

**Paper for Consideration by
11th ARHC Conference (by VTC)
IHO Secretariat Report**

Submitted by: Secretariat of the IHO

Executive Summary: This paper reports on activities of the IHO Secretariat that may impact the work of the Arctic Region Hydrographic Commission.

Results of the 5th Council meeting affecting ARHC

1. **Report and proposals from HSSC (Including update on the dual-fuel concept (transition from S-57 to S-101 electronic navigation charts (ENCs))).**
2. The priorities recommended by HSSC for implementation of the Roadmap for the S-100 Implementation Decade (2020 –2030) were, firstly, product specifications supporting the route monitoring mode planned to be covered by the S-98 Data Product Interoperability Specifications (S-98, ed. 1.0.0) and, secondly, product specifications supporting the navigational route planning mode to be covered in future S-98 editions. The S-100 WG is developing an ECDIS test data set for S-100, identified as S-164.
3. HSSC had identified three options for parallel production of S-57 and S-101 ENCs:
 - (1) hydrographic offices (HOs) would convert their own database models from S-57 to S-101 and produce both products from their own databases;
 - (2) HOs would update their production tools and produce only S-101-based products, with RENCs likely to offer S-101 to S-57 conversion services; or
 - (3) HOs would continue to generate S-57 data only, with the RENCs converting that to S-101 data.
4. The third option was considered less favourable but might provide a short-term solution for Member States with lower capacity and comparably small numbers of ENCs under service. More work was needed to develop more detailed guidance on future parallel production of S-57 and S-101.
5. **Recommendation.** ARHC to consider establishing an ENC Scheme for Region N and a transition plan for S-101 ENCs. As a test case, ARHC to consider the possibility of experimenting the provision of coordinated S-100 based products services covering Region N (what products?, who?, where?, when?) in accordance with the amended WEND100 Principles for S-1xx Products.
6. **Implementation of S-100 based standards and product specifications in IMO regulations**
7. The revision of the International Maritime Organization (IMO) ECDIS Guidance for Good Practice and ECDIS Performance Standards was due to be considered by the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR-9) in June 2022. Consideration of a proposal by European Union Member States of IMO to revise the ECDIS Performance Standards to include S-104 route plans had been postponed to the 105th session of the IMO Maritime Safety Committee. HSSC 13 agreed upon a drafting group, with the confirmed participation of CIRM, IEC and Intertanko, to be able to submit drafted documents to NCSR 9.
8. **Recommendation.** National Support of the IHO strategy on the implementation of S-100 ECDIS in IMO Documents by the respective national IMO delegations.

9. **Establishment of new Working Groups and Project Teams under HSSC**

10. The new Hydrographic Surveys Working Group (HSWG) had met for the first time in late June 2021. Three new Project Teams had been created, the first to develop a new S-130 polygonal demarcations of global sea areas product specification, the second to address Maritime Autonomous Surface Ship (MASS) requirements in navigation data and services and the third as the Baseline Symbology Project Team to support automated production of paper charts from S-101 data and the priority given to RHCs ICCWGs to focus on ENC schemes.

11. **Report and proposals from IRCC**

12. The Chair of the Hydrographic Commission on Antarctica (HCA) reported one issue: consideration of the extended role of regional charting coordinators for implementation of the S-100 Roadmap. The Chair also reported that there was a discussion on the application of IHO Resolution 2/1997 to HCA statutes.

13. The Empowering Women in Hydrography project was launched with a kick-off meeting via virtual teleconference held on 28 September 2021. Funded by Canada until 2024 and with intensive support from the IHO Secretariat, the goals of the project include to give more exposure to women to the field of hydrography and to increase gender diversity in the field. Lines of action include outreach, contact and learning, including internships, at-sea experiences and train-on-the-job activities. A specific webpage (<https://iho.int/en/basic-cbssc-ewh>) has been set up under the Capacity Building Sub-Committee (CBSC) for this project.

14. A Project Team has been established for the IHO e-Learning Center, along with terms of reference and rules of procedure. Operational tests with IHO Member States were expected to begin in 2022. However, the success of the e-learning initiative was dependent on contributions of online learning material from Member States and partners.

15. The concept of MSDI V2.0 was presented, with the Arctic SDI Governance model proposed as a role model for MSDI cooperation in RHC. MSDI WG was closely cooperating with the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)-WG on Marine Geospatial Information and also with the Open GIS Consortium (OGC).

Implementation of the Strategic Plan

16. Both HSSC and IRCC reported to Council on their efforts in implementation and the measurement of success by means of SPI. Their respective reports were amended by the Secretary-General's report on the Secretariat's activities under Work Programme 1 "Corporate Affairs" in support of the implementation. The Council endorsed the proposal to report the progression on the implementation prominently as part of official IHO Annual Report. The Secretariat will provide such report as an isolated document by February 2022 well in advance of the full Annual Report to be expected for the second quarter of the consecutive year.

17. **Recommendation.** ARHC to consider how to contribute to the implementation and make this measurable by means of suitable SPIs.

Status of Membership of the IHO

18. Since the last ARHC Conference Lebanon and Kenya acceded to the IHO Convention and became the 94th and the 95th Member State of the IHO. The Democratic Republic of the Congo paid its dues and is now reinstated in its full rights as IHO Member State. Unfortunately Serbia, Syria and Vanuatu remain suspended from Member States rights.

Crowdsourced Bathymetry

19. The views of HOs regarding crowd-sourced bathymetry (CSB) expressed on various fora were heterogeneous; it should be emphasized that the focus was to collect data in poorly surveyed or un-surveyed areas.

20. The General Bathymetric Chart of the Oceans (GEBCO) GC reported an increase in data coverage from 6% to almost 21% of the sea floor: the main challenges were in getting governments, institutions and private industry to share bathymetric data, and in the question of how to map the remaining 80% of the planet's unmapped ocean seafloor. Seabed mapping should be promoted and contributions to Seabed 2030 encouraged. A presentation by Shell on "enabling contributions" for IRCC13 had highlighted a need to simplify countries' complex permission processes that hampered the donation of data. Collaboration between HOs and the Natural Resource Regulator should be improved, and permitting requirements for systematic data acquisition in transits through EEZ simplified.

21. **Recommendations.** ARHC members are invited to identify further potential sources of bathymetric measurements and survey data providers to be facilitate the further completion of the DCDB data holdings.

New IHO – Satellite - Joint IHO Singapore Innovation & Technology Center

22. The ITL was launched on 26 October and seeks to optimise the resources of IHO Member States to harness and develop emerging technologies in the hydrographic domain that support safe maritime navigation and the protection of the marine environment.

23. In accelerating innovation in the field of hydrography, the Laboratory aims to (i) conduct research and testing of projects proposed by IHO Member States, IHO organs and other stakeholders; (ii) grow knowledge and foster collaboration on global standard-setting for the development and application of technologies enhancing safety at sea; and (iii) promote a multidisciplinary and collaborative environment to drive innovative solutions and develop pioneering technologies through active partnerships.

24. For a start, the Joint IHO-Singapore Innovation and Technology Laboratory will embark on the following two pilot projects:

- Investigate the automated conversion of the IHO S-57 Electronic Navigation Chart (ENC) to the IHO S-101 ENC. This project supports the development of the S-100 Electronic Chart Display and Information System.
- Develop a digital Infrastructure to improve information exchange between harbours and hydrographic office. The outcome of this project will inform the IHO S-131 Marine Harbour Infrastructure product specifications.

25. The Laboratory is overseen by a Governing Board chaired by Mr Abri Kampfner, the IHO Director in charge of the IHO Work Programme II. Its General Manager, Dr Parry Oei, Adviser (Hydrography) of the Maritime and Port Authority of Singapore (MPA), leads the day-to-day operations.

26. **Recommendations.** ARHC members are invited to liaise with the ITL Governing Board in order to identify future projects and resources for funding.

IHO Outreach

27. World Hydrography Day: The 5th Council meeting held in Monaco in October 2021, took note of the proposed theme of the World Hydrography Day for 2022, as announced by IHO CL 43/2021 is:

“How hydrography can contribute to the United Nations Ocean Decade”

Member States are now invited to comment on the Secretariat’s proposal.

28. The Secretariat has successfully recruited Mr Yong Bek, former Employee of KHOA (ROK) and Mr Samuel Harper, former employee of UKHO in succession for the posts of the Assistant Director Digital Technology and Assistant Director Survey & Operations. Mr Remy Roquefort, former employee of SHOM (France) was recruited for the new post of GIS specialist.

International Hydrographic Review (IHR)

29. Mr Brian Connon, USA, former Vice Chair of IHO CBSC and now employed at Saildrone is the Editor of IHR since January 2020. Papers for the IHR should be forwarded to ihreview@iho.int, copy to Leonel.manteigas@iho.int. The deadlines are:

- end of January for the May Edition
- end of July for the November Edition

30. **Recommendations.** ARHC Members are invited to submit papers for publication in the IHR.

IHO Centenary Celebrations (IHO-100)

31. The Secretariat organized the celebrations of the IHO centenary as hybrid event and was honoured by the presence of His Serene Highness Prince Albert I of Monaco and Excellency Mr Peter Thomson, Special Envoy for the Oceans of the Secretary-General United Nations. The Italian training ship *Amerigo Vespucci* paid a visit to Monaco harbour and an ASV of the French company IxBlue did a practical demonstration of an autonomous near cost survey including real time transmission of the multibeam measurements.

Action Requested of ARHC:

- a) **Note** this report
- b) **Consider** the recommendations
- c) **Take any other actions** as considered appropriate.