

# FINAL CRUISE INSTRUCTIONS

## *FOCI*

NOAA Ship *MILLER FREEMAN*, Cruise MF-04-11  
September 24 – October 4, 2004  
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-04-11

1.2.2 **FOCI Number** – 8MF-04

1.3 **Cruise Dates**

1.3.1 **Departure** – Depart from Kodiak, Alaska, on Friday, September 24, 2004, at 1500 hours.

1.3.2 **Arrival** – Arrive in Dutch Harbor, Alaska, on Monday, October 4, 2004, at 1200 hours.

### 2.0 CRUISE OVERVIEW

2.1 **Cruise Objectives** – To Recover and deploy surface and subsurface oceanographic instrumentation moorings. To complete Conductivity, Temperature, and Depth (CTD) profiler casts and California Cooperative Oceanic Fisheries Investigation (CalCOFI) Vertical Egg Tow (CalVET) and plankton tows at designated areas.

2.2 **Applicability** – These instructions, with **FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN**, dated October 6, 2003, 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

University of Alaska – Fairbanks (UAF)  
Institute of Marine Science  
200 O’Neill, Fairbanks, Alaska 99775-1080

Scripps Institute of Oceanography (SIO)  
8602 La Jolla Shores Drive  
La Jolla, California 92037

## 2.4 Personnel

### 2.4.1 Chief Scientist

Name	Gender	Affiliation	E-mail Address
Carol L. DeWitt (206) 526-6808	Female	PMEL	<a href="mailto:Carol.DeWitt@noaa.gov">Carol.DeWitt@noaa.gov</a>

### 2.4.2 Participating Scientists

Name	Gender	Affiliation	E-mail Address
Carol L. DeWitt	Female	PMEL	<a href="mailto:Carol.DeWitt@noaa.gov">Carol.DeWitt@noaa.gov</a>
William J. Floering	Male	PMEL	<a href="mailto:William.Floering@noaa.gov">William.Floering@noaa.gov</a>
Earl Roskie	Male	PMEL	<a href="mailto:Earl.Roskie@noaa.gov">Earl.Roskie@noaa.gov</a>
Sarah J. Thornton	Female	UAF	<a href="mailto:sarahjt@imsuaf.edu">sarahjt@imsuaf.edu</a>
Kevin Hardy	Male	SOI	<a href="mailto:khardy@ucsd.edu">khardy@ucsd.edu</a>
Stephen Smith	Male	PMEL	<a href="mailto:Stephen.A.Smith@noaa.gov">Stephen.A.Smith@noaa.gov</a>

## 2.5 Administration

### 2.5.1 Ship Operations

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

Commander Michele G. Bullock, NOAA  
Chief, Operations Division, Pacific (MOP1)  
Telephone: (206) 553-8705  
Cellular: (206) 390-7527  
E-mail: [Michele.Bullock@noaa.gov](mailto:Michele.Bullock@noaa.gov)

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](mailto:Larry.Mordock@noaa.gov)

### 2.5.2 **Scientific Operations**

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

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

## 3.0 OPERATIONS

3.1 **Data To Be Collected** – In addition to the standard suite of Scientific Computer System (SCS) integrated instruments, we will deploy the Sea-Bird SBE 911*plus* CTD profiler system and the Sea-Bird SBE 25 SEACAT/Bongo combination.

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** – The equipment will be barged to Kodiak, Alaska. The scientific party will be responsible for arranging vehicles for moving their equipment from the airport and/or docks.

3.3 **De-staging Plan** – Equipment will be left on the ship for transport back to Seattle, Washington. The scientific party will off-load the equipment in Seattle, Washington.

3.4 **Cruise Plan** – The ship will depart Kodiak, Alaska, on Friday, September 24, 2004, and steam directly to Bering Sea Site 2. See [Section 9.3 MF-04-11 Cruise Chartlet](#) for an overall view of the proposed cruise.

3.4.1 **FOCI Bering Sea Site 2** – Prior to mooring operations, a calibration CTD with nutrient and chlorophyll samples, Marine Assessment Monitoring and Prediction (MARMAP) Bongo tow, and triplicate California Cooperative Oceanic Fisheries Investigation (CalCOFI) Vertical Egg Tow (CalVET) will be completed. Mooring operations will consist of recovering one surface and one subsurface mooring and deploying two subsurface moorings. After the completion of all mooring operations, a CTD will be completed.

3.4.2 **FOCI Bering Sea Site 4** – The ship will transit from FOCI Bering Sea Site 2 to FOCI Bering Sea Site 4. Prior to mooring operations, a calibration CTD with nutrient and chlorophyll samples, a MARMAP Bongo tow and triplicate CalVET tows will be completed. Mooring operations will consist of recovering and redeploying one subsurface mooring. After the completion of all mooring operations, a CTD will be completed.

- 3.4.3 FOCI Bering Sea Site 5** – The ship will transit from FOCI Bering Sea Site 4 to FOCI Bering Sea Site 5. Prior to mooring operations, a calibration CTD with nutrient and chlorophyll samples, a MARMAP Bongo tow and triplicate CalVET tows will be completed. Mooring operations will consist of recovering two subsurface and deploying three subsurface moorings. After the completion of all mooring operations, a CTD will be completed.
- 3.4.4 Pribilof Islands** – Eight moorings will be recovered at the Pribilof Island area. A calibration CTD with nutrient and chlorophyll samples and MARMAP Bongo tow will be completed.
- 3.4.5 Samalga Pass** – A mooring search for 03SG-4A will be conducted.
- 3.4.6 Alaska Stream** – A mooring search for 03GSP-9A will be conducted. The Scripps camera mooring will be deployed/recovered as time allows.
- 3.5 Station Locations** – See [Section 9.2 MF-04-11 Station Locations](#)
- 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),
  - MARMAP Bongo Tows (SOI 3.2.2),
  - CalVET Net Tows (SOI 3.2.6),
  - Chlorophyll Sampling Operations (SOI 3.2.10), and
  - 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), and
  - Thermosalinograph monitoring (SOI 5.3).
- 3.8 Applicable Restrictions** – None.
- 3.9 Small Boat Operations** – Small boat operations at FOCI Bering Sea Site 2 may be required.

## 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 for the two systems,
- Niskin sampling bottles for use with rosette (10 plus 4 spares),
- Conductivity and temperature sensor package to provide dual sensors on the CTD (primary),
- AUTOSAL salinometer, for CTD field corrections,
- Sea-Bird Electronics SBE-19 SEACAT system,
- Meter block for plankton tows,
- 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 biological and chemical,
- SIMRAD EQ-50 echosounder,
- RD Instruments' ADCP written to Iomega Zip drive,
- Bench space in DataPlot for PCs, monitor, and printer,
- Scientific Computer System (SCS),
- Electrical connection between Rowe winch and DataPlot,
- Removable stern platform in place,
- Laboratory space with exhaust hood, sink, lab tables and storage space,
- Sea-water hoses and nozzles to wash nets (quarterdeck and aft deck),
- 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 911*plus* CTD system,
- Sea-Bird Electronics SBE-19 SEACAT system,
- 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 (backup),
- CTD rosette sampler,
- IAPSO standard water,
- 60-cm Bongo sampling arrays,
- 20-cm Bongo sampling arrays,
- Spare wire angle indicator,

- CalVET net array,
- Subsurface moorings,
- ARGOS tracked drifter buoy,
- Miscellaneous scientific sampling and processing equipment,
- Scientific ultra-cold freezer,
- Cruise Operations Database (COD).

## 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-RW),
- Calibration Sheets for all ship's instruments used,
- 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** – See [Section 9.1 MF-04-11 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 8, 2004, supplied to the ship. A copy of all required MSDS will also be delivered with the chemicals when ship is loaded.

## 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)

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) 660-7167

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](mailto: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](mailto:FirstName.LastName@noaa.gov)

E-Mail to Radio Room: [Radio.Room@noaa.gov](mailto:Radio.Room@noaa.gov)



## 9.0 APPENDICES

### 9.1 MF-04-11 HAZMAT Inventory

Chemical	CAS Number	Respondee	Org.	Qty.	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	None	None
Tributyltin Oxide	56-35-9	DeWitt	PMEL					Poison	6.1	II	3020	None	1

**Spill Response 1:** Stop the leak, if possible. Ventilate the space involved. Absorb, sweep up, and place in container for disposal. Shut off or remove all ignition sources. Prevent waterway contamination. Construct a dike to prevent spreading. Collect run-off (water) and transfer to drums or tanks for later disposal.

### 9.2 MF-04-11 Station Locations

Activity	Latitude	Longitude	Dist. (nm)	Spd (kts)	Trans. (hrs)	Approx Depth (m)	On Sta. (hrs)	Arrive (Local) Date/Time	Depart (Local) Date/Time
Depart Kodiak	57° 43.729' N	152° 31.294' W							24-Sep-2004 15:00
CTD/Bongo/CalVET BS-2 (chlor at: 0,11(x3),20,30,40,50m)	56° 51.613' N	164° 03.348' W	134.1	10.0	13.4	71	2.2	27-Sep-2004 05:49	27-Sep-2004 08:01
Recover 04BSP-2A	56° 51.613' N	164° 03.651' W	0.2	10.0	0.0	71	1.0	27-Sep-2004 08:02	27-Sep-2004 09:02
Recover 04BSM-2A	56° 52.529' N	164° 03.348' W	0.9	10.0	0.1	71	4.0	27-Sep-2004 09:07	27-Sep-2004 13:07
Deploy 04BS-2C	56° 52.529' N	164° 03.348' W	0.0	10.0	0.0	71	1.5	27-Sep-2004 13:07	27-Sep-2004 14:37
Deploy 04BSP-2B	56° 52.529' N	164° 03.348' W	0.0	10.0	0.0	71	1.0	27-Sep-2004 14:37	27-Sep-2004 15:37
CTD BSP-2	56° 52.529' N	164° 03.348' W	0.0	10.0	0.0	71	0.4	27-Sep-2004 15:37	27-Sep-2004 16:02
CTD/Bongo/CalVET at BS-4 (chlor at: 0,11(x3),20,30,40,50m)	57° 51.178' N	168° 52.190' W	166.4	10.0	16.6	70	2.2	28-Sep-2004 08:40	28-Sep-2004 10:52
CalVET at BS-4	57° 51.178' N	168° 52.190' W	0.0	10.0	0.0	70	1.0	28-Sep-2004 10:52	28-Sep-2004 11:52
Recover 04BS-4A	57° 51.178' N	168° 52.190' W	0.0	10.0	0.0	70	1.0	28-Sep-2004 11:52	28-Sep-2004 12:52
Deploy 04BS-4B	57° 51.178' N	168° 52.190' W	0.0	10.0	0.0	70	1.2	28-Sep-2004 12:52	28-Sep-2004 14:04
CTD at BS-4 (chlor at: 0,11(x3),20,30,40,50m)	57° 51.178' N	168° 52.190' W	0.0	10.0	0.0	70	1.2	28-Sep-2004 14:04	28-Sep-2004 15:16

Activity	Latitude	Longitude	Dist. (nm)	Spd (kts)	Trans. (hrs)	Approx Depth (m)	On Sta. (hrs)	Arrive (Local) Date/Time	Depart (Local) Date/Time
CTD/Bongo at BS-5 (chlor at: 0,11(x3),20,30,40,50m)	59° 53.878' N	171° 42.636' W	151.0	10.0	15.1	72	1.2	29-Sep-2004 06:23	29-Sep-2004 07:35
Recover 04BS-5A	59° 53.842' N	171° 42.190' W	0.2	10.0	0.0	72	1.5	29-Sep-2004 07:36	29-Sep-2004 09:06
Recover 04BSP-5A	59° 53.878' N	171° 42.636' W	0.2	10.0	0.0	72	1.0	29-Sep-2004 09:07	29-Sep-2004 10:07
Deploy 04MM-5A	59° 53.878' N	171° 43.000' W	0.2	10.0	0.0	72	1.0	29-Sep-2004 10:08	29-Sep-2004 11:08
Deploy 04BS-5B	59° 53.842' N	171° 42.190' W	0.4	10.0	0.0	72	1.2	29-Sep-2004 11:11	29-Sep-2004 12:23
Deploy 04BSP-5B	59° 53.878' N	171° 42.636' W	0.2	10.0	0.0	72	1.0	29-Sep-2004 12:24	29-Sep-2004 13:24
CTD at BS-5 (chlor at: 0,11(x3),20,30,40,50m)	59° 53.878' N	171° 42.636' W	0.0	10.0	0.0	72	0.5	29-Sep-2004 13:24	29-Sep-2004 13:54
CTD/Bongo at 04-PI-3A (chlor & nuts at: 0,11(x3),20,30,40,50 m, nuts only at: 75 & 10m>bottom)	57° 07.093' N	171° 13.168' W	167.5	11.0	15.2	102	1.2	30-Sep-2004 05:08	30-Sep-2004 06:20
CTD/Bongo at 04-PI-5A (chlor & nuts at: 0,11(x3),20,30,40,50 m)	57° 07.994' N	170° 34.271' W	21.1	11.0	1.9	68	1.2	30-Sep-2004 08:15	30-Sep-2004 09:27
Recover 04-PI-5A	57° 07.994' N	170° 34.271' W	0.0	11.0	0.0	68	1.0	30-Sep-2004 09:27	30-Sep-2004 10:27
Recover 04-PI-3A	57° 07.093' N	171° 13.168' W	21.1	11.0	1.9	102	1.0	30-Sep-2004 12:22	30-Sep-2004 13:22
Recover 04-PI-2A	56° 34.606' N	170° 05.986' W	49.0	11.0	4.5	102	1.0	30-Sep-2004 17:50	30-Sep-2004 18:50
Recover 04-PI-7A	56° 17.175' N	169° 41.746' W	22.0	11.0	2.0	202	0.5	30-Sep-2004 20:50	30-Sep-2004 21:20
CTD at 04-PI-7A (chlor&nuts at: 0,10,20,30,40,50, nuts only at: 75,100,150, 10>bottom)	56° 17.175' N	169° 41.746' W	0.0	11.0	0.0	202	0.5	30-Sep-2004 21:20	30-Sep-2004 21:51
CTD/Bongo at 04-PI-2A (chlor & nuts at: 0,11(x3),20,30,40,50 m, nuts only at: 75 & 10m>bottom)	56° 34.606' N	170° 05.986' W	22.0	11.0	2.0	102	1.2	30-Sep-2004 23:50	01-Oct-2004 01:02
CTD/Bongo at 04-PI-1A (chlor & nuts at: 0,11(x3),20,30,40,50 m,Fmax,3<mixed)	56° 53.989' N	169° 35.392' W	25.6	11.0	2.3	69	1.2	01-Oct-2004 03:22	01-Oct-2004 04:34
CTD/Bongo at 04-PI-6A (chlor & nuts at: 0,11(x3),20,30,40,50 m, Fmax,3<mixed)	57° 25.220' N	169° 40.426' W	31.3	11.0	2.8	68	1.2	01-Oct-2004 07:25	01-Oct-2004 08:37
Recover 04-PI-6	57° 25.220' N	169° 40.426' W	0.0	11.0	0.0	68	1.0	01-Oct-2004 08:37	01-Oct-2004 09:37
Recover 04-PI-1A	56° 53.989' N	169° 35.392' W	31.3	11.0	2.8	69	1.0	01-Oct-2004 12:28	01-Oct-2004 13:28

Activity	Latitude	Longitude	Dist. (nm)	Spd (kts)	Trans. (hrs)	Approx Depth (m)	On Sta. (hrs)	Arrive (Local) Date/Time	Depart (Local) Date/Time
CTD at 04-PI-4A (chlor & nuts at: 0,11(x3),20,30,40,50 m, nuts only at: 75 & 10m>bottom)	56° 38.049' N	168° 52.646' W	28.3	11.0	2.6	102	0.4	01-Oct-2004 16:03	01-Oct-2004 16:30
Recover 04-PI-4A	56° 38.049' N	168° 52.646' W	0.0	11.0	0.0	102	1.0	01-Oct-2004 16:30	01-Oct-2004 17:30
CTD at 04-PI-8A (chlor&nuts at: 0,10,20,30,40,50, nuts only at: 75,100,150, 10>bottom)	56° 13.893' N	168° 35.058' W	26.0	11.0	2.4	199	0.6	01-Oct-2004 19:52	01-Oct-2004 20:25
Recover 04-PI-8A	56° 13.893' N	168° 35.058' W	0.0	11.0	0.0	199	0.5	01-Oct-2004 20:25	01-Oct-2004 20:55
CTD at 03SG-4	52° 41.361' N	169° 34.486' W	215.3	11.0	19.6	111	0.5	02-Oct-2004 16:29	02-Oct-2004 16:57
Search for 03SG-4A	52° 41.361' N	169° 34.486' W	0.0	11.0	0.0	111	4.0	02-Oct-2004 16:57	02-Oct-2004 20:57
Search for 03GSP-9A/camera work	52° 09.930' N	168° 12.367' W	59.1	11.0	5.4	4,348	18.0	03-Oct-2004 02:19	03-Oct-2004 20:19
Arrive Dutch Harbor	53° 53.419' N	166° 30.796' W	1.5	4.0	0.4			04-Oct-2004 15:02	

### 9.3 MF-04-11 Cruise Chartlet

