried out on ECDIS claiming to be approved to function in Polar Regions.

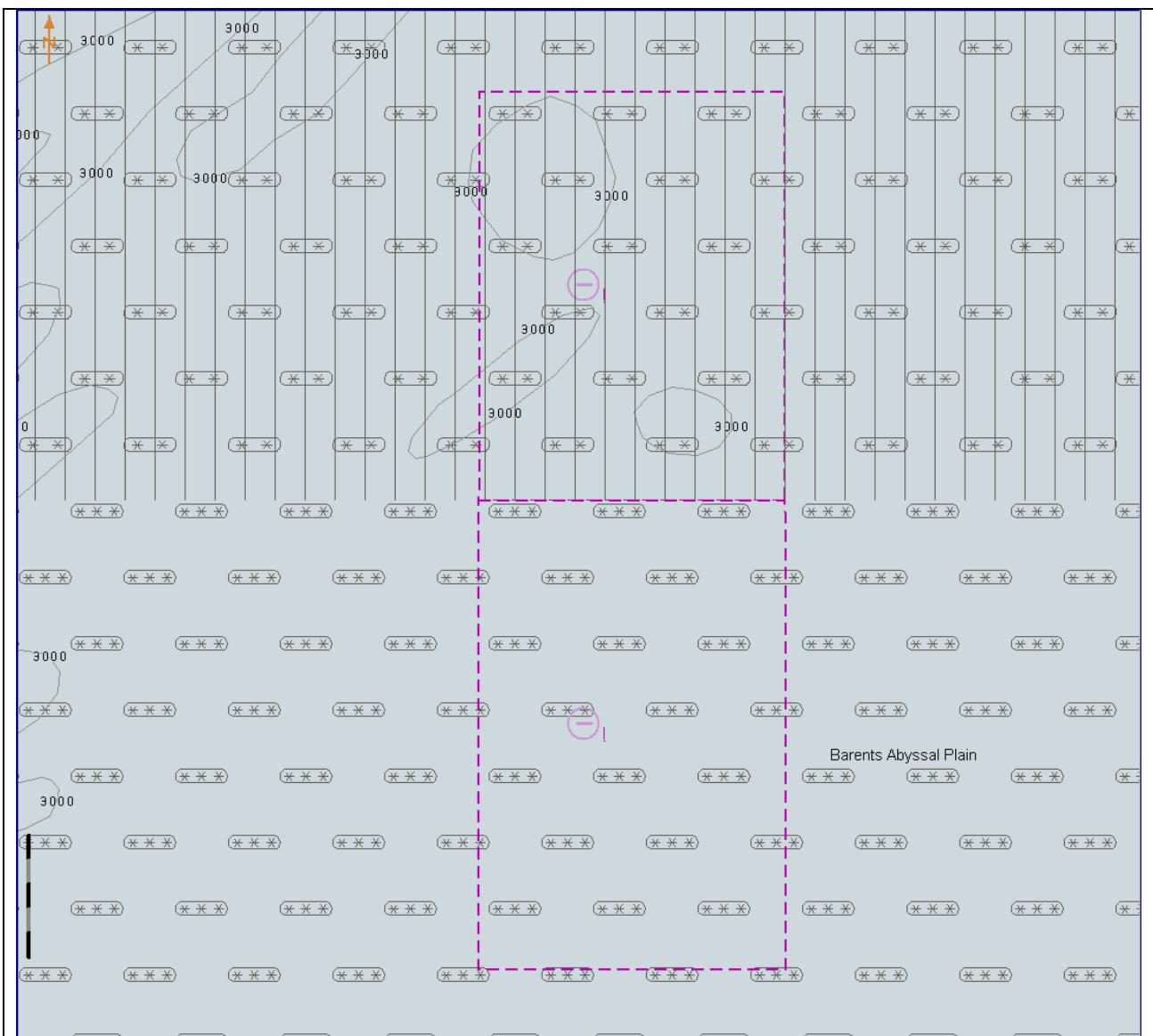
#### 3.9.1 Display of ENC Data up to 85 degrees

Test Reference	3.9.1	IHO Reference	S-52 10.1.10.2
<b>Test description</b>			
Display of charts up to 85 degrees.			
<b>Setup</b>			
Load all cells from 3.9 Polar ENC Data Select Display mode = Other Select Safety Contour = 30 metres Select Plain Boundaries Select Paper chart symbols			
<b>Action</b>			
Select chart AA1NPOL3.000 at compilation scale (1:3 000 000) Check ENC symbols shown in the ECDIS against the graphical plot.			
<b>Results</b>			
<i>The ENC should be displayed in the ECDIS like one of the options below.</i> 			
<i>Display is based on Mercator projection</i>			

# IHO ENC Test Data Sets for ECDIS



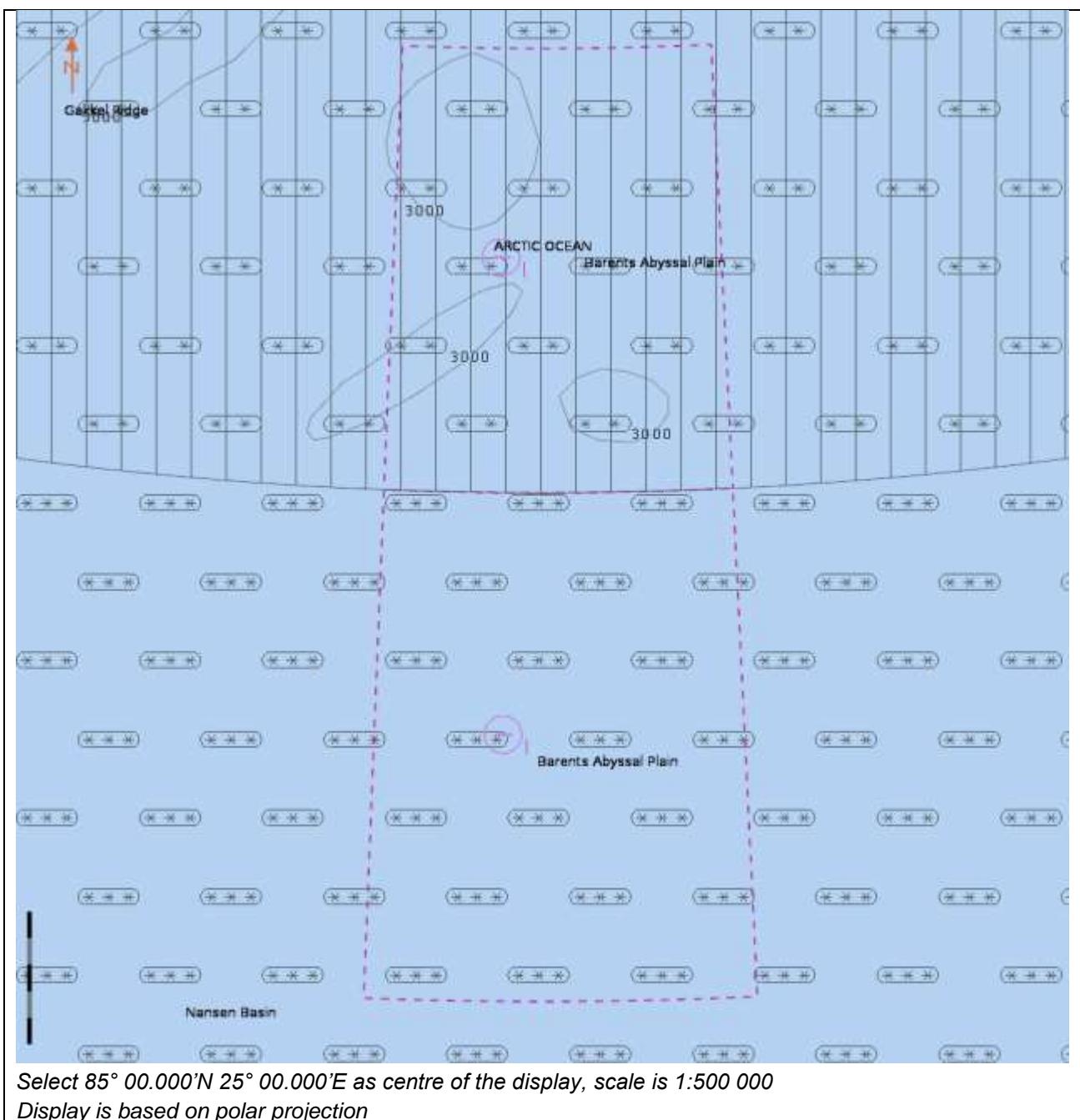
# IHO ENC Test Data Sets for ECDIS



Select 85° 00.000'N 25° 00.000'E as centre of the display, scale is 1:500 000

Display is based on polar projection

# IHO ENC Test Data Sets for ECDIS

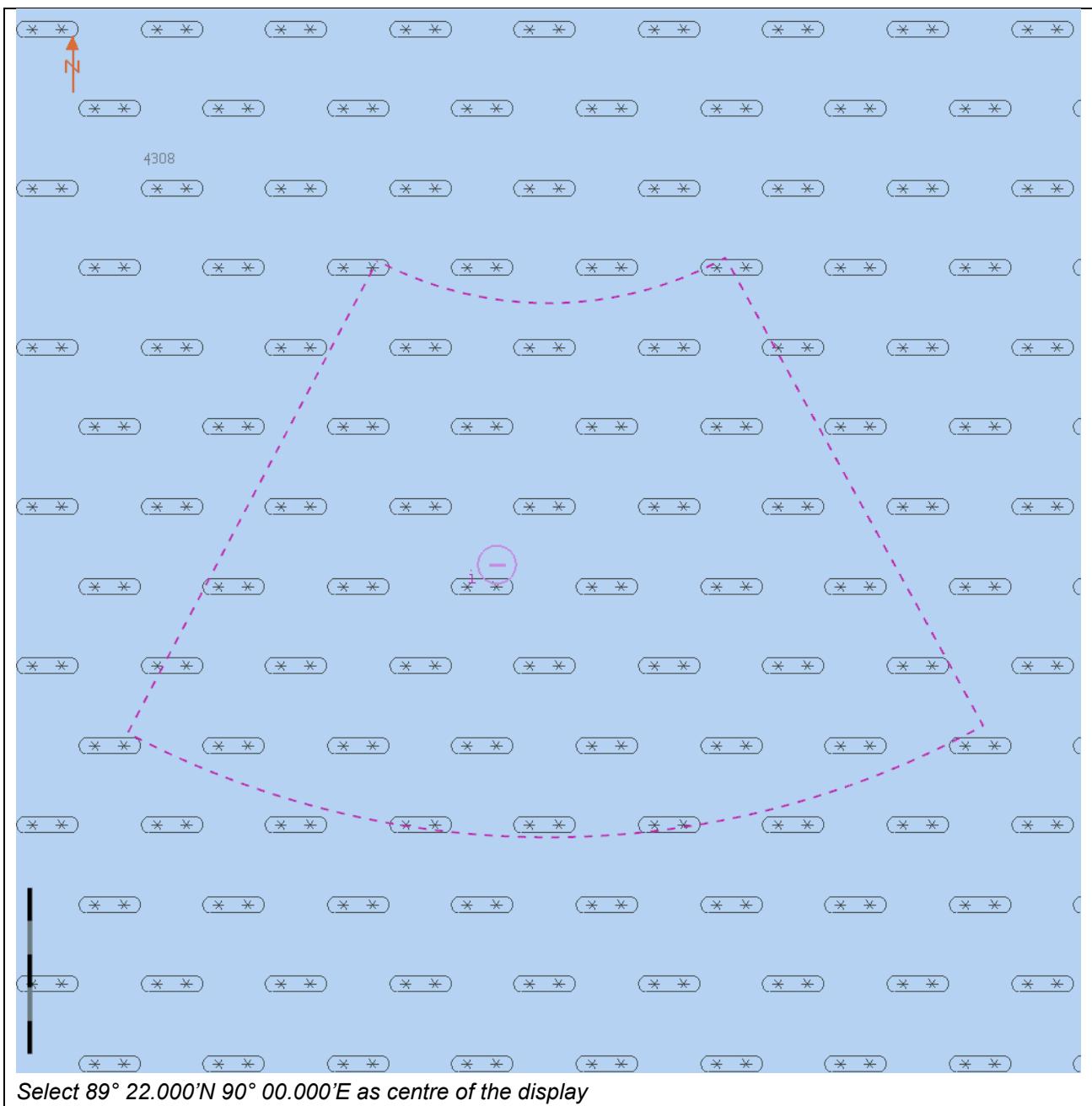


## IHO ENC Test Data Sets for ECDIS

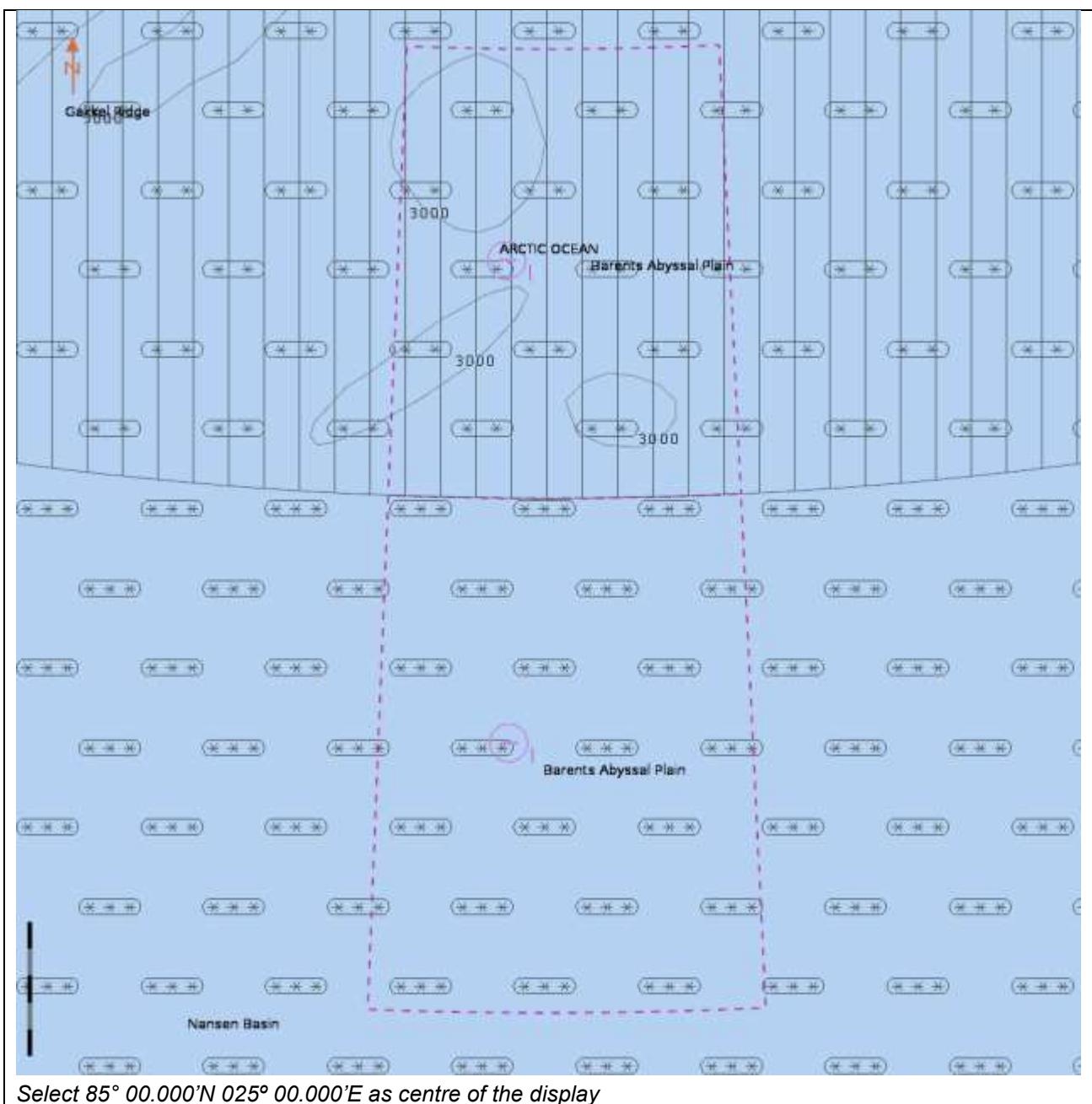
### 3.9.2 Display of Data at Extreme High Latitudes

<b>Test Reference</b>	3.9.2	<b>IHO Reference</b>	S-52 10.1.10.2
<b>Test description</b>			
<b>ONLY TO BE TESTED FOR EQUIPMENT CLAIMING THE CAPABILITY TO DISPLAY ENC DATA AT LATITUDES GREATER THAN 85 DEGREES</b>			
Display of charts above 85 degrees.			
<b>Setup</b>			
Load all cells from 3.9 Polar ENC Data			
Select Display mode = Other			
Select Safety Contour = 30 metres			
Select Plain Boundaries			
Select Paper chart symbols			
<b>Action</b>			
Check ENC symbols shown in the ECDIS against the graphical plot.			
<b>Results</b>			
The ENC in the ECDIS should be shown like in the picture below.			
<p>North Pole is in the centre of the display</p>			

# IHO ENC Test Data Sets for ECDIS



# IHO ENC Test Data Sets for ECDIS



**4 Chart related functions****4.1 Mode and orientation**

<b>Test Reference</b>	4.1 a)	<b>IHO Reference</b>	S-52 10.5.4
<b>Test description</b>			
<i>Display of the north arrow symbol.</i>			
<b>Setup</b>			
<i>Load the following cell 2.1.1 Power Up\ENC_ROOT\GB4X0000.000</i>			
<b>Action</b>			
<i>Observe the display. If the EUT offers the capability to show other than north-up presentation; Change the presentation to non-north up and observe the display.</i>			
<b>Results</b>			
<i>Confirm that the north arrow symbol is always displayed at the top left corner of the chart area, not overlapping the scale or latitude bar. If the EUT supports changing to non-north up presentations confirm that the symbol realigns to north.</i>			

<b>Test Reference</b>	4.1 b)	<b>IHO Reference</b>	S-52 2.2.3
<b>Test description</b>			
<i>True motion operation.</i>			
<b>Setup</b>			
<i>As for test 4.1 a)</i>			
<b>Action</b>			
<i>Ensure that true motion is provided. Reset the display and check that the generation of the neighbouring area takes place automatically at a distance selected by the Mariner.</i>			
<b>Results</b>			
<i>Confirm that true motion operation is provided and that the generation of the neighbouring area takes place automatically at a distance selected by the Mariner.</i>			

<b>Test Reference</b>	4.1 c)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Manual adjustment of chart display area and own ship position.</i>			
<b>Setup</b>			
<i>As for test 4.1 a)</i>			
<b>Action</b>			
<i>Manually adjust the chart display area. Change the position of own ship relative to the edge of the display.</i>			
<b>Results</b>			
<i>Confirm that it is possible to change manually the chart area and the position of own ship relative to the edge of the display.</i>			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	4.1 d)	<b>IHO Reference</b>	S-52 10.1.8
<b>Test description</b>			
No ENC data available.			
<b>Setup</b>			
As for test 4.1 a) Ship position as follows: 32°24.53'S 061°19.29'E (within ENC data coverage (M_COVR) where CATCOV=2 (no coverage available)).			
<b>Action</b>			
Observe the display.			
<b>Results</b>			
Confirm that a "No ENC available" indication is provided.			

<b>Test Reference</b>	4.1 e)	<b>IHO Reference</b>	S-52 10.1.8
<b>Test description</b>			
No ENC data available.			
<b>Setup</b>			
As for test 4.1 a) Ship position as follows: 32°27.88'S 061°20.66'E (an area with no ENC)			
<b>Action</b>			
Observe the display.			
<b>Results</b>			
Confirm that a "No ENC available" indication is provided.			

<b>Test Reference</b>	4.1 f)	<b>IHO Reference</b>	S-52 [3.1.6]
<b>Test description</b>			
Display in non 'north-up' orientation.			
<b>Setup</b>			
As for test 4.1 a)			
<b>Action</b>			
For each bearing-stabilised orientation other than 'north-up' that may be provided, confirm by analytical evaluation that for turning rates between 0 deg/s and 20 deg/s the displayed chart symbols and text do not re-orient more often than 2 times per second and remain legible if they do not remain fixed.			
<b>Results</b>			
Confirm that the displayed chart symbols and text do not re-orient more often than 2 times per second and remain legible. The symbols and text may remain fixed and in this case will not re-orientate.			

## 4.2 Display of scale bar

<b>Test Reference</b>	4.2	<b>IHO Reference</b>	S-52 10.5.1
<b>Test description</b>			
Display of scale bar at appropriate scales.			
<b>Setup</b>			
Load the cells from 2.1.1 Power Up\ENC_ROOT Set display mode to BASE.			
<b>Action</b>			
Zoom to a display scale greater than 1:80,000 (such as 1:25,000), observe the display.			
<b>Results</b>			
Confirm that a scale bar is displayed. Also confirm that the scale bar is displayed between 2mm and 4mm from the left side of the chart display area.			

### 4.3 Display of latitude bar

<b>Test Reference</b>	4.3	<b>IHO Reference</b>	S-52 10.5.1
<b>Test description</b>			
<i>Display of latitude bar at appropriate scales.</i>			
<b>Setup</b>			
<i>Load the cells from 2.1.1 Power Up\ENC_ROOT Set display mode to BASE.</i>			
<b>Action</b>			
<i>Zoom to a display scale less than 1:80,000 (such as 1:300,000), observe the display.</i>			
<b>Results</b>			
<i>Confirm that a latitude bar is displayed. Also confirm that the scale bar is displayed between 2mm and 4mm from the left side of the chart display area.</i>			

### 4.4 Object information

<b>Test Reference</b>	4.4 a)	<b>IHO Reference</b>	
<b>Test description</b>			
<i>General rules for cursor pick report</i>			
<b>Setup</b>			
<i>As for test 4.3</i>			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1. Select several objects of           <ul style="list-style-type: none"> <li>- depth area;</li> <li>- restricted area;</li> <li>- sea area;</li> <li>- depth contour;</li> <li>- ferry route;</li> <li>- recommended track;</li> <li>- buoy (e.g. buoy and light at 32°29.50'S 0 61°00.46'E);</li> <li>- light;</li> <li>- wreck.</li> </ul> </li> <li>2. Observe object information</li> <li>3. Remove object information from display.</li> </ol>			
<b>Results</b>			
<ol style="list-style-type: none"> <li>1. The following rules shall be applied to the pick report:           <ol style="list-style-type: none"> <li>a. Full S-57 Object and Attribute names shall be displayed.</li> <li>b. Enumerate value names shall be displayed. Enumerate attribute numbers should not be displayed.</li> <li>c. There shall not be any padding of attribute values, e.g. a height of 10 metres shall not be padded to 10.000000 metres as this could potentially confuse or mislead the Mariner.</li> <li>d. Units of measure shall be included after all attribute values which are weights or measures.</li> <li>e. S-57 category "C" feature attributes shall not be displayed unless requested by the user. Attributes in this subset provide administrative information about an object and the data describing it. In most cases it is of no practical use to the Mariner. This information is only relevant to S-57 data transferred between Hydrographic Offices.</li> </ol> </li> </ol> <p>An exception to show the value of SORDAT if it is for the following objects:</p> <ul style="list-style-type: none"> <li>- WRECKS, OBSTRN, UWTROC, and SOUNDG with value QUASOU=9 and geometry attribute QUAPOS=8;</li> <li>- DRGARE with QUASOU=11;</li> <li>- SWPARE;</li> <li>- Any object class with attribute CONDTN=1 or 3 or 5.</li> </ul>			

## IHO ENC Test Data Sets for ECDIS

- |  |
|--|
| <p>f. Dates shall be given in the form "Day Month Year" DD-MMM-YYYY. (MMM=JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC)</p> <p>g. The pick report shall only return information about the objects present on the ECDIS display. This means all objects in the viewing layers enabled even if those objects have no resultant display. For example the meta object M_SREL has no display but should be detailed in the pick report.</p> <p>h. Cursor enquiry shall extend to the spatial object, which carries accuracy attributes QUAPOS and POSACC. It shall include collection objects which carry additional information for example the OBJNAM of traffic separation schemes, navigation lines (NAVLNE, RECTR, DWRTCL, etc.).</p> <p>2. Text associated with chart objects must be removed from the display.</p> |
|--|

*Note: The text and background colour of pick report is specified by the OEM*

<b>Test Reference</b>	4.4 b)	<b>IHO Reference</b>	S-52 10.8.1, 10.8.2 & 10.8.4
<b>Test description</b>			
<i>Pick report descriptions and sorting</i>			
<b>Setup</b>			
As for test 4.4 a)			
<b>Action</b>			
<i>Select several objects as mentioned in 4.4a)</i>			
<b>Results</b>			
<ol style="list-style-type: none"> <li>1. A plain language explanation of each symbol shall be used as included in the Symbol Library and in the Presentation Library section 17 to provide quick and understandable information which is not always obvious from the object class and attribute information.</li> <li>2. Attribute values provided in addition to the above explanation shall be connected to their meaning, and the definitions shall also be available.</li> <li>3. The object information shall be sorted by the drawing priority of the object as defined in the look-up table for symbolizing. When the drawing priority of objects is equal, the geometric primitive shall be used to order the information (points followed by lines and finally areas).</li> <li>4. Check that the content displayed in the pick report is configurable by the user.</li> </ol>			

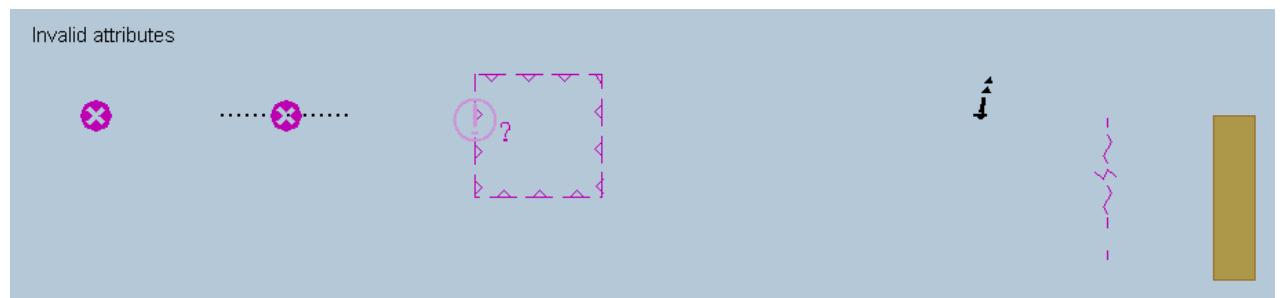
<b>Test Reference</b>	4.4 c)	<b>IHO Reference</b>	S-52 10.8.3
<b>Test description</b>			
<i>User defined cursor pick parameters</i>			
<b>Setup</b>			
As for test 4.4 a)			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1. Configure the cursor pick parameter as available.</li> <li>2. Select several objects as mentioned in 4.4a)</li> </ol>			
<b>Results</b>			
<ol style="list-style-type: none"> <li>1. The cursor pick parameters shall be configurable by the user and available for presentation.</li> <li>2. The content of the pick report shall be presented as configured.</li> </ol>			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	4.4 d)	<b>IHO Reference</b>	S-52 10.8.5																												
<b>Test description</b>																															
<i>Hover-over function for object information (optional) Test shall only be performed if a hover-over function for object information is provided.</i>																															
<b>Setup</b>																															
As for test 4.4 a)																															
<b>Action</b>																															
<ol style="list-style-type: none"> <li>1. Configure the hover-over function OFF.</li> <li>2. Move cursor to one of the objects in the table below and to objects where additional information is available or date dependent objects:</li> <li>3. Configure the hover-over function ON.</li> <li>4. Move cursor to one of the objects mentioned in 2.</li> <li>5. Move cursor to any other objects.</li> </ol>																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #ffffcc;"> <th style="padding: 2px;"><b>Features</b></th><th style="padding: 2px;"><b>S-57 Acronym</b></th></tr> </thead> <tbody> <tr><td style="padding: 2px;">Lights</td><td style="padding: 2px;">LIGHTS</td></tr> <tr><td style="padding: 2px;">Beacon, cardinal</td><td style="padding: 2px;">BCNCAR</td></tr> <tr><td style="padding: 2px;">Beacon, isolated danger</td><td style="padding: 2px;">BCNISD</td></tr> <tr><td style="padding: 2px;">Beacon, lateral</td><td style="padding: 2px;">BCNLAT</td></tr> <tr><td style="padding: 2px;">Beacon, safe water</td><td style="padding: 2px;">BCNSAW</td></tr> <tr><td style="padding: 2px;">Beacon, special purpose/general</td><td style="padding: 2px;">BVNSPP</td></tr> <tr><td style="padding: 2px;">Buoy, cardinal</td><td style="padding: 2px;">BOYCAR</td></tr> <tr><td style="padding: 2px;">Buoy, installation</td><td style="padding: 2px;">BOYINB</td></tr> <tr><td style="padding: 2px;">Buoy, isolated danger</td><td style="padding: 2px;">BOYISD</td></tr> <tr><td style="padding: 2px;">Buoy, lateral</td><td style="padding: 2px;">BOYLAT</td></tr> <tr><td style="padding: 2px;">Buoy, safe water</td><td style="padding: 2px;">BOYSAW</td></tr> <tr><td style="padding: 2px;">Buoy, special purpose/general</td><td style="padding: 2px;">BOYSPP</td></tr> <tr><td style="padding: 2px;">Landmarks</td><td style="padding: 2px;">LNDMRK</td></tr> </tbody> </table>				<b>Features</b>	<b>S-57 Acronym</b>	Lights	LIGHTS	Beacon, cardinal	BCNCAR	Beacon, isolated danger	BCNISD	Beacon, lateral	BCNLAT	Beacon, safe water	BCNSAW	Beacon, special purpose/general	BVNSPP	Buoy, cardinal	BOYCAR	Buoy, installation	BOYINB	Buoy, isolated danger	BOYISD	Buoy, lateral	BOYLAT	Buoy, safe water	BOYSAW	Buoy, special purpose/general	BOYSPP	Landmarks	LNDMRK
<b>Features</b>	<b>S-57 Acronym</b>																														
Lights	LIGHTS																														
Beacon, cardinal	BCNCAR																														
Beacon, isolated danger	BCNISD																														
Beacon, lateral	BCNLAT																														
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Buoy, installation	BOYINB																														
Buoy, isolated danger	BOYISD																														
Buoy, lateral	BOYLAT																														
Buoy, safe water	BOYSAW																														
Buoy, special purpose/general	BOYSPP																														
Landmarks	LNDMRK																														
<b>Results</b>																															
<ol style="list-style-type: none"> <li>1. It shall be possible to switch OFF the hover-over function.</li> <li>2. There shall be no information of chart objects displayed when hovering over it.</li> <li>3. It shall be possible to switch ON the hover-over function.</li> <li>4. Important information of chart objects shall be displayed when hovering over it.</li> <li>5. When hovering over other chart objects no information shall be displayed.</li> </ol>																															

<b>Test Reference</b>	4.4 e)	<b>IHO Reference</b>	S-52 10.8.6
<b>Test description</b>			
Presentation of unknown attributes <i>There is no generic special presentation for unknown attributes. Some presentations may indicate question mark, but that is because something mandatory is missing for the object. The main purpose of this test is to check that ECDIS is able to accept ENC cells which contain unknown attributes. The real use case is when ECDIS is not upgraded for latest IHO standard and therefore the ECDIS does not understand all attributes.</i>			
<b>Setup</b>			
Load cell AA3\INV0B.000 from 3.2 Invalid Object\ENC_ROOT Select Viewing group layer Other Set the safety contour value to 0 m Select Symbolized Boundaries Select Paper chart symbols Deselect Highlight info			

## IHO ENC Test Data Sets for ECDIS

Action
Select chart objects with unknown attribute for cursor pick report.
Results
<p>Check ENC symbols shown in the ECDIS against the corresponding graphical plot. Select one by one each of 6 objects for cursor pick report.</p> <p>The result of cursor pick shall be</p> <ul style="list-style-type: none"> <li>a) Wreck with attribute Water level effect (covers and uncovers)</li> <li>b) Obstruction with attribute Value of sounding (no value)</li> <li>c) Restricted area without any attribute</li> <li>d) Buoy, cardinal with attributes Buoy shape (spar (spindle)), Category of cardinal mark (north cardinal mark) and Color pattern (horizontal stripes)</li> <li>e) Cable, submarine without any attribute</li> <li>f) Silo/Tank without any attribute</li> </ul> 

<b>Test Reference</b>	4.4 f)	<b>IHO Reference</b>	S-52 10.9
<b>Test description</b>			
Display of tidal stream panels			
<b>Setup</b>			
Load all cells from 2.1.1 Power Up\ENC_ROOT			
<b>Action</b>			
<ol style="list-style-type: none"> <li>1. Select an example of TS_PAD (tidal stream panel information)</li> <li>1a. select tidal stream panel information object at 32°31.45'S 60°56.35'E for display;</li> <li>2. Select an example of TS_PRH (tidal stream prediction by harmonic methods)</li> <li>2a. select tidal stream prediction by harmonic methods object at 32°32.57'S 60°57.69'E for display;</li> <li>3. Repeat step 1 and 2 for different light conditions (DAY, DUSK, NIGHT).</li> </ol>			

**Results**

1a. The data must be displayed in a way that it can be easily read and is logically presented, in a format as follows:

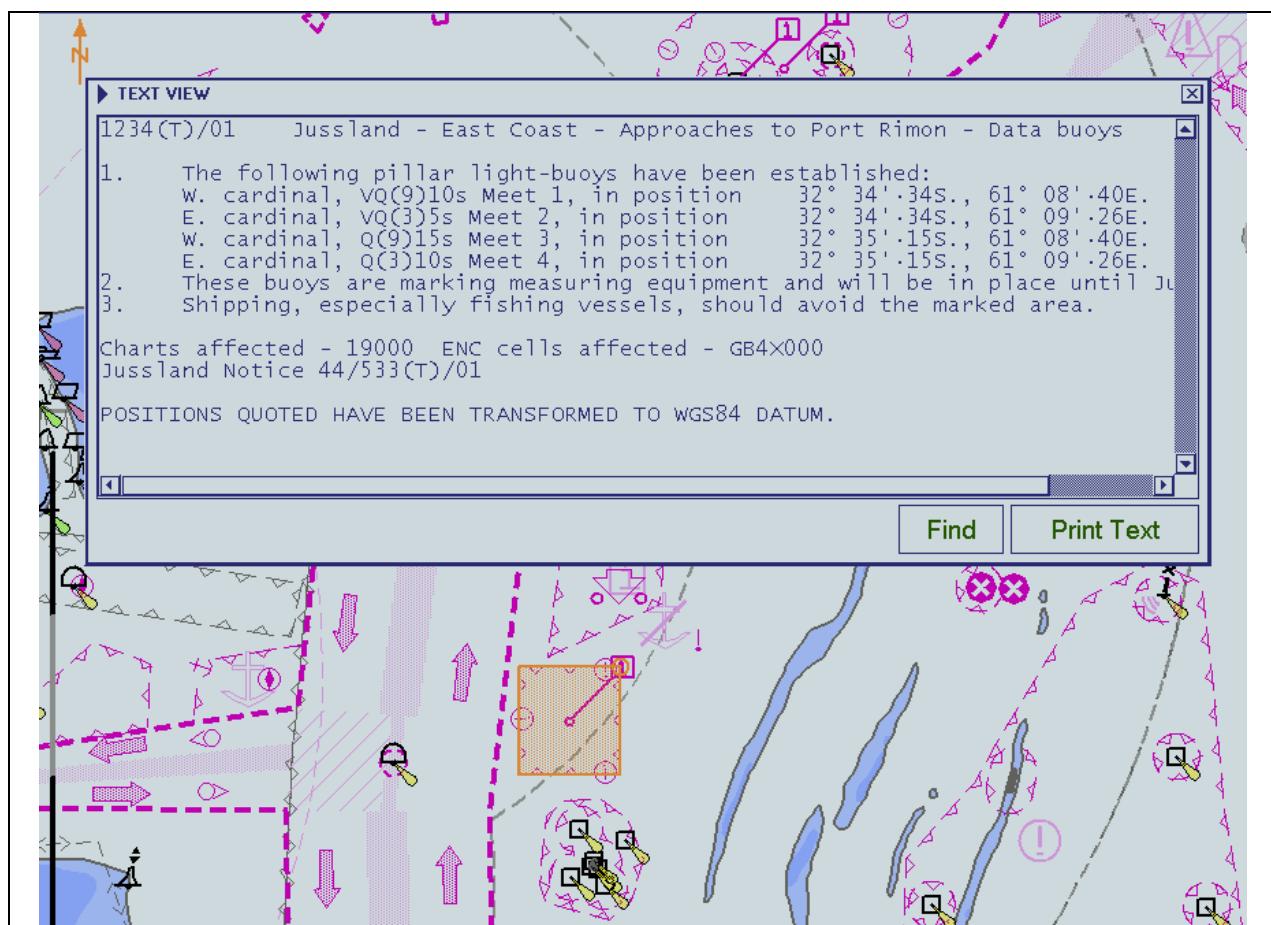
Tidal Station: <b>xxxxxx</b>			
Tidal Station Identifier: <b>yyyyyyy</b>			
	Hours	Direction of stream (degrees)	Rates at spring tide (knots)
Before	-6	xxx	xxx
	-5	xxx	xxx
	-4	xxx	xxx
	-3	xxx	xxx
	-2	xxx	xxx
	-1	xxx	xxx
<b>HW/LW</b>	0	xxx	xxx
After	+1	xxx	xxx
	+2	xxx	xxx
	+3	xxx	xxx
	+4	xxx	xxx
	+5	xxx	xxx
	+6	xxx	xxx

2a. The data must be displayed in a way that it can be easily read and is logically presented, for example by displaying the data as it might appear on a paper chart;

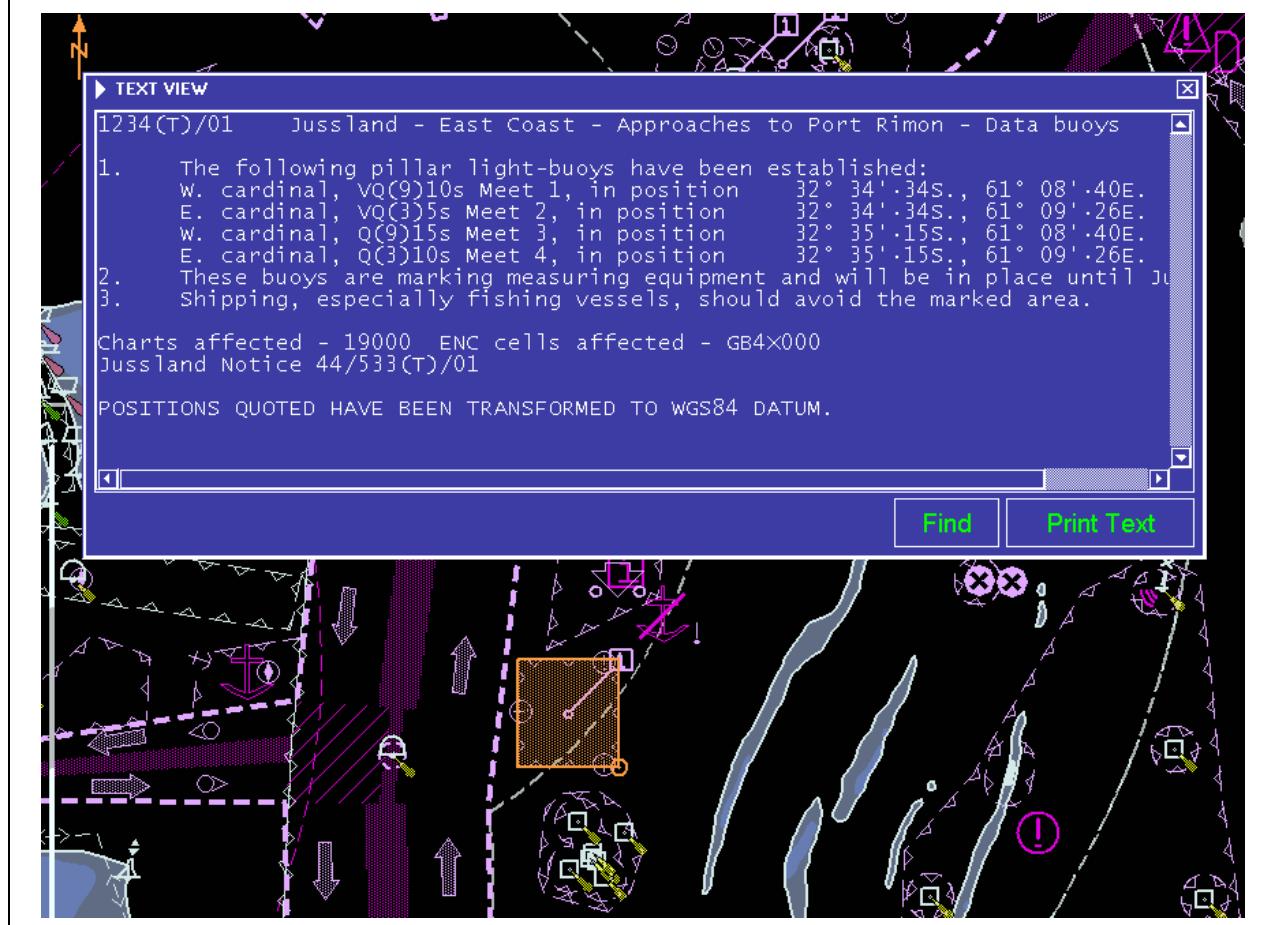
3. The data must be displayed as appropriate for the selected light condition (DAY, DUSK, NIGHT).

<b>Test Reference</b>	4.4 g)	<b>IHO Reference</b>	S-52 [3.2.3] & 10.6.1.1
<b>Test description</b>			
Display of text description			
<b>Setup</b>			
As for test 4.4 a)			
<b>Action</b>			
1. Select an example of a note encoded using TXTDSC (text description) (e.g. caution area at approximately, 32°34.74'S 061°08.92'E); 2. Repeat step 1 for different light conditions (DAY, DUSK, NIGHT).			
<b>Results</b>			
1. The note must be displayed within the light level of the current display and in a way that it can be easily read, for example by displaying the note as it might appear on a paper chart (e.g. content of GBIECTMP.TXT file as contained in the directory of loaded ENCs). 2. The note must be displayed as appropriate for the selected light condition (DAY, DUSK, NIGHT).			

## IHO ENC Test Data Sets for ECDIS

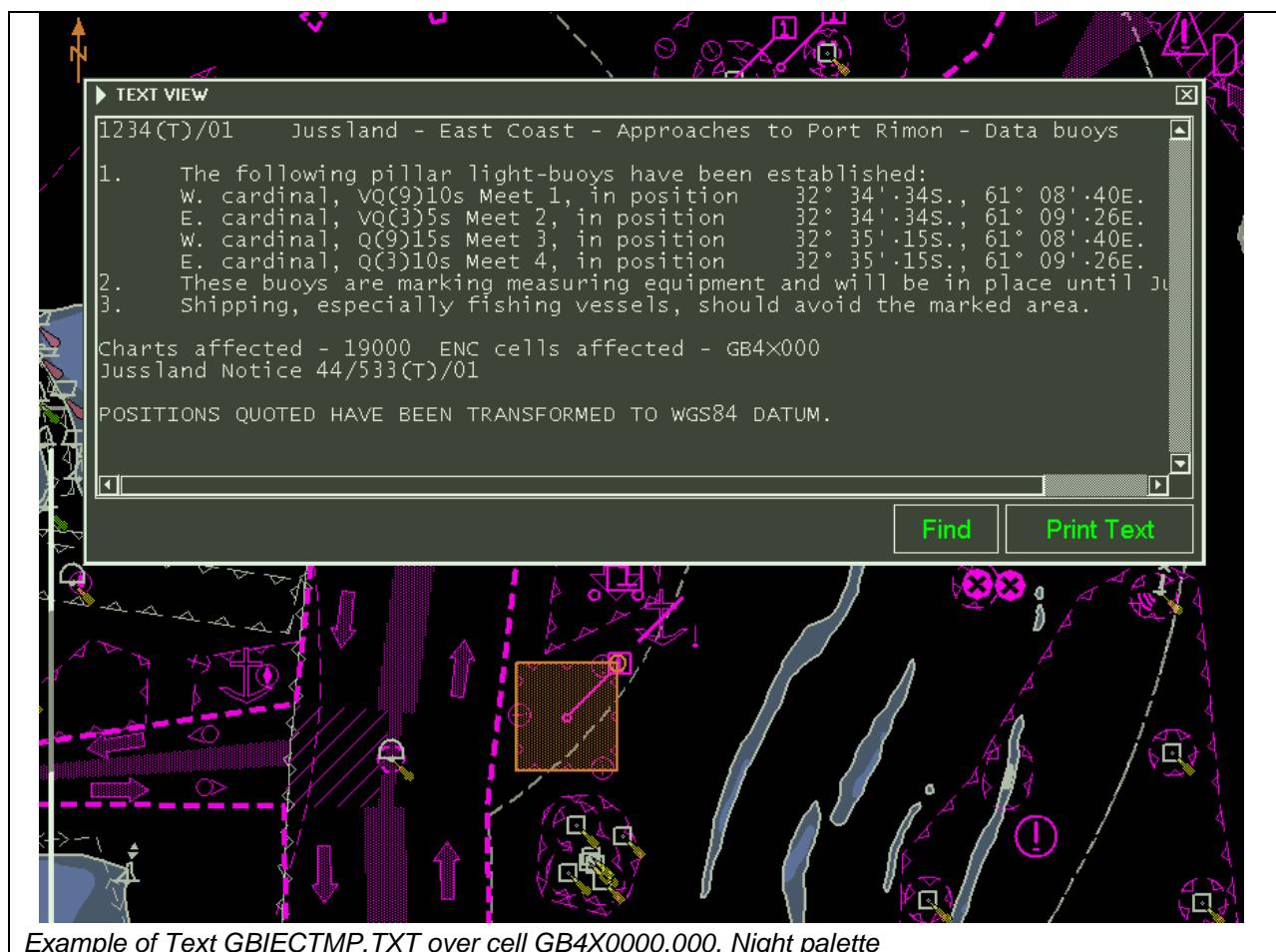


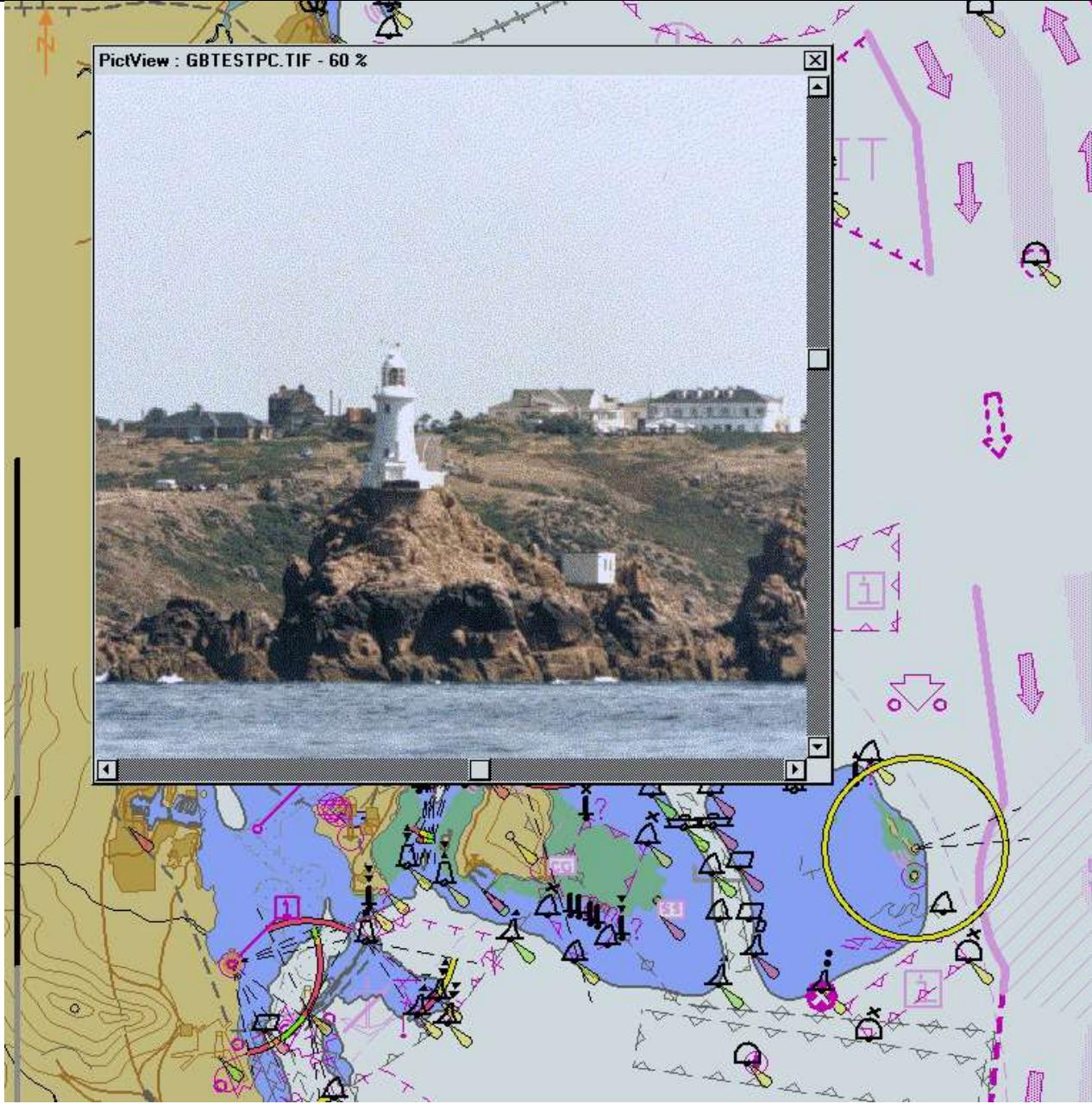
Example of Text GBIECTMP.TXT over cell GB4X0000.000, Day palette

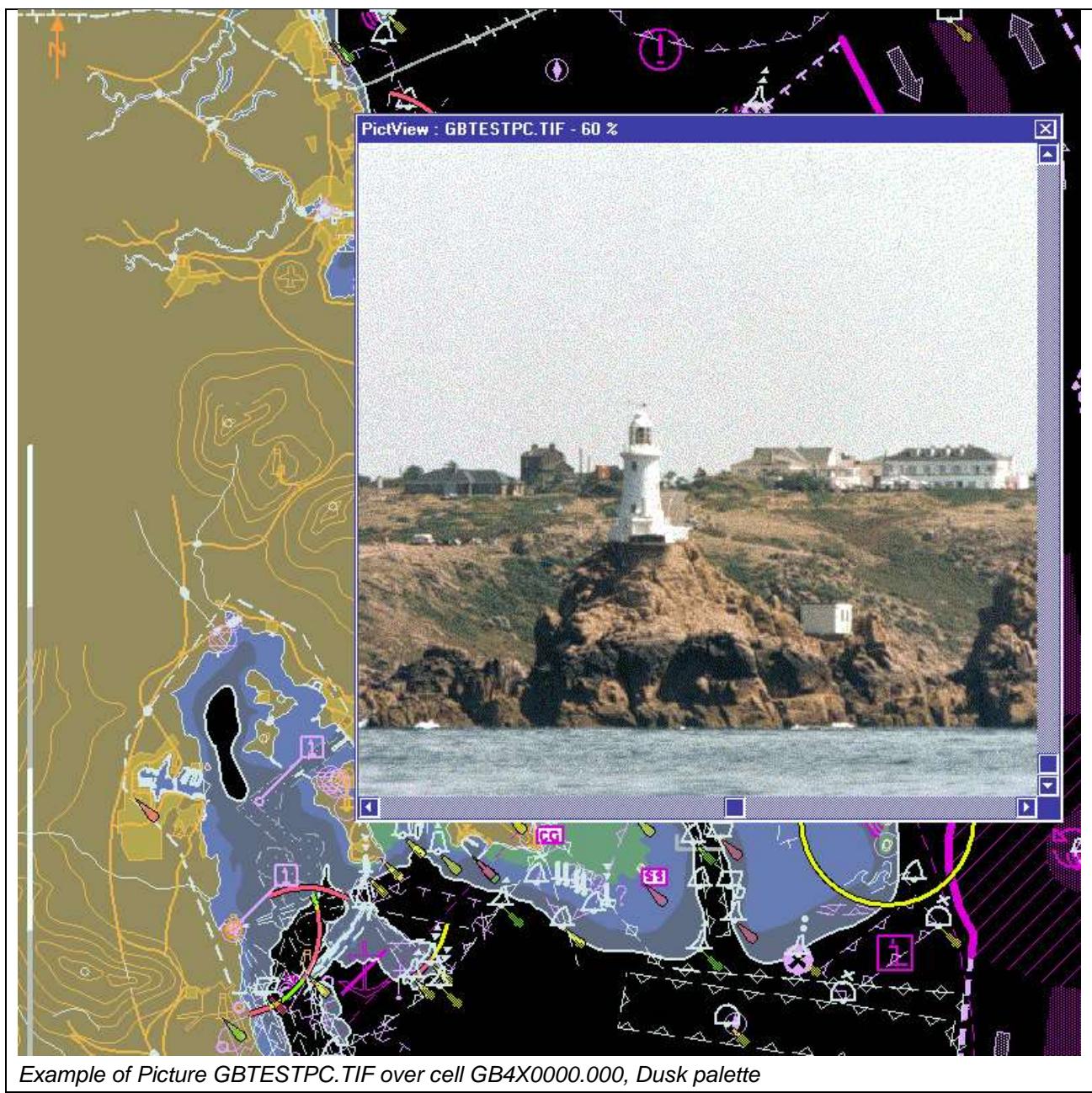


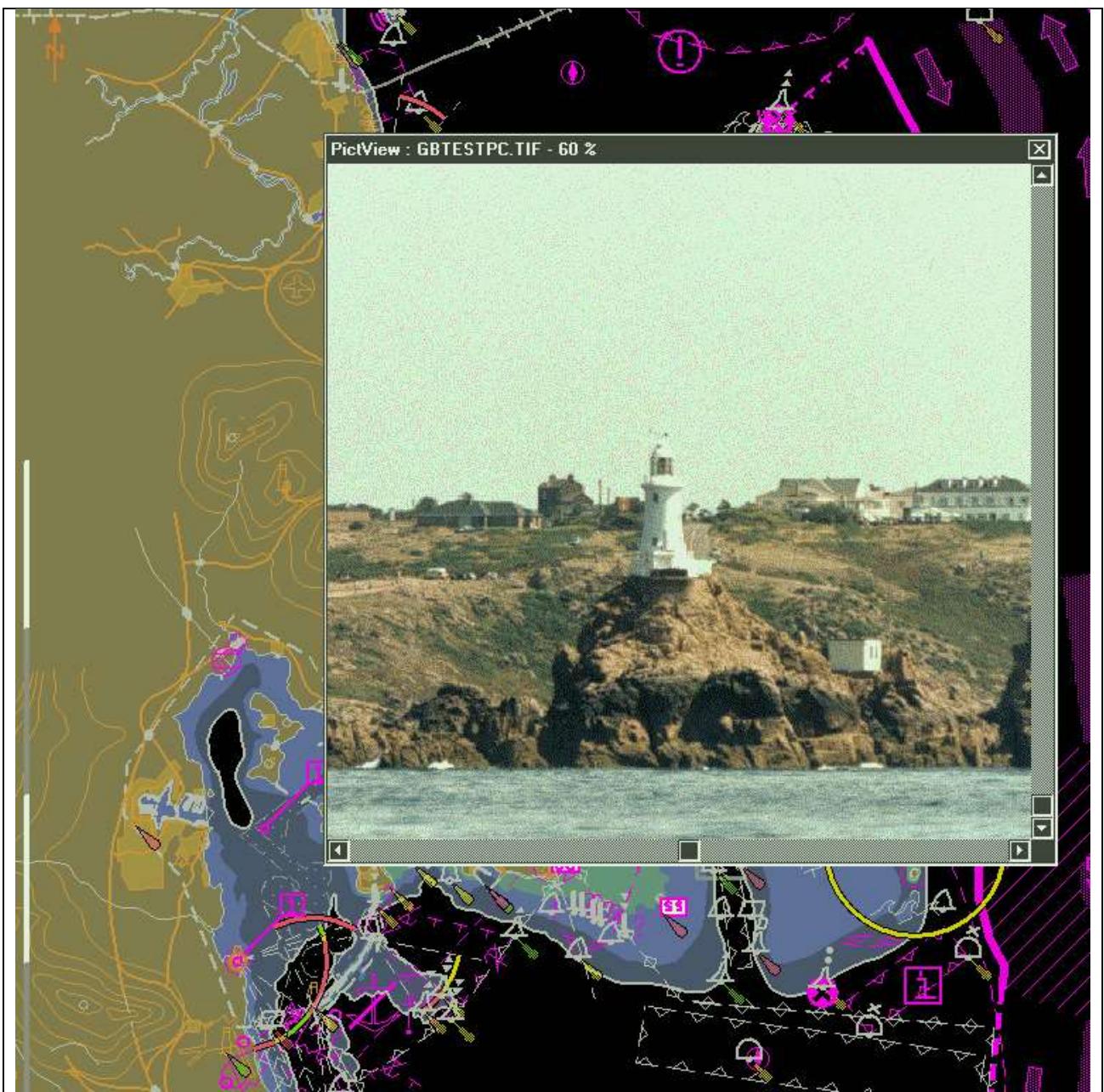
Example of Text GBIECTMP.TXT over cell GB4X0000.000, Dusk palette

## IHO ENC Test Data Sets for ECDIS

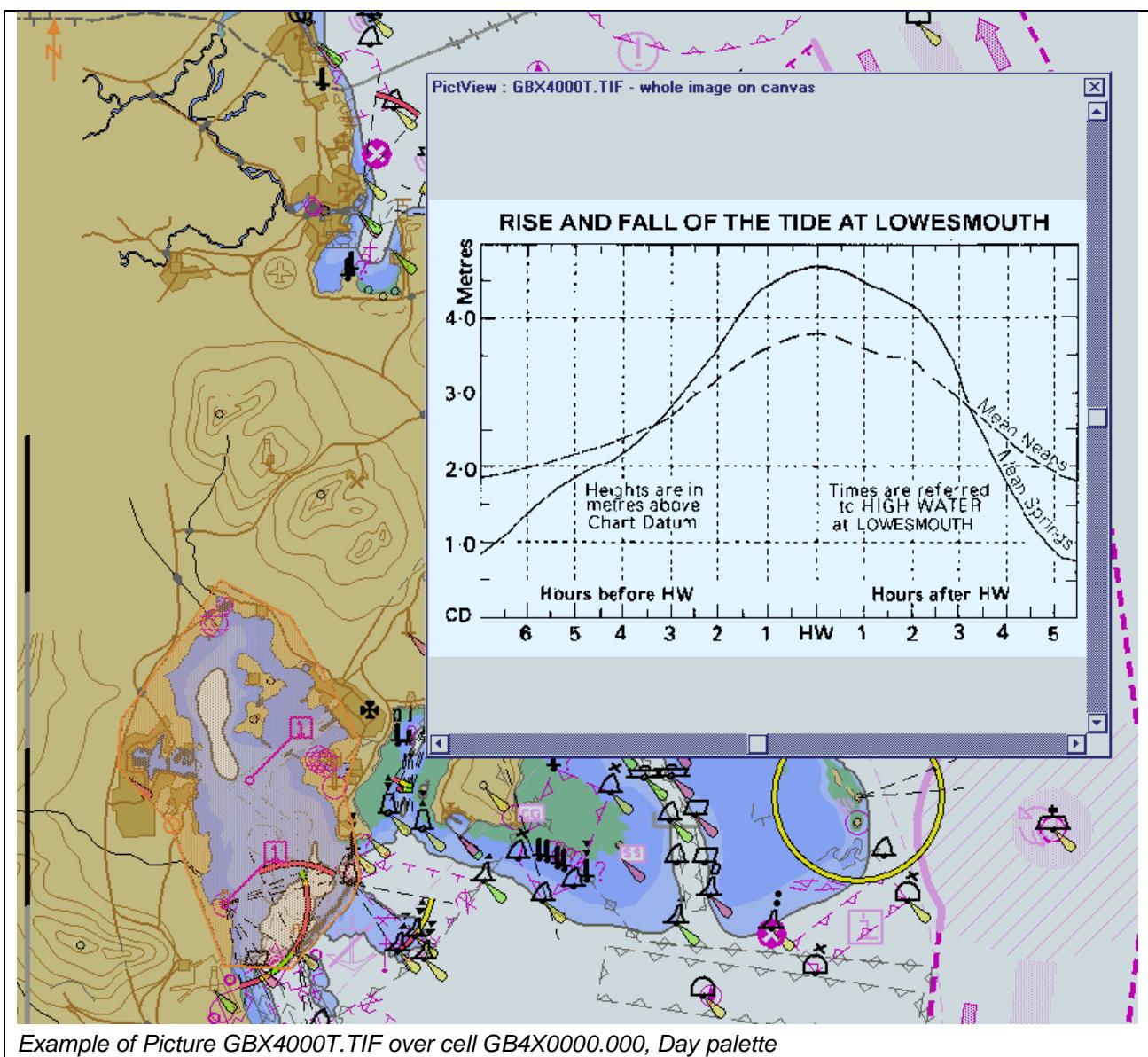


<b>Test Reference</b>	4.4 h)	<b>IHO Reference</b>	S-52 [3.2.3] & 10.6.1.1
<b>Test description</b>			
<i>Display of picture representation</i>			
<b>Setup</b>			
As for test 4.4 a)			
<b>Action</b>			
<p>1. Select an example of PICREP (picture representation)</p> <p>1a. select landmark object at 32°31.95'S 60°54.34'E and select picture representation for display;</p> <p>1b. select area object of 32°30.25'S 60°54.64'E with nautical publication (M_NPUB) and select picture representation for display;</p> <p>2. Repeat step 1a and b for different light conditions (DAY, DUSK, NIGHT).</p>			
<b>Results</b>			
<p>1a. The picture GBTESTPC.TIF must be displayed;</p> <p>1b. The picture GBX4000T.TIF must be displayed;</p> <p>2. The pictures must be displayed as appropriate for the selected light condition (DAY, DUSK, NIGHT). It shall not affect the user's night vision.</p>			
			
<p>Example of Picture GBTESTPC.TIF over cell GB4X0000.000, Day palette</p>			



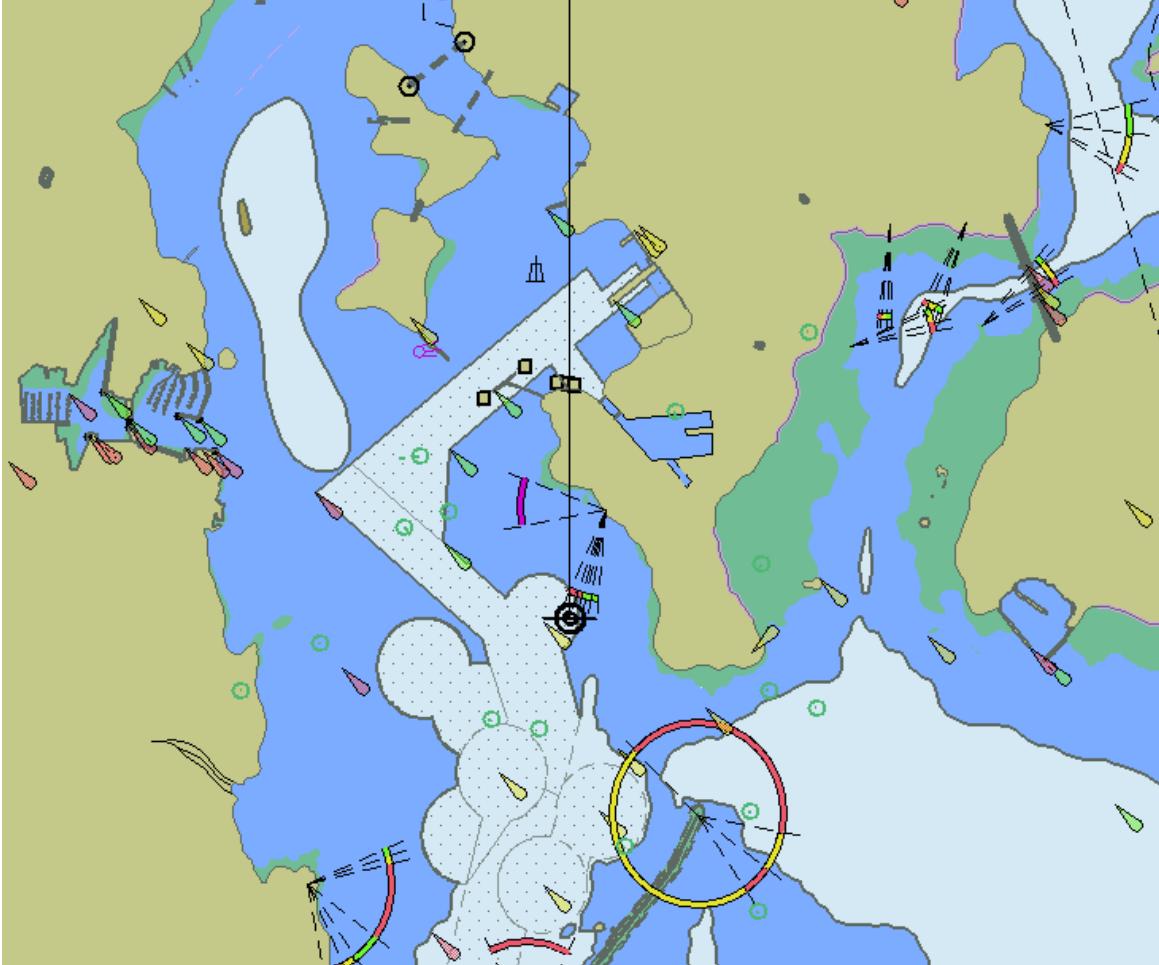


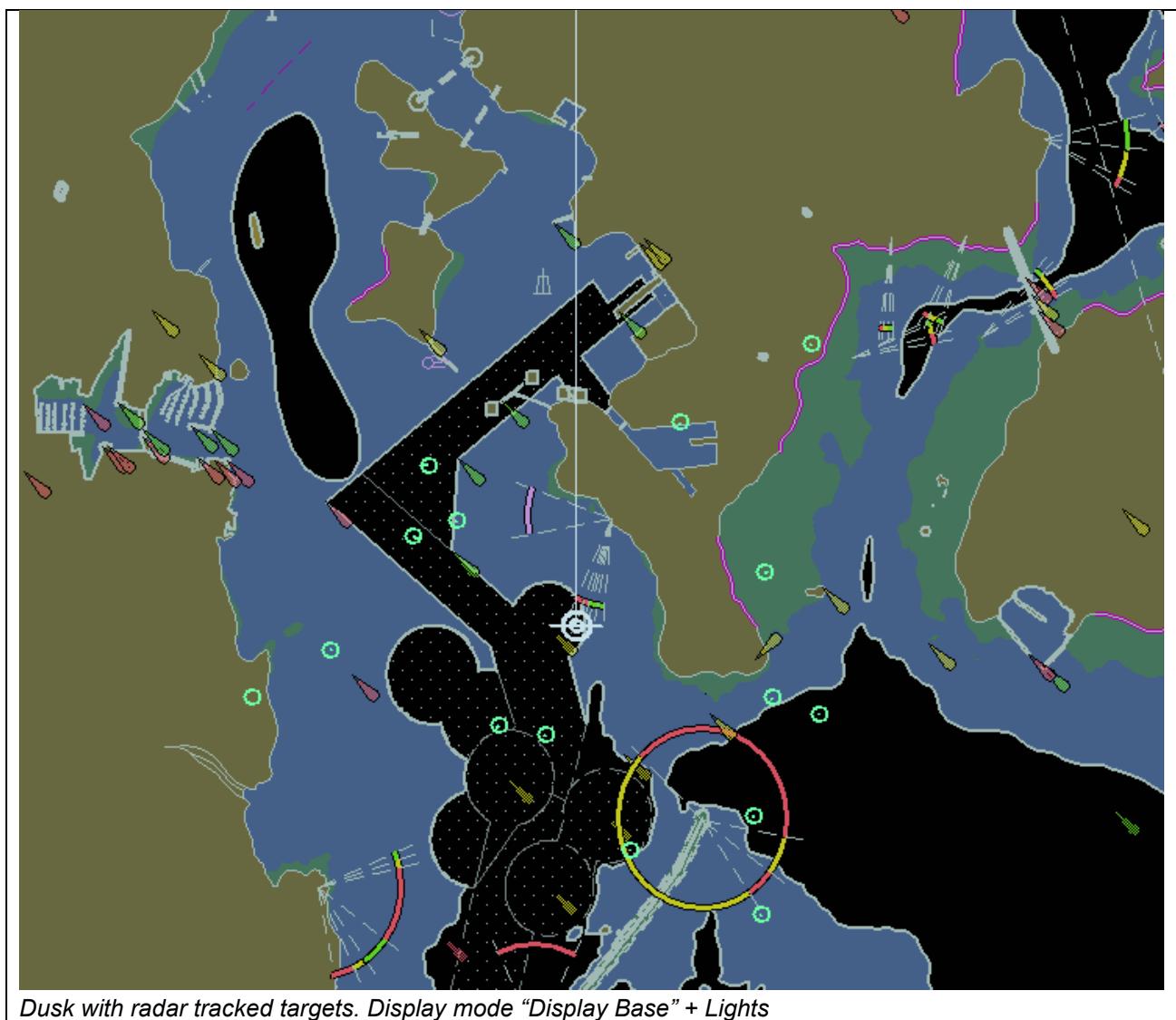
Example of Picture GBTESTPC.TIF over cell GB4X0000.000, Night palette



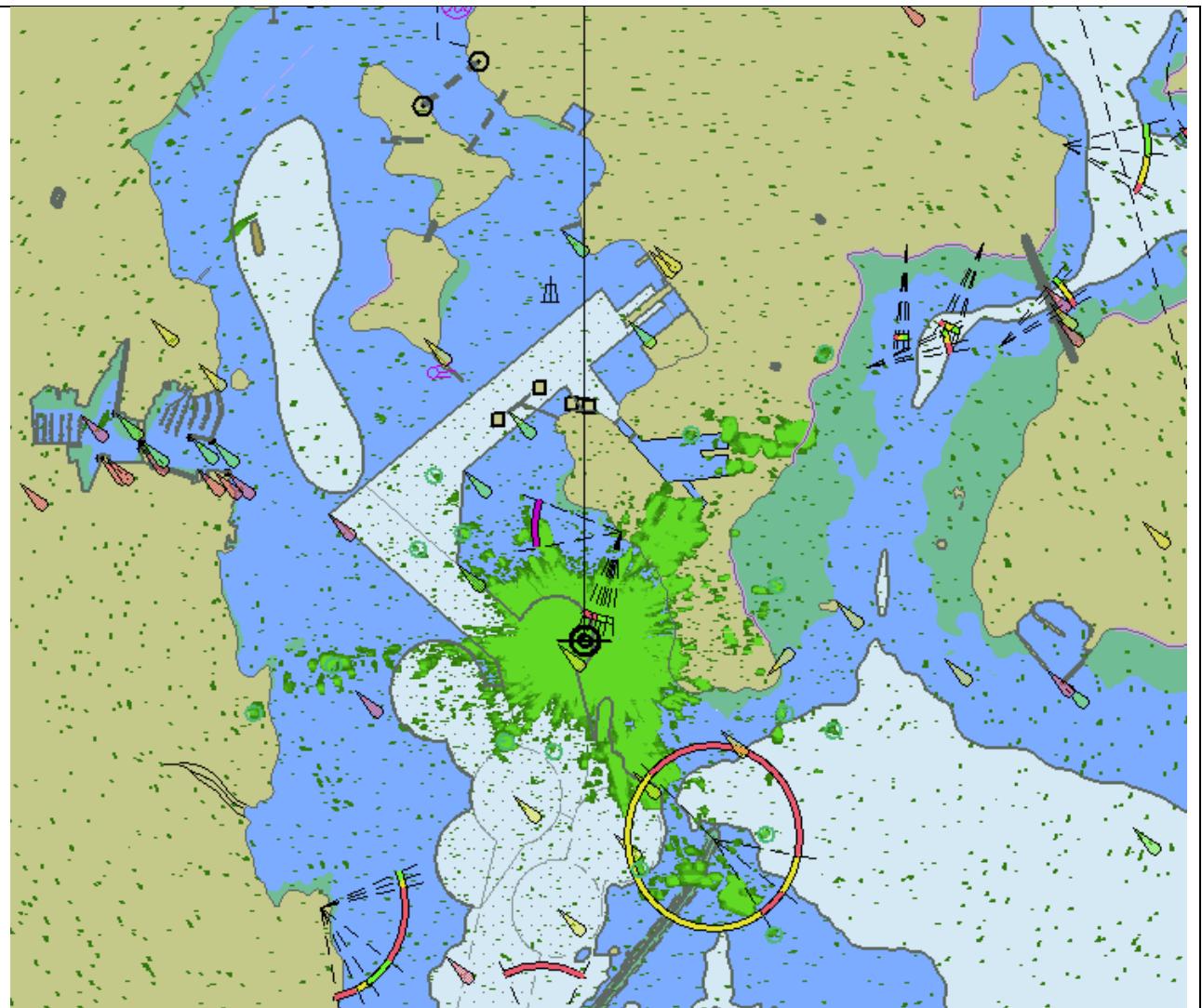
#### 4.5 Radar and Plotting Information

Where the capability for displaying radar, radar tracks or AIS is provided, in addition to the requirements of IEC 62288 for radar displays and presentation of target information, perform the following:

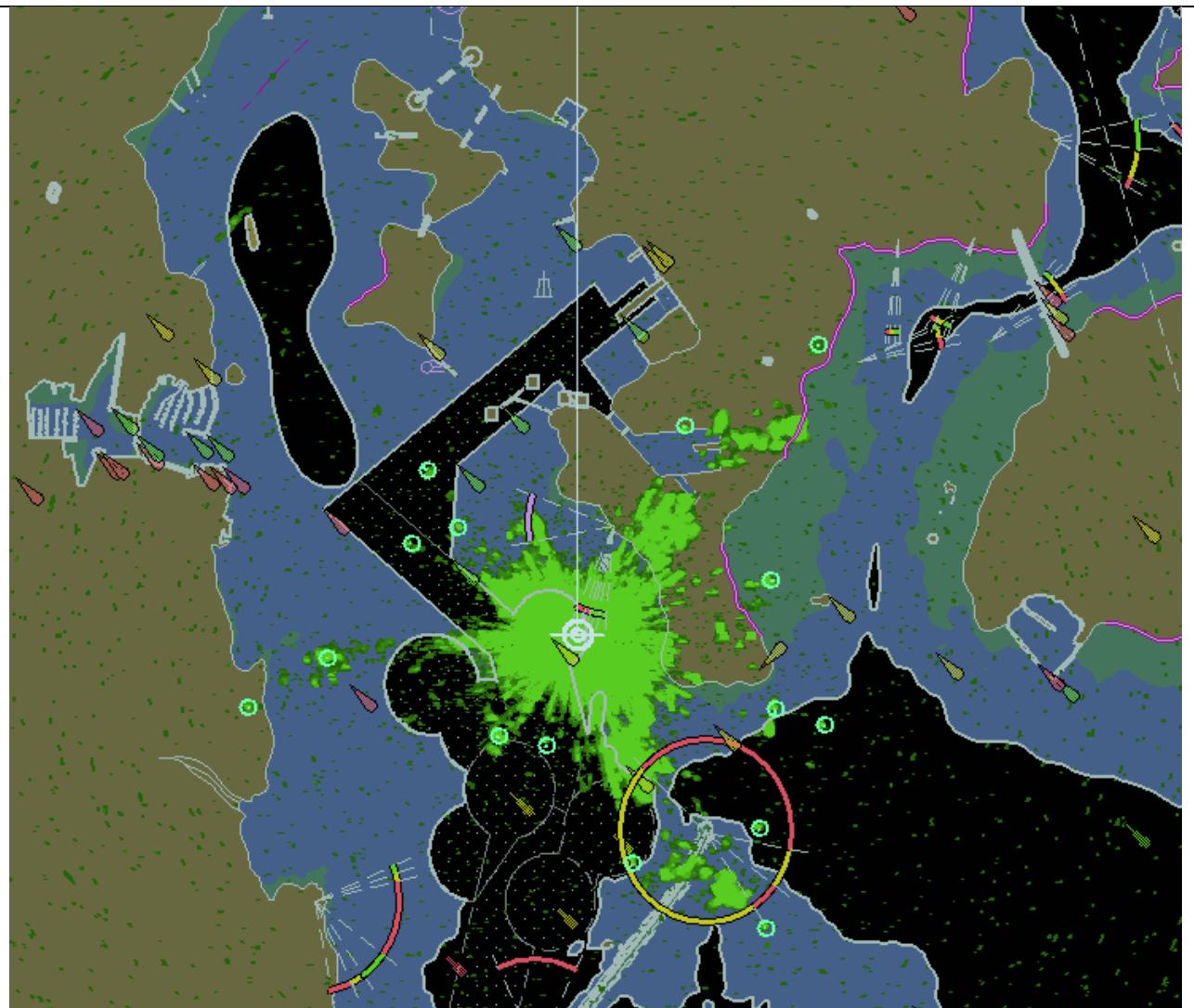
<b>Test Reference</b>	4.5 a)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Display of Radar and AIS overlays with SENC information.</i>			
<b>Setup</b>			
<p>Load all cells from 2.1.1 Power Up          Display cell GB5X01NE at 3 NM range scale          Select Safety Contour = 8 metres          Select Safety Depth = 8 metres          Select Plain Boundaries          Select Paper chart symbols</p>			
<b>Action</b>			
<p>Switch on the following (where available):</p> <ul style="list-style-type: none"> <li>• Radar image overlay</li> <li>• Radar tracked target information</li> <li>• AIS information</li> </ul>			
<b>Results</b>			
<p>Confirm by observation that same SENC object are under or over radar echoes as in the example pictures. Note that some examples contain intentionally a lot of radar echo noise in order to give many examples of the SENC objects which shall be over or under radar echoes.</p> 			
<i>Day with radar tracked targets. Display mode "Display Base" + Lights</i>			



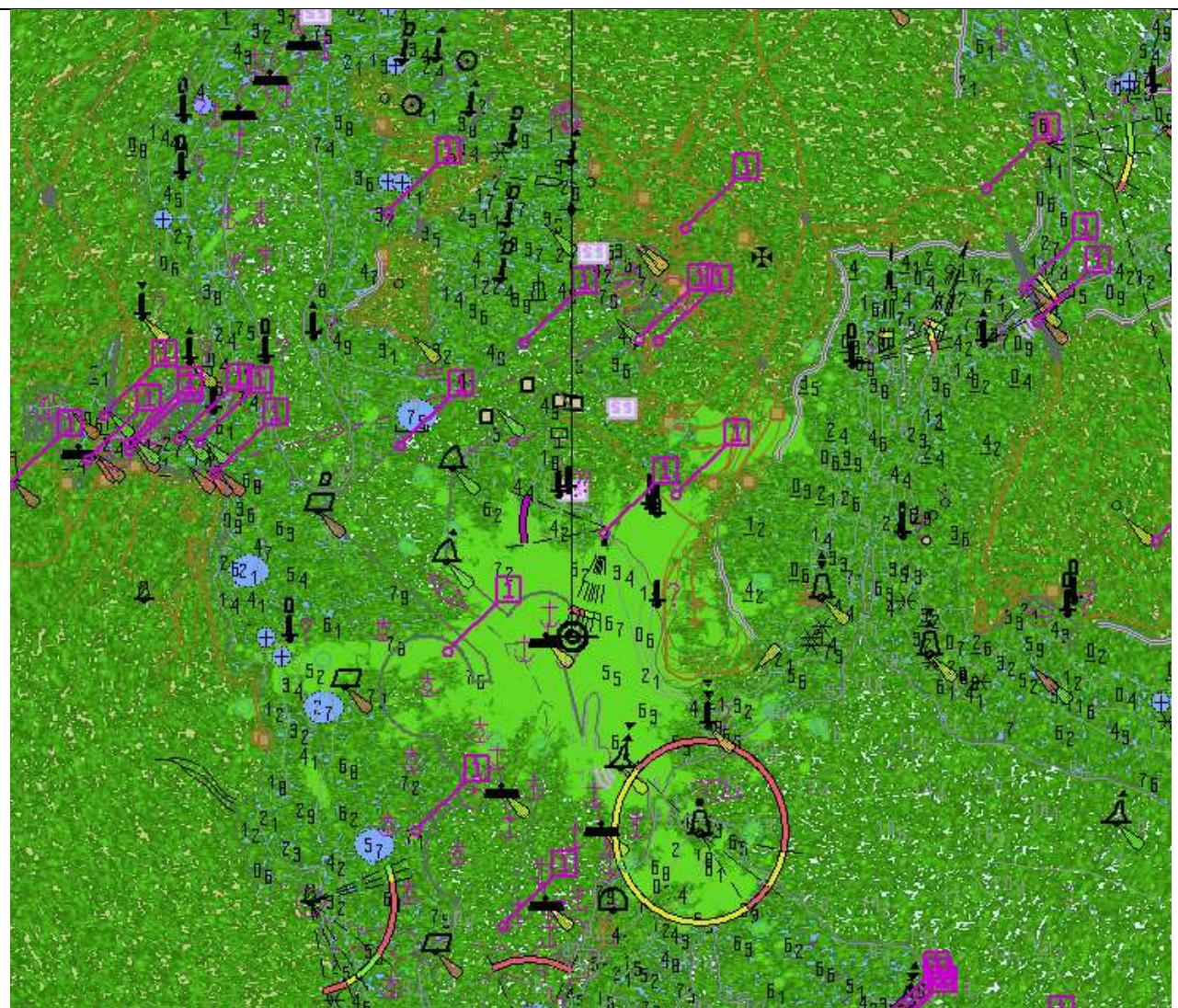
Dusk with radar tracked targets. Display mode "Display Base" + Lights



*Day with radar echoes and tracked targets. Display mode "Display Base" + Lights*



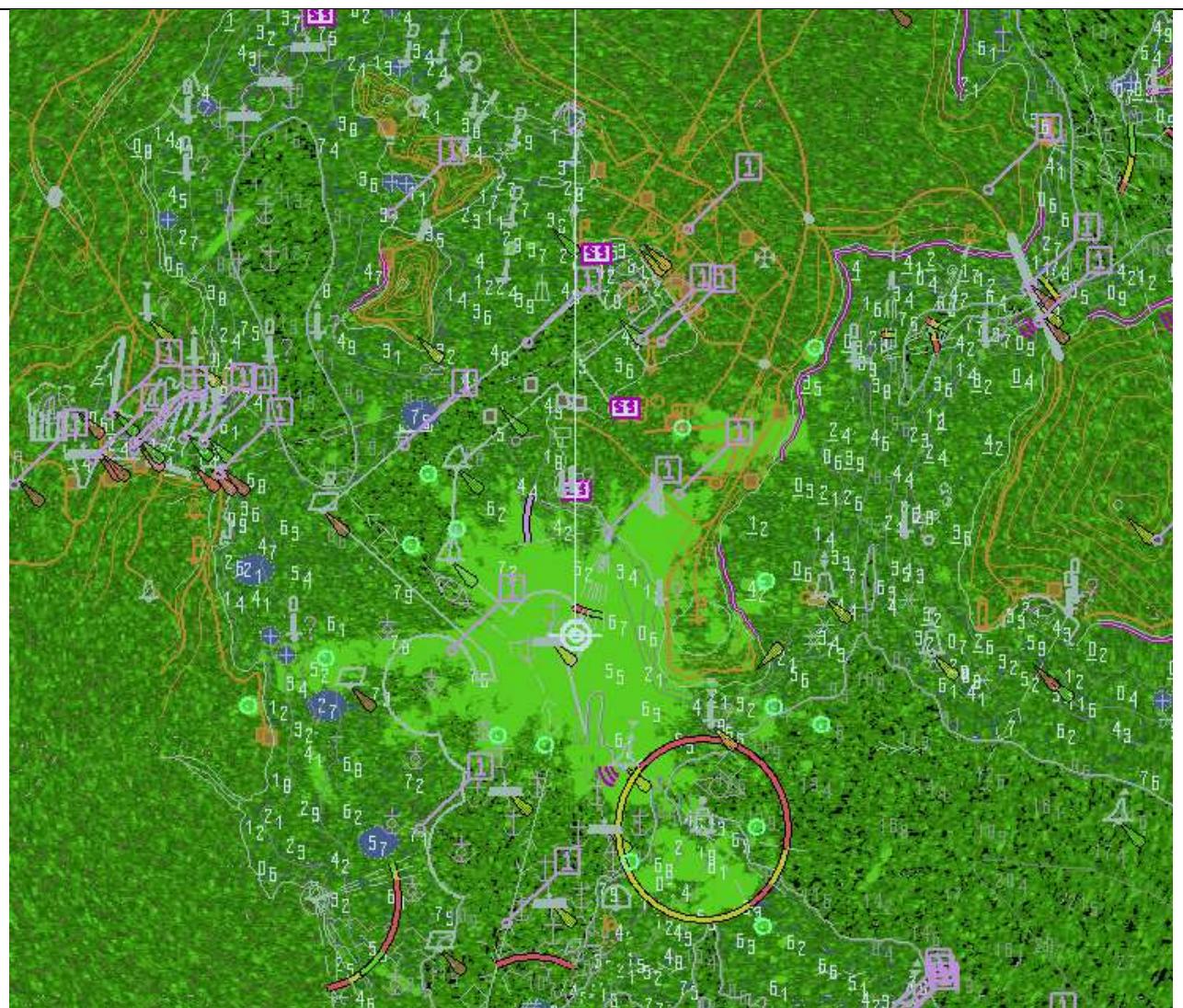
## IHO ENC Test Data Sets for ECDIS



*Day with very noisy radar echoes and tracked targets. Display mode "Other"*

*Note: This example clearly shows which SENC features are above radar echoes*

## IHO ENC Test Data Sets for ECDIS



*Dusk with very noisy radar echoes and tracked targets. Display mode "Other"*

*Note: This example clearly shows which SENC features are above radar echoes*

## 4.6 Accuracy

In this section calculations are based on the WGS-84 spheroid:

Semi-major axis      6378137.0000m  
 Semi-minor axis      6356752.3142m  
 Eccentricity squared 0.00669437999013  
 Flattening            298.257223563

The WGS-84 spheroid is defined by its semi-major axis and flattening  $1/f = 1/298.257223563$   
 The other parameters are derived from  $a$  and  $f$ .

Conversion of metres (m) to nautical miles (NM) uses  
 $1 \text{ NM} = 1852 \text{ m}$ .

The tests contained within this section shall be executed using the Electronic Bearing Line (EBL) and Variable Range Marker (VRM) tools provided by the ECDIS system.

The tolerance for distances is 1% or 30m whichever is greater. The tolerance for bearings is  $1^\circ$ .

The positions used in this section are also included in the files "4.6 Accuracy-Geodesic.doc" and "4.6 Accuracy -Rhumb Lines.doc" in the "4.6 Accuracy" folder within the TDS.

### 4.6.1 Distance and azimuth between geographical positions

<b>Test Reference</b>	4.6.1 a)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>True distance and azimuth between two geographical positions a).</i>			
<b>Setup</b>			
<i>Load all cells from: 2.1.1 Power Up\ENC_ROOT</i>			
<b>Action</b>			
<i>Measure the distance and azimuth between the following two objects:</i>			
<i>Viking 49/27-B      <math>32^\circ 35.224'\text{S}</math> <math>61^\circ 17.710'\text{E}</math> Corund Cape Light   <math>32^\circ 27.436'\text{S}</math> <math>60^\circ 58.609'\text{E}</math></i>			
<b>Results</b>			
<i>Confirm that the results are as follows:</i>			
<i>True Distance        33193.554 m / 17.9231 NM Forward Bearing     295.614 degrees Reverse Bearing     115.785 degrees</i>			

<b>Test Reference</b>	4.6.1 b)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>True distance and azimuth between two geographical positions b).</i>			
<b>Setup</b>			
<i>As for test 4.6.1a)</i>			
<b>Action</b>			
<i>Measure the distance and azimuth between the following two objects:</i>			
<i>Viking 49/27-B      <math>32^\circ 35.224'\text{S}</math> <math>61^\circ 17.710'\text{E}</math> Castlerigg Light    <math>32^\circ 23.280'\text{S}</math> <math>60^\circ 58.496'\text{E}</math></i>			
<b>Results</b>			
<i>Confirm that the results are as follows:</i>			
<i>True Distance        37326.351 m / 20.1546 NM Forward Bearing     306.172 degrees Reverse Bearing     126.344 degrees</i>			

<b>Test Reference</b>	4.6.1 c)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>True distance and azimuth between two geographical positions c).</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
<i>Measure the distance and azimuth between the following two objects:</i>			
<i>Corund Cape Light 32° 27.447'S 60° 58.599'E</i>			
<i>Worm Head Light 32° 31.958'S 60° 54.337'E</i>			
<b>Results</b>			
<i>Confirm that the results are as follows:</i>			
<i>True Distance 10680.859 m / 5.7672 NM</i>			
<i>Forward Bearing 218.665 degrees</i>			
<i>Reverse Bearing 38.703 degrees</i>			

#### 4.6.2 Geographical position from a known position and distance/azimuth

<b>Test Reference</b>	4.6.2 a)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Geographical position from known position and distance/azimuth a).</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
<i>From the following position:</i>			
<i>Viking 49/27-B 32° 35.224'S 61° 17.710'E</i>			
<i>Enter a distance and bearing of:</i>			
<i>True Distance 33193.554 m / 17.9231 NM</i>			
<i>Forward Bearing 295.614 degrees</i>			
<b>Results</b>			
<i>Confirm that the end geographical position is:</i>			
<i>Corund Cape Light 32° 27.436'S 60° 58.609'E</i>			

<b>Test Reference</b>	4.6.2 b)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Geographical position from known position and distance/azimuth b).</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
<i>From the following position:</i>			
<i>Viking 49/27-B 32° 35.224'S 61° 17.710'E</i>			
<i>Enter a distance and bearing of:</i>			
<i>True Distance 37326.351 m / 20.1546 NM</i>			
<i>Forward Bearing 306.172 degrees</i>			
<b>Results</b>			
<i>Confirm that the end geographical position is:</i>			
<i>Castlerigg Light 32° 23.280'S 60° 58.496'E</i>			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	4.6.2 c)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Geographical position from known position and distance/azimuth c).</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
<p><i>From the following position:</i></p> <p><i>Corund Cape Light 32° 27.447'S 60° 58.599'E</i></p> <p><i>Enter a distance and bearing of:</i></p> <p><i>True Distance 10680.859 m / 5.7672 NM</i></p> <p><i>Forward Bearing 218.665 degrees</i></p>			
<b>Results</b>			
<p><i>Confirm that the end geographical position is:</i></p> <p><i>Worm Head Light 32° 31.958'S 60° 54.337'E</i></p>			

### 4.6.3 Rhumb line distance and azimuth between geographical positions

<b>Test Reference</b>	4.6.3 a)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Rhumb line distance and azimuth between two geographical positions a).</i>			
<b>Setup</b>			
<p><i>Load all cells from:</i></p> <p><i>2.1.1 Power Up\ENC_ROOT</i></p>			
<b>Action</b>			
<p><i>Measure the distance and azimuth between the following two objects:</i></p> <p><i>Viking 49/27-B 32° 35.224'S 61° 17.710'E</i></p> <p><i>Corund Cape Light 32° 27.436'S 60° 58.609'E</i></p>			
<b>Results</b>			
<p><i>Confirm that the results are as follows:</i></p> <p><i>True Distance 33193.567 m / 17.9231 NM</i></p> <p><i>Forward Bearing 295.699 degrees</i></p> <p><i>Reverse Bearing 115.699 degrees</i></p>			

<b>Test Reference</b>	4.6.3 b)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Rhumb line distance and azimuth between two geographical positions b).</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
<p><i>Measure the distance and azimuth between the following two objects:</i></p> <p><i>Viking 49/27-B 32° 35.224'S 61° 17.710'E</i></p> <p><i>Castlerigg Light 32° 23.280'S 60° 58.496'E</i></p>			
<b>Results</b>			
<p><i>Confirm that the results are as follows:</i></p> <p><i>True Distance 37326.365 m / 20.1546 NM</i></p> <p><i>Forward Bearing 306.258 degrees</i></p> <p><i>Reverse Bearing 126.258 degrees</i></p>			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	4.6.3 c)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Rhumb line distance and azimuth between two geographical positions c).</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Measure the distance and azimuth between the following two objects:			
Corund Cape Light 32° 27.447'S 60° 58.599'E			
Worm Head Light 32° 31.958'S 60° 54.337'E			
<b>Results</b>			
Confirm that the results are as follows:			
True Distance 10680.859 m / 5.7672 NM			
Forward Bearing 218.684 degrees			
Reverse Bearing 38.684 degrees			

### 4.6.4 Geodesics

<b>Test Reference</b>	4.6.4 a)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Geodesic lines and circle, northern quadrant.</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Plot positions listed in sets 2-6 of the positions listed in section 4.6.6			
<b>Results</b>			
Confirm that the lines drawn pass through or sufficiently close to the listed positions and that the Geodesic circle corresponds to range rings at 2,000,000m intervals.			

<b>Test Reference</b>	4.6.4 b)	<b>IHO Reference</b>	-
<b>Test description</b>			
<i>Geodesic lines and circle, crossing the equator.</i>			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Plot positions listed in sets 7-11 of the positions listed in section 4.6.6			
<b>Results</b>			
Confirm that the lines drawn pass through or sufficiently close to the listed positions and that the Geodesic circle corresponds to range rings at 2,000,000m intervals.			

## IHO ENC Test Data Sets for ECDIS

<b>Test Reference</b>	4.6.4 c)	<b>IHO Reference</b>	-
<b>Test description</b>			
Geodesic lines southern quadrant.			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Plot positions listed in sets 12-16 of the positions listed in section 4.6.6			
<b>Results</b>			
Confirm that the lines drawn pass through or sufficiently close to the listed positions and that the Geodesic circle corresponds to range rings at 2,000,000m intervals.			

### 4.6.5 Rhumb Lines

<b>Test Reference</b>	4.6.5 a)	<b>IHO Reference</b>	-
<b>Test description</b>			
Rhumb lines, northern quadrant.			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Plot positions listed in sets 2-5 of the positions listed in section 4.6.7			
<b>Results</b>			
Confirm that the lines drawn pass through or sufficiently close to the listed positions.			

<b>Test Reference</b>	4.6.5 b)	<b>IHO Reference</b>	-
<b>Test description</b>			
Rhumb lines, crossing the equator.			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Plot positions listed in sets 6-9 of the positions listed in section 4.6.7			
<b>Results</b>			
Confirm that the lines drawn pass through or sufficiently close to the listed positions.			

<b>Test Reference</b>	4.6.5 c)	<b>IHO Reference</b>	-
<b>Test description</b>			
Rhumb lines, southern quadrant.			
<b>Setup</b>			
As for test 4.6.1a)			
<b>Action</b>			
Plot positions listed in sets 10-13 of the positions listed in section 4.6.7			
<b>Results</b>			
Confirm that the lines drawn pass through or sufficiently close to the listed positions.			

#### 4.6.6 Positions for use in Accuracy Tests - Geodesics

The following sections contain a series of latitudes and longitudes which define a number of geodesics. These points are intended to allow type approval authorities to test the ability of ECDIS to calculate geodesics correctly.

Conversion of metres (m) to nautical miles (NM) uses  
1 NM = 1852 m.

##### Set 1 Micklefirth

Usage Band 4

Viking 49/27-B 32 35.224S 61 17.710E  
 Corund Cape Light 32 27.436S 60 58.609E  
 True Distance 33193.554 m / 17.9231 NM  
 Forward Bearing 295.614 degrees  
 Reverse Bearing 115.785 degrees

Viking 49/27-B 32 35.224S 61 17.710E  
 Castlerigg Light 32 23.280S 60 58.496E  
 True Distance 37326.351 m / 20.1546 NM  
 Forward Bearing 306.172 degrees  
 Reverse Bearing 126.344 degrees

Usage Band 5

Corund Cape Light 32 27.447S 60 58.599E  
 Worm Head Light 32 31.958S 60 54.337E  
 True Distance 10680.859 m / 5.7672 NM  
 Forward Bearing 218.665 degrees  
 Reverse Bearing 38.703 degrees

##### Long Geodesics - North West Quadrant.

##### Set 2 Long Diagonal (30N, 60W to 60N, 30W)

Point1	30 00.0000N	60 00.0000W
Point2	31 38.1452N	59 5.9571W
Point3	33 15.8706N	58 9.9924W
Point4	34 53.1348N	57 11.9156W
Point5	36 29.8923N	56 11.5178W
Point6	38 6.0926N	55 8.5692W
Point7	39 41.6796N	54 2.8166W
Point8	41 16.5909N	52 53.9805W
Point9	42 50.7564N	51 41.7515W
Point10	44 24.0976N	50 25.7868W
Point11	45 56.5257N	49 5.7067W
Point12	47 27.9409N	47 41.0895W
Point13	48 58.2294N	46 11.4681W
Point14	50 27.2626N	44 36.3244W
Point15	51 54.8937N	42 55.0855W

## IHO ENC Test Data Sets for ECDIS

Point16	53 20.9554N	41 7.1195W
Point17	54 45.2565N	39 11.7330W
Point18	56 7.5789N	37 8.1699W
Point19	57 27.6730N	34 55.6135W
Point20	58 45.2547N	32 33.1935W
Point21	60 00.0000N	30 00.0000W

### **Set 3 Long Diagonal (30N, 30W to 60N, 60W)**

Point1	30 00.0000N	30 00.0000W
Point2	31 38.1452N	30 54.0429W
Point3	33 15.8706N	31 50.0076W
Point4	34 53.1348N	32 48.0844W
Point5	36 29.8923N	33 48.4822W
Point6	38 6.0926N	34 51.4308W
Point7	39 41.6796N	35 57.1833W
Point8	41 16.5909N	37 6.0195W
Point9	42 50.7564N	38 18.2485W
Point10	44 24.0976N	39 34.2132W
Point11	45 56.5257N	40 54.2933W
Point12	47 27.9409N	42 18.9105W
Point13	48 58.2294N	43 48.5319W
Point14	50 27.2626N	45 23.6756W
Point15	51 54.8937N	47 4.9145W
Point16	53 20.9554N	48 52.8805W
Point17	54 45.2565N	50 48.2670W
Point18	56 7.5789N	52 51.8301W
Point19	57 27.6730N	55 4.3865W
Point20	58 45.2547N	57 26.8065W
Point21	60 00.0000N	60 00.0000W

### **Set 4 Long Horizontal (45N, 60W to 45N, 30W)**

Point1	45 00.0000N	60 00.0000W
Point2	45 11.2519N	58 31.7916W
Point3	45 21.3608N	57 3.0317W
Point4	45 30.3133N	55 33.7738W
Point5	45 38.0973N	54 4.0740W
Point6	45 44.7022N	52 33.9908W
Point7	45 50.1188N	51 3.5849W
Point8	45 54.3397N	49 32.9185W
Point9	45 57.3588N	48 2.0555W
Point10	45 59.1720N	46 31.0608W
Point11	45 59.7767N	45 0.0000W
Point12	45 59.1720N	43 28.9392W
Point13	45 57.3588N	41 57.9446W
Point14	45 54.3397N	40 27.0815W
Point15	45 50.1188N	38 56.4152W
Point16	45 44.7022N	37 26.0092W
Point17	45 38.0973N	35 55.9260W
Point18	45 30.3133N	34 26.2263W
Point19	45 21.3608N	32 56.9684W
Point20	45 11.2519N	31 28.2085W
Point21	45 00.0000N	30 00.0000W

**Set 5 Long Vertical (30N, 45W to 60N, 45W)**

The geodesic runs along the 45W meridian.

**Set 6 Circle (Centre 45N, 45W Radius 2,000,000 m Points every 15 degrees)**

Point1	62 58.1482N	45 00.0000W
Point2	62 2.9175N	35 13.1324W
Point3	59 29.7703N	27 21.3716W
Point4	55 47.3417N	22 13.6842W
Point5	51 25.6105N	19 41.1668W
Point6	46 49.0062N	19 14.2861W
Point7	42 16.1548N	20 24.1958W
Point8	38 1.4970N	22 48.2871W
Point9	34 16.6609N	26 9.5368W
Point10	31 11.2085N	30 14.5458W
Point11	28 52.8672N	34 51.8044W
Point12	27 27.4359N	39 50.5197W
Point13	26 58.5455N	45 0.0000W
Point14	27 27.4359N	50 9.4803W
Point15	28 52.8672N	55 8.1956W
Point16	31 11.2085N	59 45.4542W
Point17	34 16.6609N	63 50.4632W
Point18	38 1.4970N	67 11.7129W
Point19	42 16.1548N	69 35.8042W
Point20	46 49.0062N	70 45.7139W
Point21	51 25.6105N	70 18.8332W
Point22	55 47.3417N	67 46.3158W
Point23	59 29.7703N	62 38.6284W
Point24	62 2.9175N	54 46.8676W
Point25	62 58.1482N	45 0.0000W

**Long Geodesics (Crossing Equator).****Set 7 Long Diagonal (15N, 60W to 15S, 30W)**

Point1	15 0.0000N	60 0.0000W
Point2	13 31.8194N	58 26.4185W
Point3	12 3.0524N	56 53.9818W
Point4	10 33.7708N	55 22.5552W
Point5	9 4.0440N	53 52.0065W
Point6	7 33.9393N	52 22.2057W
Point7	6 3.5224N	50 53.0251W
Point8	4 32.8574N	49 24.3384W
Point9	3 2.0073N	47 56.0210W
Point10	1 31.0343N	46 27.9492W
Point11	0 0.0000N	45 0.0000W
Point12	1 31.0343S	43 32.0508W
Point13	3 2.0073S	42 3.9789W
Point14	4 32.8574S	40 35.6615W
Point15	6 3.5224S	39 6.9749W
Point16	7 33.9393S	37 37.7942W
Point17	9 4.0440S	36 7.9935W
Point18	10 33.7708S	34 37.4447W
Point19	12 3.0524S	33 6.0182W
Point20	13 31.8194S	31 33.5815W
Point21	15 0.0000S	30 0.0000W

**Set 8 Long Diagonal (15N, 30W to 15S, 60W)**

Point1	15 0.0000N	30 0.0000W
Point2	13 31.8194N	31 33.5815W
Point3	12 3.0524N	33 6.0182W
Point4	10 33.7708N	34 37.4448W
Point5	9 4.0440N	36 7.9935W
Point6	7 33.9393N	37 37.7943W
Point7	6 3.5224N	39 6.9749W
Point8	4 32.8574N	40 35.6616W
Point9	3 2.0073N	42 3.9790W
Point10	1 31.0343N	43 32.0508W
Point11	0 0.0000N	45 0.0000W
Point12	1 31.0343S	46 27.9492W
Point13	3 2.0073S	47 56.0211W
Point14	4 32.8574S	49 24.3385W
Point15	6 3.5224S	50 53.0251W
Point16	7 33.9393S	52 22.2058W
Point17	9 4.0440S	53 52.0065W
Point18	10 33.7708S	55 22.5553W
Point19	12 3.0524S	56 53.9819W
Point20	13 31.8194S	58 26.4185W
Point21	15 0.0000S	60 0.0000W

**Set 9 Long Horizontal (0N, 60W to 0N, 30W)**

The geodesic runs along the Equator.

**Set 10 Long Vertical (15S, 45W to 15N, 45W)**

The geodesic runs along the 45W meridian.

**Set 11 Circle (Centre 0N, 45W Radius 2,000,000 m Points every 15 degrees)**

Point1	18 4.8887N	45 00.0000W
Point2	17 26.7433N	40 12.0936W
Point3	15 35.6306N	35 47.3375W
Point4	12 40.8191N	32 5.0570W
Point5	8 55.8234N	29 18.7826W
Point6	4 36.5608N	27 36.4877W
Point7	0 0.0000N	27 2.0217W
Point8	4 36.5608S	27 36.4877W
Point9	8 55.8234S	29 18.7826W
Point10	12 40.8191S	32 5.0570W
Point11	15 35.6306S	35 47.3375W
Point12	17 26.7433S	40 12.0936W
Point13	18 4.8887S	45 0.0000W
Point14	17 26.7433S	49 47.9064W
Point15	15 35.6306S	54 12.6625W
Point16	12 40.8191S	57 54.9430W
Point17	8 55.8234S	60 41.2174W
Point18	4 36.5608S	62 23.5123W
Point19	0 0.0000N	62 57.9783W
Point20	4 36.5608N	62 23.5123W
Point21	8 55.8234N	60 41.2174W
Point22	12 40.8191N	57 54.9430W

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Point23	15 35.6306N	54 12.6625W
Point24	17 26.7433N	49 47.9064W
Point25	18 4.8887N	45 0.0000W

### Long Geodesics - South West Quadrant.

#### Set 12 Long Diagonal (30S, 60W to 60S, 30W)

Point1	30 00.0000S	60 00.0000W
Point2	31 38.1452S	59 5.9571W
Point3	33 15.8706S	58 9.9924W
Point4	34 53.1348S	57 11.9156W
Point5	36 29.8923S	56 11.5178W
Point6	38 6.0926S	55 8.5692W
Point7	39 41.6796S	54 2.8166W
Point8	41 16.5909S	52 53.9805W
Point9	42 50.7564S	51 41.7515W
Point10	44 24.0976S	50 25.7868W
Point11	45 56.5257S	49 5.7067W
Point12	47 27.9409S	47 41.0895W
Point13	48 58.2294S	46 11.4681W
Point14	50 27.2626S	44 36.3244W
Point15	51 54.8937S	42 55.0855W
Point16	53 20.9554S	41 7.1195W
Point17	54 45.2565S	39 11.7330W
Point18	56 7.5789S	37 8.1699W
Point19	57 27.6730S	34 55.6135W
Point20	58 45.2547S	32 33.1935W
Point21	60 00.0000S	30 00.0000W

#### Set 13 Long Diagonal (30S, 30W to 60S, 60W)

Point1	30 00.0000S	30 00.0000W
Point2	31 38.1452S	30 54.0429W
Point3	33 15.8706S	31 50.0076W
Point4	34 53.1348S	32 48.0844W
Point5	36 29.8923S	33 48.4822W
Point6	38 6.0926S	34 51.4308W
Point7	39 41.6796S	35 57.1833W
Point8	41 16.5909S	37 6.0195W
Point9	42 50.7564S	38 18.2485W
Point10	44 24.0976S	39 34.2132W
Point11	45 56.5257S	40 54.2933W
Point12	47 27.9409S	42 18.9105W
Point13	48 58.2294S	43 48.5319W
Point14	50 27.2626S	45 23.6756W
Point15	51 54.8937S	47 4.9145W
Point16	53 20.9554S	48 52.8805W
Point17	54 45.2565S	50 48.2670W
Point18	56 7.5789S	52 51.8301W
Point19	57 27.6730S	55 4.3865W
Point20	58 45.2547S	57 26.8065W
Point21	60 00.0000S	60 00.0000W

**Set 14 Long Horizontal (45S, 60W to 45S, 30W)**

Point1	45 00.0000S	60 00.0000W
Point2	45 11.2519S	58 31.7916W
Point3	45 21.3608S	57 3.0317W
Point4	45 30.3133S	55 33.7738W
Point5	45 38.0973S	54 4.0740W
Point6	45 44.7022S	52 33.9908W
Point7	45 50.1188S	51 3.5849W
Point8	45 54.3397S	49 32.9185W
Point9	45 57.3588S	48 2.0555W
Point10	45 59.1720S	46 31.0608W
Point11	45 59.7767S	45 0.0000W
Point12	45 59.1720S	43 28.9392W
Point13	45 57.3588S	41 57.9446W
Point14	45 54.3397S	40 27.0815W
Point15	45 50.1188S	38 56.4152W
Point16	45 44.7022S	37 26.0092W
Point17	45 38.0973S	35 55.9260W
Point18	45 30.3133S	34 26.2263W
Point19	45 21.3608S	32 56.9684W
Point20	45 11.2519S	31 28.2085W
Point21	45 00.0000S	30 00.0000W

**Set 15 Long Vertical (30S, 45W to 60S, 45W)**

The geodesic runs along the 45W meridian.

**Set 16 Circle (Centre 45S, 45W Radius 2,000,000 m Points every 15 degrees)**

Point1	62 58.1482S	45 00.0000W
Point2	62 2.9175S	35 13.1324W
Point3	59 29.7703S	27 21.3716W
Point4	55 47.3417S	22 13.6842W
Point5	51 25.6105S	19 41.1668W
Point6	46 49.0062S	19 14.2861W
Point7	42 16.1548S	20 24.1958W
Point8	38 1.4970S	22 48.2871W
Point9	34 16.6609S	26 9.5368W
Point10	31 11.2085S	30 14.5458W
Point11	28 52.8672S	34 51.8044W
Point12	27 27.4359S	39 50.5197W
Point13	26 58.5455S	45 0.0000W
Point14	27 27.4359S	50 9.4803W
Point15	28 52.8672S	55 8.1956W
Point16	31 11.2085S	59 45.4542W
Point17	34 16.6609S	63 50.4632W
Point18	38 1.4970S	67 11.7129W
Point19	42 16.1548S	69 35.8042W
Point20	46 49.0062S	70 45.7139W
Point21	51 25.6105S	70 18.8332W
Point22	55 47.3417S	67 46.3158W
Point23	59 29.7703S	62 38.6284W
Point24	62 2.9175S	54 46.8676W
Point25	62 58.1482S	45 0.0000W

#### 4.6.7 Positions for use in Accuracy Tests – Rhumb Lines

The following sections contain a series of latitudes and longitudes which define a number of rhumb lines. These points are intended to allow type approval authorities to test the ability of ECDIS to calculate rhumb lines correctly.

All calculations are based on the WGS-84 spheroid:

Semi-major axis	6378137.0000m
Semi-minor axis	6356752.3142m
Eccentricity squared	0.0066943800
Flattening	298.25722356

Conversion of metres (m) to nautical miles (NM) uses  
1 NM = 1852 m.

##### **Set 1 – not applicable**

##### **Long Rhumb Lines - North West Quadrant.**

##### **Set 2 Long Diagonal (30N, 30W to 60N, 60W)**

Point1	30 00.0000N	30 00.0000W
Point2	31 30.2165N	31 11.4806W
Point3	33 0.4119N	32 24.1146W
Point4	34 30.5854N	33 37.9913W
Point5	36 0.7368N	34 53.2065W
Point6	37 30.8656N	36 9.8628W
Point7	39 0.9713N	37 28.0713W
Point8	40 31.0539N	38 47.9519W
Point9	42 1.1129N	40 9.6347W
Point10	43 31.1484N	41 33.2615W
Point11	45 1.1601N	42 58.9871W
Point12	46 31.1481N	44 26.9812W
Point13	48 1.1124N	45 57.4306W
Point14	49 31.0531N	47 30.5417W
Point15	51 0.9704N	49 6.5435W
Point16	52 30.8645N	50 45.6910W
Point17	54 0.7358N	52 28.2698W
Point18	55 30.5845N	54 14.6010W
Point19	57 0.4111N	56 5.0479W
Point20	58 30.2161N	58 0.0234W
Point21	60 00.0000N	60 0.0000W

##### **Set 3 Long Diagonal (60N, 30W to 30N, 60W)**

Point1	60 00.0000N	30 00.0000W
Point2	58 30.2161N	31 59.9767W
Point3	57 0.4111N	33 54.9521W
Point4	55 30.5845N	35 45.3990W
Point5	54 0.7358N	37 31.7302W
Point6	52 30.8645N	39 14.3090W
Point7	51 0.9704N	40 53.4565W
Point8	49 31.0531N	42 29.4583W
Point9	48 1.1124N	44 2.5694W
Point10	46 31.1481N	45 33.0188W
Point11	45 1.1601N	47 1.0129W
Point12	43 31.1484N	48 26.7385W

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Point13	42 1.1129N	49 50.3653W
Point14	40 31.0539N	51 12.0481W
Point15	39 0.9713N	52 31.9287W
Point16	37 30.8656N	53 50.1372W
Point17	36 0.7368N	55 6.7935W
Point18	34 30.5854N	56 22.0087W
Point19	33 0.4119N	57 35.8854W
Point20	31 30.2165N	58 48.5194W
Point21	30 00.0000N	60 0.0000W

### Set 4 Long Horizontal (45N, 60W to 45N, 30W)

The rhumb line runs along the 45N parallel.

### Set 5 Long Vertical (30N, 45W to 60N, 45W)

The rhumb line runs along the 45W meridian.

### Long Rhumb Lines (Crossing Equator).

### Set 6 Long Diagonal (15N, 60W to 15S, 30W)

Point1	15 0.0000N	60 0.0000W
Point2	13 30.0344N	58 28.2185W
Point3	12 0.0581N	56 57.0084W
Point4	10 30.0722N	55 26.3012W
Point5	9 0.0778N	53 56.0303W
Point6	7 30.0761N	52 26.1306W
Point7	6 0.0683N	50 56.5384W
Point8	4 30.0555N	49 27.1908W
Point9	3 0.0391N	47 58.0260W
Point10	1 30.0202N	46 28.9826W
Point11	0 0.0000N	45 0.0000W
Point12	1 30.0202S	43 31.0173W
Point13	3 0.0391S	42 1.9740W
Point14	4 30.0555S	40 32.8092W
Point15	6 0.0683S	39 3.4616W
Point16	7 30.0761S	37 33.8694W
Point17	9 0.0778S	36 3.9697W
Point18	10 30.0722S	34 33.6988W
Point19	12 0.0581S	33 2.9916W
Point20	13 30.0344S	31 31.7815W
Point21	15 0.0000S	30 0.0000W

### Set 7 Long Diagonal (15N, 30W to 15S, 60W)

Point1	15 0.0000N	30 0.0000W
Point2	13 30.0344N	31 31.7815W
Point3	12 0.0581N	33 2.9916W
Point4	10 30.0722N	34 33.6988W
Point5	9 0.0778N	36 3.9697W
Point6	7 30.0761N	37 33.8694W
Point7	6 0.0683N	39 3.4616W
Point8	4 30.0555N	40 32.8092W
Point9	3 0.0391N	42 1.9740W
Point10	1 30.0202N	43 31.0174W

## IHO ENC Test Data Sets for ECDIS

Point11	0 0.0000N	45 0.0000W
Point12	1 30.0202S	46 28.9827W
Point13	3 0.0391S	47 58.0260W
Point14	4 30.0555S	49 27.1908W
Point15	6 0.0683S	50 56.5384W
Point16	7 30.0761S	52 26.1306W
Point17	9 0.0778S	53 56.0303W
Point18	10 30.0722S	55 26.3012W
Point19	12 0.0581S	56 57.0084W
Point20	13 30.0344S	58 28.2185W
Point21	15 0.0000S	60 0.0000W

### Set 8 Long Horizontal (0N, 60W to 0N, 30W)

The rhumb line runs along the Equator.

### Set 9 Long Vertical (15S, 45W to 15N, 45W)

The rhumb line runs along the 45W meridian.

### Long Rhumb Lines - South West Quadrant.

### Set 10 Long Diagonal (30S, 30W to 60S, 60W)

Point1	30 00.0000S	30 00.0000W
Point2	31 30.2165S	31 11.4806W
Point3	33 0.4119S	32 24.1146W
Point4	34 30.5854S	33 37.9913W
Point5	36 0.7368S	34 53.2065W
Point6	37 30.8656S	36 9.8628W
Point7	39 0.9713S	37 28.0713W
Point8	40 31.0539S	38 47.9519W
Point9	42 1.1129S	40 9.6347W
Point10	43 31.1484S	41 33.2615W
Point11	45 1.1601S	42 58.9871W
Point12	46 31.1481S	44 26.9812W
Point13	48 1.1124S	45 57.4306W
Point14	49 31.0531S	47 30.5417W
Point15	51 0.9704S	49 6.5435W
Point16	52 30.8645S	50 45.6910W
Point17	54 0.7358S	52 28.2698W
Point18	55 30.5845S	54 14.6010W
Point19	57 0.4111S	56 5.0479W
Point20	58 30.2161S	58 0.0234W
Point21	60 00.0000S	60 0.0000W

### Set 11 Long Diagonal (60S, 30W to 30S, 60W)

Point1	60 00.0000S	30 00.0000W
Point2	58 30.2161S	31 59.9767W
Point3	57 0.4111S	33 54.9521W
Point4	55 30.5845S	35 45.3990W
Point5	54 0.7358S	37 31.7302W
Point6	52 30.8645S	39 14.3090W
Point7	51 0.9704S	40 53.4565W
Point8	49 31.0531S	42 29.4583W

## IHO ENC Test Data Sets for ECDIS

Point9	48 1.1124S	44 2.5694W
Point10	46 31.1481S	45 33.0188W
Point11	45 1.1601S	47 1.0129W
Point12	43 31.1484S	48 26.7385W
Point13	42 1.1129S	49 50.3653W
Point14	40 31.0539S	51 12.0481W
Point15	39 0.9713S	52 31.9287W
Point16	37 30.8656S	53 50.1372W
Point17	36 0.7368S	55 6.7935W
Point18	34 30.5854S	56 22.0087W
Point19	33 0.4119S	57 35.8854W
Point20	31 30.2165S	58 48.5194W
Point21	30 00.0000S	60 0.0000W

### Set 12 Long Horizontal (45S, 60W to 45S, 30W)

The rhumb line runs along the 45S parallel.

### Set 13 Long Vertical (30S, 45W to 60S, 45W)

The rhumb line runs along the 45W meridian.

## 4.7 Symbols

### 4.7.1 Symbol Size

<b>Test Reference</b>	4.7.1	<b>IHO Reference</b>	S-52 [3.1.5]
<b>Test description</b>			
<i>Display of symbols in size shown in the IHO Presentation Library.</i>			
<b>Setup</b>			
<i>Load one or more cells from 2.1.1 Power Up\ENC_ROOT</i>			
<b>Action</b>			
<i>Perform zoom-in and zoom-out operations in each display mode.</i>			
<b>Results</b>			
<i>Confirm that the symbols do not decrease in size below that shown in the IHO Presentation Library.</i>			

### 4.7.2 Display of ECDIS chart 1 symbols of correct size

<b>Test Reference</b>	4.7.2	<b>IHO Reference</b>	S-52 16.1
<b>Test description</b>			
<i>Display of the check symbol of the correct size (in mm).</i>			
<b>Setup</b>			
<i>Load the following cell from ECDIS Chart 1 as provided in IHO S-52 Presentation Library: AA5C1AB2.000</i>			
<b>Action</b>			
<i>Observe the CHKSYM01 symbol within the Information about the chart display (A,B) section.</i>			
<b>Results</b>			
<i>Confirm that the height of the CHKSYM01 symbol is not less than 5.0mm and not greater than 5.5mm.</i>			

### 4.7.3 Size in pixels of the check symbol CHKSYM01

<b>Test Reference</b>	4.7.3	<b>IHO Reference</b>	S-52 [3.1.5]
<b>Test description</b>			
<i>Display of the check symbol of the correct size (in pixels).</i>			
<b>Setup</b>			
<i>As for test 4.7.1</i>			
<b>Action</b>			
<i>Observe the CHKSYM01 symbol within the Information about the chart display (A,B) section.</i>			
<b>Results</b>			
<i>Confirm that the number of pixels (lines) which comprise the vertical extent of the symbol CHKSYM01 is not less than 16.</i>			
<i>This test may be conducted by calculation based on the properties of the EUT.</i>			

#### 4.7.4 Display of text at the correct size

<b>Test Reference</b>	4.7.4	<b>IHO Reference</b>	S-52 [3.1.5]
<b>Test description</b>			
<i>Display of text within the chart display and pick report.</i>			
<b>Setup</b>			
<i>Load one or more cells from 2.1.1 Power Up\ENC_ROOT</i>			
<b>Action</b>			
<i>Observe the chart display. Pick an object and observe the text within the pick report. Create a Mariner's note with text and observe its display.</i>			
<b>Results</b>			
<i>Confirm that for all text observed the height of upper-case characters is not less than 3.5 mm and not greater than 4.0mm.</i>			

#### 4.7.5 Display redraw

<b>Test Reference</b>	4.7.5	<b>IHO Reference</b>	S-52 [5.1]
<b>Test description</b>			
<i>Display of text within the chart display and pick report.</i>			
<b>Setup</b>			
<i>Load one or more cells from 2.1.1 Power Up\ENC_ROOT Simulate the own ship's movement from Micklefirth through the Mickelfirth channel and to the Mickleden TSS roundabout.</i>			
<b>Action</b>			
<i>Monitor the display at a viewing scale of 1:20,000</i>			
<b>Results</b>			
<i>Confirm that the display redraws in less than 5 seconds for the duration of the own ship movement. Select the display of the area north of the Lowesmore Oilfield and confirm that the display redraws in 5 seconds or informs the user and retains the previous display until ready.</i>			

## 4.8 Units and Legend

<b>Test Reference</b>	4.8	<b>IHO Reference</b>	S-52 [2.3.1f, 2.3.1g], 10.6.2			
<b>Test description</b>						
<i>Display units and chart legend.</i>						
<b>Setup</b>						
Load cell GB4X0000.000 from 2.1.1 Power Up\ENC_ROOT						
<b>Action</b>						
<i>Select a position for display applicable chart legend</i>						
<b>Results</b>						
As a minimum the information listed below must be presented clearly (the complete list needs not always to be shown). Examples from the dataset loaded are listed in bold text where appropriate.						
<b>ECDIS Legend</b>	<b>Values</b>					
Units for depth	Metres					
Units for height	Metres					
<i>Note: Units for depth and height: although the ENC Product Specification of S-57 does not allow any other than metric depths and heights, these two elements shall be stated for clarity for the Mariner.</i>						
Scale of display	<i>Selected by Mariner. (The default display scale is defined by the compilation scale which is coded in the sub-field of the DSPM field or CSCALE attribute value of the M_CSCL object.)</i> <b>Compilation scale – 52,000</b>					
Data quality indicator	<i>a. CATZOC attribute of the M_QUAL object for bathymetric data. b. POSACC attribute of the M_ACCY object (if available) for non-bathymetric data.</i>					
<i>Note: Due to the way quality is encoded in the ENC, both values (a. and b.) shall be used.</i>						
Sounding/vertical datum	<i>Sounding datum – <b>Lowest astronomical tide</b> Vertical datum – <b>Mean high water springs</b> (VERDAT attributes of individual objects shall not be used for the legend.)</i>					
Horizontal datum	<i>HDAT subfield of the DPSM field. <b>WGS 84</b></i>					
Value of safety depth	<i>Selected by Mariner (default is 30 metres).</i>					
Value of safety contour	<i>Selected by Mariner (default is 30 metres).</i>					
<i>Note: If the Mariner has selected a contour that is not available in the ENC and the ECDIS displays a default contour, both the contour selected and the contour displayed shall be quoted.</i>						
Magnetic variation	<i>VALMAG, RYRMGV and VALACM of the MAGVAR object. Item shall be displayed as:  VALMAG RYRMGV (VALACM)  e.g., 4°15W 1990 (8'E)</i>					
Date and number of latest update affecting chart cells currently in use.	<i>ISDT and UPDN subfields of the DSID field of the last update cell update file (ER data set) applied. <b>Issue Date – 20010409</b> <b>Update Number- 0</b></i>					
<i>In addition the following units shall be indicated:</i>						
<ul style="list-style-type: none"> <li>- position;</li> <li>- distance;</li> <li>- speed.</li> </ul>						

## 4.9 Other Chart Related Functionality

### 4.9.1 Presentation Library

<b>Test Reference</b>	4.9.1	<b>IHO Reference</b>	S-52 4.3
<b>Test description</b>			
<i>Display of Presentation Library edition number.</i>			
<b>Setup</b>			
N/A			
<b>Action</b>			
<i>Action</i> <i>Navigate to the appropriate dialog where the Presentation Library edition number can be found.</i>			
<b>Results</b>			
<i>Presentation Library edition number 4.0 must be displayed.</i>			

### 4.9.2 ECDIS Chart 1

<b>Test Reference</b>	4.9.2 a)	<b>IHO Reference</b>	S-52 18.2.2
<b>Test description</b>			
<i>Display of ECDIS chart 1.</i>			
<b>Setup</b>			
N/A			
<b>Action</b>			
<i>Navigate to ECDIS chart 1.</i> <i>Compare the displayed image with the plots provided in S-52 Part 1 Section 16.2.</i>			
<b>Results</b>			
<i>Confirm that ECDIS chart 1 is displayed.</i> <i>Confirm that the displayed image is consistent with the plots provided in S-52.</i>			

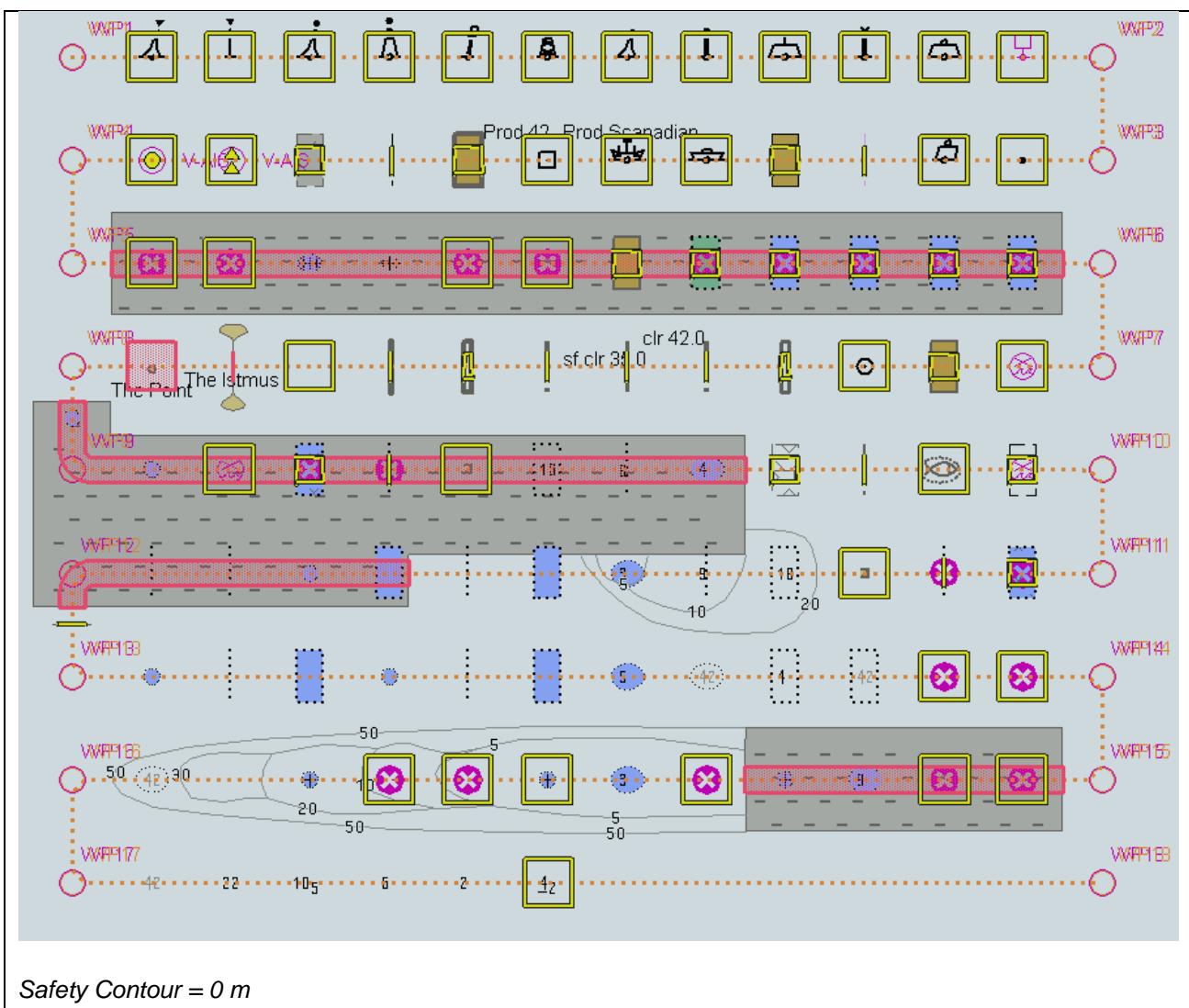
<b>Test Reference</b>	4.9.2 b)	<b>IHO Reference</b>	S-52 18.2.2
<b>Test description</b>			
<i>Interrogation of ECDIS chart 1.</i>			
<b>Setup</b>			
<i>With ECDIS chart 1 displayed.</i>			
<b>Action</b>			
<i>Interrogate 3 symbols by cursor pick.</i>			
<b>Results</b>			
<i>Upon interrogation the description of the symbol as contained in the Presentation Library is presented.</i>			

## 5 Detection and Notification of Navigational Hazards

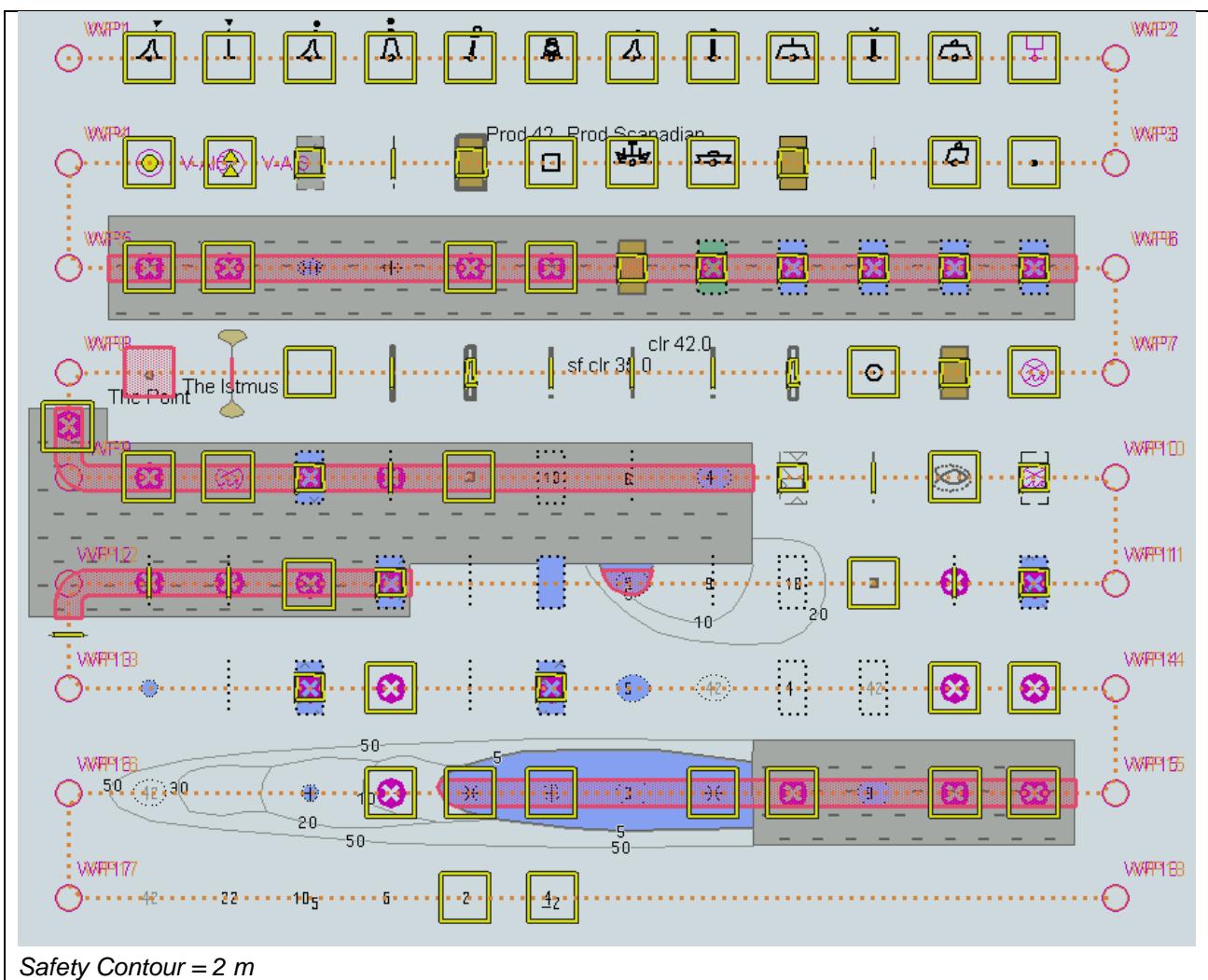
### 5.1 Detection and Notification of Navigational Hazards - Basic test

<b>Test Reference</b>	5.1	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p><i>The purpose of this test is to verify by observation that ECDIS provides an appropriate indication when the Mariner plans a route closer than a user-specified distance from any objects satisfying the conditions for this test as listed in section 10.5.9 of IHO S-52 and included in the test cell AA3NAVHZ.000.</i></p>			
<p><i>This test is performed by loading the test cell AA3NAVHZ.000, manually creating a route connecting all way points between feature objects marked as WP1 through WP18 and checking display against the corresponding graphical plot</i></p>			
<b>Setup</b>			
<p>Load cell AA3NAVHZ.000 from 5.0 Navigational Hazards\ENC_ROOT</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 0 m</p> <p>Set the safety depth value to 30 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Manually create a route connecting all way points between feature objects marked WP1 through WP18.</p> <p>Set user-specified distance for indication navigational hazards as 0.1 NM</p>			
<b>Action</b>			
<p>Check ENC symbols shown in the ECDIS against the corresponding graphical plot.</p> <p>Repeat sequentially with a safety contour of 0m, 2m, 4m, 5m, 6m, 8m, 9m, 10m, 11m, 16m, 21m, 31m, 42m, 50m, 51m</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p>			

# IHO ENC Test Data Sets for ECDIS

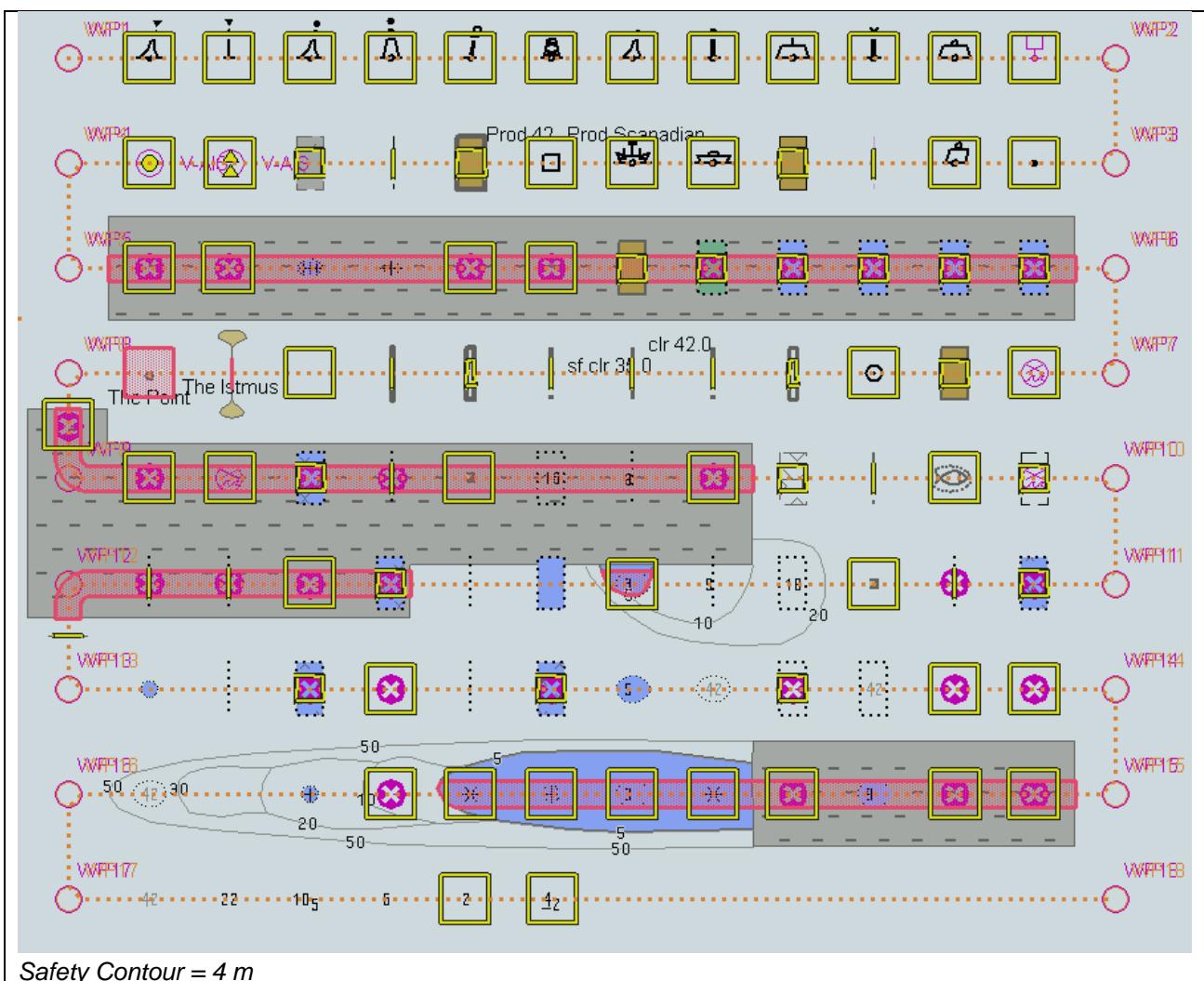


# IHO ENC Test Data Sets for ECDIS

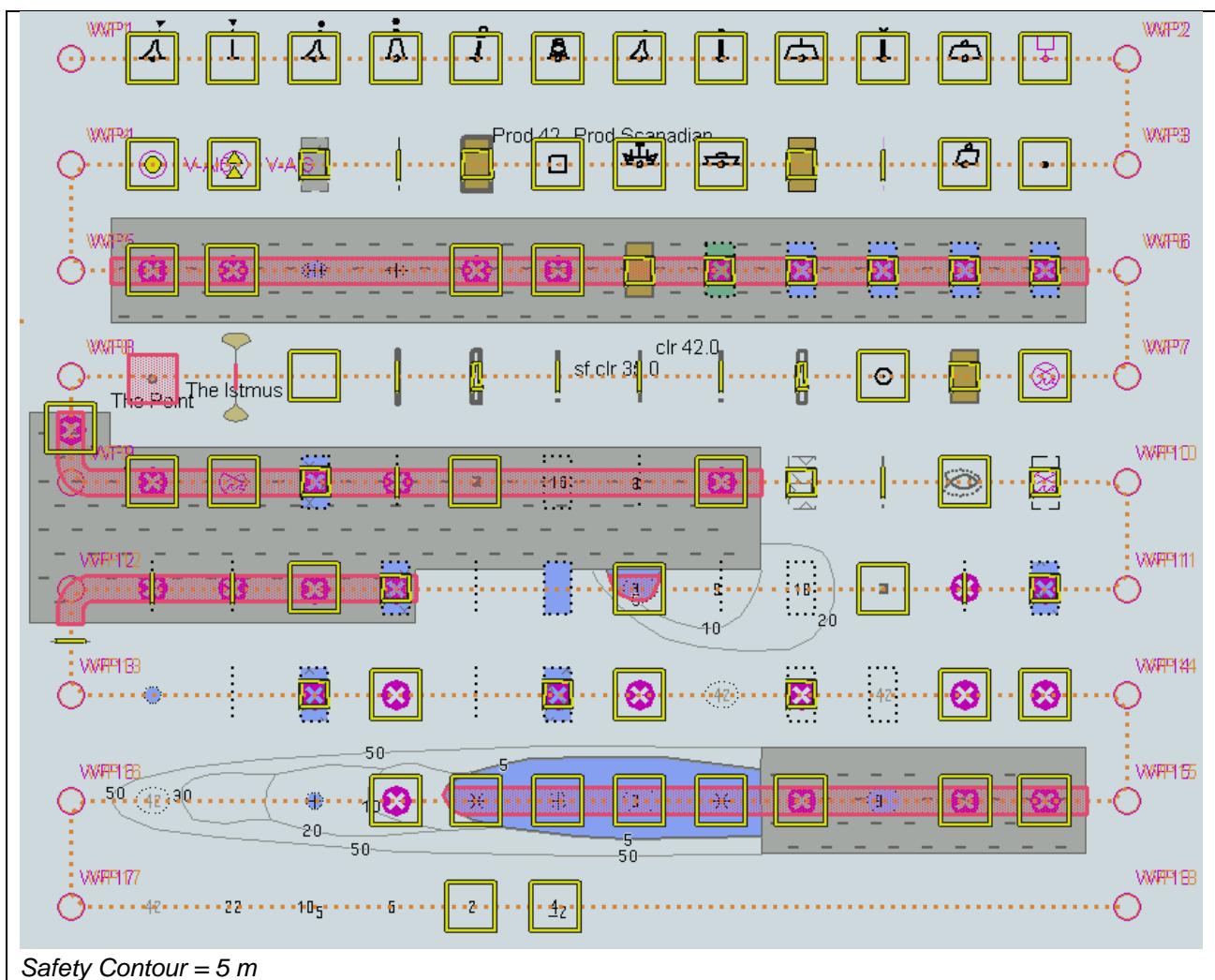


Safety Contour = 2 m

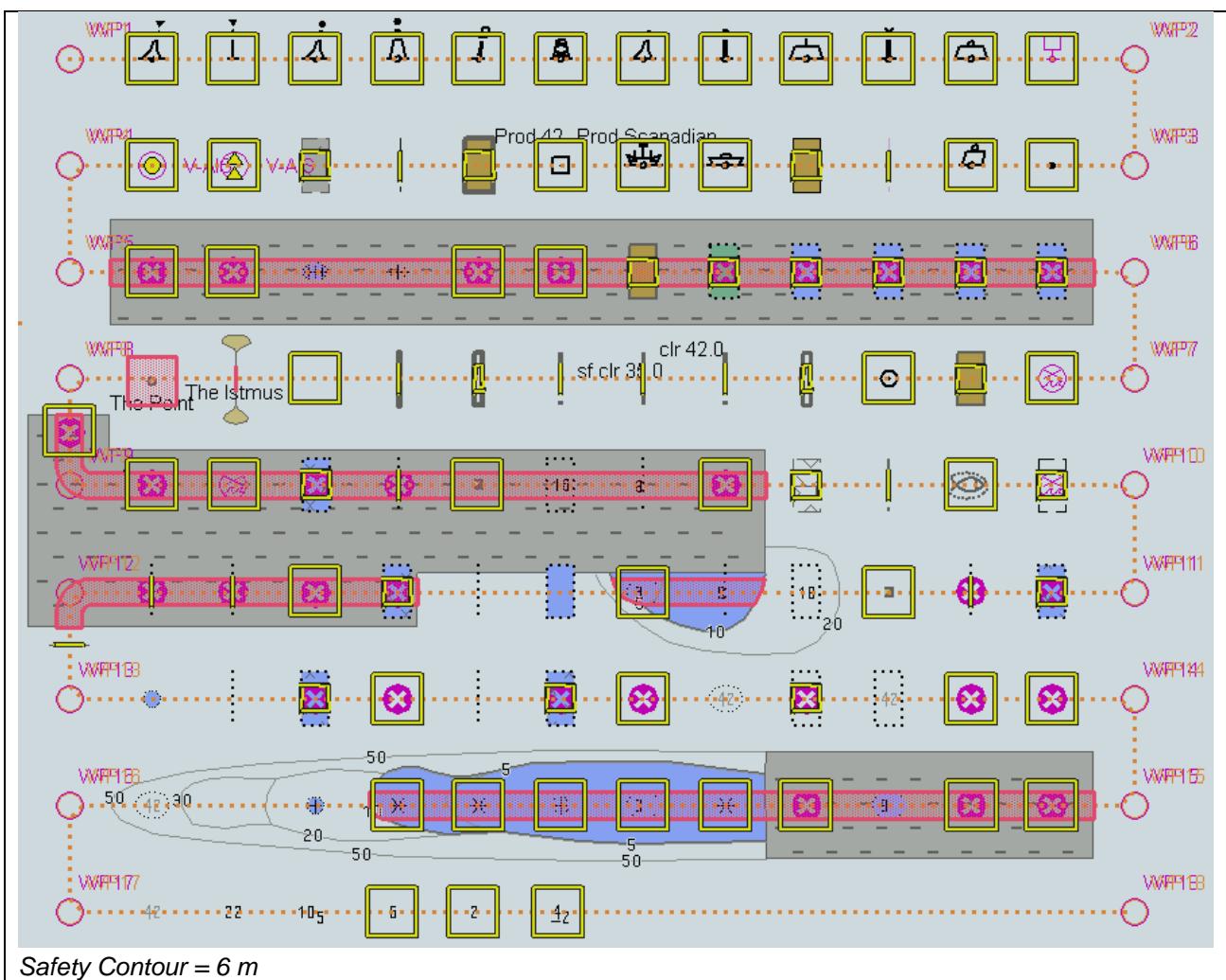
## IHO ENC Test Data Sets for ECDIS



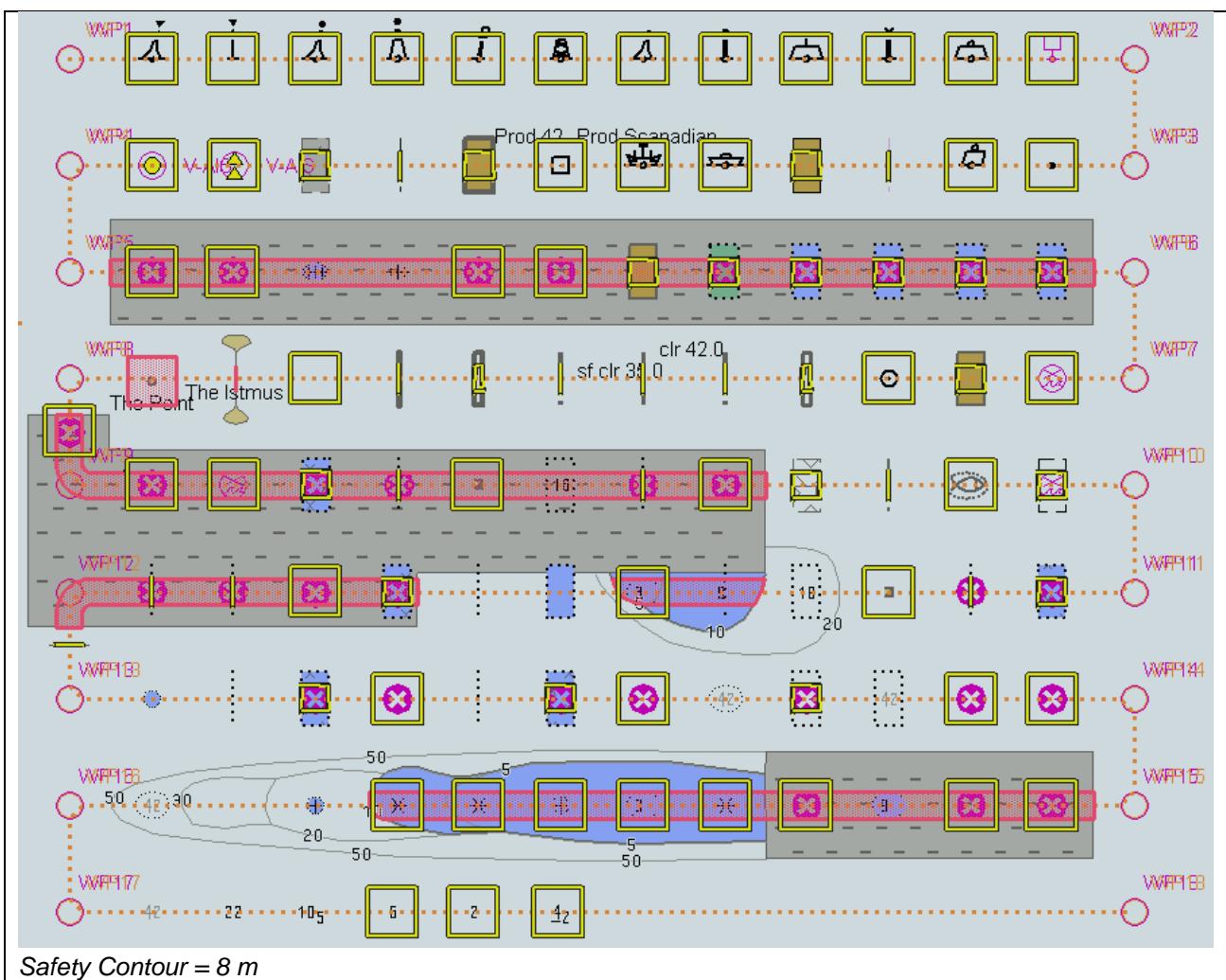
# IHO ENC Test Data Sets for ECDIS



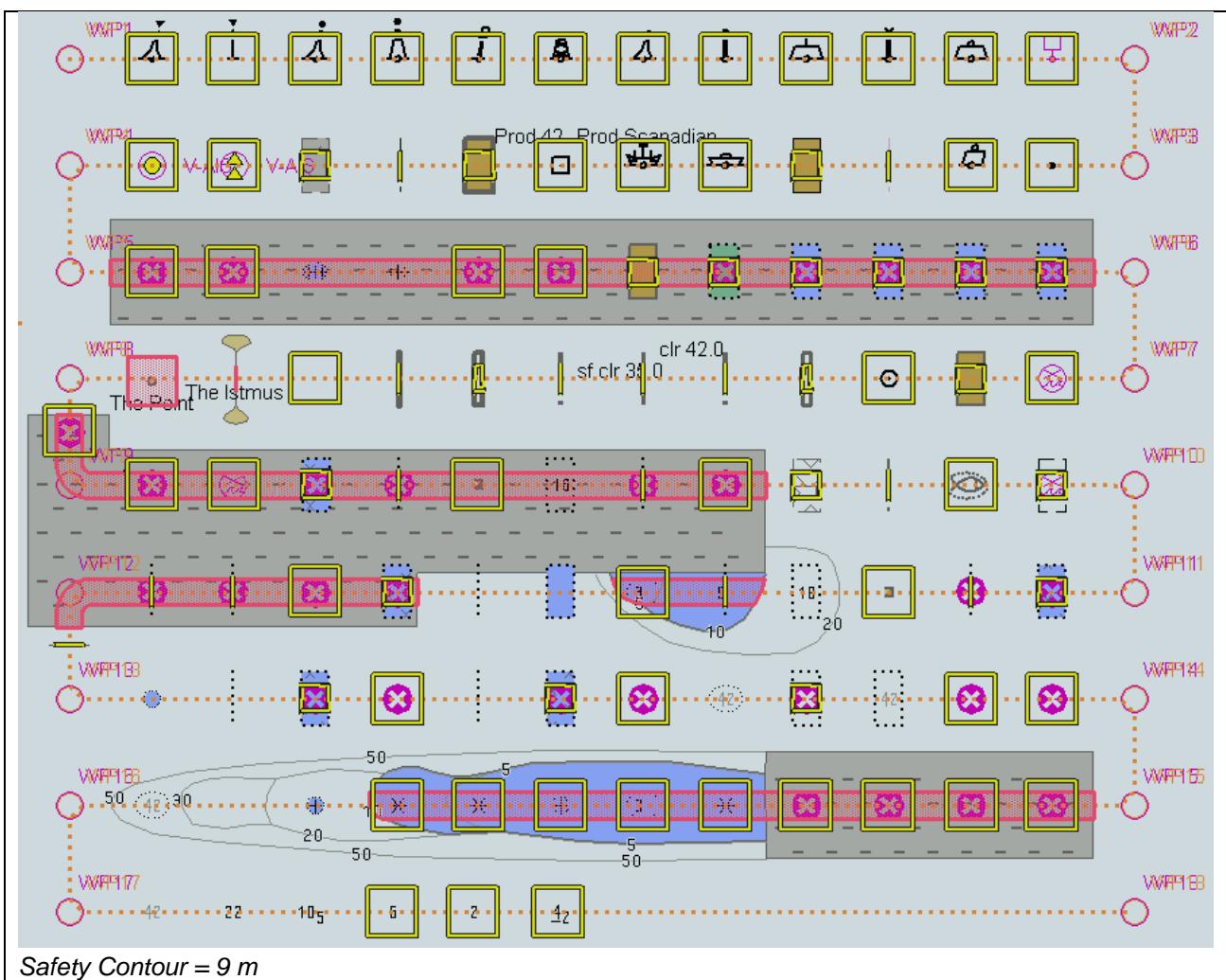
## IHO ENC Test Data Sets for ECDIS



## IHO ENC Test Data Sets for ECDIS

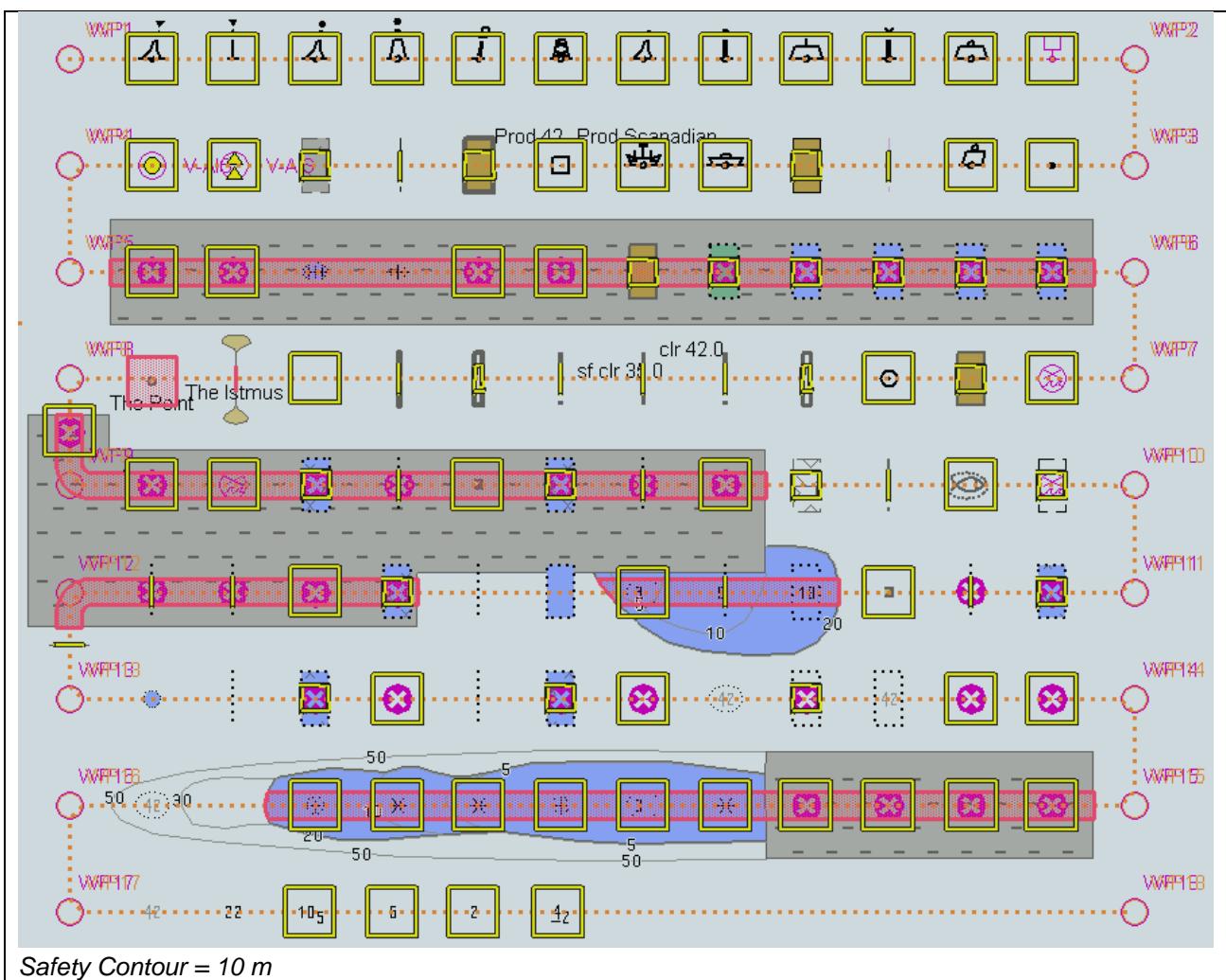


## IHO ENC Test Data Sets for ECDIS

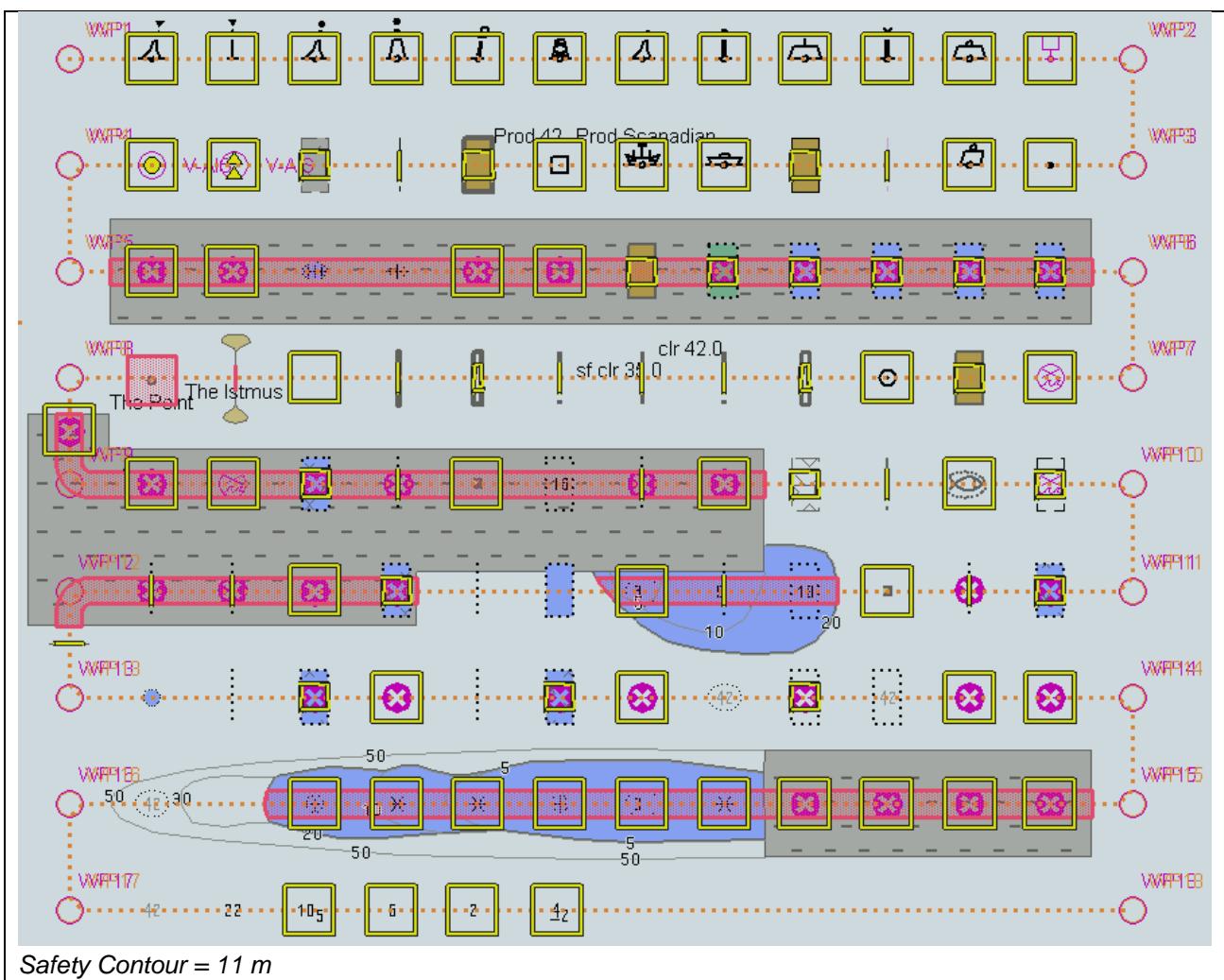


*Safety Contour = 9 m*

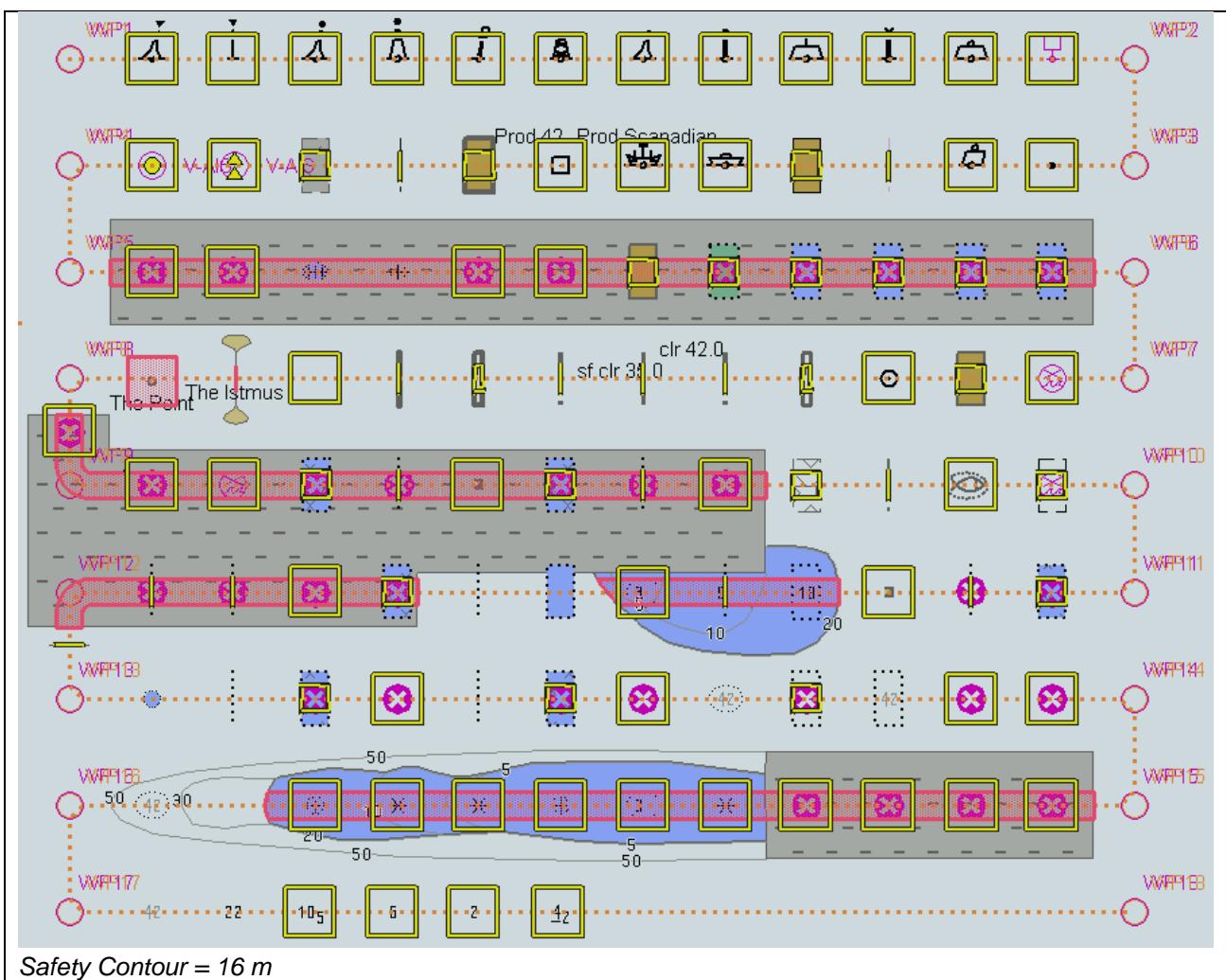
## IHO ENC Test Data Sets for ECDIS



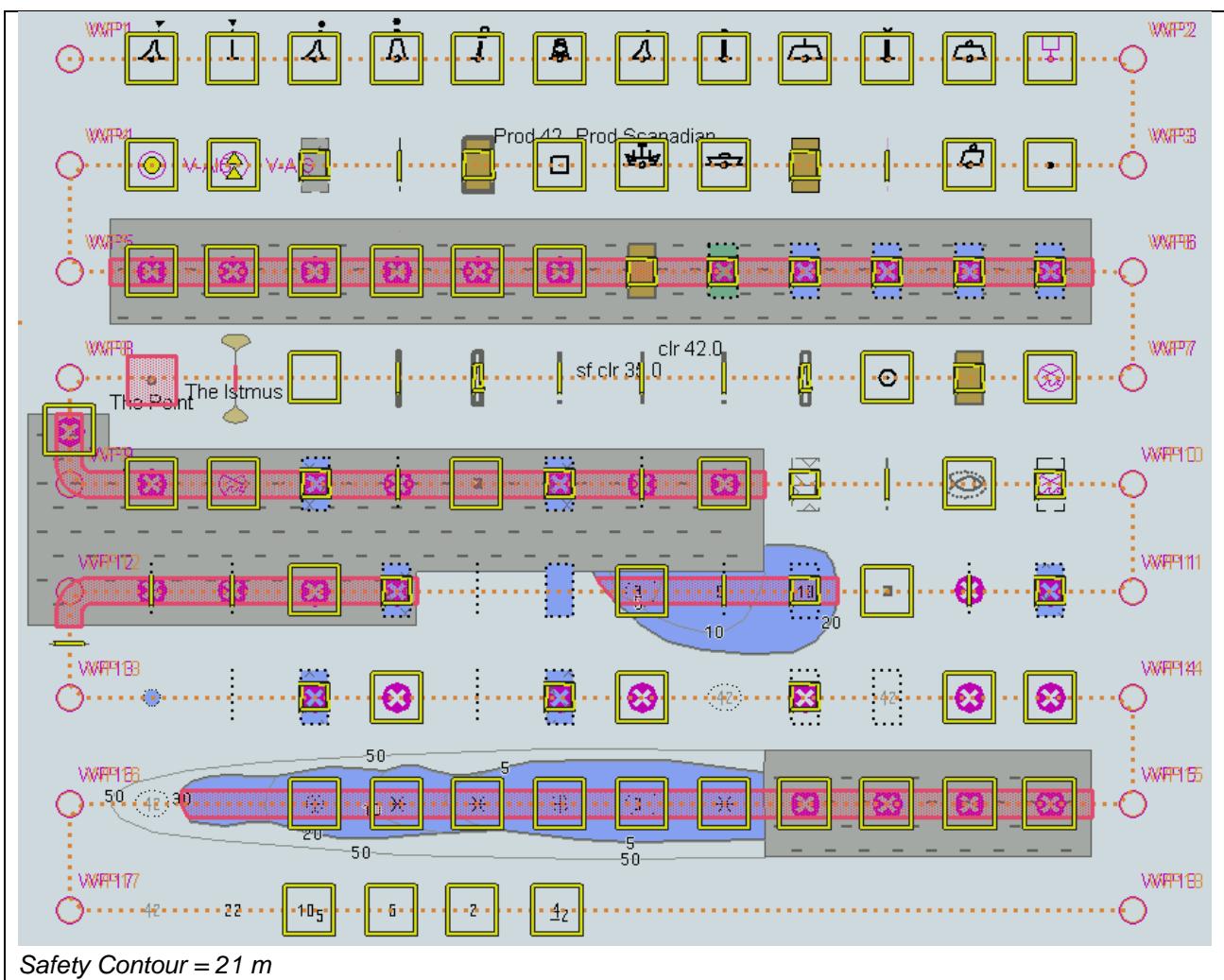
## IHO ENC Test Data Sets for ECDIS



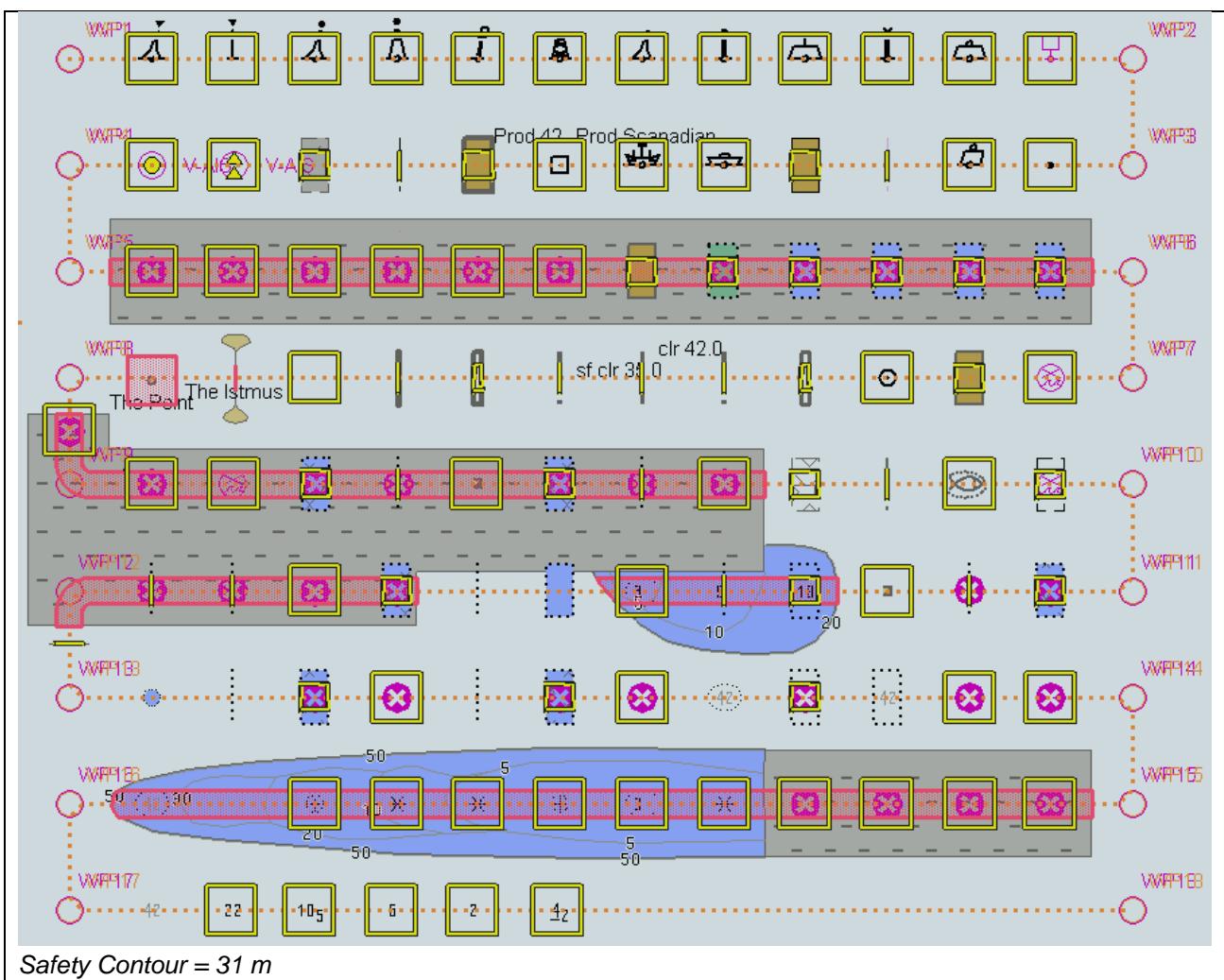
# IHO ENC Test Data Sets for ECDIS



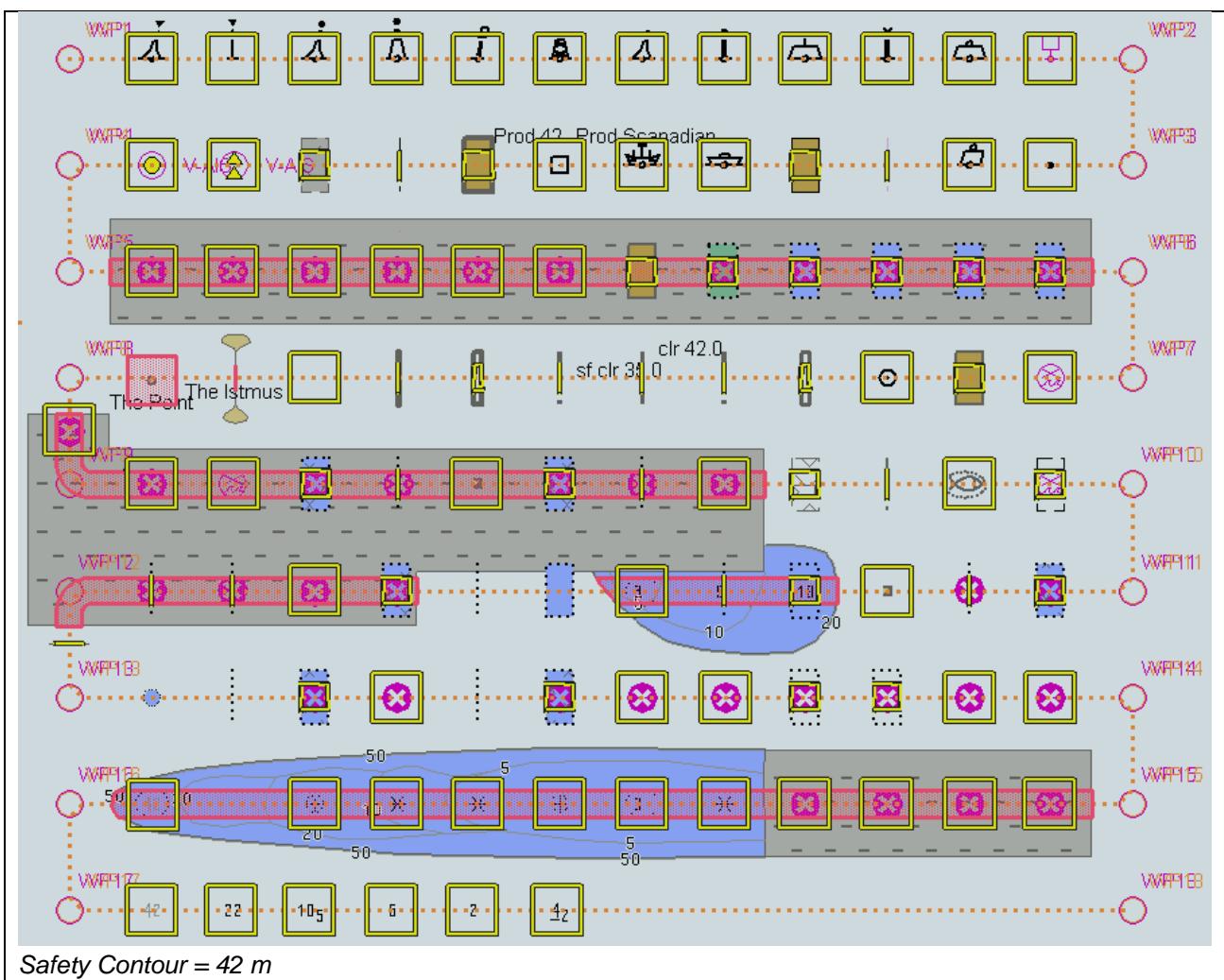
## IHO ENC Test Data Sets for ECDIS



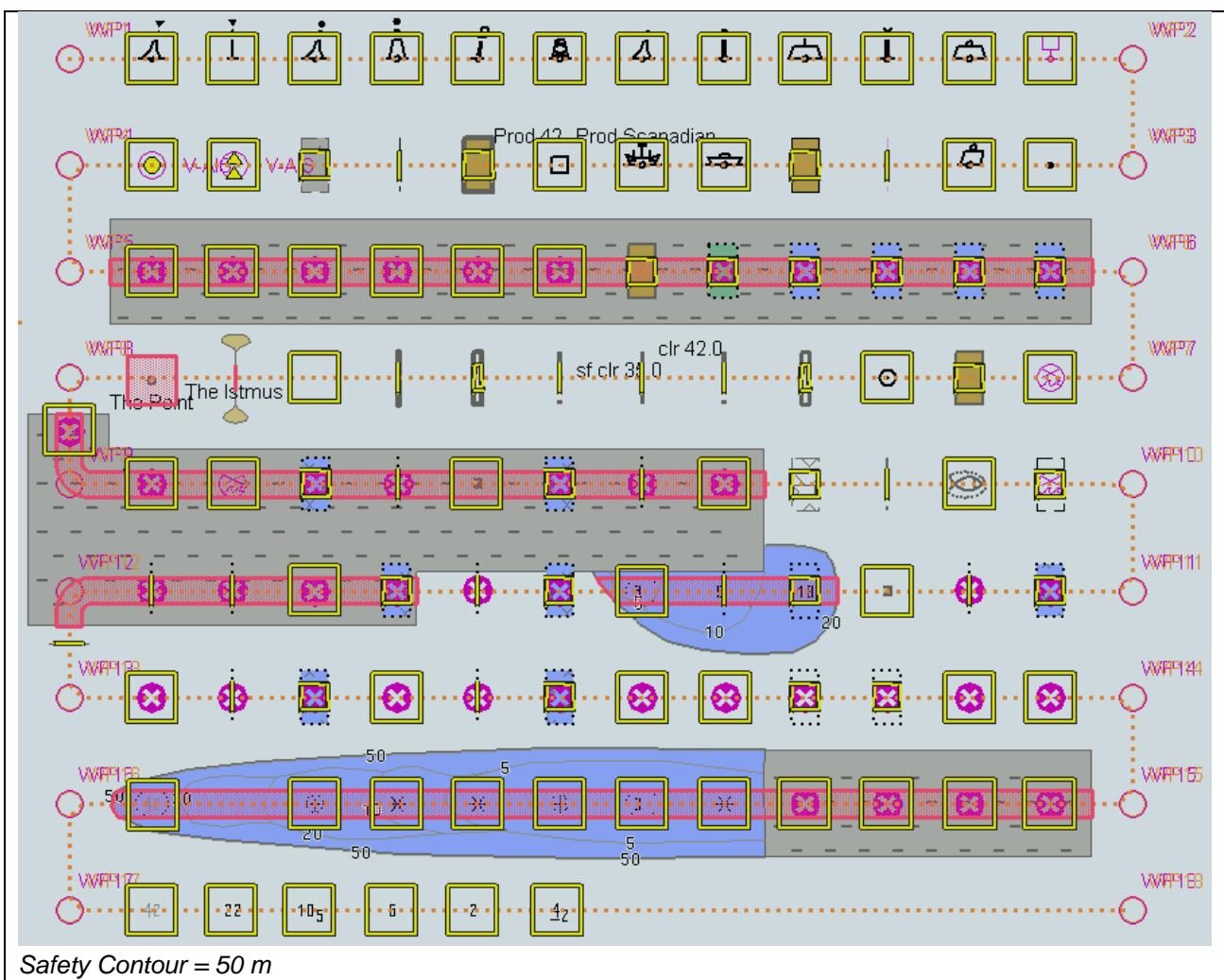
## IHO ENC Test Data Sets for ECDIS



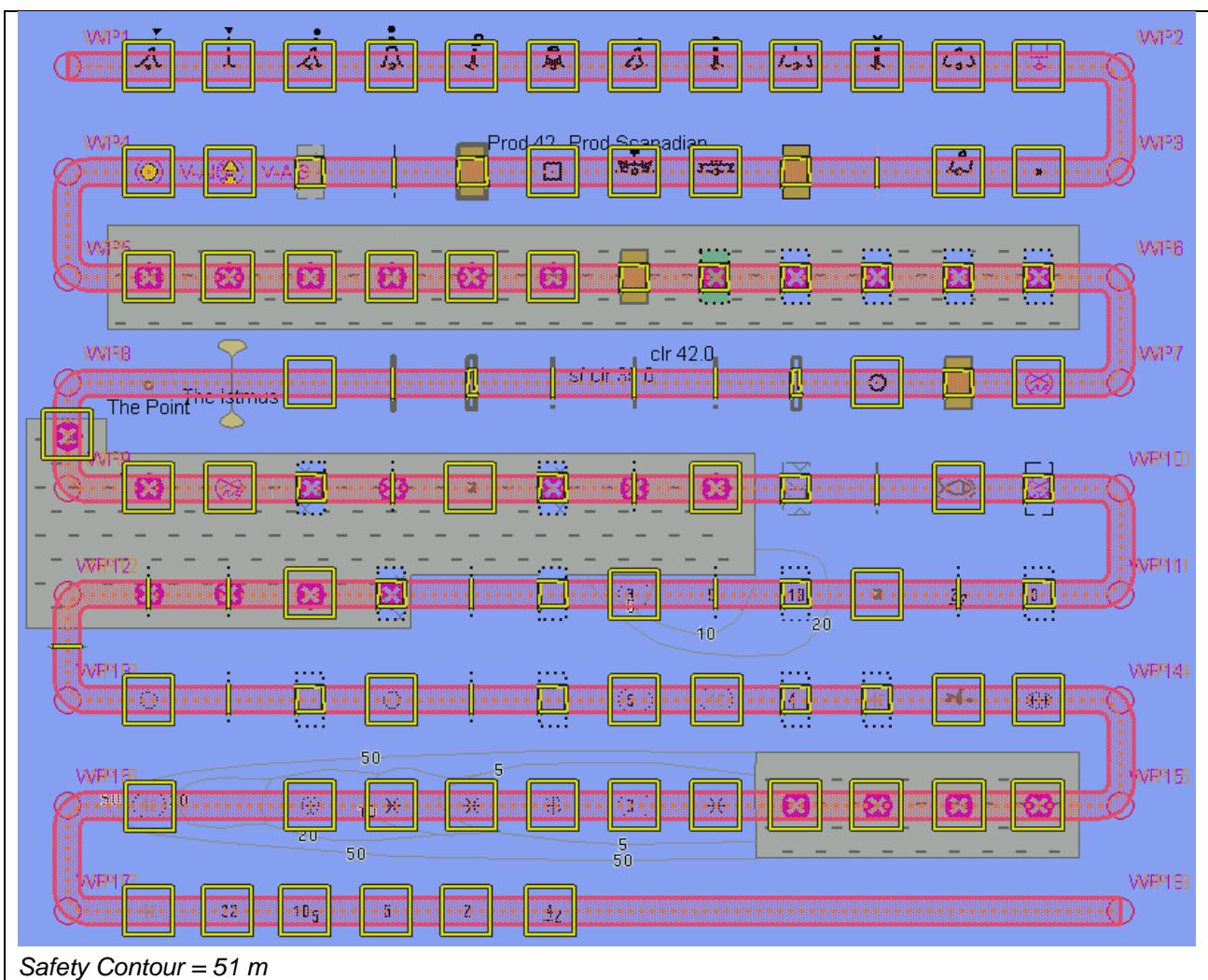
## IHO ENC Test Data Sets for ECDIS



## IHO ENC Test Data Sets for ECDIS

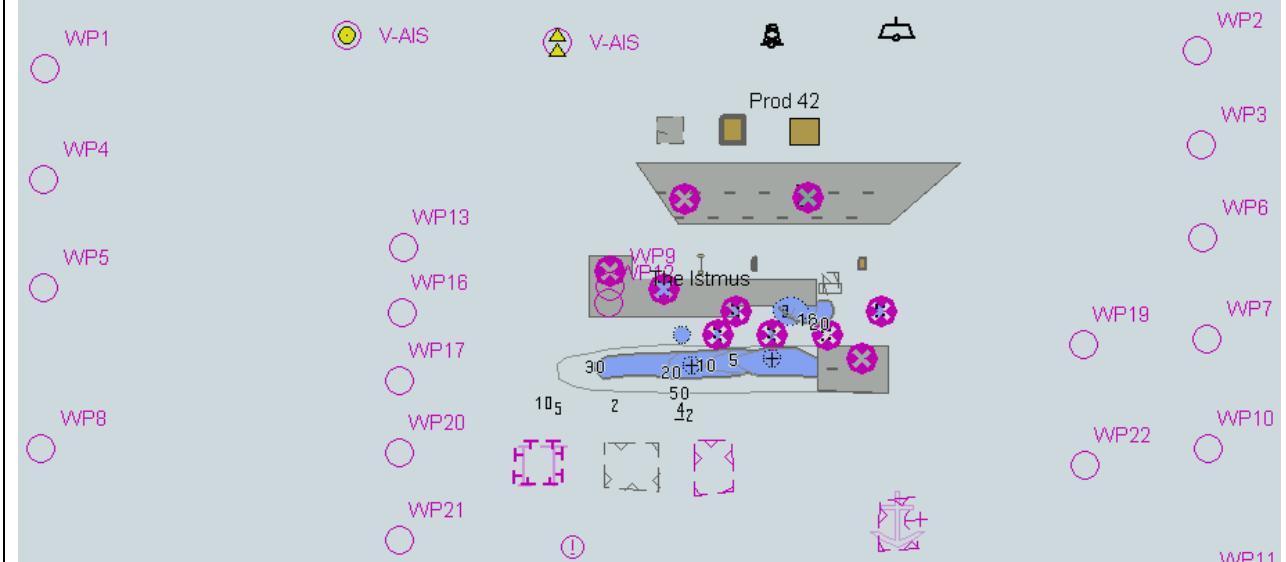


## IHO ENC Test Data Sets for ECDIS



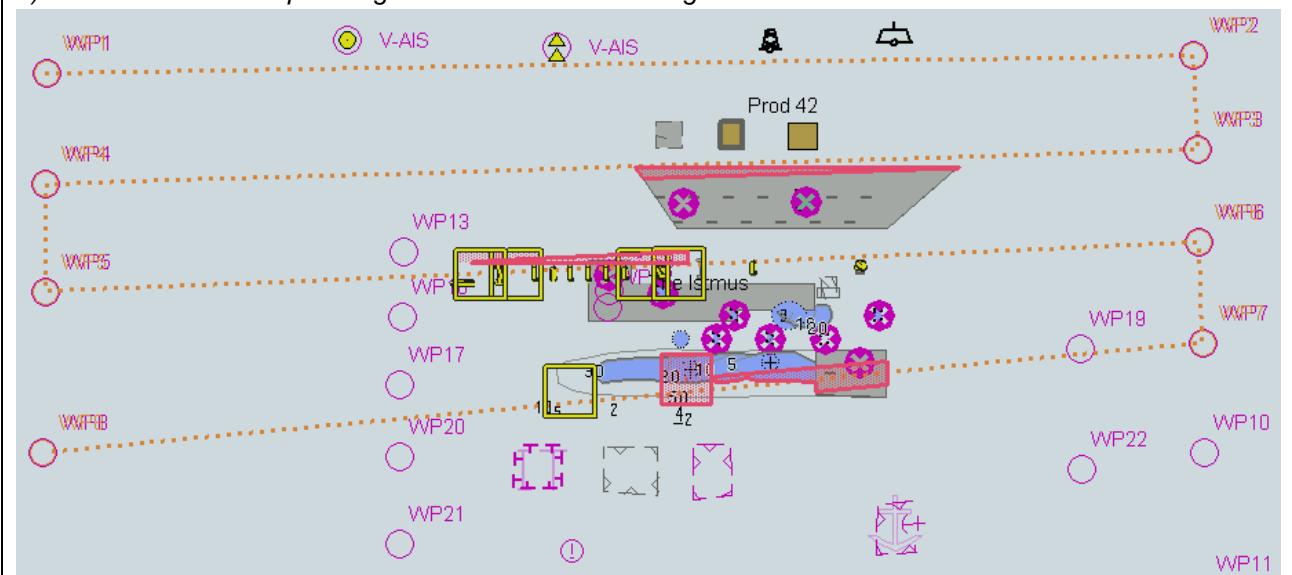
## IHO ENC Test Data Sets for ECDIS

### 5.2 Detection and Notification of Navigational Hazards – Use of largest scale available

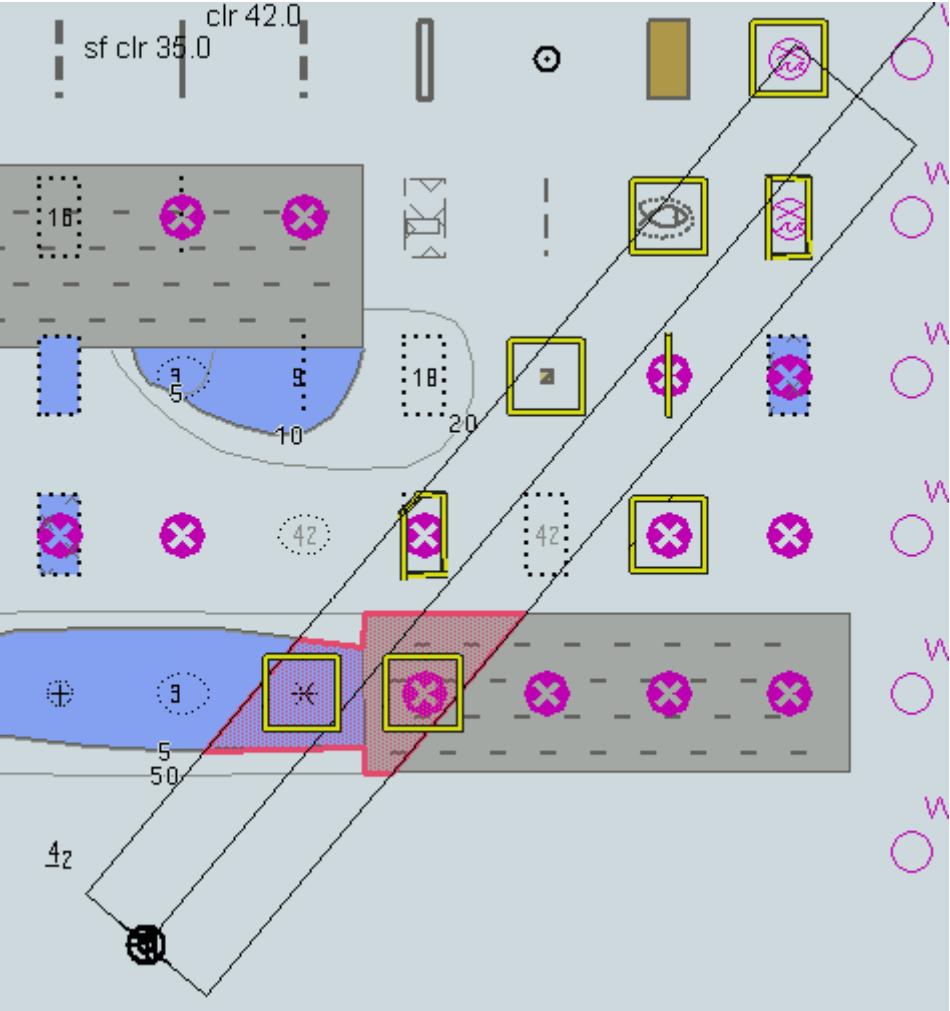
<b>Test Reference</b>	5.2	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p><i>The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of navigational hazards.</i></p>			
<p><i>This test is performed by loading the test cells AA2OVRVU.000 and AA3NAVHZ.000, manually creating a route connecting all way points between feature objects marked as WP1 through WP8 and checking display against the corresponding graphical plot.</i></p>			
<b>Setup</b>			
<p>Load cell AA3NAVHZ.000 from 5.0 Navigational Hazards\ENC ROOT          Load cell AA2OVRVU.000 from 5.0 Navigational Hazards\Overview\ENC ROOT          Select Viewing group layer Other          Set the safety contour value to 0 m          Set the safety depth value to 30 m          Select Symbolized Boundaries          Select Paper chart symbols          Deselect Accuracy          Deselect Highlight info</p>			
<b>Action</b>			
<p>Select position 39°57.000'N 104°49.000'W at compilation scale (1:350 000) of AA2OVRVU.          1) View chart before route planning          2) Manually create a route connecting all way points between feature objects marked WP1 through WP8. Set user-specified distance for indication navigational hazards as 0.5 NM. Check ENC symbols shown in the ECDIS against the corresponding graphical plot.</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p> <p>1) Situation before route planning. Chart AA2OVRVU displayed as it is-</p> 			

## IHO ENC Test Data Sets for ECDIS

2) Situation after route planning. Alerts indicated from largest scale available for each location



### 5.3 Detection and Notification of Navigational Hazards – Basic test Monitoring Mode

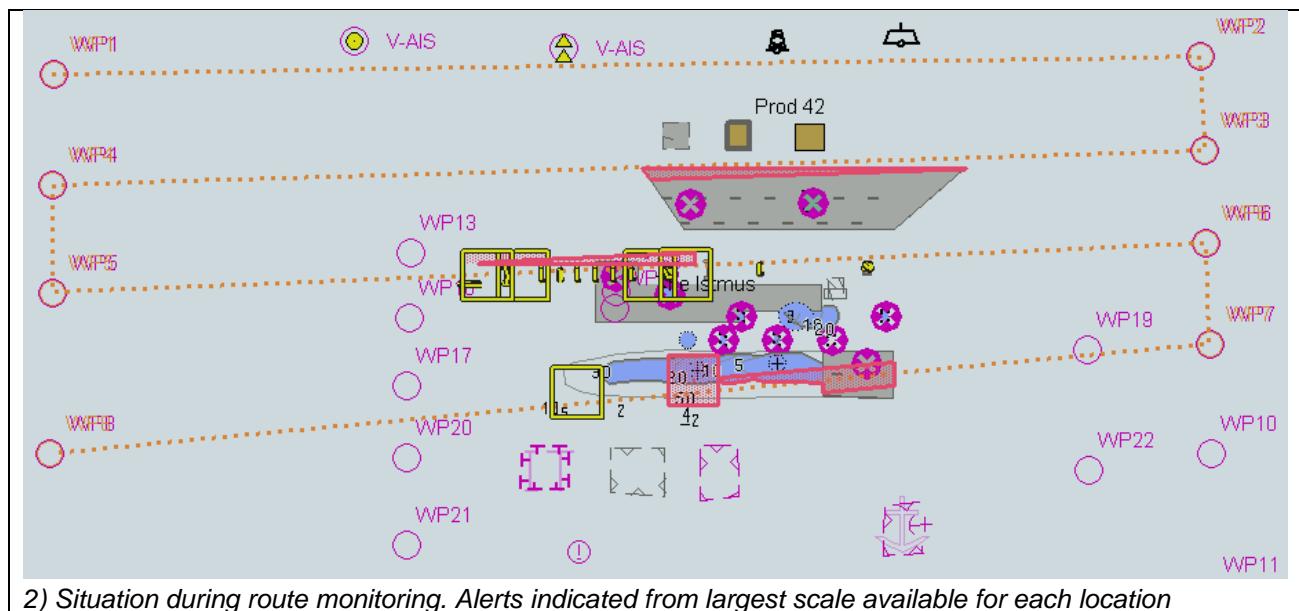
<b>Test Reference</b>	5.3	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS provides an appropriate indication if, continuing on its present course and speed, over a specified time or distance set by the Mariner, own ship will pass closer than a user-specified distance from any objects satisfying the conditions for this test (as listed in section 10.5.9 of IHO S-52 and included in the test cell AA3NAVHZ.000) that is shallower than the Mariner's safety contour.</p>			
<p>This test is performed by loading the test cell AA3NAVHZ.000, sailing with a simulated ship over the test area, setting the safety contour to the appropriate values (0m, 2m, 5m, 6m, 8m, 9m, 10m, 11m, 16m, 21m, 31m, 42m, 50m, 51m) and checking display against the graphical plots of test 5.1 (Route plan) corresponding to each set of safety contour settings.</p>			
<b>Setup</b>			
As for test 5.1			
<b>Action</b>			
Check ENC symbols shown in the ECDIS for each safety contour setting against the corresponding graphical plot.			
<b>Results</b>			
The ENC in the ECDIS should match the corresponding graphical plot of test 5.1.			
 <p>An example with Safety contour = 10 m.</p>			

## IHO ENC Test Data Sets for ECDIS

### 5.4 Detection and Notification of Navigational Hazards – Use of largest scale available – Monitoring Mode

<b>Test Reference</b>	5.4	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of navigational hazards.</p> <p>This test is performed by loading the test cells AA20VRVU.000 and AA3NAVHZ.000, manually creating a route connecting all way points between feature objects marked as WP1 through WP8 and checking display against the corresponding graphical plot.</p>			
<b>Setup</b>			
<p>Load cell AA3NAVHZ.000 from 5.0 Navigational Hazards\ENC ROOT</p> <p>Load cell AA20VRVU.000 from 5.0 Navigational Hazards\Overview\ENC ROOT</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 0 m</p> <p>Set the safety depth value to 30 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p>			
<b>Action</b>			
<p>Select position 39°57.000'N 104°49.000'W at compilation scale (1:350 000) of AA20VRVU.</p> <p>1) View chart before route planning</p> <p>2) Manually create a route connecting all way points between feature objects marked WP1 through WP8. Set user-specified distance for indication navigational hazards as 0.5 NM. Check ENC symbols shown in the ECDIS against the corresponding graphical plot.</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p> <p>1) Situation before route monitoring. Chart AA20VRVU displayed as it is-</p>			

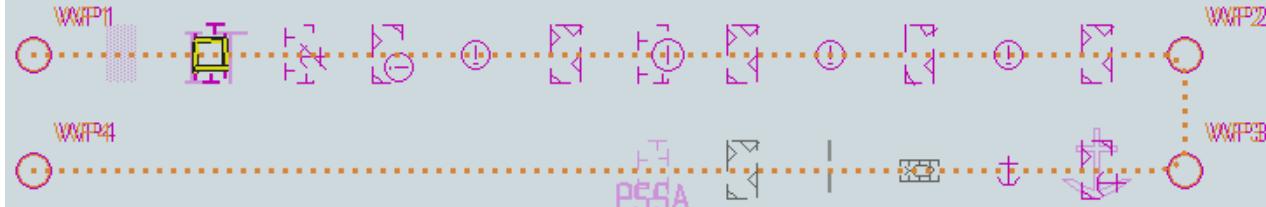
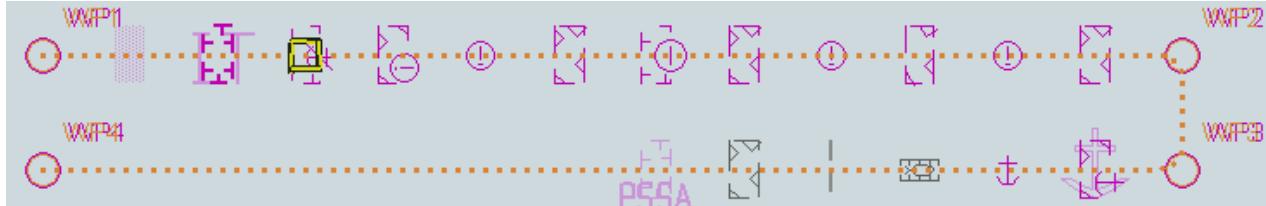
## IHO ENC Test Data Sets for ECDIS



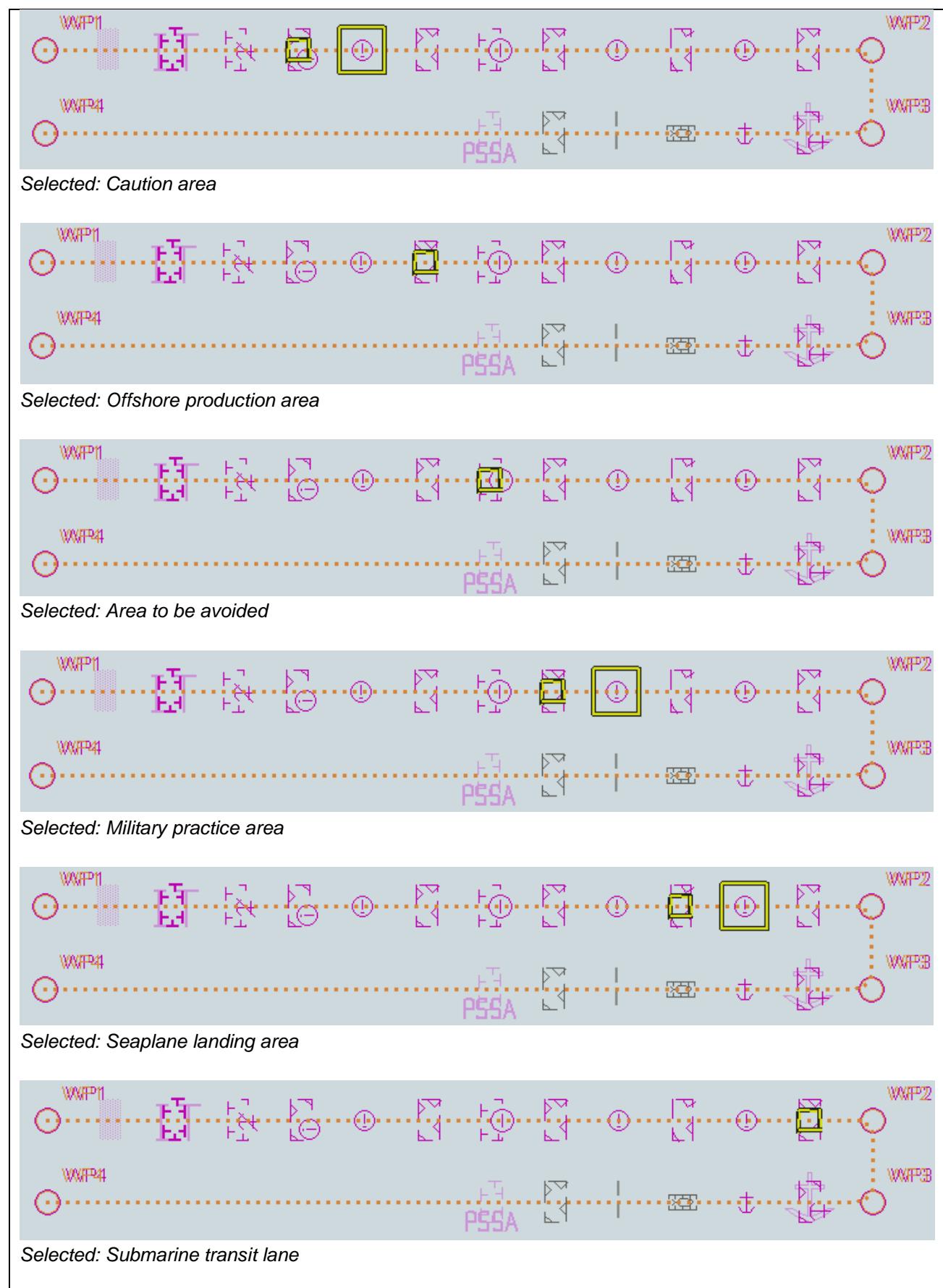
# IHO ENC Test Data Sets for ECDIS

## 6 Detection of Areas for which Special Conditions Exist

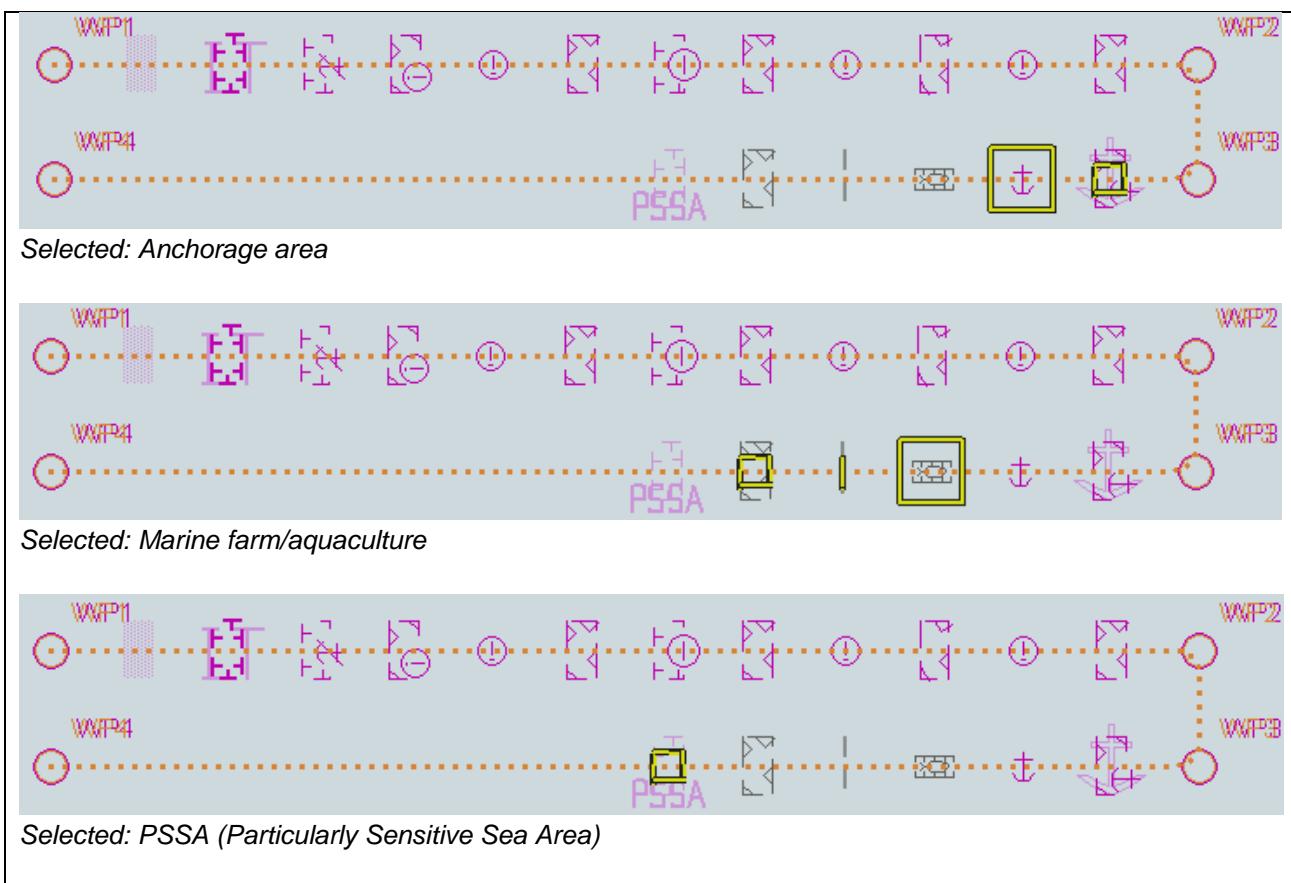
### 6.1 Detection of Areas for which Special Conditions Exist - Basic test

Test Reference	6.1	IHO Reference	S-52 10.5.10			
Test description	<p>The purpose of this test is to verify by observation that ECDIS provides an appropriate indication when the Mariner plans a route closer than a user-specified distance from the boundary of a prohibited area or a geographic area for which special conditions exist. The objects satisfying the conditions for this test are listed in section 10.5.10 of IHO S-52 and are included in the test cell AA3ARSPC.000.</p> <p>This test is performed by loading the test cell AA3ARSPC.000, manually creating a route connecting all way points between feature objects marked as WP1 through WP4 and checking display against the corresponding graphical plot.</p>					
Setup	<p>Load cell AA3ARSPC.000 from 6.0 Special Conditions\ENC_ROOT</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 0 m</p> <p>Set the safety depth value to 30 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Manually create a route connecting all way points between feature objects marked WP1 through WP4.</p> <p>Set user-specified distance for indication of areas with special condition as 0.1 NM</p>					
Action	<p>Check ENC symbols shown in the ECDIS against the corresponding graphical plot. selecting one by one each special condition for the test</p>					
Results	<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p>					
 <p>Selected: Traffic separation zone</p>						
 <p>Selected: Inshore traffic zone</p>						
 <p>Selected: Restricted area</p>						

## IHO ENC Test Data Sets for ECDIS



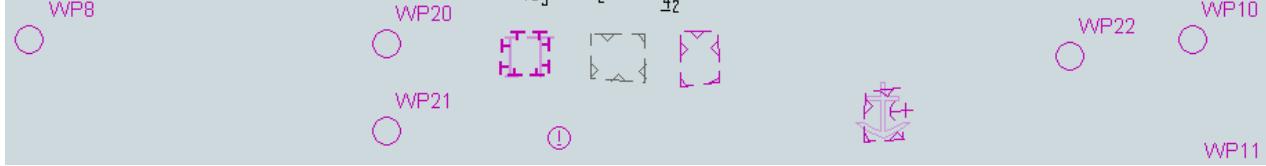
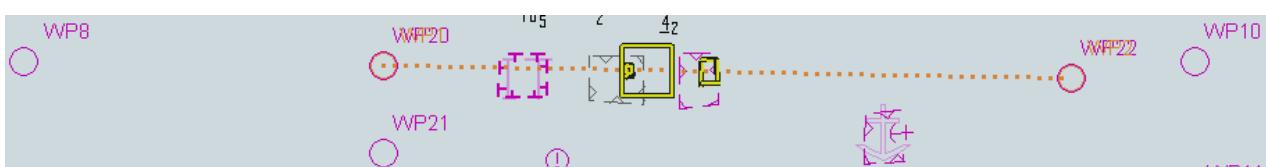
## IHO ENC Test Data Sets for ECDIS



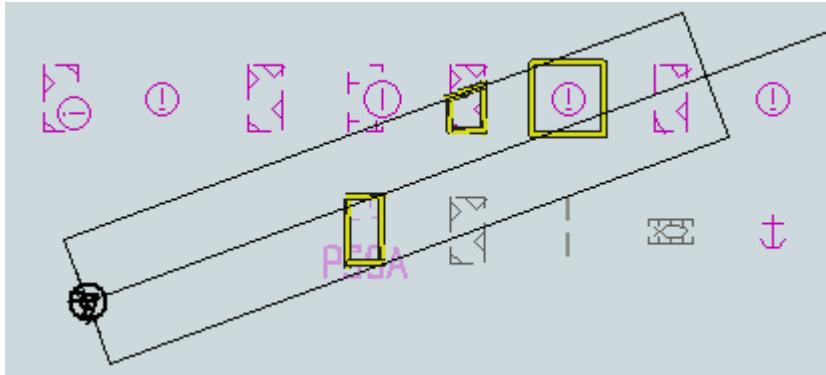
### 6.2 Detection of Areas for which Special Conditions Exist - Use of largest scale available

Test Reference	6.2	IHO Reference	S-52 10.5.9
<b>Test description</b>			
The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of areas with special condition.			
This test is performed by loading the test cells AA20VRVU.000 and AA3ARSPC.000, manually creating a route connecting way points between feature objects marked as WP20 and WP22 and checking display against the corresponding graphical plot.			
<b>Setup</b>			
As for test 6.1 and in addition load cell AA20VRVU.000 from 5.0 Navigational Hazards\Overview\ENC_ROOT Select Viewing group layer Other Set the safety contour value to 0 m Set the safety depth value to 30 m Select Symbolized Boundaries Select Paper chart symbols Deselect Accuracy Deselect Highlight info			

## IHO ENC Test Data Sets for ECDIS

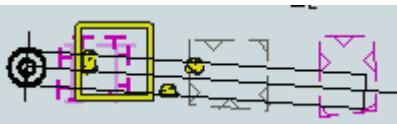
Action
<p>Select position <math>39^{\circ}45'000N\ 104^{\circ}49'000W</math> at compilation scale (1:350 000) of AA20VRVU.</p> <p>1) View chart before route planning</p> <p>2) Manually create a route connecting two way points between feature objects marked WP20 and WP22. Set user-specified distance for indication of areas with special conditions as 0.5 NM. Check ENC symbols shown in the ECDIS against the corresponding graphical plot.</p>
Results
<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p>  <p>1) Situation before route planning. Chart AA20VRVU displayed as it is</p>  <p>2) Situation after route planning. Alerts indicated from largest scale available for each location. An example with Seaplane landing area and Marine farm/culture area as selected.</p>

### 6.3 Detection of Areas for which Special Conditions Exist - Monitoring Mode

<b>Test Reference</b>	6.3	<b>IHO Reference</b>	S-52 10.5.10
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS provides an appropriate alarm or indication, as selected by the Mariner, if, within a specified time set by the Mariner, own ship will cross the boundary of a prohibited area or area for which special conditions exist. The objects satisfying the conditions for this test are listed in section 10.5.10 of IHO S-52 and are included in the test cell AA3ARSPC.000.</p>			
<p>This test is performed by loading the test cell AA3ARSPC.000, sailing with a simulated ship over the test area, selecting one by one each special condition for the test and checking display against the graphical plots of test 6.1 (Route plan) corresponding to each set of safety contour settings.</p>			
<b>Setup</b>			
As for test 6.1			
<b>Action</b>			
Check ENC symbols shown in the ECDIS for each special condition against the corresponding graphical plot.			
<b>Results</b>			
The ENC in the ECDIS should match the corresponding graphical plot of test 6.1.			
			
An example with PSSA and Military practice area as selected.			

## IHO ENC Test Data Sets for ECDIS

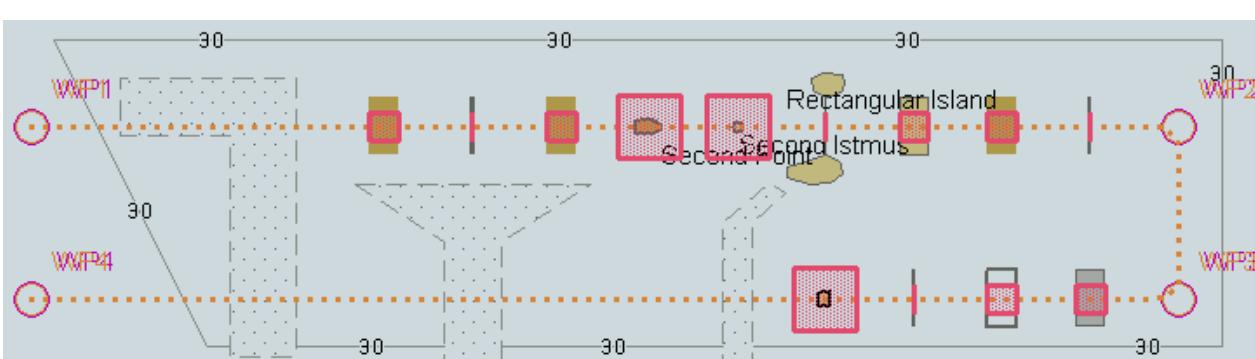
### 6.4 Detection of Areas for which Special Conditions Exist - Use of largest scale available – Monitoring Mode

<b>Test Reference</b>	6.4	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p><i>The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of areas with special condition.</i></p>			
<p><i>This test is performed by loading the test cells AA20VRVU.000 and AA3ARSPC.000, sailing with a simulated ship over the test area, selecting one by one each special condition for the test and checking display against the graphical plots of tests 6.1 and 6.2 (Route plan) corresponding to each special condition settings.</i></p>			
<b>Setup</b>			
As for test 6.2			
<b>Action</b>			
<p><i>Check ENC symbols shown in the ECDIS for each special condition against the corresponding graphical plot</i></p>			
<b>Results</b>			
<p><i>The ENC in the ECDIS should match the corresponding graphical plot of test 6.1 and 6.2.</i></p>			
			
<p><i>An example with Seaplane landing area and Marine farm/culture area as selected</i></p>			

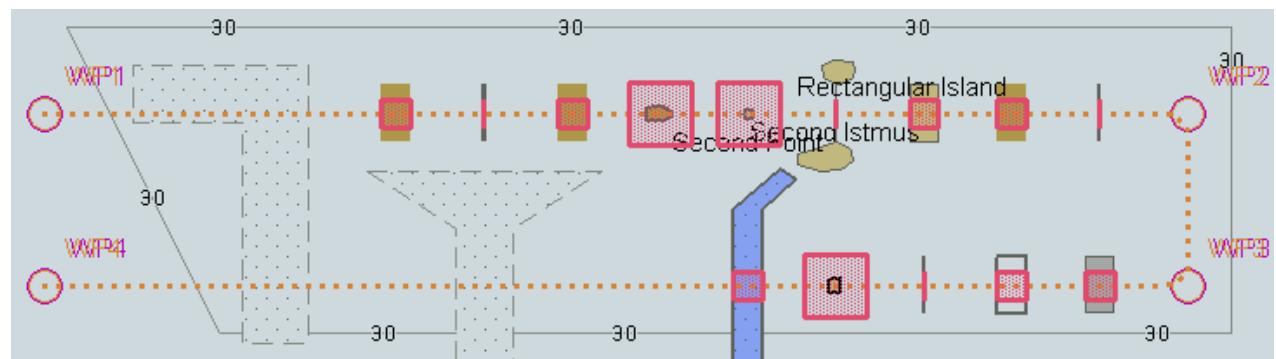
# IHO ENC Test Data Sets for ECDIS

## 7 Detection and Notification of the Safety Contour

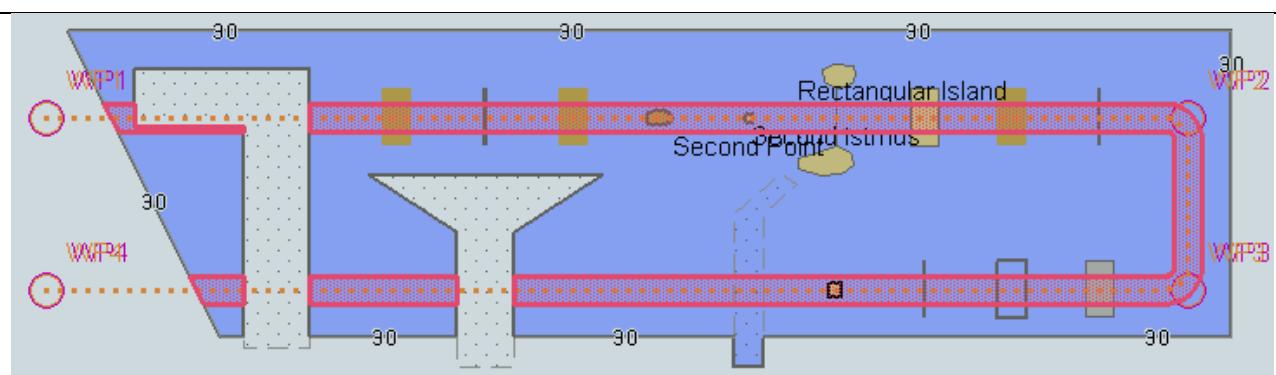
### 7.1 Detection and Notification of the Safety Contour - Basic test

<b>Test Reference</b>	7.1	<b>IHO Reference</b>	S-52 10.5.12
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS provides an appropriate indication when the Mariner plans a route across an own ship's safety contour. The objects satisfying the conditions for this test are listed in section 10.5.12 of IHO S-52 and are included in the test cell AA3SAFCO.000.</p> <p>This test is performed by loading the test cell AA3SAFCO.000, manually creating a route connecting all way points between feature objects marked as WP1 through WP4 and checking display against the corresponding graphical plot.</p>			
<b>Setup</b>			
<p>Load cell AA3SAFCO.000 from 7.0 Safety Contour\ENC_ROOT</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 0 m</p> <p>Set the safety depth value to 30 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p> <p>Manually create a route connecting all way points between feature objects marked WP1 through WP4.</p> <p>Set user-specified distance for detecting of safety contour as 0.1 NM</p>			
<b>Action</b>			
<p>Check ENC symbols shown in the ECDIS against the corresponding graphical plot.</p> <p>Repeat sequentially safety contour for 0m, 6m, 11m, 13m, 43m</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p>  <p>Safety Contour = 0 m</p>			

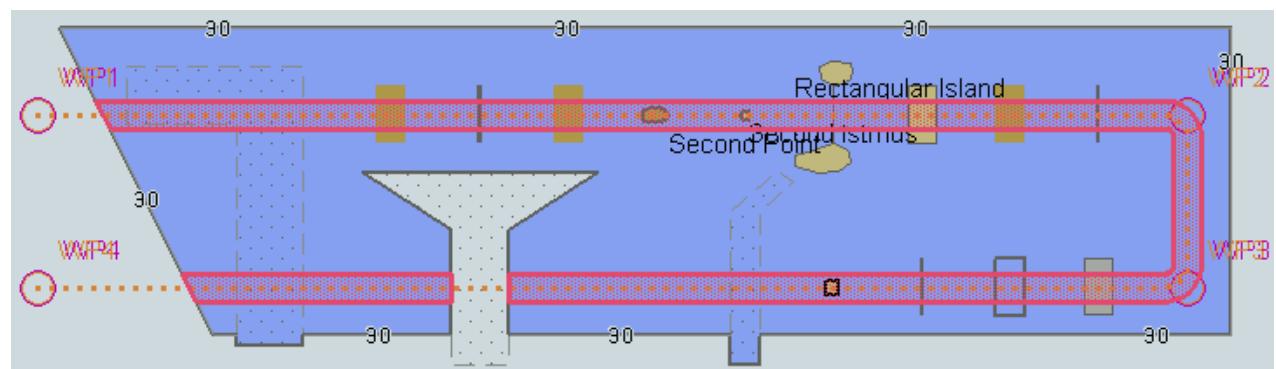
## IHO ENC Test Data Sets for ECDIS



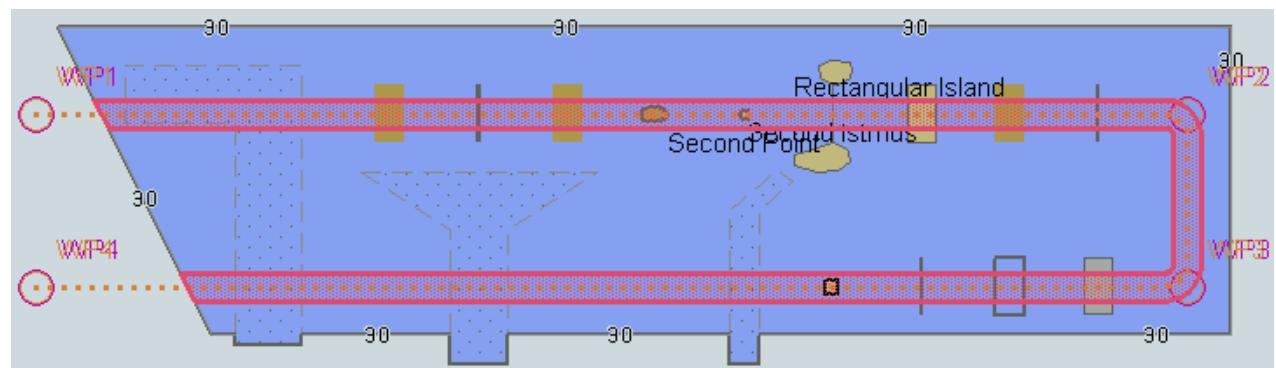
Safety Contour = 6 m



Safety Contour = 11 m

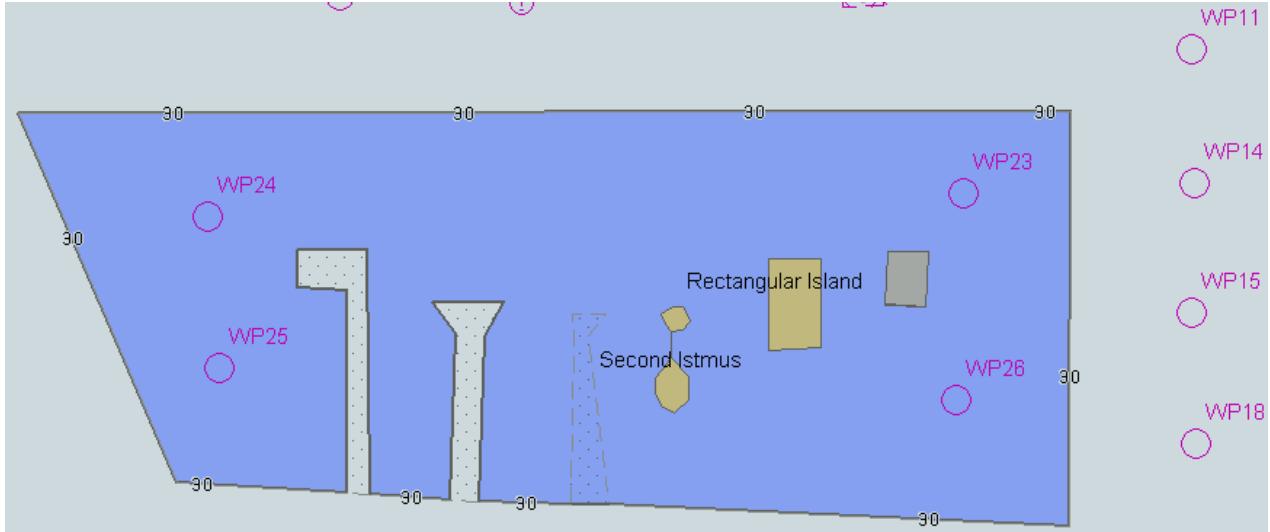


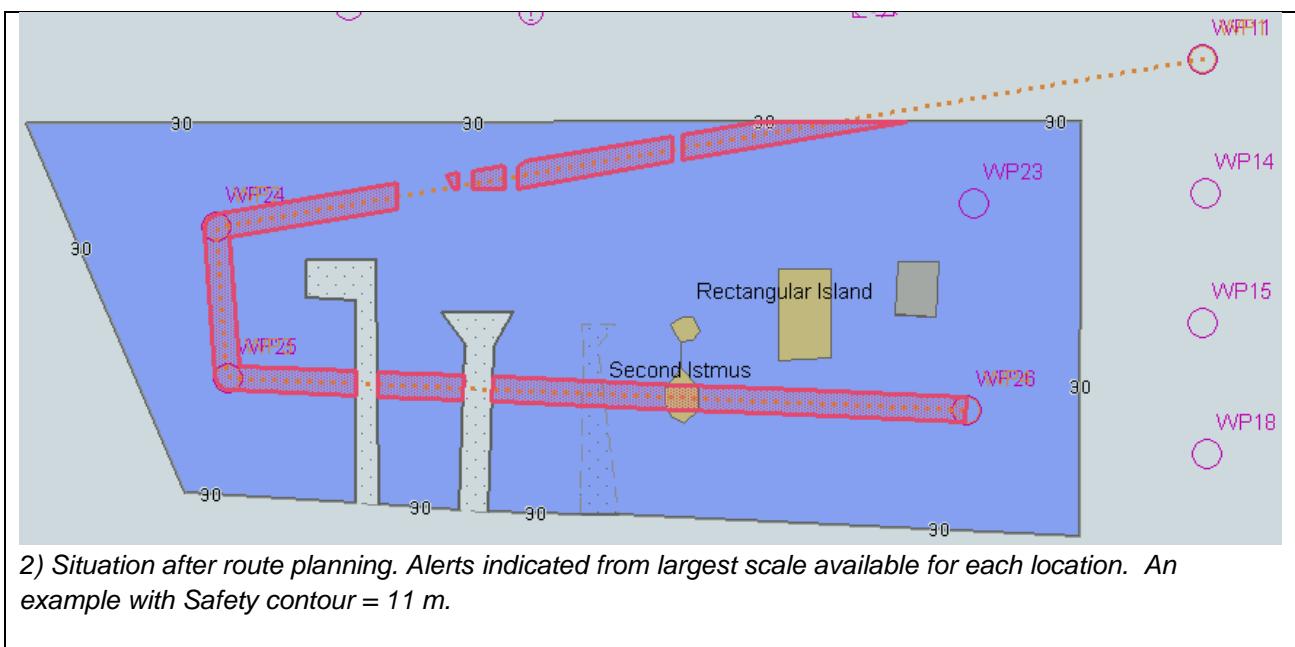
Safety Contour = 13 m



Safety Contour = 43 m

## 7.2 Detection and Notification of the Safety Contour – Use of largest scale available

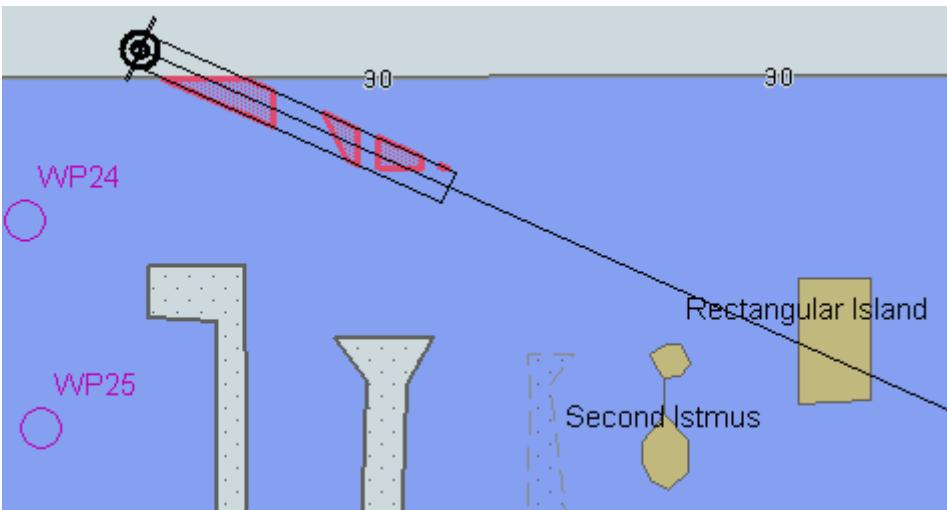
<b>Test Reference</b>	7.2	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detecting that the route crosses an own's shift safety contour..</p> <p>This test is performed by loading the test cells AA20VRVU.000 and AA3SAFCO.000, manually creating a route connecting way points between feature objects marked as WP11, WP24, WP25 and WP26 and checking display against the corresponding graphical plot.</p>			
<b>Setup</b>			
<p>As for test 7.1 and in addition load cell AA20VRVU.000 from 5.0 Navigational Hazards\Overview\ENC_ROOT</p> <p>Select Viewing group layer Other</p> <p>Set the safety contour value to 11 m</p> <p>Set the safety depth value to 30 m</p> <p>Select Symbolized Boundaries</p> <p>Select Paper chart symbols</p> <p>Deselect Accuracy</p> <p>Deselect Highlight info</p>			
<b>Action</b>			
<p>Select position 39°27'•000N 104°49'•000W at compilation scale (1:350 000) of AA20VRVU.</p> <p>1) View chart before route planning</p> <p>2) Manually create a route connecting way points between feature objects marked WP11, WP24, WP25 and WP26. Set user-specified distance for indication navigational hazards as 0.5 NM. Check ENC symbols shown in the ECDIS against the corresponding graphical plot.</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot shown below.</p>  <p>1) Situation before route planning. Chart AA20VRVU displayed as it is</p>			



### 7.3 Detection and Notification of the Safety Contour - Basic test – Monitoring Mode

<b>Test Reference</b>	7.3	<b>IHO Reference</b>	S-52 10.5.12
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS provides an appropriate alarm if the ship, within a specified time set by the Mariner, is going to cross own ship's safety contour. The objects satisfying the conditions for this test are listed in section 10.5.12 of IHO S-52 and are included in the test cell AA3SAFCO.000.</p>			
<p>This test is performed by loading the test cell AA3SAFCO.000, sailing with a simulated ship over the test area, setting the safety contour to the appropriate values (0m, 6m, 11m, 13m, 43m) and checking display against the graphical plots of test 7.1 (Route plan) corresponding to each set of safety contour settings.</p>			
<b>Setup</b>			
As for test 7.1			
<b>Action</b>			
<p>Check ENC symbols shown in the ECDIS for each safety contour setting against the corresponding graphical plot.</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot of test 7.1</p>			
<p>An example with Safety contour = 6 m.</p>			

#### 7.4 Detection and Notification of the Safety Contour – Use of largest scale available – Monitoring Mode

<b>Test Reference</b>	7.4	<b>IHO Reference</b>	S-52 10.5.9
<b>Test description</b>			
<p>The purpose of this test is to verify by observation that ECDIS uses the largest scale available for providing an appropriate alarm if the ship, within a specified time set by the Mariner, is going to cross own ship's safety contour. The objects satisfying the conditions for this test are listed in section 10.5.12 of IHO S-52 and are included in the test cell AA3SAFCO.000.</p>			
<p>This test is performed by loading the test cells AA20VRVU.000 and AA3SAFCO.000, sailing with a simulated ship over the test area, setting the safety contour to the appropriate values (0m, 6m, 11m, 13m, 43m) and checking display against the graphical plots of tests 7.1 and 7.2 (Route plan) corresponding to each set of safety contour settings.</p>			
<b>Setup</b>			
As for test 7.2			
<b>Action</b>			
<p>Check ENC symbols shown in the ECDIS for each safety contour setting against the corresponding graphical plot.</p>			
<b>Results</b>			
<p>The ENC in the ECDIS should match the corresponding graphical plot of test 7.1 and 7.2.</p>			
 <p>An example with Safety contour = 11 m.</p>			