

Paper for Consideration by HSSC11 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 NCSR 6 WP.4

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)

Meetings Held During Reporting Period

NA

Planned Meeting

ENCWG4, IHO Secretariat, Monaco (10 - 12 June 2019) in conjunction with S-101 meeting

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

Minor clarifications to ECDIS chart 1 are being carried out to create a new set of images for S-52. It is hoped the clarified document will be available for final review and endorsement during the ENCWG 4 meeting. Following the procedure described in 2/2007 the clarifications once approved by the ENCWG will be published on the IHO website.

S-64 - IHO Test Data Sets in ECDIS edition 3.0.3

Several screen shots in S-64 to be revised, to recreate these images, minor corrections to the ENC test datasets need to be made. The ENCWG approved these clarifications in Wollongong and the clarified document edition 3.0.3. will be available for final review and endorsement during the ENCWG 4 meeting. Following the procedure described in 2/2007 the clarifications once approved by the ENCWG will be published on the IHO website.

S-63 - ENC Readme.TXT

The recommendation from Intertanko to standardize the content of a S-63 readme file in an encrypted exchange set is being jointly developed by IC-ENC and Primar. Primar are currently reviewing the proposed standard template from IC-ENC and are aiming to finalize the format at the upcoming ENCWG meeting. As the readme.txt file is not mandated in the S-57 Product Specification, creating a standard template for disclaimers and ENC specific information would only constitute a clarification to S-63. Pending ENCWG approval the updated S-63 will be published on the IHO website after the meeting.

Progress on HSSC Action Items

HSSC 10/23 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 was due for completion by the end May 2018. Unfortunately, due to a number of errors detected this work has been delayed. The datasets and accompanying documentation has been circulated to validation tool manufacturers and RENCs. We are currently working on the final batch of comments and intend to make the finalised test datasets and documentation available by the end of April 2019.

The datasets will be hosted on the GitHub website where they can be easily accessed. GitHub is a web-based hosting service for version control which will allow expert contributors and HOs to comment on the datasets and be regularly maintained, the infrastructure will be presented to the ENCWG4 meeting.

HSSC10/24 Production and Maintenance of High Density ENCs, new edition of S-65

The ENCWG Chairman has drafted a new annex to S-65 offering HOs HD ENC production and maintenance guidance. This was distributed to the HD ENC sub-WG for comment. The consolidated draft document will be presented at the Bathymetric Workshop in April to be hosted by BSH in Hamburg, Germany. Any constructive feedback on the draft Annex will be fed back to the sub-WG for their review. The Annex will be reviewed at the ENCWG4 meeting. If consensus can be reached by the ENCWG the annex will be added to S-65 to create a new edition of the document. Following HSSC 10 S-65 can be developed and maintained without following the full process of IHO Res 2/2007 therefore the new edition will be added to the IHO website when approved without the need for full HSSC endorsement.

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.

HSSC9/14 Improvement of ENC display on ECDIS

The Sub-WG on the display of ENCs in ECDIS (led by FR) are continuing discussions and developing encoding solutions using the Basecamp collaboration software. Final proposals to update S-57 Appendix B.1, ANNEX A - Use of the Object Catalogue for ENC will be proposed to ENCWG 4.

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

Following the ENCWG3 meeting further investigation into the proposed solution from the IEC TC80 chair to sign the supplementary files in an ENC exchange set was carried out. Unfortunately, the proposal in its current form did not support the existing model of ENC distribution in use today. Therefore, it has been necessary to find an alternative solution to mitigate the cyber security risk which also support current ENC data servers. In conjunction with the expert contributors to S-63 a new solution has been proposed and a paper has been written which will be presented at ENCWG4. In addition, the paper will be presented to the ECDIS WG of CIRM at their AGM in Vouliagmeni, Greece, 2nd - 4th April 2019 for further investigation and comment before considering the need for updating S-63. If it's deemed that the solution could be implemented a full risk assessment will be carried out

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

The Paris Memorandum of Understanding (Paris MoU) on Port State Control (PSC) carried out a Concentrated Inspection Campaign (CIC) on Safety of Navigation including ECDIS jointly with the Tokyo MOU between 1st

September 2017 and 30th November 2017. The results of the Concentrated Inspection Campaign (CIC) were published in July 2018

Table 1: Responses to CIC questionnaire

Nr.	CIC on Safety of Navigation, including ECDIS	Measured over only Yes and No answers				Measured over Total of CIC Inspections				
		'YES'(1)		'NO'(1)		N/A(2)		Blank(2)		% 'NO' adjusted Det.(3)
		#	%	#	%	#	%	#	%	
01*	Is ship's navigation equipment in accordance with its applicable safety certificate (SEC, PSSC, CSSC)?	3845	97.9%	84	2.1%	94	2.3%	4	0.1%	100.0%
02*	Does the ECDIS have the appropriate up-to-date electronic charts for the intended voyage and is there a suitable back-up arrangement?	2382	96.2%	95	3.8%	1549	38.5%	1	0.0%	29.5%
03	Is there evidence that all watchkeeping officers comply with STCW requirements for ECDIS?	2537	98.4%	42	1.6%	1447	35.9%	1	0.0%	
04*	Can watchkeeping officers demonstrate familiarization with ECDIS?	2415	97.2%	70	2.8%	1537	38.2%	5	0.1%	30.0%
05*	Can ship's VDR/SVDR record data fully?	3111	97.5%	79	2.5%	828	20.6%	9	0.2%	-20.2%
06*	Is second and/or third stage remote audible alarm of BNWAS recognized?	3833	98.6%	54	1.4%	127	3.2%	13	0.3%	-33.3%
07	Is the ship's Automatic Identification System transmitting correct particulars?	3977	99.3%	29	0.7%	15	0.4%	6	0.1%	
08	Does the passage plan cover the whole voyage?	3871	96.3%	147	3.7%	0	0.0%	9	0.2%	
09*	Does all crew know and respect the official working language as established and recorded in the ship's logbook?	3944	98.0%	82	2.0%	0	0.0%	1	0.0%	-4.7%
10*	Is the crew familiar with the procedure of emergency operation of steering gear?	3994	99.4%	24	0.6%	0	0.0%	9	0.2%	100.0%
11*	Are the exhibition of navigation/signal lights in accordance with the requirements of COLREG72?	3937	97.9%	86	2.1%	0	0.0%	4	0.1%	-38.6%
12	Is the ship detained as a result of this CIC?	44	1.1%	3978	98.9%	0	0.0%	5	0.1%	

The CIC noted that the largest number of deficiencies was related to the "voyage or passage plan"; the report recommended that industry should take note and care to ensure the voyage or passage plan as required by SOLAS and STCW is up-to-date for the intended voyage.

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

The proposal to update S-64 and S-52 to allow for the display of ENC in large format monitors will be presented to the ECDIS WG of CIRM at their AGM in April. The existing tests and screen captures in S-64 are based on the minimum effective size of the area for chart display 270 x 270 mm. Many OEMs are already utilizing large format monitors for ECDIS and back of bridge planning stations and updating IHO standards will legitimise their use and allow them to be tested correctly during type approval. The feedback of CIRM will be presented to the ENCWG4 meeting.

HSSC 10/04 Guidelines for the standardization of user interface design for navigation equipment (formerly known as S-Mode)

As reported to HSSC 10 the ENCWG Chairman and IEC TC80 Chairman submitted a set of S-52 based symbols to Nick Lemon IMO CG Coordinator in support of the S-mode concept. After full scrutiny by the CG this information was eventually included in the guideline. The guideline was submitted to the 6th session of IMO's Navigation Communications and Search and Rescue subcommittee and will now be sent to the next meeting of the IMO's Maritime Safety Committee for final approval. During this process the guideline was renamed, "Guidelines for the standardization of user interface design for navigation equipment".

Conclusions and Recommended Actions

The HSSC11 meeting are invited to note the production of clarification editions of S-52, S-64 and S-63. It is also recommended that action HSSC10/04 S-Mode is now complete and this work item be closed. With the publication of the CIC results this work item has also come to an end and can also be closed.

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.

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 – 2019 to 2020

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		recommend close work item
A.5	Monitor and assist the ECDIS S-mode work which will be an agenda item at NCSR5				2019	O	Chair ENCWG		recommend close work item
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	

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
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		
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 ENCs.	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			

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
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		
K.1	Maintain S-66 Publication				Permanent	O	Chair / IHO Sec		
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	Thomas Mellor, RENC, Industry and IHO Sec.	S-63	