

Submitted by ARHC (USA, Canada, Russia, Norway, Denmark)

PAME II-2015 Agenda Item 4.1(b)
Update on Activities of the Arctic Regional Hydrographic Commission

BACKGROUND

PAME-I 2015 adopted a Record of Decision (ROD) stating:

PAME requests the Secretariat to invite the Arctic Regional Hydrographic Commission (ARHC) to submit and update progress on the status of Arctic hydrography and charting, as well as any developments with respect to Arctic Voyage Planning Guides.

Pursuant to this ROD, the members of the Arctic Regional Hydrographic Commission (ARHC) (Canada, Denmark, Norway, the Russian Federation, and the United States) are providing a status report on activities of the Commission since February 2015.

The ARHC is one of 15 Regional Hydrographic Commissions (RHCs), voluntary associations of International Hydrographic Organization (IHO) Member States having common regional interests in hydrographic data and nautical charting. The RHCs complement the work of the IHO. These RHCs along with the IHO Hydrographic Commission on Antarctica, provide a global structure to help achieve IHO objectives at the regional level.

A principal *Aim* of the IHO is to ensure that all the world's seas, oceans and navigable waters are surveyed and charted. The *Mission* of the IHO is to create a global environment in which States provide adequate and timely hydrographic data, products and services and ensure their widest possible use. The *Vision* of the IHO is to be the authoritative worldwide hydrographic body which actively engages all coastal and interested States to advance maritime safety and efficiency and which supports the protection and sustainable use of the marine environment.

The IHO awaits a decision on its observer status at the Arctic Council and our belief that the ARHC is the competent intergovernmental authority regarding the coordination of hydrography and nautical charting services in the region and should be recognized as such by the Arctic Council, in the same way as the IHO is recognized by the UN General Assembly, IMO, IOC, WMO, IALA and others. The Secretariat of the IHO is the International Hydrographic Board.

DISCUSSION

The Arctic Regional Hydrographic Commission was established in October 2010 by Canada, Denmark, Norway, the Russian Federation and the United States in recognition of the need

for enhanced collaboration and coordination on Arctic hydrographic issues.¹ By exchanging knowledge and information and by providing quality assured data, ARHC members aim to facilitate an environmentally responsible utilization of Arctic waters and contribute to the development of the maritime infrastructure required for safe navigation and protection of the Arctic marine environment.² Finland and Iceland have participated as “observers” at the ARHC since 2011 in recognition of their membership in the Arctic Council.

Arctic Voyage Planning Guides

ARHC members decided on a path forward for producing nationally managed voyage planning guides (AVPGs) for navigation in Arctic waters. AVPGs are intended to enhance mariner and public awareness of the unique complexities and requirements of navigating in the Arctic marine environment. The information proposed to be common across AVPGs was discussed and addressed at the ARHC-4 (2014) meeting in Portsmouth, New Hampshire (see Attachment I).

The current state of web-based AVPG guides developed by ARHC members may be accessed at the links below:

Canada	http://geoportail-geoportal.gc.ca/eng/Gallery/mapprofile/5
Denmark	http://eng.navigation.gl/
Norway	Pending status update at ARHC-5 (October 2015; St. Petersburg, Russia)
Russian Federation	http://asmp.morflot.ru/en/ceci_funktsii/
United States of America	http://www.nauticalcharts.noaa.gov/avpg/guide.htm

The linkage and access to these sites and next steps will be discussed at the ARHC-5 meeting to be held 28 -31 October 2015 in St. Petersburg, Russian Federation.

Status of Hydrography and Nautical Charting

In September 2013, PAME II-2013 (Rostov, Russia) adopted a ROD and invited IHO and ARHC to “provide relevant updates to PAME as requested on the status of hydrography and nautical charting in the Arctic region and to identify where there may be opportunities for collaboration on areas of common interest.” And, “PAME invites member governments to submit information to PAME I-2014 on the currency and accuracy of nautical charting and of future charting plans in Arctic waters subject to their jurisdiction.”

In response, the ARHC Operations and Technology Working Group comprised of members of seven Arctic States hydrographic offices, collaborated to develop an assessment

¹ The constitutive document of the ARHC, *The Statutes of the Arctic Regional Hydrographic Commission*, is available online at http://www.iho.int/mtg_docs/rhc/statutes/ArHC_Statutes.pdf. Additional information, including past ARHC meeting documents, may be found at http://www.iho.int/srv1/index.php?option=com_content&view=article&id=435&Itemid=690.

² *Statement of the Arctic Regional Hydrographic Commission*, ARHC1-07D (6 October 2010) (available at http://www.iho.int/mtg_docs/rhc/ArHC/ArHC1/ARHC1-07D_ARHC_Statement_Oct_6_2010.pdf.)

methodology to provide the requested information.³ In an effort to determine how best to deploy assets in an incremental survey approach, a comprehensive study was conducted to assess the current hydrographic holdings relative to potential areas of navigational risk. This study presented a risk-based methodology of prioritizing survey areas based on confidence of chart data, estimated depth, and dominant marine traffic patterns. The Hydrographer General of Canada, Mr. Denis Hains, presented the results of this assessment to PAME II-2014 in Whitehorse, Yellowknife, Canada.

PAME I-2015 (February 2015, Akureyri, Iceland) adopted the record of decision cited above. The following updates activities of the ARHC members since then.

The methodology of the Arctic assessment effort was documented and presented at the U.S. Hydrographic Conference⁴ (16-19 March 2015) in a paper entitled "*A Risk-based Methodology of Assessing the Adequacy of Charting Products in the Arctic Region: Identifying the Survey Priorities of the Future*"⁵ and as a PowerPoint presentation.⁶ Feedback has been received on the approach from hydrographic colleagues and maritime transportation stakeholders. Several Hydrographic Offices are actively collaborating and working to improve risk-based methodologies to support development of hydrographic survey priorities, including the United States, Canada, and Australia. Lessons learned should also enable further refinement of the methodology by Hydrographic Offices involved in the Arctic assessment.

A proposal to repeat the Arctic charting assessment in 2016 with more recent satellite Automatic Information System (AIS) data (depending on availability) will be discussed at ARHC-5. AIS is a shipboard broadcast system that transmits a vessel's real-time position and other critical information and is used to understand and assess existing or new shipping routes.

In Canada, a similar methodology has been applied by the Canadian Hydrographic Service (CHS) to support the Government of Canada's Northern Marine Transportation Corridors initiative. The intent is that there will be periodic re-assessments of priority areas as more hydrography is completed and more AIS data becomes available.

³ Mike Gonsalves (U.S. National Oceanic and Atmospheric Administration), Douglas Brunt (Canadian Hydrographic Service), Noralf Slotsvik (Norwegian Mapping Authority Hydrographic Service), Jens Peter Hartmann (Danish Geodata Agency), and Captain Leonid Shalnov (Russian Federation, Department of Navigation and Oceanography).

⁴ The U.S. Hydro 2015 Conference, presented by The Hydrographic Society of America, is a continuation of the series of hydrographic conferences that alternate between the United States and Canada. In addition to the technical papers, the conferences feature an extensive series of Workshops, social program, Exhibition Hall, and a Student Outreach program. The conferences include technical sessions and a poster session on the latest developments and applications in hydrographic surveying, multibeam and side scan sonar, data management, electronic charting, marine archaeology, and related topics. Approximately 200 participants attended US Hydro 2015. The next Conference will be held in Nova Scotia Canada in May 2016.

⁵ http://www.hypack.com/ushydro/2015/papers/pdf/USHydro_Risk_based_Methodology_Gonsalves.pdf.

⁶ http://www.hypack.com/ushydro/2015/papers/slides/3-Gonsalves_Arctic_Chart_Priority.pdf

Other Activities

- Conference on Global Leadership in the Arctic: Cooperation, Innovation, Engagement and Resilience (GLACIER, 28 August 2015, Anchorage, Alaska):
 - U.S. National Hydrographer, Rear Admiral Gerd F. Glang, Director of the Office of Coast Survey, NOAA addressed a panel on “*Charting the Arctic: Opportunities and Challenges*”;
 - The U.S. National Geospatial-Intelligence Agency (NGA), and U.S. National Science Foundation announced their collaboration with the University of Minnesota’s Polar Geospatial Center and the private sector to create the first-ever publicly available, high-resolution, satellite-based elevation maps of the Arctic;
 - The U.S. Department of the Interior’s U.S. Geological Survey, in partnership with the State of Alaska, announced efforts to fly the Alaskan Arctic with new sensors, generating Interferometric Synthetic Aperture Radar (IfSAR) data that will complement Alaska and Arctic DEMs, improving maps and elevation models of these regions to unprecedented levels of accuracy; and
 - NGA announced development of the most comprehensive pan-Arctic map ever published by the U.S. Government (<http://nga.maps.arcgis.com>). The map will include layers such as Arctic Routes, Arctic Currents, Oil Production Sites, Gas Production Sites, Oil Drilling Areas, Oil and Gas Reserves, Airfields and Ports, Bathymetric Data, Digital Terrain Elevation Data, and Natural Earth (including rivers, railroads, and populated places).

- Arctic Council Emergency Prevention, Preparedness and Response Working Group:
 - In July, the U.S. National Hydrographer briefed Dr. Amy Merten, Chair of the EPPR Working Group, on the purpose and recent work of the ARHC. EPPR is currently preparing the Marine Oil Pollution Preparedness and Response in the Arctic (MOSPA) Planning Workshop to be held in September 2015 with an international Exercise in 2016. Admiral Glang offered to make hydrographic expertise available (if warranted and logistically feasible) to assist in any future efforts of EPPR in factoring hydrographic considerations in marine emergency response contingency planning.

- Transport Canada Inter-departmental Marine Security Working Group (Canada)
 - The Hydrographer General of Canada made a presentation entitled, “*Charting Canada’s Arctic Waters*” in January 2015 to this working group outlining the status and challenges of Arctic charting and highlighting the need for international collaboration, e.g. ARHC.

ARHC-5

The Russian Federation will host the ARHC-5 meeting in St. Petersburg 28 - 30 October 2015. The meeting agenda and supporting documents will be posted on the IHO website: http://www.iho.int/mtg_docs/rhc/ArHC/ArHC5/ArHC5Docs.htm.

RECOMMENDATIONS

The member states of the ARHC recommend that:

- PAME note this report.
- PAME note the preliminary agenda of the ARHC-5 (as of July 9, 2015) and particularly the following agenda item: “D. International Cooperation” and “D3. Report from the Arctic Council/PAME CA.” See Attachment 2.
- PAME identify any information, assessments, or other needs that the ARHC might collectively address to inform PAME considerations and recommendations to contribute to the protection of the Arctic marine environment.
- PAME provide an overview of any recommendations or suggestions from the PAME II-2015 meeting regarding this report and/or any other discussion points relevant to the hydrographic offices attending the ARHC-5 meeting.
- PAME consider submitting any requests for ARHC action for the upcoming 2016-17 period. If acceptable, please provide the summary to the Chair (Captain Sergey Travin, Russian Federation, Unio@mil.ru), Vice Chair (Denis Hains, Canada, denis.hains@dfo-mpo.gc.ca), and the International Hydrographic Board (President Robert Ward, pres@iho.int) by October 20, 2015.

Attachment 1

Information Content Identified by the ARHC for Arctic Voyage Planning Guides From ARHC4-3.3 “*Harmonization of Arctic Voyage Planning Guides for Pan Arctic Coverage*”

Theme 1 – Carriage Requirements

- Navigational Warnings Services
- Radio Aids to Navigation
- List of Lights and Buoys and Aids to Navigation
- Nautical Charts and Publications services

Theme 2 Regulatory Requirements

- Acts and Regulations specific to marine navigation (similar to S-49 E.3.2)
- IMO Guidelines for Operating in Polar Waters

Theme 3 Arctic Environment Considerations

- Communities and Populated Areas Information
- Weather Station Locations and Services Available (similar to S-49 E.4.2 and U.4))
- Airports and Hospitals
- Resource Development Significant Locations

Theme 4 Route Planning

- Traditional Traffic Routes (similar to S-49 E.3.2)
- Controlled Navigational Areas including Vessel Traffic Services Zones
- Limiting Depth For Constricted Waterways
- Tide, Current and Water Level information (similar to S-49 U.6.1)
- Environment Protected Areas
- Major Aids to Navigations (similar to S-49 E.1.2 and U.1.2)
- Places of refuge or Pilot Boarding Stations (similar to S-49 E.1.5)
- Calling-in Points (similar to S-49 E.4.1)

Theme 5 Reporting and Communicating

- Areas of Legislative Importance to Navigation
- Marine Communication Services (similar calling-in info to S-49 E.4.1)

Theme 6 Marine Services

- Ice Breaking Support Services
- Search and Rescue Support Services
- Ice Services Information (similar to S-49 U.6.4)

Theme 7 Nautical Charts and Publication

- Nautical Chart Catalogue and Coverage
- Publication Catalogue and Coverage

Attachment 2



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Letter 1/2015
9 July 2015

**The 5th Arctic Regional Hydrographic Commission Meeting
28-30 October 2015, Saint Petersburg, Russian Federation**

Preliminary Agenda

A. Opening formalities

B. IHO Work Program 1 - Corporate Affairs

B1. Information about activities of the IHB - **IHB**

B2. Outcome of IRCC7 meeting - **IHB**

B3. Status of actions from ARHC-5 - **Chair**

B4. National reports - **MS**

B4.1 National report of Canada - **CA**

B4.2 National report of Denmark - **DK**

B4.3 National report of Norway - **NO**

B4.4 National report of Russian Federation - **RF**

B4.5 National report of USA - **US**

C. IHO Work Program 2 – Hydrographic Services and Standards

C1. Report of Strategic Planning Working Group - **SPWG Chair**

C2. Report of Operational and Technical Working Group - **OTWG Chair**

C3. Report of of Arctic Voyage Planning Guide Working Group -
AVPGWG Chair

C4. Status of Arctic International Charting Coordination Working Group –
NO

D. International cooperation - IHO, IMO, IALA ...

D1. The progress of the WEND WG - ...

D2. Associate Members and Observers of ARHC - **Chair**

D3. Report from Arctic Council/PAME – **CA**



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E. Marine Spatial Data Infrastructure (MSDI)

E1. Report of MSDI Working Group - **DK**

F. Any other international activities in nautical charting and hydrographic surveying

G. Any other business

H. Election of next ARHC Chair and Vice Chair

I. Time and venue for next ARHC Meeting

J. Review of ARHC 5 List of Actions

K. Closing formalities