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

DEC 31, 2014

MEMORANDUM FOR: 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-15-01
Gulf of Maine

Attached is the final Project Instruction for FH-15-01, Gulf of Maine, scheduled aboard NOAA Ship *Ferdinand Hassler* during the period of 05 January to 13 February 2015. According to the proposed OMNIBUS FAP for FY15, of the 35 DAS scheduled for this project, 35 days will be funded by a Line Office allocation. If allocation or funding changes once underway, you will be immediately notified. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to **OpsMgr.MOA@noaa.gov** at Marine Operations Center-Atlantic.

Attachment

cc:
MOA1

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

Final Project Instructions

Date Submitted: December 19, 2014

Platform: NOAA Ship *Ferdinand R. Hassler*

Project Number: FH-15-01

Project Title: Gulf of Maine

Project Dates: 1/5/2015 – 2/13/2015

Prepared by: GONSALVES.MICHAEL.O.1275635126 2014.12.22 15:17:32 -05'00' Dated: 22 Dec 2014
LCDR Michael Gonsalves, NOAA
Chief, Operations Branch
Hydrographic Surveys Division

Approved by: 2014.12.22 15:32:20 -05'00' Dated: _____
Mike Brown
Chief, Hydrographic Surveys Division (Acting)
Office of Coast Survey

Approved by: Anne K Lynch CAPT/NOAA Dated: 31 Dec 2014
CAPT 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 January 2015 and end in February 2015. 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 35 DAS scheduled for this project, ~~35~~ 0 DAS are funded by an OMAO allocation, ~~0~~ 35 DAS are funded by a Line Office Allocation, 0 DAS are Program Funded, and 0 DAS are Other Agency funded. This project is estimated to exhibit a Medium Operational Tempo.

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

The project area is located in the Gulf of Maine. 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

N/A

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Fandel, Christina	PS	1/5/2015	1/16/2015	F	NOAA	USA
Johnson, Kayla	PS	1/19/2015	1/30/2015	F	NOAA	USA
Weller, Erin	PS	2/3/2015	2/13/2015	F	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:
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

Chief Scientist:
LCDR Marc S. Moser, NOAA
Commanding Officer, NOAA Ship *Ferdinand R. Hassler*
P.O. Box 368
New Castle, NH 03854
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 it 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/

In addition, the Office of Coast Survey has issued out a letter to the Maine Lobstermen's Association notifying them to the location of planned survey activities. Operations will exercise every caution while surveying to avoid entanglement of fishing gear. If fishing gear is entangled, operations will cease and gear will be cleared. In the event entangled gear becomes damaged or lost, there is relevant information in the notification letter for the Tort Claims process.

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.

A. Project Itinerary:

DEP: 1/5/2015 ARR: 1/16/2015	Mon New Castle, NH Fri New Castle, NH	FH-15-01 Leg 1 OPR-A321-Gulf of Maine
DEP: 1/~~19~~20/2015 DB ARR: 1/30/2015	~~Mon~~ Tues DB New Castle, NH Fri New Castle, NH	FH-15-01 Leg 2 OPR-A321-Gulf of Maine
DEP: 2/3/2015 ARR: 2/13/2015	Mon New Castle, NH Fri New Castle, NH	FH-15-01 Leg 3 OPR-A321-Gulf of Maine

B. Staging and Destaging: N/A

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

A. Equipment and Capabilities provided by the ship (itemized)

1. Ship fully-outfitted with hydrographic survey equipment to support shallow and mid-water multibeam and/or side scan sonar survey operations.
2. Personnel to staff and operate the ship's survey equipment for 24 hr/day operations.
3. The Office of Coast Survey may staff the survey department with rotating physical scientists to efficiently manage the project's data processing

requirements.

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

Hydrographic Surveys Division shall 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. 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 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 Commanding Officer 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, 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.omao.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-A321-FH-15, Gulf of Maine

Hydrographic Survey Project Instructions

Project Name:	Gulf of Maine
Project Number:	OPR-A321-FH-15
Assigned Field Unit:	NOAA Ship *Ferdinand R. Hassler*
Assigned Processing Branch:	Atlantic Hydrographic Branch
Signed Date:	12/19/2014
Project Instructions Version:	Final
Planned Acquisition Time:	Start Date: 01/2015 End Date: 02/2015
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. This project will cover approximately 142 square nautical miles (SNM) of Navigationally Significant area, as identified in the 2012 NOAA Hydrographic Survey Priorities (NHSP) document. In addition, this area is heavily trafficked by commercial vessels most specifically commercial fishermen.
Supporting Documents:
Hydrography shall consist of Navigable Area Surveys in accordance with the following support documents. Data from surveys is intended to supersede all prior survey data in the common area.
NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April 2014
NOS Field Procedures Manual for Hydrographic Surveying (FPM), May 2014
Hydrographic Survey Technical Directive (HTD): 2014-1 Configuration Management

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

Registry Details:

General Locality: Gulf of Maine

Registry Number	*Priority*	*Sublocality*	*State or Territory*	*Scale*	*Estimated SNM*	*Instructions*
H12725	2	Fletcher Neck to Moody Beach	Maine	40000	50	
H12726	1	Taylor Reef to Woody Island	Maine	40000	92	

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.

Coverage Type: None Specified

Coverage Water Depth	*Coverage Required*
All waters in survey area	Either A) 200% SSS with concurrent set line spacing SBES or MBES with backscatter, or B) Complete MBES 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.

AWOIS Items:

AWOIS items have been provided for information only. Please refer to the GIS files located within the project folder for reference.

Maritime Boundary Points (MBPs):	
Investigate Maritime Boundary Points in accordance with section 3.5.6 of the FPM.	
Number of MBPs provided for Full Investigation: *(when safety permits, search inshore of the NALL line for these maritime boundary features)*	7
Number of MBPs provided for Information Only:	32

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.

Affected Raster Charts

Chart Number	*Scale*	*Edition Number*	*Edition Date*	*LNM Date*	*NM Date*
13286	80000	32	12/2013	10/14/2014	10/25/2014
13287	20000	13	06/2013	10/14/2014	10/25/2014
13288	80000	43	07/2010	10/14/2014	10/25/2014
13290	40000	39	07/2010	10/14/2014	10/25/2014
13292	20000	41	07/2014	10/14/2014	10/25/2014

Affected ENCs

ENC Name	*Scale*	*Edition*	*Update Application Date*	*Issue Date*	*Preliminary*
US5ME01M	20000	4	04/27/2014	06/04/2014	NO
US5ME02M	20000	7	09/18/2013	06/04/2014	NO
US5ME10M	20000	21	03/07/2013	07/11/2014	NO
US5ME12M	40000	15	03/11/2013	07/09/2014	NO
US4ME01M	80000	11	04/28/2014	06/03/2014	NO
US4ME03M	80000	12	03/11/2013	07/08/2014	NO

Coast Pilot:

Review and make recommendations for changes to the Coast Pilot excerpts provided with these instructions in accordance with section 7.4 of the HSSD. In addition, address the directed questions stated within the Coast Pilot Investigation Items. Submit both documents, or a report stating no changes are recommended, via email to coast.pilot@noaa.gov and ocs.ndb@noaa.gov, with a courtesy copy to the HSD Operations project planner and the appropriate Processing Branch.

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. 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. ***In addition please run 2 cross lines through the State of Maine Junction to the East of sheet H12725 prior to performing any work on the assigned H12725 and H12726. After completing, compare this data to the State of Maine data and let HSD Ops know the results.***

Registry Number	*Scale*	*Year*	*Platform*	*Relative Location*
H12697	40000	2014	NOAA Ship *Ferdinand R. Hassler*	S
H12698	40000	2014	NOAA Ship *Ferdinand R. Hassler*	S
W00288	0	2014	Gulf of Maine, Offshore of Cape Porpoise	E

Progress Reports:

Email monthly progress reports no later than 5 days from the end of the reported month, in accordance with section 5.2.2.2.1 of the FPM, to progress.sketches@noaa.gov with a copy to the chief of the assigned Processing Branch.

Survey Outlines:

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

Horizontal Control Requirements:

Comply with the horizontal control requirements in section 3 of the HSSD. In conjunction with this project, a real-time Precise Point Positioning (PPP) satellite-based corrector service will be integrated into the Ferdinand Hassler's acquisition system. This system supplants DGPS for survey line navigation and is being pursued as an alternative to the Inertially-Aided Post-Processed Kinematic (IAPPK), vertical positioning sufficient for Ellipsoidally Referenced Survey (ERS) final data. A supplementary deliverable to report on a comparison of the PPP and IAPPK solutions may be requested from the field unit. HSTP will provide support with both the system integration and data processing & analysis.

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

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

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

NWLON Gauges

Operating Water Level Station	*Station ID*
Portland	848150

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.

User Contacts

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

Northeast Navigation Manager
LT Meghan McGovern
NOAA
Phone: 401-782-3252
Fax: 401-782-3292
Email: Meghan.McGovern@noaa.gov
Obligation: Mandatory

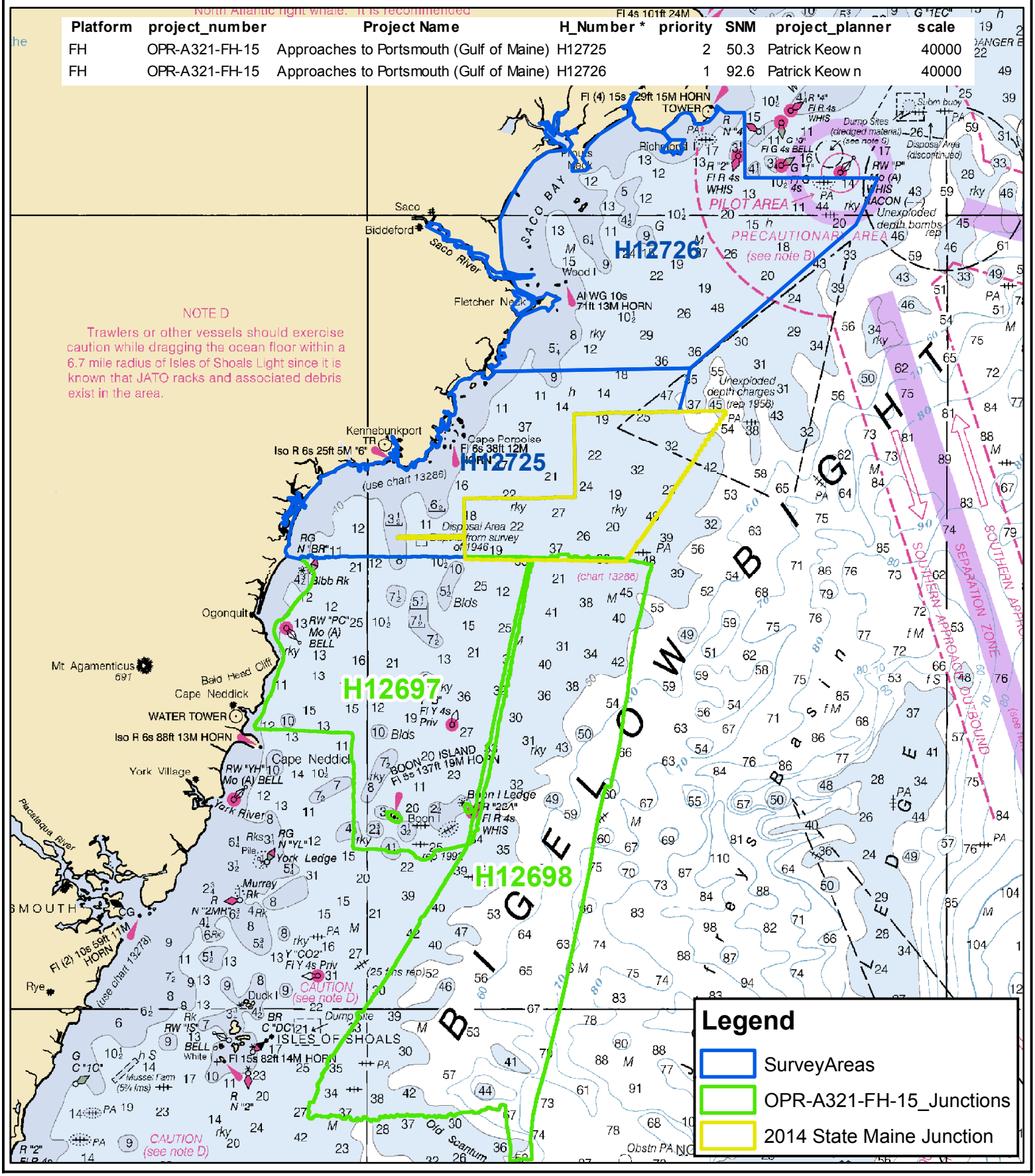
HSD/OPS Project Manager
Patrick Keown
NOAA
Phone: 301-713-2702 x 125
Fax:
Email: Patrick.Keown@noaa.gov
Obligation: Mandatory

HSD/OPS Project Manager
Megan Greenaway
NOAA
Phone: 603-862-2712
Fax:
Email: Megan.Greenaway@noaa.gov
Obligation: For Reference

OPR-A321-FH-14
Gulf of Maine
Sheet Layout
12/5/2014

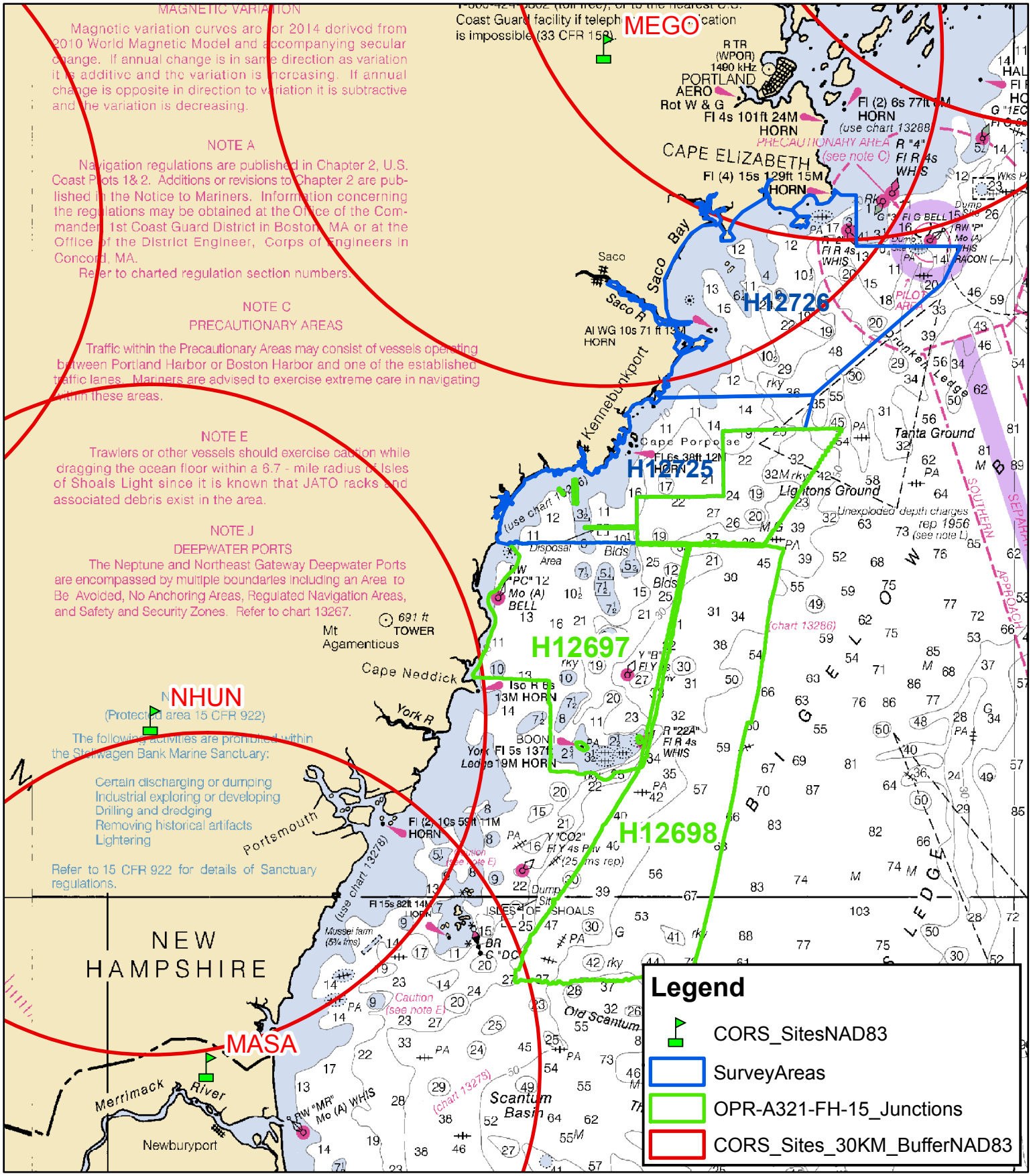
Total SNM - 142
Nav Significant - 142

Platform	project_number	Project Name	H_Number *	priority	SNM	project_planner	scale
FH	OPR-A321-FH-15	Approaches to Portsmouth (Gulf of Maine)	H12725	2	50.3	Patrick Keown	40000
FH	OPR-A321-FH-15	Approaches to Portsmouth (Gulf of Maine)	H12726	1	92.6	Patrick Keown	40000



OPR-A321-FH-14
Gulf of Maine
CORS Sites
12/5/2014

Total SNM - 66
Nav Significant - 66



Appendix I

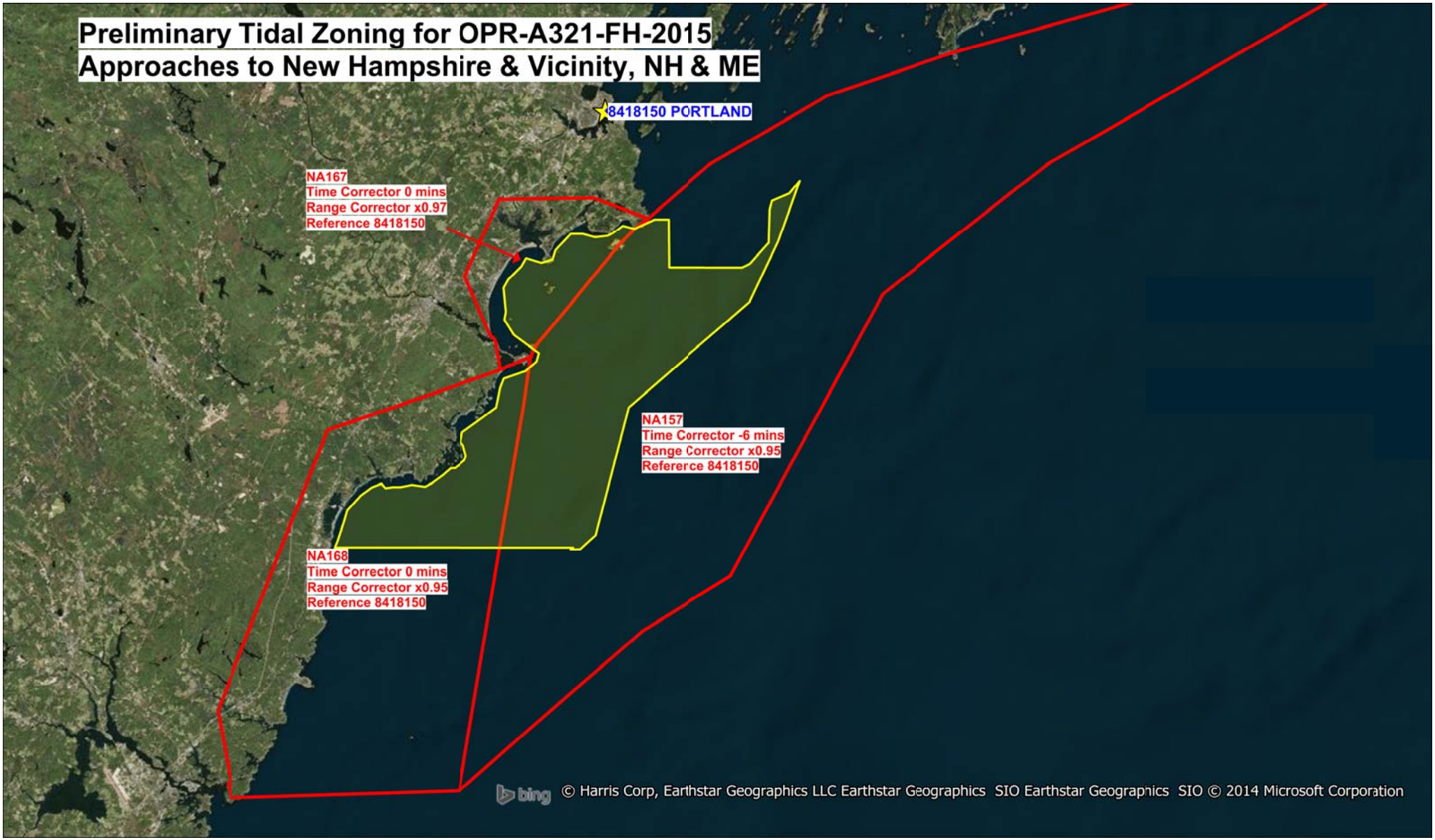
OPR-A321-FH-15 ERS Test & Evaluation Deliverables

1 DELIVERABLES

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

- Recommendation on vertical transformation technique for sounding reduction (VDatum ERS, tidal package, or a combination of the two).
- Crossline comparison of HIPS PVDL Processed Depths referenced to MLLW reduced via traditional tides versus reduced via VDatum (see Pydro/Post Acquisition Tools/Tool/CARIS/Compare Time Series Data).
- Difference surface and analysis of above crosslines.
- Comparison of Pydro-produced crossline metrics (i.e. means and standard deviations) to predicted uncertainties of the difference surfaces.

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


Preliminary Tidal Zoning for OPR-A321-FH-2015
Approaches to New Hampshire & Vicinity, NH & ME
8418150 PORTLAND
NA167
Time Corrector 0 mins
Range Corrector x0.97
Reference 8418150
NA157
Time Corrector -6 mins
Range Corrector x0.95
Refererce 8418150
NA168
Time Corrector 0 mins
Range Corrector x0.95
Reference 8418150
bing
© Harris Corp, Earthstar Geographics LLC Earthstar Geographics SIO Earthstar Geographics SIO © 2014 Microsoft Corporation

WATER LEVEL INSTRUCTIONS
OPR-A321-FH-2015 Approaches to New Hampshire and Vicinity, NH & ME
(10/03/2014 LH)

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, 2014, 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. 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.

1.2.2. The Hydro Hot List (HHL)

Please contact CO-OPS' Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and CO-OPS' 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(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©, etc)	Comment
Portland	8418150	Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of OPR-A321-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 "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.

1.3. Tide Reducer Stations

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

The NWLON station Portland, ME (8418150) 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 Portland, ME (8418150) 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 New Hampshire and Maine is 0.16 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 Portland, ME (8418150) is the reference station for preliminary tides for hydrography in the approaches to New Hampshire and Vicinity. The time and height correctors listed below for applicable zones should be applied to the preliminary data at Portland, ME (8418150) 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.

Zone	Time Corrector(mins)	Range Ratio	Predicted Reference Station
NA157	-6	x0.95	8418150
NA167	0	x0.97	8418150
NA168	0	x0.95	8418150

1.4.2. Polygon nodes and water level correctors referencing Portland, ME (8418150) are provided in CARIS® format denoted by a *.zdf extension file name.

NOTE: The tide corrector values referenced to Portland, ME (8418150) are provided in the zoning file "A321FH2015CORP" 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, Portland, ME (8418150), 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-A321-FH-2015, 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.