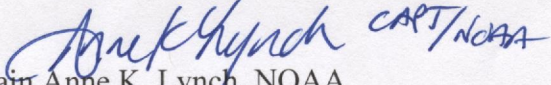




UNITED STATES DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center - Atlantic
Norfolk, Virginia 23510-1114

MEMORANDUM FOR: Lieutenant Commander Briana J. Welton, NOAA
Commanding Officer, NOAA Ship *Ferdinand Hassler*

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

SUBJECT: Project Instruction for FH-16-01 / OPR-D304
Approaches to Chesapeake Bay

Attached is the final Project Instruction for FH-16-01/OPR-D304 Approaches to Chesapeake Bay, scheduled aboard NOAA Ship *Ferdinand Hassler* during the period of February 8, 2016 to March 25, 2016. Of the 38 DAS scheduled for this project, 3 days are funded by OMAO allocation and 35 days are funded by Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to chiefops.moa@noaa.gov at Marine Operations Center-Atlantic.

Attachment

cc:
LCDR Michael Gonsalves
CAPT Eric Berkowitz





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

Final Project Instructions

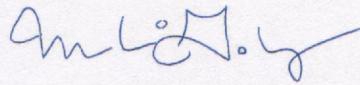
Date Submitted: February 3, 2016

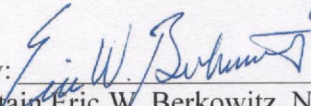
Platform: NOAA Ship *Ferdinand R. Hassler*

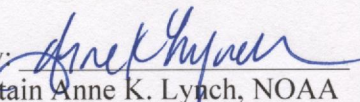
Project Number: FH-16-01 (OMAO)

Project Title: Approaches to Chesapeake Bay

Project Dates: February 8, 2016 to March 25, 2016

Prepared by:  Dated: 3 Feb 2016
Lieutenant Commander Michael O. Gonsalves, NOAA
Chief, Operations Branch
Hydrographic Surveys Division
Office of Coast Survey

Approved by:  ^{CAPT/NOAA} Dated: 5 Feb 2016
Captain Eric W. Berkowitz, NOAA
Chief, Hydrographic Surveys Division
Office of Coast Survey

Approved by:  Dated: 5 Feb 2016
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center – Atlantic



I. Overview

A. Brief Summary and Project Period

This survey is scheduled to begin in February 2016 and end in March 2016. This project is being conducted in support of NOAA's Office of Coast Survey to provide contemporary hydrographic data in order to update the nautical charting products and reduce survey backlog in the area.

B. Days at Sea (DAS)

Of the 38 DAS scheduled for this project, 3 DAS are funded by an OMAO allocation, 35 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded.

C. Operating Area

The project area is located northeast of North Carolina, approaching Chesapeake Bay. 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 mission:

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

Office of Coast Survey

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Wilson, Matt	PS	2/1/2016	2/12/2016	M	NOAA	USA
Miller, James	PS	2/16/2016	2/26/2016	M	NOAA	USA
Marshall, Jeff	PS	2/29/2016	3/11/2016	M	NOAA	USA
Miller, James	PS	3/16/2016	3/25/2016	M	NOAA	USA

G. Administrative

1. Points of Contacts:

Principal 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

Project Manager:
Paul Turner
Physical Scientist, Operations Branch
Hydrographic Surveys Division
1315 East West Hwy, #6854
Silver Spring, MD 20910
301-713-2702 x106
Paul.Turner@noaa.gov

Chief Scientist:
LCDR Briana Welton, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler*
439 West York Street
Norfolk VA 23510-1114
603-812-8748
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 Commanding Officer 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.

1. Project Itinerary:

DEP: 02/8/2016 ARR: 02/12/2016	Mon. Brooklyn, NY Fri. Norfolk, VA	FH-16-01 Leg 1 OPR-D304 Chesapeake Bay, VA
DEP: 02/16/2016 ARR: 02/26/2016	Weds. Norfolk, VA Fri. Norfolk, VA	FH-16-01 Leg 2 OPR-D304 Chesapeake Bay, VA
DEP: 02/29/2016 ARR: 03/11/2016	Mon. Norfolk, VA Thurs. Norfolk, VA	FH-16-01 Leg 3 OPR-D304 Chesapeake Bay, VA
DEP: 03/16/2016 ARR: 03/25/2016	Wed. Norfolk, VA Fri. New Castle, NH	FH-16-01 Leg 4 OPR-D304 Chesapeake Bay, VA

2. Staging and Destaging:

Staging and destaging are not planned for this project.

C. Operations to be Conducted:

Hydrographic survey operations per the appended project instructions with the ability to run concurrent 24 hr ship survey operations and use of one survey launch up to 10 hr/day for data acquisition and project field support.

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations:

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

III. Equipment

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 and a minimum of 1 survey launches and equipment for up to 10 hrs per day concurrently, at the discretion of the command to ensure the most efficient survey 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.
4. One fully-outfitted and operational survey launch to support shallow water survey operations utilizing hull-mounted side scan sonar, multibeam, and vertical beam sonar systems.

IV. Hazardous Materials

A. Policy and Compliance

No Hazardous Materials are being brought aboard the ship for this project.

B. 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 Principal Investigator and the 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 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 conducting 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 Commanding Officer, and members of the scientific party and is normally arranged by the Operations Officer.
- D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Commanding Officer. The form is available at <http://www.oma.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 Commanding Officer by the Principal Investigator. The Commanding Officer will work 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.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Principal Investigator will ensure that all non NOAA or non-Federal scientists aboard also have proper orders. It is the responsibility of the Principal Investigator 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, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from <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).

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

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
Email MOA.Health.Services@noaa.gov

Prior to departure, the Executive Officer will obtain an electronic listing of emergency contacts 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 Principal Investigator to ensure members of the scientific party report aboard with the proper attire.

D. Communications

A progress report on operations prepared by the Commanding Officer may be relayed to the program office. The ship’s primary means of communication with the Marine Operations Center is via email 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 through the ship’s Commanding Officer 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-16 Approaches to Chesapeake Bay, VA

Hydrographic Survey Project Instructions

Project Name:	Approaches to Chesapeake Bay
Project Number:	OPR-D304-FH-16
Assigned Field Unit:	NOAA Ship <i>Ferdinand R. Hassler</i>
Assigned Processing Branch:	Atlantic Hydrographic Branch
Signed Date:	02/03/2016
Project Instructions Version:	Final
Planned Acquisition Time:	Start Date: 02/2016 End Date: 03/2016
Delivery Dates:	120 days from completion of data acquisition.

Purpose and Location:

The purpose of this project is to provide contemporary surveys to update National Ocean Service (NOS) nautical charting products. Survey areas will address 403 SNM, of which 260 SNM are Critical Area and 143 SNM are Priority 1 in accordance with the National Hydrographic Survey Priorities Edition 2012. In addition, this project will improve the chart for traffic navigating the Atlantic Ocean Channel and will support BOEM research in the area.

Supporting Documents:

Hydrography shall consist of Navigable Area Surveys in accordance with the following support documents.

NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), May 2015

Hydrographic Survey Technical Directive (HTD): HTD 2015-1 Configuration Management

NOS Field Procedures Manual for Hydrographic Surveying (FPM), April, 2014

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:**General Locality:** Approaches to Chesapeake Bay

<i>Registry Number</i>	<i>Sheet Number</i>	<i>Sublocality</i>	<i>State or Territory</i>	<i>Scale</i>	<i>Estimated SNM</i>	<i>Instructions</i>
H12858	1	20 Miles East of Sheep House Hill	North Carolina	40000	50	
H12859	2	14 Miles East of Poyner Hill	North Carolina	40000	67	
H12860	3	8 Miles East of Poyner Hill	North Carolina	40000	60	
H12861	4	Currituck Beach	North Carolina	40000	136	
H12862	5	28 NM East of Currituck Beach	North Carolina	40000	90	
F00675	6	Poquoson River Shoal Investigations	Virginia	10000	3	F00675 is a secondary priority to sheets 1-5 and provided as an alternative survey area during times of prolonged offshore foul weather.
F00676	7	Red Bird Artificial Reef Investigation	Delaware	10000	1	Data processing and submission of final deliverables to be done by CCOM/JHC.

Limits & Coverage:

Inshore Limit: 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. The inshore limit of hydrography for sheet 6, F00675 will be the 2-meter contour.

Coverage Requirements:*Coverage Water Depth*

Greater than 8 meters water depth

Inshore limit to 8 meters water depth

Coverage Required

Complete Coverage accomplished using either: A) Complete coverage MBES depth and backscatter data, or B) 100% SSS coverage with concurrent set line spacing MBES depth and backscatter data. Refer to HSSD Section 5.2.2.2 50 m set line spacing. Indications of shoaling falling between set line

Limits & Coverage:*Coverage Water Depth*

For Sheet 7, F00676

Coverage Required

spacing main scheme lines must be investigated. Set line spacing orientation should be approximately perpendicular to countours whenever possible. Refer to HSSD Section 5.2.2.3.

Object Detection Coverage MBES depth and backscatter data gridded at 25 cm resolution. Refer to HSSD Section 5.2.2.1

Assigned Tasks**Acknowledgement:**

The project manager for this project is Paul Turner. Contact information for the project manager may be found in the User Contacts section of this document. The field unit shall acknowledge receipt of these instructions and submit any comments or questions via email to the project manager. Additionally, the project manager shall be included on all discussions or correspondence involving issues concerning the project.

Environmental Compliance Requirements

Comply with the marine mammal observation and reporting requirements in Section 7.6 of the HSSD.

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.

AWOIS Items:

There are no AWOIS investigation requirements for this project. For reference, a dataset containing all AWOIS items can be accessed within the GIS files located within the project folder or found in multiple formats at http://www.nauticalcharts.noaa.gov/hsd/wrecks_and_obstructions.html

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:

Perform a chart comparison in accordance with Section 4.5 of the FPM and Sections 8.1.4 and D.1 of the HSSD. Use only the latest editions of the largest scale NOS charts covering the project area. 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, however, this list is for reference only and not exhaustive. Some charts listed may have larger scale sections to which survey data must be compared.

Affected Raster Charts

<i>Chart Number</i>	<i>Scale</i>	<i>Edition Number</i>	<i>Edition Date</i>	<i>Kapp Number</i>	<i>LNK Date</i>	<i>NM Date</i>
12204	80000	38	12/2012	527	12/01/2015	12/12/2015
12207	80000	24	07/2014	548	11/24/2015	12/12/2015
12205	80000	34	04/2014	530	11/24/2015	12/12/2015
12200	419706	51	06/2014	526	11/17/2015	11/28/2015
12241	20000	23	03/2014	581	01/19/2016	01/23/2016
12238	40000	41	07/2014	580	01/19/2016	01/23/2016

Affected ENC's

<i>ENC Name</i>	<i>Scale</i>	<i>Edition</i>	<i>Update Application Date</i>	<i>Issue Date</i>	<i>Preliminary</i>
US4NC53M	80000	23	12/16/2013	06/03/2015	NO
US4NC32M	80000	10	10/28/2014	05/15/2015	NO
US4NC31M	80000	18	10/09/2014	06/03/2015	NO
US3DE01M	80000	15	05/06/2015	05/31/2015	NO
US5VA13M	40000	31	10/23/2015	01/28/2016	NO
US5VA24M	40000	21	01/07/2016	01/28/2016	NO

Coast Pilot:

Submit a Coast Pilot Review Report in accordance with section 7.5 of the HSSD.

Dangers to Navigation (DTONs):

Generate DTON reports in accordance with Section 8.1.3 of the HSSD. DTON reports should be sent to ocs.ndb@noaa.gov with a courtesy copy to the project manager. 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>
H12306	40000	2011	NOAA Ship <i>Thomas Jefferson</i>	N
H12341	20000	2011	NOAA Ship <i>Thomas Jefferson</i>	N
H12342	20000	2011	NOAA Ship <i>Thomas Jefferson</i>	N
H12343	20000	2011	NOAA Ship <i>Thomas Jefferson</i>	N
H12839	40000	2015	NOAA Ship <i>Ferdinand R. Hassler</i>	S
H12840	40000	2015	NOAA Ship <i>Ferdinand R. Hassler</i>	S
H12841	40000	2015	NOAA Ship <i>Ferdinand R. Hassler</i>	S
H12843	40000	2015	NOAA Ship <i>Ferdinand R. Hassler</i>	S

Progress Reports:

Submit a weekly acquisition progress report during field operations in accordance with Section 8.1.1 of the HSSD.

Survey Outlines:

Generate a survey outline in accordance with Section 8.1.2 of the HSSD. Submit survey outlines to survey.outlines@noaa.gov.

Special Data Handling Requirements:

ATTENTION: NOAA Ship FERDINAND R. HASSLER

Submit all Conductivity Temperature and Depth (CTD) data to the National Oceanographic Data Center (NODC) ensuring data are in an appropriate file format as outlined on the NODC website at <http://www.nodc.noaa.gov/access/dataformats.html>.

Horizontal Control Requirements:

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

PPK

This project has a requirement to reference survey data to the ellipse where possible. Realization of the ellipse will be achieved through a single base solution using COR Stations. Several sheets are greater than 40km from the existing CORS and PBO stations, and are unlikely to meet ERS requirements. At the commencement of survey operations, check lines should be run across the entirety of these sheets to confirm the operational status of the COR Stations, and to measure the anticipated uncertainties of the single base solution. The results of these check lines should be reported back to HSD Operations.

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. 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 Discrete Zoning or VDATUM, and will officially be decided on upon delivery of interim deliverable products. Sheet 6, F00675 is an exclusively ERS project, chart datum must be realized through VDATUM. All survey lines shall be delivered with SBET/RMS files applied and GPS tides computed. The field unit shall prepare an ERS Capability Memorandum, submitted to HSD Operations, summarizing the degree to which ERS surveying campaign was successful. Should the field experience difficulty in realizing chart datum via the ellipse, then, after pursuing technical assistance, the field shall communicate with HSD Operations for guidance on how to proceed.

VDatum Version	Geoid	Area	Area Version	Separation Uncertainty
3.2	2012	Virginia/Maryland	V.1.1	10.2 centimeters

NWLON Gauges

<i>Operating Water Level Station</i>	<i>Station ID</i>
Duck, NC	8651370
Atlantic City, NJ **For Sheet 7, F00676 Only**	8534720

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 features with attribute asgmt populated with 'Assigned' shall be addressed in accordance with Sections 5.2.1.2 and 8.2 of the HSSD, even if they are inshore of NALL. The CSF was compiled from ENC's US4NC53M, US4NC32M, US4NC31M, and US3DE01M. Features that DO NOT have the attribute asgmt populated with 'Assigned' need not be addressed unless they are deemed by the field unit as a navigationally significant hazard. For the purposes of disproving a feature, either complete MB coverage or 200% SSS is necessary. The search radius for such disprovals are as follows: charted features in H12860 and H12861, labeled with a "PA" will have a search radius of 160 meters. All charted features in F00675, labeled with a "PA" or otherwise, will have a search radius of 50 meters. Please contact the HSD OPS Project Manager if there are any questions in regards to feature assignment. In addition, see Section 3.5.5.2.2 of the FPM.

Additional Task: *Satellite Derived Bathymetry data*

Satellite Derived Bathymetry data will be provided to the Ferdinand Hassler for reference and survey planning purpose's for Sheet 6, F00675.

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).

Primary Project Manager

Paul Turner

NOAA

Phone: 301-713-2700*106

Fax:

Email: paul.turner@noaa.gov

Obligation: Mandatory

Project Manager Back-up

Corey Allen

NOAA

Phone: 301-713-2700*119

Fax:

Email: corey.allen@noaa.gov

Obligation: For Reference

NOAA Navigation Manager, Mid Atlantic Region

Ryan Wartick, LT NOAA

NOAA

Phone: 757-441-6746 *116

Fax: 757-441-6601

Email: ryan.wartick@noaa.gov

Obligation: For Reference

WYLE Fleet Forces Atlantic Exercise Coordination Center (FFAECC) Project Manager

Jay Clark

Navy

Phone: 757-425-2671

Fax: 757-433-2035

Email: john.f.clark.ctr@navy.smil.mil

Obligation: Mandatory

Red Bird Artificial Reef Investigation POC

Val Schmidt

CCOM/JHC

Phone: 614.286.3726

Fax:

Email: vschmidt@ccom.unh.edu

Obligation: For Reference

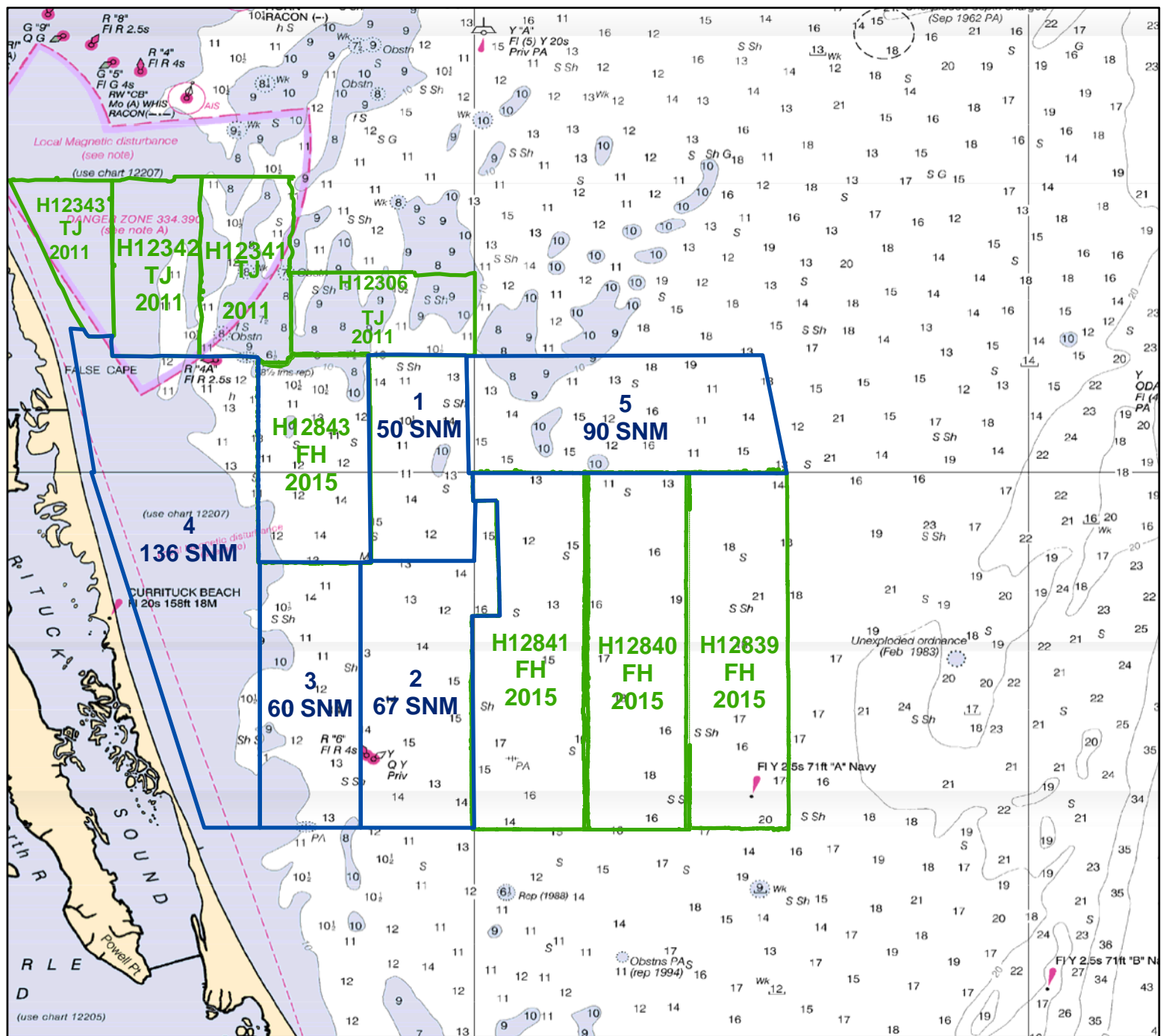
OPR-D304-FH-16

Approaches to Chesapeake Bay

Sheet Layout

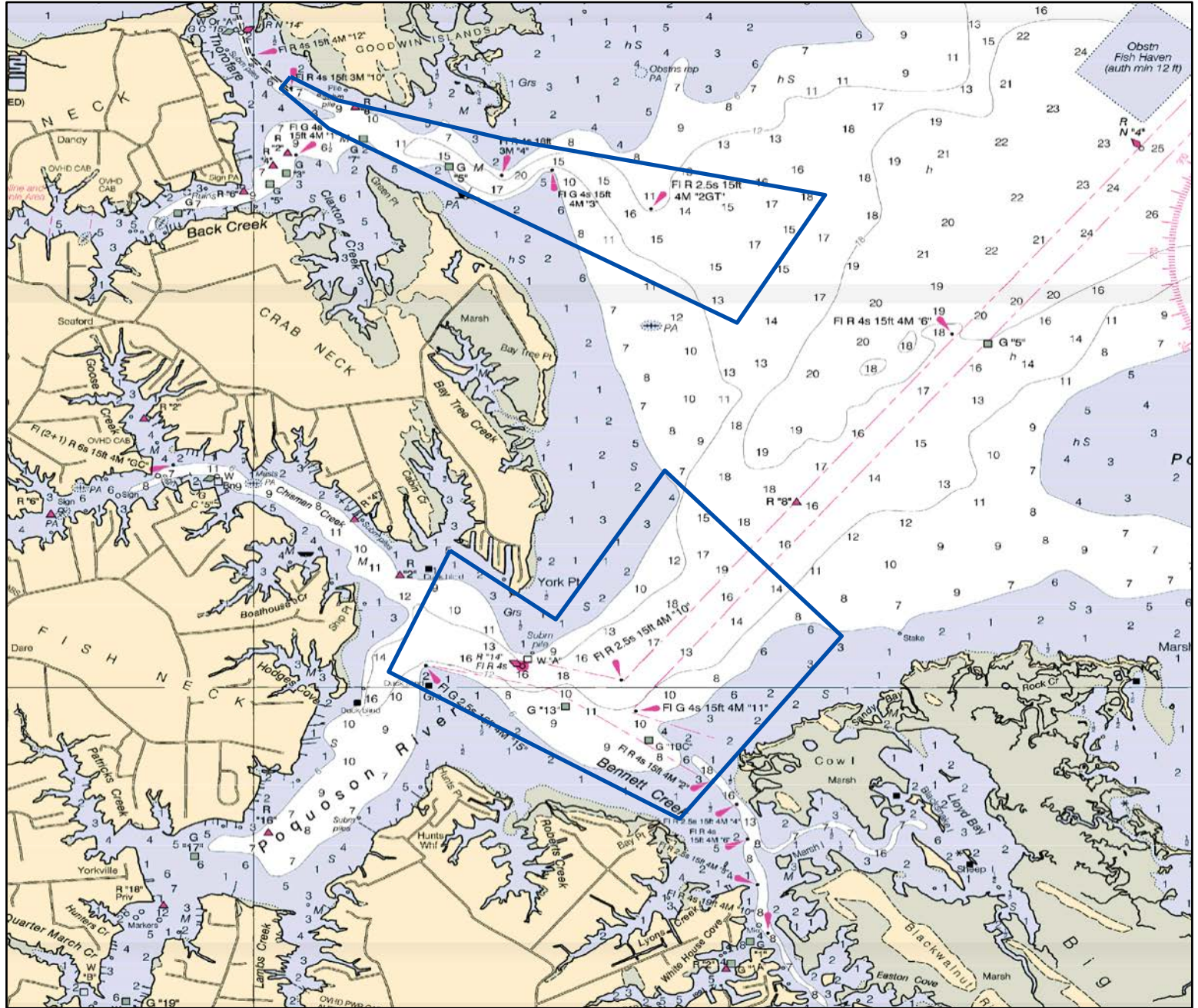
2/3/2016

Total SNM - 403
Critical SNM- 260
Priority 1 SNM- 143



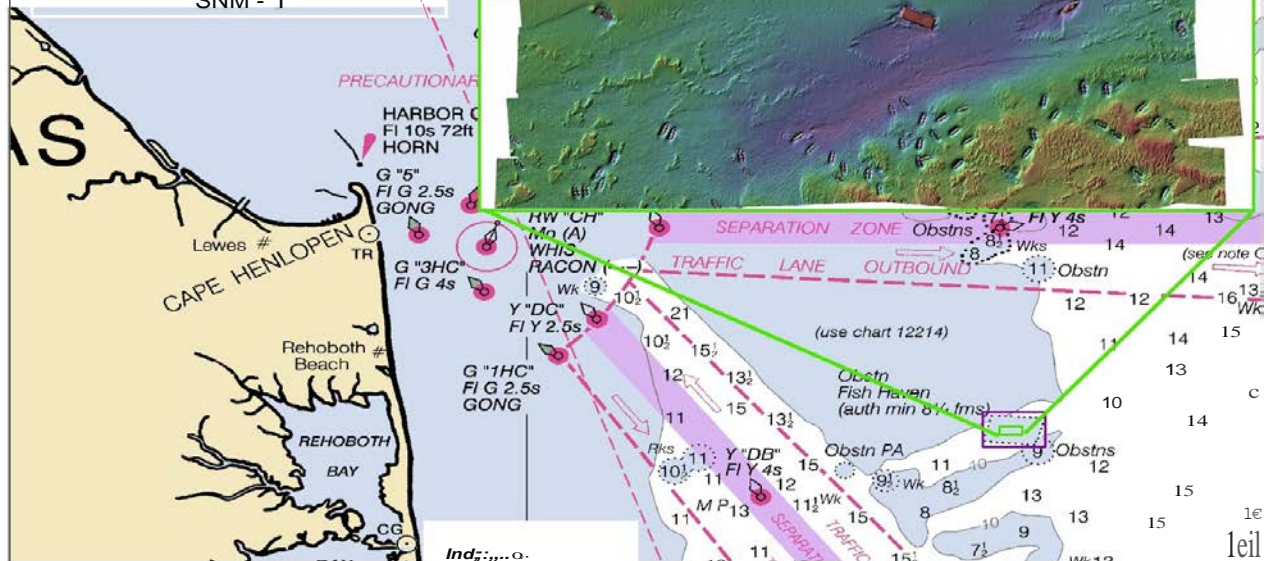
Registry Num	Sheet Priority	Sub-Locality	SNM	Scale
H12858	1	20 Miles East of Sheep House Hill	50	40000
H12859	2	14 Miles East of Poyner Hill	67	40000
H12860	3	8 Miles East of Poyner Hill	60	40000
H12861	4	Currituck Beach	136	40000
H12862	5	28 NM East of Currituck Beach	90	40000
F00675	6	Poquoson R. Shoal Investigations	3	10000
F00676	7	Red Bird Artificial Reef Investigation	1	10000

SNM - 3

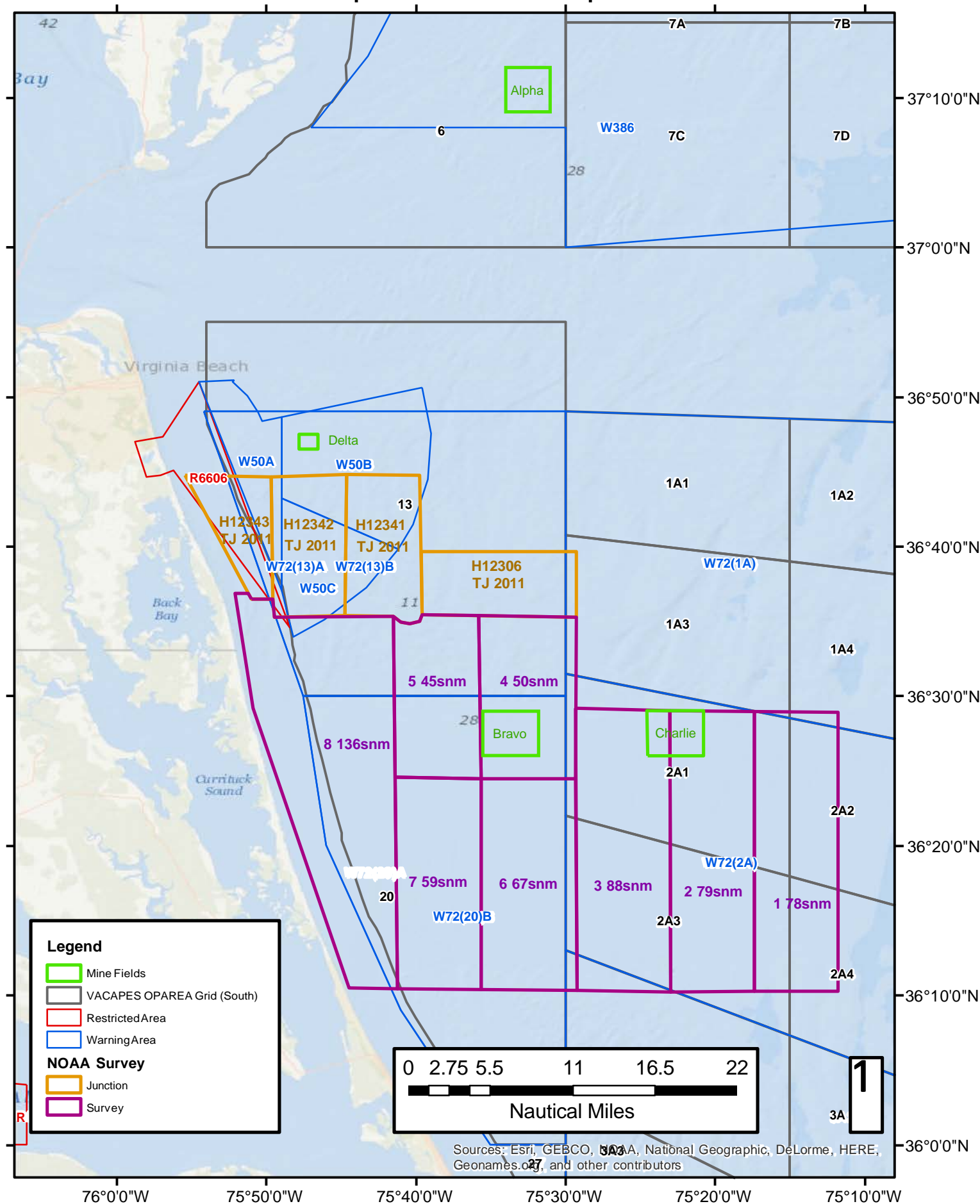


OPR-0304-FH-16
Approaches to Chesapeake Bay
F00676 Sheet Layout
Red Bird Artificial Reef Investigation

SNM - 1



NOAA Survey and Junction Areas with Navy Surface Grids and Special Use Airspace



Sources: Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, and other contributors

WATER LEVEL INSTRUCTIONS

OPR-D304-FH-2016 Approaches to Chesapeake Bay, VA&NC

(11/19/2015 LH)

1.1. TIDES AND WATER LEVELS

1.2. 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 May 2015, and OCS Field Procedures Manual (FPM), dated April, 2014. 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.

1.3. 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.

1.3.1. 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. 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) 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.

1.3.2. The Hydro Hot List (HHL)

Please contact the CO-OPS/Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and the Operational Engineering Team (OET) at 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 is 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 station numbers. The notification must be sent to both teams as OET is responsible for configuring the stations in the CO-OPS data base and HPT manages the addition and removal of stations from the HHL.

Station	Station ID	Residual Control	Type (NWLON, PORTS [®] , etc.)	Comment
Duck, NC	8651370	Residual Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of OPR-D304-FH-2016

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 “Plot” 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, CORMS at 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 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. In order to ensure that verified data is correctly downloaded please **select a date that is more than 7 days prior to the day of interest** in the 'From' field on the CO-OPS website.

1.4. Operating Tide Reducer Stations

1.4.1. CO-OPS Long Term Water Level Station Operation and Maintenance

The operating water level 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'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.

1.4.2. 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.

1.4.3. Tide Component Error Estimation

The estimated tidal error contribution to the total survey error budget in the vicinity of approaches to Chesapeake Bay is 0.18 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.

1.4.4. GOES Satellite Enabled Subordinate Stations

This section is not applicable for this project.

1.4.5. Benchmark Recovery and GPS Requirements

This section is not applicable for this project.

1.4.6. This section is not applicable for this project.

1.5. Discrete Tidal Zoning

1.5.1. The water level station at Duck, NC (8651370) is the reference station for preliminary tides for hydrography in the vicinity of Approaches to Chesapeake Bay, VA & NC. 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 (min)</u>	<u>Range Ratio</u>	<u>Predicted Reference Station</u>
SA46	0	x1.09	8651370
SA57	0	x1.02	8651370
SA46A	0	x1.09	8651370
SA57A	-12	x1.02	8651370

1.5.2. 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 “D304FH2016CORP” 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 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 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-2016, 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. 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-2016 Approaches to Chesapeake Bay, VA&NC

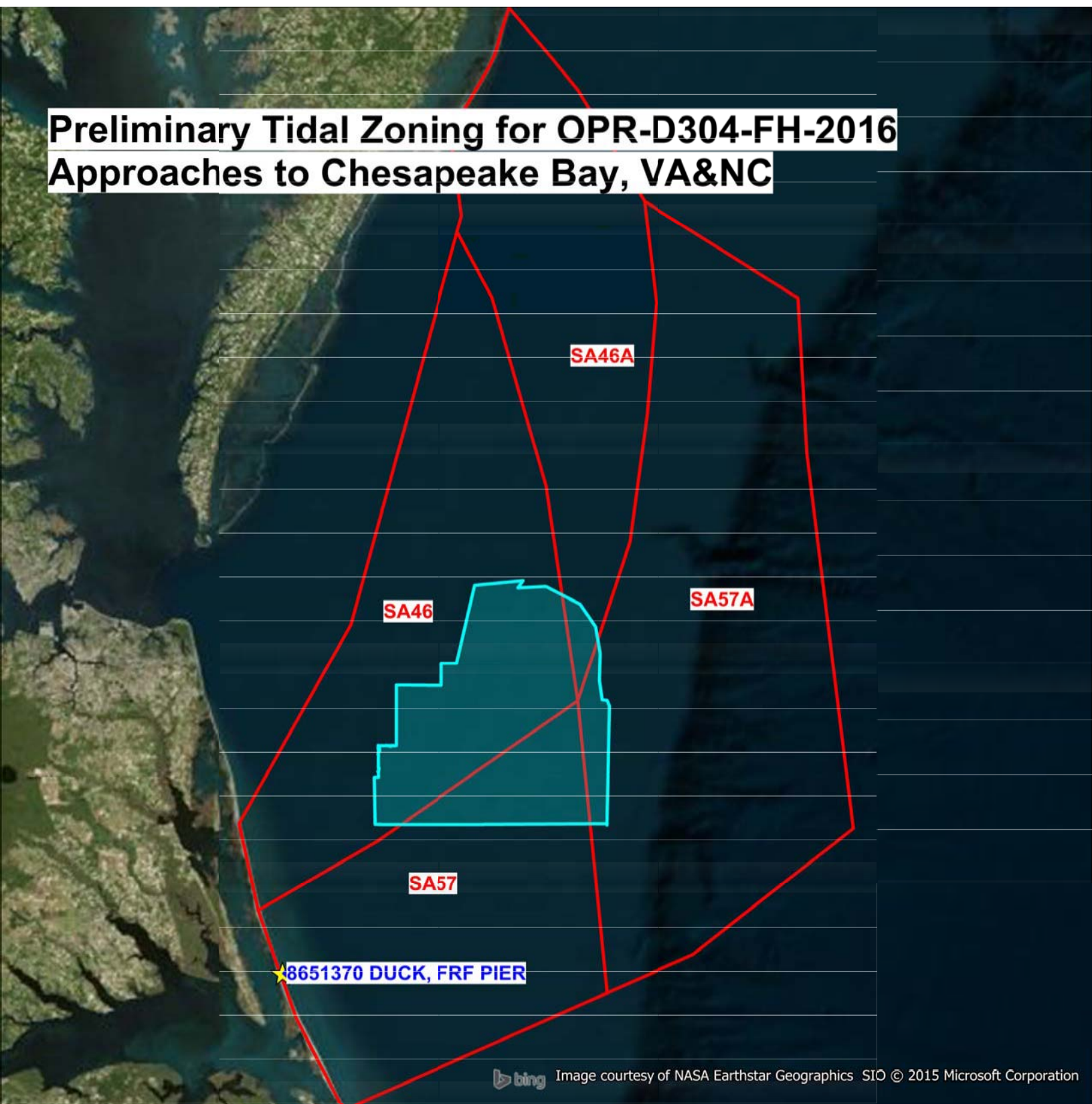


Image courtesy of NASA Earthstar Geographics SIO © 2015 Microsoft Corporation