XVIIIth INTERNATIONAL HYDROGRAPHIC CONFERENCE

MONACO, 23 - 27 April 2012

REPORTS ON THE WORK OF THE IHO FOR THE PERIOD

2007 - 2011

WORK PROGRAMME No. 3
INTER REGIONAL COORDINATION AND SUPPORT

TABLE OF CONTENTS

ELEMENT 3.1

CO-OPERATION WITH MEMBER STATES AND ATTENDANCE AT RELEVANT MEETINGS

REPORT BY THE INTER REGIONAL COORDINATION COMMITTEE (IRCC)

1. Chair: Ing. Gen. Gilles BESSERO (France)
Vice-Chair: Capt. Abri KAMPFER (South Africa)

2. Membership:

Members: Chairs of the Regional Hydrographic Commissions (RHCs):
- Nordic Hydrographic Commission (NHC)
- North Sea Hydrographic Commission (NSHC)
- East Asia Hydrographic Commission (EAHC)
- United States Canada Hydrographic Commission (USCHC)
- Mediterranean and Black Seas Hydrographic Commission (MBSHC)
- Baltic Sea Hydrographic Commission (BSHC)
- Eastern Atlantic Hydrographic Commission (EAtHC)
- South East Pacific Hydrographic Commission (SEPHC)
- South West Pacific Hydrographic Commission (SWPHC)
- Meso-American - Caribbean Sea Hydrographic Commission (MACHC)
- Southern Africa and Islands Hydrographic Commission (SAIHC)
- ROPME Sea Area Hydrographic Commission (RSAHC)
- North Indian Ocean Hydrographic Commission (NIOHC)
- South West Atlantic Hydrographic Commission (SWAtHC)
- Arctic Regional Hydrographic Commission (ARHC) *from 2011*

Chair of the Hydrographic Commission on Antarctica (HCA)

Chair of the Capacity Building Sub-Committee (CBSC)

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

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

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

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

Observers[1]: IHO Member States:
Australia, Brazil, China, Colombia, Denmark, Finland, France, Germany, Japan, Mexico, Mozambique, Nigeria, Norway, Peru, Sweden, Thailand, Turkey, UK, USA

Non-Government International Organizations (NGIOs):
RTCA

3. Meetings:

The Committee was established on 1st January 2009 (ref. CL 94/2008) and has met annually since that date, in accordance with the Rules of Procedure:

- IRCC 1: 5 June 2009, Monaco;

[1] List of the observers who attended at least one meeting of the Committee.

- IRCC 2: 17-18 June 2010, New Orleans, USA;
- IRCC 3: 26-27 May 2011, Niteroi, Brazil.

4. Agenda Items:

The purpose of the Committee is to promote and coordinate those activities that might benefit from a regional approach. Its principal objectives are to:

- establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions;
- establish co-operation to enhance the delivery of capacity building programmes;
- monitor the work of specified IHO Inter-Organizational Bodies engaged in activities that require inter-regional cooperation and coordination;
- promote co-operation between pertinent regional organizations and review and implement the IHO Capacity Building Strategy, promoting Capacity Building initiatives.

The IRCC assumes the responsibility of the policy matters related to the WEND until the Council is established.

The standing agenda of the Committee is provided in annex.

The main subjects dealt with during the period were the following:

- the status of approval of the Protocol of Amendments to the IHO Convention;
- the ways and means to increase the participation of Non-member States in IHO activities;
- the development of the WEND;
- the implementation of the IHO strategic planning mechanism;
- the methodologies in use for displaying information on survey status and the development of IHO Publication C-55;
- the consolidation of the relations between RHCs and GEBCO;
- the implementation of the guidance for preparing and maintaining INT Charts (S-11);
- the experiences in dealing with handling marine disasters;
- the relations with the IHO Stakeholders' Forum.

5. Conclusions:

- IRCC invited RHCs and the IHB to take specific actions to accelerate the process of ratification of the Protocol of Amendments to the IHO Convention in order to reach final approval in time for the 2012 IHO Conference to be the first Assembly (i.e. a minimum of 48 notifications before 23 January 2012) (ongoing - see CL 58/2011);
- IRCC invited RHCs to encourage the re-insertion in IHO of suspended Member States and the ratification of the IHO Convention by pending applicants and to monitor the swift approval by Member States of pending applications for IHO membership (ongoing).
- IRCC invited the Arctic Regional Hydrographic Commission (ARHC) to resolve the definition of the southern borders of the ARHC area and associated INT Chart scheme, in conjunction with neighbouring RHCs (ongoing - see ARHC report).
- IRCC agreed an action to design a suitable framework for the development of IHO Publication C-55 (Status of Hydrographic Surveying and Nautical Cartography World-wide) (ongoing as a specific pluriannual task identified in the IHO 2012 Work Programme and in the draft IHO 2013-2017 Work Programme submitted to the Conference). **[See CONF.18/WP.3/Add.1]**
- IRCC established the WEND Working Group in line with the recommendation of the former WEND Committee (ref. CL 82/2008) and set up and monitored its work programme (ongoing - see WEND WG report);
- IRCC agreed to recommend to the IHO Conference (or Assembly) in 2012 to postpone any revision of the IHO Strategic Plan to the next Conference / Assembly and to concentrate on the implementation issues. In that perspective, the Committee agreed a procedure to assess its contribution to the implementation of the preceding year's Work Programme and to collate its input for the preparation of the next year's Work Programme. The Committee also invited the IHB Directing Committee to start implementing the Strategic level Performance Indicators (SPIs) approved by the 4th EIHC and discussed

the working level performance indicators which are appropriate for monitoring the IRCC Work Programme and feeding into the SPIs (ongoing).
- IRCC invited RHCs to take action on the lack of follow-up reports from countries receiving support from the Capacity Building Fund (permanent).
- IRCC invited 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 (ongoing - see GEBCO GC report).
- Regarding the IHO Stakeholders' Forum, IRCC recognized the importance of ECDIS related issues and recommended to focus relations with stakeholders on them. It agreed that it was too premature to organize a Forum prior to or in connection with the IHO Conference (or Assembly) in 2012 and tasked the IRCC Chair to liaise with the HSSC Chair on the way forward, aiming at submitting a report to the IHO Conference (or Assembly) (ongoing - *to be discussed at HSSC3*).
- IRCC invited the IHB to consider with SWAtHC the appropriate level of participation in the RIO + 20 process, in line with the IHO strategic directions (ongoing).
- On the recommendation of IRCC, chart specification A402.1 in Publication S-4 was amended to facilitate the access of INT chart producers to new data (done - see CL 50/2010 and 69/2010);
- On the recommendation of IRCC, IHO Resolution 2/2007 was amended to accommodate standards under the purview of IRCC (done - see CL 37/2011 and 50/2011).

6. Proposals for adoption by the XVIIIth I.H. Conference:
The Conference is invited:

(a) to note the report;

(b) to consider the following proposals:

PRO IRCC-1 - Update of the IHO Strategic Plan

IHO Resolution 12/2002 as amended stipulates that Member States, HSSC and IRCC will be invited 12 months before each ordinary Conference to provide input to update the IHO Strategic Plan:
"Y-12 (Apr): IHB invites HSSC and IRCC to submit proposals to update the Strategic Plan."
For the first time line of 2012, noting that the strategic directions of the 2009 edition remain highly relevant and considering that the implementation of the 2009 Strategic Plan is still in its initial stage IRCC recommends that the Conference postpone any revision to the next ordinary session of the Conference / Assembly and concentrate on the implementation issues, namely performance monitoring and risk assessment, when discussing the next 5-year Work Programme.

PRO IRCC-2 - IHO Stakeholders' Forum (Joint HSSC-IRCC Proposal)

Noting that each strategic direction of the IHO Strategic Plan identifies one or more issues requiring some interaction with the IHO Stakeholders which involve both a "top down" approach (IHO towards its Stakeholders) and a "bottom up" approach (Stakeholders towards IHO);

Noting that the IHO would benefit from both improving its visibility in non-IHO events related with its activities and organizing specific IHO encounters with its Stakeholders;

Noting that the IHB maintains three lists of Stakeholders:

- the list of International Organizations which have signed a MOU or a Cooperative Agreement with the IHO,
- the list of Non-Governmental International Organizations (NGIOs) accredited as Observers,
- the list of ECDIS Stakeholders;

Supporting the recommendation that the IHO should continue to take a leading role within the ECDIS Stakeholder community;

HSSC and **IRCC invite** the **Conference** to approve the following action plan regarding outreach to IHO Stakeholders:

(a) the IHB is invited, through annual inputs from HSSC, IRCC, as well as from individual IHO Member States, to maintain an inventory of IHO Stakeholders based on the existing lists and expanded to all relevant sectors such as industry (outside the ECDIS community), academia and the media, with the identification of the main items of interest for each Stakeholder or Stakeholders' group;

(b) both HSSC and IRCC Committees are invited to identify annually which items of their Work Programmes could benefit from exchanges with the relevant Stakeholders;

(c) the IHB is invited to canvas the IHO Stakeholders biennially about specific proposals for discussion topics;

(d) the IHB is invited to develop the participation of IHO, through the presence of IHB representatives or through the presence of representatives of IHO Member States, in non-IHO events of interest, to be identified in the IHO Work Programme, based on annual inputs from HSSC, IRCC and individual IHO Member States;

(e) the IHB is invited to plan biennial IHO Stakeholders' Forum Meetings in the IHO Work Programme subject to:
- developing from (b) and (c) above an appropriate agenda with specific issues to be addressed,
- identifying a venue susceptible to attract the targeted audience,
- securing a sufficient commitment of the relevant IHO bodies and IHO Member States to contribute and participate effectively.

(f) the IHB is invited to consider organizing the next IHO Stakeholders' Forum as soon as possible after the IH Conference/Assembly and not later than 2013 and to focus on ECDIS related issues, with the support of HSSC and IRCC.

(c) to note that IRCC supports the following proposals submitted by IRCC related bodies:

Proposal submitted by ARHC:

PRO ARHC - Amendment to the General Regulations of the IHO

The IH Conference is invited to adopt the following amendment to the Annex to the General Regulations of the IHO as approved by Decision 3 of the 17th IHC:

- replace :
"13. US/Canada Hydrographic Commission (USCHC); and
14. South West Atlantic Hydrographic Commission (SWAtHC)."
with:
"13. US/Canada Hydrographic Commission (USCHC);
14. South West Atlantic Hydrographic Commission (SWAtHC); and
15. Arctic Regional Hydrographic Commission (ARHC)."

Proposals submitted by the WEND Working Group:

PRO WENDWG-1 – Re-affirmation of the IHO's commitment to full ENC coverage

Re-affirmation of the IHO's commitment to full ENC coverage, subject to the needs of changing traffic patterns, and the availability of suitable source data and resources.

NOTE: COMPLETE TEXT OF THE PROPOSAL IS INCLUDED IN THE WEND-WG REPORT

PRO WENDWG-2 - Implementation of the WEND Principles

The WEND Principles require updating to take account of the IMO mandatory carriage of ECDIS. The guidelines to the WEND Principles should also be expanded to include a process that acknowledges, as a last resort, that existing paper chart producers can fill the gaps in ENC coverage and a similar process that can identify areas overlapping data that impacts on safety of navigation, and after notification to the Producer States and the observance of due process, inform mariners and IMO if the matter cannot/will not be resolved by those Producer States. These revised guidelines should be added to the existing WEND Principles. This process will involve the RHCs.

NOTE: COMPLETE TEXT OF THE PROPOSAL IS INCLUDED IN THE WEND-WG REPORT

(d) to note the following comments on other proposals to be considered by the Conference:

PRO 1 - Revision of the Resolution on the IHO response to disasters

IRCC, noting that, unfortunately, several tragic events have affected many areas of the world since the Indian Ocean tsunami of 2004, proposes that the IH Conference:

(i) invites RHCs to review the proposed amendments at the regional level and report back to IRCC4, and
(ii) requests IRCC to produce a consolidated draft taking into account the various experiences accumulated since 2005 and any additional inputs from other IHO bodies.

PRO 6 - Global status of hydrographic surveying

IRCC invites the IH Conference to consider this proposal in conjunction with the on-going task of the IHO Work Programme about the development of IHO Publication C-55 referred to in section 5 above.

(e) to decide on the future work of the committee as proposed in programme 3 ("Inter Regional Coordination and Support") of the draft IHO 2013-2017 Work Programme.

STANDING AGENDA OF IRCC MEETINGS
(as approved by IRCC 1 and amended by IRCC 2)

1. Opening of the Meeting and Administrative Arrangements
2. Report by the Chair and pending matters
3. Actions and inputs from IRCC Bodies
4. Inputs from other Bodies affecting IRCC
5. Review of Terms of Reference and Rules of Procedure
6. IRCC Work Programme Management
7. Next IRCC Meeting. Venue and Date.
8. Any Other Business
9. Decisions of the IRCC
10. Recommendations of the IRCC for consideration of the IHO Member States.
11. Closure of the Meeting.

REPORTS BY THE REGIONAL HYDROGRAPHIC COMMISSIONS (RHCS)
(IN ALPHABETICAL ORDER)

1. ARCTIC REGIONAL HYDROGRAPHIC COMMISSION (ARHC)

1. **Inaugural Chair:** Dr. Savithri Narayanan,
Dominion Hydrographer, Canada

Chair (Oct 2011) Mr. Sven Eskildsen,
Director General, Danish Maritime Safety Administration

Inaugural Vice-Chair: Mr. Sven Eskildsen, DG
Director General, Danish Maritime Safety Administration

Vice- Chair (Oct 2011): Cdr. Evert Flier
Director Hydrography, Norway

2. **Membership*:***

CANADA	Dominion Hydrographer Dr. Savithri Narayanan
DENMARK	DG Danish Maritime Safety Administration Mr. Svend Eskildsen
NORWAY	Director Hydrography Cdr. Evert Flier
RUSSIAN FEDERATION	Chief, Dept. of Navigation & Oceanography Captain Alexander Shemetov
U.S.A	National Hydrographer Captain John E. Lowell

3. **Meetings:** 1) Inaugural Meeting (ARHC1) held in Ottawa, Canada October 4-6, 2010
2) ARHC 2 held in Copenhagen, Denmark September 28-29, 2011

4. **Agenda Items*:*** *(all of which are best aligned to the IHO Work Programme 3 Element 3.1)*

- Agreement and signing of Statutes for the Commission at the inaugural meeting
- Establishment of three working groups to undertake the work of the Commission intersessionally (Strategic Planning WG, Arctic Mariners Routeing Guide WG, Operational and Technical WG)
- Area of responsibility has been agreed and pending actions to formalize an INT Chart area 'N' and adjust associated IHO documentation
- Norway established as the INTernational Chart Coordinator for the ARHC
- Discussions and development of a prototype design of an Arctic Mariners Routeing Guide
- Agreement on exchange of technology applications and experiences including standards allowing more rapid collection and utility of Arctic hydrography on nautical charts
- Agreement to monitor Arctic hydrography developments such as those initialized by the Arctic Council (Marine Spatial Data Infrastructure) and TSMAD (development of polar projections suitable for ENC application)

5. Conclusions*:*

- ARHC is formally established
- Agreement on the area of responsibility for the ARHC in consultation with neighbouring Commissions
- Working groups established to work between Conferences
- The current Observers to ARHC are Finland and Iceland

6. Proposals for adoption by XVIIIth I.H. Conference:

- The Conference is invited to note the report.
- The Conference is invited to consider the Proposal to amend the Annex (related to Article 8) to the General Regulations of the International Hydrographic Organization (not yet in force) in order to reflect the newly created Arctic Regional Hydrographic Commission.

2. BALTIC SEA HYDROGRAPHIC COMMISSION (BSHC)

1. Chair: Patrik Wiberg (SE) from September 2011
Henryk Nitner (PL) from September 2010
Charlotte Wiin Havsteen (DK) from September 2009
Mathias Jonas (DE) from August 2008
Viktoras Liulys (LI) from June 2007

Vice-Chair: Jukka Varonen (FI) from September 2011
Åke Magnusson (SE) from September 2010
Piotr Pernaczynski (PL) from September 2009
Jens-Peter Hartmann (DK)from August 2008
Peter Ehlers (DE) from June 2007

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

Associate Member: Lithuania
Observers: Captain Robert Ward – IHB, Mr. Nigel Sutton - UKHO

3. Meetings:

The following BSHC meetings have taken place since the XVIIth IH Conference:

16th Meeting - Norrköping, Sweden (20-21 September 2011)
15th Meeting - Gdynia, Poland (21-23 September 2010)
14th Meeting - Copenhagen, Denmark (15 - 17 September 2009)
13th Meeting - Rostock, Germany (19 - 21 August 2008)
12th Meeting - Klaipeda, Lithuania (12 - 14 June 2007)

4. Agenda Items:

Baltic Sea INT Chart Coordination Working Group (BSICCWG)

One of many important tasks for BSHC is to coordinate the publication of international (INT) charts in the Baltic Sea Region, which is done through the sub-working group BSICCWG. A new responsibility for this working group is also to coordinate the small and medium scale ENC scheme for the region. There is total ENC coverage of the Baltic Sea, in appropriate scale bands, apart from a minor area in the south eastern Baltic Sea. See also image below.

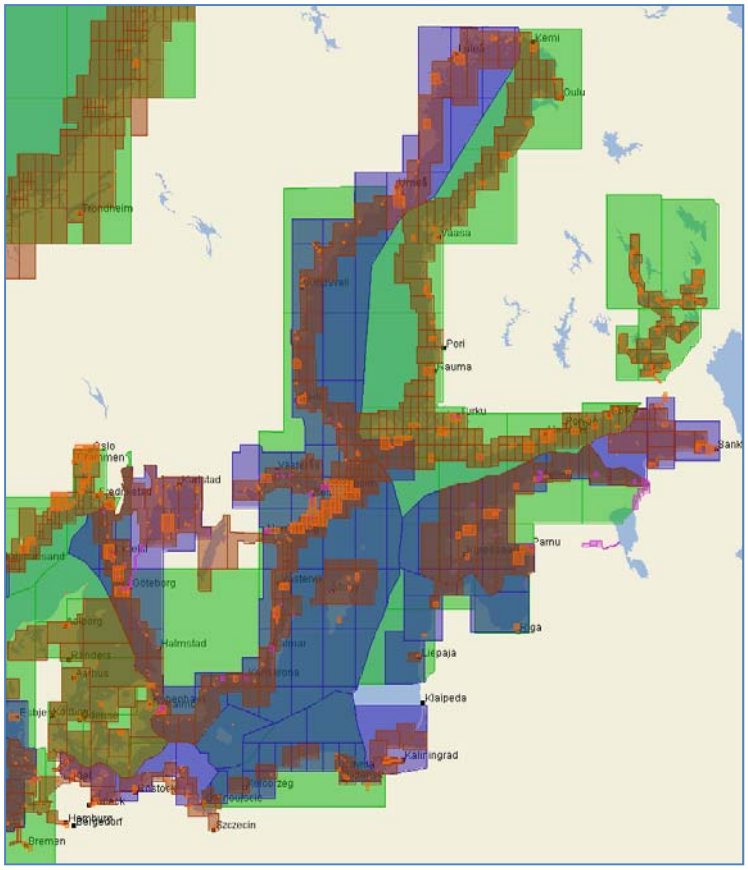

Image 1 ENC coverage (Berthing, Harbour, Approach, Coastal and General) in the Baltic Sea Region.

The BSICCWG has also been working on modification to the current 2002 draft Edition 4 of the IHO S-23 Part 2 (Baltic Sea). Many of the existing geographical names in the S-23 publication may cause confusion to the users and this may be a critical safety issue. At the 16th BSHC meeting 2011 it was suggested to forward the addendum to IHO, preferably to the IHC XVIII.

Within the Nordic Hydrographic Commission a method of using neighbouring countries ENCs for paper chart production, where the paper chart covers a neighbouring country's geographical area, has been established since 2010. These principles have been presented also within BSHC and respective Member States have been invited to consider participating.

Chart Datum Working Group (CDWG)

The main tasks for the Chart Datum Working Group are to prepare the implementation of the European Vertical Reference System (EVRS) in the Baltic Sea, to forward to the IHO Tidal and Water Levelling Working Group (TWLWG) more specific Mean Seal Level definitions and recommendations (especially for non-tidal areas), to study the validation, interpolation, prediction and distribution of water level information, and to cooperate with relevant other international bodies.

The WG has forwarded to the TWLWG proposals to amend IHO Resolutions related to vertical datum.

Working Group for Monitoring the Implementation of the Harmonised Re-survey Scheme (MWG)

All countries surrounding the Baltic Sea have, through intergovernmental co-operation, agreed upon the Helsinki Convention (HELCOM). The main target of HELCOM is to co-operate in achieving an improved environment within the Baltic Sea. One of the objectives is a re-survey scheme where all countries commit themselves to establishing a plan for re-surveying the fairway areas. The Working Group for Monitoring the Implementation of the Harmonised Re-survey Scheme has therefore been established.

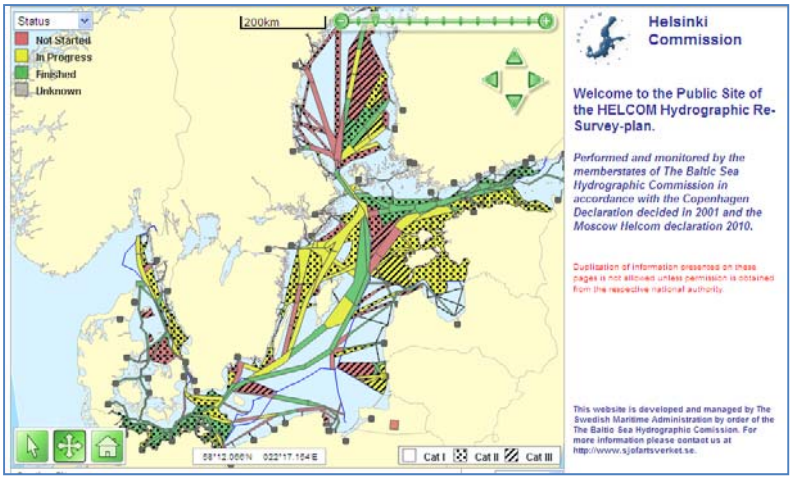

Image 2 Screen dump from the public site of the HELCOM re-survey plan http://www.sjofartsverket.se/helcom

Baltic Sea Bathymetry Database Working Group (BSBDWG)

The establishment of BSBDWG was a result of discussions and decision at BSHC 14. Initially, the Swedish Maritime Administration (SMA) had a task funded by the Swedish government, in cooperation with authorities concerned and within the IHO framework, to deliver an action plan aiming at the creation of a harmonised bathymetry model for the Baltic Sea.

The planned activities of BSBDWG (with some extensions) were then included in the application for an EU TEN-T project named MonaLisa (Motorways & Electronic Navigation by Intelligence at Sea). This application has been successful and has resulted in a considerably improved situation regarding funding of the activities. The project period for MonaLisa extends until the end of 2013.

Baltic Sea Maritime Spatial Data Infrastructure Working Group (BSMSDIWG)

At its 15th meeting, the BSHC recognised the need to initiate a study of MSDI in the Baltic Sea in order to identify areas where maritime SDI implementation is underway. This includes identification of problems that can be foreseen and how the Baltic member states regard the future development of MSDI in the region. Therefore, the BSHC 15th Conference established the BSMSDIWG with the task of studying MSDI in the Baltic Sea.

Baltic Sea ENC Harmonization Working Group (BSEHWG)

The Working Group was established in order to propose guidelines for harmonization rules for ENCs. Since the guidelines were agreed upon, the implementation in respective BSHC countries has been monitored by BSICCWG. An example of a harmonization rule is that attribute values for Compilation Scale in each ENC scale band have been agreed upon.

5. Conclusions:

Since 2007 the Baltic Sea Maritime Spatial Data Infrastructure Working Group and the Baltic Sea Bathymetry Database Working Group have been established. The HELCOM re-survey plan is now monitored through the Working Group for Monitoring the Implementation of the Harmonized Re-survey Scheme.

Harmonization rules for ENCs within the region have been established and the implementation is monitored.

It is important that the IHO takes the lead in addressing MSDI matters through its Member States for the maritime sphere. In view of IHO´s definition of hydrography in place, MSDI delivers the instruments for the enhanced scope of hydrographic information users. MSDI is to create the framework for the future provision of this information beyond the classic field of surface navigation. The MSDIWG would be an appropriate WG to deal with these challenges.

The BSICCWG has also been working on modifications to the current 2002 draft Edition 4 of the IHO S-23 Part 2 (Baltic Sea). Many of the existing geographical names in the S-23 publication may cause confusion to the users and this may be a safety critical issue. If the development of the substitute section of the S-23 for the Baltic region are finalized in due time, it was suggested at the 16th BSHC meeting 2011 to forward the section to IHO as an Addendum to the current edition of S-23, preferably to the IHC XVIII.

6. Proposals for adoption by XVIIIth I.H. Conference:

The Conference is invited to note the report.

3. EAST ASIA HYDROGRAPHIC COMMISSION (EAHC)

1. Chair: Vice Admiral Nirut Hongprasith, Thailand (from 1 October 2011)
Vice Admiral Prayuth Netrprapa, Thailand (from 1 October 2010-30 September 2011)
Vice Admiral Nakorn Tanuwong, Thailand (from 17 October 2009 – 30 September 2010)
Mr. Parry OEI, Singapore (from 22 September 2006 – 16 October 2009)

Vice Chair: Commodore Romeo I. Ho, Philippines (from 17 October 2009)
Vice Admiral Nakorn Tanuwong, Thailand (from 1 October 2008 – 17 October 2009)

2. Membership

Full Members: China, Democratic People's Republic of Korea (DPRK), Indonesia, Japan, Republic of Korea (ROK), Malaysia, Philippines, Singapore and Thailand.

Observers: Brunei Darussalam, UK, USA and Vietnam.

3. Activities

3.1. EAHC Conferences

Date	Event	Venue
15-17 October 2009	10th EAHC Conference	Singapore
September 2012	11th EAHC Conference	Thailand

3.2. EAHC Meetings

Date	Event	Venue
24-25 January 2008	2nd EAHC Coordinating Meeting	Thailand
16-18 July 2008	2nd EAHC ENC Task Group Meeting	Philippines
18-19 February 2009	3rd EAHC Coordinating Meeting	China
20 January 2010	3rd EAHC ENC Task Group Meeting	Thailand
21-22 January 2010	4th EAHC Coordinating Meeting	Thailand
17-19 March 2010	4th EAHC ENC Task Group Meeting	Hong Kong
19-21 July 2010	5th EAHC ENC Task Group Meeting	Thailand
26 January 2011	6th EAHC ENC Task Group Meeting	Indonesia

27-28 January 2011	5th EAHC Coordinating Meeting	Indonesia
28-29 April 2011	1st EAHC Ad hoc Discussion Group Meeting	Republic of Korea
12-15 July 2011	7th EAHC ENC Task Group Meeting	China
16-17 January 2012	8th EAHC ENC Task Group Meeting	Japan
18-19 January 2012	6th EAHC Coordinating Meeting	Japan

3.3. Capacity Building

3.3.1. Technical visits

Date	Event	Venue
29-30 September 2009	Technical visit to Brunei Survey Department	Brunei
25-26 November 2010	Technical visit to Vietnam Maritime Safety-North	Vietnam

3.3.2. Short courses

Date	Event	Venue
16-19 June 2008	Quality Assurance on MBES hydrographic surveying and post processing	Singapore
4-6 November 2008	Quality Assurance on ENC Production	Thailand
18-21 August 2009	Quality Assurance on MBES hydrographic surveying and post processing	Philippines
25-27 August 2009	Quality Assurance on ENC Production	Philippines
15-19 November 2010	Technical Aspects of Maritime Boundaries, Baselines and the Extended Continental Shelf	Thailand
23-26 November 2010	Marine Cartography and ENC Production and Quality Assurance	Vietnam
20-24 June 2011	Database Design and Management	Thailand
5-7 July 2011	ENC Production and Quality Assurance	Indonesia
11-14 October 2011	Multibeam Survey and Side Scan Sonar	Singapore
June 2012	Tides and Water Level for Hydrographic Survey	Thailand
June 2012	Seabed Classification	Malaysia
August 2012	Technical Aspects of Maritime Boundaries, Baselines and the Extended Continental Shelf	Vietnam
November 2012	Database Design and Management	Republic of Korea

3.4 The Reissue of the South China Sea (SCS) ENC

At the 6th EAHC Coordinating Meeting held between 18-19 January 2012 in Okinawa, Japan, EAHC agreed that as there have been a large number of updates since the earlier release in 2008, the reissue of SCS ENCs will be published on 21 June 2012.

4. Main Agenda Items

4.1. ENC development

With the phased-in implementation of the ECDIS from 2012 and the growing number of ENCs, EAHC Member States (MS) recognized the urgent need to address ENC overlaps, gaps and data

harmonization which could lead to unstable ECDIS performance. Those issues could be addressed based on regional and bilateral discussions. At the 4th EAHC Coordinating Meeting in January 2010, the timeline for addressing those issues was set and EAHC ENC Task Group has been tasked to produce harmonized small scale ENCs. For larger scale ENC, the issues will be resolved based on multilateral, bilateral or national basis.

4.2. EAHC Capacity Building

At the 10th EAHC Conference in October 2009, Member States agreed that the short-term courses should be continued. In addition, the long-term training needs should be identified and the EAHC training road map should be developed for self sufficiency within the region. At the 5th EAHC Coordinating Meeting in January 2011, the Ad hoc Discussion Group (ADG) was formed to explore the short and long term training needs and other relevant activities of Member States.

4.3. New EAHC Website

The EAHC website has proved to be a useful medium for storing and disseminating information to Member States. EAHC also has ENC websites for Member States to access and housing all the SCS updates and quality check reports. However, there were some layout shortfalls including the lack of specific domain name, the marked difference of domain names, the difference of look and feel of each site, and the dependence upon IT support for creation and management. Therefore, the new, unified EAHC website has been developed (http://home.eahc.asia) and was launched at the 5th EAHC ENC Task Group Meeting in July 2010.

5. Conclusions

ENC harmonization is the main focus of the region. Approaches to harmonize small-scale ENCs and larger-scale ENCs are determined and implemented. Mechanisms to enhance Member States' capacity in hydrography and cartography to support safety of navigation are also being developed.

6. Proposals for adoption by the XVIIIth IH Conference

The Conference is invited to note the report.

4. EASTERN ATLANTIC HYDROGRAPHIC COMMISSION (EAtHC)

Chair: Vice-Admiral Agostinho Ramos da SILVA (Portugal) from 26 November 2010
Commodore Abdullahi Gunda INUSA (Nigeria) from 5 December 2008 to 25 November 2010
Captain Francisco PÉREZ CARRILLO (Spain) to 4 December 2008

Vice-Chair: IGA Bruno FRACHON (France) from 26 November 2010

2. Membership*:*

Members*:* France, Morocco, Nigeria, Portugal, Spain.

Associate Members: Benin, Cameroon, Cape Verde, Côte d'Ivoire, Guinea, Guinea-Bissau, Mauritania, Republic of Congo, Senegal, Togo.

Observers: Democratic Republic of Congo, Equatorial Guinea, Gabon, Gambia, Ghana, Liberia, Sao Tome and Principe, Sierra Leone, United Kingdom, United States of America.

3. Meetings:

1. 10th Meeting - Lomé, Togo (2 - 5 December 2008);
2. 11th Meeting - Accra, Ghana (24 - 26 November 2010).

4. Agenda Items*:*

The main subjects dealt with during the EAtHC meetings were the following:

10th EAtHC meeting:

- **Co-operation with Member States and with International Organizations**
  - Co-operation with Member States
    - Signature of the Bilateral Arrangement between France and Morocco:
      The bilateral agreement signed between France and Morocco is intended to establish a complete hydrographic service in Morocco.
  - Co-operation with non-Member States
    - Signature of the Bilateral Arrangement between France and Togo:
      The bilateral arrangement signed by France and Togo is an example of the collaboration with nations which are not full IHO members.
      - C-16:
        Coastal States were encouraged to provide to the IHB and EAtHC Chair with official documents setting up national hydrographic committees, organisation and general procedures to be considered for inclusion in C-16.
      - IHO Membership:
        Associate Members were reminded of the relevance of becoming full members of IHO and the advantages of it. It was agreed to create one Action Item for IHB to break down the cost/benefit ratio of full membership into IHO.

- **Capacity Building**
  - Capacity Building Assessment
    - Nomination of the regional CBC representative:
      France was designated as Regional CBC representative.
  - Capacity Building Provision
    Raising awareness of the importance of hydrography at governmental level in west African coastal countries.
  - C-55 Review
    All coastal States were reminded to keep this publication updated, given that it is a very helpful tool for scheduling and prioritizing when assigning CBC funds.

- **Techniques and Standards Co-Ordination and Support**
  - Nautical cartography
    - Implementation of the Schemes and new demands of INT Charts (CHATINTCHART)
  - Progress in National ENC production
    - Development of an EAtHC ENC Scheme:
      The responsibility of preparing small and medium scale ENC Scheme for EAtHC was assigned to the Regional INT Chart Coordinator.
  - Impact of NAV-54, WEND 11 and MSC 85
    - NAV-54: e-navigation and ECDIS carriage requirements
    - WEND-11: WEND principles review - "Guidelines for the preparation and maintenance of small/medium scale ENC schemes"
  - Marine Safety Information:
    - Implementation of GMDSS in the Eastern Atlantic
    - MSI in NAVAREA II

11th EAtHC meeting:

- **IHO Programme 1 "Corporate Affairs"**
  - Co-operation with International Organizations
  - IHO New Structure - Approval Protocol of Amendments:
    Portugal ratified the Protocol of Amendments in May 2011.

- **IHO Programme 2 "Hydrographic Services and Standards"**
  - Nautical Cartography
    - Implementation of the Schemes and new demands of INT Charts - CHATINTCHART;
    - Progress in national ENC production:
      The current situation was reported.
    - Development of an EAtHC ENC Scheme:
      A scheme for the ENC Band 3 is being established, like it was done for the ENC Bands 1 and 2.

- **IHO Programme 3 "Inter Regional Coordination and Support"**
  - Co-operation with Member States
    - IHO Membership - Status of applications
    - Coordination for ENC production
    - C-55 Review:
      The Commission considered that members should regularly report to the IHB on all information relevant to update the status of hydrographic services and capabilities, including provision of the list of POCs.

  - Co-operation with non-Member States
    - Establishment of a strategy increasing the participation of Non IHO Member States and complying with SOLAS regulations:
      1. The Republic of Guinea expressed interest in signing the EAtHC Statutes;
      2. Togo reported that a National Hydrographic Committee was established and expressed that efforts were ongoing to apply for IHO membership before the next EAtHC Conference;
      3. It was decided to inform International Maritime Organization (IMO) representatives of the EAtHC observers' countries that EAtHC Statutes may be signed by the appropriate Focal Point.

  - Capacity Building
    - Planned activities:
      Capacity Building Committee (CBC) proposed to carry out a capacity building visit to Gabon, Cameroon and Guinea-Bissau in 2011 – *The visit to Cameroon was accomplished in September 2011 and the visits to Gabon and Guinea-Bissau were postponed to 2012.*

    - Identification of new regional needs:
      Member States were invited to prepare submissions to the EAtHC for consideration at CBSC 9.

  - Marine Safety Information
    - Implementation of GMDSS in the Eastern Atlantic
    - MSI in NAVAREA II

5. Conclusions*:*

These are the most important conclusions and actions adopted since the last IHC, at the 10th and 11th EAtHC meetings:

- Advise pending IHO members in the EAtHC region to complete the process by depositing their instrument of accession to the IHO (done);
- Encourage observer nations to sign the EAtHC Statutes, in order to become Associate Members;
- Notify the responsible authorities of coastal States in the region of the importance of setting up hydrographic committees, in order to undertake the hydrographic services and responsibilities underlined on SOLAS Convention, Chapter V, Regulation 9 (done);
- Encourage Member States to report to the Region G International Charting Coordinator (France) on current or planned high-speed crafts routes in Region G in order to be able to meet IMO requirements, ECDIS carriage and related ENC coverage;
- Encourage EAtHC countries to establish formal arrangements with the developed Hydrographic Services;
- Encourage Member States to identify systematic procedures for the transmission of survey data to cartographic authorities in order to enable a swift update of nautical documentation, paper charts and ENC;
- Convince INT Chart producing nations to check and update the information in C-11 and provide feedback to the Region G Coordinator;
- Promote the importance of C-55 as it forms the basis of evaluating capacity building needs in the various regions;
- EAtHC is committed to carrying forward hydrographic, cartographic and capacity building activities in accordance with IHO objectives and goals.

6. Proposals for adoption by XVIIIth I.H. Conference:

The Conference is invited to note the report.

5. MEDITERRANEAN AND BLACK SEAS HYDROGRAPHIC COMMISSION (MBSHC)

1. Chair: Captain Francisco J Perez Carillo (Spain) until Oct. 2007
Capt. Rachid ESSOUSSI (Tunisia) (from Oct. 2007 to Sept. 2009)
RAdm. Mustafa IPTES (Turkey) (from Sept. 2009 to Aug. 2010)
RAdm. Hakan ERAYDIN (Turkey) (from Aug. 2010 to June 2011)
Cdre Alexandros THEODOSIOU (Greece) (from June 2011)

Vice-Chair: Dr. Sergei Symonenko (Ukraine) (from Oct. 2007 to Sept. 2009)
Cdre Dimitrios PALIATSOS (Greece) (from Sept. 2009 to Mar. 2010) Cdre Alexandros THEODOSIOU (Greece) (from Mar. 2010 to June 2011) RAdm Hakan ERAYDIN (Turkey) (from June 2011)

2. Membership:

Members: Algeria, Croatia, Cyprus, Egypt, France, Greece, Italy, Monaco, Morocco, Romania, Russian Federation, Serbia, Slovenia, Spain, Syria, Tunisia, Turkey, Ukraine.

Associate Members: Bulgaria, Georgia, Israel, Malta, Palestinian Authority, UK, USA.

Observers: Albania, Germany, Lebanon, DINMA, IMA, IOC, PRIMAR.

3. Meetings:

Since the last IHC the Commission has met three (3) times in accordance with the Statutes:

- MBSHC 15: 22-24 October 2007, Malta
- MBSHC 16: 22-24 September 2009, Odessa, Ukraine
- MBSHC 17: 1-3 June 2011, Athens, Greece

4. Agenda Items:

The standing agenda of the MBSHC is in the attached annex.

The main subjects dealt with during the reporting period were the following:

- The amendment of the MBSHC Statutes
- The approval of the pending applicants to IHO membership
- The status of approval of the Protocol of Amendments to the IHO Convention
- The survey status and the development of the IHO Publication C-55
- The implementation of the WEND Principles.
- The Capacity Building activities
- The marine disaster management

5. Conclusions:

- The Commission approved an amendment to the MBSHC Statutes in order to enable Associate Members to host MBSHC meetings.

- The Commission designated Italy to be the official representative of the MBSHC at the Regional Seapower Symposium for the navies of the Mediterranean and Black Sea countries.

- The Commission recommended Member States to contribute actively to the development of NEAMTWS through upgrade national sea level stations identified by the NEAMTWS Implementation Plan to real time data delivery and participate in data exchange.

- The Commission invited Member States to consider providing coastal bathymetry data to the IHB i.a.w. the relevant resolution of IOC and IHO CL 36/2006.

- The Commission accepted to include the disaster management issues as a permanent item on its agenda i.a.w IHO CL 89/2005. Further invited the MBSHC chair to study the procedure and guidelines for developing a disaster action plan.

- The Commission urged Member States which have not yet ratified the Protocol of Amendments to the IHO Convention to contact their national authorities to accelerate the process of ratification of the Protocol.

- The Commission urged Member States which have not yet approved the pending applicants to IHO membership, to contact their national authorities to accelerate the approval process of the pending applicants.

- The Commission invited Member States to provide comments to Italy on the draft procedures of the designation of the MBSHC representatives to the IHO Council.

- The Commission invited MBSHC Chair to seek ways to get Member States not participating in its work to be more involved in the Commission's activities.

- The Commission invited Member States to send their national reports to the Chair at least one month before the MBSHC meetings in line with the format in the IHO Resolution 2/1997 as amended. Chair to provide the IHB with the National Reports to be posted on the IHO web site.

- The Commission designated Turkey as the representative of the MBSHC on the International Hydrographic Review Editorial Board.

- The Commission approved the amended Rules of Procedures of the Black and Azov Seas Working Group.

- The Commission invited the Russian Federation and Ukraine to discuss on bilateral basis the issue of borders materialization on Ukrainian national paper charts and report to the Black and Azov Seas Working Group Chair.

- The Commission designated Turkey as the CB Coordinator for the MBSHC.

- The Commission adopted the request of Romania to organize a seminar on the establishment of the national hydrographic committee and invited CB Coordinator to do the necessary coordination with Romania, other Member States, CBSC and IHB to carry out this seminar.

- The Commission invited MBSHC Chair to keep non-IHO Member States in the region informed on all Capacity Building activities available through the IHO and other regional initiatives.

- The Commission invited MBSHC Chair to be in contact with Syria to investigate suitable dates to carry out the technical visit which has been postponed and to be in further consultation with Israel (and Libya when it is appropriate) to enquire if they need the technical visits and identify volunteer Member States able to provide staff to accomplish these visits.

- The Commission invited CB Coordinator to participate in the meetings of CBSC for MBSHC and the activities for C-55 development, as decided in IRCC 3.

- The Commission invited CB coordinator to prepare a two-year CB plan in coordination with Member States and Chair.

- The Commission invited Member States to send a graphic status of the conducted surveys yearly (by 1st February) to Spain for coordination. The last update should preferably be sent three months before the MBSHC meetings.

- The Commission adopted the generic ToR and RoP contained in Annex C to S-11 Part A as the ToR and RoP for Region F International Charting Coordination Working Group (ICCWG).

- France confirmed its agreement to continue as Region F Coordinator i.a.w. ToR set by HSSC for the Regional International Charting Coordination Working Groups.

- The Commission invited Region F Coordinator to circulate a table for the inputs of Member States and AMSs in order to be sent to the WEND WG i.a.w the action item of IRCC 03/13.

- On the recommendation of IRCC the Commission invited the MBSHC Chair to highlight in the standard meeting reports the items that the Commission would like to refer to IRCC.

- On the recommendation of IRCC the Commission called the MBSHC Chair to invite Chairs of adjacent RHCs to attend MBSHC meetings.

- After confirmation by Turkey the next MBSHC meeting will be hosted in Istanbul during the second half of 2013.

6. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

ANNEX

Mediterranean and Black Seas Hydrographic Commission (MBSHC)

Draft Agenda

1. Chairman's Opening. Working and Administrative Arrangements
2. Adoption of the Agenda, Timetable and Documentation.
3. Chairman's Report.
4. Designation of the Vice – Chairman of the Meeting.
5. Status of the Action List from the Previous Meeting.
6. IHB Report on Status of the IHO Working Programme
7. IHO WP - Programme 1 - Element 1.1 - Cooperation with International Organizations and Participation in Relevant Meetings
8. IHO WP - Programme 1 - Element 1.4 - IHO
9. IHO WP - Programme 2 - Element 2.1 – Hydrographic Services and Standards (HSSC)
10. IHO WP - Programme 3 - Element 3.1 – Cooperation with Member States and Attendance at Relevant Meetings
11. IHO WP - Programme 3 - Element 3.2 – Increase Participation by Non-Member States
12. IHO WP - Programme 3 - Element 3.3 – Capacity Building Management
13. IHO WP - Programme 3 - Element 3.4 – Capacity Building Assessment
14. IHO WP - Programme 3 - Element 3.6 – Coordination of Global Surveying and Charting
15. IHO WP - Programme 3 - Element 3.7 – Maritime Safety Information (MSI)
16. Reports from and to the Adjacent Hydrographic Commissions
17. Report to IRCC.
18. Any Other Business
19. Date and Venue of the Next MBSHC Meeting.
20. Decisions and Recommendations.
21. Closing.

6. MESO AMERICAN AND CARIBBEAN HYDROGRAPHIC COMMISSION (MACHC)

1. Chairs: Rear Admiral Nick LAMBERT (UK) from November 2010
Vice Admiral Fernando PALMER Fonseca (BRAZIL), 2008 – 2010
Rear Admiral José J. Ocaña GARCÍA (MEXICO) 2007 - 2008

Vice-Chairs: Mr Freddie DELCHOT (SURINAME)
Rear Admiral Nick LAMBERT (UK)
Rear Admiral Ian MONCRIEFF (UK)

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

Associate Members: Antigua & Barbuda, Barbados, El Salvador, Guyana, Haiti, Honduras, Nicaragua, Panama, Saint Lucia, St.Kitts & Nevis.

Observers: Bahamas, Belize, British Virgin Islands, Chile, Dominica, Dominican Republic, Grenada, St.Vincent & The Grenadines.

3. Meetings:

The Commission has met annually since the close of the XVIIth IHC (May 2007), in accordance with the MACHC Statutes:

- 8th Meeting – Niteroi, Brazil (8 – 10 October 2007)
- 9th Meeting – Niteroi, Brazil (9 – 10 October 2008);
- 10th Meeting – Bridgetown, Barbados (3 - 6 November 2009);
- 11th Meeting – Paramaribo, Suriname (8 – 12 November 2010)
- Planned 12th Meeting – Basseterre, St.Kitts & Nevis (6 – 9 December 2011)

4. Agenda Items:

The main subjects (*all IHO Work Programme Elements 3.1, 3.2, 3.3*) dealt with during the period were the following:

(a) review and modification of Commission representation, limits, and statutes;
(b) review of information on input to IHO Publication C-55 (formerly S-55);
(c) progress on INT charting in the region;
(d) progress on ENC developments in the region, including quality control and distribution;
(e) Capacity Building in the Region, including training;
(f) MACHC response to disasters in the region.

5. Conclusions:

The main conclusions and recommendations from the MACHC meetings are as follows:

The Commission is committed to developing cooperation with IHO Member States, Non-IHO Member States, adjacent Regional Hydrographic Commissions, other International Organizations and industry. Haiti has joined the Commission as an Associate Member. Representatives from a number of international bodies and commercial organizations, including CARIS, ESRI, Jeppesen and Konsgberg, attended the most recent Commission meetings.

The MACHC would like to highlight that ENC coverage of the region is progressing well and that the gaps in coverage are in the process of being addressed. The Electronic Chart Committee has been particularly active. Issues regarding the overlap of ENC cells within user bands have largely been resolved in the Atlantic side of Region B. An ENC Scheme is under development for the Pacific side.

Co-ordination of both INT charts and their respective ENC-equivalents within Region B has improved, and has recently been combined, initially under the stewardship of Mexico.

The MACHC members have responded to regional natural disasters, notably the Haitian earthquake in January 2011, with longer-term technical assistance and capacity re-building measures to affected countries.

The Commission agreed on the importance of Member States updating the C-55 database, at least on an annual basis.

The Commission acknowledged the importance of Member States having due regard to the future charting, and representation by ENC symbology or layers, of regional environmental information, including aspects of the Meso-American Barrier Reef.

Significant progress has been made with the development of MACHC regional Capacity Building programmes. A comprehensive assessment of needs and projects has been undertaken, and supporting Member States have identified individual recipient nations. The following visits and training *(all IHO Work Programme Elements 3.1, 3.2, 3.3)* were undertaken:

a. Technical visits Type I and II to the following countries:
   Antigua & Barbuda
   Bahamas
   Barbados
   Costa Rica
   Dominica
   El Salvador
   Grenada
   Panama
   St. Kitts & Nevis
   Saint Lucia
   Trinidad & Tobago

b. Training:
   i. Multibeam Surveying, with (Argentina), Brazil, Colombia, Jamaica and Mexico, held in Vera Cruz, Mexico.
   ii. MSI Course with Antigua & Barbuda, British Virgin Islands, St Kitts & Nevis, Grenada, and Honduras, held in Niteroi, Brazil.
   iii. Hydrography Type I and II Course with Antigua & Barbuda, Barbados, British Virgin Islands, El Salvador, Grenada and St.Kitts & Nevis, held in St.Johns, Antigua
   iv. Hydrography Type III Course, with Belize, Guatemala and Honduras, held in co-operation with the NOAA, USA at NOAA facilities and on location (part of the Gulf of Honduras project).
   v. Basic ENC and ENC Production with El Salvador, Honduras, Jamaica and Suriname, held in Kingston, Jamaica.
   vi. Basic Hydrography and Marine Cartography Course in Haiti (5-16 Sept. 2011) provided by France in co-operation with Caris, Kongsberg, PAIGH and funded by CBSC.

c. The inter-agency Gulf of Honduras Project has been initiated. The programme includes collaborative training, substantive field surveying, and data assessment, ahead of hydrographic compilations and local production, and has been supported by PAIGH, COCOTRAM, CCAM, NOAA, SICA and others.

6. Proposals for adoption by the XVIIIth IH Conference:

The Conference is invited to note the report.

7. NORDIC HYDROGRAPHIC COMMISSION (NHC)

1. Chairs:

Since 6 April 2011	Ms. Charlotte Havsteen (DK)
15 April 2010 - 6 April 2011	Mr. Evert Flier (NO)
23 April 2009 – 15 April 2010	Mr. Georg Larusson
8 May 2008 – 23 April 2010	Mr. Jukka Varonen
19 April 2007 – 8 May 2008	Mr. Åke Magnusson
Vice-Chair:	Mr. Evert Flier (NO)

2. Membership*:*

Denmark
Finland
Iceland
Norway
Sweden

3. Meetings:

55th Meeting - Stavanger, Norway (5-6 April 2011)
54th Meeting - Reykjavík, Iceland (13-15 April 2010)
53rd Meeting - Helsinki, Finland (21-23 April 2009)
52nd Meeting - Norrköping Sweden (6-8 May 2008)

Denmark will be hosting the 56th meeting of the NHC in Copenhagen, in the spring 2012.

4.* Agenda Items*:

-RENC cooperation between PRIMAR and IC-ENC
-Improved data exchange between the Nordic HO's
-Harmonization issues with respect to nautical publications, paper chart production and ENC's
-Area of interest for NHC and relations to bordering RHC's
-Mutual reporting of national issues, initiatives and projects.

The following working groups have been formed during the period:

- Nordic Nautical Publication Working Group (NNPWG)
- Nordic Chart Production Working Group (NCPWG)
- Nordic Data Quality Working Group (NDQWG)

NHC has hosted a range of yearly multi beam validation workshops, in order for the data validation experts, to exchange knowledge and experience.

5. Conclusions:

NHC has decided that there is no conflict of interest or delimitation of area of responsibility between NHC and any of the bordering RHC's, including the newly formed ARHC.

6. Proposals for adoption by XVIIIth I.H. Conference:

The Conference is invited to note the report.

8. NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION (NIOHC)

1. Chairs: Rear Admiral Nick LAMBERT (UK) from September 2010
Rear Admiral Ian MONCRIEFF (UK) 2010 and 2007 to 2008
Vice Admiral BR RAO (India) 2008 to 2010

Vice-Chairs: Vacant from Feb 2011
Vice Admiral BR RAO (India)
Capt MI HAQUE (Bangladesh)
Rear Admiral Abdul Rahman Mohd AL-SHEHRI (Saudi Arabia)

2. Membership: Bangladesh, Egypt, India, Myanmar, Saudi Arabia, Sri Lanka, Thailand, United Kingdom.

Associate Members: France, Oman, Mauritius, Pakistan, Seychelles, USA.

Observers: Malaysia.

3. Meetings:
The Commission has met annually since the close of the XVIIth I.H. Conference (May 2007), in accordance with the NIOHC Statutes:

- 8th Meeting - Goa, India (14 - 17 April 2008)
- 9th Meeting - Seychelles (25 - 26 February 2009);
- 10th Meeting - Dhaka, Bangladesh (23 - 24 February 2010);
- 11th Meeting - New Delhi, India (1-2 March 2011);
- Planned 12th Meeting - Colombo, Sri Lanka (20 - 23 March 2012)

4. Agenda Items:
The main subjects dealt with during the period *(all IHO Work Programme Elements 3.1, 3.2, 3.3)* were the following:

- review and modification of Commission Statutes;
- review of information on survey status and input to IHO Publication C-55;
- progress on INT charting in the region;
- progress on ENC developments in the region, including distribution;
- Capacity Building in the region, including training;
- NIOHC response to disasters in the region;

5. Conclusions:
The main conclusions and recommendations from the NIOHC meetings are as follows:

The Commission is committed to developing cooperation with IHO Member States, Non-IHO Member States, adjacent Regional Hydrographic Commissions, other International Organisations and industry;

Mauritius and Oman joined the Commission as Associate Members and representatives from Jeppesen and Fugro Survey attended the most recent Commission meeting.

The NIOHC would like to highlight that ENC coverage of the region is progressing well and that the small number of gaps are in the process of being addressed.

Region J INT chart coordinator (India) regularly updated the Commission on the status of INT charts within the region.

The formation of an NIOHC International Charting Coordination Working Group (IRCC Action No. 02/14) was discussed without agreement and Member States agreed to revisit the proposal at the 12th NIOHC meeting, March 2012.

The Commission agreed on the importance of Member States updating the C-55 database, at least on an annual basis.

The NIOHC disaster response contacts and plan have been reviewed and updated by Commission members.

The establishment of a regional Capacity Building (CB) coordinator responsible for CB advice and collating submissions to the IHO CBC. The following visits and training *(all IHO Work Programme Elements 3.1, 3.2, 3.3)* were undertaken:

-Technical visits to Sudan and Yemen.

-Training:

i. Phase 1 joint Technical workshop (with the RSAHC) in Jeddah, Saudi Arabia.
ii. MSI Course (joint with RSAHC) in Muscat and Oman.
iii. Regional Survey Team Operations in the Seychelles
    i. Support to Oman for on-the-job ENC training in Pakistan
    ii. Support to attend MBES technical workshop in Goa, India
iv. Shallow Water Survey Workshop (joint with SAIHC)
v. Survey training in Mauritius, Maldives and Seychelles

7. **Proposals for adoption by the XVIIIth I.H. Conference:**

The Conference is invited to note the report.

9. NORTH SEA HYDROGRAPHIC COMMISSION (NSHC)

1. **Chairs:** Peter Ehlers (DE) to April 2008
Svend Eskildsen (DK), from April 2008 to September 2010
Bruno Frachon (FR), from September 2010

Vice-Chairs: DK to April 2008
FR from April 2008 to September 2010
NO from September 2010

2. **Membership:** Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Sweden, United Kingdom.

3. Meetings:

The Commission met on 22-24 April 2008 in Elsinore (DK) and on 28 -29 September 2010 in Brest (FR). The next meeting is planned in Ålesund (NO), 18-21 June 2012, in accordance with the NSHC Statutes. A special meeting was also held in Monaco in the margins of the XVIIth IHC on 11 May 2007.

The NSHC runs several groups that work mainly by correspondence:

- the Region D ICCWG (former NW European Charting WG) and the North Sea ENC Harmonization Working Group (UK lead);
- the NSHC Tidal Working Group;
- the Dover Strait/*Pas de Calais* Survey Strategy Working Group (BE, FR, NL,UK) ;
- the NSHC Re-survey Working Group (DE lead) ;
- the European Union Marine and Maritime Policy Working Group (FR lead).

4. Agenda Items:

Task numbers refer to IHO WP for 2011 (see CL 81/2010)

IHO Work Programme 1 – "Corporate Affairs"

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

Tasks 1.1.5c, 1.1.10b, 1.1.10d: A number of the NSHC HOs representatives are involved in IMO meetings (mainly NAV, COMSAR, e-navigation) together with IHB representatives. With the development of e-navigation, and the ECDIS mandatory carriage requirements implementation plan, the NSHC believes that this co-ordinated involvement along national Maritime Safety Agencies is of huge importance for the sake of safety of navigation and for raising the awareness of the important IHO role. This importance requires strong involvement of IHO members and bodies, which must be optimized.

* A more efficient and straightforward co-ordination mechanism across RHCs, IHO SCs, and IHO Member States in IMO activities (MSC, TCC, NAV) might be considered by the IHB in the future.

Task 1.1.8: The International Cartographic Conference ICC'2011 took place in Paris in July 2011, a summary report of which by FR is to be published in the IHO Bulletin.

Task 1.1.17b: The NSHC made little progress in the follow-on of the MoU between the IHO and the European Commission although it is acknowledged (conclusions 91, 92) that European marine and maritime policies are changing the global environment, are playing an increasing cross-boundary role (Marine Knowledge 2020 for instance) and are impacting HOs activities, business models, etc. A number of HOs are already involved in the development of their implementation plan to comply with the EU INSPIRE directive establishing an Infrastructure for Spatial Information in the European Community. The BLAST project (Bringing Sea and Land Together) is progressing according to the plan. An interesting result is the ENC Harmonization Checker (ENC-HC), a tool that automatically compares adjacent ENCs and identifies geometric inconsistencies and inconsistent use of attributes.

* The NSHC decided that HOs of EU Member States and of non-EU Member States should be kept informed of the development of EU policies that may interfere with or support IHO objectives, as appropriate.

IHO Work Programme 2 - "Hydrographic Services and Standards"

Element 2.9 Marine Spatial Data Infrastructure Working Group

Task 2.9.1 (also related to Task 3.6.3 below): The NSHC members share concerns on their MSDI activities and decided to provide and compare, at the next NSHC conference, the governance principles for the definition and monitoring of their national civilian hydrographic and charting programme (conclusion 90).

* As it could be of great interest for other RHCs, the NSHC will be happy to report on this issue at IRCC05.

Element 2.12 Tidal and Water Level Working Group

Task 2.12.1: NSHC tasked the NSHC Tidal Working Group with the formulation of recommendations on the ways forward, to create common and unique vertical reference surface for the whole North Sea area (conclusion 87). The NSHC also approved the NSHC TWG Terms of Reference and Work Plan according to the recommendations made at the IHO TWG level. It is worth noting that this WG is to be playing an important role in the European-funded BLAST project.

IHO Work Programme 3 – " Inter Regional Coordination and Support"

Element 3.1 Co-operation with Member States and attendance at relevant meetings Inter Regional Coordination Committee Hydrographic Commissions

Task 3.1.0: The IRCC Chair participated in the last meeting of the NSHC and provided important updates. The NSHC was represented by FR (acting Chair) at the IRCC3 meeting.

Task 3.1.1: a proposal was made at IRCC3, by the NSHC for the consideration of the ARHC for the definition of the adjacent limits between the two regions. It was also suggested to create a new INT charting area "N" (see action IRCC03/08, and document ARHC02/03B). At the ARHC meeting in September 2011, NO was tasked to take the necessary steps to formalize the establishment of the new region "N" and the 69°N proposal, for the border limit between the ARHC and the NSHC in the North Atlantic was accepted and adopted.

Task 3.1.2[2]: The Commission met once since the EIHC4, all Member States were represented in the meeting held in Brest. The NSHC agreed to amend its statutes (conclusion 82) to include a new paragraph 3 of article 19 as follows "*The Commission shall lay down its decisions in the form of conclusions, to be annexed to the summary; reports to be numbered consecutively and to consist of a preamble containing the main considerations, followed by one or more operative paragraphs containing the actions decided upon and taking into account the provision in paragraph 2 of article 19, of the Statutes of the North Sea Hydrographic Commission.*"
This list of conclusions is an interesting way for keeping record of the main decisions within a Regional Hydrographic Commission and to monitor the progress made in the development of co-operation.

* The amended NSHC Statutes and the list of conclusions will be posted on the IHO website shortly.

Task 3.1.12: The participation of representatives of the industrial sector and of the European Commission at the 30th meeting of the NSHC in 2012 will be proposed to the NSHC Member States.

[2] The NSHC is missing in IHO 2011WP; it should have been Task 3.1.2 as in IHO 2010 WP.

Element 3.3 Capacity Building Management

Task 3.3.1: There is no real capacity building initiatives currently carried out within the NSHC. However, it is worth noting that a number of NSHC HOs are involved in the IHO capacity building activities (DE who chairs the CBSC, NO, UK, FR). NO currently represents the NSHC at the CBSC meetings.

Element 3.6 WEND WG, Coordination of Global Surveying and Charting

Tasks 3.6.1, 3.6.2: The NSHC established the NS ENC Harmonisation WG (conclusions 83, 84) and was represented in the WEND-WG meeting held in Wollongong 13-14 Oct. 2011.

The development of the TOR for the NS ENC Harmonization by UK is in progress.

A proposal for the consideration of the WEND-WG, supported by the NSHC, was made by DE and FR on behalf of the Joint Distribution WG of the IC-ENC-PRIMAR Co-operation to promote the WEND principles through the distribution of ENCs under a new brand name, namely "IHO-WEND", provided these ENCs are integrated into the Joint ENC Database through the RENCs.

A second proposal was also made by DE and FR that Regional International Charting Co-ordination Groups within RHCs should conduct systematic and periodic ENC overlaps and gaps analysis in their areas of responsibility, and report to WEND-WG (conclusion 84).

These recommendations were considered at the WEND-WG meeting hosted in Wollongong (AU) 14-15 Oct. 2011.

Task 3.6.3: Two NSHC working groups are respectively responsible for the revision of the Dover Strait/*Pas de Calais* Survey Strategy and the NSHC Re-survey Strategy (including re-surveying of critical areas). The work conducted by the NSHC Re-survey (conclusions 89 and 88) is of great importance for the revision of C-55 (see action IRCC03/09).

Task 3.6.4: The NSHC, at its 28th meeting, stressed the importance of M-3 TR 1/1992 (former B5.5) that it is the role of the IHB to monitor new INT chart publication and to provide the concerned Member States with comments on any point of non-compliance with IHO INT Charts Specification standards. One of the actions raised was also for the IHB to investigate the use and implications (incl. liability) of freely-available satellite imagery.

5. Conclusions:

The main conclusions and recommendations from the NSHC are as follows:
Through the activities carried out by the relevant working groups, it is acknowledged that the NSHC is actually committed to implicitly developing a risk assessment programme (re-survey plan, charting, comparison of governance principles, etc.). However, due to other important national commitments and budget constraints, the NSHC admits that progress made by the different WGs are not as quick as expected.
Meanwhile, the European Commission is playing an increasing role that impacts national HO activities, directly or through the mandatory derived national obligations (for some members). It is therefore important to remain pro-active and to emphasize the role of the IHO as the relevant technical and consultative organization in order to avoid duplication of efforts and also as leverage for improving national EU and non-EU HOs responsibilities.
The development of e-navigation (including S-100) together with the ECDIS carriage requirement implementation plan is an important step forward that the NSHC member states take into consideration.

Time has come to a faster pace in improving the ENC coverage, consistency, and quality in order to meet IMO and users' requirements.

6. Proposals for adoption by the XVIIIth IH Conference:

The Conference is invited to note the report.

10. ROPME SEA AREA HYDROGRAPHIC COMMISSION (RSAHC)

1. **Chair:** Cdr. Thani al Mahrouki, (Oman) since 2009
   Capt. Zafar Mansoor TIPU (Pakistan) 2006 to 2009

   Vice-Chair: Mr. Vladan JANKOVIC (Qatar) since 2009
   RAdm Abdul AL-SHEHRI (Saudi Arabia) 2006 to 2009

2. **Membership:**

   Members:
   Bahrain, Iran, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, United Arab Emirates.
   Associate Members:
   United Kingdom, United States of America.
   Observers:
   Regional Organization for the Protection of the Marine Environment (ROPME), Middle East Navigation Service (MENAS) and Arabian Maritime and Navigation Aids Services (AMNAS).
   IHB Representatives:
   Captain Hugo GORZIGLIA (Director) and Mr. Steve SHIPMAN (PAH)

3. **Meetings**.

   Two meetings were held during the period (May 2007 – April 2012).
   a. 3rd Meeting - IHB, Monaco (8-9 June 2009)
   b. 4th Meeting - Muscat, Oman (21-22 March 2011)

4. **Agenda Items:**

   The main subjects dealt with during the 3rd and 4th meetings are:
   a. Review of the Statutes of the Commission.
   b. Report of the IHB.
   c. National Reports.
   d. Review of Status of Hydrographic Surveying and Nautical Charting in the ROPME Sea Area Region (IHO Special Publication C-55 and questionnaires / updates from RSAHC Countries).
   e. Establishment of RSAICC-WG (IHO CL23/2010).
   f. Progress on the implementation of the INT Chart Scheme.
   g. Progress on the implementation of ENC coverage and other ENC issues.
   h. New techniques and equipment in Hydrography and Oceanography.
   i. Promulgation of Radio Navigational Warnings within NAVAREA IX area, MSI in NAVAREA IX and the implementation of GMDSS.
   j. Capacity Building matters.
   k. RSAHC input to WEND-WG report to IRCC3.
   l. Development of Marine Spatial Data Infrastructure (MSDI) in the region.

m. Engagement of ROPME Sea Area members with IHB, IHO, IRCC and IHOWGs.

5. **Conclusion**.

4th RSAHC meeting was just less than 2 years from the 3rd meeting with most of the Member States present which is an encouraging sign compared to the previous meetings. Next meeting will be in February 2013 in Kingdom of Saudi Arabia (to be confirmed).

6. Proposal for adoption by XVIIIth I.H. Conference.

The Conference is invited to note the report.

11. SOUTH EAST PACIFIC HYDROGRAPHIC COMMISSION (SEPHC)

1. Chairs since 2007 to date:

- Period 2005 – 2008 Commander Mario Proaño Silva and Captain Galo Garzón López from Equator
- Period (May 2008 – Apr 2011) Rear Admiral Leonardo Santamaría Gaitán from Colombia
- Apr 04 2011 to date Captain Patricio Carrasco from Chile

2. Membership: Chile, Colombia, Ecuador, Perú.

3. Meetings:

- 8th Meeting Cartagena de Indias, Colombia 12 to 14 May 2008
- 9th Meeting Cartagena de Indias, Colombia 15 to 18 November 2010
- 10th Meeting Valparaíso, Chile 04 to 06 April 2011

4. Agenda items

1. Workshop on Improvements of rivers survey techniques. Year 2007. Iquitos – Peru.
2. Statues review. Year 2008 and 2010 – Cartagena de Indias – Colombia.
3. Implementation of Capacity Building Programme for the Member States of the Commission. Period 2008 – 2012.
4. Workshop on implementation and diffusion of Hydrographic Data Bases. 28 to 31 October – 2008. Cartagena de Indias – Colombia.
5. Multibeam Course of MACHC and SWATHC. Invitation to participate to members of SEPHC. 24 to 28 November 2008. Niteroi – Brazil.
6. Updating Seminar on surveys, production and distribution of ENC´s. Invitation from MACHC. July 2009. Niteroi – Brazil.

7. Multibeam Course. Attended by one representative of each Member Country of the Regional Commission, invited by MACHC. July 2009. Niteroi - Brazil.

8. First Meeting of Technical Experts Working Group. Workshop on Homologation of ENC data to improve ENC production lines. 06 to 08 April. Valparaiso – Chile.

9. Use of video-conferences to improve follow-up of agreed actions.

10. In 2010 started links with the Maritime Service of Panama to invite that country to join the Commission.

5. Conclusions

- With the achievement of the first Meeting of Technical Experts Working Group of the Commission, and the use of video conferences as media to follow up agreed actions it has been confirmed that the Commission is sailing on the right track to improve, with practical solutions, its contribution to hydrography on this part of the planet.

- Within Member States of SEPHC there have been some disasters (basically tsunamis) that made their Hydrographic and Oceanographic Services valuable organizations that could contribute to others with their experiences and activities on these matters.

- In this regard SEPHC is ready to contribute to elaborate training plans, seminars, workshops, etc, that could help to improve, with concrete actions, to preparedness of Member States to face these types of disasters.

6. Proposal for adoption by the XVIIIth Conference

The Conference is invited to note the report.

12. SOUTHERN AFRICA AND ISLANDS HYDROGRAPHIC COMMISSION (SAIHC)

1.	**Chair:**	Captain Abri KAMPFER, Hydrographer , South Africa
	Vice Chairman:	Mr Abdool Oozeer, PS Ministry of Housing & Lands, Mauritius
2.	**Membership:**	France, Mozambique, Mauritius, Norway, South Africa and United Kingdom.
	Associate Members:	Angola, Kenya, Malawi, Madagascar, Tanzania, Portugal, Comoros, Namibia and Seychelles.
	Observers:	Brazil and United States of America

3. Meetings:

6th SAIHC Conference, Malawi, Mangochi, 27 – 28 August 2007.
7th SAIHC Conference, La Réunion, Saint Denis, 16 – 17 September 2009.
8th SAIHC Conference Namibia, Walvis Bay, 6 – 7 September 2011.

4. Agenda Items

The SAIHC Conferences tend to work to a standing agenda with modifications for new issues as they arise. The principal agenda items dealt with during the above-mentioned meetings are:

- Feedback from other IHO Bodies affecting SAIHC
  - **IRCC**
  - **CBSC**
  - **IHB**

- SAIHC Activities in the light of IHO Work Programme

  - INT chart scheme for Region H and NAVAREA VII Self Assessment: Progress made since last meeting; actual Charting Status; ENC production status; new requirements and modifications proposed to the scheme.
  - Bilateral and Regional Cooperation Agreements, Projects and Regional Capacity Building Management Plan. CBSC Technical Visits and Regional Projects.
  - Presentation of National Reports: Hydrographic surveying, nautical charting, nautical publications and information status
  - Status of Hydrographic Surveying and Nautical Charting (C-55)
  - Procedures in response to Marine Disasters

- Marine / Hydrographic Spatial Data Infrastructure

- Feedback on Regional Projects

- Revision of SAIHC Statutes

Conclusions

Main conclusions were as follows:

- Member States were urged to implement actions to accelerate the process of ratification of the Protocol of Amendments to the IHO Convention in order to meet the end of 2011 deadline.

- Member States were encouraged to approve the applications for IHO membership of Haiti and Montenegro.

- All recipients of the IHO Technical visits were unanimous in their praises of the value of the Technical visits in creating awareness on Hydrography at higher levels of decision-making in their respective countries.

- To encourage and to assist Member States to subscribe to IHO and IALA conventions and to work towards establishing Hydrographic and Aids to Navigation institutions.

- Distribute IHO resolutions to Member States. Encourage the exchange of relevant hydrographic information and to stimulate communication among Member States. The training opportunities offered by IHO Member states are of particular importance to assist with building of Hydrographic capacity in the region.

- The importance of C-55 was re-iterated as it forms the basis of establishing capacity building needs in the various regions. All Member States were urged to keep C-55 up to date.

- SAIHC strategies to involve non-IHO Member States in RHC's activities were established to be achieved by regular technical visits, correspondence forwarded by the Chairman and annual SAIHC meetings.

- Emphasis was placed on the importance of IHO reference documents to be used in compliance with INT charting standards. Member states were encouraged to comply with these standards.

- The need for MSI was emphasized, especially in the Great Rift Valley Lakes region.

- ENC coverage is similar to that of INT Chart coverage and this is mainly due to the sterling efforts of the SAIHC Member States with charting responsibilities. Deficiencies in charting coverage will only be improved through modern surveys as the lack of data is the main inhibitor.

- Care should be taken of duplicating work in areas where modern surveys already exist. Recipient states should forward all survey data to the relevant charting authorities.

- Generic Bilateral Agreement for the provision of Hydrographic Services created by France is considered a very good example of the type of agreement that can be used by Member States and associate members who require hydrographic services or wish to enter into a Bilateral Agreement with another contracting government, to comply with the SOLAS Convention obligations.

- SAIHC Statutes to be amended to reflect annual meetings, as well as the venues for the meetings to be amended to allow for the SAIHC meetings to be held outside of the SAIHC region.

5. Venue and date of next meeting

The 9th SAIHC Conference will be held in Mauritius in September 2012.

6. Proposals for adoption by the XVIII International Hydrographic Conference

The Conference is invited to note the report.

13. SOUTH WEST ATLANTIC HYDROGRAPHIC COMMISSION (SWATHC)

1. Chairs:

Captain Orestes PEREYRA (Uruguay) from 2011
Vice-Admiral Luiz Fernando PALMER (Brazil) 2010 - 2011
Rear-Admiral Andrés Roque DI VINCENZO (Argentina) 2009 - 2010
Captain Orestes PEREYRA (Uruguay) 2008 - 2009
Vicealmirante Edison LAWRENCE (Brazil) 2007 - 2008

Vice-Chairs: Rear Admiral Andres Roque DI VINCENZO (Argentina) from 2011
Captain Orestes PEREYRA (Uruguay) 2010 - 2011
Vice-Admiral Luiz Fernando PALMER (Brazil) 2009 - 2010
Rear-Admiral Andrés Roque DI VINCENZO (Argentina) 2008 - 2009
Captain Orestes PEREYRA (Uruguay) 2007 - 2008

2. Membership:

a. Full Members: Argentina, Brazil and Uruguay.
b. Associate Members: Paraguay.
c. Observers:
Country: Bolivia
IHB : Captain (CH) Hugo Gorziglia.

3. Meetings:

a. 1st Meeting - Buenos Aires, Argentina – April 10th– 12th , 2007.
b. 2nd Meeting - Rio de Janeiro, Brazil – March 18th– 19th, 2008
c. 3rd Meeting - Montevideo, Uruguay – March 26th– 27th, 2009
d. 4th Meeting - Buenos Aires, Argentina – March 25th– 26th, 2010
e. 5th Meeting - Arraial do Cabo, Brazil – March 24th– 25th, 2011
f. Next Meeting - Montevideo, Uruguay – March 15th– 16th, 2012

4. Agenda Items:

a. The CBC Representative Report about the Technical Visit to the Hydrografic Offices in Argentina, Brazil and Uruguay was presented. In this report the basic elements to produce a regional hydro-cartographic plan as well as the actions for capacity building were identified. (February 2008).
b. Continuation of a Planning Working Group composed of technical staff from the three HO's was also recommended to ensure compliance with the agreements to be adopted by the Commission and to facilitate the exchange of experiences and capacities.
c. Other recommendations were:
    i. To establish an ENC regional scheme.
    ii. To define the responsibilities in the production of cells in neighbouring areas.
    iii. To develop a capacity building plan for the committee.
    iv. Permanent revision of the IHO Working Programme to identify the activities to be carried out by the Committee.
d. The regional representation in the future IHO Council was analysed and it was decided that the Chairman of the Commission would be the Representative of the Committee.
e. The report of the Cartographic Planning Working Group was approved and it was turned into a Planning Commission, with the consequent approval of its Terms of Reference and Rules of Procedure. This Commission will coordinate INT Charts and ENCs production at a regional level in order to achieve their harmonization and to avoid overlapping, in compliance with WEND Principles.
f. The SWAtHC Cartographic Plan was presented to the IHB, according to the goals set for the creation of the Cartographic Planning Working Group.
g. To promote a permanent and a regional active participation within the Organization's different levels; representatives from SWAtHC (specifically from Argentina and Brazil) take part in the several IHO Commissions and WG (HSSC, IRCC, CBC, ISPWG).

h. In 2008, Bolivia and Paraguay's Hydrographic Offices were invited to attend the SWAtHC future meetings and to encourage the regional participation, integration and regional coordination according to provisions in T1.3 Resolution. The requests made by these two nations to join this Commission as Associate Members were accepted and then SWAtHC Statutes were passed to the representatives of the two nations in order to start the integration process. Paraguay, during the 4th Meeting in March 2010, signed the SWAtHC Statutes and from that date became an Associate Member.
i. The need of the treatment and definition of the expression "inland waters" by the HCIWWG was analysed. It was also pointed out the importance of a correct definition in Spanish.
j. The members of this Commission agreed that a continuous and rigorous check of their products is essential in order to achieve harmonization between the ENCs and Paper Charts.
k. SWAtHC Members were recommended to revise S-100 Standard, and the Planning Committee was commissioned to analyze the suitable period of adaptation and application after its approval.
l. The Planning Committee was commissioned to revise the possibility of a joint edition of such standardized nautical publication as the Symbols and Abreviations Terms, List of Lighthouses and Maritime Aids to Navigation and a publication with explanations about different topics related to ENC.
m. SWAtHC members are encouraged to reach maximum widespread of "TRANSITIONING FROM PAPER CHART TO ELECTRONIC CHART DISPLAY AND INFORMATION SYSTEMS (ECDIS) NAVIGATION" which appears as an annex to IMO SN. 1/Cir.276.
n. An administrative agreement between Brazil, through its "Diretoría de Hidrografía e Navegação" (DHN)" and Argentina, through its "Servicio de Hidrografía Naval (SHN)" was approved to be made for the purpose of achievement mutual support for ISM transmission via SafetyNET service, in case the LES comes to standstill.
o. According to provisions in IHB Cir 89/2008 on methods used by theBaltic Sea Hydrographic Commission (BSHC) to determine the compilation parameters suitable for the ENCs in the region, and the discussion during the 20th CHRIS Meeting held in Brazil in November 2008, where Member States and Regional Hydrographic Commission Chairmen were invited to study such experience and take into account its application within their own regions, the Planning Committee was commissioned by SWAtHC to study the validity of applying the BSHC model in the areas international boundaries into their jurisdiction.
p. INT Chart Scheme: SWAtHC INT Chart scheme has a total of 50 charts. From these, 24 charts 48% have already been published.
q. ENC Scheme: SWAtHC ENC scheme has a total of 222 Cells. From these, 130 Cells (58%) have already been published. The following Cells were planned to be published during 2011.
    i. Argentina: 30 Cells.
    ii. Brazil: 4 Cells
    iii. SWAtHC ENC Production and Coverage Status- Including Inland Waters

Country	Cells produced and delivered	Cells produced but not yet available	Cells to be produced	Total
Argentina	29	30	04	63
Brazil	83	04	26	113
Uruguay	18	06	22	46
Total	130	40	52	222

r. One of the RHC main goals is to create and strengthen capacities through the CBC. Therefore, we may highlight SWAtHC achievement by pointing out the courses, workshops and seminars carried out:
    i. Workshop on river hydrographic surveys. Peru, November 2007.

ii. Technical support for regional hydrocartographic plan development. Uruguay, February 2008
iii. MBES training course. Brazil, November 2008
iv. Workshop on "e-Navigation" and ENC. Brazil, November, 2008 (During CHRIS Meeting).
v. ENC Workshop Brazil, 2009
vi. 51st Multibeam Course (OMG-CCOM) Brazil, 2009.
vii. Workshop on Port and Shallow Water Surveys (MACHC, SEPHC and SWAtHC All countries). Uruguay, 2010
viii. MSI Regional Course (IHB standard Course implemented with two days for hydro-cartographic basic introduction for operators and NAVAREA Coordinators exchange of procedures and experiences). Brazil, 2011

5. Conclusions:

a. Through the incorporation of Bolivia in SWAtHC, all country members of the "Hidrovia Paraná- Paraguay" will be represented.
b. ENC production developments in the region: in this sense we highlight the increasing level of ENC production that allowed to reach an amount of 130 produced and available cells, and this year expects to reach 170 of 222 planned for adequate coverage.
c. Finally, the study for ENC harmonization in bordering zones initiated by the Planning Committee and the comparison between paper charts and ENC, represent so much qualitative indicators.
d. Capacity Building: Taking into account the bases on the IHO CBSC strategy, SWAtHC has developed its own capacity building. It is important to emphasize the permanent CBC support in this region, which promotes the optimization of the Hydrographic Offices' products and the advantages of the capacity development in the region.
e. SWAtHC is committed to carrying forward hydrographic, cartographic and capacity building activities in a close alignment with IHO objectives and goals.
f. Regarding progress of the ratification of the Protocol of the amendments to IHO Convention, RA Di Vincenzo said that SHN so far had been waiting for the Ministry of Foreign Affairs' comments.
g. Experience in dealing with marine disasters: at present we have no experience in this matter, during last years there was no serious maritime disaster, which could lead to the need for coordinating actions of national hydrographic services.

6. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

14. SOUTH WEST PACIFIC HYDROGRAPHIC COMMISSION (SWPHC)

1. Chair: Mr Nicholas Pion (Hydrographer, Papua New Guinea) June 2011-
Mr Joseph Kunda (Hydrographer, Papua New Guinea) Nov 2010 - June 2011
Vice Admiral Bruno Frachon (Hydrographer, France) 2010
Vice Admiral Gilles Bessero (Hydrographer, France) 2008-2009

Vice Chair: Commodore Rod Nairn, RAN (Hydrographer, Australia) 2011
Mr Adam Greenland (Hydrographer, New Zealand) 2008-2010

2. Membership: Australia, France, Fiji, New Zealand, Papua New Guinea, Tonga, United Kingdom, United States of America

Observers: Cook Islands, Kiribati, Nauru, Samoa, Solomon Islands, Tokelau, Tuvalu, Vanuatu, South Pacific Geoscience Commission (SOPAC), Secretariat of Pacific Community (SPC), Pacific Islands Maritime Association (PacMA)

IHB Representative: Captain Robert Ward (Director)

3. Meetings

8th Meeting	Papeete, Tahiti	19-20 September 2007
9th Meeting	Port Moresby, Papua New Guinea	9-11 March 2009
10th Meeting	Honiara, Solomon Islands	9-10 November 2010
11th Meeting	Brisbane, Australia	15-16 February 2012 (planned)

4. Agenda Items

4.1 SWPHC Statutes

At its 9th Meeting, the Commission discussed and agreed on the following amendments to the SWPHC Statutes:

- Remove the reference to Appendix 2 as the chart schema at the reference is now on the IHO website.
- Add a Clause on 'Communications' that invites Members to ensure that their contact details in the IHO Yearbook are correct.
- Add a Clause on the election of the Commission representative on the IHO Council (when the Council is established).

4.2 Capacity Building

Capacity Building has been identified as the major issue in the SW Pacific Region. The SWPHC faces particular difficulties due to the remoteness of the region and the fact that it comprises mostly isolated island States, with very limited hydrographic capabilities.

4.2.1 Technical Assessment & Advice Visits

Combined high level and technical visits to various States in the region were carried out under the IHO Capacity Building Work Programme. The aim of these visits was to seek increased levels of support for hydrography from the higher levels of government and at the same time to assess what type of capacity building programmes might be most appropriate.

<u>Solomon Islands Technical Assessment & Advice Visit (October 2009)</u>
Two members of the IHO secretariat (a Director and a Professional Assistant) undertook a technical assessment visit and recommended to the government of the Solomon Islands that the Solomon Islands Maritime Safety Authority (SIMSA), planned for establishment in 2010, be responsible for ensuring the provision of a national hydrographic service.

Cook Islands Technical Assessment & Advice Visit (February 2011)
Two members of the SWPHC (the Hydrographers of Australia and New Zealand) visited the Cook Islands where they met various government officers and parliamentarians in order to raise the level of awareness of the importance of providing national support for improving the hydrography and nautical charting of the country.

Kiribati and Vanuatu Technical Assessment & Advice Visits (November 2011)
An IHB Director and a technical advisor from the UKHO visited Kiribati and Vanuatu. They met various government officers, parliamentarians and hydrographic programme stakeholders in order to raise the level of awareness of the importance of providing national support for improving the hydrography and nautical charting of the country. An initial charting requirements programme was developed during the visits.

4.2.2 Training Courses and Workshops

The following workshops and training courses were carried out as part of the IHO Capacity Building Work Programme for the countries in the region:

Technical Workshop (Port Moresby, Papua New Guinea - March 2009)
A one-day workshop preceded the 9th Meeting of the SWPHC. The objective of the workshop was to raise awareness of the benefit of hydrography in the SW Pacific region and to stress national obligations to provide hydrographic services under SOLAS Regulations.

SWPHC Regional MSI Training Course (Sydney, Australia - August 2010)
A three-day training programme provided practical guidance to persons responsible for the collecting and issuing coastal navigational warnings within a coastal region. The programme also aimed to establish a support network to enable the flow of MSI information from SWP Island States to NAVAREA X and XIV Coordinators to improve safety and increase maritime domain awareness. Representatives from 8 Pacific Island Countries attended the course.

Regional Training Course on Hydrographic Surveying and Introduction to Chart Production (Port Moresby, Papua New Guinea - October 2010)
A two-week course provided training in basic techniques of hydrographic surveys and nautical charting. Its objective was to establish capacity in these fields so that maritime authorities could provide high quality products and services to satisfy the basic requirements for safety of navigation in the area. A total of 13 participants from 8 countries in the region attended the training course.

4.2.3 Future Projects under the IHO Capacity Building Work Programme (CBWP)

Discussions during the 10th SWPHC Meeting identified various applications for CBSC assistance in future years (up to 2015). Requests were essentially related to Phases 1 and 2 of the Capacity Building process as countries in the region are faced with lack of human resources, namely awareness - education, campaign and collection - circulation of information to maintain existing charts and publications. The IHO CBSC Meeting held in May 2011 approved the following projects as part of the 2012 CBWP:

Technical Assessment and Advisory Visits - Samoa, Tonga
To inform, assess current status and note requirements.

Technical Visit to facilitate National Hydrographic Requirements - Solomon Islands (planned for Feb 2012), Cook Islands and Kiribati (planned for 2012 – dates to be decided)
Follow-up Technical Support Visit & Development of Prioritised Hydrographic Survey and Charting Plan.

Hydrographic Administration Training Placements with Regional Hydrographic Offices - Papua New Guinea, Solomon Islands, Vanuatu, Timor Leste
Increased efficiencies in developing Hydrographic administration.

National Hydrographic Capability Development – Papua New Guinea
To upgrade skills of cartographic and chart printing staff.

Ports & Shallow Water Bathymetry Technical Workshop (planned to be held in Brisbane in February 2012)
The workshop will enable the exchange of information and ideas about the challenges faced in conducting port and shallow water surveys in the SW Pacific. Participants will benefit from an improved understanding of port and shallow water surveying activities throughout the SW Pacific region and where they may obtain assistance, advice and other resources.

MSI Regional Workshop - SW Pacific Island Countries
A workshop aimed at establishing a support network and training to enable the flow of MSI from SWP countries to NAVAREA X and XIV Coordinators to improve safety and increase maritime domain awareness.

4.3 Charting – INT Charts and ENCs

The ongoing monitoring of progress and refinement of the chart coverage for INT Chart Scheme Region 'L' is being carried out. In compliance with IHO CL 23/2010 a formal correspondence working group, chaired by Australia, was formed to coordinate the limits and production of INT charts and ENC for the SWPHC region. There is now full ENC coverage of the region for navigational purpose bands 1 and 2..

4.4 Liaison with Regional Organisations

Contacts with the regional organisations – the South Pacific Geoscience Commission (SOPAC), the Secretariat of Pacific Community (SPC) and the Pacific Islands Maritime Association (PacMA) are improving. The Vice-Chair (Hydrographer, New Zealand) of the SWPHC attended the 13th PacMA Meeting held in Tonga on 11 May 2009. A paper was presented which discussed the role of the SWPHC within the IHO and highlighted the importance of hydrography in the region to ensure coastal States are aware of their responsibilities regarding hydrographic services under the SOLAS Regulations. Fiji represented the SWPHC at the 14th PacMA meeting held in Suva, Fiji in 2010 and provided briefs on the SWPHC activities. The 10th SWPHC Meeting (Honiara, Solomon Islands, 9-10 Nov 2011) was attended by representatives of PacMA and SOPAC.

4.5 MOUs with Regional Agencies

In 2004 a Memorandum of Understanding (MoU) was signed between the IHO and the South Pacific Applied Geoscience Commission (SOPAC) to provide a framework for continuing liaison between the IHO and SOPAC to ensure the efficient and effective use of hydrographic data collected by the two organisations or their members.

In January 2011 SOPAC was transferred and integrated into the Secretariat of Pacific Community (SPC) as a new Applied Geoscience and Technology Division. The SPC is an intergovernmental organisation that provides technical and policy advice and assistance to its Pacific Island members (totalling 26 member countries and territories). As a result of the SWPHC's initiative an MoU between the IHO and SPC was signed in April 2011. This MoU acknowledges the importance of hydrography and nautical charting and brings it to the attention of many regional governments at the most senior levels for the first time. It also provides a single, high-level point of reference for various practical initiatives and programmes to be undertaken. It also facilitates the exchange of hydrographic information and provides for mutual representation at SWPHC and SPC meetings

5. Closing Statement

The SWPHC continues to face significant challenges, brought about by its isolation, limited marine traffic, the very limited resources available in the many small island States in the region, yet the pressing need for improvements in hydrography and nautical charting because of the huge dependence on limited maritime transport, trade and tourism. As well as continuing with direct capacity building efforts to individual States, greater engagement and collaboration with SPC and, in particular, the potential development of SOPAC's current geophysical and environmental surveying capabilities to include hydrographic surveying for charting purposes are seen as important activities for the next five years and beyond.

6. Proposals

The Conference is invited to note the report.

15. USA AND CANADA HYDROGRAPHIC COMMISSION (USCHC)

1. Co-Chairs:

From 2010 (33rd and 34th USCHC and current)
Dr. Savithri Narayanan, Dominion Hydrographer, Canada
Captain John E. Lowell, Jr, National Hydrographer of the United States

2007- 2009 (30th to 32nd USCHC)
Dr. Savithri Narayanan, Dominion Hydrographer, Canada
Captain Steve Barnum, National Hydrographer of the United States

2. Membership: *Agencies*

United States of America:
i) NOAA Office of Coast Survey,
ii) U.S. Navy, and
iii) National Geospatial-Intelligence Agency (NGA)

Canada:
Canadian Hydrographic Service

3. Meetings:

31st USCHC, April 16, 2008 (Ottawa, Canada)
Charting Advisory Committee Meeting (CAC)
32nd USCHC, April 9, 2009 (Silver Spring, Maryland, USA)

Charting Advisory Committee Meeting (CAC)
33rd USCHC, May 17-18, 2010 (Ottawa, Canada)
Charting Advisory Committee Meeting (CAC)
34th USCHC, April 25, 2011 (Tampa, Florida, USA)
Conference calls as required inter-sessionally

4. Agenda Items*:*

- Identify issues and develop an action plan to resolve the overlap of ENCs in transboundary areas of the U.S. and Canada
- Mutual personnel exchange to develop cross-office cartographic and technology experience necessary to implement Transboundary charting
- Catalogue existing U.S. and Canadian ENC's
- Undertake an initial ENC demonstration project in the Straits of Juan De Fuca and document lessons learned regarding various technical issues and policy decisions.
- Develop a Work Plan for the 2011-2012 period for three remaining U.S.-Canada transboundary regions: a) Pacific, b) Atlantic and c) Great Lakes.
- Develop USCHC input to the newly established Arctic Regional Hydrographic Commission including recommendations of ARHC boundaries as potentially affect neighbouring RHCs

5. Conclusions*:*

USCHC Actions contributing to the IHC Work Programme 2008-2012 under Programme 3, Element 3.1 "Regional Hydrographic Commissions".

- United States and Canada signed a Level of Services Agreement outlining expectations and roles of cooperation between the two national hydrographic offices toward the joint development of ENCs for the Pacific Ocean, Atlantic Ocean and Great Lakes transboundary regions of the two counties.
- U.S. and Canada signed the "U.S.-Canada Transboundary ENC Project Report" summarizing the collaborative process, issues addressed, conclusions, and lessons learned from the initial demonstration project focusing on the Straits of Juan de Fuca.
- The Commission agreed to a time-line and actions for addressing three remaining identified transboundary areas, including a communications plan to inform stakeholders of proposed ENC changes.
- The Commission determined respective ENC chart cuts for the U.S.-Canada transbounary areas in the Pacific and Atlantic Region *(by 1st Quarter 2012)*.
- U.S.-Canada Pacific Region (Juan De Fuca and Haro Straits) Transboundary ENC Pilot Release scheduled (*January 2012*).
- The USCHC developed input to support the establishment of the ARHC, including recommendations for the regional commission boundary areas.

6. Proposals for adoption by XVIIIth I.H. Conference:

The Conference is invited to note the report.

REPORT BY THE HYDROGRAPHIC COMMISSION ON ANTARCTICA (HCA)

1. **Chair:** Captain Hugo GORZIGLIA, IHB Director
Vice-Chairs: Commodore Rod NAIRN, Australian Hydrographer, 2007-2008
Rear Admiral Ian MONCRIEFF (United Kingdom), 2008- 2010
Commodore Rod NAIRN, Australian Hydrographer, 2010 – 2012

2. **Membership*:*** Argentina, Australia, Brazil, Chile, China, Ecuador, France, Germany, Greece, India, Italy, Japan, Korea (Rep. of), New Zealand, Norway, Peru, Russian Federation, South Africa, Spain, United Kingdom, Uruguay, USA and Venezuela.

Observers: Antarctic Treaty Secretariat (ATS), Council of Managers of National Antarctic Programmes (COMNAP), International Association of Antarctic Tour Operators (IAATO), Scientific Committee on Antarctic Research (SCAR), International Maritime Organization (IMO), Intergovernmental Oceanographic Commission (IOC), General Bathymetric Chart of the Oceans (GEBCO), International Bathymetric Chart of the Southern Ocean (IBCSO).

3. **Meetings:** 7th Meeting, Buenos Aires, Argentina, 3-5 October 2007
8th Meeting, Niterói, Rio de Janeiro, Brazil, 06-08 October 2008
9th Meeting, Cape Town, South Africa, 12-14 October 2009
10th Meeting, Cambridge, United Kingdom, 20-22 September 2010
11th Meeting, Hobart, Tasmania, Australia, 5-7 October 2011

4. **Agenda Items*:***

4.1 Membership.
One of the HCA standing agenda items refers to the HCA membership. The Commission has taken different initiatives to reinforce the participation of countries which do contribute to the hydrographic and cartographic activities in Antarctica. During the period covered by this Report, the following Member States have signed the HCA Statutes and have become HCA Members: Japan (2008), Korea (Republic of) (2008), Peru(2007), Uruguay(2008), USA (2007) and Venezuela (2009).

4.2 HCA Statutes.
At its 7th Meeting, the Commission examined, discussed and proposed amendments to the HCA Statutes to comply with the new IHO structure. The following two options were considered: 1) HCA Chairperson from a Member State and supported by the IHO Secretariat; and 2) HCA Chairperson from the IHO Secretariat. There was overwhelming support for the second option. The Commission also agreed on a proposed amendment to Article 8(e) of the revised IHO General Regulations to accommodate the particular case of HCA, i.e. no coastal States exist within the region and, while HCA members must be IHO Member States, they must also have acceded to the Antarctic Treaty and contribute resources and/or data to the IHO INT Chart coverage of Region M. The proposed amendment was approved by Member States in June 2008 (CL53/2008).

4.3 Interaction with other International Organizations.

4.3.1 Participation in HCA Meetings.
The HCA has been quite successful in working closely with other related organizations which have been invited to attend HCA meetings to share their views and experiences, aiming at building the importance of hydrography in Antarctica, a strong common objective.

The HCA has benefited from the support of all international organizations that participate as Observers. The annual Antarctic Treaty Consultative Meeting (ATCM) of the Parties is provided with an IHO/HCA Report that keeps the Parties well informed on the progress and the shortcomings the HCA is facing in providing adequate nautical charts and information contributing to safe navigation in Antarctica. The ATCM has adopted several recommendations requesting AT signatory governments to increase the priority and to allocate resources to improve the level of hydrographic surveys and nautical chart production.

COMNAP and IAATO have been actively involved with and contributed to HCA work, particularly offering their views on priority areas requiring hydrographic surveys and nautical charts, as well as being strongly supportive in contributing to raise awareness at all levels, on the importance of allocating more resources to improve the availability of nautical charts covering Antarctica. Both organizations have offered the possibility to use Ships of Opportunity (SOO) to gather hydrographic data and have motivated their members to use a standardized format to render hydrographic data in support to HCA work.

IOC, GEBCO, the Regional project IBCSO and SCAR have actively promoted the gathering of bathymetric data collected for scientific purposes by different institutions, particularly those collected under projects executed as part of the research conducted during the International Polar Year. The HCA has appreciated this contribution and has stressed the importance of making all available bathymetric data known to the IHO DCDB.

IALA has recently joined the work of the HCA and has participated as Observer, contributing to the overall discussion on safety of navigation in Antarctic waters. Unfortunately, due to various circumstances, IMO has not been able to attend any of the meetings held during the period covered by this report.

4.3.2 Technical Seminars delivered.
At the XXXI ATCM (Ukraine, 2008) a Seminar on The Importance of Hydrographic Activities in Antarctica was delivered by HCA, covering topics like: "Hydrography in the Antarctica"; "Hydrography and its contribution to the protection of the marine environment in Antarctic waters"; "Hydrography and its contribution to Antarctic Sciences"; "Hydrographic and Cartographic Status in the Antarctica" and "Practical initiatives to improve hydrography and nautical charting in Antarctica". Over 300 persons attended the seminar the outcome of which was a concrete resolution from ATCM recommending Government Parties to:

1. encourage their national programme vessels and other vessels, as appropriate, to collect hydrographic and bathymetric data on all Antarctic voyages, as practicable;
2. cooperate with the HCA to improve hydrographic surveying and charting in the Antarctic region including working to:
    a. clarify with HCA requirements for the collection of hydrographic data of sufficient quality for use in the development of electronic navigational charts and,
    b. identify priority areas for the collection of additional hydrographic and bathymetric data
3. forward any Antarctic hydrographic and bathymetric data collected to the relevant international chart producer for charting action;

4. endeavour to find additional resources towards improving hydrographic surveying and charting in the Antarctic region.

The HCA also organized a similar event at the 2009 COMNAP held in Chile. The structure of the seminar was very much like the original one. Over 150 delegates from 26 countries were present. As an outcome of this activity, COMNAP agreed to put in practice the "**IHO Collection and Rendering of Hydrographic Data Form**", included in the document **"Collection and Rendering of Hydrographic Data obtained by SOO in Antarctic Waters"** submitted by the IHO/HCA. Also, COMNAP decided to commit the review and provide comments on the HCA Hydrographic Survey Priority List.

Another seminar was organized and delivered at the 21st Annual Meeting of IAATO that took place in Turin, Italy, 2010. On this occasion, the objective of the presentation was to raise awareness at the operational level on the importance of hydrographic activity in the Antarctica; to achieve a better understanding of IAATO on the existing risks associated to the present status of charting in the region and what IHO/HCA is doing to fill the gaps and, finally, to jointly explore on WHAT and HOW IAATO can contribute to IHO/HCA efforts to improve the situation. Close to 100 IAATO Members and Observers were present. The outcome was that data collected by IAATO ships constitute a concrete potential contribution from IAATO to the IHO/HCA, if such data is collected following standards. In this line, the "**IHO Collection and Rendering of Hydrographic Data Form**" was adopted by IAATO.

An HCA presentation was also made to the 22nd Annual Meeting of IAATO in Hobart, Australia in May 2011. IAATO participants were informed on the progress made in INT Charts and ENC production and availability. Other main aspects highlighted were:

1. HCA has been successful in spreading recognition of the needs for charts but not successful in getting more data and information on to charts; an ongoing challenge.
2. The contribution made by IAATO by providing HCA data kept under its domain. This is a positive sign that HCA recognizes and promotes to encourage further data submissions.
3. The value of technical coordination visits between the relevant HCA Member States and IAATO members at all practicable port calls made before and / after heading to Antarctica to ensure fluent exchange of hydrographic data and information.

4.4 Charting - INT Charts and ENCs.

The HCA has analyzed the INT Chart scheme progress at all its annual meetings and have kept updated the list of INT Charts covering Region M through slight modifications suggested by producer nations and considering some new requirements from end users. Today, the INT Chart scheme includes 108 Charts out of which 65 are already available.

The Commission has established a small (2007) and a medium scale (2009) ENC coverage and is identifying a large scale coverage. INT Chart producer nations in region M have agreed to also consider the production of the ENCs covering same areas as paper charts do. ENC production has started and 52 ENCs are so far available.

With regard to chart production, in general, the HCA has identified the urgent need to avoid the overlap that occasionally exists between national cartography and the INT Chart series. This situation, if not solved, may expose the mariner to select among different products, a non-desired situation. The HCA has strongly urged its members to examine this situation and to adopt corrective measurements. Priority should be given to the provision of the most updated and complete INT chart version covering Antarctic waters.

4.5 Prioritized Hydrographic Survey Plan for Antarctica.
The HCA has discussed at its meetings the progress made by the HCA Survey Prioritization Working Group that was established in 2004 to develop and propose guidance on a Hydrographic Survey Plan, based on the INT Chart scheme demand of hydrographic data. The HCA Long Term Survey Plan together with the HCA Survey Short List has been examined annually and an updated version of the document has been prepared and adopted at each meeting. This plan constitutes a guide for HOs when planning their hydrographic activities.

4.6 Other matters
There have been many other activities the HCA has accomplished during the period 2007-2011. In this report we have provided some details of those considered to be of higher relative relevance. Nevertheless, keeping the IHO/HCA web page as complete and friendly as possible allows the external world to access information on what the IHO is doing to improve safety to navigation in Antarctica.
Also the IHO/HCA participation in the Antarctic Treaty Experts Meeting convened to discuss Antarctic Tourism (2009) constitutes a milestone of great significance and a clear demonstration of the consideration IHO/HCA has within the Antarctic Treaty system.
A Special reference also needs to be made to the IHO/HCA participation in the 50th Anniversary of the signature (USA 2010) and 50th Anniversary of the entering into force (Argentina 2011) of the Antarctic Treaty. The IHO was invited to both ceremonies and was present at both. Finally, at the 11th HCA meeting held in Hobart, Australia, the delegates endorsed a Strategic Statement which builds on the HCA Statutes to provide a clear direction for the Commission for the next 5 years (see Annex).

5. Conclusions*:*
The HCA has organized, prepared and conducted the meetings scheduled for 2007, 2008, 2009, 2010 and 2011, reporting on their outcomes to its members and the IHO, through the IHB. The HCA has coordinated and actively participated with other Antarctic relevant organizations having received strong support in raising awareness on the importance of hydrography in Antarctica. The HCA has followed up the action lists agreed at each HCA meeting and has encouraged the INT Chart scheme production and priority hydrographic surveys in support of the chart production.
Due to the new IHO structure that started in 2009 , the HCA became an IRCC member and reports to this Committee.
As a general final conclusion, we might say that the HCA has duly completed the tasks identified in the IHO Work Programme for the period covered by this Report and has identified its Strategic Direction and Strategic Goals for the years to come, based on its Statutes.

6. Proposals for adoption by XVIIIth I.H. Conference:

The Conference is invited to note the report.

ELEMENT 3.2 INCREASE PARTICIPATION BY NON-MEMBER STATES
(Included under each individual RHC Report under Element 3.1 when applicable)

ELEMENT 3.3 CAPACITY BUILDING MANAGEMENT

REPORT BY THE CAPACITY BUILDING SUB-COMMITTEE (CBSC)

1. Chair:

Mr. Thomas Dehling (Germany)	since 2011
Mr. Jānis Krastiņš (Latvia)	2009-2011
Capt. Hugo Gorziglia (IHB)	2007-2009

Vice-Chair:

Commodore Vinay Badhwar (India)	since 2011
Cdr. Brian Common (USA)	2009-2011
Capt. Mike Barritt (UK)	2007-2009

Secretary:

Capt. Alberto NEVES (IHB)	since 2011
Capt. Federico BERMEJO (IHB)	2007-2011

2. Membership:

Members: Capt. Hugo GORZIGLIA	IHB
Mr. Sun BING (China)	EAHC
Ing. en chef Yves GUILLAM (France)	EAtHC
Capt. Wesley CAVALHEIRO (Brazil)	MACHC, SWAtHC
Mr. Noralf SLOTSVIK (Norway)	NHC, NSHC
Mr. Jeff BRYANT (UK)	NIOHC
Capt. Abri KAMPFER (South Africa)	SAIHC
Cdr. Enrique SILVA (Chile)	SEPHC
Cdre. Rod NAIRN (Australia)	SWPHC
Mr. Jānis KRASTIŅŠ	Latvia
Dr. Shigeru KASUGA	Japan
Cdr. CARDENAS	Mexico
Mr. Augusto BATA	Mozambique
Capt. José GIANELLA	Peru
Mr. Ho JIN	Republic of Korea
VAdm Prayuth NETRPRAPA	Thailand

Note: the members representing the RHCs are also their CB Coordinators. Ten of the 15 RHCs have CB Coordinators.

3. Meetings:
The Sub-committee, formerly known as Capacity Building Committee (CBC), was established in 2003 following a proposal submitted by the IHB (CL 7/2003) and approved by Member States and has been renamed on 1st January 2009 (ref. CL 94/2008). Since IHC17 it has met annually in accordance with the Rules of Procedure:

- CBC 5: Riga, Latvia (5 - 7 June 2007);
- CBC 6: IHB, Monaco (27 - 29 May 2008);
- CBSC 7: Seoul Rep. of Korea (11 - 13 May 2009);
- CBSC 8: New Orleans, USA (14 - 16 June 2010);
- CBSC 9: Niteroi, Brazil (23-25 May 2011).

4. Agenda Items:

Purpose of the Sub-committee
The Capacity Building Committee is an IHO Committee established in 2002 with the following main objectives:

- Continuously assess the hydrographic surveying, nautical charting and nautical information status in nations and regions where hydrography is developing,
- establish and maintain close relationships with national agencies and international organizations, which may provide funding or other support for technical assistance projects, and study the procedures to access the funds for Technical Assistance available from such organizations,
- cooperate with Regional Hydrographic Commissions in the creation of Study Teams or Action Groups to carry out assessment studies in identified areas.

Defining priorities and improving the strategy

The Sub-committee reviewed and rendered the CB Strategy more precisely. After that five procedures have been developed to clarify, and provide a clear structure for the CB provision.

Joint CB efforts
Following an initiative from the IHB, the responsible officers for Capacity Building matters in the IMO, IOC, WMO, IALA, IAEA and IHO decided to hold annual meetings to consider matters such as the procedures established in each organisation, their Work Programmes and Funding mechanisms, the experiences gained in the provision of CB, the experience with Funding Agencies and Organisations, the Status of joint co-operation projects and the areas of common interest. Meetings have been held up to date on a yearly basis since 2007. In 2011 the FIG joined the meeting as an observer.
Some parts of the CB programme have been realized in cooperation with the IMO and with the Nippon Foundation. The Republic of Korea also provided a substantial increase in the annual contribution, up to US$ 400,000 (to be defined annually).

Implementing regional CB coordinators
The 17th International Hydrographic Conference agreed in Decision 17 to ask the CBC, in consultation with RHCs, to consider the part-time allocation of personnel to act as Regional Staff Officers to assist those chairmen of Regional Hydrographic Commissions (RHCs) who have limited human resources with which to sustain the capacity building effort in their regions. As a result the CBSC in coordination with the RHCs developed the following amendment to IHO Resolution T 1.3. which was approved by Member States in 2007:
2 bis Where Capacity Building is required in a region, RHCs are recommended to establish an internal body to deal with CB matters and to designate a focal point to ensure continuity in the CB process. This part-time allocation to assist RHCs should come primarily and ideally from an HO within the region. If that is not possible then the RHC might agree to request support from another RHC or an HO that might wish to take that responsibility.
The RHCs that are receiving support from the CB fund have established CB coordinators. It is highly recommended that these coordinators are members of the CBSC and participate in the CBSC meetings.

Further development of the CB WP and MP
The SC has been very active in developing the Management Plan further. Work Programmes have been elaborated in a yearly schedule on the basis of the information gathered from the RHCs, C-55 and technical visits.

CBSC WP 2013-2017:
The Sub-committee requested all RHC's to communicate their most urgent capacity building needs in order to have them included in the 2013-2017 CB Programme, a sub set of the IHO WP. At the time of writing this report, this activity is still in progress.

Growth of the CB Provision
A positive trend can be recognized when looking at the growth rate of the number of submissions from RHCs and the yearly expenditure from the CB-Fund.

The intensified efforts of the IHO in the field of CB are evident in the activities that have been organised in the following fields, since the last EIHC:

- Technical Visits (19 visits to 18 countries)
  - Cameroon, Costa Rica, Namibia, Malawi
  - Belize, Georgia, Vietnam, El Salvador
  - Guatemala, Honduras, Belize, Comoros
  - Kenya, Haiti, Solomon Islands
  - Lebanon, Vietnam, Brunei, Tonga
- Technical Workshops: 8
- Technical Seminars: 1
- Courses:
  - MSI: 5
  - Hydrography and Cartography: 5

Detailed information on the activities can be obtained from the IHO website.

5. Conclusions:

5.1 The establishment of the IHO CBSC has been an excellent decision as again important progress has been achieved in various directions. CBSC Members have worked hard to set principles and procedures with a strong "team work" approach. The CBSC would not have been successful without the comprehensive assistance of Member States, providing personal, financial and practical support.

5.2 The latest version of the publication C-55, in its digital format, constitutes a good tool for, among other tasks, the identification of capacity building needs. To extend the use and usability of C-55, the publication should be further improved. An action item therefore has been defined at IRCC3 to design a framework for C-55 development. Reference is made to the report from IRCC3 (action item 9). CBSC is actively contributing to that development.

5.3 The CBSC has approved a set of Procedures to improve CB assessment, provision and accountability. The five Procedures are indicated below:

1. Procedure and model for submitting a request of support to the CBSC.
2. Procedure to be followed by RHCs before submitting requests of support to the CBSC.
3. Reviewing process to be followed by the IHB, prior to include request in the Draft Management Plan.
4. Procedure to be followed by the CBSC when considering submission requesting support.
5. Procedure for performance assessment.

Another procedure is under construction, to be presented to CBSC10, to organize the project execution.

6. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

REPORT BY THE IHB ON THE CAPACITY BUILDING FUND (CBFUND)

1. General Information.

The Capacity Building Fund (CBFund) is defined as a mechanism to support the Capacity Building Work Programme (CBWP) developed by the Capacity Building Sub-Committee (CBSC) and approved by Member States.

The resources of the CBFund shall be used to go in support of the main capacity building activities, as for example: a) technical assistance; b) training and education; c) financial assistance for participation in IHO events; and d) start-up funding for hydrographic elements of projects.

The objective is to assist developing countries in building human and institutional capacities for the effective development of hydrographic surveying and nautical charting capabilities needed to comply with the IHO objectives and related requirements defined in SOLAS and in other international regulations.

The CBFund is integrated by normal IHO Budget allocation; donations received in support of IHO Capacity Building initiatives and external contributions earmarked for a specific capacity building initiative. The Republic of Korea has made an outstanding contribution to the IHO CBFund during the period of this report. Many other IHO Member States have contributed in kind to the IHO CB Programme, either providing the venue, instructors, local support, and other items to ensure an effective implementation of the CB activities.

2. 2007- 2011 CBFund development and analysis.

YEAR	Funds at 1st January	IHO Budget allocation	External Contribution (From the RoK)	Total annual availability	CBWP Budget	REAL CBWP Expenses	Balance
2007	196772	64000	79721	340493	181500	93779	87721
2008	246714	70000	94405	411119	325267	101641	223626
2009	309478	148000	72137	529615	294782	161007	133775
2010	368609	135000	64195	567804	319880	174074	145806
2011	393730	55000	257592	708880	502435	310222	192213
2012	398658	55000	tbd	tbd	514610	tbd	tbd

Analysing the above table we can conclude as follows:

a) The original IHO allocation for the CBFund from the regular budget has been increased twice with resources not spent on other items. This has allowed a great flexibility for the CBSC to support projects submitted for funding.
b) The external contribution that in its totality comes from contributions made by the Republic of Korea, in conformity with the MOU in force, has been increased since 2011. These resources not originally anticipated by the CBSC are being spent on priority projects identified during 2011 and following the last CBSC meeting. From 2012 onwards, the CBSC will be able to consider the increase of this contribution.
c) The two flows of income show an increase in the total annual availability of resources in the CBFund.
d) A light analysis may conduct the reader to interpret that the CBSC has been too conservative in committing resources to the CBWP. The truth is that RHCs originally were not prepared/ready to submit proposals for funding. After identifying the convenience of having a regional coordinator to keep the continuity in compiling and following up all CB needs in its region under control, the situation is improving. RHCs have taken their time to get organized and identify and assign priories to their regional needs. This positive change is observed in the increase of the CBWP Budget allocated.
e) The low Real Expenses figures represent the difficulties RHCs have had to implement their identified and supported activities. Coordination to implement activities is suffering from communications' limitations with participants/beneficiaries. The establishment of procedures worked out by the CBSC is contributing to improve the situation.
f) The overall situation has been considered in the definition of the next 5-year allocation to the CB Fund.

3. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

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

1. Chair: Prof. Dr. Lysandros Tsoulos [ICA] from 2011
Mr. Gordon Johnston [FIG] 2008-2010
Capt. Andrew Armstrong [IHO] until 2007

Vice Chair 1 : Prof. Dr. Luciano Surace [IHO][3]
Prof. Dr. Lysandros Tsoulos [ICA] 2008-2010

Vice Chair 2 : Prof. Dr. Razali Mahmud [FIG]
Prof. Dr. Luciano Surace [IHO] 2008-2010

[3] Prof. Dr. Luciano Surace resigned after the IBSC 2011 meeting

2. Members: Capt. Andrew Armstrong [IHO]
Cdre Lohit Brahma (IHO) until 2007
Prof. Dr. Delf Egge [IHO]
Mr. Ron Furness [ICA]
Mr. Adam Greenland [FIG]
Mr. Gordon Johnston [FIG]
Prof. Dr. Razali Mahmud [FIG]
Cdre K. N. Nair [IHO] from 2008
Mr. David Neale [FIG] [4] 2008-2011
Prof. Dr. Lysandros Tsoulos [ICA]
Mrs. Tiina Tuurnala [FIG] until 2007

3. Secretary: Capt. Alberto Pedrassani Costa Neves [IHB] from 2011
Capt. Federico Bermejo [IHB] 2007-2010

4. Meetings:

i. 30th meeting 25 - 30 June 2007 (Hamburg, Germany)
ii. 31st meeting 7 - 11 April 2008 (Sydney, Australia)
iii. 32nd meeting 20 – 24 April 2009 (Genoa, Italy)
iv. 33rd meeting 1 - 5 March 2010 (Port of Spain, Trinidad and Tobago)
v. 34th meeting 2 - 6 May 2011 (New Orleans USA)

5. Agenda Items:

The main task of the FIG/IHO/ICA IBSC is to develop and maintain international Standards on Competence of Hydrographic Surveyors, S-5 and Nautical Cartographers, S-8. The intention of the IBSC in preparing these Standards is to provide guidance whereby individual surveyors and nautical cartographers may be trained and qualified in accordance with internationally accepted levels of competence. The Standards indicate the minimum degree of knowledge and experience considered necessary for hydrographic surveyors and nautical cartographers, and provide a set of programme outlines against which the IBSC may evaluate programmes submitted for recognition.

In the course of the years the IBSC has published a number of new editions and new versions of both Standards in order to keep up with the scientific and technological developments in the fields of Hydrography and Nautical Cartography.

The current status of S-5 is Eleventh Edition Version 11.0.1 – May 2011 and of S-8 Third Edition 2010 Version 1. Major changes to the standards adopted during the reporting period refer to the following:

- New Guidelines for submission of courses
- Establishment of procedures for internal assessment
- Reduction of period of submission of courses (from ten to six years)
- Establishment of funding scheme/cost recovery mechanism
- Individual recognition through recognition of national schemes

[4] Mr. David Neale passed away in 2011

These changes are reflected into the current editions of both Standards and provide detailed guidance to submitting organizations.

The IBSC has awarded recognition to more than 40 courses worldwide. These courses must be continuously updated in accordance with IHO Publications S-5 and S-8. In order to maintain the high level of programmes recognized, the Board pays scheduled on-site visits to the organizations offering courses thus providing consultancy and guidance for necessary improvements where appropriate.

6. Work programme

New standards framework

According to the discussion at IBSC33 in 2010 and the decisions taken therein, the Board Members agreed to separate Cat A and Cat B competency requirements by developing two discrete parts in the standards. Work will start with the restructuring of S-5 and continue with that of S-8. This approach will clarify the situation, assist the submitting organizations to better focus on the essence/content of the Standards and result to the formulation of a much better profile of the students. A process was adopted for the development of draft new standards, comments and implementation, through the formulation of two workgroups to create a framework, outline and try to populate the new Standard in the interim period until the 2012 meeting.

New Standards when developed by the Board will be posted as a draft and feedback will be invited for a limited period prior to implementation.

Quite relevant to the above is: a) a modular learning experience over a limited time period to accumulate a full Cat A or Cat B curriculum and b) the increasing role that the private sector plays in educational activities. The IBSC also acknowledges that there are various ways of delivering a Cat A or Cat B programme i.e. e-learning. This will be carefully considered by the Board and specific provisions for modular/ e-learning programmes will be adopted and be part of the new standards framework.

Due to the additional work that has to be carried out at the future meetings concerning the restructuring of the Standards and the increasing number of programmes for evaluation/recognition, it was agreed that the duration of the 2012 meeting will be seven (7) working days and an extraordinary plenary or group meeting will be required for the next years in order to fulfill this task. It may be noted that there is interest from academia and industry for the IBSC to hold some open sessions to receive feedback and discuss the development of the S5 and S8 Standards. The Board decided to include a standing agenda item for future IBSC meetings - an open session with industry, academia, etc. - to listen and receive feedback on future requirements for development of the standards and submission process. This will be a progressive change in the way the Standards are developed and maintained and it will contribute considerably to their improvement and the transparency of the process per se.

For the implementation of the New Standards framework, which is a radical change to the philosophy and the content of the standards, extraordinary plenary or group IBSC meetings are necessary, which will be scheduled for the period 2013 - 2017. This will require extra funding to cover travel expenses of the members of the Board and these requirements have been included in the Task Identification Form for the preparation of the 2013-2017 IHO WP.

7. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

ELEMENT 3.4 CAPACITY BUILDING ASSESSMENT

REPORT BY THE IHB ON CAPACITY BUILDING ASSESSMENT

1. General Information.

Capacity Building Assessment is one of the first phases in the overall procedure. It mainly consists of technical visits carried out at different levels. We can distinguish technical visits to raise awareness on the importance of developing national hydrographic capabilities and technical visits to work on particular subjects aiming at developing plans and programmes. The first one normally involves meetings with governmental authorities and high level national stakeholders while the second type generally involves technical personnel.

2. 2007- 2011 CB Assessment development and analysis.

During the period between the XVII and the XVIII IHO Conferences, the following assessment missions have been conducted either by expert teams from the relevant Regional Hydrographic Commissions or by the IHB.

YEAR	EXPERT TEAM	COUNTRY
2008	MBSHC	Albania, Romania, Malta
	SAIHC	Angola, Malawi
	IHB jointly with IOC under the IO COAST-MAP Join Project	Bangladesh, Comoros, Kenya, Madagascar, Maldives, Mauritius, Mozambique, Myanmar, Seychelles, Sri Lanka, Tanzania, Thailand.
	IHB	Bahrain, Uruguay, Brazil, Argentina, Suriname, Haiti
2009	SWPHC	Tonga
	MBSHC	Lebanon
	EAHC	Vietnam, Brunei
	IHB	Solomon Islands, Haiti
2010	MBSHC	Georgia
	EAHC	Vietnam
	MACHC	Guatemala, Honduras, Belize
	IHB jointly with IOC under the IO COAST-MAP Join Project	Comoros, Kenya
	IHB	El Salvador
2011	MACHC	Belize
	SAIHC	Malawi, Namibia
	SWPHC	Cook Islands, Kiribati
	EAtHC	Cameroon
	IHB / MACHC	Costa Rica

It can be concluded that the IHO has made emphasis in Africa, the South West Pacific and Central America and the Caribbean Sea. Also in Asia, the Mediterranean and the Indian Ocean. This coincides with the priorities also identified by our sister organizations such as IMO, IOC and WMO.

The IHB is working on the development of a system that shall help to monitor this effort and keep track on the conclusions and recommendations identified at each of the technical visits paid. This information will be key for the CBSC decision process.

3. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

ELEMENT 3.5 CAPACITY BUILDING PROVISION

REPORT BY THE IHB ON CAPACITY BUILDING PROVISION

1. General Information.

Capacity Building Provision constitutes the "action" phase of the IHO CB Strategy. It consists of the implementation of training opportunities according to the needs identified by the different RHCs. Based on the experience gathered, the IHB, together with the CBSC, is moving from the early absolute flexible approach for the delivery of training to a more structured system. The idea is to offer standardized syllabi for those courses that are most commonly required. The first course to adopt a standardized form was the MSI course (three days). Today we have also developed the basis for a Hydrographic Survey and Introduction to Chart Production and a Basic ENC and ENC Production, both courses with a duration of 10 days each.

The decision to standardize courses aims at making a better use of the resources. Nevertheless, we continue to consider needs that are of particular interest to each RHC.

2. 2007- 2011 CB Provision development and analysis.

During the period between the XVII and the XVIII IHO Conferences, the following seminars, courses and workshops have taken place.

YEAR	RHCs	Training	Venue	Countries	Trainees
2007	NIOHC and RSAHC	Workshop on Phase 1 Capacity	Jeddah, Saudi Arabia	Bahrain, Djibouti, Jordan, Oman, Pakistan, Qatar, Saudi Arabia, Sudan and Yemen.	23
	SEPHC,	Workshop on Fluvial Hydrographic Surveying	Iquitos, Peru	Colombia, Ecuador, Peru, Chile, Argentina, Brazil, Germany, Mozambique, Panama, Uruguay, USA, Venezuela.	35
	MACHC, SEPHC and SWAtHC	Workshop on Development of Standard Operational procedures for Multibeam Hydrographic Surveys	Cartagena, Colombia	Argentina, Brazil, Chile, Colombia, Ecuador, México, Panama, Peru, Uruguay, USA and Venezuela.	30
	MACHC	MSI Course	Kingston, Jamaica	Anguilla, Antigua & Barbuda, Barbados, BVI, Cayman Is., Colombia, Grenada, Guatemala, Montserrat, Panama, Jamaica, St. Kitts and Nevis, St. Vincent and The Grenadines, Trinidad and Tobago, Nicaragua.	23
	SAIHC	MSI Course	Maputo, Mozambique	Kenya, Madagascar, Malawi, Mauritius, Mozambique, Namibia, South Africa and Tanzania.	14
	EAHC, NIOHC	Ocean Mapping Group Multibeam Course	Cairns, Australia.	Sri Lanka, Rep. Of Korea, Philippines, Thailand.	4
2008	MACHC	IMO-IHO Workshop on Hydrography	Suriname	Antigua & Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, St. Lucia, St.	36

				Vincent and The Grenadines, Suriname.	
	MACHC	Hydro Carto Basic Course	Margarita, Venezuela	Belize , Costa Rica, Guatemala , Haití, Jamaica, Nicaragua , Venezuela.	10
	MBSHC	MSI Course	Cadiz, Spain	Malta, Tunisia, Algeria, Syria, Suriname, and Spain.	7
	MACHC	MBES On-the-job training	Brazil	Argentina, Brazil, Colombia, Cuba, Chile, Ecuador, Mexico, Suriname, Uruguay.	13
	SEPHC	Data Base Exchange Workshop	Cartagena, Colombia	Chile, Colombia, Ecuador, Peru.	8
	SWPHC	IMO/IHO Seminar on Raising Awareness of Hydrography	Suva, Fiji	Cook Islands, Fiji, Kiribati, Marshall Islands, Federal States of Micronesia, Nauru, Palau, Samoa, Solomon Islands, Tonga and Tuvalu.	18
	EAHC	Workshop on Quality Assurance of ENC Production	Pattaya, Thailand	Indonesia, Japan, Malaysia, Philippines, Rep of Korea, Singapore, Thailand.	13
	EAHC	Training course on Quality Assurance (QA) of Multibeam Surveying and Data Processing	Singapore	Indonesia, Japan, Malaysia, The Republic of Korea, The Philippines, Thailand, Singapore, Vietnam.	16
	NIOHC	Multibeam Workshop	Goa, India	Algeria, Estonia, Fiji, Kenya, Mauritius, Myanmar, Oman, Serbia, South Africa, Tanzania.	15
	SAIHC	Introduction to Hydrographic Surveying	Nairobi, Kenya	Kenya, Malawi, Madagascar, Mozambique, Namibia, Seychelles, Tanzania, Uganda.	10
	SWAtHC	Regional ECDIS/ENC Seminar	Niteroi, Brazil	Argentina, Australia, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, Finland, France, Germany, Greece, Honduras, Italy, Japan, Rep. of Korea, Netherlands, Norway, Portugal, South Africa, Suriname, Sweden, United Kingdom, USA, Uruguay, Venezuela.	85
2009	SWPHC	Technical Workshop "Raising the importance of hydrography"	Port Moresby, Papua New Guinea	Australia, Fiji, France, New Zealand, Papua New Guinea, UK, USA, Cook Islands, Kiribati, Solomon Islands.	25
	SEPHC, SWAtHC MACHC	ENC Workshop	Niteroi, Brazil	Argentina, Brazil, Chile , Cuba, Ecuador, Peru, Uruguay.	17
	SEPHC, SWAtHC MACHC	Ocean Mapping Group Multibeam Course	Niteroi, Brazil	Argentina, Brazil, Chile, Ecuador, Peru, Suriname, Uruguay.	10
	SAIHC	Seminar for NHC Chairs (or equivalent)	La Reunion, France	Angola, Comoros, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, Tanzania, France, Norway, Portugal, USA, UK.	14
	EAtHC	MSI Course	Accra, Ghana	Benin, Gambia, Ghana, Guinea Bissau, Guinea, Côte d'Ivoire, Mauritania, Nigeria, Senegal and Togo.	17
	RSAHC	MSI Course	Muscat, Oman	Bangladesh, Iran, Oman, Pakistan, Seychelles, Sri Lanka and Thailand.	16
	EAHC	Workshop on Quality Assurance of ENC Production	Philippines	Indonesia, Japan, Malaysia, Republic of Korea, The Philippines, Thailand, Singapore, Vietnam.	15
	EAHC	Training course on Quality Assurance (QA) of Multibeam Surveying and Data Processing	Philippines	Indonesia, Japan, Malaysia, Republic of Korea, The Philippines, Thailand, Singapore, Vietnam.	15
2010	MACHC, SEPHC SWAtHC	Workshop on Port and Shallow Water Surveys.	Montevideo, Uruguay.	Argentina, Brazil, Chile, Colombia, El Salvador, Peru, USA and Uruguay.	12
	EAHC	Technical aspects of maritime boundaries, baselines and the extended continental shelf	Bangkok, Thailand	China, Indonesia, Japan, Malaysia, Philippines, Republic of Korea, Singapore, Thailand.	16
	EAHC	Workshop on Quality Assurance of ENC Production	Vietnam	TBC	TBC

	Open Call	Module 1: Marine Cartography of the UKHO internationally accredited programme Cat B	Singapore	Papua New Guinea, South Africa, Iran, New Zealand, Sri Lanka, El Salvador, Fiji, Oman, Bangladesh, Solomon Islands, Singapore.	10
	Open Call	2nd Course in Hydrographic Data Processing and Marine Cartography, including specialism in Electronic Navigational Chart.	Taunton, UKHO	Uruguay, New Zealand, Latvia, Vietnam, Thailand, Ukraine.	6
	MACHC	IMO/IHO 2-week Regional Training Course on Basic ENC and ENC Production	Kingston, Jamaica	Trinidad & Tobago, Antigua, Dominica, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Nicaragua, St Vincent & the Grenadines, Suriname, Trinidad & Tobago.	15
	SAIHC	MSI Course	Walvis Bay, Namibia	Angola, Kenya, Malawi, Mozambique, Namibia.	16
	SWPHC	MSI Course (with the cooperation of IMO)	Sydney, Australia	Cook Islands, Fiji, French Polynesia, New Caledonia, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu, Oman.	13
	SWPHC	2-weeks Regional Hydrographic Survey & Nautical Cartographic Course	Port Moresby, PNG	Cook Island, Federation State of Micronesia, Fiji , Palau , Papua New Guinea ,Tonga and Solomon Islands.	11
2011	EAHC	Database design and management	Bangkok, Thailand	China, Indonesia, Japan, Malaysia, Philippines, Rep of Korea, Singapore, Thailand , Vietnam	28
	EAHC	Workshop on ENC Production and QA	Jakarta, Indonesia	China, Indonesia, Japan, Malaysia, Philippines, Rep of Korea, Singapore, Thailand , Vietnam	9
	Haiti	Hydrography and Nautical Cartography training	Carriès, Haiti	Haiti	18
	SAIHC and NIOHC	Ports and Shallow Water Surveys	South Africa	Bangladesh, Comoros, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Sri Lanka, Thailand and Tanzania	12
	SEPHC, SWAtHC and MACHC	MSI Course	Niteroi, Brazil	Antigua & Barbuda, Argentina, Brazil, British Virgin Islands, Chile, Colombia, Ecuador, Grenada, Peru, Suriname and Uruguay.	14
	MACHC	Introduction to Hydrographic Surveying and Nautical Charting	Antigua & Barbuda	Antigua, Barbados, British Virgin Islands, Dominica, El Salvador, Grenada, St Kitts and Nevis, St Lucia and St Vincent and the Grenadines.	12
	Open Call	Module 1 Marine Cartography of the UKHO internationally accredited programme (Cat B).	Taunton, UKHO	Mozambique, Suriname, Paraguay, Slovenia, Bangladesh, Bahrain, Guyana, Mauritius, Cyprus	9
	EAtHC and SAIHC	IMO/IHO 2-weeks Regional Hydrographic Surveying and Nautical Charting	Accra, Ghana	Cameroon, Côte d'Ivoire, DR Congo, Gabon, The Gambia, Ghana, Guinea Bissau, Liberia, Nigeria, São Tomé & P., Sierra Leona, Togo.	16
	EAtHC and SAIHC	IMO/IHO 2-weeks Regional Training Course on Basic ENC and ENC Production	South Africa	Info to be received	Info to be received 10?
	Open Call	3rd Course in Hydrographic Data Processing and Marine Cartography, including specialism in Electronic Navigational Chart.	Taunton, UKHO	Bangladesh, Indonesia, Mexico, Oman, Pakistan and Philippines	6
	Open Call	Multibeam Sonar Training Course	Fremantle, Australia	Bangladesh, Brazil, Indonesia, Japan, Korea (Republic of), Mauritius, Nigeria, Oman, Philippines and Peru.	10

After examining the above table, we can conclude the following:

a) Out of the 15 RHCs, 11 have been supported to implement their CB initiatives. 5 RHCs have benefitted from the 70% of the total support in terms of number of activities due to their efficient internal organization to manage CB matters. The message is clear, if a RHC does not submit any proposal to the CBSC, it cannot get support. Those more active RHCs have a better chance of being supported.
b) Sharing a CB event with other RHCs, particularly the neighbouring ones, or those with the same language constitutes an efficient way to add value to the CB resources.
c) The diversity of training demands has suggested that the CBSC and the IHB adopt a more systematic approach, standardizing as much as possible a set of pre-defined training opportunities, where syllabi, instructors, training aids and other elements can be prepared even in different languages, shared and made available for the implementation of such courses. This is an ongoing activity. This should not preclude special demands.
d) The events mentioned above have been hosted by 20 IHO Member States and 6 Non IHO Member States (one Asian, two Caribbean and three African countries). This means that 25% of the IHO Membership is actively involved in facilitating the implementation of the CB WP. Some Member States, such as Brazil, has hosted as many as 5 events in the period. Host countries are a strong component of the CB process.
e) Over 700 participants from about 60 IHO Member States and 60 non IHO Member States have attended the training opportunities. These figures confirm that the IHO is, without any doubt, strongly committed to contributing to the development of hydrographic capabilities in countries where such a capability does not exist. Out of the 60 non IHO Member States, over one-third have expressed their willingness to improve the relationship with IHO, to participate in the work of the RHCs and to get organized internally to establish or improve a national body to handle hydrographic issues. But still there is too much to do.
f) The CBSC and the IHB are fully aware of the situation and are working closer to find ways to improve effectiveness and efficiency in the CB provision issue, being conscious that "persistence" is probably the only proper way forward to change the attitude of some countries that do not express any interest at all in IHO matters.

3. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

ELEMENT 3.6 COORDINATION OF GLOBAL SURVEYING AND CHARTING

REPORT OF WORLDWIDE ENC DATABASE WORKING GROUP (WEND-WG)
By the Chairman, Captain Jamie McMichael-Phillips (UK)

1. Chairmen: Capt Jamie McMICHAEL-PHILLIPS (UK) from May 2010
Capt Abri KAMPFER (South Africa) 2009 to 2010
Vice-Chair: Capt Carlos Augusto Medeiros De ALBUQUERQUE (Brazil) from 2010

2. Membership:

RHCs:
Mr Juha KORHONEN (Finland) (BSHC);
Mr NG Kwok-Chu (China) (EAHC)
Capt Ayo OLUGBODE (Nigeria) (EAtHC);
Ms Kathryn RIES; (USA) (MACHC);

Ing en Chef Yves GUILLAM (France) (MBSHC);
Mr Jens Peter HARTMANN (Denmark) (NHC);
Capt Vinay BADHWAR (India) (NIOHC)
Capt Jamie McMICHAEL-PHILLIPS (United Kingdom) (NSHC)
Cdr Thani AL MAHOKI (Oman) (RSAHC)
Capt Abri KAMPFER (South Africa) SAIHC
Capt Carlos Augusto MEDEIROS DE ALBUQUERQUE (Brazil) (SWAtHC)
Mr Mike PRINCE (Australia) (SWPHC)
Mr Sean HINDS (Canada) (USCHC)

Member States:
Dr Mathias JONAS (Germany)
Mr Satoshi SATO (Japan)
Mr Jae-Yon LEE (Republic of Korea)
Capt Evert FLIER (Norway)
Dr Parry OEI (Singapore)
Dr Paul CANHAM (UK)

RENCs:
Mr Kjell Magne OLSEN (PRIMAR)
Mr James HARPER (IC-ENC)

IHB:
Capt Robert WARD

Notes on Formation and Terms of Reference of WEND-WG

The First Meeting of the IHO Inter Regional Coordination Committee (IRCC) held in Monaco on 05 June 2009, approved the formation of the IRCC WEND Working Group as proposed by the WEND report, and continues many of the responsibilities and activities formerly undertaken by the WEND Committee and the WEND Task Group. Both these latter bodies were dissolved in 2009 upon the formation of the IRCC.

The former WEND TG was constituted as a small group in order to reduce overheads, and to speed up any decision-making processes required in the execution of investigation or the formulation of proposals for subsequent consideration by WEND Committee. This proved to be most successful. The IRCC WEND-WG Terms of Reference (ToRs) and Rules of Procedures (RoPs) have maintained a similarly limited membership to build on the success of the WEND TG. The WEND-WG membership comprises a representative from each RHC, a representative from each RENC (to reflect an emphasis on RENC-based services), two members of IRCC, the IHB, and invited expert contributors as required to address specific issues.

This report includes, where appropriate, agenda material and conclusions derived from the WEND Committee and the WEND TG activities since the IHC XVIIth IHC in May 2007.

3. Meetings:
13-14 October 2011 in Wollongong, Australia (WEND-WG Foundation Meeting)
2-5 September 2008 in Tokyo (WEND Committee)
30-31 August 2007 in Paris (WEND TG)

4. Agenda Items:
WEND-WG - Principle Objective: To monitor and advise IRCC on the development of adequate ENC coverage to meet the SOLAS V/19 carriage requirements for ECDIS.

The main subjects dealt with during the period were the following:

4.1 IHO ENC-related commitments to IMO

(a). Support for mandatory carriage of ECDIS.
(b). WEND Committee / WEND TG achievements since XVIIth IHC.
(c). Current coverage status.
(d). Compliance with WEND Principles.
(e). Trademark proposals.
(f). Raising ENC / ECDIS awareness amongst IMO delegates.

- **Coverage - Gap / Overlap Issues:**

(a). Amplification of the processes to deal with gaps and overlaps.

- **Quality, Consistency and Updating issues:**

(a). Handling of non-updated ENCs.
(b). Handling of ENCs with content issues.
(c). Promulgation of errors / issues.
(d). Monitoring of RHC schemes.
(e). Prioritisation of future ENC productions: assessment of Top 800 Ports, Main Shipping Routes traffic against ENC provision at all usage bands.
(f). Inconsistent use of SCAMIN and data encoding.

- **Service Provision:**

(a). Integrated Services.
(b). Status of licensing necessary to facilitate integrated services.
(c). Non-RENC ENCs.

- **ECDIS Related Issues:**

(a). Updates from HSCC.

- **Review of WEND TG 2007 Resolutions**

- **Capacity Building & Cooperation**

- **RENC topics**

(a). RENC to RENC discussions.
(b). Harmonisation Overview & update.
(c). Consideration of WEND-WG/IRCC ownership of harmonization.
(d). Consideration of Royalty based approach to ENC distribution.
(e). RENC Membership.
(f). How to guarantee independent checks on data quality.
(g). Work Plan & Load Sharing Discussions.
(h). Review of WEND Principles / Implementation Guidance.

5. Conclusions:

a. The main conclusions and recommendations from the WEND-WG meeting are:

i. A Proposal to IHC would be drafted to revise and update the text contained in the WEND Principles and the associated Guidelines to take account of the IMO mandatory carriage of ECDIS; this would include amplification of processes for dealing with gaps and overlaps. Implementation of a structured approach to tackling the issue of ENC gaps and overlaps is necessary. The priority at the moment, linked to the phased introduction of the mandatory carriage of ECDIS, should also

focus on meeting the requirements of the cruise sector and the tanker sector. The process will involve the RHCs. In the case of gaps, the proposal is that, as a last resort, the gap should be filled as an interim ENC by an HO with the support of IHO; the steps will be time bound to bring the process to a conclusion. For overlaps a risk based approach will be taken; the final stage is for IHO to support withdrawal of overlapping coverage. This would, of course, create a gap and so a mechanism for completing coverage is in place.

ii. The proposition, subject to IPCC and IRCC ratification, that the RENC co-operation will be taken forward by the WEND-WG which will subsume the role of the IPCC. A RENC Harmonisation Sub-Group was established, to be co-chaired by the Chairs of the IC-ENC Steering Committee and the PRIMAR Advisory Committee. Other members will be the operators and general managers of the two RENCs, plus the China delegate and a delegate from NOAA/OCS. This will take forward the topics identified as outstanding in the latest report to IPCC and other issues related to cooperation and harmonisation.

iii. The need to make RENC membership more attractive; noting the perception that part of the problem was a lack of transparency in the way the RENCs operated their business. It was agreed that, in order to improve transparency, the RENCs would publish, on line, appropriate documents concerning their governance and their operational models.

iv. The creation of a new WEND Task Force to take forward detailed policy work. France would chair and membership would be drawn from UK, Australia, Brazil and the IHB.

v. Good progress had been made at the inaugural WEND-WG meeting and it was agreed that another meeting would be scheduled either immediately preceding or following the 2012 HSSC meeting (circa November 2012).

b. Significant conclusions and achievements of the WEND Committee and WEND TG are as follows:

(a). Progress has been made in achieving better worldwide ENC coverage. Since the beginning of 2008, small scale ENC coverage has risen and is now approaching 100%. There has been a 28% increase in medium scale ENC coverage and a corresponding 34% increase in large scale ENC coverage over the same period. Five coastal states (and Antarctica) still have to produce five or more medium scale ENCs to match paper chart coverage. Seven coastal states have yet to produce large scale ENCs to match paper chart overage. RHC chairs have been encouraged to address gaps within their region and a number of regions have been particularly successful in addressing resolution of gaps in this period.

Comparison of ENCs with corresponding paper charts for international voyages				
	May 2008	**May 2009**	**May 2010**	**May 2011**
Small scale ENCs (planning charts)	**>90%**	**~100%**	**~100%**	**~100%**
Medium scale ENCs (coastal charts)	**60%**	**77%**	**84%**	**88%**
Large scale ENCs (top 800 ports)	**60%**	**84%**	**91%**	**94%**

(b). At IRCC3, RHC chairs were requested to report on the implementation of each item of the WEND Principles and on the validity of coverage and overlap analysis. Responses were received from the majority of the 48 ENC producer nations, either individually, or collectively through the appropriate RHCs. Some 15 producer nations did not respond to the Circular Letter. Of the responses received all were in broad support of the WEND Principles

(c). Since 2009, there has been a modest increase in RENC membership with 4 new members joining and a fifth nation seeking dual membership.

RENC Membership Status		
	Current Membership (Sept 11)	**New Members since 2007 (IHC)**
PRIMAR	**12*#**	**1****
IC-ENC	**26***	**4*****
Non Members	**16**	**n/a**
* *Russia, Greece & Brazil have dual membership.* ** *Brazil* **** *Colombia, Ecuador, New Zealand, & Uruguay* # *PRIMAR also distributes ENCs from a number of hydrographic organisations that are not RENC members.*		

RENCs need to take a view on how they might increase membership to encompass more producer nations.

(d). WEND-sponsored RENC-to-RENC discussions have been particularly active since the XVIIth IHC and significant progress has being made towards achieving closer cooperation and harmonising RENC policies in several important respects. Progress reports have been sent to the IHB and the chairs of both IC-ENC and PRIMAR.

6. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited:

(a) to note the report;

(b) to consider the following proposals:

PRO WENDWG-1 – Re-affirmation of the IHO's commitment to full ENC coverage

Re-affirmation of the IHO's commitment to full ENC coverage, subject to the needs of changing traffic patterns, and the availability of suitable source data and resources.

The IH Conference is invited to adopt the following decision :

The International Hydrographic Conference,

Recognizing that the Decisions 20 and 21 from the 17th International Hydrographic Conference committed to achieving 'adequate coverage', availability, consistency and quality of Electronic Navigational Charts (ENCs) by 2010 in support of a carriage requirement for ECDIS;

Recognizing that the 54th meeting of the Safety of Navigation sub-committee (NAV54) of the International Maritime Organization (IMO) agreed a proposal for the adoption of a carriage requirement for ECDIS given assurance from the International Hydrographic Organization (IHO) that sufficient coverage of ENCs would be met by the dates being considered. NAV54 agreed the definition of sufficiency as being "equivalent to the best available paper chart coverage of either a Hydrographic Office providing global coverage or the Hydrographic Office of the Coastal State";

Noting that at NAV54 IHO predicted that the coverage of ENC in 2010 would be 100% for small scales, 95-100% for medium scales and 95-100% for large scales (for the top 800 priority ports);

Considering that the IHO report to IMO NAV57 in June 2011 indicated that 100% of small scale ENCs, 88% of medium scale (coastal charts) ENCs and 94% of large scale ENCs (covering the top 800 priority ports) had been completed. That there are now only six States, and Antarctica, where five or more ENCs remain to be produced in order to match corresponding paper chart coverage at medium scale. For the world's top 800 ports (by total tonnage), only eight coastal States have yet to produce ENCs that match the coverage provided by paper charts of those same ports;

Noting that ENCs currently on issue cover over 90% of the top 1500 ports (by tonnage) worldwide (through which approximately 95% of international trade is conducted) but that the ENC coverage required for the full range of international voyages evolves over time and that cruise vessels have additional requirements (often not catered for by paper charts);

Considering the IHO as a consultative and technical body bound together by only 80 Member States representing less than 50% of the larger Coastal State community of the IMO;

Understanding that the IHO is highly respectful of the national rights of Coastal States and so has invested significant resources to urge States at the international level and at the regional level through the Regional Hydrographic Commissions (RHCs) to find internal, bilateral or multi-lateral arrangements to complete the ENC coverage in all waters and ports requested by NAV54 to support the carriage of ECDIS and will continue to do so, via the World-wide ENC Database (WEND) Principles and Implementation Guidelines (as amended);

Considering that the Inter-Regional Coordination Committee (IRCC) and the WEND Working Group (WEND-WG) recommend that RHCs continue to assess and address the outstanding areas for future ENC coverage, quality and service improvements, along with subsequent reporting mechanisms;

Recognizing that the quality and consistency of ENCs is now a greater challenge than coverage given that the standard source for a majority of ENCs has been paper nautical charts and that these often contain inefficiencies stemming from historic data and technological limitations. Whilst more large scale ENCs are progressively being produced from modern, high data density surveys based on the WGS84 datum there are still very large areas of the world where available hydrographic survey data is inadequate to fully meet navigational requirements. This is especially true for remote regions of the globe where surveys are either non-existent or of sparse reconnaissance nature where even paper charts need to be used with considerable caution by the mariner;

Recognizing that hydrographic survey technology and navigational technology is evolving at unprecedented rates, that the maritime shipping industry is continually embracing technical solutions intended to facilitate navigation at the margins of safety in response to global economic competition, and that these realities continue to challenge the capacity of the international hydrographic community to improve its services on several fronts simultaneously;

Noting the resources and time associated with obtaining adequate hydrographic survey coverage needed to meet all the requirements of modern navigation (especially of remote regions) is a challenge that requires new thinking, new technologies and new methodologies by Hydrographic Offices, navigation regulators and the maritime shipping industry;

Recognizing these challenges need to be undertaken in a collaborative and transparent fashion between the hydrographic community and the maritime community at large, so that priorities are understood and risks are shared and mitigated;

Considering the recommendations from the WEND-WG to improve management of ENC services, including more transparency in service and greater ease of access, through cooperation among ENC Producer Nations, End-User Service Providers, RHCs, Regional ENC Centres (RENCs), Original Equipment Manufacturers (OEMs) and the Mariner User community they serve;

Concludes that the Member States of the International Hydrographic Organization should commit to:

- continuing through best international collaborative efforts and technological innovation to complete the outstanding requirement established for adequate ENC coverage as outlined at IMO NAV54;
- working with IMO Member States to promote the need for improved hydrographic survey and nautical charting services as required by SOLAS Chap. V, Reg. 9 and to provide support through the respective IHO and IMO capacity building programs;
- encouraging bilateral and multilateral cooperation within and across RHCs to improve consistency and harmonization of ENC cells (including the removal of any overlapping data) and services;
- establishing a systematic methodology, through the IRCC and the WEND-WG and in conjunction with the RHCs and RENCs, for monitoring evolving ENC coverage requirements, agreeing production priorities and for supporting the provision of integrated ENC services;
- informing mariners, through such things as IMO Safety of Navigation circulars and other national and international navigational warning mechanisms, the areas of national waters where the use of electronic navigation systems is not possible due to the limited quality or absence of source hydrographic data reflected in the nautical charts.

PRO WENDWG-2 - Implementation of the WEND Principles

The WEND Principles require updating to take account of the IMO mandatory carriage of ECDIS. The guidelines to the WEND Principles should also be expanded to include a process that amplifies the details already contained within the Principles and Guidelines that acknowledge, as a last resort, that existing paper chart producers can fill the gaps in ENC coverage and a similar process that can identify areas of overlapping data that impacts on safety of navigation, and after notification to the Producer States and the observance of due process, inform mariners and IMO if the matter cannot/will not be resolved by those Producer States. These revised guidelines should be added to the existing WEND Principles. This process will involve the RHCs.

Recognising that "IHO Resolution 1/1997 as amended (former K 2.19), Principles of the Worldwide Electronic Navigational Chart Database (WEND), was revised last at the 9th WEND Committee meeting in April 2005 and the revision was approved by Member States in August 2005;

Recognising that the IMO Maritime Safety Committee, at its 82nd Session (MSC 82), adopted revisions to the High Speed Craft Codes, making the carriage of ECDIS compulsory for new build craft from 1 July 2008 and for existing craft from 1 July 2010; and at the 86th Session (MSC 86 in June 2009), this was extended to a wide range of vessels (including all vessels over 10,000GT) in a rolling programme commencing from July 2012 and running until July 2018;

Noting that the 1st WEND Working Group met in October 2010 and endorsed minor updates to the main text of Resolution 1/1997 as amended, the Principles of WEND, taking into account the IMO mandatory carriage of ECDIS; No changes were proposed to the Annex to 1/1997, the Principles of WEND.

Recognising that the Guidelines for the Implementation of the WEND Principles were endorsed at the 11th WEND Committee Meeting in September 2008;

Noting that the 1st WEND Working Group meeting in October 2011 endorsed both minor amendments to the Guidelines for the Implementation of the WEND Principles to take into account the IMO mandatory carriage of ECDIS; and the inclusion of an amplifying annex on processes for dealing with gaps and overlaps in ENC coverage.

Concludes that the Member States of the International Hydrographic Organization should approve:

- the minor updates to the main text of Resolution 1/1997 as amended, the WEND Principles, as per the attached draft text at Annex A;
- the amendments to the Guidelines for the Implementation of the WEND Principles as per the attached text at Annex B;
- the inclusion of an amplifying Annex to the Guidelines for the Implementation of the WEND Principles as per the attached text at Annex C.

ANNEX A

PRINCIPLES OF THE WORLDWIDE ELECTRONIC NAVIGATIONAL CHART DATABASE (WEND)	**1/1997 as amended**	**11/2007**	**K 2.19**

As amended and endorsed by the 1st WEND-WG Meeting (Wollongong, Aus, 13-14 October 2011)

1. The purpose of WEND is to ensure a world-wide consistent level of high-quality, updated official ENCs through integrated services that support chart carriage requirements of SOLAS Chapter V, and the requirements of the IMO Performance Standards for ECDIS.

2. Service Provision

a) Member States will strive to ensure that mariners, anywhere in the world, can obtain fully updated ENCs for all shipping routes and ports across the world.

b) Member States will strive to ensure that their ENC data are available to users through integrated services[5], each accessible to any ECDIS user (i.e., providing data in S-57 form), in addition to any national distribution or system-specific SENC delivery.

c) Member States are encouraged to distribute their ENCs through a RENC[6] in order to share in common experience and reduce expenditure, and to ensure the greatest possible standardization, consistency, reliability and availability of ENCs.

d) Member States should strive for harmonization between RENCs in respect of data standards and service practices in order to ensure the provision of integrated ENC services to users.

e) Methods to be adopted should ensure that data bear a stamp or seal of approval of the issuing HO.

f) When an encryption mechanism is employed to protect data, a failure of contractual obligations by the user should not result in a complete termination of the service. This is to assure that the safety of the vessel is not compromised.

g) Member States are to strive for the greatest possible user –friendliness of their ENC services and to facilitate integrated services to the mariner in order to maximise the use of ENCs.

3. Rights and Responsibilities

a) SOLAS Chapter V, Regulation 9, requires Contracting Governments to ensure that hydrographic data are available in a suitable manner in order to satisfy the needs of safe navigation. The introduction from 2012 of an IMO mandatory carriage requirement for ECDIS imposes a requirement on Contracting Governments to ensure that such data are available in a form suitable for use in ECDIS.

b) It is expected that Member States will have mature arrangements in place for the issue of ENCs and their subsequent updating for waters of national jurisdiction in order to support the IMO requirement for the mandatory carriage of ECDIS.

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[5] *Integrated services are a variety of end-user services where each service is selling all its ENC data, regardless of source, to the end user within a single service proposition embracing format, data protection scheme and updating mechanism, packaged in a single exchange set.*

[6] *RENCs are organisational entities where IHO members have established co-operation amongst each other to guarantee a world-wide consistent level of high quality data, and for bringing about co-ordinated services with official ENCs and updates to them.*

c) By the dates established by IMO[7], Member States will strive to either:

a. Provide the necessary ENC coverage, or
b. Agree with other States to produce the necessary ENC coverage on their behalf.

IHO will address overall coverage on a regional basis through Regional Hydrographic Commissions. Guidelines on the implementation of the WEND Principles are published separately. These should be employed to facilitate the provision of appropriate ENC coverage within a suitable timeframe.

d) The INT chart system is a useful basis for initial area selection for producing ENCs.

e) Member States are encouraged to work together on data capture and data management.

f) Responsibilities for providing digital data outside areas of national jurisdictions must be established (see guidance in Annex).

g) Technically and economically effective solutions for updating are to be established conforming to the relevant IHO standards. The updating of ENCs should be at least as frequent as that provided by the nation for correction of paper charting.

h) The Member State responsible for originating the data is also responsible for its validation in terms of content, conformance to standards and consistency across cell boundaries.

i) A Member State responsible for any subsequent integration of a country's data into a wider service is responsible for validating the results of that integration.

j) National HOs providing source data are responsible for advising the issuing HO of update information in a timely manner.

k) Member States should work together so that the IHO Data Protection Scheme (S-63) is used for ENC distribution to end users, to ensure data integrity, to safeguard national copyright in ENC data, to protect the mariner from falsified products, and to ensure traceability.

l) In producing ENCs, Member States are to take due account of the rights of the owners of source data and if paper chart coverage has been published by another Member State, the rights of that State.

m) Member States should recognize their potential exposure to legal liability for ENCs.

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[7] *The IMO Sub-Committee on Safety of Navigation, at its 51st Session (NAV 51):*

- *Agreed to recommend to the IMO Maritime Safety Committee the mandatory carriage requirement of ECDIS for High Speed Craft (HSC) by 1 July 2008.*
- *Did not decide on a mandatory carriage requirement for other types of ship; this will be considered in conjunction with a Formal Safety Assessment (FSA) to be conducted into the use of ECDIS in ships other than HSC and large passenger ships*

Maritime Safety Committee, at its 82nd Session (MSC 82), adopted revisions to the High Speed Craft Codes, making the carriage of ECDIS compulsory for new build craft from 1 July 2008 and for existing craft from 1 July 2010. At the 86th Session (MSC 86 in June 2009), this was extended to a wide range of vessels (including all vessels over 10,000GT) in a rolling programme commencing from July 2012 and running until July 2018.

4. Standards and Quality Management

a) A Quality Management System should be considered to assure high quality of ENC services. When implemented, this should be certified by a relevant body as conforming to a suitable recognised standard; typically this will be ISO 9001:2008 (as amended).

b) There must be conformance with all relevant IHO and IMO standards.

5. Assistance and Training

a) Member States' HOs are strongly recommended to provide, upon request, training and advice to HOs that require it to develop their own national ENC provision.

Annex to 1/1997 as amended (K2.19)

Guidance for the Establishment of ENC Production Boundaries

1. ENC duplication should be avoided. A single ENC producing country should exist in any given area.

2. A country is normally the ENC producing country for waters within its national jurisdiction.

3. Responsibility for the production of ENC can be delegated in whole or in part by a country to another country, which then becomes the producing country in the considered area.

4. When the limits of waters of national jurisdiction between two neighbouring countries are not established, or it is more convenient to establish boundaries other than established national boundaries, producing countries are to define the boundaries for ENC production within a technical arrangement. These limits would be for cartographic convenience only and shall not be construed as having any significance or status regarding political or other jurisdictional boundaries.

5. In international waters, the INT chart producer nation shall be assumed to be the producer of the corresponding ENC. Where the offshore limits of waters under national jurisdiction have not yet been established, clause '4' should apply.

6. In areas where the paper INT charts overlap, neighbouring producer nations should agree a common limit of ENC production in the overlapping areas. Cartographic boundaries should be as simple as possible; for example: a succession of straight segments and turning points corresponding to such things as meridians, parallels, or chart limits. Where different producer nations are responsible for INT coverage of the same area at different scales, those nations should agree on a suitable set of boundaries so as to provide the user with the most coherent service possible.

7. In areas of national jurisdiction for which there is no recognized ENC producer nation, the Regional Hydrographic Commission (or similar body) should determine the ENC producer nation. ENCs produced under such arrangements should be offered for transfer to the Coastal State in the event that the Coastal State subsequently develops the capacity to maintain the ENCs. Such transfer should respect the moral rights of the Coastal State and the commercial rights of the producer nation.

8. When the production limits are the official limits for national jurisdiction waters, commercial rights shall belong to the ENC producing country.

9. When the production limits are cartographic boundaries as opposed to national boundaries, the commercial rights shall normally belong to the ENC producing country but may possibly be encumbered by the payment of royalties to the relevant country through a technical arrangement (see clause 4).

ANNEX B

GUIDELINES FOR THE IMPLEMENTATION OF THE WEND PRINCIPLES

As endorsed by the 11th WEND Committee Meeting (Tokyo, 2-5 September 2008)
With minor amendments as endorsed by the 1st WEND WG Meeting
(Wollongong 13-14 October 2011)

The International Hydrographic Organization (IHO) is encouraging the transition from paper charts to electronic navigation through its support of a carriage requirement for ECDIS. It follows that the IHO should ensure that mariners are well served by adequate ENC services.
Noting that there are significant improvements required related to coverage, consistency, quality, updating and distribution of ENCs for many parts of the world and that this needs urgent attention, the WEND committee invites IHO Member States to apply the following guidelines for the implementation of the WEND principles (IHO Resolution 1/1997 as amended).

1. Responsibilities of Coastal States

1.1. A mandatory carriage requirement for ECDIS means a consequential obligation on Coastal States to ensure the provision of ENCs.

1.2. If the coastal State is the issuing authority (in terms of SOLAS V 2.2) then responsibility for the ENCs should lie with it regardless of whether the production and maintenance is undertaken with the assistance of commercial contractors or another Member State.

1.3. Where agreement is given to another Member State to produce and issue ENCs on behalf of a Coastal State the producing / issuing Member State should carry the responsibility for the ENC.

1.4. States providing source data to another State for the compilation of ENCs should advise that producer State of update information in a timely manner.

1.5. Member States should take into consideration the complexity and resource requirements of the ENC production and maintenance task in relation to their own capabilities and options when deciding how to best ensure the provision of ENCs for their waters.

1.6. Subject to appropriate agreement, it is acceptable for a Member State or a group of Member States to produce ENCs as an interim measure to fill gaps in existing coastal States' coverage to promote contiguous coverage. Such ENCs should be withdrawn when adequate coverage is made available by the coastal State. Further guidance on dealing with gaps is offered at the Annex to these guidelines.

1.7. The S-57 standard requires that there is no overlap of ENC data within usage bands. ECDIS systems will operate unpredictably in areas where overlapping ENC data is present; for this reason overlapping ENC data is not acceptable in end-user services. Where overlapping coverage exists the producing States should recognize their responsibility and take the necessary steps to resolve the situation. In situations

where overlapping data cannot be resolved through negotiation, the ENC producer(s) can anticipate that an end user service provider may need to take action itself to eliminate the overlap or discontinue services until the issue is satisfactorily addressed. Any such action to eliminate overlap should be communicated in advance to the affected ENC producer(s) and be based on guidelines that emphasize navigation safety, such as the following:

1. Scale of the data compiled in the ENC,
2. Currency of data in the ENC - i.e. most recent surveys, shoalest soundings, wrecks, rocks, and obstructions,
3. Avoidance of dividing navigationally significant features between producers. For example, Traffic Separation Schemes should be handled by one producer or the other.

Further guidance on dealing with overlapping data is offered at the Annex to these guidelines.

1.8. Exceptionally, a Member State may create additional ENCs to facilitate unified coverage where such production is undertaken specifically to address issues inhibiting provision of ENC coverage for the safety of navigation in accordance with the long term aims of the WEND Principles. A Member State undertaking such production should have very valid reasons for its actions and, beforehand, should have made reasonable efforts to negotiate with and come to some agreement with the State that has jurisdiction over the area in question. RHCs should place a high priority on filling ENC gaps.

1.9. In order to ensure uniform quality and consistency of the WEND, Member States should cooperate in accordance with clause 1.3 of the WEND Principles.

1.10. To ensure that the WEND database is maintained to the highest quality standard Member States that identify an error or any other deficiency in an issued ENC, or that receive information indicating such a deficiency, must bring this to the attention of the ENC producer so that the problem can be resolved at the earliest opportunity. Member States should act to ensure that appropriate actions are taken so that the safety of navigation is not compromised.

2. Reference Standards and Implementation

2.1. Harmonization means the uniform implementation of S-57 and other applicable standards, according to common IHO implementation rules as described in S-58, S-65 and the S-57 Encoding Bulletins.

2.2. Member States not wishing to join a RENC should make appropriate arrangements to ensure that their ENCs meet WEND requirements for consistency and quality and are widely distributed.

3. Capacity Building and Cooperation

3.1. Assistance to coastal States may cover aspects such as development of an ENC production capability, ENC quality and the role of RENCs in ENC validation and distribution.

3.2. It is essential that coastal States have established cartographic capability and infrastructure prior to undertaking ENC production and maintenance tasks themselves so as to ensure that the ENCs within the WEND database meet the high quality standards necessary to fulfil SOLAS requirements.

3.3. IHO Member States should consider ENC related projects as high priority capacity building initiatives.

4. Integrated services

4.1. Member States and RENCs should cooperate to ensure that ENCs are harmonised to the same quality standards thereby facilitating integrated services.

4.2. Member States only need to consider the use of S-63 if they intend to deliver a service to end users. Data Servers (i.e. service providers) and equipment manufacturers are responsible for implementing S-63 and form part of the 'S-63 trusted circle' (i.e. are entrusted to protect the ENCs and the encryption process).

ANNEX C

Annex to Guidelines for the Implementation of the WEND Principles

Further Guidance on the procedure for resolving ENC issues

The intent of these Guidelines is to facilitate the provision of ENC coverage by the IHO community to support the use of ECDIS. The IHO commitment to IMO is to provide ENC coverage of appropriate quality and updatedness that is the equivalent to that available in an international paper chart series or in national paper chart series and should be employed to achieve this aim. This Annex is intended to outline the procedures to be employed to resolve issues such as gaps and overlaps where these undermine the IHO commitment to IMO, the WEND Principles and there is otherwise no likely or timely alternatives.

NB The Guidelines (including this Annex) are NOT intended to be used to improve on existing chart coverage to meet the extended requirements of some sections of the shipping industry (e.g. cruise companies). In many cases these extended requirements cannot be met due to the inadequacy of survey data which may also prevent the conversion of existing paper charts into ENCs. In these cases the provision of ENCs by the responsible national HO will have to await new survey work.

A. Dealing with Gaps in ENC coverage

Where gaps in Coastal States' ENC coverage remain then RHCs will need to take action and a Member State or a group of Member States will need to provide the required ENCs as an interim measure. The following procedures should be undertaken in priority order until there is satisfactory resolution, agreed by the RHC, to close the gaps where it is feasible to make quality ENCs from existing paper chart coverage:

a. Each RHC shall identify gaps in ENC coverage within their area of responsibility and desired timeframe for resolution, noting initial targets for coverage of shipping routes and priority ports, as well as subsequent coverage requirements.

b. The RHC shall liaise with the relevant Coastal State to determine whether the State has the capacity to meet the required timeframe as well as quality and maintenance requirements. If these requirements can be met the Coastal State shall then fill the identified gap in ENC coverage.

c. In the event the Coastal State cannot meet these requirements, or cannot meet the timeframe, the RHC shall report these concerns to the WEND Working Group for further consideration and reporting by the IHB.

d. If the identified gap is covered by an existing paper chart produced under a Bilateral Arrangement between the Coastal State and an ENC producer nation, the producer nation shall be invited by the RHC to produce and maintain interim ENC coverage under its own producer

code until such time as it may be possible to hand the ENC and its maintenance back to the Coastal State. If there is more than one producer nation then the RHC will decide which one of them will release the ENCs.

e. If the identified gap is covered by an existing paper chart produced under an informal arrangement by one or more third party producer nations, the RHC shall determine the most appropriate producer nation. The selected producer nation shall then be invited by the RHC to produce and maintain interim ENC coverage under its own producer code until such time as it may be possible to hand the ENC and its maintenance back to the Coastal State.

f. If a Bilateral Arrangement is subsequently created between the Coastal State and a producer nation, or the Coastal State establishes the capacity to adopt and maintain the interim ENC under their own producer code, this arrangement shall supersede those already in place with the interim ENC handed back to the Coastal State or the nominated producer nation.

B. Dealing with Overlaps in ENC coverage

Where there are overlaps in Coastal States' ENC coverage then RHCs will need to take action to ensure that safety of navigation is not compromised. The following procedures should be undertaken:

a. RHCs should create and maintain, through periodic audit, an inventory of (or some means to identify and note) areas of overlapping ENC and highlight those areas where there are navigationally significant differences in the overlaps

b. RHCs should take a proactive approach to resolving overlap issues within their regions. They should produce a risk evaluation report for areas of overlap where navigationally significant differences exist and submit this to the IRCC Chair and the IHB. Appropriate action should then be initiated to inform IMO; the RHC report should highlight:

1. the desired actions to be taken by the Governments of the involved producer States and the risks associated with inaction,

2. the action that may be, or has been, taken, in the interests of maritime safety and protection of the marine environment, by an End User Service Provider (EUSP) to eliminate the overlap (including the withdrawal of ENCs) pending the satisfactory resolution of matters by the coastal States concerned.

c. Where urgent action is required to alert mariners to navigationally significant issues then RHCs should initiate promulgation of appropriate warnings directly with the regional NAVAREA coordinator keeping the IRCC Chair and IHB informed.

d. RHCs should maintain records of instances where independent action has been taken by an End User Service Provider to eliminate an overlap. RHCs should request an explanation from EUSPs where such action has been taken if this has not been provided. This is particularly relevant for areas where coverage is not distributed via a RENC.

ELEMENT 3.7 MARITIME SAFETY INFORMATION

REPORT BY THE WORLD WIDE NAVIGATION WARNING SYSTEM SUB-COMMITTEE (WWNWSSC)

The WWNWS was formed on 1 January 2009 as a result of Decisions 8 and 9 of the XVIIth IHC that brought into force a restructuring of the committees of the Organization. The task of the WWNWS is to monitor and guide the International Hydrographic Organization (IHO) / International Maritime Organization (IMO) World-Wide Navigational Warning Service (WWNWS) which includes NAVAREA, Sub-Area and coastal warnings. Prior to the existence of the WWNWS, the Commission on the Promulgation of Radio Navigational Warnings (CPRNW) performed the same function. The CPRNW was disbanded upon the formation of the WWNWS.

1.	**Chair:**	Mr. P. DOHERTY (USA)	2007 - 2012
	Vice-Chair:	Vacant Captain (R) F. Lacroze (France) Captain (R) Alain Rouault (France)	2007 - 2009 2009 - 2011 2011 - 2012
	Secretary:	Mr. S. SHIPMAN (IHB)	2007 - 2012
2.	**Participants**	(..) Denotes number of meetings attended	
	IHO Member States:	Argentina (3), Australia (4), Brazil (5), Canada (5), Chile (2), China (1), Croatia (1), Ecuador (0), Egypt (0), France (5), Germany (0), Greece (3), India (5), IR of Iran (1), Italy (1), Japan (2), Monaco (0), New Zealand (1). Norway (5), Oman (2), Pakistan (2), Peru (2), Russian Federation (0), South Africa (2), Spain (4), Sweden (4), Turkey (4), UK (5), USA (5),	
	Expert Contributors:	IMO (2), IMSO (3), WMO (5), Inmarsat (4)	

3. Meetings

Since the XVIIth Conference five meetings of CPRNW / WWNWS have taken place, as follows:

CPRNW9	IHB, Monaco	11 – 14 September 2007
CPRNW10	Niteroi, Brazil	25 – 29 August 2008
WWNWS1	IHB, Monaco	18 – 21 August 2009
WWNWS2	Sydney, Australia	9 – 13 August 2010
WWNWS3	IHB, Monaco	13 – 16 September 2011

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

DocRev5	26 February – 02 March 2007
DocRev6	14 – 18 April 2008
DocRev7	26 – 30 January 2009
DocRev8	16 – 19 March 2010
DocRev9	15 – 18 March 2011

4. Summary of Work Undertaken

WWNWS Document Review

4.1 In the period since the XVIIth IHC CPRNW / WWNWS has completed the revision of all WWNWS documentation. Following approval by IHO Member States this documentation was submitted to, and subsequently adopted by, the IMO as summarized below:

- Resolution A.705(17), as amended, Promulgation of Maritime Safety Information - Review completed in 2007, approved by COMSAR 12 in 2008, adopted by MSC85 in 2008 and issued as MSC.1/Circ.1287. Entered into force 1 January 2010.

- Resolution A.706(17), as amended, World-Wide Navigational Warning Service - Review completed in 2007, approved by COMSAR 12 in 2008, adopted by MSC85 in 2008 and issued as MSC.1/Circ.1288. Entered into force 1 January 2010.

- Joint IMO/IHO/WMO Manual on Maritime Safety Information - Review completed in 2008, approved by COMSAR 13 in 2009, adopted by MSC86 in 2009 and issued as MSC.1/Circ.1310. Enters into force 1 January 2011. A single printed publication containing the English / French and Spanish texts was published by IMO in late 2010.

- IHO Publication S-53 Manual on Maritime Safety Information - Adopted by IHO Member States by IHB Circular Letters 70 and 84 /2008. This publication is maintained in parallel with the Joint IMO/IHO/WMO Manual on Maritime Safety Information.

- IMO International SafetyNET Manual - Review completed in 2009, approved by COMSAR 14 in 2010, adopted by MSC87 in 2010 and issued as MSC.1/Circ.1364. Enters into force 1 January 2012.

- IMO NAVTEX Manual - Review completed in 2010, approved by COMSAR 15 in March 2011, adopted by MSC 89 in May 2011 and issued as MSC.1/Circ.1403. (Only in English at time of preparing this report, French and Spanish to come). Enters into force on 1 January 2013.

- IMO Resolution A.664(16), Performance Standards for Enhanced Group Call Equipment (EGC) - Review completed in 2009, approved by COMSAR 14 in 2010, adopted by MSC87 in 2010 as resolution MSC.306(87). Note: MSC.306(87) applies to equipment fitted after 1 July 2012, A.664(16) applies to equipment fitted before 1 July 2012.

- IMO Guideline on operational procedures for the broadcast of maritime safety information concerning acts of piracy and counter-piracy operations - Approved by COMSAR 14 in 2010, adopted by MSC87 in 2010 as resolution MSC.305(87).

- COMSAR Circ.36, Broadcast of warnings for tsunamis and other natural disasters - Approved by COMSAR 9 in 2005 and endorsed by MSC 80 in 2005. This Circular was reviewed at WWNWS3 and a recommendation submitted to COMSAR 16 recommending its deletion following the entry into force of the documents listed above.

4.2 The WWNWS also provided assistance to IMO and IMSO in the revision of IMO Assembly resolution A.888(21) - *Criteria for the provision of Mobile-Satellite Communication Systems in the GMDSS*. A new resolution A.1001(25) with the same title was adopted by the IMO Assembly on 29 November 2007.

Expansion of the WWNWS into Arctic Waters

4.3 The IMO decided in 2006 to consider the expansion of the WWNWS into Arctic Waters. This work was brought to completion on 1 June 2011 when five new Arctic NAVAREAs and METAREAs came into full operational capability. Whilst this was an IMO task, the IMO Correspondence Group established in the years 2007 – 2010 to progress the work was led by the Chairman of the IHO WWNWS Sub-Committee strongly supported by the membership of the WWNWS and the WMO.

Capacity Building – MSI Training Course

4.4 The WWNWS has developed a 1-week training course on Maritime Safety Information (MSI) for the Capacity Building Sub-Committee and has delivered this on 8 occasions as follows:

- 2007: Jamaica, Mozambique; 2008: Spain; 2009: Ghana, Oman; 2010: Namibia, Australia; and 2011: Brazil. In 2012 a course is planned for the SWPHC.
- Over 60 countries and approximately 125 students have participated in this course to date.

4.5 Training documentation for this course has been developed in English, French and Spanish.

4.6 Lecturers for the above courses were provided by France, UK and USA.

5. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

ELEMENT 3.8 OCEAN MAPPING PROGRAMME

REPORT BY THE GEBCO GUIDING COMMITTEE (GGC)

GEBCO is a joint project under the International Hydrographic Organization (IHO) and the Intergovernmental Oceanographic Commission (IOC). Following Decisions 8 and 9 of the XVIIth IHC which restructured the committees of the Organization, GEBCO was placed under the Inter-Regional Co-ordination Committee (IRCC) for reporting purposes within IHO. GEBCO also reports to the Executive Council of IOC. The task of the GEBCO Guiding Committee is to guide the GEBCO Project under the governance of IHO and IOC.

1.	**Chair:**	Mr. D. MONAHAN (Canada) (IHO) Dr. R. FALCONER (New Zealand) (IOC)	2007 - 2009 2009 - 2012
	Vice-Chair:	Dr. R. FALCONER (New Zealand) (IOC) Dr. C. FOX (USA) (IHO)	2007 - 2009 2009 - 2012
	Permanent Secretary:	Dr. R. WHITMARSH (UK) Mr. D. CLARK (USA)	2007 – 2010 2010 - 2012
	Membership IHO	Ing. gén. Etienne CAILLIAU (France)	From 2003
		Dr. Christopher FOX (USA)	From 2005
		Cdr. Paolo LUSIANI (Italy)	From 2005
		Mr. Dave MONAHAN (Canada) Ms. Hyo Hyn SUNG (Korea) From 2009	Until 2009
		Dr. Kunio YASHIMA (Japan)	From 2007

	Membership IOC	Dr. Robin FALCONER (New Zealand)	From 2005
		Lic. José Luis FRIAS SALAZAR (Mexico)	Until 2010
		Dr. Martin JAKOBSSON (Sweden)	From 2006
		Dr. Hans-Werner SCHENKE (Germany)	From 2003
		Dr. Nataliya TURKO (Russian Federation)	From 2006

	GGC Participants	(..) Denotes number of meetings attended
	IHO Members:	Canada - until 2009 (3), France (5), Italy (3), Japan (5), Rep of Korea- from 2009 (3), USA (5)
	IOC Members:	Germany (5), Mexico (2), New Zealand (5), Russian Federation (5), Sweden (5)

The Chairs of the GEBCO Sub-committees (SCUFN, TSCOM, ISCRUM*) and the Chair of the IHO DCDB are formal members of the GGC. The IHB, the IOC Secretariat and other active members of the GEBCO Community are invited to attend GGC meetings.

(*) Interim Sub-Committee on Regional Undersea Mapping, establishment under approval. (see § 4.7).

SUB-COMMITTEE ON UNDERSEA FEATURE NAMES (SCUFN)

SCUFN Participants:

SCUFN Members		
Dr. Hans Werner SCHENKE (Chair)	Germany	IOC
Ms. Lisa A. TAYLOR (Vice Chair)	USA	IHO
Mr. Norman CHERKIS	USA	IOC
Dr. Yasuhiko OHARA	Japan	IHO
Dr. Hyun-Chul HAN	Rep. of Korea	IOC
Cdr. Ana Angelica ALBERONI	Brazil	IHO
Dr. Vaughan STAGPOOLE	New Zealand	IOC
Lic. Walter REYNOSO-PERALTA	Argentina	IHO
Dr. Ksenia DOBROLYUBOVA	Russia Federation	IOC
Cdr. Muhammad BASHIR	Pakistan	IHO
Prof. LIN Shaohua	China	IOC
Secretary		
Ing En Chef Michel HUET	IHB	

IHO Members:	Argentina (3), Brazil – from 2009 (3), India (3), Japan (5), Pakistan – from 2009 (2), USA (5)
IOC Members:	China – from 2011 (1), Germany (5), Rep. of Korea (5), Mexico – until 2010 (2), New Zealand – from 2009 (3), Russian Federation (5), USA (4)

Observers from other countries are also welcomed at SCUFN meetings.

TECHNICAL SUB-COMMITTEE ON OCEAN MAPPING

TSCOM Members:

Dr. Walter SMITH (Chair)	USA	IHO
Dr. Bruce GOLEBY (Vice-Chair)	Australia	IOC
Mr. Norm CHERKIS	USA	IOC
Dr. John HALL	Israel	IOC
Dr. Hans-Werner SCHENKE	Germany	IOC
Mr. Shin TANI	Japan	IHO
Ms. Paola TRAVAGLINI	Canada	IHO

TSCOM Participants:

IHO Members: Canada - (4), France (5), Italy (3), Japan (5)

IOC Members: Germany (5), Israel (3), New Zealand (4), USA (5)

In addition to the formal IHO / IOC membership many other scientific advisors and other interested parties participate in TSCOM.

The interim Sub-Committee on Regional Undersea Mapping iSCRUM has met in conjunction with TSCOM since TSCOM XXV in 2009. Since 2006 a "GEBCO Bathymetric Science Day" featuring presentations and posters on Ocean Mapping topics is also held in conjunction with the TSCOM and iSCRUM Meetings, the sixth such Science Day was held in 2011.

3. Meetings

Since the XVIIth Conference, the GGC has met on five occasions, as follows:

GGC XXIV	Paris, France	7 – 8 November 2007
GGC XXV	Tokyo, Japan	29 – 30 May 2008
GGC XXVI	Brest, France	1 – 2 October 2009
GGC XXVII	Lima, Peru	18 September 2010
GGC XXVIII	San Diego, USA	7 October 2011

The Sub-Committee on Undersea Feature Names (SCUFN) met on the following occasions:

SCUFN XX	IHB, Monaco	9 - 13 July 2007
SCUFN XXI	Jeju Island, Rep of Korea	19 – 22 May 2008
SCUFN XXII	Brest, France	22 – 26 September 2009
SCUFN XXIII	Lima, Peru	11 – 14 September 2010
SCUFN XXIV	Beijing, China	12 – 16 September 2011

The Technical Sub-Committee on Ocean Mapping met on the following occasions:

TSCOM XXIII	New York, USA	11 – 13 September 2007
TSCOM XX XXIV	Tokyo, Japan	26 – 27 May 2008
TSCOM XXV	Brest, France	28 – 30 September 2009
TSCOM XXVI	Lima, Peru	13 – 17 September 2010
TSCOM XXVII	San Diego, USA	3 – 5 October 2011

4. Summary of Work Undertaken

4.1 Data Sets and Products

Recognizing the importance of the availability of gridded bathymetric data sets for the international scientific community, GEBCO has continued to develop and make available a number of data sets and products.

GEBCO released its first global bathymetric grid, the GEBCO One Minute Grid in 2003. This data set is at one arc-minute interval and is largely based on the bathymetric contours contained within the GEBCO Digital Atlas (GDA). An updated version of the grid was published in 2008.

In January 2009, GEBCO released the GEBCO_08 Grid. This global data set is at 30 arc-second intervals and was generated by combining quality-controlled ship depth soundings with interpolation between sounding points guided by satellite-derived gravity data. This data has been continually updated and new versions were made available in November 2009 and September 2010. The next release is planned for publication in the Spring of 2012

GEBCO's grids are available to download from the internet and are included as part of the GDA. Most recently, the GEBCO_08 Grid was made available as a Web Map Service (WMS), a means of accessing geo-referenced map images over the internet.

GEBCO's data sets and products are accessed by a wide range of users from all over the world; from scientists, students and the general public to commercial organisations. The data are used in diverse applications such as tsunami and ocean circulation modelling systems; planning submarine cable routes; developing maps for reports and atlases and terrain models for use in 3D visualisation software and graphics for educational TV programmes. They also provide map imagery in a number of commercial and open source Geographic Information System (GIS) and mapping packages. In 2009, Google Earth adopted the GEBCO_08 Grid as the global representation of seafloor relief in its Google Ocean product.

GEBCO is continually working to improve its gridded data sets and welcomes contributions of data from many sources. Olex, a Norwegian company that produces mapping and visualisation software largely based on data collected from fishing vessels, has made available to GEBCO a sub-sample of their global marine soundings database. This data set is largely focussed in shallower water areas, mainly in the North Atlantic Ocean region. Part of the data set, for regions around the UK, has already been included in the GEBCO_08 Grid.

4.2 Electronic Nautical Charts

The bathymetric data contained in the world wide coverage of Electronic Nautical Charts (ENCs), (collectively produced by IHO Member States), has proven to be a valuable source data, and is being used to significantly improve GEBCO's bathymetric grids in shallow water regions. Many Hydrographic Offices and hydrographic organizations have already contributed substantial amounts of shallow water bathymetry data for their coastal zones, generally from ENCs in small scale "General" and "Coastal" navigational purpose bands. These have resulted in significant improvements in the bathymetry for some shallow water areas. They have also enabled GEBCO to produce better generalized bathymetric models that seamlessly extend across oceans from shore to shore. To date, shallow water bathymetry data has been received from 21 organisations. Many of these data sets have already been incorporated into the GEBCO_08 Grid.

4.3 GEBCO Web Site

Since July 2008, GEBCO's web site has been maintained and updated at the British Oceanographic Data Centre on behalf of GEBCO. It can be accessed at the domain www.gebco.net. The web page content has been updated to reflect the release of new data sets and/or on request for content update by GEBCO colleagues. The 'news and events' web pages (www.gebco.net/about_us/news_and_events/) are regularly updated during the year. Users can be kept informed about the release of news items via a Really Simple Syndication (RSS) feed. Since the web site's re-launch in July 2008, there have been over 569,000 web pages viewed.

4.4 Nippon Foundation

In order to widen the GEBCO community and to encourage younger scientists and hydrographers to become involved in mapping the ocean floor, GEBCO has undertaken the training of a new generation of younger scientists and hydrographers in ocean mapping through a grant from the Nippon Foundation. This programme commenced in 2004. Between 2007 and 2011, this programme, administered by the University of New Hampshire (USA), has produced 30 Nippon Foundation Scholars from 19 countries. Nippon Foundation Scholars actively participated in GGC and TSCOM annual meetings in Toyko, 2008, Brest, 2009 and Lima, 2010, in TSCOM, New York, 2007 and in SCUFN, Jeju Island, 2008 and Brest, 2009 . Two former scholars from Argentina and Pakistan were elected as members of SCUFN. Recently, the Nippon Foundation has provided additional funds to support existing Nippon Scholars' participation in activities that further develop them and enhance personal networks in ocean affairs, such as the regional mapping efforts of GEBCO. Areas of current emphasis are the Indian Ocean, Southeast Pacific and Arctic and Southern Oceans. It is anticipated that GEBCO Nippon Foundation Scholars will become regular participants in the IHO Regional Hydrographic Commission efforts.

4.5 Gazetteer of Undersea Feature Names

GEBCO's Sub-Committee on Undersea Feature Names (SCUFN) handled 332 submissions and approved 236 undersea feature names during the period. The IHO Data Centre for Digital Bathymetry (IHO DCDB) completed part one of a comprehensive project to review, update, correct and migrate the GEBCO Gazetteer of Undersea Feature Names to a geospatial database. This contribution represents a huge step forward for GEBCO, as the Gazetteer will soon be available to the public as a web service from the GEBCO website in formats that are compatible with multiple GIS systems.

4.6 Improving Ocean Mapping Technology

The Technical Sub-Committee on Ocean Mapping (TSCOM) held a workshop in Boulder, Colorado, USA to begin the development of a model for smooth digital data flow from data producers to the GEBCO product. The GEBCO Data Flow Workshop was attended by fourteen members of the GEBCO community. The goal of the workshop was to develop a plan to allow data, grids, products, etc. to flow in a predefined manner though the GEBCO community for incorporation into the compiled GEBCO product. After two and a half days, a GEBCO data flow model was formulated and agreed upon.

TSCOM has also organized highly successful Science Day symposia at each GEBCO annual meeting.

4.7 Revitalizing Regional Mapping

GEBCO has taken steps to revitalize the regional mapping efforts of the IOC with the proposed creation of a new Sub-Committee on Regional Undersea Mapping (SCRUM). Terms of Reference for SCRUM have been agreed by the GGC. Approval of this new sub-committee is currently being requested from both IHO and IOC.

A major project since 2007 within GEBCO's regional mapping efforts is the production of the International Bathymetric Chart of the Southern Ocean (IBCSO). It was primarily initiated by IOC and SCAR in order to build up a comprehensive geodata-base used for scientific applications as well as for the production of a new Nautical Chart scheme in areas of the Antarctic Treaty (south of 60°S). For this reason, close cooperation including data and information exchange is practised between the IBCSO Editorial Board and the IHO Hydrographic Commission on Antarctica (HCA).

The goals of the International Bathymetric Chart of the Arctic Ocean (IBCAO) and IBCSO are to compile the most up-to-date bathymetric portrayals of these two regions. The key experts conducting bathymetric mapping in Arctic and Antarctic waters of the IBCAO and IBCSO organized an Arctic-Antarctic Seafloor Mapping Meeting at Stockholm University in May 2011**.** The main aims of the meeting were to coordinate mapping activities, improve the IBCAO and the IBCSO, discuss the uses and technical requirements of regional bathymetric compilations, and discuss data sharing and acknowledgment.

A GEBCO workshop was held at the *Centro de Investigaciones Oceanográficas e Hidrograficas* in Cartagena, Colombia in November 2011. There were 12 attendees from the IBCSO who attended the GEBCO workshop. The *Carta Batimétrica Internacional del Pacífico Sur Oriental* (IBCSEP) group were very enthusiastic about the workshop, which was a presentation on how GEBCO worked, and how GEBCO contributors undertook work using digital data, including data compilation, gridding and grid-publication. The group asked for further workshops in particular focussing on databases, data cleaning and gridding techniques.

4.8 Distribution of GEBCO's bathymetric data sets and products

A. Internet downloads of GEBCO's gridded bathymetric data sets

GEBCO_08 Grid
Since 01 September 2010

- Full global grid: 1,817
- User-selected sub-regions of the global grid: 3,795

Since release, 29 January 2009

- Full global data set: 3,939
- User-selected sub-regions of the global grid: 7,823

GEBCO_08 Source Identifier Grid
Since 01 September 2010

- Full global grid: 825
- User-selected sub-regions of the global grid: 846

Since release, 27 November 2009

- Full global data set: 1,210
- User-selected sub-regions of the global grid: 1,150

GEBCO One Minute Grid
Since 01 September 2010

- Full global data set: 997
- User-selected sub-regions of the global grid: 1,308

Since 01 January 2009

- Global data set: 3,041

- User-selected sub-regions of the global grid: 3,100

B. Internet downloads of viewing software for displaying and accessing data from GEBCO's grids

- Total number of downloads since January 2009: 7,079
- Total number of downloads since September 2010: 3,227

C. Distribution of the GEBCO Digital Atlas (GDA)

- Since 01 September 2010, 97 copies of the GDA have been distributed. This includes copies sold to commercial companies and complimentary copies given, for example, to participants on training courses.
- Since its release in 2003, 1,624 copies of the GDA have been distributed.

5. Proposals for adoption by the XVIIIth I.H. Conference:

The Conference is invited to note the report.

REPORT BY THE IHO - DATA CENTER FOR DIGITAL BATHYMETRY (DCDB)
by the Center Director, Mrs. Lisa TAYLOR, NOAA, USA

I. Background

The International Hydrographic Organization Data Center for Digital Bathymetry (IHO DCDB) hosted by the U.S. National Geophysical Data Center (NGDC) was officially established in 1990. The IHO DCDB operates and maintains a worldwide digital data bank of oceanic bathymetry on behalf of the IHO Member States. Since its inception, the IHO DCDB has made substantial progress toward establishing itself as the focal point for the digital bathymetric data service for IHO Member States.

During the reporting period of January 2007 to December 2011, the numerous accomplishments of the IHO DCDB include:

- Responded to multiple data requests from IHO Member States
- Increased international bathymetric data holdings
- Enhanced data management and access
- Developed coastal to global digital elevation models to support tsunami inundation modelling and forecast and warnings
- Conducted a thorough review of the GEBCO Gazetteer of Undersea Features Names
- Started migrating to ISO metadata standard
- Hosted digital elevation models (DEM) development and data management training sessions for GEBCO Nippon students

II. Data Management and Access

Over the last five years, the IHO DCDB responded to over 540 requests for data or information from organizations in 37 IHO Member States, as well as several non-IHO Member States.

Enhanced Map Services:

The IHO DCDB has developed a new set of map viewers using ArcGIS Server to display data from multiple databases. The map services can be consumed by a variety of clients through standard protocols, making the data more easily accessible to multiple users. A new Bathymetry Viewer allows users to access multibeam sonar data, track line geophysical data, and bathymetric/topographic digital elevation models (DEM), as well as point soundings archived at IHO DCDB, and metadata not archived at IHO

DCDB from one web page. The viewer includes both a global Mercator-projection view and a polar projection for data surrounding the poles, as well as allowing for seamless panning across the antemeridian.

Metadata Access:
The IHO DCDB is enhancing metadata discovery by using ESRI GeoPortal Server along with ISO metadata standards.

New Web Applications and User Tools:

- New web applications are being developed to utilize modern frameworks such as Groovy & Grails, providing more functionality for searching, viewing, filtering, and retrieving data that meets specific criteria.

- The GEODAS Grid Translator now offers translation of bathymetric gridded databases to several formats using various grid parameter options. Users can create and download custom grids of ETOPO1, U.S. Coastal Relief Model, and (U.S.) Great Lakes Bathymetry gridded datasets.

Database Management:
The IHO DCDB has migrated its single-beam, multi-beam, hydrographic, and sidescan sonar databases to a spatially enabled Oracle Relational Database Management System to aid in maintaining data consistency and to increase overall data quality and searchability. This migration has led to development of an alternative tab-delimited format, MGD77T, which overcomes some of the limitations of the fixed length MGD77 records. The IHO DCDB now provides data in both MGD77 and MGD77T formats.

III. Growth in International Bathymetric Data Holdings

Over the reporting period, the IHO DCDB received multi- and single-beam bathymetric data from Australia, Brazil, Canada, Indonesia, Ireland, Japan, Korea, and New Zealand:

- Marine Trackline Bathymetry Database:
  Added more than 11 million bathymetric soundings from 262 cruises for a total of more than 54 million bathymetric soundings from 4,884 cruises (7.5 million bathymetric soundings from 226 cruises came from non-US IHO Member States).
- Multibeam Bathymetry Database:
  Added 742 cruises for a total of 6.0 terabytes of data files from 1,761 cruises.
- National Ocean Service Hydrographic Database:
  Increase of over 63 TB for a total of over 73.53 TB of survey data.

IV. Development of Digital Elevation Models

During the reporting period, the IHO DCDB built 90 Digital Elevation Models (DEMs) covering all of Puerto Rico and portions of the U.S. East, West, Gulf, Hawaiian, and Alaskan coasts, as well as several Pacific Islands to support tsunami and storm surge forecasting and modelling efforts. Users may view planned DEMs and download completed DEMs with corresponding metadata and documentation at http://www.ngdc.noaa.gov/mgg/coastal/coastal.html. The DEMs are useful for coastal process modelling, ecosystem management and habitat research, coastal and marine spatial planning, and hazard mitigation and community preparedness.

V. Review of GEBCO Gazetteer of Undersea Feature Names

The IHO DCDB completed Part I of the GEBCO Gazetteer Enhancement Project with a comprehensive review and update of the GEBCO Gazetteer of Undersea Feature Names (SCUFN24-07.2A). Pending additional resources, Part II of this project will include correcting and enhancing feature geometries and providing the Gazetteer as a web service accessible via an on-line interface. Completion of this project is critical to ensure that the Gazetteer is available to all IHO Member States and used consistently in GIS systems and other applications such as Google Earth.

VI. Hosted GEBCO NIPPON Students

Starting in 2008, the IHO DCDB has hosted two to four week DEM development and data management training sessions for the Nippon Foundation/GEBCO Training Project. The University of New Hampshire hosts the project, which is designed to train maritime experts from around the world in deep-ocean mapping. Students from organizations ranging from the Royal Thai Navy's Hydrographic Department, Sri Lanka's National Aquatic Resources Research and Development Agency and the Japan Hydrographic Office worked with IHO DCDB staff to learn about hydrographic / bathymetric data management, metadata development, and developing coastal digital elevation models and other derived bathymetric products. The IHO DCDB has agreed to support the NIPPON/GEBCO Programme by offering these training sessions as a regular part of the curriculum.

VII. Conclusion

The IHO DCDB plays a critical role in providing IHO Member States easy access to fully described and archived global bathymetric data. With sufficient support, the IHO DCDB will continue to enhance its user services and data base management practices and partner with international organizations to increase its data holdings.

VIII. Proposals for adoption by XVIIIth I.H. Conference

The Conference is invited to note the report.