



ARHC3-2.e

UNITED STATES OF AMERICA

National Report

**3rd Meeting of the Arctic Regional Hydrographic Commission
(ARHC)**

Tromso, Norway

October 10-11, 2012

**NOAA, Office of Coast Survey
National Geospatial-Intelligence Agency
Naval Meteorology and Oceanography Command**

<http://www.nauticalcharts.noaa.gov>
<https://www1.nga.mil>
<http://www.navmetocom.navy.mil>

1 Hydrographic Office/Service

This document provides specific information pertaining to individual products and services of primary interest to the Arctic Regional Hydrographic Commission (ARHC) region.

U.S. domestic and international hydrographic services in the region are primarily conducted by three government agencies: The National Oceanic and Atmospheric Administration's (NOAA) Office of Coast Survey (OCS), the National Geospatial-Intelligence Agency (NGA), and the Naval Meteorology and Oceanography Command (U.S. Navy). A national-level overview of the services, mandates, activities and priorities of these three agencies is provided in Appendix A of this report.

Please consult both the National Report and the Appendix for complete information about national programs and/or other regions. Any specific questions should be directed to U. S. Hydrographic Office representatives or the relevant hydrographic component.

It is important to note that the U.S. Arctic Research and Policy Act (ARPA) defines the Arctic for the United States as illustrated in the graphic.

Arctic Boundary as defined by the Arctic Research and Policy Act (ARPA)

All United States and foreign territory north of the Arctic Circle and all United States territory north and west of the boundary formed by the Porcupine, Yukon, and Kuskokwim Rivers; all contiguous seas, including the Arctic Ocean and the Beaufort, Bering and Chukchi Seas; and the Aleutian chain.¹



Acknowledgement: Funding for this map was provided by the National Science Foundation through the Arctic Research Mapping Application (amap.org) and Contract #0520837 to CH2M HILL for the Interagency Arctic Research Policy Committee (IARPC).
 Map author: Allison Gayford, Nuna Technologies. May 27, 2009.
 1. The Aleutian chain boundary is demarcated by the 'Contiguous zone' limit of 24-nautical miles.

Figure 1 Arctic Boundary as defined by the Arctic Research and Policy Act.

The International Hydrographic Organization defines the ARHC as shown in figure 2.

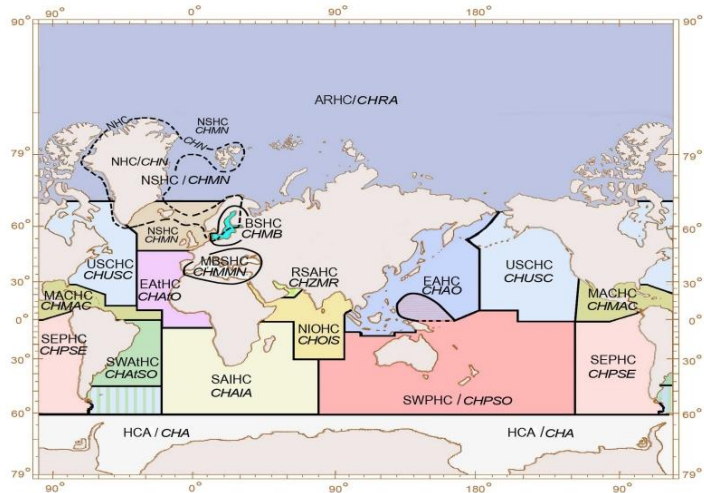


Figure 2: Boundaries of the Regional Hydrographic Commissions.

2 Surveys

A statutory mandate authorizes NOAA to provide nautical charts and related hydrographic information for the safe navigation of maritime commerce as well as providing basic data for engineering, scientific, and other commercial and industrial activities within the nation’s 3.4 million square nautical mile EEZ. The U.S. Navy surveys waters outside the United States.

NOAA Hydrographic Survey Priorities (2012 edition) defines methodology by which the agency identifies survey priorities across the U.S. EEZ. The document can be found at <http://www.nauticalcharts.noaa.gov/hsd/NHSP.htm>.

NOAA survey priorities for U.S. waters in the ARHC region are summarized in square nautical miles in Table 1.

	Navig. Significant	Critical Areas	Emerging Critical	Priority 1	Priority 2	Priority 3	Priority 4	Priority 5	Completed (post 1993 survey)
Alaska	324,465	4,169	3,540	23,752	93,761	34,463	28,175	117,350	19,255
National Total (8 regions)	511,051	14,055	5,601	46,502	116,801	99,058	58,303	131,718	39,013

Table 1: NOAA Survey Priorities (U.S. waters) in the Arctic Region

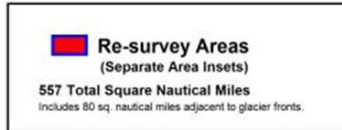
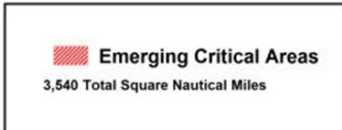
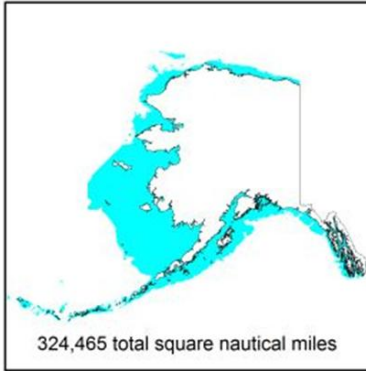
NOAA Hydrographic Survey Priorities - Alaska

2012

Legend

	Critical Areas Remaining
	4,169 Total Square Nautical Miles High Commercial Traffic Volume Inadequate Charts Compelling Request Extensive Petroleum/Hazmat material transport Low Under Keel Clearance
	Priority 1
	23,752 Total Square Nautical Miles Navigation Significant: < 100 fathom depth Survey vintage pre-1940 Petroleum transport > 1,000,000 tons or Coal transport > 600,000 tons or Chemical/Waste transport >100,000 tons or Cargo > 5,000,000 tons or Passenger transport > 10,000
	Priority 2
	93,761 Total Square Nautical Miles Navigation Significant: < 100 fathom depth Survey vintage pre-1940 Not Priority 1
	Priority 3
	34,463 Total Square Nautical Miles Navigation Significant: < 100 fathom depth Survey vintage pre-1970 Not Priority 1 or Priority 2
	Priority 4
	28,175 Total Square Nautical Miles Navigation Significant: < 100 fathom depth Survey vintage 1970-1993
	Priority 5
	117,350 Total Square Nautical Miles Navigation Significant: 50 - 100 fathom depth Survey vintage pre-1940
	Full Bottom Coverage Era
	19,255 Total Square Nautical Miles Completed Critical/Navigationally Significant Areas Survey vintage post-1993

Navigationally Significant Area



NOAA Hydrographic Survey Priorities - Alaska

2012

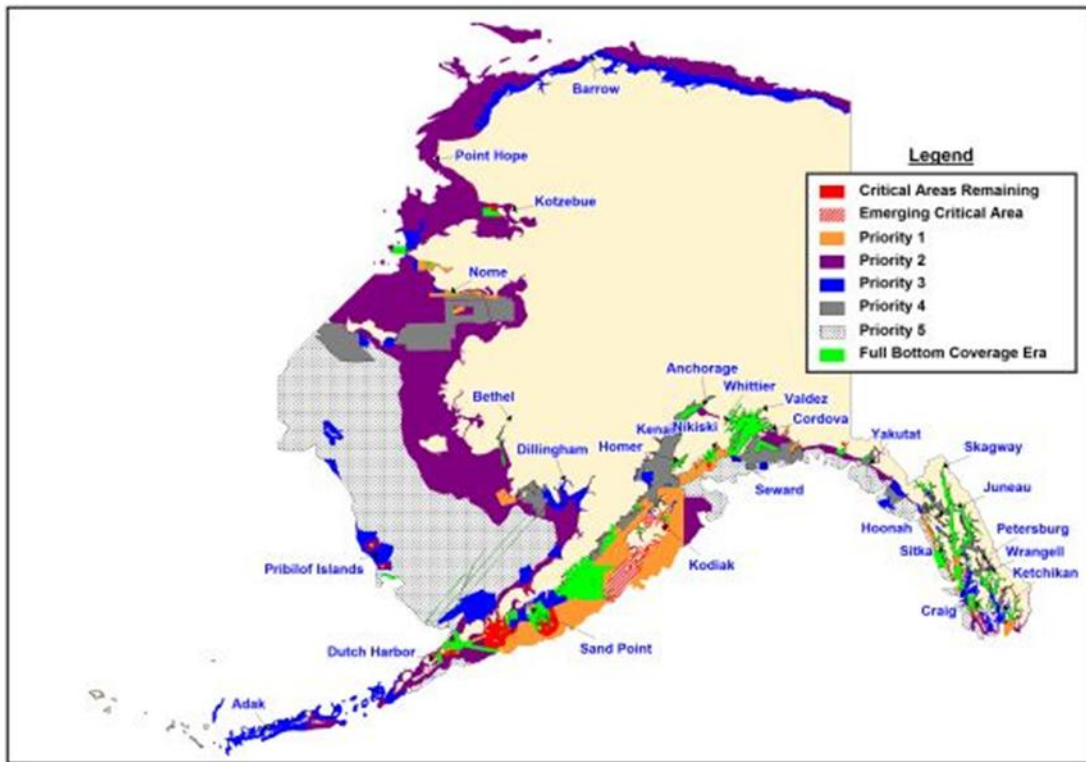


Figure 4: NOAA Hydrographic Survey Priorities- Alaska (2012)

The U.S. Navy surveys waters outside the United States and in the territorial waters of other nations through Diplomatic Channels and International Agreements (IA).

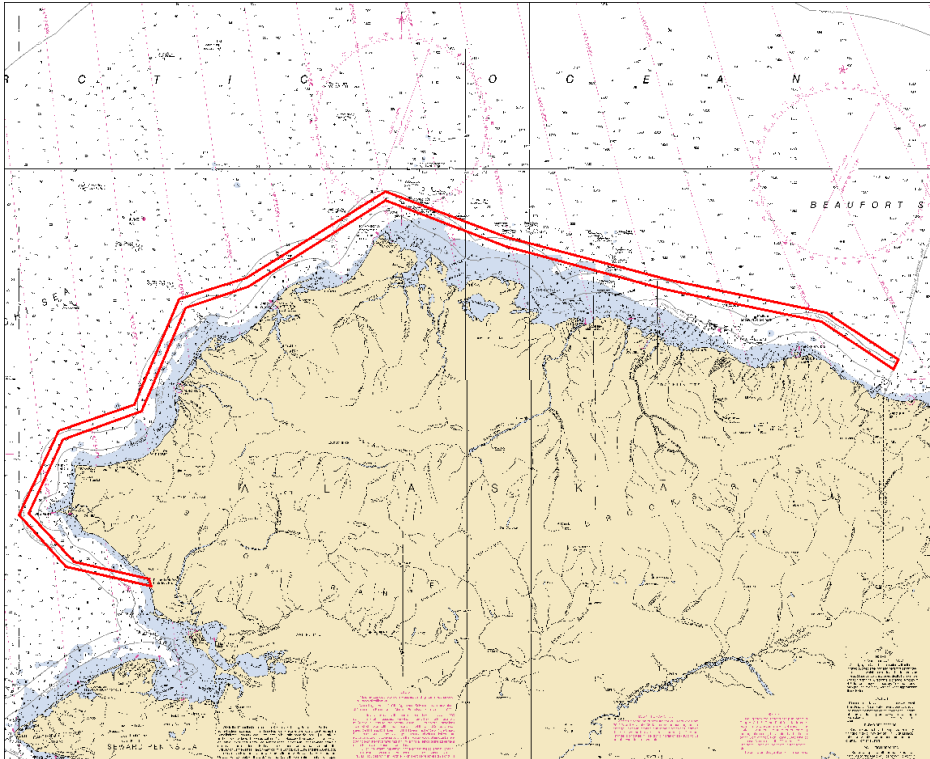
2012 Cruise in U.S. waters of the ARHC

Figure 5: M-S974-FA-12 North Arctic Reconnaissance, AK

The North Arctic Reconnaissance area of Alaska, extending from Red Dog Mine to the US-Canadian border was surveyed during the summer 2012 field season. The purpose of this project was to acquire trackline sounding data to fill gaps, where this is inadequate coverage, and to update the NOAA nautical charts.

From August 1, NOAA ship FAIRWEATHER began a 30 day survey mission in the Arctic to collect data along a 1,500 nautical mile coastal corridor from Dutch Harbor, Alaska to the Canadian border. Data collected will be used to update charts in the region.

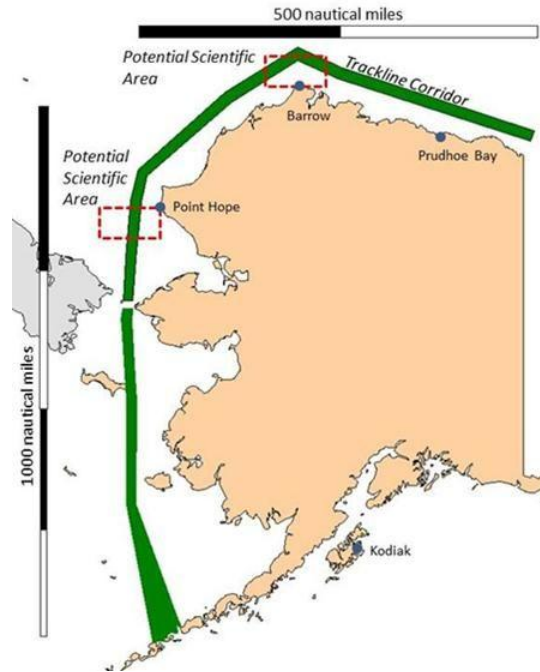


Figure 6: Fairweather Tracking Corridor

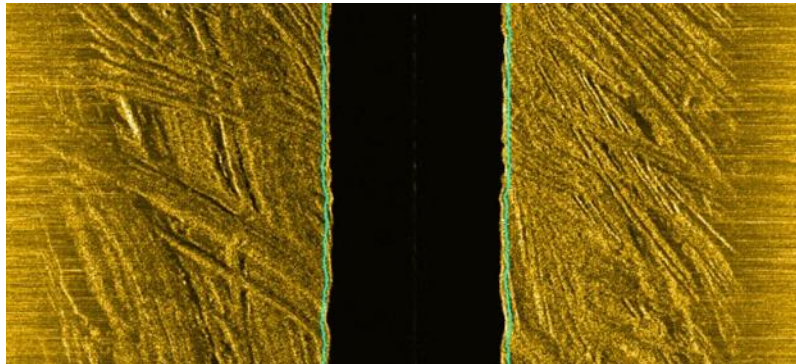


Figure 7: Image obtained during NOAA ship *Fairweather* 2012 Arctic reconnaissance trip

During the cruise, the *Fairweather* was able to collect multibeam echo sounder data along the entire route. The area continues to be relatively shallow (8 to 25 meters) and relatively flat (1 to 1.5 meters of relief). However, dramatic ice scours and scars on the seafloor are easily visible in the data collected (see figure 7). This “pseudo-side-scan” image – which looks at only a preliminary selection of the initial acoustic data recorded – was obtained in real time.” The Cruise report is scheduled to be available the first half of October 2012.

2013 Survey Plans

In 2013, the NOAA vessel FAIRWEATHER is scheduled to survey Port Clarence and Barrow Alaska from late July through September 2013. For further details, please contact the Office of Coast Survey, Hydrographic Survey Division Chief, Mr. Jeffrey Ferguson at Jeff.Ferguson@noaa.gov.

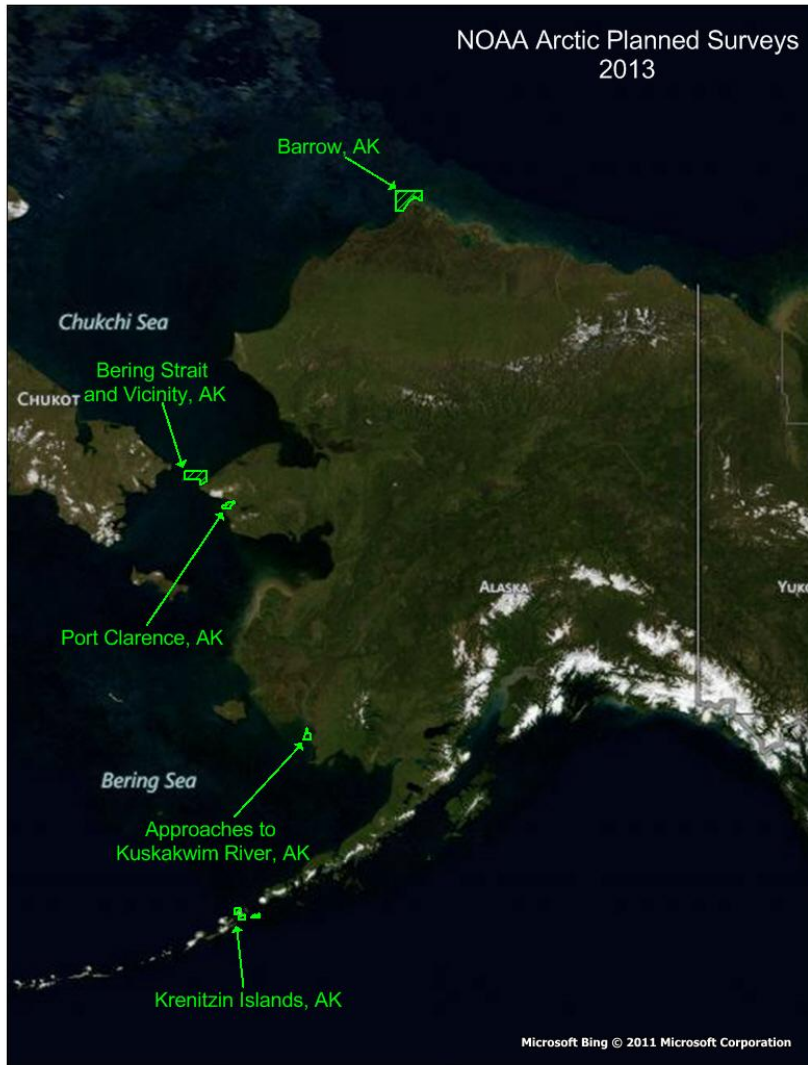


Figure 8: NOAA Planned Surveys in Alaska: 2013

3 New Charts and Updates

NOAA Charts

NOAA has identified the need for additional chart coverage in the Arctic and has developed the *Office of Coast Survey Arctic Nautical Charting Plan* to address this need. This document provides detailed plans for the layout of additional nautical chart coverage and describes the requisite activities needed to build and maintain these charts. The plan can be downloaded at http://www.nauticalcharts.noaa.gov/mcd/docs/Arctic_Nautical_Charting_Plan.pdf.

ENC and Raster Charts (US domestic waters)

The US produces 36 ENC charts in U.S. waters of the ARHC region and 39 raster charts:

ENC Band	Number US Charts of domestic waters in ARHC region
1	2
2	2
3	2
4	0
5	30

Scale	Number of US Charts of domestic waters of the Region
1:1,000,000 and above	4
1,000,000 and 51,000	5
1:20,000 to 51,000	30

Band	U.S. Chart	Chart Overlaps
2	US 2AK92M (1:700,000)	RU2OGT9 (1:700,000)
2	US2AK91M (1:700,000)	CA273357 (1:250,000)
3	US3 AK80M (1:400,000)	RU3OH0B0 (1:180,000)
	U.S3AK89M (1:315,300)	RUSOE090 (1:180,000)
		RU3O90B9 (1:180,000)

Table 2:US-Russian Federation/Canada ENC Overlaps

NGA Charts

NGA produces a number of charts for the Arctic region in their subregions 1,3,4 and 9, but NGA is withdrawing many of its charts from public sale. The only charts NGA will continue to distribute to the public are those where NGA is the primary charting authority. These are specifically areas where the U.S. conducts the surveys, compiles and issues the, chart and there is no functioning national authority or NGA has specific authority (e.g. Trust Territory of the Pacific).

INT Charts

INT Chart 814 is produced by the United States and includes a portion of the ARHC between Alaska and the Russian Federation to 68°N. INT Chart 814 corresponds to US National Chart 514. The newest edition is 2004 and is at 1 to 3.5 million scale.

ENC distribution

US ENCs are distributed through PRIMAR, UKHO, Maris, Jeppessen, Chart World, Oceangrafix (NGA) and directly through the NOAA at www.nauticalcharts.noaa.gov.

4 New Publications and Updates

United States Coast Pilot®

The United States Coast Pilot® consists of a series of nautical books that cover a variety of information important to navigators of coastal and intracoastal waters and the Great Lakes.

Issued in nine regionally focused volumes. Coast Pilot 9 provides information covered by the ARHC. The 30th edition was published in 2012 and is available in PDF, HTML, and XML digital format¹ at http://www.nauticalcharts.noaa.gov/nsd/coastpilot_w.php?book=9.



Additional information about the Coast Pilot can be found in Appendix A of this report.

Sailing Directions

Sailing Directions are published by the U.S./NGA in 42 Planning Guide and Enroute volumes as part of a global portfolio of publications. Sailing directions and digital updates

¹ HTML and XML formats of the Coast Pilot are experimental and NOT TO BE USED FOR NAVIGATION.

can be downloaded from the NGA Maritime Safety website,

<http://msi.nga.mil/NGAPortal/MSI.portal>

Four volumes of Sailing Directions cover the ARHC region, as listed in **Table 3**.

Publication	Title	Edition Date
Sailing Directions 180	Planning Guide for the Arctic Ocean	9 th Ed 2011
Sailing Directions 181	Greenland and Iceland	11 th Ed 2010
Sailing Directions 182	North and West Coasts of Norway	10 th Ed 2011
Sailing Directions 183	North Coast of Russia	9 th Ed 2011

Table 3: Sailing Directions covering the ARHC Region

Additional information about NGA Sailing Directions can be found in Appendix A of this report.

List of Lights, Radio Aids and Fog Signals

The NGA *List of Lights, Radio Aids and Fog Signals* is published in seven volumes and contains more complete information about the navigational aids than can be conveniently shown on nautical charts. All of these publications and their digital updates are available to the public and are posted at the NGA Maritime Safety website at <http://msi.nga.mil/NGAPortal/MSI.portal>.

Three volumes of “List of Lights” cover the ARHC region as shown in Table .

Publication	Edition Date
List of Lights Pub. 115 Norway, Iceland and Arctic Ocean	2012
List of Lights Pub. 110 Greenland, the East Coasts of North and Southern America and Arctic Ocean	2012
List of Lights Pub 111 The West Coasts of North and South America	2012

Table 4: List of Lights Radio Aids and Fog Signals Covering the ARHC Region

Additional information about the *NGA List of Lights, Radio Aids and Fog Signals* can be found <http://msi.nga.mil/NGAPortal/MSI.portal>.

5 Maritime Safety Information (MSI)

US/NGA produces navigation warnings in the region of the ARCH called HYDROARCs. These are broadcast and uploaded to <http://msi.nga.mil/NGAPortal/MSI.portal>.

Notices to Mariners are issued for NOAA charts by the U.S. Coast Guard. NGA produces Notices to Mariners for NGA charts in the area.

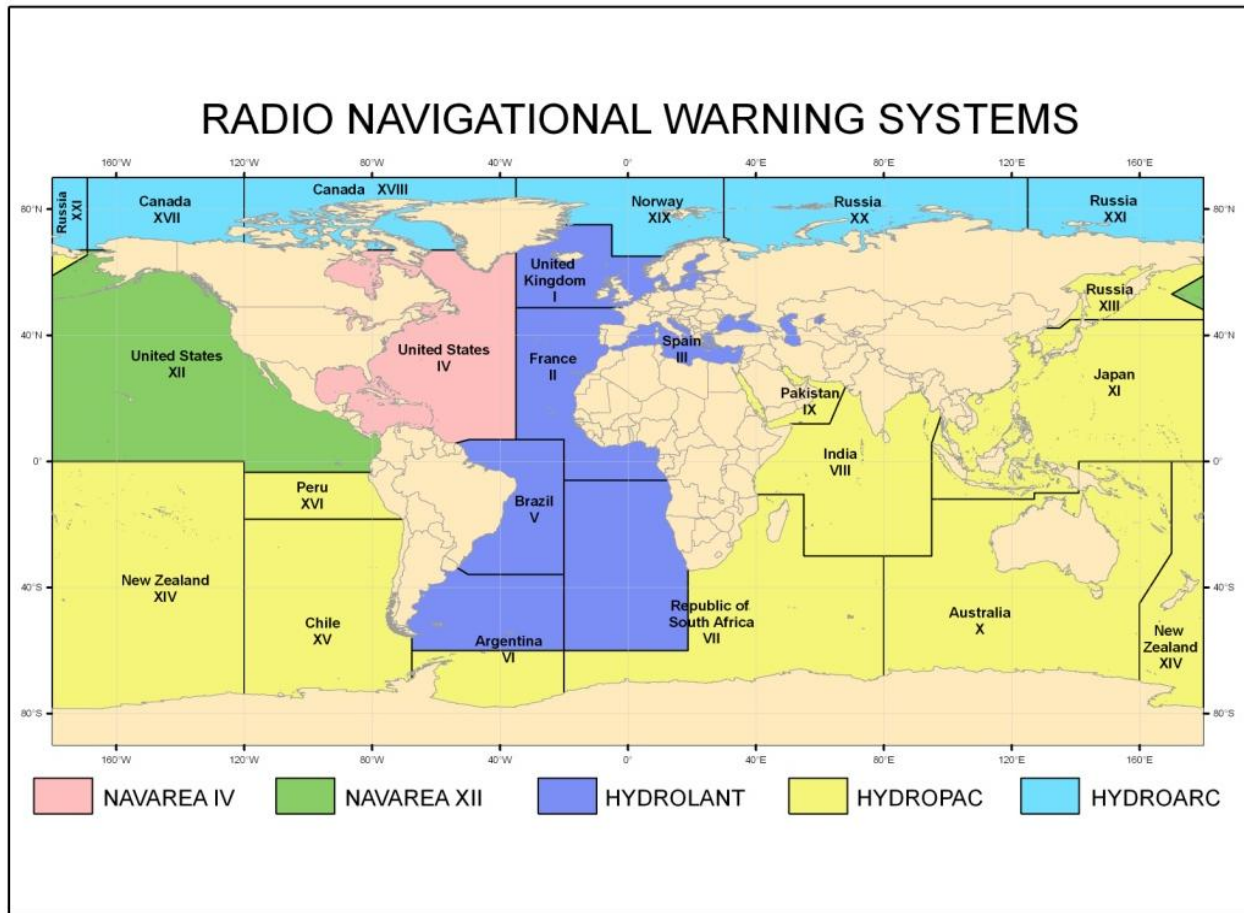


Figure 9: NAVAREA Limits

6 C-55 Update

The U.S. updated its C-55 information with the IHO in April 2012. For Region A, USA Alaska and Arctic (including the Aleutian Islands), the US reported:

The status of nautical charting with the limits of the EEZ of dependent territories:

Purpose/Scale	A	B	C
Offshore passage/small	100%	100%	82%
Landfall and Coastal passage/Medium	100%	100%	100%
Approaches and Ports/Large	100%	100%	67%
Percentage of Group A showing depths in meters	2.1%		
Percentage of Group A referenced to a satellite datum	100%		

Navigational Information (S-53)

Service	Yes/No
Local Warnings	Yes
Coastal Warnings	Yes
NAVAREA Warnings	Yes
Informational on Ports and Harbours	Yes

7 Capacity Building

A list of U.S. institutions, which provide hydrographic training opportunities, is provided in the Appendix A of this report.

The United States is an active participant in the IHO Capacity Building Sub-Committee (CBSC) and the U.S./NGA directly supports the IHO Maritime Safety Information (MSI) training course. An overview and description of NGA's training activities in the field of Marine Safety Information (MSI) are provided in Appendix A of this report.

8 Oceanographic Activities

NOAA's Center for Operational Oceanographic Products and Services

CO-OPS maintains 2 tide station in the ARHC region of Alaska from Point Hope to Beaufort Sea located at Red Dog Dock and Prudhoe Bay. Data on this station and all U.S. Tide Data Stations can be found at http://tidesandcurrents.noaa.gov/station_retrieve.shtml?type=Tide+Data.

GEBCO

The United States participates on the IOC-IHO Guiding Committee for GEBCO and hosts the IHO Data Centre for Digital Bathymetry at NOAA's National Geophysical Data Center. GEBCO remains actively interested to expand the currently available bathymetric data for the Arctic distributed openly and freely at <http://www.ngdc.noaa.gov/mgg/bathymetry/arctic/>.

Shoreline Mapping

Most of the shoreline in the Arctic along Alaska's northern and western coasts has not been mapped since 1960, if ever, and confidence in the shoreline depicted on the region's nautical charts is extremely low. Less than 10% of Alaska has contemporary shoreline data and less than 1% is mapped annually. Plans for FY12 include compiling (via satellite) approximately 390 miles of Arctic shoreline and 933 miles of Alaska shoreline in FY12. At this time, there are no plans to use NOAA aircraft to conduct large area surveys; however use of the aircraft may be required in port areas or areas in need of more detailed charts.

In the last 10 years eight ports have been updated: Kivilina/Red Dog Mine, Valdez, Anchorage, Dutch Harbor, Ketchikan, Petersburg, Kodiak and Juneau. NGS has also provided shoreline coverage (full or partial) for five Alaska National Parks: Bering Land Bridge, Cape Krusenstern, Glacier Bay, Kenai Fjords and Wrangell-St.Elias.

9 Other

CORS

NOAA's National Geodetic Survey (NGS) manages a national Continuously Operating Reference Station (CORS) network of highly accurate GPS receivers that continuously collect data broadcast by Global Navigation Satellite System satellites. There are almost 100 active CORS in the CORS Network for Alaska. However, CORS sites serving the Alaskan Arctic are very few, with only nine CORS Network sites along the Aleutian Chain, six in Arctic coastal areas of the Bering Sea, and seven serving the North Slope.