

**Arctic Regional Hydrographic Commission (ARHC)
St. Petersburg, Russia 28-30 October**

Report of the OTWG

Submitted by:	United States of America (Chair) and Canada (Vice Chair)
Executive Summary:	This paper reports on efforts of the OTWG since January 2014.
Related Documents:	IRCC7-11G
Related Projects:	none

Introduction / Background

The Operations and Technology Working Group was established at ARHC-1. The Terms of Reference (ARHC2-07A) identifies the objectives of the group:

- To provide a core of expertise on hydrographic operations in the Arctic.
- To develop and maintain documented best practices, lessons learned, and advances in training and technology.

At ARHC-4, the United States agreed to continue serving as OTWG chair. One action item was identified for the OTWG for the 2014-5 period at ARHC-4:

- ARHC4-07: The OTWG to cooperate with IBCAO to come up with an overview of the availability of survey data.
 - OTWG worked with IBCAO to produce generalized depth surface of Arctic, used as one of three foundation layers for PAME project (see below).
- ARHC4-10: OTWG chair to invite Finland and Iceland to become a member of the Working Group.
 - Completed.

2014-5 Activities and Update

- Finland and Iceland joined as members of the OTWG. The current membership of the OTWG is provided as Attachment A.
- Members of the OTWG contributed to the report “*A Risk-based Methodology of Assessing the Adequacy of Charting Products in the Arctic Region: Identifying the Survey Priorities of the Future*” which was submitted to the PAME Working

Group (Arctic Council) and presented at U.S. Hydro Conference in March 2015. The assessment includes data provided by Canada, Denmark, Norway, the United States and IBCAO. The paper is available as IRCC7-11G. A copy of the presentation given is also available on the OTWG website. Readers are encouraged to review the “Conclusions and Future Work” section of the paper.

- NOAA established a website to encourage and promote sharing of information at: <https://coastsurvey.noaa.gov/arhcotwg/default.aspx>. Users must register for access. The access form is provided as Attachment B. A list of topics that were identified for potential collaboration on the website are provided in Attachment C.
- The “*NOAA Vessel Operations in Arctic Waters*” (July 2015) presentation is available on the OTWG website.

Analysis/Discussion

The collaborative assessment of charting adequacy was a successful project. Additional data is needed to complete the assessment for the entire Arctic. Readers are encouraged to note the conclusions section of the paper.

Comment and discussion of the methodology and conclusions would be welcomed. See statistical conclusion summaries (Figures 11 and 12) from the paper in Attachment D. Reanalysis of the assessment with different temporal data may provide insights into shifting navigation patterns and shifting survey and charting needs.

Guidance of the National Hydrographers is requested on work priorities for the intersessional period between ARHC-5 and ARHC-6.

Recommendations

ARHC Member States are invited to consider this report and offer direction and guidance to the Working Group on future activities. Member States are also invited to provide updates to membership list.

Actions Requested of ARHC

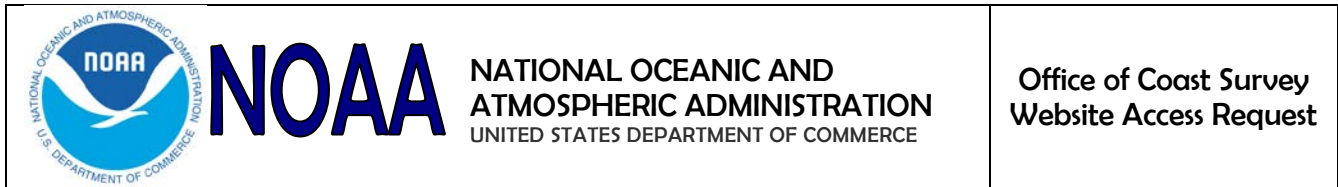
The ARHC is invited to:

1. review the 2015 report;
2. consider the discussion points;
3. discuss the proposed 2016 actions; and
4. make any adjustments and decisions as warranted.

Attachment A

Membership

Canada	Scott Youngblut	scott.youngblut@dfo-mpo.gc.ca (Vice Chair)
	Douglas Brunt	douglas.brunt@dfo-mpo.gc.ca
Denmark	Lars Hansen	larsh@gst.dk
	Jens Peter Hartmann	jepha@gst.dk
Finland	Seppo Makinen	seppo.h.makinen@liikennevirasto.fi
Iceland	Hilmar Helgason	hilmar.helgason@ihg.is
Norway	Arne Ofstad	arne.ofstad@kartverkey.no
	Noralf Slotsvik	noralf.slotsvik@kartverket.no
Russian Federation		unio@mil.ru
United States	Michael Gonsalves	michael.gonsalves@noaa.gov (Chair)
	Stanley Harvey	stanley.b.harvey@navy.mil
	John Lowell	john.e.lowell@nga.mil
	Keith Alexander	keith.e.alexander@nga.mil
	Keith Dominic	keith.e.dominic@nga.mil
	Jonathan Justi	jonathan.justi@noaa.gov



Office of Coast Survey Website Application for New Account

You have been recommended to the Office of Coast Survey, NOAA (OCS) for access to the Coast Survey SharePoint website which has a restricted access list. This collaboration website contains data pertinent to daily OCS operations, some of which may be proprietary. Prior to your gaining access, the Office of Coast Survey will need information from you that will become part of our integrated database and website.

Effective January 1, 2011, the OFFICE OF COAST SURVEY IT Security Office requires each website user requesting access to a multi-user IT system to submit an Account Request Document for approval.

Please complete the following application and return (with signature) to the the website Point-of-Contact who will process the application. You will be notified when approved and account is created.

Instructions for Completing the Form

1. **Name:** Last Name, First Name, Middle Initial.
2. **Functional Title:** (e.g., Systems Engineer, Administrative Assistant, etc...)
3. **Affiliation:** Please indicate your government agency and organization. For non-government employees, please identify your official relationship to NOAA.
4. **Address at Work** (list City and State, or County only if outside the U.S.)
5. **Email Address:** If NOAA email address, provide "@NOAA.gov" address. If non-NOAA, please provide your official email address.
6. **Phone numbers:** Please provide a current Telephone number.
7. **Citizenship of the requestor:** If you are not a U.S. citizen, please indicate the nation of citizenship. If routinely accessing the system from outside the United States, indicate from what country or countries normal access will occur.
8. **Site or Group of Sites for which an account is being requested:** List the name or ID of the Coast Survey Site(s) to which you are requesting access.
9. **Level of user privileges afforded to the account:** Owner, Member, or Visitor.
10. **Check the ownership of the primary computer that will be used to access this website.**
11. **Requesters Signature and Date:** The request form will not be processed without the requester's signature and signature date.

Submit Application by Fax to 301-713-4019.
12. **OFFICE OF COAST SURVEY Approval:** To be filled out by the OFFICE OF COAST SURVEY Manager.
13. **IT Security Officer Approval:** To be filled out by the IT Security Officer (only required for Foreign National computer access.)



NOAA

**NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION**
UNITED STATES DEPARTMENT OF COMMERCE

**Office of Coast Survey
Website Access Request**

Office of Coast Survey Website
Application for New Account

1. Full Name (Last, First, MI):
2. Title:
3. Affiliation: If Contractor, Contract & Task #:
4. Address at Work (City and State, or Country if outside U.S.)
5. Email Address:
6. Contact Telephone Number:
7. Citizenship of Requestor:
8. Sites or Group of Site, for which the account is being requested: https://coastsurvey.noaa.gov/arhcotwg/default.aspx
9. Access Level: <input type="checkbox"/> Owner <input type="checkbox"/> Member <input type="checkbox"/> Visitor
10. Primary Computer: <input type="checkbox"/> Government <input type="checkbox"/> Company/Institution <input type="checkbox"/> Personal <input type="checkbox"/> Public

Acknowledgement Statement

I understand that the NOAA, Office of Coast Survey website may be accessed and used only for official business by authorized personnel. Unauthorized access or use of this computer system constitute grounds for termination of the account and may subject violators to criminal, civil, and/or administrative action. All information on this website may be intercepted, recorded, read, copied, and disclosed by and to authorized personnel for official purposes.

I will notify OCS should I no longer require access to this site and I will confirm yearly the requirement to maintain my account.

12. Requestor's Signature	Date
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Approval

13. Office of Coast Survey (Government Approval)	Date	Status of Request <input type="checkbox"/> Approved <input type="checkbox"/> Rejected
14. Office of Coast Survey (IT Security Officer)	Date	Status of Request <input type="checkbox"/> Approved <input type="checkbox"/> Rejected

Attachment C

**OTWG website:
Topics of Interest Identified for Collaboration**

The Topic libraries currently on the OTWG site includes:

- Water Level observations in the Arctic
- OTWG Organizational Documents
- Arctic Cruise Reports
- Positioning at high latitudes
- Sound speed in the Arctic
- Collaborative OTWG Products and Reports
- Marine Mammal Interactions
- Documents shared by MS in the current RHC intersessional period
- User Registration
- General News Items
- Contacts

<https://coastsurvey.noaa.gov/arhcotwg/default.aspx>

Attachment D

Figures 11 and 12 excerpted from “A Risk-based Methodology of Assessing the Adequacy of Charting Products in the Arctic Region: Identifying the Survey Priorities of the Future” Michael Gonsalves, Douglas Brunt, Christina Fandel and Patrick Keown

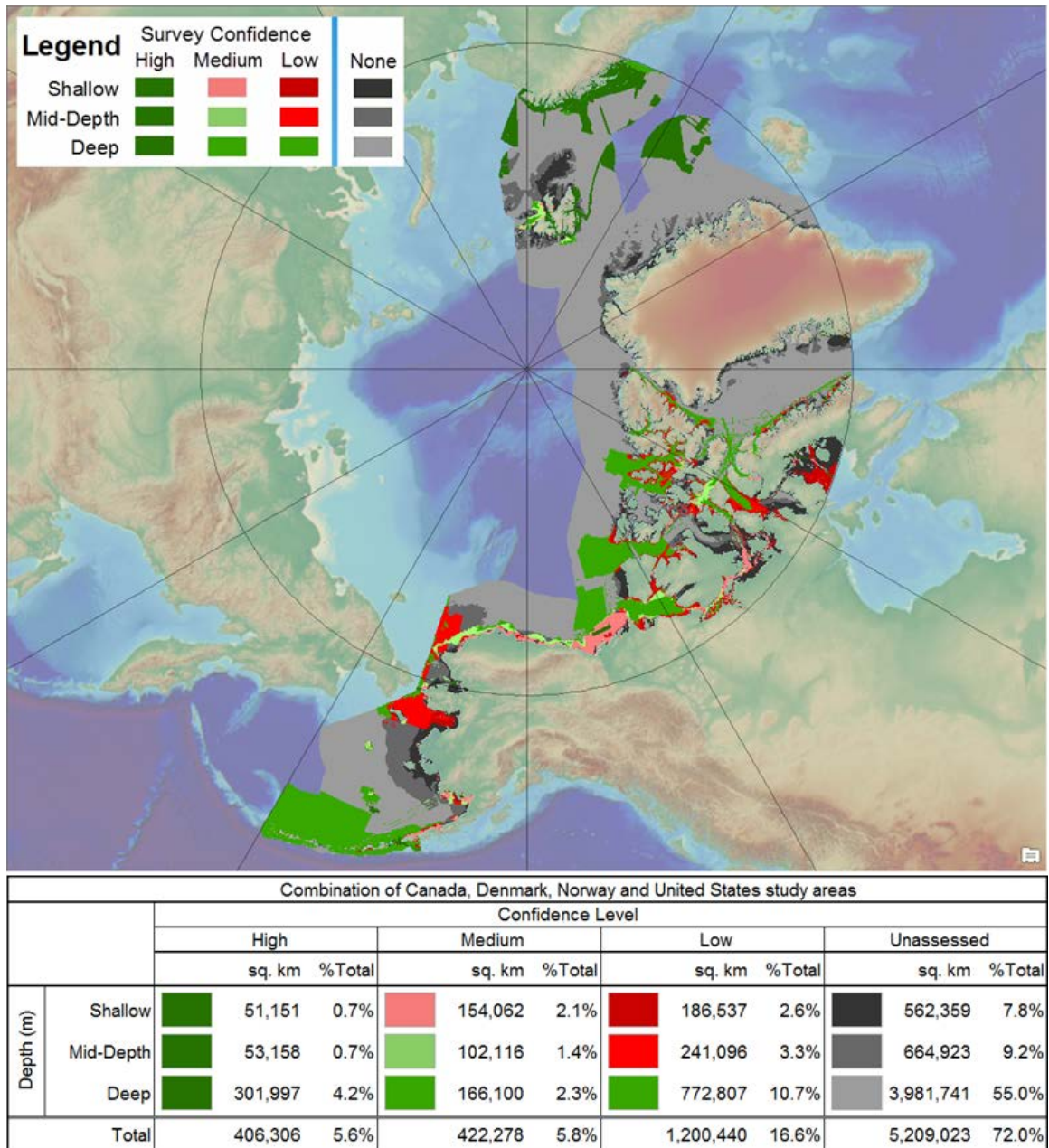
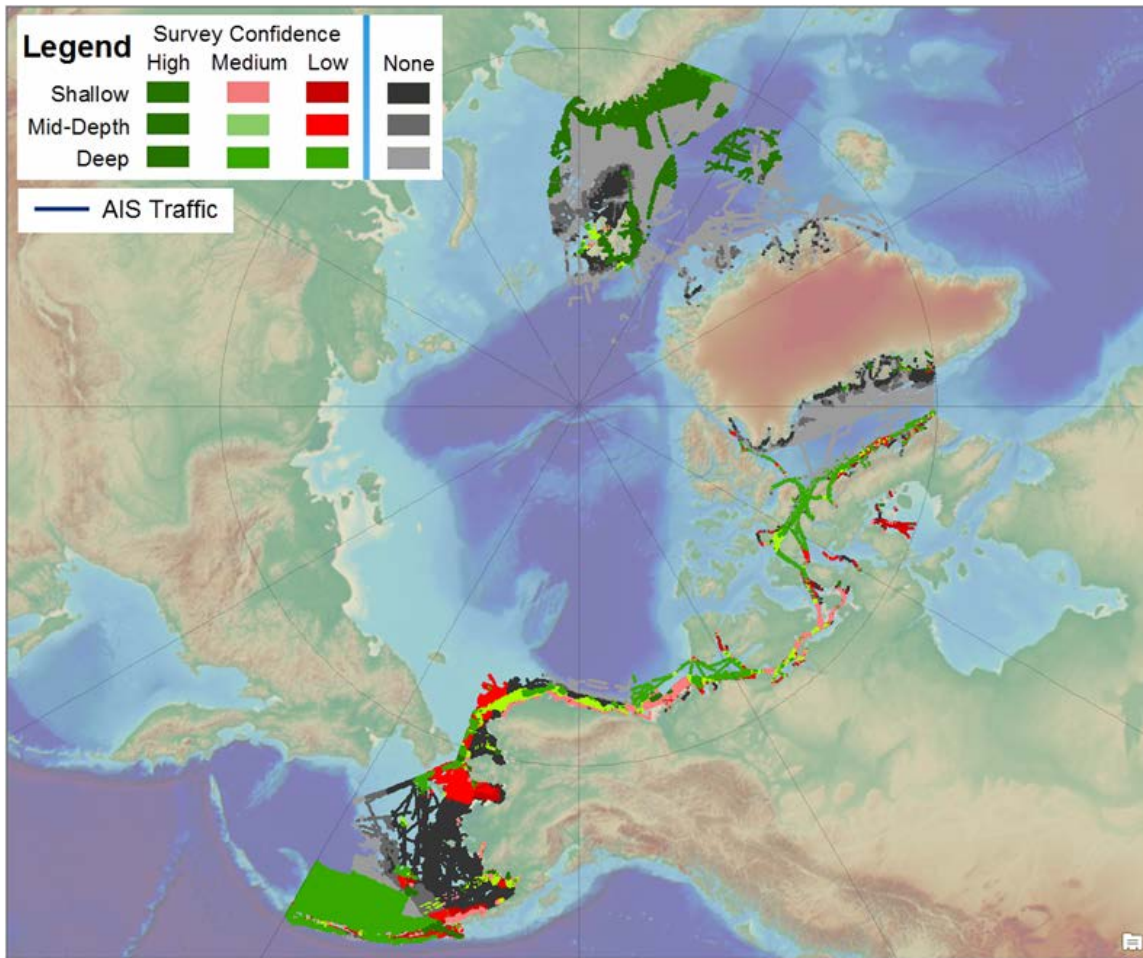


Figure 11 – Areas of potential concern throughout the Arctic. Within the table, entries further to both the bottom and left represent areas of lower concern (e.g. high confidence with deep depths); whereas entries higher and to the right represent areas of highest concern (e.g. unassessed confidence with shallow depths).



		Combination of Canada, Denmark, Norway and United States study areas							
		Confidence Level							
		High		Medium		Low		Unassessed	
		LNM	%Total	LNM	%Total	LNM	%Total	LNM	%Total
Depth (m)	Shallow	477,412	9.1%	127,673	2.4%	17,800	0.3%	211,972	4.0%
	Mid-Depth	576,983	11.0%	71,396	1.4%	69,372	1.3%	70,048	1.3%
	Deep	1,419,646	27.0%	103,136	2.0%	1,399,784	26.6%	711,046	13.5%
Total		2,474,041	47.1%	302,205	5.7%	1,486,956	28.3%	993,066	18.9%

Total Linear Nautical Miles of Traffic (Combined): 5,256,268

Figure 12 – Vessel transits through the areas of potential concern. Within the table, entries further to both the bottom and left represent transits of lower navigational risk (e.g. navigating within areas of high confidence bathymetry with deep depths); whereas, entries higher and to the right represent transits of higher navigational risk (e.g. navigating within areas of unassessed confidence with shallow depths).