The IHO S-64 Test Data Sets for S-63 Encrypted ENCs

Test Definitions and Scripts relating to Annex J of IEC61174Ed3

1. Introduction

This document contains the parameters used in the production of the IEC61174 test data for encrypted ENCs (IEC61174 Ed3, Annex J) and the test scripts that accompany the test data. Section 6 also contains a listing which outlines the content of exchange sets used in the tests and expected SENC status on completion of each.

2. Test Definitions

2.1   Default test data parameters

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

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

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

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

A Data Server must never deliver an official ENC service using these parameters. OEMs are reminded that they must request a unique M_ID and M_KEY from the Scheme Administrator (IHB) in accordance with the request procedure defined in the IHO S-63 Data Protection Scheme, Annex B.

2.2   Test Certificate and Public Key

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

3. List of Test Scripts (IEC61174 - Annex J)

The following list contains a brief description of the individual tests defined in Annex J of IEC61174. The actual numbering and test descriptions may vary between those in Annex J and this document. This was unfortunate due to the tight timescales being worked to.

3.1   ENC Licencing

These tests are designed to confirm that the ECDIS checks the format, content and validity of an ENC Permit file (PERMIT.TXT). They also test a system capability to manage correctly permits provided from multiple data servers.

Test Script	Description	Page
2a	Check permit string is availability	5
2b	ENC cell permit string incorrect format	6
2c	Validate permit CRC	7
2d	Check remaining permit expiry period	8
2e	Check for expired permits	9
2f	Permit installation and reporting	10
2g	Management of permits from multiple data servers	11
2h	Management of installed permits	12

3.2 ENC Authentication - Part 1 – Validation of the SA Certificate and/or Public Key

These tests are included to ensure the ECDIS system can install, validate and update the SA certificate and/or public key. Confirm also that the ECDIS displays the correct error/warning messages under different conditions.

Test Script	Description	Page
4a	Install and validate the SA certificate and/or public key	13
4b	Change and update installed certificate	14
4c	No pre-installed certificate/public key on the system	15
4d	Check SA Certificate Expiry Date	16
4e	Incorrectly formatted certificate and public key files	18
4f	Check certificate parameter values	19

3.3 ENC Authentication – Part 2 – ENC Authentication and Integrity Checking

These tests confirm the systems ability to authenticate the source of ENCs as being from a Data Server subscribing to the S-63 Data Protection Scheme. They further test that the systems correctly validates the integrity of the compressed and encrypted ENC files to ensure that no corruption of the files has occurred. Tests are also provided which to ensure the ECDIS checks the format of the signature files. The ECDIS must also return the appropriate error/warning messages as describe in S-63 for each test.

Test Script	Description	Page
5a	Invalid SA signature in the ENC Signature File	20
5b	Authentication against a non SA certificate/public key	21
5c	ENC signature validation	22
5d	ENC signature format validation	23
5e	Check authentication is continuous and complete	24
5f	Single exchange set with ENC signature files signed by multiple data servers	25

3.4 ENC Decryption

These tests are provided to confirm that the ECDIS performs the necessary permit validation checks prior to the import of encrypted ENCs. They then check that the system un-compresses, decrypts and validates the ENCs as described in S-63/S-57.

Test Script	Description	Page
6a	Install ENCs when pre-installed permits have expired	27
6b	Permit expiry within 30 days	28
6c	Incorrect cell keys encrypted in the ENC permits	29
6d	Validate ENC data file integrity	30

3.5 ENC Data Management

These tests check that an ECDIS can manage ENCs sourced from different Data Servers. It also checks that the ECDIS can manage different types of issued ENCs.

Test Script	Description	Page
7a	Encrypted ENCs supplied by different Data Servers	31
7b	Loading additional ENC cell permits and cells from a different data provider	32
7c	Test that the system operates correctly in a multiple data provider environment	33
7d	ECDIS management of cancelled cells	35
7e	ECDIS Display of Replacement ENC Cells	36
7f	ECDIS management of ENC re-issued cells	37
7g	ECDIS makes correct use of the STATUS.LST file.	38

Additional **optional** tests have been provided for those systems that make use of the supplementary fields, provided with Edition 1.1 of S-63, to manage the intuitive import of encrypted ENCs. This is based in part on the guidance given in Section 5 of S-63, Appendix 2.

| Test Script	Description [Optional Checks]	Page
7h	Test a system provides intuitive prompts to users when importing encrypted ENCs across multiple base exchange sets.	39
7i	Test a system manages the test at 7h above for multiple purchases.	41
7j	Test how a system manages the import of multiple bases when one is newer than the update exchange set that is available.	43

3.6 Data Exchange Media

These tests are provided to check that an ECDIS can import an ENC service supplied on mass storage devices such as DVD, USB, etc. Tests are included that check whether the ECDIS correctly manages multiple exchange sets provided on a single media as defined in S-63.

Test Script	Description	Page
8a	Exchange Set and Media Delivery	45
8b	Single Media containing Multiple Exchange Sets	46
8c	Multiple exchange sets across multiple media sets	47
8d	Media validation of encrypted ENC service status	49

4. Test Data – Folder & File Structure

The various tests as described above are stored in the root directory "IHO S-64 [S-63 TDS v1.2]". The tests are subdivided into six categories as depicted below in the screenshot. Each category contains a number of tests which have corresponding test scripts which are detailed in Section 5 of this document.
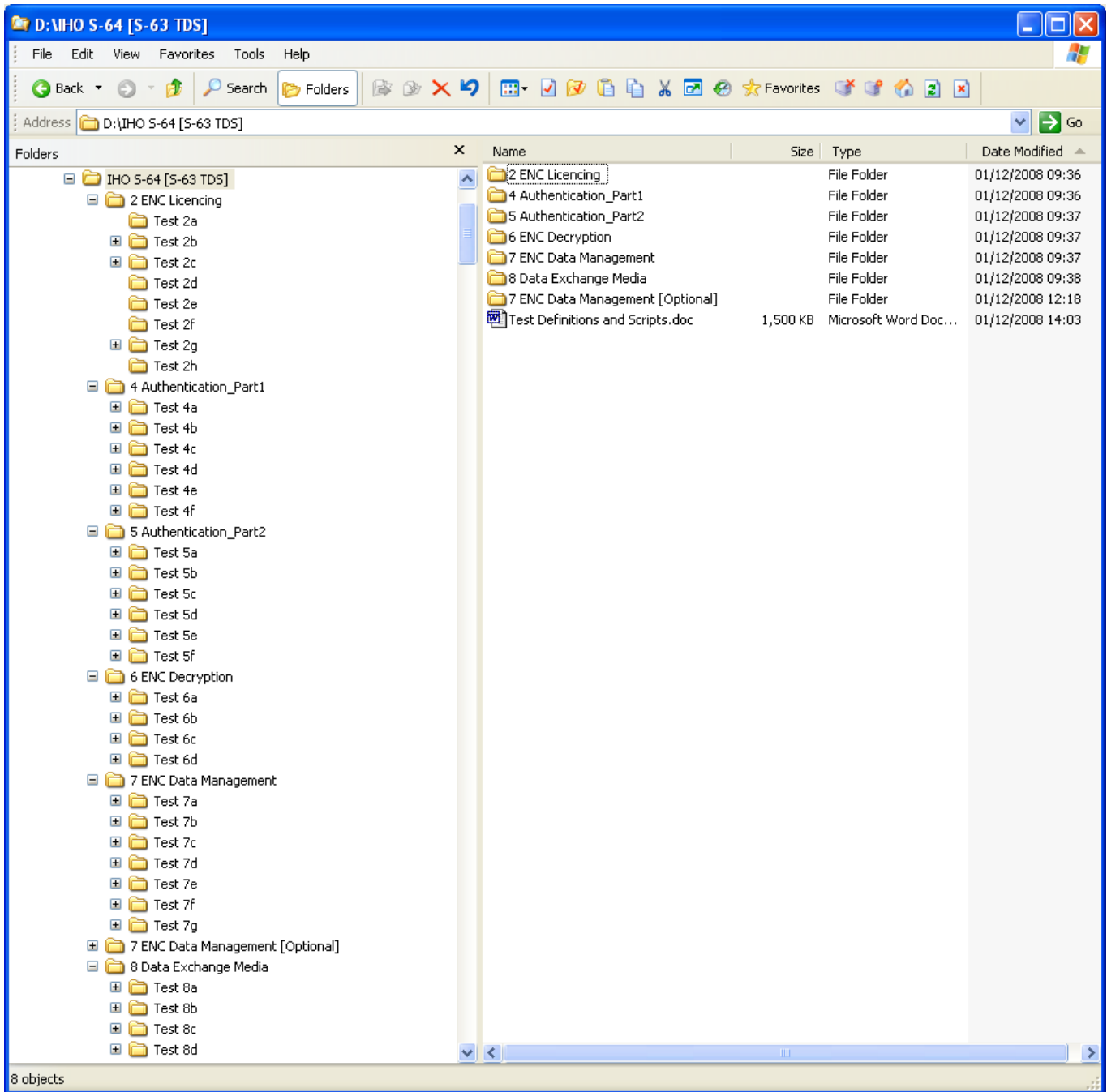
NOTE: There are additional tests provided in "7 ENC Data Management [Optional]". These are provided to assist manufacturers who have included additional ENC Data Management functions into their systems.

Test Definitions & Test Scripts for Encrypted ENCs

5. Test Scripts

<table>
<tr><td colspan="4" align="center">IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2A</td></tr>
</table>

<table>
<tr><td>Standard:</td><td colspan="3">IHO S-63 Data Protection Scheme</td></tr>
<tr><td>Edition:</td><td>1.1</td><td>S-63 Reference:</td><td>10.5.1</td></tr>
<tr><td>IEC 61174 reference:</td><td>Annex J, Section 2a</td><td>Type of test:</td><td>Compliance</td></tr>
</table>

<table>
<tr><td>Component:</td><td>ENC Licencing – Permit Management</td></tr>
<tr><td>Test Description:</td><td>Check permit string is availability</td></tr>
<tr><td>Objectives of test:</td><td>Test how the system performs when loading a non compliant permit file. Verify that the ECDIS returns the correct error message.</td></tr>
<tr><td>Test environment:</td><td>OEM ECDIS</td></tr>
<tr><td>System Status:</td><td>No pre-installed permits.</td></tr>
<tr><td>Test procedure:</td><td>1) Attempt to load a PERMIT.TXT file with no cell permits listed.
2) Attempt to load a non compliant text file.</td></tr>
<tr><td>Test data to be used:</td><td>1) PERMIT.TXT file
2) TEXT.TXT file</td></tr>
<tr><td>Test Data Location:</td><td>D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2a</td></tr>
<tr><td>Expected result:</td><td>Security Scheme Error (SSE 11) and accompanying description is displayed in the system at permit installation.

i.e. SSE 11 – Cell permit not found</td></tr>
<tr><td>Tested result:</td><td></td></tr>
<tr><td>Additional Comments:</td><td></td></tr>
</table>

<table>
<tr><td>Script Version No.:</td><td>2</td><td>Date last modified:</td><td>November 2008</td></tr>
<tr><td>Compiled by:</td><td>UKHO</td><td>Date:</td><td>October 2007</td></tr>
</table>

<table>
<tr><td>Test Passed:</td><td></td><td>Test Failed:</td><td></td><td></td></tr>
<tr><td>Tested by:</td><td></td><td>Date:</td><td></td><td></td></tr>
<tr><td>Comments:</td><td colspan="4"></td></tr>
</table>

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2B

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	4.3 and 10.5.2
IEC 61174 reference:	Annex J, Section 2b	Type of test:	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	ENC cell permit string incorrect format
Objectives of test:	Test how the system performs when loading a PERMIT.TXT file with an incorrectly formatted permit string. Verify that the ECDIS returns the correct error message.
Test environment:	OEM ECDIS
System Status:	No pre-installed permits or ENCs in the SENC.
Test procedure:	Load the permit file (PERMIT.TXT) and then the exchange set (V01X01) from the location below.
Test data to be used:	1) PERMIT.TXT 2) b) V01X01 (Exchange Set - GB100001, GB100002 plus updates)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2b
Expected result:	Security Scheme Error (SSE 12) and accompanying description is displayed in the system at permit installation. That is, GB100012, **SSE 12 – Cell permit format is incorrect** GB100002, valid to 31/12/2012 installed OK[1] Only GB100002 and updates should be loaded into the SENC.
Tested result:	
Additional Comments:	The permit string for GB100001 is the wrong length [The cell name has been shortened to GB10001 hence the expected result will return GB100012 because the software should pick up the first character of the expiry date]. The permit string for GB100002 is the correct length and is valid.

Script Version No.:	2	Date last modified:	November 2008
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Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

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[1] This message is only intended as indication of what should be displayed when a valid permit is installed.

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	10.5.4
IEC 61174 reference:	Annex J, 2c	**Type of test:**	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	Validate permit CRC
Objectives of test:	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.
Test environment:	OEM system
System Status:	No pre-installed permits.
Test procedure:	Attempt to load the PERMIT.TXT file from locations (a) and (b) below into the ECDIS.
Test data to be used:	PERMIT.TXT
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2c\1 b) D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2c\2
Expected result:	The system reports a CRC failure on GB100001 accompanied by the appropriate error message as follows: "**SSE 13 – Cell Permit is invalid (checksum is incorrect)**" In both cases the permit for GB100002 imports without any error or warning.
Tested result:	
Additional Comments:	1) Cell GB100001 has had its CRC changed from 714AB61CA474BF64 to 714AB61CA474CF64. 2) Cell GB100001 has had the encrypted cell keys 1 & 2 altered slightly. 3) Cell GB100002 has a valid CRC value for both tests.

Script Version No.:	2	**Date last modified:**	November 2008
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Test Passed:		**Test Failed:**		
Tested by:			**Date:**	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2D

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.5.5
IEC 61174 reference:	Annex J, Section 2d	Type of test:	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	Check remaining permit expiry period
Objectives of test:	Test how the system performs when loading permits that expire within the next 30 days. Verify that the ECDIS returns the correct warning message.
Test environment:	OEM ECDIS
System Status:	No pre-installed permits.
Test procedure:	Set the computer Date/Time properties to 3rd December 2007 and install the PERMIT.TXT file:
Test data to be used:	PERMIT.TXT
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2d
Expected result:	The system must return a SSE 20 warning message as follows: *"SSE 20 – Subscription service will expire in less than 30 days. Please contact your data supplier to renew the subscription licence."*
Tested result:	
Additional Comments:	The expiry date set in this test permit is 20071231 (31st December 2007).

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Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2E

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.5.5
IEC 61174 reference:	Annex J, Section 2e	Type of test:	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	Check for expired permits
Objectives of test:	Test how the system performs when installing permits which have expired. Verify that the ECDIS returns the correct warning message.
Test environment:	OEM system
System Status:	No pre-installed permits
Test procedure:	Load the PERMIT.TXT file. [Note the expiry dates for these permits are set to 20071231 therefore the computer clock must be in advance of 20080101]
Test data to be used:	PERMIT.TXT
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2e
Expected result:	The system must report the correct SSE 15 warning message as follows: **"SSE 15 – Subscription service has expired. Please contact your data supplier to renew the subscription licence."**
Tested result:	
Additional Comments:	It should be possible to install expired permits but the system must display a permanent warning message to the user as described in 10.5.5 of S-63 Edition 1.1.

Script Version No.:	2	Date last modified:	November 2008
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Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2F

Standard:	IHO S-63 Data Protection Scheme

Edition:	1.1	**S-63 Reference:**	4.3 & 10.5
IEC 61174 reference:	Annex J, Section 2f	**Type of test:**	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	Permit installation and reporting
Objectives of test:	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.
Test environment:	OEM system
System Status:	No pre-installed permits
Test procedure:	Load the file PERMIT.TXT in the location stated below.
Test data to be used:	PERMIT.TXT
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2f
Expected result:	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.
Tested result:	
Additional Comments:	10 ENC Cell permits provided for this test created using the IHB manufacturer hardware ID and M_KEY.

Script Version No.:	2	**Date last modified:**	November 2008
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Test Passed:		**Test Failed:**		
Tested by:			**Date:**	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2G

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	4.3.3 & 10.5.6
IEC 61174 reference:	Annex J, Section 2g	Type of test:	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	Management of permits from multiple data servers.
Objectives of test:	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.
Test environment:	OEM system
System Status:	No pre-installed permits
Test procedure:	Load the PERMIT.TXT file at the test data location (a) below. Load the PERMIT.TXT file at the test data location (b) below.
Test data to be used:	PERMIT.TXT
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2g\DS1 b) D:\IHO S-64 [S-63 TDS v1.2]\2 ENC Licencing\Test 2g\DS2
Expected result:	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.
Tested result:	
Additional Comments:	There are two ENC cells common to both PERMIT.TXT files. These common permits have been created using different encryption keys.

Script Version No.:	2	Date last modified:	November 2008
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Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 2H

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	4.3
IEC 61174 reference:	Annex J, Section 2h	Type of test:	Compliance

Component:	ENC Licencing – Permit Management
Test Description:	Management of installed permits
Objectives of test:	Test whether the system enables user to manage their permit holdings. Confirm that users have the ability to selectively remove permits from the system.
Test environment:	OEM system
System Status:	Use the pre-installed permits from the previous test 2g
Test procedure:	Attempt to remove one of the installed sets of permits from the system.
Test data to be used:	PERMIT.TXT files loaded in the previous test 2g
Test Data Location:	Pre-installed on the OEM system
Expected result:	The user must be able to delete permits from the system. Suitable warnings/confirmations must be given.
Tested result:	
Additional Comments:	Two permit files have been supplied with this test imitating two different Data Servers (DS). These have been designated GB and PM.

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 4A

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.6.1 & 10.6.2
IEC 61174 reference:	Annex J, Section 4a	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	Install and validate the SA certificate and/or public key
Objectives of test:	Confirm that the system can import a valid certificate/public key and supply the user with confirmation. Validate it against the SA signature contained in the ENC signature files of the supplied exchange set.
Test environment:	OEM System
System Status:	No pre-installed permits, Certificate/Public Key or ENC data.
Test procedure:	Depending on the system install the certificate and/or the public key file(s). Install the PERMIT.TXT and install the exchange set from the location below.
Test data to be used:	1) UKHO.CRT and/or UKHO.PUB 2) PERMIT.TXT 3) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4a
Expected result:	1) The appropriate warning must be displayed **"SSE 26 - This ENC is not authenticated by the IHO acting as the Scheme Administrator"**. The certificate or public key file must be installed and a message displayed informing the user that the file has been installed successfully. 2) The permit file installs without error 3) When the exchange set is authenticated the system must display the SSE 26 warning, once, to alert the user as in 1 above. The exchange set must load without any authentication failures.
Tested result:	
Additional Comments:	The signature files within this Exchange Set contain the UKHO's self signed certificate. The SSE 26 warning is displayed because this certificate has not been provided by the Scheme Administrator (IHO). Validation can be carried by the system against the file name and/or the "Issuer" if the certificate file is pre-installed. The certificate expiry date is 16/08/2010.

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 4B

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.6.1 & 10.6.2
IEC 61174 reference:	Annex J, Section 4b	Type of test:	Compliance

Component:	ENC Authentication
Description:	Change and update installed certificate
Objectives of test:	Confirm that the system can import and overwrite an already installed certificate/public key and return a report informing the user of the fact. Validate it against the SA signature contained in the ENC signature files of the supplied exchange set.
Test environment:	OEM system
System Status:	Use the pre-installed information and data from the previous test 4a.
Test procedure:	Note: The certificate or public key file should be manually checked against the corresponding files on the IHO website (www.iho.int). See 10.6.1.1 in S-63. Depending on the system install the certificate and/or public key file(s). Install the PERMIT.TXT and Install the exchange set from the location below.
Test data to be used:	1) IHO.CRT and/or IHO.PUB 2) PERMIT.TXT 3) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4b
Expected result:	1) The new certificate or public key file must overwrite the previously installed one and a message displayed informing the user that the new file has been installed successfully. 2) The exchange set loads without any authentication failures.
Tested result:	
Additional Comments:	IHO Public key used for this is the same as that posted on their website at the time this test data was produced.

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 4C

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.6.2
IEC 61174 reference:	Annex J, Section 4c	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	No pre-installed certificate/public key on the system
Objectives of test:	Test how the system performs when there is no pre-installed certificate. Confirm that the correct SSE 05 error message is displayed and that the system does not progress to the decompress/decrypt stage.
Test environment:	OEM system
System Status:	No pre-installed certificate, permits or ENC data.
Test procedure:	Install the permit file followed by the exchange set stored in the location below.
Test data to be used:	1) PERMIT.TXT 2) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4c
Expected result:	The system must report a SSE 05 error message similar to the one below. **"SSE 05 – 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.
Tested result:	
Additional Comments:	

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 4D

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.6.2
IEC 61174 reference:	Annex J, Section 4d	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	Check SA Certificate Expiry Date
Objectives of test:	Test how the system performs if the IHO digital certificate (IHO.CRT) has expired. To confirm that the correct SSE 22 error message is displayed and that the system does not progress to the decompress/decrypt stage. **NOTE: This test is only intended for those systems that authenticate against the CRT file.**
Test environment:	OEM System
System Status:	No pre-installed certificate, permits or ENC data.
Test procedure:	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. 1) Install the certificate and permits at location (a) below then attempt to load the exchange set. 2) Then install the certificate and permits at location (b) below then attempt to load the exchange set (this test should result in the certificate & ExSet loading correctly). (Permits for this test expire in 2015)
Test data to be used:	In both expired and current certificate tests use IHO.CRT PERMIT.TXT V01X01 (Exchange Set)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4d\Expired b) D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4d\Current
Expected result:	1) When installing the expired certificate the system must report a SSE 22 error message similar to the one below. ***"SSE 22 – SA Digital Certificate file has expired. A new SA Public Key (certificate) can be obtained from the IHO website or your data supplier."*** When attempting to install the exchange set the system must report the required SSE 05 message stating that no valid certificate is installed in the ECDIS. 2) When installing the current certificate this should install OK and load the ExSet without error or warning.
Tested result:	
Additional Comments:	The IHO.CRT (Expired) certificate expired on 31st December 2004 The IHO.CRT (Current) certificate expires on 29th August 2013

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:	
Tested by:		Date:	
Comments:			

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 4E

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	10.6.2
IEC 61174 reference:	Annex J, Section 4e	**Type of test:**	Compliance

Component:	ENC Authentication
Test Description:	Incorrectly formatted certificate and public key files.
Objectives of test:	Test how the system performs if the IHO digital certificate (IHO.CRT) or Public Key file is incorrectly formatted. Confirm that the correct SSE 08 error message is displayed and that the system does not progress to the decompress/decrypt stage.
Test environment:	OEM System
System Status:	No pre-installed certificate, permits or ENC data.
Test procedure:	Depending on which file the system uses install the relevant IHO.CRT and/or IHO.PUB file(s). Then attempt to load the exchange set using the permits provided.
Test data to be used:	1) IHO.CRT and/or IHO.PUB 2) PERMIT.TXT 3) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4e
Expected result:	The system must report a SSE 08 error message similar to the one below. ***"SSE 08 – 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 05 – SA Digital Certificate file is not available. A valid certificate can be obtained from the IHO website or your data supplier."***
Tested result:	
Additional Comments:	1) The last hexadecimal pair, "F8", has been removed from the public key string (Big y) in the certificate file (IHO.CRT). 2) The last hexadecimal pair, "F8", has been removed from the public key file (IHO.PUB).

Script Version No.:	2	**Date last modified:**	November 2008
Compiled by:	UKHO	**Date:**	October 2007

Test Passed:		**Test Failed:**	
Tested by:		**Date:**	
Comments:			

IHO S-63 EDITION 1.1 − IEC 61174 ANNEX J − TEST SCRIPT 4F

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	10.6.1.1
IEC 61174 reference:	Annex J, Section 4f	**Type of test:**	Compliance

Component:	ENC Authentication
Description:	Check certificate parameter values
Objectives of test:	Test how the system performs if the public key stored in the IHO digital certificate (IHO.CRT) uses either a positive or negative parameter. Confirm that the system is able to install certificates with both types of parameters.
Test environment:	OEM system
System Status:	No pre-installed certificate, permits or ENC data.
Test procedure:	1) Install the IHO.CRT file at the test data location (a) below. Insert the permit file and exchange set at the same location. Remove the IHO.CRT file on conclusion of this test before running test (2). 2) Install the IHO.CRT file at the test data location (b) below. Insert the permit file and exchange set at the same location.
Test data to be used:	**Data Server 1 (DS1)** **Data Server 2 (DS2)** IHO.CRT [024100 Parameter] IHO.CRT [0240 Parameter] PERMIT.TXT PERMIT.TXT V01X01 (Exchange Set) V01X01 (Exchange Set)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4f\DS1 b) D:\IHO S-64 [S-63 TDS v1.2]\4 Authentication_Part1\Test 4f\DS2
Expected result:	**Data Server 1** certificate must install without error or warning. The exchange set should authenticate and import without error or warning. **Data Server 2** is using a non SA Certificate. The certificate should install but with the appropriate SSE 26 warning displayed. The exchange set should authenticate and import without error but a further SSE 26 warning should be displayed prior to import (See Test 4A).
Tested result:	
Additional Comments:	**NOTE:** This test is designed only for those systems using the IHO.CRT file to authenticate the SA signed data server certificate in the ENC signature file.

Script Version No.:	2	**Date last modified:**	November 2008
Compiled by:	UKHO	**Date:**	October 2007

Test Passed:		**Test Failed:**	
Tested by:		**Date:**	
Comments:			

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 5A

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.6.2
IEC 61174 reference:	Annex J, Section 5a	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	Invalid SA signature in the ENC Signature File
Objectives of test:	To test how the system performs when an invalid certificate element of an ENC signature file is authenticated against the installed IHO certificate and/or public key. Confirm the correct SSE 06 message id returned by the ECDIS.
Test environment:	OEM system
System Status:	No pre-installed certificate, permits or ENC data.
Test procedure:	Install the IHO.CRT and/or IHO.PUB, Permits and exchange set from the location below.
Test data to be used:	1) IHO.CRT 2) PERMIT.TXT 3) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\5 Authentication_Part2\Test 5a
Expected result:	The system must report the appropriate message as follows for ENC file GB61021A.001: **"SSE 06 - The SA Signed Data Server Certificate is invalid. The SA may have issued a new public key or the ENC may originate from another service. A new SA public key can be obtained from the IHO website or from your data supplier"** The system should validate each certificate in turn and not halt at an error. Some systems may report an SSE 03 which is acceptable (similar validation)
Tested result:	
Additional Comments:	The signature file associated with update GB61021A.001 contains the data servers self signed key (SSK) and not the SA signed data server certificate. GB61021A.000, GB61021B.000 and GB61021B.001 contain valid certificates.

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 5B

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.6.2.1
IEC 61174 reference:	Annex J, Section 5b	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	Authentication against a non SA certificate/public key
Objectives of test:	To test that the system will authenticate against an alternative certificate/public key stored on the system which is not issued by the Scheme Administrator. Test that the correct SSE 26 warning is displayed informing the user that the ENC data is not authenticated by the SA.
Test environment:	OEM system
System Status:	No pre-installed certificate/public key, permits or ENC data.
Test procedure:	Install certificate and/or public key, permit file and exchange set stored in the location below.
Test data to be used:	1) NONSA.CRT/.PUB 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB61021A, GB61021B, GB61032A)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\5 Authentication_Part2\Test 5b
Expected result:	The system must authenticate the exchange set against the certificate and/or public key stored on the system. The system must identify that the data has been authenticated against a public key not issued by the IHO acting as the SA. A warning must be displayed as follows: **"SSE 26 – ENC is not authenticated by the IHO acting as the SA"** This test should not prevent the exchange set from being loaded.
Tested result:	
Additional Comments:	This test uses an installed certificate/public key file which is the same as the public key contained in the signature file of the exchange set.

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 5C

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	5.3 & 10.6.3
IEC 61174 reference:	Annex J, Section 5c	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	ENC signature validation
Objectives of test:	Test how the system responds when validating an incorrectly signed cell file. Confirm that the correct SSE 09 message is displayed.
Test environment:	OEM system
System Status:	No pre-installed certificate, permits or ENCs.
Test procedure:	Install the IHO.CRT file, PERMIT.TXT and ENC exchange set from the location described below.
Test data to be used:	1) IHO.CRT 2) PERMIT.TXT 3) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\5 Authentication_Part2\Test 5c
Expected result:	The system must display the correct SSE 09 error message for cell GB301620 as follows: **"SSE 09 – ENC Signature is invalid."** The system must not load this cell as its integrity may have been compromised. The system should validate the signature file for GB301640 and load this cell in the normal way.
Tested result:	
Additional Comments:	ENC Signature GBK01620.000 is in the correct format but the signature is invalid. ENC Signature GBK01640.000 is in the correct format and is valid.

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 5D

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	5.4.2.7 & 10.6.3
IEC 61174 reference:	Annex J, Section 5d	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	ENC signature format validation
Objectives of test:	Test how the system responds when validating against an incorrectly formatted ENC signature. Confirm that the correct SSE 24 message is displayed.
Test environment:	OEM system
System Status:	Use data installed from the previous test (5c)
Test procedure:	Load the exchange set from the location below.
Test data to be used:	V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\5 Authentication_Part2\Test 5d
Expected result:	The system displays the correct SSE 24 error message for cell GB301660 as follows: **"SSE 24 – 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 GB301620 and load this cell in the normal way. Some systems may report an SSE 09 (*ENC Signature is invalid)* error this is acceptable as the expected outcome is the same, i.e. the data file is rejected.
Tested result:	
Additional Comments:	GBK01620.000 has a valid ENC signature and is correctly formatted. GBK01660.000 has an invalid ENC signature format (deliberately corrupted).

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 5E

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	5.3, 5.4.2.7 & 10.6.3
IEC 61174 reference:	Annex J, Section 5e	**Type of test:**	Compliance

Component:	ENC Authentication
Test Description:	Check authentication is continuous and complete
Objectives of test:	The test that the system authenticates all signature files individually and continuously without hanging at an error. Check that the correct SSE 09 and SSE 24 messages are reported correctly.
Test environment:	OEM system
System Status:	Use data installed from the previous test (5d, with GB301620 & GB301640 already installed)
Test procedure:	Load the PERMIT.TXT file and exchange set at the location below.
Test data to be used:	1) PERMIT.TXT 2) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\5 Authentication_Part2\Test 5e
Expected result:	The system must authenticate each ENC signature continuously in turn. It must report the following errors at the end of the process: **"GB301820.000 – SSE 09 – ENC Signature is invalid."** **"GB301860.001 – SSE 24 – ENC Signature format is incorrect."** The system must load all ENC data files with authenticated signatures but not those that do not. Some systems may report an SSE 09 (*ENC Signature is invalid)* error for both GB301820.000 & GB301860.001. This is acceptable as the expected outcome is the same, i.e. the data file is rejected. **Note:** GB301860.002 should also return a sequential update error as it was not possible to install GB301860.001.
Tested result:	
Additional Comments:	GB301820.000/GBK01820.000 (invalid signature) GB301860.001/GBK01840.001 (Incorrect signature format)

Script Version No.:	3	**Date last modified:**	February 2009
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**	
Tested by:		**Date:**	
Comments:			

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 5F

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	5.3
IEC 61174 reference:	Annex J, Section 5f	Type of test:	Compliance

Component:	ENC Authentication
Test Description:	Single exchange set with ENC signature files signed by multiple data servers
Objectives of test:	To test how the system performs when an exchange set contains signature files from multiple data servers. That is, signed with different data server private keys and containing different SA signed certificates.
Test environment:	OEM system
System Status:	No pre-installed certificates, permits or ENCs.
Test procedure:	Install the certificate, permits and exchange set from the location below.
Test data to be used:	1) IHO.CRT/IHO.PUB 2) PERMIT.TXT 3) V01X01 (Exchange Set)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\5 Authentication_Part2\Test 5f
Expected result:	The seven cells and accompanying updates must authenticate, decrypt and import to the ECDIS without any error or warning messages.
Tested result:	
Additional Comments:	**ENC Signature File components Signed by Data Server 1 (DS1) DS1's SA signed certificate** GB301620.000, GB301640.000, GB301660.000, GB301820.000, GB301840.000	**ENC Signature File components Signed by Data Server 2 (DS2) DS2's SA signed certificate** GB301840.001 GB301860.000, 001 & 002 GB302020.000 & 001

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

Data Server 1 SA Signed Certificate

```
// Signature part R:
93F5 EF86 1FF6 BA6F 1C2B B9BB 7F36 0C80 2F9B 2414.
// Signature part S:
4877 8130 12B4 50D8 3688 B52C 7A84 8E26 D442 8B6E.
// BIG p
C16C BAD3 4D47 5EC5 3966 95D6 94BC 8BC4 7E59 8E23 B5A9 D7C5 CEC8 2D65 B682
7D44 E953 7848 4730 C0BF F1F4 CB56 F47C 6E51 054B E892 00F3 0D43 DC4F EF96
24D4 665B.
// BIG q
B7B8 10B5 8C09 34F6 4287 8F36 0B96 D7CC 26B5 3E4D.
// BIG g
4C53 C726 BDBF BBA6 549D 7E73 1939 C6C9 3A86 9A27 C5DB 17BA 3CAC 589D 7B3E
003F A735 F290 CFD0 7A3E F10F 3515 5F1A 2EF7 0335 AF7B 6A52 11A1 1035 18FB
A44E 9718.
// BIG y
15F8 A502 11C2 34BB DF19 B3CD 25D1 4413 F03D CF38 6FFC 7357 BCEE 59E4 EBFD
B641 6726 5E5F 0682 47D4 B50B 3B86 7A85 FB4D 6E01 8329 A993 C36C FD9A BFB6
ED6D 29E0.
```

Data Server 2 SA Signed Certificate

```
// Signature part R:
4ACC 8F68 F5F5 9CB9 7406 EA3D 670E AFFF F88C 13F3.
// Signature part S:
8EB1 915F 8635 A7BA 051C 7FF6 D462 D0FD 4673 6AE6.
// BIG p
C16C BAD3 4D47 5EC5 3966 95D6 94BC 8BC4 7E59 8E23 B5A9 D7C5 CEC8 2D65 B682
7D44 E953 7848 4730 C0BF F1F4 CB56 F47C 6E51 054B E892 00F3 0D43 DC4F EF96
24D4 665B.
// BIG q
B7B8 10B5 8C09 34F6 4287 8F36 0B96 D7CC 26B5 3E4D.
// BIG g
4C53 C726 BDBF BBA6 549D 7E73 1939 C6C9 3A86 9A27 C5DB 17BA 3CAC 589D 7B3E
003F A735 F290 CFD0 7A3E F10F 3515 5F1A 2EF7 0335 AF7B 6A52 11A1 1035 18FB
A44E 9718.
// BIG y
5729 7DCD A106 139C C82B 3CDF C5D6 7865 F272 C794 6529 5039 EB36 5A30 ECA6
5671 324A 7F56 9A3C 5324 9461 67C9 D9A1 53C0 D1F1 47A6 3E5F 2536 3BD8 BE25
3193 03FC.
```

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 6A

Standard:	IHO S-63 Data Protection Scheme

Edition:	1.1	**S-63 Reference:**	10.7.1 & 10.7.1.1
IEC 61174 reference:	Annex J, Section 6a	**Type of test:**	Compliance

Component:	ENC Decryption
Test Description:	Install ENCs when pre-installed permits have expired
Objectives of test:	To test how the system performs when importing new ENCs where the previously installed permits have expired.
Test environment:	OEM system
System Status:	Only the PERMIT.TXT and IHO.CRT files installed from the location below
Test procedure:	Install the exchange set from the location below. **NOTE:** The computer clock must be in advance of 30/11/2007.
Test data to be used:	1) IHO.CRT 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB61021A & GB61021B)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\6 ENC Decryption\Test 6a
Expected result:	The system must display the SSE 15 warning when importing the exchange set as follows: **"SSE 15 – Subscription service has expired. Please contact your data supplier to renew the subscription licence",** *(list affected cells)* The system must display the following SSE 25 warning when viewing cells with expired permits. **"SSE 25 – The ENC permit for this cell has expired. This cell may be out of date and MUST NOT be used for NAVIGATION".**
Tested result:	
Additional Comments:	Permits for this test are set to expire on 30th November 2007

Script Version No.:	2	**Date last modified:**	November 2008
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**		
Tested by:			**Date:**	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 6B

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.7.1.2
IEC 61174 reference:	Annex 6, Section 6b	Type of test:	Compliance

Component:	ENC Decryption
Test Description:	Permit expiry within 30 days
Objectives of test:	To test how the system performs when importing new ENCs where the installed permits expire within 30 days.
Test environment:	OEM system
System Status:	No ENC data installed but with PERMIT.TXT and IHO.CRT installed for previous test (4a)
Test procedure:	Set the computer clock between 01/11/2007 and 29/11/2007. Install the exchange set from the location below.
Test data to be used:	1) IHO.CRT (already installed) 2) PERMIT.TXT (already installed) 3) V01X01 (Exchange Set - GB61021A & GB61021B)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\6 ENC Decryption\Test 6b
Expected result:	The system must import the exchange set but display the appropriate SSE 20 warning message as follows: **"SSE 20 – Subscription service will expire in less than 30 days. Please contact your data supplier to renew the subscription licence."**
Tested result:	
Additional Comments:	Permits for this test are set to expire on 30th November 2007

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 6C

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	10.7.3
IEC 61174 reference:	Annex J, Section 6c	Type of test:	Compliance

Component:	ENC Decryption
Test Description:	Incorrect cell keys encrypted in the ENC permits.
Objectives of test:	1) Test how the system responds when loading ENCs encrypted with cell keys that are different to those used to generate the permits. Confirm that the correct SSE 21 error message is displayed. 2) Test that the system does not permanently halt for a single/multiple failures. 3) Test the system reports the number of successful/unsuccessful imports.
Test environment:	OEM system
System Status:	No pre-installed permits or ENCs. Certificate/Public key from previous tests, 6a and 6b.
Test procedure:	Install the permits and load the exchange set from the location below.
Test data to be used:	1) IHO.CRT (Pre-installed) 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB58910B, GB58910C, GB58911A, GB58911B, GB58913A, GB58932A & GB58932B)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\6 ENC Decryption\Test 6c
Expected result:	The system must check each installed permit in turn to see if there is a valid decryption key. If no valid key is available the system must report the appropriate SSE 21 error message as follows: **"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."** The system must not halt at an error but continue on to the next ENC. The system must report on successful/unsuccessful imports.
Tested result:	
Additional Comments:	Permits created from a different set of cell keys from those used to encrypt the test ENCs are as follows:- **GB58911A & GB58911B**

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 6D

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	10.7.4
IEC 61174 reference:	Annex L, Section 4d	**Type of test:**	Compliance

Component:	ENC Decryption
Test Description:	Validate ENC data file integrity
Objectives of test:	To confirm that the system correctly validates decrypted ENCs and checks the integrity of each ENC data file. Confirm the system reports the correct SSE 16 error message when the calculated CRC is incorrect or does not agree with the value contained in the corresponding CATALOG.031 record. Also determine whether the system correctly reports the SSE 23 (sequential update error).
Test environment:	OEM system
System Status:	IHO.CRT/IHO.PUB from previous test (6c) but no pre-installed permits or ENCs.
Test procedure:	Install the ENC cell permits and exchange set from the location below.
Test data to be used:	1) IHO.CRT (Pre-installed) 2) PERMIT.TXT 3) V01X01 (Exchange Set – GB40162A, GB40162B, GB40162C & GB40164A)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\6 ENC Decryption\Test 6d
Expected result:	1) The system must validate the CRC of each cell in the exchange set. The system must report the appropriate error message for all ENC files (see additional comments below) which fail to validate as follows: **"SSE 16 – ENC \<Cell Name\> CRC is incorrect. Contact you 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 23 – Non sequential update, previous update(s) missing try reloading from the base media. If the problem persists contact your data supplier."**
Tested result:	
Additional Comments:	GB40162B.000 – CRC altered manually in CATALOG.031 file GB40164A.003 – ENC data intentionally corrupted

Script Version No.:	2	**Date last modified:**	November 2008
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**		
Tested by:			**Date:**	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7A

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	Section 6
IEC 61174 reference:	Annex J, Section 7a	Type of test:	Compliance

Component:	ENC Data Management
Test Description:	Encrypted ENCs supplied by different Data Servers
Objectives of test:	To test how the system performs when loading ENCs from two different data servers who have their own unique SA signed certificates and encrypt using their own unique encryption keys.
Test environment:	OEM system
System Status:	IHO.CRT/IHO.PUB from previous test (4d) but no pre-installed permits or ENCs.
Test procedure:	Install the permits and exchange set for Data Server 1 (DS1) from location (a) below the install the permits and exchange set for DS2 from (b).
Test data to be used:	**Data Server 1 (DS1)** **Data Server 2 (DS2)** IHO.CRT [Pre-installed] IHO.CRT [Pre-installed] PERMIT.TXT PERMIT.TXT V01X01 (Exchange Set - GB281600, V01X01 (Exchange Set - GB283000, GB281800, GB282000 & GB283000) GB283100, GB283200 & GB283300)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7a\DS1 b) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7a\DS2
Expected result:	Both exchange sets must authenticate against the same installed public key. The DS's permits must be stored independently and decrypt the relevant exchanges sets when loaded. The system should be up to date as follows: GB281600 [Ed1, Up1] GB281800 [Ed1, Up0] GB282000 [Ed1, Up0] GB283000 [Ed1, Up4] GB283100 [Ed1, Up3] GB283200 [Ed1, Up0] GB283300 [Ed1, Up0]
Tested result:	
Additional Comments:	In this test both Data Servers (DS) have ENC cell GB283000 common to both. DS1 has GB283000.000 – 002 and DS2 has GB283000.000 – 004. *This test scenario considers how the ECDIS performs when a user obtains ENCs from a two independent data providers.*

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7B

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	Section 6
IEC 61174 reference:	Annex J, Section 7b	Type of test:	Compliance

Component:	ENC Data Management
Test Description:	Loading additional ENC cell permits and cells from a different data provider
Objectives of test:	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.
Test environment:	OEM system
System Status:	Use the data installed for test 7a for DS1 & 2 (assuming that the data loaded as per the expected results)
Test procedure:	Install the permit file from the location below followed by the exchange set at the same location.
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB255000, GB270000, GB281600, GB281800, GB282000 & GB283000)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7b
Expected result:	The permit file must be merged with the previously installed one for the correct data server [DS1 - GB]. The exchange set must install all new cells as well as the updates for the previously installed ones [GB281600 & GB281800]. The "Expected SENC Status" table lists the expected results. The ENC cells loaded during test 5a for data server 2 [DS2] must still be viewable in the ECDIS to their expected state of correctness. The "Expected SENC Status" table lists the expected results against 5a [DS2].
Tested result:	
Additional Comments:	The permit file **only** contains new permits for cells GB255000 & GB270000. The exchange set contains the new cells and the cells from the previous test, 5a [DS1] plus additional updates. *This test scenario considers how the ECDIS performs when presented with a subset of new additional ENC permits from a specific data provider.*

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	December 2007

Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7C

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	Section 6
IEC 61174 reference:	Annex J, Section 7c	Type of test:	Compliance

Component:	ENC Data Management
Test Description:	Test that the system operates correctly in a multiple data provider environment.
Objectives of test:	Check that ENCs existing within both subscriptions do not cause corruption across service providers. Confirm that both providers information is managed independently without conflict.
Test environment:	OEM system
System Status:	IHO certificate/public key installed from previous tests 7a & 7b. No pre-installed permits or ENCs.
Test procedure:	1. Install the ENC permit file from location (a) below. 2. Load the ENC Exchange Set (V01X01) from (a). 3. Load the ENC Exchange Set (V01X01) from (b). 4. Install the ENC permit file from location (b) 5. Load the ENC Exchange Set (V01X01) from (b). This exchange set contains new base cells and updates to previously installed cells. One cell is already installed with no updates.
Test data to be used:	**Data Server 1 (DS1)** IHO.CRT [Pre-installed] PERMIT.TXT V01X01 (Exchange Set - GB281600, GB281800, GB282000 & GB283000) **Data Server 2 (DS2)** IHO.CRT [Pre-installed] PERMIT.TXT V01X01 (Exchange Set - GB281600, GB281800, GB282000, GB283000, GB283100 & GB283200)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7c\DS1 b) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7c\DS2
Expected result:	1. ENC permits at (a) must install without error or warning. 2. ENC Exchange Set (V01X01) at (a) must load without error or warning. 3. ENC Exchange Set (V01X01) at (b) must **not** load as there are no valid permits for data server 2 [DS2] installed in the ECDIS. A SSE 10 warning must be displayed stating **"SSE 10 – Permits not available for this data provider".** 4. ENC permits at (b) must install without error or warning. 5. ENC Exchange Set (V01X01) at (b) must install the new bases and updates. Warning messages relating to "cells/updates already installed" may be displayed. 6. The content of the ECDIS SENC must be the same as that described in the "Expected SENC Status" table.
Tested result:	
Additional Comments:	*This test scenario considers how the ECDIS performs when the user changes from one data provider to another.*

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7D

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	6.4.1.1 & 6.4.1.2
IEC 61174 reference:	Annex J, Section 7d	**Type of test:**	Compliance

Component:	ENC Data Management
Test Description:	ECDIS management of cancelled cells.
Objectives of test:	To test how the system responds when a cell is cancelled in an S-63 encrypted ENC service. Confirm that the system operates correctly as defined in the S-63 standard.
Test environment:	OEM system
System Status:	IHO certificate/public key installed from previous test 7c. No pre-installed permits or ENCs.
Test procedure:	Install the ENC permits at location (a) below. Load the base exchange set at (b) and then update using the exchange set at (c). Attempt to view all imported cells in the ECDIS and determine their status.
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) V01X01 (2 Exchange Sets - GB251200/GB255000/GB280200/GB301620)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7d b) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7d\Base c) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7d\Update
Expected result:	The system must report any cell(s) that have been identified as cancelled at load time. A message must be displayed informing the user of the cell name. Depending on the method adopted by the OEM for managing cancelled cells one of the following conditions must be observed: 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.*
Tested result:	
Additional Comments:	Cell GB280200 is cancelled

Script Version No.:	2	**Date last modified:**	November 2008
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**		
Tested by:			**Date:**	

Comments:	

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7E			
Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	**S-63 Reference:**	6.4.1.1, 6.4.1.2 & 6.4.1.3
IEC 61174 reference:	Annex J, Section 7e	**Type of test:**	Compliance

Component:	ENC Data Management
Test Description:	ECDIS Display of Replacement ENC Cells
Objectives of test:	To test how the system responds when a cell is cancelled and replaced in an S-63 encrypted ENC service. Confirm that the system operates correctly as defined in the S-63 standard. This test also makes use of the PARTIAL and FULL PRODUCTS.TXT file.
Test environment:	OEM system
System Status:	Status as per successful completion of test 7d.
Test procedure:	Install the ENC permits at location (a) below. Load the base exchange set at (b) and then update using the exchange set at (c). Attempt to view all imported cells in the ECDIS and determine their status.
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) V01X01 (2 Exchange Sets - GB380620, GB380720, GB40162A, GB40162B & GB40182A)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7e b) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7e\Base c) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7e\Update
Expected result:	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 7d. If any replacement cells have been encoded in the PRODUCTS.TXT file then this must be presented to the user as defined in S-63 and as follows: *"Cell <name> has been cancelled and has been replaced by cell(s), <name1>; <name2>. Please contact your data supplier to obtain the additional ENC permits".*
Tested result:	
Additional Comments:	GB380620 is cancelled and replaced by GB383710 & GB383720 GB380720 is cancelled and replaced by GB389320

Script Version No.:	2	**Date last modified:**	November 2008
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**		
Tested by:			**Date:**	

Comments:	

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7F

Standard:	IHO S-63 Data Protection Scheme

Edition:	1.1	**S-63 Reference:**	6.2.3
IEC 61174 reference:	Annex J, Section 7f	**Type of test:**	Compliance

Component:	ENC Data Management
Test Description:	ECDIS management of ENC re-issued cells
Objectives of test:	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)
Test environment:	OEM system
System Status:	IHO certificate/public key installed from previous test 7e. No pre-installed permits or ENCs.
Test procedure:	Install the ENC permits at location (a) below. Load the base exchange set at (b) and then update using the exchange set at (c).
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) Base [Exchange Set – GB303040] 4) Update [Exchange Set – GB303040 & GB50162D]
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7f b) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7f\Base c) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7f\Update
Expected result:	The system must load the base exchange set and then the re-issued cells (GB303040 & GB50162D) on the update as though they were an EN application profile, i.e. a new data set or a new edition of a data set. The system must also install the subsequent updates GB303040 [Ed 11 Up10] and GB50162D [Ed 6 Up 6].
Tested result:	
Additional Comments:	GB50162D is a straight re-issue with no previous history, i.e. new cell. GB303040 is a re-issued cell with history, i.e. base cell already installed in the ECDIS. Both re-issued cells have subsequent updates to test the loading sequence is continuous.

Script Version No.:	3	**Date last modified:**	February 2009
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**		
Tested by:			**Date:**	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7G

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	6.5.1
IEC 61174 reference:	Annex J, Section 7g	Type of test:	Compliance

Component:	ENC Data Management
Test Description:	ECDIS management of Base and Update Exchange Sets
Objectives of test:	To confirm the user is informed when there is incompatibility between installed ENCs and the applied update exchange set.
Test environment:	OEM system
System Status:	No permits or ENCs installed
Test procedure:	Install permits and load the Update and Base media at the location below.
Test data to be used:	1) IHO.CRT/PUB [Pre-installed from previous tests] 2) PERMIT.TXT 3) BASE 1 WK23_07, BASE 2 WK30_06 & BASE 3 WK27_07 4) UPDATE WK37_07
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7g
Expected result:	The ENC bases should load without error. However when the update media set is loaded the system should install the band 3 (Coastal) and band 5 (Harbour) ENC updates without error but the system must return the following warning: **"The Update Media is not compatible with currently installed ENCs. Please install 'Base 2 issued in week 25/07 and dated 21 June 2007' and then continue with the update process".** [The system will also display continuity errors as a result of non sequential loading when attempting to load and install the updates for GBGB40162A, GBGB40184A, GBGB40186D & GBGB40202A.]
Tested result:	
Additional Comments:	Base media 2 used in this test is dated 20 July 2006 and pre dates the latest Base media 2.

Script Version No.:	2	Date last modified:	February 2009
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7H (OPTIONAL)

Standard:	IHO S-63 Data Protection Scheme

Edition:	1.1	**S-63 Reference:**	6.5.1 & Section 5 Appendix 2
IEC 61174 reference:	Annex J, Section 7h	**Type of test:**	Compliance

Component:	ENC Data Management
Test Description:	ECDIS management of multiple exchange sets
Objectives of test:	**ONLY FOR SYSTEMS THAT USE THE LATEST UPDATE EXCHANGE SET TO MANAGE THE IMPORT OF ENCs ACROSS MULTIPLE BASES** This optional test checks a systems ability to use the PERMIT.TXT; PRODUCTS.TXT & STATUS.LST file to manage the efficient loading of ENCs. Confirm the system provides intuitive prompts to the user when installing the ENC update and base media.
Test environment:	OEM system
System Status:	No ENC permits or ENC cells installed.
Test procedure:	Install the permits at the location below then load the "UPDATE WK19_07" exchange set. Load the base exchange sets as prompted by the system. For this test this should be the following: Base 1 dated 06 July 2006 Base 3 dated 03 August 2006 Finally re-install the UPDATE WK19_07 and bring the system fully up to date.
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) Update Exchange Set (UPDATE WK19_07) 4) Base Exchange sets (BASE 1 WK28_06 & BASE 3 WK32_06)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management [Optional]\Test 7h
Expected result:	The system should read the permit file and the full products listing from the WK19/07 Update. The system should read the product listing to determine where all licenced ENC base [EN] cells are located, then using the STATUS.LST file to prompt users to install the appropriate BASE media. The system should then prompt the user to load the appropriate base media in order. For example, ***"Please load BASE media 1 dated 06 July 2006".*** ***"Please load BASE media 3 dated 03 August 2006".*** When all licenced cells have been loaded from the bases the system should display a message similar to the following example: ***"Please load WK19/07 Update to bring all licenced cells up to date".*** Finally the system may display a message similar to the following example: ***"All licenced cells are installed and up to date to WK19/07".*** The system status should be the same as that described in the "Expected SENC Status" table.
Tested result:	
Additional	The permit file for this test only contains permits for Bases 1 and 3. Base 2 has no valid permits and should not be prompted for by the system.

Comments:	

Script Version No.:	2	Date last modified:	November 2008
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7I (OPTIONAL)

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	6.5.1 & Section 5 Appendix 2
IEC 61174 reference:	Annex J, Section 7i	Type of test:	Compliance

Component:	ENC Data Management
Test Description:	ECDIS management of multiple exchange sets and multiple purchases.
Objectives of test:	**ONLY FOR SYSTEMS THAT USE THE LATEST UPDATE EXCHANGE SET TO MANAGE THE IMPORT OF ENCs ACROSS MULTIPLE BASES** This optional test is similar to Test 7h but covers the scenario where the user purchases additional ENC cells.
Test environment:	OEM system
System Status:	No ENC permits or ENC cells installed.
Test procedure:	**Purchase 1** Install the PERMIT.TXT file then load "UPDATE WK19_07" from location (a) below. Load the appropriate base media as prompted by the system. Re-install the UPDATE WK19_07 and bring the system fully up to date. **Purchase 2** Install the PERMIT.TXT file then load "UPDATE WK37_07" from location (b) below. Load the appropriate base media as prompted by the system. Re-install the UPDATE WK37_07 and bring the system fully up to date.
Test data to be used:	**Purchase 1** 1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) UPDATE WK19_07 4) Base Exchange set 1 **Purchase 2** 1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) UPDATE WK37_07 4) Base Exchange sets (2 & 3)
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management [Optional]\Test 7i\Purchase 1 b) D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management [Optional]\Test 7i\Purchase 2
Expected result:	In each instance the system should respond similar to the previous test (7h) and prompt the user to load the appropriate media and install the following ENC cells. **Purchase 1** – The system will prompt for BASE 1 WK28_06 and install four cells [GB302840, GB303220, GB303420 and GB303460]. **Purchase 2** - The system will prompt for BASE 2 WK25_07 [GB40162A & GB40184A] and finally BASE 3 WK27_07 [GB50162D]. The results should be as specified in the "Expected SENC Status" table. See additional comments below.
Tested result:	
Additional Comments:	Purchase 2, BASE 1 has no new cells, new editions or updates. If the system maintains an up to date product listing the user should not be prompted to install this base.

Script Version No.:	2	Date last modified:	January 2009
Compiled by:	UKHO	Date:	November 2008

Test Passed:		Test Failed:			
Tested by:			Date:		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 7J (OPTIONAL)

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	6.5.1 & Section 5 Appendix 2
IEC 61174 reference:	Annex J, Section 7j	Type of test:	Compliance

Component:	ENC Data Management
Test Description:	ECDIS management of multiple exchange sets
Objectives of test:	**ONLY FOR SYSTEMS THAT USE THE LATEST UPDATE EXCHANGE SET TO MANAGE THE IMPORT OF ENCs ACROSS MULTIPLE BASES** Confirm the system displays a relevant warning when installing a base media that is newer the latest installed update exchange set.
Test environment:	OEM system
System Status:	No ENC permits or ENC cells installed.
Test procedure:	Install the permits at the location below then load the "UPDATE WK19_07" exchange set. Load the base exchange sets as prompted by the system, i.e. BASE Media 1 dated 06 July 2006 BASE Media 2 dated 20 July 2006 BASE Media 3 dated 03 August 2006 [Not available] Attempt to load BASE 3 WK24_07 instead of the recommended BASE 3 (unavailable) above. Install WK19/07 Update to bring all ENC up to date.
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) WK19_07 Update Exchange Set 4) Base Exchange sets (Bases 1-3)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\7 ENC Data Management\Test 7j
Expected result:	The system should read the permit file and the full products listing from the WK19/07 Update. The system should read the product listing to determine where all licenced ENC base [EN] cells are located, then using the STATUS.LST file prompt users to install the appropriate BASE media similar to test 7h. For example, The system should report a warning message when attempting to load BASE 3 WK27_07 similar to the following example: **"This base media is not compatible with the currently installed Update media. Please install "Base media 3 dated 03 August 2006".** The system can load all ENCs (base and updates) from Base 3 but when finally installing the WK19/07 update it would be useful if a message is displayed informing the user of the following: **"A newer update is available not all ENCs may be up to date"**
Tested result:	
Additional Comments:	The Base 3 exchange set used in this test is dated 21 July 2007 which is newer than the latest available update exchange set.

Script Version No.:	1		Date last modified:	
Compiled by:	UKHO		Date:	November 2008

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 8A

Standard:	IHO S-63 Data Protection Scheme

Edition:	1.1	**S-63 Reference:**	Section 7 & S-63 Appendix 2
IEC 61174 reference:	Annex J, Section 8a	**Type of test:**	Compliance

Component:	Data Exchange Media
Test Description:	Exchange Set and Media Delivery
Objectives of test:	To check that the system can import a single exchange from a CD-ROM or from any other interface or data storage media that may be supplied to the ECDIS for that purpose.
Test environment:	OEM system
System Status:	Certificate/Public Key as installed for test 7a. No pre-installed permits or ENCs.

Test procedure:	1. Install the permits and certificate/public key stored in the location below.
	2. Copy the exchange set [formatted as described in section 7 of the standard] from the same location to the following media:
	   a) Hard Drive (e.g. C:\)
	   b) CD-ROM
	   c) DVD
	   d) USB Memory Stick
	   e) Other [e.g. Bluetooth or other remote means]
	3. Load the exchange set into the system using those options available to the ECDIS.

Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT 3) V01X01 (Exchange Set - GB301620, GB301640 and GB301660)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\8 Data Exchange Media\Test 8a
Expected result:	All ENCs install correctly without error regardless of media or method.
Tested result:	**[List delivery method used with results]**
Additional Comments:	

Script Version No.:	1	**Date last modified:**	
Compiled by:	UKHO	**Date:**	November 2007

Test Passed:		**Test Failed:**			
Tested by:			**Date:**		
Comments:					

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 8B

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	Section 7 & S-63 Appendix 2
IEC 61174 reference:	Annex J, Section 8b	Type of test:	Compliance

Component:	Data Exchange Media
Test Description:	Single Media containing Multiple Exchange Sets
Objectives of test:	To check that the system can import a multiple exchange sets from the media defined in test 6a. Confirm that the system imports all test exchange sets without error or omission.
Test environment:	OEM system
System Status:	Certificate/Public Key as installed for test 8a. No pre-installed permits or ENCs.
Test procedure:	Install permits and load all exchange sets contained on the media. Uninstall and repeat for all media types.

Test data to be used:	1) IHO.CRT [Pre-installed]
	2) PERMIT.TXT
	3) M01X01 - Media Exchange Set containing the following:
	    Base Exchange Set 1 [B1]: GB100001, GB100002 & GB100004
	    Base Exchange Set 2 [B2]: GB281600, GB281800, GB282000 & GB283000
	    Base Exchange Set 3 [B3]: GB301620, GB301640 & GB301660

Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\8 Data Exchange Media\Test 8b
Expected result:	All three exchange sets and their associated ENC cells must load into the ECDIS without error or omission.
Tested result:	
Additional Comments:	

Script Version No.:	1	Date last modified:	
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 8C

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	Section 7 & S-63 Appendix 2
IEC 61174 reference:	Annex J, Section 8c	Type of test:	Compliance

Component:	Data Exchange Media
Test Description:	Multiple exchange sets across multiple media sets
Objectives of test:	To test how the system manages multiple exchanges sets across several media sets. Confirm that the system is intuitive and guides the user through the cell loading process as defined in S-63.
Test environment:	OEM system
System Status:	Certificate/Public Key as installed for test 6b. No pre-installed permits or ENCs.
Test procedure:	Install permits from the location at (a) below and then insert the update media set at (b). The system should then guide the user through the rest of the ENC installation process. The base media is held in (c).
Test data to be used:	1) IHO.CRT [Pre-installed] 2) PERMIT.TXT (Valid cell permits for GB100001, GB100002, GB100004, GB281600, GB281800, GB301660, GB40162A & GB61021B) 3) M01X01 – Update Media set containing various NE & updates for cells below. 4) M01X02 – Base Media Sets containing the following: Base Exchange Set 1 [B1]: GB100001, GB100002 & GB100004 Base Exchange Set 2 [B2]: GB281600, GB281800, GB282000 & GB283000 Base Exchange Set 3 [B3]: GB301620, GB301640 & GB301660 M02X02 - Media Exchange Set containing the following: Base Exchange Set 1 [B4]: GB40162A, GB40162B & GB40162C Base Exchange Set 1 [B5]: GB58911B, GB58913A, GB58932A & GB58932B Base Exchange Set 1 [B6]: GB61011A, GB61021A, GB61021B & GB61032A
Test Data Location:	a) D:\IHO S-64 [S-63 TDS v1.2]\8 Data Exchange Media\Test 8c b) D:\IHO S-64 [S-63 TDS v1.2]\8 Data Exchange Media\Test 8c\UPDATE MEDIA c) D:\IHO S-64 [S-63 TDS v1.2]\8 Data Exchange Media\Test 8c\BASE MEDIA
Expected result:	The system must read the MEDIA.TXT file on the update media and prompt the user to install the appropriate media based on installed valid permits. All licenced ENCs and updates must be installed (see the expected result sheet).
Tested result:	
Additional Comments:	Licenced permits are only a subset of ENC cells contained within the base exchange sets across both media.

Script Version No.:	1	Date last modified:	
Compiled by:	UKHO	Date:	November 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

IHO S-63 EDITION 1.1 – IEC 61174 ANNEX J – TEST SCRIPT 8D

Standard:	IHO S-63 Data Protection Scheme		
Edition:	1.1	S-63 Reference:	Section 7 & S-63 Appendix 2
IEC 61174 reference:	Annex J, Section 8d	Type of test:	Compliance

Component:	Data Exchange Media
Test Description:	Media validation of encrypted ENC service status
Objectives of test:	To confirm that the system performs a check of the update media to establish whether the system has the latest base data installed. Check that the system displays an appropriate warning when identifying a base exchange set that is newer than the installed version.
Test environment:	OEM system
System Status:	All data installed from the previous test (8c).
Test procedure:	1) Load the UPDATE media from the location below. 2) When the warning message is displayed proceed to install available updates. 3) Load the correct BASE media as prompted by the ECDIS at the same location. 4) Load the UPDATE media again to bring all licenced cells up to date.
Test data to be used:	M01X01 (WK48/07 Update Media) & M01X02 (new WK40/07 Base Media)
Test Data Location:	D:\IHO S-64 [S-63 TDS v1.2]\8 Data Exchange Media\Test 8d
Expected result:	1) The system must return a warning stating that that one of the base exchange sets has been re-issued as follows: **"The Update Media is not compatible with currently installed ENCs. Please load the latest version of 'BASE MEDIA 1 – Week 40/07 - dated 04 October 2007' and continue with the update process".** 2) When continuing the following errors must be reported: Updates '9' cannot be installed for cell **GB100002** (sequential error reported) [Edition 13, Updates 1 to 8 issued on the new B1]. Update '2-10' cannot be installed for cell **GB100004** (sequential error reported) [Edition 8, Update 1-7 issued on the new B1]. **GB40162A.006** must update without error. 3) Additional updates load from 'Base Exchange Set 1' 4) All licenced ENC cells are updated without errors as described in the "Expected SENC Status" table.
Tested result:	
Additional Comments:	BASE MEDIA 1 was re-issued in WK 40/07 (20071004) containing a re-issue of "Base Exchange Set 1".

Script Version No.:	3	Date last modified:	February 2009
Compiled by:	UKHO	Date:	October 2007

Test Passed:		Test Failed:		
Tested by:			Date:	
Comments:				

6. Expected Results

IEC61174 Annex J – Test Data - Expected SENC Status

The following table lists the status of the exchange sets used in the IEC 61174 – Annex J. It also lists the expected status of the SENC on completion of each test. Additional comments are listed indicating the required outcome of each test.

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	

J.2. ENC Licencing – Permit Management:

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
2b	GB100001	3	6	GB100001 not installed		
	GB100002	13	5	13	5	ENC installs without error or warning

J.4 ENC Authentication_Part1:

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
4a	GB100001	3	6	3	6	ENCs install without error or warning
	GB100002	13	5	13	5	"SSE 26" Warning Message
4b	GB100004	7	1	7	1	ENCs install without error or warning
	GB100005	3	2	3	2	
4c	GB100001	3	6	No ENCs Installed		"SSE 05" Error Message
	GB100002	13	5			
4d [Current]	GB100001	3	6	3	6	ENCs install without error or warning
	GB100002	13	5	13	5	
4d [Expired]	GB100001	3	1	No ENCs Installed		"SSE 22 & 05" Error Messages
	GB100002	12	7			
4e	GB100001	3	6	No ENCs Installed		"SSE 08 & 05" Error Messages
	GB100002	13	5			
4f [DS1]	GB58932B	1	0	1	0	ENCs install without error or warning
	GB60242T	2	0	2	0	
	GB61011A	1	1	1	1	
4f [DS2]	GB60242T	2	0	2	0	ENCs install without error or warning "SSE 26" Warning Message for DS2
	GB61011A	1	1	1	1	
	GB61021A	1	1	1	1	
	GB61021B	1	1	1	1	
	GB61032A	1	2	1	2	

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	

J.5 ENC Authentication_Part2

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
5a	GB61021A	1	1	1	0	Update 1 does not install ("SSE 06")
	GB61021B	1	1	1	1	ENC installs without error or warning
5b	GB61021A	1	1	1	1	Cells import without error but with a "SSE 26" Warning Message
	GB61021B	1	1	1	1	
	GB61032A	1	2	1	2	
5c	GB301620	3	0	GB301620 not installed		"SSE 09" Error Message
	GB301640	4	0	4	0	ENC installs without error or warning
5d	GB301620	3	0	3	0	ENC installs without error or warning
	GB301660	5	0	GB301660 not installed		"SSE 24" Error Message
5e	GB301620	3	0	3	0	ENCs install without error or warning
	GB301640	4	0	4	0	
	GB301660	5	0	5	0	
	GB301820	3	0	GB301820 not installed		"SSE 09" Error Message
	GB301840	8	1	8	1	ENC install without error or warning
	GB301860	3	2	3	0	"SSE 24" Error Update 1 does not install
	GB302020	4	1	4	1	ENC install without error or warning
5f	GB301620	3	0	3	0	All ENC cells and updates install without error or warning
	GB301640	4	0	4	0	
	GB301660	5	0	5	0	
	GB301820	3	0	3	0	
	GB301840	8	1	8	1	
	GB301860	3	2	3	2	
	GB302020	4	1	4	1	

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	

J.6. Uncompress and Decrypt ENC:

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
6a	GB61021A	1	1	1	1	"SSE 15" when importing cell permits
	GB61021B	1	1	1	1	"SSE 25" when viewing cells
6b	GB61021A	1	1	1	1	ENCs imported with a "SSE 20" warning
	GB61021B	1	1	1	1	
6c	GB58910B	1	0	1	0	ENCs install without error or warning
	GB58910C	2	1	2	1	
	GB58911A	1	1	GB58911A not installed		"SSE 21" Error Message
	GB58911B	1	0	GB58911B not installed		
	GB58913A	1	0	1	0	ENCs install without error or warning
	GB58932A	1	0	1	0	
	GB58932B	1	0	1	0	
6d	GB40162A	9	3	9	3	ENC installs without error or warning
	GB40162B	2	1	GB40162B.000 not installed		"SSE 16" followed by "SSE 23"
	GB40162C	1	1	1	1	ENC installs without error or warning
	GB40164A	1	5	1	2	GB40164A.003 not installed "SSE 16" followed by "SSE 23"

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	

J.7 ENC Data Management:

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
7a [DS1]	GB281600	1	1	1	1	After installing the exchange set from Data Server 1 the SENC should be correct as indicated across.
	GB281800	1	0	1	0	
	GB282000	1	0	1	0	
	GB283000	1	2	1	2	
7a [DS2]	GB283000	1	4	1	4	After installing the exchange set from Data Server 2 the SENC should be correct as indicated across.
	GB283100	1	3	1	3	
	GB283200	1	0	1	0	
	GB283300	1	0	1	0	
7b	GB255000	3	3	3	3	The new cells GB255000 & GB270000 should be installed. The updates for GB281600 & GB281800 should also be applied correctly.
	GB270000	1	1	1	1	
	GB281600	1	2	1	2	
	GB281800	1	1	1	1	
	GB282000	1	0	1	0	
	GB283000	1	4	1	4	
7c [DS1]	GB281600	1	1	1	1	After installing the DS1 exchange set the SENC should be correct as indicated across.
	GB281800	1	0	1	0	
	GB282000	1	0	1	0	
	GB283000	1	2	1	2	
7c [DS2]	GB281600	1	2	1	2	A "SSE 10" error will be displayed when installing the DS2 exchange set before the DS2 Permits are loaded. The SENC should be correct as indicated across when the DS2 permits are finally loaded.
	GB281800	1	1	1	1	
	GB282000	1	0	1	0	
	GB283000	1	4	1	4	
	GB283100	1	3	1	3	
	GB283200	1	0	1	0	
7d [Base]	GB251200	1	4	1	4	All ENC cells installed without error or warning
	GB255000	2	2	2	2	
	GB280200	2	0	2	0	
	GB301620	2	1	2	1	
7d [Update]	GB251200	1	8	1	8	Cancelled cell (GB280200) should be reported by the system and either removed from the SENC or displayed with the appropriate warning.
	GB255000	3	0	3	0	
	GB280200	2	1	2	1	
	GB301620	2	4	2	4	

7e [Base]	GB380620	2	0	2	0	All ENC cells installed without error or warning
	GB380720	2	0	2	0	
	GB40162A	8	3	8	3	
	GB40162B	1	1	1	1	
	GB40182A	1	4	1	4	
7e [Update]	GB251200	1	8	1	8	Cells from the previous test 7d (same status)
	GB255000	3	0	3	0	
	GB280200	2	1	2	1	
	GB301620	2	4	2	4	
	GB380620	2	1	2	1	Messages should be displayed as for 7d plus message relating to replaced cells: GB380620 (cancelled) replaced by GB380000 & GB380001. GB380720 (cancelled) replaced by GB290000
	GB380720	2	1	2	1	
	GB40162A	9	0	9	0	
	GB40162B	2	1	2	1	
	GB40182A	1	5	1	5	
7f [Base]	GB303040	11	9	11	9	Edition 11 of GB303040 installed with updates 1-9.
7f [Update]	GB303040	11	10	11	10	GB50162A is a straight re-issue with no previous history, i.e. new cell. GB303040 is a re-issued cell with history, i.e. base cell already installed in the ECDIS.
	GB50162D	6	6	6	6	
7g [BASE 1 WK23_07]	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	
7g [BASE 2 WK30_06]	GB40162A	9	0	9	0	Cells installed for this base but with the incompatibility warning.
	GB40184A	2	3	2	3	
	GB40186D	1	1	1	1	
	GB40202A	4	0	4	0	
7g [BASE 3 WK27_07]	GB50162B	10	7	10	7	
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	2	1	2	1	
7g [UPDATE WK37_07]	GB302840	23	4	23	4	NE installed from WK37/07 Update
	GB303220	4	7	4	7	
	GB303420	3	12	3	12	
	GB303460	11	1	11	1	
	GB40162A	9	5	9	0	Cells not updated due to incompatible BASE 2
	GB40184A	3	5	2	3	

	Cell Name	Exchange Set Content		Expected SENC Content		Comments
GB40186D	1	7	1	1		
GB40202A	5	2	4	0		
GB50162B	11	0	11	0	NE installed from WK37/07 Update
GB50162C	-	-	-	-	No updates for this cell
GB50162D	-	-	-	-	No updates for this cell
GB50182A	2	2	2	2	
GB50182A	2	1	2	1	

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	

J.7 ENC Data Management [Optional]:

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
7h [BASE 1 WK28_06]	GB302840	22	0	22	0	
	GB303220	4	1	4	1	
	GB303420	3	4	3	4	
	GB303460	10	3	10	3	
7h [BASE 2 WK30_06]	GB40162A	9	0	No ENC permits		
	GB40184A	2	3			
	GB40186D	1	1			
	GB40202A	4	0			
7h [BASE 3 WK32_06]	GB50162B	10	3	10	3	
	GB50162C	9	1	9	1	
	GB50162D	5	1	5	1	
	GB50182A	1	5	1	5	
7h [UPDATE WK19_07]	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	NE installed from WK19/07 Update
	GB40162A	9	3	No ENC permits		
	GB40184A	3	3			
	GB40186D	1	6			
	GB40202A	5	1			
	GB50162B	10	7	10	7	
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	2	1	2	1	NE installed from WK19/07 Update
7i – Purchase 1	GB302840	22	0	22	0	

[BASE 1 WK28_06]	GB303220	4	1	4	1	
	GB303420	3	4	3	4	
	GB303460	10	3	10	3	
7i – Purchase 1 [BASE 2 WK30_06]	GB40162A	9	0	No ENC permits		
	GB40184A	2	3			
	GB40186D	1	1			
	GB40202A	4	0			
7i – Purchase 1 [BASE 3 WK32_06]	GB50162B	10	3	No ENC permits		
	GB50162C	9	1			
	GB50162D	5	1			
	GB50182A	1	5	1	5	
7i – Purchase 1 [UPDATE WK19_07]	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	NE installed from WK19/07 Update
	GB40162A	9	3	No ENC permits		
	GB40184A	3	3			
	GB40186D	1	6			
	GB40202A	5	1			
	GB50162B	10	7			
	GB50162C	9	5			
	GB50162D	5	2			
	GB50182A	2	1	2	1	NE installed from WK19/07 Update
7i – Purchase 2 [BASE 1 WK23_07]	GB302840	22	16	22	16	There are no new cells, new editions or update files on BASE 1
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	
7i – Purchase 2 [BASE 2 WK25_07]	GB40162A	9	3	9	3	New Permit
	GB40184A	3	3	3	3	New Permit
	GB40186D	1	6	No ENC permits		
	GB40202A	5	1			
7i – Purchase 2 [BASE 3 WK27_07]	GB50162B	10	7			
	GB50162C	9	5			
	GB50162D	5	2	5	2	New Permit
	GB50182A	2	1	2	1	Cell not updated from new BASE 3
7i – Purchase 2 [UPDATE WK37_07]	GB302840	23	4	23	4	
	GB303220	4	7	4	7	
	GB303420	3	12	3	12	

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	
	GB303460	11	1	11	1	
	GB40162A	9	5	9	5	
	GB40184A	3	5	3	5	
	GB40186D	1	7	No ENC permits		
	GB40202A	5	2			
	GB50162B	11	0			
	GB50162C	-	-			No updates for this cell
	GB50162D	-	-	-	-	No updates for this cell
	GB50182A	2	2	2	2	
7j **[BASE 1 WK28_06]**	GB302840	22	0	22	0	
	GB303220	4	1	4	1	
	GB303420	3	4	3	4	
	GB303460	10	3	10	3	
7j **[BASE 2 WK30_06]**	GB40162A	9	0	9	0	
	GB40184A	2	3	2	3	
	GB40186D	1	1	1	1	
	GB40202A	4	0	4	0	
7j **[BASE 3 WK24_07]**	GB50162B	11	0	11	0	BASE 3 is newer than the installed WK19/07 Update.
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	2	2	2	2	
7j **[UPDATE WK19_07]**	GB302840	22	16	22	16	
	GB303220	4	6	4	6	
	GB303420	3	9	3	9	
	GB303460	11	0	11	0	
	GB40162A	9	3	9	3	
	GB40184A	3	3	3	3	
	GB40186D	1	6	1	6	
	GB40202A	5	1	5	1	
	GB50162B	10	7	11	0	These ENC Cells are installed from WK24/07 BASE 3.
	GB50162C	9	5	9	5	
	GB50162D	5	2	5	2	
	GB50182A	2	1	2	2	

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	

J.8 Media Delivery of Encrypted ENCs:

Test	Cell Name	Edition Number	Update Number	Edition Number	Update Number	Comments
8a	GB301620	3	0	3	0	All ENC cells install correctly without error regardless of media or method
	GB301640	4	0	4	0	
	GB301660	5	0	5	0	
8b [B1]	GB100001	3	6	3	6	All ENC cells from all three exchange sets install correctly without error or warning.
	GB100002	13	5	13	5	
	GB100004	7	1	7	1	
8b [B2]	GB281600	1	1	1	1	
	GB281800	1	0	1	0	
	GB282000	1	0	1	0	
	GB283000	1	4	1	4	
8b [B3]	GB301620	3	0	3	0	
	GB301640	4	0	4	0	
	GB301660	5	0	5	0	
8c [B1]	GB100001	3	6	3	6	All exchange sets are prompted for by the system. All ENC base cells and updates are installed correctly without error, warning or omission. The permit file only contains the following permits GB100001, GB100002, GB100004, GB281600, GB281800, GB301660, GB40162A, & GB61021B NOTE: There are no ENC cells with valid permits for Base 5.
	GB100002	13	5	13	5	
	GB100004	7	1	7	1	
8c [B2]	GB281600	1	1	1	1	
	GB281800	1	0	1	0	
	GB282000	1	0	No ENC permits		
	GB283000	1	4			
8c [B3]	GB301620	3	0			
	GB301640	4	0			
	GB301660	5	0	5	0	
8c [B4]	GB40162A	9	3	9	3	
	GB40162B	2	1	No ENC permits		
	GB40162C	1	1			
8c [B5]	GB58911B	1	0	No ENC permits		
	GB58913A	1	0			
	GB58932A	1	0			
	GB58932B	1	0			
8c [B6]	GB61011A	1	1	No ENC permits		
	GB61021A	1	1			
	GB61021B	1	1	1	1	

Test	Cell Name	Exchange Set Content		Expected SENC Content		Comments
		Edition Number	Update Number	Edition Number	Update Number	
	GB61032A	1	2	No ENC permit		
8c [U1]	GB100001	3	7	3	7	All ENC New Editions and updates install correctly without error, warning or omission. NOTE: The New Edition of Cell GB100004 is installed from the update media.
	GB100002	13	7	13	7	
	GB100004	8	0	8	0	
	GB281600	1	2	1	2	
	GB281800	1	1	1	1	
	GB301660	5	1	5	1	
	GB40162A	9	5	9	5	
	GB61021B	1	2	1	2	
8d [U1] Initial Load	GB100002	13	9	13	7	A new "Base 1" exchange set has been issued; GB100002 & GB100004 cannot be updated. System must return the correct warnings.
	GB100004	8	10	8	0	
	GB40162A	9	6	9	6	
8d [New Media 1of2 - New B1 ExSet]	GB100001	3	7	3	7	
	GB100002	13	8	13	8	
	GB100004	8	7	8	7	
8d [B2]	GB281600	1	1	1	2	ENC Cells already installed and updated from Test 8c
	GB281800	1	0	1	1	
	GB282000	1	0	No ENC permits		
	GB283000	1	3			
8d [B3]	GB301620	3	0			
	GB301640	4	0			
	GB301660	5	0	5	1	
8d [U1] Final Update	GB100002	13	9	13	9	
	GB100004	8	10	8	10	
	GB281600	1	2			ENC Cells already updated from 8d [U1] initial load
	GB281800	1	1			
	GB301660	5	1			
	GB40162A	9	6			
	GB61021B	1	2			