

**Paper for Consideration by
10th 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.

Consequences of the postponement of the 2nd IHO Assembly affecting ARHC

1. IHO ACL 19/2020 informed about the positive vote of the Member States in favour on the proposed scenario on the postponement of the 2nd Session of the IHO Assembly (A-2) and associated activities resulting from exceptional circumstances due to COVID-19 (IHO ACL 17/2020 refers).
2. As a consequence, the Secretariat invited Member States to vote by correspondence on proposals submitted for consideration by the 2nd session of the Assembly (IHO ACL 21/2020 and IHO ACL 22/2020).
3. Among other items, IHO ACL 26/2020 reported on the approval of the Revision of the IHO Resolution 2/1997 – Establishment of Regional Hydrographic Commissions (RHC) (Assembly Document A2_2020_PRO3-1_EN_Res_21997_cc_v1).
4. **Recommendation.** Noting that ARHC is currently undertaking the revision of its Statutes, ARHC is invited to adapt their respective instruments to comply with the recommendations of the IHO Resolution 2/1997 as amended by A-2.

Allocation of ARHC`s seat at the new IHO Council

5. According to Article 16 of the General Regulations of the IHO, the Secretary-General informed ARHC about the allocation of one Council Seat to the Commission. The ARHC Chair informed the Secretariat on the Commission`s decision to select the Russian Federation for this seat. It is noted that ARHC members are well represented in the forthcoming second IHO Council, namely Canada (via USCHC), Norway (via tonnage list), USA (via tonnage list), plus the Associate Members Italy (via MBSHC) and Finland (via NHC).
6. In deviation from the Rules of Procedure of the IHO Council currently in place, the Secretariat intends to propose the election of the new Council Chair and the Vice-Chair by correspondence in advance of the Council meeting. The respective Circular Letter is under preparation. The elected Council Chair and Vice-Chair will be in a position to get prepared for the 4th meeting of the Council planned in November. They will take up their duties on the 1st day of the meeting with the formal establishment of the Council
7. **Recommendation.** Prospective IHO Council members from ARHC to consider if and how issues of the Arctic Region of interest for the IHO may be included into the Council programme of work.

Status of Membership of the IHO

8. One of the main changes resulting from the entry into force of the revised IHO Convention is that, for States wishing to join the IHO that are already Member States of the United Nations, there is no requirement to seek the approval of existing Member States of the IHO. Since the last ARHC Conference Samoa acceded to the IHO Convention and became the 93th Member State of the IHO. Unfortunately Democratic Republic of the Congo, Serbia, Syria and Vanuatu remain suspended from Member States rights.

ENC Production Coordination Region N – WEND100 Principles

9. Norway (Mr Edward Hands), is the designated INT Chart / ENC Coordinator for Region N. Compared to other regions, Region N is covered by a limited amount of INT charts with little prospect to grow. Noting the use of ECDIS as predominant navigational device in these waters, it is suggested that ARHC should establish an approved multi-scale ENC scheme (S-11 Part A refers) that will be of great value when the transition from S-57 ENCs to S-101 ENCs starts to become operational.

10. The development of the WEND100 Principles is a key component of the S-100 Implementation Roadmap. This work is in good progress by the WENDWG (chaired by Mr John Nyberg, NOAA, USA) by correspondence through VTC sessions. Outcome will be reported at IRCC-12 and possibly at A-2/C-4.

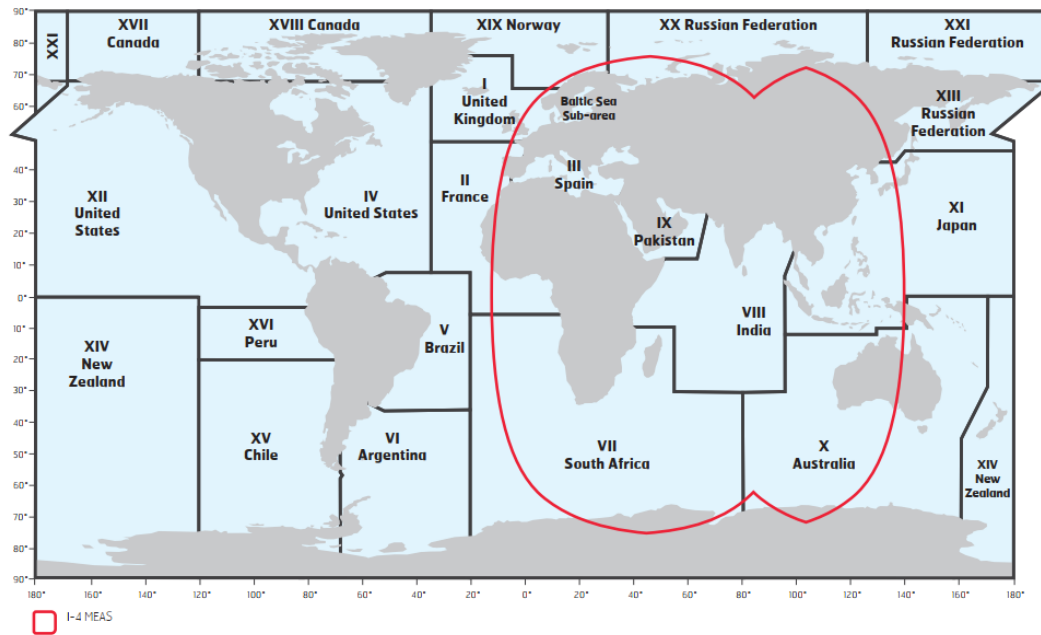
11. **Recommendations.** ARHC to consider establishing an ENC Scheme for Region N and a transition plan for S-101 ENCs. As a test case, ARHC to consider the possibility of experimenting the provision of coordinated S-100 based products services covering Region N (what products?, who?, where?, when?) in accordance with WEND100 Principles.

Maritime Safety Information Services

12. Inmarsat – stated coverage 76°N - 76°S via three geo-stationary I4 satellites, although up to 78°N has been achieved.

13. SafetyNET Services. Two systems are now available and in use by all information providers (NAV and MET Area Coordinators and RCCs):

- SafetyNET – SafetyNET messages are submitted by registered information providers for promulgation to the appropriate satellite Ocean Region(s) via an Inmarsat C Land Earth Station (LES) through the I4 satellites to vessels at sea.
- SafetyNET II – provides an interactive web portal for MSI providers to promulgate their MSI messages over the Inmarsat EGC system direct to I4 satellites via web interface. SafetyNET II messages are submitted by registered information providers via a secure interface to the Inmarsat network.
- Fleet Safety – MSC 101 approved MSC.1/Circ.1611 on *Interim guidance on technical requirements for Fleet Safety*, which will remain in force until such time as the information is included in MSC.1/Circ.1364/Rev.1 on *Amendments to the Revised International SafetyNET Manual*.
- Fleet Safety is the digital satellite communications system comprising of a FleetBroadband Ship Earth System, (SES) and type approved Maritime Safety Terminal (MST) for use within the GMDSS, enabling ships to meet the majority of the satellite communications requirements of the GMDSS including distress alerting, reception of MSI and SAR related information, voice distress and general communications.



Fleet Safety GMDSS approved area until Inmarsat 6 satellite constellation deployed

14. Iridium – global coverage through constellation of low orbiting satellites.

- Having approved the Iridium SafetyCast Service at MSC 99 and approved MSC.1/Circ.1613 on *Interim Iridium SafetyCast service manual at MSC 101*, the IMO authorised the issuing of certificates of use to the NAV and MET Areas and RCCs, which have been encouraged to engage with Iridium to put in place the necessary service contracts and to start testing the Iridium SafetyCast Service. Currently about half the NAV and MET Areas have signed contracts with Iridium and are now involved in the operational testing of the system, considerably fewer RCCs have reached this stage. Due to a number of issues, COVID-19 included, progress by Iridium on a number of technical issues has been considerably slower than anticipated and the SafetyCast system is still some way from being declared fully operational. It is planned to review the final draft of the SafetyCast Service manual at the forthcoming WWNWS12 remote meeting so as to submit it to the programmed NCSR 8 in early 2021, however this draft has not been presented by Iridium for initial editing and there is now a strong possibility that the deadlines will be missed. All these processes will continue until all NAV and MET Areas and RCCs are fully operational, at which point the Chair of the IMO EGC Coordinating Panel will advise the IMO MSC and at this point Iridium SafetyCast Service will be a fully operational part of the GMDSS.
- The necessary SOLAS amendments came into force on 1 January 2020, however this only means that a ship carrying Iridium SafetyCast Service equipment will be SOLAS compliant, it will not mean that the system is operational or that any MSI is being transmitted or received via the SafetyCast Service.
- It has been agreed that all NAV and MET Area Coordinators and RCCs will be required to provide MSI and SAR services via all recognized mobile satellite service providers, there remain considerable concerns over the cost implications, which are related to the additional resources (personnel, training and equipment) as well as the increase in message costs.

Crowdsourced Bathymetry

15. The Crowdsourced Bathymetry Working Group (CSBWG) has been tasked by the Inter-Regional Coordination Committee (IRCC) to develop the IHO publication B-12 that provides guidance on the collection and use of Crowdsourced Bathymetry (CSB) and to investigate ways to increase participation in data gathering activities. IHO Publication B-12, Edition 2.0.2 - Guidance on Crowdsourced Bathymetry, provides guidelines and advice on various considerations that should be taken into account when collecting CSB data for inclusion in the global bathymetric data set which is maintained in the IHO Data Centre for Digital Bathymetry (DCDB).

16. Replies of Member States positions on the conduct of CSB in their waters of jurisdiction (Annex B of IHO CL 11/2019) have been analysed and a table of coastal states indicating positive support for the activity within all or parts of their waters of national jurisdiction has been generated and is published on the IHO website for the guidance of the wider maritime community. Member States may advise the Secretary General at any time of any change to their originally stated position.

17. As indicated in IHO CL 11/2019, a second IHO CL (CL 21/2020 dated 3 June 2020) has been published, which focuses on the provision of data into the public domain rather than seeking support for the activity of collecting CSB. This is in recognition that vessels, in accordance with the safety of navigation requirements of SOLAS 1974, are collecting depth data at all times in coastal waters. The Secretariat and the Chair of the CSBWG are asking coastal states whether, rather than destroying this data, it can be databased and made available for wider uses other than its original individual vessel safety of navigation purpose. It is assumed there is no change for those coastal states which have already indicated positive support along with any caveats. It is hoped that other coastal states will allow the use of this data with whatever caveats that are deemed appropriate for the situation of each state.

18. In addition to the IHO CL, the Chair of the CSBWG, recognising that although engaged with their respective RHC, not all coastal states are members of the IHO and would therefore not received the IHO CL nor have an ability to indicate their position, requested the Chair of the IRCC to write to the Chairs of all RHCs asking them to engage with these coastal states to seek their support. At the same time a submission to the IRCC is being prepared in coordination with GEBCO and Seabed 2030, for RHCs to identify regional ambassadors to act as a point of contact and to raise the profile of data gather and provision within their respective region, all with the view of increasing awareness and highlighting the link between gaining a complete picture of the ocean floor with the UN Decade and the SDGs.

19. Should the forthcoming IHO Assembly approve the revised IHO Strategic Plan as endorsed by the IHO Council, the regional ambassadors would have a key role is assisting the RHCs in gathering the evidence and reporting annually on the percentage coverage achieved within their region. They would also be in a position to assist individual coastal states. Further the submission to IRCC has proposed a number of CSB and GEBCO related topics for inclusion in national reports, which aim to identify the level of activity within each coastal state, as well as any challenges for which help can be provided.

20. In support of these activities the IHO DCDB has undertaken significant development to improve the data pipeline and data viewer operability. The DCDB has developed a geographic filter application, which suppresses embargoed data from public availability and places this data in a separate data store until such time as approval is given for its release into the public domain. The DCDB has also commenced initial discussions with the ISA on suitable methods for making their data available either into the DCDB or directly into the GEBCO grid, it is anticipated that a small number of focused trials will be started later this year. The DCDB is also in advanced discussion with a number of commercial shipping companies to extract bathymetric data from their voyage data recorder systems, the initial work is being undertaken with MacGregor/Carnival Cruise Lines.

21. A number of regional projects are being supported and used as successful examples for future expansion. The Great Barrier Reef project being undertaken by James Cook University and the extensive work with local communities in northern Canada by Centre Interdisciplinaire de Développement en Cartographie des Océans (CIDCO) have provided many useful lessons, which are of relevance to all CSB community focused projects globally. The CSBWG has commenced initial engagement with C-Map/NAVICO on how they can contribute their data without impacting on their commercial activities or business model. C-Map/NAVICO has a 'Social Map' initiative from which they process the resultant crowd data to generate contour maps; they are looking to increase engagement to complete areas of sparse or no data, including a proposed reward scheme for contributors to complete designated 'survey lots', as well as provide new data types such seabed texture, vegetation type, navigation aids, shoals and obstructions.

22. The CSBWG has identified the importance of much closer cooperation and coordination with GEBCO and Seabed 2030 in communication and outreach to avoid duplication of effort and to ensure a harmonised message is maintained. The CSBWG will be working with the GEBCO Subcommittee on Communications, Outreach and Public Engagement (SCOPE), the Seabed 2030 Director and the IHO Secretariat Communications and Public Relations Officer (CPRO) to improve the message and increase awareness amongst the non-traditional sectors and communities, which have only partial or limited engagement or knowledge of the issues; the objective is to leverage the momentum generated by the UN Decade and the SDGs.

23. **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.

GEBCO support through Seabed 2030

24. Details of a new depth map of the Arctic Ocean have been published in the Nature Journal Scientific Data in July 2020. The new portrayal of the Arctic Ocean floor is in the form of a digital gridded database and comprises Version 4.0 of the International Bathymetric Chart of the Arctic Ocean (IBCAO).

25. The gridded compilation has been completed under the auspices of the Regional Center for the Arctic and North Pacific Ocean of The Nippon Foundation-GEBCO Seabed 2030 Project. This Regional Center is one of four Seabed 2030 centers covering the world ocean and is run jointly by Stockholm University and the University of New Hampshire. Scientists and map-makers from 15 countries participated in the work, including all circum-Arctic nations.

26. The new IBCAO Ver. 4.0 has increased the area mapped of the Arctic Ocean from 6.7 percent in the previous release of Ver. 3.0 in 2012 to 19.6 percent. IBCAO Ver. 4.0 represents the 2020 contribution to the GEBCO Global Grid which is targeted to map the entire ocean floor by the year 2030. Users need a specific grid of the Arctic Ocean in polar projection because the global grid is highly distorted near the geographic poles. The data will also provide a much improved foundation for predictive modelling of the fate of the Greenland Ice Sheet and rise in global sea level.

27. This is the fourth digital grid of the Arctic to be published since IBCAO was established in St Petersburg in 1997. Since 2012, when the third IBCAO was compiled, numerous icebreaker expeditions mapping the seafloor have been completed. The IBCAO grids have had hundreds of thousands of downloads over the years and are used in all bathymetric applications for the Arctic.

28. **Recommendations.** ARHC members are invited to consider the future invitation of Seabed 2030 project representatives to ARHC meetings to discuss options for deepened cooperation and support.

IHO GIS and Databases

29. Work has continued on the development of the IHO GIS which is composed of two main parts:

- a country information database, and
- a regional information database.

30. The country information database has been progressively upgraded to include additional administrative information and facilitate the maintenance of the IHO Yearbook (IHO Publication P-5) and related lists posted on the IHO website. Countries in the ARHC Region are invited to review their entry in the Yearbook on an annual basis and provide the IHO Secretariat with the appropriate updates or report no change. The status of updates in the IHO Country Information Database concerning the ARHC Countries, including those provided for C-55, is as follows:

Country	P-5 –Yearbook Last update received	C-55 Last update received
Canada	February 2020	August 2019
Denmark	March 2020	November 2016
Norway	February 2020	February 2020
Russian Federation	February 2020	July 2004
United States of America	September 2019	December 2016

IHO Outreach

31. World Hydrography Day: Taking into account the discussions at the first IHO Council meeting held in Monaco in October 2017, the theme of the World Hydrography Day for 2020, as announced by IHO CL 52/2019 is:

“Hydrography – enabling autonomous technologies”

32. The Secretariat has successfully recruited Ms Sarah Jones-Couture as local staff member to serve as Public Relations & Communication Officer since November 2019. Ms Jones-Couture managed the establishment and increased communication of IHO themes via diverse social media accounts.

33. The Secretariat launched a full new website and digital archive by 1st January 2020. By event of the celebrations of the World Hydrography Day at 21st June 2020, the Secretariat added a specific logo to highlight the period from June 2020 to June 2021 as the one hundredth year of IHO’s existence.



34. **Recommendations.** ARHC Member States are encouraged to continue to replace the IHO old logo on all sorts of nautical publications and communication with the IHO new logo as the opportunity arrives. The use of the added signage for the 100 years celebrations during the noted period is recommended as well.

International Hydrographic Review (IHR)

35. The IHO Secretariat is pleased to report that Mr Brian Connon, USA, Director of the Hydrographic Science Research Center of the University of Southern Mississippi and former Vice Chair of IHO CBSC is the new 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

36. The Secretariat expresses its satisfaction that Mr Denis Hains, former National Hydrographer of Canada has joined the IHR Editorial Board.

37. The IHO Secretariat worked with the University of New Brunswick (UNB), Canada, in a project to develop a digital repository of the complete library of the IHR. As a result, volumes from the entire collection (1923 to 2020) and other relevant information are available online at the newly created web address: <http://review.iho.int>. The Secretariat is currently working with an external contractor on a complete relaunch of this website with added functionality and incorporation of the access to the mentioned digital repository.

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

IHO Centenary Celebrations (IHO-100)

39. The years 2019 and 2021 will be important in the history of the International Hydrographic Organization. 2019 marks the centenary of the 1st International Hydrographic Conference, which was held in London in 1919 and 2021 will be the centenary of the establishment of the International Hydrographic Bureau (IHB) in 1921 in Monaco as precursor of the modern IHO.

40. In accordance with Decision A-1/23 and with the endorsement of C-2, the IHO Secretariat has conducted numerous the celebration activities. The conducted and planned outreach actions for the centenary celebrations are intended to raise awareness on hydrography, nautical charting and ocean mapping activities as well as highlighting the importance of the IHO and its relations with Monaco on all available platforms. Special emphasis is to be placed on the IHO's global scope of themes and commitments to promote the conduct of hydrography, the specific contribution of member states and the close collaboration with United Nations specialised agencies and Inter Governmental Organizations, namely IMO, IOC and IALA.

41. The further planned activities for the IHO-100, coordinated by the IHO Secretariat are as follows:

- a. To organise a half day special session on IHO-100 at the 2nd Session of the IHO Assembly (A-2) in November 2020.
- b. To conduct a prestigious peak event in collaboration with the Oceanographic Institute of Monaco at the World Hydrographic Day 21st June 2021. In order to receive a good level of participation, it is planned to hold the IRCC13 meeting back to back with the event.
- c. To present the work and the achievements of the IHO with special emphasis on safety of navigation in collaboration with the IMO at the IMO Assembly in November 2021.

Action Requested of ARHC:

- a) **Note** this report
- b) **Consider** the recommendations to comply with IHO Resolution 2/1997 as amended by A-2 as reported in **Paragraph 4**
- c) **Consider** the recommendations on ARHC input into the Council Programme in **Paragraph 7**
- d) **Consider** the recommendations on establishing an ENC Scheme for Region N and a transition plan for S-101 ENCs as explained in **Paragraph 11**
- e) **Consider** the recommendations on the establishment of an ENC Scheme for Region N and a transition plan for S-101 ENCs in **Paragraph 23**
- f) **Consider** the recommendations on Seabed 2030 collaboration in **Paragraph 28**
- g) **Consider** the recommendations on the use of the new IHO Logo and the added signage for the 100 years celebrations during the jubilee year in **Paragraph 34**
- h) **Consider** submitting papers for publication in the International Hydrographic Review (**Paragraph 38**)
- i) **Take any other actions** as considered appropriate.