

CRUISE REPORT

Cruise Number: EW0409

FOCI Number: 1EW04

Ship: R/V MAURICE EWING

Area of Operations: Gulf of Alaska

Itinerary:

Kodiak, AK – Sept. 28, 2004

Kodiak, AK – October 6, 2004 small boat operation to exchange members of the science party

Seward, AK– October 9, 2004 disembark science party

Participating Organizations:

NOAA, Pacific Marine Environmental Laboratory

NOAA, Alaska Fisheries Science Center

Chief Scientist:

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Personnel:

Peter Proctor	NOAA/PMEL	
Dylan Righi	NOAA/PMEL	
Sigirid Salo	NOAA/PMEL	
Margaret Sullivan	NOAA/PMEL	Sept. 28-Oct. 6
Bill Floering (Co-Chief Scientist)	NOAA/PMEL	Oct 6-9
Carol DeWitt	NOAA/PMEL	Oct 6-9
Stephen Smith	NOAA/PMEL	Oct 6-9

Objectives of Cruise:

1. Conduct CTD survey of two eddies located off the continental slope south of Kodiak Island, AK
2. Recover and deploy moorings in support of US GLOBEC Research Program and PMEL/FOCI (Fisheries Oceanography Coordinated Investigations).

Operations:

CTD casts	69
Bongos, 20 cm, 153mm nets	5
Bongos, 60 cm, 333mm nets	13
Mooring deployments	1
Mooring recoveries	9

Samples Collected:

Chlorophyll samples	~330
Nutrient samples	698
Plankton samples	18

Summary of Cruise:

The cruise departed Kodiak, AK at 9:30 Am on September 28, 2004. We proceeded to the nearest location identified as having water depths in excess of 1000m near the mouth of Chiniak Trough for the purpose of doing a test CTD cast to let out the CTD wire, so it could be carefully rewound on its drum. The ship had been having problems with the line leveling device, and continued to do so for several more days.

We then began a CTD transect across the mouth of Chiniak Trough. By the third station we realized that there was not power getting to the pump on the CTD, a situation that degrades conductivity measurements. Because of the time taken to diagnose the problem, this line of stations was abandoned. We proceeded to the edge of the shelf to begin a CTD transect across the large eddy positioned just off the slope. This eddy originated in early spring of 2004. It was previously sampled on cruises on the R/V Alpha Helix in May and in July (HX285 and HX287). The approximate location of the center of the eddy was identified via sea-surface altimetry analyses, and drifter positions. While in the

vicinity of the center we pinpointed it by taking 3 casts across the center and noting the depth of water properties in the core. This indicated that our transect was less than 10km southwest of the center.

All CTD casts were taken to a depth of 1500m (or the bottom). The Ewing's internally recording SBE 19(pumped) was attached to the Rosette frame to give us another set of conductivity measurements to supplement those from the FOCI SBE911+. Data was downloaded ~ every third station. Samples for nutrient were taken and frozen for analysis at PMEL. Samples taken above the thermocline were filtered as they were drawn, to improve the quality of the phosphate results. Chlorophyll samples were taken, filtered and frozen for analysis at AFSC laboratory. Bongo tows were taken at stations near the center and at the outer edge of the eddy. At the last bongo station (station 23) on this line the 20cm diameter frames and nets were lost during a cast.

We next proceeded to near the identified center of the Yakutat eddy formed in 2004. This eddy was previously occupied in May and September 2003 (KM0309 and KM01313) and May 2004 (HX285). In late September, this eddy appeared to have split into two parts, based on both the altimetry and drifter data. We occupied a north-south line of five stations near the center of the eastern (larger) sub-eddy. These five casts were taken to a depth of 500m. This allowed us to pinpoint its position. We then went west to its eastern edge, and began a transect of 1000m CTD casts through the centers of both sub-eddies. On Tues morning, October 5 we were forced by storm winds and confused seas to abandon the transect approximately 30 km before the western edge of the western gyre south of Sheilikof Sea Valley. [Figure 1](#) shows the locations of all the CTD casts. [Figure 2](#) shows those station where MARMAP bongo tows were made.

We transited to Kodiak, AK, where we disembarked one scientist and embarked three mooring technicians.

We immediately proceeded to the line of moorings off Gore Pt., and recovered all three moorings that night by making use of night- vision goggles in relatively calm seas. We

then occupied the first 7 stations of the Gore Pt. CTD line. Next we went to the GB3 site on the Seward Line, the site of both surface and subsurface moorings. We made another MARMAP bongo tow, for the purpose of calibrating the TAPS optical plankton counter moored there. A special surface mooring was then deployed for the engineering division of PMEL to measure stresses on the mooring over the winter. Then, we recovered the surface mooring at GB3. We proceeded to GB12 on the south side of Amatouli Trough and attempted to recover the subsurface mooring there. The mooring would not release, indicating that it was on its side. We chose to go and pick up the mooring at GB5, two moorings at GB4, and the subsurface mooring at GB3, and then returned to GB12 for another attempt at recovery. On this second visit, the release did not respond at all. We tried querying it at several positions around the deployment site, and again at 5 and 10 nm to the northeast.

On the morning of October 9 we picked up the mooring with the iron meter at GB2 before coming in to Seward, AK, where all the scientific party disembarked.

Attachments:

[Figure 1- Map of CTD and mooring operations](#)

[Figure 2- Map of MARMAP bongo tows](#)

[Table 1- Event Log](#)

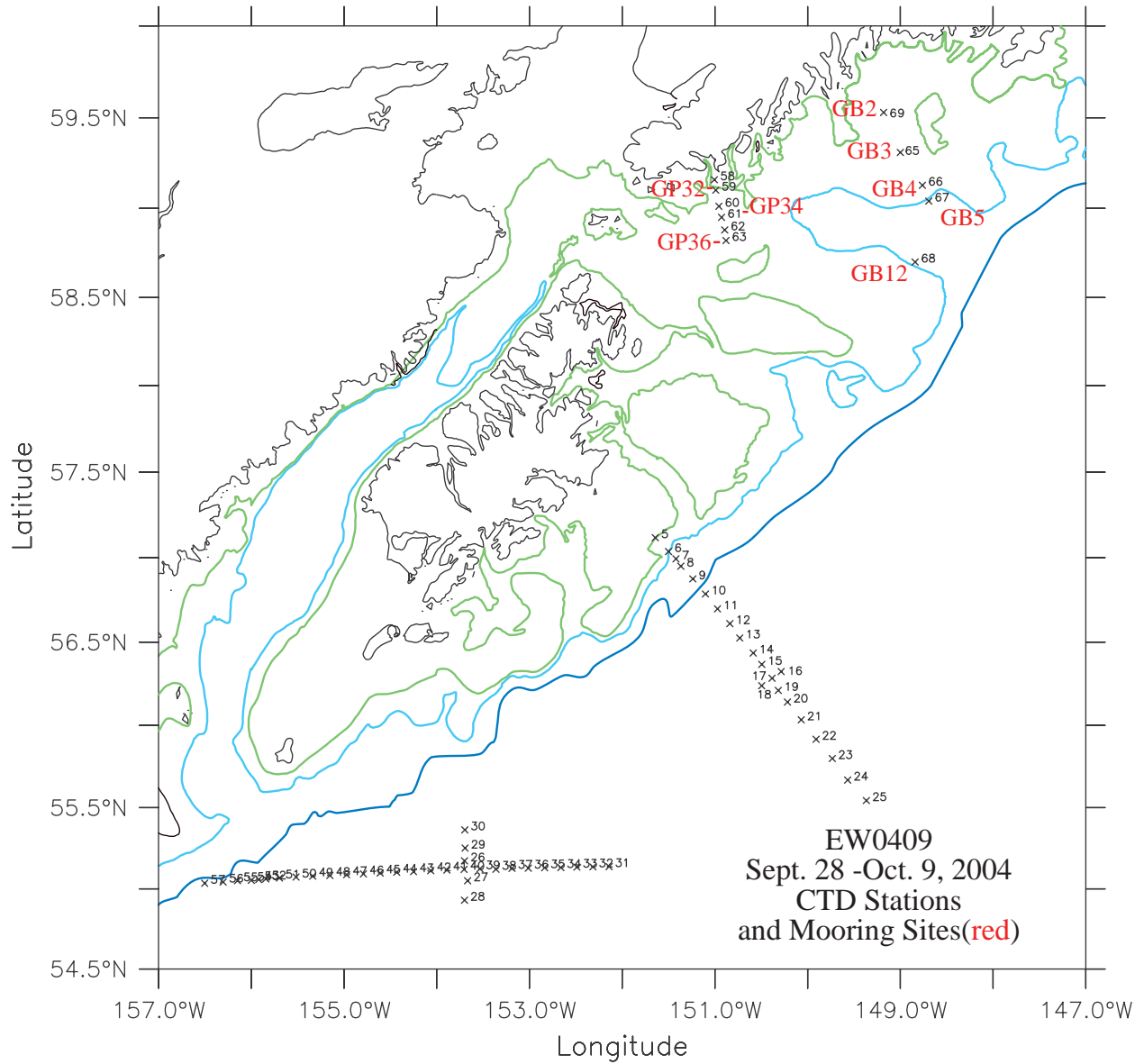


Figure 1- Map of CTDs and Mooring sites

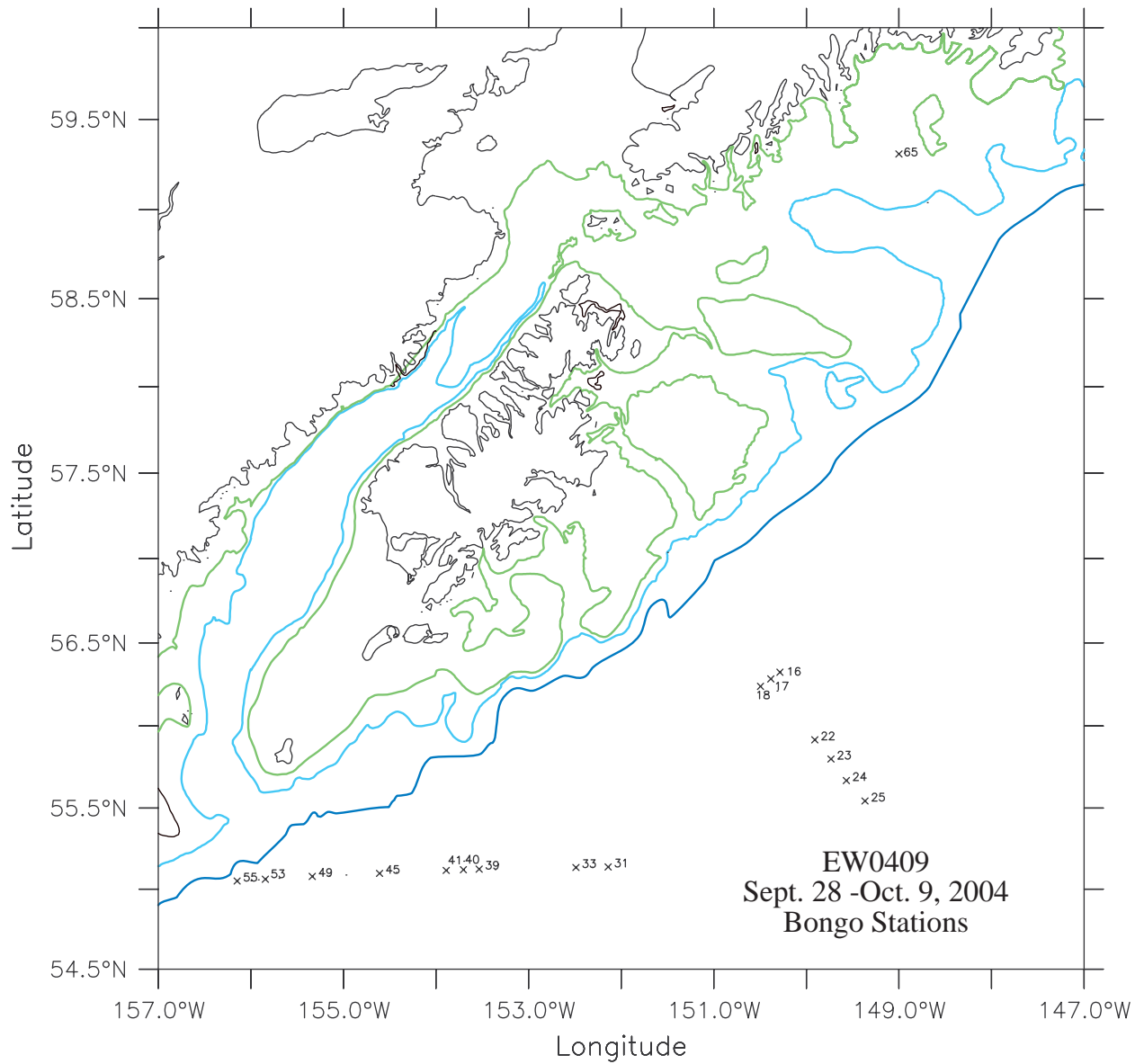


Figure 2- Map of MARMAP Bongo Tows

Table 1- Event Log, R/V/ Ewing Cruise No. EW0409, September 28- October 9, 2004

CTD Sta. No.	Station ID	Activity	Lat.			Long.			Date/ Time (GMT)	Samples Taken	Comments
	Kodiak, Ak	DEPART	57	43.4297	N	152	31.5300	W			
1	TEST	ctd/ TEST	57	7.0000	N	150	55.3000	W	9/29/04 3:35		test cast to let out 1000m of CTD wire
2	CBA1	ctd	57	20.8370	N	151	11.0860	W	9/29/04 5:08	Chlorophyll, nutrients	
3	CBA2	ctd	57	20.3000	N	151	14.5360	W	9/29/04 5:58	Chlorophyll, nutrients	
4	CBA3	ctd	57	19.2700	N	151	18.2000	W	9/29/04 7:20	Chlorophyll, nutrients	CTD problems, No power to the pump on the SBE911. This cannot be repaired at sea.
5	ed402	ctd	57	7.1000	N	151	38.6000	W	9/29/04 16:32	Chlorophyll, nutrients	Both the SBE 911 and a self contained SBE19(pumped instrument will be used
6	ed403	ctd	57	2.2000	N	151	30.0000	W	9/29/04 1:49	Chlorophyll, nutrients	Both the SBE 911 and a self contained SBE19(pumped instrument will be used
7	ed404	ctd	56	59.6000	N	151	25.2000	W	9/29/04 17:54	Chlorophyll, nutrients	
8	ed405	ctd	56	57.3300	N	151	21.7600	W	9/29/04 21:58	Chlorophyll, nutrients	
9	ed406	ctd	56	52.4700	N	151	14.0200	W	9/30/04 0:14	Chlorophyll, nutrients	
10	ed407	ctd	56	47.2000	N	151	6.3000	W	9/30/04 2:41	Chlorophyll, nutrients	
11	ed408	ctd	56	41.9000	N	150	58.5500	W	9/30/04 5:21	Chlorophyll, nutrients	
12	ed409	ctd	56	36.7000	N	150	50.8000	W	9/30/04 7:33	Chlorophyll, nutrients	
13	ed410	ctd	56	31.4000	N	150	43.1000	W	9/30/04 10:26	Chlorophyll, nutrients	
14	ed411	ctd	56	26.1000	N	150	35.3000	W	9/30/04 13:27	Chlorophyll, nutrients	
15	ed412	ctd	56	22.1000	N	150	29.7000	W	9/30/04 16:45	Chlorophyll, nutrients	
16	ed4x1	ctd	56	19.4000	N	150	17.0000	W	9/30/04 18:35	Chlorophyll, nutrients	
16	ed4x1	bongo	56	19.4000	N	150	17.0000	W	9/30/04 20:37	MARMAP Bongo Tow with 153mm and 333mm nets	
17	ed413	ctd	56	18.0000	N	150	24.0000	W	9/30/04 22:58	Chlorophyll, nutrients	

CTD Sta. No.	Station ID	Activity	Lat.			Long.			Date/ Time (GMT)	Samples Taken	Comments
17	ed413	bongo	56	18.0000	N	150	24.0000	W	10/1/04 0:25	MARMAP Bongo Tow with 153mm and 333mm nets	
18	ed4x2	bongo	56	13.7000	N	150	31.6000	W	10/1/04 2:02	MARMAP Bongo Tow with 153mm and 333mm nets	
18	ed4x2	ctd	56	13.7000	N	150	31.6000	W	10/1/04 3:40	Chlorophyll, nutrients	
19	ed414	ctd	56	12.7000	N	150	19.0000	W	10/1/04 6:16	Chlorophyll, nutrients	
20	ed415	ctd	56	8.5000	N	150	13.0000	W	10/1/04 7:50	Chlorophyll, nutrients	
21	ed416	ctd	56	2.0000	N	150	4.0000	W	10/1/04 10:46	Chlorophyll, nutrients	
22	ed417	ctd	55	55.0000	N	149	54.6000	W	10/1/04 13:28	Chlorophyll, nutrients	
22	ed417	bongo	55	55.0000	N	149	54.6000	W	10/1/04 15:00	MARMAP Bongo Tow with 153mm and 333mm nets	
23	ed418	ctd	55	48.0000	N	149	44.0000	W	10/1/04 16:55	Chlorophyll, nutrients	
23	ed418	bongo	55	48.0000	N	149	44.0000	W	10/1/04 19:24	MARMAP Bongo Tow with 153mm and 333mm nets	20 cm bongo with 153mm nets lost during tow.
24	ed419	bongo	55	40.0000	N	149	34.0000	W	10/1/04 3:40	MARMAP Bongo Tow with 333mm nets	
24	ed419	ctd	55	40.0000	N	149	34.0000	W	10/1/04 21:23	Chlorophyll, nutrients	
25	ed420	ctd	55	32.5000	N	149	22.0000	W	10/2/04 0:27	Chlorophyll, nutrients	
26	ed3n1	ctd	55	10.2000	N	153	42.0000	W	10/2/04 15:30	nutrients	
27	ed3n2	ctd	55	3.0000	N	153	42.0000	W	10/2/04 17:04	nutrients	
28	ed3n3	ctd	54	55.8000	N	153	42.0000	W	10/2/04 18:37	nutrients	
29	ed3n5	ctd	55	15.0000	N	153	42.0000	W	10/2/04 21:52	nutrients	
30	ed3n5	ctd	55	21.0000	N	153	42.0000	W	10/2/04 23:27	nutrients	
31	ed301	ctd	55	8.3000	N	152	8.5000	W	10/3/04 5:59	Chlorophyll, nutrients	
32	ed302	ctd	55	8.1833	N	152	18.9565	W	10/3/04 8:05	Chlorophyll, nutrients	
33	ed303	ctd	55	8.0667	N	152	29.4130	W	10/3/04 10:03	Chlorophyll, nutrients	
33	ed303	bongo	55	8.0667	N	152	29.4130	W	10/3/04 11:10		
34	ed304	ctd	55	7.9500	N	152	39.8696	W	10/3/04 13:07	Chlorophyll, nutrients	

CTD Sta. No.	Station ID	Activity		Lat.			Long.			Date/ Time (GMT)	Samples Taken	Comments
35	ed305	ctd	55	7.8333	N	152	50.3261	W	10/3/04 14:57	Chlorophyll, nutrients		
36	ed306	ctd	55	7.7167	N	153	0.7826	W	10/3/04 16:48	Chlorophyll, nutrients		
37	ed307	ctd	55	7.6000	N	153	11.2391	W	10/3/04 18:41	Chlorophyll, nutrients		
38	ed308	ctd	55	7.4833	N	153	21.6957	W	10/3/04 21:06	Chlorophyll, nutrients		
39	ed309	ctd	55	7.3667	N	153	32.1522	W	10/3/04 23:00	Chlorophyll, nutrients		
39	ed309	bongo	55	7.3667	N	153	32.1522	W	10/3/04 23:48	MARMAP Bongo Tow with 333mm nets		
40	ed310-center	ctd	55	7.2500	N	153	42.6087	W	10/4/04 2:22	Chlorophyll, nutrients		
41	ed311	ctd	55	6.9727	N	153	53.4170	W	10/4/04 4:07	Chlorophyll, nutrients		
41	ed311	bongo	55	6.9727	N	153	53.4170	W	10/4/04 4:46	MARMAP Bongo Tow with 333mm nets		
42	ed312	ctd	55	6.6955	N	154	4.2253	W	10/4/04 6:32	Chlorophyll, nutrients		
43	ed313	ctd	55	6.4182	N	154	15.0336	W	10/4/04 8:01	Chlorophyll, nutrients		
44	ed314	ctd	55	6.1409	N	154	25.8419	W	10/4/04 9:47	Chlorophyll, nutrients		
45	ed315	ctd	55	5.8636	N	154	36.6502	W	10/4/04 11:38	Chlorophyll, nutrients		
45	ed315	bongo	55	5.8636	N	154	36.6502	W	10/4/04 13:06	MARMAP Bongo Tow with 333mm nets		
46	ed316	ctd	55	5.5864	N	154	47.4585	W	10/4/04 14:32	Chlorophyll, nutrients		
47	ed317	ctd	55	5.3091	N	154	58.2668	W	10/4/04 16:00	Chlorophyll, nutrients		
48	ed318	ctd	55	5.0318	N	155	9.0751	W	10/4/04 17:52	Chlorophyll, nutrients		
49	ed319	ctd	55	4.7545	N	155	19.8834	W	10/4/04 19:40	Chlorophyll, nutrients		
49	ed319	bongo	55	4.7545	N	155	19.8834	W	10/4/04 20:57	MARMAP Bongo Tow with 333mm nets		
50	ed320	ctd	55	4.4773	N	155	30.6917	W	10/4/04 22:39	Chlorophyll, nutrients		
51	ed321-center	ctd	55	4.2000	N	155	41.5000	W	10/5/04 0:27	Chlorophyll, nutrients		
52	ed322	ctd	55	3.8000	N	155	50.6667	W	10/5/04 2:15	Chlorophyll, nutrients		
53	ed323	ctd	55	3.6000	N	155	55.2500	W	10/5/04 3:38	Chlorophyll, nutrients		

CTD Sta. No.	Station ID	Activity	Lat.			Long.			Date/ Time (GMT)	Samples Taken	Comments
53	ed323	bongo	55	3.6000	N	155	55.2500	W	10/5/04 4:19	MARMAP Bongo Tow with 333mm nets	
54	ed324	ctd	55	3.4000	N	155	59.8333	W	10/5/04 5:59	Chlorophyll, nutrients	
55	ed325	ctd	55	3.0000	N	156	9.0000	W	10/5/04 8:01	Chlorophyll, nutrients	
56	ed326	ctd	55	2.6000	N	156	18.0000	W	10/5/04 9:19	Chlorophyll, nutrients	
57	ed327	ctd	55	2.1000	N	156	30.0000	W	10/5/04 11:27	Chlorophyll, nutrients	
	Kodiak, Ak	Small boat op in Kodiak, Ak	57	43.4297	N	152	31.5300	W	10/6/04 9:00		Embark/debark members of scientific party
	GP36	Recover 03GPP-36B	58°	45.0200	N	150	52.0100	W	10/7/04 0:22	subsurface mooring	
	GP34	Recover 03GP-34B	58°	57.7800	N	150	55.9800	W	10/7/04 5:10	subsurface mooring	
	GP32	Recover 03GP-32B	59°	6.0300	N	150	59.4000	W	10/7/04 7:10	subsurface mooring	
58	GP0 - Gore Point (N-S)	ctd	59°	9.6000	N	151	0.5000	W	10/7/04 8:04	Chlorophyll, nutrients	
59	GP1	ctd	59°	6.0000	N	150	59.4000	W	10/7/04 9:30	Chlorophyll, nutrients	
60	GP2	ctd	59°	0.6000	N	150	57.6000	W	10/7/04 10:36	Chlorophyll, nutrients	
61	GP3	ctd	58°	57.0000	N	150	55.8000	W	10/7/04 11:26	Chlorophyll, nutrients	
62	GP4	ctd	58°	52.8000	N	150	54.0000	W	10/7/04 12:16	Chlorophyll, nutrients	
63	GP5	ctd	58°	49.2000	N	150	52.8000	W	10/7/04 12:57	Chlorophyll, nutrients	
64	GP6	ctd	58°	45.0000	N	150	52.0000	W	10/7/04 13:44	Chlorophyll, nutrients	SBE 911 data for this cast subsequently lost
	EDD test	deploy	59°	18.4932	N	148	59.7534	W	10/8/04 1:37	Surface mooring	
65	04GBM-3A	ctd	59°	18.4932	N	148	59.7534	W	10/8/04 2:17	Chlorophyll, nutrients	
65	04GBM-3A	bongo	59°	18.4932	N	148	59.7534	W	10/8/04 2:45	MARMAP Bongo Tow with 333mm nets	
	04GBM-3A	recover	59°	18.4932	N	148	59.7534	W	10/8/04 3:27	Surface mooring	

CTD Sta. No.	Station ID	Activity	Lat.			Long.			Date/ Time (GMT)	Samples Taken	Comments
66	04GB-4A	ctd	59°	7.6600	N	148	45.6460	W	10/7/04 7:14	Chlorophyll, nutrients	
67	04GBP-5A	ctd	59°	2.4780	N	148	41.6040	W	10/7/04 8:18	Chlorophyll, nutrients	
68	04GBP-12A	ctd	58°	41.0170	N	148	50.8480	W	10/8/04 15:12	Chlorophyll, nutrients	
	04GBP-12A	recover moorings	58°	41.0170	N	148	50.8480	W	10/8/04 17:18	subsurface mooring	release responded but didn't come to the surface - believed to be on its side
	04GBP-5A	recover moorings	59°	2.4780	N	148	41.6040	W	10/8/04 18:41	subsurface mooring	
	04GB-4AT	recover sub-surface mooring 04GBP-4a	59	7.6610	N	148	45.6460	W	10/8/04 20:42	subsurface mooring	Near-surface temp sensor
	04GB-4A	recover sub-surface mooring 04GBP-4a	59	7.6610	N	148	45.6460	W	10/8/04 21:23	subsurface mooring	Other sensors
	04GBP3A	recover	59°	17.0266	N	148	57.5404	W	10/9/04 3:07	subsurface mooring	
	04GBP-12A	recover moorings	58°	41.0170	N	148	50.8480	W	10/9/04 7:15	subsurface mooring	returned to site after recovery of 04GBP-3A - release did not respond - checked two sites 5 miles away - no response
69	04GBI-2A	ctd	59°	30.8300	N	149	9.7400	W	10/9/04 15:07	Chlorophyll, nutrients	
	04GBI-2A	recover mooring	59°	30.8300	N	149	9.7400	W	10/9/04 15:47	subsurface mooring with Iron meter	
	SEWARD		60°	6.3010	N	149	25.2680	W	10/9/04 20:19		