UNITED STATES DEPARTMENT OF COMMERCE



National Oceanic and Atmospheric Administration

NATIONAL OCEAN SERVICE

Office of Coast Survey

Silver Spring, Maryland 20910-3282

Project Instructions

Date Submitted:	April 21, 2014
Platform:	NOAA Ship Fairweather
Project Number:	FA-14-02
Project Title:	OPR-P335-FA-14 South Coast of Kodiak Island
Project Dates:	April 28, 2014 – September 19, 2014

LCDR Michael Gonsalves Chief, Operations Branch Hydrographic Surveys Division

Approved	by:	_
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_____ Dated: _____

for Jeffrey Ferguson Chief, Hydrographic Surveys Division Office of Coast Survey

Approved by: _

_____ Dated: _____

Captain Wade J. Blake, NOAA Commanding Officer Marine Operations Center – Pacific

I. Overview

A. Brief Summary and Project Period

This survey is scheduled to begin in April 2014 and end in September 2014. There will be a period in between that the ship will be working on other projects. 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 address navigation concerns of local maritime industry.

B. Days at Sea (DAS)

Of the 81 DAS scheduled for this project, 2 DAS are funded by an OMAO allocation, 77 DAS are funded by a OCS Line Office Allocation, and 2 DAS are funded by OAR Line Office Allocation. This project is estimated to exhibit a Medium Fuel Use Tempo, and a High Operational Tempo.

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

The project area is located adjacent to the Southern shores of Kodiak Island. A map of the detailed project area can be found with the detailed project instructions appended to these instructions.

- D. Summary of Objectives
 - 1. Hydrographic surveying to support safe navigation. Hydrographic data will be acquired and processed to update nautical charts and all dangers to navigation observed during survey operations will be identified and disseminated.
 - 2. Service the OAR Chatham Strait surface moorings. Refer to Appendix #2 Summary of Objectives.
 - 3. Service the OAR Chiniak mooring. Refer to Appendix #2 Summary of Objectives.
- E. Participating Institutions
 - 1. Pacific Marine Environmental Laboratory (PMEL/OAR)

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

Name (Last, First)	Title	Date	Date	Gender	Affiliation	Nationality
		Aboard	Disembark			
Argento, Adam	PS	4/28/2014	5/9/2014	М	NOAA	USA
Kist, Jennifer	Contractor	4/28/2014	5/9/2014	F	Contractor	USA
Naber, Daniel	Scientist	4/28/2014	5/12/2014	М	UAF	USA
Smith, Stephen	Scientist	4/28/2014	5/12/2014	М	PMEL	USA
Faulkes, Tyanne	PS	5/12/2014	5/23/2014	F	NOAA	USA
Keown, Patrick	PS	5/27/2014	6/6/2014	М	NOAA	USA
LT Nicholas Morgan	Lieutenant	5/27/2014	6/6/2014	М	NOAA	USA
Raymond, Annemieke	PS	6/11/2014	6/20/214	F	NOAA	USA
Barry, Cathleen	PS	6/11/2014	6/20/2014	F	NOAA	USA

Eisenberg, Janice	PS	6/11/2014	6/20/2014	F	NOAA	USA
Hart, Karen	Visitor	6/11/2014	6/20/2014	F	CARIS	USA
Henheffer, Mike	Visitor	6/11/2014	6/20/2014	М	CARIS	CAN
Tegeder, Joseph	PS	8/11/2014	9/19/2014	М	NOAA	USA
Ramsay, Jessica	Contractor	9/2/2014	9/24/2014	F	Contractor	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 Coordinator:

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

Chief Scientist:

CDR David Zezula, NOAA Commanding Officer, NOAA Ship *Fairweather* 1010 Stedmand Street Ketchikan, AK 99901 (541) 867-8703 CO.Fairweather@noaa.gov

2. Diplomatic Clearances

N/A

3. Licenses and Permits

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

II. Operations

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

A. Project Itinerary:

DEP:	4/28/2014	Mon	Anacortes, WA Underway	FA-14-02 Leg 1 Chatham Strait surface moorings
ARR:	5/9/2014	Fri	Kodiak, AK	OPR-P335 South Kodiak
DEP: ARR:	5/12/2014 5/23/2014	Mon Fri	Kodiak, AK Homer, AK	FA-14-02 Leg 2 OPR-P335 South Kodiak
DEP: ARR:	5/27/2014 6/6/2014	Tue Fri	Homer, AK Kodiak, AK	FA-14-02 Leg 3 OPR-P335 South Kodiak
DEP: ARR:	6/11/2014 6/20/2014	Wed Fri	Kodiak, AK Kodiak, AK	FA-14-02 Leg 4 OPR-P335 South Kodiak
DEP:	8/11/2014	Mon	Kodiak, AK	FA-14-02 Leg 5
ARR:	8/28/2014	Thu	Seward, AK	OPR-P335-FA-14 South Kodiak
DEP:	9/2/2014	Tue	Seward, AK	FA-14-02 Leg 6
	9/17/2014	Wed	Underway	OPR-P335-FA-14 South Kodiak
	9/18/2014	Thu	Underway	Transit
ARR:	9/19/2014	Fri	Ketchikan, AK	

- B. Staging and Destaging: Staging and Destaging of OAR/PMEL moorings is discussed in Appendix #2 – Staging and De-staging.
- C. Operations to be Conducted:

Hydrographic survey operations shall be conducted per the appended NOS/OCS/HSD/OPS project instructions using four survey launches up to 10 hr/day for

data acquisition and project field support. The Commanding Officer may elect to run concurrent 24-hr ship survey operations for extended periods of time.

On Leg 1 servicing of PMEL moorings are to be conducted as outlined in Appendix #1.

D. Dive Plan:

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

Dive operations are anticipated in support of the installation, servicing and removal of subordinate water level stations. Due to the dynamic schedule of survey operations, the specific dates of the dives are not known well in advance. All dives will be conducted by ship's personnel. All dive plans, will be prepared and submitted by ship's personnel as soon as reasonable, and in accordance with the requirements and regulations of the NOAA Diving Program

E. Applicable Restrictions

Conditions which preclude normal operations:

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

III. Equipment

- A. Equipment and Capabilities provided by the ship (itemized)
 - 1. 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 shallow and mid water multibeam and/or side scan sonar survey operations.
 - 3. Personnel and staff to 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/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.
 - 5. Equipment requirements for servicing PMEL/OAR moorings are discussed in Appendix #2 Equipment.
- B. Equipment and Capabilities provided by the scientists (itemized)

Hydrographic Surveys Division may provide Physical Scientists for hydrographic

data acquisition, processing, training and data quality assurance support during project survey operations. Additionally, shore-based technical support shall be provided for survey systems and data acquisition and processing software.

Equipment provided by PMEL/OAR is discussed in Appendix #2.

IV. Hazardous Materials

A. Policy and Compliance

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

Appendix #2 lists hazardous materials that will be brought aboard of the moorings project.

B. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

OAR/PMEL Chatham Strait surface moorings and Chiniak Moorings are to be serviced during Leg 1 of this project.

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. <u>Pre-Project Meeting</u>: 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 Principal Investigator in arranging this meeting.

- B. <u>Vessel Familiarization Meeting</u>: 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. <u>Post-Project Meeting</u>: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and short comings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.
- D. Project Evaluation Report

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. The form is available at http://www.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 ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

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

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, Revised: 02 JAN 2012) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf57-10-01.pdf.

All NHSQs submitted after March 1, 2014 must be accompanied by <u>NOAA Form (NF)</u> <u>57-10-02</u> - Tuberculosis Screening Document in compliance with <u>OMAO Policy 1008</u> (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 <u>Accellion Secure File Transfer</u> which requires the sender to setup an account. <u>Accellion's Web Users Guide</u> 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 – Pacific 2002 SE Marine Science Drive 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

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

D. Communications

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

E. IT Security

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

(1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.

- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

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

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

F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<u>http://deemedexports.noaa.gov</u>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) 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 Line Office Deemed Export point of contact to assist with the process.

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 Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this e-mail will be transmitted by FNRS.) 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.
- 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 Security Office.
- 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 approval from the Director of the Office of Marine and Aviation Operations 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 FNRS or Servicing Security Office 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.
- 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 Security Office.

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.
- 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 and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

VIII. Appendices

- 1. Primary Project Instructions: OPR-P335-FA-14, South Coast of Kodiak Island
- 2. OAR/PMEL Moorings objectives and requirements

Hydrographic Survey Project Instructions

Project Name:	South Coast of Kodiak Island
Project Number:	OPR-P335-FA-14
Assigned Field Unit:	NOAA Ship Fairweather
Assigned Processing Branch:	Pacific Hydrographic Branch
Signed Date:	04/21/2014
Project Instructions Version:	Final
Planned Acquisition Time:	Start Date: 05/2014 End Date: 09/2014
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. The project will include areas off the South Coast of Kodiak Island, AK. Assigned survey area will address 187 square nautical miles of which approximately 155 square nautical miles are Emerging Critical Area in accordance with the National Hydrographic Survey Priorities Edition 2012. Project area also addresses survey request number 030001, need for survey due to increasing number of passenger vessels, tour vessels, and large fishing fleet vessels.

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), April 2013

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 L	<i>General Locality:</i> Kodiak, AK								
Registry Number	Priority	Sublocality	State or Territory	Scale	Estimated SNM	Instructions			
H12680	1	Alitak Bay Approach to Humpy Cove	Alaska	10000	21				
H12681	2	West Aiaktalik Island and Vicinity	Alaska	40000	20				
H12682	3	East Aiaktalik Island and Vicinity	Alaska	40000	13				
H12683	4	Sitkinak Strait	Alaska	40000	24				
H12684	5	Offshore Geese Island	Alaska	40000	17				
H12685	6	Entrance to Geese Channel	Alaska	40000	30				
H12686	7	Twoheaded Island and Vicinity	Alaska	40000	27				
H12695	8	Offshore Twoheaded Island	Alaska	40000	35				

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: None Specified Instructions:

Coverage Water Depth	Coverage Required
Inshore limit to 8 meters water depth	25m spaced Set Line Spacing SBES or MBES with concurrent Backscatter
Greater than 8 meters water depth	Complete Multibeam with concurrent 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:

There are no AWOIS investigation requirements for this project.

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)

Number of MBPs provided for Information Only:

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.

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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	Ec Nu	dition Imber Edition		Date	LNM Date			NM Date	
16591	20000		9	9 01/2004		03/04	/2014		03/08/2014	
16592	80728		10	12/20	04	03/04	/2014		03/08/2014	
16590	81529		11	09/20	07	03/04	/04/2014		03/08/2014	
Affected ENCs										
ENC Name	Scale)	Edition		l Ap	Jpdate plication Date	Issue Da	ate	Preliminary	
US4AK5NM	80728	3	8		07/	/05/2012	09/20/20)12	NO	
US4AK5LM	81529	81529 7		7		/12/2010	10/12/20	010	NO	
US4AK5LE	81529)		7	01/	/20/2010	01/20/20	010	YES	
US4AKNE	80728	3	8	8	01/	/12/2010	01/12/20	010	YES	

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 dat	Junction with data from the surveys listed below. Refer to sections 2.2.2.3 and 4.5.2 of the FPM.									
Registry Number	Scale	Year	Platform	Relative Location						
H11664	10000	2007	TENIX LADS	E						
H11665	10000	2007	TENIX	N						
H11666	10000	2007	TENIX LADS	N						
H11667	10000	2007	TENIX LADS	N						
H11668	10000	2007	TENIX LADS	E						

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. HSD Ops has performed preliminary analysis of CORS Stations. Results are shown on the attached image following the Sheet Layout. Available CORS stations are shown in addition to a 30 km buffer surrounding the station.

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.

NWLON Gauges						
Operating Water Level Station			Station ID			
Alitak				9457804		
Kodiak Island				9457292		
	S	Subordina	te Gauge	S		
Operating Water Level Station	Station ID	Leveling Required		Installation Required	Pre-Existing Benchmarks	
Japanese	9457634	YES		YES	YES	
Aiaktalik Island	945AAAA	YE	S	YES	NO	

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. Some features may be 'Assigned' with attribute investigation requirement (invreq) stating "If rock is well-positioned, then updating of VALSOU is not required for this feature". These features were found by junctioning lidar. As is suggested by the investigation requirements, should the field unit determine these features are well-positioned (within 2mm at survey scale), then a field note of "Lidar rock noted" will be sufficient, and the field unit is not required to redetermine the height of these features (i.e. do not update the value of sounding - VALSOU). Refer to the CSF for more information. 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, AK

LT Timothy Smith NOAA Phone: 907-254-2842 Fax: Email: timothy.m.smith@noaa.gov Obligation: Mandatory

Seventeeth U.S. Coast Guard District, Commander (DPW)

Mr. Jim Helfinstine USCG Phone: 907-463-2268 Fax: Email: James.N.Helfinstine@uscg.mil Obligation: For Reference

U.S. Army Corps of Engineers Alaska District

James E. Adair USACE Phone: 907-753-5632 Fax: Email: James.E.Adair@usace.army.mil Obligation: For Reference

Alaska State Historical Preservation Officer (SHPO)

Judith E. Bittner ASHPO Phone: 907-269-8721 Fax: 907-269-8908 Email: judy.bittner@alaska.gov Obligation: For Reference

Southwest Alaska Pilots Association

Captain Jeff Pierce Phone: 907-235-8783 Fax: 907-235-6119 Email: swpilots@gci.net Obligation: For Reference

OPR-P335-FA-14 South Coast of Kodiak Island Sheet Layout 3/18/2014

Total SNM - 187 Emerging Critical Area SNM - 155



OPR-P335-FA-14 South Coast of Kodiak Island CORS Analysis 2/26/2014



WATER LEVEL INSTRUCTIONS OPR-P335-FA-2014 South Coast of Kodiak Island, AK (02/10/2014 LH)

1.0. TIDES AND WATER LEVELS

1.1. <u>Specifications</u>

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

1.2. Vertical Datums

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

1.2.1. Water Level Data Acquisition Monitoring

The Commanding Officer (or Team Leader) and the Center for Operational Oceanographic Products and Services (CO-OPS) are jointly responsible for ensuring that valid water level data are collected during periods of hydrography. The Commanding Officer (or Team Leader) is required to monitor the pertinent water level data via the CO-OPS Web site at http://tidesandcurrents.noaa.gov/hydro.shtml, or through regular communications with CO-OPS/Oceanographic Division (OD) personnel before and during operations. During traditional non duty hours, the Commanding Officer/Team Leader may contact the Continuous Operational Real-Time Monitoring System (CORMS) watch stander who is available 24 hours/day - 7 days/week for assistance in assessing the status of applicable water level station operation. The CORMS watch stander may be contacted either by phone at 301-713-2540 or by Email: CORMS@noaa.gov. 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/Team Leader before interrupting the acquisition of water level data for the NWLON gauges 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 <u>nos.coops.hpt@noaa.gov</u> and CO-OPS' Operational Engineering Team (OET) at <u>nos.coops.oetteam@noaa.gov</u> 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)

(<u>http://tidesandcurrents.noaa.gov/hydro</u>). 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	Type (e.g.	Comment
		Subordinate	NWLON,	
			PORTS©,	
			etc)	
Alitak	9457804	Control	NWLON	
Kodiak Island	9457292	Control	NWLON	
Japanese Bay	9457634	Subordinate		
Aiaktalik Island	945AAAA	Subordinate		

Table 1: All stations that need to be added to the HHL in support of P335-FA-2014

This project requires a subordinate installation. Therefore, please contact OET and HPT via email at least three business days before the subordinate stations are installed and send the site report listing the DCP and sensor serial numbers and GOES satellite information so that stations can be configured in the database and also can be added to HHL. For station removal, inform OET and HPT 3 business days prior to the actual removal of a station and confirm with OET upon final station removal.

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 not 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 <u>nos.coops.hpt@noaa.gov</u>, CORMS at <u>CORMS@noaa.gov</u>, 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 <u>nos.coops.dmat@noaa.gov</u> 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. <u>Tide Reducer Stations</u>

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

The NWLON stations Alitak, AK (9457804) and Kodiak Island, AK (9457292), 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 Alitak, AK (9457804) and Kodiak Island, AK (9457292) by NOAA's FAIRWEATHER 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

For this project, it will be necessary to install and continuously operate water level measurement systems (tide gauges) at one or more approved subordinate station locations. These subordinate stations identified for hydrography or photogrammetry are required to be installed to provide the tidal datums, water level reducers, refinement of final zoning, and harmonic constituents for predictions needed to meet NOS hydrographic specifications' accuracies as well as to support other NOAA objectives. The stations listed in Section 1.2. will provide control for datum computations at subordinate stations by using the NOS method of comparison of simultaneous observations.

A 30-day minimum of continuous data acquisition is required for all required subordinate station installations. If the data is collected for less than 30 days at the required subordinate stations, then according to the operating guidelines and business rules, CO-OPS may not publish tidal datums and bench marks sheet. This means CO-OPS may not be able to provide smooth tides (tide reducers) for less than 30 days of valid and good data. Since all data including water level data collected for hydrographic or photogrammetry surveys is used to derive products that support various NOS multipurpose applications, collection of minimum of 30-days of data is a crucial requirement.

For all subordinate stations, data must be collected throughout the entire survey period in specified areas for which they are applicable, from 4 hours before to 4 hours after the period of hydrography and not less than 30 continuous days. If the subordinate tide gauges are required to support the TCARI process, then all the gauges are required to collect the data for the entire period of the survey (in addition to the 30 day requirement) because the TCARI tidal grid is developed based upon all the gauges. This is necessary not only to facilitate the computation of an accurate datum reference as per NOS hydro graphic specifications (<u>http://www.nauticalcharts.noaa.gov/hsd/specs/specs.htm</u>), but also to ensure a functional data set that meets CO-OPS' multi-purpose products use and dissemination standards.

Additionally, supplemental and/or back-up stations may also be necessary based upon the complexity of the hydrodynamics and/or the severity of environmental conditions at the project area. If the Commanding Officer (or Team Leader) determines that additional or alternative water level stations are necessary to those required by CO-OPS, then he or she must coordinate with CO-OPS to obtain CO-OPS' approval and to define the timing and location of the additional or alternative subordinate station(s). For all subordinate stations that are approved and installed, minimum 30 continuous days of data must be collected throughout the entire survey period for which they are applicable. If the minimum 30-day data collection requirement is not met, CO-OPS may not be able to provide the tide reducers for the survey.

Since NOS uses the data and products derived from the operational NOS Hydrographic Surveys Program, installation of training gauges is discouraged during the operations. Also for training purposes, only Temporary Bench Marks (TBM) shall be installed and permanent bench marks

shall not be installed. CO-OPS will not publish water level datums on TBM and CO-OPS is not required to provide data processing for training gauges. Any gauges required for providing tide reducers either via TCARI or discret tidal zoning shall not be considered training gauges.

All additions and modifications to the original subordinate gauge installation requirements shall be documented via an amendment to the Project Instructions. Delivery of the amended Project Instructions to OCS's Hydrographic Surveys Division Operations Branch will signify CO-OPS' approval of the additions and/or modifications to the gauge installations requirements.

The following subordinate stations are required:

<u>Station Number</u> 9457634 *	<u>Station Name</u> Japanese Bay, AK	Latitude(N) 56° 57.6'	Longitude(W) 153° 41.2'
		Approximate Latitude (N)	Approximate Longitude (W)
945AAAA **	Aiaktalik Island, AK	56° 42.2'	154° 3.6'

* Historical water level station information has been provided for these stations.

** Conduct reconnaissance of the area to establish a suitable location for the placement of the water level gauge and provide the CO-OPS personnel listed in Section 1.2.1 with the proposed name and location. CO-OPS/ED will confirm this and then assign a station number. Do not install these subordinate gauges prior to receiving assigned station numbers. If it is necessary to change the location of a gauge by more than ¹/₄ mile from its assigned location and a station number has already been assigned, then contact CO-OPS/Engineering Division personnel prior to the installation of the gauge.

1.3.3. Tide Component Error Estimation

The estimated tidal error contribution to the total survey error budget in the vicinity of the south coast of Kodiak Island, AK can not be computed due to a lack of available water level time series data.

1.3.4. GOES Satellite Enabled Subordinate Stations

In the event that water level stations with Geostationary Operational Environmental Satellite (GOES) capability are utilized, information about the station is needed at CO-OPS so that the station(s) can be configured in CO-OPS' Data Management System (DMS) before GOES data transmission is started. A minimum of two weeks prior to initiating data transmission, please contact CO-OPS' Operational Engineering Team (OET) at nos.coops.oetteam@noaa.gov and CO-OPS' Hydrographic Planning Team (HPT) at nos.coops.hpt@noaa.gov and provide the station number, platform ID, transmit time and channel. In addition, FAX a copy or email a digital copy of the site report before beginning transmission.

Whenever a station number needs to be assigned, the field party should provide the latitude and longitude of the location where a tide gauge will be installed to the CO-OPS' Operational Engineering Team (OET) at <u>nos.coops.oetteam@noaa.gov</u> and CO-OPS' Hydrographic Planning Team (HPT) at <u>nos.coops.hpt@noaa.gov</u> at least 3 days before the installation. OET will assign a new tide station number and provide that promptly (within 1 business day) to the field party.

GOES data transmissions must use a message format identical to the format currently implemented in NOS' Next Generation Water Level Measurement System (NGWLMS). Refer to Section 1.1. for information on the NGWLMS data format. The document, NGWLMS GOES MESSAGE FORMATTING, found under the Publications option of the CO-OPS web site at http://tidesandcurrents.noaa.gov/ will give an explanation of the NGWLMS GOES message format.

The following <u>preliminary</u> satellite antenna pointing angles are provided for the stations in Sections 1.3.1. to facilitate GOES satellite transmission. Complete GOES information will be provided after the station location is finalized and reported to CO-OPS/Engineering Division (ED). If a suitable site for transmitting via satellite cannot be found within the required area, then a station should be established within the area and the data downloaded onto diskette/CD and forwarded to CO-OPS/ED. As a backup for all stations, data must be forwarded to CO-OPS/ED on diskette.

<u>STATION</u>	GOES West
9457634	ELEV. 23.1° AZIMUTH(T) 158.0°
945AAAA	ELEV. 23.3° AZIMUTH(T) 157.5°

1.3.5. Benchmark Recovery and GPS Requirements

Recover all historical bench marks at each required subordinate water level station. If a total of five benchmarks cannot be found, install the number of benchmarks necessary for the subordinate station to have the total five benchmarks. In the event of a new station with no historical marks, installation of a minimum of five bench marks will be required. Third-order levels from the tide staff or sensor to a minimum of five bench marks (including the primary bench mark) are required at the beginning and end of the survey period. See Section 1.1. for clarification of requirements.

1.3.5.1. Hand held GPS latitude and longitude positions on all historical subordinate water level station bench marks are required. In addition, one of the subordinate water level station bench marks shall be selected for high accuracy static differential GPS observations to obtain ties between the tidal datums and GPS derived datums. Refer to Section 1.1 for further details on the GPS positioning requirements.

1.3.6. Operate the water level stations listed in Section 1.3.1. of these Project Instructions for the following hydrographic area(s) or zone(s):

Station Number	Hydrographic Area(s) or Zone(s)
9457634	Zones SWA124, SWA124B, SWA124C, SWA124D, SWA139
945AAAA	Zones SS75, SS82, SS83, SS84, SS85, SS86, SS87, SS88, SWA140, SWA141 and SWA141A

1.4. Discrete Tidal Zoning

1.4.1. The water level stations at Alitak, AK (9457804) and Kodiak Island, AK (9457292) are the reference stations for preliminary tides for hydrography in South Coast of Kodiak Island. The time and height correctors listed below for applicable zones should be applied to the preliminary data at the stations 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** <u>http://opendap.co-ops.nos.noaa.gov/axis/text.html</u>. 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 in the applicable zone.

Time		Predicted
<u>Corrector(mins)</u>	<u>Ratio</u>	Reference Station
0	x0.93	9457804
0	x0.95	9457804
0	x0.97	9457804
0	x0.9	9457804
0	x0.88	9457804
-6	x0.88	9457804
-12	x0.86	9457804
-12	x0.84	9457804
-12	x0.84	9457804
-6	x0.86	9457804
-6	x0.86	9457804
+6	x0.99	9457804
-18	x1.02	9457292
-18	x1.01	9457292
-18	x0.98	9457292
-18	x0.95	9457292
-12	x1.05	9457292
-12	x1.08	9457292
-6	x1.11	9457292
-6	x1.13	9457292
	Time <u>Corrector(mins)</u> 0 0 0 0 -6 -12 -12 -12 -12 -6 -6 -6 +6 -18 -18 -18 -18 -18 -18 -18 -18 -18 -18 -18 -12 -12 -6 -72 -12 -12 -6 -6 -72 -12 -12 -6 -6 -72 -12 -6 -6 -78 -18 -18 -18 -18 -18 -12 -12 -6 -6 -6 -6 -78 -18 -18 -12 -12 -6 -6 -6 -6 -6 -6 -6 -6 -78 -18 -18 -12 -12 -6 -7 -72	Time Corrector(mins)Range Ratio0 $x0.93$ 0 $x0.93$ 0.95 0 0 $x0.95$ 0 $x0.97$ 0 0 $x0.9$ 0 $x0.9$ 0 0 $x0.88$ -6 -6 $x0.88$ -12 -12 $x0.84$ -6 -12 $x0.84$ -6 -6 $x0.86$ $+6$ -18 -18 $x1.02$ -18 -12 -18 -12 $x0.98$ -18 -12 -18 -12 $x0.98$ -18 -12 -18 -12 $x0.95$ -12 -12 -112 -12 $x1.08$ -6 -1.13

1.4.2. Polygon nodes and water level corrections referencing Alitak and Kodiak Island are provided in CARIS[®] format denoted by a *.zdf extension file name.

NOTE: The tide corrector values referenced to Alitak, AK (9457804) and Kodiak Island, AK (9457292) are provided in the zoning file "P335FA2014CORP" for this project and are in the <u>fourth</u> 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, Alitak, AK (9457804) and Kodiak Island, AK (9457292), 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 <u>http://opendap.co-ops.nos.noaa.gov/axis/text.html</u>.

1.4.3 Zoning Diagram(s)

Zoning diagrams, created in MapInfo[®] and Adobe PDF, are provided in both digital format to assist with the zoning in section 1.4.1.

1.4.4 Final Zoning

Upon completion of project OPR-P335-FA-2014, submit a Pydro generated request for final tides, with times of hydrography abstract and mid/mif tracklines attached. Forward this request to <u>Final.Tides@noaa.gov</u>. 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 processing branch for final processing.

1.5 <u>Fetchtides</u>

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 (<u>https://inside.nos.noaa.gov/hydrosoft/hydrosoftware.html</u>. For more information, please see the Fetchtides User Manual in the FPM chapter 3 appendix.

1.6 Water Level Records

Submit water level data, such as leveling records, field reports, and any other relevant data/reports, including the data downloaded onto diskette/CD as specified in the latest version of the NOS Specifications and Deliverables document.

1.6.1 Water level records should be forwarded to the following address:

NOAA/National Ocean Service/CO-OPS Chief, Engineering Division N/OPS1 - SSMC4, Station 6531 1305 East-West Highway Silver Spring, MD 20910

945 7634

3/24/66

SOUTHWEST ALASKA - 90

U. S. DEPARTMENT OF COMMERCE ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION COAST AND GEODETIC SURVEY

TIDAL BENCH MARKS

Jap Bay, Kodiak Island Lat. 56° 57'.6; Long. 153° 41'.2

BENCH MARK 1 (1931) is a standard disk, stamped "JAP BAY 1", set in large boulder lying about 165 feet northwest of first prominent sand point on west side of inner portion of Jap Bay. This boulder covers at extreme high water. Elevation: 8.11 feet above mean lower low water.

BENCH MARK 2 (1931) is a standard disk, stamped "JAP BAY 2", set in a 6-inch square by 24-inch concrete block imbedded into sand at about center of sand point on west side of inner portion of Jap Bay. Block is few inches above surface of sand and is in small clearing in front of native baraba. Elevation: 11.71 feet above mean lower low water.

BENCH MARK 3 (1931) is a standard disk, stamped "JAP BAY 3", set in large boulder lying about 330 feet southwest of point on west side of inner portion of Jap Bay. Elevation: 11.17 feet above mean lower low water.

Mean lower low water at Jap Bay, Kodiak Island is based on 54 high waters and 54 low waters July 28 - August 24, 1965, reduced to mean values. Elevations of other tide planes referred to this datum are as follows:

Feet

Mean Mean	higher high water high water	8.20 7.60
Mean	tide level	4.40
Mean	low water	1.20
Mean	lower low water	0.00

The estimated highest water level to the nearest half foot is 12½ feet above mean lower low water. The estimated lowest water level to the nearest half foot is 4 feet below mean lower low water.

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SOUTHWEST ALASKA

SUPERSENER U. S. COAST AND GEODETIC SURVEY

TIDAL BENCH MARKS

Jap Bay, Kodiak Island Lat. 56° 57'.6; Long. 153° 41'.2

BENCH MARK 1 (1931) is a standard disk, stamped "JAP BAY NO 1 1931", set in large boulder lying about 165 feet northwest of first prominent sand point on west side of inner portion of Jap Bay. This boulder covers at extreme high waters. Eleva-tion: 8.20 feet above mean lower low water.

BENCH MARK 2 (1931) is a standard disk, stamped "JAP BAY No 2 1931", set in a 6-inch square by 24-inch concrete block imbedded into sand at about center of sand point on west side of inner portion of Jap Bay. Block is few inches above surface of sand and is in small clearing in front of native baraba. Elevation: 11.84 feet above mean lower low water.

BENCH MARK 3 (1931) is a standard disk, stamped "jAP BAY NO 3 1931", set in large boulder lying about 330 feet southwest of point on west side of inner portion of Jap Bay. This boulder is about 4 feet above high water. Elevation: 11.27 feet above mean lower low water.

Mean lower low water at Jap Bay, Kodiak Island is based on automatic gage records for the month of July 1931, reduced to mean values. Elevations of other tide planes referred to this datum are as follows:

Feet

	The second s
Highest tide (estimated)	12.5
Mean higher high water	8,20
Mean high water	7.60
Half tide level	4.40
Mean low water	i.20
Mean lower low water	0.00
Lowest tide (estimated)	-4.0

SUPERSEDED

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EG-6-15-32 x a.c.

SUPERSEDED TIDAL BENCH MARKS

Jap Bay, Kodiak Island, Alaska.

The elevations of the following bench marks are based on automatic gauge records for the month of July, 1931, reduced to mean values by comparison with simultaneous observations at Seward.

HENCH MARK 1 (1931), Jap Bay, is a standard disk, stamped "Jap Bay No. 1/1931", cemented into a drill hole in a large boulder lying about 50 meters northwest of first prominent sand point on the west side of the inner portion of Jap Bay. This bowlder covers at extreme high waters. Elevation: 8.20 feet above mean lower low water; 3.80 feet above half tide level.

HENCH MARK 2 (1931), Jap Bay, is a standard disk, stamped "Jap Bay No. 2/1931", cemented into a 6" x 6" x 24" concrete block imbedded into the sand at about the center of the sand point on the west side of the inner portion of Jap Bay. The block is a few inches above the surface of the sand and is located in a small clearing in fron of a native baraba. Elevation: 11.84 feet above mean lower low water; 7.44 feet above half tide level.

BENCH MARK 3 (1931), Jap Bay, is a standard disk, stamped "Jap Bay No. 3/1931", cemented into a large bowlder lying about 100 meters south west of the point on the west side of the inner portion of Jap Bay. This bowlder is about 4 feet above high water. Elevation: 11.27 feet above mean lower low water; 6.87 feet above half tide level.

The elevations of tide planes at Jap Bay referred to mean lower low water are as follows:

Jeet

Highest tide	12.50
Higher high water	8.20
Mean high water	7.60
Half tide level	4.40
Mean low water	1.20
Lower low water	0,00
Lowest tide	-4.00

V

Form 490 DEPARTMENT OF COMMERCE COAST AND GEODETI TIDES: BENCH MARKS FOR PERMANENT FILE B. M. 1 at Jap Bay, Kodiak Island, Southwest Alaska Original and Supplementary Descriptions The bench mark is in a large bowlder lying about 50 meters northwest of first prominent sand point on the west side of the inner portion of Jap Bay. This bowlder covers at extreme high waters. July 1951 - Army Map Service (Higgins) Record as described. HE. MI CALL JULY LE 1965 STAMPINE "JAP BAY 1" Gauge Reading Chief of Party Date Remarks Established by Year Month Day Feet F. B. T. Siems 1931 June 22/Aug15 10.651 Recovered by 26 44.838 Electric Tape Gage 26 44.827 5.17 Ft. Below S.M. 1965 JULY HE MOCALL Bug 1 1 GP0

WI							
	Origina	al and Su	pplement	ary Descript	ions		
The elevation of this bench a standard disk, stamp concrete block imbedde on the west side of th above the surface of t a native baraba.	h mark is approped "Jap E ed into th he inner p the sand a	oximately ay No. e sand ortion nd is 1	2/1931 at abo of Jar ocated	feet above mea ", cement out the ce Bay. T in a sma	n tide level. ed into a (onter of the The block is ill clearing	The bend 5" x 6" x 3 sand pois a few in 5 in front	ch mark is 24" .nt iches ; of
H.E. Me CALL JULY 2	6 1965	STAN	n p1/V (U UA	РВАГГ		
<u></u>				11	W I.C.		
Chief of Party		Date		Gauge Reading	Plant pkj	Remarks	
Chief of Party Established by	Year	Date Month	Day	Gauge Reading Feet	2(11-6 106)/	Remarks	
Chief of Party Established by F. B. T. Siems	Year 1931	Date Month June 2	Day 2/Aug	Gauge Reading Feet 15 14.29	#(11-6 15K)/ 310+3	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by	Year 1931	Date Month June 2.	Day 2/Aug	Gauge Reading Feet 15 14.29	2(11-6 13K) 310+3	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL	Year 1931 1945	Date Month June 2. July July	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48,435 48,435	2(11-6 3/1/ 3/1-3 5.597 3.500	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL	Year 1931 1945 11	Date Month June 2. Juky Juky	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48,435 48,435 45,427	1 3 1 - C 3 1 - C 5, 5 9 7 3, 5 9 7 3, 5 9 5	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL	Year 1931 1965 11	Date Month June 2: July Jug	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48.435 48.435 48.437	2(11-6 10)(1) 3,10 × 3 (5, 5 97) 3, 5 9 7 3, 5 9 7	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL	Year 1931 1965 ''	Date Month June 2. July Jug	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48.435 48.435 48.427	2(11-6 10/1/ 3/1-5 5. 507 3. 600	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL	Year 1931 1965 11	Date Month June 2. July July July	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48,435 48,435 45,427	1 3 1 - C 3 1 - C 5, 5 9 7 3, 5 9 7 3, 5 9 5	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL	Year 1931 1965 11	Date Month June 2. July July	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48.435 45.427	2(11-6 10)(1) 3,107 3 (1,597 3,500	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL iii ''	Year 1931 1965 11	Date Month June 2. July Jug	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48.435 48.435 48.435	2(11-6 10)(1) 3,10+3 (5,597) 5,597 5,600	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.F. Me CALL iii ''	Year 1931 1965 11	Date Month June 2. July Jug	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48.435 48.435 48.435	2(11-6 10)(1) 3,10+3 (5,597) 3,500 3,500	Remarks	
Chief of Party Established by F. B. T. Siems Recovered by H.G. Me CALL i1 ''	Year 1931 1945 11	Date Month June 2: July Jung	Day 2/Aug 26 26	Gauge Reading Feet 15 14.29 48.435 48.435 48.427	2(11-6 10)(1) 3, 3, 33 (5, 3, 97) 3, 300	Remarks	

G P O 11-5224

Form 490 DEPARTMENT OF GOMMERCE COAST AND GEODET IRVEY TIDES: BENCH MARKS FOR PERMANENT FILE B. M. 3 at Jap Bay, Kodiak Island, Southwest Alaska Original and Supplementary Descriptions The elevation of this bench mark is approximately feet above mean tide level. The bench mark is a standard disk, stamped "Jap Bay No. 3/1931", cemented into a large bowlder lying about 100 meters south west of the point on the west side of the inner portion of Jap Bay. This bowlder is about 4 feet above high water. July 1951 - Army Map Service (Hegquis) Recovered as described. HE. MCCALL JULYIC 1945 STAMPINC " JAP BAY 3 1 Gauge Reading Remarks Chief of Party Date 14 611 Established by Year Month Day Feet 1931 June 22/Aug 15 13.719 3, 200 F. B. T. Siems Recovered by 1965 JULY 26 47.891 3.15 X3 1. Buy 26 47.885 3.058 H.E. MICAN n 11 GPÒ 11-522

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2 SKETCH SHOWING LOCATIONS F DESCRIPTION NAME TIDE STATION AND BENCH MAR Date of installation MANNEY) (₂, 1 JAP. BA KODIAK ISLAN MILLING TOOM SAND Fortable of fixed of ----Q GAGE 2. Established hy Inngedreet Vitrified BC N. ---ALASKA Date Longth of graduated staff ... _____ v.f.b Recovery £ Burdinonomeor ------Stait ... JULY 26 96 ../1 Togs por 7**10**1 BM -Z 0 With Collins. 20 Tree of mark SUPER TRAIN WOISC BLUSH **B**erge Top of staff si ALL TOON TANAN WOISU SOST Zero of thest COMMENTARY ACTO. Depth of Water 4.5 How stamped. 2 TEEN DELOW WAATT HOOT. Toyot 16W 8.2 motod 1991 .100 THER?? a colconi. I ocation and defailed description as .a Tron F TUTUT 10061 1184 woiga 1991 mon 3 Carta and a start BM AL CONTRACTORY 4.5 N. 24 - <u>i</u> -•••••• TEN NAVANCO \mathcal{N} 6000 F001 descention of the of the second ROUL CUFF **************** -----JAP BAY ------------<u>.........................</u> ----****** 1012121212 16-21115-21 10-01000-0



Appendix #2 OAR PMEL Instructions

I. Overview

- A. NOAA Ship *Fairweather* will participate in the recovery and deployment of 2 CO2 surface buoy moorings.
- B. Days at Sea (DAS) Addressed in Primary Project Instruction.
- C. Operating Area (include optional map/figure showing op area)

Southeastern Gulf of Alaska (Chatham Strait near Port Conclusion) and Chiniak Bay near Kodiak.

D. Summary of Objectives:

Project Overview: The *Fairweather* will be conducting a NOS hydrographic survey unrelated to this project April 7th through May 12th and beyond. This mooring project is to be completed in conjunction with the hydrographic survey.

PMEL will load the S.E. Alaska mooring equipment when the Fairweather is tied up at Federal Center South in Seattle between the dates of March 28th and April 7th. Two scientific staff will embark the vessel in Anacortes, WA on April 28th. As the *Fairweather* steams north they will stop at the Port Conclusion CO2 mooring site for a buoy deployment and recovery. From the Port Conclusion site the *Fairweather* will steam to Juneau to offload the buoy before continuing to Kodiak and the Chiniak Bay CO2 mooring site with an expected arrival date of 9 May. The existing CO2 surface mooring in Chiniak Bay will be recovered on the way into Kodiak. With the mooring aboard the ship will tie up in Kodiak 9 May to 12 May. During that period the recovered Chiniak Bay mooring will be offloaded and the replacement Chiniak mooring will be loaded onto the vessel. Upon departure from Kodiak on May 12th, the Chiniak Bay mooring will be deployed and the science staff will disembark the vessel for Kodiak via the ship's launch.

Final decisions on station locations will be determined by the chief scientist in consultation with the Captain and officers of the *Fairweather* as weather and shipboard circumstances permit.

In support of NOAA's Ocean Acidification Program, NOAA will recover and deploy two surface instrumentation buoys to:

- 1) Characterize ocean acidification (OA) conditions on the U. S. in S.E. Alaska and northern Gulf of Alaska.
- 2) Conduct inter-calibration measurements near the OA observing assets in the study area, allowing inter-calibration of these autonomous assets with high-quality, ship-based measurements;

- 3) Provide calibration data needed to develop predictive models for aragonite saturation state, pH, and other important OA indicators, based on widely measured parameters such as salinity, temperature, and oxygen concentration;
- 4) Provide quantitative assessment of phytoplankton, zooplankton, and harmful algal bloom activity in conjunction with OA measurements; and
- 5) Provide scientific information on OA conditions and trends for resource management and decision support.
- E. Participating Institutions:
 - NOAA Pacific Marine Environmental Laboratory (PMEL) 7600 Sand Point Way N.E., Seattle, Washington 98115-6439
 - University of Alaska Fairbanks (UAF)
 - NOAA Ocean Acidification Program
 - NOAA National Ocean Data Center (NODC)
- F. Personnel/Science Party:

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Naber, Daniel	scientist	28 Apr	12 May	male	UAF	USA
Smith, Stephen A.	scientist	28 Apr	12 May	male	PMEL	USA

- G. Administrative
 - 1. Points of Contacts

Chief Scientists: Dr. Jeremy Mathis NOAA PMEL 7600 Sand Point Way NE, Bldg 3 Seattle, WA 98115 206-526-4809 jeremy. Mathis @noaa.gov Fax: (206) 526-6744

CDR Tom Peltzer NOAA PMEL Seattle, WA 98115 (206) 526-4485, pmel.dir.ops@noaa.gov

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

None Required.

II. Operations

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

A. Project Itinerary:

- 28 March April 6, 2014. Load Port Conclusion mooring aboard vessel.
- 7 April 28 April, Conduct hydrographic survey.
- 28 April Embark 2 science party members in Anacortes, WA.
- 28 April 9 May, transit north stopping at the Port Conclusion mooring site for mooring recovery and deployment. Steam to Juneau to offload the buoy and then proceed to Chiniak Bay location for a mooring recovery. Transit to Kodiak to tie up.
- May 9 May 11, Tied up at Kodiak City pier. Off load mooring and load the Chiniak Bay replacement mooring.
- 12 May- Deploy the Chiniak Bay surface mooring, then disembark science party members via ship's launch.
- B. Staging and De-staging

Staging: The NOAA Ship *Fairweather* will arrive at Federal Center South in Seattle March 28th and will remain alongside until April 7th. During this time the Port Conclusion surface mooring will be assembled and loaded aboard the vessel. The anchor is 5000lbs, chain box 4000lbs and buoy at 2500lbs. If the *Fairweather* crane is unable to load these items at the Fed. Center South Pier, PMEL will arrange for a contract crane to complete the load. Additionally PMEL will arrange for a crane in Juneau to offload the Port Conclusion mooring.

During the May 9 – May 12 Kodiak AK inport, the recovered Chiniak mooring will be offloaded and the new mooring will be loaded aboard the vessel (buoy, chain, anchor) Weights are the same as those listed above and arrangements for a contract crane to complete the loading/offloading in Kodiak will be made by PMEL.

C. Operations to be Conducted:

After departing Anacortes, WA on Monday, April 28th, 2014, the ship will steam for the mooring site in Chatham Strait near Port Conclusion. The ship will deploy a replacement mooring and recover the existing mooring. The ship will then

transit to Juneau to offload the buoy before proceeding to Kodiak, arriving Friday, May 9th, 2014. On the way to the pier, the ship will recover a mooring in Chiniak Bay. When the ship departs Kodiak on Monday, May 12th, 2014, it will deploy a new mooring in Chiniak Bay. The mooring technicians will be ferried back to Kodiak by the ship's launch and will proceed on its next project at the conclusion of the personnel offload.

III. Equipment

- A. Equipment and Capabilities provided by the ship
 - Navigational systems including high-resolution GPS.
 - Refrigerator space (10 cubic feet) for seawater samples (no chemicals).
 - Freezer space (10 cubic feet) for seawater samples (no chemicals).
 - Minimum of 2 computers with internet and e-mail access
 - Ship's crane for loading and/or deploying
- B. Equipment and Capabilities provided by the scientists
 - Surface moorings

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 quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and chemical safety and spill response procedures. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 days before departure:

- List of chemicals by name with anticipated quantity
- List of spill response materials, including neutralizing agents, buffers, and absorbents

- Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories
- For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship's Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.

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
- Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory showing that all chemicals were 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 hazardous materials is not permitted aboard NOAA ships.

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Sulfuric Acid with not more than 51% acid	1L	Clean up with Sodium Bicarbonate	Dan Naber	А
Sodium Hydroxide	1L	Neutralize with available acid	Dan Naber	В
Liquid Mercury	0.25L	See 'M' below	Dan Naber	М
Lithium D Cell Batteries	9	In seacat instrument package on mooring	Dan Naber	N/A

B. Inventory

SPILL CONTROL

A: ACID

- Wear appropriate protective equipment and clothing during clean-up. Keep upwind. Keep out of low areas.
- Ventilate closed spaces before entering them.
- Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible.
- **Large Spills**: Dike far ahead of spill for later disposal. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal.

- **Small Spills**: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
- Never return spills in original containers for re-use.
- Neutralize spill area and washings with soda ash or lime. Collect in a noncombustible container for prompt disposal.
- J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

B: Base

- Use proper PPE.
- Ventilate area.
- Neutralize with dilute acid such as HCl if possible.
- Absorb with cat litter or vermiculite.
- Vacuum or sweep up material and place into suitable disposal container.
- Do not breathe dust.
- Do not get water on spilled substances.

M: Mercury

• Spills: Pick up and place in a suitable container for reclamation or disposal in a method that does not generate dust. Sprinkle area with sulfur or calcium polysulfide to suppress mercury. Use Mercury Spill Kit if need be.

Inventory of Spill	Inventory of Spill Kit supplies:			
Product Name	Amount	Chemicals it is		

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Mercury eater	1.8kg	mercuric Chloride/Mercury	.5L
Goggles	1 pair	All	N/A
Plastic Bags	5	All – for used absorbents	Varies
Final Wipes	50	mercuric Chloride/Mercury	N/A
Kolorsafe Base	2.5 lbs	Bases	1L
Latex Gloves	2 pair	All	N/A
Broom	1 ea	All	N/A
Baking soda	2.5lbs	Acids	1L

C. 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

A. Data Responsibilities

At the end of the Project, the Chief Survey Technician will provide the Chief Scientist with copies of data from the ship's SCS system, barometer measurements, log sheets, TSG data, rain sensor data, wind speed and direction data, ship's navigation log data, speed logs, winch system, ADCP, Fluorometer data, ADCP data, and any other logged scientific data. The number of copies of each data set will be worked out between the Chief Scientist and Chief Survey Technician.

VII. Meetings, Vessel Familiarization, and Project Evaluations

As stated in the primary project instruction section.

VIII. Miscellaneous

As stated in the primary project instruction section.

VIII. Appendices

Appendix 2A:

Port Conclusion Currently Deployed Mooring Site:

56.2645 N 134.669 W Approx. depth 50 meters. The replacement Port Conclusion mooring will be placed at a depth of approximately 100 meters so it will not be deployed where the existing mooring is recovered. A short survey of the area will be required to locate the appropriate depth for the new mooring but based on the results of a survey the Oscar Dyson completed in the area last year you will have no problem finding depths in the 100 to 110 meter range.

The Chiniak Bay Currently Deployed Mooring Site:

57.6967N 152.3133W; approximate depth is 143 meters. This buoy can be found on NOAA Chart 16595 and is labeled "NOAA-UAF"

The Chiniak Bay replacement mooring will be deployed as close as possible to the location of the currently deployed mooring. FYI, PMEL has two subsurface moorings currently deployed in Chiniak Bay. One is at location 57 43.235 N and 152 17.5007 W. The second subsurface mooring is located at 57 43.338 N and 152 17.637 W.