FINAL CRUISE INSTRUCTIONS
FOCI

NOAA Ship *MILLER FREEMAN*, MF-08-11, leg 2
September 21 – 30, 2008
Chief Scientist: Carol L. DeWitt, NOAA/PMEL

1.0 FINAL CRUISE INSTRUCTIONS

1.1 Cruise Title – Fisheries-Oceanography Coordinated Investigations (FOCI)

1.2 Cruise Numbers

1.2.1 Cruise Number – MF-08-11, leg 2

1.2.2 FOCI Number – 4MF08

1.3 Cruise Dates:

1.3.1 Departure – Sunday, September 21, 2008, at 15:00 ADT, from Dutch Harbor, Alaska.

1.3.2 Arrival – Tuesday, September 30, 2008, at 17:00 ADT, to Dutch Harbor, Alaska.

1.4 Operating Area – Bering Sea.

2.0 CRUISE OVERVIEW

2.1 Cruise Objectives – The primary objective of this cruise will be the recovery and deployment of moorings in the Bering Sea. The following mooring operations will be conducted on this cruise:

OPERATIONS	SITE	LATITUDE	LONGITUDE
Recover	Kodiak Crab	56° 25.61' N	160° 13.12' W
Recover/Deploy	Mooring 2	56° 51.83' N	164° 03.05' W
Recover/Deploy	Mooring 4	57° 51.42' N	168° 52.56' W
Recover/Deploy	Mooring 5	59° 54.58' N	171° 42.47' W
Recover	Amukta Pass	52° 25.98' N	171° 27.00' W

2.2 Applicability – These instructions, with ***FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN***, dated March 2007, 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

Applied Research Laboratory (APL)
The Pennsylvania State University
State College, PA 16804

2.4 Personnel

2.4.1 Chief Scientist

Name	Gender	Affiliation	E-mail Address
Carol L. DeWitt (206) 526-6808	Female	PMEL	Carol.DeWitt@noaa.gov

2.4.2 Participating Scientists

Name	Gender	Affiliation	E-mail Address
Carol L. DeWitt	Female	PMEL	Carol.DeWitt@noaa.gov
William J. Floering	Male	PMEL	William.Floering@noaa.gov
Antonio Jenkins	Male	PMEL	Antonio.Jenkins@noaa.gov
Peter Proctor	Male	PMEL	Peter.Proctor@noaa.gov
Steve Smith	Male	PMEL	Stephen.A.Smith@noaa.gov
Jennifer Miksis-Olds	Female	PSU	jlm91@psu.edu

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

LCDR Todd Bridgeman, NOAA
Chief, Operations Division, Pacific (MOP1)
Telephone: (206) 553-8705
Cellular: (206) 390-7527
E-mail: ChiefOps.MOP@noaa.gov

Scientific Operations

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

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

3.0 OPERATIONS

3.1 Data To Be Collected

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** – A container will be barged to Dutch Harbor, AK. The scientific party will be responsible for arranging vehicles for moving their equipment from the airport and/or docks.

3.3 **De-staging Plan** – The equipment will be off-loaded in Seattle, WA. The scientific party will be responsible for arranging vehicles for moving their equipment from the docks.

3.4 **Cruise Plan** – The ship will depart Dutch Harbor, Alaska, on Sunday, September 21, 2008, and steam directly to the first mooring site.

a) **Kodiak Crab Site 1** - The FREEMAN will complete a CTD prior to starting the mooring recovery. One subsurface mooring will be recovered.

b) **FOCI Bering Sea Site 2** – Mooring operations will consist of recovering one surface and two subsurface moorings and deploying two subsurface moorings. After the completion of all mooring operations, a CTD, with nutrient and chlorophyll samples, will be completed.

c) **FOCI Bering Sea Site 4** – The ship will transit from FOCI Bering Sea Site 2 to FOCI Bering Sea Site 4. Mooring operations will consist of recovering two subsurface mooring and deploying two subsurface moorings. After the completion of all mooring operations, a CTD, with nutrient and chlorophyll samples, will be completed.

d) **FOCI Bering Sea Site 5** – The ship will transit from FOCI Bering Sea Site 4 to FOCI Bering Sea Site 5. Mooring operations will consist of recovering three and redeploying two of the subsurface moorings. After the completion of all mooring operations, a CTD, with nutrient and chlorophyll samples, will be completed.

e) **Amukta Pass** – Six CTDs across the pass will occur prior to mooring recoveries. Four moorings will be recovered at Amukta Pass. No moorings will be deployed at Amukta Pass.

3.5 **Station Locations** – Cruise itinerary and mooring sites can be found in Sections 9.2 Cruise MF-08-11 Station Locations and 9.3 Cruise MF-08-11 Mooring Sites.

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:

- CTD/Water Sample Operations (SOI 3.2.1),
- Chlorophyll Sampling Operations (SOI 3.2.13).

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:

- Acoustic Doppler Current Profiler (ADCP) Operations (SOI 3.2.16),
- Scientific Computer System (SCS) data acquisition (SOI 5.2), and
- Thermosalinograph monitoring (SOI 5.3).

3.8 **Small Boat Operations** – Weather permitting, the small boat may be needed for mooring operations.

4.0 FACILITIES

4.1 Equipment and Capabilities Provided by Ship

- Oceanographic winch with slip rings and 3-conductor cable terminated for CTD,
- 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 for the two systems,
- 10 liter Niskin sampling bottles for use with rosette (10 plus 4 spares),
- AUTOSAL salinometer, for CTD field corrections,
- Wire speed indicators and readout for quarterdeck, Rowe, and Marco winches,
- 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 chemical samples,
- RD Instruments' ADCP written to Iomega Zip drive,
- 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

- Sea-Bird Electronics' SBE 911plus CTD system with dual sensors (for backup),
- Photosynthetically Active Radiation (PAR) and Fluorometer to be mounted on CTD,

- CTD stand modified for attachment of fluorometer,
- 5 minimum / 9 maximum subsurface moorings,
- Benthos acoustic release deck-set and transducer,
- EdgeTech acoustic release deck-set and transducer,
- 5-9 railroad wheel sets to be used as anchors, and
- Miscellaneous scientific sampling and processing equipment.

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 – recordable compact diskette (CD),
- Calibration Sheets for all ship's instruments used,
- CTD Cast Information/Rosette Log,
- Autosalinometer Logs,
- ADCP Log Sheets,
- ADCP Iomega Zip and/or recordable compact diskette (CD), 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 **HAZMAT Inventory** – See Section 9.1 Cruise MF-08-11 HAZMAT Inventory.

7.2 **Material Safety Data Sheet (MSDS)** – All MSDSs can be found on the ***OERD HAZMAT Emergency Guidelines – MSDS*** compact diskette dated January 15, 2003, supplied to the ship.

8.0 MISCELLANEOUS

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

http://www.pmc.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)

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) 660-7167

INMARSAT Mini-M
- 011-872-761-267-346 (voice/PBX)
- 011-872-761-267-347 (voice)

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 Cruise MF-08-11 HAZMAT Inventory

Chemical	CAS Number	Respondee	Organization	Quantity	H	F	R	Storage Color Code	Hazard Class	Packing Group Number	UN	Reportable Quantity	Response Indices
Battery, Lithium	mix	DeWitt	PMEL		2	2	3	General	9	II	3090	35-kg	None
Hydrochloric Acid	7647-01-0	Proctor	UAF	500-ml	3	0	2	Corrosive	8	II	1789	5,000-lbs	1
Tributyltin Oxide	56-35-9	DeWitt	PMEL		3	1	0	General	Not reg.				

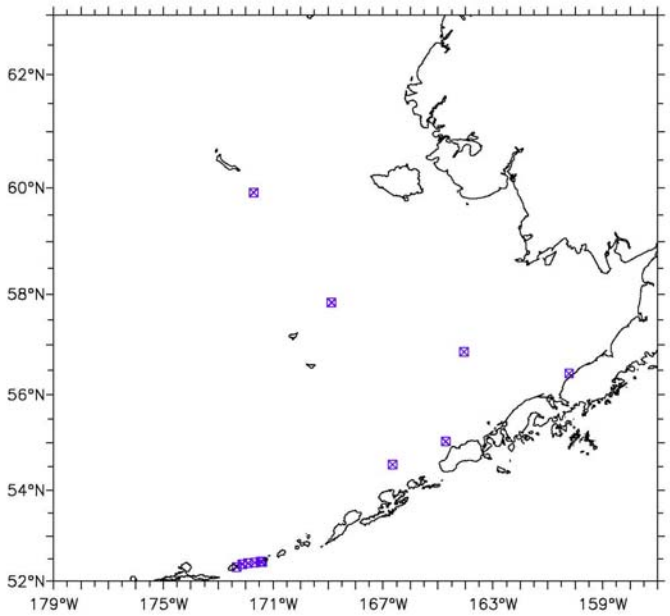
Spill Response 1: Ventilate area of leak or spill. Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then absorb with an inert material (e.g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as sawdust. **Do not flush to sewer!** U.S. Regulations (CERCLA) requires reporting spills and releases to soil, water, and air in excess of reportable quantities. The toll free number for the U.S. Coast Guard National Response Center is (800) 424-8802.

9.2 Cruise MF-08-11 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 Dutch Harbor	53°	54.00'	N	166°	31.20'	W							21-Sep 15:00
Recover 07KC-1A	56°	25.61	N	160°	13.12	W	263.7	11	24.0	73	2.0	22-Sep 14:58	22-Sep 16:58
Recover 08BSM-2A	56°	51.83'	N	164°	03.05'	W	129.1	9	14.3	72	5.0	23-Sep 7:19	23-Sep 12:19
Recover 08BSP-2A	56°	51.928'	N	164°	03.185'	W	0.1	10	0.0	73	0.5	23-Sep 12:19	23-Sep 12:49
Recover 08BST-2A	56°	51.808'	N	164°	03.019'	W	0.2	10	0.0	73	1.0	23-Sep 12:50	23-Sep 13:50
Deploy 08BS-2C	56°	51.99'	N	164°	03.00'	W	0.2	10	0.0	72	2.0	23-Sep 13:51	23-Sep 15:51
Deploy 08BSP-2B	56°	51.99'	N	164°	03.00'	W	0.0	10	0.0	72	0.5	23-Sep 15:51	23-Sep 16:21
CTD at site 2 (chlor at: 0, 12(x3),20(x3),24(x3),30,40,50 m; nuts at 0,10(x3),20,30,40, 50,60 m) - 2 casts (0.5 mi away fm mrg site)	56°	51.99'	N	164°	03.00'	W	0.0	10	0.0	72	0.4	23-Sep 16:21	23-Sep 16:46
Recover 08BS-4A	57°	51.418'	N	168°	52.562'	W	167.0	10	16.7	72	1.0	24-Sep 9:28	24-Sep 10:28
Recover 08BSP-4A	57°	51.665'	N	168°	52.679'	W	0.3	10	0.0	72	0.5	24-Sep 10:30	24-Sep 11:00
Deploy 08BS-4A	57°	51.21'	N	168°	52.21'	W	0.5	10	0.1	72	2.0	24-Sep 11:03	24-Sep 13:03
Deploy 08BSP-4B	57°	51.21'	N	168°	52.21'	W	0.0	10	0.0	72	0.5	24-Sep 13:03	24-Sep 13:33
CTD at site 4 (chlor at: 0, 12(x3),24(x3),30, 44(x3),50 m; nuts at 0,10(x3),17(x3),30, 40, 50,60 m) - 2 casts (0.5 mi away fm mrg site)	57°	51.70'	N	168°	52.21'	W	0.5	10	0.0	72	0.4	24-Sep 13:36	24-Sep 14:01
Recover 08BSV-5A	59°	54.462	N	171°	42.443	W	151.0	9	17.4	71	1.0	25-Sep 7:22	25-Sep 8:22

Activity	Latitude			Longitude			Dist. (nm)	Spd (kts)	Trans (hrs)	Approx Bott Depth (m)	On Sta (hrs)	Arrive (Local) Date / Time	Depart Date / Time
Recover 07BS-5B	59°	54.578	N	171°	42.472	W	0.1	10	0.0	70	1.0	25-Sep 8:23	25-Sep 9:23
Recover 07BSP-5B	59°	54.278	N	171°	42.290	W	0.3	10	0.0	70	0.5	25-Sep 9:25	25-Sep 9:55
Deploy 08BS-5B	59°	54.58	N	171°	42.47	W	0.3	10	0.0	73	2.0	25-Sep 9:57	25-Sep 11:57
Deploy 08BSP-5A	59°	54.58	N	171°	42.47	W	0.0	10	0.0	73	0.5	25-Sep 11:57	25-Sep 12:27
CTD at site 5 (chlor at: 0, 11(x3),20,30,40,50 m; nuts at 0,12(x3),20,30,40,50,59(x3) m) (0.5 mi away fm mrg site)	59°	54.58	N	171°	42.47	W	0.0	10	0.0	72	0.4	25-Sep 12:27	25-Sep 12:51
CTDs across Amukta Pass (west) - **DEPTH DEPENDENT** (given location approx)	52°	19.00	N	172°	20.00	W	456.1	10	45.6	180 - 200	0.5	27-Sep 10:28	27-Sep 10:58
CTDs across Amukta Pass (AMP-4) move .5 mile off!	52°	23.06	N	172°	6.20	W	9.4	10	0.9	366	0.6	27-Sep 11:54	27-Sep 12:31
Recover 08AMP-4A	52°	23.057	N	172°	7.001	W	0.5	10	0.0	366	0.5	27-Sep 12:34	27-Sep 13:04
CTDs across Amukta Pass (AMP-3) move .5 mile off!	52°	24.00	N	171°	54.20	W	7.9	10	0.8	298	0.6	27-Sep 13:52	27-Sep 14:26
Recover 08AMP-3A	52°	23.999	N	171°	54.971	W	0.5	10	0.0	298	0.5	27-Sep 14:29	27-Sep 14:59
CTDs across Amukta Pass (AMP-2) move .5 mile off!	52°	25.00	N	171°	40.80	W	8.7	10	0.9	456	0.7	27-Sep 15:51	27-Sep 16:33
Recover 08AMP-2A	52°	24.997	N	171°	39.993	W	0.5	10	0.0	456	0.5	27-Sep 16:36	27-Sep 17:06
CTDs across Amukta Pass (AMP-1) move .5 mile off!	52°	26.70	N	171°	27.60	W	7.7	10	0.8	414	0.7	27-Sep 17:52	27-Sep 18:32

Activity	Latitude			Longitude			Dist. (nm)	Spd (kts)	Trans (hrs)	Approx Bott Depth (m)	On Sta (hrs)	Arrive (Local) Date / Time	Depart Date / Time
Recover 08AMP-1A	52°	26.700	N	171°	26.809	W	0.5	10	0.0	414	0.5	27-Sep 18:35	27-Sep 19:05
CTDs across Amukta Pass (east) - **DEPTH DEPENDENT** (given location approx)	52°	25.84	N	171°	23.66	W	2.1	10	0.2	180	0.5	27-Sep 19:18	27-Sep 19:50
Weather day	53°	54.00'	N	166°	31.20'	W	196.2	10	19.6	78	24.0	28-Sep 15:27	29-Sep 15:27
Arrive Dutch Harbor	53°	54.00'	N	166°	31.20'	W	0.0	10	0.0	200		29-Sep 15:27	29-Sep 15:27



MF08–Fall