

# FINAL CRUISE INSTRUCTIONS

## *FOCI*

NOAA Ship *MILLER FREEMAN*, MF-03-08  
May 25 – June 2, 2003  
Chief Scientist: Annette Brown, AFSC

### 1.0 FINAL CRUISE INSTRUCTIONS

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

1.2 **Cruise Numbers**

1.2.1 **Cruise Number** – MF-03-08

1.2.2 **FOCI Number** – 5MF03

1.3 **Cruise Dates**

1.3.1 **Departure** – Depart Sunday, May 25, 2003 at 1500 from Dutch Harbor, Alaska.

1.3.2 **Arrival** – Arrive Monday, June 2, 2003 at 0800 in Kodiak, Alaska.

### 2.0 CRUISE OVERVIEW

2.1 **Cruise Objectives** – The objectives of this cruise are to conduct an ichthyoplankton survey and process oriented studies in the region between Unimak Pass, the Shumagin Islands, and through Shelikof Strait to Kodiak Island, Alaska, so that we may estimate the abundance, transport, and factors influencing the survival of young walleye pollock larvae. We will also occupy stations on Line 8 to continue our 18-year time series of environmental and biological conditions in Shelikof Strait. In the event of high algal concentrations encountered at a survey station in the strait region and in the sea valley region, sampling will be conducted for a forage fish diet study.

2.2 **Applicability** – These instructions, with **FOCI Standard Operating Instructions for NOAA Ship MILLER FREEMAN**, dated April 8, 2002, present complete information for this cruise.

2.3 **Operating Area** – Unimak Pass to Shelikof Strait, ending at Kodiak Island, Alaska.

2.4 **Participating Organizations**

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

## 2.5 Personnel

### 2.5.1 Chief Scientist

Name	Gender	Affiliation	E-mail Address
Annette L. Brown (206) 526-6523	Female	AFSC	<a href="mailto:Annette.Brown@noaa.gov">Annette.Brown@noaa.gov</a>

### 2.5.2 Participating Scientists

Name	Gender	Affiliation	E-mail Address
Annette L. Brown	Female	AFSC	<a href="mailto:Annette.Brown@noaa.gov">Annette.Brown@noaa.gov</a>
Steven Porter	Male	AFSC	<a href="mailto:Steve.Porter@noaa.gov">Steve.Porter@noaa.gov</a>
Tiffany C. Vance	Female	AFSC	<a href="mailto:Tiffany.Vance@noaa.gov">Tiffany.Vance@noaa.gov</a>
Mathew T. Wilson	Male	AFSC	<a href="mailto:Matt.Wilson@noaa.gov">Matt.Wilson@noaa.gov</a>

## 2.6 Administration

### 2.6.1 Ship Operations

Marine Operations Center, Pacific  
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 W. Mordock  
Deputy Chief, Operations Division (MOP1x1)  
Telephone – Work: (206) 553-4764  
Telephone – Home: (206) 365-3567  
Cellular: (206) 465-9316  
E-mail: [Larry.Mordock@noaa.gov](mailto:Larry.Mordock@noaa.gov)

### 2.6.2 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

- 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** – NOAA Ship **MILLER FREEMAN** will be loaded with FOCI gear during the week of April 21, 2003, while the ship is in port at Marine Operations Center, Pacific (MOP) in Seattle, Washington. There will be no special requirements for loading the gear besides access to the loading crane, storage hold, and laboratory spaces. All vehicles used to load the vessel will be provided by AFSC under the responsibility of the scientific party.
- 3.3 De-staging Plan** – AFSC will off-load FOCI gear from NOAA Ship **MILLER FREEMAN** during August 2003 while the ship is alongside Marine Operations Center, Pacific (MOP) in Seattle, Washington. The hold will need to be opened and the loading crane will be required to remove all FOCI gear from the vessel's hold. The scientific party off-loading the vessel will supply vehicles from AFSC for transportation of the gear from the vessel.
- 3.4 Cruise Plan** – An ichthyoplankton survey will be conducted from Unimak Pass through Shelikof Strait and Kennedy Entrance. The standard gear for this survey will be 60-cm Bongos with 0.505-mm mesh netting. Tows will be to 100 meters or 10 meters off the bottom where water depth is shallower. See Sections [9.2.1 Potential MF-03-08 Station Locations](#) and [9.2.2 MF-03-08 Station Locations and Activities at Line 8](#) for locations and Sections [9.4.1 Potential MF-03-08 Station Locations Chartlet](#) and [9.4.2 MF-03-08 Station Locations – Line 8](#) for chartlets of the possible station locations.

Approximately 120 stations from the list will be chosen for occupation from the potential stations listed. Live tows may be conducted with the Bongos to examine larval walleye pollock condition if larvae 8-mm or less are found. While we are working up the grid toward Kodiak Island, Alaska, we will occupy Line 8. Line 8 sampling will include 20-cm and 60-cm Bongos and Conductivity, Temperature, and Depth (CTD) profiles with Niskin bottle samples taken for chlorophyll, microzooplankton, and nutrients. Line 8 station positions and figures are shown in Sections [9.2.2 MF-03-08 Station Locations and Activities at Line 8](#) and [9.4.2 MF-03-08 Station Locations – Line 8](#), respectively.

Net tows at Line 8 are to 10 meters off the bottom. The 60-cm Bongo will be fitted with 0.505-mm and 0.333-mm mesh nets for Line 8 sampling, respectively. When a high algal station is encountered during the survey grid in the sea valley and the strait regions, the Chief Scientist may stop normal operations and request sampling for a forage fish diet study. This study will consist of fishing the Marinovich trawl using the ship's Furuno system to collect juvenile forage fishes. Sampling will also include a CTD to collect chlorophyll and microzooplankton samples associated with the fish.

In the event of a storm, the Chief Scientist may call for a break in the survey operations in order to opportunistically monitor before and after storm conditions. Storm monitoring will include CTDs (nutrients, chlorophyll, and microzooplankton), Tucker, and Bongo tows.

**3.5 Station Locations** – See Sections [9.2.1 Potential MF-03-08 Station Locations](#) and [9.2.2 MF-03-08 Station Locations and Activities at Line 8](#) for 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),
- Bongo Larval Condition Tows (SOI 3.2.3),
- Midwater Trawls (SOI 3.2.8),
- Tucker Trawls (SOI 3.2.9), and
- Chlorophyll Sampling Operations (SOI 3.2.10).

**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** – None.

## **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),
- 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 samples (blast and storage freezers, at -20° and -80° Celsius),
- SIMRAD EQ-50 echosounder,
- JRC JFV-200R color sounder recorder,
- Use of Pentium PC in DataPlot for data analysis,
- Scientific Computer System (SCS),
- Removable stern platform removed,
- 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 to be used with PMEL stand (**primary system**),
- Sea-Bird Electronics' SBE-19 SEACAT system (**primary 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 primary CTD,
- CTD rosette sampler,
- IAPSO standard water,
- XBTs for project,
- 60-cm Bongo sampling arrays,
- 20-cm Bongo sampling arrays,
- Spare wire angle indicator,
- Tucker trawl, complete 1-M sampling array,
- Marinovich midwater trawl,
- Miscellaneous scientific sampling and processing equipment,
- Scientific ultra-cold freezer, and
- 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,
- PMEL CTD Weather Observation Logs,
- CTD VHS videocassettes,
- CTD Cast Information/Rosette Log,
- Autosalinometer Logs,

- Electronic Navigation suite's export files on diskette,
- 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 [9.3 MF-03-08 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)

**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 to Radio Room: [Radio.Room@noaa.gov](mailto:Radio.Room@noaa.gov)

## 9.0 APPENDICES

### 9.1 Equipment Inventory

Equipment	Qty	Dimension	Weight	Total Weight
Larval Supply Trunks	1	20" x 22" x 36"	80.0 lbs	80 lbs
Microzooplankton Supply Trunks	2	20" x 22" x 36"	90.0 lbs	180 lbs
Formaldehyde Containers	4	20-Liter	40.0 lbs	160 lbs
Carboys: 95% Ethanol	1	20-Liter	40.0 lbs	40 lbs
Saturated sodium borate solution	1	20-Liter	40.0 lbs	40 lbs
Miscellaneous Gear Trunks	4	20" x 22" x 36"	80.0 lbs	320 lbs
Tucker Frame and Weights	1	14" x 20" x 48"	200.0 lbs	200 lbs
60-cm Bongo Frame	1	8" x 26" x 60"		
20-cm Bongo Frame	1	8" x 14" x 16"		
Cases, Glass Jars, 32-oz	20	8" x 12" x 15"	2.5 lbs	50 lbs
Cases, Glass Jars, 8-oz	6	4" x 6" x 8"	1.3 lbs	8 lbs
<b>TOTAL WEIGHT:</b>				<b>1078 lbs</b>

### 9.2 Station Locations

#### 9.2.1 Potential MF-03-08 Station Locations

X	Y	Latitude	Longitude	Decimal Latitude	Decimal Longitude	XY
gd	103	54° 16.902' N	164° 42.630' W	54.2817	-164.7105	gd103
gf	103	54° 10.014' N	164° 27.888' W	54.1669	-164.4648	gf103
gf	105	54° 17.274' N	164° 16.104' W	54.2879	-164.2684	gf105
gf	107	54° 24.534' N	164° 04.290' W	54.4089	-164.0715	gf107
gf	109	54° 31.788' N	163° 52.440' W	54.5298	-163.8740	gf109
gh	103	54° 03.132' N	164° 13.194' W	54.0522	-164.2199	gh103
gh	105	54° 10.386' N	164° 01.446' W	54.1731	-164.0241	gh105
gh	107	54° 17.646' N	163° 49.662' W	54.2941	-163.8277	gh107
gh	109	54° 24.900' N	163° 37.842' W	54.4150	-163.6307	gh109
gj	107	54° 10.758' N	163° 35.088' W	54.1793	-163.5848	gj107
gj	109	54° 18.012' N	163° 23.304' W	54.3002	-163.3884	gj109
gl	107	54° 03.870' N	163° 20.562' W	54.0645	-163.3427	gl107
gp	125	54° 55.410' N	161° 05.226' W	54.9235	-161.0871	gp125
gp	127	55° 02.670' N	160° 53.220' W	55.0445	-160.8870	gp127
gp	135	55° 31.698' N	160° 04.848' W	55.5283	-160.0808	gp135



<b>X</b>	<b>Y</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Decimal Latitude</b>	<b>Decimal Longitude</b>	<b>XY</b>
gr	125	54° 48.528' N	160° 51.144' W	54.8088	-160.8524	gr125
gr	127	54° 55.782' N	160° 39.174' W	54.9297	-160.6529	gr127
gr	135	55° 24.810' N	159° 50.940' W	55.4135	-159.8490	gr135
gr	151	56° 22.872' N	158° 12.666' W	56.3812	-158.2111	gr151
gt	125	54° 41.640' N	160° 37.110' W	54.6940	-160.6185	gt125
gt	127	54° 48.894' N	160° 25.176' W	54.8149	-160.4196	gt127
gt	135	55° 17.928' N	159° 37.080' W	55.2988	-159.6180	gt135
gt	139	55° 32.442' N	159° 12.810' W	55.5407	-159.2135	gt139
gt	151	56° 15.984' N	157° 59.094' W	56.2664	-157.9849	gt151
gt	153	56° 23.244' N	157° 46.674' W	56.3874	-157.7779	gt153
gt	155	56° 30.498' N	157° 34.212' W	56.5083	-157.5702	gt155
gt	163	56° 51.000' N	156° 45.000' W	56.8500	-156.7500	gt163
gt	169	57° 21.300' N	156° 04.998' W	57.3550	-156.0833	gt169
gt	171	57° 27.000' N	155° 46.002' W	57.4500	-155.7667	gt171
gt	173	57° 37.002' N	155° 28.002' W	57.6167	-155.4667	gt173
gt	197	59° 02.904' N	153° 02.826' W	59.0484	-153.0471	gt197
gu	158	56° 40.002' N	157° 13.002' W	56.6667	-157.2167	gu158
gv	125	54° 34.752' N	160° 23.124' W	54.5792	-160.3854	gv125
gv	127	54° 42.006' N	160° 11.220' W	54.7001	-160.1870	gv127
gv	139	55° 25.554' N	158° 59.064' W	55.4259	-158.9844	gv139
gv	143	55° 40.068' N	158° 34.716' W	55.6678	-158.5786	gv143
gv	147	55° 54.582' N	158° 10.212' W	55.9097	-158.1702	gv147
gv	151	56° 09.096' N	157° 45.564' W	56.1516	-157.7594	gv151
gv	153	56° 16.356' N	157° 33.180' W	56.2726	-157.5530	gv153
gv	155	56° 23.610' N	157° 20.754' W	56.3935	-157.3459	gv155
gv	159	56° 38.124' N	156° 55.788' W	56.6354	-156.9298	gv159
gv	161	56° 45.384' N	156° 43.248' W	56.7564	-156.7208	gv161
gv	163	56° 52.644' N	156° 30.666' W	56.8774	-156.5111	gv163
gv	165	56° 59.898' N	156° 18.042' W	56.9983	-156.3007	gv165
gv	167	57° 07.158' N	156° 05.376' W	57.1193	-156.0896	gv167
gv	169	57° 14.412' N	155° 52.668' W	57.2402	-155.8778	gv169
gv	171	57° 21.672' N	155° 39.918' W	57.3612	-155.6653	gv171
gv	173	57° 28.926' N	155° 27.126' W	57.4821	-155.4521	gv173
gv	175	57° 36.186' N	155° 14.298' W	57.6031	-155.2383	gv175
gv	177	57° 43.446' N	155° 01.422' W	57.7241	-155.0237	gv177
gv	179	57° 50.700' N	154° 48.498' W	57.8450	-154.8083	gv179
gv	189	58° 26.988' N	153° 43.248' W	58.4498	-153.7208	gv189
gv	191	58° 34.242' N	153° 30.066' W	58.5707	-153.5011	gv191
gv	193	58° 41.502' N	153° 16.830' W	58.6917	-153.2805	gv193

<b>X</b>	<b>Y</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Decimal Latitude</b>	<b>Decimal Longitude</b>	<b>XY</b>
gv	195	58° 48.762' N	153° 03.558' W	58.8127	-153.0593	gv195
gv	197	58° 56.016' N	152° 50.232' W	58.9336	-152.8372	gv197
gv	199	59° 03.276' N	152° 36.864' W	59.0546	-152.6144	gv199
gv	201	59° 10.530' N	152° 23.448' W	59.1755	-152.3908	gv201
gx	127	54° 35.124' N	159° 57.312' W	54.5854	-159.9552	gx127
gx	135	55° 04.152' N	159° 09.486' W	55.0692	-159.1581	gx135
gx	139	55° 18.666' N	158° 45.360' W	55.3111	-158.7560	gx139
gx	143	55° 33.180' N	158° 21.078' W	55.5530	-158.3513	gx143
gx	147	55° 47.694' N	157° 56.652' W	55.7949	-157.9442	gx147
gx	151	56° 02.208' N	157° 32.076' W	56.0368	-157.5346	gx151
gx	153	56° 09.468' N	157° 19.728' W	56.1578	-157.3288	gx153
gx	155	56° 16.722' N	157° 07.344' W	56.2787	-157.1224	gx155
gx	157	56° 23.982' N	156° 54.918' W	56.3997	-156.9153	gx157
gx	159	56° 31.242' N	156° 42.450' W	56.5207	-156.7075	gx159
gx	161	56° 38.496' N	156° 29.946' W	56.6416	-156.4991	gx161
gx	163	56° 45.756' N	156° 17.400' W	56.7626	-156.2900	gx163
gx	165	56° 53.010' N	156° 04.818' W	56.8835	-156.0803	gx165
gx	167	57° 00.270' N	155° 52.188' W	57.0045	-155.8698	gx167
gx	169	57° 07.524' N	155° 39.522' W	57.1254	-155.6587	gx169
gx	171	57° 14.784' N	155° 26.814' W	57.2464	-155.4469	gx171
gx	173	57° 22.044' N	155° 14.064' W	57.3674	-155.2344	gx173
gx	175	57° 29.298' N	155° 01.272' W	57.4883	-155.0212	gx175
gx	177	57° 36.558' N	154° 48.438' W	57.6093	-154.8073	gx177
gx	179	57° 43.812' N	154° 35.562' W	57.7302	-154.5927	gx179
gx	181	57° 51.072' N	154° 22.638' W	57.8512	-154.3773	gx181
gx	183	57° 58.326' N	154° 09.672' W	57.9721	-154.1612	gx183
gx	185	58° 05.586' N	153° 56.664' W	58.0931	-153.9444	gx185
gx	187	58° 12.846' N	153° 43.614' W	58.2141	-153.7269	gx187
gx	189	58° 20.100' N	153° 30.516' W	58.3350	-153.5086	gx189
gx	191	58° 27.360' N	153° 17.370' W	58.4560	-153.2895	gx191
gx	193	58° 34.614' N	153° 04.182' W	58.5769	-153.0697	gx193
gx	195	58° 41.874' N	152° 50.952' W	58.6979	-152.8492	gx195
gx	197	58° 49.128' N	152° 37.674' W	58.8188	-152.6279	gx197
gx	199	58° 56.388' N	152° 24.348' W	58.9398	-152.4058	gx199
gx	201	59° 03.642' N	152° 10.974' W	59.0607	-152.1829	gx201
gz	135	54° 57.264' N	158° 55.758' W	54.9544	-158.9293	gz135
gz	139	55° 11.778' N	158° 31.698' W	55.1963	-158.5283	gz139
gz	143	55° 26.292' N	158° 07.494' W	55.4382	-158.1249	gz143
gz	145	55° 33.552' N	157° 55.332' W	55.5592	-157.9222	gz145

<b>X</b>	<b>Y</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Decimal Latitude</b>	<b>Decimal Longitude</b>	<b>XY</b>
gz	147	55° 40.806' N	157° 43.134' W	55.6801	-157.7189	gz147
gz	149	55° 48.066' N	157° 30.900' W	55.8011	-157.5150	gz149
gz	151	55° 55.326' N	157° 18.630' W	55.9221	-157.3105	gz151
gz	153	56° 02.580' N	157° 06.318' W	56.0430	-157.1053	gz153
gz	155	56° 09.840' N	156° 53.970' W	56.1640	-156.8995	gz155
gz	157	56° 17.094' N	156° 41.580' W	56.2849	-156.6930	gz157
gz	159	56° 24.354' N	156° 29.154' W	56.4059	-156.4859	gz159
gz	161	56° 31.608' N	156° 16.686' W	56.5268	-156.2781	gz161
gz	163	56° 38.868' N	156° 04.182' W	56.6478	-156.0697	gz163
gz	165	56° 46.122' N	155° 51.636' W	56.7687	-155.8606	gz165
gz	167	56° 53.382' N	155° 39.048' W	56.8897	-155.6508	gz167
gz	169	57° 00.642' N	155° 26.418' W	57.0107	-155.4403	gz169
gz	171	57° 07.896' N	155° 13.746' W	57.1316	-155.2291	gz171
gz	173	57° 15.156' N	155° 01.038' W	57.2526	-155.0173	gz173
gz	181	57° 44.184' N	154° 09.774' W	57.7364	-154.1629	gz181
gz	183	57° 51.444' N	153° 56.850' W	57.8574	-153.9475	gz183
gz	185	57° 58.698' N	153° 43.884' W	57.9783	-153.7314	gz185
gz	187	58° 05.958' N	153° 30.870' W	58.0993	-153.5145	gz187
gz	189	58° 13.212' N	153° 17.820' W	58.2202	-153.2970	gz189
gz	191	58° 20.472' N	153° 04.716' W	58.3412	-153.0786	gz191
gz	193	58° 27.726' N	152° 51.576' W	58.4621	-152.8596	gz193
gz	197	58° 42.240' N	152° 25.146' W	58.7040	-152.4191	gz197
gz	199	58° 49.500' N	152° 11.868' W	58.8250	-152.1978	gz199
hb	139	55° 04.890' N	158° 18.084' W	55.0815	-158.3014	hb139
hb	143	55° 19.404' N	157° 53.946' W	55.3234	-157.8991	hb143
hb	145	55° 26.664' N	157° 41.826' W	55.4444	-157.6971	hb145
hb	147	55° 33.924' N	157° 29.664' W	55.5654	-157.4944	hb147
hb	149	55° 41.178' N	157° 17.466' W	55.6863	-157.2911	hb149
hb	151	55° 48.438' N	157° 05.226' W	55.8073	-157.0871	hb151
hb	153	55° 55.692' N	156° 52.956' W	55.9282	-156.8826	hb153
hb	157	56° 10.206' N	156° 28.290' W	56.1701	-156.4715	hb157
hb	159	56° 17.466' N	156° 15.900' W	56.2911	-156.2650	hb159
hb	161	56° 24.720' N	156° 03.468' W	56.4120	-156.0578	hb161
hb	163	56° 31.980' N	155° 51.000' W	56.5330	-155.8500	hb163
hb	165	56° 39.240' N	155° 38.490' W	56.6540	-155.6415	hb165
hb	167	56° 46.494' N	155° 25.944' W	56.7749	-155.4324	hb167
hb	169	56° 53.754' N	155° 13.350' W	56.8959	-155.2225	hb169
hb	171	57° 01.008' N	155° 00.720' W	57.0168	-155.0120	hb171
hb	199	58° 42.612' N	151° 59.418' W	58.7102	-151.9903	hb199

<b>X</b>	<b>Y</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Decimal Latitude</b>	<b>Decimal Longitude</b>	<b>XY</b>
hd	143	55° 12.522' N	157° 40.440' W	55.2087	-157.6740	hd143
hd	147	55° 27.036' N	157° 16.230' W	55.4506	-157.2705	hd147
hd	151	55° 41.550' N	156° 51.864' W	55.6925	-156.8644	hd151
hd	153	55° 48.804' N	156° 39.630' W	55.8134	-156.6605	hd153
hd	155	55° 56.064' N	156° 27.354' W	55.9344	-156.4559	hd155
hd	157	56° 03.324' N	156° 15.036' W	56.0554	-156.2506	hd157
hd	159	56° 10.578' N	156° 02.682' W	56.1763	-156.0447	hd159
hd	161	56° 17.838' N	155° 50.292' W	56.2973	-155.8382	hd161
hd	163	56° 25.092' N	155° 37.860' W	56.4182	-155.6310	hd163
hd	165	56° 32.352' N	155° 25.386' W	56.5392	-155.4231	hd165
hd	167	56° 39.606' N	155° 12.876' W	56.6601	-155.2146	hd167
hd	169	56° 46.866' N	155° 00.324' W	56.7811	-155.0054	hd169
hd	197	58° 28.470' N	152° 00.204' W	58.4745	-152.0034	hd197
hd	199	58° 35.724' N	151° 47.010' W	58.5954	-151.7835	hd199
hf	147	55° 20.148' N	157° 02.838' W	55.3358	-157.0473	hf147
hf	151	55° 34.662' N	156° 38.544' W	55.5777	-156.6424	hf151
hf	153	55° 41.922' N	156° 26.340' W	55.6987	-156.4390	hf153
hf	155	55° 49.176' N	156° 14.100' W	55.8196	-156.2350	hf155
hf	157	55° 56.436' N	156° 01.824' W	55.9406	-156.0304	hf157
hf	159	56° 03.690' N	155° 49.506' W	56.0615	-155.8251	hf159
hf	191	57° 59.808' N	152° 26.970' W	57.9968	-152.4495	hf191
hf	197	58° 21.582' N	151° 47.784' W	58.3597	-151.7964	hf197
hf	199	58° 28.842' N	151° 34.632' W	58.4807	-151.5772	hf199
hh	151	55° 27.774' N	156° 25.266' W	55.4629	-156.4211	hh151
hh	153	55° 35.034' N	156° 13.098' W	55.5839	-156.2183	hh153
hh	155	55° 42.288' N	156° 00.894' W	55.7048	-156.0149	hh155
hh	157	55° 49.548' N	155° 48.654' W	55.8258	-155.8109	hh157
hh	159	55° 56.802' N	155° 36.372' W	55.9467	-155.6062	hh159
hh	193	58° 00.180' N	152° 01.482' W	58.0030	-152.0247	hh193
hh	195	58° 07.440' N	151° 48.462' W	58.1240	-151.8077	hh195
hh	197	58° 14.694' N	151° 35.400' W	58.2449	-151.5900	hh197
hh	199	58° 21.954' N	151° 22.290' W	58.3659	-151.3715	hh199

**9.2.2 MF-03-08 Station Locations and Activities at Line 8**

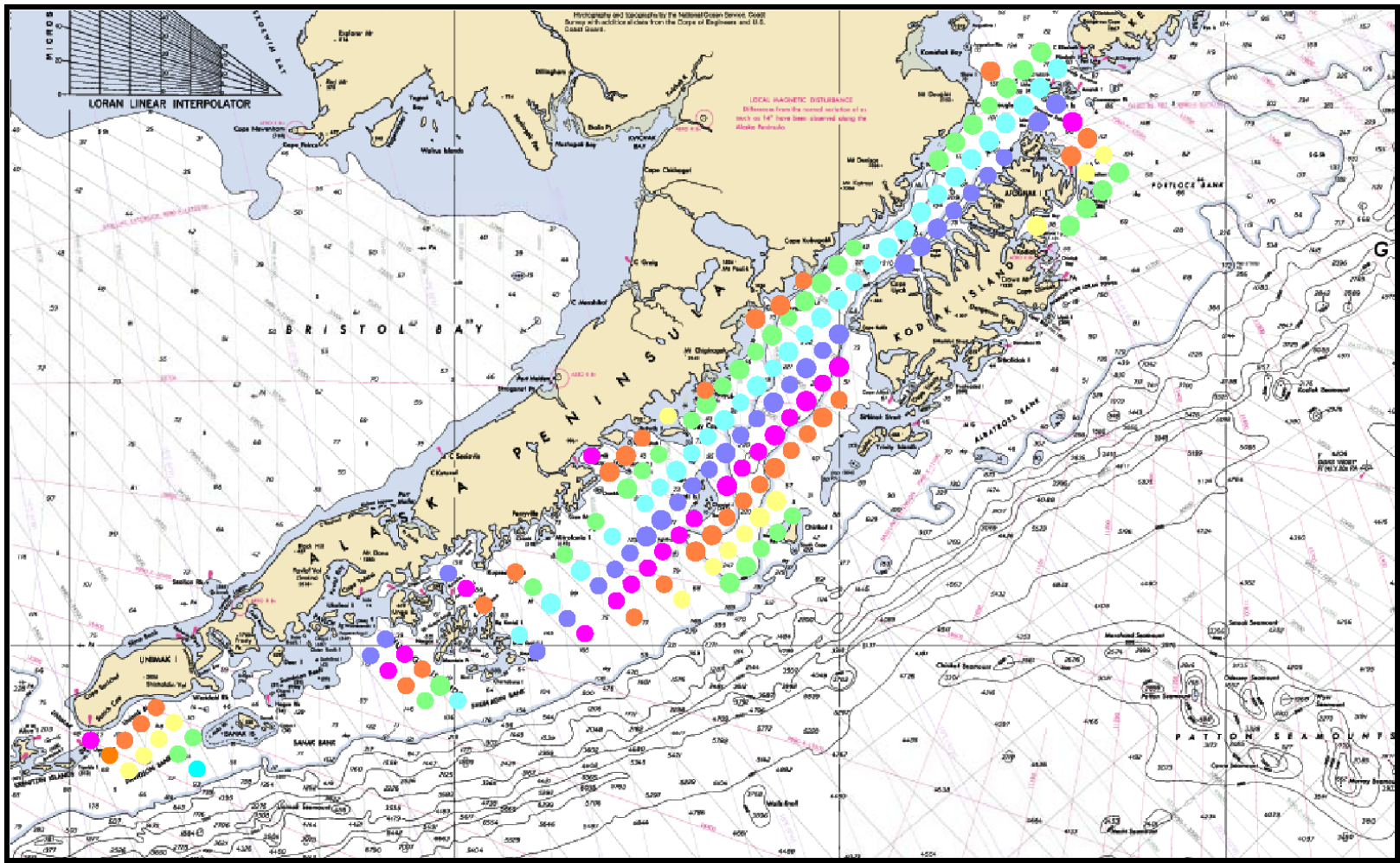
Station	Latitude	Longitude	Decimal Latitude	Longitude	CTDB	Chl	Nuts	MZ	Bongo
FOX61	57° 43.200' N	155° 15.600' W	57.72	-155.26	x	x	x	x	x
FOX60	57° 40.800' N	155° 10.200' W	57.68	-155.17	x	x	x	x	x
FOX59	57° 38.400' N	155° 04.200' W	57.64	-155.07	x	x	x	x	x
FOX58	57° 36.600' N	155° 00.600' W	57.61	-155.01	x	x	x	x	x
FOX57	57° 33.000' N	154° 52.800' W	57.55	-154.88	x	x	x	x	x
FOX56	57° 31.200' N	154° 46.800' W	57.52	-154.78	x	x	x	x	x
FOX55	57° 28.800' N	154° 42.000' W	57.48	-154.70	x	x	x	x	x

**9.3 MF-03-08 HAZMAT Inventory**

Chemical	CAS Number	Respondee	Org.	Qty.	H	F	R	Storage Color Code	Hazard Class	Packing Group Number	UN	Reportable Quantity	Response Indices
Ethanol, 95%	64-17-5	Brown	AFSC	20.0-l	3	4	2	Flammable	3	II	1170	5000-lb	1
Formaldehyde, 1.8%	mix	Brown	AFSC	120-jars	3	2	2	Flammable	3 & 8	III	1198	100-lb	1
Formaldehyde, 37%	mix	Brown	AFSC	80.0-l	3	2	2	Flammable	3 & 8	III	1198	100-lb	1
Sodium Borate	1330-43-4	Brown	AFSC	1.0-kg	2	0	0	General	Not regulated			None	2
Sodium Borate Solution, Saturated	mix	Brown	AFSC	20.0-l	2	0	0	General	Not regulated			None	2
Zinc-Formalin, 10%, (Z-Fix)	mix	Brown	AFSC	1.0-l	2	1	0	General	9		3334	None	None
<p><b>Spill Response 1:</b> 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, or earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. <b>Do not flush to sewer!</b> If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. 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.</p>													
<p><b>Spill Response 2:</b> Ventilate area of leak or spill. Wear appropriate personal protective equipment. Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.</p>													

## 9.4 MF-03-08 Figures

### 9.4.1 Potential MF-03-08 Station Locations Chartlet



9.4.2 MF-03-08 Station Locations – Line 8

