

**FIFTH MEETING OF THE IHO INTER-REGIONAL COORDINATION COMMITTEE
IHO-IRCC5
Wollongong, Australia, 3-4 June 2013**

REPORT

1. Opening and Welcome to New Members

Dr. Savi Narayanan (Canada), Chair of the Inter-Regional Coordination Committee opened the meeting at 0900 on 3 June 2013 at the conference room in the Novotel Wollongong Northbeach Hotel, hosted by the Australian Hydrographic Service.

1.1. Opening Remarks

The Chair welcomed the IRCC Members and participants to the meeting. She thanked the hosts from Australia and requested them to address the Committee and to provide participants with administrative and local details.

On behalf of Australia, Commodore Brett Brace welcomed the participants to Wollongong and expressed his pleasure in having the opportunity to closely interact with them.

The Chair invited the IHO President Robert Ward to welcome the meeting. He highlighted the importance of the IRCC for the development of hydrographic services and invited the IRCC participants to reflect on the meaning of the first C in IRCC acronym. This C also means communication, a key element in the IHO. He also stressed the current constraints in resources and the challenges the IHO faces.

1.2. Introductions

The meeting participants were invited to introduce themselves for the benefit of participants attending IRCC for the first time. Jukka Varonen (Finland) and Tom Karsten (UK) sent apologies. **Annex A** presents the list of participants.

1.3. Administrative Arrangements

Docs: IRCC5-01A List of Documents (IHB)
IRCC5-01B List of Participants (IHB)
IRCC5-01C IRCC Membership (IHB)

The Secretary introduced these documents for Committee to note.

2. Approval of Agenda

Doc: IRCC5-02Rev2. Agenda and Timetable (IHB)

The Secretary introduced the agenda that was subsequently approved (**Annex B**) with one slight modification. The election of the Vice Chair will be considered under Agenda item 15.

3. Matters arising from Minutes of IRCC4 Meeting

Docs: IRCC5-03A Minutes of IRCC4 (IHB)
IRCC5-03B Status of Action List from IRCC4 (IHB)
IRCC5-03C Best Practices (UK)

The Secretary followed by UK introduced the three documents and the Chair invited comments from IRCC Members. IRCC agreed on the following Decision:

Decision 1: to approve the IRCC4 Minutes.

The Chair reviewed the List of Actions from IRCC4 providing the status on each and highlighting the pending actions. One of the main challenges faced by the Committee was the implementation of the Performance Indicators, due to its complexity and the need of further development.

The participants also discussed the best practices presented in document (*IRCC5-03C*). Norway suggested including one additional practice: the need to speak slowly and clearly in the meetings for the benefit of non-English speaking participants. France suggested creating a reliable mailing list for IRCC.

The IRCC agreed on the following decisions and actions:

Decision 2: to approve the updated IRCC4 List of Actions.

Decision 3: to acknowledge the Best Practices paper prepared by UK (*doc. IRCC5-03C*) with the revisions recommended by the Committee as an important document to guide the IRCC meetings.

Action 23: IHB to incorporate the best practices to the Informal Guidelines for the preparation of IRCC meetings taking into account additional inputs from the meeting (deadline: August 2013).

4. Report by the Chair and the IHB

Doc: IRCC5-04 Report of IHB (IHB)

The Chair expressed her appreciation for the invaluable contributions by IHO Director Gilles Bessero as the former IRCC Chair and of RAdm Nick Lambert as the enthusiastic Vice Chair. She also provided a general overview of events and activities since IRCC4.

IHO Director Mustafa Iptes (Secretary) presented the IHB Report (*IRCC5-04*), where he highlighted the duties and responsibilities of the new Directing Committee (DC) that took office on 1 September 2012. He reported on the status of approval of the amendments to the IHO Convention and of the new Member States, and the diplomatic engagement in place to accelerate the on-going voting process, on the progress of the C-55 Metadata Data Base, the World Hydrography Day and the IHO Work Programme developments.

The Chair invited participants to comment on the reports. President Ward stressed that there are only nine votes missing for the amendments to the Convention and the implications for the IHO. He also expressed that the Directing Committee intends to organize an information day during the next EIHC5 and invited the RHC Chairs to comment and help develop and prioritize the IHO work items.

Chair requested the views on the way forward and agreed with President Ward on the need to review and assess the IHO Work Programme for its completeness and relevance. President Ward explained that the revision of the work items will be decided by the Member States and that the IHB will provide the platform for this. The revision will flow through IRCC and HSSC.

Action 20: RHC Chairs to consider proposing agenda items to the next EIHC5 (deadline: January 2014).

Action 21: IHB to consider covering the following subjects in the next EIHC5: Satellite Derived Bathymetry (SDB) and Crowd Source Bathymetry (deadline: January 2014).

5. Presentation of key achievements and lessons learned by RHCs

<i>IRCC5-05A</i>	<i>Nordic HC (NHC Chair)</i>
<i>IRCC5-05B</i>	<i>North Sea HC (NSHC Chair)</i>
<i>IRCC5-05C</i>	<i>East Asia HC (EAHC Chair)</i>
<i>IRCC5-05D</i>	<i>US/Canada HC (USCHC Chair)</i>
<i>IRCC5-05E</i>	<i>Mediterranean and Black Seas HC (MBSHC Chair)</i>
<i>IRCC5-05F</i>	<i>Baltic Sea HC (BSHC Chair)</i>
<i>IRCC5-05G</i>	<i>Eastern Atlantic HC (EAtHC Chair)</i>
<i>IRCC5-05H</i>	<i>South-East Pacific HC (SEPHC Chair)</i>
<i>IRCC5-05I</i>	<i>South-West Pacific HC (SWPHC Chair)</i>
<i>IRCC5-05J</i>	<i>Meso American & Caribbean Sea HC (MACHC Chair)</i>
<i>IRCC5-05K</i>	<i>Southern Africa and Islands HC (SAIHC Chair)</i>
<i>IRCC5-05L</i>	<i>North Indian Ocean HC (NIOHC Chair)</i>
<i>IRCC5-05M</i>	<i>ROPME Sea Area HC (RSAHC Chair)</i>
<i>IRCC5-05N</i>	<i>South West Atlantic HC (SWAtHC Chair)</i>
<i>IRCC5-05O</i>	<i>Arctic Regional HC (ARHC Chair)</i>

RHC Chairs were invited to briefly summarize their reports and present the key achievements, the challenges faced and lessons learned in each Region; full documents and presentations are on the IHB website under IRCC5. The key points were:

NHC: the current reduced hydrographic survey capacity and the need to look into new technologies; the outsourcing of hydrographic survey capacity; the challenge posed by decreasing competitiveness due to the competition with oil and gas industry; the fact that rebuild later is proven to be a challenge after losing hydrographic capacity; how to channel the quality of ENC to the leisure boats as well as for the professional sailor.

NSHC: the increasing cooperation with the European Commission (EC) and the relevance of the Green Paper 2020; the progress of a common vertical reference in the Region; the work done together with BLAST; the inclusion of SDB in the agenda of the region.

EAHC (Japan, on behalf of the chair): highlighted the developments brought by the Capacity Building activities in the region.

USCHC: reported that the last meeting was done via videoconference and that though it offered significant cost savings and much broader participation, it did somewhat restrict discussions; the completion of the transboundary project in southern waters; the use of Lidar surveys and the progress on its effort to establish a common vertical datum; the future work to continue the transboundary developments; the current ability to support the S-100 development in DIPWG.

Norway complemented the use of software for virtual meeting (Webex). Jeppesen noted the use of several software depending on the level of encryption that is necessary in each case.

MBSHC: the two new (potential) members, of which, one, viz. Serbia, is landlocked; the challenges associated with resources; the designation of Turkey as the CB Coordinator; the visits to Israel, Georgia and Lebanon (2014); the cooperation between IHO and EC.

President Robert Ward commented on the establishment of a NAVAREA or Sub-NAVAREA in the Caspian Sea and Russia's effort. He explained that the logical place would be in the MBSHC as a subgroup, but there are political challenges. Director Iptes complemented explaining the case of the Black and Azov Seas Working Group (BASWG), created under MBSHC to deal with the specific matters of these two bodies of water.

BSHC (Latvia on behalf of the Chair): reported on the implementation of MSDI and the vertical datum in the region; all the members are distributing ENC's via RENC's; introduction of Inspire initiative and Maritime Spatial Planning; the resurvey scheme as a possibility for the C-55 developments.

EAtHC: reported the new member (Cameroon became an IHO MS); focus on Western Africa countries; the regional coordination for CB in the region; the implementation of a revised strategy; the engagement with Coastal states to seek bilateral agreements to fulfil SOLAS commitments; the need to regulate third party surveys and ensure the resulting data flowing to the Charting Authorities; reported that several countries reported their regulations on how the private surveys are delivered to the hydrographic offices; the intention to develop a Nigerian Hydrographic Academy.

SEPHC: reported on the progress of the ENC Scheme in the region, the organization of a seminar on "The importance and contribution of the Hydrographic Services to the sustainable development from an economic and social focus" and a Workshop on "Standards for Tsunami Inundation Charts"; the future Workshops on HPD (2013) and on S-100 (2013).

SWPHC: reported the delivering of a Hydrographic Category B for the Secretariat of the Pacific Community (SPC) as a success history; presented the current situation regarding the development of the risk based assessment in the region and the implementation in Vanuatu as a proof of concept.

President Ward noted that SPC is the case of building regional capability as it would be difficult to each individual state to get it alone. IRCC agreed on the following decision:

Decision 4: to acknowledge the progress made by New Zealand in establishing a risk based criteria for prioritizing the surveys. The risk assessment outlines areas where charting should be upgraded to modern standards and the results obtained in Vanuatu shows the benefit of such model. IRCC also recognizes that methodology is a useful tool for the Capacity Building Sub-Committee to orient the CB Work Programme.

MACHC: reported on the establishment of the ENC and INT Chart coordination mechanism (MICC) and the success in solving gaps and overlaps; the Maritime Economic Infrastructure Program (MEIP) and the economic impact and benefits; the involvement of industry in the region as a key for success; the establishment of the Mexican Hydrographic Conference.

SAIHC: reported on the efforts to bring the countries in CB Phase 1 and how MSI has improved in the region; the status of INT Charts and ENC's; the need of modern surveys for improving the quality of the charts; the Technical Visits conducted in the region.

Following a discussion on ways to improve the tide network in SAIHC, the IRCC agreed on the action:

Action 22: Chair to investigate possible IOC collaboration in Africa with SAIHC (deadline: December 2013-DONE during the 27th IOC Assembly)

NIOHC: reported the developments in the region gained by the Capacity Building activities and the very good return from the MSDI courses for the beneficiary countries; the issues regarding ENC's and the engagement of industry in the region.

RSAHC: reported the establishment of regular meetings and that Iraq is interested in becoming an IHO Member State; the impact of the CB Projects to improve the language of Hydrography in the region.

SWAtHC: reported on the joint INT Charts and ENC coordination; the availability of Hydrography Category A and Category B seats in Brazil for international students; the use of new technologies for data acquisition; the cooperation with IOC.

ARHC: highlighted the surveying difficulties in the Arctic due to complex geography, vastness of the region and challenging environmental conditions; the quality of the current charts and the increase in traffic in such an area with difficult search and rescue capabilities; the development of a planning tool to plan a route in the area; the establishment of the new INT chart region N; the scientific meeting one day before the annual meetings.

The IRCC noted the Reports from the RHCs.

6. Presentation of key achievements and lessons learned by IRCC Bodies

<i>IRCC5-06A</i>	<i>Hydrographic Commission on Antarctica (HCA Chair)</i>
<i>IRCC5-06B</i>	<i>World-Wide Navigational Warning Service SC (WWNWS Chair)</i>
<i>IRCC5-06C</i>	<i>Capacity Building Sub-Committee (CBSC Chair)</i>
<i>IRCC5-06D</i>	<i>WEND Working Group (WENDWG Chair)</i>
<i>IRCC5-06E</i>	<i>FIG-IHO-ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC Chair)</i>
<i>IRCC5-06F</i>	<i>GEBCO Guiding Committee (GGC Chair)</i>

The Chairs of the IRCC bodies were invited to briefly summarize their reports and present the key achievements, the challenges faced and lessons learned. The full reports and presentations are on the IHB website under IRCC5. The key points were:

HCA: reported a reduction in planned surveys and that over 95% of Antarctica is still unsurveyed; the use of ships of opportunity (crowd sourcing), Lidar and Satellite Derived Bathymetry; the status of the hydrographic surveys and the chart coverage; the development of the Antarctica GIS in the IHB; the contribution of HCA to the PIs and the differences from the RHCs.

WWNWS: reported on the progress done with the documentation revision, including the draft editorial amendments to the Joint IMO/IHO/WMO Manual on MSI (IHO Publication S-53); the continued support to the CBWP to deliver MSI Courses; the program to monitor developments in IMO regarding e-Navigation, AIS Aids to Navigation and GMDSS Modernization and their impact on the provision of navigational warnings to mariners at sea.

President Ward highlighted the great work done by the WWNWS-SC and the long term achievements for the safety of navigation. The IRCC then agreed on the following decision:

Decision 5: to acknowledge the work done by the WWNWS-SC and the long term positive impact for the safety of navigation.

CBSC: reported on the way forward regarding the CB Strategy revision process, the main topics to be discussed and the timetable; presented the figures for the Strategic PIs related to CB; the role of the CB Coordinators and the impact for each RHC; the approval of two new CB Procedures to improve the management and to comply with the Auditing process in the IHB; highlighted the contributions from Korea and Japan for the CB Fund; the updated CB Work Programme (CBWP) for 2013 and the agreed CBWP for 2014.

Director Iptes emphasized the new programme supported by Korea to deliver Hydrography Category A courses in the University of Southern Mississippi (USA). He also expressed the intention of the IHB to host a CB Stakeholders Seminar in Monaco on 11-12 March 2014. The IRCC agreed on the following action:

Action 18: IRCC Members to publicize the CB Stakeholders Seminar (deadline: before the Seminar).

France stressed the need for the development of comprehensive projects within the CBWP and the implementation strategy. Developing a comprehensive strategy for CB will be most useful to prioritize the CB work plan and to get engagement from donors and Member States, as well to bring more visibility to the CB.

UK noted the importance of the PIs to support the CB activities. He proposed to include a new PI associated to the CB Phase (1, 2 or 3) of each coastal State in order to monitor its progress.

President Ward informed that the IHB foyer can be used by Member States to display their achievements. IC-ENC asked if there is a mechanism to incorporate activities supported by the RENC in the CBWP if the Management Board decides to support trainings. CBSC Chair answered that these activities will be incorporated to the CBWP.

The IRCC discussed the CB Strategy revision process and agreed on the following:

Decision 6: to approve the way forward regarding the revision of the CB Strategy as proposed in the CBSC Chair's Report (IRCC5-06C).

Action 24: CBSC to develop the CB Strategy and report back to IRCC (deadline: December 2013).

WENDWG: reported the coverage, comparison of ENCs with corresponding paper charts and the evolution in time; proposed a revised version of its ToR; the election of the Vice Chair; submitted the revision of the WEND Guidelines for IRCC approval; presented the Risk Assessment Guidelines to handle ENC overlaps; the development of the WEND to become an IHO WENC; the proposal from EAHC to define the Cartographic Boundaries concept in order to overcome geopolitical and diplomatic issues; the need for an authoritative catalogue (WEND Metadata Data Store); the outcomes of the RENC Harmonization Sub-Group (RHSG).

IRCC discussed the revision of the ToR and will decide on the election of the Vice Chair of WENDWG the Agenda item 15. The following decision was agreed:

Decision 7: to approve the revised ToR for the WENDWG as proposed by the Chair's report (doc. IRCC5-06D).

IRCC debated the revised WEND Guidelines proposed by the WENDWG following IHC18 Decision 13. The following decision and action were agreed:

Decision 8: to endorse the revised WEND Guidelines as proposed by the Chair's report (doc. IRCC5-06D) and to send it to the IHB to seek Member States' approval.

Action 38: IHB to seek Member States' approval to the revised WEND Guidelines (deadline: December 2013)

The definition of Cartographic Boundary was supported by Norway, Brazil and France. The IRCC agrees in principle and agrees on the following action:

Action 25: IHB to find a harmonized definition for Cartographic Boundary according to the guidelines to produce ENC and to submit a proposal to include the definition in the existing appendix to IHO Resolution 13/2012 on WEND Guidelines.

The ENC Reference Library was discussed by the Committee. President Ward stressed the difficulties the IHB encounters to provide appropriate guidance and to report to RHC and Member States given the lack of an authoritative ENC Catalogue. The IRCC then agreed the decision:

Decision 9: to acknowledge the value of an IHO authoritative ENC Catalogue at the IHB and invite RHC Chairs to work in their region to achieve the goals established in Article 19 of the IHO General Regulations.

The establishment of the IHO WENC (or RENC) was considered by the Committee and the work plan submitted by the Chair was approved with the support from France and Brazil.

Decision 10: to approve the WENDWG Work Programme for the development of an IHO WENC (or RENC).

IBSC: reported that 16 programmes were submitted or re-submitted in 2013 and 10 were awarded recognition; the revision of the current IBSC Standards were reviewed at the level of a revision; the work plan and timetable for the complete revision of the standards were agreed; the creation of a Code of Conduct for the Board Members to be included in the Rules of Procedure.

The IRCC discussed the revision of the Standards and agreed with the following decisions and actions:
Decision 11: to approve the work plan for the revision and the principles of the white paper (IBSC36 document) for the revision of the Standards (new edition).

Decision 12: to endorse the revision of IHO Publications S-5 and S-8.

Action 26: IBSC to submit the draft revision of S-5 and S-8 to the IHB in order to seek Member States' approval (deadline: June 2013).

Action 27: IHB to issue a Circular Letter on S-5/S-8 for the approval of Member States (deadline: upon receiving the IBSC docs.).

GEBCO: reported the improvements in the services provided by the DCDB website; urged RHC Members to contribute data or metadata to the DCDB; the revised publication on Undersea Feature Names and the web search; the new IHO-IOC GEBCO Cook Book; the Nippon Foundation GEBCO scholars; the status of shallow water bathymetry database.

IRCC agreed the following decision and actions:

Decision 13: to endorse the revision of IHO Publication B-6 (Undersea Feature Names).

Action 5: IHB to seek Member States' approval to Publication B-6 (deadline: December 2013).

Action 6: RHCs and GEBCO to invite GEBCO Guiding Committee / Bathymetric Regional Project Chairs to attend corresponding RHCs meetings, aiming at strengthening collaboration with a priority on improving high resolution shallow water bathymetry at the regional level (Permanent).

Action 28: RHC Chairs to encourage RHCs to support GEBCO regional mapping projects and report back to IRCC (deadline: IRCC6).

7. Inputs from Member States on other bodies affecting IRCC

Docs: IRCC5-07A

Input from HSSC4 (HSSC Chair)

IRCC5-07B

Proposal on improving IHO's relationship with the European Commission (Sweden)

IRCC5-07C Proposal for the extension of the scope of the IHO Resolution 1/2005 as amended (IHO response to disasters) to prevention and contingency plans (France)

The Chair invited the presenters to highlight the main issues from the reports and how they impact the RHCs and the IRCC bodies.

HSSC: provided status report on the actions from IRCC4, in particular, the tasks regarding the MSDI training course; the feedback from the 5th IHO Stakeholders' Forum; and the organization of the next stakeholders' event, co-sponsored by the International Federation of Hydrographic Societies (IFHS) on "Digital Hydrography on the Maritime Web - Embracing the challenges and opportunities" which will take place in Southampton, UK on 29-30 October 2013.

Action 29: RHC Chairs to encourage participation of Stakeholders in the region on IFHS-IHO Stakeholders conference of October 2013 (deadline: before October 2013).

European Commission (EC): the paper (*doc. IRCC5-07B*) presented the experiences and the current coordination that exists among the EC, NHC and BSHC and invited the IRCC to consider creating a subordinated body of the IRCC to liaise with the EC.

President Ward raised the point that a working group, if formed, should be open to all Member States and not only European Member States. He recalled that it is necessary to have a point of entry to the EC as the Bureau does. He suggested to have delegates of the IHO to provide the inputs to the EC or to establish bilateral agreement (among the RHCs concerned: NHC, EAHC, MBSCH, NSHC, and BSHC). The other option is to input the IHB that will in turn input the EC, under the current MOU.

Norway supported the engagement with the EC and the establishment of a working group open to all Member States (not only European) and was seconded by UK. The Chair proposed to the Committee to form a steering committee or a working group to manage the European Union (EU) matters and the IHO/EC MoU. The following decisions and actions:

Decision 14: to create the Working Group to deal with the EC matters.

Decision 15: to task the Working Group to manage the EU matters and the IHO/EC MOU.

Action 30: France (on behalf of NSHC) to develop the ToR for the WG to manage the EU matters and the IHO/EC MoU and circulate to the IRCC Members (deadline: August 2013)

Action 31: IRCC to Approve the ToR for the WG on IHO/EC MoU to manage the EU matters and the IHO/EC MoU (deadline: October 2013)

France: (*doc. IRCC5-07B*) reported on the rationale for amending IHO Resolution 1/2005 in order to expand the scope from "Response to Disasters" to "Response to Marine Disasters, and Contribution to Prevention and Alert Systems".

The proposal was supported by Japan, Suriname, South Africa and Chile. According to France the main focus is to cooperate, support and contribute with data to the established IOC operational arrangements.

President Ward explained that if the IRCC endorses the proposal the IHB then circulate the proposal to modify the existing resolution by Circular Letter. The IRCC then agreed on:

Decision 16: to adopt the proposal to change IHO Resolution 1/2005 (*doc. IRCC5-07B*).

Action 32: IHB to send a CL on changes on IHO Resolution 1/2005 (Response to Disasters) for approval by Member States (deadline: July 2013).

8. Review of Terms of Reference and Rules of Procedure

Doc: IRCC5-08 TOR-ROP (IHB)

The Chair invited the Members to revise the IRCC Terms of Reference and Rules of Procedure (ToR-RoP). The IRCC considered the document and agreed on:

Decision 17: to maintain the current ToR-RoP for the IRCC.

9. Proposal of instructions for the submission of reports and proposals to IRCC

Doc: IRCC5-09Draft instructions for the submission of reports and proposals to IRCC (IHB)

The IHB presented the rationale for the instructions regarding the submission of reports and proposals to the IRCC meetings (*doc. IRCC5-09*).

The Chair suggested adding "achievements and lessons learned" in the document. The IRCC then agreed on the following:

Decision 18: to adopt the Instructions for the submission of reports and proposals to IRCC considering the suggestion from the Chair.

Action 33: IHB to update the proposal instructions regarding the submission of reports and proposals to the IRCC meetings and upload to the IHO Website (deadline: June 2013).

10. IHO Work Programme Management

Docs: IRCC4-06.1 Input from and to the IHO Work Programme (2012-2013)

IHO five-year Work Programme 2013-2017 (CONF.18/REP.01)

IHO 2014 Work Programme (CONF.18/REP.02)

Chair introduced *doc. IRCC4-06.1* and invited the Committee to discuss the inputs from and to the IHO Work Programme. IRCC then agreed on the following actions:

Action 16: RHCs and IRCC subsidiary organs to provide the IRCC Chair with their report on the progress of the relevant tasks of the IHO 2013 Work Programme (deadline: by the end of January 2014).

Action 17: IRCC Chair to provide the IHB with the IRCC Annual Report for 2013 (deadline: by end of February 2014).

11. Satellite Derived Bathymetry and the Use of New Technologies

Doc: IRCC5-11A Satellite Derived Bathymetry (SDB) (IHB)

IRCC5-11B Crowd Source Bathymetry (UK)

IRCC5-11C The Use of Bathymetric Data from Third Parties (ARHC)

President Ward presented *doc. IRCC5-11A* on Satellite Derived Bathymetry (SDB). He highlighted that SDB has the potential to make substantial improvements to otherwise inadequate charts and can provide useful hydrographic data for other purposes in areas where existing charting is based on little or no hydrographic surveying and there is little prospect of conventional surveys being conducted in the reasonable future.

President Ward also provided the background information and the basic knowledge on how bathymetry is derived from multispectral imagery. He also presented the history and the current status of SDB, a brief impact analysis of the technique, the relevance for the IHO CB Strategy, how SDB relates to the IHO Standards for Hydrographic Surveys and the role of the IHO.

Chair invited Prof Arnold Dekker to present the status of SDB sponsored by CSIRO, the Commonwealth Scientific and Industrial Research Organisation, Australia's national science agency. He presented the conceptual physics-based model for optically shallow waters, and the process to derive the bathymetry in this environment, using multiple satellite and airborne sensors. Prof Dekker displayed the statistics of numerous experiments and how this technique fits in the IHO Standards for Hydrographic Surveys, regarding orders 1A, 1B and 2. He also displayed a number of derived bathymetry compared to regular surveys and how this technique can be used as an additional tool to help hydrographic services. The presentation is available in the IRCC web page.

Following a discussion on the importance and the future of SDB, the Committee the following decision and action:

Decision 19: to acknowledge that:

- a) Satellite Derived Bathymetry, with appropriate accuracy and reliability indicators, may be a way to address the current limitations on maritime development due to extensive areas of unsurveyed and very poorly surveyed shallow waters,
- b) Satellite Derived Bathymetry could be an effective way of identifying certain sea areas for further maritime development, including more detailed hydrographic surveys where the principal objective is for safe navigation,
- c) the cost effectiveness of Satellite Derived Bathymetry may encourage States to more quickly recognize the benefits of investing in an effective national hydrographic survey programme.

Action 34: RHC Chairs to encourage Member States and representatives of industry and academia to promote and to work together to ensure that the best possible use is made of Satellite Derived Bathymetry (Permanent).

UK presented *doc. IRCC5-11B* on Crowd Source Bathymetry (CSB) and the relationship to the gathering of passage sounding data. He presented the results of collaboration with Argos in ships operating in Antarctica and concluded that this technique can provide useful information to contribute to safety of navigation with relatively low cost.

Following a discussion on the topic the IRCC agreed on the following action:

Action 35: RHC Chairs to encourage discussions on how Crowd Source Bathymetry can be used in official navigational products and report back to IRCC6 (deadline: IRCC6).

ARHC Chair presented *doc. IRCC5-11C* on the use of bathymetric data from 3rd parties. He highlighted that this bathymetric data can be used for charts or as an awareness tool. The challenge is to establish the policy to progress the issue.

France noted that some data may not comply with S-44 but many surveys do not comply either. Many charts have 100-year old lead line surveys. He recommended not downgrading the Standards to fit the weakness of the technology but continue to take data into account and improve the quality of these data.

President Ward drew attention to the lack of quality assessment in many of the charts and then requested HSSC to consider further actions to improve the situation. He recalled that there are many tools that can be used such as hydrographic notes, as used in the past with data from fishermen and others.

ARHC Chair raised the concern that many sailors may not be aware of CATZOCs and the need for better portrayal of the quality information particularly in reference to data from 3rd parties; this need to be addressed by HSSC. The Chair sought the Committee's input on possible actions IRCC can undertake to establish the policy, guidelines and standards for portraying CSB on charts.

USA noted that the CSB may not be better than 100-year old charts; suggested that we gain more experience with the usage of these data and later the portrayal; noted that it is resource intensive to use CSB into charts but may be useful to identify areas of navigational significance; considered that a risk assessment approach is necessary to allow the use of CSB in charts. He also noted that it is necessary to develop a trusted partnership for data collection and a methodology for CSB.

GEBCO Guiding Committee Chair recalled that it is necessary to motivate ships to turn on their multi-beam systems while transiting and the use of ships of opportunity is the only way to go for ocean mapping.

12. Developments on C-55

Doc: IRCC5-12A C-55 GIS Database (IHB)
IRCC5-12B C-55 developments at UKHO (UK)

President Ward presented *doc IRCC5-12A* on the C-55 GIS Database being developed at the IHB, taking into account input from the IRCC4 meeting and feedback from RHC meetings. The IHB has produced a harmonised model for product metadata that will form the basis of a regional metadata GIS data base.

The database makes provision for ENC, INT chart, survey coverage, quality metadata, MSI, tidal records and undersea feature information. The IHB is currently populating a test database for the Antarctic region that will be presented to the 13th HCA meeting in Cadiz, Spain in December. It is proposed that this model, once implemented for the HCA may become the model for establishing metadata databases for all RHCs, and may become an essential component of C-55.

UK presented *doc IRCC5-12B* on the C-55 developments at UKHO since IRCC4. He reported the approach used to create outcomes to define if a chart survey was considered adequate, not adequate or very inadequate.

The IRCC considered the reports and agreed on the following:

Decision 20: to note the reports and acknowledge the developments done in both the IHB and the UKHO.

13. Next IRCC Meetings (Venue and Date)

The Chair invited the Committee to consider the dates and venues for IRCC6 and IRCC7, considering the decision by CBSC11 to hold CBSC12 in Brest (France) on 14-16 May 2014 and the EIHC5 on 6-10 October 2014.

CBSC Chair noted the benefits of the Sub-Committee holding its meeting back-to-back with IRCC. The Committee discussed the duration of the meeting, whether to keep two days or extend to three days and agreed the decision:

Decision 21: to continue to hold the IRCC meetings in two days, back-to-back with CBSC.

France kindly offered to host both CBSC12 and IRCC6 in Brest and Paris. Mexico kindly offered to host the IRCC7 meeting in Mexico in 2015. The IRCC then agreed on the decisions:

Decision 22: to hold the IRCC6 meeting in Paris (France) on 19-20 May 2014.

Decision 23: to hold the IRCC7 meeting in Mexico in 2015 (Venue and dates to be agreed during IRCC6 but in principle in June).

14. Review of the Actions and Decisions

The Chair invited the Secretary to present the draft actions and decisions agreed during the meeting for adoption. The IRCC reviewed the permanent actions, the actions brought from IRCC4 List of Actions and the actions agreed during the meeting (**Annex C**), the decisions (**Annex D**) and the tasks (**Annex E**) associated to IRCC.

15. Election of the IRCC Vice Chair and WENDWG Chair and Vice Chair

The Chair referred to Article 3 of IRCC Rules of Procedure:

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 Conference (Conference to be replaced by Assembly when the Council and Assembly are established) 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 act as the Chair with the same powers and duties.

and invited the participants to present nominations for Vice Chair. She recalled that IRCC had already received nomination of RAdm. Tom Karsten (UK). This nomination received support from RSAHC, MACHC, Australia, Thailand followed by others and RAdm. Tom Karsten was elected IRCC Vice Chair by acclamation.

The Chair also invited nominations for WENDWG Chair and Vice Chair. SAIHC Chair proposed to keep the current Chair, Capt. Jamie McMichael-Phillips (UK) and was supported by RSAHC, ARHC and NSHC Chairs, seconded by others. Capt. Jamie McMichael-Phillips (UK) was elected Chair of the WENDWG by acclamation.

USA nominated Mr Sean Hinds (Canada) as Vice Chair of the WENDWG and was supported by UK and seconded by others. President Ward noted the work done by Sean Hinds during the WENDWG3 meeting in Monaco.

Mr Sean Hinds (Canada) was elected Vice Chair of the WENDWG by acclamation.

16. Any other business

Participants were invited to present any other business. No item was raised.

17. Closure of the meeting

The Chair warmly thanked the Australian Hydrographic Service for the excellent arrangements for the meeting. She also thanked all participants and observers for their valuable contribution to the meeting, welcomed the very constructive atmosphere of the meeting and wished the participants a safe return journey. The meeting closed at 17:00 on 4 June 2013.

ANNEXES:

- A) List of Participants
- B) Agenda and timetable
- C)
- C) List of Actions
- D) Decisions
- E) Tasks