

UNITED STATES OF AMERICA

National Report

To the Arctic Regional Hydrographic Commission
(ARHC)

**NOAA's Office of Coast Survey, National Geospatial-Intelligence Agency, and Naval
Oceanographic Office**

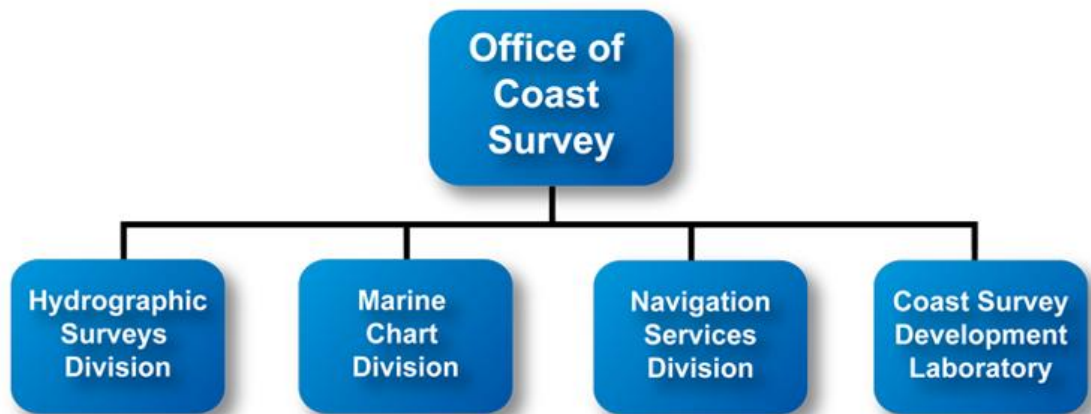
10/4/2010

This report represents an overview of the United States' hydrographic activities. Direct any specific questions to U. S. Hydrographic Office representatives or the relevant hydrographic component.

1. US Hydrographic Activities

- 1.1 The Office of Coast Survey (OCS) is a line office within the National Ocean Service, part of the National Oceanic and Atmospheric Administration (NOAA). The administrator of NOAA reports to the Secretary of Commerce, a member of the Presidential Cabinet. OCS provides navigation products and services that ensure safe and efficient maritime commerce on America's oceans and coastal waters, and in the Great Lakes. In fulfillment of this mission, OCS is responsible for conducting hydrographic surveys and producing the nation's nautical charts for the U.S. Exclusive Economic Zone, an area of 3.4 million square nautical miles.

OCS is made up of the four following divisions: Hydrographic Surveys Division, Marine Chart Division, Navigational Services Division, and the Coast Survey Development Lab.



1.2

The National Geospatial-Intelligence Agency (NGA) provides timely, relevant and accurate geospatial intelligence in support of national security objectives. The term "geospatial intelligence" (GEOINT) means the exploitation and analysis of imagery and geospatial information to describe, assess and visually depict physical features and geographically referenced activities on the Earth. Geospatial intelligence consists of imagery, imagery intelligence and geospatial (e.g., mapping, charting and geodesy) information. NGA also contributes to humanitarian efforts, such as tracking floods and disaster support, and to peacekeeping. The Office of Global Navigation Maritime Domain is tasked with the responsibility to collect and analyze maritime safety information and to produce and provide global access to nautical charts, publications, and custom tailored digital hydrographic and bathymetric safety of navigation data.

- 1.3 NAVOCEANO acquires and analyzes global ocean and littoral data to provide specialized, operationally significant products and services for war fighters and civilian, national and international customers. Utilizing airborne, surface and subsurface platforms deployed worldwide, remote-sensing satellites and seaborne buoys, NAVOCEANO data are converted into products that are tailored to customer's needs. These products and services support virtually every type of Fleet operation by providing mission essential information.

2. Surveys

- 2.1 The statutory mandate of the National Oceanic and Atmospheric Administration (NOAA) authorizes NOAA to provide nautical charts and related hydrographic information for the safe navigation of maritime commerce as well as to provide basic data for engineering, scientific, and other commercial and industrial activities. This mandate covers all US territorial waters and the US Exclusive Economic Zone (EEZ), a combined area of 3.4 million square nautical miles (SNM) which extends 200 nautical miles offshore from the nation's coastline. The production of high-quality navigation charts to support the safety of marine transportation depends on the availability of up-to-date, reliable hydrographic survey data.
- 2.2 Although the primary use for NOAA surveys is for chart compilation, they are also available to the general public via NOAA's National Geophysical Data Center (NGDC). NGDC is the data archive and distribution center for the Office of Coast Survey (OCS) digital hydrographic data. NGDC also maintains the National Ocean Service Hydrographic Data Base (NOSHDB) providing survey coverage of the coastal waters and Exclusive Economic Zone (EEZ) of the United States and its territories.

2.3

NOAA has designated 511,000 SQM of territorial waters as navigationally significant. From 1994 to 2009, 33,279 SQM of this navigationally significant area has been surveyed with full bottom coverage. In the 2010 calendar year, 2900 square nautical miles have been surveyed bringing the total of navigationally significant area surveyed with full bottom coverage to 26, 179 SQM.

- 2.4 NOAA's National Ocean Service operates three full time survey vessels devoted to supporting OCS charting responsibilities. These vessels are the FAIRWEATHER, THOMAS JEFFERSON, and the RAINIER. In addition to these platforms OCS's Navigational Services Division (NSD) maintains a fleet of 6 smaller, more portable vessels devoted to strategic survey requests and

requirements, such as emergency response and ENC verification. NSD also operates the BAY HYDROGRAPHER II, a vessel devoted to research and development and limited hydrographic surveying in support of the OCS mission.

3. Charts

- 3.1 NOAA produces and maintains a suite of nautical charts that cover the coastal waters of the U.S. and its territories. NOAA's charts are available in a variety of formats, including:
 - Traditional paper charts
 - Print-on-Demand charts: up-to-date paper charts with current Notice to Mariners corrections
 - Raster Navigational Charts® (NOAA RNCs): bitmap electronic images of paper charts
 - Electronic Navigational Charts® (NOAA ENCs): vector charts that conform to international standards

- 3.2 Details about NOAA's nautical chart program can be found at <http://www.nauticalcharts.noaa.gov/staff/chartspubs.html>. At this site, users can find more information about NOAA's various chart products, download chart catalogs, access links to critical updates, and submit consumer inquiries and chart discrepancies through the NOAA inquiry system.

- 3.3 NOAA maintains a suite of 1019 paper charts. These charts are maintained as color separate raster images. The raster files are updated with new source and critical updates, and then sent to the Federal Aviation Administration (FAA) for the lithographic process.

- 3.4 NOAA maintains S-57 compliant ENCs equal to 706 chart equivalents. These ENCs are maintained to critical corrections through the issuance of new editions and incremental updates available through NOAA's Chart Downloader at <http://www.charts.noaa.gov/InteractiveCatalog/nenc.shtml>.

- 3.5 NOAA's Print-on-Demand (POD) nautical charts provide up-to-date navigation information to mariners. These paper charts are updated on a weekly basis and include all of the latest critical chart corrections. Although NOAA produces POD charts, NOAA does not sell POD charts directly to the public. Instead, POD charts are made available through NOAA's commercial partner OceanGrafix, who has 46 retail agents located throughout the U.S. and overseas, including Canada, Japan, and Panama. Twenty of these agents have the capability to print charts on-

site. Just over half of all NOAA paper charts distributed to mariners are POD charts.

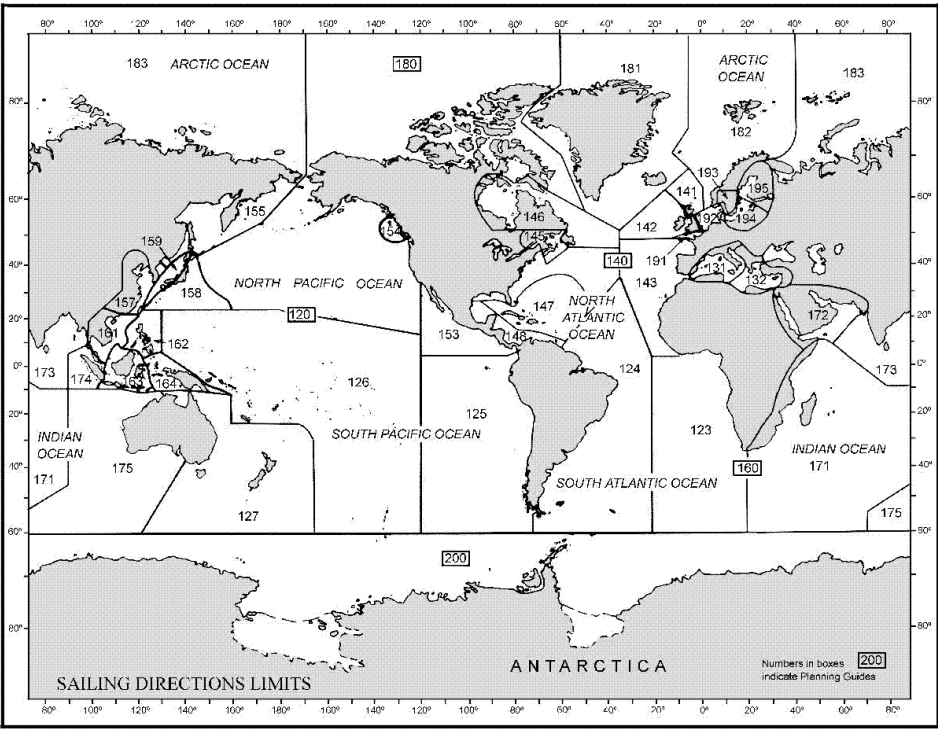
Nautical Publications

- 4.1 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, they contain supplemental information that is difficult to portray on the nautical chart. See table below for currently available and forthcoming editions.

Publication	Region	Publication Date
CP 1	West Quoddy Head , ME to Provincetown, MA	40 th Ed., 2010
CP 2	Cape Cod, MA to Sandy Hook, NJ	39 th Ed., 2010
CP 3	Sandy Hook, NJ to Cape Henry, VA	43 rd Ed, 2010
CP 4	Cape Henry, VA to Key West, FL	42 st Ed, 2010
CP 5	Gulf of Mexico, Puerto Rico, and Virgin Islands	38 th Ed., 2010
CP 6	Great Lakes	40 th Ed., 2010
CP 7	Pacific Coast, Hawaii, and Pacific Islands	42 st Ed., 2010
CP 8	Dixon Entrance, AK to Cape Spencer, AK	32 st Ed., 2010
CP 9	Cape Spencer, AK to Beaufort Sea, AK	28 th Ed., 2010

- 4.2 Digital versions of the United States Coast Pilot® are available from <http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>. These digital files are available as complete books or by chapter in PDF and RTF formats. Select volumes of the United States Coast Pilot® are available as an XML file with other volumes to follow throughout 2010.
- 4.3 OCS is modernizing the Coast Pilot through enhancements including on-line automatic updating, expanding content sources, improving content quality, data sharing and Internet display. In order to realize these results, OCS is designing a new production system with enhancements over the existing product by linking to associated NOAA services, and allowing for private industry interactions to develop value-added products. The Coast Pilot project needs increased data management capability in order to share its information with other sources and offer a customizable product. This degree of customizations requires more control than a traditional Desktop Publisher (DTP) or database system can provide. However the Extensible Markup Language (XML) and associated tools can provide this capability.
- 4.4 Sailing Directions are published by the US/NGA in 42 Planning Guide and Enroute volumes as part of a global portfolio of publications. Sailing Directions (Planning Guide) are intended to assist mariners in planning ocean passages and include relevant physical, political, industrial, navigational and regulatory information about the countries adjacent to a particular ocean basin. Sailing Directions (Enroute) are intended to supplement the largest scale charts of the

area and include detailed coastal and port approach information. They are subdivided into geographic regions, called sectors, which contain information about the coastal weather, currents, ice, dangers, features and ports. NGA Sailing Directions are updated via a digital update, Publication Data Update (PDU), patch process. All of these publications and their digital patch updates are available to the public and are posted at the NGA Maritime Safety website at www.nga.mil/maritime. A graphic of NGA Sailing Directions global coverage is shown below:



4.5 There are four volumes of Sailing Directions that cover the Arctic region. They are listed below:

Publication	Edition Date
Sailing Directions Pub 180: Arctic Ocean (Planning Guide)	8 th Edition (May 2010) Corrected thru PDU1, 20 July 2010
Sailing Directions Pub 181: Greenland & Iceland (Enroute)	10 th Edition (June 2010) No PDU update patches
Sailing Directions Pub 182: North & West Coasts of Norway (Enroute)	9 th Edition (August 2010) No PDU update patches
Sailing Directions Pub 183: North Coast of Russia (Enroute)	8 th Edition (March 2009) No PDU update patches

5. MSI

5.1

NGA is the NAVAREA IV and XII Coordinator within the IMO/IHO World-Wide Navigational Warning Service.

The following boundaries are:

Limits of NAVAREA IV: From the east coast boundary of Suriname to 07-00N out to 035-00W, from there to 067-00N and the coastline of Greenland, following 067-00N to the coastline of Canada (Baffin Islands area).

Limits of NAVAREA XII: from the coast line at 03-24S to 120-00W, then to 00-00, then to 180-00, then to 50-00N, and then following the International Date Line to 67-00N.

Schedule of broadcasts for Navigational Warnings/Meteorological Information (see appendix 1)

5.2 NAVTEX Coverage:

Eleven NAVTEX stations are operational in NAVAREA IV and XII. Please note that the United States also has an operational NAVTEX facility on Guam (NAVAREA XI).

NAVTEX coverage is reasonably continuous in the East, West and Gulf coasts of the United States, as well the area around Kodiak Alaska, Guam and Puerto Rico. The U.S. has no coverage in the Great Lakes, though coverage of much of the Great Lakes is provided by the Canadian Coast Guard. Since the U.S. Coast Guard originally only installed NAVTEX at sites where Morse telegraphy transmissions were made previously, propagation analyses show some coverage gaps, particularly in the southeast United States, Alaska, and Guam. NAVTEX broadcasts from Adak (Alaska) were permanently terminated in December 1996 due to closure of the Naval facility there.

5.3 Operational Issues:

NAVAREA IV and XII have fully redundant and site separated NAVAREA operational systems to include satellite transceivers, telecommunications, internet and desktop PC's. System operations are exercised on a daily basis at this location to ensure full continuity of NAVAREA operations.

5.4 Capacity Building:

NGA continues to provide training and practical guidance for those who are concerned with drafting radio navigational warnings or with the issuance of Maritime Safety Information (MSI) for the high seas through the IHO World-Wide Navigational Warning Service. The training effort intends to translate into safer navigation for the region and establish an active regional coordination team of experts who will continue to collaborate with the respective NAVAREA in the area of influence. These courses are organized on the behalf of the IHO's

Capacity Building Sub-Committee along with leadership oversight and instructor support from NAVAREA's I, IV and XII. In support of the new Arctic NAVAREAs XVII and XVIII, NGA has provided onsite training support for Canadian Coast Guard personnel who will be staffing the NAVAREA watch operations.

5.5 NAVAREA Website:

www.nga.mil/maritime

In-Force NAVAREA IV and XII messages are posted each morning from the previous 24hrs. Active NAVAREA IV and XII messages can be queried by a variety of menu options to include by specific NAVAREA, by NAVAREA number, by a NAVAREA number range and by date and date range.

5.6 NAVAREA Contact Information:

U.S.A. (NAVAREA IV & XII)
Mr. Peter Doherty
Chief, Global Operations Maritime
Office Of Global Navigation
ATTN: PV (Mail Stop D-44)
4600 Sangamore Road
Bethesda, Maryland 20816-5003
Tel: +1 (301) 227 7646
Fax: +1 (301) 227 3731
E-mail: Peter.M.Doherty@nga.mil

6. S-55 Update

6.1 U.S. update to S-55 will be forthcoming to the IHB.

7. Capacity Building

7.1 Training Opportunities available in the United States

See Appendix 1 for a list of specific opportunities.

8. Oceanographic Activities

8.1 NOAA's Center for Operational Oceanographic Products and Services collects, analyzes and distributes historical and real-time observations and predictions of water levels, coastal currents and other meteorological and oceanographic data. This is part of an integrated National Ocean Service program supporting safe maritime zone management, engineering and surveying communities. The Center

manages the National Water Level Observation Program and the national network of Physical Oceanographic Real-Time Systems in major U.S. harbors. It conducts its programs through university, industry, Federal and State partnerships as appropriate.

- 8.2 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. The United States actively participates in the International Bathymetric Chart of the Arctic Ocean, the International Bathymetric Chart of the Caribbean Sea & Gulf of Mexico, and the International Bathymetric Chart of the Southern Ocean
- 8.3 NOAA's Center for Operational Oceanographic Products and Services maintains the domestic tide gauge system for the United States.

9. Other Activities

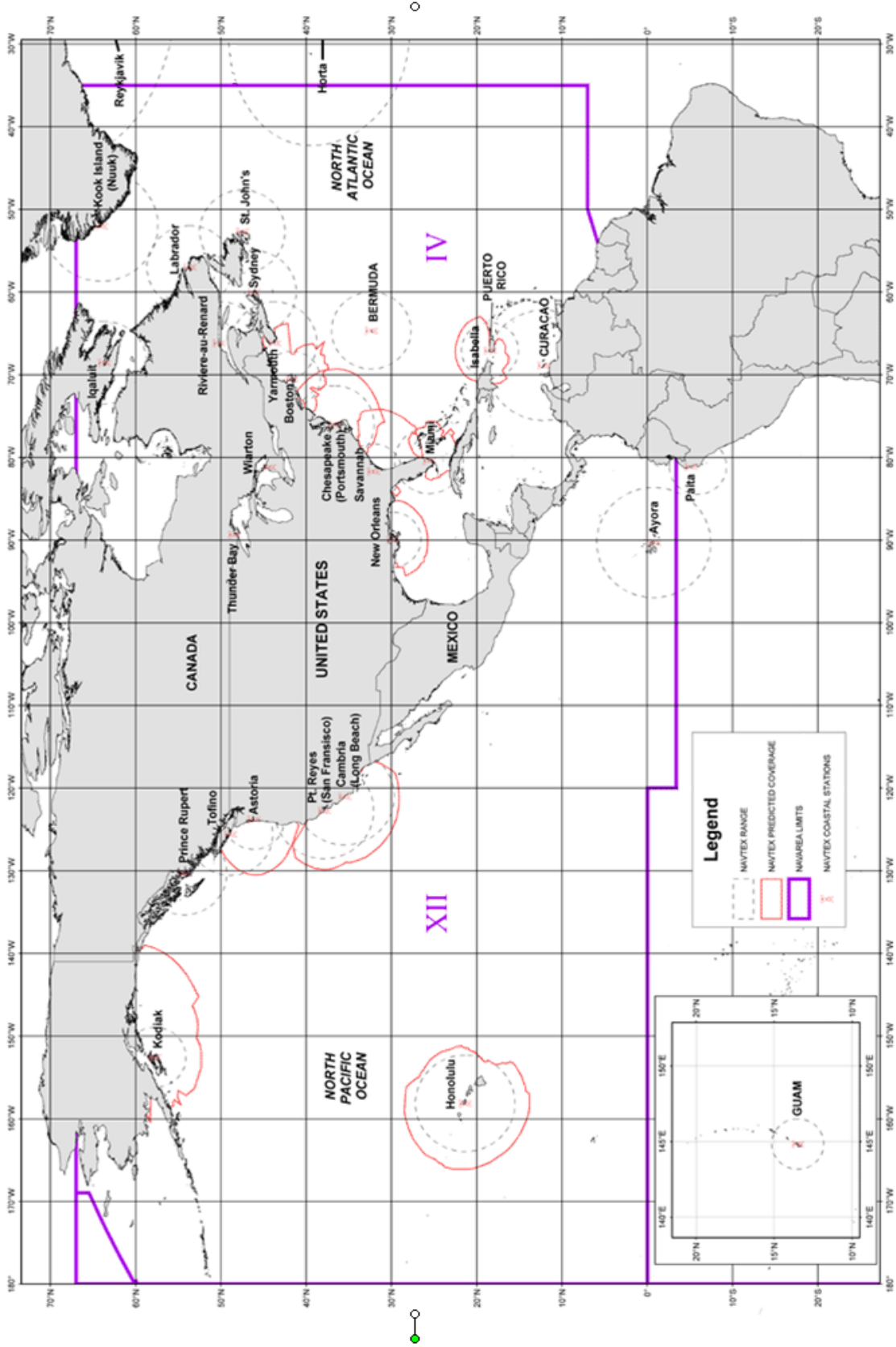
- 9.1 The U.S. is an active participant within the International Hydrographic Organization (IHO). U.S. IHO support includes participating in the CSPCWG, DQWG HSSC, MSDIWG, SNPWG, TSMAD. U.S. IHO Chair responsibilities are Chair of the DIPWG, HDWG, TWLWG, and the WWNWS.
- 9.2 Capt. Andrew Armstrong, NOAA (ret.), the NOAA Co-Director of the Joint Hydrographic Center is a member of the FIG/IHO/ICA International Board on Standards of Competence for Hydrographic Surveyors and Nautical Cartographers. As a member of the Board, Capt. Armstrong is available to advise Meso-American institutions on establishing hydrographic training curricula and preparing submissions to the International Board for Category A or Category B recognition. (andy.armstrong@noaa.gov)

**PROMULGATION OF MARITIME SAFETY INFORMATION BY U.S.
INFORMATION PROVIDERS**

SCHEDULED BROADCAST TIMES

WHAT	WHO	WHEN (UTC)	HOW	NAVAREA/ METAREA	SATELLITE
High seas warnings and forecasts	NWS	0430, 1030, 1630, 2230	SafetyNET	IV	AOR-W
High seas warnings and forecasts	NWS	0545, 1145, 1745, 2345	SafetyNET	XII	AOR-W/POR
High seas warnings and forecasts	NWS	0515, 1115, 1715, 2315	SafetyNET	XVI	AOR-W
Hurricane advisories West Atlantic	NWS	as required	SafetyNET	IV	AOR-W
Hurricane advisories East Pacific	NWS	as required	SafetyNET	XII	POR/AOR-W
Hurricane advisories Central Pacific	NWS	as required	SafetyNET	XII	POR
Long range navigational warnings	NGA	1000, 2200	SafetyNET	IV	AOR-W
Long range navigational warnings	NGA	1030, 2230	SafetyNET	XII	POR/AOR-W
Long range search and rescue	USCG	upon receipt	SafetyNET	IV/XII	AOR-W/POR
Coastal MSI	USCG	4 to 6 times daily for routine traffic; upon receipt for distress	NAVTEX	Generally, within 200 miles of the coastline	None; see Pub 117 for stations and times
Status of ice in North Atlantic Ocean	USCG	1200	SafetyNET	IV	AOR-E/W

NAVAREA IV & XII NAVTEX COVERAGE



Institution and Point of Contact	Training Opportunity	Training Details
<p>Florida Institute of Technology</p> <p>Graduate Admissions 1-800-944-4348 Fax: 1-407-723-9468</p>	<p>Master of Science in Hydrographic Engineering</p>	<p>(More Information)</p>
<p>NOAA National Geodetic Survey NGS Workshop Program</p> <p>David R. Doyle 301-713-3178 Fax: 301-713-4327 Dave.Doyle@noaa.gov</p>	<p>NGS conducts workshops throughout the United States, involving the cooperation of professional societies, universities, and international, Federal, state, and local organizations. NGS also develops new workshops upon request, provided it has the necessary resources and the material is within NGS' mission.</p>	<p>(More Information)</p>
<p>University of New Hampshire Center for Coastal & Ocean Mapping Joint Hydrographic Center</p> <p>Abby Pagan-Allis 603-862-3433 Fax: 603-862-0839</p>	<p>Graduate Program in Ocean Mapping</p> <p>[Category A Certified Program]</p>	<p>(More Information)</p>
<p>U.S. Navy Commander Naval Meteorology Oceanography Command</p> <p>Jacqueline Bussell 228-688-5753 Fax: 228-688-5332 Jacqueline.bussell@navy.mil</p>	<p>International Hydrographic Management and Engineering Program (IHMEP)</p> <p>[Category B Certified Program]</p>	<p>(More Information)</p>
<p>U.S. Navy Commander Naval Meteorology Oceanography Command</p> <p>Jacqueline Bussell 228-688-5753 Fax: 228-688-5332 Jacqueline.bussell@navy.mil</p>	<p>International Hydrographic Science Applications Program (IHSAP)</p> <p>[Category A Certified Program]</p>	<p>(More Information)</p>
<p>U.S. Navy Commander Naval Meteorology Oceanography Command</p> <p>Jacqueline Bussell 228-688-5753 Fax: 228-688-5332 Jacqueline.bussell@navy.mil</p>	<p>Mobile Training Team (NMTT) Tailored Maritime Geospatial Training</p>	<p>(More Information)</p>

