Report of the ENCWG

Submitted by:	Chairman, ENCWG
Related Documents:	S-57, S-58, S- 52, S-64, S-65, S-66
Related Projects:	S-Mode,

Chair:	Thomas Mellor UK
Vice-Chair:	Mr Mikko Hovi (FI)
Secretary:	Mr Athony 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 ENCs (IC-ENC), PRIMAR Stavanger, Caris, ESRI (USA), Furuno (Finland), GEOMOD (France), Hydundai e-Marine (ROK), Jeppesen Marine, IIC Technologies (Canada), NAVTOR AS (Norway), SevenCs (Germany), TKartor (Sweden), and Transas (Russia), Frank Hippmann (Australia)
	see Annex A for full details

Meetings Held During Reporting Period

ENCWG2 Genoa, Italy 20 - 22 March 2017

Planned Meeting

ENCWG3 Sydney, Australia (16 - 18 April 2018)

Work Program

S-57 Appendix B.1 Annex A - Use of the Object Catalogue for ENC edition 4.1.0

As agreed by HSSC 8 S-57 Appendix B.1 Annex A Edition 4.1.0 was approved by HSSC Letter 02/2017 8 August 2017. The report of HSSC to the first meeting of the IHO Council will recommend the draft new edition for endorsement and subsequent adoption by the Member States.

S-52 - Specifications for Chart Content and Display Aspects of ECDIS edition 4.0.2 and S-64 IHO Test Data Sets in ECDIS edition 3.0.2

As reported to HSSC 8 minor clarifications have been made to the S-52 Presentation Library (Edition 4.0.2) and to S-64 (Edition 3.0.2), addressing issues identified by ECDIS OEMs type approving ECDIS. Both standards were clarified and published in July 2017.

To ensure the widest possible review of the final drafts the ENCWG meeting in Italy agreed to circulate an ENCWG letter to CIRM and all other OEMs on the IHO contacts list informing them that the revised S-52 and S-64 standards were ready for final review, comments were to be sent back to the IHO.

S-58 ENC Validation Checks edition 6.0
As agreed by HSSC 8 S-58 Edition 6.0 was endorsed by CL 37/2017 22 May 2017.

ENCWG2 agreed that the IHO Secretariat would invite stakeholders to develop (under contract), ENC datasets that can be used to check that ENC validation software tools correctly detect and report on all "Critical Errors" as documented in S-58 Edition 6.0.0. A Statement Of Work (SOW) document outlining the work activities, deliverables and schedule was sent to all interested parties 4th August 2017. All proposals are to be submitted to the IHO Secretariat no later than 30 September 2017.

S-65 - Electronic Navigational Charts (ENCs) Production, Maintenance and Distribution Guidance
CL 36/2017/Rev1 09 June 2017 announced the adoption of S-65 Edition 2.1.0.

S-66 - Facts about Electronic Charts and Carriage Requirements edition 1.1
As agreed by HSSC 8 S-66 Edition 1.1 was approved by HSSC Letter 02/2017. The report of HSSC to the first meeting of the IHO Council will recommend the draft new edition for endorsement and subsequent adoption by the Member States.

Improvement of ENC display on ECDIS
FR submitted a paper to ENCWG2 regarding the display of ENCs in ECDIS. The paper reviewed some current ENC display issues that need to be resolved to improve ENC use in ECDIS. Many of the issues were due to ENCs having been derived from the paper charts. FR proposed a Sub-WG of the ENCWG be setup to investigate the issues further. The group were asked to conduct the exercise on ECDIS running the new S-52 Presentation Library edition 4.0. It was also noted that a sample of real world vessel ENC holdings should be used to mimic the way in which a mariner would use the system. The discussion ended with the group agreeing that there would probably be changes to the encoding of ENC features that would improve their display in ECDIS without the need to update the S-52 Presentation Library. The final proposal(s) of the Sub-WG are to be completed by February 2018 for consideration by the ENCWG3 meeting.

Progress on HSSC Action Items

HSSC8/26 - IHO Sec. in liaison with ENCWG Chair to revise the IHO webpage
At its 8th meeting, the IHO Hydrographic Services and Standards Committee (HSSC) agreed an action tasking the IHO Secretariat, in liaison with the ENCWG Chair to review and amend the IHO Webpages as necessary. This action has been attempted but is not complete.

To enable the simple retrieval of important business critical information by shipping companies and other organizations it has been necessary to reorganise the IHO webpage – "ENCs, ECDIS and S-100". Unfortunately, during discussions with Mariners, it seems the new structure has not resulted in easy access to critical information. My original concepts and ideas were not taken forward and now the mix of information provided in the two official languages of the IHO (English and French) either through bilingual pages or through separate FR and EN pages adds to this confusing mix. I would recommend that the IHO with support from MS employ a web design agency to redesign the whole IHO website. Careful consideration must be given to the audience being served; I suggest splitting the site between MS who would have controlled access and public facing pages. Whilst this is a large undertaking the current site does nothing to enhance the reputation of the Organization.

HSSC8/27 - High density contour lines ENCs
During ENCWG 2 Germany reported on the paper presented to HSSC8 and proposed that there should be a global standard for bathymetric ENCs. The 5Mb limit restricts the provision of this type of

bathymetry in existing ENCs and there is a need for a new bENCs Product Specification that allows the data to be updated frequency. Another advantage is that bENC data can be switched on/off as a layer.

The UK presented a view that there was no need to produce a new IHO standard when high resolution bathymetry can already be included in ENC and that the current S-57 standard already supports bENCs that are commercially available within AVCS. AU supported the UK and explained they were also using the current IHO S-57 standards to produce ENCs with high resolution bathymetry.

The view expressed by some OEMs was that they did not want to have to redevelop their ECDIS to allow the display of a new bENC if the IHO proceed with the proposed new standard.

The group could not decide on the best way to proceed and after a vote we were split on the decision to take the German proposal forward and produce an official IHO standard for bENC.

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.

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

Information on IHO Standards related to ENC and ECDIS
CL 67 /2016, Consideration of Port State Control Issues Related to ECDIS Carriage and Operation, requested all MS send relevant information related to inspections by port State control authorities of ECDIS carriage and operation (including ENC related issues) to the Secretariat for review by the ENCWG.

There were many inputs made to ENCWG2 and these were discussed by the group during the meeting. It was agreed that an informative IHO bulletin should be created covering the updates made to IHO ECDIS standards and how the changes will assist port State control (PSC) inspectors in determining if a vessel is complying with the regulations from SOLAS Chapter V.

IHO bulletin Information on IHO Standards related to ENC and ECDIS was published during Aug 2017 after ENCWG review. It was sent to the secretaries of Paris and Tokyo Memorandum of Understanding (MoU) to coincide with the Concentrated Inspection Campaign (CIC) covering Safety of Navigation SOLAS Chapter V which runs from 1St Sept to 31st November 2017. An ENCWG letter was also sent to members of the group urging them to send copies to their relevant PSC authorities.

Retirement of IHO standards
As reported to the IMO Sub-Committee on Navigation, Communications and Search and Rescue NCSR 4, S-52 Presentation Library Edition 3.4 and IHO S-64 Test Data Sets for ECDIS Edition 2 were retired on Aug 31st 2017. To reflect this change, the IHO webpage – "Current IHO ECDIS and ENC Standards", was updated to remove references to the retired IHO standards; and the IHO check datasets and associated instructions have also been removed from the IHO website.

S-Mode guideline
AU in conjunction with other interested parties have developed the first draft guideline for the standardised (or s) mode of operation of navigation equipment, this paper will be presented to NCSR5. The guideline is based on the following standardization principles, Navigation-related terminology and icons of functions (Hot keys and shortcuts), Logical grouping of information ("essential information blocks") List of functions that must be accessible by single or simple operator action and Standard and user settings. It is recommended that the symbols, icons, and abbreviations as developed under this guideline are included in the next revision of SN.1/Circ 243, and that this circular becomes the consolidated document for navigational-related symbols, terms and abbreviations. Currently there is no requirement for chart related hot keys however the IHO should be ready to assist during this development if required.

Circular Letter 50/2017 29 August 17 - Requirement to Provide Meaningful CATZOC Information in ENCs
With ever increasing evidence that Port State Control officers and vetting inspectors are requiring that navigating officers have taken the ENC values of CATZOC into account when calculating their under-keel clearances, it is of paramount importance that they have access to this information within the ENC.

Unfortunately, there are still large areas across the global ENC database were CATZOC value U - 'unassessed' is common place. CL 50/2017 29 August 2017 calls on all MS to review their CATZOC encoding in ENCs and take steps to remove CATZOC value U from ENC data at the next available opportunity.

Conclusions and Recommended Actions

It is recommended that the HSSC investigate the cost and time required to redesign the IHO Website by a web design agency.

Justification and Impacts

The current IHO web site is a mixture of content and there is very little consistency. Having been extended over the years the site has lost its consistent brand identity. Providing the opportunity to redesign the site would allow MS to structure the purpose and content of the information we make available to industry.

Action Required of HSSC
HSSC are invited to:

- **Note** this report;
- **Endorse** the continued activity of the WG;
- **Approve** the Work Plan at Annex C, and request for finacial support in paper HSSC9-11B INF2
- **Support** an investigation into the cost and time required to redesign the IHO Website by a web design agency.

Annexes:

A. Membership of ENCWG (at September 2017)
B. Draft T&P advice
C. ENCWG Work Plan

Annex A

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ANNEX B

INTERNATIONAL HYDROGRAPHIC ORGANIZATION

ORGANISATION HYDROGRAPHIQUE INTERNATIONALE

ENC STANDARDS MAINTENANCE WORKING GROUP (ENCWG)

[A Working Group of the Hydrographic Services and Standards Committee (HSSC)]

T&P NM information in ENCs

Introduction / Background

Not all ENC data producers are currently choosing to distribute updates to their ENCs that are Temporary and Preliminary (T&P) in nature. This document is intended provide information to Port State Control Inspectors and ENC data producers on the importance of promulgating updates that are Temporary and Preliminary using the S-57 temporal attributes, and how the ECDIS will use this attribute information to display these updates effectively.

The concept of a T or P NM does not exist in ENC, any change to the data contained in the ECDIS is simply a digital update. Once loaded into the ECDIS the automatic change that has occurred to the ENC can be viewed and reviewed by the Mariner. The IHO S-52 Presentation Library defines all the symbols used in ENC and defines a series of symbols designed to indicate where the change to the ENC has occurred.

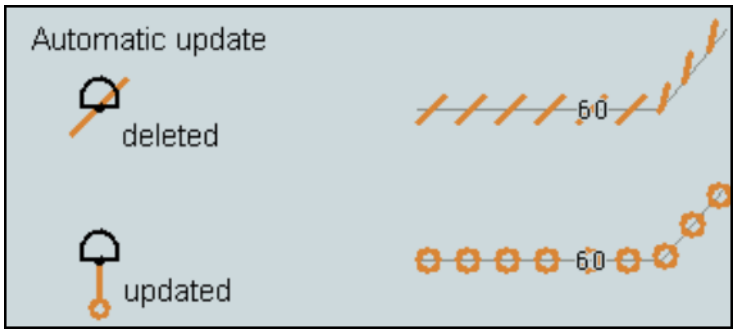

Fig1. Automatic Update Symbols

What are T&P updates?

A Temporary Notices to Mariners, (T)NM promulgates navigationally significant information that will remain valid for a limited period of time.

A Preliminary (P) NM is issued to promulgate navigationally significant data early to the mariner when:

- Action/work will shortly be taking place (for example: harbour developments; installation of, or alterations to, important aids to navigation). If possible, at least 8 weeks notice should be given, with the date of entry into force indicated.

The S-57 attributes that can carry temporal information are;

Date Start (DATSTA) - The attribute 'date start' indicates the earliest date on which an object (e.g. a buoy) will be presented on the ECDIS display.

Date End (DATEND) - The attribute 'date end' indicates the latest date on which an object (e.g. a buoy) will be presented on the ECDIS display.

Period Start (PERSTA) - The start of the active period for a seasonal object (e.g. a buoy)

Period End (PEREND) - The end of the active period for a seasonal object (e.g. a buoy)

Diagrams to support (P) NMs are very useful to the mariner, for example:
• where a new, amended or complex series of routeing measures is being announced;
• a new bridge is being constructed and shipping routes need to be diverted.
Diagrams should be a different scale from the chart, to prevent the mariner from using them as blocks to directly amend the chart. If a diagram is at the same scale as the chart, it must contain a 'Not to be pasted on the chart', or equivalent legend.
It may be best to produce such diagrams in monochrome, using black stipple in lieu of tints if necessary, because:
• digital file sizes may be an issue for receipt by some users;
• the recipient may not be able to reproduce colours.

ECDIS display

Port state and SIREs (Ship Inspection and Reporting) inspectors want to see evidence that a vessel is managing and taking note of T&P information; if the vessel cannot adequately demonstrate this, it gets a deficiency.

The new S-52 Presentation Library edition 4.0 has introduced a new magenta 'd' symbol to highlight ENC features that have a temporal attribute encoded making the identification of this information much easier.

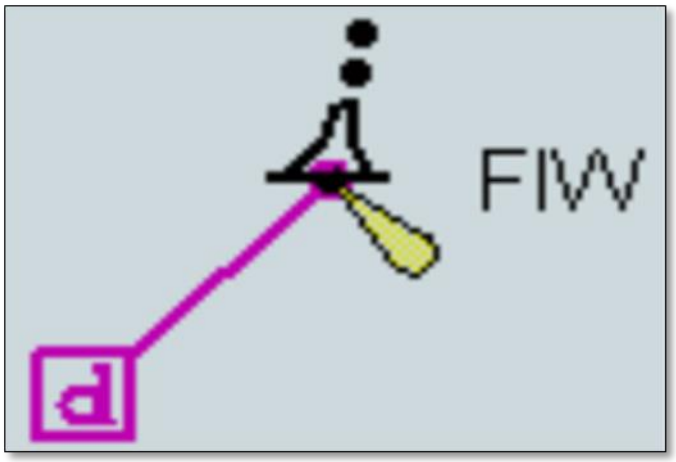

Fig 2. The display of date dependent information is indicated by the symbol SY(CHDATD01)

Setting date range

There are a number of objects within the Marine environment, which are seasonal, such as racing buoys. These objects are only to be displayed over a certain period, S-57 uses the attributes Period Start (PERSTA) and Period End (PEREND) to encode these dates. Other objects, such as traffic separation schemes, use the attributes Date Start (DATSTA) and Date End (DATEND) to indicate their introduction or removal. In order for the Mariner to receive important changes to traffic separation schemes before the event Hydrographic Offices are required to provide updates or new editions containing the alterations at least one month before they come into force. Any S-57 object with one of the above attributes must not be displayed outside its effective dates unless requested by the Mariner.

To provide the Mariner with effective route planning capabilities and for the look-ahead function during route monitoring ECDIS must display date dependent chart data based on a Mariner selected date or date range (start viewing date and end viewing date).
During route planning and monitoring the Mariner must be able to select a date or date range to display all date dependent chart objects. The display of date dependent information is indicated by the symbol SY(CHDATD01)

Example: A new traffic separation scheme is coming into effect on 01.01.2013, it has been encoded by the ENC producer using the attribute date start (DATSTA). The current date is 12.12.2012 and the Mariner is planning a route that will cross this area over the effective start period.
The ECDIS must be capable of providing the Mariner the ability to set the date he will be in the area (02.01.2013) and the system must show the new traffic scheme.

IMPORTANT: When viewing date or date range do not include current date. The Mariner must be informed by a permanent indication on the chart display that the date has been adjusted. Please use one of the following options below.

Display Not Real Time – Display is based on date dd mmm yyyy

Or

Display Not Real Time – Display is based on viewing date range from dd mmm yyyy to dd mmm yyyy
(Note: dd mmm yyyy = Day, Month, Year, example; 28 Jan 2014)

(NEED ECDIS EXAMPLE)

ANNEX C

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”
B	Maintain S-57 “IHO Transfer Standard for Digital Hydrographic Data”
C	Maintain S-58 “Recommended ENC validation checks”
D	Maintain S-61 “Product Specification for Raster Navigational Charts”
E	Maintain S-63 “IHO Data Protection Scheme”
F	Maintain S-64 “IHO Test Data Sets for ECDIS”
G	Maintain S-65 “ENC Production, Maintenance and Distribution Guidance”
H	Assess the impact of other IHO standards on S-52 display specifications
G	Liaise with all HSSC WGs
H	Maintain the ENC production and portrayal sections of the IHO website
I	Conduct 2018 meetings of ENCWG and its sub-group(s) and project team(s)

Task	Work Item	Priority H-high M-medium L-low	Milestones	Start Date	End Date	Status P-planned O-ongoing C-Completed	Contact Person	Affected Pubs/Standard	Remarks
A1	Resolve any problems or errors identified in the current editions of S-52 Presentation Library and S-64 ENC Test Datasets	H			Permanent	O	Tom Mellor	S-52	Generally OEMs going through type approval with ECDIS will identify areas for clarification or correction
A2	Resolve any problems or errors identified in the current edition of S-57	H			Permanent	P	Tom Mellor		
A3	Produce T&P paper for PSC	M		Nov 2016	Apr 2018	O	Tom Mellor		
B1	Monitor the implementation of the new edition of S-58 and produce new test datasets for validation of software.	H		Sept 2017	July 2018	O	Richard Fowle	S-58	
B2	Maintain the ENC production and portrayal sections of the IHO website, and support FAQ and Encoding Bulletins	M			Permanent	O	Tom Mellor		
C1	Monitor the Paris and Tokyo MoU CIC on Safety of Navigation and take appropriate action where necessary	H		Sept 2017	Nov 2018	O	Tom Mellor		
C2	Monitor and assist the ECDIS S-mode work which will be an agenda item at NCSR5	H				O	Tom Mellor		
C3	Investigate ENC display issues in ECDIS	H		Mar 2017	Mar 2019	P	Christian Mouden	S-52 – S-57 UOC	