



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

Final Project Instruction


Date Submitted: September 20, 2013


Platform: NOAA Ship *Rainier*


Project Number: RA-13-03

Project Title: Strait of Juan De Fuca

Project Dates: October 1, 2013 to November 15, 2013

Prepared by:  Digitally signed by
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DN: cn=US, o=U.S. Government, ou=DoD, ou=PKI,
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Date: 2013.09.20 14:06:54 -0400 Dated: September 20, 2013
LCDR Marc S. Moser, NOAA
Chief, Operations Branch
Hydrographic Surveys Division

Approved by:  Date: 2013.09.20
14:12:08 -04'00' Dated: _____
Jeffrey Ferguson
Chief, Hydrographic Surveys Division
Office of Coast Survey

Approved by:  Dated: 9/27/13
F01 Captain Wade J. Blake, NOAA
Commanding Officer
Marine Operations Center – Pacific



I. Overview

A. Brief Summary and Project Period

B. Service Level Agreements

Of the 21 DAS scheduled for this project, 21 DAS are funded by OMAO. This project is estimated to exhibit a high Operational Tempo.

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

The project area is located in the Strait of Juan De Fuca, Washington. A map of the project area can be found with the detailed project instructions appended to these instructions.

D. Summary of Objectives

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

E. Participating Institutions

N/A

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
TBD						

G. Administrative

1. Points of Contacts:

Principle Investigator:

LCDR Marc S. Moser, NOAA
Chief, Operations Branch
Hydrographic Surveys Division
1315 East West Hwy, #6854
Silver Spring, MD 20910
(301) 713-2702 x112
Marc.S.Moser@noaa.gov

Project Coordinator:

Megan Greenaway
Physical Scientist, Operations Branch

Hydrographic Surveys Division
1315 East West Hwy
Silver Spring, MD 20910
(603)-862-2712
Megan.Greenaway@noaa.gov

Chief Scientist:

CDR Richard T. Brennan, NOAA
Commanding Officer, NOAA Ship *Rainier*
2002 SE Marine Science Drive
Newport, OR 97365
206-660-8747
CO.Rainier@noaa.gov

2. Diplomatic Clearances

N/A

3. Licenses and Permits

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

II. Operations

A. Project Itinerary

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

B. Staging and Destaging

N/A

C. Operations to be Conducted

Hydrographic survey operations per the appended project instructions using four survey launches up to 10 hr/day for data acquisition and project field support. Additionally, the ability to run concurrent 24 hr ship survey operations for short periods of time or for extended periods of time with reduced launch operations.

D. Dive Plan

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

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 Four fully outfitted and operational survey launches to support shallow water survey operations utilizing hull mounted side scan sonar, multibeam, and vertical beam sonar systems.
- 2 Ship fully outfitted with hydrographic survey equipment to support multibeam survey operations.
- 3 Personnel to staff and operate the ship's survey equipment for 24 hr/day operations and a minimum of 2 survey launches and equipment for up to 10 hr per day concurrently, at the discretion of the command to ensure the most efficient survey operations.
- 4 A fully staffed survey department 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

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

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

- A list of hazardous materials by name and anticipated quantity

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

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

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

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

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

B. Radioactive Isotopes

The Chief Scientist is responsible for complying with OMAO 0701-10 Radioactive Material aboard NOAA Ships. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

At least three months in advance of a domestic project and eight months in advance of a foreign project start date the shall submit required documentation to MOC-CO, including:

1. NOAA Form 57-07-02, Request to Use Radioactive Material aboard a NOAA Ship
2. Draft Project Instructions
3. Nuclear Regulatory Commission (NRC) Materials License (NRC Form 374) or a state license for each state the ship will operate in with RAM on board the ship.
4. Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters (NRC Form 241), if only state license(s) are submitted).
5. MSDS
6. Experiment or usage protocols, including spill cleanup procedures.

Scientific parties will follow responsibilities as outlined in the procedure, including requirements for storage and use, routine wipe tests, signage, and material disposal as outline in OMAO 0701-10.

All radioisotope work will be conducted by NRC or State licensed investigators only, and copies of these licenses shall be provided per OMAO 0701-10 at least three months prior to the start date of domestic projects and eight months in advance of foreign project start dates.

C. Inventory (itemized) of Radioactive Materials

V. Additional Projects

A. Supplementary (“Piggyback”) Projects

None

B. NOAA Fleet Ancillary Projects

None

VI. Disposition of Data and Reports

A. Data Responsibilities

B. Pre and Post Project Meeting

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

Post-Project Meeting: Upon completion of the project, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship’s officers, the Chief Scientist and members of the scientific party to review the project. Concerns regarding safety, efficiency, and suggestions for improvements for future projects should be discussed. Minutes of the post-project meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report

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

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

VII. Miscellaneous

A. Meals and Berthing

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

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

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

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

B. Medical Forms and Emergency Contacts

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

Contact information:

Regional Director of Health Services
Marine Operations Center – Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.Health-Services@noaa.gov

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

C. Shipboard Safety

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

D. Communications

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

E. IT Security

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

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

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

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

F. Foreign National Guests Access to OMAO Facilities and Platforms

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

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

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the e-mail generated by the FRNS granting approval for the foreign national guest's visit. This e-mail will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.
4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

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

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written NMAO approval and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FRNS e-mail granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the

vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.

Responsibilities of the Foreign National Sponsor:

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

Appendices

1. Primary Project Instructions: OPR-N305-RA-13 Strait of Juan De Fuca, WA

Hydrographic Survey Project Instructions

Project Name:	Strait of Juan De Fuca
Project Number:	OPR-N305-RA-13
Assigned Field Unit:	NOAA Ship <i>Rainier</i>
Assigned Processing Branch:	Pacific Hydrographic Branch
Signed Date:	09/20/2013
Project Instructions Version:	Final
Planned Acquisition Time:	Start Date: 10/2013 End Date: 11/2013
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 area is frequently transited by large commercial vessels transiting both north to Cherry Point and BC and south to the Ports of Seattle and Tacoma. There are three traffic lanes with shoals in between and the potential exists for shoal migration and/or deviation of vessel traffic due to high volume. The project will cover approximately 63 square nautical miles of critical areas as identified in the 2012 NOAA Hydrographic Survey Priorities (NHSP).
Supporting Documents:
Hydrography shall consist of Navigable Area Surveys in accordance with the following support documents. Data from surveys is intended to supersede all prior survey data in the common area.
NOS Hydrographic Surveys Specifications and Deliverables Manual (HSSD), April 2013
NOS Field Procedures Manual for Hydrographic Surveying (FPM), May 2013
Hydrographic Survey Technical Directive (HTD) 2013-4: Configuration Management

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

Registry Details:						
General Locality: Strait of Juan De Fuca, WA						
<i>Registry Number</i>	<i>Priority</i>	<i>Sublocality</i>	<i>State or Territory</i>	<i>Scale</i>	<i>Estimated SNM</i>	<i>Instructions</i>
H12626	1	Cattle Point to Mc Ardle Bay	Washington	12000	18	
H12625	2	Salmon Bank to Kanaka Bay	Washington	12000	20	
F00637	3	Friday Harbor	Washington	12000	0.3	
H12623	4	Protection Island and Vicinity	Washington	20000	24	
H12624	5	Jamestown to Rocky Point	Washington	20000	24	
F00638	6	Brown Island to Flat Point	Washington	12000	4	

Coverage & Limits:	
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: Complete Coverage	
Instructions:	
<i>Coverage Water Depth</i>	<i>Coverage Required</i>
4 meters to 8 meters water depth	25 m spaced Set Line Spacing SBES or MBES with Time Series Backscatter
Greater than 8 meters water depth	Multibeam with Time Series Backscatter

Assigned Tasks

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

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

Automated Wreck and Obstruction Information System (AWOIS) Items:	
Investigate AWOIS items in accordance with section 2.2.2.2 and 2.5.4.1 of the FPM.	
<i>Number of AWOIS items provided for Full Investigation:</i>	2
<i>Number of AWOIS items provided for Information Only:</i>	3

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

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

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

Affected Raster Charts					
<i>Chart Number</i>	<i>Scale</i>	<i>Edition Number</i>	<i>Edition Date</i>	<i>LNM Date</i>	<i>NM Date</i>
18429	25000	10	01/2007	07/23/2013	08/03/2013
18434	25000	7	04/2008	07/23/2013	07/27/2013
18465	80000	39	10/2011	10/04/2011	10/22/2011
18471	40000	11	12/2007	07/23/2013	08/03/2013
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>
US5WA32M	25000	12	05/27/2011	06/25/2013	NO
US5WA42M	25000	10	01/24/2013	01/24/2013	NO
US5WA16M	40000	13	07/23/2012	07/16/2013	NO
US4WA34M	80000	14	05/15/2012	06/07/2013	NO

Coast Pilot:

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

Dangers to Navigation (DTONs):

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

Junctions:

Junction with data from the surveys listed below. Refer to sections 2.2.2.3 and 4.5.2 of the FPM.

<i>Registry Number</i>	<i>Scale</i>	<i>Year</i>	<i>Platform</i>	<i>Relative Location</i>
H10828	10000	1999	Pacific Hydrographic Party	NE
H11039	20000	2002	NOAA Ship <i>Rainier</i>	SE
H11316	20000	2004	NOAA Ship <i>Rainier</i>	S
H11317	10000	2004	NOAA Ship <i>Rainier</i>	S
H11371	20000	2005	NOAA Ship <i>Rainier</i>	S
H11749	10000	2007	NOAA Ship <i>Rainier</i>	W

Progress Reports:

Email monthly progress reports 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. The submittal is due within 5 days after the end of each month.

Survey Outlines:

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

Horizontal Control Requirements:

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

Vertical Control Requirements:

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

Discrete Zoning

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

VDatum

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

VDatum Version	Geoid	Area	Area Version	Separation Uncertainty
3.2	2012	Washington - Juan de Fuca Strait	2	14.0 centimeters

NWLON Gauges

<i>Operating Water Level Station</i>	<i>Station ID</i>
Friday Harbor	9449880
Port Townsend	9444900

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).

NOAA Navigation Manager, Northwest Region

Crescent Moegling

NOAA

Phone: 206-526-6840

Fax: 206-526-4514

Email: crescent.moegling@noaa.gov

Obligation: Mandatory

Thirteenth U.S. Coast Guard District, Aids to Navigation Branch

Danny McReynolds

Thirteenth U.S. Coast Guard District

Phone: 206-220-7280

Fax:

Email: Danny.g.mcreynolds@uscg.mil

Obligation: Mandatory

Washington State Archaeologist

Rob Whitlam

DAHPP

Phone: 360-586-3080

Fax:

Email: Rob.Whitlam@dahp.wa.gov

Obligation: For Reference

President Puget Sound Pilots

Captain Jonathan Ward

Puget Sound Pilots

Phone: 206-728-6400

Fax:

Email: President@pspilots.org

Obligation: For Reference

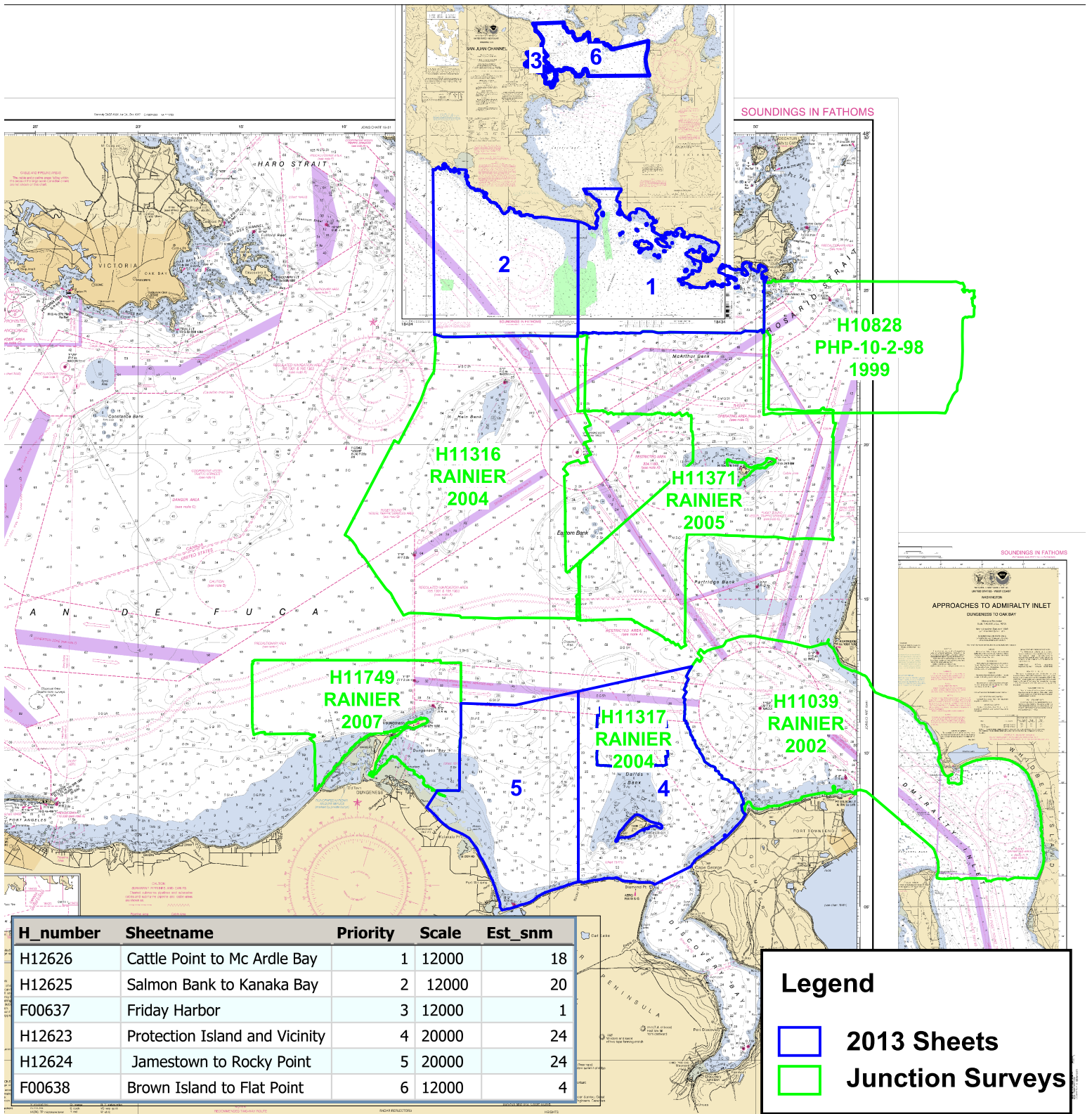
OPR-N305-RA-13

Strait of Juan De Fuca, WA

Sheet Layout

09/20/2013

Total SNM: 91
Critical Area SNM:63



Legend

- 2013 Sheets
- Junction Surveys

OPR-N305-RA-13 ERS Test & Evaluation Deliverables

1 DELIVERABLES

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

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

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

WATER LEVEL INSTRUCTIONS
OPR-N305-RA-2013 Strait of Juan de Fuca, WA
(07/11/2013 HY)

1.0. TIDES AND WATER LEVELS

1.1. Specifications

Tidal data acquisition, data processing, tidal datum computation and final tidal zoning shall be performed utilizing sound engineering and oceanographic practices as specified in National Ocean Service (NOS) Hydrographic Surveys Specifications and Deliverables (HSSD), dated April 2013, and OCS Field Procedures Manual (FPM), dated May 2013. Specifically reference Chapter 4 of the HSSD and Sections 1.5.8, 1.5.9, 2.4.3, and 3.4.2 of the FPM.

1.2. Vertical Datums

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

1.2.1. Water Level Data Acquisition Monitoring

The Commanding Officer (or Team Leader) and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The Commanding Officer (or Team Leader) is required to monitor the pertinent water level data via the CO-OPS Web site at <http://tidesandcurrents.noaa.gov/hydro.shtml>, email data transmissions through TIDEBOT, or through regular communications with CO-OPS/Engineering Division (ED) personnel before and during operations. During traditional non duty hours, the Commanding Officer/Team Leader may contact the Continuous Operational Real-Time Monitoring System (CORMS) watch stander who is available 24 hours/day - 7 days/week for assistance in assessing the status of applicable water level station operation. The CORMS watch stander may be contacted either by phone at 301-713-2540 or by Email: CORMS@noaa.gov. Problems or concerns regarding the acquisition of valid water level data identified by the Commanding Officer/Team Leader shall be communicated with CO-OPS/ED (Artara Johnson at 301-713-2900 x134, Email: nos.coops.oetteam@noaa.gov) to coordinate the appropriate course of action to be taken such as gauge repair and/or developing contingency plans for hydrographic survey operations. In addition, CO-OPS is required to coordinate with the Commanding Officer (or Team Leader) before interrupting the acquisition of water level data for the NWLON stations mentioned above for any reason during periods of hydrography.

1.2.2. The Hydro Hot List (HHL)

Please contact CO-OPS' Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov 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
Friday Harbor	9449880	Control	NWLON	
Port Townsend	9444900	Control	NWLON	

Table 1: All stations that need to be added to the HHL in support of OPR-N305-RA-2013

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

1.3. Tide Reducer Stations

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

The NWLON stations Friday Harbor (9449880) and Port Townsend (9444900), will provide water level reducers for this project. Therefore it is critical that they remain in operation during the survey. See Sections 1.1. and 1.2. concerning responsibilities.

No leveling is required at Friday Harbor (9449880) and Port Townsend (9444900) by NOAA's Rainier 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 project area is 0.23 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 stations at Friday Harbor (9449880) and Port Townsend (9444900) are the reference stations for preliminary tides for hydrography in the Strait of Juan de Fuca. The time and height correctors listed below for applicable zones should be applied to the preliminary data at Friday Harbor (9449880) and Port Townsend (9444900) during the acquisition and preliminary processing phases of this project. **Preliminary data may be retrieved in one month increments over the Internet from the CO-OPS SOAP web services at <http://opendap.co-ops.nos.noaa.gov/axis/text.html>.** The Commanding Officer (or Team Leader) must notify CO-OPS/ED personnel immediately of any problems concerning the preliminary tides. Preliminary data are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. For the time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the preliminary tides at the reference station. A positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the

reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

<u>Zone</u>	<u>Time Corrector(mins)</u>	<u>Range Ratio</u>	<u>Predicted Reference Station</u>
PS84	-72	x0.86	9449880
PS85	-72	x0.89	9449880
PS86	-78	x0.87	9449880
PS91	-36	x0.86	9444900
PS92	-30	x0.87	9444900
PS95	-30	x0.88	9444900
PS98	-66	x0.89	9449880
PS220	-48	x0.9	9449880
PS221	-48	x0.91	9449880
PS222	-48	x0.93	9449880
PS261	-66	x0.9	9449880
PS262	-60	x0.91	9449880
PS262A	-54	x0.93	9449880
PS263	-60	x0.91	9449880
PS264	-54	x0.93	9449880
PS265	-42	x0.93	9449880
PS266	-30	x0.94	9449880
PS310	-54	x0.89	9449880
PS311	-60	x0.91	9449880
PS312	-54	x0.93	9449880
PS313	-48	x0.95	9449880

1.4.2. Polygon nodes and water level corrections referencing Friday Harbor (9449880) and Port Townsend (9444900) are provided in CARIS[®] format denoted by a *.zdf extension file name.

NOTE: The tide corrector values referenced to Friday Harbor (9449880) and Port Townsend (9444900) are provided in the zoning file “N305RA2013CORP” 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 stations, Friday Harbor (9449880) and Port Townsend (9444900), 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-N305-RA-2013, submit a Pydro generated request for final tides, with times of hydrography abstract and mid/mif tracklines attached. Forward this request to Final.Tides@noaa.gov. Provide the project number, as well as a sheet number, in the subject line of the email.

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

1.5 TideBot and Fetchtides

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

Alternately, users may download preliminary and verified six minute water level time series data from the CO-OPS database via the Fetchtides application. Fetchtides provides a mechanism to store imported data locally and combine multiple days worth of data into one CARIS readable tide (.tid) file. Fetchtides is available for download at Hydrosoft Online (<https://inside.nos.noaa.gov/hydrosoft/hydrosoftware.html>). For more information, please see the Fetchtides User Manual in the FPM chapter 3 appendix.

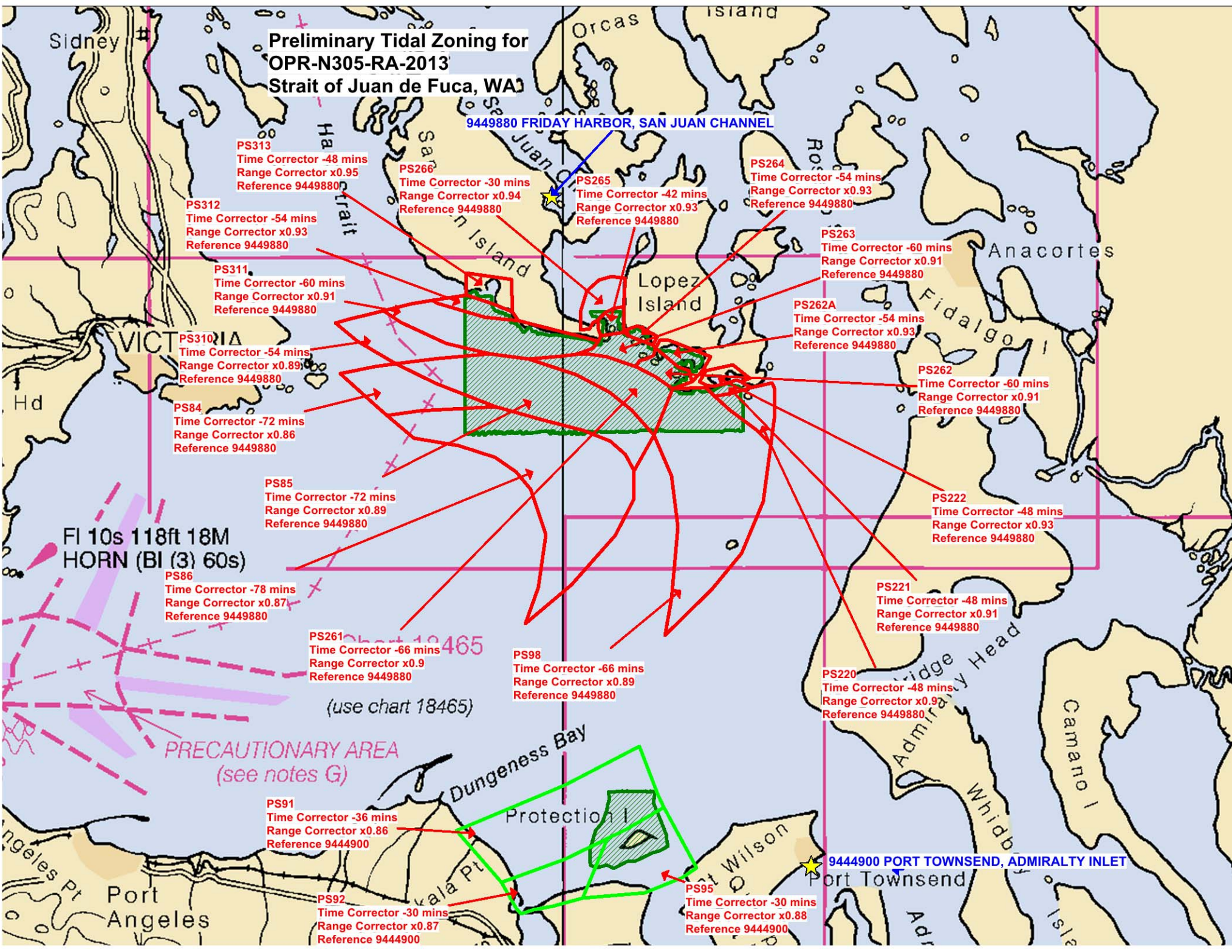
1.6 Water Level Records

This section is not applicable for this project.

Preliminary Tidal Zoning for OPR-N305-RA-2013 Strait of Juan de Fuca, WA

9449880 FRIDAY HARBOR, SAN JUAN CHANNEL

9444900 PORT TOWNSEND, ADMIRALTY INLET



PS313
Time Corrector -48 mins
Range Corrector x0.95
Reference 9449880

PS266
Time Corrector -30 mins
Range Corrector x0.94
Reference 9449880

PS265
Time Corrector -42 mins
Range Corrector x0.93
Reference 9449880

PS264
Time Corrector -54 mins
Range Corrector x0.93
Reference 9449880

PS312
Time Corrector -54 mins
Range Corrector x0.93
Reference 9449880

PS263
Time Corrector -60 mins
Range Corrector x0.91
Reference 9449880

PS311
Time Corrector -60 mins
Range Corrector x0.91
Reference 9449880

PS262A
Time Corrector -54 mins
Range Corrector x0.93
Reference 9449880

PS310
Time Corrector -54 mins
Range Corrector x0.89
Reference 9449880

PS262
Time Corrector -60 mins
Range Corrector x0.91
Reference 9449880

PS84
Time Corrector -72 mins
Range Corrector x0.86
Reference 9449880

PS222
Time Corrector -48 mins
Range Corrector x0.93
Reference 9449880

PS85
Time Corrector -72 mins
Range Corrector x0.89
Reference 9449880

PS221
Time Corrector -48 mins
Range Corrector x0.91
Reference 9449880

FI 10s 118ft 18M
HORN (BI (3) 60s)

PS86
Time Corrector -78 mins
Range Corrector x0.87
Reference 9449880

PS261
Time Corrector -66 mins
Range Corrector x0.9
Reference 9449880

PS98
Time Corrector -66 mins
Range Corrector x0.89
Reference 9449880

PS220
Time Corrector -48 mins
Range Corrector x0.9
Reference 9449880

PRECAUTIONARY AREA
(see notes G)

PS91
Time Corrector -36 mins
Range Corrector x0.86
Reference 9444900

PS92
Time Corrector -30 mins
Range Corrector x0.87
Reference 9444900

PS95
Time Corrector -30 mins
Range Corrector x0.88
Reference 9444900

Port Angeles

Dungeness Bay

Protection I

Port Townsend

Whidbey Inlet



UNITED STATES DEPARTMENT OF COMMERCE
 National Oceanic and Atmospheric Administration
 NOAA Marine and Aviation Operations
 Marine Operations Center - Pacific
 2002 SE Marine Science Drive
 Newport, OR 97365

26 September, 2013

MEMORANDUM FOR: *For* Commander Mike L. Hopkins, NOAA
 Acting Commanding Officer, Marine Operations Center - Pacific

Colin D. Little LCDR NOAA

Digitally signed by LITTLE.COLIN.D.1271718981
 DN: c=US, o=U.S. Government, ou=DoD, ou=PKI,
 ou=NOAA, cn=LITTLE.COLIN.D.1271718981
 Date: 2013.09.26 15:46:36 -0700

FROM: Lieutenant Commander Colin D. Little, NOAA
 Deputy Chief of Operations, Marine Operations Center - Pacific

SUBJECT: Amendment 1 to final project instructions, *Rainier*
 RA-13-03.

Please amend the subject project instructions dated 20 September 2013, as follows:
 (Please see included .pdf file)


 APPROVED

DISAPPROVED

LET'S DISCUSS



The following changes are respectfully requested to be made to RA-13-03 Project Instructions:

I Overview

B. Service Level Agreements

Of the 21 DAS scheduled for this project, 21 DAS are funded by OMAO. 1 FY13 DAS will be used to commence transit to Straits of Juan de Fuca. This DAS is allocated to the South Alaska Peninsula project. The 21 DAS allocated to Straits of Juan de Fuca project are FY14.

F. Personnel/Science Party

No scientific personnel will be embarking for this project.

II Operations

A. Project Itinerary

09/30/13 Depart Kodiak

10/11/13 Arrive Seattle

10/15/13 Depart Seattle

10/24/13 Arrive Newport