

Cruise Report

Cruise Number: MF96-08

FOCI Number: FOCI

NOAA Ship: Miller Freeman

Area of Operations: Gulf of Alaska

Itinerary: May 1, 1996 Kodiak, Alaska

May 15, 1996 Dutch Harbor, Alaska

Participating Organizations: Alaska Fisheries Science Center and
Pacific Marine Environmental Laboratory

Chief Scientist: Kevin Bailey AFSC

Personnel:

Jeff Napp, Watch Chief	AFSC
Annette Brown, Watch Chief	AFSC
Lisa Britt	AFSC
Kathy Mier	AFSC
Lynne Long	PMEL
Sigrid Salo	PMEL
Lorenzo Cianelli	AFSC/Italy
Larry Finnestad	Teacher-at-Sea

Objectives of Cruise: The principal objective of this cruise was to examine important biophysical processes as they relate to larval pollock distribution, abundance and mortality. These physical conditions include the occurrence of storms, eddies, fronts and wind conditions. Each of these conditions have important consequences to larval pollock survival. Other objectives were to 1) continue acquisition of long-term biological and physical time series measurements, 2) to conduct a survey of larval pollock for use in estimating abundance and distribution, and 3) to collect samples of larval pollock and their prey for studies on growth and feeding condition. The cruise was designed to achieve maximum coordination with larval pollock sampling by the Discoverer. The Discoverer conducted a pre-survey of the region and also conducted part of a broad-scale survey of the region. The Miller Freeman sampling was designed to conduct more intensive studies within a larval pollock aggregation, and to continue the broad-scale survey.

Summary of Operations:

Operations:

CTD casts: 79

Bongos: 60cm: 188
Bongos: 20cm: 42
MOCNESS tows: 4
Live tows (60cm Bongo): 18
Methot tows: 1
Satellite tracked buoy deployments: 4
Radar drifter deployments: 4
CalVet tows: 23
.75m Ring Net tows: 14

Samples Collected:

Chlorophyll samples: 205
Nutrient samples: 196
Microzooplankton samples: 42
Plankton samples (QTOWF): 366
Predator samples: 200
Otolith samples: 5242
Larval gut samples: 595
Histology samples: 265
Frozen samples: 196

Summary of Cruise: The initial phase of the cruise was to sample FOCI lines 3, 5 and 8 with CTD and bongos. The second phase was coordinated with operations of the **Discoverer** to find an area where pollock larvae are concentrated. The area was indentified in the Shelikof Strait sea valley, and was sampled intensively to monitor the advection of larvae and to study processes within the larval aggregation. The third phase of the cruise was to continue plankton sampling the shelf and outer slope region to the southwest of the Shumagin Is. to Unimak Pass, completing the broad-scale distribution coverage that was obtained on the Discoverer. The final operation was to occupy a line of stations with CTDs and bongos across Unimak Pass. The weather during the cruise was exceptionally fine, with many sunny days and low winds. No major breakdowns occurred.

Acknowledgements: We thank the Captain, CDR John Clary, officers, and crew of the Miller Freeman for the successful completion of our mission. Especial thanks are due to FOO LT Dan Cheng, Survey Techs Chief Bill Floering and Jonathan Shannahoff, ET Phil Porter and the deck department under Chief Rick Pietrusiak.

Attachments: Chronological list of events.

GM Date	GM Time	FOCI Grid	Alt Sta	Station	Haul	dLat	mLat	dLong	mLong	Gear	Depth
5/2/96	1:11	'HJ191'	'None'	1	1	57	45.91	152	1.91	'60Bon'	101
5/2/96	3:13	'hj195'	'None'	2	1	58	0.64	161	36.02	'60Bon'	93
5/2/96	5:20	'hj199'	'None'	3	1	58	15.23	161	10.81	'60Bon'	170
5/2/96	5:54	'hj199'	'ctd001'	3	2	58	15.47	161	11.95	'CTD'	132
5/2/96	7:50	'hfi199'	'None'	4	1	53	28.98	161	35.31	'60Bon'	166
5/2/96	11:30	'fox019'	'ctd002'	5	1	58	39.37	162	38.59	'CTDB'	68
5/2/96	11:53	'fox019'	'None'	5	2	58	38.29	162	38.83	'60Bon'	70
5/2/96	11:53	'fox019'	'None'	5	2	58	38.29	162	38.83	'20Bon'	70
5/2/96	12:41	'fox020'	'ctd003'	6	1	58	40.69	162	43.54	'CTDB'	200
5/2/96	13:15	'fox020'	'None'	6	2	58	40.63	162	43.46	'60Bon'	200
5/2/96	13:15	'fox020'	'None'	6	2	58	40.63	162	43.46	'20Bon'	200
5/2/96	13:51	'fox020'	'None'	6	3	58	40.69	162	43.31	'CalVer'	200
5/2/96	14:34	'fox021'	'ctd004'	7	1	58	42.74	162	49.46	'CTDB'	158
5/2/96	15:01	'fox021'	'None'	7	2	58	42.64	162	49.54	'60Bon'	158
5/2/96	15:01	'fox021'	'None'	7	2	58	42.64	162	49.54	'20Bon'	158
5/2/96	16:08	'fox022'	'ctd005'	8	1	58	44.44	162	55.48	'CTDB'	144
5/2/96	16:31	'fox022'	'None'	8	2	58	44.2	162	56.03	'20Bon'	146
5/2/96	16:31	'fox022'	'None'	8	2	58	44.2	162	56.03	'60Bon'	146
5/2/96	16:59	'fox022'	'None'	8	3	58	44.11	162	56.06	'CalVer'	146
5/2/96	17:45	'fox023'	'ctd006'	9	1	58	46.27	162	2.49	'CTDB'	144
5/2/96	18:08	'fox023'	'None'	9	2	58	45.99	163	3.31	'60Bon'	144
5/2/96	18:08	'fox023'	'None'	9	2	58	45.99	163	3.31	'20Bon'	144
5/2/96	19:01	'fox024'	'ctd007'	10	1	58	48.64	163	7.74	'CTDB'	189
5/2/96	19:27	'fox024'	'None'	10	2	58	48.66	163	7.96	'60Bon'	191
5/2/96	19:27	'fox024'	'None'	10	2	58	48.66	163	7.96	'20Bon'	191
5/2/96	19:56	'FOX024'	'None'	10	3	58	48.33	163	9.25	'CalVer'	195
5/2/96	20:36	'fox026'	'ctd008'	11	1	58	50.92	163	13.78	'CTDB'	54
5/2/96	20:49	'fox026'	'None'	11	2	58	50.68	163	13.67	'60Bon'	66
5/2/96	20:49	'fox026'	'None'	11	2	58	50.68	163	13.67	'20Bon'	66
5/3/96	1:07	'fox039'	'ctd009'	12	1	58	12.67	164	6.46	'CTDB'	104
5/3/96	1:26	'fox039'	'None'	12	2	58	12.74	164	6.32	'60Bon'	112
5/3/96	1:26	'fox039'	'None'	12	2	58	12.74	164	6.32	'20Bon'	112
5/3/96	2:11	'fox038'	'ctd010'	13	1	58	10.6	164	1.16	'CTDB'	267
5/3/96	2:40	'fox038'	'None'	13	2	58	10.44	164	1.25	'60Bon'	255
5/3/96	2:40	'fox038'	'None'	13	2	58	10.44	164	1.25	'20Bon'	255
5/3/96	3:16	'fox038'	'None'	13	3	58	10.61	164	1.2	'CalVer'	256
5/3/96	4:37	'fox037'	'ctd011'	14	1	58	8.02	163	54.88	'CTDB'	202
5/3/96	4:56	'fox037'	'None'	14	2	58	8.05	163	54.3	'60Bon'	200
5/3/96	4:56	'fox037'	'None'	14	2	58	8.05	163	54.3	'20Bon'	200
5/3/96	5:57	'fox036'	'ctd012'	15	1	58	5.67	163	49.03	'CTDB'	195
5/3/96	6:22	'fox036'	'None'	15	2	58	5.78	163	48.53	'60Bon'	195
5/3/96	6:22	'fox036'	'None'	15	2	58	5.78	163	48.53	'20Bon'	195
5/3/96	6:52	'fox036'	'None'	15	3	58	5.59	163	47.96	'CalVer'	196
5/3/96	7:50	'fox035'	'ctd013'	16	1	58	3.17	163	43.07	'CTDB'	199
5/3/96	8:13	'fox035'	'None'	16	2	58	2.91	163	43.19	'20Bon'	200
5/3/96	8:13	'fox035'	'None'	16	2	58	2.91	163	43.19	'60Bon'	200
5/3/96	9:12	'fox034'	'ctd014'	17	1	58	0.59	163	37.68	'CTDB'	187
5/3/96	9:34	'fox034'	'None'	17	2	58	0.47	163	37.26	'60Bon'	181
5/3/96	9:34	'fox034'	'None'	17	2	58	0.47	163	37.26	'20Bon'	181
5/3/96	9:58	'fox034'	'None'	17	3	58	0.45	163	37.16	'CalVer'	181
5/3/96	10:29	'fox033'	'ctd015'	18	1	57	59.3	163	33.97	'CTD'	81
5/3/96	10:38	'fox033'	'None'	18	2	57	59.21	163	33.84	'60Bon'	70
5/3/96	10:38	'fox033'	'None'	18	2	57	59.21	163	33.84	'20Bon'	70
5/3/96	15:13	'fox056'	'ctd016'	19	1	57	30.97	164	47.07	'CTDB'	210
5/3/96	15:48	'fox056'	'None'	19	2	57	30.86	164	47.06	'60Bon'	211
5/3/96	15:48	'fox056'	'None'	19	2	57	30.86	164	47.06	'20Bon'	211
5/3/96	16:51	'fox057'	'None'	20	1	57	33.1	164	51.98	'60Bon'	227
5/3/96	16:51	'fox057'	'None'	20	1	57	33.1	164	51.98	'20Bon'	227
5/3/96	18:05	'fox058'	'None'	21	1	57	36.31	164	59.89	'60Bon'	233
5/3/96	18:05	'fox058'	'None'	21	1	57	36.31	164	59.89	'20Bon'	233
5/3/96	20:14	'fox056'	'ctd017'	22	1	57	31.14	164	46.97	'CTDB'	211
5/3/96	21:02	'fox057'	'ctd018'	23	1	57	33.41	164	52.49	'CTDB'	229
5/3/96	22:00	'fox058'	'ctd019'	24	1	57	36.53	165	0.62	'CTDB'	238
5/3/96	22:49	'fox059'	'ctd020'	25	1	57	38.75	165	4.42	'CTDB'	251
5/3/96	23:23	'fox059'	'None'	25	2	57	38.65	165	4.06	'60Bon'	256
5/3/96	23:23	'fox059'	'None'	25	2	57	38.65	165	4.05	'20Bon'	256
5/4/96	0:17	'fox058'	'None'	26	1	57	36.28	165	0.29	'SaffBuoy'	238
5/4/96	1:17	'fox060'	'ctd021'	27	1	57	40.92	165	10.17	'CTDB'	289
5/4/96	1:51	'fox060'	'None'	27	2	57	40.69	165	10.25	'60Bon'	288
5/4/96	1:51	'fox060'	'None'	27	2	57	40.69	165	10.25	'20Bon'	288

5/4/96	3:06	'fox061'	'ctd022'	28	1	57	42.85	155	15.71	'CTDB'	265
5/4/96	3:38	'fox061'	'None'	28	2	57	42.86	155	15.69	'60Bon'	272
5/4/96	3:38	'fox061'	'None'	28	2	57	42.86	155	15.69	'20Bon'	272
5/4/96	5:09	'None'	'None'	29	1	57	42.09	155	12.88	'SatBuoy'	293
5/4/96	5:41	'FOX060'	'None'	30	1	57	40.69	155	10.14	'60Bon'	286
5/4/96	6:14	'FOX060'	'None'	30	2	57	40.62	155	10.33	'60Bon'	287
5/4/96	7:12	'FOX060'	'None'	30	3	57	40.63	155	10.26	'60Bon'	287
5/4/96	8:04	'FOX060'	'None'	30	4	57	40.61	155	9.7	'60Bon'	286
5/4/96	9:18	'FOX058'	'None'	31	1	57	36.4	155	0.75	'60Bon'	239
5/4/96	10:40	'FOX058'	'None'	31	2	57	36.32	155	0.33	'60Bon'	239
5/4/96	11:39	'fox058'	'None'	31	3	57	36.31	155	0.64	'60Bon'	239
5/4/96	13:14	'None'	'None'	32	2	57	35.94	154	59.72	'Live'	236
5/4/96	13:32	'None'	'None'	32	3	57	35.97	154	59.27	'Live'	236
5/4/96	13:56	'None'	'ctd023'	32	4	57	36.11	154	59.33	'CTD'	234
5/4/96	14:15	'None'	'None'	32	5	57	36.13	154	59.35	'CalVer'	234
5/4/96	16:33	'None'	'None'	32	7	57	36.17	155	0.01	'Live'	233
5/4/96	16:55	'None'	'None'	32	8	57	36	155	0.28	'Live'	233
5/4/96	17:22	'None'	'ctd024'	32	9	57	36.28	154	59.8	'CTD'	233
5/4/96	17:43	'None'	'None'	32	10	57	36.08	154	59.67	'CalVer'	232
5/4/96	19:11	'None'	'None'	33	1	57	36.69	154	58.32	'Live'	231
5/4/96	19:40	'None'	'ctd025'	33	2	57	36.8	154	58.05	'CTD'	231
5/4/96	19:57	'None'	'None'	33	3	57	37	154	57.69	'CalVer'	231
5/4/96	21:03	'None'	'None'	34	1	57	37.41	154	56.73	'Live'	233
5/4/96	21:38	'None'	'ctd026'	34	2	57	37.74	154	56.33	'CTD'	233
5/4/96	21:50	'None'	'None'	34	3	57	37.88	154	56.19	'CalVer'	233
5/5/96	4:21	'None'	'None'	36	1	56	41.78	155	17.64	'60Bon'	99
5/5/96	5:32	'None'	'None'	37	1	56	41.59	155	29.38	'60Bon'	222
5/5/96	6:25	'None'	'None'	38	1	56	44.62	155	37.5	'60Bon'	257
5/5/96	7:07	'None'	'None'	39	1	56	41.07	155	43.14	'60Bon'	266
5/5/96	8:09	'None'	'None'	40	1	56	40.84	155	55.9	'60Bon'	292
5/5/96	9:12	'None'	'None'	41	1	56	33.97	155	65.33	'60Bon'	260
5/5/96	10:01	'None'	'None'	42	1	56	30.46	155	48.89	'60Bon'	220
5/5/96	10:48	'None'	'None'	43	1	56	27.1	155	42.19	'60Bon'	105
5/5/96	11:51	'None'	'None'	44	1	56	26.74	155	54.74	'60Bon'	223
5/5/96	12:57	'None'	'None'	45	1	56	26.29	156	7.75	'60Bon'	272
5/5/96	13:45	'None'	'None'	46	1	56	25.95	156	20.26	'60Bon'	225
5/5/96	14:49	'None'	'None'	47	1	56	18.8	156	19.74	'60Bon'	266
5/5/96	15:48	'None'	'None'	48	1	56	11.52	156	19.16	'60Bon'	243
5/5/96	16:34	'None'	'None'	49	1	56	8.16	156	12.83	'60Bon'	232
5/5/96	17:31	'None'	'None'	50	1	56	12.04	156	6.22	'60Bon'	239
5/5/96	18:31	'None'	'None'	51	1	56	15.98	156	1.07	'60Bon'	218
5/5/96	19:16	'None'	'None'	52	1	56	19.16	156	6.3	'60Bon'	243
5/5/96	20:02	'None'	'None'	53	1	56	22.82	156	1.11	'60Bon'	229
5/5/96	21:00	'None'	'None'	54	1	56	22.64	156	13.33	'60Bon'	269
5/5/96	21:58	'None'	'None'	55	1	56	22.18	156	26.17	'60Bon'	218
5/5/96	22:54	'None'	'None'	56	1	56	15.28	156	25.74	'60Bon'	237
5/5/96	23:36	'None'	'None'	57	1	56	18.55	156	32.04	'60Bon'	205
5/6/96	0:18	'None'	'None'	58	1	56	14.36	156	36.95	'60Bon'	165
5/6/96	1:01	'None'	'None'	59	1	56	10.92	156	30.37	'60Bon'	223
5/6/96	1:42	'None'	'None'	60	1	56	7.6	156	24.09	'60Bon'	226
5/6/96	2:22	'None'	'None'	61	1	56	4.22	156	17.18	'60Bon'	215
5/6/96	3:32	'None'	'None'	62	1	56	8.64	155	59.81	'60Bon'	221
5/6/96	4:09	'None'	'None'	63	1	56	4.42	155	4.52	'60Bon'	225
5/6/96	4:50	'None'	'None'	64	1	56	0.1	155	9.42	'60Bon'	203
5/6/96	5:30	'None'	'None'	65	1	55	56.44	156	15.29	'60Bon'	217
5/6/96	6:20	'None'	'None'	66	1	55	59.98	156	21.9	'60Bon'	210
5/6/96	7:03	'None'	'None'	67	1	56	3.3	156	28.39	'60Bon'	208
5/6/96	7:48	'None'	'None'	68	1	56	6.55	156	35.44	'60Bon'	194
5/6/96	9:02	'None'	'None'	69	1	56	11.94	156	18.37	'SatBuoy'	248
5/6/96	9:37	'None'	'None'	70	1	56	15.54	156	13.2	'60Bon'	264
5/6/96	10:21	'None'	'None'	71	1	56	11.91	156	18.81	'60Bon'	249
5/6/96	12:14	'None'	'None'	72	1	56	12.42	156	17.49	'Live'	252
5/6/96	12:36	'None'	'ctd027'	72	2	56	12.56	156	17.58	'CTD'	253
5/6/96	12:53	'None'	'None'	72	3	56	12.67	156	17.68	'CalVer'	254
5/6/96	14:04	'None'	'None'	73	1	56	13.38	156	16.19	'Live'	262
5/6/96	14:23	'None'	'ctd028'	73	2	56	13.36	156	16.32	'CTD'	261
5/6/96	14:27	'None'	'None'	73	3	56	13.4	156	16.34	'CalVer'	261
5/6/96	14:57	'None'	'None'	73	4	56	12.98	156	16.22	'Ring.8'	254
5/6/96	16:05	'None'	'None'	74	1	56	12.7	156	15.94	'Live'	251
5/6/96	16:22	'None'	'ctd029'	74	2	56	12.44	156	16.05	'CTD'	249
5/6/96	16:37	'None'	'None'	74	3	56	12.33	156	16.09	'CalVer'	249
5/6/96	16:53	'None'	'None'	74	4	56	12.04	156	16.03	'Ring.8'	245

5/6/96	17:40	'None'	'None'	74	5	56	11.4	156	15.93	'Ring.8'	238
5/6/96	18:14	'None'	'None'	75	1	56	11	156	16	'Live'	235
5/6/96	18:33	'None'	'ctd030'	75	2	56	10.85	156	16.05	'CTD'	233
5/6/96	18:52	'None'	'None'	75	3	56	10.62	156	16.74	'CalVet'	232
5/6/96	20:02	'None'	'None'	76	1	56	9.95	156	16.14	'Live'	228
5/6/96	20:24	'None'	'ctd031'	76	2	56	9.85	156	16.1	'CTD'	228
5/6/96	20:36	'None'	'None'	76	3	56	9.93	156	16.22	'CalVet'	230
5/6/96	21:18	'None'	'None'	76	4	56	9.87	156	16.45	'20Bon'	230
5/6/96	21:18	'None'	'None'	76	4	56	9.87	156	16.45	'60Bon'	230
5/6/96	22:11	'None'	'None'	77	1	56	10.58	156	16.37	'Live'	232
5/6/96	22:34	'None'	'CTD032'	77	2	56	10.89	156	16.62	'CTD'	235
5/6/96	23:42	'None'	'None'	79	1	56	11.81	156	16.1	'CalVet'	244
5/7/96	1:55	'None'	'CTD033'	81	1	56	13.32	156	14.78	'CTDB'	259
5/7/96	2:35	'None'	'None'	82	1	56	13.09	156	15.83	'20Bon'	257
5/7/96	2:35	'None'	'None'	82	1	56	13.09	156	15.83	'60Bon'	257
5/7/96	3:10	'None'	'None'	83	1	56	13.29	156	14.41	'20Bon'	259
5/7/96	3:10	'None'	'None'	83	1	56	13.29	156	14.41	'60Bon'	259
5/7/96	3:41	'None'	'None'	83	2	56	13.17	156	14.28	'20Bon'	257
5/7/96	3:41	'None'	'None'	83	2	56	13.17	156	14.28	'60Bon'	257
5/7/96	6:20	'fox152'	'ctd034'	85	1	55	54.02	156	0.01	'CTDB'	86
5/7/96	6:58	'fox152'	'None'	85	2	55	53.78	156	0.66	'60Bon'	89
5/7/96	7:42	'fox153'	'ctd035'	86	1	55	55.02	156	11.27	'CTD'	202
5/7/96	7:59	'fox153'	'None'	86	2	55	54.88	156	11.71	'60Bon'	205
5/7/96	8:43	'fox154'	'ctd036'	87	1	55	55.65	156	14.88	'CTDB'	223
5/7/96	9:15	'fox154'	'None'	87	2	55	55.47	156	15.16	'60Bon'	225
5/7/96	10:03	'fox155'	'ctd037'	88	1	55	56.44	156	20.88	'CTD'	232
5/7/96	10:22	'fox155'	'None'	88	2	55	56.39	156	21.09	'60Bon'	231
5/7/96	11:05	'fox156'	'ctd038'	89	1	55	56.82	156	25.7	'CTDB'	210
5/7/96	11:30	'fox156'	'None'	89	2	55	56.58	156	26.01	'60Bon'	210
5/7/96	12:15	'fox157'	'ctd039'	90	1	55	57.67	156	30.61	'CTD'	201
5/7/96	12:34	'fox157'	'None'	90	2	55	57.45	156	30.36	'60Bon'	202
5/7/96	13:29	'fox158'	'ctd040'	91	1	55	58.2	156	37.76	'CTDB'	197
5/7/96	13:48	'fox158'	'None'	91	2	55	58.15	156	37.46	'60Bon'	197
5/7/96	15:31	'hf155'	'None'	92	1	55	49.16	156	14.42	'60Bon'	231
5/7/96	16:18	'hf154'	'None'	93	1	55	45.63	156	20.66	'60Bon'	248
5/7/96	17:00	'hf153'	'None'	94	1	55	41.81	156	26.7	'60Bon'	240
5/7/96	17:47	'he153'	'None'	95	1	55	45.27	156	33.17	'60Bon'	234
5/7/96	20:07	'hd157'	'None'	96	1	56	2.96	156	15.99	'Ring.8'	212
5/7/96	20:42	'hd157'	'None'	96	2	56	2.41	156	16.51	'60Bon'	212
5/8/96	0:10	'fox151'	'None'	98	1	56	26.81	156	30.82	'SafBuoy'	211
5/8/96	1:51	'fox151'	'ctd041'	99	1	56	29.93	156	59.68	'CTD'	53
5/8/96	2:04	'fox151'	'0204'	99	2	56	29.91	156	59.63	'60Bon'	52
5/8/96	2:36	'fox150'	'None'	100	1	56	26.96	156	57.46	'60Bon'	98
5/8/96	2:54	'fox150'	'ctd042'	100	2	56	27.09	156	57.64	'CTDB'	92
5/8/96	3:50	'fox149'	'ctd043'	101	1	56	24.13	156	54.84	'CTD'	122
5/8/96	4:04	'fox149'	'None'	101	2	56	24.08	156	55.22	'60Bon'	126
5/8/96	4:47	'fox148'	'ctd044'	102	1	56	21.59	156	51.83	'CTDB'	138
5/8/96	5:03	'fox148'	'None'	102	2	56	21.5	156	52.22	'60Bon'	132
5/8/96	5:53	'fox147'	'ctd045'	103	1	56	17.92	156	48.23	'CTD'	109
5/8/96	6:03	'fox147'	'None'	103	2	56	17.84	156	48.71	'60Bon'	109
5/8/96	11:20	'None'	'None'	106	1	56	12.38	156	18.16	'Meth'	253
5/8/96	12:58	'None'	'None'	107	1	56	13.14	156	18.26	'Live'	263
5/8/96	13:17	'None'	'ctd046'	107	2	56	13.38	156	18.28	'CTD'	267
5/8/96	13:30	'None'	'None'	107	3	56	13.32	156	18.22	'CalVet'	265
5/8/96	14:07	'None'	'None'	108	1	56	13.82	156	17.31	'Live'	266
5/8/96	14:23	'None'	'ctd047'	108	2	56	13.87	156	17.41	'CTDB'	267
5/8/96	14:36	'None'	'None'	108	3	56	13.91	156	17.45	'CalVet'	268
5/8/96	16:09	'None'	'None'	109	1	56	14.37	156	17.81	'Live'	270
5/8/96	16:58	'None'	'ctd048'	109	2	56	14.03	156	18.1	'CTD'	269
5/8/96	17:13	'None'	'None'	109	3	56	13.97	156	18.22	'CalVet'	268
5/8/96	18:06	'None'	'None'	110	1	56	13.93	156	17.26	'Live'	265
5/8/96	18:26	'None'	'ctd049'	110	2	56	13.71	156	17.43	'CTD'	264
5/8/96	18:40	'None'	'None'	110	3	56	13.59	156	17.46	'CalVet'	263
5/8/96	18:58	'None'	'None'	110	4	56	13.3	156	17.68	'Ring.8'	260
5/8/96	19:30	'None'	'None'	110	5	56	12.68	156	17.93	'Ring.8'	251
5/8/96	20:14	'None'	'None'	110	6	56	12.85	156	17.4	'Live'	252
5/8/96	20:33	'None'	'ctd050'	110	7	56	12.69	156	17.49	'CTD'	251
5/8/96	20:44	'None'	'None'	110	8	56	12.65	156	17.68	'CalVet'	251
5/8/96	22:09	'None'	'None'	111	1	56	12.61	156	17.29	'Live'	250
5/8/96	22:29	'None'	'ctd051'	111	2	56	12.68	156	17.64	'CTD'	251
5/8/96	22:43	'None'	'None'	111	3	56	12.66	156	17.45	'CalVet'	250
5/9/96	2:28	'None'	'ctd052'	113	1	56	41.96	157	0.06	'CTDB'	102

5/9/96	2:43	'None'	'None'	113	2	56	41.77	157	0.38	'60Bon'	144
5/9/96	2:43	'None'	'None'	113	2	56	41.77	157	0.38	'20Bon'	144
5/9/96	3:22	'None'	'ctd053'	114	1	56	39.6	156	57.92	'CTD'	145
5/9/96	3:35	'None'	'None'	114	2	56	39.53	156	58.11	'20Bon'	130
5/9/96	3:35	'None'	'None'	114	2	56	39.53	156	58.11	'60Bon'	130
5/9/96	4:20	'None'	'ctd054'	115	1	56	36.36	156	59.94	'CTDB'	129
5/9/96	4:35	'None'	'None'	115	2	56	36.35	156	56.61	'60Bon'	128
5/9/96	4:35	'None'	'None'	115	2	56	36.35	156	56.61	'20Bon'	128
5/9/96	5:08	'None'	'ctd055'	116	1	56	34.67	156	55.49	'CTD'	124
5/9/96	5:23	'None'	'None'	116	2	56	34.7	156	54.86	'60Bon'	130
5/9/96	5:23	'None'	'None'	116	2	56	34.7	156	54.86	'20Bon'	130
5/9/96	6:08	'None'	'ctd056'	117	1	56	31.94	156	53.9	'CTDB'	61
5/9/96	6:17	'None'	'None'	117	2	56	31.88	156	53.67	'60Bon'	63
5/9/96	6:17	'None'	'None'	117	2	56	31.88	156	53.67	'20Bon'	63
5/9/96	7:57	'None'	'ctd057'	118	1	56	43.09	156	44.81	'CTD'	118
5/9/96	8:15	'None'	'None'	118	2	56	43.18	156	44.65	'20Bon'	118
5/9/96	8:15	'None'	'None'	118	2	56	43.18	156	44.65	'60Bon'	118
5/9/96	9:13	'None'	'ctd058'	119	1	56	38.9	156	38.46	'CTD'	159
5/9/96	9:29	'None'	'None'	119	2	56	38.7	156	38.47	'60Bon'	150
5/9/96	9:29	'None'	'None'	119	2	56	38.7	156	38.47	'20Bon'	150
5/9/96	10:27	'None'	'ctd059'	120	1	56	34.48	156	31.45	'CTD'	193
5/9/96	10:53	'None'	'None'	120	2	56	34.48	156	31.81	'20Bon'	188
5/9/96	10:53	'None'	'None'	120	2	56	34.48	156	31.81	'60Bon'	188
5/9/96	11:55	'None'	'ctd060'	121	1	56	32.07	156	24.79	'CTD'	218
5/9/96	12:15	'None'	'None'	121	2	56	31.91	156	25.04	'60Bon'	218
5/9/96	12:15	'None'	'None'	121	2	56	31.91	156	25.04	'20Bon'	218
5/9/96	13:22	'None'	'ctd061'	122	1	56	28.14	156	16.93	'CTD'	254
5/9/96	13:45	'None'	'None'	122	2	56	28.07	156	16.98	'60Bon'	253
5/9/96	13:45	'None'	'None'	122	2	56	28.07	156	16.98	'20Bon'	253
5/9/96	15:19	'None'	'ctd062'	123	1	56	37.86	156	9.74	'CTD'	267
5/9/96	15:40	'None'	'None'	123	2	56	37.58	156	9.95	'60Bon'	267
5/9/96	15:40	'None'	'None'	123	2	56	37.58	156	9.95	'20Bon'	267
5/9/96	16:57	'None'	'ctd063'	124	1	56	41.87	156	17.24	'CTD'	198
5/9/96	17:15	'None'	'None'	124	2	56	41.58	156	17.33	'60Bon'	198
5/9/96	17:15	'None'	'None'	124	2	56	41.58	156	17.33	'20Bon'	198
5/9/96	18:27	'None'	'ctd064'	125	1	56	46	156	28.72	'CTD'	122
5/9/96	18:40	'None'	'None'	125	2	56	46.08	156	28.55	'60Bon'	121
5/9/96	18:40	'None'	'None'	125	2	56	46.08	156	28.55	'20Bon'	121
5/9/96	19:29	'None'	'ctd065'	126	1	56	48.14	156	33.66	'CTD'	126
5/9/96	19:43	'None'	'None'	126	2	56	48.25	156	33.45	'60Bon'	122
5/9/96	19:43	'None'	'None'	126	2	56	48.25	156	33.45	'20Bon'	122
5/9/96	20:26	'None'	'ctd066'	127	1	56	50.2	156	38.43	'CTD'	165
5/9/96	20:40	'None'	'None'	127	2	56	50.51	156	38.34	'20Bon'	104
5/9/96	20:40	'None'	'None'	127	2	56	50.51	156	38.34	'60Bon'	104
5/10/96	0:50	'hc166'	'None'	128	1	56	39.68	155	25.92	'Ring.8'	167
5/10/96	1:13	'hc166'	'None'	128	2	56	39.59	155	25.85	'60Bon'	163
5/10/96	2:04	'hd165'	'None'	129	1	56	32.41	155	25.4	'60Bon'	69
5/10/96	3:30	'hb163'	'None'	130	1	56	32	155	50.99	'60Bon'	235
5/10/96	5:27	'hd160'	'None'	131	1	56	1400	155	56.36	'60Bon'	188
5/10/96	6:29	'hc159'	'None'	132	1	56	14.06	155	9.37	'60Bon'	252
5/10/96	7:20	'hb159'	'None'	133	1	56	17.26	155	15.74	'60Bon'	273
5/10/96	8:13	'hc158'	'None'	134	1	56	10.51	155	15.45	'60Bon'	234
5/10/96	10:52	'hb157'	'None'	135	1	56	10.23	155	28.32	'60Bon'	232
5/10/96	11:35	'hb156'	'None'	136	1	56	6.65	155	34.42	'60Bon'	201
5/10/96	12:19	'ha156'	'None'	137	1	56	10.02	155	40.94	'60Bon'	82
5/10/96	13:00	'ha157'	'None'	138	1	56	13.72	155	34.73	'60Bon'	183
5/10/96	13:40	'ha158'	'None'	139	1	56	17.19	155	28.64	'60Bon'	223
5/10/96	14:19	'ha159'	'None'	140	1	56	20.84	155	22.23	'60Bon'	238
5/10/96	14:58	'ha160'	'None'	141	1	56	24.39	155	15.88	'60Bon'	264
5/10/96	15:51	'hb161'	'None'	142	1	56	24.79	155	3.08	'60Bon'	247
5/10/96	16:50	'hb160'	'None'	143	1	56	21.1	155	9.72	'60Bon'	263
5/10/96	18:03	'hb158'	'None'	144	1	56	14.02	155	21.99	'60Bon'	265
5/10/96	18:31	'hb158'	'None'	144	2	56	14	155	22.11	'Ring.8'	267
5/10/96	19:55	'hc157'	'None'	145	1	56	6.88	155	21.78	'60Bon'	217
5/10/96	20:40	'hc156'	'None'	146	1	56	3.09	155	27.92	'60Bon'	206
5/10/96	21:20	'hc155'	'None'	147	1	55	59.47	155	33.77	'60Bon'	191
5/10/96	22:11	'hc154'	'None'	148	1	55	55.78	155	39.98	'60Bon'	195
5/10/96	22:50	'hd154'	'None'	149	1	55	52.7	155	33.12	'60Bon'	237
5/10/96	23:29	'hd155'	'None'	150	1	55	55.18	155	27.52	'60Bon'	207
5/11/96	0:09	'hd156'	'None'	151	1	55	59.78	155	21.16	'60Bon'	209
5/11/96	0:46	'hd157'	'None'	152	1	56	3.29	155	15.03	'60Bon'	213
5/11/96	3:50	'gz159'	'None'	154	1	56	24.34	155	29.09	'60Bon'	219

5/11/96	5:30	'ha162'	'None'	155	1	56	31.82	156	3.62	'60Bon'	278
5/11/96	6:38	'hc162'	'None'	156	1	56	25.19	155	50.05	'60Bon'	191
5/11/96	8:17	'hd159'	'None'	157	1	56	10.49	156	2.67	'60Bon'	232
5/11/96	9:38	'he160'	'None'	158	1	56	10.92	155	50	'60Bon'	71
5/11/96	10:39	'he158'	'None'	159	1	56	3.74	156	2.31	'60Bon'	207
5/11/96	11:51	'he156'	'None'	160	1	55	56.48	156	14.58	'60Bon'	215
5/11/96	12:29	'he156'	'cta067'	160	2	55	56.46	156	14.59	'CTDB'	216
5/11/96	17:41	'hf145'	'None'	161	1	55	12.86	157	15.04	'60Bon'	104
5/11/96	18:00	'hf145'	'None'	161	2	55	12.76	157	15.37	'Ring.8'	103
5/11/96	19:21	'hd145'	'None'	162	1	55	19.77	157	28.63	'60Bon'	89
5/11/96	20:37	'hb145'	'None'	163	1	55	26.5	157	42.09	'60Bon'	92
5/11/96	21:56	'gz145'	'cta068'	164	1	55	33.42	157	55.26	'CTDB'	131
5/11/96	22:10	'gz145'	'None'	164	2	55	33.3	157	55.41	'60Bon'	131
5/11/96	23:21	'gx145'	'None'	165	1	55	40.31	158	8.96	'60Bon'	127
5/12/96	0:40	'gv145'	'cta069'	166	1	55	47.37	158	22.76	'CTDB'	117
5/12/96	0:58	'gv145'	'None'	166	2	55	47.32	158	22.72	'60Bon'	118
5/12/96	2:13	'gf145'	'cta070'	167	1	55	54.05	158	36.09	'CTDB'	111
5/12/96	2:27	'gf145'	'None'	167	2	55	54.19	158	36.23	'60Bon'	109
5/12/96	4:44	'gv141'	'cta071'	168	1	55	32.85	158	46.94	'CTD'	156
5/12/96	4:57	'gv141'	'None'	168	2	55	32.82	158	47.29	'60Bon'	155
5/12/96	6:20	'gx141'	'cta072'	169	1	55	26.11	158	33.09	'CTDB'	153
5/12/96	6:38	'gx141'	'None'	169	2	55	26.08	158	33.12	'60Bon'	153
5/12/96	8:03	'gz141'	'cta073'	170	1	55	19.14	158	19.64	'CTD'	135
5/12/96	8:19	'gz141'	'None'	170	2	55	19.05	158	19.68	'60Bon'	134
5/12/96	9:38	'hb141'	'cta074'	171	1	55	12.16	158	6	'CTDB'	106
5/12/96	9:56	'hb141'	'None'	171	2	55	12.14	158	6.12	'60Bon'	105
5/12/96	11:12	'hd141'	'cta075'	172	1	55	5.2	157	52.51	'CTDB'	79
5/12/96	11:28	'hd141'	'None'	172	2	55	5.17	157	52.51	'60Bon'	79
5/12/96	13:30	'hf137'	'None'	173	1	54	43.79	158	2.98	'60Bon'	129
5/12/96	13:52	'hf137'	'None'	173	2	54	43.71	158	3.07	'Ring.8'	134
5/12/96	14:29	'hd137'	'None'	174	1	54	45.72	158	6.57	'60Bon'	196
5/12/96	16:48	'hb135'	'None'	175	1	54	50.44	158	42.17	'60Bon'	101
5/12/96	18:04	'hb137'	'None'	176	1	54	57.78	158	30.14	'60Bon'	172
5/12/96	19:30	'gz137'	'None'	177	1	55	4.65	158	43.56	'60Bon'	191
5/12/96	20:43	'gx137'	'None'	178	1	55	11.56	158	57.16	'60Bon'	187
5/12/96	21:56	'gx135'	'None'	179	1	55	4.05	159	9.24	'60Bon'	76
5/13/96	4:48	'gv137'	'None'	180	1	55	19.03	159	11.76	'60Bon'	189
5/13/96	6:38	'gf137'	'None'	181	1	55	29.88	159	34.84	'60Bon'	172
5/13/96	7:01	'gr135'	'None'	182	1	55	31.8	159	39.73	'60Bon'	99
5/13/96	8:31	'gp135'	'None'	183	1	55	31.66	160	4.69	'60Bon'	121
5/13/96	11:55	'gr129'	'None'	184	1	55	2.96	160	27.26	'60Bon'	155
5/13/96	13:53	'gr125'	'None'	185	1	54	48.43	160	51.24	'60Bon'	99
5/13/96	15:21	'gf123'	'None'	186	1	54	34.37	160	49.07	'60Bon'	135
5/13/96	16:53	'gv121'	'None'	187	1	54	20.23	160	47.09	'60Bon'	113
5/13/96	18:28	'gx119'	'None'	188	1	54	6.08	160	45.08	'60Bon'	1829
5/13/96	19:41	'gv119'	'None'	189	1	54	12.98	160	58.86	'60Bon'	693
5/13/96	20:50	'gf119'	'None'	190	1	54	19.91	161	12.99	'60Bon'	127
5/13/96	22:02	'gr119'	'None'	191	1	54	26.63	161	26.97	'60Bon'	83
5/13/96	23:21	'gp119'	'None'	192	1	54	33.9	161	41.48	'60Bon'	125
5/14/96	0:34	'gp117'	'None'	193	1	54	26.25	161	53.05	'60Bon'	149
5/14/96	1:37	'gp115'	'None'	194	1	54	19.16	162	4.62	'60Bon'	69
5/14/96	3:57	'gp113'	'None'	195	1	54	11.93	162	16.72	'60Bon'	86
5/14/96	5:07	'gp111'	'None'	196	1	54	4.68	162	28.64	'60Bon'	715
5/14/96	5:28	'gp111'	'None'	196	2	54	4.78	162	29.02	'Ring.8'	670
5/14/96	5:56	'gp111'	'None'	196	3	54	4.82	162	29.24	'Ring.8'	644
5/14/96	7:20	'gp109'	'None'	197	1	53	57.57	162	40.23	'60Bon'	995
5/14/96	7:45	'gp109'	'None'	197	2	53	57.78	162	40.6	'Ring.8'	1011
5/14/96	9:12	'gn109'	'None'	198	1	54	4.18	162	54.29	'60Bon'	81
5/14/96	9:27	'gn109'	'None'	198	2	54	4.23	162	54.49	'Ring.8'	81
5/14/96	10:45	'gi109'	'None'	199	1	54	11.1	163	8.71	'60Bon'	83
5/14/96	11:56	'gi109'	'None'	200	1	54	17.99	163	23.15	'60Bon'	81
5/14/96	13:07	'gh109'	'None'	201	1	54	24.85	163	37.84	'60Bon'	102
5/14/96	14:14	'gh107'	'None'	202	1	54	17.69	163	49.67	'60Bon'	116
5/14/96	15:30	'gf107'	'None'	203	1	54	24.41	164	4.13	'60Bon'	109
5/14/96	17:36	'gf105'	'None'	204	1	54	17.24	164	16.04	'60Bon'	76
5/14/96	18:50	'gh105'	'None'	205	1	54	10.3	164	1.51	'60Bon'	78
5/14/96	19:57	'gh103'	'None'	206	1	54	2.97	164	13.35	'60Bon'	89
5/14/96	21:08	'gf103'	'None'	207	1	54	9.96	164	27.98	'60Bon'	84
5/14/96	22:15	'gf101'	'None'	208	1	54	2.67	164	40.04	'60Bon'	103
5/14/96	23:44	'gd103'	'None'	209	1	54	16.76	164	43.63	'60Bon'	99
5/15/96	1:12	'f50'	'cta076'	210	1	54	27.14	165	0.1	'CTDB'	56
5/15/96	1:26	'f50'	'None'	210	2	54	27.64	165	0.83	'60Bon'	56

5/15/96	1:26	'1950'	'None'	210	2	54	27.64	165	0.83	'20Bon'	56
5/15/96	2:20	'None'	'None'	211	1	54	34.94	165	7.19	'60Bon'	83
5/15/96	3:37	'1949'	'ctd077'	212	1	54	25.13	165	7.74	'CTDB'	131
5/15/96	3:55	'1949'	'None'	212	2	54	25.49	165	7.66	'60Bon'	128
5/15/96	3:55	'1949'	'None'	212	2	54	25.49	165	7.66	'20Bon'	128
5/15/96	4:45	'None'	'None'	213	1	54	24.31	165	11.22	'Ring.8'	183
5/15/96	5:11	'None'	'None'	213	2	54	24.51	165	11.57	'CalVer'	184
5/15/96	5:59	'1948'	'ctd078'	214	1	54	22.07	165	16.09	'CTDB'	170
5/15/96	6:18	'1948'	'None'	214	2	54	22.18	165	16.06	'20Bon'	169
5/15/96	6:18	'1948'	'None'	214	2	54	22.18	165	16.06	'60Bon'	169
5/15/96	7:27	'1947'	'ctd079'	215	1	54	19.75	165	25.2	'CTDB'	163
5/15/96	7:47	'1947'	'None'	215	2	54	19.59	165	24.98	'60Bon'	159
5/15/96	7:47	'1947'	'None'	215	2	54	19.59	165	24.98	'20Bon'	159
5/15/96	9:27	'None'	'None'	216	1	54	22.58	165	48.94	'Ring.8'	287
5/15/96	11:15	'None'	'None'	217	1	54	14.01	165	7	'Ring.8'	369
5/15/96	12:19	'None'	'None'	218	1	54	14.08	165	5.91	'Ring.8'	219
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