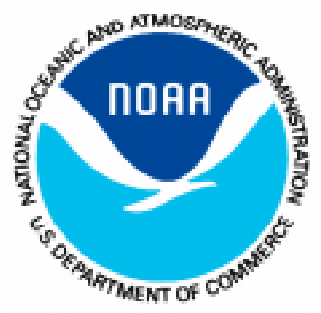
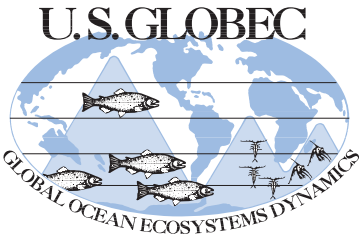
GLOBEC Northeast Pacific, Coastal Gulf of Alaska

Cruise Report, R/V *Miller Freeman* (MF0211b)

4 - 9 October, 2002





GLOBEC Northeast Pacific, Gulf of Alaska
Cruise Report, R/V *Miller Freeman* (MF0211b)
October 4 - 9, 2002

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Port of Departure: Seward, Alaska
Port of Return: Kodiak, Alaska

Cruise Objectives

FOCI's goal is to understand the effects of abiotic and biotic variability on ecosystems of the North Pacific Ocean and Bering Sea in order to discern the physical and biological processes that determine recruitment variability of commercially valuable finfish and shellfish stocks in Alaskan waters. This cruise is in support of the Steller Sea Lion Research Programs, FOCI base, and United States Global Ocean Ecosystems Dynamics (U.S. GLOBEC). This cruise was undertaken by FOCI to support research into the physical, chemical, and biological mechanisms acting in the coastal Gulf of Alaska.

The principle objective of leg 2 (MF0211b) was to make a CTD/Chlorophyll/Nutrient survey of Portlock bank, then, as time permitted, survey the northern portion of Albatross Bank and Chiniak Trough (Fig. 1).

Summaries of each of the GLOBEC projects may be found at the web site: http://globec.coas.oregonstate/edu/groups/nep/projs.html.

Table 1. GLOBEC Cruise Participants

Nancy B. Kachel	PMEL/NOAA
David G. Kachel	PMEL/NOAA
Sigrid A. Salo	PMEL/NOAA
Antonio Jenkins	PMEL/NOAA
David Weisgarver	PMEL/NOAA

Summary of Cruise

See Appendix 1 (Event Log).

Daily Cruise Summary (Narrative)

4 October. The NOAA Ship *Miller Freeman* departed Seward, Alaska at ~1000ADT for the second leg of cruise MF0211. On the first two nights we experienced winds exceeding 40 kts. Swells 8 to 15' and winds of 15-30 kts persisted throughout the rest of the cruise. From Oct 7 – 9, we experienced sunny days and mostly clear nights, with some high haze.

The SeaBird 911+ CTD was equipped with dual temperature and conductivity sensors as well as a WetStar Fluorometer and a Photosynthetically Active Radiation sensor (PAR). At each station, water samples were collected for analysis of chlorophyll and nutrient concentrations, in addition to a salinity sample for calibrating the CTD sensor.

The chlorophyll samples were filtered through a 0.45-micron filter, frozen, and stored in a –80ºC freezer. The nutrient samples collected in the top 50 m were also filtered though 0.45 micron filters as soon as they were collected. All samples were flash-frozen, then the nutrients were transferred to a –20ºC freezer.

As we left Resurrection Bay we deployed 2 Argos-tracked drifters at GAK1 and GAK2 (on the Seward line). The ship then proceeded to a line of stations parallel to the Kenai Peninsula coastline (KS line). The purpose of these stations was to sample the boundary between zones of higher and lower surface chlorophyll concentrations frequently observed in SeaWIFS data.

The hydrographic survey of Portlock Bank consisted of 5 lines: the outer portion of the Gore Point line (GP) on the western side of the bank, 2 lines (PBA and PBB) crossing over the center, another over the eastern portion (PBC), and finally a transect roughly from east to west (PX) (see Fig 1). One drifter was deployed at the center of the bank and another on the eastern side.

The survey of Albatross Bank and Chiniak Trough began with a transect along the middle part of Northern Albatross Bank from Stevenson Trough on the northeast, continued along the bank, and then crossed over Chiniak Trough, on the southwest (NAB / CBA). Two more lines were then occupied across Chiniak Trough (CBA and CBC), before the start of the final cross-shelf transect (AX) from the slope of Northern Albatross Bank to near Marmot Bay (~90m deep).

9 October. A current meter mooring (02CB1B) was deployed in Chiniak Bay before coming into port at Kodiak, AK at 0800 local time.

Summary of Sampling Operations

Samples Collected:

Chlorophyll samples	~600
Nutrient samples	~850

Operations:

CTD casts	103
Mooring deployment	1
Satellite tracked buoy deployments	4

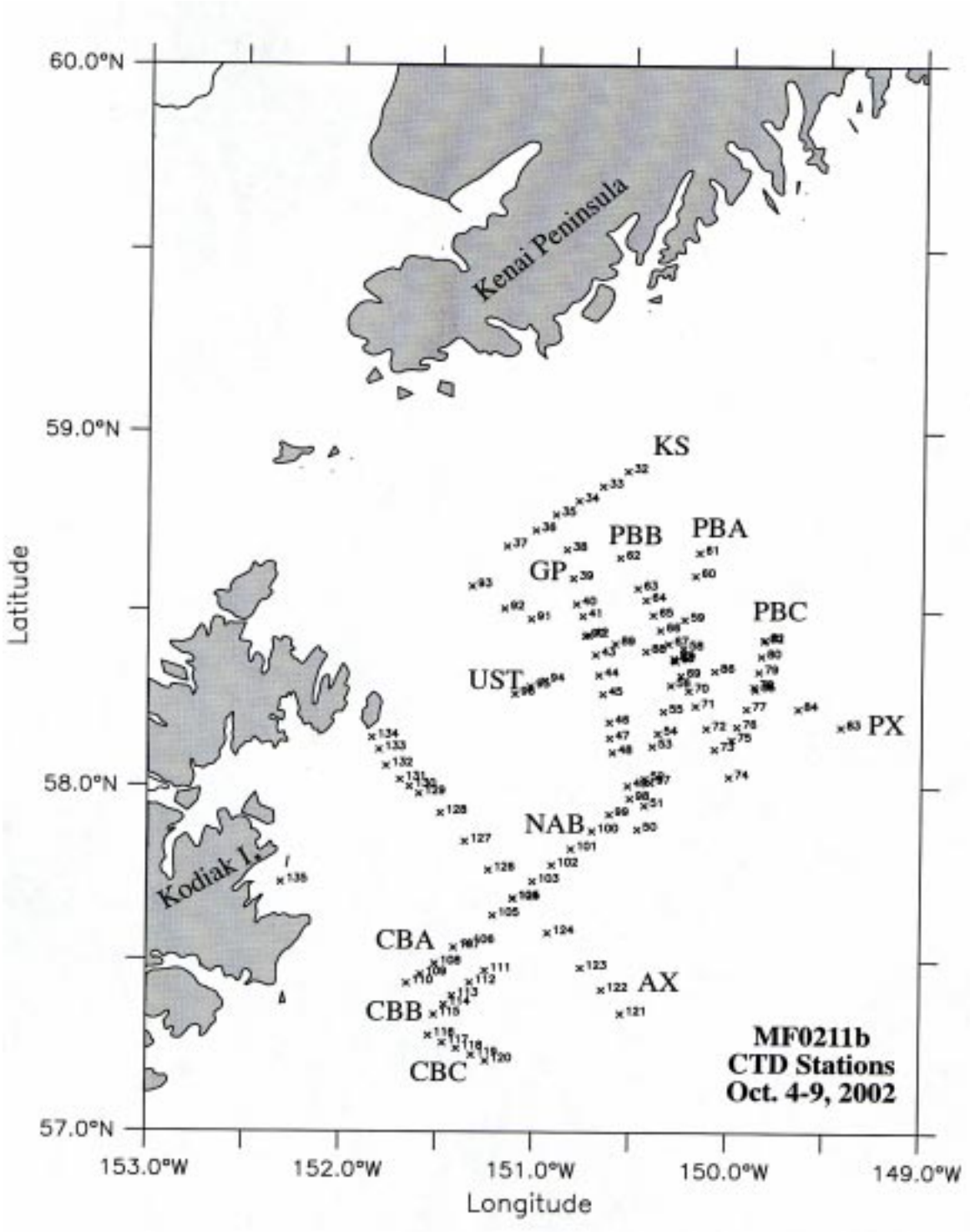

Fig 1 --- CTD station 32-135 from MF0211b. Transects are identified as: CB - Chiniak Bay A, B, and C; GP - Gore Point; PB - Portlock Bank A, B, C, and X; NAB - Northern Albatross from Stevenson Trough on the northeast to Chiniak Trough on the southwest; and AX - Northern Albatross cross-shelf.

APPENDIX I

MF0211b EVENT LOG

EVENT LOG CONTENTS

Column Label	Description
Event#	Unique identifier for each line of event log
Instrument (Instr)	CTD: Conductivity Temperature Depth profile collected with Seabird SBE with bottles for chlorophyll and nutrients; SatBuoy: Deployment of satellite-tracked drifter; Mooring Deploy: Deployment of mooring and instruments.
Cast	Sequence # for a particular instrument
Station (Sta)	
Station Standard (Sta std)	
S/E Flag	Start/End flag
Latitude (Lat)	Decimal degrees; north is positive
Longitude (Long)	Decimal degrees; east is positive
Water Depth	Depth of bottom
Day	GMT time basis
Month (Mos)	GMT time basis
Time	GMT time basis
Station Alternate (Sta alt)	Alternate Station ID
Comments	

Appendix I: Event Log

Event#	Instr	Cast	Sta	Sta std	S/E Flag	Lat	Long	Water Depth	Day	Mos	Time	Sta alt	Comments
MF27702.01	Depart	nd	nd	nd	nd	60.1189	-149.4255	nd	4	10	1639	nd	
MF27702.02	SatBuoy	1	1	GAK1	S	59.8449	-149.4664	264.0	4	10	1828	02GB-1A	Drifter #37518; position.
MF27702.03	SatBuoy	2	2	GAK2	S	59.6934	-149.3580	237.0	4	10	1958	02GB-2A	Drifter #37480; position.
MF27802.01	CTD	32	3	KS1	S	58.8917	-150.5283	129.0	5	10	0101	PR4	Salinity, Chl-a, Nutrients; first CTD is numbered 32.
MF27802.02	CTD	33	4	KS2	S	58.8501	-150.6553	149.0	5	10	0151	nd	Salinity, Chl-a, Nutrients.
MF27802.03	CTD	34	5	KS3	S	58.8097	-150.7789	180.1	5	10	0243	nd	Salinity, Chl-a, Nutrients.
MF27802.04	CTD	35	6	KS4	S	58.7702	-150.8973	165.0	5	10	0337	nd	Salinity, Chl-a, Nutrients.
MF27802.05	CTD	36	7	KS5	S	58.7264	-151.0006	169.1	5	10	0426	GP4	Salinity, Chl-a, Nutrients.
MF27802.06	CTD	37	8	KS6	S	58.6820	-151.1489	182.0	5	10	0521	nd	Salinity, Chl-a, Nutrients.
MF27802.07	CTD	38	9	GP6A	S	58.6725	-150.8394	191.0	5	10	0641	nd	Salinity, Chl-a, Nutrients.
MF27802.08	CTD	39	10	GP7	S	58.5919	-150.8053	182.0	5	10	0738	nd	Salinity, Chl-a, Nutrients.
MF27802.09	CTD	40	11	GP7A	S	58.5350	-150.7884	136.3	5	10	0843	nd	Salinity, Chl-a, Nutrients.
MF27802.10	CTD	41	12	GP7B	S	58.4854	-150.7551	91.0	5	10	0951	nd	Salinity, Chl-a, Nutrients.
MF27802.11	CTD	42	13	GP8	S	58.4319	-150.7239	79.9	5	10	1102	nd	Salinity, Chl-a, Nutrients.
MF27802.12	CTD	43	14	GP8A	S	58.3765	-150.6870	65.6	5	10	1203	nd	Salinity, Chl-a, Nutrients.
MF27802.13	CTD	44	15	GB8B	S	58.3185	-150.6692	60.1	5	10	1302	nd	Salinity, Chl-a, Nutrients.
MF27802.14	CTD	45	16	GP9	S	58.2650	-150.6480	65.6	5	10	1354	nd	Salinity, Chl-a, Nutrients.
MF27802.15	CTD	46	17	GP9A	S	58.1844	-150.6127	108.6	5	10	1500	nd	Salinity, Chl-a, Nutrients.
MF27802.16	CTD	47	18	GP9B	S	58.1411	-150.6127	134.0	5	10	1559	nd	Salinity, Chl-a, Nutrients.
MF27802.17	CTD	48	19	GP10	S	58.0991	-150.5965	140.6	5	10	1654	nd	Salinity, Chl-a, Nutrients.
MF27802.18	CTD	49	20	GP11	S	58.0038	-150.5174	155.0	5	10	1806	nd	Salinity, Chl-a, Nutrients.
MF27802.19	CTD	50	21	PB12	S	57.8792	-150.4661	111.8	5	10	1929	nd	Salinity, Chl-a, Nutrients.
MF27802.20	CTD	51	22	PB11	S	57.9479	-150.4305	157.2	5	10	2020	nd	Salinity, Chl-a, Nutrients.
MF27802.21	CTD	52	23	PB10	S	58.0241	-150.4297	175.9	5	10	2139	nd	Salinity, Chl-a, Nutrients.
MF27802.22	CTD	53	24	PB8	S	58.1169	-150.3910	192.5	5	10	2229	nd	Salinity, Chl-a, Nutrients.
MF27802.23	CTD	54	25	PB9	S	58.1536	-150.3634	154.0	5	10	2309	nd	Salinity, Chl-a, Nutrients.
MF27802.24	CTD	55	26	PB7	S	58.2163	-150.3354	85.5	5	10	2354	nd	Salinity, Chl-a, Nutrients.
MF27902.01	CTD	56	27	PB6	S	58.2906	-150.2992	56.7	6	10	0049	nd	Salinity, Chl-a, Nutrients.
MF27902.02	CTD	57	28	PB5	S	58.3586	-150.2734	52.4	6	10	0140	nd	Salinity, Chl-a, Nutrients.
MF27902.03	CTD	58	29	PB4	S	58.3960	-150.2344	65.6	6	10	0224	nd	Salinity, Chl-a, Nutrients.
MF27902.04	CTD	59	30	PB3	S	58.4763	-150.2301	86.6	6	10	0325	nd	Salinity, Chl-a, Nutrients.
MF27902.05	CTD	60	31	PB2	S	58.6005	-150.1764	112.0	6	10	0430	nd	Salinity, Chl-a, Nutrients.
MF27902.06	CTD	61	32	PB1	S	58.6652	-150.1557	123.0	6	10	0516	nd	Salinity, Chl-a, Nutrients.
MF27902.07	CTD	62	33	PBB12	S	58.6518	-150.5696	215.6	6	10	0649	nd	Salinity, Chl-a, Nutrients.
MF27902.08	CTD	63	34	PBB11	S	58.5679	-150.4814	173.7	6	10	0757	nd	Salinity, Chl-a, Nutrients.
MF27902.09	CTD	64	35	PBB10	S	58.5315	-150.4296	97.6	6	10	0849	nd	Salinity, Chl-a, Nutrients.
MF27902.10	CTD	65	36	PBB9	S	58.4889	-150.3918	89.8	6	10	0938	nd	Salinity, Chl-a, Nutrients.
MF27902.11	CTD	66	37	PBB8	S	58.4464	-150.3543	75.5	6	10	1025	nd	Salinity, Chl-a, Nutrients.
MF27902.12	CTD	67	38	PBB7	S	58.4079	-150.3116	70.1	6	10	1111	nd	Salinity, Chl-a, Nutrients.
MF27902.13	CTD	68	39	PBB6	S	58.3621	-150.2805	55.7	6	10	1157	PB5	Salinity, Chl-a, Nutrients.
MF27902.14	SatBuoy	3	39	PBB6	S	58.3581	-150.2592	54.6	6	10	1215	PB5	Drifter #37479; positions.
MF27902.15	CTD	69	40	PBB5	S	58.3184	-150.2470	52.3	6	10	1249	nd	Salinity, Chl-a, Nutrients.
MF27902.16	CTD	70	41	PBB4	S	58.2756	-150.2057	55.7	6	10	1330	nd	Salinity, Chl-a, Nutrients.
MF27902.17	CTD	71	42	PBB3	S	58.2318	-150.1707	81.1	6	10	1414	nd	Salinity, Chl-a, Nutrients.
MF27902.18	CTD	72	43	PBB2	S	58.1685	-150.1129	140.6	6	10	1509	nd	Salinity, Chl-a, Nutrients.
MF27902.19	CTD	73	44	PBB1	S	58.1095	-150.0704	277.4	6	10	1615	nd	Salinity, Chl-a, Nutrients.
MF27902.20	CTD	74	45	PBC8	S	58.0299	-149.9962	284.0	6	10	1725	PBB0	Salinity, Chl-a, Nutrients.

Appendix I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	S/E Flag	Lat	Long	Water Depth	Day	Mos	Time	Sta alt	Comments
MF27902.21	CTD	75	46	PBC7	S	58.1031	-149.9831	279.6	6	10	1833	nd	Salinity, Chl-a, Nutrients.
MF27902.22	CTD	76	47	PBC6	S	58.1737	-149.9558	144.0	6	10	1945	nd	Salinity, Chl-a, Nutrients.
MF27902.23	CTD	77	48	PBC5	S	58.2247	-149.9096	88.7	6	10	2028	nd	Salinity, Chl-a, Nutrients.
MF27902.24	CTD	78	49	PBC4	S	58.2868	-149.8710	67.7	6	10	2111	nd	Salinity, Chl-a, Nutrients.
MF27902.25	CTD	79	50	PBC3	S	58.3286	-149.8450	80.0	6	10	2144	nd	Salinity, Chl-a, Nutrients.
MF27902.26	CTD	80	51	PBC2	S	58.3728	-149.8348	110.8	6	10	2220	nd	Salinity, Chl-a, Nutrients.
MF27902.27	CTD	81	52	PBC8	S	58.4189	-149.8174	138.4	6	10	2258	nd	Salinity, Chl-a, Nutrients.
MF27902.28	CTD	82	52	PBC8	S	58.4172	-149.8222	137.3	6	10	2322	nd	Salinity, Chl-a, Nutrients.
MF28002.01	CTD	83	53	PX11	S	58.1696	-149.4202	107.5	7	10	0135	nd	Salinity, Chl-a, Nutrients.
MF28002.02	CTD	84	54	PX10	S	58.2222	-149.6399	59.1	7	10	0248	nd	Salinity, Chl-a, Nutrients.
MF28002.03	CTD	85	55	PX9	S	58.2773	-149.8648	59.1	7	10	0400	nd	Salinity, Chl-a, Nutrients.
MF28002.04	SatBuoy	4	55	PX9	S	58.2729	-149.8727	59.1	7	10	0410	nd	Drifter #37483; positions.
MF28002.05	CTD	86	56	PX8	S	58.3300	-150.0751	52.3	7	10	0508	nd	Salinity, Chl-a, Nutrients.
MF28002.06	CTD	87	57	PX7	S	58.3659	-150.2871	52.4	7	10	0605	nd	Salinity, Chl-a, Nutrients.
MF28002.07	CTD	88	58	PX6	S	58.3866	-150.4320	66.7	7	10	0646	nd	Salinity, Chl-a, Nutrients.
MF28002.08	CTD	89	59	PX5	S	58.4077	-150.5907	72.2	7	10	0728	nd	Salinity, Chl-a, Nutrients.
MF28002.09	CTD	90	60	PX4	S	58.4301	-150.7411	75.5	7	10	0816	nd	Salinity, Chl-a, Nutrients.
MF28002.10	CTD	91	61	PX3	S	58.4765	-151.0208	79.9	7	10	0929	nd	Salinity, Chl-a, Nutrients.
MF28002.11	CTD	92	62	PX2	S	58.5062	-151.1594	124.1	7	10	1027	nd	Salinity, Chl-a, Nutrients.
MF28002.12	CTD	93	63	PX1	S	58.5691	-151.3289	158.2	7	10	1140	nd	Salinity, Chl-a, Nutrients.
MF28002.13	CTD	94	64	UST1	S	58.3030	-150.9488	67.8	7	10	1435	nd	Salinity, Chl-a, Nutrients.
MF28002.14	CTD	95	65	UST2	S	58.2860	-151.0228	136.2	7	10	1522	nd	Salinity, Chl-a, Nutrients.
MF28002.15	CTD	96	66	UST3	S	58.2648	-151.1021	105.4	7	10	1622	nd	Salinity, Chl-a, Nutrients.
MF28002.16	CTD	97	67	NAB1	S	58.0135	-150.3988	175.8	7	10	1902	PB10	Salinity, Chl-a, Nutrients.
MF28002.17	CTD	98	68	NAB2	S	57.9669	-150.5089	152.7	7	10	2001	nd	Salinity, Chl-a, Nutrients.
MF28002.18	CTD	99	69	NAB3	S	57.9225	-150.6160	125.2	7	10	2049	nd	Salinity, Chl-a, Nutrients.
MF28002.19	CTD	100	70	NAB4	S	57.8753	-150.7050	85.5	7	10	2150	nd	Salinity, Chl-a, Nutrients.
MF28002.20	CTD	101	71	NAB5	S	57.8245	-150.8108	83.3	7	10	2252	nd	Salinity, Chl-a, Nutrients.
MF28002.21	CTD	102	72	NAB6	S	57.7776	-150.9074	79.9	7	10	2348	nd	Salinity, Chl-a, Nutrients.
MF28102.01	CTD	103	73	NAB7	S	57.7290	-151.0048	76.6	8	10	0044	nd	Salinity, Chl-a, Nutrients.
MF28102.02	CTD	104	74	NAB8	S	57.6784	-151.1052	72.3	8	10	0140	nd	Salinity, Chl-a, Nutrients.
MF28102.03	CTD	105	75	NAB9	S	57.6283	-151.2092	65.6	8	10	0231	nd	Salinity, Chl-a, Nutrients.
MF28102.04	CTD	106	76	NAB10	S	57.5518	-151.3348	73.4	8	10	0331	CBA1	Salinity, Chl-a, Nutrients.
MF28102.05	CTD	107	77	CBA2	S	57.5358	-151.4089	75.6	8	10	0405	nd	Salinity, Chl-a, Nutrients.
MF28102.06	CTD	108	78	CBA3	S	57.4895	-151.5075	154.9	8	10	0453	nd	Salinity, Chl-a, Nutrients.
MF28102.07	CTD	109	79	CBA4	S	57.4582	-151.5816	101.0	8	10	0534	nd	Salinity, Chl-a, Nutrients.
MF28102.08	CTD	110	80	CBA5	S	57.4338	-151.6510	62.4	8	10	0606	nd	Salinity, Chl-a, Nutrients.
MF28102.09	CTD	111	81	CBB1	S	57.4702	-151.2503	87.7	8	10	0738	nd	Salinity, Chl-a, Nutrients.
MF28102.10	CTD	112	82	CBB2	S	57.4353	-151.3257	152.7	8	10	0823	nd	Salinity, Chl-a, Nutrients.
MF28102.11	CTD	113	83	CBB3	S	57.3970	-151.4163	169.3	8	10	0919	nd	Salinity, Chl-a, Nutrients.
MF28102.12	CTD	114	84	CBB4	S	57.3711	-151.4576	137.3	8	10	1006	nd	Salinity, Chl-a, Nutrients.
MF28102.13	CTD	115	85	CBB5	S	57.3420	-151.5105	80.0	8	10	1049	nd	Salinity, Chl-a, Nutrients.
MF28102.14	CTD	116	86	CBC1	S	57.2815	-151.5372	71.2	8	10	1215	nd	Salinity, Chl-a, Nutrients.
MF28102.15	CTD	117	87	CBC2	S	57.2605	-151.4643	81.1	8	10	1303	nd	Salinity, Chl-a, Nutrients.
MF28102.16	CTD	118	88	CBC3	S	57.2438	-151.3919	104.2	8	10	1348	nd	Salinity, Chl-a, Nutrients.
MF28102.17	CTD	119	89	CBC4	S	57.2252	-151.3147	159.4	8	10	1440	nd	Salinity, Chl-a, Nutrients.
MF28102.18	CTD	120	90	CBC5	S	57.2078	-151.2408	133.9	8	10	1533	nd	Salinity, Chl-a, Nutrients.
MF28102.19	CTD	121	91	ABX1	S	57.3461	-150.5440	454.0	8	10	1821	nd	Salinity, Chl-a, Nutrients.

Appendix I: Event Log (cont'd)

Event#	Instr	Cast	Sta	Sta std	S/E Flag	Lat	Long	Water Depth	Day	Mos	Time	Sta alt	Comments
MF28102.20	CTD	122	92	ABX2	S	57.4151	-150.6429	145.1	8	10	1935	nd	Salinity, Chl-a, Nutrients.
MF28102.21	CTD	123	93	ABX3	S	57.4799	-150.7553	99.8	8	10	2039	nd	Salinity, Chl-a, Nutrients.
MF28102.22	CTD	124	94	ABX4	S	57.5821	-150.9260	85.5	8	10	2152	nd	Salinity, Chl-a, Nutrients.
MF28102.23	CTD	125	95	ABX5	S	57.6831	-151.1018	73.4	8	10	2312	NAB8	Salinity, Chl-a, Nutrients.
MF28202.01	CTD	126	96	ABX6	S	57.7638	-151.2342	65.6	9	10	0019	nd	Salinity, Chl-a, Nutrients.
MF28202.02	CTD	127	97	ABX7	S	57.8443	-151.3550	62.3	9	10	0131	nd	Salinity, Chl-a, Nutrients.
MF28202.03	CTD	128	98	ABX8	S	57.9250	-151.4831	67.8	9	10	0238	nd	Salinity, Chl-a, Nutrients.
MF28202.04	CTD	129	99	ABX9	S	57.9797	-151.5926	88.8	9	10	0341	nd	Salinity, Chl-a, Nutrients.
MF28202.05	CTD	130	100	ABX10	S	57.9992	-151.6437	103.2	9	10	0415	nd	Salinity, Chl-a, Nutrients.
MF28202.06	CTD	131	101	ABX11	S	58.0194	-151.6970	128.5	9	10	0453	nd	Salinity, Chl-a, Nutrients.
MF28202.07	CTD	132	102	ABX12	S	58.0585	-151.7692	165.9	9	10	0538	nd	Salinity, Chl-a, Nutrients.
MF28202.08	CTD	133	103	ABX13	S	58.1063	-151.8062	93.2	9	10	0620	nd	Salinity, Chl-a, Nutrients.
MF28202.09	CTD	134	104	ABX14	S	58.1407	-151.8438	53.5	9	10	0650	nd	Salinity, Chl-a, Nutrients.
MF28202.10	Mooring deploy	1	105	CB1	S	57.7364	-152.2307	183.6	9	10	1328	nd	Mooring 02CB-1B; u,v,Temp,Salinity.
MF28202.11	CTD	135	105	CB1	S	57.7265	-152.3089	149.4	9	10	1345	nd	None.
MF28202.12	Dock	nd	nd	nd	nd	57.7238	-152.5255	nd	9	10	1630	nd	Arr. Kodiak, AK Coast Guard Pier.