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# **IHO COUNCIL REPORTS**



Annex 1 Summary Report Council-4 (C-4)

**4<sup>th</sup> MEETING OF THE IHO COUNCIL**

**IHO C-4**

**Monaco, 19 November 2020**

**SUMMARY REPORT**

*(Version 1.0, 26 November 2020)*

[Annex A:](#) *List of Participants*

[Annex B:](#) *Agenda*

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**1. OPENING**

**1.1 Secretary-General opening remarks and introductions**

*Docs: C4-01A List of Documents*  
*C4-01B List of Participants*  
*C4-01.3A Membership Contact List*

**The Secretary-General** welcomed members of the Council. The conduct of proceedings at the 2<sup>nd</sup> Session of the Assembly (A-2) provided a good foundation for the deliberations of the Council. Arrangements for the video teleconference would be identical to those of A-2, including the “silence procedure” whereby silence implied consent. The session had reached a quorum with 29 Council Member States registered and active, a further 12 Member States accredited as observers and 93 individuals participating online.

**1.2 Adoption of the Agenda**

*Docs: C4-01.2A Rev1 Agenda*  
*C4-01.2B Timetable*

The Council Secretariat drew attention to the agenda and timetable as being the version proposed on the Council webpage.

**Decision C4/01: The Council adopted the agenda and the timetable.**

**1.3 Formal Establishment of the new Council, confirmation of the election of the Chair and Vice-Chair (Decision A2/13)**

*Docs: C4-01.3A Membership Contact List*  
*CCL 04/2020 Election of Chair and Vice-Chair of the IHO Council*

**The Council Secretariat** drew attention to the Council’s Membership Contact List, requesting members to check the details listed and advise the IHO Secretariat of any amendments. The Council Secretariat highlighted the decision of the A-2 (A2/13) to endorse the selection process of the Council membership and to confirm the election of Dr Geneviève Bécharde (Canada) as Chair and Mr Thai Low Ying-Huang (Singapore) as Vice-Chair of the Council.

**Decision C4/02: The Assembly** endorsement of the Council membership was formally noted and the election of the Chair and Vice-Chair of the IHO Council as proposed in CCL 04/2020 was confirmed.

**Action C4/03: IHO Member States having a seat at Council** to provide the IHO Secretariat with their updates to the IHO Council List of Contacts.

#### 1.4 Chair's Opening remarks

*Docs: C4-01.5A*

**Dr Béchard, incoming Council Chair**, welcomed those who had newly joined the Council. She expressed sincere gratitude to the outgoing Chair, Rear Admiral Shepard Smith (USA) and Vice-Chair, Admiral Luis Fernando Palmer Fonseca (Brazil) whose leadership and guidance had established firm foundations on which the present Council would seek to build. It was not clear for how much longer the pandemic would continue to influence ways of working; the Chair congratulated the Secretariat for having supported more flexible ways of working and virtual meetings. The transformation of IHO to a more digital, dynamic and data-driven organization would impact the nature of almost all of IHO's activities, from capacity building and communication to contributing to the sustainable and wise use of the world's maritime resources.

**Decision C4/04: Council Members** welcomed the opening address by Dr Geneviève Béchard, new Council Chair.

#### 1.5 Administrative arrangements

*Docs: C4-01.5A Useful References – Marked-up Basic Docs*

*(IHO Convention, General Regulations, Assembly ROP, Council ROP)*

**The Secretary-General** asked participants for their patience in what he hoped would be the smooth running of the remote meeting. He would be assisted by Assistant Director Yves Guillam in presenting certain items.

## 2. ITEMS REQUESTED BY THE 2<sup>nd</sup> IHO ASSEMBLY

*Docs: C4-02.1A List of A2 Decisions*

### 2.1 Reflection of directions given by the A-2

**The Chair** congratulated the Chair of the A-2, Captain Marc van der Donck, and the Secretariat on the very successful running of the A-2 which would make the work of the Council easier at the present meeting and in the coming years. Member States had approved the Strategic Plan at the A-2, setting the direction for the coming six years. Drivers for change included technological advances and the need to prepare for increased automation. IHO had a long tradition of working with commercial navigation and mariners and it should continue to lead on international standards on safe navigation.

With an increased interest globally in the blue economy and the launch of the UN Decade of Ocean Science for Sustainable Development, IHO had opportunities to raise awareness on the importance of its work and make meaningful contributions to society in new areas. The Organization was just beginning to understand how its data and its expertise could support a broad range of non-navigational uses and the Strategic Plan would help in that endeavour.

The Council had been tasked with making the Strategic Plan real, a task that must be accomplished quickly to ensure that the IHO reaches its goals. Although the pandemic created constraints, it has also fostered innovation by creating new expectations and challenging all



to do things differently, such as virtual meetings arrangements.

The A-2 had also tasked the Council with implementation of the S-100 Roadmap, which included S-100 standards and offered increasing safety of navigation by ensuring that the most up-to-date information was available with the vision of its delivery to mariners seamlessly integrated with other data such as navigational aid information and weather. The A-2 had tasked the Council to work through the technical, operation and regulatory challenges associated with the transition from paper-based products and S-57 ENCs to the S-100 suite of standards and services. Many Member States had committed resources to support IHO technical working groups and committees to address those challenges. The **Chair** looked forward to seeing projects produced by the new joint IHO-Singapore Innovation and Technology Laboratory.

In less than three years, the Council would need to provide recommendations to the 3<sup>rd</sup> Session of the Assembly on the nature and pace of transition to S-100 and on other issues, including on the “Dual Fuel” concept, recognizing that readiness for change varied across IHO Member States. The importance of capacity building had been stressed, in particular in preparing for the new standards, at a time when the pandemic had impacted activities.

The **Chair** looked forward to discussion on what the hydrographer of the future would look like and the competencies that would be needed. There would need to be creativity on how capacity building was supported. The new e-Learning project would provide an additional tool to reach more people. The new Empowering Women in Hydrography project would help bring more women into the tent of decision making.

The efforts to coordinate the work of IHO with other international bodies had been emphasized through the full suite of S-100 product specifications and it had been good to see IMO and IALA represented at A-2. That work must continue as IHO moves to a global digital service based on S-100 standards. Hydrographic Offices are encouraged to liaise with their IMO and IALA representative delegations to encourage adoption of S-100 services.

Finally, the A-2 had approved the IHO Work Programme and Budget and it was for the Council to provide the oversight required to deliver and maintain the positive financial outlook inherited from the previous Council. As the Organization celebrates its 100 years in 2021, it is a good time to look forward to the next century, and to set a trajectory for the future, with advances in artificial intelligence and its applications within automation systems, delivery of machine-to-machine data, and a future where hydrography fully supports the blue economy as well as the core functions of the hydrographic offices.

**Decision C4/05: The Council Chair on behalf of IHO Member States commended Captain Marc van der Donck for his excellent chairmanship of A-2**

## **2.2. Way forward for the effective implementation of all A-2 Decisions including Pro c)<sup>1</sup> of the Council Chair Report to A2 (Decision A2/12)**

The **Council Secretariat** drew attention to the draft list of decisions which had been approved at the A-2. Decision A2/02 was noted in particular. This decision approves the interpretation that the Council has the authority to request and consider proposals submitted by Member States or the Secretary-General and confirmed that the Council is entitled to propose amendments to the General Regulations of the IHO for Member States’ approval.

Decision A2/06 concerning Revision of Rule 12 of the Rules of Procedure of the IHO Council and consequence on Rules 8 and 11 - Timing of Election of the Chair and Vice-Chair, had been updated in Publication M-1.

Decision A2/08: “Establishment of the joint IHO-Singapore Innovation and Technology Laboratory” had been taken by correspondence and approved. There were two actions to

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<sup>1</sup> Pro c): “to adopt as the main theme until Assembly 3 (A-3) the effective implementation of the Revised Strategic Plan keeping in mind to apply the principles of ISO 9001 for.”

discuss within the decision, on regular reporting to the Council and on the need for the Council to advise the Governing Board.

**Singapore** thanked **USA** for co-sponsoring the proposal on the joint IHO-Singapore Innovation and Technology Laboratory and the **Member States** that had endorsed the project. Under the proposal, outcomes would be reported to the Council annually and Singapore wished to propose that the matter should become a standing item on the agenda of the Council. He asked whether there were any comments on the joint IHO-Singapore Laboratory.

**USA** said that this agenda item was one of several for which it would have been preferable to have more time for preparation and discussion. The Council might wish to consider other ways in which members could work together over the forthcoming year in order to keep the momentum going on such important projects that showed so much early promise.

The **Chair** noted the request from **Singapore** for the topic to be placed on the Council's agenda as a standing item and the **USA's** comment as a reminder for all to be engaged.

The **Council Secretariat** recalled that it had been proposed at the A-2 that the "Dual Fuel" concept should be one of the first to be investigated by the IHO-Singapore Laboratory.

**Singapore** said that one potential project for the Laboratory was looking at the S-57 and S-101 conversion and that the "Dual Fuel" concept was part of the potential project.

The **Council Secretariat** drew attention to a number of matters including Decision A2/12 which concerned keeping in mind application of the principles of ISO 9001 as the main theme of supervision and control of the Council. The decision would be discussed under agenda item 6.1. Decision A2/14: Council to consider the best way forward with proposals A-2 PRO-1.4 and A-2 PRO-1.5 on what constitutes the definition of hydrographic interest would be considered under agenda item 2.3.

The **Council Secretariat** continued to Decision A2/18 under which the Assembly had endorsed the Chair's report. Under Decisions A2/24 and A2/25, A-2 had approved proposal A-2 PRO-1.9 on the future of S-23, made as a package, and had tasked the Secretary-General with the implementation of the proposal. It was suggested that **Secretary-General** should report on the progress made on this matter at the next session of the Council.

**Decision and Action C4/06: The Council** agreed to include a standing agenda item in future Council meetings on the joint IHO-Singapore Innovation and Technology Laboratory (deadline C-5).

The **Governing Board** of the Laboratory to report on an annual basis.

**Council** to advise the Lab on themes and projects to be considered.

Possible topics for consideration of the Governing Board:

- "Dual Fuel" Concept
- Conversion of S-57 to S-101 and vice-versa.

**Decision and Action C4/07: Secretary-General** to report on implementation of proposal A-2 PRO-1.9<sup>2</sup> (deadline: C-5).

### **2.3. Discussion on the best way forward on the definition of hydrographic interest (Decisions A2/04 and A2/14)**

The **Chair** noted that A-2 had requested the Council to consider the best way forward on the definition of hydrographic interest and report to A-3. Assembly authorized Council to appoint a working group to consider the issue further if necessary (Decision A2/14).

Most participants agreed that tonnage alone is not an ideal measure of hydrographic interest used to determine one third of the Council membership. Some participants considered that,

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<sup>2</sup> Future of S-23.

although using tonnage alone is not ideal, it has the advantage of being easily measured, and may be no worse than any other practicable method. Participants expressed mixed views on whether the definition for hydrographic interest should be revisited given the need to prioritize Council resources.

Some considered the single criterion tonnage method to be unduly restrictive, since it partially reflected the State's contribution to Strategic Plan Goal 1, but not necessarily to Goals 2 or 3. A change in the criteria might mean that some States lose their seat on the Council. However, Norway, with verbal agreement from Japan, noted that non-Council members could still participate freely in its deliberations as observers, likely with the same influence as members as historically few Council decisions go to a vote. Some proposed that a working group could be convened at relatively little cost, perhaps in virtual or hybrid form, to consider the issue further, and the Council should appoint its officers and agree its terms of reference. Malta asked to join the working group if it were convened.

As a compromise, the **Council** invited interested members to submit a joint proposal to review existing documents, resolve discrepancies, and submit a consolidated single proposal on the definition of hydrographic interest to C-5 or C-6.

**Decision and Action C4/08: The Council** noted the task given by the A-2 to consider the best way forward with proposals A-2 PRO-1.4 and A-2 PRO-1.5 on the definition of hydrographic interest and report to A-3 in 2023 and by which the Council was empowered to establish a working group for this specific purpose (deadline A-3).

**Decision and Action C4/09: The Council** invited **interested parties (Argentina, Brazil, India, Uruguay ...)** in the development of a definition of hydrographic interest, to consider IHC17 outcome, PRO1.4 and 1.5, and come back with a single consolidated proposal to C-5 or C-6 for possible consideration at A-3. (deadline C-5, C-6).

## 2.4. Cumulative List of A-2 Decisions

See Doc. C-4-02.4 for reference.

## 3. ITEMS REQUESTED BY THE IHO COUNCIL

### 3.1. Review of the status of Decisions and Actions from C-3 (skipped all remaining actions/decisions from C-3 if not already overtaken by A2, to be addressed under agenda item 2 and 4 as appropriate.

*Doc: C4-03.1A      Review of the Status of Decisions and Actions from C-3*

The **Council Secretariat** indicated most items and decisions arising from C-3 had been completed.

## 4. ITEMS REQUESTED BY SUBSIDIARY ORGANS

### 4.1 Operational items of subordinate working groups and project teams resulting from HSSC Report to A-2 remote session.

*Doc: C4-04.1A      Operational items of subordinate working groups and project teams resulting from HSSC Report to A-2*

The **HSSC Chair** reported on the relevant HSSC recommendations, including amendment of the Roadmap for the S-100 Implementation Decade to include products currently covered by S-98 and the inclusion of an annual update of the S-100 implementation timeline as an annex to the Roadmap. Over the next year, HSSC would work further on development of S-100

product specifications (first editions of S-104 (water level) and S-98 (interoperability)) and recommendations for the future of the paper nautical chart; it also planned to set up a hydrographic survey working group.

**Decision and Action C4/10: Council** to monitor the implementation by **HSSC** of the recommendations on the Future of the Paper Nautical Chart as appropriate. **HSSC** to report to Council annually on recommendations on the Future of the Paper Nautical Chart (deadline C-5).

**Decision and Action C4/11: Council** to monitor the progress of the task given to **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 (deadline C-5).

**Decision and Action C4/12: Council** to monitor the progress of the task given to **HSSC** and **IRCC** to review the IHO Resolutions with regard to proposal A-2 PRO-2.3<sup>3</sup> when the operational implementation of the S-100 concept becomes mature enough.

**HSSC** and **IRCC** to make proposals for endorsement to **Council** meetings when appropriate (deadline C-5, C-6 as appropriate).

**Decision and Action C4/13:** 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 (deadline July 2021).

#### 4.2 Operational items of subordinate sub-committees, working groups and project teams resulting from IRCC Report to A-2 remote session.

*Doc: C4-04.2A Operational items of subordinate working groups and project teams resulting from IRCC Report to A-2*

The **IRCC Chair** reported on the main priorities of IRCC over the coming year: further cooperation between RHCs and between RHCs and IHO; cooperation between the subordinate bodies of IRCC; the alignment of national reports with the new work programme; outreach; and a number of cross-sectional topics – e-learning development, data collection and dissemination, and technical developments.

The **Republic of Korea** said that ROK will do its best to complete the construction of the e-Learning Center infrastructure and a website by 2021, and test run them from 2022. Member States with expertise in e-learning were invited to share content and ROK will support to provide them on the e-Learning platform.

**Decision and Action C4/14: Council** to monitor the progress made by IRCC to establish an IHO e-Learning Center based on proposal A-2 PRO-3.3<sup>4</sup> and the related recommendations of IRCC/CBSC (deadline C-5).

**Decision C4/15: The Council** thanked the ROK for their generous offer made to Member States to establish the IHO e-Learning platform.

The **IRCC Chair** presented a report of the Committee's activities with particular emphasis on the continued need for Capacity Building; the ongoing work for the WENDWG to also encompass the future S-100 products; Maritime Safety Information (MSI); Crowdsourced bathymetry; Project Seabed 2030; and Marine Spatial Data Infrastructure (MSDI). It was encouraging to note the improvements in many nations, introduced slowly but surely in recent years, as a result of capacity building. Considerations on the status of the Seabed 2030 Project

<sup>3</sup> Revision of IHO Resolutions following the Introduction of S-100.

<sup>4</sup> Establishment of an IHO e-Learning Center.

in terms of the coverage of the current GEBCO grid meeting Seabed 2030 requirements (6%) were given in order to raise the awareness of the challenge to reach 100 % in 2030. The **IRCC Chair** thanked **Denmark** for pursuing progress in the area of marine spatial data infrastructure (MSDI) and especially the e-learning material on MSDI funded by **Denmark**. **IRCC** acknowledged the work of the IHO Project Team on implementation of UN-GGIM Shared Guiding Principles.

**Decision C4/16: Council** to monitor the progress made by **IRCC** on the **CBSC** work item of **Empowering Women in Hydrography (EWH)**. (deadline C-5)

The **IRCC Chair** agreed that the following Decision and Action (former C3/25), needed to be considered.

**Decision and Action C4/17: The Council** invited the **IRCC** to instruct the **CBSC** to develop a system of performance indicators to measure, under the conduct of the **CBSC** and in accordance with the Revised Strategic Plan, the effectiveness and efficiency of **CB** activities. This system should be oriented by the expected effects and outcomes of **CB** support, not on the achievement of the **CB** activities. (deadline C-5)

### 4.3 Discussion on the S-100 Implementation Strategy

The **Council Vice-Chair** led the discussion. He noted the importance of the S-100 Implementation Strategy, not only for the realization of Goal 1 of the Revised Strategic Plan, but also Goals 2 and 3. He suggested that guidance on terminology and concepts related to S-100 should be provided to guide the national Hydrographic Offices, which would be responsible for implementing S-100.

Participants were concerned by the likely delay in the revision of IMO ECDIS Performance Standards. **IHO Director Abri Kampfer** said that, in view of the urgency of the issue, it was hoped that the IMO Sub-Committee on Navigation, Communication, Search and Rescue (NCSR) would discuss the updating of ECDIS Performance Standards during the 2020–2021 biennium, as originally planned. Participants concluded that IHO should concentrate on the processes it could control, such as the finalization of products and operating standards, and raise awareness of the urgent need to introduce the S-100 technology as soon as possible. Moreover, **IHO Director Abri Kampfer, Canada, Japan, United States of America, and HSSC Chair** voiced the need to move forward with S-100 to encourage and be ready for IMO regulations. **United States of America** noted that ECDIS is not the only potential application for S-100; application in other markets, such as users of Portable Pilot Units, could help demonstrate value of S-100 products. **Member States** would also require relevant capacity building.

**India** expressed the opinion that the IHO Work Programmes do not address S-100 Implementation explicitly and emphasized the urgency of moving to S-100.

The **WENDWG Chair** commended the sterling efforts of **Captain Marc van der Donck**, Chair of the drafting team for the WEND100 Principles. The WEND Working Group had agreed on the format of the Principles and would meet again in early 2021. It would then submit its final conclusions to **IRCC** and the Council and draft a resolution to be submitted to Member States for adoption by circular letter in approximately one year's time.

**Decision and Action C4/18: Council Chair, HSSC and IRCC Chairs and Secretary-General**, supported by subject matter experts and Member States as appropriate, to maintain the S-100 Implementation Roadmap as an incremental version-controlled document (including narrative and timelines) on an annual basis (permanent).

**Decision and Action C4/19:** Following the endorsement of the S-100 Implementation Roadmap, **Secretariat and Council** to set up the repository of the version-controlled roadmap on the IHO website, including some clarification on terminology (Council webpage to be confirmed) (deadline January 2021).

**Decision and Action C4/20: Council Chair, HSSC and IRCC Chairs and Secretary-General** to consider the addition of three annexes, related to the IHO Work Programmes 1, 2 and 3, to S-100 Implementation Roadmap (deadline C-5).

**Decision C4/21: The Council** agreed on the need to amend the S-100 Implementation Roadmap based on the list of products planned to be covered by S-98 (Action HSSC12/11 refers) (deadline C-5).

**Decision C4/22: The Council** agreed on the need to include the S-100 Implementation Timeline in the updates to be made in the appropriate Annex of the S-100 Implementation Roadmap (deadline C-5).

**Decision and Action C4/23: Council** to maintain and update the S-100 Implementation Roadmap and resulting activities, in liaison with Member States and external bodies, on an annual basis as a key priority of Council activities (deadline C-5).

**Council Chair and Secretary-General** to identify some key actions in support and report on progress to C-5 (deadline C-5).

**Decision and Action C4/24: Council** to monitor the subsequent development of the WEND100 Principles, as a consequence of the expanding range of hydrographic data products addressed in the S-100 Implementation Strategy (deadline C-5).

**IRCC** to submit a new IHO Resolution on WEND100 Principles to the Council for endorsement. Then, submission to Member States for approval and inclusion as a reference in Annex 3 of the S-100 Implementation Roadmap (deadline C-5).

**Decision C4/26:** The **Council** reminded Member States to consider the possibility of coordinating their inputs in support of the S-100 Implementation Strategy with their national representatives in IMO bodies (NCSR, MSC in particular) (permanent).

**Decision and Action C4/27:** The Assembly having noted the update on interrelations and tasks, **Secretary-General** to continue to liaise with [IMO and] other relevant stakeholders and organizations involved in the development of other S-100 based products (permanent).

**Decision and Action C4/28:** The **Council** noted the importance of Capacity Building in this matter so all IHO Member States can consider meeting the IHO deadlines for the production of S-1xx products and S-101 in particular.

The **Council** invited IRCC/CBSC to consider this requirement, raised by some Member States at A-2 and C-4 (deadline C-5).

## 5. IHO ANNUAL WORK PROGRAMME AND BUDGET

### 5.1 Review of the Current Financial Status of the IHO

*Docs: C4-05.1A      Monthly Financial Reporting Statement (Oct 2020)*

The **Secretary-General** reviewed the current financial status of the Organization. At present, the rate of payment of contributions by Member States was above average, standing at 86%. A total of 17 Member States had already paid their contributions in advance for 2021. Five States had still not paid their contributions for 2019. The Organization had a budget surplus currently estimated at €351.000, resulting from greatly reduced expenditure on operating costs, principally due to travel (€241.000), personnel costs (€101.000) and capital expenditure (€9.000).

**Decision C4/29: The Council** noted the information provided on the current financial status of IHO.

## 5.2 Proposed IHO Work Programme for 2021

Doc: C4-05.2A *Proposed IHO Work Programme for 2021*

The **Secretary-General** introduced the proposed work programme for 2021, derived from the three-year work programme adopted by A-2 and adapted to reflect the Revised Strategic Plan by the addition of a new column, Goals&Targets, mapping the proposed activities to the goals and targets of the latter.

The theme for World Hydrography Day 2021, chosen to commemorate the 100<sup>th</sup> anniversary of IHO and to match the title of the prestige book published to mark the occasion, would be “100 Years of International Cooperation in Hydrography”.

**Decision C4/30:** Noting that the Assembly endorsed the alignment of the IHO Work Programme 2021 with the Strategic Plan (introduction column G&T, etc.), the **Council** approved the Work Programme 2021 as given in Doc. C4-05.2A keeping the current structure of the Work Programme to facilitate the operational work and implementation by the Secretariat.

**Decision and Action C4/31: IHO Secretariat** to issue an IHO CL making the IHO Work Programme 2021 as approved by the Council available to the IHO Member States (permanent).

**Decision and Action C4/32: The Council** noted the proposed theme for the 2021 World Hydrography Day by the Secretary-General “100 Years of International Cooperation in Hydrography”.

**IHO Secretariat** to circulate the theme for 2021 to the IHO MS by IHO CL.

## 5.3 Proposed IHO Budget for 2021

Doc: C4-05.3A *Proposed IHO Budget for 2021*

The **Secretary-General** introduced the proposed budget estimates for 2021, based on the first year of the three-year Work Programme 2021–2023, adopted by A-2. Owing to increases in national tonnage figures, an additional 32 contribution shares had been added, which increased the planned income by approximately €129.000. He proposed to use the additional income to maintain the planned expenditure, to increase provision for bad debts (likely because of the expected economic impact of the COVID-19 pandemic) by €50.000 and to invest an additional €80.000 in the Internal Retirement Fund to mitigate the effects of the recent historically low interest rates.

The **Council Secretariat** briefly recalled Assembly Decision A2/50, which authorized the Council to increase Member States’ contributions by 1% in 2022 and 2023, if considered necessary, as part of its approval of the annual budget.

**Decision C4/33: The Council** approved the Budget 2021 as given in Docs C4-05.3A.

**Decision and Action C4/34:** Noting that A-2 approved the mandate of the Council to increase Member States’ contributions by 1% in 2022 (and/or 2023) subject to the IHO’s financial situation, **Council** to consider the subsequent proposed Budget 2022 at C-5. (deadline C-5).

**Decision and Action C4/35: Secretary-General** to secure funding through negotiation of suitable cooperation agreements with interested Member States and/or partnering organizations (deadline C-5).

## 6. IHO STRATEGIC PLAN REVIEW

### 6.1 Implementation and discussion of adoptions of the IHO Work Programme and other affected IHO instruments resulting from the A2 decisions on the revised Strategic Plan

*Docs: C4-6.1A Proposed Table of Targets, SPIs and Lead, version 0.2, 18 Nov 2020*

The **Chair** said that the adoption of the Strategic Plan by the A-2 marked a major achievement. Work had been completed by the SPRWG under the able chairmanship of Ingénieur général Bruno Frachon (France), Vice-Chair Mr Shigeru Nakabayashi (Japan) and Secretary Mr Douglas Brunt (Canada). Council was now tasked with implementing the plan. According to the implementation framework, the IHO Secretariat, HSSC and IRCC, through their work programmes, would deliver on their targets.

The **Chair** invited the Council to consider Decision A2/12 (concerning implementation of the Revised Strategic Plan) and A2/20 (Council to monitor closely the appropriateness and applicability of the proposed SPI and amend them if necessary) and tables showing the targets, Strategic Performance Indicators (SPI) and the proposed leads for each one (HSSC, IRCC or IHO Secretariat).

The proposed leads would identify the subordinate bodies or working groups to which the SPI would be assigned. The regional hydrographic commissions should be engaged in the application of the Strategic Performance Indicators and the collection of data. It was proposed that the work would take place before C-5. The SPI were assigned over the three strategic goals.

**United States of America** called for a broader evaluation of the work to ensure that there was alignment to achieve the goals in the Strategic Plan, including examining the terms of reference of the working groups and undertaking some mapping to determine how the structures and activities of the working groups were tied to the Strategic Plan (and subsequently identifying gaps or locations where there could be more efficiency).

**India**, building on the suggestion by the **United States of America**, suggested that targets should be identified for the delivery of Decision A2/20.

The **Chair** acknowledged that there had been some discussion on how to align and achieve coherence between the work programmes, the Strategic Plan and the S-100 Implementation Road Map.

The **Chairs of the IRCC and HSSC, the Council Secretariat, supported by Norway and IHO Director Luigi Sinapi** said that there was an established mechanism through which the two Committees and their working groups reflected on strategic decisions. Both Committees had been involved in developing the Strategic Plan and had already programmed work with their working groups on implementation of the Strategic Plan.

The **Chair** asked whether it would be useful to draft a Council decision that tasked the Chairs of Council and the two Committees and the Secretary-General to integrate the work that was being done and to ensure that there were no gaps or duplication and to ensure that the work plan and the Strategic Plan came together. The **United States of America** requested that vice-chairs of the committees also be included in those consultation.

**United States of America, supported by Norway**, asked that consideration be given to the role of the Regional Hydrographic Commissions in implementing the Strategic Plan since most of the work to effect change was done by the Hydrographic Offices.

Some delegations supported the view that an extraordinary session of the Council should be held in spring 2021 to explore creative ideas on the application of Goals 2 and 3 (United States of America, United Kingdom of Great Britain and Northern Ireland). Other speakers (Netherlands, Secretary-General, HSSC and IRCC Chairs and Secretariat) favoured holding an interactive or informal workshop in June 2021 to which experts could be invited. Norway



and the Secretary-General pointed out that the possibility to hold any face-to-face meeting would depend on the situation with respect to the pandemic. These proposals were re-considered under agenda item 8 (Next meetings).

The **Chair** confirmed that the Council could agree to Decision A2/21 to disband the SPRWG.

**Decision and Action C4/36:** Following the adoption of the Revised Strategic Plan by A-2, the **Council** noted that the effective implementation of the Strategic Plan 2021-2026 is to be considered as the main theme of supervision and control of the **Council** until A-3, keeping in mind to apply the principles of ISO 9001 (deadline A-3).

**Decision C4/37:** Following the **adoption** of the Revised Strategic Plan by A-2, **Council** to monitor closely the appropriateness and applicability of the proposed SPI and amend them if necessary (deadline C-5).

**Decision C4/38:** The **Council** disbanded the SPRWG.

**Decision C4/39:** The **Council** agreed on the proposed allocation of the new SPIs to the Secretary-General, HSSC and IRCC (Programmes 1, 2 and 3 respectively) (Doc. C4-06.1A refers).

**Secretary-General, HSSC and IRCC** (Chairs/Vice-Chairs), **RHCs** (Chairs/Vice-Chairs) to experiment the implementation of the Strategic Plan and consider during this process, following gap analysis if appropriate, whether our organization and work programmes are fit for purpose, in particular for meeting Goals 2 and 3 (deadline C-5).

**Decision and Action C4/40:** The **Council** agreed to experiment the application of the ISO 9001 principles on a couple of Strategic Plan targets (one per Committee to be proposed) (deadline C-5, C-6).

## 7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL

No other items were proposed

## 8. NEXT MEETING

### 8.1 Dates and venue for the 5<sup>th</sup> meeting of the IHO Council (19-21 October 2021, Monaco) Decision A2/11).

**Decision C4/41:** The **Council** agreed to hold C-5 in Monaco, at the IHO Secretariat, from 19 to 21 October 2021 (go no-go decision 19 June 2021).

In the case of a remote event, the Council agreed to consider arrangements for 3 sessions, over 3 days, each of 3 hours.

**Decision C4/42:** The **Council Chair/Secretary-General** to consider possible informal physical or virtual brainstorming session(s) in spring 2021 aiming to consider the best options to address Goals 2 and 3 in particular, under the conditions of worldwide improvement of sanitary conditions (deadline Spring 2021, back to back with WHD June 2021).

## 9. ANY OTHER BUSINESS

There was no other business.

## 10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING

The **Council Secretariat** read out the identified actions, providing brief comments and explanations for each action and decision.

## 11. CLOSURE OF THE MEETING

The **Chair** thanked her predecessor, Rear Admiral Shepard Smith, and the Secretary-General for their guidance and support and the IHO staff for their hard work in arranging the virtual Assembly and Council meeting. She also thanked the précis-writers, the rapporteurs (Ms Clare Lain, UKHO, United Kingdom and Dr. Michael Brady, NGA, USA) and their supporting organizations for their contribution. She then declared the 4<sup>th</sup> meeting of the IHO Council closed.

## LIST OF PARTICIPANTS

**Name:** Head of delegation

<b>IHO Member States having a seat at the Council</b>				
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**4<sup>TH</sup> MEETING OF THE IHO COUNCIL**  
**IHO Secretariat, Monaco, 19 November 2020**

**REVISED PROVISIONAL AGENDA**

**1. OPENING**

- 1.1. Secretary-General Opening remarks and introductions
- 1.2. Adoption of the agenda
- 1.3. Formal establishment of the new Council, confirmation of the election of the Chair and Vice-Chair (Decision A2/13)
- 1.4. Chair's Opening Remarks
- 1.5. Administrative arrangements

**2. ITEMS REQUESTED BY THE 2<sup>ND</sup> IHO ASSEMBLY**

- 2.1. Reflection of directions given by the Assembly.
- 2.2. Way forward for the effective implementation of all Assembly Decisions including Pro c) of the Council Chair Report to A-2 (Decision A2/12).
- 2.3. Discussion on the best way forward on the definition of hydrographic interest (Decisions A2/04 and A2/14).
- 2.4. Cumulative List of Assembly Decisions as of 24 September affecting the Council (ACL 30/2020 refers): Decisions A2/02, A2/04, A2/06, A2/08, A2/11, A2/12, A2/14.

**3. ITEMS REQUESTED BY THE IHO COUNCIL**

- 3.1. Review of the status of Decisions and Actions from C-3 (skipped, all remaining actions/decisions from C-3 if not already overtaken by A-2, to be addressed under agenda item 2 and 4 as appropriate).

**4. ITEMS REQUESTED BY SUBSIDIARY ORGANS**

- 4.1. Operational items of subordinate working groups and project teams resulting from HSSC Report to A-2 remote session.
- 4.2. Operational items of subordinate sub-committees, working groups and project teams resulting from IRCC Report to A-2 remote session.
- 4.3. Discussion on the S-100 Implementation Strategy

**5. IHO ANNUAL WORK PROGRAMME AND BUDGET**

- 5.1. Review of the Current Financial Status of the IHO
- 5.2. Proposed IHO Work Programme for 2021
- 5.3. Proposed IHO Budget for 2021

**6. IHO STRATEGIC PLAN REVIEW**

- 6.1. Implementation and discussion of adaptations of the IHO Work programme and other affected IHO instruments resulting from the A-2 decisions on the revised Strategic Plan.

**7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL**

None

**8. NEXT MEETING**

8.1. Dates and venue for the 5<sup>th</sup> meeting of the IHO Council (19-21 October 2021, Monaco) (Decision A2/11).

**9. ANY OTHER BUSINESS**

**10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING**

**11. CLOSURE OF THE MEETING**

FINAL LIST OF **DECISIONS** and **ACTIONS** FROM C-4

(as of 26 November 2020)

AGENDA ITEM	SUBJECT	DECISION or ACTION No.	DECISION or ACTIONS (in bold, action by)	TARGET DATE/EVENT	STATUS (at November 2020)
<b>1. OPENING</b>					
<b>1.1 Secretary-General Opening remarks and introductions</b>					
<b>1.2 Adoption of the agenda</b>					
	Agenda	C4/01	The <b>Council</b> adopted the agenda and the timetable		Decision
<b>1.3 Formal establishment of the new Council, confirmation of the election of the Chair and Vice-Chair (Decision A2/13)</b>					
	Council 2020-2023	C4/02	The <b>Assembly</b> endorsement of the Council membership was formally noted and the election of the Chair and Vice-Chair of the IHO Council as proposed in CCL 04/2020 was confirmed.		Decision (Decision A2/13 and CCL 04/2020 refer)
	Contact List	C4/03	<b>IHO Member States having a seat at the Council</b> to provide the IHO Secretariat with their updates to the IHO Council List of Contacts.	<b>Permanent</b>	
<b>1.4 Chair's Opening remarks</b>					
	Opening	C4/04	<b>Council Members</b> welcomed the opening address by Dr. Geneviève Béchar, new Council Chair.		
<b>1.5 Administrative arrangements</b>					

2. ITEMS REQUESTED BY THE 2 <sup>nd</sup> IHO ASSEMBLY					
2.1 Reflection of directions given by the Assembly.					
		C4/05	The <b>Council Chair</b> on behalf of IHO Member States commended Captain Marc van der Donck for his excellent chairmanship of A-2.		
2.2 Way forward for the effective implementation of all Assembly Decisions including Pro c) of the Council Chair Report to A-2 (Decision A2/12).					
	IHO-Singapore Innovation and Technology Lab	C4/06	<p><b>The Council</b> agreed to include a standing agenda item in future Council meetings on the joint IHO-Singapore Innovation and Technology Laboratory.</p> <p><b>Governing Board of the Lab</b> to report on an annual basis</p> <p><b>Council</b> to advise the Lab on themes and projects to be considered. Possible topics for consideration of the Governing Board:</p> <ul style="list-style-type: none"> <li>- “Dual Fuel” Concept.</li> <li>- Conversion S-57 to S-101 and vice-versa.</li> </ul>	C-5	Decision (Decision A2/08 refers)
	S-23, A2 PRO1.9 follow-up	C4/07	<b>Secretary-General</b> to report on implementation of PRO 1.9 <sup>5</sup> .	C-5	(Decision A2/24&25 refers)
2.3 Discussion on the best way forward on the definition of hydrographic interest (Decisions A2/04 and A2/14).					
	Definition of Hydrographic Interest	C4/08	<b>Council</b> noted the task given by the A-2 to consider the best way forward with proposals A-2 PRO-1.4 and A-2 PRO-1.5 on the definition of hydrographic interest and report to A-3 in 2023 and by which the Council was empowered to establish a working group for this specific purpose.	A-3	

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<sup>5</sup> Future of S-23.

	Definition of Hydrographic Interest	C4/09	<b>Council</b> invited interested parties (Argentina, Brazil, India, Uruguay ...) in the development of a definition of hydrographic interest, to consider IHC17 outcome, PRO1.4 and 1.5, and come back with a single consolidated proposal to C-5 or C-6 for possible consideration at A-3. (deadline C-5, C-6).	<b>C-5, C-6</b>	
<b>2.4 Cumulative List of Assembly Decisions affecting the Council.</b>					
			<i>For reference only</i>		
<b>3. ITEMS REQUESTED BY THE IHO COUNCIL</b>					
<b>3.1 Review of the status of Decisions and Actions from C-3 (pending actions) (skipped, all remaining actions/decisions from C-3 if not already overtaken by A-2, to be addressed under agenda item 2 and 4 as appropriate).</b>					
<b>4. ITEMS REQUESTED BY SUBSIDIARY ORGANS</b>					
<b>4.1 Operational items of subordinate working groups and project teams resulting from HSSC Report to A-2 remote session</b>					
	Future of the Paper Nautical Chart	C4/10	<b>Council</b> to monitor the implementation by <b>HSSC</b> of the recommendations on the Future of the Paper Nautical Chart as appropriate.	<b>C-5</b>	(Decisions A2/27&28 refers)
	S-57, S-101	C4/11	<b>Council</b> to monitor the progress of the task given to <b>HSSC</b> 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.	<b>C-5</b>	(Decision A2/33 refers)

	IHO Resolutions	C4/12	<p><b>Council</b> to monitor the progress of the task given to <b>HSSC</b> and <b>IRCC</b> to review the IHO Resolutions with regard to PRO 2.3 when the operational implementation of the S-100 concept becomes mature enough.</p> <p><b>HSSC</b> and <b>IRCC</b> to make proposals for endorsement to <b>Council</b> meetings when appropriate</p>	<b>C-5, C-6 as appropriate</b>	(Decision A2/32 refers)
	HSSC&IRCC Reports and Proposals to C-5	C4/13 (same as former C2/17 and C1/06)	<p>Considering the timelines between HSSC-13 and IRCC-13 meetings in 2021 and the countdown for submission of reports and proposals to C-5, <b>the Council</b> invited <b>HSSC and IRCC Chairs</b> 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.</p>	<b>July 2021</b>	
<b>4.2 Operational items of subordinate sub-committees, working groups and project teams resulting from IRCC Report to A-2 remote session.</b>					
	IHO e-Learning Centre	C4/14	<p><b>Council</b> to monitor the progress made by IRCC to establish an IHO e-Learning Center based on A-2 PRO 3.3 and the related recommendations of IRCC/CSBC.</p>	<b>C-5</b>	(Decision A2/42 refers)
	e-Learning	C4/15	<p><b>The Council</b> thanked the ROK for their generous offer made to Member States to establish the IHO e-Learning platform.</p>		<b>Decision</b>
	Women in Hydrography	C4/16	<p><b>Council</b> to monitor the progress made by IRCC on the CBSC work item of Empowering Women in Hydrography (EWH).</p>	<b>C-5</b>	(Decision A2/35 refers)

4.2	CB Activities	C4/17 (former C3/25)	<b>The Council</b> invited the IRCC to instruct the CBSC to develop a system of performance indicators to measure, under the conduct of the CBSC and in accordance with the Revised Strategic Plan, the effectiveness and efficiency of CB activities. This system should be oriented by the expected effects and outcomes of CB support, not on the achievement of the CB activities.	<b>C-5</b>	
<b>4.3 Discussion on the S-100 Implementation Strategy</b>					
	S-100 Implementatio n Strategy	C4/18 (former C3/13)	<b>Council/HSSC/IRCC Chairs/SecGen</b> supported by subject matter experts and Member States as appropriate to maintain the S-100 Implementation Roadmap as an incremental version-controlled document (including narrative and timelines) on an annual basis.	<b>Permanent</b>	
	S-100 Implementatio n Strategy	C4/19	Following the endorsement of the the S-100 Implementation Roadmap, <b>Secretariat/Council</b> to set up the repository of the version-controlled of this roadmap on the IHO website, including some clarification on the terminology (Council webpage to be confirmed).	<b>Jan 2021</b>	
	S-100 Implementatio n Strategy	C4/20	<b>SG, Council Chair, HSSC, IRCC Chairs</b> to consider the addition of three annexes related to the IHO WP 1, 2 and 3 to S-100 Implementation Roadmap.	<b>C-5</b>	(Decision A2/31 refers)

	S-100 Implementation Strategy, S-98	C4/21	<b>Council</b> 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 (Action HSSC12/11 refers).	C-5	Decision
	S-100 Implementation Strategy, S-100 Timeline	C4/22	<b>Council</b> agreed on the need to include the S-100 Implementation Timeline in the updates to be made in the appropriate Annex of the S-100 Implementation Roadmap.	C-5	Decision
	S-100 Implementation Strategy	C4/23	<b>Council</b> to maintain and update the the S-100 implementation roadmap and resulting activities in liaison with MS and external bodies on an annual basis as a key priority of the Council activities.  <b>SG/Council Chair</b> to identify some key actions in support and report progress at C-5.	C-5	(Decision A2/30 refers)
	WEND100 Principles	C4/24	<b>Council</b> to monitor the subsequent development of the WEND100 Principles, as a consequence of the expanding range of hydrographic data products addressed in the S-100 Implementation Strategy.  <b>IRCC</b> to submit a new IHO Resolution on WEND100 Principles to the Council for endorsement. Then, submission to Member States for approval and inclusion as a reference in Annex 3 of the S-100 Implementation RoadMap.	C-5  C-5	(Decision A2/38 refers)
		C4/25	<i>Left intentionally blank</i>		



	S-100 Implementatio n Strategy	C4/26	The <b>Council</b> reminded Member States to consider the possibility of coordinating their inputs in support of the S-100 Implementation Strategy with their national representatives in IMO bodies (NCSR, MSC in particular).	<b>Permanent</b>	
	S-100 Implementatio n Strategy	C4/27	The Assembly having noted the update on interrelations and tasks, <b>Secretary-General</b> to continue to liaise with [IMO and] other relevant stakeholders and organizations involved in the development of other S-100 based products.	<b>Permanent</b>	(Decisions A2/40&41 refer)
	S-100 Implementatio n Strategy	C4/28	<b>The Council</b> noted the importance of Capacity Building in this matter so all IHO Member States can consider meeting the IHO deadlines for the production of S-1xx products and S-101 in particular. <b>The Council</b> invited the IRCC/CBSC to consider this requirement made by some Member States at A-2 and C-4.	<b>C-5</b>	
<b>5. IHO ANNUAL WORK PROGRAMME AND BUDGET</b>					
<b>5.1 Review of the Current Financial Status of the IHO</b>					
	Financial Status	C4/29	<b>The Council</b> noted the information provided on the current financial status.		<b>Decision</b>

5.2 Proposed IHO Work Programme for 2021					
	Work Programme 2021	C4/30	Noting that the Assembly endorsed the alignment of the IHO Work Programme 2021 with the Strategic Plan (introduction column G&T, etc.), the <b>Council</b> approved the Work Programme 2021 as given in Doc. C4-05.2A keeping the current structure of the Work Programme to facilitate the operational work and implementation by the Secretariat.		<b>Decision</b>  (Decision A2/22&49 refers)
	Work Programme 2021	C4/31	<b>IHO Secretariat</b> to issue an IHO CL making the IHO Work Programme 2021 as approved by the Council available to the IHO Member States.	<b>Permanent</b>	
	Theme for the World Hydrographic Day 2021	C4/32	<b>The Council</b> noted the proposed theme for the 2021 World Hydrography Day by the Secretary-General " <i>100 Years of International Cooperation in Hydrography</i> ".  <b>IHO Secretariat</b> to circulate the theme for 2020 to the IHO MS by IHO CL.		<b>Decision</b>
5.3 Proposed IHO Budget for 2021					
	Budget 2021	C4/33	The <b>Council</b> approved the Budget 2021 as given in Docs C4-05.3A.		<b>Decision</b>
	Budget 2022	C4/34	Noting that A-2 approved the mandate of the Council to increase Member States' contributions by 1% in 2022 (and/or 2023) subject to the IHO's financial situation, <b>Council</b> to consider the subsequent proposed Budget 2022 at C-5.	<b>C-5</b>	(Decision A2/50 refers)
	Budget 2022	C4/35	<b>Secretary-General</b> to secure funding through negotiation of suitable cooperation agreements with interested Member States and/or partnering organizations.	<b>C-5</b>	(Decision A2/39 refers)

6. IHO STRATEGIC PLAN REVIEW					
6.1 Implementation and discussion of adaptations of the IHO Work Programme and other affected IHO instruments resulting from the A-2 decisions on the revised Strategic Plan					
6.1	Strategic Plan 2021-2026	C4/36	Following the adoption of the Revised Strategic Plan by A-2, the <b>Council</b> noted that the effective implementation of the Strategic Plan 2021-2026 is to be considered as the main theme of supervision and control of the <b>Council</b> until A-3, keeping in mind to apply the principles of ISO 9001 for.	<b>A-3</b>	<b>Decision</b> (Decisions A2/12&19 refer)
6.1		C4/37	Following the adoption of the Revised Strategic Plan by A-2, <b>Council</b> to monitor closely the appropriateness and applicability of the proposed SPI and amend them if necessary.	<b>C-5</b>	(Decision A2/20 refers)
6.1	Strategic Plan 2021-2026	C4/38	<b>The Council</b> disbanded the SPRWG.		<b>Decision</b> (Decision A2/21 refers)
6.1	Strategic Plan 2021-2026	C4/39	<b>The Council</b> agreed on the proposed allocation of the new SPIs to the Secretary-General, HSSC and IRCC (Programmes 1, 2 and 3 respectively) (Doc. C4-06.1A refers).  <b>Secretary-General, HSSC and IRCC</b> (Chairs/Vice-Chairs), <b>RHCs</b> (Chairs/Vice-Chairs) to experiment the implementation of the Strategic Plan and consider during this process, following gap analysis if appropriate, whether our organisation and work programmes are fit for purpose, in particular for meeting Goals 2 and 3.	<b>C-5</b>	<b>Decision</b>
6.1	Strategic Plan 2021-2026	C4/40	<b>The Council</b> agreed to experiment the application of the ISO 9001 principles on a couple of Strategic Plan targets (one per Committee to be proposed.	<b>C-5, C-6</b>	

7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL					
8. NEXT MEETING					
8.1 Dates and venue for the 5 <sup>th</sup> Meeting of the IHO Council					
	C-5	C4/41	<p>The <b>Council</b> agreed to hold C-5 in Monaco, at the IHO Secretariat, from 19 to 21 Oct. 2021.</p> <p>In the case of a remote event, the Council agreed to consider arrangements for 3 sessions, for 3 days, for 3 hours.</p>	<b>Go no-go decision 19 June 2021</b>	<u>Decision</u>
	Strategic Plan	C4/42	<p>The <b>Council Chair/Secretary-General</b> to consider possible informal physical or virtual brainstorming session(s) in spring 2021 aiming to consider the best options to address Goals 2 and 3 in particular, under the conditions of world-wide improvement of sanitary conditions.</p>	<b>Spring 2021, eventually back-to-back with WHD June 2021</b>	
9. ANY OTHER BUSINESS					
10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING					
11. CLOSURE OF THE MEETING					

**5<sup>th</sup> MEETING OF THE IHO COUNCIL**  
**IHO C-5**  
**Monaco, hybrid in-person/VTC, 19 – 21 October 2021**

**SUMMARY REPORT**  
*(Version 1.0, 27 October 2021)*

*Note: while the 5<sup>th</sup> meeting of the IHO Council was conducted according to the timetable, this summary report is in line with the sections of the agenda.*

Annex A: *List of Registered Participants*

Annex B: *Agenda*

Annex C: *List of Decisions and Actions*

## **1. OPENING**

### **1.1. Secretary-General Opening remarks**

Docs: C5-01A *List of Documents*  
C5-01B *List of Participants*  
C5-01.4A *Membership Contact List*

The **Secretary-General** welcomed participants to the fifth session of the Council, which was taking place this year in a hybrid virtual/in-person format due to the global pandemic. The session had reached a quorum with 30 Council Member States registered and present. He confirmed that no Red Book, containing prior comments on Proposals to Council, was presented on this occasion, as no comments had been received.

### **1.2 Adoption of the Agenda and Timetable**

Docs: C5-01.2A Rev1 *Agenda*  
C5-01.2B *Timetable*

The **Chair** presented the proposed agenda and timetable, with minor changes from the version distributed in advance.

**Decision C5/01:** The **Council** adopted the agenda and the timetable as proposed and agreed to consider the information paper on the S-100 Test Bed Project provided by KHOA (Republic of Korea), and NOAA (United States of America) (Doc. C5-07.6A INF refers) at the end of session 2 time permitting.

### **1.3 Chair's Opening remarks**

Docs: C5-01.3A

The **Chair** of the Council, **Dr Geneviève Béchar**d, welcomed members and noted that the current session of the Council would make an important contribution to preparations for the third session of the IHO Assembly. Among the items to be discussed were the proposals from HSSC, IRCC and the Secretariat for delivery of the Strategic Performance Indicators (SPIs) assigned to each of those bodies for the implementation of the IHO Strategic Plan, as well as the Roadmap for the S-100 Implementation Decade (2020-2030) for the development of digital

products and services. Following bilateral talks between the Chair and Council Members, the Chair informed the Council that Member States stressed the need for IHO to support basic Capacity Building while also supporting themigration to S-100. The role of the RENCs had been a subject of discussion, and RENC representatives had therefore been invited by the Chair to attend the session as observers.

**Decision C5/02: Council Members** welcomed the opening addresses by Dr Geneviève Béchar, Council Chair and the Secretary-General and agreed on the participation of RENCs representatives as Observers.

#### 1.4 Administrative Arrangements

*Docs: C5-01.4A Membership Contact List & Useful References – Marked-up Basic Docs (IHO Convention, General Regulations, Assembly ROP, Council ROP)*

The **IHO Secretariat** invited all members to check the Council membership list and confirm their individual details, and explained the process and timelines of the Council Summary Report, the work of the précis-writers and four rapporteurs kindly appointed by Canada, Peru, the United Kingdom and the United States of America.

**Decision C5/03: IHO Member States having a seat at the Council** to provide the IHO Secretariat with their updates to the IHO Council List of Contacts.

## 2. ITEMS REQUESTED BY THE 2<sup>nd</sup> IHO ASSEMBLY

**2.1. Update on the Joint IHO-Singapore Innovation and Technology Laboratory – Proposals from the Council to the Governing Board (Decision A2/08)** (*To be discussed under agenda item 4.5*).

**2.2. Report on the Application of ISO 9001 Principles (To be discussed through the reports of HSSC and IRCC under agenda items 4.1 and 4.2 and 6.1). Decision A2/12**

**Decision C5/40:** The **Council** endorsed the **HSSC** proposal that ISO 9001 principles will be experimented on the development of the Product Specification for ENC S-101 ed. 2.0.0 (deadline: C-6)

The IRCC Chair also agreed to undertake to select a theme out of the IRCC subordinate bodies work programmes to which the ISO 9001 principles would be applied.

**Action C5/08:** The **Council** invited the **IRCC** to identify a theme on which ISO 9001 Principles should be applied and to propose it to **Council** for endorsement. (deadline: IRCC-14/C-6)

**2.3. Update on the best way forward for the definition of hydrographic interest. (Decision A2/14)**

The **Chair** recalled that C-4 had invited parties interested in the development of a definition of hydrographic interest to submit a joint proposal to review existing documents, resolve discrepancies, and submit a consolidated single proposal on the definition of hydrographic interest. A discussion of the item had not been planned for C-5. However, she was pleased to report that Argentina, Brazil, India and Uruguay had begun collaborations and that work on the item was underway.

**India** commended the Council Chair on her work to initiate collaboration between the interested parties. He said that discussions were ongoing among the interested parties, who

were attempting to identify a consensus approach to the definition of hydrographic interest. Referring to the discussion of IHO's strategic performance indicators, he suggested that the Organization's interests might be summed up as i) capacity to undertake surveys, which every country should have ii) making the ENC's and products available for the benefit of larger society and iii) capacity building and international interaction. It was unclear how the question of tonnage fitted with or reflected those SPIs. He therefore called for a measure of introspection by the Council as to how the definition of hydrographic interest might better reflect IHO's strategic goals.

**Decision C5/04:** The Council thanked Council Chair for the update on the ongoing work by the interested parties Argentina, Brazil, India and Uruguay and invited them to submit a consolidated report on possible ways forward, including impact assessment on IHO Basic Documents.

(deadline: C-6 / -3 months<sup>6</sup>)

**2.4. Status report on the appropriateness and applicability of the new Strategic Performance Indicators** (*To be discussed under agenda item 6.1, taking into account recommendations from Secretary-General for Programme 1 in agenda item 6.1, from HSSC and IRCC Chairs for Programmes 2 and 3 in agenda items 4.1 and 4.2*).

**2.5. Proposed version 1.x of the Roadmap for the S-100 Implementation Decade** (*To be discussed under agenda item 4.4 following proposals from HSSC and IRCC under agenda items 4.1 and 4.2*). Decisions A2/20

**2.6. Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENC's)** (*To be discussed under agenda item 4.1*). Decision A2/33

**2.7. Cumulative List of A-2 Decisions affecting the Council** (Decisions A2/02<sup>7</sup>, A2/04<sup>2</sup>, A2/06<sup>2</sup>, A2/08, A2/11<sup>2</sup>, A2/12, A2/14, A2/20, A2/30, A2/31, A2/33).

Doc: C5-02.7A

### 3. ITEMS REQUESTED BY THE IHO COUNCIL

#### 5.3 Review of the status of Decisions and Actions from C-4

Doc: C5-03.1A

The IHO Secretariat reported that most decisions and actions from C-4 had been implemented or would be discussed under the relevant item. Pending decisions and actions not covered were:

**Decision and Action C5/05:** The Council to monitor the progress of the task given to HSSC and IRCC to review the IHO Resolutions with regard to PRO 2.3 when the operational implementation of the S-100 concept becomes mature enough. HSSC and IRCC to make proposals on the IHO Resolutions with regard to PRO 2.3 for endorsement by Council when appropriate. (deadline: C-6 as appropriate in preparation of A-3)

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<sup>6</sup> for submission in accordance to Council ROP.

<sup>7</sup> Complete.

The Chair of HSSC and IHO Secretariat confirmed that this action was ongoing.

**Decision C5/06:** The **Council** invited the IRCC to instruct the CBSC to develop a system of performance indicators to measure, under the conduct of the CBSC and in accordance with the Revised Strategic Plan, the effectiveness and efficiency of CB activities. This system should be oriented to actual outcomes of CB support, not on quantity, or instances of CB activity.

(deadline: C-6)

The Chair of IRCC and IHO Secretariat confirmed that this action was ongoing as well.

#### 4. ITEMS REQUESTED BY SUBSIDIARY ORGANS

##### 4.1 Report and proposals from HSSC (Including update on the dual-fuel concept (transition from S-57 to S-101 electronic navigation charts (ENCs))).

- Annex A: Strategic Performance Indicators allocated to HSSC and proposed metrics.
- Annex B: Proposed Annex 2 (version 1.0, 7 July 2021) to the Roadmap for the S-100 Implementation Decade (2020-2030).

Doc: C5-04.1A Rev1

The **Chair of HSSC** reported on the work of the Committee for the current cycle of the Council, which had continued despite the constraints imposed by the pandemic.

**Decision C5/09:** The **Council** noted the report and commended the **HSSC**, its Working Groups and supporting organizations for the excellent achievements made in 2020-2021 despite the obstacles raised by the pandemic.

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. The timeline for the prioritised product specification would be maintained by the IHO Secretariat in the form of a version-controlled Gantt chart and would be reported on annually to the IHO Council.

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.

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.



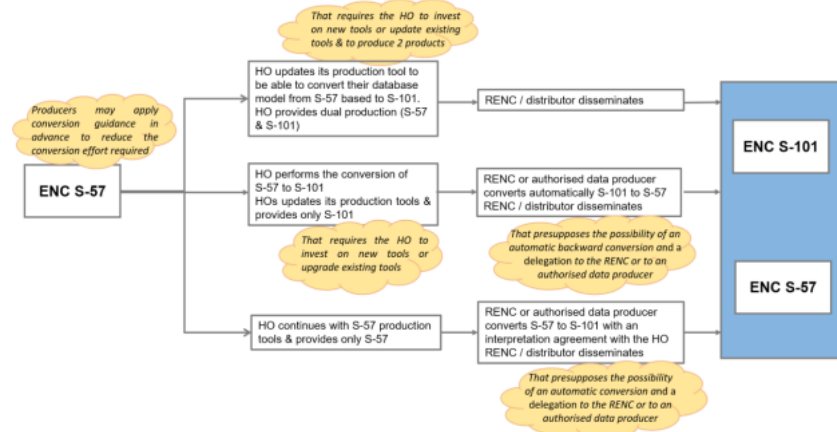


Figure 1 Potential options for HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production

It was reported that the draft governance document on the 'dual fuel' concept would be considered by HSSC-14 and subsequently submitted to C-6.

**Decision and Action C5/10:** The Council noted the actions in progress within HSSC for the development of a governance document in support of the dual fuel concept and associated actions. HSSC to report on the outcome at the next meeting. (deadline: C-6)

To develop a guidance document on the dual fuel concept, the S-100 WG, under HSSC, was conducting a series of workshops that included discussions on the subject as well as on the future continuation of the system-ENC (SENC) delivery. The ENC Standards Maintenance Working Group (ENCWG) was also working on a guidance document for HOs on how ENC features could be enhanced to support automated conversion to S-101. The work was expected to partly be done in collaboration with the IHO-Singapore Innovation and Technology Laboratory (IHO Lab).

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 105<sup>th</sup> 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.

**Decision C5/11:** The Council noted the work in progress by HSSC Chair Group, CIRM, IEC, Intertanko, for the revision of the IMO MSC.1/Circ.1503/Rev1 – ECDIS Guidance for Good Practice and Resolution MSC.232(82) - ECDIS Performance Standard. (deadline: HSSC-14/NCSR-9 (June 2022) then C-6)

A project team under the Nautical Cartography Working Group (NCWG) had been established to develop a baseline symbology library to support automated production of paper charts from S-101 data.

**Decision and Action C5/12:** The Council to continue the monitoring of the implementation by HSSC of the recommendations on the Future of the Paper Nautical Chart as appropriate. The Council noted the development of a 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. (deadline: HSSC-14/C-6)

The new Hydrographic Surveys Working Group (HSWG) had met for the first time in late June 2021. Two new Project Teams had been created, the first to develop a new S-130 polygonal demarcations of global sea areas product specification, and the second to address Maritime Autonomous Surface Ship (MASS) requirements in navigation data and services.

In the subsequent discussion, **France** noted that the first option for parallel production of S-57 and S-101 data was likely to be beyond the capacity of many HOs, while the third option might mean that no native S-101 data were produced by certain HOs, if the conversion from S-57 to S-101 was left exclusively to the RENCs. **France** therefore favoured the second option, with S-101 becoming the default reference standard.

**New Zealand** likewise favoured the second option, and also supported the work on establishing the standards for automated production of paper nautical charts from S-100 data. **New Zealand** noted that S-101 is still evolving, that some small HOs would be challenged to implement S-100 technology anyway, and that the roll-out to S-101 needed to be quicker than the S-57 roll-out, in order to gain substantial coverage.

**USA** emphasised the need to develop a standard set of symbology for use in automated ENC-based paper chart production systems. The new NCWG Baseline Symbology Project Team should establish simplified symbols and rules for paper chart production that were accessible and applicable to both S-57 and S-101. The US noted many Member States are already transforming their paper chart production environments to take advantage of automated processes. Highlighting greater collaboration among the efforts underway around the world will result in a standard set of symbol and portrayal rules, endorsed by the NCWG and approved by the HSSC within the next year or two. Many HOs would make use of them as soon as they became available.

**Australia** drew attention to the high level of resources Member States would require in order to maintain the 'dual fuel' system. Conversion tools should be developed promptly, and S-57 should be taken out of use as soon as practicable. **Australia** favoured the first option.

**Russian Federation** likewise favoured the first option, that all production should be a national responsibility.

**Netherlands** and **France** noted that, in the third option, Member States would still bear the legal responsibility for the ENC content they provided, with the RENCs exercising a purely contractual function that would need verification and monitoring.

**PRIMAR** drew attention to its working group on conversion from S-57 to S-101 and vice-versa, which expected to reach conclusions on its role in the area of S-101 conversion in the next year.

The **Secretary-General** said that the added value of the S-100 series of standards was derived not merely from the S-101 ENCs themselves, but the real opportunity is through the developments of the many other associated S-100 products, such as those on water level information or surface currents. Services that would enable the end-user to benefit from those products should be established at the regional level; building critical mass within regions will encourage data suppliers, Original Equipment Manufacturers (OEMs) and users to integrate these fields.

**Decision C5/13:** The **Council** to monitor the progress of the task given to **HSSC** to prepare (*done*) now maintain the synoptic summary report on the various options offered to HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production. (deadline: C-6)

**Decision and Action C5/14:** Considering the timelines between HSSC-14 and IRCC-14 meetings in 2022 and the countdown for submission of reports and proposals to C-6, the **Council** invited **HSSC and IRCC Chairs** to prepare their 2022 meeting minutes with the view that they will be used/submitted directly as reports and proposals to be considered at C-6. (deadline: July 2022)

## 4.2 Report and proposals from IRCC

*Doc: C5-04.2A*

The IRCC Chair presented his report on the Committee's activities. Noting that participation in IRCC-13 had been good, he said a suitable mix of virtual, hybrid and in-person meetings would need to be found in future. The Regional Hydrographic Committee (RHC) Chairs were asked to focus their oral reports on work on the Strategic Plan and gap analysis, important findings, and proposals to IRCC. Along these themes, issues raised by Regional Hydrographic

Committee (RHC) chairs related to the need for guidance on the determination of Strategic Performance Indicator (SPI) values at the regional level and implementation of S-100, communication issues between Member States enhanced due to the pandemic, low productivity of virtual teleconferences, the difficulty of recruiting new Member States, implementation of Marine Spatial Data Infrastructure (MSDI) initiatives, postponement of capacity building projects and the importance of online training. More issues and details can be found in the written report.

**Decision and Action C5/15:** The **Council** noted the report and commended the IRCC, the RHCs, and IRCC Sub-Committees for their achievements as well as the outcome of the IRCC October Workshop on the Strategic Plan.

The **Council**, acknowledging the need for further recommendations on the realization of the Strategic Plan in **RHCs** by Member States, invited the **IRCC** to provide these recommendations to the RHCs as a matter of priority. (deadline: By April 2022/IRCC-14/C-6).

The **Council** recognized the need for further IRCC workshops to support the realization of the IHO Strategic Plan.

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.

Graphs provided by the World-Wide Navigation Warning Service (WWNWS) sub-committee showed trends in the promulgation of Marine Safety Information (MSI). The first showed the percentage of National Coordinators providing MSI in the different NAVAREAs providing MSI in 2020, information that can be used to measure the efficiency of the MSI capacity building course, and to determine where to focus future capacity building training. The second graph showed an increasing trend in the promulgation of navigational warnings – 14% in the last 5 years. A train-the-trainer course was to be offered to address the lack of qualified trainers. 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-cbsc-ewh>) has been set up under the Capacity Building Sub-Committee (CBSC) for this project. The 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.

**Decision C5/16:** The Council to monitor the progress made by IRCC to establish an IHO e-Learning Center based on A-2 PRO 3.3 and the related recommendations of IRCC/CSBC. (deadline: C-6)

**Decision C5/17:** The Council to monitor the progress made by IRCC on the CBSC work item of Empowering Women in Hydrography (EWH). (deadline: C-6)

The World-wide Electronic Navigational chart Database (WEND) Working Group (WG) focused on WEND-100 principles. IRCC had endorsed the recommendations made on amendment of the Roadmap for the S-100 Implementation Decade (Annex A) and requested Council's approval. Council was therefore requested to take note of the adoption of the WEND-100 principles (IHO C 37/2021).

As part of the IRCC, two surveys - one on the production of High Density Electronic Navigational Charts (HD ENCs) and one on S-100 Operational Analysis - had been disseminated to Member States in CL 26/2021 and CL 27/2021 respectively.

The concept of MSDI V2.0 was presented, with the Arctic SDI Governance model proposed as a role model for MSDI cooperation in RHC. MSDIWG 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) (see CL 41/2021).

The IHO-EU Network working group was contributing to the programmes of the European Union, focusing on EMODnet Portals, especially EMODnet Bathymetry. Maritime Spatial Planning was another area of interest. European Directive 2019/2024 on open data and the reuse of public sector information, whereby high level datasets were considered as open data, had a possible impact for Hydrographic Offices (HOs) if it applied to ENC data.

The poor quality of initial submissions to the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC), reflecting difficulties in interpreting the new standards, were creating a heavy workload of intersessional revisions.

The views of HOs regarding crowd-sourced bathymetry (CSB) were heterogeneous; it should be emphasized that the focus was to collect data in poorly surveyed or un-surveyed areas. IHO B-12 was updated. IHO Member States and stakeholders were invited to contribute and encouraged to provide bathymetric data. 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" 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.

The first IRCC Workshop on the IHO Strategic Plan and Strategic performance indicators was held on 7 October 2021, as a virtual teleconference with more than 70 participants, in order to facilitate the exchange of information and discussion to improve coordination in IRCC; more such workshops are planned. An excellent gap analysis on the regions ability to report on the strategic performance indicators of the IHO Strategic Plan was reported by the South West Pacific Hydrographic Commission (SWPHC) and could serve as an example for other RHCs.

In the discussion, **Norway**, speaking as Chair of the Capacity Building Subcommittee, acknowledged the generous contributions of the Republic of Korea, Japan and Canada, but expressed a general concern about the lack of non-earmarked project funding. It was suggested that the Empowering Women in Hydrography project would be complemented by further awareness-raising efforts, such as reporting on gender equality within the HO. The RHCs should ask their subordinate bodies to develop online learning content to support the e-Learning Center. It was noted that, despite the momentum provided by Seabed 2030 and the United Nations Decade of Ocean Science, most of the reported increase in coverage had come from existing data being made available, and so the time horizon for a fully mapped planet remained several generations away. Leadership brought with it not only the responsibility to represent one's country but also to challenge and improve national regulations for improving GEBCO, in turn improving climate modelling and monitoring of marine biodiversity.

The **Republic of Korea** said that the country would strive to develop the e-learning courses needed so that the IHO e-Learning Center could be operational from 2022 and would consider the possibility of allocating more non-earmarked funds.

**India** mentioned the need to quantify the benefits of training, such as to employability, and ensure that time and finances spent on training were counted. The increase in MSI messages could be taken as a positive indication in relation to NAVAREA VIII. However, the low number of users of Iridium SafetyCast undermined the cost-effectiveness of its use; consideration should be given to measures to support its uptake, like for example offering the service free initially so that users could understand the benefit.

**IHO Director Sinapi** commended the outstanding teamwork achieved by the IRCC and its subordinated bodies in the difficult context of the pandemic. The educational programme sponsored by the IHO with generous donor support including from the Republic of Korea, the Nippon Foundation, UKHO and USA was a shining example of innovative responses to that challenge.

**Portugal** noted the conclusion of the Eastern Atlantic Hydrographic Commission that the capacity building approach needed improvement: on-line training alone was not sufficient to achieve the goal of giving less developed countries real hydrographic capacity - on-job training was also needed. The CB Strategy should be aligned with bilateral cooperation actions, led by nations with greater hydrographic capacity.

**Colombia** noted that thanks to a national vaccination program, they can organize the MSDI workshop between the three Latin American commissions in December this year in person.

**Colombia** also noted the solution of granting a six-month extension for completion of the practical components of training that could not be completed in online training for Cat A and Cat B.

**IHO Assistant Director Guillam** also highlighted the work of the GEBCO Sub-committee on undersea feature names for the provision of associated bathymetric data to the IHO DCDB and Seabed2030.

#### 4.3 Left blank intentionally

#### 4.4 Proposed version 1.x of the Roadmap for the S-100 Implementation Decade

*Doc: C5-04.4A*

Members viewed a video produced by the Korea Hydrographic and Oceanographic Agency (KHOA) in celebration of one hundred years of international cooperation in hydrography for World Hydrography Day 2021. The HSSC Chair then presented the HSSC's proposed amendments to the Roadmap for the S-100 Implementation Decade (2020-2030). These comprised, firstly an amendment expanding the IHO list of S-100 products with a special focus on S-100 products in Table A, and grouping them into first step of route monitoring mode (S-101, S-102, S-104, S-111, S-124, S-128, S-129) and the second step of route planning mode (S-122, S123, S-125, S126, S-127 and S-131). Secondly, a proposed amendment to paragraph 2 to clarify the progress with S-101. Thirdly, HSSC proposed to include as an Annex 2 to the roadmap, a Gantt chart showing S-100 product specifications developments and timeline, and a synoptic diagram showing the three options for parallel production of S-57 and S-101 databases.

In the discussion, USA noted that, as a technical and consultative organization, IHO should strive for innovative data environment but also allow flexibility to enable SOLAS signatory nations to meet the requirements of Chapter V, Regulation 9 – which establishes the responsibility of a nation to arrange for the provision of hydrographic services – in a variety of ways. This was illustrated by the Council's discussions of the multiple options for moving forward in relation to one standard, S-101. Given the differences between nations with large hydrographic offices and smaller coastal nations as signatory states, the need for multiple national solutions for the provisioning of hydrographic data, products and services is something that must be accepted. He encouraged the Council to recognize that there would not be a one-size-fits-all solution: Council could use its role, via RHCs, to encourage work programmes to be managed with awareness of the need for flexibility and innovation.

**Decision C5/23:** The Council noted the statement made by the US calling for the IHO to accept some flexibility in the implementation of IHO standards (production, distribution and WEND-100 services in particular) as SOLAS Chap. V, Reg. 9 allows.

Responding to one member's question as to the reason for the timeline for S-102 having been pushed back by a year in the Gantt chart, the HSSC Chair explained that the delayed timeline for S-102 was explained by the limitations of the virtual teleconference format, as more in-depth discussions were needed of how S-102 would be used in practice in navigational environments. The Secretary-General observed that WEND-100 faced a similar challenge, in that detailed discussions were needed to resolve how WEND-100 worked in combination with SOLAS requirements. IHO had proved to be pragmatic in its support of developing countries in assisting them to comply with their SOLAS arrangements. It could be expected that in future, regional solutions would need to play a larger role.

**Decision C5/18:** The **Council** agreed to the proposed amended list of S-100 products with special focus (e.g. route monitoring, planning) as cited in Table A of Annex A of the HSSC report.

**Decision C5/19:** The **Council** agreed to the proposed amendment to the S-100 Implementation Roadmap to clarify the progress with S-101 as contained in Annex B of the HSSC report.

**Decision C5/20:** The **Council** approved the proposed Annex 2 to the Roadmap for the s-100 Implementation Decade (2020-2030) as described in Annex B of the HSSC report (S-1xx Products, Product Specifications Development Timeline and synoptic diagram from S-57 o S-101).

**Decision C5/21:** The **Council** endorsed the amendment to the S-100 Implementation Roadmap as proposed by the WENDWG and contained in Annex A of the IRCC report.

**Decision C5/22:** **IHO Secretariat** to upload version 2.0 of the Roadmap including approved amendments. (deadline: 31 January 2022)

**Decision C5/24:** The **Council/HSSC/IRCC Chairs/SecGen** supported by subject matter experts and Member States as appropriate to maintain the S-100 Implementation Roadmap as an incremental version-controlled document (including narrative and timelines) on an annual basis.

**Decision C5/25:** **SG, Council Chair, HSSC, IRCC Chairs** to maintain the three annexes related to the IHO WP 1, 2 and 3 to S-100 Implementation Roadmap.

**Decision C5/26:** The Assembly having noted the update on interrelations and tasks, **Secretary-General** to continue to liaise with IMO and other relevant stakeholders and organizations involved in the development of other S-100 based products.

#### **4.5 Update on the Joint IHO-Singapore Innovation and Technology Laboratory – Proposals from the Council to the Governing Board.**

*Doc: C5-4.5A*

**Singapore**, summarizing the activities of the Joint IHO-Singapore Innovation and Technology Laboratory, reported on two meetings of the Governing Board, on 28 April and 8 September 2021. A two-step procedure for the submission of project proposals had been established, whereby stage one involved providing enough funding, and stage two involved a more detailed proposal once a beneficiary had been identified. He outlined the project to develop the S-57 to S-101 conversion guidance document; comments regarding test bedding, and innovations such as the Korean eye-track trial had been noted. The Marine Harbour Infrastructure Database Project had drawn interest from ports in Norway as well as Singapore and Maritime connectivity task force. The Maritime Connectivity Platform looked at not only authentication but also at the question of centralized or decentralized data. The website for IHO-Singapore Lab had been launched, with the help of the Secretariat. He proposed that the IHO website might usefully serve as a registry of projects to provide clarity on who was doing what. Two pilot projects had been agreed. The involvement of industry stakeholders should be encouraged.

In response, the **USA** noted the particular importance of projects concerning the interoperability of S-57 and S-100.

**Decision C5/27:** The **Council** noted the update report on the Joint IHO-Singapore Innovation & Technology Laboratory including simplified procedures for submission of project proposals.

**Decision C5/28:** The **Council** endorsed the **HSSC** project proposals: a. Testing automated conversion of S-57 to S-101 in support of the dual-fuel concept; and b. Prototyping a S-131 database (and interface) for marine harbour information.

**Action C5/29:** The **Council** tasked **HSSC** to encourage **ENCWG** and **NIPWG** to manage their project applications respectively through the Lab.

## 5. IHO ANNUAL WORK PROGRAMME AND BUDGET

### 5.1 Review of the Current Financial Status of the IHO

*Docs: C5-5.1A*

The **Secretary-General** reviewed the current financial status of the Organization. 80.19% of Member State contributions due in 2021 had been received, which was lower than both the previous year (84.6%) and the average over the past 5 years (84.09%); it was unclear whether that figure has been impacted by COVID-19. Two Member States had not yet paid their 2019 contributions; five Member States had not yet paid their 2020 contributions. Three Member States had paid their contributions in advance for 2022. He welcomed Kenya as a new IHO Member State; and the Democratic Republic of Congo, which had paid its arrears and been reinstated as an IHO Member State after a long suspension back in 1983.

The **Secretary-General** detailed expenditure from the Special Projects Fund totalling €46100. Sponsored projects had included the development of Product Specification S-131 (Marine Harbour Infrastructure); development of the S-100 ECDIS Concept Document; and UML Updates for S-100 Edition 5.0.0. Expenditure on Capacity Building projects totalling €337100 had included IHO Capacity Building funds to cover a technical visit of Côte d'Ivoire; Project Officer's expenses funded by the Nippon Foundation; and Project Officer's expenses and a Category A education programme funded by the Republic of Korea. A fiscally conservative approach to the budget had historically resulted in a small end-of-year surplus, often allocated into the Special Projects Fund and/or Capacity Building Fund. However, the surplus for 2021 was estimated to be €465000, which was unusually high due to the impact of COVID-19 on personnel costs and operational costs, which included travel. Expenditure on personnel costs, (€207000) operating costs (€25000) and capital expenditure (€8000) had all been below budget. Proposals on how that surplus should be used would be discussed by the Finance Committee and brought to the Council for approval in the first half of 2022.

**Decision C5/30:** The **Council** noted the information provided on the current financial status.

**Action C5/31:** The **Council** invited the **Secretary-General** to provide recommendations to the **Council Members** by Finance Circular Letter on the allocation of the anticipated surplus for 2021, with priority for additional funds going to capacity building. (deadline: April 2022).

### 5.2 Proposed IHO Work Programme for 2022

*Doc: C5-5.2A*

The **Secretary-General**, introducing the item, noted that the proposed IHO Annual Work



Programme 2022 was based on the second year of the three-year Work Programme (2021-2023) that had been approved by A-2. The proposal covered all three Work Programme elements – Corporate Affairs (Work Programme 1), Hydrographic Services and Standards (Work Programme 2) and Interregional Coordination and Support (Work Programme 3) – and took into account all activities that had taken place under the respective work programme items since the previous Council C-4.

He invited the Council to approve the proposed Work Programme for 2022, and take note of the specific challenges for 2022, which related to the preparation of the Preparation of Work Plan for 2023 and the Work Plan for 2024-2026 to be submitted to C-6 before A-3 (Task 1.4.2) and preparation for A-3 (Task 1.6.1). Preparations for the Assembly would need to begin a year in advance. The Council was also asked to take note of the proposed theme for World Hydrography Day 2022: "How hydrography can contribute to the United Nations Ocean Decade".

**Decision C5/32:** The Council agreed to and approved the IHO Work Programme for 2022, as presented by the Secretary-General, including the preparation of A-3 and IHO Work Programme 2024-2026.

**Action C5/33:** IHO Secretariat to issue an IHO CL making the IHO Work Programme 2022 available to the IHO Member States as approved by the Council.

Members indicated support for the Work Programme and endorsed the proposed theme for World Hydrography Day 2022. One member suggested replacing the word "can" with the word "will". **The Secretary General** said that such amendments to the wording of the theme may be suggested in Member States' responses to the IHO Circular Letter that will be issued in October.

**Decision and Action C5/34:** The Council noted the proposed theme for the 2022 World Hydrography Day by the Secretary-General "*How hydrography can contribute to the United Nations Ocean Decade*" IHO Secretariat to circulate the theme for 2022 to the IHO Member States by IHO CL. (deadline: End of October 2021).

### 5.3 Proposed IHO Budget for 2022

Doc: C5-5.3 A

The **Secretary-General**, introducing the item, noted that the proposed budget estimates for 2022 were based on the second year of the approved three-year IHO Work Programme 2021-2023. The estimates included a forecast increase in planned income from national tonnage figures of €148.900 from 37 additional shares. It was proposed that the additional planned income be allocated to: i) a proposal to compensate for the historic low interest rates of the Retirement Fund by €150000, planned for 2022; ii) a proposal to increase the allocation for retirement schemes by €53000 in order to supplement the capital needed for a new scheme to pay the pensions to future retirees; iii) a proposal to increase the provision for bad debts by €30000 to cover potential arrears of Member States that may occur due to the ongoing pandemic situation; and iv) a proposal to increase the Capacity Building Fund from €85000 to €100000 and the Special Projects Fund from €30000 to €80000.

**Decision C5/35:** The Council approved the budget estimates provided by the Secretary-General.

In the ensuing discussions, **The Netherlands** asked whether the proposals for spending the additional income forecast for 2022 could not be covered using the underspent budget from

the current year. **Portugal** asked why a larger increase to the Capacity Building Fund was not proposed, given that much of the savings had resulted from capacity building activities that could not be conducted due to the pandemic. **Chile** enquired as to the rationale for the significant differential between the 18% increase to the Capacity Building Fund versus a 266% increase for Special Projects Fund.

The **Secretary-General** said that he preferred to focus not on comparing percentages, but on how much money was needed in each area. A number of planned actions in capacity building could not be conducted due to the pandemic. Funding for travel to enable the participation of those from smaller and less developed countries in training and events in other parts of the world had not been needed and it remained unclear how soon such activities would be able to resume in person. In contrast, the information technology elements were a pressing need and funding was required for external contract support that could not be provided directly by the Member States. He noted that the amounts were small compared to the overall budget of the IHO and explained that the question of how to allocate any underspend from the current year's budget would be considered in early 2022 once the amount was known.

The **IRCC Chair** said that as projects had been postponed or replaced with less expensive online training, the allocated fund had not been spent. A greater increase would likely be necessary in future years, in line with the CB Strategy, but was not needed for 2022. He therefore expressed satisfaction with the proposed increase of €15.000, which represented a stable contribution.

**France** asked whether the current sizable surplus created by the exceptional circumstances of the COVID-19 pandemic could not be used to make provision for the anticipated future training needs with regard to S-100 implementation.

The **Secretary-General** explained that the IHO budget was initially designed to cover nothing more than the running costs of the Secretariat. Responsible handling of the budget had however historically enabled the Secretariat to generate a surplus from the allocated budget. The Council had used its collective wisdom to agree how that surplus should be spent, and for many years had directed it towards capacity building. However, against the enormous cost of education, the surplus was a mere drop in the ocean. If Member States wished to make a sizeable investment into capacity building out of the budget, a change in that funding model would be required, resulting in increased Member State contributions. Although good use could be made of any surplus, including by allocating it to capacity building, his first priority must be to cover the operational and social protection costs of the Secretariat, and only then to look at capacity building and special projects.

**The Netherlands** suggested that a fund might be established that could be drawn on in future to cover "small drops in the ocean" as the need arose. **Chile** said that the proposed increase from €30000 to €80.000 for Special Projects nonetheless seemed substantial compared to the far smaller increase proposed for capacity building.

**IHO Director Kampfer** noted that within the work of HSSC, a clear timeline for S-100 implementation had been published for the first time, which was important not only for IHO but also for its partner organizations. However, the creation of deadlines brought the responsibility to achieve them that required resources to be available at short notice in order to enable those deadlines to be achieved. **IHO Assistant Director Guillam** added that every HSSC meeting received requests to use the Special Projects Fund and that often those requests could not be met. The **Secretary-General** observed that, even with the proposed increase, the Special Projects Fund was still significantly smaller than the Capacity Building Fund.

**The Netherlands** acknowledged the need to have Special Project funding available in order to keep the momentum going. The **Chair** noted the opportunity for the Capacity Building Fund to receive a further top up from the 2021 budget surplus, in early 2022. She also highlighted the potential funding that could be available for projects that met the requirements of the Empowering Women in Hydrography project.

## 6. IHO STRATEGIC PLAN REVIEW

### 6.1 Implementation and discussion of adaptations of the IHO Work Programme and other affected IHO instruments resulting from the revised Strategic Plan with a specific focus on Goal 2 and Goal 3. Status report on the appropriateness and applicability of the new Strategic Performance Indicators. Secretariat's recommendations on the implementation of the Strategic Plan (Work Programme 1).

*Docs: C5-6.1A*

The **Secretary-General** reviewed the SPIs relating to Work Programme 1 (Corporate Affairs) of the Strategic Plan for 2021–2026. The Strategic Plan included two relevant targets. The first was for the creation of a portal to support and promote regional and international cooperation in MSDI (target 2.1). At present, the relevant webpage on the IHO website mostly pointed to Member States' national collections of nautical charts; all Member States were encouraged to add their links on that page and, if possible, keep a record of the number of visitors who accessed their website through it. In-kind contributions or other resources to expand the functionality and increase the attractiveness of the IHO MSDI webpage would be welcome.

The second target related to the creation of a comprehensive IHO digital communication strategy (target 3.3). The IHO website had recorded almost 391,000 page views since 1 January 2021. The Secretariat was now measuring the number of downloads of the most popular IHO standards, and had considerably increased its social media activity, with LinkedIn proving the most successful channel of communication. Of course, the main outreach event of the previous year had been the celebration of the 100<sup>th</sup> anniversary of IHO, culminating in a hybrid in-person/virtual event on 21 June 2021 in the presence of HSH Prince Albert II of Monaco.

<https://www.youtube.com/watch?v=QuDX9cAzQMI&t=13s>

The contribution of WP 1 to Goal 3, however, was more comprehensive as the metrics for social media, IHO visitors and requests for download have expressed. The management and fostering of relations with intergovernmental and other international organizations was an essential contribution and was measured quantitatively and qualitatively in terms of the amount and type of outreach. The excerpt of WP1 out of the full IHO Work Programme annexed to C5-6.1A listed all such notable activities undertaken under the IHO Work Programme 1 until 1st July 2021 in four categories:

Global outreach:	13 notable activities
Regional outreach:	4 notable activities
Stakeholder's specific outreach:	15 notable activities
Consultations:	2 notable activities

The Council was invited to approve the suggestion to measure the notable activities under WP 1 by means of the proposed four categories.

Members congratulated the IHO on their outreach event and 100<sup>th</sup> anniversary of IHO celebration.

**Netherlands** noted the current links in the portal point to mostly chart catalogues and suggested that the MSDI page could be subdivided into two distinct subpages: the existing catalogue of Member States' nautical charts and MSDI resources. This was noted by the IHO Secretariat.

**USA** complimented the work done regarding MSDI listing but said that the most valuable role for the IHO Secretariat was to build awareness of the MSDI infrastructure and ensure coordination between its own work and that of the MSDI Working Group and Member States' national MSDI activities.

**Decision C5/37:** The **Council** acknowledged the submission of the IHO Secretariat's recommendations on the Implementation of the Strategic Plan and noted the Secretariat's achievements, e.g. the number of followers on social media, counting IHO website visitors and standards documentation downloads.

**Decision C5/38:** The **Council** approved the suggestion to measure the notable activities under WP1 in four categories (global outreach, regional outreach, stakeholder's specific outreach + consultations) as SPIs.

**Decision and Action C5/39:** The **Council** noted the in-kind contribution/assistance requested by the IHO Secretariat to prepare the tools in support of SPI 2.1.1 and improve the attractiveness of the gateway. **Council Members** to consider the provision of some support. (deadline: March 2022)

The **Chair of HSSC** reported on the strategic performance indicators allocated to HSSC and introduced the proposed metrics. For target 1.1.1, the target figure was for 60% of Member States to distribute at least one product based on S-100. For target 1.1.2, the target figure was for 10 (specified) S-100 product specifications, ed. 2.0.0., to become operational. For target 1.2.1, the same 10 S-100 product specifications should be assessed for cybersecurity and data quality. For target 2.2.2, HSSC would measure the number of new applications of the new version of S-44, with the precise target number of downloads to be determined at a later date.

**Decision and Action C5/41:** The **Council** agreed to the SPI metrics as proposed by HSSC in Annex A of its report with the following considerations and tasked **HSSC** to provide tentative values and comments to the **Council Chair** for the preparation of the Annual Report (section Implementation of the Strategic Plan). (deadline: end of January 2022)

**Canada** said in respect of target 1.1.2 that HSSC, IRCC and WENDWG should work closely together, since the indicator would provide useful data for monitoring the progress of S-100 Roadmap implementation.

The **Chair of IRCC** reported on the strategic performance indicators allocated to IRCC and introduced the proposed metrics.

**Decision and Action C5/42a:** The **Council** agreed to the SPI metrics as proposed by IRCC in Annex B of its report and tasked **IRCC** to engage with the RHCs to design relevant implementation procedures as appropriate. (deadline: April 2022)

**Decision and Action C5/42b:** The **Council** tasked the **IRCC** to provide tentative values and comments to the **Council Chair** for the preparation of the Annual Report (section Implementation of the Strategic Plan). (deadline: end of January 2022)

**Decision C5/43:** The **Council** noted the information from **IRCC** to organize a workshop by April 2022 on the definition and design of SPIs methodologies and subsequent governance and automated GIS tools to implement them, by **Members States** within **RHCs**. (deadline: IRCC-14 / C-6).

For target 1.2.2, the target figure was for hydrographic knowledge to be assessed through the use of appropriate quality indicators in all navigationally significant areas by 2026. The lead bodies for that task were the regional hydrographic commissions, specifically their capacity building coordinators. A regional approach would need to be taken, since some regions had a high level of hydrographic knowledge, while others were at a lower level and should use a system such as Category Zone of Confidence (CATZOC) values, which would be adequate for the present. IRCC planned to conduct a workshop on regulation to assist Member States in their assessment activities, which would include guidance on the SPI for target 1.2.2. Taking a regional approach should ensure that neither the IHO Secretariat nor the Data Quality Working Group saw a great increase in their workload.

For target 2.2.1, a two-step process was proposed for determining the percentage of adequately surveyed area for each coastal State. The procedure laid down in publication C-55 was not sufficiently rigorous: indeed, in some cases, the evaluation provided was no more than a rough estimate by the State concerned. A further complication was that not all coastal States were members of IHO. The first step would be an overview obtained from CATZOC data, while the second was a survey overview which would be compared with the needs of the area concerned – a substantial task currently carried out by capacity building coordinators.

**Norway** noted that, historically, C-55 issues had been monitored by CBSC. Now that evaluation of the status and progress of hydrographic surveys had become more technical, it might be valuable to involve charts coordinators, who could also contribute to C-55 reporting and looking at the BSHC work in the Baltic to see if that could have relevance. In respect of the proposed two-step process for determining percentages of adequately surveyed area, **Norway** noted that a project team existed for the second step of that process, but that it was currently dormant. For target 3.2.3 on the percentage of total sea area that was Seabed-2030-compliant, RHCs were encouraged to liaise with Seabed 2030 regional coordinators and report on their findings to IRCC.

**IRCC Chair** said regarding BSHC's survey monitoring work, there was no chance to use this approach for SPI as too complex to be generalized to other regions (Useful Reference: [link to BSHC Status of Survey Present and Future](#)).

**Netherlands** shared **Norway's** concern with which IRCC body takes up the work for the second step of determining the percentages of adequately surveyed areas and asked what the role of the Data Quality Working Group would be. IRCC Chair sees it as the role of the IHO Secretariat to gather and provide this information but states the data must come from the regions and the CBSC. The Data Quality Working Group sees this should be a regional approach.

The **IHO Secretariat** noted that C-55 had originally been intended to assess coastal States' compliance with SOLAS; an SPI intended to measure the implementation of all aspects of Goal 2 of the Strategic Plan needed to be broader in scope. C-55 was not sufficient to measure this SPI as it was, and improvement was under development in relation to capacity building. There would be a workshop specifically designated and GIS experts might usefully participate in the proposed IRCC workshop.

With regard to the implementation of the Strategic Plan, the IHO Secretariat reminded the previous decision (C4/36) – now transformed into a C-5 decision - as follows:

**Decision C5/48:** Following the adoption of the Revised Strategic Plan by A-2, the **Council** noted that the effective implementation of the Strategic Plan 2021-2026 is to be considered as the main theme of supervision and control of the **Council** until A-3, keeping in mind to apply the principles of ISO 9001 (deadline: A-3)

## 7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL

### 7.1 Update on the implementation of Decision A2/07 Gender-inclusivity

*Docs: C5-7.1A*

The **Secretary-General** said that, guided by the UN Guidelines for gender-inclusive language, the Secretariat had identified the following recommendations: to undertake a comprehensive review of IHO Basic Documents (M-1) and Resolutions (M-3) from the perspective of gender-inclusive language; to propose alternative wording for each detected instance of less-inclusive language in M-1 and M-3 in keeping with the UN Guidelines on Gender-inclusive Language; to report on the use of gender-inclusive language in IHO documentation and written communication to be reviewed by C-6 and submitted to A-3; and to draft an IHO Resolution on the use of gender-inclusive language to be reviewed by C-6 and proposed to A-3. However, those recommendations amounted to a substantial administrative burden for the Secretariat. Updating all existing documentation was felt to be too burdensome, and so the approach suggested was to apply the guidelines to new documentation and to documentation that was being modified for any other reason. He welcomed the offer by Canada to assist the Secretariat by undertaking the core tasks of the document review and re-wording proposals, as well as drafting the new IHO resolution on gender-inclusive language. He encouraged other Member States to offer their assistance.

**Canada** fully endorsed the recommendations made in the proposal; it would support the Secretariat by providing a resource to assist in the completion of the review and re-wording tasks. **Japan** also endorsed the recommendations by the Secretary-General and agreed with the suggested approach: the wording of historical documents was not a priority, what mattered was an inclusive attitude by IHO Member States. **USA** stated strong support for the effort and offered administrative support for reviewing and rewording of IHO documents, offering to donate staff time to review a subset of documents for gender-inclusive language; she suggested that documents be divided between relevant Member States in order to review them as a team. **UK** said it was keen to assist as the review developed. **Colombia** and **France** endorsed the recommendations.

**Decision C5/49:** The **Council** endorsed the recommendations of Secretary-General presented in this report.

**Decision C5/50:** The **Council** agreed that to the greatest extent possible, the updating of gender references in existing IHO documents will take place in conjunction with other edits and revisions which have been received as proposals from IHO bodies. That is, there will be no systematic updating of all IHO documents for the single purpose of addressing gender language issues.

**Decision C5/51:** The **Council** agreed that guiding principles on gender-inclusive language, once approved, will apply to all new IHO documents, new editions, and communications.

**Action C5/52:** The **Secretary-General** with assistance from **CA** will evaluate the UN

Guidelines on gender-inclusive language and clean those relevant to the IHO to use as guiding principles. These will be incorporated into a new draft IHO Resolution on gender-inclusive language to be drafted by the **Secretary-General** – again assisted by **CA** - to be reviewed by C-6 and proposed to A-3.

**Action C5/53:** The **Secretary-General** with assistance from **CA** will undertake a comprehensive review and report of IHO Basic Documents (M-1) and Resolutions (M-3) vis-à-vis gender-inclusive language.

**Action C5/54:** Following a review by the **Secretary-General** and **CA**, the **Secretary-General** with assistance from **CA, UK and US (and other Member States...)** will propose gender inclusive wording in M1 and M-3 in keeping with the UN Guidelines on Gender-inclusive Language. These will be applied the next time the document is updated or revised.

**Action C5/55:** The **Secretary-General** to prepare a report on the use of gender-inclusive language in IHO documentation and written communication to be reviewed by C-6 and submitted to A-3.

## 7.2 Update on the implementation of Decision A2/25: S-130 Polygonal demarcations of global seas areas.

*Docs: C5-7.2A Useful references: IHO CL 19/2021 and 33/2021*

The **Secretary General** recalled that the Hydrographic Services and Standards Committee (HSSC) had been tasked with taking action to develop a new S-130 Polygonal Demarcations of Global Sea Areas Product Specification. The 13th meeting of HSSC had endorsed the requirement for a Project Team to develop the S-130 Product Specification as a dataset model for the subsequent production of the authoritative S-130 Dataset. Terms of reference and rules of procedure had been agreed, with the majority of responding HSSC members indicating support for following the common references and procedures for Project Teams working on technical solutions. A circular letter (IHO CL33/2021) had invited Member States to nominate representatives and technical experts to participate in the HSSC S-130 Project Team: 12 of the 21 Member States that responded had indicated their intention to participate. To date, the Secretariat had received one nomination for the role of Chair (Belgium) and one nomination for the role of Vice Chair (China). No nomination had been received for the role of Secretary. The HSSC Chair, S-130 PT Chair and IHO Secretariat would work out a timeline for the first activities of the S-130 Project Team to begin its work in the first half of 2022.

The development of the S-130 Product Specification as a dataset model and the subsequent production of the authoritative S-130 Dataset addressed the element PRO 1.9.2 of Decision A1/25. The remaining task placed on the Secretary-General under PRO 1.9.5 was to consider subsequent amendments to the relevant IHO Resolutions 32/1919 as amended and 12/1919 as amended. It was suggested that this would be carried out as part of the process resulting from PRO 1.9.2 progression. The **Republic of Korea** welcomed the establishment of the Project Team and the news that a Chair had been nominated, undertaking to cooperate so that the data set could be developed successfully.

**Decision C5/56:** The **Council** noted the progress report by the **Secretary-General** on the establishment of the S-130 PT and welcomed the nominations for the Chair and Vice-Chair positions, from **Belgium** and **China** respectively.

**Action C5/57:** Secretary-General to report on implementation of PRO 1.9 (deadline: C-6 / A-3)

### 7.3 US Proposal – Council role in Annual Assessment of the implementation of the IHO Strategic Plan in support of anticipated Report to be Assembly -3.

*Docs: C5-7.3A*

**USA** suggested that the Council Chair should prepare an annual assessment of the implementation of the IHO Strategic Plan at the end of 2021 and another at the end of 2022, in order to ensure that all Member States remained fully informed and to prepare for the Council's report to A-3 on implementation of the Strategic Plan. It could also be used for the IHO annual report and for communication with external partners. The Council was the appropriate body to prepare the report, since it was the only one that had oversight over all three work programmes.

**The Council Chair** indicated her willingness to prepare the reports as requested and acknowledged it would be a good document for use with external partners during the move to S-100 and for internal use.

Members supported the US proposal. **France** noted that the report should include an assessment of the implementation of the SPI at regional level, provided by the regional hydrographic commissions. **Canada** suggested a possible Annex to the IHO Annual Report for this annual summary. **Japan** said that the team should not be limited to Council but open to Member States as well.

The **Secretary-General** expressed a preference for a concise, attractive document that could be used for outreach to an external audience, both by the Secretariat and by Member States seeking to raise awareness of hydrography in their own countries. Regarding Japan's suggestion, it could use other Member States but suggested a relatively small group.

**Decision C5/44:** The **Council** endorsed the US proposal for **Council Chair** to organize and prepare an annual assessment of the implementation of the IHO Strategic Plan for 2021 and 2022.

**Decision and Action C5/45:** **Council Chair** will establish a methodology for preparing an annual assessment, including, if required, creating a team to assist in this task. (deadline: C-6)

**Decision and Action C5/46:** **IHO Member States** to be invited by **Council Chair** to provide support and information, as required.

**Decision and Action C5/47:** The **Council** noted the recommendation by Secretary-General that this report could be included in the Periodic Publication P7 - *IHO Annual Report* for Y replacing the current Annex B of P7 and requests the **IHO Secretariat** and the **US** to assist in this matter. Other ways to make this report more prominent will be considered. (deadline: End of January Y + 1).

### 7.4 Information: UKHO (UK) & Shom (France) S-100 ECDIS Collaboration

*Docs: C5-7.4A INF*

**UK** introduced an impending joint project by UKHO and Shom to support improved understanding of the challenges regarding production, distribution and display of S-57 and S-101 datasets in S-100 ECDIS, based on a route between Southampton/Portsmouth (UK) and Saint-Malo (France). It comprised three phases: automated conversion of data from S-57 to S-101 (but not S-101 to S-57, at present); delivery of data from HO to RENC; and data display in sea trials in ferries and, potentially, naval vessels. The third phase was scheduled to take place at some point in the next three years, depending on the availability of suitable ECDIS technology. At present, the project covered only S-101, but more S-100 products could be



added in due course. There was also provision to look at risk assessment, to consider mechanisms for updating S-101 ENC's, and the effects of the move to gridded ENC's.

A number of questions were raised, including whether the IHO Lab might be involved later, the potential to engage with multiple end users, and the HSSC Chair welcomed another example of co-operation between Member States, and again encouraged such regional initiatives. Only through building a body of evidence through multiple practical tests will the greater efficiency of S-100 be proven.

**Decision C5/58:** The Council noted this report and encouraged UK and FR to pursue their efforts in this incremental experimentation.

## **7.5 Information: UKHO's presentation on collaborative work underway with several other IHO Member States in relation to S100 and the various S1\*\* datasets, products and services.**

*Docs: C5-7.5A INF*

**United Kingdom**, noting the range of stakeholders outside the hydrographic sector affected by S-100 standard, presented several aspects of the UKHO's collaborative work. An overarching infographic that illustrated the S-100 standards in a single view showed the breadth of the data specification and was intended to serve as a useful visual aid when interacting with those less familiar with S-100. A short animated video used the real world example of the Solent to showcase the various standards in context.

UKHO's collaboration with the French Hydrographic Office (SHOM) was focused on a joint S-100 project that aimed to provide the IHO community with evidence for the proposed risk assessment, demonstrating that navigational safety in ECDIS was ensured with the introduction of S-101 ENC's; such evidence could be used by IHO when reporting to IMO in support of the introduction of S-100 ECDIS. The project would include data production on S-57 to S101 conversion and native S-101 creation, and would involve working with OEM partners and S-100 sea trials. A planned collaboration between UKHO and the Federal Maritime and Hydrographic Agency (BSH) would initially focus on

processing a proof of concept for S-102 German Test Data Set in readiness for early rounds of user testing, and move through testing and user feedback towards the outcome of providing an S-102 German Data Set that are maintained, updated, and supported with the coverage that partners needed in order to provide the services needed. UKHO was committed to participating in IHO Working Groups and Project Teams to support the development of S-100 standards, and had established an introductory online training course on S-100, with intermediate and advanced courses planned.

Several members complimented UKHO on the S-100 animated video; one member asked for permission to use the video domestically. The Chair expressed appreciation of the online training UKHO had provided throughout the pandemic and of the recently launched S-100 training.

**Decision C5/59:** The Council noted this report and thanked UK for their presentation and video.

## **7.6 Information: KHOA (ROK) & NOAA (USA) information on S-100 testbed project**

*Docs: C5-07.6A INF*

**Republic of Korea** gave an overview of the S-100 testbed project to support the stable and systematic introduction of S-100 for data production, distribution and utilisation of hydrographic datasets based on the S-100 Implementation Roadmap. In a two-day test in September 2021, researchers had tested technical aspects, including the S-98 Interoperability Catalogue and the new S-101 ENC symbols, and conducted a quantitative review of the usability and benefits of S-100 hydrographic data services using eye-tracker technology.

The **IHO Secretariat** welcomed the quantitative methodology employed in the project, which could provide evidence of the value of S-100 data services for improvements in efficiency, safety or environmental protection. **Netherlands** drew attention to the improved data integrity and security provided by S-100 technology.

**Decision C5/60:** The **Council** noted the approach proposed by the **KHOA-NOAA S-100 Testbed** project to measure the efficiency quantitatively for the use of S-100 data service and invited Member States to join the project and suggest other quantitative measures (safety of navigation, efficiency) as appropriate.

The **Secretary-General** thanked the Member States that had provided information on their collaborative projects, which provided valuable evidence of the increased efficiency resulting from the application of the S-100 standards. He was impressed with the holistic approach, evaluating the integrated use of a variety of S-100 datasets.

The **HSSC Chair** said that the new data obtained using S-100 products, in areas such as surface currents and bathymetry, was needed to convince the regulatory bodies, such as IMO, and end users to switch from S-57 to S-100 technology, although S-57 systems would remain in use for many years to come. Also, it would be illuminating to understand how this integration could affect loading or route savings, and he looked forward to supporting analysis.

## 8. NEXT MEETING

### 8.1 Dates and venue for the 6<sup>th</sup> meeting of the IHO Council (18-20 October 2022, Monaco)

The **Council Chair** highlighted the advantages of in-person meetings for informal discussion and networking, and the challenges of a virtual meeting across multiple time zones.

The **IHO Secretariat** suggested that it should plan for an in-person sixth session of the Council (C-6) on 18–20 October 2022, to be attended by as many Member States as possible. A “soft-hybrid” option would be available if the COVID-19 situation so required. The final decision between an in-person and a hybrid virtual/in-person meeting would be made in June 2022. Proposals by Member

States for inclusion on the agenda would be due by 18 July, and comments on those proposals by 18 August.

Every effort would be made to hold A-3 as a fully in-person event. If travel restrictions were still in place by 2023, Member States might consider accrediting a diplomatic representative already in France, or their IMO delegate in London, instead of the head of the national Hydrographic Office.

**Germany, Greece, Netherlands** and **Republic of Korea** expressed a preference for in-person meetings for both C-6 and A-3, even if some Member States were not able to attend. **Colombia, Japan, Malta** and **UK** likewise supported the proposal to hold an in-person C-6,

with the backup option of a hybrid meeting.

**Decision C5/61:** The **Council** agreed to hold C-6 in Monaco, at the IHO Secretariat, from 18 to 20 Oct. 2022. In the case of a remote/hybrid event, the **Council** agreed to consider arrangements similar to those made for C-5 (deadline: Go no-go decision 18 June 2022)

## 9. ANY OTHER BUSINESS

There was no other business.

## 10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING

**IHO Assistant Director Guillam** went through the identified actions, providing brief comments and explanations for actions and decisions where necessary (see Annex C).

In order for the Regional Hydrographic Commissions (RHCs) to get prepared for selecting some of their Members in the composition of the next Council who will be established after the 3<sup>rd</sup> Session of the Assembly, he also reminded that Member States would be requested to indicate in June 2022 the RHC to which they wished to be assigned and counted for Council qualification purposes.

The following decisions or actions (See Annex C) were deemed to have been completed: Decision C5/07 on updating of the S-100 Implementation Roadmap; and Decision C5/36 on funding for Empowering Women in Hydrography projects, with thanks to the generous support of **Canada**.

*Post-meeting note:* In the revision process of the List of Decisions and Actions resulting from C-5, Member States' comments were received to maintain C5/07 and C5/36 as ongoing.

The **Council** noted **Malta's** concerns that it might become necessary in future to reconsider or revise a number of IMO resolutions likely to be affected by other international instruments, in addition to SOLAS Chapter V, Regulation 9, which had been cited in Decision C5/23. The IHO Secretariat agreed to keep the issue on watch, and also invited Malta to advocate for IHO's interests in the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR).

At the suggestion of **Netherlands**, Decisions C5/15 and C5/42 were amended to state that IRCC would "engage" with the RHCs, rather than "provide guidance".

## 11. CLOSURE OF THE MEETING

The **Chair** thanked her fellow officers, Member State representatives and observers, the four rapporteurs and the IHO Secretariat for their hard work, which had made the fifth session of the Council a success.

The **Secretary-General** expressed his appreciation and gratitude to the Chair for her able management of the session, and commended his staff for their hard work, which had enabled the session to run smoothly. He declared the session closed.



**LIST OF REGISTERED PARTICIPANTS**

**5<sup>th</sup> Meeting of the IHO Council  
VTC, 18-Oct-2021 – 21-Oct-2021**



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94	IHO Member State	Thailand	HYDROGRAPHIC DEPARTMENT	Chatchai LUANGTHONGKHAM	Member of delegation	piakchat@gmail.com
95	IHO Member State	Thailand	HYDROGRAPHIC DEPARTMENT	Thanakorn NAJARN	Member of delegation	thanakorn.n@navy.mi.th

No	Category	Country	Organization / Company	Name	Status	E-mail
96	IHO Member State	Turkey	SEYİR HİDROGRAFI VE OSİNOGRAFI DAİRESİ BASKANLIĞI	Kayacan ÜNALP	Member of delegation	kunalp@shodb.gov.tr
97	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Bruce HARDING	Member of delegation	Bruce.harding@ukho.gov.uk
98	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Rhett HATCHER	Head of delegation	rhett.hatcher@ukho.gov.uk
99	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Chris HUNT	Observer	chris.hunt@ukho.gov.uk
100	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Dearbhla CAMPBELL	Observer	dearbhla.campbell@ukho.gov.uk
101	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Helena PATTON	Member of delegation	helena.patton@ukho.gov.uk
102	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Peter SPARKES	Head of delegation	peter.sparkes@ukho.gov.uk
103	IHO Member State	United States of America	Office of Coast Survey / National Ocean Service,(OCS/NOS)	John NYBERG	Member of delegation	john.nyberg@noaa.gov
104	IHO Member State	United States of America	Department of State (IO/S/SC)	Carrie LACROSSE	Member of delegation	LaCrosseC@state.gov
105	IHO Member State	United States of America	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)	Jenna JOHNSON	Member of delegation	Jenna.M.Johnson@nga.mil
106	IHO Member State	United States of America	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)	John LOWELL	Head of delegation	john.e.lowell@nga.mil
107	IHO Member State	United States of America	COMMANDER,NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND (CNMOC)	Matthew BORBASH	Member of delegation	matthew.borbash2.civ@us.navy.mil
108	IHO Secretariat	-	International Hydrographic Organization	Yong BAEK	Staff	yong.baek@iho.int
109	IHO Secretariat	-	International Hydrographic Organization	Yves GUILLAM	Staff	yves.guillam@iho.int
110	IHO Secretariat	-	International Hydrographic Organization	Remy ROQUEFORT	Staff	remy.roquefort@iho.int
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112	IHO Secretariat	-	International Hydrographic Organization	Caroline FONTANILI	Staff	caroline.fontanili@iho.int
113	IHO Secretariat	-	International Hydrographic Organization	Luigi SINAPI	Staff	luigi.sinapi@iho.int
114	IHO Secretariat	-	International Hydrographic Organization	Isabelle ROSSI	Staff	isabelle.rossi@iho.int
115	IHO Secretariat	-	International Hydrographic Organization	Leonel MANTEIGAS	Staff	leonel.manteigas@iho.int
116	Other Observers	-	-	James HARPER	Head of delegation	james.harper@ic-enc.org
117	Other Observers	-	-	Hans LAURITZEN	Observer	lauhan@kartverket.no



**5<sup>TH</sup> MEETING OF THE IHO COUNCIL**  
**Video-Teleconference (VTC), 19 – 21 October 2021**

**FINAL AGENDA**

**References:** Rules 7 and 8 of the Rules of Procedure of the Council.

**1. OPENING**

- 1.1 Secretary-General Opening Remarks.
- 1.2 Adoption of the Agenda and Timetable.
- 1.3 Chair's Opening Remarks.
- 1.4 Administrative Arrangements.

**2. ITEMS REQUESTED BY THE 2<sup>ND</sup> IHO ASSEMBLY**

- 2.1 Decision A2/08: Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board (*To be discussed under agenda item 4.5*).
- 2.2 Decision A2/12: Report on the Application of ISO 9001 Principles (*To be discussed through the reports of HSSC and IRCC under agenda items 4.1 and 4.2*).
- 2.3 Decision A2/14: Update on the best way forward for the definition of hydrographic interest.
- 2.4 Decision A2/20: Status report on the appropriateness and applicability of the new Strategic Performance Indicators (*To be discussed under agenda item 6.1, taking into account recommendations from Secretary-General for Programme 1, HSSC and IRCC Chairs for Programmes 2 and 3*).
- 2.5 Decisions A2/30&A2/31: Proposed version 1.x of the Roadmap for the S-100 Implementation Decade (*To be discussed under agenda item 4.4*).
- 2.6 Decision A2/33: Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs) (*To be discussed under agenda item 4.1*).
- 2.7 Cumulative List of A-2 Decisions affecting the Council (Decisions A2/02<sup>8</sup>, A2/04<sup>1</sup>, A2/06<sup>1</sup>, A2/08, A2/11<sup>1</sup>, A2/12, A2/14, A2/20, A2/30, A2/31, A2/33).

**3. ITEMS REQUESTED BY THE IHO COUNCIL**

- 3.1 Review of the status of Decisions and Actions from C-4.

**4. ITEMS REQUESTED BY SUBSIDIARY ORGANS**

- 4.1 Report and proposals from HSSC (including Update on the Dual-Fuel Concept in the transition from S-57 to S-101 ENCs.
  - Annex A: Strategic Performance Indicators allocated to HSSC and proposed metrics.

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<sup>8</sup> Complete.

- Annex B: Proposed Annex 2 (version 1.0, 7 July 2021) to the Roadmap for the S-100 Implementation Decade (2020-2030).

4.2 Report and proposals from IRCC.

- Annex A - Proposal for Amendment to Roadmap S-100.
- Annex B - Strategic Performance Indicators allocated to IRCC.

4.3 Left blank intentionally.

4.4 Proposed version 1.x of the Roadmap for the S-100 Implementation Decade.

4.5 Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board.

## **5. IHO ANNUAL WORK PROGRAMME AND BUDGET**

5.1 Review of the Current Financial Status of the IHO.

5.2 Proposed IHO Work Programme for 2022.

5.3 Proposed IHO Budget for 2022.

## **6. IHO STRATEGIC PLAN**

6.1 Implementation and discussion of adaptations of the IHO Work programme and other affected IHO instruments resulting from the revised Strategic Plan with a specific focus on Goal 2 and Goal 3. Status report on the appropriateness and applicability of the new Strategic Performance Indicators. Secretariat's recommendations on the implementation of the Strategic Plan (Work Programme 1)

## **7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL**

7.1 Update on the implementation of Decision A2/07: gender-inclusivity.

7.2 Update on the implementation of Decision A2/25: S-130 Polygonal demarcations of global sea areas.

7.3 US Proposal - Council role in Annual Assessment of the implementation of the IHO Strategic Plan in support of anticipated Report to be Assembly-3.

7.4 Information: UKHO (UK) & Shom (France) S-100 ECDIS Collaboration.

7.5 UKHO's presentation on collaborative work underway with several other IHO Member States in relation to S100 and the various S1\*\* datasets, products and services.

7.6 KHOA (ROK) & NOAA (US) Information on S-100 Testbed Project.

## **8. NEXT MEETING**

8.1 Dates and venue for the 6<sup>th</sup> meeting of the IHO Council (18 - 20 October 2022, Monaco) (Decision A2/11).

## **9. ANY OTHER BUSINESS**

## **10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING**

## **11. CLOSURE OF THE MEETING**

## LIST OF DECISIONS and ACTIONS FROM C-5

AGENDA ITEM	SUBJECT	DECISION or ACTION No.	DECISION or ACTIONS (in bold, action by)	TARGET DATE/EVENT	STATUS (at October 2021)
<b>1. OPENING</b>					
<b>1.1 Secretary-General Opening remarks and introductions</b>					
<b>1.2 Adoption of the agenda</b>					
	Agenda	C5/01	The <b>Council</b> adopted the agenda and the timetable as proposed and agreed to consider the information paper on S-100 Test Bed Project provided by KHOA (KR), and NOAA (US) (Doc. C5-07.6A INF refers) at the end of session 2 time permitting.		Decision
<b>1.3 Chair's Opening Remarks</b>					
	Opening	C5/02	<b>Council Members</b> welcomed the opening addresses by Dr. Geneviève Béchar, Council Chair and the Secretary-General and agreed on the participation of RENCs representatives as Observers.		Decision
<b>1.4 Administrative Arrangements</b>					
	Contact List	C5/03	<b>IHO Member States having a seat at the Council</b> to provide the IHO Secretariat with their updates to the IHO Council List of Contacts.	<b>Permanent</b>	
<b>2. ITEMS REQUESTED BY THE 2<sup>nd</sup> IHO ASSEMBLY</b>					
<b>2.1 Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board (Decision A2/08)</b>					
			<i>See section 4.5</i>		
<b>2.2 Report on the Application of ISO 9001 Principles (Decision A2/12)</b>					
			<i>See sections 3.1, 4.1, 4.2 and 6.1</i>		

AGENDA ITEM	SUBJECT	DECISION or ACTION No.	DECISION or ACTIONS (in bold, action by)	TARGET DATE/EVENT	STATUS (at October 2021)
6.1	Strategic Plan 2021-2026	C4/40	<b>The Council</b> agreed to experiment the application of the ISO 9001 principles on a couple of Strategic Plan targets (one per Committee to be proposed).		Reminder
<b>2.3 Discussion on the best way forward on the definition of hydrographic interest (Decisions A2/04 and A2/14).</b>					
	Definition of Hydrographic Interest	C5/04	The <b>Council</b> thanked Council Chair for the update on the ongoing work by the <b>interested parties AR, BR, IN and UY</b> and invited them to submit a consolidated report on possible ways forward, including impact assessment on IHO Basic Documents.	<b>C-6 (- 3 months)</b>	
	Definition of Hydrographic Interest	C4/08	<b>Council</b> noted the task given by the A-2 to consider the best way forward with proposals A-2 PRO-1.4 and A-2 PRO-1.5 on the definition of hydrographic interest and report to A-3 in 2023 and by which the Council was empowered to establish a working group for this specific purpose.	<b>A-3</b>	Reminder
	Definition of Hydrographic Interest	C4/09	<b>Council</b> invited interested parties (Argentina, Brazil, India, Uruguay ...) in the development of a definition of hydrographic interest, to consider IHC17 outcome, PRO1.4 and 1.5, and come back with a single consolidated proposal to C-5 or C-6 for possible consideration at A-3. (deadline C-5, C-6).	<b>C-5, C-6</b>	Reminder
<b>2.4 Status report on the appropriateness and applicability of the new Strategic Performance Indicators (Decision A2/20)</b>					
			<i>See section 6.1</i>		
<b>2.5 Proposed version 1.x of the Roadmap for the S-100 Implementation Decade (Decisions A2/30&amp;A2/31)</b>					
			<i>See section 4.4</i>		



AGENDA ITEM	SUBJECT	DECISION or ACTION No.	DECISION or ACTIONS (in bold, action by)	TARGET DATE/EVENT	STATUS (at October 2021)
<b>2.6 Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs) (Decision A2/33)</b>					
			<i>See section 4.1</i>		
<b>2.7 Cumulative List of Assembly Decisions affecting the Council.</b>					
			<i>For reference only</i>		

### 3. ITEMS REQUESTED BY THE IHO COUNCIL

#### 3.1 Review of the status of Decisions and Actions from C-4 (pending actions)

	IHO Resolutions on S-100	C5/05 (former C4/12)	The <b>Council</b> to monitor the progress of the task given to <b>HSSC</b> and <b>IRCC</b> to review the IHO Resolutions with regard to PRO 2.3 when the operational implementation of the S-100 concept becomes mature enough.  <b>HSSC</b> and <b>IRCC</b> to make proposals for endorsement to <b>Council</b> when appropriate	<b>C-6 as appropriate in preparation of A-3</b>	(Decision A2/32 refers). In progress. Planned at HSSC-14 (2022)
4.2	Capacity Building Activities	C5/06 (former C4/17, C3/25)	The <b>Council</b> invited the <b>IRCC</b> to instruct the <b>CBSC</b> to develop a system of performance indicators to measure, under the conduct of the <b>CBSC</b> and in accordance with the Revised Strategic Plan, the effectiveness and efficiency of <b>CB</b> activities. This system should be oriented to actual outcomes of <b>CB</b> support, not on quantity, or instances of <b>CB</b> activity.	<b>C-6</b>	On going
	S-100 Implementation Strategy	C5/07 (former C4/23)	<b>Council</b> to maintain and update the the S-100 implementation roadmap and resulting activities in liaison with <b>MS</b> and external bodies on an annual basis as a key priority of the Council activities.  <b>SG/Council Chair</b> to identify some key actions in support and report progress at C-5.	<b>C-6</b>	(Decision A2/30 refers)  Ongoing

	Application of ISO 9001 principles	C5/08 (former C4/40)	The <b>Council</b> invited the <b>IRCC</b> to identify a theme on which ISO 9001 Principles should be applied and to propose it to <b>Council</b> for endorsement.	<b>IRCC-14/C-6</b>	

#### 4. ITEMS REQUESTED BY SUBSIDIARY ORGANS

##### 4.1 Report and proposals from HSSC (including Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs))

	Report of HSSC	C5/09	The <b>Council</b> noted the report and commended the <b>HSSC</b> , its Working Groups and supporting organizations for the excellent achievements made in 2020-2021 despite the obstacles raised by the pandemic.		Decision
	Dual Fuel Concept	C5/10	The <b>Council</b> noted the actions in progress within <b>HSSC</b> for the development of a governance document in support of the dual fuel concept and associated actions. <b>HSSC</b> to report on the outcome at the next meeting.	<b>C-6</b>	
	IMO ECDIS Documents on S-100 ECDIS	C5/11	The <b>Council</b> noted the work in progress by <b>HSSC Chair Group, CIRM, IEC, Intertanko</b> , for the revision of the IMO MSC.1/Circ.1503/Rev1 – <i>ECDIS Guidance for Good Practice</i> and Resolution MSC.232(82) - <i>ECDIS Performance Standard</i> .	<b>HSSC-14/NCSR-9 (June 2022), then C-6</b>	

	Future of the Paper Nautical Chart	C5/12 (former C4/10)	<p>The <b>Council</b> to continue the monitoring of the implementation by <b>HSSC</b> of the recommendations on the Future of the Paper Nautical Chart as appropriate.</p> <p>The <b>Council</b> noted the development of a 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.</p>	<b>HSSC-14 / C-6</b>	<p>(Decisions A2/27&amp;28 refers)</p> <p>Decision</p>
	S-57, S-101	C5/13 (former C4/11)	<p><b>The Council</b> to monitor the progress of the task given to <b>HSSC</b> to prepare (<i>done</i>) now maintain the synoptic summary report on the various options offered to HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production.</p>	<b>C-6</b>	(Decision A2/33 refers)
	HSSC&IRCC Reports and Proposals to C-6	C5/14 (same as former C4/13, ...and C1/06)	<p>Considering the timelines between HSSC-14 and IRCC-14 meetings in 2022 and the countdown for submission of reports and proposals to C-6, the <b>Council</b> invited <b>HSSC and IRCC Chairs</b> to prepare their 2022 meeting minutes with the view that they will be used/submitted directly as reports and proposals to be considered at C-6.</p>	<b>July 2022</b>	
<b>4.2 Report and proposals from IRCC</b>					

4.2	Report of IRCC	C5/15	The <b>Council</b> noted the report and commended the IRCC, the RHCs, and IRCC Sub-Committees for their achievements as well as the outcome of the IRCC October Workshop on the Strategic Plan.		Decision
6.1			The <b>Council</b> , acknowledging the need for further recommendations on the realization of the Strategic Plan in <b>RHCs</b> by Member States, invited the <b>IRCC</b> to provide these recommendations to the RHCs as a matter of priority.	<b>By April 2022/IRCC-14/C-6</b>	
			The Council recognized the need for further IRCC workshops to support the realization of the IHO Strategic Plan.		
4.2	IHO e-Learning Centre	C5/16 (former C4/14)	The <b>Council</b> to monitor the progress made by IRCC to establish an IHO e-Learning Center based on A-2 PRO 3.3 and the related recommendations of IRCC/CSBC.	<b>C-6</b>	(Decision A2/42 refers).
4.2	Women in Hydrography	C5/17 (former C4/16)	The <b>Council</b> to monitor the progress made by IRCC on the CBSC work item of Empowering Women in Hydrography (EWH).	<b>C-6</b>	(Decision A2/35 refers).
<b>4.3</b> <i>Left blank intentionally</i>					
<b>4.4</b> <b>Discussion on the S-100 Implementation Strategy – Proposals from HSSC and IRCC</b>					
	S-100 Implementation Strategy – Products in 1 <sup>st</sup> and 2 <sup>nd</sup> step developments	C5/18	<b>Council</b> agreed to the proposed amended list of S-100 products with special focus (e.g. route monitoring, planning) as cited in Table A of Annex A of the HSSC report.		Decision
	S-100 Implementation Strategy – S-101	C5/19	<b>The Council</b> agreed to the proposed amendment to the S-100 Implementation Roadmap to clarify the progress with S-101 as contained in Annex B of the HSSC report.		Decision

	S-100 Implementation Strategy – new Annex 2 to Roadmap document	C5/20	The <b>Council</b> approved the proposed Annex 2 to the Roadmap for the s-100 Implementation Decade (2020-2030) as described in Annex B of the HSSC report (S-1xx Products, Product Specifications Development Timeline and synoptic diagram from S-57 to S-101).		Decision
	S-100 Implementation Strategy – Amendment from WENDWG	C5/21	The <b>Council</b> endorsed the amendment to the S-100 Implementation Roadmap as proposed by the WENDWG and contained in Annex A of the IRCC report.		Decision
	Roadmap for S-100 Implementation Decade	C5/22	<b>IHO Secretariat</b> to upload version 2.0 of the Roadmap including approved amendments.	<b>31 January 2022</b>	
	SOLAS Chap. V, Reg. 9	C5/23	The <b>Council</b> noted the statement made by the US calling for the IHO to accept some flexibility in the implementation of IHO standards (production, distribution and WEND-100 services in particular) as SOLAS Chap. V, Reg. 9 allows.		
	S-100 Implementation Strategy	C5/24 (former C4/18, C3/13)	<b>Council/HSSC/IRCC Chairs/SecGen</b> supported by subject matter experts and Member States as appropriate to maintain the S-100 Implementation Roadmap as an incremental version-controlled document (including narrative and timelines) on an annual basis.	<b>Permanent</b>	
	S-100 Implementation Strategy	C5/25 (former C4/20)	<b>SG, Council Chair, HSSC, IRCC Chairs</b> to maintain the three annexes related to the IHO WP 1, 2 and 3 to S-100 Implementation Roadmap.	<b>C-6</b>	(Decision A2/31 refers)

	S-100 Implementation Strategy	C5/26 (former C4/27)	The Assembly having noted the update on interrelations and tasks, <b>Secretary-General</b> to continue to liaise with [IMO and] other relevant stakeholders and organizations involved in the development of other S-100 based products.	<b>Permanent</b>	(Decisions A2/40&41 refer)
<b>4.5 Update on the Joint IHO-Singapore Innovation and Technology Laboratory – Proposals from the Council to the Governing Board (Decision A2/08)</b>					
	IHO-Singapore Innovation and Technology Laboratory	C5/27	The <b>Council</b> noted the update on the Joint IHO-Singapore Innovation and Technology Laboratory including simplified procedures for submission of project proposals.		(Decision A2/08 refers)
	IHO-Singapore Innovation and Technology Laboratory	C5/28  C5/29	The <b>Council</b> endorsed the <b>HSSC</b> project proposals: a. Testing automated conversion of S-57 to S-101 in support of the dual-fuel concept; and b. Prototyping a S-131 database (and interface) for marine harbour information  The <b>Council</b> tasked <b>HSSC</b> to encourage <b>ENCWG</b> and <b>NIPWG</b> to manage their project applications respectively through the Lab.	<b>HSSC-14/C-6</b>	(Decision A2/08 refers)
<b>5. IHO ANNUAL WORK PROGRAMME AND BUDGET</b>					
<b>5.1 Review of the Current Financial Status of the IHO</b>					
	Financial Reporting Statement	C5/30	The <b>Council</b> noted the information provided on the current financial status.		Decision
	Financial Reporting Statement	C5/31	The <b>Council</b> invited the <b>Secretary-General</b> to provide recommendations to the <b>Council Members</b> by Finance Circular Letter on the allocation of the anticipated surplus for 2021, with priority for additional funds going to capacity building.	<b>April 2022</b>	

5.2 Proposed IHO Work Programme for 2022					
	Proposed IHO WP for 2022	C5/32	The <b>Council</b> agreed to and approved the IHO Work Programme for 2022, as presented by the Secretary-General, including the preparation of A-3 and IHO Work Programme 2024-2026.		Decision
	Work Programme 2022	C5/33 (former C4/31)	<b>IHO Secretariat</b> to issue an IHO CL making the IHO Work Programme 2022 available to the IHO MemberStates as approved by the Council.	<b>Permanent</b>	Reminder: See IHO CL 18/2021 as reference
	World Hydrography Day	C5/34	The <b>Council</b> noted the proposed theme for the 2022 World Hydrography Day by the Secretary-General " <i>How hydrography can contribute to the United Nations Ocean Decade</i> "  <b>IHO Secretariat</b> to circulate the theme for 2022 to the IHO MS by IHO CL and fine tune language of the theme as needed.	<b>End of October 2021</b>	Decision
5.3 Proposed IHO Budget for 2022					
	2022 IHO Budget	C5/35	The <b>Council</b> approved the budget estimates provided by the Secretary-General.		Decision
	Budget 2023	C5/36 (former C4/35)	<b>Secretary-General</b> to secure funding to support EWH projects through negotiation of suitable cooperation agreements with interested Member States and/or partnering organizations.	<b>C-6</b>	(Decision A2/39 refers) Ongoing (Canada's contribution noted)

6. IHO STRATEGIC PLAN REVIEW					
6.1 Implementation and discussion of adaptations of the IHO Work programme and other affected IHO instruments resulting from the revised Strategic Plan with a specific focus on Goal 2 and Goal 3. Status report on the appropriateness and applicability of the new Strategic Performance Indicators					
	SPI metrics - IHO Secretariat (Action C4/37)	C5/37	The <b>Council</b> acknowledged the submission of the IHO Secretariat's recommendations on the Implementation of the Strategic Plan and noted the Secretariat's achievements, e.g. the number of followers on social media, counting IHO website visitors and standards documentation downloads.		Decision
	SPI Work Programme 1	C5/38	The <b>Council</b> approved the suggestion to measure the notable activities under WP1 in four categories (global outreach, regional outreach, stakeholder's specific outreach + consultations) as SPIs.		Decision
	SPI 2.1.1	C5/39	The <b>Council</b> noted the in-kind contribution/assistance requested by the IHO Secretariat to prepare the tools in support of SPI 2.1.1 and improve the attractiveness of the gateway. <b>Council Members</b> to consider the provision of some support.	March 2022	
	Application of ISO 9001 principles (Action C4/40)	C5/40	The <b>Council</b> endorsed the <b>HSSC</b> proposal that ISO 9001 principles will be experimented on the development of the Product Specification for ENC's S-101 ed. 2.0.0	C-6	
	SPI metrics - HSSC (Action C4/37 and C4/39)	C5/41	The <b>Council</b> agreed to the SPI metrics as proposed by HSSC in Annex A of its report with the following considerations and tasked <b>HSSC</b> to provide tentative values and comments to the <b>Council Chair</b> for the preparation of the Annual Report (section Implementation of the Strategic Plan).	End of January 2022	Decision



	SPI metrics - IRCC (Action C4/37)	C5/42a          C5/42b	The <b>Council</b> agreed to the SPI metrics as proposed by IRCC in Annex B of its report and tasked <b>IRCC</b> to engage with the RHCs to design relevant implementation procedures as appropriate.  The <b>Council</b> tasked the <b>IRCC</b> to provide tentative values and comments to the <b>Council Chair</b> for the preparation of the Annual Report (section Implementation of the Strategic Plan).	<b>By April 2022</b>          <b>End of January 2022</b>	Decision
	IRCC Strategic Workshop	C5/43	The <b>Council</b> noted the information from <b>IRCC</b> to organize a workshop by April 2022 on the definition and design of SPIs methodologies and subsequent governance and automated GIS tools to implement them, by <b>Members States</b> within <b>RHCs</b> .	<b>IRCC-14 / C-6</b>	

	US Proposal - Council role in Annual Assessment of the implementation of the IHO Strategic Plan in support of anticipated Report to be Assembly-3.	C5/44  C5/45  C5/46  C5/47	<p>The <b>Council</b> endorsed the US proposal for <b>Council Chair</b> to organize and prepare an annual assessment of the implementation of the IHO Strategic Plan for 2021 and 2022.</p> <p><b>Council Chair</b> will establish a methodology for preparing an annual assessment, including, if required, creating a team to assist in this task.</p> <p><b>IHO Member States</b> to be invited by <b>Council Chair</b> to provide support and information, as required.</p> <p>The <b>Council</b> noted the recommendation by Secretary-General that this report could be included in the Periodic Publication P7 - <i>IHO Annual Report</i> for Y replacing the current Annex B of P7 and requests the <b>IHO Secretariat</b> and <b>the US</b> assist in this matter. Other ways to make this report more prominent will be considered.</p>	C-6  Ongoing  End of January Y+1	Decision
6.1	Strategic Plan 2021-2026	C5/48 (former C4/36)	Following the adoption of the Revised Strategic Plan by A-2, the <b>Council</b> noted that the effective implementation of the Strategic Plan 2021-2026 is to be considered as the main theme of supervision and control of the <b>Council</b> until A-3, keeping in mind to apply the principles of ISO 9001.	A-3	Decision (Decisions A2/12&19 refer)

7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL					
7.1 Update on the implementation of Decision A2/07: gender-inclusivity					
	Gender-inclusive Language	C5/49	The <b>Council</b> endorsed the recommendations of Secretary-General presented in this report.		Decision
		C5/50	The <b>Council</b> agreed that to the greatest extent possible, the updating of gender references in existing IHO documents will take place in conjunction with other edits and revisions which have been received as proposals from IHO bodies. That is, there will be no systematic updating of all IHO documents for the single purpose of addressing gender language issues.		Decision
		C5/51	The <b>Council</b> agreed that guiding principles on gender-inclusive language, once approved, will apply to all <u>new</u> IHO documents, <u>new</u> Editions, and communications.		Decision
	Gender-inclusive Language	C5/52	The <b>Secretary-General</b> with assistance from <b>CA</b> will evaluate the UN Guidelines on gender-inclusive language and clean those relevant to the IHO to use as guiding principles. These will be incorporated into a new draft IHO Resolution on gender-inclusive language to be drafted by the Secretary-General to be reviewed by C-6 and proposed to A-3.	<b>C-6</b>	
	Gender-inclusive Language	C5/54	Following a review by the Secretary-General and CA, the <b>Secretary-General</b> with assistance from <b>CA, UK and US (and other Member States...)</b> will propose gender inclusive wording in M1 and M-3 in keeping with the UN Guidelines on Gender-inclusive Language. These will be applied the next time the document is updated or revised.	<b>C-6, C-7...</b>	

	Gender-inclusive Language	C5/55	The <b>Secretary-General</b> to prepare a report on the use of gender-inclusive language in IHO documentation and written communication to be reviewed by C-6 and submitted to A-3.	C-6	
<b>7.2 Update on the implementation of Decision A2/25: S-130 Polygonal demarcations of global sea areas</b>					
		C5/56	The <b>Council</b> noted the progress report by the <b>Secretary-General</b> on the establishment of the S-130 PT and welcomed the nominations for the Chair and Vice-Chair positions, from <b>Belgium</b> and <b>China</b> respectively.		Decision
	S-23, A2 PRO1.9 follow-up	C5/57 (former C4/07)	<b>Secretary-General</b> to report on implementation of PRO 1.9 <sup>9</sup> .	C-6 / A-3	(Decision A2/24&25 refer)
<b>7.3 US Proposal - Council role in Annual Assessment of the implementation of the IHO Strategic Plan in support of anticipated Report to be Assembly-3.</b>					
			<i>Reference 6.1</i>		
<b>7.4 Information: UKHO (UK) &amp; Shom (France) S-100 ECDIS Collaboration.</b>					
	7.4	C5/58	The <b>Council</b> noted this report and encouraged <b>UK</b> and <b>FR</b> to pursue their efforts in this incremental experimentation.		
<b>7.5 Information: UKHO's presentation on collaborative work underway with several other IHO Member States in relation to S100 and the various S1** datasets, products and services.</b>					
	7.5	C5/59	The <b>Council</b> noted this report and thanked <b>UK</b> for their presentation and video.		
<b>7.6 Information: Republic of Korea (KHOA) –US (NOAA) S-100 Test bed Project.</b>					
	S-100 Test bed Project	C5/60	The <b>Council</b> noted the approach proposed by the KHOA-NOAA S-100 Test bed project to measure the efficiency quantitatively for the use of S-100 data service and invited Member States to join the project and suggest other quantitative measures (safety of navigation, efficiency) as appropriate.		

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<sup>9</sup> Future of S-23.

8. NEXT MEETING					
8.1 Dates and venue for the 6 <sup>th</sup> Meeting of the IHO Council					
	C-6	C5/61		Go no-go decision 18 June 2022	Decision
			The <b>Council</b> agreed to hold C-6 in Monaco, at the IHO Secretariat, from 18 to 20 Oct. 2022. In the case of a remote/hybrid event, the <b>Council</b> agreed to consider arrangements similar to those made for C-5.		
9. ANY OTHER BUSINESS					
10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING					
11. CLOSURE OF THE MEETING					

**6<sup>th</sup> MEETING OF THE IHO COUNCIL**  
**IHO C-6**  
**Monaco, 18 – 20 October 2022**

**SUMMARY REPORT**  
*(Version 1, 26 October 2022)*

*Note: while the 6<sup>th</sup> meeting of the IHO Council was conducted according to the timetable, this summary report is in line with the sections of the agenda.*

Annex A: *List of Registered Participants*

Annex B: *Agenda*

Annex C: *List of Decisions and Actions*

## **1. OPENING**

### **5.1 Secretary-General Opening remarks**

*Docs: C6-01A      List of Documents*  
*C6-01B      List of Participants*  
*C6-01.4A    Membership Contact List*

The **Secretary-General** of the IHO, **Dr Mathias Jonas**, welcomed participants to the sixth session of the Council, which was taking place in person once again after two years of hybrid meetings. Three members were unable to attend and had provided apologies, however two of these members were listening in via live stream. The session had reached a quorum, with 26 Council Member States registered and present. He confirmed that no Red Book, containing prior comments on Proposals to Council, had been prepared, as no comments had been received.

He appealed to members to show flexibility and to express their views freely. The silence procedure adopted during the previous virtual session still applied; accordingly, members not explicitly objecting to a proposal were deemed to have accepted it. The Council's main task was to formulate clear and decisive recommendations for the 3<sup>rd</sup> Session of the IHO Assembly, scheduled for May 2023.

### **1.2 Adoption of the Agenda and Timetable**

*Docs: C6-01.2A Rev2.1    Agenda*  
*C6-01.2B          Timetable*

The **Chair** presented the proposed agenda and timetable, with minor changes from the version distributed in advance. It was announced that a film crew from the local television station, Monaco Info, would record visuals, but not sound, on the second day of the session, 19 October.

**Decision C6/01:** The **Council** welcomed the proposal to be informed on Day 2 by Mr Pierre Bahurel, Director General of Mercator Ocean International, about the Digital Twin of the Ocean initiative.

**Decision C6/02:** The **Council** adopted the agenda and the timetable as proposed, and agreed to consider the information papers (Docs. C6-07.6A, and 07.7A), when appropriate or at the end of some sessions, time permitting.

### **1.3 Chair's Opening remarks**

Docs: C6-01.3A

The **Chair** of the Council, **Dr Geneviève Béchar**d, welcomed members, including a special welcome to the delegation from Albania, which had become the 98<sup>th</sup> Member State of IHO in May 2022; and congratulated the Italian Hydrographic Institute on its 150<sup>th</sup> anniversary. She thanked His Serene Highness Prince Albert II and the Government of Monaco for financing the renovation of the IHO offices during the pandemic. Important issues at the current session of the Council included the recommendations to be transmitted to the 3<sup>rd</sup> Session of the IHO Assembly, progress in implementing the IHO Strategic Plan and proposed revisions to the S-100 Roadmap. The Council would consider the proposed IHO Work Programme and Budget for 2023 and the three-year Work Programme and Budget for the period 2024–2026. It would also identify priorities for the Council over the next three years.

**Decision C6/03: Council Members** welcomed the opening addresses by Dr Geneviève Béchar, Council Chair and the Secretary-General and agreed on the participation of RENC representatives (IC-ENC) as observers.

#### 1.4 Administrative Arrangements

Docs: C6-01.4A      *Membership Contact List & Useful References – Marked-up Basic Docs (IHO Convention, General Regulations, Assembly ROP, Council ROP)*

The **IHO Secretariat** invited all members to check the Council membership list and confirm their individual details, explained the process and timelines of the Council Summary Report and the work of the précis-writers and five rapporteurs kindly appointed by France, Germany, United Kingdom, United States of America and the IHO Secretariat.

**Decision C6/04: IHO Member States having a seat at the Council** to provide the IHO Secretariat with their updates to the IHO Council List of Contacts.

## 2. ITEMS REQUESTED BY THE 2<sup>nd</sup> IHO ASSEMBLY

**2.1 Decision A2/08: Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board** (*To be discussed under agenda item 4.5*).

**2.2 Decision A2/12: Report on the Application of ISO 9001 Principles** (*To be discussed through the reports of HSSC and IRCC under agenda items 4.1 and 4.2*).

**2.3 Update on the best way forward for the definition of hydrographic interest (Decision A2/14)**

**The Chair** informed that, after informal discussions between the interested Members, it had been agreed that more work was needed on a possible revision of the definition of hydrographic interest, if possible with the participation of more countries. Since the present Council would be dissolved at the end of the current session, she declared the agenda item closed and suggested that it should be taken up again at some point in the future, when more detailed solutions have been developed.

**Decision and Action C6/05: The Council Chair** to report at A-3 on the situation (as requested by Decision A2/14) and to recommend that this topic is put on hold until interested parties work out a mature proposal for a revised definition (deadline: 20 December 2022 for submission to A-3).

**2.4 Decision A2/20: Status report on the appropriateness and applicability of the new Strategic Performance Indicators** (*To be discussed under agenda item 6.1, taking into account recommendations from Secretary-General for Programme 1, HSSC and IRCC Chairs for Programmes 2 and 3*).

**2.5 Decisions A2/30&A2/31: Proposed version 2.x of the Roadmap for the S-100 Implementation Decade** (*To be discussed under agenda item 4.4*).

**2.6 Decision A2/33: Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs)** (*To be discussed under agenda item 4.3*).

**2.7 Cumulative List of A-2 Decisions affecting the Council (Decisions A2/02<sup>10</sup>, A2/04<sup>2</sup>, A2/06<sup>2</sup>, A2/08, A2/11<sup>2</sup>, A2/12, A2/14, A2/20, A2/30, A2/31, A2/33).**

For Reference only. See Publication P-6, volume 1 ([link](#)).

### 3. ITEMS REQUESTED BY THE IHO COUNCIL

#### 3.1 Review of the status of Decisions and Actions from C-5

*Doc: C6-03.1A*

The **IHO Secretariat** reported that most decisions and actions from C-5 had been implemented while all pending would be discussed under the relevant item.

### 4. ITEMS REQUESTED BY SUBSIDIARY ORGANS

#### 4.1 Report and proposals from HSSC

*Doc: C6-04.1A Report from HSSC*

- Annex A: Proposed New IHO Resolution xx/2023 on the S-100 Implementation
- Annex B: Draft revised version of the Roadmap for the S-100 Implementation Roadmap, Annex 2, version 2.0, 12 July 2022
- Annex C: Proposed Annex 4 to the Roadmap for the S-100 Implementation Decade (2020-2030), Executive Summary of Dual Fuel Concept for S-100 ECDIS

*Doc: C6-04.1B Submission (USA et al) Guidelines for ENC derived Paper Charts*

*Doc: C6-04.1C Submission ROK S-100 Testbed project in 2022*

**4.1A** The **Chair of HSSC** reported on the work of the Committee for the current cycle of the Council. All Working Groups were requested to hold at least one face-to-face meeting before HSSC15, which would take place in Finland on 5–9 June 2023.

**Decision C6/07:** The **Council** noted the report and commended the HSSC, its Working Groups and supporting organizations for the achievements since C-5.

**Decision C6/09:** Following up on Decision A2/33, the **Council** noted the publication, for implementation and testing, of Ed.1.0.0 of Annex B to S-65 - S-57 ENC to S-101 Conversion Guidance and commended the ENCWG and Mr Jeff Wootton in particular (TSSO, IHO Secretariat) for this outstanding achievement.

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<sup>10</sup> Complete.



**Decision and Action C6/14:** The **Council** endorsed the recommendation by **HSSC** by which Goal 1 and its Targets in the IHO Strategic Plan should have the highest priority in the 2023–2026 Work Programme. The **Council Chair** to report to A-3 accordingly for approval (deadline: 20 December 2022 for submission to A-3).

At its ninth meeting in 2022 (NCSR9), the Sub-Committee on Navigation, Communications, Search and Rescue of the International Maritime Organization (IMO) had endorsed and transmitted to the IMO Maritime Safety Committee (MSC) the proposal, initiated by IHO, to include S-100 compatible data sets as a valid format in ECDIS. Controversial content on functionalities for route exchange included in the initial proposal had been deleted. Of particular note is the intended timeline for S-100 ECDIS. It was essential to encourage IHO Member States and wider stakeholders to actively support the development of S-101 and other S-1xx Product Specifications and, potentially, accelerate delivery of operational versions of S-128, S-164 and S-98<sup>11</sup>.

**Decision C6/11:** The **Council** noted the outcome of the 9th session of the IMO NCSR on the revision of MSC.1/Circ.1503/Rev1 – ECDIS Guidance for Good Practice and Revision of MSC.232(82) – ECDIS Performance Standard (IHO CL 31/2022 refers) and took note of the associated commitments made towards the IMO and the IEC in particular (transition period for S-100 ECDIS, to become legal to use after 1 January 2026 and from 1 January 2029, new systems must comply with the new IMO Resolution on ECDIS Performance Standards)<sup>12</sup>.

**IHO Director Kampfer** urged members to liaise with their counterparts in the IMO Maritime Safety Committee to promote the timely development of S-101 and the importance of the S-100 Roadmap and support the proposed amendments to ECDIS Performance Standards, with the associated in force dates endorsed by NCSR9, at the upcoming MSC meeting.

**Action C6/12:** The **Council** invited the **Members** to consider approaching their representatives in IMO to provide their support on the amendments to ECDIS Performance Standard at the next MSC106. (deadline: 2 November 2022)

The **Council** was invited to endorse an overarching draft Resolution on S-100 (see Annex A to the HSSC report to C-6) for subsequent adoption by A-3. The draft Resolution calls upon IHO Member States to respect the IMO Resolution on Performance Standards for ECDIS and the agreed in-force dates, understanding that the rapidly growing S-101 ENC coverage and appropriate complementary S-100 data/products services would be expected when S-100 ECDIS becomes operational.

**Decision and Action C6/08:** Following up on Decision A2/32 (PRO2.3 by the ROK), the **Council** noted the progress made on existing IHO Resolutions (IHO CL 38/2022) and endorsed the proposal for a new generic IHO Resolution on S-100 Implementation (Annex A to HSSC Report to C-6 refers). **Council Chair**, in her report to A-3, to submit the new IHO Resolution on S-100 Implementation for the approval of Member States, and indicate in the context the adoption of some amendments to existing Resolutions (IHO CL 38/2022). (deadline: 20 December 2022 for submission to A-3).

In the subsequent discussion related to the report, one participant expressed concern about possible inconsistencies, when implementing S-98, between S-101 and corresponding S-102 data. It was understood that further testing and development is needed before the interoperability standard S-98 becomes operational. Another suggested that the draft Resolution on S-100 should clearly assign responsibilities to the relevant IHO body (HSSC, IRCC, etc.).

**Decision and Action C6/13:** The **Council** endorsed the strategic change in S-100 ECDIS with Electronic Navigational Data Services (ENDS) and interacting navigational data layers, enabled by

<sup>11</sup> See List of S-100 based Product Specifications ([link](#))

<sup>12</sup> If approved at MSC106 in November 2022.

the Interoperability Specification S-98. **Council Chair** to report to A-3 accordingly for approval (deadline: 20 December 2022 for submission to A-3).

The posts of Chair and Secretary of the Data Quality Working Group are currently vacant, and there was a risk that the Working Group's activities would have to be put on hold. One nomination had been received from China just before the Council meeting.

The Baseline Symbology Project Team of the Nautical Cartography Working Group aims to develop a baseline symbology to support the automated production of paper charts from S-101 data. The Council was invited to discuss whether an alternative approach was needed for the future of the paper chart, to be approved by A-3. (Refer to summary of discussions on document C6-4.1B below.)

**Actions C6/15:** The **Council** to continue the monitoring of the implementation by HSSC of the recommendations on the Future of the Paper Nautical Chart as appropriate (deadline: HSSC-15 June 2023 / C-7). **Council Chair** to report to A-3 on the matter (Decisions A-2/27 & 28 refer) (deadline: 20 December 2022 for submission to A-3).

**4.1B USA** introduced a joint proposal for new guidance on the continued use of paper charts derived from ENC's (document C6-4.1B). Three use cases were envisaged: ECDIS backup on SOLAS vessels, albeit only while the vessel navigated to a safe place to await assistance; safety of navigation for non-SOLAS vessels; and non-safety-related functions such as planning. In the view of the sponsors of the proposal, an endorsed use case or (preferably) basic guidelines for a simplified paper chart product from IHO would provide consistency for the many hydrographic offices, private producers and others currently involved in chart production, including those from low-resource countries. The minimum content required was specified in document HSSC 14-05.4C. It was suggested that a new standard was not required.

In the subsequent discussion, participants supported the proposal to prepare guidelines and advised against the creation of a new standard. They noted that navigation training supported by paper charts compliant with S-4 regulations would continue to be required in view of the latter backup function, especially in coastal navigation. Moreover, many stakeholders outside IHO and IMO still make extensive use of paper charts. Planning, resources and internal capacity for dual production of paper charts and ENC's would be required. It was regarded essential to standardize the content and layout (for example, use of colour). One participant felt that regional or national production of paper charts might be sufficient in regions where such charts were used mainly in the leisure market. Others noted that paper charts could also be derived from sources other than directly from ENC's, such as national databases. Opinions were divided on the advisability of amending S-4, Regulations for International (INT) Charts and Chart Specifications of the IHO, instead of developing new guidance or use cases.

The **Secretary-General** noted that creating formal IHO guidance might introduce issues of liability and that use cases would be more advisable. The **Chair of HSSC** said that the US proposal was not entirely consistent with the views of HSSC, which had considered it more important to focus on automated production of paper chart from S-101 ENC's. The **IHO Secretariat** noted that A-2 had called for priority to be given to the development of formal guidance on the issue, and that any changes would therefore require endorsement by A-3.

**Decision C6/16:** The **Council** noted the recommendations made by HSSC on the automated production of paper charts and confirmed the Decision made at A-2 by which priority is to develop guidelines for the automated production of paper charts meeting S-4 chart minimum content requirements from S-101 ENC data.

**Decision C6/17:** The **Council** endorsed the offer of the **USA** (supported by **AU, DE, DK, KR, and NZ**) to document use cases and develop associated guidelines, as well as identify challenges with S-4, to achieve automated production of derived paper charts from ENC content databases and

submit them to the HSSC/NCWG for their consideration.

**Decision and Action C6/18:** The **Council** to monitor the progress of the task given to **HSSC** to prepare (*done*) and maintain the synoptic summary report on the various options offered to HOs for future production of S-101 ENC in conjunction with S-57 maintenance/production (Decision A2/33 refers). The **Council Chair** in liaison with **HSSC Chair** to report on this task at A-3 (deadline: 20 December 2022 for submission to A-3).

**4.1C** The **Republic of Korea** reported on the progress of the S-100 testbed project which, in 2022, focused on interoperability with S-98, the dual-fuel mode, up-to-datedness of S-100 data measured by the S-128 dataset, and the usability and economic efficiency of the S-100 service. Recommendations included taking the S-98 Interoperability Catalogue as part of the S-164 test dataset (TDS) for type approval and developing a technical guideline for indicating the boundaries between S-57 ENC and S-101 ENC when they are displayed simultaneously on the screen. Usability had been tested qualitatively through voyage-planning missions of varying difficulty and quantitatively through eye-tracking technology; the S-100-based product service had proved considerably more usable than traditional products. The S-100 data service also demonstrated large economic savings in a test involving the planning of a navigation route in an area with strong tides, compared with a standard route and a low-risk route.

Participants welcomed the results of the testbed project and suggested that greater emphasis should be placed not only on the economic advantages, but also on the environmental benefits, of S-100 data services. Information on geographical coverage of S-100 services would also be valuable. One participant asked about possible tie-ins with the work of the joint IHO-Singapore Laboratory. **Canada** declared its intention to join the testbed project.

**Decision and Action C6/19:** The **Council** welcomed the information provided by the Republic of Korea on the S-100 Testbed Project and agreed that it is a critical component of the Roadmap. The **Council** invited IHO Member States to participate in this S-100 testbed project and in addition, to consider whether other criteria than those proposed by KHOA (Doc. C6-04.1C refers) should also be considered (expected geographical coverage implementation rate compared to existing S-57 ENCs, distribution and update mechanisms and NPubs coverage, for instance) (deadline: end of December 2022).

**Decision and Action C6/20:** Considering the timelines between HSSC-15 and IRCC-15 meetings in 2023 and the countdown for submission of reports and proposals to C-7, **the Council** invited **HSSC and IRCC Chairs** to prepare their 2023 meeting minutes with the view that it will be used/submitted directly as reports and proposals to be considered at C-7 (deadline: July 2022).

## 4.2 Report and proposals from IRCC

*Doc:* C6-4.2A

- Annex A: IHO Capacity Building Strategy
- Annex B: Guidelines on the Implementation of the WEND-100 Principles, version 1.0, April 2022
- Annex C: IRCC Chair proposal regarding SPI allocated to IRCC

**4.2A** The **Chair of IRCC** reported that the 14<sup>th</sup> Interregional Coordination Committee had been held in a hybrid format in Bali, Indonesia. The Covid-19 pandemic continued to affect the ability to conduct work and capacity building was constrained by the limited availability of funds. The IRCC's main concerns related to the need for IHO Strategic Plan gap analysis, the determination of SPI values at regional level, and collaboration and coordination in implementation of the S-100

Roadmap. The South West Pacific Hydrographic Commission (SWPHC) Chair had been requested to investigate organizing a workshop on environmental emissions from shipping, in line with a COP-26 outcome, and on cyber security. IRCC had noted the proposal by the Hydrographic Commission on Antarctica (HCA) for recognition of the *Southern Ocean* to be progressed by means of an IHO Resolution to be proposed to the Assembly at its forthcoming session and invited the HCA to initiate the debate on how climate-change related activities could be investigated within the remit of the IHO.

**Decision C6/21:** The Council noted the report and commended the IRCC, the RHCs, and IRCC Sub-Committees for their achievements as well as for the outcome of the IRCC April Workshop on the Strategic Performance Indicators and the new TORs of the IBSC.

**Decision C6/23:** The Council noted the completion of S-124 (MSI) Edition 1.0.0, ready for approval by the next HSSC.

**Decision C6/27:** The Council to monitor the progress made by IRCC to establish an IHO e-Learning Center based on A-2 PRO 3.3 and the related recommendations of IRCC/CSBC (deadline: C-7). Council Chair in liaison with IRCC Chair to report to A-3 on the matter (deadline: 20 Dec. 2022 for A-3)

**Argentina** raised several procedural objections in relation to action HCA 18/45, adopted within the framework of the 18<sup>th</sup> Conference of the Hydrographic Commission on Antarctica (HCA) held in May 2022, which had agreed to propose to the 3<sup>rd</sup> session of the Assembly the approval of a resolution on the recognition of the *Southern Ocean* as the maritime area surrounding Antarctica.

The **Secretary General**, speaking in the capacity of standing Chair of the HCA, confirmed that the intention had not been to reactivate the naming discussion but to initiate an open discussion with a view to finding a way forward on this item pending since many decades; the forthcoming Assembly offered a good opportunity to have the necessary discussions, anticipating the question to be raised in relation to the polygonal demarcation of global sea areas (S-130 authoritative data set).

**Decision C6/24:** The Council noted the statement made, and concerns raised by **Argentina** on the information provided in the IRCC report on HCA activities by which a submission of a proposed new IHO Resolution on the recognition of the *Southern Ocean* is planned to be submitted to A-3.

The IHO World Wide Navigation Warning Service Subcommittee (WWNWS) Chair had reported on the approval of the IMO NAVTEX Manual for submission to the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR 9). More work was needed in relation to SPI 3.1.1, as only 62% of Coastal States provided information internally to the NAVAREAs by the end of 2021, compared to the target of 90% (143 Coastal States out of 230). The new version of the Joint IMO/IHO/WMO Manual on MSI was expected in January 2024. Coastal States had expressed concern that MSI providers were compelled to bear the burden of all additional costs incurred from implementing Iridium SafetyCast services.

**Decision C6/22:** The Council noted the concern of Member States (as Maritime Safety Information providers), that, should they implement Iridium SafetyCast services, they are compelled to bear the burden of all additional costs, as a consequence of the approval by IMO Member States of the Iridium SafetyCast as an Recognized Mobile Satellite Service (RMSS).

The **Chair of IRCC** acknowledged the generous contributions to the Capacity Building Fund made by Republic of Korea and the Nippon Foundation, and by Canada to the Empowering Women in Hydrography project. The IHO e-learning centre at KHOA had made a significant effort towards addressing learning needs and the Chair appealed for Member States in possession of suitable e-learning material to share it through the centre. The total funds available for capacity building for non-earmarked projects limited the attribution of funds to the activities submitted by the RHCs. The current value of the capacity building fund included funds carried over due to projects not yet executed due to COVID-19 pandemic. However, once those projects were executed the capacity

building fund would be significantly diminished.

**IHO Director Sinapi** said that the priorities of the capacity-building programme were in line with the Strategic Plan. Recalling that the importance of capacity building had been acknowledged by the Council since its very first meeting, he noted the significant decline in capacity building funding that was being witnessed, in the face of constant or rising demand. He said there was an evident need to take note of this reality and promote to the Assembly the importance of capacity building. The success of the Empowering Women in Hydrography project had been recognized; the results of the CL 26/22 Survey on leadership positions of women were already available and numbers would be formalized very soon.

**Decision and Action C6/25:** The **Council** endorsed the new proposed Capacity Building Strategy. The **Council Chair** in liaison with **IRCC Chair** to submit the proposed CB Strategy to the 3<sup>rd</sup> Session of the IHO Assembly for approval. (Annex A). (deadline: 20 December 2022 for submission to A-3)

**Decision C6/26:** The **Council** noted the decrease of Capacity Building fund over the last few years.

Good progress had been made on the Empowering Women in Hydrography project. Information was being collected on the percentage of employees of hydrographic offices that are female and especially those in leadership roles.

**Decision and Action C6/28:** The **Council** to monitor the progress made by IRCC on the CBSC work item of Empowering Women in Hydrography (EWH). The **Council Chair** in liaison with **IRCC Chair** to report to A-3 on the matter. (deadline: 20 December 2022 for submission to A-3)

The Marine Spatial Data Infrastructures (MSDI) Working Group held a joint meeting with the Open Geospatial Consortium and the United Nations Working Group on Marine Geospatial Information (WG-MGI, UNGGIM). The Working Group was attached to the importance of FAIR principles (Findable, Accessible, Interoperable and Reusable). The concept of Maritime Digital Twins was included in the workplan of the MSDI Working Group.

**Decision and Action C6/71:** The **Council** invited the **IRCC** to identify a theme on which ISO 9001 Principles should be applied and to propose it to **Council** for endorsement (deadline: IRCC15/C-7). The **Council** noted the task given by the IRCC to the MSDIWG to identify a theme in their portfolio of activities, where ISO 9001 basic principles could be applied and be beneficial (deadline: IRCC-15).

The IHO-EU network working group had celebrated its 10th anniversary on 6 May 2022. Maritime Spatial Planning (MSP) had been a major topic of interest and consideration of how European Directive 2019/2024 on open data and the reuse of public sector information, whereby high level datasets were considered as open data, could impact Hydrographic Offices (HOs) if it applied to ENC data.

The poor quality of numerous initial submissions to the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC), reflecting difficulties in interpreting the new standards, was creating a heavy workload for intersessional revisions. Only 3 out of 10 submissions had been recognized, with the remainder requiring intersessional revision. The Terms of Reference of the IBSC had been revised to add 2 members from the ICA to the Board.

The Crowdsourced Bathymetry Working Group (CSBWG) had approved the publication of Edition 3.0.0 of the IHO Publication B-12. Member States were reminded to respond to the Circular Letter (IHO CL25/2020). The CSBWG encouraged the establishment of a Seabed 2030/CSB Coordinator on every Regional Hydrographic Commission. The General Bathymetric Chart of the Oceans

(GEBCO) Guiding Committee reported that the main challenge was the question of how to map the remaining 77% of the planet's unmapped ocean seafloor. More seabed mapping should be promoted and contributions of data to Seabed 2030 were encouraged.

The introduction of IRCC workshops - the first on the Strategic Plan, the second on the SPI – had been successful; the next workshop was planned for December on how to engage with international and regional agencies, development partners and coastal states to support knowledge and understanding of hydrography and the value associated with open data policies.

#### 4.2B

*Doc: C6-4.2B - Submission (France): Avoid any ambiguity for S-100 based products that do contribute to navigation, by clearly distinguishing them from products using the same data format with a content for other purposes*

**France** explained the importance of ensuring that there was no potential for ambiguity between S-100-based products that contributed to the safety of navigation and those that used the same data format for other purposes, such as ocean modelling, given the goal to increase the use of hydrographical information in society. France suggested that careful development of naming conventions was needed to avoid potential ambiguity and recommended that IHO investigate the issue with a view to developing any appropriate actions. The **HSSC Chair** commented that some of the concerns expressed by France would be alleviated because S-128 would be part of the critical framework and was already established as a tool used for navigation; however, it was for Member States to decide whether a different naming convention was needed.

**Decision and Action C6/31:** The **Council** endorsed the recommendation made by France by which S-1xx naming corresponding to S-1xx Product Specification to be used for safe navigation, which encompasses data format *and* content, should carry S-1xx names (Doc. C6-04.2B refers). The **Council** tasked the **HSSC**, in liaison with **IRCC** when appropriate, to ensure that a clear distinction is made in the future in the naming between *S-1xx products* (- data format and content - that meet requirements for safe navigation) and products used for other purposes (Goal 2 for instance) even if they use the S-100 based format. (deadline: C-7, ... C-X as and when appropriate)

#### 4.3 Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs)

*Covered under 4.1*

#### 4.4 Proposed version 2.x or v3.0 of the Roadmap for the S-100 Implementation Decade

*Doc: C6-4.4A*

- *Proposed Annex 1, v2.0, July 2022*
- *Proposed Annex 2 (See Annex B of Doc. C6-04.1A)*
- *Proposed Appendix 1 to Annex 3 (See Annex B of Doc. C6-04.2A)*
- *Proposed Annex 4 (See Annex C of Doc. C6-04.1A)*

In accordance with **Decision C6/37** (Permanent) - **Council/HSSC/IRCC Chairs/SecGen** supported by subject matter experts and Member States as appropriate to maintain the S-100 Implementation Roadmap as an incremental version-controlled document (including narrative and timelines) on an annual basis – the **Council** reviewed the proposed amendments to the different Annexes of the Roadmap for the S-100 Implementation Decade as proposed by the

**Secretary-General** (for Annex 1), the **HSSC Chair** (Annex 2 and new Annex 4), and the **IRCC Chair** (Annex 3).

**IHO Assistant Director Guillam** drew the attention of the Council to the current version 2.0 of the Roadmap for the S-100 Implementation Decade, presented on the webpage of C-6, which included the three annexes to the Roadmap for approval by the Council. After C-6 approval of the three proposed amended annexes a 2.1 version of the S-100 Roadmap will be published. He clarified that version 3.0 of the Roadmap, to include an additional proposed Annex 4 on the dual fuel Concept for S-100 ECDIS, would appear only after approval by the forthcoming Assembly.

The **Secretary-General**, introducing the amended version of Annex 1, said that it presented the various organizations that had already associated themselves with the S-100 framework and started to draft product specifications. The Annex showed the success of IHO's collaborative efforts, with IMO, WMO, IALA, the UN Law of the Sea, International Electrotechnical Commission (IEC), the Inland ENC Harmonization Group, and the International Harbour Masters Association all contributing to a collaborative ecosystem for developing and applying S-100 based products. The field of oceanography was notably absent; one explanation for this had been the lack of an identifiable partner with which to work. He hoped that Mercator Ocean International may prove to be a potential partner in that regard to enable the network of partnerships to extend into the area of oceanographic nowcasts and forecasts. Annex 1 also included a timeline, which was on track.

The **Council Chair** acknowledged the work that had gone in to establishing the necessary collaborations.

**Decision C6/32: The Council** approved the proposed amendment to the S-100 Implementation Roadmap with the updated version 2.0 dated July 2022 of Annex 1 as provided in Doc. C6-04.4A

The **HSSC Chair** outlined some proposed amendments to the S-100 Implementation Roadmap. There was now an Executive Summary on the Dual Fuel Concept for S-100 ECDIS. There was recognition that increasing support was needed to speed up the development of the critical framework, which included: IHO Geospatial Information registry; S-98 Interoperability specification; S-100 Universal Hydrographic Data Model; S-128 Catalogue of Nautical Products; S-164 Test Data Set for S-100 and ECDIS Type Approval. There had also been some minor adjustments made to the S-100 timeline.

**Decision C6/33: The Council** approved the proposed amendment to the S-100 Implementation Roadmap with the updated version 2.0 dated 12 July 2022 of Annex 2 as provided in Annex B of the HSSC report.

The **IRCC Chair** reported that consensus had not yet been reached on the Global Common Grid Scheme. The WENDWG had agreed on the proposed way forward on the development of INTOGIS III to become S-128 compliant. It was recommended that a S-100 coordinator role be established in the RHCs, either as a separate role or combined with the role of Chart Coordinator. The first iteration of the *Guidelines on the Implementation of WEND-100 Principles* version 1.0 presented to and approved by the IRCC, was to be included as an appendix 1 to Annex 3 of the S-100 Implementation Roadmap.

**Decision C6/29:** Following IRCC's endorsement, the **Council** approved version 1.0 of the *Guidelines on the Implementation of the WEND-100 Principles*. **Council Chair** in liaison with **IRCC Chair** to report at A-3 (deadline: 20 December 2022 for submission to A-3).

**Decision C6/34: The Council** approved the amendment (addition of Appendix 1 to the Annex 3 – version 1.0 of *Guidelines on the Implementation of WEND-100 Principles*) of the S-100 Implementation Roadmap as proposed by the WENDWG and contained in Annex B of the IRCC report.

**Decision C6/30: The Council** noted that the efforts on establishing a common global gridding system could not reach consensus and is put on hold.

The **HSSC Chair** outlined the work that had been done to develop the Dual Fuel Concept for S-100 ECDIS, which had culminated in the development of a dual fuel governance document intended to help facilitate understanding of the dual-fuel environment, which was proposed to be added as a new Annex 4.

In the discussions, **USA** strongly supported the work presented on the Dual-Fuel Concept, noting there was evidence that the coordinator role was already being introduced. He expressed hopefulness that consensus on the global grid scheme was within reach. **Japan** expressed broad support for the document, but raised a specific concern regarding the wording used to describe the need for consistency in using the “same producer”, given the multiple kinds of producers might exist within Member States. **France** said that the main concern was not to ensure that the same producer was used for each S-100 product but to ensure that any such products were produced under the responsibility of the national hydrographic office. **Sweden** clarified that there was already an agreement with IMO that ensured any data produced for usage in ECDIS must be recognized by an authorized hydrographic office. The **Council** agreed that the guidelines would not be final but would need further development and that such considerations would be taken into account in the next update of the guidelines.

**Decision and Action C6/10:** Still following up on Decision A2/33, the **Council** endorsed the Dual Fuel Concept for S-100 ECDIS Executive Summary and the full report. **Council Chair** in liaison with **HSSC Chair**, in her report to A-3, to submit the Dual Fuel Concept for S-100 ECDIS Executive Summary and the full report for the approval of Member States (deadline: 20 December 2022 for submission to A-3). Prior to the submission, the **Council** requested the **HSSC** (supported by **S-100 WG**) to amend the S-57/S-101 image in fig. 2 in section 2.6.1 of the Dual Fuel Concept by a better one as those available in Doc. C6-04.1C (Testbed Project) (deadline: 1 December 2022).

**Decision C6/35:** The **Council** approved the principle of adding a new Annex 4 (Dual-Fuel Concept for S-100 ECDIS – Executive Summary) to the S-100 Implementation Roadmap based on version 1.0 dated 1 July 2022 as provided in Annex C of the HSSC report.

**Decision C6/36:** **IHO Secretariat** to upload version 2.1 of the Roadmap including approved amendments to Annexes 1, 2 and 3 (Deadline: 31 Jan. 2023). Once the final version of Annex 4 (Dual Fuel Concept on S-100 ECDIS) is approved by A-3, **IHO Secretariat** to upload version 3.0 of the Roadmap (Deadline: May 2023 after A-3).

Several **Members** requested guidance on the best way to prepare the operational implementation phase of S-100 data services within their Regional Hydrographic Commissions.

**Decision C6/39:** The **Council** noted the WEND100-IGIF matrix (WENDWG CL 02/2022 refers) as a tool to describe the status, the progresses and the needs in introducing S-100 based products.

**Decision C6/41:** The **Council** noted the progress on S-128 (Catalogue of Nautical Products) development by the S-128 Task Group led by the Republic of Korea (KHOA) under the NIPWG umbrella.

#### 4.5 Update on the Joint IHO-Singapore Innovation and Technology Laboratory – Proposals from the Council to the Governing Board.

Doc: C6-4.5A

The **IHO-Singapore-Laboratory’s Governing Board Chair** summarized the progress made by the Joint IHO-Singapore Innovation and Technology and its objectives. The Governing Board, which had now held four meetings, had established clear procedures, including for submission of project proposals. Project proposals should be mature proposals with a clear sense of the contributions needed; ideally proposals would not only comprise an idea, but also come with the resources needed to enable delivery. The involvement of industry stakeholders was encouraged.



**France** said that the conversion from S-57 to S-101 and from S-101 to S-57 were two sides of the same coin and consideration should be given to both; the **IHO-Singapore-Laboratory Board Chair** confirmed that both conversions would be included.

**Canada** and **USA** expressed support for the work of the **IHO-Singapore-Laboratory**. USA suggested that storm surge modelling might be an example of other areas in which projects were needed; the Chair said he looked forward to receiving a specific proposal in that regard.

**Decision C6/42:** The **Council** noted the update on the Joint IHO-Singapore Innovation and Technology Laboratory and noted the progress made on the following projects:

- S-131 Marine Harbour Infrastructure Database (MHID)
- Development of S-57 to S-101 Conversion Guidance Document
- Creation and Test-Bedding of ECDIS capable of displaying S-102 on S-101 ENC

and the joint IHO-IALA proposed proof-of-concept project:

- Demonstration Interoperability of S-101 and S-125 at sea using wireless updating via 4G/5G Telecommunications links.

**Decision C6/43:** The **Council** endorsed the recommendation from the Governing Board of the Lab encouraging more stakeholders to identify collaborative projects, especially with other organisations and industry partners.

## 5. IHO ANNUAL WORK PROGRAMME AND BUDGET

### 5.1 Monthly Financial Reporting Statement (September 2022)

*Docs: C6-5.1A*

The **Secretary-General**, reviewing the current financial status of the Organization, said that 77.8% of Member States' contributions due in 2022 had been received by end of September, which was lower than at the same point the previous year and below average for the previous 5 years. One Member State had not yet paid its 2019-2020 contributions; five Member States had not yet paid their contributions for 2021.

**Decision C6/44:** The **Council** noted the information provided on the current financial status as of September 2022.

### 5.2 Proposed IHO Work Programme for 2023

*Doc: C6-5.2A*

The **Secretary-General**, introducing the item, noted that the proposed IHO Annual Work Programme for 2023 was based on the third year of the three-year Work Programme (2021-2023) that had been approved by A-2. The proposal covers all three Work Programme elements – Corporate Affairs (Work Programme 1), Hydrographic Services and Standards (Work Programme 2) and Interregional Coordination and Support (Work Programme 3) and takes into account all activities that had taken place under the respective work programme items since Council C-5. The Secretary-General highlighted the most relevant outcome which is to allocate more material and human resources to the further work on S-100 based standards, required technical infrastructure and the planning for future data services based on S-100. The Council was also asked to take note of the proposed theme for World Hydrography Day 2023: "*Hydrography – underpinning the digital twin of the ocean*", would also form the theme for the Assembly. A circular letter to all Member States would provide an opportunity to comment.

**Norway** expressed support for the report and the strategic thinking it reflected, as well as support of the chosen theme for the World Hydrography Day 2023.

**Decision C6/45:** The **Council** agreed to and approved the IHO Work Programme for 2023, as presented by the **Secretary-General**.

**Decision and Action C6/46:** The **Council** noted the proposed theme for the 2023 World Hydrography Day by the **Secretary-General** “*Hydrography - underpinning the digital twin of the ocean*”. The **IHO Secretariat** to circulate the theme for 2023 to the **IHO MS** by IHO CL and fine tune language of the theme if needed. (deadline: end of October 2022)

### 5.3 Proposed IHO Budget for 2023

Doc: C6-5.3 A

The **Secretary-General**, introducing the item, noted that the proposed budget estimates were based on the third year of the approved three-year IHO budget 2021-2023. An additional 41 shares provided by the five new Member States raised the planned income by €165 000 compared to the estimate made in 2020. That additional planned income would cover the extra provision for the new external retirement scheme, increased premiums for medical insurance and the moderate increase in operational costs.

Global developments since the submission of Document C6-05.3A in July 2022, namely cost increases due to inflation, had required some adaptations to the proposed budget, which were outlined. Noting that the budget was designed to cover the operational costs of the Secretariat, he said that the difference had been found by reducing the Capacity Building Fund back to the level originally approved, and re-allocating money from the Special Project Fund, the balance of which was deemed to be sufficient to cover the planned special projects.

**Decision C6/47:** The **Council** approved the budget estimates provided by the **Secretary-General**, including the proposed adaptations to respond to the inflation effects.

### 5.4 Proposal to be submitted to A-3 for the IHO 3 year Work programme and 3 year Budget 2024-2026

The **Secretary-General**, introducing the proposed Work Programme and Budget, said that Work Programme 1, covered ongoing digitalization of IHO’s work (such as INTToGIS, online registration, SCUFN-Gazetteer) and the modernization of IHO’s communication, social media presence and website. IHO’s increased presence in the ocean science scene, through participation and contributions in various formats, including presence at the 2022 UN Ocean Conference, had proven to be a very effective way of interfacing with those in need of hydrographic information, and the value of investing in increased engagement was demonstrated by growth in the membership from 93 to 98 Member States. Work Programme 2 covered aspects such as the incorporation of S-100 into the IMO instruments for ECDIS, the ongoing S-100 framework, infrastructure and standards developments, and the establishment of the IHO-Singapore Innovation and Technology Laboratory. Work Programme 3 covered the continuation of education and training programmes, the introduction and enhancement of e-learning provision, intensified collaboration in GEBCO/Seabed-2030 which had resulted in ocean mapping coverage rising from just 6% to 23.4% of the seabed mapped.

The 3-year work programme was based on the IHO Strategic Plan. However, whereas the Strategic Plan focused on the Organization’s priorities, the Work Programme listed the entire range of IHO activities. Strategic discussions were required on the focus and prioritized resource allocation within the IHO Work Programme prior to A-3. The cycle for revision of the IHO Strategic Plan for 2027 to 2032 would start 6 months after A-3.

The proposed budget estimates were based on the annual budget estimates for 2023 as defined in

July 2022. The proposal considered known factors such as expected variations in staff salaries and costs for the social benefits granted to the IHO Secretariat staff. The proposed budget assumed no further increase in income through expanding membership or through increases in the value of contribution shares, as neither were guaranteed. Presenting a figure that illustrated how budget, staff costs, salary costs and medical costs had increased between 2008 and 2022, he noted that a large part of the difference was explained by a significant increase in medical costs. Most concerning was a rapid spike in the inflation rate for Monaco over the previous two years amounting to 20.6% increase since 2008.

Given the volatility of global inflation and the risks that global and local inflation posed for the IHO budget, the Council was invited to request A-3 to renew the Council's entitlement to increase Member States' contributions within the inter-assembly period up to 3%, subject to the Council's annual review of the budget, with the earliest potential increase being for 2024. He recalled that A-2 had granted the Council such entitlement but that it had not been necessary for the Council to exercise that option due to new memberships and cost-savings.

**USA** requested clarification as to whether the proposal to A-3 would request a ceiling of up to 3% over 3 years, or as agreed previously, 1% per year. The Secretary-General explained that the idea had been to create flexibility, by asking for 3% in total to leave the same ceiling in place but create greater leeway for the Council to decide how best to make use of it if required. Norway expressed support for such flexibility.

**France, Australia and UK** asked whether, in the light of the very high inflation rate shown, 3% would be adequate to allow IHO to maintain its operations and what mechanism was in place, if any, for further intersessional revision if the 3% ceiling proved too low. It was suggested that different scenarios might be presented to Member States, including one that would allow for the Organization to grow its operations, such as capacity-building. A contingency sum might also be advisable. **USA** recommended keeping the ceiling at 3%, as asking for more than 1% per year may meet resistance; he noted that his Government would ask for complete transparency, strong justification and demonstration of efforts and efficiencies before approving any increase.

The **Secretary-General** commented that he was mindful of striking a balance between the difficulty of asking for more money when national budgets are under global inflationary pressures and ensuring the Secretariat could function in a healthy manner, and so had sought to request a realistic figure. He hoped that any difference could be resolved by recruiting more Member States to join. He understood that there was in principle endorsement of the suggestion to ask A-3 to empower the Council to approve an increase in Member States contribution, with some concerns that 3% may not be enough. It was clarified that an increase of 3 % means 120 euros only per share. If the Council endorsed the proposal in principle, he undertook to develop the concept further in his submission to the A-3 in the light of the comments made.

In terms of there being any mechanism for further revision of the budget before A-4, he said that as the Council was by convention tasked with supervision of the Organization on an operational and annual basis, he had confidence in the Council to come to a wise decision should that need arise.

**Decision and Action C6/48:** The Council endorsed the proposed 3-year Work Programme and Budget\* provided by the Secretary-General for submission at A-3 by Council Chair for the approval of Member States. (deadline: 20 December 2022 for submission to A-3),

*\* subject to an update prior to submission to A-3 by 20 December 2022 in consideration of the volatility of the global finance situation.*

**Decision and Action C6/49:** The Council endorsed the recommendation made by the Secretary-General to request A-3, for renewal of Council's entitlement, for an increase of Member States

contribution up to 3% subject to the Council's annual budget review between 2024 and 2026, with 2024 as the earliest. (deadline: 20 December 2022 for submission to A-3)

## 6. IHO STRATEGIC PLAN REVIEW

### 6.1 Strategic Performance Indicators: Status

*Docs: C6-6.1A*

The Secretary-General reported on the new Strategic Performance Indicators (SPI), adopted by A-2 in the Revised Strategic Plan, in respect of Work Programme 1 (Corporate Affairs).

One major issue had arisen under Goal 2, increasing the use of hydrographic data for the benefit of society. Target 2.1 under that goal was to build a portal to support and promote regional and international cooperation in marine spatial data infrastructures (MSDI). The portal was still at the design stage, and the challenges of collecting and updating information about national MSDI infrastructures, as originally envisaged, had led the Secretariat to suggest a change in strategy. The recommendation is to move away from an aggregated collection of links to national infrastructure and focus on global thematic layers of information that are genuine to the IHO scope, such as those already provided under various digital services in place such as INTogIS and the SCUFN Gazetteer. New types of information, such as a repository of Marine Protected Areas relevant for safe navigation, for example, could be included in the portal. The Council was invited to endorse that change of strategy, which he would then submit to A-3 for approval.

IHO had greatly expanded its digital presence, especially on social media, with a dedicated public relations and communications officers. IHO had a presence on LinkedIn, Twitter and Facebook, with content tailored to the interests of each audience. The management and fostering of relations with intergovernmental and other international organizations could be measured both quantitatively and qualitatively in terms of the amount and type of outreach.

Participants agreed with the proposal to focus the MSDI portal on products controlled by IHO. It was important to know how hydrographic data were used, and by whom. Information on new areas of interest, such as “green” spatial planning, would help to increase IHO’s visibility.

**Decision and Action C6/52:** The Council noted the Status Report on Performance Monitoring available as Annex B to the IHO Annual Report (Publication P-7). The **Council Chair**, in liaison with **Secretary-General (WP1)**, **HSSC Chair (WP2)**, and **IRCC Chair (WP3)** to report at A-3, on the basis of the IHO Annual Report 2022. (deadline: May 2023 A-3)

**Action C6/53:** The Council agreed on the recommendation from the Secretary-General to refocus the function and the layout of a future MSDI portal. (deadline: C-7)

**Decision C6/54:** The Council noted the continued increase of IHO visibility via IHO website and social media activities and the amount of notable outreach activities under WP1 in four categories.

In his report, the **Chair of HSSC** presented the SPIs allocated to HSSC and the way they are monitored.

**Decision C6/50:** The Council noted the dashboard (target 2026, value as of 31 Dec. 2021) on SPIs 1.1.1, 1.1.2, 1.2.1, and 2.2.2 allocated to HSSC.

The **Chair of IRCC** reported on the Strategic Performance Indicators allocated to IRCC (Work Programme 3). One indicator which had provoked a great deal of discussion was SPI 1.2.2, Percentage of navigationally significant areas for which the adequacy of hydrographic knowledge is assessed through the use of appropriate quality indicators. IRCC had defined a “navigationally significant area” as one in usage bands 3 to 5, and had agreed on a quality indicator, namely the percentage of an area in which the Category of Zone of Confidence in Data (CATZOC) was other

than *Unassessed*. The relevant calculations were already undertaken regularly by the IHO Secretariat. He used the example for a Regional Hydrographic Commission, where approximately 70% of navigationally significant areas appeared to have no CATZOC values. He explained that this score had nothing to do with the adequacy of hydrographic knowledge, but that it was simply due to the absence of CATZOC values in the data used by the IHO Secretariat for the calculation.

**Decision C6/51:** The **Council** noted the progress made by IRCC in the development of the methodologies and metrics for SPIs allocated to IRCC and endorsed the proposals (definitions, metrics, action plan...) as reported in IHO CL 23/2022.

For SPI 2.2.1, percentage of adequately surveyed area per coastal state, the IHO Secretariat would regularly derive figures from C-55 for “adequately surveyed”, per coastal state. The results would be expressed as a percentage per coastal state and would be summarized in a strategic overview. The General Bathymetric Chart of the Oceans (GEBCO) Guiding Committee would be requested to provide an additional figure for each Regional Hydrographic Commission on the Seabed 2030 information. For the definition of “adequately surveyed area” IRCC and HSSC had agreed to use the definition in the Hydrographic Survey Standard, S-44.

IC-ENC deplored the high number of areas without CATZOC values, although the rules might soon be changed to make submission of CATZOC information the default option rather than a deliberate choice. Some regions had very few IHO Members, and their usage data were barely sufficient to qualify for band 3. The **IHO Secretariat** said that it collected CATZOC data also from primary charting authorities, even if the country concerned was not an IHO Member, and evaluated it for internal use only.

**Decision C6/55:** The **Council** invited all Member States to consider providing their CATZOC values through the RENCs to support the Secretariat in the process of SPI 1.2.2.

The Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC) would soon begin to monitor the quality of communication with coastal States and integrate the information into C-55 data. One participant noted that the GMDSS website of the IMO Global Integrated Shipping Information System (GISIS) was not regularly updated and other organizations lacked the administrator rights required to contribute to it, even though it was a potentially valuable source of information for many countries.

Responding to the points raised, the **Chair of IRCC** agreed that the SPI would show up areas where some Member States required extra support, which would require coordination with IHO’s capacity-building strategy. The contribution of the regional hydrographic commissions and capacity-building coordinators would be essential, particularly in regions with fewer resources and many coastal States that were not IHO Members. The joint training sessions organized by IHO and IMO also provided valuable opportunities for outreach.

## 6.2 Review of the Strategic Plan in preparation of A-3 (Reference B, article 1)

*Docs: C6-6.2A*

The **Secretary-General** noted that the current Strategic Plan is valid until 2026, however, it would be necessary to apply slight adaptations. The main priorities of this adaptations are the transition to S-100 and the change in focus in the future MSDI portal.

One participant noted the need for flexibility in interpreting the SPIs since the situation in the real world might well change rapidly. The **Council** agreed that the development of the next Strategic Plan to be put in place for 2027 – 2032 should be considered at C-7, should receive guidance from

A-3, should be drafted after C-8, approved by C-9, and adopted by A-4.

**Decision and Action C6/56: The Council** noted the mid-term obligation made by the Planning Cycle (IHO Resolution 12/2002 as amended), to review the Strategic Plan at each ordinary session of the Assembly and the recommendation from the **Council Chair** to continue with the SP 2021–2026 as it is at the moment, noting the implementation of SPI in progress, while focusing the efforts on the directions to be provided at A-3 to the next Council for the preparation of the SP 2027–2032 (deadline: 20 December 2022 for submission to A-3).

## 7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL

### 7.1 Update on the implementation of Decision A2/07 Gender-inclusivity

*Docs: C6-7.1A*

The **Secretary-General** said that, pursuant to Decision A2/07 of the 2<sup>nd</sup> session of the IHO Assembly, the Secretariat, with the assistance of Canada, had reviewed the English version of IHO Basic Documents M-1 and M-3 from the perspective of gender inclusivity, using the United Nations Guidelines on gender-inclusive language. Only a few changes had been required, and they had not affected the overall understanding of the documents. The Secretariat recommended that new documents, or documents requiring revision, should be edited for consistency with the United Nations Guidelines (summarized in the annex to the report on the agenda item). Since the Guidelines were not yet available in French, the official gender-inclusivity guidelines of the *Académie française*, when available, would be used for French documents. A draft resolution to that effect would be submitted to A-3.

**Decision C6/57: The Council** thanked Canada for the assistance provided to the IHO Secretariat on this theme and took note of the test applications of gender-inclusivity to M-1 and M-3 and to the additional workload in the creation process of IHO documents and communications.

**Decision and Action C6/58:** The **Council** endorsed the proposed amendments to IHO Resolution 1/2020 and the **Secretary-General** to submit the proposal to A-3. (deadline: 20 December 2022 for submission to A-3)

**Decision and Action C6/59:** If and once amendments on IHO Resolution 1/2020 are approved at A-3, **IHO Secretariat** to implement the gender-inclusive language in M-1 as a first step (deadline C-7) and **Committees and Working Groups** to review their TORs and ROPs in application of the new IHO Resolution. (deadline: As and when appropriate in 2024)

### 7.2 Update on the implementation of Decision A2/25: S-130 Polygonal demarcations of global seas areas.

*Docs: C6-7.2A Useful references: IHO CL [33/2021](#)*

The **Secretary-General** noted that, pursuant to Decision A2/25, the S-130 Project Team, under the excellent leadership of the Chair from **Belgium**, had met four times in 2022, with a further meeting scheduled for late October. Edition 1.0.0 of the product specification is due to be submitted to HSSC-15 for approval in June 2023; assuming that approval was forthcoming, the authoritative S-130 dataset and Edition 2.0.0 of the product specification would be finalized by the end of 2024, endorsed by HSSC and submitted to Member States for approval in the first quarter of 2025. He reminded at this occasion that the objective of the S-130 Project team was not limited to the Product Specification but to the provision of the S-130 authoritative dataset itself.

In reply to a point raised by a participant, he confirmed that, as decided by A-2 in Decision A2/24, S-23 would remain publicly available.

**Decision and Action C6/60: The Council** commended the S-130 PT for the achievements since C-6 and noted the timeline for the development of the S-130 Product Specification and Implementation.

**Action C6/61: Secretary-General** to report on implementation of PRO 1.9 (future of S-23) at the 3<sup>rd</sup> Session of the Assembly (Decision A2/24&25 refer) (deadline: 20 December 2022 for submission to A-3).

### **7.3 Preparation steps of the establishment of the new Council 2023-2026 and Update on the preparation of A-3**

*Doc: C6-7.3A Provisional list of deliverables for consideration/approval at A-3*

*Doc: C6-7.3B Update on the preparation of the 3<sup>rd</sup> Session of the IHO Assembly: countdown, programme, general information*

*Doc: C6-7.3C Preparation steps for the establishment of the next Council*

**7.3A** The **Secretary-General** listed the deliverables allocated to the Council since A-2, which would be reported to A-3, either in the Chair's report or separately.

**Decision C6/62:** In preparation of A-3, the **Council** noted the provisional list of deliverables for consideration/approval at A-3.

**7.3B** **IHO Director Sinapi** gave an overview of arrangements for A-3, now scheduled for 2–5 May 2023 at the Grimaldi Forum, Monaco, as a fully in-person meeting. An exhibition space would be provided for Member States and industry exhibitors; the deadline for any special requests is 1 December 2022.

On the 1<sup>st</sup> of May there would be a meeting of the Finance Committee, a special event on Empowering Women in Hydrography (EWH) and a meeting of the Heads of Delegations. On the 2<sup>nd</sup> of May, the Albert I<sup>st</sup> Medal will be awarded to an outstanding hydrographic contributor; Member States were invited to send their nominations to the Secretariat by 20 December 2022. On the 4<sup>th</sup> of May, panel discussions will take place in three thematic blocks, namely ocean mapping, S-100 digitalization of hydrographic information, and hydrography underpinning the digital twin of the ocean. Several receptions are scheduled, including one onboard a US ship. The countdown to prepare the Red Book for A-3 was presented, with the deadline for Member States to provide their comments to A-3 proposals being 20 January 2023.

**Decision C6/63: The Council** noted the countdown, programme and the general information planned in preparation of A-3.

**7.3C** The IHO Secretariat outlined the procedure for the appointment of the next Council. Each regional hydrographic commission should notify the Secretariat of the Member States eligible for membership of the Council by the end of January 2023. The final list will be endorsed by A-3. The regional commissions appoint two thirds of the Council members, with the remaining third being selected on hydrographic interest and the registered national flag tonnage.

**Decision C6/64: The Council** noted the preparation steps for the establishment of the next Council.



#### 7.4 Proposal for the Revision of Article 8.e of the General Regulations of the IHO – Membership of the IHO Hydrographic Commission on Antarctica (HCA)

*Docs: C6-7.4A*

The **Secretary-General** reported that, at its 18<sup>th</sup> Conference in May 2022, the Hydrographic Commission on Antarctica (HCA) had made changes to its Statutes which had implications for Article 8.e of the IHO General Regulations. It was accordingly proposed that the wording of Article 8.e, referring to the provision of resources and data for IHO INT Chart coverage only, should be replaced by the following wording: “the provision of hydrographic data, products and services supporting marine safety of navigation within, and/or the wider marine geospatial information of the Antarctic region”. He would submit the proposed change to A-3 in his capacity as Chair of HCA.

**Decision and Action C6/65:** The **Council** endorsed the amendments of Art 8.e of the GR as proposed by the HCA and tasked the **Council Chair** to submit them to A-3 to the approval of Member States. (deadline: 20 December 2022 for submission to A-3).

#### 7.5 Secretariat’s proposed revision of the Staff Regulations IHO Publication M-7

*Docs: C6-7.5A*

The **Secretary-General**, introducing the item, said that the driver for the proposed revision of the Staff Regulations IHO Publication M-7 had been the introduction of teleworking as a regular option, to reflect the new global reality since the COVID-19 pandemic. The revisions also covered certain changes necessary to maintain staff medical and retirement benefits. Consultations on the proposed revisions had been undertaken with those directly affected, namely the Secretariat workforce, and the result shared with the Finance Committee as FCCL02/2022. Comments would be taken into account before preparing submission of the final draft to A-3 for approval. He explained that the need to adapt to the realities of the new global way of working meant that the Organization was in fact already in a transitional phase of staff management, whereby teleworking had already been introduced: there was a need to formalize arrangements already introduced.

**Decision and Action C6/66:** The **Council** noted the information and the way forward for the preparation of Edition 9.0.0 (amendments related to application of the changes made for health and retirement provisions) of M-7 – *Staff Regulations* to be submitted by the **Secretary-General** to A-3 for Member States’ approval. (deadline: 20 December 2022 for submission to A-3).

#### 7.6 Information (ROK & Canada): Establishment of a National S-100 Committee

*Docs: C5-07.6A INF*

**Republic of Korea** and **Canada** shared their experiences of establishing a national S-100 committee. ROK’s aim was to create an environment in which many stakeholders could cooperate to facilitate wider implementation of S-100 services. The twice-yearly meetings brought together maritime administrations, research institutes and industry in the fields of nautical publications, aids to navigation, e-navigation and marine weather. Canada’s national S-100 committee met every month. Its aim was to nationally coordinate the implementation of S-100, develop a national S-128 catalogue of services, share knowledge – particularly relating to international S-100 activities – and build momentum within the country to meet S-100 roadmap targets. Canada would share the minutes of its meetings with interested members to give an idea of the way it worked.

Both committees had made progress in the development of standards and created opportunities to

encourage discussion and cooperation. A plan for cooperation in standards development in different fields had been drawn up.

Responding to questions and comments from the floor, **ROK** said that most members of the S-100 committee were producers, although it regarded participants from the navigation community as users of the information on domestic navigation. Members of the committee were invited to participate by means of an official letter. Canada said that new members were usually encouraged to join its committee by word-of-mouth recommendation. Other participants described their own S-100 committees or similar bodies; for instance, **UK** has an internal S-100 committee within the UK Hydrographic Office and a joint working group with the regulator, the Maritime and Coastguard Agency. It also maintains links with original equipment manufacturers. **Australia** has established a national S-100 committee which is currently focused on production of S100 and is happy to share information on it. **Finland** informed about ongoing work on "National Coordination on S-100 Implementation". The mission of the Finnish Hydrographic Office's taskforce is to share information about IHO S-100 standardisation framework and various product standards to agencies and companies who currently holds or will be responsible for production of S-100 datasets or provide e-Navigational services. The coordination will continue actively and plan is to contact end-users (i.e. via Finnish Shipowners' Assosiation) as well. Italy intends to organize a meeting of partners in 2023 and, in the meantime, places great reliance on its coastguard's agency, which also represented the country at IMO.

**Decision and Action C6/67: The Council** welcomed the strategy presented by **Canada** and the **Republic of Korea** through the establishment of their National S-100 Committees and noted the expected benefits of such approach. The **Council** invited **Member States** to share their national strategies with regard to the establishment of similar national S-100 committees, as appropriate (deadline: C-7).

## **7.7 Information (UK): Understanding the drivers, solutions and enablers within the shipping industry**

*Docs: C6-7.7A INF*

The **UK** introduced a white paper it had published on drivers, solutions and enablers within the shipping industry. The current drivers were predominantly decarbonization and digitalization, the former being driven by instruments such as the IMO Carbon Intensity Indicator. Possible solutions included optimization of operational efficiency and reduced carbon emissions including, in the long-term, alternative sources of fuel. The enablers of the optimization process included real-time, secure data feeds, improved Internet connectivity and appropriate training for mariners. The key findings of the report included the growing international commitment to decarbonization and the increased availability and rapidly reducing costs of high-speed Internet services, as well as the importance of cyber security. Hydrographic offices could contribute by producing safe and secure data sets that supported decarbonization and S-100 data standards readable by both humans and machines and by providing relevant training for the hydrographic office community.

The **UK** had sought to create a response that was resilient and sustainable, providing appropriate data solutions and working together with partners. It was reducing the carbon footprint of its navigation products and services and exploring the potential of S-100 data services in collaboration with industry partners and users. It had taken the difficult decision to phase out the production of paper charts by 2026, and was working with the national regulator, the Maritime and Coastguard Agency, to develop regulations for the transition to digital alternatives. Any solution it arrived at would be consistent with IHO standards. Although paper charts, and the training required to use them,

would persist for some time to come, the UK was preparing for a future in which paper charts would be obsolete.

Participants commended the steps taken by the UK to promote “green” shipping, which was a topic likely to enjoy popular support, as shown by the adoption of the Clydebank Declaration for green shipping corridors, adopted at the United Nations climate change conference (COP26) in 2021. The Declaration would tie in well with IHO’s work on S-131 at the Singapore laboratory. However, they expressed serious concern at the prospect of a Member State ceasing the production of paper charts altogether, which they felt would have serious implications for the safety of navigation. Paper charts were still used for navigation, including compliance with SOLAS and national regulatory requirements. **IHO Director Kampfer** encouraged Member States to become involved in the ongoing activities to produce paper charts derived from S-101 data, by participating in the work of the Nautical Cartography Working Group and its Baseline Typology Project Team.

**Decision and Action C6/68:** The Council thanked the UK for sharing their white paper on shipping industry drivers, solutions, and enablers. The Council invited the UK to identify the lessons learned from this study and consider the possibility to provide inputs against the IHO Strategic Plan and IHO Work Programme as appropriate through the relevant WGs and Committees in which they are involved. (deadline: HSSC15/IRCC15).

## 8. NEXT MEETING

### 8.1 Dates and venue for the 7<sup>th</sup> meeting of the IHO Council

The **Secretary-General** suggested that the new Council should meet for the seventh session in Monaco at the IHO Secretariat on 17–19 October 2023.

**Decision C6/69:** The Council agreed to hold C-7 in Monaco, at the IHO Secretariat, from 17 to 19 October 2023. (deadline: go no go decision - 17 June 2023)

## 9. ANY OTHER BUSINESS

### 9.1 Information: Towards the digital twin of the Ocean – how hydrographic knowledge and oceanographic modelling become building blocks (Mercator Ocean International)

The **Director-General of Mercator Ocean International, Mr Pierre Bahurel**, presenting the Digital Twin of the Ocean concept, first explained that the organization he represented was a global ocean prediction centre, a non-profit organization owned by public institutions from five countries that received funding from both Members and the European Commission. The organization planned to transition to intergovernmental organization (IGO) status, however, reflecting the growing realization of the importance of ensuring that the science reached the policymakers.

Mercator Ocean International had been delivering an operational service since 2015. By connecting a network of data producers to a single port, it currently enabled observations to be updated every ten minutes on a 1 billion grid point digital ocean, translated by experts into verified data, with 400 000 users worldwide and 40 000 subscribers. The scope of the project spanned not only “Blue Ocean” data (such as salinity, temperature...) but also “White Ocean” (such as ice) and “Green Ocean” (such as (chlorophyll-a production, acidity...)). The data produced was open and free and the service provided was worldwide; although most users were in Europe the number of users outside Europe was growing rapidly and subscriber information indicated that data was already being utilised by hydrography users.

He said that the goal of the Digital Twin of the Ocean was to develop a consistent, high-resolution, multi-dimensional and near real-time virtual representation of the ocean that could make ocean knowledge open-access, available to citizens, scientists and policy makers around the world, and provide a platform for global cooperation. As a concept that could be understood by and had already caught the attention of politicians, the Digital Twin of the Ocean could serve as a bridge between scientific knowledge and policy making.

In moving from ocean prediction to a digital twin ocean, the idea was to automate processes so that feedback provided from the digital twin could help decision-makers to make informed decisions in relation to the real ocean. There was therefore a need to improve and diversify the information content of the digital twin, with the vision being to set up a platform that various data systems could be plugged into, connecting community and services with robust, interoperable systems worldwide.

In terms of international standards, the ocean prediction community had some standards that were operational, such as using the same format and key performance indicators, but were not yet set into a recognized framework. The S-100 Universal Hydrographic Data Model was therefore of interest, along with the analogue frameworks such as S-300 of the UNESCO IOC domain, S-400 for WMO, or the S-500 NATO Geospatial Maritime Working Group for Additional Military Layers. For example, using S-111 standards to inform surface currents data in the development of dynamic hydrographic products could help to eliminate the barrier posed by the use of differing formats.

In the discussions, the **Council** lauded the project. **Norway** said that the Digital Twin of the Ocean demonstrated how hydrography and oceanography could work together for mutual benefit, with hydrography being a building block for the digital twin. The General Bathymetric Chart of the Oceans (GEBCO) was another area of collaboration. **USA** said that the digital twin project was taking a great leap forward into what had been envisaged in the S-100 framework. He asked what funding mechanism was envisaged. **Japan** wished to know what kind of bathymetric data were of interest. **USA** recommended that Mercator Ocean International consider engaging with the Committee of Experts on Global Geospatial Information Management (UN-GGIM) for possible integration with what was being done on land. **Sweden** invited the Mercator Ocean International to cooperate in the working group that would develop the product specification S-126 Marine Physical Environment. The **Secretary-General** observed that the standards framework could be thought of as providing data containers that could also be filled with oceanographic information; the standards framework could thus serve to ensure interoperability of information such as “Green Ocean” data, which might provide new information of benefit to maritime users. The S-411 Sea Ice Information product specification would also be relevant area for collaboration. **Canada** suggested that a starting point for bringing standardization to the modelling might be to apply standards to the inputs.

The **Director-General of Mercator Ocean International** said that current funding came from the public institutions involved for the innovation part, with the majority of funding coming from European Commission for the entire operational part, which had identified the beneficial leverage effect in providing infrastructure to which others would contribute. The transformation to IGO was needed because the success of the project required not only scientific and technological excellence, but also the connection between the technology and the policy. IGO status provided the visibility needed for this. The hope was that member States would support the project but that funding from European commission would not be lost. He emphasized that the project was open worldwide and was open to collaboration to support national authorities to see what data could be provided regionally. In some cases, it was possible to first identify a data need – such as on ocean currents – and then identify a potential partner who might provide it. Lastly, he expressed openness to further collaboration with IHO.

The **Council** expressed support for pursuing further collaboration between IHO and Mercator Ocean International, including through an invitation to the forthcoming 3<sup>rd</sup> session of the Assembly and exploring the possibility of a Memorandum of Understanding to formalize the collaboration.

**Decision and Action C6/70:** The **Council** welcomed the presentation on the Digital Twin Ocean by the Director General of Mercator Ocean International, and noted the intention to create a new IGO.

When appropriate, the **Council** invited the **Secretary-General** of the IHO to consider whether a MoU between the two organizations (when established) would be useful to develop synergies in the future. (deadline: A-3 to be confirmed)

## 10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING

IHO Assistant Director Guillam went through the identified actions, providing brief comments and explanations for actions and decisions where necessary including those permanent or pending from previous Council meetings (**Decision C6/38, C6/40**) (see Annex C).

On the advice of Director Kampfer, **Decision C6/42** was amended to reflect that testing would only be conducted on S-102, as testing on S-104 would come in the next phase. At the suggestion of USA, the wording of Action C6/49 was amended to clarify that the timeframe of the 3% ceiling in a potential increase of the value of Member States contributions shares was between A3 and A4.

## 11. CLOSURE OF THE MEETING

The **Secretary-General** said that the long list of actions and decisions resulting from the Council's deliberations were evidence of its effectiveness. He expressed his appreciation and gratitude to the Secretariat, the working groups, the Council, and to the Chair for her able management of the session. The **Chair**, noting that it was the last meeting of the triennial Council, said that notwithstanding the necessity of innovating in response to the COVID-19 pandemic, it was a measure of the Council's success that all of the actions that had been entrusted to it by the Assembly at its 2<sup>nd</sup> session could be reported back at the 3<sup>rd</sup> session.

Key messages she planned to convey on the Council's behalf included: the need for IHO to make the transition to S-100, and in particular from S-57 to S-101, a priority for 2023-2026; that the Strategic Plan 2021-2026 and its associated SPIs had been tested and so could move to reporting achievements against each of the goals – with one SPI requiring a refocus; and that capacity building must remain a priority. The reduction in funding available for capacity building remained a concern and would require creativity. As 2026 is getting closer, preparing for and communicating the worldwide picture of dual-fuel ENC provision will become vital, ensuring that no Member State was left behind. The Digital Twin of the Ocean project had embarked IHO on a path to explore collaboration with colleagues in oceanography on the delivery of S-100 services.

The **Council** expressed its appreciation for the Head of delegation of Portugal, RAdm Mário Simões Marques, who retired a week before, after a long and distinguished career; he commended the IHO community on its friendliness and its commitment to making the oceans safer.

The **Chair** went on to thank the five rapporteurs and the IHO Secretariat for their contributions to the smooth orchestration of the meeting and faithful reporting of its work, commending the successful live streaming of the meeting. She thanked all the presenters, the chairs of HSSC and IRCC, and all the members of Council for their many contributions to the work achieved, and declared the session closed.

**LIST OF REGISTERED PARTICIPANTS**

**6<sup>th</sup> Meeting of the IHO Council  
18-Oct-2022 – 20-Oct-2022**

6th Meeting of the IHO Council  
Face-to-face, 18-Oct-2022 ~ 20-Oct-2022

No	Category	Country	Organization / Company	Name	Status	E-mail	Date
1	IHO Member State	Albania	ALBANIAN HYDROGRAPHIC SERVICE (AHS)	Emrush BEJDO	Member of delegation	emrush.bejdo@aaf.mil.al	2022-06-14
2	IHO Member State	Albania	ALBANIAN HYDROGRAPHIC SERVICE (AHS)	Elvis CENKA	Member of delegation	elviscenko@gmail.com	2022-06-14
3	IHO Member State	Argentina	SERVICIO DE HIDROGRAFIA NAVAL	Gustavo Jorge ALMAZÁN	Member of delegation	galmazan@hidro.gov.ar	2022-05-22
4	IHO Member State	Argentina	SERVICIO DE HIDROGRAFIA NAVAL	Valentín Alejandro SANZ RODRIGUEZ	Head of delegation	directorshn@hidro.gov.ar	2022-06-10
5	IHO Member State	Australia	AUSTRALIAN HYDROGRAPHIC OFFICE	Stewart DUNNE	Head of delegation	stewart.dunne@defence.gov.au	2022-06-06
6	IHO Member State	Australia	AUSTRALIAN HYDROGRAPHIC OFFICE	Hilary THOMPSON	Member of delegation	hilary.thompson@defence.gov.au	2022-08-02
7	IHO Member State	Brazil	DIRECTORATE OF HYDROGRAPHY AND NAVIGATION	RENATO ARRUDA	Head of delegation	obino@marinha.mil.br	2022-05-11
8	IHO Member State	Brazil	DIRECTORATE OF HYDROGRAPHY AND NAVIGATION	RODRIGO OBINO	Member of delegation	obino@marinha.mil.br	2022-05-11
9	IHO Member State	Canada	CANADIAN HYDROGRAPHIC SERVICE	Annie BIRON	Member of delegation	annie.biron@dfo-mpo.gc.ca	2022-05-16
10	IHO Member State	Canada	CANADIAN HYDROGRAPHIC SERVICE	Doug BRUNT	Head of delegation	douglas.brunt@dfo-mpo.gc.ca	2022-06-14
11	IHO Member State	Canada	CANADIAN HYDROGRAPHIC SERVICE	Geneviève BÉCHARD	Member of delegation	genevieve.bechar@dfo-mpo.gc.ca	2022-07-12
12	IHO Member State	Croatia	HRVATSKI HIDROGRAFSKI INSTITUT (Hydrographic Institute of the Republic of Croatia)	Vinka KOLIC	Head of delegation	vinka.kolic@hhi.hr	2022-06-09
13	IHO Member State	Cyprus	HEADQUARTERS OF DEPARTMENT OF LANDS AND SURVEYS	GEORGIOS KOKOSIS	Head of delegation	gkokosis@dls.moi.gov.cy	2022-08-04
14	IHO Member State	Denmark	DANISH GEODATA AGENCY - GEODATASTYRELSEN (GST)	Pia HOUJGAARD	Head of delegation	pdh@gst.dk	2022-08-26
15	IHO Member State	Denmark	DANISH GEODATA AGENCY - GEODATASTYRELSEN (GST)	Sophie HOHWÜ-CHRISTENSEN	Member of delegation	sohoh@gst.dk	2022-08-26
16	IHO Member State	Finland	FINNISH TRANSPORT AND COMMUNICATIONS AGENCY	Rainer MUSTANIEMI	Head of delegation	rainer.mustaniemi@traficom.fi	2022-06-03
17	IHO Member State	France	SERVICE HYDROGRAPHIQUE ET Océanographique DE LA MARINE	LAURENT KERLEGUER	Head of delegation	laurent.kerleguer@shom.fr	2022-06-07
18	IHO Member State	France	SERVICE HYDROGRAPHIQUE ET Océanographique DE LA MARINE	Julien SMEECKAERT	Member of delegation	julien.smeekaert@shom.fr	2022-06-14
19	IHO Member State	Germany	BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE	Jens SCHRÖDER-FÜRSTENBERG	Member of delegation	jens.schroeder-fuerstenberg@bsh.de	2022-06-24
20	IHO Member State	Germany	BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE	Thomas DEHLING	Head of delegation	thomas.dehling@bsh.de	2022-05-21
21	IHO Member State	Greece	HELLENIC NAVY HYDROGRAPHIC SERVICE	Dimitrios EFSTATHIOU	Head of delegation	director_hnhs@navy.mil.gr	2022-06-10
22	IHO Member State	Greece	HELLENIC NAVY HYDROGRAPHIC SERVICE	Panagiotis GKIONIS	Member of delegation	panagiotis.gkionis@hnhs.gr	2022-06-10
23	IHO Member State	India	NATIONAL HYDROGRAPHIC OFFICE	Adhir ARORA	Head of delegation	ia-inho@navy.gov.in	2022-08-05

No	Category	Country	Organization / Company	Name	Status	E-mail	Date
24	IHO Member State	India	NATIONAL HYDROGRAPHIC OFFICE	Kuldeep SINGH	Member of delegation	ia-inho@navy.gov.in	2022-09-29
25	IHO Member State	Indonesia	HYDROGRAPHY AND OCEANOGRAPHY CENTRE,INDONESIA NAVY (Pushidrosal)	Fajar RUSDIANTO	Member of delegation	fajar.rusdianto@pushidrosal.id	2022-06-03
26	IHO Member State	Indonesia	HYDROGRAPHY AND OCEANOGRAPHY CENTRE,INDONESIA NAVY (Pushidrosal)	Nurhidayat -	Head of delegation	infohid@pushidrosal.id	2022-06-03
27	IHO Member State	Indonesia	HYDROGRAPHY AND OCEANOGRAPHY CENTRE,INDONESIA NAVY (Pushidrosal)	Danar PRATAMA	Member of delegation	int.pushidrosal@gmail.com	2022-07-22
28	IHO Member State	Iran (Islamic Republic of)	PORTS AND MARITIME ORGANIZATION (PMO)	Nader PASANDEH	Member of delegation	npasand44@gmail.com	2022-06-20
29	IHO Member State	Iran (Islamic Republic of)	PORTS AND MARITIME ORGANIZATION (PMO)	Majid ALI NAZI	Head of delegation	malinazi@pmo.ir	2022-06-20
30	IHO Member State	Italy	ISTITUTO IDROGRAFICO DELLA MARINA	Nicola Marco PIZZEGHELLO	Member of delegation	nicolam.pizzeghello@marina.difesa.it	2022-06-10
31	IHO Member State	Italy	ISTITUTO IDROGRAFICO DELLA MARINA (Italian Hydrographic Institute)	Massimiliano NANNINI	Head of delegation	massimiliano.nannini@marina.difesa.it	2022-09-20
32	IHO Member State	Japan	Japan Coast Guard (JCG)	Shigeru NAKABAYASHI	Member of delegation	iao@jhod.go.jp	2022-05-30
33	IHO Member State	Japan	Japan Coast Guard (JCG)	Masayuki FUJITA	Head of delegation	iao@jhod.go.jp	2022-05-30
34	IHO Member State	Malta	HYDROGRAPHIC OFFICE, PORTS AND YACHTING DIRECTORATE, TRANSPORT MALTA	Godwin L. BORG	Member of delegation	godwin-louis.borg@transport.gov.mt	2022-10-25
35	IHO Member State	Malta	HYDROGRAPHIC OFFICE, PORTS AND YACHTING DIRECTORATE, TRANSPORT MALTA	Mark A. CHAPELLE	Head of delegation	mark.chapelle@transport.gov.mt	2022-10-25
36	IHO Member State	Netherlands	Hydrographic Service - Royal Netherlands Navy	Leendert DORST	Member of delegation	LL.Dorst@mindef.nl	2022-06-03
37	IHO Member State	Netherlands	Netherlands Ministry of Defence	Toine BARTEN	Head of delegation	wa.barten@mindef.nl	2022-06-03
38	IHO Member State	Nigeria	NIGERIAN NAVY HYDROGRAPHIC OFFICE	Olugbenga Bidemi Fahad OLADIPO	Member	dhydro@navy.mil.ng	2022-09-14
39	IHO Member State	Norway	NORWEGIAN HYDROGRAPHIC SERVICE	Evert FLIER	Member of delegation	Evert.Flier@statkart.no	2022-06-22
40	IHO Member State	Norway	NORWEGIAN HYDROGRAPHIC SERVICE	Birte BORREVIK	Head of delegation	birte.noer.borrevik@kartverket.no	2022-06-22
41	IHO Member State	Oman	NATIONAL HYDROGRAPHIC OFFICE (ONHO)	YAHYA AL BALUSHI	Head of delegation	ahmed.a.albadi@mod.gov.om	2022-08-05
42	IHO Member State	Oman	NATIONAL HYDROGRAPHIC OFFICE (ONHO)	AHMED ALBADI	Member of delegation	ahmed.a.albadi@mod.gov.om	2022-08-05
43	IHO Member State	Peru	DIRECCION DE HIDROGRAFIA Y NAVEGACION	César ZELADA	Head of delegation	cesar.zelada@marina.mil.pe	2022-06-03
44	IHO Member State	Peru	DIRECCION DE HIDROGRAFIA Y NAVEGACION	Juan TERRY	Member of delegation	jterry@dhn.mil.pe	2022-06-03
45	IHO Member State	Portugal	INSTITUTO HIDROGRAFICO	João VICENTE	Member of delegation	dt.hi.chf@hidrografico.pt	2022-06-03
46	IHO Member State	Portugal	INSTITUTO HIDROGRAFICO	Mário SIMÕES MARQUES	Head of delegation	simo.es.marques@hidrografico.pt	2022-06-03



No	Category	Country	Organization / Company	Name	Status	E-mail	Date
47	IHO Member State	Republic of Korea	-	Jung-woo LEE	Member of delegation	juwlee05@mofa.go.kr	2022-06-20
48	IHO Member State	Republic of Korea	KOREA HYDROGRAPHIC AND OCEANOGRAPHIC AGENCY (KHOA)	Kwan Chang LIM	Member of delegation	kclim00@korea.kr	2022-10-05
49	IHO Member State	Republic of Korea	KOREA HYDROGRAPHIC AND OCEANOGRAPHIC AGENCY (KHOA)	Jaeyoung BYEON	Head of delegation	infokhoa@korea.kr	2022-06-14
50	IHO Member State	Singapore	Maritime and Port Authority of Singapore (MPA)	Pearlyn PANG	Head of delegation	pearlyn_pang@mpa.gov.sg	2022-06-24
51	IHO Member State	Singapore	Maritime and Port Authority of Singapore (MPA)	Ying-Huang THAI LOW	Head of delegation	Hydrographic@mpa.gov.sg	2022-06-24
52	IHO Member State	South Africa	South African Navy Hydrographic Office (SANHO)	Christoff THEUNISSEN	Head of delegation	hydrosan@iafrica.com	2022-08-02
53	IHO Member State	Spain	INSTITUTO HIDROGRAFICO DE LA MARINA (IHM)	Salvador MORENO	Member of delegation	smorenos@fn.mde.es	2022-06-03
54	IHO Member State	Spain	INSTITUTO HIDROGRAFICO DE LA MARINA (IHM)	Salvador ESPINOSA GONZALEZ-LLANOS	Head of delegation	sespinosa@fn.mde.es	2022-06-03
55	IHO Member State	Sweden	SJOFARTSVERKET	Magnus WALLHAGEN	Member of delegation	magnus.wallhagen@sjofartsverket.se	2022-06-03
56	IHO Member State	Sweden	SJOFARTSVERKET	Patrik WIBERG	Head of delegation	patrik.wiberg@sjofartsverket.se	2022-06-22
57	IHO Member State	Thailand	HYDROGRAPHIC DEPARTMENT, ROYAL THAI NAVY	Pathomphote KAENCHAN	Head of delegation	hydrotechhdrt@gmail.com	2022-06-01
58	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Rhett HATCHER	Head of delegation	rhett.hatcher@ukho.gov.uk	2022-06-07
59	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Helena PATTON	Member of delegation	helen.patton@ukho.gov.uk	2022-09-20
60	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Jake THACKER-PUGSLEY	Member of delegation	jacob.ThackerPugsley@ukho.gov.uk	2022-09-20
61	IHO Member State	United Kingdom of Great Britain and Northern Ireland	UNITED KINGDOM HYDROGRAPHIC OFFICE	Clare LAIN	Member of delegation	clare.lain@ukho.gov.uk	2022-06-07
62	IHO Member State	United States of America	National Oceanographic and Atmospheric Administration (NOAA)	John NYBERG	Head of delegation	john.nyberg@noaa.gov	2022-06-17
63	IHO Member State	United States of America	NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY (NGA)	John LOWELL	Member of delegation	john.e.lowell@nga.mil	2022-06-02
64	IHO Member State	United States of America	National Oceanographic and Atmospheric Administration (NOAA)	Jonathan JUSTI	Member of delegation	Jonathan.Justi@noaa.gov	2022-06-24
65	IHO Member State	United States of America	COMMANDER, NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND (CNMOC)	Matthew BORBASH	Member of delegation	matthew.borbash2.civ@us.navy.mil	2022-07-01
66	IHO Secretariat	-	International Hydrographic Organization	Leonel MANTEIGAS	Staff	leonel.manteigas@iho.int	2022-10-13
67	IHO Secretariat	-	International Hydrographic Organization	Luigi SINAPI	Staff	luigi.sinapi@iho.int	2022-09-22
68	IHO Secretariat	-	International Hydrographic Organization	Rebekka YATES	Staff	rebekayates@yahoo.co.uk	2022-09-20
69	IHO Secretariat	-	International Hydrographic Organization	Rémy ROQUEFORT	Staff	remy.roquefort@iho.int	2022-10-13
70	IHO Secretariat	-	International Hydrographic Organization	Jeff WOOTTON	Staff	jeff.wootton@iho.int	2022-09-14

No	Category	Country	Organization / Company	Name	Status	E-mail	Date
71	IHO Secretariat	-	International Hydrographic Organization	Mathias JONAS	Staff	sg@iho.int	2022-09-20
72	IHO Secretariat	-	International Hydrographic Organization	Teresa LANDER	Staff	tb_lander@yahoo.co.uk	2022-09-20
73	IHO Secretariat	-	International Hydrographic Organization	Yves GUILLAM	Staff	yves.guillam@iho.int	2022-05-02
74	IHO Secretariat	-	International Hydrographic Organization	Caroline FONTANILI	Staff	caroline.fontanili@iho.int	2022-09-14
75	IHO Secretariat	-	International Hydrographic Organization	Yong BAEK	Staff	yong.baek@iho.int	2022-08-08
76	IHO Secretariat	-	International Hydrographic Organization	Insung PARK	Staff	pok@iho.int	2022-06-22
77	IHO Secretariat	-	International Hydrographic Organization	Abri KAMPFER	Staff	dtech@iho.int	2022-07-26
78	IHO Secretariat	-	International Hydrographic Organization	Sam HARPER	Staff	adso@iho.int	2022-07-12
79	Other Observers	-	Mercator Ocean International (MOI)	Pierre BAHUREL	Observer	pierre.bahurel@mercator-ocean.fr	2022-09-15

**6<sup>TH</sup> MEETING OF THE IHO COUNCIL****18 – 20 October 2022****FINAL AGENDA**

- References:** A. Rule 8 of the Rules of Procedure of the Council.  
 B. IHO Resolution 12/2002 as amended – *Planning Cycle [for Assembly Years]*.

**1. OPENING**

- 1.1 Secretary-General Opening Remarks.
- 1.2 Adoption of the Agenda and Timetable.
- 1.3 Chair's Opening Remarks.
- 1.4 Administrative Arrangements.

**2. ITEMS REQUESTED BY THE 2<sup>ND</sup> IHO ASSEMBLY**

- 2.1 Decision A2/08: Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board (*To be discussed under agenda item 4.5*).
- 2.2 Decision A2/12: Report on the Application of ISO 9001 Principles (*To be discussed through the reports of HSSC and IRCC under agenda items 4.1 and 4.2*).
- 2.3 Decision A2/14: Update on the best way forward for the definition of hydrographic interest.
- 2.4 Decision A2/20: Status report on the appropriateness and applicability of the new Strategic Performance Indicators (*To be discussed under agenda item 6.1, taking into account recommendations from Secretary-General for Programme 1, HSSC and IRCC Chairs for Programmes 2 and 3*).
- 2.5 Decisions A2/30&A2/31: Proposed version 2.x of the Roadmap for the S-100 Implementation Decade (*To be discussed under agenda item 4.4*).
- 2.6 Decision A2/33: Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs) (*To be discussed under agenda item 4.3*).
- 2.7 Cumulative List of A-2 Decisions affecting the Council (Decisions A2/02<sup>13</sup>, A2/04<sup>2</sup>, A2/06<sup>2</sup>, A2/08, A2/11<sup>2</sup>, A2/12, A2/14, A2/20, A2/30, A2/31, A2/33).

**3. ITEMS REQUESTED BY THE IHO COUNCIL**

- 3.1 Review of the status of Decisions and Actions from C-5.

**4. ITEMS REQUESTED BY SUBSIDIARY ORGANS**

- 4.1 A. Report and proposals from HSSC including:

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<sup>13</sup> Complete.

Annex A: Proposed New IHO Resolution xx/2023 on the S-100 Implementation

Annex B: Draft revised version of the Roadmap for the S-100 Implementation Roadmap, Annex 2, version 2.0, 12 July 2022

Annex C: Proposed Annex 4 to the Roadmap for the S-100 Implementation Decade (2020-2030), Executive Summary of Dual Fuel Concept for S-100 ECDIS

4.2 A. Report and proposals from IRCC including:

Annex A: IHO Capacity Building Strategy

Annex B: Guidelines on the Implementation of the WEND-100 Principles, version 1.0, April 2022

Annex C: IRCC Chair proposal regarding SPI allocated to IRCC

4.2 B. Proposed Recommendation (France): Avoid any ambiguity for S-100 based products that do contribute to navigation, by clearly distinguishing them from products using the same data format with a content for other purposes

4.3 Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs).

4.4 Proposed version 2.x of the Roadmap for the S-100 Implementation Decade.

4.5 Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board.

## 5. IHO ANNUAL WORK PROGRAMME AND BUDGET

5.1 Review of the Current Financial Status of the IHO.

5.2 Proposed IHO Work Programme for 2023.

5.3 Proposed IHO Budget for 2023.

5.4 Proposal to be submitted to A-3 for the IHO 3-year Work Programme and 3-year Budget 2024-2026.

## 6. IHO STRATEGIC PLAN REVIEW

6.1 Implementation and discussion of adaptations of the IHO Work programme and other affected IHO instruments resulting from the Strategic Plan 2021-2026. Status report on the appropriateness and applicability of the Strategic Performance Indicators.

6.2 Review of the Strategic Plan in preparation of A-3 (Reference B, article 1, amendments if any).

## 7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL

7.1 Update on the implementation of Decision A2/07: gender-inclusivity.

7.2 Update on the implementation of Decision A2/25: S-130 Polygonal demarcations of global sea areas.

7.3 Preparation of the 3rd Session of the IHO Assembly: List of deliverables to A-3, Countdown, Programme, General Information and Preparation steps of the establishment of the new IHO Council 2023-2026.

7.4 Proposal for the Revision of Article 8.e of the General Regulations of the IHO – *Membership of the IHO Hydrographic Commission on Antarctica (HCA)*

- 7.5 Proposal to amend Publication M-7 - Staff Regulations (application of the changes made for health and retirement provisions).
- 7.6 Information (ROK, Canada): Establishment of a National S-100 Committee.
- 7.7 Information (UK): Understanding the Drivers, Solutions and Enablers within the Shipping Industry.

**8. NEXT MEETING**

- 8.1 Dates and venue for the 7<sup>th</sup> meeting of the IHO Council (17-19 October 2023, Monaco) (Decision A2/11).

**9. ANY OTHER BUSINESS**

- 9.1 Towards the digital twin of the ocean - how hydrographic knowledge and oceanographic modelling become building blocks (Mr Pierre Bahurel, Director General, Mercator Ocean International).

**10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING**

**11. CLOSURE OF THE MEETING**

## Annex C

## LIST OF DECISIONS and ACTIONS FROM C-6

AGENDA ITEM	SUBJECT	DECISION or ACTION No.	DECISION or ACTIONS (in bold, action by)	TARGET DATE/EVENT	STATUS (at October 2022)
<b>1. OPENING</b>					
<b>1.1 Secretary-General Opening remarks and introductions</b>					
<b>1.2 Adoption of the agenda</b>					
	Observers	C6/01	<b>The Council</b> welcomed the proposal to be informed on Day 2 by Mr Pierre Bahurel, Director General of Mercator Ocean International, about the <i>Digital Twin of the Ocean</i> initiative.		Decision
	Agenda	C6/02	Subsequently, the <b>Council</b> adopted the agenda and the timetable as proposed, and agreed to consider the information papers (Docs. C6-07.6A, and 07.7A), when appropriate or at the end of some sessions, time permitting.		Decision
<b>1.3 Chair's Opening Remarks</b>					
	Opening	C6/03	<b>Council Members</b> welcomed the opening addresses by Dr Geneviève Béchar, Council Chair and the Secretary-General and agreed on the participation of RENCs representatives (IC-ENC this time) as Observers.		Decision
<b>1.4 Administrative Arrangements</b>					
	Contact List	C6/04	<b>IHO Member States having a seat at the Council</b> to provide the IHO Secretariat with their updates to the IHO Council List of Contacts.	Permanent	

2. ITEMS REQUESTED BY THE 2 <sup>nd</sup> IHO ASSEMBLY					
2.1 Update on the Joint IHO-Singapore Laboratory – Proposals from the Council to the Governing Board (Decision A2/08)					
			See section 4.5		
2.2 Report on the Application of ISO 9001 Principles (Decision A2/12)					
			See sections 3.1 and 4.1		
2.3 Discussion on the best way forward on the definition of hydrographic interest (Decisions A2/04 and A2/14).					
	Definition of Hydrographic Interest	C5/04	The <b>Council</b> thanked Council Chair for the update on the ongoing work by the <b>interested parties AR, BR, IN and UY</b> and invited them to submit a consolidated report on possible ways forward, including impact assessment on IHO Basic Documents.	<b>C-6 (- 3 months)</b>	Closed
	Definition of Hydrographic Interest	C4/08	<b>Council</b> noted the task given by the A-2 to consider the best way forward with proposals A-2 PRO-1.4 and A-2 PRO-1.5 on the definition of hydrographic interest and report to A-3 in 2023 and by which the Council was empowered to establish a working group for this specific purpose.	<b>A-3</b>	Closed
	Definition of Hydrographic Interest	C4/09	<b>Council</b> invited interested parties (Argentina, Brazil, India, Uruguay ...) in the development of a definition of hydrographic interest, to consider IHC17 outcome, PRO1.4 and 1.5, and come back with a single consolidated proposal to C-5 or C-6 for possible consideration at A-3 (deadline C-5, C-6).	<b>C-5, C-6</b>	Closed
	Definition of Hydrographic Interest	C6/05	<b>The Council Chair</b> to report at A-3 on the situation (as requested by Decision A2/14) and to recommend that this topic is put on hold until interested parties work out a mature proposal for a revised definition.	<b>20 Dec. 2022 (for A-3)</b>	Decision

<b>2.4 Status report on the appropriateness and applicability of the new Strategic Performance Indicators (Decision A2/20)</b>					
			See section 4.2 Annex C and 6.1		
<b>2.5 Proposed version 2.x of the Roadmap for the S-100 Implementation Decade (Decisions A2/30&amp;A2/31)</b>					
			See section 4.4 which embraces all proposals		
<b>2.6 Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs) (Decision A2/33)</b>					
			See section 4.1 , Paragraph 11, 12 and Annex C		
<b>2.7 Cumulative List of Assembly Decisions affecting the Council.</b>					
			For reference only		
<b>3. ITEMS REQUESTED BY THE IHO COUNCIL</b>					
<b>3.1 Review of the status of Decisions and Actions from C-5 (pending actions)</b>					
	Application of ISO 9001 principles	C6/71 (former C5/08, C4/40)	The <b>Council</b> invited the <b>IRCC</b> to identify a theme on which ISO 9001 Principles should be applied and to propose it to <b>Council</b> for endorsement.  The <b>Council</b> noted the task given by the <b>IRCC</b> to the <b>MSDIWG</b> to identify a theme in their portfolio of activities, where ISO 9001 basic principles could be applied and be beneficial.	<b>IRCC-15/C-7</b>	Decision A2/12
	--	C6/06	Left blank intentionally		
<b>4. ITEMS REQUESTED BY SUBSIDIARY ORGANS</b>					
<b>4.1 Report and proposals from HSSC</b>					
	Report of HSSC	C6/07	The <b>Council</b> noted the report and commended the <b>HSSC</b> , its Working Groups and supporting organizations for the achievements since C-5.		Decision



	<p>IHO Resolutions on S-100</p>	<p>C6/08 (former C5/05, C4/12)</p>	<p>Following up on Decision A2/32 (PRO2.3 by the ROK), the <b>Council</b> noted the progress made on existing IHO Resolutions (IHO CL 38/2022) and endorsed the proposal for a new generic IHO Resolution on S-100 Implementation (Annex A to HSSC Report to C-6 refers).</p> <p><b>Council Chair</b>, in her report to A-3, to submit the new IHO Resolution on S-100 Implementation for the approval of Member States, and indicate in the context the adoption of some amendments to existing Resolutions (IHO CL 38/2022).</p>	<p><b>20 Dec. 2022 (deadline for submission to A-3)</b></p>	<p>Decision</p>
	<p>Conversion S-57 to S-101</p>	<p>C6/09</p>	<p>Following up on Decision A2/33, the <b>Council</b> noted the publication, for implementation and testing, of Ed.1.0.0 of Annex B to S-65 - <i>S-57 ENC to S-101 Conversion Guidance</i> and commended the ENCWG and Mr Jeff Wootton in particular (TSSO, IHO Secretariat) for this outstanding achievement.</p>		<p>Decision</p>

	Dual Fuel Concept for S-100 ECDIS	C6/10 (former C5/10)	<p>Still following up on Decision A2/33, the <b>Council</b> endorsed the Dual Fuel Concept for S-100 ECDIS Executive Summary and the full report.</p> <p><b>Council Chair</b> in liaison with <b>HSSC Chair</b>, in her report to A-3, to submit the Dual Fuel Concept for S-100 ECDIS Executive Summary and the full report for the approval of Member States.</p> <p>Prior to the submission, the <b>Council</b> requested the <b>HSSC</b> (supported by <b>S-100 WG</b>) to amend the S-57/S-101 image in fig. 2 in section 2.6.1 of the Dual Fuel Concept by a better one as those available in Doc. C6-04.1C (Testbed Project).</p>	<p><b>20 Dec. 2022</b> (deadline for submission to A-3)</p> <p><b>1 Dec. 2022</b></p>	Decision
	IMO Documents on S-100 ECDIS	C6/11 (former C5/11)	<p>The <b>Council</b> noted the outcome of the 9<sup>th</sup> session of the IMO NCSR on the revision of MSC.1/Circ.1503/Rev1 - <i>ECDIS Guidance for Good Practice</i> and Revision of MSC.232(82) - <i>ECDIS Performance Standard</i> (IHO CL 31/2022 refers) and took note of the associated commitments made towards the IMO and the IEC in particular (<i>transition period for S-100 ECDIS, to become legal to use after 1 January 2026 and from 1 January 2029, new systems must comply with the new IMO Resolution on ECDIS Performance Standards</i>)<sup>14</sup>.</p>		Decision
	MSC106	C6/12	<p>The <b>Council</b> invited the <b>Members</b> to consider approaching their representatives in IMO to provide their support on the amendments to <i>ECDIS Performance Standard</i> at the next MSC106.</p>	<b>2 November 2022</b>	

<sup>14</sup> If approved at MSC106 in November 2022.

	Changes in S-100 ECDIS, S-98	C6/13	The <b>Council</b> endorsed the strategic change in S-100 ECDIS with Electronic Navigational Data Services (ENDS) and interacting navigational data layers, enabled by the Interoperability Specification S-98.  <b>Council Chair</b> to report to A-3 accordingly for approval.	<b>20 Dec. 2022 (for A-3)</b>	
	IHO Work Programme 2023-2026	C6/14	The <b>Council</b> endorsed the recommendation by <b>HSSC</b> by which Goal 1 and its Targets in the IHO Strategic Plan should have the highest priority in the 2024 – 2026 Work Programme.  <b>Council Chair</b> to report to A-3 accordingly for approval.	<b>20 Dec. 2022 (for A-3)</b>	Decision
	Future of the Paper Nautical Chart	C6/15 (former C5/12, C4/10)	The <b>Council</b> to continue the monitoring of the implementation by <b>HSSC</b> of the recommendations on the Future of the Paper Nautical Chart as appropriate.  <b>Council Chair</b> to report to A-3 on the matter.	<b>HSSC-15 / C-7</b>  <b>20 Dec. 2022 (for A-3)</b>	(Decisions A2/27&28 refers)
	Future of the Paper Nautical Chart	C6/16	The <b>Council</b> noted the recommendations made by <b>HSSC</b> on the automated production of paper charts and confirmed the Decision made at A-2 by which <u>priority</u> is to develop guidelines for the automated production of paper charts meeting S-4 <sup>15</sup> chart minimum content requirements from S-101 ENC data.		Decision

<sup>15</sup> S-4 is already a standard for « minimum » chart content.

	ENC derived paper charts	C6/17	The <b>Council</b> endorsed the offer of the <b>US</b> (supported by <b>AU, DE, DK, KR, and NZ</b> ) to document use cases and develop associated guidelines, as well as identify challenges with S-4, to achieve automated production of derived paper charts from ENC content databases and submit them to the <b>HSSC/NCWG</b> for their consideration.		
	S-57, S-101	C6/18 (former C5/13, C4/11)	<b>The Council</b> to monitor the progress of the task given to <b>HSSC</b> to prepare ( <i>done</i> ) and maintain the synoptic summary report on the various options offered to HOs for future production of S-101 ENCs in conjunction with S-57 maintenance/production.  <b>Council Chair</b> in liaison with <b>HSSC Chair</b> to report on this task at A-3.	<b>20 Dec. 2022 (for A-3)</b>	(Decision A2/33 refers)
	S-100 Testbed	C6/19 (former C5/60)	The <b>Council</b> welcomed the information provided by the Republic of Korea on the S-100 Testbed Project and agreed that it is a critical component of the Roadmap.  The <b>Council</b> invited IHO <b>Member States</b> to participate in this S-100 testbed project and in addition, to consider whether other criteria than those proposed by KHOA (Doc. C6-04.1C refers) should also be considered (expected geographic coverage implementation rate compared to existing S-57 ENCs, distribution and update mechanisms and NPubs coverage, for instance).	<b>End of December 2022</b>	

	HSSC&IRCC Reports and Proposals to C-6	C6/20 (same as former C5/14, ...and C1/06)	Considering the timelines between HSSC-15 and IRCC-15 meetings in 2023 and the countdown for submission of reports and proposals to C-7, the <b>Council</b> invited <b>HSSC and IRCC Chairs</b> to prepare their 2023 meeting minutes with the view that it will be used/submitted directly as reports and proposals to be considered at C-7.	July 2022	
<b>4.2 Report and proposals from IRCC</b>					
4.2	Report of IRCC	C6/21	The <b>Council</b> noted the report and commended the IRCC, the RHCs, and IRCC Sub-Committees for their achievements as well as for the outcome of the IRCC April Workshop on the Strategic Performance Indicators and the new TORs of the IBSC.		Decision
4.2	Maritime Safety Information	C6/22	The <b>Council</b> noted the concern of Member States (as Maritime Safety Information providers), should they implement Iridium SafetyCast services, they are compelled to bear the burden of all additional costs, as a consequence of the approval by IMO Member States of the Iridium SafetyCast as an Recognized Mobile Satellite Service (RMSS).		Decision
4.2	Maritime Safety Information	C6/23	The <b>Council</b> noted the completion of S-124 (MSI) Edition 1.0.0, ready for approval by the next HSSC.		Decision
4.2	Southern Ocean	C6/24	The <b>Council</b> noted the statement made and concerns raised by <b>Argentina</b> on the information provided in the IRCC report on HCA by which a submission on the recognition of the Southern Ocean is planned to be submitted to A-3.		

4.2	Capacity Building Strategy	C6/25	The <b>Council</b> endorsed the new proposed Capacity Building Strategy.  <b>Council Chair</b> in liaison with <b>IRCC Chair</b> to submit it to A-3 for approval.	<b>20 Dec. 2022 (for A-3)</b>	<u>Decision</u>
4.2	Capacity Building	C6/26	The <b>Council</b> noted the decrease of Capacity Building fund over the last few years.		<u>Decision</u>
4.2	IHO e-Learning Centre	C6/27 (former C5/16, C4/14)	The <b>Council</b> to monitor the progress made by IRCC to establish an IHO e-Learning Center based on A-2 PRO 3.3 and the related recommendations of IRCC/CSBC.  <b>Council Chair</b> in liaison with <b>IRCC Chair</b> to report to A-3 on the matter.	<b>C-7</b>  <b>20 Dec. 2022 (for A-3)</b>	(Decision A2/42 refers).
4.2	Women in Hydrography	C6/28 (former C5/17, C4/16)	The <b>Council</b> to monitor the progress made by IRCC on the CBSC work item of Empowering Women in Hydrography (EWH).  <b>Council Chair</b> in liaison with <b>IRCC Chair</b> to report to A-3 on the matter.	<b>C-7</b>  <b>20 Dec. 2022 (for A-3)</b>	(Decision A2/35 refers).
4.2A	Guidelines on Implementation of WEND-100 Principles	C6/29	Following IRCC's <i>endorsement</i> , the <b>Council approved</b> version 1.0 of the Guidelines on the Implementation of the WEND-100 Principles.  <b>Council Chair</b> in liaison with <b>IRCC Chair</b> to report at A-3	<b>20 Dec. 2022 (for A-3)</b>	
4.2	Guidelines on Common Global Gridding System	C6/30	The <b>Council</b> noted that the efforts on establishing a common global gridding system couldn't reach consensus and is put on hold.		<u>Decision</u>

4.2B	WEND-100, Guidelines on Implementation of WEND-100 Principles,	C6/31	<p>The <b>Council</b> endorsed the recommendation made by France by which S-1xx naming corresponding to S-1xx Product Specification to be used for safe navigation, which encompasses data format and content, should carry S-1xx names (Doc. C6-04.2B refers).</p> <p>The <b>Council</b> tasked the <b>HSSC</b>, in liaison with <b>IRCC</b> when appropriate, to ensure that a clear distinction is made in the future in the naming between <i>S-1xx products</i> (- data format and content - that meet requirements for safe navigation) and products used for other purposes (Goal 2) even if they use the S-100 based format.</p>	C-7, ... C-xx, if and when appropriate	Decision
<b>4.3 Update on the Dual-Fuel Concept (transition from S-57 to S-101 ENCs)</b>					
			Covered under agenda 4.1 (See HSSC Report to C-6, paragraph 11.		Decision A2/33 refers

4.4 Proposed version 2.x (or 3.0) of the Roadmap for the S-100 Implementation Decade					
	S-100 Implementation Strategy – Roadmap Annex 1	C6/32	<b>The Council</b> approved the proposed amendment to the S-100 Implementation Roadmap with the updated version 2.0 dated July 2022 of <u>Annex 1</u> as provided in Doc. C6-04.4A.		Decision
	S-100 Implementation Strategy - Roadmap Annex 2	C6/33	<b>The Council</b> approved the proposed amendment to the S-100 Implementation Roadmap with the updated version 2.0 dated 12 July 2022 of <u>Annex 2</u> as provided in Annex B of the HSSC report.		Decision
	S-100 Implementation Strategy – Roadmap Annex 3	C6/34	The <b>Council</b> approved the amendment (addition of Appendix 1 to the <u>Annex 3</u> – version 1.0 of <i>Guidelines on the Implementation of WEND-100 Principles</i> ) of the S-100 Implementation Roadmap as proposed by the WENDWG and contained in Annex B of the IRCC report.		Decision
	S-100 Implementation Strategy – Roadmap Annex 4	C6/35	<b>The Council</b> approved the principle of adding a new <u>Annex 4</u> (Dual-Fuel Concept for S-100 ECDIS – Executive Summary) to the S-100 Implementation Roadmap based on version 1.0 dated 1 July 2022 as provided in Annex C of the HSSC report.		Decision
	Roadmap for S-100 Implementation Decade	C6/36	<b>IHO Secretariat</b> to upload version 2.1 of the Roadmap including approved amendments to Annexes 1, 2 and 3.  Once the final version of Annex 4 (Dual Fuel Concept on S-100 ECDIS) is approved by A-3, IHO Secretariat to upload version 3.0 of the Roadmap.	<b>31 January 2023</b>  <b>May 2023 (after A-3)</b>	



	S-100 Implementatio n Strategy	C6/37 (former C5/24, ..., C3/13)	<b>Council/HSSC/IRCC Chairs/SecGen</b> supported by subject matter experts and Member States as appropriate to maintain the S-100 Implementation Roadmap as an incremental version- controlled document (including narrative and timelines) on an annual basis.	<b>Permanent</b>	
	S-100 Implementatio n Strategy	C6/38 (former C5/25, C4/20)	<b>SG, Council Chair, HSSC, IRCC Chairs</b> to maintain the three annexes related to the IHO WP 1, 2 and 3 to S-100 Implementation Roadmap.	<b>C-7</b>	(Decision A2/31 refers)
	S-100 Implementatio n Strategy	C6/39	The <b>Council</b> noted the WEND100-IGIF matrix (WENDWG CL 02/2022 refers) as a tool to describe the status, the progresses and the needs in introducing S-100 based products.		<u>Decision</u>
	S-100 Implementatio n Strategy	C6/40 (former C5/26, C4/27)	The Assembly having noted the update on interrelations and tasks, <b>Secretary-General</b> to continue to liaise with [IMO and] other relevant stakeholders and organizations involved in the development of other S-100 based products.	<b>Permanent</b>	(Decisions A2/40&41 refer)
	S-100 Implementatio n Strategy	C6/41	The <b>Council</b> noted progress on S-128 (Catalogue of Nautical Products) development.		Decision

4.5 Update on the Joint IHO-Singapore Innovation and Technology Laboratory – Proposals from the Council to the Governing Board (Decision A2/08)					
	IHO-Singapore Innovation and Technology Laboratory	C6/42 (former C5/27)	<p>The <b>Council</b> noted the update on the Joint IHO-Singapore Innovation and Technology Laboratory and noted the progress made on the following projects:</p> <ul style="list-style-type: none"> <li>- S-131 Marine Harbour Infrastructure Database (MHID)</li> <li>- Development of S-57 to S-101 Conversion Guidance Document</li> <li>- Creation and Test-Bedding of ECDIS capable of displaying S-102 on S-101 ENC's</li> </ul> <p>and the proposed project Proof of Concept: IHO-IALA Collaboration to Demonstration Interoperability of S-101 and S-125 at sea using wireless updating via 4G/5G Telecommunications links</p>		(Decision A2/08 refers)
	IHO-Singapore Innovation and Technology Laboratory	C6/43	<p>The <b>Council</b> endorsed the recommendation from the Governing Board of the Lab encouraging more stakeholders to identify collaborative projects, especially with other organisations and industry partners.</p>		
5. IHO ANNUAL WORK PROGRAMME AND BUDGET					
5.1 Review of the Current Financial Status of the IHO					
	Financial Reporting Statement	C6/44	<p>The <b>Council</b> noted the information provided on the current financial status as of September 2022.</p>		Decision
5.2 Proposed IHO Work Programme for 2023					
	Proposed IHO WP for 2023	C6/45	<p>The <b>Council</b> agreed to and approved the IHO Work Programme for 2023, as presented by the <b>Secretary-General</b>.</p>		Decision

	World Hydrography Day	C6/46	<p>The <b>Council</b> noted the proposed theme for the 2023 World Hydrography Day by the <b>Secretary-General</b> “Hydrography - underpinning the digital twin of the ocean”</p> <p><b>IHO Secretariat</b> to circulate the theme for 2023 to the <b>IHO MS</b> by IHO CL and fine tune language of the theme if needed.</p>	End of October 2022	Decision
<b>5.3 Proposed IHO Budget for 2023</b>					
	2023 IHO Budget	C6/47	<p>The <b>Council</b> approved the budget estimates provided by the <b>Secretary-General</b>, including the proposed adaptations to respond to the inflation effects.</p>		Decision
<b>5.4 Proposal to A-3: IHO Work Programme and Budget for 2024-2026</b>					
	2024 - 2026 IHO Budget	C6/48	<p>The <b>Council</b> endorsed the proposed 3-year Work Programme and Budget* provided by the Secretary-General for submission at A-3 by <b>Council Chair</b> for the approval of Member States.</p> <p>* subject to an update prior to submission to A-3 by 20 December 2022 in consideration of the volatility of the global finance situation.</p>	20 Dec. 2022 (for A-3)	
	2024 - 2026 IHO Budget	C6/49	<p>The <b>Council</b> endorsed the recommendation made by the <b>Secretary-General</b> to request A-3, for renewal of Council’s entitlement, for an increase of Member States contribution up to 3% subject to the Council’s annual budget review between 2024 and 2026, with 2024 as the earliest.</p>	20 Dec. 2022 (for A-3)	

6. IHO STRATEGIC PLAN REVIEW					
6.1 Implementation and discussion of adaptations of the IHO Work programme and other affected IHO instruments resulting from the revised Strategic Plan with a specific focus on Goal 2 and Goal 3. Status report on the appropriateness and applicability of the new Strategic Performance Indicators					
6.1	SPIs allocated to HSSC	C6/50	The <b>Council</b> noted the dashboard (target 2026, value as of 31 Dec. 2021) on SPIs 1.1.1, 1.1.2, 1.2.1, and 2.2.2 allocated to HSSC.		Decision
6.1	SPIs allocated to IRCC	C6/51	The <b>Council</b> noted the progress made by <b>IRCC</b> in the development of the methodologies and metrics for SPIs allocated to IRCC and endorsed the proposals (definitions, metrics, action plan, ...) as reported in IHO CL 23/2022.		Decision
	Strategic Plan 2021-2026 - Performance Monitoring	C6/52	The <b>Council</b> noted the Status Report on Performance Monitoring available as Annex B to the IHO Annual Report (Publication P-7).  <b>Council Chair</b> , in liaison with <b>Secretary-General (WP1)</b> , <b>HSSC Chair (WP2)</b> , and <b>IRCC Chair (WP3)</b> to report at A-3, on the basis of the IHO Annual Report 2022.	A-3	Decision  (Decisions A2/12&19 refer)
	MSDI portal	C6/53	The <b>Council</b> agreed on the recommendation from the <b>Secretary-General</b> to refocus the function and the layout of a future MSDI portal.	C-7	
	IHO visibility	C6/54	The <b>Council</b> noted the continued increase of IHO visibility via IHO website and social media activities and the amount of notable outreach activities under WP1 in four categories.		
	SPI 1.2.2	C6/55	The <b>Council</b> invited <b>all Member States</b> to consider providing their CATZOC values through the RENCs to support the Secretariat in the process of SPI 1.2.2.		

6.2 Review of the Strategic Plan in preparation of A-3					
	Strategic Plan 2021-2026	C6/56	The <b>Council</b> noted the mid-term obligation made by the Planning Cycle (IHO Resolution 12/2002 as amended), to review the Strategic Plan at each ordinary session of the Assembly and the recommendation from the <b>Council Chair</b> to continue with the SP 2021-2026 as it is at the moment, noting the implementation of SPI in progress, while focusing the efforts on the directions to be provided at A-3 to the next Council for the preparation of the SP 2027-2032.	20 Dec. 2022 (deadline for A-3)	
<b>7. OTHER ITEMS PROPOSED BY A MEMBER STATE OR BY THE SECRETARY-GENERAL</b>					
<b>7.1 Update on the implementation of Decision A2/07: gender-inclusivity</b>					
	Gender-inclusive Language	C6/57	The <b>Council</b> thanked <b>Canada</b> for the assistance provided to the IHO Secretariat on this theme and took note of the test applications of gender-inclusivity to M-1 and M-3 and to the additional workload in the creation process of IHO documents and communications.		Decision
	Gender-inclusive Language	C6/58	The <b>Council</b> endorsed the proposed amendments to IHO Resolution 1/2020.  <b>Secretary-General</b> to submit the proposal to A-3.	20 Dec. 2022 (for A-3)	Decision
	Gender-inclusive Language	C6/59	If and once amendments on IHO Resolution 1/2020 are approved at A-3, <b>IHO Secretariat</b> to implement the gender-inclusive language in M-1 as a first step...  ...and <b>Committees</b> and <b>Working Groups</b> to review their TORs in application of the new IHO Resolution.	C-7  When, and as appropriate (2024)	

7.2 Update on the implementation of Decision A2/25: S-130 Polygonal demarcations of global sea areas					
	S-130 PT	C6/60	The <b>Council</b> commended the S-130 PT for the achievements since C-5 and noted the timeline for the development of the S-130 Product Specification and Implementation.		Decision
	S-23, A2 PRO1.9 follow-up	C6/61 (former C5/57, C4/07)	<b>Secretary-General</b> to report on implementation of PRO 1.9 <sup>16</sup> .	<b>20 Dec. 2022 (for A-3)</b>	(Decision A2/24&25 refer)
7.3 Preparation steps of the establishment of the new Council 2023-2026 and Update on the preparation of A-3					
	7.3A	C6/62	In preparation of A-3, the <b>Council</b> noted the provisional list of deliverables for consideration/approval at A-3.		
	7.3B	C6/63	<b>The Council</b> noted the countdown, programme and the general information planned in preparation of A-3.		
	7.3C	C6/64	<b>The Council</b> noted the preparation steps for the establishment of the next Council.		
7.4 Proposal for the Revision of Article 8.e of the General Regulations of the IHO – Membership of the IHO Hydrographic Commission on Antarctica (HCA)					
	Art. 8.e of the General Regulations	C6/65	The <b>Council</b> endorsed the amendments of Art 8.e of the GR as proposed by the HCA and tasked the <b>Council Chair</b> to submit them to A-3 to the approval of Member States.	<b>20 Dec.2022 (for A-3)</b>	Decision

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<sup>16</sup> Future of S-23.

7.5 Proposed revision of IHO Publication M-7 - <i>Staff Regulations</i>					
	M-7 - Staff Regulations	C6/66	The <b>Council</b> noted the information and the way forward for the preparation of Edition 9.0.0 (amendments related to application of the changes made for health and retirement provisions) of M-7 – <i>Staff Regulations</i> to be submitted by the <b>Secretary-General</b> to A-3 for Member States' approval.	20 Dec. 2022 (for A-3)	
7.6 Information: Establishment of a National S-100 Committee (Canada, Republic of Korea)					
	National S-100 Committees	C6/67	The <b>Council</b> welcomed the strategy presented by Canada and the Republic of Korea through the establishment of their National S-100 Committees and noted the expected benefits of such approach.  The <b>Council</b> invited <b>Member States</b> to share their national strategies with regard to the establishment of similar national S-100 committees, as appropriate.	C-7	
7.7 Information: Understanding the Drivers, Solutions and Enablers within the Shipping Industry (UK)					
	Drivers, Solutions and Enablers within the Shipping Industry	C6/68	The <b>Council</b> thanked the <b>UK</b> for sharing their whitepaper on shipping industry drivers, solutions, and enablers.  The <b>Council</b> invited the UK to identify the lessons learned from this study and consider the possibility to provide inputs against the IHO Strategic Plan and IHO Work Programme as appropriate through the relevant WGs and Committees in which they are involved.	HSSC-15/IRCC-15	

8. NEXT MEETING					
8.1 Dates and venue for the 7 <sup>th</sup> Meeting of the IHO Council					
	C-7	C6/69	The <b>Council</b> agreed to hold C-7 in Monaco, at the IHO Secretariat, from 17 to 19 Oct. 2023.	<b>Go no-go decision 17 June 2023</b>	Decision
9. ANY OTHER BUSINESS					
9.1 Information: Digital Twin of the Ocean					
	Digital Twin of the Ocean	C6/70	<p>The <b>Council</b> welcomed the presentation on the Digital Twin Ocean by the Director General of Mercator Ocean International, and noted the intention to create a new IGO.</p> <p>When appropriate, the <b>Council</b> invited the <b>Secretary-General</b> of the IHO to consider whether a MoU between the two organizations would be useful to develop synergies in the future.</p>	<b>A-3 (to be confirmed)</b>	
10. REVIEW OF ACTIONS AND DECISIONS OF THE MEETING					
11. CLOSURE OF THE MEETING					



**REPORTS OF THE REGIONAL  
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THE HYDROGRAPHIC COMMISSION OF  
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**REPORTS OF THE REGIONAL HYDROGRAPHIC COMMISSIONS AND THE  
HYDROGRAPHIC COMMISSION OF ANTARCTICA**

**(IN ALPHABETICAL ORDER)**

1. Artic Regional Hydrographic Commission	ARHC
2. Baltic Sea Hydrographic Commission	BSHC
3. East Asia Hydrographic Commission	EAHC
4. Eastern Atlantic Hydrographic Commission	EAtHC
5. Meso-American - Caribbean Sea Hydrographic Commission	MACHC
6. Mediterranean and Black Seas Hydrographic Commission	MBSHC
7. Nordic Hydrographic Commission	NHC
8. North Indian Ocean Hydrographic Commission	NIOHC
9. North Sea Hydrographic Commission	NSHC
10. ROPME Sea Area Hydrographic Commission	RSAHC
11. Southern Africa and Islands Hydrographic Commission	SAIHC
12. South East Pacific Regional Hydrographic Commission	SEPRHC
13. South West Atlantic Hydrographic Commission	SWAtHC
14. South West Pacific Hydrographic Commission	SWPHC
15. United States Canada Hydrographic Commission	USCHC
16. Hydrographic Commission on Antarctica	HCA

## 1. REPORT OF THE ARCTIC REGIONAL HYDROGRAPHIC COMMISSION (ARHC)

### 1. Chair:

Ms. Pia Dahl Højgaard (**Denmark**) from September 16, 2022 to present

Ms. Dr. Geneviève Béchard (**Canada**) from November 10, 2021 to September 16, 2022

Radm Shepard Smith, Radm Rick Brennan (**US**) from September 16, 2019 to November 10, 2021

### Vice-Chair:

Ms. Birte Borrevik (**Norway**) from September 16, 2022 to present

Ms. Pia Dahl Højgaard (**Denmark**) from November 10, 2021 to September 16, 2022

Ms. Dr. Geneviève Béchard (**Canada**) from September 16, 2019 to November 10, 2021

### 2. Membership:

**Members:** Canada, Denmark, Norway, Russian Federation, United States

**Associate Members:** Finland, Iceland, Italy, United Kingdom

**Observers:** IHO Secretariat

### 3. Meetings:

For purposes of this report, the period is considered from IHO Assembly 2 (November 2020) through IHO Assembly-3 (May 2023) with information as of December 2022

**ARHC 11**, 09-10 November 2021 – VTC, hosted by CA

**ARHC 12**, 12-16 September 2022 – St. John's, Newfoundland and Labrador, Canada

### 4. Agenda Items:

- a) National Report updates addressing charting, survey, science and technology, personnel and national interagency coordination and policy developments
- b) Progress with new innovative technologies and techniques to acquire hydrographic data, such as autonomous vehicles, drone projects, crowd sourced bathymetry, and satellite derived bathymetry
- c) External outreach to the EU, UN, the Arctic Council and others to inform of hydrographic interests and developments bearing on the safe navigation and marine environmental protection in the Arctic. Primary outreach and collaboration focus on the EU, Arctic Council PAME Working Group, the Arctic SDI, the UNGGIM and its marine working group, and most recently the IMO Polar Maritime Seminar.
- d) Engaging on the readiness of S-101 data within the region. Through the

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AICCWG, ARHC members discuss difficulties of S-100 implementation in the Arctic. The AICCWG is chaired by Norway who also serves as S-100 Implementation Coordinator of the region.

- e) Open discussion on gridding in the Arctic through and with the Arctic Grid Study Project Team. Different ideas and solutions have been presented in the past and are being debated both in ARHC member institutions as well as among IHO members states at large.
- f) Additional working groups and coordinators with the ARHC currently operating include a) Arctic Marine Spatial Data Infrastructure Working Group (ARMSDIWG), b) Operational and Technical Working Group (OTWG), and c) Crowd Source Bathymetry/Seabed 2030 Coordinator.

### 5. **Difficulties encountered and challenges yet to be addressed:**

The Arctic region's vastness, remoteness, and emergence as a unique operating environment present a challenge to the ARHC and the hydrographic offices making progress realizing the goals of the IHO to chart the ocean and protect the marine environment. These challenges are being addressed by testing and sharing news of technological solutions and enhancing partnerships. Topics such as satellite derived bathymetry, crowd sourced bathymetry, autonomous vessel operations will continue to be important topics of ARHC agenda in the future

### 6. **Achievements/outputs/conclusions:**

- ARHC Strategic Plan Gap Analysis: A project team to implement the IHO SP including the reporting of strategic performance indicators.
- ARHC & PAME Cooperation – With US as liaison under the ARHC & PAME MoU, cooperation is continuing to progress. In May 2021, the Arctic Council and the ARHC issued a joint policy statement on “Hydrography in the Arctic Region” (available online).
- Collecting information to update the ARHC's 2018 Arctic Chart Adequacy Assessment – conducted every five years by the ARHC OTWG partnering with PAME to develop a report mapping Arctic vessel traffic locations and the current state of Arctic Charting. The new report will be published in 2023.
- Information on, experiences with, and the critical assessment of technologies, such as crowd sourced bathymetry, satellite derived bathymetry, drone projects, and community hydrography projects are being discussed and shared.
- Open forums meaning scientific exchange, workshops and open input by external actors were organized by respective host nations. These one-day meetings preceded the formal ARHC sessions and encouraged local scientific, governmental, academic, and community representatives to contribute perspectives regarding hydrographic matters related to community development. In recent years, *challenges, innovation, engagement, community hydrography* and the engagement with local and/or indigenous communities was of particular focus to the ARHC open forums.
- Update of ARHC Statutes. The new Statutes 3.0 were adopted in November 2021 in accordance with article 10.c of the Statutes 2.2 of 2017.
- Suspension of all ARHC-Related Activities by Canada, Denmark, Norway, and the United States of America with the Russian Federation. ARHC full Members Canada, Denmark, Norway, and the United States of America each decided that technical collaboration with the Russian Federation is no longer possible within

## **Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica**

ARHC at this stage.

- Following the process for Associate Membership, the United Kingdom formally joined ARHC as Associate Member in November 2022.

### **7. Actions required of the Assembly:**

- a) **Note** the report of the Arctic Regional Hydrographic Commission
- b) **Take** any other action considered appropriate.

**Reports of the Regional Hydrographic Commissions and  
the Hydrographic Commission of Antarctica**

# Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

## 2. REPORT OF THE BALTIC SEA HYDROGRAPHIC COMMISSION (BSHC)

### 1. Chair

Captain Dariusz Kolator, **Poland**, from 1 October 2019

Mr. Magnus Wallhagen, **Sweden**, from 22 September 2020

Mr. Rainer Mustaniemi, **Finland**, from 22 September 2022

### Vice-Chair

Mr. Patrik Wiberg, **Sweden**, from 12 September 2019

Mr. Rainer Mustaniemi, **Finland**, from 22 September 2020

Mr. Olavi Heinlo, **Estonia**, from 22 September 2022

### 2. Membership

**Members:** Denmark, Estonia, Finland, Germany, Latvia, Poland, Russian Federation, Sweden

**Associate Member:** Lithuania

**Observers:** IHO Secretariat, United States of America, United Kingdom

### 3. Meetings

25 <sup>th</sup> Meeting:	VTC	22 September 2020
26 <sup>th</sup> Meeting:	VTC	21–23 September 2021
27 <sup>th</sup> Meeting:	Stockholm (Sweden)	20–22 September 2022

### 4. Agenda Items

#### **BSHC Strategy**

The commission has established a Strategic Correspondence Group to ensure that the Commission acts in accordance with the IHO Strategic Plan. In particular, the group will have a role to overall coordination of the S-100 implementation behalf of the Commission.

#### **Hydrographic Re-survey Monitoring and coordination**

The Baltic Sea is a vulnerable sea basin with extensive impact from human activities. A regional platform for environmental policy making, HELCOM, was established already in 1974 to protect the marine environment of the Baltic Sea from all sources of pollution. HELCOM, the Baltic Marine Environment Protection Commission (also known as the Helsinki Commission) is an Intergovernmental Organization (IGO) and a Regional Sea Convention in the Baltic Sea area. HELCOM has identified that it is of uttermost importance that the MS perform hydrographic surveying in the Baltic Sea to avoid groundings due to shipping activities and establish a reliable source of knowledge of the seabed of the sea basin. The BSHC has identified as trusted organization to propose hydrographic survey plans to be adopted and agreed upon by HELCOM MSs through the Baltic Sea Action Plan. A revised Baltic Sea Action Plan including targets for hydrographic surveying, was agreed upon by the HELCOM MSs and the EU commission in November 2021.

BSHC maintains the hydrographic re-surveys plan for the Baltic Sea through the Re-Survey

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Monitoring Working Group (MWG) and reports on an annual basis to the HELCOM. Planned and performed surveys are being updated in a web-based tool, which is maintained and operated by the Swedish Maritime Administration.

See <https://helcomresurvey.sjofartsverket.se/>. The BSHC MWG liaises also with the similar North Sea Hydrographic Commission (NSHC) Re-Survey Working Group.

### **Harmonized Chart Datum in the Baltic Sea**

BSHC has developed the Baltic Sea Chart Datum 2000 (BSCD 2000) as a common Chart Datum and a Vertical Reference Frame for all waters within the Baltic Sea. It is derived from the European Vertical Reference Frame (EVRF) and Member States has agreed upon to implement the system for all navigational and hydrographic products and services. The first specification of BSCD 2000 was completed in 2013. BSCD 2000 is based on EVRF, which is also used as the vertical height reference on land in all Baltic Sea countries. BSCD 2000 is registered in the IHO GI Registry.

The Chart Datum Working Group (CDWG) is monitoring and provide guidance for the implementation of BSCD 2000. BSHC MSs are committed to implement BSCD 2000 in form of new editions of ENC's and paper charts as well as introducing BSCD 2000 as a new reference for water level information. The implementation is already finalized in many areas. However, a lot of implementation activities are still ongoing and the full implementation is expected to be finalized before 2027. To improve the geoid model further in the Baltic Sea, also gravity measurements and geoid computations are performed in cooperation between HO's, land survey authorities and academia.

The CDWG has been tasked to coordinate the implementation of Water Level Information for S-104 format and Surface Currents for S-111 format within the Baltic Sea.

### **Maritime Safety Information (MSI)**

The Baltic Sea is a Sub-area of NAVAREA I (NE Atlantic – coordinated by UK) and is coordinated by Sweden. To facilitate that the GMDSS MSI services in the Baltic Sea are arranged in compliance with the applicable regulations and recommendations, the Baltic Sea MSI Working Group (BSMSIWG) has been established. The WG is monitoring and resolves possible transmitting and interference problems and also exchange information about major planned operations at sea that are expected to affect international shipping in coastal waters of the Baltic Sea. UK as the NAVAREA I coordinator participates also in the WG and the BSMSIWG Chair participates in the newly established North Sea MSI WG, covering whole NAVAREA I.

The BSMSIWG has been tasked to coordinate the implementation of navigational warnings in S-124 format within the Baltic Sea.

### **Baltic Sea INT-chart and ENC scheme coordination**

The Baltic Sea INT Chart Coordination Working Group (BSICCWG) is the responsible body for nautical charts scheming, resolving ENC gaps and overlaps, ENC distribution, harmonization of ENC's and ENC coverage status in the Baltic Sea region. Finland chair the workgroup.

The WG also coordinates the coverage and the numbering of INT paper charts and is monitoring that the IHO Chart Web Catalogue is updated over the region. BSHC member states agreed on unlimited internal use of the small scale Overview ENC covering the whole Baltic, kindly provided by Germany as the responsible producer.

The BSICCWG have been tasked to coordinate and harmonise the implementation of S-101 ENC and S-102 Bathymetric Surface products in the Baltic Sea region.



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## **Marine Spatial Data Infrastructure (MSDI)**

MSDI provides hydrographic information to stakeholders beyond the classic field of surface navigation. The two neighbouring hydrographic commissions BSHC and NSHC have seen the importance to deal with MSDI as a regional corporate approach and have established the joint BSHC and NSHC Baltic Sea North Sea Marine Spatial Data Infrastructure Working Group (BSNSMSDIWG). The WG reports to both Commissions and co-operate closely with the IHO MSDIWG. A project to test the usage of the new IHO standard for Marine Protected Areas S-122 for MSDI purposes is currently under work with the OGC (Open Geospatial consortium) and with support from the Danish Geodata Agency. The project will report the outcome to IHO NIPWG and MSDIWG in due course.

## **WENDWG**

BSHC is represented in the WEND Working Group by Finland. The representative shall report to the Commission, including; review of the progress on the work items of WEND, resolving overlaps, ENC distribution and harmonisation, ENC coverage status, the WEND principles and the development of the new WEND-100 principles. BSHC receives the annual report and gives further guidance to the BSHC WENDWG representative.

## **IHO-EU Network WG (IENWG)**

Sweden is the BSHC representative in IENWG. Also several other BSHC member states have been actively participating in the working group since its inception in 2012. Several of the BSHC MS participated in the WG 10 years' anniversary in Brussels in May 2022. Several Baltic Sea HOs have been partners in a consortium, coordinated by SHOM in France, with the objective to develop one of the European Commission's flagship maritime projects the European Marine Observation and Data Network (EMODnet) Bathymetry Portal. Bathymetry for all European waters is made available at the EMODnet Bathymetry portal and data is also subsequently reused by GEBCO, Google and many other stakeholders.

## **Baltic Sea Bathymetric Database**

Sweden operates a cross border bathymetry database and a geoportal, the Baltic Sea Bathymetry Database (BSDB) - [data.bshc.pro](http://data.bshc.pro), on behalf of the Commission. BSHC Member States are providing gridded bathymetry information and the Baltic Sea Bathymetry Database Working Group (BSBDWG) acts as a coordinator. Data density differs between the Member States and has a minimum resolution of 500 m. The website is fairly widely used and the portal is running smoothly. It is possible to view, download data or use the WMS service provision.

The BSBDWG also coordinate bathymetry data in the Baltic Sea for the usage in the EMODNet Bathymetry portal, being the major hub for bathymetry data within Europe. Bathymetry for all European waters is made available at the EMODNet Bathymetry portal and this data is also subsequently reused by GEBCO, Google and many other stakeholders. Upon request from the Seabed 2030 project and the IHO CSBWG Chair, the BSBDWG Chair has been appointed as the BSHC coordinator for Seabed 2030 and crowdsourced bathymetry.

## **Capacity Building**

Activities in CB are monitored within BSHC. Germany is the CB Coordinator for the BSHC.

## **BSHC Website**

BSHC has a website [www.bshc.pro](http://www.bshc.pro) operated by Sweden. The website consist information on the BSHC WGs including ToRs, WG members and minutes from their meetings. Useful links to services provided by the Commission such as the Baltic Sea Bathymetric Data portal and the BSHC-HELCOM Re-Survey Scheme, are available as well.

## **5. Difficulties encountered and challenges yet to be addressed**

Suspension of all BSHC-Related Activities by Denmark, Estonia, Finland, Germany, Latvia,

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Poland and Sweden with the Russian Federation. The BSHC Full Members Denmark, Estonia, Finland, Germany, Latvia, Poland and Sweden each decided, that collaboration with the Russian Federation is considered no longer technically possible under the current situation in Ukraine.

The ongoing Covid-19 pandemic hindered the Commission to conduct face-to-face meetings from end of 2019 to July 2022. Having annual VTC meetings for some of the most important tasks was managed by the Commission and its underlying working groups but otherwise many planned actions and tasks was postponed.

A major challenge is the implementation of S-100 products and services in the region. Currently the BSHC has prioritized to coordinate implementation of the route monitoring products, as pointed out in the IHO S-100 Roadmap. Appointed WGs will start up discussions on harmonisation, timelines, technical coordination, dissemination strategies and identifying need for knowledge building.

### 6. Achievements/outputs/conclusions

The revised BSHC Re-survey plan was adopted and included in the HELCOM Baltic Sea Action Plan, signed at HELCOM Ministerial Meeting by the MSs and the EU Commission. The most important waterways and areas covering common shipping routes have been now re-surveyed and work continues with the lower priority waters.

The implementation of the common Baltic Sea Chart Datum 2000 (BSCD2000) proceeds satisfactorily by many member states.

BSHC has established a Strategic Correspondence Group for overall coordination of the S-100 implementation within the BSHC Region. The group will also ensure that the decisions and actions made by the Commission are in line with the IHO Strategic Plan.

A pilot project for testing Marine Protected Areas in S-122 is ongoing by the Baltic Sea North Sea MSDI WG.

Some member states are populating their ENC's with high density (intervals) depth contours and depth areas, respectively. A high density contours will be applied for the major merchant fairways and ports in large scale ENC's (Berth, Harbour and Approach) products.

### 7. Actions required by the Assembly

- a) **Note** the report of the Baltic Sea Hydrographic Commission (BSHC)
- b) **Take** any other action considered appropriate.

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## 3. EAST ASIA HYDROGRAPHIC COMMISSION (EAHC)

1. **Chair:** Vice Admiral Nurhidayat – Indonesia

**Vice-Chair:** Captain Chen Aiping – China

2. **Membership:**

**Members:** Brunei Darussalam, China, Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, Philippines, Republic of Korea, Singapore, Thailand

**Observers:** Cambodia, Timor Leste, UK, USA, Viet Nam, GEBCO Guiding Committee

3. **Meetings:**

9<sup>th</sup> EAHC SC Meeting: Yogyakarta, Indonesia (16-17 February 2023)

4. **Agenda Items:**

- a. EAHC Membership Status.
- b. EA-RECC Report
- c. EAHC-MSDI WG Report
- d. TRDC-BOD Report
- e. Strategic Team Advance Roadmap (STAR), Task Group Report and Discussion on the New EAHC Structure Election of Vice Chair
- f. Regional Framework for Disaster Risk Management and Mitigation. g. Managing and Coordinating the Migration to S-100
- g. EAHC Statutes Amendments-Terms of Reference
- h. Maritime Safety Information (MSI) by NAVAREA XI Coordinator
- i. CSBWG Update
- j. Statutes of Seabed 2030 Progress in EAHC Region
- k. Election of the EAHC Vice Chair

5. **Difficulties encountered and challenges yet to be addressed:**

- a. The Covid-19 pandemic has hampered the work of the commission and its groups, particularly in improving personnel capabilities, one of which is implementing a face-to-face capacity-building program.
- b. EAHC will further optimize the existing organizational functions of EAHC through the Strategic Team Advance Roadmap (STAR) program to implement the Development of hydrographic survey technology and synchronizes the nautical charts in the future.

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- b. Implement amendments to EAHC statutes, particularly relating to membership.
- c. The EAHC needs to have an extensive in-charge working group supporting the preparation of the capacity-building program in the Region. The MS carries out and broadens training and workshops on the S-100 program within the scope of capacity building in the Region.

### 6. **Achievements /outputs /conclusions :**

- a. EAHC has appointed Indonesia as chair for TRDC-BOD. b. China is the vice chair of EAHC for 2022-2025.
- b. EAHC is committed to building MSDI. Therefore, an MSDI working group meeting will be held in Hanoi, Vietnam. EAHC will activate the Working Group for developing the S-100 Roadmap, MSDI and Capacity building programs.
- c. The next EAHC SC meeting will be held in Manado, North Sulawesi, Indonesia, on 14-15 February 2024.
- d. In 2022, EAHC successfully implemented a capacity-building program through the TRDC program on the Development and implementation of a regional framework for disaster and management, which Indonesia organizes (hybrid)
- e. C-55 will be updated in 2023 by the member state.
- f. The Seabed 2030 project has three strategies to achieve its objective; Crowded Sourced Bathymetry and technical innovation in collecting marine bathymetric data by each member state.

### 7. **Actions required of the Assembly:**

- a. **Note** the report of the East Asia Hydrographic Commission.
- b. **Take** any other action considered appropriate.

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## 4. REPORT OF THE EASTERN ATLANTIC HYDROGRAPHIC COMMISSION (EAthC)

### 1. Chair:

Radm Laurent Kerléguer, France, October 2022 – present

Radm Mário Simões Marques, Portugal, January 2022 – October 2022

Radm Carlos Ventura Soares, Portugal, October 2020 – January 2022

Radm Chukwuemeka Ebenezer Okafor, Nigeria, October 2018 – October 2020

### Vice-Chair:

Capt Mostafa Tafrhy, Morocco, October 2022 – present

Radm Laurent Kerléguer, France, October 2020 – October 2022

Radm Carlos Ventura Soares, Portugal, October 2018 – October 2020

### 2. Membership:

**Members:** Cameroon, Democratic Republic of the Congo, France, Ghana, Morocco, Nigeria, Portugal, Spain.

**Associate members:** Benin, Cabo Verde, Congo, Côte d'Ivoire, Guinea, Guinea-Bissau, Mauritania, Senegal, Togo, United Kingdom.

**Observers:** Angola, Equatorial Guinea, Gabon, Gambia, Liberia, São Tome and Príncipe, Sierra Leone, USA, IALA, IHO Secretariat.

### 3. Meetings:

- 16<sup>th</sup> EAthC meeting, 29 September – 01 October 2021, Lisbon – Portugal

- 17<sup>th</sup> EAthC meeting, 28 – 30 September 2022, Mindelo – Cabo Verde

### 4. Agenda Items:

The agenda items dealt with during the period have followed the IHO Work Programmes one,

two and three, in compliance with the IHO subsidiary bodies. The main activities are listed below.

#### a) EAthC Capacity Building:

Since September 2020, 5 technical visits have been carried out in EAthC region: Benin, Congo, Côte d'Ivoire, Senegal and Togo. 6 other technical visits are planned: Guinea Bissau, Guinea, Mauritania, Morocco, Sierra Leone and São Tome and Príncipe. These technical visits represent an important tool for the regional capacity building policy. They enable the Coastal States to be aware of the national and regional issues of hydrography, MSI and marine cartography and to know the prerequisites. With the help of the experts who realize the visits, the Coastal States can identify the actions to be done to improve their organization, coordination and capacities.

The 17<sup>th</sup> Conference in Mindelo was preceded by a 2-day seminar funded by the IHO

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and related to the relationship with NAVAREA II Coordinator and PCAs, risk assessment and survey specification. This seminar made it possible to raise the awareness of many States in the region on these major issues for the development of hydrography and enabled many of these States to attend the EAtHC Conference. All the participants shared their concerns and experiences in the management of Maritime Safety Information, in data exchange with the NAVAREA II Coordinator (France) and/or their Primary Charting Authority (PCA). The IHO

Secretariat reiterated a well-known recommendation in the EAtHC on the establishment of a

National Hydrographic Committee, since it appeared that those Coastal States who have established their own national hydrographic committee are in a much better situation for meeting their SOLAS obligations

During these events, training needs are identified for Coastal States but most are not carried out due to lack of funding.

### b) EAtHC International Charting Coordination Working Group (EAtHC ICCWG):

The charting coordination of Region G is led by France. The INT charts coordination is ongoing with mature schemes for most of the scale bands.

In order to develop the coordination of the ENC production, the EAtHC entrusted the ICCWG, in consultation with the IHO Secretariat, with the implementation of the ENC scheme in INTOGIS for the usage bands 1 to 3. This action is ongoing in view of the upcoming dual-fuel period with the transition to S-101 ENCs, the effective maintenance of a S-57 scheme being an indispensable prerequisite to a good charting coordination during this period.

The ToRs & RoPs of the EAtHC ICCWG were revised and approved during the 16<sup>th</sup> EAtHC Conference.

During the 17<sup>th</sup> EAtHC Conference, the Commission decided to extend the mandate of the ICCWG to coordinate the implementation of S-100 products for Region G. In this context, a working meeting on the coordination of S-100 products is planned with the EAtHC ICCWG members during 2023 in order to define a strategy and to propose to the Commission a revised version of the ToRs & RoPs.

### c) EAtHC Marine Spatial Data Infrastructure Working Group (EAtHC MSDIWG):

During the 16<sup>th</sup> Conference, the EAtHC approved the creation of a MSDI Working Group under the chairpersonship of Portugal. Its first meeting occurred in VTC in February 2022 with the participation of 7 Coastal States. This MSDIWG is also in charge of coordinating for the EAtHC Region the project Seabed2030 and the crowdsourced bathymetry issue.

The 2 main objectives of this working group are to support the development of MSDI through the EAtHC area and to promote the CSB initiative.

### d) Maritime Safety Information:

The coordination relating to MSI in the NAVAREA II is carried out by France. Each Conference allows for the monitoring of the situation in terms of nautical information feedback and the transmission of urgent and rapid notices to mariners.

The seminar that preceded the 17<sup>th</sup> EAtHC Conference mainly focused on the MSI theme with presentations and recommendations from the NAVAREA II coordinator.

On the occasion of the 17<sup>th</sup> Conference, the attention of Coastal States was drawn to the need to set up national hydrographic committees, or similar national bodies, to gather the stakeholders concerned by MSI and safety of navigation.

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### e) Disaster Response:

A plan for disaster response framework for the region was approved during the 16<sup>th</sup> EAtHC Conference.

### f) Revision of the EAtHC Statutes:

A revised version of the EAtHC Statutes was unanimously approved during the 16<sup>th</sup> EAtHC Conference on 1<sup>st</sup> October 2021. The objective was for the EAtHC to be more compliant with the IHO Resolution 2/1997 "ESTABLISHMENT OF REGIONAL HYDROGRAPHIC COMMISSIONS (RHC)" as amended.

## 5. **Difficulties encountered and challenges yet to be addressed:**

a) Travel restrictions due to the COVID-19 pandemic in the region have postponed some capacity building activities and an EAtHC conference.

b) Awareness on the importance of Hydrography is increasing within the Region. Still EAtHC

Members should sustain collaborative efforts until the region's hydrographic capacity is fully developed for the good of all mariners. The attendance to the EAtHC Conferences is important to raise awareness in the region and to start a dynamic. Many countries in the region do not have the travel budget to attend Conferences. Organising an IHO-funded seminar prior to the conferences not only raises awareness, but also allows states to attend the conferences. Still, the low available budget from IHO for capacity building makes it increasingly difficult to fund such seminars. External funding should be sought but with an uncertain result.

c) Some of the region's Coastal States are still lacking basic hydrographic and cartographic capacities. It would be very important for national agencies to lobby their governments to adhere to IHO. The EAtHC tries to accompany these coastal states in the process of accession to the IHO, notably through the technical visits. These technical visits, carried out in the frame of the CB policy of IHO, are vital for less developed countries in order to help them identify priority needs, the necessary means and to derive a list of actions in order to start a dynamic that will eventually lead them to meet the obligations of the SOLAS Convention. Here again, the lack of budget threatens the carrying out of such technical visits. Training or provision of equipment fall outside the IHO's CB framework for non IHO members, alternative funding solutions remain very difficult to put in place, making this much needed support erratic.

d) Communication problems persist in the region, between the EAtHC Secretariat and some members and national agencies. The lack of updated contact lists when hand-over / take-over of positions occur is the main reason. Members were requested to keep their contact details up to date.

e) EAtHC tried to contact MOWCA, PMAWCA and AMSSA agencies without success. The Commission is trying to work through the member states of these organisations to re-establish contact and ensure the willingness of these organisations to cooperate.

## 6. **Achievements/outputs/conclusions:**

a) The EAtHC continues to keep and strengthen the cooperation in the region.

b) Hydrographic capacity development in the EAtHC region remains a challenge, with most of the Central & Western African coastal states lacking hydrographic infrastructure and relying on a third State to provide hydrographic services and fulfil their SOLAS obligations. The current pattern of capacity building has allowed only

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limited progress despite particular attention by the IHO to the EAtHC region and the involvement of some Member States (acting as Primary Charting Authority in that region).

c) With this in mind, efforts must therefore be continued with greater involvement of the Coastal States primarily concerned by the development of their hydrographic services in order to meet their SOLAS obligations, with the support of the IHO and the IHO Member States of the region.

d) At the same time, there is a growing need to develop capacity building actions for the benefit of Member States in particular to support the transition to S-100, whereas currently most of the actions carried out benefit non IHO Member States. The resources, both in terms of in-kind contributions from Member States to carry out these actions and in terms of capacity-building funds, are not sufficient to achieve these two objectives at the same time.

e) More technical visits are needed for CB.

f) Member States should share their education and training programs and develop on-job training (ex: onboard hydrographic survey training, in-office chart production training, etc.).

g) Member States should articulate the IHO CB initiatives with national initiatives in order to have very consistent on-job training in the coastal State.

### 7. **Actions required of the Assembly:**

- a) **Note** the report of the Eastern Atlantic Hydrographic Commission.
- b) **take** any other action considered appropriate.



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## 5. REPORT OF THE MESO AMERICAN AND CARIBBEAN SEA HYDROGRAPHIC COMMISSION (MACHC)

### 1. Chair

Rear Admiral Rhett Hatcher (UK) from March 2023 to present

Vice Admiral Renato Arruda (Brazil) from December 2021 to March 2023

Vice Admiral Edgar Barbosa (Brazil) from March 2021 to December 2021

Ms. Katie Ries (USA) from November 2020 to March 2021

#### Vice-Chair

Mrs. Bernice Mahabier (Suriname) from March 2023 to present

Rear Admiral Rhett Hatcher (UK) from March 2021 to March 2023

Vice Admiral Edgar Barbosa (Brazil) from November 2020 to March 2021

### 2. Membership

**Members:** Brazil, Colombia, Cuba, Dominican Republic, France, Guatemala, Guyana, Jamaica, Mexico, Netherlands, Suriname, Trinidad and Tobago, United Kingdom, United States of America, Venezuela.

**Associate Members:** Antigua and Barbuda, Barbados, Belize, Costa Rica, El Salvador, Grenada, Haiti, Honduras, Nicaragua, Panama, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines.

**Observer States:** Dominica, Spain.

**Observer Organizations:** ICG/Caribe EWS, Caribbean Geospatial Development Initiative (CARIGEO), Caribbean Disaster Emergency Management Agency (CDEMA), Central American Commission for Maritime Transport (COCATRAM), IALA, IC-ENC, IHO, IMO, IOCARIBE, MapAction, The Hydrographic Society of America (THSOA), The Nippon Foundation-GEBCO Seabed 2030 Project, University of Southern Mississippi (USM), University of the West Indies (UWI).

**Observer Companies:** 4 Earth Intelligence, AXYS Technologies, EOMAP, Esri, Fugro, IIC Technologies, iXblue, OceanWise, QPS, Kongsberg Maritime, SevenCs, TCarta, Teledyne Geospatial (CARIS), Terratec AS, Xylem/HYPACK.

### 3. Meetings

20 <sup>th</sup> Conference	Santo Domingo, Dominican Republic	4 - 6 December 2019
21 <sup>st</sup> Conference	Virtual	30 November - 3 December 2020
22 <sup>nd</sup> Conference	Virtual	30 November - 3 December 2021
23 <sup>rd</sup> Conference	Saint Louis, Missouri, USA (Hybrid)	29 November - 2 December 2022

Next Conference (24<sup>th</sup> Conference): Suriname, November-December 2023.

MACHC held 6 Webinars on the Seabed 2030 Project in September and October 2020, in November 2021 and in June 2022.

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A MACHC Webinar on Satellite-Derived Bathymetry (SDB) Technology & Experience was held in November 2020.

A MACHC Webinar on S-100 was held in November 2021.

MACHC held a Seminar on Hydrographic Governance and Introduction to MSDI in December 2019 and another Seminar on Hydrographic Governance and a Workshop on MSDI in November 2022.

### 4. Agenda Items

The main topics dealt with during the reporting period were primarily organized around the MACHC Committee and Working Groups. The major activities follow:

#### a) MACHC Capacity Building Committee (CBC)

MACHC Members have contributed to the last editions of the International Hydrographic Review (IHR).

In November 2020, a Webinar on Satellite-Derived Bathymetry (SDB), supported by EOMAP, Esri and TCarta was conducted, exploring the technology and possible applications of SDB.

Other SDB capacity building opportunities were shared with MACHC Members: the Earth Observation Clinic or EO Science for Society Program; the Earth Observation Resilient Society; a webinar with in-depth use cases and applications, in December 2020, held by TCarta and Esri; and 3<sup>rd</sup> and 4<sup>th</sup> International Conferences on SDB, also known as SDB Day 2021 (January 2021) and SDB Day 2022 (October 2022).

The candidates from Colombia, Guatemala and Venezuela who were selected for the 2021 Training for Trainers Programme in Basic Hydrography sponsored by the Republic of Korea have successfully completed the programme from 1 to 12 November 2021.

In November 2021, a Webinar on S-100 was held via VTC for the MACHC and neighbouring RHCs. The Webinar was supported by the IHO S-100 Working Group and IALA who discussed the development of the new standards and the opportunities that they present. MACHC Members shared their plans for S-100 development and production and the challenges that they face with the transition from S-57 to S-100.

The candidates from Colombia, Dominican Republic and Guyana who were selected for the 2020 Category "B" level Geospatial Marine Analysis and Cartography course, funded by the Nippon Foundation and hosted by the United Kingdom successfully completed the course in 2022 following the postponement of the course due to COVID travel restrictions.

Due to the impact of COVID, the IHO funded face-to-face Capacity Building Activities from the 2020 and 2021 workplans could not be completed. The funding for these events were carried into 2022 and 2023 so that these important opportunities were not lost. Scheduled for delivery this year are the High-Level Technical Visit to the Dominican Republic, the High-Level Technical Visit to Jamaica, the Technical Visit to Honduras, the Technical Visit to Belize, the Technical Visit to Costa Rica, and the Tides Workshop for Spanish Speakers. In recognition that the IHO CB funding resources are not enough to meet the regional demand, the MACHC is actively seeking and leveraging CB partnerships with other regional organizations and stakeholders who have common capacity building needs. These include the Central American Commission for Maritime Transport (COCATRAM), Inter-American Development Bank (IADB), the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS), IALA, IMO, IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) and neighbouring RHCs (SEPRHC, SWAtHC). The Tides Workshop for Spanish Speakers is an excellent example of these efforts and is supported both through IHO funding and through co-

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sponsorship by multiple regional partners (COCATRAM, ICG/CARIBE EWS, SEPRHC, SWAtHC and the MACHC).

The MACHC Members have been notified about the IALA webinars that took place in January 2021 (AtoN Remote Monitoring and Buoys Moorings) and February 2021 (AtoN Light Characters and AtoN Maintenance).

As part of the Empowering Women in Hydrography initiative a number of internships have been offered to provide opportunities to engage in international forums and to gain leadership skills and experience. The USA offered space for 2-3 women a year on NOAA hydrographic vessels starting in 2022 for which a candidate from Suriname has been successful in gaining a place. The International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) offered 4 internships; the USA was successful in being selected for one.

The Ports and Shallow Water Survey Course hosted by Brazil under the coordination of the South-West Atlantic Hydrographic Commission (SWAtHC) was held in October 2022. Guatemala also attended this course.

Dominican Republic and Mexico attended the Hydrographic Databases Workshop hosted by Ecuador under the coordination of the South East Pacific Regional Hydrographic Commission (SEPRHC) in November-December 2022.

The candidates from Guyana and Jamaica who were selected for the 2022 Category "B" Hydrographic Survey Programme, funded by the offered by the IHO-Republic of Korea Programme of Technical Cooperation and hosted by the Korea Hydrographic and Oceanographic Agency (KHOA) have successfully completed the programme.

A candidate from Guatemala was selected for the 2022-2023 session of the Category "A" Master of Science in Hydrographic Science at the University of Southern Mississippi (USM), USA.

The "Assessment of Capacity Building Phases of Coastal States" based on IHO CB Procedure 11 is constantly updated. It will be used to better evaluate, prioritize and focus future capacity building training.

The importance of keeping the IHO Publication C-55 current, as this is utilized in the IMO audit, has been highlighted to MACHC Members.

### b) MACHC Integrated Charting Coordination Working Group (MICC)

The MACHC and the South-West Atlantic Hydrographic Commission (SWAtHC) agreed on the boundary limit between them (moved from 0° Equator to 01°S) to include the entire Amazon basin in the MACHC Region (IHO International Charting Region B), having informed the IRCC.

The availability of ENC's and of INT Charts in Region B stands at 1,114 and 54, respectively. There was a considerable increase of Usage Bands 4 and 5 ENC cells in recent years. There are still 30 INT Charts schemed for Region B.

MACHC regularly performs Cruise Ship Ports Gap Analysis to identify gaps added anchorage areas to list of ports, identifying 207 ports and anchorage areas with only 8 not covered by nautical cartography.

The MICC sub-working group developed a MACHC Regular ENC Scheme for Usage Band 1. The UKHO presented the gridded scheme built by the UKHO for GB ENC coverages. NOAA presented the US approach for ENC re-scheme plan. It was decided for the adoption of the UKHO regular grid scheme for the MACHC ENC Scheme for Usage Band 1.

Testbeds for S-100 series products by MACHC Members were reported to be in progress: S-102 (Bathymetric Surface) by France, the Netherlands, the UK and the USA, S-111 (Surface Currents) by the USA, S-122 (Marine Protected Areas) by France, and S-124 (Navigational

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Warnings) by France.

Colombia as chair of IOC International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico Project (IBCCA) announced the conclusion of the 16 schemed maps in 2020. The second phase of the project, increasing the data resolution and leveraging the participation and the capacity of national Hydrographic Offices and research institutions, has been started.

### c) MACHC Marine Spatial Data Infrastructure Working Group (MMSDIWG)

The MMSDIWG section in the MACHC Initiative website is used as a method for sharing meeting materials and useful links with MACHC Members, contributing organizations, industry partners, academia and potential stakeholders.

The MACHC is engaging with multiple stakeholders on MSDI use cases / partnerships in the MACHC Region to advance the use and sharing of geospatial information to support improved decision making for sustainable national and regional development. These include: Risk Assessment and Mitigation Measures of Maritime Navigation in the Caribbean Sea; Silver Bank project; Disaster Response Support; Caribbean Marine Atlas (CMA); Caribbean GeoPortal; Caribbean Geospatial Development Initiative (CARIGEO); European Marine Observation and Data Network (EMODnet); and UN-GGIM/WG-MGI.

A MSDI Inventory survey has been conducted since 2020 to help the MACHC to document the various existing MSDI and SDI web resources within the MACHC Region; the results of these can be found in “MACHC MMSDIWG Inventory Survey Results”. Subsequently, another survey has been carried out on the MSDI Inventory for the Additional Layers for the MACHC Region based on the feedback from potential non-navigation users. These layers will support many use cases found in the Region. The results of this survey can be found in “MACHC MMSDIWG Inventory - Additional Layers Results”.

A bathymetric data protocols was completed to ensure users, such as CDEMA and MapAction, can more efficiently support disaster relief efforts within the MACHC Region. The protocols define the process for requesting the data, ensuring that the data is made available in the appropriate formats, and defining the process for sharing the data with the disaster response organizations.

MACHC began reaching out other RHC MSDI WG to share best practices and knowledge, having met with representatives from ARHC, SAIHC and SWPHC.

The MACHC was introduced to the Operational Framework for Integrated Marine Geospatial Information Management (or Integrated Geospatial Information Framework – Hydro “IGIF-H”) being developed by the UN-GGIM Working Group on Marine Geospatial Information.

### d) MACHC Coordination to the Seabed 2030 Project and Crowdsourced Bathymetry

The MACHC partnered with the Seabed 2030 Regional Data Assembly and Coordination Centre (RDACC) for the Atlantic and Indian Oceans to develop a gap analysis tool to help focus national efforts to contribute existing data and organize new collaborative surveys.

The MACHC Coordinator to the Seabed 2030 Project established close collaboration with this RDACC and with IHO DCDB.

The MACHC and IOCARIBE promoted four Seabed 2030 Webinars in September and October 2020 on the following subjects: Current Mapping Status; How to Build the Map: Sharing Data and Attribution; Increasing Data Coverage: Crowdsourced Bathymetry (CSB) and Related Tools; and draft joint MACHC-CARIBE Seabed 2030 Strategy.

The MACHC and IOCARIBE promoted a Webinar on the Seabed 2030 Project in November 2021 on the following subjects: Exploring Applications for the Bathymetric Grid Generation and Remote Bathymetric Data Processing using the Nippon Foundation/GEBCO Training Programme Alumni Network.

The MACHC approved, in December 2021, the expansion of the title of the MACHC Seabed

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2030 Coordinator to “MACHC CSB/Seabed 2030 Coordinator”.

The Commission approved the MACHC Seabed 2030 Work Plan for 2023, in accordance with the MACHC-IOCARIBE Seabed 2030 Strategy. Actions are in progress to contribute with existing non-public bathymetric data to the IHO DCDB and GEBCO grid, in order to increase data coverage in the MACHC Region and to build capacity for mapping contributions. Polygons with the gaps where no bathymetric data is recorded in the MACHC Region have been sent to the national points of contact to the MACHC CSB/Seabed 2030 Coordinator.

The Intergovernmental Oceanographic Commission (IOC) had recognised the MACHC-IOCARIBE Seabed 2030 Strategy as an endorsed Decade Project of the UN Decade of Ocean Science for Sustainable Development (2021-2030) entitled “No 140.2. MACHC-IOCARIBE Seabed 2030 Project” and attached to the Decade Programme “107. The Nippon Foundation-GEBCO Seabed 2030 Project” in June 2022.

The MACHC Seabed 2030/CSB Coordinator, in collaboration with IHO Crowdsourced Bathymetry Working Group (CSBWG) Chair, prepared a MACHC proposal to IRCC for the establishment of a Seabed 2030/CSB Coordinator Collaboration Team to discuss the past and current updates on Seabed 2030 Project and/or CSB efforts within the RHCs, to update on Coordinator-led efforts within their RHCs, to establish of a cohesive regional approach, to share challenges, issues, successes and lessons learned experienced by Coordinators. CSBWG will investigate the establishment of a Seabed 2030/CSB Coordinator Collaboration Team within that WG and report back to IRCC.

### e) Maritime Safety Information

The MACHC MSI Status Matrix and MACHC MSI Training Status Details on the MACHC Initiative website provide a color-coded representation that describes the level of MSI support National Coordinators provide to NAVAREA IV, NAVAREA V and NAVAREA XII. This matrix is used to identify and prioritize future MSI training and support within the MACHC.

Year 2020 was particularly busy for the promulgation of navigational warnings with an unprecedented number of storms and hurricanes, and the WWNWS issued numerous navigational warnings informing mariners regarding port closures due to these dangerous storms, allowing them to adjust their course to navigate more safely to a different area, or to remain out of harm's way.

The NAVTEX stations in the MACHC Region enhance the capacity of the coastal warning service. Colombia established two new NAVTEX stations.

NAVAREA IV/XII Coordinator informed how the Commission will measure the Strategic Performance Indicator 3.1.1 “Percentage of Coastal States that are capable to provide marine safety information (MSI) according to the joint IMO/IHO/WMO manual on MSI”. He reported that in 2021, NAVAREA IV/XII received MSI from 52% of National Coordinators and confirmed satisfactory coordination with 65%, and in 2022, NAVAREA IV/XII received MSI from 56% of National Coordinators and confirmed satisfactory coordination with 86%.

A MSI Course was held in Colombia under the coordination of the South East Pacific Regional Hydrographic Commission (SEPRHC) in September 2022. The Dominican Republic and Guatemala also attended this course.

The MACHC established a MSI WG in December 2022.

### f) Disaster Response

A Response to Disasters section has been established since 2019 on the MACHC Initiative website. This section is being filled with more information about National Points of Contact, Disaster Contingency Plans, Response Capabilities and Past Event Responses.

Brazil shared its experience with the response that the State of Brazil gave to the oil spill that hit the Brazilian coast as of October 2019. Many national, international and foreign

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organizations supported the investigation with resources and information. About 5,340 tons of oil residues hit the Brazilian coast, affecting 3,600 km, 130 cities and 11 states, from the north coast to the southeast coast. The head of the Brazilian Hydrographic Office was the head of the investigation. It was very important the knowledge of the marine environment and it was necessary to apply a multidisciplinary analysis, such as oil geochemistry analysis, mathematical modelling, maritime traffic analysis and dispersion of oil at sea.

The hurricane season in 2020 ended with a record of more than 30 storms.

Colombia shared how it responded to hurricanes Eta and Iota. A hydrographic team was deployed to carry out hydrographic surveys in order to generate plans and charts and verify navigable areas, anchoring, and other areas of interest for navigation.

The USA has a series of navigation response teams that conduct hydrographic surveys on small vessels to update NOAA's suite of charts. These teams are strategically located around USA and remain on call to respond to emergencies in order to restore resumption of shipping after storms and to protect life and property from dangers to navigation. During the pandemic, recreational vehicle rentals were deployed due to the scarcity of available lodging and restricted protocols, such as, virtual planning, personal protective equipment and social distancing, were applied.

The MACHC Disaster Response Framework is now at Annex 4 to the Statutes of the MACHC.

### **5. Difficulties encountered and challenges yet to be addressed**

A key challenge is to get more active participation from most MACHC Members in the Committee/Working Groups.

Finding ways to increase alternate sources of funding and partnerships for capacity building, as the demand far outweighs IHO CB funds.

Full ENC and INT Chart coverages not yet achieved.

The MACHC held a Workshop on S-100 in 2021 and discussions during the 23<sup>rd</sup> Conference of the MACHC to communicate on this issue, but the challenge is to get engagement from more MACHC Members in testing the implementation of S-100 based products. There are still many questions about the development and the implementation of S-100 based products by MACHC Members in the MACHC Region to be understood.

The MACHC established the MACHC MSDI WG in 2018 and carried out two Seminars on MSDI in 2019 and 2022, but we still face a challenge for most MACHC Members and certain contributing organisations to understand how and why it is in their interest to participate and contribute to MSDI.

While a MACHC Seabed 2030 Strategy was established in 2020, there is a challenge to motivate, receive support and sustain the engagement of MACHC Members so as to continue receiving bathymetric data contributions to fill gaps in the MACHC Region.

To implement a GIS-based layer for the MACHC Disaster Response Framework that could most effectively support coordination and communication efforts before and after a disaster event with effects on maritime infrastructures.

### **6. Achievements/Outputs/Conclusions**

Despite of the Coronavirus pandemic, the MACHC arranged to organize virtual meetings of its Committee/Working Groups, a webinar on S-100, webinars on the Seabed 2030 Project, and the MACHC Conferences in virtual format, through a videoconferencing platform generously resourced by NOAA/USA.

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The Statutes of the MACHC was revised in order to adapt to the IHO Resolution 2/1997 (“Establishment of Regional Hydrographic Commissions – RHC”) as amended.

The dissemination of IHO-funded trainings and opportunities has certainly benefited the selection of candidates from IHO Member States in the MACHC Region.

The annual Seminars on Raising Awareness in Hydrography are fundamental for the greater participation of Associate Members in the Commission events.

Technical Visits and High-Level Technical Visits to Associate Members are extremely relevant to leverage hydrographic and cartographic activities in these countries, as well as to raise their awareness in these fields.

The partnership with IOCARIBE to establish a joint strategy to support the Seabed 2030 Project resulted in the submission in January 2022 for IOC endorsement, a Decade Project linked to an endorsed Decade Programme (Call for Decade Action 02/2021) and the endorsement itself in June 2022.

The value of increased collaboration across RHCs and regional partnerships for capacity building training, Seabed 2030/CSB (including the development of a Regional Strategy and an Annual Work Plan), MSDI and other requires concerted effort to identify the specific activities of common interest and sustain those connections.

The MACHC, in collaboration with other international, regional and bi-lateral partners, is committed to carrying forward hydrographic, nautical cartography, MSDI and capacity building activities in close alignment with IHO objectives and goals.

The “Initiatives of the MACHC” website, generously hosted by NOAA/USA, is a space where the work of the MACHC is contained and designed to be a centralized resource for all MACHC Members and Observers. Some of the key features include: it is in both English and Spanish; is mobile device friendly; and provides up-to-date information related to the work of the MACHC Committee, Working Groups and other initiatives as described above, complementing the IHO MACHC webpage.

### **7. Actions required of the Assembly**

- a) Note the report of the MACHC;
- b) Consider the maintenance of IHO CB-fund for annual Seminars on Raising Awareness in Hydrography, Technical Visits and High-Level Technical Visits for Associate Members in the RHCs; and
- c) Take any other action considered appropriate.

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### 6. REPORT OF THE MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION (MBSHC)

1. **Chair:** Vinka KOLIĆ, Croatia, from April 2022

**Vice-Chair:** Capt. Nicolae VATU, Romania, from September 2022

2. **Membership:**

**Members:** Albania, Algeria, Bulgaria, Croatia, Cyprus, Egypt, France, Georgia, Greece, Italy, Lebanon, Malta, Monaco, Montenegro, Morocco, Romania, Russian Federation, Serbia (suspended), Slovenia, Spain, Syria (suspended), Tunisia, Turkey, Ukraine.

**Associate Member(s):** Israel, Palestinian Authority, United Kingdom, United States of America.

**Observers:** CIESM, Germany, IALA, IC-ENC, IOC, PRIMAR.

3. **Meetings:**

22<sup>nd</sup> MBSHC conference – VTC event, 27–28 May 2021

23<sup>rd</sup> extraordinary MBSHC conference – Ljubljana, Slovenia, 30 March–1 April 2022

Due to the Covid-19 pandemic, MBSHC22 was organized as a VTC event and MBSHC23 was organised as hybrid event according to MBSHC CL 03/2022.

4. **Agenda Items:**

**International Charting Coordination WG for the charting region F (F-ICCWG)**

Position of the Region F Coordinator was vacant after MBSHC22 (May 2021) when Italy resigned as Region F ICCWG Coordinator. In the meantime, two CL were issued calling for nominations for the position of the Mediterranean and Black Seas (Region F) International Charting Coordinator (ICC) – CL 03/2021, 06/2021. Spain in the meantime performed as acting Coordinator for urgent and relevant actions related to cartography coordination in the region.

During the 23<sup>rd</sup> Conference of the Mediterranean and Black Seas Hydrographic Commission, Greece and Turkey offered their candidatures for the Region F ICCWG Coordinator. It was agreed that Greece would be designated as Region F ICCWG Coordinator and Turkey as Vice-Coordinator on a rotating basis for a period of four years, two years each (MBSHC 23/07).

Member States were asked for proposals about the future role that regional cartographic coordination might have in the coming years with the implementation of S-100 products and services regarding INT charts.

**Black and Azov Seas WG (BASWG)**

The main objectives of the WG shall be: 1) to coordinate the hydrographic, cartographic, navigational, and maritime safety information needs (MSI) and requirements of the States in the Black and Azov Seas, 2) to coordinate the actions & resolutions in the region in accordance with the outcomes of the MBSHC meetings. Since A2 (11/2020), two VTC meetings were held (11.05.2021 BASWG15 and 01.03.2022 BASWG16). Turkey is the Chair of the Black and Azov Seas Working

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Group. The escalated tension due to the ongoing military confrontation in the region currently undermines the coordination between the Member States, especially 'ENC Overlap' issues have remained unresolved.

### **Cooperation with Member States**

The enlargement of the MBSHC membership is beneficial. The most significant achievement is that Lebanon became a new MS of the MBSHC from February 2021. Lebanon is a good example of improving capacities and its capabilities in Hydrography and Cartography, with the support of the Member States and IHO CB programmes. Lebanon also became MBSHC GEBCO/Seabed 2030/CSB ambassador.

Also, one of the significant issues was the incorporation of Albania as new 98th Member State of the International Hydrographic Organization. The IHO Secretariat was informed by the Ministry of the Foreign Affairs and Cooperation of the Government of Monaco that the Government of the Republic of Albania deposited its Instruments of Accession to the Convention on the IHO on 3 May 2022. During the MBSHC23, IHO invited Albania to sign the MBSHC Statutes at the end of the meeting to become Full Member of the MBSHC region. Albania is in the process of signing the MBSHC Statutes. Two Member States (Israel, Libya) are still non-members of the IHO and two Member States were suspended (Serbia and Syria).

Related to IRCC Recommendation 10, to apply Resolution 1/2005 in case of disasters occurred to support the affected States in their Regions, MBSHC created Disaster Response Framework and it was approved at the MBSHC23 (March 2022).

### **Maritime Safety Information (MSI)**

The NAVAREA III Coordinator for this region is Spain. The NAVAREA III Region covers the Mediterranean Sea from the meridian 005° 45'W, and the Black Sea, including the Azov Sea. Since May 2020, the NAVAREA III navigational warnings have been broadcast on SafetyNET II. Since last March, this NAVAREA III Coordinator centre has been broadcasting in training mode through the IRIDIUM service, using the SAFETYCAST platform. The coverage of NAVTEX stations in this region is satisfactory, and the coordination between contacts is effective. The MBSHC Member States are encouraged to establish closer engagement between their National Maritime Safety Information Coordinators and the NAVAREA Coordinator.

Due to crisis between the Russian Federation and Ukraine, an intense coordination activity NAVAREA is carried out in the Black and Azov Seas area. For the last two years, the number of NAVAREA III warnings continues to decrease. Most of the warnings, about 75 % of the messages, are from the Aegean Sea, the Eastern Mediterranean and Black Seas.

### **Maritime Spatial Data Infrastructure (MSDI)**

The MBSHC ambassador on the MSDIWG is Italy. Since the last A2, the MBSHC ambassador attended one VTC meeting MSDIWG12 (17–18 March 2021) and one hybrid meeting MSDIWG13 which was held in Singapore (9–13 May 2022) and which was incorporated with the annual meeting of the OGC Marine Domain Working Group, the third expert meeting of the UN-GGIM WGMGI, the International Seminar on United Nations Global Geospatial Information Management, with the theme “Effective and Integrated Marine Geospatial Information”.

Regular updates between MBSHC and MSDIWG have been exchanged through the ambassador. In November 2022, a workshop on MSDI funded by IHO CB programme was held in Turkey. Participants received a great benefit to develop their MSDI. MSDI is becoming more and more relevant due to marine spatial data integration and new standard S-100.

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There is a constant need to cooperate with MS, to encourage training, awareness of the importance of the integrated geospatial information framework and involvement of the MS in the MSDI initiatives and challenges in the region.

### **Capacity Building**

The Capacity Building (CB) Coordinator role of the MBSHC has been carried out by Turkey. Capacity-Building activities, which are based on assessing the development and capacities of each coastal state within the region, play a key role in providing and maintaining a fundamental level of understanding and capability in related fields. This base makes it possible for the coastal states to cooperate, exchange information and experience.

Another essential objective of these activities is to help the Member States fulfilling their obligations with respect to the SOLAS Convention. Turkey, as the MBSHC CB Coordinator represents the Commission at the CB Sub-Committee and is responsible for updating the MBSHC three-year CB plan, which is mostly shaped by the feedbacks of the Member States. A three-year CB plan was approved during MBSHC23.

Since the last A2 (11/2020), all the remote Capacity Building activities that were planned for 2021 and funded by CBSC were carried out successfully:

- Webinar on Transition to S-100 (22.11.2021)
- Webinar on Airborne Lidar Bathymetry (theory and practice) (17.11.2021)
- Webinar on Artificial Intelligence in Modern Hydrography (01.11.2021)
- Webinar on Satellite-derived Bathymetry (30.06.2021 & 28.09.2021). These two webinars which were organized by the MBSHC and sponsored by industry leaders, reached more than 500 attendees, globally.

In addition to above-said trainings, Understanding ENC's, Introduction to S-57 and Compiling for Navigational Safety were provided by the UKHO free of charge.

Two workshops funded by the CBSC were carried out successfully in December 2022, in Istanbul. 15 trainees from 10 different countries joined the workshops under the supervision of two trainers from the USA.

- Workshop on Cartographic Data Management (05.–07.12.2022)
- Workshop on MSDI development & implementation (07.–09.12.2022)

The challenge faced in terms of the CB activities is mainly related with the limited funds available each year. This situation has the potential of causing more severe repercussions as we are in the verge of the S-100 era.

This problem can be overcome by following one or many of the options below:

- Raising the CB Funds
- Providing CB Funds to the regions proportional to their contribution to the IHO Budget
- Centralizing S-100 focused activities.

### **5. Difficulties encountered and challenges yet to be addressed:**

#### **Difficulties**

- The main difficulties faced by the MBSHC are in the coordination of the INT chart schemes and ENC coverage. Discrepancies between new ENC's and existing INT charts are raising new difficulties regarding consistency of the nautical information

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provided by different producers. Sometimes, the only way forward is to conduct bilateral discussions for the solution of ENC overlapping issues.

- The escalated tension due to the ongoing military confrontation in the region (Black and Azov Seas) currently undermines the coordination between the Member States, especially 'ENC Overlap' issues have remained unresolved.
- One of the major difficulties in the last period was the lack of interest for the position of Chair and Vice-Chair of the MBSHC region and the position of Vice-Chair was vacant from 06/2019 to 09/2021. Also, the position of Region F Coordinator was vacant from 05/2021 to 04/2022, where Spain as the MBSHC Chair performed only urgent tasks in the F region. That was quite worrying situation also because the MBSHC region is the largest commission in the IHO and there is a constant need for coordination of the activities and need to make improvement. After MBSHC22, Croatia became a Vice-Chair (09/2021, MBSHC CL No 07/21), and afterwards took position of the Chair at the MBSHC23. The MBSHC23 approved the designation of Greece as Region F IRCC Coordinator and Turkey as Vice-Coordinator until MBSHC24 included. The MBSHC also agreed on the rotation on these positions after MBSHC24 and until MBSHC25, with Turkey becoming Region F Coordinator and Greece Vice-Coordinator (MBSHC 23/07). Since the MBSHC23 significant progress have been made. MBSHC Member States selected Romania for the position of

MBSHC Vice-Chair (MBSHC CL 08/2022). With this progress we have enabled continuity and stability in performing the tasks in the MBSHC region and that is crucial to ensure safety of navigation in the area.

- Insufficient funds for capacity building programs.
- Difficult and slow adaption of most of the MS in the MBSHC region to the process of digitalization in the whole maritime sector which starts with S-100 as a base line data model for IMO's e-navigation programme.
- Collaborative ecosystem to develop and apply S-100 based products – interoperability and reliability of the data of different kind of stakeholders.

### **Challenges**

- A major challenge is the implementation of S-100 products in the region because it is demanding in organizational, technical-technological, and financial sense. The most important strategic issue will be related to dual standards regarding the transition from S-57 to S-101 ENCs, or even triple mode because most of the MS in the MBSHC region will have paper chart production, S-57 and S-101.
- Key role of the RHC for harmonized production and distribution of future S-100.
- Awareness raising among MS – it is necessary to create an environment where many stakeholders such as maritime administrations, industry and other professional organizations can be involved and cooperate to facilitate widest possible implementation of S-100.
- Main challenge will be the establishment of the national S-100 Committee in each country. The National S-100 Committees should be composed of various national stakeholders that are involved in the development of S-100 standards especially significant end users such as Maritime administrations, Pilot services, Navy, Vessel Traffic Service, research institutes and industry in the fields of nautical publications, aids to navigation, e-Navigation and marine weather to allow varied participation.
- Improving cartographic coordination in the region is an ongoing task and permanent

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challenge.

- Improve capacity building programs. MBSHC region needs to develop e-learning capabilities which in turn will enable capacity building activities to reach a wider audience in a more cost-effective way. The main activities in the CB programme should be focused at S-100 Universal hydrographic model and MSDI.
- In order to enhance better results and ensure continuity of the work and implementation of the assigned tasks to the MS in the region, IHO/MS need to find a better way to motivate MS for the positions of Chair and Vice-Chair of the MBSHC (other RHC) – funds/sponsorship on a yearly basis for the chairmanship.

### 6. Achievements/outputs/conclusions:

#### Achievements/outputs

- The new MBSHC Statutes was adopted during the MBSHC23, and in force as from 1 April 2022.
- Following decision MBSHC23/08, a working group MBSHC S-1xx dedicated to the S-100 roadmap implementation within the MBSHC region has been established. A call for membership to the MBSHC S-1xx Working Group was issued by MBSHC circular letter No. 04/2022 in May. Ten applications were received (Croatia, France, Greece, Italy, Romania, Slovenia, Spain, Turkey, United Kingdom, United States of America) and MBSHC circular letter No. 06/2022 rev1, dated 13 July, provided the list of members and points of contact, and announced the selection of France (SHOM, Capt. Ronan Pronost) as chairman of the working group. The terms of reference and rules of procedures of the MBSHC S-1xx WG were drafted by the chair in November 2022 and circulated among its members before being submitted to MBSHC for approval. A VTC meeting is planned in the beginning of 2023.
- MBSHC MS are active in participating to the IHO-EU network working group (IENWG) and that is shown through the participation in the implementation of the EU funded projects European Marine Observation and Data Network (EMODNet), MBSHC Coastal Mapping, European Ocean Observation System (EOOS), etc. Also, there is a quite active participation from the MS of the EU initiatives – Maritime Spatial Planning (MSP) and EU Directive on Public Sector Information.
- Since the A2 11/2020, progress has been made in the Region F concerning the solution of some ENC overlaps. Effective tools for detecting these overlaps put in place by the RENCs and the implementation of the IHO resolution 1/2018 helped to raise awareness among ENC producers about these overlaps and MS in solving them.

#### Conclusions

- The cooperation within the MBSHC was good but, due to the restrictions imposed by the Covid-19 pandemic and because we had to learn to work virtually, communication and activities slowed down compared to the pre-pandemic period.
- All efforts to maintain communication and active participation of Member States through VTC meetings were not as effective and productive as they should have been, especially because MBSHC is a RHC covering a small geographic area but with the largest number of countries and different kind of issues. It became clear that we are most productive to address strategic issues when we are working together and in person.
- Capacity building activities play a key role in the Region, CB funds should be raised.
- New Member States and the enlargement of the MBSHC membership is beneficial.

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- Bilateral discussion is the only way for the solution of ENC overlapping issues and the only way for the step forward.
- The coordination role of the IENWG is a great example of the cooperation between European HOs in large EU funded projects, especially in the MBSHC region.
- The main challenge in the MBSHC region is the implementation of the S-1xx framework services, and for that reason additional effort, capacity building activities, education, trainings, and cooperation among Member States in the region are required. MBSHC S-1XX Working Group should coordinate activities related to S-100 roadmap implementation within the MBSHC region.
- MSDI is becoming more and more relevant due to marine spatial data integration and new standard S-100. There is a constant need to cooperate with MS, to encourage training, awareness of the importance of the integrated geospatial information framework and involvement of the MS in the MSDI initiatives and challenges in the region.

### 7. Actions required of the Assembly:

- a) **Note** the report of the Mediterranean and Black Seas Hydrographic Commission (MBSHC)
- b) **Take** any other action considered appropriate.

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## 7. REPORT OF THE NORDIC HYDROGRAPHIC COMMISSION (NHC)

### 1. Chair:

Magnus Wallhagen (Sweden) from March 22, 2023 to present  
Pia Dahl Højgaard (Denmark) from April 27, 2022 to March 22, 2023  
Birte Noer Borrevik (Norway) from April 21, 2021 to April 27, 2022  
Georg Lárussen (Iceland) from April 11, 2019 to April 21, 2021

### Vice-Chair:

Annika Kindeberg (**Sweden**) from March 22, 2023 to present  
Elizabeth Hagemann (**Denmark**) from August 1, 2022 to March 22, 2023  
Jens-Peter Hartmann (**Denmark**) from April 27, 2022 to July 31, 2022  
Evert Flier (**Norway**) from April 21, 2021 from April 27, 2022  
Árni Þór Vésteinsson (**Iceland**) from April 11, 2019 to April 21, 2021

### 2. Membership:

**Members:** Denmark, Finland, Iceland, Norway, Sweden

**Observers:** IHO Secretariat

### 3. Meetings:

For purposes of this report, the reporting period is considered from Assembly 2 (November 2020) to the current Assembly (May 2023) with information as of December 2022

***NHC 64, 20-21 April 2021 – VTC, hosted by Iceland***

***NHC Strategy Workshop 2021 – VTC, hosted by Denmark***

***NHC 65, 26-27 April 2022 – Stavanger, Norway***

***NHC 66, 21-22 March 2023 – Aalborg, Denmark (after submission of the report)***

### 4. Agenda Items:

- a) National Report updates addressing charting, survey, technology, and personnel.
- b) Data Distribution Policies: Updating and debating current and future plans of the member states. Both in general but also in light of Seabed 2030.
- c) NHC strategic work and studies on customer needs in the future.
- d) NHC statutes assessment: Working towards an alignment of NHC statutes with IHO strategy.

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- e) S-100 Implementation: Debating and discussing common challenges concerning data distribution among others. Sharing good practices on promotion of S-100.
- f) Reviewing the work of NHC working groups (NSEG, Expert Group on Hydrographic Surveying and NCPEG, Expert Group on Nautical Cartography). The later working group has taken on the task to work with harmonization of how to handle preliminary and temporary notices to mariners in ENCs. This was also discussed at the NHC65.
- g) DQWG WG Actions: CATZOC 'best practice' policies.

**5. Difficulties encountered and challenges yet to be addressed:**

**6. Achievements/outputs/conclusions:**

- NHC strategic workshop: developing 12 matrices covering different user groups specifying the varying interests of user groups (customers for hydrographic data). This serves as forward-looking perspective for internal and regional discussions on user needs.

**7. Actions required of the Assembly:**

- a) **Note** the report of the Nordic Hydrographic Commission (NHC).
- b) **Take** any other action considered appropriate.



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### 8. REPORT OF THE NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION (NIOHC)

#### 1. Chair:

Vice Admiral Nurhidayat – Indonesia

Vice-Chair:

Vice Admiral Chakkrit Malikhao – Thailand

#### 2. Membership:

**Members:** Bangladesh, Egypt, India, Indonesia, Myanmar, Pakistan, Saudi Arabia, Sri

Lanka, Thailand, United Kingdom.

**Associate Members:** Australia, France, Oman, Mauritius, Seychelles, USA.

**Observers:** Malaysia, Russian Federation, Sudan

#### 3. Meetings:

21st Meeting: Bali, Indonesia 22-25 August 2022

22nd Meeting: Yogyakarta, Indonesia 13-15 February 2023

#### 4. Agenda Items:

21st Meeting – Principal Agenda Items

- Elaborate on the S-100 road map implementation, including the S-100 product specifications development and timeline.
- National report.
- IC-ENC presentation.
- Mauritius requested full membership.
- CSB Update & Seabed 2030 development report.

22nd Meeting – Principal Agenda Items

- IHO Matters.
- National Reports.
- NIOHC Committee and Working Groups.
- Maritime Safety and the Worldwide Navigational Warning Service.
- NIOHC input to IHO meetings.

#### 5. Difficulties encountered and challenges yet to be addressed:

- The Covid-19 pandemic has hampered the work of the commission and its groups, particularly in improving personnel capabilities, one of which is implementing a face-to-face capacity-building program.

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- The NIOHC needs to have an extensive in-charge working group supporting the preparation of the capacity-building program in the Region.
- The NIOHC member states are at varying levels of technical maturity on the S-100 project and need assistance developing the S-100 series. The MS carries out and broadens training and workshops on S-100 within the scope of capacity building in the Region.

### 6. Achievements /outputs /conclusions :

- The next meeting of NIOHC-23 will be held in June 2024 and hosted by Thailand.
- The next Chair and Vice Chair of NIOHC (for 2023-2025) have been determined, Thailand will be the next Chair, and Bangladesh will be the next Vice Chair.
- In the developing S-100 project in the NIOHC region, The UK is ready to assist in producing, maintaining and disseminating the products.
- NIOHC will activate the Working Group for developing the S-100 Roadmap, MSDI and Capacity building programs.
- NIOHC is committed to undertaking hydrographic and cartographic activities and cooperating in building capacity. It aligns with IHO's goals and objectives. They are the coordinated charts and the production of ENC. In addition, it is necessary to align the creation of INT charting coverage and work to reduce ENC overlaps and gaps in the Region.
- C-55 will be updated in 2023 by the members.
- The Seabed 2030 project has three strategies to achieve its objective, Crowded Sourced Bathymetry and technical innovation in collecting marine bathymetric data by each member state.

### 7. Actions required of the Assembly:

- a) **Note** the report of the North Indian Ocean Hydrographic Commission to the 3<sup>rd</sup> Assembly of IHO.
- b) **Take** any other action considered appropriate.

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## 9. REPORT OF THE NORTH SEA HYDROGRAPHIC COMMISSION (NSHC)

### 1. Chair:

Koen Vanstaen, Belgium, October 2019 – April 2021  
Georg Lárusson, Iceland, April 2021 – April 2022  
Magnus Wallhagen, Sweden, April 2022 – present

### Vice-Chair:

Árni Þór Vésteinsson, Iceland, October 2019 – April 2021  
Magnus Wallhagen, Sweden, April 2021 – April 2022  
RAdm Rhett Hatcher, United Kingdom, April 2022 – present

### 2. Membership:

**Members:** Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Sweden, United Kingdom

**Observers:** IHO Secretariat

### 3. Meetings:

34<sup>th</sup> NSHC Meeting, 27 – 28 April 2021, VTC hosted by Belgium

35<sup>th</sup> NSHC Meeting, 5 – 6 April 2022, Reykjavik Iceland

36<sup>th</sup> NSHC Meeting, planned 29 – 30 March 2023, VTC hosted by Sweden

### 4. Agenda Items:

The agenda items dealt with during the period have followed the IHO Work Programmes one, two and three.

As a consequence of the revised IHO Strategic Plan, discussions have followed within the NSHC on how the Commission could take further steps to implement the Strategy. Belgium prepared a questionnaire to get a compilation of the NSHC MS plans for the implementation of the prioritized S-100 products. In connection the Commission had a discussion at the 35<sup>th</sup> NSHC meeting 2022 on the theme “What does the future have in store for us”. The coordination of the S-100 Implementation within NSHC has been discussed, but this important matter needs to be addressed further at coming meetings.

A foundation for high resolution navigational products in future S-100 ECDIS, as well as delivery of hydrographic data for other purposes than navigation, is a well surveyed seafloor. NSHC MS have shared experiences about ongoing mapping programmes and of particular interest are the ongoing INFOMAR seabed mapping programme to survey all waters in Ireland and the Norwegian Marine Base map project having the objective to survey and establish Marine Base Maps for the shallowest waters of Norway.

Several of the NSHC MS are contributing to the EU Commission initiative to establish the EMODNet Bathymetry portal where bathymetry for all European waters is available. These data can be reused for the IHO GEBCO dataset and as such contribute to the Seabed 2030 project. The Commission has also discussed how Crowd Sourced Bathymetry could contribute in the region.

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Five sub working groups are established under NSHC. Despite difficult circumstances during the COVID-19 pandemic, the working groups have continued their ongoing tasks. The North Sea ICCWG is working with the coordination of ENC's and INT-charts, the Tidal WG is discussing on how to harmonize the different chart datum used in the region. The Re-Survey WG has been working on coordination of hydrographic surveys in the North Sea as well as to study new methods of surveying such as the usage of Autonomous Surface Vessels. Coordination of Marine Spatial Data Infrastructure is handled by the joint BSHC and NSHC WG, Baltic Sea North Sea MSDI WG. The WG has initiated a joint project with OGC on testing the new IHO Product Specifications on Marine Protected Areas, S-122. The first two project periods, sponsored by the Danish Geodata Agency and OGC, have been terminated. The outcome has been reported to the IHO NIPWG who is responsible for the development of S-122.

At the 35<sup>th</sup> NSHC Meeting the North Sea Maritime Safety Information WG was established with the objectives to coordinate MSI messages in the North Sea region and to facilitate harmonization of new and existing methods to provide MSI to the shipping industry. The MSI WG will work in cooperation with the similar Baltic Sea MSI WG, established by BSHC, and as such these two working groups cover NAVAREA I.

### **5. Difficulties encountered and challenges yet to be addressed:**

The COVID-19 pandemic hampered the work of the Commission and its working groups. NSHC34 was postponed from 2020 to 2021 and the NSHC WGs meetings were limited to VTCs. Even if achievements could be made also during VTCs, the conclusion was after the first physical meeting (NSHC35 in April 2022) that face-to-face meetings are more productive.

Chairing of some of the NSHC WGs has changed with the NSHC Chair. It has been concluded that chairing of the WGs needs to be on a long-term basis for effectiveness. Steps to change this have been introduced.

NSHC had some challenges to measure the Strategic Performance Indicators (SPIs) associated with the IHO Strategic Plan. The ongoing work within IRCC to simplify the measurements of the SPIs is appreciated.

### **6. Achievements/outputs/conclusions:**

- Establishment of a Maritime Safety Information (MSI) Working Group (NSHC MSIWG)
- The cooperation within the NSHC is good and efficient. The NSHC MS participate actively in the NSHC WG. MS have continued to contribute to the work of the IHO and have been active in IHO working groups and Committees.
- NSHC was finally able to conduct a face-to-face NSHC35 – thank you Iceland for great hosting.

### **7. Actions required of the Assembly:**

- a) Note the report of the North Sea Hydrographic Commission (NSHC)
- b) take any other action considered appropriate.

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### 10. ROPME SEA AREA HYDROGRAPHIC COMMISSION (RSAHC)

1. **Chair:** Captain Yahya AL-BALUSHI (Oman)

**Vice-Chair:** Saud Hamoud M Alruways (Saudi Arabia)

2. **Membership:**

**Members:** Bahrain, IR of Iran, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, United Arab Emirates.

**Associate Members:** France, Iraq, United Kingdom, United States of America.

**Observers:** Regional Organization for the Protection of the Marine Environment (ROPME), Middle East Navigation Service (MENAS), International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), Arabian Maritime and Navigation Aids Services LLC (AMNAS)

3. **Meetings:**

9 th RSAHC Meeting Muscat, Oman 15 - 17 November 2022.

4. **Agenda Items:**

Main activities of RSAHC are the progress in developing the INT chart schemes, ENC production, MSI, inter-state co-operation under the capacity-building program, and other activities and issues as decided by the Commission, including National Reports, Review of Status of Hydrographic Surveying and Nautical Charting in the RSAHC (IHO Publication C-55).

The following notable topics have been discussed at the 9<sup>th</sup> RSAHC meeting:

1. Review of action items from the previous meetings (RSAHC8).
2. Report by IHO Secretariat.
3. National reports (major items and highlights only) by members and associate members.
4. Review of Status of Hydrographic Surveying and Nautical Charting in the RSAHC (IHO Publication C-55).
5. Report by INT Chart Coordinator (IR of Iran).
6. Report by ENC Regional Coordinator (IR of Iran) – Progress on the implementation of ENC coverage and other issues.
7. Promulgation of Navigational Warnings with NAVAREA IX area, MSI in NAVAREA IX and the implementation of GMDSS. (Pakistan)
8. Capacity-building status and report by Capacity-building Coordinator (IR of Iran).
9. Relevant International organizations' report, including IALA, etc.
10. Presentations by Industrial Partners (IXblue, Kongsberg, Fugro,EOMAP)

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### 5. Difficulties encountered and challenges yet to be addressed:

1. While most regional communication is conducted through emails, there are still numerous problems in the way of robust safe and permanent communication between Member States to allow better cooperation within the region. As IHO has been informed, it has been observed in the past few years that the Member States of RSAHC have limited participation in regional hydrographic activities and as mentioned in the last meeting the Chair Office faced difficulty reaching the focal point of hydrographic authorities and a lack of communication in the United Arab Emirates and Kuwait.
2. Certain overlaps in ENC cells between Iran and UK, Oman and UK, as well as between Pakistan (Region I) and India (Region J).
3. Following the introduction of new standards such as S-100 series and their implementation in a near future, all the Member States in Region I will need proper training to prepare accordingly.

### 6. Achievements/outputs/conclusions:

1. IR of Iran is a CB Coordinator and INT Charts Coordinator of the RSAHC Region.
2. A technical visit of Iran and Iraq to be arranged by IHO and IALA as discussed in RSAHC9.
3. A merger between RSAHC and NIOHC could strengthen the regional activities and engagement, since the regions are adjacent and a few states (i.e. Pakistan and Saudi Arabia) are already members of both RHCs.
4. Good participation in IHO e-Learning Center and CB training.
5. Since the period between Commission Meeting (RSAHC8) in February 2018 and the last Commission Meeting (RSAHC9) in November 2022, a better ENC coverage in the region achieved, which in turn means better coverage of un-surveyed areas in RSAHC region.
6. Good progress is being made with the aspirations of nations to attain IHO Membership, Iraq to sign the RSAHC statutes IAW RSAHC statutes.
7. The RSAHC encourage nomination of a coordinator to promote establishment of MSDI working group and S-100 Services Coordinator for RSAHC.
8. There has been a high level of industry participation in RSAHC meetings with many opportunities to share experiences and contribute to discussions.

### 7. **Actions required of the Assembly:**

- a) **Note** the report of the RSAHC.
- b) **Take** any other action considered appropriate.

# Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

## 11. REPORT OF THE SOUTHERN AFRICAN AND ISLANDS HYDROGRAPHIC COMMISSION (SAIHC)

### 1. Chair

Captain Theo Stokes: South Africa, until September 2017 (unable to attend 14<sup>th</sup> SAIHC Conference)

Rear Admiral Tim LOWE CBE, United Kingdom, since September 2017

### Vice Chair

Rear Admiral Tim LOWE CBE: United Kingdom, until September 2017

Captain Theo Stokes: South Africa, September 2017 - September 2019

TBN: Mauritius, since September 2019

### 2. Membership

**Members:** France, Mauritius, Mozambique, Norway, Republic of South Africa, Seychelles and United Kingdom

**Associate Members:** Angola, Comoros, India, Kenya, Madagascar, Malawi, Namibia, Portugal and Tanzania.

**Observers:** Brazil and United States of America

### 3. Meetings

14th SAIHC Conference	La Réunion	6 - 8 September 2017
15th SAIHC Conference	Seychelles	27 - 30 August 2018
16th SAIHC Conference	Cape Town, South Africa	2 - 5 September 2019

### 4. Agenda Items

a) The SAIHC Conferences tend to work to a standing agenda with modifications for new issues as they arise. The principal agenda items dealt with during the above-mentioned meetings are:

- Feedback from other IHO Bodies affecting SAIHC
  - IRCC - Actions and Recommendations on RHCs interwoven into the agenda and actively discussed throughout
  - CBSC
  - IHO Secretariat (IHO Secretariat), including P-5, C-55, and reports from the latest IHO Council, IRCC, WENDWG, HSSC, and MSDIWG
- SAIHC Activities in the light of IHO Work programme
  - ICCWG - INT chart scheme for Region H
  - MSI - NAVAREA VII Self-Assessment
  - Bilateral and Regional Cooperation Agreements, Projects and Regional Capacity Building Management Plan. CBSC Technical Visits and Regional Projects.

## **Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica**

- Presentation of National Reports: Hydrographic surveying, nautical charting, nautical publications and information status
- Procedures in response to Marine Disasters
- Marine / Hydrographic Spatial Data Infrastructure
- Marine Spatial Planning / Blue Economy
- GEBCO / Seabed 2030

### **5. Difficulties encountered and challenges yet to be addressed**

- a) The recently reduced IHO Capacity Building funding is a real concern for the level of CB activity in a region where SAIHC Conferences and associated Seminars are key elements of building capability. Technical visits remain the only effective measure to determine progress, gauge capacity building requirements and interact with decision makers on the importance of hydrography.
- b) The provision of survey data and reports of changes that may affect safety of navigation in national waters by Coastal States to INT Chart producer nations remains problematic and these requirements are constantly communicated.
- c) The effective exchange of information is difficult to achieve, and communication must improve to allow for better execution of the SAIHC Capacity Building Strategy. Limited Capacity Building options are available as the majority of Coastal States must still achieve Phase 1 of Hydrographic development.
- d) The proposals for implementation of S-101 and other S-10X services and changes to the RNW satellite service provision are areas of concern for developing and smaller Hydrographic Offices within the SAIHC region.

### **6. Achievements/Outputs/Conclusions**

- a) Statutes have been amended to allow wider membership, as Associate Membership, for those nations that contribute by their activities to hydrography in the region and also have special interest within the region, enabling India to become an Associate Member to SAIHC in 2017, with active participation in subsequent meetings.
- b) Good progress is being made with the aspirations of nations to attain IHO Membership, with Seychelles becoming the 88<sup>th</sup> IHO Member and full Member to SAIHC in 2018.
- c) The IHO Capacity Building funded Raising Awareness of Hydrography Seminar preceding the 15<sup>th</sup> and 16<sup>th</sup> SAIHC Conferences has proven particularly successful in increasing the awareness of the importance of this element of science to an expanding level of attendance at SAIHC Conferences (approximately 20% increase over the intersessional period) and also for successfully demonstrating “Delivering as one” with IHO, IMO, and IALA, which has added value to discussions and contributed positively to capacity building efforts within the region.
- d) SAIHC has recognised the importance of communication in dealing with Marine Disasters and is developing a SAIHC Marine Disaster Response Framework to build on the SAIHC Response to Marine Disasters emergency contact details.
- e) Establishment of the SAIHC MSDIWG in 2018 and the designation of a regional Seabed 2030 Coordinator for SAIHC.
- f) The SAIHC ICCWG has successfully maintained the INT Chart Catalogue for Region H and progress has been made to create a similar ENC catalogue.



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- g) There has been a high level of industry participation in SAIHC meetings with ample opportunities to share experiences and contribute to discussions.
- h) Greater inclusion and awareness of Regional Actors and initiatives in RHC meetings and activities is seen as a very positive development.

### **7. Actions required of the Assembly**

- a) The Assembly is invited to note the report of the SAIHC.

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# Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

## 12. REPORT OF THE SOUTH-EAST PACIFIC REGIONAL HYDROGRAPHIC COMMISSION (SEPRHC)

### 1. Chair (2020 to 2023 Perú):

- 2023 Rear Admiral Carlos Guerrero
- 2022 Rear Admiral Cesar Zelada
- 2021 Rear Admiral Roberto Jimenez
- 2020 Rear Admiral Jorge Paz

### 2. Membership:

- Members: Chile, Colombia, Ecuador, Perú
- Observers: Panamá, IHO Secretariat

### 3. Meetings:

For purposes of this report, the period is considered from SEPHRC14 (September 2020) through IHO Assembly 3:

- 2020:
  - VTC September 15<sup>th</sup> when Perú took over the presidency
  - 1<sup>st</sup> VTC December 15<sup>th</sup>
- 2021:
  - 2<sup>nd</sup> VTC March 17<sup>th</sup>
  - 3<sup>rd</sup> VTC August 31<sup>st</sup>
  - 4<sup>th</sup> VTC November 25<sup>th</sup>
- 2022:
  - 1<sup>st</sup> VTC May 25<sup>th</sup>
  - 2<sup>nd</sup> VTC July 13<sup>th</sup>
  - 3<sup>rd</sup> VTC October 25<sup>th</sup>
- 2023:
  - 1<sup>st</sup> VTC April 5<sup>th</sup> (devoted to CB issues)
  - SEPHRC will held SeaBed 2030 meeting next july in Lima, on the occasion of the 120<sup>th</sup> anniversary of the Directorate of Hydrography and Navigation of the Peruvian Navy
- IRCC:
  - 12 VTC, October 6<sup>th</sup> to 7<sup>th</sup> 2020
  - 13 VTC, June 23<sup>th</sup> to 25<sup>th</sup> 2021
  - 14 face to face, June 6<sup>th</sup> to 8<sup>th</sup> 2022

### 4. Agenda Items:

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- Collaboration to GEBCO/Seabed 2030 project
  - Delivery of data
  - Cruise participation (on board and virtual)
- Activities in CB are monitored within the SEPHRC. Chile is the CB coordinator:
  - Region's States have applicants to invitations received from the University of New Hampshire (GEBCO programme), UKHO and Korea training programs
  - Geospatial Marine Analysis and Cartography (GEOMAC) – UK (Not in CB programme)
  - Workshop on Maritime Safety Information implementation and development (sept 2022, from the postponed 2020 Work Programme)
  - Workshop on Cartographic Data Management (nov-dic 2022, from the 2022 Work Programme)
- Collaboration to the International Hydrographic Review:
  - Two notes:
    - Hydrographic service of Colombia in front of disaster care
    - The Participation of women in Hydrography Activity in Chile
  - Four articles:
    - Remote Sensing For The Detection Of Hydrocarbon Pollution In the Peruvian Coastline
    - The Kirke channel and its nautical cartography from the 1982 edition to the new edition 2019
    - Characterization of four shipwrecks from 1741 in the Bay of Cartagena
- Presentation of a protocol for the exchange of data from nautical charts of maritime borders, based on the successful experience between Ecuador and Colombia
- National Report updates addressing charting, survey, science and technology

### 5. Difficulties encountered and challenges yet to be addressed:

- Declining of public funds. Pandemic drove governments to redirect budget priorities
- Lack of funds from Capacity Building Programme
- Migration of the current work structure to the IHO S-100 and S-1XX Universal Hydrographic Data Model
- Survey of hydrographic and topographic data with AUV's technology
- Coordination of the INT chart schemes and ENC coverage. Discrepancies between new ENCs and existing INT charts are raising difficulties regarding consistency of the nautical information. Sometimes, the only way forward is to conduct bilateral discussions for the solution of ENC overlapping issues, thus, the above mentioned successful experience between two Member States.

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### 6. **Achievements/outputs/conclusions:**

- The region has maintained their high level on its products, in straight alignment to IHO goals and targets contained in its Strategic Plan, in order to face the challenges that fuels to fulfil its vision and mission
- The close relationship among member states of the region allows permanent communication and sharing experiences
- The region needs more participation on CB funds

### 7. **Actions required of the Assembly:**

- a) **Note** the report of the South East Pacific Hydrographic Regional Commission
- b) **Take** any other action considered appropriate.

# Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

## 13. REPORT OF THE SOUTH WEST ATLANTIC HYDROGRAPHIC COMMISSION (SWAtHC)

### 1. Chair:

Commodore Valentin Alejandro SANZ RODRIGUEZ, Argentina, from October 2020.

Captain Jose DOMINGUEZ, Uruguay, from since 01 April 2020 until October 2020.

### Vice-Chair:

Vice Admiral Renato ARRUDA, Brazil, from December 2021.

Vice Admiral Edgar BARBOSA, Brazil, from October 2020 until December 2021.

Commodore Valentin Alejandro SANZ RODRIGUEZ, Argentina, from March 2017 until October 2020.

### 2. Membership:

Members: Argentina, Brazil, Uruguay.

Associate: Paraguay.

Observer: Bolivia.

### 3. Meetings:

- 14<sup>th</sup> SWAtHC Conference Niteroi, Brazil 9-10 March 2020, (face to face).
- 15<sup>th</sup> SWAtHC Conference VTC Buenos Aires, Argentina 31 August - 1 September 2021, (VTC).
- 16<sup>th</sup> SWAtHC Conference Montevideo, Uruguay 30 and 31 August 2022, (face to face and VTC).

### 4. Agenda Items:

The SWAtHC Conferences tend to work with a permanent agenda that is amended when new issues arise. The main topics in the agenda, transacted during the before-mentioned meetings, are:

- i. NAVAREA V and VI Contingency Plan is signed between the Argentine and the Brazilian Hydrographic Services.
- ii. Revision and update of SWAtHC Statute.
- iii. Creation and progress of the Regional IC-ENC Coordinating Centre.
- iv. Current situation of Chart INT2010: pending approval.
- v. Commission Representation at the IHO Council.
- vi. Presentation of national and IHO Secretariat reports.
- vii. Submission of reports drafted by Working Groups and Committees:
  - Planning Committee.
  - CBSC – WENDWG - IEGH – IRCC – S100WG.

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- GEBCO / Seabed 2030 Progress.

viii. Update of IHO C-55 and P-5 Publications.

ix. Signature and ratification of the membership application to the Commission submitted by the Plurinational State of Bolivia. A2\_2020\_G\_06\_EN 41

x. SWAtHC Capacity Building Coordination, Trainings and workshops:

### 2020

- Hydrographic Awareness Seminar (10-11, March) – Brazil (DHN).

### 2021

- Webinar on Raising Awareness of Hydrography – with the coordination of Uruguay (SOHMA). The Webinar had approximately 48 participants, and the feedback was very good. Five lectures were held:

- IMO (SOLAS Convention and Navigational Warning Service)
- IALA (with emphasis on aids to navigation - inland waters)

IRCC14-06.1N

- IHO's Capacity Building Program
- Water level in estuaries and rivers
- Inland ENC's - cartographic production process

The CBSC approved these SWAtHC events for 2021, but did not hold them because of the pandemic situation:

- Technical Visit to Bolivia – SWAtHC/IHO).
- Seminar (in person) on Raising Awareness of Hydrography – Uruguay (SOHMA); and
- Port and Shallow Water Survey Course – Brazil (DHN).

## 5. Difficulties encountered and challenges yet to be addressed:

a) Difficulties:

1. The main difficulty encountered is the lack of qualified personnel available versus the increase in workload.
2. Shortage of Spanish speaking trainers.
3. The main difficulty that has arisen is the scarce resources allocated for the projects by the Capacity Building, for which the SWAtHC Region has not had approved events for 2022.

The activities must be face-to-face and practical, but they have been affected and limited by the pandemic. The continuity of the SWAtHC Capacity Building Plan is a strategic issue of vital importance for all Members.

4. Members lack sufficient staff resources to address all the proposed work lines.
5. It is difficult for Members to stay ahead of the technology, which is constantly improving, making it difficult to adapt to the changes proposed by the different committees.

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### b) Challenges:

1. The main challenge yet to be addressed is the implementation of S-100 based products for the SWAtHC Region.
2. In order to be more eligible to receive support from IHO Capacity Building Funds, SWAtHC will propose training courses in conjunction with the neighbouring RHCs.
3. Carrying out and broadening of trainings and workshops within or beyond the scope of the CBSC.
4. Another change to consider is the costs involved in NAVAREAs notifications in the event that the Iridium Safety Cast becomes mandatory.

### 6. Achievements/outputs/conclusions:

a) SWAtHC is committed to perform hydrographic and cartographic activities and cooperates in capacity building in straight alignment with IHO objectives and goals and coordinates charts and ENC's production. Besides, it harmonizes boundaries and data and stimulates participation of all regional countries. The high-level of harmonization, quantity of training performed and absence of overlaps in ENC's is a good indicator of the success of SWAtHC members' efforts.

b) SWAtHC full members have approved the request of the "Servicio Nacional de Hidrografía Naval" from Bolivia, and started the procedure of adhesion to become an Associate Member of SWAtHC. That Service should address this to its national authorities.

c) A Contingency Plan for the transmission of navigational warnings in the Region is in effect. In 2016, during SWAtHC10, the mutual support agreement between SHN (Argentina) and DHN (Brazil) was signed, in order to ensure the transmission and monitoring of navigational warnings in their areas of responsibility, in case of an interruption of system operation. The exercises are carried out annually; six successful exercises have been carried out since 2016. Furthermore, they are updating it depending on the development of the new S-124 standard.

d) SWAtHC member's NtM are written in accordance with the IMO/IHO/WMO Manual on Maritime Safety Information (MSI).

e) Regarding IRCC action 2, Brazil is an active participant of the NCWG and supports Decision 28 of the IHO Assembly about the implementation of the document "The Future of the Paper Nautical Chart". Uruguay proposes not to stop nautical cartography production in paper format for the moment, as there are sectors of the maritime community that do not have the appropriate ENC displays to navigate exclusively with electronic nautical charts. Their Cartography Division is also analysing the document to present their conclusions in the 15th SWAtHC. Finally, there are many non-SOLAS users and outside the nautical activity in Argentina that still use paper nautical charts, for which the discontinuation of their production has not yet been evaluated. The possibility of simplifying its production methods in the future, from products derived from S-101 is an alternative that will be welcomed to reduce the workload of the SHN.

f) In order to improve MSI services, a web system is being developed by some Members, to record and control the dissemination of maritime safety information.

g) C-55 was updated in March 2022 by the Members.



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h) SWAtHC remains committed to the guiding principles of the IHO, as well as supporting the accession of Bolivia and Paraguay as IHO Member States. The associate and observer countries of the SWAtCH region that are not yet members of the IHO, Bolivia and Paraguay, continue without submitting their instruments of accession, and attempts aimed at obtaining their accession continue.

i) Within the report of the WWNWS-SC, there has been a worldwide reduction in NAVAREA notifications, a situation that was not reflected in Brazil or Argentina. Brazil (Navarea V) and Argentina (NAVAREA VI) have not yet signed NAVAREA's adherence to Iridium's new ISM provider.

j) Brazil provided a bathymetric grid of 1 km resolution covering NAVAREA V to contribute to the Seabed 2030 Project in March 2021.

k) The Seabed 2030 Project has three strategies to achieve its objective, Crowdsourced Bathymetry, border mapping and technical innovation. Brazil has recently produced a georeferenced map with bathymetric gaps in the CHAtSO Region, to be disseminated among the other Members.

l) The Statute of the SWAtHC was modified. The most important modification was the northern limit of the CHAtSO Region, moving from 0° (equator) to 01° South.

m) During the COVID-19 pandemic, the SWAtHC held the annual meetings, which allowed the continuity of the hydrographic activity in the Region.

As a result, the SWAtHC meeting will be held in a hybrid format (face-to-face and VTC), in order to expand the number of participants.

### **7. Actions required of the Assembly:**

- a) **Consider** the report of the SWAtCH
- b) **Take** any other action considered appropriate.

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## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### 14. REPORT OF THE SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION (SWPHC)

#### 1. Chair

Commodore Fiona Freeman	Australia	until June 2020
Mr Adam Greenland	New Zealand	from June 2020

#### Vice-Chair

Mr Tony Hanuagi	Solomon Islands	from February 2020
Lt Cdr Gerard Rokoua	Fiji	from September 2021
Lt Cdr Jervis Robinson	Fiji	from February 2023

#### 2. Membership

**Members:** Australia, Fiji, France, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, United Kingdom, United States of America, Vanuatu.

**Associate Members:** Cook Islands, Indonesia, Kiribati, Nauru, Niue, Palau,

**Observers:** Marshal Islands, New Caledonia, Tokelau, Tuvalu.

**Observer Organizations:** IALA, IMO, GEBCO, Pacific Community (SPC).

#### 3. Meetings

The SWPHC has met annually since the 2<sup>nd</sup> Session of the IHO Assembly in November 2020, as follows:

<a href="#">SWPHC18</a>	Online	17-19 February 2021
<a href="#">SWPHC19</a>	Online	23-25 February 2022
<a href="#">SWPHC20</a>	Wellington, New Zealand	22-24 February 2023

The online Commission meetings were well attended with all Member States attending the meetings. SWPHC18 and SWPHC19 meetings were held online as a result of travel restrictions due to the COVID-19 pandemic. The third meeting was held in-person and was preceded with a 2-day IHO funded Capacity Building (CB) workshop on Hydrographic Governance. Most non-Member States in the region also attend the SWPHC meetings and workshop. An 'Industry Session' forms part of the meeting agenda and valuable input to CB initiatives was provided by industry representatives who were invited as 'Expert Contributors'.

#### 4. Agenda Items

The main agenda items dealt with since the 2<sup>nd</sup> Session of the IHO Assembly pertained to the following:

- i. Exchange of information through National Reports
- ii. Development of a regional response ([SWPHC Work Plan](#)) to the IHO Strategic Plan 2021-2026 through a [gap analysis](#)

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- iii. Exchange of experiences with implementing S-100
- iv. Investigation of UN-GGIM Integrated Geospatial Information Framework (IGIF-H)
  - a. [Open Data – the value proposition](#)
  - b. [Building Partnerships: Understanding the World Bank](#)
  - c. [Implementation case studies](#)
- v. Regional collaboration on [Safety of Navigation: Delivering as one](#)
- vi. Regional initiatives in support of [Empowering Women in Hydrography \(EWH\)](#)
- vii. Delivery of a regional Hydrographic Leaders Programme (HLP)

### 4.1. Capacity Building (CB) activities

Due to COVID-19 travel restrictions, in-person activities planned for 2020, 2021 and 2022 were postponed with agreement of the IHO Capacity Building Sub-Committee. An IHO CB Funded workshop on Hydrographic Governance was held in-person before the SWPHC20 meeting in February 2023. In addition, preparations are underway to hold a IHO funded CB MSI Workshop in July 2023 in Fiji; and a Disaster Response exercise is planned for 2024 in conjunction with SWPHC21.

### 4.2. SWPHC Working Groups

- i. [International Charting Coordination Working Group \(ICCWG\)](#)

The [SWPHC ICCWG](#) comprises Producer Nations (Australia, France, New Zealand, United Kingdom and United States of America) who publish Paper Charts and ENC's in the region. It is chaired by Australia, the INT Chart Co-ordinator for Region 'L', and the main responsibility is the coordination of nautical charting in the region, ensuring the paper chart INT series is comprehensive and current, and the ENC coverage is appropriate.

The focus is on paper charts at 1:500,000 and smaller and ENC Nav Purpose 1 and 2 coverage.

- ii. [Marine Spatial Data Infrastructure Working Group \(MSDIWG\)](#)

The [SWPHC MSDIWG](#) was created with the proposal to promote the sustainable development and use of the oceans, seas and inland waters in line with the United Nations Sustainable Development Goals. The WG effort is based on the 9 Strategic Pathways from the United Nations Global Geospatial Information Management, Integrated Geospatial Information Framework.

The WG is comprised of members from Australia, France, New Zealand, Papua New Guinea, Tonga, United Kingdom (Chair) and the United States of America.

- iii. [Work Plan & Priorities Working Group \(WP&PWG\)](#)

The SWPHC WP&PWG was established in 2021 to develop and maintain a SWPHC 3-6 year draft work plan and priorities to achieve the Goals and Targets of the IHO Strategic Plan and the SWPHC Work Plan. The WG is comprised of members from Australia (Chair), Fiji, France, New Zealand, United Kingdom, United States of America and Vanuatu.

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The [SWPHC Work Plan](#) was presented at SWPHC19.

### 4.3. SWPHC Work Plan activities

i. [Hydrographic Leaders Programme \(Mar – Nov 2022\)](#)

This new initiative, led by the SWPHC, was launched at SWPHC19 in February 2022 (SWPHC CL05/2021 - [Call for Nominations](#)) and aims to:

- support development of a leadership pipeline and increase awareness of the hydrographic activity and interests in the region
- build and encourage an active and self-sustaining network of leaders in hydrography in the region, and
- contribute directly to the region's alignment with the IHO Strategic Plan 2021 – 2026, the UN's Shared Guiding Principles for Geospatial Information Management, and the Joint Canada-IHO Project Empowering Women in Hydrography

The programme has been delivered on-line and included workshops covering Law of the Sea, S-100 and Hydrographic Governance, as well as personal skills and behaviours. The cohort is comprised of 17 participants from Australia, Cook Islands, Fiji, Indonesia, Kiribati, New Zealand, Niue, Papua New Guinea, Solomon Islands, Tonga, United Kingdom and Vanuatu.

The programme culminated with members of the HLP attending and leading a session at the SWPHC20 meeting, and attending and assisting with the delivery of the CB funded Workshop on Hydrographic Governance preceding SWPHC20.

ii. [Extratropical Surge and Tide Operational Forecast System \(ESTOFS\) Workshop \(Sep 2021\)](#) – led by NOAA

This workshop presented NOAA's Global Extratropical Storm Surge and Tide Operational Forecast System (Global ESTOFS) and provided examples of how it could be used in the region.

iii. [SWPHC S-100 Workshop #1 – experiences in implementing S-100 \(Oct 2021\)](#) – led by LINZ

This workshop was an opportunity for Hydrographic Offices to share their S-100 journey so far and allow others to learn of their experiences and developments in scoping the S-100 work. The meeting also ensured that all coastal States in the region were informed of progress and provided an opportunity for any questions.

iv. [SWPHC Seabed 2030 Webinar series \(May, Jun and Jul 2021\)](#) – led by LINZ

A series of [four webinars](#) with the objectives of raising the awareness of the Seabed 2030 Project; promote collaboration and coordination; review current status of ocean mapping in the region; demonstrate online tools; presentation of CSB activities; and engage the community of stakeholders. Presentations were provided by Jennifer Jencks (Director IHO DCDB), Kevin Mackay (Head, Seabed 2020 South and West Pacific Regional Center) and Stuart Caie (SWPHC Seabed 2030/CSB Coordinator).

v. [SWPHC S-100 Workshop #2 – Updates and Value Proposition \(Oct 2022\)](#) – led by LINZ

In response to [SWPHC19 Action Item #16](#), this workshop was held to coordinate the efforts on the implementation of S-100; promote the cooperation and exchange of experiences; and identify Capacity Building requirements.

vi. [Presentation on Maritime Cybersecurity \(Feb 2023\)](#)

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In response to IRCC14 Recommendation 3, a presentation was delivered by the UK at the 1-Day VTC SWPHC20 Pre-meeting.

All recordings from the above workshops with the presentations are available on the [SWPHC Events & recordings](#) webpage.

### 5. Difficulties encountered and challenges yet to be addressed

The main challenges (now and yet to be addressed) in the region are:

- Engaging and coordinating with international and regional agencies, development partners and coastal states at a senior enough level, to raise awareness of the benefits of hydrography and adopting and giving effect to open data policies and mutually agreeable practices. (ref: IRCC14-06.11: SWPHC substantive paper)
- Supporting hydrographic governance in Pacific Island Countries and Territories with the introduction of S-100 Next Generation Charting Products & Sunsetting of the Traditional Paper Chart.
- Provision of mechanisms to ensure greater inclusion and participation of SWPHC Member States at IHO meetings, in particular the IHO Assembly (SWPHC20 Action 21). Ref: 3-Day SWPHC20 Meeting, Agenda Item 7, Draft Minutes V1.0.
  1. The South West Pacific Hydrographic Commission welcomed the support of the Capacity Building Fund which enabled greater participation from across the region in the 20th Commission meeting held in Wellington, New Zealand, February 2023.
  2. The South West Pacific Hydrographic Commission will continue to encourage IHO membership for Coastal states in the region.
  3. Recognising that travel to Monaco from the South West Pacific region can be prohibitively costly, the Commission understands that funds will not be made available by the IHO to enable in-person participation at the A3 Assembly.
  4. Whereas not all IHO Member States will be able to travel and participate in the IHO A3 Assembly, **the Member States of the South West Pacific Hydrographic Commission resolved that:**
    - a. Every provision should be made to allow all States to enjoy the benefits of their membership of the IHO and to join and participate so far as possible through appropriate mechanisms. This is important given that the IHO Assembly takes place only once every three years. The South-West Pacific Hydrographic Commission has made inclusion and representation the core of its work plan and we request, and IHO Member States require, the IHO to do the same.
    - b. Failure to support mechanisms for remote participation reduces the opportunity for diversity and inclusion in the hydrographic community.
    - c. Failure to support mechanisms for remote participation excludes Member States from their rights and duties as IHO Member States. These are important membership rights which include the right to comment, vote and contribute to discussions on the IHO's work and priorities.

### 6. Achievements / Outputs / Conclusions

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

- SWPHC allocated two seats on IHO Council (CL 43/2022, 7 November 2022). Fiji and New Zealand are designated as the SWPHC Representatives to the Council. Fiji is the first Pacific Island Country to be designated a seat on Council.
- SWPHC18 (2021) Coastal States provided a high-level gap analysis for each goal of the Strategic Plan to develop the SWPHC Work Plan.
- IRCC14-06.11 [SWPHC substantive paper](#) recommending the development and implementation of a strategy to engage with international and regional agencies, development partners and coastal states to support knowledge and understanding of hydrography and the value associated with open data policies in respect of marine geospatial information.
- [SWPHC paper and presentation of IHO Strategic Plan and SWPHC Work Plan](#) to the Pacific Regional Maritime Transport Officials Meeting, November 2023. The paper requested the meeting to engage and collaborate with IHO, IMO, IALA and regional partners to deliver as one the delivery of future Safety of Navigation services in the Pacific region. This paper will be presented at the 5th Pacific Regional Energy & Transport Ministers Meeting in May 2023.
- SWPHC19 meeting (February 2022) included a session on the UN-GGIM Integrated Geospatial Information Framework (IGIF) & Open Data – the value proposition.

The intent was to kick-start a regional discussion on the value and benefits of geospatial information, the framework and sharing data. The outcome is to seek actions and commitment from SWPHC members to collaborate with international and regional entities and coastal States to develop a strategy to support the implementation of the IGIF, understand the value of open data and commit to sharing data.

- The Hydrographic Leaders Programme (HLP) was launched in February 2022. It is a direct response to the **SWPHC Goal 1** *Increase SWP influence at IHO and other international/intergovernmental bodies*. Sixteen participants from 12 countries took part in the HLP.
- The first meeting of the SWPHC MSDIWG was held February 2021 and the WG held its 8<sup>th</sup> meeting in December 2022. The main focus areas of the WG is the development of a [data sharing proposition](#) (presented at SWPHC20); encouraging Coastal States to share data and adopt open data policies; and adopt and implement the UN-GGIM Integrated Geospatial Information Framework-Hydro (IGIF-H).
- A SWPHC Empowering Women in Hydrography Pacific Network was established in September 2022 to build relationships and support career growth through mentoring, opportunity, and awareness. Fifty-five women have joined the network to-date from around the region as well as from the UK and US; and work in national hydrographic offices, maritime safety authorities, navies, Government science organisations, industry and academia.

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

- SWPHC20 meeting (February 2023) included sessions on the UN-GGIM IGIF focusing on building partnerships and understanding the World Bank; and implementation case studies from the Philippines and Kiribati.
- SWPHC20 also included a session on *Safety of Navigation: Delivery as one* with contributions from IHO, IMO and IALA. This led to an action for IHO, IMO and IALA to work together with the SWPHC and the Pacific Community (SPC) to address the capacity building needs of the Member States in the SWP region.
- Members are active on IHO committees and working groups but face challenges of attending in-person meetings due to distance and prohibitive travel costs.

### 7. Actions required of the Assembly

- **Note** this report.
- **Note** the SWPHC Work Plan 2022-2023.
- **Consider** the implementation of appropriate mechanisms to ensure greater inclusion, representation and participation of SWPHC Member States at IHO meetings, in particular the IHO Assembly.
- **Take** any other action considered appropriate.



## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### 15 REPORT OF THE UNITED STATES – CANADA HYDROGRAPHIC COMMISSION (USCHC)

**1. Chair:** RDML Benjamin E. Evans, Director Office of Coast Survey, NOAA

**Vice-Chair:** Dr. Geneviève Béchar, Director General, Canadian Hydrographic Service

**2. Membership:**

Member States: Canada, United States of America

Associate Members: none

Observers: IHO Secretariat

**3. Meetings:**

USCHC44	March 18-19, 2021	Video Teleconference (VTC)	Chair: RDML Richard Brennan Vice Chair: Dr. Geneviève Béchar
Hydrographic Geospatial Products and Services Committee	Ongoing (approximately monthly)	VTC	Co-leads: Ms. Christie Ence, NOAA Mr. Louis Malthais, CHS (2020- 2022) Ms. Laura Columbe, CHS (2022- present)
USCHC45	June 9-10, 2022	Ottawa, Canada	Chair: Dr. Geneviève Béchar Vice Chair: RDML Benjamin K. Evans

**Forthcoming Planned**

USCHC46	March 16-17, 2023	Mobile, Alabama, USA	Chair: RDML Benjamin K. Evans Vice Chair: Dr. Geneviève Béchar
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**4. Agenda Items:**

- Scoping the future of paper charts e.g paper charts derived from ENC
- Hydrographic Geospatial Products and Services and related connections to UN GGIM and other MSDI initiatives
- WEND and S-100 Implementation
- Charting Harmonization in Transboundary Areas (Great Lakes and Atlantic Ocean)
- National Contributions to Seabed 2030
- Implementation of the IHO Strategic Plan including support to IHO priorities such as Empowering Women in Hydrography, US-CA hydrographic support to the Ocean Decade of Ocean Science. Includes conducting a gap analysis of US and CA against the IHO SP goals, targets and performance indicators.

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

- Agency Status reports (National Reports and national initiatives-such as Canada S-100 Committee establishment; personnel updates to ensure proper lines of communication, etc...)
- Capacity Building, including coordinating RHC meeting with annual Hydrographic Conferences, discussing the “hydrographer of the future” (skill sets, diversity, etc...)

### 5. Difficulties encountered and challenges yet to be addressed:

Completing chart harmonization in transboundary areas

Fully implementing the IHO Strategic Plan in the USCHC region and reconciling tracking and reporting of performance measures from the USCHC into the global tracking system

Implementing WEND-100 and harmonizing and coordinating the delivery of S-100 products and service in transboundary waters.

### 6. Achievements/outputs/conclusions:

USCHC Achievements/outputs/conclusions:

- Transboundary collaboration in the Great Lakes continuing and now expanding to the Atlantic and Pacific regions.
- Discussions on coverage responsibilities for U.S. and Canada in southern Lake Superior and Maine/New Brunswick are ongoing.
- Coordinated data transfer of Canadian electronic chart cell in eastern Lake Ontario for U.S. hydrographic survey planning.
- Helped facilitate conversation between U.S. Board of Geographic Names (BGN) and Advisory Committee on Undersea Feature Names (ACUFN) to ensure coordinated efforts on naming a seamount chain crossing the boundary.
- Work on Annex to Puget Sound MOA to revise break in national responsibility from 47°59'N to 48°N to remove the need for a new regrided Canadian cell with very narrow, “sliver” coverage.
- Coordinating hydrographic surveys in transboundary areas and documenting those via the Schedule A process of the NOAA-CHS Memorandum of Understanding.
- Ongoing work on upgrading the USCHC Transboundary Web App site to reflect cell cut and single-agency solution decisions throughout all U.S./Canada transboundary coverage.
- Continued support by US and CA for the IHO Crowdsourced Bathymetry Initiative (e.g.: positive responses to IHO CL 21/2020, serve as current Chair (US) and vice Chair (CA) of CSBWG)
- Data contributions from US and CA in USCHC region to IHO DCDB and SB2030
- Initial IHO Strategic Plan Gap Analysis and initial completion of the IGIF matrix
- USCHC focal points
  - Seabed 2030/CSB Coordinator: [Andy.Armstrong@noaa.gov](mailto:Andy.Armstrong@noaa.gov)

## **Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica**

### **7. Actions required of the Assembly:**

- a) Note the report of the USCHC;
- b) consider how the RHCs fit into the global tracking of the IHO Strategic Plan and associated management and communication; and
- c) take any other action considered appropriate.

**Reports of the Regional Hydrographic Commissions and  
the Hydrographic Commission of Antarctica**

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### 16. REPORT OF THE IHO HYDROGRAPHIC COMMISSION ON ANTARCTICA (HCA)

1. **Chair:** Dr. Mathias Jonas, IHO Secretariat  
**Vice-Chair:** Patrick Dorr, USA  
**Secretary:** Yves Guillam, IHO Secretariat  
**Region M ENC/INT Chart Coordinator:** Lee Truscott, UK
  
2. **Membership of full Members:**  
Argentina, Australia, Brazil, Chile, China, Colombia, Ecuador, France, Germany, Greece, India, Italy, Japan, Korea (Rep. of), New Zealand, Norway, Peru, Russian Federation, South Africa, Spain, United Kingdom, Uruguay, USA, Venezuela
  
3. **Meetings:**  
HCA17: Video Conference 14 June 2021  
HCA18: Hybrid event, 24 - 26 May 2022, Berlin, Germany, in conjunction with the XLIV Antarctic Treaty Consultative Meeting (ATCM).  
HCA-19: Planned in Italy, 27-29 March 2024 (*dates to be confirmed*).
  
4. **Agenda Items:**
  - a) Revision of HCA Statutes
  - b) Assessment of the adequacy of INT Chart and ENC coverage on the Maritime Shipping Routes around the Antarctic Peninsula
  - c) Presentation of respective National Polar Strategic Plans
  - d) Bathymetric data sharing
  - e) S-100 Implementation Roadmap for the region
  - f) Recognition of the Southern Ocean
  - g) Contribution to the management of effects of climate change in the region
  
5. **Difficulties encountered and challenges yet to be addressed:**
  - a) Set up of regular data service provisions for the Priority 1 S1xx data products to meet the timelines of the S-100 Implementation Roadmap (PRO 1.1 refers) and the introduction of S-100 Dual Fuel ECDIS based on IMO requirements (PRO 2.1 refers).
  - b) Involvement of the IHO in general, and HCA in particular, on scientific matters in relation to climate change.
  - c) Practical and coordinated implementation of the good will and statements collected in ATCM Resolutions focused on hydrography.

## Reports of the Regional Hydrographic Commissions and the Hydrographic Commission of Antarctica

### 6. Achievements/outputs/conclusions:

- a) HCA Statutes are now fully aligned with the IHO Resolution 2/1997 - Establishment of Regional Hydrographic Commissions (RHC), the Antarctic Treaty System<sup>17</sup>, the last ATCM Resolutions and the IHO Strategic Plan 2021-2026.
- b) Proposed change of Art. 8.e of the General Regulations of the IHO (A3 PRO 3.3 refers).
- c) Establishment an HCA S-100 Implementation Working Group. Distribution of work among HCA member on the governance and production strategies for the top priority S-100 based products (S-101, S-102, S-104, S-111, S-122, S-124, S-128, and S-411).
- d) New straightforward procedure to submit survey coverage metadata for being displayed in HCA GIS maintained by the IHO Secretariat.
- e) Proposal of an IHO Resolution addressing the recognition of the Southern Ocean (PRO 3.3 refers).
- f) Analysis of the Scientific Committee on Antarctic Research (SCAR) **Recommendations for Action** available in their recent report: *Antarctic Climate and the Environment: A Decadal Synopsis and Recommendations for Action*.
- g) Call towards to all remaining IHO Member States, who are Parties to the Antarctic Treaty (Consultative or Non-Consultative Status) to join the HCA (in progress at the date of this report).
- h) Significant increase of new assets (Polar research vessels) for collecting data in Antarctica.
- i) Close relationship with the Antarctic Treaty Secretariat (in charge of ATCM meetings).

### 7. Actions required of the Assembly:

- a) **Note** the report of the IHO Hydrographic Commission on Antarctica;
- b) **Commend** Mr Lee Truscott, Chair of the HCA Hydrographic Priority Working Group and ENC / INT Chart Coordinator for his outstanding achievements and sustainable support;
- c) **take any other action** considered appropriate.

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<sup>17</sup> Antarctic Treaty, Article III 1.(c) states that “scientific observations and results from Antarctica shall be exchanged and made freely available”.