

Paper for Consideration by HSSC10 Report of the ENCWG

Submitted by:	Chairman, ENCWG
Related Documents:	S-57, S-58, S- 52, S-63 and S-64
Related Projects:	IMO S-Mode

Chair:	Thomas Mellor UK
Vice-Chair:	Mr. Richard Fowle DK
Secretary:	Mr Anthony Pharaoh (IHB)
Member States:	Argentina, Brazil, Canada, Denmark, Chile, Equator, Egypt, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Netherlands, New Zealand, Norway, Russia, Singapore, Slovenia, South Africa, Sweden, Turkey, Ukraine, United Kingdom, United States of America
Expert Contributor Organisations:	The International Centre for ENC (IC-ENC), PRIMAR Stavanger, Caris, ESRI (USA), Furuno (Finland), GEOMOD (France), Hyundai e-Marine (ROK), Jeppesen Marine, IIC Technologies (Canada), NAVTOR AS (Norway), SevenCs (Germany), TKartor (Sweden), and Transas (Russia), Frank Hippmann (Australia)
<i>See Annex A for further details</i>	

Meetings Held During Reporting Period

ENCWG3, Wollongong Australia (16 - 18 April 2018).

Planned Meeting

ENCWG4, tbc in consultation with S-101 project team.

Work Program

S-52 - Specifications for Chart Content and Display Aspects of ECDIS edition 4.0.3

Although the last set of clarifications to S-52 and S-64 were circulated to the widest audience yet we received no comments on the changes. Unfortunately, the ENCWG have been made aware of a further need to issue a clarification to the S-52 Presentation Library, this is to correct several minor problems with ECDIS Chart 1 datasets. The ENCWG approved these clarifications in Wollongong and the intention is to issue Edition 4.0.3 later this year, after a final ENCWG review.

S-64 IHO Test Data Sets in ECDIS edition 3.0.3

Furuno have also raised a minor set of issues which require a few of screen shots in S-64 to be revised. To recreate these images several minor corrections need to be made to the ENC test datasets. The ENCWG approved these clarifications in Wollongong and the intention is to issue Edition 3.0.3 later this year, after a final ENCWG review.

S-58 ENC Validation Checks edition 6.1

As announced in Circular Letter 37/2017, 22 May 2017, Edition 6.0.0 of S-58 was due to come into force 1st June 2018. However, following the implementation of S-58 edition 6.0.0 by software vendors, it has been reported that there are a few checks that, under certain circumstances, would erroneously report critical errors for valid ENC data. Having inspected these issues with the IHO Secretariat and the S-58 work item lead, there is regrettably no other way to fix these problems other than to issue a revision to edition 6.0.0. The consequence of correcting these checks and producing a revised edition of S-58 will result in a delay to the entry into force date. Therefore, the ENCWG has requested the entry into force date is postponed, and this has been communicated to Member States via Circular Letter 30/2018.

In line with resolution 2/2007 all the proposed changes have been circulated to OEMs for comment, and a final redline version has been formally approved by the ENCWG.

The ENCWG requests HSSC10 to endorse the changes made to S-58 edition 6.0.0 and agree to recommend MS approve the publication of S-58 ENC Validation Checks edition 6.1.0. Below is the ENCWG proposed timeline for the publication of S-58 edition 6.1.0.

April 2018: ENCWG3 formally endorse Ed 6.1.0 for submission to HSSC10.
May 2018: HSSC 10 endorsement of Ed 6.1.0 for submission to IHO MS for adoption.
June 2018: IHO CL for adoption of S-58 ED 6.1.0.
Sept 2018: IHO CL announcing adoption of S-58 Ed 6.1.0, new date of "entry into force" (TBD).

S-58 ENC datasets

HSSC9 approved funding to create a set of test datasets to detect if validation software could identify all the critical errors in S-58. The IHO approved IIC to carry out the work which is due to complete by the end May. The datasets will be distributed to validation tool manufactures and be available for download via the IHO website.

Progress on HSSC Action Items

HSSC8/28 Equivalent T&Ps for ENC

A draft informative text has been jointly worked on by the ENCWG and NCWG, however the final version is not yet ready for distribution. NCWG and ENCWG chairmen to continue to develop the draft.

The ENCWG3 meeting discussed the draft and have concluded that in addition to the informative text there must also be improved guidance on encoding T&P notices in ENC for more HOs to adopt the practice. This must also address data production methods as more HOs turn to HDB solutions we need to ensure effective creation of both the ENC and paper chart from the same information. FR and DK to lead on this work.

HSSC9/14 Improvement of ENC display on ECDIS

The Sub-WG on the display of ENCs in ECDIS (led by FR) reported to the ENCWG3 on their findings from the testing conducted by MS over the last year. The group have identified several display issues that could be improved by providing HOs with additional encoding guidance. The Sub-WG will now work to develop this additional guidance which will result in a need to update S-57 Appendix B.1, ANNEX A - Use of the Object Catalogue for ENC.

HSSC9/19 ENC Readme.TXT

Intertanko submitted a paper to HSSC 9 highlighting several issues they had encountered when using ENCs in ECDIS. Many of the issues raised are being dealt with by the ENCWG and will improve the navigational experience for the user. They did however bring to the attention of the ENCWG3 meeting, issues with the use and format of the README.TXT commonly contained within an ENC exchange set. Although this file is not mandated in the S-57 Product Specification it has become an important source of information in all commercial ENC services, especially given the increasing amount of ENCs available from many different producer nations. Many of the README.TXT files consist of disclaimers and specific information from the countries that deliver ENCs. This information sometimes could be navigationally significant and required to be reviewed for changes when the ECDIS is updated. The ENCWG 3 meeting discussed how we could improve the user experience and it

was agreed that IC-ENC and Primar would jointly work on creating a standard template for this information. As this is not a substantive change and is optional the ENCWG have agreed that this would be a clarification to S-63.

HSSC9/22 High density contour lines ENCs

The ENCWG chairman sought feedback from the various HOs already engaged in the production of ENCs containing high density contour information to identify how best to offer production guidance to HOs on encoding additional contours in ENC. The ENCWG3 meeting had two presentations from AU and the UK on their experiences of using auto generated contours to create new ENCs. It was agreed that in order to take this action forward the ENCWG should form a sub group led by the UK to draft a new section to S-65 offering HOs production and maintenance guidance. The group would also consider what other IHO standards may need to be updated to facilitate the creation and distribution of this data. (Sub-WG UK, Aus, Canada, Denmark, Estonia, Norway and USA).

HSSC9/47 HSSC tasked the ENCWG to monitor the development of guidance on cyber security.

The ENCWG have been alerted to a security issue which may need to be addressed. IEC TC80 are drafting a new standard, IEC 63154 on Cyber Security based on the principle that all data files and executables should be authenticated for their source and integrity before use in approved bridge equipment. In doing so they have identified a possible vulnerability in ENC exchange sets, there are currently several ENC files contained in an exchange set that are not protected and could provide a route into the ECDIS for cyber criminals. To address this issue a new edition of IHO S-63 would be required. The ENCWG have discussed the technical aspects of the issue and agreed that the best way to address this problem would be to sign the additional files.

CATALOG.031
README.TXT
PRODUCTS.TXT
MEDIA.TXT
PERMITS.TXT
SERIAL.ENC
STATUS.LST

This change whilst relatively simple to address does have a wider impact on the shipping industry and would require all ECDIS to be updated to read the new signatures. HSSC must consider the impact on shipping companies and weigh this against the risk posed.

HSSC9/59 S-100WG/ENCWG to submit a proposal opening the possibility of establishing G-series in the list of IHO Publications, for guidelines, and guidance documents.

Completed

Problems Encountered

Currently there are no outstanding issues that are causing a major problem to the work of the ENCWG.

Any Other Items of Note

IEC request for changes to S-64 to accommodate 4K and full HD large format monitors

The current tests in S-64 are based on the minimum effective size of the area for chart display 270 x 270 mm, this unfortunately limits the different monitor options for OEMs and customers. It is proposed to update the test descriptions S-64 and S-52 to allow for the display of ENC in large format monitors. The ENCWG3 discussed this proposal and would recommend that S-64 and S-52 are updated. Many OEMs are already utilizing these large format monitors and updating our standards will legitimise their use and allow them to be tested correctly during type approval.

S-Mode Guideline

Nick Lemon IMO S-Mode CG Coordinator attended the ENCWG3 meeting to provide a short presentation on the work of the CG. The information was well received, the UK Hydrographic Office and IEC representatives will provide proposed S-52 icons to include in Appendix 2. Nick has agreed this information will be shared with the CG in the next draft.

Conclusions and Recommended Actions

The HSSC10 meeting are invited to endorse S-58 edition 6.1.0 and task the IHO Secretariat to circulate the document to MS for approval.

Justification and Impacts

The new edition of S-63 requested by IEC must be carefully considered as the impact on the shipping industry would be significant. Whilst there is a potential cyber security risk HSSC must balance this against the time it would take to update and implement this change. If HSSC approve this new edition careful consideration must be given as to how this is communicated to the industry after having only just updated the ECDIS for the S-52 presentation library update.

Action Required of HSSC

HSSC are invited to:

- **Note** this report;
- **Endorse** the continued activity of the WG;
- **Approve** the Work Plan at Annex B;

Annexes:

- A. ENCWG Work Plan

ANNEX A

ENCWG Proposed Work Plan - 2017 to 2018

ENCWG Tasks

A	Maintain S-52 "Specifications for Chart Content and Display Aspects of ECDIS" and its associated "Presentation Library" (IHO Task 2.4.1)
B	Maintain S-57 "IHO Transfer Standard for Digital Hydrographic Data, including ENC Product Specification" (IHO Task 2.4.2)
C	Maintain S-58 "Recommended ENC validation checks" (IHO Task 2.4.3)
D	Maintain S-61 "Product Specification for Raster Navigational Charts" (IHO Task 2.4.4)
E	Maintain S-64 "IHO Test Data Sets for ECDIS" (IHO Task 2.4.6)
F	Maintain S-65 "ENC Production, Maintenance and Distribution Guidance" (IHO Task 2.4.7)
G	Assess the impact of other IHO standards on S-52 display specifications (IHO Task 2.4.1)
H	Liaise with the NIPWG and the NCWG (IHO Task 2.1)
I	Maintain the ENC production and portrayal sections of the IHO website (IHO Task 2.4)
J	Conduct the 2017 and 2018 meetings of ENCWG and its sub-group(s) and project team(s) (IHO Task 2.1)
K	Maintain S-66 "Facts about electronic charts and carriage requirements – (IHO Task 2.4.8)
L	Consider the development of high density contour lines related to ENCs (IHO Task 2.4)
M	Maintain and monitor the existing S-63 standard (IHO Task 2.4.5)

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A.1	Maintain S-52 - Specifications for Chart Content and Display Aspects of ECDIS	H	Next meeting		Permanent	O	Chair/Sec ENCWG (Tom Mellor)	S-57	
A.2	Resolve any problems or errors identified in the current editions of S-52 Presentation Library and S-64 ENC Test Datasets	H			Permanent	O	Chair/Sec ENCWG (Tom Mellor)	S-57, S-64	Generally OEMs going through type approval with ECDIS will identify areas for clarification or correction
A.3	Investigate ENC display issues in ECDIS	H		Mar-17	Mar-19	P	Christian Mouden	S-53, S-57 (UoC)	
A.4	With respect to the implementation of S-52 PL4.0; monitor the Paris and Tokyo MoU CIC on Safety of Navigation and take appropriate action where necessary	M	Next meeting		2019	O	Chair ENCWG		
A.5	Monitor and assist the ECDIS S-mode work which will be an agenda item at NCSR5				2019	O	Chair ENCWG		
B.1	Maintain S-57 "IHO Transfer Standard for Digital Hydrographic Data, including ENC Product Specification"	H			Permanent	O	Chair/Sec ENCWG	S-52, S-58	
B.2	Resolve any problems or errors identified in the current edition of S-57	H			Permanent	O	Chair ENCWG	S-57	
B.3	Produce T&P paper for PSC See K.2	M	2017	2018			Chair ENCWG		
B.4	Maintain the ENC portrayal sections of the IHO website.	M			Permanent	O	Chair/Sec ENCWG		
C.1	Resolve any problems or errors identified in the current edition of S-58	H			Permanent	O	Richard Fowle		

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
C.2	Monitor the implementation of the new edition of S-58 and keep the recommended checks up to date	H		Sept-2017	July-2018	O	Richard Fowle	S-57	
C.3	1. Restructure S-58 to provide a more logical means of data validation. 2. Investigate how the new version of S-58 can be used to implement a minimum validation standard for all ENC's.	H		2012	2017	C	Richard Fowle		Task Completed
E.1	Resolve any problems or errors identified in the current edition of S-64	H			Permanent	O	Chair/Sec ENCWG		
F.1	Monitor and assess proposals for amending S-65	L			Permanent	O	Chair/Sec ENCWG		
G.1	Liaise with IEC TC80 to ensure that future editions of IEC 61174 are compatible with standards maintained by ENCWG	M			Permanent	O	Chair/Sec ENCWG	S-52, IEC 61174	
H.1	Liaise with the NIPWG and the NCWG	H			Permanent	O			
I.1	Maintain the ENC production and portrayal sections of the IHO website, and support FAQ and Encoding Bulletins	H			Permanent	O	Chair / IHO Sec		
J.1	Conduct meetings of ENCWG and its sub-group(s) and project team(s) as required				Permanent		Chair / IHO Sec		
K.1	Maintain S-66 Publication				Permanent	O	Chair / IHO Sec		

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
K.2	Prepare a single educative IHO authoritative document addressing the issue of "equivalent" T&P NMs for ENCs, in view of its distribution to HOs, Port State Control authorities and mariners after approval. (See B.3)	M				P	Thomas Mellor (UKHO) and NCWG Chair		
M.1	Maintain and monitor the existing S-63 protection scheme	M		2016	Permanent	O	RENC, Industry and IHO Sec.	S-63	

Meetings (Task J)

Date	Location	Activity
14 – 18 March 2016	Tokyo, Japan	ENCWG-1
20-22 March 2017	Genoa, Italy	ENCWG-2
16-18 April 2018	Wollongong, Australia	ENCWG-3

Chair: Thomas Mellor, UK
Vice Chair: Richard Fowle, DK
Secretary: Anthony Pharaoh, IHO Sec.

Email: Thomas.Mellor@UKHO.gov.uk
Email: riafo@gst.dk
Email: addt@iho.int