Paper for Consideration by HSSC 15

Consolidation of IHO Standards into IHO S-67 Mariners Guide to use of ENCs in ECDIS

Submitted by:	ENCWG & DQWG
Executive Summary:	Report on the development of a single authoritative IHO text related to the use of ENCs in ECDIS
Related Documents:	S-66 Facts about Electronic Charts and Carriage Requirements S-67 Mariners' Guide to Accuracy of Depth Information in Electronic Navigational Charts (ENC) IHO ENC & ECDIS cyber security guidance Information on ENC Generalization, Over-Scaling and Safety Checking Functions in ECDIS. Information on IHO Standards Related to ENC and ECDIS
Related Projects:	HSSC action 14/40 (former HSSC13/33, HSSC12/25) See Annex B for full membership details

Introduction / Background

HSSC action 14/40 (former HSSC13/33, HSSC12/25) agreed on the principles of merging S-66 and S-67 into a single IHO publication, with the aim of also incorporating mariner ENC and ECDIS related information papers.

Analysis/Discussion.

A first attempt was made by UKHO to consolidate the information into a single text and presented to the ENCWG7 held in NZ Nov 2022. This was shared with DQWG at their 18th meeting Feb 2023. The first draft was a concatenation of the documents and did not attempt to harmonise the content, option 2 as defined below.

At a joint meeting of the ENCWG and DQWG held on March 1st 2023 discussions were held on how to proceed. It was determined there were two possible options to fulfill the aims of the HSSC action.

Option 1 – Fully integrate the text from all current standards and publications into a single harmonised document

Option 2 – Keep existing standards and input papers separate but consolidate into a single IHO publication. Like S-98, the new IHO publication will include several parts, such as part A, part B, part C and so on.

To scope the size of the task to meet option 1, which was determined would be in the best interests of the Mariner, the ENCWG chair proposed a new structure (Annex A) to harmonise all the content across the input documents, and each member of the combined group provide some good comments and suggestions. On this basis, UKHO have volunteered to create a first draft of option 1.

The document is currently being prepared and it is hoped a first draft will be available for both WGs comment at the end of May 2023.

Following a consultation period with both WGs it is hoped a second draft can be produced which will also incorporate the new cyber security guidance by HSSC 16

Action Required of HSSC
HSSC 15 is requested to note the progress of the action and the proposed timeline for publication

Annex A

Draft structure of the new S-67

New Section no.	Current Title	Old refrence	Notes
1	Introduction	S-67 p2 S-66 p2	New introduction needed to cover purpose of the consolidated document
2	Abbreviations	S-67 – p2 S-66 – p40	
3	IHO standards Related to ENC and ECDIS	PSC Advice p1	
4	Regulations Related to ECDIS and ENC	PSC Advice p2	Section needs harmonisation
	Overview of Electronic Charting and Regulations	S-66 Section 1: p8	
5	What are the IMO requirements that apply to the carriage of nautical charts?	S-66 Section 1: p8	
6	MSC.1/Circ.1503 (as amended) ECDIS – Guidance for Good Practice	PSC Advice p3	
7	What is a nautical chart?	S-66 Section 1: p8	
8	What is an Electronic Chart Display and Information System ?	S-66 Section 1: p9	
9	ECDIS	S-66 Section 1: p9	
10	ECS	S-66 Section 1: p10	
11	What kinds of electronic charts are available?	S-66 Section 1: p10	
12	What are official charts?	S-66 Section 1: p11	
13	What is an ENC?	S-66 Section 1: p11	
14	How do I recognise an ENC?	S-66 Section 1: p12	
15	What ENCs are available?	S-66 Section 1: p13	
16	How are ENCs protected from Unauthorised Changes?	S-66 Section 1: p13	

17	Are there other ways that ENCs can be distributed?	S-66 Section 1: p13	
18	What is an RNC?	S-66 Section 1: p14	
19	How are ENCs and RNCs kept up to date?	S-66 Section 1: p14	
20	Is it possible to check that all updates have been applied to an ENC?	S-66 Section 1: p14	
21	A closer look at ECDIS	S-66 Section 1: p15	
22	How is an ECDIS approved and by whom?	S-66 Section 1: p15	
23	Is there a need to keep ECDIS software updated?	S-66 Section 1: p15	
24	Is there a mandatory requirement to carry ECDIS?	S-66 Section 1: p16	
25	Meeting Carriage Requirements with ECDIS	S-66 Section 1: p17	
26	Back-up Requirements	S-66 Section 1: p17	
27	What to do in areas without ENC coverage?	S-66 Section 1: p17	
28	Does your ECDIS system meet IMO chart carriage requirements?	S-66 Section 1: p18	
29	Can chart format names indicate carriage compliance?	S-66 Section 1: p19	
30	Acceptance of ECDIS by Port State Control Authorities	S-66 Section 1: p20	
31	IHO Advice for Port State Control Inspectors Concerning IHO Standards	PSC Advice: p5	
32	Is there a need for ECDIS training?	S-66 Section 1: p20	
33	What are the requirements for ECDIS training?	S-66 Section 1: p20	
34	What are the operational considerations when using ECDIS	S-66 Section 1: p21	
35	More on ECS	S-66 Section 1: p22	

36	**Technical Details of Electronic Charts**	S-66 Section 4: p29	
37	Official Electronic Chart Data	S-66 Section 4: p29	
38	Types of Official Chart Data	S-66 Section 4: p29	
39	Electronic Navigational Charts (ENCs)	S-66 Section 4: p29	
40	General Principles	S-66 Section 4: p29	
41	How are ENCs named?	S-66 Section 4: p35	
42	ENC Data Format	S-66 Section 4: p29	
43	ENC Display	S-66 Section 4: p30	
44	Executive summary and recommendations	S-67 chapter 2: p3	New title required
45	Accuracy of depth information in Electronic Navigational Charts	S-67 chapter 4: p5	
46	What scale should an ENC be displayed at?	S-66 Section 4: p34	
47	ENC Compilation Scale	ENC Generalisation over scaling and safety functions in ECDIS : p2	
48	Effect of over-scaling	S-67 chapter 5.1.1 : p14	Needs harmonisation
49	ENC over-scaling	ENC Generalisation over scaling and safety functions in ECDIS : p6	
50	Generalized information	S-67 chapter 4.1 : p6	
51	High accuracy depth information	S-67 chapter 4.1.1 : p8	
52	Medium accuracy depth information	S-67 chapter 4.1.2 : p8	
53	Poor accuracy depth information	S-67 chapter 4.1.3 : P8	
54	Quality descriptions of individual objects dangerous to safe navigation	S-67 chapter 4.2 : p8	
55	Obstructions	S-67 chapter 4.2.1 : p9	

56	Survey reliability	S-67 chapter 4.3 : p10	
57	Depth accuracy in relation to charted depth	S-67 chapter 4.4 : p11	
58	ECDIS safety checking function	ENC Generalisation over scaling and safety functions in ECDIS : p3	
59	Safety contour	S-67 chapter 4.4.1	
60	Zones of Confidence symbols in ENCs	S-67 chapter 5	
61	Impact of ZOC categories upon mariners	S-67 chapter 5.1	
62	Updating ENCs	S-66 Section 4: p35	
63	ENC Distribution	S-66 Section 4: p33	
64	What is a SENC?	S-66 Section 4: p33	
65	SENC Delivery	S-66 Section 4: p34	
66	Official and Unofficial Data	S-66 Section 4: p34	
67	Use of ENCs in ECS	S-66 Section 4: p32	
68	Raster Navigational Charts (RNCs)	S-66 Section 4: p35	
69	General principles of RNCs	S-66 Section 4: p35	
70	RNC data format and production	S-66 Section 4: p35	
71	RNC Display	S-66 Section 4: p36	
72	RNC updating	S-66 Section 4: p37	
73	Private Chart Data	S-66 Section 4: p38	
74	**IHO ECDIS & ENC cyber security**	New IHO guidance	
75	**ECDIS Training**	S-66 Section 3: p26	
76	Training Objectives	S-66 Section 3: p26	
77	IMO Model Training Course - Operational Use of ECDIS	S-66 Section 3: p26	
	Certification of ECDIS Education	S-66 Section 3: p28	
Annex A	List of Flag State Authorities	S-66 Section 2: p24	
Annex B	Zones of Confidence Categories	S-67 Annex A : p19	

Annex C	Assessment of the quality of a survey into a Zone of Confidence by the Hydrographic Office	S-67 Chapter 6 : p15	
	Assessment examples	S-67 Chapter 6.1 : p15	
	Position accuracy of a survey	S-67 Chapter 6.2 : p17	
Annex E	Dangerous effects of over-scale ECDIS display near 'isolated dangers'	S-67 Annex B: p21	
Annex F	References & Further reading	S-66 p39 S-66 p41	

Annex B

Members of the combined group

Member State	Name of Delegate	email
Brazil	Ana Brandão Mileze	ana.mileze@marinha.mil.br
China	Lingzhi Wu (DQWG Chair)	3511431@qq.com
Italy	Roberto Manuzzo	roberto_manuzzo@marina.difesa.it
Norway	Gjermund Bakken	Gjermund.Bakken@kartverket.no
Sweden	Klas Östergren	klas.ostergren@sjofartsverket.se
United Kingdom	Thomas Mellor (ENCWG Chair)	Thomas.Mellor@UKHO.gov.uk
	Andrew Richardson	Andrew.Richardson@UKHO.gov.uk
	Ian Howse	Ian.Howse@UKHO.gov.uk
	Jason Williams	Jason.Williams@UKHO.gov.uk
USA	Sean Legeer	sean.legeer@noaa.gov
IHO Secretariat	**Name**	**E-mail**
	Yves Guillam	adcs@iho.int
	Yong Baek	yong.baek@iho.int
Observer Organisation	**Name of Delegate**	**email**
Furuno	Hannu Peiponen	hannu.peiponen@furuno.fi
IIC	Jonathan Pritchard	jonathan.pritchard@iictechnologies.com
PRIMAR	Svein Skjaeveland	svein.skjaeveland@ecc.no