

May 6, 1996

## CRUISE REPORT

Ship's cruise number: DI96-03  
FOCI cruise number: 1DI96  
NOAAS Discoverer  
Gulf of Alaska larval pollock survey

Depart Honolulu, HI: April 17, 1996  
Arrive Kodiak, AK: April 24, 1996  
Depart Kodiak, AK: April 25, 1996  
Arrive Kodiak, AK: May 6, 1996

Participation Organizations: Alaska Fisheries Science Center (AFSC) and Pacific Marine Environmental Laboratory (PMEL).

Chief Scientist: William Rugen (AFSC)

### Personnel

Debbie Blood (AFSC)  
Jay Clark (AFSC)  
Dave Kachel (PMEL)  
Leslie Lawrence (PMEL)  
Sue Picquelle (AFSC)

Cruise Objectives: 1) continue acquisition of long-term biological and physical time series in the Gulf of Alaska; 2) conduct sampling of set grid stations for determining distribution and abundance of walleye pollock eggs, larvae, and other general ichthyoplankton; and 3) investigate Alaska Coastal Current (ACC) water mass.

### Summary of Operations:

On this cruise, the following number of operations were completed:

CTD casts: 38  
Bongo tows: 160  
Calvet tows: 20  
Argo buoy deployments: 3

On this cruise, the following number of samples were collected:

Nutrient samples: 221  
Chlorophyll samples: 143  
Microzooplankton samples: 20  
Ichthyoplankton samples: 160  
Zooplankton samples: 34  
Larval pollock for otolith extraction: 3304

Summary of cruise: After the long transit from Honolulu, HI, the NOAAAS Discoverer left port at 1800 April 25th and proceeded to the first predetermined CTD/bongo line (Figure 1). We occupied 38 stations situated on 5 different lines. The lines intersected the Alaska Coastal Current. Various combinations of CTDs, 20 and 60 cm bongo tows, and calvet tows were done at each station. An Argos satellite -tracked buoy was deployed between stations 3.2 and 3.3. After completion we proceeded to the larval survey grid (Figure 2). A 60 cm bongo was completed at each station and larval pollock removed for later otolith extraction. Two Argos buoys were deployed in areas of high concentrations, as determined by cooperating scientists on the NOAAAS Miller Freeman. After the completion of this portion of the grid, we proceeded to predetermined stations along the shelf edge (200 m isobath) to the south and east of Kodiak Island. All planned operations were completed despite leaving port a day later than expected due to bad weather encountered by the ship on its transit to Kodiak from Honolulu. No time was lost during this cruise due to either weather or mechanical malfunctions. For detailed cruise summary see Table 1.

Acknowledgements: The scientists would like to offer their heartfelt thanks to the crew and officers of the Discoverer. Their unflagging effort and assistance made this an easy and enjoyable cruise. Special thanks goes to: Lt. Michelle Bullock for her help and patience in every phase of this cruise, from the earliest rough draft that included over 300 hundred stations to the decision as to where to put the last station on the last day, and warm gratitude for hunting down the space heater; Chief survey tech Phil Harper and the rest of the survey office, SST Jerri Layman, ST Rob Rosner, and ST Mark Rothmeyer for their assistance in completing the sampling, making maps, and their superior wash down skills; The E.T.s, Steve Macrie and Frank Gomes for helping us with our buoys; and finally to Capt. Stephen Manzo for providing an atmosphere of friendliness, cooperation, and efficiency which makes any cruise that much easier.

## ITINER

gmdat	gmtim	station	haul	altsta	focigrd	lat	long	gearabrv	botdpth
4/26/96	14:56:00	1	1	ctd001	None	59.91	148.403	CTDB	176
4/26/96	15:48:00	1	2	None	None	59.9032	148.4023	20Bon	165
4/26/96	15:48:00	1	2	None	None	59.9032	148.4023	60Bon	165
4/26/96	16:53:00	2	1	ctd002	None	59.8188	148.3507	CTDB	126
4/26/96	17:22:00	2	2	None	None	59.8188	148.3517	CalVet	126
4/26/96	19:46:00	2	3	None	None	59.8167	148.3482	20Bon	125
4/26/96	19:46:00	2	3	None	None	59.8167	148.3482	60Bon	125
4/26/96	18:38:00	3	1	ctd003	None	59.7528	148.2872	CTDB	158
4/26/96	18:59:00	3	2	None	None	59.7665	148.2887	20Bon	157
4/26/96	18:59:00	3	2	None	None	59.7665	148.2887	60Bon	157
4/26/96	20:45:00	4	1	ctd004	None	59.5858	148.1605	CTDB	203
4/26/96	21:15:00	4	2	None	None	59.583	148.1608	20Bon	204
4/26/96	21:15:00	4	2	None	None	59.583	148.1608	60Bon	204
4/26/96	23:00:00	5	1	ctd005	None	59.3898	148.0542	CTDB	158
4/26/96	23:25:00	5	2	None	None	59.391	148.0667	CalVet	164
4/26/96	23:45:00	5	3	None	None	59.386	148.069	20Bon	159
4/26/96	23:45:00	5	3	None	None	59.386	148.069	60Bon	159
4/27/96	1:21:00	6	1	ctd006	None	59.202	147.9365	CTDB	185
4/27/96	1:55:00	6	2	None	None	59.2032	147.9328	20Bon	186
4/27/96	1:55:00	6	2	None	None	59.2032	147.9328	60Bon	186
4/27/96	5:53:00	7	1	ctd007	None	58.7332	148.8532	CTDB	224
4/27/96	6:26:00	7	2	None	None	58.7385	148.8432	20Bon	224
4/27/96	6:26:00	7	2	None	None	58.7385	148.8432	60Bon	224
4/27/96	7:41:00	8	1	CTD008	None	58.8822	148.7468	CTDB	268
4/27/96	8:16:00	8	2	None	None	58.8868	148.7435	CalVet	278
4/27/96	8:46:00	8	3	None	None	58.897	148.7335	20Bon	276
4/27/96	8:46:00	8	3	None	None	58.897	148.7335	60Bon	276
4/27/96	10:06:00	9	1	CTD009	None	59.0368	148.6297	CTDB	228
4/27/96	10:41:00	9	2	None	None	59.0365	148.626	20Bon	229
4/27/96	10:41:00	9	2	None	None	59.0365	148.626	60Bon	229
4/27/96	12:03:00	10	1	CTD010	None	59.183	148.7292	CTDB	136
4/27/96	12:31:00	10	2	None	None	59.1817	148.733	CalVet	139
4/27/96	12:49:00	10	3	None	None	59.1798	148.726	20Bon	135
4/27/96	12:49:00	10	3	None	None	59.1798	148.726	60Bon	135
4/27/96	14:11:00	11	1	CTD011	None	59.34	148.8243	CTDB	145
4/27/96	14:32:00	11	2	None	None	59.3415	148.82	CalVet	145
4/27/96	14:48:00	11	3	None	None	59.3412	148.811	20Bon	134
4/27/96	14:48:00	11	3	None	None	59.3412	148.811	60Bon	134
4/27/96	16:11:00	12	1	ctd012	None	59.4835	148.9615	CTDB	182
4/27/96	16:34:00	12	2	None	None	59.4862	148.9592	CalVet	181
4/27/96	16:53:00	12	3	None	None	59.489	148.951	20Bon	183
4/27/96	16:53:00	12	3	None	None	59.489	148.951	60Bon	183
4/27/96	17:47:00	13	1	CTD013	None	59.5685	149.0317	CTDB	179
4/27/96	18:15:00	13	2	None	None	59.5752	149.034	20Bon	179
4/27/96	18:15:00	13	2	None	None	59.5752	149.034	60Bon	179
4/27/96	19:08:00	14	1	CTD014	None	59.6493	149.076	CTDB	170
4/27/96	19:30:00	14	2	None	None	59.6567	149.0778	CalVet	172
4/27/96	19:45:00	14	3	None	None	59.6598	149.0763	20Bon	167

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4/27/96	19:45:00	14	3	None	None	59.6598	149.0763	60Bon	167
4/27/96	20:39:00	15	1	ctd015	None	59.7165	148.1362	CTDB	160
4/27/96	21:05:00	15	2	None	None	59.7298	149.1585	20Bon	173
4/27/96	21:05:00	15	2	None	None	59.7298	149.1585	60Bon	173
4/28/96	0:21:00	16	1	ctd016	None	59.3985	150.2618	CTDB	98
4/28/96	1:23:00	17	1	ctd017	None	59.319	150.1887	CTDB	163
4/28/96	1:46:00	17	2	None	None	59.323	150.1928	CaVet	153
4/28/96	2:51:00	17	3	None	None	59.349	150.1685	20Bon	155
4/28/96	2:51:00	17	3	None	None	59.349	150.1685	60Bon	155
4/28/96	4:25:00	19	1	ctd018	None	59.2323	150.1068	CTDB	160
4/28/96	4:50:00	19	2	None	None	59.2258	150.1165	CaVet	150
4/28/96	5:09:00	19	3	None	None	59.2283	150.107	20Bon	159
4/28/96	5:09:00	19	3	None	None	59.2283	150.107	60Bon	159
4/28/96	6:03:00	20	1	ctd019	None	59.1503	150.004	CTDB	139
4/28/96	6:22:00	20	2	None	None	59.1482	150.0067	CaVet	138
4/28/96	6:38:00	20	3	None	None	59.1458	149.9963	20Bon	136
4/28/96	6:38:00	20	3	None	None	59.1458	149.9963	60Bon	136
4/28/96	7:38:00	21	1	ctd020	None	59.0523	149.902	CTDB	209
4/28/96	8:03:00	21	2	None	None	59.0445	149.8977	20Bon	210
4/28/96	8:03:00	21	2	None	None	59.0445	149.8977	60Bon	210
4/28/96	9:32:00	22	1	ctd021	None	58.9022	149.895	CTDB	232
4/28/96	9:59:00	22	2	None	None	58.906	149.8888	CaVet	229
4/28/96	10:16:00	22	3	None	None	58.9117	149.8793	20Bon	228
4/28/96	10:16:00	22	3	None	None	58.9117	149.8793	60Bon	228
4/28/96	11:50:00	23	1	ctd022	None	58.747	149.8927	CTDB	173
4/28/96	12:18:00	23	2	None	None	58.7543	149.8825	20Bon	173
4/28/96	12:18:00	23	2	None	None	58.7543	149.8825	60Bon	173
4/28/96	14:51:00	24	1	ctd023	None	58.5805	150.8028	CTDB	170
4/28/96	15:12:00	24	2	None	None	58.5838	150.8068	CaVet	174
4/28/96	15:42:00	24	3	None	None	58.5938	150.8118	20Bon	181
4/28/96	15:42:00	24	3	None	None	58.5938	150.8118	60Bon	181
4/28/96	16:40:00	25	1	ctd024	None	58.7025	150.8377	CTDB	192
4/28/96	17:07:00	25	2	None	None	58.7073	150.8378	20Bon	188
4/28/96	17:07:00	25	2	None	None	58.7073	150.8378	60Bon	188
4/28/96	18:03:00	26	1	ctd025	None	58.8058	150.8838	CTDB	178
4/28/96	18:26:00	26	2	None	None	58.8122	150.667	CaVet	175
4/28/96	18:43:00	26	3	None	None	58.818	150.903	20Bon	172
4/28/96	18:43:00	26	3	None	None	58.818	150.903	60Bon	172
4/28/96	19:24:00	27	1	ctd026	None	58.8707	150.8967	CTDB	168
4/28/96	19:53:00	27	2	None	None	58.8753	150.9103	20Bon	153
4/28/96	19:53:00	27	2	None	None	58.8753	150.9103	60Bon	153
4/28/96	20:48:00	28	1	ctd027	None	58.9447	150.931	CTDB	154
4/28/96	21:11:00	28	2	None	None	58.948	150.937	CaVet	148
4/28/96	21:24:00	28	3	None	None	58.9522	150.9428	20Bon	141
4/28/96	21:24:00	28	3	None	None	58.9522	150.9428	60Bon	141
4/28/96	22:07:00	29	1	ctd028	None	59.0045	150.9577	CTDB	172
4/28/96	22:35:00	29	2	None	None	59.013	150.9593	20Bon	162
4/28/96	22:35:00	29	2	None	None	59.013	150.9593	60Bon	162
4/28/96	23:39:00	30	1	ctd029	None	59.0948	150.9982	CTDB	189

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4/29/96	0:07:00	30	2	None	None	59.0908	151.0035	CalVet	193
4/29/96	0:22:00	30	3	None	None	59.0858	151.0097	20Bon	186
4/29/96	0:22:00	30	3	None	None	59.0858	151.0097	60Bon	186
4/29/96	2:51:00	31	1	ctd030	None	59.0535	151.7315	CTDB	160
4/29/96	3:16:00	31	2	None	None	59.0493	151.751	CalVet	182
4/29/96	3:33:00	31	3	None	None	59.0465	151.7708	20Bon	194
4/29/96	3:33:00	31	3	None	None	59.0465	151.7708	60Bon	194
4/29/96	4:17:00	32	1	ctd031	None	59.013	151.7773	CTDB	139
4/29/96	4:34:00	32	2	None	None	59.0103	151.7847	CalVet	131
4/29/96	4:47:00	32	3	None	None	59.0068	151.7935	20Bon	130
4/29/96	4:47:00	32	3	None	None	59.0068	151.7935	60Bon	130
4/29/96	5:31:00	33	1	ctd032	None	58.951	151.8103	CTDB	166
4/29/96	5:54:00	33	2	None	None	58.953	151.8148	CalVet	166
4/29/96	6:11:00	33	3	None	None	58.9485	151.8243	20Bon	160
4/29/96	6:11:00	33	3	None	None	58.9485	151.8243	60Bon	160
4/29/96	7:00:00	34	1	ctd033	None	58.879	151.8322	CTD	105
4/29/96	7:41:00	35	1	ctd034	None	58.8145	151.8935	CTD	118
4/29/96	8:24:00	36	1	ctd035	None	58.7648	151.9382	CTDB	115
4/29/96	8:44:00	36	2	None	None	58.7598	151.929	CalVet	117
4/29/96	9:05:00	36	3	None	None	58.758	151.9392	20Bon	112
4/29/96	9:05:00	36	3	None	None	58.758	151.9392	60Bon	112
4/29/96	9:56:00	37	1	ctd036	None	58.6955	152.0065	CTD	149
4/29/96	10:15:00	37	2	None	None	58.696	152.0172	20Bon	146
4/29/96	10:15:00	37	2	None	None	58.696	152.0172	60Bon	146
4/29/96	11:00:00	38	1	ctd037	None	58.6367	152.0735	CTDB	112
4/29/96	11:21:00	38	2	None	None	58.629	152.0793	CalVet	127
4/29/96	11:32:00	38	3	None	None	58.627	152.0862	20Bon	132
4/29/96	11:32:00	38	3	None	None	58.627	152.0862	60Bon	132
4/29/96	12:12:00	39	1	ctd038	None	58.573	152.1102	CTD	65
4/29/96	20:04:00	40	1	None	gx179	57.7278	154.6067	60Bon	218
4/29/96	21:26:00	41	1	None	gv179	57.8435	154.8168	60Bon	274
4/29/96	22:41:00	42	1	None	gv177	57.7198	155.0305	60Bon	272
4/30/96	0:02:00	43	1	None	gx177	57.6057	154.8135	60Bon	216
4/30/96	1:18:00	44	1	None	gx175	57.4877	155.0343	60Bon	227
4/30/96	2:34:00	45	1	None	gv175	57.601	155.2373	60Bon	273
4/30/96	4:10:00	46	1	None	gx173	57.369	155.2325	60Bon	239
4/30/96	6:09:00	47	1	None	gz171	57.1303	155.2248	60Bon	237
4/30/96	7:29:00	48	1	None	hb169	56.8963	155.23	60Bon	219
4/30/96	8:58:00	49	1	None	hd167	56.655	155.205	60Bon	73
4/30/96	10:20:00	50	1	None	hf165	56.4197	155.2048	60Bon	37
4/30/96	11:22:00	51	1	None	hf163	56.3022	155.4173	60Bon	54
4/30/96	12:58:00	52	1	None	hd165	56.5382	155.438	60Bon	69
4/30/96	14:36:00	53	1	None	hb167	56.7752	155.4498	60Bon	234
4/30/96	16:24:00	54	1	None	gz169	57.0018	155.4408	60Bon	262
4/30/96	18:11:00	55	1	None	gx171	57.2505	155.4485	60Bon	295
4/30/96	19:54:00	56	1	None	gv173	57.4778	155.453	60Bon	289
4/30/96	21:14:00	57	1	None	gv171	57.362	155.6722	60Bon	275
4/30/96	22:55:00	58	1	None	gx169	57.118	155.6697	60Bon	273
5/1/96	0:35:00	59	1	None	gz167	56.882	155.6683	60Bon	277

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5/1/96	2:09:00	60	1	None	hb165	56.6507	155.6538	60Bon	231
5/1/96	3:42:00	61	1	None	hd163	56.4165	155.6313	60Bon	73
5/1/96	5:09:00	62	1	None	hf161	56.181	155.534	60Bon	59
5/1/96	6:12:00	63	1	None	hf159	56.0622	155.8238	60Bon	66
5/1/96	7:45:00	64	1	None	hd161	56.2983	155.8402	60Bon	106
5/1/96	9:22:00	65	1	None	hb163	56.5325	155.8487	60Bon	231
5/1/96	11:13:00	66	1	None	gz165	56.7693	155.8648	60Bon	291
5/1/96	12:55:00	67	1	None	gx167	57.0075	155.8643	60Bon	300
5/1/96	14:39:00	68	1	None	gv169	57.2372	155.8823	60Bon	245
5/1/96	15:48:00	69	1	None	gt169	57.311	156.0907	60Bon	173
5/1/96	17:15:00	70	1	None	gv167	57.1182	156.0953	60Bon	82
5/1/96	18:50:00	71	1	None	gx165	56.8887	156.0815	60Bon	204
5/1/96	20:29:00	72	1	None	gz163	56.6495	156.0635	60Bon	292
5/1/96	22:07:00	73	1	None	hb161	56.4053	156.056	60Bon	242
5/1/96	22:34:00	74	1	None	gz161	56.5252	156.2812	60Bon	233
5/2/96	1:18:00	75	1	None	gx163	56.7525	156.3033	60Bon	181
5/2/96	3:04:00	76	1	None	gv165	57.001	156.2993	60Bon	84
5/2/96	4:10:00	77	1	None	gv163	56.8743	156.5098	60Bon	74
5/2/96	6:05:00	78	1	None	gx161	56.643	156.499	60Bon	182
5/2/96	7:18:00	79	1	None	gv161	56.7563	156.7212	60Bon	143
5/2/96	8:29:00	80	1	None	gv159	56.6348	156.925	60Bon	95
5/2/96	9:38:00	81	1	None	gx159	56.5178	156.6953	60Bon	159
5/2/96	10:53:00	82	1	None	gz159	56.4003	156.4833	60Bon	207
5/2/96	12:18:00	83	1	None	hb159	56.2843	156.2812	60Bon	268
5/2/96	13:41:00	84	1	None	hd159	56.169	156.0333	60Bon	228
5/2/96	15:05:00	85	1	None	hf157	55.93	156.0352	60Bon	95
5/2/96	16:23:00	86	1	None	hd157	56.0533	156.2553	60Bon	208
5/2/96	17:38:00	87	1	None	hb157	56.1677	156.4745	60Bon	226
5/2/96	18:46:00	88	1	None	gz157	56.2845	156.689	60Bon	107
5/2/96	19:51:00	89	1	None	gx157	56.4002	156.913	60Bon	120
5/2/96	21:20:00	90	1	None	gv155	56.394	157.3407	60Bon	61
5/2/96	22:25:00	91	1	None	gx155	56.2783	157.1177	60Bon	121
5/2/96	23:31:00	92	1	None	gz155	56.1632	156.8908	60Bon	83
5/3/96	0:56:00	93	1	None	hb155	56.0818	156.5912	60Bon	180
5/3/96	4:05:00	94	1	None	gx161	56.6413	156.502	60Bon	178
5/3/96	4:58:00	95	1	None	None	56.6138	156.57	60Bon	129
5/3/96	5:38:00	96	1	None	None	56.5838	156.64	60Bon	147
5/3/96	8:21:00	98	1	None	hb163	56.5318	155.8402	60Bon	228
5/3/96	12:14:00	99	1	None	hd155	55.9275	156.463	60Bon	208
5/3/96	13:27:00	100	1	None	hf155	55.8025	156.2362	60Bon	226
5/3/96	14:38:00	101	1	None	hh155	55.7012	156.0163	60Bon	208
5/3/96	15:50:00	102	1	None	hj155	55.586	155.8032	60Bon	191
5/3/96	16:54:00	103	1	None	hj153	55.4678	156.0007	60Bon	200
5/3/96	18:09:00	104	1	None	hh153	55.5853	156.2173	60Bon	244
5/3/96	19:35:00	105	1	None	hf153	55.6957	156.4392	60Bon	237
5/3/96	21:03:00	106	1	None	hd153	55.8162	156.6498	60Bon	218
5/3/96	22:34:00	107	1	None	hb153	55.9288	156.8857	60Bon	150
5/4/96	0:23:56	108	1	None	gz153	56.0395	157.1013	60Bon	106
5/4/96	1:18:00	109	1	None	gx153	56.1557	157.3222	60Bon	149

di96-03 CTD lines

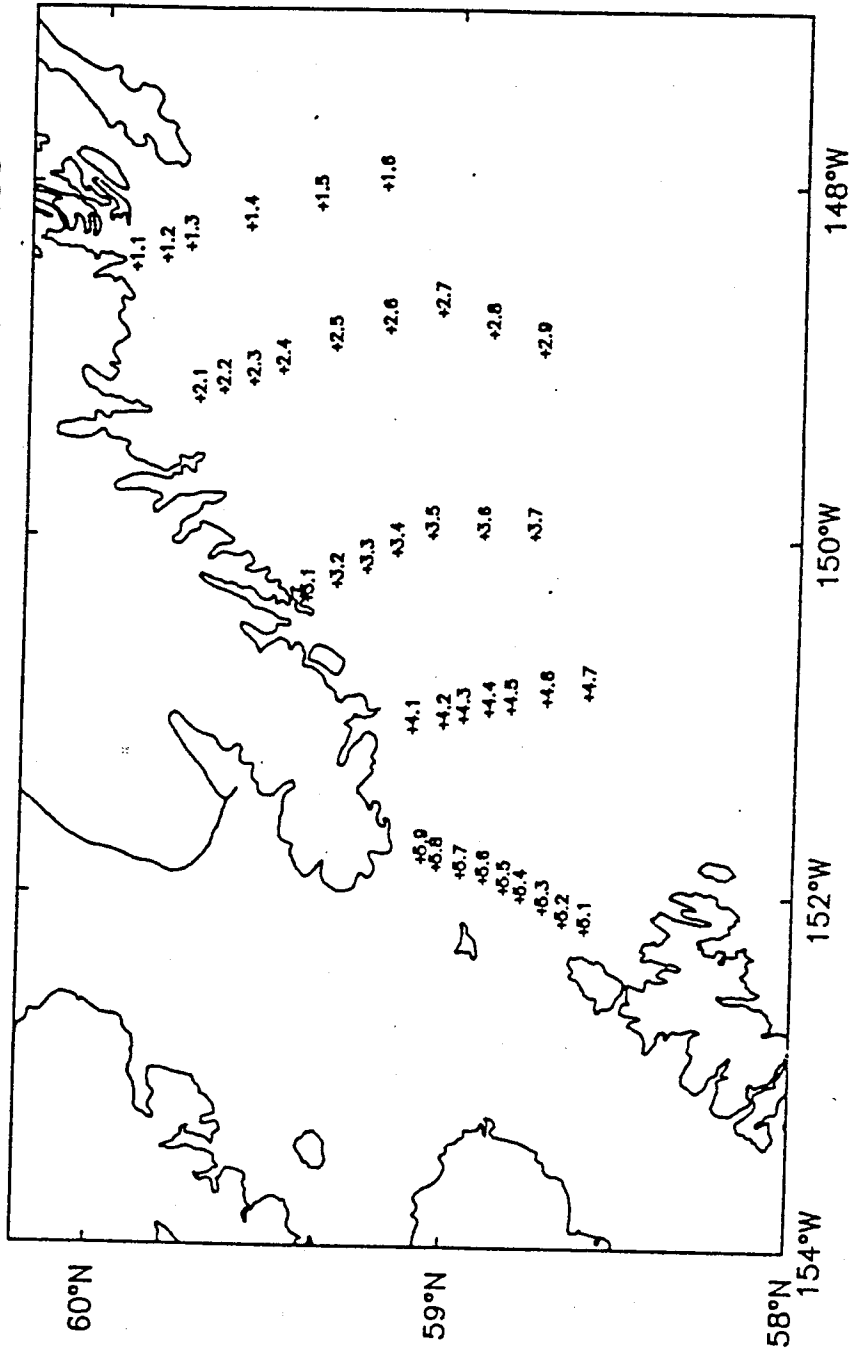


Figure 2

