

**International Hydrographic  
Organization**



**United States - Canada Hydrographic  
Commission**



Minutes

35<sup>th</sup> Meeting of the

**UNITED STATES - CANADA HYDROGRAPHIC COMMISSION**

Niagara Falls, Ontario  
Canada  
May 14, 2012

Co-Chairs:

CAPT John E. Lowell, Jr., NOAA  
Director, Office of Coast Survey (OCS)  
National Oceanic and Atmospheric  
Administration (NOAA)

Dr. Savithri (Savi) Narayanan  
Director General, Dominion Hydrographer  
Canadian Hydrographic Service (CHS)  
Fisheries & Oceans Canada

**1. Introductions and Welcoming Remarks**

S. Narayanan welcomed those in attendance and noted that each delegation consisted of multiple agencies: OCS-NOAA, NGA and US Navy from the US and from Canada CHS-DFO, CCG-DFO and the Royal Canadian Navy. She also welcomed the Observers and Guests Robert Ward (International Hydrographic Bureau (IHB)), Tim Lewis (United Kingdom Hydrographic Office (UKHO)) and Christopher Fox (Vice Chair GEBCO). She congratulated Robert Ward for his successful re-appointment to the IHO Directing Committee and particularly his success as being President Elect of the IHB.

J. Lowell also welcomed the participants and expressed his pleasure in having the opportunity to co-chair the Commission meeting. He announced his pending retirement as Director of Office of Coast Survey and USA National Hydrographer. He introduced Captain Gerd Glang as his expected replacement pending the necessary Government approvals.

A round table of introductions followed. The Participants List is provided in Annex A.

S. Narayanan asked for approval of the agenda with a minor adjustment to agenda Item 7. The Agenda was approved and is attached as Annex B.

## **2. Review Outstanding Actions for USCHC34 and approve minutes of USCHC34**

The chair noted that all action items except two were completed and the two outstanding ones will be discussed during the session.

Motion to accept USCHC34 Minutes and Actions was approved.

## **3. Organizational Updates**

S. Narayanan introduced organizational changes that included:

- announcing Michael Hecimovich as the new Director of CHS Central and Arctic Region. Former Director Dale Nicholson has moved to a new position within Fisheries & Oceans Canada.
- a shift in CHS organizational focus that includes an emphasis on enhanced national coordination to deal with increasing demands on the organization and the need to focus the limited resources on national priorities; CHS will also adopt an approach whereby ships-of-opportunity will be increasingly utilized to enhance the content and coverage in its navigational products as well as to better utilize innovative technologies.
- a transfer of the Oceanographic responsibilities to another Directorate within Fisheries & Oceans Canada.
- a Canadian Hydrographic Service emphasis on Arctic Hydrography that detailed the 2nd year of a multi-agency collaboration in Canada's Arctic for the collection of hydrographic data to serve the objectives of charting, marine heritage and ecosystem science.

Michael Eelhart of the Canadian Royal Navy provided an organizational update that included:

- introduction of himself as new Staff Officer responsible for liaison between Canadian Hydrographic Service and the Department of National Defence (DND) charting services
- announcement of Captain Osborne as Director of Canadian National Defence Geospatial Intelligence Office
- informing the group that the Royal Canadian Navy is moving aggressively to a paperless bridge that includes no paper charts and wherever possible no paper publications
- the intention of DND to investigate the addition of hydrographic data collection capacity to some of its vessels. This will start with the OLEX system on a few of DND vessels including the HMCS Quest for 2013 during its tour into Arctic waters.

Opportunistic data collection was discussed with R. Ward, IHB Director, reflecting on Australian and French Hydrographic Office's positive experiences using satellite imagery to determine water depth up to 20 metres. This may complement traditional surveys particularly in the Arctic waters.

**ACTION M. Eelhart** – to update the UCHC36 with the lessons learned and/or Standard Operating Procedures related to the implementation of the OLEX system.

J. Lowell introduced the OCS organizational update that included:

- Ongoing expansion of bilateral agreements to gain access to hydrographic information in all the world areas where USA has territory
- OCS paper distribution is being led by Print on Demand (rather than the Lithographic products); digital charts average almost 10 million downloads per month.
- Great Lakes shoreline has been recently obtained by LiDAR surveys and this will stimulate new editions of Great Lakes products in the near future.
- The National GeoSpatial-Intelligence Agency (NGA) is slowly withdrawing its hardcopy paper charts and to-date has adopted 232 Canadian Charts for use in their portfolio.
- The HTML searchable database for nautical publication (Coast Pilots) was presented and has been a significant success from the End User perspective. These digital publications are not geo-referenced at this stage.
- Informing the group of the pending retirement of NGA, Chief Hydrographer, Chris Andreasen

Discussion on the digital publications included a question on whether they were just converted or was there a step to re-assess the data and the presentation. J. Lowell indicated they were just converted acknowledging that this was the quickest and most guaranteed way to get material into the User hands. Refinement of the digital Coast Pilots for enhanced digital products will be ongoing.

#### **4. Chart Advisors Committee (CAC) Reports**

##### 4.1 Transboundary ENC Production Status

D. Pelletier, co-chair of CAC, noted the following:

- The Pacific Ocean, Strait of Juan de Fuca (Phase 1) was the focus of the first release of these cooperative ENCs and these were released in December 2011.
- Phases 2 and 3 are now underway. This includes the Pacific Ocean, Dixon Entrance area (Phase 2) as well as the Atlantic Ocean Gulf of Maine/Bay of Fundy region (Phase 3). These are scheduled for release at the end of July 2012.

- The Great Lakes and St. Lawrence River and Seaway areas (Phase 4) will begin after the release of Phases 2 and 3.
- A total of 47 ENC cells were candidates for review in the overall Phases 2 and 3. Of these 14 ENC cells had to be cutback and 6 ENC cells were deleted.

4.2 Proposal and Information Items for extension of USCHC digital and paper chart collaboration. S. Hinds presented the following four items:

PROPOSAL 1 ‘Revision of 2011 Transboundary ENC Notes’ was presented with the following discussion and decision:

- The 2011 ENC Transboundary Project document established rules of procedure for creation of collaborative ENCs.
- Subsequent to signing the Project document it was observed that the Copyright Note for the collaborative ENCs required fine tuning.
- Correction to this Copyright Note was presented and explained.
- **DECISION:** A new version of the Copyright Note was approved by the Commission
- A formal signing of this amendment was undertaken during this Commission meeting for its incorporation into the USCHC Memorandum of Agreement (MOA).

PROPOSAL 2 ‘Updating of Chart Catalogues and References for Transboundary ENCs’ was introduced with the following discussion and decision:

- The Transboundary ENC project has de-coupled both parties ENCs from traditional paper chart limits
- In addition to the changed limits is the fact that waters of one State may now be covered by another Producer Nation
- Detailed communication of ENC coverage for use by Chart Dealers, Portfolio Management Services or Mariners themselves is essential for effective navigation through Canada-US transboundary waters
- ENC catalogue references are suggested to be updated as Phases of the Transboundary ENC work is completed
- This Proposal was adopted and assigned to CAC

**ACTION D. Prince:** To investigate and action updates to the Canadian Chart Catalogue and associated references to reflect realities of Transboundary ENCs in Strait of Juan de Fuca region by December 31, 2012

**ACTION CAC:** to use the lessons learned from the CHS actions taken in Strait of Juan de Fuca to establish protocols for catalogue and web representation at each phase of the Transboundary ENC work.

INformation Paper 1 ‘Canada to investigate the updating of Sailing Directions for ENC coverage’ was introduced with the following points noted:

- Sailing Directions are traditionally paper chart based and could be considered to cross-reference to digital chart products given they were also based on the paper chart scheme.

- The correlation between paper chart and Transboundary ENC's has changed and the Sailing Directions should consider how this information can best be reflected for Stakeholders.
- Investigate and implement Sailing Directions as a communication tool to inform End-Users of the correlation of ENC products with national paper chart coverage.
- Lessons learned will be communicated at next USCHC meeting.
- US Coast Pilot does not reference or link to ENC coverage in the U.S.

**ACTION D. Prince:** Investigate and action updates to CHS Pacific Region Sailing Directions to harmonize with decisions taken on Strait of Juan de Fuca Transboundary ENC's. Completion target is December 2012.

PROPOSAL 3 'To review commitments and best way forward for paper chart collaboration' was introduced with the following points raised in discussion:

- Canada and United States traditionally cooperated in paper chart production in the Great Lakes and the Atlantic Coast
- Corporate memory of paper chart collaboration business rules has deteriorated over recent years due to insufficient record keeping, personnel transition, and organizational changes lack of formal documentation
- S. Narayanan suggested that the practice of dual badging products be viewed in light of efficiency opportunities gained from Single Agency Charting
- This Proposal was adopted and assigned to CAC

**ACTION CAC** – To investigate best application of paper chart collaboration and recommend best next steps including formalization of the business rules into the USCHC MOA with appropriate updating of any related carriage information documents required for US or Canada waters. Recommendations from CAC to USCHC should be provided by January 2013 with expectations to formalize a paper chart agreement at USCHC36.

## **5. IHO Inter-Regional Coordination Committee (IRCC)**

S. Narayanan introduced this Agenda Item and noted that Canada (S. Narayanan) will represent USCHC at IRCC4 with support of USA (J. Justi). The following points were noted as key preparation steps USCHC at IRCC4:

- Annual Regional Hydrographic Commission reports due May 21 to Chair IRCC
- Nominations of new Chair and Vice-Chair are expected and Canada and USA to give serious consideration to the best Member State to fill these important roles

Next steps for the WENDWG post XVIIIITH IHC and the pending revision of C-55 were consider worthy points of discussion for this meeting

Next, S. Narayanan encouraged discussion of the work to be undertaken by WENDWG in respect of the WEND Principles. The following points of discussion are noted:

- The proposed Amplifying Annex of the WEND Principles and Guidelines introduced at XVIIIth IHC was put back to WENDWG for more consideration
- J. Lowell commented that in the present form the Amplifying Annex wrongly implies authority in IHO or in RHCs to direct ENC production in waters of another Coastal State
- K. Ries stressed that the goal of the WEND Principles and associated documents are to encourage proactive action to close gaps but the current drafted language is too strong and goes beyond the authority of IHO and RHCs
- It was recognized that time constraints on WENDWG deliberations and reporting to the XVIIIth IHC resulted in inadequate time to seek full input of the IRCC and IHB.
- S. Hinds suggested that WENDWG might consider further elaboration of the role of IHO and RHCs to report where gaps or overlaps exist and to present a sound risk assessment to inform the stakeholder community in order to assist in prioritization of the most critical areas to focus effort and awareness
- K. Ries suggested that USCHC concerns regarding the strong language in the current draft and recommendations for enhanced discussion on reporting and risk assessment be included in the USCHC report to IRCC4
- R. Ward provided some history of the WEND Principles and Guidelines whereby the Principles are already reflected in an IHO Technical Resolution but the Guidelines are only recorded on the WEND web page. It may be worthy of consideration to suggest the WENDWG consider how to re-constitute these two distinct documents in any further revision.

**DECISION:** CHS and OCS to be active in any drafting group established by the WENDWG in regards to the WEND Principles and Guidelines

**ACTION S. Narayanan:** to include a recommendation in the USCHC report to IRCC4 that WENDWG consider enhanced requirement for RHC reporting and risk assessment of gaps and overlaps. Additionally, deliberation on a revised WEND Guidelines should consider final publication of the work given the current status of the Principles being a Technical Resolution and the Guidelines being a web Working Group document.

S. Narayanan introduced the topic of the IRCC revision of the C-55 publication ‘Status of Hydrographic Surveying and Nautical Charting Worldwide’. She invited presentations on associated activities in both CHS and OCS. Michel Goguen, Director CHS Atlantic, provided insight into a new survey priority planning tool that may assist in determination of inputs to C-55. Doug Baird, OCS Chief Marine Chart Division, presented NOAA’s methodology for strategic and annual planning for hydrography and charting in waters of the USA.

- M. Goguen presented work in progress in CHS for using a GIS tool to compare the existing quality of hydrographic data (CATZOC) with the estimated CATZOC required for the area. Factors guiding CATZOC requirements included depth, complexity of navigation, type of cargo shipped and Search and Rescue response times.
- Differences between the two CATZOCs would assist CHS in determining survey and charting priorities but would at same time provide a sound scientific approach to reporting on Status of Hydrography and Charting.
- D. Baird presented the systematic approach used in US waters to identify areas of navigational significance which also took into account depth and complex navigational activity including the busiest ports along the US coast. This analytical tool can be utilized to analyze Status of Hydrographic Surveys and Charting in the global waters where USA has territory.

S. Narayanan opened the floor for discussion on the processes that were presented and their potential for supporting the IRCC proposed revision of C-55:

- R. Ward noted that this was good progress by both offices but was concerned by the capacity of some IHO Member States to have similar technical tools particularly in those where the most critical analysis and reporting was required to properly inform Stakeholders of requirements and risks arising from poor hydrographic data.
- J. Lowell agreed that the input to C-55 by only the most developed HOs would not be appropriate to meet the basic global needs of the IHO C-55 publication. It may be appropriate for the IRCC to clearly specify to MS its most basic needs rather than seeking to gather any information that is available which may be far detailed more than required.
- There was general agreement by the group that what is needed by IRCC and the IHO is a tool to indicate where there is dire need for improved hydrography and thereby provide a compelling story on how the collective Coastal States must act to remedy the areas of most risk to navigation. This should be the real utility of C-55.

**ACTION S. Narayanan** – to include a recommendation in the USCHC IRCC4 Report that the C-55 Task Group consider defining the objectives for the publication in order that it meets the needs of the IHB and does not duplicate with the detailed responsibility of Hydrographic Offices to inform their direct stakeholders of coverage and quality of hydrographic surveys and charting.

## 6. Marine Safety Information (MSI) Reports

S. Narayanan turned the floor over to Canada (A. Li, Director Canadian Coast Guard (CCG)) and USA (P. Doherty, Chair IHO World Wide Navigational Warning System (WWNWS) sub-committee) representatives to update the group on MSI matters.

A. Li provided a briefing on the activities in Canada in respect of MSI and the CCG.

- Canadian Government recently announced significant investment for CCG fleet and shore-based asset renewal
- E-Navigation is an emerging priority for Canada that will require a sustained effort to achieve. CCG is the national lead in Canada for e-nav.
- Arctic marine patterns are changing and this is a priority for CCG. NAVAREA implementation has been a success and in summer 2012 CCG will begin broadcasting NAVAREA warnings above 76° North.
- CCG contributed to the signing of the Arctic SAR agreement with other Arctic nations
- CCG is planning to include hydrographic survey instrumentation in its new builds in order to enhance its contribution to the work of the Canadian Hydrographic Service
- The concept of identifying marine transportation corridors is being considered as a means to encourage predictable marine transportation where service levels can be confidently provided.

P. Doherty provided a briefing on WWNWS activities within US water and some general comments of the IHO Committee in a global context

- There are 11 Navtex Systems covering US coastal water that include waters of Guam and Puerto Rico
- NAV warning operations in United States are structured to alternate service delivery locations as a natural course of operations to ensure ability to recover should service fail for any reason
- US and Canada displayed good collaboration in building Canadian capacity to assume operation of the two Arctic NAVAREAS assigned to Canadian Coast Guard
- IHO WWNWS sub-committee was asked by IMO to provide logistic nav warning direction to vessels during the 100 year celebration of the Titanic event



- IHO WNWNS has also enhanced its communication protocols in areas of known piracy activities
- Lessons learned from the Japan tsunami and its aftermath resulted in creation of zones of safe passage corridors for ships to avoid nuclear fallout
- Recent awareness of anomalies in ECDIS display was also a subject of detailed broadcast navigational warnings.
- IHO WNWNS is working with the World Meteorological Organization for improvement to the world meteorological warning system

## **7. Arctic Regional Hydrographic Commission (ARHC) discussion**

S. Narayanan provided an update for the group on discussion of the ARHC during an Ad Hoc meeting during the XVIIIth IHC. Of particular interest were next steps for the work of the Arctic Mariner Routing Guide (AMRG) in which USA and Canada have been particularly active. The following points of discussion are to be noted:

- J. Lowell noted the two concerns of Canada on the complexity of a multi-national AMRG product and the necessity that it is properly maintained up-to-date. He also noted that the discussion on a paper version versus a more detailed digital version could be viewed as serving two different needs, one being a planning tool and the paper version being a tool used on the navigational bridge.
- J. Lowell also expressed the opinion that there were benefits of releasing a prototype AMRG product by putting it out to obtain Stakeholder feedback. Included in this was the opportunity for the ARHC to gain recognition for demonstrating a unified contribution to improving knowledge of navigating in Arctic waters.
- UKHO indicated they had similar experiences in publishing a prototype document (in the case of piracy) as a first offering and then improving it on an incremental basis. UKHO consider their product to be a first cut at risk mitigation and it was well received by the User community. UKHO offered to share experiences of this product in support of the AMRG
- P. Doherty indicated that the product may be best considered as a Planning Guide to differentiate it from the officially recognized Routing Guides
- S. Narayanan reflected that the in-depth consultation on how to design the AMRG product for Canadian purposes may have lost the basic original concepts articulated by the ARHC. It may therefore be worth putting a 1<sup>st</sup> draft into the hands of the potential users to gain experience on how the users value the information

- M. Eelhart noted that this could be a 70% solution and further improvements would be forthcoming if the up-take was positive. He stated that DND finds the current product highly useful.
- M. Hecimovich indicated that the response he received on the proposed product was that the current version may be useful as a planning tool and not necessarily a tactical navigation product. The User discussions in Canada also indicated that a digital product was the preferred option because of its flexibility.
- R. Ward offered advice that this unique Arctic product need not conform to the IHO Guidance on Mariners Routing Guides (C-17) and that a simple product may be useful and will serve as a signal of positive ARHC collaboration
- When asked if it could be hosted on the IHB web site as a neutral platform for distribution R. Ward responded that this could be supported if that was the wish of the ARHC
- S. Narayanan expressed actions that should be captured in the USCHC minutes and presented to the Chair of the AMRG Working Group as follows:

**ACTIONS USCHC:**

- Make recommendations to ARHC for a new title for the AMRG proposal
- Define clearly what the intentions of the product are and what it is not
- Make recommendations to ARHC on how this product can be maintained
- Make recommendations to the ARHC on where and how it be hosted for access

S. Hinds introduced PROPOSAL 4 – ‘USCHC to design an ENC scheme for the Beaufort Sea region’ to be considered for presentation to the 3<sup>rd</sup> meeting of the ARHC. The following discussion points were noted:

- It was noted that the good momentum in establishing Transboundary ENC solutions should be applied to the Arctic border waters between Canada and United States
- To date there has been minimal ENC production in the region and therefore this would be a planned ENC scheme with no time commitment for chart production given the need for improved hydrographic data

- D. Baird noted that the ARHC INT Chart Working Group led by Norway should be engaged early in the process to improve traction by ARHC Members

**ACTION CAC:** To begin investigation of a collaborative ENC scheme in the Beaufort Sea region that includes ARHC awareness with the intention of presenting results to ARHC3 in October 2012.

## **8. International Information Update**

IHB Director Robert Ward provided an update of IHB activities and perspectives from the recent XVIIIth IHC. The following points are noted:

- the extensive Work Plan of the IHO and its significant advancement over the last 10 years was notable during deliberations of the XVIIIth IHC
- the new Directing Committee will seek to elevate awareness of the importance of hydrography in the global context. In particular, the Directing Committee will seek to improve awareness of the importance of Hydrography at the highest levels including through diplomatic channels aimed at Foreign Ministers
- continued recruitment of non-Member States into the IHO organization is vital to improve effectiveness in reaching IHO objectives
- implementation of the revised IHO Convention and developing the reporting and measuring of achievements against the IHO strategic plan should be priorities

Tim Lewis provided a presentation on the MACHC Economic Infrastructure Project (MEIP). The following points and discussion were noted:

- A Marine Spatial Data Infrastructure (MSDI) for the MesoAmerican Region is the underlying objective of this project.
- This MSDI is expected to provide a sound scientific demonstration of the factors that will lend credibility to a Business Plan for funding requests for key areas that would benefit from investment in hydrographic services
- A key factor of success is to make the technology and cost of the tool manageable and accessible by all Coastal States in the region
- Standardization of data and formats is also important thus sound reliance on OGC and ISO Standards

- MSDI example information is available at [www.data.gov/catalog/geodata](http://www.data.gov/catalog/geodata)
- Processes and lessons learned from similar initiatives worldwide are to be leveraged including those from the Baltic Sea region
- T. Lewis ended his presentation with an invitation to USCHC to share their experiences as opportunities for the MEIP to evolve

Kian Fadaie provided information on one of the MSDI efforts in Canada noting the following:

- Natural Resources Canada (NRCan) and CHS are leading a MSDI project funded through the GeoConnections Program of NRCan.
- pilot project funding is focused now on the Arctic Region and a questionnaire is in preparation to solicit input from 40 primary Canadian Arctic Stakeholders as a preliminary scan of user interest and gaps

**ACTION K. Fadaie:** to update USCHC on progress with Canadian MSDI questionnaire results and to exchange questionnaire information with the UKHO led MEIP initiative

Christopher Fox presented an overview of GEBCO activities noting the following:

- GEBCO has a long history tightly aligned with IHO having been initiated also by Prince Albert of Monaco
- Canada and United States have been contributing governments for ENC data
- Long-term engagement of scholars from the Nippon Institute, hosted at the University of New Hampshire, has been a success for GEBCO
- GEBCO objective is to nurture collaborative relations with IHO Member States and Regional Hydrographic Commissions in particular
- Arctic and Antarctic Seafloor Mapping workshops are a GEBCO sponsored annual activity and Canada and United States, both being Arctic Coastal States, are invited to note this work
- Awareness of the recently published GEBCO Cook Book as a guide to creation of gridded data sets was noted as a GEBCO effort for sharing of knowledge and experiences.

## **9. New Items**

S. Narayanan took this opportunity to recognize the dedication and contribution of Captain John E. Lowell to the important work of the United States-Canada Hydrographic Commission. To express the deep gratitude of the Canadian Hydrographic Service, Captain Lowell was presented with a bronze cast of the CHS crest. S. Narayanan wished him well in his retirement years and hope that he would remain active within the hydrographic community.

## **10. Close of Meeting**

J. Lowell welcomed the USCHC to attend the 2013 meeting likely to be held in conjunction with the United States Hydrographic Conference scheduled for New Orleans in March of next year. He expressed his positive outlook on USCHC collaboration and wished the group well in its future endeavours. He thanked the good work of the Canadian hosts who assembled and delivered another smooth Commission meeting

S. Narayanan took this opportunity to welcome Captain Gerd Glang with hopes and expectations of fruitful outcomes of Commission cooperation in the years to come. She echoed John Lowell's praise of the organization committee for this meeting.

S. Narayanan closed the meeting

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**International Hydrographic  
Organization**



**United States - Canada Hydrographic  
Commission**



Agenda

35<sup>th</sup> Meeting of the

**UNITED STATES - CANADA HYDROGRAPHIC COMMISSION**

Room 204 at the Scotiabank Convention Centre, 6815 Stanley Avenue, Niagara Falls, Canada

May 14, 2012, 09h30 – 17h00

Co-Chairs: Dr. Savithri Narayanan and Captain John E. Lowell

Item	Time	Presentation/Discussion	Presenter
	09h30	<i>Coffee &amp; Muffin</i>	
1	10h00	<b>Opening Remarks, Introductions</b> <b>Approval of Agenda</b>	S. Narayanan J. E. Lowell
2	10h15	<b>Approval of Minutes of 34<sup>th</sup> Meeting</b> Status of Actions Arising from 34 <sup>th</sup> Meeting	S. Narayanan
3	10h30	<b>Organizational Updates</b>	
		Canadian Hydrographic Service	S. Narayanan
		National Defence- Geospatial Intelligence	M. Eelhart
	10h50	Office Coast Survey	J. E. Lowell
4	11h15	<b>Chart Advisors Committee Report</b>	
		<ul style="list-style-type: none"> <li>• Transboundary ENC Production Status</li> <li>• PRO 1: Amendment to the 2011 Schedule a Record 2011-1 ENC Transboundary Project – Annex E</li> <li>• Pro 2: Harmonized Product Catalogue information to reflect Transboundary ENC coverage</li> <li>• INF1: Update Sailing Directions publications to reflect Transboundary ENC schemes</li> </ul>	D. Pelletier, D. Baird S. Hinds S. Hinds S. Hinds
		Update of USCHC Paper Chart Cooperation	S. Hinds, D. Baird

		<ul style="list-style-type: none"> <li>• PRO 3: Reaffirm and document the US Canada collaboration on paper nautical charting</li> </ul>	
	12h30	<i>Lunch Break – Boxed Lunch Provided</i>	
5	13h15	<b>IHO Inter-Regional Coordination Matters</b>	
		<ul style="list-style-type: none"> <li>• General planning for IRCC4</li> <li>• WENDWG XVIIIth IHC outcomes and next steps</li> <li>• USCHC contribution opportunities for Revision of C-55 – Canada presentation</li> <li>• USCHC contribution opportunities for Revision of C-55 – USA presentation</li> </ul>	<p>S. Narayanan S. Narayanan, J. E. Lowell</p> <p>M. Goguen</p> <p>D. Baird</p>
6	14h00	<b>Marine Safety Information Report</b>	
		<p>Canada Update</p> <ul style="list-style-type: none"> <li>• Canadian Coast Guard Communication &amp; Hydrographic Services</li> </ul>	Alex Li
		<p>United States Update</p> <ul style="list-style-type: none"> <li>• USA Marine Communication &amp; Hydrographic Services</li> </ul>	Peter Doherty
7	14h45	<b>Arctic Regional Hydrographic Commission</b>	
		<p>Status of Cooperation on the Arctic Mariners Routeing Guide</p> <ul style="list-style-type: none"> <li>• Re-Cap ARHC Discussion at XVIIIth IHC</li> <li>• Next Steps Routeing Guide</li> <li>• PRO 4: USCHC to prepare cooperative ENC scheme in Beaufort Sea for ARHC3</li> </ul>	S. Narayanan, J. E. Lowell
	15h15	<i>Coffee and Health Break</i>	
8	15h30	<b>International Information Update</b>	
		<p>International Hydrographic Bureau Report</p> <ul style="list-style-type: none"> <li>• Update of the IHB</li> </ul>	Robert Ward
		<p>United Kingdom Hydrographic Office</p> <ul style="list-style-type: none"> <li>• Update of the MACHC MSDI initiative</li> </ul>	Tim Lewis
		GEBCO Update	Chris Fox
9	16h30	<b>New Items Raised</b>	
10	17h00	<b>Closing Meeting</b>	
		Next Meeting	S. Narayanan

		Closing Remarks	S. Narayanan, J. E. Lowell
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