CRUISE REPORT

Cruise Number: MF03-12

Vessel:	NOAA Ship *Miller Freeman*	
Area of Operations:	Gulf of Alaska, Bering Sea	
Itinerary:	Depart Kodiak, Alaska:	23 September 2003
	Arrive Dutch Harbor, Alaska:	4 October 2003

Participating Organizations:

PMEL/FOCI
Univ. of Alaska, Fairbanks

Chief Scientist: Carol DeWitt
NOAA/PMEL/OERD2/FOCI
206-526-6808
Carol.Dewitt@noaa.gov

Other Participating Scientists:

Bill Floering	M	USA	NOAA/PMEL
Earl Roskie	M	USA	NOAA/PMEL
Steve Smith	M	USA	NOAA/PMEL
Susan Henrichs	F	USA	University of Alaska Fairbanks
Sarah Thornton	F	Canada	University of Alaska Fairbanks

Cruise Objectives: The primary objective of the cruise was the recovery and deployment of moorings in the Gulf of Alaska and Bering Sea. The second objective was biological and physical ocean property sampling at the mooring locations.

Summary of Operations and Samples Collected:

CTD Casts	29
Bongo Tows, 60 cm only	6
Moorings Recovered	15
Moorings Deployed	14
Salinity Samples	10
Chlorophyll Samples	7
Nutrient Samples	43

Cruise Summary:

Miller Freeman left Kodiak, Alaska on September 23rd and proceeded to the mooring site at Chiniak Bay. Weather conditions were marginal for mooring operations; the one mooring at this site was successfully recovered and deployed. A calibration CTD was conducted prior to mooring recovery and after mooring deployment. The ship proceeded towards Shelikof Strait. Weather conditions continued to deteriorate; therefore the transit to Shelikof was aborted. Since there weren't any available sheltered areas close by, the ship maintained an optimal heading, in regards to weather, throughout the night.

In the morning, the winds died down and the ship proceeded to Shelikof Strait. On the evening of September 24th, CTD operations began for the seven stations across line 8. In the morning, mooring operations at line 8 began. At each of three sites, a mooring was recovered and deployed and was followed by a calibration CTD. Satellite-tracked drifter s/n 43821 was deployed between mooring sites 3 and 2; satellite-tracked drifter s/n 43820 was deployed between mooring sites 2 and 1. These drifters were manufactured by METOCEAN who is testing a new drifter hull design.

We proceeded to Bering Sea site 2. On September 27th, a 60-cm bongo and a CTD/nutrients cast were conducted at the south station of site 2. No 20-cm bongo was aboard for this cruise due to equipment scheduling conflicts. We then proceeded to the center station where a calibration CTD/chlorophylls/nutrients cast was conducted prior to mooring recovery operations. Three moorings were recovered, including a surface mooring. The Benthos release on the surface mooring would not release until it was vertical – which resulted in having the anchor attached during half of the mooring recovery. Next, two moorings were deployed. A CTD/nutrient and bongo cast were completed after the mooring deployment operations (no CalVET was conducted – it also was not aboard due to equipment scheduling conflicts). A CTD/nutrients and 60-cm bongo cast were completed at the remaining three stations (east, north and west) of site 2.

We proceeded to Bering Sea site 4. Since the weather was deteriorating, we skipped the southern box site and went directly to the mooring site. On September 28th, we completed a calibration CTD/chlorophylls/nutrients cast (two Nisken bottles and the secondary conductivity cell were broken during the CTD recovery), recovered and deployed one mooring, completed another CTD/nutrients calibration cast, and a 60-cm bongo cast. Based on the deteriorating weather conditions and weather forecasts, the box stations at site 4 were not completed and the ship proceeded directly towards the Amukta Pass mooring site.

When we arrived at Amukta Pass, the weather conditions prohibited operations, and the ship hid behind Amukta Island. Weather conditions at Amukta Pass delayed the start of operations until the morning of October 1st. Although the winds had died down, sea conditions were still marginal. A CTD was completed at Amukta site 1 and then the ship hid behind Amukta Island during lunch. After lunch a mooring recovery was completed during marginal sea conditions and again the ship hid behind Amukta Island during dinner. After dinner the seas died down considerably and we were able to complete the mooring deployment (due to time considerations, no post deployment CTD) at site 1 and proceed to site 2 for mooring recovery, mooring deployment and post deployment CTD (no pre-recovery CTD). During the night, CTDs were completed at Amukta sites 3 and 4. On the morning of October 2nd, we began mooring operations at site 4 where a mooring was recovered, deployed, and followed by a CTD. At site 3, we also recovered and deployed a mooring followed by a CTD.

The ship proceeded to Samalga site 1. The mooring was sent release commands, but did not surface. It was determined that due to strong tidal currents, the Benthos release was leaning over too far to accept the release command. We waited overnight for the next slack tide. In the morning, the release command was resent, and the mooring surfaced without incident. During the first mooring deployment attempt, the anchor was lost when Benthos release s/n 1074 failed by inexplicably releasing while the anchor was in the water. The mooring was brought back on board and the release was replaced. The mooring was then successfully deployed and was followed by a CTD/nutrients cast. At Samalga site 5, a CTD, mooring recovery, mooring deployment, and another CTD were completed. The gravity release tripped prematurely during mooring deployment. It was concluded that the release was triggered by a combination of surging

seas and a light anchor weight. Thus instead of gently placing the anchor directly on the sea floor, the anchor dropped approximately 100' through the water column which may impact mooring recovery operations in Spring 2004. It was decided that at the next mooring site we would replace the gravity release with a Benthos release. At Samalga site 3, a CTD, mooring recovery, mooring deployment, and CTD were completed. The Benthos release system worked well in this case.

Summary of Cruise:

Days lost to weather – 2.7
Days lost to equipment failure – 0

Acknowledgments:

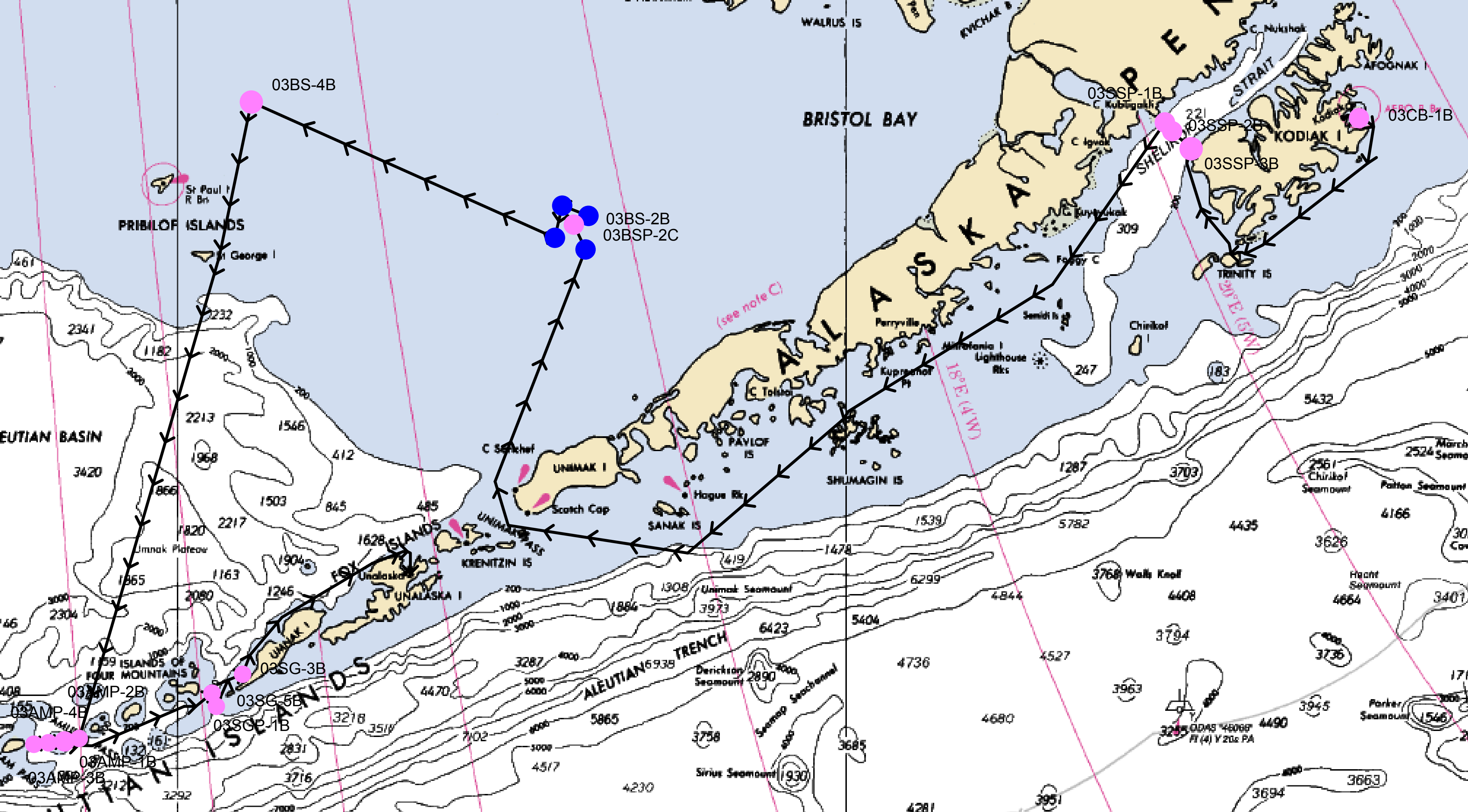
I would like to commend the captain of *MILLER FREEMAN* for his support and expertise during this challenging cruise. MILLER FREEMAN crew are noteworthy for their hard work, good attitude, and patience during adverse weather conditions.

Attachments:

Date UTC	Time UTC	Button	Notes	TRIMBLE-LAT	TRIMBLE-LON	EK500-DEPTH
9/23/2003	18:26:04	CB Down		5743.2659N	15218.7485W	0154.1M
9/23/2003	18:46:02	CTD at Depth	03CB-1A	5743.0591N	15217.8034W	0163.8M
9/23/2003	19:21:58	Mooring Recover	03CB-1A	5743.3730N	15217.6150W	0182.2M
9/23/2003	20:50:17	Mooring Deploy	03CB-1B	5743.3497N	15217.6641W	0183.6M
9/23/2003	21:10:49	CTD at Depth	03CB-1B/ctd2	5743.1396N	15217.4316W	0185.7M
9/25/2003	6:13:14	CTD at Depth	CTD 3 Fox 55	5728.6437N	15441.4571W	0056.8M
9/25/2003	6:53:19	CTD at Depth	CTD 4 Fox 56 03SSP-3A	5729.0501N	15447.6775W	0184.1M
9/25/2003	7:44:31	CTD at Depth	CTD 5 Fox 57	5733.0035N	15452.0611W	0228.9M
9/25/2003	8:43:30	CTD at Depth	CTD 6 Fox 58	5736.0953N	15501.4337W	0238.9M
9/25/2003	9:30:26	CTD at Depth	CTD 7 Fox 59	5737.3677N	15504.6283W	0251.6M
9/25/2003	10:37:15	CTD at Depth	CTD 8 Fox 60	5741.2372N	15512.4145W	0295.7M
9/25/2003	11:22:45	CTD at Depth	CTD 9 Fox 61	5742.7473N	15516.3030W	0198.4M
9/25/2003	15:59:08	Mooring Recover	03SSP-3A/B	5728.9332N	15448.3741W	0187.6M
9/25/2003	17:14:31	Mooring Deploy	03SSP-3A/B	5729.0223N	15448.4498W	0191.1M
9/25/2003	17:30:41	CTD at Depth	CTD #010 03SSP-3A/B	5729.1200N	15448.9038W	0203.5M
9/25/2003	18:09:52	Drifter Deploy	Drifter #43821	5733.1567N	15456.7520W	0225.9M
9/25/2003	18:54:55	Mooring Recover	03SSP-2A/B	5736.9993N	15504.4242W	0246.5M
9/25/2003	20:22:09	Mooring Deploy	03SSP-2A/B	5737.1245N	15504.4913W	0249.2M
9/25/2003	20:42:32	CTD at Depth	CTD #011 03SSP-2A/B	5737.2552N	15505.0207W	0251.8M
9/25/2003	21:10:00	Drifter Deploy	43820	5739.0156N	15508.8468W	0272.5M
9/25/2003	21:52:55	Mooring Recover	03SSP-1A/B	5740.8304N	15512.4914W	0295.2M
9/25/2003	22:54:23	Mooring Deploy	03SSP-1A/B	5741.0799N	15512.2046W	0295.0M
9/25/2003	23:19:41	CTD at Depth	CTD012 03SSP-1A/B	5741.0576N	15513.1081W	0296.9M
9/26/2003	5:56:15	CB Up		5639.7683N	15643.2507W	0185.7M

Date UTC	Time UTC	Button	Notes	TRIMBLE-LAT	TRIMBLE-LON	EK500-DEPTH
9/27/2003	20:18:50	CTD at Depth	CTD #013 Site 2 South	5639.8518N	16351.9954W	0079.0M
9/27/2003	20:48:40	Bongo at Depth	Bongo #001	5640.0025N	16352.2342W	0078.8M
9/27/2003	22:10:56	CTD at Depth	site 2 middle CTD 014	5651.6380N	16402.8803W	0075.4M
9/27/2003	22:40:29	Mooring Recover	site 2 middle 03BSP-2B	5651.5635N	16403.7191W	0075.0M
9/27/2003	23:07:50	Mooring Recover	site 2 middle 03BSST-2A	5651.9778N	16402.5049W	0074.9M
9/28/2003	4:14:00	Mooring Deploy	03BS-2C	5651.9796N	16403.0666W	0075.8M
9/28/2003	4:51:53	Mooring Deploy	03BSP-2B	5651.6173N	16403.6379W	0076.1M
9/28/2003	5:13:19	CTD at Depth	CTD #015 Site 2 Middle	5651.6208N	16402.8464W	0076.5M
9/28/2003	5:27:30	Bongo at Depth	Bongo #002	5651.8338N	16402.5142W	0072.5M
9/28/2003	5:29:58	CB Down		5651.8982N	16402.4214W	0072.1M
9/28/2003	7:03:53	CTD at Depth	CTD #016 Site 2 East	5656.3668N	16349.8633W	0069.6M
9/28/2003	7:21:00	Bongo at Depth	Bongo #003 Site 2 East	5656.6529N	16349.3860W	0068.1M
9/28/2003	8:51:59	CTD at Depth	site 2 north CTD 017	5700.8781N	16412.9254W	0068.1M
9/28/2003	9:08:04	Bongo at Depth	site 2 north Bongo 004	5700.9695N	16412.6247W	0068.6M
9/28/2003	10:48:34	CTD at Depth	site 2 west CTD 018	5645.9264N	16420.1458W	0074.4M
9/28/2003	11:12:53	Bongo at Depth	site 2 west Bongo 005	5645.9307N	16420.3925W	0072.0M
9/29/2003	1:46:49	CTD at Depth	CTD 019 03BS-4A	5750.7930N	16851.8749W	0072.8M
9/29/2003	2:36:18	Mooring Recover	03BS-4A	5751.2147N	16852.4045W	0072.3M
9/29/2003	5:43:42	Mooring Deploy	03BS-4B	5751.2720N	16852.1665W	0071.1M
9/29/2003	6:01:48	CTD at Depth	CTD #020 at 03BS-4B	5751.4635N	16851.9690W	0071.4M
9/29/2003	6:22:18	Bongo at Depth	Bongo #006	5751.7111N	16851.7517W	0071.7M
10/1/2003	18:15:34	CTD at Depth	CTD #021 03AMP-1A/B	5227.5472N	17128.3751W	0478.5M
10/1/2003	21:05:25	Mooring Recover	03AMP-1A/B	5229.1655N	17127.2015W	0440.4M
10/2/2003	2:54:43	Mooring Deploy	03AMP-1B	5226.2170N	17127.1847W	0421.0M
10/2/2003	4:11:56	Mooring Recover	03AMP-2A	5225.5964N	17140.0411W	0516.1M
10/2/2003	5:17:08	Mooring Deploy	03AMP-2B	5224.9965N	17139.9625W	0458.3M
10/2/2003	6:34:56	CTD at Depth	CTD #022 at 03AMP-2B	5225.3664N	17139.3536W	0494.1M
10/2/2003	8:01:03	CTD at Depth	03AMP-3A/B CTD 023	5224.3537N	17154.2812W	0294.6M
10/2/2003	9:44:56	CTD at Depth	03AMP-4A/B CTD 024	5223.0910N	17206.6907W	0362.8M
10/2/2003	17:36:50	Mooring Recover	03AMP-4A	5223.6244N	17207.5982W	0344.6M
10/2/2003	18:30:35	Mooring Deploy	03AMP-4B	5222.9898N	17207.2164W	0364.4M

Date UTC	Time UTC	Button	Notes	TRIMBLE-LAT	TRIMBLE-LON	EK500-DEPTH
10/2/2003	18:49:47	CTD at Depth	CTD #025 at 03AMP-4B	5224.1302N	17207.6286W	0336.1M
10/2/2003	21:10:57	Mooring Deploy	03AMP-3B	5224.0096N	17154.9893W	0306.7M
10/2/2003	21:28:11	CTD at Depth	03AMP-3B CTD 026	5224.8949N	17154.4879W	0300.7M
10/3/2003	17:14:45	Mooring Recover	03SGP-1A	5251.0031N	16927.3509W	0241.5M
10/3/2003	18:23:23	Mooring Deploy	03SGP-1B	5250.7287N	16927.2933W	0231.8M
10/3/2003	18:25:19	Mooring Deploy	03SGP-1B	5250.7353N	16927.3221W	0231.9M
10/3/2003	18:26:14	Note	03SGP-1B released at 18:25:19	5250.7682N	16927.3054W	0234.1M
10/3/2003	18:46:49	CTD at Depth	CTD 27 at 03SGP1B	5251.8534N	16926.9328W	0272.4M
10/3/2003	21:06:58	Mooring Recover	03SG-5A/B	5244.3043N	16924.3155W	0120.6M
10/3/2003	21:37:59	Mooring Deploy	03SG-5A/B	5243.5956N	16923.3203W	0102.1M
10/3/2003	21:51:33	CTD at Depth	03SG-5A/B CTD 028	5244.0492N	16924.0781W	0130.0M
10/4/2003	0:07:27	Mooring Recover	03SG-3A/B	5301.3918N	16859.4313W	0086.3M
10/4/2003	1:21:19	Mooring Deploy	03SG-3B	5301.3024N	16859.8912W	0103.9M
10/4/2003	1:33:49	CTD at Depth	CTD 029	5301.1294N	16859.2454W	0096.6M


03BS-4B
03BS-2B
03BSP-2C
03SSP-1B
03SSP-2B
03SSP-3B
03CB-1B
03SG-3B
03SG-5B
03SGP-1B
03AMP-2B
03AMP-4B
03AMP-1B
03AMP-3B
BRISTOL BAY
PRIBILOF ISLANDS
St Paul I
St George I
WALRUS IS
AFOGNAK I
KODIAK I
TRINITY IS
Chirikof I
Foggy C
Perryville
Mitrofania I
Lighthouse Rks
C Tolstoi
PAVLOF IS
SHUMAGIN IS
SANAK IS
Hague Rk
Scotch Cap
C Sarichef
UNIMAK I
KRENITZIN IS
UNALASKA I
Unalaska
Umnak Plateau
ISLANDS OF FOUR MOUNTAINS
(see note C)
ALEUTIAN TRENCH
Unimak Seamount
Derickson Seamount
Sirius Seamount
Walls Knoll
Chirikof Seamount
Patton Seamount
Parker Seamount