

FINAL CRUISE INSTRUCTIONS

ECO-FOCI

NOAA Ship *MILLER FREEMAN*, Cruise MF-06-02
February 22 to March 4, 2006
Chief Scientist – Wm. Floering, NOAA/PMEL

1.0 FINAL CRUISE INSTRUCTIONS

1.1 **Cruise Title** – Ecosystem and Fisheries-Oceanography Coordinated Investigations (Eco-FOCI) Moorings.

1.2 **Cruise Numbers:**

1.2.1 **Cruise Number** – MF-06-02

1.2.2 **Eco-FOCI Number** – 1MF06

1.3 **Cruise Dates:**

1.3.1 **Departure** – Kodiak, Alaska 22 February 2006, 1300 hours

1.3.2 **Arrival** – Dutch Harbor, Alaska 4 March 2006, 0900 hours

1.4 **Operating Area** – Shelikof Strait, Gulf of Alaska, and Aleutian Islands

2.0 CRUISE OVERVIEW

2.1 **Cruise Objectives** – To recover and deploy subsurface oceanographic moorings in Chiniak Bay, Pavlof Bay, Shelikof Strait, Amukta Pass, and GSP-9. CTD casts will accompany the mooring operations. WestMar search for the missing GSP-9 mooring with trawling operations if the mooring is located.

2.2 **Applicability** - These instructions, with ***FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN***, dated March 1, 2005, present complete information for this cruise.

2.3 **Participating Organizations**

NOAA - Pacific Marine Environmental Laboratory (PMEL)
7600 Sand Point Way N.E., Seattle, Washington 98115-6439

NOAA - Alaska Fisheries Science Center (AFSC)
7600 Sand Point Way N.E., Seattle, Washington 98115-0070

2.4 Personnel

2.4.1 Chief Scientist

Name	Gender	Affiliation	E-mail Address
William Floering	M	PMEL	William.floering@noaa.gov

2.4.2 Other Participating Scientists

Name	Gender	Affiliation	E-mail Address
Carol Dewitt	F	PMEL	Carol.dewitt@noaa.gov

2.5 Administration

2.5.1 Ship Operations

Marine Operations Center, Pacific
1801 Fairview Avenue East, Seattle, Washington 98102-3767
Telephone: (206) 553-4548
Fax: (206) 553-1109

Commander Mark P. Pickett, NOAA
Chief, Operations Division, Pacific (MOP1)
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Larry Mordock
Deputy Chief, Operations Division (MOP1x1)
Telephone – Work: (206) 553-4764
Home: (206) 365-3567
Cellular: (206) 465-9316
E-mail: Larry.Mordock@noaa.gov

2.5.2 Scientific Operations

Dr. Phyllis J. Stabeno, PMEL
Telephone: (206) 526-6453
E-mail: Phyllis.Stabeno@noaa.gov

Dr. Jeffrey Napp, AFSC
Telephone: (206) 526-4148
E-mail: Jeff.Napp@noaa.gov

3.0 OPERATIONS

3.1 Data to Be Collected: CTD casts will be taken at each mooring site. Data from each of the instruments on the moorings will be downloaded. The standard suite of SCS sensor data will be collected along with the ADCP data. An SCS ship log (MOA) will be completed by the watch officers.

- 3.1.1 Scientific Computer System (SCS)** - The ship's SCS shall operate throughout the cruise, acquiring and logging data from navigation, meteorological, oceanographic, and fisheries sensors. See **FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN** (SOI 5.2) for specific requirements.
- 3.2 Staging Plan** – It is our intention to load a portion of the mooring equipment (anchors, metal floats and wire spools) in Seattle prior to the transit to Kodiak. The remainder of our instruments and equipment will be shipped via container to Kodiak and loaded aboard the vessel during the Feb. 20 – 22 inport.
- 3.3 De-staging Plan** – Arrangements will be made with FTS in Dutch Harbor to pick up our equipment, load it on a container and ship it back to Seattle via Horizon Lines. This operation should be completed by close of business on the day of arrival, March 4th.
- 3.4 Cruise Plan** – We will depart the Kodiak Coast Guard Base at 1300 Feb. 22nd steaming to the Chiniak Bay mooring site, approximately 1.5 hours from Kodiak. At the Chiniak Bay mooring site a CTD cast will be completed and the Chiniak mooring will be recovered and re-deployed. Following the deployment a second CTD cast will be completed. From Chiniak Bay we will steam to the first of 3 line-8 mooring sites. Depending on arrival time (daylight or night) we may complete the FOX line of 6-7 CTD casts along line-8. Each of the 3 moorings located along line-8 will be recovered and re-deployed. A CTD cast will be taken before recovery and following deployment.

Next stop will be the Pavlof Bay mooring site. This mooring will be recovered and re-deployed with a CTD cast before recovery and after deployment. Following Pavlof we will steam to Amukta pass and recover 4 moorings, AMP-1 thru AMP-4, and conduct four CTD casts. Following the work at Amukta pass the ship will steam to the mooring site GSP-9, south east of Amukta Pass.

Mooring GSP-9 has a faulty release and has not been recovered. In September 2005 we tired dragging/snagging for the mooring based on an acoustic location provided by the MACE group aboard NOAA Ship *Oscar Dyson*. In discussions with MACE acoustic personnel they are confident that the WestMar 100 Khz third wire head rope unit will see the top 49 inch syntactic foam float. The top float of the GSP-9 mooring is between 500 and 600 meters deep. We will tow the MACE poly NorEastern trawl with the WestMar head rope unit attached at a depth of 400 meters. If the mooring is located we will attempt to snag it by dragging a damaged trawl net that will be provided by Dave King. The net will be deployed with the fish buster doors currently aboard *Miller Freeman*. This net will be towed at approximately 1000 meters depth, making several passes until we catch the mooring. The assumption is that the mooring Kevlar line will part and the ADCP float will come to the surface. Visual sighting is the only way we will have to locate the float at the surface so this dragging operation will be done during daylight hours only.

If time allows we will complete a line of deep CTD casts (1800 meters) across the Alaska Stream in the vicinity of GSP-9.

3.5 Station Locations –

U.S. Coast Guard Base Kodiak AK

Chiniak Bay

CB-1

57 degrees 43.338 N 152 degrees 17.620 W

Shelikof St.		
SSP-1	57 degrees 41.05 N	155 degrees 12.217 W
SSP-2	57 degrees 37.111 N	155 degrees 04.487 W
SSP-3	57 degrees 29.017 N	154 degrees 48.453 W
CTD Line 8 No.55	57 degrees 28.500 N	154 degrees 42.000 W
CTD Line 8 No. 56	57 degrees 39.900 N	154 degrees 47.000 W
CTD Line 8 No. 57	57 degrees 33.100 N	154 degrees 52.500 W
CTD Line 8 No. 58	57 degrees 36.300 N	155 degrees 00.500 W
CTD Line 8 No. 59	57 degrees 38.500 N	155 degrees 04.200 W
CTD Line 8 No. 60	57 degrees 41.000 N	155 degrees 10.000 W
CTD Line 8 No. 61	57 degrees 43.200 N	155 degrees 15.600 W
Pavlof Bay		
PA-1 Pavlof	55 degrees 10.866 N	161 degrees 41.198 W
Amukta Pass		
AMP-1	52 degrees 25.992 N	171 degrees 27.023 W
AMP-2	52 degrees 24.995 N	171 degrees 40.009 W
AMP-3	52 degrees 24.003 N	171 degrees 55.006 W
AMP-4	52 degrees 22.999 N	172 degrees 07.015 W
GSP-9	52 degrees 10.44 N	168 degrees 12.60 W

3.6 Station Operations - The following are operations to be conducted on this cruise. The procedures for these operations are listed in the ***FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN*** (SOI). Operations not addressed in the SOI and changes to standard procedures are addressed below.

- Mooring recovery and deployment
- Drugging/snagging operations for mooring recovery
- Chlorophyll Sampling Operations (SOI 3.2.10)
- ARGOS Satellite Tracked Drifter Buoy Deployments (SOI 3.2.11)

3.7 Underway Operations - The following are underway operations to be conducted on this cruise. The procedures for these operations are listed in the ***FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN*** (SOI). Operations not addressed in the SOI and changes to standard procedures are addressed below.

- Radiometer Operations (SOI 3.2.14),
- Scientific Computer System (SCS) data acquisition (SOI 5.2),
- Fluorometer monitoring (SOI 5.3),
- Thermosalinograph monitoring (SOI 5.3).

3.8 Applicable Restrictions – N/A

3.9 Small Boat Operations – N/A

4.0 FACILITIES

4.1 **Equipment and Capabilities Provided by Ship**

- Oceanographic winch with slip rings and 3-conductor cable terminated for CTD,

- Manual wire-angle indicator,
- Oceanographic winch with slip rings and 3-conductor cable terminated for the SBE SEACAT, for net tow operations,
- Sea-Bird Electronics' SBE 911*plus* CTD system with stand, each CTD system should include underwater CTD, weights, and pinger. There should be one deck unit and tape recorder for the two systems,
- 10-liter Niskin sampling bottles for use with rosette (10 plus 4 spares),
- Conductivity and temperature sensor package to provide dual sensors on the CTD,
- AUTOSAL salinometer, for CTD field corrections,
- Sea-Bird Electronics' SBE-19 SEACAT system,
- For meteorological observations: 2 anemometers (one R. M. Young system interfaced to the SCS), calibrated air thermometer (wet-and dry-bulb) and a calibrated barometer and/or barograph,
- Freezer space for storage of biological and chemical samples (blast and storage freezers),
- SIMRAD EQ-50 echosounder,
- JRC JFV-200R color sounder recorder,
- RD Instruments' ADCP written to disk,
- Bench space in DataPlot for PCs, monitor, printer and VCR,
- Use of Pentium PC in DataPlot for data analysis,
- Scientific Computer System (SCS),
- Removable stern platform in place,
- Laboratory space with exhaust hood, sink, lab tables and storage space,
- Adequate deck lighting for night-time operations,
- Navigational equipment including GPS and radar,
- Safety harnesses for working on quarterdeck and fantail, and
- Ship's crane(s) used for loading and/or deploying.

4.2 Equipment and Capabilities Provided by Scientists

- PMEL PC with SEASOFT software for CTD data collection and processing,
- Fluorometer and light meter to be mounted on CTD,
- CTD stand modified for attachment of fluorometer,
- Conductivity and temperature sensor package to provide dual sensors on the CTD,
- CTD rosette sampler,
- IAPSO standard water,
- Subsurface moorings,
- Miscellaneous scientific sampling and processing equipment, and
- Scientific ultra-cold freezer, and
- Damaged trawl net provided by Dave King.

5.0 DISPOSITION OF DATA AND REPORTS

5.1 The following data products will be included in the cruise data package:

- **NOAA Form 77-13d - Deck Log - Weather Observation Sheets,**
- Electronic Marine Operations Abstracts,
- SCS backup,

- Calibration Sheets for all ship's instruments used,
- PMEL CTD Weather Observation Logs,
- CTD Cast Information/Rosette Log,
- Autosalinometer Logs, and
- Ultra-cold Freezer Temperature Daily Log (SOI 5.4).

5.2 Pre- and Post-cruise Meetings - Cruise meetings may be held in accordance with **FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN** (SOI 5.5).

6.0 ADDITIONAL PROJECTS

6.1 Definition - Ancillary and piggyback projects are secondary to the objectives of the cruise and should be treated as additional investigations. The difference between the two types of secondary projects is that an ancillary project does not have representation aboard and is accomplished by the ship's force.

6.2 Ancillary Projects - Any ancillary work done during this project will be accomplished with the concurrence of the Chief Scientist and on a not-to-interfere basis with the programs described in these instructions and in accordance with the **NOAA Fleet Standing Ancillary Instructions**.

6.3 Piggyback Projects - None

7.0 HAZARDOUS MATERIALS

7.1 Inventory

- Lithium Batteries
- Biological antifouling

7.2 Material Safety Data Sheet (MSDS) – Already provided to ship on CD

8.0 MISCELLANEOUS

8.1 Communications - Specific information on how to contact **NOAA Ship MILLER FREEMAN** and all other fleet vessels can be found at:

<http://www.moc.noaa.gov/phone.htm>

8.2 Important Telephone and Facsimile Numbers and E-mail Addresses

8.2.1 Pacific Marine Environmental Laboratory (PMEL):

FOCI - Ocean Environmental Research Division (OERD2):

- (206) 526-4700 (voice)
- (206) 526-6485 (fax)

Administration:

- (206) 526-6810 (voice)
- (206) 526-6815 (fax)

E-Mail: FirstName.LastName@noaa.gov

8.2.2 Alaska Fisheries Science Center (AFSC):

FOCI - Resource Assessment and Conservation Engineering (RACE):

- (206) 526-4171 (voice)
- (206) 526-6723 (fax)

E-Mail: FirstName.LastName@noaa.gov

8.2.3 NOAA Ship MILLER FREEMAN - Telephone methods listed in order of increasing expense:

Homeport - Seattle, Washington:

- (206) 553-4589
- (206) 553-4581
- (206) 553-8344

United States Coast Guard - Kodiak, Alaska

- (907) 487-9752
- (907) 487-9753
- (907) 487-4397
- (907) 487-4398

Cellular:

- (206) 790-7594

Iridium:

- (808) 659-5684

INMARSAT Mini-M

- 011-872-761-267-346 (voice/PBX)
- 011-872-761-267-347 (voice)
- 011-872-761-267-348 (fax)

INMARSAT B

- 011-872-330-394-120 (voice)
- 011-872-330-394-121 (fax)

E-Mail: NOAA.Ship.Miller.Freeman@noaa.gov (mention the person's name in SUBJECT field)

8.2.4 Marine Operations Center, Pacific (MOP):

Operations Division (MOP1)

- (206) 553-4548 (voice)
- (206) 553-1109 (facsimile)

E-Mail: FirstName.LastName@noaa.gov

E-Mail to Radio Room: Radio.Room@noaa.gov

9.0 APPENDICES

9.1 [Equipment Inventory](#)

9.2 [Station Locations](#)

9.3 [Cruise Map](#)

9.1 Equipment Inventory

Equipment	Quantity	Weight (Lbs)/Each	Total Wt. (Lbs)
<i>Equipment to be loaded in Seattle</i>			
Railroad wheel anchors	5	1,600	8,000
30" Steel floats	5	150	750
Anchovy net (dragging)	1	400	400
Acoustic release deck set	2	25	50
<i>Equipment to be loaded in Kodiak</i>			
Acoustic Releases	5	125	625
ADCP's in Syntactic floats	3	1,000	3,000
Chain mooring on spool	1	350	350
Mooring equip. and gear box (4x4)	1	600	600
Mooring equip. footlocker	1	200	200
Misc. equip. and cages	1	250	250
Poly line spool for dragging	1		
Catch device for dragging	1		
Drogue for dragging	1		
Empty ADCP boxes	3	100	300
Empty spool	1	50	50
		Total	14,575

9.2 Station Locations –

Activity	Latitude			Longitude			Dist. (nm)	Spd (kts)	Trans (hrs)	Approx Bott Depth (m)	On Sta (hrs)	Arrive (Local) Date / Time	Depart Date / Time
Depart Kodiak	57°	45.000	N	152°	29.600	W							22-Feb 13:00
Rec/Dep Chiniak Bay Mooring	57°	43.340	N	152°	17.620	W	6.6	10	0.7	184	2.0	22-Feb 13:39	22-Feb 15:39
Rec/Dep/CTD at SSP-3	57°	29.020	N	154°	48.450	W	82.1	10	8.2	191	4.0	22-Feb 23:52	23-Feb 03:52
CTD at Line 8, FOX 55	57°	28.500	N	154°	42.000	W	3.5	10	0.4	195	0.5	23-Feb 04:13	23-Feb 04:43
CTD at Line 8, FOX 56	57°	30.900	N	154°	47.000	W	3.6	10	0.4	200	0.5	23-Feb 05:04	23-Feb 05:34
CTD at Line 8, FOX 57	57°	33.100	N	154°	52.500	W	3.7	10	0.4	210	0.5	23-Feb 05:56	23-Feb 06:26
CTD at Line 8, FOX 58	57°	36.300	N	155°	0.500	W	5.4	10	0.5	220	0.5	23-Feb 06:58	23-Feb 07:28
Rec/Dep/CTD at SSP-2	57°	37.110	N	155°	4.490	W	2.3	10	0.2	246	4.0	23-Feb 07:42	23-Feb 11:42
CTD at Line 8, FOX 59	57°	38.500	N	155°	4.200	W	1.4	10	0.1	250	0.5	23-Feb 11:51	23-Feb 12:21
CTD at Line 8, FOX 60	57°	41.000	N	155°	10.000	W	4.0	10	0.4	275	0.5	23-Feb 12:44	23-Feb 13:14
Rec/Dep/CTD at SSP-1	57°	41.050	N	155°	12.220	W	1.2	10	0.1	292	4.0	23-Feb 13:22	23-Feb 17:22
CTD at Line 8, FOX 61	57°	43.200	N	155°	15.600	W	2.8	10	0.3	300	0.5	23-Feb 17:38	23-Feb 18:08
Rec/Dep/CTD at Pavlof Bay	55°	10.866	N	161°	41.191	W	261.8	10	26.2	100	2.0	24-Feb 20:19	24-Feb 22:19
Rec/CTD AMP-1	52°	25.992	N	171°	27.023	W	382.8	10	38.3	408	2.0	26-Feb 12:36	26-Feb 14:36
Rec/CTD AMP-2	52°	24.995	N	171°	40.009	W	8.0	10	0.8	460	2.0	26-Feb 15:24	26-Feb 17:24
Rec/CTD AMP-3	52°	24.003	N	171°	55.006	W	9.2	10	0.9	273	2.0	26-Feb 18:19	26-Feb 20:19
Rec/CTD AMP-4	52°	22.999	N	172°	7.015	W	7.4	10	0.7	356	2.0	26-Feb 21:03	26-Feb 23:03
Drag for GSP-9	52°	9.930	N	168°	12.367	W	144.2	10	14.4	1000	90.0	27-Feb 13:28	03-Mar 07:28
Gulf Stream CTD5	52°	9.930	N	168°	11.500	W	0.5	10	0.1	4300	1.5	03-Mar 07:31	03-Mar 09:01
Gulf Stream CTD4	52°	23.230	N	168°	26.600	W	16.2	10	1.6	4300	1.5	03-Mar 10:38	03-Mar 12:08
Gulf Stream CTD3	52°	32.730	N	168°	36.200	W	11.2	10	1.1	4300	1.5	03-Mar 13:15	03-Mar 14:45
Gulf Stream CTD2	52°	40.430	N	168°	47.600	W	10.4	10	1.0	4300	1.5	03-Mar 15:47	03-Mar 17:17
Gulf Stream CTD1	52°	42.000	N	168°	50.000	W	2.1	10	0.2	4300	1.5	03-Mar 17:30	03-Mar 19:00
Arrive Dutch Harbor	53°	55.000	N	166°	31.000	W	110.6	10	11.1		0.0	04-Mar 06:04	

9.3 Cruise Map –

