




**UNITED STATES DEPARTMENT OF COMMERCE**

National Oceanic and Atmospheric Administration  
NOAA Marine and Aviation Operations  
Marine Operations Center  
439 W. York Street  
Norfolk, VA 23510-1114

MEMORANDUM FOR: Lieutenant Commander Benjamin K. Evans, NOAA  
Commanding Officer, NOAA Ship *Ferdinand R. Hassler*

FROM:  Captain Anita L. Lopez, NOAA  
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for FH-13-04  
Approaches to Portsmouth, NH

Attached is the final Project Instruction for FH-13-04, Approaches to Portsmouth, NH, which is scheduled aboard NOAA Ship *Ferdinand R. Hassler* during the period of August 12 – October 25, 2013. Of the 28 DAS scheduled for this project, 0 DAS are funded by the program and 28 DAS are funded by OMAO. This project is estimated to exhibit a High Operational Tempo. Acknowledge receipt of these instructions via e-mail to [OpsMgr.MOA@noaa.gov](mailto:OpsMgr.MOA@noaa.gov) at Marine Operations Center-Atlantic.

Attachment

cc:  
MOA1





UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Coast Survey  
Silver Spring, Maryland 20910-3282

## FINAL Project Instruction

**Date Submitted:** July 25, 2013

**Platform:** NOAA Ship *Ferdinand R. Hassler*

**Project Number:** FH-13-04 (OMAO)

**Project Title:** Approaches to Portsmouth, NH


**Project Dates:** 8/12/2013 – 10/25/2013


Prepared by:  Digitally signed by MOSER MARC STANTON 1163193902  
DN: cn=MOSER MARC STANTON 1163193902, ou=NOAA,  
c=US, email=MOSER MARC STANTON 1163193902@noaa.gov  
Date: 2013.07.26 10:51:30 -0400 Dated: July 26, 2013

LCDR Marc S. Moser, NOAA  
Chief, Operations Branch  
Hydrographic Surveys Division

Date:

2013.07.26

Approved by:  10:49:34 -04'00' Dated: \_\_\_\_\_  
Jeffrey Ferguson  
Chief, Hydrographic Surveys Division  
Office of Coast Survey

Approved by:  Dated: 26 JUL 13  
Captain Anita Lopez, NOAA  
Commanding Officer  
Marine Operations Center - Atlantic



## I. Overview

### A. Brief Summary and Project Period

#### Phase 2 Operational Testing

During the second deployment (Fall 2013), draft CON-OPS will be validated as the operational team works in ‘survey mode’ to document manpower requirements and efficiency metrics to determine the capabilities and possible benefits of the REMUS 600 aboard *Hassler*. During the two week deployment, we will potentially operate in multiple operational modes varying from an 8 hour daylight survey to a 16+ hour overnight survey in an effort to quantify the potential for survey gains.

Results from the initial *Hassler* surveys will include refined SOP’s and CON-OPS, an initial report on the expected efficiency gains and a report of the data accuracy (including the development of an uncertainty model) for the REMUS 600 aboard NOAA Ship *Hassler*.

### B. Service Level Agreements

Of the 28 DAS scheduled for this project, 0 DAS are funded by the program and 28DAS are funded by OMAO. This project is estimated to exhibit a High Operational Tempo.

### C. Operating Area

The project area is located in the Approaches to Portsmouth, NH. A map of the project area can be found with the detailed project instructions appended to these instructions.

### D. Summary of Objectives

This project will support the following primary missions:

To support safe navigation through the acquisition and processing of hydrographic survey data for updating nautical charts and by the identification and dissemination of dangers to navigation as identified during the course of survey operations.

And

To test the new NOAA multibeam echosounder autonomous underwater vehicle (AUV) during ship operations to determine next steps and operational constraints of hydrographic data acquisition using an AUV. Specific objectives for the AUV testing include:

- Does bathymetric data collected by AUVs meet NOAA’s nautical charting standards?
- How can bathymetric data collected by AUVs be integrated into NOAA’s data processing pipeline?
- What resources, including personnel, shipboard infrastructure, and handling systems, are necessary to safely operate a large AUV from a hydrographic survey vessel?

- What are the Standard Operating Procedures (SOPs) necessary to safely operate a large AUV from a hydrographic survey vessel?
- Under what concept of operations will Bathymetric AUVs provide a benefit to NOAA hydrographic survey operations?
- What is the expected cost-benefit ratio for using AUVs aboard a NOAA hydrographic survey vessel, where cost includes the manpower required to maintain and operate an AUV and the benefit is increased survey efficiency?

E. Participating Institutions

N/A

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Downs, Rob *	Project Manager / PS	8/26/2013	8/30/2013	M	NOAA	USA
Annis, Mike *	Physical Scientist	8/26/2013	8/30/2013	M	NOAA	USA
Murray, Bryan *	ERT	8/26/2013	8/30/2013	M	NOAA	USA
Kist, Jennifer	Physical Scientist	8/12/2013	8/21/2013	F	NOAA	USA
Herzog, Martha	Physical Scientist	8/26/2013	9/11/2013	F	NOAA	USA

*\*Note: Personnel indicated with a '\*' will be transferred ashore each evening and will not spend the night on the ship*

G. Administrative

1. Points of Contacts

Principle Investigator:  
 LCDR Marc S. Moser, NOAA  
 Chief, Operations Branch  
 Hydrographic Surveys Division  
 1315 East West Hwy, #6854  
 Silver Spring, MD 20910  
 301-713-2702 x112

Project Coordinator:  
Paul Turner  
Physical Scientist, Operations Branch  
Hydrographic Surveys Division  
1315 East West Hwy, #6752  
Silver Spring, MD 20910  
301-713-2702 x106  
[Paul.Turner@noaa.gov](mailto:Paul.Turner@noaa.gov)

Chief Scientist:  
LCDR Benjamin Evans, NOAA  
Commanding Officer, NOAA Ship *Ferdinand R. Hassler*  
Marine Operations Center, Atlantic  
439 West York Street  
Norfolk, VA 23510-1145  
603-812-8748  
[CO.Ferdinand.Hassler@noaa.gov](mailto:CO.Ferdinand.Hassler@noaa.gov)

AUV Project Manager:  
Rob Downs (NOAA), [rob.downs@noaa.gov](mailto:rob.downs@noaa.gov)  
1315 East West Highway, Silver Spring, MD 20910  
Office: 301-713-2653 x148  
Mobile: 301-693-9848

AUV Technical Lead:  
Mike Annis (NOAA), [Michael.j.annis@noaa.gov](mailto:Michael.j.annis@noaa.gov)  
1315 East West Highway, Silver Spring, MD 20910  
Office: 301-713-2653 x144  
Mobile: 571-332-4508

2. Diplomatic Clearances

N/A

3. Licenses and Permits

Planned hydrographic surveys are included in the OCS National Environmental Policy Act (NEPA) analysis and the Programmatic Environmental Assessment for the Office of Coast Survey Hydrographic Survey Projects dated June 2012.

## II. Operations

### A. Project Itinerary

1. Itinerary will be based upon the ship's schedule and executed under the direction of the Commanding Officer. Every effort shall be made by the Commanding Officer to maximize the operational efficiency of assigned projects.

During times of AUV operations, visiting personnel will be put ashore by small boat for the night and ship will be at anchor.

### 2. Staging and Destaging

AUV and associated equipment will be mobilized on ship and AUV and associated equipment will be shipped up to New Castle before 8/21/2013.

AUV and associated equipment will be demobilized after 9/11/2013 in New Castle, NH.

### C. Operations to be Conducted

#### 1. Underway Operations

Hydrographic survey operations per the appended project instructions using the ability to run concurrent 24 hr ship survey operations.

2. AUV deployment, recovery, and operations to support testing and hydrographic survey operations during the day. AUV will acquire multibeam bathymetry and backscatter data. Data acquisition is not the primary goal; survey plans for following leg will be developed based on CONOPS from this leg.

#### AUV Launch & Recovery

The AUV will be launched and recovered by *Hassler's* deck department using the vessel's A-Frame and winch. *Hassler's* deck department and crew will direct the AUV Launch and Recovery operations.

During launch, the lifting line will be attached to the lifting bail on the AUV with a tag line attached to the AUV's nose. Once the AUV is in the water it will be towed by the tag line while the lifting line is released. Then the tag line can be remotely released and *Hassler* can move to a safe standoff distance while the run command is remotely transmitted to the AUV.

During recovery, the AUV will drift on the surface and a command will be remotely transmitted to deploy the nose tag line. The tag line will be grappled and the AUV taken into tow. With the AUV in tow the lifting hook will be connected to the AUV's bail and the AUV will be winched aboard using the A-Frame.

### AUV Survey Operations and Monitoring

The AUV is equipped with acoustic, wireless Ethernet, and Iridium satellite communications which permit monitoring the AUV while in mission mode and transmitting basic commands (stop, run, pause mission).

Acoustic communications require a small, towable acoustic modem to be lowered into the water from the vessel while stopped or proceeding at a slow speed.

Wireless Ethernet and Iridium communications are accomplished via a small mast box which will be temporarily mounted to the *Hassler* superstructure. Wireless Ethernet communications are short range, but permit full interaction with the AUV, including surface control. Iridium communications are long range and provide in-mission status and tracking, as well as basic commands.

In normal survey operations the AUV status is monitored via periodic calls over Iridium. At any point in the mission communications can be established with the AUV using acoustic communications within a 2KM range.

The AUV Team will be responsible for programming AUV missions, monitoring the AUV's status, and pausing or halting the mission if necessary due to weather, vessel traffic, or under the direction of the Hassler crew.

AUV missions will initially be planned for durations of 1-4 hours during initial testing of shipboard operations. As testing progresses and concepts of operations are evaluated the mission durations will increase up to 16 hours. All planned AUV launch and recovery operations will occur during daylight.

#### D. Dive Plan

N/A

#### E. Applicable Restrictions

Conditions which preclude normal operations:

- poor weather conditions
- equipment failure
- safety concerns
- personnel shortages

AUV Operating Conditions:

##### 1. Environment

- a. Operating Depth: Minimum 3 meters, maximum 450 meters

- b. Sea State: Maximum sea state 4 (Beaufort Scale) for launch and recovery or less as directed by *Hassler*.
  - c. Current: Maximum 3 knots or no greater than 75% of planned operational speed of AUV.
  - d. Visibility: Minimum 1 km.
- 2. AUV Mission Planning and Risk Mitigation
  - a. AUV mission planning, pre-mission approvals, and mission monitoring shall be conducted in accordance with the Office of Coast Survey's Emergency Response AUV Personnel Requirements & Standard Operating Procedures.

### III. Equipment

- A. Equipment and Capabilities provided by the ship (itemized)
  - 1. Ship fully outfitted with hydrographic survey equipment to support shallow and mid water multibeam and/or side scan sonar survey operations.
  - 2. Personnel to staff and operate the ship's survey equipment for 24 hr/day operations.
  - 3. The Office of Coast Survey may staff the survey department with rotating physical scientists to efficiently manage the project's data processing requirements.
- B. Equipment and Capabilities provided by the scientists (itemized)
  - i. REMUS-600 AUV with Kongsberg EM3002 multibeam echosounder
    - a. Dimensions: 13' x 12.75", 650 Lbs
  - ii. One Mission Planning Laptop
  - iii. One Data Processing Laptop with CARIS and NavLab processing software
  - iv. One REMUS topside unit for interface with AUV
  - v. One REMUS battery charging unit
  - vi. One REMUS mast box (WiFi, Iridium, and GPS antennas)
  - vii. One REMUS Ranger towable acoustic modem
  - viii. Interconnect cables for AUV communications, mast box, and charging
  - ix. One transport cart with lockable wheels.



#### **IV. Hazardous Materials**

##### **A. Policy and Compliance**

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per FEC 07, the scientific party will include with their project instructions and provide to the CO of the respective ship 60 to 90 days before departure:

- A list of hazardous materials by name and anticipated quantity
- Include a chemical spill plan that addresses all of the chemicals the program is bringing aboard. This shall include:
  - Procedures on how the spilled chemicals will be contained and cleaned up.
  - A complete inventory (including volumes/amounts) of the chemical spill supplies and equipment brought aboard by the program. This must be sufficient to clean and neutralize all of the chemicals brought aboard by the program.
  - A list of the trained personnel that will be accompanying the project and the training they've completed.

The AUV contains Lithium batteries which are enclosed in the AUV's watertight housing. Although these batteries are not required to be listed under this section, a rough plan of action is included for special circumstances.

##### **SPILL CONTROL**

The material contained within the AUV batteries would only be expelled under abusive conditions. Using a shovel or broom cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

##### **FIRE**

Extinguishing media: CO2, dry chemical or foam extinguishers. Type D extinguishers are not to be used.

##### **Exposure Controls / Personal Protection**

Respiratory: Not necessary under normal use. In case of battery rupture, use self-contained full-face respiratory equipment.

Hand Protection: Not necessary under normal use. Use Viton rubber gloves if handling a leaking or ruptured battery.

Eye Protection: Not necessary under normal use. Wear safety goggles or glasses with side shields if handling leaking or ruptured batteries.

Skin Protection: Not necessary under normal use. Use rubber apron and protective working in case of handling a ruptured battery.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An MSDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program.

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory of hazardous material indicating all materials have been used or removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of scientific chemicals is not permitted during projects aboard NOAA ships.

B. Radioactive Isotopes

N/A

**V. Additional Projects**

A. Supplementary ("Piggyback") Projects

B. NOAA Fleet Ancillary Projects

N/A

**VI. Disposition of Data and Reports**

A. Data Responsibilities

B. Pre and Post Project Meeting

Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of project objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Post-Project Meeting: Upon completion of the project, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief

Scientist and members of the scientific party to review the project. Concerns regarding safety, efficiency, and suggestions for improvements for future projects should be discussed. Minutes of the post-project meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report

Within seven days of the completion of the project, a Ship Operation Evaluation form is to be completed by the Chief Scientist. The preferred method of transmittal of this form is via email to [omao.customer.satisfaction@noaa.gov](mailto:omao.customer.satisfaction@noaa.gov). If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations  
NOAA Office of Marine and Aviation Operations  
8403 Colesville Road, Suite 500  
Silver Spring, MD 20910

**VII. Miscellaneous**

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

**B. Medical Forms and Emergency Contacts**

The NOAA Health Services Questionnaire (NHSQ, Revised: 02 JAN 2012) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf57-10-01.pdf>. The completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the project to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

Contact information:

Regional Director of Health Services  
Marine Operations Center – Atlantic  
439 W. York Street  
Norfolk, VA 23510  
Telephone 757-441-6320  
Fax 757-441-3760  
E-mail [MOA.Health.Services@noaa.gov](mailto:MOA.Health.Services@noaa.gov)

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

**C. Shipboard Safety**

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

#### D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required it must be arranged at least 30 days in advance.

#### E. IT Security

Any computer that will be hooked into the ship's network must comply with the *NMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of these requirements prior to boarding the ship is required.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

#### F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FRNS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated NMFS Deemed Exports point of contact to assist with the process.

The following are basic requirements. Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the e-mail generated by the FRNS granting approval for the foreign national guest's visit. This e-mail will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.

2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

#### Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written NMAO approval and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FRNS e-mail granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.

#### Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen, NOAA (or DOC) employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

## **Appendices**

1. Primary Project Instructions: OPR-A321-FH-13, Approaches to Portsmouth, NH

# Hydrographic Survey Project Instructions

<b>Project Name:</b>	Approaches to Portsmouth, NH
<b>Project Number:</b>	OPR-A321-FH-13
<b>Assigned Field Unit:</b>	NOAA Ship <i>Ferdinand R. Hassler</i>
<b>Assigned Processing Branch:</b>	Atlantic Hydrographic Branch
<b>Signed Date:</b>	07/25/2013
<b>Project Instructions Version:</b>	Final
<b>Planned Acquisition Time:</b>	Start Date: 08/2013 End Date: 10/2013
<b>Delivery Dates:</b>	120 days from completion of data acquisition.

## **Purpose and Location:**

The primary purpose of this project is to support safe navigation through the acquisition and processing of hydrographic data for updating the National Ocean Service's (NOS) nautical charting products. In addition, testing of NOAA's multibeam echosounder autonomous underwater vehicle (AUV) will be conducted to determine functionality and operational constraints of hydrographic data acquisition using an AUV during standard ship operations. This project will cover approximately 188 snm of which 65 snm are Priority 1 survey areas as designated in NOAA Hydrographic Survey Priorities, 2012 edition.

## **Supporting Documents:**

Hydrography shall consist of Navigable Area Surveys in accordance with the following support documents. Data from surveys is intended to supersede all prior survey data in the common area.

NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April 2013

NOS Field Procedures Manual for Hydrographic Surveying (FPM), May 2013

Hydrographic Survey Technical Directive (HTD): 2013-4, Configuration Management

**PERSONNEL SAFETY AND DATA QUALITY SHALL ALWAYS BE EMPHASIZED OVER DATA QUANTITY! THE HYDROGRAPHER SHALL NEVER SUBJECT PERSONNEL OR BOATS TO UNDUE RISKS AND HAZARDS.**



Registry Details:						
<b>General Locality:</b> Gulf of Maine						
Registry Number	Priority	Sublocality	State or Territory	Scale	Estimated SNM	Instructions
H12613	1	Vicinity of Boon Island	Maine	40000	37	
H12615	2	York Harbor Entrance to Cape Neddick	Maine	10000	20	
H12612	3	Vicinity of Isles of Shoals	Maine	40000	19	
H12614	4	Hampton Beach to Little Boars Head	New Hampshire	20000	33	
H12616	5	Fox Hill Pt to Concord Pt	New Hampshire	10000	16	
H99999	6	Cape Neddick Harbor to Moody Beach	Maine	40000	22	
H99999	7	8 NM East of Ogonquit	Maine	40000	41	

Coverage & Limits:	
<b>Inshore Limit:</b> The inshore limit of hydrography will be the farthest offshore of the following: (1) the 4-meter depth contour or (2) the line defined by the distance seaward from the MHW line which is equivalent to 0.8 millimeters at the scale of the largest scale nautical chart.	
<b>Coverage Type:</b> Object Detection	
<b>Instructions:</b>	
Coverage Water Depth	Coverage Required
8 meters to 20 meters water depth	200% SSS with concurrent Set Line Spacing SBES or MBES with Backscatter, or Object Detection MBES with Backscatter
Greater than 20 meters water depth	Complete MBES with Backscatter

## Assigned Tasks

Acknowledgement:
Acknowledge receipt of these instructions and submit any comments or questions via email to Paul Turner at Paul.Turner@noaa.gov.

**Aids to Navigation (ATONs):**

There are no ATONs specifically assigned for this project. Any ATONs located within the survey area should be verified so that they serve their intended purpose in accordance with section 7.2 of the HSSD.

**Automated Wreck and Obstruction Information System (AWOIS) Items:**

Investigate AWOIS items in accordance with section 2.2.2.2 and 2.5.4.1 of the FPM.

<i>Number of AWOIS items provided for <u>Full Investigation</u>:</i>	7
<i>Number of AWOIS items provided for <u>Information Only</u>:</i>	0

**Maritime Boundary Points (MBPs):**

Investigate Maritime Boundary Points in accordance with section 3.5.6 of the FPM.

<i>Number of MBPs provided for <u>Full Investigation</u>: (when safety permits, search inshore of the NALL line for these maritime boundary features)</i>	4
<i>Number of MBPs provided for <u>Information Only</u>:</i>	27

**Bottom Samples:**

Obtain bottom samples in accordance with section 7.1 of the HSSD in areas designated by the feature object class springs (SPRING) in the Project Reference File (PRF). Review the recommended bottom sample locations with regards to the acquired survey data. Contact HSD Operations Branch if it is determined that modifying the bottom sample plan would better differentiate the varying bottom characteristic within the survey area. Any modification to the bottom sample plan shall closely maintain the same plan provided. This may increase or decrease the sample density but should closely maintain the same numbers of samples per survey as originally assigned.

**Chart Comparison:**

Use only the latest editions of the largest scale NOS charts covering the project area. Compare in accordance with section 4.5 of the FPM and section 8.1.4, D.1 of the HSSD. Resolve any discrepancies identified in the field and explain them in the Descriptive Report. The charts, listed below, were used in the preparation of these project instructions and accompanying project files.

<b><i>Affected Raster Charts</i></b>					
<i>Chart Number</i>	<i>Scale</i>	<i>Edition Number</i>	<i>Edition Date</i>	<i>LNМ Date</i>	<i>NM Date</i>
13283	20000	22	04/2013	04/02/2013	04/13/2013
13274	40000	28	04/2011	03/29/2011	04/09/2011
13278	80000	27	10/2009	09/29/2009	10/03/2009
13286	80000	31	06/2011	05/31/2011	06/04/2011
<b><i>Affected ENCѕ</i></b>					
<i>ENC Name</i>	<i>Scale</i>	<i>Edition</i>	<i>Update Application Date</i>	<i>Issue Date</i>	<i>Preliminary</i>
US4MA04M	80000	21	04/08/2013	05/17/2013	NO
US4ME01M	80000	10	03/08/2013	04/02/2013	NO
US5MA04M	80000	2	10/02/2012	10/25/2012	NO
US5MA19M	40000	4	08/27/2012	08/31/2012	NO
US5NH02M	20000	16	09/27/2012	03/29/2013	NO

**Coast Pilot:**

Review and make recommendations for changes to the Coast Pilot. Coast Pilot excerpts can be downloaded from the Coast Pilot website(<http://www.nauticalcharts.noaa.gov/nsd/cpdownload.htm>). Submit the revised Coast Pilot section or a report stating no changes are recommended, via email to Coast.Pilot@noaa.gov and ocs.ndb@noaa.gov with a courtesy copy to the HSD OPS project planner and the appropriate Processing Branch. The report should be submitted as soon as possible following field work for the project. Refer to sections 3.5.7 and 5.2.2.2.5 of the FPM for more information.

**Dangers to Navigation (DTONs):**

Generate DTON reports in accordance with the HSSD, section 8.1.3. DTON reports should be sent to ocs.ndb@noaa.gov. It is of paramount importance that DTONs be reported as soon as possible.

**Junctions:**

Junction with data from the surveys listed below. Refer to sections 2.2.2.3 and 4.5.2 of the FPM. Please note, junctioning survey data for W11111 is not available at this time.

<i>Registry Number</i>	<i>Scale</i>	<i>Year</i>	<i>Platform</i>	<i>Relative Location</i>
H10771	10000	1997	NOAA Ship <i>Rude</i>	W
H10763	10000	1997	NOAA Ship <i>Rude</i>	W
W00206	10000	2009	UNH - R/V Coastal Surveyor	W
F00574	10000	2011	NOAA Ship <i>Thomas Jefferson</i>	E
W11111	10000	2009	UNH - R/V Coastal Surveyor	SW

**Progress Reports:**

Email monthly progress reports in accordance with section 5.2.2.2.1 of the FPM to [progress.sketches@noaa.gov](mailto:progress.sketches@noaa.gov) with a copy to the chief of the assigned Processing Branch. The submittal is due within 5 days after the end of each month.

**Survey Outlines:**

Generate a survey outline in accordance with the HSSD, section 8.1.2. Submit survey outlines to [survey.outlines@noaa.gov](mailto:survey.outlines@noaa.gov).

**Horizontal Control Requirements:**

Comply with the horizontal control requirements in section 3 of the HSSD.

**Vertical Control Requirements:**

Comply with the horizontal control requirements in section 4 of the HSSD.

***Discrete Zoning***

Comply with the requirements from CO-OPS which are included with the project data from the Operations Branch. Submit surveys with final approved water levels applied. Contact the Operations Branch if this causes the survey to miss a submission deadline.

***VDatum***

Please refer to Appendix 1 attached to this document for ERS vertical specific deliverables. Vertical control will either be the CO-OPS provided model or VDATUM, and will officially be decided on upon delivery of interim deliverable products, as per Appendix 1.

VDatum Version	Geoid	Area	Area Version	Separation Uncertainty
3.2	2012	New Hampshire, Maine	v.1	8.1 centimeters

***NWLON Gauges***

<i>Operating Water Level Station</i>	<i>Station ID</i>
Fort Point	8423898

**Orthometric Imagery:**

No Orthometric Imagery has been provided for this project.

**Shoreline and Nearshore Features:**

Conduct a limited shoreline verification using the composite source file (CSF). All other submerged or visible cultural features inside the limit of survey shall be verified. All features with attribute asgmt populated with 'Assigned' shall be addressed even if they are inshore of NALL. Preliminary analysis of the nautical chart and imagery was conducted at HSD OPS. For reference, prior survey features are provided in S57 format. See section 3.5.5.2.2 of the FPM.

## ***User Contacts***

*The following primary offices and persons shall be contacted at or near the beginning and end of the field operations to discuss survey objectives and accomplishment (Mandatory) or are listed for contact at the discretion of the Commanding Officer (Reference).*

### **Northeast Navigation Manager**

LCDR Brent Pounds

NOAA

*Phone:* 401-782-3252

*Fax:* 401-782-3292

*Email:* brent.pounds@noaa.gov

*Obligation:* Mandatory

### **Chief of AtoNs and Waterways Management**

John Mauro

USCG 1st District

*Phone:* 617-223-8355

*Fax:* 617-223-8073

*Email:* john.j.mauro@uscg.mil

*Obligation:* For Reference

### **Chief of Waterways Management**

LT Megan Drewniak

USCG Sector Northern New England

*Phone:* 207-741-5421

*Fax:*

*Email:* megan.l.drewniak@uscg.mil

*Obligation:* For Reference

### **Chief, Navigation Section**

Ed O'Donnell

USACE, New England District

*Phone:* 978-318-8375

*Fax:* 978-318-8758

*Email:* edward.g.odonnell@usace.army.mil

*Obligation:* For Reference

### **State Historic Preservation Officer, New Hampshire**

Ms. Elizabeth Muzzey

New Hampshire Division of Historical Resources

*Phone:* 603-271-3483

*Fax:* 603-271-3433

*Email:* preservation@dcr.nh.gov

*Obligation:* Mandatory

### **State Historic Preservation Officer, Maine**

Earle Shettleworth, Jr.  
Maine Historic Preservation Commission  
*Phone:* 207-287-2132  
*Fax:*  
*Email:* earle.shettleworth@maine.gov  
*Obligation:* For Reference



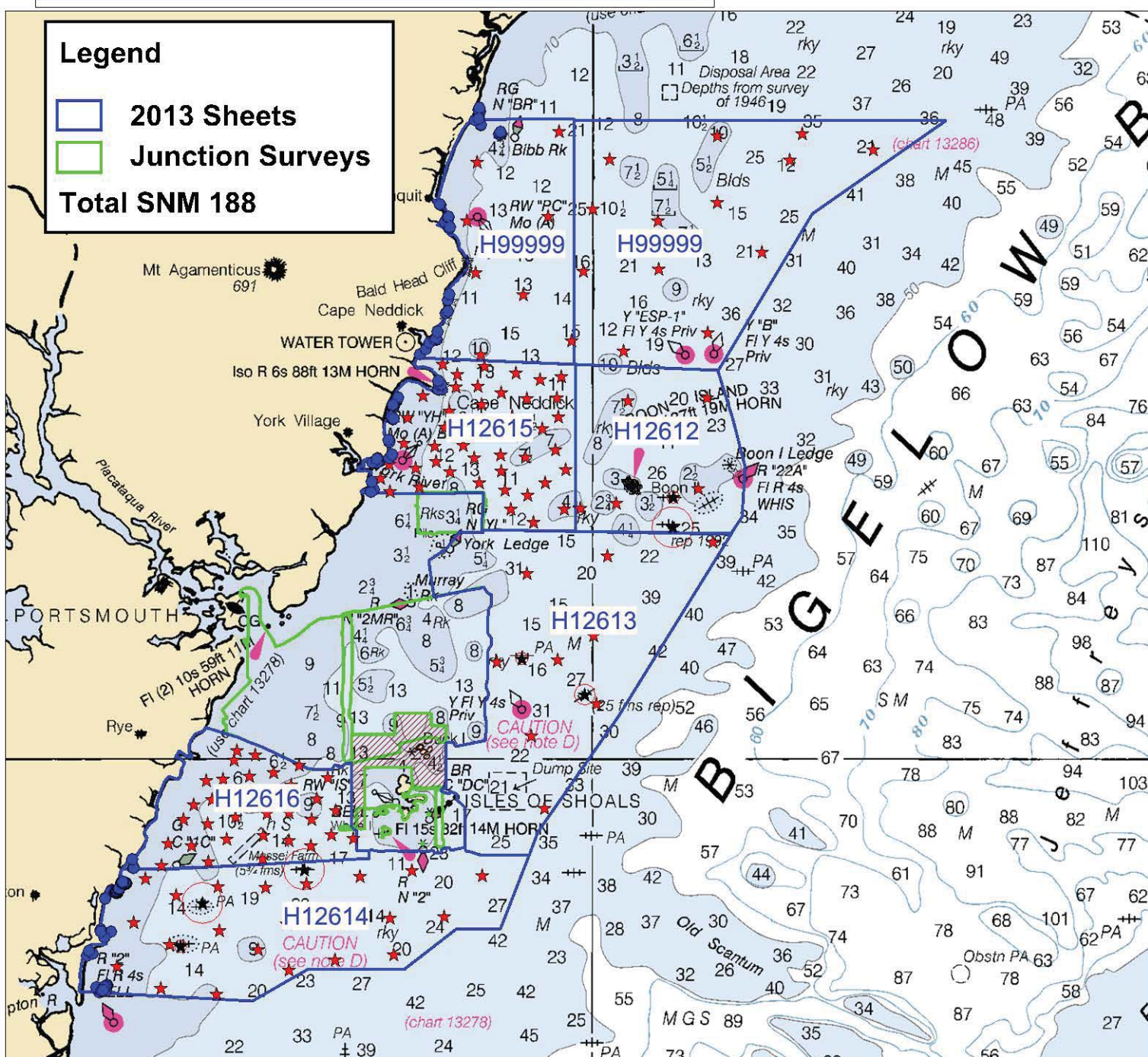
# OPR-A321-FH-13

## Approaches to Portsmouth, NH

### Sheet Layout

7/25/2013

H_Number	SheetName	Priority	Scale	Est_SNM
H12613	Vicinity of Boon Island	1	40000	37
H12615	York Harbor Entracne to Cape Neddick	2	10000	20
H12612	Vicinity of Isles of Shoals	3	40000	19
H12614	Hampton Beach to Little Boars Head	4	20000	33
H12616	Fox Hill Pt to Concord Pt	5	10000	16
H99999	Cape Neddick Harbor to Moody Beach	6	40000	22
H99999	8 NM East of Ogonquit	7	40000	41





## OPR-A321-FH-13 ERS Test & Evaluation Deliverables

### 1 DELIVERABLES

Commanding Officer, NOAA Ship *Ferndiand R. Hassler* shall provide an analysis of VDatum ERS test and evaluation no greater than 60 days from the completion of data acquisition.

Preliminary results to include:

- Recommendation on vertical transformation technique (VDatum ERS or Tidal Package) using crossline data. Compare crossline HIPS PVDL ProcessedDepths, referenced to MLLW reduced via discrete zoning, relative to crossline HIPS PVDL ProcessedDepths, referenced to MLLW reduced via VDatum (Pydro/Post Acquisition Tools/Tool/Caris/Compare Time Series Data).

Upon review of interim deliverables, HSD will determine the final vertical transformation technique to be used to create the final deliverables. For further information on final deliverables refer to the HSSD & FPM.

## **WATER LEVEL INSTRUCTIONS**

**OPR-A321-FH-2013 Approaches to Portsmouth, NH  
(03/18/2013 CU)**

### **1.0. TIDES AND WATER LEVELS**

#### **1.1. Specifications**

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated April 2012, and OCS Field Procedures Manual (FPM), dated April 2012. Specifically reference Chapter 4 of the HSSD and Sections 1.5.8, 1.5.9, 2.4.3, and 3.4.2 of the FPM.

#### **1.2. Vertical Datums**

The tidal datums for this project are referenced to Chart Datum, Mean Lower Low Water (MLLW) and Mean High Water (MHW). Soundings are referenced to MLLW and heights of overhead obstructions (bridges and cables) are referenced to MHW.

##### **1.2.1. Water Level Data Acquisition Monitoring**

The Commanding Officer (or Team Leader) and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The Commanding Officer (or Team Leader) is required to monitor the pertinent water level data via the CO-OPS Web site at <http://tidesandcurrents.noaa.gov/hydro.shtml>, email data transmissions through TIDEBOT, or through regular communications with CO-OPS/Engineering Division (ED) personnel before and during operations. During traditional non duty hours, the Commanding Officer/Team Leader may contact the Continuous Operational Real-Time Monitoring System (CORMS) watch stander who is available 24 hours/day - 7 days/week for assistance in assessing the status of applicable water level station operation. The CORMS watch stander may be contacted either by phone at 301-713-2540 or by Email: [CORMS@noaa.gov](mailto:CORMS@noaa.gov). Problems or concerns regarding the acquisition of valid water level data identified by the Commanding Officer/Team Leader shall be communicated with CO-OPS/ED (Colleen Roche at 301-713-2897 x137, Email: [nos.coops.oetteam@noaa.gov](mailto:nos.coops.oetteam@noaa.gov)) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations. In addition, CO-OPS is required to coordinate with the Commanding Officer (or Team Leader) before interrupting the acquisition of water level data for the NWLON stations mentioned above for any reason during periods of hydrography.

##### **1.2.2. The Hydro Hot List (HHL)**

Please contact CO-OPS' Hydrographic Planning Team (HPT) at [nos.coops.hpt@noaa.gov](mailto:nos.coops.hpt@noaa.gov) and CO-OPS' Operational Engineering Team (OET) at [nos.coops.oetteam@noaa.gov](mailto:nos.coops.oetteam@noaa.gov) at least three business days before survey operations begin, and within 1 business day after survey operations are completed so that the appropriate CO-OPS National Water Level Observation Network (NWLON) control water level station(s), as well as any required subordinate station(s), is/are added to or removed from the CO-OPS Hydro Hotlist (HHL) (<http://tidesandcurrents.noaa.gov/hydro>). Include start and end survey dates, full project number (e.g. OPR-H355-TJ-10), and control and subordinate station numbers. The notification must be

sent to both teams as OET is responsible for configuring the station in the CO-OPS data base and HPT manages the addition and removal of stations from the HHL.

Station	Station ID	Control or Subordinate	Type (e.g. NWLON, PORTS <sup>®</sup> , etc)	Comment
Fort Point, NH	8423898	Control	Long-term Operating	

Table 1: All stations that need to be added to the HHL in support of A321-FH-2013

It is important to know that the addition of a water level station to the HHL ensures the station is monitored by CORMS and any problems are reported daily. However, platforms should view the HHL each morning of active survey operations and click on the eyeball icon to double check that there are no problems with the required stations on that day. If a platform notices problems with data on their survey day of operation, please contact HPT at [nos.coops.hpt@noaa.gov](mailto:nos.coops.hpt@noaa.gov), CORMS at [CORMS@noaa.gov](mailto:CORMS@noaa.gov), and their respective headquarters point of contact at HSD or NSD.

Stations on the HHL are given priority for maintenance should a station cease normal operation during scheduled times of hydrography. CO-OPS will notify a field unit within 1 business day if a HHL water level station ceases operation during scheduled times of hydrography. This is in addition to the daily CORMS report that CORMS sends to NOAA field units, if the field unit's e-mail address is added to the CORM's daily e-mail list. To be added to the CORMS daily HHL report, the platform should contact CO-OPS' Data Monitoring and Analysis Team (DMAT) at [nos.co-ops.dmat@noaa.gov](mailto:nos.co-ops.dmat@noaa.gov) and request to be added.

If the stations are listed on HHL, then weekly priority processing will occur and, for those water level stations, verified 6-minute water level data will be made available every week on Monday or Tuesday. If Monday happens to be a federal holiday, then the 6-minute verified water level data will be made available on the following Tuesday or Wednesday.

### **1.3. Tide Reducer Stations**

#### **1.3.1. CO-OPS Long Term Water Level Station Operation and Maintenance**

The long-term operating station, Fort Point, NH (8423898), will provide water level reducers for this project. Therefore it is critical that it remain in operation during the survey. See Sections 1.1. and 1.2. concerning responsibilities.

No leveling is required at Fort, Point, NH (8423898) by NOAA's FERDINAND HASSLER personnel.

CO-OPS/FOD is responsible for the operation and maintenance of all NWLON primary control stations. If a problem is identified at an NWLON primary control station, FOD shall make all reasonable efforts to repair the malfunctioning station. However, CO-OPS may request assistance from the NOAA ship or NRT personnel in the actual repair of the water level station to facilitate a rapid repair. CO-OPS/FOD and the Commanding Officer (or Team Leader) shall maintain the required communications until the repairs to the water level station have been completed.

### 1.3.2. Subordinate Station Requirements

No subordinate water level stations are required for this project, however, supplemental and/or back-up water level stations may be necessary depending on the complexity of the hydro-dynamics and/or the severity of the environmental conditions of the project area. The installation and continuous operation of water level measurement systems (tide gauges) at subordinate station locations is left to the discretion of the Commanding Officer (or Team Leader), subject to the approval of CO-OPS. If the Commanding Officer (or Team Leader) decides to install additional water level stations, then a 30-day minimum of continuous data acquisition is required. For all subordinate stations, data must be collected throughout the entire survey period for which they are applicable, and not less than 30 continuous days. This is necessary to facilitate the computation of an accurate datum reference as per NOS standards.

### 1.3.3. Tide Component Error Estimation

The estimated tidal error contribution to the total survey error budget in the vicinity of Approaches to Portsmouth, NH is 0.21 meters at the 95% confidence level, and includes the estimated gauge measurement error, tidal datum computation error, and tidal zoning error. It should be noted that the tidal error component can be significantly greater than stated if a substantial meteorological event or condition should occur during time of hydrography. It should also be noted that all errors are reported in 2-sigma.

### 1.3.4. GOES Satellite Enabled Subordinate Stations

This section is not applicable for this project.

### 1.3.5. Benchmark Recovery and GPS Requirements

This section is not applicable for this project.

**1.3.6.** This section is not applicable for this project.

## 1.4. Discrete Tidal Zoning

**1.4.1.** The water level station at Fort Point, NH (8423898) is the reference station for preliminary tides for hydrography in Approaches to Portsmouth, NH. The time and height correctors listed below for applicable zones should be applied to the preliminary data at Fort Point, NH (8423898) during the acquisition and preliminary processing phases of this project. **Preliminary data may be retrieved in one month increments over the Internet from the CO-OPS SOAP web services at <http://opendap.co-ops.nos.noaa.gov/axis/text.html>.** The Commanding Officer (or Team Leader) must notify CO-OPS/ED personnel immediately of any problems concerning the preliminary tides. Preliminary data are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. For the time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the preliminary tides at the reference station. A positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

<u>Zone</u>	<u>Time Corrector(mins)</u>	<u>Range Ratio</u>	<u>Predicted Reference Station</u>
NA156	-12	x0.98	8423898
NA157	-18	x1.01	8423898
NA168	-6	x1.01	8423898
NA169	-6	x1	8423898

**1.4.2.** Polygon nodes and water level corrections referencing Fort Point, NH (8423898) are provided in CARIS<sup>®</sup> format denoted by a \*.zdf extension file name.

**NOTE: The tide corrector values referenced to Fort Point, NH (8423898) are provided in the zoning file “A321FH2013CORP” for this project and are in the fourth set of correctors designated as TS4.** Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo<sup>®</sup> representation of West longitude

“Preliminary” data for the control water level station, Fort Point, NH (8423898), are available in near real-time and verified data will be available on a weekly basis for the previous week. **These water level data may be obtained from the CO-OPS SOAP web services at <http://opendap.co-ops.nos.noaa.gov/axis/text.html>.**

#### **1.4.3 Zoning Diagram(s)**

Zoning diagrams, created in MapInfo<sup>®</sup> and Adobe PDF, are provided in digital format to assist with the zoning in section 1.4.1.

#### **1.4.4 Final Zoning**

Upon completion of project OPR-A321-FH-2013, submit a Pydro generated request for final tides, with times of hydrography abstract and mid/mif tracklines attached. Forward this request to [Final.Tides@noaa.gov](mailto:Final.Tides@noaa.gov) . Provide the project number, as well as a sheet number, in the subject line of the email.

CO-OPS will review the times of hydrography, final tracklines, and six-minute water level data from all applicable water level gauges. After review, CO-OPS will send a notice indicating that the tidal zoning scheme sent with the project instructions has been approved for final zoning. If there are any discrepancies, CO-OPS will make the appropriate adjustments and forward a revised tidal zoning scheme to the field group and project manager for final processing.

### **1.5 TideBot and Fetchtides**

Preliminary and verified six minute water level time series data may be retrieved from the CO-OPS database via the TideBot application. TideBot delivers timely preliminary/verified tidal and Great Lakes six minute water level observations via email to users on a scheduled, recurring basis. To access TideBot through an email account, send an email to [TideBot@noaa.gov](mailto:TideBot@noaa.gov) with the word “help” as the subject. An email reply will be sent with instructions on how to subscribe to TideBot for time series data retrieval.

Alternately, users may download preliminary and verified six minute water level time series data from the CO-OPS database via the Fetchtides application. Fetchtides provides a mechanism to store imported data locally and combine multiple days worth of data into one CARIS readable

tide (.tid) file. Fetchtides is available for download at Hydrosoft Online (<https://inside.nos.noaa.gov/hydrosoft/hydrosoftware.html>). For more information, please see the Fetchtides User Manual in the FPM chapter 3 appendix.

## **1.6 Water Level Records**

This section is not applicable for this project.



that JATO racks and associated debris exist in the area.

#### HORIZONTAL DATUM

The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), which for charting purposes is considered equivalent to the World Geodetic System of 1984 (WGS 84). Geographic positions referred to the North American Datum of 1927 do not require conversion to NAD 83 for plotting on this chart.

#### COPYRIGHT

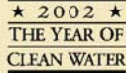
No copyright is claimed by the United States Government under Title 17 U.S.C. However, other nations may claim intellectual property rights on the compilation of data depicting the foreign waters shown on this chart.

#### POLLUTION REPORTS

See Canadian List of Lights, Buoys and Fog Signals for information not included in the U.S. Coast Guard Light List.

#### AUTHORITIES

Hydrography and topography by the National Ocean Service, Coast Survey, with additional data from the US Coast Guard, British Admiralty, and Canadian Charts.



## Preliminary Tidal Zoning for OPR-A321-FH-2013 Approaches to Portsmouth, NH

#### NOTE C

##### PRECAUTIONARY AREAS

Traffic within the Precautionary Areas may consist of vessels operating between Portland Harbor or Boston Harbor and one of the established traffic lanes. Mariners are advised to exercise extreme care in navigating within these areas.

#### NA168

**Time Corrector -6 mins**  
**Range Corrector x 1.01**  
**Reference 8423898**

#### NOTE A

Refer to U.S. Coast Guard Notice to Mariners for details of the Commissioned or at the Corps of Engineers in the area.

#### NOTE F

(Protected area 15 CFR 922)  
The following activities are prohibited within the Stellwagen Bank Marine Sanctuary:

- Contain discharging or dumping
- Industrial exploring or developing
- Drilling and dredging
- Removing historical artifacts
- Lighting

Refer to 15 CFR 922 for details of Sanctuary regulations.

### 8423898 FORT POINT, NH

#### NA169

**Time Corrector -6 mins**  
**Range Corrector x 1**  
**Reference 8423898**

#### NA157

**Time Corrector -18 mins**  
**Range Corrector x 1.01**  
**Reference 8423898**

#### NA156

**Time Corrector -12 mins**  
**Range Corrector x 0.98**  
**Reference 8423898**

