9ᵀᴴ MEETING OF THE HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE
Ottawa, Canada, 6-10 November 2017

Paper for Consideration by HSSC

IMO activities affecting HSSC (including e-navigation)

Submitted by:	IHO Secretariat
Executive Summary:	This paper summarizes discussions and decisions taken by the IMO since HSSC-8 and related items that may be relevant to the work of HSSC.
Related Documents:	HSSC8-07.2A - *IMO activities affecting HSSC (including e-navigation)* IHO CL 11/2017 dated 6 February - *Report on the 97ᵗʰ Session of the IMO Maritime Safety Committee* IHO CL 29/2017 dated 31 March - *Report on the 4ᵗʰ Session of the IMO Sub Committee on Navigation, Communications and Search and Rescue (NCSR 4)* NCSR 4/29 dated 24 March 2017 - *Report to the Maritime Safety Committee* NCSR 4/WP.4 dated 9 March 2017 - *Report of the Navigation Working Group* IHO CL 43/2017 dated 30 June - *Report on the 98ᵗʰ Session of the IMO Maritime Safety Committee (MSC 98)* MSC 98/23 - *Report of the Maritime Safety Committee on its ninety-eighth Session* MSC 98/23/Add.1 - *Report of the Maritime Safety Committee on its ninety-eighth Session - Annexes 1 to 10, 12 to 25, 27 to 33 and 39* NCSR 4/27/5 dated 21 December 2016 - *Any other business - Report on monitoring of ECDIS issues by the IHO* MSC.1/Circ.1503/Rev.1 dated 16 June 2017 - *ECDIS - Guidance for Good Practice* III 4/5/8 dated 4 August 2017 - *Measures to harmonize port State control activities and procedures worldwide - Comments on the outcome of NCSR 4 on monitoring of ECDIS issues* MSC-FAL.1/Circ.3 dated 5 July 2017 - *Guidelines on maritime cyber risk management*
Related Projects:	HSSC Work Programme Maintenance of IHO Publications and Services related to ENC and ECDIS Development of the S-100 framework.

Introduction

1.   The principal IMO activities since HSSC-8 that may affect the work of HSSC arose from the 4ᵗʰ session of the IMO Sub Committee on Navigation, Communications and Search and Rescue (NCSR 4 - March 2017) and from the 97ᵗʰ and 98ᵗʰ sessions of the Maritime Safety Committee (MSC 97 - November 2016; MSC 98 – June 2017). The IHO, as an accredited observer to the IMO, was formally represented by the Secretariat at these meetings. A number of representatives drawn from hydrographic offices also formed part of several national delegations.

2.   As reported to IHO Member States in the relevant IHO Circular Letters (see related documents) IMO activities relevant to HSSC covered three main subjects:

- E-navigation;

- ECDIS matters;

- Maritime cyber security.

E-navigation

Overview

3.   Table 1 summarizes the status of agreed outputs related to the IMO e-navigation Strategy Implementation Plan (SIP).

Table 1
Status of agreed outputs related to the implementation of the IMO e-navigation Strategy

Output	Target date	Coordinating Body	Status
Guidelines on harmonization of test beds reporting			*Completed* *MSC.1/Circ.1494 dated 21 November 2014*
Guideline on software quality assurance and human centred design for e-navigation			*Completed* *MSC.1/Circ.1512 dated 13 July 2015*
Additional modules to the Revised Performance standards for Integrated Navigation Systems (INS) (resolution MSC.252(83)) relating to the harmonization of bridge design and display of information	~~2017~~ 2019	NCSR	Approval of the proposed amendments to resolution MSC 252(83) postponed until completion of the related work on the Guidelines for the harmonized display of navigation information received via communications equipment at NCSR 5 (February 2018) See paragraphs 4 to 7 and 16
Guidelines for the harmonized display of navigation information received via communications equipment	~~2017~~ 2018	NCSR	On-going Norway to coordinate a Correspondence Group and report to NCSR 5 (February 2018) See paragraphs 8 to 10
Revised guidelines and criteria for ship reporting systems (resolution MSC.43(64))			*Completed* *Resolution MSC.433(98) on Guidelines and criteria for ship reporting systems (MSC 98/23/Add.1 - Annex 17)* See paragraph 11 to 13
Guidelines on standardized modes of operation	2019	NCSR	Planned (2018-2019) See paragraph 18
Guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)	2019	NCSR	Planned (2018-2019) 1st meeting of the IMO/IHO Harmonization Group on Data Modelling to be held from 16 to 20 October 2017 See paragraph 19 to 22.

Additional modules to the Revised Performance standards for Integrated Navigation Systems (INS)

4.   NCSR 4 considered the report provided by China, containing the outcome of the work of the Correspondence Group established by NCSR 3 which developed two additional modules to the INS

Performance standards: Module E on harmonization of bridge design and Module F on display of information received via communications equipment.

5.   The Sub-Committee did not support a proposal by Ukraine to include new functions in the draft additional two modules to provide two-way connections for ECDIS with VHF DSC controller.

6.   It was agreed that the provisions in the proposed new Module E were already addressed in other IMO instruments, such as MSC/Circ.982 - *Guidelines on Ergonomic Criteria for Bridge Equipment and Layout*, and not INS-specific. It was therefore agreed that Module E should not be included in Resolution MSC.252(83).

7.   The Sub-Committee noted the interrelation between Module F on display of information received via communications equipment and the Guidelines for the harmonized display of navigation information received via communications equipment and agreed not to amend Resolution MSC.252(83) at this stage. Consequently, the Sub-Committee invited the MSC to delete this output from the Sub-Committee's biennial agenda. At its 98th session, the MSC decided to keep the output in the post-biennial agenda of the NCSR, in order to further consider the matter at the appropriate time.

Guidelines for the harmonized display of navigation information received via communications equipment

8.   In support of this work item, the IHO Secretariat submitted to NCSR 4 a document on the contribution of the S-100 framework to the harmonized display of navigation information. The Sub-Committee agreed to the establishment of a Correspondence Group under the coordination of Norway to continue the development of the guidelines and endorsed the extension of the target completion date to 2018.

9.   The Correspondence Group was invited to take into account guiding principles developed by the Navigation Working Group established by NCSR 4. These guiding principles include in particular the following provisions (see NCSR 4/WP.4 - paragraph 5.5):

> .3   *if applicable, navigation-related information received via communication equipment should be displayed based on the portrayal specifications of the S-100 standard or based on SN.1/Circ.243/Rev.1;*

> .4   *the amount of information available from communications equipment may exceed the presentation capability / amount of display space available on existing navigation equipment such as radar and ECDIS;*

10.   In accordance with action HSSC7/35, the Chair of the NIPWG continues to coordinate the IHO input to this work item.

Revised guidelines and criteria for ship reporting systems

11.   At the invitation of NCSR 4, MSC 98 adopted resolution MSC.433(98) on *Guidelines and criteria for ship reporting systems*, revising resolution MSC.43(64) with the aim to emphasize the use of electronic means for mandatory ship reporting systems.

12.   When considering this item, the NCSR noted that further discussion of any possible technical solutions or architecture to achieve standardized and harmonized electronic ship reporting and automated collection of on-board data for reporting would require a new output. A view was expressed that there was a need to look at the issue of ship reporting in a holistic manner, including all kinds of ship reporting concepts, such as maritime single window reporting, and this should be considered in consultation with the IMO Facilitation Committee (FAL).

13.   In line with the views expressed at HSSC8, it is recommended to ensure that the IMO/IHO Harmonization Group on Data Modelling (HGDM - see paragraphs 19 to 22) monitors the on-going consideration by FAL of the single-window concept.

Interconnection of NAVTEX and Inmarsat SafetyNET receivers and their display on Integrated Navigation Display Systems

14.   Although this output was agreed by MSC 92 (2013) independently of the e-navigation SIP, it is directly related to the development of additional INS modules and of guidelines on the harmonized

display of navigation information received via communications equipment. Therefore, the IHO Secretariat endeavours to ensure that the contributions of the IHO to these three outputs are coordinated.

15. In order to enable interconnection of NAVTEX and Inmarsat SafetyNET for the purpose of displaying maritime safety information on integrated navigation display systems MSC 98 adopted, at the invitation of NCSR 4, the draft amendments to the following resolutions:
  - MSC.148(77) on *Revised performance standards for narrow-band direct-printing telegraph equipment for the reception of navigational and meteorological warnings and urgent information to ships (NAVTEX)* - issued as resolution MSC.430(98);
  - MSC.306(87) on *Revised performance standards for enhanced group call (EGC) equipment* - issued as resolution MSC.431(98). This is subject to further revision commenced at the IMO-ITU EG13, the results of which will be reported to NCSR5.
  - MSC.401(95) on *Amendments to Performance standards for multi-system shipborne radio navigation receivers* - issued as resolution MSC.432(98).

16. The MSC decided to postpone the approval of the proposed amendment to resolution MSC.252(83) until completion of the related work on the Guidelines for the harmonized display of navigation information received via communications equipment, in order to avoid multiple amendments to resolution MSC.252(83).

17. In addition to the review by the IHO World-Wide Navigational Warning Service Sub-Committee of any consequential changes to the NAVTEX Manual, International SafetyNET Manual or other MSI-related manuals, these amendments may have an impact on the draft version of the S-124 Product Specification and the Guidelines for the harmonized display of navigation information received via communications equipment.

Guidelines on standardized modes of operation

18. No additional development was reported to NCSR 4. This item is included in the provisional agenda for NCSR 5.

Guidance on Maritime Service Portfolios

19. As reported to HSSC-8, the IHO submitted to NCSR 4 a document proposing the activation of the IMO/IHO Harmonization Group on Data Modelling (HGDM) to assist in developing guidance on the definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs) in support of the implementation of e-navigation. The proposal was referred to the Navigation Working Group that unanimously agreed to recommend the activation of the HGDM and developed a draft work plan. However, the Sub-Committee did not endorse the proposal to activate the group and referred it to the MSC, inviting interested parties to submit proposals related to the proposed work plan and to a possible revision of the HGDM terms of reference for further consideration at MSC 98.

20. In the absence of any further proposal, the Committee agreed to activate the HGDM to work only on the output "Develop guidance on definition and harmonization of the format and structure of Maritime Service Portfolios (MSPs)"; and endorsed the holding of the first meeting of this Group, at IMO Headquarters in London, from 16 to 20 October 2017.

21. The Secretariats of the IHO and of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) agreed to develop a joint submission to HGDM 1 on the Development of a definition for MSPs and consideration for the harmonization of the format and structure of MSPs. The IHO Secretariat coordinated the development of the submission in liaison with the Chairs of the NIPWG and S-100WG.

22. All the papers submitted to the HGDM can be accessed from a subsection of the HSSC page on the IHO web site (www.iho.int > Committees & WGs > HSSC). The outcome of the HGDM 1 will be reported to HSSC-9.

ECDIS Matters

23. The IHO reported on the monitoring of ECDIS issues and Electronic Navigational Chart (ENC) coverage (see NCSR 4/27/5). The IHO confirmed the withdrawal of the previous versions of the IHO standards for ECDIS on 31 August 2017 as agreed at NCSR 3 in 2016, following the entry into force

of the revised set of IHO standards in August 2015. It was noted that some items of MSC.1/Circ.1503 - *ECDIS – Guidance for good practice* related in particular to operating anomalies would no longer be relevant for up-to-date ECDIS and the Sub-Committee was invited to consider revising the Circular in connection with the possible development of port State Control guidelines on ECDIS. Noting the relevant considerations by the IMO Sub-Committee on Implementation of IMO Instruments (III) and the revision of the section of the Circular on ECDIS training by the IMO Sub-Committee on Human Element, Training and Watchkeeping (HTW), the Sub-Committee decided not to take further actions.

24.   MSC 98 approved the amendments to MSC.1/Circ.1503developed by the HTW and instructed the Secretariat to issue it as MSC.1/Circ.1503/Rev.1.

25.   The IHO report did not raise any comment at NCSR 4 and the NCSR 4 report was subsequently approved by MSC 98 without any comment. The IHO Secretariat started getting some feedback on the concerns of some ship-owners about updating all ECDIS to the revised set of ECDIS standards by 31 August 2017 in response to a reminder that was sent to observer organizations representing the shipping industry (AECO, BIMCO, CLIA, ICS, Intercargo, Intertanko) in early June. It was not clear, from the IHO perspective, if the issue resulted solely with some OEMs not being able to provide timely software upgrades as claimed by the shipping industry.

26.   Intertanko submitted a paper for consideration by the 4th session of the IMO Sub-Committee on Implementation of IMO Instruments (III 4 - 25 to 29 Sep 2017) proposing that "*Port State control officers (PSCOs) should inspect ships carrying ECDIS units that have not been updated, in a pragmatic and practical manner, provided that the ship has taken appropriate actions to mitigate any safety of navigation issues*".

27.   The issue could be potentially exacerbated as the Maritime Authorities of the Tokyo and the Paris Memoranda of Understanding (MoU) on Port State Control had decided to launch a joint Concentrated Inspection Campaign (CIC) on Safety of Navigation on 1 September. One of the 12 questions of the questionnaire relates to the carriage of ECDIS ("Does the ECDIS have the appropriate up-to-date electronic charts for the intended voyage and is there a suitable back-up arrangement**?).** In June, the Secretariat of the Paris MoU informed the IHO Secretariat that "*the Committee of the Paris MoU has agreed to share information from our ECDIS guidelines with the IHO*", but no information has been received so far.

28.   At the initiative of the ENCWG, an information document on IHO ECDIS-related standards has been developed and posted on the IHO web site (see www.iho.int > ENCs, ECDIS & S-100 > ECDIS Operation > Information on IHO Standards related to ENC and ECDIS). The ECDIS-related information on the IHO web site was updated on 1 Sep 2017 to reflect the withdrawal of the previous editions of the IHO standards. In particular, the ENC/ECDIS Data Presentation and Performance Check published in 2011 was removed. Table 2 provides the consolidated statistics of the reports received by the IHO Secretariat from 2011 to 2017.

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 Sep 2016	1 Sep 2016 31 Aug 2017
Number of reports	1,042	76	74	1,318	2,853	5881
% of reports indicating no problem	22%	43%	55%	73%	85%	82%
% of reports indicating no anomaly in the display of "new objects"	60%	91%	95%	95%	92%	97%

29.   The IHO Secretariat will monitor subsequent developments and report to the HSSC as appropriate.

Maritime cyber security

30.   MSC 98 approved the MSC-FAL.1/Circ.3 - *Guidelines on maritime cyber risk management* which supersedes the interim guidelines contained in MSC.1/Circ.1526. Regarding the implementation of the maritime cyber risk management, the MSC, noting the advice provided by the IMO Legal Affairs and External Relations Division that cyber risks could be addressed as part of the existing provisions of the International Ship and Port Facility Security (ISPS) Code and the International Safety Management (ISM) Code and that some Member States considered that mandatory implementation of maritime cyber risk was an issue, agreed that this would require further consideration after gaining more experience from the use of the guidelines.

31.   The Committee noted that Singapore and the Baltic and International Maritime Council (BIMCO) had developed cyber risk management posters for distribution to ships to raise crew awareness of cyber issues and that version 2.0 of the industry cyber guidelines would be released shortly and would be reported to the MSC. The Committee also noted that the International Organization for Standardization (ISO) had started work on cyber risk safety assessment with a focus on cyber security on board ships.

32.   **The HSSC is invited to request the S-100WG to continue monitoring the development of guidance on cyber security and advise on appropriate actions in relation with the development of the S-100 data protection scheme.**

Action required of HSSC

33.   The HSSC is invited to:

a.   **Note** this report;

b.   **Ensure** that the HGDM monitors the on-going consideration by FAL of the single-window concept and takes appropriate action (paragraph 13);

c.   **Consider** any action that may be required as an outcome of HGDM 1 (paragraph 22);

d.   **Request** the S-100WG to continue monitoring the development of guidance on cyber security and advise on appropriate actions in relation with the development of the S-100 data protection scheme (paragraph 32); and

e.   **Take any other actions** considered necessary.