

5th MEETING OF THE IHO COUNCIL

Monaco/VTC, 19 – 21 October 2021



REPORT OF THE IHO HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE, HSSC

REPORT¹ OF THE IHO HYDROGRAPHIC SERVICES AND STANDARDS COMMITTEE TO THE 5TH MEETING OF THE IHO COUNCIL

References:

- A. [List of Decisions and Actions from C-4 affecting HSSC](#)
- B. [List of Decisions and Actions of HSSC-13](#)

Annexes:

- A. *Strategic Performance Indicators allocated to HSSC and proposed metrics.*
- B. *Proposed Annex 2 to the Roadmap for the S-100 Implementation Decade (2020-2030)*

Introduction

1. The 13th Hydrographic Services and Standards Committee (HSSC) meeting took place from 3 to 6 May as a VTC, as announced by the IHO CL 06/2021. One session was dedicated to presentations from stakeholders, which provided valuable input to the development of S-100 and new survey methods.

The meeting was guided by HSSC main principles dealing with the promotion and the coordination of the development of standards, specifications and guidelines for official products and services in order to meet hydrographic information requirements for mariners and other users.

As consequence of the inputs from C-4 (see Reference A), the 13th meeting of HSSC was characterized by two main levels of discussion:

1. An operational/strategic level:
 - a) The implementation of the revised IHO Strategic Plan (Council 4 action C4/37, 39 and 40)
 - b) The implementation of the Roadmap for the S-100 Implementation Decade (2020-2030) (Action C4/11, 12, 18, 20, 21 and 22)
 - c) The implementation of the recommendations on the Future of the Paper Nautical Chart (Action C4/10)
 - d) The establishment of a Project Team on Polygonal demarcations of global sea areas (Action C4/07)
 - e) The establishment of a Project Team on a Maritime Autonomous Surface Ships (MASS) Navigation Project Team
 - f) Proposal on themes and projects to be considered by the IHO-Singapore Innovation and Technology Lab (Action C4/06)
2. A technical level:
 - a) Progresses in the development of the S-1xx Product Specifications
 - b) Progress of the work plans (items outside S-100) of subordinate bodies

The list of Decisions and Actions of HSSC-13 is provided in Reference B.

¹ Report to C-5 and also Summary Report of HSSC-13. See Action C4/13 that states “*Considering the timelines between HSSC-13 and IRCC-13 meetings in 2021 and the countdown for submission of reports and proposals to C-5, the Council invited HSSC and IRCC Chairs to prepare their 2021 meeting minutes with the view that they will be used/submitted directly as reports and proposals to be considered at C-5*”.

Technical Programme Coordination

- This document reports on the progress of the ongoing implementation of the IHO Work Programme 2021 and the three year Work Programme for 2021 – 2023 that takes into account HSSC Work Plan inputs provided by WGs/PTs Chairs during the HSSC 13 meeting.

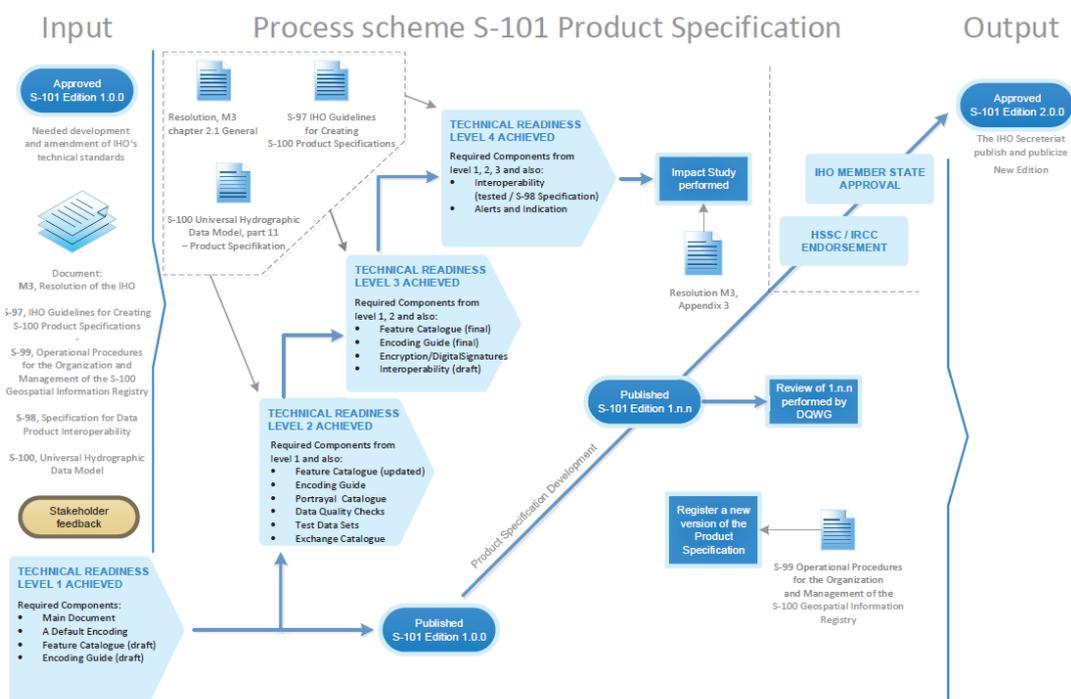
Difficulties and challenges yet to be addressed

- The Covid-19 pandemic has continued to limit face-to-face meetings. Despite the pandemic and the limitations with VTCs most of the actions agreed in October 2020 at HSSC-12 and tasked at C-4 progressed successfully anyway, but there are clear challenges with more complex discussions not being addressed properly due to VTC meeting time constrains.

Achievements/outputs/conclusions

The implementation of the revised IHO Strategic Plan

- The revised IHO Strategic Plan was agreed upon by the IHO Assembly 2. Subsequently the following Council 4 meeting decided to implement the Strategic Performance Indicators (SPIs) and allocate the SPIs to the three work programmes concerned. See C4/37 and 39. For SPIs allocated to HSSC the HSSC 13 meeting agreed upon metrics, initial (2021) and target (2026) values, to measure the SPIs allocated to HSSC. **The proposed SPI metrics are attached in Annex A to this report and HSSC invites the Council to agree upon these metrics.**
- Following action C4/40 where the Council agreed to experiment on the application of the ISO 9001 principles on a couple of Strategic Plan targets (one per Committee to be proposed); the HSSC 13 meeting agreed that the ISO 9001 principles will be experimented on the development of the Product Specification for ENC S-101 ed. 2.0.0. The process scheme to which the ISO 9001 Principles will be experimented is given below. An HSSC ISO 9001 Cell has been established, led by the HSSC Vice-Chair, with development, monitoring and risk management objectives. **HSSC invites the Council to endorse that the ISO 9001 principles will be experimented on the development of the Product Specification for ENC S-101 ed. 2.0.0.**



The implementation of the Roadmap for the S-100 Implementation Decade (2020 – 2030)

6. The implementation of S-100 product specifications is progressing according to the plan presented at IHO Assembly 2 and Council 4, with some minor adjustments. For the first edition of S-98, which will handle interoperability between different layers in the future S-100 ECDIS, priority will be given to layers used in route monitoring mode. In the next step layers used in route planning mode will be included. See figure 1 below. In addition, the S-100 WG is developing an ECDIS test data set for S-100; S-164. An S-100 ECDIS test data set is requested by the industry in order to start developing their coming S-100 ECDIS.

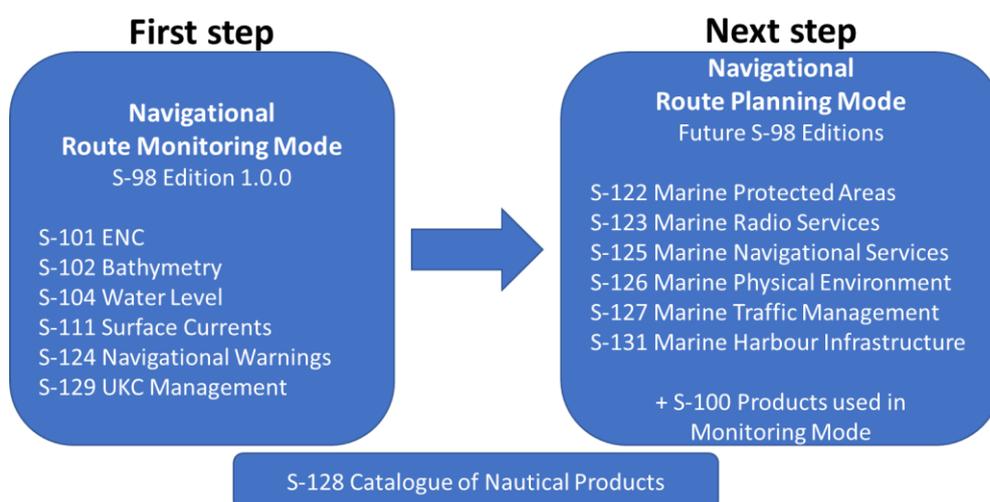


Figure 1; The IHO Navigational Package to be handled by the Interoperability Specification S-98. Additional layers may be added in the future.

7. In accordance with the Council 4 decision C4/21, saying that the Council agreed on the need to amend the S-100 Implementation Road Map based on the list of products planned to be covered by S-98, HSSC propose to amend the list of products to put special focus on. See paragraph 2 in the Roadmap for the S-100 Implementation Decade (2020 – 2030), Version 1.0 Rev 1. **HSSC invites the Council to agree upon the amendment of the list of products as presented in table A below.** It should be noted that priorities given to the products used in route monitoring mode does not prevent route planning products to be developed in parallel to the once in first step. As a proposed target by HSSC, in addition to the route monitoring products, also S-122, S-127 and S-131 should be operational 2026 (see SPI 1.1.2 and 1.2.1 in Annex A).

Table A – IHO list of S-100 products with special focus	
First step – Route monitoring mode	
S-101	Electronic Navigational Chart (ENC)
S-102	Bathymetric Surface
S-104	Water Level Information for Surface Navigation
S-111	Surface Currents
S-124	Navigational Warnings
S-128	Catalogue of Nautical Products
S-129	Under Keel Clearance Management
Second step – Route planning mode	
S-122	Marine Protected Areas
S-123	Marine Radio Services
S-125	Marine Navigational Services
S-126	Marine Physical Environment
S-127	Marine Traffic Management
S-131	Marine Harbour Infrastructure

8. Also connected to Council decision C4/21 on proposed amendments to the S-100 Implementation Roadmap HSSC would like to propose an amendment to clarify the progress with S-101 ENC. In paragraph 2 in the S-100 Implementation Roadmap it is mentioned that S-101 will be *technically ready for regular production of S-101 ENCs by end of 2022*. HSSC propose to change this sentence to read:

In the beginning of 2024 the Standard will be operational and ready for production and implementation. HOs can prepare their production systems and experiment with S-101 ed 1.1.0 already 2022.

This will reflect the S-100 implementation timeline now included in the proposed Annex 2 to the Roadmap for the S-100 Implementation Decade (2020-2030), which is attached as Annex B to this report. **The Council is invited to agree on the proposed amendment to the S-100 Implementation Roadmap to clarify the progress with S-101.**

9. To include the S-100 implementation timelines and in order to include other relevant topics in connection to the S-100 implementation the Council 4 decided that three annexes should be attached to the S-100 Implementation Roadmap (C4/18, 20 and 22). Annex 2 will be allocated to the Technical Work Programme and HSSC has developed a version controlled Gantt Chart with the timelines for the development of the product specifications to be included in Annex 2. The product specifications to be covered by the Gantt Chart are those listed in the proposed Table A – IHO list of S-100 products with special focus (see paragraph 7 in this report) plus the Interoperability Specification S-98 and the S-100 test data set S-164.
10. [As a consequence of the Assembly 2 Action A2/33 on Dual Fuel](#) the Council 4 requested HSSC to prepare a synoptic summary report on the various options offered to HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production (C4/11). It is concluded that the preferred option for HOs would be to produce their ENCs from a database driven production system since it is expected that production systems software companies will include support for parallel ENC production (S-57 and S-101) when using a database driven system. However, HSSC has prepared a synoptic diagram to show other possible options for HOs in regards to parallel production. See figure 2 below. The synoptic diagram is included in the proposed Annex 2 to the S-100 Implementation Roadmap.

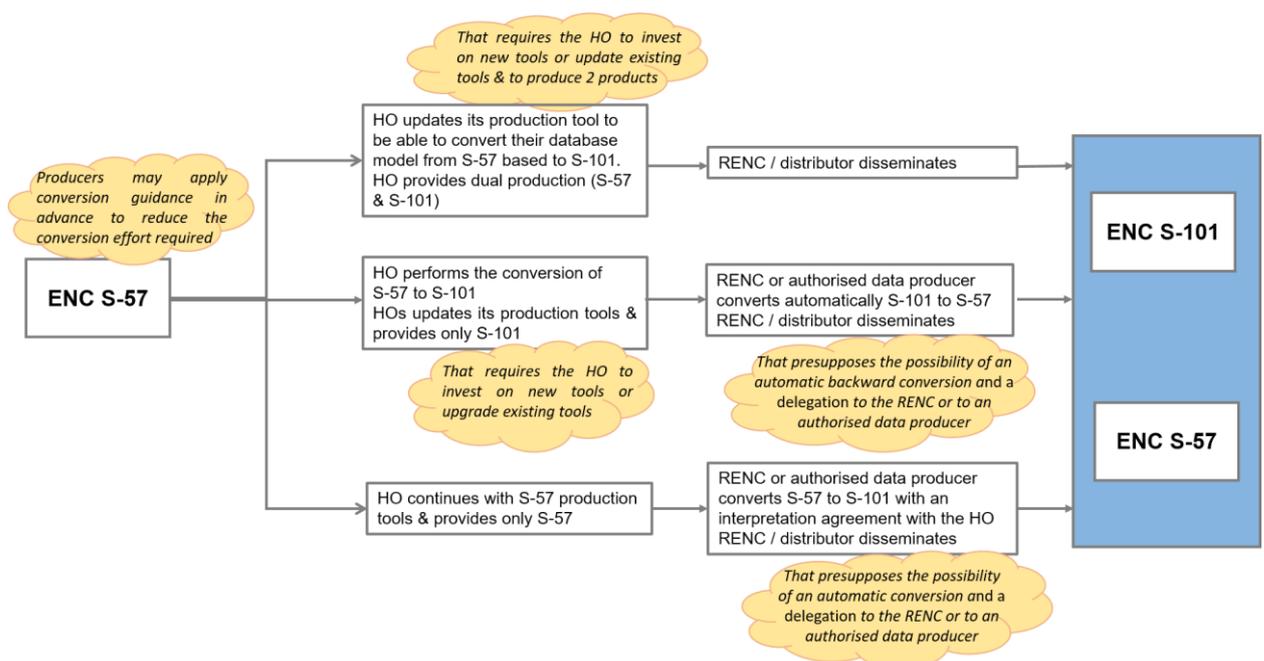


Figure 2 Potential options for HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production.

11. The proposed new annex 2 to the S-100 Implementation Roadmap, as attached as annex B to this report, includes the Gantt Chart with the detailed timetable for the planned S-1xx product specifications and the synoptic diagram on potential options for HOs for future production of S-101 ENC in conjunction with S-57 ENCs. **The Council is invited to approve the proposed annex 2 to the Roadmap for the S-100 Implementation Decade (2020 – 2030).**
12. In addition to the synoptic diagram, it should be noted that the S-100 WG are working on a Governance Document on the Dual Fuel Concept to be presented to HSSC 14 in May 2022. At HSSC 13 it was agreed upon to outsource the development of this high-level governance document on the Dual Fuel Concept, but the importance of IHO MS involvement was underlined. It should also be understood that future S-100 ECDIS must be capable to read S-57 ENCs in addition to S-101 and other S-xxx layers. The ENCWG is also working on a guidance document for HOs on how ENC features can be enhanced to support automated conversion to S-101. This work is expected to be done in collaboration with the IHO-Singapore Innovation and Technology Laboratory. All these initiatives are aimed to support the transition from S-57 ENCs to S-101 ENCs.
13. In connection to the discussion on the Dual Fuel Concept the SENC Delivery option, now available for S-57 ENC deliveries, was discussed at HSSC 13. Concerns were raised, in particular for the sake of cyber security, if applied to S-100 products. A work item was added and will be handled by the S-100 WG.
14. The Council decided (C4/12) to monitor the progress of the task given to HSSC and IRCC to review the IHO Resolutions as a consequence of the introduction of S-100, The HSSC WGs/PTs are continuously monitoring the needs for amendments to the resolutions. The TWCWG is in progress on proposing amended IHO Resolutions, but no amended resolutions have been agreed upon by IHO MS since Council 4.
15. Following the proposal from IHO, with a supporting paper from Canada, the IMO NCSR 8 meeting in April 2021 agreed upon an output on the Revision of the IMO ECDIS Guidance and ECDIS Performance Standard. The proposed output must be approved by IMO MSC 104, 4 – 8 October 2021. At HSSC 13 it was agreed upon a drafting group consisting of the HSSC Chair group with confirmed participating from CIRM, IEC and Intertanko. The intension is to have a draft ready in November 2021 to be able to submit drafted documents to NCSR 9 2022.

The implementation of the recommendations on the Future of the Paper Nautical Chart

16. As requested by the Council 4 (C4/10) the HSSC and the NCWG has continued to work on the implementation of the recommendations given in the Future of the Paper Nautical Chart report. An important step is that the NCWG has established a sub-WG to develop a Baseline Symbology aiming to support the automated production of paper charts from S-101 data. Recommendations in the report on Regional Hydrographic ICCWGs, to focus on ENC schemes, have been coordinated between HSSC and IRCC and was agreed upon at IRCC 13 in June 2021.

The establishment of a Project Team on Polygonal demarcations of global sea areas

17. Following the IHO Assembly 2 decision A2/24 & 25 and Council 4 decision C4/07, HSSC 13 agreed upon the establishment of a Project Team to develop a new S-130 Polygonal Demarcations of Global Sea Areas Product Specification. As issued by the IHO secretariat, in the IHO CL 18/21, Member States are invited to consider nominating officers bearers and representatives to participate in the S-130PT. Deadline by 15 August 2021.

The establishment of a Project Team on a Maritime Autonomous Surface Ships (MASS) Navigation Project Team

18. As a result of a proposal from Norway, Singapore and UK, HSSC 13 agreed upon the establishment of a Project Team on MASS Navigation in order to address MASS requirements on navigation data and services. The project team will have the following objectives:
- to identify and prioritize MASS navigation requirements;
 - to analyse their impacts on current hydrographic standards and services; and
 - to develop a set of recommendations/issues to be addressed by existing working groups.
19. The Project Team will work on a 2-year mandate. An intermediate status report on the progress made is expected in 2022 (HSSC-14) and a final report and associated deliverables in 2023 (HSSC15). Decision for the continuation of the MASS PT or for the creation of a dedicated Working Group to be made subsequently in 2023. As issued by the IHO secretariat, in the IHO CL 23/21, Member States are invited to consider nominating officers bearers and representatives to participate in the MASS PT. Deadline by 15 September 2021.

Proposal on themes and projects to be considered by the IHO-Singapore Innovation and Technology Lab

20. HSSC 13 agreed upon to propose two projects to the IHO-Singapore Innovation and Technology Lab (reference C4/06):
- A proposal from ENCWG to test the automated conversion of S-57 to S-101 ENCs
 - A proposal from NIPWG to support the possible establishment of a technical infrastructure within the IHO GIS Infrastructure to also include a S-131 database for harbour's information registration.
21. The IHO-Singapore Tech Lab General Manager has already established contact with the two WG Chairs from ENCWG and NIPWG and the two WGs are working on their respective project application. The inauguration of the Tech Lab is expected in October 2021.

Progresses in the development of the S-1xx Product Specifications

22. As mentioned above the development of the S-1xx product specifications is progressing more or less as expected. The more detailed timeline for all planned S-1xx specifications is found in the proposed Annex 2 to the Roadmap for the S-100 Implementation Decade (2020 – 2030), annex B to this report.
23. At HSSC 13 some specific discussions were focusing on S-102. The S-102 PT proposed a priority of the scope of S-102 - Bathymetric Surface to navigation systems. The impact of such a priority will be needed to studied further by S-100 WG and the S-102 PT and will be reported to HSSC 14 in May 2022. Another challenge with S-102 is that the current edition number 2.0.0 does not reflect that the S-102 PS is not actually at the operational level yet. However, resolution 2/2007 will be applied and all proposed new versions will be dependent on MS approval
24. It should also be highlighted that NIPWG is progressing well with the development of S-131 – Marine Harbour Infrastructure. The product specification is developed in liaison with the International Harbour Masters Association (IHMA) and the International Port CDM Council. S-131 can become an important driver for improving the relationship between the Hydrographic Offices and Port Authorities.

Progress of the work plans (items outside S-100) of subordinate bodies

25. Other work items outside the development of S-100 is progressing well within the HSSC working groups. An updated consolidated HSSC work plan is available at the IHO HSSC website (under Miscellaneous).
26. Following a decision at HSSC 12 and the subsequent IHO CLs, the Hydrographic Surveys WG (HSWG) has been established. HSWG had a first short meeting in the end of April 2021 in front of HSSC 13 and their first ordinary HSWG 1 meeting 29 June – 1 July, with active participation from several MS and stakeholders.

Actions required of the Council

The Council is invited to:

- a) Note the Report
- b) To agree upon the proposed SPI metrics as attached in Annex A to this report
- c) To endorse that the ISO 9001 principles will be experimented on the development of the Product Specification for ENCs S-101 ed. 2.0.0.
- d) To agree upon the following amendments to the Roadmap for the S-100 Implementation Decade (2020 – 2030):
 - amending the list of products in as presented in table A in this report; and
 - agree on the proposed amendment to clarify the progress with S-101, as presented in paragraph 8 in this report.
- e) To approve the proposed annex 2 to the Roadmap for the S-100 Implementation Decade (2020 – 2030). Attached as Annex B to this report.
- f) Take any other action as it may consider appropriate