

9th MEETING OF THE IHO INTER-REGIONAL COORDINATION COMMITTEE
IHO-IRCC9
Paramaribo, Suriname, 12-14 June 2017

REPORT

1. Opening Remarks, Introductions and Administrative Arrangements

Docs: IRCC9-01A List of Documents (Secretariat)
IRCC9-01B List of Participants (Secretariat)
IRCC9-01C List of IRCC Members (Secretariat)

The 15th Meeting of the IHO Inter-Regional Coordination Committee (IRCC) took place in Paramaribo hosted by the Maritime Authority Suriname (MAS) from 12 to 14 June 2017. The meeting was opened by Dr Parry Oei, Chair of the IRCC and the host Mr Michel Amafo, MAS Director, provided the opening speech and highlighted the importance of the meeting. Mr. Amafo welcomed the participants and highlighted the work of MAS and the challenges in conducting hydrographic surveys in riverine shallow waters as Suriname has only river ports. He also introduced the regional hydrographic project adopted during the Senior Maritime Administrators' Workshop in the Caribbean Region and the preparation for the IMO Member State Audit Scheme. The opening session was also attended by the Chair of the MAS Supervisory Board, Mr. Theo Vishnudatt.

The Chair welcomed the participants and set the directions for the work of the IRCC with highlights the strengthening of the Maritime Safety Information (MSI) infrastructures in all coastal States, the importance of the National Hydrographic Coordinating Committees (NHCC) in developing countries and the establishment of the Marine Spatial Data Infrastructures (MSDI). He highlighted that the work of the IRCC in this direction need to be consistent and sustainable.

Participants were invited by the Chair to introduce themselves.

The Secretary introduced the relevant documents and explained the administrative arrangements for the meeting and the following decision was adopted:

Decision 1: to note the documents under agenda item 1 (docs. IRCC9-01A, IRCC9-01B and IRCC9-01C).

2. Approval of Agenda

Doc: IRCC9-02 (rev2) Agenda and Timetable (Secretariat)

The Chair invited participants to comment on the agenda and the timetable. The agenda was adopted without changes:

Decision 2: to adopt the agenda and the timetable (doc. IRCC9-02).

3. Matters arising from Minutes of IRCC8 Meeting

Docs: IRCC9-03A Minutes of IRCC8 (Secretariat)
IRCC9-03B Status of Action List from IRCC8 (Secretariat)
IRCC9-03C Status of the IRCC Work Programme 2016-2017 (Secretariat)

The Chair introduced the IRCC8 Report (doc. IRCC9-03A) which was considered and approved without changes. The Chair then invited the IRCC Secretary to introduce the pending actions from IRCC8 (doc. IRCC9-03B) and the IRCC Work Programme 2016-2017 (doc. IRCC9-03C). Participants updated the documents and agreed on the following decision and action:

Decision 3: to approve the IRCC8 Report (doc. IRCC9-03A), the updated List of Actions from IRCC8 (doc. IRCC9-03B) and the IRCC Work Programme 2016-2017 (doc. IRCC9-03C).

Action 1: IHO Secretariat to make the updated List of Actions from IRCC8 available in the IHO website (deadline: June 2017).

4. Review of Terms of Reference and Rules of Procedure

Doc: IRCC9-04 IRCC TOR-ROP (Secretariat)

The meeting considered the Terms of Reference (ToR) and Rules of Procedure (RoP) of IRCC (*doc. IRCC9-04*) and agreed that there is no need to update the documents at this time.

5. Report by the Chair and the Secretariat

Docs: IRCC9-05A IRCC Annual Report (Chair)
IRCC9-05B IHO Secretariat Report (Secretariat)

The Chair introduced his annual report (*doc. IRCC9-05A*) and highlighted the main objectives of the IRCC and the coordination with each Regional Hydrographic Commission (RHC). He emphasized the activities of the subordinate bodies and concluded that there is need for continued close cooperation and coordination amongst stakeholders, for information sharing and harmonization at global scale and for the hydrographic community to play a larger role for the safety of navigation and the protection of the marine environment.

The IRCC Secretary presented the IHO Secretariat Report (*doc. IRCC9-05B*) and highlighted the changes with the entry into force of the amendments to the Convention on the IHO and its supporting Basic Documents, the status of the IHO Membership and the suspended Member States, the IHO outreach (World Hydrography Day and the International Hydrographic Review) and the administration of the Capacity Building Programme.

USCHC highlighted the efforts of the Chair and the Secretariat in support of Crowd-sourced Bathymetry (CSB), Satellite Derived Bathymetry (SDB) and Capacity Building (CB). He also stressed the importance of the MSDIWG and its work to link the IHO with the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM). He also invited Member States to further develop MSDI and to liaise with their national delegations at the UN-GGIM to ensure that the IHO recognized as the relevant authority in Hydrography.

The meeting noted the new Member States of the IHO and the need for high level and diplomatic engagement to expand the IHO Membership and the need to expand the funding in a sustainable way with RHC support. The IRCC also noted the need to advertise the work of the IHO related to e-Navigation and of the WHD for 2017 in order to help Member States to engage with stakeholders. The meeting agreed the following decision:

Decision 4: to note the reports under agenda item 5 (*IRCC9-05A and IRCC9-05B*).

6. Regional Hydrographic Commission (RHC) Reports

RHC Chairs introduced their report and presented the key achievements, the challenges faced and lessons learned in each Region.

a) NHC Report

Doc: IRCC9-06A Nordic HC (NHC Chair)

Sweden, on behalf of the NHC Chair, highlighted the key achievements on harmonization of depth data and presentation in ENC's, the workshop on surveying with Multi Beam technologies and the workshop on nautical chart products. She exposed some aspects of using official S-57 data to the leisure craft market including the update rate, the users' requirements, the need for special rules or recommendations and the work in progress in Hydrographic Services in the region.

The meeting considered the regulation on the use of data in Electronic Chart System (ECS) for non-SOLAS vessels, in particular the need for specific requirements of the leisure market. The Meeting also examined the conceptual and business models for leisure charts, the need for a collaborative effort with HSSC and industry for the development of the conceptual model and of standardization, the distribution model and the role of the RENCs.

The risk of having two different data sets available to SOLAS and to the non-SOLAS vessels was considered a critical matter, especially with the the existence of smart products in the market that could be easily adapted for use by the leisure market. The better choice should be the use of ENC's rather than a different set of products.

Norway shared with the meeting on the legal aspects and the focus on updating data rather than engaging in the leisure market. The meeting carefully considered two options ie. the need to implement minimum requirements

instead of standardization for leisure charts and to ensure that correct data is available to be used or to enforce the use of the data. USA opined that pushing to ensuring the mariners use data by making products available and the frequency of updates should be left to companies using the data.

A summary was made by the Chair by means of questions: are Hydrographic Services and the IHO responsible for leisure charts? If so, what is this responsibility? Should we focus on data or products and how to ensure regular updates? Should the updating regimes for both SOLAS and non-SOLAS ships be different? How is this handled in the national legislations and by whom, the Hydrographic or the Maritime Authority? The meeting concluded that this matter is best left with the national authority that is responsibility for navigational safety in their waters. The meeting felt that there is no compelling reason for any action to be taken by the IRCC at this stage.

The Chair informed the meeting that the proposal from the NHC on Marine Information Overlays (MIO) / Admiralty Information Overlay (AIO) would be addressed further in agenda item 7 with the WENDWG Report.

b) NSHC Report

Doc: IRCC9-06B North Sea HC (NSHC Chair)

The NSHC Chair reported the main achievements in the region in particular the IHO-EU Network Working Group participation, the strong regional cooperation in terms of MSDI, the shared experiences in shallow water surveying, in vertical reference frames and in satellite derived bathymetry, the promotion of Hydrographic Services' and their data to increase visibility and profile and the continuing support from its Member States to Capacity Building. He also presented as the main difficulty and challenge the reduced resources that have restricted the surveying capability, maintenance of staff members and their ability to contribute to the IHO Work Programme.

c) EAHC Report

Doc: IRCC9-06C East Asia HC (EAHC Chair)

The EAHC Chair reported the difficulties encountered and challenges yet to be addressed regarding regional geographical names and the political influence exerted by some Member States. As achievements and lessons learned he highlighted the EAHC Capacity Building Programme and the Training for Trainers project, the production of ENC's, the successful Technical Visits conducted to Timor Leste and Cambodia, and the establishment of a new Working Groups on Marine Spatial Database Infrastructures and a Task Group on Strategic Team Advance Roadmap (STAR).

d) USCHC Report

Doc: IRCC9-06D US/Canada HC (USCHC Chair)

The USCHC Chair reported the key achievements in the region as the Canada-France-USA proposal to the 1st Session of the IHO Assembly for the development of an IHO Satellite-Derived Bathymetry assessment and charting programme for uncharted or poorly charted areas, the support to the UN-GGIM Shared Guiding Principles for Geospatial Information Management and the new USCHC Statutes signed during the IHO Assembly.

The difficulties encountered and challenges yet to be addressed include the future of the paper chart, the implementation of S-100, the increasing need for improved data and navigational products (e.g. e-navigation and marine services portfolios - MSPs), the potential of Crowd-Sourced Bathymetry (CSB) and questions of engagement and integration into product. The region also considers the potential of remote sensing (e.g. LiDAR) and satellite-derived bathymetry, the full and integrated implementation of MSDI, the CATZOC attribution, the USCHC support for the INT charting programme and the timely response to IHO/IRCC reporting requirements and action items.

e) MBSHC Report

Doc: IRCC9-06E Mediterranean and Black Seas HC (MBSHC Chair)

The MBSHC Chair reported on the status of the application of the WEND Principles undertaken by Region F-International Chart Coordination Working Group (ICCWG) and supported by the RENCs, the participation in the Union for the Mediterranean (UfM) in the EU Marine Knowledge and in the EU European Blue Growth

Initiative, and the cooperation with international organization like IALA, CIESM (Mediterranean Science Commission) and IOC (in particular on tsunami warning system).

He also reported the participation of non-Member States in the region and potential hydrographic developments in the Caspian Sea region, the status of hydrographic survey status depicted in a regional GIS portal hosted by Spain, regional Capacity Building activities and the development of MSDI with the European Marine Observation and Data Network (EMODnet).

The meeting was informed on the challenges and difficulties for the coordination of the INT chart schemes and ENC coverage, in particular the establishment of consistent INT schemes in semi-closed basins of the Mediterranean and Black Seas and the solution for some unresolved ENCs overlaps in small scale usage bands. He reported that the use of the IHO INT Chart Web Catalogue and the ongoing experimentation of risk assessment of ENC overlaps pave the way forward.

Additional challenge is posed as the region is a critical area for maritime traffic with 1% of the world ocean and 25% of the global maritime traffic and requirement for better knowledge of the marine environment for the sustainable development of blue economy and for the development of interactions with organizations involved in improving the knowledge of the Mediterranean and Black Seas.

f) BSHC Report

Doc: IRCC9-06F Baltic Sea HC (BSHC Chair)

The BSHC Vice-Chair reported the key achievements with the coordinated and monitored re-survey scheme, the outcomes of the FAMOS project, the provision of the joint Baltic Sea Bathymetric Database, the implementation of a Harmonized Chart Datum, the parallel processing of all ENC and paper chart issues, the collaboration with NSHC in Marine Spatial Data Infrastructure affairs, the provision of publicly available BSHC Information and GIS services and the active participation in the IHO-EU Network Working Group. The meeting then agreed on the following decisions:

Decision 5: to note the very productive cooperation within the BSHC where several projects have led to joint databases, to results provided on the web and to improved outreach of the hydrographic work in the region and beyond.

Decision 6: to note that BSHC Member States continue to contribute extensively to the work of the IHO and have been active participants of IHO bodies.

Decision 7: to note that there has been substantial cooperation between the BSHC Member States and other European States and the European Union on information sharing and shared projects.

g) EAtHC Report

Doc: IRCC9-06G Eastern Atlantic HC (EAtHC Chair)

The EAtHC Chair reported the recent Technical Visits to Liberia and to Cabo Verde, the signature of a Memorandum of Understanding (MoU) establishing cooperation between the IHO and the Maritime Organization of West and Central Africa (MOWCA) and the cooperation with stakeholders.

He informed the meeting on the difficulties following technical visits in order to strengthen Capacity Building initiatives in the region, to identify more efficient strategies that could be shared by the visited countries and to guarantee the commitment and participation of the concerned coastal States. Another challenge is to ensure participation of all the coastal States in the activities in the region and to facilitate the establishment of Hydrographic Services in some of the coastal States, although some of them have created specific services to address the safety of navigation and committees for hydrographic and navigation security issues. Additionally, the region struggles to establish permanent and reliable National Coordinators for MSI to work closely with the NAVAREA II Coordinator.

The meeting was informed on the outcomes of the collaboration between the National Hydrographic Institutes of Spain and Portugal resulting in the bilateral arrangement on the boundaries between both countries with the agreement on relevant baselines and the production of new charts.

SEPRHC Report

Doc: IRCC9-06H South-East Pacific Regional HC (SEPRHC Chair)

The SEPRHC Representative from the Chair's office highlighted the active cooperation with SWAtHC and MACHC in Capacity Building activities and the active involvement with other intergovernmental organizations related to maritime activities and safety of navigation (e.g. IOC, IALA and IMO). He also reported that national hydrographic services in the region are under naval administration and that the annual meetings between Naval Chiefs of Staff have contributed to organize and carry out joint hydrographic capacity building (training course and internships) and technical activities (joint hydrographic surveys).

He also noted that the regional and inter-regional cooperation has proven to be an effective way to improve technical competences and capabilities of national Hydrographic Services. However, these services are facing an increasing demand for more diverse and complex set of hydrographic products by the maritime community and governmental agencies to support the effective and sustainable use of maritime spaces and their natural resources. He also noted that the constant rotation of Capacity Building Coordinators in the SEPRHC has proven to generate complications in the process of preparing and submitting projects to the CBSC, reducing the possibilities of obtaining a good review and in consequence, the resources required for their implementation.

h) SWPHC Report

Doc: IRCC9-06I South-West Pacific HC (SWPHC Chair)

The SWPHC Chair started his report with the CB activities, including the completed Technical Assessment and Advice visits to Samoa and Tuvalu, Technical Workshop for Pacific Islands Countries and Territories (PICT) and MSI Regional Workshop, and the plans for 2017. He also reported on the major support activities conducted under the UK Commonwealth Marine Economies Programme (CME), the New Zealand (NZ) Pacific Regional Navigation Initiative (PRNI) and the Papua New Guinea (PNG) Maritime and Waterways Safety Project funded by the Asian Development Bank (ADB).

The meeting noted the achievements in the region where progress was made in all the PICTs with respect to hydrographic activities, with significant progress in Fiji, PNG, Solomon Islands, Tonga and Vanuatu. Also worth noting was the outcome of the 3rd Pacific Regional Energy and Transport Ministers' meeting in Tonga in 2017 that endorsed the *Regional Strategy on Safety of Navigation in the Pacific*, that Vanuatu established the Office of the Marine Regulator and became an IHO Member in 2017, the NZ Risk Assessment activities conducted in Cook Islands, NZ, Niue, Tonga and Vanuatu and the NZ PRNI outcomes in risk assessments and CB support to achieve Phase 1 and establish the MSI coordinator.

He also informed the meeting that Cook Islands signed a bilateral agreement with NZ and approved the establishment of a Hydrographic Service while Tonga and NZ are progressing a bilateral agreement, Australia is working with UK concerning with Australia to become the Primary Charting Authority (PCA) for Solomon Island. He also reported that the USA is engaging with Palau for a Technical Visit and Nauru is engaging with UK for charting support and PCA activities.

The main challenges reported are related to the capacity of the Capacity Builders. The support from the PCAs for Capacity Building activities in the SWPHC is under constant strain as the balance is maintained against other national priorities and resource management and the need for increased support from the IHO Secretariat is critical to the ongoing success of the IHO CBWP, not only merely for implementing the CBWP but also for its effectiveness, governance and due diligence to Member States. He emphasized that there is a need to establish a CB Assistant in IHO Secretariat as a matter of urgency and that potentially too much is being asked of the RHCs and RHC Chairs, which then impacts delivery of their own and RHC-based activities. The meeting agreed that consideration on the suggestion on the CB Assistant will be discussed later under agenda item 7(c) with the CBSC Report. The following decision was agreed:

Decision 8: to note the value and effectiveness of preceding RHC meetings with a CB related workshop to support developing countries to participate in the meeting in order to raise awareness of the importance of Hydrography.

i) MACHC Report

Doc: IRCC9-06J Meso American - Caribbean Sea HC (MACHC Chair)

USA, on behalf of the MACHC Chair, informed the meeting on the CB Activities in the region and the benefits

of joining forces with FOCAHIMECA Project from Mexico, especially for the delivery of trainings in Spanish. He reported the improvements in the ENC online viewer, the progress in the new ENCs, the gap analysis for ports and the INT Charts in the region. The meeting was also informed on the difficulties in the region that needs further development of the Spanish courses in the regions, the high costs of carrying out surveys in poorly surveyed areas and the full ENC coverage not yet achieved.

j) SAIHC Report

Doc: IRCC9-06K Southern Africa and Islands HC (SAIHC Chair)

The SAIHC Vice-Chair reported the progress made in the INT chart scheme for Region H since the last meeting, the actual charting status and the new requirements and modifications proposed to the scheme, the status of MSI in NAVAREA VII, and the bilateral and regional cooperation agreements, projects and regional Capacity Building activities. He noted that SAIHC cooperation with stakeholders has been at high level of industry participation in meetings with ample opportunities to share experiences and contribute to discussions. Active participation of IALA and GEBCO in SAIHC Conferences have added value to discussions and contributed positively to capacity building efforts within the region.

The meeting was informed on the difficulties encountered with participation of Associate Members 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. 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.

He also stressed that 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. The region achieved progresses and 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 and the 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.

k) NIOHC Report

Doc: IRCC9-06L North Indian Ocean HC (NIOHC Chair)

UK, on behalf of the NIOHC Chair, reported the recent Capacity Building activities, and highlighted that a lot of progress has been made in terms of Capacity Building for becoming self-sufficient, but the region still need support for training. He also informed the IRCC on cooperation with other organizations and ICCWG activities.

l) RSAHC Report

Doc: IRCC9-06M ROPME Sea Area HC (RSAHC Chair)

IHO Director, on behalf of the RSAHC Chair, introduced the report. He highlighted the progress made since the last meeting in ENC production and coverage, the new requirements proposed to the ENC scheme, the self-assessment for NAVAREA IX, the developments of MSDI in the region, the establishment of procedures in response to Marine Disasters, the plans for Capacity Building and the strong relationship with Industry and its active participation in RSAHC meeting.

The meeting was also informed on the challenges in data sharing, on communication problems among some Member States, the limited resources and availability of trained manpower. He also reported the achievements in particular the progress in hydrographic surveys which are increasing at a good rate, and the growth in national hydrographic infrastructures including survey vessels and training institutes in the region is a matter of satisfaction.

m) SWAtHC Report

Doc: IRCC9-06N South West Atlantic HC (SWAtHC Chair)

Brazil, on behalf of the SWAtHC Chair, informed the meeting on the development of a regional Cartographic Plan, the establishment of a Planning Commission to coordinate INT Chart and ENC production and the acceptance of Bolivia and Paraguay as Observer and Associate Members. He noted the agreement of a

contingency plan between NAVAREA V (Brazil) and NAVAREA VI (Argentina) to ensure that broadcast and monitoring Maritime Safety Information (MSI) are not interrupted in case of failure of one of these systems.

The meeting was informed on the creation of a SWAtHC Geoportal including ENC data published by its Member States to facilitate harmonization of charts and risk assessment. He also informed the meeting that the region has no significant overlaps, no unassessed CATZOCs and gaps are being addressed in a consistent way. The region has 47 INT Chart in its scheme with 77% accomplished and 226 ENCs in the scheme with 79 already published. He also highlighted the new hydrographic boat received by Brazil and fully devoted to Capacity Building.

n) ARHC Report

Doc: IRCC9-06O Arctic Regional HC (ARHC Chair)

Denmark, on behalf of the ARHC Chair, introduced the report and informed the meeting on the development of the Hydrographic Risk Assessment in the Arctic, the work of the Arctic International Charting Coordination Working Group, the establishment of the Arctic Regional Marine Spatial Data Infrastructure Working Group and of the Arctic Voyage Planning Guide for mariners. He also reported the current investigation on the potential of remote sensing and satellite-derived bathymetry (SDB) and of crowd-sourced bathymetry for use within the Arctic community, and expressed the concerns with the MIO-services.

The meeting agreed on the following decision:

Decision 9: to note the reports under agenda item 6 (*IRCC9-06A, IRCC9-06B, IRCC9-06C, IRCC9-06D, IRCC9-06E, IRCC9-06F, IRCC9-06G, IRCC9-06H, IRCC9-06I, IRCC9-06J, IRCC9-06K, IRCC9-06L, IRCC9-06M, IRCC9-06N and IRCC9-06O*).

7. Reports from IRCC Subordinate Bodies

Chairs of the IRCC bodies introduced the main achievements, challenges faced, lessons learned and work programs in the IRCC bodies.

a) HCA Report

Doc: IRCC9-07A Hydrographic Commission on Antarctica (HCA Chair)

The IHO Director, on behalf of the HCA Chair, informed the meeting that a status report on the HCA was presented to the First Assembly (Assembly Report A.1/WP3/01) and in the interests of efficiency and in order to avoid duplication, it was not repeated in the current report. He informed that since the IHO Assembly, the 40th Antarctic Treaty Consultative Meeting (ATCM) was held in Beijing (China) and that ATCM agreed to invite the HCA, through the IHO, to hold a seminar on an awareness seminar, on the status and impact of hydrography on Antarctic waters, to take place in mid-2018.

He noted that as reported to the Assembly, participation of HCA Members and stakeholders in IHO HCA Conferences is somewhat unpredictable and that achieving the quorum of one third of the HCA Members has sometimes been difficult. The meeting noted that 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. The following decision was agreed:

Decision 10: to note the report *doc. IRCC9-07A*.

b) WNWNS-SC Report

Doc: IRCC9-07B World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC Chair)

USA, on behalf of the WNWNS-SC Chair, reported the outcomes of the last meeting and the engagement of the NAVAREA Coordinators and observers, the harmonization of IMO Resolutions, the status of the self-assessment reports from NAVAREA Coordinators, the increased cooperation between NAVAREA and METAREA Coordinators and updates on Inmarsat and Iridium.

The meeting was also informed of the MSI trainings led by the WNWNS-SC sponsored by the CBSC and of the need to identify and prepare trainers to progress the establishment of MSI infrastructures in a significant number of coastal States. The meeting considered the use of the EAHC Training, Research and Development

Centre (TRDC), Training for Trainers (TFT) concept and e-learning developments in order to progress the development of CB Phase 1 for all coastal States.

The meeting agreed on the following actions and decision:

Action 2: RHC Chairs to engage with Member States in their regions to identify potential instructors to accompany MSI trainings in order to become MSI trainers and report back to IRCC (deadline: IRCC10).

Action 3: RHC Chairs to consider using Trainer for Trainers (TFT) and e-learning methods to support the development of CB Phase 1 for developing coastal States and report back to IRCC (deadline: IRCC10).

Action 4: RHC Chairs to encourage the attendance of Member States and Observers at WWNWS-SC meetings, to highlight the use of the Joint Manual on MSI to ensure correct terminology and formats are used in MSI messages, to encourage closer engagement of the National MSI Coordinators of Member States with the relevant NAVAREA Coordinator(s) and report back to IRCC (deadline: IRCC10).

Action 5: RHC Chairs to encourage closer coordination between NAVAREA Coordinators and Regional CB Coordinators in planning and student selection for the CB MSI training courses (deadline: IRCC10).

Action 6: IHO Secretariat to engage with the IMO to improve the coordination of MSI-related matters and trainings and report back to IRCC (deadline: IRCC10).

Decision 11: to note the report *IRCC9-07B*.

c) CBSC Report

Doc: IRCC9-07C Capacity Building Sub-Committee (CBSC Chair)

The CBSC Chair reported that the IHO Capacity Building is developing very successfully with the strict implementation of IHO CB Strategy and with a clear structure of processes and smooth execution. To reach this development he acknowledged the generous support from the Republic of Korea and from the Nippon Foundation of Japan, the in-kind support from Member States and Industry stakeholders, the work of the RHC CB Coordinators and Project Leaders, the contribution from France for the EAtHC Definition Study, the work done by UK on Commonwealth Marine Economies (CME) Programme, OECS and Commonwealth Seabed Mapping (CSM) Programme, the work of NZ for the risk assessment and the PRNI and the support of the Secretary.

He also informed the meeting that the regular contributions from IHO Budget to the CB Fund has increased and the efficient execution is leading to a small balance in the end of each year. However, he highlighted that one major challenge is that the successful operation and further enhancement is at risk or even impossible without additional Capacity Building Assistance due to the significant increase in the level of CB activities and other competing IHO requirements/priorities. This was noted by EIHC5 (Decision No.2) and further reported in Work Programme 1 report by the Secretary-General to the IHO Assembly (items 78-80) in April 2017. The key issue is that the CBSC Secretary is too much involved in administrative work and other tasks in the Secretariat that does not leave enough time to assist the CBSC in the development of the CB and the realization of the CB Strategy. A list of the additional needs from the Secretariat are listed in the report (*doc. IRCC9-07C*).

The meeting was also informed that the available CB Funds are less than needed to even cover the expenses of projects with a higher priority and that the number of submissions from the RHCs is stagnating due to the limited chances of getting funded. He suggested that Member States can support Capacity Building by making use of national experts to help getting donor funds for projects. The Chair also informed that the formerly very productive joint Capacity Building cooperation with the IMO has ceased and the 2016 Joint IHO/IMO/WMO/IOC/IAEA/IALA/FIG CB meeting was cancelled by the IMO at short notice and the success of comprehensive projects will depend on a good cooperation between organizations. Additionally this is a disadvantage for the IMO Member States that are not IHO Members as they will not get support to develop their hydrographic services as defined in the SOLAS Convention.

He also informed the meeting on the need to nominate permanent CB Coordinators and to allow their participation in CBSC meetings. The SEPRHC still changes the CB Coordinator too often and this is disadvantageous for the acceptance of projects and the allocation of CB funds. Worth of note is that cooperation with neighboring RHCs can improve the effectiveness of projects and thus also the chances to be funded.

The CBSC Chair informed the meeting on the considerations given by the Sub-Committee on e-Learning following Decision 16 on PRO-2 during Assembly. The next revision of the IHO CB Strategy will give a more prominent visibility even though it already considers its use. He also informed that the CBSC is already promoting the development of e-learning in its Capacity Building activities, in particular with respect to Phase 1. An example is the e-learning platform for the delivery of MSI to Francophone Africa supported by the CB Fund.

The meeting considered the urgent need for increasing the Secretariat support for the development and execution of the CB Work Programme, suggestions to use CB achievements to promote Hydrography, the use of story maps for public relations and the need to improve the IHO website to increase the visibility of Capacity Building activities and potentially Hydrography in general. The meeting agreed on the following decisions and actions:

Decision 12: to endorse the need of an urgent expansion of the IHO Secretariat support to CB-related activities and to request to the Council at its 1st Session to task the Secretary-General to ensure that the appropriate staff resources are provided to the CB-related activities.

Decision 13: support the views of the CBSC on e-learning (doc. IRCC9-07C) acknowledging it as an important tool to support training.

Action 7: IRCC Chair to request to the Council to task the Secretary-General to urgently establish and recruit to a position at the IHO Secretariat to provide additional secretariat support for Capacity Building subject to resource availability (deadline: June 2017).

Action 8: IHO Secretariat to further develop the IHO website in order to improve the visibility of the IHO CB Programme and report back to the IRCC (deadline: IRCC10).

Action 9: IHO Secretariat to provide an aide-memoire to IRCC Members regarding the issues related to the IHO-IMO cooperation (deadline: June 2017).

Action 10: RHC Chairs to invite Member States to investigate the possibilities of fund raising and engagement in CB via national organizations and report back to the IRCC (deadline: IRCC10).

Action 11: SEPRHC to consider appointing a permanent CB Coordinator and to ensure his or her participation in the CBSC meetings (deadline: SEPRHC13).

Action 12: IHO Secretariat to re-engage the IMO on capacity building programmes, especially for non IHO-member States (deadline: IRCC10).

Decision 14: to note the report *IRCC9-07C*.

d) WENDWG Report

Doc: IRCC9-07D1 WEND Working Group (WENDWG Chair)
IRCC9-07D2 WEND Working Group TOR (Draft Revision)(WENDWG Chair)
IRCC9-07D3 Draft Resolution on ENC Overlapping Issues (WENDWG Chair)
IRCC9-07D4 Proposal on MIO and AIO (NHC Chair)
IRCC9-07D5 Overlapping ENC Data: IC-ENC Policy and Progress (IC-ENC)

The WENDWG Chair informed the meeting on the outcomes of the last meeting with the recommendation to simplify indicators focusing on Usage Bands 1 to 3 with future work pending on the revision of the IHO Strategic Plan and the congratulations for the IHO Secretariat for the work done in the IHO ENC Catalogue, in particular for the inclusion of CATZOCs that may support the work of the RHCs in risk analysis. He also highlighted the cooperation and harmonization done by the RENCs which increases the support provided for data quality control, for Capacity Building and for assessing significance of ENC overlaps.

He also reported the key aspects on the full implementation of the WEND Principles with some feedback received by RHCs, the guidance for the preparation and maintenance of INT Chart and ENC Schemes, the reinforcement on the need to implement ENC scheming at regional level. For Usage Bands 1 to 3 there is currently 82% of the schemes agreed but there is need to work together to increase this level of achievements. He also introduced the proposed draft IHO Resolution for eliminating overlapping ENCs that received the support of participants.

The meeting agreed on the following decisions and actions:

Decision 15: WENDWG to await the progress in the review of the IHO Strategic Plan as agreed by A-1 before developing Performance Indicators.

Action 13: WENDWG to contribute to the IHO Strategic Plan review in order to ensure consistent and relevant performance indicators related to WEND are in place and report back to IRCC (deadline: IRCC10).

Decision 16: to commend the IHO Secretariat on the improvements made to the IHO ENC catalogue over the last year.

Decision 17: to commend both RENCs on the work undertaken hitherto to reach maturity and stability and for the support provided to hydrographic offices and end-user service providers.

Decision 18: to note the revised 6-monthly updates to the ENC Data Flow Diagram maintained by the RENCs.

Action 14: RHC Chairs to encourage the Member States in the region to consider making all ENC data available through the RENCs (deadline: December 2017).

Action 15: RHC Chairs to encourage the work of the IHO community to increase existence of ENC schemes at regional level (deadline: December 2017).

Decision 19: to endorse the draft IHO Resolution for eliminating overlapping ENCs proposed in *doc. IRCC9-07D3*.

Action 16: IRCC Chair to submit the draft IHO Resolution for eliminating overlapping ENCs to the Council as proposed in *doc. IRCC9-07D3* (deadline: in time for C-1).

Decision 20: to approve the proposed updated WENDWG ToR as proposed in *doc. IRCC9-07D2*.

Decision 21: to approve the proposed updated WENDWG 2017-18 Work Programme as given at Annex A of *doc. IRCC9-07D1* and the continuity of WENDWG activities under its updated ToR.

Sweden, on behalf of the NHC Chair, introduced report on MIO (*doc. IRCC9-07D4*) and emphasized that the NHC does not question earlier decisions and statements by WENDWG and IRCC but experiences show that not all HOs interpret the outcome of the discussions in the same way. She highlighted that all attempts to stop the relevant producer of such MIOs in parts of the region have failed and the first precondition for such an MIO to be promulgated is not in place.

USA made a following statement on MIO: "The US is excited about the potential of MIOs in general, where such overlays may add additional information relevant to route planning or specific maritime operations. The remainder of these comments are specific to the Admiralty Information Overlay (AIO). The US appreciates the value of the Admiralty Information Overlay in promulgation of temporary and preliminary notices in geo-referenced format to be used with ECDIS. We also recognize the role that AIO has played in transition to ENC and ECDIS, helping to explain differences between paper charts and ENCs. UKHO cartographers frequently ask very good questions about US charts, which strengthens our products.

However, as the US has now completed its transition to ENC first, with weekly updates to our ENC suite, we see a diminished value of the AIO in US waters, and an increase in the risk of the AIO adding to mariner confusion if conflicting information is contained in the ENC and AIO. The USA wishes to clarify that the US considers the NOAA ENC suite to be fully adequate for safe navigation, without any additional overlay. We are concerned that marketing materials for AIO may imply they are required to complement the US national ENC suite. We were recently questioned about it by a large shipping interest in the US who thought that they were required. Recognizing the global value of the service, we hesitate to publicly diminish the AIO, but need to clarify the status of AIO in US waters.

Though the US has not made any requests with respect to the AIO in US waters, we feel that each national HO should have the prerogative to jointly establish the scope and content of such a service to complement national navigation services in the interest of safe navigation in their waters. We continue to support the language taken by IRCC8 decision 14 that requires joint consent for chart-related overlays."

UK expressed that is willing to discuss the issue in a bilateral way and that the MIO is only issued if there is a difference between the UK paper chart and the equivalent ENC and does not represent a criticism to the existing ENC. The mariners asked for a means worthy any difference could be highlighted and the UKHO AIO is a say

to do this. Differences are only portrayed if they cannot be resolved with the producing nations. Temporary/Preliminary Notice to Mariners are added which are wanted by the mariners.

Norway made the following statement on MIO discussions: "Norway has engaged with UKHO on the topic of AIO bilaterally, regionally (NHC and ARHC) and through the PRIMAR RENC since 2009. Having been part of all discussions, Norway fully supports the outcome of the discussions on this topic at the WENDWG6 and the subsequent endorsed decision at IRCC8. However, we experience that the wording seems to have been insufficiently clear to all IHO MS as one particular Member State clearly interprets the wording differently. As stated by the chair of the NHC, Sweden, Member State involved in the promulgation of MIO that issue information about ENC's, are to solve this bilaterally in more detail only after the involved parties all agree. If this precondition of mutual agreement is not in place, the MIO in question can not be promulgated and the request by the charting authority concerned to stop promulgation of such a MIO must be respected. Norway would therefore recommend a more precise wording that respects the role of the sovereign charting authority and prevents future confusion as how to interpret this wording."

Denmark explained that MIOs are a solution frequently requested by ship owners but there is no issue for the country as Denmark does not produce T/P NtoM. The meeting also acknowledged that MIOs are a good solution for many parts of the world but there should be a bilateral agreement between the coastal State whose waters are affected and the MIO producer and the need to stop producing such MIOs when the bilateral does not exist.

The meeting also considered that there may be conflicting information between the ENC and the MIO, giving the impression that MIOs are required while they are not, risking diminishing the value of the ENC. The HSSC Chair informed the meeting on the action tasked to the NCWG and ENCWG to produce an authoritative video and paper to explain the IHO position on T/P and ENCs to port authorities and mariners.

Canada expressed that although the AIO is an useful product, but if it within the other sovereign nation's waters it should not be unilaterally imposed.

The meeting considered that there is no offense on the quality of the work done by the UKHO on MIO but highlighted the importance of proper guidance to mariners regarding to regulations and does not intend stopping innovation at the UKHO. Australia, Canada, France, Italy and United States provided the meeting with a joint statement amending Decision IRCC8/14. Sweden supported the proposal by these five Member States improving the previous text and in line with the NHC proposal. The joint statement is as follows:

"1. Taking into account the report of WENDWG6 concerning the situation where a Marine Information Overlay (MIO) is used to assist in drawing attention to any differences between a published paper chart and the corresponding ENC or to assist in displaying T&P notices for an ENC recommends:

- a. All parties concerned with producing the respective MIO, paper chart and ENC should agree on the promulgation of the MIO for the relevant sea area concerned. No Hydrographic Office may produce such MIOs over the formal objection of the national charting authority.
- b. In such circumstances, and mindful of serving the best interests of the mariner, those producers of the MIO and related paper chart and/or ENC should work together bilaterally.
- c. Production of the MIO should be carried out in close cooperation of producers of both the paper chart and the ENC
- d. The MIO should utilize the same T&Ps source as the producer of the ENC.

2. In parallel there is a need to raise awareness of T&P NM updates for ENCs, and HSSC is encouraged to include within its work plan for the ENCWG the delivery of an improved solution for T&P updates in future S-101 based ECDIS. In the interim period possibilities of S-124 should be considered."

UK responded with the following statement:

"Thank you to Canada, US, France, Italy, Australia for their time spent on drafting the statement. UKHO has the following comments:

As a general point the UKHO is surprised and disappointed to see this Committee being used in an attempt to constrain the activities of the UKHO in its production of a MIO. We note that opposition to production of our MIO is far from universal: its production is opposed by a small minority of IHO Member States.

We do listen to the user community and we are satisfied that our MIO is regarded as a useful tool by a significant number of users. This is supported by yesterday's comments by another member state. We hope that this Committee will understand that production of our MIO is driven by user demand, and we hope that this Committee would not wish to adopt any measure that could be regarded as an obstacle to innovation or to providing users with information that they find valuable. We would also point out that our MIO is a dataset of the sort envisaged by those promoting the development of a marine spatial data infrastructure.

Turning to the specific amendments now proposed, we have reservations that we wish to bring to the attention of the Committee. Both amendments use the language of regulation rather than the language of recommendation, and in that regard we remind the Committee that the IHO is a consultative and technical body whose functions are set forth in the IHO Convention at Article 2. They do not include a regulatory function.

The amendment to paragraph a. seeks to prevent HOs from producing MIOs covering waters of nations who object to it. MIO producers may choose not to produce MIOs covering objecting nations' waters, but we are also concerned that adopting such a measure may be regarded as an anti-competitive step by Competition Regulators, particularly where there is user demand for MIOs.

The proposed new paragraph e. (*Any such MIO shall not be construed to be a mandatory supplement to the official ENC's or necessary for safe navigation*) presents a fundamental difficulty because it concerns carriage compliance. (*Note: the referenced "proposed new paragraph e." was removed from the joint statement made by Australia, Canada, France, Italy and USA at their request*). Decisions as to what is and what is not mandatory for carriage are not within the scope of IHO activities. Those decisions are taken principally by the IMO and also by Flag State Authorities and Port State Controls. We believe that it would be unwise for this Committee to seek to interfere in an area where the IMO is the competent International Organization and where Flag State Authorities and Port State Controls are the competent Regulators. Seeking to interfere in this way could cause difficulties for the IHO in its important relationship with the IMO and may prompt criticism by Regulators.

UKHO remains willing to participate bilaterally with members states to improve our communities support to the mariner and correct/clarify the many erroneous and false statements made by others on the role and purpose of AIO."

Norway requested from the IRCC to develop an official and authoritative IHO policy statement on the use of MIOs for safety of navigation. UK strongly objects this request and considered that this is beyond the remit of the IHO which has technical and consultative role.

HSSC Chair informed the Committee that NCWG and HSSC will provide a technical statement as a result of request from INTERTANKO on T&P issues.

The meeting agreed on the following decisions:

Decision 22: to endorse the amendment proposed to the statement that was earlier adopted at the 8th IRCC meeting, jointly provided by Australia, Canada, France, Italy and United States amending IRCC8 Decision 14.

Decision 23: to note the reports *IRCC9-07D1, IRCC9-07D2, IRCC9-07D3, IRCC9-07D4 and IRCC9-07D5*.

e) MSDIWG Report

*Docs: IRCC9-07E1 MSDI Working Group (MSDIWG Chair)
IRCC9-07E2 Draft New Edition 2.0.0 of C-17 (MSDIWG Chair)*

The MSDIWG Chair introduced the report by briefly explain the key concepts of a MSDI and gave as example of the importance of authoritative data the case of the marine cables from HELCOM that don't match with the information provided by national authorities. He introduced the revised 2017-2020 MSDIWG Work Plan, the progress done in the revision of the IHO Publication C-17, working with a broad range of stakeholders and the newly produced white paper on MSDI.

He informed the meeting on the developments at the Open Geospatial Consortium (OGC) Marine Domain Working Group (Marine DWG), a group of experts to advise OGC on the way forward regarding the Marine Domain. The purpose of the Marine DWG is to identify gaps in the current OGC baseline regarding marine geospatial data on Hydrography and ocean mapping, to support smart exchange methods and barriers required for interoperability and to support the widening use of marine data for purposes other than safe navigation.

The meeting was informed on how the Marine DWG will ensure that the evolving IHO standards (e.g. S-100) are brought to the attention of the OGC Members and the evolving OGC standards are brought to the attention of IHO Member States and that best practices are used and the latest technical approaches considered. He also introduced the Concept Development Initiative - Defining the Future of Marine Spatial Data Infrastructure, developed by OGC for the MSDIWG. The proposal presents an approach for evaluating the current state and defining the potential future of MSDIs and emphasizes the rapid evolution of technologies and methodologies for generating non-navigational location-based information of value to a broad range of users.

USA/NGA briefed the meeting on the special agreement with OGC and that it may be able to support the study with funds and human resources (expertise). The importance of the concept study proposed by the MSDIWG was supported by the meeting and Canada offered to contribute to the study. HSSC Chair stressed the importance of cooperating with the OGC with respect to standards. The meeting then agreed on the following decisions and actions:

Decision 24: to acknowledge the work done by the MSDIWG on the draft New Edition 2.0.0 of the IHO Publication C-17 *Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices*.

Decision 25: to endorse the draft New Edition 2.0.0 of the IHO Publication C-17 *Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices*.

Action 17: IRCC Chair and IHO Secretariat to submit the draft New Edition 2.0.0 of the IHO Publication C-17 to the 1st Session of the IHO Council (deadline: in time for C-1).

Decision 26: to note the new MSDIWG White Paper produced by the MSDIWG and available from the IHO website at www.iho.int → Committees & WG → MSDIWG → Body of Knowledge.

Decision 27: to note the creation of the Open Geospatial Consortium (OGC) Maritime Domain Working Group (Marine DWG).

Action 18: RHC Chairs to encourage Member States in the region to nominate RHC MSDI Ambassadors to promote MSDI and to help Member States to prepare the national reports with respect to the status of MSDI.

Decision 28: to form an ad-hoc group (Canada, Denmark (Coordinator), USA and IHO Secretariat) to discuss the structured proposal for a concept development study for MSDI and the possibilities for IHO to fund the study.

Action 19: ad-hoc group (Canada, Denmark, USA and IHO Secretariat) to consider the OGC proposal and seek for funding and report back to the IRCC (deadline: IRCC10).

Decision 29: to note the reports *IRCC9-07E1* and *IRCC9-07E2*.

f) IENWG Report

Doc: IRCC9-07F IHO-EU Network Working Group (IENWG Chair)

France, on behalf of the IENWG Chair, reported the activities in the Coastal Mapping Project with 18 partners to assess the current availability of digital coastal mapping in the EU, disseminate the result through EMODnet (www.emodnet.eu/coastal-mapping), share experience of coastal mapping and develop recommendations from best practices and propose the way ahead. He informed the meeting on EMODnet and the seven operational sub-portals providing access to marine data (geology, bathymetry, physics, chemistry, biology, seabed habitats and human activities) and the high resolution mapping awarded in 2016.

He also reported on the good engagement with the European Commission and other European initiatives, the monitoring of EU directives and call for tenders, proposals, projects and events, the development of geographical data infrastructures (INSPIRE), the Maritime Strategy Framework Directive for the protection of the marine environment across Europe and the Maritime Spatial Planning directive.

The meeting was also informed on the achievements in sharing views amongst European HOs and cooperation for answering European calls for tenders and for providing marine knowledge to the EC, and the IENWG focus on systematic high quality data acquisition and aggregation.

The IHO Secretariat highlighted the recent Declarations of Intent on Marine Research and the launch of the South Atlantic Research and Innovation Flagship Initiative between the European Union, Brazil and South Africa. The meeting agreed on the following decision:

Decision 30: to note the report *IRCC9-07F*.

g) CSBWG Report

Doc.: IRCC9-07G CSB Working Group (CSBWG Chair)

Norway, on behalf of the CSBWG Chair informed the meeting on the status of the preparation of an IHO document on policy for trusted crowdsourced bathymetry to provide guidance on the collection and assessment of CSB data inclusion in the global bathymetric data set which is maintained in the IHO Data Centre for Digital Bathymetry (DCDB). He also reported the CSB Pilot Project teamed up by the IHO DCDB, NOAA and Rose Point Navigation Systems for mariners joining to log position, depth and date/time, to choose to be anonymous or to submit metadata about vessel and equipment.

The meeting was informed on the problems faced by the CSBWG that received minimal feedback from IRCC participants on the draft of the CSB Guidance Document and the need to overcome a degree of skepticism on the CSB concept amid the maritime community and hydrographic organizations, but that the increased awareness and information as well as stakeholder engagement/involvement should all help to overcome these reservations. He stressed the continued importance of liaising with other IHO bodies, as well as appropriate engagement with industry, mariners and HOs to progress the Guidance Document.

The meeting considered the legal aspects of the document that may be a point of weakness and that under the Law of the Sea this may not be considered as innocent passage. However, some participants highlighted that depth collection has been the passage sounding and that was not a problem before CSB. Participants also considered that CATZOC is necessary to qualify the data being collected for using in charts. The meeting agreed on the following decision and actions:

Action 20: IHO Secretariat to circulate the draft CSB Guidance Document for formal consultation with IHO Member States and relevant stakeholders (deadline: September 2017).

Action 21: RHC Chairs to encourage IHO Member States to release datasets or subsets into the public domain via the IHO DCDB (deadline: September 2017).

Action 22: RHC Chairs to request IHO Member States to consider reviewing data gathering restrictions within their maritime areas of jurisdiction to enable CSB activities to be undertaken (deadline: September 2017).

Action 23: RHC Chairs to encourage IHO Member States to support the CSB initiative with positive actions, such as requiring all research vessels collect bathymetric data for late uploading, when on passage or when it does not interfere with other research activities (deadline: September 2017).

Decision 31: to reappoint the CSBWG to continue its work on the Guidance Document under the current ToRs.

Action 24: CSBWG to investigate possible ways to encourage Member States to collect and use CSB data and report back to IRCC (deadline: IRCC10).

h) IBSC Report

Docs: IRCC9-07H1 FIG-IHO-ICA IBSC (IBSC Chair)

IRCC9-07H2 Draft New Edition 1.0.0 of S-8A (IBSC Chair)

IRCC9-07H3 Draft New Edition 1.0.0 of S-8B (IBSC Chair)

Prof. Dr. Keith Miller, on behalf of the IBSC Chair, informed the meeting on the completion of a 5-year development project for the new set of Standards of Competence for Hydrographic Surveyors (S-5A and S-5B) and for Nautical Cartographers (draft S-8A and S-8B) separating the Category "A" and Category "B" levels. Both S-5A and S-5B were adopted in 2016 and submissions reviewed at IBSC40 (March 2017) were against the new Standards and the feedback received by the submitting institutions were very positive. He also introduced the editorial amendments to S-5A and S-5B requesting IRCC approval.

He also introduced the draft S-8A and S-8B requesting endorsement by the IRCC in line with the IHO Assembly Decision A-1/15 that tasked the IRCC to directly seek approval of the proposed new editions of IHO Publications S-8B and S-8A by Member States through Circular Letter voting rather than via submission to the Council. The development of comprehensive Guidelines for the Implementation of the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers, a companion document for S-5A, S-5B, S-8A and S-8B, was noted by the meeting.

The meeting was also informed on the process for assessment of programme submissions, on the revised Rules of Procedure and the proposal of editorial amendments of the Terms of Reference, to reflect the amendments to the Convention on the IHO. The meeting then agreed on the following decisions and actions:

Decision 32: to acknowledge the work done by the IBSC in development of the new Standards of Competence for Hydrographic Surveyors and Nautical Cartographers.

Decision 33: to approve clarifications in Editions 1.0.1 of the IHO Publication S-5A and S-5B *Standards of Competence for Category "A" and Category "B" Hydrographic Surveyors*.

Action 25: IHO Secretariat to publish the Editions 1.0.1 of the IHO Publications S-5A and S-5B *Standards of Competence for Category "A" and Category "B" Hydrographic Surveyors* (deadline: July 2017).

Decision 34: to endorse the draft New Editions 1.0.0 of the IHO Publications S-8A and S-8B *Standards of Competence for Category "A" and Category "B" Nautical Cartographers*.

Action 26: IHO Secretariat to seek Member States' approval of the New Editions 1.0.0 of the IHO Publications S-8A and S-8B *Standards of Competence for Category "A" and Category "B" Nautical Cartographers* in accordance with Decision A-1/15 (deadline: July 2017).

Decision 35: to approve editorial amendments to the Terms of Reference and note amendments to Rules of Procedure presented in Appendix B of the report (doc. IRCC9-07H1).

Action 27: IHO Secretariat to publish the amended version of the IBSC Terms of Reference and Rules of Procedures (deadline: July 2017).

i) GEBCO GC Report

Doc.: IRCC9-07I IHO-IOC GEBCO Guiding Committee (GGC Chair)

GEBCO Guiding Committee (GGC) Chair introduced the report and informed the meeting on the outcomes of the Forum for Future Ocean Floor Mapping held in Monaco in June 2016 and the target to map the ocean floor by 2030. He also reported the progress in the bathymetric datasets for the world's oceans, including the new ENC bathymetric soundings provided by the IHO Member States and the improved GEBCO's regional mapping work. He highlighted that GEBCO has traditionally focused in areas deeper than 200m but it is now actively collecting data in shallower water areas to support coastal activities such as coastal zone management and the mitigation of seaborne disasters such as storm surges and tsunami inundation.

He also informed the meeting on the developments in the Gazetteer of Undersea Feature Names, the work of an external contractor for reviewing and editing over 3 000 undersea feature names (UFN), the priority for production of an S-100 Product Specification for UFN data. He reported the good level of attendance of GGC meeting by observers and the efforts made by the GGC to ensure participation of GEBCO representatives in all RHC meetings.

The Committee was informed that the Intergovernmental Oceanographic Commission (IOC) has become more engaged in GEBCO activities. He also requested IRCC to endorse the withdrawal of the outdated IHO Publication B-7 *GEBCO Guidelines*.

Decision 36: to endorse the withdrawal of IHO Publication B-7 *GEBCO Guidelines*.

Action 28: IRCC Chair and IHO Secretariat to submit a recommendation to the 1st Session of the IHO Council to withdraw the IHO Publication B-7 *GEBCO Guidelines* (deadline: in time for C-1).

Action 29: RHC Chairs to encourage Member States to organize contribution of bathymetric data in shallower coastal areas to GEBCO in order to support the production of higher resolution gridded data products and report back to IRCC (deadline: IRCC10).

8. Outcomes of the 1st Session of the IHO Assembly (A-1)

Docs: IRCC9-08A List of Decisions of A-1 (Secretariat)
IRCC9-08B IHO Response to Disasters (Secretariat)
IRCC9-08C SDB - Risk Assessment (CAN, FRA, USA)

The Committee considered the outcomes of the 1st Session of the IHO Assembly (doc. IRCC9-08A), including the decisions in general and specifically those related to the establishment of the IHO Council and its

Membership, the IHO Resolutions, the 2018-2020 IHO Work Programme, the IHO Strategic Plan and others affecting the IRCC.

The meeting considered Decision A-1/5(o) that tasked the IRCC to include a revision of IHO Resolution 2/1997 as amended *Establishment of Regional Hydrographic Commissions - RHC* in its Work Plan and report to the Council and agreed on:

Decision 37: to establish a drafting group (Brazil, Canada, USA and IHO Secretariat) to review the IHO Resolution 2/1997 as amended *Establishment of Regional Hydrographic Commissions - RHC*.

Action 30: drafting group (Brazil, Canada, USA and IHO Secretariat (Coordinator)) to review the IHO Resolution 2/1997 as amended *Establishment of Regional Hydrographic Commissions - RHC* and submit to the IRCC (deadline: IRCC10).

The Chair recalled the meeting that Decision A-1/15 on the proposed New Editions of IHO Publications S-8B and S-8A was considered under agenda item 7(h). He also noted that Decision A-1/16 (PRO-2) on e-learning in the IHO Capacity Building Strategy and activities was considered under agenda item 7(c).

The Committee considered Decision A-1/21 (PRO-11) to endorse a new IHO Resolution on *Improving the Availability of Bathymetric Data Worldwide* and agreed on:

Decision 38: to note Decision 21 of the IHO Assembly (A-1) on a new IHO Resolution *Improving the Availability of Bathymetric Data Worldwide*.

The meeting agreed to consider Decision A-1/22 (PRO-7) on the engagement with the UN-GGIM and its Statement of Shared Guiding Principles for Geospatial Information Management in agenda item 10. The Committee also considered Decision A-1/19 (PRO-3) that tasked the IRCC to review and redraft IHO Resolution 1/2005 – IHO Response to Disasters as amended taking into consideration PRO-3 and related comments (*doc. IRCC9-08B* refers) and submit a draft revision to the Council, and agreed on the following action:

Action 31: EAHC Chair to liaise with Japan to consult with Member States to review the IHO Resolution 1/2005 *IHO Responses to Disaster* and coordinate with the SWPHC Chair and submit a draft amended version to IRCC (deadline: IRCC10).

The meeting considered Decision A-1/18 (PRO-5) that tasked the IRCC to encourage RHCs to consider using satellite derived bathymetry and risk assessment methodologies in uncharted or poorly charted areas in their respective regions as a way of developing survey priority areas as part of attracting donor funding with the elements in *doc. IRCC9-08C*.

France, on behalf of Canada, France and USA, introduced *doc. IRCC9-08C* on satellite derived bathymetry (SDB) - risk assessment and presented an approach to be considered by the RHCs with respect to Decision A-1/18. The first suggested theme is to perform research and development across RHCs to evaluate and improve technical performance of SDB. He noted the Workshop on SDB to be hosted by Canada in March 2018 to review the synthesis of Member States evaluations and the way forward. This step should be performed in liaison with the HSSC/Project Team on Hydrographic Surveys (HSPT) for the Standards and the Nautical Cartography Working Group (NCWG) for the portrayal.

He presented the second step to establish SDB pilot cases by selecting priority areas for risk assessment taking into consideration safety of navigation criteria and also other stakes like economic development, change detection, spatial planning, and environmental protection for example. The following step is to test the applicability of SDB based on imagery types and resolutions availability as well as physical characteristics such as water turbidity and surface roughness. As a result a prioritized scheme could be set up, resources required to carry out the scheme could be evaluated and finally SDB operations could be carried out.

The meeting was informed on the third theme on the identification of complementary surveys. After SDB has provided an initial analysis of the charted bathymetry, it would be possible to assess where additional surveys, using S-44 compliant means, could be carried out with focus on areas with possible passage for safe navigation or identified uncharted risks to navigation. The resources required for the additional surveys could then be assessed and prioritized using again risk assessment considerations, before the field surveys could be carried out by HOs and/or contractors.

The Committee considered the benefits associated with SDB for risk assessment and how this matter could be used by RHCs and agreed on the following decisions and actions:

Decision 39: to note the importance of workshops to kick off the use satellite derived bathymetry for risk assessment and to acknowledge the benefits of using satellite derived bathymetry for risk assessment including seeking funds from donor agencies.

Action 32: RHC Chairs to encourage Member States in the region to consider using satellite derived bathymetry and risk assessment methodologies in uncharted or poorly charted areas in their respective regions as a way of developing survey priority areas as part of attracting donor funding and report back to IRCC (deadline: IRCC10).

Action 33: RHC Chairs to encourage the use of satellite derived bathymetry and risk assessment methodologies for developing survey priority areas as part of attracting donor funding using the project rationale as presented in doc. IRCC9-08C (deadline: IRCC10).

Action 34: RHC Chairs to encourage Member States to participate in the workshop on satellite derived bathymetry sponsored by Canada in March 2018 (deadline: December 2017).

Decision 40: to note the reports at agenda item 8 (docs. IRCC9-08A, IRCC9-08B and IRCC9-08C).

9. Inputs from Member States and other bodies affecting IRCC

Docs: IRCC9-09A Input from HSSC8 (HSSC)
IRCC9-09B Relations with IGOs, NGOs and IHO Stakeholders (Secretariat)

The HSSC Chair introduced *doc. IRCC9-09A* and informed the meeting on the outcomes of the last HSSC meeting. He reported that the Data Protection Scheme Working Group (DPSWG) was disbanded and the data protection scheme transferred to the ENCWG and the establishment of the Hydrographic Standards Project Team (HSPT) to conduct a comprehensive review of the IHO Publication S-44 Standards for Hydrographic Surveys with a possible creation of a hydrographic survey working group in the future. He also noticed the concept of Ecological Marine Units being developed through a public-private partnership led by Esri and the US Geological Survey (USGS) and invited the MSDIWG to consider further the concept in relation with the development of S-122 - Marine Protected Areas.

He also reported aspects of data quality as HSSC noted that a major source of discontent from mariners in relation with ENC quality indicators was caused by the fact that many HOs were not populating CATZOC (Category Zone of Confidence) values in the ENCs and that HSSC invited IRCC to remind IHO Member States of the importance of populating ENCs with assessed CATZOC values (1 to 5) in particular for Usage Bands 3, 4, 5 and 6, noting that the concept of CATZOC values will remain valid for future S-101 ENCs. He also invited IRCC to consider the need for an additional CATZOC for SDB data and to formulate a requirement for the continuation of the Data Quality Working Group (DQWG) and the necessary coordination between the DQWG and the CSBWG.

He also reported on the developments of S-124 *Navigational Warnings*, the establishment of a Project Team on UFN to be incorporated into the S-100 framework, the task on NCWG to prepare a single educative IHO authoritative document addressing the issue of "equivalent" T&Ps for ENCs, in view of its distribution to HOs, Port State Control authorities and mariners.

The meeting considered the key aspects of the DQWG and the Netherlands offered to hold the position of Chair of the DQWG. The following action was agreed:

Action 35: RHC Chairs to invite Member States to provide technical resources to the DQWG and report back to IRCC (deadline: IRCC10).

The Secretary introduced *doc. IRCC9-09B* and informed the meeting on the relationships with external stakeholders, the updated list of International Organizations with which the IHO maintains relations (IHO Publication P-5 – *Yearbook* and IHO website at Home > External Liaisons) and the recent developments with Memorandum of Understanding (MoU) signed with the Maritime Organisation of West and Central Africa (MOWCA), International Seabed Authority (ISA), Open Geospatial Consortium (OGC) and Mediterranean Science Commission (CIESM).

He also reported the new observers to the IHO: International Association of Independent Tanker Owners (INTERTANKO), World Ocean Council (WOC) and Association of Arctic Expedition Cruise Operators

(AECO). The meeting considered the future activities listed in *doc. IRCC9-09B* and agreed on the following action and decision:

Action 36: RHC Chairs to note the list of events organized by other inter-governmental and stakeholders indicated in *doc. IRCC9-09B*, consider how the IHO might be represented in those events that are considered relevant and liaise with the IHO Secretariat for the appropriate action and report back to IRCC (deadline: IRCC10).

Decision 41: to note the reports at agenda item 9 (*docs. IRCC9-09A and IRCC9-09B*).

10. Data gathering and Management, Maximizing the use of Hydrographic Data

Docs: IRCC9-10A Update on Data Gathering and Management, Maximizing the use of Hydrographic Data (Secretariat)

IRCC9-10B Proposed UN GGIM-Working Group on Maritime Geospatial Information (USA)

IRCC9-10C Shared Guiding Principles for Geospatial Information Management (USA)

Secretary introduced the report (*doc. IRCC9-10A*) and highlight the fact that no more than 15% of ocean depths have been directly measured and the need to maximize data gathering by increasing the speed of data gathering by government agencies in priority areas; by releasing available data from scientific and commercial surveys and complemented by CSB. He also reported on the importance of the CSBWG and the additional engagements on data gathering in several forums.

USA introduced *doc. IRCC9-10B* on the proposal for the establishment of a UN-GGIM Working Group on Maritime Geospatial Information (MGI). He explained that the intention is to work toward the completion of an integrated global dataset that includes land and sea, to ensure that IHO standards serve as the basis for UN-GGIM marine information and to raise political awareness and highlight the importance of marine geospatial information. He further explained the way Member States can participate by seeking to designate experts with specific knowledge drawn from the interrelated fields of surveying, geography, cartography and mapping, remote sensing, land/sea and geographic information systems and environmental protection.

He informed the meeting that Hydrographic Services are entitled to attend UN-GGIM meetings as part of the national delegations and should work with national representatives to support the proposal, positive interventions encouraged. If established, Hydrographic Services should commit to UN-GGIM-MGI participation and consider leadership role.

The meeting considered the need to encourage Member States to support the establishment of the UN-GGIM WG-MGI by working with their national representatives to the UN-GGIM to offer interventions in favor of the WG-MGI during the August 2017 UN-GGIM meeting held in New York, USA. The meeting also considered the need to engage the IHO/MSDIWG to coordinate actions related to the UN-GGIM WGMGI and ensure that there are synergies while avoiding duplications.

USA introduced *doc. IRCC9-10B* on the Shared Guiding Principles for Geospatial Information Management, in line with Decision A-1/22, emphasizing that they also apply to the marine domain, to national authorities holding marine information, and to multi-lateral organizations constituted by the same Member States. He explained that the complexities of the marine domain are not currently well understood within the UN-GGIM, the originating body of the Principles and therefore, the task of implementing the Principles to the marine domain falls to the HO and its Member States. Many efforts are underway that align directly with the Principles, examples include the S-100 framework for marine geospatial data and regional implementations of Marine Spatial Data Infrastructures (MSDI).

The meeting considered the broader implications of the Shared Principles and the need to discuss options and develop recommendations on how they may be incorporated into the various frameworks related to the marine domain, including those related to global and regional initiatives with Crowd-sourced and Satellite Derived Bathymetry. The meeting then agreed the following decisions and actions:

Decision 42: to endorse the need to participate in the UN-GGIM Working Group on Marine Geospatial Information (WG-MGI) ensuring that Hydrography is in the agenda in the political side by the IHO Secretariat and in the technical side by the MSDIWG.

Action 37: RHC Chairs to encourage Member States to support the establishment of the UN-GGIM Working Group on Marine Geospatial Information (WG-MGI) by working with their national representatives to the UN-GGIM to offer interventions in favor of the WG-MGI during the next UN-GGIM meeting (deadline: June 2017).

Action 38: RHC Chairs to encourage Member States to attend the next UN-GGIM meeting and the UN-GGIM-MGI Side Event (deadline: July 2017).

Action 39: RHC Chairs to promote the UN-GGIM in their regions (Permanent).

Action 40: MSDIWG Chair to coordinate matters related to the UN-GGIM to ensure that actions are aligned and maximized while avoiding duplications (Permanent).

Decision 43: to establish the correspondence group Principles Project Team (PPT) to develop options and recommendations to address Decision A-1/22. Composition of the PPT is recommended to contain representative from interested MS and appropriate IRCC subordinate bodies.

Action 41: USA act as a responsible party to act the PPT and to develop the ToR for the PPT that will develop options and recommendations to address A-1 Decision 22 (deadline: July 2017).

Action 42: Principles Project Team (PPT) to develop options and recommendations to address Decision A-1/22 and report to the IRCC (deadline: IRCC10).

Decision 44: to note the reports under agenda item 10 (*docs. IRCC9-10A, IRCC9-10B and IRCC9-10C*).

11. Developments on the Infrastructure of the IHO Secretariat

Docs: IRCC9-11A Update on the development of the IHO GIS and Related Web-based Services (Secretariat)
IRCC9-11B Monitoring INT Charts (Secretariat)

IHO Secretariat presented the *doc. IRCC9-11A* on the developments on the IHO Geographic Information System (GIS), databases, web-based services and online registration system and how they impact the RHCs and the Member States' activities. The meeting was also presented with the revised process for the management, review and monitoring of new INT Charts and the proposal to amend Section 100 of IHO Publication S-11 - Part A Ed. 3.0.0 - Guidance for the Preparation and Maintenance of International (INT) Chart Schemes (*IRCC9-11B, Annex B*).

The meeting considered the benefits of having solid infrastructure in the IHO Secretariat to support and inform decisions of its Member States and the subordinated bodies, in particular with databases, online services and GIS tools. The meeting also considered very positive the developments for the management, review and monitoring of new INT Charts. The meeting agreed the following actions:

Action 43: RHCs to consider using the IHO Online Registration System for their meetings and report back to IRCC (deadline: IRCC10).

Action 44: RHC Chairs to invite Member States to review entries related to their region in IHO C-55 and P-5 (Yearbook) at least annually (Permanent).

Action 45: IHO Secretariat to investigate the possibility of making the IHO GIS available to the Member States and report back to the IRCC (deadline: IRCC10).

Decision 45: to endorse the amendment to Section 100 of IHO Publication S-11 - Part A Ed. 3.0.0 - Guidance for the Preparation and Maintenance of International (INT) Chart Schemes in Annex B of *doc. IRCC9-11B*.

Action 46: IHO Secretariat to submit the proposed amendment of the IHO Publication S-11 - Part A Ed. 3.0.0 - Guidance for the Preparation and Maintenance of International (INT) Chart Schemes to the 1st Session of the IHO Council (deadline: July 2017).

12. Other information papers

The Committee had not received any other relevant information papers from the IRCC Members and Observers.

13. Election of the Chair and Vice-Chair

Doc: IRCC9-13 Nomination of Candidates for Chair and Vice-Chair (Secretariat)

The Chair introduced *doc. IRCC9-13* with one candidate for IRCC Chair (Dr Parry Oei, Singapore), the incumbent of the post, and no candidate for Vice-Chair for the period 2017-2020. He invited the participants to consider nominating a candidate for Vice-Chair. Mr. Thomas Dehling, Chair of the CBSC, Germany was

nominated and the Committee re-elected Dr. Parry Oei and elected Mr. Thomas Dehling as Chair and Vice-Chair respectively by acclamation.

Decision 46: to re-elect Dr. Parry Oei as the Chair of the IRCC and to elect Mr. Thomas Dehling as the Vice-Chair of the IRCC.

14. Next IRCC Meetings (Venue and Date)

The Chair invited the meeting to confirm the dates and venue for IRCC10, IRCC11 and IRCC12. No offer to host IRCC13 was received at the meeting. The following decision was then agreed:

Decision 47: to hold the next IRCC meetings in the following venues and period:

IRCC10: 4-6 June 2018 – Goa, India (pending confirmation from India)

IRCC11: May / June 2019 – Italy (exact venue and dates to be decided)

IRCC12: May / June 2020 – Poland (exact venue and dates to be decided).

15. Any other business

The Chair invited participants to present other business items but no additional item was submitted.

16. Review of the Actions and Decisions

Docs: IRCC9-16A Draft List of Actions from IRCC9 (Secretariat)

IRCC9-16B Draft List of Decisions from IRCC9 (Secretariat)

The Chair explained the due to time constraints the review of the actions and decisions agreed during the meeting (docs. *IRCC9-16A* and *IRCC9-16B*) would be submitted to participants after the meeting. The List of Decisions and List of Actions are in Annexes A and B, respectively.

17. IRCC Work Programme Management

Docs: IRCC9-17A IHO Work Programme for 2018-2020 (Secretariat)

IRCC9-17B Draft IRCC Work Programme 2017-2018 (Secretariat)

The Chair explained the due to time constraints the review of the draft IRCC Work Programme for 2017-2018 (doc. *IRCC9-16A*) would be submitted to participants after the meeting. The agreed IRCC Work Programme 2017-2018 is in Annex C.

18. Closure

The Chair concluded the meeting thanking the Members and Observers for their contribution. He expressed, on behalf of all participants, his sincere gratitude to Mr Amafo, Director of MAS and the staff of MAS for the quality of the meeting organization and wished a safe return journey to all participants.

Note: the meeting was followed by a visit to Maritime Authority Suriname and to the Maritime Museum.

ANNEXES:

A) List of Decisions

B) List of Actions

C) IRCC Work Programme for 2017-2018