

SUB-COMMITTEE ON NAVIGATION,
COMMUNICATIONS AND SEARCH AND
RESCUE
4th session
Agenda item 27

NCSR 4/27/5
21 December 2016
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ANY OTHER BUSINESS

Report on monitoring of ECDIS issues by the IHO

Submitted by the International Hydrographic Organization (IHO)

SUMMARY

Executive summary: This document reports on the outcome of the continuing monitoring by the IHO of ECDIS issues related to the implementation of the carriage requirements of SOLAS regulations V/19.2.10 and V/19.2.11

Strategic direction: 5.2

High-level action: 5.2.1

Output: No related provisions

Action to be taken: Paragraph 19

Related documents: NCSR 1/4, NCSR 1/4/1, NCSR 1/28; NCSR 2/22/2; NCSR 3/28/Rev.1; III 3/5/5 and III 3/14

Background

1 In accordance with the directive agreed by the 18th International Hydrographic Conference (23-27 April 2012), the International Hydrographic Organization (IHO) continues to monitor the implementation of ECDIS to ensure that issues identified with regard to the anomalous operation of some ECDIS are collated, analysed, communicated and resolved as speedily as possible to maintain safety of navigation and to assist the smooth transition from paper to digital navigation.

2 The IHO Secretariat reported at NAV 59 and NCSR 1 on this item. NCSR 1 agreed that progress in resolving the outstanding issues with ECDIS operating anomalies, as well as other matters related to the implementation of ECDIS, could be reported to the Sub-Committee under "Any other business" (NCSR 1/28, paragraph 4.5). Accordingly, the IHO Secretariat submitted a progress report to NCSR 2 (NCSR 2/22/2) and NCSR 3 (NCSR 3/28/Rev.1).

3 This document reports on new developments since NCSR 3.

ENC/ECDIS Data Presentation and Performance Check for Ships

4 There are currently two sets of IHO ECDIS-related standards in force as indicated in table 1.

Table 1: Status of IHO ECDIS-related standards

Designation	Edition applicable to ECDIS systems type-approved with an edition of IEC 61174 previous to the 4th edition	Normative reference for the type approval of ECDIS systems referring to the 4th edition of IEC 61174 (2015)
S-57 – <i>Transfer Standard for Digital Hydrographic Data</i>	Edition 3.1 (November 2000), in conjunction with: – Supplement 3 (June 2014) – S-57 Maintenance Document No. 8 (March 2002)	
S-52 – <i>Chart Content and Display Aspects of ECDIS</i>	Edition 6.0 (March 2010)	Edition 6.1(.1) (October 2014 – with clarifications up to June 2015)
S-52, Annex A – <i>IHO Presentation Library for ECDIS</i>	Edition 3.4 (January 2008)	Edition 4.0(.1) (October 2014 – with clarifications up to June 2015)
S-64 – <i>IHO Test Data Sets for ECDIS</i>	Edition 2.0.0 (May 2012)	Edition 3.0.1 (June 2015)
S-61 – <i>Product Specification for Raster Navigational Chart</i>	Edition 1.0 (January 1999)	
S-63 – <i>IHO Data Protection scheme</i>	Edition 1.2.0 (January 2015)	

5 The number of ships' reports on the ENC/ECDIS Data Presentation and Performance Check associated with Edition 3.4 of the ECDIS Presentation Library has continued to increase significantly as shown in table 2.

Table 2: Outcome of ENC/ECDIS Data Presentation and Performance Checks for Ships

Period	1 Aug 2011 15 Apr 2013	15 Apr 2013 15 Apr 2014	15 Apr 2014 1 Dec 2014	1 Dec 2014 1 Dec 2015	1 Dec 2015 1 Dec 2016
Number of reports	1,042	76	74	1,318	4,019
% of reports indicating no problem	22%	43%	55%	73%	86%
% of reports indicating no anomaly in the display of "new objects"	60%	91%	95%	95%	93%

6 The results indicate a continuing improvement in the updating of ECDIS software operating with Edition 3.4 of the ECDIS Presentation Library. No new issue has been identified.

7 As reported at NCSR 3, the IHO Hydrographic Standards and Services Committee (HSSC) had tasked its ENC Standard Maintenance Working Group (ENCWG) to investigate the need to develop a new or revised check dataset for ECDIS operating with Edition 4.0 of the ECDIS Presentation Library. At its 8th meeting in November 2016, the HSSC endorsed the ENCWG proposal to use ECDIS Chart 1 to assist mariners in checking ECDIS operating with Edition 4.0 of the Presentation Library. The IHO webpage on ECDIS Data Presentation and Performance Check in Ships will be updated accordingly to reflect the two versions until the end of the transition period (see paragraph 12 below).

8 Views about the apparent and inappropriate use of the ENC/ECDIS Data Presentation and Performance Check for Ships by port State control (PSC) and/or vetting inspectors to check the implementation of ECDIS carriage requirements were considered by NCSR 3. The Sub-Committee invited the Maritime Safety Committee to refer the issue to the III Sub-Committee "so as to be properly addressed to all Port State Control MoUs". The IHO notes that the III Sub-Committee, at its third session, addressed ECDIS issues on the basis of a submission by Australia on "Poor navigational practices" (document III 3/5/5). The IHO invites interested parties to note that the III Sub-Committee invited interested delegations to make submissions related to the possible development of PSC guidelines on ECDIS, and consider the technical input that might be required from the NCSR and HTW Sub-Committees in that respect. The IHO stands ready to assist further work on this issue if and when appropriate.

Maintenance of IHO Standards for ECDIS

9 The IHO ENC Standards Maintenance Working Group (ENCWG) has continued to monitor in close liaison with industry the implementation of the revised sets of IHO Standards for ECDIS which became the normative IHO references for the type approval of all new ECDIS equipment when the 4th Edition of IEC 61174 – *Maritime Navigation and Radiocommunication Equipment and Systems – Electronic Chart Display and Information System (ECDIS) – Operational and Performance Requirements, Methods of Testing and Required Test Results* was published in August 2015.

10 The implementation of the new editions has not identified any significant issue. A few minor comments have been addressed through clarifications in accordance with IHO Resolution IHO Resolution 2/2007 – *Principles and procedures for making changes to IHO technical standards and specifications*, as amended.

11 The revised Edition 1.1.0 of IHO Publication S-66 – *Facts about Electronic Charts and Carriage Requirements* is expected to be submitted for the consideration of IHO Member States with a view to adoption in early 2017.

12 In accordance with MSC.1/Circ.1503, as amended, on *ECDIS – Guidance for good practice*, the up-to-date list of all the relevant IHO standards and publications relating to ECDIS can be accessed from the IHO website (www.iho.int).

13 As agreed at NCSR 3, the IHO will withdraw the previous editions of S-52 and S-64 on 31 August 2017. Considering that some items of MSC.1/Circ.1503 related in particular to operating anomalies identified with ECDIS will no longer be relevant, the Sub-Committee may wish to consider the merit of revising the Circular in connection with the possible development of PSC guidelines on ECDIS (see paragraph 8).

ENC Coverage

14 Further improvement of ENC coverage is now primarily dependent upon new surveys or re-surveys of areas where there is no satisfactory coverage. In that perspective it is worth recalling that less than 50% of the coastal waters of the world with depth less than 200 m are reported to be adequately surveyed.

15 A recent example of progress is the release of the 5th Edition of the Malacca and Singapore Straits ENCs (MSS-ENCs) on 15 November 2016. This set of ENCs is maintained by the three littoral States, Indonesia, Malaysia and Singapore, together with the Japan Hydrographic Association. The new edition incorporates updates from the joint hydrographic survey carried out by the littoral States from October 2015 to March 2016 at five areas identified

to be critical to navigation in the Straits. The survey has enabled the incorporation in the ENC's of one metre contour intervals at depths ranging from 10 to 30 metres (see figure 1).

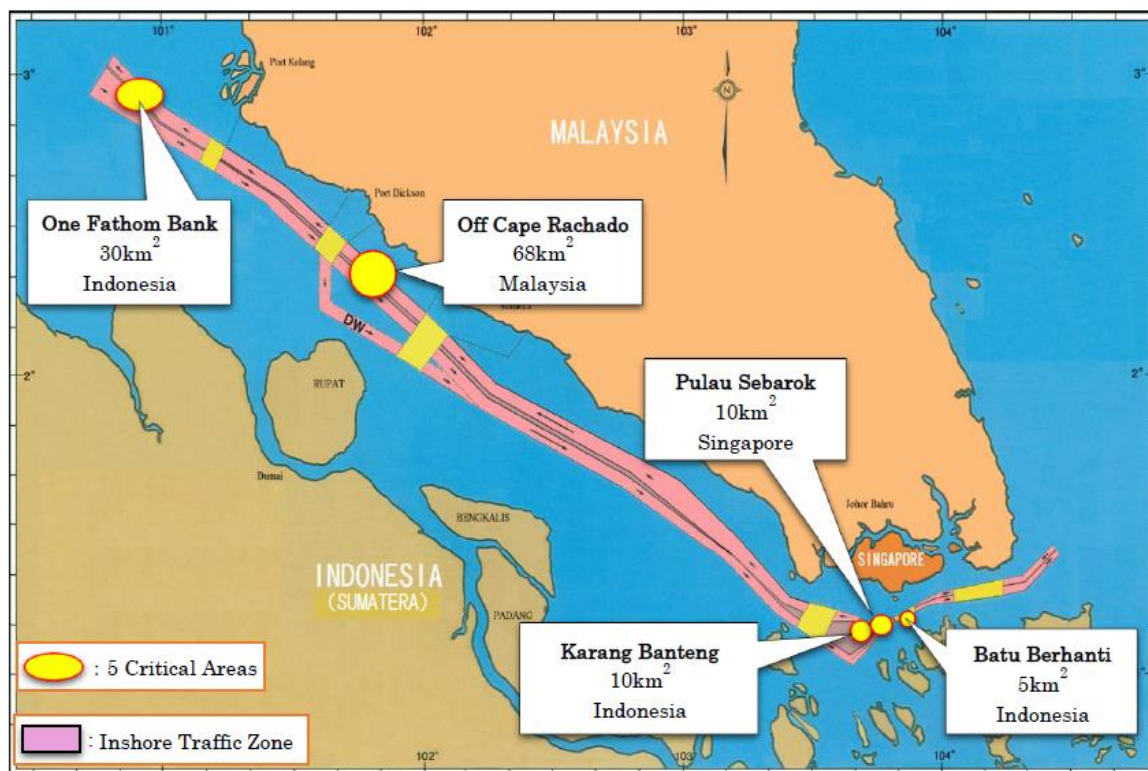


Figure 1: Joint hydrographic surveys incorporated in the 5th edition of the Malacca and Singapore Straits ENC's

16 The uncoordinated production of ENC's, resulting in overlapping data for the same area, and contravening the relevant IHO Resolutions, remains an issue in less critical areas, notably where the limits of waters of national jurisdiction between neighbouring countries are not established. Further investigations have confirmed the unpredictable behaviour of ECDIS operating with Edition 3.4 of the Presentation Library in situations where overlapping data is used in an ECDIS. However, no ENC distributor has reported any adverse user feedback related to overlapping data issues.

17 A mitigation measure has been implemented in Edition 4.0 of the Presentation Library: where an overlap of two or more cells exists, the ECDIS operating with Edition 4.0 must only display one cell for the overlapping area and provide a permanent and persisting indication "overlap". At the same time, the issue remains a high priority item on the agenda of the IHO Working Group on the World-wide ENC Database (WEND) and the relevant Regional Hydrographic Commissions. In addition, further consultation with ECDIS manufacturers, both directly and through the Comité international radio-maritime (CIRM), is continuing to investigate the possible implementation of a hierarchical decision tree to assist in selecting which cell should be displayed in the case of overlapping data.

18 The IHO Secretariat welcomes feedback from stakeholders about ENC coverage and in particular the identification of specific areas where ENC coverage may be considered inadequate due to gaps or overlaps.

Action requested of the Sub-Committee

- 19 The Sub-Committee is requested to:
- .1 consider the merit of revising MSC.1/Circ.1503, as amended, on *ECDIS – Guidance for good practice*, in connection with the possible development of PSC guidelines on ECDIS (see paragraph 13), and
 - .2 take any other action it considers appropriate.
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