



## 15th NORTH INDIAN OCEAN HYDROGRAPHIC COMMISSION MEETING

Muscat, Oman  
16 - 18 March 2015  
Approved Minutes

(The Commission approved the NIOHC15 minutes during 16<sup>th</sup> NIOHC Conference)

### 1 Opening

#### 1.1 Opening Remarks by Hosts

Chief of the Royal Navy of Oman, Rear Admiral Abdullah Khamis Al Raisi welcomed delegates to Oman and the wonderful setting of the al Shafaq club in Muscat; he also stated that Oman were proud to host such a meeting and that the Omani National Hydrographic Office (OHNO) under the Omani Navy are dedicated to the safety of shipping in their waters. The Royal Navy of Oman is committed to survey and chart Omani waters to international standards and to meet their obligations as a member of the international maritime community.

He also stated that the Hydrographic Office recently hosted the largest Maritime Safety Information (MSI) course to date, covering two Regional Hydrographic Commission (RHC) areas (NIOHC and RSAHC) and it would be a pleasure to host further IHO events and meetings.

He concluded in thanking both the Ministry of Transport and Communications and the Oman National Hydrographic Office for organising the 15<sup>th</sup> NIOHC.

#### 1.2 Opening Remarks by the Chairman

The Chair, Rear Admiral Tom Karsten (UK) thanked Rear Admiral Abdullah Khamis Al Raisi for his warm welcome and the welcome from all of the Hydrographic and Navy staff that members of the NIOHC had received since arriving in Oman. He said that the United Kingdom has historically close links with Oman and from personal experience he was assured it would be a good meeting as Muscat is an ideal location.

He then spoke of the strong attendance; 9 out of 10 members and 5 out of 6 associate members along with observer organizations and commercial companies, which should enable fruitful discussions during the week.

He said that following the last NIOHC in Thailand we should seek to build on the 14th Meeting and ensure that we continue the exchange of information and ideas, common themes that cross fertilize all RHCs and sharing of knowledge, experience and training.

He then reflected upon the recent events in Vanuatu in the South West Hydrographic Commission (SWPHC) region; the cyclone that devastated the small island nation and what assistance Member States (MS) within the NIOHC have/can offer to assist.

On a final note he encouraged all delegates to participate in the meeting and to maximize on the opportunities afforded by spending time together.

#### 1.3 Opening Remarks by Director IHB

Mustafa Iptes (Director, IHB) highlighted that RHC's are very important for the cooperation and coordination of regional issues which the International Hydrographic Bureau (IHB) strongly encourage. The NIOHC area is important due to the level of maritime traffic and the number of pinch points for vessels.

He was pleased to see such a good turnout and hopes that it will be an informative and productive meeting, thanking Oman for the hosting of such a meeting and the opportunity to discuss regional topics whilst expanding the understanding of hydrography.

## 1.4 Address by Chief Guest

Covered under 1.1.

## 1.5 Agenda and Timetable Approval

Members accepted the draft agenda and timetable as put forward by the Chair; no changes were made.

All presentations made at the meeting are to be available on the IHO NIOHC website and have been included on the disc supplied by the hosts.

## 1.6 List of Documents

Members accepted the documents as listed in NIOHC15-01d. The Chair took the opportunity to remind delegates that reports should be provided prior to the meeting so that delegates have a chance to read them; thus enabling fruitful discussions.

## 1.7 Administrative Arrangements

The Chair advised delegates of Administrative arrangements for the meeting and associated events.

The Chair then asked all the delegates to introduce themselves. He noted the absence of representatives from Myanmar, he concluded that despite this absence there was a quorum and therefore the meeting could proceed.

## 2 14th NIOHC Minutes Approval

Delegates accepted the minutes of the 14th NIOHC as a true reflection of the meeting.

## 3 14th NIOHC Actions List Review

The secretariat ran through the actions from the 14th NIOHC meeting; status updated in the table below:

No.	Agenda Item	14 <sup>th</sup> NIOHC Action	Action By	Date	Status
1	6	Include VIMSAS as agenda item at 15 <sup>th</sup> NIOHC	Chair	15 <sup>th</sup> NIOHC	Completed Included in agenda item 8.1 IMO
2	7	Encourage non-MS for membership	All	On going	Completed All maritime states in the region have been included in the circulation list.
3	7	Accelerate the process of approval of amendments to the IHO Convention	Egypt, India, Myanmar, and Thailand	As soon as possible	On going Request update from each MS on current status.
4	7	Update S-11 regularly	All	On going	Complete Will be covered by agenda 7.1
5	7	Update C-55 regularly	All	On going	Complete Will be covered under agenda item 6
6	9.1	Verify the INT Chart numbers and send them for final approval to the IHO	INT Chart Coordinator	As soon as possible	Complete Update received by IHB

No.	Agenda Item	14 <sup>th</sup> NIOHC Action	Action By	Date	Status
7	9.2	Review the 5-year CB plan	All	15th NIOHC	Complete Will also be updated under agenda item 7.2
8	9.2	Provide venue and facilities to support MBES course for 2015	CB Coordinator/ IIC	By 2015	Complete IIC hosted
9	9.2	Host the MSI course for 2014	Oman	By 2014	Complete Oman hosted
10	9.2	Replace LoS course with the Tides and Water Level course in the 2015 CB Program	CB Coordinator	1st April 2014	Complete Will be covered by agenda item 7.2 CB

MS accepted the status of the 14th NIOHC actions as shown in the table above as complete.

## 4 NIOHC Statutes

The meeting congratulated Pakistan on becoming a full member of the NIOHC upon signing the statutes, thus the current statutes dated February 2014 remain in force.

No changes to the NIOHC statutes were put forward.

### 4.1 NIOHC Membership Applications

No current observer put forward their application to become a member or associate member of the NIOHC.

## 5 IHO / IHB Matters

### 5.1 IHB Report

Mustafa Iptes (Director, IHB) provided a verbal summary on the report of the IHB to the 15th NIOHC; see NIOHC15-05a for further details. He then took the opportunity to encourage IHO non-Member States (MS) to apply for NIOHC associate as per NIOHC statutes (Action item 1) and for IHO MS yet to approve the amendments to the IHO convention to do so (Action item 2).

The Chair asked if 74% of INT charts published was a good figure? IHB stated that it is a reasonable figure but they would like to see 100% so that full INT coverage was available for the mariner. IHB was asked to clarify the current situation of S-23; a proposal was put forward to the Extraordinary Hydrographic Conference and it was decided that there will be no activity on the subject until at least 2017 therefore should be considered as dormant.

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
1	5.1	Encourage IHO non-MS to apply for NIOHC associate membership and IHO membership	All	On going
2	5.1	Accelerate the process of approval of amendments to the IHO Convention	Egypt, India, Myanmar, and Thailand	As soon as possible

### 5.2 NIOHC Report to IRCC6 (Inter Regional Coordination Committee)

Jamie McMichael-Phillips (UK) provided an overview of the NIOHC report to IRCC6 (NIOHC15-05b) highlighting the Capacity Building summary.

### 5.3 IRCC6 Report (Inter Regional Coordination Committee)

Jamie McMichael-Phillips (UK) provided an update to delegates on the last IRCC meeting and any topics relating to the region on behalf of the IRCC Chair, Tom Karsten (UK).

The Chair took the opportunity to highlight several subjects discussed at IRCC that could be of interest to NIOHC members:

- USA/Canada Trans boundary Project – harmonisation of charts and ENCs along the boundary between their respective countries. A good example of successful government to government cooperation.
- MSDIWG has been moved from HSSC to IRCC to recognise that the technical aspect of MSDI can be easily sorted but policy matters/governance can be an issue.
- Risk Assessment work

The Chair also took the opportunity to request that MS are aware that input will be required on behalf of the commission to IRCC (Action items 3 and 4).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
3	5.3	Provide the IRCC Chair with progress reports on the relevant tasks of the IHO 2015 Work Programme	Chair	Jan 2016
4	5.3	Provide to the IRCC Chair the estimated values of SPIs and agreed WPIs as of 31st December 2015 and target values for	MS/Chair	Jan 2016

### 5.4 WEND-WG Report (Worldwide ENC Database – Working Group)

The WEND-WG Chair, Jamie McMichael-Phillips (UK) provided an update on the work of the Worldwide ENC Database Working Group (WEND-WG) and report on actions affecting the NIOHC region. He highlighted the IHO's ENC Catalogue that is an internal tool (inc RENCs) for assessing ENC coverage. He also encouraged ENC producers in the region to participate in the WENDWG meetings, and provide the following relevant information to the IHB when requested:

- SPI's, WPI's (pending mechanism to be defined and coordinated by WENDWG), coverage/consistency issues – this information was requested in NIOHC CL01/2015
- Address coverage, gaps and overlaps issues based on mariners priorities
- Align paper charts and ENC updates (T&Ps)
- Anticipate the future (transition to S-101)
- Capacity building in chart production (ENC at the latest stage)

Minika Bjørge (Primar) presented on “The value a RENC adds to the ENC value chain” and explained to delegates the benefits of using a RENC.

Ahmed Hafez (Egypt) presented on experience of being an IC-ENC member – 1 year on. He highlighted the quality assurance and validation that a RENC is able to offer through training and documentation as well as distribution and membership agreements. Attendance at the steering committee meeting allows each member of IC-ENC to have a say in the direction that the organisation is going.

David Wyatt (IHB) provided a brief update from the previous weeks IMO NCSR meeting:

- New IMO ECDIS standards
- No shortcomings in current ENC coverage raised by IMO
- Reports that some Port State Control inspectors are checking ECDIS fitted vessels for paper charts as well; this will be investigated by IMO.

## **5.5 HSSC6 Report (Hydrographic Services and Standards Committee)**

Brett Brace (Aus) presented on behalf of Mike Prince (Aus) who is Vice Chair of HSSC. He highlighted the work of HSSC as the oversight body responsible for the IHO technical programme; to maintain existing standards and develop new ones. A great deal of work has been undertaken to recently restructure the working groups under HSSC representing the changing technology and workload.

A major achievement of HSSC has been the development of the S-100 data model and its subsequent derivations, further information can be found by following the link below:

[http://www.iho.int/srv1/index.php?option=com\\_content&view=article&id=331&Itemid=430&lang=en](http://www.iho.int/srv1/index.php?option=com_content&view=article&id=331&Itemid=430&lang=en)

Most ENC producers already know that S-101 the ENC Product Specification roadmap has been published; it will be updated annually and can also be found using the link above. A migrator to update ENC cells from S-57 to S-101 is being worked upon.

Any MS wishing to get involved in the work of HSSC and its subordinate bodies would be most welcome to join them.

## **5.6 5<sup>th</sup> Extraordinary International Hydrographic Conference**

Mustafa Iptes (IHB) updated member states on the 18 decisions made at the 5<sup>th</sup> Extraordinary International Hydrographic Conference (EIHC) together with major topics and outcomes. The decisions were dealing with financial arrangements such as budget approval and the continuing work package established at the last IHC. For further details and the full report of the meeting see the IHO website:

[http://www.iho.int/srv1/index.php?option=com\\_content&view=article&id=388&Itemid=306&lang=en](http://www.iho.int/srv1/index.php?option=com_content&view=article&id=388&Itemid=306&lang=en).

## **5.7 IHO Year Book P-5**

MS were reminded that P-5 is the source for information such as IHO membership details, contact points for countries hydrographic responsibility, survey and training capacity and as such MS should provide amendments to the IHB when they occur. IHB stated that P-5 along with C-55 are currently being migrated to a GIS platform to make the data more accessible.

MS should continue to provide changes to their entry in P-5 as they occur.

## **5.8 Status of Hydrographic Surveying and Nautical Charting Worldwide C-55**

David Wyatt (IHB) provided a report of the development of C-55 to the NIOHC. It was highlighted that the current C-55 is currently frozen on the IHO website; it is in the process of being migrated along with notified changes to the GIS that the IHB is working on along with P-5 data.

## **5.9 Marine Spatial Data Infrastructure (MSDI)**

IIC Technologies presented on modernization of the local Geoid to ensure best practices by surveying on the Ellipsoid. They highlighted the work that has been carried out between the National Survey Authority, Ministry of Defence, Sultanate of Oman and IIC Technologies to assess the separation between the ellipsoid and the geoid by using gravity data. Following the presentation MS requested that an update be provided to the 16<sup>th</sup> NIOHC by IIC and Oman on this topic (Action item 5).

Jeff Bryant (UK) presented on the regional MSDI being developed in the Meso American and Caribbean Sea Hydrographic Commission (MACHC); the Marine Economic Infrastructure Programme (MEIP) and discussed how it is an MSDI in all but name. It is a sub-regional project and is intended to allow decision makers in the MACHC region to be informed of currency of available maritime data in relation to environmental and regional traffic patterns. Like all MSDIs governance has been a major issue; this has been resolved and the first datasets are now being imported.

Matthew Holland (Caris) presented on Interoperability between the IHO, the Open Geospatial Consortium (OGC) and the International Association of Oil and Gas Producers (IOGP) especially as it pertains to Oil Spill Response. The presentation highlighted that the use of common datasets is able to speed up the decision making and thus a suitable response. MS were encouraged to assess the usefulness of MSDI to their country as a one stop place to both display and analyse datasets.

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
5	5.9	Oman National Survey Authority and IIC to update NIOHC16 on the outcome of the modernisation of the local Omani geoid NIOHC chair to include on the NIOHC16 agenda.	Oman (tbc), IIC, Chair	NIOHC 16

## 6 National Reports

MS in attendance provided a short presentation on their written national report provided prior to the meeting; highlights are listed below:

### Australia

- Able to offer a Cat B training course but places must be requested through official channels
- Plea for tidal gauge information for tsunami warning and highlighted damage to automatic “at sea” sensors

### Bangladesh

- Dynamic coast due to constant change in a dynamic river environment
- Port developments surveyed, charted and now require INT numbers
- Able to offer hydrographic survey training
- Plans for oceanographic research vessel

MS and the Chair were especially interested in the work undertaken by Bangladesh in a dynamic river environment; Bangladesh agreed to write a paper on the subject for discussion at IRCC8 and for inclusion in IHR (Action items 6 and 7)

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
6	6	Bangladesh to write a paper with regards their experiences of surveying and charting a dynamic river environment for discussion at IRCC8.	Bangladesh	By end March 2016
7	6	Bangladesh to write a paper for inclusion in the International Hydrographic Review (IHR) on their experiences of surveying and charting a dynamic river environment	Bangladesh	September 2016

### Egypt

- Additional channel being added to Suez Canal to enable one way sections and widening the remainder. This work should be completed by August 2016.
- Installation of a tide gauge network

### France

- Surveys in Djibouti
- Reinforced the need for real time tide gauge information
- Ready to assist in the relief/rebuilding work happening in Vanuatu
- Working on improving SDB accuracy using different satellites and processing techniques

## India

- Dual purpose survey ships that can be converted to hospital ships with 24hrs notice

## Mauritius

- MOU with India to assist in Capacity Building (CB) and surveying
- 1 inshore survey vessel
- Ultimate goal is to be self-sufficient with surveying and charting within 10 years

## Oman

- Members of tsunami warning committee which is coordinated by IOC and encouraged other MS to be involved

## Pakistan

- Able to offer training
- Produced large scale ENC's

## Saudi Arabia

- Strategy for surveying and charting established
- Commended on their excellent survey graphics – IHB requested that they are sent to IHO for inclusion in their image database (Action item 8).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
8	6	Saudi Arabia to forward survey graphics to IHB for inclusion in IHO database in conjunction with IRCC action 6/15	Saudi Arabia	August 2015

## Sri Lanka

- New tide gauge established in NE Sri Lanka

## Thailand

- Plan to withdraw four charts and associated ENC's
- Received CB training through IHO CBSC, Nippon foundation and UKHO
- Reviewing RNW process following the CBSC MSI course in Oman

## UK

- Introduces Port Approach Guides (PAGs)
- Assisted in the search for MH370 off of Australia
- New Chief Executive appointed which will be followed by a new National Hydrographer and Deputy in the summer

## 7 NIOHC Committees and Working Groups

### 7.1 North Indian Ocean Chart Coordination Working Group (NICCWG)

The coordinator of NICCWG (Vice Admiral Saroj Kumar Jha) initiated the discussions and invited the IHB representative Mr David Wyatt to brief the member states about the concept behind INT charts, producer nation and printer nation.

A presentation by Emma Fowler of Seven Cs on ENC's from a user's perspective was well received by the delegates; it highlighted many issues they were unaware of as ENC producers.

Discussions were held regarding the currency of data within producer nations INT charts. It was recommended that producer nations and states need to assess the data within the INT charts indicating the source data currency and last update (Action item 9). This information should then be passed to the NICCWG coordinator for collation and presentation at the next NICCWG (Action item 10).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
9	7.1	INT chart producers to assess their allocated INT charts within region J with regards last update and currency of data they contain. Provide information to NICCWG coordinator for review.	INT chart producer nations	31 <sup>st</sup> December 2015
10	7.1	NICCWG coordinator to review data provided by INT chart producers and present results to NIOHC16.	NICCWG coordinator	NIOHC 15 NICCWG meeting

The NICCWG coordinator presented on the status of amendments to the currently published INT scheme for the NIOHC region (S-11, Part B, region J); issues raised by each member states were discussed as follows:

### Bangladesh

Bangladesh gave a presentation on the outstanding INT chart issues and put forward the requirements for additional INT numbers due to port developments.

Outstanding changes:

- Revised limits of INT 7425 are agreed by the coordinator and MS; will be included in S-11 (Action item 11).

Additional INT chart numbers:

- INT 7426 needs to be divided into several large scale charts for improved coverage of the channel to Mongla Port;
- INT 7428 needs to be divided into two charts to cover Chittagong port approach;
- Two new INT numbers to be allotted to cover Payra port;
- One new INT number to be allotted to cover Sonadia deep sea port area;

MS agreed on the need for the coverage and 5 new INT numbers will be allocated to Bangladesh to cover Chittagong, Payra, and Sonadia Port areas.

Amendments to S-11 for the 5 new charts and the revised limits of the existing charts are to be completed by the NICCWG coordinator; these numbers will be provided to Bangladesh within 2 months (Action item 12).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
11	7.1	NICCWG coordinator to update S-11 for agreed limit amendment to INT 7425.	NICCWG coordinator	15 <sup>th</sup> May 2015
12	7.1	NICCWG coordinator to provide 5 new INT numbers to Bangladesh in relation to the ports of Chittagong, Payra, and Sonadia and to update S-11 accordingly.	NICCWG coordinator	15 <sup>th</sup> May 2015

### Pakistan

It was raised by the NICCWG coordinator that INT 751 which falls within S-11 Part B Region I is allocated to Pakistan; India also produce a national chart (IN 21) covering this area as well as producing the corresponding ENC.



It was decided that this issue should be discussed with the Region I & J coordinators (IR of Iran and India respectively) (Action items 13 and 14). It was proposed by India that relevant ENC's of INT 751 (PK-57) and IN 21 may be clipped at the RHC limits using cartographic boundaries to be agreed.

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
13	7.1	Region I & J ICCWG coordinators (IR of Iran and India) to resolve the cross region coverage issue of INT 751.	Region I & J INT Chart Coordinators	Prior to NICCWG 2016 meeting
14	7.1	NICCWG Coordinator to report result of discussions to next NICCWG meeting	Region J INT Chart Coordinator	NIOHC16

### Thailand

Thailand suggested amendments to limits of their national chart 335A which is allocated as INT 7450 by region J and INT 5792 by region K, the NICCWG coordinator proposed that as the majority of the chart will be within region K it should be moved to the EAHC and thus region K; this proposal was agreed by the member states. It was then raised the same issue exists with INT 7033 (TH 362); as this chart will fall entirely within region K it should also be moved (Action item 15).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
15	7.1	NICCWG coordinator to inform region K coordinator of the intention to move both INT 7450/5792 and INT 7033 to region K scheme	NICCWG Coordinator, Thailand	1 <sup>st</sup> April 2015

### Sri Lanka

Proposal by Sri Lanka to renumber INT charts around their coast at NIOHC14; NICCWG coordinator requires clarification of limits and national chart numbers (Action item 16). Once clarification has been received by the NICCWG coordinator new numbers will be allocated (Action item 17).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
16	7.1	Sri Lanka to provide clarification of limits and national chart numbers to NICCWG coordinator for renumbering of their allocated INT charts	Sri Lanka	1 <sup>st</sup> April 2015
17	7.1	NICCWG coordinator to supply INT numbers to Sri Lanka and update S-11, part B, region J with the amendments	NICCWG coordinator	15 <sup>th</sup> May 2015

### France

France provided updates to S-11 prior to the 15th NIOHC and thus NICCWG coordinator will update S-11 part B region J for these changes.

### Oman

No changes or issues identified.

### UK

No changes or issues identified.

### Saudi Arabia

No changes or issues identified.

MS agreed that an updated to S-11 should be provided to the IHB for inclusion in the website within 3 months (Action item 18). If no resolution of issues can be achieved by either the NICCWG coordinator or MS the IHB will assist in the process (Action item 19).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
18	7.1	NICCWG coordinator to update S-11 Part B, region J and provide to IHB.	India	30 June 2015
19	7.1	IHB to assist in the resolution of NICCWG issues that not can be resolved by NICCWG	IHB, NICCWG	On going

## ENC coverage

India presented the ENC coverage for the NIOHC region under all usage bands and informed the NIOHC Chair that all previous overlap issues within Indian waters have been resolved.

## 7.2 North Indian Ocean Hydrographic Commission Capacity Building (CB)

### 7.2.1 Update on Capacity Building activities and submissions since the last meeting.

Jeff Bryant (UK) the NIOHC CB Coordinator provided a breakdown of courses, delegates and progress since the last meeting for IHO CB funded projects:

- Technical visit to - Jordan (Nov 14)
- Advanced ENC production courses – Bangladesh and Myanmar
- Joint MSI course run with RSAHC – NIOHC Members - Bangladesh, Egypt, Saudi Arabia, Sri Lanka, Mauritius, Myanmar, Oman, Pakistan, Sudan and Thailand benefitted from this opportunity.

IHB hails the CB strategy as a real success and reinforced by the work programme from the last IHC. Advanced (long) courses are available and MS should consider having suitable staff to apply if they have the correct English language certification. The CB fund has a budget of €1 m per annum and MS should make full use of courses offered in the region; the joint RHC courses were praised as they provide better value for money. It was noted that the revised CB Strategy decided that IHO non-MS are only able to have a technical visit and attend Phase 1 CB activities.

### 7.2.2 Report on IHO CB Courses since the last NIOHC

Oman displayed their video produced on the recent joint NIOHC and RSAHC MSI course, MS and the CB coordinator congratulated them on such a well-run and attended course.

IIC Academy presented on the recent Introduction to Multibeam Survey Operations course they provided for the NIOHC region.

The outcome of both these courses means a higher level of qualified people in the region and we should see an increase in NAVAREA warnings in the region following the MSI course.

IIC offered a one week MSDI course free of charge for NIOHC members – only have to pay travel and substance; the CB coordinator thanked IIC for their offer and will accordingly develop a submission for 2016.

### 7.2.3 IC-ENC Training and Capacity Building

James Harper (IC-ENC) presented on the IC-ENC Training and Capacity Building available to its members. The course provides trainees with the skills to complete ENC validation and a greater awareness of the work and abilities of IC-ENC; the course is run regionally and can improve communication between producers.

Caris highlighted their focused training that they are able to provide to MS who have purchased their software; this also provides valuable insight into how their products are used to produce charts and ENC's. Caris are also able to offer online training courses, please see their website for further details.

The IHB noted that they are grateful for indirect training not currently offered via the CBSC fund, this adds to the expertise and training of MS.

#### 7.2.4 Update on the 5 year Capacity Building plan

The CB coordinator reminded MS that they should encourage investing in English language training as most CB courses will be delivered in English. This is especially pertinent when considering advance (long) courses such as the MSc's offered in IHO CL's.

One of the planned courses in 2015 requires a host; it was decided that Bangladesh will host the 5 day ENC Quality Assurance training (Action item 20).

France proposed to consider to include in the CB plan a workshop for chart scheming, the sharing of experiences and processes along with discussions on S-8; MS agreed that this was an excellent idea. As such the CB coordinator with the support of FR will put a proposal to CBSC and develop a workshop if successful in obtaining funding.

The Coordinator will update the NIOHC 5 year CB plan and write submissions to CBSC13 (Action items 21 and 22). Through the year the training opportunities will be disseminated to MS via NIOHC and IHO CLs, MS are encouraged to read and apply (Action item 23).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
20	7.2	Bangladesh to host ENC Quality Assurance training course and provide CB coordinator assistance in organising	CB Coordinator/ Bangladesh	September 2015
21	7.2	Update the NIOHC 5 year plan to include input from NIOHC15 meeting	CB Coordinator	March 2015
22	7.2	Produce submissions from NIOHC to CBSC as per 5 year plan	CB Coordinator	1st April 2015
23	7.2	Ensure MS are aware of CBSC and other training courses by NIOHC CLs	CB Coordinator, NIOHC Chair	As required

## **8 Relevant International Organizations' Report.**

### **8.1 International Maritime Organisation (IMO) – Member State Audits**

David Wyatt (IHO) provided an update on the IMO topics:

- Polar Code has been approved
- SOLAS and MARPOL updated
- E-Navigation implementation endorsed with IMO leading and will report at MSC95

He also took the opportunity to remind MS that the IHO produces CL's post IMO meetings highlighting hydrographic related issues/topics; MS should also see the IHO and IMO websites.

IMO has also been looking at capacity building in the wider maritime environment and successful joint training has occurred between IHO/IMO/IALA.

MS agreed that IMO should be invited to attend the next NIOHC (Action item 24).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
24	8.1	Invite IMO to attend the 16th NIOHC	Chair	16th NIOHC

## 8.2 General Bathymetric Chart of the Oceans (GEBCO)

Rochelle Wigley (GEBCO), gave a presentation on the role and work of GEBCO to provide the most authoritative, publically available comprehensive bathymetric datasets for the world's oceans. The data is a continuous terrain model using 30 arc second grid with metadata for each point.

GEBCO have been exploring ways of collecting data using data loggers aboard vessels the same as discussed in CSB (agenda item 15) to enhance their datasets; they are also looking at smartphone technology to assist the data collection and transfer.

MS were then reminded about the Indian Ocean regional mapping project and that GEBCO are able to "harvest" data from ENC's into their datasets for coastal mapping; MS were encouraged to allow the release of their data to the IHB for this purpose.

Rochelle took the opportunity to remind delegates about the Postgraduate Certificate in Ocean Bathymetry at the University of New Hampshire, USA funded by the Nippon Foundation

MS agreed that GEBCO should be invited to attend the next NIOHC (Action item 25).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
25	8.2	Invite GEBCO Guiding Committee/ Bathymetric Regional Project Chairs to attend NIOHC16 meeting	Chair	16th NIOHC

## 8.3 International Association of Lighthouse Authorities (IALA)

Jean-Charles Leclair, Dean of the IALA World-Wide Academy provided a presentation on the work of IALA and its Academy. The goal of IALA is to ensure that aids to navigation systems and related services, including e-Navigation, VTS and emerging technologies are harmonised through cooperation and standards and that all coastal states contribute to this. IALA provides guidance through recommendations, guidelines and manuals.

The IALA World-Wide Academy provides training and capacity building in support of IALAs goals; this training is now on a regional basis with NIOHC MS falling into IALA regions 2 and 3.

IALA capacity building:

- Stage 1 - raising awareness seminars and in 2014 they were delivered to 524 delegates from 49 states.
- Stage 2 - technical visits at the request of a competent authority and take 5-8 days to complete an assessment.

Any MS is requested to contact IALA should they wish CB assistance at either Stage 1 or 2.

MS agreed that IALA should be invited to attend the next NIOHC (Action item 26).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
26	8.3	Invite IALA to attend the 16th NIOHC	Chair	16th NIOHC

## 8.4 Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA)

Islam Taha, Coordinator of the PERSGA GIS and Information Technology unit attended the meeting and presented on PERSGA's programs and activities, in the conservation of the marine environment in PERSGA region. The Red Sea is currently a very clean environment and PERGSA assists in maintaining this environment through monitoring, practical ways such as installing buoys for mooring to reduce damage and through to training to clean up of the environment.

They are able to provide a response to oil incidents within the region either through coordination or the provision of training courses for spill response or prevention techniques; running approximately 20 courses a year for countries within its region.

They have a regional GIS for use by their members that contains layers for the prediction of “in water” oil movement to assist pollution control.

PERSGA also has support to/from the IMO so that conventions can be met within their region by monitoring and carrying out environmental surveys.

MS agreed that PERSGA should be invited to attend the next NIOHC (Action item 27).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
27	8.4	Invite PERSGA to attend the 16th NIOHC	Chair	16th NIOHC

### 8.5 Combined Maritime Forces (CMF)

Cdr Will Peters RN (Deputy Director Plans) for Combined Maritime Forces in Bahrain presented on counter piracy operations and wider maritime security issues in the Indian Ocean; the presentation was very well received by MS present.

CMF is a multi-national naval partnership based in Bahrain, which exists to promote security, stability and prosperity across approximately 2.5 million square miles of international waters, which encompass some of the world’s most important shipping lanes. Each participating nation’s vessel undertakes a 3 month deployment in the region working on the most pertinent operation at the time.

Due to the work of CMF the incidents of piracy have decreased significantly since patrols started; the focus of CMF has now turned to smuggling activities within the region namely narcotics, charcoal and people as well as illegal fishing.

It was highlighted that international law is insufficient to prosecute those caught either smuggling or undertaking piracy related activities as well as many nations do not have the capacity to patrol or police their waters.

## 9 Maritime Safety and the World Wide Navigational Warnings Service (WWNWS)

Report by NAVAREA VIII coordinator (India) providing statistics for NAVAREA warnings for the region and India’s proposed increase in stations from 2 to 7; also provided the table below on contacts for warnings and asked MS to ensure these details are correct.

COUNTRY	AGENCY/PERSON	EMAIL
Bangladesh	DG Department of Shipping	cns@dos.gov.bd
Myanmar	Capt. Min Thin Teint	hydro.navy.ygn@mptmail.net.mm mnhc-office@m-n-h-c.com zawlet@m-n-h-c.com
Sri Lanka	Sri Lanka Port Authority/ DG Merchant Shipping	ravi@slpa.lk dmsmos@sltnet.lk nhqdno@navy.lk
Maldives	Maritime Rescue Coordination Centre	mrcc@mndf.gov.mv
Mauritius	Mauritius Radio Service	3bm.mrs@mauritiustelecom.com
Seychelles	Harbour Master, Seychelles Port	dg@smsa.sc

COUNTRY	AGENCY/PERSON	EMAIL
Tanzania	DG Tanzania Ports Authority	mrcddar@sumatra.or.tz Ken.chimwejo@sumatra.or.tz
Kenya	Kenya Maritime Authority	info@maritimeauthority.co.ke info@kma.go.ke

David Wyatt (IHO) reported on the outcome of the 2014 WWNWS meeting in Monaco, highlights are as follows:

1. The IMO's Maritime Safety Committee (MSC) approved the revisions to the Joint IMO/IHO/WMO MSI Manual (IHO publication S-53). The MSC also agreed that the International Mobile Satellite Organization (IMSO) would undertake the technical assessment and system evaluation of the Iridium mobile satellite system as part of the process for it to be recognised as a mobile-satellite service provider of the GMDSS.
2. The sixth meeting of the WWNWS Sub-Committee (WWNWS 6) was held in Wellington, New Zealand, from 18 to 22 August 2014 under the chairmanship of Mr Peter Doherty (USA). The meeting was attended by 27 delegates from 14 IHO Member States, the International Hydrographic Bureau (IHB), the Secretariat of the International Maritime Organization (IMO), the Secretariat of the World Meteorological Organization (WMO), the IMO NAVTEX Panel, the IMO SafetyNET Panel, Inmarsat and Iridium. The delegates included representatives of 11 NAVAREA Coordinators, one Sub-area Coordinator and four National Coordinators. The WMO held its 2nd Maritime Safety Services Enhancement Workshop concurrently.
3. WWNWS-SC and the WMO Maritime Safety Services Enhancement Workshop met in joint session for one and a half days during the meeting period. This allowed NAVAREA and METAREA Coordinators to discuss topics of mutual interest and to receive briefings and background presentations on the IHO, WMO and IMO structures. The joint session received progress reports on the development of the S-124 - Navigational warnings, S-411 - Sea ice and S-412 - Met-ocean forecasts Product Specifications, all of which are relevant to worldwide navigational warning services. The IMO Secretariat encouraged closer cooperation and interaction between the IMO, IHO and WMO.
4. The WWNWS Sub-Committee received a briefing from the Secretariat of the IMO on the GMDSS modernization and the GMDSS Master Plan. A revised process for updating Annexes 7 & 8 of the Master Plan was explained. Noting that the responsibility for inserting new data would be passed directly to the IMO Member States, it was confirmed that a validation check would be undertaken by the IMO Secretariat. The representative of the IMO Secretariat urged direct engagement by all Area Coordinators with the GMDSS modernization Correspondence Group (CG).
5. The year-long WWNWS customer survey questionnaire results were reviewed and various issues identified for individual NAVAREAs to address. Inmarsat gave a general brief on issues identified for the SafetyNET service relevant to both NAVAREA and METAREA Coordinators. It was noted that many of the comments and problems submitted by users were identified as system and equipment related and reflected a lack of understanding on the part of the users. The IMO Secretariat was asked to consider if this situation could be brought to the attention of the appropriate IMO bodies to explore ways to improve GMDSS training.
6. The meeting received updated information on the delivery of MSI training courses and the need for the NAVAREA Coordinators to work closely with the Regional Capacity Building (CB) Coordinators to help developing nations to reach the CB Phase 1 level (collection and circulation of nautical information, necessary to maintain existing charts and publications up to date) of the IHO CB Strategy.
7. Post the MSI course here in Muscat in December last year, Egypt is progressing the transmission of MSI information to the NAVAREA IX coordinator via electronic means; this should be completed later this year.

8. The seventh meeting of the WWNWS-SC (WWNWS 7) will take place at the IHB in Monaco from 24 to 28 August 2015. All NAVAREA Coordinators and National MSI Coordinators are encouraged to attend the meetings of the WWNWS-SC to broaden their experience and interact with each other.

## 10 Maximising Hydrographic Data

Jeff Bryant (UK) presented the paper put to IRCC6 by the Meso-American and Caribbean Sea Hydrographic Commission (MACHC) discussing the need to maximise the availability of access to hydrographic surveys. It is estimated that less than 20% of data collected by hydrographic survey companies makes it way to either the government whose waters it is collected in or the hydrographic charting authority (figures from a survey company).

The issue could be centred around a different arm of government undertaking or receiving the data and not making the hydrographic authority aware of its collection or availability or commercial companies not passing on the data. With the current economic climate the mantra “collect once use many times” should be ever more in people’s minds. Some nations ensure that a clause is put into survey contracts that the resulting data should be provided to the hydrographic authority but others do not, sometimes it is a matter that another part of government does not make the information more widely available. The paper proposed that an IHO resolution should be drawn up to make governments and those commissioning surveys aware that data collected should be made more widely available.

MS agreed that the paper should be supported in principle but to take account of any national open source policy (Action item 28).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
28	10	Encourage discussion at IRCC7 on Maximising Hydrographic Data paper whilst also noting NIOHC reservations in relation to open data policies.	Chair	End March 2015

## 11 Towards Data Centricity

Jamie McMichael-Phillips (UK) presented on Towards Data Centricity, a paper that was first presented at the North Sea Hydrographic Commission by the UK in 2014. This was then followed up by Jean-Charles Leclair (IALA) on the concepts and developments on e-Navigation and Michael Bergmann (Jeppesen) on e-Navigation – Aviation community experiences and lessons that might be transferrable to the Maritime shipping sector; all three presentations were well received by the MS present.

The ensuing discussions centred upon the managing of data will lead to the visibility and acceptability of hydrographic offices and their work. Focusing on the data within the products rather than products themselves and thus the value of data versus the value that hydrographic offices add to it; becoming more data centric. Concerning the value added by the HOs, Bruno Frachon (FR) drew the attention on the impact of “open data” policies, that could lead to minimize the perceived value of hydrographic data *versus* hydrographic products, though the former, through extended utilization, can highlight the importance of the role of HOs.

Data is being used in more inventive ways all of the time and hydrographic offices need to be aware that technology is changing rapidly and that they need to be at the forefront of innovation. It was highlighted that take up with regards e-Navigation will initially be slow but in the experience of similar advancements in the aeronautical world an increasing acceleration can be expected and hydrographic offices will need to be ready; as such it was decided to make this a standing agenda item for future NIOHCs (Action item 29) and for IALA/IHB/CIRM to update MS on issues and topics (Action item 30).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
29	11	NIOHC to have a standing agenda item of Towards Data Centricity/e-Navigation to recognise its importance to the mariner and future hydrographic products.	Chair	On going
30	11	IALA/IHB/CIRM to keep NIOHC abreast of e-Navigation issues relevant to hydrographic offices' understanding the likely rapid implementation.	IALA, IHB, CIRM	On going

## 12 Uses of AIS (Automatic Identification System) Data

Simon Tucker of Software Radio Technology (SRT) presented on how the use and visualization of AIS contributes to maritime domain awareness; when enhanced AIS information is fused with hydrographic data it provides excellent spatial awareness in real time in a dynamic 3D dataset similar to a virtual reality.

It was raised if this could cause information overload for the mariner but, concerns were abated as information could be selected/deselected for display as filtering of information is available. Another issue could be bandwidth availability but as SRT provide 90% of current AIS transceivers in their opinion the stated bandwidth is more than capable as not all units are active at the same time and intelligent management of the network is possible.

There are lots of possible applications for AIS data and its use is just beginning to be discovered; MS are encouraged to keep abreast of future developments of AIS.

## 13 Maritime Funding

Mustafa Iptes (IHB) shared with delegates the work the IHB has been doing to enhance the funding available with regards the Capacity Building fund held by the Capacity Building Sub-Committee (CBSC). Sizable donations have been available from both the Republic of Korea and the Nippon Foundation for many years but IHB are talking with further countries and institutions to increase the budget further.

It was noted that following discussions with international funding organisations, funding would be looked at for regional or sub regional projects such as the Organisation of Eastern Caribbean States (OECS) or South West Pacific Hydrographic Commission projects that were currently being assessed by MS. The CBSC has provided funding for a scoping study for countries within the East Atlantic Hydrographic Commission to assess the need and viability of a project in that region. Each of these projects will have to be well researched with defined parameters and set outcomes in relation to economic and or environmental benefits in order to achieve international funding.

## 14 Experience in dealing with maritime disasters in relation with IHO guidelines

Australia provided information on the recent cyclone "Pam" that tracked through the South West Pacific Hydrographic Commission (SWPHC) island nation of Vanuatu. They provided an update on the current status and how the hydrographic community (Aus, NZ, FR and UK) are pulling together to provide a multinational hydrographic relief effort once the initial humanitarian effort is underway. The relief effort is currently focusing upon the initial assessment of damage, what is required, deployment of resources and evacuation (if required).

Currently, support to Vanuatu is being received in the form of humanitarian flights as they have managed to get the airport at Port Villa open and further support is being received by using amphibious assault vessels; support by larger vessels is restricted due to the water depth around the islands.



The category five cyclone hit Vanuatu on the morning of 14<sup>th</sup> March 2015 with wind speeds are recorded up to 250km/h, reports state that up to 90% of buildings in the capital Port Vila have been damaged; damage on the other islands is still being assessed due to the nature of the island nation.

UK reinforced along with France that they have been in contact with the authorities in Vanuatu directly and they stand ready to assist when called upon. Recent surveys by the UK in Vanuatu have been pushed through assessment to enable production of the chart and ENC. Post meeting note - New editions of two Vanuatu ENC cells, GB501638 Northern Vanuatu - Espiritu Santo - Luganville and GB501494 Port Vila, originally scheduled for publication in June and July 2015, were bought forward and are available as of 31 March 2015. Additionally, two special usage charts (effectively paper charts) have been produced for the two areas and released as digital image files. These products were distributed through IC-ENC on a free of charge basis for use by all interested parties and to assist with the humanitarian relief effort.

Following the 2006 tsunami India established a regional chain of command within India and they are responsible for alerts to people within the region. Regular exercises are undertaken so that people know what to do when the alert is realised.

The IHB reminded delegates that the establishment of networked tidal gauges can help in the warning process along with offshore sensors.

## 15 Crowd Sourcing Survey Techniques

David Wyatt (Assistant Director, IHB) presented on Crowd Sourced Bathymetry (CSB) survey techniques; less than 10% of the worlds sea is surveyed to an adequate standard, the remainder of soundings upon charts are made up of old school passage soundings; these have been accepted for many years by both Hydrographers and mariners as some data is better than none. This figure of 10% is not likely to increase any time soon as MS governments are on the whole reducing survey vessels and thus capacity.

The IHB have been trialling a low cost project to install a data logger onto vessels that integrates into their existing GPS and echo sounding units. This data logger passively records during their voyage and is then transferred to GEBCO via a USB and the internet. Over time many vessel tracks covering the same ground can be used to build up a picture of the seabed. Although this method is nowhere as good as a traditional hydrographic survey some data is better than no data. The raw data is sent to IHO Data Centre for Digital Bathymetry and MS can access for assessment and possible inclusion in their products.

MS expressed reservations about this data meeting their SOLAS obligations but it is noted that vessels are already entering unsurveyed areas and sharing the data (eg. Antarctica) so it would be opening up the data where there currently is none. Data collected by CS should be identified as such with a products source data diagram/inscription/CATZOC.

The Chair stated that a policy paper will be discussed at IRCC7 on CSB and as such it would be prudent to include at the next NIOHC and its subsequent outcome. MS agreed upon an action to include on the agenda at the next NIOHC (Action item 31).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
31	15	Crowd Sourced Bathymetry (CSB) to be included on the agenda at the 16 <sup>th</sup> NIOHC meeting.	Chair	NIOHC 16

## 16 Satellite Bathymetry

Jeff Bryant (UK) presented on the assessment being carried out by the UKHO on the accuracy of Satellite Derived Bathymetry (SDB), the possible subsequent use of the hydrographic data and how it may be of benefit within the NIOHC region.

The UK is still undertaking analysis of the data as it has shown to be not as accurate as hoped vertically but horizontal accuracy has shown to be within acceptable limits if used with ground truthing. Saudi Arabia also stated that they have been doing trials and, like the UK, have found the same problem; they are working to improve vertical consistency to < +/-2m.

MS agreed to have an action to include this at the next NIOHC meeting so that they can be updated on any progress (Action item 32).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
32	16	Satellite Derived Bathymetry (SDB to be included on the agenda at the 16 <sup>th</sup> NIOHC meeting.	Chair	NIOHC 16

## 17 Any Other Business

Saudi Arabia as the NIOHC regional representative of the International Hydrographic Review (IHR) invited MS to consider writing and proposing articles for inclusion in the IHR as the publication is a good place to enhance wider understanding of technical and regional issues.

## 18 NIOHC report to IRCC 7

Delegates were invited to discuss what the NIOHC report to IRCC7 should contain and if any issues need to be taken forward to IRCC or its subordinate bodies as this is our chance to influence policy setting and raise issues. The following is the list of topics to be included within the NIOHC report:

- Bangladesh's experience in data collection and product generation within the river environment and note a paper will be put to IRCC8;
- Maximising Hydrographic Data – encourage IRCC to produce IHO resolution;
- Discussions on Data Centricity;
- Cooperation in relation to INT coordinators:
  - chart allocation – lack of communication between regional coordinators to resolve issues
  - Same chart being issued 2 separate INT numbers within 2 regions
  - Encouragement of adjoining regional coordinators to attend NIOHC

The Chair will produce a report on the work of the NIOHC on behalf of MS and represent the RHC at IRCC7 (Action item 33).

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
33	18	Produce the report to IRCC on the work of the NIOHC and represent NIOHC at IRCC7.	Chair	June 2015

## 19 Date and Venue of the next meeting

Bangladesh offered to host the 16<sup>th</sup> NIOHC meeting (location to be confirmed) in either 22 – 25 February 2016 or 14 – 15 March 2016. The offer to host was warmly welcomed by the participants. Bangladesh will confirm dates and location within 2 months. (Action item 34).

Post meeting note – Bangladesh have confirmed the 16<sup>th</sup> NIOHC meeting will be held in Chittagong, Bangladesh between 14 and 16 March 2016, this will consist of half a day NICCWG and two and a half days of NIOHC.

No.	Agenda Item	15 <sup>th</sup> NIOHC Action	Action By	Date
34	19	Bangladesh to confirm dates and location of 16 <sup>th</sup> NIOHC	Bangladesh	Complete

## **20 Election of Chair and Vice Chair**

The Chair asked Bangladesh as the current Vice Chair if they wished to succeed to Chair as per NIOHC Statutes Article 1e; Bangladesh confirmed that they would accept Chairmanship of the NIOHC.

Both UK and India offered to assist the chair if required in their new role.

Egypt was nominated as Vice Chair by Saudi Arabia, this nomination was supported by all MS present and thus Egypt will step into the role of Vice Chair.

## **21 Approval of the Action List**

The Chair and participants reviewed actions agreed during the meeting with all delegates to ensure they are satisfied with the wording, timescales, etc. some actions were amended slightly and the final result can be seen in Annex A.

## **22 Closing Remarks from the Chair**

The Chair thanked Oman for organising such a well hosted meeting; the generous nature of Oman and all the pre meeting work had shone through; the chair then presented gifts to both Cpt. Mansoor Al Kharousi and Cdr. Thani al Mahrouki.

Topics of note from the meeting were sharing of experience of river charting, maximising hydrographic data, a productive CS discussion, and standing agenda items for CSB, SDB and e-Navigation/Data Centricity.

The Chair thanked both MS and observers for making this an informative and productive meeting.

Mustafa Iptes (IHB) noted that this was his 3rd attendance at the NIOHC and the meetings have exceeded expectations as a productive forum and the inclusion of new topics to keep the agenda fresh. He also thanked Oman for their excellent hosting and logistic arrangements.

V. Adm. Saroj Kumar Jha stated that this would be his last NIOHC as he would be retiring this year after nearly 40 years of service in the Indian Navy; he has enjoyed his participation and was pleased that hydrography was a more visible than ever in the region.

MS reinforced the Chairs thanks to the host Oman and to the Chair for steering productive discussions.

Cpt. Mansoor Al Kharousi stated that it was a great honour for Oman to host the 15<sup>th</sup> NIOHC as it has raised the profile of hydrography as local television and newspapers have covered the meeting. Oman is willing to host more meetings and courses to enhance a wider understanding should the opportunity arise.

The Chair thanked all for their comments, wished delegates a safe journey home and hoped to see them at future meetings.