

**19<sup>TH</sup> MEETING OF THE NORTH INDIAN OCEAN HYDROGRAPHIC  
COMMISSION (NIOHC19)  
Muscat, Oman, 25 - 28 March 2019**

**NATIONAL REPORTS FROM UNITED STATES TO THE NIOHC19**

Reference: IHO Resolution 2/1997 as amended

**Executive summary**

1. Hydrographic Office / Service:

- a) Name of the institution: National Geospatial-Intelligence Agency (NGA), Source Operations and Management Directorate, Foundation Group, Maritime Safety Office (MSO).
- b) Description: NGA provides nautical charts and related hydrographic information outside of the U.S. Economic Exclusion Zone and is the mapping and charting authority for the US Department of Defense and commercial mariners in areas the US is considered to be the charting authority.
- c) Submitted by: Nancy Jones (nancy.m.jones@nga.mil).

Additional agencies:

- National Oceanic and Atmospheric Administration's (NOAA) Office of Coast Survey (OCS).  
Description: NOAA provides nautical charts and related hydrographic information within the nation's Economic Exclusion Zone (EEZ).
- U.S. Navy, Commander, Naval Meteorology and Oceanography Command (CNMOC).  
Description: The Commander serves as the Hydrographer of the U.S. Navy. CNMOC's subordinate commands, Naval Oceanographic Office (NAVOCEANO) and Fleet Survey Team (FST) conduct oceanographic, bathymetric, and hydrographic surveys worldwide to satisfy U.S. Navy requirements.

2. Surveys:

The U.S. Navy conducts hydrographic surveys outside the United States in international waters as well as in the territorial waters of partner nations through diplomatic channels and international agreements to enhance maritime commerce and security while supporting relationship and capacity building initiatives. By CNMOC Instruction 5510.1, "Disclosure of Information to Foreign Governments and International Organizations", it is U.S. Navy policy to treat all data collected through bi-lateral agreements as restricted from public release. Accordingly, Hydrographic Service or Port Authority of the respective country is the appropriate point of contact for inquiries or requests for data regarding any of these surveys.

The NOAA Hydrographic Survey Priorities available at <http://www.nauticalcharts.noaa.gov/hsd/NHSP.htm> defines the methodology NOAA uses to identify survey priorities across the U.S. EEZ.

a) Coverage of new surveys:  
No new areas.

b) New technologies and /or equipment:  
Teledyne Z-Boat 1800 Unmanned Surface Vessels (USV) equipped with multi-beam;  
Iver3 580 Unmanned Underwater Vehicles fixed with Bathymetric Interferometric Side Scan Sonar.

3. New charts & updates (specific to NIOHC region):

Paper charts 247  
Digital Nautical Chart (DNC) 3 volumes  
Electronic Navigational Charts (ENC) 0  
Raster Navigational Charts (RNC) N/A

a) DNCs and ENCs:

The U.S. (NGA) produces three (3) DNCs in NIOHC waters. These DNCs are maintained by NGA with new source information from the U.S. and prime foreign hydrographic authorities.

Further information about DNC can be found on NGA's Maritime Homepage at <https://msi.nga.mil/NGAPortal/DNC.portal>

d) INT charts:

NGA does not share INT chart responsibility within the NIOHC region. However, NGA does build its chart schemes and DNC library limits from these INT schemes, if practical.

e) National paper charts:

NGA produces 247 paper charts for the NIOHC region in their Region 6, 7 and 9 portfolio. Based on bi-lateral agreements NGA is withdrawing many of them from public sale. They are available via data sharing agreements with partner nations. Please contact the regional NGA Representative for additional details.

NGA Paper Charts published since the NIOHC18 Meeting

Total: 11

New Charts: 1

New Editions: 11

NGA Paper Charts scheduled for publication in 19/20 FY

Total: 30+

New Charts: 3+

New Editions: 30+

4. New publications & updates (produced by the U.S. specifically for the NIOHC region):

- a) New publications: NGA publications are available from the NGA Maritime Homepage at <http://msi.nga.mil/NGAPortal/MSI.portal>
- b) Updated publications in NIOHC:

<b>Publication</b>	<b>Title</b>	<b>Published</b>	<b>Edition</b>
Pub 171	East Africa and the South Indian Ocean	Electronic copy only	2018 (updated to January 2019)
Pub 172	Red Sea and the Persian Gulf	Electronic copy only	2017 (updated to January 2019)
Pub 173	India and the Bay of Bengal	Electronic copy only	2017 (updated to December 2018)
Pub 160	South Atlantic Ocean and Indian Ocean	Electronic copy only	2016 (updated to December 2018)
Pub 113	NGA List of Lights	2018	2018 (updated to NM 5/2019)
Pub 150	World Port Index	Electronic copy only	2017
Pub 9	The American Practical Navigator Vol I	Electronic copy only	2017
Pub 9	The American Practical Navigator Vol II	Electronic copy only	2017

- c) Means of delivery: All NGA Nautical publications are available for download on the NGA Maritime homepage. Digital updates can be downloaded from NGA at <http://msi.nga.mil/NGAPortal/MSI.portal>.

## 5. MSI

- a) Existing infrastructure for transmission:

NGA produces Notices to Mariners for NGA charts in the NIOHC region. These are published weekly and available in digital format only from the Maritime Homepage <http://msi.nga.mil/NGAPortal/MSI.portal>.

NGA produces navigational warnings for the NIOHC Region in the form of HYDROLANTS. These are broadcast and uploaded every business day to:

[http://msi.nga.mil/NGAPortal/MSI.portal?\\_nfpb=true&\\_st=&\\_pageLabel=msi\\_portal\\_page\\_63](http://msi.nga.mil/NGAPortal/MSI.portal?_nfpb=true&_st=&_pageLabel=msi_portal_page_63)

## 6. C-55

The table with the latest information to update IHO Publication C-55 (Status of Hydrographic Surveying and Charting Worldwide) is provided in Annex B.

## 7. Capacity Building Offer of and/or demand for Capacity Building

- a) Training received, needed, offered:

The United States is an active participant in the IHO Capacity Building Sub-Committee (CBSC), and the US/NGA directly supports the IHO Maritime Safety Information (MSI) training course.

Training opportunities are available at various institutions in the United States. Two Category A certified hydrographic programs are available through:

- The University of Southern Mississippi (USM)  
[www.marine.usm.edu/hs.php](http://www.marine.usm.edu/hs.php)
- The University of New Hampshire (UNH)  
[www.marine.unh.edu/research/ccom.html](http://www.marine.unh.edu/research/ccom.html)

CNMOC has partnered with USM for their program and NOAA has a similar arrangement with UNH for their Category A program. U.S. Navy also offers a six-month Category B International Hydrographic Management and Engineering Program via the Naval Information Warfare Training Group in Gulfport, Mississippi.

Capt. Andrew Armstrong, NOAA (ret.), the NOAA co-director of the Joint Hydrographic Center at UNH, 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 institutions on establishing hydrographic training curricula and preparing submissions to the International Board for Category A or Category B recognition. ([andy.armstrong@noaa.gov](mailto:andy.armstrong@noaa.gov)).

b) Status of national, bilateral, multilateral or regional development projects with a hydrographic component. (In progress, planned, under evaluation or study):

N/A

c) Description of requests to be considered by the IHO/CBSC:

N/A

## 8. Oceanographic activities

### a) General

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 Centers for Environmental Information.

### b) GEBCO/IBC's activities

Seabed 2030, an initiative in development with the IHO, IOC, and the Nippon Foundation, would focus on the goal of compiling a high-resolution openly available bathymetric model of the World Ocean seabed at the highest resolution possible from the coast to the deepest trenches by the year 2030. This model should efficiently provide bathymetric information to end users and leave no features of the World Ocean floor smaller than 100 m unmapped by the completion of the program.

Member States are encouraged to provide bathymetric sounding data to General Bathymetric Chart of the Ocean (GEBCO) in support of mapping the world's oceans and become active participants of the The Nippon Foundation-GEBCO Seabed 2030 project.

## 9. Other activities

### a) Participation in IHO Working Groups:

HSSC Working Groups—S-100WG, ENCWG, NCWG, NIPWG, DQWG, and TWCWG.

### b) MSDI Progress:

A Marine Spatial Data Infrastructure (MSDI) is a framework established at a common level (e.g., national, regional, international) that consists of people/organizations with

policies/governance, information systems, and technical standards working together to promote the availability, accessibility, and interoperability of marine spatial data. Many Hydrographic Offices (HOs) are evolving to a data-centric environment to produce Safety of Navigation (SoN) products where the greater potential exists to easily provide valuable hydrographic data to a broader user-base (e.g., natural resource exploration, scientific research, fisheries management, emergency management). This data-centric approach of “collect once, use many times” promotes a view gaining wider attention of the HO as a data provider through a MSDI, which makes them a relevant and relied-upon, marine contributor to larger Spatial Data Infrastructures (SDIs). Without such relevance or reliability, support from a broader user-base is forfeited, and the destiny of the HO becomes uncertain in a rapidly advancing, open, technology- and data-driven society.

Within the IHO, the Marine Spatial Data Infrastructure Working Group (MSDIWG) is responsible for monitoring “national, regional, and international SDI activities and trends” and supply information up to the organizational structure of the IHO to the IRCC. There has been a push among several IHO Regional Hydrographic Commissions (RHCs) towards regional MSDI-related working groups and projects for their respective regions:

- Arctic Regional Marine Spatial Data Infrastructure (ARMSDIWG)
- Baltic Sea and North Sea MSDIWG (BS-NSMSDIWG)
- Meso American - Caribbean Sea Hydrographic Commission Marine Economic Infrastructure Programme Working Group (MACHC MEIP WG)

The United States has a strong focus on MSDI within their National Spatial Data Infrastructure (NSDI) and at regional levels. In particular, the United States is currently leading several of the IHO MSDI-related working groups:

- Vice-Chair, MSDIWG
- Chair, ARMSDIWG
- Chair, MACHC MEIP WG

Approaching MSDI at a regional level has been the trend within the IHO. MSDIWG is recognizing that “it is becoming more important to consider taking MSDI as a RHC agenda item therefore we hope to see a National MSDI report prepared by each MS for submission to every RHC incorporating the status of MSDI, plans for involvement in MSDI and challenges facing the HO.” The MSDIWG has requested the IRCC “to endorse the need to include MSDI agenda items in National reports to RHC’s and to nominate RHC MSDI ambassadors to provide such reports.”

## 10. Conclusions

### a) Areas of significant achievement:

Progress MSDI globally and consideration on implementation in the NIOHC.

### b) Areas of particular concern:

Support GEBCO and open data policies to maximum extent within national policies to help expand customer base and support as well as expose to a broader audience the relevancy of hydrographic offices.

### b) Any other matters of interest to the RHC:

The NIOHC is invited to:

- a. note the report;
- b. Participate as active members of the GEBCO Seabed 2030 project;
- c. Provide bathymetric data to the IHO DCDB to support mapping ocean areas at high resolution;
- d. Provide shallow water bathymetric data from Electronic Navigational Charts (ENC) to the IHO DCDB;
- e. Develop strategies to collect bathymetric data in ocean areas; and
- f. Take action as seen appropriate.

Input to the IHO Publication P-5 (*Yearbook*)

*Country: United States*  
*Organization: National Geospatial-Intelligence Agency*

<b>Contact information</b>	
-National Hydrographer or equivalent	Post: NO CHANGE Name: Postal address: Tel: Fax: Email:
-Head of the Hydrographic Office	Post: Director, Maritime Safety Office Name: CAPT Richard A. Kennedy Postal address: 7500 GEOINT Drive, Springfield, VA 22150-7500 United States of America Tel: + 1 (571) 558.3558 Fax: Email: RichardAKennedy@nga.mil
-Other point(s) of contact	NO CHANGE
-Web site	NO CHANGE
<b>Country information</b>	
-Declared National Tonnage	Tonnage: NO CHANGE Date:
-National day	NO CHANGE
-Date of establishment and Relevant National Legislation	NO CHANGE
-Date first joined IHO	NO CHANGE
-Date ratification Convention	10/06/1968 11/08/2016 (new protocol entry into force date)

-Remarks on membership	N/A			
<b>Agency information</b>				
-Top level parent organisation	Department of Defense			
-Principal functions of the organisation or the department	<p>NGA provides: Nautical charts, Aeronautical charts, Topographic maps, Sailing Directions, List of Lights, Notices to Mariners, navigational and geodetic data, and related products and services to the Armed Forces of the United States, other Department of Defense and federal agencies and to the Merchant marine and Mariners in general.</p>			
-Annual operating budget	N/A			
-Total number of staff employed	N/A			
-Number of INT charts published	NO CHANGE			
-Total number of paper charts published	Approximately 5,000 charts			
-Number of ENC cells published	None in NIOHC region.			
-Number of Other charts	3,400 Digital Nautical Chart (DNC) libraries			
-Type of publications produced	<p>Paper charts (worldwide folio of approx. 4000).  Digital charts (worldwide folio of 5000 Digital Nautical Charts in Vector Product Format).  Notices to Mariners.  Sailing Directions.  For details consult the WEB site:  <a href="http://www.nga.mil">http://www.nga.mil</a>  Marine Safety Information:  <a href="http://msi.nga.mil/NGAportal/MSI.portal">http://msi.nga.mil/NGAportal/MSI.portal</a>  Digital Nautical Chart:  <a href="http://msi.nga.mil/NGAportal/DNC.portal">http://msi.nga.mil/NGAportal/DNC.portal</a></p>			
-Detail of surveying vessels/ aircraft	-Name	-Displacement	-Date Launched	-Number of crew



-Other information of interest	Ships of the Naval Oceanographic Office support NGA Nautical Chart Production.			

**NGA is the Official Representative to IHO (as designated by Member Government)**

**Office of Coast Survey / National Ocean Service (OCS/NOS)**  
Department of Commerce

Post: Director of NOAA's Office of Coast Survey  
Rear Admiral Shepard SMITH  
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United States of America  
Staff Point of Contact, Mr. Jonathan JUSTI  
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E-mail: OCS.International@noaa.gov  
<http://www.nauticalcharts.noaa.gov>

**Web site**

**Date of establishment**

1807

**Remarks**

The Organic Act of 10 February 1807, (2 Stat.4134) authorized the President of the United States "to cause a survey to be taken of the coasts of the United States..."

**Top level parent organization**

National Oceanic and Atmospheric Administration  
U.S. Department of Commerce.

**Principal functions of the organization or the department**

Hydrographic surveys, Nautical charts, Geodetic surveys, Tides/Currents, Engineering and Systems Development. Specialized library : marine and earth sciences (NOAA library facility related to NOS activities).

**Number of INT charts published**

15(does not include NGA maintained INT Charts)

**Total number of paper charts published**

1032

**Number of ENC cells published**

955 (Updated monthly, please refer to the website for recent postings.)  
<http://nauticalcharts.noaa.gov/mcd/enc/index.htm>

**Type of publications produced**

NOAA's Coast Pilot. For details, consult the following website:  
<http://nauticalcharts.noaa.gov/nsd/cpdownload.htm>

**Detail of surveying vessels/ Aircraft****Displacement****Commissioning Date****Crew**

RAINER	1800	1967	62 (10*)
FAIRWEATHER	1800	1967	45 (7*)
THOMAS	2054	2003**	31 (8*)

## JEFFERSON

FERDINAND R	738	2012	14 (4*)
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## HASSLER

BAY HYDRO II	45	2009	3 (1*)
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6 Navigation Response Teams

27 ft launches, 3 person crews

(Hydrographic Field Parties)

2 Mobile integrated survey teams (MIST)

Portable hydrographic survey equipment able to be installed on vessels of opportunity during emergencies (SSS, VBES, and SSS equipped AUV)

\* = number of officers included in figure

\*\* = Thomas Jefferson was in US Navy vessel launched in 1992, and acquired and recommissioned by NOAA in 2003

**Other Organizations providing national Hydrographic Services****COMMANDER, NAVAL METEOROLOGY AND OCEANOGRAPHY COMMAND (CNMOC)**

Contact information

**Director or equivalent**

Commander, Naval Meteorology

and Oceanography Command

Hydrographer of the US Navy

RDM John A. OKON

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Hydrographer of the Navy 1100

Balch

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**Other point(s) of contact**

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 Scientific and Technical Director:  
 Mr Marcus JARRETT  
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 Fleet Survey Team, Commanding  
 Officer:  
 CDR Mike SVATEK  
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**Date of establishment**

06/12/1830

**Principal functions of the organization or the department**

Collection, analysis and display of oceanographic (to include oceanographic, meteorological, hydrographic and geophysical) data to support Navy operations. Improvement of oceanographic prediction, data collection, and data analysis methods. Assistance to other countries in meeting their oceanographic and hydrographic requirements.

<b>Detail of surveying vessels/ Aircraft</b>	<b>Displacement</b>	<b>Commissioning Date</b>	<b>Crew</b>
USNS PATHFINDER (T-AGS-60)	5000	1993	55
USNS BOWDITCH (T-AGS-62)	5000	1996	55
USNS HENSON (T-AGS-63)	5000	1998	55
USNS BRUCE HEEZEN (T-AGS-64)	5000	2000	55
USNS MARY SEARS (T-AGS-65)	5000	2003	55
USNS MAURY (T-AGS-66)	5000	2016	55

Each ship carries two 10-meter hydrographic survey launches (HSLs).

Additional assets:

Airborne Coastal Survey (ACS) with the Optech, Inc., “Coastal Zone Mapping and Imaging” LIDAR (CZMIL) system using a Basler BT-67, a refurbished DC-3; Fleet Survey Team (FST) employs various survey vehicles for survey including two 9 meter Workskiff with amidships transducer moon pools; four Teledyne Z-Boat 1800 Unmanned Surface Vessels (USV) equipped with multi-beam; two Iver3 580 Unmanned Underwater Vehicles fixed with Bathymetric Interferometric Side Scan Sonar and rapid littoral survey vehicles (RLSVs) (personal water craft fitted with a single beam echo sounder and side scan sonar). C-130 aircraft provide rapid deployment transportation capability for all FST craft. FST also maintains a year round stand by “Fly-Away Team” consisting of four personnel and survey gear to outfit boats of opportunity. This capability enhances standard Navy survey requirements and provides capacity to maintain navigable approach corridors in support of humanitarian aid and disaster relief.

#### Annex B

Input to the IHO Publication C-55 (*Status of Hydrographic Surveying and Charting Worldwide*)

N/A

#### Annex C

National MSI Self-Assessment

N/A