



Pacific Marine Environmental Laboratory

Final Project Instructions

Date Submitted: August 20, 2013

Platform: NOAA Ship *Oscar Dyson*

Project Number: DY-13-09-Leg 2

Project Title: Transit and Eco-FOCI Mooring Recoveries and Deployments

Project Dates: October 21, 2013 – October 29, 2013

Prepared by: *FOR David J. WDE/NOAA* Dated: 9/30/13
Chief Scientist Name: William Floering
EcoFOCI/ PMEL

Approved by: *Phyllis J. Stabeno* Dated: 9/30/13
Program Director: Phyllis J. Stabeno
Director
PMEL/EcoFOCI

Approved by: *Chris Sabine* Dated: 9/30/13
Lab Director: Chris Sabine
Director
Pacific Marine Environmental Laboratory

Approved by: _____ Dated: _____
Captain Wade J. Blake, NOAA
Commanding Officer
Marine Operations Center - Pacific

I. Overview

A. To recover and deploy several surface and subsurface moorings, and to conduct CTD casts during the Kodiak to Seattle transit October 21 to October 29, 2013. We will deploy and recover one surface and one subsurface in Chiniak Bay near Kodiak, AK. We will then recover eight subsurface moorings in the Cross Sound area west of Juneau. Finally, we will then recover and redeploy one surface mooring near Little Port Walter in Chatham Strait.

B. Service Level Agreements

Of the 9 DAS scheduled for this project, 3 DAS are funded by the program and 6 DAS are funded by OMAO for transit to CONUS. This project is estimated to exhibit a Medium Operations Tempo.

C. Operating Area: Transit from Kodiak to TBA, mooring work near Chiniak, AK and in S.E. Alaska. See attached map for mooring locations.

D. Summary of Objectives: To recover 2 and deploy 2 surface moorings and one subsurface mooring, plus recover 8 additional subsurface moorings between S.E. Alaska and Kodiak. A CTD cast will be completed at each mooring site.

E. Participating Institutions: NOAA/PMEL/FOCI, NOAA/PMEL/ CO2/ University of Alaska Fairbanks.

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Floering, William	Field Ops	10/21/13	10/29/13	M	NOAA	U.S.A.
Dan Naber	Technician	10/21/13	10/29/13	M	UAF	U.S.A.

G. Administrative

1. Points of Contacts:
 william.floering@noaa.gov 206-526-6480
 Alternate: phyllis.stabeno@noaa.gov 206-526-6453
2. Diplomatic Clearances: None required
3. Licenses and Permits: None required

II. Operations

- A. Project Itinerary: Science Party will board the vessel in Kodiak depending on the schedule. Mooring deployments, recoveries and CTD casts will be conducted along the transit from Kodiak, AK to TBD.
- B. Staging and De-staging: All mooring and science equipment will be loaded aboard the vessel during the inport in Kodiak. Upon completion of the project all equipment and personnel will disembark the vessel in Seattle. The ships schedule will be:

	DATE	PORT
ARR	10/11/13	Kodiak, AK
DEP	10/21/13	Kodiak, AK
ARR	10/29/13	Seattle

- C. Operations to be Conducted: Mooring deployments at each of the following locations:

Mooring	Lat (°N)	Lon(°W)	Depth (m)
13CB-1A (Surface Mooring)	57.7205	152.2913	195
13CBM-1A	57.6967	152.3138	145
13IP-1A	58.2501	136.9428	150
13IPP-2A	58.2501	136.9428	315
13CSP-1A	58.1485	136.5828	296
13CSP-2A	58.1740	136.6178	91
13CSP-3A	58.1189	136.5554	310
13CS-13A	57.8214	136.6694	131
13CS-12A	57.4017	136.1785	128
13CSP-11A	56.3958	135.1408	119
Port Walter Surface Mooring	56.0386	134.6550	

A CTD cast (with 9 Niskin bottles on the rosette) will be completed before or following each mooring deployment.

- D. Dive Plan: N/A
- E. Applicable Restrictions

Conditions which preclude normal operations: Operations are weather dependent.

III. Equipment:

Below is the equipment with weights that will be loaded in Kodiak:

2 surface mooring float, tower and bridle: 2100 lbs each

2 anchor for the surface mooring: 4500 lbs each

1 anchor for ADCP mooring: 1600 lbs

1 300 khz ADCP and mooring floats : 800 lbs

Chain for the moorings: 5000 lbs each

There will be an additional 1500 lbs of crates that include tools, instruments, etc.

Equipment to be recovered during the transit includes:

2 surface mooring float, tower and bridle: 2100 lbs each

Chain for the surface moorings: 4000 lbs each

3 75 khz ADCP mooring floats: 1200 lbs each

4 300 khz ADCP mooring floats : 800 lbs each

2 instrumentation moorings, chain and instruments: 2800 lbs each

Metal floats: 1600 lbs

11 acoustic releases at 125 lbs each

- A. Equipment and Capabilities provided by the ship: A stern platform over trawl-way, net reel, and Gilson winch for mooring deployments. CTD with dual temperature and conductivity sensors and 11 Niskin bottles, depth sounder, SCS data logging, and GPS location and backup system.
- B. Equipment and Capabilities provided by the scientists: For the CTD-Duel Oxygen sensors, PAR and fluorometer. All the instruments and associated equipment for mooring deployments.

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.

Common Name of Material	Qty	Notes	Trained Individual	Spill contr
Lithium 9v Batteries	25	In SeaBird and Wetlabs Instruments	Wm. Floering	N/A
Lithium AA Batteries	12	In SeaBird Microcats Saft LS14500	Wm. Floering	N/A
Lithium D Cell Batteries	40	In ISUS instrument	Wm. Floering	N/A
Sodium Thiosulfate	1L of 0.16M		Dan Naber	ST
Potassium Iodate	1L of 0.0003M	Oxidizing, keep away from combustibles	Dan Naber	PI
Sulfuric Acid	0.5L of 5M	Clean up with Sodium Bicarbonate	Dan Naber	A
Sodium Hydroxide	0.5L of 8M	Neutralize with available acid	Dan Naber	B
Manganese Chloride	1L of 3M	Sweep up in case of spill	Dan Naber	MC
Mercuric Chloride	0.1L 10% Soln	See 'M' below	Dan Naber	M
Manganese Chloride	1L of 3M	For use with Oxygen titrations	Wm Floering	
Sodium Iodide/NaOH Soln	1L of 8M	For use with Oxygen titrations	Wm Floering	B
Sulfuric Acid	1L of 5M	For use with Oxygen titrations	Wm Floering	A
Sodium Thiosulfate	1L of 0.11M	For use with Oxygen titrations	Wm Floering	ST
Potassium Iodate	1L of 0.00167M	For use with Oxygen titrations	Wm Floering	PI

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 non-combustible 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 breath 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.

F: Formalin/Formaldehyde

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.
- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as saw dust.

PI:Potassium Iodate

- Avoid Contact with combustibles (wood, paper, clothing ...).
- Keep substance damp with water spray.
- Vacuum or sweep up material and place into suitable disposable container (plastic bag).

MC:Mercuric Chloride

- Vacuum or sweep up material and place into suitable disposable container (plastic bag).
- Wear SCBA or other appropriate breathing apparatus and PPE.
- Avoid breathing dust.
- Keep in closed container for disposal.

ST: Sodium Thiosulfate

- Ventilate area of leak or spill.
- Wear protective gloves and clean body-covering
- Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.
- Recover liquid or particulate in 5 gallon bucket. Absorb with a kitty litter and place in disposable bag. Do not use combustible materials, such as saw dust to absorb.

S: Salt

- Sweep into container and dispose of
- Avoid prolonged exposure

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Sodium Bicarbonate	1kg	Sulfuric Acid	1.5L of H ² SO ⁴
Absorbent Pads	15	All brought aboard	N/A
Universal Medium Socks	2	All brought aboard	N/A
Pair Nitrile Gloves	1	All brought aboard	N/A
Disposable Bags	2	All brought aboard	N/A
Cat Litter	40 lbs	All brought aboard	N/A

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 Chief Scientist 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: None

V. Additional Projects: None

B. NOAA Fleet Ancillary Projects

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.

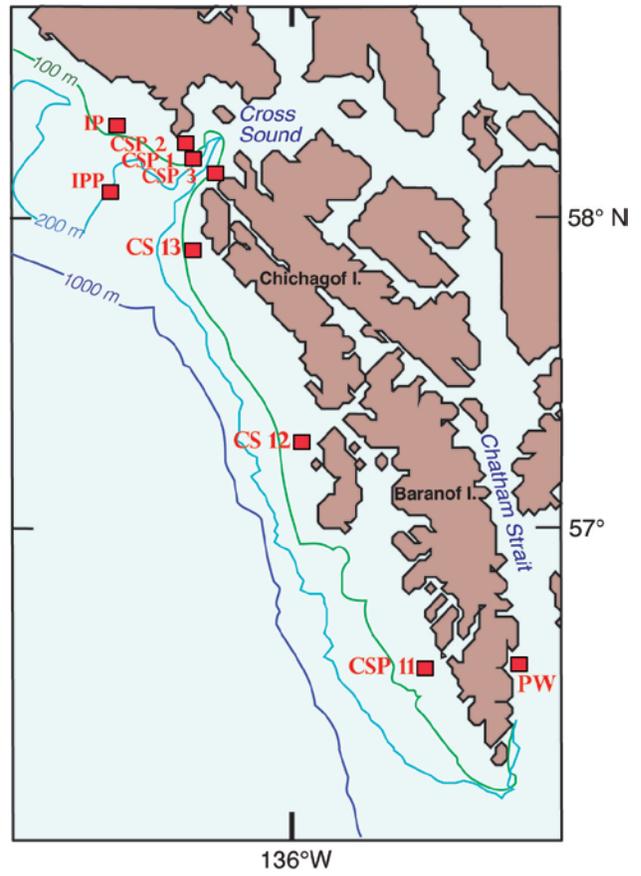
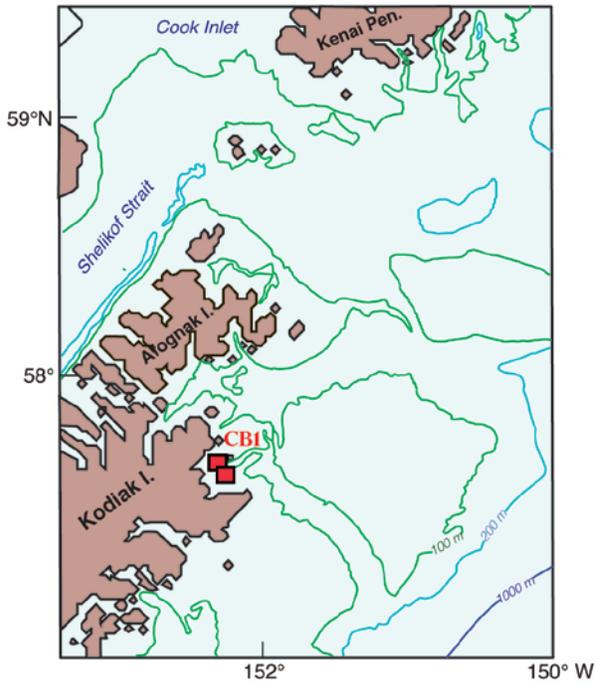
Responsibilities of the Foreign National Sponsor:

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

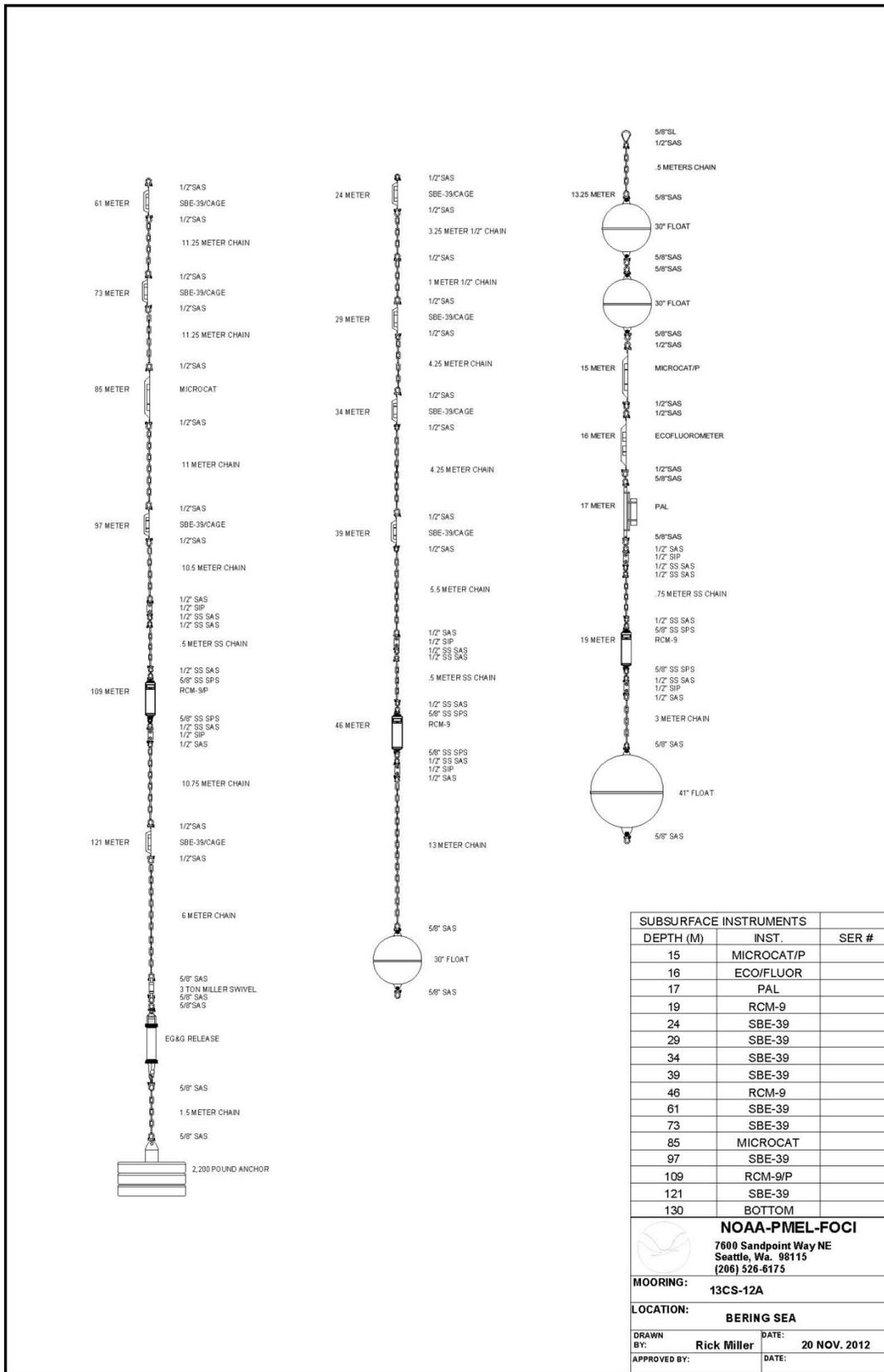
1. Figures, maps, tables, images, etc.

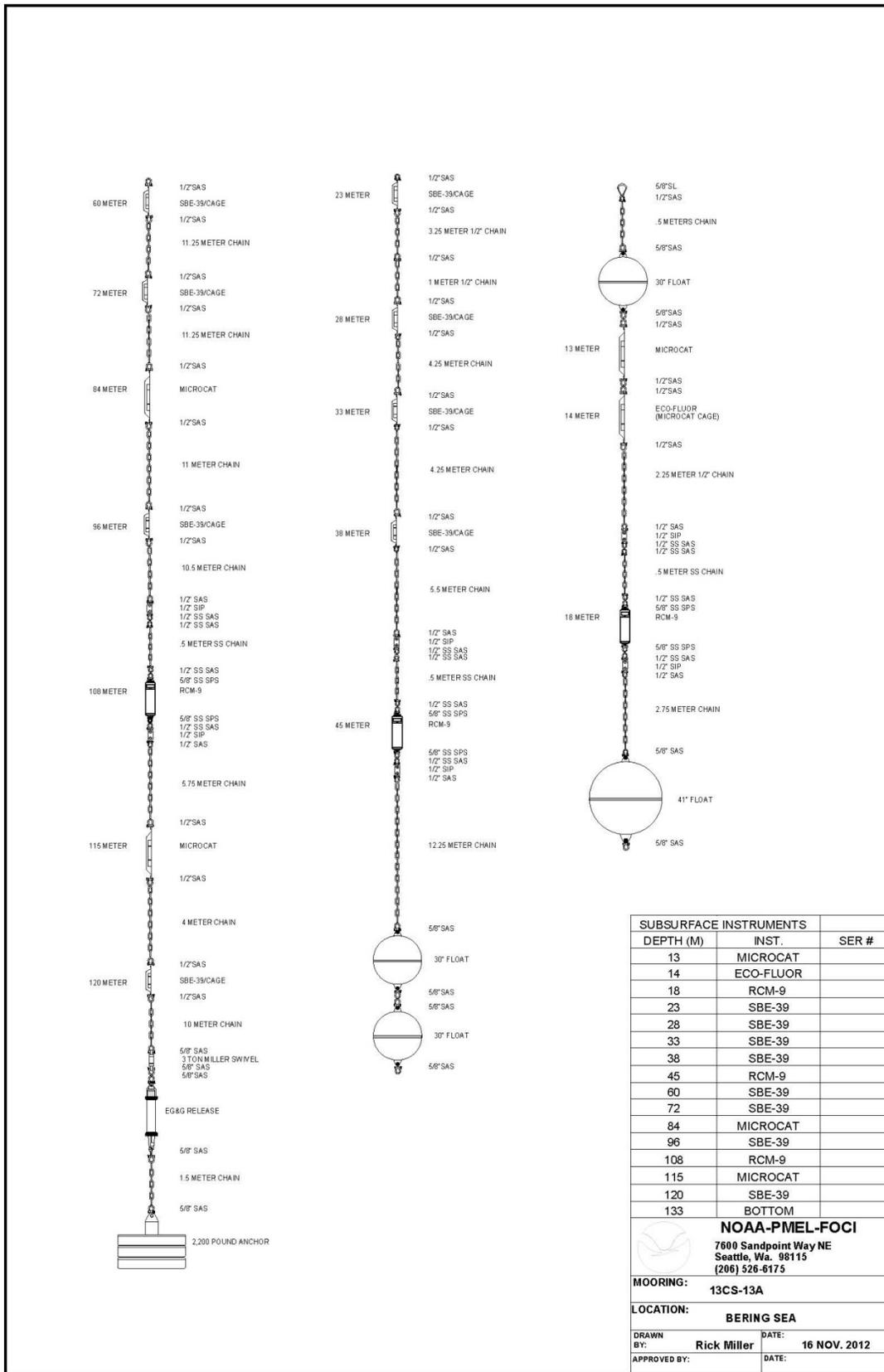
Figure 1: Maps.

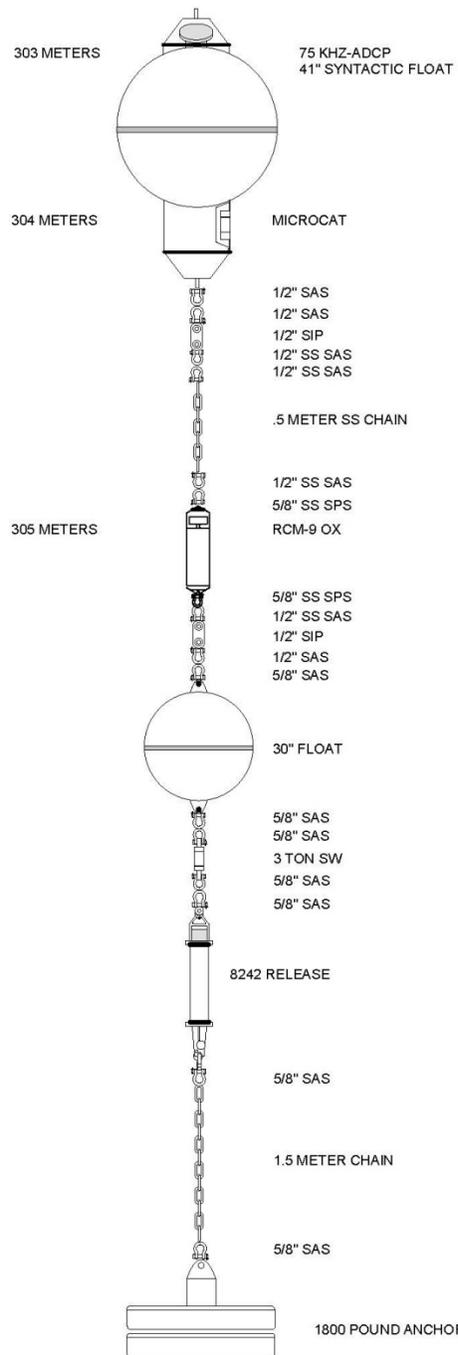


2. Station/Waypoint List (coordinates in Latitude, Longitude: degree-minutes, and depths)

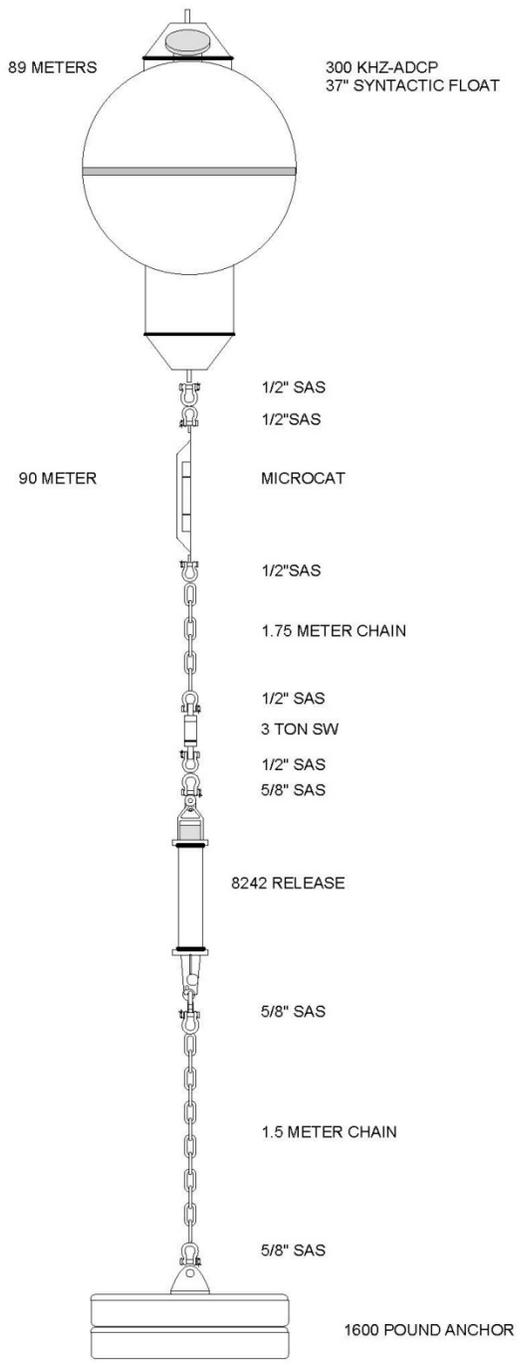
Mooring	Lat (°N)	Lon(°W)	Depth (m)
13CB-1A (Surface Mooring)	57.7205	152.2913	195
13CBM-1A	57.6967	152.3138	145
13IP-1A	58.2501	136.9428	150
13IPP-2A	58.2501	136.9428	315
13CSP-1A	58.1485	136.5828	296
13CSP-2A	58.1740	136.6178	91
13CSP-3A	58.1189	136.5554	310
13CS-13A	57.8214	136.6694	131
13CS-12A	57.4017	136.1785	128
13CSP-11A	56.3958	135.1408	119
Port Walter Surface Mooring	56.0386	134.6550	



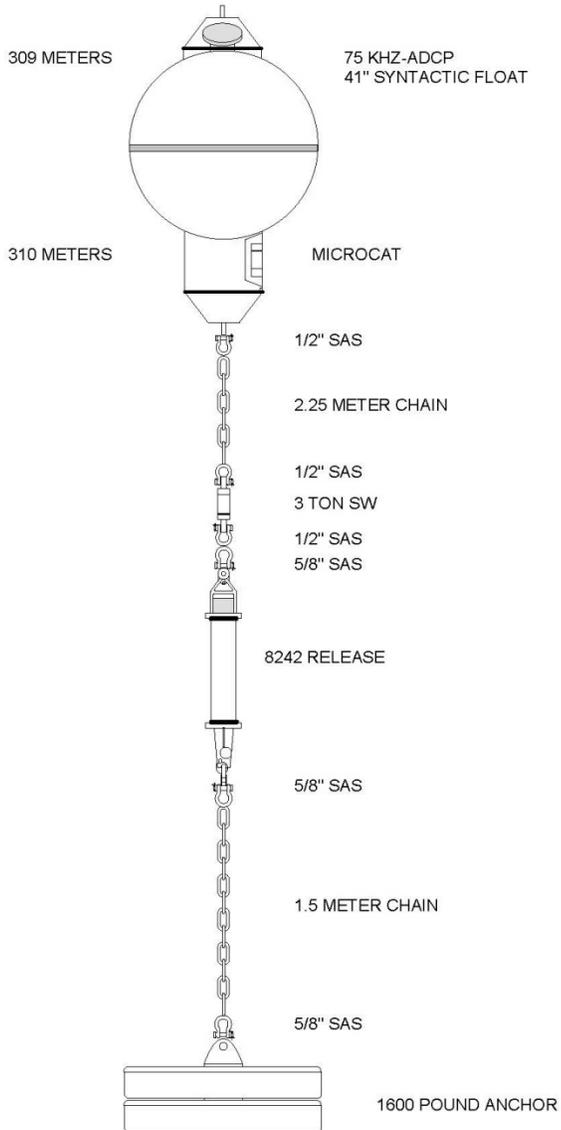




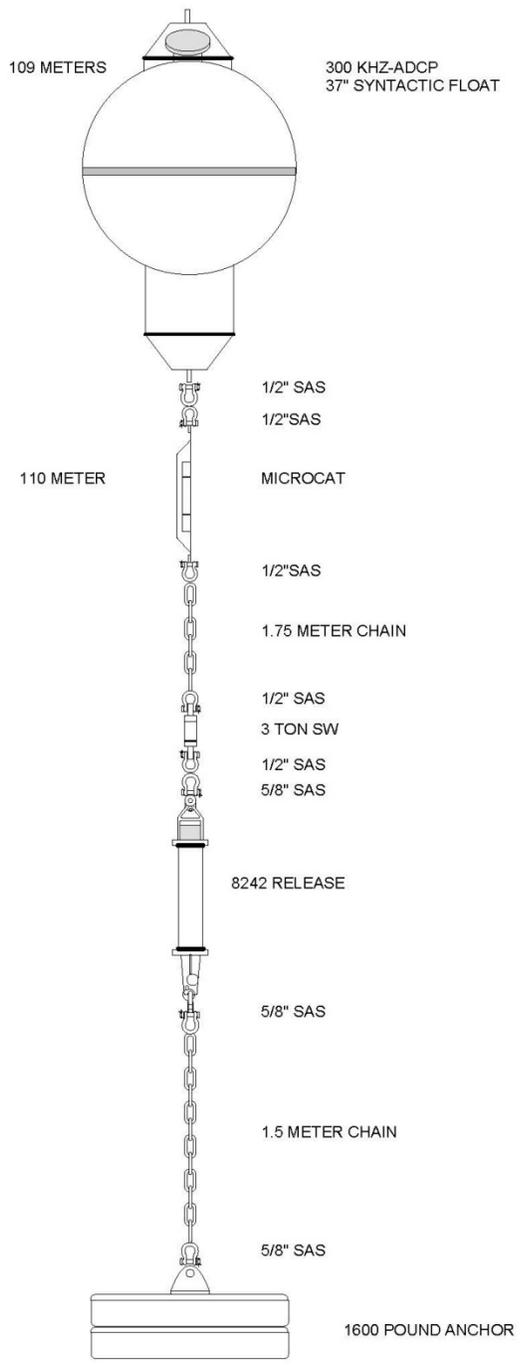
INSTRUMENT	DEPTH M	SERIAL NO.
75 kHz ADCP	303	
MICROCAT	304	
RCM-9 OX	305	
BOTTOM	309	
 NOAA-PMEL-FOCI 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6175		
MOORING:	13CSP-1A	
LOCATION:		
DRAWN BY:	Rick Miller	DATE: 20 NOV. 2012
APPROVED BY:		DATE:



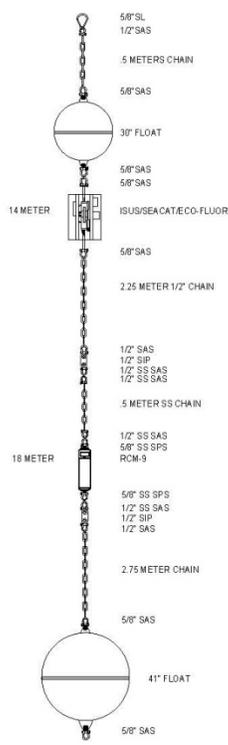
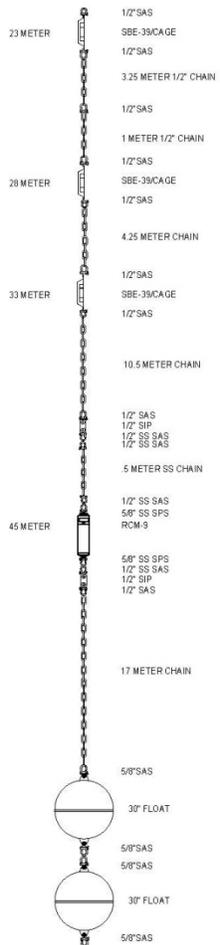
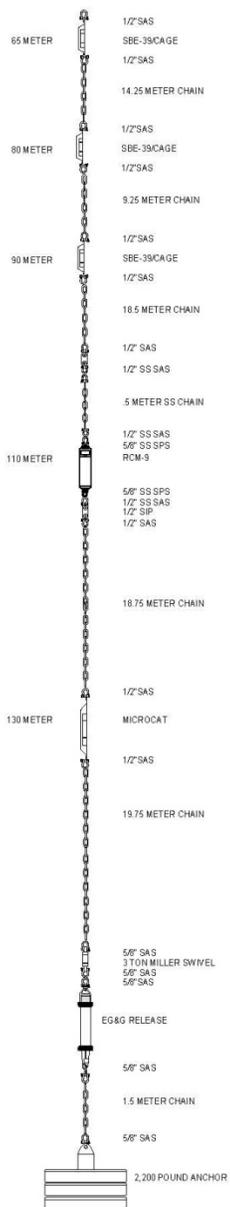
INSTRUMENT	DEPTH M	SERIAL NO.
300 kHz ADCP	89	
MICROCAT	90	
BOTTOM	95	
 NOAA-PMEL-FOCI 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6175		
MOORING:	13CSP-2A	
LOCATION:		
DRAWN BY:	Rick Miller	DATE: 16 NOV. 2012
APPROVED BY:		DATE:



INSTRUMENT	DEPTH M	SERIAL NO.
75 kHz ADCP	309	
MICROCAT	310	
BOTTOM	315	
 NOAA-PMEL-FOCI 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6175		
MOORING:	13CSP-3A	
LOCATION:		
DRAWN BY:	Rick Miller	DATE: 16 NOV. 2012
APPROVED BY:		DATE:



INSTRUMENT	DEPTH M	SERIAL NO.
300 kHz ADCP	109	
MICROCAT	110	
BOTTOM	115	
 NOAA-PMEL-FOCI 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6175		
MOORING:	13CSP-11A	
LOCATION:		
DRAWN BY:	Rick Miller	DATE: 15 NOV. 2012
APPROVED BY:		DATE:



SUBSURFACE INSTRUMENTS		
DEPTH (M)	INST.	SER #
14	ISUS/SEACAT	
14	ECO-FLUOR	
18	RCM-9	
23	SBE-39	
28	SBE-39	
33	SBE-39	
45	RCM-9	
65	SBE-39	
80	SBE-39	
90	SBE-39	
110	RCM-9/P	
130	MICROCAT	
153	BOTTOM	

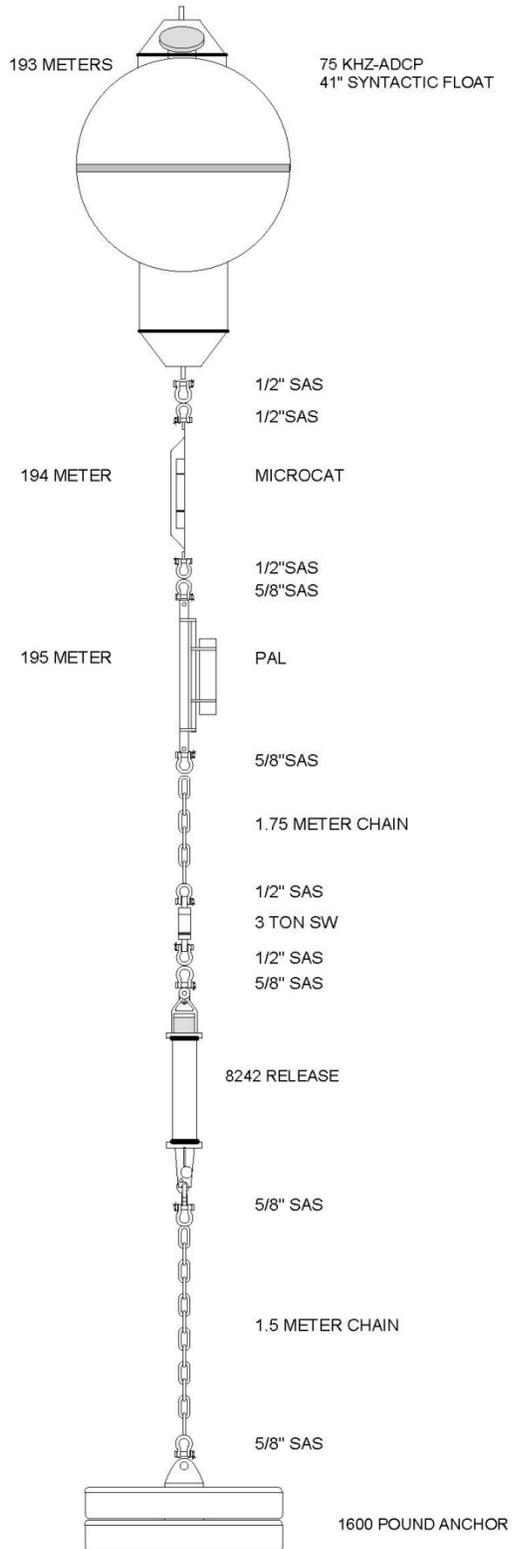
NOAA-PMEL-FOCI
 7600 Sandpoint Way NE
 Seattle, Wa. 98115
 (206) 526-6175

MOORING: 131P-1A

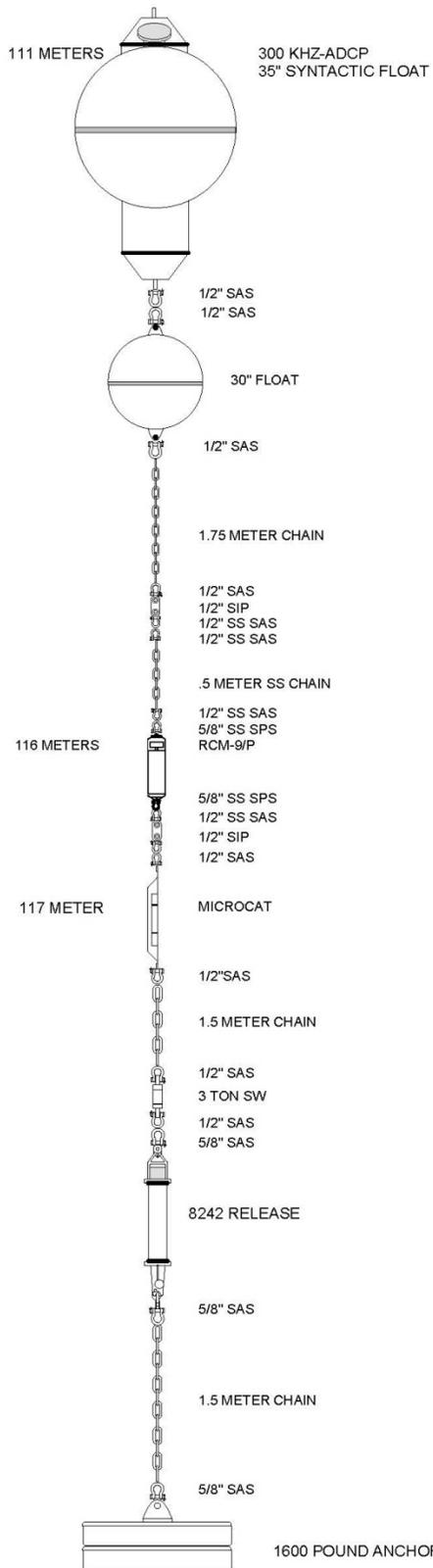
LOCATION: BERING SEA

DRAWN BY: Rick Miller DATE: 16 NOV. 2012

APPROVED BY: DATE:



INSTRUMENT	DEPTH M	SERIAL NO.
75 kHz ADCP	193	
MICROCAT	194	
PAL	195	
BOTTOM	200	
 NOAA-PMEL-FOCI 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6175		
MOORING:	13IPP-3A	
LOCATION:		
DRAWN BY:	Rick Miller	DATE: 16 NOV. 2012
APPROVED BY:		DATE:



INSTRUMENT	DEPTH M	SERIAL NO.
300 kHz ADCP	111	
RCMP	116	
MICROCAT	117	
BOTTOM	121	
 NOAA-PMEL-FOCI 7600 Sandpoint Way NE Seattle, Wa. 98115 (206) 526-6175		
MOORING:	13PCP-1A	
LOCATION:		
DRAWN BY:	Rick Miller	DATE: 20 DEC. 2012
APPROVED BY:		DATE: