

CRUISE REPORT

Cruise Number: HX287

FOCI Number: 2HX04

Ship: R/V *Alpha Helix*

Area of Operations: Gulf of Alaska

Seward, AK – July 8, 2004

Seward, AK – July 19, 2004

Participating Organizations:

NOAA Pacific Marine Environmental Laboratory

Alaska Fisheries Science Center

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Objectives of Cruise:

This cruise was in support of the Steller Sea Lion Research, Pacific Marine Environmental Laboratory's FOCI base, and United States Global Ocean Ecosystems Dynamics (U.S. GLOBEC) programs. It was undertaken by FOCI to support research into the physical, chemical, and biological mechanisms acting in the coastal Gulf of Alaska that cause it to be an extremely productive ecosystem, the home to diverse species of fish, shellfish, marine mammals and birds. The research focused on two prominent features hypothesized to contribute to the transport of nutrients to the shelf regions south and east of Kodiak Island, and to assess their importance in

sustaining production in this area throughout the summer months. The first feature studied was one of the large anti-cyclonic eddies that originate near Yakutat during the winter, then move across the deep Gulf of Alaska and begin to impinge on continental margin south of the Kenai Peninsula between late spring and early fall ([Fig. 1](#)). These eddies are hypothesized to bring High Nitrate/Low Chlorophyll water to the shelf areas from the deep Gulf of Alaska. Next we wanted to investigate the possibility that up-trough transport of nutrients, followed by tidal mixing over the banks, causes the banks south and east of Kodiak Island to be regions of sustained production throughout the summer. This study focused on Portlock Bank and Stevenson Trough. Lastly, we wanted to contrast these areas to the region of the Alaskan Coastal Current south of the Kenai Peninsula.

Summary of Cruise:

The cruise departed Seward, AK on July 8, 2004 at 10:00 AM. While still in Resurrection Bay, we tested the Triaxus, University of Alaska Fairbanks's new towed vehicle, and practiced procedures for deploying and retrieving it. We then proceeded to three mooring sites on the Seward Line, to make calibration CTD casts, and a MARMAP bongo tow at GB3, where an optical plankton counter is deployed ([Fig.2](#)). We then transited to the region off the slope, and just west of this year's eddy, that formed during the winter off Yakutat and then moved to its July position south of the Kenai Peninsula. We then made a 10-hour, 120 km transit eastward using the Triaxus, which was equipped with a temperature and conductivity sensor. This transit covered a region from west of the eddy to 40 km east of the center. The structure of the temperature field along this Triaxus transect is shown in [Fig. 3](#). Next we occupied an east-west line of CTD stations across the eddy. CTD stations were taken to a depth of 1500m. At approximately every second station /MARMAP bongo tows and CalVET tows were taken. The bongo tows were made to a depth of 300m (or 10m off the bottom) using two sets of bongo nets with mesh sizes of 330m and 120m, respectively. The CalVET tows were made to a depth of 60m or 5m off the bottom ([Fig 6](#)).

Next we made a detailed CTD/MARMAP bongo tow survey of Portlock Bank and Stevenson Trough, east of Kodiak Island to assess the mechanisms of transport to the bank and mixing of salinity and nutrients on top of it ([Fig.4](#)). Those stations at which bongo tows were taken is

shown in [Fig. 5](#). As part of that study, we quickly occupied two lines of stations with ~1nmi distance between stations. We made these transects twice on each of the two lines (PBA and PBC). The second occupation began 6 hrs after the first, in order to assess the impact that tides might have on the distribution of water properties. The lines of these stations are labeled UPA, UPB on the PBA transect, and UPC and UPD on the PBC transect. The Portlock Bank survey ended with a transect cutting from continental slope on the eastern side of the bank, to the western side near Afognak and Kodiak Islands.

We next made two transects that form two sides of a box of stations occupied in 2003 on the Kilo Moana (KM0309 and KM0313). These cut across the Alaska Coastal Current from Afognak Island to Portlock Bank (AP) and from there to Gore Point (GP) on the Kenai Peninsula. The objective of these transects was to contrast the hydrological conditions and plankton in the ACC with those on the Bank and in the trough. Three of those casts were calibration stations for the Gore Point moorings. We ended the cruise by returning to the Seward line and FOCI's GLOBEC moorings, for calibration CTD casts and another MARMAP bongo tow at the site of the AFSC deployment of an optical plankton counter at GB3.

The cruise ended when we arrived in Seward, AK on the morning of July 19, 2004. The cruise encountered good to excellent weather, so no time was lost due to weather, and all our research goals were met.

Table 1: Cruise Statistics For FOCI Cruise 2HX04 (HX287)

Gear Used	No. Tows
20cm bongo (20Bon)	61
60cm bongo (60Bon)	61
CalCOFI vertical egg tow net (CalVET)	22
Seabird SeaCAT CTD (CAT)	61
CTD without bottle samples (CTD)	65
CTD with bottle samples (CTDB)	126
Deployment of satellite buoy (SatBuoy)	6
Towed vehicle collecting; temp,salinity (Triaxus)	one tow/120km

Table 2: Cruise Statistics For FOCI Cruise 2HX04 (HX287)

Gear Used	# Tows	Samples
SeaBird SeaCat CTD (CAT)	62	
Extracted chlorophyll (Chlor)	124	638
SeaBird CTD (CTD)	193	
Deployment of buoy or mooring (Deploy)	6	6
CTD casts with Stimulated fluorescence (Fluor) data	193	
CTD casts with Photosynthetically Active Radiation (PAR) data	191	
Nutrient Samples (Chlor)		1241
Quantitative tow preserved in formalin (QTowF)	142	151
Transect with towed Triaxus (TriTrans)		2

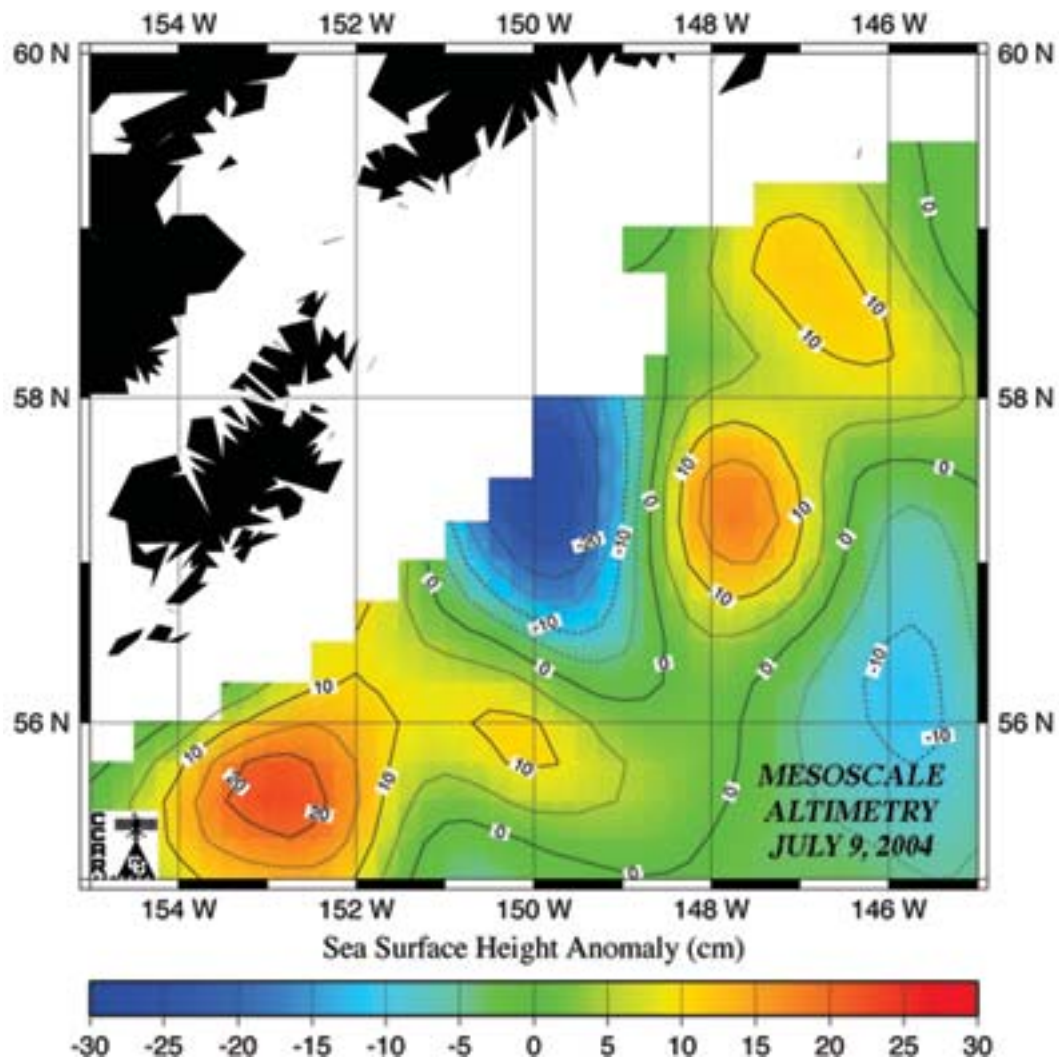


Fig. 1. Sea surface altimetry of the eddies near the Kenai Peninsula/Kodiak I. continental slope on July 9, 2004. The eddy in the southwest originated in 2003. The eddy near 57°N x 148°W originated in 2004. These were produced from the following website:
http://e450.colorado.edu/realtime/gsfc_global-real-time_ssh/

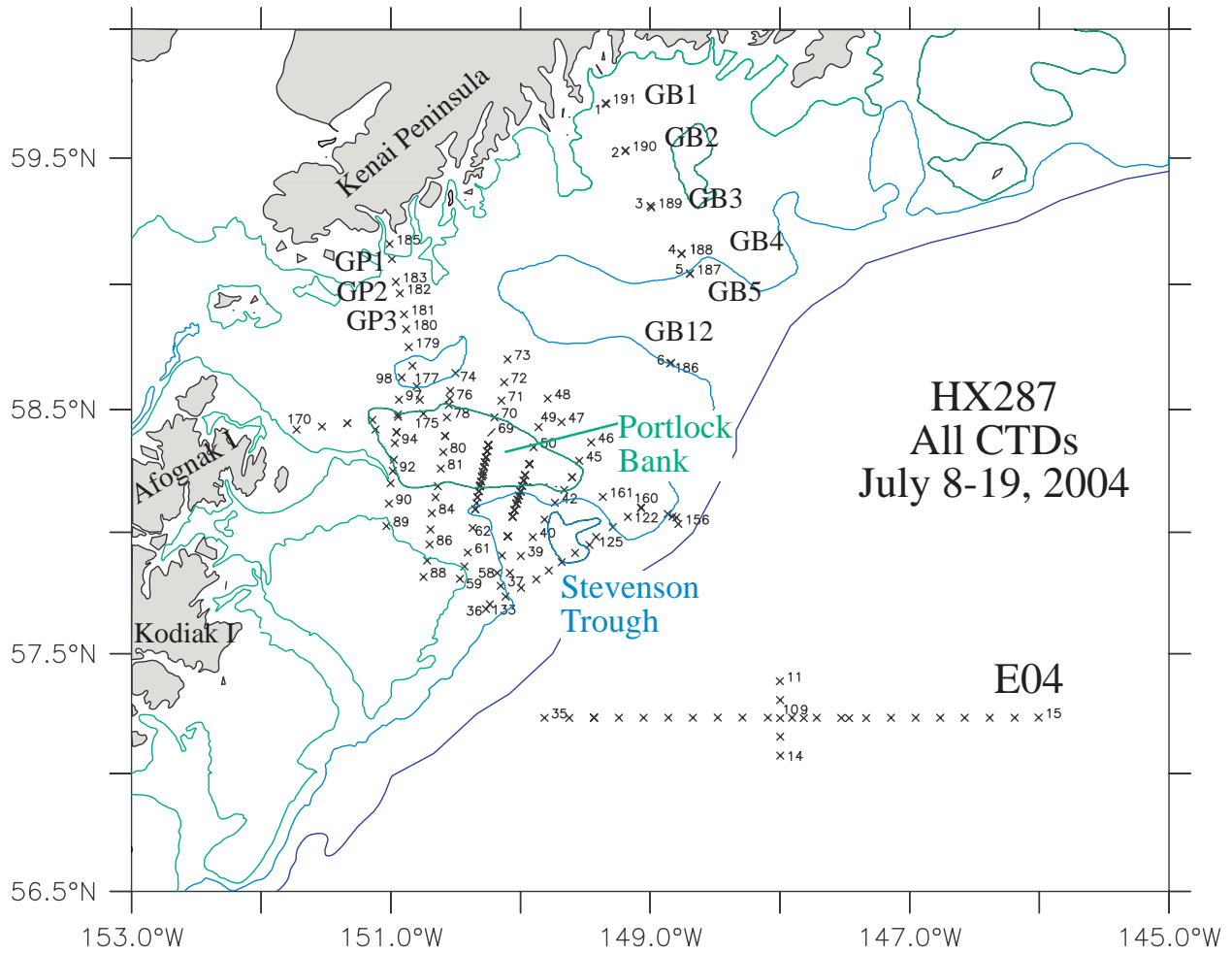


Figure 2. Map of CTD lines and stations for HX287 from July 8-19, 2004. Line E04 crosses the 2004 Yakutat eddy seen in Fig. 1. The Seward line moorings (GB) and Gore Point (GP) mooring locations, the sites of calibration casts are indicated. The line names of stations on and near Portlock Bank are presented in Fig. 4.

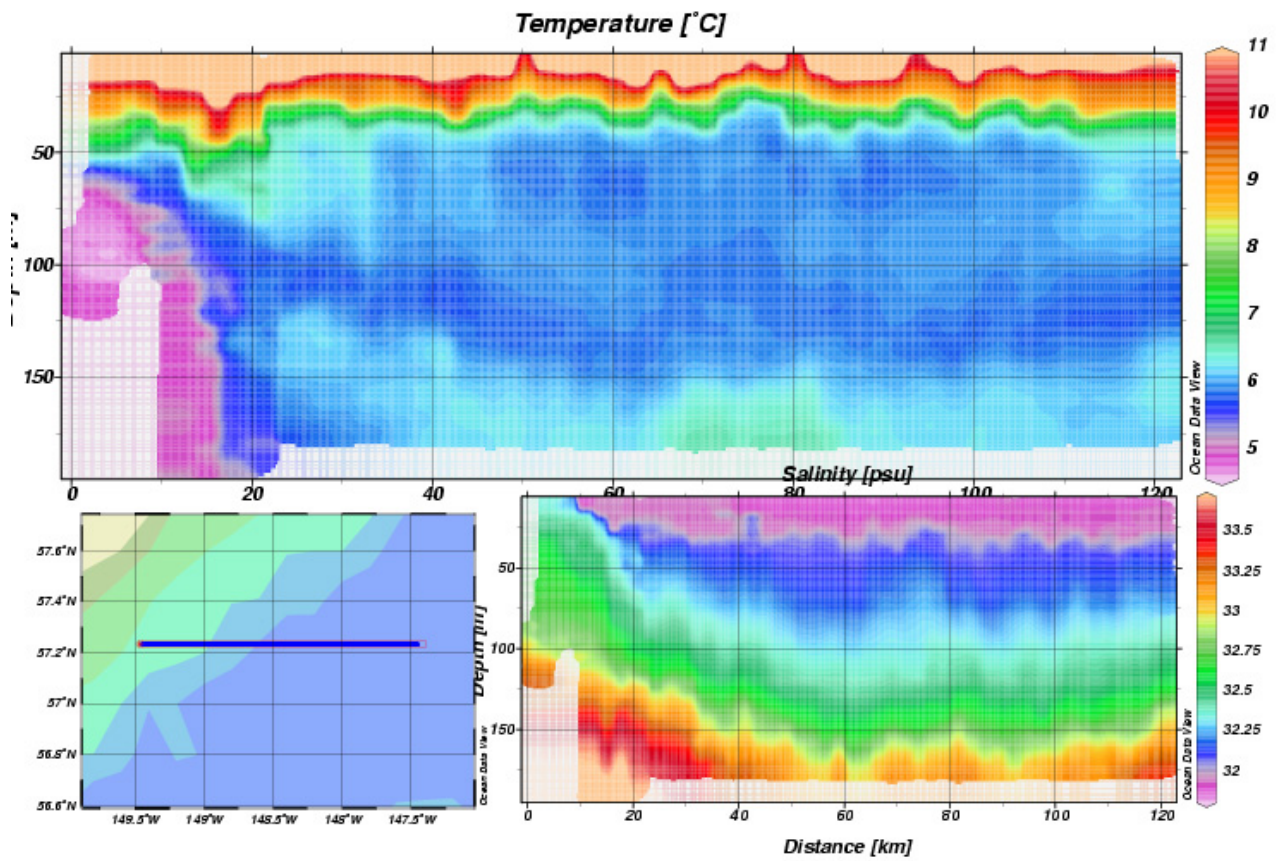


Figure 3. Temperature transect measured using the Triaxus towed vehicle.

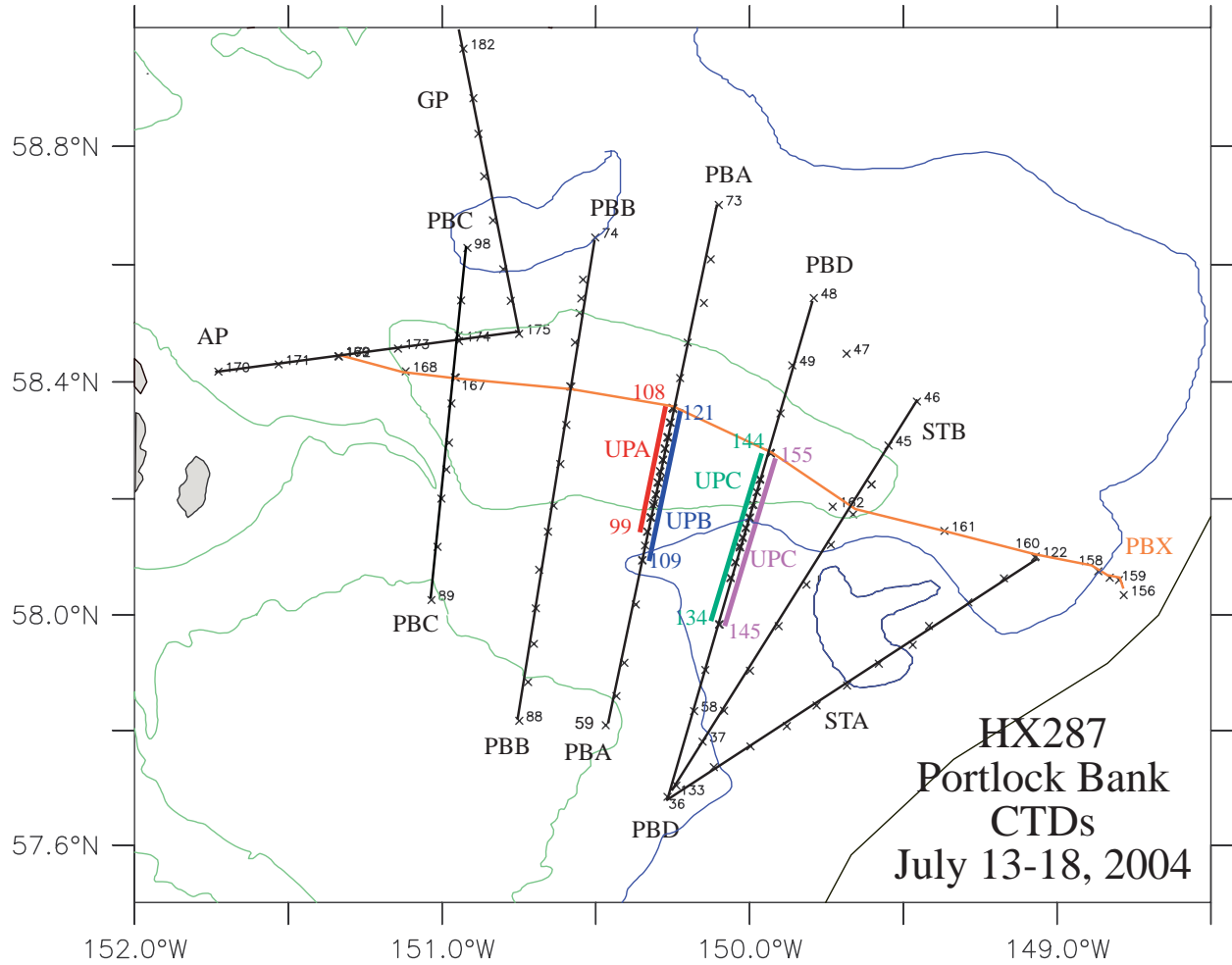


Figure 4. Station map for CTD stations taken near Portlock bank from July 13-18, 2004. Lines PBA, PBB, PBC, PBD and PBX cross Portlock Bank and the middle to upper portions of Stevenson Trough, while STA and STB traverse the outer portion of Stevenson Trough and the eastern end of Portlock Bank. GP is the Gore Point line. Line AP crosses between Afognak I. and Portlock Bank. GP is the Gore Point line. The red and blue lines identify those stations taken during on PBA during the UPA and UPB quick CTD transects. The green and purple lines identify those stations taken during on PBA during the UPC and UPD quick transects.

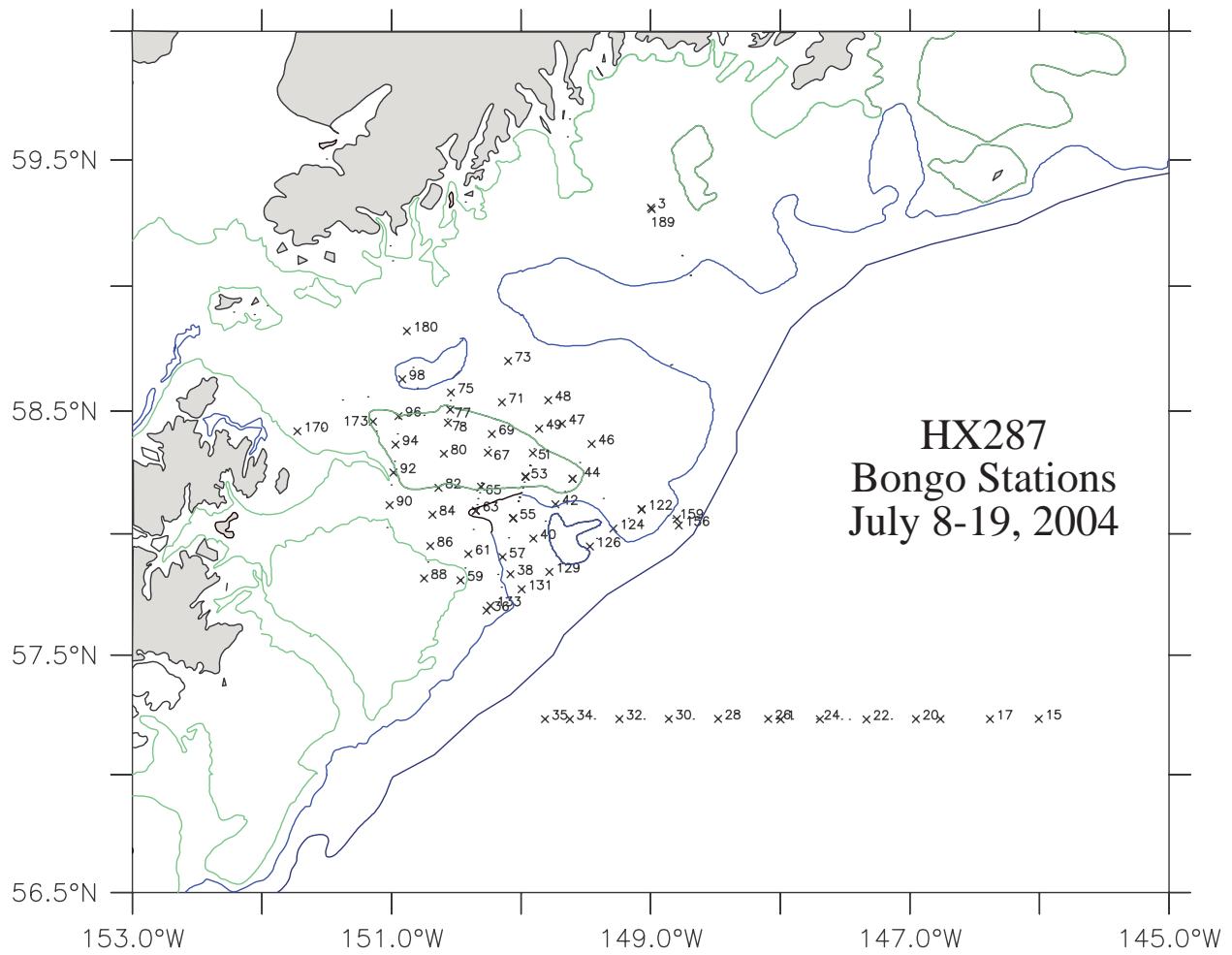


Figure 5. CTD stations with MARMAP bongo tows conducted between July 8 –19, 2004 on HX287.

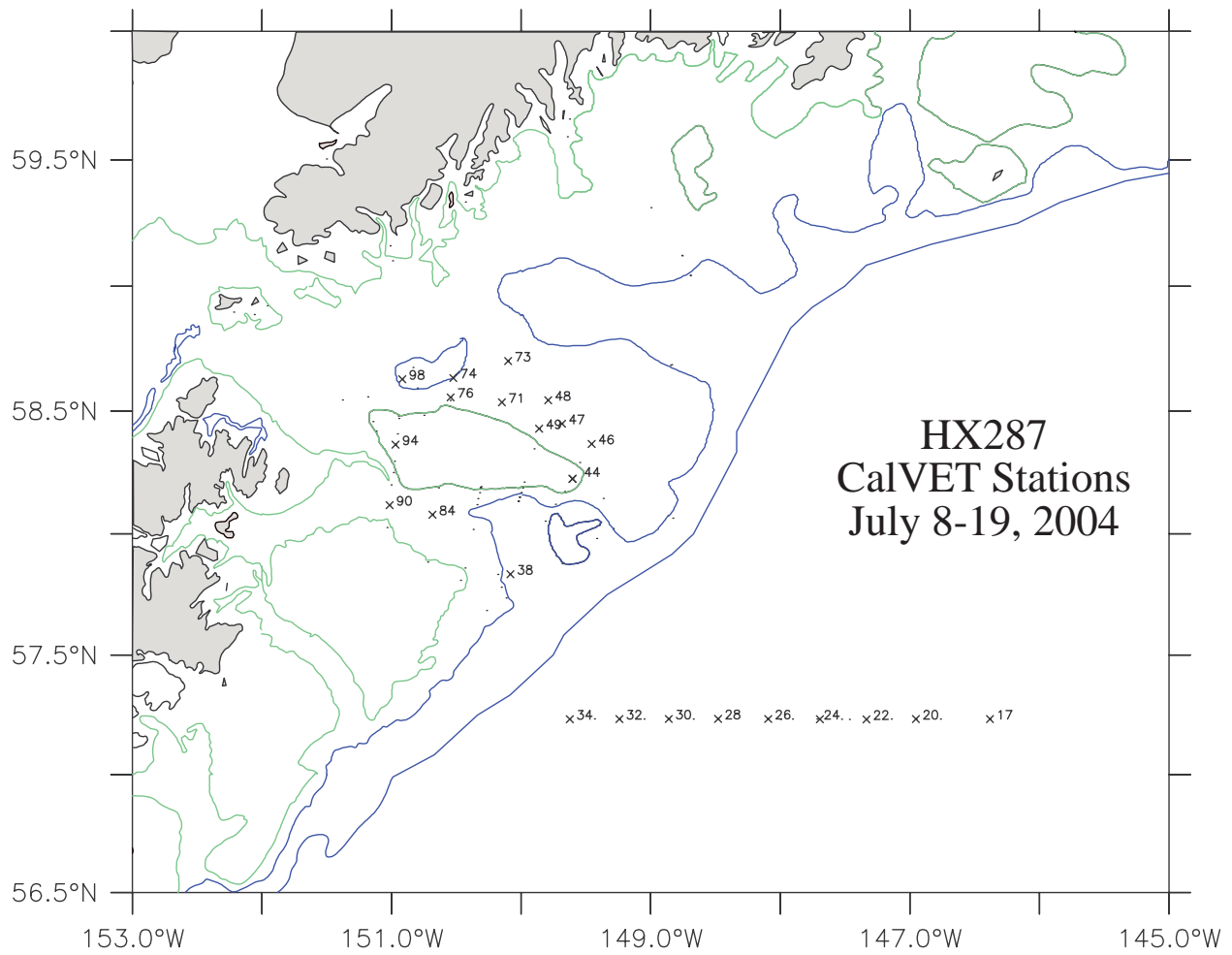


Figure 6. CTD stations with CalVET tows conducted between July 8 –19, 2004 on HX287.

Table 3. .Event log for R/V Alpha Helix cruise HX287.

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004														
Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
8-Jul-04	18:00												Depart Seward, AK	
8-Jul-04	21:33	1	04GB1-A	CTD001	231	59	42.6	N	149	20.3	W	CTDB	Chlor, CTD, Fluor, PAR	30 ml lost due to filter system failure. Remaining volume measured with graduated cylinder.
8-Jul-04	23:10	2	04GB-2A	CTD002	218	59	31.59	N	149	11.56	W	CTDB	Chlor, CTD, Fluor, PAR	
9-Jul-04	0:53	3	GBM3A	CTD003	189	59	18.66	N	148	59.85	W	CTDB	Chlor, CTD, Fluor, PAR	
9-Jul-04	1:37	3	GBM3A	BON001	189	59	18.52	N	149	1.05	W	20Bon	QTowF	Top 50m salinity readings bad. Problem with SeaCat. Tow stayed in upper 50m longer than necessary during descent. Difficult to read wire angles with protractor.
9-Jul-04	1:37	3	GBM3A	BON001	189	59	18.52	N	149	1.05	W	60Bon	QTowF	Top 50m salinity readings bad. Problem with SeaCat. Tow stayed in upper 50m longer than necessary during descent. Difficult to read wire angles with protractor.
9-Jul-04	1:37	3	GBM3A	BON001	189	59	18.52	N	149	1.05	W	CAT	CAT	Top 50m salinity readings bad. Problem with SeaCat. Tow stayed in upper 50m longer than necessary during descent. Difficult to read wire angles with protractor.
9-Jul-04	3:43	4	GB4A	CTD004	148	59	7.5	N	148	45.68	W	CTDB	Chlor, CTD, Fluor, PAR	
9-Jul-04	4:30	5	GBP5A	CTD005	196	59	2.69	N	148	41.66	W	CTDB	Chlor, CTD, Fluor, PAR	
9-Jul-04	7:05	6	GPB12A	CTD006	211	58	41.2	N	148	50.36	W	CTDB	Chlor, CTD, Fluor, PAR	
9-Jul-04	16:18	7	E3TR1	CTD007	1997	57	14.04	N	149	26.07	W	CTDB	Chlor, CTD, Fluor, PAR	West end of eddy.
9-Jul-04	17:28	7	E4TR1		3321	57	14	N	149	5.03	W	CTD, Triaxus start	Begin transect. Towed on program to zig zag between 10 and 180 meters.	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
10-Jul-04	2:38	8	E4TR2		4674	57	13.86	N	147	24.46	W	Triaxus end, CTD,	End transect. Towed zig zag 10-180 m. Total time 10 hr 10 min (610 min).	
10-Jul-04	3:46	8	E4CE	CTD008	4672	57	13.87	N	147	27.9	W	CTDB	Chlor, CTD, Fluor, PAR	
10-Jul-04	5:41	9	E4C	CTD009	4862	57	13.88	N	147	48.94	W	CTDB	Chlor, CTD, Fluor, PAR	
10-Jul-04	6:25	9	E4C		4862	57	13.45	N	147	59.89	W	SatBuoy	Deploy	
10-Jul-04	7:20	10	E4CW	CTD010	4892	57	13.74	N	147	59.71	W	CTDB	Chlor, CTD, Fluor, PAR	About 10 ml leaked from 40 m funnel.
10-Jul-04	7:46	10	E4CW		4890	57	13.59	N	147	59.87	W	SatBuoy	Deploy	
10-Jul-04	9:00	11	E4X1	CTD011	4963	57	23.13	N	148	0.55	W	CTDB	Chlor, CTD, Fluor, PAR	
10-Jul-04	10:13	12	E4X2	CTD012	4912	57	18.44	N	147	59.94	W	CTDB	Chlor, CTD, Fluor, PAR	
10-Jul-04	11:50	13	E4X3	CTD013	4840	57	9.22	N	147	59.88	W	CTDB	Chlor, CTD, Fluor, PAR	10m and 50 m bottles leaking after retrieval quest.
10-Jul-04	13:03	14	E3X4	CTD014	4722	57	4.47	N	147	59.87	W	CTDB	CTD, Fluor, PAR	Bottles did not fire - no water samples taken. CTD data OK.
10-Jul-04	20:20	15	E401	CTD015	3921	57	13.99	N	146	0.06	W	CTDB	Chlor, CTD, Fluor, PAR	
10-Jul-04	22:29	15	E401	BON002	3940	57	14.41	N	146	2.16	W	20Bon	QTowF	
10-Jul-04	22:29	15	E401	BON002	3940	57	14.41	N	146	2.16	W	60Bon	QTowF	
10-Jul-04	22:29	15	E401	BON002	3940	57	14.41	N	146	2.16	W	CAT	CAT	
10-Jul-04	23:34	16	E402	CTD016	3993	57	13.98	N	146	11.43	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	1:37	17	E403	CTD017	1998	57	13.96	N	146	22.9	W	CTDB	Chlor, CTD, Fluor, PAR	
10-Jul-04	3:25	17	E403	CV 001	4057	57	12.82	N	146	22.83	W	CalVET	QTowF	
11-Jul-04	3:39	17	E403	BON 003	4057	57	12.31	N	146	23.83	W	20Bon	QTowF	
11-Jul-04	3:39	17	E403	BON 003	4057	57	12.31	N	146	23.83	W	60Bon	QTowF	
11-Jul-04	3:39	17	E403	BON 003	4057	57	12.31	N	146	23.83	W	CAT	CAT	
11-Jul-04	4:57	18	E404	CTD018	4170	57	13.98	N	146	34.5	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	6:51	19	E405	CTD019	4279	57	13.38	N	146	45.8	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	9:30	20	E406	CTD020	4407	57	13.98	N	146	57.2	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	10:00	20	E406	CV002	4407	57	13.98	N	146	57.2	W	CalVET	QTowF	
11-Jul-04	10:35	20	E406	BON004	4394	57	13.35	N	146	57.5	W	20Bon	QTowF	
11-Jul-04	10:35	20	E406	BON004	4394	57	13.35	N	146	57.5	W	60Bon	QTowF	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
11-Jul-04	10:35	20	E406	BON004	4394	57	13.35	N	146	57.5	W	CAT	CAT	
11-Jul-04	12:14	21	E407	CTD021	4516	57	13.98	N	147	8.62	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	14:50	22	E408	CTD022	4615	57	13.93	N	147	20.12	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	15:19	22	E408	CV003	4606	57	13.91	N	147	19.66	W	CalVET	QTowF	
11-Jul-04	15:31	22	E408	BON005	4601	57	13.94	N	147	19.41	W	20Bon	QTowF	
11-Jul-04	15:31	22	E408	BON005	4601	57	13.94	N	147	19.41	W	60Bon	QTowF	
11-Jul-04	15:31	22	E408	BON005	4601	57	13.94	N	147	19.41	W	CAT	CAT	
11-Jul-04	17:29	23	E409	CTD023	4723	57	13.96	N	147	31.59	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	19:30	24	E410	CTD024	4815	57	13.99	N	147	42.99	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	20:15	24	E410	CV004	4815	57	13.98	N	147	43.08	W	CalVET	QTowF	
11-Jul-04	20:42	24	E410	BON006	4812	57	14	N	147	43.4	W	20Bon	QTowF	
11-Jul-04	20:42	24	E410	BON006	4812	57	14	N	147	43.4	W	60Bon	QTowF	
11-Jul-04	20:42	24	E410	BON006	4812	57	14	N	147	43.4	W	CAT	CAT	
11-Jul-04	21:39	25	E411	CTD025	4873	57	13.95	N	147	54.4	W	CTDB	Chlor, CTD, Fluor, PAR	
11-Jul-04	23:30	26	E412	CTD026	4903	57	14.04	N	148	6.06	W	CTDB	Chlor, CTD, Fluor, PAR	
12-Jul-04	0:41	26	E412	CV005	4902	57	13.99	N	148	5.92	W	CalVET	QTowF	
12-Jul-04	1:14	26	E412	BON007	4902	51	13.84	N	148	6.43	W	20Bon	QTowF	
12-Jul-04	1:14	26	E412	BON007	4902	51	13.84	N	148	6.43	W	60Bon	QTowF	
12-Jul-04	1:14	26	E412	BON007	4902	51	13.84	N	148	6.43	W	CAT	CAT	
12-Jul-04	2:12	27	E413	CTD027	4935	57	14.03	N	148	17.34	W	CTDB	Chlor, CTD, Fluor, PAR	10m bottle leaked. Sample contaminated through bottom seal.
12-Jul-04	4:17	28	E414	CTD028	4988	57	14.03	N	148	28.84	W	CTDB	Chlor, CTD, Fluor, PAR	
12-Jul-04	5:36	28	E414	CV006	4988	57	14.12	N	148	27.58	W	CalVET	QTowF	
12-Jul-04	5:56	28	E414	BON008	4979	57	14.12	N	148	28.22	W	20Bon	QTowF	
12-Jul-04	5:56	28	E414	BON008	4979	57	14.12	N	148	28.22	W	60Bon	QTowF	
12-Jul-04	5:56	28	E414	BON008	4979	57	14.12	N	148	28.22	W	CAT	CAT	
12-Jul-04	6:56	29	E415	CTD029	4531	57	13.98	N	148	40.27	W	CTDB	Chlor, CTD, Fluor, PAR	
12-Jul-04	9:50	30	E416	CTD030	4199	57	13.98	N	148	51.67	W	CTDB	Chlor, CTD, Fluor, PAR	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
12-Jul-04	10:20	30	E416	CAL007	3795	57	15.37	N	148	50.58	W	CalVET	QTowF	
12-Jul-04	10:26	30	E416	BON009	3877	57	15.33	N	148	50.75	W	20Bon	QTowF	
12-Jul-04	10:26	30	E416	BON009	3877	57	15.33	N	148	50.75	W	60Bon	QTowF	
12-Jul-04	10:26	30	E416	BON009	3877	57	15.33	N	148	50.75	W	CAT	CAT	
12-Jul-04	12:18	31	E417	CTD031	3522	57	13.96	N	149	3.13	W	CTDB	Chlor, CTD, Fluor, PAR	
12-Jul-04	14:30	32	E418	CTD032	3140	57	13.97	N	149	14.5	W	CTDB	Chlor, CTD, Fluor, PAR	0 meter bottle did not fire-used bucket for surface samples
12-Jul-04	15:10	32	E418	CV008	3135	57	14.86	N	149	13.81	W	CalVET	QTowF	Used net 2-net 1 spilled
12-Jul-04	15:20	32	E418	BON010	3160	57	14.83	N	149	14.33	W	20Bon	QTowF	
12-Jul-04	15:20	32	E418	BON010	3160	57	14.83	N	149	14.33	W	60Bon	QTowF	
12-Jul-04	15:20	32	E418	BON010	3160	57	14.83	N	149	14.33	W	CAT	CAT	
12-Jul-04	17:09	33	E419	CTD033	2890	57	13.99	N	149	25.99	W	CTDB	Chlor, CTD, Fluor, PAR	20m bottle leaking when brought on board. 20m sample quest
12-Jul-04	19:07	34	E420	CTD034	2626	57	13.94	N	149	37.49	W	CTDB	Chlor, CTD, Fluor, PAR	
12-Jul-04	19:49	34	E420	CV009	2674	57	14.57	N	149	37.8	W	CalVET	QTowF	Net 2 saved as net fouled opening of net 1.
12-Jul-04	20:10	34	E420	BON011	2527	57	14.6	N	149	38.82	W	20Bon	QTowF	
12-Jul-04	20:10	34	E420	BON011	2527	57	14.6	N	149	38.82	W	60Bon	QTowF	
12-Jul-04	20:10	34	E420	BON011	2527	57	14.6	N	149	38.82	W	CAT	CAT	
12-Jul-04	21:01	35	E421	CTD035	1974	57	13.96	N	149	48.92	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	1:12	36	STB9	CTD36	150	57	41.07	N	150	16.01	W	CTDB	Chlor, CTD, Fluor, PAR	20 bottle leaked, sample not taken.
13-Jul-04	2:13	36	STB9	BON012	137	57	40.99	N	150	16.13	W	20Bon	QTowF	
13-Jul-04	2:13	36	STB9	BON012	137	57	40.99	N	150	16.13	W	60Bon	QTowF	
13-Jul-04	2:13	36	STB9	BON012	137	57	40.99	N	150	16.13	W	CAT	CAT	
13-Jul-04	3:09	37	STB8	CTD37	186	57	46.83	N	150	9.17	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	3:53	38	STB7	CTD038	211	57	50.04	N	150	4.99	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	20:14	38	STB7	CV010	204	57	50.36	N	150	4.52	W	CalVET	QTowF	
13-Jul-04	4:38	38	STB7	BON013	201	57	50.11	N	150	4.94	W	20Bon	QTowF	
13-Jul-04	4:38	38	STB7	BON013	201	57	50.11	N	150	4.94	W	60Bon	QTowF	

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Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
13-Jul-04	4:38	38	STB7	BON013	201	57	50.11	N	150	4.94	W	CAT	CAT	
13-Jul-04	5:28	39	STB6	CTD039	265	57	54.2	N	149	59.91	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	5:47	40	STB5	CTD040	267	57	58.85	N	149	54.33	W	CTDB	Chlor, CTD, Fluor, PAR	20 m bottle was leaking, no sample taken.
13-Jul-04	7:10	40	STB5	BON014	266	57	58.64	N	149	55.6	W	20Bon	QTowF	
13-Jul-04	7:10	40	STB5	BON014	266	57	58.64	N	149	55.6	W	60Bon	QTowF	
13-Jul-04	7:10	40	STB5	BON014	266	57	58.64	N	149	55.6	W	CAT	CAT	
13-Jul-04	8:30	41	STB4	CTD041	246	58	3.1	N	149	48.91	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	9:11	42	STB3	CTD042	221	58	7.22	N	149	44.18	W	CTDB	Chlor, CTD, Fluor, PAR	Surface bottle leaking on way up. 0 meter leaked. Other samples OK.
13-Jul-04	9:30	42	STB3	BON015	218	58	7.34	N	149	43.69	W	20Bon	QTowF	
13-Jul-04	9:30	42	STB3	BON015	218	58	7.34	N	149	43.69	W	60Bon	QTowF	
13-Jul-04	9:30	42	STB3	BON015	218	58	7.34	N	149	43.69	W	CAT	CAT	
13-Jul-04	10:32	43	STB2	CTD043	109	58	10.4	N	149	39.86	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	11:12	44	STB1	CTD044	69	58	13.49	N	149	36.21	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	11:20	44	STB1	CV011	69	58	13.43	N	149	36.17	W	CalVET	QTowF	
13-Jul-04	11:30	44	STB1	BON016	66	58	13.23	N	149	36.43	W	20Bon	QTowF	
13-Jul-04	11:30	44	STB1	BON016	66	58	13.23	N	149	36.43	W	60Bon	QTowF	
13-Jul-04	11:30	44	STB1	BON016	66	58	13.23	N	149	36.43	W	CAT	CAT	
13-Jul-04	12:17	45	STB0	CTD045	115	58	17.49	N	149	32.9	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	13:10	46	STB00	CTD046	164	58	21.98	N	149	27.4	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	13:25	46	STB00	CV012	163	58	21.98	N	149	27.13	W	CalVET	QTowF	
13-Jul-04	13:34	46	STB00	BON017	163	58	21.82	N	149	27.15	W	20Bon	QTowF	
13-Jul-04	13:34	46	STB00	BON017	163	58	21.82	N	149	27.15	W	60Bon	QTowF	
13-Jul-04	13:34	46	STB00	BON017	163	58	21.82	N	149	27.15	W	CAT	CAT	
13-Jul-04	14:57	47	STB0X	CTD047	158	58	26.88	N	149	41.04	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	15:09	47	STB0X	CV013	158	58	26.84	N	149	41.02	W	CalVET	QTowF	
13-Jul-04	15:18	47	STB0X	BON018	157	58	26.77	N	149	41.23	W	20Bon	QTowF	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
13-Jul-04	15:18	47	STB0X	BON018	157	58	26.77	N	149	41.23	W	60Bon	QTowF	
13-Jul-04	15:18	47	STB0X	BON018	157	58	26.77	N	149	41.23	W	CAT	CAT	
13-Jul-04	16:20	48	PBD0	CTD048	140	58	32.6	N	149	47.47	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	16:37	48	PBD0	CV014	137	58	32.64	N	149	47.58	W	CalVET	QTowF	
13-Jul-04	16:46	48	PBD0	BON019	138	58	32.6	N	149	47.71	W	20Bon	QTowF	
13-Jul-04	16:46	48	PBD0	BON019	138	58	32.6	N	149	47.71	W	60Bon	QTowF	
13-Jul-04	16:46	48	PBD0	BON019	138	58	32.6	N	149	47.71	W	CAT	CAT	
13-Jul-04	17:42	49	PBD1	CTD049	129	58	25.7	N	149	51.66	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	17:57	49	PBD1	CV015	126	58	25.64	N	149	51.83	W	CalVET	QTowF	
13-Jul-04	18:05	49	PBD1	BON020	123	58	25.56	N	149	52.13	W	20Bon	QTowF	
13-Jul-04	18:05	49	PBD1	BON020	123	58	25.56	N	149	52.13	W	60Bon	QTowF	
13-Jul-04	18:05	49	PBD1	BON020	123	58	25.56	N	149	52.13	W	CAT	CAT	
13-Jul-04	18:45	50	PBD2	CTD050	78	58	20.78	N	149	53.97	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	19:25	51	PBD3	CTD051	55	58	16.7	N	149	55.96	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	19:45	51	PBD3	BON021	53	58	17.07	N	149	56.52	W	20Bon	QTowF	
13-Jul-04	19:45	51	PBD3	BON021	53	58	17.07	N	149	56.52	W	60Bon	QTowF	
13-Jul-04	19:45	51	PBD3	BON021	53	58	17.07	N	149	56.52	W	CAT	CAT	
13-Jul-04	20:21	52	PBD4	CTD052	79	58	14.05	N	149	58.25	W	CTDB	Chlor, CTD, Fluor, PAR	
13-Jul-04	20:50	53	PBD5	CTD053	154	58	10	N	148	59.53	W	CTDB	Chlor, CTD, Fluor, PAR	30 m bottle had a small leak took sample anyway.
13-Jul-04	21:19	53	PD5	BON022	151	58	10.04	N	149	59.26	W	20Bon	QTowF	
13-Jul-04	21:19	53	PD5	BON022	151	58	10.04	N	149	59.26	W	60Bon	QTowF	
13-Jul-04	21:19	53	PD5	BON022	151	58	10.04	N	149	59.26	W	CAT	CAT	
13-Jul-04	21:55	54	PBD6	CTD054	273	58	6.98	N	150	1.94	W	CTDB	Chlor, CTD, Fluor, PAR	No 40 m sample taken.
13-Jul-04	22:40	55	PBD7	CTD055	321	58	3.81	N	150	3.71	W	CTDB	Chlor, CTD, Fluor, PAR	No 30 m chlorophyll sample taken
13-Jul-04	23:17	55	PBD7	BON023	311	58	4.06	N	150	2.82	W	20Bon	QTowF	
13-Jul-04	23:17	55	PBD7	BON023	311	58	4.06	N	150	2.82	W	60Bon	QTowF	
13-Jul-04	23:17	55	PBD7	BON023	311	58	4.06	N	150	2.82	W	CAT	CAT	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
14-Jul-04	0:19	56	PBD8	CTD056	247	57	59.02	N	150	5.83	W	CTDB	Chlor, CTD, Fluor, PAR	30 m bottle leaked a bit but sample was still taken. No 20 m sample collected.
14-Jul-04	1:14	57	PB09	CTD057	214	57	54.28	N	150	8.64	W	CTDB	Chlor, CTD, Fluor, PAR	20m bottle did not fire no sample
14-Jul-04	1:44	57	PBD9	BON024	220	57	54.36	N	150	7.76	W	20Bon	QTowF	
14-Jul-04	1:44	57	PBD9	BON024	220	57	54.36	N	150	7.76	W	60Bon	QTowF	
14-Jul-04	1:44	57	PBD9	BON024	220	57	54.36	N	150	7.76	W	CAT	CAT	
14-Jul-04	2:36	58	PBD10	CTD058	189	57	50	N	150	10.83	W	CTDB	Chlor, CTD, Fluor, PAR	No 30 m chlorophyll sample collected.
14-Jul-04	4:00	59	PBA15	CTD059	91	57	48.55	N	150	28.06	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	4:19	59	PBA15	BON25	91	57	48.16	N	150	28.05	W	20Bon	QTowF	
14-Jul-04	4:19	59	PBA15	BON25	91	57	48.16	N	150	28.05	W	60Bon	QTowF	
14-Jul-04	4:19	59	PBA15	BON25	91	57	48.16	N	150	28.05	W	CAT	CAT	
14-Jul-04	4:57	60	PBA14	CTD060	102	57	51.57	N	150	25.98	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	5:33	61	PBA13	CTD061	148	57	55.02	N	150	24.43	W	CTDB	Chlor, CTD, Fluor, PAR	30 m bottle leaked badly, sample lost.
14-Jul-04	5:56	61	PBA13	BON026	147	57	54.81	N	150	24.66	W	20Bon	QTowF	
14-Jul-04	5:56	61	PBA13	BON026	147	57	54.81	N	150	24.66	W	60Bon	QTowF	
14-Jul-04	5:56	61	PBA13	BON026	147	57	54.81	N	150	24.66	W	CAT	CAT	
14-Jul-04	6:52	62	PBA12	CTD062	184	58	1.07	N	150	22.18	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	7:35	63	PBA11	CTD063	220	58	5.64	N	150	20.96	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	8:00	63	PBA11	BON027	210	58	5.36	N	150	21.6	W	20Bon	QTowF	
14-Jul-04	8:00	63	PBA11	BON027	210	58	5.36	N	150	21.6	W	60Bon	QTowF	
14-Jul-04	8:00	63	PBA11	BON027	210	58	5.36	N	150	21.6	W	CAT	CAT	
14-Jul-04	8:57	64	PBA11	CTD064	181	58	8.62	N	150	20	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	9:35	65	PBA9	CTD065	109	58	11.55	N	150	18.51	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	9:54	65	PBA9	BON028	108	58	11.37	N	150	18.74	W	20Bon	QTowF	
14-Jul-04	9:54	65	PBA9	BON028	108	58	11.37	N	150	18.74	W	60Bon	QTowF	
14-Jul-04	9:54	65	PBA9	BON028	108	58	11.37	N	150	18.74	W	CAT	CAT	
14-Jul-04	10:36	66	PBA8	CTD066	75	58	13.97	N	150	17.3	W	CTDB	Chlor, CTD, Fluor, PAR	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
14-Jul-04	11:19	67	PBA7	CTD067	53	58	18.26	N	150	15.85	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	11:24	67	PBA7	CV016	51	58	18.22	N	150	15.85	W	CalVET	Discard	Hit bottom-not saved
14-Jul-04	11:36	67	PBA7	BON029	49	58	17.82	N	150	15.94	W	20Bon	QTowF	
14-Jul-04	11:36	67	PBA7	BON029	49	58	17.82	N	150	15.94	W	60Bon	QTowF	
14-Jul-04	11:36	67	PBA7	BON029	49	58	17.82	N	150	15.94	W	CAT	CAT	
14-Jul-04	11:53	67	PBA7	CV016	51	58	17.37	N	150	15.89	W	CalVET	QTowF	second try
14-Jul-04	11:45	67	PBA7		51	58	17.53	N	150	15.98	W	SatBuoy	Deploy	buoy #43697
14-Jul-04	12:28	68	PBA6	CTD068	51	58	21.28	N	150	14.92	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	12:50	68	PBA6		51	58	21.31	N	150	14.68	W	SatBuoy	Deploy	buoy #43713
14-Jul-04	13:16	69	PBA5	CTD069	67	58	24.41	N	150	13.54	W	CTDB	Chlor, CTD, Fluor, PAR	No 10 meter bottle
14-Jul-04	13:34	69	PBA5	BON030	65	58	23.9	N	150	13.52	W	20Bon	QTowF	
14-Jul-04	13:34	69	PBA5	BON030	65	58	23.9	N	150	13.52	W	60Bon	QTowF	
14-Jul-04	13:34	69	PBA5	BON030	65	58	23.9	N	150	13.52	W	CAT	CAT	
14-Jul-04	14:22	70	PBA4	CTD070	85	58	28.04	N	150	12.07	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	15:03	71	PBA3	CTD071	112	58	32.07	N	150	8.85	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	15:22	71	PBA3	BON031	108	58	31.85	N	150	8.58	W	20Bon	QTowF	
14-Jul-04	15:22	71	PBA3	BON031	108	58	31.85	N	150	8.58	W	60Bon	QTowF	
14-Jul-04	15:22	71	PBA3	BON031	108	58	31.85	N	150	8.58	W	CAT	CAT	
14-Jul-04	16:06	72	PBA2	CTD072	115	58	36.55	N	150	7.58	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	16:50	73	PBA1	CTD073	157	58	42.04	N	150	5.97	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	17:12	73	PBA1	BON032	158	58	42.23	N	150	6	W	20Bon	QTowF	
14-Jul-04	17:12	73	PBA1	BON032	158	58	42.23	N	150	6	W	60Bon	QTowF	
14-Jul-04	17:12	73	PBA1	BON032	158	58	42.23	N	150	6	W	CAT	CAT	
14-Jul-04	18:53	74	PBB1	CTD074	209	58	38.74	N	150	30.05	W	CTDB	Chlor, CTD, Fluor, PAR	Surface bottle did not fire, sample taken from bucket.
14-Jul-04	19:20	74	PBB1	CV017	212	58	39.05	N	150	30.77	W	CalVET	QTowF	
14-Jul-04	19:30	74	PBB1	BON033	212	58	39.19	N	150	30.74	W	20Bon	QTowF	
14-Jul-04	19:30	74	PBB1	BON033	212	58	39.19	N	150	30.74	W	60Bon	QTowF	
14-Jul-04	19:30	74	PBB1	BON033	212	58	39.19	N	150	30.74	W	CAT	CAT	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
14-Jul-04	20:27	75	PBB2	CTD075	183	58	34.49	N	150	32.57	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	20:55	76	PBB3	CTD076	142	58	32.54	N	150	32.83	W	CTDB	Chlor, CTD, Fluor, PAR	No 40 m bottle collected.
14-Jul-04	21:12	76	PBB3	CV018	142	58	32.74	N	150	33.14	W	CalVET	QTowF	
14-Jul-04	21:26	76	PBB3	BON034	150	58	32.94	N	150	32.98	W	20Bon	QTowF	
14-Jul-04	21:26	76	PBB3	BON034	150	58	32.94	N	150	32.98	W	60Bon	QTowF	
14-Jul-04	21:26	76	PBB3	BON034	150	58	32.94	N	150	32.98	W	CAT	CAT	
14-Jul-04	21:55	77	PBB4	CTD077	112	58	31.05	N	150	33.16	W	CTDB	Chlor, CTD, Fluor, PAR	
14-Jul-04	22:32	78	PBB5	CTD078	78	58	28.05	N	150	34.07	W	CTDB	Chlor, CTD, Fluor, PAR	No 50 m sample collected.
14-Jul-04	22:52	78	PBB5	BON035	75	58	28.25	N	150	34.21	W	20Bon	Discard	Wireangle too low. Tow redone.
14-Jul-04	22:52	78	PBB5	BON035	75	58	28.25	N	150	34.21	W	60Bon	Discard	Wire angle too low. Tow redone.
14-Jul-04	22:52	78	PBB5	BON035	75	58	28.25	N	150	34.21	W	60Bon	Discard	Wireangle too low. Tow redone.
14-Jul-04	22:52	78	PBB5	BON035	75	58	28.25	N	150	34.21	W	CAT	CAT	Wireangle too low. Tow redone.
14-Jul-04	23:09	78	PB5	BON035B	77	58	28.54	N	150	33.45	W	20Bon	QTowF	
14-Jul-04	23:09	78	PB5	BON035B	77	58	28.54	N	150	33.45	W	60Bon	QTowF	
14-Jul-04	23:09	78	PB5	BON035B	77	58	28.54	N	150	33.45	W	CAT	CAT	
14-Jul-04	23:50	79	PBB6	CTD079	67	58	23.54	N	150	34.8	W	CTDB	Chlor, CTD, Fluor, PAR	No 40 m chlorophyll sample collected.
15-Jul-04	0:30	80	PBB7	CTD080	60	58	19.8	N	150	35.74	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	0:54	80	PBB7	BON036	60	58	19.84	N	150	35	W	20Bon	QTowF	
15-Jul-04	0:54	80	PBB7	BON036	60	58	19.84	N	150	35	W	60Bon	QTowF	
15-Jul-04	0:54	80	PBB7	BON036	60	58	19.84	N	150	35	W	CAT	CAT	
15-Jul-04	1:29	81	PBB8	CTD081	68	58	15.58	N	150	36.92	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	2:06	82	PBB9	CTD082	105	58	11.29	N	150	38.22	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	2:26	82	PBB9	BON037	108	58	11.24	N	150	37.84	W	20Bon	QTowF	
15-Jul-04	2:26	82	PBB9	BON037	108	58	11.24	N	150	37.84	W	60Bon	QTowF	
15-Jul-04	2:26	82	PBB9	BON037	108	58	11.24	N	150	37.84	W	CAT	CAT	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
15-Jul-04	2:55	83	PBB10	CTD083	128	58	8.6	N	150	39.33	W	CTDB	Chlor, CTD, Fluor, PAR	20 m bottle did not trip, no sample collected.
15-Jul-04	3:39	84	PBB11	CTD084	140	58	4.68	N	150	41.03	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	3:54	84	PBB11	CV019	141	58	4.66	N	150	41.39	W	CalVET	QTowF	
15-Jul-04	4:10	84	PBB11	BON038	140	58	4.52	N	150	40.74	W	20Bon	QTowF	
15-Jul-04	4:10	84	PBB11	BON038	140	58	4.52	N	150	40.74	W	60Bon	QTowF	
15-Jul-04	4:10	84	PBB11	BON038	140	58	4.52	N	150	40.74	W	CAT	CAT	
15-Jul-04	4:51	85	PBB12	CTD85	124	58	0.7	N	150	41.7	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	5:32	86	PBB13	CTD086	113	57	57	N	150	42.07	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	5:54	86	PBB13	BON039	113	57	56.82	N	150	41.5	W	20Bon	QTowF	
15-Jul-04	5:54	86	PBB13	BON039	113	57	56.82	N	150	41.5	W	60Bon	QTowF	
15-Jul-04	5:54	86	PBB13	BON039	113	57	56.82	N	150	41.5	W	CAT	CAT	
15-Jul-04	6:35	87	PBB14	CTD087	85	57	53.04	N	150	43.22	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	7:16	88	PBB15	CTD088	88	57	49.01	N	150	44.93	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	7:37	88	PBB15	BON040	89	57	48.87	N	150	44.44	W	20Bon	QTowF	
15-Jul-04	7:37	88	PBB15	BON040	89	57	48.87	N	150	44.44	W	60Bon	QTowF	
15-Jul-04	7:37	88	PBB15	BON040	89	57	48.87	N	150	44.44	W	CAT	CAT	
15-Jul-04	9:21	89	PBC10	CTD089	87	58	1.55	N	151	2.03	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	10:09	90	PBC9	CTD090	103	58	7.04	N	151	0.89	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	10:24	90	PBC9	CV020	104	58	7.08	N	151	1.32	W	CalVET	QTowF	
15-Jul-04	10:33	90	PBC9	B0N041	104	58	7.09	N	151	1.03	W	20Bon	QTowF	
15-Jul-04	10:33	90	PBC9	B0N041	104	58	7.09	N	151	1.03	W	60Bon	QTowF	
15-Jul-04	10:33	90	PBC9	B0N041	104	58	7.09	N	151	1.03	W	CAT	CAT	
15-Jul-04	11:24	91	PBC8	CTD091	105	58	12.04	N	151	0.22	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	11:59	92	PBC7	CTD092	154	58	15.02	N	150	59.16	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	12:22	92	PBC7	BON042	154	58	14.81	N	150	59.04	W	20Bon	QTowF	
15-Jul-04	12:22	92	PBC7	BON042	154	58	14.81	N	150	59.04	W	60Bon	QTowF	
15-Jul-04	12:22	92	PBC7	BON042	154	58	14.81	N	150	59.04	W	CAT	CAT	
15-Jul-04	13:15	93	PBC6	CTD093	86	58	17.79	N	150	58.61	W	CTDB	Chlor, CTD, Fluor, PAR	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
15-Jul-04	14:04	94	PBC5	CTD094	59	58	21.82	N	150	58.11	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	14:16	94	PBC5	CV021	54	58	21.66	N	150	58.23	W	CalVET	QTowF	
15-Jul-04	14:25	94	PBC5	BON043	55	58	21.55	N	150	58.15	W	20Bon	QTowF	
15-Jul-04	14:25	94	PBC5	BON043	55	58	21.55	N	150	58.15	W	60Bon	QTowF	
15-Jul-04	14:25	94	PBC5	BON043	55	58	21.55	N	150	58.15	W	CAT	CAT	
15-Jul-04	14:55	95	PBC4	CTD095	66	58	24.44	N	150	57.3	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	15:33	96	PBC3	CTD096	90	58	28.75	N	150	56.76	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	15:50	96	PBC3	BON044	86	58	28.75	N	150	57.02	W	20Bon	QTowF	
15-Jul-04	15:50	96	PBC3	BON044	86	58	28.75	N	150	57.02	W	60Bon	QTowF	
15-Jul-04	15:50	96	PBC3	BON044	86	58	28.75	N	150	57.02	W	CAT	CAT	
15-Jul-04	16:24	97	PBC2	CTD097	154	58	32.34	N	150	56.24	W	CTDB	Chlor, CTD, Fluor, PAR	
15-Jul-04	17:14	98	PBC1	CTD098	202	58	37.68	N	150	55.03	W	CTDB	Chlor, CTD, Fluor, PAR	No 20 meter bottle - misfired
15-Jul-04	17:35	98	PBC1	CV022	203	58	37.63	N	150	55.24	W	CalVET	QTowF	
15-Jul-04	17:45	98	PBC1	BON045	202	58	37.62	N	150	55.04	W	20Bon	QTowF	
15-Jul-04	17:45	98	PBC1	BON045	202	58	37.62	N	150	55.04	W	60Bon	QTowF	
15-Jul-04	17:45	98	PBC1	BON045	202	58	37.62	N	150	55.04	W	CAT	CAT	
15-Jul-04	22:00	99	UPA1	CTD099	121	58	10.14	N	150	19.36	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A".
15-Jul-04	22:18	100	UPA2	CTD100	110	58	11.36	N	150	18.88	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A"
15-Jul-04	22:35	101	UPA3	CTD101	97	58	12.45	N	150	18.29	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A"
15-Jul-04	22:56	102	UPA4	CTD102	80	58	13.72	N	150	18.04	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A".
15-Jul-04	23:11	103	UPA5	CTD105	73	58	14.86	N	150	17.57	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A".
15-Jul-04	23:31	104	UPA6	CTD104	63	58	16.08	N	150	17	W	CTD	CTD, Fluor, PAR	Portlock Bnk upslope experiment "A".
15-Jul-04	23:40	105	UPA7	CTD105	55	58	17.18	N	150	16.55	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A".
16-Jul-04	0:00	106	UPA8	CTD106	54	58	18.38	N	150	15.91	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A".

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
16-Jul-04	0:15	107	UPA9	CTD107	53	58	19.84	N	150	15.41	W	CTD	CTD, Fluor, PAR	Portlock Bank Upslope Experiment "A".
16-Jul-04	0:36	108	UPA10	CTD108	53	58	21.31	N	150	14.81	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "A".
16-Jul-04	2:37	109	UPB1	CTD109	214	58	5.1	N	150	20.87	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	3:06	110	UPB2	CTD110	207	58	7.41	N	150	20.09	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	3:16	111	UPB3	CTD111	179	58	8.61	N	150	19.87	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	3:45	112	UPB4	CTD112	120	58	10.04	N	150	19.29	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	4:03	113	UPB5	CTD113	110	58	11.23	N	150	18.73	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	4:25	114	UPB6	CTD114	96	58	12.47	N	150	18.28	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	4:41	115	UPB7	CTD115	83	58	13.63	N	150	17.78	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	5:01	116	UPB8	CTD116	72	58	14.79	N	150	17.37	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	5:14	117	UPB9	CTD117	62	58	15.97	N	150	16.88	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	5:33	118	UPB10	CTD118	54	58	17.17	N	150	16.47	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	5:48	119	UPB11A	CTD119	53	58	18.31	N	150	16.05	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	6:10	120	UPB12	CTD120	53	58	19.83	N	150	15.58	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	6:25	121	UPB13	CTD121	52	58	21.35	N	150	15.04	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "B".
16-Jul-04	11:06	122	STA10	CTD122	90	58	6.04	N	149	4.12	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	11:20	122	STA10	BON046	87	58	5.95	N	149	3.39	W	20Bon	QTowF	
16-Jul-04	11:20	122	STA10	BON046	87	58	5.95	N	149	3.39	W	60Bon	QTowF	
16-Jul-04	11:20	122	STA10	BON046	87	58	5.95	N	149	3.39	W	CAT	CAT	
16-Jul-04	12:06	123	STA9	CTD123	109	58	3.79	N	149	10.34	W	CTDB	Chlor, CTD, Fluor, PAR	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
16-Jul-04	12:48	124	STA8	CTD124	217	58	1.33	N	149	17.29	W	CTDB	Chlor, CTD, Fluor, PAR	Some sample lost from 30 m bottle due to filter not seated correctly. Remeasured and filtered remaining sample 90ml. No sample for 40 m due to bottle malfunction.
16-Jul-04	13:21	124	STA8	BON047	208	58	0.66	N	149	16.67	W	20Bon	QTowF	
16-Jul-04	13:21	124	STA8	BON047	208	58	0.66	N	149	16.67	W	60Bon	QTowF	
16-Jul-04	13:21	124	STA8	BON047	208	58	0.66	N	149	16.67	W	CAT	CAT	
16-Jul-04	14:17	125	STA7	CTD125	209	57	58.89	N	149	25.01	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	14:51	126	STA6	CTD126	197	57	56.9	N	149	28.16	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	15:16	126	STA6	BON048	210	57	56.4	N	149	28.43	W	20Bon	QTowF	
16-Jul-04	15:16	126	STA6	BON048	210	57	56.4	N	149	28.43	W	60Bon	QTowF	
16-Jul-04	15:16	126	STA6	BON048	210	57	56.4	N	149	28.43	W	CAT	CAT	
16-Jul-04	16:05	127	STA5	CTD127	123	57	54.94	N	149	34.74	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	16:29	127	STA5	BON049	122	57	54.87	N	149	35.31	W	20Bon	QTowF	
16-Jul-04	16:29	127	STA5	BON049	122	57	54.87	N	149	35.31	W	60Bon	QTowF	
16-Jul-04	16:29	127	STA5	BON049	122	57	54.87	N	149	35.31	W	CAT	CAT	
16-Jul-04	17:04	128	STA4	CTD128	233	57	52.66	N	149	40.97	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	17:53	129	STA3A	CTD129	265	57	50.6	N	149	46.91	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	18:24	129	STA3A	BON050	265	57	50.73	N	149	47.09	W	20Bon	QTowF	
16-Jul-04	18:24	129	STA3A	BON050	265	57	50.73	N	149	47.09	W	60Bon	QTowF	
16-Jul-04	18:24	129	STA3A	BON050	265	57	50.73	N	149	47.09	W	CAT	CAT	
16-Jul-04	19:13	130	STA3	CTD130	256	57	48.44	N	149	52.77	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	20:20	131	STA2A	CTD131	182	57	46.34	N	149	59.82	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	20:48	131	STA2A	BON051	180	57	48.98	N	150	0.15	W	20Bon	QTowF	
16-Jul-04	20:48	131	STA2A	BON051	180	57	48.98	N	150	0.15	W	60Bon	QTowF	
16-Jul-04	20:48	131	STA2A	BON051	180	57	48.98	N	150	0.15	W	CAT	CAT	
16-Jul-04	21:32	132	STA2	CTD132	196	57	44.16	N	150	6.97	W	CTDB	Chlor, CTD, Fluor, PAR	
16-Jul-04	22:19	133	STA1	CTD133	134	57	42.26	N	150	14.24	W	CTDB	Chlor, CTD, Fluor, PAR	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
16-Jul-04	22:42	133	STA1	BON052	135	57	41.96	N	150	14.14	W	20Bon	QTowF	
16-Jul-04	22:42	133	STA1	BON052	135	57	41.96	N	150	14.14	W	60Bon	QTowF	
16-Jul-04	22:42	133	STA1	BON052	135	57	41.96	N	150	14.14	W	CAT	CAT	
17-Jul-04	2:03	134	UPC1	CTD134	243	57	58.98	N	150	5.94	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	3:00	135	UPC2	CTD135	318	58	3.92	N	150	3.51	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	3:20	136	UPC3	CTD136	306	58	5.43	N	150	2.78	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	3:59	137	UPC4	CTD137	272	58	7	N	150	1.8	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	4:19	138	UPC5	CTD138	237	58	7.95	N	150	1.33	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	4:56	139	UPC6	CTD139	187	58	8.97	N	150	0.73	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	5:15	140	UPC7	CTD140	151	58	10.02	N	150	0.08	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	5:41	141	UPC8	CTD141	122	58	11.34	N	149	59.42	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	6:01	142	UPC9	CTD142	97	58	12.69	N	149	58.57	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	6:25	143	UPC10	CTD143	78	58	14.06	N	149	57.87	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	6:47	144	UPC11	CTD144	55	58	16.71	N	149	55.92	W	CTD	CTD, Fluor, PAR	Portlock Bank upslope experiment "C".
17-Jul-04	8:46	145	UPD1	CTD145	240	57	59.01	N	150	5.94	W	CTD	CTD, Fluor, PAR	Portlock bank upslope experiment 'D'
17-Jul-04	9:38	146	UPD2	CTD146	317	58	3.85	N	150	3.72	W	CTD	CTD, Fluor, PAR	
17-Jul-04	10:09	147	UPD3	CTD147	306	58	5.44	N	150	2.84	W	CTDB	CTD, Fluor, PAR	
17-Jul-04	10:48	148	UPD4	CTD148	269	58	7.1	N	150	1.91	W	CTD	CTD, Fluor, PAR	
17-Jul-04	11:17	149	UPD5	CTD149	235	58	8	N	150	1.32	W	CTD	CTD, Fluor, PAR	
17-Jul-04	11:52	150	UPD6	CTD150	186	58	9	N	150	0.71	W	CTD	CTD, Fluor, PAR	
17-Jul-04	12:13	151	UPD7	CTD151	150	58	10.06	N	149	59.9	W	CTD	CTD, Fluor, PAR	
17-Jul-04	12:37	152	UPD8	CTD152	121	58	11.34	N	149	59.24	W	CTD	CTD, Fluor, PAR	
17-Jul-04	12:58	153	UPD9	CTD153	96	58	12.7	N	149	58.59	W	CTD	CTD, Fluor, PAR	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
17-Jul-04	13:20	154	UPD10	CTD154	78	58	13.99	N	149	57.93	W	CTD	CTD, Fluor, PAR	
17-Jul-04	13:50	155	UPD11	CTD155	53	58	16.69	N	149	55.85	W	CTD	CTD, Fluor, PAR	
17-Jul-04	17:50	156	PBX1	CTD156	698	58	2.04	N	148	46.97	W	CTDB	Chlor, CTD, Fluor, PAR	
17-Jul-04	18:40	156	PBX1	B0N053	699	58	2.21	N	148	47.22	W	20Bon	QTowF	
17-Jul-04	18:40	156	PBX1	B0N053	699	58	2.21	N	148	47.22	W	60Bon	QTowF	
17-Jul-04	18:40	156	PBX1	B0N053	699	58	2.21	N	148	47.22	W	CAT	CAT	
17-Jul-04	19:33	157	PBX2	CTD157	400	58	3.58	N	148	47.9	W	CTD	CTD, Fluor, PAR	
17-Jul-04	20:33	158	PBX3	CTD158	134	58	58.04	N	148	52	W	CTDB	Chlor, CTD, Fluor, PAR	
17-Jul-04	20:54	159	PBX2.5	CTD159	207	58	3.99	N	148	49.33	W	CTDB	Chlor, CTD, Fluor, PAR	
17-Jul-04	21:20	159	PBX2.5	BON054	320	58	3.72	N	148	48.87	W	20Bon	Discard	Net hit bottom, samples not saved.
17-Jul-04	21:20	159	PBX2.5	BON054	320	58	3.72	N	148	48.87	W	60Bon	Discard	Net hit bottom, samples not saved.
17-Jul-04	21:20	159	PBX2.5	BON054	320	58	3.72	N	148	48.87	W	CAT	CAT	Net hit bottom, samples not saved.
17-Jul-04	22:49	160	STA10	CTD160	89	58	5.96	N	149	4.29	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	0:08	161	PBX5	CTD161	121	58	8.74	N	149	22	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	1:34	162	PBX6	CTD162	105	58	11.22	N	149	43.72	W	CTD	CTD, Fluor, PAR	
18-Jul-04	2:13	163	STB1	CTD163	69	58	13.47	N	149	36.2	W	CTD	CTD, Fluor, PAR	
18-Jul-04	3:32	164	PBD3	CTD164	55	58	16.72	N	149	55.92	W	CTD	CTD, Fluor, PAR	
18-Jul-04	4:52	165	PBA6	CTD165	52	58	21.32	N	150	14.9	W	CTD	CTD, Fluor, PAR	
18-Jul-04	6:10	166	PBB6	CTD166	68	58	29.56	N	150	35	W	CTD	CTD, Fluor, PAR	
18-Jul-04	7:27	167	PCB4	CTD167	68	58	24.47	N	150	57.57	W	CTD	CTD, Fluor, PAR	
18-Jul-04	8:04	168	PBX11	CTD168	102	58	25.07	N	151	7.03	W	CTD	CTD, Fluor, PAR	
18-Jul-04	8:54	169	PBX12	CTD169	132	58	26.62	N	151	20.17	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	9:15	169	PBX12	BON055	132	58	26.7	N	151	20.13	W	20Bon	QTowF	
18-Jul-04	9:15	169	PBX12	BON055	132	58	26.7	N	151	20.13	W	60Bon	QTowF	
18-Jul-04	9:15	169	PBX12	BON055	132	58	26.7	N	151	20.13	W	CAT	CAT	
18-Jul-04	10:46	170	AP6	CTD170	172	58	25.03	N	151	43.59	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	11:11	170	AP6	BON056	182	58	25.21	N	151	43.34	W	20Bon	QTowF	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
18-Jul-04	11:11	170	AP6	BON056	182	58	25.21	N	151	43.34	W	60Bon	QTowF	
18-Jul-04	11:11	170	AP6	BON056	182	58	25.21	N	151	43.34	W	CAT	CAT	
18-Jul-04	12:10	171	AP7	CTD171	169	58	25.81	N	151	31.87	W	CTD	CTD, Fluor, PAR	
18-Jul-04	13:01	172	AP8	CTD172	132	58	26.59	N	151	20.12	W	CTD	CTD, Fluor, PAR	
18-Jul-04	13:46	173	AP9	CTD173	99	58	27.42	N	151	8.57	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	14:06	173	AP9	BON057	99	58	27.22	N	151	8.26	W	20Bon	QTowF	
18-Jul-04	14:06	173	AP9	BON057	99	58	27.22	N	151	8.26	W	60Bon	QTowF	
18-Jul-04	14:06	173	AP9	BON057	99	58	27.22	N	151	8.26	W	CAT	CAT	
18-Jul-04	14:53	174	AP10	CTD174	74	58	28.18	N	150	56.7	W	CTD	CTD, Fluor, PAR	
18-Jul-04	15:36	175	AP1	CTD175	86	58	28.95	N	150	45	W	CTD	CTD, Fluor, PAR	GP7B
18-Jul-04	16:09	176	GP7A	CTD176	137	58	32.28	N	150	46.59	W	CTD	CTD, Fluor, PAR	
18-Jul-04	16:43	177	GP7	CTD177	182	58	35.53	N	150	48.04	W	CTD	CTD, Fluor, PAR	
18-Jul-04	17:30	178	GP6A	CTD178	187	58	40.48	N	150	50.08	W	CTD	CTD, Fluor, PAR	
18-Jul-04	18:16	179	GP6	CTD179	182	58	44.96	N	150	51.78	W	CTD	CTD, Fluor, PAR	04GP3a
18-Jul-04	18:55	180	GP5	CTD180	186	58	49.23	N	150	52.86	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	19:17	180	GP5	BON058	186	58	49.47	N	150	52.8	W	20Bon	QTowF	
18-Jul-04	19:17	180	GP5	BON058	186	58	49.47	N	150	52.8	W	60Bon	QTowF	
18-Jul-04	19:17	180	GP5	BON058	186	58	49.47	N	150	52.8	W	CAT	CAT	
18-Jul-04	20:08	181	GP4	CTD181	160	58	52.88	N	150	53.91	W	CTD	CTD, Fluor, PAR	
18-Jul-04	20:48	182	GP3/04	CTD182	140	58	57.88	N	150	55.87	W	CTDB	Chlor, CTD, Fluor, PAR	Chlorophyll maximum at 23 m
18-Jul-04	21:16	182	GP3	BON059	140	58	57.95	N	150	52.82	W	20Bon	QTowF	
18-Jul-04	21:16	182	GP3	BON059	140	58	57.95	N	150	52.82	W	60Bon	QTowF	
18-Jul-04	21:16	182	GP3	BON059	140	58	57.95	N	150	52.82	W	CAT	CAT	
18-Jul-04	21:45	183	GP2	CTD183	157	59	0.63	N	150	57.84	W	CTD	CTD, Fluor, PAR	
18-Jul-04	22:37	184	GP1	CTD184	165	59	6.06	N	150	59.66	W	CTD	CTD, Fluor, PAR	
18-Jul-04	23:09	185	GPO	CTD186	73	59	9.64	N	151	0.74	W	CTDB	Chlor, CTD, Fluor, PAR	
18-Jul-04	23:23	185	GPO	BON060	72	59	9.79	N	151	0.89	W	20Bon	QTowF	
18-Jul-04	23:23	185	GPO	BON060	72	59	9.79	N	151	0.89	W	60Bon	QTowF	

Cruise Summary For FOCI Cruise 2HX04 (HX287) July 8-19, 2004

Date (GMT)	Time (GMT)	AFSC Sta.#	Depth Grid	Station	Depth (m)	Latitude			Longitude			Gear	Samples Collected	Haul Comments
						Deg.	Min	H	Deg.	Min	H			
18-Jul-04	23:23	185	GPO	BON060	72	59	9.79	N	151	0.89	W	CAT	CAT	
19-Jul-04	6:50	186	GB12	CTD186	206	58	41.05	N	148	50.8	W	CTD	CTD, Fluor, PAR	
19-Jul-04	9:13	187	GB5	CTD187	198	59	2.52	N	148	41.63	W	CTD	CTD, Fluor, PAR	
19-Jul-04	9:51	188	04GB4A	CTD188	150	59	7.26	N	148	45.39	W	CTDB	Chlor, CTD, Fluor, PAR	
19-Jul-04	11:23	189	04GBM3A	CTD188	187	59	18.27	N	148	59.46	W	CTDB	Chlor, CTD, Fluor, PAR	Mooring site
19-Jul-04	11:45	189	04GBM3A		187	59	18.46	N	148	59.09	W	SatBuoy	Deploy	Drifter buoy #43714 - mooring site
19-Jul-04	11:47	189	04GBM3A	BON061	192	59	18.44	N	148	58.89	W	20Bon	QTowF	Mooring site
19-Jul-04	11:47	189	04GBM3A	BON061	192	59	18.44	N	148	58.89	W	60Bon	QTowF	Mooring site
19-Jul-04	11:47	189	04GBM3A	BON061	192	59	18.44	N	148	58.89	W	CAT	CAT	Mooring site
19-Jul-04	13:43	190	GB2A	CTD190	219	59	31.73	N	149	11.37	W	CTDB	Chlor, CTD, Fluor, PAR	Mooring site
19-Jul-04	14:02	190	GB2A		219	59	31.73	N	149	11.37	W	SatBuoy	Deploy	Drifter buoy #43716
19-Jul-04	15:12	191	04GB1A	CTD191	235	59	42.82	N	149	20.61	W	CTDB	Chlor, CTD, Fluor, PAR	
19-Jul-04	18:10		Arrive Seward, AK											