

16th South West Pacific Hydrographic Commission Meeting (SWPHC16)
13-15 February 2019 – Niue
Draft Minutes

1. Opening

1.1 Opening Remarks by the Chair

The SWPHC Chair and Hydrographer of Australia, Commodore Fiona Freeman, welcomed all the delegates to the 16th SWPHC Meeting and thanked Niue for organising and hosting the SWPHC technical workshop and meeting at such a scenic venue. She emphasised the importance of the deliberations at these forums in sharing of information and experiences, as well as networking among the participants.

1.2 Address by the Chief Guest

The Honourable Pokotoa Sipeli, Minister of Infrastructure, Niue, welcomed all delegates to Niue. He stated that the ocean is part of the islanders' everyday lives and traditions. Hydrography is important for their development planning, livelihoods, culture and above all using the sea safely. He outlined the important role of hydrography for the following:

- National Disaster Management Planning.
- Marine Spatial Planning under the Niue Ocean Wide Project,
- National infrastructure development such as the Manatua Undersea Cable.

Niue acknowledged and greatly appreciated LINZ for their support and looked forward to the data collected in 2018 under the Pacific Regional Navigation Initiative. He also acknowledged the support of the Ministry of Infrastructure, Niue Ridge to Reef Project, the Niue Ocean Wide Project, the IHO Capacity Building Fund and the Scenic Matavai Resort for the meeting.

1.3 Address by the IHO

Mr Abri Kampfer (Director IHO) stated that Regional Hydrographic Commission (RHC) meetings continued to increase in importance as they exercised an increasingly active role in the overall planning, execution and assessment of the IHO Work Programme as it relates to their regions and to the development of the IHO Strategic Plan. It was pleasing to observe increasing involvement of hydrographic industry, academia and maritime organizations in the RHC meetings. He highlighted the priorities of the IHO Secretariat, i.e.:

- IHO Outreach and raising awareness
- Capacity Building
- Increasing IHO membership especially for Significant IMO Flag States
- Marine Spatial Data Infrastructure (MSDI) and provision of geo-data
- S-100 implementation and development
- Supporting implementation of e-Navigation
- Crowd-Sourced Bathymetry (CSB), data gathering and data maximizing.

Mr Kampfer thanked Niue, particularly Ms Lynsey Talagi, for their willingness, enthusiasm and professionalism to organize this event, and all those who have been involved in the detailed preparation of the meeting.

1.4 Administrative Arrangements

Ms Lynsey Talagi provided the meeting participants with the required housekeeping details.

The Chair invited all delegates to introduce themselves.

The Secretary, Mr. Jasbir Randhawa, requested participants to review and confirm the List of Participants and provide any updated/additional information. The updated list appears as document

SWPHC16-01B Rev 3 on the IHO website (<https://iho.int/en/swphc16-2019>).

2. Agenda and Timetable approval

The Chair introduced the Draft Agenda and Timetable (*doc. SWPHC16-02 Rev. 2*). Members were invited to comment and adopt the documents. As there were no additional items proposed for discussion, the meeting adopted the draft agenda and timetable.

3. Approval of Minutes of SWPHC15 Meeting

The Secretary informed that the SWPHC15 draft minutes had been circulated to the participants. SHOM (France) had provided some minor editing to paragraph 7.3 (France) of the minutes, and the revised version was circulated as part of SWPHC16 documentation.

Mr Detenamo (Nauru) commented regarding the typo in paragraph 8.4 (Niue), i.e. to replace 'Palau' with 'Niue' in the first sentence.

As there were no further comments the Commission approved the SWPHC15 minutes with the above corrections. (*doc. SWPHC16-03*)

4. Matters arising from Minutes of SWPHC15 Meeting

Referring to the List of Actions from SWPHC15 (*doc. SWPHC16-04*) the Chair stated that most of the action items were completed and the remaining were ongoing issues which will continue to be discussed at the Commission meetings and actioned as appropriate.

5. IHO Matters

5.1 IHO Secretariat Report

Mr Abri Kampfer (IHO Director) provided the IHO Secretariat Report (*SWPHC16-05.1*) to the meeting, highlighting the activities that may impact the work of the SWPHC. These included:

Operations of the Organization under the IHO Convention since the last SWPHC Conference

The Protocol of Amendments to the IHO Convention and its supporting Basic Documents entered into force on 8 November 2016. The second meeting of the Council (C-2) was held in London, UK during October 2018 and the main outcomes were reported in IHO CL 52/2018.

Regional Hydrographic Commissions (RHCs) are established in its own right by statutes and recognized by the Assembly (Article 8 of IHO General Regulations). They are sovereign to identify tasks, ways and means to address the specifics of hydrography within their respective region. The RHCs enjoy the right to report to the Assembly directly. However, the applicable IHO Resolution 2/1997 is under review. The Secretariat proposes to discuss whether this reporting process could be better harmonised with the IRCC Chair who reports to the Assembly as well.

Status of Membership of the IHO

Under the revised IHO Convention UN Member States (MS) are eligible to join the IHO without requirement to seek approval of existing IHO MS. This is applicable to a number of Associate Members of SWPHC – i.e. Kiribati, Nauru, Niue, Palau, Samoa and Solomon Islands. Cook Islands and Niue, being non-MS of the UN, are required to seek approval of the IHO MS.

INT Chart and ENC Production Coordination – Region L

The INT Chart Scheme for Region L is contained in Edition 3.0.3 of S-11 Part B which was made available in January 2018. It has been quite an achievement in having produced and published 62 charts out of the 67 INT charts in the Scheme. At a workshop held in Monaco in January 2018 by the IHO Data Quality Working Group (DQWG) participants shared their best practices on the way

CATZOC values are populated for S-57 ENC's by Hydrographic Offices. In order to facilitate the harmonization and prepare the future transition to S-101 ENC's, it was recommended that SWPHC ENC Producers provide their guidelines to the DQWG. Australia, France, UK and USA had provided the relevant information. New Zealand was requested to consider providing its CATZOC methodology/practices to the DQWG.

IHO GIS and Databases

Work has continued on the development of the IHO GIS which is composed of two main parts: a country information database, and a regional information database

The country information database has been progressively upgraded to include additional administrative information and facilitate the maintenance of the IHO Yearbook (P-5) and the related lists posted on the IHO website. Countries in the SWPHC Region are invited to review their entry in P-5 on an annual basis and the 'Status of Hydrographic Surveying and Nautical Charting Worldwide' (C-55) and provide the IHO Secretariat with the appropriate updates or to report no change. The IHO Secretariat is in final stages of developing an online form to allow Member States to input data to the Yearbook and to C-55. This facility will also be extended to 'Responses to Voting Forms'. An IHO Circular Letter will shortly be issued to provide instructions on its use.

World Hydrography Day

The theme for WHD 2019 is "*Hydrographic Information Driving Marine Knowledge*" as promulgated through IHO CL 01/2019. The IHO website provides some relevant text which can be used by members celebrating this event.

International Hydrographic Review (IHR)

The IHR is published biannually and provides an opportunity for Member States to publicize technical and other achievements in their region. The IHO Secretariat, working in conjunction with the University of New Brunswick, Canada has developed a digital depository of the complete library of the IHR. The entire collections (1923 to 2018) are available online at: <https://journals.lib.unb.ca/index.php/ihr>. Members are invited to submit papers for publication in the IHR.

IHO Centenary Celebrations (IHO-100)

The years 2019 and 2021 will be important in the history of the IHO. 2019 marks the centenary of the 1st International Hydrographic Conference which was held in London in 1919 and 2021 will be the centenary of the establishment of the International Hydrographic Bureau (IHB) in 1921 in Monaco as a precursor of the modern IHO.

The IHO Secretariat planned to organize workshops, exhibitions, outreach events and similar activities from 2019 to 2021, either independently or jointly with sister institutions and agencies. The 'peak-of-the-peak' will be World Hydrography Day on 21 June 2021. There will also be an opportunity to present IHO's achievements at the United Nations General Assembly in September 2021 and at the IMO Assembly in November 2021.

The meeting considered the key elements of the report and ensuing discussion, and agreed on the following:

Action 1: New Zealand to consider providing CATZOC methodology practices to DQWG.

Action 2: Members to respond to IHO CL 11/2019 (Annex B) indicating whether they support CSB activity within their waters of national jurisdiction.

Action 3: Chair to liaise with IALA and SPC to encourage coastal States that are not yet members to join the SWPHC.

Action 4: All members to consider identifying opportunities in national/regional /international donor agencies to incorporate hydrography in development projects.

Action 5: All members to review their entries in the IHO Yearbook (P-5) and C-55 and to provide the IHO Secretariat with the appropriate updates or to report no change.

Action 6: All members to consider submitting papers for publication in the International Hydrographic Review.

5.2 Outcome of the 2nd Meeting of the IHO Council (C-2)

Rear Admiral Shepard Smith (Chair, IHO Council) reported as follows (*doc. SWPHC16-05.2*):

The 2nd Meeting of the IHO Council (C-2) was held in London, UK on 9-11 October 2018. It was attended by 28 Council Members and 10 IHO MS Observers. The SWPHC participants were Australia, France, UK and USA.

The key agenda items were:

- Strategic Plan – endorsed a revised management plan for the SPRWG
- S-100 Products – development and future provision; coordination in geographic areas and dissemination
- Crowdsourced Bathymetry – endorsed B-12 Edition 1.0.0 (IHO Guidelines on Crowdsourced Bathymetry), but identified two areas for further work, i.e. (i) instruct CSBWG to work out more details of the data flow processes, and (ii) acknowledging the legal framework under which CSB falls in various jurisdictions around the world
- IHO Communications – New logo; Revamping of website and IHR; IHO-100 Centenary; Social media (LinkedIn, YouTube, etc.), World Hydrography Day 2019

Vice Admiral Bruno Frachon (France) stated that an information paper ‘Recent Events in Satellite-Derived Bathymetry and Hydrography Remote Sensing’ was presented at C-2. It contained the outcomes from the International Hydrographic Remote Sensing Workshop held in Ottawa, Canada on 18-20 September 2018.

5.2A Strategic Plan Review Working Group (SPRWG) Report

Vice Admiral Bruno Frachon (Chair SPRWG) provided a brief overview of the work carried out by the SPRWG (*SWPHC16-05.2A*).

C-2 considered evolutions in the strategic context of the IHO and decided that there was a need for the Strategic Plan to be revised. It tasked SPRWG to develop a simpler strategic plan, with a small number of overarching strategic goals, including measurable targets to be achieved by 2026. C-2 adopted the management plan. The 3 overarching goals are (i) evolving support of safe and efficient navigation, (ii) developing use of marine environment geospatial information for societal benefits, and (iii) promoting IHO as a key partner on the Ocean scene. The instruments for implementation of the Strategic Plan are (i) Standardization (ii) Coordination & Cooperation (iii) Capacity Building (iv) Communication

The Drafting Group met in Monaco on 30-31 January 2019 to refine the overarching goals and linking performance indicators to the different targets. The Management Plan and time lines are as follows:

- 30-31 January 2019 – Drafting Group
- 15 March (response 15 April) – Draft Goals /targets/Performance Indicators transmitted to HSSC (resp. IRCC) chair for evaluation and comments
- May-June – HSSC and IRCC provide feedback to SPRWG
- July-August – SPRWG submits proposed IHO SP to Council
- October – C-3 reviews proposals on SP
- November – Council Report, including proposed SP, submitted to A-2
- April 2020 – 2nd session of the Assembly (A-2)

5.3 10th Meeting of the Inter-Regional Coordination Committee (IRCC10)

5.3.1 The Chair provided a brief on IRCC10 Meeting which was held in Goa, India in early June 2018 hosted by the Indian National Hydrographic Office (*doc. SWPHC16-05.3*).

IRCC10 reviewed the reports and activities of its subordinate bodies and the Regional Hydrographic Commissions and considered the need for enhancing regional coordination and cooperation. The meeting also considered the outcomes of the 1st meeting of the IHO Council (C-1), acknowledged the accomplishments and challenges of the Capacity Building programme and IBSC activities, examined the developments on Crowd-Sourced Bathymetry (CSB) and ocean mapping activities and considered issues related to the Worldwide ENC Database (WEND).

She highlighted the decisions, actions and recommendations of IRCC10 that apply specifically to or have relevance to the SWPHC, as follows:

- (i) IHO Resolution 2/1997 as amended - IRCC10 considered and agreed on the revision of IHO Resolution 2/1997 as amended (*Establishment of Regional Hydrographic Commissions - RHC*). This document articulates the relationship between the RHCs and the IHO, and some of the guidelines for the RHCs as to how they participate more broadly in the organization. It requires reconsideration and input from the RHCs.
- (ii) Capacity Building - The meeting was informed of the achievements of the Capacity Building Programme and acknowledged the generous financial support from the Republic of Korea and from the Nippon Foundation of Japan. Also noted were the in-kind support from Member States and industry stakeholders and the work of the RHC CB Coordinators and Project Leaders in these achievements
- (iii) WEND - IRCC10 reviewed progress towards the full implementation of the WEND Principles and noted with concern that overlapping ENCs create confusion on board ships and that the IHO community should strive to eliminate overlapping data.
IRCC10 endorsed the proposal that management of overlap cases should be addressed by RHCs.
- (iv) CSB - IRCC10 endorsed the final draft version of the B-12 Guideline (*IHO Guideline on Crowd-sourced Bathymetry, Edition 1.0.0*) prior to final approval by the Council and Member States. It also approved the proposed revisions to the CSBWG ToRs and RoPs and tasked the WG to continue its work under the proposed revised ToRs in order to safeguard the implementation phase and future work on Edition 2 of the Guidelines.
- (v) MSDI - Reviewed the progress on global Marine Spatial Data Infrastructure (MSDI) activities and considered the development in Marine Spatial Planning (MSP) implementation worldwide. Established IHO Project Team on implementation of the UN-GGIM Shared Guiding Principles for Geospatial Information Management (PPT) and endorsed ToRs and RoPs of the PPT.

The SWPHC Report to IRCC10 outlined the IHO CB activities that were undertaken/planned, as well as CME and PRNI activities in the region. An update on membership, i.e. Vanuatu becoming a Full Member and Indonesia an Associate Member of the Commission. IRCC noted the value and effectiveness of preceding SWPHC meetings with CB workshops, as well as the region's commitment in carrying forward hydrographic, nautical cartographic and capacity building activities in close alignment with IHO objectives and goals.

5.3.2 Mr John Lowell highlighted two circular letters that requested input from Member States (MS). CL 11/2019 related to Crowdsourced Bathymetry (CSB) and asked MS as to how they as a nation view the CSB activity. The MSDI WG has a concept development study underway with the Open Geospatial Consortium (OGC). Following a request by OGC the IHO Secretariat had invited comments from MSDIWG members. Director Kampfer stated that about half of the RHCs had established MSDIWGs for regional matters, and proposed that the Chair and Vice-Chair look into establishing a similar WG for SWPHC.

Action 7: Chair and Vice-Chair to look into establishing a regional MSDIWG

5.4A Hydrographic Services and Standards Committee (HSSC) Report

Mr Kampfer (HSSC Secretary) provided a brief on the HSSC10 Meeting that was held in Rostock, Germany in May 2018. (*doc. SWPHC16-05.4A*)

HSSC10 endorsed the proposed amendments to the HSSC Terms of Reference (TORs) with the aim that the TORs final version be submitted to the Council for subsequent adoption by the Assembly

- (A-2). The main amendments to the current HSSC TORs and Rules of Procedures (ROPs) reflect:
- The presence and the role of the Council;
 - The possibility for the HSSC to decide on the need to go through the Council for recommendations on standards and publications before submitting them to Member States for approval.

The HSSC also identified the following key priorities and presented these to the Council:

- Develop an S-100 Interoperability Specification
- Develop S-121 Product Spec for Maritime Limits and Boundaries
- Develop all the components needed to make S-101 a reality
- Consolidation and clarification of standards in relation to ECDIS/ENC
- Prepare Ed. 6.0.0 of S-44
- Consider data quality aspects in an appropriate and harmonized way for all S-100 based product spec
- Develop initial guidance on definition and harmonization of Maritime Service Portfolios.

5.4B Worldwide ENC Database Working Group (WENDWG)

Mr Jamie McMichael-Phillips (WENDWG Chair) provided a brief on the last meeting (WENDWG8) held in Buenos Aires, Argentina in March 2018. (*doc. SWPHC16-05.4B*)

Discussions dwelt on a number of subjects:

- WG ToRs
- Elimination of Overlapping ENCs
- IHO ENC Catalogue & Performance Indicators
- RENC Harmonisation and Distribution
- Full Implementation of the WEND Principles
- Industry & Stakeholders Session
- Review and Update of the WENDWG Work Programme

‘Elimination of Overlapping ENCs’ was an issue of major concern. – i.e. either overlaps in adjoining ENCs or overlying each other in full. Accordingly, the WG developed an IHO Resolution* on elimination of overlapping ENC data in areas of demonstrable risk to safety of navigation, outlining the following:

- One-year “clock” to resolve overlaps should begin once overlapping issues, starting with the potential highest risk cases, have been reported to ENC producers
- Management of overlap cases should be implemented by RHCs, reporting to IRCC and keeping WENDWG informed
- RHCs should make own assessment of level of navigational risk for ENC overlaps using IC ENC Policy on Risk Assessment as a first step where applicable.

(IHO Resolution* was promulgated vide IHO CL19/2018)

The IHO ENC Catalogue is now well publicised by the IMO. There is ongoing work to link to INT Chart Web Catalogue and AIS traffic density database.

5.5 Marine Spatial Data Infrastructures Working Group (MSDIWG)

Mr Kampfner provided a brief on the MSDIWG9 Meeting held in Niteroi, Brazil on 30 Jan – 1 Feb 2018 (*doc. SWPHC16-05.5*)

A MSDI Open Forum preceded the meeting and an OGC Marine Domain WG was arranged after the meeting.

The MSDIWG9 discussions included:

- Information on MSDI implementation from MSDIWG members
- IHO Strategic Plan and establishing a draft IHO MSDI vision 2025/2030
- MSDI e-learning
- Improving the availability of bathymetric data Worldwide
- UN-GGIM and the marine domain

- Security and integrity of data
- Update of C-17 (Edition 2)
- The IHO/OGC conceptual study for a MSDI
- Spatial Data Quality
- Connection of S-100 with MSDI
- Cooperation with the International Cable Protection Committee
- Cooperation with OGC
- Revision of the MSDIWG Work Plan

MSDIWG members provided examples of achievements on MSDI implementation – e.g. the Korea Oceanographic and Hydrographic Agency (KOHA) MSDI, Singapore’s National MSDI Initiative “GeoSpace-Sea”.

A body of knowledge on Maritime Safety Information (MSI) is also available on the IHO website – www.iho.int/msdiwg

Several members of the MSDIWG also participate in the UN-GGIM Working Group on Marine Geospatial Information. (<http://ggim.un.org/UNGGIM-wg8/>)

An important action from IRCC10 was for MSDIWG to develop basic MSDI training material in order to allow RHCs to deliver trainings with their own personnel.

6. Membership and Statutes

- 6.1 The meeting reviewed the status of the SWPHC membership (*SWPHC16-06.1*). Samoa and Solomon Islands were in the final stages of their application of IHO membership.
- 6.2 Minor amendments of the SWPHC statutes were carried out at the last meeting (*SWPHC16-06.2*). The Chair stated that IHO Resolution 2/1997 as amended, pertaining to the relationship between the IHO as an organisation and the regional commissions, was still being progressed. Accordingly, members were requested to review the document and provide their comments to the Chair by end February 2019. The Chair would provide the feedback to the IRCC. Furthermore it was decided that the Statutes be revisited following the outcome of Resolution 2/1997.

Action 8: Members to review the SWPHC Statutes after adoption/outcome of the Proposed Amendments to the IHO Resolution 2/1997 as amended.

- 6.3 The Statutes also outlined the voting process for selection of the Commission’s representative/s to the IHO Council. This will be enacted later in the year (2019) when there is notification regarding the number of Council seats allocated to the SWPHC.

7. National Reports

7.1 Australia

CDRE Fiona Freeman provided a summary of Australia’s national report (*doc. SWPHC16-07A*) as follows:

The Australian Hydrographic Office (AHO) merged with the Australian Geospatial-Intelligence Organisation (AGO) effective from 31 Oct 2017. It is still within the Defence organisation, however the survey ships and training of survey personnel remains with Navy. The Defence White Paper 2016 indicates the future of Australia's hydrographic surveying capabilities will be an efficient combination of commercial and military hydrographic and oceanographic surveying capabilities.

Defence project known as SEA 2400 comprises 2 capabilities:

1. Focussed on delivery of ship and associated equipment (Navy responsibility),
2. A commercial hydrographic survey program delivered by industry supporting the National Survey Function (AHO responsibility) - HIPP

Survey activities were carried out along various parts of the Australian coast, mainly in Torres Strait, Timor Sea and north-western Australia. Under the MOU with Papua New Guinea (PNG), surveys were conducted in Port Moresby for the APEC 18 Forum, and data was also received from the PNG ADB sponsored Hydrographic Survey Project. Since the last meeting there have been 48 New Editions of charts. A new Solomon Islands chart of Marovo Lagoon was currently being compiled and would be published in 2019. The AHO in collaboration with the Solomon Islands also published the inaugural Solomon Islands National Tide Tables 2019.

The Bureau of Meteorology operates two permanent tide gauge networks in the region. The Australian Baseline Sea Level Monitoring Array currently consists of 16 permanent gauges monitoring sea level and ancillary meteorological parameters around the Australian Coastline, including one at Cocos Island. The Pacific Sea Level Monitoring Project currently consists of 14 permanent gauges monitoring sea level and ancillary meteorological parameters throughout the South Pacific region. Co-located comparison stations were installed at Broome and Tuvalu in 2017 and at Tonga in 2018 in preparation for becoming the permanent operational tide gauges at those locations due to wharf refurbishments.

The H2 (Category B) course conducted at the RAN Hydrographic School in 2018 consisted of 15 trainees - 10 Australian (RAN), three New Zealand (RNZN), one Malaysian Navy and one Pakistan Navy. A total of 24 students attended the two Basic Courses (14 weeks duration) and 9 trainees participated in the Intermediate Course (8 weeks duration) during the year.

The AHO has developed a Survey Planning Risk Assessment Tool based on the methodology adopted by LINZ. The source code for the risk assessment was kindly supplied by LINZ and has been re-developed into open source code and tools on an Amazon Web Service (AWS) cloud instance. The first phase of development will be completed in March 2019 and will enable the AHO to incorporate AIS data (supplied monthly by AMSA) and geospatial data overlays to determine a graphical risk display.

7.2 Fiji

Lieutenant-Commander Saula Tuilevuka presented Fiji's national report (*doc. SWPHC16-07B*) outlining the activities since the last SWPHC meeting.

The Fiji Hydrographic Services (FHS) had 32 hydrographic and nautical cartographic staff – 3 Cat “A” Hydrographic Surveyors, 8 Cat ‘B’ Hydrographic Surveyors, 4 Cat ‘B’ Nautical Cartographers and 17 Survey Recorders. FHS survey staff were undergoing training on board the new survey vessel ‘RFNS Kacau’ (45-metre catamaran) which was donated by the Peoples Republic of China. MBES training was being carried out on board ‘SMB Ika Vuka’ as part of the UKHO CME Project. New surveys were conducted for Denarau Port and Malolo Island for the New Chart F-10.

The FHS invited coastal states in the region to join its survey teams conducting hydrographic work and gain valuable practical experience.

Members noted the remarkable progress made by the FHS - with new surveys conducted and charts published, as well as its offer to provide training opportunities on board its survey vessel for PICT's personnel.

7.3 France

Commander Mikael Le Gleau summarised France's report on its areas of hydrographic and charting activity in the SW Pacific (*doc. SWPHC16-07C*).

SHOM' Pacific Survey Unit (GOP) carried out various surveys in the SW Pacific in support of maritime surveillance, commercial and cruise activities. Several surveys of ports, bays, recommended tracks and passages were performed all around New Caledonia. In French Polynesia surveys and “spatiopreparation” & “stereopreparation” field works (for exploitation of satellite & aerial images) were conducted in Fangataufa, Maupihaa and Rangiroa. New Multibeam Echosounder on board have improved survey capability. N/O *L'Atalante* will be deployed to carry out survey activities in the area in 2019.

Considerable charting work had also been carried out. Three new INT charts were produced and two new INT charts are planned for 2019-2020. A total of 48 new ENC have been published since the last meeting and full coverage of New Caledonia waters achieved. Another 52 new cells are planned in 2019.

The Tide gauge network is an important tool for coastal operational oceanography, monitoring of sea level and storm surge.

SHOM has a rapid response hydrographic team available in the region which can be deployed to provide hydrographic support in case of an emergency (marine disaster).

7.4 New Zealand (NZ)

Mr. Adam Greenland presented New Zealand's national report (*doc. SWPHC16-07D*). There was considerable progress with surveys and charting nationally as well as in the region through the NZ Aid programme 'Pacific Regional Navigation Initiative (PRNI)'. Full ENC coverage of NZ waters was achieved and 45 ENCs for the PICTs released. As part of PRNI hydrographic surveys comprising SDB, ALB and MBES were carried out in the Cook Islands, Niue, Tokelau and Tonga. The SDB data has been used to update 22 ENCs and 9 paper charts. Further chart updates will occur during 2019 and 2020. The SDB, ALB and MBES data will be used to update existing charts and produce new charts, replacing charts in fathoms on undetermined datums. Further survey work is planned for Samoa in 2020, based on the risk assessment results. NAVAREA XIV Coordinator instigated 6 monthly communications with National MSI Coordinators; and individual assessment of MSI from each National Coordinator (90% response). Receipt of MSI from National Coordinators increased due to improved communications and IHO CB funded MSI training.

7.5 Papua New Guinea (PNG)

Mr Nick Pion summarised the national report for PNG (*doc. SWPHC16-07E*). Australia (RAN) conducted surveys of seven ports in support of APEC and the government's port expansion plans. As part of the ADB-funded Maritime & Waterways Safety Project (MWSP), contracted surveys utilising ALB and MBES were carried out over 30 coastal areas; thus completing 95% of the work. These surveys were in support of the government's objectives to promote domestic shipping and cruise tourism. All data was delivered to the AHO for updating nautical charts through fortnightly eNotices service.

Minor updates were collected through chart investigation field trips and incoming reports. Changes or chart discrepancies were assessed using GIS application before submitting Hydro Notes to the AHO. In Aug 2018, PNG commenced promulgating coastal warnings (S-53 MSI format) via weekly email, and a total of 38 were issued by the end of the year. Two participants attended the UN-GGIM Workshop on Legal & Policy Frameworks held in Tonga in April 2018.

7.6 Tonga

Commander Taniela Tuita presented the national report for Tonga (*doc. SWPHC16-07F*). The Ministry of Infrastructure (MOI) is responsible for the national hydrography and there is now a bilateral agreement between MOI and LINZ regarding hydrographic service in Tonga. His Majesty's Armed Forces (HMAF), Tonga is still pursuing its goal of re-establishing hydrographic capability. In terms of personnel Tonga had 5 trained Surveyor Recorders, 2 Cat 'B' Hydrographic Surveyors and 1 officer undergoing the Cat 'A' Hydrographic Survey Course at University of Southern Mississippi. It intends to acquire survey equipment within the next couple of years and re-establish the HMAF Hydrographic Unit.

In order to maintain the skills of the trained personnel, practical hydrographic experience is provided by New Zealand as part of the defence relationship between HMAF, Tonga and Royal New Zealand Navy. Tonga would also look into Fiji's offer of joining the FHS survey teams conducting hydrographic work to gain such experience.

7.7 United Kingdom (UK)

Mr Jamie McMichael-Philips presented the national report for United Kingdom (*doc. SWPHC16-07G*). Since the last meeting the UKHO had published 39 New Editions / New Chart adoptions in the SWPHC

region. UK continues to act as the Primary Charting Authority (PCA) for Fiji, Kiribati, Nauru, Tuvalu and Vanuatu. A total of 107 ENC cells have been published on varying scales – i.e. overview, general, coastal, harbour and berthing.

The UK Government funded Commonwealth Marine Economies (CME) Programme is currently in Year 3 of its 5-year programme. The following CME activities were undertaken in the region during the year:

- Tonga – Survey of critical areas in approaches to Nuku'alofa
- Tuvalu – Geodetic Survey and installation of tide gauges (in partnership with SPC and Government of Tuvalu)
- Tuvalu – SDB survey of entire island chain (for production of special purpose EEZ and Fisheries charts)
- Fiji – Digitisation of 10 national charts into S-57 format data

A SDB Survey of all 3 island chains in Kiribati is currently underway and data will be used to assess current nautical charting and where necessary update any dangers/hazards identified. In February 2019 UKHO trainers will be carrying out a 2-week training programme in Fiji associated with an ongoing MBES survey.

Since the last meeting the UKHO had published 39 New Editions / New Chart adoptions in the SWPHC region. UK continues to act as the PCA for Fiji, Kiribati, Nauru, Tuvalu and Vanuatu. Much of this is due to increased survey activity in the area. A total of 107 ENC cells have been published on varying scales – i.e. overview, general, coastal, harbour and berthing.

The main challenges and/or obstructions associated with working in the region are:

- Mobilisation of equipment and logistics associated with it
- Operating in locations remote from UK
- Limited face-to-face opportunities
- Utilising the CME funding within appropriate time frames
- Limited availability of resource/trainers

7.8 United States of America (USA)

Rear Admiral Shepard Smith provided an overview of the USA national report (*doc. SWPHC16-07H*), reporting on progress and plans for survey and charting in the region carried out by USA (NGA, NOAA and U.S. Navy). NGA continues to maintain the six ENC cells which provide complete coverage of Palau waters.

Training opportunities are available at various institutions in the United States.

Two Category A (S-5) hydrographic programs:

- (i) University of Southern Mississippi
- (ii) University of New Hampshire.

Three Category B programs:

- (i) U.S. Navy's 6-month International Hydrographic Management and Engineering Program in Gulfport, Mississippi (S-5)
- (ii) NOAA's 1-year Nautical Cartography course at Silver Spring, Maryland (S-8)
- (iii) NGA's 6 month Competence Training for Nautical Cartography (S-8)

The United States participates with the IOC-IHO Guiding Committee for GEBCO, and hosts the IHO Data Centre for Digital Bathymetry at NOAA's National Centers for Environmental Information (NCEI).

7.9 Vanuatu

Mr. Robert Tari provided Vanuatu's report (*doc. SWPHC16-07I*). The Plan to establish a new Hydrographic Survey Unit within the Lands and Survey Department in 2018 did not materialise due to the government's priority on the displaced victims of the two volcanic islands.

No new surveys had been carried out since the last meeting.

There two major challenges which Vanuatu is facing are:.

1. The increase in the number of international and domestic ships every year. (A total of 144

international ships arrived in Vanuatu in 20018.)

2. The establishment of an infrastructure which will manage the hydrographic and aids to navigation to enhance the safety information provided to mariners.

IHO Director (Mr Kampfer) addressed a couple issues raised in the Vanuatu national report, i.e.

- (i) Request for IHO assistance in establishing the Hydrographic & Aids to Navigation infrastructure to better manage the information dissemination to Mariners
 - It would be useful for Mr Robson Tari's administration to revisit/consult the IHO Technical Visit Reports to Vanuatu (2011 and 2015) which included the recommendation to establish the National Hydrographic Service, etc. and use these as motivation to push it up within the government structures. (The reports can be downloaded from the IHO website: https://www.iho.int/mtg_docs/CB/Assessment_Reports.htm)
- (ii) Request for IHO assistance to negotiate Vanuatu's membership of IALA
 - IHO Secretariat could assist in establishing these communications but would require the suitable contact details

Action 9: Vanuatu to consult the IHO Technical Visit Reports to Vanuatu (2011 and 2015) to motivate the establishment of a hydrographic capability as recommended in reports

Action 10: Vanuatu to provide IHO Secretariat with suitable contact details to assist in negotiations with IALA

The Chair thanked Members for presentation of their reports which were very informative - sharing of experiences and lessons learnt, raising awareness and building capacity. She encouraged coastal States to take advantage of opportunities available for on-the-job training (hydrographic surveys, office work, etc.) such as that offered by Fiji.

8. Reports by Associate Members and Observers

8.1 Cook Islands

Mr Vaipo Mataora provided an overview of the national report (*doc. SWPCHC16-08A*). The National Hydrographic Office was established and a new MSI officer appointed. A cadastral and GIS officer was recruited and would be trained to be a Hydrographic Surveyor. No significant surveys had been carried out since the last meeting. LINZ, the PCA for Cook Islands, had published Charts NZ 945 and NZ 955. Cook Islands is actively involved in providing MSI services to the maritime industry locally, RCC New Zealand and LINZ. 'CookGeo', a MSDI geo-forum, was developed as an open access geospatial data repository for providing premier geophysical, geodetic and marine spatial data sets. Cook Islands intends to join the IHO and is pursuing the matter with the relevant national government authority.

8.2 Indonesia

Commodore Trsimadi presented the national report for Indonesia (*doc. SWPHC16-08B*), outlining the activities of the Indonesian Navy Hydrographic and Oceanographic Center (PUSHIDROSAL) which ranged from surveys, researches, publication of nautical charts, marine environment and safety of navigation, to support armed forces and public needs.

PUSHIDROSAL had developed the Hydrographic Data Centre as implementation of MSDI in Indonesia (<http://hdc.pushidrosal.id>). It is committed to continue efforts in encouraging greater international cooperation and coordination for the harmonisation of navigational charts through increased hydrographic surveys, data quality and hydrographic information on a global basis, particularly relating to international navigation and protected marine areas.

Indonesia participated in the joint hydrographic survey which is part of the Malacca Singapore Strait Electronic Navigational Chart (MSS ENC) Programme – an IMO project funded by the World Bank.

The hydrographic data acquired will be processed and high density ENC's produced for the safety of navigation.

8.3 Kiribati

Mr Tion Uriam summarised his nation's progress (*doc. SWPHC16-08C*). Kiribati had appointed a National Coordinator for MSI and recruited a Hydrographic Surveyor.

There are plans to conduct hydrographic surveys of priority areas funded by World Bank / Asian Development Bank. The UKHO had carried out some updating of Chart BA 729 (Betio Anchorage). There are also plans to conduct SDB surveys.

8.4 Nauru

Mr Kemp Detenamo provided a brief report for Nauru (*doc. SWPHC16-08D*). Legislation is still a challenge as local expertise in this field is still lacking. The UKHO carried out a Technical Assessment Visit in 2018 and the report would be available soon. In April 2018 SPC carried out a Technical Visit (Safety of Navigation Gap Analysis and Needs Assessment) under the Pacific Safety of Navigation Project. Subsequently Nauru attended the Safety of Navigation Workshop held in Suva in June 2018. A Meteorological Office has been established.

8.5 Niue

Ms. Lynsey Talagi presented the report for Palau (*doc. SWPHC16-08E*).

As part of the PRNI, hydrographic surveys comprising SDB, ALB were carried out in Niue, Beveridge Reef and Atiiope Reef. Niue has committed to establishing 40% of its EEZ as a Marine Protected Area (MPA). It is developing the Marine Spatial Management Plan (MSMP) and the compliance strategy and legal analysis to give effect to the MSMP and MPA.

The Aids to Navigation (AToN) Risk Assessment would be carried out on 18-22 February 2019. The IHO Technical Implementation Visit is expected to occur in later part of 2019.

8.5 Palau

Mr Hayes Moses provided a brief report for Palau (*doc. SWPHC16-08F*).

Palau has established the Bureau of Communications which will be responsible for establishing the GMDSS Sea Areas. It is planned to establish a new Bureau of Marine Transportation which will serve as the MSI Coordinator and Competent Authority for Aids to Navigation, as well as responsible for coordination of Hydrography and dissemination of information under Palau's maritime warning service obligations.

The most recent hydrographic work was a survey of eastern side Malakal Harbor carried out in 2013 by a private company from Singapore. There is full paper chart coverage of Palau and the ENC's are being updated.

8.6 Samoa

Mrs Makerita Antonio provided a brief national report (*doc. SWPHC16-08G*). Samoa signed a Bilateral Arrangement on Hydrography with LINZ in May 2018. First ever H-Notes on newly established buoys at Apia wharf were prepared and sent to LINZ for promulgation of Notices to Mariners. LINZ has confirmed to conduct a hydrographic survey of Samoa in 2020. In March 2018 SPC carried out a Technical Visit (Safety of Navigation Gap Analysis and Needs Assessment) under the Pacific Safety of Navigation Project.

It is proposed to appoint a MSI Coordinator and establish a hydrographic office. Samoa is also keen to become a member of the IHO.

8.7 Solomon Islands

Mr Clifford Olisukulu presented the Solomon Islands national report (*doc. SWPHC16-08H*).

Progress on survey work was slow, although a Work Program is in place. Requests for hydrographic surveys were received from Tourism Division (for cruise ship visits) as well as

new port development works. The cooperative efforts of SIHU, AtoN Unit and Maritime Rescue Co-ordination Centre (MRCC) result in the efficient collecting, compiling and dissemination of MSI/NMs,

Two MRCC Officers were currently doing a 2 weeks on-the-job training with AMSA.

In collaboration with its PCA (Australia) the Solomon Islands published the inaugural Solomon Islands National Tide Tables 2019. Provision of nautical charts with SI national numbers (SLB) are now available at SIHU.

8.8 Marshall Islands

Mr Thomas Maddison provided a brief report on the status of hydrography in the Marshall Islands. Discussions were held with its PCA recently and it is proposed to carry out a gap analysis relating to governance, establishing a hydrographic service technical committee, etc. The planned activity for the year includes the AtoN (SIRA) Risk Assessment to be carried out in August/September 2019 under the IFAN Safety of Navigation Project.

8.9 Tokelau

Mr Samuel Phineas presented the Tokelau national report (*doc. SWPHC16-08J*). A Technical Assessment was carried out by SPC in 2018 under the International Foundation for Aids to Navigation (IFAN) Safety of Navigation Project. New Zealand (LINZ) is the PCA and produces paper charts and ENCs covering Tokelau's waters.

A new edition of chart NZ885 (Tokelau) is planned for March 2019. There are no current qualified staff handling MSI matters. A participant from Tokelau attended the IHO MSI Training Course in Wellington, New Zealand in August 2018.

8.10 Tuvalu

Mr Leupena Paueli presented the Tuvalu national report (*doc. SWPHC16-08K*). Tuvalu has not established a national hydrographic service and all hydrographic matters are referred to the Director of Marine and Port Services.

The Meteorology Office operates the PSLM tide gauge located in Tuvalu. Significant contribution by New Zealand, through its PRNI and PMSP programmes, in upgrading AtoN throughout Tuvalu and review of maritime institutional and regulatory arrangements. UKHO is the PCA and provides INT chart coverage. There no established MSI infrastructure and limited met warnings are broadcast on Local AM Radio.

9. Relevant International/Regional Organisations (Observers) Reports and Activities

9.1 SPC (Pacific Community)

Mr Salesh Kumar provided a broad overview of the hydrographic related activities of the SPC Geoscience, Energy and Maritime (GEM) Division (*doc. SWPHC16-09.1*). As part of the PRNI project. NZ MFAT has engaged SPC to work with targeted countries (Kiribati, Tuvalu and Vanuatu) to support hydrographic building capability initiatives in conjunction with work being carried out by international bodies and development partners.

GEM's Oceans and Tides Unit is involved in a no. of projects, i.e.:

- Pacific Sea Level Monitoring Project (PSLM) (1991-present)
- Climate and Oceans Support Program in the Pacific (COSPPac) (2012-2021)
- Australia Pacific Climate Change Action Programme

The activities carried out are:

- (i) Transforming ocean data into products and applications for Pacific users
 - Pacific Ocean Portal; Annual Tide Prediction Calendars; Factsheets, videos, etc.
- (ii) Building regional capacity in ocean science
 - Sub-regional and in-country trainings; Attachments and internships

- (iii) Advocating for improved oceans data, services and cross-sectoral collaboration
- Ocean capacity mapping and stakeholder engagement; Pacific Islands Marine and Ocean Services (PIMOS) Panel support

Ms Francesca Pradelli provided a brief update on the 'Pacific Safety of Navigation Project' which is funded by the International Foundation for Aids to Navigation (IFAN). Phase II (2018-2021) of the project commenced in August 2018 and involves the 13 targeted countries, i.e. Cook Islands, Kiribati, Federated States of Micronesia, Republic of Marshall Island, Nauru, Niue, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.

Activities carried out since the last SWPHC meeting were as follows:

- Tonga – Completed legal and economic assessment; Reviewed IALA's progress report
- Tuvalu – Completed legal and economic assessment; Completed IALA Technical Assessment (24 recommendations)
- Samoa – Completed technical, legal and economic assessment (22 recommendations)
- Tonga – Completed technical assessment (9 recommendations)
- Tonga – Completed technical, legal and economic assessment (19 recommendations)

AtoN managers from the targeted countries attended a regional workshop held in Suva, Fiji in June 2018. Training on the IALA SIRA risk assessment tool was conducted.

The AtoN (SIRA) Risk assessment has been completed in respect of the Solomon Islands, Kiribati, Vanuatu and Cook Islands. It is planned to complete visits to the other countries in 2019.

9.2 GEBCO Seabed 2030 Report

Mr Adam Greenland provided a brief presentation on the Seabed 2030 program which aims to produce the definitive map of the World Ocean floor by 2030 and to make policy decisions, use the ocean sustainably, and undertake scientific research based on detailed information of the Earth's seabed. In the current GEBCO global terrain model grid, which is based on ship-track soundings and interpolation guided by satellite-derived gravity data, the depth measurements are very sparse – 18% for the 30" cells and 6% in the case of 15" cells. The Target GEBCO Grid would be of depth-dependent variable resolution – ranging from 100x100 m in the depth range 0-1500 metres to 800x800 m in the 5750-11,000 meters depth range.

The Seabed2030 Culture comprises:

- Co-operation and Community Building – 3,000 individuals, 40 organizations, 50 countries and growing
- Coordination – Initial Seabed 2030 focus on > 200m water depth; Hydrographic Offices critical < 200m water depth
- Crowdsourcing – Fishing boats, cargo, passenger and cruise ships, private yachts...
- Credit and Attribution – Recognise data contributions, in-kind services, promotion, capacity building ...

New Zealand is the Seabed2030 Regional Data Assembly and Coordination Centre (RDACC) for the South and West Pacific Ocean and operates the South and West Pacific Data Assembly Centre (SaWPac). The first batch of data from SaWPac was delivered to the Global GEBCO data centre in November 2018.

The SaWPac Mapping Committee Inaugural Workshop to be held in Auckland, New Zealand on 4-6 March 2019 would focus on the following:

- Establish Regional Mapping Committee
- Identify sources of bathymetric data
- Methods for data sharing and management
- Identify upcoming voyages

10. Capacity Building

10.1 Report on the IHO CBSC Meeting, and CB activities in the Region (*doc. SWPHC16-10.1*)

Mr. Adam Greenland (SWPHC Capacity Building Coordinator) provided updates on the various aspects of capacity building, as follows:

IHO-funded CB activities carried out since the last SWPHC meeting

- Technical Workshop on Implementing Hydrography Governance held in Nadi, Fiji, on 20 February 2018– linked with SWPHC15 Meeting.
- MSI Training Course held in Wellington, New Zealand on 6-8 August 2018
- MBES Training for Fiji (ongoing– 11-15 February 2019)

Projects submitted to CBSC16 Meeting (Goa, India, 30 May – 1 Jun 2018)

2 projects (activities) were submitted to the CBSC16 Meeting and approved

- (i) P-12 Technical Workshop on Disaster Response planning & Data Discovery (linked with SWPHC16 - Feb 2019) - DONE
- (ii) Technical Assessment & advice visit to Palau (NGA) – planned 2019

2 projects (activities) were carried over from 2018 CBWP

- (i) Samoa Technical Implementation Visit (LINZ) – planned 2019
- (ii) Niue Technical Implementation Visit (LINZ) – planned 2019

10.2 Update on the 3-year Capacity Building Plan (*doc. SWPHC16-10.2*)

10.2.1 Mr Greenland outlined the planned CB activities for the 2019-2021, as follows:

2019

Technical Assessment & Advice Visit to Palau

Technical Implementation Visit to Samoa

Technical Implementation Visit to Niue

Also available to IHO MS – (i) IHO-Nippon Nautical Cartography Course at UKHO (IHO CL 04/2019), (ii) GEBCO Cat A Ocean Mapping Course at UNH (IHO CL 12/2019)

2020

2-day Technical Workshop (linked with SWPHC17)

MSI Training

Other projects to be formulated at SWPHC16 (Feb/Mar 2019) and also by CBWG in consultation with SWPHC members

2021

2-day Technical Workshop (linked with SWPHC18)

Other projects to be formulated at SWPHC17 (Feb/Mar 2020) and also by CBWG in consultation with SWPHC members

10.3 Future Capacity Building Initiatives

10.3.1 Mr Greenland stated that, based on discussions held during the workshop preceding SWPHC16 and noting the IHO CB Strategy is for coastal States to achieve Phase 1 in a sustainable manner, the 2-Day Technical Workshop (2020) should focus on MSI for managers, i.e. governance and management of service. NAVAREA X and NAVAREA XIV Coordinators will be invited and discussions dwell on challenges and achievements, including MSI analysis and reporting from coastal States, NAVAREAs and PCAs. The Chair commented that it would be useful to include demonstration of data collection, i.e. some hands-on searching for data. Mr Neves stated that an on-going action should be for the States to search for existing hydrographic data that can be made publicly/widely available.

Action 11: All members to search for hydrographic data that can be made publicly available.

- 10.3.2 Mr Greenland would engage with Fiji to consider hosting the MSI Training in 2020, as all previous workshops were conducted in New Zealand. He would also be submitting (to CBSC) a proposal for 'Train the Trainer' as Maritime Safety Authority Fiji had agreed to release their MSI National Coordinator in assisting with delivery of the MSI training. Another proposed submission would be to seek funding for a CB Strategy for the SWPHC, i.e. to engage with a contractor to assist in putting together a strategy for the region. IHO Director commented that it would be useful to refer to the CB Strategy documents for NIOHC and SAIHC developed by Mr Jeff Bryant (ex-UKHO).
- 10.3.3 The Chair requested the coastal States to work closely with PCAs regarding their capacity building requirements and prepare bids for submission to CBSC17 Meeting to be held in May 2019. These are to be forwarded to the CB Coordinator who, in coordination with the Chair, would submit it to CBSC17.

Action 12: All members (Coastal States and PCAs) to provide CB requests to the CB Coordinator (deadline: 15 March 2019).

Action 13: CB Coordinator to compile the SWPHC requests for support and submit to the CBSC17 in coordination with the Chair (deadline: 1 April 2019).

10.4 Regional Capacity Building Initiatives

10.4a Update on Pacific Regional Navigation Initiative (PRNI)

New Zealand gave an update on its aid programme in the region (*doc. SWPHC16-10.4*) as follows:

The 5-year project commenced in 2015 with a total budget of NZ \$5M for its programme of works. It is a partnership between MFAT, LINZ and SPC having a focus on navigational aspects of maritime safety and builds on previous success of programmes in the region – particularly risk assessments in Vanuatu, Tonga and Cook Islands. An additional \$2.2M was secured in January 2018 to continue the programme to 2021.

The Project had five outputs, i.e.:

- Pacific-wide Data Discovery
- Hydrographic Risk Assessment
- Capability / Capacity Building
- Mitigation Measures
- Pacific-wide Partnerships

Bilateral Arrangements concerning cooperation in hydrography are in place with Cook Islands, Niue, Samoa and Tonga. Hydrographic Risk Assessments were carried out in Niue (2016) and Samoa (2017), and a Vessel Analysis Assessment for Tokelau was done in 2017. More recently Satellite Derived Bathymetry (SDB) surveys were conducted in Cook Islands, Tonga and Niue. Additionally Airborne Laser Bathymetry (ALB) work was carried out in Tonga and Niue. In terms of survey planning the initial ALB and MBES survey areas were refined based on SDB results. It is planned to carry out surveys in various parts of Samoa.

New Editions of some Paper Charts and ENCs of Cook Islands, Niue, Samoa and Tonga were published during the period Jan 2018- Jan 2019. New Charts for Niue, Samoa, Tokelau and Tonga are planned for publication over the next two years. SDB has been included on charts, and a relevant note shown on the chart.

To date, 35 ENCs and 8 paper charts published incorporating new data (SDB, ALB and MBES) for the Cook Islands, Niue, Samoa, Tokelau and Tonga. In total 63 ENCs and 30 paper charts

will be published – including 19 new ENC's and 12 new paper charts which will replace current fathom charts.

10.4b Update on the Commonwealth Marine Economies (CME) Programme

Mr Jamie Michael-Phillips provided an overview of the status of the CME Programme which aims to support the sustainable growth of the Commonwealth Small Island Developing States (SIDS) within the Caribbean, Pacific and Indian Ocean regions. Both discovery and data capture processes will not only benefit the drive towards improving regional safety of navigation but will also assist in supporting wider maritime economic infrastructure governance and growth.

There had been significant achievements in the field of hydrography during the year, i.e.:

- Tonga – Survey of critical areas in approaches to Nuku'alofa
- Tuvalu – Geodetic Survey and installation of tide gauges
- Tuvalu – SDB Survey of entire island chain
- Fiji – Digitisation of 10 national charts into S-57 format data

A SDB survey of all three island chains in Kiribati was currently underway. The data will be used to assess current nautical charting and where necessary update any dangers/hazards identified. A 2-week MBES Training will be delivered in Fiji in February 2019.

10.4c Update on Regional Safety of Navigation Strategy

Ms Francesca Pradelli provided a brief update on the 'Pacific Safety of Navigation Project' which is funded by the International Foundation for Aids to Navigation (IFAN). The project aims to identify the current and future needs for safety of navigations systems including AtoN procedure for governance and funding, and support the enhancement of the capacity to establish, operate and maintain AtoN. It has a 5-year timeframe, i.e. Phase I (2016-2018) and Phase II (2018-2021), and the 13 targeted countries were Cook Islands, Kiribati, Federated States of Micronesia, Republic of Marshall Island, Nauru, Niue, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.

Following activities have been completed since the last SWPHC meeting:

- Technical assessment – Tokelau
- Legal and economic assessment – Tonga and Tuvalu
- Technical, legal and economic assessment – Nauru, Samoa

All the targeted countries attended a regional workshop held in SPC, Suva in June 2018. The AtoN Managers were provided training on the IALA SIRA risk assessment tool.

As part of Phase II activities, Risk Assessments have been completed in respect of Cook Islands, Kiribati, Solomon Islands and Vanuatu. The planned activities for 2019 include carrying out the Risk Assessment studies in the remaining countries as well as follow-ups on AtoN risk assessment and AtoN budgeting.

11. SWPHC International Charting Coordination Working Group (SWPHC ICCWG)

The Chair provided an update of the Working Group's activities since the last meeting. (*doc. SWPHC16-11*)

Current membership comprised the PCAs in the region, i.e. Australia (Chair), France, New Zealand, UK and USA. Its main responsibility is for the coordination of Nautical Charting in the region, ensuring the Paper Chart INT series is comprehensive and current and the ENC coverage is appropriate. The main focus is on paper Charts at 1:500,000 and smaller and ENC Nav Purpose 1 and 2 coverage.

The WG report included a few proposals by New Zealand (LINZ), as follows:

- (i) Withdraw paper chart NZ14630 (INT630) as it has multiple overlaps with various charts. Paper chart NZ93 will become an INT chart to cover for the withdrawal.
- (ii) A new INT number NZ214628 as it is available and will fit in with other NZ charts the area.
- (iii) Combine the ENC coverage of current NZ214630 and NZ200093 and extend north to fill in the small gap in coverage

Director Kampher suggested that the Commission consider holding a face-to-face meeting of its ICCWG within the margins of the Commission meetings. This would enable exchange of data and having valuable discussion between the PCAs and the recipient States related to prioritisation of the surveying and charting requirements. The WG should also consider updating its ToRs and RoPs based on latest edition of S-11 Part A Edition 3.1.0 (2018).

Action 14: SWPHC ICCWG Chair to consider holding SWPHC ICCWG meeting within the margins of the next Commission meeting

Action 15: SWPHC ICCWG Chair to update the ToRs and Procedures of SWPHC ICCWG based on latest edition of S-11 Part A Edition 3.1.0 (2018)

12. Report on GMDSS, MSI and NAVAREA Coordination

12.1 NAVAREA X Report

Commodore Freeman provided a brief summary of the ‘MSI Self Assessment Report – NAVAREA X’ (*doc. SWPHC16-12A*) submitted by Australian Maritime Safety Authority (AMSA) to the IHO WNWNS Sub-Committee Meeting held in August 2018.

A regional MSI Capacity Building training for National Coordinators was hosted by NAVAREA XIV in Wellington, New Zealand in August 2018 with representation from all four NAVAREA X National Coordinators. NAVAREA X provided an instructional staff member to assist in this training and funded an additional student from Papua New Guinea to attend as part of enhancing the National Coordinator capability in the region.

Following recommendations made at WNWNS9 and following consultations with the SafetyNET Panel Chair work has been conducted to develop a pathway for Papua New Guinea to enhance its MSI capabilities so that it can fully meet its National Coordinator responsibilities.

12.2 NAVAREA XIV Report

Mr Adam Greenland provided a brief summary of the MSI in NAVAREA XIV (*docs. SWPHC16-12B & 12C*).

The report highlighted the MSI activities for the year 2018. New Zealand is actively involved with a number of IMO and IHO Sub-Committees and Working Groups; and capacity building in the SWP region for MSI, charting and hydrography through the Regional Hydrographic Commission and the NZ Aid Programme, PRNI, and maritime safety and SAR through the Pacific Community (SPC) and PMSP. The NAVAREA XIV Coordinator is regularly engaging with the National Coordinators in NAVAREA XIV in an effort to improve communications and ensure contact details are correct.

Following discussion on this tem

Following discussion on the presentations, it was noted that the NAVAREA XIV Report included the national reports by all the coastal States within that NAVAREA. However, the NAVAREA X Report did not have such information. Australia would check whether the coastal States in NAVAREA X provide national reports to AMSA. USA and Indonesia would also coordinate with NAVAREA XI coordinator to input to the SWPHC in relation to the countries in the SWPHC.

Action 16: Australia to check with AMSA re national report templates in respect of NAVAREA X

Action 17: USA and Indonesia to coordinate with NAVAREA XI Coordinator to provide input to the SWPHC in relation with countries in the SWPHC

13. IBSC Update

Mr Adam Greenland (Chair, IBSC) provided a brief update on the work of the IBSC (*doc. SWPHC16-13.2*). Currently there were a total of 57 recognised programmes and 2 recognised schemes. The training programmes comprised 49 Hydrographic Surveying (19 Cat ‘A’ and 30 Cat ‘B’) and 8 Nautical Cartographic (2 Cat ‘A’ and 6 Cat ‘B’).

The IBSC published an interesting article in the International Hydrographic Review (November 2017) ‘*Maintaining the Standards of Competence for Hydrographic Surveyors and Nautical Cartographers*’: The annual IBSC Meeting was held in Bandung, Indonesia in April 2018. A total of 16 submissions from 10 countries (14 Hydro and 2 Carto) were reviewed and 14 were recognised.

The challenges faced by IBSC include:

- Managing workload - Large number of submissions; Recognition period 6 yrs; New programmes and schemes
- Quality of submissions - Recognized with conditions / Not Recognized; *Right First Time* principle - all programmes are Recognized at the first review stage
- Stakeholder engagement & outreach - Promoting the work of the IBSC and Standards; Guidance and assistance to institutions

The meeting decided that it would be useful to have a presentation on the AHSCP Certification Scheme, a regional certification scheme, at the next meeting. Australia agreed to arrange the presentation. (AHSCP – Australasian Hydrographic Surveyors Certification Scheme)

Action 18: Australia to provide a presentation on the AHSCP Certification Scheme at SWPHC17

14. IHO Response to Disasters

The Chair stated that RHCs were required to review the draft IHO Resolution 1/2005 as amended (IHO Response to Disasters) and provide their comments to Japan. Members suggested a few minor amendments and these were noted. It was agreed that the members review the document and provide any further comments to the Chair by end February 2019. The Chair would collate the input received and forward the regional (SWPHC) perspective to the Japan Hydrographic and Oceanographic Department (JHOD). JHOD had been tasked to coordinate responses received from RHCs and report to the next IRCC meeting.

Action 19: All members to comment on Resolution 1/2005 as amended and provide to Chair prior to forwarding it to Japan.

15. Preparation for the 3rd IHO Council Meeting (IHO C3), Monaco, 17-19 October 2019

The Chair stated that she would be submitting the SWPHC Report to the IRCC that would then feed up into the Council. Following a brief discussion, it was agreed that the items to be focussed upon in the SWPHC Report would include capacity building opportunities that have been taken advantage of; current membership and any ongoing activities in the region. Members were requested to inform the Chair in case there are other items that need considering for inclusion in the report.

Action 20: All members to provide input to Chair for inclusion in the SWPHC Report to C3.

16. Industry / Stakeholders Session (Expert Contributors)

The presentations were as follows:

16.1 Carnival Australia

Mr Mike Drake’s presentation (*doc. SWPHC16-16.1*) provided a brief update on the following:

- Evolution of cruise industry in the region
- Overview of P&O Cruises, Australia activities in the region over the past year
- Destination aspirations influenced by hydrography and charting
- Feedback from “End Users” perspective on ENC usability.

Activities in 2018 included:

APEC: The main activity was the APEC Conference in Port Moresby, PNG in November 2018. P&O Australia was engaged in hosting the delegates for the leaders' summit – as there were insufficient hotel accommodation ashore. The port infrastructure was renovated and built for the event. The harbour was dredged, surveyed and charted.

EDEN: Port development to create mainstream cruise destination on Sapphire Coast.

ENCWG: Involved in a number of conferences in the region which provided great range of professional stimulation, e.g. AMSA National Navigation Conference, Wollongong in April 2018 and New Zealand Marine Pilots Conference, Wellington in November 2018.

ENC: New Zealand in the ENC trial service on the five P&O ships.

P&O had to decline the Government of Tuvalu request for a ship to accommodate delegates for the SIDS conference in Funafuti in 2019 - due to inadequate chart and AtoN coverage. It advised Tuvalu that they might approach UKHO (PCA) for consideration in the CME programme.

16.2 EOMAP Australia

Dr Magnus Wettle provided an interesting presentation 'Satellite-Derived Bathymetry in Hydrographic Surveys' (*doc. SWPHC16-16.2*), describing the various roles that SDB can play in hydrographic surveys and the 4 phases as follows:

- 1) Planning – Prioritise locations, optimise resource deployment, contribute to safety of navigation
- 2) Surveying – Optimise survey efficiency; reducing costs, time and risk; Access shallow, remote or otherwise inaccessible areas; Integrated survey approach: complementary technologies.
(Note: Not as accurate (vertical) as ALB or MBES)
- 3) Charting – Integration of SDB in charts
- 4) Monitoring – Regular monitoring of seabed change

In Tonga (PRNI project) SDB was used as an initial broad scale imagery (15m grid) for rapid identification of all shallow areas, followed by a high resolution (2m grid) imagery acquisition and SDB mapping of these areas (where no ALB and MBES). SDB was also used for navigation and positioning for tide gauges deployment, flight planning for ALB, and navigation and planning for MBES.

SDB Day 2019, an international SDB technology and user forum, will be hosted by EOMAP Australia in the Sunshine Coast, Australia on May14-16, 2019. (www.sdbday.org)

16.3 FUGRO Australia Marine

Mr Hugh Parker's presentation 'Hydrographic Services in Australasia and the Pacific' (*doc. SWPHC16-16.3*), outlined FUGRO's main achievements during the year, i.e.:

- Papua New Guinea - Completion of the field work and 95% delivery for the surveys for the ADB-funded MWSP Maritime & Waterways Safety Project (MWSP)
- Australia - Completion of the field work and 50% delivery for the Lidar survey for entire coast of New South Wales
- Kiribati – Geophysical survey using MBES: A feasibility study into land reclamation
- Papua New Guinea – Discovery of the AE1 (RAN submarine lost at sea during WW1)
- Accredited Category B hydrographic surveying training course (S-5B) – based in Plymouth, UK; duration 24 weeks; first course commencing March 2019
- Involvement in IHO HSPT S-44 (6th Edition)
- Active involvement in GEBCO 2030 and AusSeabed Initiatives
- Technology Developments into SDB, USV, ALB and Data Processing

An Airborne Lidar survey of the nine atolls in Tuvalu is planned for April 2019 – as part of the Tuvalu Coastal Adaptation Project under United Nations Development Programme.

Some recent developments being undertaken include:

- Internal SDB Capability for: desktop study support, reconnaissance and line planning, and change detection tool

- Autoumous Surface Vessel (with L3ASV Global - UK) – designed for medium to large-scale hydrographic survey applications, scheduled for second quarter of 2019
- New RAMMS ALB Sensor (with Arete Associates - USA)
- Implementation of machine Learning and cloud Processing for MBES and ALB datasets

16.4 IIC Technologies

Mr. David Crossman’s presentation ‘Expanding Capabilities in the Region’ (*doc. SWPHC16-16.4*), outlined the various marine services provided by IIC Technologies – Multi-beam, Side-scan, Sub-bottom profiling, Airborne Bathy Lidar, SDB and Geodetic & Tidal Control.

A multi-beam survey was carried out in the approaches to Nuku’Alofa, Tonga in late 2018.

IIC Technologies had also carried out some work under the Multinational Geospatial Co-Production Programme (MGCP) relating to 1:50K mapping of Samoa, Tonga, Fiji and Kiribati. Scope of work involved processing of raw data, DEM and ortho photo generation, and feature extraction. Data is in the public domain via Koordinates/Geoint Data Service (<https://koordinates.com>).

The IIC Academy based in Visakhapatnam, India conducts a breadth of training in geospatial and marine sciences.

16.5 iXblue

Mr. David Donohue’s presentation ‘A Multi-sensor approach for large area survey in the South Pacific’ (*doc. SWPHC16-16.5*), provided an overview of the work iXblue carried out for LINZ as part of a PRNI project. It was a poorly charted area, being last surveyed in late 1800s and depths were in fathoms.

A multi-sensor approach was used:

- HS60 (Tonga) – SDB, ALB, MBES
- HS61 (Cook Islands) – SDB only
- HS62 (Niue) – SDB and ALB
- HS63 (Tokelau) – SDB only
- Tide gauge install & datum computation

Geomatics Data Solutions (a US company) was engaged for the ALB and EOMAP for the SDB work. SDB was used to plan and refine the survey plans for the ALB.

The project highlights included a series of ‘firsts’, i.e.:

1. First time in the world a multi-sensor survey of this scale had been attempted
2. First time the Chiroptera 4x ALB had been used on large area survey
3. First time iXblue Drix USV used on contract survey

17. Other Business

17.1 Connection of Tide-gauge bench marks with the land levelling datum

The Chair stated that the Australian Bureau of Meteorology (BoM) informed that some of the tide-gauges set up under the Climate and Oceans Support Program in the Pacific (COSPPac) do not have a connection to a datum and hence the data is not useful for navigation purposes. BoM had provided a list of these tide-gauges – Fiji (Lautoka), FSM (Pohnpei Harbour), Kiribati (Tarawa), Marshall Islands (Majuro), Nauru, Niue, Tonga (Nuku’Alofa), Tuvalu (Funafuti), Vanuatu (Port Vila), Fiji (Suva), Palau Islands (Malakal), Solomon Islands (Tarekukure Wharf), Tonga (Neiafu), Vanuatu (Luganville), Tuvalu (Vaitupu).

Mr Satesh Kumar stated that last year SPC had commenced the task of obtaining some of the data and would co-ordinate with the coastal States re connection of tide-gauge bench marks with the land levelling datum.

Action 21: SPC to coordinate with coastal States re connection of tide-gauge bench marks with the land levelling datum.

17.2 Revision of IHO Resolution 2/1997 as amended (Regional Hydrographic Commissions)

Mr John Lowell provided a brief overview of IHO Resolution 2/1997 as amended (Regional Hydrographic Commissions) (*doc. SWPHC16-17*), which deals with relationship between the IHO as an organisation and the regional commissions. There was a remit on RHCs to provide feedback to the IRCC. Following discussion on this item it was agreed the document be circulated to members for their comments. The feedback received (by end February 2019) would be collated into a SWPHC response and the Chair report back to the IRCC.

Action 22: All members to review Resolution 2/1997 (as amended) and provide comments to Chair.

17.3 Training and Technical Assistance

Members discussed on the need for training and technical assistance in the region. There was a need to campaign for more training in hydrographic survey and nautical charting for the region, particularly for those nations that are not IHO members. In addition it would be worth considering a regional project – e.g. in the Straits of Malacca and Singapore where the IMO organised and paid for the consultants to develop the project. The project was submitted to the World Bank, succeeded in being financed, and is now operational. .

It was agreed that members should consult with their IMO representatives to lobby IMO Technical Corporation Committee (TCC) the need for hydrographic survey projects in the region.

In addition, coastal States and SPC would liaise with the IMO Technical Cooperation Officer at SPC to lead on drafting and submission to IMO TCC re supporting training for hydrography in the region.

Action 23: Members to consult with their IMO representatives to lobby IMO Technical Cooperation Committee (TCC) the need for hydrographic survey projects in the region

Action 24: Coastal States and SPC to liaise with IMO Technical Cooperation Officer at SPC to lead on drafting and submission of paper to IMO TCC re supporting training for hydrography in the region

18. Date and Venue of Next Meeting

The Chair offered to host the next meeting in Wollongong, Australia at about the same time next year. As there were no other offers for hosting of the event it was agreed that SWPHC17 and the Technical Workshop be held in Wollongong in February 2020.

19. Election of Chair and Vice Chair

The Chair invited the Commission to consider nominations for the Chair and Vice Chair, taking into account Article 2 of the SWPHC Statutes.

USA stated that Australia had done a great job as the Chair and proposed that it continue in this role. The proposal was seconded by United Kingdom and supported by all Members. Commodore Freeman accepted the proposal and it was decided that Australia continue as the Chair of the Commission.

USA proposed and Tonga seconded Vanuatu as the Vice-Chair. All Members supported the proposal. As there were no other nominations, Vanuatu was elected as the Vice-Chair.

On behalf of the Commission, the Chair thanked Fiji for the excellent roles as Vice-Chair in recent years, particularly the hosting of SWPHC16 in 2018.

20. Review of the Actions and Decisions

Chair invited the Secretary and the IHO Asst. Director (Mr Alberto Costa Neves) to present the draft

list of actions and decisions agreed during the meeting. This was reviewed and agreed by the meeting participants. The List of Actions is in **Annex A**.

21. Closing Remarks

In closing, the Chair thanked all participants for their valuable contribution and proactive discussions during the meeting and the workshop. She reiterated that the SWPHC has a strong reputation for being proactive and delivering practical awareness. On behalf of the Commission, she also thanked Niue for hosting the meeting in an efficient and effective manner, as well as the excellent hospitality accorded.

16th South West Pacific Hydrographic Commission Meeting
13-15 February 2019
Niue

LIST OF ACTIONS (updated 15 December 2019)

No.	Agenda Item	Action	Responsible	Deadline
1	5.1	to consider providing CATZOC methodology/practices to DQWG	New Zealand	DONE
2	5.1	to respond to IHO CL 11/2019 (Annex B) indicating whether they support CSB activity within their waters of national jurisdiction	Members	20 May 2019
3.	5.1	to liaise with IALA and SPC to encourage coastal States that are not yet Members to join the SWPHC	Chair	permanent
4	5.1	to consider identifying opportunities in national/regional/international donor agencies to incorporate hydrography in development projects.	All members	permanent
5	5.1	to review their entries in the IHO Yearbook and C-55 and to provide the IHO Secretariat with the appropriate updates or to report no change.	All members	permanent
6	5.1	to consider submitting papers for publication in the International Hydrographic Review	All members	permanent
7	5.4	to look into establishing regional MSDI WG	Chair Vice-Chair	SWPHC17
8	6.2	to review the SWPHC Statutes after adoption/outcome of the Proposed Amendments to the IHO Resolution 2/1997, as amended.	Members	Upon adoption of IHO Resolution 2/1997 as amended
9	7	to consult the IHO Technical Visit Reports to Vanuatu (2011 and 2015) to motivate the establishment of a hydrographic capability as recommended in reports.	Vanuatu	SWPHC17
10	7	to provide IHO Secretariat with suitable contact details to assist in negotiations with IALA	Vanuatu	DONE
11	10.2	to search for hydrographic data that can be made publicly available	All members	ONGOING
12	10.3	to provide CB requests to the CB Coordinator	All members	DONE
13	10.3	to compile the SWPHC requests for support and submit to the CBSC16 in coordination with the Chair	CB Coordinator	DONE
14	11	to consider holding SWPHC ICCWG meeting within the margins of next Commission meeting.	SWPHC ICCWG Chair	SWPHC17
15	11	to update the ToRs and Procedures of SWPHC ICCWG based on latest edition of S-11 Part A Edition 3.1.0 (2018)	SWPHC ICCWG Chair	DONE

16	12	to check with AMSA re national report templates in respect of NAVAREA X	Chair	DONE
17	12	to coordinate with NAVAREA XI Coordinator in relation with countries in the SWPHC	USA Indonesia	SWPHC17
18	13.2	to provide a presentation on the AHSCP Certification Scheme at SWPHC17	Australia	SWPHC17
19	14	to comment on Resolution 1/2005 as amended and provide to Chair prior to forwarding it to Japan.	All members Chair	DONE
20	15	to provide input to Chair for inclusion in the SWPHC Report to C3	Members Chair	DONE
21	17	to coordinate with coastal States re connection of tide-gauge bench marks with the land levelling datum	SPC	SWPHC17
22	17	to review Resolution 2/1997 as amended and provide comments to Chair	All members Chair	DONE
23	17	to consult with their IMO representatives to lobby IMO Technical Cooperation Committee (TCC) the need for hydrographic survey projects in the region	Members	SWPHC17
24	17	to liaise with IMO Technical Cooperation Officer at SPC to lead on drafting and submission of paper to IMO TCC re supporting training for hydrography in the region	coastal States SPC	SWPHC17