




**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 Marc Moser, NOAA  
Commanding Officer, NOAA Ship *Ferdinand Hassler*

FROM:   
Captain Anne K. Lynch, NOAA  
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for FH-14-01  
Approaches to Chesapeake Bay, VA

Attached is the final Project Instruction for FH-14-01, Approaches to Chesapeake Bay, VA, which is scheduled aboard NOAA Ship *Ferdinand Hassler* during the period of 14 April to 08 June 2014. Of the 64 DAS scheduled for this project, 64 days are funded by an OMAO Allocation. 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

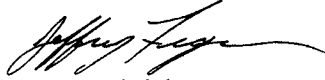




UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Coast Survey  
Silver Spring, Maryland 20910-3282

8 April 2014

MEMORANDUM FOR: Captain Anne Lynch, NOAA  
Commanding Officer, Marine Operations Center – Atlantic

FROM: Jeffrey Ferguson   
Chief, Hydrographic Surveys Division

SUBJECT: Project Instruction for FH-14-01  
OPR-D304-FH-14, Approaches to Chesapeake Bay, VA  
Expansion of Working Grounds

The latest signed Fleet Allocation Plan shows the *Ferdinand R. Hassler* scheduled to conduct hydrographic operations in the vicinity of Chesapeake Bay between April and June. However, this plan was drafted with the assumption that the issue concerning the *Ferdinand R. Hassler*'s buoyancy appendages would have been resolved by the start of the 2014 field season.

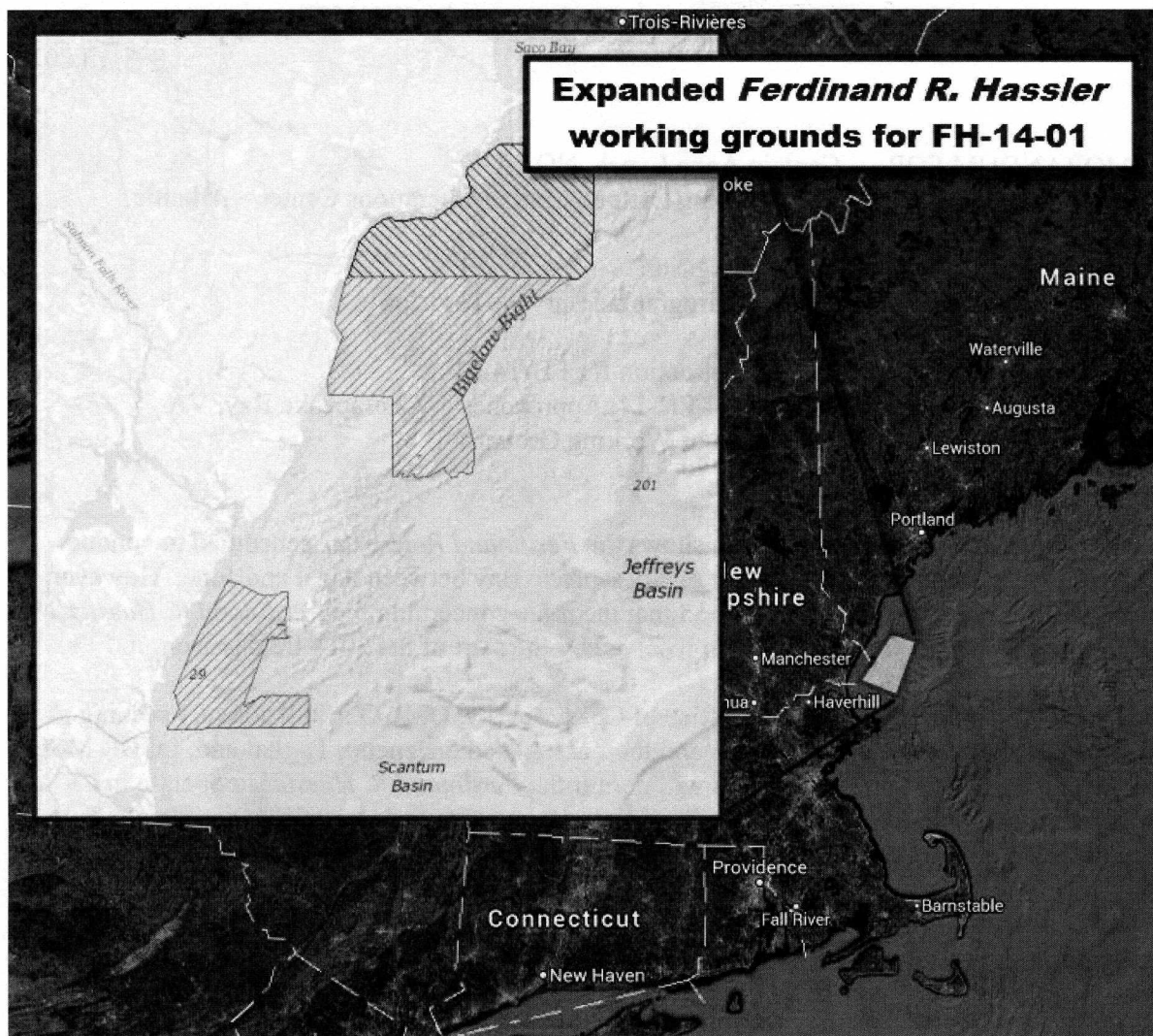
As it has been communicated to the Office of Coast Survey, OMAO is still actively seeking a resolution to the buoyancy appendages and their associated fasteners. To that end, LCDR Moser has proposed a mitigation strategy that will permit the *Ferdinand R. Hassler* to operate in a limited capacity (limited in transit speeds, distance from ports and operational sea state). To accommodate this strategy, the Office of Coast Survey proposes to expand the operating area for FH-14-01 to include the waters offshore of Portsmouth, NH, see attached.

Attachment

cc:  
Commanding Officer, NOAA Ship *Ferdinand R. Hassler*  
MOA1



ATTACHMENT







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

25 August 2014

MEMORANDUM FOR: Captain Anne Lynch, NOAA  
Commanding Officer, Marine Operations Center – Atlantic

FROM: Jeffrey Ferguson   
Chief, Hydrographic Surveys Division

SUBJECT: Project Instruction for FH-14-03 01   
OPR-D304-FH-14, Approaches to Chesapeake Bay, VA  
Addition of AUV Operational Testing

Please see below for change information for FH-14-03 01  Hydrographic Project Instructions. This change was precipitated by the request for AUV Concept of Operational (CON-OPS) testing.

#### Brief Summary

AUV Operational Testing to support CON-OPS for the REMUS 600 AUV while aboard NOAA Ship *Ferdinand R. Hassler* during OPR-D304-FH-14, Approaches to Chesapeake Bay, VA. The AUV Operational Team will work in 'survey mode' to document manpower requirements and efficiency metrics to determine the capabilities and possible benefits of the REMUS 600 aboard the *Hassler* during ship operations.

During the operational deployment, the AUV Team will 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. 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?



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	9/2/2014	9/12/2014	M	NOAA	USA

### **Project Itinerary**

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.

### **Staging and Destaging**

AUV and associated equipment will be mobilized on the ship during the scheduled 8/9/14 – 8/12/14 inport in New Castle, NH.

AUV and associated equipment will be demobilized and off-loaded concluding operations in Norfolk, VA after 9/12/14.

### **Underway Operations**

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

AUV deployment, recovery, and operations to support testing and hydrographic survey operations during the day and/or night. AUV will acquire multibeam bathymetry and backscatter data.

### **AUV Launch & Recovery**

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

### **AUV Survey Operations and Monitoring**

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.

cc:

Commanding Officer, NOAA Ship *Ferdinand R. Hassler*





UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Project Instructions


Date Submitted: March 3, 2014


Platform: NOAA Ship *Ferdinand R. Hassler*

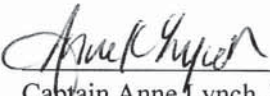
Project Number: FH-14-01

Project Title: OPR-D304-FH-14  
Approaches to Chesapeake Bay

Project Dates: April 8, 2014 – June 6, 2014

Prepared by:  Digitally signed by  
GONSALVES.MICHAEL.O.1275635  
126  
Date: 2014.02.28 15:11:33 -05'00' Dated: \_\_\_\_\_  
Lieutenant Commander Michael O. Gonsalves, NOAA  
Chief, Operations Branch  
Hydrographic Surveys Division

Approved by:  Date: 2014.03.04  
08:53:29 -05'00' Dated: \_\_\_\_\_  
Jeffrey Ferguson  
Chief, Hydrographic Surveys Division  
Office of Coast Survey

Approved by:  CAPT  
NOAA Dated: 4/14/2014  
Captain Anne Lynch, NOAA  
Commanding Officer  
Marine Operations Center - Atlantic

## I. Overview

### A. Brief Summary and Project Period

### B. Days at Sea (DAS)

Of the 64 DAS scheduled for this project, 64 DAS are funded by an OMAO allocation, 0 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0DAS are Other Agency funded. This project is estimated to exhibit a High Operational Tempo.

### C. Operating Area (include optional map/figure showing op area)

The project area is located in the Approaches to the Chesapeake Bay, VA and surrounding areas offshore. A map of the detailed project area can be found with the detailed project instructions appended to these instructions.

### D. Summary of Objectives

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.

### 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
Mueller, Kurt	PS	4/08/2014	5/2/2014	M	NOAA	USA
Wilson, Matt	PS	5/6/2014	5/16/2014	M	NOAA	USA
Kist, Jennifer	PS	5/20/2014	6/26/2014	F	NOAA	USA

### G. Administrative

#### 1. Points of Contacts:

Principle Investigator:

LCDR Michael Gonsalves, NOAA  
Chief, Operations Branch  
Hydrographic Surveys Division  
1315 East West Hwy, #6854  
Silver Spring, MD 20910  
(301) 713-2702 x112  
[Michael.Gonsalves@noaa.gov](mailto:Michael.Gonsalves@noaa.gov)

Project Coordinator:

Patrick Keown  
Physical Scientist, Operations Branch  
Hydrographic Surveys Division  
1315 East West Hwy, #6709  
Silver Spring, MD 20910  
(301) 713-2702 x125  
[Patrick.Keown@noaa.gov](mailto:Patrick.Keown@noaa.gov)

Chief Scientist:

LCDR Marc S. Moser, NOAA  
Commanding Officer, NOAA Ship *Ferdinand R. Hassler*  
439 West York Street  
Norfolk, VA 23510-1114  
(603) 812-8748  
[CO.Ferdinand.Hassler@noaa.gov](mailto:CO.Ferdinand.Hassler@noaa.gov)

2. Diplomatic Clearances

None Required

3. Licenses and Permits

The Office of Coast Survey is sensitive to the potential effects of its operations on the physical, biological, and cultural marine environment. In accordance with the National Environmental Protection Act, Coast Survey prepared a Programmatic Environmental Assessment to gauge the environmental impacts resulting from surveying and other data-gathering activities. As a result, the National Ocean Service has published a Finding of No Significant Impact (FONSI) for the Office of Coast Survey program of conducting hydrographic surveys for the calendar years 2013 - 2018. For further information, please refer to <http://www.nauticalcharts.noaa.gov/Legal/>

## II. Operations

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

A. Project Itinerary:

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.



B. Staging and Destaging:

HSTP personnel will deliver a Tide Buoy dockside on April 21, 2014, and recover June 13, 2014. Ship's force will be needed for craning the gear on and off the vessel.

C. Operations to be Conducted:

1. Underway Operations

Hydrographic survey operations shall be conducted per the appended project instructions. The Commanding Officer may elect to run continuous 24-hr ship survey operations for extended periods of time.

2. Station Operations

In addition to hydrographic survey operations, the ship will assist with the deployment and recovery of a GPS tide buoy. The preliminary location for the deployment of the buoy, the NE corner of the operating area, is depicted in the attached Primary Project Instructions. The buoy will be deployed for a period from 30 days up to the duration of the project. If possible, the buoy should be in operation concurrent with all survey operations. The final determination of the duration and location of the buoy deployment will be coordinated with HSTP personnel. Servicing of the buoy may require the ship to divert from survey operations mid-leg; otherwise, only a single deployment and recovery is planned.

Please refer to the Section "Additional Task: Tide Buoy Deployment" in the attached Primary Project Instructions .

D. Dive Plan:

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations:

- Poor weather conditions
- Equipment failure
- Safety concerns
- Personnel shortage

### 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.

**B. Equipment and Capabilities provided by the scientists (itemized)**

1. Tide Buoy
  - a. Dimensions
    - i. Diameter: 0.6m
    - ii. Weight: 156 lbs.
    - iii. Telemetry: Iridium (WiFi available)
  - b. Charging Requirements
    - i. Standard 120V AC outlet
    - ii. 12 hours charge time
    - iii. 60 "D-Cell" Lithium non-rechargeable batteries (Supplied by HSTP)
  - c. Assembly / Hardware
    - i. 11mm torque wrench
    - ii. 12 bolts around equator
  - d. Hydrographic Surveys Division may provide Physical Scientists for hydrographic data acquisition, processing, training and data quality assurance support during project survey operations. Additionally, shore based technical support shall be provided for survey systems and data acquisition and processing software.

**IV. Hazardous Materials**

**A. Policy and Compliance**

No hazardous materials are being brought aboard the ship for this project.

**B. Inventory**

No hazardous materials are being brought aboard the ship for this project.

**C. Chemical safety and spill response procedures**

No hazardous materials are being brought aboard the ship for this project.

**D. Radioactive Materials**

No Radioactive Isotopes are planned for this project.

**V. Additional Projects**

**A. Supplementary ("Piggyback") Projects**

No Supplementary Projects are planned.

B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

**VI. Disposition of Data and Reports**

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA's Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

**VII. Meetings, Vessel Familiarization, and Project Evaluations**

- A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.
- D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at <http://www.omaο.noaa.gov/fleeteval.html> and provides a "Submit" button at the end of the form. Submitted form data is deposited into a spreadsheet used by OMAO

management to analyze the information. Though the complete form is not shared with the ships', specific concerns and praises are followed up on while not divulging the identity of the evaluator.

## **VIII. 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 project.

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 17, 2000 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>.

All NHSQs submitted after March 1, 2014 must be accompanied by [NOAA Form \(NF\) 57-10-02](#) - Tuberculosis Screening Document in compliance with [OMAO Policy 1008](#) (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each 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.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance ([http://ocio.os.doc.gov/ITPolicyandPrograms/IT\\_Privacy/PROD01\\_008240](http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240)).

The only secure email process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to setup an account. [Accellion's Web Users Guide](#) is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to [accellionAlerts@doc.gov](mailto:accellionAlerts@doc.gov) requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The "Send Tab" function will be accessible for 30 days.

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

Hard hats are 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.

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. At the discretion of the ship CO, safety



shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

#### 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 and 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 *OMAO 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 the above 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

Foreign National access to the NOAA ship or Federal Facilities is not required for this project.

### VIII. Appendices

1. Primary Project Instructions: OPR-D304-FH-14, Approaches to Chesapeake Bay, VA

# Hydrographic Survey Project Instructions

<b>Project Name:</b>	Approaches to Chesapeake Bay
<b>Project Number:</b>	OPR-D304-FH-14
<b>Assigned Field Unit:</b>	NOAA Ship <i>Ferdinand R. Hassler</i>
<b>Assigned Processing Branch:</b>	Atlantic Hydrographic Branch
<b>Signed Date:</b>	03/03/2014
<b>Project Instructions Version:</b>	Final
<b>Planned Acquisition Time:</b>	Start Date: 04/2014 End Date: 06/2014
<b>Delivery Dates:</b>	120 days from completion of data acquisition.

<b>Purpose and Location:</b>
The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. The project will include areas north and south of the Chesapeake Bay Inlet. Survey areas will address 337 SNM of which 328 SNM are Critical Area in accordance with the National Hydrographic Survey Priorities Edition 2012. In addition, work may support BOEM windfarm activity in the area.
<b>Supporting Documents:</b>
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 (HSSD), April 2013
NOS Field Procedures Manual for Hydrographic Surveying (FPM), April 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.**

<b>Registry Details:</b>						
<b>General Locality:</b> Approaches to Chesapeake Bay						
<i>Registry Number</i>	<i>Priority</i>	<i>Sublocality</i>	<i>State or Territory</i>	<i>Scale</i>	<i>Estimated SNM</i>	<i>Instructions</i>
H12666	1	Chesapeake Bay Traffic Area	Virginia	20000	10	
H12667	2	Vicinity of Cape Charles	Virginia	20000	33	
H12668	3	6 NM offshore of Cape Charles, VA	Virginia	40000	34	
H12669	4	10 NM offshore of Cape Charles, VA	Virginia	40000	40	
H12670	5	15 NM offshore of Cape Charles, VA	Virginia	40000	50	
H12671	6	32 NM offshore North of Cape Hatteras, NC	North Carolina	40000	61	
H12672	7	32 NM offshore South of Cape Hatteras, NC	North Carolina	40000	62	
H12673	8	39 NM offshore of Cape Hatteras, NC	North Carolina	40000	47	

<b>Coverage &amp; Limits:</b>	
<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> None Specified	
<b>Instructions:</b>	
<i>Coverage Water Depth</i>	<i>Coverage Required</i>
Inshore limit to 20 meters water depth	Object Detection 200% SSS with concurrent Set Line Spacing SBES or MBES, or Object Detection MBES
Greater than 20 meters water depth	Complete Multibeam with Backscatter

### **Assigned Tasks**

**Acknowledgement:**

Acknowledge receipt of these instructions and submit any comments or questions via email to Patrick Keown at Patrick.Keown@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>	2
<i>Number of AWOIS items provided for <u>Information Only</u>:</i>	4

**Maritime Boundary Points (MBPs):**

There are no Maritime Boundary investigation requirements for this project.

**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>
12224	40000	25	12/2012	12/24/2013	12/28/2013
12222	40000	54	04/2013	02/25/2014	02/01/2014
12208	50000	16	07/2013	02/04/2014	02/01/2014
12205	80000	33	05/2012	12/24/2013	12/28/2013
12204	80000	38	12/2012	12/24/2013	12/28/2013
12207	80000	23	02/2013	12/24/2013	12/28/2013
12221	80000	81	04/2011	12/24/2013	12/28/2013
12200	419706	50	04/2011	12/24/2013	12/28/2013
<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>
US5VA19M	20000	25	04/04/2012	11/21/2013	NO
US5VA13M	40000	30	05/20/2013	12/18/2013	NO
US5VA14M	40000	22	05/04/2012	10/15/2013	NO
US5VA11M	50000	18	10/18/2013	10/18/2013	NO
US4VA12M	80000	22	04/06/2012	10/16/2013	NO
US3DE01M	419706	14	04/24/2013	11/05/2013	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](mailto:Coast.Pilot@noaa.gov) and [ocs.ndb@noaa.gov](mailto: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](mailto: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.

<i>Registry Number</i>	<i>Scale</i>	<i>Year</i>	<i>Platform</i>	<i>Relative Location</i>
H12561	40000	2013	Fugro Pelagos, Inc.	N
H12560	40000	2013	SAIC	N
H12559	20000	2013	SAIC	N
H12504	40000	2013	NOAA Ship <i>Ferdinand R. Hassler</i>	E
H12423	40000	2012	NOAA Ship <i>Ferdinand R. Hassler</i>	E
H12100	25000	2009	NOAA Ship <i>Thomas Jefferson</i>	S
H12038	20000	2009	NOAA Ship <i>Thomas Jefferson</i>	S
H12037	25000	2009	NOAA Ship <i>Thomas Jefferson</i>	S

**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 vertical 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. Please use Discrete Zoning for sheets 6-8 as they are not fully covered by VDatum. Submit surveys with final approved water levels applied. Contact the Operations Branch if this causes the survey to miss a submission deadline.

***VDatum***

Vertical control will either be the CO-OPS provided model or VDATUM. Due to prior junction surveys showing VDATUM grid is appropriate in this area, ERS techniques are approved for this survey without an interim deliverable requirement. For sheets 1-3 (H12666, H12667, H12668) use VDatum uncertainty of 10.2cm (Virginia/Maryland - Chesapeake Bay), for sheets 4&5 (H12669 & H12670) use VDatum uncertainty of 8.1cm, (Virginia/Maryland/Delaware/New Jersey - Mid-Atlantic Bight Shelf). For remaining sheets 6-8 please refer to Discrete Zoning instruction above. All VDatum uncertainties reported as 1-sigma.

VDatum Version	Geoid	Area	Area Version	Separation Uncertainty
3.2	2012	Virginia/Maryland - Chesapeake Bay	V.1	10.2 centimeters
3.2	2012	Virginia/Maryland/Delaware/New Jersey - Mid-Atlantic Bight Shelf	V.1	8.1 centimeters

***NWLON Gauges***

<i>Operating Water Level Station</i>	<i>Station ID</i>
Duck, NC	8651370
Chesapeake Bay Bridge Tunnel	8638863

**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 asgnmt populated with 'Assigned' shall be addressed even if they are inshore of NALL. For reference, prior survey features are provided in S57 format. See section 3.5.5.2.2 of the FPM.

**Additional Task: *Tide Buoy Deployment***

In addition to hydrographic survey operations, the ship will assist with the deployment and recovery of a GPS tide buoy. The preliminary location for the deployment of the buoy, the NE corner of the operating area, see attached image below. The buoy will be deployed for a period

**Additional Task: *Tide Buoy Deployment***

from 30 days up to the duration of the project. If possible, the buoy should be in operation concurrent with all survey operations. The final determination of the duration and location of the buoy deployment will be coordinated with HSTP personnel. Servicing of the buoy may require the ship to divert from survey operations mid-leg; otherwise, only a single deployment and recovery is planned.

## ***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).*

### **Navigation Manager, Mid Atlantic Region**

LCDR Denise Gruccio, NOAA

*Phone:* 757-441-6746 x116

*Fax:* 757-441-6601

*Email:* denise.gruccio@noaa.gov

*Obligation:* Mandatory

### **Virginia Pilots Association**

Captain William Counselman

Virginia Pilots Association

*Phone:* 757-233-3012

*Fax:* 757-233-9324

*Email:* vicepres@vapilotassn.com

*Obligation:* For Reference

### **Commander, Fifth Coast Guard District (OAN)**

Mr. Waverly Gregory

U.S. Coast Guard

*Phone:* 757-398-6222

*Fax:*

*Email:* Waverly.W.Gregory@uscg.mil

*Obligation:* For Reference

### **Chief Surveying and Engineering**

Mr T.D. Woodward

U.S. Army Corps of Engineers District, Norfolk

*Phone:* 757-441-7018

*Fax:* 757-441-7664

*Email:*

*Obligation:* For Reference

### **State Historic Preservation Officer, Virginia**

Michael Barber, State Archaeologist

Department of Historic Resources

*Phone:* 804-862-6193\*155

*Fax:*

*Email:* Mike.Barber@dhr.virginia.gov

*Obligation:* For Reference

OPR-D304-FH-14

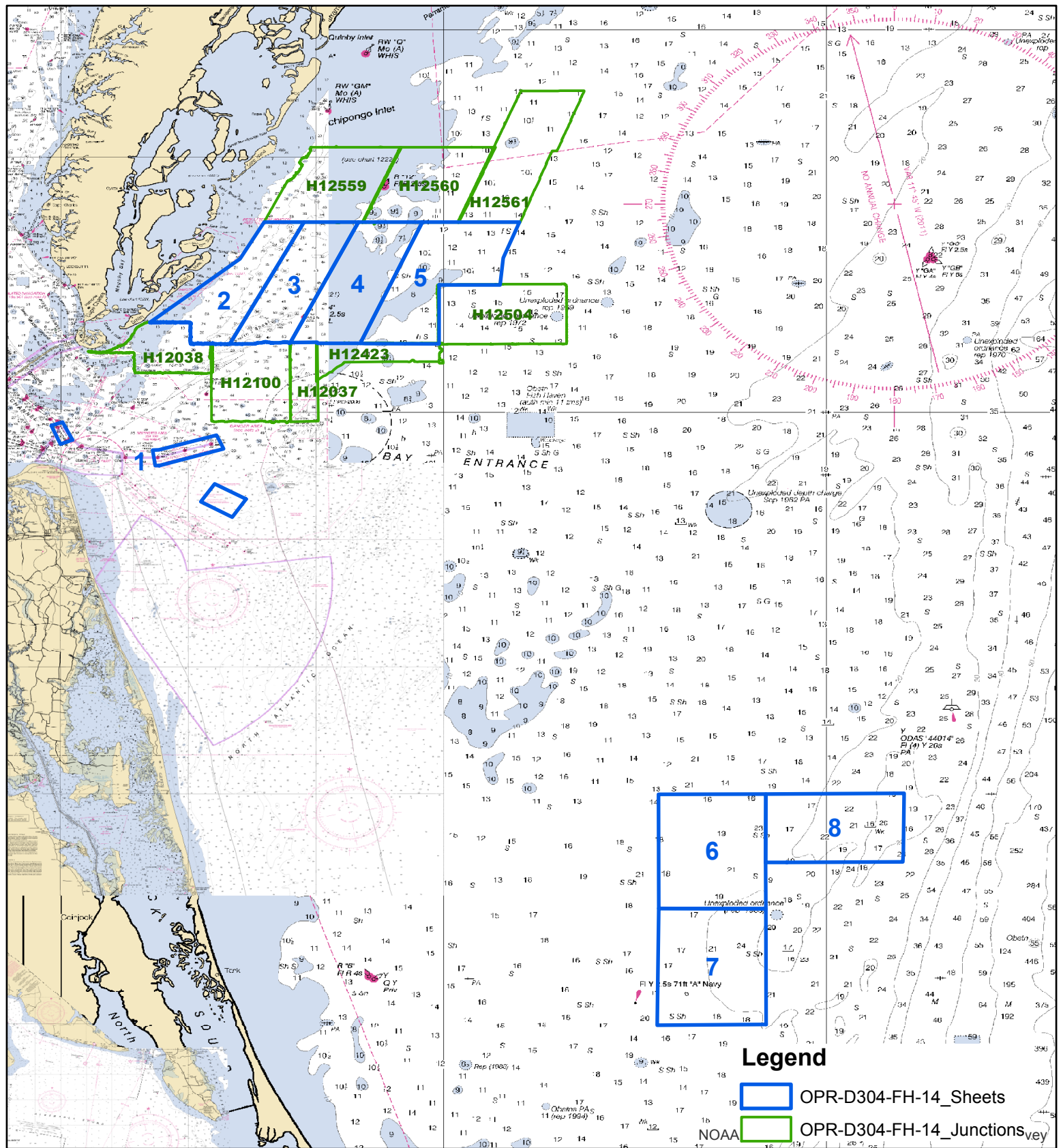
Approaches to Chesapeake Bay

Sheet Layout

2/28/2014

Total SNM - 337

Critical Area SNM - 328





## **WATER LEVEL INSTRUCTIONS**

**OPR-D304-FH-2014 Approaches to Chesapeake Bay, VA  
(10/09/2013 HY)**

### **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, 2013, and OCS Field Procedures Manual (FPM), dated May, 2013. 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>, or through regular communications with CO-OPS/Oceanographic Division (OD) 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/OD ([nos.coops.hpt@noaa.gov](mailto:nos.coops.hpt@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
Duck, NC	8651370	Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of OPR-D304-FH-2014

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 NWLON station Duck, NC (8651370) will provide water level reducers for this project. Therefore it is critical that it remains in operation during the survey. See Sections 1.1. and 1.2. concerning responsibilities.

No leveling is required at Duck, NC (8651370) by NOAA ship 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

hydrodynamics 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 approaches to Chesapeake Bay, VA 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.

### 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 Duck, NC (8651370) is the reference station for preliminary tides for hydrography in the approaches to Chesapeake Bay, VA. The time and height correctors listed below for applicable zones should be applied to the preliminary data at Duck, NC (8651370) 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>
SA46	0	x1.09	8651370
SA50	+24	x1.12	8651370
SA50A	+36	x1.10	8651370
SA52A	+30	x1.15	8651370
SA54	+12	x1.12	8651370

SA54A	+24	x1.18	8651370
SA55	+6	x1.12	8651370
SA56	+18	x1.12	8651370
SA57	0	x1.02	8651370

**1.4.2.** Polygon nodes and water level corrections referencing Duck, NC (8651370) are provided in CARIS® format denoted by a \*.zdf extension file name.

**NOTE: The tide corrector values referenced to Duck, NC (8651370) are provided in the zoning file “D304FH2014CORP” 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® representation of West longitude.

“Preliminary” data for the control water level station, Duck, NC (8651370) 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® 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-D304-FH-2014, 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 Fetchtides**

Preliminary and verified six minute water level time series data may be retrieved from the CO-OPS database via the Fetchtides application. Fetchtides provides a mechanism to store imported data locally and combines multiple days 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.



# Preliminary Tidal Zoning for OPR-D304-FH-2014 Approaches to Chesapeake Bay, VA

SA54A  
Time Corrector +24 mins  
Range Corrector x1.18  
Reference 8651370

SA52A  
Time Corrector +30 mins  
Range Corrector x1.15  
Reference 8651370

SA50A  
Time Corrector +36 mins  
Range Corrector x1.1  
Reference 8651370

SA50  
Time Corrector +24 mins  
Range Corrector x1.12  
Reference 8651370

SA56  
Time Corrector +18 mins  
Range Corrector x1.12  
Reference 8651370

SA54  
Time Corrector 12 mins  
Range Corrector x1.12  
Reference 8651370

SA55  
Time Corrector 6 mins  
Range Corrector x1.12  
Reference 8651370

SA46  
Time Corrector 0 mins  
Range Corrector x1.09  
Reference 8651370

SA57  
Time Corrector 0 mins  
Range Corrector x1.02  
Reference 8651370

8651370 DUCK, NC

0 20

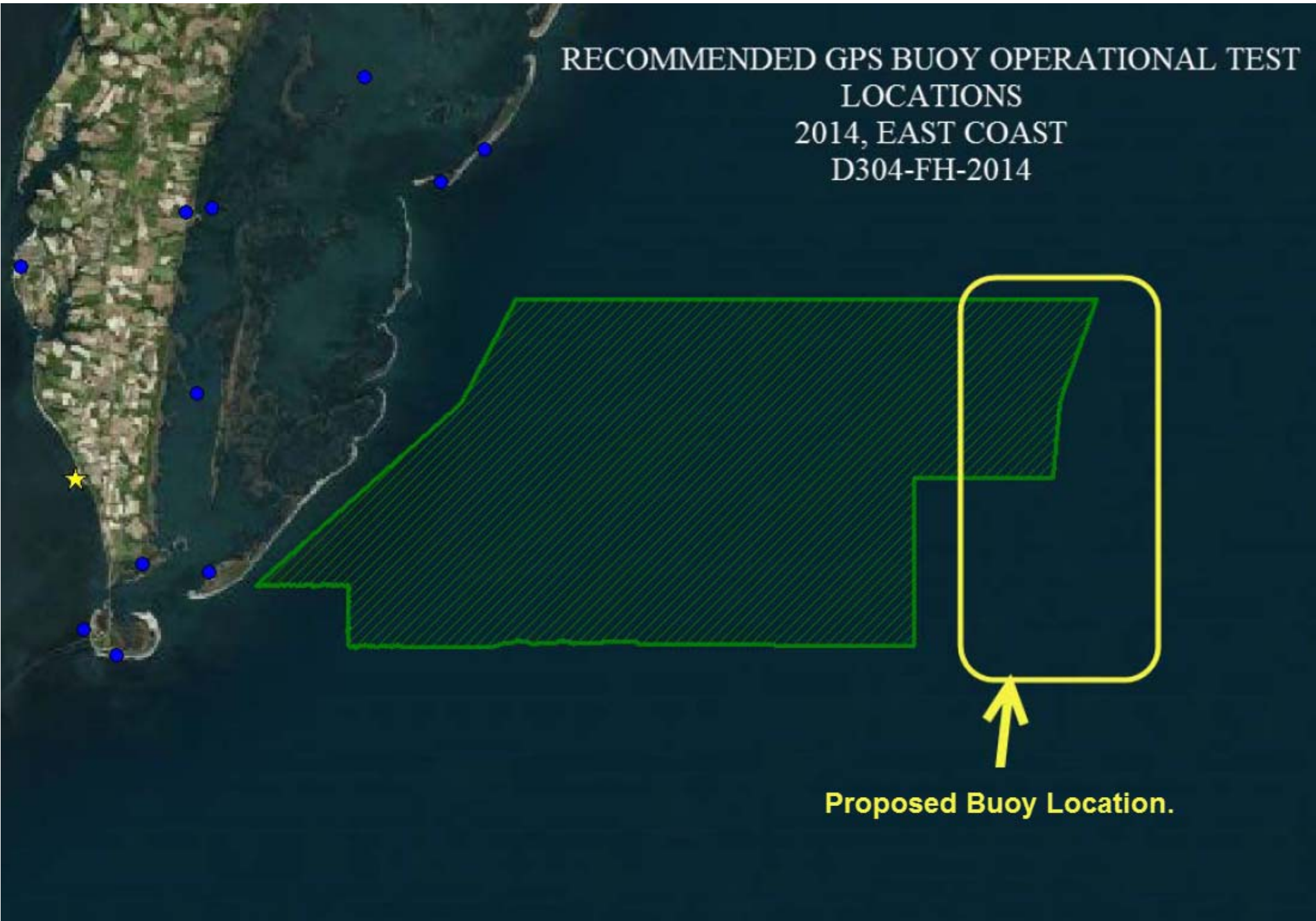


nautical miles

Scale: 1:1,261,000



RECOMMENDED GPS BUOY OPERATIONAL TEST  
LOCATIONS  
2014, EAST COAST  
D304-FH-2014



**Proposed Buoy Location.**