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**S-164**



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# Introduction

## Change Control History

|  |  |  |  |
| --- | --- | --- | --- |
| Version Number | Date of Issue | Author(s) | Brief Description of Change(s) |
| 1.0.0 | 01/03/2023 | S100WG | Initial Draft |
| 1.1.0 | 31/03/2023 | S100WGTSM9 | Updated following feedback from TSM9 meeting |
| 1.2.0 | 31/12/2023 | J Pritchard | Updated following new datasets and S-100WG meetings. |

## 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 164 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.

## Acknowledgements

Edition 1.2.0 and its subsequent clarifications has been produced with assistance from many expert contributors and members of the IHO S-100 WG, the ENC Working Group (ENCWG), and associated expert contributors; their input during the drafting and revision process has been invaluable.

## 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

## 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-100 Edition 5.0.0

IHO S-98 Edition 1.0.0

Informative References:

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

IHO S-65 – ENC Production Guidance

## Preface to Edition 1.2.0

IHO S-164 is dependent for some of its content on the existence of comprehensive test datasets (which it documents) and systems which have implemented correctly the requirements of IHO S-100 (and allied) standards. As the initial version of S-164 few, if any, S-100 systems, with Duel Fuel mode enabled are in existence and many of the datasets are still under development. Therefore, many of the tests documented do not contain reference screenshots from S-100 implementations – where this is the case screenshots have been noted with “**[TBD]**” (“to be determined”). As version 2.0.0 is developed, and implementation of S-100 matures these gaps will be filled in this manual. Until version 2.0.0 of this standard is created all screenshots should therefore be seen as indicative.

This version of the manual accompanies exchange sets that have been created for initial testing. Not all exchange sets are complete yet. Where exchange sets are available, the tests which use them have had the text updated to reflect the content. Conversely, if an exchange set is missing, then the test has not been updated.

Additionally, references to both IEC61174 and IHO S-98 v1.0.0 should be viewed as indicative as both standards are in the process of revision at the time of publication of S-164 v1.2.0

As portrayal and feature catalogue contents are updated for the relevant product specifications screenshots will be updated with the latest portrayal images and, if necessary, tests for complex portrayal will be enhanced.

## 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) in respect of 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.

Timeline

Description automatically generated

Figure 1 – The TDS and its relationship to other standards

The S-164 test data set contains both encrypted and unencrypted data. The inclusion of an encrypted dataset, conforming to S-100 Part 15, is so that ECDIS data loading and management operations can be tested under IEC 61174. There are also unencrypted datasets which test visualisation and operational aspects of the ECDIS in respect of its compatibility with S-100 data in various forms. S-164 also contains datasets which test the dual fuel mode of ECDIS, mixing S-57 and S-101 electronic navigational charts.

## Structure of the Instruction Manual

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

| **Test Reference** | (S-164 reference) | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *A short description of what the test covers.* | | | |
| **Setup** | | | |
| *The configuration required to perform the test including datasets 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)*  *Note: All Independent Mariner selectors must be switched Off, setup will specify when these selectors must be turned on to conduct a test.*  *Where the term ‘Select’ is used in the test setup it refers to the selection of a named viewing group layer, selection of independent mariner selector or selection of named display category* | | | |
| **Action** | | | |
| *The action which the test executor must perform.* | | | |
| **Results** | | | |
| *The result which the test executor must observe to complete the test.* | | | |

Where new tests, specific to the operation of the ECDIS under S-100 are concerned, the colour of the tables has been set as below for ease of use, e.g.

| **Test Reference** | InitialCatalogues | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |

## Organization and Coverage of the TDS

The TDS contains a named directory for each section of the TIM which requires test data. Depending on the test requirement, the named folder contains an S100\_ROOT directory containing the files of the exchange set (e.g CATALOG.XML), plus any required catalogues, updates or other optional/related files, e.g. .TIF, .TXT necessary.

The TDS data for encrypted data, located in section 2.6, contains multiple named exchange sets, each with their own S100\_ROOT directory and full test scripts describing how to use the data.

The location (or path) of ENC exchange set and/or ENC dataset will be indicated using bold italic notation, e.g. ***PowerUp***..Tests are structured so that data is imported from standard S-100 exchange sets only, with no individual datasets requiring import. Datasets themselves are sometimes named individually in the tests for reference where necessary. Exchange sets contain necessary catalogues to perform tests.

Test datasets are arranged in a number of spatially disjoint schemes, with S-57 and S-100 datasets located in close proximity (for easing dual fuel testing). Examples of the schemes, and individual dataset names are illustrated in the following diagrams. These show the extent of the S-101 charts comprising the test datasets. Other S-100 products are layered on top of these datasets and are integrated with the named exchange sets referenced in each individual test.

Chart, box and whisker chart

Description automatically generated

Figure 1: Data Scheming for Alert and Indication Tests

Chart

Description automatically generated with low confidence

Map

Description automatically generated

Figure 2: Cartographic cell overviews

Chart, treemap chart

Description automatically generated

**S-164 Data Coverage scheming.**

## 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 S-98 1.0.0 including an ECDIS Chart 1 and colour differentiation diagrams. If the manufacturer provides their own presentation library, Chart 1 has to be adapted accordingly.*
2. *IHO S-164 test data sets for ECDIS which includes both encrypted and unencrypted datasets, and updates, together with the associated instruction manual.*

ECDIS Chart 1 and colour differentiation diagrams must also 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-164, 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.iho.int> > (ENCs & ECDIS).** The version number (currently v1.0.0) will remain the same as long as the corrections do not impact this document.

[All tests using data assume the system has preloaded the correct catalogues. Aside from Section 1 of this manual, all systems should pre-install the necessary catalogues, contained in exchange set “PowerUpCatalogues” as a pre-requisite. This will ensure the correct portrayal. Section 1 of this manual is concerned with correct behaviour of catalogue installation.]

# Chart Loading and Updating

## Catalogue Loading and System Initialisation.

### Initial Catalogues

| **Test Reference** | InitialCatalogues | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading of initial catalogues. This test loads initial feature and portrayal catalogues independently and checks they are persistent in the ECDIS* | | | |
| **Setup** | | | |
| *Clear all ECDIS catalogues and data contents* | | | |
| **Action** | | | |
| *Load the exchange set* ***InitialCatalogues*** | | | |
| **Results** | | | |
| *Verify the version of the S-101 feature catalogue and portrayal catalogue is correct. The correct information is shown in the following table:*   |  |  |  | | --- | --- | --- | | ***Catalogue*** | ***Product*** | ***Version / Issue Date.*** | | *Feature Catalogue* | *S-101* | *1.0.2* | | *Portrayal Catalogue* | *S-101* | *1.0.0* | | *Feature Catalogue* | *S-124* | *1.0.0* | | *Feature Catalogue* | *S-128* | *1.0.0* | | | | |

### Load Invalid Feature Catalogue

| **Test Reference** | InvalidCatalogues | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading Corrupt Catalogues. This test ensures the ECDIS will detect invalid feature catalogue content and reject installation of potentially harmful machine readable files* | | | |
| **Setup** | | | |
| *As per test InitialCatalogues (load exchange set* ***InitialCatalogues****)* | | | |
| **Action** | | | |
| *Load the exchange set* ***CorruptFeatureCatalogue****.* | | | |
| **Results** | | | |
| *The catalogue installation process shall stop, the updated catalogue flagged as invalid, and the user provided with the error message “SSE128 Error installing <file name>. The format or content could not be validated and it could not be installed”* | | | |

### Load Invalid portrayal Catalogue

| **Test Reference** | InvalidPC | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test ensures the ECDIS will detect invalid content within catalogue content and reject installation of potentially harmful machine readable files.* | | | |
| **Setup** | | | |
| *As per test InitialCatalogues* | | | |
| **Action** | | | |
| *Load exchange set* ***CorruptPortrayalCatalogue****.* | | | |
| **Results** | | | |
| *The catalogue installation process shall stop, the updated catalogue flagged as invalid, and the user provided with the error message “SSE128 Error installing <file name>. The format or content could not be validated and it could not be installed”.* | | | |

### Out of Sequence Catalogues

| **Test Reference** | OutOfSequenceCatalogues | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test ensures the ECDIS will detect mismatches between installed catalogues content and datasets* | | | |
| **Setup** | | | |
| *As per test* ***InitialCatalogues*** *(load exchange set* ***InitialCatalogues****)* | | | |
| **Action** | | | |
| *Load the exchange set* ***UpdatedCatalogueData*** | | | |
| **Results** | | | |
| *The catalogue installation process shall stop, issuing the user with the error message SSE133 “Version mismatch between 10100AA\_X01NE and S-101 Feature Catalogue 1.0.2. Only version 1.1.0 is supported for this data”* | | | |

### Load Valid Catalogue Update and Data

| **Test Reference** | UpdateCatalogues | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *EUT support for management and update of feature and portrayal catalogues. Installation of updated feature catalogues and associated datasets matching such catalogues* | | | |
| **Setup** | | | |
| *As per test InitialCatalogues (load exchange set* ***InitialCatalogues****)* | | | |
| **Action** | | | |
| *Load the following exchange sets:*   * ***PowerUpCatalogues*** * ***UpdatedCatalogueData***  1. *Verify the versions of all catalogues installed* 2. *Navigate to Position 32 29 51.90, 060 57 59.86 at viewing scale 1:45,000* 3. *Cursor pick feature at position XX XX.XX, YY YY.YY* | | | |
| **Results** | | | |
| *The exchange sets shall install without any warning messages. The following versions shall be installed.*   |  |  |  | | --- | --- | --- | | ***Catalogue*** | ***Product*** | ***Version / Issue Date.*** | | ***Feature Catalogue*** | ***S-101*** | ***1.0.2*** | | ***Portrayal Catalogue*** | ***S-101*** | ***1.0.0*** | | ***Feature Catalogue*** | ***S-101*** | ***1.1.0*** | | ***Portrayal Catalogue*** | ***S-101*** | ***1.1.0*** | | ***Feature Catalogue*** | ***S-128*** | ***1.0.0*** | | ***Feature Catalogue*** | ***S-164*** | ***1.0.0*** |   *At the defined position the following image shall be observed:*  ***[IMG: Two products side-by-side, original and updated FC/PC]****:*  The selected feature shall have the following attribution:  **[IMG: Updated attribution for new FC**] | | | |

### Load new product catalogues

| **Test Reference** | NewCatalogues | **IHO Reference** | S-98 Annex C C-21.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test ensures the ECDIS will correctly load new products (Catalogue and Dataset) into the System Database* | | | |
| **Setup** | | | |
| *As per test* ***InitialCatalogues*** *(load exchange set* ***InitialCatalogues****)* | | | |
| **Action** | | | |
| *Load the exchange set* ***NewProduct****. This contains a new unseen (GML) product.* | | | |
| **Results** | | | |
| *Verify:*   * The existence of the new product within the System Database * The existence of the single dataset of the new product * The portrayal of the new product at position (XX YY ZZ)  |  |  |  | | --- | --- | --- | | ***Catalogue*** | ***Product*** | ***Version / Issue Date.*** | | *Feature Catalogue* | *S-164* | *2.0.0/20230201* | | *Portrayal Catalogue* | *S-164* | *2.0.0/20230201* | | ***Dataset*** | ***Product*** | ***Issue Date*** | | *164AA00NEWPROD.GML* | *S-164* | *20230201* | | | | |

## Loading of Unencrypted datasets

### Preparation and Power Up

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | **InitialPowerUp** *(2.1.1[[1]](#footnote-2))* | **IHO Reference** | IEC 61174/ 4.4.1 |
| **Test description** | | | |
| *Loading of initial datasets and indication of own ship stationary position.* | | | |
| **Setup** | | | |
| *Load the following exchange set:*  ***InitialPowerUp***  *with the following settings:*   * *Select Display Category Other* * *Set the Safety Contour value to 8 m* * *Set the Safety Depth value to 8 m* * *Select Symbolized Boundaries* * *Select all Text groups* * *Select Accuracy* * *Select Highlight info* * *Select Highlight date dependent* * *Select simplified points = false*   *Ship position 32°29.66’S, 060°55.86’E*  *Heading 234.0 degrees* | | | |
| **Action** | | | |
| *Load datasets and view the chart display.* | | | |
| **Results** | | | |
| *With the charts displayed the own ship shall be placed at the jetty in Micklefirth.* ***[TBD]*** | | | |
|  | | | |
| *After loading of 10100AA\_X0000.000, displayed scale 1:50 000* ***[TBD****]* | | | |
|  | | | |
| ***[TBD****]* | | | |
|  | | | |
| *After loading of 10100AA\_X01NW.000, displayed scale 1:20 000* ***[TBD****]*   * ***[TBD****]****Screenshots for display of S-102/S-104/S-100 under bridge*** * ***[TBD****]****Screenshot of S-124 and S-129 display for 10100AA\_X01NW.000 area*** | | | |

### Number and date in System Database

| **Test Reference** | | | PowerUp | | **IHO Reference** | | IEC 61174/ 4.4.1 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test description** | | | | | | | | | |
| *Loading of initial datasets and confirmation of information in System Database.* | | | | | | | | | |
| **Setup** | | | | | | | | | |
| *Load the exchange set* ***PowerUp*** | | | | | | | | | |
| **Action** | | | | | | | | | |
| Check that in the chart library the information about the datasets is provided as follows | | | | | | | | | |
|  | ENC | Edition  (EDTN) | | Update number  (UPDN) | | Update Application  Date (UADT) | | Issue Date  (ISDT) |  |
| 10100AA\_X0000.000 | 2 | | 0 | | 20210409 | | 20210409 |
| 10100AA\_X01NE.000 | 1 | | 0 | | 20210406 | | 20210406 |
| 10100AA\_X01NW.000 | 2 | | 0 | | 20210406 | | 20210406 |
| 101AA00X01SE.000 | 1 | | 0 | | 20210406 | | 20210406 |
| 101AA00X01SW.000 | 1 | | 0 | | 20210408 | | 20210408 |
| *101AA00X02SE.000* | *1* | | *0* | | *20210407* | | *20210407* |
|  | *104AA00X01NW.H5* | *1* | | *0* | | *20210406* | | *20210406* |  |
|  | *102AA00X01NW.H5* | *1* | | *0* | | *20210406* | | *20210406* |  |
|  | *111AA00X01NW.H5* | *1* | | *0* | | *20210406* | | *20210406* |  |
|  | *124AA00X01NW.GML* | *1* | | *0* | | *20210406* | | *20210406* |  |
|  | *129AA00X01NW.GML* | *1* | | *0* | | *20210406* | | *20210406* |  |
| **Results** | | | | | | | | | |
| *The information in the System Database shall be identical to the above table.* | | | | | | | | | |

### Load additional dataseta and check System Database

| **Test Reference** | AdditionalCell | **IHO Reference** | IEC 61174/ 4.4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading additional cell and confirmation of its addition to the chart library.* | | | |
| **Setup** | | | |
| *As for test* ***PowerUp*** *2.1.2* | | | |
| **Action** | | | |
| *Load the exchange set* ***~~AdditionalCell~~ [Settings]***    *Check that in the System Database the details of the dataset have been added.* | | | |
| **Results** | | | |
| *The information in the System Database shall reflect the cell loaded and the coverage shall have changed accordingly.* | | | |

### Remove dataset and check chart library

| **Test Reference** | RemoveCell | **IHO Reference** | IEC 61174/ 4.4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Removing a cell and confirmation of its removal from the chart library.* | | | |
| **Setup** | | | |
| *As on completion of test* ***AdditionalCell*** | | | |
| **Action** | | | |
| *Remove the following cell 10100AA\_X0001.000*  *Check that in the chart library the details of the cell have been removed.* | | | |
| **Results** | | | |
| *The information in the chart library shall reflect the cell removed and the chart coverage shall have changed accordingly.* | | | |

### Loading of Corrupted Data

| **Test Reference** | CorruptData | **IHO Reference** | IEC 61174/ 4.4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Testing the ECDIS correctly rejects corrupted data* | | | |
| **Setup** | | | |
|  | | | |
| **Action** | | | |
| *Load the following exchange set:*  ***CorruptData*** | | | |
| **Results** | | | |
| *The EUT shall generate a warning when loading datasets 10100AA\_X01NE and 124AA00X01NE and reject installation of these two datasets.* | | | |

## Automatic updates of Unencrypted ENCs

### Loading corrupted update

| **Test Reference** | CorruptUpdate | **IHO Reference** | IEC 61174/ 4.4.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading corrupt update files.* | | | |
| **Setup** | | | |
| *Load the following exchange set:*  ***PowerUp*** | | | |
| **Action** | | | |
| *Load the following exchange set:*  ***CorruptUpdates*** | | | |
| **Results** | | | |
| *The update process shall stop, the update flagged as invalid, and the user provided with an appropriate message.* | | | |

### Loading sequential update

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | SequentialUpdate | **IHO Reference** | IEC 61174/ 4.4.2 |
| **Test description** | | | |
| *Loading correct sequential update files.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***  *Load the following 5 updates one by one and check the plots after each successfully applied update to create the same results as the S-164 plots.*  *.001*  *Update review date range: 1st May 2011 – 21st May 2011*  *.002*  *Update review date range: 1st Dec 2014 – 1st Mar 2015*  *.003*  *Update review date range: 1st Sep 2015 – 14th Sep 2015*  *.004*  *Update review date range: 15th Sep 2015 – 30th Sep 2015*  *.005*  *Update review date range: 1st Oct 2015 – 14th Oct 2015* | | | |
| **Action** | | | |
| *Load the following five updates from the exchange set(s):*   * ***SequentialUpdate(1-5)*** | | | |
| **Results** | | | |
| *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:*  *- identification of issuing authority;*  *- update numbers of the update files;*  *- identifiers of datasets affected;*  *- edition number and date of involved;*  *- number of updates in the affected datasets.*  *Review of updates shall be performed after the update process is completed and the updates have been applied. Review the updates by selecting the given date range and confirm that display is as available in the corresponding screen plot.*  Note Manufacturers can use their own algorithms for calculating the position of centred symbols. | | | |
|  | | | |
| *Before loading of updates, displayed scale 1:20 000****[TBD****]*  *.* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.001, displayed scale 1:20 000, date range include 9thMay 2021* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.002, displayed scale 1:20 000, date range 1st Jan 2015-21st Feb 2015* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.003, displayed scale 1:20 000, date range include 8th Sep 2015* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.004, displayed scale 1:20 000, date range include 22nd Sep 2015* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.005, displayed scale 1:20 000, date range include 6th Oct 2015* | | | |

### Loading update in an invalid sequence

| **Test Reference** | InvalidSequence | **IHO Reference** | IEC61174/ 4.4.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading update files in an invalid sequence.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Load the following five update exchange sets:*  ***InvalidSequence00x*** *with x=1,2,3,4,5* | | | |
| **Results** | | | |
| *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.* | | | |

### Loading update of newer edition

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | NewerEdition | **IHO Reference** | IEC 61174/ 6.8.16.1 |
| **Test description** | | | |
| *Loading update file of a newer edition than base dataset installed.* | | | |
| **Setup** | | | |
| *As result of test 2.2.3*  Note: Following dataset is already loaded*:*   * *101AA00X01SW.000 (edition 1)* | | | |
| **Action** | | | |
| *1. Load the following update exchange set:*  ***NewUpdate****, contains 101AA00X01SW.001 (edition 2)*  *2. Display installed chart.*  *3. Install the following exchange sets:*  ***GoodBaseCells*** *101AA00X01SW.000 (edition 2)*  ***NewUpdate*** *101AA00X01SW.001 (edition 2)*  *4. Display installed chart.* | | | |
| **Results** | | | |
| 1. *The update process shall refuse to install the update and inform the user that chart data of a newer edition are available.* 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).* 3. *Base cell and update shall be installed without any warning or error.* 4. *The “Chart information not up to date” message no longer displayed.* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.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.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\2.2.4 picture 2.PNG | | | |
| ***[TBD****]After loading of 101AA00X01SW.001 2nd edition, displayed scale 1:20 000, all features and their geometries being subject to this update review are highlighted* | | | |
| *C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\2.2.4 picture 3 - filtered example1.png* | | | |
| ***[TBD****]After loading of 101AA00X01SW.001 2nd edition, displayed scale 1:20 000, update review highlight filtered for real changes (example 1)* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.001 2nd edition, displayed scale 1:20 000, update review highlight filtered for real changes (example 2)* | | | |

### Loading update of older edition

| **Test Reference** | OlderEdition | **IHO Reference** | IEC 61174/ 4.4.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading update file of an older edition than base dataset installed.* | | | |
| **Setup** | | | |
| *Install the following exchange sets:*  ***GoodBaseCells*** *101AA00X01SW.000 and 124AA00X01SW.GML (edition 2)* | | | |
| ***Action*** | | | |
| *Install the following exchange set:*   * ***OldUpdate*** *101AA00X01SW.000 and 124AA00X01SW.GML (edition 1)* | | | |
| **Results** | | | |
| *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, for example “Incorrect Edition Number 1 [of update]: expecting 2”* | | | |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | ReIssue | **IHO Reference** | IEC 61174/ 4.4.2 |
| **Test description** | | | |
| *Loading a re-issue of an unencrypted data set.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Load the following update exchange sets in sequence:*   * ***ReIssue001*** * ***ReIssueX01SW*** * ***ReIssue004****.* | | | |
| **Results** | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.001 1st edition, displayed scale 1:20 000* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.000 re-issue, edition 1, update 3, displayed scale 1:20 000* | | | |
|  | | | |
| ***[TBD****]After loading of 101AA00X01SW.004, displayed scale 1:20 000* | | | |

### Rejection of automatic update

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | UpdateRejection | **IHO Reference** | IEC 61174/ 4.4.2 |
| **Test description** | | | |
| *Manual rejection of an automatic update.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Load the following update from the exchange set* ***SequentialUpdate****:*  *101AA00X01SW.001 (edition 1, update 1)*  *After loading of the update, manually annotate the features of the update as rejected using the deletion available in the manual update method.* | | | |

| **Results** |
| --- |
| *The features from the update shall remain in display as annotated by the deletion mark of the manual update method.* |
|  |
| ***[TBD****]Before loading of update, displayed scale 1:20 000* |
|  |
| ***[TBD****]After loading of 101AA00X01SW.001, displayed scale 1:20 000* |
|  |
| ***[TBD****]After update 1 has been manually annotated as rejected by the Mariner, displayed scale 1:20 000* |

## Manual Updates

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | ManualUpdates | **IHO Reference** | IEC 61174/ 6.8.17 |
| **Test description** | | | |
| *Manual updates* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***   * *Select Display Category Standard* * *Set the Safety Contour value to 8 m* * *Set the Safety Depth value to 8 m* * *Select Symbolized Boundaries* * *Select Simpified Symbols = false* * *Select Highlight date dependent* * *Select Spot soundings* | | | |
| **Action** | | | |
| 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:*  *a. insert a dangerous wreck near: 32 31.5S, 60 57.3E*  *b. insert East Cardinal buoys including topmarks near: 32 31.5S, 60 57.46E*  *c. insert West Cardinal buoy including topmark near: 32 31.5S, 60 57.16E;*  *d. insert a prohibited entry area between Panther and Tinker Shoals timed to come into force at 20220220;*  *e. insert a cautionary area in the same location being in force from date of issue to 20220220;*  *f. insert 15 metre sounding at 32 31.7S, 60 57.4E.*  *g. delete fog signal of cardinal buoy at 32 31.444S, 60 55.842E*  *2. Set viewing date before 20220220. Display chart cell with manual updates.*  *3. Set viewing date after 20220220. Display chart cell with manual updates.*  *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:*  *h. extend western limits of the prohibited entry area;*  *i. delete cautionary area;*  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 20220220. Display chart cell with manual updates.*  *6. Set viewing date after 20220220. 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 20220220. The ENC in the ECDIS should match the corresponding graphical plot shown below. Manual updates shall be distinguishable as described in* ***S-98 XXX-XXX*** | | | |
| *2*  ***[TBD****]* | | | |
| 2 | | | |
| ***[TBD****]3. Set viewing date after 20150220. The ENC in the ECDIS should match the corresponding graphical plot shown above.* | | | |
| 2 | | | |
| ***[TBD****]5. Set viewing date before 20220220. The ENC in the ECDIS should match the corresponding graphical plot shown above.* | | | |
| 2 | | | |
| ***[TBD****]6. Set viewing date after 20220220. The ENC in the ECDIS should match the corresponding graphical plot shown above.* | | | |
| 2 | | | |
| ***[TBD****]7.a-g. Review of manual updates shall be available on demand. Above is review of updates a-g.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 24mar2016\2.3 picture 6.PNG  ***[TBD****]* | | | |
| *7.h-j. 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.* | | | |

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

| **Test Reference** | SENCDelivery | **IHO Reference** | IEC 61174/ 6.8.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading and Updating using SYSTEM DATABASE delivery (if provided).* | | | |
| **Setup** | | | |
| *If the ECDIS supports SYSTEM DATABASE delivery (accepting a SYSTEM DATABASE resulting from conversion of ENC to SYSTEM DATABASE ashore, in accordance with IHO Resolution 4/2002 as amended (see IHO Publication M-3), then the manufacturer shall supply a SYSTEM DATABASE version of the IHO S-64 test data set for each SYSTEM DATABASE format for which SYSTEM DATABASE delivery is to be approved.*  *Note:**The test data sets should be provided by the SYSTEM DATABASE producers for each SYSTEM DATABASE distributor approved for use with the EUT.* | | | |
| **Action** | | | |
| *For each SYSTEM DATABASE delivery format perform the following tests from section 2.1 and 2.2 :*  *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* | | | |
| **Results** | | | |
| *For each SYSTEM DATABASE 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.*  *The ECDIS shall provide an update mechanism for delivered SYSTEM DATABASEs that is not inferior to the update mechanism of ENCs.* | | | |

## Loading, Updating and Authentication of datasets

### Organization of encrypted datasets

The tests for loading encrypted data are stored in the folder “Part15”. The test exchange sets are named and referred to in the tests by the exchange set name. Where permits, certificates or other elements are needed they are provided in the root folder of the exchange set.

This section also includes tests of how the ECDIS performs data management functions for update, cancel/replace and reissued datasets and supplementary files.

**Default test data parameters**

The S-100 Part 15 data permits that accompany any encrypted test datasets have been generated for the User Permit specified below. To carry out the tests described in this document manufacturers will have to create systems compatible with the following manufacturer information and hardware ID (HW\_ID) – these are taken from S-100 Edition 5.0.0 Part 15..

#### Manufacturer ID: (M\_ID) = 859868

Manufacturer Key: (M\_KEY) = **4D5A79677065774A7343705272664F72**

Hardware ID: (HW\_ID) = **40384B45B54596201114FE9904220101**

USERPERMIT = **AD1DAD797C966EC9F6A55B66ED98281599B3C7B1859868**

This is the official manufacturer information issued for and by the Scheme Administrator (IHO secretariat) 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-164 Test Data for Encrypted ENCs (This document).

• OEM and Data Server self certification of their systems against S-100 Part 15.

* 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.*

### ENC Licensing – Permit Management

#### 2.5.2 a) Check permit string availability

| **Test Reference** | InvalidPermit | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system performs when loading a non-compliant permit file. Verify that the ECDIS returns the correct error message.* | | | |
| **Setup** | | | |
| *No pre-installed permits.*  *Test data used:*  *1) PERMIT.XML file (empty file)*  *2) TEXT.XML file (wrong name)*  *Test data location:* ***InvalidPermitFile*** | | | |
| **Action** | | | |
| *1) Attempt to load a PERMIT.XML file with no cell permits listed.*  *2) Attempt to load a non compliant text file.* | | | |
| **Results** | | | |
| *Security Scheme Error (SSE 111) and accompanying description is displayed in the system at permit installation.*  *i.e.* ***SSE 111 – Cell permit not found*** | | | |

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

| **Test Reference** | IncorrectPermitFormat | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *ENC Licensing – Permit Management*  *ENC cell permit string incorrect format*  *Test how the system performs when loading a PERMIT.XML file with an incorrectly formatted permit string. Verify that the ECDIS returns the correct error message.* | | | |
| **Setup** | | | |
| *No pre-installed permits or ENCs in the System Database*  *Test data used:*  *1) PERMIT.XML*  *2) b) S100\_ROOT (Exchange Set – 101GB00100001, 101GB00100002 plus updates)*  *Test data location:* | | | |
| **Action** | | | |
| *Load the permit file (PERMIT.XML) and then the exchange set (S100\_ROOT) from the location above.* | | | |
| **Results** | | | |
| *Security Scheme Error (SSE 112) and accompanying description is displayed in the system at permit installation. That is,* ***GB100012****, “****SSE 112 – Cell permit format is incorrect****” 101GB00100002, valid to 31st Dec 2018 installed OK*  *(This message is only intended as indication of what should be displayed when a valid permit is installed.) Only 101GB00100002 (edition #13 update # 5) and updates should be loaded into the SYSTEM DATABASE. The permit string for 101GB00100001is the wrong length [The cell name has The permit string for 101GB00100002 is the correct length and is valid.* | | | |

#### 2.5.2 c) Validate permit CRC

| **Test Reference** | InvalidPermitChecksum | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *ENC Licensing – Permit Management Validate permit CRC:*  *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.* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *PERMIT.XML*  *Test data location:*   * ***ENCLicencingC1*** * ***ENCLicencingC2*** | | | |
| **Action** | | | |
| *Attempt to load the PERMIT.XML file from locations (a) and (b) above into the ECDIS.* | | | |
| **Results** | | | |
| *The system reports a CRC failure on 101GB00100001 accompanied by the appropriate error message as follows:*  *“****SSE 113 – Cell Permit is invalid (checksum is incorrect)****”*  *In both cases the permit for 101GB00100002 imports without any error or warning.*  *1) Cell 101GB00100001 has had its permit CRC changed from* 760CD6BA8AAEF1A0 to 760CD6BA8AAEE1A0*.*  *2) Cell 101GB00100001 has had the encrypted cell keys 1 & 2 altered slightly.*  *3) Cell 101GB00100002 has a valid permit CRC value for both tests.)* | | | |

### Missing PERMIT.XML signature

| **Test Reference** | MissingPermitSignature | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that permits cannot be loaded from a PERMIT.XML without a valid PERMIT.SIG permit signature file also present.* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *PERMIT.XML*  *Test data location:*   * ***ENCLicencingH*** | | | |
| **Action** | | | |
| *Load PERMIT.XML* | | | |
| **Results** | | | |
| *Verify the ECDIS fails to load the permits contained in PERMIT.XML and a suitable error message is issued.* | | | |

### Invalid PERMIT.XML signature (contained in PERMIT.SIG)

| **Test Reference** | InvalidPermitSignature | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that permits cannot be loaded from a PERMIT.XML with an invalid PERMIT.SIG permit signature.* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *PERMIT.XML*  *Test data location:*   * ***ENCLicencingI*** | | | |
| **Action** | | | |
| *Load PERMIT.XML* | | | |
| **Results** | | | |
| *Verify the ECDIS fails to load the permits contained in PERMIT.XML and a suitable error message is issued.* | | | |

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

| **Test Reference** | ExpiringPermit | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system performs when loading permits that expire within the next 30 days. Verify that the ECDIS returns the correct warning message.* | | | |
| **Setup** | | | |
| *No pre-installed permits.*  *Test data used:*  *PERMIT.XML*  *The expiry date set in this test permit is 20221231 (31st December 2022).*  *Test data location:*   * *ENCLicencingD*   *D:\IHO S-64 [S-63 TDS v1.2.1]\2 ENC Licencing\Test 2d* | | | |
| **Action** | | | |
| ***Set the computer Date/Time properties to 3rd Dec 2022***  *Install the PERMIT.XML file:* | | | |
| **Results** | | | |
| *The system must return a SSE 120 warning message as follows:*  *“****SSE 120 – Subscription service will expire in less than 30 days. Please contact your data supplier to renew the subscription licence****.”* | | | |

### Incorrect User Permit in PERMIT.XML

| **Test Reference** | InvalidPermitSignature | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that permits cannot be loaded from a PERMIT.XML with the wrong user permit contained.* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *PERMIT.XML*  *Test data location:*   * ***ENCLicencingJ*** | | | |
| **Action** | | | |
| *Load PERMIT.XML* | | | |
| **Results** | | | |
| *Verify the ECDIS fails to load the permits contained in PERMIT.XML with the following message*  *“****SSE 121 – Permits may be for another system or new permits may be required, please contact your data supplier to obtain a new licence****.”* | | | |

#### 2.5.2 e) Check for expired permits

| **Test Reference** | ExpiredPermits | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system performs when installing permits which have expired. Verify that the ECDIS returns the correct warning message.* | | | |
| **Setup** | | | |
| *No pre-installed permits.*  *Test data used:*  *PERMIT.XML*  *The expiry date set in this test permit is 20221231 (31st December 2022).*  *Test data location:*   * ***ENCLicencingE*** | | | |
| **Action** | | | |
| *Load the PERMIT.XML file. [Note The expiry dates for these permits are set to 31st Dec 2022.*  ***Set the computer Date/Time to 1st Jan 2023*** *and install the PERMIT.XML file]* | | | |
| **Results** | | | |
| *The system must report the correct SSE 115 warning message as follows:*  *“****SSE 115 – Subscription service has expired. Please contact your data supplier to renew the subscription licence****.”*  *It should be possible to install expired permits but the system must display a permanent warning message to the user as described in S-98 XXX-XXXX 10.5.5 of S-63.* | | | |

#### 2.5.2 f) Permit installation and reporting

| **Test Reference** | PermitInstallation | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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.* | | | |
| **Setup** | | | |
| *No pre-installed permits.*  *Test data used:*  *PERMIT.XML*  *Test data location:*   * ***ENCLicencingF***   *The expiry dates for these permits are set to 31st Dec 2028.*  ***Set the computer Date/Time prior to 1st Dec 2028*** *and install the PERMIT.XML file.* | | | |
| **Action** | | | |
| *Load the file PERMIT.XML in the location stated above.* | | | |
| **Results** | | | |
| *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 IHO manufacturer hardware ID and M\_KEY.)* | | | |

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

| **Test Reference** | MultipleDataServers | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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.* | | | |
| **Setup** | | | |
| *No pre-installed permits.*  *Test data used:*  *PERMIT.XML*  *Test data location:*   * ***ENCLicencingG1*** * ***ENCLicencingG2***   *There are two ENC cells common to both PERMIT.XML files. These common permits have been created using different encryption keys.* | | | |
| **Action** | | | |
| *Load the PERMIT.XML file at the test data location (a) above.*  *Load the PERMIT.XML file at the test data location (b) above.* | | | |
| **Results** | | | |
| *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.XML files. These common permits have been created using different encryption keys.)* | | | |

#### 2.5.2 h) Management of installed permits

| **Test Reference** | PermitManagement | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test whether the system enables user to manage their permit holdings. Confirm that users have the ability to selectively remove permits from the system.* | | | |
| **Setup** | | | |
| *Use the pre-installed permits from the previous test* MultipleDataServers (*2.5.2g)*  *Test data used:*  *PERMIT.XML files loaded in the previous test*  *Two permit files have been supplied with this test from two different Data Servers (DS). These have been designated GB and PM.* | | | |
| **Action** | | | |
| *Attempt to remove one of the installed sets of permits from the system leaving the other one intact.* | | | |
| **Results** | | | |
| *The user must be able to delete permits from the system. Suitable warnings/confirmations must be given.* | | | |

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

| **Test Reference** | InstallSACertificate | **IHO Reference** | S-98 15-4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Confirm that the system can import a new certificate/public key and return a report informing the user of the fact. Validate the supplied exchange set against the SA certificate* | | | |
| **Setup** | | | |
| *Use the pre-installed information and data from the previous test 2.5.4a.*  *Test data used:*  *1) IHO.CRT*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication1B***   *The IHO Public key used for this is the same as that posted on their website at the time the test data was produced.* | | | |
| **Action** | | | |
| *Note: The certificate or public key file should be manually checked against the corresponding files on the IHO website (www.iho.int). See [****TBD]*** *in S-98.*  *Depending on the system install the certificate and/or public key file(s).*  *Install the PERMIT.XML and Install the exchange set from the location above.* | | | |
| **Results** | | | |
| *1) The new certificate or public key file should load without error or warning, i.e. no SSE 126 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.*  *ENC cell 101GB00100004 (Edition #7, Update #1) installed without error or warning*  *ENC cell 101GB00100005 (Edition #3, Update #2) installed without error or warning* | | | |

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

| **Test Reference** | MissingSACertificate | **IHO Reference** | S-98 15-4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system performs when there is no pre-installed certificate. Confirm that the correct SSE 105 error message is displayed and that the system does not progress to the decompress/decrypt stage.* | | | |
| **Setup** | | | |
| *No pre-installed certificate, permits or ENC data.*  *Test data used:*  *1) PERMIT.XML*  *2) S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication1C***   *IHO Public key used for this is the same as that posted on their website at the time this test data was produced.* | | | |

| **Action** |
| --- |
| *Install the permit file followed by the exchange set stored in the location above.* |
| **Results** |
| *The system must report a SSE 105 error message similar to the one below.*  *“****SSE 105 – SA Digital Certificate file is not available. A valid certificate can be obtained from the IHO website or your data supplier****.”*  *The system must abort at this point and not continue to install ENCs.*  *ENC cell 101GB00100001 (Edition #3, Update #6) not installed. “SSE 105” Error Message*  *ENC cell 101GB00100002 (Edition #13, Update #5) not installed. “SSE 105” Error Message* |

#### 2.5.4 d) Check SA Certificate Expiry Date

| **Test Reference** | CertificateExpiry | **IHO Reference** | S-98 15-4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system performs if the SA certificate (IHO.CRT) has expired. To confirm that the correct SSE 122 error message is displayed and that the system does not progress to the decompress/decrypt stage.*  *.* | | | |
| **Setup** | | | |
| *No pre-installed certificate, permits or ENC data.*  *Test data used:*  *IHO.CRT PERMIT.XML PERMIT.SIG*  *S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication1DExpired*** * ***Authentication1DCurrent***   *The IHO.CRT (Expired) certificate expired on 31st December 2014*  *The IHO.CRT (Current) certificate expires on 29th August 2033* | | | |
| **Action** | | | |
| *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.*  *1) Install the certificate and permits at location (a) above then attempt to load the exchange set.*  *2) Then install the certificate and permits at location (b) above then attempt to load the exchange set (this test should result in the certificate & ExSet loading correctly). (Permits for this test expire on 31st Dec 2023)* | | | |

| **Results** |
| --- |
| *1) When installing the expired certificate the system must report a SSE 122 error message similar to the one below.*  *“****SSE 122 – SA Digital Certificate file has expired. A new SA Public Key (certificate) can be obtained from the IHO website or your data supplier****.” When attempting to install the exchange set the system must report the required SSE 105 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 101GB00100001 (Edition #3, Update #6) installed without errors and warnings*  *ENC cell 101GB00100002 (Edition #13, Update #5) installed without errors and warnings*  ***Expired***  *ENC cell 101GB00100001 (Edition #3, Update #1) not installed. “SSE 122 & 105” Error Messages*  *ENC cell 101GB00100002 (Edition #12, Update #7) not installed. “SSE 122 & 105” Error* Messages |

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

| **Test Reference** | InvalidSACertificate | **IHO Reference** | S-98 15-4.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system performs if the IHO digital certificate (IHO.CRT) is incorrectly formatted. Confirm that the correct SSE 108 error message is displayed and that the system does not progress to the decompress/decrypt stage.* | | | |
| **Setup** | | | |
| *No pre-installed certificate, permits or ENC data.*  *Test data used:*  *IHO.CRT*  *PERMIT.XML PERMIT.SIG*  *S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication1E***   *1) The SA certificate is corrupted and invalid.* | | | |
| **Action** | | | |
| *Install the IHO.CRT file. Then attempt to load the exchange set using the permits provided.* | | | |
| **Results** | | | |
| *The system must report a SSE 108 error message similar to the one below.*  *“****SSE 108 – SA Digital Certificate file incorrect format. A valid certificate can be obtained from the IHO website or your data supplier****”. When attempting to install the exchange set the system must report the required “****SSE 105 – SA Digital Certificate file is not available. A valid certificate can be obtained from the IHO website or your data supplier****.”*  *ENC cell 101GB00100001 (Edition #3, Update #6) not installed. “SSE 108 & 105” Error Messages*  *ENC cell 101GB00100002 (Edition #13, Update #5) not installed. “SSE 108 & 105” Error Messages* | | | |

## Dataset Authentication

### Missing Catalogue Signature.

| **Test Reference** | MissingCatalogueSignature | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that exchange sets with an invalid catalogue signature file can not be loaded.* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *CATALOG.XML*  *Test data location:*   * ***Authentication3A***   *The exchange set is missing the CAT.SIG catalogue signature file.* | | | |
| **Action** | | | |
| *Load exchange set* ***MissingCatalogueSignature*** | | | |
| **Results** | | | |
| *Verify the ECDIS fails to install the exchange set contents and outputs a suitable error message.* | | | |

### Invalid Catalogue Signature.

| **Test Reference** | InvalidCatalogueSignature | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that exchange sets with an invalid catalogue signature file can not be loaded.* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *CATALOG.XML CAT.SIG*  *Test data location:*   * ***Authentication3B***   *The signature contained in CAT.SIG is invalid.* | | | |
| **Action** | | | |
| *Load exchange set* ***InvalidCatalogueSignature*** | | | |
| **Results** | | | |
| *Verify the ECDIS fails to install the exchange set contents and outputs a suitable error message.* | | | |

#### 2.5.5 b) Authentication against a non SA certificate

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | NonSASignedData | **IHO Reference** |  |
| **Test description** | | | |
| *Test that the system will correctly reject data which is authenticated against a certificate which is not the Scheme Administrator.* | | | |
| **Setup** | | | |
| *No pre-installed certificate/public key, permits or ENC data.*  *Test data used:*  *1) PERMIT.XML*  *3) S100\_ROOT (Exchange Set – 101GB0061021A, 101GB0061021B, 101GB0061032A)*  *Test data location:*   * ***Authentication2B***   *This test uses an exchange set where the data server certificate is self-signed (not by the SA).* | | | |
| **Action** | | | |
| *Install certificate and/or public key, permit file and exchange set stored in the location above.* | | | |
| **Results** | | | |
| *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.*  *An error message must be displayed as follows:*  *“****SSE 126 – ENC is not authenticated by the IHO acting as the SA****”*  ***This test should prevent the exchange set from being loaded.*** | | | |

### Authentication via a domain coordinator.

| **Test Reference** | AuthenticationDomainCoordinator | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *S-100 Part 15 allows for domain coordinators and a chain of certification between the data server certificate and the SA. This test verifies the ECDIS is able to correctly import data which is authenticated by the SA via one or more domain coordinators.* | | | |
| **Setup** | | | |
| *No pre-installed certificate/public key, permits or ENC data.*  *Test data used:*  *1) PERMIT.XML*  *3) S100\_ROOT (Exchange Set – 101GB0061021A, 101GB0061021B, 101GB0061032A)*  *Test data location:*   * ***AuthenticationDomainControllers*** | | | |
| **Action** | | | |
| *Install the IHO.CRT file, PERMIT.XML and ENC exchange set from the location described* | | | |
| **Results** | | | |
| *Verify the ECDIS correctly installs all cells.* | | | |

#### 2.5.5 c) ENC signature validation

| **Test Reference** | InvalidDatasetSignature | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system responds when validating an incorrectly signed dataset. Confirm that the correct SSE 109 message is displayed.* | | | |
| **Setup** | | | |
| *No pre-installed certificate/public key, permits or ENC data.*  *Test data used:*  *1) IHO.CRT*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication2C***   *The digital signature for 101GB0031620.000 is in the correct format but the signature is invalid. The digital signature for 101GB0031640.000 is in the correct format and is valid.* | | | |
| **Action** | | | |
| *Install the IHO.CRT file, PERMIT.XML and ENC exchange set from the location described below.* | | | |

| **Results** |
| --- |
| *The system must display the correct SSE 109 error message for cell 101GB00301620 as follows: “****SSE 109 – ENC Signature is invalid****.”*  *The system must not load this dataset as its integrity may have been compromised.*  *The system should validate the signature file for 101GB0031640 and load this cell in the normal way.*  *ENC cell 101GB00301620 (Edition #3, Update #0) Not installed. Error message SSE 109* |

#### 2.5.5 d) ENC signature format validation

| **Test Reference** | CorruptedSignature | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Test how the system responds when validating against an incorrectly formatted digital signature. Confirm that the correct SSE 124 message is displayed.* | | | |
| **Setup** | | | |
| *Use data installed from the previous test (2.5.5c)*  *Test data used:*  *S100\_ROOT (Exchange Set)*  *Test data location*   * ***Authentication2D***   *The digital signature for 101GB00301620.000 has a valid ENC signature and is correctly formatted. 101GB00301660.000 has an invalid (corrupted) digital signature.* | | | |
| **Action** | | | |
| *Load the exchange set from the location above.* | | | |
| **Results** | | | |
| *The system displays the correct SSE 124 error message for cell 101GB00301660 as follows: “****SSE 124 – ENC Signature format is incorrect****.”*  *The system must not load this cell as its integrity may have been compromised.*  *The system should validate the signature file for 101GB00301620 and load this cell in the normal way.*  *Some systems may report an SSE 109 (ENC Signature is invalid) error this is acceptable as the expected outcome is the same, i.e. the data file is rejected.*  *ENC cell 101GB00301620 (Edition #3, Update #0) installed without error or warning*  *ENC cell 101GB00301660 (Edition #5, Update #0) is not installed. Error message SSE124* | | | |

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

| **Test Reference** | ContinuousAuthentication | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Tests that the system authenticates all signature files individually and continuously without hanging at an error. Check that the SSE 109 and SSE 124 messages are reported correctly.* | | | |

| **Setup** |
| --- |
| *Use data installed from the previous test (with 101GB00301620 & 101GB00301660 already installed)*  *Test data used:*  *1) PERMIT.XML*  *2) S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication2E***   *101GB00301820.000 (invalid signature) 101GB00301860.001 (Incorrect signature format)* |
| **Action** |
| *Load the PERMIT.XML file and exchange set from the location above.* |
| **Results** |
| *The system must authenticate each ENC signature continuously in turn. It must report the following errors at the end of the process:*  *“****101GB00301820.000 – SSE 109 – ENC Signature is invalid****.”*  *“****101GB00301860.001 – SSE 124 – ENC Signature format is incorrect****.”*  *The system must load all ENC data files with authenticated digital signatures but not those that do not.*  ***Some systems may report an SSE 109 (ENC Signature is invalid) error for both 101GB00301820.000 & 101GB00301860.001****. This is acceptable as the expected outcome is the same, i.e. the data file is rejected.*  *Note: 101GB00301860.002 should also return a sequential update error as it was not possible to install 101GB00301860.001.*  *e.g*  *ENC cell 101GB301620 (Edition #3, Update #0) installed without error or warning*  *ENC cell 101GB301640 (Edition #4, Update #0) installed without error or warning*  *ENC cell 101GB301660 (Edition #5, Update #0) installed without error or warning*  *ENC cell 101GB301820 (Edition #3, Update #0) is not installed. Error message SSE109*  *ENC cell 101GB301840 (Edition #8, Update #1) installed without error or warning*  *ENC cell 101GB301860 (Edition #3, Update #2) Base cell is installed without error or warning. Update #1 is not installed. Error message SSE 124* |

#### 2.5.5 f) Single exchange set with datasets signed by multiple data servers

| **Test Reference** | MultipleDataServers | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *To test how the system performs when an exchange set contains digital signatures from multiple data servers. That is, datasets signed with different data server private keys and containing different SA signed dataserver certificates.* | | | |
| **Setup** | | | |
| *No pre-installed certificates, permits or ENCs.*  *Test data used:*  *1) IHO.CRT*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set)*  *Test data location:*   * ***Authentication2F***   ***ENC Signatures ENC Signatures***  ***Signed by Data Server 1 (DS1) Signed by Data Server 2 (DS2)***  ***DS1‟s SA signed certificate DS2‟s SA signed certificate***  *101GB00301620.000, 101GB00301640.000, 101GB00301840.001*  *101GB00301660.000, 101GB00301820.000, 101GB00301860.000,001 & 002*  *101GB00301840.000 101GB00302020.000 & 001* | | | |
| **Action** | | | |
| *Install the certificate, permits and exchange set from the location above.* | | | |
| **Results** | | | |
| *The seven cells and accompanying updates must authenticate, decrypt and import to the ECDIS without any error or warning messages.*  *ENC cell 101GB00301620 (Edition #3, Update #0) installed without error or warning*  *ENC cell 101GB00301640 (Edition #4, Update #0) installed without error or warning*  *ENC cell 101GB00301660 (Edition #5, Update #0) installed without error or warning*  *ENC cell 101GB00301820 (Edition #3, Update #0) installed without error or warning*  *ENC cell 101GB00301840 (Edition #8, Update #1) installed without error or warning*  *ENC cell 101GB00301860 (Edition #3, Update #2) installed without error or warning*  *ENC cell 101GB00302020 (Edition #4, Update #1) installed without error or warning* | | | |

### Missing Certificate.

| **Test Reference** | MissingCertificate | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that exchange sets containing signatures but missing a data server certificate may not be loaded..* | | | |
| **Setup** | | | |
| *No pre-installed permits*  *Test data used:*  *CATALOG.XML CAT.SIG*  *Test data location:*   * ***Authentication3C***   *This exchange set contains data signed by two dataservers (as in MultipleDataServers) but DS2’s SA signed data server certificate is missing.* | | | |
| **Action** | | | |
| *Install the certificate, permits and exchange set from the location above.* | | | |
| **Results** | | | |
| *The four cells signed by DS1 must authenticate, decrypt and import to the ECDIS without any error or warning messages. The cells and updates from DS2 must not be loaded and a suitable error message given.*  *ENC cell 101GB00301620 (Edition #3, Update #0) installed without error or warning*  *ENC cell 101GB00301640 (Edition #4, Update #0) installed without error or warning*  *ENC cell 101GB00301660 (Edition #5, Update #0) installed without error or warning*  *ENC cell 101GB00301820 (Edition #3, Update #0) installed without error or warning*  *ENC cell 101GB00301840 (Edition #8, Update #1) not installed*  *ENC cell 101GB00301860 (Edition #3, Update #2) not installed*  *ENC cell 101GB00302020 (Edition #4, Update #1) not installed* | | | |

### ENC Decryption

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

| **Test Reference** | ExpiredPermits | **IHO Reference** | S-98 15-7.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *To test how the system performs when importing new ENCs where the previously installed permits have expired.* | | | |
| **Setup** | | | |
| *Only the PERMIT.XML and IHO.CRT files installed from the location below.*  *Test data used:*  *1) IHO.CRT*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set - 101GB0061021A & 101GB0061021B)*  *Test data location:*   * ***DecryptionA*** | | | |
| **Action** | | | |
| *Install the exchange set from the location above.*  *Note: The computer clock must be to 1st Jan 2023.* | | | |
| **Results** | | | |
| *The system must display the SSE 115 warning when importing the exchange set as follows:*  *“****SSE 115 – Subscription service has expired. Please contact your data supplier to renew the subscription licence****”, (list affected cells)*  *The system must display the following SSE 125 warning when viewing cells with expired permits:*  *“****SSE 125 – The ENC permit for this cell has expired. This cell may be out of date and MUST NOT be used for NAVIGATION****”.*  *(Permits for this test are set to expire on 31st Dec 2022.)*  *101GB0061021A (edition # 1 update # 1) should be installed.*  *101GB0061021B (edition # 1 update # 1) should be installed.* | | | |

#### 2.5.6 b) Permit expiry within 30 days

| **Test Reference** | ExpiringPermits | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *To test how the system performs when importing new ENCs where the installed permits expire within 30 days.* | | | |
| **Setup** | | | |
| *No ENC data installed but with PERMIT.XML and IHO.CRT installed for previous test (2.5.6a).*  *Test data used:*  *1) IHO.CRT (already installed)*  *2) PERMIT.XML (already installed)*  *3) S100\_ROOT (Exchange Set - 101GB0061021A & 101GB0061021B)*  *Test data location:*   * ***EncryptionB*** | | | |
| **Action** | | | |
| *Set the computer clock between 1st Dec 2022 and 31st Dec 2022.*  *Install the exchange set from the location above.* | | | |
| **Results** | | | |
| *The system must import the exchange set but display the appropriate SSE 120 warning message as follows (Permits in this test are set to expire on 31st Dec 2022):*  *“****SSE 120 – Subscription service will expire in less than 30 days. Please contact your data supplier to renew the subscription licence****.”*  *101GB0061021A (edition # 1 update # 1) should be installed (with “SSE 120”).*  *101GB0061021B (edition # 1 update # 1) should be installed (with “SSE 120”).* | | | |

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

| **Test Reference** | IncorrectCellKeys | **IHO Reference** | S-63 10.7.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| 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 121 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.* | | | |
| **Setup** | | | |
| *No pre-installed permits or ENCs. Certificate from previous tests, 2.5.6a and 2.5.6b.*  *Test data used:*  *1) IHO.CRT (Pre-installed)*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set - 101GB0058910B, 101GB0058910C, 101GB0058911A, 101GB0058911B, 101GB0058913A, 101GB0058932A & 101GB0058932B)*  *Test data location:*   * ***EncryptionC*** | | | |
| **Action** | | | |
| *Install the permits and load the exchange set from the location above.* | | | |

| **Results** |
| --- |
| *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 121 error message as follows:*  *“****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****.”*  *(Permits created from a different set of cell keys from those used to encrypt the test ENCs are as follows:-* ***101GB0058911A & 101GB0058911B****.)*  *The system must not halt at an error but continue on to the next ENC.*  *The system must report on successful/unsuccessful imports.*  *101GB0058910B (edition # 1 update # 0) should be installed (without error or warning).*  *101GB0058910C (edition # 2 update # 1) should be installed (without error or warning).*  *101GB0058911A (edition # 1 update # 1) should not be installed (with “SSE 121”).*  *101GB0058911B (edition # 1 update # 0) should not be installed (with “SSE 121”).*  *101GB0058913A (edition # 1 update # 0) should be installed (without error or warning).*  *101GB0058932A (edition # 1 update # 0) should be installed (without error or warning).*  *101GB0058932B (edition # 1 update # 0) should be installed (without error or warning).* |

#### 2.5.6 d) Validate ENC data integrity

| **Test Reference** | DataIntegrity | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 116 error message when the digital signature is incorrect or does not agree with the value contained in the corresponding CATALOG.XML record for the dataset. Also determine whether the system correctly reports the SSE 123 (sequential update error).* | | | |
| **Setup** | | | |
| *IHO.CRT from previous test (2.5.6c) but no pre-installed permits or ENCs.*  *Test data used:*  *1) IHO.CRT (Pre-installed)*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set – 101GB0040162A, 101GB0040162B, 101GB0040162C & 101GB0040164A)*  *Test data location:*   * ***EncryptionD*** | | | |
| **Action** | | | |
| *Install the ENC cell permits and exchange set from the location above.* | | | |
| **Results** | | | |
| *1) The system must validate the digital signature of each dataset 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: “****SSE 116 – Dataset <Dataset Name> Signature is incorrect. Contact your data supplier as ENC(s) may be corrupt or missing data****”.*  *2) The system must also report an error message for any validated ENC files that cannot be imported resulting from (1) as follows: “****SSE 123 – Non sequential update, previous update(s) missing try reloading from the base media. If the problem persists contact your data supplier”.***  *(101GB0040162B.000 – digital signature altered manually in CATALOG.XML file*  *101GB0040164A.003 – ENC data intentionally corrupted.)*  *101GB0040162A (edition # 9 update # 3) should be installed (without error or warning).*  *101GB0040162B (edition # 2 update # 1) should not be installed (with “SSE 116”followed by “SSE 123”).*  *101GB0040162C (edition # 1 update # 1) should be installed (without error or warning).*  *101GB0040164A (edition # 1 update # 5) should be installed with only two updates (edition # 1 update # 2) (with “SSE 116” followed by “SSE 123”).* | | | |

## Dataset Management

### Encrypted ENCs supplied by different Data Servers

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | DataManagement | **IHO Reference** |  |
| **Test description** | | | |
| *To test how the system performs when loading datasets from two different data servers who have their own unique SA signed certificates and encrypt using their own unique encryption keys.* | | | |
| **Setup** | | | |
| *IHO.CRT from previous test (2.5.6d) but no pre-installed permits or ENCs.*  ***a) Data Server 1 (DS1)***  *Test data used:*  *1) IHO.CRT [Pre-installed]*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set - 101GB00281600, 101GB00281800, 101GB00282000 & 101GB00283000)*  *Test data location:*   * ***DataManagementA1***   ***b) Data Server 2 (DS2)***  *Test data used:*  *4) IHO.CRT [Pre-installed]*  *5) PERMIT.XML*  *6) S100\_ROOT (Exchange Set - 101GB00283000, 101GB00283100, 101GB00283200 & 101GB00283300)*  *Test data location:*   * ***DataManagementA2*** | | | |
| **Action** | | | |
| *Install the permits and exchange set for Data Server 1 (DS1), then install the permits and exchange set for DS2 from locations above.* | | | |
| **Results** | | | |
| *Both exchange sets authenticate against the same installed SA certificate and contain the correct data server certificate. The DSs’ permits must be stored independently and decrypt the relevant exchange sets when loaded.*  *(In this test both Data Servers (DS) have ENC cell 101GB00283000 common to both. DS1 has 101GB00283000.000 – 002 and DS2 has 101GB00283000.000 – 004.*  *This test scenario considers how the ECDIS performs when a user obtains ENCs from two independent data providers.)*  *The system should be up to date as follows:*  *after installation of cells from DS1 (a):*  *101GB00281600 (edition # 1 update # 1)*  *101GB00281800 (edition # 1 update # 0)*  *101GB00282000 (edition # 1 update # 0)*  *101GB00283000 (edition # 1 update # 2)*  *after installation of cells from DS2 (b):*  *101GB00281600 (edition # 1 update # 1)*  *101GB00281800 (edition # 1 update # 0)*  *101GB00282000 (edition # 1 update # 0)*  *101GB00283000 (edition # 1 update # 4)*  *101GB00283100 (edition # 1 update # 3)*  *101GB00283200 (edition # 1 update # 0)*  *101GB00283300 (edition # 1 update # 0)* | | | |

### Loading additional dataset permits and cells from a different data provider

| **Test Reference** | AdditionalPermits | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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.* | | | |
| **Setup** | | | |
| *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 [Pre-installed]*  *2) PERMIT.XML*  *3) S100\_ROOT (Exchange Set - 101GB00255000, 101GB00270000, 101GB00281600, 101GB00281800, 101GB00282000 & 101GB00283000)*  *Test data location:*   * ***DataManagementB*** | | | |
| **Action** | | | |
| *Install the permit file from the location above followed by the exchange set at the same location.* | | | |
| **Results** | | | |
| *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 [101GB00281600 & 101GB00281800]. The expected Status within the ECDIS 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 SYSTEM DATABASE status listed below shows the expected results against 2.5.7a [DS2].*  *The permit file* ***only*** *contains new permits for cells 101GB00255000 & 101GB00270000. The exchange set contains the new cells and the cells from the previous test,* ***DataManagementA****] 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:*  *101GB00255000 (edition # 3 update # 3) new cell should be installed.*  *101GB00270000 (edition # 1 update # 1) new cell should be installed.*  *101GB00281600 (edition # 1 update # 2) updated.*  *101GB00281800 (edition # 1 update # 1) updated.*  *101GB00282000 (edition # 1 update # 0)*  *101GB00283000 (edition # 1 update # 4)*  *installation of cells from DS2 unchanged from 2.5.7a:*  *101GB00281600 (edition # 1 update # 2)*  *101GB00281800 (edition # 1 update # 1)*  *101GB00282000 (edition # 1 update # 0)*  *101GB00283000 (edition # 1 update # 4)*  *101GB00283100 (edition # 1 update # 3)*  *101GB00283200 (edition # 1 update # 0)*  *101GB00283300 (edition # 1 update # 0)* | | | |

### Test that the system operates correctly in a multiple data provider environment

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | ProviderChange | **IHO Reference** | S |
| **Test description** | | | |
| *Check that ENCs existing within both subscriptions do not cause corruption across service providers. Confirm that both providers information is managed independently without conflict.* | | | |
| **Setup** | | | |
| *IHO certificat installed from previous tests 2.5.7a & 2.5.7b. No pre-installed permits or ENCs.*  ***a) Data Server 1 (DS1)***  *Test data used:*  *IHO.CRT [Pre-installed] PERMIT.XML*  *S100\_ROOT (Exchange Set - 101GB00281600, 101GB00281800, 101GB00282000 & 101GB00283000)*  *Test data location:*   * ***DataManagementC1***   ***b) Data Server 2 (DS2)***  *Test data used:*  *IHO.CRT [Pre-installed] PERMIT.XML*  *S100\_ROOT (Exchange Set - 101GB00281600, 101GB00281800, 101GB00282000, 101GB00283000, 101GB00283100 & 101GB00283200)*  *Test data location:*   * ***DataManagementC2***   *2* | | | |
| **Action** | | | |
| 1. *Install the PERMIT.XML from location (a) above.* 2. *Load the Exchange Set (S100\_ROOT) from (a).* 3. *Load the Exchange Set (S100\_ROOT) from (b).* 4. *Install the PERMIT.XML from location (b)* 5. *Load the Exchange Set (S100\_ROOT) from (b). This exchange set contains new base datasets 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.* | | | |
| ***Results*** | | | |
| 1. *Permits at (a) shall install without error or warning.* 2. *Exchange Set (S100\_ROOT) at (a) shall load without error or warning.* 3. *Exchange Set (S100\_ROOT) at (b) must* ***not*** *load as there are no valid permits for data server 2 [DS2] installed in the ECDIS. A SSE 110 warning must be displayed stating “****SSE 110 – Permits not available for this data provider****”.* 4. *Permits at (b) shall install without error or warning.* 5. *Exchange Set (S100\_ROOT) 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 SYSTEM DATABASE must be the same as that described below*  *The system should be up to date as follows:*  *after installation of cells from DS1:*  *101GB00281600 (edition # 1 update # 1)*  *101GB00281800 (edition # 1 update # 0)*  *101GB00282000 (edition # 1 update # 0)*  *101GB00283000 (edition # 1 update # 2)*  *After installation of cells from DS2:*  *101GB00281600 (edition # 1 update # 2)*  *101GB00281800 (edition # 1 update # 1)*  *101GB00282000 (edition # 1 update # 0)*  *101GB00283000 (edition # 1 update # 4)*  *101GB00283100 (edition # 1 update # 3)*  *101GB00283200 (edition # 1 update # 0)* | | | |

## ECDIS management of data services.

### ECDIS management of cancelled cells

| **Test Reference** | CancelledDatasets | **IHO Reference** |  |
| --- | --- | --- | --- |
| ***Test description*** | | | |
| *To test how the system responds when a dataset is cancelled.* | | | |
| **Setup** | | | |
| *IHO certificate/public key installed from previous test 2.5.7c. No pre-installed permits or ENCs.*  *Test data used:*  *1) IHO.CRT [Pre-installed]*  *2) PERMIT.XML*  *3) S100\_ROOT (2 Exchange Sets - 101GB00251200 101GB00255000, 101GB00280200, 101GB00301620)*  *Test data location:*   * ***DataManagementCancelBase*** * ***DataManagementCancelUpdate*** | | | |
| **Action** | | | |
| *Install the ENC permits. Load the exchange set* ***DataManagementCancelBase*** *then update using the exchange set* ***DataManagementCancelUpdate***  *Attempt to view all imported cells in the ECDIS and determine their status.* | | | |
| **Results** | | | |
| *The system shall report any cell(s) that have been identified as cancelled at load time.*  *(Cell 101GB00280200 is cancelled.)*  *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 shall be observed:*   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 <name> has been cancelled and may not be up to date. Under no circumstances should it be used for primary navigation”.*  *Clarification: Systems that remove cells without consulting the user do not have to provide a warning message at load time.*  *The system should be up to date as follows: after installation of cells from 2.5.7d [Base]:*  *101GB00251200 (edition # 1 update # 4)*  *101GB00255000 (edition # 2 update # 2)*  *101GB00280200 (edition # 2 update # 0)*  *101GB00301620 (edition # 2 update # 1)*  *After installation of cells from 2.5.7d [Update]:*  *101GB00251200 (edition # 1 update # 8)*  *101GB00255000 (edition # 3 update # 0)*  *101GB00280200 cancelled cell (101GB00280200) should be reported by the system and either removed from the system database or displayed with the appropriate warning.*  *101GB00301620 (edition # 2 update # 4)* | | | |

### ECDIS Display of Replacement ENC Cells

| **Test Reference** | | | CancelReplace | | | **IHO Reference** | | |  | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test description** | | | | | | | | | | |
| *To test how the system responds when a cell is cancelled and replaced in a service..*  *101GB00380620 is cancelled and replaced by 101GB00383710 & 101GB00383720 [****Fileless Cancel]***  *101GB00380720 is cancelled and replaced by 101GB00389320* ***[by Cancellation Update]*** | | | | | | | | | | |
| **Setup** | | | | | | | | | | |
| *Status as per successful completion of test 2.5.7 d)*  *Test data used:*  *1) IHO.CRT [Pre-installed]*  *2) PERMIT.XML*  *3) S100\_ROOT (2 Exchange Sets - 101GB00380620, 101GB00380720, 101GB0040162A, 101GB0040162B & 101GB0040182A)*  *Test data location:*   * ***DataManagementCancelReplaceBase*** * ***DataManagementCancelReplaceUpdate*** | | | | | | | | | | |
| **Action** | | | | | | | | | | |
| *Install the ENC permits. Load the exchange set* ***DataManagementCancelReplaceBase*** *then update using the exchange set* ***DataManagementCancelReplaceUpdate***  *Attempt to view all imported cells in the ECDIS and determine their status.* | | | | | | | | | | |
| **Results** | | | | | | | | | | |
| *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). Replacement cells must be presented to the user as follows:*  *“Cell <name> has been cancelled and has been replaced by cell(s), <name1>; <name2>.”*  *.* | | | | | | | | | | |
|  | **Test** | **Cell Name** | **Exchange Set Content** | | **Expected SYSTEM DATABASE Content** | | | **Notes** | |  |
| **Edition N°** | **Update N°** | **Edition N°** | | **Update N°** |
| Base | 101GB00380620 | 2 | 0 | 2 | | 0 | All ENC cells installed without error or warning | |
| 101GB00380720 | 2 | 0 | 2 | | 0 |
| 101GB0040162A | 8 | 3 | 8 | | 3 |
| 101GB0040162B | 1 | 1 | 1 | | 1 |
| 101GB0040182A | 1 | 4 | 1 | | 4 |
| Update | 101GB00251200 | 1 | 8 | 1 | | 8 | Cells from the previous test (same status) | |
| 101GB00255000 | 3 | 0 | 3 | | 0 |
| 101GB00280200 | 2 | 1 | 2 | | 1 |
| 101GB00301620 | 2 | 4 | 2 | | 4 |
| 101GB00380620 | 2 | 1 | cancelled | |  | Messages should be displayed as for previous test plus message relating to replaced cells:  101GB00380620 is cancelled and replaced by 101GB00383710 & 101GB00383720  101GB00380720 is cancelled and replaced by 101GB00389320 | |
| 101GB00380720 | 2 | 1 | cancelled | |  |
| 101GB0040162A | 9 | 0 | 9 | | 0 |
| 101GB0040162B | 2 | 1 | 2 | | 1 |
| 101GB0040182A | 1 | 5 | 1 | | 5 |

### ECDIS management of ENC re-issued datasets

| **Test Reference** | | | Reissues | | | **IHO Reference** | | |  | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Test description** | | | | | | | | | | |
| *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)* | | | | | | | | | | |
| **Setup** | | | | | | | | | | |
| *IHO certificate/public key installed from previous test*  *No pre-installed permits or ENCs.*  *Test data used:*  *1) IHO.CRT [Pre-installed]*  *2) PERMIT.XML*  *3) Base [Exchange Set – 101GB00303040]*  *4) Update [Exchange Set – 101GB00303040 & 101GB0050162D]*  *Test data location:*   * ***DataManagementF1*** * ***DataManagementF2*** | | | | | | | | | | |
| **Action** | | | | | | | | | | |
| *Install the ENC permits. Load the exchange set* ***DataManagementF1*** *then update using the exchange set* ***DataManagementF2*** | | | | | | | | | | |
| **Results** | | | | | | | | | | |
| *The system must load the base exchange set and then the re-issued cells*  *(101GB00303040 & 101GB0050162D) 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 101GB00303040 [Ed 11 Up10] and 101GB0050162D [Ed 6 Up 6].*  *101GB0050162D is a re-issue with no previous history, i.e. new cell. 101GB00303040 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 SYSTEM DATABASE Content** | | | **Comments** | |  |
| **Edition N°** | **Update N°** | **Edition N°** | | **Update N°** |
| 2.5.7f  [Base] | 101GB00303040 | 11 | 9 | 11 | | 9 | Edition 11 of 101GB00303040 installed with updates 1-9 | |
| 2.5.7f [Update] | 101GB00303040 | 11 | 10 | 11 | | 10 | 101GB0050162D is straight re-issue with no previous history, i.e. new cell. 101GB00303040 is a re-issued cell with history, i.e. base cell already installed in the ECDIS. | |
| 101GB0050162D | 6 | 6 | 6 | | 6 |
|  | | | | | | | | | | |

### ECDIS management of Exchange Sets

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | ECDISManagement | **IHO Reference** |  |
| **Test description** | | | |
| *To confirm the user is informed when there is incompatibility between installed ENCs and an applied update exchange set.* | | | |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Setup** | | | | | | | | |
| *No permits or ENCs installed*  *Test data used:*  *1) IHO.CRT [Pre-installed from previous tests]*  *2) PERMIT.XML*  *3) Exchange Sets DataManagementG1, DataManagementG2, DataManagementG3*  *4) Update exchange set* ***DataManagementG4***  *Test data location:*   * ***DataManagementG1, DataManagementG2, DataManagementG3, DataManagementG4***   *7g* | | | | | | | | |
| **Action** | | | | | | | | |
| *Install permits and load the exchange sets listed.* | | | | | | | | |
| **Results** | | | | | | | | |
| ***DataManagementG1, DataManagementG2 and DataManagementG4*** *should load without error. However when loading* ***DataManagementG4*** *the system should install some ENC updates without error but the system must return an appropriate error message that the exchange set is incompatible with existing installed data.*  *Note: Systems must appropriately manage the import of data from different Data Servers and store*  *information of installed data. When loading new data systems should check that the S-128 revision information is compatible with that which is already installed and report any inconsistencies.*  *Users should only be prompted to install licenced datasets*  *[The system will also display continuity errors as a result of non sequential loading when attempting to load and install the updates for 101GB0040162A, 101GB0040184A, 101GB0040186D & 101GB00101GB0040202A.]*  ***DataManagementG4*** *used in this test is dated 20 July 2016 and pre dates* ***DataManagementG3*** | | | | | | | | |
|  | **Test** | **Cell Name** | **Exchange Set Content** | | **Expected ECDIS Content** | | **Comments** |  |
| **Edition N°** | **Update N°** | **Edition N°** | **Update N°** |
| ***DataManagementG1*** | 101GB00302840 | 22 | 16 | 22 | 16 |  |
| 101GB00303220 | 4 | 6 | 4 | 6 |  |
| 101GB00303420 | 3 | 9 | 3 | 9 |  |
| 101GB00303460 | 11 | 0 | 11 | 0 |  |
| ***DataManagementG2*** | 101GB0040162A | 9 | 0 | 9 | 0 | Cells installed for this exchange set but with the incompatibility warning |
| 101GB0040184A | 2 | 3 | 2 | 3 |
| 101GB0040186D | 1 | 1 | 1 | 1 |
| 101GB0040202A | 4 | 0 | 4 | 0 |
| ***DataManagementG3*** | 101GB0050162B | 10 | 7 | 10 | 7 |  |
| 101GB0050162C | 9 | 5 | 9 | 5 |  |
| 101GB0050162D | 5 | 2 | 5 | 2 |  |
| 101GB0050182A | 2 | 1 | 2 | 1 |  |
| ***DataManagementG4*** | 101GB00302840 | 23 | 4 | 23 | 4 | NE installed from WK37/07 ***DataManagementG4*** |
| 101GB00303220 | 4 | 7 | 4 | 7 |  |
| 101GB00303420 | 3 | 12 | 3 | 12 |  |
| 101GB00303460 | 11 | 1 | 11 | 1 |  |
| 101GB0040162A | 9 | 5 | 9 | 0 | Cells not updated due to incompatible S-128 |
| 101GB0040184A | 3 | 5 | 2 | 3 |
| 101GB0040186D | 1 | 7 | 1 | 1 | Cell not updated due to non-sequential update |
| 101GB0040202A | 5 | 2 | 4 | 0 | Cell not updated due to incompatible S-128 |
| 101GB0050162B | 11 | 0 | 11 | 0 | NE installed from ***DataManagementG4*** |
| 101GB0050162C |  |  |  |  | No updates for this cell |
| 101GB0050162D |  |  |  |  | No updates for this cell |
| 101GB0050182A | 2 | 2 | 2 | 2 |  |
|  | | | | | | | | |

### Update of Supplementary Files

| **Test Reference** | SupplementaryFiles | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies the ECDIS can update files which support datasets* | | | |
| **Setup** | | | |
| *No pre-installed permits or ENCs.*  *Test data used:*  *1) IHO.CRT [Pre-installed]*  *2) PERMIT.XML*  *3) Base* ***DataManagementSF1***  *4) Update****DataManagementSF2***  *Test data location:*   * ***DataManagementSF1*** * ***DataManagementSF2*** | | | |
| **Action** | | | |
| *Install permits and load the exchange sets listed* | | | |
| **Results** | | | |
| *1. Select the note encoded using TXTDSC (text description) (Caution area at 32°34.74’S 061°08.92’E);*  *2. The content of the note should be as follows:*  ***[Updated note content]***  *This note content is updated via a direct replacement in the Update exchange set, without an explicit update to the ENC dataset.* | | | |

*[****More test scenarios for management of supporting resource are likely in this section]***

## ECDIS Update Status Report

### ENC Update Status Report

| **Test Reference** | UpdateStatusReportENC | **IHO Reference** | S-98 Annex C, Appendix C-3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Confirm that the ECDIS is capable of executing the ENC Update status report as documented in S-98 Annex C, Appendix C-3* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***  *Set system time to 10th February 2019* | | | |
| **Action** | | | |
| *Ensure ECDIS has data installed. Locate and execute the Update Status Report and inspect output. If ECDIS also supports route filtering of the Status Report then construct a route intersecting with the cells loaded and run the Status Report with the route filtered option.* | | | |
| **Results** | | | |
| *Verify that the update Status Report can be filtered to display only Electronic Navigational Charts (S-101)*  *The ECDIS should report the status of all ENCs loaded in accordance with S-98 XXX-XXX. It should use the issue date of the latest delivered S-128 dataset as the reference date and should display its reference date as* 9th February *2019 .*  *The datasets should show in the report as “up to date”. Then reset the system time to a* 1st April 2019 *–rerun the report, all the datasets should show as “not up to date”.* | | | |

### ENP Update Status Report

| **Test Reference** | UpdateStatusReportENP | **IHO Reference** | S-98 Annex C, Appendix C-3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Confirm that the ECDIS is capable of executing the ENP Update status report as documented in S-98 Annex C, Appendix C-3* | | | |
| **Setup** | | | |
| *As for UpdateStatusReportENC* | | | |
| **Action** | | | |
| *Ensure ECDIS has data installed. Locate and execute the Update Status Report and inspect output. Select ENP Update Status report.*  *If ECDIS also supports route filtering of the Status Report then construct a route intersecting with the cells loaded and run the Status Report with the route filtered option.* | | | |
| **Results** | | | |
| *Verify that the update Status Report can be filtered to display only Electronic Navigational Publications with the following products shown*   * *S-124* * *S-129*   *The ECDIS should report the status of the ENP datasets loaded in accordance with S-98 Annex C, Appendix C-3. It should use the issue date of the latest delivered S-128 dataset as the reference date and should display its reference date as* 9th February *2019 .*  *The datasets should show in the report as “up to date”. Then reset the system time to a* 1st April 2019 *–rerun the report, all the datasets should show as “not up to date”.* | | | |

### Missing Revision information.

| **Test Reference** | MissingRevisionInformation | **IHO Reference** | S-98 Annex C, Appendix C-3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks tha* | | | |
| **Setup** | | | |
| *Load the exchange set* ***MissingRevisionInformation***  *This exchange set contains no revision information..* | | | |
| **Action** | | | |
| *Ensure ECDIS has data installed. Locate and execute the Update Status Report and inspect output.* | | | |
| **Results** | | | |
| *Verify that all cells are marked as “Unknown” in accordance with S-98 Appendix C-3* | | | |

### Multiple Revision Information.

| **Test Reference** | MultipleRevisionInformation | **IHO Reference** | S-98 Annex C, Appendix C-3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test checks that the ECDIS is able to merge multiple sources of revision information (encoded in the S-128 datasets) together.* | | | |
| **Setup** | | | |
| *Load the following exchange sets*   * ***MultipleRevisionInformation1*** * ***MultipleRevisionInformation2***   *These exchange sets contain multiple S-128 revision information. The ECDIS must merge the revision information together to give the user a harmonised view of their data holdings. A single S-124 dataset is common to both services and the revision information shows it has been updated but is not contained in the delivered exchange set.* | | | |
| **Action** | | | |
| *Ensure ECDIS has data installed. Locate and execute the Update Status Report and inspect output.* | | | |
| **Results** | | | |
| *Verify that all S-101 datasets are marked as “up to date” in the ENC up to date status report. The ENP Up to date Status report should show S-124 dataset 124AA00X01NE.GML marked as “not up to date”.* | | | |

# Chart Display

## Display of ENC data

### Display Base category

| **Test Reference** | DisplayBase | **IHO Reference** | S-98 C-9.5.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of the test is to verify by observation that ECDIS correctly displays all S-101 ENC features included in the IMO Display Base category. The test is performed by loading to ECDIS a test S-101 dataset and checking display against graphical plots. The test ENC dataset 10100AA\_DBASE.000 contains all ENC features belonging to Display Base according to the S-101 Portrayal Catalogue.* | | | |
| **Setup** | | | |
| *Load* the *exchange set* ***DisplayBase*** *(containing dataset 10100AA\_DBASE.000*) *with the following settings:*   * *Select Display Category Base* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Plain Boundaries to On* | | | |
| **Action** | | | |
| *Check the symbols shown in the ECDIS against the graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should be shown as in the picture below (scale 1:60 000).* | | | |
|  | | | |

### Standard Display category

| **Test Reference** | DisplayStandard | **IHO Reference** | S-98 C-9.5.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of the test is to verify by observation that ECDIS correctly displays all S-101 ENC features included in the IMO Standard Display category. The test is performed by loading to ECDIS a test S-101 dataset and checking the display against graphical plots.*  *The test ENC dataset 10100AA\_STNDR.000 contains depth and land areas from Display Base plus all S-101 ENC features belonging to Standard Display according to the S-101 Portrayal Catalogue. The features belonging to Standard Display are to be shown if Standard Display is selected in ECDIS HMI and should disappear in the Display Base mode.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***DisplayStandard*** *(10100AA\_STNDR.000) with the following settings:*   * *Select Display Category Standard Display* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Plain Boundaries to Off* * *Select Simplified Symbols to On* * *Turn Chart Text Off* | | | |
| **Action** | | | |
| *Switch on Standard Display. Check ENC symbols shown in ECDIS against graphical plot.* | | | |
| **Results** | | | |
| *Confirm that depth and land areas from Display Base are shown*  *The ENC in the ECDIS should be shown as in the picture below (scale 1:70 000).* | | | |
|  | | | |

| **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.* |
|  |
|  |
|  |
| A part of above chart at scale 1:20 000 |

| **Action** |
| --- |
| *Switch on Display Base. Check ENC symbols shown in ECDIS against graphical plot.* |
| **Results** |
| *The ENC in the ECDIS should be shown as in the picture below.* |
|  |

### Other Display category

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | DisplayOther | **IHO Reference** | S-98 C-9.5.4 |
| **Test description** | | | |
| *The purpose of the test is to verify by observation that ECDIS correctly displays all ENC features included in the IMO Other Display category. The test is performed by loading to ECDIS a test S-101 dataset and checking display against graphical plots.*  *The test ENC dataset 10100AA\_OTHER.000 contains depth and land areas from Display Base plus all ENC features belonging to Other Display according to the S-101 portrayal catalogue..*  *The features belonging to Other Display are to be shown if Other (or All) display is selected in ECDIS HMI and should disappear in the Display Base or Standard Display Categories..* | | | |
| **Setup** | | | |
| *Load the exchange set* ***DisplayOther*** *(dataset 10100AA\_OTHER.000) with the following settings:*   * *Select Display Category Other* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Plain Boundaries Off* * *Turn on Contour labels* | | | |
| **Action** | | | |
| *Switch on Other Display. Check every ENC symbol shown in ECDIS against graphical plot.* | | | |
| **Results** | | | |
| *The features are shown as presented in the screen plot below (scale 1:60 000)* | | | |
|  | | | |
|  | | | |
|  | | | |
| A part of above chart at scale 1:20 000 | | | |
|  | | | |
|  | | | |
| Another part of above chart at scale 1:20 000 | | | |

|  |
| --- |
| ***Action*** |
| *Switch on Display Base. Check ENC display in ECDIS against graphical plot* |
| **Results** |
| *The ENC in the ECDIS should be shown as in the picture below.* |
|  |

### ECDIS Viewing groups names. Standard Display

| **Test Reference** | ViewingGroupsStd | **IHO Reference** | S-98 C-9.5.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of the test is to verify that ECDIS is able to change S-101 display settings using 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 the content of the S-101 portrayal catalogue.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***DisplayStandard*** *with the following settings:*   * *Select Display Category Standard* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Plain Boundaries Off* * *Select Simplified Symbols Off;.* | | | |
| **Action** | | | |
| *Switch on Standard Display. Check that ECDIS HMI contains standardized controls that can switch on and off certain features from the chart* | | | |
| **Results** | | | |
| *Confirm that the following controls are available at ECDIS HMI*  *Drying line*  *Buoys, beacons, aids to navigation*  *Buoys, beacons, structures*  *Lights*  *Boundaries and limits*  *Prohibited and restricted areas*  *Chart scale boundaries*  *Cautionary notes*  *Ships’ routeing systems and ferry routes*  *Archipelagic sea lanes*  *Miscellaneous* | | | |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Drying line****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below (scale 1:70 000)* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Buoys, beacons, aids to navigation****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Boundaries and limits****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Prohibited and restricted areas****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Cautionary notes****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| ***Results*** |
| *The features are shown as presented in the screen plot below* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Ships’ routeing systems and ferry routes****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Archipelagic sea lanes****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below.* |
|  |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Miscellaneous****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below.* |
|  |

| **Action** |
| --- |
| *Load all datasets from the exchange set* ***PowerUp***  *Centre the display on position 32°28.500’ S 60°59.000’ E and then zoom in to a scale of 1:20,000*  *Switch off all controls and switch on only the “****Chart scale boundaries****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.1.4 picture 9.PNG **tbd** |

**ECDIS Display of features not included in IMO Standard Layers.**

| **Test Reference** | UnclassifiedFeatures | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of the test is to verify that the ECDIS is able to portray all features which are not assigned into IMO categories of Base, Standard or Other. An exhaustive collection of these features is contained in the dataset 101AA00UNCLASS.000* | | | |
| **Setup** | | | |
| *Load the exchange set* ***DisplayUnclassified*** *(dataset 101AA00UNCLASS.000) with the following settings:*   * *Select Display Category Other* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Symbolized Boundaries* | | | |
| **Action** | | | |
| *Switch on Other Display.* | | | |
| **Results** | | | |
| *The features are shown as presented in the screen plot below:*  *[****TBD]****.* | | | |

### ECDIS Viewing Layers. Other Display

| **Test Reference** | ViewingGroupsOther | **IHO Reference** | S-98 C-7.2.10 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of the test is to verify that ECDIS is able to change ENC display settings using 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 the S-101 Portrayal Catalogue.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***DisplayOther*** *(dataset 10100AA\_OTHER.000)with the following settings:*   * *Select Display Category Other* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Symbolized Boundaries* * *Select Simplified Symbols = false* | | | |
| **Action** | | | |
| *Switch on Other Display Check that ECDIS HMI contains standardized controls that can switch on and off certain features from the chart* | | | |
| **Results** | | | |
| *Confirm that the following controls are available at ECDIS HMI under the Other Display section*  *Spot soundings*  *Submarine cables and pipelines*  *All isolated dangers*  *Magnetic variation*  *Depth contours*  *Seabed*  *Tidal*  *Miscellaneous (Other)* | | | |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Spot soundings****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below (scale 1:60 000)* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Submarine cables and pipelines****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****All isolated danger****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Magnetic variation****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Depth Contours****” control.*  *If provided, select optional Contour label.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Seabed****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Tidal****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| 3 **tbd** |

| **Action** |
| --- |
| *Switch off all controls and switch on only the “****Miscellaneous****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| **tbd** |

### Text Grouping

| **Test Reference** | TextGrouping | **IHO Reference** | S-98 C-11.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of the test is to verify that ECDIS is able to change text display settings and display text in accordance with the S-101 portrayal catalogue. Minimum two text display categories should be available in the ECDIS HMI* | | | |
| **Setup** | | | |
| *Load the exchange sets*   * ***DisplayBase*** * ***DisplayStandard*** * ***DisplayOther***     *with the following settings:*   * *Select Display Category Standard* * *Set the Safety Contour value to 10 m* * *Set the Safety Depth value to 10 m* * *Select Symbolized Boundaries* * *Select Simplified Symbols = false* | | | |
| **Action** | | | |
| *Switch on Other Display. Check that ECDIS HMI contains standardized controls that can switch on and off certain features from the chart* | | | |
| **Results** | | | |
| *Confirm that the following controls are available at ECDIS HMI under the Other Display section:*   * *Important Text* * *Other Text*   *More text display controls may be available, however all the additional controls should be subdivisions of one of the above controls* | | | |

| **Action** |
| --- |
| *View dataset 10100AA\_DBASE.000*  *Select Display Category Display Base*  *Switch off all text group controls and switch on only the “****Important Text****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below (scale 1:60 000)* |
|  |

| **Action** |
| --- |
| *View dataset 10100AA\_STNDR.000*  *Select Display Category Standard*  *Switch off all text group controls and switch on only the “****Important Text****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below (scale 1:70 000)* |
|  |

| **Action** |
| --- |
| *View dataset 10100AA\_STNDR.000*  *Select Display Category Other*  *Switch off all text group controls and switch on only the “****Other Text****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below (scale 1:60 000)* |
|  |

| **Action** |
| --- |
| *View dataset 10100AA\_OTHER.000*  *Select Display Category Other*  *Switch off all text group controls and switch on only the “****Other Text****” control.*  *Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| **tbd** |

| **Action** |
| --- |
| *View dataset 10100AA\_OTHER.000*  *Select Display Category Other*  *Switch off all text group controls and switch on only the “****Names****” control located under the “****Other Text****” control. Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| **tbd** |

| **Action** |
| --- |
| *View dataset 10100AA\_STNDR.000*  *Switch off all text group controls and switch on only the “****Light description****” control located under the “****Other Text****” control. Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
|  |
|  |
| A part of above dataset at scale 1:20 000 |

| **Action** |
| --- |
| *View dataset 10100AA\_OTHER.000*  *Switch off all text group controls and switch on only the “****All other****” control located under the “****Other Text****” control. Verify that the features are displayed correctly as presented in the plot.* |
| **Results** |
| *The features are shown as presented in the screen plot below* |
| **tbd** |

## Invalid features

### Display of Unrecognised features

| **Test Reference** | InvalidFeaturesA | **IHO Reference** | S-98 C-12.6.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with unrecognised feature class or display of features for which available or not available attribute(s) causes special presentation.* | | | |
| **Setup** | | | |
| *Load the the exchange set* ***InvalidFeatures*** *(dataset 101AA00INVOB.000)*   * *Set the Safety Contour value to 0 m* * *Select Display Category Other* * *Select Colour Palette DAY* * *Select Symbolized Boundaries* * *Select Simplified Symbols = false* | | | |
| **Action** | | | |
| *View dataset at viewing scale 1:50 000* | | | |
| **Results** | | | |
| *Confirm that the symbol SY(QUESMRK1) is displayed as below for following cases:*  *a) unknown feature class, point geometry*  *b) unknown feature class, line geometry*  *c) unknown feature class, area geometry*  *d) known feature class for which missing attribute causes presentation of additional symbol SY(QUESMRK1)* | | | |
| 3  **tbd** | | | |

| **Test Reference** | InvalidFeaturesB | **IHO Reference** | S-98 C-12.6.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with unrecognised feature class or display of features for which available or not available attribute(s) causes special presentation.* | | | |
| **Setup** | | | |
| *Load the following exchange sets*   * ***InvalidFeatures*** *(10100AA\_X01NE.000)* * ***PowerUp (****10100AA\_X0000.000)*   *Set the Safety Contour value to 10 m*  *Select Display Category Standard*  *Select Colour Palette DAY*  *Select Symbolized Boundaries*  *Select Simplified Symbols = false* | | | |
| **Action** | | | |
| *View dataset at scale 1:10 000* | | | |
| **Results** | | | |
| *Confirm that all features display as shown in the following screenshot* | | | |
| **tbd** | | | |

### Invalid Features Pick Report Display

| **Test Reference** | InvalidFeaturesPickA | **IHO Reference** | S-98 C-12.6.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of pick report information for features with unknown feature class.* | | | |
| **Setup** | | | |
| *As for test 3.2.1 a)* | | | |
| **Action** | | | |
| *1. Select the following features:*  *1) 32°36.900’S 61°20.900’E*  *2) 32°36.900’S 61°21.500’E*  *3) 32°36.900’S 61°22.000’E*  *2. Remove pick report information from display.* | | | |
| **Results** | | | |
| *1a. Pick report associated with chart feature is displayed only when feature is selected.*  *1b. First example has 2 attributes (Orientation is 45.0 deg; Information is Wreck).*  *1c. Second example has 1 attribute (Information is danger line).*  *1d. Third example has 1 attribute (Information is See regulation “Jussland fishing act” paragraph 42).*  *2. Pick report associated with chart feature is removed from the display.* | | | |

| **Test Reference** | InvalidFeaturesPickB | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of pick report information for features with unknown feature class.* | | | |
| **Setup** | | | |
| As for test 3.2.1 b) | | | |
| **Action** | | | |
| *1. Select the following feature 32°30.924’S, 60°58.719’E*  *2. Remove pick report information from display.* | | | |
| **Results** | | | |
| *1a. Pick report associated with chart feature is displayed only when feature is selected.*  *1b. This example has no attributes. Only unknown feature and its position is available in the pick report.*  *2. Pick report associated with chart feature is removed from the display.* | | | |

| **Test Reference** | InvalidFeaturesPickC | **IHO Reference** | S-98 C-12.6.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of pick report information for known features which have unknown attribute(s).* | | | |
| **Setup** | | | |
| *As for test 3.2.1 a)* | | | |
| **Action** | | | |
| *1. Select the following features:*  *- 39°29.000’N, 104°44.000’W*  *- 39°29.000’N, 104°43.000’W*  *- 39°28.000’N, 104°41.000’W*  *2. Remove pick report information from display.* | | | |
| **Results** | | | |
| *1a. Pick report associated with chart feature is displayed only when feature 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 feature is removed from the display.* | | | |

| **Test Reference** | InvalidFeaturesPickD  3.2.2 d) | **IHO Reference** | S-98 C-12.6.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of pick report information for known features for which available or not available attribute(s) cause special presentation.* | | | |
| **Setup** | | | |
| *As for test 3.2.1 b)* | | | |
| **Action** | | | |
| *1. Select the following features:*  *- 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.* | | | |
| **Results** | | | |
| *1a. Pick report associated with chart feature is displayed only when feature 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 feature is removed from the display.* | | | |

## Independent Mariner Selections

### Portrayal of simplified point symbols

| **Test Reference** | SimplifiedSymbolsFalse | **IHO Reference** | S-98 C-7.2.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with simplified symbols turned off.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Settings (****10100AA\_X0001.000) with the following settings :*   * *Select Display Category Other* * *Set the Safety Contour to 10 m* * *Set the Safety Depth to 10 m* * *Select Symbolized Boundaries* * *Select Simplified Points = false* | | | |
| **Action** | | | |
| *View the features at position 32° 37.280’ S 61° 21 .000’ E and then zoom in to a scale of 1:10,000.* | | | |
| **Results** | | | |
| *Confirm that the features display as follows:* | | | |
|  | | | |

| **Test Reference** | SimplifiedSymbolsTrue | **IHO Reference** | S-98 C-7.2.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with simplified symbols* | | | |
| **Setup** | | | |
| *As for test 3.3.1 a)*  *Select Simplified Symbols = true* | | | |
| **Action** | | | |
| *View the features at position 32° 37.280’ S 61° 21 .000’ E and then zoom in to a scale of 1:10,000.* | | | |
| **Results** | | | |
| *Confirm that the features display as follows:* | | | |
|  | | | |

### Symbolized and plain boundaries

| **Test Reference** | PlainBoundaries | **IHO Reference** | S-98 C-7.2.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with plain boundaries.* | | | |
| **Setup** | | | |
| *Load the dataset 10100AA\_X0001.000 from the exchange set* ***Settings*** *with the following settings.*  *Select Display Category Other*  *Set the Safety Contour to 10 m*  *Set the Safety Depth to 10 m*  *Select Plain Boundaries*  *Select Simplified Points = false*  *Select all Text groups* | | | |
| **Action** | | | |
| *Zoom into 1:5 000 and View the features 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* | | | |
| **Results** | | | |
| *Confirm that the features 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:* |
|  |

| **Test Reference** | Symbolisedboundaries | **IHO Reference** | S-98 C-7.2.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with symbolized boundaries.* | | | |
| **Setup** | | | |
| *As for test 3.3.2 a) and Select Symbolized Boundaries* | | | |
| **Action** | | | |
| *Zoom into 1:5 000 and View the features 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* | | | |

| **Results** |
| --- |
| *Confirm that the features 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:* |
| --- |
|  |

### Date Dependent Display and Functionality

#### 3.3.3.1 DateStart/DateEnd on buoys

| **Test Reference** | DateDependentFeatures1 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, current date. (DateStart and DateEnd)* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Settings*** *with the following settings:*  *Select Display Category Other*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Safety Contour value to 10 m*  *Safety Depth value to 10 m*  *Select Highlight date dependent*  *Ensure that the viewing date is set to the current date and time (any date after 20231201).* | | | |
| **Action** | | | |
| *Centre the display on position 32°36.450’S 61°20.900’E and then zoom in to a scale of 1:20,000.* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below:* | | | |
|  | | | |

| **Test Reference** | DateDependentFeatures2 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, set date. (DateStart and DateEnd)* | | | |
| **Setup** | | | |
| *As for test* DateDependentFeatures1  *Select Highlight date dependent*  *Ensure that the viewing date is set to* ***18.02.2022*** | | | |
| **Action** | | | |
| As for test DateDependentFeatures1 | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below and that a permanent indication is shown as specified in* ***S-98 XXX-XXX****:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98* ***XXX-XXX****.* | | | |

| **Test Reference** | DateDependentFeatures3  3.3.3.1 c) | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, date range. (DateStart and DateEnd)* | | | |
| **Setup** | | | |
| *As for test* DateDependentFeatures2  *Set the viewing date range as follows:*  *Start viewing date= 01.02.2022*  *End viewing date= 01.12.2022* | | | |
| **Action** | | | |
| *As for test* DateDependentFeatures1 | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below and that a permanent indication is shown as specified in S-98 XXX-XXX:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98 XXX-XXX.* | | | |

| **Test Reference** | DateDependentFeatures4 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Route checking of date dependent features, date range. (DateStart and DateEnd)* | | | |
| **Setup** | | | |
| *As for test* DateDependentFeatures3  *Select scale 1:10 000* | | | |
| **Action** | | | |
| *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.* | | | |
| **Results** | | | |
| *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-98 XXX-XXX.* | | | |

#### 3.3.3.2 Periodic Date Range on buoys

| **Test Reference** | PeriodicDateRange1 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, current date. (Periodic Date Range)* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Settings*** *with the following settings:*  *Select Display Category Other*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Safety Contour value to 10 m*  *Safety Depth value to 10 m*  *Select Highlight date dependent*  *Ensure that the viewing date is set to the 01.11.2023* | | | |
| **Action** | | | |
| *Centre the display on position 32°36.450’S 61°21.900’E and then zoom in to a scale of 1:20,000.* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the diagram below:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98 XXX-XXXX.* | | | |

| **Test Reference** | PeriodicDateRange2 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, set date. (Periodic Date Range)* | | | |
| **Setup** | | | |
| *As for test* PeriodicDateRange1  *Select Highlight date dependent*  *Ensure that viewing date is set to 18.03.2013* | | | |
| **Action** | | | |
| *As for test* PeriodicDateRange1 | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below and that a permanent indication is shown as specified in S-98 XXX-XXX:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98 XXX-XXX.* | | | |

| **Test Reference** | PeriodicDateRange3 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, date range. (Periodic Date Range)* | | | |
| **Setup** | | | |
| *As for test* PeriodicDateRange2  *Set the viewing date range as follows:*  *Start viewing date = 01.02.2022*  *End viewing date = 14.11.2022* | | | |
| **Action** | | | |
| *As for test* PeriodicDateRange1 | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below and that a permanent indication is shown as specified in S-98 XXX-XXX:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98 XXX-XXX.* | | | |

| **Test Reference** | PeriodicDateRange4 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Route checking of date dependent features, date range. (Periodic Date Range)* | | | |
| **Setup** | | | |
| *As for* PeriodicDateRange3  *Select scale 1:10 000* | | | |
| **Action** | | | |
| *As for test* PeriodicDateRange1  *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.* | | | |
| **Results** | | | |
| *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-98 XXX-XXX.* | | | |

#### 3.3.3.3 Fixed Date Range on Traffic Separation Schemes (TSS)

| **Test Reference** | FixedDateRange1 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, current date. Fixed Date Range* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Settings*** *with the following settings.*  *Select Display Category Other*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Safety Contour value to 10 m*  *Safety Depth value to 10 m*  *Select Highlight date dependent*  *Ensure that the viewing date is set to the current date and time (any date after 20231201).* | | | |
| **Action** | | | |
| *Centre the display on position 32°35.300’S 61°21.380’E and then zoom in to a scale of 1:20,000.* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below:* | | | |
|  | | | |

| **Test Reference** | FixedDateRange2 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, set date. (Fixed Date Range)* | | | |
| **Setup** | | | |
| *As for test* FixedDateRange1  *Select Highlight date dependent*  *Ensure that viewing date is set to 30.11.2023* | | | |
| **Action** | | | |
| As for test 3.3.3.3 a) | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below and that a permanent indication is shown as specified in S-98 XXX-XXX:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98 XXX-XXX.* | | | |

| **Test Reference** | FixedDateRange3 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of date dependent features, date range. (Fixed Date Range)* | | | |
| **Setup** | | | |
| *As for test* FixedDateRange2  *Set the viewing date range as follows:*  *Start viewing date = 01.11.2023*  *End viewing date = 01.12.2023* | | | |
| **Action** | | | |
| *As for test* FixedDateRange1 | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below and that a permanent indication is shown as specified in S-98 XXX-XXX:* | | | |
|  | | | |
| *Note: A permanent indication that the date has been adjusted should be shown as specified in S-98 XXX-XXX.* | | | |

| **Test Reference** | FixedDateRange4 | **IHO Reference** | S-98 C-7.2.16 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Route checking of date dependent features, date range. (Periodic Date Range)* | | | |
| **Setup** | | | |
| *As for test* FixedDateRange3 | | | |
| **Action** | | | |
| *As for test* FixedDateRange1  *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.* | | | |
| **Results** | | | |
| *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-98 XXX-XXX.* | | | |

### Safety contour

| **Test Reference** | SafetyContourDisplay1 | **IHO Reference** | S-98 C-7.2.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of default safety contour* | | | |
| **Setup** | | | |
| *Switch on EUT without setting Safety Contour value (factory default setting).*  *Load all datasets from the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Display dataset 10100AA\_X0000.000 at compilation scale (1:52 000), select Display Base.* | | | |
| **Results** | | | |
| *The Safety Contour value must be set to 30 m and the 30 m contour in chart*  *10100AA\_X0000.000 must be displayed as Safety Contour (thick grey line as per portrayal catalogue).* | | | |
| *3* ***tbd*** | | | |

| **Test Reference** | SafetyContourDisplay2 | **IHO Reference** | S-98 C-7.2.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of safety contour* | | | |
| **Setup** | | | |
| *As for test* SafetyContourDisplay1 | | | |
| **Action** | | | |
| *1. Select a Safety Contour value of 15 m. None of the ENCs (with the exception of*  *101AA00X01SE.000) have a 15 m contour.*  *2. Other values should also be investigated. The large scale charts (i.e. 101AA00\*\*\*\*\*.000) contain 0, 2, 5, 10, 20m contours, and the contour intervals on the smaller scale chart (i.e. 10100AA\_X0000.000 are 0, 2, 5, 10, 20, 30, 50, 100, 200, 300, and 400m.* | | | |
| **Results** | | | |
| *1. In dataset 101AA00X01SE.000 the 15 m contour and in the other datasets the 20m contour must be highlighted as the safety contour.*  *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.* | | | |
| 3 ***tbd*** | | | |

| **Test Reference** | SafetyContourDisplay3 | **IHO Reference** | S-98 C-7.2.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of Safety Contour and isolated dangers within the safe water enclosed by the ship’s safety contour.* | | | |
| **Setup** | | | |
| *As for test* SafetyContourDisplay1 | | | |
| **Action** | | | |
| *Select Shallow water dangers for display*  *1. Set the Safety Contour value to 5 m*  *2. Set the Safety Contour value to 10 m.* | | | |
| **Results** | | | |
| *The Safety Contour must be emphasised and the isolated dangers within the unsafe water enclosed by the ship’s Safety Contour must be displayed as shown in the image below*  *1. Safety Contour set as 5 m* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.4c picture 1.PNG ***tbd*** | | | |

| *2. Safety Contour set as 10 m* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.4c picture 2.PNG ***tbd*** |

| **Test Reference** | SafetyContourDisplay4 | **IHO Reference** | S-98 C-7.2.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| ***If the equipment under test supports four colour depth shades the following test shall also be performed.***  *Display of Safety Contour and isolated dangers within the safe water enclosed by the ship’s Safety Contour using four shades for depth areas.* | | | |
| **Setup** | | | |
| *As for test* SafetyContourDisplay1 | | | |
| **Action** | | | |
| *Select Shallow water dangers for display*  *Select Four shades*  *1. Set the Safety Contour value to 5 m (shallow contour 2 m, deep contour 10 m).*  *2. Set the Safety Contour value to 10 m (shallow contour 5 m, deep contour 20 m).* | | | |
| **Results** | | | |
| *The Safety Contour must be emphasised and the isolated dangers within the unsafe water enclosed by the ship’s Safety Contour must be displayed as shown in the image below*  *1. Safety Contour set as 5 m* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.4d picture 1.PNG  ***tbd*** | | | |

| *2. Safety Contour set as 10 m* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.4d picture 2.PNG ***tbd*** |

## Display of User Selected Safety Contour.

### Setting User Selected Safety Contour.

| **Test Reference** | UserSelectedSafetyContour | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test ensures the user is able to set a user selected safety contour in areas of S-102 and S-104 coverage..* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** *with the following settings:*   * *Set User selected safety contour = 11.4m* * *Set Water Level Adjustment = false* * *Turn Interoperability to Level 2* | | | |
| **Action** | | | |
| *1. Set ship’s position to XX YY, Viewing Scale NN,000* | | | |
| **Results** | | | |
| *The ENC depth area is substituted for the S-102 values and a safety contour drawn delimiting the area deeper than 11.3m*  *Verify*   1. User is able to set a user defined safety contour 2. Verify portrayal of DepthArea, DredgedArea and DepthContours in area of S-102 coverage.     ***tbd*** | | | |

### Safety depth

| **Test Reference** | SafetyDepth | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with respect to value of safety depth* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** *with the following settings:*  *Display of spot soundings shall be switched on.* | | | |
| **Action** | | | |
| *1. Set the Safety Depth value to 10 m (Safety Contour 30 m).*  *2. Set the Safety Depth value to 4 m (Safety Contour 5 m).*  *3. Set the Safety Depth value to 7 m (Safety Contour 10 m).*  *4. Set the Safety Depth value to 12 m (Safety Contour 10 m).* | | | |
| **Results** | | | |
| *1. The features shown with depth values shallower than 10 m must be emphasised (scale 1:52 000).* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.5 picture 1.PNG ***tbd*** | | | |

| *2. The features shown with depth values shallower than 4 m must be emphasised.* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.5 picture 2.PNG ***tbd*** |

| *3. The features shown with depth values shallower than 7 m must be emphasised.* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.5 picture 3.PNG ***tbd*** |

| *4. The spot soundings shallower than 12 m must be emphasised.* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.5 picture 4.PNG  ***tbd*** |

### Shallow pattern

| **Test Reference** | ShallowPattern | **IHO Reference** | S-98 C-12.9.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of shallow pattern.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** *with the following settings:*  *Set the Safety Contour value to 10 m*  *Select Shallow Pattern* | | | |
| **Action** | | | |
| *Display dataset 10100AA\_X0000.000 at maximum display scale (1:52 000), select Display Category Display Base* | | | |
| **Results** | | | |
| *Confirm that the diamond shallow pattern is displayed as follows:* | | | |
| 3 ***tbd*** | | | |

### Contour labels

| **Test Reference** | ContourLabels | **IHO Reference** | S-98 C-9.5.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Contour labels are an optional Mariners’ selection. This test shall be performed, if the contour label option is provided.* | | | |
| **Setup** | | | |
| *Load all datasets the exchange set* ***PowerUp*** *with the following settings:*  *Set the Safety Contour to 10 m*  *Select Display Category Display Base*  *Select Colour Palette as “DAY”*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Select Other Depth contours*  *Select Contour labels* | | | |
| **Action** | | | |
| *Display dataset 10100AA\_X01NE.000 at maximum display scale (1:25 000)* | | | |
| **Results** | | | |
| *Confirm that the features display as follows* | | | |
| 3  ***tbd*** | | | |

### Colour palettes

| **Test Reference** | ColourPalettes1 | **IHO Reference** | S-98 C-14.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of ENC in Day palette* | | | |
| **Setup** | | | |
| *Load all datasets from the exchange set* ***PowerUp*** *with the following settings:*  *Set the Safety Contour value to 10 m*  *Set the Safety Depth to 10 m*  *Set the Shallow contour to 5 m*  *Set the Deep contour to 20 m*  *Display Category Display Base*  *Select Colour Palette* ***DAY***  *Select Symbolized Boundaries*  *Select Depth Shades = 4*  *Select Shallow Pattern* | | | |
| **Action** | | | |
| *Display dataset 10100AA\_X01NW.000 at maximum display scale (1:25 000)* | | | |
| **Results** | | | |
| *Confirm that the features display as follows*: | | | |
|  | | | |

| **Test Reference** | ColourPalettes2 | **IHO Reference** | S-98 C-14.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of ENC in Dusk palette* | | | |
| **Setup** | | | |
| *As for test* ColourPalettes1 *Colour Palette = “****DUSK****”* | | | |
| **Action** | | | |
| *Display dataset 10100AA\_X01NW.000 at compilation scale (1:25 000)* | | | |
| **Results** | | | |
| *Confirm that the features display as follows:* | | | |
|  | | | |

| **Test Reference** | ColourPalettes3 | **IHO Reference** | S-98 C-14.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of ENC in Night palette* | | | |
| **Setup** | | | |
| *As for test* ColourPalettes1  *Colour Palette = “NIGHT”* | | | |
| ***Action*** | | | |
| *Display dataset 10100AA\_X01NW.000 at maximum display scale (1:25 000)* | | | |
| **Results** | | | |
| *Confirm that the features display as follows:* | | | |
|  | | | |

### Display of additional Chart Information Symbol

| **Test Reference** | AdditionalInformation1 | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of additional chart information symbol (****Information****).* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Settings*** *with the following settings:*  *Select Display Category Other*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Select all Text groups*  *Set Safety Contour value to 8 m*  *Ensure that the system date is set to the current date and time.* | | | |
| **Action** | | | |
| *Centre the display on position 32°34.000’S 61° 21.705’E and then zoom in to a scale of 1:20,000.* | | | |
| **Results** | | | |
| *Confirm that the features display as in the image below:* | | | |
|  | | | |
| *Note: the display should show all of the features above without the chart information symbols.* | | | |

| **Test Reference** | AdditionalInformation2 | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of additional chart information symbol (Information).* | | | |
| **Setup** | | | |
| *As for test* AdditionalInformation1  *Select Highlight info* | | | |
| **Action** | | | |
| *As for test* AdditionalInformation1 | | | |
| **Results** | | | |
| *Confirm that the features display as in the image below:* | | | |
|  | | | |

| **Test Reference** | AdditionalInformation3 | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of additional chart information symbol (Information).* | | | |
| **Setup** | | | |
| *As for test 3.3.9 a)*  *Select Highlight document* | | | |
| **Action** | | | |
| *As for test 3.3.9 a)* | | | |
| **Results** | | | |
| *Confirm that the features display as in the image below:* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.3.9c picture 1.PNG  **tbd** | | | |

### Scale minimum

| **Test Reference** | ScaleMinimum | **IHO Reference** | S-98 C-12.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Disabling Scale Minimum using the Scale min context parameter* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** *with the following settings:*  *Select Display Category Display Base*  *Set the Safety Contour value to 30 m*  *Set the Safety Depth value to 30 m*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Select Spot soundings* | | | |
| **Action** | | | |
| *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*** | | | |
| **Results** | | | |
| *1. Confirm that the features display as in the image below (scale 1:100 000):* | | | |
| 3  **tbd** | | | |

| *2. After selecting Scale min confirm that the features display as in the image below:* |
| --- |
| 3  **tbd** |

### Full Light Lines

| **Test Reference** | FullLightLines | **IHO Reference** | S-98 C-9.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Disabling Full light lines using the Full light lines Mariner’s Selection* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** *with the following settings:*  *Select Display Category 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 Lights* | | | |
| **Action** | | | |
| *Centre the display on position 32°29.000’S 61° 04.000’E and then zoom in to a scale of 1:100,000.*  *1. Observe the display*  *2.Select Full light lines* | | | |
| **Results** | | | |
| *1. Confirm that the features display as in the image below:* | | | |
| *C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\3.3.11 picture 1.PNG*  **tbd** | | | |

| *2. After selecting Full light lines confirm that the features display as in the image below:* |
| --- |
| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\3.3.11 picture 2.PNG  **tbd** |

### Display of text in other languages

| **Test Reference** | OtherLanguages | **IHO Reference** | S-98 C-12.10.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Selecting the display of text in other languages.* | | | |
| **Setup** | | | |
| *Load the following cell 3.3 Settings\ENC\_ROOT\GB4X0001.000 with the following settings:*  *Select Display Category Other*  *Select Symbolized Boundaries*  *Select Simplified Point Symbols = false*  *Select all Text groups*  *Select Highlight Info* | | | |
| **Action** | | | |
| *Centre the display on position 32°34.700’S 61° 22.300’E and then zoom in to a scale of 1:10 000.*  *1. Observe the display*  *2.Select language setting “fra”* | | | |
| **Results** | | | |
| *1. Confirm that the feature displays as in the image below:* | | | |
| *3*  ***tbd*** | | | |
| *2. After selecting language “fra” confirm that the features display as in the image below:* | | | |
|  | | | |
| *Note: This feature has names in multiple languages.* | | | |

### Use of language packs.

| **Test Reference** | LanguagePacks | **IHO Reference** | S-98 C-12.10.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test ensures the ECDIS is capable of displaying text and catalogue entries in multiple languages.* | | | |
| **Setup** | | | |
| * *Load exchange set* ***InitialPowerUp*** * *Load exchange set* ***LanguagePacks*** | | | |
| **Action** | | | |
| *Centre the display on position 32°34.700’S 61° 22.300’E and then zoom in to a scale of 1:10 000.*  *1. Observe the display*  *2.Select language setting “fra”* | | | |
| **Results** | | | |
| *Verify*  1. Confirm that the pick report contains the following information:  [**TBD]**  2. After selecting language “fra” confirm that the pick report contains the following information:  [**TBD]** | | | |

## Display priority

### Different priority

| **Test Reference** | DifferentPriority | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Different priority and different geometry* | | | |
| **Setup** | | | |
| *Load the exchange set* ***DisplayPriorities1*** *(101AA002J5X0001.000 )with the following settings:*   * *Set the Safety Contour value to 30 m* * *Set Display Category Other* * *Text display = On* * *Shallow pattern = On* * *Information indication = On* * *Symbolized Boundaries = On* * *Simplified Symbols = Off* | | | |
| **Action** | | | |
| *View the features at position 32°20.400’S 61°20.650’ E scale 1:5000* | | | |
| **Results** | | | |
| *Confirm that items 1-6 display as shown in the graphic below:* | | | |
|  | | | |

## Portrayal of multiple datasets under Interoperability

### Load invalid Interoperability Catalogue

| **Test Reference** | CorruptInteroperabilityCatalogue | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies that the ECDIS correctly rejects an inconsistent or corrupt interoperability catalogue.* | | | |
| **Setup** | | | |
|  | | | |
| **Action** | | | |
| *Load the exchange set* ***CorruptInteroperabilityCatalogue*** | | | |
| **Results** | | | |
| *Verify the installation of the interoperability catalogue is rejected and a suitable error message given to the end user.* | | | |

### Load updated Interoperability Catalogue

| **Test Reference** | UpdatedInteroperabilityCatalogue | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies that the ECDIS is able to load an updated interoperability catalogue.* | | | |
| **Setup** | | | |
|  | | | |
| **Action** | | | |
| *Load the exchange set* ***UpdatedInteroperabilityCatalogue*** | | | |
| **Results** | | | |
| *Verify the version of the interoperability catalogue installed on the ECDIS correspond to those in the following table:*   |  |  | | --- | --- | | ***Catalogue*** | ***Version / Issue Date.*** | | *Interoperability Catalogue* | *2.0.0 / yyyymmdd* |   ***[Test effect of new interoperability catalogue: Changed interleaved behaviour, Changed Suppressed features, also change from L1 to L2 and vice versa between old/new catalogues]*** | | | |

### Portrayal under Interoperability.

| **Test Reference** | InteroperabilityCataloguePortrayal | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies that the ECDIS is capable of displaying multiple datasets using interoperability catalogues installed.* | | | |
| **Setup** | | | |
| *Load exchange set* ***InitialPowerUp*** *with the following settings:* | | | |
| **Action** | | | |
| *(A) Set Interoperability Level to 1.*  *(B) Set Interoperability Level to 2 with Predefined Display Combination = ???* | | | |
| **Results** | | | |
| *Verify the user is informed of the operation of the interoperability mechanism at level 2 (feature substitution)*  *Verify portrayal according to the following images testing with settings (A) and (B) respectively:*  ***[IMG – IC Level 2 Portrayal required:]***  ***1. S-101/S-102/S-104***  ***2. S-124/S-101***  ***3. S-129/S-101***  *WLA and user selected safety contour are tested separately.* | | | |

## Display Priorities

### Same priority

| **Test Reference** | SamePriority | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Same priority and different geometry* | | | |
| **Setup** | | | |
| *As for test DifferentPriority* | | | |
| **Action** | | | |
| *View the features at position 32°20.400’S 61°21.900’ E scale 1:5000* | | | |
| **Results** | | | |
| *Confirm that items 1-6 display as shown in the graphic below:* | | | |
|  | | | |

### Line Suppression

| **Test Reference** | LineSuppression | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Line suppression* | | | |
| **Setup** | | | |
| *As for test DifferentPriority* | | | |
| **Action** | | | |
| *View the features at position 32°20.400’S 61°23.150’ E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1-16 display as shown in the graphic below:* | | | |
|  | | | |

### Manual Updates

| **Test Reference** | ManualUpdates | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Manual updates* | | | |
| **Setup** | | | |
| *As for test DifferentPriority* | | | |
| **Action** | | | |
| *View the feature at position 32º21.100’S-61º20.650’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1-4 display as shown in the graphic below:* | | | |
|  | | | |

### Text Display

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | TextDisplay1 | **IHO Reference** | S-98 C-7.2.9 |
| **Test description** | | | |
| *Text display* | | | |
| **Setup** | | | |
| *As for test DifferentPriority* | | | |
| **Action** | | | |
| *View the features at position 32°21.100’S 61°21.900’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1 to 6 display as shown in the graphic below:* | | | |
|  | | | |
| Alternative 1: Manufacturer may implement display of text only once for a feature which is masked | | | |
|  | | | |
| Alternative 2: Manufacturer may implement display of text across parts of a feature that is not masked. | | | |

| **Test Reference** | TextDisplay2 | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Text display* | | | |
| **Setup** | | | |
| *As for test* TextDisplay1 *except Set Display Category Standard* | | | |
| **Action** | | | |
| *View the features at position 32°21.100’S 61°21.900’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1 to 6 display as shown in the graphic below:* | | | |
|  | | | |

| **Test Reference** | TextDisplay3 | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Text display* | | | |
| **Setup** | | | |
| *As for test* TextDisplay1 *except set Display Category Base Display* | | | |
| **Action** | | | |
| *View the features at position 32°21.100’S 61°21.900’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 3,5 and 6 display as shown in the graphic below:* | | | |
| 3  **tbd** | | | |

### Display of area borders

| **Test Reference** | AreaBorders | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of area borders* | | | |
| **Setup** | | | |
| *As for test* TextDisplay3  *except*  *Set Display Category Other* | | | |
| **Action** | | | |
| *View the features at position 32°21.100’S 61°23.150’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1-6 display as shown in the graphic below:* | | | |
|  | | | |

### Display of unknown symbols

| **Test Reference** | UnknownSymbols | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of unknown symbol* | | | |
| **Setup** | | | |
| *As for test* AreaBorders | | | |
| **Action** | | | |
| *View the features at position 32°21.850’S 61°20.650’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1-6 display as shown in the graphic below:* | | | |
|  | | | |

### Boundary display for unofficial data

| **Test Reference** | BoundaryDisplay1 | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Unofficial data boundary display* | | | |
| **Setup** | | | |
| *As for test AreaBorders and in addition, load the exchange sets* ***Settings*** *and* ***2J5X0002*** | | | |
| **Action** | | | |
| *View the features at position 32°22.450’S 61°24.250’E scale 1:2 000* | | | |
| **Results** | | | |
| *Confirm that items 1 and 2 display as shown in the graphic below:* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.6.8.1 picture 1.png | | | |
| Alternative 1: Orange slashes are under left hand side dark brown area  **tbd** | | | |
|  | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.6.8.1 picture 2.png | | | |
| Alternative 2: Orange slashes are above left hand side dark brown area  **tbd** | | | |

Note: Alternative 2 allows for drawing speed optimization

| **Test Reference** | BoundaryDisplay2 | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Scale boundary display* | | | |
| **Setup** | | | |
| *As for test AreaBorders and in addition Load dataset 101AA002J4X0001.000, contained in exchange set* ***DisplayPriorities*** *with the following settings.*  *Chart scale boundaries = On* | | | |
| **Action** | | | |
| *View the features at position 32°22.450’S 61°23.800’E scale 1:2 000* | | | |
| **Results** | | | |
| *Confirm that items 1 and 2 display as shown in the graphic below:* | | | |
| 3 | | | |
| Alternative 1: Line style indicating side of larger scale available (complex line style with thick line at edge and double 1 pixel lines on larger scale available side)  **tbd** | | | |
|  | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.6.8.2 picture 2.PNG | | | |
| Alternative 2: Line style just indicating scale border (1 pixel line)  **tbd** | | | |

| **Test Reference** | BoundaryDisplay3 | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Overscale pattern display* | | | |
| **Setup** | | | |
| *As for test* BoundaryDisplay2 | | | |
| **Action** | | | |
| *View the features at position 32°22.600’S 61°23.800’E scale 1:2 000* | | | |
| **Results** | | | |
| *Confirm that items 1 and 2 display as shown in the graphic below:* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.6.8.3 picture 1.PNG  **tbd** | | | |

### Display of features affected by Complex Portrayal Procedures

| **Test Reference** | ComplexPortrayal | **IHO Reference** | S-98 C-7.2.9 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of features with priority affected by complex portrayal algorithms* | | | |
| **Setup** | | | |
| *As for test DifferentPriority* | | | |
| **Action** | | | |
| *View the features at position 32°21.850’S 61°23.150’E scale 1:5 000* | | | |
| **Results** | | | |
| *Confirm that items 1-12 display as shown in the graphic below :* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.6.9 picture 1.PNG  **tbd**  ***[TBD] – This test is for complex LUA-based portrayal based on current Portryal Catalogue rules.****.* | | | |

### Display of Centred Symbols

| **Test Reference** | CentredSymbols1 | **IHO Reference** | S-98 C-7.2.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of centred symbol in the centre of an area.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Settings*** *with the following settings:*   * *Select Display Category Other* * *Select Symbolized Boundaries* * *Select Simplified Point Symbols = false* * *Set Safety Contour value to 10 m* * *Select Shallow water dangers* | | | |
| **Action** | | | |
| *Centre the display on position 32°32.805’S 61° 21.290’E and then zoom in to a scale of 1:20 000.* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below:* | | | |
|  | | | |
| *Zoom out to scale 1:50 000 and confirm that the feature now displays as follows:* | | | |
|  | | | |

| **Test Reference** | CentredSymbols2 | **IHO Reference** | S-98 C-7.2.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of centred symbols offset.* | | | |
| **Setup** | | | |
| *As for test* CentredSymbols1 | | | |
| **Action** | | | |
| *Centre the display on position 32°32.085’S 61° 21.415’E and then zoom in to a scale of 1:10 000.* | | | |
| **Results** | | | |
| *Confirm that the feature 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 feature now displays as follows:* | | | |
|  | | | |
| *Note: the display should only show the arrow as above without the centred symbol(s) offset.* | | | |

| **Test Reference** | CentredSymbols3 | **IHO Reference** | S-98 C-7.2.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of centred symbols which conflict with the own ship symbol.* | | | |
| **Setup** | | | |
| *As for test* CentredSymbols1 | | | |
| **Action** | | | |
| *Centre the display on position 32°32.085’S 61° 21.415’E and then zoom in to a scale of 1:1 000.*  *Simulate own ship on position 32°32.085’S 61° 21.415’E* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below:* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.6.10c picture 1.PNG  **tbd** | | | |
| *Note: the display should show own ship symbol centred with the arrow and restriction symbol(s) offset. Even when changing the display scale the separation between own ship and the symbols shall be maintained.*  *Note the offset between arrow and restriction symbol is specified while the own ship symbol just has to be not overlapping the centred symbols in the chart.* | | | |

| **Test Reference** | CentredSymbols4 | **IHO Reference** | S-98 C-7.2.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of centred symbols when area is partially off screen.* | | | |
| **Setup** | | | |
| *As for test* CentredSymbols1 | | | |
| **Action** | | | |
| *Centre the display on position 32°32.805’S 61° 21.290’E and then zoom in to a scale of 1:20 000.* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below:* | | | |
| 3  **tbd** | | | |
| *Note: the display should show the centred symbol in the centre of the visible area.* | | | |

| **Test Reference** | CentredSymbols5 | **IHO Reference** | S-98 C-7.2.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of centred symbols within complex areas.* | | | |
| **Setup** | | | |
| *As for test* CentredSymbols1 | | | |
| **Action** | | | |
| *Centre the display on position 32°30.970’S 61° 21.330’E and then zoom in to a scale of 1:20 000.* | | | |
| **Results** | | | |
| *Confirm that the feature displays as in the image below:* | | | |
| 3  **Tbd** | | | |
| *Note: the display should show the centred symbol within the* ***Obstruction*** *area. The display may be different from the example shown above as long as the centre of the centred symbol remains within the* ***Obstruction*** *area.* | | | |

## Scale and navigation purpose

### Display of overscale indication

| **Test Reference** | OverscaleIndication1 | **IHO Reference** | S-98 C-12.1.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of overscale indication.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Zoom in beyond 1:25 000. This is the maximum display scale of the largest scale datasets.* | | | |
| **Results** | | | |
| *Confirm that an overscale indication is provided.*  *For example, if scale zoomed is 1:20 000 then for areas based on maximum display scale 1:25 000 the overscale factor shall be 1.3 and for areas based on maximum display scale 1:52 000 it shall be 2.6* | | | |

| **Test Reference** | OverscaleIndication2 | **IHO Reference** | S-98 C-12.1.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of overscale pattern.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***   * *Select Display Category Other* * *Select Other text* * *Select Accuracy* * *Select Highlight info* * *Select Symbolized boundaries* * *Set Safety Contour value to 7 m* * *Set Safety Depth value to 7 m* | | | |
| **Action** | | | |
| *Set chart centre at the lighthouse in the Corund Cape 32°27.447’S 060°58.599’E.*  *Zoom in beyond 1:10 000. This is the maximum display scale of the largest scale datasets.* | | | |
| **Results** | | | |
| *Confirm that the overscale pattern AP(OVERSC01) is displayed.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\3.7.1b picture 1.PNG  **Tbd** | | | |

### Indication of larger scale data

| **Test Reference** | LargerScaleData | **IHO Reference** | S-98 C-12.1.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Indication of better (larger) scale data being available.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***  *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.* | | | |
| **Action** | | | |
| *Select the smaller scale dataset (GB4X0000.000). Observe this dataset.* | | | |
| **Results** | | | |
| *Position the displayed area over the own ship. Confirm that an indication is provided that larger scale is available.* | | | |

### Boundaries between maximum display scales

| **Test Reference** | ScaleBoundary | **IHO Reference** | S-98 C-12.1.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Boundaries between maximum display scales.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***   * *Select Display Category Display Base* * *Select Chart scale boundaries* | | | |
| **Action** | | | |
| *Centre the display on 32°21.010’S 060°57.920’E and zoom to 1:45 000* | | | |
| **Results** | | | |
| *Confirm that either the* ***LS(SOLD,1,CHGRD****)* ***or LC(SCLBDY51****) is shown for the diagonal limit across the dataset. Also confirm that the overscale indication is provided for the area in which the maximum display scale is 1:52 000.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.7.3 picture 1.PNG  **Tbd** | | | |

### Display of data from another scale

| **Test Reference** | DifferentScale1 | **IHO Reference** | S-98 C-12.1.5 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of data from a smaller scale navigational purpose to completely cover the display.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***   * *Select Display Category Other* * *Select Safety Contour value to 10 m* * *Select Safety Depth value to 10 m* * *Select Symbolized Boundaries* * *Select Simplified Points Symbols = false* | | | |
| **Action** | | | |
| *Centre the display at 32°33.000’S 60°56.000’E*  *Select scale 1:20 000 so that larger scale detail (buoyage, lights) is shown.* | | | |
| **Results** | | | |
| *Confirm that south of 32°33.141’S data from the smaller scale is shown.*  *Note: Screen plot is based on the full text natureOfSurface attribute. To reduce undue clutter in the ECDIS chart display, the use of the abbreviations of the natureOfSurface attribute is recommended.* | | | |
| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\3.7.4a picture 1.png  **Tbd** | | | |

| **Test Reference** | OverlappingData | **IHO Reference** | S-98 C-21.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of overlapping data.* | | | |
| **Setup** | | | |
| *Load exchange set* ***Overlap***  *Load exchange set* ***ScaleMinimum***   * *Select Display Category Other* * *Select Safety Contour value to 10 m* * *Select Safety Depth value to 10 m* * *Select Symbolized Boundaries* * *Display cell 101AA00OVRLP at maximum display scale (1:90 000)* | | | |
| **Action** | | | |
| *Centre the display on position 32°23.000’S 60°40.000’E* | | | |
| **Results** | | | |
| *Confirm that only one cell is displayed in a given area. In this case displays as shown in a) or b) are acceptable.*  *Confirm also that a permanent indication “overlap” is provided.*  *a) Chart 101AA00SCAMN overlaps chart 101AA00OVRLP at the same MaximumDisplayScale* | | | |
| 3  **Tbd** | | | |

| *b) Chart 101AA00OVRLP overlaps chart 101AA00SCAMN* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\3.7.4b picture 2.PNG  **Tbd** |

### Display of graphical index

| **Test Reference** | GraphicalIndex | **IHO Reference** | S-98 C-12.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of graphical index of cell boundaries.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Navigate to a graphical index of dataset boundaries.* | | | |
| **Results** | | | |
| *Confirm that a graphical index of the dataset boundaries is displayed and access to the edition number and, where applicable, update number of each dataset is available.* | | | |

### Change of display scale

| **Test Reference** | DisplayScaleChange | **IHO Reference** | S-98 C-12.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Change of display scale by chart scale values and by increments of displayed range values in nautical miles.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Change display scale by chart scale values or by increments of displayed range values in nautical miles.* | | | |
| **Results** | | | |
| *Confirm that the display changes accordingly.* | | | |

### Impact of ScaleMinimum on display

| **Test Reference** | ScaleMinimum | **IHO Reference** | S-98 C-12.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Impact of ScaleMinimum values on display of charted features.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***ScaleMinimum***   * *Select Display Category Other* * *Select Safety Contour value to 10 m* * *Select Safety Depth value to 10 m* * *Select Symbolized Boundaries* * *Select Simplified Point Symbols = false* * *Display cell 101AA00SCAMN at maximum display scale (1:90 000)* | | | |
| **Action** | | | |
| *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 ScaleMinimum* | | | |
| **Results** | | | |
| *1. All features shall be shown.* | | | |
|  | | | |

| *2. All features shall be shown* |
| --- |
|  |
| *3. The features with ScaleMinimumvalues of 119 000 and 179 999 shall not be shown.* |
|  |
| *4. All features shall be shown* |
|  |

## Display and Operation of Water Level Adjustment.

### Enabling Water Level Adjustment

| **Test Reference** | WaterLevelAdjustment | **IHO Reference** | S-98 C-4.2.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies the ECDIS can harmonise S-104 Water Level with S-101 Depth Values.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** *with the following settings.*   * *User Selected Safety Contour = 11.4m* * *Water Level Adjustment = true* * *Interoperability Level = 2* * *Water Level Adjustment boundary = 100 metres (S-98 Annex C C-4.2.7)* | | | |
| **Action** | | | |
| *Navigate to point (Xx,YY Coverage Area S-102, S-104)* | | | |
| **Results** | | | |
| *Verify*   1. Water Level Adjustment is enabled and a permanent message is displayed to user as per S-98 Annex C Appendix C-4.2      1. The boundary of the Water Level Adjustment is shown.      1. Verify the ECDIS legend correctly reports the vertical datum of the S-102 and S-104 data (S-98 Annex C C-4-3.2) **tbd** | | | |

### Adjustment of Other Depth Values

| **Test Reference** | AdjustmentOfDepthValues | **IHO Reference** | (S-100 Part 9/S-98  S-98 C-4-2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies the ECDIS can harmonise S-104 Water Level with S-101 Depth Values on other features.* | | | |
| **Setup** | | | |
| *As for test WaterLevelAdjustment* | | | |
| **Action** | | | |
| *A) Navigate to Point (XX,YY). Inspect Adjusted Depth Values (S-102 and S-104)*  *B) Navigate to Point (XX,YY) Inspect Adjusted Depth Values (S-104 only)* | | | |
| **Results** | | | |
| *Verify*   1. All depth values in ENC are adjusted according to the S-104 values as shown 2. **tbd** | | | |

### Feature information - Water Level Adustment.

| **Test Reference** | WLAFeatureInformation | **IHO Reference** | (S-100 Part 9/  S-98 C-4-2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies the ECDIS Water Level Adjustment communicates correct information to the user during feature interrogation..* | | | |
| **Setup** | | | |
| *As for test WaterLevelAdjustment* | | | |
| **Action** | | | |
| *A) Navigate to Point (XX,YY).*  *B) Interrogate each of the features as shown in the image.* | | | |
| **Results** | | | |
| *Verify*  1. All depth values in ENC are adjusted according to the S-104 values as shown  2. Pick Report information contains the correct values including the source of the depth values as defined in S-98 Annex C C-4-2.2   |  |  | | --- | --- | | S-102 Coverage only. |  | | S-104 and S-102 Coverage |  | | Vertical Clearance value |  | | | | |

### Water Level Adjustment across a time period

| **Test Reference** | WLATimePeriod | **IHO Reference** | (S-100 Part 9/  S-98 C-4-2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies that the ECDIS is able to correctly adjust water level depth values across a user defined time period.* | | | |
| **Setup** | | | |
| *As for test WaterLevelAdjustment*  *Set Water Level Adjustment time Period = 2021-11-08 12:30:00 to 2021-11-08 14:00:00* | | | |
| **Action** | | | |
| *A) Navigate to Point (XX,YY).*  *B) Interrogate features as shown in the image.* | | | |
| **Results** | | | |
| *Verify the permanent indication is given:*    *Verify the Adjusted Water Level values as follows:*  *[ADJUSTED values from S-102, S-104 and S-102/S-104 features across the area of coverage]* | | | |

### WLA with non matching vertical datums ?

| **Test Reference** | IncompatibleDatums | **IHO Reference** | (S-100 Part 9/  S-98 C-4-2.6 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies the ECDIS will correctly reject the installation of data for Water Level Adjustment if the layers are incompatible.* | | | |
| **Setup** | | | |
| *Load Exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Load exchange set* ***WLAInvalid*** | | | |
| **Results** | | | |
| *Verify the ECDIS rejects the installation of the following datasets:*   * *104AA005X01NW.H5* * *102AA005X01NW.H5* * *111AA005X01NW.H5*   *Verify the ECDIS correctly load the following dataset*   * *102AA005X01SE.H5* | | | |

### Route planning with Water Level Adjustment

| **Test Reference** | WLAPlanning1 | **IHO Reference** | (S-100 Part 9/  S-98 C-4-2.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Verify the ECDIS correctly allows routes to be planned accounting for Water Level Adjustment corrections* | | | |
| **Setup** | | | |
| *As for test WaterLevelAdjustment* | | | |
| **Action** | | | |
| *1. Ensure exchange set is loaded correctly*  *2. Load cell 10100AA\_X01NW.000*  *3. Plot a route between the waypoints WP1-WP4 using the following parameters*  *i) Speed = 11knots*  *ii) Planned route start date/time = 2022-14-11:00:00:00*  *4. Run a route check on the defined route.*  *5. Reset route start date/time to 2022-04-22:00:00:00*  *6. Rerun the route check* | | | |
| **Results** | | | |
| *Verify the route contains the following warnings when run at (4)*  *[list of warnings – this is because the S-104/S-102 adjusts Water Level to shoaler than 11.4m at the defined time)*  *Verify the route check is clear when run at (6) (Water Level adjustment is clear at this time)*  *Verify a permanent message is shown to the user as per S-98 C-4-2.7* | | | |

## Display of ENC covering Polar Regions

Test 3.9.1 is for all ECDIS. Test 3.9.2 is optional and should only be carried out on ECDIS claiming to be approved to function in Polar Regions.

### Display of ENC Data up to 85 degrees

| **Test Reference** | PolarData1 | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of charts up to 85 degrees.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PolarData***   * *Select Display Category Other* * *Select Safety Contour value to 30 m* * *Select Plain Boundaries* * *Select Simplified Point Symbols = false* * *Select Accuracy* * *Select Contour label* | | | |
| **Action** | | | |
| *Select chart 101AA00NPOL3.000 at maximum display scale (1:3 000 000). Check ENC symbols shown in the ECDIS against the graphical plot.* | | | |
| **Results** | | | |
| *The ENC should be displayed in the ECDIS like one of the options below:* | | | |
|  | | | |
| ***TBD:*** *Display is based on Mercator projection* | | | |

|  |
| --- |
| ***TBD:*** *Note: Implementation of support for latitudes higher than 85º is an option for ECDIS. Polar projection is typically used for latitudes higher than 85º. ECDIS image in this example is based on polar projection* |

| 3 |
| --- |
| *Select 85°00.000’N 25°00.000’E as centre of the display, scale is 1:500 000*  *Display is based on Mercator projection*  ***tbd***  *Note: Implementation of support for latitudes higher than 85º is an option for ECDIS. If not implemented, then there should be no chart displayed above latitude 85º. If implemented, the chart above latitude 85 º may or may not have overscale pattern depending of the chart available in the ECDIS for the area above latitude 85 º.* |

| 3 |
| --- |
| ***tbd***  *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*  *Note: Implementation of support for latitudes higher than 85º is an option for ECDIS. If not implemented, then there should be no chart displayed above latitude 85º. If implemented, the chart above latitude 85 º may or may not have overscale pattern depending of the chart available in the ECDIS for the area above latitude 85 º.* |

### Display of Data at Extreme High Latitudes

| **Test Reference** | PolarData2 | **IHO Reference** | S-52 10.1.10.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| ***ONLY TO BE TESTED FOR EQUIPMENT CLAIMING THE CAPABILITY TO DISPLAY ENC DATA AT LATITUDES GREATER THAN 85 DEGREES***  *Display of charts above 85 degrees.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PolarData***   * *Select Display Category Other* * *Select Safety Contour value to 30 m* * *Select Plain Boundaries* * *Select Paper chart symbols* * *Select Accuracy* * *Select Contour label* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should be shown like in the picture below.*  *Note: The chart outside the circular area is an example of an optional background chart.* | | | |
| 3 | | | |
| *North Pole is in the centre of the display* ***tbd*** | | | |

| 3 |
| --- |
| *Select 89°22.000’N 90°00.000’E as centre of the display* ***tbd*** |

| 3 |
| --- |
| *Select 85°00.000’N 025º00.000’E as centre of the display* ***tbd*** |

# Chart related functions

## Mode and orientation

| **Test Reference** | ModeOrientation1 | **IHO Reference** | S-98 C-12.9.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of the north arrow symbol.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *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.* | | | |
| **Results** | | | |
| *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.* | | | |

| **Test Reference** | ModeOrientation2 | **IHO Reference** | S-98 C-4.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *True motion operation.* | | | |
| **Setup** | | | |
| *As for* ModeOrientation | | | |
| **Action** | | | |
| *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.* | | | |
| **Results** | | | |
| *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.* | | | |

| **Test Reference** | ModeOrientation3 | **IHO Reference** | S-98 C-4.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Manual adjustment of chart display area and own ship position.* | | | |
| **Setup** | | | |
| *As for* ModeOrientation | | | |
| **Action** | | | |
| *Manually adjust the chart display area.*  *Change the position of own ship relative to the edge of the display.* | | | |
| **Results** | | | |
| *Confirm that it is possible to change manually the chart area and the position of own ship relative to the edge of the display.* | | | |

| **Test Reference** | NoDataAvailable | **IHO Reference** | S-98 C-9.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *No ENC data available.* | | | |
| **Setup** | | | |
| *As for* ModeOrientation  *Ship position as follows: 32°27.88’S 061°20.66’E (an area with no ENC)* | | | |
| **Action** | | | |
| *Observe the display.* | | | |
| **Results** | | | |
| *Confirm that a “No ENC available” indication is provided.* | | | |

| **Test Reference** | NonNorthUp | **IHO Reference** | S-98 C-10.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display in non ‘north-up’ orientation.* | | | |
| **Setup** | | | |
| *As for* ModeOrientation | | | |
| **Action** | | | |
| *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.* | | | |
| **Results** | | | |
| *Confirm that the displayed symbols and text do not re-orient more often than 2 times per second and remain legible. The symbols and text may remaining fixed and in this case will not re-orientate.* | | | |

## Display of scale bar

| **Test Reference** | ScaleBar | **IHO Reference** | S-98 C-12.9.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of scale bar at appropriate scales.* | | | |
| **Setup** | | | |
| *Load exchange set* ***PowerUp***  *Set Display Category Base Display.* | | | |
| **Action** | | | |
| *Zoom to a display scale greater than 1:80 000 (such as 1:25 000), observe the display.* | | | |
| **Results** | | | |
| *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.* | | | |

## Display of latitude bar

| **Test Reference** | LatitudeBar | **IHO Reference** | S-98 C-12.9.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of latitude bar at appropriate scales.* | | | |
| **Setup** | | | |
| *Load exchange set* ***PowerUp***  *Set Display Category Base Display.* | | | |
| **Action** | | | |
| *Zoom to a display scale less than 1:80 000 (such as 1:300 000), observe the display.* | | | |
| **Results** | | | |
| *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.* | | | |

## Feature information

| **Test Reference** | FeatureInformation1 | **IHO Reference** | S-98 C-9.1.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *General rules for cursor pick report* | | | |
| **Setup** | | | |
| *Load exchange set* ***PowerUp***  *Select Display Category Other.* | | | |
| **Action** | | | |
| *1. Select several features of*  *- depth area;*  *- restricted area;*  *- sea area;*  *- depth contour;*  *- ferry route;*  *- recommended track;*  *- buoy (for example buoy and light at 32°29.50’S 061°00.46’E);*  *- light;*  *- wreck.*  *2. Observe feature information.*  *3. Remove feature information from display.* | | | |
| **Results** | | | |
| *1. The following rules shall be applied to the pick report:*   1. *Full S-100 Feature and Attribute names shall be displayed.* 2. *Enumerate value names shall be displayed. Enumerate attribute numbers should not be displayed.* 3. *There shall not be any padding of attribute values, for example a height of 10 m shall not be padded to 10.000000 m as this could potentially confuse or mislead the Mariner.* 4. *Units of measure shall be included after all attribute values which are weights or measures.* | | | |

| 1. *The pick report shall only return information about the features present on the ECDIS display. This means all features in the viewing layers enabled even if those features have no resultant display. For example the meta feature M\_SREL has no display but should be detailed in the pick report.* 2. *Cursor enquiry shall extend to the spatial feature, which carries accuracy attributes Quaklity of Position and Positional Accuracy.* 3. *It shall include feature association information which carry additional information and related attribution, e.g.*   *2. Text associated with chart features must be removed from the display.*  *Note: The text and background colour of pick report is specified by the OEM* |
| --- |

| **Test Reference** | FeatureInformation2 | **IHO Reference** | S-98 C-9.1.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Pick report descriptions and sorting* | | | |
| **Setup** | | | |
| *As for test 4.4 a)* | | | |
| **Action** | | | |
| *Select several features as mentioned in 4.4a)* | | | |
| **Results** | | | |
| 1. *A plain language explanation of each symbol shall be used as included in portrayal catalogue to provide quick and understandable information which is not always obvious from the feature class and attribute information.* 2. *Attribute values provided in addition to the above explanation shall be connected to their meaning, and the definitions shall also be available.* 3. *The feature information shall be sorted by the drawing priority of the feature as defined in the portrayal catalogue. When the drawing priority of features is equal, the geometric primitive shall be used to order the information (points followed by curves and finally surfaces).* 4. *Check that the content displayed in the pick report is configurable by the user.* | | | |

| **Test Reference** | FeatureInformation3 | **IHO Reference** | S-98 C-9.1.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *User defined cursor pick parameters, if available* | | | |
| **Setup** | | | |
| *As for test 4.4 a)* | | | |
| **Action** | | | |
| *1. Configure the cursor pick parameter as available.*  *2. Select several features as mentioned in 4.4a)* | | | |
| **Results** | | | |
| *1. The cursor pick parameters may be configurable by the user and available for presentation.*  *2. The content of the pick report shall be presented as configured.* | | | |

| **Test Reference** | | FeatureInformation4 | | **IHO Reference** | | S-52 10.8.5 |
| --- | --- | --- | --- | --- | --- | --- |
| **Test description** | | | | | | |
| *Hover-over function for feature information (optional)*  *Test shall only be performed if a hover-over function for feature information is provided.* | | | | | | |
| **Setup** | | | | | | |
| *As for test 4.4 a)* | | | | | | |
| **Action** | | | | | | |
| *1. Configure the hover-over function OFF.*  *2. Move cursor to one of the features in the table below and to features where additional information is available or date dependent features:*  *3. Configure the hover-over function ON.*  *4. Move cursor to one of the features mentioned in 2.*  *5. Move cursor to any other features.* | | | | | | |
|  | **Features** | | **S-101 Acronym** | |  | |
| *Lights* | | ***AllRoundLight*** | |
| *Beacon, cardinal* | | ***BuoyCardinal*** | |
| *Beacon, isolated danger* | | ***BuoyIsolatedDAnger*** | |
| *Beacon, lateral* | | ***BeaconLateral*** | |
| *Beacon, safe water* | | ***BeaconSafeWater*** | |
| *Beacon, special purpose/general* | | ***BeaconSpecialPurpose*** | |
| *Buoy, cardinal* | | ***BuoyCardinal*** | |
| *Buoy, installation* | | ***BuoyInstallation*** | |
| *Buoy, isolated danger* | | ***BuoyIsolatedDanger*** | |
| *Buoy, lateral* | | ***BuoyLateral*** | |
| *Buoy, safe water* | | ***BuoySafeWater*** | |
| *Buoy, special purpose/general* | | ***BuoySpecialPurpose*** | |
| *Landmarks* | | ***Landmark*** | |
|  | | | | | | |
| **Results** | | | | | | |
| *1. It shall be possible to switch OFF the hover-over function.*  *2. There shall be no information of chart features displayed when hovering over it.*  *3. It shall be possible to switch ON the hover-over function.*  *4. Important information of chart features shall be displayed when hovering over it.*  *5. When hovering over other chart features no information shall be displayed.* | | | | | | |

| **Test Reference** | FeatureInformation5 | **IHO Reference** | S-98 C-12.6.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Presentation of unknown attributes*  *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 feature. The main purpose of this test is to check*  *that ECDIS is able to accept ENC datasets 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.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***InvalidFeatures*** *dataset 101AA00INVOB.000 :*   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols* | | | |

| **Action** |
| --- |
| *Select chart features with unknown attribute for cursor pick report.* |
| **Results** |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot. Select one by one each of 6 features for cursor pick report.*  *The result of cursor pick shall be*  *a) Wreck with attribute Water level effect (covers and uncovers)*  *b) Obstruction with attribute Value of sounding (no value)*  *c) Restricted area without any attribute*  *d) Buoy, cardinal with attributes Buoy shape (spar (spindle)), Category of cardinal mark (north cardinal mark) and Color pattern (horizontal stripes)*  *e) Cable, submarine without any attribute*  *f) Silo/Tank without any attribute* |
| 4  ***tbd*** |

| **Test Reference** | TidalStreamPanelData | **IHO Reference** | S-98 Annex C C15.4 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of tidal stream panel Data* | | | |
| **Setup** | | | |
| *Load exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *1. Select an example of TidalStreamPanelData (tidal stream panel information)*  *1a. select the complex attribute tidal stream panel values at 32°31.45’S 60°56.35’E for*  *display;*  *2. Select an example of TidalAStreamPanelData (tidal stream prediction by harmonic methods)*  *2a. select tidal stream prediction by harmonic methods feature at 32°32.57’S 60°57.69’E for display;*  *3. Repeat step 1 and 2 for different light conditions (DAY, DUSK, NIGHT).* | | | |

| **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:* |
| ***TBD***  *2a. The data must be displayed in a way that it can be easily read and is logically presented, in a format as follows:*    *3. The data must be displayed as appropriate for the selected light condition (DAY, DUSK, NIGHT).* |

| **Test Reference** | SupplemnentaryFile2 | **IHO Reference** | S-98 Annex C C-10.5.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of supplementary text file* | | | |
| **Setup** | | | |
| *As for test FeatureInformation* | | | |
| **Action** | | | |
| *1. Select an example of a note encoded using information attributes (for example caution area at approximately 32°34.74’S 061°08.92’E);*  *2. Repeat step 1 for different light conditions (DAY, DUSK, NIGHT).* | | | |
| **Results** | | | |
| *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 (for example content of 101AA00GBIECTMP.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).*  *3. The content of the note must commence at the location specified by the fileLocator reference, as shown in the image* | | | |

| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\4.4g picture 1.PNG |
| --- |
| *Example of Text 101AA00IECTMP.TXT over cell 10100AA\_X0000.000, Day palette* ***tbd*** |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\4.4g picture 2.PNG |
| *Example of Text GBIECTMP.TXT over cell 10100AA\_X0000.000, Dusk palette* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\4.4g picture 3.PNG |
| --- |
| *Example of Text 101AA00IECTMP.TXT over cell 10100AA\_X0000.000, Night palette* ***tbd*** |

| **Test Reference** | SupplmentaryFile1 | **IHO Reference** |  |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of supplementary text file using file locator attributes* | | | |
| **Setup** | | | |
| *As for test FeatureInformation* | | | |
| **Action** | | | |
| *1. Select an example of a note encoded using text (text description) (caution area at approximately 32°34.74’S 061°08.92’E);*  *2. Repeat step 1 for different light conditions (DAY, DUSK, NIGHT).* | | | |
| **Results** | | | |
| *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 (for example content of 101AA00IECTMP.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).*  *3. The content of the note must commence at the location specified by the fileLocator reference, as shown in the image* | | | |
| ***IMG: fileLocator attributes.*** | | | |

| **Test Reference** | PictorialRepresentation | **IHO Reference** | S-98 C-11.6 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of picture representation* | | | |
| **Setup** | | | |
| *As for test FeatureInformation* | | | |
| **Action** | | | |
| *1. Select an example of the attribute pictorialRepresentation*  *1a. select landmark feature at 32°31.95’S 60°54.34’E and select picture representation for display;*  *1b. select area feature of 32°30.25’S 60°54.64’E with NauticalInformation and select picture representation for display;*  *2. Repeat step 1a and b for different light conditions (DAY, DUSK, NIGHT).* | | | |
| **Results** | | | |
| *1a. The picture 101AA00TESTPC.TIF must be displayed;*  *1b. The picture 101AA00X4000T.TIF must be displayed;*  *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.* | | | |
| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.4h picture 1.PNG | | | |
| *Example of Picture 101AA00TESTPC.TIF over cell 10100AA\_X0000.000, Day palette* ***tbd*** | | | |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.4h picture 2.PNG |
| --- |
| *Example of Picture 101AA00TESTPC.TIF over cell 10100AA\_X0000.000, Dusk palette* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.4h picture 3.PNG |
| --- |
| *Example of Picture 101AA00TESTPC.TIF over cell 10100AA\_X0000.000, Night palette* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.4h picture 4.PNG |
| --- |
| *Example of Picture 101AA00X4000T.TIF over cell 10100AA\_X0000.000, Day palette* ***tbd*** |

## Radar and Plotting Information

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

| **Test Reference** | RadarOverlay | **IHO Reference** | S-98 C-9.2.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of Radar overlays with System Database information* | | | |
| **Setup** | | | |
| *Load exchange set* ***PowerUp***  *Display cell 10100AA\_X01NE at 3 NM range scale*   * *Select Safety Contour value to 8 m* * *Select Safety Depth value to 8 m* * *Select Plain Boundaries* * *Select Paper chart symbols* | | | |
| **Action** | | | |
| *Switch on the following (where available):*   * *Radar image overlay* * *Radar tracked target information* * *AIS information* | | | |
| **Results** | | | |
| *Confirm by observation that same System Database features 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 System Database features which shall be over or under radar echoes.* | | | |
| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.5 picture 1.PNG | | | |
| *Day with radar tracked targets. Display Category Display Base + Lights* ***tbd*** | | | |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.5 picture 2.PNG |
| --- |
| *Dusk with radar tracked targets. Display Category Display Base + Lights* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.5 picture 3.PNG |
| --- |
| *Day with radar echoes and tracked targets. Display Category Display Base + Lights* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.5 picture 4.PNG |
| --- |
| *Dusk with radar echoes and tracked targets. Display Category Display Base + Lights* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.5 picture 5.PNG |
| --- |
| *Day with very noisy radar echoes and tracked targets. Display Category Other, Select Highlight info, Select Shallow water dangers.*  *Note: This example clearly shows which SYSTEM DATABASE features are above radar echoes* ***tbd*** |

| C:\msdokut\STANDARDIT\IHO\S64\Work 2016\Review Aug2016\New picture originals 16aug2016\4.5 picture 6.png |
| --- |
| *Dusk with very noisy radar echoes and tracked targets. Display Category Other, Select Highlight info, Select Shallow water dangers.*  *Note: This example clearly shows which SYSTEM DATABASE features are above radar echoes* ***tbd*** |

## Accuracy

**Note:**

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 NM = 1852 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 1º.

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.

### Distance and azimuth between geographical positions

| **Test Reference** | Accuracy1 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *True distance and azimuth between two geographical positions a).* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Measure the distance and azimuth between the following two features:*  *Viking 49/27-B 32º35.224’S 061º17.710’E*  *Corund Cape Light 32º27.436’S 060º58.609’E* | | | |
| **Results** | | | |
| *Confirm that the results are as follows:*  *True Distance 33193.554 m / 17.9231 NM*  *Bearing from Viking 49/27-B to Corund Cape Light is 295.614 degrees*  *Bearing from Corund Cape Light to Viking 49/27-B is 115.785 degrees* | | | |

| **Test Reference** | Accuracy2 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *True distance and azimuth between two geographical positions b).* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Measure the distance and azimuth between the following two features:*  *Viking 49/27-B 32º35.224’S 061º17.710’E*  *Castlerigg Light 32º23.280’S 060º58.496’E* | | | |
| **Results** | | | |
| *Confirm that the results are as follows:*  *True Distance 37326.351 m / 20.1546 NM*  *Bearing from Viking 49/27-B to Castlerigg Light is 306.172 degrees*  *Bearing from Castlerigg Light to Viking 49/27-B is 126.344 degrees* | | | |

| **Test Reference** | Accuracy2  4.6.1 c) | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *True distance and azimuth between two geographical positions c).* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Measure the distance and azimuth between the following two features:*  *Corund Cape Light 32º27.447’S 060º58.599’E*  *Worm Head Light 32º31.958’S 060º54.337’E* | | | |
| **Results** | | | |
| *Confirm that the results are as follows:*  *True Distance 10680.859 m / 5.7672 NM*  *Bearing from Corund Cape Light to Worm Head Light is 218.665 degrees*  *Bearing from Worm Head Light to Corund Cape Light is 38.703 degrees* | | | |

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

| **Test Reference** | Accuracy3 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Geographical position from known position and distance/azimuth a).* | | | |
| ***Setup*** | | | |
| *As for test* Accuracy1*)* | | | |
| **Action** | | | |
| *From the following position:*  *Viking 49/27-B 32º35.224’S 061º17.710’E*  *Enter a distance and bearing of:*  *True Distance 33193.554 m / 17.9231 NM*  *Bearing 295.614 degrees* | | | |
| **Results** | | | |
| *Confirm that the end geographical position is:*  *Corund Cape Light 32º27.436’S 060º58.609’E* | | | |

| **Test Reference** | Accuracy4 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Geographical position from known position and distance/azimuth b).* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *From the following position:*  *Viking 49/27-B 32º35.224’S 061º17.710’E*  *Enter a distance and bearing of:*  *True Distance 37326.351 m / 20.1546 NM*  *Bearing 306.172 degrees* | | | |
| **Results** | | | |
| *Confirm that the end geographical position is:*  *Castlerigg Light 32º23.280’S 060º58.496’E* | | | |

| **Test Reference** | Accuracy5 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Geographical position from known position and distance/azimuth c).* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *From the following position:*  *Corund Cape Light 32º27.447’S 060º58.599’E*  *Enter a distance and bearing of:*  *True Distance 10680.859 m / 5.7672 NM*  *Bearing 218.665 degrees* | | | |
| **Results** | | | |
| *Confirm that the end geographical position is:*  *Worm Head Light 32º 31.958’S 60º 54.337’E* | | | |

### Rhumb line distance and azimuth between geographical positions

| **Test Reference** | Accuracy6 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Rhumb line distance and azimuth between two geographical positions a).* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Measure the distance and azimuth between the following two features:*  *Viking 49/27-B 32º35.224’S 061º17.710’E*  *Corund Cape Light 32º27.436’S 060º58.609’E* | | | |
| **Results** | | | |
| *Confirm that the results are as follows:*  *True Distance 33193.567 m / 17.9231 NM*  *Bearing from Viking 49/27-B to Corund Cape Light is 295.699 degrees*  *Bearing from Corund Cape Light to Viking 49/27-B is 115.699 degrees* | | | |

| **Test Reference** | Accuracy7 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Rhumb line distance and azimuth between two geographical positions b).* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Measure the distance and azimuth between the following two features:*  *Viking 49/27-B 32º35.224’S 061º17.710’E*  *Castlerigg Light 32º23.280’S 060º58.496’E* | | | |
| **Results** | | | |
| *Confirm that the results are as follows:*  *True Distance 37326.365 m / 20.1546 NM*  *Bearing from Viking 49/27-B to Castlerigg Light is 306.258 degrees*  *Bearing from Castlerigg Light to Viking 49/27-B is 126.258 degrees* | | | |

| **Test Reference** | Accuracy8 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Rhumb line distance and azimuth between two geographical positions c).* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Measure the distance and azimuth between the following two features:*  *Corund Cape Light 32º27.447’S 060º58.599’E*  *Worm Head Light 32º31.958’S 060º54.337’E* | | | |
| **Results** | | | |
| *Confirm that the results are as follows:*  *True Distance 10680.859 m / 5.7672 NM*  *Bearing from Corund Cape Light to Worm Head Light is 218.684 degrees*  *Bearing from Worm Head Light to Corund Cape Light is 38.684 degrees* | | | |

### Geodesics

| **Test Reference** | Accuracy9 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Geodesic lines and circle, northern quadrant.* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Plot positions listed in sets 2-6 of the positions listed in section 4.6.6* | | | |
| **Results** | | | |
| *Confirm that the lines drawn pass through or sufficiently close to the listed positions and that the Geodesic circle corresponds to range rings at 2 000 000 m intervals.* | | | |

| **Test Reference** | Accuracy10 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Geodesic lines and circle, crossing the equator.* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Plot positions listed in sets 7-11 of the positions listed in section 4.6.6* | | | |
| **Results** | | | |
| *Confirm that the lines drawn pass through or sufficiently close to the listed positions and that the Geodesic circle corresponds to range rings at 2 000 000 m intervals.* | | | |

| **Test Reference** | Accuracy11 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Geodesic lines southern quadrant.* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Plot positions listed in sets 12-16 of the positions listed in section 4.6.6* | | | |
| **Results** | | | |
| *Confirm that the lines drawn pass through or sufficiently close to the listed positions and that the Geodesic circle corresponds to range rings at 2 000 000 m intervals.* | | | |

### Rhumb Lines

| **Test Reference** | Accuracy12 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Rhumb lines, northern quadrant.* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Plot positions listed in sets 2-5 of the positions listed in section 4.6.7* | | | |
| **Results** | | | |
| *Confirm that the lines drawn pass through or sufficiently close to the listed positions.* | | | |

| **Test Reference** | Accuracy13 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Rhumb lines, crossing the equator.* | | | |
| **Setup** | | | |
| *As for test 4.6.1a)* | | | |
| **Action** | | | |
| *Plot positions listed in sets 6-9 of the positions listed in section 4.6.7* | | | |
| **Results** | | | |
| *Confirm that the lines drawn pass through or sufficiently close to the listed positions.* | | | |

| **Test Reference** | Accuracy14 | **IHO Reference** | - |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Rhumb lines, southern quadrant.* | | | |
| **Setup** | | | |
| *As for test* Accuracy1 | | | |
| **Action** | | | |
| *Plot positions listed in sets 10-13 of the positions listed in section 4.6.7* | | | |
| **Results** | | | |
| *Confirm that the lines drawn pass through or sufficiently close to the listed positions.* | | | |

### Plotting of Geodesics in ENC datasets

| **Test Reference** | GeodesicPlotting | **IHO Reference** | (S-100 Part 9/S-98) |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test is designed to verify the ECDIS is able to plot geodesic curves contained within S-101 ENCs.* | | | |
| **Setup** | | | |
| *Load exchange set* ***GeodesicPlotting*** | | | |
| **Action** | | | |
| *Navigate to position XX, YY, NN.* | | | |
| **Results** | | | |
| *Verify the islet lies between the rhumb line segment (north) and geodesic line segment (south)* | | | |

### 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 32º35.224S 061º17.710E

Corund Cape Light 32º27.436S 060º58.609E

True Distance 33193.554 m / 17.9231 NM

Forward Bearing 295.614 degrees

Reverse Bearing 115.785 degrees

Viking 49/27-B 32º35.224S 061º17.710E

Castlerigg Light 32º23.280S 060º58.496E

True Distance 37326.351 m / 20.1546 NM

Forward Bearing 306.172 degrees

Reverse Bearing 126.344 degrees

Usage Band 5

Corund Cape Light 32º27.447S 060º58.599E

Worm Head Light 32º31.958S 060º54.337E

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 (30ºN, 60ºW to 60ºN, 30ºW)**

Point1 30º00.0000N 060º00.0000W

Point2 31º38.1452N 059º05.9571W

Point3 33º15.8706N 058º09.9924W

Point4 34º53.1348N 057º11.9156W

Point5 36º29.8923N 056º11.5178W

Point6 38º06.0926N 055º08.5692W

Point7 39º41.6796N 054º02.8166W

Point8 41º16.5909N 052º53.9805W

Point9 42º50.7564N 051º41.7515W

Point10 44º24.0976N 050º25.7868W

Point11 45º56.5257N 049º05.7067W

Point12 47º27.9409N 047º41.0895W

Point13 48º58.2294N 046º11.4681W

Point14 50º27.2626N 044º36.3244W

Point15 51º54.8937N 042º55.0855W

Point16 53º20.9554N 041º07.1195W

Point17 54º45.2565N 039º11.7330W

Point18 56º07.5789N 037º08.1699W

Point19 57º27.6730N 034º55.6135W

Point20 58º45.2547N 032º33.1935W

Point21 60º00.0000N 030º00.0000W

**Set 3 Long Diagonal (30ºN, 30ºW to 60ºN, 60ºW)**

Point1 30º00.0000N 030º00.0000W

Point2 31º38.1452N 030º54.0429W

Point3 33º15.8706N 031º50.0076W

Point4 34º53.1348N 032º48.0844W

Point5 36º29.8923N 033º48.4822W

Point6 38º06.0926N 034º51.4308W

Point7 39º41.6796N 035º57.1833W

Point8 41º16.5909N 037º06.0195W

Point9 42º50.7564N 038º18.2485W

Point10 44º24.0976N 039º34.2132W

Point11 45º56.5257N 040º54.2933W

Point12 47º27.9409N 042º18.9105W

Point13 48º58.2294N 043º48.5319W

Point14 50º27.2626N 045º23.6756W

Point15 51º54.8937N 047º04.9145W

Point16 53º20.9554N 048º52.8805W

Point17 54º45.2565N 050º48.2670W

Point18 56º07.5789N 052º51.8301W

Point19 57º27.6730N 055º04.3865W

Point20 58º45.2547N 057º26.8065W

Point21 60º00.0000N 060º00.0000W

**Set 4 Long Horizontal (45ºN, 60ºW to 45ºN, 30ºW)**

Point1 45º00.0000N 060º00.0000W

Point2 45º11.2519N 058º31.7916W

Point3 45º21.3608N 057º03.0317W

Point4 45º30.3133N 055º33.7738W

Point5 45º38.0973N 054º04.0740W

Point6 45º44.7022N 052º33.9908W

Point7 45º50.1188N 051º03.5849W

Point8 45º54.3397N 049º32.9185W

Point9 45º57.3588N 048º02.0555W

Point10 45º59.1720N 046º31.0608W

Point11 45º59.7767N 045º00.0000W

Point12 45º59.1720N 043º28.9392W

Point13 45º57.3588N 041º57.9446W

Point14 45º54.3397N 040º27.0815W

Point15 45º50.1188N 038º56.4152W

Point16 45º44.7022N 037º26.0092W

Point17 45º38.0973N 035º55.9260W

Point18 45º30.3133N 034º26.2263W

Point19 45º21.3608N 032º56.9684W

Point20 45º11.2519N 031º28.2085W

Point21 45º00.0000N 030º00.0000W

**Set 5 Long Vertical (30ºN, 45ºW to 60ºN, 45ºW)**

The geodesic runs along the 45ºW meridian.

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

Point1 62º58.1482N 045º00.0000W

Point2 62º02.9175N 035º13.1324W

Point3 59º29.7703N 027º21.3716W

Point4 55º47.3417N 022º13.6842W

Point5 51º25.6105N 019º41.1668W

Point6 46º49.0062N 019º14.2861W

Point7 42º16.1548N 020º24.1958W

Point8 38º1.4970N 022º48.2871W

Point9 34º16.6609N 026º09.5368W

Point10 31º11.2085N 030º14.5458W

Point11 28º52.8672N 034º51.8044W

Point12 27º27.4359N 039º50.5197W

Point13 26º58.5455N 045º00.0000W

Point14 27º27.4359N 050º09.4803W

Point15 28º52.8672N 055º08.1956W

Point16 31º11.2085N 059º45.4542W

Point17 34º16.6609N 063º50.4632W

Point18 38º01.4970N 067º11.7129W

Point19 42º16.1548N 069º35.8042W

Point20 46º49.0062N 070º45.7139W

Point21 51º25.6105N 070º18.8332W

Point22 55º47.3417N 067º46.3158W

Point23 59º29.7703N 062º38.6284W

Point24 62º02.9175N 054º46.8676W

Point25 62º58.1482N 045º00.0000W

**Long Geodesics (Crossing Equator).**

**Set 7 Long Diagonal (15ºN, 60ºW to 15ºS, 30ºW)**

Point1 15º00.0000N 060º00.0000W

Point2 13º31.8194N 058º26.4185W

Point3 12º03.0524N 056º53.9818W

Point4 10º33.7708N 055º22.5552W

Point5 09º04.0440N 053º52.0065W

Point6 07º33.9393N 052º22.2057W

Point7 06º03.5224N 050º53.0251W

Point8 04º32.8574N 049º24.3384W

Point9 03º02.0073N 047º56.0210W

Point10 01º31.0343N 046º27.9492W

Point11 00º00.0000N 045º00.0000W

Point12 01º31.0343S 043º32.0508W

Point13 03º02.0073S 042º03.9789W

Point14 04º32.8574S 040º35.6615W

Point15 06º03.5224S 039º06.9749W

Point16 07º33.9393S 037º37.7942W

Point17 09º04.0440S 036º07.9935W

Point18 10º33.7708S 034º37.4447W

Point19 12º03.0524S 033º06.0182W

Point20 13º31.8194S 031º33.5815W

Point21 15º00.0000S 030º00.0000W

**Set 8 Long Diagonal (15ºN, 30ºW to 15ºS, 60ºW)**

Point1 15º00.0000N 030º00.0000W

Point2 13º31.8194N 031º33.5815W

Point3 12º03.0524N 033º06.0182W

Point4 10º33.7708N 034º37.4448W

Point5 09º04.0440N 036º07.9935W

Point6 07º33.9393N 037º37.7943W

Point7 06º03.5224N 039º06.9749W

Point8 04º32.8574N 040º35.6616W

Point9 03º02.0073N 042º03.9790W

Point10 01º31.0343N 043º32.0508W

Point11 00º00.0000N 045º00.0000W

Point12 01º31.0343S 046º27.9492W

Point13 03º02.0073S 047º56.0211W

Point14 04º32.8574S 049º24.3385W

Point15 06º03.5224S 050º53.0251W

Point16 07º33.9393S 052º22.2058W

Point17 09º04.0440S 053º52.0065W

Point18 10º33.7708S 055º22.5553W

Point19 12º03.0524S 056º53.9819W

Point20 13º31.8194S 058º26.4185W

Point21 15º00.0000S 060º00.0000W

**Set 9 Long Horizontal (0ºN, 60ºW to 0ºN, 30ºW)**

The geodesic runs along the Equator.

**Set 10 Long Vertical (15ºS, 45ºW to 15ºN, 45ºW)**

The geodesic runs along the 45ºW meridian.

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

Point1 18º04.8887N 045º00.0000W

Point2 17º26.7433N 040º12.0936W

Point3 15º35.6306N 035º47.3375W

Point4 12º40.8191N 032º05.0570W

Point5 08º55.8234N 029º18.7826W

Point6 04º36.5608N 027º36.4877W

Point7 00º00.0000N 027º02.0217W

Point8 04º36.5608S 027º36.4877W

Point9 08º55.8234S 029º18.7826W

Point10 12º40.8191S 032º05.0570W

Point11 15º35.6306S 035º47.3375W

Point12 17º26.7433S 040º12.0936W

Point13 18º04.8887S 045º00.0000W

Point14 17º26.7433S 049º47.9064W

Point15 15º35.6306S 054º12.6625W

Point16 12º40.8191S 057º54.9430W

Point17 08º55.8234S 060º41.2174W

Point18 04º36.5608S 062º23.5123W

Point19 00º00.0000N 062º57.9783W

Point20 04º36.5608N 062º23.5123W

Point21 08º55.8234N 060º41.2174W

Point22 12º40.8191N 057º54.9430W

Point23 15º35.6306N 054º12.6625W

Point24 17º26.7433N 049º47.9064W

Point25 18º04.8887N 045º00.0000W

**Long Geodesics - South West Quadrant.**

**Set 12 Long Diagonal (30ºS, 60ºW to 60ºS, 30ºW)**

Point1 30º00.0000S 060º00.0000W

Point2 31º38.1452S 059º05.9571W

Point3 33º15.8706S 058º09.9924W

Point4 34º53.1348S 057º11.9156W

Point5 36º29.8923S 056º11.5178W

Point6 38º06.0926S 055º08.5692W

Point7 39º41.6796S 054º02.8166W

Point8 41º16.5909S 052º53.9805W

Point9 42º50.7564S 051º41.7515W

Point10 44º24.0976S 050º25.7868W

Point11 45º56.5257S 049º05.7067W

Point12 47º27.9409S 047º41.0895W

Point13 48º58.2294S 046º11.4681W

Point14 50º27.2626S 044º36.3244W

Point15 51º54.8937S 042º55.0855W

Point16 53º20.9554S 041º07.1195W

Point17 54º45.2565S 039º11.7330W

Point18 56º07.5789S 037º08.1699W

Point19 57º27.6730S 034º55.6135W

Point20 58º45.2547S 032º33.1935W

Point21 60º00.0000S 030º00.0000W

**Set 13 Long Diagonal (30ºS, 30ºW to 60ºS, 60ºW)**

Point1 30º00.0000S 030º00.0000W

Point2 31º38.1452S 030º54.0429W

Point3 33º15.8706S 031º50.0076W

Point4 34º53.1348S 032º48.0844W

Point5 36º29.8923S 033º48.4822W

Point6 38º06.0926S 034º51.4308W

Point7 39º41.6796S 035º57.1833W

Point8 41º16.5909S 037º06.0195W

Point9 42º50.7564S 038º18.2485W

Point10 44º24.0976S 039º34.2132W

Point11 45º56.5257S 040º54.2933W

Point12 47º27.9409S 042º18.9105W

Point13 48º58.2294S 043º48.5319W

Point14 50º27.2626S 045º23.6756W

Point15 51º54.8937S 047º04.9145W

Point16 53º20.9554S 048º52.8805W

Point17 54º45.2565S 050º48.2670W

Point18 56º7.5789S 052º51.8301W

Point19 57º27.6730S 055º04.3865W

Point20 58º45.2547S 057º26.8065W

Point21 60º00.0000S 060º00.0000W

**Set 14 Long Horizontal (45ºS, 60ºW to 45ºS, 30ºW)**

Point1 45º00.0000S 060º00.0000W

Point2 45º11.2519S 058º31.7916W

Point3 45º21.3608S 057º03.0317W

Point4 45º30.3133S 055º33.7738W

Point5 45º38.0973S 054º04.0740W

Point6 45º44.7022S 052º33.9908W

Point7 45º50.1188S 051º03.5849W

Point8 45º54.3397S 049º32.9185W

Point9 45º57.3588S 048º02.0555W

Point10 45º59.1720S 046º31.0608W

Point11 45º59.7767S 045º00.0000W

Point12 45º59.1720S 043º28.9392W

Point13 45º57.3588S 041º57.9446W

Point14 45º54.3397S 040º27.0815W

Point15 45º50.1188S 038º56.4152W

Point16 45º44.7022S 037º26.0092W

Point17 45º38.0973S 035º55.9260W

Point18 45º30.3133S 034º26.2263W

Point19 45º21.3608S 032º56.9684W

Point20 45º11.2519S 031º28.2085W

Point21 45º00.0000S 030º00.0000W

**Set 15 Long Vertical (30ºS, 45ºW to 60ºS, 45ºW)**

The geodesic runs along the 45ºW meridian.

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

Point1 62º58.1482S 045º00.0000W

Point2 62º2.09175S 035º13.1324W

Point3 59º29.7703S 027º21.3716W

Point4 55º47.3417S 022º13.6842W

Point5 51º25.6105S 019º41.1668W

Point6 46º49.0062S 019º14.2861W

Point7 42º16.1548S 020º24.1958W

Point8 38º01.4970S 022º48.2871W

Point9 34º16.6609S 026º09.5368W

Point10 31º11.2085S 030º14.5458W

Point11 28º52.8672S 034º51.8044W

Point12 27º27.4359S 039º50.5197W

Point13 26º58.5455S 045º00.0000W

Point14 27º27.4359S 050º09.4803W

Point15 28º52.8672S 055º08.1956W

Point16 31º11.2085S 059º45.4542W

Point17 34º16.6609S 063º50.4632W

Point18 38º01.4970S 067º11.7129W

Point19 42º16.1548S 069º35.8042W

Point20 46º49.0062S 070º45.7139W

Point21 51º25.6105S 070º18.8332W

Point22 55º47.3417S 067º46.3158W

Point23 59º29.7703S 062º38.6284W

Point24 62º02.9175S 054º46.8676W

Point25 62º58.1482S 045º00.0000W

### 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 (30ºN, 30ºW to 60ºN, 60ºW)**

Point1 30º00.0000N 030º00.0000W

Point2 31º30.2165N 031º11.4806W

Point3 33º00.4119N 032º24.1146W

Point4 34º30.5854N 033º37.9913W

Point5 36º00.7368N 034º53.2065W

Point6 37º30.8656N 036º09.8628W

Point7 39º00.9713N 037º28.0713W

Point8 40º31.0539N 038º47.9519W

Point9 42º01.1129N 040º09.6347W

Point10 43º31.1484N 041º33.2615W

Point11 45º01.1601N 042º58.9871W

Point12 46º31.1481N 044º26.9812W

Point13 48º01.1124N 045º57.4306W

Point14 49º31.0531N 047º30.5417W

Point15 51º00.9704N 049º06.5435W

Point16 52º30.8645N 050º45.6910W

Point17 54º00.7358N 052º28.2698W

Point18 55º30.5845N 054º14.6010W

Point19 57º00.4111N 056º05.0479W

Point20 58º30.2161N 058º00.0234W

Point21 60º00.0000N 060º00.0000W

**Set 3 Long Diagonal (60ºN, 30ºW to 30ºN, 60ºW)**

Point1 60º00.0000N 030º00.0000W

Point2 58º30.2161N 031º59.9767W

Point3 57º00.4111N 033º54.9521W

Point4 55º30.5845N 035º45.3990W

Point5 54º00.7358N 037º31.7302W

Point6 52º30.8645N 039º14.3090W

Point7 51º00.9704N 040º53.4565W

Point8 49º31.0531N 042º29.4583W

Point9 48º01.1124N 044º02.5694W

Point10 46º31.1481N 045º33.0188W

Point11 45º01.1601N 047º01.0129W

Point12 43º31.1484N 048º26.7385W

Point13 42º01.1129N 049º50.3653W

Point14 40º31.0539N 051º12.0481W

Point15 39º00.9713N 052º31.9287W

Point16 37º30.8656N 053º50.1372W

Point17 36º00.7368N 055º06.7935W

Point18 34º30.5854N 056º22.0087W

Point19 33º00.4119N 057º35.8854W

Point20 31º30.2165N 058º48.5194W

Point21 30º00.0000N 060º00.0000W

**Set 4 Long Horizontal (45ºN, 60ºW to 45ºN, 30ºW)**

The rhumb line runs along the 45ºN parallel.

**Set 5 Long Vertical (30ºN, 45ºW to 60ºN, 45ºW)**

The rhumb line runs along the 45ºW meridian.

**Long Rhumb Lines (Crossing Equator).**

**Set 6 Long Diagonal (15ºN, 60ºW to 15ºS, 30ºW)**

Point1 15º00.0000N 060º00.0000W

Point2 13º30.0344N 058º28.2185W

Point3 12º00.0581N 056º57.0084W

Point4 10º30.0722N 055º26.3012W

Point5 09º00.0778N 053º56.0303W

Point6 07º30.0761N 052º26.1306W

Point7 06º00.0683N 050º56.5384W

Point8 04º30.0555N 049º27.1908W

Point9 03º00.0391N 047º58.0260W

Point10 01º30.0202N 046º28.9826W

Point11 00º00.0000N 045º00.0000W

Point12 01º30.0202S 043º31.0173W

Point13 03º00.0391S 042º01.9740W

Point14 04º30.0555S 040º32.8092W

Point15 06º00.0683S 039º03.4616W

Point16 07º30.0761S 037º33.8694W

Point17 09º00.0778S 036º03.9697W

Point18 10º30.0722S 034º33.6988W

Point19 12º00.0581S 033º02.9916W

Point20 13º30.0344S 031º31.7815W

Point21 15º00.0000S 030º00.0000W

**Set 7 Long Diagonal (15ºN, 30ºW to 15ºS, 60ºW)**

Point1 15º00.0000N 030º00.0000W

Point2 13º30.0344N 031º31.7815W

Point3 12º00.0581N 033º02.9916W

Point4 10º30.0722N 034º33.6988W

Point5 09º00.0778N 036º03.9697W

Point6 07º30.0761N 037º33.8694W

Point7 06º00.0683N 039º03.4616W

Point8 04º30.0555N 040º32.8092W

Point9 03º00.0391N 042º01.9740W

Point10 01º30.0202N 043º31.0174W

Point11 00º00.0000N 045º00.0000W

Point12 01º30.0202S 046º28.9827W

Point13 03º00.0391S 047º58.0260W

Point14 04º30.0555S 049º27.1908W

Point15 06º00.0683S 050º56.5384W

Point16 07º30.0761S 052º26.1306W

Point17 09º00.0778S 053º56.0303W

Point18 10º30.0722S 055º26.3012W

Point19 12º00.0581S 056º57.0084W

Point20 13º30.0344S 058º28.2185W

Point21 15º00.0000S 060º00.0000W

**Set 8 Long Horizontal (0ºN, 60ºW to 0ºN, 30ºW)**

The rhumb line runs along the Equator.

**Set 9 Long Vertical (15ºS, 45ºW to 15ºN, 45ºW)**

The rhumb line runs along the 45ºW meridian.

**Long Rhumb Lines - South West Quadrant.**

**Set 10 Long Diagonal (30ºS, 30ºW to 60ºS, 60ºW)**

Point1 30º00.0000S 030º00.0000W

Point2 31º30.2165S 031º11.4806W

Point3 33º00.4119S 032º24.1146W

Point4 34º30.5854S 033º37.9913W

Point5 36º00.7368S 034º53.2065W

Point6 37º30.8656S 036º09.8628W

Point7 39º00.9713S 037º28.0713W

Point8 40º31.0539S 038º47.9519W

Point9 42º01.1129S 040º09.6347W

Point10 43º31.1484S 041º33.2615W

Point11 45º01.1601S 042º58.9871W

Point12 46º31.1481S 044º26.9812W

Point13 48º01.1124S 045º57.4306W

Point14 49º31.0531S 047º30.5417W

Point15 51º00.9704S 049º06.5435W

Point16 52º30.8645S 050º45.6910W

Point17 54º00.7358S 052º28.2698W

Point18 55º30.5845S 054º14.6010W

Point19 57º00.4111S 056º05.0479W

Point20 58º30.2161S 058º00.0234W

Point21 60º00.0000S 060º00.0000W

**Set 11 Long Diagonal (60ºS, 30ºW to 30ºS, 60ºW)**

Point1 60º00.0000S 030º00.0000W

Point2 58º30.2161S 031º59.9767W

Point3 57º00.4111S 033º54.9521W

Point4 55º30.5845S 035º45.3990W

Point5 54º00.7358S 037º31.7302W

Point6 52º30.8645S 039º14.3090W

Point7 51º00.9704S 040º53.4565W

Point8 49º31.0531S 042º29.4583W

Point9 48º01.1124S 044º02.5694W

Point10 46º31.1481S 045º33.0188W

Point11 45º01.1601S 047º01.0129W

Point12 43º31.1484S 048º26.7385W

Point13 42º01.1129S 049º50.3653W

Point14 40º31.0539S 051º12.0481W

Point15 39º00.9713S 052º31.9287W

Point16 37º30.8656S 053º50.1372W

Point17 36º00.7368S 055º06.7935W

Point18 34º30.5854S 056º22.0087W

Point19 33º00.4119S 057º35.8854W

Point20 31º30.2165S 058º48.5194W

Point21 30º00.0000S 060º00.0000W

**Set 12 Long Horizontal (45ºS, 60ºW to 45ºS, 30ºW)**

The rhumb line runs along the 45ºS parallel.

**Set 13 Long Vertical (30ºS, 45ºW to 60ºS, 45ºW)**

The rhumb line runs along the 45ºW meridian.

## Symbols

### Symbol Size

| **Test Reference** | SymbolSize | **IHO Reference** | S-98 C-20.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of symbols in size shown in the IHO Presentation Library.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Perform zoom-in and zoom-out operations in each Display Category.* | | | |
| **Results** | | | |
| *Confirm that the symbols do not decrease in size below that shown in the IHO Presentation Library.* | | | |

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

| **Test Reference** | ChartSymbols | **IHO Reference** | S-52 16.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of the check symbol of the correct size (in mm).* | | | |
| **Setup** | | | |
| *Load the exchange set* ***Chart1*** | | | |
| **Action** | | | |
| *Observe the CHKSYM01 symbol within the Information about the chart display (A,B) section.* | | | |
| **Results** | | | |
| *Confirm that the height of the CHKSYM01 symbol is not less than 5.0mm and not greater than 5.5mm.* | | | |

### Size in pixels of the check symbol CHKSYM01

| **Test Reference** | CheckSym | **IHO Reference** | S-52 [3.1.5] |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of the check symbol of the correct size (in pixels).* | | | |
| **Setup** | | | |
| *As for test* Chart1Symbols | | | |
| **Action** | | | |
| *Observe the CHKSYM01 symbol within the Information about the chart display (A,B) section.* | | | |
| **Results** | | | |
| *Confirm that the number of pixels (lines) which comprise the vertical extent of the symbol CHKSYM01 is not less than 16.*  *This test may be conducted by calculation based on the properties of the EUT.* | | | |

### Display of text at the correct size

| **Test Reference** | TextSize | **IHO Reference** | S-52 [3.1.5] |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of text within the chart display and pick report.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp*** | | | |
| **Action** | | | |
| *Observe the chart display.*  *Pick a feature and observe the text within the pick report.*  *Create a Mariner’s note with text and observe its display.* | | | |
| **Results** | | | |
| *Based on viewing distance specified in manufacturer manuals, confirm that for all text observed the height of upper-case characters is not less than 3.5* *mm per 1 metre viewing distance* | | | |

### Display redraw

| **Test Reference** | Redraw | **IHO Reference** | S-52 [5.1] |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of text within the chart display and pick report.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***PowerUp***   * *Select North up true motion* * *Select Display Category Other* * *Select All Independent Mariner selectors* * *Simulate the own ship’s movement from Micklefirth through the Mickelfirth channel and to the Mickleden TSS roundabout.* | | | |
| **Action** | | | |
| *Monitor the display at a viewing scale of 1:20,000* | | | |
| **Results** | | | |
| *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.* | | | |

## Units and Legend

| **Test Reference** | | UnitsLegend | | **IHO Reference** | S-52 [2.3.1f,  2.3.1g], 10.6.2 |
| --- | --- | --- | --- | --- | --- |
| **Test description** | | | | | |
| *Display units and chart legend.* | | | | | |
| **Setup** | | | | | |
| *Load the exchange set* ***PowerUp*** | | | | | |
| **Action** | | | | | |
| *Select a position for display applicable chart legend* | | | | | |
| **Results** | | | | | |
| *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.* | | | | | |
|  | *ECDIS Legend* | | *Values* | | |
| *Units for depth* | | *m* | | |
| *Units for height* | | *m* | | |
| *Note****:*** *Units for depth and height: Although the ENC Product Specification, S-101 does not allow any other than metric depths and heights, these two elements shall be stated for clarity for the Mariner.* | | | | |
| *Scale of display* | | *Selected by Mariner. (The default display scale is defined by the maximum display scale)*  *Compilation scale –* ***52 000*** | | |
| *Data quality indicator* | | *a. category of zone of confidence attribute of the Quality of Bathymetric Data feature for bathymetric data.*  *b. Quality of Non Bathymetric Data attribute (if available) for non-bathymetric data.* | | |
| *Note: Due to the way quality is encoded in the ENC, both values (a. and b.) shall be used.* | | | | |
| *Sounding/vertical datum* | | *Sounding datum –* ***Lowest astronomical tide*** *Vertical datum –* ***Mean high water springs*** *(VERDAT attributes of individual features shall not be used for the legend).* | | |
| *Horizontal datum* | | *HDAT subfield of the DPSM field.*  ***WGS 84*** | | |
| *Value of safety depth* | | *Selected by Mariner (default is 30 m).* | | |
| *Value of safety contour* | | *Selected by Mariner (default is 30 m).* | | |
| *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.* | | | | |
| *Magnetic variation* | | *Value of Magnetic variation, RYRMGV and VALACM of the MAGVAR feature.Item shall be displayed as:*  *VALMAG RYRMGV (VALACM)*  *For example, 4°15W 1990 (8’E)* | | |
| *Date and number of latest update affecting chart cells currently in use.* | | *ISDT and UPDN subfields of the DSID field of the last update cell update file (ER data set) applied.* ***Issue Date – 20010409***  ***Update Number - 0*** | | |
| *In addition the following units shall be indicated:*   * *position;* * *distance;* * *speed.* | | | | | |

## Other Chart Related Functionality

### ECDIS Chart 1

| **Test Reference** | ChartOne | **IHO Reference** | S-52 18.2.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Display of ECDIS chart 1.* | | | |
| **Setup** | | | |
| *N/A* | | | |
| **Action** | | | |
| *Navigate to ECDIS chart 1.*  *Compare the displayed image with the plots provided in S-98 XXX-XXX. To ensure the same display the ECDIS under test must be configured per the instructions of the ECDIS Chart1 README.TXT;*   * *Set Safety Contour value to 10 m* * *Set Shallow Contour value to 5 m* * *Set Deep Contour value to 30 m* * *Set Safety Depth value to 8 m* * *Select Display Category Other* * *Select all Text groups* * *Select Symbolized Boundaries* * *Select Simplified Point Symbols = false* * *Select Contour label* * *Select Four Shades* * *Select Unknown*     *Screen plots are as displayed by compilation scale, that is 1:60 000 or 1:14 000. Screen plot number 1 is 1:60 000 and all others are 1:14 000.*    *Two of the screen plots (numbers 11 and 13) use “Select Simplified Point Symbols” ~~instead of “Select Paper Chart Symbols~~”. One screen plot (number 6) use “Select Accuracy”.* | | | |
| **Results** | | | |
| *Confirm that ECDIS chart 1 is displayed.*  *Confirm that the displayed image is consistent with the plots provided in S-98.* | | | |

| **Test Reference** | ChartOne2 | **IHO Reference** | S-52 18.2.2 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Interrogation of ECDIS chart 1.* | | | |
| **Setup** | | | |
| *With ECDIS chart 1 displayed.* | | | |
| **Action** | | | |
| *Interrogate 3 symbols by cursor pick.* | | | |
| **Results** | | | |
| *Upon interrogation the description of the symbol as contained in the Presentation Library is presented.* | | | |

# Detection and Notification of Navigational Hazards

## Detection and Notification of Navigational Hazards - Basic test

| **Test Reference** | NavigationalHazards | **IHO Reference** | S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test as listed in section 10.5.9 of IHO S-52 and included in the test dataset 101AA00NAVHZ.000.*  *This test is performed by loading the test cell 101AA00NAVHZ.000, manually creating a route connecting all way points between features marked as WP1 through WP18 and checking display against the corresponding graphical plot* | | | |
| **Setup** | | | |
| *Load dataset 101AA00NAVHZ.000 from exchange set* ***NavigationalHazards***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols* * *Select all Text groups* * *Manually create a route connecting all way points between feature features marked WP1 through WP18* * *Set user-specified distance for indication navigational hazards as 0.1 NM* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot.*  *Repeat sequentially with a Safety Contour value of 0m, 2m, 4m, 5m, 6m, 8m, 9m, 10m, 11m, 16m, 21m, 31m, 42m, 50m, 51m.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.*  *Note: To increase the prominence of dangers in unsafe waters it is permitted to highlight features with an isolated danger mark when they are wholly located in this area.* | | | |

|  |
| --- |
| *Safety Contour = 0 m, Alternative 1* |
| *C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 1 - Safety contour = 0 meter.PNG* |
| *Safety Contour = 0 m, Alternative 2* |

|  |
| --- |
| Safety Contour = 2 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 2 - Safety contour = 2 meter.PNG |
| Safety Contour = 2 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 4 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 3 - Safety contour = 4 meter.PNG |
| Safety Contour = 4 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 5 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 4 - Safety contour = 5 meter.PNG |
| Safety Contour = 5 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 6 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 5 - Safety contour = 6 meter.PNG |
| Safety Contour = 6 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 8 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 6 - Safety contour = 8 meter.PNG |
| Safety Contour = 8 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 9 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 7 - Safety contour = 9 meter.PNG |
| Safety Contour = 9 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 10 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 8 - Safety contour = 10 meter.PNG |
| Safety Contour = 10 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 11 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 9 - Safety contour = 11 meter.PNG |
| Safety Contour = 11 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 16 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 10 - Safety contour = 16 meter.PNG |
| Safety Contour = 16 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 21 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 11 - Safety contour = 21 meter.PNG |
| Safety Contour = 21 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 31 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 12 - Safety contour = 31 meter.PNG |
| Safety Contour = 31 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 42 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 13 - Safety contour = 42 meter - Alternative.PNG |
| Safety Contour = 42 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 50 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 14 - Safety contour = 50 meter - Alternative.PNG |
| Safety Contour = 50 m, Alternative 2 |

|  |
| --- |
| Safety Contour = 51 m, Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.1 picture 15 - Safety contour = 51 meter.PNG |
| Safety Contour = 51 m, Alternative 2 |

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

| **Test Reference** | NavigationalHazardsLS | **IHO Reference** | S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of navigational hazards.*  *This test is performed by loading the test datasets 101AA00OVRVU.000 and 101AA00NAVHZ.000, manually creating a route connecting all way points between features marked as WP1 through WP8 and checking display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***NavigationalHazards*** *and the exchange set* ***NavigationalHazardsOverview***   * *Select Display Category Other* * *Set the Safety Contour value to 30 m* * *Set the Safety Depth value to 30 m* * *Select Plain Boundaries to Off* * *Select Simplified Symbols to Off* * *Select all Text groups to On* | | | |
| **Action** | | | |
| *Select position 39°57.000’N 104°49.000’W at maximum display scale (1:350 000) of 101AA00OVRVU.*  *1) View chart before route planning.*  *2) Manually create a route connecting all way points between features 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.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.*  *1) Situation before route planning. Chart 101AA00OVRVU displayed as it is-* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.2 picture 1 - Alternative.PNG | | | |
| Alternative 1 | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.2 picture 1.PNG | | | |
| Alternative 2  **tbd** | | | |

| *2) Situation after route planning. Alerts indicated from largest scale available for each location* |
| --- |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\5.2 picture 2 - Alternative.PNG |
| Alternative 1 |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\5.2 picture 2.PNG |
| Alternative 2  **tbd** |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | NavigationalHazardsMon | **IHO Reference** | S-98 C-12.9.7 |
| **Test description** | | | |
| *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 features satisfying the conditions for this test (as listed in section 10.5.9 of IHO S-52 and included in the test cell 101AA00NAVHZ.000) that is shallower than the Mariner's safety contour.*  *This test is performed by loading the test cell 101AA00NAVHZ.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.* | | | |
| **Setup** | | | |
| *As for test 5.1*  *Select all Text groups* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS for each Safety Contour setting against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 5.1.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.3 picture 1 - Alternative.PNG | | | |
| *An example with Safety Contour = 10 m. Presentation alternative 1*  **tbd** | | | |
| *C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.3 picture 1.PNG*  **tbd** | | | |
| *An example with Safety Contour = 10 m. Presentation alternative 2* | | | |

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | NavigationalHazardsMonLS | **IHO Reference** | S-98 C-12.9.7 |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of navigational hazards. This test is performed by loading the test cells 101AA00OVRVU.000 and 101AA00NAVHZ.000, manually creating a route connecting all way points between features marked as WP1 through WP8 and checking display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***NavigationalHazards***  *Load the exchange set* ***NavigationalHazardsOverview***   * *Select Display Category Other* * *Set the Safety Contour value to 30 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols* * *Select all Text groups* | | | |
| **Action** | | | |
| *Select position 39°57.000’N 104°49.000’W at the maximum display scale (1:350 000) of 101AA00OVRVU.*  *Set simulated own ship for 39°49.587’N 104°54.930’W with heading set for 10.0°*  *Select size of own ship check area as 1.0 NM width and 8.0 NM length.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.4 picture 1 - Alternative.PNG  **tbd** | | | |
| *1) Situation before route monitoring. Chart 101AA00OVRVU displayed as it is. Presentation alternative 1* | | | |
| *C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.4 picture 1.PNG*  **tbd** | | | |
| *Situation before route monitoring. Chart 101AA00OVRVU displayed as it is. Presentation alternative 2* | | | |

| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.4 picture 2 - Alternative.PNG  **tbd** |
| --- |
| *2) Situation during route monitoring. Alerts indicated from largest scale available for each location Presentation alternative 1* |
| *C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.4 picture 2.PNG*  **tbd** |
| *Situation during route monitoring. Alerts indicated from largest scale available for each location. Presentation alternative 2*  *Note: The parameters and shapes of the ship's check area are examples* |

# Detection of Areas for which Special Conditions Exist

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

| **Test Reference** | SpecialConditions | **IHO Reference** | S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test are listed in section S-98 XXX-XXX and are included in the test cell 101AA00ARSPC.000.*  *This test is performed by loading the test cell 101AA00ARSPC.000, manually creating a route connecting all way points between features marked as WP1 through WP4 and checking display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***SpecialConditions***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols* * *Manually create a route connecting all way points between features marked WP1 through WP4* * *Set user-specified distance for indication of areas with special condition as 0.1 NM* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot. selecting one by one each special condition for the test* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 1 - Traffic separation zone.PNG | | | |
| *Selected: Traffic separation zone* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 2 - Inshore traffic zone.PNG | | | |
| *Selected: Inshore traffic zone* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 3 - Restricted area.PNG | | | |
| *Selected: Restricted area* | | | |

| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 4 - Caution area.PNG |
| --- |
| *Selected: Caution area* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 5 - Offshore production area.PNG |
| *Selected: Offshore production area* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 6 - Area to be avoided.PNG |
| *Selected: Area to be avoided* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 7 - Military practice area.PNG |
| *Selected: Military practice area* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 8 - Seaplane landing area.PNG |
| *Selected: Seaplane landing area* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 9 - Submarine transit lane.PNG |
| *Selected: Submarine transit lane* |

| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 10 - Anchorage area.PNG |
| --- |
| *Selected: Anchorage area* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 11 - Marine farm aquaculture.PNG |
| *Selected: Marine farm/aquaculture* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 12 - PSSA.PNG |
| *Selected: PSSA (Particularly Sensitive Sea Area)*  **tbd** |

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

| **Test Reference** | SpecialConditionsLS | **IHO Reference** | S-98 C-12.9.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 101AA00OVRVU.000 and 101AA00ARSPC.000, manually creating a route connecting way points between features marked as WP20 and WP22 and checking display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *As for test SpecialConditions and in addition load the exchange set* ***NavigationalHazardsOverview***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Simplified point symbols* * *Select all Text groups* | | | |

| **Action** |
| --- |
| *Select position 39°45′•000N 104°49′•000W at compilation scale (1:350 000) of 101AA00OVRVU.*  *1) View chart before route planning.*  *2) Manually create a route connecting two way points between features 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.* |
| **Results** |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.2 picture 1.PNG |
| *1) Situation before route planning. Chart 101AA00OVRVU displayed as it is* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.2 picture 2.PNG |
| *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.*  **tbd** |

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

| **Test Reference** | SpecialConditionsMon | **IHO Reference** | S-98 C-12.9.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test are listed in the Alerts and Indications section of the portrayal catalogue and are included in the test cell 101AA00ARSPC.000.*  *This test is performed by loading the test cell 101AA00ARSPC.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.* | | | |
| **Setup** | | | |
| *As for test SpecialConditions* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS for each special condition against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 6.1.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.3 picture 1.PNG | | | |
| *An example with PSSA and Military practice area as selected.*  **tbd** | | | |

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

| **Test Reference** | SpecialConditionsMonLS | **IHO Reference** | S-98 C-12.9.8 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 101AA00OVRVU.000 and 101AA00ARSPC.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.* | | | |
| **Setup** | | | |
| *As for test* SpecialConditionsLS | | | |
| **Action** | | | |
| *Select position 39°45′•000N 104°49′•000W at compilation scale (1:350 000) of 101AA00OVRVU. Heading approximately 100°.*  *Set vessel position to 39°47.877'N 104°57.590'W, heading 94.3°.*  *Check ENC symbols shown in the ECDIS for each special condition against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 6.1 and 6.2.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.4 picture 1.PNG | | | |
| *An example with Caution area, Military practice area and PSSA as selected*  **tbd** | | | |

# Detection and Notification of the Safety Contour

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Reference** | SafetyContour | **IHO Reference** | S-98 C-12.9.7 |
| **Test description** | | | |
| *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 features satisfying the conditions for this test are listed in the alerts and indications catalogue in the S-101 Portrayal Catalogue and are included in the test dataset 101AA00SAFCO.000.*  *This test is performed by loading the test cell 101AA00SAFCO.000, manually creating a route connecting all way points between features marked as WP1 through WP4 and checking display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***SafetyContour***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols* * *Select all Text groups* * *Select Contour label* * *Manually create a route connecting all way points between features marked WP1 through WP4* * *Set user-specified distance for detecting of Safety Contour as 0.1 NM* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot.*  *Repeat sequentially for Safety Contour value 0m, 6m, 11m, 13m, 43m.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.*  *Note: To increase the prominence of dangers in unsafe waters it is permitted to highlight features with an isolated danger mark when they are wholly located in this area.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.1 picture 1 - Safety contour = 0 meter.PNG | | | |
| *Safety Contour = 0 m* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.1 picture 2 - Safety contour = 6 meter.PNG | | | |
| *Safety Contour = 6 m* | | | |

| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.1 picture 3 - Safety contour = 11 meter.PNG |
| --- |
| *Safety Contour = 11 m* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.1 picture 4 - Safety contour = 13 meter.PNG |
| *Safety Contour = 13 m* |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.1 picture 5 - Safety contour = 43 meter.PNG |
| *Safety Contour = 43 m*  **tbd** |

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

| **Test Reference** | SafetyContourLS | **IHO Reference** | S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 ship’s safety contour.*  *This test is performed by loading the test cells 101AA00OVRVU.000 and 101AA00ARSPC.000, manually creating a route connecting way points between features marked as WP11, WP24, WP25 and WP26 and checking display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *As for test 7.1 and in addition load the exchange set* ***NavigationalHazardsOverview***   * *Select Display Category Other* * *Set the Safety Contour value to 11 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Simplified Point Symbols = false* * *Select Contour label* | | | |
| **Action** | | | |
| *Select position 39°27′•000N 104°49′•000W at maximum display scale (1:350 000) of 101AA00OVRVU.*  *1) View chart before route planning.*  *2) Manually create a route connecting way points between features 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.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.* | | | |
| 7 | | | |
| 1. *Situation before route planning. Chart 101AA00OVRVU displayed as it is* 2. **tbd** | | | |

| 7 |
| --- |
| *2) Situation after route planning. Alerts indicated from largest scale available for each location. An example with Safety Contour = 11 m.* |

### Detection and Notification of Safety Contour – Water Level Adjustment.

| **Test Reference** | SafetyContourWLA | **IHO Reference** | (S-100 Part 9/  S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 whilst operating with Water Level Adjustment enabled in areas of S-101, S-102 and S-104 coverage.* | | | |
| **Setup** | | | |
| *As for test* SafetyContour with the additional settings:   * Set User Selected Safety Contour = 11.4m * Select Water Level Adjustment = true * Set system date = 2022-14-11 | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *Verify correct existence of user selected safety contour in areas without either S-102 or S-104 coverage, areas with only S-102 coverage and areas with both S-102 and S-104 coverage.*  *Areas should be delimited and permanent indications of WLA mode shown as per test WaterLevelAdjustment.* | | | |

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

| **Test Reference** | SafetyContourMon | **IHO Reference** | S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test are listed in section S-98 XXX-XXX and are included in the test cell 101AA00SAFCO.000.*  *This test is performed by loading the test cell 101AA00SAFCO.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.* | | | |
| **Setup** | | | |
| *As for test* SafetyContour  *Select all Text groups*  *Select Contour label* | | | |
| **Action** | | | |
| *Set vessel position to 39°36.516'N 104°55.737'W, heading 70.3°. Check ENC symbols shown in the ECDIS for each Safety Contour setting against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 7.1* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.3 picture 1.PNG | | | |
| *An example with Safety Contour = 6 m.*  **tbd** | | | |

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

| **Test Reference** | SafetyContourMonLS | **IHO Reference** | S-98 C-12.9.7 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test are listed in section S-98 XXX-XXX and are included in the test cell 101AA00SAFCO.000.*  *This test is performed by loading the test cells 101AA00OVRVU.000 and 101AA00SAFCO.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.* | | | |
| **Setup** | | | |
| *As for test* SafetyContourLS | | | |
| **Action** | | | |
| *Set vessel position to 39°40.522'N 105°05.654'W, heading 112°. Check ENC symbols shown in the ECDIS for each Safety Contour setting against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 7.1 and 7.2.* | | | |
| 7 | | | |
| *An example with Safety Contour = 11 m.*  **tbd** | | | |

# S-57 Testing

## Introduction

During the transition period to full S-100 operation on all ECDIS parallel operation of S-57 and S-100 services will take place servicing users who still maintain the S-57 legacy format. During this period ECDIS systems will require compatibility with both S-100 and S-57 formats of ENC data. The next section in this manual deals with testing of the so-called “Duel Fuel mode” of operation of such ECDIS where S-57 and S-101 data are used simultaneously. The next section deals specifically with those test scenarios using both S-57 and S-101 at the same time.

In order to maintain minimum levels of safety and conformance with IMO documentation compatibility with S-57 data must be maintained by systems under test. Therefore, during this period, and by reference from this manual there is a continued requirement for EUT to be tested for correct operation under S-5 and S-63, supported by this manual and IHO test datasets.

This manual, therefore, references the existing IHO S-64 guidance for testing the operation of type approved ECDIS available at:

<https://iho.int/iho_pubs/standard/S-64/S-64_Edition_3.0.2/index.htm>

## Notes on specific tests.

Whilst testing under the existing S-57 is still a requirement during the transition period a number of caveats should be made prior to the execution of the S-64 test suites.

1. It may not be necessary to do all the tests if certain generic functionality has already been tested as part of the S-100 elements of testing done. The following sections should be considered complete if successfully executed in an S-100 mode of operation:
2. Skin of the Earth tests relate to anomalies detected in an S-57 mode and do not apply in the S-100 test suite.
3. S-100 replaces many user settings with “Context Parameters”. Where the S-57/S-64 tests refer to certain user controls and parameters the following table can be used to identify the names of suitable alternatives and the instructions in the S-64 manual should be considered with the equivalent names in mind. The intention is to enable ECDIS manufacturers to build more closely integrated user interface systems dealing with both S-57 and S-101 simultaneously..

|  |  |
| --- | --- |
| **Name of S-64 Parameter** | **Name of S-100 ECDIS Context Parameter** |
| Paper Chart Symbols | Plain Symbols = true |
| Others…. |  |

# Dual Fuel Mode testing

## Introduction

As referenced in the previous section of this manual a transition period from S-57 to S-100

## Data Scheming for Dual Fuel testing

In order to simplify the arrangement of test data for Dual Fuel testing, some original S-57 datasets (from IHO S-64) have been used alongside S-101 versions to create the reference test datasets. The arrangement of data coverage, therefore is largely unchanged and is illustrated in the diagrams below.

A notable exception is the data scheming for the tests for navigational hazards, safety contour detection and areas where special conditions exist. These have been created alongside the original S-57 datasets, allowing exhaustive tests to be run across both types of chart format using single routes. All data is arranged in exchange sets to allow for straightforward test setup and execution.

## Chart Loading and Update

### Initial Loading of charts in Dual fuel mode.

| **Test Reference** | DualFuelSimple | **IHO Reference** | S-98 Annex C C.18.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Initial import of a dual fuel exchange set.* | | | |
| **Setup** | | | |
| *Load exchange set* ***DualFuelSimple*** | | | |
| **Action** | | | |
| *Ensure exchange set is loaded. Inspect contents of System Database.* | | | |
| **Results** | | | |
| *The System Database should contain the following entries.*   | ENC | Edition  (EDTN) | Update number  (UPDN) | Issue Date  (ISDT) | | --- | --- | --- | --- | | 10100AA\_X0000.000 | 1 | 0 | 20190409 | | 10100AA\_X01NE.000 | 1 | 0 | 20210406 | | GB5X01NW.000 | 1 | 0 | 20210406 | | | | |

### Update of combined exchange set.

| **Test Reference** | DualFuelSimpleUpdate | **IHO Reference** | S-98 Annex C C.18.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This tests verifies the ECDIS is able to load updates to Dual Fuel datasets from a combined update exchange set.* | | | |
| **Setup** | | | |
| *As per previous test* ***DualFuelSimple*** | | | |
| **Action** | | | |
| *Load exchange set* ***DualFuelSimpleUpdate*** | | | |
| **Results** | | | |
| *SENC contents should show:*   | ENC | Edition  (EDTN) | Update number  (UPDN) | Update Application  Date (UADT) | Issue Date  (ISDT) | | --- | --- | --- | --- | --- | | GB5X01NW.000 | 1 | 1 | 20190409 | 20190409 | | 10100AA\_X01NE.000 | 1 | 1 | 20210406 | 20210406 | | | | |

### Verification of correct loading

| **Test Reference** | DualFuelPreference | **IHO Reference** | S-98 Annex C C.18.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies that when an exchange set contains both S-57 and S-101 versions of a dataset, it loads the S-101 version by default in accordance with S-98 XXX-XXX.* | | | |
| **Setup** | | | |
| *Load Exchange set* ***DualFuelPreference*** | | | |
| **Action** | | | |
| *Ensure ECDIS has installed the exchange set.* | | | |
| **Results** | | | |
| *Verify the System Database shows the following datasets installed:*   | ENC | Edition  (EDTN) | Update number  (UPDN) | Update Application  Date (UADT) | Issue Date  (ISDT) | | --- | --- | --- | --- | --- | | GB5X01NW.000 | 1 | 0 | 20190409 | 20190409 | | 10100AA\_X01NE.000 | 1 | 0 | 20210406 | 20210406 |   ECDIS loads the S-101 cell by preference according to S-98 XXX-XXX | | | |

### Verification of correct loading by update.

| **Test Reference** | DualFuelUpdate | **IHO Reference** | S-98 Annex C C.18.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *This test verifies that when loading a dual Fuel exchange set, then loading an update where a cell is replaced by its S-101 edition results in the S-101 version being loaded during the update.*  *The S-128 carries the equivalence information.* | | | |
| **Setup** | | | |
| 1. *Load Exchange set* ***DualFuelInitial*** | | | |
| **Action** | | | |
| *Ensure ECDIS has installed the exchange set*   1. *Inspect the System Database recording which datasets are installed* 2. *Load Exchange set* ***DualFuelUpdate*** 3. *Inspect the System Database recording which datasets are installed.* | | | |
| **Results** | | | |
| *Verify the System Database shows the following datasets installed at (1) as :*   | ENC | Edition  (EDTN) | Update number  (UPDN) | Issue Date  (ISDT) | | --- | --- | --- | --- | | 10100AA\_X0000.000 | 1 | 0 | 20190409 | | 10100AA\_X01NE.000 | 1 | 0 | 20210406 | | GB5X01NW.000 | 1 | 0 | 20210406 | | GB5X01SE.000 | 1 | 0 | 20210406 | | GB5X02SE.000 | 1 | 0 | 20210406 |   *After installation of the update exchange set (2) the System Database should show the following datasets installed:*   | ENC | Edition  (EDTN) | Update number  (UPDN) | Issue Date  (ISDT) | | --- | --- | --- | --- | | 10100AA\_X0000.000 | 1 | 0 | 20190409 | | 10100AA\_X01NE.000 | 1 | 0 | 20210406 | | GB5X01NW.000 | 1 | 0 | 20210406 | | GB5X01SE.000 | 1 | 0 | 20210406 | | 101AA00X03SE.000 | 1 | 0 | 20210422 | | | | |

## Chart Display

### Dual Fuel Mode Display

| **Test Reference** | DualFuelDisplay | **IHO Reference** | S-98 Annex C C.18.1 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Loading a dual fuel exchange set should result in the display of a permanent message to the user and delimited borders between datasets of different types when both are portrayed on screen.* | | | |
| **Setup** | | | |
| *Load Exchange set* ***DualFuelInitial*** | | | |
| **Action** | | | |
| 1. *Centre display on location (60.9963,-32.4806)* 2. *Set Display scale to 45,000* 3. *Set Display scale to 22,000* | | | |
| **Results** | | | |
| *Ensure ECDIS has installed the exchange set*  *Verify:*  (2) image of S-101 only small scale (10100AA\_X0000.000).  (3) i*mage of S-101/S-57 side by side portrayal*  *Additionally verify at (3)*   * *The display of an appropriate message to the user that the display is showing older format data as per S-98 Annex C Section C-18.1* * *The portrayal of an appropriate boundary between the older format data and newer format (S-57 and S-101) according to S-98 Annex C C-18.1*   *Verify the following display:*  *[****IMAGE: S-102/S-104 and S-124 over S-101 as part of side-by-side portrayal]*** | | | |

## Functions associated with chart display

**Others?**

### Dual Fuel feature information

| **Test Reference** | DualFuelFeatureInformation | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *Cursor picking in an area of DF should result in a unified display of information..* | | | |
| **Setup** | | | |
| *As per test DualFuelUpdate* | | | |
| **Action** | | | |
| 1. Set position to (60.9277,-32.4966) 2. Set display scale = 45,000 3. Interrogate features in display | | | |
| **Results** | | | |
| *Verify the information available to the user contains information from both S-57 and S-101 sources. The pick report information should contain the following information.*   * *DRGARE (S-57) from GB5X01NW.000* * *DredgedArea (S-101) from 10100AA\_X01NW.000* | | | |

## Detection and Notification of Navigational Hazards

### Detection and Notification of Navigational Hazards – basic test

| **Test Reference** | *NavigationalHazardsDF* | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS operating in Dual Fuel mode provides an appropriate indication when the Mariner plans a route closer than a user-specified distance from any features satisfying the conditions for this test as listed in section XXX-XXX of IHO S-98 and included in the test datasets AA5NAVHZ.000 and 101AA00NAVHZ.000.*  *This test is performed by loading the dual fuel exchange set NavigationalHazards, WP1 through WP36 and checking the display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***NavigationalHazardsDF***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Simplified Point Symbols = false* * *Select all Text groups* * *Manually create a route connecting all way points between features marked WP1 through WP36*   *Set user-specified distance for indication navigational hazards as 0.1 NM* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot.*  *Repeat sequentially with a Safety Contour value of 0m, 2m, 4m, 5m, 6m, 8m, 9m, 10m, 11m, 16m, 21m, 31m, 42m, 50m, 51m.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.* | | | |

### Dual Fuel Detection and Notification of Navigational Hazards – Use of largest scale available.

| **Test Reference** | *NavigationalHazardsDFLS* | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of navigational hazards.*  *This test is performed by loading dual fuel exchange sets, manually creating a route connecting all way points between marked features and checking display against a corresponding graphical plot. The same test is run twice with different overview exchange sets comprising the smaller scale data.* | | | |
| **Setup** | | | |
| *(A) Load the exchange set* ***NavigationalHazardsDF*** *and the exchange set* ***NavigationalHazardsOverviewDF1***   * *Select Display Category Other* * *Set the Safety Contour value to 30 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Simplfied point symbols = false* * *Select all Text groups*   *(B) Repeat test using exchange sets* ***NavigationalHazardsDF*** *and* ***NavigationalHazardsOverviewDF2*** | | | |
| **Action** | | | |
| *For each of (1) and (2)*  *Select position 39°57.000’N 104°49.000’W at maximum display scale (1:350 000) of 101AA00OVRVU.*  *1) View chart before route planning.*  *2) Manually create a route connecting all way points between features 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.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.*  *A) Situation before route planning. Chart 101AA00OVRVU displayed as it is-*  *B) Situation before route planning. Chart AA5OVRVU displayed as it is-* | | | |

### Detection and Notification of Navigational Hazards – monitoring mode

| **Test Reference** | NavigationalHazardsDFMon | **IHO Reference** | (S-100 Part 9  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test (as listed in IHO S-98 XXX-XXX and included in the test cells AA5NAVHZ.000 and 101AA00NAVHZ.000) that is shallower than the Mariner's safety contour.*  *This test is performed by loading the exchange set* ***NavigationalHazardsDF****, 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 NavigationalHazardsDF (Route plan) corresponding to each set of Safety Contour settings..* | | | |
| **Setup** | | | |
| *As for test NavigationalHazardsDF*  *Select all Text groups* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS for each Safety Contour setting against the corresponding graphical plot* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test NavigationalHazardsDF.*  C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.3 picture 1 - Alternative.PNG  **tbd** | | | |

### Detection and Notification of Navigational Hazards – use of largest scale available – monitoring mode

| **Test Reference** | NavigationalHazardsDFMonLS | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of navigational hazards in dual fuel mode. This test is performed by loading the exchange sets NavigationalHazardsOverviewDF1 and NavigationalHazardsDF, manually creating a route connecting all way points between features marked as WP1 through WP8 and checking the display against a corresponding graphical plot.* | | | |
| **Setup** | | | |
| *(A) Load the exchange set* ***NavigationalHazardsDF***  *Load the exchange set* ***NavigationalHazardsOverviewDF1***   * *Select Display Category Other* * *Set the Safety Contour value to 30 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols*   *Select all Text groups*  *(B) The test should then be repeated using the exchange sets* ***NavigationalHazardsDF*** *and* ***NavigationalHazardsOverviewDF2*** | | | |
| **Action** | | | |
| *Select position 39°57.000’N 104°49.000’W at the maximum display scale (1:350 000) of 101AA00OVRVU (or AA5OVRVU).*  *Set simulated own ship for 39°49.587’N 104°54.930’W with heading set for 10.0°*  *Select size of own ship check area as 1.0 NM width and 8.0 NM length.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plots shown below (A).* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\5.4 picture 1 - Alternative.PNG  **tbd** | | | |

## Detection of Areas for which Special Conditions Exist

### Detection and Notification of Areas for which special conditions exist – basic test

| **Test Reference** | SpecialConditionsDF | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 whilst operating in Dual Fuel mode. The features satisfying the conditions for this test are listed in the alerts and indications catalogue within the S-101 Portrayal Catalogue and are included in the test cells AA5ARSPC.000 and 101AA00ARSPC.000.*  *This test is performed by loading the exchange set* ***SpecialConditionsDF****, manually creating a route connecting all waypoints between features marked as WP1 through WP4 and checking the display against the corresponding graphical plot* | | | |
| **Setup** | | | |
| *Load the exchange set* ***SpecialConditionsDF***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols* * *Manually create a route connecting all way points between features marked WP1 through WP4*   *Set user-specified distance for indication of areas with special condition as 0.1 NM* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS against the corresponding graphical plot. selecting one by one each special condition for the test* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 1 - Traffic separation zone.PNG | | | |
| *Selected: Traffic separation zone* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.1 picture 2 - Inshore traffic zone.PNG  **tbd** | | | |

### Detection and Notification of Areas for which special conditions exist – use of largest scale available

| **Test Reference** | SpecialConditionsDFLS | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of areas with special conditions whilst operating in Dual Fuel mode.*  *This test is performed by loading test exchange sets, manually creating a route connecting way points between features marked as WP20 and WP22 and checking the display against a corresponding graphical plot.* | | | |
| **Setup** | | | |
| *(A) As for test SpecialConditionsDF and in addition load the exchange set* ***NavigationalHazardsOverviewDF1***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Simplified point symbols*   *Select all Text groups*  *(B) Repeat test using exchange sets* ***SpecialConditionsDF*** *and* ***NavigationalHazardsOverviewDF2*** | | | |
| **Action** | | | |
| *Select position 39°45′•000N 104°49′•000W at compilation scale (1:350 000) of 101AA00OVRVU (or AA2OVRVU).*  *1) View chart before route planning.*  *2) Manually create a route connecting two way points between features 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.* | | | |
| **Results** | | | |
| *The ENCs in the ECDIS should match the corresponding graphical plot shown below.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.2 picture 1.PNG  **tbd** | | | |
| *1) Situation before route planning. Chart 101AA00OVRVU displayed as it is* | | | |

### Detection and Notification of Areas for which special conditions exist – monitoring mode

| **Test Reference** | SpecialConditionsMonDF | **IHO Reference** | (S-100 Part 9  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 whilst operating in Dual Fuel mode.*  *The features satisfying the conditions for this test are listed in listed in the alerts and indications catalogue within the S-101 Portrayal Catalogue and are included in the test cells AA5ARSPC.000 and 101AA00ARSPC.000.*  *This test is performed by loading the exchange set* ***SpecialConditionsDF****, 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 SpecialConditions (Route plan) corresponding to each set of Safety Contour settings..* | | | |
| **Setup** | | | |
| *As for test SpecialConditionsDF* | | | |
| **Action** | | | |
| *Check ENC symbols shown in the ECDIS for each special condition against the corresponding graphical plot* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 6.1.*  C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.3 picture 1.PNG  *An example with PSSA and Military practice area as selected.*  **tbd** | | | |

### Detection and Notification of Areas for which special conditions exist – use of largest scale available – monitoring mode

| **Test Reference** | SpecialConditionsDFLSMon | **IHO Reference** | (S-100 Part 9  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *The purpose of this test is to verify by observation that ECDIS uses the largest scale available for detection of areas with special condition whilst operating in Dual Fuel mode..*  *This test is performed by loading test exchange sets, 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 SpecialConditionsDF and SpecialConditionsDFLS (Route plan) corresponding to each special condition settings.* | | | |
| **Setup** | | | |
| *As for test* SpecialConditionsDFLS | | | |
| **Action** | | | |
| 1. *Select position 39°45′•000N 104°49′•000W at compilation scale (1:350 000) of 101AA00OVRVU. Heading approximately 100°.* 2. *Set vessel position to 39°47.877'N 104°57.590'W, heading 94.3°.* 3. *Check ENC symbols shown in the ECDIS for each special condition against the corresponding graphical plot* 4. *Repeat test as described in SpecialConditionsDFLS* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of tests SpecialConditionsDF and SpecialConditionsDFLS.* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\Drafting 4.0.2 after Mar2016\New picture originals 23mar2016\6.4 picture 1.PNG **tbd** | | | |
| *An example with Caution area, Military practice area and PSSA as selected* | | | |

## Detection and Notification of the Safety Contour

### Detection and Notification of the safety contour – Basic test

| **Test Reference** | SafetyContourDF | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 whilst operating in Dual Fuel mode. The features satisfying the conditions for this test are listed in listed in the alerts and indications catalogue within the S-101 Portrayal Catalogue and are included in the test datasets AA5SAFCO.000 and 101AA00SAFCO.000.*  *This test is performed by loading the test exchange set, manually creating a route connecting all way points between features marked as WP1 through WP4 and checking the display against the corresponding graphical plot.* | | | |
| **Setup** | | | |
| *Load the exchange set* ***SafetyContourDF***   * *Select Display Category Other* * *Set the Safety Contour value to 0 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Simplified Point Symbols = true* * *Select all Text groups* * *Select Contour label* * *Manually create a route connecting all way points between features marked WP1 through WP4*   *Set user-specified distance for detecting of Safety Contour as 0.1 NM* | | | |
| **Action** | | | |
| *Check portrayal shown in the ECDIS against the corresponding graphical plot.*  *Repeat sequentially for Safety Contour value 0m, 6m, 11m, 13m, 43m.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot shown below..* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.1 picture 1 - Safety contour = 0 meter.PNG  *Safety Contour = 0 m*  **tbd** | | | |

### Detection and Notification of the safety contour – use of largest scale available.

| **Test Reference** | SafetyContourDFLS | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 ship’s safety contour whilst operating in Dual Fuel mode.*  *This test is performed by loading the test exchange sets, manually creating a route connecting way points between features marked as WP11, WP24, WP25 and WP26 and checking display against the corresponding graphical plot. The same test is run twice with different overview exchange sets comprising the smaller scale data* | | | |
| **Setup** | | | |
| *(A) As for test SafetyContourDF and in addition load the exchange set* ***NavigationalHazardsOverview1***   * *Select Display Category Other* * *Set the Safety Contour value to 11 m* * *Set the Safety Depth value to 30 m* * *Select Symbolized Boundaries* * *Select Paper chart symbols*   *Select Contour label*  *(B) Repeat test using exchange sets* ***SafetyContourDF*** *and* ***NavigationalHazardsOverview2*** | | | |
| **Action** | | | |
| *Select position 39°27′•000N 104°49′•000W at maximum display scale (1:350 000) of 101AA00OVRVU.*  *1) View chart before route planning.*  *2) Manually create a route connecting way points between features 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.* | | | |
| **Results** | | | |
| The ENC in the ECDIS should match the corresponding graphical plot shown below **[Images To Follow]**  7  **tbd** | | | |

### Detection and Notification of the safety contour – use of largest scale available – monitoring mode

| **Test Reference** | SafetyContourDFMonLS | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 whilst operating in monitoring mode. The features satisfying the conditions for this test are listed listed in the alerts and indications catalogue within the S-101 Portrayal Catalogue and are included in the test datasets AA5SAFCO.000 andl 101AA00SAFCO.000.*  *This test is performed by loading the exchange set* ***SafetyContourDFMon****, 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 SafetyContourDF (Route plan) corresponding to each set of Safety Contour settings.* | | | |
| **Setup** | | | |
| *Load exchange set* ***SafetyContourDFMon*** | | | |
| **Action** | | | |
| *Set vessel position to 39°40.522'N 105°05.654'W, heading 112°. Check ENC symbols shown in the ECDIS for each Safety Contour setting against the corresponding graphical plot.* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of test 7.1 and 7.2.* | | | |
| 7  **tbd** | | | |

### Detection and Notification of the safety contour – monitoring mode

| **Test Reference** | SafetyContourDFMon | **IHO Reference** | (S-100 Part 9/  S-98 C-18.3 |
| --- | --- | --- | --- |
| **Test description** | | | |
| *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 features satisfying the conditions for this test are listed in listed in the alerts and indications catalogue within the S-101 Portrayal Catalogue and are included in the test cells AA5SAFCO.000 and 101AA00SAFCO.000.*  *This test is performed by loading the exchange set* ***SafetyContourDFMon****, 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 SafetyContourDF (Route plan) corresponding to each set of Safety Contour settings.* | | | |
| **Setup** | | | |
| * *As for test SafetyContourDF* * *Select all Text groups* * *Select Contour label* | | | |
| **Action** | | | |
| *Set vessel position to 39°36.516'N 104°55.737'W, heading 70.3°. Check ENC symbols shown in the ECDIS for each Safety Contour setting against the corresponding graphical plot* | | | |
| **Results** | | | |
| *The ENC in the ECDIS should match the corresponding graphical plot of SafetyContourDF* | | | |
| C:\msdokut\STANDARDIT\IHO\ENCWG\work 2017\S-64, New picture originals 20may2017\7.3 picture 1.PNG  **tbd** | | | |
| *An example with Safety Contour = 6 m.* | | | |

1. Some tests still have the old (S-64) references in them for ease of cross-referencing. These will be deleted as the documented is updated. [↑](#footnote-ref-2)