14th Meeting of the Hydrographic Services and Standards Committee

Report of the ENCWG

Agenda Item 05.2

HSSC-14, Denpasar, Bali, Indonesia - Hybrid Event, 16 – 19 May 2022

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PRINCIPAL ACTIVITIES AND ACHIEVEMENTS

ENCWG Subgroups	Activities / Meetings	Achievements
S-58 ENC Validation Checks		Edition 7.0.0 ready for HSSC approval
S-57 UOC		Edition 4.3.0 ready for HSSC approval
S-57 to S-101 Conversion Guidance		Edition 1.0.0 ready for HSSC approval SG Lab preliminary approval of S-57 to S-101 conversion project
Skin Of Earth ECDIS Display issue	Survey and testdata sent to all OEMs registered in S-63	Scale of display issue quantified across current ECDIS in use at sea
Information Papers	ENCWG VTC/DQWG	ENCWG/DQWG joint paper for HSSC consideration

S-58 ENC VALIDATION CHECKS EDITION 7.0.0

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- Validation subgroup using GitHub to manage issues/proposals raised by HOs and RENCs, this allows issues to be tracked and managed through to implementation of the standard.

- The 36 identified issues have been reviewed by the subgroup, resulting in 21 amendments to existing checks and 22 new checks.

Existing Checks Amended	New Checks for edition 7
9 Critical	5 Critical
6 Error	13 Error
6 Warning	4 Warnings

- New definitions have been added, resulting in numerous editorial changes throughout the document.

- Subgroup have prepared a clean and redline draft version of S-58 edition 7.0.0 for HSSC14 approval.

- Changes to the ‘Critical’ checks will result in amendments to the S-58 Test Datasets, revision of the Test datasets is underway, and they will be made available when S-58 edition 7.0.0 has been approved.

S-57 UOC EDITION 4.3.0

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- S-57 Use of the Object Catalogue edition 4.3.0 ready for HSSC approval

Main Changes

- Clarified allowable date formats
- Added attribute PICREP to file reference allowing use of the _(underscore) character in the file name
- Guidance for encoding DEPARE associated with “hanging” depth contours.
- Guidance for encoding DEPARE for isolated shoals/deeps extended to include the option of indicating shallowest/deepest depth within the area

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S-57 TO S-101 CONVERSION GUIDENCE

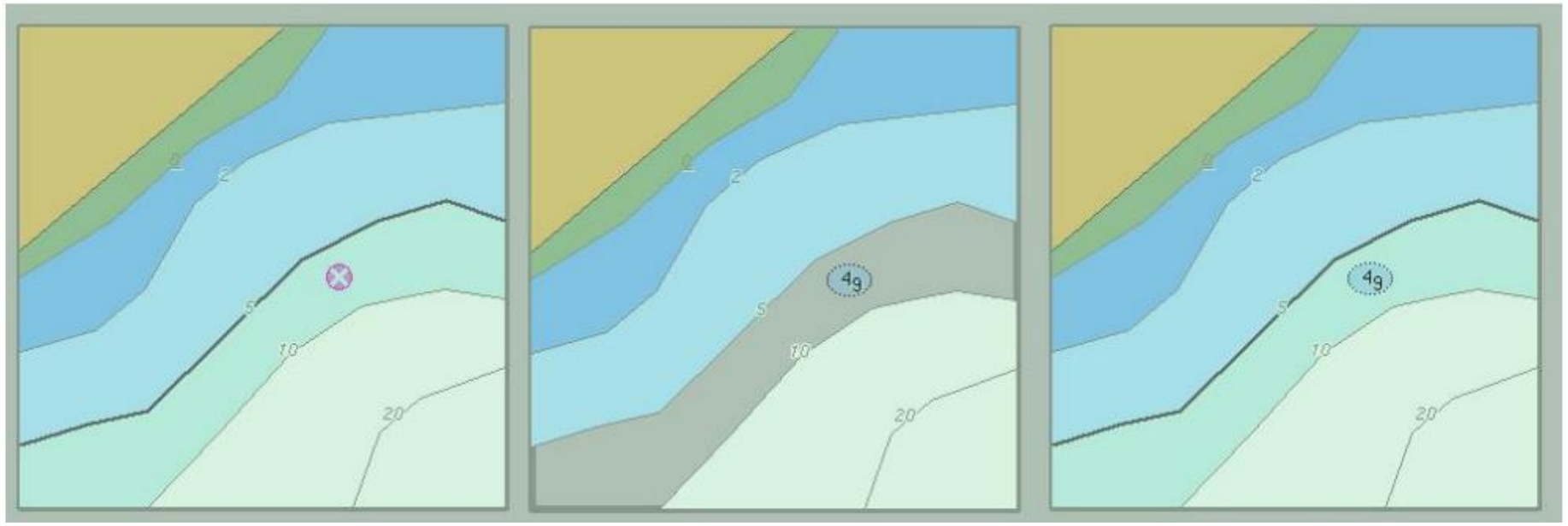
- S-57 to S-101 Conversion Guidance document edition 1.0.0 ready for publication and testing
- The document will be incorporated into IHO S-65 ENCs: Production, Maintenance and Distribution Guidance as Annex B
- ENCWG submitted project plan to SG Lab to carry out testing on guidance document and conversion tools. The principle objective is to validate encoding guidance in an effort to reduce the HO's manual effort required to create S-101 data.
- Project given preliminary approval, results of SG lab testing will be used to create edition 2.0 of S-57 to S-101 Conversion Guidance.
- Results will also be shared with conversion tool manufacturers to improve automated conversion processes

SOE ECDIS DISPLAY ISSUES

- The SOE ECDIS display issue first reported to MS has continued to represent an issue in ECDIS

- To measure the scale of the issue in ECDIS the ENCWG created a set of test data and sent this alongside an online survey to all OEMS listed in the S-63 security scheme

- As reported in ENCWG letter dated 28th March 2022 I can now confirm the scale of the issue is not just confined to 7Cs but affects the following OEMs Chersoft, Furuno and Transas



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PROBLEMS OR OUTSTANDING ISSUES

ENCWG Subgroups	Problems/Issues
S-52	ECDIS chart 1 data and S-52 PL chart plots incompatible
S-64	No test in S-64 to capture SOE issue
Cyber Security Guideline	Document still under development
HDENCs	Discussions surrounding the modification of S-52 & S-64 to allow for display of S-102 in ECDIS were dismissed by the ENCWG.

IHO S-52 PRESENTATION LIBRARY CLARIFICATIONS

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Background

Following the release of S-52 PL edition 4.0(.3) a number of small minor issues were identified by OEMs. These issues were mainly discrepancies linked to ECDIS chart 1 ENC files and their corresponding chart plots in the printed version of S-52 PL.

Changes

New machine readable DAI-file

New printed ECDIS chart 1 plots

Reproduced new ECDIS chart 1 ENC files

- New README.TXT

ENCWG Approval

The Sub WG is producing a draft version of IHO S-52 Preslib 4.0(.4) for ENCWG approval. The documents will be sent to all ENCWG members for comment.

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Proposed New Edition of S-64 IHO Test Data Sets for ECDIS

- New Skin Of Earth (SOE) test to ensure point features display correctly when depth areas are modified by Updates
- New test for the drawing of multiple safety contours to ensure ECDIS don't crash when drawing
- New test to ensure all list attributes display correctly
- New S-64 template describing ECDIS settings to accurately conduct ENC tests. Successfully trialled with OEMs carrying out SOE tests, and recommended if S-64 new edition is approved.
- Following discussions with the Chair of S-100WG group have agreed the new format will be used to describe tests in S-164

Test Reference		IHO Reference	
Test Description			

Loaded Data	
Path	**Dataset**

Display Category		**Independent Mariner's Selections**	
Standard		Accuracy	☐
Contour Values		Highlight date dependent	☐
Safety Contour		Highlight info	☐
Safety Depth		Highlight document	☐
Deep Contour		Show full light lines	☐
Shallow Contour		SCAMIN off	☐
Palette		Shallow pattern	☐
Day		Shallow water dangers	☐
Point Lookup Table		Unknown objects	☐
Paper Chart Symbols		Update review	☐
Area Lookup Table		Contour label	☐
Symbolized Boundaries		Four shades	☐
Date Dependent Objects		National language	☐
Mode	Off		
Start Date	30 July 2021		
End Date	30 July 2021	**Text Groups**	
Display		Important text	☐
Centre		Names	☐
Scale		Light description	☐
Orientation		All other text	☐

Notes

Viewing Group Layers			
Standard Display		**Other**	
Drying lines	☐	Spot soundings	☐
Buoys, beacons, structures	☐	Submarine cables and pipelines	☐
Lights	☐	All isolated dangers	☐
Boundaries and limits	☐	Magnetic variation	☐
Prohibited and restricted areas	☐	Depth contours	☐
Chart scale boundaries	☐	Seabed	☐
Cautionary notes	☐	Tidal	☐
Ships' routeing systems and ferry routes	☐	Miscellaneous	☐
Archipelagic sea lanes	☐		
Miscellaneous	☐		

Results	
Plot	

Proposed new S-64 ECDIS setup template

CYBER SECURITY GUIDELINE

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- Development of guidance still being prepared, delays due to SOE issues
- Preliminary draft based on IMO cyber security risk management principles
- Document will cover the transfer of ENC data to ECDIS via physical media and through connected networks
- Emphasis placed on mitigating cyber risk
- Collaboration with Plymouth University's Marine Institute/CyberSHIP Lab to review recommendations.

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SOE ECDIS DISPLAY ISSUES

- SOE OEM survey revealed a number of additional OEMs have same display issue as 7Cs
- ENCWG letter sent to all IHO MS requesting continued support mitigating the navigational risk by issuing ENC NE's where required
- 7Cs have provided details of additional checks to detect the issue to validation tool manufactures
- ENCWG managing problem with affected OEMs to get software patches to ECDIS as soon as possible

IHO S-65 – HIGH DENSITY ENCS

- MAIB/DMAIB report into the application and usability of ECDIS emphasised the need for ENC to contain high resolution bathymetry to support safe navigation

- Current ENCs do not contain enough contour intervals for ECDIS users to accurately set the safety contour. A consequence of using the paper chart as the source for ENC creation has meant Mariners are required to manually plot contours onto ENCs, interpolating between soundings. This is a potentially dangerous situation with possible catastrophic consequences, however HDENC negate all these issues. Using HDENCs Mariners can accurately define safe and unsafe water, improving navigational safety and unlocking the economic potential of vessels in the loading of additional cargo

- A proposal sent to the ENCWG/S-100WG sought modification to S-52 and S-64 to allow for the display of S-102 data in ECDIS

- Based on extensive evidence supplied by MAIB, CIRM and Carnival cruises ENCWG took the decision not to proceed with the proposal

- The ENCWG are continuing to refine the HDENC production guidance in S-65 Annex A. After a comprehensive study by China improved guidance for HO's advocating the automated creation of HDENC and NE replacement rather than ENC updates will be published after the ENCWG meeting in Nov 2022

- It is recommended the HDENC guidance where appropriate be passed to NCWG for inclusion in S-4

- All the IHO Strategic Performance Indicators (SPI) are currently focused on S-100,there is currently no measure of how IHO MS are meeting the needs of the ECDIS Mariner through the provision of ENCs. Given the necessity of HDENCs to meet the basic needs of ECDIS navigational safety the the ENCWG would like to recommend HSSC propose to IHO Council a new SPI measure to monitor the production of HDENCs.

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FUTURE WORK PROGRAMME

1. Proposal for ENCWG and DQWG to work together to incorporate mariner ENC and ECDIS related information papers into IHO S-67

2. Develop encoding guidance for IHO MS on conversion from S-101 to S-57

ACTIONS REQUESTED FROM HSSC

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1. Note the report of ENCWG
2. Endorse publication of S-58 ENC edition 7.0.0 for MS approval
3. Endorse publication of S-57 UOC 4.3.0 for MS approval
4. Endorse publication of S-57 to S-101 conversion guidance (S-65 Annex B)
5. Approve request to create new edition of S-64 to include additional tests for SOE issue
6. Propose to IHO Council a new Strategic Performance Indicator to measure MS production of HDENCs