INTERNATIONAL HYDROGRAPHIC ORGANIZATION

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MEMBER STATES OF THE INTERNATIONAL HYDROGRAPHIC ORGANIZATION (IHO) – 31 December 2014

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Pending Member States: Bulgaria, Georgia, Haiti, Mauritania, Sierra Leone, Viet Nam, Brunei Darussalam.

***** *Rights of membership suspended*

INTERNATIONAL HYDROGRAPHIC BUREAU
DIRECTING COMMITTEE

President	Directors
Robert WARD, Australia	**Mustafa IPTES,** Turkey
	Gilles BESSERO, France

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LIST OF ACRONYMS

A

ABLOS	Advisory Board on the Law of the Sea
ACCSEAS	Accessibility for Shipping, Efficiency Advantages and Sustainability
AfriGEOSS	African Global Earth Observation System of Systems
AGM	Annual General Meeting
AGU	American Geophysical Union
AIS	Automatic Identification System
AMNAS	Arabian Maritime and Navigation Aids Services
ARHC	Arctic Regional Hydrographic Commission
ATCM	Antarctic Treaty Consultative Meeting
AUV	Autonomous Underwater Vehicle
AWI	Alfred Wegener Institute for Polar and Marine Research

B

BAG	Bathymetric Attributed Grid
BASWG	Working Group on the Safety of Navigation in the Black and Azov Seas
BSH	*Bundesamt für Seeschifffahrt und Hydrographie*
BSHC	Baltic Sea Hydrographic Commission

C

CATZOC	Categories of Zones of Confidence
CB	Capacity Building
CBA	Capacity Building Assistant
CBMP	Capacity Building Management Plan
CBSC	Capacity Building Sub-Committee
CBWP	Capacity Building Work Programme
CHART	Cartography, Hydrography and Related Training
CHC	Charting and Hydrography Committee
CIRM	Comité International Radio-Maritime
CL	Circular Letter
COCATRAM	*Comisión Centroamericana de Transporte Marítimo*
COMNAP	Council of Managers of National Antarctic Programs
COMSAR	Subcommittee on Radiocommunications and Search and Rescue
COP	Common Operating Picture
CSB	Crowd-Sourced Bathymetry
CSPCWG	Chart Standardization and Paper Chart Working Group

D

DBM	Digital Bathymetric Models
DCDB	Data Centre for Digital Bathymetry
DCEG	Data Capture and Encoding Guide
DE	the Sub-Committee on Design and Equipment
DGIWG	Defence Geospatial Information Working Group
DG Mare	Directorate-General for Maritime Affairs and Fisheries
DHN	*Dirección de Hidrografía y Navegación*
DEM	Digital Elevation Model
DIPWG	Digital Information Portrayal Working Group
DIS	Draft International Standard
DOALOS	Division for Ocean Affairs & Law of the Sea
DOF	Department of Oceans & Fisheries
DPSWG	Data Protection Scheme Working Group
DQWG	Data Quality Working Group

DRR	Disaster Risk Reduction
DRWG	Document Review Work Group
DTT	Digital Tide Tables
DTU	*Danmarks Tekniske Universitet*

E

EAHC	East Asia Hydrographic Commission
EAtHC	Eastern Atlantic Hydrographic Commission
EC	European Commission
ECDIS	Electronic Chart Display and Information System
ECOSOC	UN Economic and Social Council
EEA	European Economic Area
EFTA	European Free Trade Association
EIHC-5	5th Extraordinary International Hydrographic Conference
EMFF	European Maritime and Fisheries Fund
EMODnet	European Marine Observation and Data Network
ENC	Electronic Navigational Chart
ERASMUS	European Community Action Scheme for the Mobility of University Students
ERSAHC	Extraordinary Meeting of ROPME Sea Area Hydrographic Commission
ETMSS	Expert Team on Maritime Safety Services
ETSI	Expert Team on Sea Ice
EU	European Union
EU2MPWG	Working Group on European Union Marine and Maritime Policies

F

FC	Finance Committee
FCCL	Finance Committee Circular Letter
FIG	International Federation of Surveyors
FTA	Finnish Transport Agency

G

G8	Group of Eight
GDA	GEBCO Digital Atlas
GEBCO	General Bathymetric Chart of the Oceans
GEO	Group on Earth Observations
GEOSS	Global Earth Observations System of Systems
GGC	GEBCO Guiding Committee
GIS	Geographic Information System
GMDSS	Global Maritime Distress and Safety System
GML	Geographic Markup Language
GMRT	Global Multi-Resolution Topography
GRSS	Geoscience and Remote Sensing Society
GSDI	Global Spatial Data Infrastructure Association
GST	Geodatastyrelsen (Danish Geodata Agency)

H

HCA	IHO Hydrographic Commission on Antarctica
HDWG	Hydrographic Dictionary Working Group
HFA	Hyogo Framework for Action
HO	Hydrographic Office
HSH	His Serene Highness
HSSC	Hydrographic Services and Standards Committee
HTW	Human Element, Training and Watchkeeping

I

IAATO	International Association of Antarctic Tour Operators
IAEA	International Atomic Energy Agency
IAG	International Association of Geodesy
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IALA-WWA	IALA World Wide Academy
IAMSAR	International Aeronautical and Maritime Search and Rescue
IAPH	International Association of Ports and Harbours
IBCSO	International Bathymetric Chart of the Southern Ocean
IBSC	International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers
ICA	International Cartographic Association
ICAO	International Civic Aviation Organization
IC-ENC	International Centre for Electronic Navigational Charts
ICC	International Cartographic Conference
ICCWG	International Charting Coordination Working Group
ICS	International Chamber of Shipping
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IENWG	IHO-EU Network Working Group
IFHS	International Federation of Hydrographic Societies
IGO	Inter-Governmental Organization
IGU	International Geographic Union
IHB	International Hydrographic Bureau
IHC	International Hydrographic Conference
IHM	*Instituto Hidrográfico de la Marina*
IHO	International Hydrographic Organization
IHPT	*Instituto Hidrográfico Portugueso*
IHR	International Hydrographic Review
IMIA	International Map Industry Association
IMO	International Maritime Organization
IMPA	International Maritime Pilots Association
IMSO	International Mobile Satellite Organization
INAHINA	Instituto Nacional de Hidrografia e Navegação
INDEMER	Institute of Economic Law of the Sea
INSPIRE	Infrastructure for Spatial Information in the European Community
INT	International
IOC	Intergovernmental Oceanographic Commission
IPIECA	The global oil and gas industry association for environmental and social issues
I.R.	Islamic Republic
IRCC	Inter-Regional Coordination Committee
IRSO	International Research Ship Operators
IS	International Standard
ISCGM	International Steering Committee for Global Mapping
ISPRS	International Society for Photogrammetry and Remote Sensing
ISO	International Organization for Standardization
IT	International Technology
ITLoS	International Tribunal on the Law of the Sea
ITU	International Telecommunication Union

J

JB-GIS	Joint Board of GIS
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology
JECMaP	Joint European Coastal Mapping Programme
JHOD	Japan Hydrographic and Oceanographic Department

K

KHOA	Korea Hydrographic and Oceanographic Department

L

LiDAR	Light Detection and Ranging
LINZ	Land Information New Zealand
LRIT	Long Range Identification and Tracking

M

MACHC	Meso-American and Caribbean Hydrographic Commission
MBSHC	Mediterranean and Black Seas Hydrographic Commission
MEH	Marine Electronic Highways
MEIP	Maritime Economic Infrastructure Programme
METAREA	METeorogical Area
MICC	MACHC Integrated Charting Committee
MIO	Marine Information Overlays
MODEG	Marine Observation and Data Expert Group
MoU	Memorandum of Understanding
MOWCA	Maritime Organization for West and Central Africa
MPA	Marine Protected Areas
MS	Member State
MSC	Maritime Safety Committee
MSDI	Marine Spatial Data Infrastructure
MSDIWG	Marine Spatial Data Infrastructure Working Group
MSDS	Maritime Safety Data Service
MSI	Maritime Safety Information
MY	Motor Yacht

N

NATO	North Atlantic Treaty Organization
NAV	Sub-Committee on Safety of Navigation
NAVAREA	NAVigational Area
NAVTEX	NAVigational TEXt Messages
NCEI	National Centers for Environmental Information
NCSR	IMO Sub-Committee on Navigation, Communications and Search and Rescue
NGA	National Geospatial-Intelligence Agency
NGDC	US National Geophysical Data Center
NGIO	Non-Governmental International Organization
NGO	Non-Governmental Organization
NHC	Nordic Hydrographic Commission
NIOHC	North Indian Ocean Hydrographic Commission
NIPWG	Nautical Information Provision Working Group
NOAA/OCS	Office of Coast Survey of the US National Oceanic and Atmospheric Administration

NOS	National Ocean Service
NP	Nautical Publication
NPUBS	Nautical Publications Register
NSHC	North Sea Hydrographic Commission

O

OECS	Organization of Eastern Caribbean States
OEM	Original Equipment Manufacturer
OEWG	Outreach and Education Working Group (GEBCO)
OCS	Office of Coast Survey
OGC	Open Geospatial Consortium
OGP	International Association of Oil & Gas Producers

P

PAIGH	Pan American Institute of Geography and History
PAME	Protection of the Marine Environment
PI	Performance Indicator
PMWCA	Port Management Association of West and Central Africa
PYA	Professional Yachting Association

Q

R

RECC	Regional ENC Coordinating Centre
RENC	Regional ENC Coordinating Centre
RFI	Request for Information
RHC	Regional Hydrographic Commission
ROK	Republic of Korea
Rop	Rules of Procedure
ROPME	Regional Organization for the Protection of the Marine Environment
RSAHC	ROPME Sea Area Hydrographic Commission
RTCM	Radio Technical Commission for Maritime Services

S

SAIHC	Southern African and Islands Hydrographic Commission
SAR	Search and Rescue
SC	Sub-Committee
SCRUM	Sub-Committee on Regional Undersea Mapping
SCUFN	Sub-Committee on Undersea Feature Names
SCWG	Surface Current Working Group
SDB	Satellite Derived Bathymetry
SDC	Ship Design and Construction
SDG	Sustainable Development Goals
SDI	Spatial Data Infrastructures
SENC	System ENC
SERPHC	South East Pacific Regional Hydrographic Commission
SHOA	Servicio Hidrográfico y Oceanográfico de la Armada
SHOM	Service Hydrographique et Océanographique de la Marine
SID	Source Identifier
SIMF	Seoul International Maritime Forum
SIP	Strategy Implementation Plan
SNPWG	Standardization of Nautical Publications Working Group

SOLAS	International Convention for the Safety of Life at Sea
SPC	Secretariat of the Pacific Community
SPI	Strategic Performance Indicator
SRWG	IHO Staff Regulations Working Group
SVG	Scalable Vector Graphics
SWAtHC	South West Atlantic Hydrographic Commission
SWPHC	South West Pacific Hydrographic Commission

T

TALOS	Technical Aspects of the UN Convention on the Law of the Sea
TC	Technical Committee
TCC	Technical Cooperation Committee
TRDC	Training, Research and Development Centre
TSCOM	Technical Sub-Committee on Ocean Mapping
TSMAD	Transfer Standard Maintenance and Application Development Working Group
TSS	Traffic Separation Schemes
TWLWG	Tidal and Water Level Working Group
T&P	Temporary&Preliminary
ToR	Terms of Reference

U

UAE	United Arab Emirates
UK	United Kingdom
UKHO	United Kingdom Hydrographic Office
UN	United Nations Organization
UNCLOS	United Nations Convention on the Law of the Sea
UNESCO	United Nations Educational, Scientific and Cultural Organization
UN-GGIM	United Nations Committee of Experts on Global Geospatial Information Management
UNH	University of New Hampshire
UNISDR	United Nations International Strategy for Disaster Reduction
US	United States
USA	United States of America
USCHC	USA-Canada Hydrographic Commission
USM	University of Southern Mississippi

V

VDR	Voyage Data Recorders
VPN	Virtual Private Network

W

WCDRR	World Conference on Disaster Risk Reduction
WENC	Worldwide ENC Coordinating Centre
WEND	Worldwide ENC Database
WG	Working Group
WMO	World Meteorological Organization
WMS	Web Map Service
WP	Work Programme
WPI	Working-level Performance Indicator
WWMIWS	Worldwide Met-Ocean Information and Warning Service
WWNWS	World Wide Navigational Warnings Service
WWNWS-SC	WWNWS Sub-Committee

X

XML	eXtensible Markup Language

Y

Z

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CONTENTS

INTRODUCTION

The Directing Committee is pleased to present the Annual Report of the activities of the Organization for 2014. This report provides an account of the principal activities and achievements of the IHO, the subordinate bodies of the Organization and the IHB during the year. The report also describes the cooperation and participation of other international organizations and stakeholders in the execution of the IHO Work Programme.

This Report consists of two parts:

Part 1– General

Part 1 provides short summary reports and observations on the execution of the IHO Work Programme. Part 1 is structured based on the three parts of the Work Programme: Corporate Affairs, Hydrographic Services and Standards and Inter-Regional Coordination and Support. In this way the Report is also directly related to the technical structure of the Organization which is based on the Secretariat (Corporate Affairs) function and the two principal Committees - the Hydrographic Services and Standards Committee (HSSC) and the Inter-Regional Coordination Committee (IRCC). As far as possible, Part 1 of the Report follows the same structure and uses the same headings as in the approved Work Programme.

Part 2 – Finance

Part 2 provides the financial statement and accounts for 2014 together with the report of the external auditor.

Summary and Highlights

5th Extraordinary International Hydrographic Conference

The work programme of the IHO for 2014 was as comprehensive and as busy as ever. The 5th Extraordinary International Hydrographic Conference, held in October, provided the opportunity for representatives of Member States to consider a number of important global developments, including the use of crowd-sourced bathymetry and satellite-derived bathymetry to assist in improving bathymetric knowledge of the world's sea areas. The Conference also considered the capacity of the International Hydrographic Bureau (IHB), as Secretariat of the IHO, to continue to fulfil all of its requirements and introduced some practical measures to assist in monitoring the performance of the IHO Work Programme.

Status of Approvals

By the end of 2014, 41 of the required minimum of 48 Member States had formally approved the Protocol of Amendments to the Convention on the IHO.

At the same time, Brunei Darussalam, Georgia and Viet Nam had all received the required number of approvals to join the IHO. All three States formally became Member States of the IHO in early 2015.

Meanwhile, Mauritania (application approved in April 1991), Bulgaria (application approved in April 1992), Sierra Leone (application approved in September 2010) and Haiti (application approved in November 2012) had yet to submit their instrument of accession to become Member States.

Technical Programme

The technical programme remained focused on developing the S-100 series of new standards while keeping the current IHO standards fit for purpose.

Significant progress was made in developing S-100 - *Universal Hydrographic Data Model* and S-101 - *ENC Product Specification*. The draft of edition 2.0.0 of S-100 was finalized and endorsed by the HSSC. An overarching test bed strategy was completed.

The revision of various IHO standards related to ECDIS undertaken in 2010 to address the anomalous operation of ENC data in some ECDIS came to fruition with the approval by Member States of new editions or revisions of IHO Publications S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*, S-52 Annex A - *ECDIS Presentation Library*, S-57 - Appendix B.1 - Annex A - *Use of the Object Catalogue for ENC*, S-58 - *ENC Validation Checks*, and S-64 - *IHO Test Data Sets for ECDIS*. The thorough revision of IHO Publication S-4 - *Regulations for International (INT) Charts and Chart Specifications of the IHO* undertaken in 2005, after the adoption of a new format, was also completed.

On the basis of the principles agreed in 2013, the HSSC implemented a re-structuring of its working groups in order to reflect the changing focus from paper to digital data based products and services, best use of limited resources, improve its efficiency and facilitate inputs from industry and other stakeholders. The increasing and very important contribution being made by participants from industry in their role as Expert Contributors was acknowledged by the 5th Extraordinary International Hydrographic Conference.

Capacity Building Programme

The level of activity of the IHO Capacity Building Programme continued to increase and was further boosted by fewer cancellations or postponements of approved activities than in previous years. The programme continued to benefit from significant financial contributions provided by the Republic of Korea and the Nippon Foundation of Japan. The Capacity Building Sub-Committee completed its review of the IHO Capacity Building Strategy, which was subsequently approved by the 5th Extraordinary International Hydrographic Conference.

Financial Situation of the IHO

As indicated in Part 2 of this Report, the financial situation of the Organization at the end of the year was good. The fortuitous positive budget result that was achieved was most welcome because of the discovery of a previously unforeseen liability to underwrite the IHO's personalized retirement plans for some Staff. Personalized retirement plans were introduced in 1987 but the results are only now becoming apparent when some Staff are reaching retirement age and finding that their personalized retirement plans will provide a lower level of benefits than was originally anticipated by the IHO.

Conclusion

In conclusion, the Directing Committee, on behalf of all IHO Member States, would like to express its gratitude to HSH Prince Albert II of Monaco and His Government for the continuing generous support and interest in the Organization.

WORK PROGRAMME 1
Corporate Affairs

Introduction

IHO Work Programme 1 "Corporate Affairs" covers the provision of the services of the IHB, the management and fostering of relations with other international organizations. Work Programme 1 is executed primarily by the Directing Committee.

Element 1.1 Cooperation with International Organizations

This element covers liaison and cooperation between the IHO and other international organizations. Notable activities during the year are described hereinafter. The IHO was represented in most cases by a Director or an Assistant Director. The participation of international organizations in the 5th Extraordinary International Hydrographic Conference (EIHC-5) is reported under Element 1.6.

Task 1.1.1 Antarctic Treaty Consultative Meetings (ATCM)

The 37th Antarctic Treaty Consultative Meeting (ATCM37) was held in Brasilia from 28 April to 7 May. The Antarctic Treaty Consultative Meeting is the primary forum for the representatives of States Parties to the Antarctic Treaty to exchange information and formulate measures, decisions and resolutions to further the principles and objectives of the Treaty. The IHO is an Invited Expert to ATCM and was represented at the meeting by President Robert Ward.

Dr Kim Crosbie, Executive Director of the International Association of Antarctica Tour Operators (IAATO) and the President at ATCM37

President Ward, as Chair of the IHO Hydrographic Commission on Antarctica (HCA), introduced a report from the IHO at the opening plenary session. The report described the state of hydrographic surveying and nautical charting in Antarctica and highlighted the fact that very little of the waters of Antarctica have been surveyed; this poses a serious risk of maritime incidents as well as impeding the conduct of maritime and related activities.

President Ward recommended that the ATCM encourage, or even oblige, all vessels operating in Antarctica to collect depth data at all times using existing shipboard equipment supplemented by low-cost data recording systems. He reported that the International Association of Antarctic Tour Operators (IAATO) is actively cooperating with the IHO to make tourist ships available for this - but there is a need to involve all other vessels - not just tourist vessels.

As a result of input from the IHO in recent years, the ATCM adopted a new Resolution on Strengthening Cooperation in Hydrographic Surveying and Charting of Antarctic Waters. The new Resolution provides a clear message that all States and Organizations involved in the ATCM

process acknowledge the currently less than acceptable situation regarding hydrography and nautical charting and appreciate that coordination, collaboration and the sharing of resources are key to improving the situation in Antarctica. The Resolution also recognizes that the HCA is the coordinating authority for nautical charting and hydrographic surveying in the region.

Task 1.1.2 Comité International Radio-Maritime (CIRM)

The "Comité International Radio-Maritime" (CIRM) held its annual meeting in Annapolis, Maryland, USA, from 28 to 30 April. CIRM is a non-governmental international organization (NGIO) representing the maritime electronics industry in the development of relevant international regulations and standards and is accredited by the IHO as an observer organization. CIRM maintains an active role in the IHO Hydrographic Services and Standards Committee (HSSC), with a number of its members also participating as Expert Contributors in many HSSC Working Groups.

The meeting was combined with the annual meeting of the Radio Technical Commission for Maritime Services (RTCM). RTCM is an accredited IHO Observer Organization. Some of the RTCM standards and recommendations are incorporated by reference into the regulations of the US Federal Communications Commission and the US Coast Guard and have been used as the basis for standards adopted by the International Electrotechnical Commission (IEC). RTCM, like CIRM, contributes to the work of the HSSC.

The joint meeting was attended by about 180 participants representing more than seventy companies, governmental and non-governmental bodies from France, Republic of Korea, Netherlands, UK and USA, as well as governmental and non-governmental international organizations such as Cospas-Sarsat, the European Commission (EC), the International Maritime Organization (IMO), the International Mobile Satellite Organization (IMSO) and RTCM. Director Gilles Bessero represented the IHO. The UK Hydrographic Office (UKHO), the US Office of Coast Survey (OCS) and the US National Geospatial-Intelligence Agency (NGA) were also represented.

The meeting considered the way forward on current issues related with e-Navigation, type approval processes for navigation equipment, and the provision of associated services. Reports were received on issues concerning the operation of voyage data recorders (VDR) and the automatic identification system (AIS), some of which may be of greater concern than the so-called "ECDIS anomalies problem". The Vice-Chair of the IHO Working Group on Transfer Standard Maintenance and Application Development (TSMAD), reported on progress with the S-101 Product Specification for the next generation Electronic Navigational Chart (ENC) based on the S-100 Universal Hydrographic Data Model. The important role of S-100 in the wider implementation of e-Navigation was acknowledged by several other speakers.

Task 1.1.3 Council of Managers of National Antarctic Programmes (COMNAP)

The Council of Managers of National Antarctic Programmes (COMNAP) held its annual general meeting (AGM) in Christchurch, New Zealand at the end of August. The purpose of the meeting was to review the activities of the organization, particularly concerning COMNAP input and support to the annual Antarctic Treaty Consultative Meeting (ATCM) and to enable face-to-face discussions and coordination of national Antarctic programmes for the forthcoming seasons.

President Robert Ward, in his role as Chair of the IHO Hydrographic Commission on Antarctica, represented the IHO and provided a report on the state of hydrographic knowledge in the Antarctic

region and the Southern Ocean. In particular, he encouraged the national managers of Antarctic programmes to include the routine collection and forwarding of depth data to the IHO Data Centre for Digital Bathymetry (DCDB), the International Bathymetric Chart of the Southern Ocean (IBCSO) project and to the relevant national hydrographic offices producing charts of the region. He also described the proof of concept crowd-sourcing trials being conducted by the IHB using simple data loggers connected to existing ship's equipment.

COMNAP AGM in Session

Task 1.1.4 European Union (EU)

- **Coordination meeting between IHO Member States of the European Economic Area**

A coordination meeting between IHO Member States of the European Economic Area (EEA) was hosted by the French Hydrographic Office (SHOM) in Saint-Mandé, France, on 3 and 4 February. The meeting was chaired by France, as chair of the Working Group on European Union Marine and Maritime Policies of the North Sea Hydrographic Commission (NSHC EUM2P WG). It was attended by representatives from Belgium, France, Germany, Norway and Sweden. Director Gilles Bessero represented the IHB.

The meeting reviewed the lessons learned from the first two phases of the European Marine Observation and Data Network (EMODnet). Options to consolidate further the contribution of the IHO both through national Hydrographic Offices (HOs) of EEA Member States and through the relevant Regional Hydrographic Commissions were discussed. It was agreed that HOs are best placed to provide operational solutions with appropriate accuracy and updating mechanisms through the current IHO regional structures and approaches.

Director Bessero addresses the meeting

The meeting also prepared for the impending 5th meeting between the European Commission (EC) and the IHO that operates under the EC-IHO Memorandum of Understanding for establishing cooperation on maritime affairs. In particular, the meeting discussed the development of a "Joint European Coastal Mapping Programme" (JECMaP) in anticipation of a possible call for tenders by the European Commission under the EU Marine Knowledge 2020 initiative. The meeting discussed how such a programme could be specified and managed.

- **5th Meeting between the IHO and the European Commission**

Senior Representatives meet in Ostend

The 5th EC-IHO meeting was hosted by the newly-established Secretariat Office of the EMODnet at the Maritime Flanders Institute (VLIZ) in Ostend, Belgium, on 19 and 20 February. The meeting was chaired by France, as Chair of the NSHC/EU2MPWG. The meeting was attended by three representatives from the European Commission (Directorate-General for Maritime Affairs and Fisheries - DG Mare) and nine representatives from IHO Member States (France, Belgium, Germany, Greece, Netherlands, Norway, Sweden, and United Kingdom). Director Gilles Bessero represented the IHB.

The meeting discussed how the IHO could support the third phase of the EMODnet initiative to be launched early in 2015 and reviewed progress in developing a future joint European coastal mapping project, taking into account the feedback from DG Mare. The meeting was informed that the European Maritime and Fisheries Fund (EMFF) for 2014-2020 would contribute to the EU Integrated Maritime Policy. This included the possibility of supporting high resolution mapping of the European seabed and the wider availability of marine data to contribute to "blue growth".

- **21st Meeting of the Marine Observation and Data Expert Group (MODEG)**

The 5th EC-IHO meeting was followed by the 21st meeting of the European Marine Observation and Data Expert Group (MODEG) which was hosted by the EMODnet Secretariat. The MODEG had been established in 2008 by the European Commission to provide scientific, technical and operational advice on the implementation of EMODnet. Five representatives from four IHO Member States (Belgium, France, Greece, and Norway) and Director Bessero attended as observers. The meeting reviewed the progress of the seven thematic "lots" of EMODnet (bathymetry, geology, habitats, chemistry, biology, physics, and human activity) and of associated activities (sea basin checkpoints, IT infrastructure, communication strategy, etc.). Director Bessero outlined the significant support that the IHO and its EU Member States could provide to the next phase of EMODnet. The MODEG welcomed the IHO presentation and the establishment of a formal partnership between the IHO and EMODnet.

- **6th Meeting between the IHO and the European Commission**

The 6th EC-IHO meeting was hosted by the Royal Netherlands Navy Hydrographic Office at the Naval Barracks in Amsterdam on 21 June. The meeting was chaired by France, as chair of the North Sea Hydrographic Commission Working Group on European Union Marine and Maritime Policies (NSHC/EU2MPWG). The meeting was attended by two representatives from the European Commission (DG Mare) and seventeen representatives from nine IHO Member States (France, Belgium, Germany, Greece, Ireland, Italy, Netherlands, Norway and Sweden). Director Gilles Bessero represented the IHB.

The meeting reviewed the development of a design study on a future joint European coastal mapping project in the perspective of a call for tender. The meeting was informed about the consultation on seabed mining undertaken by DG Mare, the opportunities related to maritime issues in Horizon 2020 - the EU Framework Programme for Research and Innovation 2014-2020 - and the objectives, contents and impact of the EU directive on maritime spatial planning which had been adopted by the European Parliament and was expected to come into force in September. The Vice-Chair of the IHO Maritime Spatial Data Infrastructure Working Group reported on the significant contribution of the maritime community, including representatives from HOs, industry and academia, to the annual Conference on INSPIRE - the framework of the European Spatial Data Infrastructure, which had been held in Aalborg, Denmark.

- **1st Meeting of the IHO-EU Network Working Group (IENWG)**

In 2006, the North Sea Hydrographic Commission (NSHC) established a Working Group on EU Marine and Maritime Policies (EUM2PWG) to monitor the impact of EU policies on Hydrographic Offices. In April 2013, the 57th meeting of the Nordic Hydrographic Commission (NHC) recognised the need to extend the group beyond the NSHC countries to include other IHO Member States within the European Economic Area (EEA) and invited the Inter-Regional Coordination Committee (IRCC) to consider creating a subordinate body to liaise with the European Commission. The IRCC created a dedicated Working Group at its 5th meeting in June 2013 to deal with EU/EC matters and to manage the IHO/EC MOU.

As a result, membership of the IHO-EU Network Working Group (IENWG) in 2014 was:

- Arctic Regional Hydrographic Commission;
- Baltic Sea Hydrographic Commission;
- Eastern Atlantic Hydrographic Commission;
- Meso American & Caribbean Sea Hydrographic Commission;
- Mediterranean and Black Seas Hydrographic Commission;
- Nordic Hydrographic Commission;
- North Indian Ocean Hydrographic Commission;
- North Sea Hydrographic Commission;
- Southern Africa and Islands Hydrographic Commission;
- South West Pacific Hydrographic Commission.

The first meeting of the IENWG was convened and hosted by the French Hydrographic Office (SHOM) in Saint-Mandé, France, on 2 September. The meeting was attended by representatives from Belgium, France, Germany (by video-conference), Italy, Netherlands, Norway, Sweden and the United Kingdom. Director Gilles Bessero represented the IHB. Apologies were received from Denmark, Greece and Spain. The meeting was preceded by a separate session, with the additional participation of Ireland and Slovenia, to consider the call for tenders on coastal mapping issued by the European Commission (DG Mare).

IENWG participants gather in Saint-Mandé

The meeting reviewed three main issues: the IHO policy towards the EMODnet, the role of HOs in supporting the EU directive on Maritime Spatial Planning and the input of HOs to the contribution of the EU "*Marine Knowledge 2020*" initiative to blue growth.

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Task 1.1.5 International Federation of Surveyors (FIG)

The 25th Congress of the International Federation of Surveyors (FIG) was held in Kuala Lumpur, Malaysia from 16 to 21 June. The Congress attracted more than 2,500 participants from almost 100 countries. The Congress offered more than 170 technical sessions over the four conference days with around 550 presentations, a three-day exhibition, technical and social tours. Among the participants, the Hydrographers of Australia and Chile were present. The IHO was represented by Director Mustafa Iptes.

The theme of the 25th Congress was "*Engaging the Challenges, Enhancing the Relevance*". The Congress was opened by the Prime Minister of Malaysia, the Honourable Dato' Sri Mohd Najib bin Tun Haji Abdul Razak. In his opening speech, he highlighted the importance of geo-spatial information by stating that "*We should work to improve the existing information infrastructure, including the spatial data infrastructure; and implement policies that ensure that spatial data is reliable, accessible for re-use, and can be easily integrated into collaborative environments*".

Prime Minister of Malaysia, the Honourable Dato' Sri Mohd Najib bin Tun Haji Abdul Razak delivering his welcoming address at the Opening Ceremony of the 25th FIG Congress

Director Iptes made a presentation on "*Hydrography, Nautical Charts, Marine Spatial Data Infrastructure and Blue Economy for the World We Want*" as one of the keynote speakers at the plenary session of the Congress. He mainly attended the FIG Commission 4 (Hydrography) programme which was chaired by Dr Michael Sutherland (Canada, and Trinidad and Tobago) and provided briefings on "*Hydrographic Education, Training and Professional Development*" and "*Sustaining the Role of Hydrography in Support of the Blue Economy*".

Task 1.1.6 International Federation of Hydrographic Societies (IFHS)

The International Federation of Hydrographic Societies (IFHS) is a non-governmental partnership of learned national and regional hydrographic societies dedicated to the promotion of hydrography and related sciences. Liaison between the IFHS and the IHO is governed by a Memorandum of Understanding signed in 2006. The IHO maintained its relationship with the (IFHS) through its participation in Hydro14 which took place in Aberdeen, United Kingdom from 28 to 30 October. The IHO took the opportunity at Hydro14 to hold an IHO-led stakeholder forum - "*The IHO & Us*" (see also Task 1.4.3).

Task 1.1.7 International Association of Antarctic Tour Operators (IAATO)

IAATO is a principal stakeholder organization that provides input to and collaborates in the work of the IHO Hydrographic Commission on Antarctica (HCA). In 2014, IAATO was represented at the annual HCA meeting (see task 3.1.16) and at EIHC-5 (see element 1.6). The IHO did not participate in any events or activities organized directly by IAATO in 2014.

Task 1.1.8 International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)

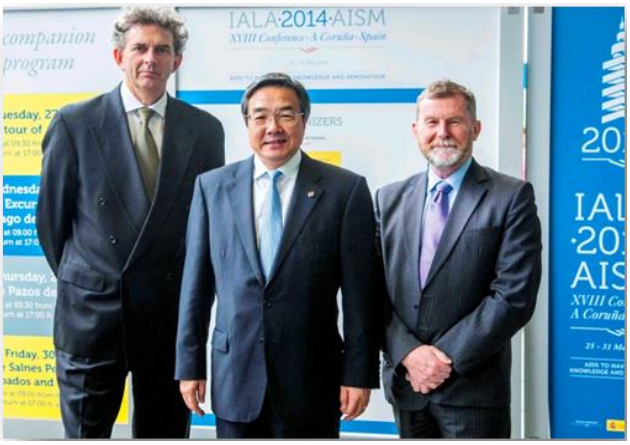
E-navigation Underway Conference

Close cooperation with IALA continued throughout the year. Regular discussions and informal contact were maintained during IMO and other meetings where both organizations were represented. In addition, Assistant Director Anthony Pharaoh represented the IHO at an e-Navigation conference jointly organized from 28 to 30 January by IALA and the Danish Maritime Authority on the Baltic Sea ferry *Pearl Seaways* and supported by the IHO, Nautical Institute (UK), CIRM, and the ACCSEAS Project. The focus of the Conference was on "*waypoints beyond the e-Navigation strategy implementation plan (SIP)*" and was attended by representatives from national maritime administrations, hydrographic offices (Denmark and France), industry and international organizations.

The meeting commenced with the signing of a Memorandum of Understanding (MoU) between the Danish Maritime Authority, the Swedish Maritime Administration and the Ministry of Oceans and Fisheries of the Republic of Korea with a focus on *"sharing a common interest in the establishment of a global e-Navigation test bed and wishing to use this e-Navigation test bed for purposes related to the testing and demonstration of e-Navigation related services and infrastructure …*"

The signing of the MoU was an important milestone in the establishment of global test beds which will facilitate long term benefits for maritime safety, the protection of the marine environment and more efficient maritime operations on-board vessels and ashore.

IALA held its quadrennial Conference in A Coruña, Spain from 25 to 31 May. A number of national Hydrographers who have responsibility for aids to navigation in their countries were at the Conference. President Robert Ward represented the IHO at the opening of the Conference, which was also attended by the Secretary-General of the IMO, Mr Koji Sekimizu. In his speech, Mr Sekimizu laid particular emphasis on the key roles that IMO, IHO and IALA play in maritime affairs. In particular, he highlighted the valuable input that IHO and IALA have made to the IMO's e-Navigation concept and the increasing levels of cooperation between the three organizations - especially for capacity building activities under the UN concept of "delivering as one".



IALA Secretary-General Gary Prosser, IMO Secretary-General Koji Sekimizu and the IHO President

The national delegates met as a General Assembly during the Conference to review and approve IALA's operations, finances and programme. A particularly important decision was taken to continue to progress work towards elevating the status of IALA to become an inter-governmental organization. In that context, the successful operation of the IHO was cited regularly in support of the proposal.

The IHB continued to lend support and give advice to the IALA secretariat concerning the IALA World Wide Academy (IALA-WWA). The Academy is, in effect, the IALA Capacity Building Programme. It is modelled, in large part, on the IHO CB Programme and experience.

Representatives from the IALA-WWA participated in a number of the meetings of the RHCs during the year as well as various cooperative capacity building activities with the IHO and IMO.

Task 1.1.9 International Association of Ports and Harbours (IAPH)

There was no communication between the IHB and International Association of Ports and Harbours (IAPH) in 2014.

Task 1.1.10 International Cartographic Association (ICA)

The IHO did not participate in any events or activities organized directly by ICA in 2014.

Task 1.1.11 International Electrotechnical Commission (IEC)

The IEC Technical Committee 80 is responsible for the preparation of standards for maritime navigation and radiocommunication equipment and systems. These standards are produced in order that the performance standards of IMO, and other relevant international organizations, can be verified.

The Transfer Standard Maintance and Apllications Development Working Group (TSMAD) and the Digital Information Portrayal Working Group (DIPWG) liaised with the IEC Technical Committee 80 (IEC-TC80) through the IHB. IEC-TC80 is responsible for the maintenance of the IEC 61174 standard. IEC 61174 is the testing standard used for ECDIS type-approval. The following IHO standards are all normative references in IEC 61174: S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*, S-57 - Appendix B.1 - *ENC Product Specification*, S-63 - *IHO Data Protection Scheme* and S-64 - *IHO Test Data Sets for ECDIS*.

Task 1.1.12 International Maritime Organization (IMO)

The excellent levels of liaison and cooperation with the IMO Secretariat continued in 2014. The members of the respective secretariats communicated regularly and effectively on all matters of mutual interest, covering such things as technical issues related to the continuing development of the e-Navigation concept, the IMO International Code for Ships Operating in Polar Waters, implementation of ECDIS as a carriage requirement, Capacity Building programmes, and the World-Wide Navigational Warning Service (WWNWS).

IMO meetings attended by the IHB included the 93rd and 94th sessions of the Maritime Safety Committee (MSC); the 1st session of the Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR); the 1st session of the Sub-Committee on Ship Design and Construction (SDC); and the 64th session of the Technical Cooperation Committee (TC).

- **Maritime Safety Committee**

The Maritime Safety Committee is the highest technical body of the International Maritime Organization. The functions of the MSC are to consider matters concerned with aids to navigation, construction and equipment of vessels, manning from a safety standpoint, rules for the prevention of

collisions, handling of dangerous cargoes, maritime safety procedures and requirements, hydrographic information, log-books and navigational records, marine casualty investigations, salvage and rescue and any other matters directly affecting maritime safety.

Mr Koji Sekimizu presents Captain Andreas Kristensen with the certificate for Exceptional Bravery at Sea on behalf of his crew of the Britannia Seaways, for their courage and determination in fighting explosions and fire on board the vessel, at great risk.

The 93rd session of the IMO Maritime Safety Committee (MSC 93) was held at the IMO Headquarters in London from 14 to 23 May. The President and Assistant Director David Wyatt represented the IHO.

MSC 93 approved in principle the proposed text of the International Code for Ships Operating in Polar Waters (the Polar Code) prepared by the Polar Code Working Group. The text submitted by the IHO and co-sponsored by Australia and New Zealand referring to the poor state of charting in the Polar Regions and the additional precautions necessary to mitigate some of the risks was included in the Polar Code Preamble and Part 1-B chapter 10 with minor amendments.

The 94th Session of the IMO Maritime Safety Committee (MSC 94) was held at the IMO Headquarters in London, UK, from 17 to 21 November. The President and Assistant Director David Wyatt represented the IHO.

MSC 94 approved and adopted the text of the mandatory International Code for Ships Operating in Polar Waters (the Polar Code) and a new chapter XIV to SOLAS. MSC 94 also approved an MSC Circular that announced the revised Joint IMO/IHO/WMO Manual on Maritime Safety Information (IHO publication S-53), which will come into force on 1 January 2016.

MSC 94 addressed various matters related to hydrography and nautical charting including those resulting from the 1st session of its Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR 1) which had met in July. The main items of interest to the IHO included adopting and amending a number of new and existing routing measures, traffic separation schemes, and mandatory ship reporting systems and further progress on the e-Navigation concept.

MSC94 in plenary session

MSC 94 approved an IMO e-Navigation Strategy Implementation Plan (SIP). The MSC supported the proposals contained in the paper MSC 94/18/8 co-sponsored by a number of IMO Member States, the IHO and a number of non-governmental international organizations. The paper sought the continuing monitoring of the implementation of e-Navigation by the IMO.

- **Sub-Committee on Navigation, Communications, and Search and Rescue**

The Sub-Committee on Navigation, Communications, and Search and Rescue (NCSR) was established as a subordinate body of the Maritime Safety Committee under a new committee structure implemented on 1st January. NCSR was the result of the merger of the former Sub-Committees on Safety of Navigation (NAV) and Radiocommunications and Search and Rescue

(COMSAR). Its functions are to consider technical and operational matters related to the obligations of Governments and operational measures related to safety of navigation. These include: hydrographic and meteorological services, ships' routeing, ship reporting systems, aids to navigation, radio-navigation systems, vessel traffic services, and pilotage; operational requirements and guidelines relating to navigational safety and associated issues, such as regulations for the prevention of collisions and groundings, bridge procedures, voyage planning, avoidance of dangerous situations, places of refuge (including maritime assistance services and relevant aspects of maritime security), carriage requirements, performance standards and operational guidelines for the use of shipborne navigational equipment and other navigational requirements; obligations of Governments and operational measures related to the Global Maritime Distress and Safety System (GMDSS), development and maintenance of the global Search and Rescue (SAR) Plan and the Long Range Identification and Tracking (LRIT) system; operational requirements and guidelines relating to radiocommunications and search and rescue, and, in cooperation with the International Civil Aviation Organization (ICAO), the harmonization of aeronautical and maritime search and rescue procedures; carriage requirements, performance standards and operational guidelines for the use of shipborne radiocommunications and search and rescue equipment; and liaison with the International Telecommunication Union (ITU) on maritime radiocommunication matters.

The 1st session of the Sub-Committee (NCSR 1) was held at the IMO Headquarters in London at the end of June. The IHO was represented by Director Gilles Bessero and Assistant Directors Anthony Pharaoh and David Wyatt, Mr Peter Doherty, the Chair of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC), and Mr Chris Janus, Branch Chief, NGA Maritime Watch - NAVAREA IV/XII. Several heads and representatives of Hydrographic Offices also attended the meeting as part of their national delegation.

A packed IMO NCSR 1 Plenary in session

NCSR 1 approved several new or amended Traffic Separation Schemes (TSS) and Routeing Measures which were forwarded to the MSC for adoption at its 94th session. The IHO made a statement noting that not all submissions followed the guidance laid out by the IMO, and requested the Sub-Committee to remind IMO Member States to properly consider the state of hydrographic surveys and nautical charts in areas covered by proposed new or amended routeing measures.

NCSR 1 endorsed the draft e-Navigation strategy implementation plan prepared by a Correspondence Group for submission to the MSC. It noted the progress in the development of associated guidelines and tasked a new Correspondence Group to finalize and consolidate the draft guidelines for its next session.

The Sub-Committee approved the draft amendments to the Joint IMO/IHO/WMO Maritime Safety Information (MSI) Manual prepared by the WWNWS-SC.

The NCSR considered the consolidation of ECDIS-related IMO Circulars and ECDIS matters related to the implementation of the carriage requirements in SOLAS Regulations. The Sub-Committee endorsed the draft MSC Circular on *ECDIS - Guidance for good practice* and agreed to forward it to the Sub-Committee on Human Element, Training and Watchkeeping (HTW) for review prior to consideration and approval by the MSC. The Sub-Committee considered that no additional work was required on ECDIS related matters beyond that which was already underway and reported in IHO submissions.

The NCSR endorsed the draft outline of the detailed review of the GMDSS for further work by an intersessional Correspondence Group on the review and modernization of the GMDSS. The Sub-Committee agreed that the process should include requesting advice from other international organizations, particularly the IHO and the World Meteorological Organization (WMO).

- **Sub-Committee on Ship Design and Construction**

IMO SDC 1 Polar Code Working Group in session

The Sub-Committee on Ship Design and Construction (SDC) is a subordinate body of the Maritime Safety Committee. The functions of the SDC are to consider technical and operational matters related to: design, construction, subdivision and stability, buoyancy, sea-keeping and arrangements, including evacuation matters, of all types of ships, vessels, craft and mobile units covered by IMO instruments; testing and approval of construction and materials; load line matters; tonnage measurement matters; safety of fishing vessels and fishermen; and survey and certification. The SDC had been tasked with coordinating the development of a mandatory code for ships operating in Polar waters, including inputs and submissions from other IMO committees and sub-committees. The 1st session of the Sub-Committee on Ship Design and Construction (SDC 1) was held at the IMO Headquarters in London from 20 to 24 January. Assistant Director David Wyatt represented the IHO.

SDC 1 considered one submission by the IHO that referred to the poor state of charting in the Polar Regions and the additional precautions necessary to mitigate some of the risks. The IHO submission received broad support from IMO Member States and non-Governmental Organizations. The proposed contents for inclusion under Sources of Hazards in Part 1-A of the draft Code were agreed without alteration.

- **Technical Cooperation Committee**

The IMO Technical Cooperation Committee (TC) oversees the IMO Technical Cooperation programme that seeks to help developing countries improve their ability to comply with international rules and standards relating to maritime safety and the prevention and control of maritime pollution. The programme gives priority to technical assistance programmes that focus on human resources development and institutional capacity-building. The 64th session of the IMO Technical Cooperation Committee (TC 64) was held at the IMO headquarters from 11 to 13 June. The IHO was represented by Assistant Director Alberto Costa Neves.

Mr Koji Sekimizu (left), IMO Secretary-General and Assistant Director Alberto Costa Neves during IMO TC64

The IHO informed the Committee of the IHO Capacity Building Work Programme, including the training courses and technical visits made since the last session of the TC. The IHO highlighted the activities jointly carried out by the IMO and the IHO, including training and a sub-regional seminar organized by the Maritime Organization of West and Central Africa (MOWCA), in cooperation with the Eastern Atlantic Hydrographic Commission (EAtHC) and the IHB.

During the introduction of the Integrated Technical Cooperation Programme Annual Report for 2013, the Committee acknowledged the in-kind support of the IHO in providing experts, logistical arrangements, administrative support and co-organization.

TC64 provided the opportunity for the IHO representative to meet and progress the planned joint activities with representatives of maritime administrations, regional organizations and members of the IMO Technical Cooperation Division.

Task 1.1.13 International Maritime Pilots Association (IMPA)

No formal activities took place between IHO and IMPA during the year. Nevertheless contact was maintained through informal meetings between the staff of the secretariats of the two organizations. This took place primarily at various meetings held by the IMO, where both IHO and IMPA were represented.

Task 1.1.14 Intergovernmental Oceanographic Commission (IOC)

Cooperation between the IHO and the Intergovernmental Oceanographic Commission (IOC) of UNESCO takes place at several levels. The detailed work of the IHO-IOC GEBCO programme falls under IHO Programme 3 and is described later in this report. Liaison with the Joint Technical Commission of the World Meteorological Organization (WMO) and the IOC for Oceanography and Marine Meteorology (JCOMM) is reported under task 1.1.19. Representation at the 47th Executive Council of IOC and liaison with the IOC Secretariat are reported on here.

The 47th Session of the Executive Council of the IOC met in Paris, France from 1 to 4 July under the chairmanship of Dr Sang-Kyung Byun (ROK). The 40 Member States of the IOC which are members of the Executive Council were represented, plus 12 other States and several international organizations. Among the delegations, the Hydrographers of the following IHO Member States were present: Brazil, Canada, Germany and Russian Federation. The IHO was represented by Director Mustafa Iptes.

Dr Wendy Watson-Wright, the Executive Secretary of the IOC, reported on the progress of the programme implementation since the previous session as well as on the budget situation. She emphasized that IOC had undergone another difficult year with a decrease in the budget accompanied by a restructuring of the Secretariat. The future of the IOC and strategic developments including an “International Polar Partnership Initiative” were also examined at the meeting.

A proposal to revise the Terms of Reference and Rules of Procedure for the Joint IHO-IOC GEBCO Guiding Committee was submitted to the IOC Council. The revisions were intended to improve governance of the GEBCO Project and engagement by the IHO and the IOC, as co-owners and parent organizations of the GEBCO Project. Director Iptes confirmed IHO’s support for the proposed revision in addition to positive comments from several IOC Member States. However, some IOC Member States felt that insufficient time had been available to review the proposed

changes in advance and they requested more time. As a result, the Council decided to seek comments from IOC Member States and present them for consideration at the 28th Session of the IOC Assembly in June 2015.

The opening of the 47th Session of the Executive Council of the IOC

Task 1.1.15 International Organization for Standardization (ISO)

The IHO has for a long time been a liaison member of ISO Technical Committee 211 *Geographic information/Geomatics* (TC211) and participates in its standards development activities. The work of ISO TC211 is directly relevant to HSSC and its working groups. ISO TC211 is responsible for the development of the ISO19100 series of standards for geospatial information upon which the IHO S-100 framework standard and the supporting IHO Geospatial Information Infrastructure Registry is based.

The IHO, through the work of the IHB and input from the Marine Spatial Data Infrastructure Working Group (MSDIWG), cooperated with the Open Geospatial Consortium (OGC) and ISO TC211 to develop a combined report on the implementation and adoption of standards for the global geospatial information community. This was presented to the 4th session of the *UN Committee of Experts on Global Geospatial Information Management* (UN-GGIM) (see also Task 1.1.18)

- **ISO TC211**

The 38th meeting of ISO TC211 took place in Berlin, Germany in June. The meeting was hosted by the German Institute for Standardization (DIN) and was sponsored by the Federal Agency for Cartography and Geodesy and the Bavarian Administration for Surveying and Mapping. The IHO was represented by Barrie Greenslade (TSMADWG Chairman), Sue Marks (UKHO) and Assistant Director Anthony Pharaoh (IHB).

The following two new projects of relevance to IHO standards development activities were approved and added to the programme of work:

- A new edition of the 19107 standard, dealing with spatial schemas is to be produced. The target date for the publication of this document as an International Standard is May 2018.
- A new standard (19157-2) which will include an XML schema implementation of ISO 19157 standard dealing with data quality will be produced. The target date for publication is May 2016.

The following documents were approved for publication as Draft International Standards: 19162 - *Well known text representation of coordinate reference systems*; and 19160-1 Addressing – Part 1: *Conceptual model*.

The IHO representatives participated in the work item activities dealing with the 19107 standard development, the work on imagery and coverage types, the development and implementation of a registry for geodetic codes and parameters, and the "Standards in Action" workshop.

The Standardization Administration of China and the National Administration of Surveying, Mapping and Geoinformation of China hosted the 39th meeting of ISO TC211 which took place in Shenzhen, China in November. Assistant Director Anthony Pharaoh represented the IHO.

A new project on the preservation of digital data and metadata (NP19165) was approved at the meeting and added to the programme of work. The meeting also agreed that a revision of the standards guide and companion document produced jointly by ISO TC211, the Open Geospatial Consortium (OGC) and the IHO under the aegis of the United Nations Committee of Experts on Global Geospatial Management (UN-GGIM) should be undertaken.

A "Standards in Action Workshop" took place during the meeting. The workshop included presentations on the following subjects: Standardization requirements for address and their labels on maps at different scales; Global land cover information service - Status and Directions; Web maps in practice; the OGC in Action; Update and New Trends in Standards Development and The Status of Imagery Standards.

Task 1.1.16 Joint Board of GIS (JB-GIS)

The JB-GIS comprises the heads of the secretariats or executive committees of a number of international organizations concerned with geospatial information. The purpose of the JB-GIS is to provide, where possible, a collective and unified voice at the international level regarding geospatial affairs, especially to the United Nations and to other global geospatial information stakeholders. Its second goal is to assist in the coordination of relevant activities between the organizations represented by the members of the JB-GIS.

The President represented the IHO at the annual meeting of the JB-GIS, held in New York in August in the margins of the meeting of the UN-GGIM (see Task 1.1.18).

The Board reviewed the progress that had been made; in particular, the success in raising the profile of the participating organizations in the UN-GGIM.

Task 1.1.17 NATO Geospatial Bodies

The Defence Geospatial Information Working Group (DGIWG) is the North Atlantic Treaty Organization (NATO) Working Group tasked with progressing geospatial standardization across the defence organizations of its Member States. The IHO and DGIWG have a cooperation agreement and have parallel, and, in some areas, overlapping standards development activities. Like the IHO, the latest DGIWG standards are based on the ISO 19100 series of standards.

The IHO, through the TSMAD Working Group, maintained a watch on the work of DGIWG to ensure interoperability between standards wherever possible.

Task 1.1.18 United Nations Organization (UN)

In addition to liaison and cooperation with the IMO and IOC, which are bodies of the UN, the IHO also enjoys observer status at the UN General Assembly and participates in various UN bodies whose secretariat is at the UN Headquarters in New York.

- **UN-GGIM**

The UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) seeks to advance international cooperation in geospatial information management by making accurate and authoritative geospatial information readily available, particularly in support of advancing sustainable development. The principal purpose of the UN-GGIM is to play a leading role in setting the agenda for the development of global geospatial information management and to promote the use of geospatial information in addressing key global challenges. The UN-GGIM reports to the UN General Assembly via the UN Economic and Social Council (ECOSOC). ECOSOC has instructed the UN-GGIM to work according to a five-year programme and to provide its first report in 2016.

The work of the UN-GGIM is of relevance to the IHO, particularly in relation to the continuing development of spatial data infrastructures around the world, and the role that IHO Member States can play in the provision of fundamental geodata and information covering the maritime domain.

The 4th session of the UN-GGIM took place at the UN Headquarters in New York, USA from 6 to 8 August. It was preceded by several associated meetings including the 21st meeting of the International Steering Committee for Global Mapping (ISCGM – see task 1.1.20).

Over 80 UN Member States were represented at the 4th session of the UN-GGIM together with representatives from nearly 20 international organizations, including the IHO. President Robert Ward represented the IHO.

A number of the agenda items included topics of direct relevance to IHO Member States, particularly in relation to the contribution of hydrographic data and services to national and regional spatial data infrastructures.

The Committee agreed to further work by its appointed working group on establishing a global geodetic reference frame. This work is being done in close association with the International Association of Geodesy. The Committee noted that the vertical component of a global geodetic reference frame was particularly relevant to hydrography and the Committee of Experts welcomed input from the IHO.

Dr Vanessa Lawrence (UK), one of the three Co-Chairs of UN-GGIM, introduces the 4th session of the Committee

The Committee accepted the combined report on the implementation and adoption of standards for the global geospatial information community prepared by the Open Geospatial Consortium (OGC), the International Organization for Standardization (ISO) and the IHO (see task 1.1.15). The Committee agreed that the report will be adopted as a UN-GGIM reference document in due course.

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The 4th session of UN-GGIM was attended by the greatest number of UN Member States so far, though very few delegations included representatives of hydrographic offices. Of particular importance for IHO Member States is the growing acknowledgement and awareness by UN-GGIM delegates of the relevance and the potential contribution of hydrographic information in the context of global geospatial data infrastructures. This places even greater relevance on the continuing work of the IHO Marine Spatial Data Infrastructure Working Group (MSDIWG) and its task in assisting Member States in their role as custodians of national hydrographic data sets and their obvious part in national and global spatial data infrastructures. It also emphasises the importance of the IHO-IOC GEBCO project as a fundamental part of the global geospatial information infrastructure.

- **3rd High Level Forum on UN Global Geospatial Information Management**

The 3rd High Level Forum on UN Global Geospatial Information Management took place in Beijing, China, from 22 - 24 October. The forum was organised by the Secretariat of the UN-GGIM, in collaboration with the National Administration of Surveying, Mapping and Geoinformation of China at its headquarters in Beijing.

The Plenary Session of the High Level Forum in Beijing

The Forum was organised under the mandate from ECOSOC to convene global forums to promote comprehensive dialogue on global geospatial information management with all relevant governments, non-governmental organizations and the private sector. The event followed on from the 2nd High Level Forum conducted in Qatar in 2013.

The overarching theme of the 3rd High Level Forum was "*Sustainable Development with Geospatial Information*". The forum concentrated on the critical roles of geospatial information science, and technology and innovation, as tools that support the UN's three pillars of sustainable development - *economic*, *social* and *environmental*.

The High Level Forum opened with a Ministerial Segment. The Forum addressed the role of geospatial information in the UN's post-2015 development agenda, as well as current critical sustainable development issues such as: mitigating and managing climate change and disasters; sustainable cities and human settlements; science, technology, and innovation to measure and monitor progress; and working together across borders and regions.

44 UN Member States were represented at the forum, of which 30 were also IHO Member States'. Regrettably only one representative from a national Hydrographic Service was present, in this case only because hydrography is also part of that country's land geodata organization. It was apparent that other national delegations had not been briefed on hydrography and the role that hydrography should play in spatial data infrastructures. Representatives from eight other UN bodies, 15 international organizations including the IHO and 12 private sector organizations or companies were also present. President Robert Ward represented the IHO.

In addition to receiving very informative briefs on the current and future requirements for and potential of geospatial information, the UN-GGIM forum was shown that crowd-sourced or volunteer

geospatial information can be both valid and authoritative if collected and managed properly and that it was a vital resource that cannot be ignored.

The President addresses the 3rd HLF in Beijing

President Ward provided the forum with a description of the work of the IHO during the session on "*working together across borders and regions*". He drew attention to the successes of the IHO and its Member States in the worldwide adoption of standards both for service delivery and for data exchange, and the benefits of regional coordination and capacity building through the establishment of the Regional Hydrographic Commissions. It is notable that, unlike the IHO, the UN-GGIM has only recently embarked upon a regional approach for the coordination of land based geospatial information management.

President Ward finished his presentation by highlighting that in many countries there is only limited contact and coordination between the national hydrographic service and the land-based government geodata organization and that this is an impediment to working together to ensure that both land and sea data are part of any national spatial data infrastructure. He encouraged the UN delegates to involve their national Hydrographers in future UN-GGIM considerations and activities.

- **United Nations International Strategy for Disaster Reduction (UNISDR)**

The reduction of vulnerabilities and risks to hazards has been an explicit item on the agenda of the international community for almost a quarter of a century. At the initiative of the UN General Assembly, an International Decade for Natural Disaster Reduction was launched on 1 January 1990. The 1st World Conference on Natural Disaster Reduction met in Yokohama, Japan, in 1994 and adopted the Yokohama Strategy and Plan of Action for a Safer World: Guidelines for Natural Disaster Prevention, Preparedness and Mitigation. In 2005, the 2nd World Conference on Disaster Reduction met in Kobe, Japan, and adopted the Hyogo Framework for Action 2005-2015 (HFA): *Building the Resilience of Countries and Communities to Disasters*. The UN General Assembly, in its Resolution 66/199 of 22

December 2011, initiated, via the UN secretariat of the International Strategy for Disaster Reduction (UNISDR), the development of a post-2015 framework for disaster risk reduction. The Assembly, in its Resolution 67/209 of 21 December 2012, decided to convene the 3rd World Conference on Disaster Risk Reduction in 2015 to review the implementation of the Hyogo Framework for Action and to adopt a post-2015 framework for disaster risk reduction. By Resolution 68/211 of 20 December 2013, the Assembly decided to hold the Conference in Sendai, Japan, from 14 to 18 March 2015, at the invitation of the Government of Japan, and established "*the Open-ended Intergovernmental Preparatory Committee for the Third World Conference to review the organizational and substantive preparations for the Conference, approve the programme of work of the Conference and propose rules of procedure for adoption by the Conference*". The Assembly further decided that the Preparatory Committee would meet in Geneva, Switzerland, in July and November 2014, for two days each time. Considering the recognition by the Assembly of the importance of the contributions and participation of all relevant stakeholders, including intergovernmental organizations, and the opportunity to highlight the role and importance of surveying and charting the world oceans, seas and coastal waters in the prevention and mitigation of maritime disasters, and in line with the theme of this year's World Hydrography Day "*Hydrography - much more than just nautical charts*", the Directing Committee registered the IHO as a contributor to the preparatory process.

Director Gilles Bessero represented the IHO at the 1st session of the Preparatory Committee for the 3rd World Conference on Disaster Risk Reduction which was hosted by the UN Office in Geneva on 14 and 15 July. The session attracted more than 600 registered participants representing more than 130 UN Member States, 20 intergovernmental organizations, UN programmes, funds and agencies, and the civil society.

The session was composed of plenary meetings and two sets of parallel meetings: three “dialogues” of the co-chairs with the so-called “major groups” (Non-Governmental Organizations, Women, Local Authorities, Children and Youth, Indigenous Peoples, Farmers, Business and Industry, Scientific and Technological Community, Workers and Trade Unions) and three “technical workshops” on: indicators, monitoring and review process for the post-2015 framework; investing in disaster risk reduction; mutual reinforcement of disaster risk reduction (DRR), sustainable development goals (SDGs) and climate change.

The main agenda item of the plenary meetings was devoted to considerations on the post-2015 framework for disaster risk reduction. In his statement on behalf of the IHO, Director Bessero recalled that the reduction of risks related to marine disasters is a major component of disaster risk reduction and highlighted the fundamental role of hydrography in predicting the impact of marine disasters and supporting early warning systems. He noted the decreasing level of government sponsored surveying activities and advised that the very significant lack of reliable, high resolution bathymetric data for many parts of the world’s coastal waters should be a cause of particular concern and should be taken into account in the international strategy for disaster reduction. The importance of earth observations as an enabling component of disaster risk reduction was underlined in the statement of the Group on Earth Observations (GEO) but very few other delegations referred to the need to collect and make available the appropriate geospatial data to support informed decisions on disaster risk reduction.

Considering that the negotiation process was driven and controlled by Member Governments, the Directing Committee urged IHO Member States to liaise with and brief their national delegations to the Preparatory Committee. The Directing Committee also invited the Chairs of the Regional Hydrographic Commissions to consider providing input through the regional platforms for disaster risk reduction (further details in IHO CL 53/2014).

- **United Nations Division for Ocean Affairs and Law of the Sea (UN DOALOS)**

In its contribution to the annual report of the UN Secretary General on Oceans and Law of the Sea, the Directing Committee recalled that hydrography was an essential foundation to the development of the Blue Economy and noted that the lack of adequate survey data was impeding progress and economic development in many, if not most, States. The recommendations that all coastal States should be encouraged to ensure that their seas and coastal areas were properly surveyed and charted and that all coastal States should consider membership of the IHO as an important way to ensure that appropriate and effective national hydrographic services can be implemented in their waters, were reflected in the annual Resolution entitled “Oceans and the law of the sea” which was adopted by the UN General Assembly on 29 December.

Task 1.1.19 World Meteorological Organization (WMO)

The principal interaction between IHO and WMO is through the WWNWS Sub-Committee (WWNWS-SC) and through the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM). The progress of the WWNWS-SC is described under element 3.7. The JCOMM Expert Teams on Sea Ice and Maritime Safety Services made significant progress in the development of S-100 based product specifications, respectively S-411 - *Sea Ice* and S-412 - *MetOcean Forecasts*.

In addition, the IHO and the WMO cooperate in capacity building as partner organizations as reported under task 3.3.3. Informal liaison is also maintained at various IMO meeting in which IHO and WMO participate.

Despite the long and productive history of cooperation between the two organizations, there is no current formal recognition of this successful and continuing partnership. Following discussions between the Directing Committee and the WMO Secretariat, the Directing Committee proposed to Member States that the long-standing engagement and positive achievements be recognised through a Memorandum of Understanding (MoU) between the IHO and the WMO (further details in IHO CL 79/2014).

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Task 1.1.20 Other Organizations when their agendas have relevance to the programme of the IHO

- **Pan American Institute of Geography and History (PAIGH)**

IHO activity with PAIGH is centred on development activities underway in the Meso-American and Caribbean Hydrographic Commission (MACHC). Mr Paul Cooper represented PAIGH at the 15th meeting of the MACHC. A report of this meeting is included under Programme 3.

- **Group on Earth Observations (GEO)**

GEO, the "Group on Earth Observations", is a voluntary partnership of governments and international organizations. It was launched in 2003 in response to calls for action by the 2002 World Summit on Sustainable Development and by the G8 (Group of Eight) leading industrialized countries. GEO is coordinating efforts to build a Global Earth Observation System of Systems (GEOSS) in order to exploit the growing potential of Earth observations to support decision-making in an increasingly complex and environmentally stressed world. GEO's Members include 95 Governments and the European Commission. In addition, 89 intergovernmental, international, and regional organizations with a mandate in Earth observation or related issues have been recognized as Participating Organizations.

The IHO was recognized as a Participating Organization in 2006. GEO meets annually in plenary session. The strategic guidance is provided by a Ministerial Summit which takes place about every three years.

GEO Ministerial Summit in session

From 1 to 17 January GEO held a GEO-X Plenary and 3rd Ministerial Summit in Geneva, Switzerland. The main objectives of the meetings were to renew the mandate for GEO through to 2025 and to adopt high-level recommendations to guide the development of a second GEOSS Implementation Plan for the decade 2015-2025. More than 500 representatives from about 60 Members and 80 Participating Organizations and Observers took part in the proceedings. Director Gilles Bessero represented the IHO.

The meeting examined and approved the draft vision to 2025 and considered reports on monitoring, evaluation and implementation of recommendations from GEOSS evaluations. The meetings adopted the proposed update of the 2012-2015 Work Plan. Director Bessero highlighted the achievements of the IHO-IOC GEBCO Project, the contribution of the IHO and HOs to spatial data infrastructures and the development of the S-100 Universal Hydrographic Data Model and related standards.

The IHO statement supported the objective of improving global coverage and availability of earth observation data, products and services as a foundation for sustainable growth and drew attention to the inadequate status of hydrographic surveys and nautical charting in many parts of the world's coastal waters, and most of the world's seas and oceans. IHO statements also noted that the proposed strengthening of engagement with developing countries is in line with the development of the IHO Capacity Building Programme.

The view from the IHO desk at GEO-XI

The 11th Plenary Session (GEO-XI) was initially planned in Libreville, Gabon on 13 and 14 November. After consulting the Chairs of the Regional Hydrographic Commissions with African members, the IHB had accepted the offer of the then Chair of the Eastern Atlantic Hydrographic Commission, Ingénieur général Bruno Frachon, the Hydrographer of France, to represent the IHO at the meeting. Due to the low number of registered participants, the venue for the meeting was transferred to Geneva at short notice.

A draft "GEO Strategic Plan 2016-2025: Implementing GEOSS" was presented. The IHB had been requested at very short notice to contribute to this draft through a questionnaire. The Plenary agreed three major action areas: "Advocate", "Engage", "Deliver" and the relevant objectives. The Plenary requested further work to make the desired goals more visible and to distinguish, on the one hand, between a vision on GEO's place in its environment, which may include some options, and, on the other hand, a professional operating strategy which may require modifying GEO's legal status.

The Plenary approved the principle of revising the set of societal benefit areas identified in the plan. The United Kingdom, supported by the IHO representative, pointed out that significant economic activities such as transport were currently not included and should be taken into account. It was agreed that the set of societal benefit areas would be reviewed to better account for the communities of practice and the private sector.

Several countries, and the IHO representative, called for a more precise connection with ongoing United Nations initiatives and the work of agencies in the field of sustainable development, climate change and disaster risk reduction. With regard to governance, it was agreed to give greater prominence to participating organizations in the governance of the GEO in recognition of the importance of their roles, which may go as far as allowing them to participate in some way in the Executive Committee, provided that the intergovernmental status of GEO was not compromised. Finally, the voluntary nature of the Member States' contributions to GEO was reaffirmed. The need for a prioritisation scheme was confirmed.

The report on data sharing principles prepared by the GEO Data Sharing Working Group was considered by the Plenary, but its adoption was postponed to GEO-XII so as to take into account the observations received from external organizations (the IHO among others had not been consulted). However, it was obvious that many in the Plenary favoured open data and this was indicated to the working group. All GEO Member States who commented in the session supported the principle of open data, but it appeared that the level of content may vary; certain States wishing, for example, to maintain restrictions on use (pre-registration, limiting to non-commercial use, for example).

The assessment of progress in implementing GEOSS underlined the difficulty to maintain in-situ observing networks, noting the negative consequences for example on natural risk management. The need to define the specific role of GEO in relation to other specialized organizations or communities was mentioned several times.

The structure of AfriGEOSS and its activities were presented in detail. AfriGEOSS relies on national activities, coordinated along five themes: "Data & Infrastructure", "Capacity building", "Resource Contributors coordination", "User needs & Apps", "Communication & Outreach". The steering committee of AfriGEOSS is composed of representatives from Egypt, Senegal, South Africa and representatives from Central and Eastern Africa who remain to be nominated.

Several activities were illustrated, in particular, the contributions of AfriGEOSS to the World Conference on Disaster Risk Reduction, a project to process the data made available by the Spot World Heritage Programme, and work on pooling infrastructures with other activities.

Seychelles and Senegal have recently joined AfriGEOSS which is also supported by the European Union and other non-African GEO Member States. Some African Member States noted that the language barrier was hindering capacity building.

- **International Steering Committee for Global Mapping (ISCGM)**

The International Steering Committee for Global Mapping (ISCGM) was established in February 1996 to spearhead 'global mapping' in response to the call for urgent actions at the 1992 Earth Summit in Rio de Janeiro. Twenty years later, in 2012, the same call was repeated at the United Nations Conference on Sustainable Development (Rio+20). In its Outcome Document, '*The Future We Want*', the Rio+20 Conference made specific references to 'the relevance of global mapping', and called for reliable geospatial information for sustainable development policy-making, programming and project operations, and disaster prevention and mitigation.

The ISCGM has two key roles. It serves as the platform to advocate the importance of global mapping, foster the exchange of views, facilitate coordination, and provide recommendations. The ISCGM strives to develop a '*Global Map*', which it defines as a group of geographical data sets of known and verified quality which will be openly available for the use of governments, organizations and the public.

So far, the *Global Map* comprises various land-based datasets provided by national geospatial information authorities. The IHO has indicated the availability of data in the IHO Data Centre for Digital Bathymetry and the various bathymetric datasets available through the IHO-IOC GEBCO Project.

The 21st meeting of the ISCGM took place at the UN Headquarters in New York, USA on 5 August immediately prior to the 4th session of the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM).

Nearly 50 participants representing States, international organizations and industry attended the meeting. President Robert Ward represented the IHO and was the only hydrographer in attendance.

He provided a presentation on the lack of appropriate bathymetric data for many parts of the world's seas, oceans and coastal areas and the need to ensure a linkage between land and marine data in many national spatial data infrastructures.

- **The International Research Ship Operators (IRSO)**

The International Research Ship Operators (IRSO), which was founded in 1986, is an annual meeting of the fleet managers of ocean research ships. The purpose of the meeting is to discuss topics and share information of mutual interest. This includes discussion on new research vessels, marine scientific and ship operational equipment, changing scientific requirements, scheduling, manning, training, classifications and certifications, liabilities and insurance, and the exchange of equipment and the sharing of vessel and resources between members.

Assistant Director Wyatt explains the importance of hydrography to IRSO representatives

The meeting is held annually in one of the participating countries. The 27th meeting was held at the Ifremer Atlantic Centre in Nantes, France, from 9 to 12 September. The 55 participants represented the majority of the 100 research vessels, shore-based support companies, training organizations and administrative authorities that are part of IRSO. Assistant Director David Wyatt represented the IHO, as part of the IHO outreach activities.

The IRSO meeting discussed various topics, including the development of a code of conduct for marine scientific research vessels, a proposed code of conduct towards marine mammals and the IMO mandatory code for ships operating in Polar Waters (the Polar Code).

Assistant Director Wyatt gave a presentation on the IHO and its relevance to the IRSO. In particular he provided details of the trials and feasibility studies on crowd-sourced bathymetry. He stressed the importance of gathering bathymetric data at every opportunity both as part of a ship's passage and during on-station research projects. He urged that all bathymetric data collected should be submitted to national Hydrographic Offices, the IHO Data Centre for Digital Bathymetry (DCDB) or the British Oceanographic Data Centre to enable viewing and downloading.

- **Ad hoc Steering Group on an International Polar Cooperation Initiative**

The second meeting of the Ad hoc Steering Group on an International Polar Cooperation Initiative was held at the headquarters of the Intergovernmental Oceanographic Commission (IOC) at UNESCO in Paris on 10 and 11 February. President Ward represented the IHO, both as the Chair of the IHO Hydrographic Commission on Antarctica and as the IHB Observer to the Arctic Regional Hydrographic Commission. The World Meteorological Organization (WMO) and the IOC were both represented at the meeting together with the heads of a number of scientific organizations active in the polar and high altitude regions of the world.

The first meeting of the Ad hoc Steering Group had been held in April 2011 in Saint-Petersburg, Russia, to discuss what initiatives might follow on from the activities and progress that was made in polar science and research as a result of the International Polar Year. The IHO had not been represented at that meeting.

Members of the Ad hoc Steering Group on an International Polar Cooperative Initiative

The participants took note of a number of other international coordination and cooperative forums with similar aims to the group when it developed its outline concept for an international polar partnership. The partnership approach is being proposed by the ad hoc group as a way of providing a setting where activities can be coordinated by participants with common interests rather than operating as another high level administrative body.

IHO Member States' principal interest in supporting such an International Polar Alliance would lie in the opportunity to engage a much wider community in the collection of hydrographic information including bathymetry and water movement observations and in return making the existing hydrographic information as widely accessible as possible to the scientific community.

Element 1.2 Information Management

This element has continued to grow in importance. The increasing reliance of the IHO on digital technology for its communications, documentation, record keeping and coordination placed an ever greater emphasis on information management during the year.

Task 1.2.1 Maintain and Extend the IHO Website

The IHO website is a key functional area providing open access to almost all of the IHO's reference documents. From its start in 1998, the website has grown from about 30 pages giving access to about 400 documents, to its current 224 pages giving access to over 40,000 documents. As a result of continuing the policy of publishing bi-lingual (French and English) pages wherever possible, twelve separate single-language pages were amalgamated to become six bi-lingual pages. Even so, the total size of the website continued to grow.

The Joomla Content Management System, on which the web site is based, was upgraded in 2014. The physical server on which the web site is located was also upgraded.

The ten most popular web pages in 2014 were:

WEB PAGE	HITS
Welcome to IHO	679 381
Standards and Publications	119 493
Committees & WG	87 827
ECDIS Data Presentation and Performance Check	82 491
About the IHO - MS Information	79 084
International Hydrographic Conference	73 751
Letters & Documents	63 246
ENCs and ECDIS	58 266
Accueil - Bienvenue à l'OHI	35 965
About the IHO	35 640

Task 1.2.2 Develop IHO GIS and Web Server and Web Mapping Services

Most of the Geographic Information System (GIS) development work in 2014 was undertaken by the officers seconded from Japan and the Republic of Korea. A common harmonized data model was developed and it is anticipated that this will facilitate the provision of information as web catalogue layers showing such things as global ENC coverage, as well as other IHO information such as INT chart schemas and relevant information from IHO C-55 - *Status of hydrographic surveying and nautical charting worldwide*. The IHB extended the functions of the ENC web catalogue during 2014. The evaluation of an Esri-based GIS solution was initiated.

Task 1.2.3 Develop IHB Desktop Publishing Services

The IHB began to use Adobe® Indesign desktop publication software in 2014 to develop the capacity to maintain complex IHB publications such as S-4 - *Chart specification of the IHO*. Two IHB staff members were provided with introductory training.

Task 1.2.4 Hydrographic Publications for which there is no specific body in charge

Almost all IHO publications are created in-house using desktop publishing techniques. The bulk of documents are available in digital form and free of charge via the IHO website. Limited numbers of publications were printed and bound using the facilities at the IHB. The printed versions were produced primarily to provide as examples and references during technical and liaison visits.

A list of new or revised editions of IHO publications published in 2014 is shown in **Annex A**.

Task 1.2.5 Maintain and Extend IHB IT Infrastructure

The maintenance and development of the IT infrastructure is achieved through a combination of contract support arrangements, one dedicated member of staff and approximately a third of the time of an Assistant Director. Even so, resources are stretched to meet all the requirements.

The principal components of the IHB IT infrastructure comprises a standard office desktop computer environment; in addition, 17 physical and virtual internal servers used for the IHB Microsoft SharePoint-based document library, proxy services, network storage, mail services, accounting services, anti-virus services, backups, the Wi-Fi infrastructure, the IHB intranet and a Virtual Private Network (VPN) to enable Directors and Assistant Directors to access the IHB network while travelling. The IHB also maintains external internet servers to host the IHO website, the IHO S-100 Registry Server, Web Mapping Services and various testing web servers.

At the end of 2014 an external audit and evaluation of the IHB IT infrastructure was carried out by consultants. A report and recommendations were expected in early 2015.

The provision of IT support and services for the 5th Extraordinary International Hydrographic Conference required additional planning and resources during 2014. For the first time the IHB was able to provide full internet Wi-Fi access to Conference participants, both within the main conference area and reception / exhibition areas.

Task 1.2.6 Circular Letters

During the year, the IHB published 85 Circular Letters (CLs) and ten Conference Circular Letters in the English, French and Spanish languages. In addition, three Finance Circular Letters were published in English and French. A small number of CLs were distributed directly to recognised Non-Governmental International Organizations and certain industry stakeholder organizations because of the nature of their content; for example, those related to ECDIS. Almost half the Member States accessed CLs via email only rather than by post or fax. This is welcomed by the IHB since it reduces the administrative burden and the cost of postage.

Task 1.2.7 IHB Technical Library

The IHB technical library comprises bound manuscript copies of all significant IHO records, such as Conference Proceedings and Circular Letters, together with a comprehensive, albeit ad hoc, collection of reference books and periodicals on various topics related to hydrography and nautical charting.

Element 1.3 Public Relations

This element covers activities concerned with raising the profile of hydrography and of the work of the IHO.

Task 1.3.1 Relationship with the Government of Monaco and other Diplomatic Missions

- **Government of Monaco**

The relationship with the Government of Monaco remained excellent throughout the year. Notwithstanding the busy travel schedules of the Directing Committee and the officers from the Department of External Relations, informal meetings were held from time to time during the year to discuss progress on all matters of mutual interest. Members of the Directing Committee also met various diplomatic and government officers at functions and events hosted in Monaco by the Government or diplomatic missions in the Principality.

- **Other Diplomatic Missions**

On the occasion of a meeting in Paris, Director Bessero called on the Ambassador of Belgium in France and Monaco to discuss progress on the approval of the Protocol of Amendments to the IHO Convention.

Task 1.3.2 Compile and Publish the International Hydrographic Review

The International Hydrographic Review (IHR) is the principal peer-reviewed journal that records significant developments in hydrography and associated subjects. Two editions of the Review were published in 2014. November edition of the IHR was assigned to Baltic Sea Special Edition which was also distributed to participants at the EIHC-5. Obtaining suitable papers continued to be a struggle for the Editor. As in previous years, the input via the points of contact in RHCs was low.

Task 1.3.3 World Hydrography Day

World Hydrography Day was celebrated in Monaco with a reception at the IHB on 18 June. The theme for this year's celebration was "*Hydrography - much more than just nautical charts*" - highlighting the significant value of hydrography to all human activities that take place in, on or under the sea.

Local dignitaries, government and diplomatic representatives, and other invited guests were graced with the presence of HSH Prince Albert of Monaco. The celebration also received a significant boost with the presence of the French Navy surveying vessel *La Pérouse* (Commanding Officer Lieutenant Commander Christophe Thomassin) berthed in Monaco's main harbour, Port Hercule.

World Hydrography Day 2014 in Monaco in the presence of HSH Prince Albert II

The Hydrographer of France, Ingénieur général Bruno Frachon, also attended the celebration. In addition, the IHO was hosting a meeting of the IHO-IOC GEBCO Sub Committee on Undersea Feature Names (SCUFN), which enabled the immediate past Hydrographer of Japan, Mr Shin Tani, and the Deputy Hydrographer-General of Canada, Dr Kian Fadaie, to be present, together with the other members and observers of the Sub- Committee.

Task 1.3.4 Public Relations and Representational Activities

The IHB provided regular articles for inclusion in a dedicated page in the Hydro International magazine. Each article covered topical subjects considered of interest to the readership including the IHO's technical programme, work in the Polar Regions, World Hydrography Day, and the 5th Extraordinary International Hydrographic Conference. A number of the topics included in IHO Circular Letters were publicized as news items by Hydro International and other technical magazines and journals.

In addition to participation in events described elsewhere in this report, the IHB represented the IHO at a number of other events in 2014. In each case, the IHO representatives sought to highlight relevant aspects of the work of the IHO and its Member States.

- **Monacology 2014**

Monacology is an annual event held in Monaco and is aimed at raising school children's awareness about the environment and sustainable development. Monacology 2014 was held under the patronage of HSH Prince Albert II and HSH Princess Charlene of Monaco, and the Monaco Education Department, on Quai Antoine 1er, from 9 to 13 June, directly in front of the IHO Headquarters.

The IHB participated in Monacology for the second year running with an interactive display and stand. More than 340 pupils from local schools in Monaco and neighbouring France visited the IHO display and took part in activities guided by the IHB staff. Each visitor was able to discover the nautical charting dimension of one of the Adventures of Tintin, "*The Shooting Star*", or try their hand at completing a magnetic puzzle chart of the Mediterranean Sea. Each child received an IHO badge indicating they were a "Junior Hydrographer" in recognition of their efforts.

The IHO was honoured by a visit to its stand by HSH Prince Albert II during the inauguration of the event and Director Iptes explained the exhibits and activities related to Monacology. Monacology 2014 provided a good opportunity to raise public awareness of hydrography, to explain the role of the IHO to the local community and particularly to the younger generation. HE Michel Roger, Minister of State of Monaco, also visited the IHO stand on 13 June.

- **The French Maritime Academy**

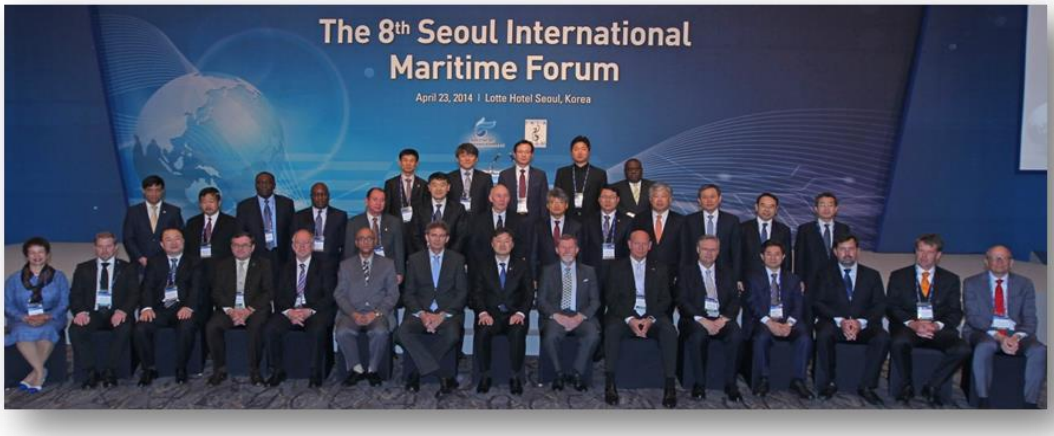
The French Maritime Academy, a scholarly society established to promote high level studies related to maritime activities, visited the Principality of Monaco in March on the occasion of one of its two annual field trips. The programme for the visit included a presentation about the International Hydrographic Organization and a presentation about the Institute of the Economic Law of the Sea of Monaco (INDEMER). Both presentations were made on 26 March at the IHB.

The French Maritime Academy visits the IHB

- **8th Seoul International Maritime Forum**

At the invitation of the Republic of Korea Ministry of Oceans and Fisheries, President Ward participated in the 8th Seoul International Maritime Forum in Seoul, Republic of Korea on 23 April. The theme of the Forum was e-Navigation. The forum was organised by the Ministry of Oceans and Fisheries in conjunction with the International Association of Marine Aids to Navigation and Lighthouse Authorities. Twelve invited speakers representing intergovernmental and international organizations, together with international and Korean experts, addressed the audience in three sessions, which included extensive panel discussions.

Of particular interest to the IHO, was the number of references speakers made about using the IHO S-100 standard in their various developments of e-Navigation functions.



International speakers and Korean experts at SIMF-8

- **CARIS 2014 - 15th International User Group Conference**

CARIS, a company well known in the hydrographic community for developing specialized geospatial software solutions, organizes a biennial User Conference to share experience and exchange on the latest technological trends and developments in data acquisition, processing and management with a variety of professionals from industry, academia and the public sector.

The 2014 edition of the User Conference took place in Brest, France, from 2 to 5 June and attracted more than 150 participants, including representatives of the following IHO Member States: Belgium, Brazil, Canada, France, Iceland, Netherlands, New Zealand, Norway, Portugal and United Kingdom. CARIS 2014 consisted of three components, a series of "boot camps" and user group meetings during the first two days, a plenary conference focusing on "developing the blue economy" during the last two days, in conjunction with an industry exhibition and a poster session. Director Gilles Bessero attended the conference as one of the three keynote speakers together with Ingénieur général Bruno Frachon, the Hydrographer of France, and Dr Wendy Watson-Wright, Executive Secretary of the IOC. In his closing keynote address, Director Bessero explained the role of the IHO in support of the blue economy and then reviewed the progress reported during the conference in relation to the issues relevant to the IHO. He concluded with an invitation for all participants to celebrate World Hydrography Day later in the month.

- **Professional Yachting Association (PYA)**

The PYA is an industry body for professional yacht crews and is recognised as an Observer Organization in the IHO. As part of outreach activities the IHB provided the venue for the annual Professional Yachting Association (PYA) Sea Changes seminar held in September in conjunction with the Monaco Yacht Show. The Seminar and associated training events were attended by over 100 participants representing yacht crews, shore-based support companies, training organizations and administrative authorities.

President Ward addressed the Seminar and provided a presentation on the IHO and its relevance to the yachting industry. He also provided details of the trials and feasibility studies on Crowd-Sourced Bathymetry (CSB), which were being undertaken in collaboration with Captain Andrew Schofield, President of the PYA and Master of *MY White Rose of Drachs* throughout the summer season.

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

This element concerns the future structure and organization of the IHO and its capacity to meet future requirements.

Task 1.4.1 IHO Strategic Plan and Performance Monitoring

Work on implementing the new strategic planning process and performance monitoring is progressing slowly. Obtaining the necessary input from the various IHO bodies through the Committee structure continued to be problematic, but is improving. There were still some significant shortfalls in obtaining relevant information from many Member States through the RHC's. Results for 2014 have been included in **Annex B** to this report.

The overall output of the IHO and IHB continues to remain at a high level. This is illustrated by the table of historical output statistics shown in **Annex C**.

Task 1.4.2 IHO Work Programme and Budget

The Work Programme and budget for 2014, based on the approved 5-year Work Programme and budget approved at the XVIIIth International Hydrographic Conference in 2012, were drawn up and approved by Member States in December (further details in IHO CL 61 & 74/2013). Progress on the work items contained in the 2014 Work Programme have been reported individually in this report.

The finances of the organization were managed in accordance with the approved budget and work plan for 2014. A budget surplus of 187,794.41k€ was declared at the end of the year. This represented a surplus of 3.55% of the approved budget. The full budget statement for 2014, recommendations and auditor's report are contained in Part 2 of this report.

A significant part of the budget is allocated to travel. This supports the travel expenses of Directors and IHB staff engaged on IHO activities. A list of IHB travel commitments is shown in **Annex D**.

Task 1.4.3 Conduct Biennial Stakeholders' Forums

The IHO took the opportunity of the Hydro 14 Conference organised by the International Federation of Hydrographic Societies (see task 1.1.6) to hold an IHO-led stakeholder forum - "*The IHO & Us*". Hydro 14 was the latest in the series of international events organized by the IFHS since 1976.

The theme of Hydro 14, "Energy and Enterprise", reflected the dominance of the offshore oil, gas and renewable energy sectors in the region. It attracted about 280 registered participants from over twenty countries, two-thirds of them from the UK. 75% of the registered participants came from the private sector, with the remainder being split between national hydrographic offices, port authorities and academia. Six IHO Member States were represented: Canada, Denmark, Finland, Germany, Netherlands and UK. Director Gilles Bessero represented the IHB.

The Conference featured presentations dealing with data management and integration, future developments, tidal and sea level monitoring, offshore exploration, standards, data quality and resilience, education and training, and subsea engineering surveying.

One session was devoted to an IHO-led stakeholder forum - "*The IHO & Us*".

Director Bessero spoke at the opening ceremony and chaired the IHO stakeholder forum which attracted about sixty participants. The discussions were facilitated by a panel of five experts, including Dr Mathias Jonas, Chair of the IHO Hydrographic Services and Standards Committee and Prof. Nicolas Seube, Chair of the FIG-IHO-ICA International Board on Standards of Competence for

Hydrographic Surveyors and Nautical Cartographers (IBSC). The forum addressed the role of the IHO and its relations with industry. Training issues were discussed in the forum as well as during a dedicated IBSC workshop.

Element 1.5 IHB Management

This element concerns ensuring that the IHB is able to provide the range of secretariat and other services required by Member States and relevant stakeholder organizations.

Task 1.5.1 IHB Administration

- **IHB Staff**

The Staff of the International Hydrographic Bureau (IHB) comprises 19 full-time positions. The Directors and four Assistant Director positions are drawn from international candidates. The remainder of the IHB positions are recruited locally. A list of the Directing Committee, IHB staff and their responsibilities during the year are set out in **Annexes E** and **F**. An organizational diagram is shown in **Annex G**.

Michel Huet

Assistant Director Yves Guillam joined the IHB in May as the replacement for Assistant Director Michel Huet, who retired in June after 25 years of service.

The part-time Capacity Building Assistant engaged under contract in July 2013 was re-engaged for a further year to help address the backlog of administrative and organizational tasks relating to the delivery of the IHO Capacity Building Programme. By the end of the year the backlog of work was significantly reduced and the contract terminated. The balance of administrative work related to the CB Programme will now be distributed among the permanent staff of the IHB and a further assessment of the workload involved in providing administrative support to the CB Programme will be made at the end of 2015.

- **Secondment of Personnel to IHB**

Two officers were seconded to the IHB Staff during 2014 under the terms of IHO Resolution 54/2008. Mr Jong-Yeon Park from the Korea Hydrographic and Oceanographic Administration replaced Mr Myung-Won Park in January. Mr Satoshi Yamao from the Hydrographic and Oceanographic Department of the Japan Coast Guard, who joined the IHB in 2011 continued to work at the IHB all year.

Mr Myung-Won Park was employed on a number of important areas that included maintaining the GEBCO Gazetteer of Undersea Feature Names, processing and analysing incoming results from the IHO ECDIS anomalies check data survey, liaison for capacity building activities sponsored by the ROK, and assisting with the maintenance of various IHO publications.

Mr Yamao continued his work on several geo-information databases that are intended to assist both the IHB and the RHCs in fulfilling their roles and a database that will simplify the production and maintenance of IHO Publication P-5 -*IHO Year Book* (see task 1.2.2).

- **S-63 Scheme Administrator and S-63 Support**

The IHB continued to carry out the role of administrator of the IHO S-63 Data Protection Scheme. This involves processing applications and providing technical support and the individual and unique digital certificates and codes that are required to allow ENC data servers, ECDIS/ECS manufacturers (OEMs) and software developers to encrypt and de-encrypt ENCs as part of the services or equipment that they provide. Three new Data Servers and 16 new OEMs were accepted in 2014. At the end of the year there were 45 data servers and 259 OEMs licenced to use S-63.

- **Training**

Several IHB members of staff received external training during the year covering:

- Training in the advanced features of the IHO financial administration software;
- Firefighting and security;
- Desk-top publishing.

Task 1.5.2 IHB Translation Service

The translation task in 2014 required particularly careful management. In addition to the normal translation tasks, all documents for the 5th Extraordinary International Hydrographic Conference required translation into the two official languages. As a result, there was little opportunity to address the significant backlog of active IHO publications that await translation into the French and Spanish languages. This situation was considered at the Conference, where it was accepted through Decision 2 that not all active IHO publications would be provided in both official languages in future unless resources permit.

Task 1.5.3 Commercial Support Contracts

In addition to the part-time Capacity Building Assistant, the IHB awarded contracts for assistance in the following areas:

- Development of the S-100 Portrayal Catalogue;
- Maintenance and documentation of the S-100 Registry;
- Development of S-100/S-101 test cases;
- Audit of the IHB IT arrangements;
- Verification service for Spanish translation;
- Editor of the International Hydrographic Review.

Task 1.5.4 IHB Staff Regulations.

No significant progress was made on the revision of the IHO Staff Regulations by the Staff Regulations Working Group (SRWG) established by Decision 18 of the XVIIth International Hydrographic Conference (IHC). The report of a consultant, engaged to compare the employment conditions of IHB staff with those of the United Nations system and the Monaco Civil Service was considered by the SRWG. This resulted in the recommendation of the SRWG at the 5th Extraordinary International Hydrographic Conference that the Directing Committee take the findings of the consultant and the previous work undertaken by the SRWG to develop a consolidated revised draft text of the Staff Regulations for further consideration by the SRWG and ultimately the Member States. This was agreed by the Conference as Decision 1.

Task 1.5.5 Maintenance of IHB Premises

Task 1.5.6 Maintenance of IHB Furniture and Fittings

The microphone system and the Wi-Fi installation in the IHB were upgraded during the year.

Element 1.6 International Hydrographic Conference

This element covers the organization, preparation and execution of International Hydrographic Conferences.

Task 1.6.1 5th Extraordinary International Hydrographic Conference

The 5th Extraordinary International Hydrographic Conference took place from 6 to 10 October at the Auditorium Rainier III in Monaco. The venue was provided through the continuing generosity of the Government of Monaco. *HMS Echo*, UK surveying ship, paid a port visit during the Conference.

The Conference was opened by HSH Prince Albert of Monaco. Among the welcoming speakers was Mr Koji Sekimizu, Secretary-General of the International Maritime Organization and Mr Mitsuyuki Unno, Executive Director of the Nippon Foundation of Japan.

Almost 300 representatives from 65 of the 82 Member States, two pending Member States and ten non-Member States were present. In addition, 30 representatives from observer international, regional or national organizations, including CIRM, FIG, IAATO, IALA, IAG and PAIGH, and more than 100 industry representatives took part in the discussions and in the exhibitions organized in parallel to the Conference.

Dr Mathias Jonas (Germany) and Rear Admiral K. R. Srinivasan (Saudi Arabia) were elected respectively President and Vice-President of the Conference.

The Conference considered reports, recommendations and proposals dealing with:

- the use of techniques and arrangements such as crowd-sourced bathymetry and satellite-derived bathymetry based on multi-spectral imagery to assist in alleviating the lack of modern survey data in many parts of the world's seas and oceans;
- the consolidation of the technical capacities of the Organization through a period of significant change resulting from the transition to digital navigation;
- the inevitable move from map production as the primary focus of Hydrographic Offices to the maintenance, management and operation of maritime spatial data infrastructures (MSDI), from which nautical charts and other services are derived;
- the revision of the IHO capacity building strategy with the aim of ensuring that all coastal countries can contribute to the safety of life at sea, to the protection of the marine environment, and to sustainable economic development of the seas and oceans.

The Conference approved 18 decisions including, the approval of the Finance Report for 2013 and the approval of the Work Programme and Budget for 2015.

A special "information session" took place during two consecutive half-days. It allowed invited stakeholders and representatives from the IHO's observer organizations to present their views and observations on a number of topical issues which are of interest and relevance to the IHO Member States. Four themes were considered, each introduced by three or four presentations followed by a question and answer period:

- the place of hydrographic data in a geospatial world;
- e-Navigation - its impact on the IHO and Member States;
- new and emerging technologies;
- capacity building.

In addition to the usual Industry Exhibition, which brought together nearly 30 companies and organizations, an IHO Capacity Building exhibition and poster celebration of ten years of Nippon Foundation IHO-IOC GEBCO scholars were arranged. A number of past scholars and alumni provided poster displays of their work since graduation throughout the period of the Conference.

WORK PROGRAMME 2
Hydrographic Services and Standards

Introduction

The IHO Work Programme 2 “Hydrographic Services and Standards” seeks to develop, maintain and extend technical standards, specifications and guidelines to enable the provision of standardised products and services that meet the requirements of mariners and other users of hydrographic information. This Work Programme is under the principal responsibility of the Hydrographic Services and Standards Committee (HSSC). The increasing and very important contribution being made by industry in their role as Expert Contributors, especially in the development of S-100 and its related applications, and in the maintenance of many other IHO technical standards was acknowledged by the 5th Extraordinary International Hydrographic Conference.

Element 2.1 Technical Programme Coordination

This element monitors technical developments and oversees the development of IHO technical standards, specifications and publications through the coordination and interaction of the relevant IHO working groups reporting to the HSSC. In 2014, 48 Member States, one IHB Director and all four Assistant Directors played an active role in this activity.

Task 2.1.1 Conduct annual meeting of HSSC

The 6th meeting of the Hydrographic Services and Standards Committee (HSSC-6) took place in Viña del Mar, Chile, hosted by the Hydrographic Office of Chile (Servicio Hidrográfico y Oceanográfico de la Armada - SHOA), from 10 to 14 November. 44 representatives from 18 Member States, six international organizations accredited as observers and the IHB were present. The final minutes of HSSC-6, together with all documents referred to at the meeting, are available (further details in IHO CL 07/2015).

HSSC in session

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The HSSC reviewed the activities, proposals, and work plans of its working groups and the decisions of other bodies and organizations affecting its work, with particular attention being paid to critical areas. The different outcomes are summarized in this report under the relevant tasks.

At its previous meeting in 2013, the Committee had agreed the principles for re-structuring its working groups in order to reflect the changing focus from paper to digital data based products and services, best use of limited resources, to improve its efficiency and facilitate inputs from industry and other stakeholders. The proposed new structure was further developed intersessionally and presented to HSSC-6 for final decision.

The Committee agreed on the implementation of a new structure including four new working groups (WG) which replace previously existing working groups: the S-100WG, ENC Standards Maintenance WG, Nautical Information Provision WG and Tides, Water Level and Currents WG. The terms of reference of the new working groups and the arrangements for the transition from the current to the new structure were agreed, further details in IHO CL 76/2014. The Committee agreed to maintain, under their current terms of reference, the Chart Standardization and Paper Chart WG, renamed the Nautical Cartography WG, the Data Protection Scheme WG and the Data Quality WG, subject to annual review and further consideration of their interactions with the new working groups.

The Committee adopted its Work Plan for 2015-2016.

The HSSC decided to retain its current five Working-level Performance Indicators (WPIs) until the next Conference/Assembly in 2017 when they will be reconsidered as part of the revision of the IHO Strategic Plan. Table 2 in **Annex B** summarizes the status of the WPIs on 31 December 2014.

Task 2.1.2 Provide technical advice and guidance on IHO technical standards, specification and publications

The main activities under this task dealt with the promotion of S-100 - *IHO Universal Hydrographic Data Model*. They are reported under the tasks associated with the relevant forum. The IHB responded also to a number of routine enquiries on other IHO technical publications, in particular S-63 - *IHO Data Protection Scheme*.

Element 2.2 Hydrographic Data Transfer Standards

This element addresses the developments related to transfer standards for digital hydrographic data, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2014, 17 Member States and 13 Expert Contributors participated in this activity.

Task 2.2.1 Conduct meetings of relevant HSSC WGs dealing with hydrographic data transfer standards

The 28th meeting of the Transfer Standard Maintenance and Application Development Working Group (TSMAD) was held in Sydney, Australia, from 31 March to 4 April, in conjunction with the 6th meeting of the Digital information Portrayal Working group (DIPWG) (see Element 2.3).

Joint TSMAD-DIPWG Meeting

Task 2.2.2 Maintain and extend the relevant IHO standards, specifications and publications

Significant progress was made in developing S-100 - *Universal Hydrographic Data Model* and S-101 - *ENC Product Specification*, through the efforts of all the contributors from IHO Member States and Industry active in TSMAD and DIPWG and the specific support of the Republic of Korea.

The draft edition 2.0.0 of S-100 was finalized and endorsed by HSSC. The changes introduced in the draft new edition aimed at improving the usability of S-100 for product specification developers. They included the portrayal model to be used to develop the IHO Portrayal Catalogue Builder, an additional encoding format - Geographic Markup Language (GML); the ability to implement codelists - which provides the ability to maintain lists of information that are common across different domains; and a template for S-100-based product specifications. The draft edition was to be submitted to IHO Member States upon completion of an impact study, as required by IHO Resolution 2/2007, as amended. Work continued on the development of a complementary guide book to assist product specification developers. An overarching test bed strategy was completed that would include nine major phases; the first one had been completed by the end of the year and the next two were in progress.

S-100 test bed strategy

No	Phase Name	Status	Comment
1A	Feature Catalogue Builder	Completed	• Development done by KHOA • S-100 Test Cases Written
1B	Portrayal Catalogue Builder	Completed	• Developed under IHB Contract • S-100 Test Cases Written
2	Simple Production Tool	In Progress	• S-57 to S-101 Convertor • Joint NOAA/Esri initiative
3A	Simple Viewer (ISO 8211)	In Progress	• S-100 Test Cases Written

3B	Simple Viewer (ISO 8211 +GML)	Not Started	• Initial Scoping Required
3C	Simple Viewer (ISO 8211 + GML + Gridded Data)	Not Started	• Initial Scoping Required
4	Preliminary Production Tool	Not Started	• Initial Scoping Required
5	Preliminary Data Validation and Packaging	Not Started	• Initial Scoping Required
6	Shore Based ECDIS	Not Started	• Initial Scoping Required
7	Full Production Tool	Not Started	• Initial Scoping Required
8	Data Validation and Packaging	Not Started	• Initial Scoping Required
9	Full ECDIS	Not Started	• Initial Scoping Required

On the basis of a statement of requirements provided by the TSMAD and in accordance with the decision of the 5th meeting of the HSSC, a development contract was awarded to the geospatial software solutions company IIC Technologies in May to create test cases for the S-100 feature catalogue builder, portrayal catalogue builder, and simple viewer and for the S-101 product specification. The contract was completed in September.

Most of the components of S-101 - notably, the main document, the data classification and encoding guide, and the feature catalogue - reached a baseline status, meaning that they were stable enough to be used for testing.

The HSSC agreed a new work item on the development of a new edition of S-102 - *Bathymetric Surface Product Specification* to address changes in the supporting Format Specification Document – Description of the Bathymetric Attributed Grid Object (BAG).

Edition 4.0.0 of S-57 - Appendix B.1 - Annex A - *Use of the Object Catalogue for ENC (UOC)*, edition 5.0.0 of S-58 - *ENC Validation Checks* and Supplement No 3 to S-57 endorsed by HSSC in 2013 were approved by the Member States and posted on the publication section of the IHO website (further details in IHO CL 46/2014). In accordance with the procedure agreed by the 5th meeting of the HSSC, the Committee endorsed by correspondence the draft edition 3.0.0 of S-64 - *IHO Test Data Sets for ECDIS* and the new edition was subsequently approved by the Member States (further details in IHO CL 81/2014).

The preparation of a new edition of S-66 - *Facts about Electronic Charts and Carriage Requirements* was initiated by a project team established in accordance with the instructions of HSSC. The draft new edition, reflecting the changes that have occurred since the first edition (January 2010), was expected to be available for review by mid-2015.

The Primar / IC-ENC Joint Technical Expert Working Group did not hold a meeting in 2014.

Task 2.2.3 Develop and maintain as-yet undefined S-100-based Product Specifications

See Element 2.13.

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Task 2.2.4 Maintain and extend S-100 Registry

The S-100 Geospatial Information Registry continued to be managed by Mr Barrie Greenslade, Chair of TSMAD, on a part-time basis, through the generous and continuing support of UK. In preparation for retirement of Mr Greenslade by the end of February 2015 and in accordance with the guidance provided by the HSSC, the IHB issued a call to Member States for proposals to resource the Registry Manager function (further details in IHO CL 77/2014).

In parallel to moving the Registry to a new server at the IHB, a number of security vulnerabilities were fixed using contract support assistance. The TSMAD developed a proposal related to the registration of product specifications which will require further changes to the Registry.

Task 2.2.5 Provide outreach and technical assistance regarding transfer standards

As reported under Task 1.1.2, progress with the development of S-101 was presented to the annual meeting of the Comité International Radio-Maritime. The S-100 framework was also promoted in the OGC-ISO-IHO report on the implementation and adoption of standards for the global geospatial information community presented to the UN Committee of Experts on Global Geospatial Information Management (UN-GGIM) (see Task 1.1.18).

In March, the IHB issued a letter to all IHO Stakeholders inviting them to consider and comment on the draft Master Plan for the development and implementation of S-100, the structure of which had been endorsed by HSSC in 2013. No input had been received by the end of 2014.

TSMAD and DIPWG members continued to liaise with IALA (see Task 1.1.8) and with the Expert Teams of JCOMM (see Task 1.1.19) to support their work on developing S-100-based product specifications.

Element 2.3 Nautical Cartography

This element addresses the developments related to nautical cartography for paper nautical charts and the colours, symbols and display rules used to show System ENC (SENC) information on ECDIS, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2014, 29 Member States and 15 Expert Contributors participated in this activity.

Task 2.3.1 Conduct meetings of relevant HSSC WGs dealing with nautical cartography

The 10th meeting of the Chart Standardization and Paper Chart Working Group (CSPCWG) was hosted by Land Information New Zealand (LINZ) in Wellington, from 21 to 24 January. A short meeting of the Sub-Working Group responsible for INT1 - *Symbols, Abbreviations and Terms used on Charts* was also held on this occasion.

10th CSPCWG meeting

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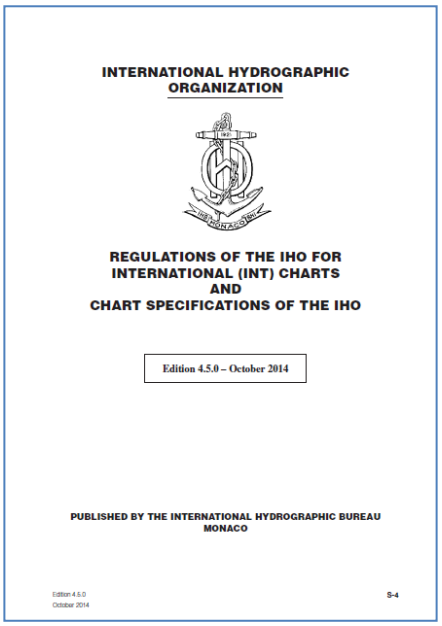
The 6th meeting of the Digital Information Portrayal Working Group (DIPWG) was held in Sydney, Australia, from 31 March to 4 April, in conjunction with the 28th TSMAD meeting (see Element 2.2).

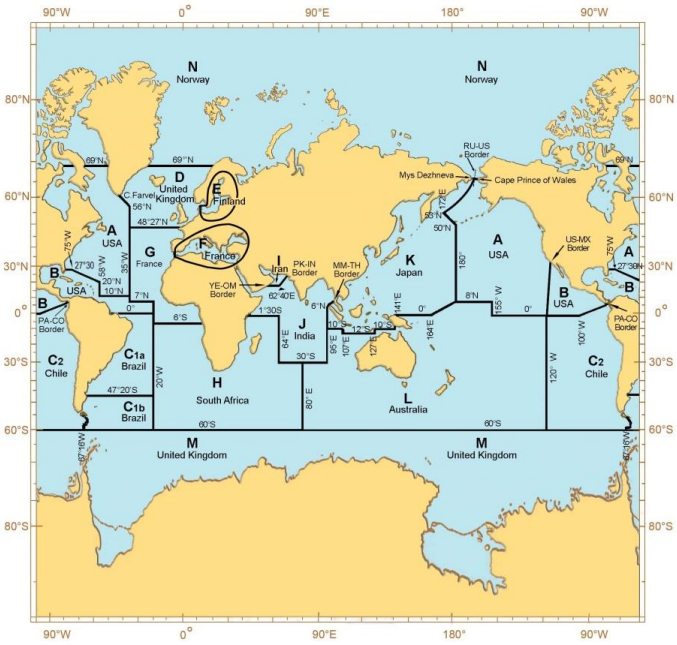
Task 2.3.2 Maintain and extend the relevant IHO standards, specifications and publications

The CSPCWG completed the revision of IHO Publication S-4 - *Regulations for International (INT) Charts and Chart Specifications of the IHO* undertaken after the adoption in 2005 of a new format. The outcome of this major work was effected with the publication of revision 4.5.0 in October (further details in IHO CL 69/2014). The main change was the revision of section B-500 - *Text: Language, Numbers, Abbreviations, Names, Styles and Fonts* (IHO CL 38/2014 refers). Smaller changes affected specifications related to sections A-204 - *International Chart Numbering*, B-100 - *General*, B-400 and C-400 - *Hydrography and Aids to Navigation* (further details in IHO CL 32, 34 and 49/2014). From now on, and in accordance with section B-160 as amended, the maintenance of S-4 will be carried out in accordance with IHO Resolutions 11/2002 and 2/2007, as amended, rather than the special procedures that were in place during the period of the major revision.

The CSPCWG continued to prepare a draft revision of S-11 - Part A - *Guidance for the Preparation and Maintenance of International Chart Schemes*, in liaison with the North Sea ENC Harmonisation Working Group. This will result in guidelines for the preparation and maintenance of ENC Schemes being included in the existing guidance for INT paper chart schemes.



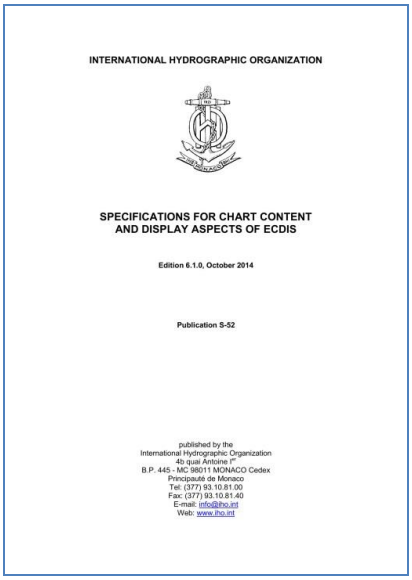
IHO Publication S-4



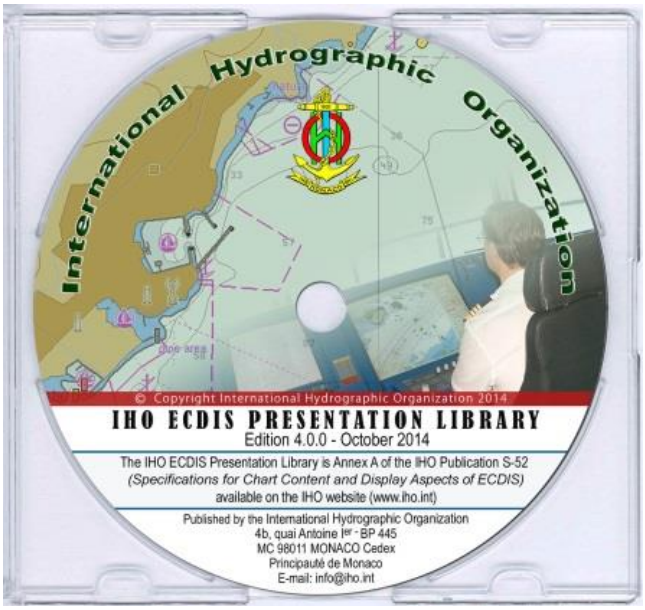
IHO International Charting Regions

Six out of the existing 15 regional chapters of S-11 Part B *Catalogue of International (INT) Charts* were the subject of revisions by the IHB during the year, as a result of input from the relevant regional INT coordinators: Region C1 *SW Atlantic*, Region D *NE Atlantic*, Region G *E Atlantic*, Region H *SE Atlantic & SW Indian Ocean*, Region J *N Indian Ocean*, Region M *Southern Ocean*.

In accordance with the procedure agreed by the 5th meeting of the HSSC, the Committee endorsed by correspondence the draft edition 4.0.0 of S-52 Annex A - *ECDIS Presentation Library*, and the associated draft revision 6.1.0 of S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*. The new editions were subsequently approved by the Member States (further details in IHO CL 81/2014).



IHO Publication S-52



IHO ECDIS Presentation Library

The IHB contract with the geospatial software solutions company Caris to create an S-100 portrayal catalogue builder successfully delivered a working web-based application. In anticipation of the modifications to the catalogue builder required to accommodate changes that were made to the feature model in the draft edition 2.0.0 of S-100 and the S-101 feature catalogue, the contract was extended to include further work in 2015. SVG formatted symbol graphics of all existing S-52 point symbols were also delivered as part of the contract. These will be used to support the portrayal of S-101 ENCs.

The DIPWG completed the initial base-line version of the S-100 portrayal model and the portrayal contents for S-101. Further refinement and expansion will be driven by the S-100/S-101 test bed activities (see Task 2.2.2).

Element 2.4 Digital Data Protection and Authentication

This element addresses the developments related to data protection and data authentication, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2014, six Member States and 12 Expert Contributors participated in this activity.

Task 2.4.1 Conduct meetings of relevant HSSC WGs dealing with data protection and authentication

The 10th meeting of the Data Protection Scheme Working Group (DPSWG) took place at the IHB, Monaco, from 3 to 5 May.

Task 2.4.2 Maintain and extend the relevant IHO standards, specifications and publications

A candidate structure for a new edition of the data protection scheme for use with S-100-based product specifications was defined. It is foreseen that the authentication part will be included in S-100 with the encryption part included in product specifications. The mechanism for determining "out-of-datedness" should also be included in product specifications.

The migration of legacy ECDIS systems that were still using edition 1.0 of S-63 - *IHO Data Protection Scheme* after its withdrawal on 31 December 2013 was monitored in liaison with the two data servers concerned. The percentage of legacy systems dropped during 2014 from 21% on 1 January to less than 6% on 31 December.

In relation to the revision of IEC Standard 61174 – *Maritime navigation and radiocommunication equipment and systems – Electronic chart display and information system (ECDIS) – Operational and performance requirements, methods of testing and required test results*, the production of a normative reference that supports the requirement for an "ENC Update Status Report" showing the status of ENC data to the end-user (for operational planning) and to the relevant authorities (for such purposes as port State inspection) appeared necessary. Further consideration led to acknowledging the need to enhance S-63 with a new annex describing the functionality required to provide an ENC Update Status Report. At its 6th meeting, HSSC endorsed the draft Annex to S-63 submitted by the DPSWG. The IHB was tasked to prepare a draft revised edition 1.2.0 of S-63 incorporating the new Annex and then to seek the approval of Member States (further details in IHO CL 75/2014). Subject to its approval by IHO Member States, the revised edition 1.2.0 of S-63 should be published in February 2015.

The HSSC agreed in principles to the extension of S-63 certificates to cover navigational products other than ENCs, subject to an impact assessment.

Element 2.5 Data Quality

This element addresses the developments related to methods of classifying and depicting the quality of hydrographic information, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2014, 18 Member States and five Expert Contributors participated in this activity.

Task 2.5.1 Conduct meetings of relevant HSSC WGs dealing with data quality

The Data Quality Working Group (DQWG) met twice in 2014. The 8th meeting was hosted by the Australian Hydrographic Service in Wollongong from 25 to 27 March. The meeting was co-located with the 6th meeting of the Tidal and Water Level Working Group (TWLWG, see Element 2.7) in order to hold a half-day joint session on quality issues in tide and water level predictions and under keel clearance solutions.

The 9th meeting of the WG was held from 3 to 7 November at the Royal National Lifeboat Institution (RNLI) College, Poole, England.

Dr Leendert Dorst (Netherlands) resigned as Vice-Chair due to his taking up a new role in the Netherlands HO. Mr Antti Castren (Finland) took over as Vice-Chair. Subsequently, Mr Chris Howlett (UK) announced that he had to stand down from his position of Chair and Mr Castren became the new Chair.

Task 2.5.2 Maintain and extend the relevant IHO standards, specifications and publications

The Data Quality Working Group (DQWG) continued to progress its work on the development of a three-tier system to replace the current categories of zones of confidence (CATZOC). A decision tree and a data model supporting the construction of a single composite quality indicator based on individual data quality attributes were finalized.

The DQWG completed the data quality model for S-101 and developed the encoding rules for the use of the updated data model. The development of a common harmonized data quality model that would allow information from nautical publications and other products to be overlaid on the same information screen as ENCs was initiated in liaison with the SNPWG (see Element 2.6).

The DQWG made some progress on the topic of educating the mariner on quality issues. The WG agreed to provide unified wording for articles on data quality to be included in the publications of the Nautical Institute. Locating other ways, such as through courses provided by training institutions, has not been successful so far.

Element 2.6 Nautical Publications

This element addresses the developments related to the preparation of nautical publications, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2014, 17 Member States and six Expert Contributors participated in this activity.

Task 2.6.1 Conduct meetings of relevant HSSC WG dealing with nautical publications

The Standardization of Nautical Publications Working Group (SNPWG) met twice in 2014. The 17th meeting was hosted by the HO of Germany (BSH) in Rostock from 7 to 10 April. The 18th meeting was hosted by the HO of Spain (IHM) in Cadiz from 1 to 4 December.

18th SNPWG meeting

Task 2.6.2 Develop, maintain and extend S-10n – Nautical Information Product Specification

The development of the following product specifications related to nautical information continued, in line with the development of edition 2.0.0 of S-100:

- S-122 - *Marine Protected Areas;*
- S-123 - *Radio Services;*
- S-126 - *Physical Environment;*
- S-127 - *Traffic Management.*

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Test data samples are now available for all four products.

The SNPWG investigated the definition of a core set of S-101 context features used by all the product specifications and completed by additional features which are product specific.

Task 2.6.3 Maintain and extend the relevant IHO standards, specifications and publications

The SNPWG maintains a Wiki application - a web application, which allows collaborative modification, extension, or deletion of its content and structure - which explains the meaning and application of each feature and attribute necessary for the definition of digital S-100 conformant Nautical Publications (NPUBS) product specifications of NP3-type (attributed features compatible with ECDIS). The application was moved to a server hosted by the IHB and accessible through the IHO web site (Home > Committees & WG > NIPWG (snpwg)).

Element 2.7 Tides and Water Levels

This element addresses developments related to tidal and water level observation, analysis and prediction and other related information including vertical and horizontal datums, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate. In 2014, 26 Member States and one Expert Contributor participated in this activity.

Task 2.7.1 Conduct meetings of relevant HSSC WGs dealing with tides and water levels

The 6th meeting of the Tidal and Water Level Working Group (TWLWG) was hosted by the Australian Hydrographic Service in Wollongong from 25 to 28 March, concurrently with the 8th DQWG meeting (see Element 2.5).

TWLWG in joint session with DQWG

Task 2.7.2 Maintain and extend the relevant IHO standards, specifications and publications

The Member States adopted the revision of three IHO Resolutions on tides, water levels and tidal publications which had been proposed by the TWLWG and endorsed by the HSSC at its 5th meeting:

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

Considering the comments received from the Member States concerning the proposed revision of Resolution 3/1919, as amended - *Datums and Bench Marks* and noting that the TWLWG had

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separately identified at its 6th meeting that additional work was required on this Resolution and related definitions, it was decided not to promulgate any revision to the existing Resolution at this stage (further details in IHO CL 44/2014).

The inventory of tide gauges used by Member States was updated in November. This information was made available on the TWLWG page of the IHO web site.

Task 2.7.3 Develop, maintain and extend a Product Specification for digital tide tables

The TWLWG identified the need to document the standard display formats and specify what minimum information should be provided.

Task 2.7.4 Develop, maintain and extend a Product Specification for the transmission of real-time tidal data

Task 2.7.5 Develop, maintain and extend a Product specification for dynamic tides in ECDIS

The first draft of an S-100-based Dynamic Water Level Data Transfer Product Specification, designated as S-112 by HSSC, was developed under the lead of the UKHO in cooperation with the Maritime and Port Authority of Singapore (MPA) and with the assistance of TSMAD. The draft is based on the Meteorological and Hydrographic Data Application-Specific Message for the Automatic Identification System (AIS). This AIS message provides the means to transfer a variety of different information, including data for wind, weather, surface currents, sea state, salinity and ice, and provides the scope not only to include dynamic water level data, but other data, as well. One of the main advantages of using this methodology is that it can be assimilated by any ECDIS that is integrated with AIS either in the current S-57 environment or in future S-100 implementations. The means for ensuring the quality and authenticity of the AIS information needs to be considered further.

Element 2.8 Digital Data Updating

This element addresses developments in standardized processes for the updating of digital hydrographic data products, the maintenance of the relevant IHO standards, specifications and publications, and the provision of technical advice as appropriate.

Task 2.8.1 Maintain and extend the relevant IHO standards, specifications and publications

In accordance with the outcome of the review by the HSSC of the status of production and publication of Temporary (T) and Preliminary (P) ENC updates, the IHB invited the fifteen Member States that had not provided a status report, or had not committed to aligning their ENC and paper chart T&P update regimes, to clarify their position. Six responses had been received by the end of 2014. All confirmed their intention to align their ENC and paper chart update regimes.

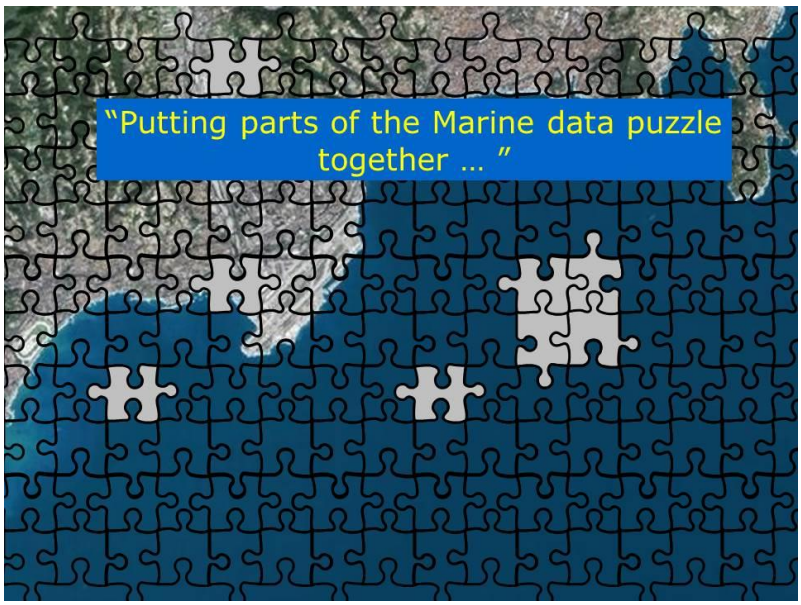
Element 2.9 Marine Spatial Data Infrastructures

This element addresses the developments related to the hydrographic component of Spatial Data Infrastructures (SDI), the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate. In 2014, twenty-three Member States and ten Expert Contributors participated in this activity.

Task 2.9.1 Conduct meetings of relevant HSSC WGs dealing with MSDI

The 5th meeting of the Marine Spatial Data Infrastructure Working Group (MSDIWG) took place in Silver Spring, Maryland, USA, hosted by NOAA, from 5 to 7 February. The meeting was preceded on 4 February by an MSDI Open Forum meeting entitled "*More than Hydrography, Better Decisions from Better Data*". The meeting reviewed the outcome of a survey of MSDIWG members on MSDI

issues and noted that the datasets considered the most important for use in MSDI/SDI were “Maritime and Administrative Boundaries”, “Bathymetry & Coastline” and “Regulated Areas”. The meeting considered reports on national and regional status and plans regarding MSDI-related activities.



Following a proposal from the Inter-Regional Coordination Committee (IRCC) approved by HSSC, the MSDIWG was transferred to the IRCC on 1 January 2015.

Task 2.9.2 Maintain and extend the relevant IHO standards, specifications and publications

This task was reflected in the work plan of the MSDIWG but no significant progress was reported in 2014.

Task 2.9.3 Develop training syllabi for MSDI and associated learning subjects

The task was reflected in the work plan of the MSDIWG but no significant progress was reported in 2014.

Element 2.10 Hydrographic Data Acquisition and Processing

This element addresses the developments related to hydrographic data acquisition and processing, the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate.

Task 2.10.2 Maintain and extend, when required, the relevant IHO standards, specifications and publications

The current edition of S-44 - *IHO Standards for Hydrographic Surveys* did not require any maintenance or extension in 2014. At its 6th meeting, the HSSC agreed to further investigation on the possible establishment of a Hydrographic Surveys WG and its scope of activity.

Element 2.11 Hydrographic Dictionary

This element addresses the development, maintenance and extension of IHO Publication S-32 - *Hydrographic Dictionary* in English, French and Spanish, and the provision of technical advice as appropriate. In 2014, nine Member States, and one Expert Contributor nominally participated in this activity. However, the involvement of almost all Member State nominees was very limited and the work plan of the Hydrographic Dictionary Working Group (HDWG) hardly progressed at all.

Task 2.11.1 Maintain and extend the IHO Hydrographic Dictionary in English, French and Spanish

The Hydrographic Dictionary Working Group (HDWG) did not meet in 2014.

Five new definitions which had been agreed by the HDWG and then endorsed by the HSSC at its 5th meeting were approved by Member States (further details in IHO CL 47/2014).

The HSSC welcomed the offer of Australia to liaise with the Chair and members of the HDWG by correspondence in order to draft new business rules for the HDWG, focused on a database approach, and addressing the potential for synergy with other requirements for definitions and references, such as the S-100 Registry, HSSC WGs and other IHO and inter-organizational bodies (such as SCUFN). The Committee also invited the HDWG to consider the structure of the ISO/TC211 Multi-Lingual Glossary of Terms as a way to evolve the IHO on-line Hydrographic Dictionary.

Task 2.11.2 Develop the Spanish language Wiki version of S-32

No specific activity related to this task was planned nor undertaken in 2014. Peru informed the IHB of its intention to second an officer to address this task.

Element 2.12 ABLOS

This element addresses the developments related to the hydrographic aspects of the UN Convention on the Law of the Sea (UNCLOS), the maintenance of the relevant IHO publications, and the provision of technical advice as appropriate. The Advisory Board on the Law of the Sea (ABLOS) is a joint body of the IHO and the International Association of Geodesy (IAG). It comprises four representatives from IHO Member States and four representatives from the IAG. Five observers from IHO Member States and two Expert Contributors were also involved in the activities of the Board in 2014.

Task 2.12.1 Organize and prepare ABLOS annual business meeting

The 21st business meeting of ABLOS was hosted by the Technical University of Denmark (DTU) in Copenhagen, Denmark on 21 and 22 October. It was followed by a seminar entitled "*UNCLOS and the Arctic – Changes Now and in the Near Future*" on 23 October. The seminar was attended by approximately 65 delegates from across the region, including United Kingdom, Faroe Islands and Greenland, as well as representatives from a wide selection of Danish government ministries, technical authorities and universities.

Preparations for the next ABLOS Conference

Task 2.12.2 Organize and prepare the biennial ABLOS Conference

The Copenhagen business meeting began preparations for the 8th ABLOS Conference, which is planned to be held in Monaco from 20 to 22 October 2015 under the title "*UNCLOS: Advances in Governing the Blue World*". Detailed information for the Conference was announced by IHO Circular Letter in December (further details in IHO CL 80/2014).

Task 2.12.3 Contribute to the revision of IHO publication C-51 - TALOS Manual

Following its approval by IHO Member States and by the IAG Executive Council, the 5th edition of C-51 - *A Manual on Technical Aspects of the United Nations Convention on the Law of the Sea – 1982* (TALOS Manual) was published in June (further details in IHO CL 43/2014).

Element 2.13 Surface Currents

This element addresses the development of standards for the delivery and presentation of navigationally significant surface current information. In 2014, seven Member States and four Expert Contributors participated in this activity.

Task 2.13.1 Conduct meetings of relevant HSSC WG dealing with surface currents

The 2nd meeting of the Surface Current Working Group (SCWG) was held at the Office of the Department of Oceans and Fisheries (DOF), Québec City, Canada from 28 to 30 May.

2nd SCWG meeting

Task 2.13.2 Maintain and extend the relevant IHO standards, specifications and publications

No specific activity was required in 2014.

Task 2.13.3 Develop, maintain and extend a Product Specification for the transmission of real-time surface current data

No significant progress was reported in 2014. This task will benefit from the work of the TWLWG on S-112 (see Task 2.7.4).

Task 2.13.4 Develop, maintain and extend a Product Specification for dynamic surface currents in ECDIS

Coverage types for currents were considered and a list of potential features and attributes was developed, presented and revised. Features are planned to include grids of water speed, direction, uncertainty in speed and direction, and water level referenced to a suitable datum. The SCWG achieved significant progress towards the development of an initial working draft of S-111 - *Surface Current Product Specification*.

WORK PROGRAMME 3
Inter-Regional Coordination and Support

Introduction

The IHO Work Programme 3 "Inter-Regional Coordination and Support" seeks to establish, coordinate and enhance cooperation in hydrographic activities on a regional basis, and between regions, especially on matters associated with the coordination of global surveying, nautical charting and ocean mapping, dissemination of maritime safety information, capacity building, and education and training. IHO Work Programme 3 is implemented under the principal responsibility of the Inter-Regional Coordination Committee (IRCC).

Element 3.0 Inter-Regional Coordination Committee (IRCC)

The IRCC promotes and coordinates those activities that might benefit from a regional approach. The principal objective of the IRCC is to establish, coordinate and enhance cooperation in hydrographic activities amongst States on a regional basis, and between regions; establish cooperation 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 cooperation between pertinent regional organizations; and review and implement the IHO Capacity Building Strategy, promoting Capacity Building initiatives.

Task 3.0.1 Conduct annual meeting of IRCC

The 6th meeting of the IRCC took place in Paris, France, hosted by the French HO (SHOM) on 19 and 20 May. The meeting was attended by the Chairs or designated representatives of the 15 RHCs, the IRCC subordinate bodies and 26 observers. A total of 49 participants from 21 countries were present. The meeting was chaired by Rear Admiral Tom Karsten (UK). The IHB was represented by President Robert Ward, Director Mustafa Iptes (Secretary) and Assistant Director Alberto Costa Neves.

The IRCC examined the reports and activities of the RHCs and its subordinate bodies, the current status of hydrographic surveys and nautical charts, the progress of ENC schemes and the IHO ENC catalogue, the Capacity Building programme, Worldwide ENC Database (WEND) related issues and the decisions of other bodies and organizations affecting its work.

The Committee endorsed a revision of its Terms of Reference (ToR) and Rules of Procedure (RoP) in order to provide clarity on the role of the Vice-Chair and the inclusion of the Chairs of the WENDWG and IHO-EU Network WG as members of the Committee. The revised ToR and RoP were subsequently approved by the Member States (further details in IHO CL's 58 and 71 of 2014).

The IRCC acknowledged the progress made with Capacity Building (CB) activities and acknowledged the draft revised IHO Capacity Building Strategy which was subsequently approved by the EIHC-5.

The Committee reviewed the activities of the WEND Working Group (WENDWG) and the continuing progress towards the full implementation of the WEND Principles and the associated Guidelines. ENC coverage, the quality and reliability of the information in ENCs and the harmonization of current ENCs with the corresponding paper charts, overlapping ENCs and developments of an IHO WENC (or RENC) were extensively discussed by the Committee. The WENDWG was tasked to assess the impact and consistency of updates for ENCs and paper chart (coverage and quality) and to report on the potential for implementing an IHO WENC Concept. The Committee also approved the WENDWG Work Programme for its future activities.

IRCC endorsed draft revisions to IHO publications S-5 - *Standards of Competence for Hydrographic Surveyors* (Ed. 11.1.0) and S-8 - *Standards of Competence for Nautical Cartographers* (Ed. 3.1.0). The revisions were subsequently approved by the Member States (further details in IHO CL's 67 and 74 of 2014). The Committee approved the Work Programme of the International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC) concerning the development of the next editions of the Standards.

The Participants at the IRCC6 Meeting

The Committee also endorsed revised ToR and RoP for the General Bathymetric Chart of the Ocean (GEBCO) Guiding Committee (GGC) which was then submitted to the Intergovernmental Oceanographic Commission (IOC) for its approval.

The IHO performance monitoring system was reviewed and the impacts for RHC and Member States were assessed. IRCC agreed on the best practices for reporting the performance indicators and the Chairs of the RHCs were encouraged to provide the IRCC Chair and the IHB with updated reports.

The Committee discussed the use of a risk assessment methodology developed by New Zealand as a tool for Capacity Building assessment. RHC Chairs were invited to encourage Member States in their respective regions to use the risk assessment methodology to prioritize hydrographic survey requirements. A proposal on the best practices for and benefits of maximizing the use of hydrographic data proposed by MACHC was also reviewed and acknowledged by the Committee.

In reviewing the work of the Working Group on Maritime Spatial Data Infrastructures (MSDIWG), the Committee supported a proposal to transfer the governance of the MSDIWG from HSSC to IRCC.

The Committee elected Dr Parry S.L. Oei, the Hydrographer of Singapore, to fill the vacancy of Vice Chair.

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

The objective of this element is to facilitate coordination, cooperation and collaboration among IHO Member States in order to improve the provision of hydrographic and charting services and products through the structure of the 15 RHCs and the IHO Hydrographic Commission on Antarctica.

This element of the Work Programme is largely accomplished through the meetings of the RHCs. The frequency of meetings of the RHCs varies from annually to triennially, depending on the region. RHC meetings continued to increase in importance as they exercise an increasingly active role in the overall planning, execution and assessment of the IHO Work Programme as it relates to their regions. A Director, sometimes accompanied by an Assistant Director, represented the IHB at the RHC meetings, providing guidance and assistance on IHO matters.

Task 3.1.1 Arctic Regional Hydrographic Commission

The 4th Meeting of the Arctic Regional Hydrographic Commission (ARHC) was held in Portsmouth, New Hampshire, USA on 29 and 30 January. All five Member States - Canada, Denmark, Norway, Russian Federation and the USA - were represented together with representatives of Finland and the International Bathymetric Chart of the Arctic Ocean (IBCAO) attending as Observers. President Robert Ward represented the IHB. The meeting was chaired by Mr Evert Flier, the Hydrographer of Norway. Captain Leonid Shalnov, Russian Federation, was representing the Vice-Chair.

Each Member State presented a briefing on the status of hydrography, progress and charting priorities in their areas of responsibility. The members of the Commission discussed the development of a strategic directions document for the ARHC together with initiatives to raise awareness of the shortcomings of hydrography and charting in the region so as to gain greater levels of national and regional support. Participants exchanged views on best practices and new technologies for surveying in the Arctic. Discussion also centred on the preparation of input to the Arctic Council Working Group on the Protection of the Marine Environment (PAME).

ARHC-4 in Portsmouth, USA

At the end of the meeting the position of Chair was handed over to the Russian Federation. The next meeting of the ARHC was planned to take place in October 2015 in St Petersburg, Russian Federation.

The meeting of the ARHC was preceded by an Arctic Science Forum with the theme: *Science in Support of Hydrography in the Arctic.* The Forum was hosted by the University of New Hampshire Joint Hydrographic Centre in nearby Durham. The Forum gave researchers, scientists and industry speakers the opportunity to inform ARHC delegates about emerging technical and scientific developments and opportunities for improving hydrography in the Arctic region.

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Task 3.1.2 Baltic Sea Hydrographic Commission

The 19th Conference of the Baltic Sea Hydrographic Commission BSHC was held in Riga, Latvia, from 10 to 12 June, under the Chairmanship of Mr Taivo Kivimae (Estonia). All full members of the Commission (Denmark, Estonia, Finland, Germany, Latvia, Poland, Sweden and Russian Federation) attended the Conference. The United Kingdom also attended as an Observer and the IHB was represented by Director Mustafa Iptes.

The Conference covered a wide range of regional topics including the developments in each of the Member States, the latest status of hydrographic surveying and nautical charting including INT Charts, ENC production and BSHC cooperative projects. Director Iptes briefed the Commission on current IHO issues and IHB activities and provided detailed information concerning the preparation of EIHC-5. The members of the BSHC reported on their national activities since the 18th Conference and reviewed on-going regional initiatives and projects including the BSHC Working Group for Monitoring the Implementation of the Harmonized Re-survey Scheme, the Baltic Sea Bathymetric Database Working Group and the Chart Datum Working Group. The Commission also reviewed the outcome of the 6th meeting of the IRCC and the 4th meeting of the WENDWG.

Participants of BSHC-19

At the end of the conference, Mr Janis Krastins (Latvia) was elected as the new Chair of the BSHC and Captain Sergei Travin (Russian Federation), as the Vice Chair. It was agreed that the next conference of the BSHC will be hosted by the Russian Federation, in St. Petersburg, in September 2015.

Task 3.1.3 East Asia Hydrographic Commission

The 1st Meeting of the newly-established Steering Committee of the East Asia Hydrographic Commission (EAHC) was held in Kuala Lumpur, Malaysia on 26 and 27 February with 35 representatives from nine Member States (China, Indonesia, Japan, Democratic People's Republic of Korea (DPRK), Republic of Korea (ROK), Malaysia, Philippines, Singapore and Thailand), eight representatives from three Observer States (Brunei Darussalam, Cambodia and Vietnam), and the Chair of the TSMAD. The meeting was chaired by the Deputy Chief Hydrographer of the Philippines, Commander Jacinto M. Cablayan who represented the Chair of the EAHC, Commodore Romeo Ho (Philippines).

The meeting of the Steering Committee was preceded by meetings on 23 February of the Board of Directors to review the development of an East Asia Training, Research and Development Centre (TRDC) and a meeting on 24 and 25 February of the Charting and Hydrography Committee (CHC) to review and coordinate INT chart and ENC coverage across the region.

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The Steering Committee considered the results of the TRDC and the CHC meetings and was then provided with a brief on S-100 and S-101 by the Chair of TSMAD. This led to discussions about the mutual benefits to be gained by incorporating a dynamic tides project as an S-100 development and test-bed activity in the Straits of Malacca and Singapore marine electronic highway project.

The representatives of the ROK expressed their willingness for the ROK to continue its efforts to create an S-100 feature catalogue builder on behalf of the IHO.

The EAHC capacity building training programme was reviewed, including the development of an on-line training programme by the ROK.

The most notable outcomes of the meeting were the approval of the TRDC Rules of Procedure and Terms of Reference, presentation of the TRDC's five-year work plan, approval of the CHC Terms of Reference, the Member States' interest in monitoring the development of the potential use of Satellite Derived Bathymetry (SDB), demonstration of an *S-57 Use of the Object Catalogue* software tool by ROK, updates on the development of e-MIO (Marine Information Overlays) by ROK, sharing of experience with regards to response to disasters by the Philippines (Typhoon Haiayan in 2013) and Japan (eruption of Nishinoshima volcano), preparations for the EAHC's 50th year celebrations, and the possible hosting of an EAHC meeting and Capacity Building Programme by Brunei Darussalam. It was agreed that the next meeting of the EAHC Steering Committee would take place in January or February 2015 in Singapore.

Task 3.1.4 Eastern Atlantic Hydrographic Commission

The 13th Conference of the Eastern Atlantic Hydrographic Commission (EAtHC) was hosted from 16 to 18 September at the Royal Naval Academy in Casablanca, Morocco, by the Department of Surveying, Oceanography and Charting of the Royal Navy of Morocco. The Conference was chaired by Ingénieur général Bruno Frachon, the Hydrographer of France, and attended by 45 delegates. Five IHO Member States of the Region (out of six), five Associate Member States (out of nine) and three Observer States (out of eleven) were represented. The IOC, the IHO-IOC GEBCO Project, IALA, the Maritime Organization of West and Central Africa (MOWCA), three partners from industry, two RENCs and the Directors of the Regional Maritime Universities of Abidjan (Côte d'Ivoire) and Accra (Ghana) were also represented as observers. Director Gilles Bessero and Assistant Director Yves Guillam represented the IHB.

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The delegation from the Republic of the Congo was represented by Mr Martin Coussoud-Mavoungou, Minister of the Merchant Navy, who confirmed the active participation of Congo as an associate member of the Commission and reported on the on-going preparation of Congo's application for membership of the IHO.

The Chair reported on EAtHC achievements since the previous Conference in 2012. Director Bessero provided a briefing on current IHO corporate, technical and cooperation issues and an overview of the preparation of the EIHC-5. He also provided a brief on the Audit Scheme of the IMO and the implications of the transition from a voluntary to a mandatory scheme in relation to the status of hydrographic services in coastal States.

All the coastal States represented reported on their activities, progress, achievements and difficulties. A few coastal States expressed concerns about the delays between the completion of surveys covering important maritime traffic areas and the publication of new editions of the relevant nautical charts. Others indicated that, in the absence of a national hydrographic authority and appropriate hydrographic expertise, they were not always in a position to coordinate surveys in their waters and ensure that hydrographic data is made available to the relevant primary charting authorities.

The status and implementation of the regional INT and ENC charting schemes were reviewed by the regional coordinator.

Following presentations by the Chair on the outcomes of the IRCC-6 meeting and by the IOC representative on the North East Atlantic Tsunami Warning System, it was decided to consider the holding of a future stakeholder workshop on the risks of maritime disasters in the region to highlight the importance of hydrography and to identify the shortfalls. Following the sub-regional Seminar hosted by MOWCA in November 2013 in Pointe-Noire, Congo, the Commission welcomed the reinforcement of the cooperation between the IHO and MOWCA through a formal agreement.

Capacity Building (CB) issues were given particular attention and the implementation of a design study for a sub-regional CB project, included in the IHO CB Work Programme and led by the CB regional coordinator, was reviewed.

Noting the positive outcomes of the IMO-IHO-IALA Seminars conducted in Mauritania (Nouakchott, Sept. 2013) and in Ghana (Accra, April 2014), the IALA representative confirmed IALA's support in joint capacity building initiatives with IHO and MOWCA in the African sub-region (technical visits, seminars, training, etc.). In accordance with the Statutes of the Commission, Morocco took over the chairmanship at the end of the Conference. The next Conference was planned to take place in Cadiz, Spain, in October 2016.

Task 3.1.5 Meso American - Caribbean Sea Hydrographic Commission

The 15th Meeting of the Meso American - Caribbean Sea Hydrographic Commission (MACHC) was held in Manzanillo, Mexico from 10 to 13 December with 68 participants from 12 Member States (only Jamaica was absent), six Associate Members, three observer countries, nine observer organizations, and 13 companies. President Robert Ward and Assistant Director Alberto Costa Neves represented the IHB.

The representatives from Costa Rica and from Saint Vincent and the Grenadines signed the MACHC Statutes on behalf of their governments to become Associated Members. The MACHC now comprises 13 Members and 13 Associate Members (five countries still to join the Commission).

The meeting was informed of significant progress in ENC coverage in the region, with 96 newly available cells and 14 cancelled. The region progressed from 583 ENCs in 2013 to 665 in 2014, with contributions from Brazil (26), Colombia (1), Cuba (6), Mexico (24), United Kingdom (15), USA (17) and Venezuela (7).

The Chair of the MACHC Integrated Charting Committee (MICC) introduced plans for an "ENC On-Line" resource, a cloud-based data store house available for planning purposes and hosted by NOAA. ENCs would not be available for download from the site. The concept was accepted by the Marine Economic Infrastructure Program (MEIP) as the solution to the MDSI dissemination project, subsequently approved by the meeting.

The MICC also presented a revised assessment of gaps in coverage of ports using AIS data for major passenger ship ports of call, and determining if Bands 4, 5, or 6 coverage was available. The result yielded significant assessment that 27 ports do not have Bands 4, 5, or 6 coverage. This methodology has been accepted by the MACHC to identify gaps in adequate ENC coverage, and will be expanded to include multiple ship types. A country specific report will be provided by the MICC Technical Coordinator to each Member State.

The new INT Chart Scheme submitted by Mexico along with the conversion of two UK Charts to INT Charts completes coverage on the Pacific side of Region B. During the meeting the MICC Chair was presented with the new suite of Mexican INT Charts, the Cuban completed INT 4158, and seven Venezuelan INT Charts, covering the entire Venezuelan coast.

The meeting discussed the development of risk based tools for the region and agreed to task the UK to create an informal correspondence group (ICG) to work intersessionally to develop the user requirements for a risk assessment tool that will subsequently be submitted to the IRCC. These tools will help the establishment of a prioritized plan for surveying the region.

The meeting was informed on progress made by the Organization of Eastern Caribbean States (OECS) with the support of UK to develop a regional Hydrographic Service in the Eastern Caribbean with a comprehensive survey programme and a capacity building plan.

Participants were updated on the uncertainties and accuracy of current methods on satellite derived bathymetry and the meeting agreed to include a standard agenda item on emerging data acquisition methodologies for future MACHC meetings.

Captain Marc van der Donck (Hydrographer of the Netherlands) and Commander Manuel Ricardo López Cruz (Mexico) were elected as Chair and Vice Chair of MACHC respectively and will assume the new roles in March 2015.

The next meeting of MACHC will take place from 7 to 12 December 2016 in St. John's, Antigua and Barbuda.

The MACHC meeting was preceded by the Second Mexican Hydrographic Conference and by a two-day Seminar on Raising Awareness of Hydrography that gathered together representatives from 11 coastal States in the region. Noteworthy was the excellent level of participation and engagement of industry in all activities held during the week.

En route to the MACHC meeting, President Robert Ward took the opportunity to brief the Secretary of the Mexican Navy, Admiral Vidal Francisco Soberon Sanz and the Hydrographer of Mexico, Rear Admiral Abascal Andrade on the current issues in the region and the leadership that the Mexican Navy is playing both nationally and internationally.

Task 3.1.6 Mediterranean and Black Seas Hydrographic Commission

No meeting of the Mediterranean and Black Seas Hydrographic Commission (MBSHC) was conducted in 2014.

Black and Azov Seas Working Group

The 12th meeting of the Black and Azov Seas Working Group (BASWG), which is a Working Group of the MBSHC, was held in Batumi, Georgia on 3 and 4 June, under the chairmanship of Captain (PhD) Erhan Gezgin, Hydrographer of Turkey. Twelve delegates attended the meeting. Five Black Sea States were represented: Bulgaria, Georgia, Romania, Turkey and Ukraine. The IHB was represented by Director Mustafa Iptes. Director Iptes provided a briefing on current IHO issues and the work of the IHB, and also reported on the outcome of the 6th IRCC meeting.

The Member States reported on their national activities since the last meeting. The WG examined the INT chart and ENC schemes of the Black and Azov Seas. New INT chart proposals and a draft ENC scheme proposed by Turkey were reviewed by the WG. The status of coverage of Maritime Safety Information services in the Black Sea was also discussed at the meeting. Georgia announced that it was considering the establishment of a new NAVTEX station in the region.

The WG reviewed the Capacity Building requirements of the Black Sea States for forwarding to the IHO Capacity Building Programme. World Hydrography Day activities and preparations for the EIHC-5 were also discussed at the meeting and Director Iptes provided the WG with detailed information.

The activities and the new developments of the BASWG were to be reported to the next meeting of the MBSHC in Batumi, in June 2015. Captain Gezgin was re-elected as Chair of the BASWG. The next BASWG meeting was planned to be held in 2016 but no venue or date was fixed.

Task 3.1.7 Nordic Hydrographic Commission

The 58th Meeting of the Nordic Hydrographic Commission (NHC) was hosted by Finland, as Chair of the Commission, from 18 to 20 August in Helsinki. Fifteen delegates attended the Meeting. The five Nordic States (Denmark, Finland, Iceland, Norway and Sweden) were represented. The IHB was represented by Director Gilles Bessero.

Following the opening of the meeting by the Chair, Mr Rainer Mustaniemi, and the review of the status of the list of actions from the previous meeting, Director Bessero briefed the Commission on current IHO issues and IHB activities and provided an update on the preparation of the EIHC-5. The members reported on their national activities since the 57th Meeting and reviewed on-going initiatives and projects of common interest related to surveys, nautical charting, nautical publications and the provision of official services to the leisure market. The Commission reviewed the outcome of the 6th meeting of the IRCC and considered further some issues related to the implementation of the WEND. The Commission supported unanimously the view that the WEND should be composed of the ENCs available via RENCs. Several members expressed concern about the Admiralty Information Overlay service in relation to their ENCs.

The Commission decided to include an item on Capacity Building in its standing agenda to consider in particular CB activities which could benefit from cooperation among its members and agreed that Norway will continue as its representative in the CB Sub-Committee.

The Commission considered the outcome of the revision of its statutes initiated at the previous meeting and agreed to finalize the revision. The revised statutes were signed by the Hydrographers of the NHC at the conclusion of the opening ceremony of EIHC-5.

In accordance with the current Nordic Cooperation Agreement, Iceland took over the Chair at the end of the meeting. It was agreed that the next meeting would be hosted by Iceland in Reykjavik in April 2015.

Task 3.1.8 North Indian Ocean Hydrographic Commission

The 14th Meeting of the North Indian Ocean Hydrographic Commission (NIOHC) was held in Bangkok, Thailand, from 26 to 28 February, under the chairmanship of Vice Admiral Witoon Tantigun, Hydrographer of Thailand. NIOHC Member State representatives from Bangladesh, Egypt, India, Myanmar, Pakistan, Sri Lanka, Thailand and the UK attended the meeting together with Associate Member representatives from Australia, Mauritius, Oman, Seychelles and the USA. The Russian Federation was represented as an Observer State. Representatives of IALA, the IHO-IOC GEBCO Project and several commercial companies also attended as invited observers. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHB.

The NIOHC received reports from Member States, Associate Member States and the IHB as well as presentations by IALA and GEBCO. The meeting also received reports on WEND and RENC issues, an up-date on the work of the MSDIWG and brief overviews on crowd-sourced bathymetry (CSB) and relevant IMO activities. Director Iptes reported on the IHO Work Programme and the Organization's activities during the previous year. The preparations for the EIHC-5 were also considered. Delegates were encouraged to provide regular updates to the IHO Yearbook and to C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*. Regional INT Chart and ENC coverage were briefly covered. Considerable time was devoted to Capacity Building and regional requirements.

The meeting concluded with a number of presentations from industry representatives. These highlighted technologies and training opportunities available to the region. Industry representatives were keen to emphasise their willingness to engage with NIOHC and its members to assist in the development of hydrographic and cartographic capability within the region.

In accordance with the Statutes of the Commission, Vice-Chair Rear Admiral Tom Karsten, the National Hydrographer of the UK, assumed the Chair of the NIOHC after the meeting. The NIOHC voted that Bangladesh would assume the Vice-Chair position for the next period. Oman volunteered to host the 15th meeting in Muscat from 16 to 18 March 2015.

NIOHC-14 in session

Task 3.1.9 North Sea Hydrographic Commission

The 31st Conference of the North Sea Hydrographic Commission (NSHC) was hosted by the Royal Netherlands Navy Hydrographic Office from 25 to 27 June. The Conference was held in Amsterdam and chaired by Mr Evert Flier, the Hydrographer of Norway. Twenty-five delegates, the Manager of the GEBCO Digital Atlas and three invited observers from industry attended the Conference. The ten IHO Member States of the Region (Belgium, Denmark, France, Germany, Iceland, Ireland, Netherlands, Norway, Sweden and United Kingdom) were represented as well as Italy. The IHB Directing Committee was represented by Director Gilles Bessero.

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Director Bessero reported on the status of the ratification of the Protocol of Amendments to the IHO Convention and on the preparation of the EIHC-5. The Conference reviewed the latest developments and perspectives with regard to the European Union (EU). The Commission tasked the Chair of the NSHC Working Group on EU Marine and Maritime Policies to transfer the on-going activities of the Working Group to the IHO-EU Network Working Group formed under the Inter-Regional Coordination Committee.

The participants shared views and experience on crowd-sourcing, airborne and satellite-derived bathymetry and marine spatial data infrastructures. The Chair of the Commission was tasked with proposing to the Chair of the Baltic Sea Hydrographic Commission (BSHC) to extend the BSHC MSDI Working Group to the North Sea Region.

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Further discussions focused on the implementation of the principles for the WEND, noting the progress since the XVIII[th] International Hydrographic Conference and the remaining shortcomings as well as the concerns expressed by the representatives of industry in relation to the limited commercial availability of ENCs in certain areas and locations. The Commission invited the Chairs of the Primar Advisory Committee and the IC-ENC Steering Committee to submit a joint progress report to the EIHC-5 on harmonizing the two Regional ENC Coordinating Centres. The Conference also reviewed the status of international charts in the region, the development of ENC schemes, the development of IHO publication C-55 - *Status of Charting and Charting Worldwide* and the activities of the NSHC Tidal Working Group, the Dover Strait Survey Strategy Working Group and the Re-survey Working Group.

The manager of the GEBCO Digital Atlas provided an update on the GEBCO Project and invited further contribution from NSHC Member States. The industry representatives shared their views on recent technological developments.

The Commission decided to establish a web site similar to the BSHC web site, with Germany as the administrator. At the end of the Conference, Captain Peter Kortenoeven (Netherlands), took over the Chair and Mr Michael Purcell (Ireland), became Vice-Chair. The next Conference was planned for June 2016 in Dublin, Ireland.

Task 3.1.10 ROPME Sea Area Hydrographic Commission

The 1[st] Extraordinary meeting of the ROPME Sea Area Hydrographic Commission (RSAHC) was held in Abu Dhabi, United Arab Emirates (UAE), from 9 to 11 February. Representatives from RSAHC Member States (Bahrain, Oman, Qatar, Saudi Arabia and UAE) attended the meeting with Associate Members attending from France, the UK and the USA and observers from Iraq and IALA, together with various representatives from industry. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHB.

The Chair particularly welcomed the attendance of a number of representatives from the Republic of Iraq and he requested the Member States to consider inviting Iraq to become an Associate Member of the RSAHC. The meeting unanimously agreed to accept Iraq as an Associate Member.

The meeting received Reports from Member and Associate Member States and the IHB following which the meeting received reports on the IHO-IOC GEBCO Project and on WEND issues. Delegates were encouraged to provide regular updates to the IHO Yearbook and IHO publication C-55. Details of regional INT Chart and ENC coverage were discussed, however in the absence of the Regional Coordinator it was decided to refer the issues to a meeting of the INT Chart Coordination Working Group the day before the next RSAHC meeting, as well as continuing to progress them through correspondence. In the absence of the NAVAREA IX Coordinator, a short up-date on issues relating to the Worldwide Navigation Warning Service (WWNWS) and outcomes from the related IMO meeting was provided.

The meeting included presentations by invited industry representatives. The presentations highlighted technologies and training opportunities available to the region. The industry representatives were keen to emphasise their willingness to engage with the RSAHC and its members to assist in the development of hydrographic and cartographic capability within the region. A presentation was given by IALA followed by presentations by the regional CB Coordinator. The presentations generated considerable debate on CB issues and regional requirements. A comprehensive plan of proposals was developed for submission to the CBSC.

The UAE, as Chair of the Commission, volunteered to host the 6[th] meeting of the RSAHC from 9 to 11 February 2015.

Task 3.1.11 Southern Africa and Islands Hydrographic Commission

The Mozambique Hydrographic Institute (INAHINA) hosted the 11[th] Meeting of the Southern Africa and Islands Hydrographic Commission (SAIHC) in Maputo, from 11 to 13 August. Five out of the six

Member States (Mauritius, Mozambique, Norway, South Africa and United Kingdom) were represented at the meeting. The following Associate Member States: Madagascar, Malawi, Namibia, Portugal and Tanzania, were also represented together with delegates from IALA, IHO-IOC GEBCO and the South African Maritime Safety Authority. Invited industry participants included representatives from CARIS, Jeppesen, FUGRO, Horizon Geosciences, QPS, Kongsberg and Underwater Surveys. The meeting was chaired by Captain Abri Kampfer (South Africa). President Robert Ward and Assistant Director Anthony Pharaoh represented the IHB.

Dr Manuela Rebelo, the Vice Minister of Communications and Transport of Mozambique, opened the meeting and welcomed all delegates to Maputo. She noted that safe and efficient maritime transportation was a key enabler to the future economic development of the Southern African region and expressed great satisfaction that Mozambique was able to host the meeting.

The participants of SAIHC-11 in Maputo

Each Member and Associate Member State presented a briefing on the status of hydrography and charting priorities in their areas of responsibility. There were reports, presentations and discussions on the collection of crowd-sourced bathymetry, satellite derived bathymetry, GEBCO and North Indian Ocean Mapping projects, the IHO capacity building plan for the region, Marine Spatial Data Infrastructures (MSDI), the status of IHO publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide* and proposals for the EIHC-5.

South Africa (Captain Abri Kampfer) was re-elected as Chair for the next term and Mauritius was elected to hold the position of Vice Chair, with the incumbent to be announced when known. It was agreed that the next meeting would take place in September 2015, possibly in Tanzania.

Task 3.1.12 South East Pacific Regional Hydrographic Commission

No meeting of the South-East Pacific Regional Hydrographic Commission (SEPRHC) was conducted in 2014.

Task 3.1.13 South-West Atlantic Hydrographic Commission

The 8th Conference of the South-West Atlantic Hydrographic Commission (SWAtHC) took place in Arraial do Cabo, State of Rio de Janeiro, Brazil and was hosted and chaired by the Hydrographic Office of Brazil (*Diretoria de Hidrografia e Navegação - DHN*) on 20 and 21 March. Twelve delegates and two invited observers from industry attended the Conference. The three IHO

Member States of the Region (Argentina, Brazil and Uruguay) and the Associate Member (Paraguay) were represented. The IHB was represented by Director Gilles Bessero who provided a briefing on current IHO issues and the work of the IHB.

SWAIHC-8 participants meet in Brazil

The approval of the report of the 7th Conference was confirmed and the status of the list of actions was reviewed. Some progress was noted in the on-going investigation of the possibilities to establish a Regional Inland Electronic Navigational Chart (ENC) Coordinating Centre covering South and Central America.

The members reported on their national activities since the 7th Conference. Brazil, as Chair of the SWAtHC Planning Committee, then reported on the progress of the work of the committee, addressing notably the maintenance and implementation of the regional INT and ENC schemes. The Commission approved the work plan of the Committee for the next intersessional period. This includes the development of a prioritized capacity building plan, and the provision of an annual update of C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*. Paraguay was invited to join the Committee. The Chair of the Committee reported also on the work of the IRCC, CBSC, WENDWG and HSSC. A technical presentation on inland ENCs was provided by Brazil, as one of the co-Chairs of the Inland ENC Harmonization Group.

The invited industry representatives briefed the Conference on current developments related to survey equipment, data processing and the transition to products based on S-100 - *Universal Hydrographic Data Model*. It was agreed that the next Conference would take place in March 2015 in Uruguay.

Task 3.1.14 South West Pacific Hydrographic Commission

No meeting of the South-West Pacific Hydrographic Commission (SWPHC) was conducted in 2014.

Task 3.1.15 USA-Canada Hydrographic Commission

The 37th Meeting of the US-Canada Hydrographic Commission (USCHC) was held in St. John's on 16 April, hosted by Canada. The meeting took place in conjunction with the Canadian Hydrographic Conference 2014. The meeting was co-chaired by the Hydrographer-General of Canada and the Director of the US Office of Coast Survey, Mr Denis Hains and Rear Admiral Gerd Glang respectively. Director Mustafa Iptes represented the IHB.

The USCHC received national reports from Canada and the USA. The meeting reviewed the report of the Charting Advisors Committee which is the technical committee of the USCHC. The USCHC discussed and agreed various positions on issues, particularly relating to the WEND concept as well as ARHC issues relevant to the USCHC. Director Iptes reported on the IHO Work Programme and the Organization's activities during the previous year. The preparations and proposals for the EIHC-5 were also considered by the USCHC.

USCHC-37 meets in St John's, Canada

The meeting concluded with a number of presentations on informational items and status reports including: ship survey plans for 2014-15, e-Navigation update, NOAA paper chart production update, developments in bathymetric radar/satellite-derived bathymetry and LIDAR, strategic plans for paper chart production in light of the requirements for ECDIS as a carriage requirement in an increasing number of ships.

It was agreed that the 38th meeting of the Commission would be hosted by the USA in Washington, DC in March 2015 and would coincide with the next US Hydrographic Conference to be held at the same venue.

Task 3.1.16 IHO Hydrographic Commission on Antarctica

No meeting of the IHO Hydrographic Commission on Antarctica (HCA) was conducted in 2014.

Task 3.1.17 WEND Working Group

The 4th meeting of the WENDWG was held at the Directorate of Hydrography and Navigation in Niterói, Brazil, on 18 and 19 March, under the chairmanship of Captain Jamie McMichael-Phillips (UK). Twenty-six representatives from 15 Member States (Argentina, Brazil, Chile, Colombia, Ecuador, Finland, France, Japan, Mexico, Norway, Singapore, Russian Federation, Suriname, UK, Uruguay), seven Regional Hydrographic Commissions (NHC, BSHC, NSHC, MBSHC, EAHC, EAtHC, SWAtHC), and the Regional ENC Coordinating Centres (IC-ENC, Primar) attended the meeting. Three members of the WG (Canada, China-Hong Kong and USA) joined the meeting via teleconference. The IHB was represented by Director Mustafa Iptes and Assistant Director Alberto Costa Neves (Secretary).

The meeting acknowledged the status of approval of the revised guidelines for the implementation of the WEND Principles and of the definition of *cartographic boundary* to help the production of ENCs in areas where maritime boundaries have not been agreed or confirmed. The meeting analyzed the potential impact of ENC overlaps and how to resolve the conflicts in ECDIS when overlaps occur. The meeting agreed to develop a proposal for a pilot project to use ECDIS software tools to resolve overlapping data issues.

The Working Group reviewed progress on the development of an IHO WENC concept and the aspects related to the WEND Principles and governance. The meeting tasked its RENC Harmonization Sub-Group (RHSG) to develop intersessionally the minimum standards for RENC operation and to produce a paper amplifying the benefits for ENC producer nations to join a RENC.

WENDWG-4 reviewed the status of global ENC coverage. The meeting invited the RENCs to report global ENC coverage and ENC distribution statistics, including for non-RENC members, to all WENDWG meetings in future. The IHB reported on the development of its ENC coverage catalogue and the expected benefits for the WENDWG to achieve its main objective (*Monitor and advise IRCC on the development of adequate ENC coverage to meet the SOLAS V/19 carriage requirements for ECDIS*). It was agreed that the next WENDWG meeting would take place in Singapore from 3 to 5 March 2015.

Task 3.1.18 Industry participation in RHC meetings

In addition to being represented at IHO meetings through various Non-Governmental International Organizations (NGIO), an increasing number of representatives from industry participated in most RHC meetings as invited Expert Contributors, where they provided valuable contributions to regional capacity building initiatives.

Task 3.1.19 Contribute to improving the framework of IHO response to marine disasters

The IRCC, at its fifth meeting in 2013, had discussed and endorsed a proposal submitted by France to modify IHO Resolution 1/2005 - *IHO Response to Disasters*, in order to expand its scope.

The proposed modifications included an expansion of the title of the Resolution and the inclusion of certain preparatory and preventative measures, such as the exchange of near real-time sea-level data and also cooperation and coordination with the IHB, RHCs, other States and international organizations. The proposed amendments to the IHO Resolution 1/2005, as amended, were submitted to the Member States for approval and subsequently approved (further details in IHO CL14/2014 and 29/2015).

Element 3.2 Increase participation by non-Member States

One of the important strategic goals of the IHO is to increase the participation of non-Member States in IHO activities. IHB Directors visited and briefed high level governmental officials directly and through their diplomatic representatives as part of the IHO awareness-raising campaign. Non-Member States of the IHO were encouraged and invited to participate in the RHC meetings, Capacity Building initiatives and relevant IHO meetings.

Jordan. Director Mustafa Iptes paid a high level Capacity Building visit to Jordan from 10 to 13 November to invite and encourage Jordan to apply to become a Member State of the IHO.

In the first part of his programme, Director Iptes visited Amman where he met Brigadier General Eng. Awni Mohd Kasawneh**,** Director General of the Royal Jordanian Geographic Centre on 10 November and called on H.E. Dr Lina Shbeeb, Minister of Transport. He presented the activities of the IHO and underlined the importance of hydrography and hydrographic services and the benefits of becoming a Member State of the IHO.

In the second part of the programme, Director Iptes visited Aqaba where he met Mr Salah Ali Abu Afifeh, Director General of the Jordan Maritime Authority and Brigadier General Ibrahim Salman Alnaimat, Deputy Commander of the Royal Jordanian Naval Force.

Director Iptes was informed that Jordan, as a coastal State, is keen to join the IHO in the future and that the relevant governmental agencies were expected to hold a coordination meeting to consider the membership process.

Director Iptes meets the Minister of Transport and the Director-General of the Geographic Center in Jordan

Panama. At the invitation of the Panama Maritime Authority, President Robert Ward, accompanied by Assistant Director Alberto Costa Neves, visited Panama from 2 to 4 December en route to the 15th meeting of the MACHC in Mexico. The purpose of the visit was to raise awareness of the importance of hydrography and its relevance to the national economic infrastructure of Panama and to highlight the potential for extending Panama's influence both regionally and globally through the leadership and example of a very significant maritime nation such as Panama.

President Ward had the opportunity to call on the Administrator of the Panama Maritime Authority who is recognized as Panama's national hydrographic authority. During the visit President Ward had very productive and open discussions with the Maritime Authority staff on significant technical matters. In addition, he met the Deputy Administrator and supporting staff of the Panama Canal Authority and the Director General and staff of the National Geographic Institute Tommy Guardia. All those visited were enthusiastic and willing to contribute to a national framework that will foster collaboration and cooperation in improving the national hydrographic capability.

President Ward emphasized the benefits of Panama's active participation in the MACHC and membership of the IHO as crucial steps towards making progress in the development of national hydrographic services in the country.

Status of Applications for Membership of the IHO

The following States, whose application for membership was approved in preceding years, have yet to deposit their Instruments of Accession:

- Mauritania (application approved in April 1991),
- Bulgaria (application approved in April 1992),
- Sierra Leone (application approved in September 2010),
- Haiti (application approved in November 2012).

The applications for IHO membership from Brunei Darussalam, Georgia and Viet Nam all obtained the required two-thirds approval of the IHO Member States in late 2014. These countries were subsequently contacted by the Government of Monaco to notify them formally of their approval status and to invite them to proceed with the deposit of their Instrument of Accession.

Element 3.3 Capacity Building Management

The IHO Capacity Building programme is a strategic objective of the organization that provides targeted training, technical assistance and hydrographic awareness seminars aimed at improving nautical charting and the delivery of maritime safety information in regions, particularly for developing countries.

The IHO Capacity Building programme is funded from the IHO budget and is supplemented by additional support from Member States (currently Japan, through the Nippon Foundation, and the Republic of Korea). However, considering the growing demands for IHO Capacity Building activities, more funds and contributions are required. For this reason, the Directing Committee continued its campaign to find new donor States and funding organizations.

Due to the significant increase in the level of activity of the CB programme, the 11th meeting of the CBSC approved the funding for the temporary employment under contract of a part-time Capacity Building Assistant (CBA) at the IHB. The CBA worked at the IHB throughout 2014. However, this contract support, which had been in place for 18 months, was terminated at the end of the year in order that the position would not be considered permanent in terms of long-term pension or employment rights. The role of the CBA will be absorbed by existing IHB staff wherever possible. The Directing Committee will monitor the impact of the discontinuation of the CBA position during 2015.

Expenditure in the IHO CB programme (427,493 Euros) continues to grow year on year. Improvements in administrative procedures (see also Task 3.4.2) and the employment of a CBA throughout the year resulted in a high rate of execution of the planned programmes (79% completion rate). Nevertheless, some planned CB activities could not take place because of administrative and other issues in host nations, the unavailability of nominated personnel, or other late changes to the planned events. Most of the activities that could not take place were postponed and transferred to the 2015 CB Work Programme for execution.

One IHB Director, one Assistant Director and the CBA were engaged in this work.

Task 3.3.1 Capacity Building Sub-Committee

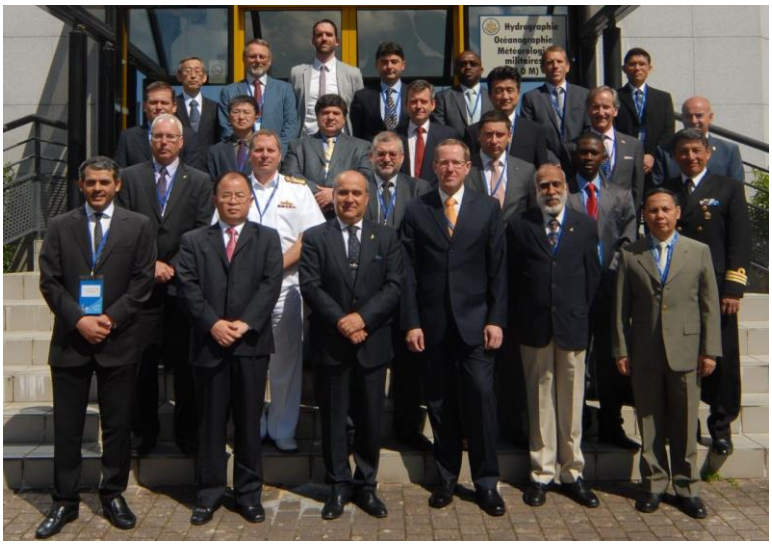
The 12th meeting of the Capacity Building Sub-Committee (CBSC) was held in Brest, France from 14 to 16 May, hosted by the *Service Hydrographique et Océanographique de la Marine* (SHOM). The meeting was chaired by Mr Thomas Dehling (Germany) and attended by 12 members and 18 observers from 11 Regional Hydrographic Commissions (RHCs), 18 Member States and the Chair of the IBSC. The IHB was represented by Director Mustafa Iptes and Assistant Director Alberto Costa Neves (Secretary - CBSC).

The CBSC approved the draft revised IHO Capacity Building (CB) Strategy that was subsequently endorsed by the IRCC and approved by the EIHC-5. The CBSC also formed a drafting group to develop suitable public relations material to publicize the revised IHO CB Strategy.

The CBSC recognized the increasing importance of the CB Coordinators in all the Regional Hydrographic Commissions. The CBSC considered that the improvement of C-55 is essential in order to provide a comprehensive basis for the assessment of CB requirements in each country. The CBSC welcomed the related work done by the IHB to develop a Geospatial Information System that will support assessing the need for CB support in coastal States in accordance with the IHO CB Strategy.

The meeting approved the revised CB Procedure 3 - *Reviewing process and the preparation of the Management Plan* and 8 - *Finance Management*. A working group was formed to develop a new Procedure 9 covering Technical Visits. This new procedure was intended to replace some parts of Procedure 5 and the former Annex to the CB Strategy.

The CBSC acknowledged the significant contributions made by the Republic of Korea and Japan, through the Nippon Foundation, to the IHO Capacity Building Programme. CBSC also recognized the contribution made by industry to capacity building and the need to achieve even greater involvement with industry partners.



CBSC-12 meet in Brest, France

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The meeting acknowledged the significant contribution of the IMO in supporting the development of hydrographic services in Developing States through its Integrated Technical Cooperation Programme. The meeting commended the risk assessment methodology developed by New Zealand as a significant and beneficial tool for establishing priorities for surveys and charting, which in turn supports the identification and justification for CB activities and projects.

The preliminary figures for the Strategic Performance Indicators were discussed and reported to IRCC-6.

The CB Management Plan (CBMP) was reviewed and approved by the meeting. The meeting also updated the 2014 CB Work Programme (CBWP) and agreed on the 2015 CBWP based on the approved CBMP. The next meeting of the CBSC was scheduled in Mexico from 27 to 29 May 2015.

Task 3.3.2 Capacity Building Fund Management

The Republic of Korea and the Nippon Foundation of Japan made a significant financial contribution to the CB Fund during the period of this report.

Many other IHO Member States contributed significant resources in-kind to the CBWP, by providing the venue, instructors, local support, or other items to ensure the effective implementation of CB activities. A statement of accounts for the Capacity Building Fund is contained in Part 2 of this Annual Report.

Task 3.3.3 Meeting with other organizations, funding agencies, private sector and academia

- ***The 8th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG Capacity Building (CB) Coordination Meeting***

  The 8th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG Capacity Building Coordination Meeting was held on 27 and 28 November, at the FIG Headquarters in Copenhagen (Denmark). The annual meeting brought together 10 representatives from the IHO, IMO, WMO, IOC, IALA and FIG. The International Atomic Energy Agency (IAEA) was not represented at the meeting on this occasion. The IHO was represented by Mr Thomas Dehling (Germany), Chair of the CBSC, and Director Mustafa Iptes and Assistant Director Alberto Costa Neves from the IHB.

  Participants presented the CB strategies for their organizations, gave an update on their CB activities in the last year and shared lessons learned, best practices, standardization procedures and experience in dealing with funding agencies. The CBSC Chair reported on IHO developments including the changes in the CB Strategy, the work flow of the CBSC, the status of joint projects and global achievements. Director Iptes presented the relevant statistics covering CB assessment and provision and their evolution over time, the way the CB programme benefits from additional support from individual Member States, namely the Republic of Korea and Japan, and the planned assessment and training activities for 2015.

  Each organization presented its CB programme for 2014 followed by a panel session to assess the priorities and joint policies that could reinforce each CB programme. Participants committed to offer mutual assistance in obtaining high level contacts in countries where the member organizations need to improve awareness and to work as much as possible under the United Nations policy of "*Deliver as one*".

  The meeting agreed that information should be shared on the establishment of regional training hubs and advances in distance/e-learning. Furthermore, the meeting saw benefits in information exchange between member organizations including: a calendar of activities; country maritime profile information; joint high level visits to common target States and regional organizations; CB impact assessments and gender and youth programmes.

Representatives agreed to present a joint paper to the next session of the IMO Technical Cooperation Committee covering the above items. It was agreed that the next Joint CB Coordination Meeting would take place on 19 and 20 November 2015 in Geneva, Switzerland, and will be hosted by the WMO.

- ***Meeting with Nippon Foundation and new fund for the CHART Project***

  A Memorandum of Understanding (MoU) between the International Hydrographic Organization and the Nippon Foundation was signed in December 2013 covering capacity building opportunities and further cooperation in the future. In keeping with the purpose of the MoU, the IHB submitted a proposal to the Nippon Foundation for a three-year capacity building programme which was subsequently approved. The programme known as The IHO-Nippon Foundation CHART (Cartography, Hydrography and Related Training) Project began in 2014 and was funded by the Nippon Foundation. A coordination meeting between the IHB and Nippon Foundation was held in Tokyo, Japan on 16 January to review and discuss the details of the next courses to be conducted under the CHART Project. Director Iptes represented the IHB.

- ***Graduation Recognition Ceremony for Master of Science Degree in Hydrographic Science University of Southern Mississippi, USA***

  The first three students (from Bangladesh, Jamaica and Mauritius), sponsored by the Republic of Korea through the IHO Capacity Building Programme, successfully completed a Master's Degree in hydrographic science at the University of Southern Mississippi, USA, in July. This course is recognised by the FIG-IHO-ICA IBSC as meeting its Category A course requirements. President Robert Ward attended the Graduation Recognition Ceremony on 31 July and delivered a keynote address. Mr Joon-Ho Jin, Director of Charting, Korea Hydrographic and Oceanographic Administration also participated in the ceremony representing the ROK as the donor country.

Task 3.3.4 IHO Capacity Building Strategy

The XVIIIth International Hydrographic Conference had tasked the CBSC to present a revised Capacity Building Strategy to the EIHC-5. The revision of the CB Strategy was finalized and adopted by the CBSC at its 12th meeting in May.

Mr Thomas Dehling, Chair of the CBSC presented the revised IHO Capacity Building Strategy to the EIHC-5. The Conference unanimously adopted the revised IHO Capacity Building Strategy.

Task 3.3.5 Capacity Building Work Programme

The Capacity Building Work Programme is developed by the CBSC and subsequently endorsed by the IRCC. More details about the activities in the CBWP are described under Elements 3.4 and 3.5.

Task 3.3.6 Follow-up of CB activities and initiatives

The IHB, on behalf of the CBSC, continuously monitored CB activities and initiatives. One IHB Director and one Assistant Director were engaged in this work. Additionally, the President, both Directors and the Assistant Directors continuously monitored CB activities undertaken in the RHC areas for which they provide an overview and advisory function.

Task 3.3.7 FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers (IBSC)

The 37th Meeting of the IBSC was held in Tokyo at the Japan Hydrographic and Oceanographic Department of the Japan Coast Guard from 11 to 17 April. The meeting was attended by eight members of the Board. Assistant Director Alberto Costa Neves (Secretary - IBSC) represented the IHB.

The Board assessed 15 programmes for Hydrographic Surveyors at its annual meeting: five Category B (S-5) submissions, including three new programmes, six Category A (S-5) submissions, including one new programme, three Category B (S-8) submissions, including two new programmes.

In addition to its annual meeting, the IBSC had been working on the development of revisions to the standards, specifically the significant revision of the S-5 and S-8 standards.

The number of programmes in hydrographic surveying and nautical cartography continued to increase. In 2014, there were 50 programmes in hydrography, eight in cartography and one regional scheme for individual recognition in hydrography that had been recognized by the Board.

The Chair reported the resignation of two members of the Board: Prof. Razali Mahmud from FIG (Vice Chair I) and Rear Admiral K.M. Nair from IHO. Mr Adam Greenland (FIG) was unanimously elected as the new Vice-Chair 1 by the Board.

Task 3.3.8 Provide guidance to training institutions

The IHB actively interacted with training institutions by providing guidance regarding recognition and provision of training and education. Interaction opportunities often arise as a result of the recognition processes, during the preparation of CB projects as well as during seminars and RHC meetings.

Element 3.4 Capacity Building Assessment

Task 3.4.1 Technical and Advisory Visits

Execution of the technical and advisory visits planned for 2014 are summarized in the following table:

Nº	Events	RHC	Implementation
1	Technical visit to Brunei Darussalam	EAHC	Led by EAHC 2 - 4 December
2	Technical visit to Viet Nam	EAHC	Led by EAHC 5 - 7 November
3	Technical Assessment & Advice Visit – Nicaragua	MACHC	Led by UKHO 3 - 5 November
4	Technical visit to Israel	MBSHC	Led by Turkey with Greece and IHB 1 - 3 July
5	Technical visit to Georgia	MBSHC	Led by Turkey and Ukraine 22 - 24 April
6	Technical Visit to Government high authorities - Jordan	NIOHC	Led by IHB 10 - 13 November
7	Technical Visit to Paraguay	SWAtHC	Led by Brazil with IHB 13 - 16 January
8	Technical Assessment & Advice - Samoa	SWPHC	Led by LINZ POSTPONED TO 2015
9	MOWCA (all western Africa coastal and island states from Mauritania to Angola) high level visit	EAtHC	Led by France POSTPONED TO 2015
10	Technical visit to Lebanon	MBSHC	Led by Turkey with France and IHB 4 - 6 February
11	Technical Visit to Liberia	EAtHC	Led by IHB POSTPONED TO 2015

Task 3.4.2 Review existing CB procedures and develop new ones

As reported under Task 3.3.1, the CBSC continued to develop procedures to improve the effectiveness of CB activities. During the year, the revised CB Procedure 3 - *Reviewing process and the preparation of the Management Plan* and new Procedure 8 - *Finance Management* were approved. A working group was formed to develop a new Procedure 9 covering Technical Visits.

Norway and the IHB continued to work on specifications for a Capacity Building Management System, in order to incorporate the development of the procedures, the databases and the publications. The management system will be a comprehensive tool to support the CB programme, to monitor the follow-up activities and to support the decision-making process.

Task 3.4.3 Enhance publication C-55

See Task 3.6.1.2

Element 3.5 Capacity Building Provision

Task 3.5.1 Raise awareness on the importance of hydrography

The IHB Directing Committee continued to work on a schedule of visits to improve global awareness, engage external stakeholders such as the United Nations, IMO, IALA, European Commission, funding agencies, academia and industry in general. This included visits to high level authorities in several countries, participation in Regional Hydrographic Commission meetings, participation in various seminars and conferences, and the active promotion of IHO activities in specialized magazines and journals.

Task 3.5.2 Technical workshops, seminars, short courses

Execution of the following seminars, workshops and short courses planned in 2014 are summarized in the following table:

No.	Events	RHC	Implementation
1	MSI (training on establishment of MSI structure and basic MSI procedures), for NIOHC Members	NIOHC	Led by UKHO, Muscat, Oman 15 - 17 December
2	MSI (training on establishment of MSI structure and basic MSI procedures), for RSAHC Members	RSAHC	Merged with the NIOHC Event No. 1
3	MSI Regional Workshop, for Solomon Is, Tuvalu, Cook Is, Fiji, Samoa, Tonga, Kiribati, PNG, Tokelau, New Caledonia, Niue, Vanuatu, French	SWPHC	Led by LINZ, Wellington, NZ 25 - 27 August
4	Phase 1 Skills: MSI course (3 days) + Introduction to the assessment and promulgation of navigationally significant data (2 days), for EAHC Members	EAHC	Led by EAHC POSTPONED TO 2015
5	MSI Regional Workshop, for EAtHC Members	EAtHC	Led by France, Abidjan, Côte d'Ivoire 16 - 18 December
6	Tides and water level for hydrographic survey, for EAHC Members	EAHC	Led by Malaysia, Kuala Lumpur 8 - 12 December
7	Sub-regional course on Hydrography (for Spanish speakers), for Guatemala (lead) Belize, El Salvador, Honduras, Nicaragua, Costa Rica and Dominican Republic	MACHC	Merged with the IMO Training Event No. 20

No.	Events	RHC	Implementation
8	Tidal and Water Levels Workshop, for RSAHC Members	RSAHC	Led by UKHO POSTPONED TO 2015
9	Introduction to Hydrographic Surveying, for SAIHC Members	SAIHC	Merged with the IMO Training Event No. 21
10	Tidal and Water Levels Workshop, for SAIHC Members	SAIHC	Led by SAIHC POSTPONED TO 2015
11	Technical Workshop on Hydro/Cartography River Survey, for SEPHC (8) SWAtHC (3) MACHC (3)	SEPHC	Led by Peru, Lima, Peru 22 - 24 October
12	Solomon Is. National Hydrographic Capability Development	SWPHC	Led by Australia, Wollongong, Aust. 11 - 22 August
13	Advanced ENC Production, for Myanmar	NIOHC	Led by UKHO, Yangon, Myanmar 3 - 7 March
14	Advanced ENC Production, for Bangladesh	NIOHC	Led by UKHO, Chittagong, Bangladesh. 4 - 8 May
15	Seminar on Raising Awareness of Hydrography (for MACHC Associate and Non Members)	MACHC	Led by UKHO, Manzanillo, Mexico 9 - 10 December
16	Development of a Regional Marine Spatial Data Infrastructure (MSDI) Workshop, for NIOHC Members	NIOHC	CANCELLED
17	Development of a Regional Marine Spatial Data Infrastructure (MSDI) Workshop, for RSAHC Members	RSAHC	CANCELLED
18	Technical aspects of maritime boundaries, baselines and extended continental shelf, for EAHC Members	EAHC	Led by Indonesia, Jakarta 10 - 14 November
19	CB Management Assistant	IHB	Led by the IHB
20	IMO funded course - Meso America and Caribbean Sea	IHB	Led by COCATRAM, Managua, Nicaragua 22 September-3 October
21	IMO funded course – Africa	IHB	Led by UKHO, Maputo, Mozambique 29 September - 10 October 2014
22	IMO funded course - Southwest Pacific	IHB	Led by LINZ, Suva, Fiji 16-27 June
23	Cat A Hydrography Programme (USM)	IHB	Led by IHB, Hattiesburg, USA Aug 2014-Aug 2015
24	Participation of CB training recipients to the CB Stakeholders Seminar at the IHB (Kenya, Ukraine)	IHB	Led by the IHB Monaco, 5-6 Mar
25	6th Course in Marine Cartography and Data Assessment	IHB	Led by UKHO, Taunton, UK 1 September - 5 December

26	GEBCO Training Project (UNH)	UNH	Led by UNH, Durham, USA August 2014 - August 2015
27	On-board training for Comoros and Madagascar	SAIHC	Led by France, *Beautemps-Beaupré* June - August 2014
28	Workshop on Port & Shallow Water Surveys	RSAHC	Led by UKHO, Abu Dhabi 22 - 26 September
29	IMO funded course - Eastern Europe and CIS	IHB	Led by IHB, Constanza, Romania 3-14 November
30	Category B Marine Geospatial Information Program (Phase 1)	IHB	Led by IHB, Busan, ROK POSTPONED TO 2015
31	Training for Trainer (TFT) Program of Foundation Course	EAHC	Led by KHOA, Busan, ROK 27 October - 7 November

Task 3.5.3 Hydrographic and Nautical Cartography Courses

The courses and training delivered in 2014 are shown in the table associated with Task 3.5.2.

The selection of trainees and oversight of the Category A hydrographic training programme at the University of Southern Mississippi sponsored by the Republic of Korea was undertaken by an IHO/ ROK Programme Management Board.

The selection of trainees and oversight of the Category B CHART cartographic training programme at the UKHO sponsored by the Nippon Foundation (Japan) was undertaken by an IHO/UKHO/JHOD Programme Coordination Board.

Task 3.5.4 On the Job Training (ashore / on board)

See Task 3.5.2 - Event number 27.

Task 3.5.5 IHB, to ensure awareness of multilateral or bilateral projects with hydrographic and/or cartographic components, and to provide advice to governments, project managers and funding agencies on the importance of including a hydrographic Capacity Building Component.

The Directing Committee assisted in the development of several regional projects including in the South-West Pacific (liaison with LINZ - Land Information New Zealand), the Caribbean region (liaison with OECS - The Organisation of Eastern Caribbean States) and the West African region.

Task 3.5.6 CBSC to foster bilateral agreements in order to help satisfy SOLAS V/9

Technical visits (see Task 3.4.1) continued to be the principal way of identifying areas where bilateral agreements may help to further develop the provision of hydrographic services.

Element 3.6 Coordination of Global Surveying and Charting

Task 3.6.1 Publication C-55: Status of Hydrographic Surveying and Nautical Charting worldwide

The following table lists the countries for which updates to existing C-55 entries were received in 2014:

IHO Member States	Non IHO Member States
Argentina	Benin (via France)
Brazil	Comoros (via France)
Cameroon (via France)	Congo (via France)
Denmark	Côte d'Ivoire (via France)
Monaco (via France)	Djibouti (via France)
Morocco	Equatorial Guinea (via France)
New Zealand	Gabon (via France)
Portugal	Guinea (via France)
Russian Federation	Madagascar (via France)
South Africa	Mauritania (via France)
	Senegal (via France)
	Togo (via France)
	Cook Is.
	Kenya
	Lebanon
	Samoa
	Tanzania
	Tonga

The IHB produced an advanced draft of a GIS data model to support C-55 and associated regional information requirements and developed a demonstration user interface covering the Antarctic region (see task 3.1.16).

Task 3.6.2 WENDWG to foster the implementation of the WEND principles, monitor progress and report to IRCC

The principal objective of the WENDWG is to monitor and advise IRCC on the achievement of adequate ENC coverage that meets the SOLAS V/19 carriage requirements for ECDIS. WENDWG reported to IRCC a number of proposals as reported under Task 3.1.17.

Task 3.6.3 RHC to coordinate ENC schemes, consistency and quality

Guided by IHO Publication S-11, RHC's are expected to coordinate the development and maintenance of small/medium scale ENC schemes and to ensure that uniform parameters are used for consistency and quality. RHCs are also invited to monitor and report on gaps and overlaps in ENC coverage on a regularly basis. This is achieved at every meeting of the IHO Working Group on the World-wide ENC Database (WENDWG). The importance of the WENDWG activities has been acknowledged formally at EIHC-5 by Decision No 10 which states that "*the two continuing priorities of the IRCC will continue to be Capacity Building and ENC coverage together with related WENDWG issues*". EIHC-5 also tasked the IHO Inter-Regional Coordination Committee (IRCC), by Decision No 12, "*to assess the long term consequences of not achieving the full implementation of the WEND Principles*".

As far as ENC coverage was concerned, reporting from individual RHCs to the IHB or the WENDWG remains inconsistent but is improving with the use of the IHO ENC on-line Catalogue. The examination of the IHO ENC Catalogue, compiled primarily from data provided by the two established RENC organizations and the UKHO, showed that ENC small/medium scale coverage was generally satisfactory, though there were a number of instances of overlapping or duplicated data in the same usage band, as well as some gaps in coverage. At larger scales, there were still a number of ports, harbours and approaches for which there was not an ENC to correspond to a published paper chart of the same area.

The statistics reported annually by the IHO to the IMO concerning global ENC coverage are included in Table 1 of Annex B under SPI 2. By the end of 2014, the figures had not changed significantly from those reported in May 2014.

The relevant Regional Hydrographic Commissions have been invited to report on their analysis of any remaining gaps in ENC coverage and to identify possible actions to the next meeting of the WENDWG.

A working group led by Singapore on behalf of the East Asia Hydrographic Commission (EAHC) was been to carry out a pilot project to explore technical solutions to resolve the unpredictable performance of ECDIS caused by overlapping ENC coverage, notably in areas where the limits of waters of national jurisdiction between two neighbouring countries are not established. ECDIS manufacturers have been invited to take part in the project.

Task 3.6.4 Maintenance of INT chart schemes and improvements of availability of the INT chart series

The purpose of the IHO INT chart series is to define and produce a set of medium and large-scale charts that are specifically designed for planning, landfall and coastal navigation and access to ports used by ships engaged in international trade. The designation of the limits and scale for each INT chart and the designation of which country will be the primary producer of each INT chart are managed by the relevant RHC.

The following table summarizes the status of the INT chart scheme at the end of 2014:

Region	Coordinator	Commission	Scheduled	New publications reported in 2014	Published Total
A	USA/NOS	USCHC	15	0	15
B	USA/NOS	MACHC	79	8	38
C1	Brazil	SWAtHC	51	3	33
C2	Chile	SEPRHC	44	0	7
D	UK	NSHC	214	0	213
E	Finland	BSHC	292	1	280
F	France	MBSHC	246	1	163
G	France	EAtHC	172	0	132
H	South Africa	SAIHC	116	0	85
I	Iran (I.R of)	RSAHC	116	0	65
J	India	NIOHC	166	6	125
K	Japan	EAHC	293	1	240
L	Australia	SWPHC	62	0	56
M	UK	HCA	114	1	74
N	Norway	ARHC	8	0	8
1 :10 Million	IHB	--	25	0	24

Total of INT charts scheduled: 2013

Total of INT charts produced in 2014: 21 (1.04% of the total scheduled)

Total of INT charts published by end 2014: 1558 (77.4% of the total scheduled)

Element 3.7 Maritime Safety Information

Task 3.7.1 Sub-Committee on the World-Wide Navigational Warning Service

The Sub-Committee on the World-Wide Navigational Warning Service (WWNWS-SC) monitors and guides the IHO/IMO World Wide Navigational Warning Service which includes NAVAREA and coastal warnings. The Sub-Committee is responsible for studying and proposing new methods to enhance the provision of navigational warnings to mariners at sea, facilitating the implementation of the major changes in procedures for dissemination of navigational warnings and providing appropriate guidance to concerned IHO Member State representatives to further the evolution of the WWNWS. The Sub-Committee also maintains a close liaison and cooperation with the WMO for its Worldwide Met-Ocean Information and Warning Service (WWMIWS).

The sixth meeting of the WWNWS-SC was held in Wellington, New Zealand, from 18 to 22 August under the chairmanship of Mr Peter Doherty (USA). The meeting was attended by 27 delegates from 14 IHO Member States, the IHB, the Secretariat of the IMO, the Secretariat of the WMO, the IMO NAVTEX Panel, the IMO SafetyNET Panel, Inmarsat and Iridium. The delegates included representatives of 11 NAVAREA Coordinators, one Sub-area Coordinator and four National Coordinators. The WMO held its 2nd Maritime Safety Services Enhancement Workshop concurrently. The IHB was represented by Assistant Director David Wyatt.

The WWNWS-SC and the WMO Maritime Safety Services Enhancement Workshop met in joint session for one and a half days during the meeting period. This allowed NAVAREA and METAREA Coordinators to discuss topics of mutual interest and to receive briefings and background presentations on the IHO, WMO and IMO structures.

The current state of the documentation related to MSI was discussed at the joint meeting. The next publications to be reviewed were highlighted; these included the IMO NAVTEX Manual and IMO Resolution A.1051(27) on the IMO/WMO Worldwide Met-Ocean Information and Warning Service. The joint session received progress reports on the development of the following Product Specifications: S-124 - *Navigational warnings*, S-411 - *Sea ice* and S-412 - *Met-ocean forecasts*, all of which are relevant to worldwide navigational warning services.

The IMO Secretariat provided background presentations on the projects related to the modernization of the Global Maritime Distress and Safety System (GMDSS) and e-Navigation, noting that engagement and input from both the NAVAREA and METAREA Coordinators is vital to the eventual successful conclusions of both projects. The IMO Secretariat encouraged closer cooperation and interaction between the IMO, IHO and WMO.

The Sub-Committee reviewed the WWNWS documentation, including the proposed amendments to the SafetyNET Manual prepared at the 12th meeting of the Document Review Working Group (DRWG), received MSI self-assessment reports (see task 3.7.3), assessed the content and success of the MSI Capacity Building training courses delivered during the year and prepared a report on the outcome of the meeting for submission to the 2nd session of the IMO Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) in 2015.

The Sub Committee received reports from the Chair of the IMO NAVTEX Panel, the IMO SafetyNET Panel and WMO. Inmarsat Global Ltd provided a report, which included a comprehensive brief on Inmarsat Fleet Broadband and Maritime Safety Data Service (MSDS) services. The Sub-Committee also received a comprehensive brief on the present state and future development of the Iridium Satellite system.

Task 3.7.2 WWNWS Document Review Working Group

Task 3.7.3 Maintain and extend the following IHO standards, specifications and publications

The WWNWS relies on various IMO/IHO documents to provide guidance for the promulgation of internationally coordinated NAVAREA and Coastal warnings. Further, the WWNWS systems used for dissemination of the maritime safety information, SafetyNET and NAVTEX respectively, each have their own guidance document. The WWNWS ensures that there is 100% consistency between these documents.

The proposed revisions to the Joint IMO/IHO/WMO Manual on MSI were presented at the first session of NCSR and were subsequently approved and adopted at the 94th session of the IMO Maritime Safety Committee.

The Document Review Working Group (DRWG) met in the week after the first session of NCSR and prepared editorial amendments to the IMO SafetyNET Manual and sections of the International Aeronautical and Maritime Search and Rescue (IAMSAR) Manual, which had been requested for review by the IMO Secretariat. The amendments to the IAMSAR Manual were submitted to the IMO Secretariat for discussion at a number of joint meetings prior to submission to the second session of NCSR held in March 2015, for approval. The editorial review of the IMO SafetyNET Manual was completed at the 6th meeting of the WWNWS-SC. After approval by IHO Member States and the WMO, the draft revision will be presented to the third session of the IMO NCSR in early March 2016 for endorsement and subsequent presentation at the 97th session of the IMO Maritime Safety Committee meeting later in 2016 for final approval and adoption.

It was decided at the WWNWS 6 meeting that the 13th meeting of the Document Review WG (DRWG 13) would undertake a review of the IMO NAVTEX Manual and prepare proposed amendments for consideration at the 7th meeting of WWNWS-SC in 2015 and, after approval by Member States and the WMO, they will be submitted to the 3rd session of IMO NCSR in 2016. In addition work was to commence on IMO Resolution A.1051(27), in preparation for submission to the IMO NCSR.

Task 3.7.4 Liaise with IMO and WMO on the delivery of MSI within the GMDSS

The WWNWS-SC, with support from the IHO Capacity Building Programme, continued to deliver its comprehensive training course that provides practical guidance to relevant authorities in countries that are drafting navigational warnings or broadcasting MSI for the high seas under the GMDSS. The objective of the course is to increase the flow of MSI to NAVAREA Coordinators for promulgation, and ultimately to emphasize the importance of establishing expertise in the countries within these NAVAREAs, to fulfil their role of National Coordinators.

The first of three MSI courses was held from 25 to 27 August in Wellington, New Zealand, in support of the South West Pacific Hydrographic Commission. 15 students attended from 13 different countries. The second MSI course was conducted in Muscat, Oman, from 15 to 17 December, in support of the ROPME Sea Area and North Indian Ocean Hydrographic Commissions. Twenty-five students attended from 15 different countries. The third MSI course was conducted in Abidjan, Côte d'Ivoire, from 16 to 18 December in support of the Eastern Atlantic Hydrographic Commission.

Two MSI courses planned for the East Asia Hydrographic Commission and the Mediterranean and Black Seas Hydrographic Commission were postponed and rescheduled for 2015.

Task 3.7.5 Contribute to the IMO work items on the modernization of GMDSS

The WWNWS-SC reviewed the relevant matters considered and decisions taken during the 94th session of the IMO Maritime Safety Committee (MSC 94) and the 1st session of IMO NCSR. The WWNWS-SC, through the IHO, again raised its concerns at IMO NCSR that the company Iridium had provided limited details on how it might fulfil the requirements outlined in IMO Resolution A.1001(25) - *Criteria for the Provision of Mobile Satellite Communication Systems in the GMDSS*. Iridium is the first commercial satellite provider other than Inmarsat, to attempt to gain approval based on the relevant IMO Resolution (A.1001(25)).

The IMO Secretariat provided a comprehensive brief on the GMDSS modernization and the GMDSS Master Plan. A revised process for updating Annexes 7 and 8 of the Master Plan was explained. Noting that the responsibility for inserting new data would be passed directly to the Member States, it was confirmed that a validation check would be undertaken by the IMO Secretariat. The representative of the IMO Secretariat urged direct engagement by all Area Coordinators with the GMDSS modernization Correspondence Group.

Subsequently the contents of the relevant annexes of the GMDSS Master Plan were reviewed. As a result, METAREA Coordinators were requested to liaise with their respective NAVAREA Coordinators to ensure the information being submitted to the IMO was correct.

Task 3.7.6 Improve the delivery and exploitation of MSI to global shipping by taking full advantage of technological developments

At the 6th meeting of the WWNWS-SC, the representatives of 11 NAVAREAs and one Sub-Area presented their MSI Self Assessments. The MSI Self-Assessment document requires NAVAREA Coordinators to complete an MSI Quality Management Survey. There was a pleasing high level of consistency of service described in all of the reports that were submitted.

The results of the year-long WWNWS customer survey questionnaire were reviewed and various issues identified for individual NAVAREAs to address. The Inmarsat company gave a general brief on issues identified for the SafetyNET service relevant to both NAVAREA and METAREA Coordinators. It was noted that many of the comments and problems submitted by users were identified as system and equipment related and reflected a lack of understanding on the part of the users. The IMO Secretariat was asked to consider if this situation could be brought to the attention of the appropriate IMO bodies to explore ways to improve GMDSS training.

Element 3.8 Ocean Mapping Programme

The GEBCO Project is a joint programme that is executed under the governance of the IHO and the IOC. GEBCO is directed by a Guiding Committee made up of representatives from both IHO and IOC and is supported by a Technical Sub-Committee on Ocean Mapping (TSCOM), a Sub-Committee on Undersea Feature Names (SCUFN), a Sub-Committee on Regional Undersea Mapping (SCRUM), and a Nippon Foundation/GEBCO Training Project Management Committee. Additional ad hoc working groups are convened as necessary. Through the work of its organs, GEBCO produces and makes available a range of bathymetric data sets and products, including gridded bathymetric data sets, the GEBCO Digital Atlas, the GEBCO world map and the GEBCO Gazetteer of Undersea Feature Names.

Task 3.8.1 Conduct meetings of relevant GEBCO bodies:

Task 3.8.1.1 GEBCO Guiding Committee

The 31st meeting of the GGC was held at the IHB in Monaco from 13 to 15 June. The President, Director Mustafa Iptes and Assistant Director David Wyatt represented the IHB.

The GGC received brief reports from its Sub-Committees and endorsed the work which they had undertaken. The GGC also received reports from key personnel performing functions on behalf of GEBCO as well as reports from its parent bodies - IHO and IOC, on activities since the previous meeting.

The GGC reviewed its Work Programme for the quinquennial period 2013 to 2017 which had been approved by the IRCC and commenced development of its Work Plan for 2014 to 2015. The Committee also developed proposed adjustments to its Terms of Reference and Rules of Procedure for submission to IHO and IOC Member States for approval.

The Chair and the President set the scene for the remainder of the meeting, asking members to focus on three key areas – (1) Awareness and profile of the GEBCO Project, (2) Data gathering for ocean mapping (3) Financial support of the project – so as to take the GEBCO Project forward and to maintain its role as the authoritative source and first place of search for ocean bathymetry. The growth in demand for data to support the ever expanding development of the *Blue Economy* in the ocean domain was a repeated theme throughout the meeting. There was a clear understanding that data quality and coverage was the underpinning foundation on which the many uses and products would be developed and that the GEBCO Project should be focused on obtaining and making bathymetric data available, and that it was for others to develop products and services from that data.

A detailed report was received covering education and outreach activities, the results of a year-long focused study.

The GGC devoted significant time to considering its future direction and associated ten-year plan. It was agreed that the goals and vision should be guided by four main underpinning themes: human capacity, science and technology, outreach and education, and resources (human and financial), which in turn supported the three key areas of focus highlighted by the Chair and the President at the beginning of the meeting.

It was agreed that the 32nd meeting of the Committee would take place, together with meetings of TSCOM, SCRUM and the GEBCO Science Day, in Kuala Lumpur, Malaysia, during the week 5 to 9 October 2015.

GEBCO Guiding Committee gather on the roof terrace at the IHB

Task 3.8.1.2 Technical Sub-Committee on Ocean Mapping (TSCOM)

Task 3.8.1.3 Sub-Committee on Regional Undersea Mapping (SCRUM)

The TSCOM and SCRUM are the two sub-committees contributing to the technical work of the IHO-IOC GEBCO Project. A joint TSCOM-SCRUM meeting took place at the Google Headquarters in Mountain View, California, USA, from 11 to 13 December. The meeting was attended by 25 participants representing IHO Member States, the IOC, academic institutions or stakeholder organizations. The meetings were co-chaired by Dr Karen Marks (USA) and Prof. Martin Jakobsson (Sweden).

Ocean mapping is a primary objective of these groups both on a global and regional level. The quality and completeness of ocean mapping products are dependent on the availability of good bathymetric data. The IHO Data Centre for Digital Bathymetry (DCDB) contains track line and multi-beam surveys and is an important resource for ocean mapping. GEBCO has also established the concept of a "Bathymetric Data Store" which includes other types of verified bathymetric data such as regional grids. The aim of the Data Store is to hold or identify (and create metadata for) publically-accessible data sets that have been, or could be, used to build ocean mapping products such as the GEBCO global grid. The Data Store includes grid datasets, point soundings, single beam and multi-beam echo sounder data sets. It is anticipated that the Data Store will be used by a broad community of users who will also be encouraged to submit their data to the Data Store. Guidelines on submitting data will be included in the IHO-IOC GEBCO Cook Book (currently available from the GEBCO web site). It is also planned to provide a facility to view and download data sets (via a web map interface) and to input metadata, either for data sets submitted to the Data Store or for available data sets stored at other locations.

A new edition of the global GEBCO grid was released in December. The GEBCO_2014 grid includes significant contributions from numerous data providers and regional mapping programmes. The grid is accompanied by a new Source Identifier (SID) grid which provides an indication of which grid cells are based on soundings and which are based on depth interpolations. At the time, the grids were only available in netCDF format, however it was planned to make them available in other (more commonly used) formats such as geoTiff. Further information on the GEBCO_2014 grid and its associated SID grid were posted on the GEBCO web site.

Other important items discussed during the meeting included: the GEBCO outreach programme; metadata developments; regional grid compilations; crowd-sourced bathymetry; the global Digital Elevation Model (DEM) project and future high resolution grid products.

The GEBCO Science Day event, which included presentations on ocean mapping initiatives, took place as a session of the American Geophysical Union (AGU) meeting hosted in San Francisco from the 15th to the 19th of December. The session was titled; *New Perspectives on Seafloor Morphology from High-Resolution Ocean Mapping*. Additional information was posted on the AGU web site.

Task 3.8.1.4 Sub-Committee on Undersea Feature Names (SCUFN)

The 27th meeting of SCUFN was hosted at the IHB in Monaco from 16 to 20 June. SCUFN is tasked with selecting the names to appear in the products of the GEBCO Project and on international nautical charts. The meeting, chaired by Dr Hans Werner Schenke (IOC representative) from the Alfred Wegener Institute for Polar and Marine Research (AWI – Germany), was attended by 27 participants, including nine (four IOC and five IHO representatives) of the 12 SCUFN members, and 15 observers including Mr Shin Tani, Chair of the GEBCO Guiding Committee.

The meeting was opened by President Robert Ward. He stressed the increasing importance of the tasks undertaken by SCUFN and its key role in progressively unveiling the mysteries of the oceans and seas. He also took the opportunity in his welcoming address to thank the organizations that supported the SCUFN members and observers.

Attendees at SCUFN-27, IHB, Monaco

SCUFN considered 74 new undersea feature names submitted by various bodies and supporting organizations: Brazil (3), China (19), Denmark (1), France (1), United Kingdom (3), Georgia (2), Japan (23), Republic of Korea (2), Malaysia (4), New Zealand (12) and Russian Federation (4).

The meeting agreed to consider ways to more efficiently address the increasing list of pending names for which information, required in accordance with SCUFN standards, is generally missing.

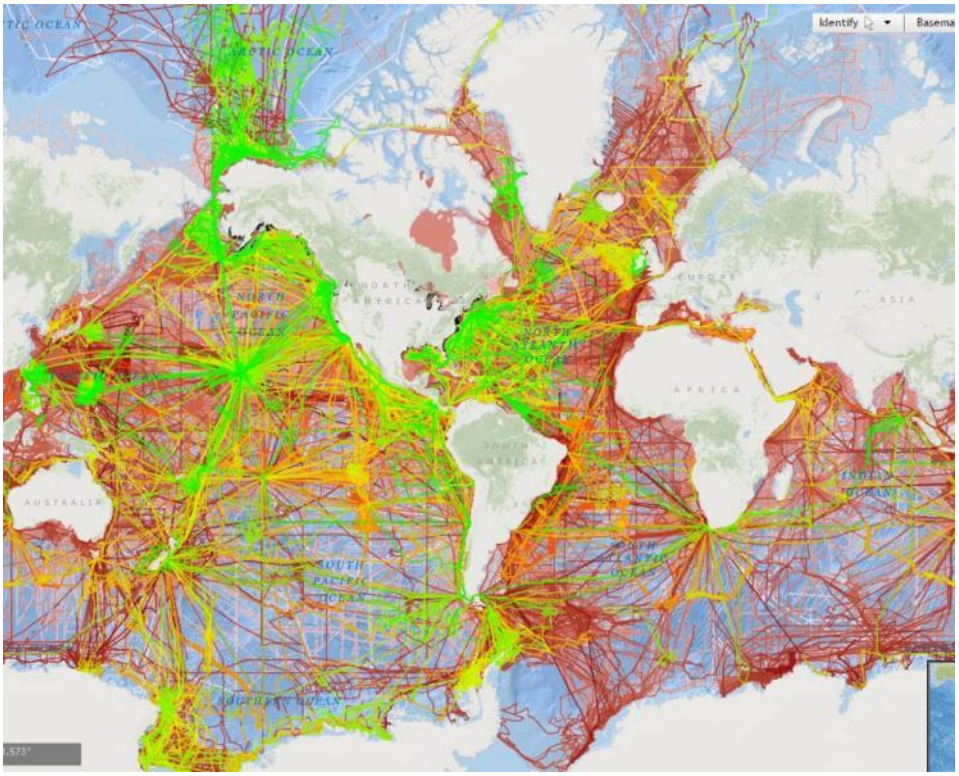
The meeting was closed with a vibrant tribute to Mr Michel Huet, IHB Assistant Director and SCUFN Secretary, who had been a cornerstone of SCUFN for some 24 years and retired at the end of June.

Task 3.8.2 Ensure effective operation of IHO Data Centre for Digital Bathymetry

The IHO Data Centre for Digital Bathymetry (DCDB) continued to operate as 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 use by IHO Member States and other maritime communities. The IHO

DCDB is located at the National Geophysical Data Center in Boulder, Colorado and is operated under the auspices of the National Oceanographic and Atmospheric Administration of the USA as in-kind support to the IHO.

The IHO DCDB provides quality checks on oceanic soundings acquired by hydrographic, oceanographic and other vessels during surveys or while on passage. These data are used for the production of more accurate and comprehensive bathymetric maps and grids, particularly in support of the GEBCO Ocean Mapping Programme (see task 3.8.4 and 3.8.5). Bathymetric data located at the IHO DCDB can be viewed/filtered via a web map interface, and freely downloaded. The map interface can be accessed from; http://maps.ngdc.noaa.gov/viewers/bathymetry/



Surveys added to the IHO DCDB during 2014

Task 3.8.3 Encourage the contribution of bathymetric data to the IHO DCDB

One of the primary objectives of the IHO DCDB is to provide an authoritative source of bathymetry for ocean mapping requirements. In order to achieve this, GEBCO proactively collects, stores and disseminates bathymetric data for the world's oceans. GEBCO has worked towards improving its participation in regional mapping activities and has appointed representatives to participate in selected RHC meetings. Traditionally GEBCO has focused on waters deeper than about 200m, however, it is now actively collecting data in shallow water areas to support activities such as coastal zone management and development and the mitigation of marine disasters such as storm and tsunami inundation.

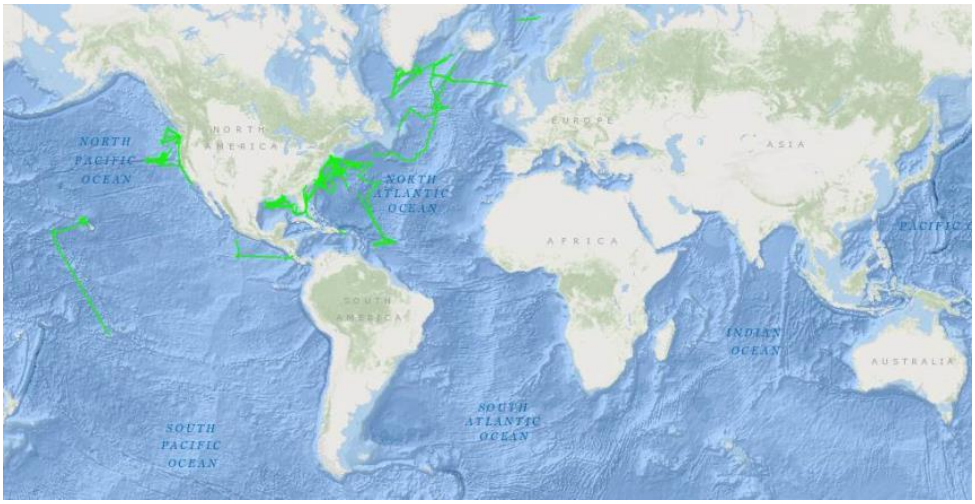
The collection of crowd-sourced bathymetry was an important topic discussed at the EIHC-5. A joint proposal from France and the USA resulted in a Conference decision to establish a Crowd-Sourced Bathymetry Working Group in 2015 to provide guidance on the requirements and uses for CSB. It is anticipated that the DCDB and the Data Store highlighted under tasks 3.8.1.2 and 3.8.1.3 above, will play a central role as the upload and download portal in an IHO CSB programme.

***Task 3.8.4 Maintain IHO bathymetric publications**:*

- ***B-4 - Information concerning recent bathymetric data***

  Bathymetric data from 47 surveys were added to the IHO DCDB during 2014. These data can be viewed or downloaded using the web mapping facility provided at:

  http://maps.ngdc.noaa.gov/viewers/bathymetry/



IHO DCDB – Web Interface showing Ocean Bathymetry

- ***B-6 - Standardization of undersea feature names***

  Edition 4.1.0 of B-6 on the Standardization of Undersea Feature Names had entered into force in September 2013. It provides guidelines for naming features, a naming proposal form and a list of generic terms with definitions. No work was carried out on this publication in 2014. However, harmonization issues between procedures and definitions used by SCUFN and national/international organizations such as the New Zealand Geographical Board Undersea Names Committee, the US Board on Geographical Names Advisory Committee on Undersea Features, and the Marine Regions project managed by the Flanders Marine Institute were discussed, in order to avoid duplication, and improve efficiency and interoperability in the future.

- ***B-8 – GEBCO Gazetteer of Undersea Feature Names***

  A new on-line GEBCO Gazetteer of Undersea Feature Names, developed by the IHO Data Centre for Digital Bathymetry (co-located at the former US National Geophysical Data Center (now one of the National Centers for Environmental Information (NCEI))) and maintained by the IHB, became fully operational in the first half of the year and was used as part of evaluating the various proposals during SCUFN-27 meeting in June in Monaco.

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- ***B-9 - GEBCO Digital Atlas***

  IHO publication B-9 GEBCO Digital Atlas (GDA) is a two-volume DVD and CDROM set which contains: the GEBCO global bathymetric grid at 30 arc-second intervals; the GEBCO One Minute Grid global bathymetric grid, a global set of digital bathymetric contours and coastlines, the GEBCO gazetteer of undersea feature names and a software interface for viewing and accessing the data sets. A new GEBCO_2014 Grid was also released during the year and it has a global 30 arc-second interval bathymetric grid, largely generated by combining quality-controlled ship depth soundings with interpolation between sounding points guided by satellite derived gravity data. The new GEBCO 2014 bathymetric grid was included in the GDA.

- ***GEBCO Cook Book***

  The GEBCO Cook Book (IHO publication B-11) is a technical reference manual that has been developed to assist and encourage participation in the development of bathymetric grids. It is an important GEBCO reference document that is used by academic institutions and hydrographic organizations. The Cook Book covers a wide range of topics such as data gathering, data cleaning, gridding examples and provides an overview of different software applications used for producing bathymetric grids.

  The Cook Book was originally released in October 2012, and is updated periodically whenever new contributions become available. In September, a new chapter was added covering "*Digital Terrain Map Editing.*"

Task 3.8.5 Contribute to outreach and education about ocean mapping

GEBCO continues to promote the importance of bathymetric data to the international community. A significant GEBCO annual outreach event is the annual Science Day, which consists of oral presentations and poster displays on topics relating to ocean-floor mapping and its applications. Attendance is open and the Science Day is usually held during GEBCO's annual TSCOM and SCRUM meetings. A Science day was held in conjunction with the 30th meeting of the GGC and the associated meetings of TSCOM and SCRUM. (See also Tasks 3.8.1.2 and 3.8.1.3).

Some of the future products and services to help raise awareness include, in addition to those already provided, a digital globe product, applications for smart phones and tablet devices, a smart globe and 3D printed models showing prominent undersea features.

Task 3.8.6 GEBCO Web Site kept current and updated regularly

The GEBCO web site provides access to information about GEBCO's products, services and activities. The web site can be viewed at http://www.gebco.net. There were 235,273 pages viewed by 57,349 visitors to the site in 2014.

GEBCO bathymetric maps and data sets can be downloaded from the website. These continue to be accessed by a wide user community that includes commercial and academic sectors and the general public. The GEBCO_08 gridded data sets were downloaded 12,823 times and the GEBCO grid display software was downloaded 2,700 in 2014.

The GEBCO web site also provides access to the world grid via a Web Map Service (WMS).

Task 3.8.7 Develop short course and course material on compiling digital bathymetric models (DBMs) to be included in GEBCO from a heterogeneous bathymetric source database. Associated deliverables: -a course curriculum

No activity was conducted in 2014 for the development of short courses or course material related to compiling digital bathymetric models.

Task 3.8.8 Update and enhance the GEBCO Gazetteer (B-8) for internet access

Maintenance of the underlying geospatial database of the on-line gazetteer is carried out by a network of appointed editors (mainly, SCUFN members) under the coordination of an Administrator who is currently the SCUFN Secretary from the IHB. In order to improve the content and the quality of the Gazetteer and to remove some inconsistencies, a contract was put in place in October to review and correct any anomalies. The results, covering about 3,000 feature names, were expected in early 2015.

New and Revised IHO Publications

The following new IHO publications or revised editions were issued during 2014 and are available from the IHO website.

DATE	TITLE	Announced Via CL
07/01	S-4 - Regulations for International (INT) Charts and Chart Specifications of the IHO, Edition 4.4.0 (French version)	CL 03/2014
06/05	P-1 - International Hydrographic Review, n° 11, May 2014	
12/05	M-3 - IHO Resolutions, Edition 2, updated May 2014	CL 33/2014
13/06	C-51 - Manual on Technical Aspects of the UN Convention on the Law of the Sea – 1982, Edition 5.0.0 (English version)	CL 43/2014
13/06	M-3 - IHO Resolutions, Edition 2, updated June 2014	CL 44/2014
17/06	S-57 - Appendix B.1, Annex A - Use of the Object Catalogue, Edition 4.0.0 (English version) S-58 - ENC Validation Checks, Edition 5.0.0 (English version) S-57 - Supplement No.3 (English version)	CL 46/2014
04/08	P-7 - Annual Report of the IHO for 2013, Part 1 and Part 2 - Finances	CL 54/2014
03/09	B-11 - GEBCO Cook Book, September 2014 (English version)	
20/10	S-4 - Regulations for International (INT) Charts and Chart Specifications of the IHO, Edition 4.5.0	CL 69/2014
29/10	M-3 - IHO Resolutions, Edition 2, updated October 2014	EIHC-5
08/11	P-1 - International Hydrographic Review, n° 12, November 2014	
26/11	S-5 - Standards of Competence for Hydrographic Surveyors, Edition 11.1.0 (English version) S-8 - Standards of Competence for Nautical Cartographers, Edition 3.1.0 (English version)	CL 74/2014
22/12	S-52 - Specifications for Chart Content and Display Aspects of ECDIS, Edition 6.1.0 (English version) S-52 - Annex A - IHO Presentation Library for ECDIS, Edition 4.0.0 (English version) S-64 - IHO Test Data Sets for ECDIS, Edition 3.0.0 (English version)	CL 81/2014

NB: The following publications are continuously updated:

- B-8 - Gazetteer of Geographical Names of Undersea Features
- C-55 - Status of Hydrographic Surveying and Nautical Charting Worldwide
- P-5 - IHO Yearbook
- S-32 - Hydrographic Dictionary
- S-62 - List of Data Producer Codes

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Status Report on Performance Monitoring

Background

The introduction of IHO performance indicators was decided in 2009 by the 4th Extraordinary International Hydrographic Conference (EIHC-4), together with the adoption of the IHO Strategic Plan.

The implementation of performance indicators is described in the IHO Strategic Plan as follows:

> *The implementation of performance indicators is based on a two level approach:*
>
> *- strategic level: a small number of PIs associated with the objectives of the IHO (1 or 2 PIs per objective), to be agreed by the Conference (the Conference to be replaced by the Assembly when the revised IHO Convention enters into force) and managed by the IHB (the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force);*
>
> *- working level: PIs associated with the strategic directions and managed by the appropriate subsidiary organs;*
>
> *In this perspective cross-references between the objectives, the strategic directions and the PIs are arranged in the following way:*
>
> *Objectives => strategic PIs => strategic directions => responsible organs => working level PIs*
>
> *Accordingly, the assessment of the working level PIs and the review of progress with the strategic directions are considered in two phases: an initial review by the leading organ and an overall review by the IHB (the IHB to be replaced by the Secretary General and the Council when the revised IHO Convention enters into force). Together with the assessment of the strategic PIs, these results are then submitted for consideration by the Conference (the Conference to be replaced by the Assembly when the revised IHO Convention enters into force). The submission should include a qualitative and, where practicable, a quantitative assessment of progress based on the value of the PIs. It should also include recommendations on management actions to be considered where trends indicate either a lack of progress or a change to an underlying assumption/direction is required. In this way the aim can be maintained and evidence of progress monitored/presented.*

The EIHC-4 adopted nine strategic performance indicators (SPIs) associated to the seven objectives of the IHO and invited the IHB Directing Committee to consider, in liaison with the HSSC and the IRCC, the implementation of working level performance indicators based on list of potential indicators associated with the strategic directions.

In 2012, the XVIIIth IHC welcomed the monitoring system to be put in place by the IHB Directing Committee based on the Strategic Performance Indicators (SPI) of the Strategic Plan (see CONF.18/WP.1/Add.2) and invited them to take action. Moreover, the HSSC and the IRCC were invited to review the working level performance indicators relevant to them.

The Annual Report of the IHO has included Performance Indicators since 2012.

Strategic Performance Indicators

Table 1 provides values for the Strategic Performance Indicators for 2014. The values for 2013 are included to enable trends and comparisons to be made.

Table 1

Strategic Performance Indicators (SPI)

No PI	Designation	Source	Status 31 Dec 2013	Status 31 Dec 2014	General Trend
SPI 1	Number and percentage of Coastal States providing ENC coverage directly or through an agreement with a third party.	**WEND WG through RHCs**	No suitable information was provided by RHCs. IHB estimate ~60%	No suitable information provided by RHCs IHB estimate[1]:~64%	⇑
SPI 2	Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.	**WEND WG and IHO on-line catalogue of coverage**	Small scale: ~ 100% Medium scale: 90% Large scale: 96%	Small scale: ~ 100% Medium scale: 91% Large scale: 97%	⇔ ⇑ ⇑
SPI 3	Percentage of Coastal States which provide hydrographic services, directly or through an agreement with a third party, categorized by CB phases, as defined by the IHO Capacity Building Strategy.	**CBSC through RHCs**	No suitable information was available at IHB	Proposal on how to obtain suitable information will be proposed to IRCC-7 (June 2015)	

[1] Information is difficult to obtain from Primary Charting authorities acting on behalf of coastal States

No PI	Designation	Source	Status 31 Dec 2013	Status 31 Dec 2014	General Trend
SPI 4	Percentage of "acceptable" CB requests which are planned. (*Percentage of submitted CB requests that were approved*)	**CBSC**	**75%**	**97%**	⇑
SPI 4 bis	Percentage of planned CB requests which are subsequently delivered.	**CBSC**	**86%**	**82%**	⇔
SPI 5	Number of standards issued (including new editions), per category: - hydrographic standards to enhance safety of navigation at sea, - protection of the marine environment, - maritime security, - economic development.	**HSSC**	**4** (See Appendix I) *Safety of navigation: 2* *Protection of the marine environment: 2* *Maritime security: 0* *Economic development: 0*	**5** (See Appendix I) *Safety of navigation: 4* *Protection of the marine environment: 0* *Maritime security: 0* *Economic development: 1*	⇑ ⇑ ⇓ ⇔ ⇑
SPI 6	Number of potential new IHO MS (indicated by the start of the application process) relative to the number of "non-IHO" IMO MS.	**IHB through the Government of Monaco**	**7 / 88** (2012: 8 / 89) *Number of IMO MS: 170* *Number of IHO MS: 82*	**7 / 88** *Number of IMO MS: 170* *Number of IHO MS: 82*	⇔ ⇔ ⇔

No PI	Designation	Source	Status 31 Dec 2013	Status 31 Dec 2014	General Trend
SPI 7	Increase in participation / membership in RHCs.	**IRCC through RHCs**	No suitable information provided by RHCs IHB estimate: MS participation: 83% Non MS participation: 25%	No suitable information provided by RHCs IHB estimate[2]: MS participation: 75% Non MS participation: 29%	 ⇔ ⇔
SPI 8	Percentage of available / agreed ENC [production] schemes.	**WEND WG through RHCs or International Charting Coordination Working Groups (ICCWG)**	No suitable information provided by most RHCs[3]	IHB estimate for UB1, 2 and 3 based on existing coverage: **~80%**	

[2] Based on
- Number of RHC meetings: 11
- Participation of IHO MS: MS represented 56 times out of 75 possible attendances
- Participation of non IHO MS: Non-MS represented 16 times out of 56 possible attendances

[3] The status of ENC Schemes was provided by 2 RHC: SEPRHC and SWAtHC.

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HSSC Working Level Performance Indicators

HSSC4 agreed to implement the WPIs listed in table 2.
Table 2 provides values for the Working Level Performance Indicators for 2014 associated with Work Programme 2.
Values for 2013 are included to enable trends and comparisons to be made.

Table 2

HSSC WPIs

Metric	Source	Rationale	Status 31 Dec 2013	Status 31 Dec. 2014	General Trend
Number of S-100 based product specifications approved	**IHB**	Relative indicator of uptake of IHO standards including for purposes other than SOLAS navigation	**0**	**0**	⇔
Percentage of annual work programme achieved	**HSSC WGs (all)**	Progress against objectives in the strategic plan	**19%**	**52%**	⇑
Total number of participants at meetings (MS and Expert Contributors)	**HSSC WGs (all)**	Indicates participation of MS and wider community in execution of the plan	**258** *MS: 172* *Expert Contributors.: 86*	**171** *MS: 128* *Expert Contributors: 43*	⇓ ⇓ ⇓
Number of technical revisions and clarifications approved	**IHB**	Indicative of ability to provide comprehensive, safe and effective standards	**3**	**2**	⇓
Number of ENCs distributed annually under license (equivalent annual licences)	**WEND WG**	Relative indicator of ENC usage throughout SOLAS market	**2,202,487**	**2,272,923** [4]	⇑

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

IRCC Working Level Performance Indicators

Table 3 provides values for the Working Performance Indicators for 2014 associated with Work Programme 3.
Values for 2013 are included to enable trends and comparisons to be made.

Table 3

IRCC WPIs

No PI	Designation	Source	Status 31 Dec. 2013	Status 31 Dec. 2014	General Trend
WPI 15	Growth in ENC coverage worldwide, as reported in the IHO on-line catalogue, relative to the existing gap in adequate coverage (as defined by IMO/NAV) from the benchmark 01 Aug. 2008.	**WEND WG through RHCs**	**No suitable information was available at IHB**	**See SPI 2**	
WPI 16	Number of additional IHO MS starting to produce & maintain (with/without support) relevant ENCs (contributing to 'adequate coverage') in the reporting period relative to those already producing at 01 Aug. 2008.	**WEND WG through RHCs**	**2 (no suitable information provided by 8 out of 15 RHCs)**	**0**	⇓
WPI 17	Percentage of Coastal States delivering hydrographic services - categorized by CB phases (MSI services, surveying capabilities, charting capabilities), directly or through an agreement with a third party, at the end of the reporting period.	**CBSC through RHCs**	**No suitable information provided by most RHCs WPI 17 is the same as SPI 3**		

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No PI	Designation	Source	Status 31 Dec. 2013	Status 31 Dec. 2014	General Trend
WPI 18	Percentage of IHO MS updating their C-55 entry data regarding hydrography survey, INT charts, ENC, and MSI in the reporting period.	**IRCC through RHCs**	**21%** (17/82)	**24%** (20/82)	⇑
WPI 19	*Status of hydrographic surveys in each region.*	**IRCC through RHCs**	**Metrics yet to be defined by IRCC**	**Metrics yet to be defined by IRCC**	
WPI 20	Percentage of agreed INT chart schemes, percentage of INT charts available. [5]	**RCC through RHCs or ICCWGs**	**88% (14 schemes out of 16)** **75% (1,491 charts published out of 1,980 planned)**	**88% (14 schemes out of 16)** **77% (1,558 charts published out of 2,013 planned)**	⇔ ⇑
WPI 21	Percentage of agreed ENC schemes, percentage of ENC available.	**WEND WG through RHCs or ICCWGs**	**No suitable information provided by RHCs**	**See SPI 8**	
WPI 22	Increase in effective MS participation in RHC activities.	**IRCC through RHCs.**	**No suitable information provided by RHCs**	**No suitable information provided by RHCs**	
WPI 23	Percentage of Coastal States which are IHO Member States.	**IHB**	**54%** **(81[6] /151)**	**54%** **(81[6] /152)**	⇔
WPI 24	Number of new Coastal States joining the IHO during the reporting period.	**IHB**	**1**[7]	**0**	⇓

[5] Regions A and N, for which no scheme is available yet, are excluded
[6] Serbia is not considered as a Coastal State
[7] Montenegro.

No PI	Designation	Source	Status 31 Dec. 2013	Status 31 Dec. 2014	General Trend
WPI 25	Number of potential new IHO MS (indicated by the start of the application process) relative to the number of "non-IHO" IMO MS.	**IHB**	**WPI 26 is the same as SPI 6**		
WPI 26	Percentage of Coastal States which have achieved CB phase 1, 2 or 3 and established a National Hydrographic Office.	**CBSC through RHCs**	**No suitable information was available at IHB**	Proposal on how to obtain suitable information will be proposed to IRCC-7 (June 2015)	
WPI 27	Number of States which have achieved CB phase 1, 2 or 3 and established a National Hydrographic Office in the reporting period.	**CBSC through RHCs**	**No suitable information was available at IHB**	Proposal on how to obtain suitable information will be proposed to IRCC-7 (June 2015)	
WPI 28	Percentage of Coastal States which provide ENC coverage directly or through an agreement with a third party.	**WEND WG through RHCs**	**WPI 28 is same as SPI 1**		
WPI 29	Percentage of Coastal States which have set up a national geospatial infrastructure.	**IRCC through RHCs**	**Limited information available at IHB** **IHB estimate: 18% (28/151**) (*based on limited information provided by some RHCs and MSDIWG*)	No information available at the IHB to make an estimate	

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No PI	Designation	Source	Status 31 Dec. 2013	Status 31 Dec. 2014	General Trend
WPI 40	Number of agreements signed in the reporting period, including bilateral agreements and RENC membership, etc.	**IRCC through RHCs**	**No suitable information available at IHB**	**Limited information available at IHB** **IHB estimate: 2[8]**	
WPI 41	Percentage of planned CB events that are achieved.	**CBSC**	**WPI 41 is the same as SPI 4bis**		
WPI 42	Number of acceptable CB requests received.	**CBSC**	**28**	**29**	⇔
WPI 43	Percentage of "acceptable" CB requests which are planned.	**CBSC**	**WPI 43 is the same as SPI 4**		

[8] Comoros with France and Montenegro with Primar

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IHO/IHB Output Statistics

This table summarizes the long term evolution of some significant indicators of the outputs of the IHO

IHO/IHB Output Statistics

	2000	2006	2012	2013	2014	Trend (comparison with 2013)
Number of MS	69	72	81	81	**82**	⇑
Annual Approved Budget (M€)	(14.6252FF) €2.2M	€2.7M	€2.9M	€2.9M	**€2.9M**	⇔
Value of a Share	(24,650 FF) €3,758	€3,984	€3,984	€3,984	**€3,984**	⇔
Number of permanent IHB Staff	21	19	19	19	**19**	⇔
Number of temporary seconded officers	0	0	2	2	**2**	⇔
Number of RHCs +HCA	13	14	16	16	**16**	⇔
Number of major coordinating committees			2	2	**2**	⇔
Number of working level committees / subcommittees / WGs	11	12	14	16	**16**[9]	⇔

[9] IHO bodies active at the end of 2014:
Coordinating committees: 2 (HSSC, IRCC).
Other IHO bodies: 16 (TSMAD, DPSWG, DIPWG, SNPWG, CSPCWG, DQWG, MSDIWG, TWLWG, HDWG, SCWG, WWNWS, S-124CG, CBSC, WENDWG, SRWG, FC).
(New S-124CG replaced S100NW)

Number of inter-organizational bodies	5	5	5	6	**6**[10]	⇔
Number of new editions or revisions of IHO Publications	10	18	12	7	**14**[11]	⇑
Number of website pages	30	140	217	224	**203**	⇓
Number of IHO meetings hosted in Monaco[12]	7	16	6	7	**5**	⇓
Number of missions by IHB staff to represent IHB or IHO	57	56	52	84	**74**	⇓
Number of CLs and FCCLs published	56	91	109	81	**88**	⇑
Number of IHO standards and technical reference documents[13]	18	24	28	28	**28**	⇔
Total number of active IHO publications	35	36	48	48	**48**	⇔

[10] Inter-organizational bodies active at the end of 2014: 6 (ABLOS, IBSC, GEBCO GC, TSCOM, SCUFN, SCRUM).
[11] The continuous updating of B-8, C-55, M-3, P-5, S-32 and S-62 is not counted in the total
[12] includes sessions of International Hydrographic Conferences
[13] based on the list in Appendix 1 to IHO Resolution 2/2007, as amended

List of 2014 IHB Missions

DATE	NAME	MEETING	DESTINATION	COUNTRY
JANUARY				
9	BESSERO	Ceremony SHOM	Brest	France
13 18	IPTES	11 CB Coordination meeting - Nippon Foundation	Tokyo	Japan
13 22	COSTA NEVES	Technical Visit	Asunción	Paraguay
14 17	BESSERO	Geo Ministerial Summit	Geneva	Switzerland
18 26	HUET	CSPCWG 10	Wellington	New Zealand
19 25	WYATT	IMO SDC 1	London	UK
27 31	PHARAOH	E-Navigation Underway Conference 2014	Copenhagen	Denmark
27	WARD	Visit UNH	New Hampshire	USA
28 31	WARD	ARHC4	Portsmouth, NH	USA
FEBRUARY				
03 04	BESSERO	Preparatory Meeting EC & EMEDNET issues	Saint Mandé	France
03 07	COSTA NEVES	Technical Visit	Beirut	Lebanon
03 09	HUET	MSDIWG 5	Silver Spring	USA
03 13	WYATT	ERSAHC 1 & Preparations	Abu Dhabi	UAE
07 13	IPTES	ERSAHC 1	Abu Dhabi	UAE
10 12	WARD	Meeting on International Polar Initiative UNESCO	Paris	France
18 20	BESSERO	5th EC-IHO & MODEG Meetings	Ostend	Belgium
24 01	WYATT	NIOHC14	Bangkok	Thailand
24 03	IPTES	NIOHC14	Bangkok	Thailand
MARCH				
10 14	PHARAOH	S100 WG	Hamburg	Germany
18 20	COSTA NEVES	WENDWG 4	Niteroi	Brazil
18 20	IPTES	WENDWG 4	Niteroi	Brazil
19 22	BESSERO	SWAtHC 8	Arraial do Cabo	Brazil
21 30	WYATT	TWLWG 6	Wollongong	Australia
24 28	PHARAOH	TWLWG 6/ DCEG	Wollongong	Australia
25 28	HUET	DQWG 8	Wollongong	Australia
31 04	PHARAOH	TSMAD 28 & DIPWG 6	Wollongong	Australia

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APRIL				
06 09	PHARAOH	SNPWG 17	Rostock	Germany
07 10	BESSERO	West Africa Sub Regional Seminar	Accra	Ghana
14 18	IPTES	USCHC 37 & CHC2014	St. John's	Canada
11 17	COSTA NEVES	IBSC 37	Tokyo	Japan
21 22	WARD	IHO-Nippon Foundation liaison meeting	Tokyo	Japan
23 25	WARD	8th International Maritime Forum	Seoul	Korea (Rep Of)
28 02	BESSERO	CIRM Annual Meeting	Annapolis	USA
28 02	WARD	ATCM37	Brasilia	Brazil
MAY				
13 23	WARD	IMO MSC 93	London	UK
13 23	WYATT	IMO MSC 93	London	UK
14 16	IPTES	CBSC12	Brest	France
14 16	COSTA NEVES	CBSC12	Brest	France
19 20	WARD	IRCC6	Paris	France
19 20	IPTES	IRCC6	Paris	France
19 20	COSTA NEVES	IRCC6	Paris	France
19 20	BELMONTE	IRCC6	Paris	France
26 28	WARD	IALA Conference	A Coruña	Spain
26 31	WYATT	SCWG 2	Quebec	Canada
JUNE				
02 06	PHARAOH	ISO/TC211	Berlin	Germany
02 05	IPTES	BASWG	Batumi	Georgia
03 05	BESSERO	CARIS Conference 2014	Brest	France
10 12	IPTES	BSHC 19	Riga	Latvia
11 13	COSTA NEVES	IMO TC64	London	UK
16 20	IPTES	XXV FIG Conference	Kuala Lumpur	Malaysia
24 27	BESSERO	NSHC31	Amsterdam	The Netherlands
30 04	BESSERO	IMO NCSR1	London	UK
30 05	WYATT	IMO NCSR1	London	UK
30 04	PHARAOH	IMO NCSR1	London	UK

JULY				
01 04	GUILLAM	IHO Technical visit	Tel Aviv	Israel
01 04	IPTES	IOC Council	Paris	France
06 11	WYATT	WWNWS DRWG 12	London	UK
14 15	BESSERO	1st Prep. Comm WCDRR	Geneva	Switzerland
30 01	WARD	Cat A CB training - USM Graduation ceremony	New Orleans	USA
AUGUST				
04 08	WARD	UN GGIM4	New York	USA
11 14	WARD	SAIHC 11	Maputo	Mozambique
11 14	PHARAOH	SAIHC 11	Maputo	Mozambique
14 24	WYATT	WWNWS 6	Wellington	New Zealand
18 20	BESSERO	NHC 58	Helsinki	Finland
26 28	WARD	COMNAP annual general meeting	Christchurch	New Zealand
SEPTEMBER				
02 03	BESSERO	IENWG 1	Saint Mandé	France
11 12	WYATT	IRSO 2014	Nantes	France
15 19	BESSERO	EAtHC 13	Casablanca	Morocco
15 19	GUILLAM	EAtHC 13	Casablanca	Morocco
OCTOBER				
16 17	IPTES	CHART Project liaison visit	Taunton	UK
20 24	WARD	3rd High Level GGIM Forum	Beijing	China
20 24	WYATT	ABLOS Business Meeting 21	Copenhagen	Denmark
27 30	BESSERO	IFHS Hydro 14 Conference	Aberdeen	UK
NOVEMBER				
10 14	BESSERO	HSSC 6	Viña del Mar	Chile
10 14	GUILLAM	HSSC 6	Viña del Mar	Chile
10 14	PHARAOH	HSSC 6	Viña del Mar	Chile
10 14	IPTES	IHO High Level CB visit	Amman	Jordan
13 21	WARD	IMO MSC94	London	UK
16 22	WYATT	IMO MSC94	London	UK
24 28	PHARAOH	ISO/TC211	Shenzhen	China
24 26	GUILLAM	Primar Advisory Committee	Split	Croatia
26 27	IPTES	Joint CB Coordination Meeting	Copenhagen	Denmark
26 27	COSTA NEVES	Joint CB Coordination Meeting	Copenhagen	Denmark

DECEMBER				
01 05	PHARAOH	SNPWG 18	Cadiz	Spain
02 04	WARD	IHO High Level Visit	Panama City	Panama
02 04	COSTA NEVES	IHO High Level Visit	Panama City	Panama
05	WARD	IHO High Level Visit	Mexico City	Mexico
05	COSTA NEVES	IHO High Level Visit	Mexico City	Mexico
08 16	WARD	Mexican Hydrographic Conference & MACHC 15	Manzanillo	Mexico
08 16	COSTA NEVES	Mexican Hydrographic Conference & MACHC 15	Manzanillo	Mexico
11 13	PHARAOH	GEBCO TSCOM/SCRUM	California	USA

IHB Directing Committee Responsibilities

Robert WARD – President

- Relations with EU, the United Nations including IMO and WMO, international bodies concerned with hydrographic matters in polar regions, Non-Member States of the IHO, and other relevant organizations and bodies as appropriate;
- Matters concerning IHO Membership, Host Government Affairs;
- Public Relations;
- Finance and Budget;
- Strategic Plan, Work Plan;
- Programme Performance Reporting;
- Translation services;
- IHO Publications;
- IHB Administration, Information Technology;
- IHB Personnel Administration, Staff Regulations;

and the following Regional Hydrographic Commissions:

- Arctic Regional Hydrographic Commission;
- East Asia Hydrographic Commission;
- Meso American - Caribbean Sea Hydrographic Commission;
- South Africa and Islands Hydrographic Commission;
- South West Pacific Hydrographic Commission;

and the following Commission:

- Hydrographic Commission on Antarctica.

Mustafa IPTES - Director (Regional Coordination Programme)

- IRCC, and subordinate bodies, including IBSC and GEBCO;
- Relations with FIG, IOC, the academic sector (education and training), and other relevant organizations, concerning the IRCC programme;
- Capacity Building, Training, Education and Technical Co-operation, including CB Work Programme, CB Fund and budget;
- International Hydrographic Review;
- IHO Conference;
- Annual Report;

and the following Regional Hydrographic Commissions:

- Baltic Sea Hydrographic Commission;
- Mediterranean and Black Seas Hydrographic Commission;
- North Indian Ocean Hydrographic Commission;
- ROPME Sea Area Hydrographic Commission;
- USA and Canada Hydrographic Commission.

Gilles BESSERO - Director (Technical Programme)

- HSSC and subordinate bodies;
- Relations with ABLOS, IALA, ICA, IEC, ISO, and other relevant organizations, concerning the HSCC programme;
- Technical Support services;
- Stakeholder Liaison;

and the following Regional Hydrographic Commissions:

- Eastern Atlantic Hydrographic Commission;
- Nordic Hydrographic Commission;
- North Sea Hydrographic Commission;
- South East Pacific Regional Hydrographic Commission;
- South West Atlantic Hydrographic Commission.

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IHB Staff Responsibilities in 2014

Managerial Staff

Mr A. PEDRASSANI COSTA NEVES (Brazil)	ADCC	Cooperation and Capacity Building
Mr; HUET (France)	ADCS	Charting and Services *[to June]*
Mr. Y. GUILLAM (France)	ADCS	Charting and Services *[from May]*
Mr A. PHARAOH (South Africa)	ADDT	Digital Technology
Mr D. WYATT (UK)	ADSO	Surveying and Operations
Ms G. FAUCHOIS (France)	MFA	Manager, Finance and Administration

Translators

Ms M.P. MURO	SpTr	Spanish Translator
Ms I. ROSSI	HFrTr	Head French Translator
Ms P. BOUZANQUET	FrTr	French Translator

Technical, Administrative and Service Staff

Ms. I. BELMONTE	WPE	Website and Publications Editor
Ms S. BRUNEL	AAA	Administrative and Accounting Assistant
Mr D. COSTIN	ITO	Information Technology Officer
Ms C. FONTANILI	PA	Personal Assistant to the Directing Committee
Mr A. MAACHE	BSA	Bureau Support Assistant
Mr D. MENINI	CGA	Cartography and Graphics Assistant
Ms M. MOLLET	REG	Registrar, Librarian
Ms B. WILLIAMS	HREG	Head of Registry

Seconded Officers

Mr Jong Yeon PARK (Republic of Korea)	Website Development Projects
Mr S. YAMAO (Japan)	GIS and IT Projects

Short-term support (under contract)

Ms B. COSTIN	CBA	Capacity Building Assistant

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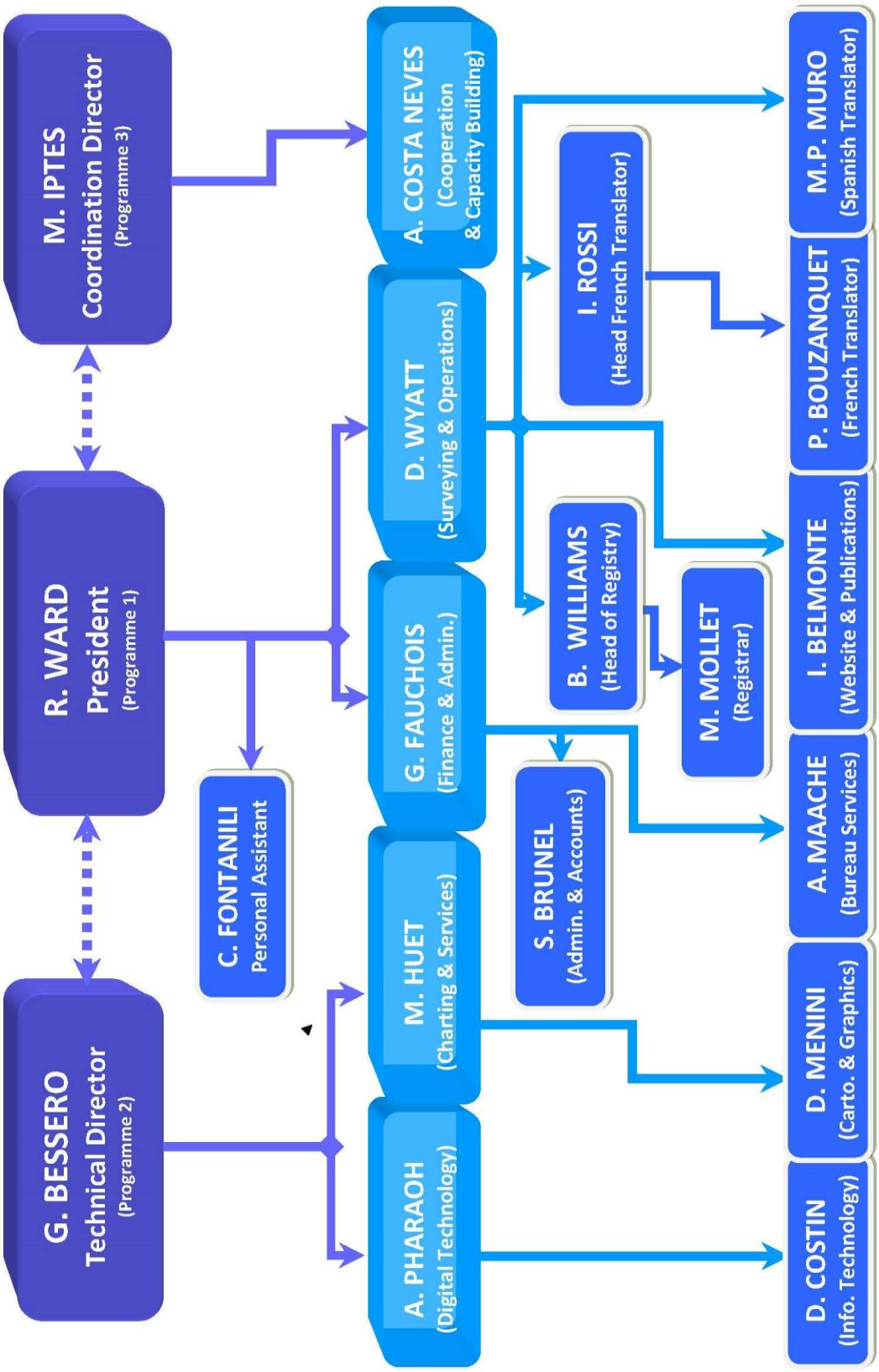
M. IPTES
Coordination Director
(Programme 3)
R. WARD
President
(Programme 1)
G. BESSERO
Technical Director
(Programme 2)
C. FONTANILI
Personal Assistant
A. COSTA NEVES
(Cooperation & Capacity Building)
D. WYATT
(Surveying & Operations)
G. FAUCHOIS
(Finance & Admin.)
M. HUET
(Charting & Services)
A. PHARAOH
(Digital Technology)
S. BRUNEL
(Admin. & Accounts)
B. WILLIAMS
(Head of Registry)
M. MOLLET
(Registrar)
I. ROSSI
(Head French Translator)
M.P. MURO
(Spanish Translator)
P. BOUZANQUET
(French Translator)
I. BELMONTE
(Website & Publications)
A. MAACHE
(Bureau Services)
D. MENINI
(Carto. & Graphics)
D. COSTIN
(Info. Technology)

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