NOAA Data Report ERL PMEL-22

BEAUFORT SEA MESOSCALE CIRCULATION STUDY: HYDROGRAPHY HELICOPTER OPERATIONS, APRIL, 1987

K. Aagaard
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Pacific Marine Environmental Laboratory
Seattle, Washington
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K. Aagaard[1], S. Salo[1], and K. Krogslund[2]

1. INTRODUCTION

This report presents data from 28 hydrographic stations occupied in April, 1987 over the Beaufort Sea continental shelf and slope, as part of the Beaufort Sea Mesoscale Circulation Study (Table 1). The casts (Figure 1), which were made along 4 transects, each roughly perpendicular to the coast, repeat most of the stations sampled in October, 1986 from the USCGC Polar Star (Aagaard *et al.*, 1987).

2. METHODOLOGIES

Personnel and equipment were transported to each hydrographic station site by NOAA helicopters. A hole was augered in the ice, a tent was erected over the hole, and the cast was made from the tent. A Neil Brown Mark III CTD system, modified for Arctic work, was used during this experiment. Each cast was done in two parts, as follows. The profile was recorded, then the CTD fish was brought back to the surface. As it was lowered the second time, five or six 5 l Niskin bottles were clamped to the wire. They were tripped when the fish was again at depth.

CTD data were analyzed as outlined in Giles and McDougall (1986) and Aagaard *et al.* (1987). Salinity and sigma-t were calculated using the algorithms of Fofonoff and Millard (1983).

All water samples were analyzed for dissolved oxygen and nutrients in Deadhorse (Prudhoe Bay), Alaska. Nutrients were determined with a 5-channel Technicon Auto Analyzer II system and the method outlined by Whitledge *et al.* (1981). Oxygen concentration was measured by the Carpenter modification of the Winkler titration (Carpenter, 1965). Samples were also taken for freons and tritium. These are being analyzed separately by other investigators.

The discrete sample values are listed in Table 2. Salinity/nutrient correlation diagrams suggest that the five nitrate and six reactive silicate values marked in Table 2 by asterisks are anomalously high. However, a review of the sampling and analytical procedures suggests no systematic source of error.

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3. ACKNOWLEDGMENTS

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4. REFERENCES

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DATA

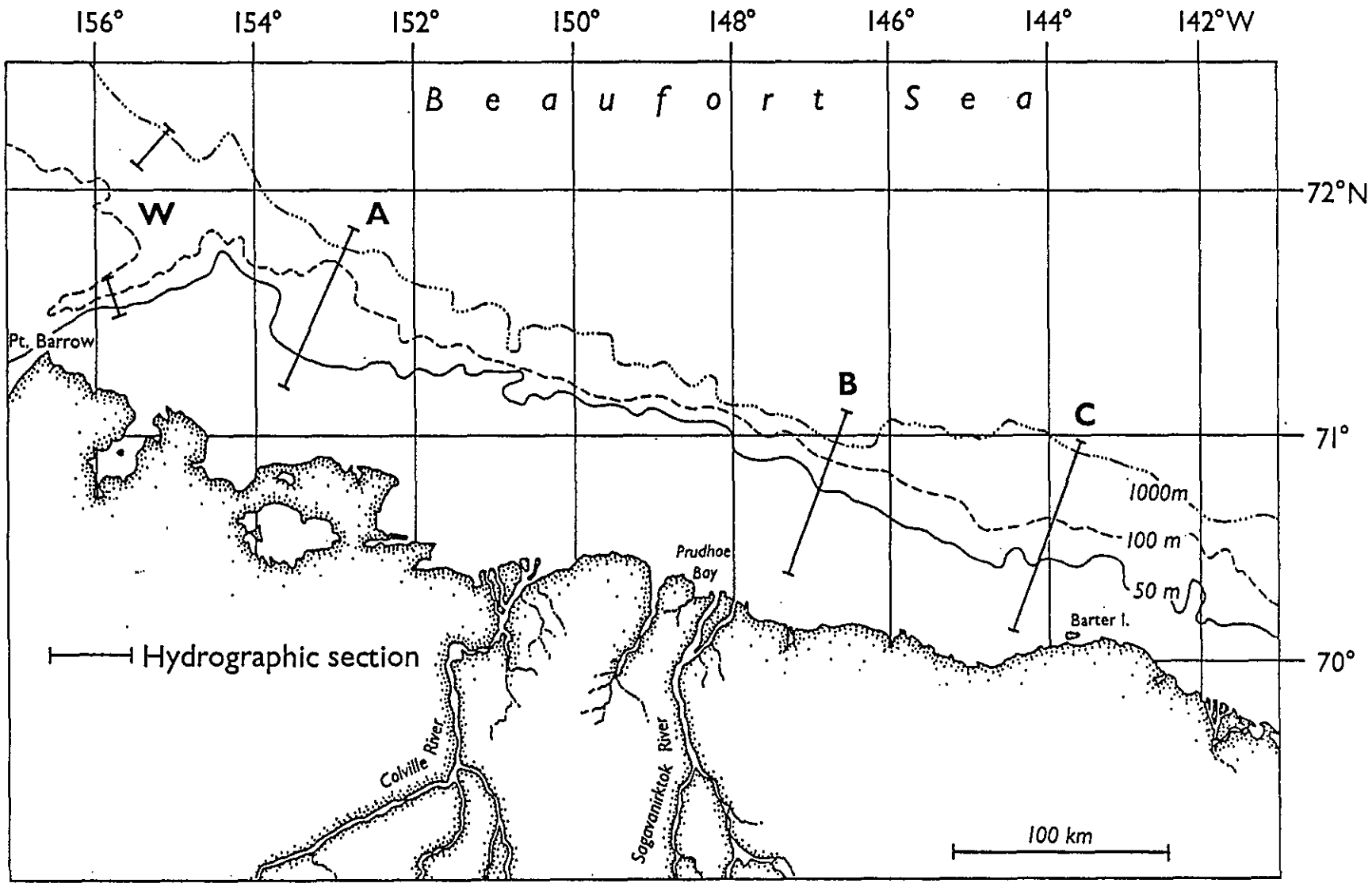


Figure 1.--Location of CTD transects

Table 1. CTD Chronology and Positions

Station	Cast#	Time (UTC)	N. Lat.	W. Long.	Depth (m)
C 09	1	2109 11 April	70° 56.3'	143° 33.3'	>1000
C 08	2	1944 12 April	70° 51.0'	143° 41.0'	>1000
C 06	3	2241 12 April	70° 38.9'	143° 55.9'	304
C 04	4	0057 13 April	70° 28.8'	144° 11.2'	52
C 02	5	1831 13 April	70° 15.5'	144° 23.8'	36
C 03	6	2108 13 April	70° 21.0'	144° 16.4'	39
C 05	7	0025 14 April	70° 34.0'	144° 03.6'	60
A 09	8	2015 18 April	71° 52.4'	152° 41.3'	>1000
A 08	9	0040 19 April	71° 46.9'	152° 54.4'	808
A 07	10	2020 20 April	71° 41.8'	153° 00.1'	156
A 06	11	2210 20 April	71° 36.2'	153° 09.9'	56
A 05	12	2342 20 April	71° 29.9'	153° 18.1'	57
A 04	13	0106 21 April	71° 23.7'	153° 26.8'	56
A 03	14	1927 21 April	71° 18.8'	153° 33.8'	46
A 02	15	2159 21 April	71° 13.0'	153° 39.9'	26
W 12	16	2315 21 April	71° 31.7'	155° 46.0'	124
W 11	17	1802 22 April	71° 35.0'	155° 46.8'	200
W 03	18	2055 22 April	72° 13.7'	155° 07.4'	>1000
W 04	19	0004 23 April	72° 08.2'	155° 18.9'	498
B 09	20	1839 26 April	71° 03.3'	146° 38.3'	>1000
B 08	21	2240 26 April	70° 57.7'	146° 44.5'	859
B 07	22	1808 27 April	70° 53.1'	146° 49.3'	68
B 06	23	1957 27 April	70° 49.9'	146° 53.8'	60
B 05	24	2129 27 April	70° 45.1'	147° 00.6'	48
B 04	25	2252 27 April	70° 42.1'	147° 04.6'	44
B 03	26	1720 28 April	70° 37.7'	147° 07.7'	38
B 02	27	1855 28 April	70° 32.0'	147° 15.0'	32
B 01	28	2016 28 April	70° 27.8'	147° 20.0'	23

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C09	1	2109 11 Apr 1987	70° 56.3	143° 33.3	>1000

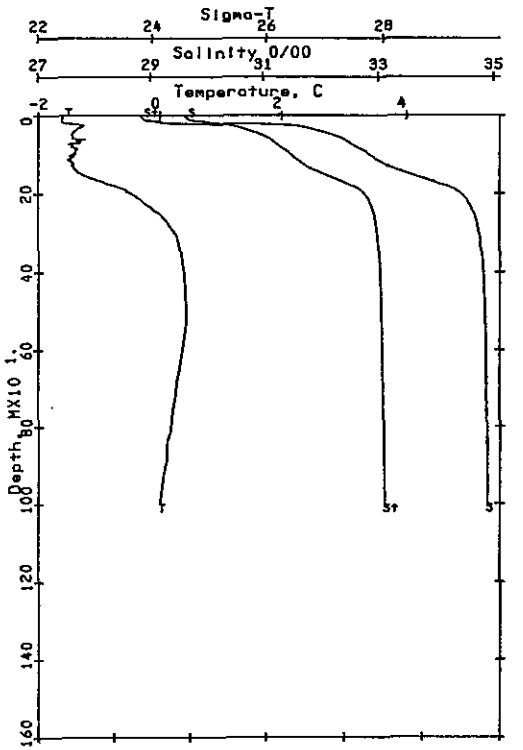
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	29.623	-1.606	23.808	9.05	0.79	8.74	2.24	0.04	0.07
22.3	30.958	-1.405	24.888	9.14	0.91	8.04	2.29	0.05	0.25
67.3	32.470	-1.314	26.112		1.50	24.77*	7.81	0.03	0.08
112.3	32.944	-1.490	26.502	6.60	1.76	34.38*	12.94	0.03	0.10
147.3	33.457	-1.344	26.914		1.66	32.87*	12.44	0.03	
497.3	34.831	0.427	27.946	6.93	0.87	9.02	7.57	0.02	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C08	2	1944 12 Apr 1987	70° 51.0	143° 41.0	>1000

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	29.808	-1.637	23.954	9.23	0.79	8.47	2.38	0.03	0.01
22.3	30.185	-1.578	24.264	9.19	0.81	7.86	2.38	0.03	0.02
42.3	31.953	-1.360	25.694		1.12	12.47	4.90	0.02	0.02
72.3	32.566	-1.405	26.192		1.61	27.80*	14.07*	0.02	0.10
117.3	33.106	-1.474	26.632	6.39	1.88	37.61*	17.64*	0.02	0.00
497.3	34.838	0.424	27.952	6.82	0.88	8.95	11.99	0.02	0.01

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C06	3	2241 12 Apr 1987	70° 38.9	143° 55.9	304

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	28.922	-1.616	23.239	9.07	0.77	9.50	1.72	0.03	0.06
22.3	28.990	-1.615	23.294	9.09	0.77	9.50	1.80	0.03	0.02
47.3	31.584	-1.290	25.393		1.03	9.19	3.31	0.02	0.06
72.3	32.313	-1.423	25.988	7.53	1.42	22.11	10.69*	0.03	0.06
97.3	33.181	-1.397	26.692	6.67	1.72	33.83*	17.24*	0.03	0.14
287.3	34.778	0.316	27.909	6.74	0.89	10.38	15.26*	0.03	0.04



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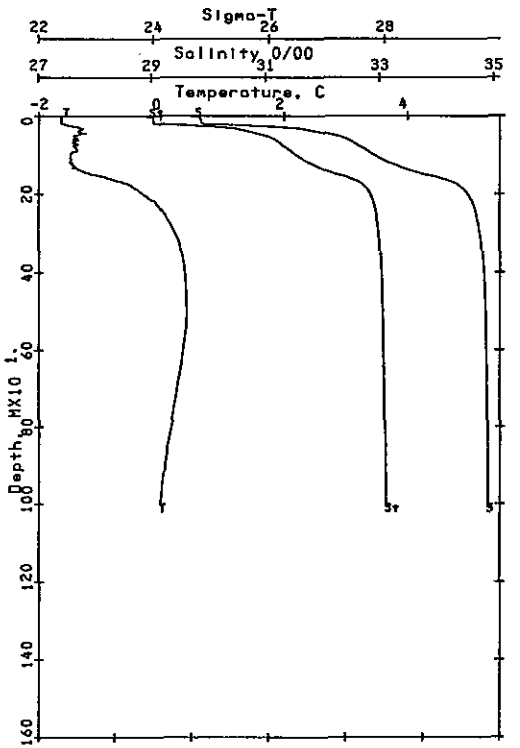

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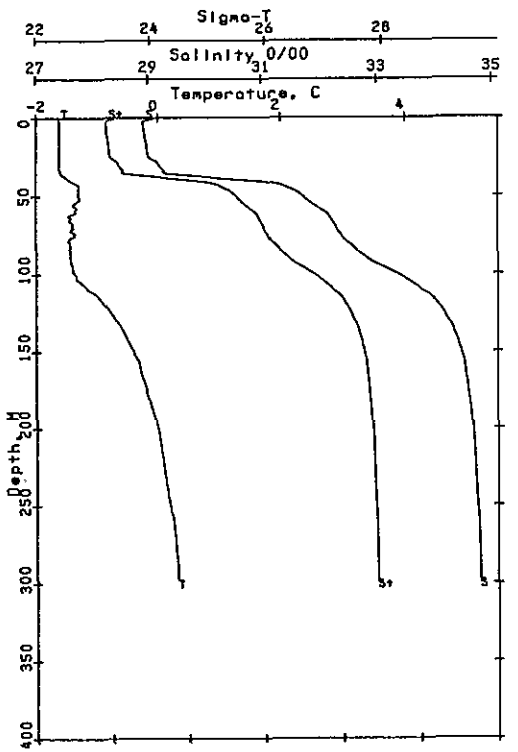

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Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C04	4	0057 13 Apr 1987	70° 28.8	144° 11.2	52

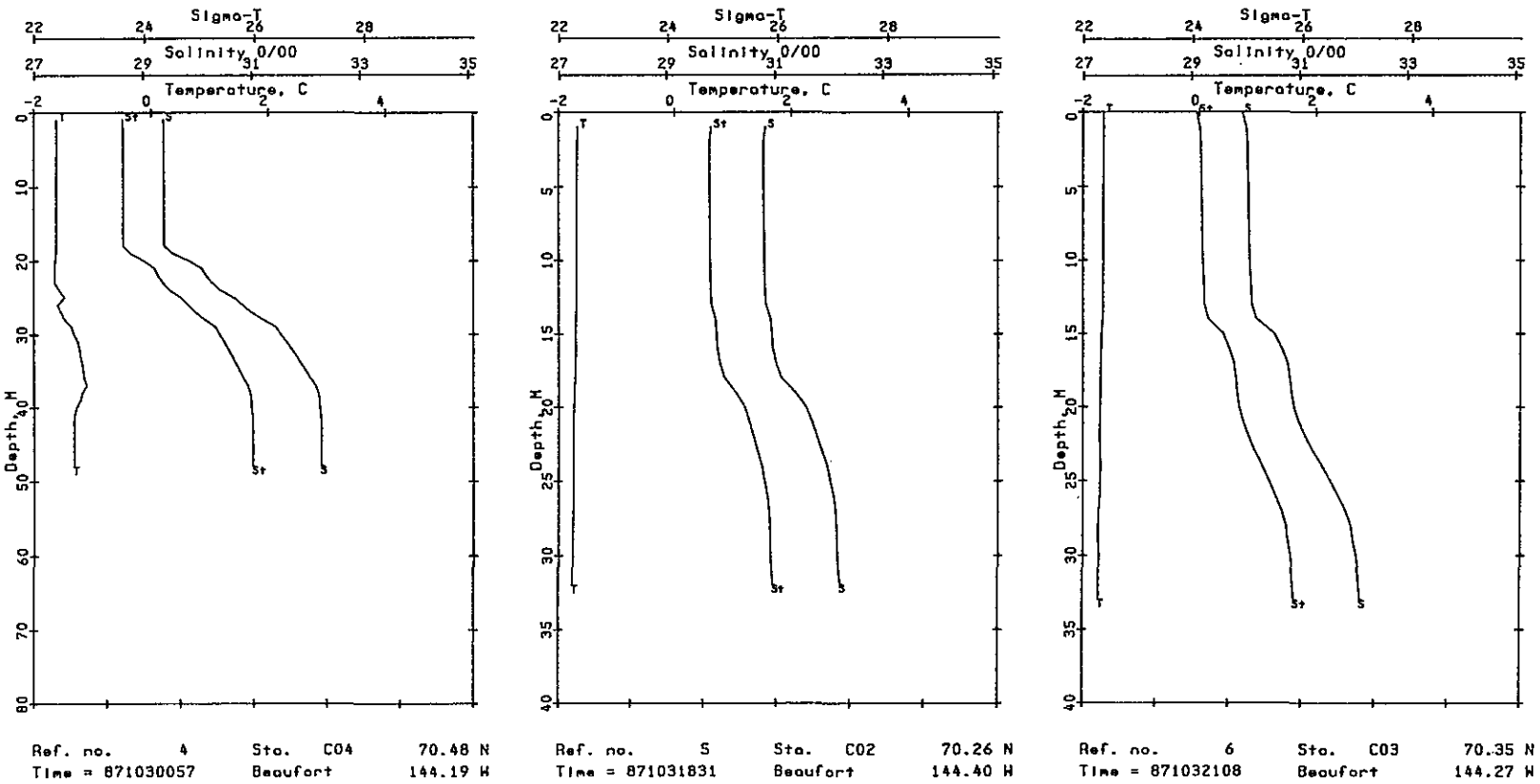
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	29.397	-1.613	23.624	9.20	0.75	10.16	1.81	0.02	0.06
7.3	29.402	-1.615	23.629	9.17	0.75	10.16	1.80	0.02	0.06
12.3	29.404	-1.615	23.630	9.26	0.75	10.15	1.79	0.02	0.05
22.3	30.171	-1.644	24.253	8.84	0.88	9.24	2.20	0.02	0.06
32.3	31.739	-1.225	25.517	8.12	1.12	13.35	5.08	0.02	0.05
45.3	32.294	-1.313	25.970	7.59	1.22	19.96	7.04	0.02	0.05

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C02	5	1831 13 Apr 1987	70° 15.5	144° 23.8	36

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.805	-1.681	24.769	9.08	0.88	10.22	2.04	0.01	0.03
7.3	30.816	-1.687	24.777	9.10	0.90	10.21	2.07	0.03	0.03
12.3	30.835	-1.692	24.794	9.05	0.91	10.21	2.06	0.03	0.00
17.3	31.038	-1.709	24.959	8.86	0.96	12.21	2.98	0.01	0.03
22.3	31.790	-1.743	25.570	8.48	1.04	15.01	4.07	0.01	0.02
29.3	32.159	-1.752	25.870	8.37	1.07	16.31	4.51	0.02	0.11

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C03	6	2108 13 Apr 1987	70° 21.0	144° 16.4	39

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.051	-1.648	24.156	9.13	0.80	11.19	2.15	0.02	0.10
7.3	30.079	-1.655	24.179	9.11	0.84	11.18	2.19	0.02	0.21
12.3	30.130	-1.660	24.220	9.08	0.83	11.18	2.18	0.02	0.08
17.3	30.793	-1.698	24.759	8.97	0.90	11.68	2.82	0.01	0.07
25.3	31.584	-1.706	25.402	8.60	1.02	13.68	4.23	0.02	0.06
32.3	31.118	-1.727	25.836	8.27	1.08	16.18	4.96	0.02	0.05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27 29 31 33 35
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S
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27 29 31 33 35
Temperature, C
-2 0 2 4
Depth M
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T
St
S
Ref. no. 5 Sta. C02 70.26 N
Time = 871031831 Beaufort 144.40 W
Sigma-T
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27 29 31 33 35
Temperature, C
-2 0 2 4
Depth M
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T
St
S
Ref. no. 6 Sta. C03 70.35 N
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Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
C05	7	0025 14 Apr 1987	70° 34.0	144° 03.6	60

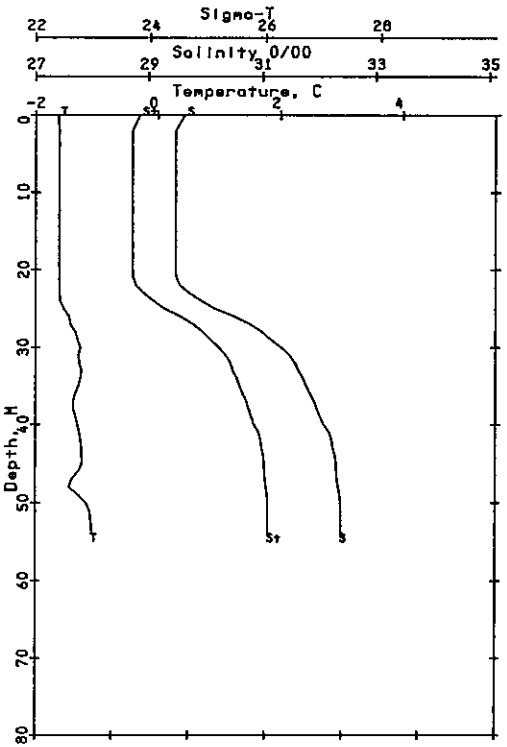
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	29.484	-1.618	23.695	9.11	0.76	10.63	1.98	0.02	0.07
12.3	29.486	-1.618	23.697	9.04	0.77	10.53	2.06	0.02	0.03
22.3	29.555	-1.615	23.753	9.06	0.82	10.52	2.23	0.02	0.26
32.3	31.571	-1.292	25.383	8.82	0.99	9.12	2.87	0.02	0.04
47.3	32.310	-1.405	25.985	7.68	1.29	20.13	8.23	0.02	0.05
52.3	32.380	-1.101	26.033	7.49	1.32	21.93	8.96	0.02	0.08

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A09	8	2015 18 Apr 1987	71° 52.4	152° 41.3	>1000

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.515	-1.674	24.533	8.46	2.46	0.82	1.04	0.23	0.14
42.3	31.880	-0.749	25.617	7.79	1.01	6.14	3.33	0.23	0.15
112.3	33.220	-1.394	26.723	6.53	1.91	24.71	12.29	0.22	0.34
347.3	34.820	0.416	27.937	6.79	1.82	1.16	10.66	0.22	1.12
452.3	34.850	0.412	27.962	6.69	0.78	1.08	10.81	0.22	0.04
997.3	34.890	-0.052	28.020	6.94	0.80	1.49	10.99	0.20	0.07

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A08	9	0040 19 Apr 1987	71° 46.9	152° 54.4	808

NO SAMPLES TAKEN



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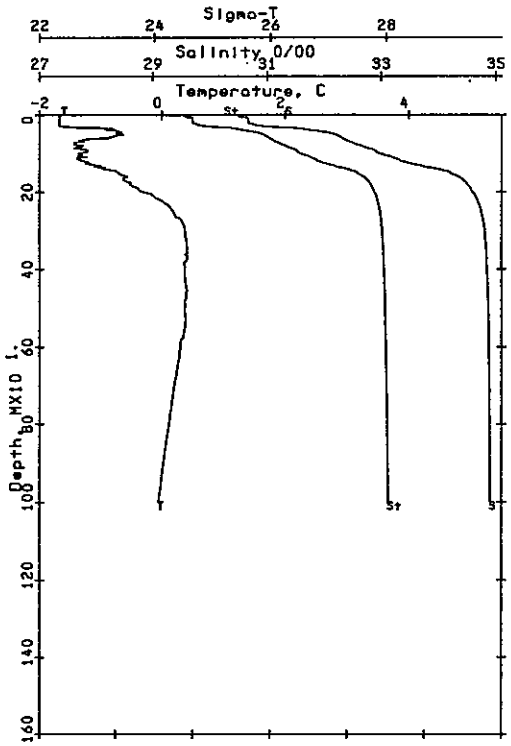

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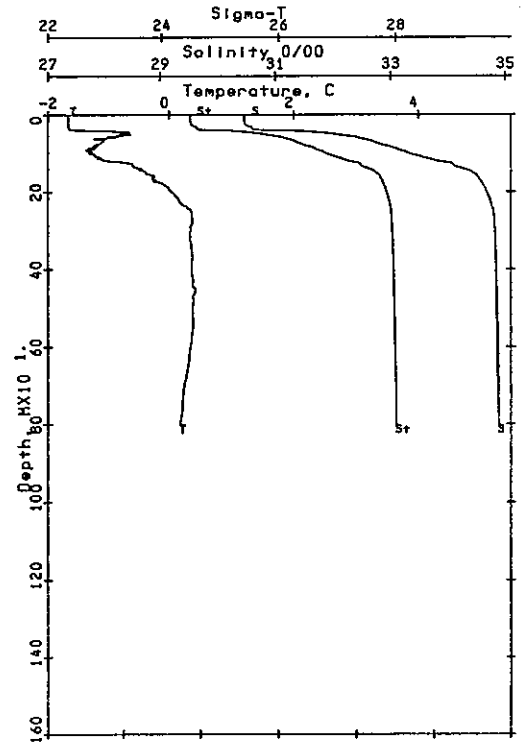

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Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A07	10	2020 20 Apr 1987	71° 41.8	153° 00.1	156

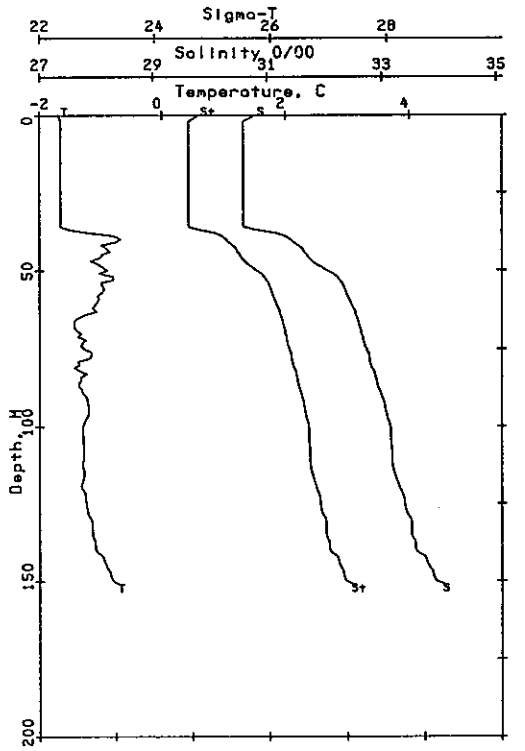
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.591	-1.658	24.595	8.52	0.73	0.00	0.86	0.17	0.03
22.3	30.594	-1.658	24.597	8.51	1.01	0.00	0.86	0.18	0.09
37.3	30.801	-1.515	24.763	8.36	0.84	1.58	1.52	0.18	0.35
92.3	33.034	-1.219	26.567	6.70	1.46	19.66	11.80	0.18	0.02
117.3	33.245	-1.284	26.740	6.52	1.45	20.77	11.11	0.17	0.00
147.3	33.882	-0.851	27.242	6.46	1.20	16.44	11.14	0.18	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A06	11	2210 20 Apr 1987	71° 36.2	153° 09.9	56

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.482	-1.672	24.506	8.55	0.70	0.00	0.86	0.18	0.00
7.3	30.550	-1.672	24.561	8.56	0.74	0.00	0.79	0.18	0.00
12.3	30.564	-1.672	24.573	8.58	0.72	0.00	0.76	0.18	0.00
22.3	30.629	-1.642	24.626	8.44	0.79	0.00	0.95	0.18	0.00
32.3	31.888	-0.853	25.627	7.65	1.11	5.62	4.07	0.18	0.02
47.3	32.540	-0.986	26.159	7.15	1.40	6.27	8.45	0.18	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A05	12	2342 20 Apr 1987	71° 29.9	153° 18.1	57

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.553	-1.671	24.564	8.54	0.77	0.00	0.87	0.18	0.00
17.3	30.562	-1.670	24.571	8.52	0.66	0.00	0.93	0.16	0.00
32.3	32.018	-0.558	25.722	7.64	1.08	6.12	4.34	0.16	0.00
42.3	32.285	-0.824	25.947	7.15	1.12	10.87	6.36	0.17	0.00
47.3	32.502	-0.984	26.128	7.01	1.29	14.22	7.41	0.17	0.00



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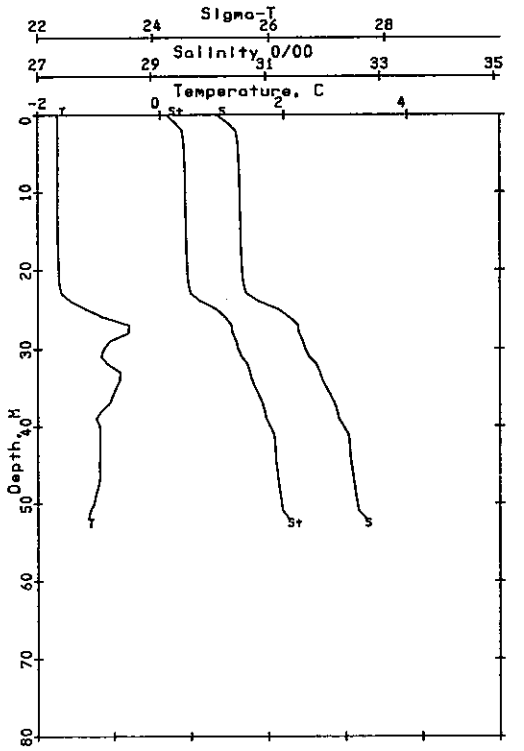

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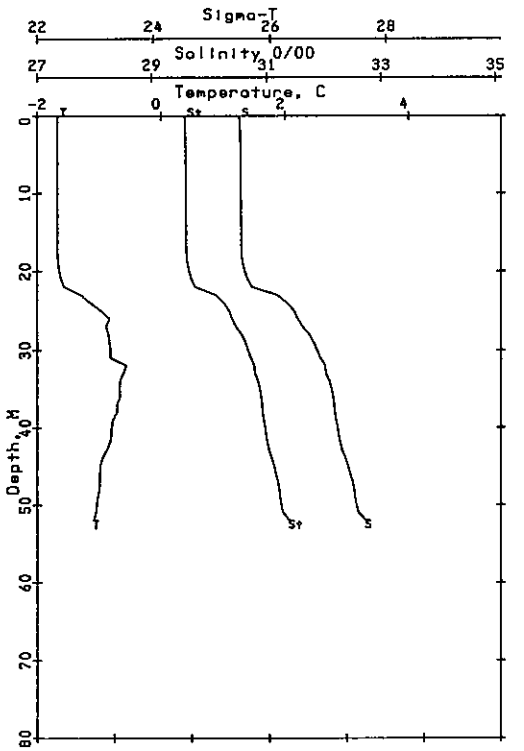


Ref. no. 12 Sta. A05 71.50 N
Time = 871102342 Beaufort 153.30 W

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A04	13	0106 21 Apr 1987	71° 23.7	153° 26.8	50

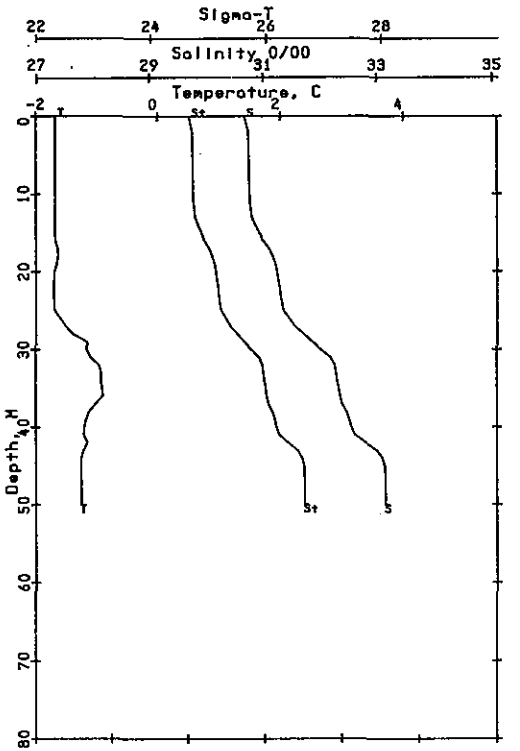
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.777	-1.681	24.746	8.54	0.98	6.25	1.15	0.01	0.02
17.3	31.116	-1.640	25.021	8.24	0.94	7.82	1.72	0.00	0.00
32.3	32.280	-0.958	25.947	7.42	1.30	19.08	6.12	0.00	0.00
37.3	32.404	-1.020	26.050	7.08	1.33	19.20	6.48	0.00	0.00
47.3	33.165	-1.253	26.674	6.55	1.92	27.87	11.61	0.07	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A03	14	1927 21 Apr 1987	71° 18.8	153° 33.8	46

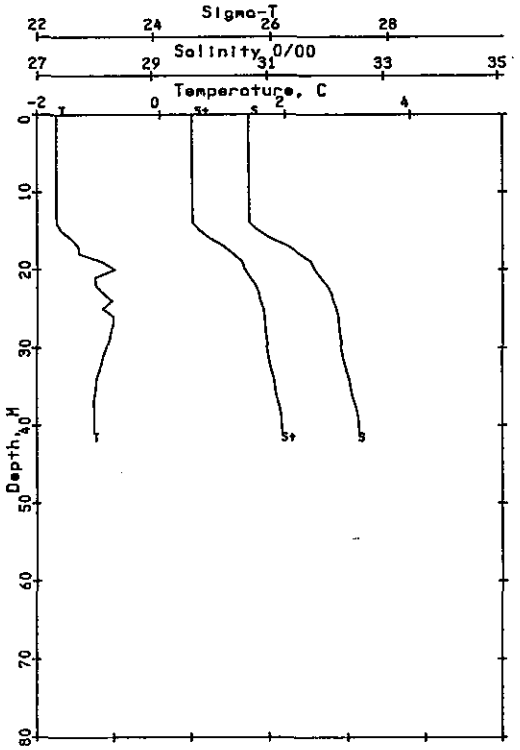
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.695	-1.680	24.680	8.70	1.14	6.40	1.08	0.01	0.00
12.3	30.706	-1.680	24.689	8.74	0.97	5.95	1.06	0.01	0.00
17.3	31.362	-1.332	25.214	7.95	1.05	9.94	2.84	0.00	0.00
22.3	32.031	-1.050	25.749	7.47	1.26	15.06	5.03	0.00	0.00
27.3	32.238	-0.770	25.907	7.25	1.36	18.00	6.50	0.00	0.00
37.3	32.511	-1.073	26.138	7.02	1.40	21.68	7.97	0.00	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
A02	15	2159 21 Apr 1987	71° 13.0	153° 39.9	26

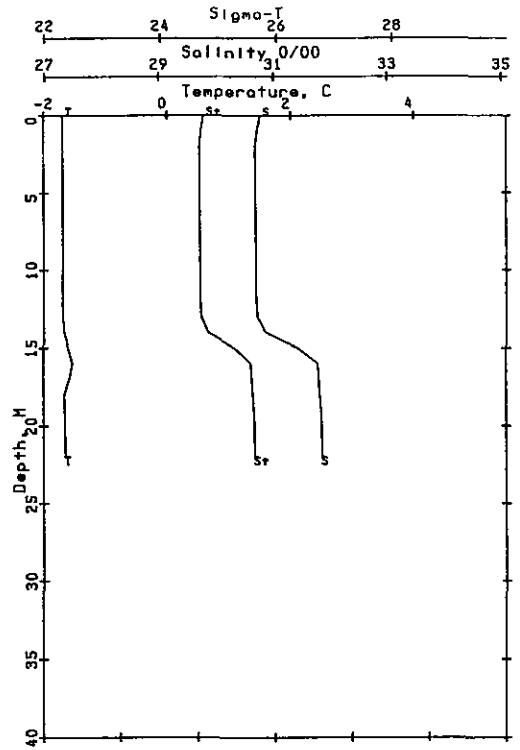
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.696	-1.687	24.680	8.00	0.78	5.64	1.05	0.01	0.00
6.3	30.703	-1.688	24.686	8.00	0.83	5.68	1.13	0.02	0.00
9.3	30.708	-1.690	24.690	8.49	1.06	5.96	1.24	0.01	0.00
13.3	30.729	-1.688	24.707	8.49	1.00	6.98	1.29	0.01	0.00
17.3	31.816	-1.577	25.588	8.62	1.04	10.65	2.39	0.00	0.00
20.3	31.868	-1.649	25.631	8.64	0.99	10.77	2.48	0.01	0.00



Ref. no. 13 Sta. A04 71.40 N
Time = 871110106 Beaufort 153.45 W



Ref. no. 14 Sta. A03 71.31 N
Time = 871111927 Beaufort 153.56 W



Ref. no. 15 Sta. A02 71.22 N
Time = 871112159 Beaufort 3 16 153.66 W

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
W12	16	2315 21 Apr 1987	71° 31.7	155° 46.0	124

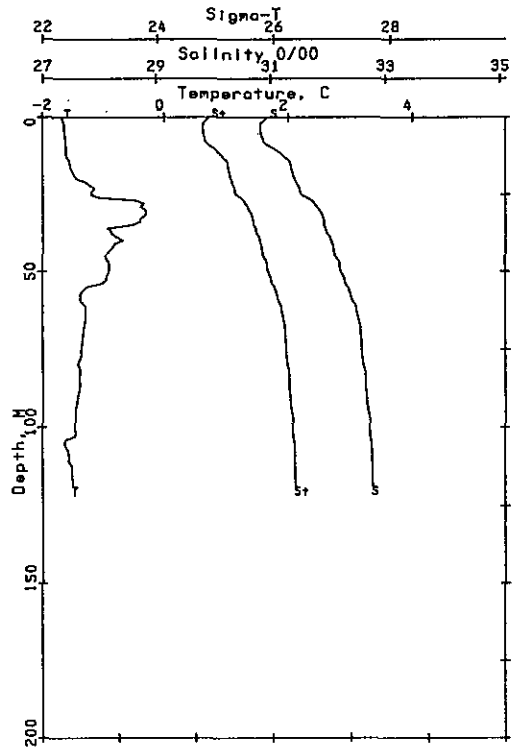
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.839	-1.650	24.796	8.53	0.85	6.68	1.30	0.02	0.00
27.3	31.727	-0.460	25.483	8.03	0.99	10.03	2.70	0.02	0.00
57.3	32.392	-1.376	26.050	7.37	1.21	18.86	8.22	0.00	0.00
77.3	32.593	-1.369	26.214	7.27	1.36	19.70	7.56	0.08	0.00
102.3	32.738	-1.454	26.333	7.28	1.28	18.93	7.13	0.10	0.13
117.3	32.777	-1.511	26.367	7.09	1.38	21.31	8.42	0.12	0.15

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
W11	17	1802 22 Apr 1987	71° 35.0	155° 46.8	200

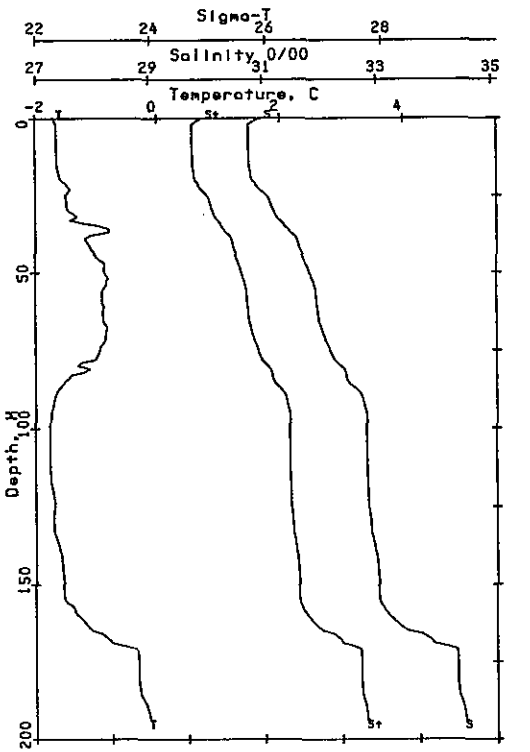
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.778	-1.653	24.746	8.64	1.27	0.00	0.78	0.03	0.00
52.3	31.883	-0.796	25.621	7.16	1.27	18.36	5.57	0.03	0.00
102.3	32.840	-1.761	26.424	7.32	1.33	21.06	7.94	0.00	0.37
157.3	33.110	-1.389	26.634	6.64	1.40	24.57	9.97	0.16	0.42
177.3	34.407	-0.312	27.643	6.20	1.14	19.04	12.06	0.14	0.33
192.3	34.529	-0.143	27.734	6.28	1.14	17.54	11.64	0.09	0.31

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
W03	18	2055 22 Apr 1987	72° 13.7	155° 07.4	>1000

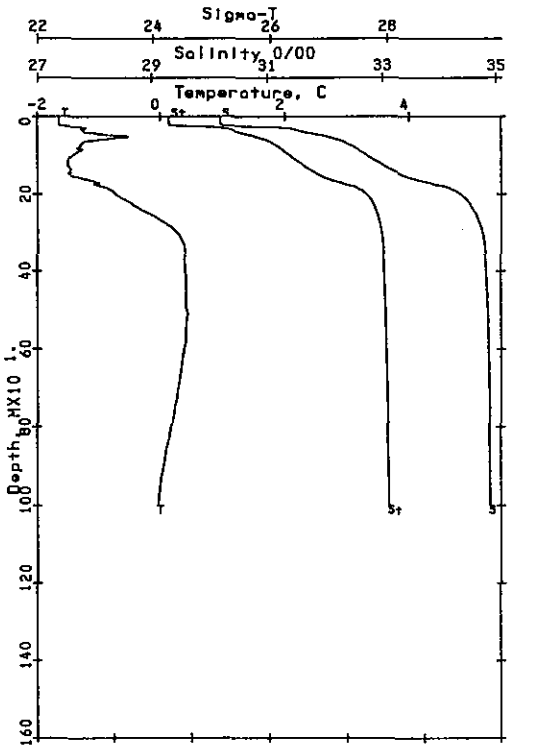
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.203	-1.645	24.279	9.21	0.75	8.01	3.16	0.18	0.00
47.3	31.886	-1.017	25.630	8.21	1.12	11.20	3.21	0.00	0.00
122.3	32.990	-1.495	26.539	6.62	1.68	29.63	11.20	0.00	0.00
497.3	34.854	0.415	27.965	6.80	0.84	6.59	9.56	0.02	0.00
995.3	34.897	-0.033	28.025	6.92	1.09	7.03	9.54	0.02	0.03
997.3	34.897	-0.035	28.025	6.92	0.85	6.67	9.87	0.01	0.00



Ref. no. 16 Sta. W12 71.53 N
Time = 871112315 Beaufort 155.77 W



Ref. no. 17 Sta. W11 71.58 N
Time = 871121802 Beaufort 155.78 W



Ref. no. 18 Sta. W03 72.23 N
Time = 871122055 Beaufort 155.12 W

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
W04	19	0004 23 Apr 1987	72° 08.2	155° 18.9	498

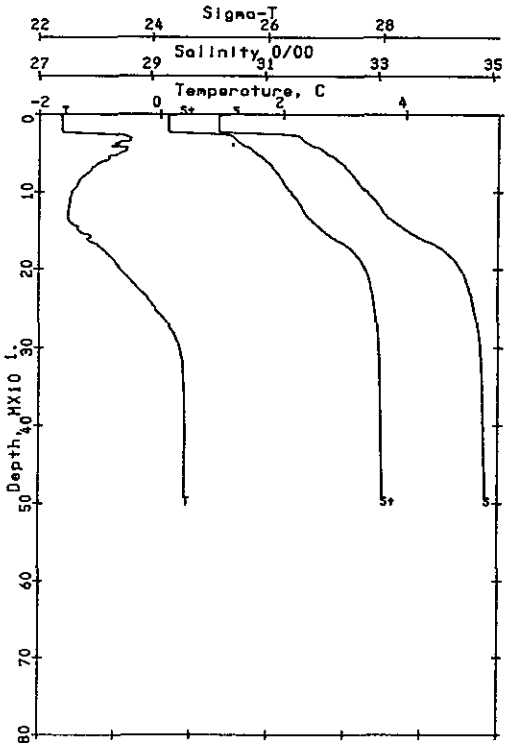
NO SAMPLES TAKEN

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B09	20	1839 26 Apr 1987	71° 03.3	146° 38.3	>1000

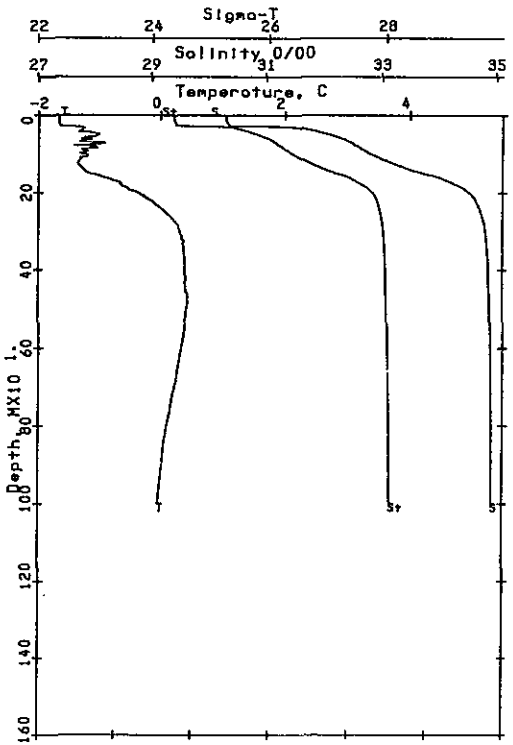
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.302	-1.669	24.360	9.21	0.74	4.42	0.02	0.79	0.00
47.3	32.007	-1.058	25.730	8.07	1.10	11.33	3.34	0.66	0.00
82.3	32.583	-1.057	26.196	7.27	1.40	21.70	7.44	0.66	0.00
122.3	33.124	-1.344	26.644	6.69	1.60	28.97	10.84	0.65	0.00
467.3	34.855	0.435	27.964	6.81	0.80	5.21	10.44	0.65	0.00
997.3	34.896	-0.040	28.024	6.93	0.81	5.27	9.68	0.64	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B08	21	2240 26 Apr 1987	70° 57.7	146° 44.5	859

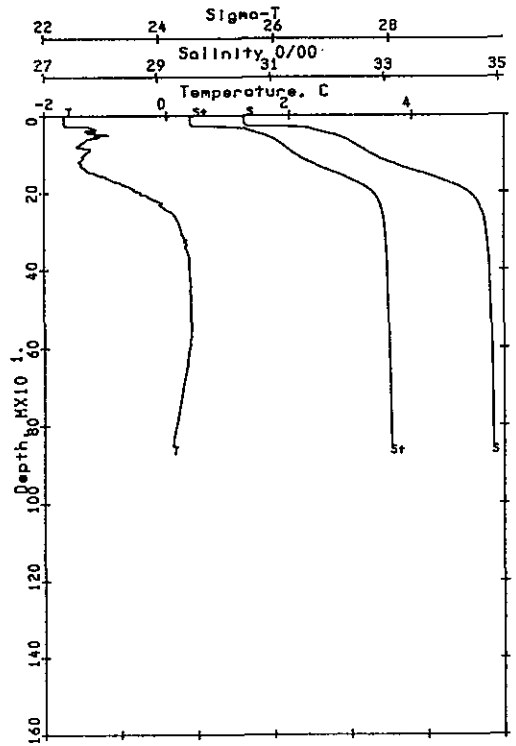
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.530	-1.673	24.545	9.12	0.55	4.60	0.38	0.42	0.00
17.3	30.536	-1.672	24.550	9.12	0.56	4.57	0.46	0.43	0.00
87.3	32.631	-1.239	26.241	7.18	1.42	22.59	7.68	0.44	0.00
167.3	34.002	-0.894	27.340	6.42	1.32	23.19	10.75	0.49	0.00
467.3	34.848	0.405	27.961	6.78	0.80	5.56	9.52	0.53	0.00
837.3	34.891	0.111	28.013	6.95	0.80	4.92	8.97	0.53	0.00



Ref. no. 19 Sta. W04 72.14 N
Time = 871130004 Beaufort 155.32 W



Ref. no. 20 Sta. B09 71.06 N
Time = 871161839 Beaufort 146.64 W



Ref. no. 21 Sta. B08 70.96 N
Time = 871162240 Beaufort 146.74 W

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B07	22	1808 27 Apr 1987	70° 53.1	146° 49.3	68

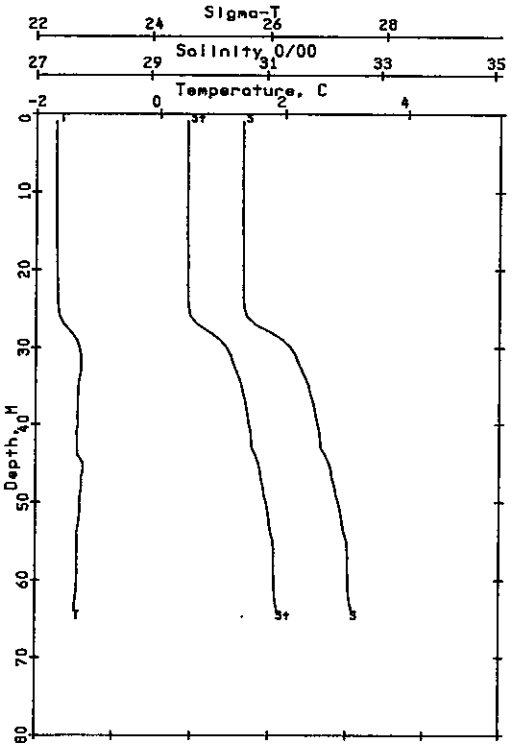
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.593	-1.673	24.596	9.00	0.80	8.01	1.60	0.03	0.00
17.3	30.604	-1.662	24.605	9.04	0.82	8.09	1.67	0.02	0.00
27.3	30.807	-1.541	24.768	8.82	0.90	8.16	2.10	0.02	0.00
37.3	31.816	-1.318	25.582	8.67	1.03	9.66	3.01	0.02	0.29
47.3	32.151	-1.261	25.852	7.74	1.23	17.50	6.92	0.02	0.01
57.3	32.424	-1.326	26.075	7.41	1.38	22.26	9.03	0.03	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B06	23	1957 27 Apr 1987	70° 49.9	146° 53.8	60

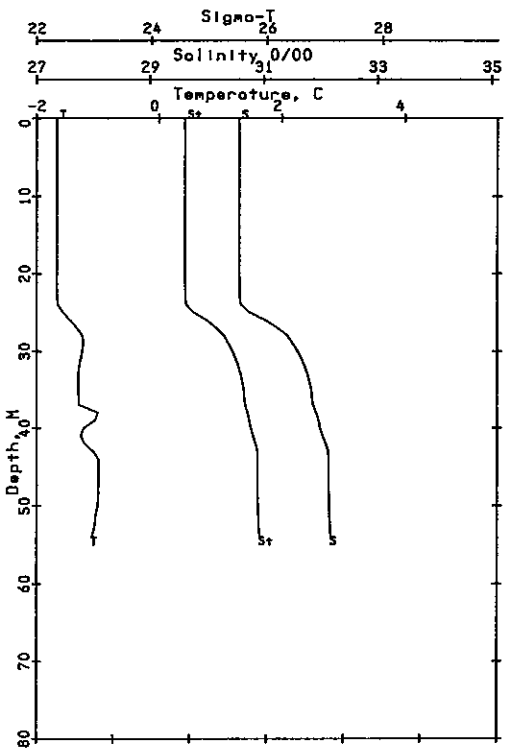
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.575	-1.672	24.582	9.03	0.83	8.05	1.73	0.03	0.00
17.3	30.576	-1.672	24.582	9.03	0.83	8.05	1.66	0.03	0.00
27.3	31.245	-1.340	25.119	8.77	0.93	8.71	2.38	0.04	0.00
37.3	31.865	-1.307	25.622	8.15	1.11	13.04	4.85	0.04	0.00
42.3	32.086	-1.220	25.798	7.66	1.20	18.05	6.26	0.04	0.00
47.3	32.143	-0.988	25.838	7.70	1.22	18.12	6.48	0.04	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B05	24	2129 27 Apr 1987	70° 45.1	147° 00.6	48

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.627	-1.677	24.624	9.08	0.83	8.26	1.82	0.04	0.06
17.3	30.651	-1.679	24.644	9.02	0.85	8.34	1.82	0.04	0.00
22.3	30.679	-1.680	24.667	9.04	0.86	8.58	1.91	0.04	0.00
27.3	30.908	-1.672	24.852	8.87	0.90	9.24	2.47	0.04	0.00
32.3	31.486	-1.110	25.309	8.52	0.97	9.66	3.06	0.04	0.00
37.3	31.764	-0.828	25.526	8.27	1.03	10.99	3.84	0.04	0.00



Ref. no. 22 Sta. B07 70.88 N
Time = 871171808 Beaufort 146.82 W



Ref. no. 23 Sta. B06 70.83 N
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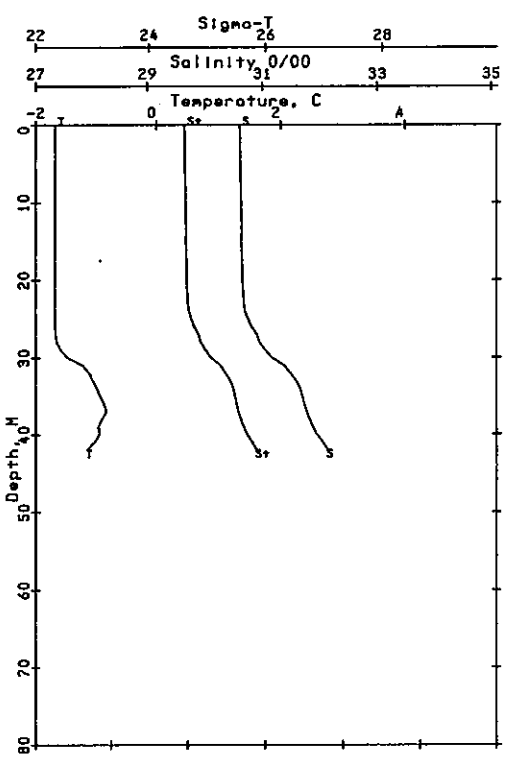


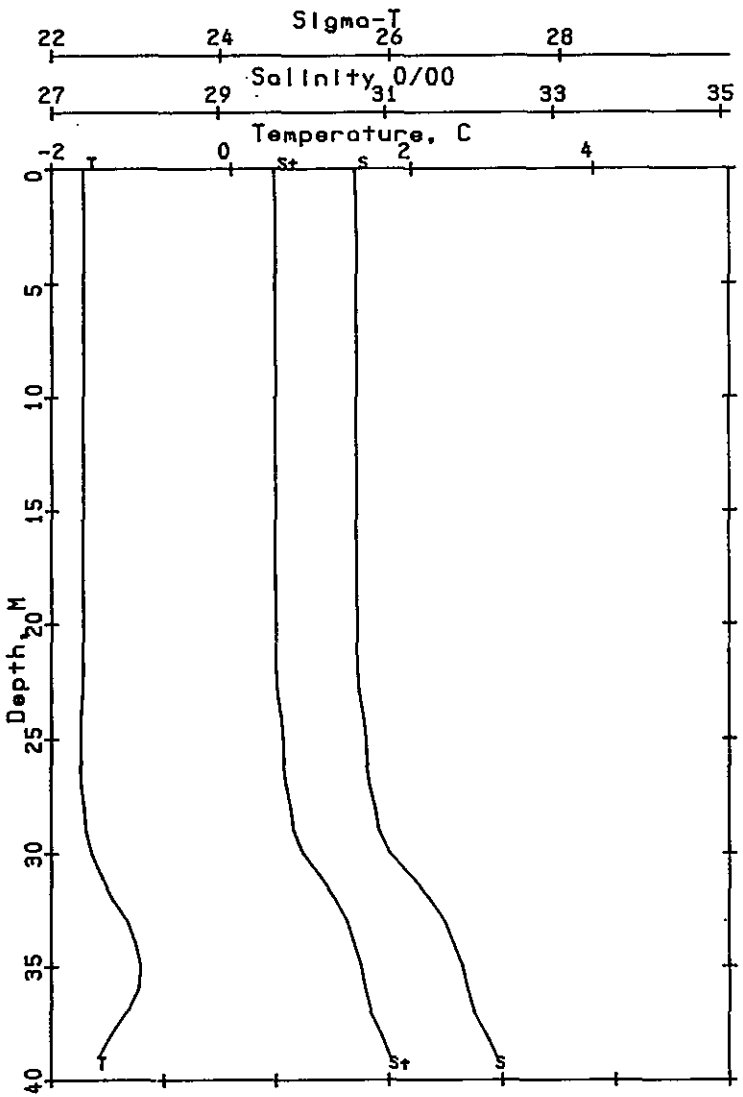
Ref. no. 24 Sta. B05 70.75 N
Time = 871172129 Beaufort 147.01 W

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B04	25	2252 27 Apr 1987	70° 42.1	147° 04.6	44

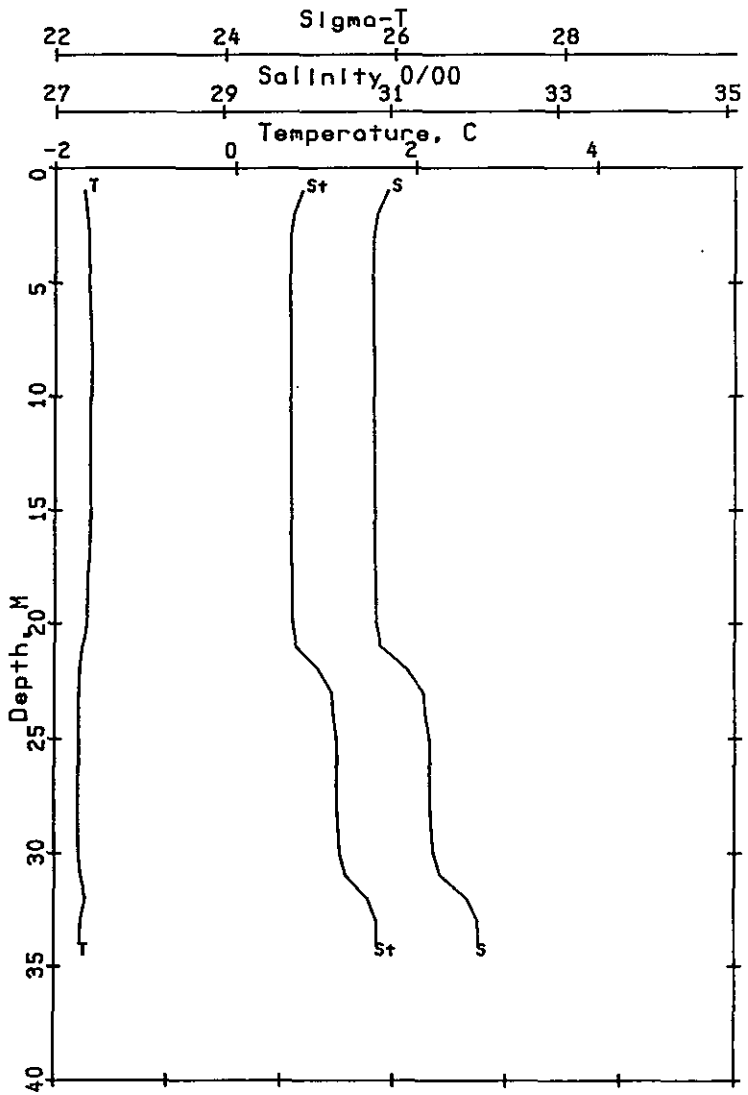
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.665	-1.648	24.654	9.06	0.84	8.30	1.82	0.04	0.00
17.3	30.667	-1.652	24.656	9.06	0.84	8.38	1.88	0.04	0.00
22.3	30.684	-1.647	24.670	9.01	0.86	8.71	1.91	0.05	0.00
27.3	30.827	-1.668	24.787	8.85	0.88	9.29	2.36	0.05	0.01
32.3	31.534	-1.328	25.353	8.33	1.01	11.62	3.70	0.05	0.00
37.3	32.063	-1.160	25.778	7.85	1.07	15.87	4.97	0.05	0.04

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B03	26	1720 28 Apr 1987	70° 37.7	147° 07.7	38

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
7.3	30.811	-1.600	24.772	9.03	0.85	8.97	1.90	0.05	0.01
12.3	30.820	-1.607	24.780	9.05	0.87	8.87	1.97	0.05	0.03
17.3	30.828	-1.611	24.787	9.03	0.88	9.67	1.97	0.05	0.00
22.3	31.218	-1.718	25.105	9.07	0.91	10.46	2.42	0.08	0.00
27.3	31.494	-1.734	25.329	8.97	0.92	10.45	2.48	0.08	0.00
31.3	31.615	-1.707	25.427	8.39	1.00	12.95	3.72	0.08	0.00



Ref. no. 25 Sta. B04 70.70 N
Time = 871172252 Beaufort 147.08 W



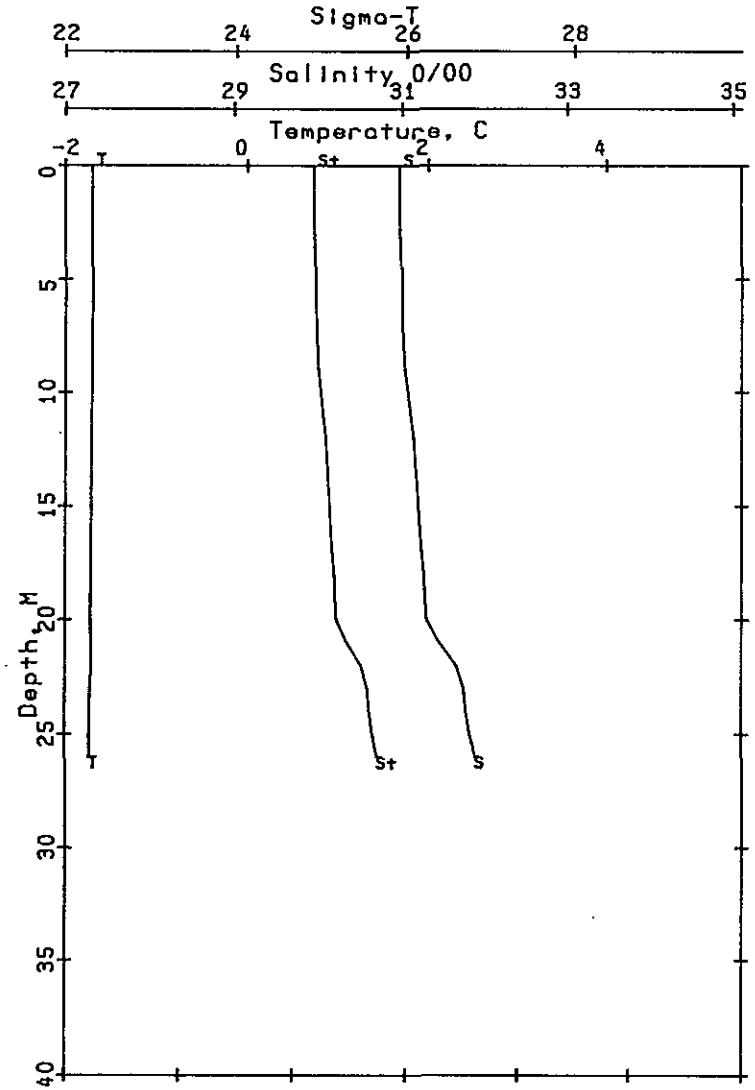
Ref. no. 26 Sta. B03 70.63 N
Time = 871181720 Beaufort 147.13 W

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B02	27	1855 28 Apr 1987	70° 32.0	147° 15.0	32

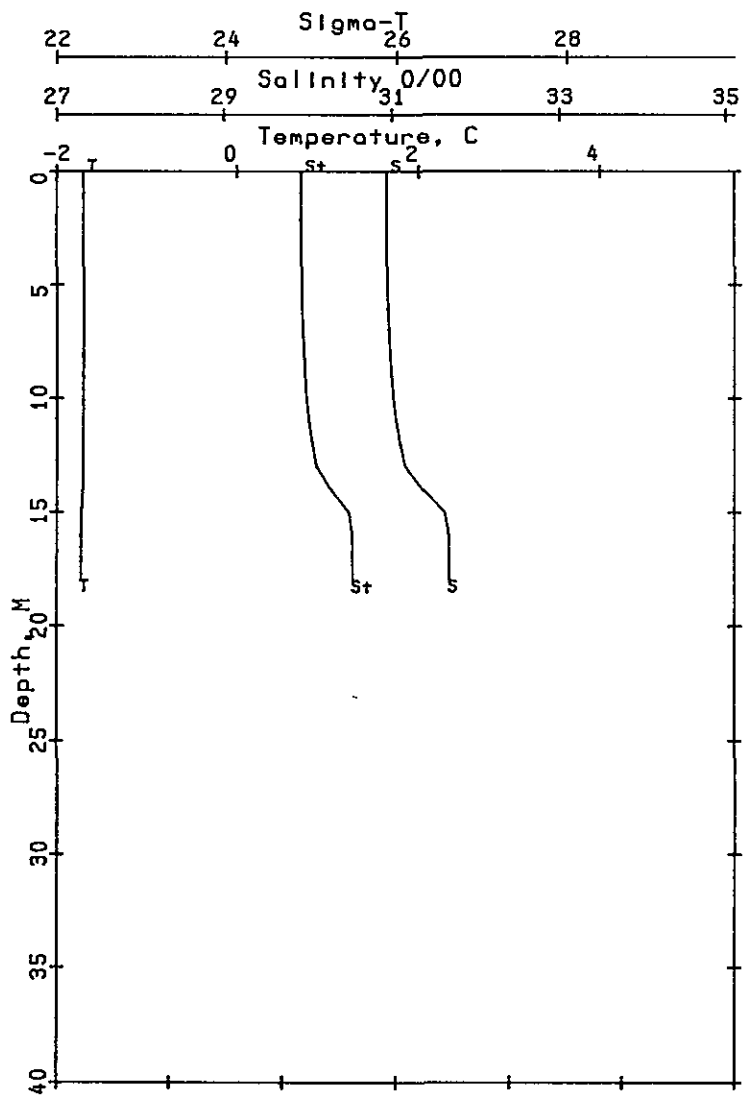
Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.974	-1.705	24.907	8.93	0.88	9.52	2.18	0.06	0.00
7.3	31.006	-1.706	24.932	8.97	0.90	8.70	2.22	0.06	0.00
12.3	31.142	-1.714	25.043	8.97	0.91	9.34	2.27	0.06	0.03
17.3	31.237	-1.719	25.121	9.00	0.88	9.40	2.14	0.07	0.00
22.3	31.660	-1.714	25.464	8.69	0.94	10.60	2.89	0.06	0.00
24.3	31.775	-1.733	25.558	8.67	0.94	11.40	2.91	0.07	0.00

Station	Cast	Time (UCT)	Latitude (°N)	Longitude (°W)	Bottom Depth (m)
B01	28	2016 28 Apr 1987	70° 27.8	147° 20.0	23

Depth	S (PSU)	T (°C)	Sigma-t	O_2 (ml/l)	PO_4 (µm/l)	SiO_4 (µm/l)	NO_3 (µm/l)	NO_2 (µm/l)	NH_3 (µm/l)
2.3	30.945	-1.703	24.882	9.01	0.88	8.87	2.09	0.04	0.00
5.3	30.947	-1.702	24.884	8.99	0.88	8.85	2.12	0.04	0.00
8.3	30.982	-1.703	24.913	8.95	0.90	9.33	2.19	0.04	0.00
11.3	31.055	-1.704	24.972	8.92	0.91	10.04	2.28	0.04	0.04
14.3	31.368	-1.711	25.227	8.77	0.91	10.03	2.53	0.05	0.00
17.3	31.680	-1.734	25.480	8.74	0.94	10.82	2.73	0.08	0.00



Ref. no. 27 Sta. B02 70.53 N
Time = 871181855 Beaufort 147.25 W



Ref. no. 28 Sta. B01 70.46 N
Time = 871182016 Beaufort 147.33 W

* U.S. Government Printing Office: 1988—573-002/80525