

**Paper for Consideration by
8th ARHC Conference**

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 Regional Hydrographic Commission.

Operations of the Organization under the IHO Convention since the last ARHC Conference in August 2017

1. The amendments to the IHO Convention and its supporting Basic Documents entered into force on 8 November 2016. Since last ARHC Conference, the Council as a new organ of the Organization was put into operation.
2. The first meeting of the Council (C-1) took place in Monaco from 17 to 19 October 2017 and will meet annually thereafter. The subsidiary organs of the IHO reported to the Council that will then referred endorsed proposals for adoption either to the Assembly or to the Member States through correspondence;
3. The main outcomes of the 1st meeting of the IHO Council were reported in CL 55/2017.
4. All regular and all associated ARHC members except Iceland are also Council members.
5. Regional Hydrographic Commissions are established in its own right by statutes and recognized by the Assembly (Article 8 of IHO General Regulations). They are sovereign to identify tasks, ways and means to address the specifics of hydrography within their respective region. If such regional hydrographic issues are of operational relevance for the international community they can be forwarded by the respective Regional Commission through the link with IRCC. The chairs of the Regional Hydrographic Commissions are regular IRCC members. They report to IRCC and in turn report back to the Regional Hydrographic Commission about IRCC issues.
6. With regard to the interrelation between the Regional Hydrographic Commissions and the Assembly, Regional Hydrographic Commissions enjoy the right to report to the Assembly directly. However, the applicable IHO Resolution 2/1997 is under review. The Secretariat proposes to discuss how reporting items of relevance shall be synchronized with the Council Chair report to the Assembly which is largely based on the annual IRCC chair report put forward to the Council.

7. Recommendations. ARHC to consider:

- a) Provide a report on the outcomes of this conference to the IRCC Chair for his report to C-2, if appropriate;
- b) Discuss how the ARHC reporting to the Assembly shall be synchronized with the Council Chair report to the Assembly.

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. In 2017 **Malta, Vanuatu, Seychelles** and in 2018 **Bulgaria** acceded to the IHO Convention and became the 86th, 87th, 88th and 89th Member States of the IHO respectively. On 1 January 2018 **Dominican Republic** was reinstated as Member State, suspended since 1983. Regrettably, Syria was suspended from Member States rights being in arrears in its contributions now for two consecutive years.

INT Chart and ENC Production Coordination - Region N

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 INT chart and ENC scheme due to substantial lack of survey in quality and quantity.

10. The status of the INT chart scheme for Region N is contained in Edition 3.0.1 of S-11 Part B which was made available in December 2017. According to the S-11 Part B Web Catalogue, as of December 2017, there are 12 charts in the scheme, nine have been produced and published. Then it has been reported that INT 9314 has been published by Norway. An update of the INT chart database for Region N will be made available after the Conference.

11. Early January 2018, the IHO Secretariat informed the Chart Coordinators that the project INTToGIS Phase II was underway, thanks to the outstanding support provided by KHOA (Republic of Korea). For more information, see Doc. [HSSC9-11A-INF1](#). Since the publication of Ed. 3.1.0 of S-11 Part A, INTToGIS Phase II aims to provide a very useful scheming tool, putting together ENC and INT charts, new base maps and some useful tools for a more efficient and consistent INT chart and ENC scheming (AIS data base, overlap checker, etc.). As agreed at the last WENDWG meeting, some Chart Coordinators (incl. Norway) are now experimenting INTToGIS II before it is commissioned and made available to all, hopefully early next year.

12. Adoption of Ed. 3.1.0 of IHO Publication S-11 Part A requires new arrangements for the monitoring of INT charts (CL 11/2018 refers).

13. The representative of the ARHC at the WENDWG (Evert Flier, Norway) participated in the 8th meeting (March 2018) of the WENDWG. It should be noted IRCC decided at its 10th meeting to expand the scope of the WENDWG. Its Terms of Reference were amended accordingly.

14. The elimination of overlapping ENC data that are navigationally significant is one of the main objective of the WEND Principles. A new IHO Resolution addressing this issue was adopted by IHO Member States (See. IHO CL 19/2018 – *Adoption of new IHO resolution on the elimination of overlapping ENC data*). WENDWG considered the outcome of this resolution at its recent 8th meeting from 20 to 22 March 2018 in Buenos Aires, Argentina and IRCC10 endorsed the resulting report (Agenda item ARHC8-D1 of this Conference refers). The ARHC should also note the comment provided by France in preparation of the 2nd meeting of the Council (See Doc. C2-4.2B).

15. At its 13th meeting in Monaco (January 2018), the Data Quality Working Group arranged a workshop where participants shared their best practices on the way CATZOC values are populated for S-57 ENCs by Hydrographic Offices. In order to facilitate the harmonization and prepare the future transition to S-101 ENCs, it is recommended that ARHC ENC Producers provide their guidelines to the DQWG.

16. Recommendations. ARHC to consider:

- a) the results of the 8th WENDWG meeting held in March 2018;
- b) providing regional CATZOC practices to the DQWG;
- c) the maintenance of ENC Schemes when the INTToGIS Phase II is commissioned;
- d) Consider the nomination of the Region N Coordinator, in liaison with ARHC Chair and the RENCs, to check and monitor ENC overlaps within the Arctic region.

Maritime Safety Information Services

17. MSI Capability and Supportability. The IHO Capacity Building strategy lays particular emphasis on the fundamental capability for all coastal States to provide a maritime safety information (MSI) service in support of their international obligations.

18. **Recommendations.** The Chair is requested to encourage all coastal States to:

- a) maintain regular communication with the regional NAVAREA Coordinator(s) and inform of any change of personnel or contact details; and
- b) use and following the guidance provided in S-53 – *Joint IMO/IHO/WMO Manual on Maritime Safety Information*;

- c) Request National Coordinators to review the contents of the relevant Annexes of the GMDSS Master Plan (GMDSS.1/Circ.21 31May 2017 refers) and to use the annexed questionnaire for electronic submission.

Capacity Building Programme

19. The level of activity of the IHO Capacity Building (CB) Programme decreased in 2017. Expenditure in the IHO 2017 CB Work Programme (625 952 Euros) was 18% smaller than the budget for the previous year. Ongoing financial support is provided by the Nippon Foundation of Japan, the Republic of Korea and by a contribution from the IHO budget with in-kind support from Member States and from industry. The Secretariat is continuing its campaign to find additional donor States and funding organizations. In 2017, 80% of the budgeted work program was executed and paid for.

20. The ARHC members, having developed Hydrographic Offices, did not directly benefited from activities under the IHO CB Work Programme (CBWP). Norway engaged directly helping Albania and Mozambique to develop their hydrographic capabilities.

21. **Recommendations.** ARHC members are invited to identify opportunities in national or regional funding agencies to incorporate hydrographic development in the broader projects supporting developing countries.

Crowdsourced Bathymetry

22. In accordance with Decision 8 of the EIHC5, IRCC7 established the Crowdsourced Bathymetry Working Group (CSBWG) to provide guidelines on the collection and use of crowdsourced bathymetry. Member States and other interested parties were invited to nominate representatives to participate in the CSBWG (see IHO CL 42/2015). The CSBWG has developed the draft IHO publication B-12 – IHO Guideline on Crowdsourced Bathymetry, which was completed with extensive stakeholder and IHO member State consultation. Edition 1.0.0 was presented to IRCC10 for endorsement, prior to submission to IHO Council-2 and IHO member State approval, it is hoped the publication will have a formal publication date of 1 January 2019. Work has commenced on the draft of Edition 2.0.0, taking into account a number of topics, for which additional time and investigation were identified as being required; additionally as a result of Decision C-1/31, IRCC10 endorsed to enlarge the scope of the tasking of the CSBWG and the CSBWG drafted revised ToRs.

23. The web-based interface portal to the IHO Data Center for Digital Bathymetry, hosted by the USA in Boulder, Colorado, as part of its commitment to the system of World Data Centres, is being upgraded to be compatible with the crowdsourced bathymetry concept. This will enable an IHO-led CSB infrastructure to be established and promoted in the IMO and across the wider maritime community.

24. **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

25. The Nippon Foundation (NF)-GEBCO Seabed 2030 project builds on more than 100 years of GEBCO history; the project has established regional connections to all corners of the World and benefits from the human network of ocean mapping capacity built over 14 years through The Nippon Foundation – University of New Hampshire (UNH) training project. Through Seabed 2030, GEBCO's role will be recognized and reinforced as the authoritative international initiative for mapping the World Oceans, from the coasts to the deepest trenches. The project will champion, develop and nurture the technical and human capacity to complete this task by 2030.

26. Seabed 2030 has established a network of 4 regional centres. Each centre focuses on discovering, gathering and assembling all available bathymetric data from their region to produce regional datasets and resulting products. A global centre will merge the regional datasets to generate the production of the annual GEBCO grid as well as other products. Within this structure, the IHO-DCDB will remain the central GEBCO repository for all raw bathymetric data and all Seabed 2030 project data will be data based there.

27. **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.

Learning from the antipodes and other polar related activities

28. The IHO Hydrographic Commission on Antarctica (HCA) operates in a similar way to the other 15 Regional Hydrographic Commissions that encompass the world. Born by initiative of IHO Member States which are Member States of the Antarctic Treaty too, the HCA seeks to coordinate hydrographic activities so as to improve the quality, coverage and availability of nautical charting and other hydrographic data, information and services covering the Antarctic region. Norway, the Russian Federation and the USA are HCA member too.

29. Due to the specifics of the legal conditions of Antarctic territories, their remoteness from civilization and its poorly explored state, HCA statutes put special emphasis on a collaborative approach of all Member States activities and addresses the support of scientific activities on the same level as safety of navigation. The 15th Conference of the HCA was held at the Diretoria de Hidrografia e Navegação (DHN), in Niteroi, Brazil, from 26 to 28 June 2018.

30. HCA noted the solid progress in the production of paper charts (so far altogether 90 charts) and related ENC coverage. Taking note of a recent IRCC decision, it was agreed that the Region M Coordinator, in liaison with HCA Secretariat and the RENCs, has the responsibility to check and monitor ENC overlaps within the Antarctic region.

31. Discussions at the meeting centred not only on the need to obtain bathymetric data from all sources and observers in the region, but also on the need to improve and develop a coordinated approach across the HCA membership on the future provision of S-100 based data products. HCA agreed that, as a matter of principle, the current primary charting authorities in Antarctica should be encouraged to consider future production and distribution of S-100 based products for Antarctica, in their designated areas of charting responsibilities.

32. The Secretariat reported on recent activities to add functionality to IHO's native GIS Portal INTtoGIS to provide specific functional enhancements for the polar region such as polar centric azimuthal projection for the presentation of chart schemes. The Commission opted for an intensified cooperation with external data portals such as Quantarctica, led by the Norwegian Polar Institute to promulgate relevant hydrographic content through integration into their respective GIS services. Such collaboration was agreed as the future favourite solution instead of further technical investment from the Secretariat for a native HCA GIS database solution.

33. The Chair informed the Commission on the confirmed opportunity to present the status of hydrographic activities in Antarctica at a seminar as part of the 42st session of the Antarctic Treaty Consultative Meeting (ATCM) taking place in Prague, Czech Republic in July 2019.

34. IALA conducted a Polar Navigation Workshop in IALA Headquarters in St. Germainen-en-Laye, France in November 2017. The workshop agenda had a focus on activities in the Arctic region such as:

- Deployment of real and virtual AtoN deployment in polar regions;
- Dedicated Web Portals: ArcticWeb, BarentsWatch;
- Polar regions proposed as future test field for e-navigation;
- VDES in polar regions – desirable but difficult to implement;
- Crowd source bathymetry as valuable data source for sparsely surveyed areas;

The latter topic was explained by the IHO Secretary General who represented the IHO topics of interest.

35. **Recommendations.** ARHC members are invited to;

- To opt for the intensified cooperation with external data portals such as Quantarctica, led by the Norwegian Polar Institute to promulgate relevant hydrographic content of the Arctic through integration into their respective GIS services as the future favorite solution instead of further technical investment of the IHO Secretariat for a native ARHC GIS database solution.
- To take note of IALA's aspirations to establish the Arctic region as test field for e-navigation.

IHO GIS and Databases

36. 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.

37. 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 2018	March 2017
Denmark	December 2016	November 2016
Norway	September 2017	February 2018
Russian Federation	August 2016	June 2004
United States of America	May 2018	December 2016

38. An Esri-based GIS solution is being implemented to develop further the regional information database. This will enable access to various layers of information through the IHO website and through cloud-based on-line GIS options. The IHO ENC Catalogue and the IHO GIS for Antarctica have been transferred to this new environment.

39. Work has continued on developing a GIS database application to support C-55 - Status of Hydrographic Surveying and Charting Worldwide and the work of the IHO. In response to the request to complement C-55 composite data (percentage of areas adequately surveyed / requiring re-survey / not surveyed) with CATZOC information (see IHO CL 52/2015), CATZOC data was provided by PRIMAR - on behalf of IC-ENC, PRIMAR and Canada, Singapore, Sweden and Thailand. Useful options for visualizing the data in the IHO C-55 GIS are being investigated.

40. **Recommendations.** ARHC members are invited to review their entry in the IHO Yearbook and C-55 and to provide the IHO Secretariat with the appropriate updates or to report no change.

Preparation of the next meeting of the IHO Council

41. The second meeting of the IHO Council is scheduled to take place in London, UK, from 9 to 11 October 2018. The preparation of this meeting is now completed, in liaison with the host country. It can be noted that in accordance with the Rules of Procedures of the Council, the deadline for submission of proposals by IHO Member States was 9 July 2018, while comments on proposals to be included in the Red Book for the Council were accepted until 31 July 2018. All proposals, comments and INF-paper are compiled in the Red Book and made available in the first half of August 2018.

IHO Outreach

42. 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 2018, as announced by IHO CL 03/2018, is:

“Bathymetry – the foundation for sustainable seas, oceans and waterways”

43. As part of the report on the proposed Work Programme 2018 at the 1st Council, the Secretary-General

introduced the priorities, which he had defined with the associated issues and risks, for Work Programme 1 (Corporate Affairs). One of the priorities was to plan and start a complete overhaul of the IHO website including incorporation of GIS-services.

44. The Secretariat conducted an internal workshop in December 2017, to assess the deficiencies of the IHO website in place, the up-to-dateness of the underlying technology and future requirements. The workshop resulted into a comprehensive list of topics to be addressed by an overhaul of the IHO website. In the course of the workshop it turned out that the reshape should not be limited to the establishment of a newsfeed mechanism, to the website structure and design only. Instead, a holistic approach covering IHO's corporate design of all media channels in digital and print was concluded as the appropriate scope of action. Further and more detailed information will be presented at the second IHO Council in London in October.

45. It was concluded further that the current IHO communication strategy is completely lacking the provision of social media. The Secretariat therefore gladly accepted the temporary secondment of the social media expert through NOAA (USA) to assist the future set up and maintenance of such a component.

International Hydrographic Review

46. Twice a year, the IHR provides an opportunity for Member States to publicize technical and other achievements in their region. An editorial board comprising a representative from each region has been established. The representative for the ARHC is Douglas Brunt (Canada).

47. Papers for consideration for publication in the IHR should be forwarded directly to the editor (ihreview@iho.int, copy to ian.halls1@defence.gov.au). The deadlines are:

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

48. The IHO Secretariat has been working 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, the first phase of the project now provides access to volumes from 1963 to 2015. They can be found at: <https://journals.lib.unb.ca/index.php/ihr>.

49. Based on the considerations raised in the course of the communication overhaul discussions, the Secretariat proposes a digital revamp of the International Hydrographic Review (IHR). First consultations were held with the Editor in Chief of the IHR, Mr Ian Halls. The following principal changes are proposed jointly:

- Design and building new separate website www.ihr.iho.int using the new corporate design.
- Design the International Hydrographic Review as online publication and printable version (PoD).
- Facilitate technical options to create customized topical compilations from the digital repository of IHR articles for pdf-download and print.

50. Further and more detailed information will be presented at the second IHO Council held in London in October for endorsement.

Action Requested of ARHC:

- a) **Note** this report
- b) **Consider** the recommendations on Council/Assembly interactions as presented in **Paragraph 7**
- c) **Consider** the recommendations on Charting as presented in **Paragraph 16**
- d) **Consider** the recommendations on MSI as presented in **Paragraph 18**
- e) **Consider** the recommendations on Capacity Building in **Paragraph 21**
- f) **Consider** the recommendations on Crowd Sourced Bathymetry in **Paragraph 24**

- g) **Consider** the recommendations on Seabed 2030 collaboration in **Paragraph 27**
- h) **Consider** the recommendations on best practice application from HCA in **Paragraph 35**
- i) **Review** entries related to IHO C-55 and P-5 (Yearbook) at least annually (**Paragraph 40**)
- j) **Consider** submitting papers for publication in the International Hydrographic Review (**Paragraph 47**)
- k) **Take any other actions** as considered appropriate

