

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



**1st SESSION
OF THE IHO ASSEMBLY**

24 – 28 April

**2017
M O N A C O**

**REPORT of PROCEEDINGS
VOLUME 2**

INTERNATIONAL HYDROGRAPHIC ORGANIZATION



1st SESSION OF THE IHO ASSEMBLY

Monaco, 24 - 28 April 2017

REPORT OF PROCEEDINGS

VOLUME 2

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PROGRAMME 1
Corporate Affairs
2012 - 2016

REPORT ON PROGRAMME 1

CORPORATE AFFAIRS

2012-2016

Introduction

1. IHO Work Programme 1 - *Corporate Affairs* covers the provision of the services of the Secretariat of the IHO and, through the Secretariat, the management and fostering of relations with other international organizations. Work Programme 1 was executed primarily by the Directing Committee, now Secretary-General with the assistance of the Directors.

Element 1.1 Cooperation with International Organizations and Participation in Relevant Meetings

2. This element covers liaison and cooperation between the IHO and other international organizations – particularly those with which the IHO has a formal relationship or agreement, such as sister intergovernmental organizations and other international organizations with interests in hydrography and marine geospatial information and services. A full list of visits and details of participation in meetings has been provided in the monthly IH Bulletin and the Annual Report of the IHO. The IHO was represented in most cases by the President (now Secretary-General), a Director or an Assistant Director. In a small number of cases, representatives from Member States also participated in the same meetings representing their own countries.
3. Notable highlights resulting from cooperation with relevant organizations during the period of this report are described hereinafter.

Antarctic Treaty Consultative Meeting

4. The IHO is an invited expert to the Antarctic Treaty Consultative Meeting (ATCM) which is a permanent diplomatic meeting that meets annually to consider measures, decisions and resolutions to give effect to the principles of the Antarctic Treaty and the Environment Protocol and to provide regulations and guidelines for the management of the Antarctic Treaty area. The IHO was represented at all meetings during the reporting period.
5. In 2014 the ATCM adopted a new Resolution: *Strengthening Cooperation in Hydrographic Surveying and Charting of Antarctic Waters*. The Resolution provided a clear message that all States and Organizations involved in the ATCM acknowledge the currently less than acceptable situation regarding hydrography and nautical charting and appreciate that coordination, collaboration and the sharing of resources are key to improving the situation in Antarctica. The Resolution also recognizes that the IHO Hydrographic Commission on Antarctica (HCA) is the coordinating authority for nautical charting and hydrographic surveying in the region.

Comité International Radio Maritime

6. The Comité International Radio Maritime (CIRM) is an accredited Observer Organization to the IHO. CIRM is the principal international association for marine electronics companies and several of its members are key contributors to standards development, particularly in relation to ENC and digital data transfer standards. During the period, CIRM played a significant part in assisting the IHO to engage with industry to resolve issues related to several operational anomalies in ECDIS equipment that affected safety

of navigation because of the way that the relevant IHO standards had been implemented by different ECDIS manufacturers.

European Union Initiatives

7. A Memorandum of Understanding (MoU) on establishing cooperation on maritime affairs between the IHO and the European Commission (EC) was signed on the occasion of the 18th International Hydrographic Conference (IHC-18). The MoU provides a framework ensuring a continuing liaison between the IHO and the European Union (EU) in the various areas of common interest. The EC Directorate General for Maritime Affairs and Fisheries (DG MARE) acts as the contact point on the Commission side. The IHO-EU Network WG (IENWG) was established as a working group under IRCC to act as the IHO contact point. Relations with the EU progressed well during the reporting period, in particular through the development of the Coastal Mapping Project in relation with the bathymetry portal of the European Marine Observation and Data Network (EMODnet). The Coastal Mapping project was the first significant success for a consortium of Hydrographic Offices (HOs) taking the lead in an important EU project. The objectives of the project were to assess the current availability of digital coastal maps in the EU, to disseminate this information by EMODnet, to share experience of coastal mapping in the EU, to develop standards for best practices and to propose how a future Joint European Coastal Mapping Programme (JECMaP) could operate (see <http://coastal-mapping.eu/>). Contributing to the further development of EMODnet, supporting the EU directive on Maritime Spatial Planning and contributing to the EU initiative on “Marine Knowledge 2020” to support blue growth were also considered during the period. Further details are provided in the report of the IENWG under programme 3.

International Association of Marine Aids to Navigation and Lighthouse Authorities

8. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) maintained a particularly productive relationship with the IHO throughout the reporting period.
9. IALA continued to move towards changing its status from an international organization to an intergovernmental organization. In doing so, it sought advice from the IHO Secretariat and made use of much of the constitutional model of the IHO in setting out its own future constitution.
10. IALA also adapted the philosophy and administrative model of the IHO Capacity Building programme as the basis for its IALA World Wide Academy – which is the IALA Capacity Building programme. The establishment of the IALA Academy resulted in increasingly close cooperation between the two organizations in order to deliver complementary basic awareness training and also technical assessments to States that require assistance.
11. IALA continued to take a leading role in influencing the implementation of the IMO e-Navigation concept. As a result, IALA began work on several information exchange protocols related to aids to navigation services that are based on IHO S-100 and are intended as services under the e-Navigation concept.

International Electrotechnical Commission (IEC)

12. The International Electrotechnical Commission (IEC) is an NGIO that publishes consensus-based international standards and manages conformity assessment systems for electric and electronic products, systems and services. The primary IHO contact is the Technical Committee 80 (TC80) that is responsible for maritime navigation and radio-communication equipment and systems and produces the testing standards required to implement the performance standards adopted by the International Maritime Organization (IMO).

13. TC80 is responsible in particular of the testing standard for ECDIS, IEC 61174 which is the reference standard for ECDIS type-approval. In response to a number of ECDIS anomalies that had been identified by the IHO and IMO in 2012, IEC-TC80 established a maintenance team to revise the 3rd edition of IEC 61174 in order to address these issues. As reported under Programme 2, the revision of IEC 61174 was closely coordinated with the revision of IHO ECDIS related standards which are normative references in IEC 61174.
14. Further cooperation with the TC80 is ongoing to deal with IEC standardization issues related to e-navigation. The TC80 established in 2015 a dedicated working group, WG17 - Common Maritime Data Structure (CMDS), to contribute to the development of the CMDS based on the S-100 framework (see IMO section).

International Organization for Standardization (ISO)

15. The IHO is a class A liaison member of the ISO Technical Committee 211 (ISO/TC211) and has contributed towards the development of the 19100 series of standards and technical specifications for geospatial information. These ISO standards have been used for the development of the S-100 - *IHO Universal Hydrographic Data Model*, the IHO Geospatial Information (GI) Registry and S-100-based product specifications.
16. In 2012, the IHO and ISO agreed a MoU declaring mutual recognition and cooperation between the two organizations to continue to develop relevant contemporary standards and avoid duplication of effort. The Secretariat monitors and participates in the ISO/TC211 standards development work and report on relevant activities to IHO committees and working groups.

United Nations

17. The Secretariat has progressively raised the profile of the IHO in several United Nations (UN) bodies during the reporting period.
18. **UN Committee of Experts on Global Geospatial Information Management (UN-GGIM)**. The UN-GGIM reports to the UN Assembly via the UN Economic and Social Council (ECOSOC). The principal purpose of the UN-GGIM is to play a leading role in setting the agenda for the development of global geospatial information management and to promote the use of geospatial information in addressing key global challenges.
19. The Secretariat represented the IHO in the annual meetings of the UN-GGIM and several of its inter-sessional high-level forums.
20. With the assistance of the IHO Marine Spatial Data Infrastructures Working Group (MSDIWG), the IHO Secretariat co-authored with the ISO/TC 211 and the Open Geospatial Consortium two reference documents that were subsequently adopted by the UN-GGIM. These documents provide advice on the implementation of geospatial standards.
21. More generally, the UN-GGIM increasingly acknowledged the need to consider the maritime geospatial information domain as part of its work. This is likely to result in a specific working group being established in 2018. This, in turn, may encourage more than the two or three national Hydrographers that are currently represented directly in the UN-GGIM to participate.
22. The UN-GGIM is now in the course of developing a list of fundamental data themes. Hydrography has been reflected in the provisional list of themes using a number of terms, including: *hydrography, depth, elevation and depth, and water*.
23. **International Seabed Authority (ISA)**. The IHO established a MoU with the ISA. This MoU enables the IHO to provide advice and comment to the Secretariat of the ISA,

particularly in relation to improving access to bathymetric data upon which the ISA manages its contracts in The Area. The President (now Secretary-General) attended the Assembly of the ISA in 2016, at which the IHO was formally recognised as an Observer organization.

24. **UN Division of Oceans and Law of the Sea (UN-DOALOS).** The Secretariat provided to UN DOALOS the IHO contribution to the annual Report of the UN Secretary General to the UN General Assembly on Oceans and Law of the Sea. Liaison was also maintained through the IHO-IAG Advisory Board on the Law of the Sea (ABLOS) as reported under Programme 2. DOALOS expressed a strong interest in the development of the S-100-based product specification on maritime limits and boundaries (S-121) to form the recommended format for States to deposit data in support of maritime limits and boundaries with the United Nations in accordance with the provisions of the UN Convention on the Law of the Sea (UNCLOS).

International Maritime Organization

25. Active liaison and cooperation with the IMO continued during the reporting period. The IHO and IMO Secretariats communicated regularly and effectively on numerous matters of mutual interest. A new agreement of cooperation between the two organizations was drafted to emphasise the close and cooperative arrangements that now exist between the two organizations and ensure even greater synergies. The agreement was approved and signed in 2013 and replaced a previous text signed in 1962.
26. The Secretariat represented the IHO at all significant meetings of the IMO where hydrographic and chart related issues were discussed. Meetings attended by the Secretariat included meetings of the Assembly, the Maritime Safety Committee (MSC), the Sub-Committee on Safety of Navigation (NAV) and the Sub-Committee on Radiocommunications and Search and Rescue (COMSAR), which were merged into the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) in 2013, and the Technical Cooperation Committee (TCC). The many items of relevance to the IHO included the continuing development and implementation of an IMO e-Navigation strategy, the development of an IMO Polar Code - both of which have significant underlying charting aspects, the implementation of ECDIS as a carriage requirement, capacity building programmes, and the World-Wide Radio Navigational Warning Service (WWNWS), in relation with the operation and modernization of the Global Maritime Distress and Safety System (GMDSS). In addition to the items reported under the relevant elements of Programmes 2 and 3, the following matters were progressed during the period.
27. In 2012, the MSC endorsed the IHO S-100 standard as the baseline for creating a framework for data access and services under the scope of e-Navigation and the relevant parts of the Convention for Safety of Life at Sea (SOLAS), identified as the Common Maritime Data Structure (CMD5). This recognition by IMO placed S-100 in an important position that goes well beyond the use of the standard principally for charting purposes. In addition, MSC authorised the establishment of a joint IMO/IHO Harmonization Group on Data Modelling and approved its terms of reference. The principal objectives of the group are to provide the overarching coordination to ensure the creation and maintenance of a robust and extendable CMD5. The group is currently dormant but is expected to be activated in 2017 in relation with the implementation of the IMO e-navigation strategy.
28. In accordance with the directive agreed by the IHC-18, the IHO continued to monitor the implementation of ECDIS to ensure that issues identified with regard to the anomalous operation of some ECDIS are collated, analysed, communicated and resolved as speedily as possible to maintain safety of navigation and to assist the smooth transition from paper to digital navigation. In particular, the IHO Secretariat monitored ship reports

on the IHO ECDIS Data Presentation and Performance Check issued in 2011 and reported annually to NAV and then to NCSR on this item. The IHO contributed to developing a consolidated IMO guidance termed “*ECDIS - Guidance for Good Practice*” (Circular MSC.1/Circ.1503 dated 24 July 2015) that replaced seven IMO circulars which had been developed in an incremental manner over the years.

29. In 2014, the MSC approved and adopted the text of a mandatory *International Code for Ships Operating in Polar Waters* (the Polar Code - Resolution MSC.385(94)) and a new chapter XIV to SOLAS on “*Safety measures for ships operating in polar waters*”. As recommended by the Secretariat, the Polar Code refers to the poor state of charting in the Polar Regions and the precautions necessary to mitigate some of the related risks.
30. In the capacity building domain, the IHO invited the TCC to consider ways and means to improve the efficiency of capacity building activities under the UN theme of “delivery as one” such as sharing information available in the IMO Country Maritime Profiles and identifying a number of common objectives, particularly in relation to helping coastal States to meet their obligations as set out in Chapter V of the International Convention for the Safety of Life at Sea (SOLAS). In 2013, the Assembly agreed the transition from the IMO Voluntary Member State Audit Scheme to a Mandatory Audit Scheme. The scheme includes the assessment of the provision of national hydrographic services in the countries being audited.

Intergovernmental Oceanographic Commission of UNESCO

31. The IHO continues to cooperate with the Intergovernmental Oceanographic Commission (IOC) in areas of common interest. Due to on-going financial constraints in IOC, a number of restrictions have been impacting on the delivery of the IOC programmes which have slightly affected IHO activities during the period 2012-2016, in particular Ocean Mapping matters. As a result, this important programme, which, recently has been given a significantly higher priority by the IOC, did not receive sufficient resources to fund the minimum requirements. Nevertheless a closer engagement between the two Secretariats over the latter part of the period has ensured that the General Bathymetric Chart of the Oceans (GEBCO) and International Bathymetric Charts (IBC) projects have been able to progress. This includes approval of the Terms of Reference and Rules of Procedure for the Sub-Committee on Regional Undersea Mapping (SCRUM) and agreement on the much revised Terms of Reference and Rules of Procedure for the GEBCO Guiding Committee, which have significantly improved the governance and oversight of this committee. The IOC adopted the GEBCO Cook Book – *IHO Publication B-11* – as IOC Manuals and Guides 63.
32. At the instigation of the new IOC Executive Secretary, Dr Vladimir Ryabinin, the IOC established a Review Group which undertook a review of the IOC Role in Support of the GEBCO Project. The Group comprised representatives of IOC Member States and one expert each from the GEBCO Guiding Committee and relevant IOC technical and regional subsidiary bodies and chaired by Dr Alexander Postnov (Russian Federation), Vice-Chair of the IOC. The Review Group reported that the majority of the IOC technical and regional subsidiary bodies used GEBCO products and found them to be significant enablers for their activities, noting that this is also the case for World Meteorological Organization (WMO) activities and modelling. Taking this into account, the Review Group recommended that IOC should continue its involvement in the GEBCO project and collect and integrate the IOC user requirements for GEBCO products on a regular basis. The IOC Executive Council expressed concern that the level of active involvement by the IOC in the GEBCO project has diminished and noted that the project relies mainly on support from the IHO. Considering the outcome of the review, the IOC Executive Council decided to enhance IOC involvement with a proposal to allocate funding in the next biennium, it also established a working group of representatives of IOC technical and regional subsidiary bodies to identify IOC user requirements and

potential contributions to GEBCO products tasking it to collect, integrate and assess the user needs and requirements and potential contributions to GEBCO data and products.

33. Tsunamis have received great attention during the period. The IOC decided to continue working on the strategy to handle tsunami threats in the most efficient and effective way. The IHO has been actively involved in raising awareness and providing training especially to countries in the Indian Ocean tsunami affected area, but also in other regions also threatened by this type of natural hazard. Capacity building matters are given very high priority by both organizations. The IOC has also attended meetings of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC) to explore improvements with warning information distribution through the WWNWS; a number of exercises have been held which have included the involvement of the respective NAVAREA Coordinators. The IHO has consistently confirmed its readiness to fully cooperate with IOC in the development of inundation maps and related coastal bathymetric activities required for the regions, in particular the Indian Ocean.
34. The IHO has continued to highlight the importance of comprehensive bathymetry to contribute to tsunami modelling and mitigation, as well as the importance of public awareness, and has recommended IOC to take advantage of the IHO's regional structure, contacting the appropriate IHO Regional Hydrographic Commissions to obtain available bathymetry to support the work. Of particular significance to the IHO are the discussions on the IOC's capacity development strategy, the International Polar Partnership initiative and the 50th anniversary of the International Indian Ocean Expedition.
35. The IHO, through the IHO Secretariat and members of the IHO Tides, Water Level and Currents Working Group (TWCWG) (formerly the TWLWG), has attended meetings of the IOC GLOSS Group of Experts. GLOSS has also been represented at meetings of the TWCWG. The IHO has continued to support GLOSS in increasing the tidal data input to GLOSS and the recovery of historical tide gauge records into the databank for the study of long-term sea level change.
36. In addition to the various delegates from the Hydrographic Offices for a number of IHO Member States, the IHO has been represented at all IOC Assemblies and Executive Council meetings by the IHO Secretariat.

World Meteorological Organization

37. In 2011 the IMO Assembly had adopted Resolution A.1051 - *IMO/WMO World Wide Met-Ocean Information and Warning Service (WWMIWS) – Guidance Document*, which established METAREA Coordinators mirroring the NAVAREA Coordinators of the WWNWS. As a result of this development the WMO has had increasingly closer engagement with the provision of Maritime Safety Information (MSI) and the GMDSS infrastructure. The WMO has been fully involved with the revision process of the MSI documentation and attended all the WWNWS Sub-Committee and Document Review Working Group meetings. There have been regular IMO/IHO/WMO Secretariat meetings focused on the provision of MSI and the unpinning services. In 2015, the IHO and the WMO Secretariat established a MoU that formalised the already strong cooperation between the two organizations, particularly in the provision of MSI and the development of S-100 based product specifications for sea ice (S-411) and met-ocean forecasts (S-412). The knowledge gained from the WMO development of the Voluntary Observing Ship scheme was identified as a very useful input to the development of the IHO led Crowd-Sourced Bathymetry initiative.

Pacific Community and Organization of Eastern Caribbean States

38. The Secretariat, on behalf of the IHO, established a Memoranda of Understanding with the Pacific Community (SPC) and with the Organization of Eastern Caribbean States

(OECS) in 2011 and 2015 respectively. These MoU are intended to formalise the liaison arrangements between the IHO and these regional intergovernmental organizations to ensure that IHO capacity building and related hydrographic development in the regions are appropriately coordinated. The respective Regional Hydrographic Commissions are nominated as the operational points of contact. As a result, SPC has played an increasing role in the South West Pacific Hydrographic Commission (SWPHC) in developing a regional hydrographic capability as part of the SPC Applied Geoscience Division. Meanwhile, the OECS Secretariat participated in several meetings of the Meso-American and Caribbean Sea Hydrographic Commission (MACHC) and is playing a central role in seeking donor funding for an OECS hydrographic improvement programme.

Maritime Organization of West and Central Africa

39. The Maritime Organisation of West and Central Africa (MOWCA) is an intergovernmental regional organization established by the Maritime Charter of Abidjan, whose mission is to promote the development of cost-effective maritime transport services with the highest safety and security standards, and to protect the marine environment.
40. Further to a joint IHO-MOWCA workshop held in Pointe-Noire (Republic of the Congo) in 2013, the Eastern Atlantic Hydrographic Commission developed a MoU on cooperation between MOWCA and the IHO which was signed in 2016. The MoU aims at consolidating and strengthening the process of regional cooperation and ensuring the efficient and effective development and coordination of hydrographic and nautical charting programmes in accordance with the obligations of international treaties.

Group on Earth Observations

41. GEO, the “Group on Earth Observations”, is a voluntary partnership of governments and international organizations. It was launched in 2003 in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialized countries. GEO is coordinating efforts to build a Global Earth Observation System of Systems (GEOSS) in order to exploit the growing potential of Earth observations to support decision-making in an increasingly complex and environmentally stressed world. GEO’s Members include 102 Governments and the European Commission. In addition, 106 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations. The IHO was recognized as a Participating Organization in 2006. GEO meets annually in plenary session.
42. Starting from 2014, the IHO has been represented at GEO plenary, regional and ministerial meetings by the Secretariat and the relevant Member States. The IHO has also provided statements at the recent GEO meetings which highlights the importance of global efforts to improve data availability for the oceans and to recognize the IHO-IOC GEBCO project, the IHO Data Centre for Digital Bathymetry (DCDB) and the IHO Working Groups on Marine Spatial Data Infrastructures and Crowd-Sourced Bathymetry as essential contributors to the maritime component of Global Earth Observation System of Systems (GEOSS).

International Cable Protection Committee (ICPC)

43. The International Cable Protection Committee (ICPC) is a non-profit corporation that represents the international submarine cable industry and promotes the security and safeguarding of submarine cables against man-made and natural hazards.
44. Through routine contacts related to the provision of cable data for charting purposes, the IHO Secretariat and the ICPC Executive Committee identified the need to foster cooperation between both organizations on matters related to submarine cable

operations. The ICPC participated in the 7th meeting of the IHO Hydrographic Services and Standards Committee (HSSC), where the HSSC acknowledged the areas of common interest between the IHO and the ICPC. As a result, an MoU was agreed between the Secretariat, on behalf of the IHO and the ICPC Executive Committee. The objective of the MoU is primarily to assist in facilitating and harmonizing the timely depiction of submarine cables on nautical charts and products through appropriate standards and procedures and therefore to contribute to the protection of submarine cable infrastructure. The MoU also encourages the development of procedures that will facilitate the provision of survey data, or metadata, collected as part of cable laying or maintenance activities, to the IHO DCDB and to GEBCO.

Open Geospatial Consortium (OGC)

45. The Open Geospatial Consortium (OGC) comprises more than 500 industry, government and academic members dedicated to advancing interoperability among information technology systems that process geo-referenced information. An MoU between the IHO and the OGC was agreed by IHO Member States in 2016. This provides an overarching framework for the long-standing cooperation that has existed between the IHO and the OGC in relation to work under the ISO/TC211 related to harmonizing their various geographic and related standards.

Non-governmental international organizations with observer status to the IHO

46. IHO Resolution 5/1957 - *IHO relations with other international organizations*, as amended, required that the Directing Committee (now the Secretary-General) “review from time to time the list of non-governmental international organizations to which IHO has granted observer status, in order to determine whether or not the continuance of their status in any particular case is necessary and desirable.”
47. In addition to the non-governmental international organizations (NGIO) with which the IHO established specific arrangements as reported above, the following NGIOs were accredited as observers to the IHO during the reporting period:
- Baltic and International Maritime Council (BIMCO): BIMCO is the largest of the international shipping associations representing ship-owners;
 - International Association of Independent Tanker Owners (INTERTANKO): INTERTANKO represents independent tanker owners and operators of oil, chemical and gas tankers;
 - Professional Yachting Association (PYA): the PYA is the professional body for yacht crews and the luxury yacht industry;
 - The International Harbour Masters’ Association (IHMA): the IHMA is the professional body for Harbour Masters from around the world;
 - The Institute of Marine Engineering, Science and Technology (IMarEST): the IMarEST is an international membership body for marine professionals operating in the spheres of marine engineering, science or technology;
 - The Hydrographic Society of America (THSOA): THSOA is composed of individual members and corporate members supporting worldwide marine businesses, governments and academia in hydrography and related activities;

- The World Ocean Council (WOC): the WOC has been established as an international multi-industry business leadership alliance on ocean sustainability, science and stewardship;
 - The Association of Arctic Expedition Cruise Operators (AECO): the AECO is composed of expedition cruise operators operating in the Arctic and other entities with interests in this industry.
48. There are currently 32 NGOs accredited as observers to the IHO. Most organizations are actively involved in IHO activities and provide valuable input and opinion. Liaison is maintained with others through joint participation in meetings of mutual interest. During the reporting period, there has been no contact with only one organization, the International Geographical Union (IGU).

Element 1.2 Information Management

49. The information management infrastructure of the Secretariat and the IHO has been progressively developed and improved over the reporting period.
50. The IT infrastructure continues to rely on a combination of one dedicated member of staff and approximately a third of the time of an Assistant Director, together with assistance and services provided by several service providers under contract terms.
51. In the face of evolving new requirements, particularly in relation to adopting an increasingly complex digital data and information environment, resources remain stretched to meet all the requirements. This, therefore, requires the careful and continuous balancing of priorities against resources. The scope and complexity of the IHO IT infrastructure should not be under-estimated, serving, as it does, a significant archive of reference documents, an extensive and dynamic website that includes the following online applications: a meeting registration system, the IHO ENC catalogue, the INT chart catalogue, an online hydrographic dictionary, a stakeholders database, an S-62 producer code database and an index of downloadable GEBCO charts.
52. Several on-line web services have been introduced to support the mobile computing environment for the senior members of staff who are required to travel frequently. These include mail services and secure access to the Secretariat internal network services.
53. An independent audit and evaluation of the IHB IT infrastructure was conducted in late 2014 resulting in an action plan to further improve the IT infrastructure including revisions to maintenance contracts, and rationalizing the server architecture. A new dedicated backup environment for internal workstations and servers was established and new WiFi access points were added to improve the coverage within the Secretariat premises. The capacity to stream video content during meetings in the Secretariat conference room has been added in order to allow remote viewing for some meetings. The mail server infrastructure was upgraded and the external web server applications were moved to a new service provider.
54. The work of two officers seconded by Japan and the Republic of Korea enabled several important capabilities to be implemented that might otherwise not have been possible within existing resources; these include a GIS environment to capture, maintain and display geo-information; an on-line meetings registration system, and a second-generation S-100 registry. Meanwhile a seconded officer from Peru has been instrumental in rationalising the IHO on-line dictionary.
55. A replacement digital document management and system was implemented in 2013 for the processing, managing and storing of Secretariat documentation and

correspondence. This has assisted in handling an ever increasing volume of documentation that requires processing.

56. There continues to be a backlog of documents that should be provided in both official languages, but cannot be done because they exceed the capacity of the two full-time French translators, even with the addition of limited contract support.

Element 1.3 Public Relations

Relations with the Government of Monaco

57. Maintaining relationships with the Government of Monaco and the diplomatic corps accredited in Monaco is currently included in the IHO work programme as part of Element 1.3 - *Public Relations*. It will be included as part of the element covering relations with governments and international organizations in the forthcoming work programme.
58. Communications with the Government of Monaco, in particular the Department of External Relations and Cooperation, was regular and productive throughout the reporting period. The Department of External Relations and Cooperation, itself stretched to meet its very heavy schedule of commitments, has taken on the additional load of addressing the many consequential actions required as a result of the entry into force of the revisions to the Convention on the IHO, such as formally informing all existing Member States, informing the UN of the changes to the Convention and necessary adjustments to the Host Agreement, and the reciprocal recognition between the governments of Monaco and France related to the status of the Organization and the secretariat.
59. Her Excellency Mme Isabelle Picco, Permanent Representative of the Government of Monaco to the United Nations provided particularly good support in assisting the President (now Secretary-General) during his attendance at meetings in the UN Headquarters.

World Hydrography Day

60. World Hydrography Day was celebrated each year during the reporting period. The Secretariat organised various events in Monaco, in conjunction with *Monacology*, a marine science based event to raise children's awareness about the environment and sustainable development. The Secretariat was honoured by the presence of His Serene Highness Prince Albert at several of the World Hydrography Day events.

Other Outreach Activities

61. The Secretariat maintained a record of the principle IHO activities in the monthly publication of the IH Bulletin, as well as providing a quarterly article in the journal *Hydro International*.
62. Specific IHO stakeholder forums were held in conjunction with the following meetings:
- 4th meeting of the HSSC, Taunton, UK, September 2012;
 - 4th meeting of the MSDIWG, Copenhagen, Denmark, February 2013;
 - 5th meeting of the MSDIWG; Silver Spring, Maryland, USA, February 2014;
 - 5th Extraordinary International Hydrographic Conference (EIHC-5), Monaco, October 2014;
 - 6th meeting of the MSDIWG, London, UK, March 2015;
 - 7th International Conference on High Resolution Surveys in Shallow Water (Shallow Survey 2015), Plymouth, UK, September 2015;

- 7th meeting of the HSSC, Busan, Republic of Korea, November 2015;
 - 7th meeting of the MSDIWG, Tokyo, Japan, January 2016.
63. In addition, IHO led stakeholders' sessions were included in the following events organized by partner organizations:
- Conference of The Hydrographic Society UK - *Digital Hydrography on the Maritime Web / Embracing the Challenges and Opportunities*, Southampton, UK, October 2013;
 - Hydro14, Aberdeen, UK, October 2014;
 - Hydro15, Cape Town, South Africa, November 2015.

Element 1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring

64. This element of the work programme concerns the execution of the IHO work programme, the future structure and organization of the IHO and its capacity to meet future requirements.

Financial situation

65. As reported in the Finance Report, the finances of the Organization remain healthy. The Secretariat pursued a conservative budget and closely monitored expenditure, making several adjustments during the reporting period that minimised expenditure, such as the renegotiation of several insurances, and support contracts, and the incorporation in the revised Staff Regulations of a reduction in travel allowances in line with other comparable organizations. The report on the finances of the Organization is submitted separately for the consideration of the Assembly (see Assembly document A.1/F/01).

Staff Regulations

66. The adoption by Member States of a new edition of the Staff Regulations in 2016 marked the end of a protracted revision process originally intended to be undertaken by a working group made up of Member States. After more than seven years' of very limited progress, and as agreed by the EIHC-5, the task was completed by the Secretariat in 2015 under the oversight of the working group. The new edition of the Staff Regulations entered into force on 1 January 2017.

Programme management, performance monitoring and risk assessment

67. The processes for programme management, performance monitoring and risk assessment described in the current edition of the Strategic Plan have been difficult to implement in a meaningful way. This was reported to Member States regularly and resulted in the EIHC-5 deciding that the Directing Committee increase the frequency of reporting by collecting and compiling bi-annual reports from all the IHO and associated bodies. However, this did not make a significant difference to the original problem of obtaining the necessary input from the various IHO bodies, particularly obtaining reports from the Chairs of Regional Hydrographic Commissions (RHCs).
68. Annex A provides the values of the strategic performance indicators for the period 2012-2015. At the time of writing, the values for 2016 were not available.
69. As a result of the above and other factors related to minimising the workload on all those involved, the Secretariat sought and has taken into account input from Member States, the IRCC and HSSC with regard to the current Strategic Plan and associated reporting mechanisms. As a result, the Secretariat is proposing a number of changes to the Strategic Plan adopted in 2009 in order to make the programme management, performance monitoring and risk assessment process more meaningful and easier to implement in future (see Assembly document A.1/WP1/03).

70. In addition to several editorial amendments that reflect the revised Convention, a number of new topics, including *the blue economy*, *an open data environment*, *crowd sourcing*, and *disaster preparedness and response* have been introduced in the revised Strategic Plan. The description of the implementation of performance indicators has been clarified. The description of the risk management framework has been generalised, and the specific example relating to the risk analysis provided in Annex A to the Strategic Plan, adopted by the IH Conference in 2009, has been removed. An updated risk analysis for 2017, based on the methodology described in the Strategic Plan is being submitted separately for the consideration of the Assembly, in support of the proposed 3-year work programme 2018-2020 (see Assembly document A.1/WP1/02).
71. The Secretariat is also proposing a number of revisions to IHO Resolution 12/2002 – *Planning Cycle* in order to reflect the planning and reporting requirements and timetable resulting from the changed arrangements under the revised Convention and the establishment of the Council. The version approved by EIHC-4 is composed of two cycles addressing respectively the maintenance of the Strategic Plan and the preparation of the 3-year Work Programme. In order to facilitate the implementation of the process, the revised text proposes to refine and re-arrange the provisions according to two cycles addressing respectively Assembly years on the one hand and non-Assembly years on the other hand (see Assembly document A.1/WP1/04).

Element 1.5 Management of the Secretariat

72. This element covers the provision of a range of secretariat and other services required by Member States and relevant stakeholder organizations.

Staff Numbers

73. For the majority of the reporting period, the Secretariat comprised 19 Members of Staff, supplemented by three officers seconded by Member States to work on specific projects otherwise beyond the resources of the Secretariat. An additional permanent position was established in 2016, in accordance with the approved IHO Budget, for the post of Technical Standards Support Officer in relation with the implementation of Programme 2.

Seconded Officers

74. One officer each from the Korea Hydrographic and Oceanographic Agency and the Hydrographic and Oceanographic Department of the Japan Coast Guard have been posted to the Secretariat throughout the period. The officer from Korea has been replaced every year, whereas the officer from Japan has been seconded for longer periods of between two and three years. The longer secondments are less disruptive both to the personnel involved and the staff of the Secretariat. An officer from the Directorate of Hydrography and Navigation of Peru was seconded to the Secretariat from March 2015 to December 2016.

Retirements

75. Several long-standing members of the Secretariat staff retired during the reporting period. Ms Pascale Bouzanquet, French Translator, retired at the end of August 2015, having joined the Secretariat in 1989. Ms Perrine Brieda joined as her replacement. Assistant Director Michel Huet retired in June 2014 after 24 years' service and was replaced by Assistant Director Yves Guillam, formerly from the French Hydrographic Service (SHOM). Ms Barbara Williams, Head of Registry, retired at the end of April 2016, having joined the Secretariat in 1979. Ms Lorène Chavagnas joined the administrative staff upon the retirement of Ms Williams.

Workload

76. The principal tasks of the administrative staff in the Secretariat involve the management and production of IHO documentation. The Secretariat continued to translate key documents into French and Spanish through the use of its translation staff, who were employed primarily on the translation of Circular Letters and other correspondences of the Secretariat. The volume of this work continued to rise, particularly because of the technical complexity of some of the required translations and the need to ensure a very high equivalence of meaning. This meant that no significant progress was made on the backlog of active IHO publications that await translation into the French and Spanish languages other than the maintenance of those publications that have already been translated.
77. The workload of the President, Directors and Assistant Directors remained at a very high tempo throughout the reporting period. This has been caused by a combination of increases in administrative and reporting requirements, greater levels of liaison with other international organizations and stakeholder groups, together with the already significant number of meetings and visits involving the Secretariat Staff. As a result, the senior staff are fully stretched.

The need for additional permanent staff in the Secretariat

78. Taking into consideration the very high workload placed upon the senior personnel in the Secretariat, consideration will need to be given during the period 2018-2020 to increasing the number of locally recruited employees in the Secretariat by up to two, particularly if funds become available as a result of new Member States joining the Organization.
79. The introduction of an annual session of the Council, the increased frequency of meetings of the RHCs, the increased activity of the representational roles of the Secretary-General and Directors, and the, planning, reporting and risk analysis responsibilities explicitly placed upon the Secretary-General all point to a requirement for an additional locally recruited managerial member of staff to undertake the role of Chief of Staff and assistant to the Secretary-General.
80. The ability of the Secretariat to provide full administrative support to the IHO Capacity Building Programme and to the International Board on Standards of Competence (IBSC) has been raised consistently by the relevant bodies and the provision of additional staff has been endorsed in principle by the IRCC. The recruitment of an experienced administrative assistant to support the clerical, reporting and administrative aspects of the CB and IBSC tasks is warranted.

Element 1.6 International Hydrographic Conferences or Future Assemblies

81. The 5th Extraordinary International Hydrographic Conference (EIHC-5) was held in Monaco from 6 to 10 October 2014. As a result of the entry into force of the revised Convention on the IHO on 8 November 2016, planning for the XIXth International Hydrographic Conference was adjusted to enable the First Session of the IHO Assembly to take place, on the same dates and at the same venue as previously planned for the Conference.
82. **Actions required of the Assembly**
The Assembly is invited to:
- a) **note** the report on the execution of programme 1;
 - b) **approve** the proposed revisions to IHO Resolution 12/2002 – *Planning Cycle*;
 - c) **approve** the proposed revisions to the IHO Strategic Plan;
 - d) **note** the requirement to increase the permanent staff in the Secretariat as soon as finances allow.

Report on Strategic Performance Indicators – 2012-2015

No PI	Designation	Source	Status 31 Dec 2012	Status 31 Dec 2013	Status 31 Dec 2014	Status 31 Dec 2015	Status 31 Dec 2016
SPI 1	Number and percentage of Coastal States providing ENC coverage directly or through an agreement with a third party.	WEND WG through RHCs	No suitable information available at the Secretariat	No suitable information provided by RHCs. IHB estimate ~60%	No suitable information provided by RHCs. IHB estimate ~64%	No suitable information provided by RHCs IHB estimate:~66%	<i>Information not available when this report was compiled (January 2017)</i>
SPI 2	Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.	WEND WG and IHO on-line catalogue of coverage	Small scale: ~ 100% Medium scale: 88% Large scale: 95%	Small scale: ~ 100% Medium scale: 90% Large scale: 96%	Small scale: ~ 100% Medium scale: 91% Large scale: 97%	Small scale: ~ 100% Medium scale: 92% Large scale: 97%	<i>Information not available when this report was compiled (January 2017)</i>
SPI 3	Percentage of Coastal States which provide hydrographic services, directly or through an agreement with a third party, categorized by CB phases, as defined by the IHO Capacity Building Strategy.	CBSC through RHCs	No suitable information available at the Secretariat	No suitable information available at the Secretariat	No suitable information available at the Secretariat	No suitable information available at the Secretariat	<i>Information not available when this report was compiled (January 2017)</i>

No PI	Designation	Source	Status 31 Dec 2012	Status 31 Dec 2013	Status 31 Dec 2014	Status 31 Dec 2015	Status 31 Dec 2016
SPI 4	Percentage of "acceptable" CB requests which are planned. <i>(Percentage of submitted CB requests that were approved)</i>	CBSC	97%	75%	97%	93%	<i>Information not available when this report was compiled (January 2017)</i>
SPI 4 bis	Percentage of planned CB requests which are subsequently delivered.	CBSC	73%	86%	82%	79%	<i>Information not available when this report was compiled (January 2017)</i>
SPI 5	Number of standards issued (including new editions), per category ¹ : - hydrographic standards to enhance safety of navigation at sea, - protection of the marine environment, - maritime security, - economic development.	HSSC	9 <i>Safety of navigation: 8 Protection of the marine environment: 1 Maritime security: 0 Economic development: 1</i>	4 <i>Safety of navigation: 2 Protection of the marine environment: 2 Maritime security: 0 Economic development: 1</i>	5 <i>Safety of navigation: 4 Protection of the marine environment: 0 Maritime security: 0 Economic development: 1</i>	4 <i>Safety of navigation: 4 Protection of the marine environment: 0 Maritime security: 0 Economic development: 0</i>	<i>Information not available when this report was compiled (January 2017)</i>

¹ Versions of standards developed originally in English, which are issued in other languages later on, are not accounted.

No PI	Designation	Source	Status 31 Dec 2012	Status 31 Dec 2013	Status 31 Dec 2014	Status 31 Dec 2015	Status 31 Dec 2016
SPI 6	Number of potential new IHO MS (indicated by the start of the application process) relative to the number of "non-IHO" IMO MS.	Secretariat through the Government of Monaco	8 / 89 <i>Number of IMO MS: 170</i> <i>Number of IHO MS: 81</i>	7 / 88 <i>Number of IMO MS: 170</i> <i>Number of IHO MS: 82</i>	7 / 88 <i>Number of IMO MS: 170</i> <i>Number of IHO MS: 82</i>	8 / 86 <i>Number of IMO MS: 171</i> <i>Number of IHO MS: 85</i>	<i>Information not available when this report was compiled (January 2017)</i>
SPI 7	Increase in participation / membership in RHCs.	IRCC through RHCs	No suitable information provided by RHCs Secretariat estimate: MS participation: 91% Non MS participation: 47%	No suitable information provided by RHCs Secretariat estimate: MS participation: 83% Non MS participation: 25%	No suitable information provided by RHCs Secretariat estimate: MS participation: 75% Non MS participation: 29%	No suitable information provided by RHCs Secretariat estimate: MS participation: 84% Non MS participation: 60%	<i>Information not available when this report was compiled (January 2017)</i>
SPI 8	Percentage of available / agreed ENC [production] schemes.	WEND WG through RHCs or International Charting Coordination Working Groups (ICCWG)	No suitable information provided by most RHCs	No suitable information provided by most RHCs	Secretariat estimate for UB1, 2 and 3 based on existing coverage: ~80%	Secretariat estimate for UB1, 2 and 3 based on existing coverage: ~82%	<i>Information not available when this report was compiled (January 2017)</i>

IHO WORK PROGRAMME FOR THE PERIOD 2018-2020 (as approved)

Introduction

Article 6(g)(v) of the amended Convention on the IHO that entered in to force on 8 November 2016, stipulates that the Council ...*prepare, with the support of the Secretary-General, proposals concerning the overall strategy and the work programme to be adopted by the Assembly.*

Since a Council will not be established before the first session of the Assembly, the Secretary-General has followed the practice that was in place prior to the amended Convention entering in to force, by preparing this proposed Work Programme to be carried out during the period 2018-2020, taking into account inputs from the two principal committees - HSSC and IRCC, together with the financial implications related to it.

This proposed Work Programme, which also takes into account the IHO Strategic Plan and the risk analysis shown in Annex A, should be considered alongside the proposed Budget for 2018-2020 which is submitted separately for the consideration of the Assembly.

Annex A provides an updated risk analysis based on the methodology described in the current IHO Strategic Plan that was adopted in 2009.

Annex B provides diagrams that illustrate the financial resources allocated from the IHO budget to each Programme.

Work Programme Structure

The IHO has defined three programmes to meet its goals:

- **Programme 1 - *Corporate Affairs***, under the principal responsibility of the Secretary-General;
- **Programme 2 - *Hydrographic Services and Standards***, under the principal responsibility of the Hydrographic Services and Standards Committee (HSSC);
- **Programme 3 - *Inter Regional Coordination and Support***, under the principal responsibility of the Inter Regional Coordination Committee (IRCC).

This proposed Work Programme follows that structure.

For each programme, various *elements* have been identified, each with a stated objective. The elements are then supported by tasks (actions). In identifying the tasks, the input from the Chairs of the relevant IHO bodies together with other information held by the Secretariat have been taken into account.

In addition, for each task, the work programme identifies:

- the principal strategic directions that the task supports;
- the principal stakeholders, if any, outside the IHO that may be affected;
- the principal deliverables and associated milestones, as appropriate;
- the lead authority and participants, if any;
- the estimated resources from the IHO budget, when significant;
- any other resources, when significant; and
- any risk to delivery, when significant.

*WORK PROGRAMME 1***CORPORATE AFFAIRS****Concept:**

Programme 1 covers the provision of the services provided by the Secretariat of the IHO and, through the Secretary-General and the Directors, the management and fostering of relations with intergovernmental and other international organizations. Work Programme 1 is directed primarily by the Secretary-General. It is integral to the achievement of all the Strategic Directions; some directly, others indirectly.

Element 1.1	Co-operation with International Organizations and participation in relevant meetings
Element 1.2	Information Management
Element 1.3	Public Relations and Outreach
Element 1.4	Work Programme & Budget, Strategic Plan and Performance Monitoring
Element 1.5	Secretariat Services
Element 1.6	IHO Council and Assembly

Element 1.1 Cooperation with International Organizations and participation in relevant meetings

Objective: Maintain relationships with relevant international organizations in order to further the interests of the IHO by enlisting their support and cooperation, and participate in projects of common interest. Represent the IHO and participate in international forums dealing with matters of relevance to the objectives of the IHO and the IHO WP, including:

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.1	Maintain relationships with the Government of Monaco and the diplomatic corps accredited in Monaco	1.1 1.2 1.3 1.5 2.3 3.1 3.2 3.3 3.4 4.4		Continuous	Secretariat			
1.1.2	Maintain relationship with the Antarctic Treaty Consultative Meeting (ATCM)	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3	Mariners, Ship operators, Marine scientific community	continuous	Secretariat	1 meeting annually Travel cost for SG or Dir		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.3	Maintain relationship with the Comité International Radio Maritime (CIRM)	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3	Navigation equipment manufacturers	continuous	Secretariat	1 meeting annually Travel cost for 1 SG/Dir/AD		
1.1.4	Maintain relationship with European Union Initiatives (such as INSPIRE and EMODnet)	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3		continuous	Secretariat IENWG	2 meetings annually. Travel cost for 1 SG/Dir/AD per meeting		
1.1.5	Maintain relationship with the Group on Earth Observation (GEO)	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3		continuous	Secretariat GEBCO GC MSDIWG	1 meeting annually. Travel cost for 1 SG/Dir/AD		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.6	Maintain relationship with the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) including the IALA e-NAV Committee	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 4.4	Aids to Navigation authorities, e-NAVIGATION data service providers	continuous	Secretariat HSSC WGs	2 meetings annually. Travel cost for 1 SG/Dir/AD per meeting		
1.1.7	Maintain relationship with the International Electrotechnical Commission (IEC), including: IEC Technical Committee 80	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3	Equipment manufacturers Type approval bodies	continuous	Secretariat HSSC WGs	1 meeting annually. Travel cost for 1 Dir/AD		
1.1.8	Maintain relationship with the International Maritime Organization (IMO), including: Assembly Council MSC NCSR TCC	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 4.4	Mariners, Ship operators, Maritime Administrations	continuous	Secretariat	5 meetings annually, Travel cost for each meeting for 1 SG/Dir + AD or 1 AD.		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.9	Maintain relationship with the Intergovernmental Oceanographic Commission (IOC) of UNESCO, including: Assembly Council Specialized WGs	1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3	Marine scientific community	continuous	Secretariat GEBCO GC MSDIWG	2 meetings annually. Travel cost for 1 SG/Dir/AD		
1.1.10	Maintain relationship with the International Organization for Standardization (ISO), including: ISO Technical Committee 211	1.1 1.2 1.3 1.4 1.5 2.5 2.6 3.1 3.2 3.3		continuous	Secretariat	2 meetings annually. Travel cost for 1 Dir/AD		
1.1.11	Maintain relationship with the Joint Board of Geospatial Information Societies (JB-GIS)	1.1 1.2 1.3 1.4 1.5 2.6 3.1 3.2 3.3		annual	Secretariat	1 meeting annually if coinciding with other meetings. No significant additional cost		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.12	Maintain relationship with United Nations (UN) organizations based in New York, including: the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) the UN Division on Ocean Affairs and Law of the Sea (UN-DOALOS)	1.1 1.2 1.3 1.4 1.5 2.5 2.6 3.1 3.2 3.3	Marine geospatial data providers and users	continuous	Secretariat MSDIWG ABLOS	2 meetings annually. Travel cost for 1 SG/Dir		
1.1.13	Maintain relationship with the World Meteorological Organization (WMO)	1.1 1.2 1.3 1.4 1.5 2.5 3.1 3.2 3.3	Mariners, Ship operators, Maritime Administrations	continuous	Secretariat	1 meeting annually. Travel cost for 1 SG/Dir/AD		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.14	Maintain relationship with the International Seabed Authority (ISA)	1.1 1.2 1.3 1.4 1.5 2.5 2.6 3.1 3.2 3.3	Marine geospatial data providers and users	continuous	Secretariat	1 meeting annually. Travel cost for 1 SG/Dir		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.1.15	Maintain relationships with other international and observer organizations when their agendas have relevance to the programme of the IHO	1.1 1.2 1.3 1.4 1.5 2.5 2.6 3.1 3.2 3.3		continuous	Secretariat	Participation to be determined on an annual basis, subject to the agenda of the organization and its significance to the IHO WP Up to 10 meetings annually Travel cost for 1 SG/Dir/AD per meeting		

Element 1.2 Information Management

Objective: Provide Member States and IHO stakeholders with accurate and relevant information in a timely and accessible manner.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.2.1	Maintain and extend the IHO website	1.1 1.2 1.4 1.5 2.1 2.2 3.2 3.3 4.1		continuous	Secretariat	Use of commercial contract support Maintenance included in 1.2.4		
1.2.2	Maintain and extend the IHO GIS, webserver and web mapping services in support of RHCs, ENC production coordination, INT chart coordination, C-55 and other related activities	1.1 1.2 1.4 1.5 2.2 2.6 3.2 3.3 3.4 4.2		continuous	Secretariat	Use of commercial contract support Maintenance included in 1.2.3		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.2.3	Maintain and extend the Secretariat Admin IT infrastructure, including in-house publishing facilities	1.1 1.2 1.3 1.4 3.3 4.1		continuous	Secretariat	95k€ annually (includes hardware, software and contract maintenance support)		
1.2.4	Maintain the IHO reference library collection including the incorporation of new material	1.5 3.2 3.3 3.4		continuous	Secretariat	1K€ annually		

Element 1.3 Public Relations and Outreach

Objective: Raise awareness of the role of the IHO and the value and importance of hydrography and nautical charting services. Provide advice and guidance on States obligations under international regulations such as SOLAS Chapter V and highlight the importance of coordinated efforts in providing for safety of navigation, protection of the marine environment and the sustainable management and development of the oceans, seas and waterways. Stress the importance of becoming an IHO Member State.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.3.1	Promote the IHO through publicity and public relations initiatives	1.5 2.6 3.1 3.2 3.3		Continuous Preparation and celebration of the centenary of the 1 st International Hydrographic Conference in 2019 Preparation of the centenary of the establishment of the IHB in 2021	Secretariat Member States	15k€ annually		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.3.2	Encourage new membership of the IHO	2.3 2.4		Participation of non-Member States in RHC and IHO activities New Member States	Secretariat RHC Chairs (except: ARHC, NHC, NSHC, USCHC)	Visits normally undertaken as side-trips in conjunction with travel to other meetings Some high-level visits funded by Capacity Building Fund (see programme 3)		
1.3.3	Celebrate World Hydrography Day including the preparation of information to support the themes	1.5 2.6 3.1 3.2 3.3		annual	Secretariat Member States	7K€ annually		
1.3.4	Compile and publish P-1 – <i>International Hydrographic Review</i> with the assistance of a paid editor	1.5 2.6 3.1 3.2 3.3		continuous	Secretariat Member States	10K€ annually		Lack of suitable papers provided by MS and other contributors

Element 1.4 Work Programme & Budget, Strategic Plan and Performance Monitoring

Objective: Ensure that the formulation and the execution of the IHO Work Programme and Budget is managed, monitored and executed efficiently to best meet the requirements of Member States and the interests of stakeholders. This Element focuses on the implementation of the IHO's Strategic Plan particularly with regard to risk assessment and performance indicators.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.4.1	Execute the IHO Work Programme and Budget approved by the 1 st Session of the Assembly, monitoring its progress and proposing or implementing any necessary adjustments according to the circumstances and the regulations	All SDs		continuous	Secretariat Council			
1.4.2	Develop and propose future IHO Work Programme, Budget and Strategic Plan			continuous	Secretariat Council Assembly			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.4.3	Administer the processes for programme management, performance monitoring and risk assessment	1.1 4.1 4.4		continuous	Secretariat			Required information not being provided by MS, RHCs or Organs of the IHO. Limited availability of the Secretariat to collate and analyse results
1.4.4	Conduct biennial IHO stakeholders' forums	1.2 1.3 1.4 1.5 2.6 3.1 3.2 3.3 3.4 4.4		2019	Secretariat	1 meeting every 2 years back-to-back with another meeting Cost subject to the venue	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meetings	

Element 1.5 Secretariat Services

Objective: Ensure that the Secretariat meets the requirements set by the Member States, by providing the best service within the resources available.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.5.1	Maintain formal communication between the Secretariat and the Member States through Circular Letters	2.2 4.1 4.2 4.3 4.4		continuous	Secretariat			
1.5.2	Maintain, update and develop procedures to facilitate and improve the effectiveness of the finance and administrative work of the Secretariat	All SDs		continuous	Secretariat			
1.5.3	Provide in-house translation services English/French and French/English in support of the IHO WP Include Spanish translations as much as possible in accordance with the relevant IHO Resolutions	2.2 4.1 4.3 4.4		continuous	Secretariat		MS encouraged to volunteer to translate lower priority IHO publications from EN to FR and SP	Translation workload exceeds the translating capacity of the existing number of staff

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.5.4	Engage contract support to supplement the maintenance and development of IHO publications beyond the resources or competence of the Secretariat or the IHO WGs, including: - Translation - Technical editing	3.3 4.1		continuous	Secretariat	20k€ each year		
1.5.5	Compile, maintain and publish IHO publications that are not allocated to a specific IHO body, including: P-5 – IHO Yearbook P-7 – IHO Annual Report P-6 – Proceedings of the Assembly and of the Council M-3 –Resolutions of the IHO	1.2 3.3 4.1		As required	Secretariat			
1.5.6	Secretariat Staff training	1.1 4.1				7k€ each year		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.5.7	Monitor and maintain the Staff Regulations and the Job Descriptions of the Staff of the IHO Secretariat in step with the evolution of the IHO Work Programme and IHO requirements	4.1		continuous	Secretariat			
1.5.8	Maintain the premises and facilities of the IHO Secretariat as required as the occupant, including renovations or modifications as requirements arise	4.1		continuous	Secretariat	70K€ each year		

Element 1.6 IHO Council and Assembly

Objective: Ensure the successful functioning of sessions of the Council and the Assembly so that they fulfil their top-level governance and decision-making functions in accordance with the Convention and the other basic documents of the Organization.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
1.6.1	Prepare and conduct the 2 nd session of the IHO Assembly	2.1 2.2 4.1 4.4		2020	Secretariat	Funded by the Conference Fund	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the Assembly	
1.6.2	Prepare and conduct annual sessions of the IHO Council	2.1 2.2 4.1 4.4		annual	Secretariat	20K€ each year Travel for minimum of SG, 2 Dir, 2AD if session held outside Monaco	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend a session of the Council	

WORK PROGRAMME 2

HYDROGRAPHIC SERVICES AND STANDARDS**Concept:**

Programme 2 focuses on the implementation of component 1.4 of Strategic Direction (SD) 1: “*developing, improving, promulgating and promoting clear, uniform, global hydrographic standards to enhance safety of navigation at sea, protection of the marine environment, maritime security and economic development*”.

Element 2.1	Programme Coordination
Element 2.2	Foundational Nautical Cartography Framework
Element 2.3	S-100 Framework
Element 2.4	S-57 Framework
Element 2.5	Support the implementation of e-navigation and Marine Spatial Data Infrastructures (MSDI)
Element 2.6	Hydrographic Surveying
Element 2.7	Hydrographic aspects of UNCLOS
Element 2.8	Other technical standards, specifications, guidelines and tools

Element 2.1 Programme Coordination**Objective:** Monitor and implement Programme 2 through the HSSC and its subordinate organs.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.1.1	Organize, prepare, and report annual meetings of HSSC	1.1 1.2 1.3 1.4 2.1 2.5 2.6 4.1 4.2		Monitor and approve HSSC Work Programme - Annual	HSSC Chair WG Chairs Secretariat	Travel cost for 1 Dir + 2 ADs Travel cost and per diem for pre-meeting briefing of Chair	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meeting	Inability of MS and others to participate in meetings
2.1.2	Organize, prepare and report meetings of HSSC working groups	1.4		As defined in the HSSC Work Programme	WG Chairs Secretariat	Travel cost, per diem and working hours 1 AD / meeting	Travel cost, per diem. and working hours for MS and other participants to prepare for and attend the meeting	Inability of MS and others to participate in meetings

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.1.3	Prepare for and represent HSSC at meetings of the Council	1.1		Submit report and recommendations - Annual	HSSC Chair Secretariat	Travel cost and per diem for HSSC Chair		
2.1.4	Prepare for and represent HSSC at 2 nd session of the IHO Assembly	1.1		Submit reports and recommendations (through the Council) - 2020	HSSC Chair Secretariat			
2.1.5	Monitor the development of related international standards, specifications and guidance	1.2	IALA IEC IMO ISO OGC	Identify and attend relevant meetings and activities and report outcome - as required (see also programme 1)	HSSC Chair Group Secretariat			
2.1.6	Provide technical outreach, advice and guidance in relation to IHO standards, specifications and guidance	4.1		Identify and attend relevant meetings and activities and report outcome - as required	HSSC Chair Group Secretariat	3 meetings per year Travel cost 1 Dir/AD per meeting		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.1.7	Specify and develop a Document Management System for the collaborative drafting of complex standards	1.1		Draft preliminary specifications and investigate possible solutions	HSSC Chair Group Secretariat	Contract support if appropriate		
2.1.8	Maintain and extend IHO Resolutions (M-3) related to technical issues	1.1		Draft proposed amendments for the consideration of the Council - 2019	HSSC All WG			

Element 2.2 Foundational Nautical Cartography Framework

Objective: Develop, maintain and promote the foundational standards, specifications, guidelines and services related to nautical cartography to meet the requirements of the stakeholders.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.2.1	Maintain S-4 (<i>Regulations for International (INT) Charts and Chart Specifications of the IHO</i>) and related publications (INT 1/2/3)	1.4			NCWG			
2.2.2	Maintain S-11 Part A - <i>Guidance for the Preparation and Maintenance of International Chart Schemes and Catalogue of International (INT) Charts</i>	1.4			NCWG			
2.2.3	Maintain the INTtoGIS infrastructure	1.1			NCWG Secretariat		Support of the Republic of Korea	

Element 2.3 S-100 Framework**Objective:** Develop, maintain and promote the S-100 framework in order to meet the requirements of the stakeholders.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.3.1	Maintain and extend the S-100 GI Registry	1.4			S-100WG Secretariat		Support of the Republic of Korea	
2.3.2	Maintain and extend S-100 - <i>IHO Universal Hydrographic Data Model</i>	1.4		S-100 Test bed - 2018 Edition 4.0.0 S-100 - 2020	S-100WG			Inability of MS and others to participate in the work
2.3.3	Develop and maintain S-99 - <i>Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry</i>	1.4		Edition 2.0.0 S-99 - 2018	S-100WG			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.3.4	Develop and maintain S-10x Product Specifications	1.4	ECDIS OEM GIS Community Data providers	Edition 1.0.0 S-101 - 2018 S-101 Implementation Plan - 2018 Edition 2.0.0 S-102 - 2017 Edition 1.0.0 S-111 - 2018 Edition 1.0.0 S-122 - 2019 Edition 1.0.0 S-123 – 2020	Project teams Relevant WGs	Contract support funded by the Special Projects Fund		Inability of MS and others to participate in the work
2.3.5	Provide advice and guidance to other organizations developing S-100 based Product Specifications	1.2 1.3			S-100WG Secretariat	2 meetings per year Travel cost 1 AD	Travel cost and working hours MS Rep.	Limited expertise available

Element 2.4 S-57 Framework**Objective:** Maintain the S-57 framework fit for purpose.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.4.1	Maintain S-52 - <i>Specifications for Chart Content and Display Aspects of ECDIS</i>	1.4	ECDIS OEM		ENCWG			
2.4.2	Maintain S-57 - <i>IHO Transfer Standard for Digital Hydrographic Data</i> , including ENC Product Specification	1.4	ECDIS OEM Data servers		ENCWG			Inability of MS and others to participate in the work
2.4.3	Maintain S-58 - <i>ENC Validation Checks</i>	1.4			ENCWG			Inability of MS and others to participate in the work
2.4.4	Maintain S-61 - <i>Product Specification for Raster Navigational Charts (RNC)</i>	1.4	ECDIS OEM Data servers	No action expected	ENCWG			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.4.5	Maintain S-63 - <i>IHO Data Protection Scheme</i>	1.4			ENCWG DPSWG			Inability of MS and others to participate in the work
2.4.6	Maintain S-64 - <i>IHO Test Data Sets for ECDIS</i>	1.4			ENCWG DPSWG			
2.4.7	Maintain S-65 - <i>ENCs: Production, Maintenance and Distribution Guidance</i>	1.4			ENCWG			
2.4.8	Maintain S-66 - <i>Facts about Electronic Charts and Carriage Requirements</i>	1.4		New Edition 2019 (tbc)	ENCWG			

Element 2.5 Support the implementation of e-navigation and Marine Spatial Data Infrastructures (MSDI)

Objective: Provide technical support to the development of new services and functionalities required by the implementation of e-navigation and MSDI.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.5.1	Monitor and assess requirements related to data flow, data security, data quality, backup arrangements, time-varying information, etc.	1.1 2.5			All WG			Inability of MS and others to participate in the work
2.5.2	Support the development and implementation of Maritime Service Portfolios (MSP)	1.1 2.5	IALA IMO	Preparation of the provision of a MSP “Hydrographic Information” – 2018 Provision of an MSP “Hydrographic Information” – 2019 (<i>include participation in the IMO/IHO HGDM</i>)	NIPWG NCWG S-100WG TWCWG WWNWS-SC			Inability of MS and others to participate in the work

Element 2.6 Hydrographic Surveying**Objective:** Maintain S-44 and related IHO documents fit for purpose.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.6.1	Maintain and extend S-44 - <i>IHO Standards for Hydrographic Surveys</i>	1.4		Report annually to HSSC Edition 6.0.0 of S-44 - 2019	HS PT			Inability of MS and others to participate in the work

Element 2.7 Hydrographic aspects of UNCLOS

Objective: Monitor developments related to the hydrographic aspects of UNCLOS and maintain the relevant IHO publications fit for purpose.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.7.1	Organize the biennial ABLOS Conference	1.3 4.1		ABLOS Conferences 2019			Self-funding	
2.7.2	Maintain C-51 - <i>Manual on Technical Aspects of the UN Convention on the Law of the Sea</i>	1.4		Edition 6.0.0 in 2018				

Element 2.8 Other technical standards, specifications, guidelines and tools**Objective:** Maintain technical standards, specifications, guidelines and tools not included in the previous elements fit for purpose.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
2.8.1	Maintain S-12 - <i>Standardization of List of Lights and Fog Signals</i>	1.4		Revision as appropriate No action expected	NIPWG			
2.8.2	Maintain S-32- <i>Hydrographic Dictionary</i>	1.4		New trilingual wiki version - 2019	HDWG	Contract support funded by the Special Projects Fund		Inability of MS and others to participate in the work
2.8.3	Maintain S-49 - <i>Standardization of Mariners' Routeing Guides</i>	1.4		Revision as appropriate	NIPWG			
2.8.4	Maintain the list of standard tidal constituent	1.4		Continuous	TWCWG			
2.8.5	Maintain the inventory of national tide gauges and current meters	1.1		Continuous	TWCWG			

WORK PROGRAMME No. 3

INTER REGIONAL COORDINATION AND SUPPORT**PROGRAMME 3 - "INTER REGIONAL COORDINATION AND SUPPORT"**

Concept: This programme refers primarily to the Organization's strategic direction "*Facilitate global coverage and use of official hydrographic data, products and services*" through enhancing and supporting cooperation on hydrographic activities among the IHO Member States (MS) under the aegis of the Regional Hydrographic Commissions (RHCs). It also contributes to the strategic direction "*Assist Member States to fulfil their roles*" through the IHO Capacity Building Work Programme in supporting MS as well as non-Member States to build national hydrographic capacities where they do not exist and to contribute to the improvement of the already established hydrographic infrastructure. The programme includes major topics that require a regionally coordinated approach, such as ENC adequacy, availability, coverage and distribution, maritime safety information and ocean mapping.

Element 3.1	Programme Coordination
Element 3.2	Regional Hydrographic Commissions and the HCA
Element 3.3	Capacity Building
Element 3.4	Coordination of Global Surveying and Charting Coverage
Element 3.5	Maritime Safety Information
Element 3.6	Ocean Mapping Programme
Element 3.7	Marine Spatial Data Infrastructures
Element 3.8	International Standards for Hydrographic Surveyors and Nautical Cartographers

Element 3.1 Programme Coordination

Objective: Promote and coordinate those activities that might benefit from a regional approach:

- establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions;
- establish co-operation to enhance the delivery of the Capacity Building Work Programme;
- monitor the work of specified IHO inter-organizational bodies engaged in activities that require inter-regional cooperation and coordination.

The IRCC will foster coordination between all RHCs and other bodies that have a global/regional structure (including: HCA, GGC, CBSC, IBSC, WWNWS-SC, WEND-WG).

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.1.1	Organize, prepare and report annual meetings of IRCC	1.1 1.2 1.4 1.5 2.1 2.2 2.3 2.4 2.5 2.6 3.1 3.2 3.3 3,4 4.1 4.2 4.3 4.4		Monitor and approve IRCC Work Programme – Annual	IRCC Chair RHC Chairs Chairs of the IRCC Bodies Secretariat	Travel cost for 1 Dir + 1 AD Travel cost and per diem for pre-meeting briefing of Chair		Inability of MS and others to participate in meetings

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.1.2	Prepare for and represent IRCC at meetings of the Council	1.1		Submit report and recommendations - Annual	IRCC Chair Secretariat	Travel cost and per diem for IRCC Chair		
3.1.3	Prepare for and represent IRCC at 2 nd session of the IHO Assembly	1.1		Submit reports and recommendations (through the Council) - 2020	IRCC Chair Secretariat			
3.1.4	Maintain and extend IHO Resolutions (M-3) related to coordination issues	1.1		Draft proposed amendments for the consideration of the Council - 2019	IRCC			

Element 3.2 Regional Hydrographic Commissions and the HCA

Objective: Facilitate regional coordination, cooperation and collaboration to improve hydrographic services and the provision of hydro-cartographic products through the structure of the Regional Hydrographic Commissions and of the Hydrographic Commission on Antarctica.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.2.1	Prepare for and report meetings of the Regional Hydrographic Commissions (RHC): ARHC – Arctic Regional Hydrographic Commission BSHC - Baltic Sea Hydrographic Commission EAHC - East Asia Hydrographic Commission EAtHC - Eastern Atlantic Hydrographic Commission MACHC - Meso American and Caribbean Hydrographic Commission MBSHC - Mediterranean and Black Seas Hydrographic Commission	2.1 2.2 2.3 2.5 2.6 3.2 3.3 4.3		Submit report and recommendations – normally Annually	RHC Chairs Secretariat	Most Commissions meet annually Travel cost for SG or Dir to each meeting. An AD also attends several of the RHC meetings – particularly the larger Commissions and those with significant CB requirements		Inability of MS and others, particularly non-IHO MS, to participate in meetings

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
	NHC - Nordic Hydrographic Commission NIOHC - North Indian Ocean Hydrographic Commission NSHC - North Sea Hydrographic Commission RSAHC - ROPME Sea Area Hydrographic Commission SAIHC - Southern Africa and Islands Hydrographic Commission SEPRHC - South East Pacific Regional Hydrographic Commission SWAtHC - South West Atlantic Hydrographic Commission SWPHC - South West Pacific Hydrographic Commission USCHC - USA and Canada Hydrographic Commission							

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.2.2	Organize, prepare for and report meetings of Hydrographic Commission on Antarctica (HCA)	2.1 2.2 2.5 2.6 3.2 3.3 4.3	COMNAP IAATO IALA	Submit report and recommendations - Annual A Conduct a risk assessment for the Antarctic region and develop a work programme to improve Antarctic charting - 2018 Through IHO Secretariat to submit to ATCM the risk assessment conducted by HCA for the Antarctic Region together with a proposed HCA work programme to improve Antarctic charting, for consideration, endorsement and support from ATCM - 2019	HCA Chair Observers Secretariat	1 meeting annually Travel cost for SG or Dir +1 AD		Inability of Members and others to participate in meetings

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.2.3	Contribute to improving the framework of IHO response to marine disasters	3.3		Improve the relevant guidelines for disaster risk reduction. Continuous	RHC Chairs Secretariat			
3.2.4	Maintain and enhance the underlying database and IHO Publication C-55 – <i>Status of Hydrographic Surveying and Nautical Charting Worldwide</i>	4.4		Develop a new framework for the input, presentation and assessment of the survey and nautical cartography status in C-55	Secretariat	20K€ annually		

Element 3.3 Capacity Building

Objective: Assess the hydrographic surveying, nautical charting and nautical information status of nations and regions where hydrography is developing.

Provide guidelines for the development of local hydrographic capabilities taking into account the regional context and possibilities of support for shared capabilities.

Identify regional requirements and study the possibilities for capacity building assistance and training from the CB Fund and other sources.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.1	Organize, prepare and report annual meetings of the Capacity Building Sub-Committee (CBSC)	2.3 2.4 3.3 3.4 4.4	IMO IALA	Monitor and approve CB Work Programme (CBWP) Annual	CBSC Chair CB Coordinators Secretariat	Travel cost for 1 Dir + 1 AD Travel cost and per diem for pre-meeting briefing of Chair		
3.3.2	Manage the IHO Capacity Building Fund	4.4			CBSC Chair Secretariat			
3.3.3	Develop and maintain a Capacity Building Management System	4.4		Support the implementation of CBWP Continuous	CBSC Chair Secretariat			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.4	Review and maintain the IHO Capacity Building Strategy	4.4		Up to date CB Strategy Annually	CBSC Chair Secretariat			
3.3.5	Develop, monitor and update the Capacity Building Work Programme (CBWP) including: Reviewing and updating CB procedures Monitoring and assessing the progress and success of CB activities and initiatives	4.4		Develop and propose an annual CBWP to be included in the IHO WP Annually. Considered in conjunction with task 3.3.1	CBSC Chair Secretariat			
3.3.6	Organize, prepare and report on meetings with other organizations, funding agencies, private sector and academia including: the Joint IHO/IMO/WMO/IOC/IAEA/IALA/FIG Capacity Building Coordination meeting	4.3 4.4	World Bank UNDP UNEP	Investigate the new opportunities for CB activities Increase the CB Fund Annual	Secretariat	2 meetings annually Travel cost for 1 Dir or 1 AD		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.7	Organize, prepare and report on a Capacity Building Stakeholders' Forum	4.4	IMO IALA IOC WMO FIG	Obtain lessons learned from CB training activities Review the future of the IHO CB Work Programme and CB Strategy 2019	Secretariat	1 meeting 2019 No significant cost expected		
3.3.8	Maintain IHO publication M-2 - <i>National Maritime Policies and Hydrographic Services</i>	3.1 3.2		Continuous	Secretariat			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.9	Plan, administer and implement Capacity Building activities, including: Technical and advisory visits, Technical Workshops, Seminars, Short and long courses On the Job Training (ashore / on board)	2.3 2.4 3.3 3.4 4.4		Assess the status of hydrography, cartography and aids to navigation in developing States Provide the basic technical knowledge and to jointly explore initiatives to achieve a minimum level of response to national, regional and international obligations	CBSC Chair RHC Chairs Secretariat	In accordance with annual CBWP Funded by the CB Fund.		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.3.10	Investigate and Develop Regional Hydrographic /Maritime Projects		IMO IALA IOC UN Agencies Funding Institutions	Ensure awareness of multilateral or bilateral projects with hydrographic and/or cartographic components, and to provide advice to governments, project managers and funding agencies Develop and support the Outline/Scope Studies on Regional Projects Continuous	CBSC Chair RHC Chairs Secretariat			

Element 3.4 Coordination of Global Surveying and Charting Coverage

Objective: Facilitate the achievement of a world-wide quality nautical charting coverage to suit the needs of the mariner in support of safe and efficient navigation through the development of specifications and standards for the production, distribution and updating of cartographic products and supporting publications.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.4.1	Organize, prepare and report annual meetings of the WEND Working Group	2.1 2.2 2.6	CIRM CNITA RENC management	Foster the implementation of the WEND principles, monitor progress and report to IRCC Annually	WEND WG Chair Secretariat	1 meeting annually. Travel cost for 1 Dir+AD or 1 AD		
3.4.2	Maintain liaison with RENCs	2.1 2.2 2.6	RENC management RENC MS	Facilitate the promotion of RENC co-operation for the benefit of ENC end-users Annual	WEND WG Chair Secretariat	2 meetings annually. Travel cost for 1 Dir or 1 AD		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.4.3	Maintain and coordinate ENC and INT schemes, including coverage, consistency, quality and availability	2.1		<p>Develop ENC schemes in the regions and coordinate the production and maintenance of ENC</p> <p>Maintain INT Chart schemes and coordinate the production of INT Chart in the regions, in line with ENC production</p> <p>Continuous</p>	RHC Chairs Secretariat			<p>Lack of appropriate surveys or re-surveys in areas where there is no satisfactory coverage.</p> <p>Overlapping data in the same area.</p>

Element 3.5 Maritime Safety Information

Objective: Facilitate the efficient provision of Maritime safety Information (MSI) to mariners through coordination and the establishment of relevant standards between agencies.

Improve the coordination of NAVAREAs in liaison with the RHCs and relevant international organizations.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.5.1	Organize, prepare and report annual meetings of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC)	1.2 2.1 4.3	IMO IALA IMSO	Monitor and guide the IHO/IMO World-Wide Navigational Warning Service including NAVAREA and coastal warnings Annual	WWNWS-SC Chair Secretariat	1 meeting annually Travel cost for 1 AD		
3.5.2	Conduct annual meetings of the WWNWS-SC Document Review Working Group	1.2 2.1	IMO IALA IMSO WMO	Maintain the IMO/WWNWS documents Annual	WWNWS-SC Chair Secretariat	1 meeting annually Per diem for 1 AD		

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.5.3	<p>Maintain and extend the following IHO standards, specifications and publications:</p> <ul style="list-style-type: none"> • relevant IHO Resolutions in M-3 - <i>Resolutions of the IHO</i>, • S-53 - <i>Joint IMO/IHO/WMO Manual on Maritime Safety Information</i> 	1.2 2.1 3.3	IMO IMSO WMO	<p>Provide update to WWNWS documentation.</p> <p>Continuous</p>	WWNWS-SC Chair Secretariat			
3.5.4	Liaise with IMO and WMO on the delivery of MSI within the GMDSS	1.2 2.1 3.3	IMO WMO IMSO IALA	<p>Ensure maintenance of service delivery.</p> <p>Continuous</p>	WWNWS-SC Chair Secretariat	1 meeting, 2 days per year within Europe (London/Genève/Monaco)		Lack of engagement of national MSI Coordinators with the relevant NAVAREA Coordinator

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.5.5	Participate and contribute to the IMO work items on the modernization of the GMDSS and the development of the e-navigation implementation plan	1.2 2.1 2.5	IMO WMO IMSO IALA	Monitor projects to ensure maintenance of service delivery at least at current levels, investigation areas for improvement Continuous	WWNWS-SC Chair Secretariat			
3.5.6	Improve the delivery and exploitation of MSI to global shipping by taking full advantage of technological developments	1.2 2.1 2.5	IMO WMO IMSO IALA	Progress development of S-124 PS to align with the development of e-navigation and GMDSS modernization (see element 2.5). Continuous	WWNWS-SC Chair Secretariat			

Element 3.6 Ocean Mapping Programme

Objective: Contribute to global ocean mapping programmes through the IHO/IOC General Bathymetric Chart of the Oceans (GEBCO) Project, the International Bathymetric Chart (IBC) Projects and other related international initiatives.

Improve the availability of shallow water bathymetry for purposes other than nautical charting.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.1	Organize, prepare and report annual meetings of the GEBCO Guiding Committee (GGC) and associated bodies including TSCOM, SCRUM, GEBCO Science Day and SCUFN	1.5 2.6 3.4	IOC	<p>Implementation of the GGC Work Programme</p> <p>Contribute to global ocean mapping programmes</p> <p>Improve the availability of shallow water bathymetry</p> <p>Implement the strategic goals for the next decade. Annual</p>	GGC Chair Secretariat	<p>4 meetings annually</p> <p>Travel cost for 1 Dir + 2 AD</p> <p>Travel cost for 1 AD (for SCUFN)</p>	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meetings	

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.2	Ensure effective operation of the IHO Data Centre for Digital Bathymetry (DCDB)	1.5 2.6		Enhance the DCDB for upload, ingest, discovery and download of bathymetric data and associated information, such as the gazetteer of undersea feature names Continuous	Director, DCDB CSBWG Chair GEBCO GC Secretariat	30k€ annually to support maintenance and development	Operation of the DCDB is funded primarily by US (NOAA)	
3.6.3	Encourage the contribution of bathymetric data to the IHO DCDB	1.5 2.2 2.6	Academia and Industry	GEBCO representatives participate in RHC meetings Continuous	GGC Chair RHC Chairs Secretariat			Lack of MS willingness to provide data
3.6.4	Develop general guidelines on the use and collection of Crowd Sourced Bathymetry (CSB)	2.6		New IHO publication on CSB 2018	CSBWG Chair Director, DCDB Secretariat	1 meeting annually. Travel cost for 1 AD	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meetings of the CSBWG	

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.5	Support cooperative bathymetric data gathering programmes, including; the Atlantic Ocean Research Alliance (AORA)	2.6		Contribute to global and regional ocean mapping programmes Annual	CSBWG Chair Secretariat	2 meetings annually 1 AD	Funded by EU	

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.6	Maintain IHO bathymetric publications, including: B-4 - <i>Information Concerning Recent Bathymetric Data</i> B-6 - <i>Standardization of Undersea Feature Names</i> B-8 - <i>Gazetteer of Geographical Names of Undersea Features</i> B-9 - <i>GEBCO Digital Atlas</i> B-10 - <i>The History of GEBCO</i> B-11 - <i>IHO-IOC GEBCO Cook Book</i> (request by GGC for B-7 - <i>GEBCO Guidelines</i> to be withdrawn is expected in 2017)	2.6	IOC	Maintain publications updated	GGC Chair Secretariat			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.7	Contribute to outreach and education about ocean mapping. Increase understanding of the importance of hydrography and interest in following ocean mapping as a career	1.5 2.6 3.4	IOC	Development of Roadmap for Outreach and Education Working Group. Development of Education Materials. Printing of GEBCO World Map in MS Continuous	GGC Chair Secretariat		GEBCO Fund - 8,500 Euros	
3.6.8	Maintain GEBCO Web site	1.5 2.6 3.4	BODC	Content of GEBCO web site continually updated with news items; information about meetings and events and information about and links to new products Continuous	GGC Chair Secretariat		GEBCO Fund - 5000 Euros annually	

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.6.9	Develop short course and course material on compiling digital bathymetric models (DBMs) to be included in GEBCO from a heterogeneous bathymetric source database	1.5 2.6 3.4		Course curriculum and schedule for first course occasion. 2018	GGC Chair Secretariat			GEBCO Fund
3.6.10	Update and enhance the GEBCO Gazetteer (B-8) for internet access	1.5		Continuing enhancement and maintenance to incorporate new names from each SCUFN meeting Annual	GGC Chair Director, DCDB Secretariat		Contract support funded by GEBCO Fund - 15,000 Euros	

Element 3.7 Marine Spatial Data Infrastructures

Objective: Monitor developments related to the hydrographic component of Spatial Data Infrastructures, to develop and maintain the relevant IHO publications, and to provide technical advice as appropriate.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.7.1	Organize, prepare and report annual meetings of the Marine Spatial Data Infrastructures Working Group (MSDIWG)	2.5	OGC SPC	Continuous	MSDIWG Chair Secretariat	1 meeting annually. Travel cost for 1 AD	Travel cost, per diem. and working hours for MS and other representatives to prepare for and attend the meeting	
3.7.2	Maintain the relevant IHO standards, specifications and publications on MSDI, including C-17	2.5		Revised version of IHO publication C-17 2018	MSDIWG Chair Secretariat			
3.7.3	Develop training syllabi for MSDI and associated learning subjects	2,5		Course materiel for standardised MSDI training course 2018	MSDIWG Chair Secretariat			

Element 3.8 International Standards for Hydrographic Surveyors and Nautical Cartographers
Objective: Establish minimum standards of competence for hydrographic surveyors and nautical cartographers.

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.8.1	Organize, prepare and report annual meetings of the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)	1.1 1.4	FIG ICA	Recognition of new submissions Continuous	IBSC Chair Secretariat	1 meeting annually. Travel cost for 1 AD	Travel cost, per diem. and working hours for Members and other representatives to prepare for and attend the meeting	Availability of Board members to undertake an increasing intersessional workload Capacity of Secretariat to provide full support to the Board
3.8.2	Fulfil the functions of the IBSC	1.4	FIG ICA	Continuous	IBSC Chair Secretariat			Availability of Board members to undertake an increasing intersessional workload Capacity of Secretariat to provide full support to the Board

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.8.3	Manage the IBSC Fund	4.4	FIG ICA	Management of the IBSC Fund effectively and report to the IHO Secretariat Continuous	IBSC Chair Secretariat			

Task	Description	SD	Notable stakeholder(s) outside the IHO	Notable deliverables / milestones and timing	Lead authority / Participants	Notable specific resources from the IHO budget	Other resources	Significant risk to delivery
3.8.4	<p>Review the IBSC standards and maintain IBSC Publications, including:</p> <p><i>C-6 - Reference Texts for Training in Hydrography</i></p> <p><i>C-47 - Training Courses in Hydrography and Nautical Cartography</i></p> <p><i>S-5A and B - Standards of Competence for Hydrographic Surveyors</i></p> <p><i>S-8A and B - Standards of Competence for Nautical Cartographers</i></p>	1.4	FIG ICA	<p>Monitor, control and update of the IBSC Standards in S-5 and S-8</p> <p>Provide guidance to training institutions</p> <p>Annually</p>	IBSC Chair Secretariat	<p>Support to IBSC on review and update of Standards of Competence</p> <p>1 meeting</p> <p>20k€ over 3 years</p>		<p>Availability of Board members to undertake an increasing intersessional workload</p> <p>Capacity of Secretariat to provide full support to the Board</p>

ANNEX A

Strategic Risk analysis – January 2017

1. INTRODUCTION

This assessment follows the risk analysis framework described in the IHO Strategic Plan adopted by the IH Conference in 2009. It is based on a limited update review conducted by the Secretariat of the analysis provided in Annex A to the Strategic Plan. The HSSC provided input that confirmed the relevant risk assessment scores used in the 2009 risk analysis.

2. RISK MANAGEMENT PROCESS

2.1 Context

The IHO's risk environment is determined by considering the trends and developments identified as relevant to the IHO's strategic objectives.

The Strategic Assumptions described in Chapter 3 of the Strategic Plan have been identified as "strengths" (S), "weaknesses" (W), "opportunities" (O), or "threats" (T).

These Strategic Assumptions introduce possible risks to the achievement of the associated Strategic Directions set out in Chapter 4 that are intended to fulfil the IHO's objectives and ultimately its mission. They have been used as the logical starting point for risk identification.

2.2 Risk Identification

Possible risks have been identified for each individual SD. These risks have been categorized as either (1) *internal*, - originating from within the IHO community, or (2) *external*. The relevant Strategic Assumptions are indicated.

SD1 Strengthen the role and effectiveness of the IHO

Internal Risks

Description	Strategic Assumptions
lack of means (capacity/competence/budget)	1.2, 2.3
lack of consensus "how"	5.2, 5.3
deficiencies in existing standards	4.1

External Risks

Description	Strategic Assumptions
technological developments too fast to cope	4.1
national developments (political/legal) hamper cooperation	5.2

SD2 Facilitate global coverage and use of official hydrographic data, products and services,

Internal Risks

Description	Strategic Assumptions
Member State (MS) not able to comply	2.3, 3.3
MS not aware of the level of importance to comply	1.2
lack of consensus "how"	5.2, 5.3, 3.1
deficiencies in existing standards	4.1

External Risks

Description	Strategic Assumptions
lack of means (capacity/competence/budget)	3.3
technological developments too fast to cope	4.1
national developments (political/legal) hamper cooperation	5.2

SD3 Raise global awareness of the importance of hydrography*Internal Risk*

Description	Strategic Assumptions
lack of means (capacity/competence/budget)	1.2, 2.3

External Risk

Description	Strategic Assumptions
lack of knowledge/competence/interest	2.3

SD4 Assist Member States to fulfil their roles*Internal Risk*

Description	Strategic Assumptions
lack of means (capacity/competence/budget)	1.2, 2.3

External risk

Description	Strategic Assumptions
national developments (political/legal) hamper cooperation	5.2

2.3 Risk Assessment

The risks identified above can be scored in relation to their potential severity of impact and their probability of occurrence according to the formula for risk quantification:

Rate of occurrence (or probability) multiplied by the numerical indicator of the impact of the event equals risk.

Based on the five-category approach described in the IHO Risk management framework set out in Annex A to the Strategic Plan, where:

Probability of occurrence within the time frame of the work programme:

- 5 – extreme
- 4 – high
- 3 – medium
- 2 – low
- 1 – negligible

Impact of the event on the IHO:

- 5 – extreme – threatens survival of the IHO
- 4 – high - threatens credibility of the IHO
- 3 – moderate –threatens present structure of the IHO
- 2 – low – shift of focus/means
- 1 – negligible – solved within existing process/structure of the IHO
- 0 – absent – nil impact

The risks identified above have been assessed as follows:

Internal Risks	Probability (1 to 5)	Impact (1 to 5)	Resultant risk score (P x I)
lack of means (capacity/competence/budget)	4	4	16
lack of consensus "how"	3	4	12
Member State (MS) not willing/not able to comply	4	5	20
MS not aware of the level of importance to comply	3	4	12
deficiencies in existing standards	4	4	16

External Risks	Probability (1 to 5)	Impact (1 to 5)	Resultant risk score (P x I)
technological developments too fast to cope	3	4	12
national developments hamper cooperation	3	2	6
lack of means (capacity/competence/budget)	4	4	16
lack of knowledge/competence/interest	4	3	12

Using the aggregate risk score for all the risks associated with each SD provides the following risk priority for the SD's:

Ranking	SD	Description	Sum of risk scores
1	SD2	Facilitate global coverage and use of official hydrographic data, products and services	94
2	SD1	Strengthen the role and effectiveness of the IHO	62
3	SD3	Raise global awareness of the importance of hydrography	28
4	SD4	Assist Member States to fulfil their roles	22

From this assessment it is clear that there are significant risks associated with achieving SD2, with the other SD's attracting progressively less risk.

2.4 Risk Treatment

As *internal* risks are within the direct control of the IHO it makes sense to initially identify the three most relevant **risks** at a strategic level, i.e. those which threaten the accomplishment of SD's and ultimately the mission, and decide on an effective treatment.

(1) SD2:	Member State (MS) not able to comply (2.3, 3.3)	4	5	20
	lack of consensus "how" (5.2, 5.3, 3.1)	3	4	12
(2) SD1&4	lack of means (capacity/competence/budget) (1.2, 2.3)	4	4	16

When a MS is not able to meet **SD2**, the IHO has mechanisms in place (such as, capacity building programmes through RHCs in the Work Programme, or support by individual HOs through bilateral arrangement) to support the affected HO, and so reduce the risk. At the same time, resolution of the situation may also be linked to both **SD1&4**. If there is a lack of means (capacity, competence, funding) to implement the existing mechanisms to support the involved HO then it is unlikely that **SD2** can be achieved effectively.

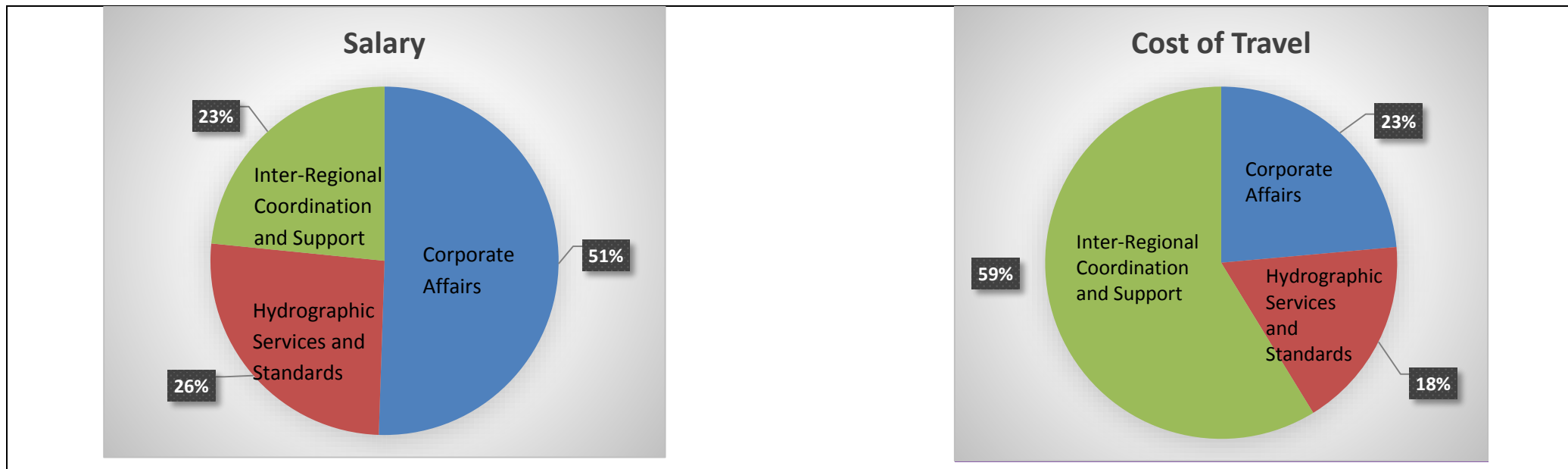
To mitigate the risk of MS not being able to fulfil **SD2**; the IHO (Secretary General in conjunction with IRCC, CBSC and the RHC Chairs) should identify:

- the HOs most affected (lack of capacity; competence)
- a realistic estimate of the remedial action required (identifying shortcomings), and
- how a supporting HO or the CB Programme can assist.

An escalation mechanism should be considered, when appropriate; such as an affected MS being approached via the IMO or directly through diplomatic channels to identify its shortcomings and highlight its responsibilities and the national benefits and value of seeking improvements to the situation.

ANNEX B

Financial resources allocated to each Programme



IHO STRATEGIC PLAN 2017 (as approved)

1. Preamble
2. Vision / Mission / Object
3. Strategic assumptions
4. Strategic directions
5. Ways and means
 - 5.1. Planning and review cycles
 - 5.2. Risk analysis and mitigation
 - 5.3. Work Programme
6. Progress monitoring

Annex A Risk management framework

Annex B Performance Indicators

1. PREAMBLE

Hydrography is the branch of applied science which deals with the measurement and description of the physical features of oceans, seas, coastal areas, lakes and rivers, as well as with the prediction of their change over time, for the primary purpose of safety of navigation and in support of all other marine activities, including economic development, security and defence, scientific research, and environmental protection.

The International Hydrographic Organization (IHO) is an inter-governmental consultative and technical organization, governed by an international Convention. Its members are the Governments Parties to this Convention. Established in 1921, the IHO is a competent international organization, as referred to in the United Nations Convention on the Law of the Sea. It primarily supports the safety of navigation and the protection of the marine environment, and coordinates on a worldwide basis the setting of standards for the production of hydrographic data and the provision of hydrographic services in accordance with the SOLAS Convention. It also facilitates capacity building of national hydrographic services. It provides a forum at international level for the improvement of hydrographic services through the discussion and resolution of hydrographic issues and it assists member governments to deliver these services in the most cost effective way through their national hydrographic offices. The IHO Convention is subject to a protocol of amendments which is under ratification.

The work of the Organization is guided by two core documents:

- a strategic plan;
- a multi-annual work programme.

2. VISION, MISSION AND OBJECT

*The **vision** of the IHO is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States and relevant intergovernmental and other international organizations to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment.*

*The **mission** of the IHO is to create a global environment in which States provide adequate, standardized and timely hydrographic data, products and services and ensure their widest possible use.*

The **object** of the IHO is set out in Article II of the Convention on the IHO as amended. *It shall be the object of the Organization:*

- a. To promote the use of hydrography for the safety of navigation and all other marine purposes and to raise global awareness of the importance of hydrography;
- b. To improve global coverage, availability and quality of hydrographic data, information, products and services and to facilitate access to such data, information, products and services;
- c. To improve global hydrographic capability, capacity, training, science and techniques;
- d. To establish and enhance the development of international standards for hydrographic data, information, products, services and techniques and to achieve the greatest possible uniformity in the use of these standards;
- e. To give authoritative and timely guidance on all hydrographic matters to States and international organizations;
- f. To facilitate coordination of hydrographic activities among the Member States; and
- g. To enhance cooperation on hydrographic activities among States on a regional basis.

3. STRATEGIC ASSUMPTIONS

The strategic assumptions are identified as *strengths* (S), *weaknesses* (W) *opportunities* (O) or *threats* (T) for the implementation of IHO objectives.

1. Status of hydrographic services / Benefits and beneficiaries

- 1.1 An adequate data-centric hydrographic infrastructure is an essential geospatial foundation layer to support the move to an open data environment. (O)
- 1.2 There is globally still insufficient awareness (and therefore funding) about the level, value and importance of hydrographic services. (W)
- 1.3 Training standards and regulations must keep up with technological developments. (O/W)

2. Political and societal trends

- 2.1 Globalization will continue to increase the demands on maritime trade and coordinated support services. (O)
- 2.2 The development of the Blue Economy and environmental concerns, related in particular to climate change awareness will generate increasing demands and wider uses for hydrographic information beyond solely core navigational safety use. (O)
- 2.3 Human performance in all sections of the maritime industry (including shipping) is a major concern in terms of safety. (O/W)

3. Economic and market related trends

- 3.1 90% of the world trade is conducted through maritime routes and presently 800 major ports, a figure that is growing, and is a key dependency for the world economy. (O)
- 3.2 Maritime industry is an indispensable partner within the hydrographic community. (O)
- 3.3 Long term investment is required to provide and maintain an appropriate hydrographic infrastructure and the benefits are indirect. (W)
- 3.4 Multinational projects are a fundamental resource. (O)

4. **Technological trends**

- 4.1 Technological developments (digital era, ENC, high rate communication systems, sensor technology and integrated services and precise positioning systems) are a major driving force for changes and require interoperable data management and portrayal. (O)
- 4.2 Crowd-sourcing has high potential (O)

5. **Legal and regulatory trends**

- 5.1 The provision of hydrographic services by contracting governments will remain regulated at the international level by the SOLAS Convention. (S)
- 5.2 National and international policies are developing that encourage or require mandatory open data exchange/distribution/access for natural risk mitigation, protection of the environment and the competitive development of value added downstream services. (O/T)
- 5.3 There will be increased regulation with regard to security that will require earlier and more detailed information on vessel movements and will potentially increase control over vessels within national waters. (O)

4. **STRATEGIC DIRECTIONS**

Taking into account the strategic assumptions, the IHO will pursue the following strategic directions, in order to fulfil its mission and objectives:

1. **Strengthen the role and effectiveness of the IHO**

The IHO will continue its leading role as the competent international organization on all hydrographic matters by responding more efficiently and effectively to the needs of the maritime community, government, science and industry for hydrographic data, products and information through:

- 1.1 implementing proactive, efficient and dynamic procedures and mechanisms that respond effectively to emerging trends, developments and challenges;
- 1.2 closer and more effective cooperation with relevant intergovernmental and other international organizations, in order to respond to cross-agency issues and thereby promote coherence and efficiency;
- 1.3 engaging the various stakeholders, including non-governmental international organizations, government, industry, academia and others, in the technical work of its bodies, in order to ensure a more inclusive approach to decision-making and the optimum use of high fidelity data;
- 1.4 developing, improving, promulgating and promoting clear, uniform, global hydrographic standards to enhance safety of navigation at sea, protection of the marine environment, maritime security, port and coastal zone management and economic development;
- 1.5 promoting the role of hydrography in supporting relevant related ocean sciences.

2. **Facilitate global coverage and use of official hydrographic data, products and services**

The IHO will strive to achieve global coverage and availability of high quality official hydrographic data, information, products and services necessary for safety of navigation at sea and for non-navigational uses, e.g. by means of the developing spatial data infrastructure, through:

- 2.1 coordinating effectively Member State activities for the provision of coherent, consistent, standardized and well-coordinated hydrographic services, in accordance with regulation 9 of Chapter V of the SOLAS Convention;

- 2.2 enhancing and supporting cooperation on hydrographic activities among States on a regional basis under the aegis of the Regional Hydrographic Commissions;
- 2.3 expanding membership of the IHO;
- 2.4 encouraging and supporting the establishment of new Hydrographic Offices;
- 2.5 encouraging and supporting the development and promotion of integrated navigation systems and geospatial data infrastructures;
- 2.6 promoting the use of new technologies and the opportunities offered by globalization, international cooperation and crowd-sourcing.

3. **Raise global awareness of the importance of hydrography**

The IHO will champion the awareness at national, regional and global levels of the value, importance and benefits of hydrography and the provision of hydrographic services for all marine activities, through:

- 3.1 ensuring that the role and responsibilities of national Hydrographic Offices are clearly understood at all levels in the marine and public communities;
- 3.2 supporting and promoting the value of national Hydrographic Offices and hydrographic surveying programmes;
- 3.3 bringing the value and importance of hydrography on issues affecting safety of navigation at sea, protection of the marine environment, disaster preparedness and response, maritime security and economic development to the attention of relevant intergovernmental and other international organizations, funding agencies, national governments, maritime stakeholders and others;
- 3.4 preparing and promoting education and outreach programmes which involve fostering a well-informed citizenry and creation of public awareness of the value and importance of hydrography and its role in daily life.

4. **Assist Member States to fulfil their roles**

The IHO will help and support its Member States in fulfilling their present roles and in meeting future demands and requirements as effectively and efficiently as possible, through;

- 4.1 acting as a focal point and forum for all hydrographic matters;
- 4.2 supporting national initiatives aimed at obtaining better hydrographic information and developing and enhancing hydrographic infrastructure;
- 4.3 encouraging bilateral and regional cooperation on hydrographic and related matters;
- 4.4 strengthening the IHO capacity-building programme in order to better support the needs of Member States, especially those developing their capabilities from maritime safety information through surveying to nautical charting and marine spatial data infrastructure.

5. **WAYS AND MEANS**

5.1 **Planning and review cycles**

The planning and review cycles for the Strategic Plan, the Work Programme and the Budget are set out in IHO Resolution 12/2002 as amended.

The inter-sessional monitoring and achievement of the Strategic Plan, the Work Programme and Budget is undertaken by the Council.

5.2 Risk analysis and mitigation

An analysis is conducted during the preparation of the Work Programme in order to:

- identify the significant risks associated with each Strategic Direction in the Strategic Plan, understand how and when they arise, identify the stakeholders, and
- estimate their likelihood of occurrence and impact on the IHO, its Member States and other stakeholders if any (for example: IMO), and
- identify the range of mitigating actions required, responsible owners/stakeholders, priority/dates assigned to them with any resource requirement that will be needed.

The Work Programme is designed to implement the Strategic Directions while mitigating these risks.

A risk management framework is set out in Annex A.

5.3 Work Programme

The Work Programme covers the period starting on 1 January of the year following the ordinary session of the Assembly and ending on 31 December of the year of the next ordinary session.

The Work Programme is divided into the following three programmes:

- *Corporate Affairs* under the responsibility of the Secretary General,
- *Hydrographic Services and Standards* under the responsibility of the relevant Committee (HSSC),
- *Inter Regional Coordination and Support* under the responsibility of the Inter Regional Coordination Committee (IRCC).

The HSSC programme includes the activities to be conducted by its subordinate bodies as well as by inter-organizational bodies that report to the HSSC.

The IRCC programme includes the activities to be conducted by its subordinate bodies as well as by the Regional Hydrographic Commissions and by inter-organizational bodies that report to the IRCC.

Activities of individual Member States which are relevant to the implementation of the Strategic Directions are listed in the appropriate programme.

Each item of the programmes identifies:

- the strategic direction to which it refers,
- the principal stakeholders outside the IHO, if any, that may be affected,
- the key deliverables and associated milestones, as appropriate ,
- the lead authority and participants, if any,
- the estimated resources from the IHO budget when significant, and
- other resources when significant,
- (h)the risk to delivery when significant.

The Work Programme is reviewed annually by the Council in liaison with the Chairs of the HSSC and the IRCC.

6. PROGRESS MONITORING

6.1 *Monitoring Mechanism*

The mechanism to monitor the implementation of the Strategic Plan and identify any needs for revision includes the following elements:

- the definition of Performance Indicators (PIs) against which progress in implementing the strategic directions is periodically assessed;
- the review of progress with Strategic Directions through the Performance Indicators;
- the review of the adequacy of the Strategic Directions in relation with the progress made and with the Strategic Assumptions on which they are based;
- the review of the ongoing validity of the Strategic Assumptions themselves since they were first set, in relation to the objectives of the Organization and taking into account any subsequent changes in
 - status of hydrographic services / benefits and beneficiaries,
 - political and societal trends,
 - economic and market related trends,
 - technological trends,
 - legal and regulatory trends.

Taking into account the object of the Organization and the Strategic Directions, the Work Programme will be measured by indicators which should show critical items / risk factors, picture of productivity (considering, among others, budget factor) and the level of achievement of the Strategic Objectives. They should also indicate future trends: forecast upturn / downturn.

The periodicity of measure should be annual, in accordance with the Work Programme review cycle.

At the end of the period of the Work Programme (every three years) these indicators provide a data source for the review of the Strategic Plan and / or the Work Programme.

6.2 *Implementation of Performance Indicators*

The implementation of Performance Indicators is based on a two level approach. *Strategic* level PIs are established by the Assembly as a *top down* process, and *working* level PIs are established by the HSCC and IRCC and their subordinate bodies as a *bottom up* process:

- Strategic Level PIs (SPIs): a small number of PIs associated with the objectives of the IHO (1 or 2 SPIs per objective), to be agreed by the Assembly and managed by the Secretary General and the Council; (see Annex B for current list)
- Working Level PIs (WPIs): PIs associated with the Strategic Directions to be agreed and managed by the HSSC and IRCC and their subsidiary organs.

In this perspective cross-references between the objectives, the Strategic Directions and the PIs are arranged in the following way:

Objectives => Strategic PIs => Strategic Directions => responsible organs => working level PIs

6.3 *Assessment and Review*

The assessment of the working level PIs and the review of progress in relation to the Strategic Directions are considered in two phases: an initial review by the leading organ and an overall review by the Secretary General and the Council.

Together with an assessment of the Strategic PIs, the results of the working level PIs are submitted for consideration by the Assembly. The submission should include a qualitative and, where practicable, a quantitative assessment of progress based on the value of the PIs.

It should also include recommendations on management actions to be considered where trends indicate either a lack of progress or a change to an underlying assumption/direction is required. In this way the aim can be maintained and evidence of progress monitored/presented.

The review of the strategic assumptions is prepared by the Secretary General and the Council for consideration by the Assembly. The submission should include an analysis of the relevance of the strategic assumptions and recommendations on the changes to be considered.

RISK MANAGEMENT FRAMEWORK

1. RISK MANAGEMENT POLICY

1.1 Policy aim and objective

- to stimulate common risk management awareness within the IHO,
- to adopt a uniform risk management framework and embed it in the IHO's strategic planning processes,
- to proactively identify and analyse the IHO's highest risk exposures and define the options to properly treat them,
- to select and implement the appropriate options which minimise the IHO's exposure to risk in the most cost (both financial, and non-financial) effective way.

1.2 General Methodology

The IHO requires that identified risks are managed in such a way that they are not unduly threatening the strategic objectives and consequently the successful achievement of the IHO's Mission. Risk management activities are therefore addressed at two levels:

- *strategic* level by the Secretary General and processed *top down*,
- *working* level by subordinate bodies under HSCC/IRCC and processed *bottom up*.

Both levels are merged through the Work Programme which is reviewed annually under the supervision of the Secretary General and the Council.

1.3 Roles and Responsibilities

The Secretary General is ultimately responsible to Member States for the IHO's risk management. The Secretary-General has the responsibility for ensuring that the risk management framework is effectively implemented within the IHO and that its principles are communicated at all levels. The Secretary-General will also provide the necessary profile to advance a risk management culture in IHO, including participation in its monitoring and reporting.

The Secretary-General and the Council are responsible for the routine oversight of the IHO's risk management programme, its implementation, agreeing risk tolerances and treatment and their regular monitoring.

2. RISK MANAGEMENT PROCESS

2.1 Context

The IHO's risk environment is determined by considering the trends and developments identified as relevant to the IHO's strategic objectives.

The Strategic Assumptions described in Chapter 3 of the Strategic Plan have been identified as "strengths" (S), "weaknesses" (W), "opportunities" (O), or "threats" (T).

The Strategic Assumptions introduce possible risks to the achievement of the associated Strategic Directions set out in Chapter 4 that are intended to fulfil the IHO's objectives and ultimately its mission. They are therefore a logical starting point for risk identification.

2.2 Risk Identification

The Strategic Directions (SD) are not necessarily independent of each other. Possible risks are firstly identified for each individual SD. During the risk assessment phase risks common to more than one SD may be identified. Risks will be categorized as either (1) *internal*, i.e. originating from within the IHO community, or (2) *external*.

2.3 Risk Assessment

Identified risks need to be assessed in relation to their potential severity of impact and their probability of occurrence. The risk assessment should produce such information for the management of the Organization that the primary risks are easy to understand and that the risk management decisions may be prioritized. The accepted formula for risk quantification is:

Rate of occurrence (or probability) multiplied by the numerical indicator of the impact of the event equals risk

A five-category approach is considered adequate:

Probability of occurrence within the time frame of the work programme:

- 5 – extreme
- 4 – high
- 3 – medium
- 2 – low
- 1 – negligible

Impact of the event on the IHO:

- 5 – extreme – threatens survival of the IHO
- 4 – high - threatens credibility of the IHO
- 3 – moderate –threatens present structure of the IHO
- 2 – low – shift of focus/means
- 1 – negligible – solved within existing process/structure of the IHO
- 0 – absent – nil impact

Based on this approach, the identified risks can be scored for probability and impact and a risk score calculated for each risk.

The risk to the relevant SD's may then be prioritised as significant or otherwise, based on the risk score.

2.4 Risk Treatment

As *internal* risks are within the direct control of the IHO it makes sense to initially identify the most relevant and significant risks at a strategic level; in other words, those which threaten the accomplishment of Strategic Directions and ultimately the Mission of the IHO, and decide on an effective treatment.

External risks should also be addressed if they are deemed significant in terms of threatening the accomplishment of the Strategic Directions and ultimately the Mission of the IHO.

2.5 Implementation of the risk management plan

An agreed treatment should be executed to reduce the identified significant risks. It may be decided to select more risks to SDs and work out their “top down” *risk treatment*.

2.6 Review and evaluation of the plan

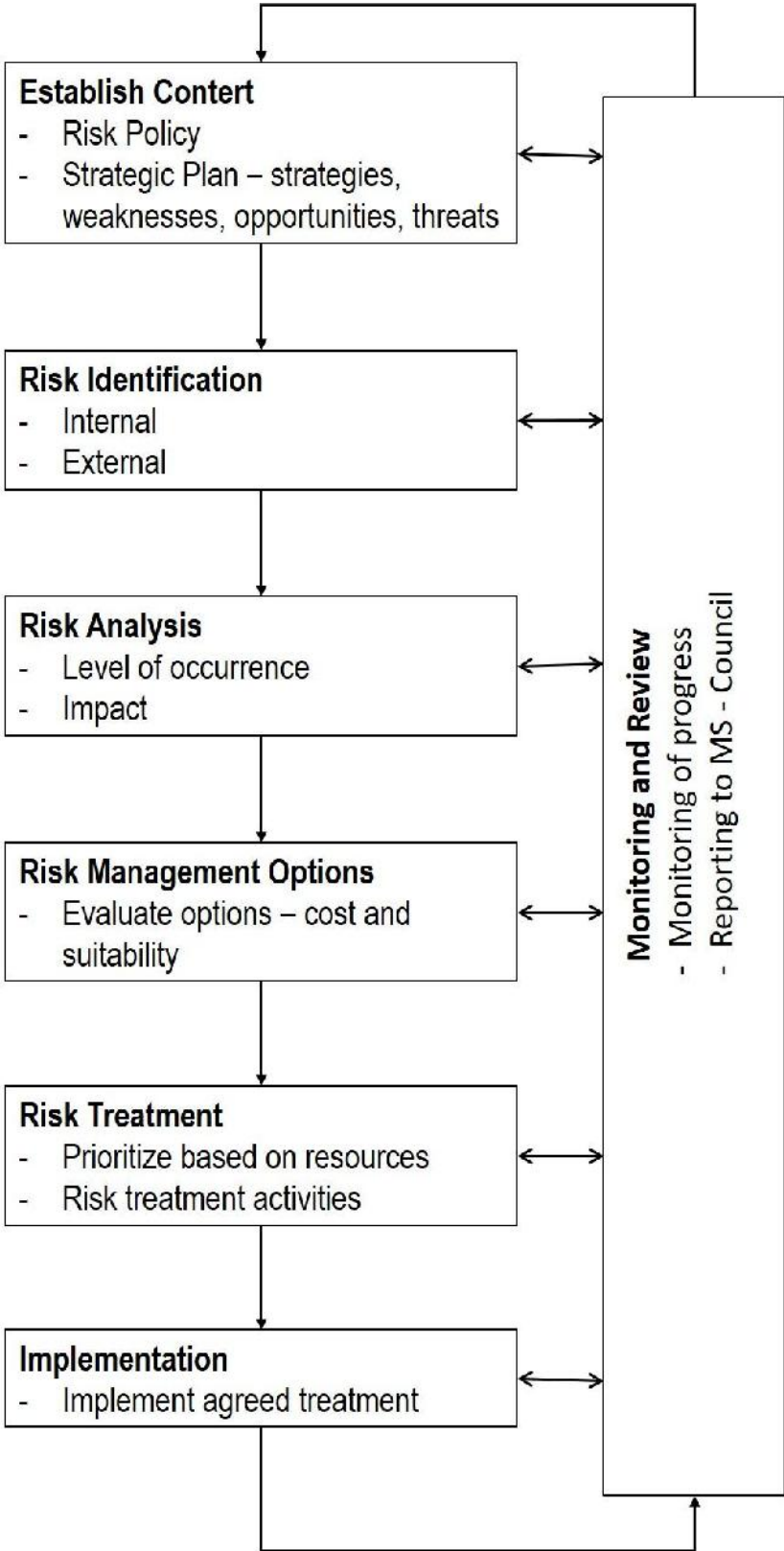
Risk management is dynamic. It is therefore important to monitor, review and evaluate the risk management plan. To monitor the progress on the SDs, the Secretary General and the Council and IHO subordinate bodies will use the agreed performance indicators (PIs).

In case of deficiencies caused by identified risks, action should be taken in accordance with the agreed treatment/plan.

The risk management plan should be reviewed, evaluated and updated annually by the Secretary General and the Council.

The attached diagram summarizes the risk management process.

SCHEMATIC REPRESENTATION OF THE RISK MANAGEMENT PROCESS



STRATEGIC PERFORMANCE INDICATORS

Objective	Strategic PIs	Reporting Period	Related Strategic Directions
a. To promote the use of hydrography for the safety of navigation and all other marine purposes and to raise global awareness of the importance of hydrography.	SPI 1 Number and percentage of Coastal States providing ENC coverage directly or through an agreement with a third party. (Previous year figures in brackets)	Yearly	1.5; 2.5; 3.1; 3.2; 3.3; and 3.4
b. To improve global coverage, availability and quality of hydrographic data, information, products and services and to facilitate access to such data, information, products and services.	SPI 2 Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008. SPI 3 Percentage of Coastal States which provide hydrographic services, directly or through an agreement with a third party, categorized by CB phases, as defined by the IHO Capacity Building Strategy.	Quarterly Yearly	2.1; and 4.2
c. To improve global hydrographic capability, capacity, training, science and techniques.	SPI 4 Percentage of “acceptable” CB requests which are planned. (= <i>Percentage of submitted CB requests that were approved</i>) SPI 5 Percentage of planned CB requests which are subsequently delivered	Yearly	1.3; 2.3; 2.4; 3.4; and 4.4

Objective	Strategic PIs	Reporting Period	Related Strategic Directions
d. To establish and enhance the development of international standards for hydrographic data, information, products, services and techniques and to achieve the greatest possible uniformity in the use of these standards.	SPI 6 Number of standards issued (including new editions), per category: - hydrographic standards to enhance safety of navigation at sea, - protection of the marine environment, - maritime security, - economic development.	Yearly	1.3; and 1.4
e. To give authoritative and timely guidance on all hydrographic matters to States and international organizations.	SPI 7 Number of potential new IHO MS (indicated by the start of the application process) relative to the number of “non-IHO” IMO MS.	Quarterly	1.1; 1.2; 2.6; and 4.1
f. To facilitate coordination of hydrographic activities among the Member States.	SPI 8 Increase in participation / membership in RHCs.	Yearly	2.1; and 4.3
g. To enhance cooperation on hydrographic activities among States on a regional basis.	SPI 9 Percentage of available / agreed ENC [production] schemes.	Yearly	2.2; 2.3; and 4.3

ENDORSEMENT OF THE SELECTION PROCESS FOR THE COUNCIL

Submitted by the Secretary General

Background

1. In accordance with the provision of the new basic documents of the IHO that entered into force on 8 November 2016, a Council must be established by the first session of the IHO Assembly. The members of the Council shall hold office until the end of the 2nd ordinary session of the Assembly.
2. In accordance with Article VI (a) of the IHO Convention as amended, 30 Member States shall take seats in the Council as long as the number of Member States is not greater than 120.
3. The procedure for determining the composition of the Council are set out in Article 16 of the General Regulations. This article requires in particular that:
 - (d) *Before the end of the ordinary session the Secretary-General shall submit the full list of Council members to the Assembly.*
 - (e) *The Assembly shall review and endorse the selection process to ensure that these principles have been correctly followed.*

Selection process

4. A first set of 20 seats shall be allocated on a regional basis. In accordance with the principles of the guidance agreed through Decision 6 of the 5th Extraordinary International Hydrographic Conference, IHO Circular Letter (CL) 46/2016 dated 21 September invited Member States which were full members of more than one Regional Hydrographic Commission (RHC) to indicate in which RHC they wished to be counted for the purpose of enabling the Secretary-General to determine the number of seats on the Council allocated to each RHC. The outcome was reported in IHO CL 63/2016 dated 5 December 2016 which invited the Chairs of RHCs to provide the identity of the State(s) that will occupy the seat(s) allocated to their RHC.
5. In accordance with sub-paragraph (b) (vi) of Article 16 of the General Regulations, the Secretary-General ensured that the outcome was not affected by any new States becoming members of the IHO up to 3 months before the beginning of the 1st session of the Assembly, that is before 23 January 2017.
6. Table 1 provides the resultant distribution of the 20 seats on the Council allocated to the RHCs, those States that were eligible to be selected to occupy those seats and the identity of the State(s) selected to occupy the seat(s) allocated to each RHC.
7. The remaining 10 seats on the IHO Council are allocated to those Member States that have not already been selected to occupy a seat allocated on a regional basis. These 10 seats are allocated on the basis of hydrographic interest, which under the current Regulation is defined as national flag tonnage. In accordance with Article 6 (a) of the Financial Regulation, the Secretary-General referred to the table of tonnages that had entered into force on 1 January 2017 (see document A.1/E/02) and approached each Member State on the list which has not already been selected to occupy a seat by the RHCs, in turn and in order of highest tonnage, inviting the State to declare if it wished to take up one of the 10 seats. The process continued until all 10 seats were filled.

Table 1
Number of seats on the IHO Council distributed on a regional basis, the Member States eligible to occupy those seats and the States selected by the RHC to occupy the seats

Regional Hydrographic Commission (RHC)	Member States (MS) eligible to occupy one of the 20 Council seat(s) allocated to the RHCs (MS that are Members of more than one RHC shown in bold) (MS whose rights were suspended at the time of the allocation shown in <i>strikethrough</i>)	Number of MS to be counted in the calculation of the number of seats on a proportional basis	Number of Council seats allocated to the RHC	MS selected by the RHC to occupy the Council seat(s) allocated to the RHC
MBSHC	Algeria, Croatia, Cyprus, France , Georgia, Greece, Italy, Monaco, Montenegro, Romania, Serbia , Slovenia, Syria, Tunisia, Turkey, Ukraine	15	3	France Italy Turkey
EAHC	Brunei Darussalam, China, Democratic People's Republic of Korea, Indonesia, Japan, Korea (Rep of), Malaysia, Philippines, Singapore, Thailand , Viet Nam	11	2	Indonesia Malaysia
MACHC	Brazil , Dominican Republic , Cuba, Guatemala, Jamaica, Mexico, Netherlands , Suriname, Trinidad and Tobago, UK , Venezuela	10	2	Brazil Netherlands
RSAHC	Bahrain, Iran (Islamic Rep. of), Kuwait, Oman, Pakistan , Qatar, Saudi Arabia , United Arab Emirates	8	2	Iran (Islamic Rep. of) Pakistan
EAtHC	Cameroon , Democratic Republic of the Congo , Morocco , Nigeria, Portugal, Spain	4	1	Spain
NIOHC	Bangladesh, Egypt , India, Myanmar, Sri Lanka	5	1	India
SWPHC	Australia, Fiji, New Zealand, Papua New Guinea, Tonga	5	1	Australia
NSHC	Belgium, Denmark , Germany , Iceland , Ireland	5	1	Germany
BSHC	Estonia, Finland , Latvia, Poland	4	1	Finland
SEPRHC	Chile, Colombia , Ecuador, Peru	4	1	Colombia
ARHC	Norway , Russian Federation , USA	3	1	Russian Federation
SAIHC	Mauritius, Mozambique, South Africa	3	1	South Africa
SWAtHC	Argentina, Uruguay	2	1	Uruguay
NHC	Sweden	1	1	Sweden
USCHC	Canada	1	1	Canada
Total		82	20	

8. Table 2 provides the resultant distribution of the 10 seats on the Council allocated on the basis of hydrographic interests (tonnage).

Table 2
Seats allocated on the basis of hydrographic interests (tonnage)

Table of tonnages (based on table in force since 1 January 2017)		Wish to take up a seat (YES/NO)
1	China	YES (letter 21 April)
	Malta	NO (letter 8 March)
2	Singapore	YES (email 9 March)
3	United Kingdom	YES (letter 1 March)
4	Greece	YES (letter 8 March)
5	Republic of Korea	YES (letter 3 March)
6	United States of America	YES (letter 6 March)
7	Cyprus	YES (letter 7 March)
8	Japan	YES (letter 3 March)
	Italy	(MBSHC)
9	Norway	YES (letter 7 March)
10	Denmark	YES (email 15 March)

9. Table 3 provides the resultant composition of the Council for the period 2017-2020 (until the end of the 2nd session of the Assembly), based on the procedure described above and the principles of the guidance agreed through Decision 6 of the 5th Extraordinary International Hydrographic Conference.

Table 3
Composition of the Council 2017-2020

No	Member State	Selected by:
1	Australia	SWPHC
2	Brazil	MACHC
3	Canada	USCHC
4	Colombia	SEPRHC
5	Finland	BSHC
6	France	MBSHC
7	Germany	NSHC
8	India	NIOHC
9	Indonesia	EAHC
10	Iran (Islamic Rep. of)	RSAHC
11	Italy	MBSHC
12	Malaysia	EAHC

No	Member State	Selected by:
13	Netherlands	MACHC
14	Pakistan	RSAHC
15	Russian Federation	ARHC
16	South Africa	SAIHC
17	Spain	EAtHC
18	Sweden	NHC
19	Turkey	MBSHC
20	Uruguay	SWAtHC
21	China	Hydrographic Interest (tonnage)
22	Singapore	Hydrographic Interest (tonnage)
23	United Kingdom	Hydrographic Interest (tonnage)
24	Greece	Hydrographic Interest (tonnage)
25	Republic of Korea	Hydrographic Interest (tonnage)
26	United States of America	Hydrographic Interest (tonnage)
27	Cyprus	Hydrographic Interest (tonnage)
28	Japan	Hydrographic Interest (tonnage)
29	Norway	Hydrographic Interest (tonnage)
30	Denmark	Hydrographic Interest (tonnage)

Action required of the Assembly

10. The Assembly is invited to:
 - a. review and endorse the selection process for the Council, and
 - b. approve the composition of the Council set out in table 3 for the period 2017-2020 (until the 2nd session of the Assembly).

PROGRAMME 2
Hydrographic Services and Standards
2012 - 2016

REPORT ON PROGRAMME 2

HYDROGRAPHIC SERVICES AND STANDARDS

2012-2016

Introduction

1. The IHO Work Programme 2 “Hydrographic Services and Standards” seeks to develop, maintain and extend technical standards, specifications and guidelines to enable the provision of standardised products and services that meet the requirements of mariners and other users of hydrographic information. This Work Programme is under the principal responsibility of the Hydrographic Services and Standards Committee (HSSC).

Technical Programme Coordination

2. This element monitors technical developments and oversees the development of IHO technical standards, specifications and publications through the coordination and interaction of the relevant IHO working groups reporting to the HSSC.
3. At its 5th meeting in 2013, the Committee agreed the principles for re-structuring its working groups in order to reflect the changing focus from paper to digital data based products and services, ensure better use of limited resources, improve its efficiency and facilitate inputs from industry and other stakeholders. The new structure was further developed intersessionally and agreed at the 6th HSSC meeting. The new structure was comprised of four new working groups (WG) which replaced previously existing working groups: the S-100WG, ENC Standards Maintenance WG (ENCWG), Nautical Information Provision WG (NIPWG) and Tides, Water Level and Currents WG (TWCWG). The terms of reference of the new working groups and the arrangements for the transition from the previous to the new structure were agreed. The Committee agreed to maintain the Chart Standardization and Paper Chart WG (CSPCWG), renamed the Nautical Cartography WG (NCWG), the Data Protection Scheme WG (DPSWG) and the Data Quality WG (DQWG), subject to annual review and further consideration of their interactions with the new working groups. At its 8th meeting in 2016, the Committee decided to disband the DPSWG and to continue the development of the protection scheme of S-100 based-products as well as the monitoring of cyber security requirements through a Project Team under the S-100WG. The ENCWG was given the responsibility of maintaining the expertise required to support the IHO Secretariat as Scheme Administrator of the existing S-63 - *Data Protection Scheme*.
4. Following a proposal from the Inter-Regional Coordination Committee (IRCC) approved by HSSC-6, the governance of the Marine Spatial Data Infrastructure Working Group (MSDIWG) was transferred to the IRCC on 1 January 2015. The activities of the MSDIWG are reported under Programme 3.
5. Annex A details the structure, membership, meetings and agenda items of the Committee and its subordinate bodies during the period 2012-2016.
6. At its 4th meeting in 2012, the Committee agreed to implement five working level performance indicators:
 - Number of S-100 based product specifications approved;
 - Percentage of annual work programme achieved;
 - Total number of participants at meetings (Member States and Expert Contributors);
 - Number of technical revisions and clarifications approved;
 - Number of ENCs distributed annually under license (equivalent annual licences).

7. In order to ensure the continuity of the indicators, the participation in the MSDIWG meeting continued to be included in the subsequent assessment of the participation at meetings, although the governance of the MSDIWG was transferred to the IRCC on 1 January 2015.
8. Annex B provides the annual values for the period 2012-2016.
9. A more realistic estimate of the time and resources required to address the work items explains the progress in the percentage of annual work programme achieved (from less than 20% in 2012 and 2013 to more than 40% from 2014 to 2016). There remains, however, scope for further improvement.
10. It appears difficult to draw significant conclusions from the other indicators.
11. Most entities under the governance of the HSSC provided their biannual reports as requested by the IHB in accordance with Decision No 3 of the 5th Extraordinary International Hydrographic Conference (EIHC-5). The following entities did not provide their report:
 - end of 2014: TSMAD, SNPWG/NIPWG, TWLWG/TWCWG and HDWG;
 - mid-2015: ABLOS;
 - end of 2015: DQWG, TWCWG and ABLOS;
 - mid-2016: DQWG.
12. In 2015, the Member States agreed to amend the terms of reference of the HSSC to allow the chairs of the subordinate bodies to designate a representative to report to HSSC meetings. The Terms of Reference implementing the new structure of the IHO which entered into force on 8 November 2016 are provided in Annex C. Considering that the possible establishment of two coordinating Sub-Committees has not been required so far and noting the new structure of the working groups implemented in 2015, it is proposed to remove the provisions related to the coordinating Sub-Committees in article 2.8 of the Rules of Procedure, as shown in Annex C.

Difficulties and challenges yet to be addressed

13. The implementation of the work programme depends essentially on the voluntary contribution of experts from Member States and from industry.
14. The increasing and very important contribution being made by industry in their role as expert contributors, especially in the development of S-100 - *IHO Universal Hydrographic Data Model* and its related applications, and in the maintenance of many other IHO technical standards was acknowledged by EIHC-5 in 2014.
15. A number of working groups reported that the rate of active participation by Member States in meetings and intersessional work was a concern and was hampering progress, causing delays in drafting new or revised publications and affecting the quality of their content. Although funds were available in the Special Project Funds to outsource some tasks, the limited resources available to the affected working group chairs to specify and manage contracts impeded the use of contractor support.
16. The situation was particularly critical with regard to the development of S-100 and S-100 based product specifications, considering the risk to undermine the central role of S-100 in the establishment of the common maritime data structure in support of e-navigation. A number of tasks and activities related to the development of the S-100 framework progressed slower than expected due to insufficient expertise or a lack of human resources. Delays affected in particular the upgrade of the S-100 Registry and the development of the portrayal component. This in turn impacted the work on the development of product specifications. The establishment of a permanent Secretariat position of Technical Standards Support

Officer, which was effective from October 2016, addressed some of the gaps identified in the support for S-100 and its associated Registry.

17. The drafting of the new editions of S-58 - *ENC Validation Checks* and S-66 - *Facts about Electronic Charts and Carriage Requirements* was also delayed due to the lack of human resources. The implementation of the new set of IHO normative references for ECDIS revealed imperfections which had been overlooked due to the limited expertise available. Lack of expertise also hampered the progress of work items of the NCWG, the TWCWG and the HDWG. The secondment of a project officer by Peru, in March 2015, alleviated some of the difficulties encountered by the HDWG.
18. The implementation of the re-organized structure of HSSC highlighted the difficulty to attract volunteers for the positions of office-bearers of the working groups. The position of vice-chair of the HDWG remained vacant during the reporting period; the position of vice-chair of the DQWG was vacant during six months. The positions of secretary of the S-100WG, DQWG and HDWG are vacant.
19. Improving the situation calls for increased participation and longer term commitment of the Member States in the relevant IHO organs. Member States may wish to consider when developing proposals for the capacity building programme if any specific capacity building actions, such as training and tutoring, could assist them in developing their own expertise and in so doing, expand the pool of experts available to develop and maintain the relevant IHO standards.

Achievements/outputs/conclusions

Element 2.2 - Hydrographic Data Transfer Standards

S-100 and related activities

20. These activities were divided between the Transfer Standard Maintenance and Applications Development WG (TSMAD) and the Digital Information Portrayal WG (DIPWG) until the establishment of the S-100WG.
21. Two planning documents were elaborated to guide the development of S-100 and related activities and set a timeline. An S-100 Master Plan was drafted in 2013 to set the long term goals and objectives of the development and implementation of S-100 and related specifications and tools, and to outline the tasks that need to be considered to achieve these objectives and the associated timelines. A more detailed roadmap was produced to provide an estimated timescale of events in the development, test and implementation of S-101 - *ENC Product Specification*. Both documents are now maintained by the S-100WG. Edition 1.1 of the S-100 master plan was endorsed at HSSC-7. The current edition of the S-101 Value Added Roadmap was published in April 2016.

S-100

22. Two new editions of S-100 were prepared during the reporting period. Edition 2.0.0 was published in June 2015. The draft Edition 3.0.0 was endorsed by the HSSC at its 8th meeting in November 2016 and is expected to be published during the first quarter of 2017, subject to its approval by the Member States.
23. The changes included in the new editions are shown in tables 1 and 2.

*Table 1
Changes included in S-100 Edition 2.0.0*

Part No	Part Name	Description	Change Type
1	Conceptual Schema Language	Added support for: Codelists Truncated date-time types Uniform resource identifiers	Extension
2A	Feature Concept Dictionaries	Added support for: Codelists Truncated date-time types Uniform resource identifiers	Extension
3	General Feature Model	Added support for: Codelists Truncated date-time types Uniform resource identifiers Expanded roles	Extension
4A	Metadata	Inclusion of metadata schemas and clarification of the S-100 catalogue UML model	Correction
5	Feature Catalogue	Added support for: Codelists Truncated date-time types Uniform resource identifiers New spatial types (ArcByCenterPoint, CircleByCenterPoint)	Extension
7	Spatial Schema	Added support for: New spatial types (ArcByCenterPoint, CircleByCenterPoint)	Extension
9	Portrayal	Inclusion of the S-100 Portrayal Model	Extension
10A	ISO-IEC 8211 Encoding	Corrections to the ISO 8211 encoding	Correction
10B	GML Encoding	Inclusion of GML as an available encoding format	Extension
11	Product Specifications	Inclusion of the S-10X template for building new product specifications	Extension
12	Maintenance Procedures	Alignment of procedures to S-99	Correction

Table 2
Changes included in S-100 Edition 3.0.0 (draft)

Part No	Part Name	Description	Change Type
0	Cover	Amends the copyright note	Clarification
2B	Portrayal Register	Inclusion of the Portrayal Register Model into S-100	Extension
4A	Metadata	S100_Support File Format (add Tiff)	Clarification
4A	Metadata	Invalid reference to a clause that does not exist	Correction
4A	Metadata	Exchange catalogue metadata harmonization and include the S-101 data coverage methodology	Correction
4A	Metadata	PDF as a support file format	Extension
4A	Metadata	Amend the definition of layerID	Clarification
5	Feature Catalogue	Feature catalogue model and schema extended to include roles in information bindings	Extension
5	Feature Catalogue	Clarification on the use of supertypes	Clarification
7	Spatial	Clarification on internal and external boundaries for areas with holes	Clarification
8	IGD	Alignment to revised ISO models	Correction
9	Portrayal	Correction of editorial issues	Correction
9C	SVG Profile	Draft profile of SVG elements that are used in the creation of S-100 symbols	Extension
10A	8211	Needed to amend 8211 to handle a conditional need for the SEGH field	Correction
10B	GML	Place existing description of associations in a sub-section and add a second sub-section describing an alternate method for encoding feature and information associations	Extension
10C	HDF	Adds HDF as an encoding format for S-100	Extension
11	Product Specification	Clarifies the rules for namespaces for product specifications	Clarification

S-100 Interoperability Specification

24. In order for multiple S-100 based product specifications to overlay and interact with each other on a single navigation system, it was determined that the S-100WG needed to create an S-100 Interoperability Specification. This will enable a harmonized portrayal of different types of navigation data within a system and allow the mariner to make informed decisions. Work commenced on this specification in 2016 and a draft for testing is expected to be available in late 2017, with an aim for finalization in 2018.

S-100 Registry

25. The S-100 Registry underpins the entire S-100 infrastructure and this item has been the highest priority for the TSMAD and then the S-100WG as it has a direct effect on the functionalities of the S-100 Feature Catalogue Builder and the S-100 Portrayal Catalogue Builder. The Registry continued to be managed, developed and maintained by the Chair of the TSMAD on a part-time basis, until his retirement in February 2015, through the generous and continuing support of the United Kingdom (UK). Edition 1.1.0 of S-99 - *Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry* was published in 2013 to take into account feedback and experience in the practical use of the S-100 Registry. The revision deleted the distinction between two classes of information arranged in main and supplementary registers and extended the time allowed to raise objections to proposals from 30 days to 60 days in order to allow stakeholders a longer period to circulate the documentation and consider responses. In 2013, the Feature Concept Dictionary Register was expanded to include the domains requested by other Submitting Organizations and a revised Help file was implemented. A detailed technical documentation of the current version of the Registry and a report containing recommendations for correcting or improving the code were delivered using contract support assistance. In 2014, the Registry was moved to a new server and a number of security vulnerabilities were fixed using contract support assistance. From February 2015 to October 2016, an interim management arrangement, based on in-kind support from the Republic of Korea (ROK), UK, and United States of America (USA), was implemented in liaison with the HSSC Chair Group and the S-100WG. USA and ROK undertook further development to address shortcomings in the operation of the Feature Concept Dictionary, to implement changes required by Edition 2.0.0 of S-100 and to support the future connexion with the Feature Catalogue Builder. In accordance with the recommendation of the HSSC, the establishment of a permanent position at the IHO Secretariat to support the S-100 Registry, and more generally the development of S-100 based standards and services, was approved by the Member States towards the end of 2015. A Technical Standards Support Officer was recruited in 2016 and has been acting as Registry Manager since 1st October 2016.
26. Now that the S-100 Registry Manager is a permanent position at the Secretariat and noting that Submitting Organizations other than the IHO are more and more active as Registry users, it is expected that continued refinements of the Registry will be required in 2017 and beyond.

S-100 Feature Catalogue Builder and Portrayal Catalogue Builder

27. The first version of the S-100 Portrayal Catalogue Builder (PCB) was developed in 2014 through contract support. Further extensions and adjustments were required in 2015 to accommodate changes to the feature model that were introduced in Edition 2.0.0 of S-100 and in the draft S-101 feature catalogue. SVG formatted symbol graphics of all existing S-52 point symbols were also delivered as part of the contract to support the portrayal of S-101 ENCs.
28. ROK has developed an initial prototype of the S-100 Feature Catalogue Builder (FCB) that will be used to create conformant feature catalogues for various product specifications under development. In late 2016, the FCB was connected to the S-100 Registry, thus enabling the testing process of the S-100 PCB and conformant S-100 portrayal catalogues to be built for

testing. As more testing and development are undertaken, it is expected that there will be continued improvements to the process.

S-101 - ENC Product Specification

29. S-101 is a multi-part product specification that when put together will form the basis for the creation and display of a new generation of Electronic Navigational Charts (ENC) interoperable with other S-100 based products. The major components of S-101 and their current status are indicated in table 3.

Table 3

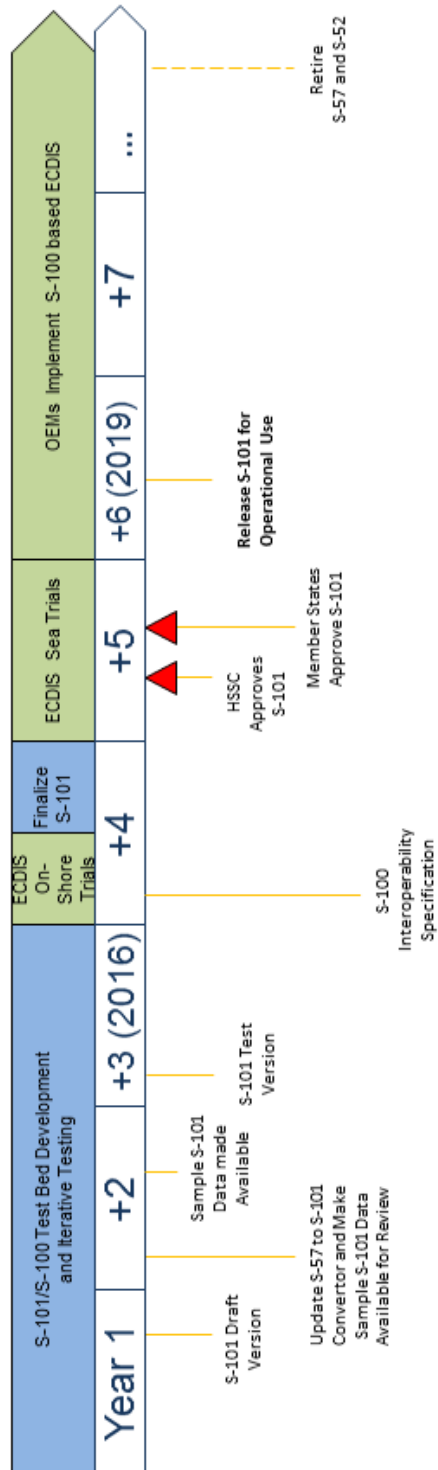
Status of the components of S-101 - ENC Product Specification

S-101 Component	Current Status	Comment
Main Document	Testing Baseline	Sent out for stakeholder review in September 2014 and final comments incorporated into the testing baseline. New Items have been registered in the GI Registry.
Data Classification and Encoding Guide	Baselined – June 2016	
8211 Annex	Testing Baseline	Changes to the DCEG will undergo a controlled proposal process in order to manage change effectively.
Feature Catalogue	Testing Baseline	Awaiting the FCB connection to the GI Registry to create a new version that contains the new DCEG items.
Portrayal Catalogue	Partial Baseline	Caris has created a partial portrayal catalogue using the elements from S-52 in the S-100 format. There is still more work to be done once the S-100 Register is operational. NOAA has funded work on baselining the S-52 CSPs into XSLT 1.0 that will be part of the Portrayal Catalogue.
Implementation Guidance	In Progress	Will continue to be refined during the S-101 test bed process.
Validation Checks	In Progress	

30. S-101 progress has been slow during this reporting period. Much of this is due to waiting for the S-100 infrastructure to be updated for operational use. Once the Registry and the FCB are operational a new Feature Catalogue will be created and the PCB will be tested to create the S-101 Portrayal Catalogue. This will then be made available on Basecamp to the S-100 Stakeholder community for testing and further development in accordance with the timeline shown at figure 1.

S-101/S-100 Test Bed Timeline

Figure 1
S-101/S-100 test bed timeline



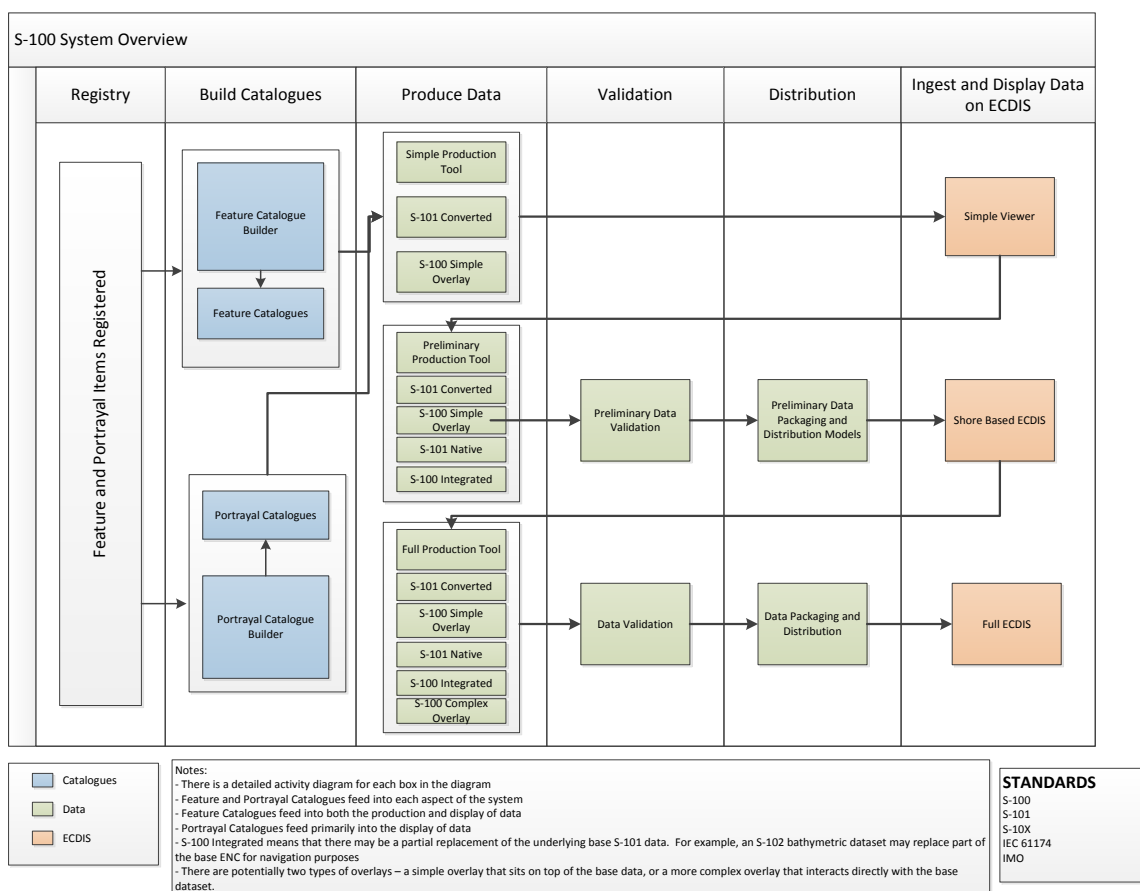
22.07.2016

S-101/S-100 Test Strategy and Test Bed

31. Before the IHO Member States can approve S-101 as a functional standard, it must undergo a rigorous testing process that will require the implementation of test bed projects. It is important to understand that these test beds will need to be S-100-based, that is be capable of testing other product specifications which can be either supplementary to S-101 ENC or non-related GIS applications. The overarching test bed strategy completed in 2014 is depicted in figure 2 which shows the logical progression from catalogue creation to use within an ECDIS.

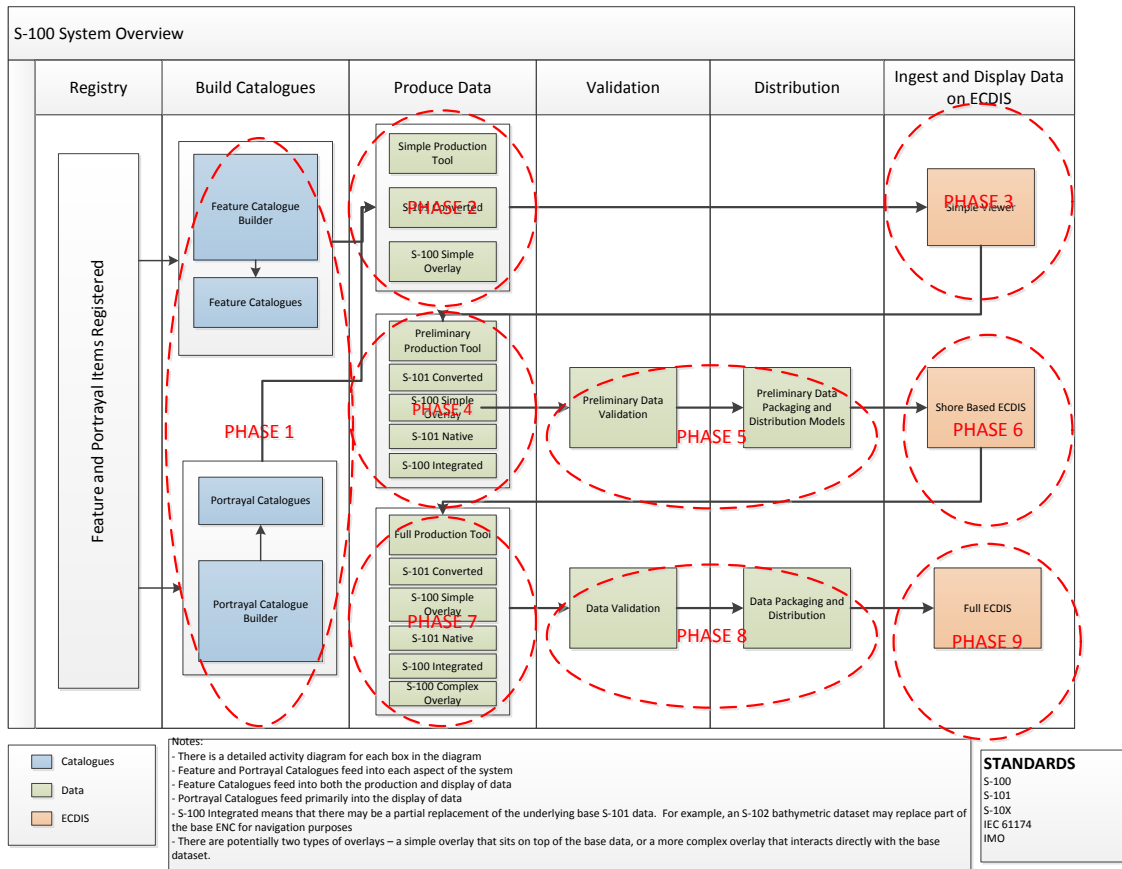
Figure 2

S-101/S-100 Test Strategy



32. In order to manage the complexity of the testing process it has been divided into nine phases as depicted in figure 3.

Figure 3
S-101/S-100 Test Strategy



33. Breaking out the testing through phases allows for the iterative development of future ECDIS as a system by gradually expanding requirements and the different types of test scenarios that are needed to validate S-101 as a functional standard. The status of the different phases is shown in table 4.

Table 4
Status of the S-101/S-100 Test Strategy

Phase No	Phase Name	Status	Comment
1A	Feature Catalogue Builder	Completed	Development done by KHOA S-100 Test Cases Written
1B	Portrayal Catalogue Builder	Completed	Developed under IHB Contract S-100 Test Cases Written
2	Simple Production Tool	In Progress	S-57 to S-101 Convertor Joint NOAA/ESRI initiative
3	Simple Viewer	In Progress	S-100 Test Cases Written ROK Simple Viewer SPAWAR Simple Viewer
4	Preliminary Production Tool	In Progress	ROK has developed a tool to produce S-101 updates for testing
5	Preliminary Data Validation and Packaging	Not Started	Initial Scoping Required
6	Shore Based ECDIS	Not Started	Initial Scoping Completed
7	Full Production Tool	Not Started	Initial Scoping Required
8	Data Validation and Packaging	Not Started	Initial Scoping Required
9	Full ECDIS	Not Started	Initial Scoping Required

34. The outcome of testing will also enable a more detailed impact study, as prescribed by IHO Resolution 2/2007 on principles and procedures for making changes to IHO technical standards and specifications, and will provide a clear picture of the effects on the various stakeholders involved in the eventual introduction of S-101.
35. The progress of the test strategy is reviewed by a subset of the S-100WG at an annual Test Strategy Meeting.
36. The ROK reported at HSSC-8 on the first sea-trial of S-100 based test data sets, including dynamic data such as S-111 - *Surface Currents* and S-112 - *Dynamic Water Level Data Transfer*, together with static data such as S-101 - *ENC* and S-102 - *Bathymetric Surface* data.

S-102 - Bathymetric Surface Product Specification

37. The 1st edition of S-102 - *Bathymetric Surface Product Specification* was published in April 2012. In 2014, the HSSC agreed a new work item on the development of a new edition to address changes in the supporting Format Specification Document -Description of the Bathymetric Attributed Grid Object (BAG)- and to make the specification functional for navigation systems. It was decided to narrow the scope of edition 2.0 to safety-of-navigation applications. The submission to HSSC was initially expected in 2016 at HSSC8. Product portrayal is taken longer than expected, delaying the submission of draft edition 2.0 until HSSC9.

Other S-100 based Product Specifications

38. In 2013, the HSSC adopted a standardised method for identifying S-100 based product specifications as shown in table 5. The HSSC also endorsed the development of a new product specification, S-121 - *Maritime Limits and Boundaries* and supported the development of S-124 - *Navigational Warnings*, a new product specification to be progressed by the World Wide Navigational Warning Service Sub-Committee (WWNWS-SC) in liaison with the TSMAD (now S-100WG).
39. In 2015, HSSC-7 considered a submission by Australia reporting that under keel clearance (UKC) systems were increasingly being used around the world in ports and by vessels themselves when sailing in depth critical waterways. Australia recommended that a project team be established under the S-100WG to coordinate the development of a draft product specification for the display of UKC management information. The Committee endorsed the recommendation and established an Under Keel Clearance Management Information Project Team. In 2016, HSSC-8 assigned the identifier S-129 to the product specification.
40. Table 5 indicates the status of S-100 based product specifications that have been identified so far.

Table 5

Status of identified S-100 based Product Specifications

No / N°	Title / Titre	Status / Etat
Product Specifications being developed by the IHO (Numbers S-101 to 199) Spécifications de produits élaborées par l'OHI (Numéros S-101 à 199)		
S-101	Electronic Navigational Chart (ENC) / <i>Cartes électroniques de navigation</i>	Under Development <i>En cours d'élaboration</i>
S-102	Bathymetric Surface / <i>Surface bathymétrique</i>	Published / <i>Publié</i>

No / N°	Title / Titre	Status / Etat
S-103	Sub-surface Navigation / <i>Navigation sous la surface</i>	Planned / <i>Prévu</i>
S-104	Water Level Information for Surface Navigation / <i>Information de hauteur d'eau pour la navigation de surface</i>	Under Development <i>En cours d'élaboration</i>
S-111	Surface Currents / <i>Courants de surface</i>	Under Development <i>En cours d'élaboration</i>
S-112	Dynamic Water Level Data Transfer / <i>Transfert de données dynamiques de hauteur d'eau</i>	Under Development <i>En cours d'élaboration</i>
S-121	Maritime Limits and Boundaries / <i>Limites et frontières maritimes</i>	Under Development <i>En cours d'élaboration</i>
S-122	Marine Protected Areas / <i>Aires marines protégées</i>	Under Development <i>En cours d'élaboration</i>
S-123	Radio Services / <i>Services radio</i>	Under Development <i>En cours d'élaboration</i>
S-124	Navigational Warnings / <i>Avertissements de navigation</i>	Under Development <i>En cours d'élaboration</i>
S-125	Navigational Services / <i>Services de navigation</i>	Under Development <i>En cours d'élaboration</i>
S-126	Physical Environment / <i>Environnement physique</i>	Under Development <i>En cours d'élaboration</i>
S-127	Traffic Management / <i>Gestion du trafic</i>	Under Development <i>En cours d'élaboration</i>
S-128	Catalogues of Nautical Products / <i>Catalogues de produits nautiques</i>	Under Development <i>En cours d'élaboration</i>
S-129	Under Keel Clearance Management (UKCM)	Under Development <i>En cours d'élaboration</i>
S-1xx	Marine Services / <i>Services maritimes</i>	Planned / <i>Prévu</i>
S-1xx	Digital Mariner Routeing Guide / <i>Guide numérique du navigateur sur l'organisation du trafic</i>	Planned / <i>Prévu</i>
S-1xx	Harbour Infrastructure / <i>Infrastructure portuaire</i>	Planned / <i>Prévu</i>
S-1xx	(Social/Political) / <i>(Social / Politique)</i>	Planned / <i>Prévu</i>
<p>Product Specifications being developed by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) (Numbers S-201 to 299)</p> <p><i>Spécifications de produits élaborées par l'Association internationale de signalisation maritime (AISM) (Numéros S-201 à 299)</i></p>		
S-201	Aid to Navigation Information / <i>Information sur les aides à la navigation</i>	Under development <i>En cours d'élaboration</i>

No / N°	Title / Titre	Status / Etat
S-210	Inter-VTS Exchange Format / <i>Format d'échange inter-STM</i>	Under development <i>En cours d'élaboration</i>
S-230	Application Specific Messages / <i>Messages d'applications spécifiques</i>	Planned / <i>Prévu</i>
S-240	DGNSS Station Almanac / <i>Almanach de station DGNSS</i>	Under development <i>En cours d'élaboration</i>
S-245	eLoran ASF Data / <i>Données FAS eLoran</i>	Under development <i>En cours d'élaboration</i>
S-246	eLoran Station Almanac / <i>Almanach de station eLoran</i>	Planned / <i>Prévu</i>
Product Specifications being developed by the Intergovernmental Oceanographic Commission (IOC) (Numbers S-301 to 399) <i>Spécifications de produits élaborées par la Commission océanographique intergouvernementale (COI) (Numéros S-301 à 399)</i>		
Product Specifications being developed by other Organizations (Numbers from S-401) <i>Spécifications de produits élaborées par d'autres organisations (Numéros à partir de S-401)</i>		
S-401	Inland ENC (Inland ENC Harmonization Group [IEHG]) / <i>ENC intérieures (Groupe d'harmonisation des ENC intérieures [IEHG])</i>	Under Development <i>En cours d'élaboration</i>
S-411	Ice Information (WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology [JCOMM]) / <i>Information sur la glace (Commission technique mixte OMM-COI pour l'océanographie et la météorologie marine [JCOMM])</i>	Under Development <i>En cours d'élaboration</i>
S-412	Weather Overlay (JCOMM) / <i>Couche d'information météorologique (JCOMM)</i>	Under Development <i>En cours d'élaboration</i>
Product Specifications for Additional Military Layers (AML) being developed by the NATO Geospatial Maritime Working Group (GMWG) (Numbers S-501 to 525) <i>Spécifications de produits de couches militaires additionnelles (AML) élaborées par le groupe de travail géospatial maritime de l'OTAN (GMWG) (Numéros S-501 à 525)</i>		

ECDIS standards

41. The maintenance of IHO standards related to ECDIS was divided between the TSMAD and DIPWG until the establishment of the ENCWG.

42. A review of the IHO ECDIS-related standards was undertaken in 2012 as a consequence of the investigations into the anomalous operation of some ECDIS. The investigations had revealed that certain parts of the requirements of the standards had been interpreted and implemented in different ways by different manufacturers. The investigations made it clear that there were a number of improvements that should be made to S-52 - *Chart Content and Display Aspects of ECDIS* to reduce the risk of implementation irregularities in the future and improve the clarity of the standard. Feedback from ships at sea also indicated that there were a number of display enhancements to be included in Annex A to S-52 - *IHO Presentation Library for ECDIS* that would significantly increase the usability of ENC in ECDIS. As a consequence, the improvements to the contents of S-52 had to be reflected in the associated IHO standard related to the testing of ECDIS, S-64 - *IHO Test Data Sets for ECDIS*. This, in turn, would affect the test standard for ECDIS of the International Electrotechnical Commission, IEC 61174 - *Electronic chart display and information system (ECDIS) - Operational and performance requirements, methods of testing and required test results*. This interdependence required the synchronization of the revision, approval and implementation of all three standards. Three revised standards were prepared:
- draft Edition 6.1.0 of S-52,
 - draft Edition 4.0.0 of S-52 - Annex A - *Presentation Library*, and
 - draft Edition 3.0.0 of S-64.
43. Language within Edition 4.0.0 of the Presentation Library was simplified and clarified, and many of the old diagrams and examples were replaced to bring the document up-to-date. Detailed examples were added to provide ECDIS developers with clear guidance for implementing the more complex parts of the ECDIS presentation. Look-up and colour tables were removed from the Presentation Library, Part I and placed into separate files. In instances where multiple options were specified to perform the same task, sometimes leading to ECDIS inconsistencies, the options were limited. Redundancies and repeated copies of several tables within the specification were eliminated, as were elements that had never been implemented, such as raster symbol definitions. A number of changes were made to reflect the requirements in the revised performance standards for ECDIS adopted by the International Maritime Organization (IMO) (Resolution MSC.232(82) refers), such as new sections being added for the detection and notification of navigational hazards, detection of areas for which special conditions exist and detection of the safety contour. These new sections were developed to provide clear guidance on the S-57 objects and attributes that must initiate an alert and/or indication within ECDIS in order to reduce the number of extraneous alarms in ECDIS. The new Presentation Library also made use of the IMO specified viewing groups mandatory. The complex Nassi-Shneiderman diagrams used to describe the Conditional Symbology Procedures (CSPs) were converted to Unified Modeling Language (UML). The inconsistent use of some terms within the CSPs was also eliminated. The display of text was added to selected features so that this information is available to the mariner without having to initiate a "pick-report". Part II of the Presentation Library was also streamlined. Most of "mariner objects" in Part II and the corresponding symbols in the Addendum to Part I were deleted in Edition 4.0.0 to eliminate redundancy with the IMO Performance Standards for the Presentation of Navigation-Related Information on Shipborne Navigational Displays (Resolution MSC.191(79) refers) and the corresponding IEC test standard.
44. The changes reflected in S-52 Edition 6.1.0 related to the colour calibration information contained in its Annexes B and C, much of which referred to obsolescing CRT display technology. The explicit description of colour calibration methods was replaced with references to current industry standards and practices.
45. The changes in S-64 Edition 3.0.0 included more explicit tests with accompanying expected output portrayed in a similar way to that used in the IHO *ECDIS Data Presentation and Performance Check in Ships*. Accordingly, graphic plots were embedded within the

- expanded instruction manual rather than as separate PDF files, as in the previous edition. The new edition was meant to expand in detail chart related functionalities from IEC 61174 and mirror the more precise definitions contained within IHO Publication S-52 of ECDIS functionalities required by the ECDIS Performance Standards of the IMO. A comprehensive set of tests, which exhaustively test the various S-57 feature and attribute combinations which portray navigational hazards and which are used in the depiction of the safety contour were provided in new sections to ensure that all required combinations of features and attributes are dealt correctly by the ECDIS under test. The presentation of the tests was standardized in order to describe the setup, data, expected results and any images required in an accessible form for the users of the document when testing ECDIS. The components required to test that the ENC update status report can be located and executed, in accordance with the relevant functionality required by the new edition of IEC 61174, were included in the revised encrypted ENC data set.
46. The draft revised standards were posted on the IHO website in February 2014 to enable comments from all stakeholders in accordance with the IHO procedures for the revision of its standards. The drafts underwent a thorough review by the full membership of the relevant working groups and ECDIS manufacturers and were further refined at a joint meeting of the TSMAD and DIPWG in April 2014. As a result, updated drafts, incorporating comments from the reviews, were posted on the IHO website and HSSC Members were requested to review and endorse the updated drafts. After endorsement by the Committee and adoption by the Member States, the revised set of standards was published in December 2014.
 47. In July 2015, the Secretariat issued a media release on “New normative references for the type approval of ECDIS” to assist ECDIS manufacturers, ship operators, and mariners in the implementation of the new editions of S-52 and S-64.
 48. As agreed with IEC and the Comité International Radio-Maritime (CIRM) and reported to the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) in July 2014, the date of entry into force of the new editions was aligned with the date of publication of the new Edition 4.0 of IEC 61174 which occurred on 19 August 2015. From that date, the new editions became the normative references for the type approval of new ECDIS. It was initially agreed that the previous editions would remain valid for twelve months beyond the date of entry into force of the new editions. In November 2015, views were expressed by the shipping industry and ECDIS manufacturers that this twelve-month transition period would be too short to enable ship owners and operators to update existing systems. This was reported to the NCSR in March 2016 and the Sub-Committee agreed to extend by one year, until 31 August 2017, the transition period for upgrading existing ECDIS systems to meet the revised set of IHO standards.
 49. Edition 4.0 of IEC 61174 refers to Edition 6.1 (2014) of S-52 and to Edition 4.0 (2014) of the Presentation Library. Despite the care taken in preparing these new editions, their effective implementation revealed imperfections requiring corrections or clarifications, to be considered by the ENCWG. In order to maintain consistency with IEC 61174, it was agreed that successive versions of S-52 and the ECDIS Presentation Library be identified respectively as *Edition 6.1(.x) - October 2014 - With clarifications up to (date)* and *Edition 4.0(.x) - October 2014 - With clarifications up to (date)*. Versions 6.1(.1) of S-52 and 4.0(.1) of the Presentation Library were published in June 2015 together with Edition 3.0.1 of S-64. A second set of clarifications is expected to be published in early 2017.
 50. In parallel, a new edition of S-58 - *Recommended ENC Validation Checks* was prepared. The new Edition 5.0.0 published in June 2014 introduced various new critical error checks to avoid errors in the compilation of ENCs by Hydrographic Offices that might cause a failure in the ECDIS, or at least severely compromise ECDIS performance. Accordingly IHO S-57 Supplement No.3, published in June 2014 also, introduced the minimum validation requirements defined in the new edition of S-58. It also included some minor changes to

improve consistency. Both standards were expected to become mandatory on 1st January 2016, to allow sufficient time for ENC producers to adapt their production process and implement the relevant validation tools. This date was postponed following the discovery in early 2015 of a number of inconsistencies, grammatical omissions and some logic errors in Edition 5.0.0 of S-58. The ENCWG was tasked to draft a new edition addressing the anomalies.

51. The preparation of a new edition of S-66 - *Facts about Electronic Charts and Carriage Requirements* was initiated in 2014 to reflect the significant changes that had occurred since the first edition (January 2010). The revision took longer than expected due to other higher priorities.
52. At the request of the Inter-Regional Coordination Committee, HSSC-7 tasked the ENCWG to draft a revised Edition 2.1.0 of S-65 to align with the latest version of the WEND Principles and Guidelines.
53. In November 2016, HSSC-8 endorsed the principles of the draft revised editions of S-58, S-65 and S-66 proposed by the ENCWG and tasked the working group to finalize the drafts and forward them to the Secretariat for subsequent consideration by the Member States.
54. In accordance with Decision No. 7 of the 18th International Hydrographic Conference, the Secretariat ensured that “issues identified in regard to the anomalous operation of ECDIS are collated, analysed, communicated and resolved as speedily as possible to maintain the safety of navigation and to assist the smooth transition from paper to digital navigation” through the monitoring of ships’ reports on ECDIS Data Presentation and Performance Check. Table 6 shows the statistics of the reports received since the check data set was distributed to ship operators and posted on the IHO website in August 2011.

Table 6

Outcome of ECDIS Data Presentation and Performance Checks for Ships

Period	1 Aug 2011	15 Apr 2013	15 Apr 2014	1 Dec 2014	1 Dec 2015
	15 Apr 2013	15 Apr 2014	1 Dec 2014	1 Dec 2015	1 Dec 2016
Number of reports	1,042	76	74	1,318	4,019
% of reports indicating no problem	22%	43%	55%	73%	86%
% of reports indicating no anomaly in the display of “new objects”	60%	91%	95%	95%	93%

55. The number of reports increased significantly in 2015 and continued to increase in 2016. This is probably due to the promotion of the checks by various organizations and the wider use of ECDIS. The statistics indicate a continuing improvement in the updating of ECDIS software. No new issue has been identified. It appeared that the ECDIS Data Presentation and Performance Check for Ships was being used by Port State Control and/or vetting inspectors to check the implementation of ECDIS carriage requirements. As indicated in the relevant section of the IHO website, the checks and the accompanying dataset are designed to alert mariners to the possibility that their ECDIS software may require upgrading. The IHO ECDIS Data Presentation and Performance Check is not intended for, and is not suitable to be used as, a carriage compliance test for ECDIS. Noting that the ECDIS Data Presentation and Performance Check would no longer be useful to ECDIS equipment conforming to the

revised set of ECDIS standards, HSSC-7 tasked the ENCWG to investigate the need to develop a new or revised check dataset. HSSC-8 endorsed the ENCWG proposal to use ECDIS Chart 1 to assist mariners in checking ECDIS operating with Edition 4.0 of the Presentation Library. The Committee tasked the Secretariat, in liaison with the ENCWG, to describe the procedure in a new edition of the IHO webpage on *ECDIS Data Presentation and Performance Check in Ships*.

56. Edition 4.0.0 of S-57, Appendix B.1, Annex A - *Use of the Object Catalogue for ENC* (UOC) was published in June 2014. It included new guidance on updating ENC datasets in response to disasters, on addressing depth discontinuities between surveys, and on masking certain objects in order to improve ECDIS screen display. It also included ENC Encoding Bulletin No. 54 on virtual Aids to Navigation based on the Automatic Identification System (AIS).
57. Member States were reminded to update the information on their requirements for ECDIS back-up arrangements using paper charts which have been posted on the IHO website since 2008. Five updates were received in 2015 and 5 in 2016. 23 of the 34 Member States which have expressed specific requirements have not provided any update of their information since 2008.

Element 2.3 - Nautical Cartography

58. The CSPCWG completed in 2014 the revision of IHO Publication S-4 - *Regulations for International (INT) Charts and Chart Specifications of the IHO* undertaken after the adoption in 2005 of a new format. The outcome of this major work was effected with the publication of Edition 4.5.0 in October 2014. Editions 4.3.0 and 4.4.0 were published respectively in August 2012 and September 2013. The main items addressed in the successive revisions were as follow:
 59. Edition 4.3.0: source/ZOC diagrams; historic wrecks; berth-side obstructions, lighthouses, depiction of imprecise shoal areas; development dredging; yellow, amber and orange lights; symbol for diving prohibited.
 60. Edition 4.4.0: revision of Section B-300 - *Topography*; "after-disaster" surveys; generic magenta light flare on multi-coloured charts
 61. Edition 4.5.0: revision of Section B-500 - *Text: Language, Numbers, Abbreviations, Names, Styles and Fonts*; INT chart numbering; showing limits of surveys on charts; discontinuities between surveys; reported dangers; updating order of charts according to scale; selection of soundings; definition of major lights; specification of direction lights; highlighting of navigation lights; status of "Large Automatic Navigational Buoy" (LANBY).
 62. A number of clarifications were also incorporated, as listed in the appropriate "Record of Updates" inserted at the beginning of each chapter of S-4.
 63. Edition 4.5.0 was the last revision adopted under the special procedures that were in place during the major revision process: the CSPCWG was authorized to recommend amendments to S-4 directly to the IHB, who would then communicate them to all IHO Member States by Circular Letter, asking Member States to make known any major objection within three months. The relevant specification of S-4, B.160 - *Updating system for the specifications*, was amended in Edition 4.5.0 to revert to the normal maintenance procedure described in IHO Resolutions 11/2002 - *Regulations of the IHO for international (INT) charts and chart specifications of the IHO* and 2/2007 - *Principles and Procedures for making changes to IHO Technical Standards and Specifications*, as amended.
 64. The subsequent revised editions of S-4 were prepared in accordance with the normal maintenance regime. Edition 4.6.0 was published in April 2016 to address the following items: light vessels; glaciers; dredged areas; maximum authorized draught; source diagrams;

dangerous cargo berth; wind farms under construction; chart maintenance: recording outstanding information; NMs for AIS aids to navigation; QR codes; T&P NMs; INT 2 and INT 3; area to be avoided within traffic separation scheme; use of non-IHO Member State seals on INT paper charts; consistency between chart products; building in or over the water; offshore accommodation vessels; refuge area/anchorage. The changes includes new guidance in section B-100 defining what is meant by “consistency” of information content between corresponding paper charts and ENC’s and revised wording in section B-600 strengthening the requirement to apply to ENC’s the equivalent of paper chart T&P NMs.

65. A new draft Edition 4.7.0 is under preparation for the consideration of the Member States. It incorporates changes approved at HSSC-8 related to the following items: radio-activated aids to navigation; suspended submarine pipelines; seaweed and seagrass; larger scale chart limits in yellow; vacant entries in INT 1.
66. The associated publication INT 1 - *Symbols, Abbreviations and Terms used on Charts* was updated in accordance with the changes introduced in S-4. The following editions were published during the reporting period:
- INT 1 (English): maintained by the German Hydrographic Office on behalf of the IHO: 8th Edition, 2015;
 - INT 1 (French): maintained by the French Hydrographic Office on behalf of the IHO: 5th Edition, 2012; 6th Edition, 2016;
 - INT 1 (Spanish): maintained by the Spanish Hydrographic Office on behalf of the IHO: 4th Edition, 2012; 5th Edition, 2015.
67. Edition 2.0.5 of Publication S-11 Part A - Guidance for the Preparation and Maintenance of International Chart Scheme was published in May 2012 to include updated information in Annex A - *Potential Printer Nations* and Annex B - *Dimensions of formats used*.
68. The CSPCWG had been tasked in 2009 to develop guidelines for the preparation and maintenance of small / medium scale ENC schemes. After much delay, an approach for assistance and advice was made in 2012 to the North Sea ENC Harmonization Working Group, under the North Sea Hydrographic Commission to draft a new edition of S-11 Part A. A draft prepared in liaison with the WENDWG was submitted to HSSC-7 in 2015. The Committee determined that more work was required and instructed the NCWG to restructure the draft to separate the guidance for INT (paper) charts schemes and ENC schemes in two separate sections. A revised draft was endorsed by HSSC-8 for subsequent consideration by the Member States. HSSC-8 approved in particular the following arrangements:
- the former Annexes A and B of S-11 Part A should be moved to S-11 Part B - *INTERNATIONAL Chart Web Catalogue*;
 - the new edition should no longer be bi-lingual but published in separate English and French versions.
69. The regional chapters of S-11 Part B - *Catalogue of International (INT) Charts* were maintained in pdf format by the Secretariat until 1st April 2016. Revised editions of the chapters were published on the basis of the input from the relevant regional INT coordinators. A new chapter covering INT Region N - *Arctic Ocean*, with Norway as coordinator, was released in 2013. The catalogue was replaced in 2016 by an on-line web-based interactive version as reported in the report of programme 3.
70. HSSC-7 invited the NCWG to address as a high priority the work item on the future of the paper chart included in its work plan and report at HSSC-8. Unfortunately, this action was not completed due to resource constraints. A report is now expected at HSSC-9.

Element 2.4 - Digital Data Protection and Authentication

71. Edition 1.1 of S-63 - *IHO Data Protection Scheme* had been published in 2008 to include a more precise description of the correct implementation of the standard. In April 2012, small changes were made to remove the hexadecimal limitation of M_ID, the unique identifier assigned by the Scheme Administrator to each manufacturer, in order to extend the number of possible M_ID values that the scheme is able to accommodate. This resulted in the publication of Edition 1.1.1 of S-63.
72. In September 2012, HSSC-4 reviewed the progress in implementing Edition 1.1 of S-63 reported by the DPSWG and agreed that in order to fully implement and standardise the use of S-63 Edition 1.1.1, a deadline should now be set, after which S-63 Edition 1.0 would no longer be a valid IHO standard. Accordingly, HSSC set 1 January 2014 as the termination date for S-63 Edition 1.0. As a consequence, in December 2012, the Secretariat sent a letter to all S-63 Data Servers and ECDIS manufacturers informing them that the further use of S-63 Edition 1.0 after 1 January 2014 would result in the termination of their protection scheme agreement. This decision did not raise any adverse feedback. A limited extension was granted to two data servers who requested more time to complete the migration of a small proportion of legacy ECDIS systems to be able to use S-63 edition 1.1 ENC's. The migration of these legacy ECDIS systems was monitored in liaison with the two data servers concerned. The percentage of legacy systems dropped from 21% on 1 January 2014 to less than 6% on 31 December 2014 and to 4% on 30 September 2015. Considering that there was no major drawback to letting the few remaining legacy users continue using S-63 Edition 1.0 until their legacy systems were removed or replaced, HSSC-7 decided to discontinue the monitoring of the transition.
73. In relation to the revision of IEC 61174 (see paragraphs 42 to 49), the production of a normative reference that supports the requirement for an "ENC Update Status Report" showing the status of ENC data to the end-user (for operational planning) and to the relevant authorities (for such purposes as Port State inspection) appeared necessary. Further consideration led to acknowledging the need to enhance S-63 with a new Annex C describing the functionality required to provide an ENC Update Status Report. A revised Edition 1.2.0 of S-63 incorporating the new Annex C was published in February 2015. The new functionality applies only to those ECDIS systems that are type-approved in accordance with the Edition 4.0 of IEC 61174.
74. The DPSWG was tasked to draft a new edition of S-63 to support S-100 development. The working group identified the need to provide a framework standard that would allow:
- the provision of data protection, compression and authentication to product specifications,
 - the ability for modular application so that encryption and authentication are not inter-dependent,
 - the ability to tailor protocols and implementations for different product specifications.
75. Following the development of a pre-draft, it appeared that it would be more efficient to incorporate a large proportion of the content of S-63 into a new part of the S-100 standard. The proposal was endorsed by the S-100WG and agreed at HSSC-8.
76. The Secretariat continued to carry out the role of administrator of the S-63 scheme. This function involves processing applications and providing technical support and the individual and unique digital certificates and codes that are required to allow ENC data servers, ECDIS Original Equipment Manufacturers (OEM) and software developers to encrypt and de-encrypt ENC's as part of the services or equipment that they provide. At the end of 2016 there were 49 Data Servers and 294 OEMs licenced to use the S-63 scheme.

Element 2.5 - Data Quality

77. The DQWG focused its activities on the development of a model for the quality of bathymetric data to be included in S-101 - *ENC Product Specification*. Different systems were investigated. Considering the effort that would be required of Hydrographic Offices to implement a new scheme, the working group decided to recommend retaining the current threshold values for data quality associated to Category of Zone of Confidence (CATZOC). As a consequence, the transition from S-57 to S-101, as far as the quality of bathymetric data is concerned, should be more easily implemented and automated. The data quality model in Unified Modelling Language (UML) and the decision tree for designating the quality of bathymetric data in S-101 were completed in 2016.
78. In addition, the DQWG developed guidance on assessing respectively temporal variations of the seafloor and overlapping depth-related features, such as for areas of mobile seafloor above which a safe clearance depth may exist. The working group provided input to the development of guidance on crowd-sourced bathymetry. Feedback was also provided to the NIPWG on data modelling and portrayal related to uncertain (“fuzzy”) areas.
79. As instructed by the HSSC, the DQWG considered the concept of data supply chain certification. The group endorsed the overall importance of end-to-end data integrity, from the data source to the end-user, but did not reach a consensus on the role of the IHO.
80. A work item of the DQWG was to investigate ways to improve mariners’ understanding about data quality. This has proved to be a very challenging topic. HSSC-4 tasked the working group to review, in liaison with training institutions, the adequacy of Member States’ publications on the quality aspects of the practical use of ENCs. Member States were invited to provide copies of their relevant publications with the intention of compiling an inventory and develop an IHO standard text that could be used as a reference from which other Member States could derive input for their own publications. Initial findings indicate that most Member State documents are excessively complex and lengthy, discouraging use by mariners. The task has not been completed due to lack of resources and is on-going. At HSSC-8, the representatives of the stakeholders highlighted the pressing requirement for all IHO Member States that produce ENCs to populate them with assessed CATZOC values (1 to 5) to assist mariners in their decision-making process for safe navigation.

Element 2.6 - Nautical Publications

81. The SNPWG and then the NIPWG concentrated on developing S-100 based product specifications related to nautical publications. The working group completed an extensive modelling work with the creation of a comprehensive catalogue of features and attributes covering the information elements of sailing directions, lists of radio signals, lists of lights, lists of buoys and beacons, mariners’ handbooks, routing guides and notices to mariners (updates to nautical publications). The items of the catalogue are being progressively inserted in the Feature Concept Dictionary Register of the S-100 Registry. Data harmonisation with the S-101 Data Classification and Encoding Guide (DCEG) is close to completion and it was decided to merge the former NPUBS domain into the HYDRO domain.
82. The status of the development of S-100-based product specifications related to nautical information is summarized hereinafter.

S-122 - Marine Protected Areas

83. This is the most advanced project:
- The application schema was drafted and is being revised according to the outcome of the harmonization between the S-101 and S-122 data models.

- The Feature Catalogue is stable and will be updated when the application schema is finalised;
- The DCEG is under review. The completion of the data part depends on the progress of the S-101 and S-122 data model harmonization. Considering that S-122 is the first product specification related to nautical publications, the general part of the DCEG will be provided in a way that enables encoders to convert the publication information into the data model based information very easily.
- The test data samples are stable and one test data sample is maintained according to the latest developments.

84. The portrayal section remains the missing element.

S-123 - Radio Services

85. A test data sample, a draft data model, and an application scheme have been developed. As a result of the test data sample review, shore based AIS transmission information will be added. An extension of the data model and the application scheme is under consideration.

S-125 - Navigational Services

86. The initial development of a test data sample has revealed the need to specify more precisely the scope of the product specification.

S-126 - Physical Environment

87. The test data sample has been reviewed and is considered stable and ready for use. A draft data model has been produced.

S-127 - Traffic Management

88. The test data sample is stable and the initial mapping of the content to the data model has been conducted. A draft data model has been produced.

S-128 Catalogue of Nautical Products

89. HSSC-7 endorsed the NIPWG proposal to develop a product specification for catalogues of nautical publications and allocated the identifier S-128. This product specification is intended to enable the exchange of lists of products between Member States and users in support of the Maritime Service Portfolios (MSPs) for e-navigation. The Republic of Korea is developing a draft product specification for further consideration by the working group.

90. The production schedules for test data samples for other product specifications such as Marine Services, Harbour Infrastructure and Social/Political Information are not yet determined.

91. Portrayal issues associated with nautical information require further investigation. A dedicated workshop is scheduled in May 2017 to discuss options for portraying nautical information on board in combination with S-101 ENC or separately.

92. IHO Publications S-12 - *Standardization of List of Lights and Fog Signals* and S-49 - *Standardization of Mariners' Routeing Guide*) did not require any maintenance during the reporting period.

93. HSSC-7 tasked the NIPWG to coordinate the contribution of the IHO to the development of IMO guidelines for the harmonized display of navigation information received via communications equipment and to the preparation of the IMO output related to the development and implementation of MSPs, notably in liaison with the Sub-Committee on the World-Wide Navigational Warning Service. Discussions are ongoing to develop a single MSP named "Hydrographic Services" that would encompass nautical charts, nautical publications, Maritime Safety Information and other related real-time hydrographic and environmental information.

94. The NIPWG monitored the development of projects and prototype services related to the implementation of e-navigation, such as the European projects Mona Lisa and EfficienSea2, and the Avanti project of the International Harbour Masters Association in order to maintain awareness of issues and progress relevant to the development of the MSPs and the improvement of the relevant product specifications.

Element 2.7 Tides and Water Levels

95. HSSC-4 invited the TWLWG, now TWCWG, to consider as a matter of priority tidal matters relevant to the dynamic application of tides in ECDIS. The working group developed a scoping document in order to identify the relevant requirements and considerations. With the assistance of TSMAD and then the S-100WG, the UK led, in cooperation with Singapore, the development of the first draft of an S-100 based Product Specification designated as S-112 - *Dynamic Water Level Data Transfer*. The draft was based on the AIS Meteorological and Hydrographic Data Application-Specific Message. This AIS message provides the means to transfer a variety of different information, including data for wind, weather, surface currents, sea state, salinity and ice, and provides the scope not only to include dynamic water level data, but other data, as well. One of the main advantages of using this methodology is that it can be assimilated by any ECDIS that is integrated with AIS either in the current S-57 environment or in future S-100 implementations. Further considerations are required to ensure the quality and authenticity of the AIS information. Other modes of transfer should be considered.

96. In parallel, a draft tidal height product specification, S-104 - *Water Level Information for Surface Navigation*, was produced and work was started on developing the attributes of a tidal zone feature.

97. Progress was made on developing a standard for digital tide tables with the development of a list of fundamental attributes generated by the USA.

98. In 2014, the Member States adopted the revision of three IHO Resolutions on tides, water levels and tidal publications which had been proposed by the TWLWG and endorsed by HSSC-5:

- Resolution 27/1919, as amended - *Time to be used*;
- Resolution 2/1977, as amended - *National Tidal Constituent Banks*;
- Resolution 1/1977, as amended - *Collection and Publication of Tidal Data*.

99. Considering the comments received from the Member States concerning the proposed revision of Resolution 3/1919, as amended - *Datums and Bench Marks* and noting that the TWCWG had separately identified that additional work was required on the Resolution and related definitions, the HSSC invited the working group to review the draft revised text. A revised draft endorsed by the HSSC was proposed to the consideration of the Member States in 2016. As agreed by HSSC-8, the final text, taking into account the comments received, will be promulgated shortly.

100. The working group kept the inventory of tide gauges used by Member States up-to-date. The inventory was extended in 2015 to include current meters. This information is available on the TWLWG page of the IHO web site. A list of on-line links to real-time tides and currents was compiled and posted on the IHO web site as an additional resource. A process for updating the list was agreed.

101. The English version of the Manual on Tides (Tides in Coastal Waters), co-produced in 2007 by the Institut Océanographique (Paris) and SHOM - the French Hydrographic Office, was made available by SHOM in 2013. The Manual was included in the IHO catalogue as publication C-33.

102. The TWCWG has undertaken a review of the material for capacity building courses on tides and currents in liaison with the Capacity Building Sub-Committee.

Element 2.8 Digital Data Updating

103. The mandate of the ENC Updating Working Group (EUWG) that had been established in 2008 to address issues relating to ENC updating was discharged in 2012 with the publication of Edition 4.0.0 of S-52 Appendix 1 - *Guidance on Updating the Electronic Navigational Chart*, providing guidance on processing of ENC updates into an ECDIS, and Edition 2.0.0 of S-65 - *ENCs: Production, Maintenance and Distribution Guidance*, including additional guidance on producing and distributing ENC updates.
104. The Committee continued to monitor the status of production and publication in ENC updates of the equivalent of Temporary (T) and Preliminary (P) Notices to Mariners (NM). A second survey was conducted in 2013 to assess the practices of the 53 Member States that were known to issue ENCs under their producer code, for themselves or on behalf of other States. In accordance with the outcome of the review by HSSC-5 in 2013, the fifteen Member States that had not provided a status report, or had not committed to aligning their ENC and paper chart T&P update regimes, were invited to clarify their position and report any need for assistance. Six responses had been received by the end of 2014. All confirmed their intention to align their ENC and paper chart update regimes. At HSSC-8 in 2016, a submission from the International Association of Independent Tanker Owners (INTERTANKO) reported that its members were facing great difficulties in recognising which T&P information was included in ENC updates or not. The Committee tasked the ENCWG and the NCWG to draft a consolidated, authoritative IHO document addressing the issue of "equivalent" T&Ps for ENCs, with the intention of distributing the completed document to Hydrographic Offices, Port State Control authorities and mariners. Further improvement of the relevant guidance (Clause 2.6.2 of S-57, Appendix B.1, Annex A - *Use of the Object Catalogue for ENC*) will also be considered to reflect the comments received from Member States.

Element 2.10 Hydrographic Data Acquisition and Processing

105. During the consideration by HSSC-6 of the re-organization of the structure of the working groups of the HSSC, concern was expressed by some Members that not a single working group in the new structure dealt with hydrographic surveying. Discussion during HSSC-6 indicated that there might be a need to address the use and standardization of new emerging hydrographic surveying technologies that were not already reflected in the relevant IHO standards and guidelines. The most relevant IHO Standard related to hydrographic surveying is IHO Publication S-44 - *IHO Standards for Hydrographic Surveys* - for which the edition in force is the 5th Edition. The 5th Edition was developed by the Working Group on Standards for Hydrographic Surveys (S-44WG) established in 2005 and adopted by IHO Member States in 2008. The S-44WG was then disbanded. No maintenance or extension of S-44 had been required.
106. As requested by HSSC-6, Member States were invited to indicate their views on the adequacy of S-44, on related work items which might be relevant, if any, and on the possible establishment of a dedicated Hydrographic Surveys Working Group (HSWG). The replies showed that only a minority of Member States would support the establishment of a new HSWG and even less would support a review of S-44. Although the majority of identified topics could be allocated to existing subordinate bodies of HSSC and IRCC, some topics, which most directly related to S-44, did not lie within the scope of any of the currently established subordinate bodies or active work programme tasks. HSSC-7 considered the outcome and in the absence of a consensus on the scope of work to justify establishing a new working group, the Committee decided to create a Hydrographic Surveys Scoping Project Team (H2SPT) that would be tasked, for one year, to clarify the scope and the deliverables expected from any possible HSWG. IHO Member States and stakeholders were

invited to participate in the project team. HSSC-8 considered the report provided by the Chair of the H2SPT and decided to establish a Project Team on Standards for Hydrographic Surveys (HS PT), primarily tasked to review S-44, draft a new edition, if appropriate, and identify additional tasks, if any, that might require the establishment of a standing Hydrographic Surveys Working Group.

Element 2.11 - Hydrographic Dictionary

107. The HDWG struggled to progress its work plan during the reporting period, due to limited participation. In 2012, new or amended definitions for 70 terms which had been endorsed by HSSC-3 in 2011 were approved by Member States and inserted in the English and French on-line versions of S-32 - *Hydrographic Dictionary*. In 2014, further five new definitions which had been agreed by the HDWG and then endorsed by HSSC-5 were approved by Member States.
108. Noting the recurring difficulties to attract participation, HSSC-6 welcomed the offer of Australia to liaise with the Chair and members of the working group by correspondence in order to draft new business rules for the HDWG, focused on a database approach, and addressing the potential for synergy with other requirements for definitions and references, such as the S-100 Registry, HSSC WGs and other IHO and inter-organizational bodies. The Committee also invited the HDWG to consider the structure of the ISO/TC211 Multi-Lingual Glossary of Terms as a way to evolve the IHO on-line Hydrographic Dictionary. The Committee considered further the situation at its 7th meeting and requested the HDWG to investigate options and associated resource requirements and timeline to produce and maintain a reference edition of S-32 and tasked the S-100WG to specify its requirements regarding definitions included in the S-100 Registry.
109. Thanks to the secondment of a project officer by Peru, the development of the Spanish language Wiki version of S-32 was undertaken in March 2015. The English, French and Spanish Word files were reformatted into tables with a common identifier that can be used to create a digital cross-reference between the three language versions. Some investigations were undertaken to identify existing options for on-line multilingual glossaries. This work led to the development of a draft policy for the maintenance of the Hydrographic Dictionary and to the proposal to develop an experimental multi-lingual wiki-based demonstrator to support a subsequent upgrade of S-32. HSSC-8 endorsed the development of the demonstrator through contractor support and invited the HDWG Chair to develop further the draft policy and complement it with an implementation roadmap, compatible with the resources available and taking into account the S 100 framework with regard to the location of authoritative definitions.

Element 2.12 - ABLOS

110. The Advisory Board on the Technical Aspects of the Law of the Sea (ABLOS) is a joint board of the IHO and the International Association of Geodesy (IAG). The ABLOS comprises four representatives from IHO Member States and four representatives from the IAG. The United Nations Division for Ocean Affairs and Law of the Sea (UN-DOALOS) and the IHO Secretariat provide one ex-officio member each. The ABLOS is charged with providing advice, guidance and, where applicable, offering expert interpretation of the hydrographic, geodetic and marine geo-scientific aspects of the Law of the Sea to the parent Organizations, their Member States or to other organizations on request. It also reviews State practice and jurisprudence on Law of the Sea (LOS) matters which are relevant to the work of the Board to enable it to provide expert advice when needed. The ABLOS also studies, promotes and encourages the development of appropriate techniques in the application of the technical provisions contained within the UN Convention on the Law of the Sea (UNCLOS). IHO publication C-51 - *Manual on the Technical Aspects of the United Nations Convention on the Law of the Sea* (TALOS Manual) is maintained by the ABLOS. ABLOS meets every year and holds a self-funded international seminar (ABLOS Conference) every other year.

111. Two ABLOS Conferences were held during the reporting period. The 7th ABLOS Conference, titled “UNCLOS in a Changing World”, was held in Monaco from 3 to 5 October 2012. It attracted an audience of nearly 90 delegates from 26 countries with 30 papers being presented during 11 sessions. The event coincided with the week of GEBCO meetings and Science Day which allowed exchange of experience and cross-fertilization between the ABLOS and GEBCO communities. Due to EHC-5 planned in October 2014, the 8th ABLOS Conference was postponed in 2015. The Conference, titled “UNCLOS: Advances in Managing the Blue World” took place from 20 to 22 October 2015 in Monaco. It was attended by 70 delegates representing 28 Member States. The Conference included 28 presentations covering a wide variety of topics and issues in relation to the Conference theme. The presentations generated numerous comments in plenary and much discussion in the margins during the break.
112. The 5th edition of C-51, which had been undertaken by an Editorial Group formed in 2010, was published in June 2014. The key elements of the work of the Editorial Group were as follows:
113. In reviewing the old text, the Editorial Group determined that Chapter 2 (Geodesy) was most in need of substantial revision in order to better reflect the current theory and practice in surveying and satellite-based positioning. Accordingly, Chapter 2 was rewritten in its entirety.
114. Minor changes were recommended and implemented for Chapter 4 (Baselines) and Chapter 6 (Bilateral Boundaries). Modifications to Chapter 3 (Nautical Charts) and Chapter 5 (Outer Limits) have been identified but, because of work load considerations, their implementation was deferred to a future edition.
115. In a significant departure from previous editions, selected illustrations throughout the Manual have been made into animations in order to better explain certain concepts and procedures. Where appropriate, figure captions contain links to the IHO website where the animations may be accessed (Home > Standards & Publications > Download > C-51 > Talos Animations).
116. The work on the sections of C-51 that were identified as requiring revision during the final stages of review of Edition 5.0.0 was undertaken in 2015.
117. In order to assist Member States in implementing the technical aspects of UNCLOS, regional seminars were held in conjunction with the business meetings of ABLOS on non-conference years. In 2013, the 20th business meeting held in Oman was followed by a seminar titled “Harmonization with UNCLOS: experiences and observations” attended by approximately 90 delegates from Oman and other countries in the region, including Kuwait, Qatar and Saudi Arabia. In 2014, the 21st business meeting held in Denmark was followed by a seminar titled “UNCLOS and the Arctic - Changes now and in the near future” which was attended by approximately 65 delegates from across the region, including United Kingdom, Faroe Islands and Greenland, as well as representatives from a wide selection of Danish government ministries, technical authorities and universities. In 2016, the 23rd business meeting held in the ROK was followed by a seminar titled “Roles of the Law of the Sea and the Hydrography in Asian Region” which was attended by approximately 45 delegates from across the region, including China and Japan as well as representatives from France and Qatar and a wide selection of Korean government ministries, technical authorities and universities.
118. Workshops on LOS issues were carried out respectively in Muscat, Oman (February 2012), for the ROPME Sea Area Hydrographic Commission, in Ho Chi Minh City, Vietnam (November 2012) and Jakarta, Indonesia (November 2014), for the East Asia Hydrographic Commission, in Paramaribo, Suriname (August 2015) for the Meso American - Caribbean

Sea Hydrographic Commission, and in Fish Hoek, South Africa (December 2015) for the Southern Africa and Islands Hydrographic Commission.

119. ABLOS members participated in a number of conferences related to law of the sea and provided technical inputs in some delimitation discussions.
120. The Secretariat maintains a list of LOS Experts designated by the Member States that is available on the IHO web site.

Element 2.13 - Surface Currents

121. Based on a proposal submitted by Canada, HSSC-4 agreed in 2012 to establish a working group to develop an S-100-based standard for the delivery and presentation of navigationally relevant information about horizontal water movement (currents, tidal flow and river flow). The Surface Current Working Group (SCWG) developed an on-line User Requirements Survey in order to identify user needs and requirements as well as to identify the capabilities and products provided by individual Member States. The User Requirements Survey was also intended to identify what needed to be specified in the standard in order to allow the mariner to visualise and best use current information to navigate safely and to make informed navigational decisions. The survey was open from October to December 2013 to Member States and all relevant parties such as maritime administrations, equipment manufacturers, data distributors, users and other professional and educational organizations so as to gain the widest possible consultation and input. The survey elicited 1,401 responses. Based on the analysis of the responses and inputs from expert contributor and Member States, the working group considered coverage types for currents and developed a list of potential features and attributes. This in turn led to the development of a draft edition of S-111 - *Surface Current Product Specification*. The working draft is now under the responsibility of the TWCWG. The production of test datasets has been initiated in order to assist the production of the feature catalogue and portrayal catalogue.

Comments on the Proposals submitted to the consideration of the Assembly

122. HSSC-6 considered the proposal PRO 6 submitted by the Republic of Korea to the consideration of the Assembly. The Committee endorsed the principles of the changes proposed to IHO Resolution 2/2007 - *Principles and procedures for making changes to IHO technical standards and specifications*, as amended. Noting the potentially significant additional resources involved in implementing the proposed changes, the Committee recommended that the proposal be considered through a holistic review of the Resolution, taking into account the feedback and experience gained, notably with the implementation of the S-101 test strategy, and assessing the impacts on all parties involved.

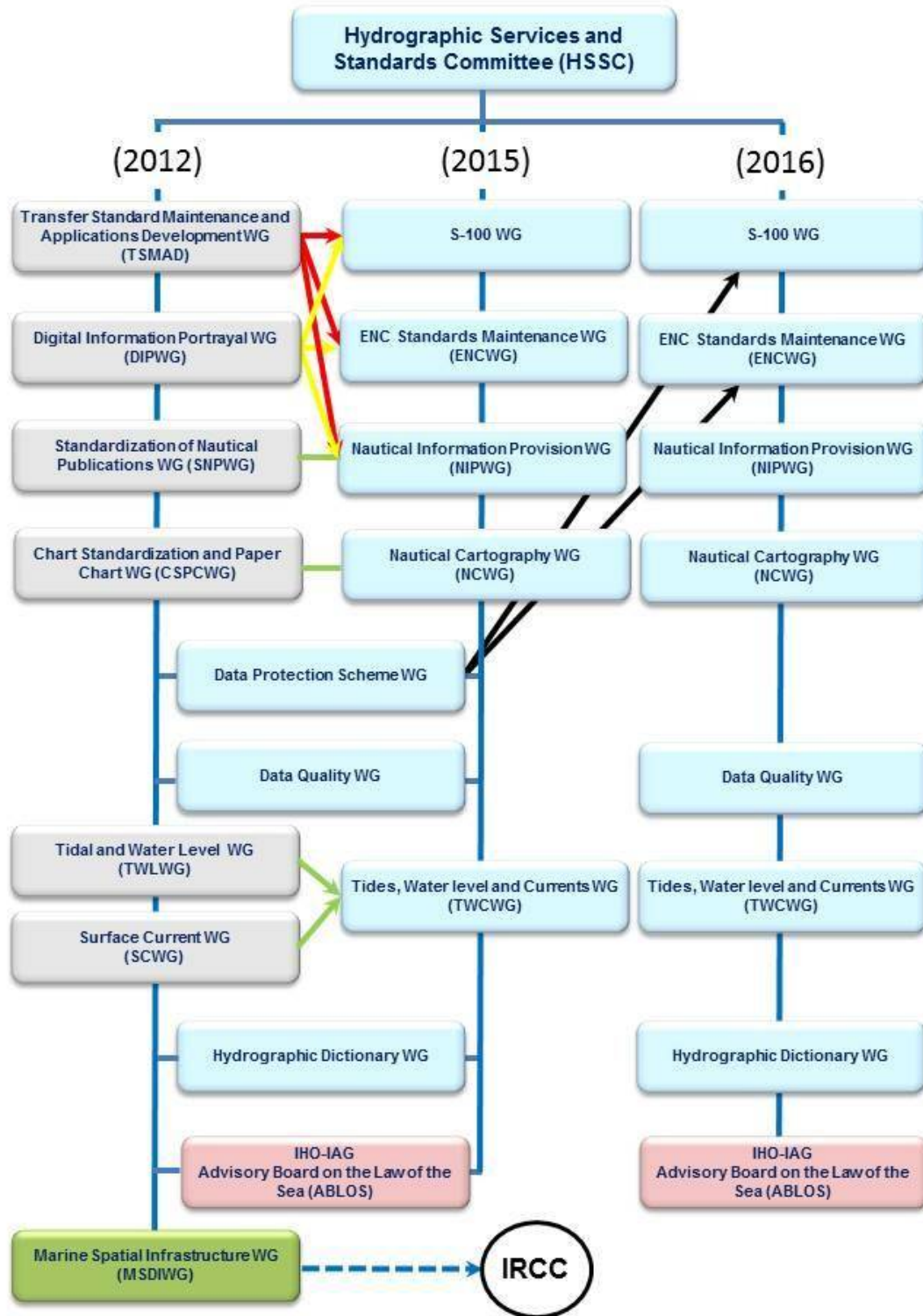
Actions required of the Assembly

123. The Assembly is invited to:
- a) note the report on the execution of programme 2;
 - b) approve the continued existence of the HSSC under its amended Terms of Reference and Rules Of Procedure as indicated in Annex C, subject to the consideration and adoption of the IHO Work Programme 2018-2020;
 - c) express the gratitude of the Organization to the Chairs of subordinate organs and subsidiary bodies who retired from the hydrographic community during the reporting period:
 - Mr Chris CARLETON, United Kingdom
 - Mr Stephen GILL, USA
 - Mr Barrie GREENSLADE, United Kingdom
 - Mr Chris HOWLETT, United Kingdom
 - Mr Peter JONES, United Kingdom
 - Mr Jerry MILLS, United States;

- d) urge Member States to contribute more actively to the implementation of Programme 2 and to maintain the relevant expertise;
- e) acknowledge the significant contribution of expert contributors from industry and academia and encourage their continuing involvement in the activities of the Organization;
- f) urge Member States to ensure consistency between their paper and digital charts and publications through the provision of the appropriate updates;
- g) urge Member States to ensure that the information on national arrangements related to the use of ECDIS are kept current;
- h) consider the recommendation in paragraph 122 above when discussing PRO 6.

Annex A - Structure and membership of HSSC

A.1. Structure of the HSSC and its subordinate bodies



A.2. Hydrographic Services and Standards Committee (HSSC)

1. Chairmanship

Chair Dr Mathias JONAS, Germany

Vice-Chair: Mr Mike PRINCE, Australia

2. Membership

(HSSC list of contacts as at 16 November 2016)

IHO Member States (34): Argentina, Australia, Brazil, Canada, Chile, China, Cuba, Denmark, Ecuador, Estonia, Finland, France, Germany, Greece, India, Indonesia, Italy, Japan, Mexico, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, Republic of Korea, Russian Federation, Singapore, South Africa, Spain, Sweden, Turkey, United Kingdom, USA

Observers (24): CIRM, CLIA, CNITA, DGIWG, FIG, GEBCO, IAG, IALA, IC-ENC, ICPC, ICS, IEC/TC80, IEHG, IMO, IMPA, IOC/IODE, ISO/TC211, INTERTANKO, OGC, OGP, PRIMAR, RTCA, RTCM, UN/DOALOS

3. Meetings

HSSC has met annually since IHC-18 as follows:

HSSC-4	Taunton, United Kingdom	25-28 September 2012
HSSC-5	Shanghai, China	5-8 November 2013
HSSC-6	Viña del Mar, Chile	11-14 November 2014
HSSC-7	Busan, Republic of Korea	9-13 November 2015
HSSC Chair Group Workshop	Paris / Saint-Mandé, France	1-2 June 2016
HSSC-8	Monaco	14-18 November 2016

4. Agenda Items

Standing items:

- HSSC administration (including preparation of inputs to IH Conference/Assembly sessions as appropriate)
- Reports by HSSC working groups
- Reports by inter-organizational bodies
- Decisions of other bodies affecting HSSC
- Review of new developments and other information papers
- Liaison with external stakeholders
- Review and endorsement of HSSC work plan and list of actions

Specific items:

- HSSC-4: IHO Stakeholders' Forum
- HSSC-7: IHO Stakeholders' Open Session
- HSSC Chair Group Workshop:
 - + review of the IHO Strategic Plan
 - + preparation of the HSSC Work Programme for 2018-2020
 - + review of IHO Resolution 2/2007 as amended - *Principles and procedures for making changes to IHO technical standards and specifications*

A.3. Transfer Standard Maintenance and Applications development WG (TSMAD) (2012-2015)

1. Chairmanship

Chair: Mr Barrie GREENSLADE, United Kingdom

Vice-Chair: Ms Julia POWELL, USA

2. Membership

IHO Member States (16): Australia, Brazil, Canada, Denmark, Finland, France, Germany, Japan, Netherlands, New Zealand, Norway, Republic of Korea, South Africa, Sweden, United Kingdom, USA

Expert Contributors (11): CARIS, ECC, ESRI, Furuno, IC-ENC, IIC Technologies, Jeppesen, NAVTOR, SevenCs, T-Kartor, Transas

3. Meetings

TSMAD-24/DIPWG-4	Monaco	7-11 May 2012
TSMAD-25	Tokyo, Japan	15-18 January 2013
TSMAD-26/DIPWG-5	Silver Spring, Maryland, USA	10-14 June 2013
TSMAD-27	Monaco	2-6 December 2013
TSMAD-28/DIPWG-6	Sydney, Australia	31 March - 4 April 2014
Test Cases Sub-WG Meeting	Arlington, Virginia, USA	16-18 September 2014
TSMAD-29/DIPWG-7	Ottawa, Canada	2-6 February 2015

4. Agenda Items

- Maintain and extend S-100 and related projects: S-99, S-101, S-102
- Maintain and extend S-58
- Maintain S-57 FAQ and encoding bulletin sections of IHO web site
- Maintain and extend S-64 IHO Test Data Sets for ECDIS
- Maintain and extend S-57
- Maintain and extend S-65
- Develop and maintain as-yet undefined S-100-based product specifications
- Maintain and extend S-100 registry
- Provide outreach and technical assistance regarding transfer standards

A.4. Digital Information Portrayal WG (DIPWG) (2012-2015)

1. Chairmanship

Chair: Mr Colby HARMON, USA
 Vice-Chair: Mr Thomas MELLOR, United Kingdom

2. Membership

IHO Member States (9): Australia, Brazil, Canada, Finland, France, Germany, Norway, United Kingdom, USA

Expert Contributors (15): CARIS, Det Norske Veritas, Furuno, Geomod, IC-ENC, IEC/TC80, Jeppesen, Kelvin Hughes, OSL, Raytheon, SAM Electronics, SevenCs, Sperry Marine, University of New Hampshire, Transas

3. Meetings

DIPWG-4/TSMAD-24	Monaco	7-11 May 2012
DIPWG-5/TSMAD-26	Silver Spring, Maryland, USA	10-14 June 2013
DIPWG-6/TSMAD-28	Sydney, Australia	31 March - 4 April 2014
DIPWG-7/TSMAD-29	Ottawa, Canada	2-6 February 2015

4. Agenda Items

- Maintain and extend S-52 and its associated Presentation Library
- Contribute to the completion of S-100 and other related projects
- Contribute to the maintenance of S-100 and other related projects
- Monitor relevant international standards
- Assess the impact of other IHO standards on S-52 colours and symbols regulations
- Harmonisation with CSPCWG
- Maintain the DIPWG bulletin and FAQ section on the IHO website
- Investigate enhancing the appearance of existing traditional paper chart symbols used in ECDIS by modifying their size, shape and colour
- Provide, on request, technical assistance on portrayal for S-100 based product specifications

A.5. S-100 WG (since 2015)**1. Chairmanship**

Chair: Ms Julia POWELL, USA

Vice-Chair: Mr Yong BAEK, Republic of Korea

2. Membership

IHO Member States (29): Argentina, Australia, Belgium, Brazil, Canada, China, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, India, Italy, Indonesia, Japan, Netherlands, Norway, Poland, Portugal, Republic of Korea, Russian Federation, Singapore, South Africa, Sweden, United Kingdom, Ukraine, USA

Expert Contributors (17): CARIS, DGIWG, ESRI, Furuno, IALA, IC-ENC, IIC Technologies, IEHG, KHRA, KRISO, NAVTOR, Noverra, Northrop Grumman, PRIMAR, SevenCs, Transas, Wuhan University

3. Meetings

S-100 TSM-3	Jeju Island, Republic of Korea	22-24 September 2015
S-100WG-01	Tokyo, Japan	14-18 March 2016
S-100 TSM-4	Rostock, Germany	13-16 September 2016
S-121 PT Meeting	New York, USA	5-9 December 2016

4. Agenda Items

- Maintain and Extend S-100
- Develop the S-100 Interoperability Specification
- Update the S-100 GI Registry and improve the web interfaces
- Develop and connect the S-100 Feature Catalogue Builder to the S-100 GI Registry
- Develop S-101 Edition 1.0.0
- Develop an S-100/S-101 Test Strategy and Test Bed
- Develop S-102 Edition 2.0.0
- Establish and monitor the project teams established to develop product specifications:
 - o S-121
 - o S-129
- Liaise with other HSSC WGs and other IHO and international bodies

A.6. ENC Standards Maintenance WG (ENCWG) (since 2015)**1. Chairmanship**

Chair: Mr Thomas MELLOR, United Kingdom

Vice-Chair: Mr Mikko HOVI, Finland

2. Membership

IHO Member States (30): Argentina, Australia, Brazil, Canada, Chile, Ecuador, Egypt, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway, Poland, Portugal, Republic of Korea, Russian Federation, Singapore, Slovenia, South Africa, Sweden, Turkey, United Kingdom, Ukraine, USA

Expert Contributors (19): CARIS, DGIWG, ESRI, Furuno, IALA, IC-ENC, IEHG, IIC Technologies, KHRA, KRISO, NAVTOR, Nipon Sogo, Northrop Grumman, PC Marine, PRIMAR, Sanmarine, SevenCs, Transas, Wuhan University

3. Meetings

ENCWG TG-1	Monaco	8-10 February 2016
ENCWG-1	Tokyo, Japan	14-18 March 2016

4. Agenda Items

- Maintain S-52 - Presentation Library
- Maintain S-58
- Maintain S-64
- Maintain S-65
- Maintain S-66
- Develop an ECDIS Data Presentation and Performance Check in Ships compatible with Edition 4.0 of the Presentation Library
- Liaise with other HSSC WGs and other IHO and international bodies

A.7 Nautical Information Provision WG (NIPWG) (formerly Standardization of Nautical Publications WG (SNPWG))

1. Chairmanship

Chair: Mr Jens SCHROEDER-FUERSTENBERG, Germany

Vice-Chair: Mr Thomas LOEPER, USA

2. Membership

IHO Member States (21): Argentina, Brazil, Denmark, Estonia, Finland, France, Germany, India, Italy, Japan, Netherlands, Norway, Poland, Republic of Korea, Russian Federation, Singapore, South Africa, Spain, Sweden, United Kingdom, USA

Expert Contributors (10): Anthropocene Institute, CARIS, CIRM, IHMA, Interschalt, KRISO, Novaco, Snowflake, Transas, University of New Hampshire

3. Meetings

SNPWG-14	Monaco	13-17 February 2012
SNPWG-15	Helsinki, Finland	12-16 November 2012
SNPWG-16	Silver Spring, Maryland, USA	3- 7 June 2013
SNPWG-17	Rostock, Germany	7-10 April 2014
SNPWG-18	Cadiz, Spain	1-4 December 2014
NIPWG-1	Monaco	29 June - 3 July 2015
NIPWG-2	Monaco	21-24 March 2016
NIPWG-3	Busan, Republic of Korea	5-9 December 2016

4. Agenda Items

- Specify and develop nautical information layers for use in ECDIS:
 - o S-122
 - o S-123
 - o S-125
 - o S-126
 - o S-127
 - o S-128
- Monitor the requirements for and provision of nautical information in e-navigation test-beds
- Develop high level specifications for a combined Maritime Service Portfolio (MSP) covering the provision of hydrographic services to mariners in accordance with the IMO e-navigation strategy implementation plan
- Liaise with other HSSC WGs and other IHO and international bodies

A.8 Nautical Cartography WG (NCWG) (formerly Chart Standardization and Paper Chart WG (CSPCWG))

1. Chairmanship

Chair: Mr Peter JONES, United Kingdom, until March 2014
 Mr Jeff WOOTOON, Australia, until September 2016
 Mr Mikko HOVI, Finland

Vice-Chair: Mr Jeff WOOTTON, Australia, until March 2014
 Mr Chris THORNE, United Kingdom, until August 2014
 Mr Nick WEBB, United Kingdom, until March 2016
 Mr Mikko HOVI, Finland, until September 2016
vacant since 1 October 2016

2. Membership

IHO Member States (29): Australia, Brazil, Canada, Chile, Colombia, Denmark, Egypt, Finland, France, Germany, Greece, India, Indonesia, Iran (Islamic Republic of), Italy, Japan, Latvia, Netherlands, New Zealand, Norway, Pakistan, Republic of Korea, Russian Federation, South Africa, Spain, Sweden, Turkey, United Kingdom, USA

Expert Contributors (2): ESRI, Jeppesen

3. Meetings

CSPCWG-9	Seoul, Republic of Korea	13-16 Nov 2012
CSPCWG-10	Wellington, New Zealand	21-24 January 2014
CSPCWG-11/NCWG-1	Rostock, Germany	27-30 April 2015
Workshop for Regional INT Chart/ENC Coordinators	Monaco	25 April 2016
NCWG-2	Monaco	26-29 April 2016

4. Agenda Items

- Maintain and extend S-4
- Maintain and extend S-11 Part A
- Develop new (and revised) symbology
- Maintain S-4 supplementary publications INT 1, 2 & 3
- Liaise with other HSSC WGs and other IHO and international bodies

A.9 Data Protection Scheme WG (DPSWG)

1. Chairmanship

Chair: Mr Jonathan PRITCHARD, United Kingdom

Vice-Chair: Mr Robert SANDVIK, Norway

2. Membership

IHO Member States (6): Australia, France, Germany, Japan, Norway, United Kingdom

Expert Contributors (9): ChartWorld, Furuno, IC-ENC, IIC Technologies, Japan Radio Company, Kelvin Hughes, PRIMAR, SAM Electronics, Transas

3. Meetings

DPSWG-9	Monaco	26-28 February 2013
DPSWG-10	Monaco	13-15 May 2014
DPSWG-11	Tokyo, Japan	14-18 March 2016

4. Agenda Items

- Maintain and extend S-63
- Provide technical support to the Scheme Administrator, OEMs and Data Servers
- Develop a new edition of S-63 to support S-101 development
- Develop views on Data Supply Chain Certification
- Monitor the development of the industry guidance on maritime cybersecurity and advice HSSC on possible future actions

A.10 Data Quality WG (DQWG)

1. Chairmanship

Chair: Mr Chris HOWLETT, United Kingdom, until December 2014
Mr. Antti CASTREN, Finland

Vice-Chair: Mr Leendert DORST, Netherlands, until November 2014
Mr. Antti CASTREN, Finland, until December 2014
Mr Sean LEGEER, USA, from July 2015

2. Membership

IHO Member States (10): Australia, Brazil, Finland, France, Italy, Netherlands, Norway, Sweden, United Kingdom, USA

Expert Contributor (1): CARIS

3. Meetings

DQWG-6	Silver Spring, Maryland, USA	24-26 July 2012
DQWG-7	Fredericton, New Brunswick, Canada	16-18 July 2013
DQWG-8	Wollongong, Australia	25-27 March 2014
DQWG-9	Poole, United Kingdom	3-7 November 2014
DQWG-10	Brest, France	7-9 July 2015
DQWG-11	Arlington, Virginia, USA	10-12 May 2016

4. Agenda Items

- Monitor and further develop quality indicators for hydrographic data
- Develop data quality related elements of S-101 and other S-100-based product specifications
- Investigate possible methods to educate practicing mariners on data quality issues
- Investigate data quality related topics concerning crowd sourced hydrographic information
- Investigate data quality related topics concerning satellite derived bathymetry
- Liaise with other HSSC WGs and other IHO and international bodies

A.11 Tides, Water level and Currents WG (TWCWG) (formerly Tidal and Water Level WG (TWLWG))

1. Chairmanship

Chair: Mr Stephen GILL, USA, until May 2013
Ms Gwenaële JAN, France

Vice-Chair: Ms Zarina JAYASWAL, Australia, until May 2013
Mr Chris JONES, United Kingdom, until April 2015
Mr Louis MALTAIS, Canada

2. Membership

IHO Member States (34): Argentina, Australia, Brazil, Canada, Chile, China, Denmark, Ecuador, Egypt, Estonia, Finland, France, Germany, India, Indonesia, Italy, Japan, Netherlands, New Zealand, Norway, Peru, Poland, Portugal, Republic of Korea, Russian Federation, Singapore, South Africa, Spain, Sweden, Ukraine, United Kingdom, Uruguay, USA, Venezuela.

Expert Contributors (4): IOC-GLOSS; C-Map, SPAWAR Atlantic, University of New Hampshire

3. Meetings

TWLWG-4	Fish Hoek, South Africa	8-10 May 2012
TWLWG-5	Helsinki, Finland	13-17 May 2013
TWLWG-6	Wollongong, Australia	25-28 March 2014
TWLWG-7	Silver Spring, Maryland, USA	21-24 April 2015
TWCWG-1	Niteroi, Brazil	25-29 April 2016

4. Agenda Items

- Maintain the list of standard tidal constituents
- Compare the tidal predictions generated as a result of analysis of a common data set using different analysis software
- Develop, maintain and extend a product specification for digital tide tables
- Develop, maintain and extend a product specification for the transmission of real-time tidal data (S-112)
- Develop, maintain and extend a product specification for the transmission of real-time surface current data
- Develop, maintain and extend a product specification for dynamic surface currents in ECDIS (S-111)
- Develop, maintain and extend a product specification for dynamic tides in ECDIS (S-104)
- Liaise with S-100WG on tidal and current matters relevant to ECDIS applications
- Liaise with industry experts on the development of product specifications for tides and currents
- Prepare and maintain an inventory of tide gauges and current meters used by Member States and publish it on the IHO web site
- Review feedback of on-line real time water level observation document
- Develop and maintain material for course on tides, water levels and currents

A.12 Surface Current WG (SCWG) (2013-2015)

1. Chairmanship

Chair: Mr Kurt HESS, USA

Vice-Chair: Mr Louis MALTAIS, Canada

2. Membership

IHO Member States (7): Canada, France, Japan, Netherlands, Republic of Korea, Spain, USA

Expert Contributors (4): CARIS, Jeppesen, SPAWAR Atlantic, University of New Hampshire

3. Meetings

SCWG-1	Silver Spring, Maryland, USA	29-31 May 2013
SCWG-2	Québec City, Canada	28-30 May 2014
SCWG-3	Tokyo, Japan	13-15 May 2015

4. Agenda Items

- Develop, maintain and extend a product specification for the transmission of real-time surface current data
- Develop, maintain and extend a product specification for dynamic surface currents in ECDIS (S-111)

A.13 Hydrographic Dictionary WG (HDWG)

1. Chairmanship

Chair: Mr Jerry MILLS, USA, until December 2012

Mr Jean LAPORTE, France

Vice-Chair: vacant

2. Membership

IHO Member States (8): Argentina, Australia, Brazil, France, Malaysia, Spain, Uruguay, USA.

Expert Contributor (1): CARIS

3. Meetings

None

4. Agenda Items

- Maintain and extend the definitions in the IHO Dictionary in French, English and Spanish
- Liaise with other IHO bodies preparing publications containing glossaries
- Liaise with other organizations developing dictionaries and/or glossaries
- Develop the Spanish language Wiki version of S-32 with commercial contract support
- Investigate options (scope, format / content management system, languages, cross-references, maintenance regime, etc.) and associated resource requirements and timeline to produce [and maintain] a reference edition of S-32
- Develop a multilingual Wiki crowd-sourced demonstrator for the Hydrographic Dictionary

A.14 Marine Spatial Data Infrastructure WG (MSDIWG) (2012-2014)

(see the report on Programme 3 for the period 2015-2016)

1. Chairmanship

Chair: Mr Jens Peter HARTMANN (Denmark)

Vice-Chair: Ms Ellen VOS (Netherlands)

2. Membership

IHO Member States (26): Argentina, Australia, Brazil, Canada, Cuba, Denmark, Estonia, Finland, France, Germany, Italy, Japan, Latvia, Nigeria, Netherlands, Norway, Portugal, Republic of Korea, Romania, Singapore, Slovenia, Spain, Sweden, Ukraine, United Kingdom, USA

Expert Contributors (8): CARIS, Envitia, ESRI, EUCC, Geosciences Australia, KESTI, OceanWise, Wuhan University

3. Meetings

MSDI Open Forum	Copenhagen, Denmark	30 January 2013
MSDIWG-4	Copenhagen, Denmark	31 January - 1 February 2013
MSDI Open Forum	Silver Spring, Maryland, USA	4 Feb 2014
MSDIWG-5	Silver Spring, Maryland, USA	5-7 February 2014

4. Agenda Items

- Investigate methods for IHO to support Member States' capability development in MSDI
- Monitor national and international marine SDI activities and liaise to increase visibility
- Identify and recommend possible solutions to significant technical issues related to interoperability
- Maintain and extend C-17 - *Spatial Data Infrastructures: The Marine Dimension - Guidance for Hydrographic Offices*

A.15 IHO-IAG Advisory Board on the Law of the Sea (ABLOS)

1. Chairmanship

Chair: Mr Chris M. CARLETON, IHO, United Kingdom, until October 2012
 Prof. Sunil BISNATH, IAG, Canada, until October 2015
 Mr John BROWN, IHO, United Kingdom

Vice-Chair: Prof. Sunil BISNATH, IAG, Canada, until October 2012
 Mr John BROWN, IHO, United Kingdom, until October 2015
 Dr Niels ANDERSEN, IAG, Denmark

2. Membership

The Advisory Board comprises 4 representatives from IHO Member States and 4 representatives from the International Association of Geodesy (IAG). The UN DOALOS and the IHO Secretariat are ex-officio members. IHO Member States may send observers to the meetings and other observers may attend at the invitation of the Chairman

3. Meetings

ABLOS-19 Business Meeting	Monaco	1 & 6 October 2012
ABLOS-7 Conference	Monaco	3-5 October 2012
ABLOS-20 Business Meeting	Muscat, Oman	28 - 29 October 2013
ABLOS-21 Business Meeting	Copenhagen, Denmark	21-23 October 2014
ABLOS-22 Business Meeting	Monaco	19 & 22 October 2015
ABLOS-8 Conference	Monaco	20-22 October 2015
ABLOS-23 Business Meeting	Seoul, Republic of Korea	26-28 October 2016

4. Agenda Items

- Organize the bi-annual ABLOS Conference
- Maintain C-51
- Deliver a standard training program on the hydrographic aspects of maritime delimitation
- Provide advice and guidance on the technical aspect of the law of the sea to relevant organizations, bodies and Member States

A.15 Attendance of IHO Member States at HSSC and WG meetings

Number of meetings Member State	HSSC	TSMAD	DIPWG	S-100WG	ENC WG	SNPWG NIPWG	CSPCWG NCWG	DPSWG	DQWG	TWLWG TWCWG	SCWG	HDWG	MSDI WG
	5	6	4*	1	1	8	4	3	6	5	3	/	2**
Argentina													1
Australia	5	6	4	1	1		4	2	5	4			1
Belgium	1												
Brazil	4	6	4	1	1	2	2			4			2
Canada	5	6	4	1	1		3		2	2	3		
Chile	4									2			
China	4			1						1			
Cuba													
Democratic People's Republic of Korea	1												
Denmark	3	3	2	1		5	3						2
Ecuador	2									1			
Egypt				1	1		1						
Estonia													1
Finland	5	6	4	1	1	5	4		5	4			1
France	5	6	4	1	1	8	4	3	5	4	3		2
Germany	5	6	4		1	8	4			1			1
Greece	2												
India	2												
Indonesia	1			1	1		1		1				
Iran (Islamic Republic of)							1						
Italy	2			1	1	2	1		1				
Japan	4	6	4		1	8	2			2	1		2
Latvia							2						1

Number of meetings Member State	HSSC	TSMAD	DIPWG	S-100WG	ENC WG	SNPWG NIPWG	CSPCWG NCWG	DPSWG	DQWG	TWLWG TWCWG	SCWG	HDWG	MSDI WG
	5	6	4*	1	1	8	4	3	6	5	3	/	2**
Malaysia	1												
Mexico	1					1	1		1				
Netherlands	5	5	3	1	1	3	3		6	2	3		2
New Zealand				1			1			1			
Norway	5	5	4		1	6	4	3		5			2
Peru	2									4			
Poland	5												
Portugal	1												
Republic of Korea	5	6	4	1		6	3			3	1		
Russian Federation		3	2	1	1	2	1			1			
Saudi Arabia	1												
Singapore	4												
South Africa	1	1	1							1			
Spain	2					7	4			3	2		2
Sweden	4	6	4	1	1	4	4		3	1			
Thailand	1												
Turkey	5	1					2		1				
United Kingdom	5	6	4	1	1	8	4	3	6	5			2
USA	5	6	4	1	1	8	4		6	4	3		2
Venezuela						1							

* Joint TSMAD-DIPWG meetings

** 2012-2014

Annex B - HSSC Working Level Performance Indicators

Metric	Source	Rationale	Status 31 Dec 2012	Status 31 Dec 2013	Status 31 Dec 2014	Status 31 Dec. 2015	Status 31 Dec. 2016
Number of S-100 based product specifications approved	IHO Secretariat	Relative indicator of uptake of IHO standards including for purposes other than SOLAS navigation	1	0	0	0	0
Percentage of annual work programme achieved	HSSC WGs (all)	Progress against objectives in the strategic plan	17%	19%	52%	46%	42%
Total number of participants at meetings (Member States (MS) and Expert Contributors(EC))	HSSC WGs (all)	Indicates participation of MS and wider community in execution of the plan	168 <i>MS: 131</i> <i>EC: 37</i> (9 meetings)	258 <i>MS: 172</i> <i>EC: 86</i> (10 meetings)	171 <i>MS: 128</i> <i>EC: 43</i> (11 meetings)	158 <i>MS:130</i> <i>EC: 28</i> (7 meetings)	218 <i>MS: 150</i> <i>EC: 68</i> (9 meetings)
Number of technical revisions and clarifications approved	IHO Secretariat	Indicative of ability to provide comprehensive, safe and effective standards	5	3	2	7	1
Number of ENC's distributed annually under license (equivalent annual licences)	WEND WG	Relative indicator of ENC usage throughout SOLAS market ²	2,052,269	2,202,487	2,272,923	2,678,741	3,149,772

² Total of Primar and IC-ENC distribution only - does not include local distribution or other distribution mechanisms

Annex C - Terms of Reference and Rules of Procedure of the HSSC

- Ref: a/ Decision 4 of the XVIIIth IHC (editorial corrections made in July 2013).
 b/ IHO CL 23/2015 and CL 41/2015 (amendment to the Rules of Procedure).
 c/ Entry into force of the Protocol of Amendments to the Convention on the IHO.

Considering the need to promote and coordinate the development of standards, specifications and guidelines for official products and services to meet the requirements of mariners and other users of hydrographic information, the International Hydrographic Organization establishes a Hydrographic Services and Standards Committee (HSSC) with the following Terms of Reference and Rules of Procedure. The HSSC shall be the IHO Technical Steering Group acting on behalf of all Member States and shall report to each ordinary session of the Assembly through the Council.

1. Terms of Reference

- 1.1 Monitor the requirements of mariners and other users of hydrographic information concerning the use of hydrographic products and information systems that may require data and information provided by national hydrographic authorities, and to identify those technical matters that may affect the activities and products of those authorities.
- 1.2 Monitor the work of specified IHO Inter-Organizational Bodies engaged in hydrographic services, standards and related technical activities as directed by the Assembly and provide advice and guidance to the IHO representatives as required.
- 1.3 Study and propose methods and standards for the acquisition, assessment and provision of official hydrographic data, nautical products and other related services.
- 1.4 Maintain technical liaison with other relevant stakeholders, such as type-approval authorities, navigation equipment manufacturers, and the hydrographic data user-community.
- 1.5 Prepare and maintain publications related to the objectives of the Committee.
- 1.6 Prepare a Committee Work Programme and propose it to each ordinary session of the Assembly through the Council. Consider and decide upon proposals for new work items under the Committee Work Programme, taking into account the financial, administrative and wider stakeholder consequences and the IHO Strategic Plan and Work Programme.
- 1.7 Monitor the execution of the Committee Work Programme and report to each meeting of the Council, including an evaluation of the performance achieved.
- 1.8 Propose to the Assembly through the Council, the establishment of new Sub-Committees, when needed, supported by a comprehensive cost-benefit analysis.
- 1.9 As required, establish Working Groups to fulfil the Committee Work Programme, in conformance Article 6 of the General Regulations and approve their Terms of Reference and Rules of Procedure.
- 1.10 Monitor the work of its Sub-committees, Working Groups and other bodies directly subordinate to the Committee.
- 1.11 Review annually the continuing need for each Working Group previously established by the Committee.
- 1.12 Liaise and maintain contact with relevant IHO and other bodies to ensure that IHO work activities are coordinated.

1.13 Liaise with other relevant international organizations and Non-Government International Organizations (NGIOs).

1.14 These Terms of Reference can be amended in accordance with Article 6 of the General Regulations.

2. Rules of Procedure

2.1 The Committee shall be composed of representatives of Member States. The Chairs of the relevant subordinate bodies of the Committee, or their nominated representatives, shall attend and report at all Committee Meetings. International Organizations and accredited Non-Government International Organizations (NGIOs) may attend Committee Meetings.

2.2 A Director of the Secretariat shall act as Secretary to the Committee. The Secretary shall prepare the reports required for submission to each meeting of the Council and to sessions of the Assembly as directed by the Council.

2.3 The Chair and Vice-Chair shall be a representative of a Member State. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Assembly and shall be determined by vote of the Member States present and voting. If the Chair is unable to carry out the duties of the office, the Vice-Chair shall act as the Chair with the same powers and duties.

2.4 The Committee shall meet once a year, unless decided otherwise by the Committee, whenever possible in conjunction with another relevant conference or meeting. The venue and date of the meeting shall be decided at the previous meeting, in order to facilitate participants' travel arrangements. Meetings should normally be scheduled to precede a session of the Council or Assembly by approximately four months. The Chair or any member of the committee, with the agreement of the simple majority of all members of the Committee, can call extraordinary meetings. Confirmation of the venue and date shall normally be announced at least six months in advance. All intending participants shall inform the Chair and Secretary ideally at least one month in advance of their intention to attend meetings of the Committee.

2.5 Decisions shall generally be made by consensus. If votes are required on issues or to endorse proposals presented to the Committee, decisions shall be taken by a simple majority of Committee Members present and voting. When dealing with inter-sessional matters by correspondence, a simple majority of all Committee Members shall be required.

2.6 The draft record of meetings shall be distributed by the Secretary within six weeks of the end of meetings and participants' comments should be returned within three weeks of the date of despatch. Final minutes of meetings should be distributed to all IHO Member States and posted on the IHO website within three months after a meeting.

2.7 The working language of the Committee shall be English.

2.8 The Committee shall progress its work primarily through Working Groups, each of which shall address specific tasks. ~~If required, a coordinating Sub-committee on Data Acquisition & Transfer Standards and a coordinating Sub-committee on Symbolology & Data Presentation Standards shall coordinate the work of those working groups dealing with data and presentation standards respectively. Sub-committees and Working Groups shall operate by correspondence to the maximum extent practicable.~~

2.9 Recommendations of the Committee shall be submitted to IHO Member States for adoption through the Council to the Assembly.

2.10 These Rules of Procedure can be amended in accordance with Article 6 of the General Regulations.

PROGRAMME 3
Inter Regional Coordination
and Support
2012 - 2016

REPORT ON PROGRAMME 3 INTER REGIONAL COORDINATION AND SUPPORT 2012-2016

Introduction

1. The IHO Work Programme 3 - Inter-Regional Coordination and Support, seeks to establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions, especially on matters associated with Capacity Building (CB); the World-Wide Navigational Warning Service; General Bathymetry and Ocean Mapping, Marine Spatial Data Infrastructures (MSDI), Education and Training, and the implementation of the Worldwide ENC Database (WEND), suitable for the needs of international shipping. IHO Work Programme 3 is implemented under the principal responsibility of the Inter-Regional Coordination Committee (IRCC).

Difficulties and challenges yet to be addressed

2. **Level of engagement of Regional Hydrographic Commissions.** The level of engagement of Regional Hydrographic Commissions (RHCs) in support of IRCC activities and objectives has varied greatly from region to region. Some RHCs have been active and responsive, both within their regions and with the Secretariat, whereas the level of involvement of a smaller number of RHCs has been much less. Some Commissions find difficulty in identifying Member States willing or able to devote the resources required to occupy the Chair. Obtaining RHC input to the IHO Reports and responses to IRCC Circular Letters has been patchy and slow.
3. **Performance Indicators.** Obtaining the necessary annual data and information for the Performance Indicators (PI) and the additional six-monthly progress reports (in accordance with Decision No. 3 of the 5th Extraordinary International Hydrographic Conference (EIHC-5)) from relevant IRCC bodies was problematic in a number of cases. It may be that in some instances, the chosen PI is not a good indicator or that it is simply too difficult to measure or to report. For these reasons, and as required by EIHC-5 Decision 3, the progress monitoring and risk management framework needs to be considered further at the 1st Session of the IHO Assembly (see document A.1/WP1/03).
4. **IHO Capacity Building Programme.** The IHO Capacity Building Programme is a strategic objective of the organization which has operated successfully within the available funds. However, the requirements for capacity building activities continue to outstrip resources - more funds are required. The short-term tenure of some RHC Capacity Building Coordinators led to a lack of continuity or ownership of the issues, which, in turn, reduced the capacity of the regions affected to properly take full benefit of the Capacity Building Programme. It would be preferable that the appointment of capacity building coordinators is regarded as a longer-term appointment that may not necessarily be linked to the length of the term of the Chair of an RHC.
5. **Secretariat resources available to support Programme 3.** Personnel resources in the IHO Secretariat available to provide administrative support to the IHO Capacity Building Programme and to the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) are stretched. This is due to the significant increase in the level of activities of both of these bodies. This shortfall has been raised consistently by the relevant bodies and the recruitment of additional staff has been endorsed in principle by the IRCC.

6. **HO involvement in Marine Spatial Data Infrastructures.** Awareness of the importance and significance of involvement by Hydrographic Offices (HO's) in Marine Spatial Data Infrastructures (MSDI) is growing, but many HO's are still focussed on gathering data primarily for chart production rather than to provide authoritative and relevant hydrographic geospatial data as a basic building block of national and regional economic and environmental management and development.
7. **Increasing IBSC Workload and Complexity.** The workload of the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) has increased significantly in recent years due to the success of the Standards and the development / transition to the new standards framework. More organizations (commercial, defence and academia) are submitting more programmes year on year which puts considerable pressure on Board members and the IHO Secretariat to address all of the work of the IBSC intersessionally and during the annual meeting.

The continuing challenge is to overcome the increasing workload of the IBSC with limited resources and scarce expertise in an efficient and effective manner to the satisfaction of the three parent organizations (FIG, IHO, ICA) and submitting organizations.

8. **Political Influence on SCUFN Activities.** Some aspects of the activities of the Sub Committee on Undersea Feature Names (SCUFN) have attracted unhelpful political attention. Some Member States have made claims that the naming of certain undersea features carries sovereignty implications. It is the general view of SCUFN that this is not the case, in the context of the applicable guidelines (IHO Publication B-6). The GEBCO Guiding Committee has striven to protect SCUFN from being drawn into political agendas.
9. The difficulties and challenges yet to be addressed by the RHCs are included as part of each individual RHC Report that has been submitted in accordance with paragraph 7 of IHO Resolution 2/1997 as amended.

Achievements/Outputs/Conclusions

10. The IRCC, through its annual meetings, provided an excellent and productive forum to discuss the activities, outputs and outcomes, and the work plans for each subsequent intersessional period of the Regional Hydrographic Commissions, as well as to develop a common strategy to achieve the objectives of the IHO.
11. The IRCC coordinated and enhanced cooperation in hydrographic activities amongst States on a regional basis, and also, between the regions. In this respect, hydrography was promoted and these efforts supported the accession of new Member States to the IHO (Montenegro, Georgia, Viet Nam, and Brunei Darussalam) and applications to join from several others.
12. The IRCC encouraged the RHCs, in coordination with their Member States, to be attentive to opportunities to raise awareness of the value and role of hydrography and the importance of improving mankind's knowledge of the seas and oceans in support of the United Nations 2030 agenda for sustainable development, disaster risk reduction and the integrity of the oceans.
13. IRCC strongly supported increasing the level of CBSC activities and the efficient implementation of the annual IHO Capacity Building Work Programmes (CBWP) by the RHCs and encouraged additional funding contributions to enhance the delivery of the Capacity Building Programme. As a result, the level of activity of the CB Programme increased significantly during the report period. The IRCC also guided the CBSC on its

revision of the CB Strategy which was subsequently endorsed by the 5th Extraordinary International Hydrographic Conference (EIHC-5) in October 2014.

14. The IRCC encouraged the RHCs to consider risk assessment methodologies, for example, the model developed by New Zealand, as an important tool in the assessment and justification for Capacity Building, and to prioritize requirements for hydrographic surveys.
15. The IRCC monitored the WENDWG activities and the continuing progress being made towards the full implementation of the WEND Principles and the Guidelines. The IRCC encouraged the RHCs to work on reducing overlapping data in regional ENC coverage by applying the WEND Principles and Guidelines when determining ENC production boundaries. The IRCC continued to support RENC to RENC cooperation.
16. Taking into account Decision 12 of EIHC5 concerning the long term consequences of not achieving full implementation of the WEND Principles, the IRCC tasked its WENDWG to review the WEND Principles and the Guidelines in relation to the status of their implementation, and the status of ENC coverage including gaps and overlaps. Based on the subsequent WENDWG report delivered to the 7th meeting of the IRCC (2015), the IRCC agreed that no further action should be taken at present on amending the WEND Principles and Guidelines.
17. The IRCC commended the work done by the Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC) and its long-term positive impact on the safety of navigation. The IRCC encouraged the RHCs to seek more engagement by Member States, national MSI Coordinators and Observers in matters related to the WWNWS.
18. The IRCC monitored the activities of the MSDI Working Group after its governance was transferred from the HSSC to the IRCC at the beginning of 2015 and encouraged the RHCs to emphasize the role and value of Hydrographic Offices being involved in their respective national special data infrastructures.
19. The IRCC increased its level of oversight of the General Bathymetric Chart of the Oceans (GEBCO) project and the governance and administration of the GEBCO Guiding Committee (GGC) with regard to the effective financing and implementation of the GEBCO work plan. The on-line GEBCO Gazetteer of Undersea Feature Names, funded and developed by the United States at the IHO Data Centre for Digital Bathymetry and maintained by the IHO Secretariat, became fully operational in 2013.
20. The IRCC recognized the relevance of the activities and aspirations of the Group on Earth Observations (GEO) and supported the continuation of IHO representation in GEO related events.
21. The IRCC monitored the work of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) and commended the work done by the IBSC with respect to the review of the increasingly large number of submissions and the development of separate competency requirements for Category "A" and Category "B" hydrographic surveyors and nautical cartographers.
22. The IRCC established the IHO-EU Network Working Group (IENWG) in 2014 and the Crowd Sourced Bathymetry Working Group (CSBWG) in 2015 (as a result of Decision 8 of EIHC-5).
23. In 2012, the 18th International Hydrographic Conference (IHC-18) welcomed the monitoring system to be put in place by the IHB Directing Committee based on the Strategic Performance Indicators (SPIs) in the Strategic Plan (see CONF.18/WP.1/Add.2) and invited it to take action. The IRCC was also invited to review the Working Level Performance Indicators (WPIs) relevant to its activities. The IRCC

reviewed the WPIs related to its activities at its 3rd and 4th meetings, in 2011 and 2012 respectively. IRCC4 agreed to monitor the WPIs and invited the RHCs and the relevant subsidiary organs to provide annually, to the IRCC Chair, their estimated values as of 31 December of the preceding year, and target values as of 31 December of the following year. The Annual Report of the IHO for 2012 included Performance Indicators for the first time. As repeated in the subsequent IHO Annual Reports, obtaining the necessary input from IRCC bodies has been problematic, although the situation improved a little over time. The published IRCC WPIs for the period 2012-2016 are shown in Annex A.

24. As directed by Decision 3 of EIHC-5 in 2014, performance monitoring was supplemented by a biannual reporting mechanism that requested the Chairs of committees, sub-committees and working groups to report at year-end and mid-year on the overall status of their respective work programmes by completing a template listing current goals and priorities and current or expected gaps and needs. The outcome of the first three biannual assessments was submitted to Member States through IHO Circular Letters (CL 17/2015, 66/2015, 14/2016, 48/2016). Most entities under the governance of the IRCC did not provide their biannual reports as requested. The following entities provided their reports:
 - end of 2014: EAthC, MACHC, NIOHC, NSHC, SAIHC, HCA, CBSC, WWNWS-SC, IENWG, MSDIWG, WEND-WG, GEBCO GC, TSCOM & SCRUM, SCUFN.
 - mid-2015: EAthC, MACHC, NSHC, SAIHC, HCA, WWNWS-SC, IENWG, WEND-WG, GEBCO GC, TSCOM & SCRUM, SCUFN.
 - end of 2015: EAthC, MACHC, NIOHC, NSHC, SAIHC, WWNWS-SC, IENWG, WEND-WG, TSCOM & SCRUM, SCUFN.
 - mid-2016: MBSHC, MACHC, NSHC, SAIHC, HCA, CBSC, IENWG, CSBWG,
25. The structure, membership, meetings and standing agenda items of the IRCC are shown in Annex B.
26. Reports from the IRCC subordinate bodies during the period of 2012-2016 are provided in Annex C.
27. The Terms of Reference and Rules of Procedure of the IRCC are shown in Annex D.

Element 3.1 Co-operation with Member States and attendance at relevant meetings

28. The objective of this element is to facilitate coordination, cooperation and collaboration among IHO Member States in order to improve the provision of hydrographic and charting services and products through the structure of the 15 RHCs and the IHO Hydrographic Commission on Antarctica.
29. This element of the Work Programme is largely accomplished through the meetings of the RHCs. The frequency of meetings of the RHCs has varied from annually to triennially, depending on the region. RHC meetings continued to increase in importance as they exercise an increasingly active role in the overall planning, execution and assessment of the IHO Work Programme as it relates to their regions.
30. The main achievements and outputs of the RHCs and the HCA are included under their individual reports in Annex E.

Element 3.2 Increase participation by non-Member States

31. One of the important strategic goals of the IHO is to increase the participation of non-Member States in IHO activities. The objectives of this element are:
 - to raise awareness in non-Member States of the importance of hydrography and

nautical charting services and their related products,

- to give advice to coastal States on how to comply with international regulations such as SOLAS Chapter V and highlight the importance of coordinated efforts in providing for safety of navigation and protection of the marine environment, and
 - to stress the importance of becoming an IHO Member State and of integration in the work of the RHCs.
32. Taking the opportunity of attending regional and other international meetings / events, in particular during the BSHC, EAHC, MACHC, MBSHC, NIOHC, RSAHC, SAICHC, SWPHC, IMO and IOC meetings held during the period, the IHO Secretary-General and Directors, Assistant Directors and IHO representatives from the RHCs visited and briefed a number of high level governmental officials directly and through their diplomatic representatives as part of the IHO awareness-raising campaign. During the reporting period, Albania, Azerbaijan, Brunei Darussalam, Bulgaria, Cambodia, Jordan, Liberia, Maldives Malta, Mauritania Montenegro, Panama, Republic of the Congo, Timor Leste and Viet Nam were visited or contacted by IHO representatives in order to promote the value of the activities of the Organization.
33. Non-Member States of the IHO were encouraged and invited to participate in the RHC meetings, CB initiatives and relevant IHO meetings.
34. Additional information related to Element 3.2 is included under the individual RHC Reports which are provided in Annex E, when applicable.

Accession of New Member States

35. During the reporting period Cameroon, Montenegro, Georgia, Viet Nam, and Brunei Darussalam joined the IHO as Member States (as of 31 December 2016). This brought the IHO membership to 85 Member States.

Element 3.3 Capacity Building Management

36. The IHO Capacity Building Programme is a strategic objective of the organization that considers the maturity of coastal States and provides targeted training, technical assistance and hydrographic awareness seminars aimed at improving nautical charting and the delivery of maritime safety information in regions, particularly for developing countries. The Capacity Building Programme is implemented by the Capacity Building Sub-Committee (CBSC) in close coordination with the IHO Secretariat.
37. During this reporting period, the IHO Capacity Building Programme has been funded from the IHO budget supplemented by additional specific support from Member States (Japan, through the Nippon Foundation, and the Republic of Korea). Many other Member States contributed significant in-kind resources to the CB Programme.
38. Taking into account the growing demands for IHO Capacity Building activities, more funds and contributions are required. For this reason, the Secretary-General and Directors of the IHO continued their campaign to identify additional donor States and funding organizations. This included visits to high level authorities in several countries, participation in RHC meetings, attendance at various seminars and conferences, and the active promotion of IHO activities in specialized magazines and journals. IHO representatives engaged external stakeholders such as the United Nations, IMO, IALA, the European Commission, funding agencies (in particular the World Bank), academia and industry in general. IHO representatives had several meetings with the World Bank which were helpful for networking and identifying funding opportunities for regional hydrographic projects, in particular for the Caribbean, West Africa and South West Pacific regions.

39. The level of activity of the IHO Capacity Building (CB) Programme continued to increase during the period of this report. Based on the growing level of the CB Fund, expenditure in the 2015 CB Work Programme (760,801 Euros) was 153% greater than the expenditure in 2011 (300,388 Euros). Approximately 80% of the annual budgeted CB Work Programmes were executed and paid for. Some planned CB activities could not take place because of administrative and other issues in host nations, the unavailability of nominated personnel, or other late changes to the planned events. Most of the activities that could not take place in the scheduled year were postponed and transferred to the following year's CB Work Programme for successful execution.
40. Detailed information about the CB Work Programme is available in the IHO Annual Reports and in the Capacity Building section of IHO website.
41. Due to the significant increase in the level of activity of the CB Programme, the CBSC approved funding in 2013 and 2014 for the temporary employment of a part-time Capacity Building Assistant (CBA) at the IHO Secretariat. The CBA worked during the second half of 2013 and throughout 2014. She effectively and closely monitored the CB activities, maintained the reports and produced CB statistics. However, this contracted support, which had been in place for 18 months, was terminated at the end of 2014 in order that the position would not be considered permanent in terms of long-term pension or employment rights. The role of the CBA has been absorbed by existing staff in the IHO Secretariat wherever possible.

Evolution of the CB Activities and of the CB Fund

42. The level of CB activities has grown significantly from the previous five years due to the continuous growth in the resources available to the CB Fund. The figures are indicated in the following table:

Year	CB requests submitted	CB projects delivered	Technical visits delivered	Number of students	Funding required (Euros)	Actual expenditure (Euros)
2012	30	22	11	227	516 185	310 810
2013	36	20	6	129	412 600	325 717
2014	27	24	8	154	687 444	636 263
2015	30	24	2	141	930 907	738 488
2016	34	22	8	180	975 106	727 198
Total	157	112	35	1058	3 522 243	2 738 477

43. The Republic of Korea (ROK) contributed 1,388,100 Euros to the Capacity Building Programme during the report period (2012-2016). The Programme Management Board (PMB), consisting of representatives from the ROK, the IHO Secretariat and the CBSC Chair co-ordinated the Korean contribution under the current MoU. The major projects were funding of up to four students annually from IHO Member States for a Category "A" Hydrographic Master Programme at the University of Southern Mississippi, sponsoring five students at the Korea Hydrographic and Oceanographic Agency (KHOA), Busan, ROK for a Category "B" Marine Geospatial Information Programme and

the development of a “Training for Trainer” programme, an initiative on e-learning. During the report period, a total of twelve Category “A” Hydrographic Master Programme students and five Category “B” Marine Geospatial Information Programme students were sponsored by the ROK. In addition, many short courses have been supported by ROK’s fund in accordance with annual CB Work Programmes.

44. Japan through the Nippon Foundation (NF) contributed 696,377 GBP to the Capacity Building Programme during the report period. In line with the MoU between the IHO and Japan Hydrographic Association, two courses in “Hydrographic Data Processing and Marine Cartography including specialism in the Electronic Navigational Chart (ENC)” and, as a continuation of these courses, three course in “Marine Cartography and Data Assessment” delivered for the CHART (Cartography, Hydrography and Related Training) Project, under the terms of the MoU between the IHO and Nippon Foundation, have been conducted at the UKHO, Taunton, recognized at the Category “B” level by the IBSC were funded by the Nippon Foundation and 28 students sponsored during the report period (2012-2016). An Alumni Workshop was also held in November 2016 in Bangkok, Thailand organized by the IHO and supported by the Nippon Foundation of Japan. The objectives of the Alumni Workshop were to strengthen the IHO-NF Alumni network, to encourage cooperation between the fellows, to further develop global linkages and to obtain feedback from the alumni. Of the total of 51 fellows, 18 alumni from 16 countries were available to participate in this event.
45. Notwithstanding the generosity of certain Member States, and the significant in-kind support provided by others, the financial resources needed to meet the increasing number of CB requests submitted by the RHCs during the reporting period was insufficient to cover all the requests. An increase in the annual CB contribution from the IHO budget is therefore warranted in order to implement the anticipated CB programme for the next three years (2018-2020). This has been taken into account by the Secretary-General in the next three-year budget proposal (see Assembly document A.1/F/02).

Meeting with other organizations, funding agencies, the private sector and academia

46. The IHO Secretariat actively participated in all the annual meetings of the Joint IHO-IMO-IOC-WMO-IALA-IAEA-FIG Capacity Building Group (Joint CB Group) held during the reporting period (the 2016 meeting was cancelled due to the non-availability of the intended venue). The meetings brought together representatives from the IHO, IMO, WMO, IOC, IALA and FIG to assess and progress where priorities and joint policies can reinforce each other’s CB programmes.
47. The Joint CB Group submitted a joint paper - *Partnership arrangements, Delivering as One in action* to the 65th session of the IMO Technical Co-operation Committee (TC 65) in June 2015 as a joint approach under the United Nations policy of “Deliver as one”.
48. The Joint CB Group agreed to focus their efforts on the identification of a suitable region (such as the Caribbean, South-West Pacific or West Africa) for the development of a joint regional project to seek funding from donor agencies.

IHO Capacity Building Strategy

49. The 18th International Hydrographic Conference had tasked the CBSC to present a revised Capacity Building Strategy to the EIHC-5. The revision of the CB Strategy was reviewed, finalized and adopted by the CBSC at its 12th meeting in May 2014. The Chair of the CBSC presented the revised IHO Capacity Building Strategy to the EIHC-5, where it was adopted unanimously.

FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

50. The main objectives of the IBSC are to establish and review minimum standards of competence for hydrographic surveyors and nautical cartographers. During the reporting period, the IBSC:
- reviewed the recommended minimum standards of competence for hydrographic surveyors and nautical cartographers and developed separate competency requirements for Category “A” and Category “B” hydrographic surveyors and nautical cartographers;
 - maintained and promulgated all publications and documents resulting from the tasks carried out by the Board, in particular S-5A and S-5B - *Standards of Competence for Hydrographic Surveyors* and S-8A and S-8B - *Standards of Competence for Nautical Cartographers*;
 - provided advice and comments on the submissions of the syllabi by comparison with the recommended minimum standards and award certificates of programme recognition, where appropriate;
 - reviewed the procedures of submission; and
 - reviewed 74 programmes from submitting organizations and recognised 49 of those programmes. As of December 2016, there were a total of 60 recognized programmes and two recognized schemes worldwide.
51. The IRCC at its 8th meeting (2016) commended the work of the IBSC with respect to the review of the large number of submissions and the revision of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers.

Timetable for the adoption of S-8A and S-8B - *Standards of Competence for Nautical Cartographers*.

52. The IRCC was informed at its 8th meeting (May 2016) that the timetable for the adoption of the new editions of S-8A and S-8B - *Standards of Competence for Nautical Cartographers*, was based on the intention that all submission for cartographic courses made to the IBSC in 2018 would be based on the new editions. It was envisaged that the draft new editions of S-8A and S-8B would be endorsed by the IRCC at its next meeting in May 2018 and subsequently passed to Member States for formal adoption by voting shortly thereafter. The new standards would then be in force by August.
53. However, under the arrangements that will now be in force as a result of the recent ratification of the Protocol of Amendments to the Convention on the IHO (November 2016), the IRCC will, in future, be required to submit its recommendations to the Council, before any voting procedure can take place.
54. Noting that the IHO Council is not expected to hold its first session until October 2017, this will significantly delay the tight adoption timetable that was anticipated by both the IBSC and its prospective applicants for recognition of their courses. In this case, and noting that the approval timetable was agreed before it was known that the IHO Council would be established, the Chair of the IBSC, with the support of the Chair of the IRCC, seeks the approval of the Assembly for the IRCC to submit the proposed new editions of S-8A and S-8B directly to Member States for approval, rather than via the 1st session of the IHO Council.
55. **Financial management.** The IBSC Fund was transferred from the FIG Secretariat to the IHO Secretariat in 2015 and the IHO Secretariat took over the role of Treasurer in 2015. This transfer permitted increased efficiency, accountability and improved

governance, since the IHO Secretariat was already acting as Secretary to the Board and the IHO is, in effect, the principal stakeholder organization regarding the work of the Board.

56. The report of the IBSC is provided in Annex C.

Capacity Building and Standards of Competence Stakeholders' Seminars

57. The first stakeholders' seminars related to the work of the IHO Capacity Building Programme and the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers took place consecutively between 5 and 7 March 2014, at the IHO Secretariat. About 60 participants from IHO Member States and industry/academia stakeholders attended the seminars which were broadcast as a livestream via internet.
58. The objectives of the CB seminar were to raise awareness of the IHO CB Programme, obtain feedback from a broad range of stakeholders, and review the future of the IHO CB Programme considering the new demands/projects/possibilities. The seminar focused on the revision of the CB Strategy and the lessons learned from previous CB activities. The outcome of the seminar was presented to the 12th CBSC meeting in May 2014.
59. The IBSC stakeholders' seminar concentrated on the need for future revisions to the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers.
60. The report of the CBSC is provided in Annex C.

Element 3.4 Capacity Building Assessment

61. Assessment is one of the first phases in the Capacity Building process. It mainly consists of technical visits and high level visits carried out at different levels.
62. Technical visits were carried out by IHO Technical Visit Teams, made up of appropriate experts, to assess the hydrographic surveying, nautical charting and nautical information status of the nations and regions visited. The Technical Visit Teams provided guidelines for the further development of in-country hydrographic capabilities taking into account the regional context and the possibilities for support through shared capabilities with other countries. High level visits were also made to high level governmental authorities and national stakeholders by the IHO Secretary-General and Directors and also by the national Hydrographers in some regions, such as in the East Asia region, to raise awareness on the value and importance of developing national hydrographic capabilities and also to invite and encourage the application of the visited country to become a member of the IHO.
63. During the reporting period, 24 technical and advisory visits were conducted by expert teams from the relevant Regional Hydrographic Commissions or by the IHO Secretariat. The visits programme concentrated on the South West Pacific, Central America and the Caribbean Sea, Africa, East Asia, the Indian Ocean and the Mediterranean regions. In general, this coincides with the priorities also identified by sister organizations such as the IMO, IOC and WMO.
64. Detailed information on the technical and advisory visits conducted during the reporting period is available in the IHO Annual Reports and in the CB section of the IHO web site.

Element 3.5 Capacity Building Provision

65. Capacity Building Provision is the "action" phase of the IHO CB Strategy. It consists of the conduct of training and education opportunities according to the needs identified by the RHCs to address identified shortcomings. During the report period, 112 CB projects

were delivered and a total 1,058 students were trained in various short and long courses.

66. More detailed information on the provision of CB including the short courses, seminars and workshops planned during the report period are available in the IHO Annual Reports and in the CB section of the IHO web site.

Element 3.6 Coordination of Global Surveying and Charting

67. The objective of this element is to facilitate the achievement of a world-wide quality nautical charting coverage to suit the needs of the mariner in support of safe and efficient navigation through the development of specifications and standards for the production, distribution and updating of cartographic products and supporting publications.

C-55 - Status of Hydrographic Surveying and Nautical Charting worldwide Database

68. The IHO Secretariat continued to maintain publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*. As a result of work undertaken by officers seconded from Japan, C-55 is now generated from a GIS database application that is continuously updated as an online service accessed in the download section of the IHO website. During the reporting period, work has continued on developing the GIS database application to support C-55. In response to the request to complement C-55 composite data (percentage of areas adequately surveyed / requiring re-survey / not surveyed) with CATZOC information (see IHO CL 52/2015), CATZOC data was provided by the RENCs and some Member States.

WENDWG activities

69. The principal objective of the WENDWG is to monitor and advise the IRCC on the achievement of adequate ENC coverage that meets the SOLAS V/19 carriage requirements for ECDIS.
70. During the report period, the WENDWG:
- closely monitored the implementation of the WEND Principles and reported to the IRCC at its annual meetings,
 - mainly worked to reduce overlaps by applying the WEND Principles in defining approved ENC schemes and drafted an IHO Resolution to address the overlaps in ENC coverage to be reported to the IRCC, and
 - promoted the RENC co-operation for the benefit of ENC end-users.
71. In 2014, amendments to the Annex of the WEND Principles and revision of the Guidelines for the implementation of the WEND Principles, which addressed mainly gap and overlap issues in ENC coverage, were adopted by the Member States. IHO Resolution 1/1997 was amended accordingly.
72. In response to the direction of EIHC-5 (see EIHC-5 Decision 12), the IRCC tasked its WENDWG to consider the long term consequences of not achieving full implementation of the WEND Principles. Based on the resulting WENDWG report, the IRCC recommends to the Assembly that there is no need to further amend or enhance the existing WEND Principles and the Guidelines for the implementation of the WEND Principles, at this stage.

RENC TO RENC Cooperation

73. The WEND Principles encourage Member States to distribute their ENCs through a Regional ENC Coordinating Centre (RENC) in order to share in common experience, to

reduce expenditure, and to ensure the greatest possible standardization, consistency, reliability and availability of ENC's. At the end of 2016, the two principal RENC organizations IC ENC and PRIMAR had 41 and 15 contributing members respectively.

74. The WENDWG encouraged RENC to RENC cooperation for better harmonization, technical and marketing coordination between RENCs. The IHO Secretariat also supported the RENC to RENC cooperation and joined the annual coordination meetings to review the RENC related issues. The Secretariat participated in IC- ENC Steering Committee and PRIMAR Advisory Committee meetings as Observer starting from 2015.
75. The report of the WENDWG is provided in Annex C.

Coordination of ENC schemes

76. In 2015-2016, the Nautical Cartography Working Group (NCWG), in liaison with the INT Chart / ENC Regional Coordinators, prepared a new draft edition of IHO Publication S-11 Part A, the main purpose of which was to incorporate guidance relating to the preparation and maintenance of ENC schemes. Based on this publication, RHC's are expected to coordinate the development and maintenance of small/medium scale ENC schemes and to ensure that uniform parameters are used to ensure consistency and quality. RHCs are also invited to monitor and report on gaps and overlaps in ENC coverage on a regularly basis.
77. With regard to ENC coverage, reporting from individual RHCs to the IHO Secretariat or the WENDWG remained inconsistent but was improving with the use of the IHO ENC on-line Catalogue and the RENC Coverage and Overlap Checker tool made available by the RENCs in 2015. The examination of the IHO ENC Catalogue, compiled primarily from data provided by the two established RENC organizations and the UKHO, showed that ENC small/medium scale coverage was generally satisfactory, though there were a number of instances of overlapping or duplicated data in the same usage band, as well as some gaps in coverage. At larger scales, there were still a number of ports, harbours, moorings and approaches for which there was not an ENC to correspond to a published paper chart of the same area.
78. The IHO reported statistics concerning global ENC coverage annually to the IMO. The statistics are included in Annex A and underpin Strategic Performance Indicator 2 (see document A.1/WP1/01). At the end of 2016, ENC coverage worldwide was reported as:

Small scale	~ 100%
Medium scale	93%
Large scale	98%

79. With some exceptions, ENC coverage is considered to be generally satisfactory. In most cases, there is ENC coverage that matches existing paper chart coverage, except for those areas where the quality of the data supporting the paper chart is of such a low quality that the production of an ENC would be inappropriate. Further improvement of ENC coverage is now primarily dependent upon new surveys or re-surveys of areas where there is no satisfactory data coverage. No serious concerns about ENC's were reported by ENC users during the period of this report.

Maintenance of INT chart schemes and improvements of availability of the INT chart series

80. The purpose of the IHO INT chart series is to define and produce a set of medium and large-scale nautical charts that are specifically designed for planning, landfall and coastal navigation and access to ports used by ships engaged in international trade.
81. The Secretariat initiated the development of an on-line web-based interactive version of

IHO Publication S-11 Part B - *Catalogue of INT Charts* in 2015, generously supported by the resources of the Korea Hydrographic and Oceanographic Agency (KHOA). The resultant INT Chart Web Catalogue and the associated INT Chart on-line Web Manager services (“INToGIS”) were made available in January 2016 through the IHO website at: www.iho.int > Standards & Publications > S-11 > Part B (link) (see IHO CL 89/2015).

82. The “INToGIS” is a complement to the IHO Geographic Information System (GIS). It provides regional International Charting Coordination Working Groups (ICCWGs) with useful and efficient tools to review and maintain INT chart schemes and to better monitor the scheming and production of INT charts and to ensure the wide on-line availability of up to date information on the status of INT charts. (See IHO CL 89/2015).
83. A workshop for INT Chart / ENC Coordinators took place in the IHO Secretariat on 25 April 2016, where the INT Chart / ENC Coordinators of 14 out of the 15 charting regions were provided with a comprehensive demonstration of the new “INToGIS”.
84. The maintenance and updating of S-11 Part B - Catalogue of INT Charts and the quality of the supporting database improved significantly in 2016, as a result of the introduction of INToGIS.
85. The following table summarizes the status of the regional INT chart schemes at the end of 2016:

Region	Coordinator	Commission	Scheduled	Published Total	Regional Database Version
A	USA/NOS	USCHC	15	15	3.0.0
B	USA/NOS	MACHC	82	49	3.0.0
C1	Brazil	SWAtHC	51	34	3.0.1
C2	Chile	SEPRHC	44	7	3.0.0
D	UK	NSHC	215	215	3.0.3
E	Finland	BSHC	299	287	3.0.5
F	France	MBSHC	240	167	3.0.1
G	France	EAtHC	172	139	3.0.3
H	South Africa	SAIHC	125	93	3.0.2
I	Iran (I.R of)	RSAHC	117	68	3.0.0
J	India	NIOHC	172	132	3.0.0
K	Japan	EAHC	294	240	3.0.0
L	Australia	SWPHC	62	58	3.0.0
M	UK	HCA	117	78	3.0.1
N	Norway	ARHC	12	8	3.0.0
1 :10 million	IHO Secretariat		25	24	3.0.0

Total number of INT charts planned: 2,042

Total number of INT charts published by end 2016: 1,614 (79.0% of the planned total)

Element 3.7 Maritime Safety Information

86. The objectives of this element are:
- to facilitate the efficient provision of Maritime Safety Information (MSI) to mariners through coordination and the establishment of relevant standards between agencies;
 - to improve the coordination of NAVAREAs in liaison with the RHCs and relevant international organizations.
87. The Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC) monitored and guided the IHO/IMO World Wide Navigational Warning Service which includes the standardised promulgation of NAVAREA and coastal warnings. The Sub-Committee is responsible for studying and proposing new methods to enhance the provision of navigational warnings to mariners at sea, facilitating the implementation of the major changes in procedures for dissemination of navigational warnings and providing appropriate guidance to concerned IHO Member State representatives to further the evolution of the WWNWS. The Sub-Committee maintained a close liaison and cooperation with the WMO and its complementary Worldwide Met-Ocean Information and Warning Service (WWMiWS).
88. During the period of this report, the WWNWS-SC completed the revision of all WWNWS documentation. Following approval by IHO Member States this documentation was submitted to and subsequently adopted by the IMO.
89. The WWNWS-SC has continued to support and provide advice and guidance with respect to shore-to-ship broadcasting of Maritime Safety Information to the IMO, the International Mobile Satellite Organization (IMSO) and the commercial satellite communications provider Iridium in relation to the evaluation of Iridium's application to be recognized as a GMDSS satellite service provider.
90. The WWNWS-SC developed a three-day training course on MSI for the Capacity Building Sub-Committee and delivered it on ten occasions since the 18th IH Conference. Training documentation for this course has been developed in English, French and Spanish.
91. The report of the WWNWS-SC is provided in Annex C.

Element 3.8 Ocean Mapping Programme

92. The objective of this element is to contribute to global ocean mapping programmes through the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) Project, the International Bathymetric Chart (IBC) Projects and other related international initiatives.
93. The GEBCO Project is a joint programme that is executed under the governance of the IHO and the IOC. GEBCO is directed by a Guiding Committee made up of representatives from both IHO and IOC and is supported by a Technical Sub-Committee on Ocean Mapping (TSCOM), a Sub-Committee on Regional Undersea Mapping (SCRUM) and a Sub-Committee on Undersea Feature Names (SCUFN). Through the work of its subsidiary organs, GEBCO produces and makes available a range of bathymetric data sets and products, including gridded bathymetric data sets, the GEBCO Digital Atlas, the GEBCO world map, the GEBCO Gazetteer of Undersea Feature Names and the GEBCO Cook Book. GEBCO maintains a comprehensive website at: <http://www.gebco.net>.
94. During the report period, GEBCO continued to collect, store and disseminate bathymetric data for the world's oceans. GEBCO worked towards improving its participation in regional mapping activities and appointed representatives to participate

in selected meetings of Regional Hydrographic Commissions that operate under the umbrella of the IHO.

95. Traditionally GEBCO has focused on waters deeper than about 200m; however, it is now actively collecting data in shallow water areas to support activities such as coastal zone management and development, and the mitigation of marine disasters such as storm surges and tsunami inundation.
96. Revised Terms of Reference and Rules of Procedures for the GEBCO Guiding Committee were approved in 2015 in close coordination with the IOC, as the other parental organization of GEBCO.
97. GEBCO funds previously managed by the University of Stockholm were transferred to the IHO Secretariat in April 2015. As a result, the IHO Secretariat now acts as treasurer and manager of all the accounts of GEBCO. This provides efficiency, accountability and improved governance of the GEBCO related funds. From January 2016, the Secretary of the GEBCO Guiding Committee was also provided by IHO Secretariat.
98. Supported by the Nippon Foundation, the Forum for Future Ocean Floor Mapping (F-FOFM) was held in June 2016 in Monaco organized by the GEBCO Guiding Committee. The outcome of the F-FOFM was a new initiative aimed at leaving no features on the ocean floor larger than 100 metres unmapped by the year 2030. In this context, a new project - *Seabed 2030*, was initiated by the GEBCO Guiding Committee and will begin in January 2017.
99. Work on the regional mapping projects -Indian Ocean Bathymetric Compilation (IOBC), North Atlantic Seabed Mapping Project, International Bathymetric Chart of the Arctic Ocean (IBCAO), International Bathymetric Chart of the Southern Ocean (IBCSO) and Baltic compilations- continued. A polar mapping workshop was held at the IHO Secretariat in conjunction with the F-FOFM.
100. The Nippon Foundation continued to support generously the Nippon Foundation - GEBCO Ocean Mapping training program at the University of New Hampshire, USA. There are now 72 programme graduates from 35 countries.
101. International discussions in groups such as the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), the Group on Earth Observation (GEO), and others, indicates a growing acknowledgement and awareness of the relevance and the potential contribution of hydrographic information in the context of global geospatial data infrastructures and in the proper governance and sustainable development of the *blue economy*. This emphasises the importance of GEBCO as a fundamental part of the global geospatial information infrastructure. The IHO Secretariat encouraged all relevant stakeholders to recognise that GEBCO is the custodian and provider of the most authoritative publicly-available bathymetry of the world's oceans.

Updating and enhancing the GEBCO Gazetteer (B-8) for internet access

102. Maintenance of the underlying geospatial database of the on-line GEBCO gazetteer (B-8) is carried out by a network of appointed editors (mainly, SCUFN members) under the coordination of an Administrator who is currently the SCUFN Secretary from the IHO Secretariat. In order to improve the content and the quality of the Gazetteer and to remove some inconsistencies, a comprehensive review and corrections of anomalies were undertaken by contract in 2015 under the supervision of the IHO Secretariat. The results, covering about 3,000 feature names, have been used to improve significantly the quality and consistency of the database.
103. The report of the GEBCO Guiding Committee is provided in Annex C.

IHO Data Centre for Digital Bathymetry

104. The IHO Data Centre for Digital Bathymetry (DCDB) is a significant global repository of digital ocean bathymetry used by IHO Member States and ocean science communities. The DCDB also hosts the on-line GEBCO Gazetteer of Undersea Feature Names that was funded and developed by the United States and became fully operational in 2013. The IHO DCDB facility is generously hosted by the US National Oceanographic and Atmospheric Administration on behalf of the IHO Member States.
105. The IHO DCDB data store contains oceanic soundings that have been acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. These data are used for the production of improved and more comprehensive bathymetric maps and grids, particularly in support of the GEBCO Ocean Mapping Programme. Bathymetric data located at the IHO DCDB can be viewed and filtered via a web map interface, and freely downloaded. The map interface can be accessed at: <http://maps.ngdc.noaa.gov/viewers/bathymetry/>
106. Funded by NOAA, a phased upgrade of the DCDB web-based data portal began in 2015. This will enable easier uploading and downloading of data from the DCDB database and in particular, it will support ingest of data from modern-day Crowd Sourced Bathymetry programmes. This will enable an IHO-led CSB infrastructure to be established and promoted across the wider maritime community.
107. The report of the IHO DCDB is provided in Annex C.

Crowd Sourced Bathymetry

108. As a result of Decision 8 of the EIHC-5, the IRCC established a Crowd Sourced Bathymetry Working Group (CSBWG) at its seventh meeting (2015). The CSBWG was tasked to examine how best to incorporate, manage and use bathymetric data acquired by other than conventional means and develop principles and guidelines to enable the appropriate collection and use of crowd sourced bathymetry for the benefit of all stakeholders interested in knowing the shape and nature of the seafloor and its depths.
109. The CSBWG was tasked to draft an IHO publication on policy for trusted crowd sourced bathymetry including guidelines on the collection and assessment of CSB data, not only for potential use for charting purposes but also for its wider use in non-navigational applications. The objective of the publication is to take into account the work that is underway to enhance the IHO DCDB as a data discovery and upload/download portal for crowd sourced bathymetry and to draw upon any lessons already learned and specifications created by those already engaged in CSB.
110. The report of the Crowd Sourced Bathymetry Working Group is provided in Annex C.

Participation in Atlantic seabed mapping programme

111. The Atlantic Seabed Mapping International Working Group (ASMIWG) was established in 2015 to address seabed mapping issues related to the implementation of the Galway Statement of 2013 through which the European Union (EU), the USA and Canada agreed to join forces on Atlantic Ocean Research. Representatives from the IHO Secretariat attended the meetings of the ASMIWG in 2015 and 2016 and drew attention to the GEBCO project, the IHO DCDB and the developments to support and encourage CSB, including the continuing contribution of the scientific community. As an outcome of this engagement, it is expected that data gathered from the Atlantic Seabed Mapping activities will be submitted to the DCDB.

Element 3.9 Marine Spatial Data Infrastructures

112. The objectives of this element are:

- to monitor developments related to the hydrographic component of Spatial Data Infrastructures,
- to develop and maintain the relevant IHO publications, and
- to provide technical advice as appropriate.

113. The Marine Spatial Data Infrastructure Working Group (MSDIWG) was transferred to the IRCC structure on 1 January 2015. During the reporting period, the MSDIWG began work on preparing an updated edition of the IHO Publication C-17 - *Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices*.

114. The MSDIWG also assisted IHO Member States and Regional Hydrographic Commissions in understanding the benefits of, and the means for, establishing MSDIs.

115. The report of the MSDIWG is provided in Annex C.

Actions required of the Assembly

116. The Assembly is invited to:

- a) **note** this report on the execution of programme 3;
- b) **note** the reports provided by the Regional Hydrographic Commissions in Annex E;
- c) **approve** the continued existence of the IRCC under its Terms of Reference and Rules of Procedure as shown in Annex D;
- d) **agree** that there is no need to further amend or enhance the existing WEND Principles and the Guidelines for the implementation of the WEND Principles, at this stage (see paragraph 72);
- e) **approve** the IRCC, at its next meeting, to seek approval of the proposed new editions of IHO Publications S-8B and S-8A by Member States through Circular Letter voting (see paragraphs 52 to 54).

IRCC Working Level Performance Indicators

No I	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	Status 31 Dec. 2014	Status 31 Dec. 2015	Status 31 Dec. 2016
WPI 15	Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.	WEND WG through RHCs	Small scale: ~ 100% Medium scale: 88% Large scale: 95%	Small scale: ~ 100% Medium scale: 90% Large scale: 96%	Small scale: ~ 100% Medium scale: 91% Large scale: 97%	Small scale: ~ 100% Medium scale: 92% Large scale: 97%	Small scale: ~ 100% Medium scale: 93% Large scale: 98%
WPI 16	Number of additional IHO MS starting to produce & maintain (with/without support) relevant ENC's (contributing to 'adequate coverage') in the reporting period relative to those already producing at 01 Aug. 2008.	WEND WG through RHCs	No suitable information was available at the IHO Secretariat	2 (No suitable information provided by 8 out of 15 RHCs)	0	1	1

No I	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	Status 31 Dec. 2014	Status 31 Dec. 2015	Status 31 Dec. 2016	
WPI 17	Percentage of Coastal States delivering hydrographic services - categorized by CB phases (MSI services, surveying capabilities, charting capabilities), directly or through an agreement with a third party, at the end of the reporting period.	CBSC through RHCs	No suitable information was provided by most RHCs					
WPI 18	Percentage of IHO MS updating their C-55 entry data regarding hydrography survey, INT charts, ENC, and MSI in the reporting period.	IRCC through RHCs	17% (14/81)	21% (17/82)	24% (20/82)	24% (20/85)	22% (19/85)	
WPI 19	Status of hydrographic surveys in each region.	IRCC through RHCs	Metrics yet to be defined by IRCC					

No I	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	Status 31 Dec. 2014	Status 31 Dec. 2015	Status 31 Dec. 2016
WPI 20	Percentage of agreed INT chart schemes, percentage of INT charts available. ³	IRCC through RHCs or ICCWGs	88% (14 schemes out of 16) 72% (1,429 charts published out of 1,988 planned)	88% (14 schemes out of 16) 75% (1,491 charts published out of 1,980 planned)	88% (14 schemes out of 16) 77% (1,558 charts published out of 2,013 planned)	88% (14 schemes out of 16) 79% (1,588 charts published out of 2,009 planned)	88% (14 schemes out of 16) 79% (1,614 charts published out of 2,042 planned)
WPI 21	Percentage of agreed ENC schemes, percentage of ENC available.	WEND WG through RHCs or ICCWGs	No suitable information was available at the IHO Secretariat	No suitable information provided by most RHCs (input only from SEPRHC and SWAtHC)	IHO Secretariat estimate for UB1, 2 and 3 based on existing coverage: ~80%	IHO Secretariat estimate for UB1, 2 and 3 based on existing coverage: ~82%	IHO Secretariat estimate for UB1, 2 and 3 based on existing coverage: ~82%
WPI 22	Increase in effective MS participation in RHC activities.	IRCC through RHCs.	No suitable information was available at the IHO Secretariat	No suitable information provided by RHCs	No suitable information provided by RHCs	No suitable information provided by RHCs	No suitable information provided by RHCs
WPI 23	Percentage of Coastal States which are IHO Member States.	IHO Secretariat	54% (80 / 151)	54% (81 / 151)	54% (82 / 151)	56% (85 / 152)	56% (85 / 152)
WPI 24	Number of new Coastal States joining the IHO during the reporting period.	IHO Secretariat	1	1	0	3 ⁹	0

³ Regions A and N, for which no scheme is available yet, are excluded

No I	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	Status 31 Dec. 2014	Status 31 Dec. 2015	Status 31 Dec. 2016	
WPI 25	Number of potential new IHO MS (indicated by the start of the application process) relative to the number of "non-IHO" IMO MS.	IHO Secretariat	8 / 89 Number of IMO MS: 170 Number of IHO MS: 81	7 / 88 Number of IMO MS: 170 Number of IHO MS: 82	7 / 88 Number of IMO MS: 170 Number of IHO MS: 82	8 / 86 Number of IMO MS: 171 Number of IHO MS: 85	8 / 86 Number of IMO MS: 171 Number of IHO MS: 85	
WPI 26	Percentage of Coastal States which have achieved CB phase 1, 2 or 3 and established a National Hydrographic Office.	CBSC through RHCs	No suitable information was available at the IHO Secretariat					
WPI 27	Number of States which have achieved CB phase 1, 2 or 3 and established a National Hydrographic Office in the reporting period.	CBSC through RHCs	No suitable information was available at the IHO Secretariat					
WPI 28 => SPI 1	Percentage of Coastal States which provide ENC coverage directly or through an agreement with a third party.	WEND WG through RHCs	No suitable information was available at the IHO Secretariat	No suitable information provided by RHCs IHO Secretariat estimate: ~60%	No suitable information provided by RHCs IHO Secretariat estimate: ~64%	No suitable information provided by RHCs IHO Secretariat estimate: ~66% ⁴	No suitable information provided by RHCs IHO Secretariat estimate: ~66%	

⁴ Information is difficult to obtain from Primary Charting authorities acting on behalf of coastal States. Thanks to the information kindly provided by Australia, France, New Zealand, South Africa and UK in 2016, the estimate is likely to be better than previous year.

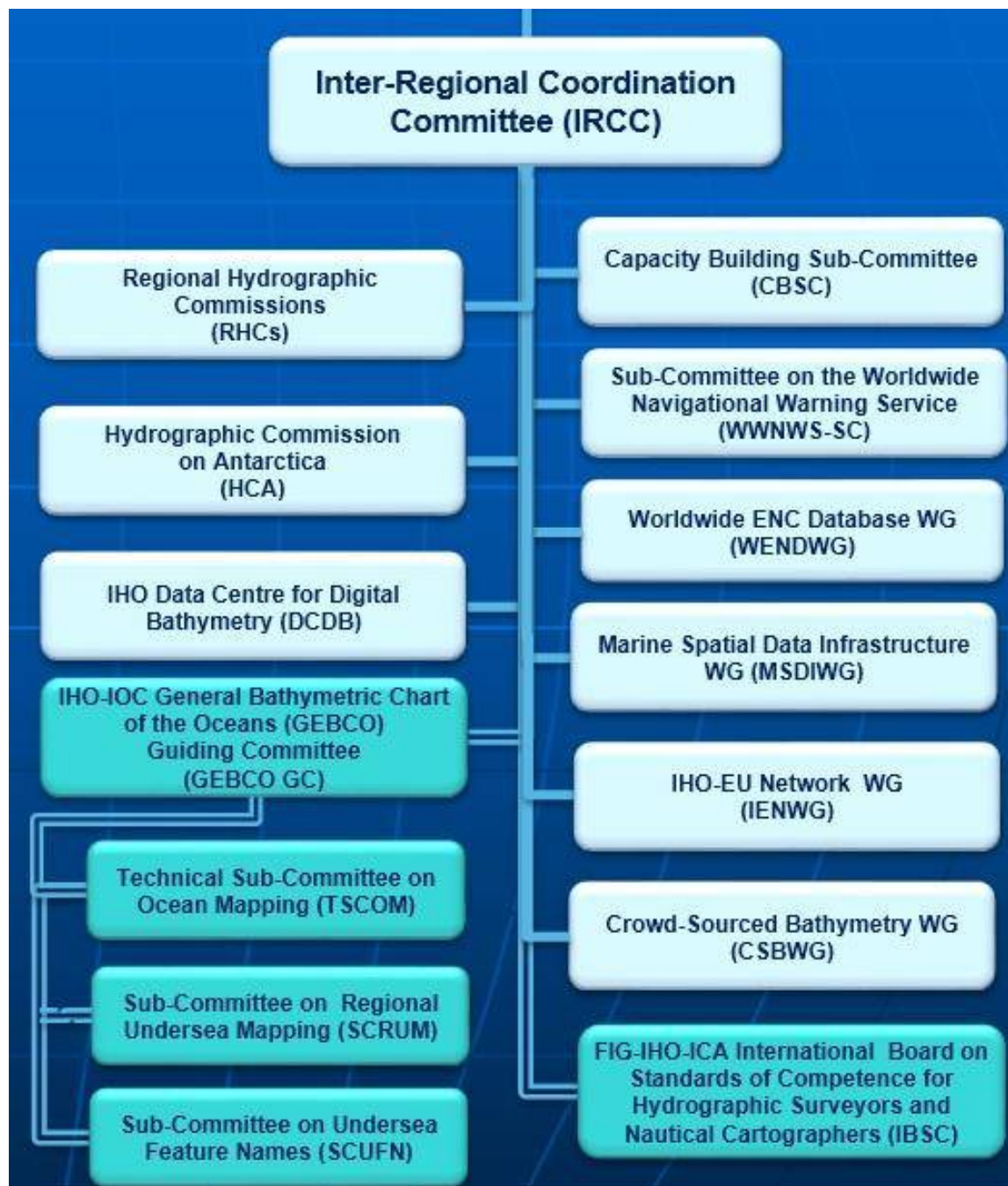
No I	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	Status 31 Dec. 2014	Status 31 Dec. 2015	Status 31 Dec. 2016
WPI 29	Percentage of Coastal States which have set up a national geospatial infrastructure.	IRCC through RHCs	No suitable information was available at the IHO Secretariat	IHO Secretariat estimate: 18% (28/151) (based on limited information provided by some RHCs and MSDIWG)	No information available at the IHO Secretariat to make an estimate	No information available at the IHO Secretariat to make an estimate	No information available at the IHO Secretariat to make an estimate
WPI 40	Number of agreements signed in the reporting period, including bilateral agreements and RENC membership, etc.	IRCC through RHCs	Limited information available at the IHO Secretariat IHO Secretariat estimate: 2	No suitable information was available at the IHO Secretariat	Limited information available at the IHO Secretariat IHO Secretariat estimate: 2	Limited information available at the IHO Secretariat IHO Secretariat estimate: 4	Limited information available at the IHO Secretariat IHO Secretariat estimate: 2
WPI 41	Percentage of planned CB events that are achieved.	CBSC	73%	86%	82%	79%	88%
WPI 42	Number of acceptable CB requests received.	CBSC	31	28	29	30	33

No I	Designation	Source	Status 31 Dec. 2012	Status 31 Dec. 2013	Status 31 Dec. 2014	Status 31 Dec. 2015	Status 31 Dec. 2016
WPI 43 => SPI 4	Percentage of “acceptable” CB requests which are planned.	CBSC	97%	75% ⁵	97%	93%	100%

⁵ Reduction due to reduction in CB funds available in 2013

Structure and membership of the IRCC

Structure of the IRCC and its subordinate bodies



Inter-Regional Coordination Committee (IRCC)**Chairmanship****Chair**

Ingénieur général Gilles BESSERO	France	until June 2012
Dr Savi NARAYANAN	Canada	June 2012 - November 2013
Rear Admiral Tom KARSTEN	UK	November 2013 - August 2015
Dr Parry OEI	Singapore	since August 2015

Vice-Chair

Rear Admiral Nick LAMBERT	UK	June 2012 - December 2012
Rear Admiral Tom KARSTEN	UK	June 2013 - November 2013
Dr Parry OEI	Singapore	May 2014 - August 2015
Rear Admiral Gerd GLANG	USA	since August 2015

Membership

Members

Chairs of the Regional Hydrographic Commissions (RHCs):

- Nordic Hydrographic Commission (NHC)
- North Sea Hydrographic Commission (NSHC)
- East Asia Hydrographic Commission (EAHC)
- United States Canada Hydrographic Commission (USCHC)
- Mediterranean and Black Seas Hydrographic Commission (MBSHC)
- Baltic Sea Hydrographic Commission (BSHC)
- Eastern Atlantic Hydrographic Commission (EAtHC)
- South East Pacific Regional Hydrographic Commission (SEPRHC)
- South West Pacific Hydrographic Commission (SWPHC)
- Meso-American - Caribbean Sea Hydrographic Commission (MACHC)
- Southern Africa and Islands Hydrographic Commission (SAIHC)
- ROPME Sea Area Hydrographic Commission (RSAHC)
- North Indian Ocean Hydrographic Commission (NIOHC)
- South West Atlantic Hydrographic Commission (SWAtHC)
- Arctic Regional Hydrographic Commission (ARHC)

Chair of the Hydrographic Commission on Antarctica (HCA)

Chair of the Capacity Building Sub-Committee (CBSC)

Chair of the Worldwide Navigational Warning Service Sub-Committee (WWNWS-SC)

Chair of the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

Chair of the General Bathymetric Chart of the Oceans (GEBCO) Guiding Committee (GGC)

Chair of the Worldwide Electronic Navigational chart Database (WEND) Working Group

Chair of the IHO-EU Network Working Group (IENWG) from December 2013

Chair of the Marine Spatial Data Infrastructures Working Group (MSDIWG) from January 2015

Chair of the Crowd Sourced Bathymetry Working Group (CSBWG) from June 2015

Observers⁶

IHO Member States:

Australia, Brazil, Canada, China, Chile, Ecuador, Estonia, France, Greece, India, Indonesia, Italy, Japan, Latvia, Mexico, Morocco, Mozambique, New Zealand, Nigeria, Norway, Peru, Portugal, ROK, Saudi Arabia, South Africa, Singapore, Thailand, Turkey, UK, USA.

Intergovernmental Organizations (IGO) / Non-Government International Organizations (NGIOs) / RENCs:

CIRM, IC-ENC, PAIGH/IPGH, PRIMAR, RTCA

Meetings

IRCC has met annually since IHC-18 as follows:

IRCC-4	Singapore, Singapore	7-8 June 2012
IRCC-5	Wollongong, Australia	3-4 June 2013
IRCC-6	Paris / Saint-Mandé, France	19-20 May 2014
IRCC-7	Mexico City, Mexico	1-3 June 2015
IRCC-8	Abu Dhabi, UAE	29-31 May 2016

Agenda Items

The standing agenda items:

- Review of Terms of Reference and Rules of Procedure
- Report by the Chair and the IHO Secretariat
- RHC Reports
- Reports from IRCC Bodies
- Inputs from Member States and other bodies affecting IRCC
- Review of IRCC Work Programme Indicators and Performance Monitoring
- Any other business
- Review of the Actions and Decisions
- IRCC Work Programme Management
- Recommendations of the IRCC for consideration of the IHO Member States

⁶ List of the observers who attended at least one meeting of the Committee.

Specific items:

- IRCC-4:
 - Input to the IHO Strategic Planning Mechanism
- IRCC-5:
 - Satellite Derived Bathymetry and the Use of New Technologies
 - Developments on C-55
- IRCC-6:
 - WEND Principles and Governance
 - Performance Monitoring
 - Data gathering and management
- IRCC-7:
 - WEND Principles, ENC Coverage and Proposals arising from the WENDWG Report
 - Data gathering and Management, Maximizing the use of Hydrographic Data
 - Developments on GIS
- IRCC-8:
 - Data gathering and Management, Maximizing the use of Hydrographic Data
 - Developments on GIS
 - Review of the IHO Strategic Plan
 - Review of IRCC Work Programme Indicators and Performance Monitoring

Reports of the IRCC Subordinate Bodies

1.	Capacity Building Sub-Committee	CBSC
2.	International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers	IBSC
3.	Worldwide Electronic Navigational chart Database Working Group	WEND
4.	Worldwide Navigational Warning Service Sub-Committee	WWNWS-SC
5.	General Bathymetric Chart of the Oceans (GEBCO) Guiding Committee	GGC
6.	The IHO Data Centre for Digital Bathymetry	DCDB
7.	Crowd-sourced Bathymetry Working Group	CSBWG
8.	Marine Spatial Data Infrastructures Working Group	MSDWG
9.	IHO-EU Network Working Group	IENWG

1. **REPORT OF THE CAPACITY BUILDING SUB-COMMITTEE**
(CBSC)

Chair

Mr Thomas DEHLING Germany since 2011

Vice-Chair

Mr Olumide OMOTOSO Nigeria since 2012

Membership:

Member	Member State	CB Coordinator
Evert Flier	Norway	NHC/NSHC/ARHC
Brian Connon	United States	USCHC
Junghyun Kim	Republic of Korea	EAHC
Thomas Dehling	Germany	BSHC
Burak Inan	Turkey	MBSHC
Eric Langlois	France	EAtHC
Jorge A. Alavera Alvarado	Ecuador	SEPRHC
Adam Greenland	New Zealand	SWPHC
Jeff Bryant	United Kingdom	MACHC/NIOHC/SAIHC/RSAHC
Abri Kampfer	South Africa	
Thani al Mahrouki	Oman	
Helber Carvalho Macedo	Brazil	SWAtHC
Amol G Merwade	India	
Yukihiko Kato	Japan	
Janis Krastins	Latvia	
Manuel Ricardo López Cruz	Mexico	
Humberto Mutevuie	Mozambique	
Olumide Omotoso	Nigeria	

Meetings

CBSC10: Singapore 04 - 06 June 2012
 CBSC11: Wollongong, Australia 30 May - 01 June 2013
 CBSC12: Brest, France 14 - 16 May 2014
 CBSC13: Mexico City, Mexico 27 - 29 May 2015
 CBSC14: Abu Dhabi, UAE 24 May - 26 May 2016

Agenda Items:

- Regional Assessment of CB Activities

- Development and update of annual Capacity Building Work Programme
- Regional projects for CB
- Strategic Issues of the CBSC
 - Assessment of the IHO CB Strategy
 - Way Ahead for the IHO CB Strategy
 - Development of projects to seek donor funds
 - Measures of success of the CB Programme
- Operational issues of the CBSC
 - Development and revision of CB Procedures
 - CB Management System
 - C-55 Status and Developments
- CB Management and CB Fund
- Cooperation with other organizations
 - Joint CB efforts (IHO, IMO, IOC, IALA, WMO, FIG, IAEA)

2. **REPORT OF THE FIG/IHO/ICA INTERNATIONAL BOARD ON STANDARDS OF COMPETENCE FOR HYDROGRAPHIC SURVEYORS AND NAUTICAL CARTOGRAPHERS (IBSC)**

Chair

Prof. Dr Lysandros TSOULOS	ICA	2011-2013
Prof. Dr Nicolas SEUBE	IHO	2014-2016
Mr Adam GREENLAND	FIG	from 2017

Vice-Chair 1

Prof. Dr Delf EGGE	IHO	2011-2013
Mr Adam GREENLAND	FIG	2014-2016
Mr Ron FURNESS	ICA	from 2017

Vice-Chair 2

Prof. Dr Mohd RAZALI Mahmud	FIG	2011-2013
Mr Ron FURNESS	ICA	2014-2016
Capt. Nickolás ROSCHER	IHO	from 2017

Secretary

Assistant director Alberto Costa NEVES (IHO Secretariat) from 2011

Membership

The FIG/IHO/ICA IBSC is composed of four Members from FIG, four Members from IHO and two Members from ICA.

IHO Appointed Members

Capt. Nickolás de A. ROSCHER	Brazil	
Capt. Andrew ARMSTRONG	United States	
Cdre Rod NAIRN	Australia	
Prof. Dr Nicolas SEUBE	Canada	
Prof. Dr Delf EGGE	Denmark	until 2015
R. Adm. K. N. NAIR	India	until 2014

FIG Appointed Members

Mr Adam GREENLAND	New Zealand	
Mr Gordon JOHNSTON	United Kingdom	
Prof. Dr Keith MCGOWAN MILLER	Trinidad and Tobago	
Mr Sobri SYAWIE	India	
Prof. Dr Mohd Razali Mahmud	Malaysia	until 2014

ICA Appointed Members

Mr Ron FURNESS	Australia
Prof. Dr Lysandros TSOULOS	Greece

Meetings

Workgroup (WG) S-5 (Wellington, NZ)	Feb 2012
IBSC35 Buenos Aires, Argentina (2 weeks, 15 Submissions)	May 2012
IBSC36 Lisbon, Portugal (2 weeks, 16 Submissions)	Apr 2013
WG S-5 (Brest, FR)	Sep 2013
Stakeholder Seminar Hydro13 (UK)	Oct 2013
WG S-5 (Durham, US)	Dec 2013
WG S-5 & Stakeholder Seminar (Monaco)	Mar 2014
IBSC37 Tokyo, Japan (2 weeks, 15 submissions)	Apr 2014
WG S-5 (Paris, FR)	May 2014
WG S-5 (Hamburg, DE)	Jun 2014
WG S-5 (Durham, US)	Jun 2014
Stakeholder seminar Hydro14 (US)	Oct 2014
WG S-5 (Durham, US)	Dec 2014
Stakeholder seminar US Hydro16 (US)	Mar 2015
IBSC38 Niteroi, Brazil (2 weeks, 10 submissions)	Mar/Apr 2015
WG S-8 (Rio, BR)	Jul 2015
Site visit (Netherlands)	Sep 2015
Stakeholder seminar Hydro15 (ZA)	Nov 2015
WG S-5 (Rimouski, CA)	Dec 2015
Stakeholder seminar MACHC16 (AG)	Dec 2015
WG S-5 (Antigua)	Dec 2015
WG S-8 (Bandung, ID)	Feb 2016
IBSC39 Brest, France (2 weeks, 18 submissions)	Apr 2016
WG S-8 (London, UK)	Sep 2016
Stakeholder seminar Hydro16 (DE)	Nov 2016
WG S-8 (Singapore, SG)	Nov 2016

Agenda Items

In broad terms the IBSC role is to:

- maintain the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (S-5 & S-8);
- maintain the publications C-6 (Reference Texts for Training in Hydrography) and C-47 (Training Courses in Hydrography and Nautical Cartography);
- review programme submissions from institutions against these standards;
- award certificates of programme recognition when appropriate; and
- undertake onsite visits to institutions offering recognized programmes

Agenda items are as follows:

- Review of Programmes submitted for recognition

- Maintenance of the Standards
- Review Terms of Reference and Rules of Procedure
- Review Annual Reports of Institutions offering Recognised Programmes
- Review On-site Visit programme
- Review opportunities for engagement / outreach with stakeholders
- New Standards and Guidelines development
 - S-5B & S5-A Standards of Competence for Hydrographic Surveyors
 - S-8B & S8-A Standards of Competence for Nautical Cartographers
 - Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers

3. REPORT OF THE WORLDWIDE ENC DATABASE WORKING GROUP (WENDWG)

Chair

Mr Jamie McMICHAEL-PHILLIPS United Kingdom since May 2010

Vice-Chair

Mr John NYBERG United States since 10 March 2016

Membership (as of 21 November 2016)

Member State	RHC	Name of representative
Argentina	SWAtHC	Captain Fabian VETERE
Australia	SWPHC	Mr Mike PRINCE
Australia		Mr Nick LIGACS
Brazil		Captain Nickolas ROSCHER
Canada	ARHC, USCHC	Mr Laurent TARDIF
Denmark		Mr Jens Peter HARTMANN
Finland	BSHC	Mr Jarmo MÄKINEN
France	EAtHC, MBSHC	Ing. en chef Laurent KERLEGUER
Germany	-	Dr Mathias JONAS
Hong Kong, China	EAHC	Mr Michael CM CHAU
India	NIOHC	R. Adm. Vinay BADHWAR
Italy	-	Commander Carlo MARCHI
Japan	-	Dr Yukihiro KATO
Norway	NHC	Mr Evert FLIER
Oman	RSAHC	Commander Thani AL MAHOKI
Poland		Mr Stanislaw PIETRZAK
Singapore		Dr Parry OEI
Turkey	-	LCdr Eşref GÜNSAY
United Kingdom		Mr Jamie MCMICHAEL-PHILLIPS
United Kingdom	NSHC	Mr Nigel SUTTON

Member State	RHC	Name of representative
South Africa	SAIHC	Captain Abri KAMPFER
United States	MACHC	Mr John NYBERG
United States		Mr John LOWELL

RENCs		
PRIMAR	PAC Chair	Mr Stanislaw PIETRZAK
PRIMAR	Operator	Ms Birte Noer BORREVIK
PRIMAR	Manager	Mr Hans Christoffer LAURITZEN
IC-ENC	SC Chair	Captain Marc van der DONCK
IC-ENC	Operator	
IC-ENC	Manager	Mr James HARPER

IHO Secretariat	
Director	Mr Mustafa IPTES
Assistant Director	Mr Yves GUILLAM (Secretary)

Meetings

WENDWG2 - London, UK	21-22 September 2012
WENDWG3 - Monaco	13-14 May 2013
WENDWG4 - Niteroi, Brazil	18-20 May 2014
WENDWG5 - Singapore	3- 5 March 2015
WENDWG6 - Stavanger, Norway	8-10 March 2016

Agenda Items

- Meeting IMO ECDIS Carriage Requirements
- ENC Coverage, Gaps, Risk Assessment
- Overlapping ENCs and associated Policy and Procedures
- Quality, Consistency, Updating Issues, Consistency with Paper Charts, Marine Information Overlays
- ENC Scheming in Regional Hydrographic Commissions
- RENC Distribution and Harmonization
- WEND Principles and Governance, Guidelines, Cartographic Boundaries/Limits
- ECDIS Display Issues (IHC XVIII, PRO-3 refers)

- IHO Strategic and Work Programme Performance Indicators
- IHO ENC Catalogue
- Impact of S-101 ENCs

**4. REPORT OF THE WORLD-WIDE NAVIGATIONAL WARNING SERVICE
SUB-COMMITTEE (WWNWS-SC)**

Chair

Mr Peter DOHERTY United States 2007 - 2017

Vice-Chair

Captain (Ret) Alain ROUAUL France 2012 - 2017

Membership

IHO Member States

Argentina, Australia, Brazil, Canada, Chile, China, Ecuador, Egypt, France, Germany, Greece, India, IR of Iran, Italy, Japan, Monaco, New Zealand, Norway, Oman, Pakistan, Peru, Russian Federation, South Africa, Spain, Sweden, Turkey, UK, USA,

Ex-Officio Members

IMO, IMSO, WMO

Expert Contributors

SONSAT (inc. AWNIS), CIRM, Inmarsat, Iridium

Meetings

- WWNWS4 Tokyo, Japan 24 – 28 September 2012
- WWNWS5 IHO Secretariat, Monaco 1 – 4 October 2013
- WWNWS6 Wellington, New Zealand 18 – 22 August 2014
- WWNWS7 IHO Secretariat, Monaco 24 – 27 August 2015
- WWNWS8 Ålesund, Norway 12 – 16 September 2016

Additionally the WWNWS-SC Document Review WG met at the IMO in London during the week following the IMO Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR) meeting:

- DocRev10 20 – 22 March 2012
- DocRev11 29 – 31 January 2013
- DocRev12 8 – 10 July 2014
- DocRev13 17 – 19 March 2015
- DocRev14 8 – 10 March 2016

Agenda Items

- Review of Action Items from previous WWNWS-SC meeting
- Matters Relating to the GMDSS Master Plan
- Promulgation of Maritime Safety Information (MSI)
 - Review of Outcome of the Annual IMO MSC, NCSR and IMO/ITU Experts Group meetings
 - Development of the GMDSS Modernization Plan and issues relevant to WWNWS

- Self Assessments by NAVAREA Coordinators
- Quality Management Analyses of Self Assessments
- Broadcast Systems and Services
 - Developments in the WNWNS
 - Emerging Technologies/Modernisation.
- Review of Guidance Documents and Other Related Documentation
- WNWNS Representation at Regional Hydrographic Commissions (RHCs) and other Conferences
- WNWNS member attendance at RHCs
- Capacity Building MSI Training Course Developments
- Review of Action Items

5. REPORT OF THE GEBCO GUIDING COMMITTEE

Chair

Dr Robin FALCONER	New Zealand	until 11 October 2013
Mr Shin TANI	Japan	since 11 October 2013

Vice-Chair

Mr Chris FOX	United States	until December 2012
Prof Martin JAKOBSSON	Sweden	since 11 October 2013

Current Membership of GEBCO Guiding Committee

IHO Appointed Members

Mr Shin TANI	Japan
Rear Admiral Patricio CARRASCO	Chile
Dr HYO Hyun Sung	Republic of Korea
Captain NORHIZAM Hassan	Malaysia
Dr Graham ALLEN	United Kingdom

IOC Appointed Members

Prof Martin JAKOBSSON	Sweden
Dr Robin FALCONER	New Zealand
Dr Marzia ROVERE	Italy
Dr Johnathan KOOL	Australia
Captain Leonid SHALNOV	Russian Federation

Ex-officio Members:

Dr Hans-Werner SCHENKE	Germany	Chair of SCUFN
Dr Karen MARKS	USA	Chair of TSCOM
Dr Vicki FERRINI	USA	Chair of SCRUM
Ms Jennifer JENCKS	USA	Director of IHO-DCDB

NOTE: Members of the Secretariats of the IHO and IOC are permanent non-voting Members in the Committee.

Meetings

GEBCO Guiding Committee (GGC)

29th GGC Meeting	5 October 2012	Monaco
30th GGC Meeting	11 October 2013	Venice, Italy
31st GGC Meeting	13-15 June 2014	Monaco
32nd GGC Meeting	8-9 October 2015	Kuala Lumpur, Malaysia
33rd GGC Meeting	13-14 October 2016	Valparaiso, Chile

Sub-Committee on Undersea Feature Names (SCUFN)

25th SCUFN Meeting	23-27 October 2012	Wellington, New Zealand
26th SCUFN Meeting	23-27 September 2013	Tokyo, Japan

27th SCUFN Meeting	16-20 June 2014	IHO Secretariat, Monaco
28th SCUFN Meeting	12-16 October 2015	Niteroi, Brazil
29th SCUFN Meeting	19-23 September 2016	Boulder, USA

Technical Sub-Committee on Ocean Mapping (TSCOM), and
Sub-Committee on Regional Undersea Mapping (SCRUM)

28 th TSCOM and SCRUM Meeting	1-4 October 2012	Monaco
29 th TSCOM and SCRUM Meeting	7-9 October 2013	Venice, Italy
30 th TSCOM and SCRUM Meeting	11-13 December 2014	Mountain View, USA
31 st TSCOM and SCRUM Meeting	5-9 October 2015	Kuala Lumpur, Malaysia
32 nd TSCOM and SCRUM Meeting	10-14 October 2016	Valparaiso, Chile

Agenda Items

- Reports from IHO, IOC, SCUFN, TSCOM, SCRUM, IHO DCDB, Digital Atlas Manager, and IBCs
- Reports on Finance, NF Project, and Outreach
- GEBCO World Map Production
- Implementation of Work programme
- Nippon Foundation scholar program 10 year celebration
- Revision of GGC's TOR/ROP
- Raising support for GEBCO operations
- Future GEBCO Directions
- Report of the Forum for Future Ocean Floor Mapping
- Arctic and Antarctic Workshop outcomes
- IOC review into future GEBCO engagement
- Engagement with international programmes
- Users and uses of GEBCO

6. REPORT OF THE IHO DATA CENTRE FOR DIGITAL BATHYMETRY
(DCDB)

Director

Ms Lisa TAYLOR United States until October 2016

Ms Jennifer JENCKS United States since October 2016

Difficulties encountered and challenges yet to be addressed

1. Securing on-going resources to maintain and enhance the GEBCO Gazetteer of Undersea Features database and online interface.

Achievements/outputs/conclusions

2. Enhanced the IHO DCDB web pages and map viewers.
3. GEBCO Gazetteer of Undersea Features database and online interface.
 - a. Decoupled front and back end of the Gazetteer web application to facilitate targeted and efficient user interface enhancements;
 - b. Updated supporting technology to ensure robust security and ability to leverage cutting edge development options;
 - c. Addressed user requested enhancement backlog, including expanded documentation, workflow improvements and visual interface changes;
 - d. Addressed regular maintenance needs including bug fixes and system upgrades, migrations and patches; and
 - e. Coordinated with GEBCO's Subcommittee on Underwater Features Names (SCUFN) to review, prioritize, and scope the effort of requested enhancements and bug fixes for the Gazetteer in anticipation for future software development work.
4. Crowd-Source Bathymetry:
 - a. Expanded the IHO DCDB system to include crowd-sourced bathymetry (CSB) data stream from Rose Point Navigation Systems;
 - b. Researched and developed a new beta version of a CSB interactive map for discovery and access;
 - c. Explored various technology options for scalable storage to accommodate increasing data volumes;
 - d. Hosted IHO Crowd-Sourced Bathymetry Working Group in February, 2016. Group discussed and made decisions to refine data format, metadata content, and data transfer processes based on lessons learned from the IHO/PYA/Sea-ID crowd-sourcing pilot project;
 - e. Captured requirements for improved data visualization with the goal of ultimately displaying the points as lines, grids or other products in the viewer; and
 - f. Enabled the NCEI Extract System delivery of CSB data so the public can easily access and download data.

7. REPORT OF THE CROWD-SOURCED BATHYMETRY WORKING GROUP (CSBWG)

Chair

Ms Lisa TAYLOR	United States	until October 2016
Ms Jennifer JENCKS	United States	from October 2016

Vice-Chair

Mr Serge GOSSELIN	Canada	from November 2016
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Membership

Member States

Argentina, Australia, Brazil, China, France, India, Italy, Japan, Nigeria, Portugal, Turkey, UK, USA

Expert Contributors

Caris, Olex AS, Sea-ID, PYA, TeamSurv, GEBCO Project, SevenCs/Chartworld

Meetings

CSBWG1	Kuala Lumpur, Malaysia	07 October 2016
CSBWG2	Boulder, Colorado, USA	10-11 February 2016
CSBWG3	Warnemünde, Germany	7-8 November 2016

Agenda Items

- Review of Action Items from previous CSBWG meeting
- Updates of Current Projects
- Overview review of the initial draft CSB Guidance Document (CSBGD)
- Progress incorporation of feedback comments and input into each section, to develop final draft version
- Review of CSBGD development timeline and milestones
- Review of Terms of Reference and Rules of Procedure

8. REPORT OF THE MARINE SPATIAL DATA INFRASTRUCTURES

WORKING GROUP (MSDIWG)

Chair

Mr Jens Peter HARTMANN Denmark since 2012

Vice-Chair

Ms Ellen VOS Netherlands until 2016

Vacant since 2016

Secretary

Mr John PEPPER OceanWise since 2012

Membership

Member States

Argentina, Australia, Brazil, Canada, Cuba, Denmark, Estonia, Finland, France, Germany, Indonesia, Japan, Malaysia, Nigeria, Netherlands, Norway, Philippines, Portugal, Republic of Korea, Romania, Slovenia, Spain, Singapore, Thailand, Ukraine, United Kingdom and United States.

Expert Contributors

CARIS, Envitia, ESRI, Geosciences Australia, GSDI Association, OceanWise, Open Geospatial Consortium (OGC).

IHO Secretariat

Meetings

MSDIWG4 Copenhagen, Denmark 31 January - 1 February 2013
preceded by a one-day MSDI Open Forum

MSDIWG5 Silver Spring, Maryland, USA 5 - 7 February 2014
preceded by a one-day MSDI Open Forum

MSDIWG6 London, United Kingdom 4 - 6 March 2015
preceded by a one-day MSDI Open Forum

MSDIWG7 Tokyo, Japan 27 - 29 January 2016
preceded by a two-day MSDI Demonstration Workshop and Open Forum

Agenda Items

- Identify and promote national and regional best practices
- Assess the existing and new standards in the provision of marine components of spatial data infrastructures (SDI)
- MSDI training and education
- Facilitate (external) MSDI communication
- Maintain and extend the IHO publication MSDI C-17

- Ensure that MSDI is a standing agenda item for RHCs' meetings (IHO Res 2/1997, as amended, refers)
- Presentation of the result of the Questionnaire about MSDI.

9. REPORT OF THE IHO-EU NETWORK WORKING GROUP (IENWG)

Chair

Mr Michel EVEN	France	March 2014 - June 2015
Mr Laurent KERLÉGUER	France	since June 2015

Membership

ARHC, represented by Denmark
 BSHC, represented by Sweden
 EAtHC, represented by France
 MACHC, represented by France
 MBSHC, represented by Greece
 NHC, represented by Norway
 NIOHC, represented by United Kingdom
 NSHC, represented by Germany
 SAIHC, represented by France
 SWPHC
 Italy (associate member)
 IHO Secretariat (observer)

Meetings

IENWG 1	Saint-Mandé, France	2 September 2014
IENWG 2	Saint-Mandé, France	28-29 January 2015
IENWG 3	Saint-Mandé, France	9-10 June 2015
IENWG 4	Saint-Mandé, France	18-19 January 2016
IENWG 5	Brussels, Belgium	13-14 October 2016

Agenda Items

Note: the main achievements are described in the report on Programme 1 (see Element 1.1).

- Improve cooperation with the European Commission, by promoting amongst its entities and with decision makers the role of HOs in the development of the maritime policies of the European Union;
- Monitor European directives, calls for tenders and proposals, projects, events, etc., potentially impacting HOs and define actions to be conducted in accordance;
- Promote the IHO and HOs as providers of authoritative data;
- Coordinate the response to the call for tender of the European Commission on coastal mapping and monitor the outcome;
- Develop a joint position of European HOs in relation with the third phase of EMODnet.

Terms of Reference and Rules of Procedure of the IRCC

References:

- a. IHO Circular Letter 115/2007, dated 10 December 2007
- b. IHO Circular Letter 46/2009, dated 03 July 2009
- c. IHO Circular Letter 54/2009, dated 03 August 2009
- d. IHO Circular Letter 28/2010, dated 30 March 2010
- e. IHO Circular Letter 71/2014, dated 24 October 2014
- f. IHO Circular Letter 86/2015, dated 10 December 2015
- g. IHO Circular Letter 64/2016, dated 07 December 2016

Considering the need to promote and coordinate those activities that might benefit from a regional approach, and considering further that Capacity Building and wider use of marine data gathering have been identified as strategic objectives, the International Hydrographic Organization establishes an Inter-Regional Coordination Committee (IRCC) with the following Terms of Reference and Rules of Procedure. The IRCC shall report to each ordinary session of the Assembly through the Council.

Note: The IRCC shall assume the responsibility of the policy matters related to the Worldwide Electronic Navigational Chart Database (WEND) until the Council is established.

TERMS OF REFERENCE

1. Establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions, especially on matters associated with Capacity Building; the World-Wide Navigational Warning Service; General Bathymetry and Ocean Mapping, Marine Spatial Data Infrastructures, Education and Training, and the implementation of the WEND suitable for the needs of international shipping.

Establish co-operation and partnership with stakeholders to enhance the delivery of Capacity Building programs and to ensure long-term sustainability.
2. Monitor the work of specified IHO Inter-Organizational Bodies engaged in activities that require inter-regional cooperation and coordination as directed by the Assembly and provide advice and guidance to the IHO representatives as required.
3. Promote co-operation between regional organizations concerned with the use of hydrographic and bathymetric data, information and products as well as Maritime Safety Information (MSI) for navigation safety and all other marine purposes, including economic development, environmental protection and coastal resource management, particularly within Marine Spatial Data Infrastructures.
4. Review and implement the IHO Capacity Building Strategy and promote the Capacity Building and Training initiatives identified by the relevant subsidiary bodies of the Organization, facilitating interaction between RHCs and potential donors at both international and regional levels.
5. Prepare and maintain publications related to the objectives of the Committee.
6. Prepare a Committee Work Programme and propose it to each ordinary session of the Assembly through the Council (when the Council is established). Consider and decide

upon proposals for new work items under the Committee Work Programme, taking into account the financial, administrative and wider stakeholder consequences and the IHO Strategic Plan and Work Programme.

7. Monitor the execution of the Committee Work Programme and report to each meeting of the Council, including an evaluation of the performance achieved.
8. Propose to the Assembly through the Council, the establishment of new Sub-Committees, when needed, supported by a comprehensive cost-benefit analysis.
9. As required, establish Working Groups to fulfil the Committee Work Programme, in conformance with Article 6 of the General Regulations and approve their Terms of Reference and Rules of Procedure.
10. Monitor the work of its Sub-Committees, Working Groups and other bodies directly subordinate to the Committee.
11. Review annually the continuing need for each Working Group previously established by the Committee.
12. Liaise and maintain contact with relevant IHO and other bodies to ensure that IHO work activities are coordinated.
13. Liaise with other relevant Intergovernmental Organizations and Non-Government International Organizations (NGIOs).
14. These Terms of Reference can be amended in accordance with Article 6 of the General Regulations.

RULES OF PROCEDURE

1. The Committee shall be composed of the Chairs of the Regional Hydrographic Commissions; the Chairs of the Hydrographic Commission on Antarctica (HCA), the Capacity Building Sub-Committee (CBSC), the World-Wide Navigational Warning Service Sub-Committee (WWNWS), the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC), the Worldwide ENC Database (WEND) Working Group, the IHO-European Union (EU) Network Working Group (IENWG), the Marine Spatial Data Infrastructures (MSDI) Working Group, the Crowd-Sourced Bathymetry Working Group (CSBWG) and the General Bathymetric Chart of the Oceans (GEBCO) Guiding Committee. Committee Meetings shall be open to all Member States of the IHO. Intergovernmental Organizations and Non-Governmental International Organizations (NGIOs) accredited as Observers to the IHO may attend Committee Meetings.
2. A Director the Secretariat shall act as Secretary to the Committee. The Secretary shall prepare the reports required for submission to each ordinary session of the Assembly and Council.
3. The Chair and Vice-Chair shall be a representative of a Member State. The election of the Chair and Vice-Chair shall be decided at the first meeting after each ordinary session of the Assembly and shall be determined by vote of the Committee Members present and voting. If the Chair is unable to carry out the duties of the office, the Vice-Chair shall assume as the Chair with the same powers and duties.
4. The Committee shall meet once a year, by mid-June, and whenever possible in

conjunction with another relevant conference or meeting. The venue and date of the meeting shall be decided at the previous meeting, in order to facilitate participants' travel arrangements. The Chair or any member of the Committee, with the agreement of the simple majority of all members of the Committee, can call extraordinary meetings. Confirmation of the venue and the date shall normally be announced at least six months in advance. All intending participants shall inform the Chair and Secretary ideally at least one month in advance of their intention to attend meetings of the Committee.

5. Decisions shall generally be made by consensus. If votes are required on issues or to endorse proposals presented to the Committee, decisions shall be taken by a simple majority of Committee Members present and voting. When dealing with inter-sessional matters by correspondence, a simple majority of all Committee Members shall be required.
6. The draft record of meetings shall be distributed by the Secretary within six weeks of the end of meetings and participants' comments should be returned within three weeks of the date of dispatch. Final minutes of meetings should be distributed to all IHO Member States and posted on the IHO website within three months after a meeting.
7. The working language of the Committee shall be English.
8. When established, Working Groups shall operate by correspondence to the maximum extent practicable.
9. Recommendations of the Committee shall be submitted to IHO Member States for adoption through the Council to the Assembly.
10. These Rules of Procedure can be amended in accordance with Article 6 of the General Regulations.

**Reports of the Regional Hydrographic Commissions
and the HCA
(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. Mediterranean and Black Seas Hydrographic Commission	MBSHC
6. Meso-American - Caribbean Sea Hydrographic Commission	MACHC
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. South East Pacific Regional Hydrographic Commission	SEPRHC
12. Southern Africa and Islands Hydrographic Commission	SAIHC
13. South West Atlantic Hydrographic Commission	SWAtHC
14. South West Pacific Hydrographic Commission	SWPHC
15. United States Canada Hydrographic Commission	USCHC
16. The Hydrographic Commission on Antarctica	HCA

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

Chair

Mr Sigvard Stampe VILLADSEN	Denmark	from September 2011
Mr Evert FLIER	Norway	from October 2012
Captain Sergey TRAVIN	Russian Federation	from January 2014
Mr Denis HAINS	Canada	from October 2015
Ms Pia Dahl HØJGAARD	Denmark	from October 2016

Vice-Chair

Mr Evert FLIER	Norway	from September 2011
Captain Sergey TRAVIN	Russian Federation	from October 2012
Mr Denis HAINS	Canada	from January 2014
Ms Anne-Sofie JENSEN	Denmark	from October 2015
Ms Pia Dahl HØJGAARD	Denmark	from January 2016
Ms Birte Noer BORREVIK	Norway	from October 2016

Membership

Members

Canada, Denmark, Norway, Russian Federation, United States of America

Associate Members

Finland, Iceland

Meetings

1. The Commission has met at least annually since the close of the 18th IHC, in accordance with the ARHC Statutes:

3 rd meeting	Tromsø, Norway	9-11 October 2012
4 th meeting	Portsmouth, NH, United States	29-30 January 2014
Special meeting	Monaco	7 October 2014
5 th meeting	Saint Petersburg, Russian Federation	28 - 30 October 2015
ARHC teleconference	13 April 2016)	
Extraordinary meeting	Abu Dhabi, UAE	28 & 31 May 2016
6 th meeting	Iqaluit, Nunavut, Canada	3 and 6 October 2016

Agenda Items

2. The main subjects dealt with during the reporting period were the following:
 - Associate Member Investiture
 - Approval of the Rules and Procedures for ARHC representation on the IHO Council
 - Establishing an Arctic Voyage Planning Guide for mariners

- Operational and Technical Working Group with an emphasis on Hydrographic Risk Assessment in the Arctic.
- Arctic International Charting Coordination Working Group
- Established Arctic Regional Marine Spatial Data Infrastructure Working Group
- Communicate Arctic activities to associated IHO Working Groups
- Outreach to Arctic Council and its working groups including the Protection of the Arctic Marine Environment (PAME) and Conservation of Arctic Flora and Fauna (CAFF)
- Engage with Arctic marine users including cruise line industry
- Outreach to IMO
- Investigate potential of crowd-sourced bathymetry for use within the Arctic community
- Investigate potential of remote sensing and satellite-derived bathymetry (SDB)
- Participate with the Arctic SDI/Open Geospatial Consortium (OGC) Arctic Spatial Data pilot project

ARHC workings groups:

- ARHC Strategic Planning Working Group (SPWG) [Dormant]
- ARHC Operations and Technologies Working Group (OTWG)
- Arctic International Charting Coordination Working Group (AICCWG)
- Arctic Regional Marine Spatial Data Infrastructure Working Group (ARMSDIWG)

Difficulties encountered and challenges yet to be addressed

3. Large gaps in hydrographic data creating increased hydrographic data risk (see OTWG report)
4. Increasing marine traffic
5. Increasing need for improved data and navigational products
6. Finding methodologies for collecting and encoding traditional knowledge

Conclusions

7. ARHC has positioned itself as the Intergovernmental Organization that deals with regional hydrographic and charting issues
8. ARHC engages across the Arctic community to communicate the hydrographic and charting data situation
9. ARHC has made great strides to improve our understanding of the hydrographic data environment and communicate this situation to a broad community of users.
10. Established a consolidated Web site for access to all national Arctic Voyage Planning Guides.
11. Utilizing existing data, established a repeatable process to understand the impact of hydrographic data environment on marine traffic.
12. Establish an Arctic Regional Marine Spatial Data Infrastructure Working Group (ARMSDIWG)

Actions required of the Assembly

13. The Assembly is invited to note the report.

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

Chair

Mr Patrik WIBERG	Sweden	until 20 September 2012
Mr Jukka VARONEN	Finland	20 September 2012 - 18 September 2013
Mr Taivo KIVIMÄE	Estonia	18 September 18, 2013 - 12 June 2014
Mr Janis KRASTINS	Latvia	12 June 12, 2014 - 18 September 2015
Captain Sergey TRAVIN	Russia	18 September 2015 - 29 September 2016
Mr Mindaugas CESNAUSKIS	Lithuania	29 September 2016 - present.

Vice-Chair:

Mr Jukka VARONEN	Finland	until 20 September 2012
Mr Taivo KIVIMÄE	Estonia	20 September 2012 - 18 September 2013
Mr Janis KRASTINS	Latvia	18 September 2013 - 12 June 2014
Captain Sergey TRAVIN	Russia	12 June 2014 - 18 September 2015
Mr Mindaugas CESNAUSKIS	Lithuania	18 September 2015 - 29 September 2016
Dr Mathias JONAS	Germany	29 September 2016 to present.

Membership

Members

Denmark, Estonia, Finland, Germany, Latvia, Poland, Russian Federation, Sweden.

Associate Member

Lithuania.

Meetings

17 th meeting	Helsinki, Finland	18-20 Sept 2012
18 th meeting	Tallinn, Estonia	16-18 Sept 2013
19 th meeting	Riga, Latvia	10-12 June 2014
20 th meeting	Saint Petersburg, Russian Federation	6-18 September 2015
21 th meeting	Klaipeda, Lithuania	27-29 September 2016

Agenda Items

• IHO-EU Network WG (IENWG)

1. Sweden acted as representative from BSHC. BSHC Member States have been active in participating in the IHO-EU Network Working Group since its inception in 2012 with substantial cooperation and progress on one of the European Commission's flagship maritime projects European Marine Observation and Data Network (EMODnet) and its coastal mapping project. Latvia, Sweden and Germany contributed as consortium members to EMODnet derivations, namely the EU projects Coastal Mapping and High Resolution Seabed Mapping.

- **Re-survey Monitoring and coordination**

2. BSHC developed and operates a standing scheme of re-surveys for the region. Schedule and execution of surveys are provided in an updated web based interface maintained and operated by Sweden. Surveys are being regularly coordinated between neighbouring countries. The BSHC Re-Survey Monitoring Working Group liaises with the respective NSHC Working Group.
3. Further developments of the common re-survey database as metadata repository are ongoing. Member States update the information for their waters of jurisdiction independently. Intention is to form a BSHC task-group to look at updating of S-44, Edition 5.

Link to BSHC RE-Survey Database: <https://helcomresurvey.sjofartsverket.se/>

- **Baltic Sea Bathymetric Database (BSBD)**

4. Sweden operates a cross border bathymetry database and a geo portal (data.bshc.pro) on behalf of the Commission. BSHC Member States are providing gridded meso-resolution depth information. Data density differs between the Member States with a minimum resolution of 500 m. The website is fairly widely used. It is possible to either download data or to use the WMS service provision. The options for the re-use of the data are not fully harmonised and depend from the specific national legal regulations. Sweden plans to release a new version of the grid as far as newer and better data is available from numerous countries.
5. The BSHC bathymetry database is recognized by GEBCO as a Regional Mapping Project. At the same time BSBD uses the GEBCO dataset for areas where no data has been provided by national HO's of the region. BSBD is used in the EMODnet phase 2 model and it is planned to assist in deliveries to EMODnet "High Resolution Seabed Mapping" (phase III).

- **Harmonized Chart Datum in the Baltic**

6. BSHC developed the Baltic Sea Chart Datum 2000 as a joint height reference. It is based on the European Vertical Reference Frame (EVRF). A first specification of such a harmonized chart datum was completed in 2016. The specification reflects the specific needs of surface navigation and hydrography in addition to EVRF conventions. The Chart Datum WG is monitoring and gives guidance for the implementation of the harmonized chart datum. BSHC Members have widely committed to implement it. In some countries implementation has already started.

- **FAMOS**

7. Several BSHC Member States (DE, DK, EE, FI, LV, LT, SE) and Working Groups are involved in the FAMOS project coordinated by Sweden. The project focuses on surveying areas relevant for commercial shipping in the Baltic Sea according to the BSHC-HELCOM re-survey scheme. Furthermore, it serves as a platform for implementing the common Baltic Sea chart datum as proposed by the BSHC Chart Datum Working Group and agreed upon within BSHC. The project receives EU co-financing from the Connecting Europe Facility for Transport (CEF Transport).
8. The first phase of the project, FAMOS Freja, was successfully executed from 2014 to 2016. The second phase of the project, FAMOS Odin, is ongoing for the period 2016-2018.

- **BSICC**

9. The Baltic Sea INT Chart Coordination Working Group (BSICC) processes ENC and paper chart issues fully in parallel and to the same extent. The facilitation of the INT Chart Web Catalogue and continuous updating of S-11 Part B, have become inherent part of the chart publishing process in all Member States. Monitoring of Baltic Sea ENC scheme and the

identification of potential gaps and overlaps has been added to the standing agenda items of the Working Group. BSHC Member States agreed about the unlimited internal use of the small scale ENC covering the whole Baltic as provided by Germany as the responsible producer.

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

10. MSDI delivers the instruments for the enhanced scope of hydrographic information users. MSDI can create the framework for future provision of this information beyond the classic field of surface navigation. BSHC and NSHC see the importance to deal with these opportunities from a regional approach. The respective WGs in both RHCs have merged in 2016 to the NSHC and BSHC Baltic Sea North Sea Marine Spatial Data Infrastructure Working Group (BSNSMSDIWG). It will report to both commissions and cooperate with the respective IHO MSDI Working Groups.

- **WENDWG**

11. BSHC is regularly 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. BSHC receives the annual report and gives further guidance to the BSHC WENDWG representative.

- **BSHC Internet Domain**

12. BSHC developed an internet domain (www.bshc.pro). It is operated by Sweden. The content is under ongoing development. Major facts about the Members and activities of the Commission are already presented. URL links are provided to GIS applications matching the scope of the Commission and to IHO web pages.

- **Capacity Building**

13. Activities in CB are mainly dealt internally within BSHC. CBSC is chaired by Germany and Germany provides the CB Coordinator for the BSHC.

Difficulties encountered and challenges yet to be addressed

14. Lithuania as BSHC Associate Member is not a member of the IHO. Since Lithuania is currently holding BSHC chair, IHO related activities are therefore effectively processed by the Vice Chair (Germany).

Achievements/Outputs/Conclusions

15. The cooperation within the BSHC is very productive. Several projects have led to joint databases and results provided on the web. The outreach of the hydrographic work in the region and beyond has improved even further.
16. Member States have continued to contribute extensively to the work of the IHO and have been active participants of working groups.
17. There has been substantial cooperation between the commission's Member States and other European States and the EU on information sharing and shared projects.

Actions required of the Assembly

18. The Assembly is invited to note the report.

3. REPORT OF EAST ASIA HYDROGRAPHIC COMMISSION (EAHC)

Chair

Commodore Romeo I HO	Philippines	until October 2013
Commodore Jacinto M. CABLAYAN	Philippines	October 2013 - October 2015
Rear Admiral Dato' Pahlawan ZAAIM bin HASAN	Malaysia	since October 2015

Vice-Chair

Dr Arata SENGOKU	Japan	since April 2016
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Membership

Members

Brunei Darussalam, China, Democratic People's Republic of Korea, Indonesia, Japan, Malaysia, Philippines, Republic of Korea, Singapore, Thailand, Vietnam (provisional)

Observers

Cambodia, Timor Leste, UK, USA, GEBCO Guiding Committee

Meetings

- 11th EAHC Conference
Chiangmai, Thailand 4-6 September 2012
- 9th EAHC ENC Task Group Meeting
Incheon, Republic of Korea 25-27 July 2012
- 10th EAHC ENC Task Group Meeting
Busan, Republic of Korea 21-22 January 2013
- 7th EAHC Coordinating Meeting
Busan, Republic of Korea 23-24 February 2013
- 1st EAHC Charting and Hydrography Committee Meeting
Bohol, Philippines 26-28 June 2013
- 1st EAHC Training and Research Development Committee Board of Directors Meeting
Busan, Republic of Korea 4-5 September 2013
- 2nd EAHC Training and Research Development Committee Board of Directors Meeting
Kuala Lumpur, Malaysia 23 February 2014
- 2nd EAHC Charting and Hydrography Committee Meeting
Kuala Lumpur, Malaysia 24-25 February 2014
- 1st EAHC Steering Committee Meeting
Kuala Lumpur, Malaysia 26-27 February 2014
- 3rd EAHC Charting and Hydrography Committee Meeting
Hong Kong, China 30 July-1 August 2014

- 3rd EAHC Training and Research Development Committee Board of Directors Meeting
Singapore 6-8 January 2015
- 2nd EAHC Steering Committee Meeting
Singapore 10-12 February 2015
- 1st EAHC Regional Chart Coordinating Centre
Singapore 10 February 2015
- 2nd EAHC Regional Chart Coordinating Centre
Tokyo, Japan 28 July 2015
- 4th EAHC Charting and Hydrography Committee Meeting
Tokyo, Japan 28-30 July 2015
- 4th EAHC Training and Research Development Committee Board of Directors Meeting
Manila, Philippines 12 October 2015
- 12th EAHC Conference
Manila, Philippines 13-15 October 2015
- 5th EAHC Training and Research Development Committee Board of Directors Meeting
Surakarta, Indonesia 22-23 February 2016
- 3rd EAHC Steering Committee Meeting
Surakarta, Indonesia 24-26 February 2016
- 5th EAHC Charting and Hydrography Committee Meeting
Singapore 19-21 October 2016

Agenda Items

- EAHC Strategy Plan
- EAHC Membership (Outreach to Cambodia and Timor Leste)
- EA Administrator, hosting of RECC and update on South China Sea & East Asia ENC
- Emergency Disaster Framework

Difficulties encountered and challenges yet to be addressed

- Regional Geographical Name
- Political Influence
- Communication with Democratic People's Republic of Korea

Achievements/Outputs/Conclusions

- EAHC Capacity Building Programme:
 - EAHC Workshop on Seabed Classification, 25-29 June 2012
 - EAHC Workshop on Database Design and Management, 5-9 November 2012
 - EAHC Workshop on Technical Aspects of Maritime Boundaries, Baselines and the Extended Continental Shelf, 19-23 November 2012

- Seminar on S-100, 9-13 September 2013
- Marine Spatial Database Infrastructure, 7-10 October 2013
- Basic Training for Trainers (TFT) in Cartography, 18-29 November 2013
- Training Course on Maritime Boundaries, 10-14 November 2014
- Training Course on Tide and Water Level for Hydrographic Survey, 8-12 December 2014
- Training Course on MSI, 3-5 February 2015
- Training on Seabed Classification and Multibeam Survey, 5-9 October 2015
- Tsunami Inundation Mapping Workshop, 25-27 November 2015
- MSDI and Database Management, 18-22 January 2016
- 1st Training for Trainers in Hydrography, 24 October – 4 November 2016
- Establishment of East Asia ENC and South China Sea ENC.
- Conceptualisation of Cartographic Boundary.
- Successful outreach:
 - Vietnam and Brunei Darussalam joined IHO
 - Technical Visit to Cambodia, 4-6 December 2013
 - Technical Visit to Vietnam, 5-7 November 2014
- Technical Visit to Brunei Darussalam, 2-4 December 2014
- Technical Visit to Timor Leste, 6-7 December 2016
 - Establishment of Working Groups on Tide Studies, MSDI and MIO.
 - Establishment of TRDC website for e-learning.

Actions required of the Assembly

The Assembly is invited to note the report.

4. REPORT OF THE EASTERN ATLANTIC HYDROGRAPHIC COMMISSION (EAthC)

Chair

Rear Admiral Agostinho RAMOS DA SILVA	Portugal	until 16 November 2012
Ingénieur général Bruno FRACHON	France	16 November 2012 - 18 September 2014
Captain Abdelouahed DIHAJI	Morocco	18 September 2014 - 20 October 2016
Captain Juan A. AGUILAR CAVANILLAS	Spain	20 October 2016 until present

Vice-Chair

12th meeting	Ingénieur général Bruno FRACHON	France
13th meeting	Captain Abdelouahed Dihaji	Morocco
14th meeting	Captain Juan A. Aguilar Cavanillas	Spain

Membership

Members

Cameroon, France, Morocco, Nigeria, Portugal, Spain.

Associate Members

Benin, Cabo Verde, Congo, Côte d'Ivoire, Guinea, Guinea-Bissau, Mauritania, Senegal, Togo

Observers

Angola, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Gambia, Liberia, Sao Tome and Principe, Sierra Leone, UK, USA.

Meetings

12 th meeting	Lisbon, Portugal	14 – 16 November 2012
13 th meeting	Casablanca, Morocco	16 – 18 September 2014
14 th meeting	Cádiz, Spain	18 - 20 October 2016

Agenda Items

1. In 2012 Cameroon joined the IHO and became the sixth member of this Commission.
2. Up to the 11th EAtHC Conference three Capacity Building visits were conducted in the EAtHC region –Gabon, Guinea-Bissau and Cameroon, and a basic course in hydrography and cartography, sponsored by the IMO and delivered by SHOM, was planned to the Maritime University of Abidjan, 19 November to 1 December 2012.
3. On November 2013 a seminar on Hydrography and Cartography was held in Pointe Noire (CG) with representatives of IHO (IHO Director and EAtHC Chair), MOWCA and several EAtHC States.
4. On December 2014 there was a MSI workshop for EAtHC members hosted by ARSTM, Abidjan (RCI), organized by SHOM with the support of the IHO Secretariat and ARSTM.
5. A Technical Visit to Liberia was conducted from 3 to 5 February 2016, supported by the Liberia Maritime Authority (LiMA), approved in 2014 by the IHO Capacity Building Sub-Committee to assess the current status of nautical charting and hydrography in the country and to provide advice to the government and to stakeholders on a way ahead. The IHO Secretariat and UKHO jointly formed the visiting team.

6. On July 2016 a Memorandum of Understanding (MoU) establishing cooperation between the IHO and the Maritime Organization of West and Central Africa (MOWCA) was signed.

Difficulties encountered and challenges yet to be addressed

7. As previously stated, since the establishment of the Capacity Building Sub Committee, several technical visits have been conducted and training courses have been offered to the EAtHC countries. Despite these successful activities, it is still necessary to strengthen Capacity Building initiatives in the region, identify more efficient strategies that could be shared by the countries themselves and guarantee the commitment and participation of the concerned coastal States.
8. Although the 13th EAtHC Conference prequels the forthcoming 30th anniversary of the creation of the Commission, progress still needs to be made in the region, and the recurrent absence of some coastal States of the region from EAtHC events is a signal among others. This is an issue still to be solved.
9. Some Member States and/or associates (Rep of the Congo, Côte d'Ivoire, Guinea, Togo) do not have a national Hydrographic Service, although some of them have created specific services to address the safety of navigation and committees for hydrographic and navigation security issues.
10. There exists a big concern about the necessity to know and understand the needs and hydrographic priorities for the Nations as well as to have the right skills and tools to get the message through to all different African governments and try to create a project to integrate all the hydrographic data/information. This issue has been highlighted in all the meetings of the period.
11. There is still a need to check and update the MSI Points of Contact to NAVAREA II Coordinator. This is also a recurrent action present in all the meetings. In much the same way there is also a need to know, and subsequently inform the NAVAREA II Coordinator, the oil platforms locations and moving forecasts.

Achievements/Outputs/Conclusions

12. During the 13th Conference, IHO Director Bessero outlined the fact that this EAtHC Conference had been hosted for the first time by a North African country (Morocco) which meant a real milestone.
13. There have been numerous cooperation projects among Member States, and with others outside the region, resulting in a good sharing of information that can be considered as CB relative success.
14. France has carried out several surveys in different States of the Region (Gabon, Sao Tome, Morocco, Cameroon...) as well as photogrammetric works in Côte d'Ivoire, Togo, Benin, Cameroon, Equatorial Guinea, Gabon....
15. Portugal has carried out five surveys in close cooperation with Cabo Verde in 2015, not for CB but in the scope of a bilateral agreement between both States. Besides, one survey was accomplished in the Democratic Republic of Sao Tome and Principe.
16. During this period Portugal and Spain have carried out several joint surveys in the common borders of both countries.
17. The CBSC has increased the presence of courses, workshops and visits to the region, thus improving the access to relevant training for the sub-region, although the difficulties arisen to put in practice the training received due to the lack of equipment.

Actions required of the Assembly

18. The Assembly is invited to note the report.

5. REPORT OF THE MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION (MBSHC)

Chair

Commodore George MATARANGAS	Greece	until 27 September 2013
Captain Erhan GEZGIN	Turkey	27 September 2013 to 2 July 2015
Ingénieur général Bruno FRACHON	France	2 July 2015 until present

Vice-chair:

18 th conference (2013)	Captain Erhan GEZGIN	Turkey.
19 th conference (2015)	Mr Revaz BABILUA	Georgia.

Membership

Members (20)

Algeria, Croatia, Cyprus, Egypt, France, Georgia, Greece, Italy, Monaco, Montenegro, Morocco, Romania, Russian Federation, Serbia (suspended), Slovenia, Spain, Syria, Tunisia, Turkey, Ukraine.

Associate Members (6)

Bulgaria, Israel, Malta, Palestinian Authority, United Kingdom, United States of America.

Observers

Albania, Germany, Lebanon, DINMA, IOC, IC-ENC, PRIMAR.

Meetings

18 th Conference	Istanbul, Turkey	25-27 September 2013
19 th Conference	Batumi, Georgia	30 June - 2 July 2015

Agenda Items

- IHO Work Programme 1 – “Corporate affairs”

Element 1.1 Cooperation with International

1. MBSHC Member States have been active in participating in the IHO-EU network working group (IENWG) since its inception in 2012. Greece has been named as the MBSHC focal point for the IENWG. Several MBSHC Member States took part in European Commission’s flagship maritime projects EMODnet and its coastal mapping project.

- IHO Work Programme 2 – Hydrographic Services and Standards

Element 2.3 Nautical Cartography

2. The INT scheme and ENC coverage coordination and monitoring is handled by the Region F International Charting Coordination Working Group (ICCWG) which is mainly organized by correspondence. However, side-meetings have been organized alongside to the 19th MBSHC Conference. Since then, MBSHC Member States solicited the Regional Charting

Coordinator (RCC) to organize another face-to-face meeting is to be organized alongside the first IHO Assembly in 2017 and the next MBSHC Conference.

3. New INT chart approval process by the Region F ICCWG is currently done through silence procedure initiated by circular letter, according to its Terms of Reference agreed at the 16th MBSHC Conference in 2011.

Element 2.8 Digital Data Updating

4. MBSHC Member States provide on an annual basis their Hydrographic status of surveys map to the Commission. These pieces of information are synthesized through a GIS portal hosted by Spain.

- IHO Work Programme 3 –Inter Regional Coordination and Support

Element 3.1 Co-operation with Member States and attendance at relevant meetings

5. MBSHC is represented to the WEND working group by the Chair of ICCWG for Region F, who participated to every meeting of the WEND WG and took the lead on some actions tasked by the 5th Extraordinary Hydrographic Conference regarding the implementation of WEND principles.

Element 3.2 Increase participation by non-Member States

6. The Commission has endeavoured liaising with non-Member States, and therefore inviting them to take part of the Conference: Malta, Israel, Libya, Montenegro and Georgia attended the 18th Conference in 2013. Lebanon, Malta, Israel attended the 19th Conference in 2015, as Montenegro and Georgia which meanwhile had accessed to membership.

During the 19th MBSHC, the IHO Secretariat and Iran gave an informative focus on the hydrographic activities in the Caspian Sea.

Element 3.3 Capacity Building Management

7. At the 17th MBSHC Conference (2011), Turkey was appointed as MBSHC Regional Capacity Building Coordinator. Since then, Turkey has been the official MBSHC representative at the annual Conferences of the Capacity Building Sub-Committee (CBSC) and is in charge of monitoring MBSHC 3 years CB work plan.

Element 3.4 Capacity Building Assessment

8. Since 2012, technical visits have been provided to the following MBSHC coastal States: Albania, Georgia, Israel, Lebanon and Montenegro. Several workshops and courses have been provided for the MBSHC coastal States on various topics: Maritime Safety Information, Multi-beam echo sounders and side-scan sonars systems.

Element 3.9 Marine Spatial Data Infrastructures

9. MBSHC discussed the stakes and feasibility of a Common Bathymetric Database for this region with regards of the forthcoming call for the third phase of the European project EMODnet.

Difficulties encountered and challenges yet to be addressed

10. The main difficulties faced by the MBSHC have been the INT chart schemes and ENC coverage monitoring and coordination: despite a consolidated small scale INT scheme and a growing large scale coverage, mid-scale schemes development have been slowed down by several long-lasting coproduction issues. Those issues have prevented the Commission from disposing of a consolidated regional INT chart catalogue during the S-11 publication era.

11. The 2016 entering into force of the IHO *INTERNATIONAL Chart Web Catalogue* came up with a solid way forward to overcome that situation.
12. As for the Regional ENC coverage, MBSHC is impacted by the lack of progress on a disparate Usage Band 1 scheme, non-consistent with the small scale INT charts scheme covering the region. Furthermore, the persistency of some UB1 overlapping cases induces some domino effect, which impacts the issue of UB2 overlapping cases, preventing the ICCWG from properly addressing the UB2-3 schemes.
13. Other discrepancies between new ENC and existing INT charts are raising new difficulties regarding consistency of nautical information provided by different producers.

Achievements/Outputs/Conclusions

14. As for the integration of non-Member States in the region, Montenegro and Georgia, two MBSHC States, became respectively the 82nd and 83rd IHO Member States. Following up the entering into force of the new IHO Convention on 8 November 2016, Malta is in the process to present the new request for accession to the IHO Convention by January 2017.
15. Moreover, MBSHC invited States bordering the Caspian Sea at its 20th Conference in 2017 and invited them to the MSI workshop scheduled in late 2015. Following up that decision, Azerbaijan attended the MSI course in Istanbul in October 2015.
16. In order to progress on INT chart coproduction issues, MBSHC discussions have been focusing on examples of good practices as way forward to solve them: at the last Conference, Members agreed that, based on the provision of such technical way forwards, some technical discussions should be kept on bilaterally with the purpose of exploiting those concrete approaches, with the support of the RCC. In 2016, a Region F ICCWG silence procedure was for the first time processed using IHO web GIS solution to review those proposals. At its 19th conference, the MBSHC endorsed the recommendations issued at IRCC7 regarding the revision and monitoring of INT Charts.
17. As for ENC coverage coordination, the MBSHC asked all ENC producer nations concerned by those UB1 overlaps to liaise with each other under the coordination of Italy and to report back to RCC on the resolution of those overlapping cases. The proposal of focusing on larger scale usage bands, UB4-5-6, was approved as a way forward on the approval of ENC schemes in the region. Work on these larger scales is on-going.

Actions required of the Assembly

18. The Assembly is invited to note the report.

6. REPORT OF THE MESO AMERICAN AND CARIBBEAN HYDROGRAPHIC COMMISSION (MACHC)

Chair

Rear Admiral Nick LAMBERT	UK	until December 2012
Rear Admiral Tom KARSTEN	UK	December 2012 to March 2013
Mr Michel AMAFO	Suriname	March 2013 to March 2015
Captain Marc VAN DER DONCK	Netherlands	March 2015 to March 2017

Vice-Chair

Mr Michel AMAFO	Suriname	until March 2013
Captain Peter KORTENOEVEN	Netherlands	March 2013 to September 2014
Captain Marc VAN DER DONCK	Netherlands	September 2014 to March 2015
Commander Ricardo LOPEZ CRUZ	Mexico	March 2015 until June 2016
Rear Admiral Fernando Alfonso RODRIQUEZ ANGLI		June 2016 until March 2017

Membership

Members: Brazil, Colombia, Cuba, France, Guatemala, Jamaica, Mexico, Netherlands, Suriname, Trinidad and Tobago, United Kingdom, United States of America, Venezuela.

Associate Members: Antigua and Barbuda, Barbados, Belize, Costa Rica, Dominican Republic, El Salvador, Guyana, Haiti, Honduras, Nicaragua, Panama, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines.

The accession of three Associate Members during the reporting period illustrates the vitality of the MACHC.

Meetings

13 th Conference	Antigua, Guatemala	November 2012
14 th Conference	Phillipsburg, Sint Maarten, Netherlands	December 2013
Extraordinary meeting	Monaco	October 2014
15 th Conference	Manzanillo, Mexico	December 2014
16 th Conference	Saint John's, Antigua & Barbuda	December 2015
17 th Conference	Belem, Brazil	December 2016

Agenda Items

1. Task numbers refer to work programme for 2016 (see IHO CL 87/2015)

IHO Work Programme 1 – "Corporate Affairs"

Task	Topic	Actions taken
1.1.4	Co-operation with European Union	Cooperation takes place through the IHO/EU Network Working Group (IENWG), in which FR represents the MACHC.

1.1.8	Co-operation with IALA	<ul style="list-style-type: none"> - A close relation with IALA is maintained through presence at the MACHC Conferences. - The MACHC Hydrographic Awareness Seminars are joint IALA/IHO/IMO activities.
1.1.12	Co-operation with IMO	<ul style="list-style-type: none"> - A close relation with IMO is maintained through presence at the MACHC Conferences. - The MACHC Hydrographic Awareness Seminars are joint IALA/IHO/IMO activities. - MSC: Several MS are involved in MSC meetings. - NCSR Subcommittee: Several MS are involved in NCSR meetings.
1.1.14	Co-operation with UNESCO-IOC	GEBICO: A close relation with GEBICO is maintained through presence at the MACHC Conferences and the IBCCA project.
1.1.18	Co-operation with UN-GGIM	A close relation with UN-GGIM Americas is maintained through Mexico.
1.1.20	Co-operation with PAIGH	A close relation with PAIGH is maintained through presence at the MACHC Conferences as an observer.
1.1.20	Co-operation with OECS	A close relation with the Organization of East Caribbean States (OECS) is maintained through presence at the MACHC Conferences as an observer.
1.1.20	Co-operation with THSOA	A close relation with The Hydrographic Society of America (THSOA) and its Latin American chapter is maintained through presence at the MACHC Conferences as an observer.
1.3.4	General Public Relation support	Hydrography was promoted at the highest level of the government of Antigua & Barbuda during MACHC16.

IHO Work Programme 2 - "Hydrographic Services and Standards"

Element	Topic	Actions taken
2.10	Hydrographic Data Acquisition and Processing	MACHC monitors SDB during its conferences, including results of pilot projects within the MACHC region.
2.12	Law of the Sea	MACHC delivered a Maritime Boundaries and Baselines workshop in support of ABLOS in 2015.

IHO Work Programme 3 – "Inter Regional Coordination and Support" (Various Elements)

Task	Topic	Actions taken
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3.1.13	South-West Atlantic Hydrographic Commission	A close relation with SWAtHC is maintained through the presence of dual members at the MACHC Conferences.
3.1.15	US and Canada Hydrographic Commission	A close relation with USCHC is maintained through presence of dual members at the MACHC Conferences.
3.1.17	WEND Working Group	US represents the MACHC during WENDWG meetings.
3.1.18	Industry participation	Industry participation is common and appreciated during MACHC Conferences.
3.2.3	MACHC strategy to increase participation of non-Member States in IHO activities	Non-MS are actively encouraged to get involved in MACHC activities.
3.2.11	Approval of pending IHO membership	MS are encouraged to approve pending IHO memberships.
3.3	Capacity Building Management	MACHC CB Coordinator (CBC) represents MACHC in the CBSC.
3.4	Capacity Building Assessment	MACHC CB plan in place, with funded activities and effective management by the CBC.
3.5	Capacity Building Provision	MACHC benefits greatly from the IHO Capacity Building efforts, as coordinated by the CBSC. MACHC is very grateful to Japan and the Republic of Korea for their generous contributions to IHO's Capacity Building efforts. MACHC organizes Hydrographic Awareness workshop, Phase 1 Skills Courses for Spanish speakers, and Technical Aspects of Maritime Boundaries and Baselines workshops.
3.6.1	C-55 Status of Hydrographic Surveying and Nautical Charting World-wide	As a continuous action item, MS are encouraged to update their status in C-55 on an annual basis.
3.6.2	Implementation of the WEND principles	MACHC conducted an internal on-line survey on the implementation of the WEND principles in 2015. 12 MS replied and all considered their data to be available through a RENC and most considered that the WEND principles were being implemented.
3.6.3	ENC schemes, consistency and quality	MACHC monitors its ENC scheme on a quarterly basis and posts updates on its website. It continues to monitor overlaps and gaps and has expanded its criteria for finding gaps in coverage

		with a focus on cruise ship traffic. NOAA provides port analysis evaluations to this end.
3.6.4	INT Chart Schemes and availability of the INT Chart Series	The INT Chart Scheme is tracked quarterly and updated on an annual basis in S-11. MACHC has made significant progress on completing the INT scheme in its area, most notably in the Pacific Ocean.
3.6.5	Global status of hydrographic surveying	The MACHC encourages MS to update C-55 on an annual basis. The status is less than satisfactory and slowly improving.
3.7	Maritime Safety Information	As a standing topic, MS are urged to distribute MSI, for which NGA has WNWWS facilities available
3.8	Ocean Mapping Programme	MACHC maintains a close relation with GEBCO and its IBCCA regional project.
3.9	Marine Spatial Data Infrastructures	NL maintains relations with IHO MSDIWG.

Difficulties encountered and challenges yet to be addressed

2. Further developments on the use of Spanish are needed, in order to stimulate membership and active participation. There also is a need for more CB courses in Spanish. MACHC Action item 16.1.6 reads: *“Member States to consider how to provide dual versions in Spanish and English of MACHC documents, for instance as a voluntary service by a Member State.”*
3. The high cost of carrying out surveys and the limits on national budgets during the period have been a limiting factor on survey activity. New acquisition techniques and risk assessment methodologies need to be implemented, in order to gain the most efficient result.
4. Despite the progress, full coverage with ENC's has not yet been achieved. Priority ports were identified by the MICC WG. The status of August 2016 is 87%.
5. In the region, several MS offer CB events, which is greatly appreciated. The timely coordination of the events is also an additional factor for the MACHC CBC to take into account.

Achievements/Outputs/Conclusions

6. The limited survey capacity needs to be dealt with. The MACHC MS share the task of following developments towards the operationalization of new acquisition techniques. Improving coverage of the MACHC region with paper and digital charts receives considerable attention. Risk Assessment methodologies could assist with the best use of the available resources for survey prioritization and chart adequacy assessments.
7. Some of the MACHC achievements are:
 - a. the renewed focus on MSDI, led by the MEIP Working Group;
 - b. the continued interest in the shared application of risk assessment methodologies;
 - c. the ENC Online initiative, in which several MS allow online access to view their ENC's of the MACHC region;

- d. the organization of a series of successful capacity building events, in English and Spanish;
- e. strong participation of industry during the past Conference;
- f. a growing suite of ENCs that better position the needs of shipping in the region;
- g. an expanded suite of INT charts, most notably in the Pacific Ocean;
- h. steps towards increased use of Spanish by amending the Statutes, to increase participation of Latin American coastal States. This is done in addition to the use of English as the MACHC working language.

Actions required of the Assembly

- 8. The Assembly is invited to note the report.

7. REPORT OF THE NORDIC HYDROGRAPHIC COMMISSION (NHC)

Chair

Mr Patrik WIBERG	Sweden	from May 2012
Mr Rainer MUSTANIEMI	Finland	from April 2013
Mr Georg LARUSSON	Iceland	from August 2014
Mr Evert FLIER	Norway	from April 2015
Ms Pia Dahl HØJGAAR	Denmark	from April 2016

Vice-Chair

Mr Ralf LINDGREN	Sweden	from May 2012
Mr Jarmo MÄKINEN	Finland	from April 2013
Mr Hilmar HELGASON	Iceland	from August 2014
Mr Noralf SLOTSVIK	Norway	from April 2015
Mr Jens Peter HARTMANN	Denmark	from April 2016

Membership

Members

Denmark, Finland, Iceland, Norway, Sweden

Meetings

- The Commission has met annually since the close of the 18th IHC (April 2012), in accordance with the NHC Statutes:

56 th Meeting	Copenhagen, Denmark	21-23 May 2012
57 th Meeting	Arko Island near Norrköping, Sweden	15 - 17 April 2013
58 th Meeting	Helsinki, Finland	19 - 20 August 2014
59 th Meeting	Reykjavik, Iceland	13 - 15 April 2015
60 th Meeting	Stavanger, Norway	11 - 13 April 2016
61 st Meeting	Elsinore, Denmark	6 - 8 March 2017

Agenda Items

- The main subjects dealt with during the reporting period were the following:
 - Report status and plans of nautical publication
 - Validation of multibeam data
 - Multibeam workshops in order to exchange knowledge and share experience
 - Nordic Chart Production
 - ENCs to leisure markets
 - Admiralty Information Overlays (AIO)
 - RENC operations
 - Finland-Sweden Pilot project on harmonisation of depth presentation

- Revision of NHC Statutes.
- Nordic Nautical Publication Working Group (NNPWG)

Conclusions

3. The NHC Member States decided that a report on nautical publications should be part of the national reports to NHC.
4. To arrange yearly Hydrographic Survey Technologies workshops and to add Lidar technology and data processing on the agenda for the workshops in order to exchange knowledge and share experience.
5. To continue to arrange Nordic Chart Production Expert Group meetings and to include experiences with Print on Demand solutions in the agenda
6. To continue the discussions about ENC's to leisure markets and to agree on a way forward for digital navigational products for the leisure or non-SOLAS market. The aim of a new ENC service is to enhance safety at sea among leisure craft mariners by providing an official alternative to paper charts as the primary means of navigation.
7. The NHC Member States agreed to review the critical competence needed within each NHC HO and investigate the possibility of arranging common training courses.
8. A procedure for election to the Council was endorsed and will be annexed to the Statutes of NHC. Sweden was elected by the NHC Member States as the first member of the Council.
9. The Statutes of the Nordic Hydrographic Commission were revised October 2014

Actions required of the Assembly

10. The Assembly is invited to note the report.

8. REPORT OF THE NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION (NIOHC)

Chair

Vice Admiral S K JHA	India	from June 2012 -3 July 2013
Vice Admiral Witoon TANTIGUN	Thailand	from 3 July 2013 - 24 July 2014
Rear Admiral Tom KARSTEN	UK	from 24 July 2014 - 9 June 2015
Rear Admiral Aurangzeb CHOWDURY March 2015	Bangladesh	from 9 June 2015 - 14 March 2015
Rear Admiral M MAKBUL HOSSAIN	Bangladesh	from 14 March 2015 - July 2016
Commander Ahmed Naguib HAFEZ	Egypt	since July 2016

Vice-Chair

Vice Admiral Witoon TANTIGUN	Thailand	from June 2012 - July 2013
Rear Admiral Tom KARSTEN	UK	from 3 July 2013 - 24 July 2014
Rear Admiral Aurangzeb CHOWDURY June 2015	Bangladesh	from 24 July 2014 - 9 June 2015
Commander Ahmed Naguib HAFEZ	Egypt	from 9 June 2015 - July 2016
Rear Admiral Vinay BADHWAR	India	since July 2016

Membership

Members

Bangladesh, Egypt, India, Myanmar, Pakistan, Saudi Arabia, Sri Lanka, Thailand, United Kingdom

Associate Members

Australia, France, Oman, Mauritius, Seychelles, USA

Observers

Russian Federation, Malaysia and Sudan

Observer Organizations

International Association of Marine Aids and Lighthouse Authorities (IALA), General Bathymetric Chart of the Oceans (GEBCO), Regional ENC Coordinating Centres (ICENC & PRIMAR) and Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)

Meetings

13 th NIOHC Meeting	Yangon, Myanmar	19 - 22 February 2013
14 th NIOHC Meeting	Bangkok, Thailand	26 - 28 February 2014
15 th NIOHC Meeting	Muscat, Oman	16 - 18 March 2015 with ICCWG - 15 March 2015
16 th NIOHC Meeting	Chittagong, Bangladesh	14 - 16 March 2016 with ICCWG

17th NIOHC Meeting

Alexandria, Egypt

July 2017 with ICCWG

Agenda Items

1. The NIOHC annual meetings have been structured, during the above-mentioned dates, to include the following agenda items:
 - Presentation of IHO Secretariat report (IHO Secretariat)
 - Presentation of Member states National Reports
 - IHO / IHO Secretariat Matters affecting NIOHC, including:
 - NIOHC report to IRCC
 - WEND-WG Report
 - HSSC report
 - P-5 Update
 - Status of Hydrographic Surveying and Nautical Charting (C-55).
 - NICCWG meeting: INT chart scheming for Region J, progress made since last meeting, the actual Charting Status; ENC production status; new requirements and modifications proposed to the scheme.
 - Discussion of the Regional Capacity Building Management Plan and CBSC Technical Visits.
 - Maximising Hydrographic Data
 - Crowd-sourced bathymetry
 - Marine / Hydrographic Spatial Data Infrastructure (MSDI)
 - Feedback on Regional Projects

Difficulties encountered and challenges yet to be addressed

2. There is still much to do within the NIOHC region with regard to capacity building to allow MS to be self-sufficient.

Achievements/outputs/conclusions

3. Member states within the region have been more involved as active participants to the work of the IHO.
4. In regard to the capacity building, progress is being made and training obtained from CBSC and other providers at a steady pace.
5. INT chart production is increasing and thus the scheme is increasing in both coverage and currency.
6. A better communication between regional chart coordinators has been achieved to resolve chart overlapping issues during the past year.
7. ENC production in the region has been deemed acceptable for UB1-3; Member States are continuing to refine the scheme and coverage for changing shipping patterns and developments

Actions required of the Assembly

8. The Assembly is invited to note the report.

9. REPORT OF THE NORTH SEA HYDROGRAPHIC COMMISSION (NSHC)

Chair

Ingénieur général Bruno FRACHON		France until 21 June 2012
Mr Evert FLIER	Norway	21 June 2012 - 27 June 2014
Captain Peter KORTENOEVEN	Netherlands	27 June 2014 - 12 Sept 2014
Captain Marc VAN DER DONCK	Netherlands	12 Sept 2014 - 23 June 2016
Captain Declan BLACK	Ireland	23 June 2016 until present

Vice-Chair

Mr Evert FLIER	Norway	until 21 June 2012
Captain Peter KORTENOEVEN	Netherlands	21 June 2012 - 27 June 2014
Captain Declan BLACK	Ireland	27 June 2014 - 23 June 2016
Ms Virginie DEBUCK	Belgium	23 June 2016 until present.

Membership

Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Sweden, United Kingdom.

Meetings

30 th meeting	Ålesund, Norway	18-21 June 2012
31 st meeting	Amsterdam, Netherlands	25-27 June 2014
32 nd meeting	Dublin, Ireland	21-23 June 2016

Agenda Items

1. Task numbers refer to work programme for 2016

IHO Work Programme 1 – Corporate Affairs

Element 1.1 Co-operation with International Organisations and participation in relevant meetings.

Task 1.1.4 European Union Initiatives

2. NSHC Member States have been active in participating in the IHO-EU network working group since its inception in 2012 with substantial cooperation and progress on one of the European Commission's flagship maritime projects European Marine Observation and Data Network (EMODnet) and its coastal mapping project.
3. The NSHC Member States have also been active in the area of the need for maritime spatial planning and the importance of data from Hydrographic Offices to underpin these plans and support development of the blue economy.

Tasks 1.1.5 (FIG) and 1.1.6 (IFHS)

4. Member States actively participate in International Federation of Hydrographic Societies (IFHS) conferences and the tidal working group provided input into the new International

Federation of Surveyors (FIG) publication 62 “*Ellipsoidally Referenced Surveying for Hydrography*”

Task 1.1.12 (IMO)

5. Several Member States including NSHC Hydrographic Offices (HO) representatives are involved in International Maritime Organization (IMO) meetings, in particular the Maritime Safety Committee (MSC) and the Navigation, Communications and Search and Rescue - Sub-committee (NCSR) and their working groups. These are particularly important to HO's in the area of E-NAV, ECDIS, Maritime Safety information and ships routeing. The expertise of HO's is invaluable to these organs in supporting safety at sea.

IHO Work Programme 2 – Hydrographic Services and Standards

Element 2.7 Tides and Water Levels

6. The United Kingdom is represented at both the IHO Tides, Surface Currents and Water Levels working group (TWCWG) and the NSHC Tidal Working Group (TWG). The NSHC Tidal Working Group continues to work on the way to combine existing national models in order to develop a common reference surface for tidal reduction to Chart Datum in the North Sea.

Element 2.13 Surface Currents

7. The Netherlands is represented at both the NSHC Tidal Working Group (TWG) and the IHO Tides, Surface Currents and Water Levels Working Group (TWCWG). The Netherlands keeps the NSHC TWG group aware of the progress being made specifically in the global 'Surface Current' arena.

IHO Work Programme 3 –Inter Regional Coordination and Support

Element 3.1 Co-operation with Member States and attendance at relevant meetings

Task 3.1.1

8. There are no unresolved matters with Arctic Regional Hydrographic Commission (ARHC): border limit issues were resolved and INT chart Region N was established. ARHC was represented in the NSHC European Union Marine and Maritime Policies Working Group (EU2MPWG).

Task 3.1.2

9. The NSHC Tidal and resurvey working groups maintain contact. The MSDI Working Group is now a merged group between NSHC and BSHC, the Baltic Sea North Sea Marine Spatial Data Infrastructure Working Group (BSNSMSDIWG), and will report to both commissions.

Task 3.1.9

10. The Commission met three times since the XVIIIth International Hydrographic Conference with all Member States attending meetings. Considerable work was undertaken by the Netherlands to the way NSHC manages its list of conclusions. The resulting changes have been adopted by the commission and the list of conclusions has now been replaced by a List of Actions and a List of Decisions to provide more focus on current and future issues rather than a historical record.
11. The statutes of the NSHC have been amended to facilitate the Council representative election process.
12. The NSHC has established a permanent place on internet under www.nshc.pro to raise the profile of our work in the region and inform the public of the work that the commission

undertakes. This website was developed, hosted and is maintained by Germany on behalf of NSHC.

Task 3.1.17

13. The United Kingdom provides NSHC representation at the World-Wide Electronic Navigational Chart Database (WEND) Working Group. In addition, the UK provides the Chair of the WEND Working Group.

Task 3.1.18

14. There has been a high level of industry participation in NSHC meetings during the open session of the meetings which appears to be very beneficial to Member States and industry participants.

Element 3.3 Capacity Building Management

Task 3.3.1

15. There are no real capacity building initiatives currently carried out within the NSHC. However a number of the NSHC members are involved in capacity building activities: the CBSC is chaired by Germany and a number of Member States HO's participate; NSHC is represented by Norway.

Element 3.4 Capacity Building Assessment

Task 3.4.1

16. Some Member States of the NSHC, especially the United Kingdom and France have participated in technical and advisory visits to regions outside NSHC.

Element 3.5 Capacity Building Provision

Task 3.5.2

17. Both the UK and France have offered workshops/short courses. Norway provides courses both through PRIMAR and through their Capacity Building project in Albania.

Element 3.9 Marine Spatial Data Infrastructures

Task 3.9.1

18. The MSDI Working Group is now a merged group between NSHC and BSHC (BSNSMSDIWG) and will report to both commissions. There has been sharing of experience and expertise between members that have more developed systems in place with members that are in the process of deciding how to constitute MSDI and how best to utilise the available data that HO's have available to contribute to or indeed underpin decision making.

Difficulties encountered and challenges yet to be addressed

19. The high cost of carrying out surveys and the limits on national budgets during the period have been a limiting factor on survey activity.

Achievements/Outputs/Conclusions

20. Member States have continued to contribute extensively to the work of the IHO and have been active participants of working groups.
21. There has been substantial cooperation between commission Member States and other European States and the EU on information sharing and shared projects.

22. There has been continued progress and cooperation on achieving an up to date bathymetric data set for the North Sea and resurvey strategies.
23. There had been considerable sharing of experiences in MSDI and raising the profile of HO's and the data that they acquire and hold.
24. There is shared progress on the establishment of vertical reference frames, including national chart datums, in particular making efforts to reduce to an acceptable level any differences at national boundaries.

Actions required of the Assembly

25. The Assembly is invited to note the report.

10. REPORT OF THE ROPME SEA AREA HYDROGRAPHIC COMMISSION (RSAHC)

Chair

Commander Thani Harith AL MAHROUKI	Oman	until March 2013
Dr Colonel Adel AL SHAMSI	UAE	March 2013 - May 2016
Vacant		since May 2016

Vice-Chair

Mr Vladan JANKOVIC	Qatar	until March 2013
Mr Ahmed PARHIZI	IR of Iran)	March 2013 - February 2016
Vacant		since May 2016

Membership

Members

Bahrain, IR of Iran, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, United Arab Emirates (UAE)

Associate Members:

France, Iraq, United Kingdom, United States of America

Meetings

5 th Meeting	Riyadh, Kingdom of Saudi Arabia	4-6 March 2013
1 st Extraordinary Meeting	Abu Dhabi, United Arab Emirates	9-11 February 2014
6 th Meeting	Abu Dhabi, United Arab Emirates	9-11 February 2015
7 th Meeting	Muscat, Oman	20-22 February 2017

Agenda Items

1. Feedback from other IHO Bodies affecting RSAHC
 - IRCC
 - CBSC
 - IHO Secretariat
2. RSAHC Activities in the light of IHO Work programme
 - Presentation of National Reports: Hydrographic surveying, nautical charting, nautical publications and information status
 - Review of Status of Hydrographic Surveying and Nautical Charting (C-55)
 - INT chart scheme for Region I and NAVAREA IX self-assessment: Progress made since last meeting; actual Charting Status; ENC production status; new requirements and modifications proposed to the scheme.
 - Progress on the implementation of ENC coverage and other issues.
 - WEND WG issues

- Developments of Marine Spatial Data Infrastructure (MSDI) in the region
- Procedures in response to Marine Disasters
- Revision of RSAHC Statutes

Difficulties encountered and challenges yet to be addressed

3. Political influence on the activities of the Commission
4. Lack of commitment at different levels
5. Communication problems with some members
6. Limited resources and trained personnel
7. Lack of national structures to coordinate national approach to a coordinated effort
8. Limited participation and representation in the IHO meetings

Achievements/outputs/conclusions

9. Increasing involvement in the Capacity Building Programme:
 - a. Technical visit – UAE – December 2013
 - b. Workshop on Port & Shallow Water Surveys – Abu Dhabi, UAE – September 2014
 - c. MSI training – Muscat, Oman – December 2014
 - d. MBES Processing – Abu Dhabi, UAE – June 2015
 - e. Tidal and Water Levels Workshop – Abu Dhabi, UAE – September 2015
10. Leading role for hosting the meetings and assuming Chairmanship by Oman and the UAE
11. High level performance on hydrographic surveys and chart production by Saudi Arabia
12. Strong participation of industry to the RHC meetings

Actions required of the Assembly

13. The Assembly is invited to note the report.

11. REPORT OF THE SOUTH EAST PACIFIC REGIONAL HYDROGRAPHIC COMMISSION (SEPRHC)

Chair

Captain Patricio CARRASCO HELWIG	Chile	4 April 2011 - 17 June 2013
Rear Admiral Rodolfo SABLICH LUNA	Peru	18 June 2013 - 12 July 2015
Captain Humberto GOMEZ PROAÑO	Ecuador	since 13 July 2015

Membership

Members

Colombia, Chile, Ecuador, Peru

Observer

Panama

Meetings

11 th Meeting	Lima, Peru	17-19 June 2013
12 th Meeting	Guayaquil, Ecuador	13-16 July 2015

Agenda Items

1. In coordination with SEPRHC members, the IHO Work Programme has been reviewed, also with the necessities from IHO communications, emitting all the regional points of view about specific topics of the IHO Work Programme.
2. Under the auspice of CBSC, all the planning activities on training for SEPRHC members has been accomplished. Other courses have taken place through coordination with and participation from other Regional Commissions, such as MACHC and SWAtHC, in order to increase technical capabilities related to the management of new technologies and IT tools that are used in hydrographic and cartographic productions. As an example, the courses which addressed hydrographic data collection and processing up to the production of paper and electronic nautical charts contributed to an increase in knowledge for all the Hydrographic Offices that are SEPRHC members and the participants from the Hydrographic Commissions mentioned above.
3. In coordination with SEPRHC members, the Capacity Building Plan (from 2018 to 2020) was generated and sent as requested to the CBSC.

Difficulties encountered and Pending challenges

4. There are still some difficulties in the information exchange process in relation with ENC cells located at the borders of the countries, to analyse differences and to access the cells issued by each country.
5. On the other hand, there are difficulties at Government levels in some countries of SEPRHC to attend the IHO meetings in order to meet the commitments required.
6. The change in the representative from SEPRHC to the CBSC with the change in the Chair makes dealing with issues more difficult and causes delays in handling some tasks in the format required by the CBSC. This topic was discussed through videoconference and will

be discussed again at the next SEPRHC meeting in 2017 along with the revision of the statutes.

7. At the regional level, there is a lack of technology, data, staff trained in Lidar technology for bathymetric data capture

Achievements / Results / Conclusions:

8. Analysis and monitoring of the IHO Work programme at the regional level.
9. Coordination and development of Capacity Building across the MACHC – SWAtHC – SEPRHC regions.
10. The usage of a videoconference platform through which SEPRHC managed to generate agreements, activities and regional resolutions in relation with IRCC, CBSC and IHO topics.

Actions required of the Assembly

11. The Assembly is invited to note the report.

12. REPORT OF THE SOUTHERN AFRICA AND ISLANDS HYDROGRAPHIC COMMISSION (SAIHC)

Chair

Captain Abri KAMPFER (South Africa)

Vice Chair

Mr Abdool OOZEER (Mauritius) until Sept 2015
Rear Admiral Tim LOWE (United Kingdom) since Sept 2015

Membership

Members

France, Mozambique, Mauritius, Norway, South Africa and United Kingdom

Associate Members

Angola, Kenya, Malawi, Madagascar, Tanzania, Portugal, Comoros, Namibia and Seychelles.

Observers

Brazil and United States of America

Meetings

9 th SAIHC Conference	Mauritius	18 – 19 September 2012
10 th SAIHC Conference	Lisbon, Portugal	17 – 18 September 2013
11 th SAIHC Conference	Maputo, Mozambique	11 – 13 August 2014
12 th SAIHC Conference	Dar-es-Salaam, Tanzania	21 – 23 September 2015
13 th SAIHC Conference	Cape Town, South Africa	30 - 31 August 2016

Agenda Items

- 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
 - CBSC
 - IHO Secretariat (IHO Secretariat)
 - SAIHC Activities in the light of IHO Work programme
 - INT chart scheme for Region H and NAVAREA VII Self-Assessment: Progress made since last meeting; actual Charting Status; ENC production status; new requirements and modifications proposed to the scheme.
 - Bilateral and Regional Cooperation Agreements, Projects and Regional Capacity Building Management Plan. CBSC Technical Visits and Regional Projects.

- Presentation of National Reports: Hydrographic surveying, nautical charting, nautical publications and information status
- Status of Hydrographic Surveying and Nautical Charting (C-55)
- Procedures in response to Marine Disasters
- Marine / Hydrographic Spatial Data Infrastructure
- Feedback on Regional Projects
- Revision of SAIHC Statutes

Difficulties encountered and challenges yet to be addressed

2. Participation of Associate Members of SAIHC is unpredictable and non-attendance of Conferences often results in no submission of national reports and therefore no information to improve the SAIHC Capacity Building programme. Technical visits are therefore still the only effective measure to determine progress, gauge capacity building requirements and interact with decision makers on the importance of hydrography.
3. 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.
4. 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.

Achievements/Outputs/Conclusions

5. Statutes have been amended to reflect the amendments to the IHO Convention.
6. A SAIHC Response to Marine Disasters emergency contact details have been established and are maintained. Efforts will be made to identify and publish secondary contacts for each coastal State.
7. The SAIHC ICCWG has been very successful to maintain the INT Chart Catalogue for Region H and good progress has been made to create a similar ENC catalogue. Future ICCWG meetings will be conducted as an agenda item of SAIHC Conferences to improve the participation of the recipients of an INT Chart production service.
8. There has been a high level of industry participation in SAIHC meetings with ample opportunities to share experiences and contribute to discussions. Active participation of IALA in SAIHC Conferences have added value to discussions and contributed positively to capacity building efforts within the region

Actions required of the Assembly

9. The Assembly is invited to note the report.

13. REPORT OF THE SOUTH WEST ATLANTIC HYDROGRAPHIC COMMISSION (SWAtHC)

Chair

Captain Orestes PEREYRA	Uruguay	2011-2012
Rear Admiral Andrés Roque DI VINCENZO	Argentina	2012-2013
Vice Admiral Antonio Carlos PONTES LIMA Junior	Brazil	2013-2014
Captain Gustavo Musso SOLARI	Uruguay	2014-2015
Rear Admiral Andrés Roque DI VINCENZO	Argentina	2015-2016
Vice Admiral Marcos Sampaio OLSEN	Brazil	2016-2017

Vice-Chair

Rear Admiral Andrés Roque DI VINCENZO	Argentina	2011-2012
Vice Admiral Marcos NUNES de MIRANDA	Brazil	2012-2013
Captain Gustavo Musso SOLARI	Uruguay	2013-2014
Rear Admiral Andrés Roque DI VINCENZO	Argentina	2014-2015
Vice Admiral Marcos Sampaio OLSEN	Brazil	2015-2016
Captain Gustavo Musso SOLARI	Uruguay	2016-2017

Membership

Members

Argentina, Brazil, Uruguay

Associate Member

Paraguay

Observer

Bolivia

Meetings

6 th Meeting	Montevideo, Uruguay	15-16 March 2012
7 th Meeting	Buenos Aires, Argentina	18-19 March 2013
8 th Meeting	Arraial do Cabo – Brazil	20-21 March 2014
9 th Meeting	Montevideo, Uruguay	19-20 March 2015
10 th Meeting	Buenos Aires, Argentina	07-08 April 2016

Agenda Items

1. review and modification of SWAtHC Statutes to change the presidential term, in order to bring it into line with the IHO Council.
2. review of information on survey status and input to IHO Publication C-55
3. progress on INT charting in the region

4. progress on ENC developments in the region, including distribution
5. progress about IEHG activities
6. Capacity Building in the region, including training

Difficulties encountered and challenges yet to be addressed

7. Derived products of S-100 (having concluded Workshop S-100 in Uruguay-2014).

Achievements/Outputs/Conclusions

8. The main conclusions and recommendations from the SWAtHC meetings are as follows:
9. The Commission is committed to developing cooperation with IHO Member States, Non-IHO Member States, adjacent Regional Hydrographic Commissions, other International Organizations and Industry;
10. The SWAtHC would like to highlight that ENC coverage of the region is progressing well and ENC Harmonization in border areas between Argentina and Uruguay - Rio de la Plata. Result satisfactorily achieved, after agreement between the parties.
11. Signed the contingency plan by the representatives of NAVAREA V (Brazil) and NAVAREA VI (Argentina) in 2016.
12. The following visits and trainings were undertaken:
 - a. Technical Visit to Paraguay led by Brazil with IHO Secretariat 13 - 16 January 2014.
 - b. Multibeam training course -Practice on data acquisition and processing (with the SEPRHC and the MACHC) led by SHN, Argentina, 12-17 October 2016.
 - c. Tide training course (with the MACHC) led by DHN, Brazil, 3-7 October 2016.
 - d. International ENC Validation training course led by IC-ENC and Panama Canal Authority, Panama, 5-16 September 2016.
 - e. MSDI Workshop (with the MACHC and the SEPRHC) led by DHN, Brazil, 23-27 November 2015.
 - f. Seminar on S-100 led by SOHMA, Uruguay, 18-20 November 2015
 - g. Technical Workshop on Hydro/Cartography River Survey, for SEPRHC, SWAtHC MACHC led by Peru, 22 - 24 October 2014.
 - h. Regional Workshop in Hydrographic Production Database (HPD) invited by SEPRHC, Peru, 2-6 Sep 2013.
 - i. Processing and Administration of Spatial Databases (with the SEPRHC and the MACHC) led by DHN, Brazil 26-30 November 2012.
 - j. Brazil offers place of Foreign Countries for the courses on Hydrography CAT "A" and CAT "B".
 - k. Argentina offers place of Foreign Countries for the courses on Hydrography CAT "B" and Cartography CAT "A".

Actions required of the Assembly

13. The Assembly is invited to note the report.

14. REPORT OF THE SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION (SWPHC)

Chair

Mr Nicholas PION	Papua New Guinea	until May 2012
Rear Admiral Nick LAMBERT	United Kingdom	June 2012 - December 2012
Rear Admiral Tom KARSTEN	United Kingdom	December 2012 - February 2014
Commodore Brett BRACE	Australia	February 2014 onwards

Vice-Chair

Commodore Rod NAIRN	Australia	until May 2012
Mr Nicholas PION	Papua New Guinea	June 2012 - December 2016
Lieutenant Commander Gerard ROKOUA		Fiji December 2016 onwards

Membership

Members

Australia, Fiji, France, New Zealand, Papua New Guinea, Tonga, United Kingdom, United States of America

Associate Members

Cook Islands, Kiribati, Niue, Palau, Samoa, Solomon Islands, Vanuatu

Observers

New Caledonia, Tuvalu

Observer Organizations

IALA, IMO, GEBCO, Pacific Community (SPC)

Meetings

SWPHC12	Port Vila, Vanuatu	12-14 November 2013
SWPHC13	Rarotonga, Cook Islands	25-27 February 2015
SWPHC14	Noumea, New Caledonia	30 November - 2 December 2016

Agenda Items

1. The main agenda items dealt with since the 18th International Hydrographic Conference pertain to the following:
 - a. Exchange of information through reports on hydrographic surveying and charting activities in the region
 - b. Capacity Building - particularly increasing Government awareness of hydrographic responsibilities among the Pacific Island Countries and Territories (PICTs), followed by training of personnel in hydrographic surveying and cartography.
2. Accordingly the SWPHC activities, aligned with the structure of relevant components of the IHO Work Programme, have been as follows:

IHO Work Programme 3 –Inter-Regional Coordination and Support

Element 3.1 Co-operation with Member States and attendance at relevant meetings

Task 3.1.14 South West Pacific Hydrographic Commission

3. The Commission met three times since the 18th International Hydrographic Conference with all Member States attending the meetings.

Task 3.1.18 Industry participation in RHC meetings

4. There has been a significant level of industry participation in SWPHC meetings, which included a half day 'Industry Session' in the programme. Representatives were invited as Expert Contributors and provided valuable input to the capacity building initiatives.

Task 3.1.19 Contribute to improving the framework of IHO response to marine disasters

5. The South West Pacific region was impacted by significant natural disasters in recent years, including "Severe Tropical Cyclone PAM" in March 2015 affecting Vanuatu mainly and "Severe Tropical Cyclone WINSTON" which struck Fiji in February 2016. The Chair of SWPHC in close coordination with the IHO Secretariat monitored the impact of these disasters and implemented the IHO Resolution 1/2005, as amended. SWPHC Members provided direct and indirect support to the countries affected by these disasters.

Element 3.2 Increase participation by non-Member States

Task 3.2.10 Execute strategy to increase participation of non-Member States in IHO activities and advise them on how to comply with international regulations such as SOLAS V

6. Most non-Member States in the region attended the SWPHC meetings and workshops during the reporting period. The IHO Technical Assessment and Advice Visits augmented with CB activities in the region have resulted in Vanuatu and Solomon Islands applying for IHO membership.

Element 3.4 Capacity Building Management

Task 3.4.1 Technical and Advisory Visits

7. The following technical and advisory visits were carried out in the region:
 - a. Technical Visit to Cook Islands to facilitate National Hydrographic Requirements (October 2013) – by NZ National Hydrographer as part of Hydrography Risk Assessment for Cook Islands
 - b. Technical Visit to Tonga (March 2014) – by NZ National Hydrographer as part of Hydrography Risk Assessment for Tonga
 - c. Technical Implementation Visit to Vanuatu (November 2015) – by UKHO and SPC
 - d. Technical Assessment Visit to Kiribati (November 2015) – by UKHO and SPC
 - e. Technical Assessment Visit to Niue (February 2016) – by NZ
 - f. Technical Assessment Visit to Samoa (August 2016) – by NZ

Element 3.5 Capacity Building Provision

Task 3.5.2 Technical workshops, seminars, short courses

8. The following were carried out in the region:
 - a. MSI Regional Workshop (August 2014) – Led by New Zealand
 - b. Technical Workshop on Hydrography and Hydrographic Governance (February 2015) – Led by LINZ; Presenters from AUS, NZ, UKHO, SPC
 - c. Tides & Water Levels Technical Workshop (August 2015) – Led by Australia
 - d. MSI Regional Workshop (August 2016) – Led by New Zealand
 - e. Technical Workshop for PICTs in Formulating and Implementing Strategic Development Plans for Hydrography (November 2016) – Led by New Zealand; Presenters from AUS, NZ, UKHO, IALA, SPC
9. The strategy of preceding SWPHC meetings with a CB workshop has proved very beneficial, with the 2016 workshop and meeting attended by approximately 50 persons, many of which were from PICTs. All participants were extremely active and contributed to collective and own knowledge of hydrography.

Task 3.5.4 On the Job Training (Ashore / On board)

10. The following were carried out in the region:
 - a. PNG National Hydrographic Capability Development (November-December 2012) – attachment of two cartographic staff from Papua New Guinea to the Australian Hydrographic Office
 - b. Solomon Islands National Hydrographic Capability Development (August 2014) – attachment of one cartographic staff from Solomon Islands to the Australian Hydrographic Office

Element 3.6 Coordination of Global Surveying and Charting

Task 3.6.3 RHC to coordinate ENC schemes, consistency and quantity; Task 3.6.4 Maintenance of INT chart schemes and improvements of availability of the INT chart series

11. The regional International Charting Coordination Working Group (SWPHC ICCWG) was established in 2012 and comprises Producer Nations who publish Paper Charts and ENCs in the region. It is chaired by Australia, the INT Chart Co-ordinator for Region 'L'. Its 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 main focus is on paper charts at 1:500,000 and smaller and ENC Navigational Purpose 1 and 2 coverage.
12. The Producer Nations (Australia, France, New Zealand, UK and USA) maintain good working relationships with the Hydrographic Offices / National maritime jurisdictions and/or Governments of the countries they chart.

Element 3.7 Maritime Safety Information

Task 3.7.1 Sub-Committee on the World-Wide Navigation Warning Service (WWNWS-SC)

13. The region is covered by NAVAREAS X (Coordinator: Australia) and NAVAREA XIV (Coordinator: New Zealand). Both coordinators attended the annual meetings of WWNWS-SC and provided the MSI Self-Assessment Reports for their respective areas.
14. New Zealand's Pacific Regional Navigation Initiative (PRNI), a 5-year programme (2015-2019) to improve maritime safety throughout the region – includes hydrography risk assessment for Niue, Samoa and Tokelau, capacity building to assist PICTs reach Phase 1 of IHO CB Strategy, in particular establishment of National MSI Coordinator position

Achievements/Outputs/Conclusions

15. All PICTs have made progress on hydrographic activities, and in the case of Fiji, Papua New Guinea, Solomon Islands, Tonga and Vanuatu it has been significant.
16. PICTs recognize the value of hydrographic data for the development of the region, and the need to establish a regional hydrographic data gathering capability. The Pacific Regional Energy and Transport Ministers Meeting in April 2014 endorsed the establishment of a hydrographic unit at SPC to develop and further enhance regional hydrographic services to Members, and also supported PICTs becoming Members of the IHO and SWPHC.
17. Vanuatu and Solomon Islands have applied for IHO membership.
18. New Zealand developed a GIS-based risk assessment methodology to determine surveying and charting priorities, and to date has effectively used this for work in the Cook Islands, New Zealand, Niue, Tonga and Vanuatu.
19. New Zealand's PRNI to improve maritime safety throughout the region includes hydrography risk assessment for Niue, Samoa and Tokelau, and capacity building to assist PICTs reach Phase 1 of IHO CB Strategy, in particular the establishment of National MSI Coordinator position.
20. New Zealand has signed a bilateral arrangement with Cook Islands, and is progressing one with Tonga.
21. Australia is working with UKHO and Solomon Islands Maritime Safety Administration (SIMSA) to assume the role of primary charting authority for Solomon Islands in early 2017.
22. SWPHC Statutes were amended to reflect selection of State(s) that will occupy seat(s) on IHO Council allocated to SWPHC.
23. SWPHC is committed to carrying forward hydrographic, nautical cartographic and capacity building activities in close alignment with IHO objectives and goals.

Difficulties encountered and challenges yet to be addressed

24. Capacity of the Capacity Builders.
25. More, potentially too much, is being asked of the RHCs and RHC Chairs; which then impacts delivery.

Actions required of the Assembly

26. The Assembly is invited to:
 - a. note the report.
 - b. to note the value of preceding SWPHC meetings with CB related workshops.

15. REPORT OF THE USA AND CANADA HYDROGRAPHIC COMMISSION (USCHC)

Co-Chairs

Dr Savi NARAYANAN (Canada) and Captain John LOWELL (USA)	from April 2012
Rear Admiral Gerd GLANG (USA) and Dr Savi NARAYANAN (Canada)	from April 2013
Mr Denis HAINS (Canada) and Rear Admiral Gerd GLANG (USA)	from April 2014
Rear Admiral Shep SMITH (USA) and Mr Denis HAINS (Canada)	from August 2016

Membership

Members

Canada and United States of America

Meetings

1. The Commission has met at least annually since the close of the 18th IHC:

35 th Meeting	Niagara Falls, Canada	14 May 2012 Observers: IHO & UK
36 th Meeting	New Orleans, USA via WebEx video conference call	29 April 2013 Observers: IHO & UK
37 th Meeting	St. John's, Newfoundland, Canada	16 April 2014 Observers: IHO & UK
38 th Meeting	National Harbor, (MD), USA	16 March 2015 Observers: IHO, UK and Mexico
39 th Meeting	Halifax, Nova Scotia, Canada	16 May 2016 Observers: IHO & UK
Extraordinary meeting	Silver Spring, MD, USA	25 August 2016

Agenda Items

2. The main subjects dealt with during the reporting period were the following:

- Selection of USCHC representative to the IHO Council.
- Marine Spatial Data Infrastructure (MSDI).
- Trans-boundary ENC overlaps.
- Crowd-sourced bathymetry (CSB).
- Remote sensing (e.g. LiDAR) and satellite-derived bathymetry (SDB).

USCHC workings groups:

- Chart Advisors Committee

Difficulties encountered and challenges yet to be addressed

3. The future of the paper chart.

4. Implementation of S-100.
5. Increasing need for improved data and navigational products e.g. e-navigation, marine services portfolios (MSPs).
6. Investigate potential of crowd-sourced bathymetry (CSB) and engagement of the Cruise Liners Industry Association (CLIA).
7. Investigate potential of remote sensing (such as LiDAR) and satellite-derived bathymetry (SDB).
8. Policies for collection, integration, and qualification of “non-traditional” sensor derived data e.g. bathymetry.
9. CATZOC attribution.
10. USCHC support for the INT charting programme.
11. Timely response to IHO/IRCC reporting requirements and relevant action items.

Conclusions

12. USCHC successfully resolved the ENC overlaps between the two countries. This was the major collaborative effort and major success of the Commission for this reporting period.
13. Member States have continued to support the applications of States to the IHO
14. WebEx and teleconference calls are being used at the working level between MS to share experiences and information.
15. MS continue to explore areas for continued collaboration and cooperation e.g. better lines of communication have been established to ensure there are no further overlap issues.
16. The return to scheduling the USCHC conferences in conjunction with the US/CA Hydrographic Conferences has proven to be of great benefit for all parties.

Actions required of the Assembly

17. The Assembly is invited to note the report.

16. REPORT BY THE HYDROGRAPHIC COMMISSION ON ANTARCTICA (HCA)

Chair:

Mr Robert WARD Secretary-General, IHO since Sept. 2012

Vice-Chair

Mr John J. HAUMANN United States since October 2012

Secretary

Mr Michel HUET IHO Secretariat until May 2014

Mr Yves GUILLAM IHO Secretariat since July 2014

Membership

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, United States, Uruguay, Venezuela

Observer Organizations

Antarctic Treaty Secretariat (ATS), Council of Managers of National Antarctic Programmes (COMNAP), International Association of Antarctic Tour Operators (IAATO), Scientific Committee on Antarctic Research (SCAR)⁷, International Maritime Organization (IMO), Intergovernmental Oceanographic Commission (IOC), General Bathymetric Chart of the Oceans (GEBCO), International Bathymetric Chart of the Southern Ocean (IBCSO)

Meetings

HCA12	Montevideo, Uruguay	10-12 October 2012
HCA13	Cádiz, Spain	3-5 December 2013
HCA14	Tromsø, Norway	28 - 30 June 2016

Agenda Items

1. The following notable topics have been discussed at the meetings:
 - a. Data collection, crowd-sourced bathymetry, data recovery.
 - b. Contribution to the IMO Polar Code in relation to precautions in using nautical charts in Polar waters.
 - c. Survey priorities, monitoring of new maritime shipping routes, ENC and INT chart scheming.
 - d. Outreach: engagement with ATCM, COMNAP, SCAR, co-operation with IAATO, IBCSO.
 - e. IHO HCA GIS for Antarctica and other Antarctica geospatial portals.

⁷ SCAR through the British Antarctic Survey and the Norwegian Polar Institute.

- f. Hydrography equipment for use in Antarctic environment, polar vessels.

Difficulties encountered and challenges yet to be addressed

2. Participation of HCA Members and stakeholders in IHO HCA Conferences is somewhat unpredictable. Achieving the quorum of $\frac{1}{3}$ of the HCA Members has sometimes been difficult. Practical liaison and the regular, systematic exchange of information and experience between HCA (IHO) national representatives and other in-country national representatives involved in Antarctic operations and in representation in other bodies at the international level continue to be limited and sub-optimal.
3. The effective exchange of information and an awareness of the activities and complementary aims of the IHO HCA and those of other international organizations concerned with Antarctica are difficult to achieve.
4. Raising an awareness of hydrography in the ATCM is not easy.

Achievements/Outputs/Conclusions

5. Statutes amended (to provide flexibility in the scheduling of Conferences, inclusion of recent ATCM Resolutions in relation to hydrography).
6. Ongoing development and maintenance of a Hydrographic Survey Priorities Plan
7. Development of Guidelines for bathymetric observations by Ships of Opportunity.
8. Development of IHO GIS for Antarctica, supporting ENC and INT chart scheming, and monitoring of production status.
9. Revitalisation of liaison between HCA Secretariat and COMNAP, IAATO, SCAR and the Executive Secretary of the Antarctic Treaty in 2016.

Actions required of the Assembly

10. The Assembly is invited to note the report.

FINANCE

FINANCE REPORT 2012 – 2016 (As approved)

INTRODUCTION

Preparation of the Report

1. This report on the administration of the finances of the IHO for the period 1 January 2012 to 31 December 2016 has been prepared by the IHO Secretariat for examination by the Finance Committee (FC) and subsequent recommendation for approval by the Assembly in accordance with Article 10(b) of the IHO General Regulations.

Audit of the accounts

2. The IHO's accounts for each calendar year have been audited by Cabinet Morel, the external auditor appointed by the 18th International Hydrographic Conference (IHC). The annual report of the auditor has been included in the Annual Report, Part 2 – Finance, that is sent to Member States for their approval.

Currency - Banks

3. The Euro was introduced on 1 January 2002 as the currency to be used for the accounting purposes of the Organization in accordance with Article 2(a) of the IHO Financial Regulations in force at that time. The Secretariat has made use of the services of CMB, CFM, SMC and CIC in Monaco for its financial and banking requirements.

Annual Financial Statements

4. Financial statements have been forwarded annually to Members of the Finance Committee for comment. Upon review of the comments and any necessary action, the financial statements amended as and if appropriate have been reported in Part 2 of the Annual Report, for subsequent approval by the Member States.

IHO Secretariat Monthly Finance Monitoring

5. A monthly financial reporting statement is prepared which provides detailed information on the budgetary statement of Incomes and Expenditure as well as information on financial holdings. This statement is examined by the Secretary-General and Directors (previously the Directing Committee) in order to monitor the financial situation of the Organization, monitor progress of the budget and take any necessary action as and if needed.

Finance Committee Officers' meetings

6. In accordance with Article 14 of the IHO General Regulations in force until 8 November 2016, the Chair and Vice-Chair of the Finance Committee met with the Directing Committee twice per year to review the financial status of the Organization and the progress of the budget. Reports of these meetings were circulated to Member States after every meeting.

INCOME 2012-2016 (see Table 1)

Contributions

7. The five-year budget estimates (2012-2016) were prepared for the 18th IHC based on a number of shares calculated at the time from the tonnage reported by Member States in accordance with the Articles 4, 5 and 6(a) and 6(b) of the IHO Financial Regulations in force at the time.

Number of shares

8. During the five-year period there were several changes in the number of shares due to changes in the tonnage figures reported by Member States in accordance with Article 6(d) of the IHO Financial Regulations that were in force at the time.

9. The 684 shares calculated in 2012 progressed to 716 in 2013, 718 in 2014, 731 in 2015 and 742 in 2016. Cameroon became a new Member State of the Organization in April 2012 with two shares, Montenegro became a new Member State of the Organization in December 2012 with two shares. Brunei Darussalam with 5 shares, Georgia with 2 shares, and Vietnam with 9 shares joined the Organization in March 2015.

Value of a share

10. The share value having remained unchanged at 3,984.48 Euros since 2005, was increased by 1% in 2016, to a value of 4,024.32€, in accordance with in the approved five-year Budget 2013-2017.

Suspension of rights and benefits

11. In 2013 Serbia had its rights suspended for failing to pay its annual financial contribution in accordance with Article XV of the version of the Convention on the IHO in force at the time.

Payments of contributions

12. Payments of contributions were generally satisfactory throughout the period. The status of contribution payments was provided in Part 2 of each Annual Report. For the period 2012-2016, 65% of the contributions were paid by the end of May each year, while the final amount received at the end of the years varied between 89% (in 2015) and 93% (in 2012) with an average over the five year period of 90%.

13. A cause for concern is the increasing difficulty for some Member States to forward their subscriptions because of international sanctions against the transfer of funds and the consequent refusal of banks to handle the transactions. On several occasions the Secretariat assisted in finding acceptable ways to ensure that some payments were made.

Interest on bank accounts

14. The total interest earned on bank deposits in the period 2012-2016 was 318,243 Euros. This is 67% more than was forecast in the budget approved by the 18th IHC in 2012 (190,000 euros) and was due to banks offering deposit accounts with progressive interest rates which were not available when the 5 year budget was finalized.

GEBCO Grant

15. Throughout the five-year period, the Government of the Principality of Monaco generously continued its annual contribution towards the running of the GEBCO project, amounting to 41,100 euros in total.

Internal Tax

16. All IHO employees paid an Internal Tax, which was 10% of their gross salary.

Extraordinary income

17. Extraordinary income of 175,833 Euros resulted mainly from interest paid on overdue contributions as required by Article 13.c of the IHO Financial Regulations then in force (28,258€), an administration fee associated with certain donations to the Capacity Building Fund (47,347€), and the payment of contributions in arrears by some Member States (100,228€).

Summary of income

18. The total estimated income for the period 2012-2016 was 14,898,831 Euros, whereas the actual total income received during the period was 15,596,989 Euros. The increase was mainly due to the increased number of shares described earlier, and to a better return on investments than estimated.

EXPENDITURE 2012-2016 (see Table 2)

Chapter I – Personnel costs

Salaries

19. IHO salaries increased in accordance with the cost of living index, promulgated by the Government of Monaco, and represented by the value of the index point, which went from 7.67588 Euros in January 2012 to 7.97186 Euros in December 2016. This was an overall increase of approximately 3.86 % over the five-year period, or an average 0.7% per year. Salary promotions were made in accordance with the Staff Regulations and the salary tables in force.

20. Until October 2016, the number of IHO employees was 19 persons, including the Directors, when a Technical Standards Support Officer was recruited. This increased the number of employees to 20. Four employees retired during the period: two Assistant Directors in May 2012 and May 2014, one locally recruited translator in August 2015 and one locally-recruited employee in April 2016. These posts were filled by replacement personnel and announced to Member States in relevant Circular Letters when appropriate.

Medical expenses

21. The reimbursement of medical costs incurred by IHO employees (both current and certain retired employees) is an item which is costly, varied and unpredictable by nature. The Secretariat subscribes to an insurance policy to mitigate against major medical claims and the recovery of payments against this policy has been indicated separately. Following negotiations with the company providing medical insurance cover for the IHO, nearly all costs (except optical and dental care) are now recognised by the insurance company. As a result, the net cost of reimbursements should not vary as much as in previous years. It can be seen from the personnel costs shown in Table 2 that the net medical costs have varied from 122k€ in 2012 to 153k€ in 2013, 148k€ in 2014, 128 k€ in 2015 and 150k€ in 2016.

Training

22. Staff Training included training in the use of MS SharePoint, accounting software, MS EXCEL, MS WORD and graphics applications, and French language training for a Director. The training was in support of upgrading the skills of the employees involved for the benefit of the IHO.

Summary

23. Total expenditure in Chapter I was 11,174,712 Euros compared to an approved expenditure of 11,492,596 Euros.

24. The expenditure in Chapter I represents 81% of the total operating costs.

Chapter II – Current operating costs

Maintenance

25. The cost of maintenance contracts for the premises and the IT equipment remained stable throughout the five-year period. Following negotiations with service providers, savings were achieved in both IT and building maintenance.

Post, telephone and telefax

26. Expenditure for all the communication costs of the Secretariat remained steady throughout the five-year period. This can mainly be attributed to the increased use of the IHO web site by Member States to download various documents and the use of e-mails and other electronic means by the Secretariat to send Circular Letters and other documents.

Contract support

27. During the five-year period 70,407 Euros were paid in contract support. This amount represents only 23% of the amount approved by Member States. This is partly explained by the fact that IHO Resolution 1/2014 - *Guiding Principles for IHO Funds* directs that one-off contract work that is directly in support of the technical and the inter-regional coordination and support work programmes should normally be financed from the Special Projects Fund, rather than the annual operations budget. As a result, spending from the operational budget on consultancy and contract support was less than planned.

Travel (technical assistance and long distance travel)

28. Expenditure on travel remained within the budget allocation in each year during the five-year period.

Chapter III – Capital Expenditure

29. A total of 182,247 Euros was expended in the period for the purchase of office equipment, furniture and publications representing 58% of the amount of 311,451 Euros approved in the budget.

Summary: Total operating costs

30. The total operating costs during the five-year period was 13,881,480 Euros. This was 5% less than the approved budget of 14,677,582 Euros.

Funds

GEBCO Fund

31. The GEBCO Fund was established in 2008 to support the operation of the GEBCO project. In 2015, the custody and management of the GEBCO Fund was transferred from the former treasurer, Stockholm University, to the IHO in order to minimize administrative costs, to provide increased governance over the funds, and to consolidate the various funding streams under which the GEBCO project operates. In 2016 all donations from the Nippon Foundation in support of the GEBCO project, including significant funds for Ocean Mapping training at the University of New Hampshire and the organization of the Forum for Future Ocean Floor Mapping which took place in Monaco in June 2016, were managed by the IHO Secretariat.

Printing Fund

32. The Printing Fund was created in 1980 to cover the variable expenses of maintaining an in-house printer in the Secretariat. By the turn of the century, the Secretariat had moved from traditional offset printing to cheaper desktop publishing. Traditional printers have now been replaced by digital printers leased from a commercial supplier and are funded from the annual budget. No withdrawals from the Printing Fund have been made since 2005. As it was no longer required for its original purpose, the Printing Fund was closed in May 2014, and its balance was transferred to the Internal Retirement Fund as agreed by the Member States (see IHO CL 33/2014).

I. H. Conference Fund

33. At the end of 2011 the Conference Fund had a balance of 467,525 Euros. The five-year budget allocated the addition of 120k€ over the period. In addition, a transfer of 50k€ from the 2011 audited budget surplus was made in 2012, as approved by the Member States (see IHO CL 79/2012). A total of 263,753 Euros was spent in the planning and execution of the 2012 IHC and the 2014 EIHC. At the end of 2016, 373,661 Euros is available in the Conference Fund for the planning and execution of the first and subsequent IHO Assemblies.

Relocation of Directors and Assistant Directors Fund

34. The Relocation of Directors and Assistant Directors Fund covers all the obligations for the relocation of the Directors and Assistant Directors (furniture, tickets, et cetera) and their dependents when they join or leave the Secretariat.

35. The five-year budget made provision for a total of 50k€ to be allocated to the Fund. This was reduced to 27.5k€ in the 2014, 2015 and 2016 budgets, based on a revised forecast of relocation requirements over the following years. A total of 149,311 Euros was expended during the period and at the end of 2016, 283,111 Euros are available in the Fund.

Capacity Building Fund

36. The Capacity Building Fund was established at the end of 2004 to meet the Capacity Building Program requirements of the Organization. During the five-year period the Fund has received 330,628 Euros from the budget, 283,846 Euros from the audited budget surplus and 2,476,062 Euros in donations from the Republic of Korea and the Nippon Foundation. During the period 2012-2016, which started with a balance of 398,658 Euros, 3,274,943 Euros were spent on authorised activities in the Capacity Building programme. At the end of 2016, 214,251 Euros are available in the Capacity Building Fund.

IHO Internal Retirement Fund (IRF)

37. Since 1 January 2005 the IHO has been paying the pensions of its retired employees from the IRF. At the end of 2016, there were ten pensioners and one IHO employee covered by the IRF scheme.

38. The current retirement scheme applicable to employees recruited after 31 August 1987 relies on personalized retirement plans. These plans are based on commercial retirement investment insurance or low-risk interest bearing deposits.

39. As a consequence of the continuing drop in interest rates following the banking and financial crisis of 2008, the existing personalized retirement plans available to the IHO struggle to compete with government schemes such as the regime provided in Monaco by the *Caisse autonome des retraites* (CAR). Articles 34 and 34(b) of Monaco Law 455 of 27 June 1947 require that pension benefits offered in the Principality shall be no less than those provided by the CAR scheme of Monaco. The revision of the Staff Regulations of the IHO addressed this situation (see IHO CLs 26 and 45/2016).

40. An actuarial assessment is conducted annually by the Secretariat and confirmed by an independent assessment once between each Conference/Assembly in order to ensure that the IRF can meet its potential liabilities of providing the relevant retirement benefits.

41. An amount of 432,951 Euros was transferred to the IRF during the five-year period comprising 65,383 Euros transferred from the Printing Fund, the budget surplus to IRF, and the capital (303,008 Euros) from a Personalized Pension Plan of an employee who chose to receive a pension from the IHO upon retirement in 2015.

42. The value of the IRF on 31 December 2016 was 3,726,557 Euros.

Special Projects Fund

43. The Special Projects Fund was established in 2012 to cover various special or non-recurring activities, such as the maintenance or drafting of standards, the editing, translation or updating of complex publications, and particular requirements identified by the Committees and other bodies of the Organization. The Fund is supporting, in particular, the development of the new generation of S-100 based standards.

44. The Fund was established by transferring 87,819 Euros from the 2011 audited budget surplus. 53,263 Euros was transferred from the 2013 audited budget surplus. A total budget allocation of 100k€ was included in the revised budget approved by the Member States in 2014, 2015 and 2016, 135,176 Euros were spent during the period 2012-2016 on approved activities.

IBSC Fund

45. The IBSC Fund was established in 2010 to support the work of the International Board on Standards of Competence (IBSC) operated jointly by the IHO, the Fédération Internationale des Géomètres (FIG), and the International Cartographic Association (ICA). The Board maintains the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, as well as reviewing and granting recognition to suitable courses upon application. At the request of the FIG Secretariat which had administered the Fund on behalf of the Board since its establishment, the IHO Secretariat, as secretary of the IBSC, took over the role of treasurer of the Fund in 2015.

Operating Cash Reserve

46. An operating cash reserve has been established to ensure the financial stability of the Organization and to avoid any cash liquidity difficulties. In accordance with Article 17 of the IHO Financial Regulations the amount that the IHO shall have at its disposal, on 31 December of each year, shall not be less than three-twelfths of the total annual operating budget of the Organization. At the end of 2016 the operating cash reserve should be not less than 766,475 Euros. At that time, the IHO operating cash reserve stood at 1,953,275 Euros.

Emergency Reserve Fund

47. In accordance with Article 18 of the IHO Financial Regulations, the IHO shall have an emergency reserve fund, the amount of which shall be not less than one-twelfth of the total annual operating budget of the Organization, that is exclusively designated to enable the Organization to meet extraordinary expenditures. At the end of 2016 the emergency reserve fund was valued at 255,492 Euros and this amount is held in reserve by the Secretariat.

Summary of expenditure

48. The total expenditure, including the total operating cost and the actual expenditure in the operational funds, was 14,533,803 Euros over the five-year period. This is less (4.7%) than the total approved budget of 15,252,710 Euros for the period. During the period, there were limited transfers of credit between Chapters of the budget as provided in Article 10 of the IHO Financial Regulations, and transfers of more than the allowed 10% transfer between chapters were not required.

CONCLUSIONS

49. The Secretariat has striven to constrain costs such that, total income has exceeded total expenditures throughout the five-year budget period. This has provided monies which have variously been applied to increase the various Funds of the Organization, to increase the operating cash reserve and to support newly arising liabilities placed on the IRF.

50. The details of income, expenditures, net effect on capital, liabilities and the IRF are presented in the attached tables.

FIVE YEAR REPORT 2012-2016

TABLE 1

INCOME 2012- 2016 (Euros)

	2012	2013	2014	2015	2016	Total of period
Number of shares of contribution	684,0	716,0	718,0	731,0	742,0	
New Member States						
Variation of tonnages		32,0	2,0	13,0	11,0	
Yearly Unit value of the share of contribution	3 984,48	3 984,48	3 984,48	3 984,48	4 024,32	
CONTRIBUTIONS FOR THE YEAR						
(a) Received	2 533 348	2 571 075	2 595 918	2 640 450	2 691 379	13 032 170
(b) Remaining due at end of year	192 037	281 812	264 939	292 128	294 666	1 325 581
	2 725 384	2 852 888	2 860 857	2 932 577	2 986 045	14 357 751
SALES OF PUBLICATIONS						
	126	0		77		203
INTEREST ON MONIES IN BANKS						
	22 409	37 968	61 243	92 086	104 537	318 243
INTERNAL TAX						
	163 875	166 859	173 288	171 347	169 817	845 187
TOTAL INCLUDING CONTRIBUTIONS DUE	2 911 795	3 057 715	3 095 388	3 196 086	3 260 400	15 521 384
Annual budget presented	2 911 006	2 985 080	2 986 781	2 991 507	3 024 457	14 898 831
<u>EXTRAORDINARY INCOME</u>						
Interest on overdue contributions	5 088	9 759	7 362	6 048		28 258
Administration fees CBF	7 264	29 955	6 460		3 668	47 347
Other extraordinary income			36 684	40 086	23 458	100 228
	2 924 147	3 097 429	3 145 894	3 242 221	3 287 525	15 596 989

2012 2013 2014 2015 2016 Total of period

TABLE 2

EXPENDITURE 2012- 2016 (Euros)I - PERSONNEL COSTS

a) Salaries - Directing Committee	457 490	456 722	460 607	467 693	478 147	2 320 659
b) Salaries - Category A	538 046	560 052	580 822	565 046	571 622	2 815 589
- Translators	203 824	208 685	211 790	215 970	207 492	1 047 759
- Category B	379 508	404 157	411 722	419 018	395 240	2 009 644
- Overtime	4 942	7 420	7 057	4 664	9 012	33 095
c) Annual Bonus	29 568	31 558	32 101	32 565	30 424	156 216
d) Payment to Retirement Funds	323 531	337 192	346 223	346 460	341 695	1 695 100
e) Insurances based on staff wages	12 805	13 098	13 765	13 349	13 481	66 497
f) Medical GAN premiums	79 758	90 499	84 880	103 277	108 267	466 681
g) Family Allowances	9 201	16 880	18 189	18 289	23 856	86 415
h) Education Grants	16 702	23 720	23 811	16 579	8 125	88 937
i) Medical claims paid	85 644	87 101	86 504	115 407	138 510	513 167
j) Medical claims - refunds from GAN	-43 017	-24 649	-22 951	-90 289	-96 902	-277 808
k) Home Rental	5 029	11 507	12 307	8 514	6 237	43 593
l) Home Leave	11 545	3 693	13 771	5 384	1 796	36 190
m) Miscellaneous Personnel Expenses	789	2 710	950	2 463	934	7 845
n) Salaries - Temporary staff	0	0	0	0	35 679	35 679
o) Training	11 957	10 733	6 012	0	752	29 454
Total Actual Chapter I	2 127 320	2 241 077	2 287 559	2 244 389	2 274 366	11 174 712
Total approved Budget for Chapter I	2 185 720	2 266 191	2 287 835	2 319 000	2 433 850	11 492 596

	2012	2013	2014	2015	2016	Total of period
<u>II - CURRENT OPERATING COSTS</u>						
a) Maintenance of building	41 512	39 086	42 644	37 409	40 310	200 961
b) Multirisk Insurance	2 556	2 868	2 707	2 989	3 138	14 257
c) Maintenance of IT equipments	57 232	48 923	54 781	49 941	57 088	267 966
d) Office Stationery	9 567	6 653	7 587	9 790	9 067	42 664
e) Postage, telephone, telefax	35 459	32 407	33 555	31 057	32 070	164 547
f) Local Travel	2 325	1 374	1 599	1 287	725	7 310
g) Bank Charges	5 838	7 364	6 908	6 549	6 845	33 503
h) Contract support	7 000	27 144	20 790	594	14 879	70 407
i) Auditor's fees	11 910	6 800	6 800	6 800	7 520	39 830
j) Public Relations	11 270	16 039	19 168	15 737	12 668	74 882
k) Miscellaneous Operating Expenses	2 133	4 501	641	1 821	1 383	10 279
l) Technical Assistance	35 299	55 874	12 434	43 902	46 588	194 097
m) Long Distance Travel	212 194	238 182	244 299	232 084	230 125	1 156 884
n) I.H. Review	10 000	10 000	10 000	10 000	10 000	50 000
o) Other publications	1 378	1 660	1 509	1 570	1 377	7 494
p) Provision for bad debts		54 508	19 922	59 148	55 862	
Total Chapter II	445 673	553 181	485 344	510 677	529 645	2 524 520
Total approved Budget for Chapter II	532 035	558 400	640 900	579 100	563 100	2 873 535
<u>III - CAPITAL EXPENDITURE</u>						
a) Purchase of IT equipments	6 235	5 109	9 439	8 909	9 824	39 518
b) Purchase of furniture & other equipments	10 902	3 914	2 251	6 193	11 409	34 670
c) Depreciation of fixed assets	11 772	24 372	24 814	22 993	21 585	105 537
d) Purchase Publications & binding	754	169	50	902	648	2 522
Total Chapter III	29 664	33 565	36 555	38 998	43 465	182 247
Total approved Budget for Chapter III	67 051	69 300	64 300	59 300	51 500	311 451
Total Operating Costs	2 602 658	2 827 824	2 809 458	2 794 064	2 847 477	13 881 480
Total approved Budget for Operating Costs	2 784 806	2 893 891	2 993 035	2 957 400	3 048 450	14 677 582

	2012	2013	2014	2015	2016	Total of period
- GEBCO	8 200	8 200	8 200	8 200	8 200	41 000
- RENOVATION FUND ALLOCATION	3 000	3 000				6 000
- I.H. CONFERENCE FUND	40 000	20 000	20 000	20 000	20 000	120 000
- RELOCATION OF DIRECTORS ALLOCATTON	20 000	7 500				27 500
- SPECIAL PROJECTS FUND				30 000	20 000	50 000
- CAPACITY BUILDING ALLOCATION	55 000	140 628	45 000	45 000	45 000	330 628
- INTERNAL RETIREMENT FUND					65 000	65 000
	2 728 858	3 007 152	2 882 658	2 897 264	3 005 677	14 521 608
Total approved Budget per year	2 911 006	3 073 219	3 066 235	3 060 600	3 141 650	15 252 710
EXTRA EXPENDITURES AND LOSSES		573		6 331	5 291	12 195
GRAND TOTAL	2 728 858	3 007 724	2 882 658	2 903 595	3 010 968	14 533 803

2012 2013 2014 2015 2016 Total of period

TABLE 3

NET EFFECT ON CAPITAL 2012- 2016 (Euros)

APPROVED EXPENDITURE LEVEL	2 911 006	3 073 219	3 066 235	3 060 600	3 141 650	15 252 710
TOTAL EXPENDITURE	-2 728 858	-3 007 734	-2 882 658	-2 903 595	-3 010 968	-14 533 803
TOTAL INCOME	2 924 147	3 097 429	3 145 894	3 242 221	3 287 525	15 697 217
Surplus on yearly Budget	195 289	89 705	263 237	338 626	276 557	1 163 414
CURRENCIES						
Net Gains on Change Operations	7		14	181	4 248	4 450
Net Losses on Change Operations	-443	-39			-9	-491
Net Gains on Valuation of Holdings	10 852	1 648	1 806			14 307
Net Losses on Valuation of Holdings	0	-18				-18
NET RESULT (Income/Expenditure/Currencies)	205 706	91 296	265 057	338 807	280 796	1 181 662
OTHER OPERATIONS						
Provision for Staff Retirement Rights			-26 000			-26 000
Transfer to Special Projects Fund			-53 263			-53 263
NET BALANCE (Total income less expenditure)	205 706	91 296	185 794	338 807	280 796	1 102 399
WORKING CAPITAL AT YEAR'S END	2 463 246	2 546 280	2 735 044	3 066 263	3 345 605	
EMERGENCY RESERVE FUND	241 158	249 420	246 450	254 038	255 492	
TOTAL FUNDING AT YEAR'S END	<u>2 704 404</u>	<u>2 795 700</u>	<u>2 981 494</u>	<u>3 320 301</u>	<u>3 601 097</u>	

2012 **2013** **2014** **2015** **2016**
TABLE 4
COMPARISON OF BALANCE SHEETS
(as of 31st December 2012 - 2016)

	1- ASSETS (Euros)				
	2012	2013	2014	2015	2016
CASH INVESTED FOR RETIREMENT FUND					
- Retirement Cash invested (IRP)	2 930 586	2 975 637	2 976 238	3 157 602	3 046 478
- Long term guaranty from ITO funds	97 807	130 872	190 768	102 306	680 079
- Retirement Cash invested (External Pension Plans)	424 071	421 039	534 559	594 168	652 785
	3 452 465	3 527 548	3 701 564	3 854 077	4 379 342
VARIOUS DEBTORS					
- Purchases made in advance	852	4 515	7 412	7 156	5 513
- Outstanding bills	10 676	12 053	16 464	38 952	10 170
- Advance to staff	14 524	21 273	19 656	16 259	25 200
- Interest to be received	1 950	5 215	41 948	73 222	57 997
- Claim for refunding of VAT	76 859	39 958	64 001	38 248	54 011
- Various debtors			146		
	104 862	83 014	149 628	173 838	152 892
OUTSTANDING CONTRIBUTIONS					
- Contributions for the year	192 037	241 952	245 016	292 128	294 666
- Contributions for previous years	41 453	25 540	45 576	50 402	68 300
- Contributions for suspended Member States	15 245	142 748	98 919	39 152	39 152
- Interest due	8 131	17 890	22 655	4 607	4 607
	256 866	428 130	412 166	386 288	406 724
FURNITURES AND INSTRUMENTS					
- Value of purchases	250 501	257 438	255 421	289 565	302 631
- Depreciation	-204 840	-203 780	-222 262	-240 068	-261 653
- Library	36 664	36 664	36 664	36 664	36 664
	82 325	90 322	69 824	86 160	77 642
CASH IN BANK AND ON HAND					
- Bank current accounts	1 603 107	133 603	272 412	378 473	793 932
- Bank deposit accounts	3 371 099	4 775 142	5 116 792	5 033 801	4 388 178
- Petty cash	3 107	2 034	3 827	2 906	10 491
	4 977 313	4 910 778	5 393 031	5 415 180	5 192 601
ASSETS GRAND TOTAL	8 873 830	9 039 793	9 726 213	9 915 543	10 209 201

	2012	2013	2014	2015	2016
II - LIABILITIES (Euros)					
STAFF INTERNAL RETIREMENT FUND					
- Internal Retirement fund	849 594	922 420	941 896	1 335 563	1 339 743
- Provision to ensure pensions to retired staff	2 178 800	2 184 089	2 225 110	1 924 345	2 386 814
Net IRF Liability	3 028 394	3 106 509	3 167 006	3 259 908	3 726 557
- Rights for External Pension Plans	326 368	431 567	534 483	594 183	632 531
VARIOUS CREDITORS					
- Guaranty to the IRF	97 807	130 872	190 768	102 306	680 079
- Pension plans NSM	33 947				
- Provision for doubtful contributions	43 758	154 048	110 219	86 938	126 800
- A.M.R.R Complementary Retirement Scheme	43 191	46 741	46 989	47 566	16 075
- Accruals (outstanding bills...)	52 136	79 561	65 382	64 530	56 030
- Travel claims & wages	945	1 098	5 346	2 598	1 542
- Deposits received for Conference (stand)	0	16 166		9 705	19 545
- Various creditors	127 946		1 757	1 305	
I.II CONFERENCE FUNDS					
- Organization of III Conferences	422 897	436 815	340 358	360 358	373 661
- Relocation of Directors and Ads	303 547	311 047	298 546	288 354	283 111
- Ablos Conference fund	6 759	6 408	99	-46	-46
- GEBCO fund	63 286	68 653	69 577	185 683	211 612
- Capacity Building fund	472 896	527 019	1 080 203	542 626	214 251
- Special Projects Fund	52 819	13 399	55 007	68 037	85 903
- Printing Equipment Fund	73 793	65 383			
- Renovation Fund	90 894	89 873	80 489	80 489	79 292
- Presentation Library Fund	55 350	61 248	42 974	22 279	32 002
- IBSC Fund				16 543	18 783
CONTRIBUTIONS RECEIVED IN ADVANCE					
- Received in advance or in excess	872 692	964 462	1 018 750	1 090 221	1 005 186
	3 141 033	3 404 361	3 940 947	3 563 675	3 836 357

	2012	2013	2014	2015	2016
II - LIABILITIES (Continuation)					
CAPITAL					
- Emergency Reserve Fund	241 158	249 420	246 450	254 038	255 492
- Provisions for risks (IRF & suspended MS)	-2 222 558	-2 283 630	-2 288 791	-1 968 103	-2 430 572
- Net yearly result	205 706	91 296	185 794	338 807	280 796
- Net Members States funds	4 480 099	4 471 837	4 474 806	4 467 219	4 540 571
Permanent funding	2 704 404	2 528 922	2 618 260	3 091 960	2 646 287
LIABILITIES GRAND TOTAL	<u>8 873 830</u>	<u>9 039 792</u>	<u>9 726 213</u>	<u>9 915 543</u>	<u>10 209 201</u>
Cash reserve to continue operations (Fin. Regs Art 18)					
- IIO Cash balances	4 977 313	4 910 778	5 393 031	5 415 180	5 192 601
- Advance contributions for next year	-872 692	-964 462	-1 018 750	-1 090 221	-1 005 186
- Emergency reserve fund	-241 158	-249 420	-246 450	-254 038	-255 492
- Special purpose reserves and funds	-1 542 242	-1 579 845	-1 967 253	-1 564 324	-1 298 569
- Guaranty to the TRF	-97 807	-130 872	-190 768	-102 306	-680 079
Operating Cash Reserve	<u>2 223 414</u>	<u>1 986 180</u>	<u>1 969 810</u>	<u>2 404 292</u>	<u>1 953 275</u>
Total Actual Operation costs	2 602 658	2 827 824	2 809 458	2 794 064	2 847 477
Total Budget for future operations	2 893 891	2 993 035	2 957 400	3 048 450	3 065 900
Number of weeks of operations	44,4	36,5	36,5	44,7	36
Minimal Requirements (3 months - 13 weeks)	723 473	748 259	739 350	762 113	766 475

	2012	2013	2014	2015	2016
TABLE 5					
INTERNAL RETIREMENT FUND (IRF) EVOLUTION					
Situation of the fund on 1st January	2 893 108	3 028 394	3 106 509	3 167 006	3 259 908
Contributions received (Secretariat & Staff)	22 442	23 069	23 599	23 885	15 588
Interest received on investments	9 395	27 213	8 660	34 807	101 399
Pensions paid	-170 140	-149 316	-145 462	-153 827	-211 807
Support from previous year's result		171 860	41 296	185 794	34 000
Transfer from Personalized Pension Plan/Printing Fund Allocation			65 383	303 008	65 000
			26 000		
Sub-total	2 754 805	3 101 220	3 125 985	3 560 673	3 264 088
Provision for liability					
- at 1st January of the year	-1 905 211	-2 178 800	-2 184 089	-2 225 110	-1 924 345
- at 31 December of the year	2 178 800	2 184 089	2 225 110	1 924 345	2 386 814
Net variation for the year	273 589	5 289	41 021	-300 765	462 469
Situation of the fund on 31st December	3 028 394	3 106 509	3 167 006	3 259 908	3 726 557

IHO 3-YEAR BUDGET 2018-2020 (As approved)

INTRODUCTION

1. The budget for the period 2018 to 2020, which was considered by the Finance Committee immediately prior to the plenary session of the Assembly and then agreed by the Assembly, is presented in Annex A in accordance with the requirements of Article 8 (a) of the Finance Regulations of the IHO.
2. The budget reflects the proposed Work Programme presented as Assembly document A1/WP1/02 and approved by the Assembly.
3. Diagrams showing the allocation of the budget according to the Chapters of the IHO accounts are shown in Annex B.
4. The following notes are intended to draw attention to the key elements of the budget and the various considerations that have been taken into account in its formulation.

INCOME

5. The IHO Secretariat proposes a conservative baseline budget based on a “worst-case” scenario in terms of anticipated income. It is likely that real income will be greater than is shown in the baseline budget because of the likelihood of new Member States joining the IHO as a result of the relevant amendments to the Convention on the IHO in relation to eligibility and rights of entry.

Member States' Contributions

6. IHO income is based primarily on the anticipated Member State's annual financial contributions, which, in turn is based on the total number of shares as determined from the tonnage list. The tonnage list, presented as Assembly document A1/G/03, is based on the responses of Member States to Conference Circular Letter (CCL) 7 dated 1 July 2016.
7. The Secretariat has ensured that the figures in the tonnage list are consistent with the most recent tonnage list adopted by the IMO. In cases where a Member State has not provided up to date figures, the figures that the State has declared to the IMO have been used, noting that these figures do not include naval vessels. The shares for the Member States that joined in early 2017 have been included in the forecast income for 2018-2020.
8. As a result of the revised arrangements for seeking membership of the IHO, it is very likely that several States will join the IHO during the period 2018-2020. This could increase the shares significantly, depending on the declared tonnage of the new Member States. For example, the membership of a single large flag State could increase income by nearly 110k€ per annum.

Share Value

9. Considering the satisfactory financial position of the Organization, the Secretariat does not propose any increase in the unit share value for the three year period 2018 to 2020, which will remain at 4,024.32 Euros.

Interest on bank accounts

10. A conservative approach has been taken in forecasting the income from interest on capital investments. This is because the worldwide financial and economic situation does not indicate that there will be significant returns on investments in the near future.

11. Some long-term fixed-interest deposit accounts will mature in 2018. These deposit accounts were initiated when interest rates were comparatively high - resulting in an expected income of 105k€ for that year. As the IHO has no other long-term deposits with the same higher yielding interest rates, the forecast income from interest on deposits is expected to be much less in the other years in the budget period.

EXPENDITURE

12. The expenditure of the IHO can be subdivided into expenses for salaries and associated personnel costs, operating costs and capital expenditure. In the proposed budget, the proportion devoted to personnel costs is 72% of the total budget, 18% corresponds to operating costs, and 1.6% to capital expenditure. The remaining 9.4% will be transferred to the various funds established for specific purposes, such as the Internal Retirement Fund, the Conference Fund, the Renovation Fund, the Capacity Building Fund, the Special Projects Fund, and so on.

13. As has been the case in the past five year budget period, the Secretariat will monitor the finances of the Organization on a monthly basis and continue to pursue efficiencies and economies in order to minimise expenditure, reporting any issues or recommendations to the Member States if and as appropriate.

Chapter I – Personnel costs

14. The following assumptions have been made in forecasting expenditure:

- The number of employees, counting all categories, will be 20:
 - one Secretary-General,
 - two Directors,
 - four Assistant Directors,
 - one Manager of Finance and Administration,
 - three Translators, and
 - nine Technical and Administrative staff.
- If the current Directors are re-elected in 2017, their salaries will increase in September 2018 by a seniority increment.
- In 2020, a change-over of up to two Directors may take place, increasing the salary bill by one month's salary during the two-week hand-over period.
- If a Secretary-General is elected in 2017 for a six-year mandate, their salary will be increased by a seniority increment in 2020.
- One internationally recruited member of staff will be eligible for an education grant throughout the period of the budget.
- An increase in medical insurance premiums in order to obtain a better rate of reimbursement is included in the budget.

- Miscellaneous (personnel) expenses have been included in the budget to account for expenses such as: the required contributions to the International Labour Organization (ILO), pharmacy and first aid, compulsory medical visits, and recruiting costs.

15. **The need for additional permanent staff in the Secretariat.** During the period 2018-2020 consideration will need to be given to increasing the number of locally recruited employees in the Secretariat by up to two, particularly if additional funds become available as a result of new Member States joining the Organization. The need for these positions are as follows

- a. The introduction of an annual session of the Council, the increased frequency of meetings of the RHCs, the increased activity in the representational roles of the Secretary-General and Directors, and the planning, reporting and risk analysis responsibilities explicitly placed upon the Secretary-General all point to a requirement for an additional locally recruited managerial member of staff to undertake the role of Chief of Staff and Senior Assistant to the Secretary-General. An increase in personnel costs of approximately 125k€ would be required to cover all the expenses of such a position.
- b. The ability of the Secretariat to provide full administrative support to the IHO Capacity Building Programme and to the International Board on Standards of Competence (IBSC) has been raised consistently by the relevant bodies and the provision of additional staff has been endorsed in principle by the IRCC. The recruitment of an experienced administrative assistant to support the clerical, reporting and administrative aspects of the CB and IBSC tasks is warranted. An increase in personnel costs of approximately 90k€ would be required to cover all the expenses of such a position.

Chapter II – Current operating costs

16. 1,844,700 Euros (19%) of the operational budget will cover the operating costs, including:

- **Contract support:** 5k€ per year has been included to supplement translation through contract support, so as to meet the obligations set out in the IHO General Regulations;
- **Administrative support for the Council:** 20k€ per year has been allocated to support the annual sessions of the Council. This will cover the additional expenses of hosting and supporting the sessions of the Council, including the hiring of additional equipment and services, personnel such as stenotypists, translators and domestic cleaners, and printing;
- **Travel costs:** The reduction of 15k€ in travel costs, incorporated in the 2017 budget because of anticipated savings brought about by changes to travelling allowances in the Staff Regulations, has been reflected similarly in the 2018-2020 budget;
- **Provision for bad debts.** As has been the case since 2014, a provision for bad debts has been included in the budget; and
- **Personnel and operating costs.** A cost of living salary increase over the period (historically about 1% per annum) has been included in the budget.

Chapter III – Capital Expenditure

17. 165,000 Euros (1.6%) of the operational budget has been allocated to cover Capital Expenditure. Expenditure included under this chapter includes the purchase of IT equipment, furniture and the depreciation of assets.

FUNDS

Chapter IV - Allocation of funds

18. The proposed allocation to the funds over the three-year period 2018-2020 takes into account the following considerations related to the proposed Work Programme for 2018-2020:

- **Internal Retirement Fund.** In order to conform to the principles of alignment with the conditions of the Monaco Civil Service, the new edition of the Staff Regulations applicable from 1 January 2017 provides the option for locally recruited employees upon retirement to choose between a payment based on their personalized retirement plan or a pension paid by the IHO based on the minimum requirements in force in Monaco.

Providing the alternative pension rights guarantee described above, potentially increases the financial exposure of the IHO. This additional liability must be met by the Internal Retirement Fund (IRF) that is already being used to support the existing employees and the retirees whose retirement scheme pre-dates the introduction of personalized retirement plans.
- **GEBCO Fund.** An allocation has been included to support the maintenance of the digital Gazetteer of Undersea Feature Names (GEBCO SCUFN Gazetteer – *Index du SCUFN de la GEBCO*)
- **Conference Fund.** The level of allocation to the Conference Fund in the 2018-2020 budget has been reduced by 20k€ per annum, in anticipation of continuing to make cost saving measures in future Assemblies, such as the replacement of precis writers with stenotypists, and to meet the need to offset the 20k€ per annum in operating costs that will be required to support the annual sessions of the Council.
- **Special Projects Fund.** An allocation has been included to support the maintenance and enhancement of the IHO Data Centre for Digital Bathymetry (DCDB), which is not currently funded by the IHO and relies solely on the financial support of the USA.
- **IBSC Fund.** An allocation of 20k€ over three years has been made specifically to support the maintenance of the IBSC standards. This is in addition to the self-funding mechanism already in place that supports the running costs of the IBSC through the IBSC Fund.
- **Capacity Building Fund.** A minimum allocation has been made, which is, in effect, the balance of the budget. It is likely that additional income from donor States, Organizations and new Member States will become available from time to time during the budget period and could be allocated to the CB Fund.

Allocation of any increase in income during the three-year period

19. In the event that income is greater than forecast in the baseline 2018-2020 budget, the Secretariat recommends that, subject to any new or extenuating circumstances at the time, any such additional income be allocated to the recruitment of additional members of Secretariat staff as described in paragraph 15, and the following funds, according to the needs and the priorities at the time:

- **GEBCO Fund** - for additional maintenance of the SCUFN Gazetteer
- **Capacity Building Fund** – to support additional capacity building activities

- **Special Projects Fund** – to advance IHO work programme tasks through contractor/commercial support

BUDGET FORECAST
2018-2020

TABLE 1
PROPOSED IHO BUDGET DETAILS FOR 2018-2020
SUMMARY

TABLEAU 1
PROJET DETAILLE DE BUDGET DE L'OHI POUR 2018-2020
RECAPITULATIF

Chapters and Items	Approved budget 2017	Proposed budget 2018	Proposed budget 2019	Proposed budget 2020
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
Value of the share - <i>Valeur de la part</i>	4 024,32 €	4 024,32 €	4 024,32 €	4 024,32 €
Number of shares - <i>Nombre de parts</i>	774	811	811	811
Provision for suspended Member States <i>Provision pour Etats membres suspendus</i>	-8	-8	-8	-8
Final number of shares <i>Nombre de parts définitif</i>	768	803	803	803
	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>	<u>(Euros)</u>
Income - <i>Revenus</i>	3 359 678	3 520 529	3 457 529	3 480 529
Net Expenditure - <i>Dépenses nettes</i>	3 354 100	3 519 400	3 456 400	3 459 500
Budget Excess/Deficit - <i>Excédent/Déficit budgétaire</i>	5 578	1 129	1 129	1 029
Effect on capital - <i>Effet sur le capital</i>	5 578	1 129	1 129	1 029

BUDGET FORECAST
2018-2020TABLE 2
INCOMETABLEAU 2
REVENUS

Chapters and Items	Approved budget 2017	Proposed budget 2018	Proposed budget 2019	Proposed budget 2020
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
	(Euros)	(Euros)	(Euros)	(Euros)
CONTRIBUTIONS <i>Contributions</i>	3 090 678	3 231 529	3 231 529	3 231 529
INTEREST ON BANK ACCOUNTS <i>Intérêts sur comptes en banques</i>	88 000	105 000	40 000	40 000
INTERNAL TAX <i>imposition interne</i>	181 000	184 000	186 000	189 000
	3 359 678	3 520 529	3 457 529	3 460 529
	=====	=====	=====	=====

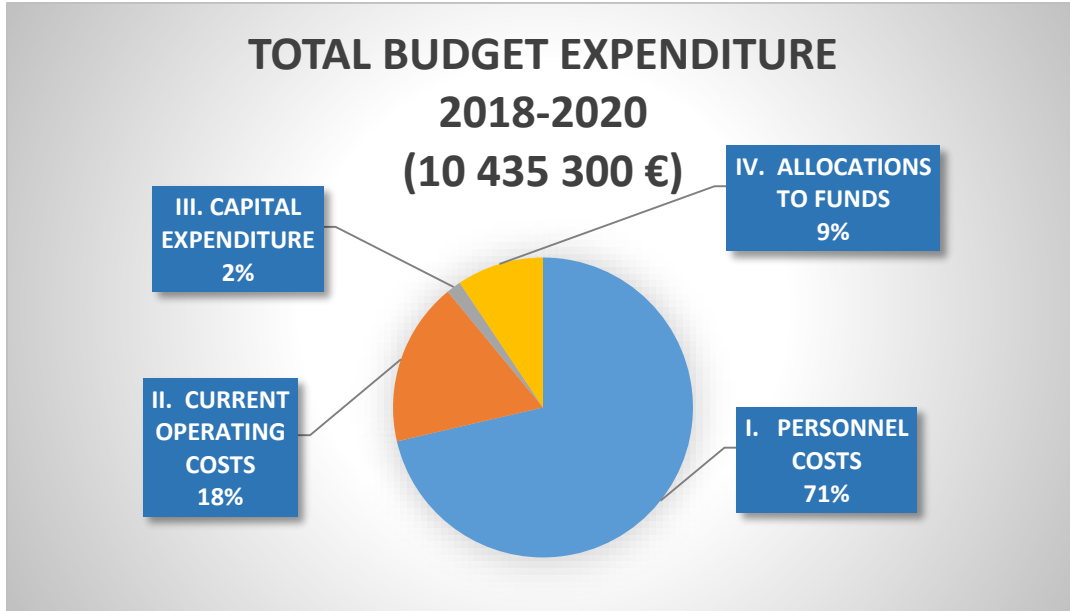
BUDGET FORECAST
2018-2020

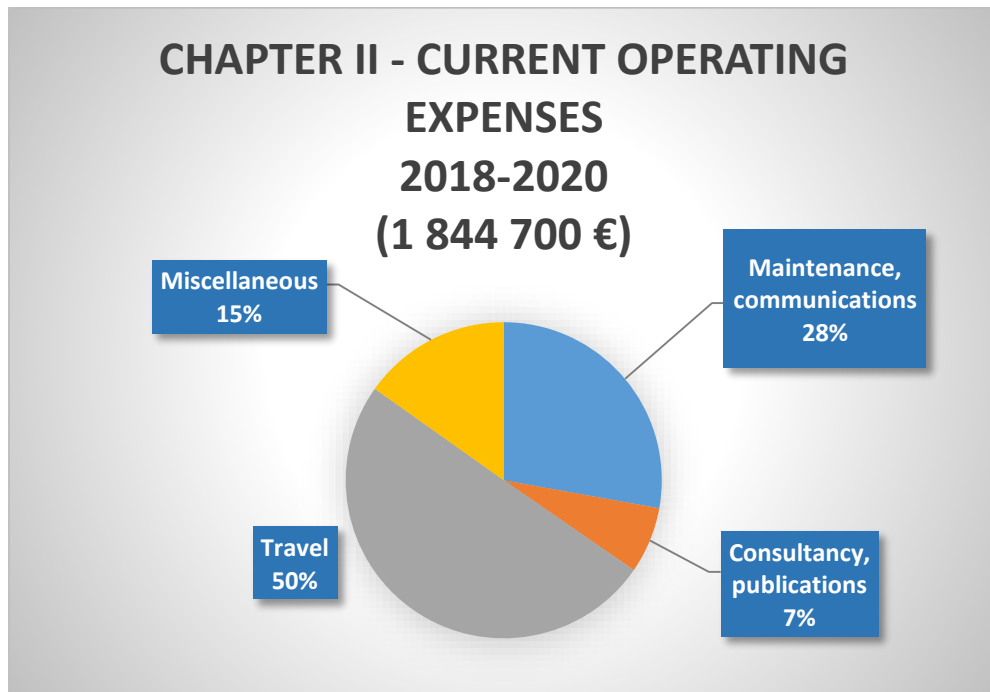
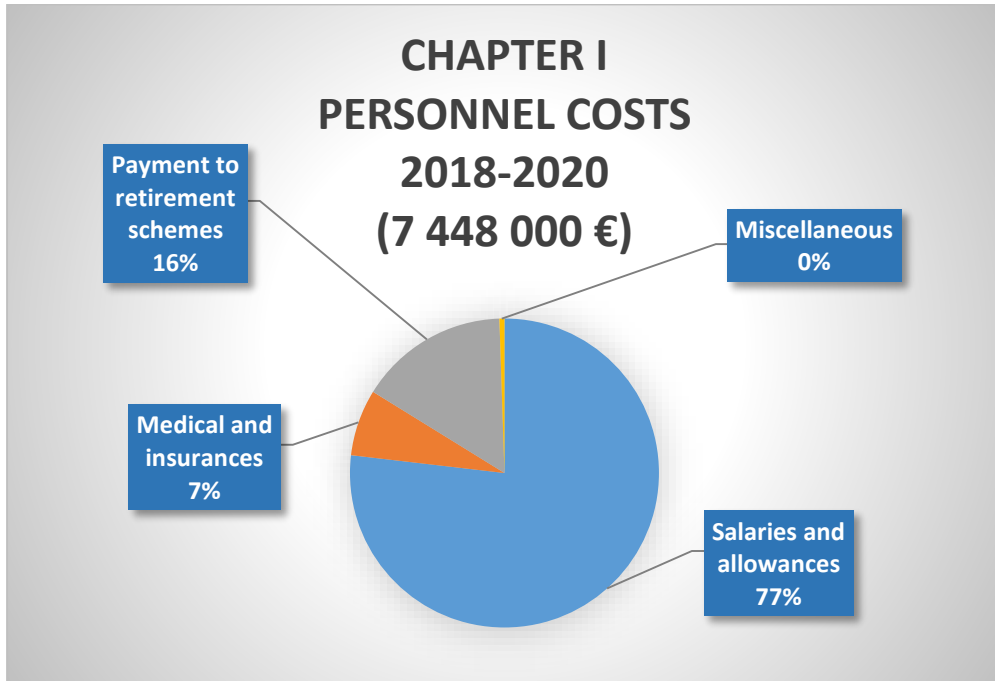
Chapters and Items	Approved budget 2017	Proposed budget 2018	Proposed budget 2019	Proposed budget 2020
<i>Chapitres et postes budgétaires</i>	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
Capital Expenditure - Dépenses d'équipement	(Euros)	(Euros)	(Euros)	(Euros)
Purchase of IT equipment - <i>Equipements informatiques</i>	10 000	10 000	10 000	10 000
Furniture & other equipment - <i>Mobilier et autres équipements</i>	5 000	5 000	5 000	5 000
Purchase Publications & Binding - <i>Reliures et publications</i>	1 000	1 000	1 000	1 000
Depreciation of fixed assets - <i>Dépréciation des immobilisations</i>	20 000	20 000	12 000	10 000
TOTAL CHAPTER III - TOTAL CHAPITRE III	36 000	36 000	28 000	26 000
Annual Operating Costs - Coût opérationnel annuel	3 040 900	3 095 200	3 127 200	3 160 300
Asset Allocation - Immobilisations	(Euros)	(Euros)	(Euros)	(Euros)
Purchase of IT equipment - <i>Equipements informatiques</i>	15 000	15 000	15 000	15 000
Furniture & other equipment - <i>Mobilier et autres équipements</i>	10 000	10 000	10 000	10 000
	25 000	25 000	25 000	25 000
Allocation to Funds - Dotations aux fonds dédiés	(Euros)	(Euros)	(Euros)	(Euros)
GEBCO Fund - <i>Fonds pour la GEBCO</i>	8 200	8 200	8 200	8 200
GEBCO SCUFN Gazoltec - <i>Index du SCUFN de la GEBCO</i>		30 000	30 000	30 000
Renovation and Enhancement Fund - <i>Fonds de rénovation et d'amélioration</i>	0	0	0	0
Conference Fund - <i>Fonds pour les conférences</i>	20 000	20 000	20 000	20 000
Relocation Fund - <i>Fonds pour les déménagements</i>	5 000	5 000	5 000	5 000
Capacity Building Fund - <i>Fonds pour le renforcement des capacités</i>	160 000	206 000	116 000	86 000
Special Project Fund - <i>Fonds pour les projets spéciaux</i>	20 000	50 000	50 000	50 000
IBSC Fund - <i>Fonds IBSC</i>	10 000	10 000	5 000	5 000
Internal Retirement Fund - <i>Fonds de Retraite Interne</i>	65 000	70 000	70 000	70 000
TOTAL CHAPTER V - TOTAL CHAPITRE V	288 200	399 200	304 200	274 200
TOTAL EXPENDITURE - Dépense totale	3 354 100	3 519 400	3 456 400	3 459 500

BUDGET FORECAST
2018 - 2020

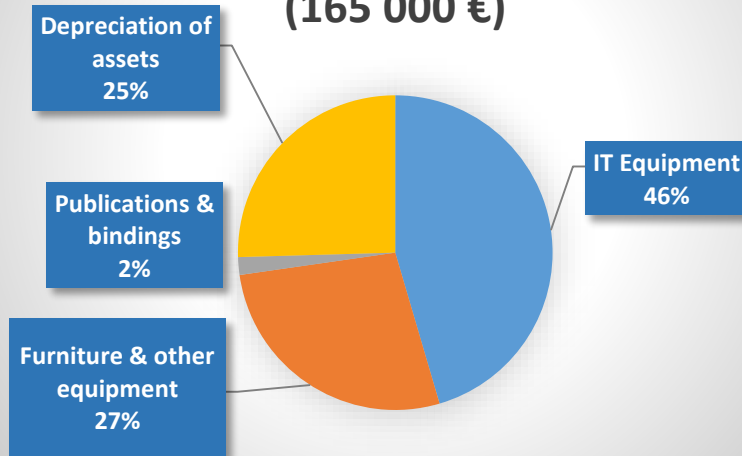
Chapters and Items <i>Chapitres et postes budgétaires</i>	Approved budget 2017	Proposed budget 2018	Proposed budget 2019	Proposed budget 2020
	<i>Budget Approuvé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>	<i>Budget Proposé</i>
PERSONNEL COSTS - DEPENSES DE PERSONNEL	(Euros)	(Euros)	(Euros)	(Euros)
Salaries Directing Committee - <i>Salaires Comité de direction</i>	2 417 500	2 452 000	2 484 000	2 512 000
Salaries Other staff - <i>Salaires autres membres du personnel</i>				
Social charges - <i>Charges sociales</i>				
Benefits and Pensions - <i>Prestations de retraite</i>				
Controllable Personnel cost - <i>Coûts de personnel modulables</i>				
CURRENT OPERATING COSTS - DEPENSES DE GESTION COURANTE	587 400	607 200	615 200	622 300
Maintenance, communications, etc. - <i>Entretien et communications</i>				
Contract support - <i>Support contractuel</i>				
Travels - <i>Déplacements</i>				
Publications - <i>Publications</i>				
CAPITAL EXPENDITURE - DEPENSES DE CAPITAL	36 000	36 000	28 000	26 000
ASSET ALLOCATION - IMMOBILISATIONS	25 000	25 000	25 000	25 000
ALLOCATIONS TO FUNDS - DOTATIONS AUX FONDS DEDIES				
GEBCO Fund - <i>Fonds pour la GEBCO</i>	8 200	8 200	8 200	8 200
GEBCO SCUFN Gazetteer - <i>Index du SCUFN de la GEBCC</i>		30 000	30 000	30 000
Renovation and Enhancement Fund - <i>Fonds de rénovation et d'amélioration</i>	0	0	0	0
Conference Fund - <i>Fonds pour les conférences</i>	20 000	20 000	20 000	20 000
Relocation Fund - <i>Fonds pour les déménagements</i>	5 000	5 000	5 000	5 000
Capacity Building Fund - <i>Fonds pour le renforcement des capacités</i>	160 000	206 000	116 000	86 000
Special Projects Fund - <i>Fonds pour les projets spéciaux</i>	20 000	50 000	50 000	50 000
IBSC Fund	10 000	10 000	5 000	5 000
Internal Retirement Fund - <i>Fonds de Retraite interne</i>	65 000	70 000	70 000	70 000
Net Expenditure - Dépenses nettes	3 354 100	3 519 400	3 456 400	3 458 500

Diagrams Showing the Allocation of the Budget According to the Chapters of the IHO Accounts

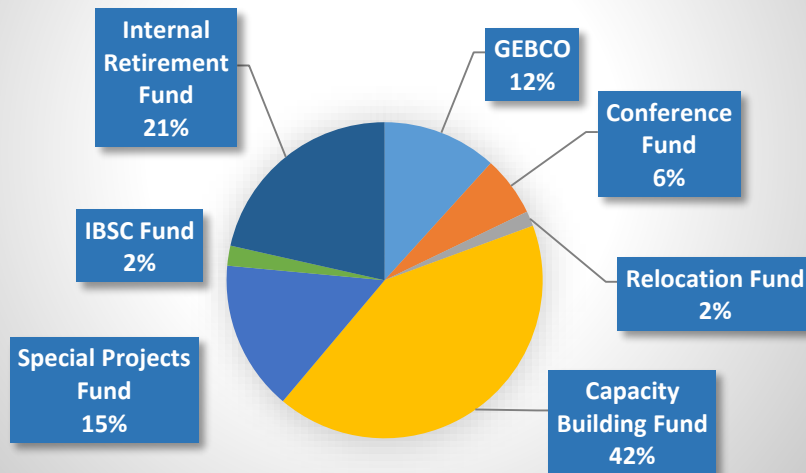




CHAPTER III - CAPITAL EXPENDITURE 2018-2020 (165 000 €)



CHAPTER IV - ALLOCATIONS TO FUNDS 2018-2020 (977 600 €)



CONSIDERATION OF THE FINANCIAL STATEMENTS FOR 2016 AND RECOMMENDATIONS

Introduction

1. Under the terms of the basic documents of the IHO in force until 8 November 2016, the draft Financial Report and its recommendations have been submitted to the Member States for approval by a two-thirds majority. This meant that in most cases, the audited accounts and the disbursement of any surplus was agreed by mid-year or shortly thereafter.

Impact of the revised basic documents on the approval of the Financial Statements and Recommendations

2. In accordance with Article 8 of the Financial Regulations that entered into force on 8 November 2016, the Secretary-General is now required to submit the financial statements to the Council and to the Finance Committee by correspondence together with the budget estimates for the following financial year.

3. It is not specified, but may be inferred from Article 8 of the Financial Regulations and the provisional agenda of meetings of the Council as detailed in Rule 8 of the Rules of Procedure of the Council, that the Council is empowered to approve the financial statements for the previous year and the budget estimates and the associated annual work programme for the forthcoming year. This requires clarification.

4. The Financial Report for 2016, as published in the annual report Part 2, indicates an operational surplus of 240k€ and a recommendation that the bulk of this surplus is transferred to the Capacity Building Fund, particularly in view of the fact that the value of the approved capacity building projects for 2017 far outweighs the currently available funds. In the circumstances it would therefore be preferable to increase the value of the Capacity Building Fund as soon as possible in 2017 so that the as yet unfunded but approved projects in the Capacity Building Work Programme could proceed.

5. The first meeting of the Council will not take place until October 2017, when a Chair and Vice-Chair will be elected. This means that it would be difficult to obtain the approval of the Council for the Financial Report for 2016 and its recommendations before that date.

Recommendations

6. Given the particular circumstances already described, and noting the potential impact on the Capacity Building Programme for 2017, the Secretary-General is submitting the Financial Report for 2016 and its recommendations to the Assembly for its consideration and approval. The Financial Report for 2016 and its Recommendations are included at Annex A.

7. Furthermore, noting the lack of clarity in the relevant basic documents, the Secretary-General seeks the confirmation of the Assembly that the Council is empowered to approve the financial statements for the previous year and the budget estimates and the associated annual work programme for each forthcoming year.

8. The Secretary-General also recommends that the Council at its first meeting agrees an appropriate methodology and a timetable to deal with each year's subsequent financial statements and proposes any adjustments to the relevant basic documents if they are required.

Decisions Requested of the Assembly

9. The Assembly is requested to:

- a. **Approve** the Financial report for 2016 and its recommendation, which is that:

the budget surplus for 2016 of 240k€ be distributed as follows:

- (1) 190k€ to the Capacity Building Fund,

(2) 50k€ to the Internal Retirement Fund.

- b. **Confirm** that the Council is empowered to approve the financial statements for the previous year and the budget estimates and the associated annual work programme for each forthcoming year
- c. **Invite** the Council at its first meeting to consider an appropriate methodology and timetable to deal with each year's subsequent financial statements and to propose any adjustments to the relevant basic documents if required.

Annex A

INTERNATIONAL HYDROGRAPHIC ORGANIZATION
ORGANISATION HYDROGRAPHIQUE INTERNATIONALE



ANNUAL REPORT 2016
RAPPORT ANNUEL 2016

Published by the IHO Secretariat
Publié par le Secrétariat de l'OHI

Foreword to the Finance Report for 2016**Introduction**

1. The Secretary General is pleased to present the statements of the finances and accounts of the IHO for 2016 in accordance with the Financial Regulations of the IHO.

Presentation of the financial statements

2. The financial statements are presented in accordance with applicable International Accounting Standards.

Result for the year

3. The audited financial statements indicate a positive result for 2016 of 280,796.25€ (see Table 10 (English) and 11 (French)). This result comprises a surplus of 241k€ from the budget implementation, a net extraordinary income of 26k€ and the inclusion of depreciable assets of 13k€.

Budget implementation

4. The budget implementation surplus of 241k€ comprises an unanticipated additional income of 53k€ and an underspend of 194k€ in the approved budget.

5. The main sources of unanticipated additional income are:

- a. Contribution from a Member State that was facing suspension and therefore not anticipated in the approved budget: 20k€;
- b. a better return on investments than was anticipated in the approved budget: 45k€.

6. The underspend (194k€) is due to the following reasons:

- a. **Staff expenditure (159 k€).** An increase in the Monaco cost of living of 2% was included in the approved budget, based on historical increases, but the increase actually declared by the Monaco Government was much less. This resulted in a surplus in the salary budget of 18k€. A surplus of 107k€ was due to the late recruiting of the Technical Standards Support Officer (October instead of January). Additional surpluses (6.2k€) arose because staff training expenses were less than budgeted. Medical costs were 18.5k€ less than budgeted, as a result of negotiated improved rates of reimbursement from the medical insurance cover. Unanticipated changes in the situation of some members of staff resulted in savings in home leave expenses (8.2k€).
- b. **IT and building maintenance (4k€).** Following negotiations with service providers, savings were achieved in IT and building maintenance, which resulted in less expenditure than was allocated in the budget.
- c. **Travel expenses (35 k€).** Travel expenses were less than anticipated in the budget because several planned high level visits and technical visits could not be carried out in some countries and changes in venue for some meetings and careful choices in travel arrangements resulted in a reduction of some planned costs.

Extraordinary income and expenditure

7. The extraordinary income (26k€ - see table 3) is composed of the payment of contribution arrears by several Member States and the administration fee provided by donors for some CBF activities.

A.1/F/04
Annex A

Supplementary remarks

Outstanding financial contributions from some Member States

8. When assessing the positive balance sheet result it should be noted that several Member States failed to pay their annual financial contributions. At the end of the year, 13 Member States had not paid fully their annual contributions. This amounted to 294k€, which is, in effect, income for 2016 yet to be received. This represents 9% of the total value of the expected Member States' contributions and compares with 11% for 2015 and 9% for the 5-year average. When these debts are eventually cleared, they will be reflected in the relevant yearly accounts as unanticipated additional income, as has been the case in 2016. Accordingly, and has been the practice in all previous years, the outstanding financial contributions are not being subtracted from the effective budget surplus considered in paragraphs 16 to 19.

Internal Retirement Fund

9. The Internal Retirement Fund (IRF) supports the IHO's long-established independent retirement plan (pension scheme) for a number of the longer-serving and retired members of the Secretariat staff. The pensions of ten retired members and one current member of staff are covered by the IRF.

10. The IRF is purposely maintained in low-risk investment accounts. In recent years these accounts have provided a low rate of interest due to a general decrease in global interest rates. The investment sum required at the end of 2016 to meet the estimated liabilities of the IRF over its lifetime, increased by 466,649€ to 3,726,557€. This results in a shortfall of 680,079€ (-18.25%).

11. The estimated liability on the IRF is calculated and adjusted every year using an actuarial assessment. It is dependent on several factors that are very difficult to predict including the estimate of long-term interest rates, and the longevity of the pensioners in the relatively small cohort of beneficiaries of the pension scheme.

12. In 2016 and 2017 an allocation to the IRF of 65k€ has been made in order to ensure that the level of the IRF remains reasonably balanced against its estimated liability. This allocation to the IRF has been made specifically to take into account the additional liabilities that may arise as a result of changes to the Staff Regulations in 2017, whereby the personalized retirement plans of several more members of staff are now underwritten by the IHO, in conformance with similar arrangements for employees in the Monaco Civil Service. It also takes into account the additional liability for the member of staff who chose to have a pension equivalent to the Caisse Autonome de Retraites (CAR) of Monaco paid by the IHO upon retirement. An allocation to the IRF of 70k€ per year is included in the proposed budget for the next triennial period 2017-2020.

13. Taking into account the long-term nature and variability of the estimate of the liability on the IRF, it is considered that the current and proposed allocations to the IRF will be sufficient to ensure that the most recent increase between the estimated liability and the value of the fund will be reduced progressively, in time to meet the obligations of the fund.

Capacity Building Fund

14. In 2016 the Capacity Building Fund (CBF) provided direct support to training activities as well as supporting the attendance of participants at various technical workshops and seminars. In addition to the funds provided by the Nippon Foundation in 2014 and allocated for the CHART (Cartography, Hydrography and Related Training) Project in 2016 (195k€), the CBF received 300k€ in external support from the Republic of Korea. Discounting the activities that were approved, but for which there was no budget available, 91% of the technical visits, and 100% of the other assignments in the Capacity Building Work Programme were completed in 2016.

Other Funds

15. **Relocation Fund.** The Relocation Fund is in a healthy position to meet all anticipated expenditure of the relocation of internationally recruited members of staff upon their joining or leaving the IHO Secretariat over the next few years without any need to adjust the budget forecast.

16. **Conference Fund** The contribution to the Conference Fund from the annual budget may need to be reviewed in the future as a result of the entry into force of the revised Convention on the IHO and the requirement for an annual meeting of the IHO Council that may incur additional administration and hosting expenses associated with the meetings, compared to the current regime.

17. **Special Projects Fund.** At the end of the year, the value of the Special Projects Fund was 85,902€. In 2016 the principal use of the Fund was for contract support for S-100 development activities and to cover the travel expenses of members of the International Board of Standards of Competence (IBSC) responsible for developing a new Standards framework to separate the competency requirements of the Cat A and Cat B syllabi.

18. **IBSC Fund.** The IBSC Fund was established in 2010. At the request of the Fédération Internationale des Géomètres (FIG) Secretariat which had administered the Fund on behalf of the IBSC since its establishment, the IHO Secretariat, as secretary of the IBSC, took over the role of treasurer of the Fund in 2015. The Fund holds the income generated by the IBSC through its fees structure, and supports the normal operations of the IBSC that is jointly operated and governed by the IHO, the FIG, and the International Cartographic Association (ICA). The balance of the fund on 1 January 2016 was 16,542.99€. An amount of 32,558.70€ was received in fees from institutions seeking recognition by IBSC, and 13 775.87€ was spent on travel expenses for the Board members to attend meetings. The Fund is in a healthy financial situation, and is self-sufficient, with a positive balance at the end of 2016 of 18,782.83€.

Proposal for allocation of the 2016 budget surplus

19. As indicated above and reported in the audited financial statements, the effective budget surplus for 2016 was 241k€.

20. The Secretary-General considers that the Capacity Building Fund is of crucial value to the Member States and should be given priority in the disbursement of the budget surplus for 2016. Some of the activities in the 2017 CB Work Programme are as yet unfunded, to a value of 301k€.

21. In order to maintain the level of the IRF to broadly match its estimated and potential liabilities for the current and prospective retirees, an allocation from the budget surplus is considered appropriate and prudent (see paragraph 10).

22. **Proposal.** The Secretary-General proposes that the budget surplus for 2016 of 241k€ be distributed as follows:

- a. 191k€ to the Capacity Building Fund
- b. 50k€ to the Internal Retirement Fund

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Conclusion

23. The Secretary-General is ever mindful of the difficulty in forecasting the income of the Organization, due to non or late payment of financial contributions by Member States and other factors, but by continuing to take a conservative approach to the budget and finances of the Organization, he remains confident in the financial situation of the IHO and its ability to meet all its current obligations.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Robert Ward', with a stylized flourish at the end.

Robert WARD
Secretary-General

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Table 1

International Hydrographic Organization - Organisation Hydrographique Internationale
Comparative Balance Sheet - Bilans comparés
as of 31 December 2016 - au 31 décembre 2016
(expressed in thousands of Euros - exprimé en milliers d'Euros)

	See notes	2016	2015
Immobilisations - Fixed assets			
<i>Valeur nette des immobilisations - Net Tangible assets</i>	4	78	86
Actif circulant - Current assets			
<i>Débiteurs - Debtors</i>	5	433	473
<i>Trésorerie disponible</i>			
<i>Cash at bank and in hand :</i>	10	5 193	5 415
		<u>5 626</u>	<u>5 888</u>
<i>Créditeurs - montants à moins d'1 an</i>			
<i>Creditors - amounts falling due within 1 year</i>	6	-1 758	-1 318
		<u>3 868</u>	<u>4 571</u>
Fonds de roulement - Working capital			
<i>Engagements pour les retraites</i>	7	4 379	3 854
Pension commitments		<u>-1 379</u>	<u>-3 854</u>
		0	0
<i>Actif net - Net assets</i>		<u><u>3 945</u></u>	<u><u>4 656</u></u>
Réserves - Reserves			
<i>Capitaux permanents de l'OH1 - Accumulated surplus</i>		2 391	2 838
<i>Autres réserves - Other reserves</i>	819	<u>1 555</u>	<u>1 818</u>
		<u><u>3 945</u></u>	<u><u>4 656</u></u>

Table 2

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International Hydrographic Organization - Organisation Hydrographique Internationale
Comparative Global Income and Expenditure - Charges et revenus comparés
 as of 31 December 2016 - au 31 décembre 2016
 (expressed in thousands of Euros - exprimé en milliers d'Euros)

	2016	2015
Revenus - Income	3 182	3 138
Charges opérationnelles - Operating costs	<u>-2 748</u>	<u>-2 696</u>
Résultat opérationnel - Operating result	434	442
Intérêts reçus - Interest received	105	98
Équipement de bureau - Office equipment	-13	-39
Charges financières - Financial costs	-56	-59
Dotations aux fonds dédiés - Transfer to dedicated funds	-158	-103
Résultat annuel - Result for the year	<u>281</u>	<u>339</u>

Etat d'évolution du financement permanent
Statement of changes in permanent funding

	Capitaux permanents de l'OHI Net members funds	Réserve de réévaluation Revaluation Reserve	Autres réserves Other reserves (note 9)	Total
Montants au 1er Janvier 2016 - Available on 1 January 2016	2 838		2	2 840
Résultat de l'année - Result for the year	281		-	281
Evolution des fonds dédiés - Evolution of dedicated funds:				
- Dépensé à partir des fonds dédiés - Spent from dedicated funds			1 553	1 553
- Fonds de retraite interne - Internal Retirement Fund	-34		-	-34
- Fonds pour le déménagement des directeurs - Relocation Fund			-	
- Fonds pour les conférences - Conference Fund			-	
- Fonds pour le Renforcement des Capacités - CB Fund	-200		-	-200
- Fonds pour les Projets spéciaux - Special Projects Fund	-30		-	-30
Mouvements dans l'année - Movements in the year (provisions) :				
- Provision États membres - Provision Member States				
- Variation provision du PRI - Changes in IRF requirements	-162		-	-162
- Dotation du fonds de réserve d'urgence - Allocation to Emergency Reserve Fund	-1		-	-1
Montants au 31 Décembre 2016 - Available at 31 December 2016	2 391		1 555	3 945

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Table 3

International Hydrographic Organization - Organisation Hydrographique Internationale
Profit and Loss Statement - Compte d'exploitation
 as of 31 December 2016 - au 31 décembre 2016
 (expressed in thousands of Euros - exprimé en milliers d'Euros)

	2016	2015
Revenus - Income		
<i>Contributions des Etats Membres</i> - Contributions from Member States	2 986	2 933
<i>Imposition interne</i> - Internal tax	170	171
<i>Ventes de publications</i> - Sales of publications		
<i>Revenus et dépenses exceptionnelles</i> - Exceptional income and expenditure	26	34
	<hr/>	<hr/>
	3 182	3 138
Revenus financiers - Interest received		
<i>Intérêts des placements</i> - bank interest	105	92
<i>Intérêts sur contributions échues</i> - Interest on overdue contributions		6
	<hr/>	<hr/>
	105	6
Charges opérationnelles - Operating costs		
<i>Charges de personnel</i> - Personnel costs	2 274	2 243
<i>Déplacements</i> - Long Distance Travel	250	232
<i>Entretien des locaux et équipements</i> - Maintenance of premises and equipment	101	90
<i>Postes et télécommunications</i> - Postage and telephone	32	31
<i>Assistance technique</i> - Technical support	17	14
<i>Consultants</i> - Consultancy	15	1
<i>Autres publications</i> - Other publications	1	2
<i>Revue H.I. - I.II Review</i>	10	10
<i>Autres coûts opérationnels</i> - Other operating costs	15	16
<i>Fournitures de bureau</i> - Office stationery	9	10
<i>Relations publiques</i> - Public relations	13	16
<i>Charges diverses</i> - Miscellaneous	1	2
	<hr/>	<hr/>
	-2 748	-2 696
Matériel de bureau - Office equipment		
<i>Amortissement des immobilisations</i> - Depreciation	22	23
<i>Autres achats</i> - Other purchases	22	16
	<hr/>	<hr/>
	-43	-39
Charges financières - Financial costs		
<i>Créances douteuses</i> - Bad debts	56	59
	<hr/>	<hr/>
	-56	-59
Dotations aux fonds dédiés - Allocation to dedicated funds	-158	-103
Résultat net annuel - Result for the year	<hr/> 281 <hr/>	<hr/> 339 <hr/>

Table 4

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International Hydrographic Organization - Organisation Hydrographique Internationale
Cash Flow Statement - Etat de flux financiers
as of 31 December 2016 - au 31 décembre 2016
(expressed in thousands of Euros - exprimé en milliers d'Euros)

	2016	2015
Cash Flow opérationnel - from operating activities		
<i>Résultat opérationnel de l'année - Result for the year</i>	281	339
<i>Ajustements pour - Adjustments for :</i>		
<i>Dépréciation des immobilisations - Depreciation</i>	22	23
<i>Cession d'immobilisations - Sale of fixed assets</i>		0
<i>Provision du PRI - IRF provision</i>		0
<i>Variation des réserves - Change in reserves</i>		0
<i>Intérêts bancaires - Bank interest</i>	-105	-92
<i>Charges financières - Financial expenditure</i>		0
	<hr/>	<hr/>
<i>Résultat avant variation du fonds de roulement</i>	-83	-69
<i>Result before working capital changes</i>	198	269
<i>Variation des débiteurs - Change in accounts receivable</i>	40	-21
<i>Variation des créditeurs - Change in accounts payable</i>	-140	11
	<hr/>	<hr/>
	-100	-11
<i>Flux financier opérationnel - Operating cash flow</i>	-202	259
<i>Intérêts réglés - Interest paid</i>	0	0
<i>Ajustement du Fonds de retraite - Retirement fund adjustment</i>	467	93
	<hr/>	<hr/>
	467	93
<i>Flux financier opérationnel net - Net cash from operating activities</i>	265	352
Flux financier des investissements		
Cash flow from investing activities		
<i>Achats d'immobilisations - Purchase of fixed assets</i>	-13	-34
<i>Cessions d'immobilisations - Sale of fixed assets</i>	0	0
<i>Intérêts reçus - Interest received</i>	105	92
	<hr/>	<hr/>
<i>Flux net des opérations d'investissement</i>	91	58
<i>Net cash movement from investment activities</i>		
	<hr/>	<hr/>
Total des flux financiers - Total cash flows	356	410
<i>Disponibilités au 1er janvier de l'année</i>		
Cash at 1st January of the year	8 730	8 320
<i>Disponibilités au 31 décembre de l'année</i>		
Cash at 31st December of the year	Euros 9 086	Euros 8 730

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Table 5

International Hydrographic Organization - Organisation Hydrographique Internationale
Budget Implementation Summary - Compte rendu de l'exécution budgétaire
 as of 31 December 2016 - au 31 décembre 2016
 (expressed in thousands of Euros - exprimé en milliers d'Euros)

	2016		
	Budget	Actual - Réel	Variance
Revenus - Income			
<i>Contributions des Etats Membres</i> - Contributions from Members States	2 966	2 986	-20
<i>Imposition interne</i> - Internal tax	181	170	11
<i>Intérêts bancaires</i> - Bank interest	60	105	-45
<i>Intérêts sur contributions échues</i> - Interest on overdue contributions			
	3 207	3 260	-53
Charges opérationnelles - Operating costs			
<i>Charges de personnel</i> - Personnel costs	2 434	2 274	159
<i>Déplacements</i> - Long Distance Travel	265	230	35
<i>Entretien</i> - Maintenance	105	101	4
<i>Postes et télécommunications</i> - Postage and telephone	34	32	2
<i>Assistance technique</i> - Technical support	50	47	3
<i>Consultants</i> - Consultancy	10	15	-5
<i>Autres publications</i> - Other publications	2	1	
<i>Revue HI</i> - I.II Review	10	10	
<i>Autres coûts opérationnels</i> - Other operating costs	17	15	1
<i>Fournitures de bureau</i> - Office stationery	8	9	-1
<i>Relations publiques</i> - Public relations	12	13	-1
<i>Charges diverses</i> - Miscellaneous	1	1	
	2 947	2 748	199
Dépenses d'investissement - Capital expenditure			
<i>Amortissement</i> - Depreciation	15	22	-7
<i>Autres achats</i> - Other purchases	12	22	-10
	27	43	-17
Autres Dépenses d'investissement (>762€) - Other Capital expenditure (over 762€)			
<i>Achat d'équipement informatique</i> - Purchase of IT equipment	15	13	2
<i>Achat de mobilier</i> - Purchase of furniture	10		10
	25	13	12
Charges financières - Financial costs			
	50	56	-6
	158	400	-241

Table 6

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International Hydrographic Organization - Organisation Hydrographique Internationale
Overdue Contributions - Contributions échues
as of 31 December 2016 - au 31 décembre 2016
(expresses in thousands of Euros - exprimé en milliers d'Euros)

	2016	2015	2014	Interest	Depreciation **	Total
Cameroon - Cameroun	8	8	8	1,0	-1,0	24
Colombia - Colombie	12	12				24
D.P.R. of Korea - Rép.Pop.Dém. de Corée	20			4,8	-4,8	20
Ecuador - Equateur	1					1
Egypt - Egypte	4					4
India - Inde	72					72
Iran (Islamic Rep. of)-Iran (Rép. islamique d')	52	28		4,3	-4,3	80
Kuwait - Koweït	40					40
Mozambique - Mozambique	8	5		3,1	-3,1	13
Qatar - Qatar	24					24
Syrian Arab Republic - Rép. arabe syrienne	20			2,4	-2,4	20
Tonga - Tonga	8	8				16
Venezuela - Venezuela	24					24
	294	61	8	16	-16	363

Suspended IHO Member States	Outstanding Contributions	Interests due	Depreciation	Balance
Etats Membres de l'OHI suspendus	Contributions arriérées	Intérêts dus	Dépréciations	Solde
Dominican Republic - République dominicaine	6,3	0,8	-7,1	0,0
Dem. Rep. of the Congo - Rép. démocratique du Congo	8,8	1,0	-9,8	0,0
Serbia - Serbie	24,0	2,8	-26,8	0,0
	39,1	4,6	-43,7	0,0

** See note 1 c

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ANNEX A International Hydrographic Organization - Organisation Hydrographique Internationale
Table 7
Creditors - Créditeurs
as of 31 December 2016 - au 31 décembre 2016
(expressed in thousands of Euros - exprimé en milliers d'Euros)

<u>Contributions reçues d'avance</u>	<i>Reçues en 2016 pour les prochaines contributions</i>	<i>Reçues en 2015 pour les prochaines contributions</i>
Contributions received in advance	Received in 2016 for future contributions	Received in 2015 for future contributions
Algeria - Algérie	0	24
Australia - Australie	32	32
Belgium - Belgique	48	48
Bangladesh - Bangladesh	24	24
Brazil - Brésil	44	44
Cyprus - Chypre	97	97
Estonia - Estonie	16	16
Finland - Finlande	4	32
France - France	57	57
Iceland - Islande	12	12
Ireland - Irlande	12	12
Latvia - Lettonie	16	16
Mauritius - Maurice	12	12
Mexico - Mexique	40	40
Montenegro - Montenegro	2	0
Morocco - Maroc	16	16
Myanmar - Myanmar	20	0
Netherlands - Pays-Bas	0	65
New Zealand - Nouvelle-Zélande	12	12
Nigeria - Nigeria	20	0
Oman - Oman	8	8
Pakistan - Pakistan	16	16
Papua New Guinea - Papouasie Nouvelle Guinée	12	0
Poland - Pologne	12	12
Portugal - Portugal	28	28
Romania - Roumanie	12	12
Russian Federation - Fédération de Russie	22	0
Saudi Arabia - Arabie saoudite	0	32
Singapore - Singapour	109	109
South Africa - Afrique du Sud	12	12
Suriname - Suriname	8	8
Sweden - Suède	48	48
Thailand - Thaïlande	44	44
Turkey - Turquie	61	61
United Kingdom - Royaume-Uni	109	109
Uruguay - Uruguay	20	32
	1 005	1 090
<u>Créditeurs et charges à payer - Creditors and accruals</u>		
Plan de pensions - Pensions plan payments	-4	48
Charges à payer - Accruals	56	65
Autres crédateurs - Other	21	14
	73	126

International Hydrographic Organization - Organisation Hydrographique Internationale
Notes to the Financial Statements - Notes relatives aux états financiers
 as of 31 December 2016 - au 31 décembre 2016
 (expressed in thousands of Euros - exprimé en milliers d'Euros)

1 Principes comptables - Accounting Policies

(a) Principes comptables de base - Basis of accounting

Les états financiers sont préparés selon la méthode du coût historique ainsi que selon les normes comptables internationales (IAS / IFRS).

The financial statements are prepared under the historical cost principle and in accordance with applicable International Accounting Standards.

(b) Revenus - Income

Les revenus proviennent essentiellement des contributions des Etats membres de l'OHI.

Income principally represents contributions receivable from Member States.

(c) Contributions échues - Overdue contributions

Conformément à l'article 13 du règlement financier, l'OHI décompte un intérêt à raison de 1% par mois de retard sur les contributions échues. Les droits et prérogatives d'un Etat membre peuvent se trouver suspendus lorsque ces contributions sont échues depuis au moins 2 années (cf. art. 16 du règlement financier de l'OHI). A compter de 2013, une provision complémentaire pour créances douteuses est instituée, afin de refléter les incertitudes géopolitiques de certains Etats membres.

Depuis 2015, une provision supplémentaire est constituée qui couvre les intérêts de retard non réglés par les Etats membres ayant soldé leurs arriérés de contribution.

In accordance with Article 13 of the Financial Regulations, the IHO charges interests at the rate of 1 % per month on overdue contributions.

Member States can be suspended when contributions are in arrears by at least two years (see Art. 16 of the IHO Financial Regulations).

From 2013, an additional provision for bad debts has been made, in order to reflect geopolitical uncertainties of some of the Member States.

From 2015, an additional provision has been made to account for the interest charges due from the Member States that settled their contributions in arrears.

(d) Amortissement des immobilisations - Depreciation of tangible assets

Il est pratiqué un amortissement sur toutes les immobilisations (d'un prix unitaire supérieur à 762 Euros) à hauteur de la valeur totale de l'immobilisation sur sa probable durée d'utilisation selon les taux suivants :

Mobilier - 20 % du coût par année (sur 5 années)

Equipement informatique - 33,33 % du coût par année (sur 3 années).

Provision is made for depreciation of all tangible assets (over 762 Euros in value per article) at rates calculated to write off the cost or valuation over its expected useful life as follows :

Furniture - 20% per annum on cost (5 years)

IT equipment - 33.33% per annum on cost (3 years).

(e) Transactions en devises - Foreign currencies

En cours d'année, les transactions libellées en devises sont converties en Euros au taux de change en vigueur à la date de la transaction.

En fin d'année, les dettes et disponibilités libellées en devises sont converties en Euros au taux de change à la date d'établissement du bilan. Les pertes et gains de change sont enregistrés dans le compte de résultat.

During the year, transactions denominated in foreign currencies were converted into Euros at the rate of exchange ruling at the date of the transaction.

At the end of the year, current assets and liabilities denominated in foreign currencies were converted at the rate of exchange ruling at the balance sheet date.

Profit and losses on exchange are dealt with in the profit and loss account.

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Table 8

(f) Fonds de retraite - Retirement fund

L'OIII gère un fonds de pension dénommé Fonds de retraite interne (FRI).

Un membre du personnel actif et 10 retraités sont concernés par ce fonds.

La totalité des avoirs destinés à couvrir les engagements de ce fonds sont l'objet de comptes bancaires spécifiques sous forme de comptes de dépôt à terme.

L'Organisation retient l'intégralité de l'engagement déterminé sur la base de l'estimation d'une étude actuarielle (voir note 7). A compter de l'année 2005, les pensions ont été réglées à partir des avoirs du FRI, au lieu d'être réglées à partir du budget de l'OIII, comme ce fut le cas de 2000 à 2004.

The Organization operates a benefit pension scheme known as the Internal Retirement

Fund (IRF). One current staff member and 10 retirees are covered by this fund.

A proportion of the assets held to meet the pension liability are held in designated bank accounts and investments.

The Organization makes full provision for the estimated liability based on actuarial valuation (see note 7).

From 2005, pensions have been paid from dedicated IRF accounts as opposed to a payment from the IHO budget as in previous years (from 2000 to 2004).

g) Réserve de trésorerie opérationnelle et Fonds de réserve d'urgence**Operating Cash Reserve and Emergency Reserve Fund**

L'article 17 du règlement financier indique que le Secrétariat disposera à la fin de chaque année d'une réserve de trésorerie opérationnelle, dont le montant sera d'au moins 3/12èmes du budget opérationnel annuel.

L'article 18 du règlement financier indique que le montant du fonds de réserve ne sera pas inférieur à 1/12ème du budget opérationnel annuel (voir note 10).

Article 17 of the Financial Regulations indicates that the Secretariat will have at its disposal by the end of each year an amount of operating cash reserve, which will correspond to at least 3/12th of the annual operating budget.

According to Article 18 of the Financial Regulations the Emergency Reserve Fund shall not be less than 1/12th of the annual operating budget (see note 10).

h) Évolution ou changement de procédures internes - Evolution or changes of internal procedures

A compter de 2007, et en accord avec le commissaire aux comptes, les procédures internes ont évolué dans 2 domaines :

- pour l'amortissement des immobilisations, le Secrétariat retient maintenant la date d'acquisition de l'immobilisation au lieu de commencer à constater l'amortissement à partir du début de l'année suivante.

- les dotations aux fonds dédiés (Conférences, déménagement des directeurs, projets spéciaux, fonds pour le renforcement des capacités, fonds de rénovation et d'amélioration et fonds pour la GIBCCO) sont dotées à partir du budget.

From 2007, and in agreement with the independent auditor, internal procedures have been developed in 2 areas:

- regarding the depreciation of fixed assets, the Secretariat now depreciates these assets from the date of acquisition of the asset, as opposed to starting the depreciation the year following that date.

- Allocations to dedicated funds (Conference Fund, Relocation Fund, Special Project Fund, Capacity Building Fund, Renovation and Enhancement Fund & GIBCCO Fund) are included in the budget.

2 Information relative au personnel - Employee Information

2016

2015

Charges de personnel - Personnel costs :

Secrétaire général et directeurs - Secretary general and directors	478	468
Salaires du personnel - Salaries to Staff Members	1 214	1 237
Cotisations aux régimes de retraite - Payment to retirement funds	342	346
Primes d'assurance - Medical insurance costs	122	117
Allocations au personnel - Allowances	40	49
Autres charges de personnel - Other staff expenses	43	27
Personnel temporaire - Temporary staff	36	0
Formation - Training	1	0
	<u>2 274</u>	<u>2 243</u>

L'effectif moyen annuel se décompose comme suit :

The average number of employees during the year was made up as follows :

Table 8

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<i>Secrétaire général et directeurs</i> - Secretary general and directors	3	3
<i>Personnel de cat. A</i> - Category A Staff	5	5
<i>Personnel de cat B</i> - Category B Staff	11	11
	<u>19</u>	<u>19</u>

3 Imposition du résultat - Taxation

Selon l'accord conclu entre l'OHI et le Gouvernement de la Principauté de Monaco, les résultats de l'activité de l'Organisation sont exempts d'imposition.

According to the agreement between the IHO and the Government of the Principality of Monaco, the Organization is exempt from direct taxation.

4 Immobilisations - Tangible Fixed Assets

	<i>Mobilier & Instruments</i> Furniture & Instruments	<i>Biblio-thèque</i> Library	Total
Valeurs d'acquisition - Cost			
<i>Au 1er janvier de l'année</i> - At 1 January 2016	290	37	326
<i>Solde des mouvements de l'année</i> - Net change during the year *	13	0	13
<i>Au 31 décembre de l'année</i> - At 31 December 2016	<u>303</u>	<u>37</u>	<u>339</u>
<i>* Achats moins mises au rebut</i> - Purchases less scrapping of equipment			
Amortissements - Depreciation			
<i>Au 1er janvier de l'année</i> - At 1 January 2016	-240	0	-240
<i>Amortissements de l'année</i> - Depreciation for the year	-22	0	-22
	<u>-262</u>	<u>0</u>	<u>-262</u>
Valeur nette - Net book value			
<i>Au 31 décembre de l'année n-1</i> - At 31 December of previous year	49	37	86
<i>Au 31 décembre de l'année n</i> - At 31 December of current year	<u>41</u>	<u>37</u>	<u>78</u>
5 Débiteurs - Debtors			
	2016		2015
<i>Contributions restant dues (nettes de provision)</i> Overdue contributions less provision	280		299
<i>TVA récupérable</i> - VAT recoverable	54		38
<i>Avances au personnel et charges constatées d'avance</i> Prepayments and Staff advances	99		135
	<u>433</u>		<u>473</u>
6 Crédoiteurs - Creditors			
	2016		2015
<i>Contributions reçues en avance</i> - Prepaid contributions	1 005		1 090
<i>Garantie au FRI</i> - Guaranty to the IRF	680		102
<i>Crédoiteurs et charges à payer</i> - Creditors and accruals	73		126
	<u>1 758</u>		<u>1 318</u>

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Table 8

7 Engagements pour la retraite - Pension Commitments	2016	2015
- Dépôts à terme du FRI - TRF Bank deposits	3 046	3 158
- Disponibilités banque SMC - SMC Bank deposits	653	594
	3 699	3 752
- Garantie du Secrétariat - Secretariat Guaranty	680	102
- Estimation de l'engagement de retraite du personnel Estimated net liabilities for existing and former Staff Members	4 379	3 854
8 Fonds dédiés (pour des opérations ultérieures) Dedicated funds for future operations	2016	2015
- Fonds pour les conférences - Conference Fund	374	360
- Fonds de déménagement - Relocation Fund	283	288
- Fonds de rénovation et d'amélioration - Renovation and Enhancement Fund	79	80
- Fonds pour le renforcement des capacités - Capacity Building Fund	214	543
- Fonds pour les projets spéciaux - Special Projects Fund	86	68
- Fonds pour la GEBCO - GEBCO Fund	212	186
- Fonds de la bibliothèque de présentation - Presentation Library Fund	32	22
- Fonds pour la conférence ABLOS - ABLOS Conference Fund	0	0
- Fonds IBSC - IBSC Fund	19	17
9 Réserves - Reserves		
- Fonds de réserve d'urgence - Emergency Reserve Fund	255	254
	1 555	1 818
10 Réserve de trésorerie en fin d'année - End of Year Cash Reserve	2016	2015
<i>Le montant de trésorerie de fin d'année est un indicateur très utile pour illustrer la solvabilité de l'Organisation, et sa capacité à poursuivre ses opérations durant les 3 mois de l'année suivante (13 semaines). Un mois supplémentaire se trouve requis pour le fonds de Réserve d'urgence, ce qui signifie un total de 17 semaines.</i>		
<i>The end-of-year cash reserve is a very useful indicator of the liquidity of the Organization, and its ability to continue operations in the new year. It should be sufficient for 3 months operations (13 weeks).</i>		
<i>In addition, a further 1 month is required for the Emergency Reserve Fund; this means a total of 17 weeks.</i>		
Trésorerie de l'OIII - IHO Cash balances	5 193	5 415
<i>(dont positions financières en devises - voir note 11 - including foreign exchange holdings - see note 11)</i>		
<i>Moins - Less</i>		
- Contributions de l'année suivante - Contributions received in advance	-1 005	-1 090
- Valeur des fonds dédiés - Dedicated funds	-1 299	-1 564
	2 889	2 761
- Garantie en faveur du FRI - Guaranty to the TRF	-680	-102
- Trésorerie disponible - Net available Cash	2 209 *	2 658
* 36 semaines de fonctionnement		36 weeks of operations
Total du budget de l'année suivante (2017) - Total budget for 2017 :	3 066	<i>(hors fonds dédiés)</i>
<i>- Besoins financiers totaux (Art.17 & 18) - 17 semaines</i>		
Total IHO financial requirements (Art. 17 & 18) - 17 weeks		
<i>Art.17 Réserve de trésorerie opérationnelle (3 mois) :</i>		
Art.17 Operating Cash Reserve (3 months) :	-766	
<i>Art.18 Fonds de réserve d'urgence (1 mois) :</i>		
Art.18 Emergency Reserve Fund (1 month) :	-255	
	1 187	<i>Excédent de trésorerie disponible</i> Cash surplus

Table 8

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ANNEX A**11 Positions financières en devises - Foreign Exchange Holdings** 2016 2015*Les disponibilités financières comportent des positions en devises étrangères.**Pour information, la valeur en milliers d'Euros de ces positions en devises en fin d'année sont :*

The Cash balances include financial availabilities held in foreign currencies.

For information, the value in thousands of Euros of foreign currencies held at the end of each year was :

- Positions en USD - USD holdings	122	1
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Ces positions en devises sont sujettes à revalorisation, en fonction de la variation des taux de change.

These holdings are liable to re-valuation, according to exchange rates fluctuations.

12 Engagements de caution - Garantie commitments*Personne visée: Monsieur Kentaro KANEIDA, détaché du service des gardes-côtes japonais auprès du BTH, en qualité de locataire de son domicile**Objet: caution solidaire du locataire portant sur paiement du loyer mensuel de 1 400€**Durée du bail: 3 ans (01/03/2015 - 28/02/2018)*Person concerned: Mr. Kentaro KANEIDA, seconded by the Japan Coast Guard to the BTH ,
as Lessee of his apartment

Subject: surety on the tenant's monthly rent payment of €1,400

Length: Length of lease: 3 years (01/03/2015 - 28/02/2018)

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Table 9

FUNDS (Euros)
FONDS (Euros)**CONFERENCE FUND - Fonds pour les Conférences**

The Conference Fund allows the expenses linked to the Int. Hydrographic Conference/Assembly to be met.
Le fonds pour les Conférences permet la couverture des dépenses de la Conférence hydrographique internationale/de l'Assemblée.

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	360 337,99 €
Budget Allocation 2016 - <i>Dotation budgétaire pour 2016</i>	20 000,00
Expenditure - <i>Dépenses</i>	-6 697,25
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	<u>373 640,74 €</u>

RENOVATION AND ENHANCEMENT FUND - Fonds de rénovation et d'amélioration

The renovation fund is maintained in order to meet any major expenses incurred for modification or renovation purposes of the building, in relation to those expenses not covered by the Government of the Principality of Monaco.
Le fonds de rénovation est maintenu pour couvrir toute dépense importante de modification ou de rénovation des locaux, dont le financement ne serait pas assuré par le Gouvernement de la Principauté de Monaco.

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	80 489,46
Expenditure - <i>Dépenses</i>	-1 197,15
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	<u>79 292,31 €</u>

RELOCATION FUND - Fonds pour le déménagement des directeurs

This fund is intended to cover the removal and relocation expenses for the internationally recruited members of staff.
Ce fonds est destiné à couvrir les dépenses de déménagement des membres du personnel recrutés sur le plan international.

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	288 354,36
Expenditure - <i>Dépenses</i>	-5 213,32
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	<u>283 141,04 €</u>

ABLLOS CONFERENCE FUND - Fonds pour les conférences ABLLOS

The ABLLOS Fund supports the operational costs for the ABLLOS conference which is held every other year.
Le fonds ABLLOS couvre les dépenses d'une conférence qui se tient tous les 2 ans.

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	-46,19
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	<u>-16,19 €</u>

GEBCO FUND - Fonds pour la Carte Générale Bathymétrique des Océans

This fund was created in 2002 to support approved GEBCO project activities and includes the subventions received every year from the Government of the Principality of Monaco and any other supporting benefactors.
Ce fonds a été créé en 2002 pour couvrir les activités liées à la GEBCO (recettes et dépenses), et inclut les subventions reçues chaque année du Gouvernement de la Principauté de Monaco et d'autres bienfaiteurs.

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	185 682,71
--	------------

Table 9

<u>Income - Revenus :</u>	
Budget Allocation 2016 - <i>Dotation budgétaire pour 2016</i>	8 200,00
Subvention from the Government of Monaco - <i>Subvention reçue du Gouvernement de Monaco</i>	8 300,00
GIBCO Digital Atlas	1 242,00
Transfer from Nippon Foundation - <i>Transfert de la Nippon Foundation</i>	1 575 279,62
<u>Expenses - Dépenses :</u>	
Financial assistance to attend GIBCO meetings - <i>Assistance financière à des participants</i>	-38 827,76
University of New Hampshire 2017-2018-2019 - <i>Université du New Hampshire 2017-2018-2019</i>	-1 152 105,41
Future of the Ocean Floor Forum	-376 159,12
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	211 612,01 €

PRESENTATION LIBRARY FUND - Fonds pour la bibliothèque de présentation

This fund is dedicated to the maintenance of a specific publication (S-52 Annex A - *IHO Presentation Library for ECDIS*). During its 6th meeting, the Hydrographic Services and Standards Committee endorsed the continuation of the fund and recommended that the fund be used to support further development of the portrayal component of the new S-100 based generation of standards [1].

Ce fonds est dédié à l'évolution d'une publication spécifique (Annexe A à la publication S-52 - bibliothèque de présentation de l'OHI pour les ECDIS). Lors de sa 6^{ème} réunion, le comité des normes et services hydrographiques a approuvé la continuation de ce fonds et a recommandé qu'il soit utilisé pour financer le développement ultérieur de la composante présentation de la nouvelle génération de normes basée sur la S-100 [1].

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	22 279,42
<u>Income - Revenus :</u>	
Sales of the publication "Presentation Library" - <i>Ventes de la publication "Bibliothèque de présentation"</i>	9 722,73
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	32 002,15 €

EMERGENCY RESERVE FUND - Fonds de réserve d'urgence

As announced in ECCL 6/2003, the amount of the Emergency Reserve Fund shall not be less than 1/12th of the annual operating budget.

Conformément à la lettre LCCF 6/2003 approuvée, le montant du fonds de réserve d'urgence ne devra pas être inférieur à 1/12^{ème} du budget opérationnel annuel.

Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	254 037,50
Additional allowance to meet Financial Regulations Art. 13 requirements - <i>Allocation complémentaire pour satisfaire les dispositions de l'article 13 du règlement financier</i>	1 454,17
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	255 491,67 €

INTERNAL RETIREMENT FUND - Fonds de retraite interne (l'IRI)

Amount of social liability on 1st January 2016 - <i>Montant de la dette sociale au 1er janvier 2016</i>	3 259 908,28
Support from 2015 result - <i>Affectation du résultat 2015</i>	34 000,00
Provision 2016 -	65 000,00

The additional support is provided in order to build up the IRF so that it can fund the pensions of the remaining potential IHO pensioners.

In 2015 the IHB received the capital sum from the Personalized Pension Plan from a staff member who elected to take a CAR-equivalent pension. In 2016, the obligation towards this pensioner has been calculated on the same basis as the other pensioners in the IRF, and is now included in the IRF. From 2016, a provision has been included in the annual budget, to be adjusted every year, to cover the additional liabilities of the Staff Members electing to draw a pension equivalent to the CAR, in accordance with article 9.6 of the Staff Regulations edition 8.0.0.

L'affectation du résultat 2015 a été décidée pour alimenter le FRI de telle manière qu'il puisse financer les pensions des derniers retraités potentiels de l'OHI.

En 2015, le BHI a reçu le capital du Plan de Pension Personnalisé d'un membre du personnel éligible à une retraite alignée sur la CAR financée par l'OHI. En 2016, l'engagement envers ce retraité a été calculé sur la même base que les autres retraités du FRI, et est inclus dans le FRI. A partir de 2016, une provision, réévaluée tous les ans, est incluse dans le budget annuel, afin de couvrir les engagements supplémentaires générés par la possibilité pour les membres du

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Table 9

<i>personnel de choisir une pension basée sur la CAR, conformément à l'article 9.6 du Règlement du Personnel édition 8.0.0</i>	
Contributions received from staff - Cotisations reçues (Secrétariat et membres du personnel)	15 537,72
Interest received from Deposit Accounts - Intérêts perçus par le fonds (DEA)	101 398,71
Pensions paid from IRF - Pensions réglées par le fonds (PRI)	-211 806,68
	3 261 088,03
Variation of IRF liability during the year - Variation annuelle de la dette sociale du PRI	462 469,00
Amount of IRF social liability on 31 December 2016 - Montant de la dette sociale du PRI en fin d'année	3 726 557,03 €

CAPACITY BUILDING FUND (CBF) - Fonds pour le renforcement des capacités

Circular Letter 87/2004 defines the CBF "as a support to assist developing countries in building human and institutional capacities for the effective development of hydrographic surveying and nautical charting capabilities needed.

La lettre circulaire 87/2004 définit le CBF comme un soutien visant à aider les pays en voie de développement à établir des capacités humaines et institutionnelles en vue du développement efficace des capacités en levé hydrographiques et en cartographie marine nécessaires.

Amount of fund on 1 January 2016 - Montant du fonds au 1er janvier 2016	542 626,02
Income - Revenus:	
IHO Budget Allocation 2016 - Dotation budgétaire de l'OHI pour 2016	45 000,00
Support from 2015 result - Affectation du résultat 2015	200 000,00
Interest on Japan support - Intérêts perçus sur les fonds du Japon	8 769,26
Support from the Republic of Korea - Soutien reçu de la République de Corée	300 300,00
	1 096 695,28
Expenses - Dépenses:	
Activities supported by the Rep. of Korea - Activités financées par la Rep. de Corée	-353 025,51
Activities supported by Japan - Activités financées par le Japon	-323 158,17
Activities supported by IHO Capacity Building Fund - Activités financées par le fonds de l'OHI	-306 260,48
	-882 444,16
Amount of fund on 31 December 2016 - Montant du fonds au 31 décembre 2016	214 251,12 €

SPECIAL PROJECTS FUND - Fonds pour les projets spéciaux

The Special Projects Fund was established in 2012 to cover various special projects, such as the maintenance or drafting of standards, the editing or updating of complex publications, translations, and particular requirements identified by the Committees and other bodies of the Organization. This fund supports in particular the development of the new generation of S-100 based standards [1].

[1] The current generation of IHO standards supporting ECDIS is based on two main standards which are separate: S-57 which defines the content and the format of ENC and S-52 which specifies the portrayal of ENCs on ECDIS. The new generation of standards based on S-100 has a different structure: S-100 defines the framework and the general principles to be implemented in specific product specifications (such as S-101 for the next ENC generation) which include portrayal rules when applicable.

Le Fonds pour les projets spéciaux a été établi en 2012 pour couvrir différents projets spéciaux, comme la maintenance ou l'établissement de normes, l'édition ou la mise à jour de publications complexes, diverses traductions, et des besoins particuliers identifiés par les comités et groupes de travail de l'Organisation. Ce fond couvre en particulier le développement de la nouvelle génération de normes basées sur la S-100 [1].

[1] La génération actuelle des normes de l'OHI relatives aux ECDIS est basée sur deux normes principales distinctes: la S-57 qui définit le contenu et le format des ENC et la S-52 qui régit la présentation des ENC sur les ECDIS. La nouvelle génération de normes basées sur la S-100 a une structure différente: la S-100 définit le cadre et les principes généraux applicables aux spécifications de produits particuliers (comme la S-101 pour la future génération d'ENC) qui comprennent les règles de présentation éventuellement nécessaires.

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Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	68 037,02
IHO Budget Allocation 2016 - <i>Dotation budgétaire de l'OHI pour 2016</i>	20 000,00
Support from 2015 result - <i>Affectation du résultat 2015</i>	30 000,00
Expenses in relation to WP 3.3.9 - <i>Maintien IHO Publications (C-6, C-47, S-5, S-8)</i>	
<i>Dépenses en connexion avec l'élément 3.3.9 du programme de travail; Maintien des publications OHI</i>	
<i>Travel expenses - Frais de voyages</i>	-32 134,37
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	85 902,65 €
IBSC FUND - FONDS IBSC	
The purpose of the Fund is to support the approved operational expenses of the IBSC. From 2015, the IHO as secretary of the IBSC, took over the role of treasurer of the Fund. <i>Le Fonds sert à couvrir les dépenses opérationnelles autorisées du Comité.</i> <i>A partir de 2015, l'OHI en tant que secrétaire de l'IBSC, a repris le rôle de trésorier du Fonds.</i>	
Amount of fund on 1 January 2016 - <i>Montant du fonds au 1er janvier 2016</i>	16 542,09
Fees levied on institutions seeking recognition by IBSC - <i>Honoraires facturés aux institutions souhaitant obtenir l'homologation IBSC</i>	32 558,70
<i>Travel expenses - Frais de voyages</i>	-13 775,87
Amount of fund on 31 December 2016 - <i>Montant du fonds au 31 décembre 2016</i>	18 782,83 €

The ABLOS, GEBCO and IBSC funds are all operated as part of the consolidated IHO bank accounts.
Les fonds ABLOS, GEBCO et IBSC sont tous gérés par le biais des comptes bancaires consolidés de l'OHI.

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ANNEX ATable 10
COMPARATIVE BALANCE SHEETS 31 DECEMBER 2016 AND 31 DECEMBER 2015

ASSETS	2016	2015	LIABILITIES	2016	2015
I. INTERNAL RETIREMENT FUNDS ASSETS			I. STAFF RETIREMENT FUND LIABILITIES		
Retirement cash invested (IRF)	3 046 477,68	3 157 602,43	Staff Retirement fund (IRF)	1 339 743,03	1 335 563,28
	3 046 477,68	3 157 602,43	Provision to ensure pensions to IRF staff and retirees	2 386 814,00	1 924 345,00
Long term guaranty from IHO funds	680 079,35	102 305,85			
	3 726 557,03	3 259 908,28	Actuarial estimate of liabilities	3 726 557,03	3 259 908,28
Retirement cash invested (External Pension Plans)	652 784,92	594 168,31	Value of External Pension Plans	595 569,53	594 163,20
II. VARIOUS DEBTORS			II. VARIOUS CREDITORS		
Purchases made in advance	5 513,45	7 156,41	NSM Pension plans	36 961,05	0,00
Outstanding bills	10 170,09	38 952,32	A.M.R.R. Complementary Retirement Scheme	16 074,91	47 566,10
Advance to staff	25 189,67	16 259,29	Accruals (outstanding bills, telex, telephone)	56 030,18	64 529,91
Claim for refunding of VAT	54 011,41	38 247,96	Travel claims & wages	1 541,82	2 597,74
Interest from Deposit to be received	57 997,28	73 222,41	Provision for doubtful contributions	126 800,39	86 937,99
Various debtors	0,00		Various creditors	0,00	1 305,00
	152 891,90	173 838,39	Deposits received for Conference (stand)	19 545,00	9 705,00
III. OUTSTANDING CONTRIBUTIONS			Guaranty to the IRF	680 079,35	102 305,85
Contributions for the year	294 666,05	292 127,60		937 032,70	314 947,99
Contributions for previous years	68 299,52	50 402,12	III. FUNDS		
Contributions for suspended MS	39 151,66	39 151,66	Conference Fund	373 660,74	360 357,99
Interest remaining due on contributions	4 606,64	4 606,64	Relocation Fund	283 111,04	288 354,36
	406 723,87	396 289,02	Renovation and Enhancement Fund	79 292,31	80 489,46
IV. FURNITURE AND EQUIPMENT			Capacity Building Fund	214 251,12	542 026,02
Depreciation of assets	302 631,19	289 564,75	Special Projects Fund	35 902,65	68 037,02
	-261 653,28	-240 068,45	GLBCCO fund	211 612,04	185 682,71
V. LIBRARY			Presentation Library Fund	32 002,15	22 279,42
	36 663,99	36 663,99	ABLCS Conference fund	-16,19	-16,19
	77 641,90	86 160,29	IBSC Fund	18 782,83	16 542,99
VI. CASH AT BANK AND IN HAND				1 298 568,69	1 564 323,78
IHO - Bank current accounts	793 932,19	378 472,84	IV. CONTRIBUTIONS RECEIVED IN ADVANCE		
IHO - Bank deposit accounts	4 388 177,70	5 033 800,82	Received in advance or in excess	1 005 185,94	1 090 220,56
Petty cash	10 491,17	2 906,30	V. CAPITAL		
	5 192 601,06	5 415 179,96	Emergency Reserve fund	253 491,67	254 037,50
	10 209 200,68	9 915 543,25	Provisions for risks	-2 130 572,30	-1 068 103,30
			Net yearly operating profit	280 796,25	338 806,66
			Net Members Fund	4 540 571,17	4 467 218,68
				2 646 286,79	3 091 959,54
				10 209 200,68	9 915 543,25

Table 11

BITANS COMPARES (au 31 décembre 2016 et 2015)

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ACTIF	2016	2015	PASSIF	2016	2015
I. TRESORERIE DES FONDS DE RETRAITE			I. ENGAGEMENTS DES FONDS DE RETRAITE		
.. Trésorerie disponible (FRI)	3 046 477,68	3 157 602,43	.. Fond de Retraite Interne (FRI)	1 339 743,03	1 335 563,28
.. Garantie long terme du FRI (FRI)	3 046 477,68	3 157 602,43	.. Provision pour couvrir les pensions du personnel (retraités et actifs relevant du FRI)	2 386 814,00	1 924 345,00
	680 079,35	102 305,85			
	3 726 557,03	3 259 908,28	Montant découlant de l'étude actuarielle	3 726 557,03	3 259 908,28
.. Trésorerie placée (Plans externes)	652 764,92	594 168,31	.. Plans de pensions externes	595 569,53	594 183,20
II. DEBITEURS DIVERS			II. CREDITEURS DIVERS		
Prestations effectuées d'avance	5 513,45	7 156,41	Plans de pension NSM	36 961,05	0,00
Factures non encaissées	10 170,09	38 952,32	Retraite complémentaire A.M.R.R	16 074,91	47 566,40
Avances au personnel	25 199,67	16 259,29	Charges à payer (factures, télécommunications, etc.)	56 030,18	64 529,91
Demande de remboursement de TVA	51 011,41	38 217,96	Salaires et notes de frais	1 511,82	2 597,74
Intérêts sur placements à recevoir	57 997,28	73 222,41	Provision pour contributions	126 800,39	86 937,99
Débiteurs divers	0,00		Créditeurs divers	0,00	1 305,00
	152 891,90	173 838,39	Montants reçus pour la prochaine Conférence (stands)	19 545,00	9 705,00
III. CONTRIBUTIONS			Garantie en faveur du FRI	680 079,35	102 305,85
Contributions pour l'année en cours	294 666,05	292 127,60		937 032,70	314 947,89
Contributions échues (années précédentes)	68 299,52	50 402,12	III. FONDS DEDIES		
Contributions (Etats membres suspendus)	39 151,66	39 151,66	Fonds pour les conférences	373 660,71	360 357,99
Intérêts restant dus sur contributions échues	-1 606,61	-1 606,61	Fonds pour le déménagement des directeurs	283 111,04	288 351,36
	406 723,97	386 288,02	Fonds de rénovation et d'amélioration	79 292,31	80 489,46
IV. MOBILIER & EQUIPEMENTS			Fonds pour le renforcement des capacités	214 251,12	542 626,02
Amortissement des immobilisations	302 631,19	289 564,75	Fonds pour les projets spéciaux	85 902,65	68 037,02
	-261 653,28	-240 068,45	Fonds pour la GEBCO	211 612,04	185 682,71
V. BIBLIOTHEQUE			Fonds de la bibliothèque de présentation	32 002,15	22 279,43
	36 663,99	36 663,99	Fonds pour la conférence AIBIOS	-46,19	-46,19
	77 641,90	86 160,29	Fonds IISCC	18 782,83	16 542,99
VI. TRESORERIE DISPONIBLE				1 298 569,69	1 564 323,78
OHII - Comptes courants bancaires	793 932,19	378 472,84	IV. CONTRIBUTIONS RECUES EN AVANCE		
OHII - Comptes de dépôt & placement monétaire	4 388 177,70	5 033 800,82	Reçus en avance ou en excédent	1 005 185,94	1 090 220,56
Espèces en caisse	10 491,17	2 906,30	V. CAPITAUX PERMANENTS		
	5 192 601,06	5 415 179,96	Fonds de réserve d'urgence	255 491,67	251 037,50
	10 209 200,68	9 915 543,25	Provisions pour risques	-2 430 572,30	-1 968 103,30
			Résultat opérationnel net de l'année en cours	280 796,25	338 806,66
			Capitaux nets permanents	4 540 571,17	4 467 218,68
				2 646 286,79	3 091 959,54
				10 209 200,68	9 915 543,25

**INTERNATIONAL
HYDROGRAPHIC BUREAU**

Registered Office
4, quai Antoine 1er
MONACO

YEAR ENDING 31 DECEMBER 2016

AUDIT REPORT

Frank MOREL
57, rue Grimaldi
MONACO

Frank MOREL
57, rue Grimaldi
MONACO

**INTERNATIONAL HYDROGRAPHIC
BUREAU**

4, quai Antoine 1er
MONACO

AUDITOR'S REPORT
For financial year ending 31 décembre 2016

Dear Sir or Madam,

In accordance with the task entrusted to me by the Finance Committee at the International Hydrographic Conference, held from 23 to 27 April 2012, and in application of the provisions of Article 20 of the Financial Regulations of the International Hydrographic Organization, supplemented by IHO Resolutions 1/2004 and 2/2004 approved on 30 April 2004, I am pleased to submit my report on the accounts for the year 2016.

These annual accounts, prepared by the Secretary-General, which reveal a net profit of € 280,796.25.

They have been prepared in the same format and using the same methods of analysis as for the past financial year.

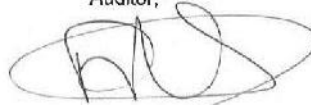
My task, which consists of expressing an opinion on these annual accounts, has been conducted in such a way as to be reasonably sure that they do not contain any significant irregularities. I have undertaken this task with the care that I considered necessary and I have made random checks on the operations carried out during the 2016 financial year. I have in particular verified the cash in hand and the liquid assets or negotiable securities.



In my opinion, the accounts which are submitted for your approval accurately reflect the financial situation of the International Hydrographic Bureau as at 31 december 2016, as well as the operations and the result of the 12 month financial period, closed on that date.

Monaco, 10 april 2017

Auditor,

A handwritten signature in black ink, consisting of several loops and a horizontal line, enclosed within a large, irregular oval shape.

F. MOREL

Table 10
COMPARATIVE BALANCE SHEETS 31 DECEMBER 2016 AND 31 DECEMBER 2015

ASSETS	2016	2015	LIABILITIES	2016	2015
I. INTERNAL RETIREMENT FUNDS ASSETS					
Retirement cash invested (REF)	3 046 477,68	3 157 602,43	Staff Retirement fund (REF)	1 359 743,03	1 355 563,28
Long term guarantee from IHO funds	3 046 477,68	3 157 602,43	Provision to ensure pensions to REF staff and retirees	2 386 814,01	1 934 345,00
Retirement cash invested (External Pension Plans)	680 079,15	102 305,85	Actuarial estimate of liabilities		
	3 726 557,03	3 259 908,28	Value of External Pension Plans	595 569,53	594 183,20
	652 784,92	594 168,31			
II. VARIOUS DEBTORS					
Purchases made in advance	5 513,45	7 156,41	NSM Pension plans	36 961,05	0,00
Outstanding bills	10 170,09	38 952,32	A.M.R.R. Complimentary Retirement Scheme	16 074,91	47 566,40
Advance to staff	25 199,67	16 259,29	Accruals (outstanding bills, tele, telephone)	56 030,18	64 529,91
Claim for refunding of VAT	54 011,41	38 247,96	Travel claims & wages	1 541,82	2 597,74
Interest from Deposit to be received	57 997,28	73 222,41	Provision for doubtful contributions	126 800,39	86 937,99
Various debtors	0,00		Various creditors	0,00	1 505,00
	152 891,90	173 838,39	Deposits received for Conference (stand)	19 545,00	9 705,00
			Guaranty to the IHO	680 679,35	102 305,85
				957 032,70	314 947,89
III. OUTSTANDING CONTRIBUTIONS					
Contributions for the year	294 666,05	292 127,60	Conference fund	373 600,74	360 357,99
Contributions for previous years	88 299,52	50 402,12	Relocation Fund	283 111,04	288 354,36
Contributions for suspended MS	39 151,66	39 151,66	Renovation and Enhancement Fund	79 292,31	80 489,46
Interest remaining due on contributions	4 606,64	4 606,64	Capacity Building Fund	214 251,12	542 626,02
	406 723,87	386 388,02	Special Projects Fund	85 902,63	68 037,02
			GERCO fund	211 612,04	185 685,71
IV. FURNITURE AND EQUIPMENT					
Depreciation of assets	302 631,19	289 564,75	Presentation Library Fund	32 002,15	22 279,42
	-261 653,28	-240 068,65	ABLOS Conference fund	-46,19	-46,19
			IRSC Fund	18 782,83	16 542,59
				1 298 568,69	1 564 323,78
V. LIBRARY					
	77 643,20	86 160,29			
VI. CASH AT BANK AND IN HAND					
IHO - Bank current accounts	793 932,19	578 472,84	IV. CONTRIBUTIONS RECEIVED IN ADVANCE	1 095 185,94	1 090 220,56
IHO - Bank deposit accounts	4 388 177,70	5 083 800,82	Reserved in advance or in excess		
Party cash	10 461,17	2 906,30	V. CAPITAL	253 491,67	254 037,50
			Emergency Reserve fund		
	5 192 601,06	5 415 179,96	Provisions for risks	-2 430 572,90	-1 968 103,30
			Net yearly operating profit	280 796,25	338 806,66
			Net Members Fund	4 540 571,17	4 467 218,68
				2 646 286,79	3 091 959,54
	10 209 200,68	9 915 543,25		10 209 200,68	9 915 543,25

REPORT OF THE FINANCE COMMITTEE TO THE ASSEMBLY

Introduction

1. The Finance Committee met on Sunday 23 April 2017 from 14:00 to 16:30 under the chairmanship of Ms Muriel Natali-Laure (Monaco) to determine its recommendations on the financial statements, budget estimates and reports on administrative matters that had been prepared by the Secretary-General for presentation to the Assembly.

2. The following Member States were represented: Australia, Brazil, Canada, Chile, China, Colombia, Democratic People's Republic of Korea, France, India, Iran (Islamic Republic of), Italy, Japan, Monaco, Mozambique, Republic of Korea, South Africa, Suriname, Tunisia, Turkey, United Kingdom, United States of America.

Observations and Recommendations

Financial Statements for 2012-2016 (A.1/F/01)

3. Noting that the annual accounts for 2012 to 2015 had been approved by correspondence in accordance with the procedure applicable before 8 November 2016, the Committee agreed to recommend that the Assembly approve the financial report for the five-year intersessional period 2012-2016.

Consideration of the Financial Statements for 2016 and Recommendations (A.1/F/04 and A.1/F/04 Add.1)

4. In accordance with Article 8 of the new Financial Regulations that entered into force on 8 November 2016, the Secretary-General is now required to submit the annual financial statements to the Council, and to the Finance Committee by correspondence, together with the budget estimates for the following financial year. However, the first meeting of the Council will not take place until October 2017. This means that it will be difficult for the Council to consider the Financial Report for 2016 and its recommendations before the last quarter of 2017. As a result, and because of the need for an early decision on the recommendation in this year's report, as well as a need for some clarification, the 2016 report and its recommendations was presented to the Finance Committee prior to further consideration by the Assembly.

5. The Finance Committee observed that it is clear from Article 8 of the Financial Regulations and its reference to Articles VI (g) (vi) and VII (c) of the Convention that the financial statements of the Organization are approved at each ordinary session of the Assembly, taking into consideration the observations and recommendations of the Council on the one hand and of the Finance Committee on the other hand. However, what is not clear, is how any recommendations that arise from either the most recently audited annual accounts or the following year's annual budget estimate are to be addressed and implemented in a timely manner in the years when no Assembly takes place.

6. As a result, of its considerations regarding the Financial Statements for 2016 and the associated recommendations, the Finance Committee agreed to recommend that the Assembly:

- a. Approve the Financial Report for 2016 and its recommendation, which is that the budget surplus for 2016 of 241,000 Euros be distributed as follows:
 - (1) 191,000 Euros to the Capacity Building Fund.
 - (2) 50,000 Euros to the Internal Retirement Fund.

- b. Confirm that the Council is empowered to approve the financial statements and any recommendations for the previous year and the budget estimates and the associated annual work programme for each forthcoming year.
- c. Invite the Council at its first meeting to consider an appropriate methodology and timetable to deal with each year's subsequent financial statements and to propose any adjustments to the relevant basic documents if required.

PRO-10: Revision of Article 13(c) of the IHO Financial Regulations (A.1/G/02/Rev.1)

7. The Finance Committee considered *PRO-10: Revision of Article 13(c) of the IHO Financial Regulations*. As a result, the Finance Committee agreed to recommend that the Assembly:

- a. Delete Article 13 (c) of the IHO Financial Regulations;
- b. Agree that any interest paid by on contributions in arrears by Member States after 1st January 2012 be deducted from their contribution due in 2018;
- c. Instruct the Secretariat to include an appropriate provision (around 13 k€) in the budget for 2017.

Appointment of the External Auditor (A.1/F/03 as amended)

8. The Committee considered the report and recommendation of the Secretary-General regarding the appointment of an auditor for the period 2018 to 2020. As a result, the Finance Committee agreed to recommend that the Assembly appoint Price Waterhouse Coopers Monaco as the external auditor for the accounts for the period 2018-2020.

Amendment to the Rules of Procedure for the Finance Committee

9. According to Rule 9 of the Rules of Procedure of the Finance Committee that came into force on 8 November 2016, the Chair and Vice-Chair of the Finance Committee shall be elected at the beginning of the regular meetings of the Committee to be held on the occasion of the ordinary sessions of the Assembly. This means that the Chair and the Vice-Chair will be elected at the meeting immediately prior to a session of the Assembly, and are then responsible for the work and the output of the Committee when it reports to the Assembly a few days later.

10. The Committee noted that if a new Chair is elected at the beginning of the meeting of the Finance Committee, then it is impossible for that new Chair to prepare in advance for the meeting and that this complicates their ability to report with confidence to the Assembly a matter of days later. For this reason, the Finance Committee endorsed the proposal of the Secretary-General to amend the relevant Rule so that the election of the Finance Committee Officers takes place at the end of the meeting, rather than at the beginning and that the term of office begins upon completion of the session of the Assembly. This arrangement would then be consistent with the arrangements for the Chair and the Vice-Chair of the Council who "*hold office until the end of the next ordinary session of the Assembly*".

11. As a result, the Finance Committee agreed to recommend that the Assembly amend Rule 9 of the Rules of Procedure of the Finance Committee as follows (proposed changed highlighted in red):

"The Chair and Vice-Chair shall be elected at regular meetings of the Finance Committee. Member States represented at such meetings may participate in such elections. The Chair and Vice-Chair shall be elected for a period of three years and hold office until the end of the next ordinary session of the Assembly".

Proposed Budget for 2018-2020 (A.1/F/02, A.1/F/02Add.1, A.1/G/03/Rév.1)

12. The Finance Committee reviewed and considered the Proposed Budget for 2018 to 2020 and the proposed Table of Tonnages.

13. As a result, the Committee agreed to recommend that the Assembly adopt the proposed budget for 2018-2020 as submitted in document A.1/F/02.

14. The Committee also agreed to recommend that the Assembly adopt the proposed Table of Tonnages as submitted in document A.1/G/03/Rev.1.

Action required of the Assembly

15. The Assembly is invited to:
- a. **approve** the financial report for the five-year intersessional period 2012-2016;
 - b. **approve** the financial report for 2016 and its recommendation, which is that the budget surplus for 2016 of 241,000 Euros be distributed as follows:
 - (1) 191,000 Euros to the Capacity Building Fund,
 - (2) 50,000 Euros to the Internal Retirement Fund;
 - c. **confirm** that the Council is empowered to approve the financial statements and any recommendations for the previous year and the budget estimates and the associated annual work programme for each forthcoming year;
 - d. **invite** the Council at its first meeting to consider an appropriate methodology and timetable to deal with each year's subsequent financial statements and to propose any adjustments to the relevant basic documents if required;
 - e. **delete** Article 13(c) of the IHO Financial Regulations;
 - f. **agree** that any interest paid by on contributions in arrears by Member States after 1st January 2012 be deducted from their contribution due in 2018;
 - g. **instruct** the Secretariat to include an appropriate provision in the budget for 2017;
 - h. **appoint** Price Waterhouse Coopers Monaco as the external auditor for the accounts of the period 2018-2020;
 - i. **amend** Rule 9 of the Rules of Procedure of the Finance Committee as proposed in paragraph 11;
 - j. **adopt** the proposed budget for 2018-2020 as submitted in document A.1/F/02;
 - k. **adopt** the proposed Table of Tonnages as submitted in document A.1/G/03/Rév.1.

TABLE OF TONNAGES, AND NUMBER OF SHARES AND VOTES
Adopted by decision 24 k of the 1st Session of the IHO Assembly

TABLEAU DES TONNAGES, ET NOMBRE DE PARTS ET VOIX
Adopté par la décision 24 k de la 1^{ère} Session de l'Assemblée de l'OHI

Member States <i>Etats membres</i>	Updating Source <i>Source mise à jour</i>	Tonnages <i>IMO / OMI</i>	Tonnages <i>IHO / OHI</i>	Shares - Parts			Votes - Voix		
				Fix.	Sup.	Tot.	Fix.	Sup.	Tot.
ALGERIA - <i>ALGERIE</i>	CCL7/2016	556 000	766 367	2	4	6	2	2	4
ARGENTINA - <i>ARGENTINE</i>	CCL7/2016	523 000	1 085 169	2	5	7	2	2	4
AUSTRALIA - <i>AUSTRALIE</i>	CCL7/2016	1 358 000	1 917 550	2	6	8	2	2	4
BAHRAIN - <i>BAHREIN</i>	CCL7/2016	449 000	451 615	2	2	4	2	1	3
BANGLADESH	CCL7/2016	784 000	1 186 680	2	5	7	2	2	4
BELGIUM - <i>BELGIQUE</i>	CCL7/2016	5 101 000	5 502 048	2	11	13	2	3	5
BRAZIL - <i>BRESIL</i>	CCL7/2016	3 092 000	3 524 891	2	9	11	2	3	5
BRUNEI DARUSSALAM	IMO LIST	674 000	674 000	2	3	5	2	2	4
CAMEROON - <i>CAMEROUN</i>	IMO LIST	165 000	165 000	2	1	3	2	1	3
CANADA	CCL7/2016	2 898 000	4 598 907	2	10	12	2	3	5
CHILE - <i>CHILI</i>	CCL7/2016	946 000	874 569	2	4	6	2	2	4
CHINA - <i>CHINE</i>	CL83/2012	44 428 000	97 570 000	2	25	27	2	4	6
COLOMBIA - <i>COLOMBIE</i>	CCL7/2016	69 000	124 159	2	1	3	2	1	3
CROATIA - <i>CROATIE</i>	CCL7/2016	1 312 000	1 488 812	2	6	8	2	2	4
CUBA	CCL7/2016	14 000	30 642	2	0	2	2	0	2
CYPRUS - <i>CHYPRE</i>	CCL7/2016	21 546 000	22 868 153	2	22	24	2	4	6
DENMARK - <i>DANEMARK</i>	CCL7/2016	15 847 000	15 604 079	2	19	21	2	4	6
D.P.R. OF KOREA - <i>REP. POP. DEM. DE COREE</i>	CCL7/2016	348 000	388 418	2	2	4	2	1	3
ECUADOR - <i>EQUATEUR</i>	CCL7/2016	370 000	671 753	2	3	5	2	2	4
EGYPT - <i>EGYPTE</i>	Jun 2015	854 000	1 100 000	2	5	7	2	2	4
ESTONIA - <i>ESTONIE</i>	CCL7/2016	389 000	390 685	2	2	4	2	1	3
FIIJI - <i>FIDJI</i>	CL83/2012	0	63 582	2	0	2	2	0	2
FINLAND - <i>FINLANDE</i>	CCL7/2016	1 652 000	1 717 856	2	6	8	2	2	4
FRANCE	CCL7/2016	5 928 000	6 491 999	2	12	14	2	3	5

Member States <i>Etats membres</i>	Updating Source <i>Source mise à jour</i>	Tonnages <i>IMO / OMI</i>	Tonnages <i>IHO / OHI</i>	Shares - Parts			Votes - Voix		
				Fix.	Sup.	Tot.	Fix.	Sup.	Tot.
GEORGIA - GEORGIE	CCL7/2016	33 000	35 778	2	0	2	2	0	2
GERMANY - ALLEMAGNE	CCL7/2016	10 091 000	10 713 602	2	16	18	2	4	6
GREECE - GRECE	CCL7/2016	41 584 000	41 716 093	2	25	27	2	4	6
GUATEMALA	CCL7/2016	8 000	5 571	2	0	2	2	0	2
ICELAND - ISLANDE	CCL7/2016	175 000	173 335	2	1	3	2	1	3
INDIA - INDE	CCL7/2016	10 879 000	11 227 227	2	16	18	2	4	6
INDONESIA - INDONESIE	IMO LIST	12 944 000	12 944 000	2	17	19	2	4	6
IRAN (ISLAMIC REP. OF - REP. ISLAMIQUE D')	Jun 2014	4 233 000	5 500 000	2	11	13	2	3	5
IRELAND - IRLANDE	CCL7/2016	251 000	342 574	2	2	4	2	1	3
ITALY - ITALIE	CCL7/2016	16 346 000	16 250 171	2	19	21	2	4	6
JAMAICA - JAMAIQUE	CCL7/2016	191 000	152 992	2	1	3	2	1	3
JAPAN - JAPON	CCL7/2016	23 156 000	22 647 157	2	22	24	2	4	6
KUWAIT - KOWEIT	IMO LIST	2 886 000	2 886 000	2	8	10	2	3	5
LATVIA - LETTONIE	CCL7/2016	167 000	234 079	2	1	3	2	1	3
MALAYSIA - MALAISIE	CCL7/2016	7 309 000	12 143 950	2	17	19	2	4	6
MALTA - MALTE	Jan 2017	67 106 000	70 700 000	2	25	27	2	4	6
MAURITIUS - MAURICE	CCL7/2016	112 000	179 981	2	1	3	2	1	3
MEXICO - MEXIQUE	CCL7/2016	1 330 000	2 437 801	2	7	9	2	3	5
MONACO	CL83/2012	0	1 228	0	0	0	2	0	2
MONTENEGRO	CCL7/2016	96 000	141 592	2	1	3	2	1	3
MOROCCO - MAROC	CCL7/2016	312 000	338 562	2	2	4	2	1	3
MOZAMBIQUE	CL83/2012	50 000	45 581	2	0	2	2	0	2
MYANMAR	CCL7/2016	188 000	531 252	2	3	5	2	2	4
NETHERLANDS - PAYS-BAS	CCL7/2016	8 114 000	8 820 000	2	14	16	2	4	6
NEW ZEALAND - NOUVELLE ZELANDE	CCL7/2016	331 000	296 752	2	2	4	2	1	3
NIGERIA	IMO LIST	2 814 000	2 814 000	2	8	10	2	3	5
NORWAY - NORVEGE	CCL7/2016	16 845 000	18 330 480	2	20	22	2	4	6
OMAN	CCL7/2016	19 000	85 330	2	0	2	2	0	2

Member States <i>Etats membres</i>	Updating Source <i>Source mise à jour</i>	Tonnages <i>IMO / OMI</i>	Tonnages <i>IHO / OHI</i>	Shares - Parts			Votes - Voix		
				Fix.	Sup.	Tot.	Fix.	Sup.	Tot.
PAKISTAN	CCL7/2016	371 000	453 420	2	2	4	2	1	3
PAPUA NEW GUINEA - <i>PAPOUASIE NOUVELLE GUINEE</i>	CCL7/2016	192 000	287 187	2	2	4	2	1	3
PERU - <i>PEROU</i>	IMO LIST	514 000	514 000	2	3	5	2	2	4
PHILIPPINES	CL83/2012	4 441 000	5 269 721	2	11	13	2	3	5
POLAND - <i>POLOGNE</i>	CCL7/2016	82 000	129 750	2	1	3	2	1	3
PORTUGAL	CCL7/2016	9 911 000	9 946 565	2	15	17	2	4	6
QATAR - <i>QUATAR</i>	CL83/2012	650 000	960 840	2	4	6	2	2	4
REPUBLIC OF KOREA - <i>REPUBLIQUE DE COREE</i>	CCL7/2016	10 330 000	44 384 155	2	25	27	2	4	6
ROMANIA - <i>ROUMANIE</i>	CCL7/2016	41 000	127 049	2	1	3	2	1	3
RUSSIAN FEDERATION - <i>FEDERATION DE RUSSIE</i>	Jun 2014	8 550 000	10 310 722	2	15	17	2	4	6
SAUDI ARABIA - <i>ARABIE SAOUDITE</i>	CCL7/2016	3 197 000	4 840 634	2	11	13	2	3	5
SINGAPORE - <i>SINGAPOUR</i>	CCL7/2016	81 848 000	86 352 300	2	25	27	2	4	6
SLOVENIA - <i>SLOVENIE</i>	CCL7/2016	2 000	2 510	2	0	2	2	0	2
SOUTH AFRICA - <i>AFRIQUE DU SUD</i>	CCL7/2016	326 000	418 434	2	2	4	2	1	3
SPAIN - <i>ESPAGNE</i>	CCL7/2016	2 456 000	2 382 193	2	7	9	2	3	5
SRI LANKA	CL83/2012	244 000	187 925	2	1	3	2	1	3
SURINAME	CL83/2012	5 000	13 136	2	0	2	2	0	2
SWEDEN - <i>SUEDE</i>	CCL7/2016	2 448 000	3 262 331	2	9	11	2	3	5
SYRIA - <i>SYRIE</i>	CL83/2012	43 000	498 145	2	3	5	2	1	3
THAILAND - <i>THAILANDE</i>	CL83/2012	3 320 000	3 846 758	2	9	11	2	3	5
TONGA	CL83/2012	6 000	69 034	2	0	2	2	0	2
TRINIDAD AND TOBAGO <i>TRINITE-ET-TOBAGO</i>	CL83/2012	50 000	50 045	2	0	2	2	0	2
TUNISIA - <i>TUNISIE</i>	CCL7/2016	256 000	265 326	2	2	4	2	1	3
TURKEY - <i>TURQUIE</i>	CCL7/2016	5 987 000	6 869 995	2	13	15	2	3	5
UKRAINE	CCL7/2016	468 000	496 423	2	3	5	2	1	3
UNITED ARAB EMIRATES - <i>EMIRATS ARABES UNIS</i>	CL83/2012	761 000	1 075 569	2	5	7	2	2	4
UNITED KINGDOM - <i>ROYAUME UNI</i>	CCL7/2016	47 588 000	48 102 992	2	25	27	2	4	6
UNITED STATES OF AMERICA - <i>ETATS UNIS D'AMERIQUE</i>	CCL7/2016	11 383 000	25 526 217	2	23	25	2	4	6
URUGUAY	CCL7/2016	177 000	200 199	2	1	3	2	1	3

Member States <i>Etats membres</i>	Updating Source <i>Source mise à jour</i>	Tonnages <i>IMO / OMI</i>	Tonnages <i>IHO / OHI</i>	Shares - Parts			Votes - Voix		
				Fix.	Sup.	Tot.	Fix.	Sup.	Tot.
VANUATU	Feb 2017	2 003 000	2 003 000	2	7	9	2	3	5
VENEZUELA	IMO LIST	1 834 000	1 834 000	2	6	8	2	2	4
VIETNAM	IMO LIST	4 092 000	4 092 000	2	10	12	2	3	5
TOTAL (Member States / <i>Etats membres</i>)		540 453 000	675 724 597	166	643	809	168	177	345
<i>Suspended Member States / Etats Membres privés de leurs droits</i>									
DOMINICAN REPUBLIC - <i>REPUBLIQUE DOMINICAINE</i>	IMO LIST	7 000	7 000	0	0	0	0	0	0
DEM. REP. OF THE CONGO - <i>REP. DEM. DU CONGO</i>	IMO LIST	114 000	114 000	0	0	0	0	0	0
SERBIA - <i>SERBIE</i>	IMO LIST	0	0	0	0	0	0	0	0
TOTAL (Member States / <i>Etats membres</i>)		540 574 000	675 845 597	0	0	0	0	0	0