

# **CENTRAL FILE**

**Hydrographic Data, Ocean Pulse Environmental Monitoring Surveys**

**April 1978 Through April 1980**

**By**

**F. W. Steimle, Jr., J. E. O'Reilly, D. J. Radosh and R. Waldhauer**

**Division of Environmental Assessment**

**U. S. Department of Commerce**

**National Oceanic and Atmospheric Administration**

**National Marine Fisheries Service**

**Northeast Fisheries Service**

**Sandy Hook Laboratory**

**Highlands, New Jersey 07732**

**Report No. SHL 81-10**

## CONTENTS

	Page
<b>Introduction.....</b>	1
<b>Methods .....</b>	1
<b>Results .....</b>	2
<b>Acknowledgments .....</b>	3
<b>Literature Cited.....</b>	4
<b>Figure 1. Station locations and cruise track for Ocean Pulse cruise RE 78-04, 19 April - 3 May 1978.....</b>	5
<b>Figure 2. Station locations and cruise track for Ocean Pulse cruise AL 78-12, 20 September - 4 October 1978.....</b>	6
<b>Figure 3. Station locations and cruise track for Ocean Pulse cruise AD 79-01, 18-27 April 1979.....</b>	7
<b>Figure 4. Station locations and cruise track for Ocean Pulse cruise AL 79-07, 17-26 July 1979.....</b>	8
<b>Figure 5. Station locations and cruise track for Ocean Pulse cruise AL 79-10, 13-27 September 1979.....</b>	9
<b>Figure 6. Station locations and cruise track for Ocean Pulse cruise KE 79-10/11, 10-31 October 1979.....</b>	10
<b>Figure 7. Station locations and cruise track for Ocean Pulse cruise DE 79-11, 4-17 December 1979.....</b>	11
<b>Figure 8. Station locations and cruise track for Ocean Pulse cruise KE 80-04, 25 March - 4 April 1980.....</b>	12
<b>Table 1. Station coordinates, sampling dates and times, bottom depths and reference to previous station numbering (cruise station no.) for stations where hydrographic data is available from 8 Ocean Pulse cruises covering the period April 1978 through April 1980.....</b>	13
<b>Table 2. Hydrographic data per sampling depth (temperature, salinity, sigma-t, dissolved oxygen, percent D.O. saturation, pH and alkalinity) for Ocean Pulse stations where hydro- graphic data was collected.....</b>	21

## Introduction

In 1977, the Northeast Fisheries Center (NEFC) of the National Marine Fisheries Service (NMFS) initiated a new program (Ocean Pulse) to assess, monitor and research the health and well-being of the living resources in the waters of the continental shelf between Cape Hatteras and the Canadian border (Pearce 1977). Its goal is to provide periodic and frequent information on the health of the marine environment to detect natural and man-induced changes, investigate the causes of the observed changes and provide baselines which can be used to assess environmental damage resulting from unpredictable environmental problems. The first two years of the program (1978-1980) were for program operational testing. Presently, the program has been integrated with two other NOAA ocean monitoring programs into the Northeast Monitoring Program (NEMP).

This report presents all the hydrographic and station location data for eight Ocean Pulse surveys conducted between April 1978 and March 1980. The hydrographic data, presented as a listing, includes vertical profiles of temperature, salinity, sigma-t, dissolved oxygen, dissolved oxygen percent saturation, pH and total alkalinity.

## Methods

During most surveys an expendable bathythermograph (XBT) was used to measure water temperature. Reported temperatures for specific depths were taken from the XBT traces. Surface water temperature was measured with a bucket thermometer. Exceptions to these methods for measuring temperature are noted in the data listing.

Samples for salinity, dissolved oxygen, pH, and alkalinity were collected with Niskin PVC water bottles. During the Albatross 79-07 survey and during all subsequent surveys, water samples were routinely collected within a meter of the seabed using a Niskin bottle rigged to close when a tripping device contacted the bottom. The "bottom trip" bottle was used on stations less than 100 m and has provided better estimates of dissolved oxygen concentrations available to benthic communities on the shelf.

Salinity was analyzed using a Guildline Autosal 8400 salinometer. Conductivity readings were converted to salinity using the equations provided in the Guildline manual.

Dissolved oxygen concentrations were measured using the azide modification of the Winkler method (APHA, 1975). Phenylarsine oxide was used in place of sodium thiosulfate and thyodene was used as the end-point indicator (Kroner 1964; US EPA 1974). The percent saturation of dissolved oxygen was computed using equation 4, Table 3 from Weiss (1970).

Sigma-t was calculated using the equations provided by Knudsen (1901). The in situ pH of seawater and total alkalinity were calculated using equations (O'Reilly and Thomas 1979) derived from tables given by Strickland and Parsons (1972).

### Results

The approximate station locations and cruise tracks for each of the eight cruises are presented in Figures 1 - 8. Sampling positions (latitude and longitude), depth, sampling date and time (local), and reference station number are presented for all surveys in Table 1.

The measured or calculated hydrographic data for these cruises are chronologically listed in Table 2. This data set is also available on tape for copying or card deck, upon request.

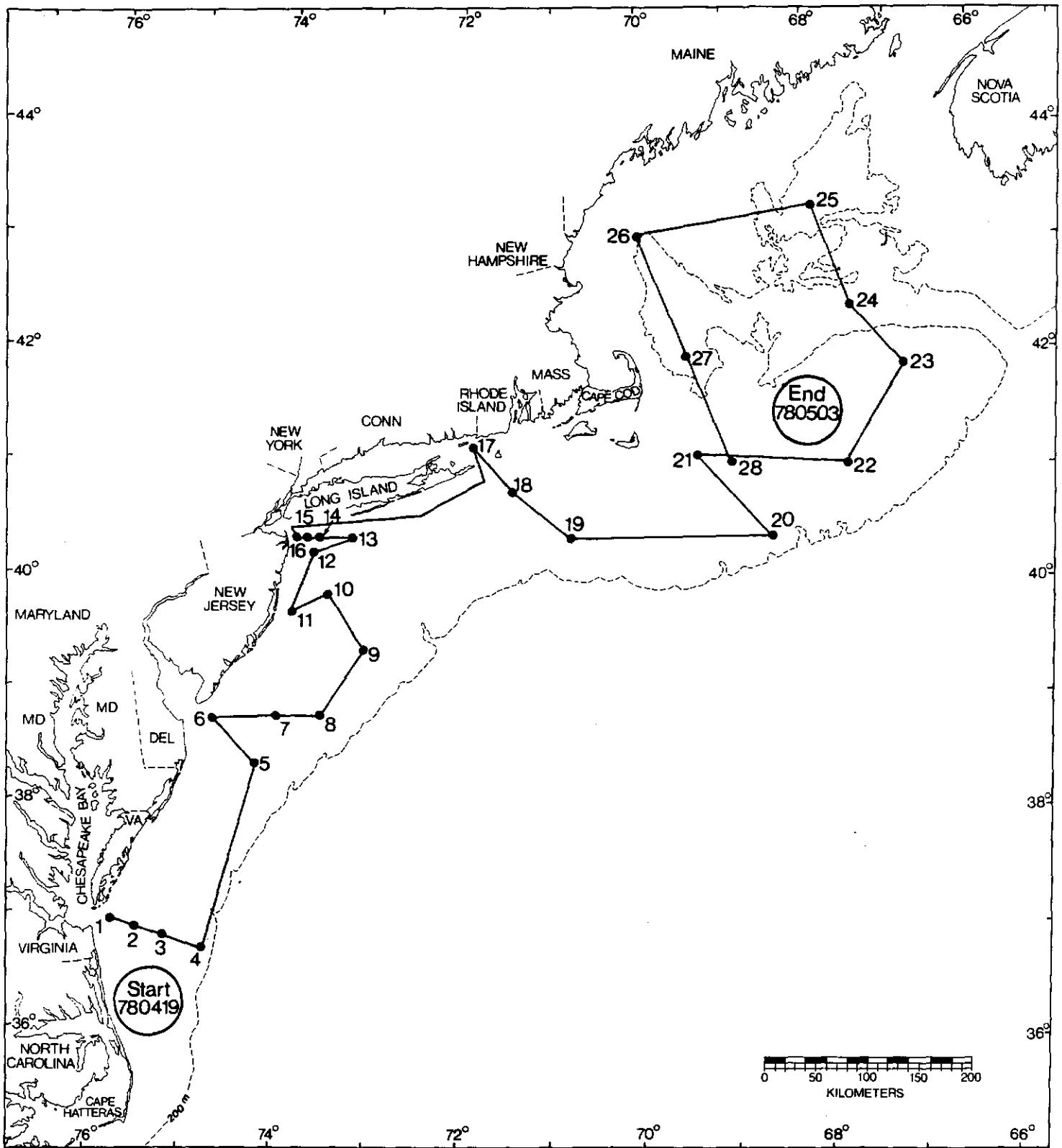
Acknowledgments

We thank a large number of people, too numerous to name, who helped us in collecting and analyzing the samples upon which this report is based. We also thank John LeBaron, Sue Craig and Pat Fournier for their efforts in data processing and to Michele Cox for her illustrations.

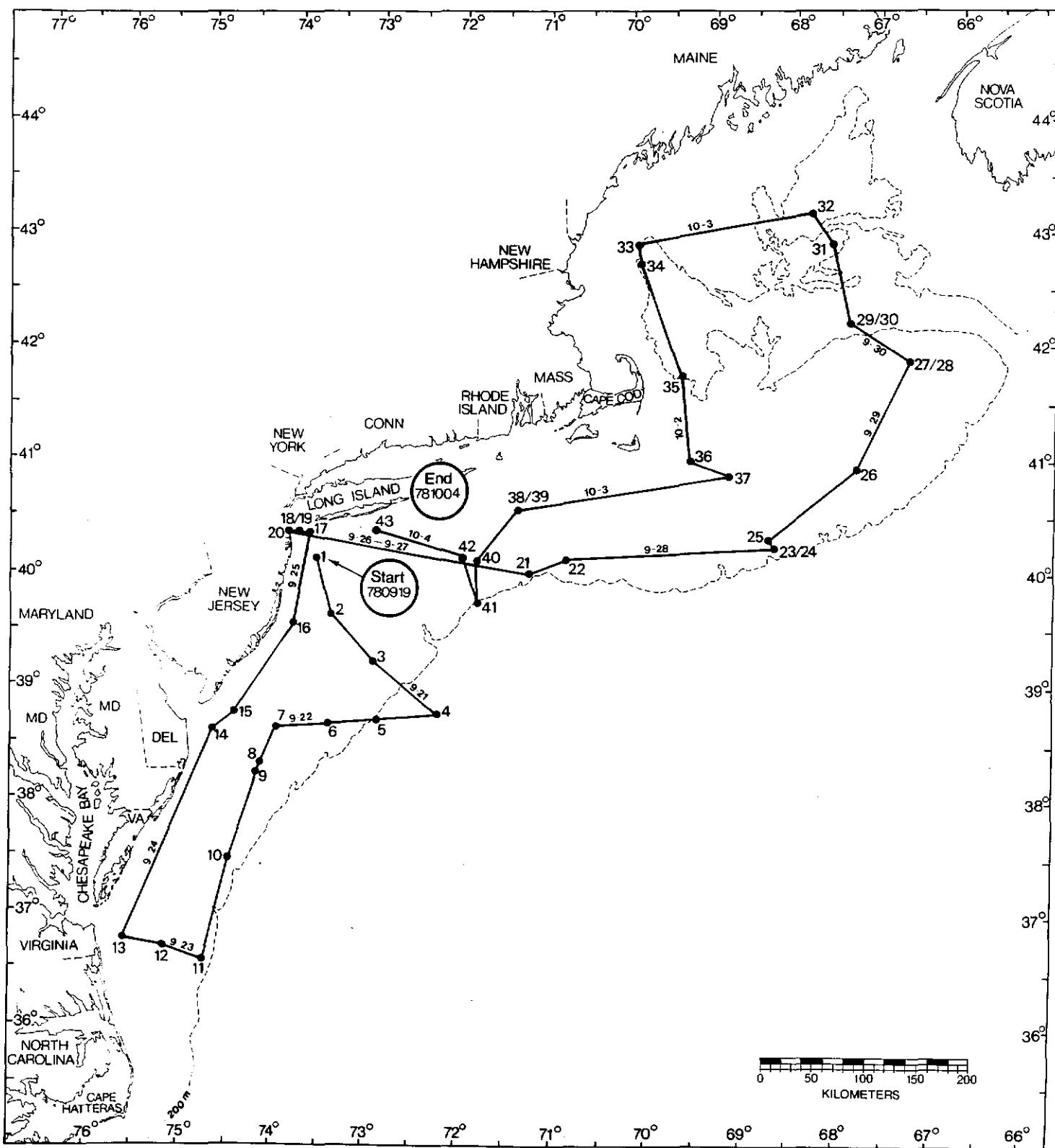
### Literature Cited

- American Public Health Association. 1975. Standard methods for the examination of water and waste water. 14th ed. Amer. Publ. Health Assoc. Inc., pp. 443-450.
- Guildline. 1975. Technical manual for Autosal laboratory salinometer - model 8400. Guildline Instruments, Inc. Elmsford, N. Y. 97 p.
- Knudsen, M. 1901. Hydrographic tables, Copenhagen, G.E.C. Gad, 1901.  
(Reprinted 1962) G. M. Mfg. and Instrument Corp., Bronx, N. Y. pg. IV.
- Kroner, R. C., J. E. Longbottom and R. Gorman. 1964. A comparison of various reagents proposed for use in the Winkler procedure for dissolved oxygen. U. S. Dept. HEW, Public Health Service, Water Poll. Surveillance Sept., Applied Develop. Report 12. 18 p.
- O'Reilly, J. E. and J. P. Thomas. 1979. A manual for the measurement of total daily primary productivity on MARMAP and Ocean Pulse cruises using  $^{14}\text{C}$  simulated in situ sunlight incubation, Ocean Pulse Technical Manual No. 1., U. S. Dept. Comm., NOAA, NMFS, Northeast Fisheries Center, Sandy Hook Laboratory, Highlands, N. J., SHL Report No. 79-06, 117 p.
- Pearce, J. B. 1977. A report on a new environmental assessment and monitoring program, Ocean Pulse. Intern. Council Explor. Sea, C.M. 1977/E:65 (Fish. Improv. Comm.). 12 p.
- U. S. Environmental Protection Agency. 1974. Methods for chemical analysis of water and wastes. Methods Develop. Qual. Assurance Res. Lab. NERC, EPA-625/6-74/003.

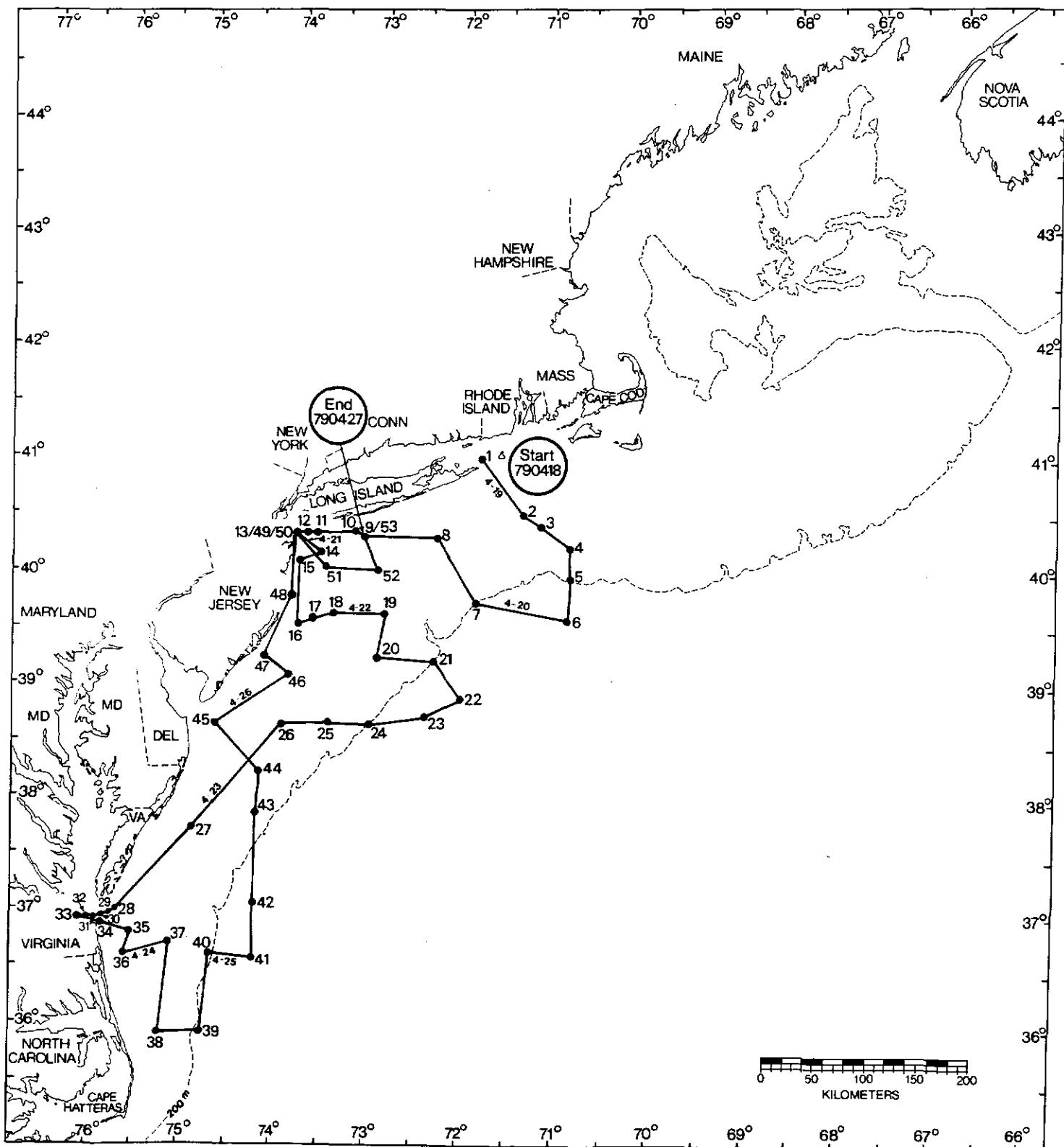
**Figure 1. Station locations and cruise track for Ocean Pulse  
cruise RE-78-04, 19 April - 3 May 1978.**



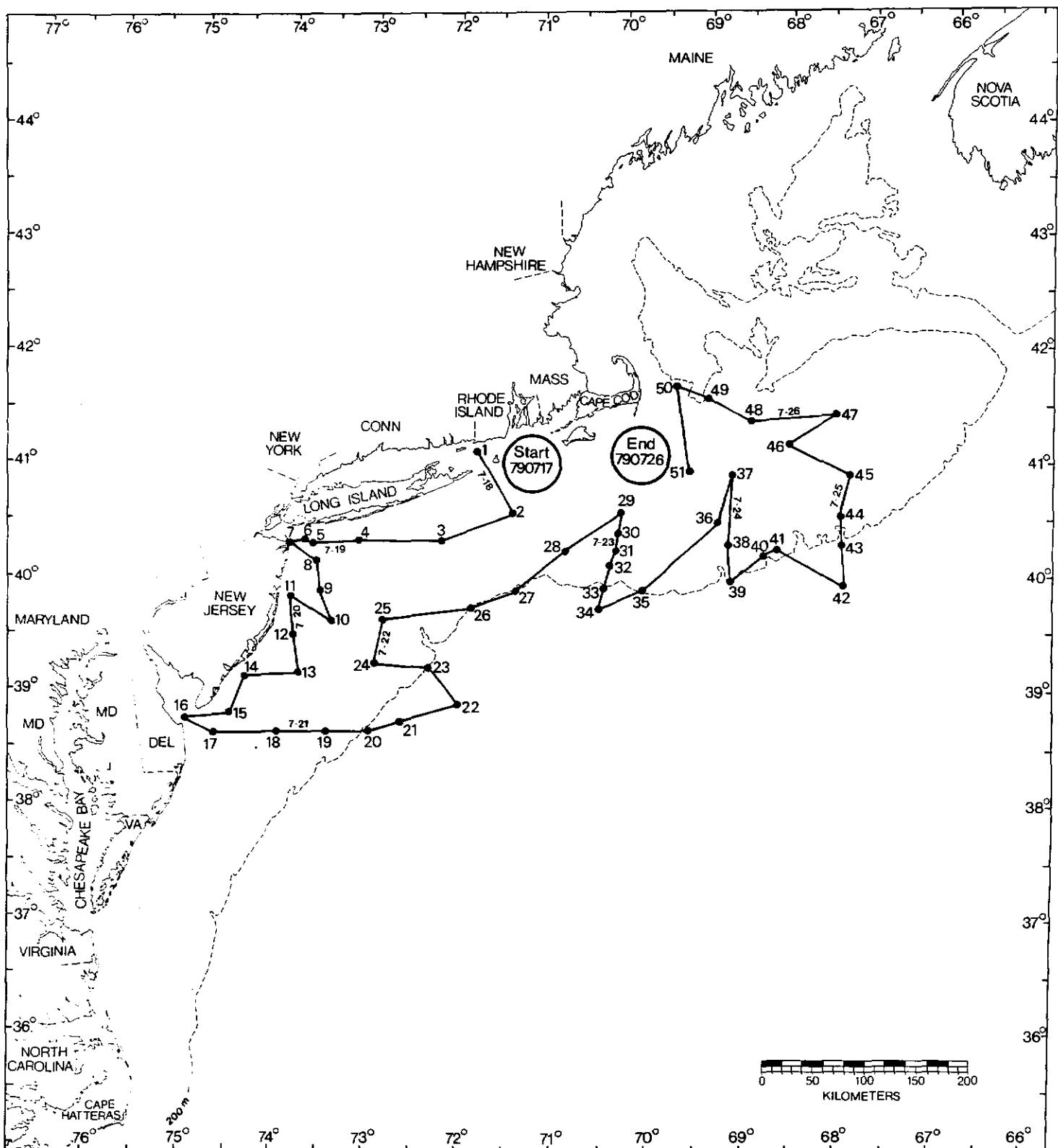
**Figure 2. Station locations and cruise track for Ocean Pulse  
cruise AL 78-12, 20 September - 4 October 1978.**



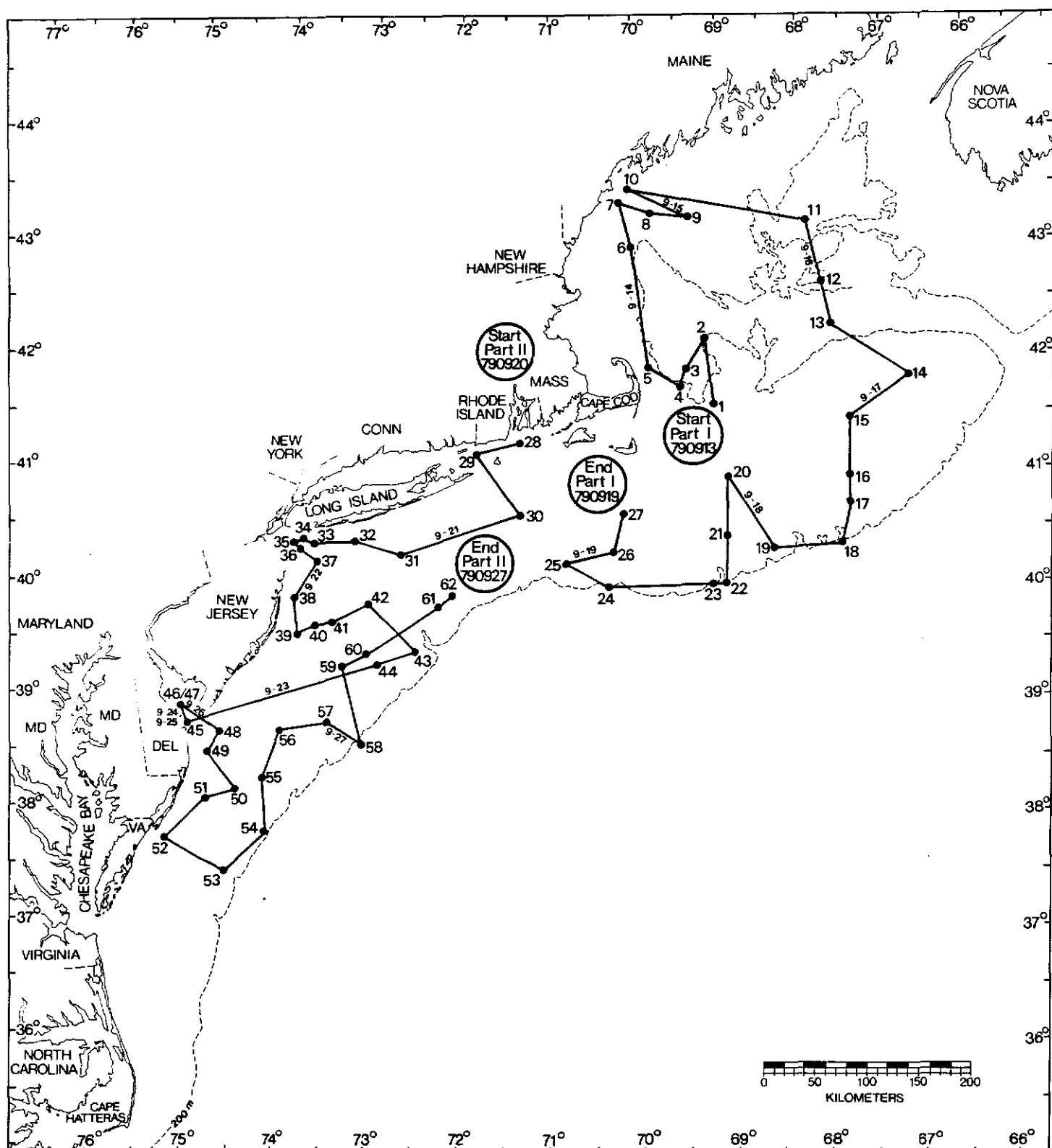
**Figure 3. Station locations and cruise track for Ocean Pulse  
cruise AD 79-01, 18-27 April 1979.**



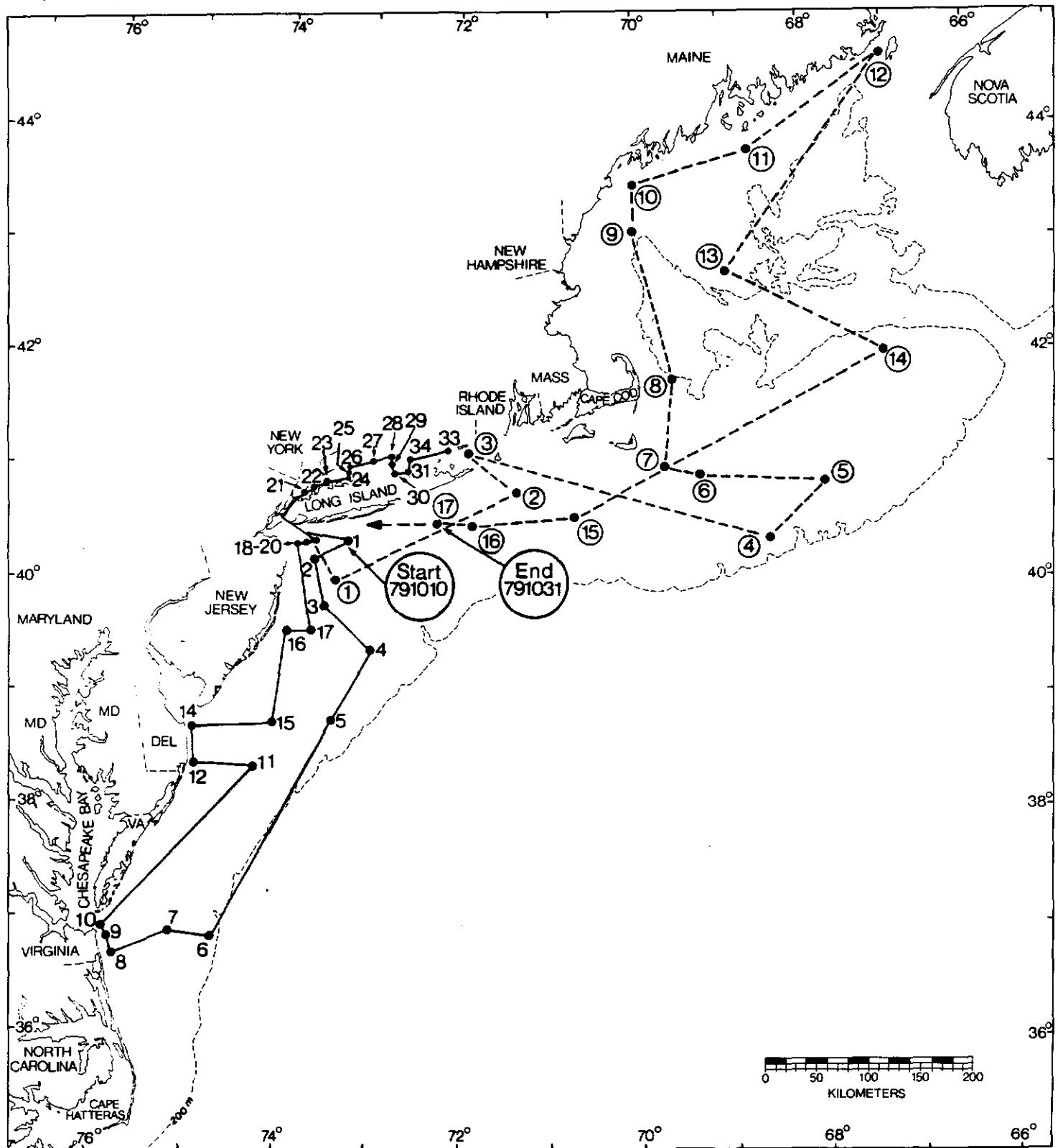
**Figure 4. Station locations and cruise track for Ocean Pulse  
cruise AL 79-07, 17-26 July 1979.**



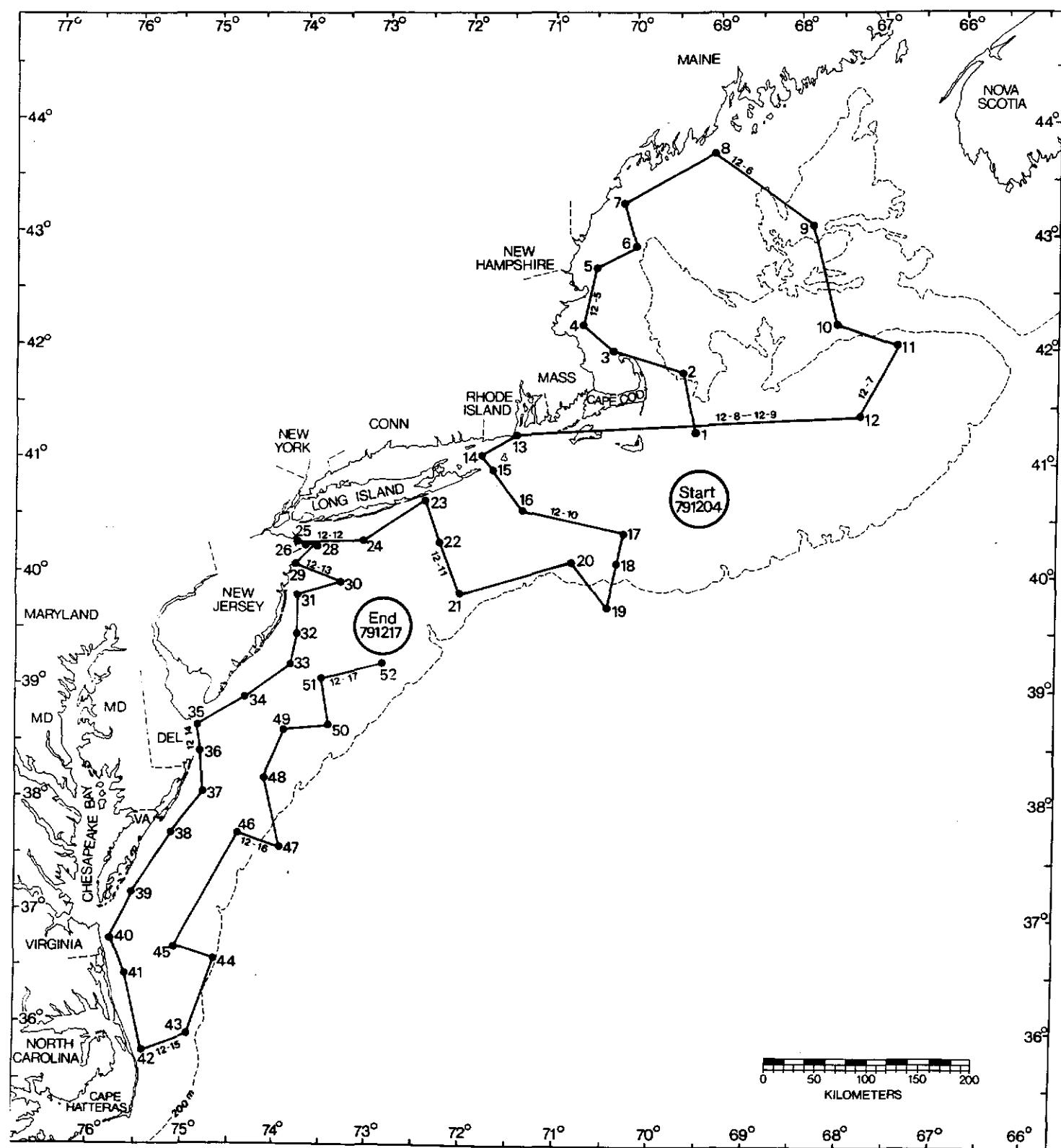
**Figure 5. Station locations and cruise track for Ocean Pulse  
cruise AL 79-10, 13-27 September 1979.**



**Figure 6. Station locations and cruise tracks for Ocean Pulse  
cruise KE 79-10/11, 10-31 October 1979.**



**Figure 7. Station locations and cruise tracks for Ocean Pulse  
cruise DE 79-11, 4-17 December 1979.**



**Figure 8. Station locations and cruise tracks for Ocean Pulse  
cruise KE 80-04, 25 March - 4 April 1980.**

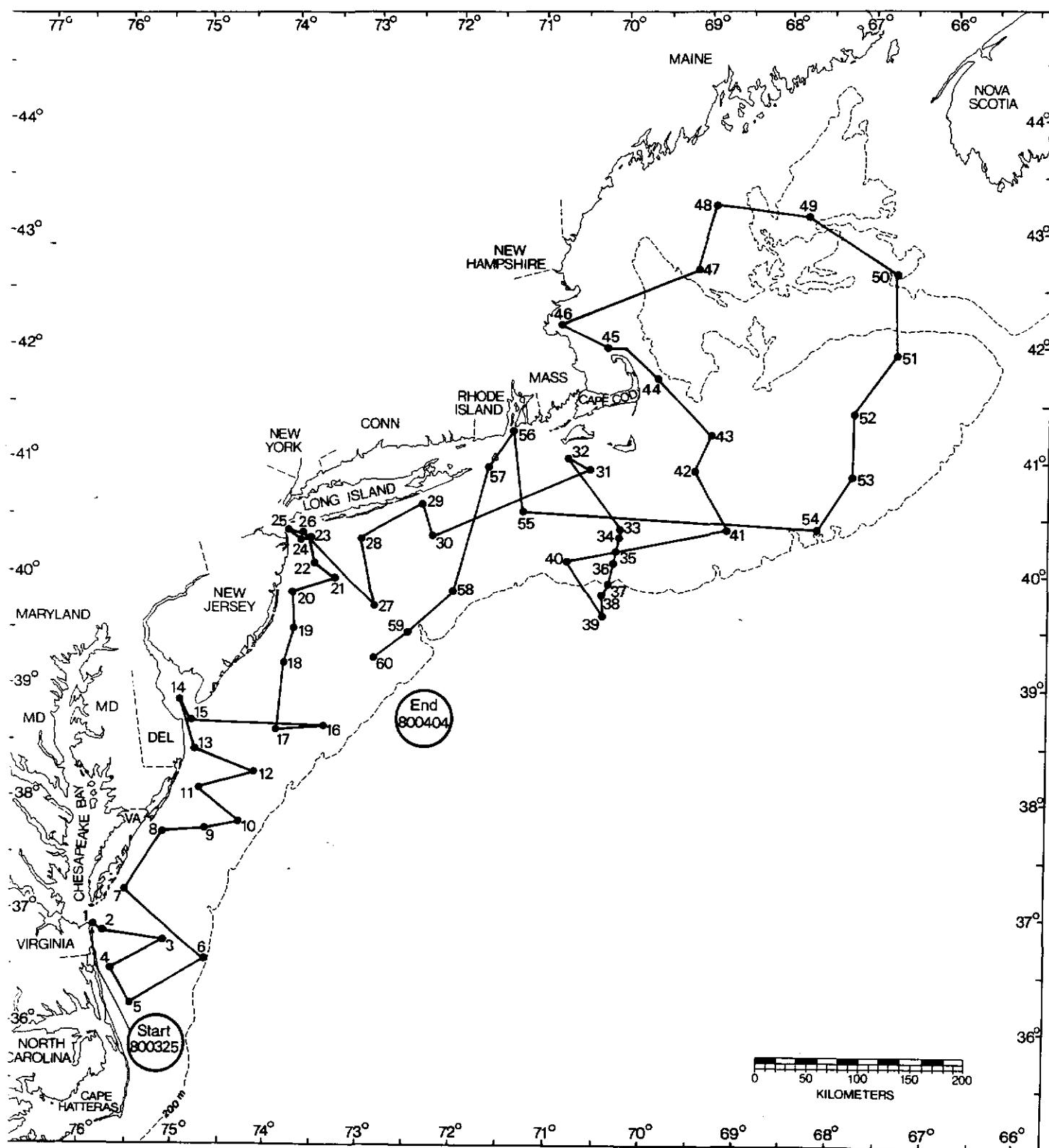


Table 1. Station coordinates, sampling dates and times, bottom depths and reference to previous station numbering (cruise station no.) for stations where hydrographic data is available from 8 Ocean Pulse cruises covering the period April 1978 through April 1980.

CRUISE	CUNSEC	CRUISE		DATE	SAMPLE	BOTTOM	
CODE	STA #	STA #	LAT.	LONG.	D.M.Y.	TIME	DEPTH(M)
RE7804	1	5	36548	75495	190478	0318	14
RE7804	2	6	36499	75377	190478	1315	6
RE7804	3	7	36481	75124	200478	2207	30
RE7804	4	8	36409	74445	200478	0541	90
RE7804	5	9	38204	74165	200478	1916	44
RE7804	6	10	38432	74455	210478	0354	21
RE7804	7	11	38447	74029	210478	1100	83
RE7804	8	12	38459	73303	220478	2334	70
RE7804	9	13	39199	73005	220478	0817	61
RE7804	10	14	39441	73279	230478	0130	51
RE7804	11	15	39375	73545	230478	0413	28
RE7804	12	15A	40158	73401	230478	1348	28
RE7804	13	16A	40254	73115	240478	2359	52
RE7804	15	16C	40252	73462	260478	0745	31
RE7804	16	17	40245	73558	260478	1736	15
RE7804	17	18	41141	71504	270478	1014	47
RE7804	18	19	40421	71216	270478	1216	58
RE7804	19	20	40158	70489	290478	2100	119
RE7804	20	21	40220	68290	290478	1122	101
RE7804	21	21A	41031	69230	300478	0128	42
RE7804	22	22	40587	67342	300478	1002	64
RE7804	23	23	41518	66506	010578	0024	68
RE7804	24	24	42178	67313	010578	0758	276
RE7804	25	25	43147	67590	020578	2117	213
RE7804	26	26	42599	70016	020578	1308	55
RE7804	27	27	41504	69292	030578	0355	187
RE7804	28	28	40593	68591	030578	1209	83

CRUISE	CONSEC	CRUISE		DATE	SAMPLE	BOTTOM	
CODE	STA #	STA #	LAT.	LONG.	0.M.Y.	TIME	DEPTH(M)
AL7812	1	1	4015	7340	200978	0151	29
AL7812	2	2A	3945	73305	200978	1137	55
AL7812	3	3	3920	7300	200978	2055	71
AL7812	5	4A	3848	7255	210978	1128	567
AL7812	6	5	3846	7330	210978	1434	68
AL7812	7	6	3845	74015	210978	2308	48
AL7812	8	7	3820	7416	220978	0615	55
AL7812	9	7A	3817	7416	220978	1121	48
AL7812	10	7B	37335	7433	220978	1547	62
AL7812	11	8	3640	7445	220978	2151	82
AL7812	12	9	3647	7511	230978	0551	37
AL7812	14	11	3842	7444	240978	0942	11
AL7812	15	11A	3850	7432	240978	1620	18
AL7812	16	12	3937	7354	240978	2212	26
AL7812	18	13B	4025	7346	250978	1115	27
AL7812	21	13D	4007	7111	270978	1121	155
AL7812	22	14	40132	7045	270978	1710	121
AL7812	23	15	4021	6828	280978	1100	110
AL7812	25	15A	40265	68315	280978	1608	90
AL7812	26	16	40595	67335	290878	0358	66
AL7812	28	17	41562	6651	300978	0124	70
AL7812	29	18	42165	6731	300978	0805	269
AL7812	30	18A	42165	6731	300978	1102	269
AL7812	31	18B	4259	67495	300978	1545	210
AL7812	32	19	4314	67593	300978	2200	205
AL7812	33	20	4300	7000	011078	1058	159
AL7812	34	20A	42475	6957	011078	1610	230
AL7812	36	22	4104	6923	021078	1100	40
AL7812	37	22A	4059	6901	021078	1005	79
AL7812	38	23	4041	7122	031078	1105	60
AL7812	39	23A	4037	7120	031078	1610	60
AL7812	40	24	4114	7148	041078	0101	33
AL7812	41	24A	3952	7149	041078	1105	155
AL7812	42	24B	40125	71595	041078	1610	66

CRUISE	CONSEC	CRUISE		DATE	SAMPLE	BOTTOM	
CODE	STA #	STA #	LAT.	LONG.	D,M,Y,	TIME	DEPTH(M)
AD7901	1	1	41135	71511	190479	0215	57
AD7901	2	2	40409	71215	190479	1151	62
AD7901	3	2A	40308	71068	190479	1027	78
AD7901	4	3	40211	70492	190479	2038	99
AD7901	5	4	40026	70472	190479	2330	98
AD7901	6	5	39403	70482	200479	0214	500
AD7901	7	6	39500	71520	200479	0730	166
AD7901	8	7	40245	72184	200479	1214	59
AD7901	9	8A	40256	73111	200479	1052	57
AD7901	12	31B	40251	73460	210479	0208	34
AD7901	13	31C	40251	73559	210479	0344	13
AD7901	14	9	40152	73402	210479	0724	29
AD7901	15	30	40119	73549	210479	1103	22
AD7901	16	29	39368	73541	210479	1628	29
AD7901	18	10	39445	73295	210479	2112	44
AD7901	19	11	39430	72530	220479	0241	75
AD7901	20	12	39204	72591	220479	0414	77
AD7901	21	13	39189	72201	220479	0915	192
AD7901	22	14	38599	72001	220479	1344	2277
AD7901	23	14A	38494	72265	220479	1700	2010
AD7901	24	15	38450	73040	220479	1940	150
AD7901	25	16	38465	73304	220479	0044	69
AD7901	26	17	38445	74022	230479	0313	49
AD7901	27	26	37472	74592	230479	1134	31
AD7901	28	26A	37022	75491	230479	1642	10
AD7901	34	24	36558	75568	230479	2333	19
AD7901	55	23	36500	75366	240479	0124	22
AD7901	36	22	36400	75398	240479	0421	24
AD7901	37	21	36470	75110	240479	0720	38
AD7901	38	21A	35597	75150	240479	1605	29
AD7901	39	20A	36000	74476	240479	2150	230
AD7901	40	20	36400	74448	250479	0039	70
AD7901	41	19	36400	74150	250479	0717	2251
AD7901	42	19A	37091	74173	250479	1157	100
AD7901	43	25	37559	74171	250479	1017	73
AD7901	44	18	38205	74163	250479	2140	49
AD7901	45	27	38431	74455	260479	2326	10
AD7901	46	28A	39102	75570	260479	1118	38
AD7901	47	28B	39188	74132	260479	1257	24
AD7901	48	30A	39537	73566	260479	1614	23
AD7901	52	11A	40074	73001	270479	0242	49

CRUISE	CONSEC	CRUISE		DATE	SAMPLE	BOTTUM	
CODE	STA #	STA #	LAT.	LONG.	U.M.Y.	TIME	DEPTH(M)
AL7907	1	1	41144	71476	180779	0142	31
AL7907	2	2	4041	7123	180779	1112	57
AL7907	3	3	40255	72146	180779	1702	60
AL7907	4	4	40256	73111	180779	2150	33
AL7907	5	5A	40242	7344	190779	0409	22
AL7907	6	5B	40252	73462	190779	0630	37
AL7907	7	5C	40253	73561	190779	0747	16
AL7907	8	6	4015	7340	190779	1157	26
AL7907	9	6A	3959	7336	190779	1433	37
AL7907	10	8	39443	73292	190779	1647	42
AL7907	11	7	3955	7356	190779	2239	18
AL7907	12	9	39362	73542	200779	0152	137
AL7907	13	9A	3915	7348	200779	0623	33
AL7907	14	10	3914	7426	200779	0924	15
AL7907	15	10A	3853	7435	200779	1151	16
AL7907	16	11	3850	7505	200779	1441	18
AL7907	17	12	38431	74455	200779	1635	14
AL7907	18	13	38446	74021	200779	2248	44
AL7907	19	14	38465	73305	210779	0352	64
AL7907	20	15	3845	7304	210779	0903	139
AL7907	21	15A	3852	7240	210779	1140	1800
AL7907	22	16	3900	7200	210779	1614	2400
AL7907	23	17	3919	7220	210779	1909	190
AL7907	24	18	39204	72584	210779	2215	65
AL7907	25	19	3943	7253	220779	0344	70
AL7907	26	20	3950	7152	220779	0847	154
AL7907	27	20A	3959	7122	220779	1147	157
AL7907	28	23	4021	70485	220779	1537	95
AL7907	29	24	4041	7011	220779	2152	40
AL7907	30	25	4030	7013	220779	2339	62
AL7907	31	26	4021	7015	230779	0242	90
AL7907	32	27	4013	7020	230779	0357	102
AL7907	33	28	4002	7022	230779	0732	208
AL7907	34	29	3951	7025	230779	0917	823
AL7907	35	29A	3959	6959	230779	1200	157
AL7907	36	30	4035	6909	230779	1737	68
AL7907	37	42	40592	68556	230779	2227	73
AL7907	38	30A	4025	6903	240779	0436	82
AL7907	39	31	4005	6901	240779	0734	100
AL7907	40	32A	4019	6835	240779	1125	101
AL7907	41	32	40215	6829	240779	1543	93
AL7907	42	33	4000	6740	240779	2025	2742
AL7907	43	34	4022	6740	250779	0022	284
AL7907	44	34A	4037	6741	250779	0247	86
AL7907	45	36	4058	6733	250779	1105	75
AL7907	46	43	4115	6815	250779	1610	44
AL7907	47	37	4130	6741	250779	2251	30
AL7907	48	37X	4127	6845	260779	0505	124
AL7907	50	41	41505	6930	260779	1204	186
AL7907	51	44	4103	6923	260779	2210	40

CRUISE	CONSEC	CRUISE			DATE	SAMPLE	BOTTUM
CODE	STA #	STA #	LAT.	LNG.	D.M.Y.	TIME	DEPTH(M)
AL7910	1	109	4138	6909	130979	0352	170
AL7910	2	107	4211	6912	130979	0807	194
AL7910	3	07A	4156	6924	130979	1225	207
AL7910	4	P28	4150	6928	130979	1654	186
AL7910	5	095	4158	6951	130979	2152	91
AL7910	6	P27	4300	7001	140979	0425	93
AL7910	7	102	43241	70121	140979	1106	95
AL7910	8	02A	4319	6948	140979	1625	173
AL7910	9	183	4317	6920	140979	1936	157
AL7910	10	300	4332	7005	150979	1816	93
AL7910	11	P26	4314	6758	160979	0324	203
AL7910	12	45A	42403	67494	160979	1109	181
AL7910	13	145	4218	6741	160979	1604	236
AL7910	14	P24	41503	66508	160979	2334	66
AL7910	15	331	4129	6730	170979	0522	36
AL7910	16	P23	40578	67352	170979	1056	67
AL7910	17	50A	4045	6734	170979	1607	77
AL7910	18	151	4022	6740	170979	1903	550
AL7910	19	P22	40223	68291	170979	2304	102
AL7910	20	P21	4059	6859	180979	0538	78
AL7910	21	338	40315	68594	180979	1110	73
AL7910	22	115	4005	6901	180979	1437	165
AL7910	23	15A	4004	6911	180979	1620	124
AL7910	24	192	40022	70210	180979	2226	190
AL7910	25	P20	4015	7048	190979	0230	117
AL7910	26	190	4021	7016	190979	0724	80
AL7910	27	089	40414	70098	190979	1117	48
AL7910	28	75A	4118	7120	200979	1615	31
AL7910	29	P18	4114	7149	200979	1849	27
AL7910	30	P19	4041	7121	210979	0046	57
AL7910	31	066	40191	72429	210979	0847	51
AL7910	32	P02	40254	73118	210979	1142	33
AL7910	33	16A	4024	7344	210979	1621	27
AL7910	34	16B	4025	7346	210979	1757	31
AL7910	35	16C	40252	73563	210979	2009	13
AL7910	36	16E	40236	73517	210979	2156	20
AL7910	37	P15	4015	7339	220979	0030	27
AL7910	38	185	3955	7355	220979	0439	18
AL7910	39	P17	39369	73540	220979	0750	26
AL7910	40	17A	39413	73402	220979	1128	31
AL7910	42	058	3952	7305	220979	1654	68
AL7910	43	060	3928	7233	220979	2138	106
AL7910	44	P13	3920	7258	230979	0126	70
AL7910	45	029	3850	7503	230979	1839	22
AL7910	46	DBA	38563	75107	240979	1146	14
AL7910	47	BA1	38565	75092	240979	1635	14
AL7910	48	P10	3843	7445	250979	1618	17
AL7910	49	184	3834	7453	250979	1740	19
AL7910	50	032	38141	74322	250979	2040	42
AL7910	51	028	38099	74538	250979	2255	24
AL7910	52	023	3749	7517	260979	0240	13
AL7910	53	025	3731	7439	260979	0705	57
AL7910	54	034	37510	74124	260979	1136	97
AL7910	55	P09	3821	7416	260979	1636	46
AL7910	56	P11	38448	74031	260979	2012	48
AL7910	57	P12	38458	73509	260979	0035	66
AL7910	58	046	3839	7309	270979	0433	146
AL7910	60	A50	39248	73042	270979	1136	62
AL7910	61	08A	3951	7217	270979	1035	82

CRUISE	CONSEC	CRUISE		DATE	SAMPLE	BOTTUM	
CODE	STA #	STA #	LAT.	LONG.	D.M.Y.	TIME	DEPTH(M)
KE7910	1	1	4024	7312	101079	0100	32
KE7910	2	2	4015	7340	111079	0500	28
KE7910	3	3	3945	7330	111079	1000	42
KE7910	4	4	3920	7259	111079	1500	72
KE7910	5	5	3846	7330	111079	2223	68
KE7910	6	8	3640	7444	121079	1433	84
KE7910	7	9	3647	7510	121079	1949	59
KE7910	8	10	3634	7548	131079	0552	16
KE7910	9	11	3652	7554	131079	0900	15
KE7910	10	12	3655	7558	131079	1246	14
KE7910	11	13	3821	7415	151079	0545	51
KE7910	14	15	3843	7445	151079	2042	16
KE7910	15	6	3844	7402	151079	0216	48
KE7910	16	16	3937	7354	161079	1045	27
KE7910	20	17	4025	7346	171079	0653	32
KE7910	22	19	4055	7341	171079	1430	15
KE7910	27	23	4106	7300	171079	2056	23
KE7910	33	31	4118	7205	181079	0654	12

KE7911	4	4	4021	6828	251079	1331
KE7911	5	5	4059	6733	251079	1939
KE7911	6	6	4058	6859	261079	1106
KE7911	8	8	4150	6930	271079	0159
KE7911	9	9	4300	7000	271079	1116
KE7911	11	11	4320	6857	271079	2302
KE7911	12	12	4445	6700	281079	1216
KE7911	14	14	4155	6655	291079	1025
KE7911	15	15	4021	7048	301079	2003

CRUISE	CUNSEC	CRUISE		DATE	SAMPLE	BOTTOM	
CODE	STA #	STA #	LAT.	LNG.	D.M.Y.	TIME	DEPTH(M)
DL7911	1	1	4120	6906	041279	0020	157
DL7911	2	2	4151	6930	041279	1000	188
DL7911	3	3	4206	7020	041279	1740	59
DL7911	4	4	4219	7036	041279	2058	62
DL7911	5	5	4248	7032	051279	0133	106
DL7911	6	6	4300	7001	051279	0505	123
DL7911	7	7	4324	7012	051279	1115	101
DL7911	8	8	4350	6905	051279	1715	69
DL7911	9	9	4314	6758	061279	0529	212
DL7911	10	10	4218	6742	061279	1437	230
DL7911	11	11	4200	6700	061279	2008	66
DL7911	12	12	4130	6730	071279	0327	46
DL7911	13	13	4124	7125	091279	1104	27
DL7911	14	14	41135	71511	091279	1903	46
DL7911	15	15	4104	7142	091279	2305	49
DL7911	16	16	4041	7122	101279	0651	57
DL7911	17	17	4030	7013	101279	1449	64
DL7911	18	18	4013	7018	101279	1659	101
DL7911	19	19	3951	7025	101279	2008	823
DL7911	20	20	4015	7049	101279	2347	119
DL7911	21	21	39576	72050	111279	0819	80
DL7911	22	22	4026	7220	111279	1151	53
DL7911	23	23	4048	7228	111279	1430	24
DL7911	24	24	40256	73111	111279	2010	30
DL7911	25	25	4025	7356	121279	1710	9
DL7911	26	26	4025	7352	121279	1749	16
DL7911	28	28	4025	7344	121279	2150	20
DL7911	29	29	4013	7357	121279	2353	17
DL7911	30	30	4003	7326	131279	0253	71
DL7911	31	31	3955	7356	131279	0804	18
DL7911	32	32	3936	7354	131279	1009	24
DL7911	33	33	3918	7400	131279	1443	27
DL7911	34	34	3900	7430	131279	1752	19
DL7911	35	35	3845	7501	131279	2058	20
DL7911	36	36	3831	7458	141279	0027	14
DL7911	37	37	3810	7454	141279	0240	20
DL7911	38	38	3748	7517	141279	0649	17
DL7911	39	39	3715	7540	141279	1030	11
DL7911	40	40	3652	7553	141279	1316	150
DL7911	41	41	3634	7543	141279	1602	22
DL7911	42	42	3551	7529	141279	2154	15
DL7911	43	43	3600	7500	151279	0228	36
DL7911	44	44	3641	7445	151279	0830	81
DL7911	45	45	3648	7512	151279	1312	35
DL7911	46	46	3948	7432	151279	2137	51
DL7911	47	47	3741	7403	161279	0204	1270
DL7911	48	48	3820	7416	161279	0736	55
DL7911	49	49	3845	7402	161279	1033	44
DL7911	50	50	3846	7331	161279	1554	64
DL7911	51	51	3912	7339	161279	2039	40
DL7911	52	52	3920	7259	171279	0021	64

CRUISE	CONSEC	CRUISE		DATE	SAMPLE	BOTTOM	
CODE	STA #	STA #	LAT.	LONG.	U,M,Y,	TIME	DEPTH(M)
KE8004	1	1	36540	75570	240380	1343	12
KE8004	2	2	36530	75540	240380	1614	16
KE8004	3	3	36480	75110	240380	2057	34
KE8004	4	4	36340	75470	250380	0128	15
KE8004	5	5	36140	75310	250380	0532	26
KE8004	6	6	36400	74450	250380	1250	82
KE8004	7	7	37140	75400	250380	2350	12
KE8004	8	8	37470	75160	260380	0540	21
KE8004	9	9	37480	74470	260380	1041	39
KE8004	10	10	37540	74250	260380	1316	58
KE8004	11	11	38100	74540	260380	1821	20
KE8004	12	12	38200	74160	260380	2217	55
KE8004	13	13	38300	74580	270380	0240	15
KE8004	14	14	38560	75100	270380	1602	34
KE8004	15	15	38450	75010	270380	1925	20
KE8004	16	16	38460	73310	280380	0746	67
KE8004	17	17	38430	74020	280380	1743	49
KE8004	18	18	39190	74000	280380	2218	28
KE8004	19	19	39350	73540	290380	0119	27
KE8004	20	20	39550	73560	290380	0540	22
KE8004	21	21	40030	73260	290380	0854	55
KE8004	22	22	40130	73430	290380	1355	30
KE8004	23	23	40250	73450	290380	1613	30
KE8004	24	24	40250	73520	290380	1725	26
KE8004	25	25	40290	73590	290380	1905	11
KE8004	26	26	40250	73480	290380	2126	35
KE8004	27	27	39480	72590	300380	0523	75
KE8004	28	28	40250	73110	300380	1102	33
KE8004	29	29	40480	72280	300380	1634	25
KE8004	30	30	40260	72200	300380	1933	56
KE8004	31	31	41030	70330	310380	0823	46
KE8004	32	32	41100	71000	310380	1125	37
KE8004	34	34	40300	70130	020480	2219	65
KE8004	36	36	40130	70170	030480	0150	97
KE8004	38	38	39510	70250	030480	0501	768
KE8004	40	40	40150	70480	030480	1056	121
KE8004	41	41	40300	69000	030480	2008	74
KE8004	42	42	41020	69220	040480	0125	46
KE8004	43	43	41200	69070	040480	0415	155
KE8004	44	44	41490	69450	050480	0237	122
KE8004	45	45	42060	70200	050480	0826	61
KE8004	46	46	42180	70480	050480	1548	24
KE8004	47	47	42460	69180	060480	0020	70
KE8004	48	48	43210	69030	060480	0738	157
KE8004	49	49	43140	67580	060480	1624	204
KE8004	50	50	42460	66580	060480	2308	168
KE8004	51	51	42000	66590	070480	0652	63
KE8004	52	52	41310	67300	070480	1254	43
KE8004	53	53	40580	67330	070480	1928	69
KE8004	54	54	40300	67590	080480	0053	113
KE8004	55	55	40410	71200	080480	1812	59
KE8004	56	56	41240	71240	090480	0036	31
KE8004	57	57	41040	71420	090480	0431	45
KE8004	58	58	39570	72050	090480	1236	38
KE8004	59	59	39370	72370	090480	1713	78

Table 2. Hydrographic data per sampling depth (temperature, salinity, sigma-t, dissolved oxygen, percent D.O. saturation, pH and alkalinity) for Ocean Pulse stations where hydrographic data was collected.

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	BAL 0/00	SIGMA-T	O.O. ML/L	X SAT. OXYGEN	IN SITU RH %	TOTAL ALK MEQ/L
RE7804	1	1.0	10.70	25.630	19.67	4.95	74.69		
RE7804	1	10.0	7.60	25.630	20.15	4.90	68.89		
RE7804	1	16.0	7.80	31.600	24.78	4.73	69.87		
RE7804	2	1.0	10.40	28.040	21.58	4.80	73.10		
RE7804	2	10.0	6.80	32.200	25.40	4.80	69.14		
RE7804	2	11.0	6.80	32.370	25.53	4.85	69.93		
RE7804	3	1.0	10.60	32.480	24.97	4.70	73.87		
RE7804	3	10.0	7.30	32.610	25.65	4.66	68.10		
RE7804	3	30.0	6.00	33.200	26.00	4.95	73.75		
RE7804	4	1.0	6.90	33.430	26.03	5.24	79.88		
RE7804	4	10.0	6.50	33.350	26.04	5.29	79.89		
RE7804	4	30.0	6.70	33.410	26.36	5.19	75.11		
RE7804	4	90.0	6.70	33.480	26.42	4.36	63.18		
RE7804	5	1.0	6.30	33.260	26.00	4.75	71.35		
RE7804	5	10.0	7.70	33.280	26.11	5.00	74.01		
RE7804	5	30.0	6.65	33.290	26.20	4.95	71.52		
RE7804	5	44.0	6.90	33.360	26.30	4.80	69.83		
RE7804	6	1.0	7.90	31.950	25.04	4.80	70.83		
RE7804	6	10.0	9.15	31.950	24.84	4.80	72.88		
RE7804	6	21.0	6.80	31.980	25.13	4.66	67.03		
RE7804	7	1.0	6.00	33.170	25.98	4.90	73.01		
RE7804	7	10.0	8.00	33.160	25.97	4.80	71.55		
RE7804	7	30.0	6.75	33.210	26.20	5.10	73.68		
RE7804	7	83.0	6.95	33.230	26.19	5.05	73.43		
RE7804	8	1.0	7.70	32.950	25.86	5.05	74.58		
RE7804	8	10.0	6.50	32.950	26.03	5.24	75.34		
RE7804	8	30.0	5.40	32.940	26.16	5.39	75.44		
RE7804	8	69.0	5.50	33.050	26.23	4.81	63.29		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATION #	SAMPLE DEPTH(M)	TEMP (C)	SAL (PPM)	SIGMAR	D.O. ML/L	OXYGEN % SAT.	IN SITU PH	TOTAL ALK HCO3/L
RE7804	9	1.0	22.720	32.720	25.83	5.37	77.21		
RE7804	9	10.0	22.720	32.720	25.97	5.05	70.71		
RE7804	9	20.0	22.720	32.720	26.09	5.29	72.36		
RE7804	9	30.0	22.720	32.700	26.21	4.51	62.01		
RE7804	9	40.0	22.720	32.680	26.33	4.00	70.60		
RE7804	10	1.0	22.510	32.510	25.57	5.11	74.60		
RE7804	10	10.0	22.500	32.500	25.80	5.08	70.60		
RE7804	10	20.0	22.500	32.620	26.03	5.00	70.60		
RE7804	10	30.0	22.500	32.620	26.03	5.00	70.60		
RE7804	11	1.0	29.980	32.355	23.55	5.10	73.79		
RE7804	11	10.0	29.980	32.030	23.97	5.05	67.63		
RE7804	11	20.0	29.980	32.410	25.85	4.63	65.74		
RE7804	11	30.0	29.980	32.410	25.85	4.63	65.74		
RE7804	12	1.0	31.640	31.640	24.86	5.00	72.90		
RE7804	12	10.0	31.640	31.640	25.17	5.00	70.52		
RE7804	12	20.0	31.640	32.360	25.56	4.95	70.64		
RE7804	12	30.0	31.640	32.360	25.56	4.95	70.64		
RE7804	13	1.0	31.630	31.630	25.02	5.00	72.61		
RE7804	13	10.0	31.630	31.630	25.38	5.00	68.98		
RE7804	13	20.0	31.630	32.190	25.61	4.94	64.73		
RE7804	13	30.0	31.630	32.190	25.61	4.94	64.73		
RE7804	14	1.0	31.630	31.630	24.13	5.08	72.19		
RE7804	14	10.0	31.630	31.630	24.13	5.08	65.99		
RE7804	14	20.0	31.630	32.310	25.67	4.64	63.09		
RE7804	14	30.0	31.630	32.310	25.67	4.64	63.09		
RE7804	15	1.0	31.630	31.630	24.15	5.08	72.36		
RE7804	15	10.0	31.630	31.630	24.15	5.08	65.99		
RE7804	15	20.0	31.630	32.310	25.67	4.64	63.09		
RE7804	15	30.0	31.630	32.310	25.67	4.64	63.09		
RE7804	16	1.0	31.630	31.630	24.15	5.08	72.36		
RE7804	16	10.0	31.630	31.630	24.15	5.08	65.99		
RE7804	16	20.0	31.630	32.310	25.67	4.64	63.09		
RE7804	16	30.0	31.630	32.310	25.67	4.64	63.09		
RE7804	17	1.0	31.630	31.630	24.15	5.08	72.36		
RE7804	17	10.0	31.630	31.630	24.15	5.08	65.99		
RE7804	17	20.0	31.630	32.310	25.67	4.64	63.09		
RE7804	17	30.0	31.630	32.310	25.67	4.64	63.09		
RE7804	18	1.0	31.630	31.630	24.15	5.08	72.36		
RE7804	18	10.0	31.630	31.630	24.15	5.08	65.99		
RE7804	18	20.0	31.630	32.310	25.67	4.64	63.09		
RE7804	18	30.0	31.630	32.310	25.67	4.64	63.09		

OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	SAMPLE DEPTH(m)	TEMP (°C)	SAL 0/00	IN SITU TOTALALK MEQ/L		X-SAT. OXYGEN	SIGMA-T ML/L	D <sub>O</sub> ML/L	PH
				X-SAT.	TOTALALK				
RE7804	18	5.05	32.350	35.73	19	71.70	35.73	19	71.70
RE7804	18	3.10	32.350	35.92	10	67.57	35.92	10	67.57
RE7804	18	3.65	32.1570	36.05	05	59.64	36.05	05	59.64
RE7804	10	5.05	32.770	36.00	17	68.17	36.00	17	68.17
RE7804	10	3.10	32.780	36.05	00	69.38	36.05	00	69.38
RE7804	10	3.65	32.020	36.15	05	67.36	36.15	05	67.36
RE7804	0	5.20	32.770	36.05	05	69.18	36.05	05	69.18
RE7804	0	5.05	32.780	36.07	00	69.97	36.07	00	69.97
RE7804	0	3.10	32.020	36.15	05	69.99	36.15	05	69.99
RE7804	0	3.65	32.020	36.15	05	72.91	36.15	05	72.91
RE7804	19	5.05	32.350	35.69	18	69.18	35.69	18	69.18
RE7804	19	3.10	32.350	35.69	10	69.97	35.69	10	69.97
RE7804	19	3.65	32.020	35.69	05	69.99	35.69	05	69.99
RE7804	119	0.00	32.770	36.00	00	69.46	36.00	00	69.46
RE7804	119	0.00	32.780	36.00	00	69.46	36.00	00	69.46
RE7804	119	0.00	32.020	36.00	00	69.46	36.00	00	69.46
RE7804	119	0.00	32.020	36.00	00	69.46	36.00	00	69.46
RE7804	20	5.05	32.350	35.69	14	71.14	35.69	14	71.14
RE7804	20	3.10	32.350	35.69	10	71.14	35.69	10	71.14
RE7804	20	3.65	32.020	35.69	05	71.14	35.69	05	71.14
RE7804	20	0	32.770	36.00	00	71.14	36.00	00	71.14
RE7804	21	5.05	32.350	35.69	14	71.14	35.69	14	71.14
RE7804	21	3.10	32.350	35.69	10	71.14	35.69	10	71.14
RE7804	21	3.65	32.020	35.69	05	71.14	35.69	05	71.14
RE7804	21	0	32.770	36.00	00	71.14	36.00	00	71.14
RE7804	22	5.05	32.350	35.69	14	71.14	35.69	14	71.14
RE7804	22	3.10	32.350	35.69	10	71.14	35.69	10	71.14
RE7804	22	3.65	32.020	35.69	05	71.14	35.69	05	71.14
RE7804	22	0	32.770	36.00	00	71.14	36.00	00	71.14
RE7804	23	5.05	32.350	35.69	14	71.14	35.69	14	71.14
RE7804	23	3.10	32.350	35.69	10	71.14	35.69	10	71.14
RE7804	23	3.65	32.020	35.69	05	71.14	35.69	05	71.14
RE7804	23	0	32.770	36.00	00	71.14	36.00	00	71.14
RE7804	24	5.05	32.350	35.69	14	71.14	35.69	14	71.14
RE7804	24	3.10	32.350	35.69	10	71.14	35.69	10	71.14
RE7804	24	3.65	32.020	35.69	05	71.14	35.69	05	71.14
RE7804	24	0	32.770	36.00	00	71.14	36.00	00	71.14
RE7804	25	5.05	32.350	35.69	14	71.14	35.69	14	71.14
RE7804	25	3.10	32.350	35.69	10	71.14	35.69	10	71.14
RE7804	25	3.65	32.020	35.69	05	71.14	35.69	05	71.14
RE7804	25	0	32.770	36.00	00	71.14	36.00	00	71.14

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	SAMPLE STATION	TEMP (°C)	SAL 0/00	SIGMARPT	D.O. ML/L	X-SAT <sup>a</sup> OXYGEN	IN SITU TOTAL ALK MEG/L
RE7804	325	30.0	32.05	32.210	25.73	5.44	73.39
RE7804	325	30.0	32.45	32.360	25.92	4.95	69.76
RE7804	326	1.0	5.50	32.330	25.67	5.15	71.99
RE7804	326	10.0	5.20	32.430	25.78	5.24	72.76
RE7804	326	30.0	5.40	32.370	25.71	5.34	73.11
RE7804	326	187.0	4.90	32.740	26.86	5.38	45.52
RE7804	327	1.0	4.90	32.630	25.97	5.34	73.70
RE7804	327	10.0	4.95	32.620	25.96	5.19	71.66
RE7804	327	30.0	4.95	32.610	25.95	5.19	71.65
RE7804	327	63.0	4.95	32.600	25.94	5.19	71.73
RE7804	328	1.0	4.90	32.370	25.77	5.29	72.90
RE7804	328	10.0	4.75	32.360	25.77	5.19	71.99
RE7804	328	30.0	4.75	32.350	25.77	5.15	70.71
RE7804	328	187.0	4.75	32.350	25.77	5.15	70.71
AL7812	1	1.0	4.75	31.660	21.86	5.39	69.64
AL7812	1	10.0	4.75	31.660	21.84	5.39	69.63
AL7812	1	30.0	4.75	31.660	21.84	5.39	69.63
AL7812	1	63.0	4.75	31.660	21.84	5.39	69.63
AL7812	2	1.0	4.90	31.290	20.87	5.81	109.63
AL7812	2	10.0	4.90	31.350	21.06	6.01	111.11
AL7812	2	30.0	4.90	31.350	21.04	6.01	111.11
AL7812	2	63.0	4.90	31.350	21.04	6.01	111.11
AL7812	3	1.0	4.90	31.90	21.51	4.97	60.00
AL7812	3	10.0	4.90	31.90	21.79	5.39	63.16
AL7812	3	30.0	4.90	31.90	24.40	6.47	63.16
AL7812	3	63.0	4.90	31.90	24.47	6.47	63.16
AL7812	4	1.0	4.90	31.90	24.96	4.97	77.08
AL7812	4	10.0	4.90	31.90	24.96	4.97	77.08
AL7812	4	30.0	4.90	31.90	24.96	4.97	77.08
AL7812	4	63.0	4.90	31.90	24.96	4.97	77.08

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATE #	SAMPLE DEPTH (CM)	TEMP (C)	SAH 0/00	SIGMANT 0/00	D.O. HL/L	X SAT. OXYGEN	IN SITU PH	TOTALALK MEQ/L
AL7812	3	71.0	7.15	32.750	25.770	5.04	73.43		
AL7812	4	1.0	21.50	31.060	20.34	5.53	107.09		
AL7812	4	27.0	21.40			5.32			
AL7812	4	57.0	11.45	32.120	24.51	5.32	98.04		
AL7812	4	61.0							
AL7812	4	1.0	19.40	31.060	21.52				
AL7812	4	16.0	19.40						
AL7812	5	1.0	20.00	33.030	22.31	5.32	101.93	8.190	
AL7812	5	22.0	20.05	33.00	22.22	5.32	101.95		
AL7812	5	22.5	18.90						
AL7812	5	40.0	6.00	32.910	25.78	6.30	93.71	8.245	
AL7812	5	48.0	7.70	32.780	25.72	5.25	77.49		
AL7812	7	1.0	20.40	32.390	21.34	5.25	100.66		
AL7812	7	20.0	20.00	32.370	21.55	5.25	99.69		
AL7812	7	26.0	6.45	32.350	25.41	6.18	77.69		
AL7812	7	26.5	4.45						
AL7812	7	40.0	6.20	32.310	25.43	5.04	75.12		
AL7812	8	1.0	21.00	32.410	21.00				
AL7812	8	19.0	20.00						
AL7812	8	22.0	6.40	32.380	25.46	6.11	76.55		
AL7812	8	26.0	6.05	32.340	25.46	6.10	77.01		
AL7812	9	1.0		32.410					
AL7812	9	24.0							
AL7812	10	1.0	19.0	21.90					
AL7812	10	19.0	15.00						
AL7812	11	1.0	24.60						
AL7812	11	22.0	24.95	32.450	18.34				
AL7812	11	45.0	6.00						
AL7812	11	60.0	11.70	31.920	25.52	5.25	85.11		

## OCEAN PULSE HYDROGRAPHIC DATA LOG

CRUISE CODE	CONSEC STATION #	SAMPLE TEMP (C)	PSAL	BIGNIFY	D.O.	X-SAT OXYGEN	IN SITU TOTAL ALK (MEG/L)
AL7812	12	23.25	0.700				
AL7812	13	22.35					
AL7812	14	21.50					
AL7812	15	20.60					
AL7812	16	19.70					
AL7812	17	18.80					
AL7812	18	17.90					
AL7812	19	17.00					
AL7812	20	16.10					
AL7812	21	15.20					
AL7812	22	14.30					
AL7812	23	13.40					
AL7812	24	12.50					
AL7812	25	11.60					
AL7812	26	10.70					
AL7812	27	9.80					
AL7812	28	8.90					
AL7812	29	8.00					
AL7812	30	7.10					
AL7812	31	6.20					
AL7812	32	5.30					
AL7812	33	4.40					
AL7812	34	3.50					
AL7812	35	2.60					
AL7812	36	1.70					
AL7812	37	0.80					
AL7812	38	-0.90					
AL7812	39	-1.80					
AL7812	40	-2.70					
AL7812	41	-3.60					
AL7812	42	-4.50					
AL7812	43	-5.40					
AL7812	44	-6.30					
AL7812	45	-7.20					
AL7812	46	-8.10					
AL7812	47	-9.00					
AL7812	48	-9.90					
AL7812	49	-10.80					
AL7812	50	-11.70					
AL7812	51	-12.60					
AL7812	52	-13.50					
AL7812	53	-14.40					
AL7812	54	-15.30					
AL7812	55	-16.20					
AL7812	56	-17.10					
AL7812	57	-18.00					
AL7812	58	-18.90					
AL7812	59	-19.80					
AL7812	60	-20.70					
AL7812	61	-21.60					
AL7812	62	-22.50					
AL7812	63	-23.40					
AL7812	64	-24.30					
AL7812	65	-25.20					
AL7812	66	-26.10					
AL7812	67	-27.00					
AL7812	68	-27.90					
AL7812	69	-28.80					
AL7812	70	-29.70					
AL7812	71	-30.60					
AL7812	72	-31.50					
AL7812	73	-32.40					
AL7812	74	-33.30					
AL7812	75	-34.20					
AL7812	76	-35.10					
AL7812	77	-36.00					
AL7812	78	-36.90					
AL7812	79	-37.80					
AL7812	80	-38.70					
AL7812	81	-39.60					
AL7812	82	-40.50					
AL7812	83	-41.40					
AL7812	84	-42.30					
AL7812	85	-43.20					
AL7812	86	-44.10					
AL7812	87	-45.00					
AL7812	88	-45.90					
AL7812	89	-46.80					
AL7812	90	-47.70					
AL7812	91	-48.60					
AL7812	92	-49.50					
AL7812	93	-50.40					
AL7812	94	-51.30					
AL7812	95	-52.20					
AL7812	96	-53.10					
AL7812	97	-54.00					
AL7812	98	-54.90					
AL7812	99	-55.80					
AL7812	100	-56.70					
AL7812	101	-57.60					
AL7812	102	-58.50					
AL7812	103	-59.40					
AL7812	104	-60.30					
AL7812	105	-61.20					
AL7812	106	-62.10					
AL7812	107	-63.00					
AL7812	108	-63.90					
AL7812	109	-64.80					
AL7812	110	-65.70					
AL7812	111	-66.60					
AL7812	112	-67.50					
AL7812	113	-68.40					
AL7812	114	-69.30					
AL7812	115	-70.20					
AL7812	116	-71.10					
AL7812	117	-72.00					
AL7812	118	-72.90					
AL7812	119	-73.80					
AL7812	120	-74.70					
AL7812	121	-75.60					
AL7812	122	-76.50					
AL7812	123	-77.40					
AL7812	124	-78.30					
AL7812	125	-79.20					
AL7812	126	-80.10					
AL7812	127	-81.00					
AL7812	128	-81.90					
AL7812	129	-82.80					
AL7812	130	-83.70					
AL7812	131	-84.60					
AL7812	132	-85.50					
AL7812	133	-86.40					
AL7812	134	-87.30					
AL7812	135	-88.20					
AL7812	136	-89.10					
AL7812	137	-90.00					
AL7812	138	-90.90					
AL7812	139	-91.80					
AL7812	140	-92.70					
AL7812	141	-93.60					
AL7812	142	-94.50					
AL7812	143	-95.40					
AL7812	144	-96.30					
AL7812	145	-97.20					
AL7812	146	-98.10					
AL7812	147	-99.00					
AL7812	148	-99.90					
AL7812	149	-100.80					
AL7812	150	-101.70					
AL7812	151	-102.60					
AL7812	152	-103.50					
AL7812	153	-104.40					
AL7812	154	-105.30					
AL7812	155	-106.20					
AL7812	156	-107.10					
AL7812	157	-108.00					
AL7812	158	-108.90					
AL7812	159	-109.80					
AL7812	160	-110.70					
AL7812	161	-111.60					
AL7812	162	-112.50					
AL7812	163	-113.40					
AL7812	164	-114.30					
AL7812	165	-115.20					
AL7812	166	-116.10					
AL7812	167	-117.00					
AL7812	168	-117.90					
AL7812	169	-118.80					
AL7812	170	-119.70					
AL7812	171	-120.60					
AL7812	172	-121.50					
AL7812	173	-122.40					
AL7812	174	-123.30					
AL7812	175	-124.20					
AL7812	176	-125.10					
AL7812	177	-126.00					
AL7812	178	-126.90					
AL7812	179	-127.80					
AL7812	180	-128.70					
AL7812	181	-129.60					
AL7812	182	-130.50					
AL7812	183	-131.40					
AL7812	184	-132.30					
AL7812	185	-133.20					
AL7812	186	-134.10					
AL7812	187	-135.00					
AL7812	188	-135.90					
AL7812	189	-136.80					
AL7812	190	-137.70					
AL7812	191	-138.60					
AL7812	192	-139.50					
AL7812	193	-140.40					
AL7812	194	-141.30					
AL7812	195	-142.20					
AL7812	196	-143.10					
AL7812	197	-144.00					
AL7812	198	-144.90					
AL7812	199	-145.80					
AL7812	200	-146.70					
AL7812	201	-147.60					
AL7812	202	-148.50					
AL7812	203	-149.40					
AL7812	204	-150.30					
AL7812	205	-151.20					
AL7812	206	-152.10					
AL7812	207	-153.00					
AL7812	208	-153.90					
AL7812	209	-154.80					
AL7812	210	-155.70					
AL7812	211	-156.60					
AL7812	212	-157.50					
AL7812	213	-158.40					
AL7812	214	-159.30					
AL7812	215	-160.20					
AL7812	216	-161.10					
AL7812	217	-162.00					
AL7812	218	-162.90					
AL7812	219	-163.80					
AL7812	220	-164.70					
AL7812	221	-165.60					
AL7812	222	-166.50					
AL7812	223	-167.40					

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATION #	SAMPLE DEPTH (CM)	TEMP (C)	WATER O/00	SIGNALANT	D.O. ML/L	% SAT. OXYGEN	IN SITU PH	TOTAL ALK NEQ/L
AL7812	29	270.0	7.40	33.460	26.30	4.90	72.15		
AL7812	30	270.0	7.40	33.460	24.64	24.52	24.64	2.243	2.274
AL7812	31	270.0	7.40	33.460	24.62	24.50	24.67	2.299	2.210
AL7812	32	270.0	7.40	33.460	24.58	24.46	24.67		
AL7812	33	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	34	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	35	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	36	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	37	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	38	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	39	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	40	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	41	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	42	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	43	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	44	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	45	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	46	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	47	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	48	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	49	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	50	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	51	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	52	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	53	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	54	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	55	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	56	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	57	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	58	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	59	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	60	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	61	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	62	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	63	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	64	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	65	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	66	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	67	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	68	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	69	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	70	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	71	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	72	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	73	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	74	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	75	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	76	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	77	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	78	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	79	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	80	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	81	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	82	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	83	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	84	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	85	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	86	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	87	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	88	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	89	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	90	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	91	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	92	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	93	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	94	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	95	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	96	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	97	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	98	270.0	7.40	33.460	24.67	24.54	24.67		
AL7812	99	270.0	7.40	33.460	24.75	24.62	24.75		
AL7812	100	270.0	7.40	33.460	24.67	24.54	24.67		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	SALT 0/00	SIGMA-T	D.O. ML/L	X-SAT. OXYGEN	IN SITU PH	TOTAL ALK MEG/L
AL7907	22	46.0	16.60	35.540	25.44	5.60	101.70		
AL7907	22	59.0	14.50	35.714	26.38				
AL7907	22	79.0	14.20	35.724	26.48	3.92	67.91		
AL7907	22	100.0	13.30	35.706	26.76	3.71	63.07		
AL7907	22	200.0	10.80	35.400	27.18	3.82	61.81		
AL7907	22	300.0		35.146		3.36			
AL7907	22	500.0		35.027		4.90			
AL7907	22	600.0		35.047					
AL7907	22	800.0		35.025					
AL7907	23	1.0	23.00	33.907	20.57	5.32	108.00		
AL7907	23	5.0	22.20						
AL7907	23	10.0	20.50	34.122	22.43				
AL7907	23	15.0	19.50						
AL7907	23	20.0	14.90	34.366	25.23	5.74	100.02		
AL7907	23	25.0	12.40						
AL7907	23	30.0	11.90	34.167	25.97	6.51	106.43		
AL7907	23	35.0	12.30						
AL7907	23	50.0	14.50	35.139	25.95	5.11	86.75		
AL7907	23	75.0	14.20	35.800	26.54				
AL7907	23	100.0	13.50	35.694	26.69	4.20	71.70		
AL7907	23	150.0	11.70	35.479	27.02	3.92	64.34		
AL7907	23	190.0	11.00	35.390	27.13	3.36	64.30		
AL7907	24	1.0	24.50	32.941	18.45				
AL7907	24	3.0	23.90			5.04			
AL7907	24	7.0	20.50			5.86			
AL7907	24	12.0	17.80	32.906	23.06	6.93	126.87		
AL7907	24	17.0	10.50						
AL7907	24	22.0	7.00	32.909	25.93	6.51	94.63		
AL7907	24	27.0	6.30						
AL7907	24	32.0	5.70	33.007	26.18	5.88	82.92		
AL7907	24	52.0	5.70	33.166	26.30	6.89	90.32		
AL7907	24	62.0	5.70	33.170	26.30				
AL7907	25	1.0	24.00	31.365	18.30	5.04	102.63		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	SIGMA-T	O.O. MC/L	X-SAT, OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
AL7907	26	5.0	21.40						
AL7907	26	10.0	19.80	32.002	21.41	5.83	104.60		
AL7907	25	15.0	19.30						
AL7907	25	20.0	19.40	32.609	25.30				
AL7907	25	25.0	17.50						
AL7907	26	30.0	15.20	32.722	26.01	6.02	83.72		
AL7907	26	35.0	15.10						
AL7907	25	40.0	15.10	32.763	26.05	5.95	82.57		
AL7907	26	45.0	15.00	32.830	26.12	5.29	72.72		
AL7907	26	50.0	23.00	33.119	20.10	5.83	111.74		
AL7907	26	55.0	23.80						
AL7907	26	10.0	24.70	33.174	19.82	5.04	106.28		
AL7907	26	15.0	22.90						
AL7907	26	20.0	21.60	35.052	23.17	5.01	116.17		
AL7907	26	25.0	17.80						
AL7907	26	30.0	14.50	34.166	25.22	4.90	84.59		
AL7907	26	35.0	11.80						
AL7907	26	40.0	11.30	34.783	26.59	4.20	68.05		
AL7907	26	45.0	12.40	35.216	26.64	3.71	61.71		
AL7907	26	50.0	12.30	35.451	26.88				
AL7907	26	100.0	11.60	35.460	27.06	3.57	58.34		
AL7907	27	5.0	22.50	33.470	20.68	5.10	102.39	8.212	12.346
AL7907	27	10.0	23.10						
AL7907	27	15.0	23.10						
AL7907	27	20.0	21.40						
AL7907	27	25.0	15.50	33.931	24.70	6.56	115.76	8.290	12.341
AL7907	27	30.0	10.80	33.894	26.02	6.86	104.87		
AL7907	27	35.0	8.70	33.688	26.27				
AL7907	27	40.0	10.00	34.163	26.39	5.51	86.42		
AL7907	27	45.0	10.90	34.688	26.61	4.78	76.30		
AL7907	27	50.0	11.10	35.375	27.09	3.95	63.93		
AL7907	27	100.0	10.70	35.377	27.16	3.22	51.69		
AL7907	28	5.0	22.50	32.967	20.37	5.57	111.47	8.179	12.326

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	PAL 0/00	SIGMA-T	D.O. ML/L	% SAT. OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
AL7907	34	16.0	23.20	35.516	21.36	5.15	105.98		
AL7907	34	20.0	22.60	35.582	21.89				
AL7907	34	25.0	22.60	35.572	21.88	5.03	102.43		
AL7907	34	29.0	22.50	35.632	22.00				
AL7907	34	41.0	19.90	35.614	23.93	5.22	101.24		
AL7907	34	61.0	16.30	35.813	25.76				
AL7907	34	82.0	14.90	35.767	26.27	3.82	67.18		
AL7907	34	164.0	12.70	35.596	26.89	3.06	51.68		
AL7907	34	246.0	11.30	35.355	27.03	3.06	50.06		
AL7907	34	410.0		35.062		3.06			
AL7907	34	656.0		34.995		5.22			
AL7907	35	1.0	25.00	35.525	19.71	4.69	99.65	8.220	12.421
AL7907	35	2.0	24.60						
AL7907	35	6.0	24.60						
AL7907	35	16.0	21.40	35.527	22.75	4.76	94.75		
AL7907	35	30.0	18.80	35.664	27.79	5.46	84.20	8.403	12.431
AL7907	35	42.0	19.80	35.708	27.79				
AL7907	35	42.0	19.50	34.056	26.41	5.32	82.40		
AL7907	35	75.0	12.80	34.246	25.95	5.10	85.28		
AL7907	35	100.0	11.10	33.866	27.02	4.20	67.97		
AL7907	35	157.0		34.117		5.32			
AL7907	36	1.0	23.00	33.238	20.17	5.39	108.98	8.174	12.344
AL7907	36	2.0	22.00						
AL7907	36	5.0	21.70						
AL7907	36	11.0	21.00	33.161	21.49	5.74	111.01		
AL7907	36	17.0						8.199	12.362
AL7907	36	18.0	18.90	33.320	22.78				
AL7907	36	26.0	13.30	33.023	24.72	6.86	114.70		
AL7907	36	35.0	10.10	33.050	25.51	6.23	97.25		
AL7907	36	50.0	8.50	33.050	25.81	6.16	92.77		
AL7907	36	68.0	8.50	33.050	25.81	6.30	94.06		
AL7907	37	1.0	15.00	32.677	23.94	6.79	117.34		
AL7907	37	5.0	13.50						

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE-HYDROGRAPHIC DATA LOGS

OCEAN PULSE-HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOG

CRUISE CODE	CONSEC SAMPLE	TEMP (C)	BAL 0/00	SIGMA-T	D.O. ML/L	X-SAT:	IN SITU TOTAL ALK	pH	MEG/L
AL7907	46	16.0	32.466	23.24					
AL7907	46	15.9							
AL7907	46	15.8							
AL7907	46	15.7							
AL7907	46	15.6							
AL7907	46	15.5							
AL7907	46	15.4							
AL7907	46	15.3							
AL7907	46	15.2							
AL7907	46	15.1							
AL7907	46	15.0							
AL7907	46	14.9							
AL7907	46	14.8							
AL7907	46	14.7							
AL7907	46	14.6							
AL7907	46	14.5							
AL7907	46	14.4							
AL7907	46	14.3							
AL7907	46	14.2							
AL7907	46	14.1							
AL7907	47	16.0	32.444	23.42	3.74	101.09			
AL7907	47	15.9	32.446	23.47					
AL7907	47	15.8							
AL7907	47	15.7							
AL7907	47	15.6							
AL7907	47	15.5							
AL7907	47	15.4							
AL7907	47	15.3							
AL7907	47	15.2							
AL7907	47	15.1							
AL7907	47	15.0							
AL7907	47	14.9							
AL7907	47	14.8							
AL7907	47	14.7							
AL7907	47	14.6							
AL7907	47	14.5							
AL7907	47	14.4							
AL7907	47	14.3							
AL7907	47	14.2							
AL7907	47	14.1							
AL7907	48	16.0	31.564	20.46	5.52	106.56			
AL7907	48	15.9	31.566	20.56					
AL7907	48	15.8							
AL7907	48	15.7							
AL7907	48	15.6							
AL7907	48	15.5							
AL7907	48	15.4							
AL7907	48	15.3							
AL7907	48	15.2							
AL7907	48	15.1							
AL7907	48	15.0							
AL7907	48	14.9							
AL7907	48	14.8							
AL7907	48	14.7							
AL7907	48	14.6							
AL7907	48	14.5							
AL7907	48	14.4							
AL7907	48	14.3							
AL7907	48	14.2							
AL7907	48	14.1							
AL7907	49	16.0	31.532	20.31	5.39	104.36			
AL7907	49	15.9							
AL7907	49	15.8							
AL7907	49	15.7							
AL7907	49	15.6							
AL7907	49	15.5							
AL7907	49	15.4							
AL7907	49	15.3							
AL7907	49	15.2							
AL7907	49	15.1							
AL7907	49	15.0							
AL7907	49	14.9							
AL7907	49	14.8							
AL7907	49	14.7							
AL7907	49	14.6							
AL7907	49	14.5							
AL7907	49	14.4							
AL7907	49	14.3							
AL7907	49	14.2							
AL7907	49	14.1							

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATION	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	DO/C MUL	X-SAT/ OXYGEN	IN SITU PH	TOTAL ALK MEG/L		
									TIME	DATE
AL7910	7	0000000000	11.10	31.763	24.72	99.62	8.394	2.325		
AL7910	7	0000000000	10.80	32.305	24.66	97.76				
AL7910	7	0000000000	10.50	32.709	25.34	95.04	7.747			
AL7910	7	0000000000	10.20	32.781	25.51	95.60	85.15			
AL7910	7	0000000000	9.90	32.955	26.07	96.11	88.99			
AL7910	7	0000000000	9.60	32.477	22.63	96.03	86.99			
AL7910	7	0000000000	9.30	32.423	22.66	96.09	86.99			
AL7910	7	0000000000	9.00	32.286	22.66	96.02	86.99			
AL7910	7	0000000000	8.70	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	8.40	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	8.10	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	7.80	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	7.50	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	7.20	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	6.90	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	6.60	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	6.30	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	6.00	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	5.70	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	5.40	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	5.10	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	4.80	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	4.50	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	4.20	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	3.90	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	3.60	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	3.30	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	3.00	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	2.70	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	2.40	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	2.10	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	1.80	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	1.50	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	1.20	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	0.90	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	0.60	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	0.30	32.274	22.67	96.02	86.99			
AL7910	7	0000000000	0.00	32.274	22.67	96.02	86.99			

OCEAN PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONDUCTOR	SAMPLE DEPTH (M)	TEMP (C)	SAL (PPT)	IN SITU		TOTAL ALK	
					PH	OXYGEN ML/L	PPM	MEG/L
AL7910	22	0	17.10	35.102	24.90	4.63	86.35	
AL7910	22	100	16.00	35.473	25.60	5.46	97.96	
AL7910	22	100	14.80	35.525	26.31	4.06	71.23	
AL7910	22	100	14.60	35.631	26.31	4.075	64.67	
AL7910	22	100	14.40	35.770	26.31	4.075	66.67	
AL7910	22	100	14.20	35.820	26.31	4.075	67.35	
AL7910	22	100	14.00	35.860	26.31	4.075	67.35	
AL7910	22	100	13.80	35.900	26.31	4.075	67.35	
AL7910	22	100	13.60	35.935	26.31	4.075	67.35	
AL7910	22	100	13.40	35.970	26.31	4.075	67.35	
AL7910	22	100	13.20	36.000	26.31	4.075	67.35	
AL7910	22	100	13.00	36.025	26.31	4.075	67.35	
AL7910	22	100	12.80	36.050	26.31	4.075	67.35	
AL7910	22	100	12.60	36.075	26.31	4.075	67.35	
AL7910	22	100	12.40	36.100	26.31	4.075	67.35	
AL7910	22	100	12.20	36.125	26.31	4.075	67.35	
AL7910	22	100	12.00	36.150	26.31	4.075	67.35	
AL7910	22	100	11.80	36.175	26.31	4.075	67.35	
AL7910	22	100	11.60	36.200	26.31	4.075	67.35	
AL7910	22	100	11.40	36.225	26.31	4.075	67.35	
AL7910	22	100	11.20	36.250	26.31	4.075	67.35	
AL7910	22	100	11.00	36.275	26.31	4.075	67.35	
AL7910	22	100	10.80	36.300	26.31	4.075	67.35	
AL7910	22	100	10.60	36.325	26.31	4.075	67.35	
AL7910	22	100	10.40	36.350	26.31	4.075	67.35	
AL7910	22	100	10.20	36.375	26.31	4.075	67.35	
AL7910	22	100	10.00	36.400	26.31	4.075	67.35	
AL7910	22	100	9.80	36.425	26.31	4.075	67.35	
AL7910	22	100	9.60	36.450	26.31	4.075	67.35	
AL7910	22	100	9.40	36.475	26.31	4.075	67.35	
AL7910	22	100	9.20	36.500	26.31	4.075	67.35	
AL7910	22	100	9.00	36.525	26.31	4.075	67.35	
AL7910	22	100	8.80	36.550	26.31	4.075	67.35	
AL7910	22	100	8.60	36.575	26.31	4.075	67.35	
AL7910	22	100	8.40	36.600	26.31	4.075	67.35	
AL7910	22	100	8.20	36.625	26.31	4.075	67.35	
AL7910	22	100	8.00	36.650	26.31	4.075	67.35	
AL7910	22	100	7.80	36.675	26.31	4.075	67.35	
AL7910	22	100	7.60	36.700	26.31	4.075	67.35	
AL7910	22	100	7.40	36.725	26.31	4.075	67.35	
AL7910	22	100	7.20	36.750	26.31	4.075	67.35	
AL7910	22	100	7.00	36.775	26.31	4.075	67.35	
AL7910	22	100	6.80	36.800	26.31	4.075	67.35	
AL7910	22	100	6.60	36.825	26.31	4.075	67.35	
AL7910	22	100	6.40	36.850	26.31	4.075	67.35	
AL7910	22	100	6.20	36.875	26.31	4.075	67.35	
AL7910	22	100	6.00	36.900	26.31	4.075	67.35	
AL7910	22	100	5.80	36.925	26.31	4.075	67.35	
AL7910	22	100	5.60	36.950	26.31	4.075	67.35	
AL7910	22	100	5.40	36.975	26.31	4.075	67.35	
AL7910	22	100	5.20	37.000	26.31	4.075	67.35	
AL7910	22	100	5.00	37.025	26.31	4.075	67.35	
AL7910	22	100	4.80	37.050	26.31	4.075	67.35	
AL7910	22	100	4.60	37.075	26.31	4.075	67.35	
AL7910	22	100	4.40	37.100	26.31	4.075	67.35	
AL7910	22	100	4.20	37.125	26.31	4.075	67.35	
AL7910	22	100	4.00	37.150	26.31	4.075	67.35	
AL7910	22	100	3.80	37.175	26.31	4.075	67.35	
AL7910	22	100	3.60	37.200	26.31	4.075	67.35	
AL7910	22	100	3.40	37.225	26.31	4.075	67.35	
AL7910	22	100	3.20	37.250	26.31	4.075	67.35	
AL7910	22	100	3.00	37.275	26.31	4.075	67.35	
AL7910	22	100	2.80	37.300	26.31	4.075	67.35	
AL7910	22	100	2.60	37.325	26.31	4.075	67.35	
AL7910	22	100	2.40	37.350	26.31	4.075	67.35	
AL7910	22	100	2.20	37.375	26.31	4.075	67.35	
AL7910	22	100	2.00	37.400	26.31	4.075	67.35	
AL7910	22	100	1.80	37.425	26.31	4.075	67.35	
AL7910	22	100	1.60	37.450	26.31	4.075	67.35	
AL7910	22	100	1.40	37.475	26.31	4.075	67.35	
AL7910	22	100	1.20	37.500	26.31	4.075	67.35	
AL7910	22	100	1.00	37.525	26.31	4.075	67.35	
AL7910	22	100	0.80	37.550	26.31	4.075	67.35	
AL7910	22	100	0.60	37.575	26.31	4.075	67.35	
AL7910	22	100	0.40	37.600	26.31	4.075	67.35	
AL7910	22	100	0.20	37.625	26.31	4.075	67.35	
AL7910	22	100	0.00	37.650	26.31	4.075	67.35	
AL7910	22	100	-0.20	37.675	26.31	4.075	67.35	
AL7910	22	100	-0.40	37.700	26.31	4.075	67.35	
AL7910	22	100	-0.60	37.725	26.31	4.075	67.35	
AL7910	22	100	-0.80	37.750	26.31	4.075	67.35	
AL7910	22	100	-1.00	37.775	26.31	4.075	67.35	
AL7910	22	100	-1.20	37.800	26.31	4.075	67.35	
AL7910	22	100	-1.40	37.825	26.31	4.075	67.35	
AL7910	22	100	-1.60	37.850	26.31	4.075	67.35	
AL7910	22	100	-1.80	37.875	26.31	4.075	67.35	
AL7910	22	100	-2.00	37.900	26.31	4.075	67.35	
AL7910	22	100	-2.20	37.925	26.31	4.075	67.35	
AL7910	22	100	-2.40	37.950	26.31	4.075	67.35	
AL7910	22	100	-2.60	37.975	26.31	4.075	67.35	
AL7910	22	100	-2.80	38.000	26.31	4.075	67.35	
AL7910	22	100	-3.00	38.025	26.31	4.075	67.35	
AL7910	22	100	-3.20	38.050	26.31	4.075	67.35	
AL7910	22	100	-3.40	38.075	26.31	4.075	67.35	
AL7910	22	100	-3.60	38.100	26.31	4.075	67.35	
AL7910	22	100	-3.80	38.125	26.31	4.075	67.35	
AL7910	22	100	-4.00	38.150	26.31	4.075	67.35	
AL7910	22	100	-4.20	38.175	26.31	4.075	67.35	
AL7910	22	100	-4.40	38.200	26.31	4.075	67.35	
AL7910	22	100	-4.60	38.225	26.31	4.075	67.35	
AL7910	22	100	-4.80	38.250	26.31	4.075	67.35	
AL7910	22	100	-5.00	38.275	26.31	4.075	67.35	
AL7910	22	100	-5.20	38.300	26.31	4.075	67.35	
AL7910	22	100	-5.40	38.325	26.31	4.075	67.35	
AL7910	22	100	-5.60	38.350	26.31	4.075	67.35	
AL7910	22	100	-5.80	38.375	26.31	4.075	67.35	
AL7910	22	100	-6.00	38.400	26.31	4.075	67.35	
AL7910	22	100	-6.20	38.425	26.31	4.075	67.35	
AL7910	22	100	-6.40	38.450	26.31	4.075	67.35	
AL7910	22	100	-6.60	38.475	26.31	4.075	67.35	
AL7910	22	100	-6.80	38.500	26.31	4.075	67.35	
AL7910	22	100	-7.00	38.525	26.31	4.075	67.35	
AL7910	22	100	-7.20	38.550	26.31	4.075	67.35	
AL7910	22	100	-7.40	38.575	26.31	4.075	67.35	
AL7910	22	100	-7.60	38.600	26.31	4.075	67.35	
AL7910	22	100	-7.80	38.625	26.31	4.075	67.35	
AL7910	22	100	-8.00	38.650	26.31	4.075	67.35	
AL7910	22	100	-8.20	38.675	26.31	4.075	67.35	
AL7910	22	100	-8.40	38.700	26.31	4.075	67.35	
AL7910	22	100	-8.60	38.725	26.31	4.075	67.35	
AL7910	22	100	-8.80	38.750	26.31	4.075	67.35	
AL7910	22	100	-9.00	38.775	26.31	4.075	67.35	
AL7910	22	100	-9.20	38.800	26.31	4.075	67.35	
AL7910	22	100	-9.40	38.825	26.31	4.075	67.35	
AL7910	22	100	-9.60	38.850	26.31	4.075	67.35	
AL7910	22	100	-9.80	38.875	26.31	4.075	67.35	
AL7910	22	100	-10.00	38.900	26.31	4.075	67.35	
AL7910	22	100	-10.20	38.925	26.31	4.075	67.35	
AL7910	22	100	-10.40	38.950	26.31	4.075	67.35	
AL7910	22	100	-10.60	38.975	26.			

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC SAMPLE #	STATION	TEMP (C)	PHTAL	SIGNANT	D.O. (ML/L)	OXYGEN	K-SAT.	IN SITU PH (MEQ/L)	TOTAL TALK
AL7910	1	1	19.850	31.342	21.11				8.344	2.281
AL7910	2	1	19.850	31.344						
AL7910	3	1	19.850	31.344						
AL7910	4	1	19.850	31.344						
AL7910	5	1	19.850	31.344						
AL7910	6	1	19.850	31.344						
AL7910	7	1	19.850	31.344						
AL7910	8	1	19.850	31.344						
AL7910	9	1	19.850	31.344						
AL7910	10	1	19.850	31.344						
AL7910	11	1	19.850	31.344						
AL7910	12	1	19.850	31.344						
AL7910	13	1	19.850	31.344						
AL7910	14	1	19.850	31.344						
AL7910	15	1	19.850	31.344						
AL7910	16	1	19.850	31.344						
AL7910	17	1	19.850	31.344						
AL7910	18	1	19.850	31.344						
AL7910	19	1	19.850	31.344						
AL7910	20	1	19.850	31.344						
AL7910	21	1	19.850	31.344						
AL7910	22	1	19.850	31.344						
AL7910	23	1	19.850	31.344						
AL7910	24	1	19.850	31.344						
AL7910	25	1	19.850	31.344						
AL7910	26	1	19.850	31.344						
AL7910	27	1	19.850	31.344						
AL7910	28	1	19.850	31.344						
AL7910	29	1	19.850	31.344						
AL7910	30	1	19.850	31.344						
AL7910	31	1	19.850	31.344						
AL7910	32	1	19.850	31.344						
AL7910	33	1	19.850	31.344						
AL7910	34	1	19.850	31.344						
AL7910	35	1	19.850	31.344						
AL7910	36	1	19.850	31.344						
AL7910	37	1	19.850	31.344						
AL7910	38	1	19.850	31.344						
AL7910	39	1	19.850	31.344						
AL7910	40	1	19.850	31.344						
AL7910	41	1	19.850	31.344						
AL7910	42	1	19.850	31.344						
AL7910	43	1	19.850	31.344						
AL7910	44	1	19.850	31.344						
AL7910	45	1	19.850	31.344						
AL7910	46	1	19.850	31.344						
AL7910	47	1	19.850	31.344						
AL7910	48	1	19.850	31.344						
AL7910	49	1	19.850	31.344						
AL7910	50	1	19.850	31.344						
AL7910	51	1	19.850	31.344						
AL7910	52	1	19.850	31.344						
AL7910	53	1	19.850	31.344						
AL7910	54	1	19.850	31.344						
AL7910	55	1	19.850	31.344						
AL7910	56	1	19.850	31.344						
AL7910	57	1	19.850	31.344						
AL7910	58	1	19.850	31.344						
AL7910	59	1	19.850	31.344						
AL7910	60	1	19.850	31.344						
AL7910	61	1	19.850	31.344						
AL7910	62	1	19.850	31.344						
AL7910	63	1	19.850	31.344						
AL7910	64	1	19.850	31.344						
AL7910	65	1	19.850	31.344						
AL7910	66	1	19.850	31.344						
AL7910	67	1	19.850	31.344						
AL7910	68	1	19.850	31.344						
AL7910	69	1	19.850	31.344						
AL7910	70	1	19.850	31.344						
AL7910	71	1	19.850	31.344						
AL7910	72	1	19.850	31.344						
AL7910	73	1	19.850	31.344						
AL7910	74	1	19.850	31.344						
AL7910	75	1	19.850	31.344						
AL7910	76	1	19.850	31.344						
AL7910	77	1	19.850	31.344						
AL7910	78	1	19.850	31.344						
AL7910	79	1	19.850	31.344						
AL7910	80	1	19.850	31.344						
AL7910	81	1	19.850	31.344						
AL7910	82	1	19.850	31.344						
AL7910	83	1	19.850	31.344						
AL7910	84	1	19.850	31.344						
AL7910	85	1	19.850	31.344						
AL7910	86	1	19.850	31.344						
AL7910	87	1	19.850	31.344						
AL7910	88	1	19.850	31.344						
AL7910	89	1	19.850	31.344						
AL7910	90	1	19.850	31.344						
AL7910	91	1	19.850	31.344						
AL7910	92	1	19.850	31.344						
AL7910	93	1	19.850	31.344						
AL7910	94	1	19.850	31.344						
AL7910	95	1	19.850	31.344						
AL7910	96	1	19.850	31.344						
AL7910	97	1	19.850	31.344						
AL7910	98	1	19.850	31.344						
AL7910	99	1	19.850	31.344						
AL7910	100	1	19.850	31.344						
AL7910	101	1	19.850	31.344						
AL7910	102	1	19.850	31.344						
AL7910	103	1	19.850	31.344						
AL7910	104	1	19.850	31.344						
AL7910	105	1	19.850	31.344						
AL7910	106	1	19.850	31.344						
AL7910	107	1	19.850	31.344						
AL7910	108	1	19.850	31.344						
AL7910	109	1	19.850	31.344						
AL7910	110	1	19.850	31.344						
AL7910	111	1	19.850	31.344						
AL7910	112	1	19.850	31.344						
AL7910	113	1	19.850	31.344						
AL7910	114	1	19.850	31.344						
AL7910	115	1	19.850	31.344						
AL7910	116	1	19.850	31.344						
AL7910	117	1	19.850	31.344						
AL7910	118	1	19.850	31.344						
AL7910	119	1	19.850	31.344						
AL7910	120	1	19.850	31.344						
AL7910	121	1	19.850	31.344						
AL7910	122	1	19.850	31.344						
AL7910	123	1	19.850	31.344						
AL7910	124	1	19.850	31.344						
AL7910	125	1	19.850	31.344						
AL7910	126	1	19.850	31.344						
AL7910	127	1	19.850	31.344						
AL7910	128	1	19.850	31.344						
AL7910	129	1	19.850	31.344						
AL7910	130	1	19.850	31.344						
AL7910	131	1	19.850	31.344						
AL7910	132	1	19.850	31.344						
AL7910	133	1	19.850	31.344						
AL7910	134	1	19.850	31.344						
AL7910	135	1	19.850	31.344						
AL7910	136	1	19.850	31.344						
AL7910	137	1	19.850	31.344						
AL7910	138	1	19.850	31.344						
AL7910	139	1	19.850	31.344						
AL7910	140	1	19.850	31.344						
AL7910	141	1	19.850	31.344						
AL7910	142	1	19.850	31.344						
AL7910	143	1	19.850	31.344						
AL7910	144	1	19.850	31.344						
AL7910	145	1	19.850	31.344						
AL7910	146	1	19.850	31.344						
AL7910	147	1	19.850	31.344						
AL7910	148	1	19.850	31.344						
AL7910	149	1	19.850	31.344						

OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC SAMPLE #	DEPTH(M)	TEMP (C)	SAL	IN SITU TOTAL ALK	
					D.O.	X SAT. OXYGEN
VAL7910	51	52	19.30	31.562	21.0	21.86
VAL7910	52	53	19.30	31.562	21.0	21.86
VAL7910	53	54	19.30	31.562	21.0	21.86
VAL7910	54	55	19.30	31.562	21.0	21.86
VAL7910	55	56	19.30	31.562	21.0	21.86
VAL7910	56	57	19.30	31.562	21.0	21.86
VAL7910	57	58	19.30	31.562	21.0	21.86
VAL7910	58	59	19.30	31.562	21.0	21.86
VAL7910	59	60	19.30	31.562	21.0	21.86
VAL7910	60	61	19.30	31.562	21.0	21.86
VAL7910	61	62	19.30	31.562	21.0	21.86
VAL7910	62	63	19.30	31.562	21.0	21.86
VAL7910	63	64	19.30	31.562	21.0	21.86
VAL7910	64	65	19.30	31.562	21.0	21.86
VAL7910	65	66	19.30	31.562	21.0	21.86
VAL7910	66	67	19.30	31.562	21.0	21.86
VAL7910	67	68	19.30	31.562	21.0	21.86
VAL7910	68	69	19.30	31.562	21.0	21.86
VAL7910	69	70	19.30	31.562	21.0	21.86
VAL7910	70	71	19.30	31.562	21.0	21.86
VAL7910	71	72	19.30	31.562	21.0	21.86
VAL7910	72	73	19.30	31.562	21.0	21.86
VAL7910	73	74	19.30	31.562	21.0	21.86
VAL7910	74	75	19.30	31.562	21.0	21.86
VAL7910	75	76	19.30	31.562	21.0	21.86
VAL7910	76	77	19.30	31.562	21.0	21.86
VAL7910	77	78	19.30	31.562	21.0	21.86
VAL7910	78	79	19.30	31.562	21.0	21.86
VAL7910	79	80	19.30	31.562	21.0	21.86
VAL7910	80	81	19.30	31.562	21.0	21.86
VAL7910	81	82	19.30	31.562	21.0	21.86
VAL7910	82	83	19.30	31.562	21.0	21.86
VAL7910	83	84	19.30	31.562	21.0	21.86
VAL7910	84	85	19.30	31.562	21.0	21.86
VAL7910	85	86	19.30	31.562	21.0	21.86
VAL7910	86	87	19.30	31.562	21.0	21.86
VAL7910	87	88	19.30	31.562	21.0	21.86
VAL7910	88	89	19.30	31.562	21.0	21.86
VAL7910	89	90	19.30	31.562	21.0	21.86
VAL7910	90	91	19.30	31.562	21.0	21.86
VAL7910	91	92	19.30	31.562	21.0	21.86
VAL7910	92	93	19.30	31.562	21.0	21.86
VAL7910	93	94	19.30	31.562	21.0	21.86
VAL7910	94	95	19.30	31.562	21.0	21.86
VAL7910	95	96	19.30	31.562	21.0	21.86
VAL7910	96	97	19.30	31.562	21.0	21.86
VAL7910	97	98	19.30	31.562	21.0	21.86
VAL7910	98	99	19.30	31.562	21.0	21.86
VAL7910	99	100	19.30	31.562	21.0	21.86

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONREC STAT #	SAMPLE DEPTH(M)	TEMP (C)	PAL 0/00	SIGMA-T	O,O, ML/L	X-SAT, OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
AL7910	55	35.0	9.30	32.635	25.34				
AL7910	55	46.0	9.30	32.620	25.33				
AL7910	56	1.0	19.40	32.787	22.16				
AL7910	56	5.0	19.40	32.770	22.18				
AL7910	56	10.0	19.40	32.767	22.16				
AL7910	56	15.0	19.30	32.664	22.26				
AL7910	56	20.0	19.20	32.667	22.33				
AL7910	56	25.0	19.20	32.702	22.20				
AL7910	56	30.0	9.30	32.616	25.29				
AL7910	56	35.0	9.40	32.623	25.31				
AL7910	56	45.0	9.40	32.657	25.34	5.11	78.34		
AL7910	56	46.0	9.40	32.668	25.35				
AL7910	57	1.0	20.00	34.520	22.51				
AL7910	57	5.0	20.00	34.591	22.53				
AL7910	57	10.0	20.00	34.545	22.52	5.04	98.62		
AL7910	57	15.0	20.00	34.545	22.52	5.11	99.99		
AL7910	57	20.0	20.00	34.602	22.56				
AL7910	57	25.0	20.00	34.632	22.58				
AL7910	57	30.0	17.00	33.990	24.18				
AL7910	57	35.0	8.00	33.199	25.97				
AL7910	57	50.0	8.00	33.226	26.03				
AL7910	57	67.0	8.10	33.331	26.09				
AL7910	58	1.0	21.40	34.888	22.35	5.11	101.33		
AL7910	58	5.0	21.40	34.893	22.38				
AL7910	58	10.0	21.50	34.911	22.29	5.04	100.13		
AL7910	58	15.0	21.50	34.903	22.29				
AL7910	58	20.0	21.50	34.919	22.30	4.97	98.75		
AL7910	58	25.0	21.50	34.966	22.33				
AL7910	58	30.0	21.50	34.996	22.38	5.04	100.18		
AL7910	58	35.0	20.00	34.856	23.22				
AL7910	58	50.0	14.20	35.309	26.17	4.48	77.41		
AL7910	58	75.0	14.20	35.764	26.51	3.78	65.50		
AL7910	58	100.0	12.80	35.571	26.80	3.75	63.07		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	PAL 0/00	SIGMA-T	O,O <sub>2</sub> ML/L	X-SAT. OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
AL7910	58	146.0	12.40	35.539	26.89	3.71	61.83		
AL7910	59	44.0	18.30	32.793	22.71				
AL7910	60	1.0		33.052		5.16		8.389	2.383
AL7910	60	6.0		33.099					
AL7910	60	10.0		33.053		5.16			
AL7910	60	18.0		33.060		5.16		8.368	2.381
AL7910	60	28.0		33.063		5.11			
AL7910	60	37.0		33.041					
AL7910	60	50.0		33.039		4.27			
AL7910	60	63.0		33.113		4.41			
AL7910	61	1.0	19.70	34.438	23.12	5.16	99.82	8.389	2.392
AL7910	61	7.0	19.70	34.440	23.13				
AL7910	61	18.0	19.70	34.444	23.13	5.11	97.89		
AL7910	61	20.0	19.70	34.456	23.19	5.16	99.85	8.368	2.391
AL7910	61	25.0	19.70	34.500	23.16				
AL7910	61	31.0	19.70	34.497	23.16	5.11	97.92		
AL7910	61	41.0	16.00	34.130	24.65				
AL7910	61	50.0	12.60	34.167	25.79	4.76	78.98		
AL7910	61	75.0	11.60	34.448	26.26	4.41	71.76		
AL7910	61			34.903					
KE7910	1	32.0	15.00	32.737	23.99	3.57	61.71		
KE7910	2	27.0	14.10	32.192	23.86	3.85	65.11		
KE7910	3	42.0	16.00	31.591	22.79	2.73	47.82		
KE7910	4	1.0	15.50	33.228	24.18	5.25	91.96		
KE7910	4	65.0	14.00	34.234	25.43	4.55	77.78		
KE7910	5	1.0	16.00	33.263	24.02	5.39	95.40		
KE7910	5	68.0	15.50	34.422	25.06	4.13	72.87		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	PAL 0700	SIGMA-T	D.O. ML/L	% OXYGEN	IN SITU RH	TOTAL ALK MEQ/L
KE7910	6	1.0	16.00	32.114	23.18	4.62	91.19		
KE7910	6	48.0	13.00	32.177	24.17	5.53	91.40		
KE7910	7	1.0	15.00	32.751	24.00	3.85	66.86		
KE7910	7	51.0	13.00	34.578	25.98	2.73	48.80		
KE7910	8	1.0	17.00	32.777	22.93	5.16	94.72		
KE7910	8	84.0	16.20	35.836	25.60	3.36	60.53		
KE7910	9	39.0	16.10	33.053	23.59	4.81	81.64		
KE7910	10	1.0	19.50	31.475	21.21	4.83	90.55		
KE7910	10	16.0	16.20	31.723	22.00	4.76	87.16		
KE7910	11	16.0	18.50	29.804	20.51	4.76	66.66		
KE7910	12	1.0	18.50	19.169	12.93	4.06	69.33		
KE7910	12	16.0	18.30	28.944	15.02	3.43	59.53		
KE7910	13	16.0	16.20	31.411	22.59	3.78	66.41		
KE7910	14	20.0	16.00	30.881	22.27	3.22	56.16		
KE7910	15	1.0	18.50	31.369	22.80	3.85	66.67		
KE7910	15	16.0	16.00	31.512	22.73	4.20	73.54		
KE7910	16	1.0	16.20	32.790	23.60	5.60	99.21		
KE7910	16	27.0	16.00	33.369	24.10	3.92	69.42		
KE7910	17	1.0	14.00	31.707	23.53	5.67	95.41		
KE7910	17	32.0	11.00	33.167	25.41	3.92	62.46		
KE7910	18	1.0	15.00	27.037	19.74	5.39	89.96		
KE7910	19	17.0	14.50	27.030	20.48	4.97	82.51		
KE7910	20	17.0	14.30	26.182	19.27	4.97	81.32		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	TOTAL SAL	SIGNANT 0/00	D.O. ML/L	OXYGEN PPM	IN SITU PH	TOTALALK MEQ/L
KET7910	21	23.0	14.70	327.973	200.83	5.25	87.89		
KET7910	22	24.0	14.40	328.189	20.74	5.14	84.82		
KET7910	23	16.0	15.00	328.174	20.59	5.00	99.95		
KET7910	23	23.0	14.00	328.166	20.66	5.12	87.89		
KET7910	24	23.0	14.10	328.010	20.72	5.11	84.21		
KET7910	25	21.0	13.90	327.915	20.70	5.25	86.11		
KET7910	26	30.0	14.20	329.289	20.91	4.97	82.35		
KET7910	27	30.0	14.20	329.531	21.09	5.11	84.67		
KET7910	28	34.0	14.20	329.405	20.99	5.04	83.44		
KET7910	29	17.0	14.00	326.788	19.67	5.67	93.72		
KET7910	31	15.0	14.00			5.19			
KET7910	31	12.0	15.80			5.18			
KET7911	1		76.0	11.00					
KET7911	2		59.0	11.20	34.997	26.78			
KET7911	3		55.0	13.60	32.769	24.45	4.90	82.31	
KET7911	4		104.0	13.00	33.703	25.73	4.20	79.98	
KET7911	5		69.0	12.30	326.159	21.28	5.15	91.91	
KET7911	6		63.0	14.40	323.066	24.44	5.04	86.26	
KET7911	7		45.0		229.969		6.09		

## OCEAN PHASE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATION	SAMPLE DEPTH(M)	TEMP (C)	SAL	SIGMA-T	O.O.	EX-SAT	IN-SITU PH	OXYGEN	TOTAL ALK
KE7911	8	192.0	5.30	33.703	26.77	8.11	71.70			
KE7911	9	180.0	31.316		5.29					
KE7911	10	46.0	30.391		4.59					
KE7911	11	65.0	12.20	34.446	26.11	4.48	71.85			
KE7911	12	60.0	30.005		3.32					
KE7911	13	65.0			5.74					
KE7911	14				1.12					
KE7911	15	135.0								
DL7911	1		1.0	25.60	6.09	91.43				
DL7911	2		1.0	25.60	6.10	91.43				
DL7911	3		1.0	25.60	6.10	91.43				
DL7911	4		1.0	25.60	6.10	91.43				
DL7911	5		1.0	25.60	6.10	91.43				
DL7911	6		1.0	25.60	6.10	91.43				
DL7911	7		1.0	25.60	6.10	91.43				
DL7911	8		1.0	25.60	6.10	91.43				
DL7911	9		1.0	25.60	6.10	91.43				
DL7911	10		1.0	25.60	6.10	91.43				
DL7911	11		1.0	25.60	6.10	91.43				
DL7911	12		1.0	25.60	6.10	91.43				
DL7911	13		1.0	25.60	6.10	91.43				
DL7911	14		1.0	25.60	6.10	91.43				
DL7911	15		1.0	25.60	6.10	91.43				
DL7911	16		1.0	25.60	6.10	91.43				
DL7911	17		1.0	25.60	6.10	91.43				
DL7911	18		1.0	25.60	6.10	91.43				
DL7911	19		1.0	25.60	6.10	91.43				
DL7911	20		1.0	25.60	6.10	91.43				
DL7911	21		1.0	25.60	6.10	91.43				
DL7911	22		1.0	25.60	6.10	91.43				
DL7911	23		1.0	25.60	6.10	91.43				
DL7911	24		1.0	25.60	6.10	91.43				
DL7911	25		1.0	25.60	6.10	91.43				
DL7911	26		1.0	25.60	6.10	91.43				
DL7911	27		1.0	25.60	6.10	91.43				
DL7911	28		1.0	25.60	6.10	91.43				
DL7911	29		1.0	25.60	6.10	91.43				
DL7911	30		1.0	25.60	6.10	91.43				
DL7911	31		1.0	25.60	6.10	91.43				
DL7911	32		1.0	25.60	6.10	91.43				
DL7911	33		1.0	25.60	6.10	91.43				
DL7911	34		1.0	25.60	6.10	91.43				
DL7911	35		1.0	25.60	6.10	91.43				
DL7911	36		1.0	25.60	6.10	91.43				
DL7911	37		1.0	25.60	6.10	91.43				
DL7911	38		1.0	25.60	6.10	91.43				
DL7911	39		1.0	25.60	6.10	91.43				
DL7911	40		1.0	25.60	6.10	91.43				
DL7911	41		1.0	25.60	6.10	91.43				
DL7911	42		1.0	25.60	6.10	91.43				
DL7911	43		1.0	25.60	6.10	91.43				
DL7911	44		1.0	25.60	6.10	91.43				
DL7911	45		1.0	25.60	6.10	91.43				
DL7911	46		1.0	25.60	6.10	91.43				
DL7911	47		1.0	25.60	6.10	91.43				
DL7911	48		1.0	25.60	6.10	91.43				
DL7911	49		1.0	25.60	6.10	91.43				
DL7911	50		1.0	25.60	6.10	91.43				
DL7911	51		1.0	25.60	6.10	91.43				
DL7911	52		1.0	25.60	6.10	91.43				
DL7911	53		1.0	25.60	6.10	91.43				
DL7911	54		1.0	25.60	6.10	91.43				
DL7911	55		1.0	25.60	6.10	91.43				
DL7911	56		1.0	25.60	6.10	91.43				
DL7911	57		1.0	25.60	6.10	91.43				
DL7911	58		1.0	25.60	6.10	91.43				
DL7911	59		1.0	25.60	6.10	91.43				
DL7911	60		1.0	25.60	6.10	91.43				
DL7911	61		1.0	25.60	6.10	91.43				
DL7911	62		1.0	25.60	6.10	91.43				
DL7911	63		1.0	25.60	6.10	91.43				
DL7911	64		1.0	25.60	6.10	91.43				
DL7911	65		1.0	25.60	6.10	91.43				
DL7911	66		1.0	25.60	6.10	91.43				
DL7911	67		1.0	25.60	6.10	91.43				
DL7911	68		1.0	25.60	6.10	91.43				
DL7911	69		1.0	25.60	6.10	91.43				
DL7911	70		1.0	25.60	6.10	91.43				
DL7911	71		1.0	25.60	6.10	91.43				
DL7911	72		1.0	25.60	6.10	91.43				
DL7911	73		1.0	25.60	6.10	91.43				
DL7911	74		1.0	25.60	6.10	91.43				
DL7911	75		1.0	25.60	6.10	91.43				
DL7911	76		1.0	25.60	6.10	91.43				
DL7911	77		1.0	25.60	6.10	91.43				
DL7911	78		1.0	25.60	6.10	91.43				
DL7911	79		1.0	25.60	6.10	91.43				
DL7911	80		1.0	25.60	6.10	91.43				
DL7911	81		1.0	25.60	6.10	91.43				
DL7911	82		1.0	25.60	6.10	91.43				
DL7911	83		1.0	25.60	6.10	91.43				
DL7911	84		1.0	25.60	6.10	91.43				
DL7911	85		1.0	25.60	6.10	91.43				
DL7911	86		1.0	25.60	6.10	91.43				
DL7911	87		1.0	25.60	6.10	91.43				
DL7911	88		1.0	25.60	6.10	91.43				
DL7911	89		1.0	25.60	6.10	91.43				
DL7911	90		1.0	25.60	6.10	91.43				
DL7911	91		1.0	25.60	6.10	91.43				
DL7911	92		1.0	25.60	6.10	91.43				
DL7911	93		1.0	25.60	6.10	91.43				
DL7911	94		1.0	25.60	6.10	91.43				
DL7911	95		1.0	25.60	6.10	91.43				
DL7911	96		1.0	25.60	6.10	91.43				
DL7911	97		1.0	25.60	6.10	91.43				
DL7911	98		1.0	25.60	6.10	91.43				
DL7911	99		1.0	25.60	6.10	91.43				
DL7911	100		1.0	25.60	6.10	91.43				
DL7911	101		1.0	25.60	6.10	91.43				
DL7911	102		1.0	25.60	6.10	91.43				
DL7911	103		1.0	25.60	6.10	91.43				
DL7911	104		1.0	25.60	6.10	91.43				
DL7911	105		1.0	25.60	6.10	91.43				
DL7911	106		1.0	25.60	6.10	91.43				
DL7911	107		1.0	25.60	6.10	91.43				
DL7911	108		1.0	25.60	6.10	91.43				
DL7911	109		1.0	25.60	6.10	91.43				
DL7911	110		1.0	25.60	6.10	91.43				
DL7911	111		1.0	25.60	6.10	91.43				
DL7911	112		1.0	25.60	6.10	91.43				
DL7911	113		1.0	25.60	6.10	91.43				
DL7911	114		1.0	25.60	6.10	91.43				
DL7911	115		1.0	25.60	6.10	91.43				
DL7911	116		1.0	25.60	6.10	91.43				
DL7911	117		1.0	25.60	6.10	91.43				
DL7911	118		1.0	25.60	6.10	91.43				
DL7911	119		1.0	25.60	6.10	91.43				
DL7911	120		1.0	25.60	6.10	91.43				
DL7911	121		1.0	25.60	6.10	91.43				
DL7911	122		1.0	25.60	6.10	91.43				
DL7911	123		1.0	25.60	6.10	91.43				
DL7911	124		1.0	25.60	6.10	91.43				
DL7911	125		1.0	25.60	6.10	91.43				
DL7911	126		1.0	25.60	6.10	91.43				
DL7911	127		1.0	25.60	6.10	91.43				
DL7911	128		1.0	25.60	6.10	91.43				
DL7911	129		1.0	25.60	6.10	91.43				
DL7911	130		1.0	25.60	6.10	91.43				
DL7911	131		1.0	25.60	6.10	91.43				
DL7911	132		1.0	25.60	6.10	91.43				
DL7911	133									

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN-PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATION	SAMPLE	TEMP (C)	SAL	SIGHTCAST	O2O2	X-SAT	IN SITU PH	TOTAL ALK
						MG/L	MG/L	MEG/L	MEG/L
DL7911	12	111111111111	10.000	32.703	25.10	6.02	95.22		
DL7911	13	111111111111	10.000	32.719	25.00				
DL7911	14	111111111111	10.000	32.725	24.94				
DL7911	15	111111111111	10.000	32.731	24.87				
DL7911	16	111111111111	10.000	32.737	24.80				
DL7911	17	111111111111	10.000	32.743	24.74				
DL7911	18	111111111111	10.000	32.749	24.67				
DL7911	19	111111111111	10.000	32.755	24.60				
DL7911	20	111111111111	10.000	32.761	24.53				
DL7911	21	111111111111	10.000	32.767	24.46				
DL7911	22	111111111111	10.000	32.773	24.39				
DL7911	23	111111111111	10.000	32.779	24.32				
DL7911	24	111111111111	10.000	32.785	24.25				
DL7911	25	111111111111	10.000	32.791	24.18				
DL7911	26	111111111111	10.000	32.797	24.11				
DL7911	27	111111111111	10.000	32.803	24.04				
DL7911	28	111111111111	10.000	32.809	23.97				
DL7911	29	111111111111	10.000	32.815	23.90				
DL7911	30	111111111111	10.000	32.821	23.83				
DL7911	31	111111111111	10.000	32.827	23.76				
DL7911	32	111111111111	10.000	32.833	23.69				
DL7911	33	111111111111	10.000	32.839	23.62				
DL7911	34	111111111111	10.000	32.845	23.55				
DL7911	35	111111111111	10.000	32.851	23.48				
DL7911	36	111111111111	10.000	32.857	23.41				
DL7911	37	111111111111	10.000	32.863	23.34				
DL7911	38	111111111111	10.000	32.869	23.27				
DL7911	39	111111111111	10.000	32.875	23.20				
DL7911	40	111111111111	10.000	32.881	23.13				
DL7911	41	111111111111	10.000	32.887	23.06				
DL7911	42	111111111111	10.000	32.893	22.99				
DL7911	43	111111111111	10.000	32.899	22.92				
DL7911	44	111111111111	10.000	32.905	22.85				
DL7911	45	111111111111	10.000	32.911	22.78				
DL7911	46	111111111111	10.000	32.917	22.71				
DL7911	47	111111111111	10.000	32.923	22.64				
DL7911	48	111111111111	10.000	32.929	22.57				
DL7911	49	111111111111	10.000	32.935	22.50				
DL7911	50	111111111111	10.000	32.941	22.43				
DL7911	51	111111111111	10.000	32.947	22.36				
DL7911	52	111111111111	10.000	32.953	22.29				
DL7911	53	111111111111	10.000	32.959	22.22				
DL7911	54	111111111111	10.000	32.965	22.15				
DL7911	55	111111111111	10.000	32.971	22.08				
DL7911	56	111111111111	10.000	32.977	21.99				
DL7911	57	111111111111	10.000	32.983	21.92				
DL7911	58	111111111111	10.000	32.989	21.85				
DL7911	59	111111111111	10.000	32.995	21.78				
DL7911	60	111111111111	10.000	33.001	21.71				
DL7911	61	111111111111	10.000	33.007	21.64				
DL7911	62	111111111111	10.000	33.013	21.57				
DL7911	63	111111111111	10.000	33.019	21.50				
DL7911	64	111111111111	10.000	33.025	21.43				
DL7911	65	111111111111	10.000	33.031	21.36				
DL7911	66	111111111111	10.000	33.037	21.29				
DL7911	67	111111111111	10.000	33.043	21.22				
DL7911	68	111111111111	10.000	33.049	21.15				
DL7911	69	111111111111	10.000	33.055	21.08				
DL7911	70	111111111111	10.000	33.061	20.99				
DL7911	71	111111111111	10.000	33.067	20.92				
DL7911	72	111111111111	10.000	33.073	20.85				
DL7911	73	111111111111	10.000	33.079	20.78				
DL7911	74	111111111111	10.000	33.085	20.71				
DL7911	75	111111111111	10.000	33.091	20.64				
DL7911	76	111111111111	10.000	33.097	20.57				
DL7911	77	111111111111	10.000	33.103	20.50				
DL7911	78	111111111111	10.000	33.109	20.43				
DL7911	79	111111111111	10.000	33.115	20.36				
DL7911	80	111111111111	10.000	33.121	20.29				
DL7911	81	111111111111	10.000	33.127	20.22				
DL7911	82	111111111111	10.000	33.133	20.15				
DL7911	83	111111111111	10.000	33.139	20.08				
DL7911	84	111111111111	10.000	33.145	20.01				
DL7911	85	111111111111	10.000	33.151	19.94				
DL7911	86	111111111111	10.000	33.157	19.87				
DL7911	87	111111111111	10.000	33.163	19.80				
DL7911	88	111111111111	10.000	33.169	19.73				
DL7911	89	111111111111	10.000	33.175	19.66				
DL7911	90	111111111111	10.000	33.181	19.59				
DL7911	91	111111111111	10.000	33.187	19.52				
DL7911	92	111111111111	10.000	33.193	19.45				
DL7911	93	111111111111	10.000	33.199	19.38				
DL7911	94	111111111111	10.000	33.205	19.31				
DL7911	95	111111111111	10.000	33.211	19.24				
DL7911	96	111111111111	10.000	33.217	19.17				
DL7911	97	111111111111	10.000	33.223	19.10				
DL7911	98	111111111111	10.000	33.229	19.03				
DL7911	99	111111111111	10.000	33.235	18.96				
DL7911	100	111111111111	10.000	33.241	18.89				
DL7911	101	111111111111	10.000	33.247	18.82				
DL7911	102	111111111111	10.000	33.253	18.75				
DL7911	103	111111111111	10.000	33.259	18.68				
DL7911	104	111111111111	10.000	33.265	18.61				
DL7911	105	111111111111	10.000	33.271	18.54				
DL7911	106	111111111111	10.000	33.277	18.47				
DL7911	107	111111111111	10.000	33.283	18.40				
DL7911	108	111111111111	10.000	33.289	18.33				
DL7911	109	111111111111	10.000	33.295	18.26				
DL7911	110	111111111111	10.000	33.301	18.19				
DL7911	111	111111111111	10.000	33.307	18.12				
DL7911	112	111111111111	10.000	33.313	18.05				
DL7911	113	111111111111	10.000	33.319	17.98				
DL7911	114	111111111111	10.000	33.325	17.91				
DL7911	115	111111111111	10.000	33.331	17.84				
DL7911	116	111111111111	10.000	33.337	17.77				
DL7911	117	111111111111	10.000	33.343	17.70				
DL7911	118	111111111111	10.000	33.349	17.63				
DL7911	119	111111111111	10.000	33.355	17.56				
DL7911	120	111111111111	10.000	33.361	17.49				
DL7911	121	111111111111	10.000	33.367	17.42				
DL7911	122	111111111111	10.000	33.373	17.35				
DL7911	123	111111111111	10.000	33.379	17.28				
DL7911	124	111111111111	10.000	33.385	17.21				
DL7911	125	111111111111	10.000	33.391	17.14				
DL7911	126	111111111111	10.000	33.397	17.07				
DL7911	127	111111111111	10.000	33.403	16.99				
DL7911	128	111111111111	10.000	33.409	16.92				
DL7911	129	111111111111	10.000	33.415	16.85				
DL7911	130	111111111111	10.000	33.421	16.78				
DL7911	131	111111111111	10.000	33.427	16.71				
DL7911	132	111111111111	10.000	33.433	16.64				
DL7911	133	111111111111	10.000	33.439	16.57				
DL7911	134	111111111111	10.000	33.445	16.50				
DL7911	135	111111111111	10.000	33.451	16.43				
DL7911	136	111111111111	10.000	33.457	16.36	</			

OCEAN PULSE HYDROGRAPHIC DATA LOGS

## OCEAN PULSE HYDROGRAPHIC DATA LOG

CRUISE CODE	CONSEC STAT#	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	SIGHT ACT	O.O. MOL/L	K-DAT, OXYGEN	IN SITU TOTAL ALK PH	MEG/L
DL7911	42	15.0		33.293		5.60			
DL7911	43	1.0		35.239		5.26			
DL7911	43	5.0		35.226		5.60			
DL7911	43	10.0		35.230		5.25			
DL7911	43	15.0		35.235		5.25			
DL7911	43	20.0		35.237		5.39			
DL7911	43	25.0		35.249		5.39			
DL7911	43	30.0		35.224		5.32			
DL7911	43	36.0		35.229		5.25			
DL7911	44	1.0		35.113		5.46			
DL7911	44	10.0		35.109		5.53			
DL7911	44	20.0		34.323		4.93			
DL7911	44	30.0		35.109		5.39			
DL7911	44	35.0		35.466		5.11			
DL7911	44	50.0		35.531		5.05			
DL7911	45	1.0		32.512		5.99			
DL7911	45	5.0		32.514		5.11			
DL7911	45	10.0		32.585		5.95			
DL7911	45	15.0		33.169		5.93			
DL7911	45	20.0		33.290		5.32			
DL7911	45	25.0		33.408		5.32			
DL7911	45	30.0		33.459		5.35			
DL7911	45	36.0		33.478		5.18			
DL7911	46	1.0		34.288		5.74			
DL7911	46	5.0		34.296		5.67			
DL7911	46	10.0		34.292		5.74			
DL7911	46	15.0		34.304		5.74			
DL7911	46	20.0		34.302		5.67			
DL7911	46	25.0		34.321		5.74			
DL7911	46	30.0		34.349		5.67			
DL7911	46	35.0		34.685		4.69			
DL7911	46	51.0		34.616		4.55			

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE HYDROGRAPHIC DATA LOGS

OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	PAL 0/00	SIGMA-T	D.O. ML/L	% SAT. OXYGEN	IN SITU RH	TOTAL ALK MEQ/L
KE8004	5	1.0	6.70	30.170	23.82	6.93	98.25		
KE8004	5	5.0	6.80	30.195	23.83	6.86	97.50		
KE8004	5	10.0	6.70	32.145	25.37	6.79	97.82		
KE8004	5	15.0	6.60	32.937	26.01	6.79	97.79		
KE8004	5	20.0	6.60	33.202	26.21	6.72	96.94		
KE8004	5	27.0	6.60	33.182	26.20	6.72	96.93		
KE8004	6	1.0	9.40	35.032	27.19	6.37	99.15		
KE8004	6	5.0	9.40	35.032	27.19	6.37	99.15		
KE8004	6	10.0	9.40	35.032	27.19	6.37	99.15		
KE8004	6	15.0	9.40	35.034	27.19	6.37	99.15		
KE8004	6	20.0	9.40	35.034	27.19	6.37	99.15		
KE8004	6	25.0	9.40	35.036	27.19	6.37	99.15		
KE8004	6	30.0	9.40	35.036	27.19	6.37	99.15		
KE8004	6	35.0	9.40	35.040	27.19	6.37	99.15		
KE8004	6	50.0	9.40	35.040	27.19	6.37	99.15		
KE8004	6	75.0	9.40						
KE8004	6	81.0	9.40	35.062	27.21	6.30	98.08		
KE8004	7	1.0	6.60	32.982	26.04	6.58	94.79		
KE8004	7	5.0	6.30	32.986	26.08	6.58	94.82		
KE8004	7	12.0	6.30	33.057	26.14	6.72	96.17		
KE8004	8	1.0	5.20	32.807	26.08	6.86	95.46		
KE8004	8	5.0	5.15	32.762	26.06	6.93	96.31		
KE8004	8	10.0	5.10	32.789	26.07	6.86	95.82		
KE8004	8	15.0	5.10	32.899	26.16	6.86	95.29		
KE8004	8	20.0	5.10	32.893	26.16	6.86	95.28		
KE8004	9	1.0	5.50	33.999	26.98	6.93	97.91		
KE8004	9	5.0	5.40						
KE8004	9	10.0	5.40	34.007	27.00	6.86	96.69		
KE8004	9	15.0	5.40						
KE8004	9	20.0	5.40	34.016	27.01	6.93	97.68		
KE8004	9	25.0	5.40						
KE8004	9	30.0	5.40	34.007	27.00	6.93	97.68		

OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE	CONSEC	SAMPLE	TEMP	SAL	SIGMA-T		D.O.	% SAT.	IN SITU TOTAL ALK	
					STAT	DEPTH(M)	ML/L	OXYGEN	PH	MED/L
KE6004	9	3510	5.40	34.016	27.01	6.58	92.75			
KE6004	9	4110	5.40	34.016	27.01	6.58	92.75			
KE6004	10	110	0.00	34.240	26.82	6.65	99.78			
KE6004	10	150	0.20	34.252	26.95	6.66	101.06			
KE6004	10	1010	0.20	34.252	26.95	6.66	101.06			
KE6004	10	1510	0.20	34.252	26.95	6.66	101.06			
KE6004	10	2010	0.20	34.248	26.96	6.65	97.84			
KE6004	10	2510	0.15	34.266	26.97	6.66	100.93			
KE6004	10	3010	0.15	34.266	26.97	6.66	100.93			
KE6004	10	3510	0.15	34.256	26.99	6.72	98.54			
KE6004	10	4010	0.15	34.256	26.99	6.72	98.54			
KE6004	11	5.00	33.112	26.14	7.00	97.14				
KE6004	11	5.00	33.110	26.34	7.00	97.12				
KE6004	11	5.00	33.098	26.33	7.00	97.00				
KE6004	11	5.00	33.107	26.35	7.00	96.90				
KE6004	11	5.00	33.098	26.28	7.00	96.84				
KE6004	11	5.00	33.098	26.08	8.12	117.51				
KE6004	11	5.00	33.098	26.89	6.86	99.28				
KE6004	11	5.00	33.098	26.89	6.86	99.26				
KE6004	11	5.00	33.098	26.93	6.79	98.05				
KE6004	11	5.00	33.098	26.94	6.79	98.05				
KE6004	12	5.00	33.070	26.92	6.79	98.05				
KE6004	12	5.00	33.070	26.92	6.79	98.05				
KE6004	12	5.00	33.070	26.92	6.79	98.05				
KE6004	12	5.00	33.070	26.92	6.79	98.05				
KE6004	13	5.00	33.070	26.94	7.10	97.92				
KE6004	13	5.00	33.070	26.94	7.10	97.92				
KE6004	13	5.00	33.070	26.94	7.10	97.92				
KE6004	13	5.00	33.070	26.94	7.10	97.92				
KE6004	14	5.00	33.070	26.94	7.10	97.92				

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STATION #	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	SIGMA-T 0.0	D.O. ml/L	X-SAT. OXYGEN	IN SITU PH	TOTALALK MEQ/L
KE8004	14	5.0	5.70	28.024	7.14				
KE8004	14	10.0							
KE8004	14	15.0							
KE8004	14	20.0							
KE8004	14	25.0							
KE8004	14	39.0							
KE8004	15	1.0	5.80	29.478	23.42	6.96	94.06		
KE8004	15	5.0	5.00						
KE8004	15	10.0	5.00	31.163	24.80	7.00	95.09		
KE8004	15	15.0	4.80						
KE8004	15	21.0	4.80	32.519	25.89	6.72	93.43		
KE8004	16	1.0	6.30	31.656	26.77	7.07	101.71		
KE8004	16	5.0	6.30						
KE8004	16	10.0	6.30	33.842	26.76	7.21	103.72		
KE8004	16	15.0	6.30						
KE8004	16	20.0	6.30	33.868	26.78	7.14	102.73		
KE8004	16	25.0	6.30						
KE8004	16	30.0	6.30	33.882	26.79	7.14	102.73		
KE8004	16	35.0	6.30						
KE8004	16	40.0	6.30	33.937	26.81	6.79	99.20		
KE8004	16	45.0	6.70	33.962	26.80	6.72	97.66		
KE8004	17	0.0	6.50	33.961	26.81	7.07	102.76		
KE8004	17	5.0	6.50	33.943	26.81				
KE8004	17	10.0	6.50						
KE8004	17	15.0	6.50						
KE8004	17	20.0	6.50						
KE8004	17	25.0	6.50						
KE8004	17	30.0	6.50						
KE8004	17	35.0	6.50						
KE8004	17	40.0	6.50						
KE8004	18	0.0	4.90	33.443	26.61	7.07	98.09		
KE8004	18	5.0	4.90						
KE8004	18	10.0	4.90	33.442	26.61	7.00	97.12		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE #	DEPTH(M)	TEMP (C)	PRES (dbar)	SEAL 0/00	SIGMA-T	D.O. ML/L	OXYGEN % SAT.	IN SITU PH	TOTAL HDO / L	ALK
KE8004	18	18	15.0	4.90	33.552	26.70	6.66	95.24				
KE8004	18	20	20.0	4.90	33.558	26.71	6.93	96.22				
KE8004	18	26	26.0	4.90	33.558	26.71	6.93	96.22				
KE8004	19	19	1.0	5.50	33.012	26.68	7.07	99.63				
KE8004	19	5	5.0	5.50	33.012	26.68	7.07	99.63				
KE8004	19	10	10.0	5.10	33.048	26.73	7.14	100.16				
KE8004	19	15	15.0	5.35	33.048	26.73	7.14	100.16				
KE8004	19	20	20.0	5.35	33.063	26.74	7.00	98.51				
KE8004	19	27	27.0	5.40	33.087	26.75	7.07	99.04				
KE8004	20	20	1.0	5.70	32.075	22.29	7.28	99.30				
KE8004	20	5	5.0	5.18	32.158	22.94	7.28	100.25				
KE8004	20	10	10.0	5.10	32.052	22.98	6.79	99.41				
KE8004	20	15	15.0	5.10	32.049	22.97	6.86	99.61				
KE8004	20	20	20.0	5.10	32.072	22.91	6.86	99.65				
KE8004	21	21	1.0	5.10	32.158	22.71	7.31	100.61				
KE8004	21	5	5.0	4.75	33.607	26.76	7.07	97.94				
KE8004	21	10	10.0	4.75	33.607	26.76	7.07	97.94				
KE8004	21	15	15.0	4.75	33.609	26.76	7.07	97.94				
KE8004	21	20	20.0	4.64	33.602	26.77	7.00	96.65				
KE8004	21	25	25.0	4.66	33.602	26.77	7.00	96.65				
KE8004	21	30	30.0	4.70	33.629	26.78	6.93	95.79				
KE8004	21	35	35.0	4.70	33.629	26.78	6.93	95.79				
KE8004	21	40	40.0	4.70	33.629	26.78	6.93	95.79				
KE8004	22	22	1.0	5.90	32.069	26.44	7.21	97.38				
KE8004	22	5	5.0	5.90	32.063	26.41	7.21	97.35				
KE8004	22	10	10.0	5.90	32.063	26.41	7.21	97.35				
KE8004	22	15	15.0	5.90	32.073	26.44	7.14	95.94				
KE8004	22	20	20.0	5.70	32.073	26.44	7.14	95.94				
KE8004	22	25	25.0	5.65	32.073	26.44	7.14	95.94				
KE8004	22	30	30.0	5.60	32.173	26.53	6.79	91.08				
KE8004	22	35	35.0	5.60	32.173	26.53	6.79	91.08				
KE8004	22	40	40.0	5.60	32.173	26.53	6.79	91.08				
KE8004	21	21	1.0	5.90	32.069	26.44	7.21	97.38				

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	SIGMA-T	O.D.O. ML/L	X-SAT., OXYGEN	IN-SITU PH	TOTAL ALK MEQ/L
KE8004	23	5.0	4.80	32.912	26.23	7.00	96.06		
KE8004	23	10.0	4.60	32.972	26.31	6.86	93.49		
KE8004	23	15.0	4.40	32.977	26.31	6.72	92.11		
KE8004	23	20.0	4.30	32.982	26.37	6.72	92.11		
KE8004	23	25.0	4.40	33.082	26.37	6.72	92.11		
KE8004	23	30.0	4.50	33.082	26.37	6.72	92.11		
KE8004	24	1.0	5.70	25.105	19.96	7.14	95.60		
KE8004	24	5.0	5.50	25.822	20.54	6.72	89.97		
KE8004	24	10.0	4.46	32.451	25.89	6.65	90.65		
KE8004	24	15.0	4.40	32.865	26.21	7.21	98.43		
KE8004	24	21.0	4.40	32.894	26.23	6.79	92.72		
KE8004	25	1.0	5.60	25.333	20.14	6.93	92.71		
KE8004	25	5.0	5.00	25.294	20.17	6.79	89.48		
KE8004	25	10.0	4.80	29.908	23.83	6.65	89.90		
KE8004	25	13.0	5.00	29.754	23.69	6.58	89.31		
KE8004	26	1.0	5.40	27.249	21.67	7.28	98.15		
KE8004	26	5.0	5.00	27.249	21.67	7.28	98.15		
KE8004	26	10.0	4.60	32.613	25.99	7.21	98.75		
KE8004	26	15.0	4.40	33.138	26.43	7.00	95.74		
KE8004	26	20.0	4.40	33.138	26.43	7.00	95.74		
KE8004	26	25.0	4.50	33.138	26.43	6.37	87.02		
KE8004	26	30.0	4.70	33.231	26.47	6.37	87.02		
KE8004	26	36.0	4.70	33.282	26.51	6.37	87.05		
KE8004	27	1.0	5.30	33.496	26.59	7.56	106.46		
KE8004	27	5.0	5.10	33.493	26.63	7.40	104.45		
KE8004	27	10.0	5.10	33.493	26.63	7.40	104.45		
KE8004	27	15.0	5.20	33.491	26.61	7.14	99.94		
KE8004	27	20.0	5.25	33.491	26.61	7.14	99.94		
KE8004	27	25.0	5.10	33.491	26.61	7.14	99.94		
KE8004	27	30.0	5.10	33.682	26.70	7.42	103.60		
KE8004	27	35.0	5.05	33.682	26.70	7.42	103.60		
KE8004	27	30.0	5.00	33.790	26.80	6.86	95.62		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	SIGMA-T	D.D. ML/L	% SAT. OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
KE8004	27	74.0	5.10	33.782	26.86	6.44	89.97		
KE8004	28	1.0	4.90	33.129	26.41	7.28	99.82		
KE8004	28	5.0	4.10	33.132	26.45	7.07	95.99		
KE8004	28	10.0	4.10	33.132	26.45	7.07	95.99		
KE8004	28	15.0	4.05						
KE8004	28	20.0	3.75	33.146	26.50	7.07	95.15		
KE8004	28	25.0	3.70						
KE8004	28	33.0	3.70	33.155	26.51	7.14	95.99		
KE8004	29	1.0	4.25	32.098	25.62	7.35	99.47		
KE8004	29	5.0	4.20						
KE8004	29	10.0	4.10	32.110	25.64	7.35	99.11		
KE8004	29	15.0	4.10						
KE8004	29	20.0	4.10	32.130	25.66	7.49	101.01		
KE8004	29	25.0	4.10	32.104	25.64	7.56	101.94		
KE8004	30	1.0	5.70	33.406	26.49	7.56	100.89		
KE8004	30	5.0	5.15						
KE8004	30	10.0	5.10	33.408	26.56	7.56	105.36		
KE8004	30	15.0	5.00						
KE8004	30	20.0	5.00	33.444	26.60	7.56	105.14		
KE8004	30	25.0	5.00						
KE8004	30	30.0	5.00	33.475	26.63	7.56	105.16		
KE8004	30	35.0	4.80						
KE8004	30	50.0	4.80	33.515	26.66	7.26	100.80		
KE8004	30	54.0	4.80	33.513	26.66	7.14	98.84		
KE8004	31	1.0	3.10	33.092	26.51	7.28	96.38		
KE8004	31	5.0	3.10						
KE8004	31	10.0	3.10	33.053	26.48	7.35	97.28		
KE8004	31	15.0	3.10						
KE8004	31	20.0	3.10	33.037	26.47	7.28	96.34		
KE8004	31	25.0	3.10						
KE8004	31	30.0	3.10	33.039	26.47	7.21	95.42		
KE8004	31	35.0	3.10						

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	BAL 0/00	SIGMA-T	D.O. ML/L	X-SAT, OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
KE8004	31	46.0	3.10	33.046	26.48	7.21	95.42		
KE8004	32	1.0	3.00	32.747	26.25	7.28	95.91		
KE8004	32	5.0	3.00	32.746	26.25	7.35	96.83		
KE8004	32	10.0	3.00	32.746	26.25	7.35	96.83		
KE8004	32	15.0	3.00	32.751	26.25	7.35	96.83		
KE8004	32	20.0	3.00	32.751	26.25	7.35	96.83		
KE8004	32	25.0	3.10	32.751	26.25	7.28	96.47		
KE8004	32	30.0	3.20	32.857	26.32	7.28	96.47		
KE8004	32	36.0	3.30	32.926	26.37	7.21	95.83		
KE8004	34	1.0	4.90	33.260	26.47	7.21	99.91		
KE8004	34	10.0	4.90	33.264	26.47	7.21	99.91		
KE8004	34	20.0	4.90	33.287	26.49	7.21	99.93		
KE8004	34	30.0	4.90	33.335	26.53	6.78	93.17		
KE8004	34	40.0	4.90	33.338	26.53	6.86	93.11		
KE8004	34	50.0	4.90	33.342	26.53	6.93	96.00		
KE8004	34	60.0	4.80	33.328	26.53	7.00	96.80		
KE8004	34	65.0	4.80	33.354	26.53	7.00	96.82		
KE8004	36	1.0	6.40	33.637	26.58	6.79	97.77		
KE8004	36	10.0	6.40	33.636	26.58	6.72	96.76		
KE8004	36	20.0	6.40	33.632	26.58				
KE8004	36	30.0	6.40	33.629	26.58	6.65	95.75		
KE8004	36	40.0	6.40	33.636	26.58	6.65	95.75		
KE8004	36	50.0	6.40	33.693	26.63	6.65	95.79		
KE8004	36	60.0	6.70	33.734	26.62	6.72	97.52		
KE8004	36	75.0	6.70	33.732	26.62	6.58	95.48		
KE8004	36	98.0	7.00	33.824	26.65	6.51	95.19		
KE8004	38	1.0	10.90	35.069	26.90	5.88	94.62		
KE8004	38	10.0	10.90	35.067	26.90	5.95	95.74		
KE8004	38	20.0	10.90	35.066	26.90	5.88	94.62		
KE8004	38	30.0	10.90	35.082	26.91	5.88	94.62		
KE8004	38	40.0	11.00	35.123	26.92	5.88	94.86		
KE8004	38	50.0	11.00	35.161	26.96	5.74	92.64		

OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	SAMPLE STAT #	DEPTH(M)	TEMP (C)	SAL 0/00	IN SITU TOTAL ALK	
					D.O. ML/L	X-SAT. OXYGEN
KE8004	40	33.0	1.0	33.004	6.44	93.70
KE8004	40	33.0	0.9	33.004	6.86	99.82
KE8004	40	33.0	0.8	33.004	6.79	98.79
KE8004	40	33.0	0.7	33.004	6.65	96.76
KE8004	40	33.0	0.6	33.004	6.58	95.78
KE8004	40	33.0	0.5	33.004	6.51	94.80
KE8004	40	33.0	0.4	33.004	6.23	93.31
KE8004	40	33.0	0.3	33.004	6.16	91.25
KE8004	40	33.0	0.2	33.004	6.01	92.45
KE8004	40	33.0	0.1	33.004	5.81	91.92
KE8004	40	33.0	0.0	33.004	5.61	92.45
KE8004	40	32.9	1.0	32.995	6.44	93.70
KE8004	40	32.9	0.9	32.995	6.86	99.82
KE8004	40	32.9	0.8	32.995	6.79	98.79
KE8004	40	32.9	0.7	32.995	6.65	96.76
KE8004	40	32.9	0.6	32.995	6.58	95.78
KE8004	40	32.9	0.5	32.995	6.51	94.80
KE8004	40	32.9	0.4	32.995	6.23	93.31
KE8004	40	32.9	0.3	32.995	6.16	91.25
KE8004	40	32.9	0.2	32.995	6.01	92.45
KE8004	40	32.9	0.1	32.995	5.81	91.92
KE8004	40	32.9	0.0	32.995	5.61	92.45
KE8004	41	33.0	1.0	33.005	6.44	93.70
KE8004	41	33.0	0.9	33.005	6.86	99.82
KE8004	41	33.0	0.8	33.005	6.79	98.79
KE8004	41	33.0	0.7	33.005	6.65	96.76
KE8004	41	33.0	0.6	33.005	6.58	95.78
KE8004	41	33.0	0.5	33.005	6.51	94.80
KE8004	41	33.0	0.4	33.005	6.23	93.31
KE8004	41	33.0	0.3	33.005	6.16	91.25
KE8004	41	33.0	0.2	33.005	6.01	92.45
KE8004	41	33.0	0.1	33.005	5.81	91.92
KE8004	41	33.0	0.0	33.005	5.61	92.45
KE8004	42	33.0	1.0	33.006	6.44	93.70
KE8004	42	33.0	0.9	33.006	6.86	99.82
KE8004	42	33.0	0.8	33.006	6.79	98.79
KE8004	42	33.0	0.7	33.006	6.65	96.76
KE8004	42	33.0	0.6	33.006	6.58	95.78
KE8004	42	33.0	0.5	33.006	6.51	94.80
KE8004	42	33.0	0.4	33.006	6.23	93.31
KE8004	42	33.0	0.3	33.006	6.16	91.25
KE8004	42	33.0	0.2	33.006	6.01	92.45
KE8004	42	33.0	0.1	33.006	5.81	91.92
KE8004	42	33.0	0.0	33.006	5.61	92.45
KE8004	43	33.0	1.0	33.007	6.44	93.70
KE8004	43	33.0	0.9	33.007	6.86	99.82
KE8004	43	33.0	0.8	33.007	6.79	98.79
KE8004	43	33.0	0.7	33.007	6.65	96.76
KE8004	43	33.0	0.6	33.007	6.58	95.78
KE8004	43	33.0	0.5	33.007	6.51	94.80
KE8004	43	33.0	0.4	33.007	6.23	93.31
KE8004	43	33.0	0.3	33.007	6.16	91.25
KE8004	43	33.0	0.2	33.007	6.01	92.45
KE8004	43	33.0	0.1	33.007	5.81	91.92
KE8004	43	33.0	0.0	33.007	5.61	92.45

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CHUISE	CONSEC	SAMPLE	TEMP (C)	SAL	SIGHTHT	O2O.	X-SAT	IN SITU PH	TOTALALK
CODE	STAT#	DEPTH(M)	(C)	0/00	M/L	M/L	M/L	MOL/L	MOL/L
KE8004	48	40.0	4.60	33.374	26.59	6.93	98.39	7.00	9.91
KE8004	48	50.0	4.50	33.362	26.59	6.93	98.39	7.00	9.91
KE8004	48	75.0	4.55	33.452	26.66	6.94	94.37	6.96	9.91
KE8004	48	100.0	4.50	33.450	26.66	6.94	94.26	6.96	9.91
KE8004	48	125.0	4.40	33.503	26.72	6.96	93.00	6.96	9.91
KE8004	48	162.0	4.60	33.558	26.74	6.72	92.61	6.72	9.91
KE8004	49	40.0	5.10	33.276	26.46	7.14	99.42	7.00	9.92
KE8004	49	50.0	5.00	33.296	26.46	7.00	97.26	6.96	9.92
KE8004	49	75.0	5.00	33.329	26.51	6.95	96.30	6.96	9.92
KE8004	49	100.0	5.00	33.347	26.60	6.95	92.48	6.96	9.92
KE8004	49	125.0	5.20	33.351	26.63	6.95	91.99	6.96	9.92
KE8004	49	160.0	5.55	33.350	26.67	6.96	90.76	6.96	9.92
KE8004	49	175.0	6.00	33.332	26.63	6.96	90.96	6.96	9.92
KE8004	49	219.0	6.60	33.376	26.66	6.96	84.13	6.96	9.92
KE8004	50	40.0	4.80	32.678	26.02	7.00	99.38	7.00	9.92
KE8004	50	50.0	4.80	32.666	26.14	6.93	97.83	6.93	9.92
KE8004	50	75.0	5.70	32.667	26.70	5.98	83.98	6.98	9.92
KE8004	50	100.0	6.50	32.658	26.74	5.98	78.63	6.98	9.92
KE8004	50	125.0	6.90	32.621	26.82	5.98	76.68	6.98	9.92
KE8004	50	160.0	7.30	32.608	26.98	4.97	73.40	4.97	9.92
KE8004	50	175.0	7.80	32.650	27.17	4.99	70.35	4.99	9.92
KE8004	50	219.0	7.80	32.644	27.17	4.92	69.18	4.92	9.92
KE8004	51	40.0	5.80	32.047	26.34	7.00	102.64	7.00	102.64
KE8004	51	50.0	5.80	32.053	26.11	7.02	112.92	7.02	112.92
KE8004	51	75.0	6.80	32.047	26.20	7.02	106.70	7.02	106.70
KE8004	51	100.0	6.80	32.048	26.23	7.02	104.93	7.02	104.93
KE8004	51	125.0	7.50	32.090	26.19	7.02	104.72	7.02	104.72
KE8004	51	160.0	7.80	32.043	26.23	7.02	104.17	7.02	104.17
KE8004	52	40.0	4.75	33.210	26.45	7.70	106.28	7.70	106.28
KE8004	52	50.0	4.75	33.214	26.45	7.70	106.28	7.70	106.28

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CONSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	SAL 0/00	SIGMA-T	D.O. ML/L	% SAT. OXYGEN	IN SITU TOTAL ALK PH	MEQ/L
KE8004	52	20.0	4.75	33.218	26.45	7.77	107.25		
KE8004	52	30.0	4.75	33.210	26.45	7.77	107.25		
KE8004	52	42.0	4.75	33.210	26.45	7.63	105.31		
KE8004	53	1.0	4.60	32.997	26.29	7.00	96.12		
KE8004	53	10.0	4.70	32.995	26.28	7.00	96.35		
KE8004	53	20.0	4.70	32.998	26.28	7.00	96.35		
KE8004	53	30.0	4.70	32.991	26.28	6.93	95.38		
KE8004	53	40.0	4.70	32.100	25.57	7.00	95.78		
KE8004	53	50.0	4.70	33.006	26.29	7.00	96.36		
KE8004	53	60.0	4.75	33.004	26.28	6.86	94.56		
KE8004	53	70.0	4.75	33.010	26.29	6.86	94.56		
KE8004	54	1.0	6.40	33.541	26.51	6.72	96.70		
KE8004	54	25.0	6.50	33.547	26.50	6.65	95.93		
KE8004	54	50.0	6.70	33.609	26.52	6.44	93.38		
KE8004	54	75.0	7.10	33.812	26.62	6.44	94.38		
KE8004	54	114.0	10.50	34.914	26.87	5.67	90.37		
KE8004	55	1.0	4.80	33.061	26.36	7.49	102.65		
KE8004	55	10.0	4.80	33.058	26.35	7.42	101.69		
KE8004	55	20.0	4.00	33.066	26.41	7.49	101.39		
KE8004	55	30.0	3.60	33.070	26.45	7.42	99.46		
KE8004	55	40.0	3.60	33.168	26.53	6.72	90.13		
KE8004	55	50.0	3.60	33.174	26.53	6.72	90.14		
KE8004	55	64.0	3.60	33.172	26.53	6.79	91.07		
KE8004	56	1.0	5.00	32.244	25.66	7.14	98.51		
KE8004	56	10.0	4.95	32.241	25.66	7.14	98.39		
KE8004	56	20.0	4.75	32.333	25.75	7.00	96.06		
KE8004	56	31.0	3.50	32.497	26.01	6.93	92.30		
KE8004	57	1.0	4.80	32.345	25.76	7.21	99.06		
KE8004	57	10.0	4.90	32.483	25.86	7.28	100.36		
KE8004	57	20.0	4.75	32.784	26.11	7.21	99.24		
KE8004	57	30.0	4.20	32.946	26.30	7.07	96.10		

## OCEAN PULSE HYDROGRAPHIC DATA LOGS

CRUISE CODE	CUNSEC STAT #	SAMPLE DEPTH(M)	TEMP (C)	BAL 0/00	SIGMA-T	D.O. ML/L	% SAT. OXYGEN	IN SITU PH	TOTAL ALK MEQ/L
KE8004	57	46.0	4.30	32.996	26.32	7.00	95.41		
KE8004	58	1.0	6.90	33.533	26.43	7.00	101.91		
KE8004	58	10.0	6.70	33.540	26.47	7.00	101.45		
KE8004	58	20.0	6.30	33.568	26.57	7.00	100.04		
KE8004	58	30.0	6.05	33.593	26.59	6.79	96.94		
KE8004	58	40.0	6.30	33.644	26.60	6.65	95.54		
KE8004	58	50.0	6.60	33.915	26.77	6.30	91.31		
KE8004	58	75.0	6.80	34.310	26.74	6.09	93.10		
KE8004	58	81.0	9.00	34.543	26.88	6.02	92.58		
KE8004	59	1.0	6.00	33.368	26.42	7.21	102.66		
KE8004	59	10.0	5.90	33.449	26.50	7.07	100.47		
KE8004	59	20.0	5.50	33.557	26.63	7.00	98.61		
KE8004	59	30.0	6.20	33.662	26.63	6.86	98.33		
KE8004	59	40.0	6.30	33.808	26.73	6.44	92.62		
KE8004	59	50.0	6.40	33.847	26.75	6.44	92.66		
KE8004	59	75.0	6.70	33.927	26.77	6.37	92.55		