

# DRAFT CRUISE INSTRUCTIONS

## *Eco-FOCI*

NOAA Ship *Oscar Dyson*, OD-07-02  
February 19 – February 28, 2007  
Chief Scientist: Janet Duffy-Anderson, NOAA/AFSC

### 1.0 DRAFT CRUISE INSTRUCTIONS

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

1.2 **Cruise Numbers:**

1.2.1 **Cruise Number** – OD-07-02

1.2.2 **Eco-FOCI Number** – 1OD07

1.3 **Cruise Dates:**

1.3.1 **Departure** – Depart Dutch Harbor, Alaska, at 1500 hours on Monday, February 19, 2007.

1.3.2 **Arrival** – Arrive Dutch Harbor, Alaska, at 0800 hours on Wednesday, February 28, 2007.

### 2.0 CRUISE OVERVIEW

2.1 **Cruise Objectives** – We will conduct bottom trawl sampling in Bering canyon to collect ripe adult Greenland halibut (*Reinhardtus hippoglossides*), and we will conduct an ichthyoplankton survey in the same vicinity to collect ichthyoplankton. This work is needed to describe halibut spawning ecology and their egg and larval distribution over the slope and in Bering Canyon in winter. The work will also be used in the study of transport and early life history of this species. Data on physical characteristics of the water column will also be collected.

2.2 **Applicability** – These instructions, with **FOCI Standard Operating Instructions for NOAA Ship Oscar Dyson**, dated November 11, 2005, present complete information for this cruise. [Note that these standard operating instructions are modified from those from the NOAA Ship **MILLER FREEMAN** and are in the process of being adapted for *Oscar Dyson*. Comments are welcome.]

2.3 **Operating Area** – Eastern Bering Sea/Bering Canyon.

## **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**

<b>Name</b>	<b>Gender</b>	<b>Affiliation</b>	<b>E-mail Address</b>
Janet Duffy-Anderson (206) 526-6465	Female	AFSC	<a href="mailto:Janet.Duffy-Anderson@noaa.gov">Janet.Duffy-Anderson@noaa.gov</a>

### **2.5.2 Other Participating Scientists**

<b>Name</b>	<b>Gender</b>	<b>Affiliation</b>	<b>E-mail Address</b>
Morgan S. Busby	Male	AFSC	<a href="mailto:Morgan.Busby@noaa.gov">Morgan.Busby@noaa.gov</a>
Deborah M. Blood	Female	AFSC	<a href="mailto:Debbie.Blood@noaa.gov">Debbie.Blood@noaa.gov</a>
Jeffrey M. Napp	Male	AFSC	<a href="mailto:Jeff.Napp@noaa.gov">Jeff.Napp@noaa.gov</a>
Ann C. Matarese	Female	AFSC	<a href="mailto:Ann.Matarese@noaa.gov">Ann.Matarese@noaa.gov</a>
Lorenzo Ciannelli	Male	OSU	<a href="mailto:Lorenzo.Ciannelli@bio.uio.no">Lorenzo.Ciannelli@bio.uio.no</a>
Christina Jump	Female	AFSC	<a href="mailto:Christina.Jump@noaa.gov">Christina.Jump@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  
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Commander Mark P. Ablondi, NOAA  
Chief, Operations Division, Pacific (MOP1)  
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E-mail: [Mark.Ablondi@noaa.gov](mailto:Mark.Ablondi@noaa.gov)

Larry Mordock  
Deputy Chief, Operations Division (MOP1x1)  
Telephone – Work: (206) 553-4764  
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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**

**Data To Be Collected** – We will collect ichthyoplankton samples with 20- and 60-cm Bongo nets (20BON, 60BON), a Sameoto neuston net (NEU) from a grid of approximately 70 stations in the vicinity of Bering Canyon. In addition, a 1m<sup>2</sup> Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS) will be used at selected stations to examine depth-discrete distributions of larvae. Deep (200, 400, or 600 m) Bongo net samples for ichthyoplankton may also be taken at selected stations. Bottom trawls for spawning condition Greenland halibut will be made with RACE Division poly Nor'Eastern (PNE) bottom trawl at selected stations throughout the grid (see section 3.4.1). Exact positions will be determined at sea based on densities of eggs and larvae collected in bongo tows. A standard oceanographic watch is requested, which consists of a winch operator, a scientific staff of three and a Survey Tech on deck. Operations will be conducted 24 hours a day. A fishing crew will be required to assist with bottom trawls, which will be conducted day and night.

We will collect data on the physical environment using the Sea-Bird Electronics SBE-19 SEACAT Profiler to relate larval fish abundance to environmental variables (temperature and salinity). CTDB samples will also be taken to assess microzooplankton, chlorophyll, and nutrients.

**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 OSCAR DYSON** (SOI 5.2) for specific requirements.

**3.2 Staging Plan** – The majority of the equipment necessary for the cruise will be loaded onto **NOAA Ship OSCAR DYSON** when the ship is in port in Seattle, Washington, in January 2006. We request that we be allowed to set up equipment, including the MOCNESS (+ termination if necessary), on the day prior to departure. To accomplish this, three scientists (Napp, Jump, Duffy-Anderson) will arrive on Saturday, February 17, 2007, and if possible, we request that they be allowed to berth overnight on the vessel beginning the night of February 17<sup>th</sup>. We request that the ET and someone from the Deck Department be available on February 18<sup>th</sup> to assist the scientists with setting up the MOCNESS. We will require dedicated use of the computer lab, dry lab, hydrographic lab (for potential storage of MOCNESS accessories), controlled environmental room (3 °C), and fish lab for sample and equipment preparation and request as much counter and cabinet space as possible.

**3.3 De-staging Plan** – We will offload the gear and plankton samples after the ship returns to Dutch Harbor, Alaska on February 28<sup>th</sup>.

**3.4 Cruise Plan** – The cruise will depart from Dutch Harbor, Alaska, and occupy a series of approximately 60 stations. Station positions and a map of the working area are located in [Sections 9.2 OD-07-02 – Station Locations](#) and [9.3 OD-07-02 – Cruise Chartlet](#), respectively.

**3.4.1 Grid Survey** – During the regular grid survey (EBS), the Sameoto neuston net will be deployed first. The net will collect fish larvae in the surface layer. Samples from the Neuston net will be preserved in 1.8% buffered Formaldehyde (5% formalin). Marks should be made at surface (in) and surface (out). A Marine Assessment Monitoring and Prediction (MARMAP) Bongo tow (SOI 3.2.2) will be conducted next. The SBE 19 SEACAT, the 20-cm Bongo (20BON) net with 0.150-mm mesh netting and the 60-cm Bongo (60BON) net mounted with 0.505-mm mesh will all be mounted together for this tow. Grid station bongo tows will be to a depth of 300 meters, or to 10 meters off bottom, whichever is shallowest. Marks should be made at surface (in), at-depth, and surface (out). The sample from Bongo Net 1 will be preserved in its entirety in 1.8% buffered formaldehyde solution (5% formalin) and the sample from Net 2, whenever time allows, will be rough sorted, and the contents identified. If egg or larval halibut are found in 60BON Net 2, they will be preserved in EtOH. The remainder of the sample will be discarded.

**3.4.2 MOCNESS** – We will opportunistically fish the MOCNESS (0.505 and/or 0.333 mm mesh) at selected stations (approximately 10) in Bering Canyon, over the slope, and on the Bering Sea continental shelf during the survey. At each of these stations the CTDB cast (with 8 bottles) will occur after the MOCNESS tow. Samples will be preserved in formalin. Locations for this sampling to be determined at sea at the discretion of the Chief Scientist and the CO. One or more 24-hr station occupations may occur to examine diel changes in vertical distribution of ichthyoplankton and zooplankton. Marks for MOCNESS tows should be surface (in), at-depth, one mark for each subsequent closed net, and surface (out).

The associated CTDB (8 bottles) casts will collect water samples for microzooplankton, chlorophyll, and nutrient data (SOI 3.2.1). At these stations, the CTD cast will follow the MOCNESS tow. CTD bottle trips will be made at the same depths as the MOCNESS. Marks for CTD casts should be surface (in), at-depth, each bottle trip, and surface (out).

**3.4.3 Trawling Activities** – A Poly Nor'eastern bottom trawl (PNE) with roller gear will have been loaded onto the net reels prior to this cruise for use during OD-07-01 (MACE). Spare AWT and PNE with roller gear will serve as backups. The PNE is a high-opening trawl equipped with roller gear and constructed with stretch mesh sizes that range from 13 cm (5 in) in the forward portion of the net to 8.9 cm (3.5 in) in the codend. The codend will be fitted with a 3.2 cm (1.25 in) nylon mesh liner. The 27.2 m (89.1 ft) headrope holds 21 floats [30 cm (12 in) diameter]. A 24.7 m (81 ft) chain fishing line will be attached to a 24.9 m (81.6 ft) footrope constructed of 1 cm (0.4 in) 6 × 19 wire rope wrapped with polypropylene rope. The trawl will be rigged with triple 54.9 m (180 ft) galvanized wire rope dandyline. The roller gear will be attached to the fishing line using chain toggles [2.9 kg (6.5 lb) each] comprised of five

links and one ring. The 24.2 m (79.5 ft) roller gear will be constructed with 36 cm (14 in) rubber bobbins spaced 1.5-2.1 m (5-7 ft) apart. A solid string of 10 cm (4 in) rubber disks separates some of the bobbins in the center section of the roller gear. Two 5.9 m (19.5 ft) wire rope extensions with 10 cm (4 in) and 20 cm (8 in) rubber disks will be used to span the two lower flying wing sections and will be attached to the roller gear. The net will be fished with the Fishbuster trawl doors. The vertical net opening and depth will be monitored with a Furuno netsounder system attached to the headrope. After deployment and settling of the net on bottom, the net will be towed for 20 minutes at a speed of 1.5 m/sec. We request that the chief boatswain keep a trawl gear logbook to record any modifications made to trawl gear during the cruise. Opportunistic fishing will then be conducted at depths of approximately 600-400 m throughout the cruise. Whenever ripe adult Greenland halibut are found, a CTD cast with bottles will be deployed to collect data on the physical properties of water at the bottom and water for holding live eggs. We will then attempt to fertilize eggs from gravid females with sperm from ripe males aboard ship. If insufficient numbers of fishes are collected for successful fertilization, adults may be held in a live holding tank temporarily. Live eggs will be held in gallon jars placed in the refrigerated room (3.0° C) until the end of the cruise. We anticipate trawling activities at approximately 20 stations.

**3.4.4 ARGOS Satellite-Tracked Drifter Buoy Deployments** – FOCI anticipates deployment of 3-4 ARGOS drifters at selected stations in Bering Canyon. Sites will be determined at sea dependent upon catches of egg/larvae in the bongo or MOCNESS tows.

**3.5 Station Locations** – See [Section 9.2 OD-06-02 – 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 Oscar Dyson** (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),
- MOCNESS tows, (SOI 3.2.5)
- ARGOS Satellite-Tracked Drifter Buoy Deployments (SOI 3.2.11).

### **3.6.1 Neuston Net Tows**

**3.6.1.1 Description** – Neuston nets are used for sampling the upper few centimeters of the water column. There are many frame styles that may be used; however, we use a Sameoto sampler made of stainless steel. The mouth opening is 30-cm x 50-cm and is designed to fish half in and half out of the water.

**3.6.1.2 Rates/Fishing** – The vessel should be moving slowly ahead, about 1.5 to 2.0 knots, so that the net is fishing half in and half out of the water.

The exact speed is a learning process and may vary with sea conditions. Lower the Neuston net to the surface and pay out 10 to 15 meters of rope. It may be necessary to adjust the ship's speed to maintain the proper skimming action.

Start the stopwatch when the net starts to fish and tow the net for approximately 9.5 minutes, unless otherwise instructed. After 9.5 minutes, decrease vessel speed to retrieve the net. Read and record flow meter revolutions, duration of tow, and any comments on the COD form.

**3.6.1.3 Preservation** – The Neuston sample should be preserved immediately, as specified in the **FOCI Field Manual** or sample collection request forms.

**3.6.1.4 Maintenance** – Check net for holes and fill flow meter with water.

**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:

- Scientific Computer System (SOI 5.2),
- 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-19 SEACAT, for net tow operations,
- Sea-Bird Electronics' SBE-19 SEACAT system,
- Sea-Bird Electronics SBE 911plus CTD system with stand, each CTD system should include underwater CTD, weights, and pinger. There should be one deck unit for the two systems,
- Conductivity and temperature sensor package to provide dual sensors on the CTD (primary),
- Niskin Bottles: 10.0 liter (10 plus 10 spares),
- AUTOSAL salinometer for CTD field corrections,
- Meter block for plankton tows,
- Wire speed indicators and readout for 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 (both blast and storage freezers, -20° C and -80° C) turned on and operating,
- Use of Pentium PC for data analysis,
- Scientific Computer System (SCS),
- Environmental room (3°C)
- Furuno net sounder
- 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
- Ship'd crane(s) used for loading and/or deploying gear and supplies.

**4.2 Equipment and Capabilities Provided by Scientists** – See [Section 9.1 OD-06-02 – Equipment Inventory](#) for weights and dimensions.

- Sea-Bird Electronics SBE 911plus CTD system (backup),
- Sea-Bird Electronics' SBE-19 SEACAT system, (backup),
- PMEL PC with SEASOFT software for CTD data collection and processing,
- Fluorometer and light meter to be mounted on CTD,
- MOCNESS array,
- Live holding tank,
- ARGOS drifters,
- PNE bottom trawl with Fishbuster doors
- 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,
- 20-cm and 60-cm Bongo sampling arrays,
- Sameoto neuston net and frame,
- Spare wire angle indicator,

- Miscellaneous scientific sampling and processing equipment,
- Underway fluorometer,
- Scientific freezer (-20 °C),
- Microscope for examining, sorting, and measuring fish eggs and larvae,
- Haul position and catch composition forms, and
- Cruise Operations Database (COD) software and forms
- Plastic five-gallon buckets
- Dissection tools
- Refrigerators for holding fish eggs Probably do not need with cold room? Ask Deb
- Microscope for examining, sorting, and measuring fish eggs
- Thermoses and coolers for transporting live eggs

## 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 and scientific instruments used, PMEL CTD weather observation log
- CTD Cast Information/Rosette Log,
- Autosalinometer Logs, and
- Scientific Freezer Temperature Daily Log
- Controlled Environmental Room Temperature Log

5.2 **Pre- and Post-cruise Meetings** – Cruise meetings may be held in accordance with **FOCI Standard Operating Instructions for NOAA Ship Oscar Dyson** (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 9.4 OD-07-02 – HAZMAT Inventory](#).



**7.2 Material Safety Data Sheet (MSDS)** – Submitted separately.

## **8.0 MISCELLANEOUS**

**8.1 Communications** – Specific information on how to contact the **NOAA Ship OSCAR DYSON** 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 OSCAR DYSON** – Telephone methods listed in order of increasing expense.

Homeport – Kodiak, Alaska:

- Numbers yet to be determined

United States Coast Guard – Kodiak, Alaska:

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

Cellular:

- (206) 604-7122 (CO)
- (206) 295-0775 (XO)
- (206) 295-0550 (OPS)

Cruise No: OD-07-02  
FOCI No: 1OD07

- (206) 295-0670 (CME)

Wavetalk

- 1-800-668-04950-toll free

INMARSAT B:

- 011-872-336-995-910 (voice line 1)
- 011-872-336-995-920 (voice line 2)
- 011-872-336-995-911 (fax)

Iridium:

- (808) 659-5684

E-Mail: [Noaa.Ship.Oscar.Dyson@noaa.gov](mailto:Noaa.Ship.Oscar.Dyson@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](mailto:Radio.Room@noaa.gov)

**9.0 APPENDICES****9.1 OD-06-02 – Equipment Inventory**

Equipment	Quantity	Dimension	Weight
Larval Supply Trunk	1	20" x 22" x 36"	80-lbs
Formaldehyde Containers	1 x 20-Liter		20-lbs
Carboy, Saturated Sodium Borate	1 x 20-Liter		40-lbs
Miscellaneous Gear Trunks	4	20" x 22" x 36"	80-lbs (ea.)
60-cm Bongo Frame	1	8" x 26" x 60"	40 lbs
20-cm Bongo Frame	1	8" x 14" x 16"	40 lbs
Live tank	1		
PNE Trawl + doors	1		
MOCNESS Frame	1	90" x 90"	250 lbs
Cases, Glass Jars, 32-oz	25 cases	8" x 12" x 15"	50-lbs
Cases, Glass Jars, 8-oz	15 cases	4" x 6" x 8"	8-lbs
Sameoto Neuston Frame	1	24" x 48" x 12"	20-lbs

**9.2 OD-07-02 – Station Locations (yellow indicates potential MOCNESS sites)**

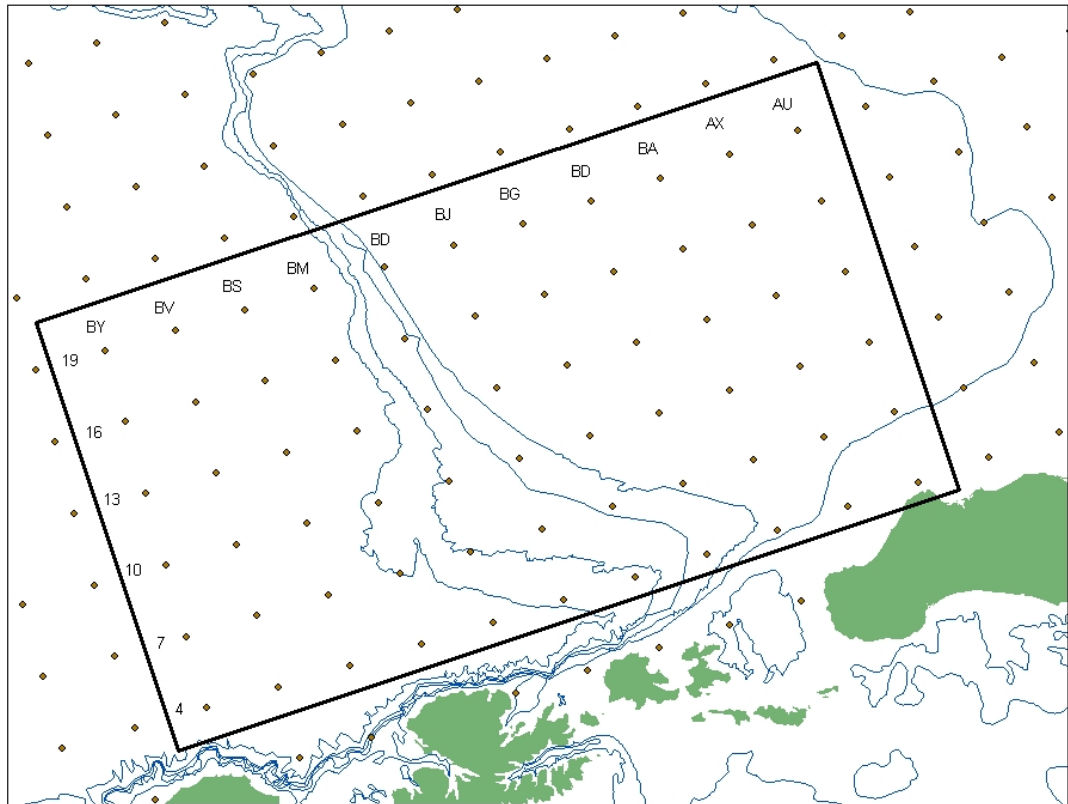
Operation	LatDeg	LatMin	LongDeg	LongMin	DecLat	DecLong
BY19	54	51.15	-169	19.36	54.85252	-169.323
BY16	54	37.96	-169	6.95	54.6327	-169.116
BY13	54	24.77	-168	54.61	54.41288	-168.91
BY10	54	11.58	-168	42.34	54.19307	-168.706
BY7	53	58.40	-168	30.13	53.97325	-168.502
BY4	53	45.21	-168	17.99	53.75343	-168.3
BV4	53	52.37	-167	55.50	53.87278	-167.925
BV7	54	5.56	-168	7.67	54.0926	-168.128
BV10	54	18.75	-168	19.92	54.31242	-168.332
BV13	54	31.93	-168	32.23	54.53223	-168.537
BV16	54	45.12	-168	44.60	54.75205	-168.743
BV19	54	58.31	-168	57.04	54.97187	-168.951
BS19	55	5.47	-168	34.67	55.09122	-168.578
BS16	54	52.28	-168	22.19	54.8714	-168.37
BS13	54	39.09	-168	9.78	54.65158	-168.163
BS10	54	25.91	-167	57.43	54.43177	-167.957
BS7	54	12.72	-167	45.16	54.21195	-167.753
BS4	53	59.53	-167	32.94	53.99213	-167.549
BP4	54	6.69	-167	10.32	54.11148	-167.172
BP7	54	19.88	-167	22.57	54.3313	-167.376
BP10	54	33.07	-167	34.88	54.55112	-167.581
BP13	54	46.26	-167	47.26	54.77094	-167.788
BP16	54	59.44	-167	59.71	54.99075	-167.995
BP19	55	12.63	-168	12.23	55.21057	-168.204
BM19	55	19.80	-167	49.72	55.32992	-167.829
BM16	55	6.61	-167	37.17	55.1101	-167.62

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BM13	54	53.42	-167	24.68	54.89029	-167.411
BM10	54	40.23	-167	12.27	54.67047	-167.205
BM7	54	27.04	-166	59.92	54.45065	-166.999
BM4	54	13.85	-166	47.63	54.23083	-166.794
BJ4	54	21.01	-166	24.88	54.35018	-166.415
BJ7	54	34.20	-166	37.20	54.57	-166.62
BJ10	54	47.39	-166	49.58	54.78982	-166.826
BJ13	55	0.58	-167	2.04	55.00964	-167.034
BJ16	55	13.77	-167	14.56	55.22945	-167.243
BJ19	55	26.96	-167	27.16	55.44927	-167.453
BG19	55	34.12	-167	4.52	55.56862	-167.075
BG16	55	20.93	-166	51.89	55.3488	-166.865
BG13	55	7.74	-166	39.33	55.12899	-166.656
BG10	54	54.55	-166	26.84	54.90917	-166.447
BG7	54	41.36	-166	14.41	54.68935	-166.24
BG4	54	28.17	-166	2.06	54.46953	-166.034
BD4	54	35.33	-165	39.17	54.58888	-165.653
BD7	54	48.52	-165	51.56	54.8087	-165.859
BD10	55	1.71	-166	4.02	55.02852	-166.067
BD13	55	14.90	-166	16.55	55.24834	-166.276
BD16	55	28.09	-166	29.15	55.46815	-166.486
BD19	55	41.28	-166	41.81	55.68797	-166.697
BA19	55	48.44	-166	19.05	55.80732	-166.318
BA16	55	35.25	-166	6.34	55.58751	-166.106
BA13	55	22.06	-165	53.71	55.36769	-165.895
BA10	55	8.87	-165	41.14	55.14787	-165.686
BA7	54	55.68	-165	28.64	54.92805	-165.477
BA4	54	42.49	-165	16.22	54.70823	-165.27
AX4	54	49.65	-164	53.19	54.82758	-164.887
AX7	55	2.84	-165	5.66	55.0474	-165.094
AX10	55	16.03	-165	18.19	55.26722	-165.303
AX13	55	29.22	-165	30.80	55.48704	-165.513
AX16	55	42.41	-165	43.47	55.70686	-165.725
AX19	55	55.60	-165	56.21	55.92667	-165.937
AU19	56	2.76	-165	33.31	56.04602	-165.555
AU16	55	49.57	-165	20.53	55.82621	-165.342
AU13	55	36.38	-165	7.81	55.60639	-165.13
AU10	55	23.19	-164	55.18	55.38657	-164.92
AU7	55	10.01	-164	42.60	55.16675	-164.71
AU4	54	56.82	-164	30.10	54.94693	-164.502

Cruise No: OD-07-02  
FOCI No: 10D07

### 9.3 OD-07-02 – Cruise Chartlet



## 9.4 HAZMAT Inventory

Chemical	CAS Number	Respondee	Org.	Qty	H	F	R	Storage Code	Hazard Class	Packing Group Number	UN	Reportable Quantity	Response Indices
Formaldehyde, 37%	50-00-0	Duffy-Anderson	AFSC	60-L	3	2	2	Flammable	3 & 8	III	1198	100 LBS	2
Sodium Borate	1330-43-4	Duffy-Anderson	AFSC	500-g	1	0	0	General	Not regulated				3
Sodium Borate Solution, Saturated	mix	Duffy-Anderson	AFSC	20-L	1	0	0	General	Not regulated				3
Alcohol, Reagent, 95%	mix	Duffy-Anderson	AFSC	1 x 20-l	3	3	1	Flammable	3	II	1987	350 Lb	1

**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 saw dust. **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.

**Spill Response 2:** 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. **Do not flush to sewer!** 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.

**Spill Response 3:** 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.