



INTERNATIONAL HYDROGRAPHIC BULLETIN



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January - December 2015

JANUARY

2nd Meeting of the IHO-EU Network Working Group Saint-Mandé, France, 28-29 January

The IHO-EU Network Working Group (IENWG), set up by the Inter-Regional Coordination Committee (IRCC) to monitor and deal with activities and processes developed under the aegis of the European Union (EU), held its second meeting in Saint-Mandé, France, on 28 and 29 January 2015, at the invitation of the French Hydrographic Office (SHOM).

The meeting, chaired by France, was attended by representatives from Denmark, France, Germany, Norway, Spain, Sweden and the United Kingdom. Director Gilles Bessero represented the IHB. The meeting was organized in three sessions. The first two sessions were devoted to reviewing the status and perspective of respectively the European Marine Observation and Data Network (EMODnet) and Maritime Spatial Planning. Representatives of the European Commission (Directorate-General for Maritime Affairs and Fisheries - DG Mare) attended these sessions. The last session focused on the work plan of the Working Group.



EMODnet and related issues

The Working Group was informed by DG Mare that the outcome of the call for tenders on coastal mapping, to which a consortium led by SHOM including 11 other Hydrographic Offices had responded, was expected to be announced in March. DG Mare indicated that a new call for tenders on the ingestion and safe-keeping of marine data held by both public and private operators was in preparation with a budget of 4 million euros. Another call for tenders is expected later in 2015, probably in the last quarter of the year, to initiate the third phase of EMODnet (EMODnet III), with a budget of 5 million euros. The objective will be to move from low resolution (approximately 250 m) digital terrain models to multiple resolution models aligned on the resolution at which the survey data was captured. Noting the requirement of the European Commission that the data and models be made freely available, the IENWG highlighted policy issues related to national security and cost recovery.

Maritime Spatial Planning

The Working Group reviewed the recent EU Directive on Maritime Spatial Planning (MSP) which came into force in September 2014. EU Member States are required to reflect the Directive in their national legislation by September 2016. At that date, the national authority responsible for MSP should be nominated and a process for consulting the public and the stakeholders should be established. The

directive also requires that plans covering the territorial waters and the Exclusive Economic Zones of each EU Member State be in place by 2021. Germany presented its national arrangements. The Working Group noted that although the role of HOs could be limited to the provision of low resolution bathymetry in support of the general planning phase, MSP offers an opportunity for HOs to position themselves as the national focal point for MSP, as part of the implementation of Marine Spatial Data Infrastructures.

Work plan

The following work items were identified by the IENWG:

- Implementing the coastal mapping project, subject to success of the tender;
- Preparing EMODnet III;
- Monitoring EU initiatives relevant to HOs;
- Lobbying EU organs and groups on HO activities and issues.

Due to the uncertainty of the outcome of the call for tenders on coastal mapping, the HOs represented at the meeting were reluctant to commit resources to the preparation of EMODnet III. Following a presentation by Sweden on the set up and operation of the [Baltic Sea Bathymetry Database](#), the IENWG agreed that inviting the other Regional Hydrographic Commissions (RHC) concerned to consider implementing a similar concept in their region would be the best preparation for EMODnet III. Germany, assisted by Sweden and the IHB, will draft a document which will be further refined by the Working Group and then circulated to the RHC Chairs.

The Working Group invited the Chair to seek the opportunity to liaise with the European Parliament Intergroup on "Seas, rivers, islands and coastal areas".

Following a request submitted to the IHB by an industry stakeholder, the Working Group also agreed to consider how the EU Directive on Marine Equipment could foster the requirement that software-based equipment - such as ECDIS - be updated to the latest version of the relevant standards. The IHB representative agreed to draft a background paper for further consideration of the IENWG.

Future events relevant to the IENWG scope include the celebration of European Maritime Day on 28 and 29 May and an EMODnet "Jamboree" in October this year. The Chair will liaise with Greece, as host Member State, on potential IENWG involvement in the programme of European Maritime Day.

Next meeting

The 3rd IENWG Meeting will depend on the outcome of the call for tenders on coastal mapping and the opportunities to liaise with the EMODnet Secretariat. Video-teleconferencing will be considered as the preferred communications medium.

5th Annual International e-Navigation Under way Conference MS Pearl Seaways, at Sea, 27 - 29 January

The 5th International e-Navigation Underway Conference was held onboard the Baltic Sea ferry *Pearl Seaways* from 27 to 29 January and organized by the Danish Maritime Authority and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). A full international speaker programme led to lively discussions on how to implement the e-Navigation concept.

The Conference was attended by over 150 representatives from many parts of the world and representing a cross-section of interests ranging from mariners, maritime administrations, significant flag States, navigation equipment manufacturers, academia and international maritime organizations.



MV *Pearl Seaways* preparing to leave Copenhagen

Captain Simon Peletier, President of the International Maritime Pilots' Association (IMPA), provided an opening address in which he urged the audience to concentrate on delivering practical e-Navigation capabilities that would make the mariner's job at sea easier and safer. This was followed by observations from Mr Alan Blume, Deputy

Commissioner of Maritime Affairs for the Marshall Islands, representing a significant Flag State. Mr Blume confirmed that e-Navigation should provide ways to make existing operations and requirements at sea safer and more efficient - it should not be an excuse to impose additional obligations and workloads on mariners. Speakers from industry, academia and those engaged in developing e-Navigation capabilities then provided information on their activities and how these will contribute to the successful implementation of e-Navigation.

President Robert Ward, representing the IHO, also addressed the Conference. He described the underpinning role that hydrography plays in all human activities that take place in, on or under the sea. He went on to describe how hydrography and nautical charting will underpin many aspects of e-Navigation, which he described as the "*maritime Intranet*", where mariners, ship operators and all those involved in commercial maritime activity can provide and obtain authoritative and relevant digital information in a simpler and better way than at present.

He emphasized the role of the ISO standards-based IHO S-100 data exchange standard as an underpinning element of e-Navigation in ensuring that the information can be input once only and will be interoperable with all the other related information in the e-Navigation digital information environment.

A North American-based version of the e-Navigation Underway Conference will be held from 28 to 30 September in New York, USA. The sixth e-Navigation Underway Conference in Europe will be held in early February 2016.

Courtesy visit by Professor Adoté Blim Blivi, Vice-Chair of the Intergovernmental Oceanographic Commission (IOC)

IHB, Monaco, 15 January

Professor Adoté Blim Blivi, from the University of Lomé (Togo), Director of the National Oceanographic Data Centre of the Centre for Integrated Coastal Management and Environment (<http://www.nodc-togo.org/>), paid a courtesy visit to the IHB in January. As Vice-Chair of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, Prof. Blivi was participating in a three-day workshop, organized by the International Ocean Acidification Coordination Centre of the International Atomic Energy Agency (IAEA).



Prof. Blivi met President Robert Ward and Director Gilles Bessero. As a former active participant of the Conferences of the Eastern Atlantic Hydrographic Commission (EAtHC), he apologized for not being present in Casablanca at EAtHC-13 in September 2014. Director Bessero and Assistant Director Alberto Costa Neves provided Prof. Blivi with an update on the IHO Capacity Building Strategy that might be of interest to the IOC. They also provided the relevant IHO documentation.

Prof. Blivi provided details of the High Council for the Sea that the President of the Togolese Republic convened in September 2014. This Council, which includes the National Working Committee on Hydrography, Oceanography and Safety of Maritime Navigation of Togo, should become an important tool for raising the awareness of maritime stakeholders in the country and in the region on hydrographic issues. In October this year, the Togolese Republic plans to host a summit on maritime security bringing together the Heads of the Coastal States of the African Union. Prof. Blivi is now investigating the possibility of preparing a side event under the topic "Ocean and Great Issues" which could help promote the activities of the IHO and its Eastern Atlantic Hydrographic Commission, back-to-back with this summit.

FEBRUARY

Joint 29th Meeting of the Transfer Standard Maintenance and Applications Development Working Group and 7th Meeting of the Digital Information Portrayal Working Group Ottawa, Canada, 2 -6 February

The Transfer Standard Maintenance and Applications Development Working Group (TSMAD) and the Digital Information Portrayal Working Group Meeting (DIPWG) held jointly their respective 29th and 7th meetings (TSMAD29/DIPWG7) in Ottawa, Canada from 2 to 6 February. Forty seven participants from 12 Member States and 12 stakeholder organizations attended the joint meeting. The IHB was represented by Assistant Director Anthony Pharaoh.



Meeting Participants

Mr. Denis Hains, Director General of the Canadian Hydrographic Service and Oceanographic Services, Hydrographer General of Canada, opened the meeting and welcomed the participants to Ottawa.

In accordance with the decisions of the Hydrographic Services and Standards Committee (HSSC) on the implementation of the reorganized structure of its working groups, this was the last meeting of TSMAD and DIPWG. Both working groups were disbanded at the end of the meeting. Their work items were reorganized and assigned to two new working groups: the S-100 Working Group (S-100WG) and the ENC Standards Maintenance Working Group (ENCWG).

The main focus of the meeting was the continuing development of S-101 - *ENC Product Specification*, and the associated Feature Catalogue and Data Capture and Encoding Guide. This agenda item included a review of the comments received from various stakeholders, on the latest documents that had been sent out for comment. The Republic of Korea (Korea Hydrographic and Oceanographic Administration - KHOA, and Korea Institute of Ocean Science and Technology - KIOST) provided a presentation on the S-100 feature catalogue builder that is being developed by them.

There were also discussions on the development of a new edition of S-102 - *Bathymetric Surface Product Specification*. The purpose of this new edition would be to include a chapter on the portrayal of bathymetric coverage and address issues and enhancements identified by stakeholder organizations.

The meeting carried out a review of the new edition 5.0.0 of S-58 - *ENC Validation Checks*, to address a number of potential anomalies which had been referred to TSMAD.

A number of other important issues were also discussed, such as the resources required to operate the S-100 GI Registry, the development of S-100/S-101 viewer applications, the status of the S-100/S-101 test bed projects and the interoperability of S-100-based product specifications.

At the end of the meeting, an election was held for office bearers of the new S-100WG and ENCWG. Ms. Julia Powell (USA) and Mr. Yong Baek (Rep. of Korea) were elected as Chair and Vice-Chair of the S-100WG. Mr. Eivind Mong (Jeppesen) was appointed as Secretary. Mr. Thomas Mellor (UK) was elected as Chair of the ENCWG. There were no nominations for Vice-Chair and Secretary. Mr. Anthony Pharaoh (IHB) was appointed as Secretary.

The Chairs of the new working groups acknowledged the outstanding contributions made by the outgoing Chairs of the TSMADWG and the DIPWG. Mr. Barrie Greenslade had been a member of the TSMADWG for 16 years and had been Chair for the past eight years. He was acknowledged being as driving force behind the development of S-100, and the maintenance of other important ENC related standards. Mr. Colby Harmon was the Chair of the DIPWG for five years and was instrumental in guiding the revision of S-52 - *Chart Content and Display Aspects of ECDIS* and its associated Annex A - *Presentation Library for ECDIS*, together with the development of the portrayal component of S-100.

6th Meeting of the ROPME Sea Area Hydrographic Commission Abu Dhabi, UAE, 9-11 February

The 6th Meeting of the ROPME Sea Area Hydrographic Commission (RSAHC) was held in Abu Dhabi, United Arab Emirates (UAE), from 9 to 11 February. The meeting was opened by Dr Colonel Adel al Shamsi, Military Survey Department in the UAE and Chairman of RSAHC. Representatives from RSAHC Member States - Bahrain, Oman, Pakistan, Qatar, Saudi Arabia and UAE - attended the meeting with Associate Members attending from France, Iraq, UK and USA and Observers from a number of Emirati organizations and authorities, together with several representatives from industry. Director Iptes and Assistant Director Wyatt represented the IHB.



Director Iptes addresses delegates at the opening ceremony



Members of RSAHC 6

The meeting received national reports from Member and Associate States and the IHB following which the meeting received reports on the IHO-IOC GEBCO Project and on Worldwide ENC Data Base (WEND) issues. Delegates were encouraged to provide regular updates for the IHO Yearbook and IHO publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide*. Details of regional INT Chart and Electronic Navigational Chart (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 to be held in Abu Dhabi in April 2015, as well as continuing to progress them through correspondence. The NAVAREA IX Coordinator provided an update on issues relating to the Worldwide Navigation Warning Service (WWNWS) and outcomes from related IMO meeting were reviewed. Director Iptes briefed the Commission on current IHO issues and IHB activities and provided an update on the outcomes of the 5th Extraordinary International Hydrographic Conference (EIHC-5).

The meeting included presentations from industry representatives. The presentations were incorporated in the agenda to provide introductions to the various topics for discussion and to highlight technologies and training opportunities available to the region. Industry representatives were keen to emphasise their willingness to engage with the RSAHC and its members to assist the development of hydrographic and cartographic capability within the region. These presentations were followed by presentations from the regional Capacity Building (CB) Coordinator. The presentations generated considerable debate on CB issues and regional requirements. A comprehensive plan of proposals was developed for submission to the IHO Capacity Building Sub-Committee (CBSC) that will meet later in the year. Presentations were also given on Satellite Derived Bathymetry and Crowd-Sourced Bathymetry, both of which supported the request for Member States to contribute to the IHO-IOC GEBCO Programme through the provision of shallow water bathymetric data to the IHO Data Centre for Digital Bathymetry (DCDB).

The UAE (Dr Colonel Adel al Shamsi) was re-elected as Chair of the Commission with the Islamic Republic of Iran being re-elected as Vice-Chair. Saudi Arabia offered to investigate hosting the 7th Meeting of the RSAHC, with a view to holding it in Jeddah in late January 2017 and preceded by a one-day meeting of the INT Chart Coordination Working Group.

**2nd Meeting of the Steering Committee
of the East Asia Hydrographic Commission
Singapore, 10-12 February**



EAST ASIA HYDROGRAPHIC COMMISSION

The 2nd meeting of the Steering Committee of the East Asia Hydrographic Commission (EAHC) was held in Singapore from 10 to 12 February, hosted by the Hydrographic Department of the Maritime and Port Authority of Singapore and chaired by Commodore Jacinto M. Cablayan, Director of the Hydrography Branch of the Philippines' National Mapping and Resource Information Authority and Chairman of the EAHC. The EAHC Steering Committee meets annually between the triennial meetings of the EAHC to monitor progress in the region and provide an annual forum for the region's Hydrographers to meet.

Representatives from all, but one, EAHC Member States attended the meeting: China, Indonesia, Japan, Republic of Korea (RoK), Malaysia, Philippines, Singapore and Thailand attended the meeting. The Democratic People's Republic of Korea was not represented. Associate Members Brunei Darussalam and Viet Nam attended the meeting together with the Chair of the GEBCO Guiding Committee (GC). President Ward attended as an invited observer from the secretariat of the IHO.



The meeting received progress reports on the Training and Research Development Center (TRDC) (see: <http://trdc.eahc.asia/>), based at the KHOA, in Busan, RoK, established by the Commission to deliver its Capacity Building Programme and endorsed the 5-year Capacity Building requirements plan 2015-20. President Ward provided a report of IHO activities of relevance to the Commission and the Chair of the GEBCO GC provided a briefing on the IHO-IOC GEBCO project and its involvement with crowd-sourcing for data.

Details of regional Electronic Navigational Chart (ENC) coverage were discussed, and in particular the production, pricing and distribution arrangements for the eight co-produced ENCs in usage bands 1 and 2 covering the central areas of the EAHC region centred around the South China Sea were agreed.

During the meeting, the participants shared their experience on the implementation of common chart production and database systems. Indonesia provided a briefing on the combined efforts of hydrographers to locate the Air Asia aircraft that was recently lost at sea en route from Surabaya to Singapore. Hydrographers from Singapore joined their Indonesian counterparts in the search efforts. It was acknowledged that the close professional relationships developed through the EAHC were key to the ease with which practical cooperation was marshalled in a very short time span to conduct the search operations.

The next meeting of the EAHC Steering Committee will be held in the first part of 2016 in either Brunei Darussalam, Indonesia or Viet Nam.

2nd Stakeholder Meeting on the Implementation of the Galway Statement European Union Covent Garden Building Brussels, Belgium, 23-24 February

The Galway Statement was an outcome of the Conference on “The Atlantic – A Shared Resource” held in Galway, Ireland, from 23 to 24 May 2013. Representatives of the European Union, the United States and Canada agreed to join forces on Atlantic Ocean Research. The goal is to better understand the Atlantic Ocean and promote the sustainable management of its resources. The Galway Statement aims to connect the ocean observation efforts of the three partners. The work will also study the interplay of the Atlantic Ocean with the Arctic Ocean, particularly in relation to climate change. The actual sea area covered by the Statement is not precisely defined.

The Galway Conference was followed by two plenary meetings in Washington DC and in Ottawa (November 2014) and a number of thematic meetings.

The 2nd stakeholder meeting on the Implementation of the Galway Statement, combined with a Seabed Mapping Workshop, took place in the European Union (EU) Covent Garden Building in Brussels, Belgium, from 23 to 24 February 2015. Representatives from the EU, Canada and USA as well as numerous representatives from the EU Commission and Non-Governmental Organizations were welcomed by Mr John Bell, Director of the Research, Technology and Development (RTD) Directorate, Mr Terry Schaefer, Office of Oceanic and Atmospheric Research (NOAA/OOAR) and Mr João Fonseca Ribeiro, Director-General of Maritime Policy (Portugal). Assistant Director David Wyatt represented the IHO and the IHO-IOC GEBCO Project.

The opening plenary session, chaired by Ms Sieglinde Gruber, Head of Unit in RTD, received reports on progress since the meetings in Washington DC and Ottawa. Presentations were given on Seabed Mapping, Ocean Literacy, Aquaculture and Galway Statement follow-up Horizon 2020 projects (The EU Framework Programme for Research and Innovation). Briefs were provided on updates and new initiatives from various stakeholders and a discussion on creating synergies with the EU Member States, particularly the Strategic Forum for International Science and Technology Cooperation (SFIC). IHO-IOC



Galway Statement Stakeholder Plenary session

GEBCO Outreach and Education Working Group (OEWG) activities and initiatives were highlighted during the initial Ocean Literacy discussion. The importance of engaging with the wider public rather than academia and already involved organizations and institutions was identified and the necessity of focusing material and efforts for use in secondary education was emphasised.

The Seabed Mapping Workshop, convened after the plenary session, was chaired by Mr Alan Stevenson, British Geological Survey (BGS)/EuroGeoSurvey Marine Geology Expert Group (EGS MGEG). It had been preceded by a workshop held in Dublin, Ireland on 2 December 2014 where marine scientists and policy makers from the USA, Canada, Europe and Brazil met to address a number of key issues relating to the role of seabed and seabed habitat mapping raised at the Galway Conference. In particular the Dublin Workshop sought to establish the status of Atlantic seabed mapping initiatives, and identify priority scientific challenges related to seabed and seabed habitat mapping, which need to be addressed in order to deliver an improved Atlantic Ocean observation capacity. It was considered that such a capacity would provide better predictive and forecasting models for sustainable resource development and improved risk management, including climate change, as outlined in the Galway Statement.

The Workshop first day covered general discussions of ideas and challenges for Seabed Mapping. Short presentations were given covering NOAA's National Geophysical Data Center, Natural Oil and Gas Seeps and the need for Water Column Data; Assistant Director Wyatt demonstrated the IHO and GEBCO websites, particularly highlighting the IHO Data Centre for Digital Bathymetry (DCDB) section. Considerable discussion took place on bathymetric data quality and accuracy requirements, which it was noted are driven by intended use and the resultant products.

The Workshop second day focused on improving linkages across programmes and leveraging existing ocean exploration knowledge and infrastructure. It was agreed a target pilot area in the North Atlantic should be identified along with the minimum data required. It was also agreed there was requirement to raise awareness of the need for mapping the Atlantic. There was general consensus that utilizing the IHO-IOC GEBCO brand, together with the IHO DCDB, to encourage the increased availability of bathymetry and the release of national, academic and research data into the public domain under the IHO umbrella had significant advantages and should be further investigated. It was agreed engagement with IHO-IOC GEBCO should be encouraged and attendance at the GEBCO meetings should be considered.

The next seabed mapping meeting is tentatively planned for June or July 2015 in Brussels with the final dates to be de-conflicted with the IMO Maritime Safety Committee and IOC Assembly. It was also noted that further informal discussions could take place during the Horizon 2020 conference in Brussels from 16 to 17 April, where it was intended to include associated activities outside the Horizon 2020 project and engagement with Southern Atlantic coastal states.

The meeting report and all papers are available from the EU web site at <http://ec.europa.eu/research/iscp/index.cfm?lg=en&pg=transatlantic-alliance> .

**13th Conference of the
South West Pacific Hydrographic Commission
and
IHO Workshop on Hydrographic Governance
Rarotonga, Cook Islands, 23-27 February**

The Government of the Cook Islands hosted the 13th Conference of the South West Pacific Hydrographic Commission (SWPHC) from 25 to 27 February in Rarotonga, Cook Islands. Representatives from all eight Member States of the Commission, and all seven Associate Members attended the meeting. Three Observer States, three international organisations and six representatives from industry also participated. The IHO was represented by President Robert Ward.



The Deputy Prime Minister of the Cook Islands, the Honourable Teariki Heather opens the meeting

The meeting was opened by the Deputy Prime Minister of the Cook Islands, the Honourable Teariki Heather, and chaired by Commodore Brett Brace (Australia).

Each of the States present provided an update on their activities since the last meeting 18 months previously. Among the Pacific Island States and Territories (PICTs) all indicated that progress had been made, albeit only marginal in some cases. However, Papua New Guinea, The Solomon Islands, Tonga and Vanuatu all indicated significant progress. Personnel from Papua New Guinea have received internationally recognised training, Solomon Islands personnel are currently implementing new hydrographic survey equipment, and Tonga has re-organised its internal hydrographic responsibilities by designating the Department of Infrastructure, Marine & Ports Division as the national hydrographic authority while the Navy retains responsibility for the conduct of hydrographic surveying and will shortly refurbish its dedicated hydrographic survey vessel.

Vanuatu reported on the very successful collaborative effort between its government, the Secretariat of the Pacific Community (SPC) Geoscience Division, New Zealand, through the Ministry of Foreign Affairs and Land Information New Zealand and the UK Hydrographic Office. This resulted in urgent surveys being carried out and electronic navigational charts being published in direct support of a rapidly growing cruise ship requirement.

New Zealand reported on its ground-breaking work in developing and using a GIS-based risk assessment and cost benefit methodology to determine surveying and charting priorities. The work in Vanuatu and subsequent work in Tonga and the Cook Islands were used to illustrate how the methodology is being used.

During the meeting the New Zealand government announced a five million dollar, five-year hydrographic assistance programme (Pacific Regional Navigation Initiative (PRNI)) which will focus on navigation-related aspects of maritime safety that will see hydrographic risk assessments and chart remediation programmes take place for the Cook Islands, Niue, Samoa, Tonga and Tokelau, where New Zealand is the Primary Charting Authority.

The activities of the SPC Geoscience Division and its improved capability to conduct hydrographic surveys that can be used to improve charts were presented and discussed. Highlights of these included its work as part of the surveying efforts in Vanuatu and the decision at the 2nd meeting of the Pacific Regional Energy and Transport Ministers in April 2014 to endorse the establishment of a hydrographic unit at SPC to develop and further enhance regional hydrographic services to members.

The Commission members reviewed their requirements for further capacity building and agreed on priorities to be submitted to the forthcoming meeting of the IHO Capacity Building Sub Committee in May.

The 13th meeting of the Commission was preceded by a workshop on hydrographic governance sponsored by the IHO Capacity Building Fund and delivered by representatives from the Primary Charting Authorities in the region and industry. The workshop was intended to provide the representatives of the PICTs with information on the responsibilities and obligations of coastal States with regard to the provision of hydrographic and nautical charting services and ways in which these obligations can be met. 22 people attended the workshop to hear from seven presenters over two days.



Captain Tafaigata Toilolo, representative of Samoa signs the Statutes, witnessed by the Chair, Commodore Brett Brace

Vanuatu, currently an Associate Member of the SWPHC, submitted its application to become a Member State of the IHO during the period of the meeting. Meanwhile, Samoa became an Associate Member of the SWPHC, through the signing of the Statutes during the closing ceremony. Several other Pacific Island States indicated that they expect to become either Associate Members of the Commission or to apply for membership of the IHO in the near future.

At the end of the meeting, the members agreed that Australia would continue to occupy the Chair and Papua New Guinea will continue to occupy the Vice Chair position.

Subject to final confirmation, the next meeting will be held in Noumea, New Caledonia in late 2016.

5th Meeting of the IHO/ROK Programme Management Board (PMB5) Busan, Republic of Korea, 25 - 26 February

The 5th meeting of the IHO/ROK Programme Management Board (PMB5) was held in Busan, Republic of Korea (ROK), from 25 to 26 February, hosted by the Korea Hydrographic and Oceanographic Administration (KHOA). The meeting was co-chaired by Mr. Joon Ho Jin (KHOA) and Mr. Thomas Dehling (IHO) and attended by representatives from the contributing partners. The IHO was represented by Mr. Dehling (Germany, Chair of the IHO Capacity Building Sub-Committee), Director Mustafa Iptes and Assistant Director Alberto Costa Neves (Secretary).

The PMB was established under the IHO/ROK Memorandum of Understanding (MoU) to identify ways of improving hydrography and nautical cartography worldwide through the capacity building activities funded by the ROK and to manage the IHO/ROK programme of technical cooperation.

The meeting reviewed the significant achievements and the various training and education activities sponsored by the ROK. The annual contribution from the ROK plays a significant part in the Capacity Building (CB) Fund used to support the annual CB Work Programme (CBWP). Since its inception the ROK contribution has supported education programmes in hydrography and cartography, training for trainers courses, seminars, and short courses on marine spatial data infrastructures, law of the sea, tides and water levels, amongst others.

The meeting considered the management aspects of supporting trainees on the Category "A" Programme at the University of Southern Mississippi (USM)/USA and the Category "B" Nautical Cartography Programme at KHOA in order to effectively deliver high level education to participants from developing countries. During the meeting the selection board for the 2015-2016 edition of the Category "A" Programme was established and selected four candidates from Bahrain, Nigeria, Oman and Romania, subject to final acceptance by the USM. During the meeting the ROK confirmed its intention to continue supporting CB activities at the same level of contribution as this year.



Participants at the PMB5 Meeting

The meeting also identified training needs related to S-100-based Standards and e-Navigation in order to help developing regions to prepare for the practical implementation of these developments and for the expected impacts.

The meeting was preceded by a half-day workshop on capacity building, focusing on new challenges and opportunities. This was attended by 21 participants from relevant ROK institutions and invited guests. The workshop was co-chaired by Mr. Gi-jun Han (KHOA/ROK) and Director Iptes and aimed at further developing the cooperation between the IHO and the ROK for the benefit of worldwide hydrographic capacity.



The Director General of the Korea Hydrographic and Oceanographic Administration, Mr. Gi-jun Han, addresses the participants of the Capacity Building Workshop

MARCH

5th Meeting of the Worldwide ENC Database (WEND) Working Group (WENDWG) Singapore, 3-5 March

The 5th meeting of the Worldwide ENC Database Working Group (WENDWG) took place in Singapore, hosted by the Hydrographic Department of the Maritime and Port Authority (MPA) of Singapore, from 3 to 5 March. The meeting was chaired by Captain Jamie McMichael-Phillips, UKHO. Twenty-six delegates from 14 Member States (Brazil, Canada, China, Finland, France, Germany, Japan, Norway, Poland, Singapore, South Africa, Turkey, United Kingdom, USA), representing 10 Regional Hydrographic Commissions (ARHC, BSHC, EAHC, EAHC, MACHC, MBSHC, NHC, NSHC, SAIHC, USCHC), 2 Regional ENC Coordinating Centres (IC-ENC and PRIMAR), and the IHB attended the meeting. Australia (representing the SWPHC) could not participate and provided written comments. Director Mustafa Iptes and Assistant Director Yves Guillam (Secretary) represented the IHB.



5th WENDWG Meeting
March 2015
Singapore



The meeting considered the decisions and actions affecting WENDWG activities arising from the 6th meeting of the Inter-Regional Coordination Committee (IRCC-6) and the 5th Extraordinary International Hydrographic Conference (EIHC-5). Subsequent actions were included in the WENDWG 2015-16 proposed work programme, now aligned in its format with those of the other IHO subordinate bodies. This work programme will be submitted to the next meeting of the IRCC (IRCC-7) in June for approval. The meeting considered issues associated with ENC information overlays and prepared the way ahead to address this matter in accordance with existing IHO Resolutions and Standards. The meeting also prepared suggestions for the consideration of IRCC-7 to progress EIHC-5 Decision No. 10 concerning ENC coverage, and Decision No. 12 on the full implementation of the *WEND Principles*. Two ad hoc sub-groups met during the meeting to make progress on various standing issues including how to manage the collation of the strategic and working level performance indicators that are within the scope of the Working Group and are required for the IHO Annual Report. Methods and timelines for delivering them were agreed.

The WENDWG agreed that it would monitor RENC harmonization activities related to technical and distribution issues as a new permanent item of the WENDWG work programme; as a consequence, it was agreed that the RENC Harmonization Sub-Group could be disbanded.

Two initiatives were agreed to further address ENC overlap issues:

- one - led by Singapore (on behalf of the East Asia Hydrographic Commission) and IC-ENC -will consider ECDIS scenarios and ENC overlapping test dataset cases.

Results are expected in early 2016; and

- the second - to establish an IHO online repository of useful documents such as the report of the US-Canada Hydrographic Commission transboundary ENC agreement - intends to share best practises.

The continuing re-development of the IHO ENC Catalogue was noted and its principles agreed. The offer made by PRIMAR (on behalf of the RENCs) for the International Charting Regions Co-ordinators and the IHB to use its online RENC ENC database catalogue and overlap checker tool was most welcomed. These password-protected tools will be made available to the Regional Hydrographic Commissions so that they can monitor ENC coverage, overlaps and gaps in their regions.

The WENDWG agreed to recommend to IRCC that there was no need to further amend or enhance the existing *WEND Principles* and the *Guidelines for the implementation of these WEND Principles* at this stage. However, some work is required to align IHO publication S-65 - *Electronic Navigational Charts, Production, Maintenance and Distribution Guidance* - with the guidelines and principles.



WENDWG-5 participants visiting the Port Operations Control Centre of Singapore - Vista

The next WENDWG meeting will be held in early March 2016, in Stavanger, Norway.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > WENDWG > WENDWG-5.

6th Meeting of the Marine Spatial Data Infrastructures Working Group (MSDIWG), London, UK, 4-6 March

The 6th Meeting of the Marine Spatial Data Infrastructures Working Group (MSDIWG) took place in London, UK, hosted by the United Kingdom, from 4 to 6 March. The meeting was chaired by Mr. Jens Peter Hartmann (Denmark). Ten participants from nine Member States (Canada, Denmark, France, Germany, Japan, Netherlands, Norway, United Kingdom and USA), six Expert Contributors representing the Coastal & Marine Union (EUCC) and industry (Caris, Envitia, ESRI, and OceanWise), and the IHB attended the meeting. Assistant Director Alberto Costa Neves represented the IHB.



MSDIWG6 Open Forum participants

The meeting considered the impact of the decision to transfer governance of the MSDIWG from the Hydrographic Services and Standards Committee (HSSC) to the Inter-Regional Coordination Committee (IRCC) and prepared revised Terms of Reference that will be submitted to the IRCC for approval. Participants looked at ways to assist IHO Member States and Regional Hydrographic Commissions in understanding the benefits of, and the means for, establishing MSDIs. The need to promote cultural changes, to develop an MSDI strategy and to invest in training were all considered. The technical aspects of MSDI will be reported to HSSC when and if necessary.

The MSDIWG also discussed the impact of Crowd-Sourced Bathymetry (CSB) and the use of authoritative versus non-authoritative data. The possibility of establishing the uncertainty of such data was considered while discussing the character of CSB as an extension of Hydrographic Notes (reports from mariners), the nature of the input to the General Bathymetric Chart of the Ocean (GEBCO) gridded data sets and the parallel with the use of Vessels of Opportunity by the World Meteorological Organization (WMO) to collect data. Participants focused on the "data centric" approach rather than on products in order to make data available for re-use.

Presentations on regional and national MSDI developments allowed participants to better understand the progress that has been made in some countries, but a large gap still exists between the advanced hydrographic services and those that are yet to modernize and embrace a digital geospatial information environment. The meeting considered examples of the use of common datasets to enable greater collaboration across national boundaries, the improvement of data management processes, links to the development of e-Navigation and improvements to the public and government acknowledgement of hydrographic services at a national and regional level. The MSDIWG agreed on actions to build use cases and a generic business case framework for MSDI.

Participants also considered the need to establish training syllabi for MSDI at distinct levels - decision-makers, managers, users. The MSDIWG will seek input from academia and the wider hydrographic community to review and extend the IHO Publication C-17 (*Spatial Data Infrastructures: "The Marine*

Dimension” - Guidance for Hydrographic Offices), to identify national and regional best practices, to identify the challenges that are faced by hydrographic services and to update existing MSDI documentation on the IHO website. The meeting also reviewed the existing standards and how appropriate they are to MSDI.

MSDIWG-6 was preceded by a one day “MSDI Open Forum” attended by 30 people. The Forum explored the theme: “*Building a Maritime Spatial Data Infrastructure – Are the Principles at Odds with Strategies for Delivery?*”. MSDIWG members and external stakeholders discussed the relationship between MSDI and hydrography. Geospatial data developments - mainly in UK and Europe, SDI case studies and open data standards and policies were also on the agenda.

The next meeting of the MSDIWG, to be associated with another MSDI Forum, will take place in early February 2016, in Tokyo, Japan. Further information concerning the meeting and the Open Forum presentations are available on the IHO web site at:

www.iho.int → Committees & WG → MSDIWG → MSDIWG6 (and → MSDI Open Forum)

2nd session of the IMO Sub-Committee on Navigation, Communications and Search and Rescue London, United Kingdom, 9 – 13 March

The Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) is a subordinate body of the Maritime Safety Committee (MSC) of the International Maritime Organization (IMO). 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’ routing, 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 co-operation 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.



IMO NCSR 2 Plenary in session



Director Bessero in the plenary at NCSR 2

The 2nd session of the Sub-Committee (NCSR 2) was held at the IMO Headquarters in London from 9 to 13 March 2015. The IHO was represented by Director Gilles Bessero and Assistant Director David Wyatt, Mr Peter Doherty, the Chair of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC), and Mr Christopher Janus, Branch Chief, NGA Maritime Watch - NAVAREA IV/XII. Several representatives of Hydrographic Offices also attended the meeting as part of their national delegation.

NCSR 2 approved three routing measures which will be forwarded to the MSC for adoption at its 95th session in June 2015. The Sub-Committee also approved two model document templates for ships' routing and reporting system proposals.

NCSR 2 finalized a draft consolidated guideline on Software Quality Assurance (SQA) and Human Centred Design (HCD) for e-navigation prepared by a Correspondence Group. The Sub-Committee agreed there was no requirement for input from the Sub-Committee on Human Element, Training and Watchkeeping (HTW) at the present time and endorsed the draft guideline with a view to approval by the MSC.

The Sub-Committee received reports from the Chair of the IMO NAVTEX Panel, in which details of proposed new NAVTEX transmitters were provided, and the Chair of the IHO WWNWS-SC, in which were highlighted the results of a year-long customer survey which revealed an apparent lack of system knowledge and a potential gap in GMDSS training for on-board users. The Sub-Committee noted that amendments to the GMDSS Master Plan had been distributed in GMDSS/Circ.17 and Administrations were encouraged to check their national data for accuracy. It was noted that GMDSS/Circ.18 would be issued in September 2015, allowing time for amendments to be submitted.

The NCSR finalized a draft MSC Resolution on the *Performance standards for multisystem shipborne radionavigation receivers*. The draft was endorsed by the Sub-Committee with a view to approval by the MSC with a proposed implementation date of 31 December 2017. The Sub-Committee also identified a future work item on the *interconnection of NAVTEX and SafetyNET receivers and their display on Integrated Navigation Display System*.

The NCSR agreed in principle on new definitions of GMDSS sea areas A3 and A4 and that a definition of interoperability, based on the functional requirements of the future GMDSS, was needed. Views were expressed that this concept should be applicable to all the GMDSS service providers and that it might be included in a future revision of SOLAS Chapter IV - *Radiocommunications*. The NCSR endorsed a draft outline of the detailed review of the GMDSS to be progressed by an intersessional Correspondence Group on the review and modernization of GMDSS.

The IHO submitted a document reporting on the monitoring of ECDIS issues and chart coverage. The IHO also highlighted that some port authorities required the carriage of paper charts in addition to the carriage of an adequate set of ENCs, in accordance with the requirements set out in SOLAS Regulation V/19.2.14. The Cook Islands highlighted the recent successful meeting of the South West Pacific Hydrographic Commission (SWPHC) held in Rarotonga and cautioned to ensure a quality assurance mechanism would guarantee the quality of crowd-sourced bathymetry data, whilst acknowledging the potential value of such data to improve nautical charts.

Mr Ringo Lakeman, The Netherlands, and Mr Nigel Clifford, New Zealand, were elected as Chair and Vice-Chair, respectively, of the Sub-Committee for its 3rd session scheduled to be held at the IMO Headquarters in London, United Kingdom, from 29 February to 4 March 2016.

38th Conference of the US-Canada Hydrographic Commission National Harbor, Washington DC, USA, 16 March

The USA hosted the 38th Conference of the US-Canada Hydrographic Commission (USCHC) on 16 March in National Harbor, Washington DC, USA immediately prior to the biennial US Hydro Conference organised by the Hydrographic Society of America. In addition to the two Member States of the Commission, Mexico and the United Kingdom attended as Observer States at the meeting. The IHO was represented by President Robert Ward.



As usual, the meeting was co-chaired by the national Hydrographers of Canada and the United States of America. Mr Denis Hains, Hydrographer-General of Canada represented Canada and Rear Admiral Gerd Glang, Hydrographer of the USA, represented the United States of America.

Each country provided reports and presentations on their organizations and accomplishments in the past year. Specific topics discussed were the status of world-wide Electronic Navigational Chart (ENC) coverage. The USA described its progress on evaluating the use of satellite-derived bathymetry, the development of the IHO Data Centre for Digital Bathymetry to become a global crowd-sourced bathymetry database and the potential for collaboration on a web-based tool to better discover ENCs - *ENC Online*. Canada provided information on its world-class tanker safety system,

the web-based water levels and currents project, its continuous vertical datums project and the Canadian Federal Geospatial Platform.



Co-Chairs Mr Hains and Admiral Glang (both on right) seek views from IHB President Robert Ward (second left) during the meeting

The next meeting of the Commission will be held in Halifax, Nova Scotia, Canada on 16 May 2016 immediately preceding the Canadian Hydrographic Conference 2016 that will be held in the same location.

3rd World Conference on Disaster Risk Reduction (WCDRR-3) Sendai, Japan, 14-18 March

In 2011, the UN General Assembly initiated the development of a post-2015 framework for disaster risk reduction, in continuation of previous UN initiatives to reduce the vulnerabilities and risks to hazards. The Directing Committee has registered the IHO as a contributor to the preparatory process. This provides the IHO with opportunities 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. The IHO input so far has advised that the preparation of a post-2015 framework should address the availability of appropriate coastal and bathymetric data, both through direct contribution to the consultation process and through related initiatives and programmes, such as the UN initiative on Global Geospatial Information Management and the work plan of the Group on Earth Observations (GEO).

As part of the UN process, the 3rd World Conference on Disaster Risk Reduction (WCDRR-3) convened in Sendai, Japan, from 14 to 18 March 2015. It was tasked by the UN General Assembly to adopt the post-2015 framework for disaster risk reduction. Japan agreed to represent the IHO at the Conference. The IHO delegation was composed of Messrs Hideki Kinoshita, Director of International Affairs Office, and Katsumasa Miyauchi, Senior Official International Affairs Office, Japan Coast Guard - Hydrographic and Oceanographic Department.

Over 6,500 participants, including 2,800 government representatives from 187 UN Member States, attended WCDRR-3. 150 intergovernmental and multi-stakeholder events were held and over 350 side events were organized in the public forum with over 143,000 visitors.

The IHO delegation attended several events, including the Opening Ceremony, plenary sessions, working sessions and side events. Mr Kinoshita delivered a statement on behalf of the IHO under Agenda Item 9 of the Plenary Sessions (Statements by the intergovernmental and other organizations), highlighting the important roles of hydrography in predicting the impact of marine disasters such as coastal storms, tsunamis and sea level rise as well as in the forecasting of the likely spread and track of oil slicks as part of oil spill response plans. Mr Kinoshita's address can be viewed at: <http://webtv.un.org/meetings-events/conferencessummits/3rd-un-world-conference-on-disaster-risk-reduction-14-18-march-2015-sendai-japan/watch/representative-from-the-international-hydrographic-organization-8th-plenary-meeting/4116435100001>



Mr Kinoshita addressing the Plenary Session

The role of geospatial data infrastructures in the reduction of disaster risks was addressed in a working session on “Earth Observation and High Technology to Reduce Risks” on 15 March, with input from GEO and from the International Steering Committee for Global Mapping.

The Conference adopted the Sendai Framework for Disaster Risk Reduction 2015-2030 (see http://www.wcdrr.org/uploads/Sendai_Framework_for_Disaster_Risk_Reduction_2015-2030.pdf).

The framework identifies the need for “*focused action within and across sectors by States at local, national, regional and global levels in the following four priority areas:*”

1. *Understanding disaster risk;*
2. *Strengthening disaster risk governance to manage disaster risk;*
3. *Investing in disaster risk reduction for resilience;*
4. *Enhancing disaster preparedness for effective response, and to “Build Back Better” in recovery, rehabilitation and reconstruction.”*

The framework also invites “*States, regional and international organizations and other relevant stakeholders*” ... to “*take into consideration the key activities listed under each of these four priorities and should implement them, as appropriate, taking into consideration respective capacities and capabilities, in line with national laws and regulations.*”

The 15th Meeting of the North Indian Ocean Hydrographic Commission Muscat, Oman, 16-18 March

The 15th meeting of the North Indian Ocean Hydrographic Commission (NIOHC) was held in Muscat, Oman, from 16 to 18 March, under the chairmanship of Rear Admiral Tom Karsten, National Hydrographer of the United Kingdom. Participants were welcomed at the Opening Ceremony by His Excellency Said Hamdoon Al Harthy, Under-Secretary for Ports and Maritime Affairs at the Ministry of Transport and Communications, and Rear Admiral Abdullah bin Khamis bin Abdullah Al Raisi, Commander of the Royal Navy of Oman.



NIOHC15 in session

NIOHC Member State representatives from Bangladesh, Egypt, India, Pakistan, Saudi Arabia, Sri Lanka, Thailand and the UK attended the meeting together with representatives of Associate Members from Australia, France, Mauritius, Oman, and the Seychelles. The Russian Federation was represented as an Observer State. Representatives of the International Association of

Marine Aids to Navigation and Lighthouse Authorities (IALA), the IHO-IOC GEBCO Project and several commercial companies also attended as invited observers. Director Iptes and Assistant Director Wyatt represented the IHB. The 15th meeting of the Commission was preceded by a meeting of the NIOHC International Chart Coordination Working Group (ICCWG) on 15 March.



Director Iptes addressing the NIOHC15 plenary

The NIOHC received national reports from Member States, Associate Member States and the IHB as well as summary reports on the 6th meetings of the IHO Hydrographic Services and Standards Committee and the Inter-Regional Coordination Committee held during the previous year and presentations about progress in the GEBCO Project and IALA activities. The meeting also received reports on progress and issues related to the IHO Worldwide ENC Database concept and the associated Regional

ENC Coordinating Centres, an update on the work of the IHO Marine Spatial Data

Infrastructures Working Group and brief overviews on the progress towards an IHO crowd-sourced bathymetry programme, relevant activities that had taken place in the International Maritime Organization, an update from the NAVAREA VIII Coordinator and the outcomes of the 7th meeting of the World-Wide Navigational Warning Service Sub-Committee.

Director Iptes reported on the IHO Work Programme and the Organization's activities during the previous year. The outcomes of the 5th Extraordinary International Hydrographic Conference held in October 2014 were also considered. Regional INT Chart and ENC coverage were covered with a brief on the INT Chart concept delivered by the IHB. Considerable time was devoted to capacity building (CB) and regional requirements. A comprehensive CB plan was developed for submission to the 13th meeting of the IHO Capacity Building Sub-Committee (CBSC-13) later in the year. The meeting received a comprehensive brief on the work of the Combined Maritime Forces countering maritime crime and piracy in the region.

The meeting included 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 the NIOHC and its members to assist the development of hydrographic and cartographic capability within the region.

The meeting discussed several topical issues including how to maximise the use of hydrographic data, the movement towards a data-centric world, an introduction to e-Navigation and potential uses of AIS data, all of which included valuable industry input and generated much discussion.

The current Vice-Chair of the NIOHC, Bangladesh, will assume the Chair of the NIOHC within the next four months in accordance with the Statutes of the Commission. The NIOHC elected Egypt to assume the Vice-Chair position for the next period. Bangladesh volunteered to host the 16th meeting of the Commission in Bangladesh from 14 to 16 March or 23 to 25 February 2016 and it was proposed to hold an INT Chart Coordination Working Group meeting prior to NIOHC-16.

US Hydrographic Conference 2015 **National Harbor, Washington DC, USA, 17-19 March**



The US Hydrographic Conference 2015 was organised in National Harbor, Washington DC, USA from 17 to 19 March by the Hydrographic Society of America (THSOA).

The Conference participants represented the full gamut of hydrographic interests including the government sector, academia, equipment manufacturers and commercial hydrographic surveyors. In addition to participants from across the USA, others came from Brazil, Canada, China, Egypt, France,

Germany, Ghana, Republic of Korea, Mexico, Netherlands, Nigeria, Turkey and the United Kingdom.

The Conference was opened by Senator Sheldon Whitehouse, Head of the Senate Ocean Caucus and a strong advocate of measures to protect the environment and health of the oceans; Mr Robert Cardillo, Director of the National Geospatial Intelligence Agency, Rear Admiral Gerd Glang, US National Hydrographer, Rear Admiral Timothy Gallaudet, Hydrographer of the Navy, and Mr. Robert Ward, President of the Directing Committee of the International Hydrographic Organization.

A wide and varied programme of presentations, workshops, a social programme and a technical exhibition hall along with a Student Outreach programme were available over the three days. Close to 600 attendees registered, 70 industry exhibitors, 8 boats from industry and government were berthed for on water demonstrations, 50 technical papers were presented, 34 Lightning Rounds were presented, 22 Academic Posters were displayed and judged for prizes, 18 non-academic posters were displayed by industry contributors, and 20 Specialized Workshops were presented. Media coverage included Sea Technology, Hydro International, and xyHt.

The Hydrographic Society of America, as principal organisers of the Conference took the opportunity to induct its second group of hydrographers into its *Hall of Fame*". This year saw former US Hydrographer, Hydrographer of the National Geospatial Intelligence Agency and President of the Directing Committee of the IHO (1992-97) Rear Admiral Chris Andreasen inducted, together with Messrs Karl Keininger and Bill Bergin.

23rd Session of Committee on International Oceanographic Data and Information Exchange of the Intergovernmental Oceanographic Commission (IODE-XXIII) Bruges, Belgium, 17-20 March

The 23rd Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE-XXIII) was held in Bruges, Belgium from 17 to 20 March. The meeting was preceded on 16 March by a Scientific Conference to celebrate the 10th anniversary of the establishment of the Committee in Ostend, Belgium. Both events took place in the Bruges Provincial Court building.



Participants at IODE-XXIII.

The IODE Session was attended by 105 participants from 40 IOC Member States and 10 partner organizations. The IHO was represented by Assistant Director Anthony Pharaoh.

Intersessional working groups were established to discuss and propose how the IODE could be restructured to operate more effectively; revise the IOC strategic plan for oceanographic data and information exchange and develop an IOC communication and outreach strategy for data and

information management. The meeting considered how to formally establish the “*OceanTeacher Global Academy*” as an IODE capacity building project. Recommendations on the following topics were agreed: the revitalization of the Ocean Data and Information Network for the Black Sea (ODINBLACKSEA), the establishment of an IODE project for an international quality controlled ocean database (IODE-IQuOD), the establishment of an IODE pilot project to expand the Ocean Biogeographic Information System (OBIS) with environmental data (OBIS-ENV-DATA) and the IODE work plan and budget for 2015 to 2017.

The IHO representative briefed the Session on the latest developments of the GEBCO project.

Ms Cynthia Chandler (USA) and Professor Yutaka Michida (Japan) were elected as the new IODE Co-Chairs. They take over from Ms Sissy Iona (Greece) and Mr Ariel Troisi (Argentina) who have both served two terms in office.

9th Meeting of the South-West Atlantic Hydrographic Commission (SWAtHC) Montevideo, Uruguay, 19-20 March

The 9th Meeting of the South-West Atlantic Hydrographic Commission (SWAtHC) was hosted and chaired by the Hydrographic Office of Uruguay (*Servicio de Oceanografía, Hidrografía y Meteorología de la Armada - SOHMA*) on 19 and 20 March 2015. Nine delegates and one observer from industry attended the Meeting. Only two IHO Member States in the Region, Brazil and Uruguay, were represented. The IHB Directing Committee was represented by Director Gilles Bessero who provided a briefing on current IHO issues and the work of the IHB.



The Chair acknowledged a note of apology from the representatives of Argentina who could not attend for administrative reasons. The approval of the report of the 8th Meeting was confirmed and the status of the list of actions was reviewed.



**Captain Musso,
Hydrographer of
Uruguay,
and Director Bessero**



**Vice Admiral Pontes,
Hydrographer of Brazil,
addressing the Meeting**

Brazil and Uruguay reported on their national activities since the 8th Meeting. Brazil, as Chair of the SWAtHC Planning Committee (*Comité de Planeamiento*), 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. The work plan includes progressing 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*. The Chair of the Commission was tasked to reiterate the invitation to Paraguay to join the Committee. The delegation from Brazil reported on the work of the Inter-Regional Coordination Committee, Capacity Building Sub-Committee, Worldwide ENC Database Working Group and Hydrographic Services and Standards Committee. The Commission agreed consequential actions. A brief on the technical visit to Paraguay conducted in January 2014 was also presented. Brazil, as one of the co-Chairs of the Inland ENC Harmonization Group, reported on the activities of that group. It was noted that interoperability issues might need to be considered in the future for vessels operating in waterways which include a downstream segment covered by ENC and an upstream segment covered by inland ENC.

The Commission discussed and agreed the proposals that will be submitted to the next meeting of the Capacity Building Sub-Committee. Following a presentation by Uruguay on the status of ENC coverage in the region, the Commission agreed to formalize through technical agreements, the pragmatic arrangements which have been progressively adopted to avoid gaps and overlaps and facilitate the shared maintenance of the scheme. The Commission welcomed the intention of Brazil to consider the establishment of a Regional Electronic Navigational Chart (ENC) Coordinating Centre covering South America and expressed its support.

The industry representative briefed the Meeting on new software now available to facilitate the acquisition and processing of data from multiple platforms and to prepare the transition to products based on S-100 - *Universal Hydrographic Data Model*.

It was proposed that the next Meeting be held in the first half of April 2016 in Argentina, the exact date and venue to be decided by 1 September 2015. In accordance with the Statutes of the Commission, the chairmanship will be transferred to Argentina within 45 days of the closure of the Meeting.

APRIL

Meeting of the ROPME Sea Area International Chart Coordination Working Group (RSAICCWG)

Muscat, Oman, 29-30 April

The ROPME Sea Area International Chart Coordination Working Group (RSAICCWG), a subordinate body of the ROPME Sea Area Hydrographic Commission (RSAHC), is tasked with the coordination of INT Chart and ENC coverage of INT Chart Region I. The RSAICCWG held a meeting in Muscat, Oman, from 29 to 30 April 2015 under the chairmanship of Mr Saeed Parazi (IR of Iran), the Region I Coordinator. Representatives from the IR of Iran, Oman, Pakistan, Saudi Arabia, United Arab Emirates, UK and the IHB attended. David Wyatt, IHB Assistant Director, represented the IHB.



RSAHC ICCWG in session

The IHB gave an introductory presentation on the INT Chart concepts, which provided background knowledge for the participants during the subsequent discussions. The IR of Iran, Oman and Saudi Arabia presented proposed amendments and up-dates to their national schemes, highlighting proposed changes to charts to be designated for inclusion in the INT Chart Region I scheme. The UK provided details of proposed adjustments to their current chart coverage in the region. It was agreed that some further changes were required before the final versions were approved through the Region I Coordinator and passed to the IHB as up-dates to IHO publication S-11 Part B - *Catalogue of INT Charts*.

The UK provided a short introduction on ENC scheming, which generated considerable further discussion. Pakistan then highlighted some inter-Regional coverage issues, for which advice was sought from the group. The relevant outcomes of the recent North Indian Ocean Hydrographic Commission (NIOHC) meeting were presented, including proposed solutions to the inter-Regional issues. The meeting agreed that the IR of Iran, as Region I Coordinator, and Pakistan should discuss the issues with India, the Region J Coordinator, using the NIOHC proposals as the starting point of the discussions.

The IR of Iran will now submit the meeting report to the Chairman of RSAHC for endorsement by the Commission and propose a second separate meeting of the RSAICCWG prior to the 7th meeting of the RSAHC. The IR of Iran also offered to investigate hosting this next meeting during the second half of 2016 and approximately four months ahead of the 7th meeting of the RSAHC in early 2017.

The report of the meeting and all documents will be available from the RSAHC section of the IHO web site.

1st Meeting of the Nautical Cartography Working Group (NCWG) Rostock, Germany, 27 – 30 April

The first meeting of the Nautical Cartography Working Group (NCWG) took place in Rostock, Germany, hosted by the *Bundesamt für Seeschifffahrt und Hydrographie* (BSH), from 27 to 30 April. The meeting was chaired by Mr Jeff Wootton (Australia), supported by Andrew Heath-Coleman, Secretary (UK). Twenty-six delegates from 17 Member States (Australia, Canada, Denmark, Finland, France, Germany, Indonesia, Korea (Rep. of), Latvia, Mexico, Netherlands, Norway, Russian Federation, Spain, Sweden, United Kingdom, USA), one Expert Contributor (ESRI), and the IHB attended the meeting. Assistant Director Yves Guillaum represented the IHB.



NCWG-1 participants at BSH, while VWFS "Deneb" is berthing

Dr. Mathias Jonas, National Hydrographer of Germany, welcomed the members and participated in some of the discussions providing views and guidance as Chair of the Hydrographic Services and Standards Committee (HSSC) to which the Nautical Cartography Working Group is subordinated.

As a result of the reorganised structure of the Working Groups of the HSSC, the members of the former Chart and Standardization and Paper Chart Working Group (CSPCWG) reviewed the draft Terms of Reference of the "new" Nautical Cartography Working Group for submission to the HSSC. The maintenance regime of IHO Publication S-4 - *Regulations for the International (INT) Charts and Charts Specifications of the IHO* - was discussed with arguments given by the NCWG Officers to consider adjusting IHO Resolution 2/2007 - *Principles and procedures for making changes to IHO technical standards and specifications*, so that changes to S-4 could be implemented more quickly. Proposals will be submitted to the HSSC accordingly.

About 20 submission papers addressing chart content and portrayal issues in relation to S-4 were considered at the meeting. Following discussions, the NCWG agreed to prepare *clarifications*, as well as proposals for a *revision* of S-4. It is worth noting that the Chair systematically considered the impact of these proposed changes on ENC encoding/portrayal and on the operation of ECDIS. As a consequence, some actions will be undertaken in close liaison with other HSSC WGs.

As tasked by the HSSC, the NCWG considered the various positions of its members on standards-related issues raised by the Admiralty Information Overlay (AIO) service. Proposals were agreed to incorporate additional recommendations in S-4 in order to address consistency issues between ENCs, paper charts and nautical products in general. It was acknowledged that the principles leading to the provision of AIO by the UKHO, acting here as an End-User Service Provider, had to be addressed by other IHO bodies and that this was in hand.

The future of IHO Publication S-4 was discussed together with a topic on the future of the paper chart. Several options were considered, including the use of on-line tools such as the IHO Digital Reference Tool for Cartographers developed by the Republic of Korea. Finally, it was agreed that an ad hoc Correspondence Group will prepare terms of reference for an NCWG Project Team that will look into future directions.

The next meeting of the NCWG is scheduled to take place on 26 to 28 April 2016, at the IHB in Monaco.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > NCWG > NCWG-1.



NCWG-1 participants in session

Comité International Radio-Maritime (CIRM) Annual Meeting Kouklia, Cyprus, 27 to 29 April

The Comité International Radio-Maritime (CIRM) held its Annual Meeting in Kouklia, Cyprus from 27 to 29 April. CIRM is the body representing the maritime electronics industry in the development of relevant international regulations and standards and enjoys observer status with the IHO as a Non-Governmental International 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 on various HSSC Working Groups.

President Ward represented the IHO at the Annual Meeting where he participated in a panel discussion on various topics in which CIRM is taking an active interest: in particular, e-navigation, the need for established software maintenance requirements for navigational systems in ships and cyber-security.

During the meeting, the members re-elected Mr Michael Bergmann as their President and re-appointed the governing Board.

Alongside the President representing the IHO, the Secretaries-General of the following IHO Observer Organizations also attended the meeting as observers: the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the International Chamber of Shipping (ICS), and the International Maritime Pilots' Association (IMPA). Mr Thomas Mellor, Chair of the IHO ENC Working Group, also attended the meeting and provided a progress report on the relevant IHO standards governing ECDIS.

The next Annual Meeting of CIRM will take place in Genoa, Italy.



President Ward (right) congratulates the President of CIRM on his re-election



**Mr Andreas Sokratous,
Director of the Department of Lands
and Surveys of Cyprus
and President Ward**

After the meeting, the President visited the Cyprus Hydrographic Office, where he was greeted by Mr Andreas Sokratous, Director of the Department of Lands and Surveys of Cyprus with overall responsibility for hydrography and nautical charting in Cyprus. The President was given a tour of the facilities by Ms Georgia Papatoma Economidou and Mr Giorgos Kokosis, before discussing topical IHO issues with senior members of the Department. President Ward was particularly impressed with the way that the Department was focussing on spatial data infrastructures and successfully incorporating hydrography and the fundamental hydrographic data sets into the national geodata infrastructure, even with a limited staff and constrained financial resources.

7th Meeting of the IHO Tidal and Water Level Working Group Silver Spring, Maryland, USA, 21-24 April



Rear Admiral Gerd Glang, Hydrographer of the USA, welcoming TWLWG7 participants

The Tidal and Water Level Working Group (TWLWG) is tasked by the IHO Hydrographic Services and Standards Committee (HSSC) to monitor and develop the use of tidal and water level information as well as to advise on tidal and water level observation, analysis and prediction. The Working Group held its 7th meeting at the Civic Building, Silver Spring, Maryland, USA from 21 to 24 April. In the absence of the chair of the TWLWG, Ms. Gwenaële Jan (France), Mr Christopher Jones (UK), Vice-Chair of the TWLWG, ran the meeting of representatives from Australia, Brazil, Canada, Chile, Ecuador, Japan, Norway, Republic of Korea, Spain, UK, USA, and the IHB. David Wyatt, IHB Assistant Director, represented the IHB.

Progress was made on a standard for digital tide tables with the development of a list of fundamental attributes. It was agreed to highlight the inventory of tide gauges through Regional Hydrographic Commissions with a view to raising awareness and encouraging additional inputs. The compiled list of Actual Tides On-line Links was highlighted, a process for validating and updating the list was agreed so that the list can be uploaded to the website and maintained as a resource for Member States.

A full day was set aside to work on the S-100 based product specifications guided by the Chair of S-100WG. The Chair provided briefs on S-100 and S-101 - the *ENC Product Specification*, as well as work undertaken at TSMAD29 on S-112 - *dynamic water level data product specification*. The meeting also received presentations on various aspects of the work of the Surface Current Working Group and S-111 - *Surface Current Data Product Specification*. Significant progress was achieved in reviewing a

draft Tidal Height product specification and work was started on developing the Tidal Zone feature attributes; it is intended that an application for a S-1xx number will be made to the 7th meeting of the HSSC in November.



TWLWG7 viewing the 1910 US Coast and Geodetic Survey Tide-Predicting Machine at NOAA Science Center

Proposed revised wording of IHO Resolution 3/1919, as amended, was agreed after a review of the comments received in response to IHO CL 17/2014 - *Proposed Revisions to IHO Resolutions on Tides, Water Levels and Tidal Publications*. The proposed revision will be submitted to the 7th meeting of the HSSC for endorsement prior to seeking its adoption by IHO Member States.

The intended outcomes and the presentation for the Tide and Water Level Capacity Building course, developed by South Africa, were reviewed and a process for incorporating proposed amendments was agreed.

As a result of the reorganization of the subordinate bodies of the HSSC, the 7th meeting was the last meeting of the working group. At the end of the meeting, the participants reformed as the Tides, Water Level and Currents Working Group (TWCWG) and elected Ms Gwenaële Jan (France) as Chair and Mr Louis Maltais (Canada) as Vice-Chair. The new working group requested that the IHB continue to provide the secretary, which will be Assistant Director Wyatt.

Brazil offered to investigate hosting the next meeting which will be TWCWG1, with proposed dates of 18 to 22 April 2016.

The report of the meeting and all documents will be available from the TWCWG section of the IHO web site.

The Atlantic our Shared Resource: Making the Vision Reality European Commission, Brussels, Belgium, 16-17 April

The Galway Statement, launching an Atlantic Ocean Research Alliance, was signed in May 2013 by the European Union (EU), Canada and the United States of America (USA). The 2nd Stakeholder Meeting on the Implementation of the Galway Statement was reported in the IHO Bulletin in February 2015.

The implementation of the activities supporting this Galway Statement was the object of a high level Conference on “*The Atlantic our Shared Resource: Making the Vision Reality*”, held in Brussels, Belgium, from 16 to 17 April. The objective was to bring together all the project coordinators and their partners, report on progress and develop networking connections among stakeholders.

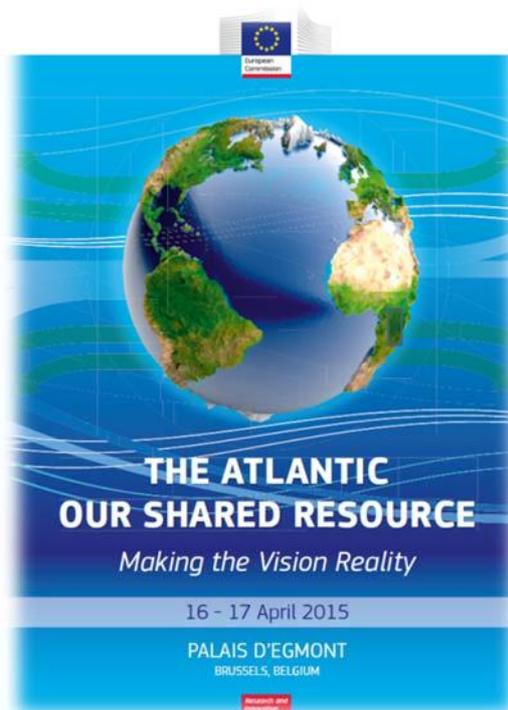
More than 340 participants representing European countries, Brazil, Cabo Verde, Canada, South Africa, USA, various organizations, and industry, had registered at this Conference. The Conference was opened by Mr Carlos Moedas, European Commissioner for Research, Innovation and Science and Mr Karmenu Vella, European Commissioner for Maritime Affairs and Environment, with the participation of high level authorities, including Ministers and Ambassadors, from Brazil, Canada, France, Ireland, South Africa and USA. The IHO was invited to participate by the European Commission. Assistant Director Yves Guillam, on behalf of the IHO, provided an introduction to the IHO and the status of hydrography at the very first session.

On the European side, approximately 70 million Euros has been earmarked for the period 2014-2020. This funding will support the first round of projects approved under the *Horizon 2020 Blue Growth Galway Statement follow-up projects*.

The first stages of many Horizon 2020 projects were presented by their coordinators during the “showcase” sessions. The term *seabed mapping* was used much more than *hydrography* during the Conference. In this context, most of the speakers referred positively to the IHO presentation stressing the fact that many areas around the world remained unsurveyed or inadequately surveyed.

During the presentations, development of new survey initiatives involving ships of opportunity from the commercial fleet, were highlighted. Presenters indicated the development of web data portals as part of the deliverables of every project - portals “*where you can finally find and download the data you need!*”, as they said.

Unfortunately, presenters made little or no reference to the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) programme and associated activities. However, discussions in the margins of the Conference between Assistant Director Guillam and senior representatives from many of the organizations provided opportunities to highlight the role of national Hydrographic Offices (HOs) and to confirm that they are well-recognized in general, even if they are not featured directly in the large research and collaborative projects that were described at the Conference.



At the end of the Conference, a panel of high level participants contributed to the development of a series of recommendations. Those of interest for the IHO include:

- a better knowledge of the oceans seafloor is required for running predictive models;
- it is necessary to better interact and work together with the community of oil and gas producers;
- before the research projects come to an end, it is important to ensure that existing organizations (such as IOC) or infrastructures (such as EMODnet) can take over;
- coastal States need to develop their own national ocean policies;
- it is necessary to harmonize marine information databases and promote free access to data.

Further information concerning the Conference and related activities is available on the IHO web site at www.iho.int > Committees & WG > IRCC > IENWG & EC-IHO Cooperation > Miscellaneous and on the relevant web pages of the European Commission

(http://ec.europa.eu/dgs/maritimeaffairs_fisheries/ and <http://ec.europa.eu/research/>).

**59TH MEETING
OF THE NORDIC HYDROGRAPHIC COMMISSION (NHC)
Reykjavik, Iceland, 13-15 April**



The 59th meeting of the Nordic Hydrographic Commission (NHC) was hosted by Iceland, as Chair of the Commission, from 13 to 15 April 2015 in Reykjavik. Fourteen delegates attended the meeting. The five Nordic States (Denmark, Finland, Iceland, Norway and Sweden) were represented. The IHB Directing Committee was represented by Director Gilles Bessero.



Following the opening of the meeting by the Chair, Mr Georg K. Lárusson, Director General of the Icelandic Coast Guard, 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. The meeting considered reports on national activities since the 58th meeting and reviewed ongoing initiatives and projects of common interest related to surveys, nautical charting, nautical publications, the provision of official services to the leisure market, the development of marine spatial data infrastructures and the provision of capacity building. Noting that the Nordic Council had initiated a study on Marine Spatial Planning, the Commission tasked the Chair to liaise with the Marine Group of the Nordic Council.

The members shared their experiences and projects about chart production systems and reported on the status of nautical publications and future plans. It appears that most publications, including notices to mariners, are being made available in digital format and are no longer printed.

The Commission decided to disband the Nordic Nautical Publication Working Group and refer related issues to the relevant working groups of the Hydrographic Services and Standards Committee (HSSC).



The Commission reviewed the activities of the IHO-European Commission Network Working Group (IENWG) and discussed the preparation of the 7th meeting of the Inter-Regional Coordination Committee (IRCC).

The Commission reconsidered the Admiralty Overlay Information (AIO) service provided by the UKHO and reconfirmed its desire that the publication of AIOs related to ENCs produced by NHC Member States be discontinued.

In accordance with the order defined by the Statutes, Norway took over the chairmanship at the end of the meeting. The next meeting will be hosted by Norway and is tentatively scheduled for 11-13 April 2016, at a location to be determined.

All the meeting documents are posted on the NHC page of the IHO website.

MAY

13th Meeting of the IHO Capacity Building Sub-Committee Mexico City, Mexico, 27 to 29 May

The 13th meeting of the Capacity Building Sub-Committee (CBSC13) was held in Mexico City, Mexico, from 27 to 29 May, hosted by the Mexican *Secretaría de Marina* at the premises of the *Centro de Estudios Superiores Navales*. The meeting was chaired by Mr Thomas Dehling (Germany) and attended by 18 members and 14 observers from 13 Regional Hydrographic Commissions (RHCs), 19 Member States and two observing organizations. The IHB was represented by Director Mustafa Iptes and Assistant Director Alberto Costa Neves (CBSC Secretary).

The Sub-Committee reviewed the impact of the revised IHO Capacity Building (CB) Strategy approved by the 5th Extraordinary International Hydrographic Conference (EIHC-5) on the work of the CBSC, especially in building the Management Plan, the access of non-Member States only to Phase 1 activities, the need to identify larger and comprehensive projects to attract funding from donor agencies and the development of a Public Relations paper to raise awareness of the importance of the IHO CB Programme and to improve its visibility.

The Sub-Committee considered the increasing number of CB activities, the associated administrative workload, intersessional correspondence and meeting workload. The Sub-Committee acknowledged the challenges on the existing limitations of the IHO secretariat to support the administration of the CB programme.

The increasing interaction with the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC), the Marine Spatial Data Infrastructures Working Group (MSDIWG) and the Tides, Water Level and Current Working Group (TWCWG) was considered with respect to the feedback to the CB activities, the assessment of the need for further support and the development of course material.

The CBSC considered the development of the current IHO publication C-55 - *Status of Hydrographic Surveying and Nautical Charting Worldwide* and its transition to a GIS database environment, the development of supporting databases (the Country Information System and the regional database), the progress made in the IHO GIS infrastructure and the possibilities for creating an improved C-55 function by using Category of Zones of Confidence (CATZOC) values extracted from ENC's. This work will enable country profiles to be created to support the decision-making process when dealing with CB resources.

The Sub-Committee reviewed the draft CB Procedure 9 - *Technical Visits* and agreed to use this draft procedure for one year and obtain feedback before considering formal approval at the next CBSC meeting. The CBSC acknowledged the continuing significant contributions made by the Republic of Korea and Japan, through the Nippon Foundation (NF), to the IHO CB Programme. The Sub-Committee also acknowledged the significant contributions from the International Maritime Organization (IMO) and the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) in supporting the development of hydrographic services in developing states through the delivery of joint capacity building programmes.

The meeting commended the work by New Zealand in developing an evidence-based risk assessment methodology and its implementation in the SWPHC to establish priorities for surveys and charting. Other developments were presented by the UK (the Organization of the Eastern Caribbean States – OECS Project), the Republic of Korea (the EAHC Training, Research and Development Center), France (the EAHC Definition Study for a Long Term CB Project) and Mexico (Strengthening the Hydrographic Capabilities in Meso-America and Caribbean Sea).

The CB Management Plan (CBMP) was reviewed and approved by the meeting as the basis for the 2016 CB Work Programme (CBWP). The meeting also approved the 2014 CBWP and updated the 2015 CBWP. The CBSC expressed some concern that there were currently only limited financial resources available to execute the full 2016 CBWP.

The next meeting of the CBSC will be held in Abu Dhabi (UAE) from 24 to 26 May 2016. A full report of the 13th meeting of CBSC will be published on the IHO website.



Participants at the 13th meeting of the IHO Capacity Building Sub-Committee

3rd Meeting of the IHO Surface Current Working Group Hydrographic and Oceanographic Department, Japan Coast Guard Tokyo, Japan, 13-15 May



*Mr Shigeru Kasuga, Chief Hydrographer of Japan,
welcoming participants to SCWG3*

The Surface Current Working Group (SCWG), which is tasked by the IHO Hydrographic Services and Standards Committee (HSSC) to develop standards for the delivery and presentation of navigationally significant surface current information, held its 3rd meeting (SCWG3) at the Office of the Hydrographic and Oceanographic Department, Japan Coast Guard (JHOD) in Tokyo, Japan, from 13 to 15 May 2015. Mr Shigeru Kasuga, Chief Hydrographer of Japan, welcomed the delegates and noted the participation of Japan and the Republic of Korea in the SCWG for the

first time. Mr Kurt Hess (USA), Chair of the SCWG, ran the meeting. Representatives from Canada, France, Japan, Republic of Korea, Netherlands, Spain, USA, and the IHB attended the meeting along with expert contributors from the Centre for Coastal and Ocean Mapping at the University of New Hampshire (UNH), SAPWAR Atlantic, Jeppesen and SevenCs/ Chartworld. Assistant Director David Wyatt represented the IHB.

The SCWG received presentations covering the JHOD current information service, the current prediction software and the S-111 - *Surface Current Data Product Specification* - test-bed software developed by the Korean Hydrographic and Oceanographic Administration (KHOA), the oceanographic forecast service of the *Service hydrographique et océanographique de la marine* (SHOM), surface current rendering and development work on S-111 and visualization by SPAWAR Atlantic, and bridge systems and external data provision to support EDCDIS and ENCs by Jeppesen.

The majority of the meeting was devoted to the revision and further development of the draft S-111 Product Specification document. Areas identified as requiring more work were considered. The SCWG devoted significant time to the revision of the metadata and harmonization with ISO and S-100 standards. It was agreed that trial S-111 compatible datasets should be produced later this year for further testing and evaluation.

Participants were briefed on the activities and the work progressed at the 7th meeting of the Tides and Water Level Working Group (TWLWG), much of which was of relevance to the work being progressed by the SCWG.

As a result of the reorganization of the subordinate bodies of the HSSC, the 3rd meeting was the last meeting of the SCWG before its work is taken forward as part of the expanded Tides, Water Level and Currents Working Group (TWCWG). The impacts of the integration with TWLWG and the resultant broadening of work items beyond the single issue development of S-111 were highlighted. The participants of the now disbanded SCWG were encouraged to take part in these additional tasks. The SCWG enthusiastically endorsed the expansion of the inventory of tide gauges to include current meters. A number of amendments to the TWCWG Terms of



Participants of SCWG3 visiting the JHOD museum

Reference were proposed by the SCWG members; these will be submitted to HSSC7 for its consideration. The TWCWG Work Plan for the period 2016-2017 was also presented and a number of changes were proposed; these will also be submitted to HSSC7 for endorsement.

The new structure for subordinate bodies of HSSC, including the TWCWG, provides the flexibility for Working Groups (WG) to form Project Teams (PT) at any stage. Against this background, the delegates considered that the TWCWG should meet firstly as a single WG for its first meeting, where it can address all its work items before considering whether to establish Project Teams for some of the work. TWCWG1 is planned for the period late April/early May 2016 at a venue yet to be confirmed.

The meeting report and all papers will be available from the SCWG section of the IHO TWCWG web site.

JUNE

Celebration of World Hydrography Day in Monaco Monaco, 30 June

World Hydrography Day was celebrated in Monaco with a reception on board the Japan Coast Guard training vessel *Kojima* on 30 June. *Kojima* was berthed in Monaco's main harbour, Port Hercule during a special visit as part of her extensive global training cruise for more than 40 cadets.



*Japan Coast Guard Training Vessel Kojima
in Port Hercule, Monaco*

Local dignitaries, government and diplomatic representatives, together with other invited guests boarded *Kojima*, where they were greeted by the Commanding Officer, Captain Tetsushi Mitsuya, and Robert Ward, President of the Directing Committee of the IHO. The reception was honoured by the presence of HSH Prince Albert II of Monaco.

The theme for this year's celebration - *Our seas and waterways - yet to be fully charted and explored* - highlights the fact that much of the world's seas, oceans and navigable waters remain unsurveyed. The President delivered a speech which highlighted the theme. He laid particular emphasis on the initiatives that the IHO is undertaking to improve the situation.

The President highlighted the objectives of the newly formed Crowd-Sourced Bathymetry Working Group as well as the growing emphasis that countries are placing on marine spatial data infrastructures as a means of making all available depth data more accessible for the better management and sustainable use of the seas, oceans and other navigable waterways.

During the port call of *Kojima*, the cadets and their Captain visited the International Hydrographic Bureau where they were briefed on the roles and activities of the IHO.

Further information at www.iho.int > About IHO > World Hydrography Day > WHD 2015 Celebrations around the world



*HSH Prince Albert of Monaco presents a
crest to Captain Mitsuya*

65th Session of the IMO Technical Cooperation Committee (TC 65)

London, UK, 22 - 24 June

The 65th session of the International Maritime Organization (IMO) Technical Cooperation Committee (TC 65) was held at the IMO Headquarters in London, UK, from 22 to 24 June 2015. The IHO was represented by Assistant Director Alberto Costa Neves.



Mr. Laurent Parenté (left), new Vice-Chair, Assistant Director Alberto Costa Neves (centre) and Mr. Zulkarnain Ayub (right), new Chair, during IMO TC 65.

During the opening ceremony the IMO Secretary-General Mr Koji Sekimizu addressed the meeting and highlighted the inauguration of the new premises of the World Maritime University (WMO) in Malmo, Sweden and its importance in delivering maritime education and training for leaders and decision-makers around the world. He also invited the IMO Member States to identify *IMO Ambassadors* to help raise the profile of the IMO and to attract young people to maritime careers. The Secretary-General also presented the developments in the IMO Country Maritime Profile system as the key component to deliver Capacity Building activities in an efficient manner.

The IHO had submitted a document informing the Committee on how the IHO operates an open-access policy on country profile for assessing the needs of the IHO Member States and other coastal States and for planning the delivery of Capacity Building activities in an efficient manner. The document requested the Committee to work with the IMO Secretariat to identify the non-sensitive sections of the IMO Country Maritime Profiles that could be shared among the other intergovernmental and international organizations working together under the UN banner of "delivering as one". The Committee decided to request additional input on how the information will be used before a decision is taken.

The IHO, jointly with the other intergovernmental and international organizations - IMO, WMO, IOC, IALA, IAEA and FIG – that form the Joint Capacity Building Group, had also submitted a report - "*Delivering as One in action*" and highlighted the achievements of the organizations working together on Capacity Building. This powerhouse of expertise pursues, both individually and cooperatively, a range of capacity-building activities designed specifically to meet the UN's Millennium Development Goals and the post-2015 Development Agenda, particularly the protection of the world's oceans and those that live and work on or near them.

The Committee approved the Integrated Technical Cooperation Programme (ITCP) for the period 2016-2017 and considered its links to the Millennium Development Goals and the strategy for attracting funds to secure its execution. The meeting also addressed the development of the Maritime Single Window (MSW) to facilitate on board reporting demands, the way ahead to help Member States

to develop Maritime Transportation Policies, the progress achieved in the IMO Member States Audit Scheme and the strengthening of women's profile in the maritime sector.

The meeting also considered the status of global maritime training institutions, the regional presence of IMO and the general principles and methodology of the Impact Assessment Exercise (IAE) for 2012-2015. IAE aims to measure the effectiveness of the technical assistance received by developing countries, through the Integrated Technical Co-operation Programme (ITCP).

During the meeting the IHO representative had the chance to speak to the several national delegations in order to raise awareness of the IHO activities at regional and national levels, particularly in areas where Capacity Building is key. Following the TC 65 meeting the IMO Secretariat and the representatives of IHO and IALA organized a side meeting to progress cooperation and the planning of joint programmes in 2015, 2016 and 2017.

Following the resignation of Ms Nancy Karigithu (Kenya), the meeting elected the Vice-Chair, Mr Zulkarnain Ayub from Malaysia, previously trained as a hydrographic surveyor, and Mr. Laurent Parenté from Vanuatu as the Chair and Vice-Chair of the Technical Cooperation Committee for 2015-2016. The next session of the Technical Cooperation Committee is scheduled to take place from 20 to 22 June 2016.

28th Session of the IOC Assembly Paris, France, 18-24 June

The Assembly is the highest governing body of the Intergovernmental Oceanographic Commission (IOC) of UNESCO. It meets every two years. The functions of the Assembly are to consider matters related to managing the regional subsidiary bodies of the IOC and their programmes, to oversee the ocean research programmes, the ocean observing systems and data management, the regional tsunami warning systems, the coordination of warning and mitigation systems for ocean hazards, the capacity building programme and strategy, sustainable development and governance, the administration and management of the IOC and the governance of the IHO-IOC GEBCO Project in cooperation with the IHO Secretariat.



*Executive Secretary of the IOC,
Vladimir Ryabinin addressing the IOC Assembly
during the opening session.*

The 28th session of the IOC Assembly was held at the UNESCO Headquarters in Paris, France, from 18 to 25 June. It was preceded by the 48th session of the Executive Council on 16 June and an “Ocean Science Day” on 17 June. Among the delegations, the Hydrographers of the following IHO Member States were present: Brazil, Chile, Germany, Russian Federation and Turkey. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHO. The Assembly session was opened by Ms Irina Bokova, Director General of UNESCO, and Mr Vladimir Ryabinin, the Executive Secretary of the IOC.

General

The Assembly received reports from the Executive Secretary and reports on the status of the IOC global ocean science report, the world climate research programme and the second international Indian Ocean expedition. Reports on the activities of the IOC regional subsidiary bodies – *the sub-commissions for the Western Pacific, the Caribbean and adjacent regions, and Africa and adjacent island States* - were considered also. The Assembly discussed the United Nations world ocean assessment and the progress of the Global Ocean Observing System, the Global Climate Observing System and the Joint World Meteorological Organization (WMO) - IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM). The Assembly also discussed the regional tsunami warning and mitigation systems covering the Pacific, the Indian Ocean and the North-Eastern Atlantic, the Mediterranean and connected seas, the tsunami and other coastal hazards warning system for the Caribbean and adjacent regions, as well as the global coordination of warning and mitigation systems for ocean hazards and harmful algal blooms.

Ocean Bathymetry and Capacity Building

Of particular significance to Hydrographers were the discussions on the IOC's capacity development strategy, the International Polar Partnership initiative, the 50th anniversary of the International Indian Ocean Expedition and the IHO-IOC General Bathymetric Chart of the Ocean (GEBCO) Project. The latter covered two items – the consideration of proposed revised Terms of Reference (ToR) and Rules of Procedures (RoP) of the GEBCO Guiding Committee (GGC) and the consideration of a submission from the IOC Secretariat to review the role and involvement of the IOC in the GEBCO Project. The ToR / RoP of the GGC were discussed at length in a sessional working group, chaired by Mr Craig McLean, USA, with representatives from Argentina, Australia, Brazil, Bulgaria, Canada, China, Colombia, France, India, Ireland, Japan, Malaysia, Monaco, Portugal, Republic of Korea, Russian Federation, Spain, Tanzania, Tunisia, Turkey, UK, and USA. The IHO representatives also participated with the Chair and officers of the GGC observing.

The IOC Assembly adopted by consensus the revised ToR / RoP of the GGC in the plenary session on 22 June and agreed to the proposed review of the role and involvement of the IOC inviting a report to be submitted to the IOC Executive Council meeting in 2016.

Office Bearers

The Assembly unanimously elected Professor Peter Haugan of Norway as the Chair of the IOC for 2016 to 2017. Lieutenant Commander Ariel Troisi, from the Hydrographic Office of Argentina, was elected as one of the new Vice-Chairs.

Next Sessions

The next session of the IOC Executive Council (49th session) will be held from 6 to 10 June 2016. The next session of the IOC Assembly (Assembly 29) is scheduled in June 2017.

MONACOLOGY

2015

Monaco, Principality of Monaco, 15-19 June

Monacology is an annual event held in Monaco that aims to raise children's awareness about the environment and sustainable development. Monacology 2015 took place on Quai Antoine 1er, from 15 to 19 June, directly in front of the International Hydrographic Bureau (IHB), the secretariat of the IHO.



clockwise from top left:

HSH Prince Albert II of Monaco welcomed by Director Gilles Bessero, a “Junior Hydrographer” displays his “treasure map” with President Robert Ward, and a GEBCO globe awarded to the school “François d’Assise Nicolas Barré” de Monaco

Hydrography was presented at Monacology for the third year running with an interactive display and stand. More than 330 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 how marine protected areas in the region are shown on the charts that were provided for the event by the French Hydrographic Office (SHOM). All the children enjoyed trying their hands at completing a magnetic puzzle chart of the Mediterranean Sea and reproducing the limits of environmentally sensitive areas on their own tracings that they could take home or display at school. Each aspiring hydrographer 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 of Monaco on Thursday 18 June. President Robert Ward and Director Gilles Bessero explained the exhibit and the activities related to hydrography that were intended to raise public awareness of hydrography, and to explain the role of the IHO and its Secretariat to the local community and particularly to the younger generation.

95th Session of the IMO Maritime Safety Committee London, United Kingdom, 3-12 June

The Maritime Safety Committee (MSC) is the highest technical body of the International Maritime Organization (IMO). The functions of the MSC are to consider matters related to aids to navigation, construction and equipment of vessels, rules for the prevention of collisions, handling of dangerous cargoes, maritime safety procedures, hydrographic information, salvage and rescue and any other issues directly affecting maritime safety. The 95th session of the IMO Maritime Safety Committee (MSC 95) was held at the IMO Headquarters in London, UK, from 3 to 12 June. Director Gilles Bessero and Assistant Director Wyatt represented the IHO. In addressing the formal agenda in his opening address, the Secretary-General of IMO, Mr Koji Sekimizu, highlighted ongoing issues with domestic passenger ship safety and unsafe mixed migration by sea, both topics of major concern to the MSC.



IMO MSC 95 in plenary session

Unsafe mixed migration by sea

A number of UN agencies were invited by the IMO Secretary General to attend a half-day special meeting on the increasing challenges and difficulties being experienced by the maritime industry and regional search and rescue (SAR) authorities involved with the rescue of illegal migrants at sea around the world. Delegates called for action and it was agreed that the MSC should include an item on *Unsafe Mixed Migration by Sea* on its agenda and invite Member States to make submissions to MSC 96. The MSC also agreed to instruct the Sub-Committee on Navigation, Communications and Search and Rescue (NCSR) to place an unplanned output from the 2016-2017 biennium agenda on the agenda of its next meeting (NCSR 3) and to consider the guidance on large-scale rescue operations at sea developed by the shipping industry.

e-Navigation



*Joint IHO-IALA-CIRM-ICS-BIMCO-CLIA presentation –
An IGO/NGO view on e-Navigation.*

The IHO co-sponsored along with the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the *Comité International Radio-Maritime* (CIRM), the International Chamber of Shipping (ICS), the Baltic and International Maritime Conference (BIMCO) and the Cruise Lines International Association (CLIA) a presentation on *An IGO/NGO view on e-Navigation*, introduced at the end of the first day of the session. It reviewed the current status of e-Navigation developments and urged the IMO to continue to take the lead in these ongoing developments. The Committee agreed to include a High-

level Action on *Development and implementation of e-navigation* in the High-level Action Plan for 2016-2017 and to include on the agenda of the NCSR five outputs based on the eighteen tasks from the approved e-navigation Strategy Implementation Plan (SIP), noting the comments contained in the IHO submission. Three outputs are expected to be completed in the 2016-2017 biennial agenda of the NCSR: additional modules to the revised Performance Standards for Integrated Navigation Systems (INS), revision of the Guidelines and criteria for ship reporting systems and the development of guidelines for the harmonized display of navigation information. The two remaining outputs were included in the post-biennial agenda of the NCSR (2018-2019): guidelines on standardized modes of operation (S-mode), and revised general requirements for ship-borne radio equipment forming part of the Global Maritime Distress and Safety System (GMDSS) and for electronic navigational aids relating to Built-In Integrity Testing (BIIT) for navigation equipment. Furthermore, the MSC approved the draft

MSC circular on Guidelines on Software Quality Assurance and Human-Centred Design for e-Navigation submitted by the NCSR.

Hydrography and Charting

The MSC addressed various matters related to hydrography and nautical charting resulting from the 2nd session of the NCSR held in March this year. The main items included adopting and amending a number of new and existing routing measures, traffic separation schemes and mandatory ship reporting systems. The MSC agreed to a new unplanned output for the next biennium of the NCSR for an amendment to the General Provisions on Ships' Routeing, IMO Resolution A.572(14), on establishing multiple structures at sea, with a target completion year of 2016. The MSC also agreed to a new unplanned output to develop a new performance standard for ship-borne GMDSS equipment to accommodate additional providers of GMDSS satellite services with a target completion year of 2016.

Maritime Cybersecurity

The MSC reaffirmed that cybersecurity was an important and timely issue and that work on this matter should be progressed by the Committee together with the Facilitation Committee (FAL), while ensuring consistency and avoiding any duplication of the efforts of the UN, the European Commission, the International Electrotechnical Commission (IEC), industry and others. The Committee decided to await the outcome of the development of industry guidance on maritime cybersecurity on board ships which is planned to be submitted to its next session while urging Member States and international organizations to collaborate on proposals for guidance on maritime cybersecurity and submit them also to the next session.

Office Bearers

The MSC unanimously elected Mr Bradley Groves of Australia as Chair and Mr Juan Carlos Cubisino of Argentina as Vice-Chair of the Committee for 2016.

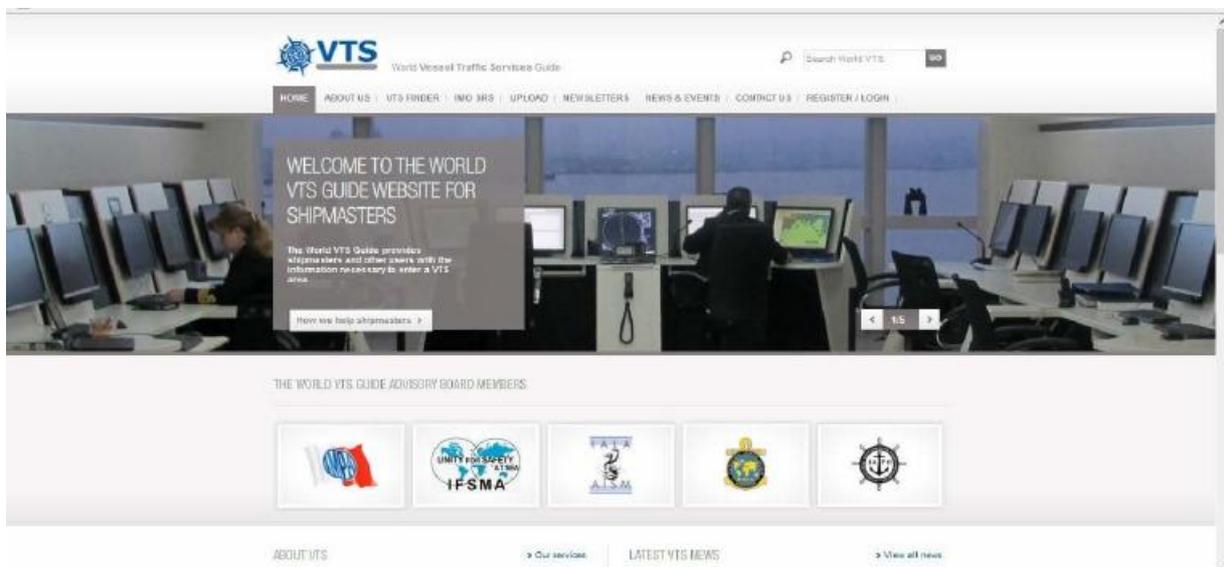
Next Sessions

The next sessions of the MSC are scheduled to be held from 11 to 20 May (MSC 96) and from 21 to 25 November 2016 (MSC 97).

Meeting of the World VTS Guide Advisory Board London, UK, 11 June

The World Vessel Traffic Services (VTS) Guide was initiated in the 1980's by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), the International Association of Ports and Harbours (IAPH) and the International Maritime Pilots' Association (IMPA) to give ship masters, navigators and other interested users the information necessary to enter VTS areas. Initially available as a paper publication, the Guide was made accessible on the Internet in 1999 and subsequently the paper publication was discontinued. The Guide operates as a not-for-profit organization (www.worldvtsguide.org) supervised by an Advisory Board consisting of representatives from the three founding organizations and from the International Federation of Shipmasters' Associations (IFSMA) and the International Harbour Masters' Association (IHMA). In 2003 the IHO was invited to join the Advisory Board, and as a result of Member States' responses to IHO Circular Letter 60/2003, the IHO has since been represented at board meetings in an observer capacity by appropriate personnel from the UK Hydrographic Office.

The World VTS Guide was recognized by the Maritime Safety Committee of the International Maritime Organization (IMO) in 1992. The IMO Guidelines for Vessel Traffic Services invite VTS authorities and operators to ensure that all VTS information is published in the appropriate nautical publications and in the Guide.



Access to the World VTS Guide is free and open. However, until recently, contributors to the Guide were required to pay a small fee to help cover some of the maintenance costs. This has now been removed to encourage more contributors, given that there are only 196 entries from 40 countries at present.

The Advisory Board which had previously met in September 2013 was reconvened under the chairmanship of Mr Francis Zachariae, Secretary-General of IALA, at the IMPA headquarters in London, UK, on 11 June. Dr Edward Hosken, UK, represented the IHO.

The meeting focused on how to make the Guide more successful. The available figures on usage by mariners are inconclusive, but it was suggested that the measure of success should be on increased data entry, rather than end use. It was agreed to promote the need to increase the content of the Guide, notably at the 13th International VTS Symposium to be held in Kuala Lumpur, Malaysia, from 8 to 12 August 2016.

The Advisory Board acknowledged that information in the World VTS Guide is mostly duplicated in nautical publications produced by HOs, and may not be maintained to ensure consistency with the entries in official publications. Entries in the Guide are the responsibility of VTS authorities/operators and therefore vary considerably in content. Some entries simply direct users to a port website. Geographic coverage is variable, with quite comprehensive content from some countries, but generally only a limited selection, and no VTS information for many countries. There is an overlap between

information published in the Guide, and that published by Hydrographic Offices (HOs). As a result, further liaison with the IHO is planned.

The move to provide on the internet the type of information contained in the Guide is in keeping with principles of e-navigation in terms of ease of data access, but raised questions for the Advisory Board over understanding what data is authoritative, and striking a balance between ease of access, versus quality and completeness.

The next meeting of the Advisory Board is scheduled to be held on 3 March 2016, during the week of the 3rd meeting of the IMO Sub-Committee on Navigation, Communications and Search and Rescue.

25th Meeting of States Parties to the UN Convention on the Law of the Sea

UN Headquarters, New York, USA, 8 to 12 June

The 25th Meeting of States Parties to the Convention on the Law of the Sea (SPLOS) took place at the United Nations (UN) Headquarters in New York, USA from 8 to 12 June. The annual meeting of SPLOS enables the signatory nations of the UN Convention on the Law of the Sea (UNCLOS) to review the operation of the administrative mechanisms put in place to implement the Convention, and in particular the operation of the following UN bodies: the International Tribunal for the Law of the Sea (ITLOS), the International Seabed Authority (ISA) and the Commission on the Limits of the Continental Shelf (CLCS). Reports from the various bodies were tabled and a number of elections were held to fill vacancies in those bodies. The Open-ended Working Group on the Conditions of Service of the CLCS, established at the 23rd meeting of SPLOS, also met during the meeting period.

The IHO, as a recognized Observer Organization, was represented at the meeting by the President of the Directing Committee. President Ward informed the meeting of the publication of the 5th Edition of IHO Publication C-51, the Manual on Technical Aspects of the United Nations Convention on the Law of the Sea (the TALOS Manual). He drew attention to the new features in the 5th Edition and encouraged all States that are preparing submissions to the CLCS, the ISA and ITLOS, to consider referring to the TALOS Manual from the outset.

The TALOS Manual is aimed at both the specialist user and a non-specialist audience. It provides guidance and understanding and helps to ensure the maximum level of international standardization in the technical aspects of UNCLOS and has been produced with collaboration from the United Nations Division on Ocean Affairs and Law of the Sea (DOALOS).

The most significant change introduced in the 5th Edition is a number of accompanying animations presented as a slide show. There is also extensive cross-referencing and hyper-linking made possible by digital publishing. This combination of new publishing technologies makes it easier to explain otherwise complicated concepts and procedures.



The TALOS Manual - Edition 5.0.0



President Ward took the opportunity while at UN Headquarters to call on a number of Heads of the Permanent Missions to discuss matters of current interest to those States, including Egypt, Guatemala, Jamaica, Mozambique, Panama, The Philippines, the Syrian Arab Republic, Trinidad and Tobago, and Uruguay. He also met the Executive Secretary of the International Civil Service Commission to learn more about UN conditions of service and remuneration packages as part of the Directing Committee's work in revising the IHB Staff Regulations for further consideration by the Staff Regulations Working Group.

3rd meeting of the IHO-EU Network Working Group Saint-Mandé, France, 9-10 June

The IHO-EU Network Working Group (IENWG), established by the Inter-Regional Coordination Committee (IRCC) to monitor and deal with the activities and processes developed under the aegis of the European Union (EU), held its third meeting in Saint-Mandé, France, on 9 and 10 June 2015, at the invitation of the French Hydrographic Office (SHOM).

The meeting was attended by representatives from Denmark, France, Germany¹, Greece, Norway, Sweden and the United Kingdom. Assistant Director Yves Guillam represented the IHB.

At the beginning of the meeting, Laurent Kerléguer (SHOM's Deputy Director General, France) was elected as Chair, succeeding Michel Even who had resigned due to his taking up a new role in SHOM.

EMODnet and related issues

The Chair informed the participants that the European Commission's Directorate-General for Maritime Affairs and Fisheries (DG Mare) had recently awarded a contract on coastal mapping to the consortium led by SHOM and including 11 other Hydrographic Offices (HOs). Several administrative requirements still need to be addressed but a kick-off meeting is planned at the end of June in Saint-Mandé when the contract should be formally signed. Three years after the signature of the Memorandum of Understanding between the European Commission (EC) and the IHO, this is the first significant success for a consortium of HOs taking the lead in an important EU project.

The meeting participants worked on a draft strategy for building a new consortium in order to prepare for the future call for tenders on EMODnet² III-bathymetry expected in late 2015.



The French Baguette Working Lunch Session

Horizon 2020, Research and Innovation Programmes

The Working Group was informed of the recent events³ sponsored by the EC Directorate-General for Research and Innovation (DGRI) and presentations were given on various maritime projects already supported by this Directorate such as *EfficienSea2*⁴. It was agreed that these activities provide an excellent opportunity to experiment with new concepts, and to use and promote the IHO S-100 framework, IALA⁵ and JCOMM⁶ standards. Possibilities exist to obtain funding for other additional research and innovation projects in the future. The Working Group acknowledged that it will need to prepare a strategy to identify the resources needed within HOs for submitting new attractive proposals to DGRI.

¹ By conference call, 9 June only.

² European Marine Observation and Data Network

³ *The Atlantic our Shared Resource: Making the Vision Reality* - Brussels, Belgium (16-17 April 2015)

⁴ http://cordis.europa.eu/project/rcn/193397_en.html

⁵ International Association of Marine Aids to Navigation and Lighthouse Authorities

⁶ WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology

IENWG Members plan to meet Mr Ricardo Serrão Santos, Member of the European Parliament on 2 July. This will be an opportunity to raise awareness beyond DG Mare on the activities of the IHO and national HOs and their relevance for various EU initiatives and priorities.

Miscellaneous

A paper submitted by the IHB on relations with stakeholders of the European Union Marine Equipment Directive (MARED), managed by the EC Directorate-General for Mobility and Transport (DG Move), was considered by the participants. The paper highlighted the fact that the Directive does not properly address the case of software-intensive equipment such as ECDIS. The IENWG will invite HOs to liaise with their maritime safety administration and raise the concerns described in the IHB paper.

Next meeting(s)

Future events relevant to the scope of the IENWG were reviewed and the potential participation of IENWG members was considered, in particular when such events are planned in the country of one of the members of the IENWG.

Due to travel budget constraints, it was agreed to plan only two face-to-face meetings per year (plus video-teleconferences if appropriate), except when major calls for tenders or relations with the European Commission require an ad hoc meeting.

The 4th IENWG meeting is planned on 16 and 17 November in Saint-Mandé, France.

7th Meeting of the Inter-Regional Coordination Committee Mexico City, Mexico, 1-3 June

The seventh meeting of the Inter-Regional Coordination Committee (IRCC7) took place in Mexico City, Mexico, from 1 to 3 June, hosted by the Mexican *Secretaría de Marina* at the premises of the *Centro de Estudios Superiores Navales*. The meeting was attended by the Chairs, or their representatives, of the 15 Regional Hydrographic Commissions (RHCs) and the IRCC subordinate bodies, three observing organizations and 29 observers. A total of 55 participants from 23 countries were present. The IHB was represented by President Robert Ward, who also attended as Chair of the IHO Hydrographic Commission on Antarctica, Director Mustafa Iptes (Secretary) and Assistant Director Alberto Costa Neves. The meeting was chaired by Rear Admiral Tom Karsten (UK) on 1 and 2 June, and by Dr Parry S.L. Oei (Singapore), the Vice Chair of the IRCC, on 3 May in the absence of the Chair.



The Participants at the IRCC7 Meeting.

The IRCC reviewed the reports and activities of the RHCs and its subordinate bodies, considered the outcomes of the 5th Extraordinary International Hydrographic Conference (EIHC-5), acknowledged the accomplishments and challenges of the Capacity Building programme and IBSC activities, examined the developments on Crowd-Sourced Bathymetry and maximizing the use of Hydrographic Data and considered the Worldwide ENC Database (WEND) related issues.

As directed by EIHC-5, the IRCC established a Crowd-Sourced Bathymetry Working Group (CSBWG) and approved its proposed Terms of Reference (ToR). The Committee also appointed the Director of the IHO Data Centre for Digital Bathymetry (DCDB), Ms Lisa Taylor (USA), as the first Chair of the CSBWG.

The Committee considered a revision of its ToR and Rules of Procedure (RoP) to include the Chairs of the Maritime Spatial Data Infrastructure Working Group (MSDIWG) and the newly established CSBWG as members of the Committee. The revised ToR and RoP will now be submitted to Member States for approval.

The Committee examined the management and monitoring of INT chart production and agreed on an experimental procedure for monitoring and validating new INT Chart production. This procedure will be coordinated and implemented by Regional INT Chart Coordinators or INT Chart Coordination Working Groups (ICCWGs) and will run for two years before further evaluation.

The Committee decided to add the topic of satellite-derived bathymetry as a standing agenda item at all future IRCC meetings. The Committee also took note of the IHO GIS and INTGIS Projects reported by the IHB and how they should have a beneficial impact on RHCs and the Member States' activities.

The IRCC acknowledged the accomplishments and challenges, including the resource limitations of the IHO secretariat, to support the administration of the Capacity Building programme and IBSC activities. The Committee approved the CB work programme, the IBSC work plan and the new IHO Publication S-5B - *Standards of Competence for Hydrographic Surveyors*. The Committee also endorsed the proposal of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC) to submit proposed revised texts related to Maritime Safety Information documents directly to the International Maritime Organization through the IHB in the future.

Taking into account Decision 12 of EIHC-5 concerning the long term consequences of not achieving full implementation of the WEND Principles, the IRCC reviewed the WEND Principles and the Guidelines for implementation, ENC Coverage including gaps and overlaps, information overlay issues and proposals arising from the WEND Working Group report. The Committee agreed that no further action should be taken for the moment on amending the WEND Principles and Guidelines and approved the WENDWG Work Programme for 2015-2016.

The Committee considered papers on data gathering, the management and maximizing the use of hydrographic data, and guidance on access to bathymetric data collected for commercial or scientific purposes. As a result, the IRCC agreed on the need to update IHO publication C-16 - *National Hydrographic Regulations* and also decided that an appropriate supplement or additional chapter, as appropriate, on maximizing access to bathymetric data collected for commercial or scientific purposes was required in IHO Publication C-17 - *Spatial Data Infrastructures: "The Marine Dimension" - Guidance for Hydrographic Offices*.

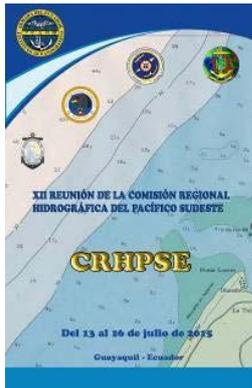
The IRCC acknowledged an IHB paper on "Considerations on the development of the General Bathymetric Chart of the Oceans (GEBCO)" and tasked the GEBCO Guiding Committee (GGC) to take the recommendations included in the paper into consideration in implementing the GEBCO work plan and to report progress on those recommendations at the next IRCC meeting. The Committee also took note of an IHB paper regarding concerns over the governance and administration of the GEBCO Project.

It was announced prior to the meeting that the current Chair would step down shortly after the meeting as a consequence of his retirement from UK service. The current Vice-Chair would then assume the position of Chair, leaving a vacant position of Vice-Chair to be filled. The Committee therefore elected Rear Admiral Gerd Glang, the National Hydrographer of the USA, as the next Vice-Chair to succeed Dr Oei when he takes over the Chair.

The next meeting of the IRCC will be held in Abu Dhabi (UAE) from 29 to 31 May 2016. The full report of the meeting of IRCC7 will be published on the IHO website.

JULY

12th Meeting of the South-East Pacific Regional Hydrographic Commission (SEPRHC) Guayaquil, Ecuador, 13-16 July



The 12th meeting of the South-East Pacific Regional Hydrographic Commission (SEPRHC) was hosted and chaired by the Hydrographic Office of Ecuador (*Instituto Oceanográfico de la Armada - INOCAR*) from 13 to 16 July 2015. Eighteen delegates attended the Conference. The participants included six representatives from three of the four IHO Member States of the Region (Chile, Ecuador and Peru), four observers from Mexico, the United Kingdom, the IHO-IOC GEBCO Project and the IC-ENC coordinating centre, and seven observers from industry. Representatives of Colombia participated in most of the Conference by video-link. The IHB Directing Committee was represented by Director Gilles Bessero who provided a briefing on current IHO issues and the work of the IHB.

The opening ceremony, chaired by the National Director of Marine Spaces of Ecuador, marked the change of chairmanship from Peru to Ecuador. The subsequent sessions were chaired by the Director of INOCAR. The Members of the Commission presented the reports on their national activities since the 11th Conference held in 2013. While significant progress in the coverage of Electronic Navigational Charts (ENC) for the region was reported, it was noted that due to limited resources and national priorities, the development of the INT chart scheme was at a standstill. The coordinators of the HSSC, IRCC, CBSC and WEND-WG groups reported on their work. The Commission discussed its future activities in connection with the IHO Work Programme and adopted its work plan for 2015-2016.



Director Bessero addressing the opening ceremony



The participants in the entrance hall of INOCAR

The representative of the United Kingdom highlighted the development of new products and new printing services. The representative of Mexico invited the Commission to support an initiative aiming at acknowledging Spanish as an official language of the IHO. The IC-ENC representative briefed the Commission on the support provided to assist IC-ENC members in developing their ENC production and on the IC-ENC policy on overlapping ENCs. He reported that all potential overlaps within the Region had been resolved prior to the release of the relevant ENCs by IC-ENC. Following the presentation of the GEBCO project by the Secretary of the GEBCO Guiding Committee, the Commission agreed to consider the possibility of re-activating the International Bathymetric Chart of the South East Pacific project.

The representatives from industry updated the Commission on their activities and products relevant to the activities of Hydrographic Offices.

The Commission agreed to a number of clarifications to the Statutes of the Commission.

It is expected that the next meeting of the Commission will be hosted by Colombia in 2017.

All the documents of the meeting are posted on the SEPRHC page of the IHO website.

2nd North Atlantic Seabed Mapping Meeting on the Implementation of the Galway Statement and 2nd Stakeholder Meeting Cork, Ireland, 9 July

The Galway Statement was an outcome of the Conference on “*The Atlantic – A Shared Resource*” held in Galway, Ireland, from 23 to 24 May 2013, where representatives of the European Union (EU), the United States of America (USA) and Canada agreed to join forces on Atlantic Ocean Research. The goal is to better understand the Atlantic Ocean and promote the sustainable management of its resources. The Galway Statement aims to connect the ocean observation efforts of the three partners. The work will also study the interplay of the Atlantic Ocean with the Arctic Ocean, particularly in relation to climate change. The actual sea area covered by the Statement is not precisely defined.

The 2nd Seabed Mapping meeting on the Implementation of the Galway Statement, which followed on from the first meeting in Brussels, Belgium, from 23 to 24 February 2015, was held in Cork, Ireland, on 9 July 2015. The meeting was chaired by Mr Alan Stevenson, British Geological Survey (BGS)/EuroGeoSurvey Marine Geology Expert Group (EGS MGEG) with representatives from the EU, Canada and USA as well as representatives from the European Commission (EC) and Non-Governmental Organizations.



2nd North Atlantic Seabed Mapping meeting participants with recovered USA Atlantic drift drone

Assistant Director David Wyatt represented the IHO and the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) Project.

The meeting reviewed the progress made since the previous meeting in Brussels, including a number of key issues relating to seabed and seabed habitat mapping. In particular the meeting received presentations on the European Ocean Observing System (EOOS), which is part of the Global Ocean Observing System (GOOS) of the Intergovernmental Oceanographic Commission (IOC) of UNESCO, the seabed mapping work undertaken by *Instituto Geológico y Minero de España* (IGME) off the south west coast of Spain, the results of a North Atlantic transect undertaken by *Celtic Explorer*, a research vessel operated by the Marine Institute of Ireland (INFOMAR), the preparations for transects by the Canadian Coast Guard vessels *Louis S. St-Laurent* and *Terry Fox* on route to the Arctic and a report on the data collection activities by research vessels of the German Leibniz Institute of Marine Sciences (IFM-GEOMAR), as well as US and EU policy up-dates.



Ms Jennifer Jencks demonstrating the updated IHO DCDB website

Assistant Director Wyatt and Ms Jennifer Jencks, from NOAA/National Centers for Environmental Information, gave a joint presentation and update on the IHO-IOC GEBCO Project activities and the current state of development on the updating of the IHO Data Center for Digital Bathymetry (DCDB). The new draft International Bathymetric Chart of the Arctic Ocean (IBCAO) and the potential to utilize current and past students of the GEBCO-Nippon Foundation Ocean Mapping course for multibeam system operations during transects were highlighted. The new DCDB home page was displayed and the use of the DCDB as one of the main data storage

portals for transects and area bathymetric data was generally agreed. It was noted that further development of the data uploading and access is required to ensure the processes are as simple as possible to encourage greater utilization.

There was further discussion on the basic principles and recommendations for pilot project areas. The participants at the meeting considered that close liaison must be maintained with the other elements of the North Atlantic mapping project to ensure targeted pilot areas maximize the limited resources available. All agreed that the IHO-IOC GEBCO Project and the IHO DCDB are important elements in relation to the collection and availability of bathymetric information for the Atlantic Ocean and that the identification and release of bathymetric data collected under national, academic and research programmes should be encouraged.

The meeting reviewed its outline draft Terms of Reference. Raising awareness of the need for mapping the Atlantic was acknowledged and identified as a particular area of focus for the participants.

The next seabed mapping meeting is planned for 29 October 2015 in St John's Newfoundland, Canada. The meeting report and all papers will be available from the EC web site at <http://ec.europa.eu/research/iscp/index.cfm?lg=en&pg=transatlantic-alliance>.

10th Meeting of the Data Quality Working Group Brest, France, 7 - 9 July

The 10th meeting of the Data Quality Working Group (DQWG) was hosted from 7 to 9 July 2015, in Brest, France, by the French Hydrographic Office (SHOM). The meeting was chaired by Mr Antti Cástren (Finland). Twelve delegates from seven Member States (Australia, Finland, France, Mexico, Netherlands, United Kingdom, and USA) and two expert contributors from industry attended the meeting. Assistant Director Yves Guillam represented the IHB.



The Working Group, in its role as the IHO data/product quality expert group, discussed how best to assist other working groups dealing with new product specifications. The DQWG agreed to draft a guidance document listing the questions that need to be addressed when determining what level of data quality is needed in an S-100 based product specification. This should ensure, in particular, harmonization of the data quality model for different product specifications.

As an example the working group reviewed a proposal made by the S-100 WG on the data quality section of the IHO S-101 – *ENC Product Specification*. Further work will be continued by correspondence on this matter to ensure compliance with other standards such as the ISO 19100 series of geographic standards. Data quality of non-bathymetric data, such as time and velocity attributes in the IHO S-111 - *Surface Current Product Specification*, were also addressed.

The development of indicators reflecting the quality of surveys and of bathymetric data to be portrayed on charts remain the core activity of the DQWG and most of its time was spent discussing a range of issues, including: feature detection, survey coverage, accuracy of measurements, temporal variation of dynamic seabed. One of the objectives of the Working Group is to assist in harmonizing the practices of Hydrographic Offices in the production of future products derived from surveys. Following the conclusions of a pragmatic report by the representative of Australia on the impact of a three-tier bathymetric data classification in future S-101 ENCs, the DQWG nevertheless agreed to retain the six-category S-57 model for Category Zone of Confidence (CATZOC). As for satellite derived bathymetry and portrayal related issues, the DQWG agreed that there was no need for any specific considerations as the current chart specifications to express uncertainty (position approximate, dashed iso lines, and so on) can be used to inform mariners on this type of data.

The DQWG agreed that the list of nautical shipping incidents, that was tentatively maintained by the DQWG and used by Hydro International, for instance, as an IHO reference, should be removed from the DQWG page of the IHO website. Hydrographic Offices will be invited to share future concerns and lessons learned from nautical shipping incidents with the relevant IHO working groups.

The DQWG initiated the preparation of a new draft work plan to be presented at the 7th meeting of the Hydrographic Services and Standards Committee in November 2015.

The next meeting of the DQWG is scheduled to take place from 10 to 12 May 2016, in the USA.

Further information concerning the meeting is available on the IHO web site at www.iho.int > Committees & WG > DQWG > DQWG-10.

19th Conference of the Mediterranean and Black Seas Hydrographic Commission Batumi, Georgia, 30 June-2 July

The 19th Conference of the Mediterranean and Black Seas Hydrographic Commission (MBSHC) was held in Batumi, Georgia from 30 June to 2 July, hosted by the State Hydrographic Service of Georgia. The Conference was chaired by Captain Erhan Gezgin, Director of the Turkish Navy Office of Navigation Hydrography and Oceanography (TN-ONHO). 40 representatives from Cyprus, Egypt, France, Georgia, Greece, Italy, Iran (Islamic Republic of), Israel, Lebanon, Malta, Monaco, Montenegro, Romania, Spain, Tunisia, Turkey, Ukraine, United Kingdom and United States of America attended the meeting. 13 IHO Member States of the region and four Associate Member States were therefore represented. Four partners from industry, IC-ENC and PRIMAR, the two Regional ENC Coordinating Centres (RENC), were also present as observers. The IHB was represented by Director Mustafa Iptes and Assistant Director Yves Guillam.



Director Iptes reported on the IHO Work Programme in general and on the positive momentum within the region with regard to the IHO and MBSHC memberships. While the MBSHC is the regional hydrographic commission of the IHO with the largest number of Members and Associate Members, other Coastal States, such as Lebanon and Israel, expressed their intention to submit their applications in due course. Georgia and Montenegro signed the MBSHC Statutes, thus becoming full MBSHC Members.

The IHB representatives provided informative presentations on the cooperation with the International Maritime Organization (IMO), on the main outcomes of the 28th session of the Assembly of the Intergovernmental Oceanographic Commission (IOC), on the development of standards and on the evolution of the IHO information management system using GIS⁷ layers derived from the IHB country information database.

⁷ Geographic Information System.

The Chair of the MBSHC and Director Iptes presented the most important decisions arising from the 7th meeting of the Inter-Regional Coordination Committee (IRCC-7) that have an impact on MBSHC activities: Decision 3 in particular, which introduces a two-year experimental procedure for the review of INT charts by the Regional Charting Coordinators, was explained as well as the remaining steps before the commissioning of the INTOGIS project being developed by the IHB with the assistance of the Republic of Korea. This project intends to supersede the current maintenance process of the IHO S-11 Part B *Catalogue of INTERNATIONAL Charts* through the use of web services and to improve the quality and content of the associated INT charts regional databases. France, as the International Charting Coordinator for Region F, chaired two side-meetings to progress with INT and ENC scheming and chart production issues. Italy kindly offered to support France, and to take the lead of an ad hoc sub-working group of the nations concerned to identify the course of action needed for eliminating existing overlaps in the small scale ENC scheme covering the Mediterranean Sea.

The Conference covered a wide range of other important topics: Greece reported on the projects funded by the European Commission that are managed or monitored by the IHO-EU Network Working Group (IENWG) such as EMODnet⁸ and Coastal Mapping. Based on the information provided by some Members, Spain also reported on the status of hydrographic surveying in the region as well as on Maritime Safety Information (MSI) in its role as NAVAREA III coordinator.

Director Iptes provided a general overview of the IHO capacity building activities. The representative of Turkey, as Capacity Building Coordinator for the region, reported on the outcomes of the 13th meeting of the Capacity Building Sub-Committee (CBSC), held in Mexico, in May. Technical visits to Montenegro and Albania are planned at the end of 2015 or early 2016.

IC-ENC and PRIMAR gave a joint presentation on the benefits of distributing ENCs through the RENCs and reported individually on the progress made with different ENC Producer nations and on the development of distribution solutions for IHO S-102-compliant bathymetric surface products. Egypt also announced that their ENCs covering the new Suez Canal had been issued on 2 July.

Participants from industry provided presentations on the evolution of the technologies available in the hydrographic domain. They had opportunities to talk with the delegates in the margins of the Conference.

At the end of the Conference, Bruno Frachon, Director General of SHOM (France), was elected as the new Chair of the MBSHC for the next two years. The 20th Conference of the MBSHC will take place in Montenegro, from 4 to 6 July 2017.

⁸ European Marine Observation and Data Network

1st Meeting of the Nautical Information Provision Working Group (NIPWG)

Monaco, 29 June – 3 July

The 1st meeting of the Nautical Information Provision Working Group (NIPWG) took place at the International Hydrographic Bureau (IHB) in Monaco from 29 June to 3 July.

The NIPWG is one of the new working groups resulting from the implementation of a new organizational structure under the Hydrographic Services and Standards Committee (HSSC). It continues the activities of the former Standardization of Nautical Publications Working Group (SNPWG) with a broader mandate to develop general specifications in support of the e-navigation services that are intended to provide mariners with harmonized up-to-date information on integrated displays in the future.

Twenty participants from nine IHO Member States and five stakeholder organizations attended the meeting. The IHB was represented by Assistant Director Anthony Pharaoh. Director Gilles Bessero welcomed the participants and provided some inputs in relation to the e-navigation strategy implementation plan adopted by the International Maritime Organization (IMO). He also reported on the recently established liaison with the International Harbour Masters' Association (IHMA) concerning their related initiative on "Port Call Optimization".

Mr Jens Schröder-Fürstenberg (Germany) was elected Chair of the Working Group and Mr Edward Hosken (United Kingdom) was elected Vice-Chair. Mr Tom Loeper (USA) was appointed as Secretary.



Participants at the NIPWG-1 Meeting

The meeting reviewed the various items of the NIPWG work plan approved by the HSSC. Reports were presented and discussed on the continuing development of S-100 based product specifications, namely the Marine Protected Areas Product Specification (S-122), the Radio Services Product Specification (S-123), the Physical Environment Product Specification (S-126), and the Traffic Management Product Specification (S-127). Arrangements were agreed to ensure appropriate coordination with the development of the IHO Navigational Warning Product Specification (S-124) under the aegis of the World-Wide Navigational Warning Service Sub-Committee (WWNWS-SC) and with the work of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) on the development of Maritime Service Portfolios. Reports on the project of the East Asia Hydrographic Commission (EAHC) on e-Marine Information Overlays and on the work undertaken by US agencies on geo-tagging features in nautical publications were considered. Further progress on addressing and testing the interactions between different product specifications within an ECDIS and the portrayal of quality indicators was discussed.

The participants were invited to attend the World Hydrography Day celebration which took place on board the Japan Coast Guard training vessel *Kojima*, berthed in the port of Monaco, on 30 June.

The next meeting of the Working Group was scheduled for 21 to 25 March 2016. The location will be decided at a later date.

AUGUST

5th Session of the UN Committee of Experts on Global Geospatial Information Management New York, USA, 5 - 7 August



The Fifth Session of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) took place at the UN Headquarters in New York, USA from 5 to 7 August.

The UN-GGIM reports to the UN Assembly via the UN Economic and Social Council (ECOSOC). ECOSOC has instructed UN-GGIM to work according to a five-year programme and to provide its first report in 2016. 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.

Representatives of over 80 UN Member States participated in the Session together with representatives from international organizations, including the IHO. The Session was attended by the greatest number of UN Member States so far, and a growing number of Observer Organizations. Representatives from the Hydrographic Offices of Cuba, Mexico, Oman and the USA were present in their respective delegations. President Robert Ward represented the IHO.

The Session was preceded by 28 associated side meetings including the 22nd meeting of the International Steering Committee for Global Mapping (ISCGM) which focussed on mapping activity to support disaster risk reduction, security and civil management, and briefings in support of the UN-GGIM meeting itself including a briefing on the benefits of implementing international geospatial data standards, in which the IHO was represented.

A number of the items on the agenda of UN-GGIM5 were 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. Underpinning much of the discussion during the Session was the “*UN 2030 Agenda for Sustainable Development*” which was agreed immediately before and is expected to be adopted at a UN Summit in September. The agenda for sustainable development includes 17 Sustainable Development Goals (SDGs) that will guide decisions taken by the UN over the next 15 years.

The Committee noted with satisfaction that the UN General Assembly adopted its Resolution on a Global Geodetic Reference Frame for Sustainable Development (A/RES/69/266) in February before considering a report on the development of a list of fundamental data themes. Hydrography is reflected in the provisional list of themes using a number of terms, including: *hydrography, depth, elevation and depth, and water*. From an IHO perspective, these different terms need to be unified and standardised. The Committee decided to invite UN-GGIM Europe to liaise with other UN-GGIM regional groups to develop agreement on a minimum set of global fundamental geospatial data themes and to report to the next Session of the Committee.



UN Headquarters, New York

The Committee adopted *A Guide to the Role of Standards in Geospatial Information Management* prepared by the Open Geospatial Consortium (OGC), the International Organization for Standardization (ISO) and the IHO and its companion document as UN-GGIM reference documents. The IHO input to these documents was provided by the IHB and the Marine Spatial Data Infrastructure Working Group (MSDIWG).

The Committee heard that 63% of its responding Member States have indicated that they have carried out or plan to make significant changes to their national institutional arrangements for the management of geospatial information. These changes include the implementation of new policies to address data quality and availability; the establishment of new committees to reorganize existing activities for better synergies; and to increase participation to ensure wider representation and foster closer relationships with stakeholders. In this context, 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 is particularly relevant.

The Committee heard that many national geospatial information agencies are in the early stages of introducing and making use of volunteered geographic information (crowd-sourcing). Volunteered Geographic Information (VGI) would likely be a major emerging source for rapidly collecting geospatial data, change detection and the updating of datasets. However, there were concerns about the lack of appropriate quality assurance mechanisms and the general levels of participation. The challenges are, therefore, to identify the advantages and weaknesses of VGI from both the data provider and the data user perspectives, and to encourage Member States to develop best practices on the collection, quality assurance and application of VGI. The newly established IHO Crowd-Sourced Bathymetry Working Group is already considering these aspects on behalf of the IHO.

Copies of all the papers and report of the meeting are available on the GGIM website at: <http://ggim.un.org>

The sixth Session of UN-GGIM will take place at the UN Headquarters during the first week of August 2016.

7th Meeting of the IHO World-Wide Navigational Warning Service Sub-Committee

IHB, Monaco, 24-27 August

The 7th meeting of the World-Wide Navigational Warning Service (WWNWS) Sub-Committee (WWNWS7) was held at the International Hydrographic Bureau (IHB) in Monaco, from 24 to 27 August under the chairmanship of Mr Peter Doherty of the United States of America. The meeting was attended by 42 delegates from 18 IHO Member States, the Secretariat of the International Maritime Organization (IMO), the Secretariat of the World Meteorological Organization (WMO), the Secretariat of the Intergovernmental Oceanographic Commission of UNESCO (IOC), the Secretariat of the International Mobile Satellite Organization (IMSO), the Chairs of IMO NAVTEX and IMO SafetyNET Coordinating Panels, Inmarsat, Iridium, *Comité International Radio-Maritime* (CIRM), Furuno Finland Oy and the IHB. The delegates included representatives of 16 NAVAREA Coordinators, one Sub-Area Coordinator and four National Coordinators.



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The Sub-Committee received Maritime Safety Information (MSI) self-assessment reports from all 21 NAVAREAs and from the Baltic Sea Sub-Area, as well as reports from the Secretariats of the IMO and WMO and Director General of IMSO. The outcomes of the 13th meeting of the Document Review Working Group (17-19 March 2015) were discussed; in particular the proposed editorial amendments to the IMO SafetyNET and NAVTEX Manuals were reviewed and approved by the Sub-Committee. The meeting received progress reports on the delivery of MSI training courses, and discussed the processes for reporting the status of MSI provision at Regional Hydrographic Commission meetings and methods for identifying to the Capacity Building Sub-Committee the regions and coastal States most in need of training and assistance.

The delegates received briefings on AIS Application Specific Messages from the USA, SONSAT (Security of Navigation, Stabilisation, Advice and Training, including the Admiralty Warning and Navigational Information Service (AWNIS)) from the UK and developments in the provision of mobile satellite Global Maritime Distress and Safety System (GMDSS) services from Inmarsat and Iridium. The meeting also received a progress report on the development of the S-124 Product Specification on Navigational Warnings.

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The next meeting of WWNWS-SC will be held in Norway in August or September 2016, and exact details will be published on the WWNWS-SC page of the IHO website when confirmed.

When finalized, the report of WWNWS7 will be posted in the IHO website, where all the meeting documents are already available (www.iho.int > Committees & WG > WWNWS-SC > WWNWS7)



WWNWS-SC in plenary session

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Retirement of an IHB Staff Member

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Ms Pascale Bouzanquet joined the IHB in August 1989. She had previously worked for five years in the Department of Conference Services at the United Nations Headquarters, in New York, where she was in charge of correspondence in the Office of the Secretary-General, Mr. Javier Perez de Cuellar.

After holding the post of French Editorial Assistant for more than ten years at the IHB, Ms Bouzanquet was assigned to the French translation department to undertake translation work, where she continued until her retirement, on 31 August 2015. In 2009, she was awarded a long service bronze medal by the Government of Monaco in recognition of her 20 years' service at the IHB.



Ms Bouzanquet with the Directing Committee

After 26 years at the Bureau, where she worked diligently until the last minute, Ms Bouzanquet has begun a well-deserved retirement. Her bright, outstanding personality, her competence and conscientiousness, always ensuring that the work was well done, will be missed. The Directing Committee wishes Ms Bouzanquet a long and happy retirement full of enriching activities. Miss Perrine Brieda has now succeeded her as French translator at the IHB.

SEPTEMBER

S-100 Working Group 3rd S-100 Test Strategy Meeting (TSM3) Jeju, Republic of Korea, 22 to 24 September

In June 2013, the former Transfer Standard Maintenance and Applications Development Working Group (TSMAD) had identified the need to convene dedicated workshops to develop the S-100 test strategy as a key element of the implementation of the S-100 Universal Hydrographic Data Model. Two “S-100 Test Strategy Meetings” (TSM) were organized in September 2013 and in September 2014 respectively. Now, under the auspices of the S-100 Working Group, the 3rd S-100 Test Strategy Meeting (TSM3) took place in Jeju, Republic of Korea from 22 to 24 September. The meeting was hosted by the Korea Hydrographic and Oceanographic Administration (KHOA), and was attended by experts representing the Canadian Hydrographic Service (CHS), the US National Oceanic and Atmospheric Administration (NOAA), the US Navy and Coastguard, KHOA, the Korea Institute of Ocean Science and Technology (KIOST), International Centre for ENC’s (IC-ENC), ESRI, Furuno, IIC Technologies, Jeppesen, SevenCs, SPAWAR and Transas. The IHB was represented by Assistant Director Anthony Pharaoh.



Participants at the S-100WG TSM3 Meeting.

The main objective of the TSM meetings is to develop an S-100 Test Framework to support the testing of S-100 based product specifications. Due to its broad scope, the framework has been divided into nine major phases.

The test framework applies to all S-100 dependent product specifications. Its implementation is dependent on the availability of test datasets and the functional tools to read, portray and analyse those test datasets. The test framework also makes provision for testing and verifying the associated supporting resources such as product specific feature and portrayal catalogues.

The meeting discussed and reviewed the S-57 to S-101 data converter that has been developed as a joint project by NOAA and ESRI. This application converts S-57 object to S-101 features. Where a direct conversion is not possible, or where new S-101 feature types are required, they must be added manually. The meeting reviewed the prototype S-101 ENC editor which was presented by KHOA.

Two S-101 data viewers (developed by SPAWAR and KHOA/KIOST) were demonstrated. Both viewers use draft versions of the S-101 feature catalogue and portrayal catalogues. The meeting discussed the need to develop a mechanism for providing a machine readable catalogue for the standard ECDIS alerts and indicators.

A status report on the S-100 "Feature Catalogue Builder" application (developed by KHOA) was provided. This application has been used to produce the first test catalogues which were implemented in the two prototype S-101 ENC viewers.

The S-101 catalogue datasets were reviewed by the meeting. They include metadata which reference all resources within an "exchange set". It was concluded that the catalogue mechanism needs to be extended to make provision for multiple S-100 based products.

Other items discussed during the meeting included extensions to the S-102 product specification for bathymetric surfaces, improvements to the IHO Registry application and interoperability of S-100 product specifications.

Professional Yachting Association Sea Changes Seminar IHB, Monaco, 24 September

The Professional Yachting Association (PYA) was founded in 1991 in response to the creation of the Large Commercial Yacht and Passenger Yacht Codes. The PYA is the professional body for yacht crews and the luxury yacht industry. It has 15 regional offices worldwide and its headquarters in Antibes, France. The PYA enjoys observer status with the International Hydrographic Organization (IHO). As part of IHO outreach activities, the International Hydrographic Bureau (IHB) was provided as the venue for the annual PYA Sea Changes Seminar on 24 September 2015, on the occasion of the annual Monaco Yacht Show. The Seminar was attended by a total of 100 delegates representing yacht crews, shore-based support companies, training organizations and administrative authorities.



UK Chamber of Shipping presentation at the PYA Seminar

The Seminar was divided into two sessions: a session for Engineers followed by a session for Deck and Bridge crews. The Engineering session covered new engineering legislation, training and methods for professional registration and recognition of qualifications, which included a brief by Mr David Loosley, Chief Executive of the Institute of Marine Engineers, Scientists and Technologists (IMarEST), another observer organization of the IHO. The Deck and Bridge crew session covered presentations on the policies of Maritime Administrations in relation to the yachting industry, an update on UK Maritime Coastguard Agency regulations relevant to yacht crews, PYA training initiatives and an up-date on maritime security and what actions yacht crews should be considering.

Assistant Director Wyatt addressed the Seminar and provided a presentation on the IHO and its relevance to the yachting industry, particularly highlighting the way that members of the PYA can contribute their views and expertise to the relevant IHO subordinate bodies. He also provided an update on the IHO Crowd-Sourced Bathymetry (CSB) initiative, encouraging those who are not participating to consider joining the CSB community. He explained the work being undertaken to enhance the capabilities of the IHO Data Centre for Digital Bathymetry (DCDB) over the next three years to enable the uploading, viewing and downloading of all its data including crowd-sourced data collected by the anticipated increasing number of professionally manned vessels from around the world.

The evening concluded with a reception on the roof terrace of the IHB organised and hosted by the PYA.

12th Conference of the Southern Africa and Islands Hydrographic Commission (SAIHC) Dar es Salaam, Tanzania, 21 - 23 September

The 12th Conference of the Southern Africa and Islands Hydrographic Commission (SAIHC) was held from 22 to 23 September 2015 in Dar es Salaam, Tanzania. Five out of six Member States: France, Mauritius, Norway, South Africa and the United Kingdom were represented at the conference. The following Associate Member States: Comoros, Kenya, Malawi, Mauritius, Namibia, and Tanzania were also represented together with delegates from the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), and the General Bathymetric Chart of the Oceans project (GEBCO). Industry participants included representatives from CARIS, C&C Technologies, Jeppesen, Oceanwise Ltd, SevenCs GmbH, and Underwater Surveys (Pty) Ltd. President Robert Ward represented the IHB. The conference was chaired by Captain Abri Kampfer (Hydrographer of South Africa).

The 12th Conference was preceded by a meeting of the regional International Charting Coordination Working Group and a workshop on the fundamentals of best practice data management and marine spatial data infrastructure. These events took place on 21 September.

The Honourable Angellah J. Kairuki, the Tanzanian Deputy Minister of Lands, Housing and Human Settlement opened the meeting of the Commission and welcomed all delegates to Tanzania. She thanked the delegates for their commitment to safe and efficient navigation through the coordination of hydrography in the region. She outlined the progress being made in hydrography in Tanzania and looked forward to further assistance from the IHO.



The Honourable Angellah J. Kairuki, Tanzanian Deputy Minister of Lands, Housing and Human Settlement and participants at the 12th SAIHC Meeting

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 Satellite Derived Bathymetry, GEBCO, the IHO capacity building programme for the region, Marine Spatial Data Infrastructures (MSDI), the status of IHO publication C-55, and the inexorable move towards data-centric services rather than charts and maps.

South Africa (Captain Abri Kampfer) was re-elected as Chair for the next term and UK was elected to hold the position of Vice-Chair. The next conference will take place early in September 2016, in Cape Town, South Africa.

20th Conference of the Baltic Sea Hydrographic Commission St. Petersburg, Russian Federation, 16-18 September

The 20th conference of the Baltic Sea Hydrographic Commission (BSHC20) was held in St. Petersburg, Russian Federation, from 16 to 18 September, under the Chairmanship of Mr. Janis KRASTINS (Latvia). All full members of the Commission (Denmark, Estonia, Finland, Germany, Latvia, Poland, Sweden and the Russian Federation) attended the meeting. The IHB was represented by Director Mustafa IPTES.



The Participants of the 20th conference of the Baltic Sea Hydrographic Commission.

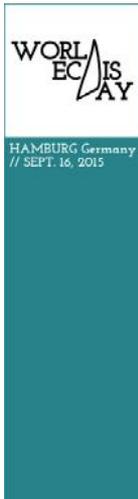
BSHC20 covered a wide range of regional topics including developments in each of the Member States, the latest status of hydrographic surveying and nautical charting including INT Charts, ENC production and BSHC cooperative projects. The members of the BSHC reported on their national hydrographic, cartographic and Maritime Safety Information activities since the 19th meeting. Director Iptes briefed the Commission on current IHO issues, IHB activities and the outcome of the 5th Extraordinary International Hydrographic Conference (EIHC-5).

The Commission reviewed on-going regional initiatives in particular the activities of the Monitoring Re-survey Working Group (MWG), Baltic Sea Bathymetric Database Working Group (BSBDWG), Baltic Sea Marine Spatial Data Infrastructure Working Group (BSMSDIWG) and the Chart Datum Working Group (CDWG). The Commission also considered the outcome of the 7th meeting of the Inter-Regional Coordination Committee (IRCC) and the 5th meeting of World Wide ENC Database Working Group (WEND-WG).

Considering that the IHO Council which will be established once the Protocol of Amendments to the IHO Convention is ratified and following the first Assembly of the IHO, which is anticipated in 2017, the members of the BSHC discussed the possible options for designating the representative of the Baltic Sea Hydrographic Commission to the IHO Council.

At the end of the meeting, Captain Sergey Travin, (Russian Federation) was elected as the new Chair of the BSHC. It was agreed that the next meeting of the BSHC will be hosted by Lithuania, in Klaipeda, in September 2016. All the documents of the meeting are posted on the BSHC page of the IHO website.

World ECDIS Day Hamburg, Germany – 16 September



At the initiative of the German software firm SevenCs GmbH, a « World ECDIS Day » was organized as a non-profit industry initiative in Hamburg, Germany, on 16 September 2015.

The goal of the event was to foster the exchange of ideas, concerns and perspectives on ECDIS and Electronic Navigational Charts (ENCs) among all the stakeholders from administrations, industry, academia and the user community.

The event attracted some 250 participants from around the world, including representatives from the Hydrographic Offices of Germany, Indonesia, Norway and UK and representatives of IC-ENC and Primar. Director Gilles Bessero represented the IHO and delivered the opening address focusing on the role of the IHO in supporting the development and implementation of ECDIS and the lessons learned. The manufacturer angle was provided by Michael Bergmann, President of the Comité International Radio-Maritime. The Hydrographer of Germany, Dr Mathias Jonas, addressed the participants through a pre-recorded video as the event was taking place during the Conference of the Baltic Sea Hydrographic Commission.



Parallel interactive sessions discussed different segments of the “ECDIS process”, including ENC production and distribution, ECDIS type-approval, ECDIS operation and training, and ECDIS maintenance. The multi-faceted functions of the German Maritime and Hydrographic Agency (BSH) in the ECDIS process were illustrated through an on-site visit welcomed by the President of BSH, Ms Monika Breuch-Moritz.

The closing addresses were given by Captain Osamu Marumoto, representing the International Maritime Organization, and Mr Jochen Rudolph, Managing Director of ChartWorld. The event was concluded by a reception and an award ceremony which distinguished the following recipients:

- ECDIS Trainer of the Year: Captain Peter Möller, Promacindo, Jakarta, Indonesia;
- Best ECDIS Implementation Award: Geden Lines, Istanbul, Turkey;
- Innovation Award: Carnival Maritime, Hamburg, Germany;
- Navigation Safety Award: Fleet Management Limited, Hong Kong;
- Lifetime Achievement Award: Prof. Dr. Bernhard Berking, Hamburg, Germany.

Encouraged by the success of the event, the organizers announced their intention to plan a second edition in 2017.

Shallow Survey 2015

7th International Conference on High Resolution Surveys in Shallow Water

Plymouth, UK, 14-18 September

Shallow Survey 2015 was the 7th International Conference on High Resolution Surveys in Shallow Water. The Conference attracts the top international experts in high resolution surveys in shallow water (less than 200 metres in depth). Established in Sydney, Australia, in 1999 and held since in Portsmouth, New Hampshire, USA, in 2001 and again in Sydney in 2003, Plymouth, UK in 2005, New Castle, New Hampshire, USA in 2008, Wellington, New Zealand in 2012, it returned to Plymouth in 2015. The unique attraction of the Conference is the Common Data Set, which is a series of different surveys obtained by a range of equipment types and models over the same area of seabed close to the Conference site. This enables delegates to observe and compare how different equipment and techniques work in a common location. In this instance, the Common Data Set was collected within the natural harbour of Plymouth Sound during the summer of 2014.



**Shallow Survey 2015 Conference –
Common Data Set presentation**

The Conference was jointly organized by the United Kingdom Hydrographic Office (UKHO) and the UK Maritime and Coastguard Agency (MCA) in association with the University of Plymouth. Over 300 representatives from a number of IHO Member States, Non-Governmental Organizations and Industry heard presentations given by experts from Canada, Denmark, France, Germany, Ireland, New Zealand, UK and USA as well as various industry and non-governmental organizations. Assistant Director David Wyatt represented the IHB.

Assistant Director Wyatt gave a presentation on Crowd-Sourced Bathymetry (CSB) and Open-access Bathymetric Data, in which he described the progress of the IHO CSB initiative, the formation of the CSB Working Group and progress on up-dating the IHO Data Center for Digital Bathymetry (DCDB) to accept CSB and to act as a data discovery portal for the world's bathymetry. He also chaired an open forum that considered 'is IHO publication S-44 - *Standards for Hydrographic Surveys* fit for purpose?' He introduced the topic with a brief presentation on the background and history of S-44 and drew upon feedback received from IHO Member States in response to IHO CL 25/2015.

The Forum included a panel with representatives drawn from a broad section of government and industry organizations – Mr David Parker (UKHO), Dr Tim Le Bas (NOC), Mr Phil Riddell (Shell), Capt Shep Smith (NOAA), Dr Thomas Heege (EOMap) and Mr Don Ventura (Fugro). In general all participants agreed that S-44 was appropriate for surveys for nautical charting, although it was felt there was scope to consider some improvements including a higher specification than the current *Special Order* and the format of the publication in general. It was felt that re-titling the publication might make it clearer that the current standards were intended primarily for surveys for nautical charting purposes and that there are other documented standards for data gathering for other uses. The audience felt it was unwise and undesirable to try and create a broader set of standards for gathering data for a variety of survey uses. The use of exemptions or relaxations from some requirements when used for non-nautical charting surveys could be better explained. The audience also advised that the use of the entire document rather than just the Table of Orders should be highlighted to ensure all specifications were met for individual survey orders. Although there was no urgency for the development of standards appropriate for data obtained from Satellite Derived Bathymetry and Crowd-sourced Bathymetry, the audience indicated that these newer and developing methods of data acquisition should be taken into account in any future work. The open, direct engagement by the IHO was welcomed and particularly well received.

The next Shallow Survey Conference is planned to be held in St John's, Newfoundland, Canada in 2018. The Conference report and all papers will be available from the Shallow Survey 2015 web site at <http://www.shallowsurvey2015.org/>.

The Conference was followed by a meeting of the Resurvey Working Group of the North Sea Hydrographic Commission (NSHC). The meeting was chaired by Dr Leendert Dorst (Netherlands) with representatives from 7 NSHC Member States (Belgium, Denmark, France, Germany, Netherlands, Sweden and UK) with Finland representing the Baltic Sea Hydrographic Commission. Assistant Director David Wyatt represented the IHB. The meeting discussed some of the outcomes from the Shallow Survey Conference, including the S-44 Open Forum with additional observations and comments provided for submission to HSSC7. A progress report on the development of the NSHC website was provided and participants provided comments and suggestions for consideration during the next phase of work. The meeting also received reports on NSHC, European Union and national developments since the previous meeting. A brief on the Belgium, France and UK Dover Strait survey strategy was provided. The applicability of alternative survey methods was discussed and the progress towards a suitable hydrographic risk assessment methodology for the North Sea area was given.

FIRST FORMAL VISIT TO MONACO OF A DELEGATION FROM VIET NAM SINCE JOINING IHO IHB, Monaco, 2 September

A delegation from Viet Nam led by Rear Admiral Pham Xuan Diep, Vice Commander-In-Chief and Chief of Staff of Viet Nam People's Navy, Vice President and Chief Executive Officer of the Hydrographic Office of Viet Nam visited the IHB on 2 September.



This was the first visit of a delegation from Viet Nam to the IHB since Viet Nam became a Member of the IHO on 2 March 2015. On this occasion, a delegation of the Government of Monaco, composed of Ms Armelle Roudaut-Lafon, Director of Maritime Affairs, and Mr Tidiani Couma from the Department of External Relations and Cooperation, participated in the visit.

As the visit coincided with Viet Nam's National Day, the visit started with an official ceremony for the presentation of the flag of Viet Nam. President Robert Ward welcomed the delegation highlighting the significance of joining the IHO. Rear Admiral Pham Xuan Diep expressed his pleasure at visiting the IHO Headquarters and confirmed Viet Nam's commitment to the objectives of the Organization. The Viet Nam flag was hoisted to the accompaniment of the national anthem of Viet Nam.

The visit continued with a thorough presentation of the IHO highlighting the various opportunities for the active involvement of Viet Nam in the work programme and activities of the Organization.



Rear Admiral Pham Xuan Diep and President Robert Ward exchange the crests of Viet Nam and of the IHO

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OCTOBER

5th Meeting of the Arctic Regional Hydrographic Commission Saint Petersburg, Russian Federation, 28 - 30 October



The 5th Meeting of the Arctic Regional Hydrographic Commission (ARHC) was held in Saint Petersburg, Russian Federation from 28 to 30 October. Four of the five Member States, Denmark, Norway, Russian Federation and the USA were represented, together with representatives of Finland and Iceland attending as observers. Canada was unable to attend the meeting. President Robert Ward represented the IHB. The meeting was chaired by Captain Leonid Shalnov on behalf of the Hydrographer of the Russian Federation, Captain Sergey Travin.

The meeting agenda covered the further development of a strategic directions document for the ARHC as well as 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 providing relevant input to the Arctic Council working group on the Protection of the Arctic Marine Environment (PAME).

Reports were presented from each Member State covering the status of hydrography, progress made and the charting priorities. This prompted a number of informal and fruitful technical discussions between the delegates during the intervals between sessions of the meeting.

The representatives discussed how the Member States of the Commission might contribute to improving the evolving Marine Spatial Data Infrastructure (MSDI) for the Arctic region.



Evert Flier, Director of the Norwegian Hydrographic Service, delivers his national report



Cartographers from the Russian Federation and the USA discuss the harmonization of their trans-boundary chart coverage

Chart coverage issues that were discussed included the IHO INT chart scheme and better harmonization of ENC chart compilation - especially in relation to compilation scales and the allocation of navigation purpose codes.

The Members at the meeting agreed to invite Finland to apply for associate membership of the Commission. They also agreed to work interessionally to develop protocols for the selection process for representatives on the IHO Council when it is formed as part of the revised terms of the Convention on the IHO.

In accordance with the established policy of rotation, Canada was elevated from the position of vice-chair to take over the chair at the end of the meeting. Denmark was elected to occupy the resultant vacant vice-chair position.

The meeting noted Canada's offer to host the next meeting in October 2016 and invited Canada to provide specific dates and details of the venue in due course.

3rd Meeting of the Atlantic Seabed Mapping International Working Group (ASMIWG) and Ocean Innovation 2015 Conference St John's, Newfoundland, Canada, 27-29 October

The *Galway Statement* was an outcome of the Conference on “*The Atlantic – A Shared Resource*” held in Galway, Ireland, from 23 to 24 May 2013, where representatives of the European Union (EU), the United States of America (USA) and Canada agreed to join forces on Atlantic Ocean Research. The goal is to better understand the Atlantic Ocean and promote the sustainable management of its resources. The *Galway Statement* aims to connect the ocean observation efforts of the three partners. The work will also study the interplay of the Atlantic Ocean with the Arctic Ocean, particularly in relation to climate change. The actual sea area covered by the *Statement* is not precisely defined.

The 3rd Meeting of the Atlantic Seabed Mapping International Working Group (ASMIWG) on the Implementation of the *Galway Statement* was held in St John's, Newfoundland, Canada, on 29 October 2015. The meeting was chaired by Mr Alan Stevenson, British Geological Survey (BGS)/EuroGeoSurvey Marine Geology Expert Group (EGS MGEG) with representatives from the EU, Canada and USA as well as representatives from the European Commission (EC) and Non-Governmental Organizations. Assistant Director David Wyatt represented the IHO and the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) Project.

The meeting of the ASMIWG was preceded by a meeting of the Canada-EU-US Galway Implementation Committee and the Ocean Innovation 2015 Conference, under the title: *Mapping our Oceans*. All the events were hosted by the Fisheries and Marine Institute of Memorial University in St John's. Participants were welcomed to the Conference by Mr Glenn Blackwood, Vice-President of the Institute. The opening keynote address was delivered by Mr Denis Hains, Hydrographer-General of Canada and Director General, Canadian Hydrographic Service (CHS).



**Assistant Director Wyatt presenting
at Ocean Innovation 2015**



**Atlantic Seabed Mapping International
Working Group Meeting**

The 70 Conference delegates heard speakers from Canada, Ireland, USA and EU deliver presentations covering a broad spectrum of topics including seabed mapping projects in Ireland and Canada, geological interpretation of bathymetric and backscatter data, data discovery and sharing, benthic habitat mapping, developments in interferometric synthetic aperture sonars and details of the Canadian 2014 Franklin Expedition. Professor Larry Mayer, Director of the Center for Coastal and Ocean Mapping, and Co-Director of the Joint Hydrographic Center, University of New Hampshire,

USA, gave a presentation which looked at potential future developments in equipment and techniques and how these could change the way ocean mapping was conducted in the future. Assistant Director David Wyatt gave a presentation on Crowd-Sourced Bathymetry and Open Access Bathymetric Data.

The ASMIWG reviewed the progress since its previous meeting in Cork and the direction and guidance provided from the Canada-EU-US Galway Implementation Committee meeting. The meeting received information on recent North Atlantic transects undertaken in *Celtic Explorer*, a research vessel operated by the Marine Institute of Ireland (INFOMAR), and by the Canadian Coast Guard vessels *Louis S. St-Laurent* and *Terry Fox* en route to the Arctic. Ms Jennifer Jencks, from the NOAA/National Centers for Environmental Information, provided a progress report on the improvements to the IHO Data Center for Digital Bathymetry (DCDB), in which she highlighted the efforts at improving the interoperability and harmonization with other data stores as well as initiatives for improved information sharing. The potential to utilize current and past students of the GEBCO-Nippon Foundation Ocean Mapping training programme and those from the University of Stockholm for multibeam system operations during transects were highlighted.

Taking into account the outcomes of the Canada-EU-US Implementation Committee meeting and its directive to the ASMIWG to generate recommendations and outline plans for consideration, there was considerable discussion on the ideal attributes for a pilot project area. It was agreed that draft recommendations should be completed by the end of 2015 and presented to the Implementation Committee by February 2016 to allow platform bids to be made for the 2017 season.

The ASMIWG reviewed its draft Terms of Reference and Rules of Procedure, which will be presented to the next meeting of the Implementation Committee for endorsement. It was also agreed a web page should be developed on the Atlantic Ocean Research Alliance site (<http://www.atlanticresource.org>) for the use of ASMIWG members, particularly for past and future meeting documents. The Implementation Committee confirmed the next meeting of the ASMIWG would take place in New Orleans, USA, at the start of the Ocean Sciences Conference which will be held from 21 to 26 February 2016, with a further meeting at the GeoHab Conference in Winchester, UK, in May 2016. It is intended that the meeting report and all papers will be available from the EC web site at

<http://ec.europa.eu/research/iscp/index.cfm?lg=en&pg=transatlantic-alliance> and from <http://www.atlanticresources.org>.

8th Conference and 22nd Business Meeting of the Advisory Board on the Technical Aspects of the Law of the Sea Monaco, 19-22 October

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



ABLOS Members gathered for ABLOS BM22 in Monaco

22nd Business Meeting of ABLOS

The 22nd Business Meeting of ABLOS was held at the International Hydrographic Bureau in Monaco on 19 and 22 October 2015. The 8th ABLOS Conference, titled '*UNCLOS: Advances in Managing the Blue World*' took place 20-22 October 2015 and was held at the Novotel, Monaco.

All ABLOS Members and Observers from Australia, Brazil, Canada, Chile, Denmark, India, Indonesia, Japan, Republic of Korea and the United Kingdom were present; a representative from Suriname also attended both events. The Chair, Professor Sunil Bisnath (IAG – Canada), welcomed all Board Members and Observers to the business meeting.

The first session of the Business Meeting completed final preparations for the 8th ABLOS Conference. The revisions identified for Chapter 3 of Edition 5.0.0 of the Manual on Technical Aspects of the United Nations Convention on the Law of the Sea - 1982 (TALOS Manual - C-51) were discussed. The revision time frame and process were decided with a target completion in 2016 for consideration by the 8th Meeting of the Hydrographic Standards and Services Committee. Japan agreed to provide the revised Chapter 3 text for review by the Editorial Board.

ABLOS Members and Observers discussed notable topics from the various conferences, seminars and workshops that they had attended and undertaken since the previous Business Meeting. The meeting also discussed the material for the ABLOS capacity building training course and reviewed ways to develop it further.

The meeting reviewed the Terms of Reference and Rules of Procedure for the ABLOS, noting there was no requirement for amendments at present. They agreed that the future of ABLOS and its work should be considered by all Members before the next Business Meeting. It was noted that the Terms of Reference should be used as the basis for a review of the tasks set and the work undertaken. Participants were asked to consider whether some tasks had been completed and whether there were any activities which were not addressed in the Terms of Reference. The status of current Board Members was reviewed. Dr Niels Andersen, IAG representative due to complete his term in January 2016, expressed a desire to serve for a further 4 years.

Dr Sobar Sutisna (IAG representative) indicated that he would be standing down in 2017 and Professor Sunil Bisnath (IAG representative) would complete his second term in 2017. The Board unanimously supported the reappointment of Dr Andersen and Professor Bisnath. The Chair was directed to request the IAG Executive to consider reappointing Dr Andersen and Professor Bisnath and to identify a suitable replacement for Dr Sutisna. In addition the ABLOS requested the Chair to investigate with the IAG Executive the appointment of an IAG Observer to ABLOS for the development of potential future IAG Members to ABLOS.

On completion of the ABLOS Conference, Mr John Brown (UK) assumed the role of Chair and Dr Niels Andersen (Denmark) was elected as Vice-Chair. It was agreed that the next Business Meeting would take place in Seoul, Republic of Korea, 26-28 October 2016 and the next ABLOS Conference would take place in Monaco on 10 and 11 October 2017.

8th ABLOS Conference



***Director Gilles Bessero addressing
the 8th ABLOS Conference***

The 8th ABLOS Conference was attended by approximately 60 delegates. 25 IHO Member States were represented, namely Algeria, Australia, Brazil, Canada, Chile, Denmark, France, Germany, Greece, India, Indonesia, Japan, Monaco, Netherlands, New Zealand, Nigeria, Norway, Oman, Portugal, Republic of Korea, Singapore, Suriname, Thailand, United Kingdom and USA. The Conference included 28 presentations covering a wide variety of topics and issues in relation with the theme “*UNCLOS: Advances in Governing the Blue World*”. President Robert Ward welcomed the delegates on behalf of the IHO. The opening key note address was given by Rear Admiral Nick Lambert, former National Hydrographer of the United

Kingdom, and the closing presentation was given by Professor David Freestone, The George Washington University, USA. Overviews of the IHO and IAG contributions to the implementation of UNCLOS were provided by Director Gilles Bessero and Professor Sunil Bisnath respectively. The presentations on various aspects of the Law of the Sea generated numerous questions and comments in plenary and much discussion in the margins during the breaks.

Date of Next Meetings

The 9th ABLOS Conference will be held in Monaco and is planned for the period 10-11 October 2017; details will be available from the IHO website as the planning progresses.

Availability of Documents

The documents considered by the Business Meeting and the presentations given at the Conference will be available from the ABLOS section of the IHO website (IHO → Committees and Working Groups → HSSC → ABLOS).

Plenary Meeting of the Technical Committee 80 of the International Electrotechnical Commission Busan, Republic of Korea, 19-20 October

The International Electrotechnical Commission (IEC) is an international non-governmental organization that publishes consensus-based international standards and manages conformity assessment systems for electric and electronic products, systems and services. Its Technical Committee 80 (TC80) is responsible for maritime navigation and radiocommunication equipment and systems and produces the testing standards required to implement the performance standards adopted by the International Maritime Organization (IMO). IEC/TC80 has therefore been involved in developing and maintaining the set of standards related to the Electronic Chart Display and Information System (ECDIS) in cooperation with the IMO and the International Hydrographic Organization (IHO). The level of cooperation is expected to increase with the implementation of e-navigation and the adoption of S-100 - IHO Universal Hydrographic Data Model as the baseline for the e-navigation common maritime data structure.

IEC/TC80 meets in plenary session every two years to review the main achievements during the intersessional period and agree the future work plans of its working groups, project teams and maintenance teams. The plenary meeting which took place in Busan, Republic of Korea, on 19 and 20 October 2015 brought together 37 participants, including representatives of national committees and observers from international organizations. Mr Yong Baek, Republic of Korea, represented the IHO. The meeting was chaired by Mr Hannu Peiponen from Finland. Mr Peiponen, who has been a long-standing expert contributor to a number of IHO bodies, took over the chairmanship on 1 September 2015 for a six-year mandate, succeeding Dr Andy Norris from the United Kingdom.



TC 80 in session

The representative of the IEC Central Office provided an overview of the processes for the development and maintenance of international standards. He highlighted the recent amendments to the relevant ISO/IEC Directives and explained the use of the IEC expert management system and associated web tools.

The seven subordinate bodies active during the 2013-2015 intersessional period (two working groups, two project teams and three maintenance teams) reported on their work in relation with the development and maintenance of standards. Two new standards, four new editions of existing standards and one amendment to an existing standard were published:

Project	Subject	Publication Date
62065 Edition 2	Track control system	February 2014
61162-3 Amendment 2	Digital interfaces - Part 3: Serial data instrument network	July 2014
62288 Edition 2	Presentation of navigation-related information on shipborne navigational displays	July 2014
62320-1 Edition 2	Automatic identification system (AIS) - Part 1: AIS Base Stations	January 2015
62320-3 Edition 1	Automatic identification systems (AIS) - Part 3: Repeater stations	January 2015
61162-460 Edition 1	Digital interfaces - Part 460: Multiple talkers and multiple listeners - Ethernet interconnection - Safety and security	August 2015
61174 Edition 4	Electronic chart display and information system (ECDIS)	August 2015

The new edition of IEC Standard 61174 refers to the new editions of the relevant IHO standards (S-52 - *Specifications for Chart Content and Display Aspects of ECDIS*, S-52 Annex A - *IHO Presentation Library for ECDIS* and S-64 - *IHO Test Data Sets for ECDIS*) as reported in IHO Circular Letter 65/2015 dated 31 August.

The development and implementation of e-navigation in relation with the IMO Strategic Implementation Plan was recognized as a driver for the future work of the Committee. The interoperability of marine equipment with shore-based systems and the use of the S-100 framework were identified as important issues. On the basis of a proposal from the Republic of Korea, the Committee decided to establish a working group dealing with standardization issues related to e-navigation and Dr Kwangil Lee from the Republic of Korea was elected as the Convenor.

The further development of the cooperation between IEC/TC80 and the IHO will be considered by the IHO Hydrographic Standards and Services Committee at its next meeting in November 2015.

28th Meeting of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names

Niteroi, Brazil, 12-16 October

The 28th Meeting of the IHO-IOC GEBCO Sub-Committee on Undersea Feature Names (SCUFN) was hosted at the *Diretoria de Hidrografia e Navegação* (DHN), in Niteroi, Brazil, from 12 to 16 October. SCUFN is tasked with selecting the names of undersea features to appear in the products of the IHO-IOC General Bathymetric Chart of the Oceans (GEBCO) project and on international nautical charts. These names, widely used in scientific publications also, are made available in the GEBCO Gazetteer of Undersea Features Names (www.gebco.net → Data and products → Undersea feature names → view and download). 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 20 participants, including nine of the 12 SCUFN Members (four IOC and five IHO representatives), together with 10 observers. Assistant Director Yves Guillam (SCUFN Secretary) represented the IHB.

The Meeting was opened by Vice-Admiral Antonio Pontes Lima, Director of DHN, and Admiral (Ret.) Luiz Fernando Palmer, ex-Director of DHN. Admiral Pontes Lima stressed the importance of the role played by SCUFN in harmonizing undersea feature names and making these names available to a large community of users. Aware of the magnitude of the task ahead, the Chair thanked the DHN for hosting this important meeting and invited the participants to address the very full agenda straight away.



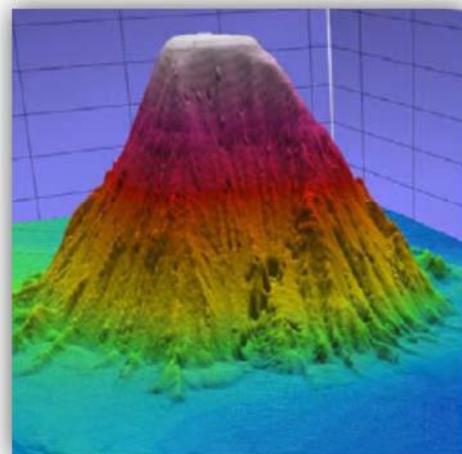
SCUFN-28 Attendees, the DHN Director and his staff

After the election of Dr Yasuhiko Ohara (IHO representative, Japan,) as Vice-Chair, the Sub-Committee considered proposals for 72 undersea feature names, submitted by various bodies and supporting organizations: Brazil (12), China (20), Japan (28), Republic of Korea (3), Malaysia (6), Russian Federation (1), Sweden (1) and USA (1). The Sub-Committee also decided to trial a fast-track procedure when reviewing the proposals made by New Zealand for 56 names that already appear on nautical charts.

Most of the names submitted to the Sub-Committee were accepted and will be included in the Gazetteer in the near future. A small number were not accepted for various technical reasons.

The success of the Meeting was assisted by the work contracted out by the IHB during the inter-sessional period, when it was possible to address a number of issues identified in 2014:

- the improvement of the consistency of the GEBCO Gazetteer database and the effective implementation of SCUFN decisions;
- the monitoring of the number of PENDING names;
- the evaluation of the on-line tools;



An illustration that supported the proposal for the name Maximiano Guyot, which was accepted.

- the preparation of an experimental fast-track evaluation procedure to review the proposals made by New Zealand related to 56 names that already appear on nautical charts;

the preparation of the collection of amendments / clarifications that will need to be included in the IHO-IOC Publication B-6 – *Standardization of Undersea Feature Names* when a new Edition is deemed necessary.

In addition, several other factors were very helpful in making the evaluation process more efficient during the meeting, including:

- most of the proposals were submitted in accordance with the relevant standards and submission procedures;
- the terminology provided in Publication B-6 was applied more consistently;
- associated GIS files were provided in advance, which enabled the IHB to pre-load the data in the GEBCO Gazetteer database and perform some initial quality control and screening;
- the SCUFN Members were able to use collaborative on-line reviewing tools developed by the Republic of Korea, prior to the meeting.

The Sub-Committee also decided to include in its work programme liaison with the IHO S-100 Working Group and the Nautical Cartography Working Group to provide expertise on undersea feature names. The creation of a small project team, led by Canada, is being discussed and will be reported to the Hydrographic Services and Standards Committee (HSSC) for its consideration.

Further harmonization between the procedures and definitions used by SCUFN and those used by other national and international naming organizations still needs to be addressed as a matter of high priority. As an example, it was reported to the Sub-Committee that the National Geographical Names Board of Canada may wish to submit about 950 existing names for approval by SCUFN.

In order to assist national geographic boards and promote further harmonization in the naming of features, SCUFN agreed to make its reserved-list of specific terms publicly available. The Sub-Committee will also publish articles promoting SCUFN responsibilities and achievements for the benefit of national hydrographic offices and scientific and research institutes.

The next meeting of the Sub-Committee is scheduled to take place in September 2016. The venue has not yet been decided.

Liaison Visit to the IHO-Nippon Foundation CHART Project Course for Nautical Cartographers United Kingdom Hydrographic Office, Taunton, UK, 15 October

IHB Director Mustafa Iptes and Mr Kentaro Kaneda (Project Officer seconded to the IHB from Japan) visited the United Kingdom Hydrographic Office (UKHO) on 15 October to meet and brief the trainees attending the seventh Category B nautical cartography training programme funded by the Nippon Foundation of Japan. The IHO - Nippon Foundation CHART (Cartography, Hydrography and Related Training) Project provides training in marine cartography and data assessment which is recognized at the Category B level by the FIG-IHO-ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. The course is composed of five modules, each module varying from two to five weeks in length. The 7th course started on 7 September 2015 and will end on 18 December.

Director Iptes discussed various topics with the students from **Egypt, Estonia, Fiji, Indonesia, Montenegro, Myanmar and Tunisia**. The students described their experiences and thanked the Nippon Foundation, UKHO and the IHO for the opportunity to improve their knowledge in the field of nautical cartography. Director Iptes gave a presentation highlighting the areas of influence of hydrography and the responsibilities of Governments in relation to the provision of hydrographic data, information, products and services. The vital coordination and standardization role of the IHO and its Capacity Building Programme were also described. The students were encouraged to keep in touch with each other and maintain an alumni relationship after their return home.



The CHART Course trainees and the IHO Liaison Visit team.

12th Conference of the East Asia Hydrographic Commission

Manila, Philippines, 13-15 October



EAST ASIA HYDROGRAPHIC COMMISSION



The handover of the EAHC banner signifies the change of Chairmanship from Commodore Cablayan (left) to Rear Admiral Zaaim (right)

The 12th Conference of the East Asia Hydrographic Commission (EAHC) was held in Manila, Philippines, from 13 to 15 October, hosted by the Hydrography Branch of the National Mapping and Resource Information Authority (NAMRIA) of the Philippines and chaired by Commodore Jacinto M. Cablayan, its Director and Chairman of the EAHC. The EAHC meets in Conference every three years and holds annual meetings of its Steering Committee in the intervening years.

Representatives from all but one EAHC Member State attended the Conference: China, Indonesia, Japan, Republic of Korea (RoK), Malaysia, Philippines, Singapore and Thailand. The Democratic People's Republic of Korea was unable to attend. Associate Members, Brunei Darussalam and Viet Nam, attended the meeting together with invited national representatives from Australia, UK and USA and the Chair of the GEBCO Guiding Committee (GC). President Ward attended as an invited observer from the secretariat of the IHO.

Each Member State of the Commission provided a progress report. In addition, the meeting received a report on the EAHC Training and Research Development Center (TRDC) (see: <http://trdc.eahc.asia/>), hosted by the Korea Hydrographic and Oceanographic Agency (KHOA), in Busan, RoK, and established by the Commission to deliver its regional Capacity Building Programme.

The participants discussed proposals to establish a Regional ENC Coordination Centre (RECC) that would validate and harmonise ENC coverage in the region. They also agreed the establishment of a Working Group and a Task Group to report to the Commission at the meetings of its Steering Committee. The Working Group will be tasked to identify practical measures that the Commission and its members might take to provide information as part of the establishment of a regional Marine Spatial Data Infrastructure (MSDI). Meanwhile, the Task Group will develop and propose a strategic plan and associated objectives for the Commission covering the next ten years.

President Ward provided a report on IHO activities of relevance to the Commission. He also delivered a report and presentation of the work of the IHO MSDI Working Group and highlighted its relevance to the Commission. He provided a briefing and guidance on the need for the Commission to establish procedures for the selection of regional representatives to the IHO Council that will be established when the amendments to the Convention on the IHO enter into force.

The Chair of the GEBCO GC provided a briefing on the IHO-IOC GEBCO project.

The full members of the Commission congratulated Brunei Darussalam and Viet Nam on their recent acceptance as Member States of the IHO and anticipated their acceptance as full members of the Commission at the next meeting of the EAHC Steering Committee, subject to the unanimous agreement of the existing members.

At the end of the meeting, the chairmanship of the Commission was transferred to Rear Admiral Zaaim bin Hasan, the Hydrographer of Malaysia. Mr Shigeru Kasuga, the Hydrographer of Japan, was elected as the Vice-Chair. Both will serve for three years until the next Conference of the EAHC in 2018.

Meanwhile, the members of the Commission will next meet as the EAHC Steering Committee in February 2016 in Indonesia. Those items that were discussed but unresolved during the EAHC Conference will be addressed further during the meeting of the Steering Committee.

High Level Visit to Brunei Darussalam Bandar Seri Begawan, Brunei Darussalam, 12 October

Following the GEBCO meetings hosted by Malaysia, IHB Director Mustafa Iptes paid a high level official visit to Brunei Darussalam on 12 October 2015. The purpose of the visit was to welcome Brunei Darussalam to the International Hydrographic Organization (IHO) as a new Member State which became effective on 26 March 2015 and to present the activities of the IHO.

Director Iptes visited the Survey Department which is the official governmental agency dealing with hydrographic activities in Brunei Darussalam where he called on Mr Arefin bin Haji Jaya, Deputy Surveyor General. He provided an overview briefing to the senior members of staff of the Survey Department and invited officials from the maritime departments; the briefing covered the role of the IHO, current and future IHO activities, regional and global cooperation, and the IHO Work Programme. Director Iptes emphasized the rights and responsibilities of Brunei Darussalam as a full member of the IHO. He encouraged the officials of the Survey Department to participate in IHO activities, in particular meetings of the Regional Hydrographic Commission and the sessions of the IHO Conference / Assembly.



Director Iptes and Mr Arefin bin Haji Jaya, Deputy Surveyor General of Brunei Darussalam accompanied by officials of the maritime departments.

IHO-IOC GEBCO (General Bathymetric Chart of the Oceans) Project Annual Meetings Kuala Lumpur, Malaysia, 5 – 9 October

A series of meetings of several bodies of the IHO-IOC GEBCO (General Bathymetric Chart of the Oceans) project were held in Kuala Lumpur, Malaysia from 5 – 9 October 2015:

- 5 October: GEBCO Science Day;
 - 6 and 7 October: Joint meeting of the Technical Sub-Committee on Ocean Mapping (TSCOM) and the Sub-Committee on Regional Undersea Mapping (SCRUM);
- and
- 8 and 9 October: 32nd Meeting of the GEBCO Guiding Committee (GGC).

The International Hydrographic Bureau was represented at the joint TSCOM/SCRUM meeting and at the GEBCO Science Day by Assistant Directors Anthony Pharaoh and David Wyatt who were joined by Director Mustafa Iptes for the meeting of the GGC.

Science Day



IHO-IOC GEBCO Science Day

For the tenth consecutive year, the GEBCO project held a “Bathymetric Science Day” which took place on 5 October at the Kuala Lumpur Convention Centre. The Science Day, which included a poster session and involved contributions from a pleasing number of scholars of the Nippon Foundation ocean mapping programme, featured presentations on a diverse range of topics. The associated presentations will be available from the GEBCO web site at;

http://www.gebco.net/about_us/meetings_and_minutes/gebco_meetings_2015.html

TSCOM and SCRUM

The GEBCO Technical Sub-Committee on Ocean Mapping (TSCOM) and the Sub-Committee on Regional Undersea Mapping (SCRUM) held a joint meeting on 6 and 7 October. The meeting was co-chaired by Dr. Karen Marks (USA), Chair of TSCOM, and Professor Martin Jakobsson (Sweden), Chair of SCRUM.

Following a discussion on the need for a higher resolution grid, the meeting agreed that a new edition of the 30 arc-second GEBCO 14 grid should be produced. The latest SRTM¹¹ 15 arc-second grid is to be used (provided that there are no copyright restrictions) for areas where no depth data exists. Between June 2014 and August 2015, the GEBCO gridded data sets were downloaded 17,288 times. The meeting agreed that the bathymetric data for coastal and shallow water areas available to GEBCO and its mapping programmes required improvement, and proposed that national hydrographic authorities be invited to provide depth data for these areas where it existed. Crowd Sourced Bathymetry (CSB) would also be an important source of shallow water data in these areas. The meeting discussed various outreach activities such as outreach for high school and college students, using the IHO-IOC GEBCO Cook Book (B-11) as an educational resource, and making scanned versions of the five GEBCO printed map editions available for download and as an online tile map service. Information on the Cook Book was included in Earth Observing System (EOS) news brief and in an article in *Hydro International*.

¹¹ SRTM: Shuttle Radar Topography Mission.

Update reports were provided on the following regional mapping projects: Indian Ocean Bathymetric Compilation (IOBC), North Atlantic Seabed Mapping Project, International Bathymetric Chart of the Arctic Ocean (IBCAO), International Bathymetric Chart of the Southern Ocean (IBCSO) and Baltic compilations.

GEBCO Guiding Committee

The majority of the IHO representatives on the GEBCO Guiding Committee were present, including the two recently appointed members Dr Graham Allen (UK) and Captain Norhizam Hassan (Malaysia). Rear Admiral Patricio Carrasco (Chile), Dr Nataliya Turko (Russian Federation) and Mr Ngouanet Chretien (Cameroon) were unable to attend. Representatives of Malaysia, Republic of Korea, Russian Federation and USA attended the meeting as observers.

The Chair, Mr Shin Tani (IHO - Japan), introduced the revised Terms of Reference and Rules of Procedure for the GGC and explained the background to their revision. 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 desire was expressed to seek ways in which the naming process used by the Sub-Committee on Undersea Feature Names (SCUFN) could be made more efficient, one of which was to reassess the way in which the GGC provided its endorsement of names approved by SCUFN. It was agreed in future this would be done by correspondence.

The GGC discussed outreach and ways to raise the profile of the GEBCO project amongst the different stakeholder and user communities - including IHO and IOC Member States, the maritime and scientific community and the public. It was noted that different strategies would be required for each of these groups. The GGC also reviewed its current financial situation in relation to proposed planned projects; the Committee recognised that the sub-committees would need to present more detailed proposals for consideration at future GGC meetings for the subsequent examination and endorsement by the IHO Inter Regional Coordination Committee (IRCC). The current secretary advised the Committee that his term of office will finish at the end of 2015. The GGC accepted the offer of the IHB to provide secretarial assistance and Assistant Director David Wyatt was appointed to the position of GEBCO Secretary from 1 January 2016.



The participants at the GGC32

1st Meeting of the IHO Crowd-Sourced Bathymetry Working Group

Kuala Lumpur, Malaysia, 7 October 2015

The Crowd-Sourced Bathymetry Working Group (CSBWG), which is tasked by the IHO Inter-Regional Coordination Committee (IRCC) to develop a draft IHO publication on policy for trusted Crowd-Sourced Bathymetry (CSB) which will provide guidelines on the collection and assessment of CSB data, not only for potential use for charting purposes but also for its wider use in non-navigational applications, held its first meeting in Kuala Lumpur, Malaysia on 7 October 2015. The meeting was chaired by Ms Lisa Taylor (USA) with representatives from five Member States (China, France, Malaysia, UK and USA) with observers and expert contributors from the IHO-IOC GEBCO Project, the Professional Yachting Association (PYA) and Sea ID, a company developing open technology for the marine industry. Director Mustafa Iptes and Assistant Director David Wyatt represented the IHB.

The CSBWG received a presentation covering the background to the creation of the Working Group and the tasks which have been set by the IRCC. The participants focused on four key areas – data collection models, appropriate hardware, data formats and the determination of uncertainties – which it was felt needed to be addressed within the guidance document and progressed by the Working Group. It was agreed that an outline for the guidance document should be prepared for presentation at the 8th meeting of the IRCC in May 2016 (IRCC8). A number of participants expressed their desire to actively participate in the Working Group.



CSBWG1 in session

It was agreed that a further meeting of the Working Group would be beneficial prior to IRCC8 to progress the outline document. Therefore a second meeting is tentatively planned for the early part of 2016 with the dates and venue to be confirmed after consultation with all WG members.

The report of the meeting and the supporting papers will be available from the CSBWG section of the IHO web site:

www.iho.int > [Committees & WG](#) > [IRCC](#) > [CSBWG](#)



Signature of a Memorandum of Understanding between the International Hydrographic Organization and the World Meteorological Organization IHB, Monaco, 7 October



The World Meteorological Organization (WMO) originated from the International Meteorological Organization (IMO) which was founded in 1873. In 1951 the WMO became the specialized agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences. WMO has a membership of 185 Member States and 6 Territories.

The WMO has worked in partnership with the IHO for many years through its long involvement in the Commission on the Promulgation of Radio Navigational Warnings and its successor the World-Wide Navigational Warnings Service Sub-Committee. The IHO has been involved in the activities of Expert Teams of the Joint Technical Commission for Oceanography and Marine Meteorology of the WMO and the UNESCO Intergovernmental Oceanographic Commission (IOC). The IHO and the WMO cooperate in capacity building as partner organizations through the joint IHO / IMO / WMO / IOC / IALA / IAEA / FIG Capacity Building Coordination Meetings held annually since 2008. Despite the long and productive history of cooperation between the two organizations, there was no current formal recognition of this successful and continuing partnership.

Following discussions between the Secretariats of the two organizations, a draft Memorandum of Understanding (MoU) was developed in 2014 to provide an overarching framework for the continuation of consultation between the IHO and the WMO in relation to enhancing Maritime Safety Information, capacity building, and other matters of mutual interest. Subsequent to the approval of the draft by the two organizations, the Secretary-General of the WMO offered to sign the MoU on the occasion of a visit to the IHB in Monaco.



The visit took place on 7 October. Mr Michel Jarraud, Secretary-General of the WMO was accompanied with Mr Edgard Cabrera, Chief of the Marine Meteorology and Ocean Affairs Division. President Robert Ward provided a comprehensive briefing on the IHO and highlighted the various areas of cooperation with the WMO. A number of ideas for further development of this cooperation were discussed and the visit was concluded by the signature of the Memorandum of Understanding.

Shallow Survey 2015

7th International Conference on High Resolution Surveys in Shallow Water

Plymouth, UK , 14-18 September



**Shallow Survey 2015 Conference –
Common Data Set presentation**

Shallow Survey 2015 was the 7th International Conference on High Resolution Surveys in Shallow Water. The Conference attracts the top international experts in high resolution surveys in shallow water (less than 200 metres in depth). Established in Sydney, Australia, in 1999 and held since in Portsmouth, New Hampshire, USA, in 2001 and again in Sydney in 2003, Plymouth, UK in 2005, New Castle, New Hampshire, USA in 2008, Wellington, New Zealand in 2012, it returned to Plymouth in 2015. The unique attraction of the Conference is the Common Data Set, which is a series of different surveys obtained by a range of

equipment types and models over the same area of seabed close to the Conference site. This enables delegates to observe and compare how different equipment and techniques work in a common location. In this instance, the Common Data Set was collected within the natural harbour of Plymouth Sound during the summer of 2014.

The Conference was jointly organized by the United Kingdom Hydrographic Office (UKHO) and the UK Maritime and Coastguard Agency (MCA) in association with the University of Plymouth. Over 300 representatives from a number of IHO Member States, Non-Governmental Organizations and Industry heard presentations given by experts from Canada, Denmark, France, Germany, Ireland, New Zealand, UK and USA as well as various industry and non-governmental organizations. Assistant Director David Wyatt represented the IHB.

Assistant Director Wyatt gave a presentation on Crowd-Sourced Bathymetry (CSB) and Open-access Bathymetric Data, in which he described the progress of the IHO CSB initiative, the formation of the CSB Working Group and progress on up-dating the IHO Data Center for Digital Bathymetry (DCDB) to accept CSB and to act as a data discovery portal for the world's bathymetry. He also chaired an open forum that considered 'is IHO publication S-44 - *Standards for Hydrographic Surveys* fit for purpose?' He introduced the topic with a brief presentation on the background and history of S-44 and drew upon feedback received from IHO Member States in response to IHO CL 25/2015.

The Forum included a panel with representatives drawn from a broad section of government and industry organizations – Mr David Parker (UKHO), Dr Tim Le Bas (NOC), Mr Phil Riddell (Shell), Capt Shep Smith (NOAA), Dr Thomas Heege (EOMap) and Mr Don Ventura (Fugro). In general all participants agreed that S-44 was appropriate for surveys for nautical charting, although it was felt there was scope to consider some improvements including a higher specification than the current *Special Order* and the format of the publication in general. It was felt that re-titling the publication might make it clearer that the current standards were intended primarily for surveys for nautical charting purposes and that there are other documented standards for data gathering for other uses. The audience felt it was unwise and undesirable to try and create a broader set of standards for gathering data for a variety of survey uses. The use of exemptions or relaxations from some requirements when used for non-nautical charting surveys could be better explained. The audience also advised that the use of the entire document rather than just the Table of Orders should be highlighted to ensure all specifications were met for individual survey orders. Although there was no urgency for the development of standards appropriate for data obtained from Satellite Derived Bathymetry and Crowd-sourced Bathymetry, the audience indicated that these newer and developing methods of data acquisition should be taken into account in any future work. The open, direct engagement by the IHO was welcomed and particularly well received.

The next Shallow Survey Conference is planned to be held in St John's, Newfoundland, Canada in 2018. The Conference report and all papers will be available from the Shallow Survey 2015 web site at <http://www.shallowsurvey2015.org/>.

The Conference was followed by a meeting of the Resurvey Working Group of the North Sea Hydrographic Commission (NSHC). The meeting was chaired by Dr Leendert Dorst (Netherlands) with representatives from 7 NSHC Member States (Belgium, Denmark, France, Germany, Netherlands, Sweden and UK) with Finland representing the Baltic Sea Hydrographic Commission. Assistant Director David Wyatt represented the IHB. The meeting discussed some of the outcomes from the Shallow Survey Conference, including the S-44 Open Forum with additional observations and comments provided for submission to HSSC7. A progress report on the development of the NSHC website was provided and participants provided comments and suggestions for consideration during the next phase of work. The meeting also received reports on NSHC, European Union and national developments since the previous meeting. A brief on the Belgium, France and UK Dover Strait survey strategy was provided. The applicability of alternative survey methods was discussed and the progress towards a suitable hydrographic risk assessment methodology for the North Sea area was given.



OCTOBER

GLOSS/Indian Ocean Sea Level Workshop Goa, India 19-23 October

Mr. Richard Edwing, the US Delegate to GLOSS, provided a presentation on the activities of the International Hydrographic Organization's (IHO) Tides, Water Levels, and Currents Working Group (TWCWG) to the 14th of the Group of Experts for the Global Sea Level Observing System (GLOSS) held in Goa, India from 19–23 Oct. 2015. Mr Edwing presented the briefing for the TWCWG, which was unable to be represented. The briefing described the major activities of the TWCWG, which includes the development of three S-100 based product specifications, the integration of the Tides and Water Levels Working Group (TWLWG) and the Surface Currents Working Group (SCWG), the formulation of standards for on-line digital tide tables, an inventory of tide gauges and current meters equipment, a list of actual on-line water level and tide data and the capacity building training that the working group has undertaken.

The presentation was well received from the GLOSS Group of Experts, who appreciated the progress being made by the work group. There was a discussion around the capacity building training and how there could be some synergistic efforts between the two groups since GLOSS maintains a considerable amount of material for general tides training. These materials are known to the TWCWG capacity building point of contact. GLOSS is also preparing a radar gauge manual that may be of interest to the working group. This manual is in its final stages of finalization and will be published in a number of languages later this year.

NOVEMBER

9th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG Capacity Building Coordination Meeting Geneva, Switzerland, 30 November – 1 December

The 9th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG Capacity Building (CB) Coordination Meeting was held on 30 November and 1 December 2015, at the World Maritime Organization (WMO) Headquarters in Geneva, Switzerland. The annual meeting brought together seven representatives from the IHO, WMO and IALA. The IMO, IOC, IAEA and FIG were not represented at the meeting. The IHO was represented by Mr. Thomas Dehling (Germany), Chair of the CB Sub-Committee (CBSC), and Director Mustafa Iptes and Assistant Director Alberto Costa Neves from the IHB.

Participants presented the strategies and the management of their CB programmes, reported on their CB activities since the last meeting and shared lessons learned, best practices, standardization procedures and experience in dealing with funding agencies. The IHO representatives reported on developments including the impact of the recently approved IHO CB Strategy, the status of joint projects and the overall CB achievements.

Participants reviewed the impact of the joint paper on “Partnership arrangements, Delivering as One in action” submitted to the last session of the IMO Technical Co-operation Committee (TC 65) in June 2014 and discussed the need to follow up the joint approach under the United Nations policy of “Deliver as one”. The IHO representatives informed the meeting of the presentation of a proposal to the IMO TC 65 for the identification of the components of the IMO Country Maritime Profile that could be shared amongst the seven organizations. The meeting considered the synergies for the execution of the CB programmes for 2016 and agreed on the implementation of a joint CB Calendar that will be put in place by the WMO and the IOC.



***The Participants at the 9th Joint IHO/IMO/WMO/IOC/IALA/IAEA/FIG
Capacity Building Coordination Meeting at the WMO Headquarters***

The meeting agreed to focus its efforts on the identification of a suitable region (such as the Caribbean, South-West Pacific or West Africa) for the development of a joint regional project to seek funding from donor agencies. The objectives would be to increase communication amongst existing systems in the region, to invest in CB and to provide integrated maritime and marine services in order to improve the safety of navigation, the protection of the marine environment, the protection of the population and support to sustainable economic growth. The meeting agreed to work interessionally to select the region, to outline the scope of work and to define how to progress the project.

The next Joint CB Coordination Meeting will take place in the second half of October 2016 in London, UK, and will be hosted by the IMO (to be confirmed).

29th Session of the IMO Assembly London, United Kingdom, 23 November - 2 December 2015

The Assembly is the highest governing body of the International Maritime Organization (IMO). It consists of all Member States and meets once every two years in regular session, but may also meet in an extraordinary session if necessary. The Assembly is responsible for approving the work programme, the budget and determining the financial arrangements of the IMO. The Assembly also elects the IMO Council. The 29th session of the IMO Assembly was held at the IMO Headquarters in London from 23 November to 2 December. It was attended by more than 1000 representatives from 160 Member States and two Associate Members, as well as observer delegations from 13 inter-governmental organizations and 31 non-governmental organizations. The IHO was represented by Director Mustafa Iptes.



Director Iptes together with Mr Koji Sekimizu, outgoing Secretary-General of the IMO and Mr Kitack Lim, the next Secretary-General

Welcoming addresses were made by Mr Unal Cevikoz, the outgoing President of the 28th Assembly and Former Ambassador of Turkey to the United Kingdom, Mr Koji Sekimizu, Secretary-General of the IMO, and Mr Robert Goodwill, United Kingdom Parliamentary Under-Secretary of State for Transport. The Assembly unanimously elected Mr D. Federico Trillo-Figueroa of Spain as President, Mr Binyah C. Kesselly of Liberia as first Vice-President and Mr Keichi Hayashi of Japan as second Vice-President of the Assembly for the biennium 2016-2017.

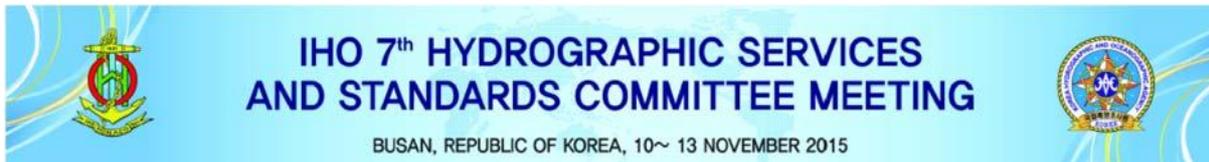
The Assembly established two Committees. One to consider administrative, financial, legal and technical cooperation issues and the other to consider technical matters. Committee-1 agreed to recommend to Plenary the approval of the reports of the Legal Committee and Technical Cooperation Committee provided during the last biennium 2014 to 2015. Committee-2 also recommended to Plenary the approval of the reports and decisions of the Maritime Safety Committee, Marine Environment Protection Committee and Facilitation Committee held during the last biennium. The reports and decisions of the IMO Committees were subsequently approved by the Assembly.

The Assembly adopted an updated Strategic Plan of the IMO for the six-year period 2016 to 2021 and the Budget, High-level Action Plan and priorities for the 2016-2017 biennium. The Assembly elected the 40-Member IMO Council for the next biennium. A number of other resolutions were adopted, including several aimed at updating various guidance documents.

The Assembly endorsed the Council's decision to appoint Mr Kitack Lim (Republic of Korea), as the next Secretary-General for a period of 4 years from 1 January 2016. The Assembly also unanimously adopted a resolution thanking the outgoing Secretary-General, Mr Koji Sekimizu of Japan for his longstanding service to the IMO.

The 30th session of the Assembly will take place at IMO Headquarters in the autumn of 2017.

**7th MEETING OF THE IHO HYDROGRAPHIC SERVICES
AND STANDARDS COMMITTEE (HSSC)
Busan, Republic of Korea, 10-13 November**



The seventh meeting of the Hydrographic Services and Standards Committee (HSSC) took place in Busan, Republic of Korea, hosted by the Korea Hydrographic and Oceanographic Agency (KHOA), from 10 to 13 November 2015. Mr Hyun Jung, Director of the Nautical Chart Division, welcomed delegates on behalf of Mr Jae-hyung Ryoo, Director General of KHOA, who could not be present due to unforeseen circumstances.



Welcoming address by Mr Hyun Jung, Director of the Nautical Chart Division, KHOA

The meeting was chaired by Dr Mathias Jonas, National Hydrographer of Germany, and attended by 48 representatives from 20 Member States, the IHB, and six international organizations accredited as observers. Director Gilles Bessero and Assistant Directors Yves Guillam and Tony Pharaoh represented the IHB. As agreed at the previous meeting, a half-day IHO Stakeholders' Open Session was included in the agenda of the meeting and attracted eight additional participants who attended all or part of the HSSC sessions as observers.

The Chair Group, composed of the Chairs of the HSSC and of its subordinate bodies, met on 9 November to discuss the major items on the agenda and prepare consolidated proposals for the further consideration of the Committee.

The Committee reviewed the activities, proposals, and work plans of its subordinate bodies and the decisions of other organs and organizations affecting its work and decided on a number of outcomes. The Open Session, which was held on 12 November, focussed on new survey techniques and crowd-sourced bathymetry and on issues related to the development and implementation of the S-100 framework.



HSSC-7 participants

A summary of the main outcomes is described below:

S-100 and related activities

The Committee acknowledged the work of the S-100 Working Group (S-100WG) and welcomed the progress in developing and implementing the S-100 framework, noting:

- the publication of Edition 2.0.0 of S-100 - *IHO Universal Hydrographic Data Model*;
- the on-going preparation of supporting documents (including the S-100 interoperability specification for ECDIS, UML models, and data quality models);
- the on-going development, test and implementation of S-100 product specifications both within the IHO and within partner organizations;
- possible additional requirements related to the provision of data services and to the establishment of an S-100 domain for Additional Military Layers (AMLs).

The Committee welcomed in particular the announcement that most operational ice charts will be available in S-411 format by December 2015 and that the first S-411 capable commercial ECDIS is expected to enter service in mid-2016.

The Committee established a project team that will report to the S-100WG to consider the development of a new product specification for the display of under keel clearance management information. The Committee endorsed the revised Edition 1.1 of the S-100 Master Plan, further upgrades of the S-100 Registry and the plan to publish an extended Edition 3.0.0 of S-100 in 2017. The Committee urged the IHO Member States to strengthen their support to the S-100WG and the associated project teams in order to meet the milestones of the work plan.

Noting the current limited expertise in the IHO concerning the portrayal of features in an S-100 based environment, the Committee tasked the Nautical Information Provision Working Group (NIPWG) and the Nautical Cartography Working Group (NCWG) to investigate further portrayal issues, through the use of test bed opportunities.

The Committee noted the intention of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) to submit a proposal for developing a maritime resource name scheme under the S-100 framework.

The Committee agreed that the IHO should take the initiative for developing further the maritime service portfolios (MSP) related to hydrographic services in the e-navigation environment.



HSSC in session

ECDIS matters

The Committee acknowledged the efficient coordination between the IHO and the International Electrotechnical Commission (IEC) in producing a coherent set of revised editions of the key ECDIS related standards thereby addressing the anomalies in the operation of some ECDIS.

The Committee tasked the ENC Standards Maintenance Working Group (ENCWG) to finalize the draft revised new editions of S-58 - *ENC validation checks* and S-66 - *Facts about Electronic Charts and Carriage Requirements* for review and endorsement by correspondence during the intersessional period.

The Committee noted the feedback from industry on the implementation of the new editions of S-52 - *Specifications for Chart Content and Display Aspects of ECDIS* and its Annex A - *Presentation Library for ECDIS*, and agreed to consider postponing the withdrawal of the previous editions, currently planned to occur on 31 August 2016 in accordance with the timeline reported to the International Maritime Organization. The Committee agreed on the benefits of holding an IHO-Industry ECDIS Forum in the context of the implementation of the revised ECDIS related standards and invited the IHB to liaise with the Secretariat of CIRM (*Comité International Radio-Maritime*) for the possible organization of such a forum.

The Committee expressed its support for the development of industry standards for software maintenance of shipborne equipment and invited the CIRM to coordinate with the ENCWG for the revision of the IHO check datasets for ECDIS and the possible introduction of an annual performance test for ECDIS.

Nautical cartography

The Committee endorsed the proposed changes to Edition 4.5.0 of S-4 - *Chart Specifications of the IHO* and tasked the NCWG to finalize the draft new edition 4.6.0 and forward it to the IHB which will then circulate it to IHO Member States for their consideration and approval. The Committee instructed the NCWG to develop a separate section on ENC schemes in the draft revision of S-11 Part A - *Guidance for the Preparation and Maintenance of International Chart Schemes*. The Committee invited the NCWG to address as a high priority the work item on the future of the paper chart.

Hydrographic Dictionary

The Committee requested the Hydrographic Dictionary Working Group to investigate options and associated resource requirements and timeline to produce and maintain a reference edition of S-32 - *Hydrographic Dictionary*. The S-100WG was tasked to specify its requirements regarding definitions included in the S-100 Registry.

Consideration of the need to establish a Hydrographic Surveys Working Group

The Committee considered the mixed responses from the Member States on the need to establish a Hydrographic Surveys Working Group, following the consultation initiated at its previous meeting. The Committee decided to establish a Project Team to investigate further the need for HSSC activities related to hydrographic surveys, define the scope and the possible tasks that may be considered in that respect and propose recommendations at the next HSSC meeting (HSSC-8).

Preparation of the International Hydrographic Conference or Assembly of the IHO in 2017

The HSSC Chair Group was tasked to prepare the contribution of the Committee to the revision of the IHO Strategic Plan and the preparation of the next pluriannual IHO Work Programme in accordance with the IHO Resolution on the planning cycle.

Relations with Stakeholders

The Committee acknowledged that the relations with stakeholders are a strategic issue to be considered by the HSSC Chair Group in its contribution to the revision of the IHO Strategic Plan.

The Committee noted the areas of common interest between the IHO and the International Cable Protection Committee (ICPC), and welcomed the possible contribution through the ICPC of bathymetric data to the IHO Data Centre for Digital Bathymetry, in the context of the development of trusted crowd-sourced bathymetry. The Committee supported the proposal of the ICPC to develop a Memorandum of Understanding between the IHO and the ICPC.

Contribution of the Republic of Korea

The Committee commended the significant contribution of KHOA to the development of IHO web services through the INTtoGIS project, which aims to develop a GIS-based version of S-11 Part B - *Catalogue of International (INT) Charts*, and the Digital Reference Tool for Cartographers (DRTC). The Committee also warmly thanked KHOA for the excellent meeting arrangements and the outstanding support provided to the participants.

Next Meetings

The next meeting of the HSSC (HSSC-8) will be held in Monaco from 14 to 18 November 2016. HSSC-9 will take place in Ottawa, Canada in early November 2017. Germany offered to host HSSC-10 in Rostock in November 2018.

More Information

Further information is available on the IHO web site at Home > Committees & WG > HSSC.

DECEMBER

41st Meeting of ISO/TC 211 Sydney, Australia, 7-11 December

Standards Australia hosted the 41st meeting of the International Organization for Standardization (ISO) - Technical Committee 211 (ISO/TC211). ISO TC211 deals with the development of standards and specifications for the geospatial domain. The International Hydrographic Organization (IHO) is a Class A liaison member of ISO/TC211 and participates in its standards development and maintenance Working Groups. The ISO/TC211 19100 series of standards and specifications have been used for the development of the IHO S-100 Universal Hydrographic Data Model. IHB Assistant Director Anthony Pharaoh represented the IHO at the meeting.



41st ISO/TC211 Plenary Meeting

The 41st plenary meeting unanimously accepted a nomination from the United Nations Statistics Division (UNSD), (which is the secretariat for the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)), to become a Class A liaison member. There are currently 33 external liaison members.

ISO requires that all standards undergo regular revisions. The 41st plenary meeting agreed that the following standards, which are relevant to the IHO S-100 standard, should undergo a systematic review: ISO 19108 (Temporal schema), ISO 19123 (Schema for coverage geometry and functions), ISO 19129 (Imagery, gridded and coverage data framework) and ISO 19135-2 (Procedures for item registration - Part 2: XML schema implementation).

The following standards, which are also relevant to S-100, will be eligible for systematic review in 2016: ISO 19111 (Spatial referencing by coordinates), ISO 19131 (Data product specifications) and ISO 19139-2 (XML schema implementation – Part 2 for Metadata).

In response to a request by the IHO to ensure that new editions of the 19100 series of standards remain relevant to implementing organizations; the 41st Plenary unanimously approved a resolution (744) relating to backward compatibility in revised standards and stating that; *ISO/TC 211 strongly recommends that revisions of standards and technical specifications include an informative annex which describes how backward compatibility is addressed. This annex may include crosswalks, mappings or similar mechanisms, which evidence the degree of compatibility*".

In response to an invitation from the Technical Committee on Geographic Information of the European Committee for Standardization (CEN/TC287) the plenary meeting, agreed to investigate how the documents listed below can be adopted as TC211 documents. These documents may be relevant to the IHO MSDI Working Group;

- CEN/TR 15449-1, Spatial data infrastructures – Part 1: Reference model
- CEN/TR 15449-2, Spatial data infrastructures – Part 2: Best practices
- CEN/TR 15449-3, Spatial data infrastructures – Part 3: Data centric view
- CEN/TR 15449-4, Spatial data infrastructures – Part 4: Service centric view
- CEN/TR 15449-5, Spatial data infrastructures – Part 5: Validation and testing

A "*Standards in Action Workshop*" took place during the meeting. The workshop included presentations on the Australia & New Zealand - Foundation Spatial Data Framework (FSDF), the Republic of Korea's experiences with geospatial standard profiling, the use of ISO standards within the multinational Defence Geospatial Information Working Group (DGIWG) and a "*Standards Development Journey*".

The next ISO/TC211 plenary meeting will take place in Tromsø, Norway in June 2016.

16th Meeting of the Meso-American - Caribbean Sea Hydrographic Commission (MACHC) Antigua and Barbuda, 9-12 December

The 16th Meeting of the Meso American - Caribbean Sea Hydrographic Commission (MACHC) was held in St. John's, Antigua and Barbuda from 9 to 12 December with 70 participants from 11 Member States, six Associate Members, three observer countries, nine observer organizations, and eleven companies. President Robert Ward and Assistant Director Alberto Costa Neves represented the IHB.



The meeting was hosted by the Antigua Department of Maritime Services (ADOMS) and chaired by Captain Marc van der Donck, national Hydrographer of the Netherlands and Chair of the Commission.

As a lead-up to the meeting, an IHO capacity building seminar on raising awareness of hydrography was held. Speakers from several IHO Member States, the International Maritime Organization (IMO) and the International Association of Aids to Navigation and Lighthouse Authorities (IALA) took part.



This was followed by meetings of the MACHC Integrated Chart Coordination Committee (MICC), the Capacity Building Committee, the Marine Economic Infrastructure Program (MEIP) Working Group and discussions on the latest developments in risk assessment.

President Ward and the Chair of the MACHC, accompanied by the national Hydrographers of Mexico and UK and the former national Hydrographer of Brazil called on His Excellency Gaston Browne, Prime Minister of Antigua and Barbuda.

HNLMS *Friesland*, the Netherlands Navy regional guard ship made a port call during the period of the meeting. MACHC attendees were invited to lunch and a tour aboard the vessel.

The 16th meeting of the MACHC was opened on behalf of the government of Antigua and Barbuda by His Excellency Dwight Gardiner, Ambassador Extraordinary and Plenipotentiary, with special responsibility for the International Maritime Organization, the International Seabed Authority, the International Maritime Satellite Organization, Antigua and Barbuda Representative on Transportation (Port and Maritime) to the Caribbean Community and the Association of Caribbean States.

The agenda was arranged according to themes: reports from countries and organizations, surveying and risk assessment, spatial data infrastructures, nautical charts and publications, and capacity building. In addition to the delivery of national reports from each of the countries represented at the meeting, presentations were provided to complement relevant agenda topics by the industry stakeholders and other organizations invited to the meeting.

The meeting was told of significant progress in ENC coverage in the region with 58 new ENCs and the development of a regional IC-ENC Center in Brazil. The meeting was also informed of the development of a practical gap analysis process under development by the USA that will help coastal States to identify those ports where there is a need to produce larger scale ENCs.

This, and other collaborative activities, reflected the growing levels of technical cooperation between all MACHC States in the region.

The meeting welcomed the representative of the Organization of Eastern Caribbean States (OECS) and acknowledged the recent Memorandum of Understanding concluded between the IHO and the OECS. As a result, the OECS was recognised as a permanent observer organization in the MACHC. The meeting was informed of significant progress on a proposal, spear-headed by Antigua and Barbuda, to develop sub-regional hydrographic services in the waters of the Member States of the OECS. Once donor funding has been obtained, the project will enable the development of a regional Hydrographic Service in the Eastern Caribbean.

The Commission reviewed the progress made with its Maritime Economic Infrastructure Programme (MEIP), which aims to be part of a regional Marine Spatial Data Infrastructure (MSDI) that supports the blue economy in the region.

A number of changes to the Statutes of the MACHC were agreed in anticipation of the entry into force of amendments to the IHO Convention. In particular, a process was included to determine the selection of representatives on the IHO Council and to indicate their obligations to the Commission. The Statutes were also amended to recognize the need to support the Spanish language during meetings of the Commission.

The Dominican Republic informed the meeting of the recent creation of the national hydrographic service as part of the Navy. The Dominican Republic was also recognised as an Associate Member of the Commission.

The next meeting of the MACHC will take place from 14 to 17 December 2016 in Belém, Brazil.

97th Meeting of the Open Geospatial Consortium (OGC) Technical Committee Sydney, Australia, 30 November to 3 December

The Open Geospatial Consortium (OGC) is a not for profit international industry consortium with a membership of more than 520 companies, government agencies and universities. The OGC standards support interoperable solutions for location-based services and mainstream IT requirements. The OGC works closely with the Technical Committee on Geographic information/Geomatics of the International Organization for Standardization (ISO/TC211) in producing standards for the geospatial domain. Following the joint work between these two organizations and the IHO to develop a "Guide to the Role of Standards in Geospatial Information Management" which has been adopted by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), the IHO and the OGC are considering developing further their cooperation through cross-participation in their relevant organs.

The OGC held its 97th Technical Committee meeting in Sydney; Australia from 30 November to 4 December, preceding the 41st plenary meeting of the ISO/TC211. The meeting was hosted by the National Information and Communications Technology - Australia (NICTA) Research Centre and attracted some fifty participants. IHB Assistant Director Anthony Pharaoh represented the IHO at the meeting.

The opening address was provided by the Chief of the Environmental Geoscience Division of Geoscience Australia, Dr. Stuart Minchin. The Committee conducted its work through parallel working group sessions. The activities focused on topics including how to integrate and support the OGC Land XML schema, reviewing and updating extensions to the OGC Metadata framework, TimeseriesML (Time series Markup Language) which will also include a JSON encoding, the "SensorThings" Application Programming Interface (API) Standard, use-cases requirements for a draft OGC JSON (Java Script Object Notation) specification and its associated geographic (GeoJSON) extension, extensions to the OGC Web Map Services specification, work on improved security for web services, a temporal extension for Well Known Text (WKT) encoding and the development of a point cloud data product specification.

The following new OGC standards that may be relevant to IHO work were approved in 2015: GML Application Schema (Coverages JPEG2000), Web Processing Service (WPS) 2.0 Interface Standard, Web Map Tile Service: Simple Profile (WMTS Simple); Network Common Data Format (CF-netCDF) 3.0 encoding using a GML (Geographic Markup Language) Coverage Application Schema, KML (Keyhole Markup Language) 2.3, Earth Observation Metadata Profile and Web Coverage Service Interface Standard for Transaction Extensions. There were discussions on the use of the Hierarchical Data Format (HDF5) and on testing the inclusion of ISO-19115 metadata in HDF5. HDF is currently used in the Bathymetric Attributed Grid (BAG) specification and the IHO S-102 product specification. It will also be included as an encoding format in the next edition of the S-100 Standard.

The OGC has recognised that there is a need for interoperability in LiDAR standards. Several presentations were provided on LiDAR formats, including hydrographic LiDAR. Associated with this, the OGC has established a Domain Working Group (DWG) to address interoperability issues with point cloud data. The aim of the Working Group is to broaden the understanding of point cloud data and improve data interoperability.

The OGC has commissioned test bed projects to test the applicability of its standards with the outcomes of these projects being provided as engineering reports. The engineering reports that are of relevance to the S-100 Working Group include "Testbed 11 DGIWG GMLJP2 Testing," "Testbed 11 Referenceable Grid Harmonization" and "Symbology Mediation."

A presentation on the Australian "Data Cube" project was provided by Dr Minchin. This project has enabled three decades of Australian satellite imagery, spanning Australia's total land area at a resolution of 25 square metres, to be made available for public access and analysis. The presentation highlighted how Australia's vegetation, land use, water movements and urban expansion has changed over the past 30 years.

NEW HYDROGRAPHERS

NAMES	COUNTRIES	DATES
Mr Paul UNAS*	Papua New Guinea	2014**
Rear Admiral Rodolfo SABLICH LUNA VICTORIA	Peru	January 2015
Commodore Amgad KHATER	Egypt	January 2015
Mr John HUMPHREY	United Kingdom	February 2015
Mr Keonsoo SOHN	Republic of Korea	May 2015
Captain DARYANTO*	Indonesia	May 2015
Catptain Juan Antonio AGUILAR CAVANILLAS	Spain	June 2015
Rear Admiral Fernando Alfonso ANGLI RODRIGUEZ*	Mexico	August 2015
Rear Admiral Tim LOWE	United Kindgdom	August 2015
Vice Admiral Charin BOONMOH RTN	Thailand	September 2015
Captain Luigi SINAPI	Italy	October 2015
His Excellency Major General (Retd) Dr Abdul Aziz Ibn Ibrahim Ibn Abdullah AL-SAAB	Saudi Arabia	November 2015
Rear Admiral Antonio Manuel C. Coelho CANDIDO*	Portugal	November 2015

* No C.V. received

** Nomination reported to the IHB in 2015

NEW HYDROGRAPHER OF PERU



Rear Admiral Rodolfo SABLICH LUNA VICTORIA was born in Callao, on 24 March 1966. He joined the Navy on 22 February 1983, and graduated on 1st January 1988 as Ensign.

He is qualified in Hydrography and Navigation and has followed major courses such as: Navigational Course in Antarctic Waters, the Basic Staff Course, Command and Staff Course and a Master of Science in Coastal Engineering.

He also holds a Master in Management, a Master in Hydraulic Engineering with a specialisation in Coastal Morphology, a Master in National Defence and a national diploma in Defence and National Security.

Amongst the main positions held by the above-mentioned officer, the following can be highlighted: Head of the B.A.P. Logistics Department "Velarde"; Head of the Security Department of the General Command Headquarters of the Navy; Deputy-Commander of B.A.P. "Unanue", Deputy-Commander of BIC "Humboldt", Head of of B.A.P. cover "Bayovar"; Head of the Logistics Department of B.A.P. "Admiral Grau"; Head of the Logistics Section of Fourth Naval Zone's General Staff, Commander of B.I.C. "Humboldt"; Captain of the Port of Callao; Naval and Defence Attaché in the Republic of Brazil and Head of the Institutional Policy Department of the Navy General Staff.

Furthermore, he has held a number of posts at the Directorate of Hydrography and Navigation, including : Head of the Surveying Division of the Department of Hydrography; Head of the Department of Nautical Lights; Head of Materials and Services;; Head of Antarctic Affairs; Chief Technical Officer and Deputy Director of Hydrography and Navigation, having participated in five Campaigns in Antarctica.

New Hydrographer of EGYPT



Commodore Amgad Khater took up the post as Egyptian National hydrographer in January 2015.

He graduated from the naval college with the honor of graduate 1986, he has served in the fast missile crafts units (1986-1996). After doing the basic course in hydrography, he was posted to the naval hydrographic department (ENHD) as a chief of surveying operation, head of chart production division and finally the head of hydrographic division (1996-2011), during that period he was registered as a national expert on the law of the sea in the International Tribunal for the Law of the Sea.

He also headed the navigation department in the postgraduate naval institute and recognized as international instructor for ECDIS course according to Standard of training and watch keeping (STCW), then posted as a chief instructor in the Egyptian Naval College (2011-2014).

Commodore Khater has done advanced course in cartography, advanced course in navigation, commanding course and a master of science in a major of digital cartography from Arab Academy for science and Technology & maritime transport.

Commodore Khater is married and has one son and one daughter.

New Chief Executive of the United Kingdom Hydrographic Office



John Humphrey joined the United Kingdom Hydrographic Office in 2007 as Head of Sales & Marketing to help develop and launch the Vector Chart Service. In May 2008, he moved to Germany to work as Managing Director of ADMIRALTY Deutschland; a UKHO owned company. He returned to the UKHO as Commercial Director in May 2012, was appointed Chief Commercial Officer & Deputy Chief Executive in April 2014, and Chief Executive as of 1st February 2015.

Previously he was the Group Managing Director with Dedicated Microcomputers Group Ltd, a leading supplier of digital video surveillance systems, and then went on to found a video surveillance company, BraddaHead Ltd, which he sold in 2004 before moving to Canada to become VP Sales for Verint, a NASDAQ listed business.

NEW HYDROGRAPHER OF THAILAND



Vice Admiral Charin Boonmoh RTN.

1. Education

- 1972 Armed Forces Academy Preparatory School
- 1975 BSc., Hydrography, Royal Thai Naval Academy, Royal Thai Navy
- 1983 Diploma, Hydrographic Survey Course, Japan Hydrographic Department
- 1985 MSc., Physical Oceanography, Florida Institute of Technology, USA
- 1990 Naval Staff College, Royal Thai Navy
- 2001 Naval War College, Royal Thai Navy

2. Career Positions

- 1980 Hydrographic Survey Officer, Surveying Division, Hydrographic Department, Royal Thai Navy
- 1983 Navigator, H.T.M.S. Suriya and H.T.M.S. Chantara, Hydrographic Flotilla, Hydrographic Department, Royal Thai Navy
- 1987 Head of Oceanographic Instrument Section, Oceanographic Division, Hydrographic Department, Royal Thai Navy
- 1988 Commanding Officer, HTMS Suk, Hydrographic Flotilla, Hydrographic Department, Royal Thai Navy
- 1991 Head of Physical Oceanography Section, Oceanographic Division, Hydrographic Department, Royal Thai Navy
- 1992 Head of Lighthouse and Buoy Section, Aids to Navigation Division, Hydrographic Department, Royal Thai Navy
- 1994 Deputy Director, Technical Division, Hydrographic Department, Royal Thai Navy
- 1995 Deputy Director, Surveying Division, Hydrographic Department, Royal Thai Navy
- 1996 Chief of Maritime Security Division, Hydrographic Department, Royal Thai Navy
- 1997 Director, Surveying Division, Hydrographic Department, Royal Thai Navy

1999 Director, Cartographic Division, Hydrographic Department, Royal Thai Navy
2001 Director, Hydrographic Engineering Division, Royal Thai Naval Academy
2003 Director, Seamanship and Navigation Division, Royal Thai Naval Academy
2010 Deputy Director General, Naval Research and Development Office, Royal Thai Navy
2011 Deputy Director General, Hydrographic Department, Royal Thai Navy
2015 Director General, Hydrographic Department, Royal Thai Navy

NEW HYDROGRAPHER OF ITALY



Captain Luigi Sinapi was born in Grosseto on August 27 1967 and joined the Naval Academy in 1985.

Captain Sinapi was:

- Commanding Officer of the MIRTO Survey Vessel
- Head of the Hydrography Division at the Italian Hydrographic Institute
- Naval Staff Officer at the NATO Navy Command (COMNAVSOUTH) at Nisida (Naples)
- Executive Officer of Frigate ALISEO
- Commanding Officer of Frigate ZEFFIRO
- Head of the 1st Division of the Financial Planning Department of the Navy General Staff
- Commanding Officer of Destroyer DURAND DE LA PENNE
- Head of the 5th Division of the 3rd Department of the Navy General Staff
- Head of the 1st Division of the 4th Department of the Navy General Staff

Among the many medals and decorations he was awarded in the course of his career, Captain Sinapi received the Commemorative Medal for the 11th Italian Expedition to Antarctica, NATO Medals for the former state of Yugoslavia and Kosovo operations, and the Order of Merit of the Italian Republic (Knight).

Captain Sinapi earned the following:

- II level degree in Physics at the University of Lecce
- I level degree in Navigation and Maritime Science at the University of Pisa
- II level degree in International Diplomacy at the University of Trieste
- II level master in Marine Geomatics at the University of Genoa (IHO-FIG-ICA, Hydrography category A)
- Master in International strategic and military studies at the CASD, Centre for the Defense Higher Studies, Rome

From 2001 to 2004, he taught hydrography and geodesy at the Parthenope University, Naples, and has published a number of essays in national and international journals and reviews.

Captain Sinapi is married and has two sons, who are now university students. His hobbies are navigation, sailing, basket and tennis.

New Hydrographer of kOREA



Mr. Keonsoo SOHN took office as the 39th Director General of the Korea Hydrographic and Oceanographic Administration, Ministry of Oceans and Fisheries on 4 May 2015.

Mr SOHN has a Bachelor of Arts in Economics from the Seoul National

University. Since 1989, he has held a number of senior positions in several ministries including the Ministry for Food, Agriculture, Forestry and Fisheries.

EDUCATION

- B.A. Economics, Seoul National University
- Seoul Kyung Dong High School

WORK EXPERIENCE

- May 2015 - Present: Director General, Korea Hydrographic and Oceanographic Administration
- March 2014: Vice Chair, Hebei Spirit Incident Compensation Bureau
- February 2013: Director, General Services Division, National Fishery Products Quality Management Service
- February 2005: Director, International Cooperation Division, Ministry for Food, Agriculture, Forestry and Fisheries
- March 2001: Assistant Director, Financial Policy Division, Ministry of Planning and Budget
- March 1989: Deputy Director of Economic Planning Bureau, Economic Planning Board

New Hydrographer of SPAIN



Juan Antonio AGUILAR CAVANILLAS was born on 21 January 1960 in Madrid (Spain).

ACADEMIC QUALIFICATIONS

1977	High School Diploma & University Admissions Test (Ntra. Sra. del Recuerdo Jesuit School, Madrid)
1980-1985	Navy General Corps Officer Commission Degree (Naval Academy, Marín, Pontevedra)
1988-1989	Systems Analyst Diploma, Integrated Systems Branch (Navy IT Specialization School, Madrid)
1991-1992	Course on Specialization in Hydrography (Navy School of Hydrography, Cádiz)
1997-1999	Master in Operations Research (Naval Postgraduate School, Monterey, California, US)

PROFESSIONAL CAREER HISTORY

As a Naval Officer he has held the following posts:

1985-1987	Gunnery Officer; Corvette "Diana".
1987-1988	Officer of the Deck, English Language and Handling Instructor, T.S. "Juan Sebastián de Elcano".
1989-1991	Analyst Officer in the "TRITAN-1" Program to modernize Baleares-class frigates, Tactical Programming Center, Rota Naval Base, Cádiz.
1992-1995	Specialist Officer, Executive Officer and Second in Command, H.V. "Malaspina".
1995-1997	Commander, H.V. "Pollux".
1999-2001	Technical Director of the "SABIK" simulation software at the Navy Operative Research Office, Madrid.
2001-2003	Commander, H.V. "Malaspina".
2003-2005	Technical Director of the "SABIK" simulation software at the Navy Operative Research Office, Madrid.
2005-2009	Technical Secretary and Head of IT, Instituto Hidrográfico de la Marina (Spanish Hydrographic Office), Cádiz.
2009-2011	Commander R.V. "Hespérides".

- 2011-2012 Head, Navigational Office, Operational Logistics Section, Navy Staff Operations Division.
- 2012-2015 Head, Operational Logistics Section, Navy Staff Operations Division.
- 2015-Act. Commander – Director of the Instituto Hidrográfico de la Marina (Spanish Hydrographic Office) and Director of the School of Hydrography “Alejandro Malaspina”.

OTHER

Language skills: English (fluent/bilingual)

Yachtmaster Certificate of Competence.

Driving License Categories A1, A2 & B.

Four Crosses of Naval Merit; Cross, Commander & Commander with Star of the Royal Military order of St Hermenegildo.

New Hydrographer of THE UNITED KINGDOM



Rear Admiral Tim Lowe joined the United Kingdom Hydrographic Office as UK National Hydrographer, Deputy Chief Executive (Hydrography) and Head of Defence in August 2015.

Tim Lowe was trained at Britannia Royal Naval College and served in the Royal Navy as well as in the North Atlantic Treaty Organization (NATO). His latest positions included:

- Principal Staff Officer to NATO Deputy Supreme Allied Commander Europe (2004-2006);
- Commanding Officer, HMS Albion (2006-2008);
- Commander of the United Kingdom Maritime Component and Deputy Commander Combined Maritime Forces, United States Naval Forces Central Command (2008-2010);
- Commodore Maritime Warfare School, Commanding Officer HMS Collingwood (2010-2011);
- Deputy Flag Officer Sea Training (2012);
- Deputy Commander Naval Striking and Support Forces, NATO (2012-2015)

New Hydrographer of Saudi Arabia



His Excellency Abdulaziz Ibn Ibrahim Ibn Abdullah Al-Saab has assumed the post of the President at the General Commission for Survey (GCS) in the Kingdom of Saudi Arabia wef 01 Nov 2015.

GCS is the official mapping organization in Saudi Arabia, mandated to provide geospatial products and services, including Hydrography, with due national representation at the IHO.

EDUCATION & DIPLOMAS :

- PhD, in Integrated Planning for the Seas, from Cardiff University, Department of Maritime Studies, United Kingdom.
- M.Sc. in Maritime Management 1988, World Maritime University in Malmo, Sweden.
- B.Sc., Marine Sciences 1977, Pakistan Maritime Academy, Karachi.

PROFESSIONAL EXPERIENCE:

- President of the General Commission for Survey with the title of "His Excellency" since 01/11/2015.
- Member of Shura Council from 15/01/2013 to 31/10/2015.
- Listed as an Advisor and Expert with the International Maritime Organization (United Nations).
- Advisor at the Ministry of the Interior.
- Assistant Director General of the Border Guards for Systems and Monitoring: 2002-2010.
- Director, General Department of Planning and Budget at the Directorate of Border Guards, 1998-2002.
- Director, Department of Planning and Organization at the Directorate of Border Guards, 1997-1998
- Head of the Navigation Section at the Directorate of Border Guards, 1996-1997.
- Participated as a military operations officer and member of the Ministry of the Interior's task force, operating under the Ministry of Defense and Aviation's Command during the Allied Forces' military campaign for the liberation of Kuwait: 1989-1991.
- Head of the Maintenance and Marine Supply Section: 1988-1989.
- Head of the Projects and Marine Development Section at the Directorate of Border Guards, 1985-1986.
- Marine Department Officer at the Directorate of Border Guards, 1984-1985
- Navy Officer at Ras Tannura Seaport and Ju'aima for sea patrolling including the responsibility for receiving and clearing oil and gas tankers: 1979-1983 .
- Sea Patrol Boat Captain: 1976-1978

SEMINARS AND CONFERENCES:

1. Attended the conferences held by the Environment Protection Committee and Marine Safety Committee affiliated to the International Maritime Organization (IMO).

PROFESSIONAL AFFILIATIONS:

- Member of the committee tasked with determining the baseline, outer boundary and the internal water limit of the territorial sea.
- Member of the Preparatory Committee of the Ministerial Committee for Border Affairs.
- Member of the Technical Committee for the Demarcation of the Kingdom's Maritime Boundaries with the United Arab Emirates (UAE).
- Member of the Saudi Side in the Negotiating Committees tasked with the duty of demarcating the undetermined maritime boundaries with neighboring Red Sea countries.

- Member of the Standing Committee for the Law of the Sea.
- Member of the Sea Transportation Development Committee.

DECORATIONS & MEDALS:

1. King Faisal Decoration of the fourth class.
2. Military Merit Medal of the first class.
3. The Naval Force Medal
4. The Liberation of Kuwait Medal.
5. Order of Battle
6. Order of Perfection.
7. Order of Security
8. Order of Management
9. Order of Military Service (received five times)

His Excellency was born at Al- Sha'ra in Saudi Arabia on 07 Mar 1954 and is married

With his vast experience in Maritime Affairs, His Excellency is expected to contribute significantly to the further growth of Hydrography at Saudi Arabia.