



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: Captain Scott M. Sirois, NOAA  
Commanding Officer, NOAA Marine Operations Center-Atlantic

*SM Sirois* CAPT/NOAA

SUBJECT: Project Instruction for FH-16-02  
Approaches to Wilmington

Attached is the final Project Instruction for FH-16-02 Approaches to Wilmington, scheduled aboard NOAA Ship *Ferdinand Hassler* during the period of July 6, 2016 to September 30, 2016. Of the 77 DAS scheduled for this project, 77 days are funded by a 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](mailto:chiefops.moa@noaa.gov) at Marine Operations Center-Atlantic.

Attachment

cc:  
LCDR Michael Gonsalves



**Project Instructions**

**Date Submitted:** June 29, 2016

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

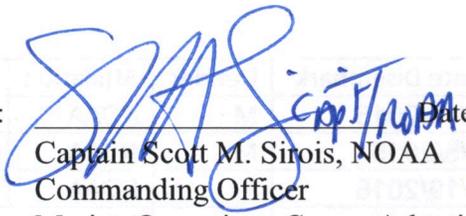
**Project Number:** OPR-G309-FH-16-02 (OMAO)

**Project Title:** Approaches to Wilmington

**Project Dates:** July 6<sup>th</sup> to September 30<sup>th</sup>, 2016

Prepared by:  Dated: 29 June 2016  
Lieutenant Commander Michael O. Gonsalves, NOAA  
Chief, Operations Branch  
Hydrographic Surveys Division  
Office of Coast Survey

Approved by:  Dated: 29 June 2016  
for Captain Eric W. Berkowitz, NOAA  
Chief, Hydrographic Surveys Division  
Office of Coast Survey

Approved by:  Dated: 7/4/16  
Captain Scott M. Sirois, NOAA  
Commanding Officer  
Marine Operations Center Atlantic

**I. Overview**

**A. Brief Summary and Project Period**

This survey is scheduled to begin in July 2016 and end in September 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 77 DAS scheduled for this project, 0 DAS are funded by an OMAO allocation, 77 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 southeast of North Carolina, approaching Wilmington. 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**

Visiting personnel and the supporting science party is currently being developed.

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Marshall, Jeff	PS	7/6/2016	7/15/2016	M	NOAA	USA
TBA	ST	7/25/2016	8/5/2016	M	NOAA	USA
Robinson, Starla	PS	8/8/2016	8/19/2016	F	NOAA	USA
Miller, Vanessa	PS	8/23/2016	9/2/2016	F	NOAA	USA
TBA	PS	9/6/2016	9/13/2016	M	NOAA	USA
TBA	PS	9/19/2016	9/30/2016	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](mailto:Michael.Gonsalves@noaa.gov)

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

Project Manager Back-up:  
Corey Allen  
Physical Scientist, Operations Branch  
Hydrographic Surveys Division  
1315 East West Hwy, #6854  
Silver Spring, MD 20910  
301-713-2702x119  
[Corey.allen@noaa.gov](mailto:Corey.allen@noaa.gov)

Chief Scientist:  
LCDR Matthew Jaskoski, 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 Policy 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.

In addition The Office of Coast Survey has implemented Best Management Practices (BMPs) based on the ESA mitigation and monitoring measures agreed to between the OCS Hydrographic Services Division (HSD) and the NMFS Office of Protected Resources (OPR-ESA) and documented in the April 30, 2013 Biological Opinion. They were adopted in the context of the ESA, but include BMPs for marine mammals listed in the ESA (“depleted” under MMPA).

For further information on the BMPs, please refer to the Environmental Compliance Section of the Hydrographic Survey Project Instructions. For further information on OCS Regulations and Policies go to: <http://www.nauticalcharts.noaa.gov/Legal/>

Military exercise area is included within the boundaries of this project area. HSD is currently working with the regional Navigation Manager to coordinate survey activities.

## 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: 7/6/2016 ARR: 7/15/2016	Weds. New Castle, NH Fri. Norfolk, VA	FH-16-02 Leg 2 OPR-G309 Wilmington, NC
DEP: 7/25/2016 ARR: 8/5/2016	Mon. Norfolk, VA Thurs. Charleston, SC	FH-16-02 Leg 3 OPR-G309 Wilmington, NC
DEP: 8/8/2016 ARR: 8/19/2016	Wed. Charleston, SC Fri. Charleston, SC	FH-16-02 Leg 4 OPR-G309 Wilmington, NC
DEP: 8/23/2016 ARR: 9/02/2016	Wed. Charleston, SC Fri. Charleston, SC	FH-16-02 Leg 5 OPR-G309 Wilmington, NC
DEP: 9/6/2016 ARR: 9/13/2016	Wed. Charleston, SC Fri. Norfolk, VA	FH-16-02 Leg 6 OPR-G309 Wilmington, NC
DEP: 9/19/2016 ARR: 9/30/2016	Wed. Charleston, SC Fri. Norfolk, VA	FH-16-02 Leg 7 OPR-G309 Wilmington, NC

2. Staging and Destaging:

Staging and destaging are not planned for this project.

C. Operations to be Conducted:

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

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.
3. The Office of Coast Survey may staff the survey department with rotating physical scientists to efficiently manage the project's data processing requirements.

**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.

A. Data Classifications: *Under Development*

a. OMAO Data

b. Program Data

B. Responsibilities: *Under Development*

**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.

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](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  
Email [MOA.Health.Services@noaa.gov](mailto: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-G309-FH-16 Approaches to Wilmington, NC

# Hydrographic Survey Project Instructions

<b>Project Name:</b>	Approaches to Wilmington
<b>Project Number:</b>	OPR-G309-FH-16
<b>Assigned Field Unit:</b>	NOAA Ship <i>Ferdinand R. Hassler</i>
<b>Assigned Processing Branch:</b>	Atlantic Hydrographic Branch
<b>Signed Date:</b>	06/29/2016
<b>Project Instructions Version:</b>	Final
<b>Planned Acquisition Time:</b>	Start Date: 07/2016 End Date: 09/2016
<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. Survey areas will address 793 SNM, of which 660 SNM are Priority 1 in accordance with the National Hydrographic Survey Priorities Edition 2012. The project is based on a request from an a Atlantic Coast Port Access Route Study conducted by Pacific Northwest National Laboratory at the request of the U.S. Coast Guard to delineate traffic corridors using AIS. This project will improve the chart for traffic navigating from Port to Port along the Atlantic Ocean Channel.

<b>Supporting Documents:</b>
Hydrography shall consist of Navigable Area Surveys in accordance with the following support documents.
NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), March 2016
NOS Field Procedures Manual for Hydrographic Surveying (FPM), April, 2014
Hydrographic Survey Technical Directive (HTD) 2016-2

**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 Wilmington						
<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>
H12893	1	53 Miles East of Cape Romain	South Carolina	40000	66	
H12894	2	56 Miles East of Georgetown LT	North Carolina South Carolina	40000	81	
H12895	3	45 Miles South of Southport	North Carolina	40000	62	
H12927	4	60 Miles East of Cape Romain	South Carolina	40000	79	
H12928	5	68 Miles East of Cape Romain	North Carolina South Carolina	40000	68	
H12929	6	53 Miles South of Southport	North Carolina	40000	55	
H12930	7	South Frying Pan Shoal	North Carolina	40000	42	
H12931	8	East Frying Pan Shoal	North Carolina	40000	51	
H12932	9	18 Miles Southwest of Frying Pan	North Carolina	40000	48	
H12933	10	10 Miles South of Frying Pan	North Carolina	40000	46	
H12934	11	11 Miles South of Frying Pan	North Carolina	40000	67	
F00679	12	Cape Fear	North Carolina	40000	125	Run crosslines and developments as assigned to evaluate the quality of survey W00310.

<b>Limits &amp; Coverage:</b>	
<i>Inshore Limit:</i> There is no inshore limit defined for this survey.	
<b>Coverage Requirements:</b>	
<b>Limits &amp; Coverage:</b>	
<i>Coverage Water Depth</i>	<i>Coverage Required</i>
All waters in survey area	Complete Coverage. Refer to HSSD Section 5.2.2.3.
For F00679 (Sheet12)	Quality assurance reconnaissance for areas assigned. Refer to HSSD Section 5.2.2.5.2

### **Assigned Tasks**

<b>Acknowledgement:</b>
The project manager for this project is Starla Robinson. 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.

<b>Environmental Compliance Requirements</b>
Comply with the marine mammal observation and reporting requirements in Section 1.4 of the HSSD; and all Best Management Practices (BMPs) listed at the end of these Project Instructions.

<b>Aids to Navigation (ATONs):</b>
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.

<b>AWOIS Items:</b>
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 <a href="http://www.nauticalcharts.noaa.gov/hsd/wrecks_and_obstructions.html">http://www.nauticalcharts.noaa.gov/hsd/wrecks_and_obstructions.html</a>

<b>Maritime Boundary Points (MBPs):</b>
There are no Maritime Boundary investigation requirements for this project.

**Bottom Samples:**

Obtain bottom samples in accordance with Section 7.2 and 7.2.2. Work with Dr. Christopher Taylor (chris.taylor@noaa.gov), from NCCOS to create a bottom sample strategy based on backscatter mosaics. Notify the project manager in regards to the bottom sample plan.

Bottom samples will number no less than 2 per sheet. The mosaic and bottom samples will be compared with the historic charted bottom samples provided in the project reference file. If a historic bottom sample contradicts the survey's findings, a new bottom sample must be taken within 2mm chart scale (160 meters) of the historic bottom sample to disprove it. All bottom samples will be accompanied with video for habitat analysis.

**Chart Comparison:**

Perform a chart comparison in accordance D.1 Chart Comparison, under Section 8.1.4 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>
11536	80000	20	01/2015	211	03/15/2016	03/26/2016
11520	432720	45	09/2013	377	03/15/2016	03/26/2016

***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>
US4NC11M	80000	13	04/27/2014	02/16/2016	NO
US3SC10M	432720	21	09/15/2014	03/29/2016	NO

**Coast Pilot:**

Perform a Coast Pilot Review as described in HSSD Section 8.1.3.

**Dangers to Navigation (DTONs):**

Generate DTON reports in accordance with Section 1.5 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:**

Refer to HSSD 8.1.4 Junction guidance. Junctions are from outside source data surveyed to different standards than a traditional hydrographic survey. Any potential disagreement does not indicate a shortcoming, but instead will help us assess those platforms as source of survey data.

<i>Registry Number</i>	<i>Scale</i>	<i>Year</i>	<i>Platform</i>	<i>Relative Location</i>
W00310	NA	2014	NOAA Ship NANCY FOSTER	NW
W00290	NA	2014	NOAA Ship PISCES	W

**Progress Reports:**

Submit weekly (refer to HSSD 8.1.1.1) and monthly (refer to HSSD 8.1.1.2) progress reports.

**Survey Outlines:**

Generate and submit a survey outline in accordance with Section 8.1.2 of the HSSD.

**Horizontal Control Requirements:**

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

***Post-Processed Precise Point Positioning (5P)***

This project has a requirement to acquire survey data vertically-referenced to the ellipse. Based on analysis of existing infrastructure, this will most likely be achieved through a SBAS subscription using a 5P processing solution. At the commencement of survey operations, check lines should be acquired across the entirety of the survey to identify any systematic procedural, hardware, or configuration errors prior to the bulk of data acquisition. The results of the checklines should be reported back to HSD Operations. Refer to ERZT Section below.

**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.

***ERZT***

This project has a requirement to acquire survey data vertically-referenced to the ellipse. Based on analysis of existing infrastructure, this will most likely be achieved through a SBAS subscription using a 5P processing solution. The field unit shall use a HSTB generated PMVD separation model to realize chart datum via the ellipse.

At the commencement of survey operations, check lines should be acquired across the entirety of the survey to identify any systematic procedural, hardware, or configuration errors prior to the bulk of data acquisition. To determine the quality of the 3D trajectory, the checkline crossline analysis shall be performed between the ERZT separation model and the PMVD separation model.

If the field’s recommendation on the method of acquiring 3D trajectories and the method of reducing the ellipse-referenced data to chart datum is accepted, all survey lines shall be delivered with 3D trajectory and associated uncertainty files applied (i.e. SBETs and RMS) and GPS tides computed. All delivered grids shall be derived via the ellipse.

If at any point the field unit experiences difficulty in realizing chart datum via the ellipse, the field shall communicate with the HSD Project Manager for guidance on how to proceed. Within 60 days of the completion of acquisition, the field unit shall prepare an ERS Capability Memorandum, summarizing the degree to which ERS surveying campaign was successful.

The ERS Checkline and ERS Capability Memo requirements are detailed in the ERS Capability Requirements document. The ERS deliverables shall be submitted to the HSD Project Manager with a CC to ERS.Deliverables@noaa.gov. Project specific data quality issues or departures from standard processing approaches shall be captured in the DAPR or DR.

***NWLON Gauges***

<i>Operating Water Level Station</i>	<i>Station ID</i>
Springmaid Pier, SC	8661070

**Shoreline and Nearshore Features:**

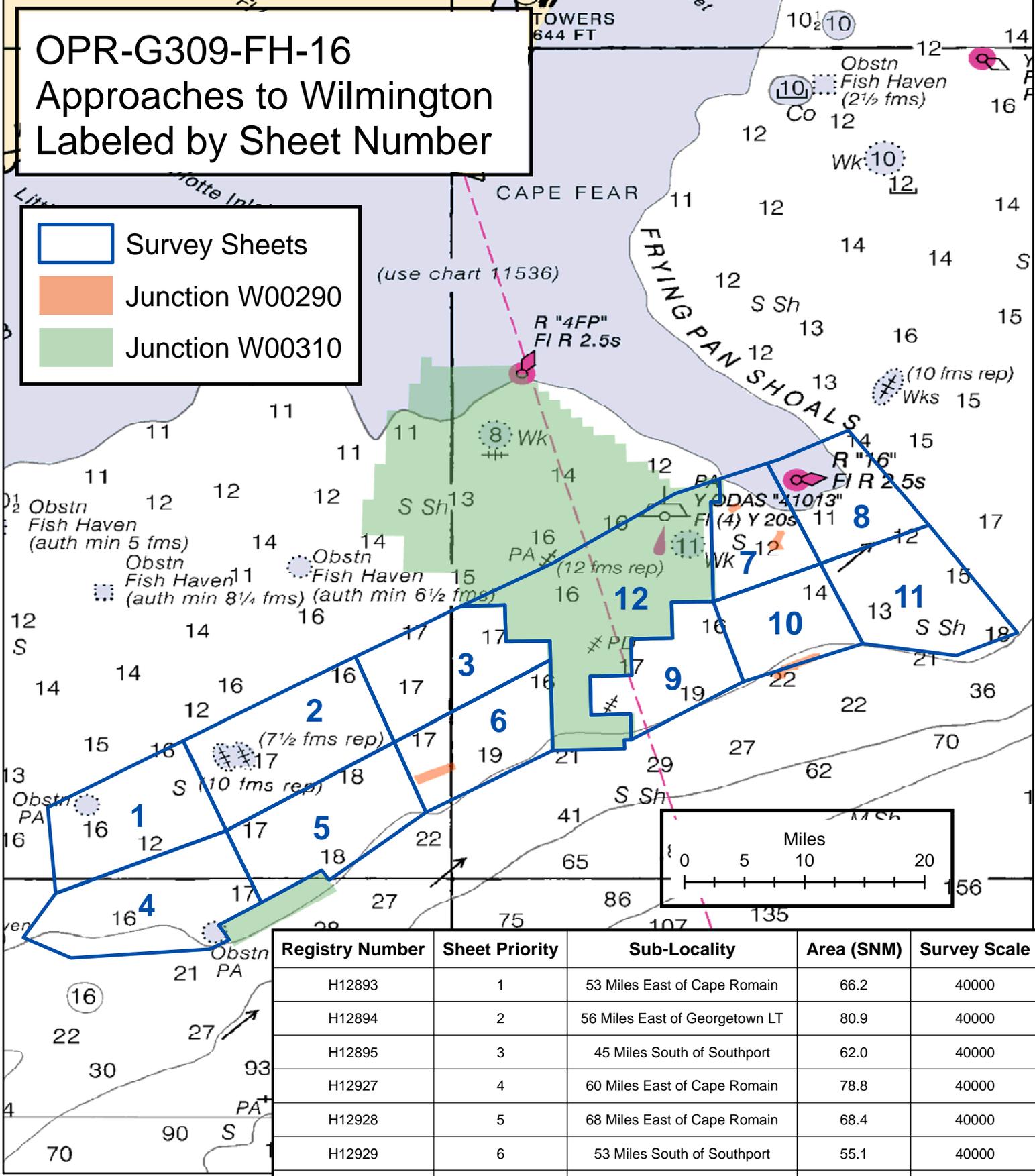
Submit a Final Feature File in accordance with Section 7 of the HSSD. Contact the HSD Project Manager if there are any questions regarding feature assignments and feature management.

# OPR-G309-FH-16

## Approaches to Wilmington

### Labeled by Sheet Number

Survey Sheets  
 Junction W00290  
 Junction W00310



**Total SNM**  
**793**  
**Priority 1 SNM**  
**660**

Registry Number	Sheet Priority	Sub-Locality	Area (SNM)	Survey Scale
H12893	1	53 Miles East of Cape Romain	66.2	40000
H12894	2	56 Miles East of Georgetown LT	80.9	40000
H12895	3	45 Miles South of Southport	62.0	40000
H12927	4	60 Miles East of Cape Romain	78.8	40000
H12928	5	68 Miles East of Cape Romain	68.4	40000
H12929	6	53 Miles South of Southport	55.1	40000
H12930	7	South Frying Pan Shoal	42.0	40000
H12931	8	East Frying Pan Shoal	50.6	40000
H12932	9	18 Miles Southwest of Frying Pan	48.4	40000
H12933	10	10 Miles South of Frying Pan	45.6	40000
H12934	11	11 Miles Southeast of Frying Pan	67.3	40000
F00679	12	Cape Fear	125.	40000

## **PROPOSED BEST MANAGEMENT PRACTICES (BMPs) FOR HYDROGRAPHIC SURVEY OPR-G309-FH-16**

The following BMPs are based on the ESA mitigation and monitoring measures agreed to between the OCS Hydrographic Services Division (HSD) and the NMFS Office of Protected Resources (OPR-ESA) and documented in the April 30, 2013 Biological Opinion. They were adopted in the context of the ESA, but include BMPs for marine mammals listed in the ESA (“depleted” under MMPA). OCS proposes that these BMPs be applied to all OCS hydro work while MMPA compliance is underway. In all cases BMPs will be communicated to ship and boat crews via project instructions.

### **Universal BMPs (Apply to all OCS Surveys):**

#### **Vessel Speed Limits**

- Slow speeds (4 – 8 knots) when mapping
- Reduced speeds (<13 knots) when transiting outside of the Great Lakes

#### **Echosounder Restrictions**

- Avoid using sonar frequencies < 180 kHz when possible
  - If **multibeam** sonar frequencies < 180 kHz must be employed, use echosounders at ≥ 50 kHz frequencies, with the lowest possible power and ping-rate
  - If **single beam** sonar frequencies < 180 kHz must be employed, use echo sounders at ≥ 30 kHz frequencies, with the lowest possible power and ping-rate and a 12° beam angle.
    - If **single beam** sonar frequencies < 30 kHz must be employed, suspend transmissions of 30 kHz or lower when ESA-listed cetacean species (whales, dolphins, and porpoises) are within hearing range (i.e., the 4.2 meter beam width).

#### **Vessel Maintenance Requirements**

- Meet all EPA Vessel General Permits and Coast Guard requirements
- Use anti-fouling coatings
- Clean hull regularly to remove aquatic nuisance species
- Avoid cleaners with nonylphenols
- Rinse anchor with high-powered hose after retrieval

### **Anchoring Restrictions**

- Use designated anchorage area when available
- Use mapping data to anchor in mud or sand, to avoid anchoring on corals
- Minimize anchor drag

### **Visual Monitoring Requirements**

- Maintain trained observers aboard all vessels; 100% observer coverage
- Make species identification keys (for marine mammals, sea turtles, corals, abalone, and seagrasses) available on all vessels

### **Animal Approach Restrictions**

- Avoid approaching within 200 yards of cetaceans (whales, dolphins, and porpoises), 500 yards for right whales
- Suspend single beam sonar transmissions of 30 kHz when ESA-listed cetaceans (whales, dolphins, and porpoises) are within hearing range (i.e., within the 4.2 meter beam width).
- Avoid approaching within 100 yards of in-water seals and walrus
- When possible, suspend sonar transmissions when ESA-listed seals and walrus are within hearing range (i.e., within the 4.2 meter beam width).
- Avoid approaching within 50 yards of sea turtles

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### **Additional BMPs:**

For critical habitat located near the project area refer to the Environmental Compliance map on the next page.

### **Echosounder Restrictions**

- Suspend multibeam sonar transmissions of < 125 kHz, when killer whales are within hearing range (750 yards)

### **Discharge Restrictions**

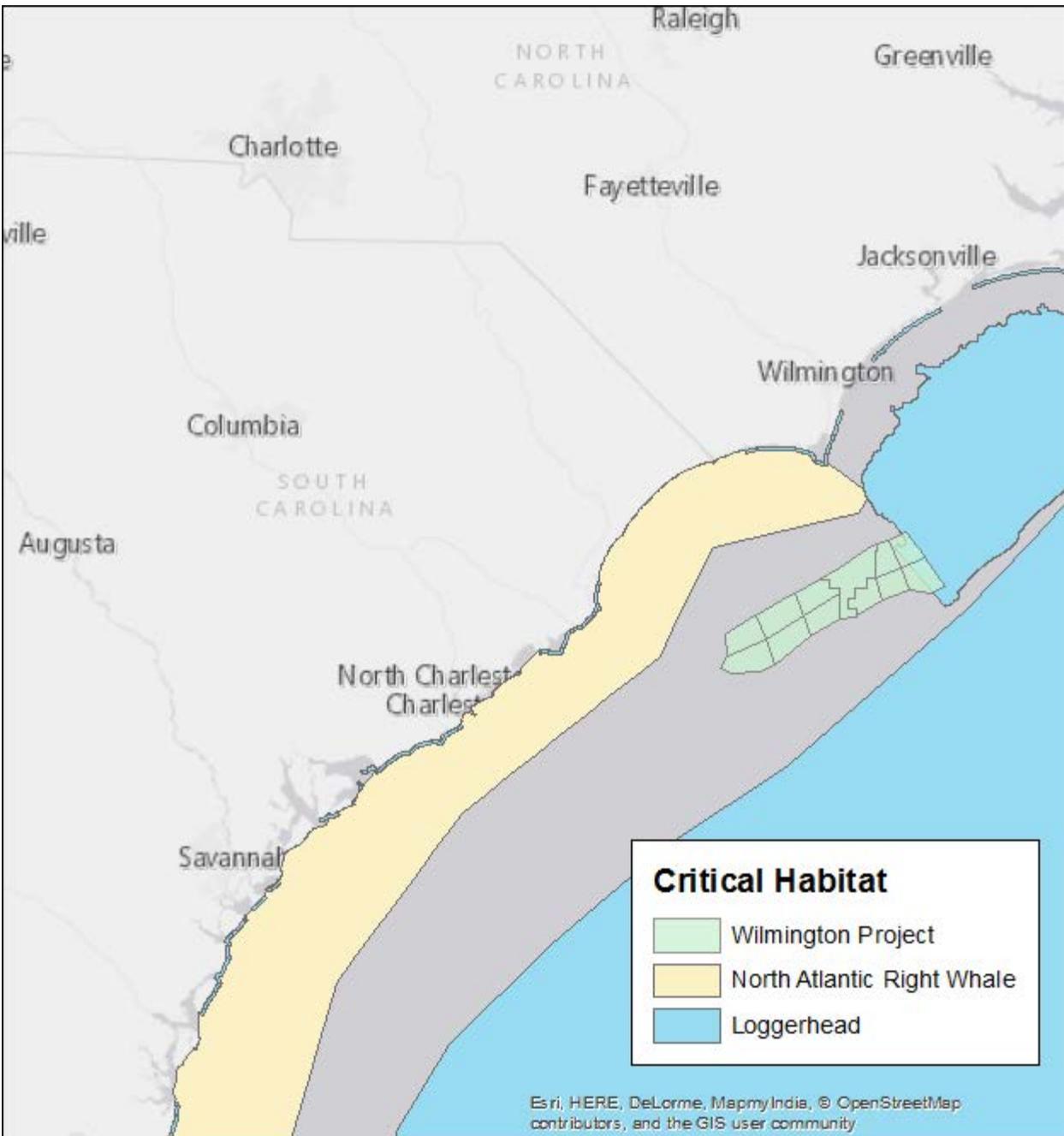
- Avoid discharge of ballast water and hull cleaning in designated critical habitat

### **Animal Approach Restrictions**

- Avoid cetacean (whales, dolphins, and porpoises) critical habitat, when possible

# OPR-G309-FH-16

## Approaches to Wilmington Environmental Compliance



Relevant CFR Passage Links for critical habitats in the vicinity:

-- North Atlantic Right Whale calving area - <https://federalregister.gov/a/2016-01633>

(Core calving season December through March.)

-- Loggerhead Turtles - <http://www.nmfs.noaa.gov/pr/pdfs/fr/fr77-4170.pdf>

## **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**

Starla Robinson

NOAA

*Phone:* 301-713-2700\*125

*Fax:*

*Email:* starla.robinson@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

### **NCCOS Contact**

J. Christopher Taylor, PhD

National Centers for Coastal Ocean Science

*Phone:* 252-723-3993

*Fax:*

*Email:* chris.taylor@noaa.gov

*Obligation:* For Reference

### **NOAA Navigation Manager, Southeast Atlantic Region**

Kyle Ward

NOAA

*Phone:* 843-740-1153

*Fax:* 301-651-4852

*Email:* kyle.ward@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

## **WATER LEVEL INSTRUCTIONS**

**OPR-G309-FH-2016 Approaches to Wilmington, NC (Revised)  
(05/04/2016 AC)**

### **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 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.

#### **1.2. 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 the CO-OPS/Hydrographic Planning Team (HPT) at [nos.coops.hpt@noaa.gov](mailto:nos.coops.hpt@noaa.gov) and the 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 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 <sup>®</sup> , etc.)	Comment
Springmaid Pier, SC	8661070	Residual Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of OPR-G309-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](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. 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.

### 1.3. Operating Tide Reducer Stations

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

The operating water level station Springmaid Pier, SC (8661070), 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 Springmaid Pier, SC (8661070) by NOAA’s FERDINAND HASSLER personnel.

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

#### 1.3.2. Subordinate Station Requirements

No subordinate water level stations are required for this project, however, supplemental and/or back-up water level stations may be necessary depending on the complexity of the 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 vicinity of Springmaid Pier, SC (8661070) is 0.40 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 Springmaid Pier, SC (8661070) is the reference station for preliminary tides for hydrography in Approaches to Wilmington, NC. The time and height correctors listed below for applicable zones should be applied to the preliminary data at Springmaid Pier, SC (8661070) 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>
SA107	-6	x0.86	8661070
SA108	-6	x0.82	8661070
SA109A	-12	x0.78	8661070
SA110	-12	x0.74	8661070
SA119	0	x0.9	8661070

1.4.2. Polygon nodes and water level corrections referencing Springmaid Pier, SC (8661070) are provided in CARIS<sup>®</sup> format denoted by a \*.zdf extension file name.

**NOTE: The tide corrector values referenced to Springmaid Pier, SC (8661070) are provided in the zoning file “G309FH2016CORP” 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, Springmaid Pier, SC (8661070), 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-G309-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](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-G309-FH-2016  
Approaches to Wilmington, NC (Revised)**

8661070 SPRINGMAID PIER

