

UNITED STATES OF AMERICA
CA

National Report

Appendix A

1 Hydrographic Office/Service

This Appendix provides general information about U.S. hydrographic services from a national perspective.

U.S. domestic and international hydrographic services 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).

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

National Oceanic and Atmospheric Administration

The Office of Coast Survey (OCS) is a line office within the National Ocean Service, part of the National Oceanic and Atmospheric Administration (NOAA) of the U.S. Department of Commerce. The Under Secretary for Oceans and Commerce and 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.

The National Geospatial Intelligence Agency

The National Geospatial-Intelligence Agency (NGA) of the U.S. Department of Defense 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 acts as the Hydrographer for US Department of Defense, providing nautical data for global safety of navigation coverage.

NGA also contributes to humanitarian efforts, such as tracking floods and disaster support, and to peacekeeping. The NGA Maritime Safety Office 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.

U.S. Navy

The Naval Meteorology and Oceanography Command (NAVMETOCOM) provides Meteorology and Oceanography (METOC), Bathymetry and Hydrography (Bathy/Hydro), Precise Time and Astrometry (PTA), products and services that enable effective decision-making for operational safety, warfighting success by Naval and Joint forces, and Security Cooperation initiatives.

The Naval Oceanographic Office (NAVOCEANO) is the primary command for collecting, analyzing and displaying hydrographic information for safety of navigation of Department of Defense (DoD) surface and subsurface vessels. NAVOCEANO's core competencies include hydrography, bathymetry, geophysics, acoustics, physical oceanography, and geospatial intelligence. NAVOCEANO acquires and analyzes global ocean and littoral data to provide specialized, timely, and operationally relevant products and services for Department of Defense warfighters as well as other civilian, national and international customers. Utilizing space-based, airborne, surface, and subsurface platforms, as well as state-of-the-art computing and modeling techniques, NAVOCEANO synthesizes this data into products and services tailored to the individual warfighter's needs. These products and services support virtually every type of Fleet operation, providing mission-essential environmental information to the warfighter and to U.S. allies.

NAVOCEANO is the parent command of the Naval Ice Center and the Fleet Survey Team.

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 to provide basic data for engineering, scientific, and other commercial and industrial activities. This mandate covers all U.S. territorial waters and the U.S. 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. Figure 1 shows the extents of the U.S. EEZ. 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.

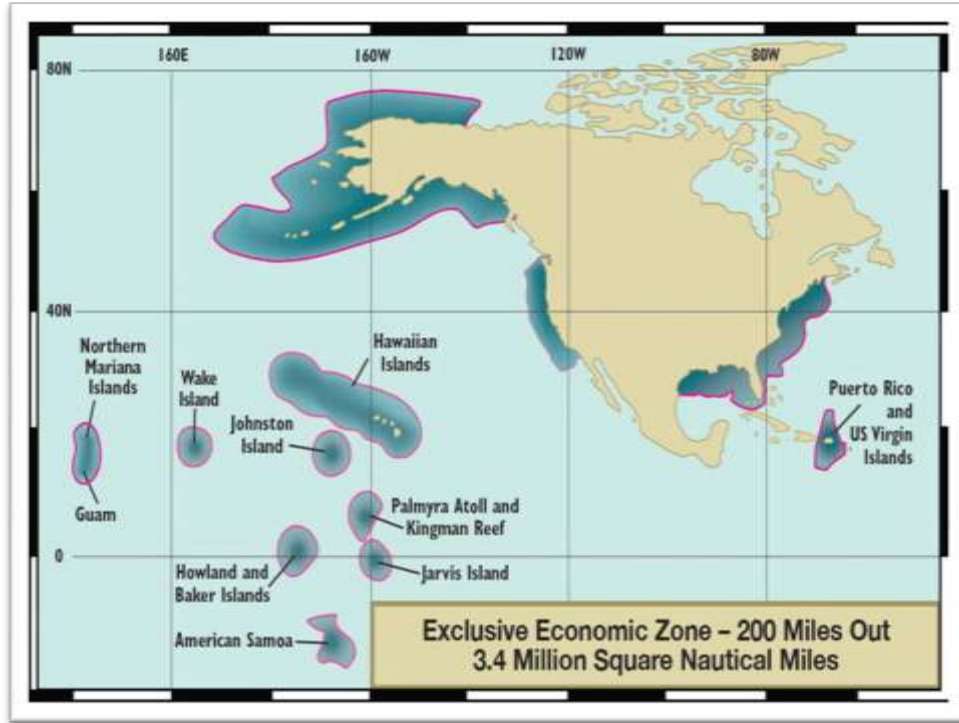


Figure 1: US Exclusive Economic Zone (EEZ)

Each year, the areas within NOAA’s scope of navigation safety responsibilities are reevaluated. NOAA determines which areas are in greatest need of hydrographic surveys and publishes these in the *NOAA Hydrographic Survey Priorities (NHSP)* document, which can be found at <http://www.nauticalcharts.noaa.gov/hsd/NHSP.htm>. Priorities are assigned based on several factors, including survey vintage, vessel traffic, depth, and customer requests.

NOAA has designated 511,000 SNM of territorial waters as navigationally significant. From 1994 to 2010, 36,545 SNM of this navigationally significant area has been surveyed with full bottom coverage. In the 2011 calendar year, 1,950 square nautical miles have been surveyed bringing the total of navigationally significant areas surveyed with full bottom coverage to 38,495 SNM.

Table 1 provides an overview of areas surveyed by NOAA in 2011.

Although the primary use for NOAA surveys is for chart compilation, they are also available for free to the general public via NOAA’s National Geophysical Data Center (NGDC). NGDC is the data archive and distribution center for the OCS’s digital hydrographic data and provides a wide variety of hydrographic data and derived product, which can be found at <http://www.ngdc.noaa.gov/mgg/bathymetry/hydro.html>.

SQUARE NAUTICAL MILE BREAKOUT* OF NHSP PRIORITY CATEGORIES**

	Navig. Significant	Critical Areas	Emerging Critical	Priority 1 Areas	Priority 2 Areas	Priority 3 Areas	Priority 4 Areas	Priority 5 Areas	Completed (post-1993 survey)
East Coast	53,416	2,479	0	7,063	5,795	15,568	14,347	0	8,164
Gulf of Mexico	73,502	7,709	2,107	11,133	8,065	14,357	8,616	14,368	7,147
West Coast	5,356	110	6	42	1,842	836	741	0	1,779
Alaska	324,754	4,407	3,638	23,953	94,242	34,464	28,175	117,562	18,313
Great Lakes	46,135	215	0	4,915	3,002	32,593	5,333	0	77
Hawaii and Pacific Is.	6,617	22	0	1	4,286	962	648	0	698
Caribbean Islands	1,543	34	0	38	184	341	579	0	367
Total	511,323	14,976	5,751	47,145	117,416	99,121	58,439	131,930	36,545

*Calculations derived from generalized area delineations; estimated accuracy is +/- 10%

**There are approximately 9,200 SNM of resurvey area for the U.S.

Table 1: Square Nautical Mile Breakout of NHSP Priority Categories – Total

Survey Platforms

NOAA’s Office of Marine and Aviation Operations (OMAO) operates three survey vessels devoted to supporting OCS charting responsibilities: NOAA Ship *Fairweather*, NOAA Ship *Thomas Jefferson*, and NOAA Ship *Rainier* (see Figure 2). In addition to these platforms OCS’s Navigational Services Division (NSD) maintains a fleet of six trailer-able boats devoted to strategic and urgent survey requests and requirements, such as emergency response and ENC verification. NSD also operates a 54-foot catamaran survey vessel, NOAA R/V *Bay Hydro II*, which is devoted to R&D and limited hydrographic surveying in support of the OCS mission. More details about NOAA’s fleet of hydrographic survey vessels can be reviewed at <http://www.moc.noaa.gov/flthmpgs.htm>.



Figure 2: NOAA Survey Platforms

3 New Charts and Updates

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, Raster Navigational Charts, Electronic Navigational Charts, and Print-on-Demand Charts.

Full details about NOAA’s nautical chart program, can be found at <http://www.nauticalcharts.noaa.gov/staff/chartspubs.html>. Here, 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.

Traditional Paper Charts/ Raster Navigational Charts® (NOAA RNCs)

NOAA maintains a suite of 1019 paper charts. These charts are maintained as color-separated 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 printing process. Official RNCs are available for free to the general public through NOAA’s Chart Downloader, <http://www.nauticalcharts.noaa.gov/mcd/Raster/>.

Electronic Navigational Charts® (NOAA ENC)

NOAA maintains S-57 compliant ENCs equal to 885 chart equivalents. These ENCs are maintained to critical corrections through the issuance of new editions and incremental updates and are continuously evaluated for any gaps and overlaps. ENCs are available for free to the general public through NOAA’s Chart Downloader, <http://www.nauticalcharts.noaa.gov/mcd/enc/index.htm>.

Print-on-Demand (POD)

NOAA’s 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.

NGA Charts

NGA is withdrawing most 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 US 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).

Certain NGA charts are offered for viewing as a service through NOAA’s Online Chart Viewer, <http://www.nauticalcharts.noaa.gov/mcd/NGAChartViewer.html>. NOAA does not produce or distribute these charts and does not offer electronic downloads of NGA charts. The NGA charts on the Chart Viewer are NOT corrected for Notice to Mariners and are not to be used for navigation. However, a link to the latest corrections is given for each chart.



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, they contain supplemental information that is difficult to portray on the nautical chart. See Table 2 for currently available and forthcoming editions.

NOAA has modernized the Coast Pilot production system, streamlining the process and providing enhanced products beyond the traditional annual hard copy printed editions. These digital files have made possible partnerships with private industry for POD publishing, binding, and distribution as an alternative to large scale single press runs. E-publishing and other web applications have also been promoted by expanding the ability of customization with ongoing efforts at Extensible Markup Language (XML) tagging of the Coast Pilot content.

Digital versions of the Coast Pilot are available for free to the general public from <http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>. The digital files are available as complete books or by chapter in PDF. All volumes of the Coast Pilot are also available for online viewing in HTML and in the XML format, which are experimental and not to be used for navigation.

Volume	Title	Edition	Year	Next Scheduled Edition
1	Eastport, ME to Cape Cod, MA	41	2011	Apr, 2012
2	Cape Cod, MA to Sandy Hook, NJ	41	2012	Oct, 2012
3	Sandy Hook, NJ to Cape Henry, VA	45	2012	Jan, 2013
4	Cape Henry, VA to Key West, FL	43	2011	Sep, 2012
5	Gulf Coast, Puerto Rico, and Virgin Islands	39	2011	May, 2012
6	Great Lakes and connecting waterways	41	2011	Feb, 2012
7	California, Oregon, Washington, Hawaii and Pacific Islands	44	2012	Dec, 2012
8	Dixon Entrance, AK to Cape Spencer, AK	33	2011	June, 2012
9	Cape Spencer, AK to Beaufort Sea, AK	29	2011	Aug, 2012

Table 2: Coast Pilot Volumes

Sailing Directions

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 digital updates.

All of these publications and their digital updates are available to the general public from the NGA Maritime Safety website, <http://msi.nga.mil/NGAPortal/MSI.portal>. A graphic of NGA Sailing Directions global coverage is shown in Figure 3:

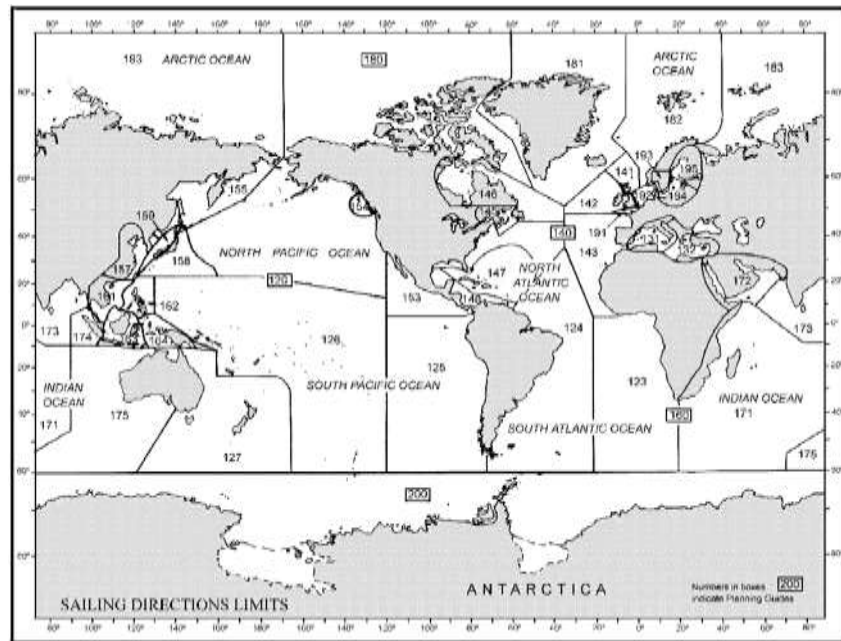


Figure 3: NGA Sailing Directions Global Coverage

List of Lights, Radio Aids and Fog Signals

The NGA List of Lights, Radio Aids and Fog Signals is published in seven volumes, as Publication numbers 110 through 116. Each volume contains lights and other aids to navigation that are maintained by or under the authority of foreign governments. Each volume corresponds to a defined geographic region, and contains more complete information about the navigational aids than can be conveniently shown on nautical charts. New editions are published annually for every volume. The uncorrected publications can be viewed or downloaded in their entirety as PDF files. Corrections to the List of Lights are published in the US Notice to Mariners. All of these publications and their digital updates are available to the general public from the NGA Maritime Safety website, <http://msi.nga.mil/NGAPortal/MSI.portal>. A graphic of global coverage for the NGA List of Lights can be seen in Figure 4.

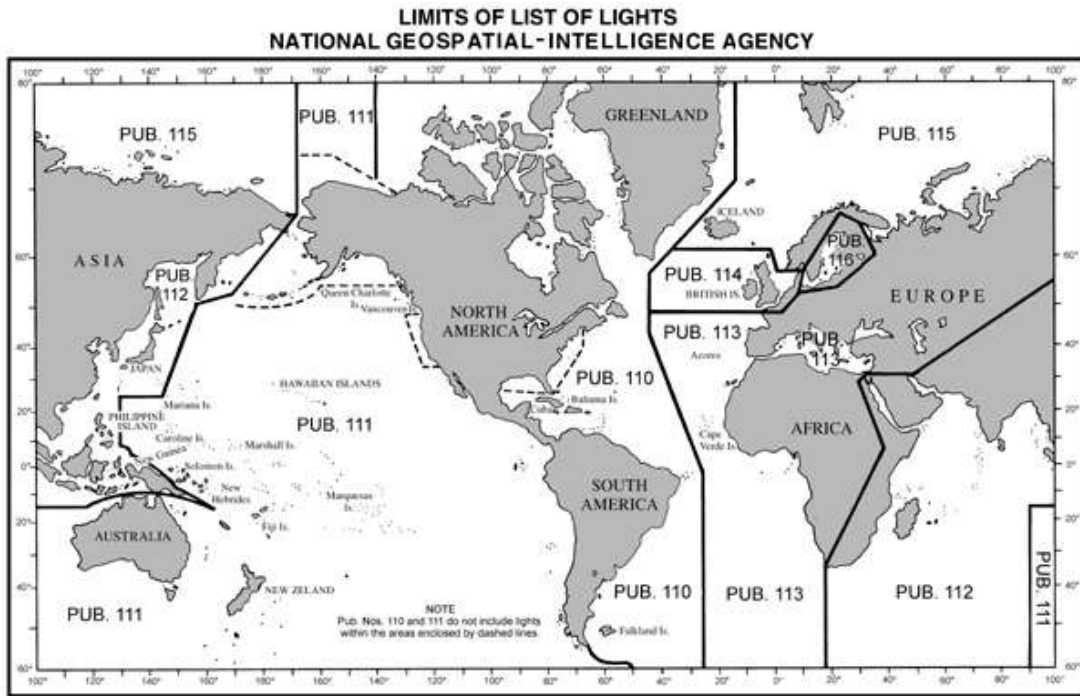


Figure 4: NGA List of Lights - Global Coverage

5 Maritime Safety Information (MSI)

NAVAREAS and Warnings

NGA is the NAVAREA IV and XII Coordinator within the IMO/IHO World- Wide Navigational Warning Service (WWNWS) and also acts as Chairman for the WWNWS Sub-Committee (SC). NAVAREA IV and XII have fully redundant and site separated NAVAREA operational systems to include satellite transceivers, telecommunications, internet and desktop PCs. System operations are exercised on a daily basis at this location to ensure full continuity of NAVAREA operations.

The limits of NAVAREA IV are formed 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). NAVAREA IV is shown as #4 in Figure 5.

The limits of NAVAREA XII are formed 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. NAVAREA XII is shown as #12 in Figure 5.

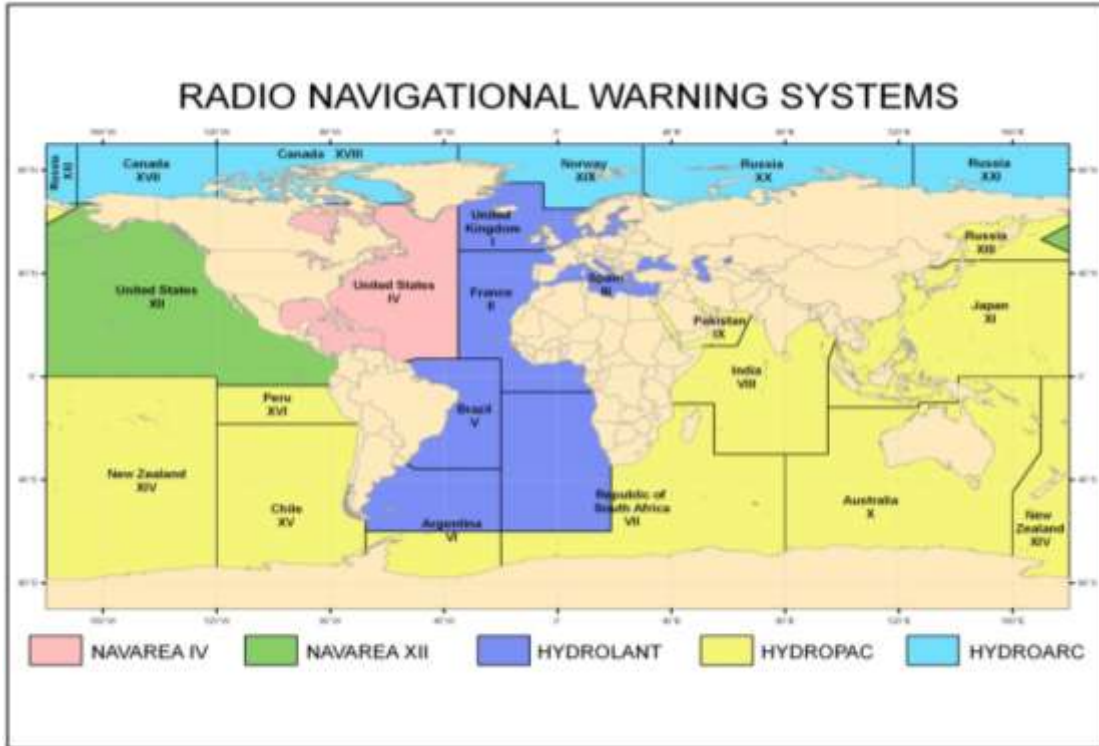


Figure 5: NAVAREA Limit

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

In-Force NAVAREA IV and XII messages are reposted each morning from the previous 24 hours at http://msi.nga.mil/NGAPortal/MSI.portal?_nfpb=true&_pageLabel=msi_portal_page_63.

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.

The Schedule of Broadcasts for Navigational Warnings/Meteorological Information is listed in Table 3.

NAVAREA Contact Information:

Mr. Peter DOHERTY - Deputy Director, Office of Maritime Safety
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 7500 Geoint Drive
 Springfield, Virginia 22150-7500
 Tel: +1 (571) 557 6746
 Fax: +1 (571) 557 3261
 E-mail: Peter.M.Doherty@nga.mil

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	NAVTEX	Generally, within 200 miles of the	None; see Pub 117 for stations and
Status of ice in North Atlantic Ocean	USCG	1200	SafetyNET	IV	AOR-E/W

Table 3: Promulgation of Maritime Safety Information by U.S. Information Providers (Scheduled Broadcast Times)

6 C-55 Update

The United States recognizes the importance of IHO C-55, “Status of Hydrographic Surveying and Nautical Cartography Worldwide” and is working to update this database with current survey and chart information. The US will have its five year C-55 information update by the International Hydrographic Conference in April 2012.

7 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 IV and XII.

Additional hydrographic training opportunities are available at various institutions in the United States as seen in Table 4.

Institution and Point of Contact	Training Opportunity
<p>FloridaInstituteof Technology GraduateAdmissions Tel: 800-944-4348Fax:407-723-9468 http://www.fit.edu/programs/grad/</p>	<p>MasterofScienceinOceanEngineeringwitha specialization inHydrographicEngineering</p> <p>MasterofScienceinEarthRemoteSensing,includingclasses inhydrographicsurveyingandhydroacoustics</p>
<p>NOAA NationalGeodeticSurvey NGSWorkshopProgram</p> <p>DavidR.Doyle Tel: 301-713-3178Fax:301-713-4327 Dave.Doyle@noaa.gov http://www.ngs.noaa.gov/</p>	<p>NGSconducts workshopsthroughouttheUnitedStates, involvingthecooperationofprofessionalsocieties, universities,andinternational,Federal,state,andlocal organizations.NGSalsodevelopsnewworkshopsupon request,providedit hasthenecessaryresourcesandthe materialiswithinNGS'mission.</p>
<p>NOAAOfficeofCoastSurvey AnnualNOAAHydro-trainingcourse</p> <p>KathrynRies Tel:(301)713-2780ext139 Kathryn.Ries@noaa.gov</p>	<p>ConductedFebruaryofeachyearinNorfolk, VA</p> <p>Topicinclude,butnotlimitedto:</p> <ul style="list-style-type: none"> *Introductionto Hydrography *NauticalChartProducts *NavigationandOrientation *Geodesy,Positioning&GPS,ERS *SideScanSonar *Tides
<p>UniversityofNewHampshire Centerfor Coastal&OceanMapping JointHydrographic Center</p> <p>AbbyPagan-Allis Tel: 603-862-3433Fax:603-862-0839 http://ccom.unh.edu/</p>	<p>GraduatePrograminOceanMapping</p> <p>[CategoryA CertifiedProgram]</p>
<p>U.S.Navy CommanderNavalMeteorologyOceanography Command</p> <p>JacquelineBussell Tel: 228-688-5753Fax:228-688-5332 Jacqueline.bussell@navy.mil</p>	<p>InternationalHydrographicScienceApplicationsProgram(IHSAP) - CategoryA CertifiedProgram</p> <p>InternationalHydrographicManagementandEngineeringProgram (IHMEP) - CategoryBCertifiedProgram</p> <p>MobileTrainingTeam(NMTT)TailoredMaritimeGeospatialTrainin g</p>
<p>NationalGeospatialIntelligenceAgency</p>	<p>MSITrainingsupportthroughIHOCapacityBuildingSteeringCommit teeandWWWNWSSteeringCommittee</p>

Table 4: U.S. Hydrographic Training Opportunities

8 Oceanographic Activities

NOAA's Center for Operational Oceanographic Products and Services (CO-OPS) 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 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.

The United States participates on the IOC-IHO Guiding Committee for GEBCO and hosts the IHO Data Centre for Digital Bathymetry at NGDC. 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.

9 Other Activities

IHO Involvement

The U.S. is an active participant within the International Hydrographic Organization (IHO). U.S. IHO support includes participating in the CSPCWG, DQWG, HSSC, SNPWG, TSMAD, WENDWG, ISBC, HCA, CBSC, GEBCO, EUWG, ABLOS, S-23WG, SRWG, the Correspondence Group on the Definition and Length of the Coastline, and the Finance Committee. Additionally, the U.S. chairs the MSDIWG, DIPWG, HDWG, TWLWG, and the WWNWS.

Marine Spatial Data Infrastructure

The United States has been active in the MSDI arena for many years. A Geospatial Platform is being developed by partner agencies of the U.S. Federal Geographic Data Committee (FGDC) to more effectively provide place-based products and services to the American public. The Geospatial Platform will be a managed portfolio of common geospatial data, services, and applications contributed and administered by authoritative sources and hosted on a shared infrastructure, for use by government agencies and partners to meet their mission needs and the broader needs of the U.S. The Geospatial Platform initiative, with the goal of "ultimately increasing access to geospatial data," is designed to become the operational component of the U.S. National Spatial Data Infrastructure (NSDI). NOAA's raster nautical charts were recently added to this service and can be viewed seamlessly and without the borders/collars. Information can be found at:

www.geoplatform.gov.