

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6001

8 January - 13 February 1960

SIO Reference 61-23

20 June 1961

UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 6001

8 January - 13 February 1960

Sponsored by

Marine Research Committee

SIO Reference 61-23

20 June 1961

Approved for distribution:



Roger Revelle, Director

UNIVERSITY OF CALIFORNIA
SCHOOL OF OCEANOGRAPHY
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INTRODUCTION

The data presented in this report were collected on the one hundred and twenty-eighth consecutive cruise of the California Cooperative Oceanic Fisheries Investigations program. The R/V Black Douglas of the U. S. Bureau of Commercial Fisheries and the R/V Horizon and R/V Orca of the Scripps Institution participated in this cruise.

The data are tabulated at observed depths; the interpolated and computed values are tabulated at standard depths and are accompanied by charts of horizontal distribution. The presentation of data in this report does not constitute publication; however, the data contained in this report have been carefully edited and no modifications should be necessary before final publication.

STANDARD PROCEDURES

Processing of the data was carried out using the method described by Klein.^{1/} Certain approximations have been introduced for the determination of the integrated pressure terms which may result in errors whose maximum values are less than 0.5 dynamic centimeter at 0 over 200 decibars, 1.0 dynamic centimeter at 0 over 500 decibars, and 2.0 dynamic centimeters at 0 over 1000 decibars. The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of ΔD .

To indicate degree of accuracy, temperatures are recorded in tenths of a degree when obtained by bucket thermometer, thermograph, or bathythermograph, while temperatures from reversing thermometers are recorded in hundredths of a degree. The salinity values obtained by salinometer are recorded to three decimal places, provided they meet accepted standards. The third decimal place has been offset to emphasize that the accuracy of the observations is not to one unit in that place, but that the values recorded "have a reproducibility of $\pm 0.004\%$ salinity at the 95 percent probability level, and a probable accuracy of $\pm 0.01\%$ salinity or better at the same level of probability."^{2/} The values are recorded to two decimal places when obtained by chlorinity titration, or by salinometer where only one determination per sample was obtained, or where there is doubt concerning the accuracy of a particular sample, or of all samples on a station. The accuracy of all samples obtained by salinometer and recorded to two decimal places is believed to be equal to or better than those obtained by manual titration.

^{1/} Klein, Hans T. A new technique for processing physical oceanographic data. MS.

^{2/} Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.

Extrapolated values and values interpolated between remote observations are entered within parentheses. A hyphen is used to indicate a missing observed value. The time is the time of messenger release. When more than one cast was made on a station, messenger times and wire angles are given in the order of increasing depth. A line is left blank between the observed data of each cast.

On stations where more than one cast is lowered, the various property curves may not agree perfectly. This discrepancy may be caused by changes in geographical position, real property changes with time, slight error in measurement, or a combination of these factors. Stations with overlapping casts have the following footnote: Overlapping casts; reconciliation of property curves when necessary.

FOOTNOTES

Laboratory personnel, before titrating the salinity samples, note any possible imperfections in the sealing of the bottles as follows:

Loose bottle cap: The cap is definitely loose so that it could be moved with very little applied pressure. The salinity values obtained from these samples may be usable depending on time and/or conditions of storage.

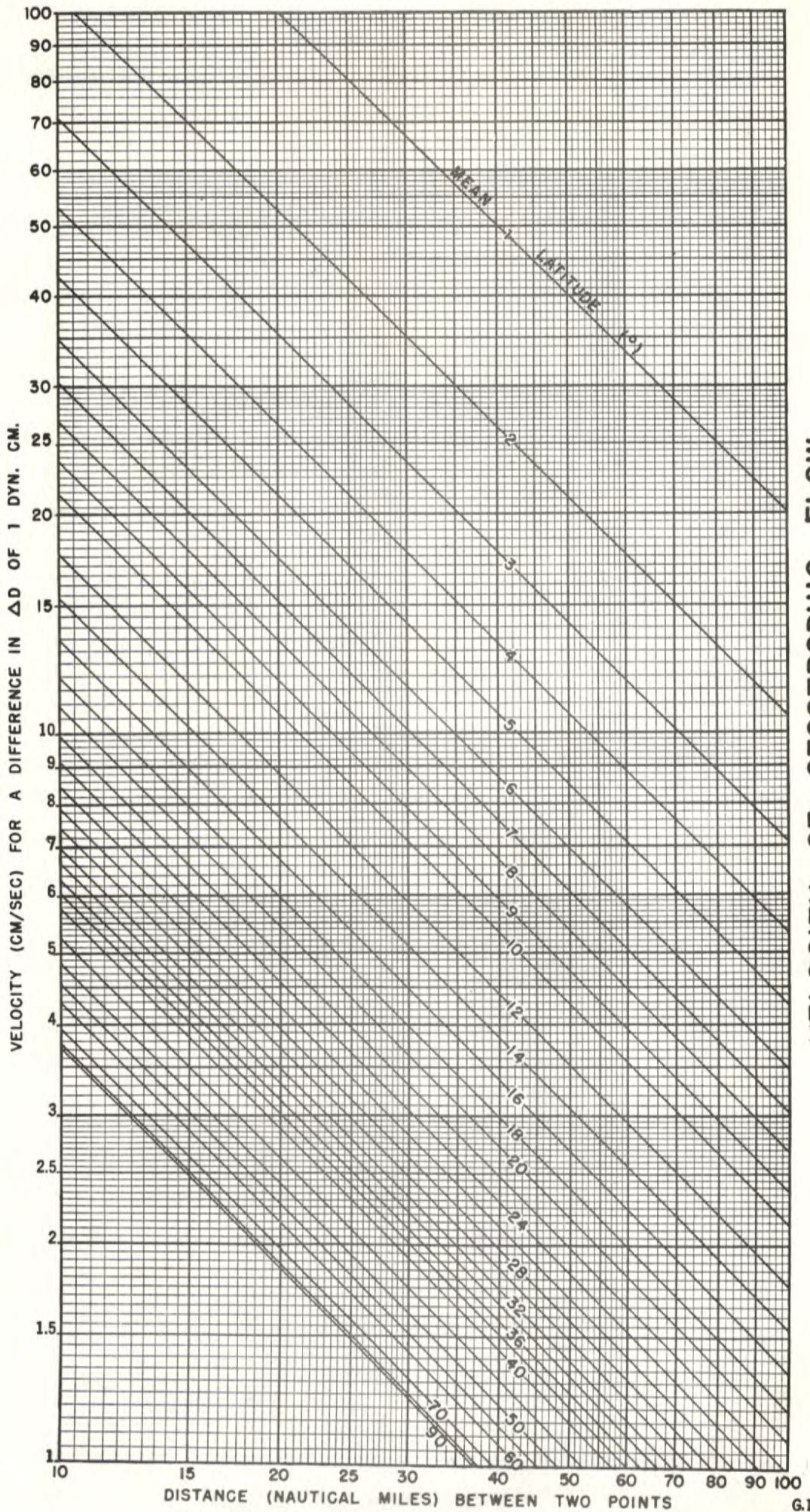
Possible evaporation: Either the cap was sealed with less than usual pressure, the bottle edge chipped, the rubber washer cracked, or the bale broke on opening, etc.

Use of the above values in interpolation depends upon consistency with other values of salinity and other properties, and these footnotes are supplemented with "falls on property curve" or "does not fall on property curve," depending upon whether the property curve was drawn through the value of not.

In addition to footnotes, three special notations are used without footnotes because their meaning is always the same.

To indicate a premature or a delayed reversal of the water-sampling device which results in certain depth and property errors, the following notation is used.

p: pretrip or posttrip.



VELOCITY OF GEOSTROPHIC FLOW

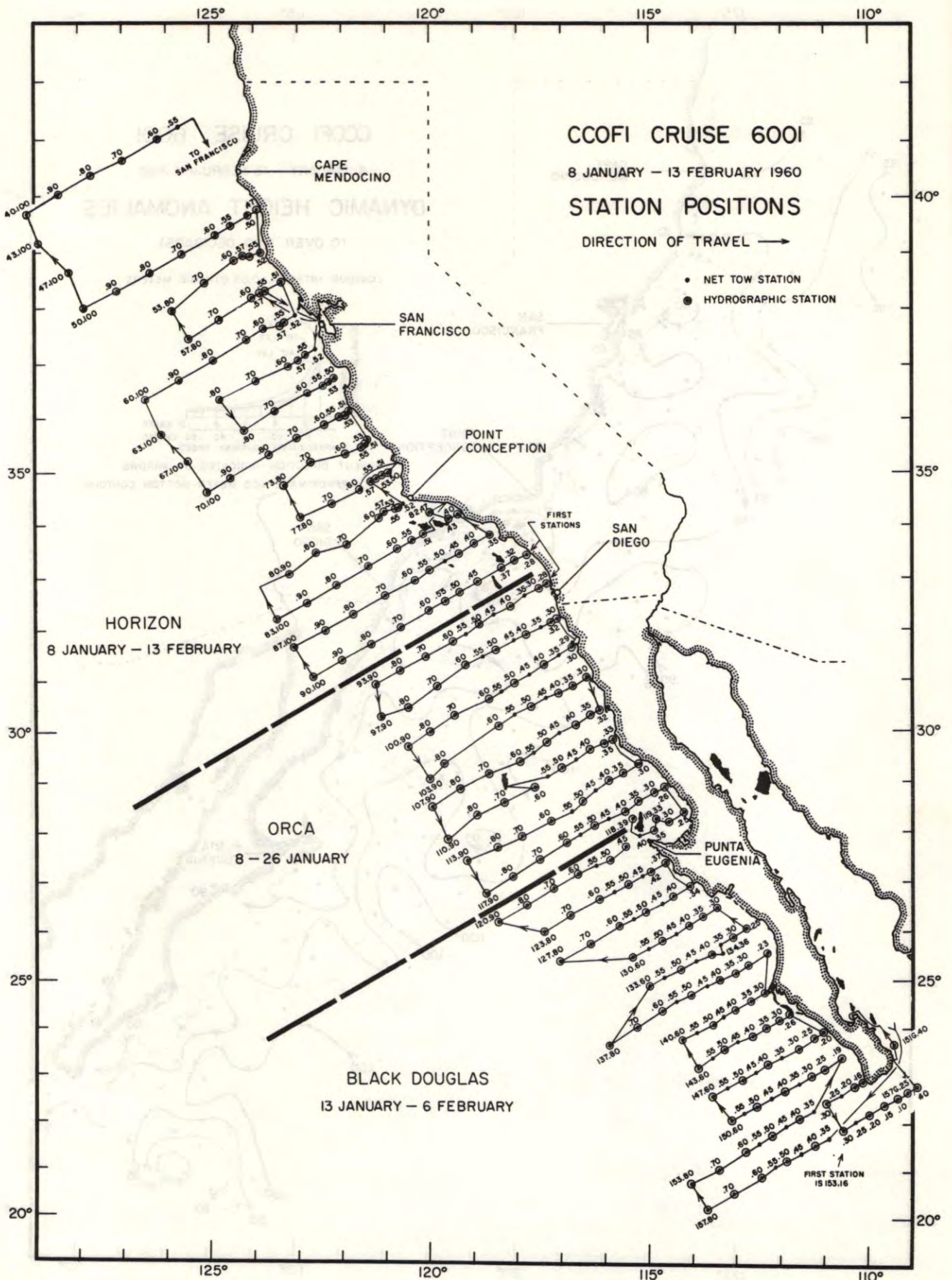


FIGURE 1

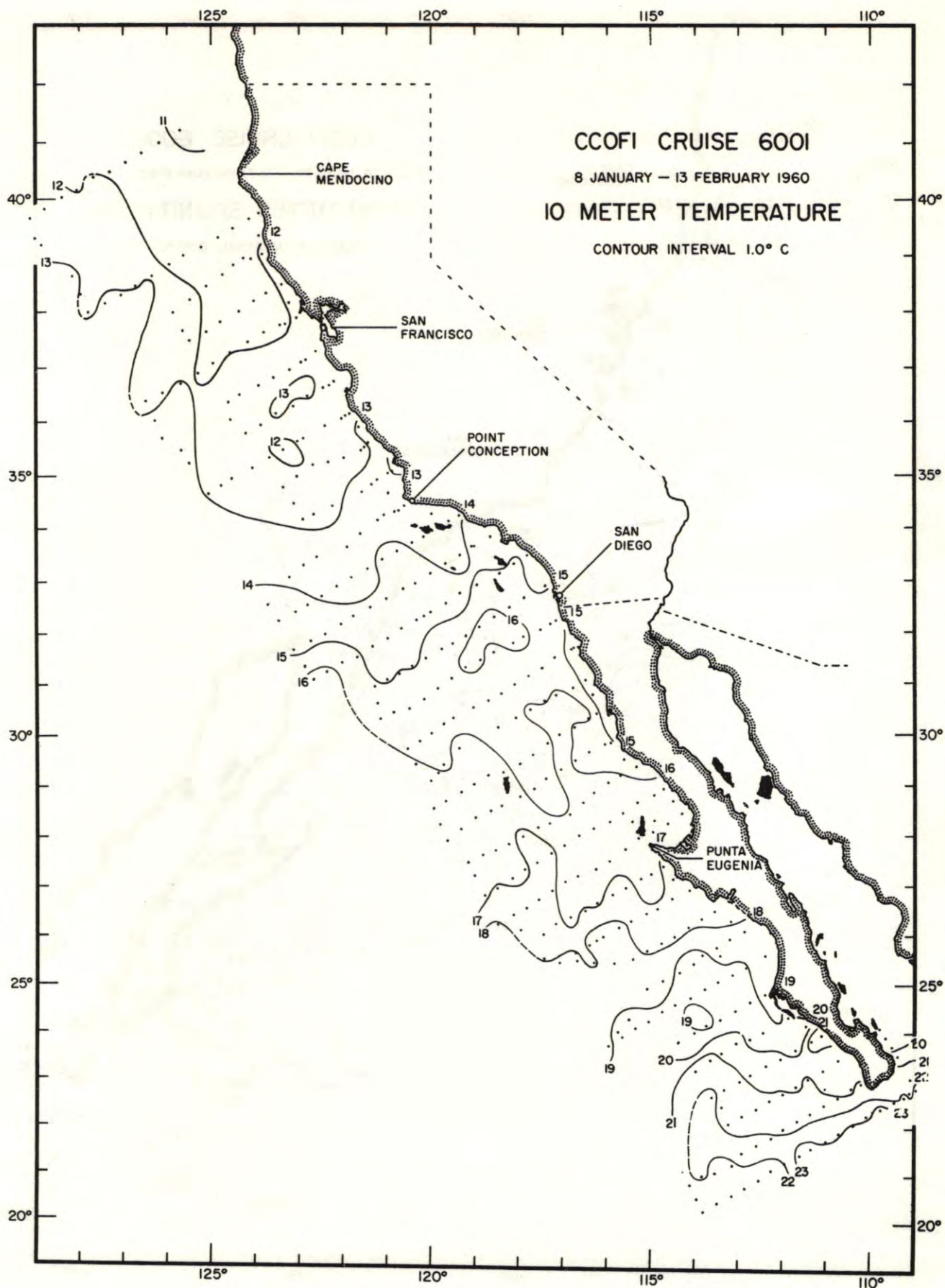


FIGURE 3

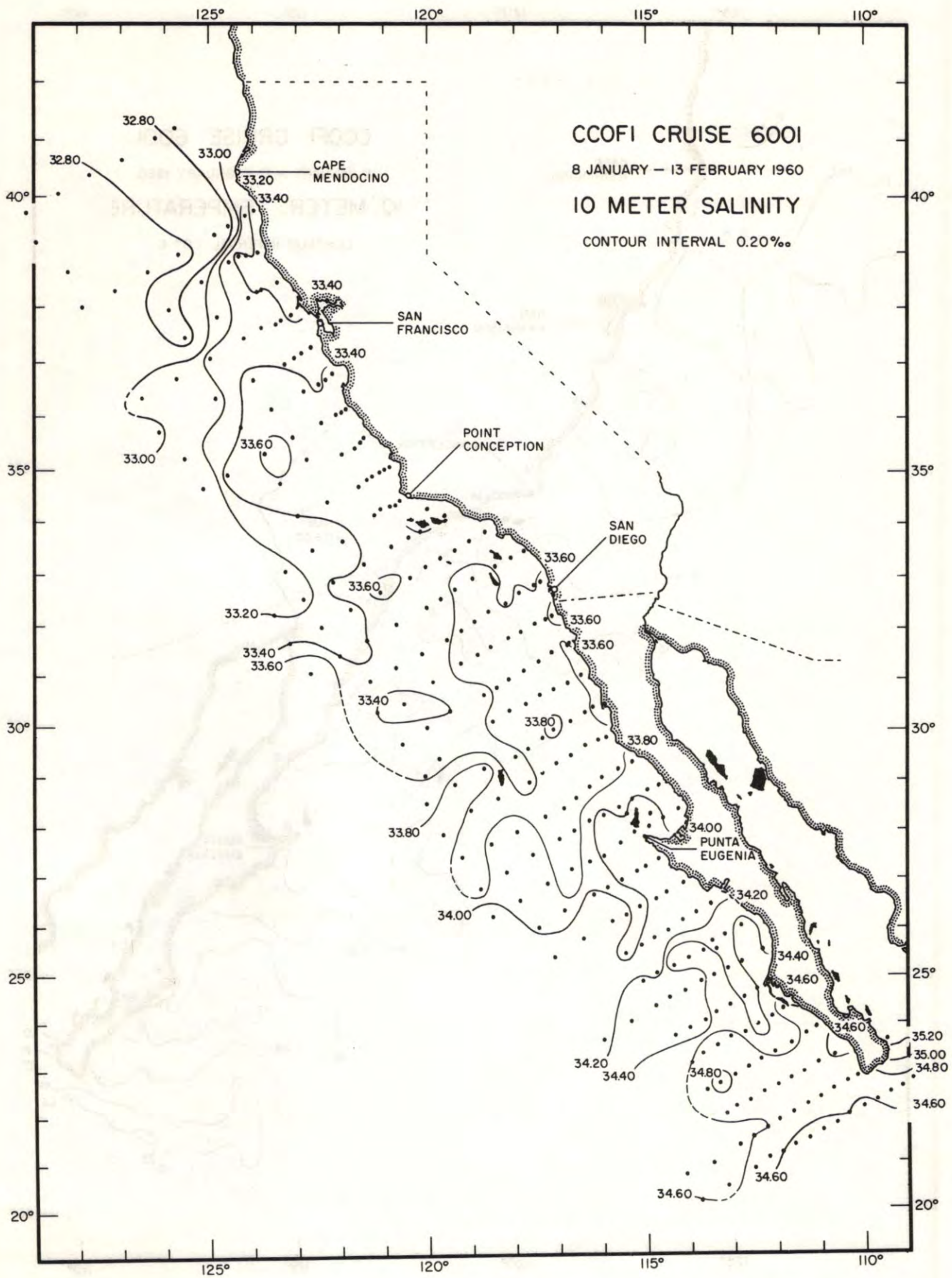


FIGURE 4

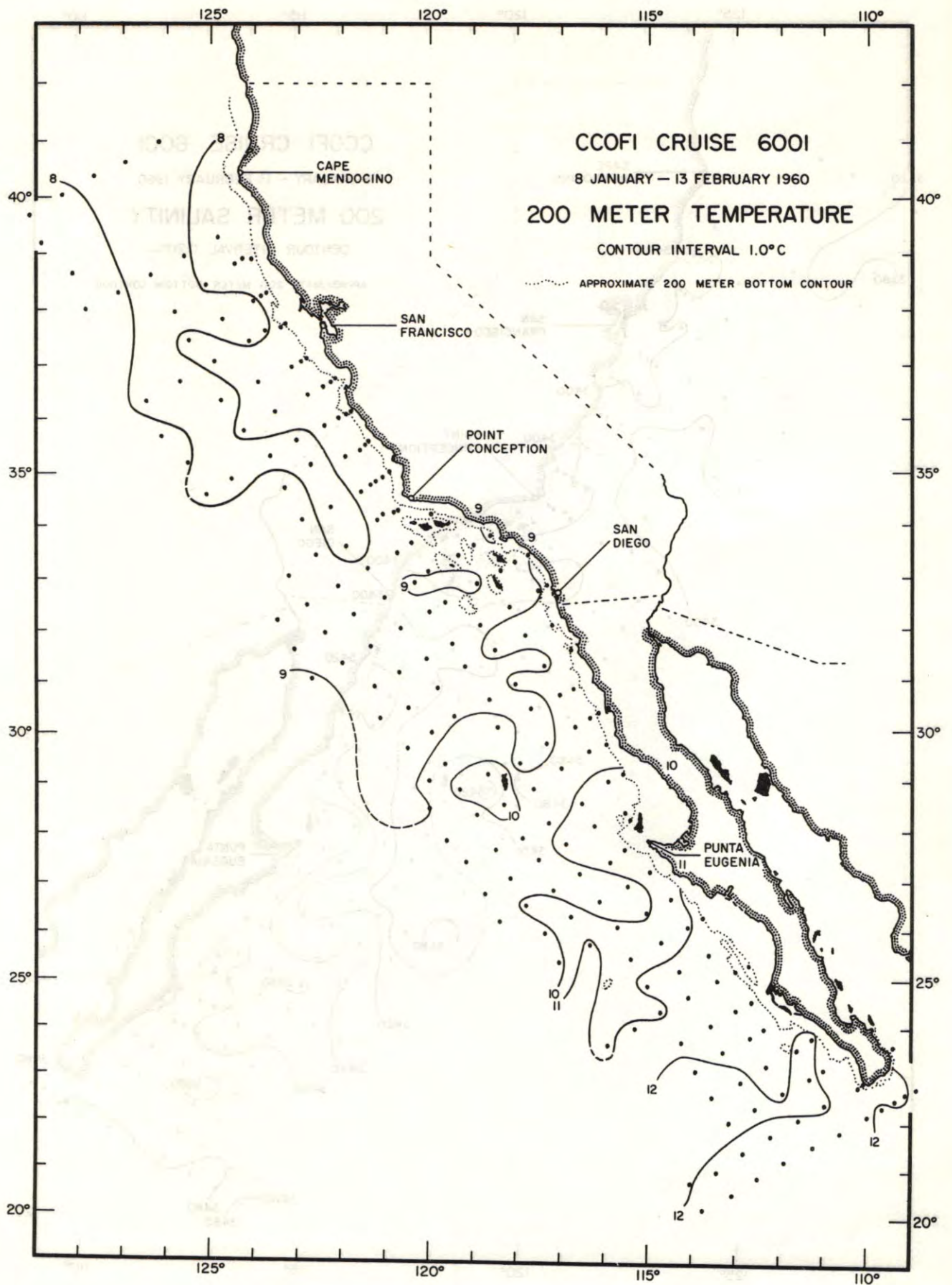


FIGURE 5

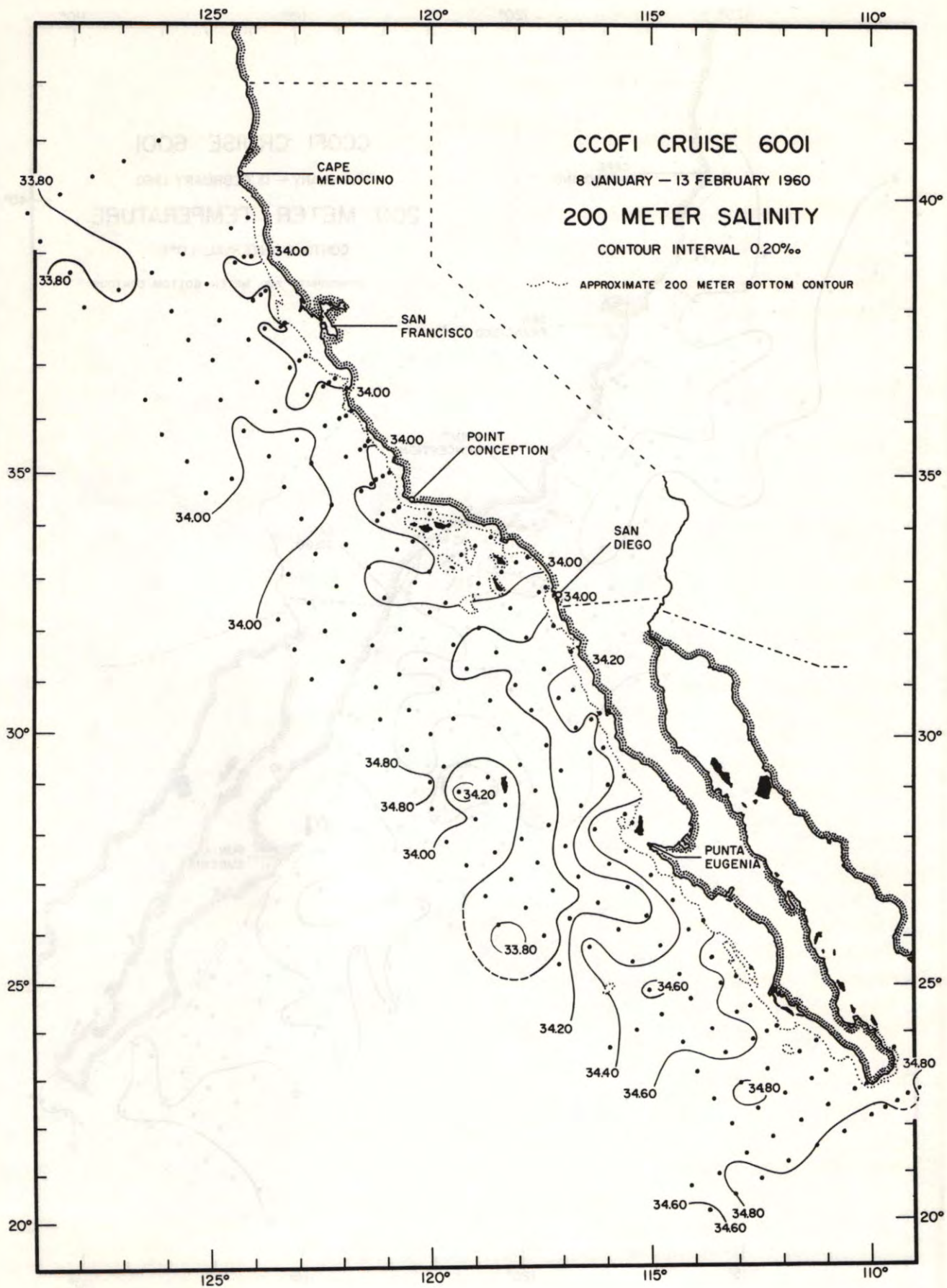


FIGURE 6

PERSONNEL

SHIPS' CAPTAINS

Collinson, Barnes, R/V Horizon
Forster, Charles W., R/V Black Douglas
Hopkins, Marvin F., R/V Orca

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

R/V Black Douglas

Farrar, Lloyd J., Fishery Aid, Bureau of Commercial Fisheries
Bottom, Kenneth S., Marine Technician
Hester, Arthur W., Marine Technician
Metoyer, Jack D., Fishery Aid, Bureau of Commercial Fisheries

R/V Horizon

Anderson, Norman E., Senior Marine Technician
*Costello, James P., Laboratory Technician II
Fisher, Oliver L., Marine Technician
Justice, David K., Marine Technician
Pine, James S., Marine Technician
Tracy, Robert S., Marine Technician

R/V Orca

Lawson, Jan B., Senior Marine Technician
Bassel, John B., Marine Technician
Brennan, Robert E., Marine Technician
Kimura, Makoto, Fishery Biologist, Bureau of Commercial Fisheries
Mantyla, Arnold W., Marine Technician

*January 8-13 only.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
CCOFI
6001

HORIZON; February 4, 1960; 1100 GCT; 41°02'N, 126°10'W; sounding, 1700 fm; wind, 160°, force 4; weather, cloudy; sea, very rough; wire angle, 29°.

40.60

0	11.22	32.77	6.09	294	0	11.22	32.77	6.09	25.03	294	0.00
9	11.23	32.77	6.14	294	10	11.23	32.77	6.14	25.03	294	0.03
30	11.24	32.75	6.13	296	20	11.24	32.76	6.13	25.01	296	0.06
56	11.14	32.77	6.04	293	30	11.24	32.75	6.13	25.00	296	0.09
65	10.72	32.90	5.84	276	50	11.19	32.76	6.11	25.02	295	0.15
82	9.02	33.25	4.58	224	75	9.75	33.11	5.23	25.54	246	0.22
95	8.82	33.43	4.20	207	100	8.80	33.45	4.05	25.96	206	0.27
108	8.80	33.46	3.97	205	125	8.69	33.56	3.69	26.06	196	0.32
133	8.60	33.66	3.44	187	150	8.28	33.73	3.39	26.26	177	0.37
150	8.28	33.73	3.39	177	200	7.60	33.90	2.90	26.49	155	0.46
174	7.90	33.84	3.13	164	250	6.85	33.98	2.49	26.66	139	0.53
203	7.56	33.91	2.88	154	300	6.29	33.99	1.99	26.74	131	0.60
226	7.10	33.97 3	2.78	143	400	5.48	34.07	1.18	26.90	116	0.73
268	6.70	33.98 8	2.29	136	500	5.13	34.16	0.66	27.02	105	0.84
320	6.03	34.00 0	1.78	128							
405	5.46	34.07 2	1.15	115							
482	5.27	34.15 0	0.73	107							
549	4.78	34.19 2	0.44	99							

HORIZON; February 4, 1960; 0523 GCT; 40°40'N, 126°56'W; sounding, 1600 fm; wind, 220°, force 3; weather, cloudy; sea, very rough; wire angle, 18°.

40.70

3	11.90	32.75	5.73	308	0	(11.90)	(32.75)	(5.73)	(24.88)	(308)	(0.00)
14	11.89	32.74	5.66	308	10	11.90	32.74	5.68	24.88	308	0.03
38	11.88	32.74	5.66	308	20	11.89	32.74	5.66	24.88	308	0.06
68	11.71	32.73	5.81a)	306	30	11.89	32.74	5.66	24.88	308	0.09
78	10.36	32.77	5.52	280	50	11.85	32.74	5.68	24.88	308	0.15
97	8.78	33.22	4.64	222	75	11.10	32.74	5.70	25.02	295	0.23
110	8.60	33.37	4.11	208	100	8.72	33.28	4.45	25.86	216	0.29
127	8.10	33.62	3.49	183	125	8.17	33.59	3.57	26.17	186	0.34
154	7.77	33.77	3.19	167	150	7.82	33.75	3.25	26.34	169	0.39
173	7.71	33.84	3.10	161	200	7.45	33.91	2.83	26.52	152	0.47
201	7.44	33.91	2.82	152	250	6.97	33.95	2.53	26.62	143	0.55
233	7.14	33.93	2.57	146	300	6.51	33.99	2.08	26.71	134	0.62
266	6.82	33.97 6	2.48	139	400	5.58	34.01	1.53	26.85	121	0.75
308	6.45	33.99 1	2.01	133	500	4.84	34.14	0.68	27.03	104	0.87
370	5.84	33.99 4	1.77	126	600	4.47	34.23	0.36	27.15	93	0.97
463	5.05	34.09 5	0.88	109							
549	4.66	34.19 2	0.48	98							
622	4.40	34.25 0	0.32	90							

HORIZON; February 3, 1960; 0752 GCT; 40°24'N, 127°40.5'W; sounding, 2000+ fm; wind, 190°, force 4; weather, overcast; sea, very rough; wire angle, 30°.

40.80

2	12.30	32.88	5.78	306	0	(12.30)	(32.88)	(5.78)	(24.90)	(306)	(0.00)
10	12.30	32.88	5.85	306	10	12.30	32.88	5.85	24.90	306	0.03
31	12.27	32.86	5.83	306	20	12.29	32.87	5.84	24.90	306	0.06
57	12.20	32.86	5.82	305	30	12.27	32.86	5.83	24.90	306	0.09
66	12.15	32.86	5.79	304	50	12.22	32.86	5.82	24.91	305	0.15
84	11.35	32.86	5.80	290	75	11.99	32.86	5.80	24.96	301	0.23
95	10.04	32.95	5.63	262	100	9.94	32.99	5.58	25.42	257	0.30
110	9.30	33.11	5.35	238	125	8.75	33.33	4.79	25.87	214	0.36
137	8.38	33.48	4.35	197	150	8.02	33.63	4.16	26.22	181	0.41
154	7.92	33.68	4.11	176	200	7.40	33.89	3.65	26.52	153	0.49
180	7.66	33.86	3.45	159	250	7.18	33.96	2.50	26.60	145	0.57
211	7.28	33.91	3.71	150	300	6.68	33.98	2.26	26.68	137	0.64
237	7.26	33.94 8	2.58	147	400	5.41	34.02	1.60	26.88	118	0.78
283	6.89	33.97 0	2.37	140	500	4.69	34.10	0.86	27.02	105	0.89
341	6.13	33.98 6	1.94	130	600	(4.37)	(34.16)		(27.10)	(97)	(1.00)
433	5.05	34.05 2	1.43	113							
517	4.63	34.11 6	0.72	103							
589	4.38	34.15 6	0.57	98							

a) Alternate value, 5.91 ml/L, not used in interpolation.

SIO

CCOFI
6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

40.90

HORIZON; February 2-3, 1960; 2243, 0151 GCT; 40°03'N, 128°24'W; sounding, 2395 fm; wind, 200°, force 4; weather, drizzle; sea, very rough; wire angle, 25°, 15°.

1	12.90	32.88	5.86	316	0	(12.90)	(32.88)	(5.86)	(24.80)	(316)	(0.00)
10	12.90	32.89	5.84	316	10	12.90	32.89	5.84	24.80	316	0.03
32	12.89	32.90	5.80	314	20	12.90	32.89	5.82	24.81	315	0.06
59	12.90	32.91	5.77	314	30	12.89	32.90	5.80	24.82	314	0.09
68	12.88	32.92	5.76	313	50	12.90	32.91	5.78	24.82	314	0.16
86	12.63	32.91	5.66	309	75	12.88	32.92	5.74	24.84	312	0.24
99	11.94	32.92	5.47	296	100	11.88	32.92	5.46	25.03	294	0.31
114	10.26	33.12	5.43	253	125	9.91	33.19	5.18	25.58	242	0.38
138	9.38	33.30	4.73	226	150	8.94	33.44	4.56	25.93	208	0.44
159	8.64	33.58	4.40	193	200	8.22	33.86	4.26	26.36	167	0.53
186	8.22	33.79	3.98	172	250	7.97	33.96	4.54	26.49	155	0.62
219	8.27	33.93	4.60	162	300	6.96	33.93	3.90	26.60	145	0.69
248	8.00	33.97 0	4.55	155	400	5.80	34.00	2.00	26.81	124	0.83
294	7.06	33.92 5	4.01	146	500	5.10	34.10	0.89	26.98	109	0.96
355	6.12	33.96 2	2.46	131	600	4.66	34.19	0.50	27.09	98	1.06
450	5.44	34.05 4	1.26	116	700	4.27	34.27	0.38	27.20	88	1.16
536	4.86	34.13 6	0.71	104	800	3.96	34.33	0.37	27.28	80	1.26
609	4.60	34.20 0	0.44	96	1000	3.45	34.44	0.45	27.42	67	1.42
					1200	2.95	34.50	0.60	27.51	58	1.56
380a)	5.94	33.97 8	2.29	128	1500	2.55	34.55	1.00	27.59	51	1.75
474	5.30	34.07 0	1.07	114	2000	2.03	34.60	1.48	27.67	43	2.03
617	4.67	34.19 0	0.49	98	2500	1.77	34.64	2.00	27.72	39	2.28
807	3.95	34.33 8	0.37	80	3000	1.63	34.66	2.44	27.76	35	2.52
998	3.46	34.43 8	0.44	67	4000	1.52	34.68	3.12	27.78	33	2.98
1237	2.88	34.50 7	0.64	57							
1474	2.59	34.54 4	0.97	52							
1713	2.17	34.57 8	1.23	46							
1952	2.05	34.59 8	1.44	44							
2193	1.88	34.62 4	1.73	40							
2435	1.80	34.63 7	1.92	40							
2676	1.72	34.64 8	2.16	38							
2921	1.64	34.66 3	2.43	35							
3162	1.60	34.66 4	2.53	35							
3405	1.58	34.66 8	2.74	34							
3694	1.52	34.67 8	2.93	34							
3982	1.52	34.68 6	3.11	33							
4271	1.54	34.68 2	3.20	33							
4369	1.55	34.69 0	3.36	33							

40.100

HORIZON; February 2, 1960; 1729 GCT; 39°43'N, 129°07.5'W; sounding, 2000+ fm; wind, 250°, force 4; weather, overcast; sea, very rough; wire angle, 18°.

2	12.82	32.86 b)	5.90	320	0	(12.82)	(32.82)	(5.90)	(24.76)	(320)	(0.00)
11	12.81	32.92 b)	5.72	320	10	12.81	(32.82)	5.73	(24.76)	(320)	(0.03)
34	12.79	32.90 b)	5.84	319	20	12.80	(32.82)	5.76	(24.76)	(320)	(0.06)
63	12.82	32.90 b)	5.84	320	30	12.79	(32.82)	5.81	(24.77)	(319)	(0.10)
72	12.80	32.82	5.83	319	50	12.80	(32.82)	5.84	(24.76)	(320)	(0.16)
91	12.82	32.83	5.86	318	75	12.80	32.82	5.83	24.77	319	(0.24)
105	12.58	32.87	5.87	311	100	12.72	32.86	5.87	24.82	314	(0.32)
120	10.90	33.01	5.58	271	125	10.52	33.06	5.41	25.38	261	(0.39)
148	9.25	33.31	4.66	223	150	9.15	33.35	4.52	25.82	218	(0.45)
168	8.53	33.55	3.54	194	200	8.02	33.73	3.16	26.29	174	(0.55)
194	8.11	33.70	3.24	177	250	7.32	33.94	2.58	26.57	148	(0.64)
228	7.58	33.89	2.60	156	300	6.62	33.99	2.14	26.69	136	(0.71)
256	7.24	33.96 0	2.58	146	400	5.80	34.04	1.27	26.85	121	(0.84)
304	6.56	33.99 2	2.07	134	500	5.12	34.11	0.83	26.98	109	(0.96)
367	6.04	34.03 0	1.47	126	600	4.62	34.17	0.53	27.08	99	(1.07)
463	5.30	34.08 2	0.98	113							
551	4.92	34.15 5	0.60	103							
625	4.44	34.17 6	0.49	96							

a) Overlapping casts; reconciliation of property curves when necessary.

b) These first four salinity values are very doubtful as the result of a poorly mixed solution of silver nitrate.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
CCOFI
6001

HORIZON; February 2, 1960; 1249 GCT; 39°12.5'N, 128°52.5'W; sounding, 2000+ fm; wind, 250°, force 3; weather, clear; sea, very rough; wire angle, 31°.

43100

1	12.72	32.86	5.47	314	0	(12.72)	(32.86)	(5.47)	(24.82)	(314)	(0.00)
10	12.70	32.85	5.65	314	10	12.70	32.85	5.65	24.81	314	0.03
31	12.68	32.87	5.52	313	20	12.69	32.86	5.58	24.82	314	0.06
56	12.72	32.86	5.66	314	30	12.68	32.87	5.53	24.83	313	0.09
65	12.70	32.85	5.58	314	50	12.70	32.86	5.61	24.82	314	0.16
81	12.70	32.89	5.58	312	75	12.70	32.86	5.58	24.82	314	0.24
92	12.48	32.91	5.59	306	100	11.60	32.94	5.47	25.08	289	0.31
105	11.08	32.95	5.38	279	125	10.08	33.16	4.92	25.52	247	0.38
129	9.90	33.19	4.81	242	150	9.30	33.30	4.43	25.76	225	0.44
145	9.44	33.26	4.51	229	200	8.14	33.73	3.51	26.29	175	0.54
170	8.76	33.48	4.09	203	250	7.42	33.86	3.37	26.48	156	0.63
199	8.15	33.73	3.52	175	300	6.64	33.94	2.90	26.66	139	0.70
222	7.71	33.76 7	3.26	166	400	5.83	34.02	1.52	26.83	123	0.84
265	7.28	33.91 2	3.43	150	500	5.01	34.06	1.03	26.95	112	0.96
300p	6.64	33.94 2	2.90	139							
381p	6.02a)	33.99 9	1.76	127							
459p	5.22	34.03 0	1.24	116							
526p	4.95	34.09 0	0.82	108							

HORIZON; February 1, 1960; 0557 GCT; 38°39'N, 128°09.5'W; sounding, 2000+ fm; wind, 150°, force 5; weather, partly cloudy; sea, very rough; wire angle, 35°.

47100

1	13.18	32.94	5.77	317	0	(13.18)	(32.94)	(5.77)	(24.78)	(317)	(0.00)
10	13.18	32.92	5.69	319	10	13.18	32.92	5.69	24.77	319	0.03
30	13.18	32.91	5.67	320	20	13.18	32.92	5.68	24.77	319	0.06
54	13.14	32.94	5.71	317	30	13.18	32.91	5.67	24.76	320	0.10
63	13.10	32.94	5.54b)	316	50	13.15	32.93	5.69	24.79	317	0.16
79	13.03	32.95	5.82	314	75	13.06	32.95	5.70	24.82	314	0.24
90	11.82	33.01	5.73	287	100	11.28	33.12	5.60	25.28	270	0.31
103	11.16	33.15	5.55	265	125	10.14	33.21	5.15	25.55	244	0.38
128	10.03	33.21	5.10	242	150	9.23	33.40	4.44	25.85	216	0.44
144	9.34	33.35	4.53	221	200	8.55	33.86	3.28	26.32	172	0.53
167	8.94	33.66	4.21	192	250	7.82	33.96	4.13	26.51	153	0.62
197	8.59	33.84	3.21	174	300	7.06	33.97	3.37	26.62	143	0.69
222	8.32	33.93 2	3.85	162	400	5.82	33.99	2.06	26.80	126	0.84
263	7.57	33.96 6	4.20	150	500	5.04	34.06	1.18	26.94	112	0.96
318	6.84	33.96 7	3.09	140							
403	5.78	33.98 9	2.01	125							
482	5.16	34.03 6	1.33	114							
550	4.68	34.09 7	0.87	105							

HORIZON; January 28, 1960; 1517 GCT; 39°46'N, 123°54.5'W; sounding, 60 fm; wind, 140°, force 5; weather, overcast; sea, moderate; wire angle, 15°.

5047

2	11.58	33.44	5.85	251	0	(11.58)	(33.44)	(5.85)	(25.48)	(251)	(0.00)
12	11.62	33.43	5.82	252	10	11.61	33.43	5.83	25.47	252	0.03
31	11.60	33.44	5.81	252	20	11.60	33.43	5.82	25.47	252	0.05
50	11.58	33.44	5.74	251	30	11.60	33.44	5.81	25.47	252	0.08
73	11.62	33.44	5.73	252	50	11.58	33.44	5.74	25.48	251	0.13
					75	(11.62)	(33.44)	(5.73)	(25.47)	(252)	(0.19)

a) Alternate value, 5.91°C, not used in interpolation.

b) Alternate value, 5.62 ml/L, not used in interpolation.

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600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

50.50

HORIZON; January 28, 1960; 1725 GCT; 39°40'N, 124°07.5'W; sounding, 470 fm; wind, 140°, force 5; weather, overcast; sea, rough; wire angle, 27°.

1	11.58	33.22	5.95	268	0	(11.58)	(33.22)	(5.95)	(25.30)	(268)	(0.00)
10	11.60	33.22	6.00	268	10	11.60	33.22	6.00	25.30	268	0.03
32	11.58	33.43	5.87	252	20	11.60	33.26	5.98	25.32	265	0.05
58	11.44	33.44	5.72	249	30	11.58	33.42	5.88	25.47	252	0.08
67	11.32	33.51	5.50	241	50	11.51	33.44	5.81	25.49	250	0.13
85	11.13	33.53	5.23	237	75	11.20	33.53	5.30	25.62	238	0.19
96	11.08	33.51	4.83	237	100	11.02	33.52	4.79	25.64	236	0.25
110	10.83	33.57	4.72	229	125	10.46	33.62	3.95	25.82	219	0.31
136	10.22	33.66	3.36	212	150	9.89	33.70	3.20	25.98	204	0.36
153	9.82	33.71	3.16	202	200	8.89	33.83	2.74	26.24	178	0.46
178	9.38	33.78	2.96	190	250	8.12	33.93	2.63	26.45	159	0.54
209	8.67	33.86	2.67	173	300	7.56	34.03	2.18	26.60	145	0.62
235	8.29	33.90 8	2.68	164	400	6.38	34.10	1.20	26.82	124	0.76
279	7.82	33.99 8	2.44	151	500	5.61	34.15	0.87	26.96	111	0.88
337	7.10	34.08 4	1.59	135	600	(5.07)	(34.21)		(27.06)	(101)	(1.00)
427	6.12	34.10 7	1.09	120							
510	5.54	34.15 5	0.83	110							
582	5.14	34.19 6	0.51	102							

50.55

HORIZON; January 29, 1960; 2330 GCT; 39°29.5'N, 124°29.5'W; sounding, 945 fm; wind, 160°, force 6; weather, overcast; sea, high; wire angle, 39°.

1	11.40	32.74	5.99	300	0	(11.40)	(32.74)	(5.99)	(24.97)	(300)	(0.00)
10	11.40	32.72	6.01	301	10	11.40	32.72	6.01	24.96	301	0.03
28	11.41	32.74	6.07	300	20	11.40	32.73	6.04	24.96	301	0.06
52	11.54	33.49	5.56	247	30	11.41	32.75	6.06	24.98	299	0.09
62a)	11.54	33.52	5.69	245	50	11.40	33.44	5.57	25.51	248	0.14
83	11.56	33.51	5.62	246							
96	11.06	33.51	4.99	237							
116	9.47	33.68	3.44	198							
140	8.82	33.78	3.24	182							
160	8.58	33.79 1	3.17	176							
193	7.97	33.87 7	3.15	162							
238	7.51	33.99 4	2.59	147							
305	6.62	34.02 5	2.00	133							
370	6.37	34.08 0	1.31	125							
426	5.96	34.14 5	0.87	116							

50.60

HORIZON; January 30, 1960; 0245 GCT; 39°20'N, 124°50'W; sounding, 2000+ fm; wind, 180°, force 3; weather, overcast; sea, moderate; wire angle, 09°.

2	11.41	32.74	6.04	300	0	(11.41)	(32.74)	(6.04)	(24.97)	(300)	(0.00)
13	11.40	32.75	6.03	299	10	11.40	32.75	6.03	24.98	299	0.03
32	11.42	32.83	6.08	293	20	11.41	32.78	6.05	25.00	297	0.06
60	11.02	32.86	5.97	284	30	11.41	32.82	6.07	25.03	294	0.09
70	10.45	32.87	5.82	274	50	11.39	32.84	6.07	25.05	293	0.15
85	9.30	33.03	5.12	244	75	10.08	32.90	5.67	25.32	267	0.22
100	8.68	33.16	4.52	225	100	8.68	33.16	4.52	25.76	225	0.28
115	9.00	33.49	4.10	206	125	8.97	33.60	3.78	26.05	197	0.33
140	8.90	33.71	3.41	188	150	8.77	33.76	3.29	26.21	182	0.38
159	8.62	33.80	3.21	177	200	8.13	33.93	2.97	26.44	160	0.47
189	8.23	33.91	3.06	163	250	7.59	33.98	3.01	26.56	149	0.55
218	7.98	33.96	2.83	156	300	6.92	33.98	2.93	26.65	140	0.62
247	7.63	33.98 0	3.02	150	400	6.11	34.08	1.27	26.83	123	0.76
296	6.97	33.97 6	2.96	141	500	5.56	34.13	0.76	26.95	112	0.88
349	6.54	34.04 6	1.74	130	600	5.00	34.20	0.52	27.06	101	0.99
433	5.86	34.10 2	0.97	117							
517	5.50	34.14 8	0.70	110							
600	5.00	34.20 0	0.52	101							

a) Possible pretrip; depths too uncertain for interpolation.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT	Z	T	S	O ₂	σ _t	δT	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6001

HORIZON; January 30, 1960; 0756, 1101 GCT; 39°01'N, 125°36'W; sounding, 2000+ fm; wind, 180°, force 4; weather, fog; sea, rough; wire angle, 00°, 21°.

50.70

5	11.44	32.86	5.81	292	0	11.5	(32.86)		(25.04)	(293)	(0.00)
15	11.44	32.86	5.86	292	10	11.44	32.86	5.84	25.05	292	0.03
35	11.40	32.94	5.84	285	20	11.43	32.87	5.86	25.06	291	0.06
44	11.50	33.24	5.60	264	30	11.40	32.90	5.86	25.09	288	0.09
60	11.72	33.54	5.43	246	50	11.67	33.38	5.56	25.41	258	0.14
75	11.54	33.55	5.18	242	75	11.54	33.55	5.18	25.57	242	0.20
100	9.57	33.59	3.51	207	100	9.57	33.59	3.51	25.94	207	0.26
119	9.14	33.64	3.32	197	125	8.97	33.66	3.31	26.10	192	0.31
139	8.52	33.71	3.29	182	150	8.49	33.80	3.18	26.28	175	0.36
160	8.46	33.87	3.06	170	200	7.98	33.94	2.76	26.47	157	0.44
189	8.15	33.94	2.76	160	250	7.45	34.01	2.30	26.60	145	0.52
225	7.58	33.96	2.76	150	300	6.97	34.04	1.82	26.69	136	0.59
254	7.42	34.02 0	2.24	144	400	5.89	34.06	1.35	26.85	121	0.72
305	6.90	34.04 0	1.81	135	500	5.34	34.12	0.83	26.97	110	0.84
359	6.09	34.02 1	1.75	126	600	5.17	34.24	0.41	27.08	99	0.96
444	5.54	34.06 6	0.94	117	700	4.45	34.27	0.34	27.18	89	1.06
529	5.28	34.15 7	0.64	107	800	4.06	34.32	0.30	27.26	82	1.15
613	5.11	34.25 0	0.40	98	1000	3.51	34.42	0.33	27.40	69	1.31
					1200	3.07	34.48	0.53	27.48	61	1.46
375a)	6.18	34.06 6	1.45	124	1500	2.60	34.55	0.85	27.58	52	1.65
467	5.42	34.09 0	0.99	114	2000	1.96	34.61	1.50	27.68	42	1.93
558	5.31	34.20 9	0.47	104	2500	1.76	34.64	2.00	27.73	38	2.18
743	4.24	34.29 3	0.32	86	3000	1.64	34.66	2.47	27.75	36	2.41
928	3.70	34.38 8	0.28	73							
1114	3.26	34.45 9	0.43	64							
1298	2.92	34.50 9	0.64	57							
1485	2.62	34.54 7	0.84	52							
1674	2.30	34.57 3	1.18	47							
1864	2.09	34.59 4	1.38	44							
2052	1.92	34.61 5	1.57	41							
2242	1.84	34.62 8	1.79	40							
2434	1.78	34.64 1	1.96	38							
2627	1.72	34.65 4	2.18	37							
2819	1.68	34.65 8	2.36	36							
3061	1.62	34.66 4	2.48	36							
3300	1.60	34.67 0	2.58	35							
3400	1.56	34.67 0	2.64	34							

HORIZON; January 30, 1960; 1704 GCT; 38°38.5'N, 126°19.5'W; sounding, 2000+ fm; wind, 160°, force 2; weather, fog; sea, rough; wire angle, 04°.

50.80

3	12.97	32.84	5.87	321	0	(12.97)	(32.84)	(5.87)	(24.75)	(321)	(0.00)
13	12.96	32.83	5.90	321	10	12.96	32.83	5.89	24.75	321	0.03
33	12.84	32.84	5.88	318	20	12.92	32.84	5.90	24.76	320	0.06
62	11.72	32.89	5.96	294	30	12.87	32.84	5.89	24.77	319	0.10
72	10.94	33.19	5.34	259	50	12.68	32.85	5.90	24.81	315	0.16
87	9.90	33.30	4.69	234	75	10.82	33.21	5.27	25.44	255	0.23
102	9.06	33.31	4.77	220	100	9.30	33.31	4.76	25.76	224	0.29
116	8.85	33.45	4.27	206	125	8.67	33.54	4.12	26.05	197	0.34
141	8.32	33.64	4.00	184	150	8.11	33.68	3.98	26.25	178	0.39
161	7.89	33.73	3.97	172	200	7.44	33.88	3.37	26.49	155	0.48
190	7.57	33.85	3.39	158	250	6.81	33.95	2.84	26.64	141	0.55
220	7.21	33.91	3.37	149	300	6.28	33.98	2.22	26.74	132	0.62
248	6.84	33.95 2	2.85	141	400	5.70	34.07	1.27	26.88	118	0.75
298	6.30	33.97 8	2.25	132	500	5.08	34.14	0.74	27.01	106	0.87
352	5.84	34.00 2	1.76	125	600	4.88	34.24	0.41	27.10	97	0.98
436	5.64	34.13 4	0.88	113							
520	4.91	34.13 8	0.72	104							
602	4.88	34.23 7	0.40	97							

a) Overlapping casts; reconciliation of property curves when necessary.

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6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

50.90

HORIZON; January 30, 1960; 2155 GCT; 38°19'N, 127°03'W; sounding, 2000+ fm; wind, 170°, force 2; weather, cloudy; sea, rough; wire angle, 32°.

1	13.50	32.90	5.85	326	0	(13.50)	(32.90)	(5.85)	(24.69)	(326)	(0.00)
10	13.48	32.88	5.76	327	10	13.48	32.88	5.76	24.68	327	0.03
27	13.45	32.92	5.81	324	20	13.46	32.91	5.79	24.70	325	0.07
51	13.46	32.84u	5.76	-	30	13.45	32.92	5.81	24.72	324	0.10
60	13.46	32.94	5.80	323	50	13.46	32.94	5.76	24.72	323	0.16
72	13.44	32.95	5.69	321	75	13.41	32.94	5.71	24.75	321	0.24
83	13.28	32.93	5.82	320	100	12.50	33.02	5.63	24.99	298	0.32
93	12.32	32.90	5.68	303	125	10.00	33.20	5.09	25.57	242	0.39
113	10.66	33.12	5.41	260	150	9.04	33.40	4.53	25.88	213	0.45
127	9.92	33.21	5.05	240	200	8.08	33.70	3.78	26.27	176	0.55
148	9.10	33.38	4.56	216	250	7.38	33.91	3.06	26.54	151	0.63
170	8.64	33.54	4.24	196	300	6.67	33.97	2.53	26.68	137	0.71
192	8.20	33.66 0	3.92	181	400	5.72	34.04	1.98	26.85	121	0.84
229	7.70	33.86 2	3.24	159							
269	7.06	33.94 2	2.91	145							
335	6.31	33.99 5	2.09	131							
404	5.68	34.04 4	1.31	120							

50.100

HORIZON; January 31, 1960; 1739, 2026 GCT; 38°02'N, 127°50'W; sounding, 2485 fm; wind, 150°, force 3; weather, overcast; sea, very rough; wire angle, 27°, 25°.

2	12.82	32.86	5.95	316	0	(12.82)	(32.86)	(5.95)	(24.80)	(316)	(0.00)
11	12.82	32.91	6.12	313	10	12.82	32.91	6.12	24.83	313	0.03
32	12.74	32.82	6.08	318	20	12.78	32.87	6.11	24.81	315	0.06
59	12.65	32.84	6.06	315	30	12.75	32.83	6.10	24.78	318	0.09
68	12.63	32.84	6.06	314	50	12.68	32.84	6.06	24.80	315	0.16
86	12.07	32.93	5.91	298	75	12.60	32.84	6.04	24.82	314	0.24
98	10.75	33.13	5.53	260	100	10.66	33.14	5.49	25.41	258	0.31
112	10.18	33.17	5.28	248	125	9.77	33.34	5.14	25.71	229	0.37
138	9.40	33.58	5.01	205	150	9.13	33.66	4.80	26.07	195	0.42
157	9.00	33.70	4.54	190	200	8.46	33.95	3.08	26.40	164	0.52
182	8.78	33.86	3.07	175	250	8.18	34.04	2.12	26.52	152	0.60
213	8.29	34.00	3.08	158	300	7.44	34.06	2.05	26.64	141	0.67
239	8.28	34.03 3	2.15	155	400	6.55	34.09	1.37	26.79	127	0.81
283	7.67	34.05 6	2.11	145	500	5.89	34.18	0.67	26.96	110	0.94
341	6.98	34.05 6	1.82	135	600	5.29	34.24	0.46	27.06	101	1.05
428	6.34	34.12 8	1.03	122	700	4.80	34.29	0.36	27.16	92	1.15
505	5.63	34.18 4	0.61	109	800	4.35	34.33	0.31	27.24	84	1.24
573	5.30	34.21 6	0.47	103	1000	3.75	34.42	0.47	27.37	72	1.42
					1200	3.30	34.49	0.60	27.47	62	1.57
441a)	6.26	34.10 6	1.30	122	1500	2.74	34.54	0.87	27.57	53	1.77
614	5.26	34.25 0	0.45	100	2000	2.08	34.60	1.54	27.67	43	2.06
788	4.39	34.32 6	0.31	84	2500	1.78	34.63	1.85	27.72	39	2.31
1024	3.68	34.42 6	0.49	70	3000	1.62	34.66	2.50	27.74	36	2.55
1245	3.20	34.50 2	0.64	60	4000	1.52	34.69	3.09	27.78	33	3.01
1466	2.80	34.53 4	0.83	54							
1685	2.45	34.57 4	1.14	48							
1909	2.17	34.59 5	1.46	44							
2139	1.97	34.61 6	1.72	42							
2354	1.84	34.63 0	1.80	40							
2574	1.76	34.64 5	2.07	38							
2800	1.70	34.65 4	2.36	37							
3022	1.62	34.66 6	2.52	36							
3246	1.60	34.67 2	2.61	35							
3471	1.57	34.67 5	2.37	34							
3744	1.52	34.68 4	3.08	33							
4027	1.52	34.68 8	3.09b)	33							
4301	1.54	34.68 7	3.16c)	33							
4416	1.54	34.69 1	3.27	33							

a) Overlapping casts; reconciliation of property curves when necessary.

b) Alternate value, 3.24 ml/L, not used in interpolation.

c) Alternate value, 3.31 ml/L, not used in interpolation.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10
CCOFI
6001

HORIZON; January 28, 1960; 1055 GCT; 39°02.5'N, 123°49.5'W; sounding, 50 fm; wind, 140°, force 7; weather, rain; sea, rough; wire angle, 18°.

53.52

2	12.06	33.48	6.12	257	0	(12.06)	(33.48)	(6.12)	(25.42)	(257)	(0.00)
11	12.08	33.48	6.12	257	10	12.08	33.48	6.12	25.42	257	0.03
30	12.09	33.49	6.09	257	20	12.09	33.48	6.11	25.42	257	0.05
49	12.08	33.48	6.04	257	30	12.09	33.49	6.09	25.42	257	0.08
73	12.10	33.48	6.01	258	50	12.09	33.48	6.04	25.42	257	0.13
					75	(12.10)	(33.48)	(6.01)	(25.41)	(258)	(0.19)

HORIZON; January 28, 1960; 0853 GCT; 38°57.5'N, 124°04.5'W; sounding, 320 fm; wind, 140°, force 5; weather, rain; sea, rough; wire angle, 43°.

53.55

1	11.83	33.35	6.24	263	0	(11.83)	(33.35)	(6.24)	(25.36)	(263)	(0.00)
9	11.82	33.34	6.26	263	10	11.82	33.34	6.27	25.36	263	0.03
26	11.81	33.36	6.28	261	20	11.81	33.35	6.28	25.37	262	0.05
48	11.71	33.40	6.01	257	30	11.80	33.36	6.28	25.38	261	0.08
55	11.40	33.40	5.65	251	50	11.67	33.40	5.98	25.43	256	0.13
69	10.77	33.57	4.42	228	75	10.48	33.61	3.94	25.80	220	0.19
78	10.26	33.63	3.65	215	100	9.79	33.74	3.30	26.02	199	0.24
88	10.02	33.69	3.54	207	125	9.49	33.81	3.10	26.13	190	0.29
106	9.68	33.75	3.21	197	150	9.19	33.89	2.87	26.24	179	0.34
119	9.60	33.78	3.15	193	200	8.53	33.95	2.60	26.39	165	0.43
135	9.36	33.84	3.04	185	250	7.70	34.00	2.50	26.56	148	0.51
158	9.10	33.91	2.79	176	300	7.28	34.04	2.13	26.65	140	0.58
175	8.94	33.90 0	2.70	174	400	6.57	34.11	1.26	26.81	126	0.72
207	8.42	33.96 6	2.58	162							
247	7.73	34.00 0	2.53	149							
313	7.18	34.04 5	2.03	139							
379	6.79	34.09 8	1.47	130							
442	6.04	34.17 4	0.82	115							

HORIZON; January 28, 1960; 0642 GCT; 38°58'N, 124°13.5'W; sounding, 2000 fm; wind, 140°, force 5; weather, rain; sea, rough; wire angle, 37°.

53.57

1	11.85	33.42	6.11	258	0	(11.85)	(33.42)	(6.11)	(25.41)	(258)	(0.00)
9	11.86	33.41	6.22	258	10	11.85	33.41	6.20	25.40	258	0.03
28	11.82	33.40	6.19	258	20	11.83	33.40	6.20	25.40	258	0.05
52	11.82	33.43	6.09	256	30	11.82	33.40	6.18	25.40	258	0.08
60	11.60	33.46	5.83	250	50	11.82	33.42	6.10	25.42	257	0.13
75	10.92	33.59	4.37	229	75	10.92	33.59	4.37	25.71	229	0.19
84	10.57	33.67	3.87	217	100	9.87	33.76	3.22	26.03	199	0.24
96	9.98	33.75	3.27	201	125	9.34	33.81	2.99	26.15	187	0.29
120	9.40	33.79	3.05	189	150	8.90	33.90	2.60	26.30	174	0.34
134	9.25	33.86	2.85	182	200	8.23	33.99	2.40	26.47	157	0.42
156	8.75	33.91	2.53	171	250	7.74	34.04	2.27	26.57	147	0.50
183	8.50	33.96	2.37	163	300	6.89	34.03	2.11	26.70	136	0.57
205	8.15	34.00 6	2.43	155	400	6.42	34.13	1.10	26.83	123	0.71
243	7.84	34.03 6	2.28	148	500	5.89	34.20	0.54	26.96	111	0.83
293	6.97	34.03 0	2.16	137							
370	6.62	34.11 6	1.26	126							
444	6.17	34.16 1	0.92	117							
512	5.86	34.21 0	0.50	110							

S10

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6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

53.60

HORIZON; January 28, 1960; 0409 GCT; 38°52.5'N, 124°27.5'W; sounding, 1900 fm; wind, 160°, force 5; weather, rain; sea, rough; wire angle, 32°.

1	11.70	33.30		264	0	(11.70)	(33.30)		(25.35)	(264)	(0.00)
9	11.69	33.30		264	10	11.69	33.30		25.35	264	0.03
27	11.66	33.30		263	20	11.67	33.30		25.36	263	0.05
52	11.62	33.31		262	30	11.65	33.30		25.36	263	0.08
60	11.54	33.36		256	50	11.61	33.31		25.37	262	0.13
71	11.32	33.40		250	75	11.29	33.44		25.52	247	0.20
85	10.08	33.57	3.92	217	100	9.68	33.75	3.56	26.05	197	0.25
96	9.72	33.73	3.66	199	125	9.28	33.80	2.94	26.16	187	0.30
116	9.52	33.77	3.16	193	150	8.85	33.91	2.53	26.31	172	0.35
131	9.13	33.82	2.85	183	200	8.34	34.04	1.95	26.49	155	0.43
153	8.81	33.92	2.48	171	250	7.82	34.10	1.67	26.62	143	0.50
178	8.54	33.96	2.19	164	300	7.21	34.10	1.54	26.70	135	0.58
200	8.34	34.04 0	1.95	155	400	6.27	34.12	1.15	26.85	121	0.71
240	7.93	34.09 0	1.68	145	500	5.77	34.21	0.56	26.98	109	0.83
286	7.42	34.11 0	1.57	137							
357	6.36	34.06 4	1.46	126							
430	6.26	34.17 2	0.91	117							
507	5.70	34.21 4	0.49	107							

53.70

HORIZON; January 27, 1960; 2351 GCT; 38°28'N, 125°06'W; sounding, 2000+ fm; wind, 160°, force 4; weather, overcast; sea, moderate; wire angle, 26°.

2	11.62	32.93	5.95	290	0	(11.62)	(32.93)	(5.95)	(25.07)	(290)	(0.00)
10	11.62	32.95	6.12	288	10	11.62	32.95	6.12	25.09	288	0.03
29	11.35	33.35	5.93	254	20	11.38	33.07	6.07	25.23	275	0.06
55	11.60	33.48	5.61	249	30	11.35	33.35	5.93	25.45	254	0.08
64	11.40	33.49	5.41	244	50	11.57	33.47	5.65	25.50	249	0.13
77	10.30	33.57	4.11	220	75	10.41	33.55	4.26	25.78	223	0.19
91	9.82	33.68	3.55	204	100	9.41	33.68	3.44	26.04	198	0.25
104	9.25	33.68	3.40	195	125	9.09	33.77	2.99	26.17	186	0.30
126	9.08	33.78	2.98	186	150	8.74	33.83	2.88	26.26	177	0.34
143	8.86	33.82	2.84	179	200	8.03	33.94	2.81	26.46	158	0.43
169	8.47	33.86	3.10	170	250	7.30	34.01	2.36	26.62	143	0.50
194	8.10	33.93	2.90	160	300	6.66	34.03	1.87	26.72	133	0.57
220	7.79	34.00 6	2.43	150	400	5.73	34.07	1.18	26.87	119	0.70
266	7.04	34.00 5	2.30	140	500	5.21	34.16	0.66	27.01	106	0.82
313	6.51	34.03 6	1.70	131							
391	5.80	34.05 9	1.25	120							
470	5.32	34.12 9	0.79	110							
550	5.12	34.23 7	0.42	99							

53.80

HORIZON; January 27, 1960; 1836 GCT; 37°59.5'N, 125°51'W; sounding, 2000+ fm; wind, 200°, force 3; weather, overcast; sea, moderate; wire angle, 16°.

2	12.52	32.77	5.90	317	0	(12.52)	(32.77)	(5.90)	(24.79)	(317)	(0.00)
11	12.51	32.79	5.89	316	10	12.51	32.79	5.89	24.80	316	0.03
30	12.50	32.79	5.91	316	20	12.50	32.79	5.90	24.80	316	0.06
58	12.34	32.76	5.90	316	30	12.50	32.79	5.91	24.80	316	0.09
68	12.32	32.79	5.90	312	50	12.39	32.77	5.91	24.80	316	0.16
81	11.92	32.82	5.72	303	75	12.30	32.80	5.87	24.85	311	0.24
96	10.66	32.98	5.66	270	100	10.54	33.03	5.57	25.35	264	0.31
109	9.49	33.04	5.26	246	125	8.97	33.25	4.74	25.78	223	0.37
132	8.78	33.32	4.52	215	150	8.50	33.53	4.06	26.07	195	0.42
151	8.49	33.54	4.06	194	200	7.74	33.94	3.58	26.50	154	0.51
179	8.02	33.83	3.79	166	250	7.16	33.95	3.30	26.60	145	0.59
207	7.67	33.95	3.56	152	300	6.52	33.97	2.64	26.69	136	0.66
234	7.36	33.95 0	3.51	148	400	5.62	34.05	1.30	26.87	119	0.79
281	6.77	33.96 2	2.83	139	500	4.92	34.13	0.75	27.02	105	0.91
332	6.14	33.98 1	2.35	130							
413	5.54	34.06 0	1.17	117							
495	4.96	34.12 6	0.77	106							
576	4.86	34.20 9	0.52	99							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6001

HORIZON; January 24, 1960; 1020 GCT; 38°30.5'N, 123°22.5'W; sounding, 53 fm; wind, 090°, force 4; weather, partly cloudy; sea, moderate; wire angle, 10°.

57.51

2	12.14	33.44	5.92	261	0	(12.14)	(33.44)	(5.92)	(25.38)	(261)	(0.00)
12	12.16	33.46	5.89	260	10	12.16	33.46	5.89	25.39	260	0.03
32	12.05	33.48	5.78	257	20	12.11	33.47	5.84	25.40	258	0.05
51	12.12	33.53	5.65	254	30	12.05	33.48	5.78	25.42	257	0.08
76	11.88	33.49	5.60	253	50	12.12	33.53	5.65	25.44	255	0.13
					75	11.89	33.49	5.61	25.46	253	0.19

HORIZON; January 24, 1960; 1315 GCT; 38°21'N, 123°44.5'W; sounding, 760 fm; wind, 160°, force 6; weather, rain; sea, moderate; wire angle, 34°.

57.55

2	11.76	33.40	6.11	257	0	(11.76)	(33.40)	(6.11)	(25.42)	(257)	(0.00)
10	11.74	33.40	6.14	257	10	11.74	33.40	6.14	25.42	257	0.03
27	11.68	33.48	6.11	250	20	11.71	33.46	6.12	25.47	252	0.05
50	11.42	33.48	5.93	246	30	11.67	33.48	6.08	25.50	249	0.08
59	11.38	33.49	5.80	244	50	11.42	33.48	5.93	25.53	246	0.13
71	11.32	33.49	5.77	243	75	11.27	33.49	5.68	25.57	242	0.19
84	11.06	33.50	5.46	238	100	10.28	33.64	3.65	25.87	214	0.24
95	10.44	33.62	3.89	219	125	9.76	33.73	3.04	26.03	199	0.30
116	9.96	33.70	3.26	205	150	9.16	33.86	2.56	26.22	181	0.34
131	9.64	33.76	2.92	196	200	8.40	33.98	2.35	26.44	160	0.43
154	9.04	33.89	2.50	177	250	7.61	34.03	2.45	26.59	146	0.51
177	8.60	33.95	2.37	165	300	7.03	34.02	2.35	26.66	139	0.58
200	8.40	33.98 1	2.35	160	400	5.98	34.06	1.43	26.84	122	0.72
240	7.74	34.02 6	2.44	148	500	5.62	34.16	0.80	26.96	111	0.84
285	7.26	34.02 1	2.46	142							
358	6.26	34.03 8	1.75	127							
435	5.88	34.09 8	1.20	119							
512	5.58	34.17 1	0.70	109							

HORIZON; January 27, 1960; 0041 GCT; 38°18'N, 123°49'W; sounding, 950 fm; wind, 160°, force 2; weather, cloudy; sea, moderate; wire angle, 18°.

57.57

2	12.16	33.38	5.97	266	0	(12.16)	(33.38)	(5.97)	(25.32)	(266)	(0.00)
11	12.08	33.40	5.89	263	10	12.08	33.40	5.89	25.36	263	0.03
30	12.18	33.39	5.85	266	20	12.14	33.39	5.87	25.33	265	0.05
58	12.20	33.53	5.25	256	30	12.18	33.39	5.85	25.32	266	0.08
69	12.08	33.48	5.20	258	50	12.20	33.50	5.36	25.41	258	0.13
82	11.52	33.53	4.46	244	75	11.89	33.49	4.96	25.46	253	0.20
95	10.40	33.58	3.46	220	100	10.17	33.61	3.27	25.86	215	0.26
108	9.78	33.68	2.99	204	125	9.15	33.77	2.86	26.15	187	0.31
132	8.94	33.79	2.85	183	150	8.68	33.79	2.92	26.24	179	0.35
150	8.68	33.79	2.92	179	200	8.32	33.98	2.18	26.45	159	0.44
177	8.60	33.91	2.23	168	250	7.47	34.03	2.25	26.61	144	0.52
206	8.24	34.00	2.18	157	300	6.96	34.06	1.67	26.71	134	0.59
233	7.72	34.01 0	2.49	148	400	6.33	34.15	0.89	26.86	120	0.72
280	7.12	34.04 8	1.82	138	500	5.59	34.19	0.57	26.98	108	0.84
331	6.74	34.08 2	1.51	130							
412	6.26	34.16 2	0.80	118							
493	5.64	34.18 6	0.59	108							
575	5.21	34.25 6	0.42	99							

S10

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600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

57.60

HORIZON; January 27, 1960; 0315 GCT; 38°12'N, 124°01'W; sounding, 2000 fm; wind, 160°, force 2; weather, partly cloudy; sea, moderate; wire angle, 12°.

2	11.93	33.33	5.86	266	0	(11.93)	(33.33)	(5.86)	(25.33)	(266)	(0.00)
12	11.89	33.34	5.75	264	10	11.90	33.34	5.76	25.34	264	0.03
31	11.89	33.35	5.73	263	20	11.89	33.35	5.74	25.35	263	0.05
60	11.65	33.36	5.48	258	30	11.89	33.35	5.73	25.35	263	0.08
70	10.44	33.51	4.16	227	50	11.81	33.36	5.63	25.38	261	0.13
85	9.48	33.56	3.78	208	75	9.69	33.52	3.89	25.87	214	0.19
100	9.26	33.75	2.94	190	100	9.26	33.75	2.94	26.12	190	0.24
113	8.96	33.82	2.81	180	125	8.90	33.90	2.58	26.29	174	0.29
138	8.74	33.91	2.46	170	150	8.50	33.92	2.55	26.38	166	0.33
158	8.30	33.92	2.60	163	200	7.90	34.00	2.02	26.53	151	0.41
186	7.95	33.95	2.36	156	250	7.13	34.03	2.12	26.66	139	0.49
215	7.88	34.07	1.64	146	300	6.70	34.06	1.62	26.74	131	0.56
243	7.23	34.03 4	2.13	140	400	6.14	34.15	0.88	26.89	118	0.68
293	6.74	34.05 7	1.70	132	500	5.52	34.19	0.56	27.00	107	0.80
345	6.48	34.12 2	1.17	124	600	(5.05)	(34.26)	(0.34)	(27.10)	(97)	(0.91)
429	5.96	34.15 4	0.79	115							
511	5.47	34.20 8	0.51	106							
593	5.08	34.25 9	0.34	98							

57.70

HORIZON; January 27, 1960; 0842 GCT; 37°49.5'N, 124°46'W; sounding, 2000+ fm; wind, 160°, force 2; weather, overcast; sea, moderate; wire angle, 18°.

3	11.78	33.02	5.93	289	0	(11.78)	(33.02)	(5.93)	(25.08)	(289)	(0.00)
12	11.82	33.08	6.00	282	10	11.80	33.07	5.99	25.14	283	0.03
40	11.82	33.37	5.66	260	20	11.82	33.17	5.94	25.23	275	0.06
68	11.74	33.39	5.64	258	30	11.82	33.28	5.77	25.31	267	0.08
77	11.72	33.41	5.66	256	50	11.79	33.38	5.65	25.40	259	0.14
91	11.34	33.44	5.15	247	75	11.72	33.40	5.65	25.42	257	0.20
104	10.16	33.48	4.18	224	100	10.32	33.47	4.30	25.72	228	0.26
117	9.17	33.62	3.38	198	125	8.88	33.68	3.12	26.12	190	0.32
141	8.56	33.78	2.75	178	150	8.42	33.82	2.64	26.30	173	0.36
160	8.33	33.86	2.54	168	200	7.73	33.91	2.43	26.47	157	0.44
189	7.86	33.89	2.57	159	250	7.23	34.03	2.07	26.65	140	0.52
216	7.62	33.94	2.23	152	300	6.61	34.04	1.74	26.74	131	0.59
244	7.31	34.02 7	2.10	142	400	5.98	34.15	0.83	26.90	116	0.72
291	6.70	34.03 6	1.83	133	500	5.44	34.20	0.54	27.01	106	0.83
342	6.32	34.08 1	1.35	125	600	(4.76)	(34.24)		(27.12)	(95)	(0.94)
423	5.88	34.17 4	0.69	113							
505	5.42	34.19 8	0.53	106							
588	4.86	34.23 2	0.44	97							

57.80

HORIZON; January 27, 1960; 1405 GCT; 37°29'N, 125°29'W; sounding, 2000+ fm; wind, 180°, force 3; weather, overcast; sea, moderate; wire angle, 10°.

2	12.27	32.70	5.89	318	0	(12.27)	(32.70)	(5.89)	(24.78)	(318)	(0.00)
12	12.26	32.73	5.90	316	10	12.26	32.72	5.90	24.79	317	0.03
32	12.14	32.72	5.90	314	20	12.23	32.72	5.90	24.81	315	0.06
60	11.46	32.94	5.80	286	30	12.17	32.72	5.90	24.82	314	0.09
70	11.16	33.12	5.68	267	50	11.71	32.76	5.86	24.94	303	0.16
85	10.68	33.19	5.15	255	75	10.72	33.10	5.47	25.38	261	0.23
100	10.63	33.42	4.67	237	100	10.63	33.42	4.67	25.62	237	0.29
113	9.70	33.54	3.76	213	125	9.42	33.60	3.53	25.97	204	0.35
139	9.18	33.66	3.41	196	150	8.98	33.70	3.36	26.12	190	0.40
158	8.82	33.73	3.32	185	200	8.21	33.84	2.89	26.35	168	0.49
187	8.47	33.82	2.88	173	250	7.34	33.98	2.60	26.59	146	0.57
216	7.86	33.86	2.89	162	300	6.83	34.02	1.95	26.69	136	0.64
245	7.40	33.97 0	2.69	147	400	6.29	34.12	1.12	26.84	122	0.77
295	6.88	34.01 8	2.00	137	500	5.77	34.24	0.50	27.00	106	0.89
348	6.48	34.05 0	1.62	129	600	(5.09)	(34.30)	(0.31)	(27.13)	(94)	(1.00)
431	6.20	34.16 0	0.87	118							
515	5.66	34.26 2	0.44	104							
597	5.12	34.29 8	0.31	95							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6001

HORIZON; January 24, 1960; 0353 GCT; 37°46'N, 123°18.5'W; sounding, 520 fm; wind, 140°, force 3; weather, overcast; sea, moderate; wire angle, 16°.

60.55

2	11.92	33.30	5.77	268	0	(11.92)	(33.30)	(5.77)	(25.31)	(268)	(0.00)
12	11.92	33.30	5.81	268	10	11.92	33.30	5.81	25.31	268	0.03
31	12.06	33.35	5.80	266	20	11.97	33.32	5.81	25.31	267	0.05
54	12.25	33.46	5.66	262	30	12.04	33.34	5.80	25.32	266	0.08
63	12.24	33.48	5.62	260	50	12.21	33.43	5.70	25.36	263	0.13
73	11.77	33.48	5.15	252	75	11.42	33.49	4.84	25.54	245	0.20
87	10.06	33.57	3.73	216	100	9.74	33.67	3.30	25.98	204	0.25
102	9.71	33.68	3.27	203	125	9.42	33.79	2.85	26.12	190	0.30
125	9.42	33.79	2.85	190	150	8.92	33.87	2.47	26.27	176	0.35
144	9.00	33.86	2.57	178	200	8.33	33.97	2.03	26.44	160	0.44
167	8.80	33.89	2.33	173	250	7.88	34.09	1.71	26.60	145	0.51
194	8.38	33.96	2.04	162	300	7.45	34.14	1.26	26.70	135	0.58
223	8.22	34.04 5	2.01	153	400	6.77	34.15	1.10	26.80	125	0.72
259	7.74	34.11 0	1.54	142	500	5.59	34.18	0.66	26.98	108	0.84
316	7.37	34.14 8	1.16	134							
387	6.92	34.15 0	1.14	127							
459	5.88	34.16 6	0.79	114							
537	5.46	34.22 0	0.56	104							

HORIZON; January 24, 1960; 0140 GCT; 37°43.5'N, 123°23.5'W; sounding, 1020 fm; wind, 140°, force 3; weather, cloudy; sea, rough; wire angle, 07°.

60.57

2	11.98	33.31	6.02	268	0	(11.98)	(33.31)	(6.02)	(25.30)	(268)	(0.00)
12	11.95	33.30	6.25	268	10	11.95	33.30	6.23	25.30	268	0.03
32	11.89	33.30	5.96	267	20	11.91	33.30	6.12	25.31	268	0.05
60	12.16	33.43	5.90	262	30	11.90	33.30	5.97	25.31	267	0.08
70	11.46	33.49	5.04	246	50	12.08	33.38	5.93	25.34	265	0.13
85	9.46	33.55	4.02	209	75	10.28	33.52	4.36	25.78	223	0.19
100	9.69	33.73	3.12	198	100	9.69	33.73	3.12	26.03	198	0.25
114	9.26	33.82	2.95	185	125	9.07	33.87	2.78	26.24	179	0.30
139	8.96	33.93	2.59	172	150	8.85	33.95	2.46	26.34	169	0.34
159	8.76	33.98	2.38	166	200	8.22	34.05	2.30	26.52	152	0.42
188	8.40	34.04	2.24	156	250	7.56	34.06	2.10	26.62	143	0.50
217	7.96	34.05	2.37	149	300	7.23	34.13	1.44	26.72	133	0.57
246	7.60	34.05 7	2.16	144	400	6.26	34.16	0.96	26.88	118	0.70
296	7.26	34.12 3	1.50	134	500	5.32	34.17	0.68	27.01	106	0.81
350	6.84	34.15 7	1.17	126	600	(4.87)	(34.24)	(0.40)	(27.11)	(96)	(0.92)
433	5.88	34.15 3	0.86	114							
516	5.23	34.18 4	0.63	104							
599	4.87	34.24 2	0.40	96							

HORIZON; January 23, 1960; 2209 GCT; 37°39'N, 123°44.5'W; sounding, 2000+ fm; wind, 140°, force 4; weather, overcast; sea, moderate; wire angle, 29°.

60.60

2	11.88	33.30	5.82	267	0	(11.88)	(33.30)	(5.82)	(25.31)	(267)	(0.00)
10	11.88	33.30	5.83	267	10	11.88	33.30	5.83	25.31	267	0.03
28	11.76	33.28	5.79	266	20	11.81	33.28	5.80	25.32	266	0.05
53	11.77	33.31	5.66	264	30	11.76	33.28	5.79	25.33	266	0.08
62	11.80	33.33	5.68	263	50	11.77	33.31	5.66	25.35	264	0.13
75	11.60	33.44	4.99	252	75	11.60	33.44	4.99	25.47	252	0.20
88	9.62	33.47	3.91	217	100	9.08	33.50	3.83	25.95	206	0.26
100	9.08	33.50	3.83	206	125	8.67	33.72	3.14	26.19	184	0.30
121	8.76	33.68	3.26	188	150	8.32	33.86	2.80	26.36	168	0.35
137	8.50	33.80	2.92	175	200	7.72	34.03	2.29	26.58	147	0.43
159	8.20	33.89	2.76	164	250	7.03	34.01	2.28	26.66	139	0.50
183	7.94	33.95	2.61	156	300	6.53	34.07	1.56	26.77	129	0.57
206	7.66	34.03 4	2.27	146	400	5.84	34.12	1.02	26.90	116	0.70
248	7.06	34.01 0	2.29	140	500	5.44	34.22	0.50	27.02	105	0.81
293	6.60	34.06 0	1.65	130							
366	5.96	34.07 2	1.28	121							
442	5.75	34.18 2	0.69	110							
520	5.34	34.22 6	0.47	102							

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6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

60.70 HORIZON; January 23, 1960; 1854 GCT; 37°28'N, 124°08'W; sounding, 2000+ fm; wind, 140°, force 3; weather, overcast; sea, moderate; wire angle, 19°.

0	11.81	33.30	6.06	266	0	11.81	33.30	6.06	25.33	266	0.00
8	11.81	33.30	5.92	266	10	11.80	33.30	5.91	25.33	265	0.03
28	11.76	33.30	5.73	264	20	11.77	33.30	5.83	25.34	265	0.05
55	11.65	33.35	5.61	259	30	11.74	33.30	5.71	25.34	264	0.08
64	11.62	33.35	5.63	258	50	11.66	33.35	5.62	25.39	260	0.13
77	11.43	33.36	5.44	255	75	11.47	33.36	5.48	25.43	256	0.20
90	9.77	33.53	3.82	214	100	9.17	33.63	3.44	26.04	198	0.25
102	9.10	33.64	3.42	196	125	8.45	33.73	3.50	26.23	180	0.30
124	8.47	33.73	3.51	180	150	8.37	33.85	3.08	26.34	170	0.35
142	8.40	33.81	3.32	173	200	7.88	33.97	2.46	26.51	153	0.43
168	8.24	33.91	2.61	164	250	7.25	34.05	1.90	26.66	139	0.50
194	7.95	33.96	2.48	155	300	6.68	34.07	1.57	26.75	130	0.57
220	7.58	34.01 2	2.36	146	400	5.78	34.11	1.00	26.90	116	0.70
265	7.10	34.06 3	1.74	136	500	5.30	34.20	0.53	27.03	104	0.81
314	6.51	34.06 9	1.52	128							
390	5.84	34.10 2	1.06	118							
470	5.39	34.16 5	0.66	108							
549	5.18	34.25 6	0.32	98							

60.80 HORIZON; January 23, 1960; 1330 GCT; 37°06'N, 124°55'W; sounding, 2000+ fm; wind, 180°, force 2; weather, fog; sea, moderate; wire angle, 15°.

1	11.99	33.24	5.96	273	0	(11.99)	(33.24)	(5.96)	(25.25)	(273)	(0.00)
10	11.99	33.23	5.98	274	10	11.99	33.23	5.98	25.24	274	0.03
30	12.04	33.26	5.96	273	20	12.01	33.24	5.97	25.25	273	0.05
58	12.06	33.28	5.90	272	30	12.04	33.26	5.96	25.25	273	0.08
68	12.04	33.26	5.91	273	50	12.06	33.28	5.90	25.26	272	0.14
82	11.28	33.32	5.18	255	75	12.04	33.26	5.91	25.25	273	0.20
97	9.66	33.49	4.02	216	100	9.53	33.51	3.94	25.89	212	0.27
110	9.28	33.64	3.73	199	125	9.00	33.70	3.49	26.12	190	0.32
134	8.86	33.73	3.37	186	150	8.63	33.85	3.10	26.29	174	0.36
155	8.56	33.87	3.04	171	200	8.06	33.97	2.65	26.47	157	0.45
182	8.29	33.93	2.92	162	250	7.51	34.03	2.14	26.61	144	0.52
211	7.92	33.98	2.43	153	300	6.90	34.06	1.53	26.71	134	0.60
238	7.64	34.02 6	2.24	147	400	5.81	34.11	1.00	26.90	116	0.72
287	7.06	34.05 6	1.64	136	500	5.31	34.19	0.57	27.03	104	0.84
340	6.48	34.09 4	1.27	126	600	(4.76)	(34.23)		(27.11)	(96)	(0.95)
422	5.60	34.11 6	0.93	114							
505	5.28	34.20 2	0.56	103							
587	4.84	34.23 4	0.38	97							

60.90 HORIZON; January 23, 1960; 0831 GCT; 36°44.5'N, 125°41'W; sounding, 2000+ fm; wind, 200°, force 2; weather, fog; sea, moderate; wire angle, 07°.

3	12.06	33.17	6.06	280	0	(12.06)	(33.17)	(6.06)	(25.18)	(280)	(0.00)
13	12.04	33.15	6.11	281	10	12.04	33.15	6.10	25.17	281	0.03
33	11.99	33.19	6.03	277	20	12.02	33.17	6.08	25.19	279	0.06
61	11.93	33.20	5.99	275	30	12.00	33.19	6.04	25.21	277	0.08
71	11.59	33.24	5.79	266	50	11.96	33.19	6.01	25.22	276	0.14
86	10.12	33.40	4.31	230	75	11.09	33.29	5.37	25.45	254	0.21
101	9.58	33.53	3.96	212	100	9.61	33.53	3.97	25.89	212	0.26
115	9.19	33.64	3.58	197	125	8.97	33.68	3.47	26.11	191	0.32
139	8.72	33.73	3.40	183	150	8.57	33.79	3.10	26.26	177	0.36
159	8.44	33.86	2.81	170	200	7.90	33.98	2.66	26.51	153	0.44
188	8.03	33.96	3.01	157	250	7.34	34.05	1.95	26.65	140	0.52
216	7.76	34.02	2.19	148	300	6.78	34.08	1.47	26.75	131	0.59
246	7.39	34.05 2	1.98	141	400	6.16	34.20	0.70	26.93	114	0.72
295	6.83	34.07 7	1.50	132	500	5.27	34.21	0.56	27.04	103	0.83
347	6.30	34.13 2	1.01	121	600	(4.78)	(34.25)	(0.41)	(27.12)	(95)	(0.93)
432	6.07	34.22 8	0.57	111							
515	5.10	34.20 2	0.56	102							
597	4.78	34.24 7	0.41	95							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 23, 1960; 0326 GCT; 36°22.5'N, 126°28'W; sounding, 2000+ fm; wind, 180°, force 3; weather, overcast; sea, rough; wire angle, 21°.

60.100

1	12.71	33.05	5.77	300	0	(12.71)	(33.05)	(5.77)	(24.97)	(300)	(0.00)
11	12.65	33.06	5.79	298	10	12.66	33.06	5.79	24.98	298	0.03
29	12.38	33.06	5.77	294	20	12.40	33.06	5.77	25.03	294	0.06
37	12.36	33.10	5.74	290	30	12.37	33.06	5.77	25.03	294	0.09
51	12.30	33.08	5.74	291	50	12.30	33.08	5.74	25.06	291	0.15
65	11.89	33.17	5.45	277	75	11.29	33.35	5.16	25.47	252	0.22
89	10.32	33.36	5.06	236	100	9.87	33.38	4.60	25.73	227	0.28
106	9.84	33.42	4.42	224	125	9.18	33.60	4.33	26.02	200	0.33
125	9.18	33.60	4.33	200	150	8.59	33.77	4.45	26.25	178	0.38
141	8.74	33.73	4.46	184	200	7.90	33.90	4.42	26.45	159	0.46
166	8.39	33.82	4.44	172	250	7.48	34.02	2.80	26.60	145	0.54
197	7.94	33.89	4.44	161	300	7.02	34.07	1.66	26.70	135	0.61
222	7.66	33.96 4	4.17	151	400	6.13	34.13	1.00	26.87	119	0.74
266	7.40	34.04 6	1.92	142	500	5.43	34.18	0.60	27.00	107	0.86
314	6.86	34.07 1	1.58	133							
391	6.18	34.12 4	1.03	120							
469	5.66	34.17 3	0.67	110							
550	5.07	34.19 6	0.54	102							

HORIZON; February 11, 1960; 2205 GCT; 37°11'N, 122°50'W; sounding, 193 fm; wind, 010°, force 2; weather, clear; sea, very rough; wire angle, 10°.

63.55

2	12.54	33.35	6.50	275	0	(12.54)	(33.35)	(6.50)	(25.23)	(275)	(0.00)
12	12.37	33.35	6.46	272	10	12.38	33.35	6.47	25.26	272	0.03
32	12.40	33.36	6.47	272	20	12.37	33.35	6.47	25.26	272	0.05
50	12.40	33.43	6.19	267	30	12.39	33.36	6.47	25.26	272	0.08
75	11.99	33.51	5.67	253	50	12.40	33.43	6.19	25.31	267	0.14
99	10.45	33.62	4.13	219	75	11.99	33.51	5.67	25.46	253	0.20
123	9.65	33.77	3.34	195	100	10.42	33.62	4.10	25.82	218	0.26
163	8.78	33.92	2.68	170	125	9.60	33.78	3.28	26.09	193	0.31
201	8.26	34.03	2.35	155	150	9.03	33.88	2.87	26.26	177	0.36
250	7.18	34.04	2.43	139	200	8.27	34.03	2.36	26.49	155	0.44
298	6.98	34.07	2.03	134	250	7.18	34.04	2.43	26.66	139	0.52
					300	(6.98)	(34.07)	(2.03)	(26.71)	(134)	(0.59)

HORIZON; February 11, 1960; 2350 GCT; 37°06.5'N, 122°58.5'W; sounding, 460 fm; wind, 300°, force 3; weather, partly cloudy; sea, very rough; wire angle, 18°.

63.57

2	12.48	33.30	6.59	278	0	(12.48)	(33.30)	(6.59)	(25.20)	(278)	(0.00)
10	12.34	33.31	6.53	275	10	12.34	33.31	6.53	25.23	275	0.03
30	12.30	33.31	6.60	274	20	12.31	33.31	6.59	25.24	274	0.06
58	12.28	33.33	6.34	272	30	12.30	33.31	6.60	25.24	274	0.08
67	12.28	33.37	6.40	269	50	12.28	33.32	6.42	25.25	273	0.14
81	11.10	33.39	5.42	246	75	12.26	33.37	6.37	25.30	268	0.20
95	10.91	33.49	4.95	236	100	10.26	33.48	4.64	25.74	226	0.27
109	9.88	33.49	4.45	219	125	9.26	33.66	3.99	26.05	197	0.32
132	9.04	33.74	3.87	188	150	8.52	33.91	3.59	26.37	167	0.37
153	8.43	33.93	3.55	164	200	8.10	34.05	2.85	26.54	151	0.45
181	8.20	33.98	3.28	158	250	7.91	34.09	1.93	26.60	144	0.52
210	8.04	34.07	2.71	148	300	7.42	34.09	1.77	26.66	139	0.60
237	7.99	34.08 7a)	2.03	146	400	6.06	34.08	1.35	26.84	122	0.73
288	7.61	34.09 7	1.78	141	500	5.43	34.15		26.98	109	0.85
340	6.74	34.07 2	1.76	131	600	(5.00)	(34.21)		(27.07)	(100)	(0.96)
422	5.84	34.08 8	1.18	119							
505	5.42	34.15 2	-	109							
588	5.04	34.20 4	-	101							

a) Alternate value, 34.068‰, not used in interpolation.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

63.60

HORIZON; February 12, 1960; 0217 GCT; 36°59'N, 123°12'W; sounding, 1390 fm; wind, 320°, force 3; weather, cloudy; sea, rough; wire angle, 15°.

1	12.46	33.37	6.05	273	0	(12.46)	(33.37)	(6.05)	(25.25)	(273)	(0.00)
11	12.46	33.39	6.10	271	10	12.46	33.39	6.09	25.27	271	0.03
30	12.30	33.35	6.09	271	20	12.38	33.37	6.09	25.27	271	0.05
59	12.29	33.39	6.03	268	30	12.30	33.35	6.09	25.27	271	0.08
69	12.22	33.47	5.88	260	50	12.30	33.36	6.06	25.28	270	0.14
83	11.24	33.32	5.20	254	75	12.27	33.51	5.70	25.40	258	0.20
96	9.98	33.42	4.38	226	100	9.96	33.44	4.32	25.76	224	0.26
110	9.71	33.60	3.65	208	125	9.10	33.67	3.61	26.08	194	0.32
133	8.87	33.69	3.58	189	150	8.69	33.79	3.34	26.24	179	0.36
151	8.68	33.79	3.33	179	200	8.10	33.95	2.56	26.46	158	0.45
179	8.36	33.93	2.42	163	250	7.68	34.05	2.06	26.60	145	0.52
207	8.02	33.96	2.58	156	300	7.00	34.04	1.96	26.69	136	0.60
233	7.83	34.02 8	2.08	148	400	5.84	34.08	1.26	26.87	119	0.73
280	7.36	34.05 0	2.04	140	500	5.32	34.17	0.62	27.00	106	0.85
332	6.44	34.03 6	1.79	130							
413	5.76	34.08 8	1.14	118							
495	5.35	34.16 3	0.63	107							
577	4.93	34.21 9	0.56	98							

63.70

HORIZON; February 12, 1960; 0721 GCT; 36°42'N, 123°56'W; sounding, 2100 fm; wind, 320°, force 2; weather, partly cloudy; sea, rough; wire angle, 11°.

1	12.64	33.50	5.94	266	0	(12.64)	(33.50)	(5.94)	(25.32)	(266)	(0.00)
11	12.65	33.47	5.89	268	10	12.65	33.47	5.90	25.30	268	0.03
31	12.60	33.48	5.94	267	20	12.62	33.48	5.91	25.30	268	0.05
59	12.52	33.48	5.73	265	30	12.60	33.48	5.93	25.31	267	0.08
69	12.12	33.52	5.18	255	50	12.54	33.48	5.79	25.32	266	0.13
83	11.37	33.56	4.52	239	75	11.79	33.54	4.88	25.52	248	0.20
97	10.44	33.58	3.77	222	100	10.30	33.58	3.69	25.82	219	0.26
111	10.08	33.63	3.54	212	125	9.84	33.72	3.38	26.00	202	0.31
135	9.50	33.77	3.23	192	150	9.27	33.84	2.98	26.19	184	0.36
154	9.20	33.86	2.95	181	200	8.39	33.94	2.53	26.41	163	0.45
182	8.63	33.88	2.98	171	250	7.99	34.06	1.91	26.56	148	0.53
210	8.28	33.99	2.21	158	300	7.57	34.10	1.55	26.66	139	0.60
237	8.10	34.05 4	2.00	150	400	6.49	34.15	1.04	26.84	122	0.74
285	7.70	34.09 0	1.65	142	500	5.70	34.21	0.62	26.99	108	0.86
335	7.28	34.14 4	1.30	133	600	(5.06)	(34.23)		(27.08)	(99)	(0.96)
417	6.30	34.15 6	0.97	119							
499	5.72	34.20 9	0.62	108							
581	5.16	34.22 4	0.53	100							

63.80

HORIZON; February 12, 1960; 1223 GCT; 36°22'N, 124°47'W; sounding, 2000+ fm; wind, 250°, force 2; weather, cloudy; sea, very rough; wire angle, 10°.

1	12.48	33.06	5.95	296	0	(12.48)	(33.06)	(5.95)	(25.01)	(296)	(0.00)
11	12.49	33.08	5.81	294	10	12.49	33.08	5.82	25.03	294	0.03
31	12.50	33.08	5.87	294	20	12.50	33.08	5.84	25.03	294	0.06
59	11.65	33.18	5.38	272	30	12.50	33.08	5.86	25.03	294	0.09
69	10.84	33.27	4.89	251	50	12.47	33.08	5.86	25.03	294	0.15
84	9.90	33.39	4.34	227	75	10.48	33.31	4.70	25.57	242	0.21
99	9.33	33.52	4.07	208	100	9.32	33.52	4.06	25.93	208	0.27
112	9.01	33.58	3.62	199	125	8.80	33.65	3.56	26.11	191	0.32
137	8.66	33.71	3.53	184	150	8.54	33.84	4.20	26.30	173	0.37
157	8.50	33.91	4.50	167	200	7.83	33.96	4.22	26.51	153	0.45
186	8.02	33.95	4.44	157	250	7.25	34.01	2.62	26.62	143	0.53
214	7.64	33.98	3.95	150	300	6.79	34.05	1.78	26.72	134	0.60
241	7.34	33.99 8	2.88	144	400	6.03	34.10	1.04	26.86	120	0.73
290	6.88	34.04 0	1.89	135	500	5.20	34.13	0.80	26.98	108	0.85
342	6.46	34.08 0	1.39	127	600	(4.90)	(34.23)		(27.10)	(97)	(0.96)
422	5.90	34.11 6	0.95	117							
505	5.16	34.13 1	0.79	107							
586	4.93	34.21 6	0.42	98							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 22, 1960; 2215 GCT; 35°42'N, 126°05.5'W; sounding, 2000+ fm; wind, 180°, force 3; weather, overcast; sea, rough; wire angle, 13°.

63.00

3	13.68	32.99	5.85	323	0	(13.68)	(32.99)	(5.85)	(24.72)	(323)	(0.00)
13	13.62	32.99	5.78	322	10	13.64	32.99	5.79	24.74	322	0.03
32	13.56	33.01	5.80	319	20	13.59	33.00	5.79	24.76	320	0.06
41	13.57	33.01	5.75	319	30	13.56	33.01	5.80	24.77	319	0.10
55	13.54	33.01a)	5.72	318	50	13.56	33.01	5.73	24.77	318	0.16
70	13.38	32.99	5.76	318	75	13.18	32.99	5.81	24.83	313	0.24
94	12.52	33.03	5.81	298	100	12.53	33.07	5.77	25.02	295	0.32
113	12.18	33.19	5.44	280	125	11.24	33.28	5.27	25.42	257	0.39
133	10.54	33.30	5.18	244	150	9.88	33.41	4.60	25.74	226	0.45
152	9.82	33.42	4.54	224	200	8.36	33.87	4.30	26.35	268	0.55
181	8.63	33.77	3.91	180	250	7.68	33.97	3.98	26.54	151	0.63
216	8.16	33.93	4.59	160	300	7.12	34.01	2.75	26.64	141	0.71
244	7.77	33.96 9	4.04	152	400	6.30	34.09	1.26	26.82	124	0.84
295	7.16	34.00 2	2.80	142	500	5.46	34.14	0.82	26.97	110	0.96
347	6.84	34.07 2	1.63	132	600	(4.63)	(34.17)	(0.57)	(27.08)	(99)	(1.08)
430	5.98	34.10 3	1.10	119							
514	5.35	34.14 4	0.77	108							
597	4.66	34.17 2	0.57	99							

HORIZON; February 13, 1960; 1100 GCT; 36°46'N, 122°10.5'W; sounding, 450 fm; wind, direction missing, force 1; weather, overcast; sea, moderate; wire angle, 04°.

67.50

0	12.64	33.44	5.68	270	0	12.64	33.44	5.68	25.28	270	0.00
10	12.64	33.41	5.88	272	10	12.64	33.41	5.88	25.26	272	0.03
30	12.64	33.44	5.88	270	20	12.64	33.42	5.88	25.26	272	0.05
54	12.49	33.50	5.65	263	30	12.64	33.44	5.88	25.28	270	0.08
64	11.82	33.56	4.99	246	50	12.55	33.47	5.75	25.32	266	0.14
74	10.72	33.58	3.91	226	75	10.68	33.58	3.86	25.75	225	0.20
88	10.10	33.66	3.49	210	100	9.73	33.70	3.27	26.01	201	0.25
104	9.62	33.73	3.17	197	125	8.97	33.84	2.70	26.24	178	0.30
127	8.97	33.87	2.67	177	150	8.46	33.97	2.56	26.42	162	0.34
148	8.50	33.96	2.61	163	200	7.97	34.04	2.05	26.55	150	0.42
173	8.18	34.00	2.24	156	250	7.59	34.09	1.76	26.64	141	0.49
201	7.96	34.04	2.04	150	300	7.20	34.12	1.36	26.72	133	0.56
231	7.76	34.07 6	1.87	144	400	6.44	34.19	0.91	26.88	118	0.70
270	7.42	34.09 8	1.61	138	500	5.81	34.23	0.64	26.99	108	0.81
329	7.04	34.14 0	1.18	130							
403	6.42	34.18 8	0.89	118							
476	5.96	34.22 0	0.70	110							
555	5.49	34.26 9	0.44	101							

HORIZON; February 13, 1960; 0921 GCT; 36°42.5'N, 122°17.5'W; sounding, 760 fm; wind, direction missing, force 1; weather, drizzle; sea, moderate; wire angle, 01°.

67.53

4	12.75	33.46	5.99	271	0	12.8	(33.46)		(25.26)	(272)	(0.00)
14	12.74	33.47	5.88	270	10	12.74	33.47	5.92	25.28	270	0.03
34	12.71	33.44	5.93	271	20	12.74	33.46	5.89	25.28	270	0.05
43	12.60	33.48	5.76	266	30	12.73	33.44	5.92	25.27	271	0.08
58	12.34	33.51	5.47	260	50	12.49	33.49	5.65	25.35	264	0.13
73	11.33	33.61	4.15	234	75	11.23	33.62	4.10	25.68	232	0.20
98	10.33	33.70	3.56	211	100	10.28	33.70	3.53	25.91	210	0.25
117	9.77	33.77	3.20b)	196	125	9.52	33.80	3.04	26.12	190	0.30
138	9.14	33.84	2.89	182	150	8.80	33.86	3.00	26.28	175	0.35
157	8.66	33.87	3.04	172	200	8.12	34.01	2.28	26.50	154	0.43
186	8.35	33.98	2.30	160	250	7.66	34.08	1.85	26.62	143	0.51
222	7.88	34.04	2.27	148	300	7.02	34.09	1.57	26.72	133	0.58
250	7.66	34.07 6	1.85	143	400	6.56	34.22	0.71	26.88	118	0.71
300	7.02	34.08 8	1.57	133	500	5.99	34.24	0.50	26.98	109	0.83
354	6.79	34.16 0	1.00	125	600	5.43	34.28	0.35	27.08	99	0.94
438	6.34	34.23 2	0.60	114							
522	5.86	34.25 0	0.46	107							
605	5.41	34.29 0	0.34	98							

a) Loose bottle cap; value falls on property curve.

b) Alternate value, 2.95 ml/L, not used in interpolation.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

67.55 HORIZON; February 13, 1960; 0617 GCT; 36°38.5'N, 122°26.5'W; sounding, 1200 fm; wind, 290°, force 3; weather, cloudy; sea, rough; wire angle, 09°.

1	12.48	33.32	6.14	277	0	(12.48)	(33.32)	(6.14)	(25.21)	(277)	(0.00)
9	12.44	33.32	6.16	276	10	12.44	33.32	6.16	25.22	276	0.03
30	12.53	33.36	6.16	274	20	12.48	33.34	6.16	25.23	275	0.06
59	12.21	33.38	5.92	267	30	12.53	33.36	6.16	25.24	274	0.08
69	11.18	33.40	5.06	247	50	12.52	33.37	6.15	25.25	273	0.14
84	10.14	33.55	3.88	219	75	10.74	33.44	4.62	25.62	237	0.20
99	9.92	33.68	3.47	206	100	9.89	33.68	3.46	25.97	205	0.26
114	9.59	33.73	3.42	197	125	9.43	33.78	3.18	26.11	191	0.31
138	9.26	33.84	2.83	184	150	9.04	33.90	2.67	26.27	176	0.35
158	8.89	33.93	2.60	171	200	8.23	33.98	2.57	26.46	158	0.44
186	8.38	33.96	2.64	162	250	7.80	34.07	1.92	26.60	145	0.52
215	8.12	34.00	2.47	155	300	7.35	34.12	1.39	26.69	136	0.59
244	7.87	34.05 6	1.98	147	400	6.61	34.18	0.94	26.85	121	0.72
294	7.42	34.11 8	1.41	136	500	5.89	34.24	0.49	26.99	108	0.84
348	6.88	34.12 6	1.21	129	600	(5.29)	(34.28)	(0.39)	(27.09)	(98)	(0.95)
430	6.46	34.20 4	0.74	117							
513	5.78	34.25 0	0.44	106							
595	5.31	34.27 6	0.39	98							

67.60 HORIZON; January 13, 1960; 0313 GCT; 36°29'N, 122°47.5'W; sounding, 1640 fm; wind, direction missing, force 1; weather, cloudy; sea, rough; wire angle, 14°.

1	13.04	33.48	5.99	275	0	(13.04)	(33.48)	(5.99)	(25.23)	(275)	(0.00)
11	13.04	33.48	6.07	275	10	13.04	33.48	6.07	25.23	275	0.03
30	12.96	33.48	6.02	273	20	12.99	33.48	6.05	25.24	274	0.06
53	12.92	33.48	5.84	272	30	12.96	33.48	6.02	25.25	273	0.08
63	12.86	33.48	5.69	271	50	12.92	33.48	5.89	25.26	272	0.14
73	12.70	33.52	5.43	265	75	12.63	33.53	5.38	25.35	264	0.20
87	11.44	33.57	4.49	240	100	10.82	33.61	4.05	25.74	226	0.27
102	10.75	33.62	3.99	224	125	10.13	33.70	3.64	25.94	208	0.32
124	10.14	33.70	3.65	208	150	9.57	33.80	3.23	26.11	191	0.37
145	9.74	33.77	3.36	196	200	8.06	34.03	2.23	26.52	152	0.46
169	8.62	33.95	2.65	166	250	7.73	34.09	1.72	26.63	142	0.53
196	8.12	34.02	2.26	153	300	7.40	34.12	1.41	26.69	136	0.60
225	7.89	34.05 8	2.04	147	400	6.48	34.20	0.87	26.88	118	0.74
262	7.67	34.10 1	1.65	141	500	5.93	34.26	0.48	27.00	107	0.86
319	7.24	34.13 2	1.35	133							
390	6.54	34.18 8	0.95	120							
461	6.18	34.23 6	0.56	112							
538	5.64	34.27 9	0.43	102							

67.70 HORIZON; February 12, 1960; 2215 GCT; 36°09'N, 123°31.5'W; sounding, 2000+ fm; wind, direction missing, force 1; weather, cloudy; sea, rough; wire angle, 05°.

0	13.14	33.43	5.87	280	0	13.14	33.43	5.87	25.17	280	0.00
10	13.04	33.44	5.81	278	10	13.04	33.44	5.81	25.20	278	0.03
30	12.92	33.44	5.80	276	20	12.95	33.44	5.80	25.22	276	0.06
59	12.02	33.49	5.20	255	30	12.92	33.44	5.80	25.22	276	0.08
68	11.60	33.49	4.84	248	50	12.90	33.44	5.79	25.23	275	0.14
84	10.61	33.57	3.88	225	75	10.90	33.51	4.22	25.45	254	0.20
100	9.80	33.62	3.30	208	100	9.80	33.62	3.30	25.93	208	0.26
113	9.46	33.69	3.11	198	125	9.26	33.76	2.95	26.12	190	0.31
137	9.06	33.81	2.80	182	150	8.74	33.85	2.80	26.28	175	0.36
158	8.58	33.87	2.80	171	200	8.11	33.99	2.37	26.49	155	0.44
186	8.25	33.95	2.58	160	250	7.50	34.06	1.99	26.63	142	0.52
216	7.94	34.02	2.18	150	300	6.98	34.08	1.54	26.72	134	0.59
245	7.57	34.05 1	2.07	144	400	6.30	34.16	0.89	26.88	118	0.72
295	7.03	34.07 8	1.57	134	500	5.83	34.26	0.43	27.01	106	0.83
349	6.60	34.09 6	1.36	127	600	(5.20)	(34.30)	(0.29)	(27.12)	(95)	(0.94)
431	6.15	34.19 8	0.69	114							
516	5.76	34.26 9	0.38	104							
599	5.21	34.30 4	0.29	95							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; February 12, 1960; 1738 GCT; 35°47.5'N, 124°13'W; sounding, 2000 fm; wind, direction missing, force 1; weather, partly cloudy; sea, rough; wire angle, 07°.

67.80

1	12.48	33.39	5.49	272	0	(12.48)	(33.39)	(5.49)	(25.26)	(272)	(0.00)
11	12.44	33.40	5.67	270	10	12.44	33.40	5.67	25.28	270	0.03
31	12.44	33.41	5.38	269	20	12.44	33.40	5.52	25.28	270	0.05
61	12.38	33.41	5.41	268	30	12.44	33.41	5.39	25.29	269	0.08
71	11.92	33.58	4.64	247	50	12.43	33.41	5.40	25.29	269	0.13
85	10.71	33.60	3.73	225	75	11.00	33.58	3.95	25.69	231	0.20
99	10.10	33.66	3.45	210	100	10.09	33.66	3.45	25.91	210	0.25
113	9.06	33.66	3.59	194	125	9.94	33.76	3.25	26.18	184	0.30
139	8.87	33.86	2.80	176	150	8.78	33.91	2.48	26.32	171	0.35
159	8.68	33.94	2.31	167	200	8.17	34.03	2.03	26.52	153	0.43
188	8.30	34.02	2.09	156	250	7.88	34.10	1.50	26.62	143	0.51
217	8.06	34.04	1.96	151	300	7.30	34.16	1.08	26.74	132	0.58
245	7.92	34.09 8	1.57	144	400	6.38	34.20	0.69	26.90	117	0.70
295	7.36	34.15 5	1.12	133	500	5.86	34.25	0.46	27.00	106	0.82
350	6.82	34.18 6	0.81	123	600	(5.31)	(34.31)	(0.32)	(27.11)	(96)	(0.93)
432	6.17	34.21 2	0.62	113							
516	5.79	34.26 2	0.43	105							
599	5.32	34.30 4	0.32	96							

HORIZON; January 22, 1960; 1638 GCT; 35°13'N, 125°30'W; sounding, 2000+ fm; wind, 180°, force 3; weather, overcast; sea, rough; wire angle, 00°.

67.00

2	13.57	33.03	5.91	318	0	(13.57)	(33.03)	(5.91)	(24.78)	(318)	(0.00)
12	13.56	33.04	5.78	317	10	13.56	33.04	5.79	24.79	317	0.03
32	13.01	33.01	5.97	309	20	13.49	33.04	5.82	24.80	316	0.06
38	12.72	33.00	5.92	304	30	13.12	33.02	5.94	24.86	310	0.09
55	12.56	33.04	5.67	298	50	12.58	33.03	5.70	24.98	299	0.16
69	12.42	33.13	5.56	290	75	12.34	33.16	5.50	25.12	286	0.23
97	11.20	33.24	5.11	259	100	11.03	33.25	5.04	25.43	256	0.30
115	9.95	33.34	4.58	232	125	9.61	33.42	4.40	25.81	220	0.36
135	9.38	33.51	4.24	210	150	9.00	33.66	3.62	26.09	193	0.41
156	8.89	33.72	3.37	187	200	8.44	33.90	2.87	26.36	167	0.50
184	8.62	33.84	2.96	174	250	7.73	33.98	3.32	26.54	151	0.58
220	8.18	33.98	2.83	157	300	7.08	34.01	2.55	26.65	140	0.66
249	7.74	33.98 0	3.33	151	400	6.04	34.07	1.45	26.83	123	0.79
298	7.10	34.00 6	2.60	140	500	5.38	34.15	0.76	26.98	108	0.92
352	6.53	34.03 2	1.92	131	600	4.88	34.24	0.41	27.10	97	1.02
436	5.72	34.09 1	1.16	117							
521	5.29	34.16 6	0.67	106							
604	4.86	34.24 2	0.39	96							

HORIZON; January 20, 1960; 0617 GCT; 36°09'N, 121°50.5'W; sounding, 300 fm; wind, 130°, force 4; weather, partly cloudy; sea, rough; wire angle, 17°.

70.51

1	12.87	33.61	5.75	262	0	(12.87)	(33.61)	(5.75)	(25.37)	(262)	(0.00)
10	12.86	33.59	5.77	263	10	12.86	33.59	5.77	25.35	263	0.03
29	12.84	33.62	5.75	261	20	12.85	33.61	5.76	25.37	262	0.05
53	12.58	33.60	5.50	257	30	12.83	33.62	5.74	25.38	261	0.08
61	12.46	33.54	5.23	260	50	12.63	33.61	5.59	25.41	258	0.13
72	11.94	33.58	4.74	247	75	11.47	33.61	4.42	25.63	237	0.19
86	10.72	33.63	4.02	223	100	10.32	33.60	3.93	25.83	218	0.25
100	10.32	33.60	3.93	218	125	9.91	33.75	3.61	26.02	200	0.30
123	9.96	33.75	3.64	201	150	9.26	33.82	3.24	26.18	185	0.35
142	9.47	33.78	3.37	191	200	8.70	33.91	2.78	26.33	170	0.44
166	8.96	33.89	3.04	175	250	8.08	34.02	2.50	26.52	153	0.52
193	8.78	33.90	2.78	172	300	7.76	34.11	1.70	26.63	142	0.60
222	8.42	33.96 4	2.81	162	400	6.78	34.20	0.90	26.84	122	0.74
259	8.00	34.03 8	2.32	150	500	6.13	34.27	0.47	26.99	108	0.86
316	7.64	34.12 5	1.53	139							
388	6.86	34.18 8	0.98	124							
460	6.38	34.24 8	0.56	113							
539	5.87	34.28 8	0.42	104							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

70.53

HORIZON; January 20, 1960; 0805 GCT; 36°06.5'N, 121°54.5'W; sounding, 580 fm; wind, 120°, force 4; weather, missing; sea, rough; wire angle, 23°.

3	12.77	33.51	5.84	267	0	(12.77)	(33.51)	(5.84)	(25.31)	(267)	(0.00)
12	12.76	33.51	5.79	267	10	12.76	33.51	5.80	25.31	267	0.03
30	12.74	33.58	5.71	262	20	12.75	33.54	5.73	25.34	265	0.05
57	12.66	33.65	5.79	255	30	12.74	33.58	5.71	25.37	262	0.08
67	12.58	33.60	5.61	257	50	12.70	33.64	5.77	25.42	257	0.13
80	12.22	33.59	5.03	252	75	12.53	33.61	5.38	25.43	256	0.20
94	11.44	33.62	4.07	236	100	11.12	33.65	4.00	25.73	227	0.26
106	10.72	33.68	3.94	219	125	10.01	33.76	3.33	26.00	202	0.31
129	9.86	33.78	3.24	198	150	9.13	33.85	3.20	26.22	181	0.36
146	9.21	33.85	3.22	182	200	8.36	33.95	2.93	26.42	162	0.45
173	8.82	33.87	3.11	175	250	7.78	34.05	2.24	26.58	147	0.52
200	8.36	33.95	2.93	162	300	7.51	34.12	1.47	26.68	137	0.60
226	8.02	34.00 6	2.65	153	400	6.91	34.20	0.89	26.82	124	0.73
272	7.62	34.07 4	1.93	143	500	6.24	34.27	0.50	26.97	110	0.86
321	7.42	34.14 4	1.28	135							
399	6.92	34.19 9	0.90	124							
480	6.38	34.25 5	0.55	112							
562	5.72	34.29 2	0.34	102							

70.55

HORIZON; January 20, 1960; 1005 GCT; 36°03'N, 122°02'W; sounding, 740 fm; wind, 150°, force 6; weather, missing; sea, rough; wire angle, 35°.

2	12.98	33.58	5.59	266	0	(12.98)	(33.58)	(5.59)	(25.32)	(266)	(0.00)
12	12.96	33.58	5.78	266	10	12.97	33.58	5.74	25.32	266	0.03
26	12.94	33.60	5.68	264	20	12.95	33.60	5.71	25.34	264	0.05
49	12.96	33.57	5.50	266	30	12.94	33.60	5.64	25.34	264	0.08
58	12.94	33.58	5.69	266	50	12.96	33.57	5.50	25.32	266	0.13
70	12.56	33.57	5.01	259	75	11.44	33.59	4.12	25.61	238	0.20
82	11.30	33.62	4.00	233	100	10.77	33.67	3.75	25.80	221	0.25
93	11.01	33.64	3.90	227	125	9.77	33.75	3.43	26.04	198	0.31
113	10.16	33.73	3.38	206	150	9.26	33.91	2.69	26.25	178	0.35
128	9.70	33.76	3.43	196	200	8.43	33.93	2.80	26.39	165	0.44
149	9.28	33.91	2.69	178	250	7.83	34.04	2.25	26.56	148	0.52
172	8.74	33.93	2.95	169	300	7.34	34.08	1.76	26.67	138	0.60
195	8.48	33.92 8	2.83	165	400	6.67	34.22	0.69	26.87	119	0.73
233	8.08	34.02 8	2.38	152	500	(5.91)	(34.26)	(0.43)	(27.00)	(107)	(0.84)
275	7.48	34.04 7	2.06	142							
347	7.15	34.16 4	1.05	129							
421	6.48	34.22 9	0.62	116							
498	5.92	34.25 4	0.43	107							

70.60

HORIZON; January 20, 1960; 1323 GCT; 35°55'N, 122°23.5'W; sounding, 2000+ fm; wind, 140°, force 6; weather, cloudy; sea, very rough; wire angle, 36°.

2	12.60	33.56	5.58	261	0	(12.60)	(33.56)	(5.58)	(25.38)	(261)	(0.00)
10	12.60	33.55	5.71	262	10	12.60	33.55	5.71	25.37	262	0.03
30	12.58	33.54	5.62	262	20	12.59	33.55	5.67	25.38	261	0.05
54	12.46	33.55	5.32	259	30	12.58	33.54	5.62	25.37	262	0.08
61	11.94	33.55	4.96	250	50	12.54	33.54	5.50	25.38	261	0.13
76	10.36	33.60	3.71	219	75	10.41	33.60	3.74	25.81	220	0.19
89	9.92	33.62	3.59	210	100	9.87	33.68	3.48	25.97	205	0.24
102	9.70	33.68	3.41	202	125	9.17	33.78	3.13	26.16	187	0.29
125	9.17	33.78	3.13	187	150	8.80	33.87	2.95	26.29	174	0.34
141	8.89	33.86	3.05	176	200	8.10	33.98	2.70	26.48	156	0.42
164	8.68	33.89	2.77	171	250	7.53	34.05	2.14	26.62	143	0.50
190	8.32	33.95	2.88	161	300	7.21	34.12	1.46	26.71	134	0.57
210	7.91	33.99 8	2.54	152	400	6.40	34.18	0.74	26.88	118	0.70
247	7.55	34.04 6	2.16	144	500	5.82	34.24	0.44	27.00	107	0.82
297	7.23	34.11 1	1.50	134							
375	6.60	34.16 8	0.85	122							
453	6.02	34.21 4	0.56	112							
520	5.76	34.26 2	0.39	105							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 20, 1960; 2010 GCT; 35° 38'N, 123° 01'W; sounding, 2000+ fm; wind, 170°, force 6; weather, cloudy; sea, very rough; wire angle, 38°.

70.70

2	12.00	33.58	5.79	248	0	(12.00)	(33.58)	(5.79)	(25.51)	(248)	(0.00)
11	12.01	33.57	5.54	249	10	12.01	33.57	5.55	25.50	249	0.02
33	12.00	33.57	5.70	249	20	12.01	33.57	5.62	25.50	249	0.05
59	11.02	33.60	4.59	230	30	12.00	33.57	5.67	25.50	249	0.07
68	9.96	33.71	3.33	204	50	11.97	33.57	5.69	25.50	249	0.12
84	9.68	33.77	3.15	195	75	9.85	33.73	3.27	26.01	201	0.18
95	9.34	33.83	2.96	186	100	9.23	33.84	2.91	26.19	184	0.23
106	9.10	33.84	2.88	181	125	8.72	33.91	2.81	26.33	170	0.27
129	8.64	33.93	2.80	168	150	8.32	33.96	2.68	26.44	160	0.32
143	8.40	33.96	2.76	162	200	7.70	34.08	1.95	26.62	143	0.39
173	8.21	34.02	2.34	155	250	7.37	34.09	1.64	26.67	138	0.46
190	7.89	34.09	1.99	145	300	6.97	34.11	1.24	26.75	131	0.53
213	7.56	34.07 8	1.90	142	400	6.37	34.22	0.70	26.91	115	0.66
251	7.36	34.09 2	1.63	137	500	5.66	34.26	0.43	27.03	104	0.77
304	6.95	34.12 0	1.22	130							
387	6.46	34.20 7	0.78	117							
466	5.86	34.23 8	0.52	108							
534	5.53	34.28 7	0.35	100							

HORIZON; January 21, 1960; 0125 GCT; 35° 19'N, 123° 39.5'W; sounding, 2000+ fm; wind, 170°, force 6; weather, cloudy; sea, high; wire angle, 35°.

70.80

3	12.10	33.60	5.79	248	0	(12.10)	(33.60)	(5.79)	(25.51)	(248)	(0.00)
11	12.08	33.62	5.80	246	10	12.08	33.62	5.80	25.52	247	0.02
31	12.08	33.60	5.72	248	20	12.08	33.61	5.76	25.52	247	0.05
56	12.09	33.62	5.89	247	30	12.08	33.60	5.72	25.51	248	0.07
65	11.98	33.60	5.56	246	50	12.09	33.62	5.86	25.52	247	0.12
80	9.81	33.73	3.16	200	75	10.35	33.69	3.68	25.89	212	0.18
93	9.32	33.78	3.09	189	100	9.08	33.86	2.97	26.23	180	0.23
105	8.95	33.89	2.85	175	125	8.71	33.92	2.52	26.34	169	0.28
130	8.66	33.93	2.46	168	150	8.50	34.01	2.21	26.45	159	0.32
144	8.55	34.00	2.21	161	200	7.96	34.04	2.26	26.56	149	0.40
166	8.32	34.04	2.23	155	250	7.33	34.07	1.94	26.66	139	0.47
193	8.10	34.05	2.23	151	300	7.10	34.11	1.50	26.72	133	0.54
213	7.64	34.03 6	2.27	146	400	6.57	34.23	0.67	26.89	117	0.67
248	7.34	34.06 6	1.95	139	500	(5.62)	(34.29)	(0.38)	(27.06)	(101)	(0.78)
294	7.11	34.09 8	1.58	134							
367	6.80	34.21 2	0.80	121							
436	6.26	34.25 6	0.57	111							
496	5.66	34.28 8	0.38	102							

HORIZON; January 21, 1960; 1815 GCT; 34° 55.5'N, 124° 31'W; sounding, 2260 fm; wind, 160°, force 3; weather, partly cloudy; sea, very rough; wire angle, 05°.

70.90

2	12.80	33.52	5.92	267	0	(12.80)	(33.52)	(5.92)	(25.31)	(267)	(0.00)
12	12.78	33.49	5.97	269	10	12.78	33.49	5.96	25.29	269	0.03
37	12.76	33.48	5.98	269	20	12.77	33.49	5.97	25.29	269	0.05
65	12.76	33.49	5.98	269	30	12.77	33.49	5.97	25.29	269	0.08
75	12.03	33.52	5.46	254	50	12.76	33.48	5.98	25.29	269	0.13
95	9.86	33.64	4.05	208	75	12.03	33.52	5.46	25.45	254	0.20
110	9.58	33.71	3.45	198	100	9.75	33.66	3.86	25.97	204	0.26
125	9.30	33.79	3.14	188	125	9.30	33.79	3.14	26.14	188	0.31
155	8.93	33.90	2.77	174	150	8.99	33.89	2.82	26.27	176	0.35
174	8.68	33.96	2.36	166	200	8.34	33.97	2.28	26.44	160	0.44
204	8.28	33.98	2.27	159	250	7.58	34.06	1.93	26.62	143	0.52
239	7.72	34.04	2.03	146	300	7.11	34.11	1.57	26.72	133	0.59
267	7.39	34.09 2	1.75	138	400	5.88	34.10	1.16	26.88	118	0.72
316	6.97	34.10 6	1.49	131	500	5.44	34.23	0.50	27.04	103	0.83
379	6.00	34.07 8	1.29	122	600	4.99	34.29	0.36	27.14	93	0.94
478	5.54	34.20 8	0.54	106							
567	5.14	34.27 2	0.43	97							
641	4.81	34.31 0	0.25	90							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

70.100

HORIZON; January 21, 1960; 0822 GCT; 34°38.5'N, 125°04'W; sounding, 2000+ fm; wind, 220°, force 3; weather, overcast; sea, very rough; wire angle, 23°.

2	13.00	33.12	5.84	300	0	(13.00)	(33.12)	(5.84)	(24.96)	(300)	(0.00)
11	12.98	33.12	5.90	300	10	12.98	33.12	5.90	24.97	300	0.03
30	12.76	33.41	5.83	274	20	12.87	33.19	5.88	25.04	293	0.06
56	12.52	33.42	5.87	269	30	12.76	33.41	5.83	25.24	274	0.09
65	12.50	33.47	5.61	266	50	12.55	33.41	5.87	25.27	271	0.14
79	11.60	33.49	4.59	248	75	12.00	33.48	4.98	25.44	255	0.21
92	10.16	33.60	3.48	216	100	9.62	33.61	3.60	25.96	206	0.27
105	9.07	33.59	3.70	200	125	8.67	33.65	3.81	26.14	188	0.32
126	8.67	33.66	3.81	188	150	8.49	33.78	3.26	26.27	176	0.36
144	8.54	33.76	3.46	179	200	7.88	33.97	2.63	26.51	153	0.45
169	8.25	33.83	2.80	170	250	7.24	34.01	2.45	26.63	142	0.52
195	7.94	33.95	2.64	156	300	6.67	34.03	1.91	26.72	133	0.59
221	7.64	34.01 2	2.57	147	400	5.82	34.12	0.97	26.90	116	0.72
265	7.04	34.00 9	2.39	140	500	5.58	34.26	0.36	27.05	102	0.84
313	6.54	34.04 2	1.73	130							
388	5.86	34.10 6	1.05	117							
465	5.68	34.22 2	0.40	106							
541	5.44	34.28 6	0.36	99							

73.51

HORIZON; January 20, 1960; 0052 GCT; 35°36'N, 121°25.5'W; sounding, 282 fm; wind, 160°, force 3; weather, overcast; sea, rough; wire angle, 19°.

1	13.23	33.53	5.81	275	0	(13.23)	(33.53)	(5.81)	(25.23)	(275)	(0.00)
10	13.22	33.53	5.80	275	10	13.22	33.53	5.80	25.23	275	0.03
29	12.92	33.57	5.68	266	20	13.20	33.53	5.79	25.24	274	0.05
38	12.62	33.55	5.43	262	30	12.90	33.57	5.67	25.32	266	0.08
47	12.52	33.55	5.40	260	50	12.49	33.55	5.37	25.40	259	0.13
57	12.35	33.58	5.11	255	75	11.23	33.59	4.17	25.65	235	0.20
66	11.56	33.60	4.37	239	100	10.22	33.65	3.52	25.88	213	0.25
80	11.05	33.58	4.06	232	125	9.94	33.73	3.30	25.98	203	0.31
93	10.68	33.63	3.69	222	150	9.65	33.82	3.00	26.11	191	0.36
106	10.21	33.68	3.47	211	200	9.09	33.93	2.63	26.29	174	0.45
128	9.90	33.74	3.24	201	250	8.29	34.06	1.98	26.52	152	0.53
155	9.60	33.83 4	2.95	189	300	7.84	34.11	1.58	26.62	143	0.61
185	9.32	33.88 4	2.81	181	400	7.04	34.21	0.91	26.81	125	0.75
230	8.54	34.03 2	2.19	158	500	(6.23)	(34.27)		(26.99)	(108)	(0.87)
275	8.05	34.08 6	1.77	147							
370	7.28	34.18 4	1.09	129							
464	6.49	34.24 5	0.62	115							

73.53

HORIZON; January 19, 1960; 2333 GCT; 35°33'N, 121°28'W; sounding, 350 fm; wind, 250°, force 3; weather, cloudy; sea, rough; wire angle, 20°.

3	12.96	33.58	5.83	266	0	(12.96)	(33.58)	(5.83)	(25.32)	(266)	(0.00)
13	12.90	33.55	5.72	267	10	12.92	33.56	5.74	25.31	267	0.03
32	12.22	33.54	4.96	255	20	12.87	33.55	5.67	25.31	267	0.05
40	12.00	33.55	4.84	251	30	12.30	33.54	5.00	25.42	257	0.08
55	11.12	33.64	4.13	228	50	11.42	33.62	4.38	25.64	236	0.13
69	10.68	33.66	3.86	220	75	10.54	33.66	3.80	25.84	217	0.19
92	10.34	33.68	3.70	212	100	10.35	33.69	3.67	25.90	211	0.24
109	10.36	33.71	3.62	210	125	9.83	33.79	3.20	26.05	197	0.29
126	9.82	33.79	3.19	196	150	9.48	33.88	2.87	26.18	185	0.34
145	9.56	33.86	2.94	187	200	8.76	34.00	2.33	26.40	164	0.43
169	9.20	33.92	2.64	177	250	7.91	34.10	1.71	26.60	145	0.51
200	8.76	34.00	2.33	164	300	7.43	34.11	1.50	26.68	137	0.58
226	8.31	34.05 2	2.00	154	400	6.74	34.22	0.75	26.86	120	0.71
271	7.65	34.11 4	1.58	140	500	6.03	34.27	0.50	27.00	107	0.83
320	7.31	34.11 6	1.45	135							
397	6.76	34.21 5	0.77	120							
475	6.22	34.25 8	0.55	110							
554	5.53	34.31 7	0.36	98							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6001

HORIZON; January 19, 1960; 2157 GCT; 35°28.5'N, 121°33'W; sounding, 490 fm; wind, 220°, force 3; weather, cloudy; sea, rough; wire angle, 15°.

73.55

1	12.84	33.50	6.00	270	0	(12.84)	(33.50)	(6.00)	(25.28)	(270)	(0.00)
11	12.80	33.49	5.91	270	10	12.81	33.49	5.92	25.28	270	0.03
35	12.62	33.51	5.82	265	20	12.72	33.50	5.87	25.31	267	0.05
64	11.56	33.49	4.72	247	30	12.64	33.51	5.83	25.33	265	0.08
73	10.66	33.54	4.12	228	50	12.58	33.51	5.76	25.34	264	0.13
92	10.05	33.60	3.73	214	75	10.63	33.54	4.10	25.72	228	0.19
106	9.79	33.63	3.68	207	100	9.91	33.61	3.71	25.90	211	0.25
121	9.39	33.73	3.48	194	125	9.29	33.75	3.42	26.11	191	0.30
149	8.91	33.82	3.26	180	150	8.89	33.82	3.25	26.24	179	0.35
165	8.65	33.89	2.99	171	200	8.33	33.99	2.52	26.45	159	0.43
195	8.38	33.98	2.57	160	250	7.86	34.11	1.60	26.62	143	0.51
228	8.02	34.00	2.26	154	300	7.47	34.16	1.23	26.71	134	0.58
255	7.82	34.12 2	1.55	142	400	6.59	34.23	0.71	26.89	117	0.71
301	7.46	34.16 1	1.24	134	500	5.84	34.29	0.37	27.03	104	0.83
363	6.90	34.19 4	0.91	124	600	5.24	34.35	0.30	27.16	92	0.93
457	6.16	34.26 1	0.48	109							
543	5.56	34.31 1	0.30	98							
615	5.16	34.36 6	0.30	90							

HORIZON; January 19, 1960; 1917 GCT; 35°20'N, 121°55.5'W; sounding, 1300+ fm; wind, 120°, force 3; weather, partly cloudy; sea, rough; wire angle, 20°.

73.60

1	13.14	33.50	5.76	275	0	(13.14)	(33.50)	(5.76)	(25.23)	(275)	(0.00)
10	13.10	33.50	5.76	275	10	13.10	33.50	5.76	25.23	275	0.03
29	13.10	33.48	5.80	276	20	13.10	33.49	5.78	25.23	275	0.06
56	13.10	33.49	5.85	275	30	13.10	33.48	5.80	25.22	276	0.08
64	13.10	33.48	5.72	276	50	13.10	33.49	5.83	25.23	275	0.14
79	11.56	33.42	4.65	252	75	13.03	33.48	5.66	25.23	275	0.21
92	10.56	33.55	4.05	226	100	10.31	33.57	3.93	25.81	220	0.27
105	10.14	33.59	3.85	216	125	9.31	33.73	3.44	26.10	192	0.32
126	9.29	33.74	3.42	191	150	8.89	33.87	3.09	26.27	176	0.37
144	8.95	33.85	3.12	178	200	8.14	33.99	2.84	26.48	156	0.45
168	8.72	33.89	3.03	172	250	7.43	34.02	2.48	26.61	144	0.53
195	8.23	33.98	2.84	158	300	6.94	34.09	1.61	26.73	132	0.60
220	7.82	34.00 9	2.84	150	400	5.86	34.12	1.05	26.89	117	0.73
265	7.26	34.03 0	2.25	141	500	5.42	34.22	0.50	27.03	104	0.84
314	6.79	34.10 2	1.43	129							
391	5.92	34.10 7	1.12	118							
470	5.57	34.19 4	0.58	107							
551	5.12	34.24 0	0.44	99							

HORIZON; January 19, 1960; 1458 GCT; 35°12.5'N, 122°41'W; sounding, 2000+ fm; wind, 160°, force 3; weather, partly cloudy; sea, moderate; wire angle, 16°.

73.70

1	12.40	33.51	5.62	261	0	(12.40)	(33.51)	(5.62)	(25.38)	(261)	(0.00)
10	12.43	33.51	5.76	262	10	12.43	33.51	5.76	25.37	262	0.03
30	12.31	33.53	5.72	258	20	12.34	33.52	5.74	25.39	259	0.05
58	12.00	33.55	5.69	251	30	12.31	33.53	5.72	25.41	258	0.08
67	11.95	33.55	5.67	250	50	12.03	33.54	5.70	25.47	252	0.13
81	10.12	33.62	3.42	213	75	10.60	33.59	4.01	25.77	224	0.19
96	9.67	33.68	3.10	202	100	9.49	33.71	3.03	26.05	197	0.24
109	9.22	33.78	2.89	188	125	9.00	33.84	2.64	26.23	180	0.29
133	8.90	33.87	2.56	176	150	8.62	33.94	2.47	26.37	167	0.33
152	8.58	33.95	2.47	165	200	7.78	34.00	2.49	26.55	150	0.41
180	8.06	34.00	2.55	154	250	7.26	34.08	1.88	26.67	138	0.49
208	7.68	34.01	2.42	148	300	6.66	34.10	1.37	26.78	128	0.56
236	7.39	34.05 6	2.08	141	400	5.73	34.13	0.92	26.92	115	0.68
284	6.90	34.10 1	1.43	131	500	5.20	34.19	0.62	27.03	104	0.79
336	6.14	34.09 0	1.26	122	600	(5.16)	(34.32)		(27.14)	(94)	(0.90)
417	5.64	34.13 3	0.86	113							
500	5.20	34.18 6	0.62	104							
582	5.16	34.29 2	0.32	95							

SIO

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600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

73.80

HORIZON; January 19, 1960; 1000 GCT; 34°45'N, 123°20.5'W; sounding, 2000+ fm; wind, 160°, force 4; weather, cloudy; sea, moderate; wire angle, 23°.

3	12.56	33.57	5.69	259	0	(12.56)	(33.57)	(5.69)	(25.40)	(259)	(0.00)
14	12.57	33.57	5.72	260	10	12.56	33.57	5.71	25.39	260	0.03
32	12.56	33.56	5.69	260	20	12.56	33.57	5.71	25.39	260	0.05
59	12.56	33.57	5.60	259	30	12.56	33.56	5.69	25.39	260	0.08
67	12.08	33.57	5.63	251	50	12.56	33.57	5.62	25.40	259	0.13
82	9.70	33.64	3.42	205	75	10.00	33.61	3.79	25.89	212	0.19
96	9.48	33.82	2.87	189	100	9.43	33.83	2.84	26.16	187	0.24
109	9.32	33.86	2.79	183	125	9.15	33.90	2.59	26.25	178	0.28
132	9.10	33.91	2.51	176	150	8.88	33.99	2.25	26.36	167	0.33
150	8.88	33.99	2.25	167	200	8.48	34.08	1.77	26.50	154	0.41
178	8.66	34.04	1.98	160	250	8.07	34.16	1.41	26.63	142	0.48
205	8.43	34.09	1.73	153	300	7.79	34.20	1.16	26.70	136	0.56
232	8.19	34.13 9	1.56	145	400	6.99	34.26	0.75	26.86	120	0.69
279	7.91	34.18 0	1.24	138	500	6.28	34.29	0.54	26.98	109	0.81
330	7.58	34.21 4	1.04	131							
409	6.92	34.25 9	0.72	119							
489	6.36	34.28 2	0.56	110							
569	5.80	34.30 2	0.38	102							

77.51

HORIZON; January 17, 1960; 1626 GCT; 35°02.5'N, 120°55.5'W; sounding, 140 fm; wind, 090°, force 2; weather, partly cloudy; sea, very rough; wire angle, 00°.

2	13.01	33.51	5.34	272	0	(13.01)	(33.51)	(5.34)	(25.26)	(272)	(0.00)
12	13.04	33.51	5.41	273	10	13.03	33.51	5.40	25.25	273	0.03
32	13.04	33.49	5.31	274	20	13.04	33.50	5.35	25.24	274	0.05
51	13.04	33.50	5.43	274	30	13.04	33.49	5.32	25.24	274	0.08
76	12.83	33.49	5.23	270	50	13.04	33.50	5.42	25.24	274	0.14
101	11.10	33.62	3.83	230	75	12.89	33.49	5.30	25.27	271	0.20
125	9.76	33.78	2.99	196	100	11.12	33.62	3.84	25.70	230	0.27
165	8.94	33.93	2.23	172	125	9.76	33.78	2.99	26.06	196	0.32
204	8.39	34.06	1.78	154	150	9.19	33.87	2.49	26.23	180	0.37
					200	8.44	34.05	1.82	26.48	156	0.46

77.53

HORIZON; January 17, 1960; 1420 GCT; 34°58'N, 121°04'W; sounding, 270 fm; wind, 250°, force 2; weather, partly cloudy; sea, moderate; wire angle, 03°.

2	13.00	33.56	5.50	268	0	(13.00)	(33.56)	(5.50)	(25.30)	(268)	(0.00)
22	13.05	33.55	5.49	270	10	13.02	33.56	5.50	25.29	269	0.03
32	13.07	33.57	5.51	269	20	13.04	33.55	5.49	25.28	270	0.05
40	13.06	33.56	5.46	269	30	13.06	33.57	5.51	25.29	269	0.08
51	13.08	33.60	5.40	267	50	13.07	33.60	5.40	25.32	267	0.13
66	11.24	33.53	4.25	239	75	10.95	33.61	3.82	25.72	228	0.20
81	10.76	33.63	3.73	223	100	10.00	33.72	3.57	25.97	204	0.25
96	10.14	33.69	3.69	209	125	9.56	33.85	2.80	26.15	187	0.30
120	9.62	33.84	2.89	189	150	9.24	33.90	2.39	26.24	179	0.35
150	9.24	33.90	2.39	179	200	8.82	34.05	2.00	26.42	162	0.43
184	9.03	34.01 9	2.12	167	250	8.05	34.11	1.56	26.59	146	0.51
233	8.28	34.09 6	1.66	150	300	7.53	34.15	1.28	26.70	135	0.58
282	7.70	34.13 9	1.37	139	400	6.82	34.24	0.68	26.86	120	0.72
386	6.92	34.22 1a)	0.74	122	500	(6.04)	(34.28)	(0.41)	(27.00)	(107)	(0.83)
484	6.16	34.28 0	0.41	108							

a) Mean value of 34.214 and 34.228‰.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
CCOFI
6001

HORIZON; January 17, 1960; 1216 GCT; 34°53.5'N, 121°14'W; sounding, 300 fm; wind, 250°, force 3; weather, partly cloudy; sea, moderate; wire angle, 05°.

7755

2	13.34	33.53	5.46	277	0	(13.34)	(33.53)	(5.46)	(25.21)	(277)	(0.00)
12	13.34	33.55	5.48	276	10	13.34	33.55	5.48	25.22	276	0.03
32	13.34	33.55	5.50	276	20	13.34	33.55	5.49	25.22	276	0.06
51	13.36	33.55	5.50	276	30	13.34	33.55	5.50	25.22	276	0.08
75	11.54	33.48	4.51	248	50	13.36	33.55	5.50	25.22	276	0.14
100	10.28	33.58	3.90	219	75	11.54	33.48	4.51	25.52	248	0.20
124	9.42	33.77	3.36	191	100	10.28	33.58	3.90	25.82	219	0.26
164	8.52	33.98	2.58	162	125	9.42	33.78	3.35	26.11	191	0.32
203	8.26	34.02	2.29	156	150	8.83	33.92	2.87	26.32	171	0.36
252	7.78	34.13	1.58	140	200	8.29	34.02	2.31	26.48	156	0.44
302	7.52	34.18	1.26	133	250	7.79	34.13	1.59	26.65	140	0.52
405	6.88	34.23	0.73	121	300	7.53	34.18	1.28	26.72	133	0.59
					400	6.91	34.23	0.77	26.84	122	0.72

HORIZON; January 18, 1960; 1656 GCT; 34°50'N, 121°20.5'W; sounding, 265 fm; wind, 260°, force 1; weather, squalls; sea, moderate; wire angle, 04°.

7757

2	13.22	33.60	5.38	270	0	(13.22)	(33.60)	(5.38)	(25.28)	(270)	(0.00)
12	13.22	33.58	5.39	271	10	13.22	33.58	5.39	25.27	271	0.03
32	13.24	33.58	5.32	271	20	13.23	33.58	5.36	25.27	271	0.05
51	12.18	33.57	4.45	252	30	13.24	33.58	5.33	25.27	271	0.08
76	10.90	33.62	3.76	226	50	12.30	33.57	4.55	25.44	255	0.13
101	9.90	33.68	3.61	205	75	10.93	33.62	3.77	25.73	227	0.19
125	9.44	33.70	3.41	197	100	9.93	33.68	3.62	25.95	206	0.25
165	8.97	33.78	3.21	183	125	9.44	33.70	3.41	26.05	197	0.30
203	8.50	33.94	2.89	165	150	9.13	33.74	3.26	26.14	189	0.35
252	7.80	34.08	1.69	144	200	8.55	33.93	2.95	26.37	166	0.44
302	7.37	34.22	1.21	128	250	7.82	34.08	1.70	26.60	145	0.52
405	6.67	34.25	0.62	117	300	7.38	34.22	1.22	26.78	128	0.59
					400	6.72	34.25	0.64	26.89	117	0.72

HORIZON; January 18, 1960; 1938 GCT; 34°41'N, 121°33.5'W; sounding, 500 fm; wind, direction missing, force 1; weather, squalls; sea, rough; wire angle, 07°.

7760

1	13.28	33.57u	5.54	-	0	(13.28)	(33.49)	(5.54)	(25.19)	(279)	(0.00)
11	13.20	33.49	5.59	277	10	13.21	(33.49)	(5.58)	(25.21)	(277)	(0.03)
31	13.18	33.50	5.54	276	20	13.19	33.49	5.58	25.21	277	(0.06)
56	13.19	33.48	5.57	277	30	13.18	33.50	5.54	25.22	276	(0.08)
65	13.16	33.53	5.45	273	50	13.19	33.49	5.56	25.21	277	(0.14)
75	11.96	33.44	4.77	258	75	11.96	33.44	4.77	25.41	258	(0.21)
89	10.64	33.51	4.08	230	100	10.22	33.57	3.85	25.82	219	(0.27)
104	9.83	33.61	3.69	210	125	9.28	33.73	3.30	26.12	190	(0.32)
128	9.10	33.75	3.24	188	150	8.74	33.87	2.98	26.30	173	(0.36)
148	8.76	33.87	2.99	174	200	8.07	34.02	2.75	26.52	152	(0.45)
173	8.38	33.95	2.86	162	250	7.09	34.05	1.88	26.68	137	(0.52)
202	8.03	34.02	2.74	152	300	6.85	34.12	1.32	26.77	129	(0.59)
231	7.40	34.03 9	2.14	142	400	6.42	34.26	0.57	26.93	113	(0.71)
270	6.91	34.07 2	1.64	133	500	5.87	34.31	0.37	27.05	102	(0.83)
329	6.80	34.16 5	1.03	125							
402	6.41	34.25 7	0.56	113							
476	6.01	34.30 0	0.41	105							
554	5.52	34.33 6	0.30	96							

SIO
CCOFI
600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

77.70

HORIZON; January 19, 1960; 0037 GCT; 34°25'N, 122°14'W; sounding, 2000+ fm; wind, direction missing, force 1; weather, squalls; sea, moderate; wire angle, 10°.

1	13.00	33.46	5.92	276	0	(13.00)	(33.46)	(5.92)	(25.22)	(276)	(0.00)
11	12.93	33.46	5.86	274	10	12.94	33.46	5.87	25.24	274	0.03
31	12.88	33.47	5.86	272	20	12.90	33.47	5.86	25.25	273	0.05
54	12.84	33.46	5.78	272	30	12.88	33.47	5.86	25.26	272	0.08
64	10.86	33.60	3.75	227	50	12.85	33.46	5.80	25.26	272	0.14
75	10.38	33.62	3.48	217	75	10.38	33.62	3.48	25.84	217	0.20
89	9.66	33.71	3.30	200	100	9.52	33.74	3.14	26.07	195	0.25
104	9.44	33.75	3.07	193	125	9.12	33.83	2.75	26.20	183	0.30
127	9.09	33.83	2.73	182	150	8.75	33.94	2.53	26.35	168	0.34
147	8.80	33.93	2.52	170	200	7.90	34.00	2.58	26.52	152	0.42
172	8.48	33.97	2.55	162	250	7.38	34.08	1.90	26.67	138	0.50
200	7.90	34.00	2.58	152	300	7.14	34.15	1.37	26.75	130	0.57
230	7.54	34.05 6a)	2.07	143	400	6.57	34.26	0.67	26.92	114	0.69
268	7.26	34.10 3	1.77	135	500	5.77	34.31	0.39	27.05	102	0.80
327	7.05	34.19 6	1.04	126							
400	6.57	34.26 2	0.67	114							
473	5.96	34.29 4	0.44	104							
552	5.50	34.32 0	0.31	97							

77.80

HORIZON; January 19, 1960; 0510 GCT; 34°10'N, 122°55'W; sounding, 2000+ fm; wind, 050°, force 4; weather, cloudy; sea, moderate; wire angle, 20°.

2	12.86	33.40	5.79	277	0	(12.86)	(33.40)	(5.79)	(25.21)	(277)	(0.00)
11	12.86	33.40	5.85	277	10	12.86	33.40	5.85	25.21	277	0.03
30	12.82	33.42	5.78	275	20	12.84	33.41	5.80	25.22	276	0.06
53	12.86	33.48	5.71	271	30	12.82	33.42	5.78	25.23	275	0.08
62	12.73	33.53	5.59	265	50	12.86	33.47	5.73	25.26	272	0.14
71	11.56	33.51	4.60	246	75	11.10	33.52	4.20	25.63	237	0.20
86	10.32	33.60	3.58	218	100	9.88	33.69	3.22	25.97	204	0.26
100	9.88	33.69	3.22	204	125	9.18	33.82	2.95	26.19	184	0.31
123	9.21	33.81	2.98	185	150	8.72	33.89	2.77	26.32	172	0.35
143	8.86	33.87	2.79	175	200	8.01	34.04	2.42	26.54	150	0.43
167	8.44	33.96	2.70	163	250	7.60	34.08	1.90	26.63	142	0.51
195	8.08	34.04	2.45	151	300	7.30	34.15	1.37	26.73	132	0.58
223	7.74	34.04 2b)	2.27	146	400	6.70	34.23	0.84	26.87	119	0.71
261	7.55	34.10 6	1.68	139	500	6.12	34.28	0.68	26.99	108	0.83
318	7.18	34.16 4	1.26	130							
390	6.76	34.21 8c)	0.83	120							
463	6.33	34.26 0	0.84	112							
542	5.90	34.30 4	0.40	103							

80.53

HORIZON; January 17, 1960; 0525 GCT; 34°20.5'N, 120°43'W; sounding, 325 fm; wind, 320°, force 1; weather, partly cloudy; sea, very rough; wire angle, 12°.

3	13.02	33.53	5.64	271	0	(13.02)	(33.53)	(5.64)	(25.27)	(271)	(0.00)
13	13.02	33.53	5.89	271	10	13.02	33.53	5.82	25.27	271	0.03
32	13.00	33.53	5.91	270	20	13.01	33.53	5.90	25.28	270	0.05
61	11.14	33.58	4.09	233	30	13.00	33.53	5.91	25.28	270	0.08
70	10.87	33.61	3.83	227	50	13.00	33.53	5.90	25.28	270	0.14
85	10.40	33.68	3.60	213	75	10.71	33.64	3.74	25.79	222	0.20
100	10.04	33.70	3.35	206	100	10.04	33.70	3.35	25.95	206	0.25
113	9.78	33.73	2.88	200	125	9.63	33.81	2.80	26.10	192	0.30
138	9.52	33.86	2.74	186	150	9.43	33.87	2.55	26.18	184	0.35
157	9.38	33.87	2.41	183	200	8.72	34.07	1.97	26.46	158	0.44
186	9.04	34.01	2.11	168	250	8.25	34.14	1.65	26.58	146	0.51
216	8.43	34.11	1.82	152	300	7.77	34.16	1.42	26.67	138	0.59
244	8.28	34.13 4	1.67	147	400	6.85	34.20	1.00	26.83	123	0.72
294	7.86	34.16 1	1.45	139	500	6.31	34.28	0.52	26.97	110	0.84
347	7.06	34.15 7	1.29	129	600	(5.64)	(34.33)	(0.36)	(27.09)	(98)	(0.95)
430	6.74	34.22 6	0.82	119							
513	6.22	34.28 2	0.49	109							
597	5.66	34.33 0	0.36	98							

24

- a) Mean value of 34.048 and 34.065‰.
 b) Mean value of 34.037 and 34.048‰.
 c) Mean value of 34.212 and 34.224‰.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	α _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
CCOFI
6001

HORIZON; January 17, 1960; 0319 GCT; 34°18.5'N, 120°48'W; sounding, 408 fm; wind, 320°, force 5; weather, partly cloudy; sea, very rough; wire angle, 35°.

80.55

1	13.19	33.57	5.56	271	0	(13.19)	(33.57)	(5.56)	(25.27)	(271)	(0.00)
8	13.20	33.57	5.55	271	10	13.20	33.56	5.56	25.27	271	0.03
28	13.22	33.55	5.56	273	20	13.21	33.56	5.56	25.26	272	0.05
51	13.18	33.57	5.56	271	30	13.22	33.55	5.56	25.25	273	0.08
61	13.08	33.55	5.45	271	50	13.19	33.57	5.56	25.27	271	0.14
78	11.60	33.57	4.26	242	75	11.91	33.56	4.45	25.51	248	0.20
89	10.96	33.64	3.89	226	100	10.85	33.65	3.80	25.78	223	0.26
101	10.84	33.65	3.79	223	125	9.33	33.83	2.99	26.16	186	0.31
122	9.39	33.81	3.05	188	150	8.99	34.01	2.11	26.37	166	0.36
140	9.13	33.94	2.44	174	200	8.49	34.11	1.67	26.52	152	0.44
162	8.82	34.04	1.96	162	250	8.04	34.15	1.42	26.62	143	0.51
189	8.62	34.07	1.80	157	300	7.64	34.16	1.31	26.69	136	0.58
211	8.35	34.13 0	1.58	149	400	7.01	34.21	0.96	26.82	124	0.72
250	8.04	34.14 8	1.42	143	500	6.40	34.27	0.58	26.95	112	0.84
303	7.62	34.16 2	1.30	136							
385	7.10	34.20 0	1.00	126							
466	6.59	34.25 4	0.68	115							
537	6.21	34.27 8	0.50	109							

HORIZON; January 17, 1960; 0015 GCT; 34°15'N, 121°03'W; sounding, 560 fm; wind, 320°, force 5; weather, partly cloudy; sea, high; wire angle, 26°.

80.57

3	13.74	33.57	5.56	282	0	(13.74)	(33.57)	(5.56)	(25.16)	(282)	(0.00)
12	13.74	33.55	5.63	283	10	13.74	33.56	5.61	25.15	283	0.03
33	13.72	33.53	5.68	284	20	13.73	33.55	5.65	25.15	283	0.06
60	13.28	33.51	5.22	277	30	13.73	33.53	5.67	25.13	284	0.08
70	11.41	33.51	4.32	243	50	13.65	33.52	5.60	25.15	283	0.14
85	10.38	33.61	3.82	218	75	11.00	33.54	4.13	25.66	234	0.21
100	9.48	33.72	3.59	196	100	9.48	33.72	3.59	26.06	196	0.26
113	9.33	33.74	3.43	192	125	9.12	33.79	3.20	26.18	185	0.31
139	8.86	33.87	2.96	175	150	8.69	33.91	2.82	26.33	170	0.35
156	8.62	33.92	2.78	168	200	8.04	34.01	2.26	26.52	153	0.44
181	8.39	33.97	2.57	161	250	7.56	34.09	1.72	26.65	140	0.51
212	7.84	34.04	2.09	148	300	7.14	34.17	1.12	26.76	129	0.58
238	7.65	34.07 6	1.85	143	400	6.51	34.24	0.62	26.91	116	0.71
281	7.29	34.14 0	1.34	133	500	5.91	34.28	0.62	27.02	105	0.82
339	6.88	34.20 5	0.86	123							
428	6.35	34.25 0	0.59	112							
510	5.84	34.28 4	0.62	104							
578	5.48	34.33 9	0.10	95							

HORIZON; January 16, 1960; 2145 GCT; 34°09'N, 121°11.5'W; sounding, 1200 fm; wind, 320°, force 5; weather, cloudy; sea, very rough; wire angle, 34°.

80.60

3	13.60	33.53	5.80	282	0	(13.62)	(33.53)	(5.80)	(25.15)	(282)	(0.00)
10	13.62	33.55	5.76	280	10	13.60	33.55	5.76	25.17	280	0.03
31	13.57	33.53	5.83	281	20	13.59	33.54	5.80	25.16	281	0.06
56	13.48	33.55	5.71	278	30	13.58	33.53	5.83	25.16	281	0.08
64	13.22	33.52	5.45	276	50	13.53	33.55	5.75	25.19	279	0.14
81	10.94	33.56	4.05	231	75	11.20	33.55	4.12	25.63	237	0.20
93	10.19	33.60	3.97	216	100	10.04	33.65	3.83	25.91	210	0.26
105	9.92	33.68	3.72	206	125	9.42	33.76	3.36	26.10	192	0.31
130	9.30	33.78	3.27	188	150	8.87	33.89	3.03	26.29	174	0.36
146	8.96	33.87	3.10	177	200	8.10	34.04	2.34	26.54	151	0.44
171	8.45	33.96	2.65	163	250	7.50	34.09	1.66	26.65	140	0.52
200	8.10	34.04	2.34	151	300	7.04	34.14	1.22	26.76	130	0.58
225	7.82	34.06 1	2.05	146	400	6.39	34.24	0.61	26.94	113	0.71
267	7.32	34.11 0	1.44	136	500	6.04	34.30	0.42	27.01	106	0.82
322	6.88	34.16 6	1.07	126							
409	6.36	34.24 7	0.59	113							
492	6.09	34.29 0	0.43	107							
562	5.61	34.32 8	0.34	98							

OBSERVED		COMPUTED			INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

80.70 HORIZON; January 16, 1960; 1527 GCT; 33°39'N, 121°54'W; sounding, 2000+ fm; wind, 320°, force 5; weather, partly cloudy; sea, high; wire angle, 30°.

0	13.47	33.21	5.74	303	0	13.47	33.21	5.74	24.94	303	0.00
9	13.48	33.22	5.81	302	10	13.48	33.22	5.81	24.95	302	0.03
30	13.49	33.26	5.81	299	20	13.49	33.24	5.81	24.97	300	0.06
55	13.52	33.24	5.78	301	30	13.49	33.26	5.81	24.98	299	0.09
64	13.56	33.33	5.80	296	50	13.51	33.24	5.79	24.96	301	0.15
82	11.26	33.36	4.72	252	75	12.95	33.35	5.56	25.14	283	0.22
94	10.38	33.51	4.06	226	100	9.90	33.53	4.00	25.84	217	0.29
107	9.78	33.58	3.93	211	125	9.28	33.74	3.31	26.10	192	0.34
131	9.14	33.78	3.14	186	150	8.89	33.87	2.98	26.27	176	0.39
148	8.93	33.85	2.95	178	200	7.92	33.98	3.10	26.50	154	0.47
172	8.46	33.95	3.19	164	250	7.25	34.05	2.42	26.66	139	0.54
202	7.88	33.98	3.05	153	300	6.71	34.14	1.82	26.81	125	0.61
226	7.54	34.02 8	2.84	145	400	6.10	34.20	0.76	26.94	113	0.74
268	7.06	34.06 4	2.15	135	500	5.69	34.26	0.45	27.03	104	0.85
325	6.50	34.18 0	1.59	120							
409	6.06	-	0.72	-							
490	5.72	34.25 0	0.47	105							
558	5.58	34.34 2	0.31	96							

80.80 HORIZON; January 16, 1960; 0030 GCT; 33°29.5'N, 122°35'W; sounding, 2000+ fm; wind, 330°, force 7; weather, cloudy; sea, high; wire angle, 36°.

2	13.46	33.26	5.97	299	0	(13.46)	(33.26)	(5.97)	(24.98)	(299)	(0.00)
11	13.46	33.28	5.98	297	10	13.46	33.28	5.98	25.00	297	0.03
30	13.46	33.28	6.00	297	20	13.46	33.28	5.99	25.00	297	0.06
54	13.42	33.28	5.90	297	30	13.46	33.28	6.00	25.00	297	0.09
61	13.02	33.30	5.79	288	50	13.44	33.28	5.92	25.00	297	0.15
76	11.30	33.36	5.18	252	75	11.31	33.36	5.19	25.47	252	0.22
88	11.24	33.33u	4.90	-	100	10.65	33.49	4.05	25.68	232	0.28
100	10.65	33.49	4.05	232	125	9.48	33.61	3.67	25.98	204	0.34
122	9.55	33.58	3.80	208	150	9.05	33.77	3.13	26.18	185	0.38
137	9.27	33.77	2.99	189	200	8.25	33.97	3.20	26.45	159	0.47
168	8.80	33.78	3.33	181	250	7.60	34.08	2.51	26.63	142	0.55
188	8.51	33.87	3.26	170	300	7.01	34.13	1.80	26.75	130	0.62
212	8.04	34.02 6	3.15	152	400	5.94	34.13	0.96	26.89	117	0.75
253	7.56	34.08 0	2.48	141	500	5.37	34.21	0.54	27.02	105	0.86
307	6.92	34.12 8	1.69	129							
396	5.98	34.12 8	0.98	117							
483	5.47	34.19 4	0.59	106							
555	5.00	34.24 8	0.45	97							

80.90 HORIZON; January 15, 1960; 1841 GCT; 33°05.5'N, 123°12'W; sounding, 2000 fm; wind, 330°, force 6; weather, cloudy; sea, high; wire angle, 34°.

2	13.60	33.16	5.71	309	0	(13.60)	(33.16)	(5.71)	(24.87)	(309)	(0.00)
10	13.61	33.15	5.81	310	10	13.61	33.15	5.81	24.86	310	0.03
30	13.60	33.16	5.85	309	20	13.60	33.16	5.83	24.87	309	0.06
57	13.06	33.22	5.72	294	30	13.60	33.16	5.85	24.87	309	0.09
64	12.86	33.27	5.79	287	50	13.50	33.18	5.84	24.90	306	0.15
82	12.38	33.29	5.60	277	75	12.75	33.31	5.70	25.16	282	0.23
95	11.36	33.19	5.55	266	100	11.14	33.20	5.51	25.37	261	0.30
108	10.84	33.25	5.39	253	125	10.00	33.46	4.65	25.76	224	0.36
135	9.61	33.57	4.28	209	150	9.31	33.63	4.15	26.02	200	0.41
151	9.29	33.63	4.13	200	200	8.51	33.91	3.65	26.36	167	0.50
178	8.84	33.82	3.93	178	250	7.74	33.99	2.76	26.55	150	0.59
208	8.39	33.93	3.49	164	300	7.13	34.02	2.28	26.65	140	0.66
232	8.00	33.97 4	2.97	155	400	6.11	34.11	1.06	26.86	120	0.80
276	7.42	34.00 6	2.53	145	500	5.58	34.22	0.52	27.02	105	0.92
335	6.71	34.04 6	1.81	132							
425	5.94	34.14 2	0.85	115							
507	5.56	34.22 9	0.50	105							
579	5.28	34.31 4	0.30	95							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 13, 1960; 1030 GCT; 34°15'N, 119°59'W; sounding, 320 fm; wind, 320°, force 2; weather, clear; sea, rough; wire angle, 06°.

82.47

3	13.70	33.55	5.32	282	0	(13.70)	(33.55)	(5.32)	(25.15)	(282)	(0.00)
14	13.70	33.51	5.32	285	10	13.70	33.52	5.32	25.13	284	0.03
34	13.70	33.53	5.35	284	20	13.70	33.52	5.33	25.12	285	0.06
43	13.58	33.51	5.08	283	30	13.70	33.52	5.34	25.13	284	0.09
53	13.02	33.55	4.65	270	50	13.26	33.53	4.85	25.23	275	0.14
63	12.48	33.55	4.28	259	75	11.12	33.63	3.70	25.71	229	0.20
73	11.24	33.62	3.80	232	100	10.25	33.73	3.08	25.93	208	0.26
87	10.66	33.68	3.33	218	125	9.70	33.81	2.58	26.10	192	0.31
103	10.16	33.74	3.02	205	150	9.42	33.91	2.30	26.23	180	0.36
115	9.84	33.78	2.74	197	200	8.97	34.05	1.81	26.40	164	0.44
141	9.53	33.87	2.43	185	250	8.35	34.13	1.33	26.56	148	0.52
170	9.20	34.00	2.05	171	300	7.96	34.20	1.06	26.67	138	0.60
205	8.94	34.05 8	1.78	163	400	6.97	34.25	0.78	26.86	120	0.73
254	8.29	34.13 0	1.31	148	500	6.55	34.26	0.24	26.92	114	0.85
303	7.94	34.20 1	1.04	137							
406	6.92	34.24 9	0.77	120							
504	6.54	34.26 6	0.22	114							

HORIZON; January 13, 1960; 0535 GCT; 34°13.5'N, 119°22.5'W; sounding, 12 fm; wind, 310°, force 4; weather, clear; sea, rough; wire angle, 00°.

83.40

0	13.95	33.54	5.60	288	0	13.95	33.54	5.60	25.09	288	0.00
10	13.94	33.55	5.69	287	10	13.94	33.55	5.69	25.10	287	0.03

HORIZON; January 13, 1960; 0725 GCT; 34°07'N, 119°34.5'W; sounding, 130 fm; wind, 320°, force 2; weather, clear; sea, slight; wire angle, 06°.

83.43

1	13.84	33.50	5.79	289	0	(13.84)	(33.50)	(5.79)	(25.08)	(289)	(0.00)
11	13.88	33.51	5.79	289	10	13.87	33.51	5.79	25.08	289	0.03
31	13.88	33.50	5.77	290	20	13.88	33.50	5.78	25.08	289	0.06
50	13.89	33.51	5.69	289	30	13.88	33.50	5.77	25.07	290	0.09
75	11.86	33.53	4.55	249	50	13.89	33.51	5.69	25.08	289	0.14
100	10.76	33.62	4.00	224	75	11.86	33.53	4.55	25.50	249	0.21
123	9.80	33.78	3.35	197	100	10.76	33.62	4.00	25.77	224	0.27
153	9.12	33.96	2.30	172	125	9.75	33.79	3.33	26.07	195	0.33
					150	9.19	33.94	2.46	26.28	175	0.37

HORIZON; January 14, 1960; 0520 GCT; 33°51'N, 120°08'W; sounding, 120 fm; wind, 270°, force 3; weather, partly cloudy; sea, moderate; wire angle, 17°.

83.51

1	13.22	33.58	5.04	271	0	(13.22)	(33.58)	(5.04)	(25.27)	(271)	(0.00)
10	13.24	33.60	5.55	270	10	13.24	33.60	5.55	25.28	270	0.03
30	13.24	33.58	5.50	272	20	13.24	33.59	5.53	25.27	271	0.05
47	13.08	33.55	5.23	270	30	13.24	33.58	5.50	25.26	272	0.08
73	11.18	33.64	4.01	229	50	12.90	33.53	5.12	25.30	268	0.14
96	9.59	33.82	3.09	190	75	10.44	33.66	3.68	25.85	216	0.20
119	9.24	33.88	2.84	181	100	9.53	33.84	3.03	26.15	187	0.25
148	8.76	34.04	1.97	161	125	9.15	33.91	2.73	26.26	177	0.29
					150	(8.72)	(34.05)	(1.97)	(26.44)	(160)	(0.34)

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

83.55 HORIZON; January 14, 1960; 0630 GCT; 33°43.5'N, 120°24'W; sounding, 440 fm; wind, 280°, force 3; weather, partly cloudy; sea, rough; wire angle, 25°.

1	13.96	33.51	5.55	290	0	(13.96)	(33.51)	(5.55)	(25.07)	(290)	(0.00)
10	13.94	33.51	5.53	290	10	13.94	33.51	5.53	25.07	290	0.03
28	13.94	33.51	5.37	290	20	13.94	33.51	5.44	25.07	290	0.06
55	13.95	33.49	5.54	292	30	13.94	33.50	5.40	25.07	290	0.09
63	12.78	33.42	4.94	274	50	13.95	33.49	5.52	25.06	291	0.15
77	11.82	33.40	4.72	258	75	11.98	33.40	4.76	25.38	261	0.21
91	11.06	33.49	4.27	239	100	10.30	33.56	4.09	25.80	221	0.28
103	10.01	33.58	4.02	215	125	9.34	33.70	3.67	26.07	195	0.33
126	9.32	33.70	3.66	195	150	8.81	33.83	3.30	26.25	178	0.38
144	8.88	33.81	3.39	180	200	8.11	33.99	2.60	26.48	156	0.46
170	8.60	33.91	2.98	168	250	7.63	34.06	2.00	26.61	144	0.54
198	8.13	33.98	2.62	156	300	7.24	34.12	1.40	26.71	134	0.61
225	7.86	34.02 8	2.33	149	400	6.65	34.21	0.98	26.86	120	0.74
270	7.46	34.08 2	1.74	139	500	6.08	34.29	0.46	27.00	107	0.86
320	7.12	34.14 7	1.23	130							
400	6.65	34.20 6	0.98	120							
479	6.20	34.27 2	0.52	109							
560	5.80	34.32 4	0.33	100							

83.60 HORIZON; January 14, 1960; 0945 GCT; 33°34'N, 120°45'W; sounding, 790 fm; wind, 230°, force 4; weather, overcast; sea, rough; wire angle, 10°.

1	14.22	33.58	5.44	291	0	(14.22)	(33.58)	(5.44)	(25.06)	(291)	(0.00)
11	14.22	33.58	5.49	291	10	14.22	33.58	5.49	25.06	291	0.03
30	14.22	33.55	5.41	293	20	14.22	33.56	5.43	25.06	291	0.06
59	14.22	33.55	5.46	293	30	14.22	33.55	5.41	25.04	293	0.09
69	14.21	33.55	5.33	292	50	14.22	33.55	5.45	25.05	292	0.15
83	12.70	33.38	4.88	276	75	14.20	33.55	5.33	25.05	292	0.22
98	11.20	33.40	4.40	248	100	11.15	33.41	4.39	25.54	246	0.29
113	9.92	33.51	4.03	218	125	9.60	33.58	3.83	25.93	208	0.34
137	9.30	33.68	3.57	196	150	9.16	33.77	3.10	26.15	187	0.40
158	9.10	33.82	2.84	183	200	8.32	33.94	2.51	26.42	162	0.48
184	8.64	33.91	2.60	169	250	7.69	34.07	1.80	26.61	144	0.56
215	8.02	33.97	2.43	156	300	7.11	34.11	1.39	26.73	132	0.63
243	7.76	34.05 0	1.91	146	400	6.38	34.19	0.89	26.90	117	0.76
293	7.17	34.10 6	1.44	134	500	5.92	34.28	0.45	27.02	105	0.88
346	6.76	34.15 0	1.11	125	600	(5.46)	(34.34)	(0.35)	(27.13)	(95)	(0.98)
429	6.17	34.21 2	0.80	113							
512	5.88	34.28 8	0.42	104							
593	5.50	34.34 0	0.35	96							

83.70 HORIZON; January 14, 1960; 1457 GCT; 33°14'N, 121°24.5'W; sounding, 2000+ fm; wind, 270°, force 5; weather, cloudy; sea, rough; wire angle, 15°.

1	13.36	33.42	5.51	285	0	(13.36)	(33.42)	(5.51)	(25.12)	(285)	(0.00)
11	13.37	33.42	5.58	285	10	13.37	33.42	5.58	25.12	285	0.03
30	13.38	33.43	5.53	285	20	13.38	33.42	5.55	25.12	285	0.06
58	13.40	33.42	5.55	286	30	13.38	33.43	5.53	25.12	285	0.09
68	12.06	33.35	4.88	267	50	13.40	33.42	5.55	25.11	286	0.14
82	10.98	33.40	4.47	243	75	11.32	33.38	4.60	25.48	251	0.21
96	10.44	33.50	4.09	228	100	10.27	33.53	3.97	25.78	223	0.27
109	9.85	33.61	3.62	210	125	9.34	33.72	3.42	26.08	194	0.32
133	9.12	33.77	3.33	187	150	8.89	33.79	3.10	26.21	182	0.37
152	8.86	33.79	3.06	181	200	8.13	34.00	2.25	26.49	155	0.46
179	8.39	33.91	2.81	165	250	7.57	34.13	1.63	26.67	138	0.53
208	8.02	34.04	2.03	151	300	7.17	34.17	1.14	26.76	129	0.60
235	7.70	34.10 2	1.79	141	400	6.52	34.24	0.70	26.91	115	0.73
283	7.32	34.15 4	1.26	132	500	5.96	34.31	0.41	27.04	103	0.84
334	6.86	34.19 2	0.96	124							
415	6.47	34.26 2	0.64	113							
497	5.99	34.31 4	0.42	103							
579	5.48	34.35 5	0.36	94							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 14, 1960; 2007 GCT; 32°52.5'N, 122°07.5'W; sounding, 2000+ fm; wind, 270°, force 5; weather, partly cloudy; sea, very rough; wire angle, 20°.

83.80

3	13.90	33.42	5.63	296	0	(13.90)	(33.42)	(5.63)	(25.01)	(296)	(0.00)
12	13.88	33.42	5.55	295	10	13.89	33.42	5.55	25.02	295	0.03
31	13.86	33.40	5.56	296	20	13.87	33.40	5.55	25.01	296	0.06
58	13.88	33.39	5.65	298	30	13.86	33.40	5.56	25.01	296	0.09
68	13.85	33.40	5.59	296	50	13.87	33.39	5.62	25.00	297	0.15
81	13.84	33.40	5.62	296	75	13.85	33.40	5.60	25.01	296	0.22
97	13.10	33.38	5.26	283	100	12.10	33.38	4.87	25.34	265	0.29
108	10.92	33.40	4.43	243	125	10.25	33.53	3.98	25.79	222	0.36
130	10.08	33.58	3.84	216	150	9.37	33.70	3.45	26.06	196	0.41
148	9.42	33.69	3.48	197	200	8.48	33.90	2.88	26.36	168	0.50
175	8.94	33.78	3.25	183	250	7.92	34.07	1.90	26.58	147	0.58
201	8.47	33.90	2.86	167	300	7.42	34.13	1.30	26.70	135	0.66
228	8.19	34.01 4	2.32	155	400	6.44	34.23	0.81	26.91	116	0.78
275	7.62	34.10 2	1.58	141	500	5.68	34.31	0.40	27.07	100	0.90
324	7.22	34.16 0	1.10	131							
400	6.44	34.22 7	0.81	116							
483	5.78	34.29 9	0.44	102							
563	5.30	34.33 3	0.27	94							

HORIZON; January 15, 1960; 0120 GCT; 32°32.5'N, 122°47.5'W; sounding, 2000+ fm; wind, 280°, force 5; weather, squalls; sea, very rough; wire angle, 39°.

83.90

1	14.65	33.19	5.75	328	0	(14.65)	(33.19)	(5.75)	(24.67)	(328)	(0.00)
9	14.67	33.17	5.71	330	10	14.67	33.17	5.71	24.65	330	0.03
25	14.66	33.18	5.72	328	20	14.67	33.18	5.72	24.66	329	0.07
47	14.68	33.20	5.71	327	30	14.67	33.18	5.72	24.67	328	0.10
55	14.50	33.21	5.68	323	50	14.65	33.20	5.70	24.68	327	0.16
67	13.91	33.23	5.77	310	75	13.75	33.25	5.72	24.91	305	0.24
78	13.71	33.28	5.69	302	100	13.33	33.34	5.60	25.06	291	0.32
87	13.58	33.35	5.68	294	125	10.92	33.43	4.46	25.59	240	0.39
103	13.20	33.33	5.53	289	150	9.52	33.66	3.72	26.01	201	0.44
115	11.57	33.38	4.80	256	200	8.62	33.90	3.36	26.34	170	0.54
134	10.44	33.49	4.18	228	250	7.79	33.99	3.05	26.54	151	0.62
153	9.42	33.68	3.66	198	300	6.99	34.02	2.32	26.67	138	0.69
173	9.13	33.79 0	3.11	185	400	6.19	34.11	1.14	26.85	121	0.83
208	8.46	33.92 0	3.40	166	500	(5.54)	(34.17)		(26.98)	(109)	(0.95)
249	7.80	33.98 6	3.08	151							
316	6.80	34.02 4	2.10	135							
389	6.26	34.09 6	1.24	123							
464	5.77	34.15 6	0.76	112							

HORIZON; January 15, 1960; 0635, 0702, 0728 GCT; 32°14'N, 123°28.5'W; sounding, 2000+ fm; wind, 280°, force 5; weather, drizzle; sea, high; wire angle, 36°, 37°, 36°.

83.00

3	14.18	33.21	5.64	316	0	(14.18)	(33.21)	(5.64)	(24.80)	(316)	(0.00)
12	14.18	33.19	5.66	318	10	14.18	33.20	5.66	24.78	318	0.03
32	14.20	33.22	5.64	317	20	14.20	33.21	5.65	24.79	317	0.06
56	14.00	33.24	5.63	311	30	14.20	33.22	5.64	24.79	317	0.10
					50	14.03	33.24	5.63	24.83	313	0.16
79	13.52	33.23	5.58	302	75	13.81	33.23	5.59	24.94	303	0.24
90	12.68	33.21	5.31	288	100	11.98	33.28	5.10	25.28	270	0.31
100	11.98	33.28	5.10	270	125	10.50	33.42	4.30	25.66	234	0.37
123	10.63	33.40	4.36	238	150	9.25	33.73	3.62	26.10	192	0.43
					200	8.40	33.94	2.71	26.41	163	0.52
137	9.68	33.58	4.00	209	250	7.66	34.01	2.45	26.57	148	0.60
159	9.05	33.80	3.36	184	300	7.17	34.05	2.05	26.67	138	0.67
186	8.63	33.91 0	2.83	169	400	6.14	34.13	0.90	26.87	119	0.80
249	7.68	34.00 8	2.46	148	500	5.70	34.21	0.61	26.99	108	0.92
302	7.15	34.04 8	2.02	138							
384	6.28	34.11 8	0.97	122							
464	5.76	34.16 0	0.75	112							
532	5.67	34.26 7	0.42	103							

SIO

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600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

8735

HORIZON; January 13, 1960; 0009 GCT; 33°50.5'N, 118°37.5'W; sounding, 335 fm; wind, 310°, force 6; weather, partly cloudy; sea, very rough; wire angle, 23°.

1	14.57	33.57	5.61	298	0	(14.57)	(33.57)	(5.61)	(24.98)	(298)	(0.00)
9	14.56	33.55	5.51	299	10	14.56	33.55	5.51	24.98	299	0.03
29	14.57	33.55	5.53	300	20	14.56	33.55	5.52	24.98	299	0.06
50	12.74	33.54	4.59	265	30	14.57	33.55	5.53	24.98	299	0.09
60	11.84	33.58	4.13	246	50	12.74	33.54	4.59	25.34	265	0.15
69	11.60	33.59	4.08	241	75	11.40	33.60	4.06	25.64	236	0.21
83	11.11	33.61	3.99	230	100	10.53	33.65	3.67	25.82	218	0.27
96	10.68	33.64	3.76	221	125	9.76	33.74	3.15	26.03	199	0.32
118	9.90	33.71	3.35	203	150	9.41	33.83	2.81	26.16	187	0.37
136	9.61	33.78	2.92	194	200	9.05	34.06	1.90	26.40	164	0.46
159	9.30	33.87	2.70	182	250	8.65	34.18	1.45	26.55	149	0.54
185	9.18	33.96	2.25	174	300	8.24	34.21	1.19	26.64	141	0.61
212	8.95	34.10 8	1.73	159	400	7.15	34.26	0.83	26.84	122	0.75
247	8.68	34.17 2	1.47	150	500	6.56	34.30	0.44	26.95	112	0.87
302	8.22	34.21 0	1.18	141							
370	7.38	34.24 0	1.05	127							
439	6.97	34.27 6	0.63	119							
517	6.45	34.30 2	0.42	110							

8740

HORIZON; January 12, 1960; 2105 GCT; 33°40'N, 118°59'W; sounding, 475 fm; wind, 320°, force 7; weather, partly cloudy; sea, very rough; wire angle, 18°.

6	14.48	33.55	5.42	298	0	14.5	(33.55)		(24.98)	(298)	(0.00)
14	14.46	33.52	5.61	300	10	14.47	33.54	5.50	24.98	298	0.03
37	14.43	33.55	5.53	297	20	14.45	33.53	5.60	24.98	298	0.06
47	14.07	33.56	5.54	289	30	14.44	33.54	5.54	24.99	298	0.09
60	13.18	33.54	4.89	273	50	13.82	33.56	5.42	25.12	285	0.15
75	11.72	33.58	4.50	243	75	11.72	33.58	4.50	25.56	243	0.21
98	10.53	33.64	3.95	219	100	10.47	33.64	3.92	25.84	217	0.27
115	9.98	33.72	3.66	204	125	9.82	33.72	3.55	26.01	201	0.33
132	9.73	33.73	3.47	199	150	9.37	33.81	3.12	26.14	188	0.37
160	9.19	33.86	2.94	181	200	8.70	34.04	2.28	26.43	161	0.46
187	8.84	33.98	2.51	167	250	8.28	34.17	1.44	26.60	145	0.54
223	8.48	34.11	1.90	152	300	8.01	34.20	1.32	26.67	138	0.61
250	8.28	34.17 2	1.44	145	400	7.10	34.26	0.91	26.85	121	0.75
295	8.06	34.19 8	1.33	139	500	6.44	34.30	0.62	26.97	110	0.87
356	7.35	34.25 2	0.93	125	600	5.77	34.36	0.34	27.09	98	0.98
449	6.82	34.27 4	0.88	117							
535	6.18	34.32 8	0.43	105							
608	5.74	34.35 7	0.33	97							

8745

HORIZON; January 12, 1960; 1634, 1647, 1715 GCT; 33°29.5'N, 119°19'W; sounding, 885 fm; wind, 320°, force 6; weather, partly cloudy; sea, high; wire angle, 30°, 33°, 36°.

1	13.44	33.49	5.62	301	0	13.44	33.49	5.62	(24.96)	(301)	(0.00)
					10	13.44	33.49	5.68	24.96	301	0.03
10	13.44	33.49	5.68	301	20	13.43	33.51	5.54	24.97	300	0.06
30	13.40	33.51	5.52	299	30	13.40	33.51	5.52	24.98	299	0.09
38	13.31	33.51	5.45	297	50	12.12	33.44	4.80	25.38	261	0.15
50	12.12	33.44	4.80	261	75	10.64	33.51	4.20	25.70	230	0.21
64	11.47	33.49	4.52	246	100	10.22	33.61	3.87	25.85	216	0.26
84	10.50	33.53	4.13	226	125	9.67	33.72	3.38	26.03	199	0.32
					150	9.24	33.81	2.95	26.16	186	0.37
97	10.28	33.59	3.93	218	200	8.67	34.04	1.94	26.44	160	0.45
112	9.96	33.67	3.63	207	250	8.28	34.15	1.48	26.59	146	0.53
135	9.50	33.75	3.22	194	300	7.91	34.19	1.25	26.67	138	0.60
158	9.13	33.83	2.85	183	400	7.02	34.26	0.92	26.85	121	0.74
188	8.79	33.96	2.12	168	500	6.42	34.30	0.43	26.97	110	0.86
212	8.56	34.08 8	1.80	154							
250	8.28	34.15 2	1.48	146							
304	7.87	34.19 4	1.23	137							
386	7.15	34.24 9	1.00	123							
464	6.63	34.28 3	0.56	114							
533	6.22	34.31 4	0.36	106							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
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6001

HORIZON; January 12, 1960; 0919 GCT; 33°10'N, 120°00.5'W; sounding, 620 fm; wind, 300°, force 6; weather, overcast; sea, very rough; wire angle, 33°.

87.55

2	14.42	33.51	5.61	300	0	(14.42)	(33.51)	(5.61)	(24.97)	(300)	(0.00)
11	14.42	33.49	5.58	301	10	14.42	33.49	5.59	24.96	301	0.03
31	14.42	33.49	5.68	301	20	14.42	33.49	5.63	24.96	301	0.06
56	13.14	33.44	5.20	280	30	14.42	33.49	5.68	24.96	301	0.09
65	12.01	33.51	4.72	254	50	14.05	33.47	5.55	25.02	295	0.15
82	11.33	33.57	4.10	237	75	11.55	33.55	4.24	25.58	242	0.22
92	11.07	33.58	4.19	232	100	10.69	33.60	4.12	25.76	224	0.28
106	10.52	33.62	4.03	220	125	10.19	33.69	3.54	25.92	209	0.33
129	10.13	33.70	3.50	208	150	9.72	33.79	3.22	26.07	195	0.38
145	9.84	33.76	3.32	199	200	8.91	34.00	2.43	26.38	166	0.47
167	9.28	33.91	2.77	179	250	8.00	34.12	1.83	26.60	144	0.55
195	9.00	33.99	2.43	169	300	7.59	34.20	1.24	26.72	133	0.62
218	8.41	34.03 0	2.45	157	400	6.60	34.22	0.87	26.88	118	0.75
260	7.90	34.14 0	1.65	141	500	6.16	34.29	0.47	26.99	108	0.87
315	7.47	34.20 8	1.15	130							
402	6.58	34.22 2	0.86	118							
485	6.30	34.28 6	0.53	109							
556	5.82	34.33 4	0.38	100							

HORIZON; January 12, 1960; 0555 GCT; 32°57'N, 120°21'W; sounding, 410 fm; wind, 280°, force 4; weather, rain; sea, very rough; wire angle, 26°.

87.60

1	14.32	33.58	5.57	292	0	(14.32)	(33.58)	(5.57)	(25.05)	(292)	(0.00)
9	14.32	33.57	5.46	293	10	14.32	33.57	5.46	25.04	293	0.03
28	14.35	33.57	5.55	294	20	14.34	33.57	5.54	25.03	294	0.06
53	14.34	33.56	5.48	294	30	14.35	33.57	5.54	25.03	294	0.09
63	14.30	33.55	5.49	294	50	14.34	33.56	5.48	25.03	294	0.15
75	12.24	33.58	4.28	253	75	12.24	33.58	4.28	25.46	253	0.22
90	11.57	33.61	3.90	238	100	11.00	33.68	3.52	25.77	224	0.28
103	10.82	33.70	3.39	219	125	10.22	33.78	2.91	25.98	203	0.33
125	10.22	33.78	2.91	203	150	9.83	33.88	2.52	26.12	190	0.38
144	9.88	33.86	2.57	192	200	9.43	34.06	2.10	26.33	170	0.47
169	9.68	33.94	2.41	183	250	8.90	34.17	1.57	26.51	153	0.55
197	9.44	34.05	2.16	171	300	8.29	34.20	1.30	26.63	142	0.63
223	9.24	34.12 0	1.81	163	400	7.11	34.24	0.96	26.82	124	0.77
269	8.66	34.19 2	1.47	148	500	6.25	34.28	0.47	26.98	109	0.89
319	8.06	34.20 2	1.24	139							
397	7.14	34.23 6	0.98	124							
477	6.44	34.26 4	0.56	113							
558	5.81	34.32 4	0.33	100							

HORIZON; January 12, 1960; 0053 GCT; 32°39'N, 121°01'W; sounding, 2000+ fm; wind, 240°, force 4; weather, cloudy; sea, rough; wire angle, 23°.

87.70

2	14.46	33.65	5.59	290	0	(14.46)	(33.65)	(5.59)	(25.07)	(290)	(0.00)
11	14.46	33.66	5.65	290	10	14.46	33.66	5.64	25.07	290	0.03
30	14.46	33.65	5.66	290	20	14.46	33.66	5.65	25.07	290	0.06
56	14.46	33.68	5.65	288	30	14.46	33.65	5.66	25.07	290	0.09
65	14.43	33.66	5.62	288	50	14.46	33.67	5.65	25.09	288	0.14
78	13.48	33.66	5.02	270	75	14.30	33.66	5.52	25.11	286	0.22
91	10.62	33.58	4.02	225	100	9.72	33.64	3.89	25.96	206	0.28
103	9.70	33.66	3.85	204	125	9.28	33.78	3.18	26.13	189	0.33
125	9.28	33.78	3.18	189	150	8.85	33.87	2.88	26.28	175	0.38
142	9.00	33.84	2.98	180	200	8.21	34.01	2.30	26.48	156	0.46
167	8.56	33.94	2.64	166	250	7.66	34.08	1.87	26.62	143	0.54
194	8.30	34.00	2.33	158	300	7.10	34.12	1.40	26.73	132	0.61
218	7.92	34.03 2	2.26	150	400	6.42	34.19	0.83	26.88	118	0.74
262	7.56	34.09 3	1.72	140	500	6.00	34.31	0.40	27.04	104	0.85
310	7.00	34.12 2	1.33	131							
387	6.48	34.17 8	0.91	120							
464	6.16	34.28 3	0.49	108							
543	5.83	34.32 9	0.33	101							

SIO

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6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

8780

HORIZON; January 11, 1960; 1922 GCT; 32°19'N, 121°44'W; sounding, 2000+ fm; wind, 270°, force 4; weather, cloudy; sea, very rough; wire angle, 15°. a)

3	14.79	33.38	5.69	317	0	(14.79)	(33.38)	(5.69)	(24.79)	(317)	(0.00)
12	14.78	33.36	5.73	318	10	14.78	33.36	5.72	24.78	318	0.03
30	14.74	33.37	5.73	316	20	14.76	33.37	5.73	24.79	317	0.06
57	14.68	33.37	5.69	316	30	14.74	33.37	5.73	24.80	316	0.10
65	14.56	33.38	5.58	312	50	14.72	33.37	5.71	24.80	316	0.16
77	13.58	33.30	5.56	303	75	14.32	33.37	5.57	24.89	307	0.24
90	13.17	33.33	5.45	288	100	11.40	33.40	4.73	25.49	251	0.31
100	11.40	33.40	4.73	251	125	9.90	33.59	4.12	25.89	212	0.37
122	10.04	33.57	4.20	216	150	9.09	33.75	3.64	26.14	188	0.42
139	9.32	33.68	3.80	196	200	8.37	33.95	3.05	26.42	162	0.50
164	8.88	33.82	3.56	180	250	7.73	34.02	2.47	26.56	148	0.58
188	8.58	33.89	3.45	170	300	7.13	34.08	1.76	26.69	136	0.66
213	8.15	33.99 4	2.69	155	400	6.15	34.15	1.00	26.88	118	0.79
258	7.65	34.02 4	2.40	147	500	5.68	34.22	0.54	27.00	107	0.91
306	7.05	34.08 0	1.70	134							
380	6.30	34.13 6	1.14	120							
460	5.84	34.19 0	0.71	111							
539	5.52	34.25 1	0.42	102							

8790

HORIZON; January 11, 1960; 1357 GCT; 31°59'N, 122°23'W; sounding, 2000+ fm; wind, 310°, force 3; weather, partly cloudy; sea, very rough; wire angle, 14°.

2	14.93	33.35	5.62	322	0	(14.93)	(33.35)	(5.62)	(24.74)	(322)	(0.00)
11	14.92	33.37	5.46	320	10	14.92	33.37	5.46	24.76	320	0.03
30	14.92	33.39	5.49	318	20	14.92	33.38	5.48	24.77	319	0.06
59	14.9	33.37	5.60	319	30	14.92	33.39	5.49	24.77	318	0.10
69	14.91	33.37	5.52	320	50	14.90	33.38	5.55	24.77	319	0.16
83	12.48	33.24	5.14	282	75	14.50	33.35	5.43	24.83	313	0.24
97	12.01	33.31	5.34	268	100	11.80	33.34	5.25	25.37	262	0.31
110	10.87	33.42	4.62	241	125	10.09	33.58	4.02	25.85	216	0.37
134	9.45	33.65	3.73	201	150	9.12	33.76	3.54	26.15	187	0.42
153	9.05	33.78	3.49	185	200	8.20	33.93	2.70	26.43	161	0.51
180	8.54	33.88	2.95	170	250	7.50	34.05	2.16	26.62	143	0.59
208	8.08	33.95	2.63	158	300	6.96	34.07	1.69	26.71	134	0.66
235	7.72	34.03 4	2.32	147	400	6.33	34.18	0.82	26.88	118	0.79
283	7.10	34.05 6	1.88	137	500	5.60	34.26	0.42	27.04	103	0.91
335	6.74	34.10 6	1.28	128							
415	6.22	34.18 8	0.73	116							
497	5.62	34.25 2	0.43	104							
578	5.34	34.32 4	0.34	95							

87100

HORIZON; January 11, 1960; 0850 GCT; 31°39.5'N, 123°05'W; sounding, 2000+ fm; wind, 300°, force 3; weather, partly cloudy; sea, very rough; wire angle, 16°.

3	14.49	33.40	5.47	309	0	(14.49)	(33.40)	(5.47)	(24.88)	(309)	(0.00)
13	14.47	33.40	5.65	309	10	14.48	33.40	5.60	24.88	309	0.03
36	14.48	33.40	5.67	309	20	14.47	33.40	5.65	24.88	309	0.06
66	14.49	33.42	5.66	308	30	14.47	33.40	5.66	24.88	309	0.09
75	14.50	33.43	5.67	307	50	14.49	33.41	5.66	24.88	308	0.15
94	11.84	33.36	4.75	262	75	14.50	33.43	5.67	24.89	307	0.23
108	10.63	33.46	4.28	234	100	11.27	33.38	4.54	25.49	250	0.30
122	10.08	33.59	3.81	215	125	9.97	33.61	3.80	25.89	212	0.36
151	9.19	33.73	3.80	191	150	9.22	33.73	3.80	26.10	192	0.41
170	8.89	33.80	3.55	181	200	8.52	33.89	3.14	26.34	169	0.50
200	8.52	33.89	3.14	169	250	7.50	34.03	2.20	26.61	144	0.58
232	7.76	33.98	2.42	151	300	7.05	34.08	1.64	26.71	134	0.66
260	7.38	34.04 4	2.10	141	400	6.08	34.16	0.78	26.90	116	0.78
307	7.00	34.09 0	1.56	133	500	5.48	34.24	0.49	27.04	103	0.90
372	6.36	34.13 4	1.01	122	600	5.11	34.31	0.37	27.13	94	1.00
468	5.64	34.23 3	0.51	106							
556	5.26	34.27 4	0.45	98							
630	5.02	34.34 6	0.29	90							

32

a) An assumed wire angle of 25° was used in depth determination.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT	Z	T	S	O ₂	σ _t	δT	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 9, 1960; 0524 GCT; 33°28.5'N, 117°46.5'W; sounding, 330 fm; wind, direction missing, force 1; weather, cloudy; sea, slight; wire angle, 00°.

90.28

0	14.94	33.58	5.56	306	0	14.94	33.58	5.56	24.91	306	0.00
10	14.88	33.57	5.61	305	10	14.88	33.57	5.61	24.92	305	0.03
30	14.70	33.55	5.50	302	20	14.80	33.56	5.55	24.93	304	0.06
39	14.53	33.55	5.43	299	30	14.70	33.55	5.50	24.94	302	0.09
49	13.82	33.50	5.11	288	50	13.73	33.50	5.03	25.10	287	0.15
64	12.70	33.51	4.50	266	75	12.06	33.52	4.47	25.45	254	0.22
79	11.80	33.52	4.47	249	100	10.84	33.62	3.82	25.76	225	0.28
99	10.86	33.62	3.84	226	125	9.93	33.70	3.39	25.97	204	0.33
123	10.01	33.69	3.46	207	150	9.23	33.84	2.90	26.19	183	0.38
143	9.36	33.80	3.01	188	200	8.93	34.08	2.06	26.43	161	0.47
173	9.02	33.96	2.63	171	250	8.61	34.18	1.49	26.56	149	0.55
202	8.92	34.08	2.05	161	300	8.22	34.23	1.29	26.66	139	0.62
232	8.74	34.14 8	1.63	153	400	7.28	34.27	0.85	26.83	123	0.76
271	8.47	34.21 0	1.39	144	500	6.57	34.31	0.53	26.96	111	0.88
330	7.98	34.23 6	1.21	135							
404	7.24	34.26 7	0.84	123							
479	6.70	34.29 9	0.58	114							
558	6.21	34.33 6	0.44	102							

HORIZON; January 9, 1960; 0825 GCT; 33°21.5'N, 118°03.5'W; sounding, 395 fm; wind, direction missing, force 1; weather, cloudy; sea, slight; wire angle, 01°.

90.32

0	15.12	33.58	5.71	309	0	15.12	33.58	5.71	24.87	309	0.00
9	15.13	33.59	5.84	308	10	15.13	33.59	5.83	24.88	308	0.03
29	15.10	33.60	5.74	307	20	15.11	33.59	5.80	24.88	308	0.06
38	15.07	33.60	5.73	306	30	15.09	33.60	5.74	24.89	307	0.09
48	15.06	33.60	5.65	306	50	15.05	33.60	5.64	24.90	306	0.15
63	12.90	33.55	4.26	267	75	11.98	33.59	4.49	25.52	247	0.22
78	11.78	33.60	4.50	243	100	10.59	33.69	3.94	25.85	216	0.28
98	10.70	33.68	3.98	219	125	9.90	33.79	3.65	26.04	198	0.33
121	9.98	33.77	3.74	200	150	9.48	33.91	3.04	26.22	181	0.38
139	9.67	33.84	3.34	190	200	8.94	34.04	2.25	26.40	164	0.47
171	9.20	33.98	2.70	172	250	8.55	34.18	1.44	26.57	147	0.55
201	8.93	34.04	2.25	164	300	8.06	34.23	1.15	26.68	137	0.62
230	8.75	34.12 6	1.73	155	400	7.15	34.27	0.74	26.84	122	0.76
270	8.36	34.21 0	1.28	143	500	6.43	34.32	0.41	26.98	109	0.88
329	7.82	34.24 1	1.04	133							
403	7.12	34.26 8	0.73	121							
477	6.56	34.30 6	0.46	111							
556	6.20	34.33 6	0.37	104							

HORIZON; January 9, 1960; 1215 GCT; 33°10'N, 118°23.5'W; sounding, 633 fm; wind, 160°, force 1; weather, cloudy; sea, slight; wire angle, 00°.

90.37

0	15.16	33.58	5.47	310	0	15.16	33.58	5.47	24.86	310	0.00
10	15.14	33.59	5.48	308	10	15.14	33.59	5.48	24.88	308	0.03
30	14.93	33.58	5.40	305	20	15.06	33.59	5.45	24.89	307	0.06
39	14.77	33.57	5.45	302	30	14.93	33.58	5.40	24.92	305	0.09
49	14.46	33.55	5.44	298	50	14.44	33.55	5.42	25.00	297	0.15
64	14.16	33.53	5.29	293	75	13.50	33.51	5.02	25.16	281	0.22
79	12.92	33.51	4.78	270	100	11.60	33.59	4.25	25.59	241	0.29
97	11.80	33.57	-	246	125	9.79	33.77	3.36	26.05	197	0.35
122	9.89	33.75	3.47	200	150	9.38	33.89	2.92	26.21	181	0.40
138p	9.52	33.84	3.10	188	200	8.92	34.04	2.08	26.41	163	0.48
142	9.46	33.86	3.04	185	250	8.57	34.17	1.55	26.56	149	0.56
167p	9.23	33.95	2.69	175	300	8.28	34.22	1.27	26.65	140	0.64
194p	8.99	34.02 8	2.20	166	400	7.46	34.26	0.88	26.79	127	0.78
236p	8.67	34.14 4	1.69	152	500	6.43	34.31	0.60	26.97	109	0.90
294p	8.32	34.21 7	1.30	142							
396	7.50	34.25 7	0.90	127							
466	6.72	34.28 4	0.70	115							
547	6.17	34.32 6	0.48	104							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

90.45

HORIZON; January 9, 1960; 1653 GCT; 32°56'N, 118°56.5'W; sounding, 980 fm; wind, 180°, force 4; weather, overcast; sea, moderate; wire angle, 31°.

1	15.26	33.58	5.43	312	0	(15.26)	(33.58)	(5.43)	(24.84)	(312)	(0.00)
9	15.26	33.64	5.52	308	10	15.26	33.64	5.52	24.88	308	0.03
26	15.26	33.63	5.56	308	20	15.26	33.64	5.54	24.88	308	0.06
52	15.24	33.64	5.52	307	30	15.26	33.64	5.54	24.88	308	0.09
61	13.80	33.55	5.11	284	50	15.25	33.64	5.52	24.89	307	0.15
73	12.27	33.53	4.75	257	75	12.18	33.54	4.70	25.45	254	0.22
85	11.50	33.64	4.34	235	100	10.70	33.65	4.04	25.79	221	0.28
96	10.96	33.64	4.12	226	125	9.93	33.75	3.64	26.01	201	0.34
116	10.14	33.69	3.82	209	150	9.63	33.84	3.07	26.13	189	0.39
132	9.84	33.78	3.50	197	200	9.01	34.06	2.17	26.40	164	0.48
155	9.58	33.86	3.00	187	250	8.53	34.15	1.61	26.55	150	0.56
177	9.36	33.94	2.79	178	300	8.02	34.21	1.24	26.67	138	0.63
198	9.04	34.05 3	2.22	165	400	7.29	34.26	0.84	26.82	124	0.77
238	8.67	34.13 5	1.73	153	500	6.37	34.30	0.46	26.98	109	0.89
282	8.17	34.19 2	1.35	141							
353	7.70	34.24 0	1.05	131							
429	7.00	34.27 1	0.70	120							
509	6.31	34.30 2	0.44	108							

90.45

HORIZON; January 9, 1960; 1845 GCT;^{a)} 32°56'N, 118°56.5'W; sounding, 990 fm; wind, 180°, force 4; weather, overcast; sea, moderate; wire angle, 29°.

389	7.18	34.25 1	0.83	123
392	7.14	34.24 6	0.85	123
395	7.12	34.25 0	0.74	122
419	6.96	34.26 8	0.70	117
421	6.92	34.27 2	0.69	116
425	6.91	34.27 1	0.62	116
450	6.72	34.28 2	0.51	114
454	6.71	34.28 3	0.56	114
456	6.70	34.28 4	0.49	114
480	6.48	34.30 2	0.47	111
483	6.46	34.30 2	0.43	110
485	6.42	34.29 9	0.43	110
510	6.30	34.31 0	0.40	107
513	6.28	34.31 2	0.41	107
516	6.28	-	-	-
541	6.14	34.31 7	0.37	105
544	6.14	34.31 8	0.40	105
547	6.14	34.31 9	0.39	105

90.50

HORIZON; January 9, 1960; 2138 GCT; 32°44.5'N, 119°19'W; sounding, 68 fm; wind, 200°, force 4; weather, cloudy; sea, rough; wire angle, 07°.

2	14.62	33.60	5.75	297	0	(14.62)	(33.60)	(5.75)	(25.00)	(297)	(0.00)
11	14.60	33.62	5.67	296	10	14.60	33.62	5.67	25.01	296	0.03
32	14.40	33.60	5.67	293	20	14.58	33.62	5.67	25.02	295	0.06
52	13.72	33.55	5.20	283	30	14.45	33.61	5.67	25.03	294	0.09
76	11.16	33.55	4.37	236	50	13.89	33.56	5.35	25.12	285	0.15
102	10.39	33.72	3.81	210	75	11.17	33.54	4.37	25.64	236	0.21
					100	10.43	33.70	3.89	25.88	213	0.27

a) Test cast.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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HORIZON; January 10, 1960; 0103 GCT; 32°34'N, 119°39'W; sounding, 550 fm; wind, 120°, force 5; weather, cloudy; sea, rough; wire angle, 18°. a)

90.55

1	14.74	33.58	5.80	301	0	(14.74)	(33.58)	(5.80)	(24.96)	(301)	(0.00)
8	14.74	33.57	5.66	302	10	14.74	33.57	5.66	24.95	302	0.03
31	14.63	33.58 b)	5.65	299	20	14.70	33.57	5.66	24.96	301	0.06
55	13.14	33.49 b)	4.87	276	30	14.64	33.58	5.65	24.98	299	0.09
64	12.21	33.51 b)	4.68	258	50	13.28	33.49	4.92	25.19	279	0.15
81	11.54	33.55 b)	4.51	242	75	11.78	33.54	4.57	25.51	248	0.21
93	10.78	33.58 b)	4.15	227	100	10.25	33.63	4.04	25.87	214	0.27
106	10.20	33.65 b)	4.03	212	125	9.29	33.81	3.48	26.16	186	0.32
131	9.18	33.82 b)	3.43	184	150	9.02	33.85	3.31	26.23	180	0.37
147	9.06	33.84 b)	3.35	181	200	8.17	34.02	2.56	26.50	154	0.45
173	8.66	33.93 b)	2.89	168	250	7.93	34.12	1.74	26.62	143	0.53
204	8.13	34.03 b)	2.53	152	300	7.66	34.18	1.32	26.70	135	0.60
227	8.07	34.06 8	2.06	149	400	6.86	34.26	0.70	26.88	118	0.73
271	7.80	34.14 6	1.55	140	500	6.29	34.29	0.51	26.98	108	0.85
326	7.55	34.21 7	1.13	131							
414	6.75	34.26 3	0.65	116							
495	6.32	34.29 4	0.52	109							
564	5.92	34.33 2	0.41	102							

HORIZON; January 10, 1960; 0455 GCT; 32°24'N, 119°59'W; sounding, 430 fm; wind, 140°, force 4; weather, rain; sea, rough; wire angle, 15°.

90.60

2	14.58	33.51	5.50	303	0	(14.58)	(33.51)	(5.50)	(24.94)	(303)	(0.00)
12	14.57	33.53	5.52	301	10	14.57	33.53	5.52	24.96	301	0.03
31	14.56	33.53	5.55	301	20	14.57	33.53	5.53	24.96	301	0.06
40	14.58	33.53	5.54	301	30	14.56	33.53	5.55	24.96	301	0.09
55	14.56	33.53	5.55	301	50	14.58	33.53	5.54	24.96	301	0.15
70	13.82	33.53	5.13	286	75	12.80	33.48	4.80	25.28	270	0.22
94	11.38	33.56	4.32	239	100	11.19	33.58	4.22	25.66	234	0.29
112	10.75	33.62	4.05	224	125	10.20	33.67	3.76	25.90	211	0.34
130	9.98	33.68	3.66	207	150	9.05	33.78	3.26	26.18	185	0.39
152	8.99	33.79	3.22	183	200	8.30	33.93	2.63	26.41	163	0.48
181	8.55	33.89	2.83	169	250	7.85	34.12	1.80	26.63	142	0.56
213	8.14	33.96	2.44	158	300	7.65	34.20	1.29	26.71	134	0.63
242	7.90	34.09 8	1.92	144	400	6.79	34.28	0.69	26.90	116	0.76
291	7.68	34.18 2	1.37	136	500	6.07	34.31	0.47	27.02	105	0.88
344	7.42	34.24 8	1.03	127	600	(5.69)	(34.37)	(0.31)	(27.11)	(96)	(0.98)
428	6.51	34.28 6	0.59	112							
511	6.03	34.31 6	0.46	104							
595	5.70	34.36 1	0.31	96							

HORIZON; January 10, 1960; 1005 GCT; 32°04'N, 120°39'W; sounding, 2000+ fm; wind, 190°, force 2; weather, cloudy; sea, moderate; wire angle, 00°.

90.70

0	14.66	33.51	5.64	305	0	14.66	33.51	5.64	24.92	305	0.00
10	14.66	33.52	5.61	304	10	14.66	33.52	5.61	24.93	304	0.03
30	14.66	33.51	5.59	305	20	14.66	33.51	5.60	24.92	304	0.06
59	14.60	33.51	5.50	303	30	14.66	33.51	5.59	24.92	305	0.09
68	13.04	33.46	4.90	276	50	14.64	33.51	5.55	24.93	304	0.15
84	11.68	33.49	4.47	249	75	12.24	33.47	4.67	25.38	261	0.22
98	10.98	33.55	4.13	233	100	10.88	33.56	4.07	25.70	230	0.28
113	10.14	33.66	3.82	211	125	9.71	33.71	3.67	26.01	201	0.34
139	9.38	33.76	3.46	192	150	9.20	33.81	3.18	26.17	185	0.39
158	9.05	33.84	3.04	181	200	8.36	33.98	2.63	26.44	160	0.48
186	8.40	33.94	2.91	163	250	8.11	34.16	1.56	26.62	143	0.55
218	8.34	34.04	2.17	155	300	7.65	34.22	1.16	26.73	132	0.62
246	8.16	34.14 9	1.63	144	400	6.64	34.24	0.68	26.89	117	0.75
296	7.70	34.21 1	1.20	133	500	5.93	34.28	0.47	27.02	105	0.87
350	7.16	34.23 2	0.88	124	600	5.46	34.34	0.28	27.12	95	0.98
434	6.34	34.24 6	0.60	113							
518	5.85	34.29 4	0.44	103							
601	5.46	34.34 6	0.28	95							

a) An assumed wire angle of 28° was used in depth determination.

b) Salinity values from 31 to 204 meters doubtful; true values may be lower by no more than 0.10‰.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

90.80

HORIZON; January 10, 1960; 1634 GCT; 31°43'N, 121°19.5'W; sounding, 2000 fm; wind, 270°, force 3; weather, partly cloudy; sea, rough; wire angle, 24°.

1	14.78	33.44	5.52	312	0	(14.78)	(33.44)	(5.52)	(24.84)	(312)	(0.00)
10	14.77	33.40	5.57	314	10	14.77	33.40	5.57	24.82	314	0.03
27	14.75	33.44	5.43	312	20	14.75	33.42	5.47	24.83	313	0.06
53	14.77	33.40	5.40	314	30	14.75	33.44	5.43	24.84	312	0.09
61	14.74	33.44	5.36	311	50	14.76	33.40	5.41	24.82	314	0.16
74	14.46	33.44	5.23	305	75	14.43	33.44	5.22	24.92	305	0.23
87	12.11	33.42	5.01	262	100	11.29	33.39	4.68	25.49	250	0.30
99	11.32	-	4.69	-	125	10.07	33.35	4.09	25.68	232	0.36
121	10.25	33.34	4.18	236	150	9.32	33.73	3.58	26.09	193	0.42
138	9.68	33.66	3.80	203	200	8.32	33.95	2.66	26.43	161	0.51
163	8.98	33.78	3.40	184	250	7.76	34.10	1.68	26.62	143	0.59
189	8.46	33.89	3.06	168	300	7.12	34.15	1.30	26.75	130	0.66
214	8.16	34.02 6	2.16	153	400	6.46	34.22	0.71	26.90	116	0.78
258	7.66	34.10 6	1.62	141	500	5.87	34.30	0.42	27.04	103	0.90
306	7.07	34.14 9	1.28	130							
382	6.60	34.21 0	0.78	119							
459	6.04	34.26 2	0.54	108							
538	5.71	34.34 4	0.28	98							

90.90

HORIZON; January 10, 1960; 2200 GCT; 31°25'N, 121°59'W; sounding, 2000+ fm; wind, 320°, force 4; weather, partly cloudy; sea, rough; wire angle, 17°.

2	15.06	33.40	5.75	321	0	(15.06)	(33.40)	(5.75)	(24.75)	(321)	(0.00)
13	15.06	33.40	5.75	321	10	15.06	33.40	5.75	24.75	321	0.03
32	15.02	33.39	5.67	321	20	15.04	33.39	5.72	24.75	321	0.06
60	15.03	33.39	5.65	321	30	15.02	33.39	5.67	24.75	321	0.10
70	14.96	33.39	5.70	319	50	15.03	33.39	5.65	24.75	321	0.16
83	13.18	33.25	5.61	294	75	14.93	33.39	5.70	24.77	319	0.24
97	11.88	33.28	5.23	269	100	11.80	33.29	5.17	25.32	266	0.31
110	11.12	33.39	4.74	247	125	10.29	33.50	4.40	25.76	225	0.38
131	10.08	33.53	4.34	220	150	9.47	33.66	4.05	26.02	200	0.43
150	9.47	33.66	4.05	200	200	8.40	33.92	3.37	26.39	165	0.52
176	8.88	33.84	3.95	178	250	7.59	34.03	2.47	26.60	145	0.60
203	8.34	33.93	3.30	163	300	7.05	34.07	1.84	26.70	135	0.68
229	7.88	34.01 2	2.77	151	400	6.33	34.17	0.93	26.87	119	0.81
275	7.29	34.05 1	2.17	140	500	(5.72)	(34.24)	(0.62)	(27.02)	(105)	(0.92)
325	6.86	34.09 8	1.55	131							
404	6.30	34.17 2	0.91	118							
484	5.79	34.23 2	0.62	107							

90.100

HORIZON; January 11, 1960; 0325 GCT; 31°05'N, 122°39'W; sounding, 2000+ fm; wind, 120°, force 4; weather, partly cloudy; sea, rough; wire angle, 22°.

2	16.86	33.80	5.34	330	0	(16.86)	(33.80)	(5.34)	(24.65)	(330)	(0.00)
12	16.87	33.82	5.32	329	10	16.87	33.82	5.32	24.66	329	0.03
30	16.88	33.86	5.33	326	20	16.87	33.83	5.32	24.67	328	0.07
58	16.86	33.82	5.26	329	30	16.88	33.86	5.33	24.69	326	0.10
67	16.88	33.81	5.25	330	50	16.87	33.83	5.27	24.67	328	0.16
81	16.88	-	-	-	75	16.88	33.81	5.25	24.66	329	0.25
95	16.82	33.81	5.26	328	100	16.50	33.77	5.26	24.71	324	0.33
106	14.04	33.47	5.30	295	125	12.53	33.49	5.06	25.33	265	0.40
131	12.18	33.51	4.99	257	150	10.87	33.64	4.60	25.76	224	0.47
149	10.90	33.64	4.61	225	200	9.13	33.86	3.93	26.22	180	0.57
173	9.82	33.73	4.29	200	250	8.12	33.98	3.03	26.48	156	0.66
227	8.56	33.94 2	3.54	165	300	7.25	34.04	2.15	26.65	140	0.73
271	7.74	34.00 9	2.60	149	400	6.33	34.16	0.91	26.87	119	0.86
321	6.98	34.06 6	1.80	134	500	5.68	34.26	0.48	27.03	104	0.98
399	6.34	34.15 8	0.92	120							
479	5.82	34.24 1	0.53	107							
561	5.38	34.29 0	0.38	98							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 9, 1960; 0129 GCT; 32°54.5'N, 117°22'W; sounding, 290 fm; wind, direction missing, force 1; weather, partly cloudy; sea, slight; wire angle, 03°.

93.28

0	15.11	33.58	5.75	308	0	15.11	33.58	5.75	24.88	308	0.00
10	14.91	33.62	5.78	302	10	14.91	33.62	5.78	24.95	302	0.03
30	14.82	33.55	5.76	305	20	14.84	33.59	5.77	24.94	303	0.06
50	14.38	33.58	5.57	294	30	14.82	33.55	5.76	24.91	305	0.09
75	12.70	33.53	4.67	264	50	14.38	33.58	5.57	25.03	294	0.15
100	11.20	33.61	4.22	232	75	12.70	33.53	4.67	25.34	264	0.22
125	10.03	33.62	3.69	212	100	11.20	33.61	4.22	25.68	232	0.28
165	9.41	33.84	3.02	186	125	10.03	33.62	3.69	25.89	212	0.34
205	9.02	33.96	2.21	171	150	9.59	33.75	3.26	26.07	195	0.39
253	8.46	34.04	1.85	156	200	9.06	33.95	2.27	26.30	173	0.48
303	8.09	34.07	-	150	250	8.49	34.04	1.86	26.47	157	0.57
408	7.42	34.18	-	132	300	8.11	34.07	-	26.55	150	0.65
					400	7.47	34.17	-	26.72	133	0.80

ORCA; January 9, 1960; 0321 GCT; 32°48.5'N, 117°31.5'W; sounding, 510 fm; wind, direction missing, force 1; weather, cloudy; sea, slight; wire angle, 00°.

93.30

0	15.26	33.58	5.71	311	0	15.26	33.58	5.71	24.85	311	0.00
10	14.98	33.58	5.72	306	10	14.98	33.58	5.72	24.90	306	0.03
30	14.91	33.58	5.74	304	20	14.93	33.58	5.73	24.91	305	0.06
55	13.93	33.48	5.34	292	30	14.91	33.58	5.74	24.92	304	0.09
65	13.14	33.47	5.02	278	50	14.82	33.57	5.72	24.94	303	0.15
75	12.54	33.45	4.72	268	75	12.54	33.45	4.72	25.30	268	0.22
90	11.71	33.47	4.15	251	100	11.15	33.53	4.00	25.62	237	0.29
105	10.88	33.67	3.94	222	125	10.46	33.63	3.76	25.82	218	0.35
129	10.38	33.63	3.70	217	150	9.72	33.70	3.35	26.02	200	0.40
149	9.73	33.69	3.40	202	200	8.84	33.98	2.53	26.36	167	0.49
174	9.30	33.91	2.85	179	250	8.31	34.09	1.87	26.54	151	0.57
203	8.78	33.98	2.48	166	300	8.00	34.15	1.53	26.63	142	0.65
233	8.42	34.07	2.03	154	400	7.19	34.25	0.79	26.82	124	0.79
272	8.21	34.12	1.72	147	500	6.47	34.28	0.53	26.95	112	0.91
331	7.74	34.18	1.36	136							
406	7.16	34.25	0.77	123							
482	6.60	34.27	0.58	114							
562	6.05	34.34	0.38	102							

ORCA; January 9, 1960; 0900 GCT; 32°29.5'N, 118°11.5'W; sounding, 950 fm; wind, 180°, force 2; weather, overcast; sea, moderate; wire angle, 05°.

93.40

1	15.56	33.58	5.62	318	0	(15.56)	(33.58)	(5.62)	(24.78)	(318)	(0.00)
11	15.56	33.57	5.71	318	10	15.56	33.57	5.70	24.77	318	0.03
31	15.49	33.56	5.62	318	20	15.54	33.56	5.69	24.77	318	0.06
56	15.38	33.60	5.59	313	30	15.50	33.56	5.63	24.77	318	0.10
65	15.26	33.53	5.58	315	50	15.41	33.60	5.59	24.83	313	0.16
75	13.02	33.38	5.19	282	75	13.02	33.38	5.19	25.16	282	0.23
90	12.21	33.44	4.77	262	100	11.56	33.49	4.57	25.52	247	0.30
104	11.28	33.52	4.50	240	125	10.74	33.55	4.17	25.71	229	0.36
129	10.66	33.56	4.11	227	150	9.89	33.69	3.68	25.97	204	0.42
148	9.95	33.68	3.72	206	200	8.78	33.97	2.64	26.36	167	0.51
173	9.36	33.79	3.33	189	250	8.10	34.07	1.89	26.56	149	0.59
202	8.74	33.98	2.58	166	300	7.69	34.17	1.45	26.69	136	0.66
232	8.27	34.02	2.07	156	400	6.91	34.22	0.78	26.84	122	0.80
270	7.95	34.14	1.75	142	500	6.22	34.28	0.44	26.98	109	0.92
329	7.47	34.18	1.17	133							
403	6.89	34.22	0.77	122							
478	6.38	34.26	0.49	112							
558	5.88	34.33	0.35	101							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

93.50

ORCA; January 9, 1960; 1454 GCT; 32°06'N, 118°52.5'W; sounding, 800 fm; wind, 170°, force 4; weather, cloudy; sea, moderate; wire angle, 24°.

1	16.10	33.64	5.51	325	0	(16.10)	(33.64)	(5.51)	(24.70)	(325)	(0.00)
10	16.11	33.66	5.54	324	10	16.11	33.66	5.54	24.71	324	0.03
25	16.10	33.63	5.54	326	20	16.10	33.64	5.54	24.70	325	0.06
33	15.90	33.65	5.61	320	30	16.00	33.64	5.59	24.72	323	0.10
41	15.76	33.59	5.58	321	50	15.30	33.55	5.58	24.81	315	0.16
52	14.38	33.49	5.58	300	75	12.34	33.54	4.60	25.40	258	0.23
62	13.38	33.36	5.40	290	100	11.06	33.53	4.40	25.64	236	0.30
76	12.32	33.54	4.59	257	125	9.95	33.64	3.77	25.92	210	0.35
94	11.37	33.53	4.45	241	150	9.46	33.79	3.26	26.11	191	0.40
108	10.58	33.54	4.28	227	200	8.66	34.00	2.22	26.41	163	0.49
127	9.89	33.65	3.71	207	250	8.05	34.09	1.76	26.58	147	0.57
147	9.51	33.79	3.30	191	300	7.58	34.15	1.31	26.69	136	0.64
168	9.13	33.88	2.88	179	400	6.81	34.24	0.78	26.86	120	0.78
196	8.72	33.98	2.28	165	500	(6.15)	(34.23)		(26.95)	(112)	(0.90)
241	8.16	34.07	1.85	150							
298	7.59	34.14	1.33	137							
360	7.12	34.23	0.92	124							
436	6.56	34.23	0.68	116							

93.60

ORCA; January 9, 1960; 2116 GCT; 31°46'N, 119°29'W; sounding, 1500 fm; wind, 190°, force 4; weather, cloudy; sea, very rough; wire angle, 20°.

2	15.59	33.51	5.55	324	0	(15.59)	(33.51)	(5.55)	(24.72)	(324)	(0.00)
11	15.60	33.52	5.62	323	10	15.60	33.52	5.61	24.72	323	0.03
34	15.56	33.53	5.58	322	20	15.58	33.52	5.60	24.74	322	0.06
62	15.60	33.52	5.60	323	30	15.57	33.53	5.59	24.74	322	0.10
71	15.56	33.52	5.58	322	50	15.58	33.52	5.59	24.74	322	0.16
90	14.92	33.45	5.45	314	75	15.47	33.51	5.55	24.75	321	0.24
104	13.24	33.50	4.99	277	100	13.75	33.49	5.14	25.09	288	0.32
118	11.45	33.53	4.37	243	125	10.96	33.57	4.16	25.69	231	0.38
146	9.92	33.73	3.61	202	150	9.82	33.75	3.54	26.03	199	0.44
165	9.54	33.80	3.33	191	200	8.98	33.99	2.54	26.34	169	0.53
193	9.04	33.96	2.69	172	250	8.52	34.11	1.94	26.52	152	0.62
224	8.86	34.04	2.16	163	300	7.89	34.20	1.29	26.68	137	0.69
250	8.52	34.11	1.94	152	400	6.88	34.26	0.70	26.87	119	0.82
297	7.93	34.19	1.33	138	500	6.04	34.30	0.38	27.02	105	0.94
356	7.32	34.24	0.91	126	600	5.51	34.34	0.39	27.11	96	1.05
450	6.39	34.27	0.56	111							
537	5.83	34.32	0.33	101							
611	5.47	34.34	0.40	95							

93.70

ORCA; January 10, 1960; 0250 GCT; 31°29.5'N, 120°05.5'W; sounding, 2000+ fm; wind, 180°, force 4; weather, rain; sea, very rough; wire angle, 16°.

1	15.63	33.56	5.51	321	0	(15.63)	(33.56)	(5.51)	(24.75)	(321)	(0.00)
10	15.64	33.55	5.60	322	10	15.64	33.55	5.60	24.74	322	0.03
35	15.64	33.64	5.64	316	20	15.64	33.58	5.62	24.76	320	0.06
64	15.63	33.57	5.61	320	30	15.64	33.63	5.64	24.80	316	0.10
73	15.64	33.58	5.58	320	50	15.63	33.61	5.63	24.79	317	0.16
93	12.43	33.58	4.47	256	75	15.64	33.58	5.57	24.76	319	0.24
107	11.27	33.57	4.33	236	100	11.72	33.57	4.35	25.56	244	0.31
122	10.30	33.58	4.18	219	125	10.13	33.59	4.13	25.85	216	0.37
151	9.23	33.81	3.66	186	150	9.26	33.81	3.66	26.16	186	0.42
170	8.89	33.82	3.28	180	200	8.43	33.95	2.80	26.41	163	0.51
200	8.43	33.95	2.80	163	250	7.82	34.07	2.09	26.59	145	0.59
234	8.01	34.00	2.23	153	300	7.37	34.10	1.50	26.68	137	0.66
262	7.70	34.14	2.02	139	400	6.47	34.17	0.85	26.86	120	0.79
310	7.28	34.09	1.46	136	500	5.94	34.27	0.45	27.01	106	0.91
374	6.65	34.14	1.02	125	600	5.38	34.33	0.42	27.11	95	1.02
472	6.11	34.26	0.48	109							
561	5.59	34.30	0.44	100							
638	5.22	34.37	0.38	91							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 10, 1960; 0911, 0921 GCT; 31°12.5'N, 120°41'W; sounding, 2000 fm; wind, direction missing, force 1; weather, cloudy; sea, moderate; wire angle, 02°, 00°.

93.80

1	15.08	33.46	5.62	317	0	(15.08)	(33.46)	(5.62)	(24.78)	(317)	(0.00)
11	15.09	33.42	5.71	320	10	15.09	33.42	5.70	24.76	320	0.03
31	15.09	33.43	5.67	319	20	15.09	33.42	5.70	24.76	320	0.06
61	15.04	33.43	5.67	318	30	15.09	33.43	5.68	24.77	319	0.10
71	12.84	33.24	5.43	289	50	15.09	33.43	5.67	24.77	318	0.16
86	12.40	33.38	5.11	271	75	12.75	33.25	5.36	25.11	286	0.24
100	11.24	33.45	4.79	245	100	11.24	33.45	4.79	25.54	245	0.30
115	10.48	33.53	4.45	226	125	10.04	33.59	4.27	25.86	215	0.36
140	9.48	33.69	4.03	198	150	9.29	33.74	3.97	26.10	192	0.41
160	9.13	33.78	3.95	186	200	8.32	33.95	2.86	26.43	161	0.50
190	8.56	33.92	2.90	167	250	7.74	34.08	1.74	26.61	144	0.58
220	7.86	33.98	2.84	153	300	7.29	34.15	1.33	26.72	133	0.65
248	7.76	34.07	1.78	144	400	6.75	34.26	0.66	26.89	117	0.78
298	7.30	34.14	1.35	133	500	6.10	34.31	0.36	27.02	105	0.90
353	7.09	34.22	0.83	125	600	5.64	34.34	0.30	27.09	98	1.00
438	6.44	34.29	0.59	111							
523	5.98	34.31	0.32	104							
608	5.61	34.34	0.30	97							

ORCA; January 10, 1960; 1500 GCT; 30°56'N, 121°15'W; sounding, 2246 fm; wind, 290°, force 3; weather, partly cloudy; sea, very rough; wire angle, 10°.

93.90

1	15.46	33.44	5.65	326	0	(15.46)	(33.44)	(5.65)	(24.69)	(326)	(0.00)
11	15.50	33.44	5.63	326	10	15.50	33.44	5.64	24.69	326	0.03
30	15.33	33.44	5.68	324	20	15.44	33.44	5.65	24.70	325	0.07
59	15.20	33.44	5.71	321	30	15.33	33.44	5.68	24.71	324	0.10
69	15.20	33.43	5.67	321	50	15.22	33.44	5.70	24.75	321	0.16
83	15.13	33.43	5.65	320	75	15.18	33.43	5.66	24.75	321	0.24
98	13.58	33.29	5.54	299	100	13.32	33.29	5.47	25.03	294	0.32
113	12.29	33.33	5.15	272	125	11.42	33.43	4.87	25.49	250	0.39
136	10.90	33.51	4.66	234	150	10.03	33.61	4.16	25.88	213	0.45
155	9.79	33.63	4.01	207	200	8.80	33.87	3.50	26.28	175	0.55
184	9.10	33.78	3.85	186	250	8.09	33.98	2.52	26.48	156	0.63
213	8.57	33.94	3.06	166	300	7.48	34.07	1.87	26.63	142	0.71
240	8.22	33.97	2.66	158	400	6.42	34.18	0.83	26.88	118	0.84
289	7.62	34.05	1.99	144	500	5.79	34.27	0.45	27.02	105	0.96
341	6.97	34.11	1.33	131	600	(5.36)	(34.33)	(0.35)	(27.13)	(94)	(1.07)
425	6.24	34.21	0.68	114							
508	5.76	34.27	0.44	104							
593	5.38	34.33	0.35	95							

ORCA; January 8, 1960; 2355 GCT; 32°47'N, 117°22'W; sounding, 80 fm; wind, direction missing, force 1; weather, partly cloudy; sea, slight; wire angle, 00°. ^{a)}

93^{b)}.29
4

1	15.25	33.58	5.83	311							
6	14.99	33.58	5.80	306							
11	14.96	33.57	5.81	306							
16	14.91	33.57	5.81	305							
21	14.92	33.58	5.80	305							
26	14.91	33.57	5.76	305							
31	14.86	33.57	5.78	304							
36	14.74	33.57	5.59	301							
41	14.11	33.48	5.37	295							
46	13.44	33.46	5.12	284							
51	13.10	33.57	4.82	269							
56	13.00	33.55	4.80	269							
61	12.84	33.55	4.67	266							
66	12.70	33.58	4.61	261							
71	12.42	33.58	4.53	257							
76	12.20	33.58	4.46	252							
81	11.88	33.59	4.41	245							
87	11.54	33.59	4.28	240							

a) Shakedown station.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

5
94⁹296
30

HORIZON; January 8, 1960; 2320 GCT; 32°35.5'N, 117°18.5'W; sounding, 55 fm; wind, direction missing, force 1; weather, clear; sea, smooth; wire angle, 02°. a)

0	15.66	33.62	5.40	317
4	15.60	33.61	5.22	317
10	15.38	33.62	5.26	312
15	15.10	33.58	5.12	309
19	15.02	33.58	5.28	307
25	14.96	33.57	5.58	306
30	14.96	33.58	5.58	306
35	14.98	33.58	5.56	306
38	14.94	33.58	5.48	305
44	14.95	33.58 4	5.65	305
49	14.94	33.58 2	5.67	305
53	14.55	33.53 6	5.38	301
59	13.47	33.50 6	4.98	281
64	13.16	33.50 2	4.95	276
69	12.62	33.54 0	4.61	263

97.30

ORCA; January 12, 1960; 0932 GCT; 32°14.5'N, 117°08'W; sounding, 27 fm; wind, 180°, force 6; weather, drizzle; sea, moderate; wire angle, 07°.

1	15.27	33.59	5.74	311	0	(15.27)	(33.59)	(5.74)	(24.85)	(311)	(0.00)
11	15.28	33.58	5.66	312	10	15.28	33.58	5.66	24.84	312	0.03
30	15.26	33.58	5.69	312	20	15.27	33.58	5.67	24.84	312	0.06
					30	15.26	33.58	5.69	24.84	312	0.09

97.32

ORCA; January 12, 1960; 0804 GCT; 32°10.5'N, 117°14.5'W; sounding, 850 fm; wind, 220°, force 3; weather, drizzle; sea, moderate; wire angle, 10°.

2	15.58	33.61	5.46	316	0	(15.58)	(33.61)	(5.46)	(24.80)	(316)	(0.00)
11	15.58	33.62	5.59	316	10	15.58	33.62	5.59	24.80	316	0.03
31	15.46	33.62	5.62	313	20	15.55	33.62	5.60	24.82	314	0.06
40	15.20	33.58	5.64	311	30	15.47	33.62	5.61	24.83	313	0.09
50	15.02	33.57	5.64	308	50	15.02	33.57	5.64	24.88	308	0.16
64	13.70	33.51	5.21	285	75	12.74	33.56	4.67	25.35	263	0.23
79	12.58	33.57	4.62	260	100	10.72	33.62	4.12	25.76	224	0.29
99	10.77	33.61	4.14	225	125	10.00	33.81	3.46	26.04	198	0.34
124	10.02	33.78	3.54	200	150	9.71	33.93	2.82	26.19	184	0.39
143	9.84	33.93	2.88	186	200	9.14	34.04	2.38	26.36	168	0.48
171	9.26	33.93	2.73	177	250	8.39	34.14	1.77	26.57	148	0.56
201	9.14	34.04	2.37	167	300	8.09	34.18	1.53	26.64	141	0.64
230	8.49	34.11	1.95	152	400	7.22	34.27	0.86	26.84	122	0.77
268	8.35	34.16	1.68	146	500	6.39	34.32	0.52	27.00	107	0.89
326	7.84	34.20	1.42	136							
400	7.22	34.27	0.86	122							
474	6.57	34.31	0.59	111							
554	6.12	34.33	0.44	104							

97.32

BLACK DOUGLAS; January 13, 1960; 0312 GCT; 32°12'N, 117°15'W; sounding, 700 fm; wind, 290°, force 4; weather, cloudy; sea, rough; wire angle, 07°. a)

0	15.68	33.66	5.68	315
5	15.66	33.68	5.64	313
10	15.68	33.66	5.69	315
20	15.68	33.66	5.62	315
25	15.69	33.66	5.57	315
30	15.70	33.65	5.55	316
35	15.70	33.67	5.56	314
41	15.70	33.65	5.35	316
45	15.67	33.68	5.57	314
51	15.64	33.68	5.58	312
55	15.40	33.67	5.57	308
60	14.92	33.61	5.56	303
65	14.18b)	33.60	5.28	288
70	13.16	33.54	5.10	273
75	12.66	33.56	4.91	262
80	12.34	33.56	4.84	256
85	11.88	33.58	4.59	246

40

a) Shakedown station.

b) Mean value of 14.12 and 14.23°C.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 12, 1960; 0245 GCT; 31°55'N, 117°49.5'W; sounding, 650 fm; wind, 290°, force 3; weather, cloudy; sea, very rough; wire angle, 04°.

9740

1	16.44	33.74	5.43	326	0	(16.44)	(33.74)	(5.43)	(24.69)	(326)	(0.00)
11	16.46	33.77	5.41	324	10	16.46	33.77	5.41	24.71	324	0.03
31	16.47	33.69	5.50	329	20	16.46	33.74	5.45	24.69	326	0.06
60	15.56	33.62	5.46	315	30	16.47	33.69	5.49	24.66	329	0.10
71	15.32	33.63	5.29	309	50	16.43	33.68	5.50	24.66	329	0.16
86	13.74	33.62	4.78	278	75	15.21	33.63	5.23	24.89	307	0.24
100	12.48	33.64	4.28	253	100	12.48	33.64	4.28	25.46	253	0.31
114	11.50	33.68	3.81	232	125	11.10	33.73	3.64	25.79	222	0.37
140	10.71	33.78	3.50	211	150	10.38	33.82	3.32	26.00	202	0.43
159	10.08	33.86	3.15	195	200	9.17	33.99	2.66	26.32	171	0.52
189	9.36	33.93	2.82	178	250	8.68	34.16	1.84	26.54	151	0.60
218	8.86	34.07	2.36	161	300	8.18	34.25	1.35	26.68	137	0.68
247	8.70	34.15	1.86	152	400	6.98	34.25	0.97	26.85	121	0.81
297	8.22	34.25	1.37	138	500	6.27	34.31	0.49	26.99	108	0.93
352	7.23	34.19	1.23	129	600	5.68	34.34	0.50	27.09	98	1.04
436	6.80	34.29	0.76	115							
521	6.11	34.31	0.47	105							
606	5.67	34.34	0.51	98							

ORCA; January 11, 1960; 2119 GCT; 31°37'N, 118°30.5'W; sounding, 1200 fm; wind, 300°, force 4; weather, cloudy; sea, high; wire angle, 13°.

9750

1	15.71	33.73	5.48	310	0	(15.71)	(33.73)	(5.48)	(24.86)	(310)	(0.00)
11	15.73	33.67u	5.52	-	10	15.73	33.73	5.52	24.86	310	0.03
36	15.73	33.73	5.52	311	20	15.73	33.73	5.52	24.86	311	0.06
65	13.98	33.68	4.72	278	30	15.73	33.73	5.52	24.86	311	0.09
74	13.03	33.64	4.46	263	50	15.73	33.73	5.49	24.86	310	0.16
94	11.52	33.76	3.87	227	75	12.99	33.64	4.44	25.37	262	0.23
106	11.08	33.69	3.47	224	100	11.20	33.69	3.65	25.75	225	0.29
123	10.60	33.77	3.09	210	125	10.53	33.77	3.05	25.92	209	0.34
151	10.07	33.86	2.85	195	150	10.08	33.86	2.86	26.07	195	0.40
170	9.78	33.96	2.57	183	200	9.57	34.12	2.07	26.36	168	0.49
197	9.58	34.10	2.12	169	250	8.99	34.26	1.62	26.56	148	0.57
231	9.25	34.24	1.82	154	300	8.32	34.25	1.37	26.66	139	0.64
256	8.92	34.27	1.55	146	400	7.23	34.33	0.76	26.88	118	0.78
305	8.25	34.25	1.36	138	500	6.17	34.30	0.45	27.00	106	0.89
367	7.66	34.34	0.92	123	600	5.68	34.35	0.36	27.11	96	1.00
464	6.39	34.29	0.53	110							
552	5.90	34.34	0.36	100							
626	5.54	34.36	0.36	95							

ORCA; January 11, 1960; 1406 GCT; 31°18'N, 119°12'W; sounding, 1900 fm; wind, 300°, force 5; weather, cloudy; sea, very rough; wire angle, 35°.

9760

2	16.36	33.81	5.39	318	0	(16.36)	(33.81)	(5.39)	(24.78)	(318)	(0.00)
11	16.38	33.78	5.44	321	10	16.38	33.78	5.44	24.75	321	0.03
28	16.38	33.80	5.41	319	20	16.38	33.79	5.43	24.75	321	0.06
53	15.44	33.70	5.17	307	30	16.38	33.80	5.40	24.77	319	0.10
62	13.41	33.61	4.54	273	50	16.37	33.80	5.40	24.77	319	0.16
73	12.69	33.62	4.35	258	75	12.59	33.62	4.33	25.43	256	0.23
86	11.82	33.61	4.23	243	100	10.98	33.65	4.01	25.75	225	0.29
98	11.06	33.64	4.04	228	125	9.95	33.74	3.55	26.00	202	0.35
118	10.16	33.73	3.63	206	150	9.22	33.86	3.35	26.21	182	0.40
134	9.77	33.75	3.47	198	200	8.40	34.06	2.40	26.49	155	0.48
159	8.90	33.89	3.31	174	250	7.81	34.12		26.63	142	0.56
183	8.66	33.99	2.82	163	300	7.48	34.19		26.73	132	0.63
207	8.30	34.07	2.23	152	400	6.78	34.29	0.69	26.91	115	0.76
365	7.15	34.27	0.82	121	500	5.94	34.32	0.38	27.05	102	0.87
442	6.32	34.30	0.55	108							
525	5.80	34.33	0.32	100							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

9760

ORCA; January 11, 1960; 1527 GCT; ^{a)} 31°18'N, 119°12'W; sounding, 1900 fm; wind, 300°, force 5; weather, cloudy; sea, very rough; wire angle, 20°.

412	6.84	34.30	0.60	115
415	6.67	34.29	0.60	114
417	6.58	34.28	0.57	113
441	6.50	34.29	0.45	112
443	6.44	34.29	0.48	111
446	6.44	34.31	0.45	110
470	6.08	34.29	0.43	106
473	6.08	34.29	0.45	106
476	6.10	34.27	0.45	108
499	5.96	34.33	0.43	102
503	5.94	34.31	0.40	103
505	5.92	34.31	0.39	103
530	5.79	34.33	0.37	100
532	5.80	34.33	0.36	100
535	5.78	34.34	0.35	99
560	5.60	34.36	0.28	96
563	5.60	34.34	0.30	97
566	5.58	34.36	0.34	95

9770

ORCA; January 11, 1960; 0745 GCT; 30°54'N, 119°50'W; sounding, 1950 fm; wind, 320°, force 6; weather, cloudy; sea, high; wire angle, 11°.

1	15.07	33.49	5.60	314	0	(15.07)	(33.49)	(5.60)	(24.82)	(314)	(0.00)
11	15.09	33.51	5.60	314	10	15.09	33.51	5.60	24.82	314	0.03
30	15.09	33.49	5.62	315	20	15.09	33.50	5.61	24.82	314	0.06
60	14.95	33.50	5.63	311	30	15.09	33.49	5.62	24.81	315	0.09
69	14.86	33.49	5.56	310	50	15.02	33.50	5.63	24.83	313	0.16
85	12.66	33.26	5.34	284	75	14.71	33.47	5.50	24.88	308	0.23
99	11.90	33.34	5.03	264	100	11.89	33.34	5.03	25.34	264	0.31
114	11.02	33.50	4.49	237	125	10.24	33.61	4.05	25.84	217	0.37
137	9.86	33.77	3.60	198	150	9.48	33.84	3.29	26.16	187	0.42
156	9.32	33.87	3.17	182	200	8.50	33.98	2.53	26.42	162	0.51
186	8.74	33.95	2.69	168	250	7.83	34.11	2.00	26.62	143	0.59
215	8.24	34.01	2.37	156	300	7.28	34.19	1.39	26.76	129	0.66
243	7.92	34.09	2.08	145	400	6.59	34.28	0.64	26.94	113	0.78
293	7.34	34.18	1.48	131	500	5.99	34.34	0.36	27.06	101	0.90
346	6.90	34.24	0.94	120	600	(5.45)	(34.38)	(0.32)	(27.16)	(92)	(1.00)
431	6.48	34.31	0.53	110							
514	5.89	34.36	0.35	99							
599	5.46	34.38	0.32	92							

9780

ORCA; January 11, 1960; 0135 GCT; 30°30'N, 120°29.5'W; sounding, 2000+ fm; wind, 320°, force 4; weather, partly cloudy; sea, high; wire angle, 21°.

1	15.60	33.40	5.58	332	0	(15.60)	(33.40)	(5.58)	(24.63)	(332)	(0.00)
10	15.64	33.39	5.56	334	10	15.64	33.39	5.56	24.61	334	0.03
28	15.64	33.40	5.53	333	20	15.64	33.40	5.54	24.61	334	0.07
56	15.60	33.43	5.51	330	30	15.63	33.40	5.53	24.62	333	0.10
65	15.59	33.40	5.45	332	50	15.61	33.42	5.51	24.64	331	0.17
78	15.06	33.38	5.56	323	75	15.54	33.40	5.47	24.64	331	0.25
92	13.36	33.40	5.26	287	100	12.83	33.46	5.18	25.25	273	0.33
105	12.60	33.49	5.15	266	125	11.19	33.56	4.67	25.65	235	0.39
127	11.07	33.57	4.64	233	150	9.62	33.73	4.00	26.04	198	0.44
145	9.86	33.69	4.10	204	200	8.51	33.95	3.44	26.40	164	0.54
172	8.90	33.89	3.68	174	250	7.80	34.06	2.73	26.59	146	0.62
201	8.50	33.95	3.44	164	300	7.08	34.12	1.80	26.73	132	0.69
224	8.16	34.04	3.16	152	400	6.50	34.27	0.86	26.94	113	0.82
270	7.56	34.06	2.43	143	500	5.96	34.32	0.43	27.05	102	0.93
320	6.80	34.16	1.37	125							
399	6.50	34.27	0.86	113							
480	6.08	34.31	0.49	105							
564	5.49	34.36	0.32	94							

42

a) Test cast.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10
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ORCA; January 10, 1960; 2000 GCT; 30°18'N, 121°08'W; sounding, 1950 fm; wind, 320°, force 3; weather, cloudy; sea, high; wire angle, 15°.

97.90

1	15.55	33.41	5.65	330	0	(15.55)	(33.41)	(5.65)	(24.65)	(330)	(0.00)
10	15.55	33.40	5.69	331	10	15.55	33.40	5.69	24.64	331	0.03
29	15.48	33.42	5.67	328	20	15.51	33.41	5.68	24.65	330	0.07
58	15.46	33.42	5.64	328	30	15.48	33.42	5.67	24.67	328	0.10
67	15.47	33.44	5.62	326	50	15.46	33.42	5.64	24.67	328	0.16
82	12.97	33.22	5.51	293	75	15.00	33.40	5.60	24.76	320	0.25
96	11.94	33.30	5.09	268	100	11.79	33.33	5.02	25.36	263	0.32
110	11.42	33.39	4.83	252	125	10.66	33.50	4.44	25.69	231	0.38
134	10.18	33.55	4.18	220	150	9.62	33.61	3.95	25.95	206	0.44
152	9.56	33.62	3.92	204	200	8.62	33.91	3.35	26.34	169	0.53
180	9.08	33.79	3.69	184	250	7.64	34.02	2.23	26.58	147	0.61
208	8.40	33.95	3.22	163	300	7.02	34.07	1.68	26.70	135	0.69
236	7.83	33.99	2.48	152	400	6.15	34.13	0.89	26.86	120	0.82
283	7.24	34.06	1.86	138	500	5.77	34.29	0.43	27.05	102	0.94
335	6.53	34.09	1.32	127	600	(5.43)	(34.35)		(27.12)	(95)	(1.04)
416	6.10	34.14	0.79	118							
500	5.77	34.29	0.43	102							
584	5.48	34.34	0.40	96							

ORCA; January 12, 1960; 1641 GCT; 31°40.5'N, 116°47'W; sounding, 260 fm; wind, 280°, force 1; weather, partly cloudy; sea, very rough; wire angle, 06°.

100.30

0	14.68	33.48	5.63	308	0	14.68	33.48	5.63	24.88	308	0.00
10	14.90	33.53	5.66	308	10	14.90	33.53	5.66	24.88	308	0.03
30	14.93	33.56	5.53	307	20	14.92	33.55	5.55	24.88	307	0.06
50	14.53	33.56	5.29	298	30	14.93	33.56	5.53	24.89	307	0.09
74	13.20	33.63	4.34	267	50	14.53	33.56	5.29	24.98	298	0.15
98	11.52	33.66	3.73	234	75	13.12	33.63	4.30	25.33	265	0.22
123	10.72	33.77	3.21	212	100	11.45	33.66	3.71	25.67	233	0.29
162	9.73	33.98	2.49	180	125	10.66	33.78	3.16	25.91	210	0.34
201	9.24	34.07	2.11	167	150	10.02	33.91	2.71	26.12	190	0.39
251	8.70	34.14	1.80	153	200	9.25	34.07	2.12	26.37	167	0.48
301	7.90	34.20	1.38	137	250	8.71	34.14	1.81	26.51	153	0.57
					300	7.91	34.20	1.39	26.68	137	0.64

ORCA; January 13, 1960; 2300 GCT; 31°18.5'N, 117°25'W; sounding, 1050 fm; wind, 290°, force 3; weather, partly cloudy; sea, high; wire angle, 05°.

100.40

1	15.80	33.66	5.40	317	0	(15.80)	(33.66)	(5.40)	(24.78)	(317)	(0.00)
11	15.78	33.65	5.46	318	10	15.78	33.65	5.46	24.78	318	0.03
30	15.74	33.65	5.42	317	20	15.76	33.65	5.44	24.79	317	0.06
60	14.46	33.59	4.83	295	30	15.74	33.65	5.42	24.79	317	0.10
70	13.70	33.62	4.50	277	50	15.57	33.64	5.33	24.83	313	0.16
85	12.82	33.68	4.15	256	75	13.10	33.63	4.30	25.33	265	0.23
99	12.25	33.69	3.96	245	100	12.20	33.69	3.92	25.56	244	0.30
115	11.44	33.71	3.69	229	125	11.02	33.75	3.52	25.82	219	0.35
139	10.55	33.84	3.25	204	150	10.21	33.89	2.94	26.07	195	0.41
159	9.96	33.93	2.73	188	200	8.98	34.02	2.33	26.38	166	0.50
189	9.30	34.02	2.43	171	250	8.07	34.07	1.96	26.56	149	0.58
217	8.56	34.03	2.16	159	300	7.57	34.15	1.52	26.69	136	0.65
247	8.10	34.07	1.99	149	400	6.73	34.21	0.92	26.85	121	0.78
296	7.61	34.15	1.57	137	500	6.21	34.30	0.48	27.00	107	0.90
350	7.08	34.16	1.24	129	600	5.62	34.33	0.35	27.09	98	1.01
434	6.56	34.25	0.71	115							
518	6.12	34.31	0.46	105							
603	5.60	34.33	0.35	98							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

100.50

ORCA; January 14, 1960; 0452 GCT; 30°58'N, 118°03.5'W; sounding, 2025 fm; wind, 290°, force 4; weather, partly cloudy; sea, high; wire angle, 07°.

2	15.56	33.67	5.51	311	0	(15.56)	(33.67)	(5.51)	(24.85)	(311)	(0.00)
12	15.58	33.68	5.53	311	10	15.58	33.68	5.53	24.85	311	0.03
31	15.58	33.66	5.53	312	20	15.58	33.67	5.53	24.85	311	0.06
61	14.64	33.64	5.02	295	30	15.58	33.66	5.53	24.84	312	0.09
71	13.46	33.63	4.62	272	50	15.57	33.66	5.52	24.84	312	0.16
85	11.95	33.67	4.21	241	75	13.09	33.64	4.51	25.34	264	0.23
100	11.28	33.69	3.87	228	100	11.28	33.69	3.87	25.72	228	0.29
115	10.56	33.70	3.69	216	125	10.22	33.72	3.57	25.94	208	0.35
140	9.80	33.80	3.28	195	150	9.54	33.86	3.07	26.17	186	0.40
160	9.34	33.92	2.86	179	200	9.12	34.03	2.38	26.36	168	0.48
190	9.16	33.98	2.58	172	250	8.54	34.14	1.74	26.55	150	0.57
220	9.08	34.13	2.00	160	300	8.04	34.26	1.22	26.71	134	0.64
249	8.56	34.14	1.76	150	400	7.35	34.30	0.73	26.84	122	0.77
297	8.05	34.25	1.26	135	500	6.27	34.30	0.48	26.99	108	0.89
353	7.84	34.31	0.97	128	600	5.67	34.33	0.35	27.08	99	1.00
437	6.93	34.30	0.58	116							
522	6.10	34.30	0.45	106							
607	5.64	34.33	0.34	98							

100.60

ORCA; January 13, 1960; 1121, 1344 GCT; 30°39'N, 118°39.5'W; sounding, 1750 fm; wind, 290°, force 3; weather, cloudy; sea, very rough; wire angle, 16°, 15°.

1	15.50	33.53	5.52	320	0	(15.50)	(33.53)	(5.52)	(24.76)	(320)	(0.00)
10	15.46	33.53	5.50	320	10	15.46	33.53	5.50	24.76	320	0.03
29	15.48	33.53	5.45	320	20	15.47	33.53	5.47	24.76	320	0.06
58	15.46	33.51	5.49	321	30	15.48	33.53	5.45	24.76	320	0.10
67	15.39	33.53	5.39	318	50	15.47	33.52	5.48	24.75	321	0.16
80	13.04	33.37	5.17	283	75	14.70	33.48	5.31	24.89	307	0.24
94	12.83	33.50	4.92	270	100	12.65	33.53	4.80	25.34	264	0.31
108	12.15	33.57	4.55	252	125	11.09	33.63	4.06	25.71	229	0.37
131	10.78	33.64	3.97	223	150	9.86	33.65	3.85	25.94	207	0.43
150	9.86	33.65	3.85	207	200	8.61	33.91	2.76	26.34	169	0.52
178	9.08	33.82	3.31	182	250	7.76	34.03	1.97	26.57	148	0.60
205	8.51	33.92	2.66	166	300	7.33	34.10	1.45	26.69	136	0.68
232	8.04	34.00	2.17	154	400	6.57	34.18	0.76	26.86	120	0.81
278	7.41	34.06	1.70	140	500	6.00	34.31	0.35	27.03	104	0.93
330	7.26	34.16	1.14	131	600	5.54	34.36	0.32	27.12	95	1.04
410	6.38	34.17	0.69	118	700	5.00	34.41	0.31	27.23	85	1.13
492	6.06	34.30	0.37	106	800	4.61	34.48	0.37	27.33	76	1.22
577	5.57	34.36	0.35	95	1000	3.91	34.50	0.59	27.42	67	1.38
					1200	3.40	34.52	0.78	27.49	60	1.52
385a)	6.84	34.20 1	0.85	122	1500	2.83	34.57	1.16	27.58	52	1.72
481	6.17	34.28 2	0.43	108	2000	2.09	34.64	1.87	27.70	41	2.00
578	5.74	34.34 3	0.29	98	2500	1.82	34.66	2.29	27.74	36	2.24
674	5.14	34.38 1	0.31	88							
768	4.72	34.47 1b)	0.34	77							
960	4.02	34.49 1	0.53	69							
1152	3.51	-	0.72	-							
1342	3.14	34.55 5	0.94	56							
1534	2.77	34.58 2	1.21	50							
1727	2.45	34.62 3	1.49	44							
1919	2.20	34.63 1	1.81	42							
2113	1.98	34.65 0	1.96	39							
2210	1.98	34.63 1u	2.02	-							
2308	1.94	34.65 1	2.18	38							
2405	1.86	34.66 1	2.17	37							
2505	1.82	34.66 1	2.29	36							
2604	1.75	34.68 3u	2.34	-							
2704	1.74	34.66 9	2.40	36							

a) Overlapping casts; reconciliation of property curves when necessary.

b) The use of this value results in an unusual density structure, but nevertheless the value was accepted in drawing the property curve.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 14, 1960; 2130 GCT; 30°20.5'N, 119°27.5'W; sounding, 2150 fm; wind, 220°, force 5; weather, cloudy; sea, very rough; wire angle, 23°.

100.70

1	15.44	33.40	5.63	329	0	(15.44)	(33.40)	(5.63)	(24.66)	(329)	(0.00)
10	15.46	33.40	5.67	329	10	15.46	33.40	5.67	24.66	329	0.03
33	15.40	33.39	5.64	329	20	15.42	33.39	5.66	24.66	329	0.07
51	15.38	33.40	5.60	328	30	15.41	33.39	5.65	24.66	329	0.10
69	15.40	33.40	5.63	328	50	15.38	33.40	5.61	24.67	328	0.16
87	13.28	33.22	5.53	299	75	15.39	33.40	5.63	24.67	328	0.25
100	13.38	33.48	5.33	281	100	13.38	33.48	5.33	25.16	281	0.32
114	12.60	33.53	5.14	263	125	11.93	33.56	5.01	25.51	248	0.39
142	10.98	33.62	4.83	228	150	10.50	33.64	4.63	25.82	218	0.45
159	10.02	33.67	4.38	209	200	8.96	33.85	3.70	26.25	178	0.55
185	9.35	33.77	3.90	190	250	7.89	33.96	2.72	26.50	154	0.64
216	8.55	33.91	3.49	168	300	7.27	34.04	1.98	26.65	140	0.71
242	8.03	33.95	2.92	157	400	6.62	34.18	0.94	26.85	121	0.85
286	7.38	34.01	2.17	144	500	6.06	34.29	0.42	27.01	106	0.97
345	7.02	34.13	1.48	130	600	(5.59)	(34.34)	(0.30)	(27.11)	(96)	(1.08)
437	6.39	34.22	0.65	115							
523	5.94	34.31	0.36	103							
597	5.60	34.34	0.30	96							

ORCA; January 15, 1960; 0310 GCT; 31°01.5'N, 119°58'W; sounding, 2200 fm; wind, 320°, force 4; weather, rain; sea, very rough; wire angle, 09°.

100.80

1	15.79	33.50	5.43	329	0	(15.79)	(33.50)	(5.43)	(24.66)	(329)	(0.00)
11	15.80	33.47	5.40	331	10	15.80	33.47	5.40	24.64	331	0.03
31	15.80	33.47	5.51	331	20	15.80	33.47	5.45	24.64	331	0.07
60	15.76	33.46	5.43	331	30	15.80	33.47	5.51	24.64	331	0.10
70	15.80	33.46	5.42	332	50	15.76	33.47	5.46	24.64	331	0.17
85	15.72	33.47	5.51	329	75	15.79	33.46	5.45	24.63	332	0.25
100	14.16	33.42	5.44	301	100	14.16	33.42	5.44	24.96	301	0.33
114	12.92	33.53	5.12	269	125	11.50	33.55	5.00	25.38	260	0.40
138	11.91	33.64	4.78	242	150	10.96	33.64	4.60	25.75	226	0.46
158	10.34	33.66	4.47	214	200	8.75	33.90	3.65	26.32	172	0.56
187	9.13	33.83	3.91	182	250	7.85	34.03	2.70	26.56	149	0.64
216	8.42	33.96	3.34	162	300	7.19	34.06	1.75	26.68	137	0.72
244	7.96	34.02	2.83	151	400	6.53	34.20	0.82	26.87	119	0.85
292	7.26	34.05	1.87	140	500	5.89	34.30	0.51	27.04	103	0.97
346	6.92	34.15	1.28	127	600	(5.18)	(34.33)	(0.33)	(27.14)	(93)	(1.07)
429	6.33	34.22	0.63	115							
514	5.78	34.31	0.48	101							
598	5.20	34.33	0.33	93							

ORCA; January 15, 1960; 0855 GCT; 29°42'N, 120°31'W; sounding, 2200 fm; wind, 320°, force 4; weather, cloudy; sea, rough; wire angle, 20°.

100.90

2	15.83	33.49	5.51	331	0	(15.83)	(33.49)	(5.51)	(24.64)	(331)	(0.00)
11	15.84	33.48	5.53	331	10	15.84	33.48	5.53	24.64	331	0.03
30	15.85	33.49	5.51	331	20	15.85	33.49	5.52	24.64	331	0.07
58	15.84	33.51	5.53	329	30	15.85	33.49	5.51	24.64	331	0.10
67	15.86	33.48	5.51	332	50	15.85	33.50	5.52	24.65	330	0.17
81	15.64	33.48	5.60	327	75	15.79	33.48	5.54	24.65	330	0.25
94	14.90	33.48	5.60	312	100	14.46	33.48	5.56	24.94	302	0.33
108	13.42	33.47	5.36	283	125	12.21	33.39	5.13	25.32	266	0.40
131	12.12	33.39	5.10	265	150	10.57	33.54	4.47	25.74	226	0.46
148	10.76	33.52	4.57	231	200	8.84	33.83	3.36	26.25	178	0.57
175	9.37	33.70	3.74	196	250	7.87	33.96	2.83	26.50	154	0.65
204	8.76	33.85	3.32	175	300	7.14	34.03	1.84	26.65	140	0.73
230	8.18	33.92	3.13	162	400	6.32	34.13	0.91	26.84	121	0.86
276	7.49	34.00	2.32	146	500	5.61	34.22	0.52	27.01	106	0.98
327	6.82	34.05	1.44	134							
406	6.28	34.13	0.88	121							
487	5.69	34.21	0.55	108							
572	5.28	34.26	0.39	99							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

103.30

ORCA; January 17, 1960; 1105 GCT; 31°04'N, 116°26'W; sounding, 45 fm; wind, 020°, force 2; weather, clear; sea, moderate; wire angle, 00°.

1	14.80	33.57	5.72	303	0	(14.80)	(33.57)	(5.72)	(24.94)	(303)	(0.00)
11	14.80	33.58	5.75	302	10	14.80	33.58	5.75	24.95	302	0.03
31	14.74	33.55	5.65	304	20	14.80	33.57	5.70	24.94	303	0.06
41	14.02	33.62	4.84	284	30	14.75	33.55	5.65	24.93	304	0.09

103.35

ORCA; January 17, 1960; 0758 GCT; 30°53.5'N, 116°45.5'W; sounding, 1150 fm; wind, 270°, force 2; weather, partly cloudy; sea, high; wire angle, 05°.

2	15.82	33.68	5.49	316	0	(15.82)	(33.68)	(5.49)	(24.80)	(316)	(0.00)
12	15.84	33.69	5.43	316	10	15.84	33.69	5.43	24.80	316	0.03
32	15.84	33.75	5.43	312	20	15.84	33.72	5.43	24.81	314	0.06
61	15.58	33.68	5.43	311	30	15.84	33.74	5.43	24.84	312	0.09
71	14.36	33.69	4.65	285	50	15.82	33.74	5.43	24.85	311	0.16
85	13.03	33.71	4.01	258	75	13.80	33.70	4.33	25.24	274	0.23
100	11.86	33.79	3.68	231	100	11.86	33.79	3.68	25.69	231	0.29
114	11.16	33.89	3.05	211	125	10.73	33.97	2.57	26.04	198	0.35
139	10.34	34.07	2.07	184	150	10.22	34.13	1.89	26.26	177	0.40
159	10.14	34.20	1.71	171	200	9.91	34.31	1.24	26.45	159	0.48
188	10.00	34.29	1.32	162	250	9.30	34.36	0.94	26.59	146	0.56
217	9.74	34.33	1.17	155	300	8.61	34.35	0.83	26.69	136	0.63
245	9.38	34.36	0.97	147	400	7.58	34.33	0.54	26.83	123	0.77
294	8.68	34.35	0.86	137	500	6.71	34.36	0.35	26.98	109	0.89
348	8.08	34.30	0.73	132	600	5.88	34.36	0.29	27.08	99	1.00
431	7.30	34.34	0.44	119							
515	6.58	34.36	0.33	107							
600	5.88	34.36	0.29	99							

103.40

ORCA; January 17, 1960; 0442 GCT; 30°45.5'N, 117°05.5'W; sounding, 900 fm; wind, 300°, force 4; weather, partly cloudy; sea, high; wire angle, 10°.

2	16.08	33.73	5.49	318	0	(16.08)	(33.73)	(5.49)	(24.77)	(318)	(0.00)
12	16.10	33.73	5.50	319	10	16.09	33.73	5.50	24.77	319	0.03
31	16.10	33.71	5.48	320	20	16.10	33.72	5.49	24.76	319	0.06
60	16.04	33.72	5.48	318	30	16.10	33.71	5.48	24.76	320	0.10
71	14.30	33.65	4.67	287	50	16.09	33.71	5.48	24.77	319	0.16
85	13.12	33.65	4.43	264	75	13.70	33.65	4.54	25.23	275	0.23
100	12.17	33.70	4.09	243	100	12.17	33.70	4.09	25.56	243	0.30
115	11.70	33.77	3.53	229	125	11.39	33.83	3.14	25.81	219	0.36
139	10.82	33.95	2.68	201	150	10.31	34.00	2.58	26.14	188	0.41
158	10.06	34.02	2.51	183	200	9.66	34.24	1.70	26.43	161	0.50
187	9.80	34.17	1.93	168	250	8.50	34.18	1.73	26.58	147	0.58
215	9.36	34.27	1.60	153	300	8.14	34.23	1.28	26.67	138	0.65
243	8.58	34.18	1.76	148	400	7.13	34.31	0.66	26.88	118	0.78
291	8.21	34.22	1.36	140	500	6.28	34.35	0.36	27.02	105	0.90
346	7.78	34.30	0.94	128	600	(5.70)	(34.38)	(0.31)	(27.12)	(95)	(1.01)
428	6.85	34.31	0.55	114							
512	6.21	34.35	0.36	103							
597	5.72	34.38	0.31	95							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 16, 1960; 2255 GCT; 30°30'N, 117°42'W; sounding, 1500 fm; wind, 310°, force 5; weather, cloudy; sea, high; wire angle, 18°.

103.50

2	16.02	33.72	5.49	318	0	(16.02)	(33.72)	(5.49)	(24.78)	(318)	(0.00)
11	16.04	33.71	5.62	319	10	16.04	33.71	5.62	24.77	319	0.03
35	16.04	33.73	5.68	318	20	16.04	33.71	5.65	24.77	319	0.06
64	16.02	33.73	5.64	317	30	16.04	33.72	5.67	24.78	318	0.10
74	14.48	33.65	5.20	290	50	16.03	33.73	5.66	24.79	317	0.16
92	12.94	33.66	4.77	260	75	14.25	33.65	5.12	25.12	286	0.23
106	11.50	33.66	4.29	234	100	12.00	33.66	4.46	25.57	242	0.30
120	10.78	33.78	3.78	212	125	10.49	33.80	3.70	25.96	206	0.36
148	9.42	33.86	3.47	185	150	9.38	33.87	3.40	26.20	183	0.41
166	9.17	33.92	3.13	176	200	8.77	34.07	2.54	26.45	159	0.49
194	8.80	34.04	2.62	162	250	8.41	34.21	1.76	26.62	143	0.57
227	8.62	34.18	2.07	149	300	7.91	34.29	1.17	26.75	130	0.64
254	8.36	34.22	1.68	142	400	7.06	34.34	0.66	26.91	116	0.77
300	7.91	34.29	1.17	130	500	6.30	34.35	0.40	27.03	104	0.89
362	7.38	34.33	0.84	120	600	5.64	34.39	0.35	27.14	94	0.99
457	6.62	34.34	0.45	109							
546	6.00	34.37	0.38	100							
620	5.52	34.40	0.34	92							

ORCA; January 16, 1960; 1633 GCT; 30°07'N, 118°28'W; sounding, 1650 fm; wind, 310°, force 5; weather, cloudy; sea, very high; wire angle, 25°.

103.60

2	15.76	33.64	5.48	318	0	(15.76)	(33.64)	(5.48)	(24.78)	(318)	(0.00)
10	15.77	33.64	5.49	318	10	15.77	33.64	5.49	24.78	318	0.03
34	15.78	33.63	5.46	318	20	15.78	33.64	5.47	24.78	318	0.06
61	15.77	33.63	5.46	318	30	15.78	33.63	5.46	24.78	318	0.10
70	15.78	33.68	5.43	315	50	15.78	33.63	5.46	24.78	318	0.16
88	13.34	33.46	5.33	282	75	15.78	33.68	5.42	24.81	315	0.24
101	12.66	33.53	5.07	264	100	12.67	33.53	5.08	25.34	265	0.31
113	12.09	33.64	4.89	245	125	10.90	33.71	4.49	25.81	220	0.37
140	10.34	33.75	4.16	208	150	10.30	33.77	3.92	25.96	205	0.43
159	10.26	33.78	3.86	204	200	9.10	33.97	3.04	26.32	172	0.52
185	9.30	33.89	3.45	180	250	8.42	34.14	2.02	26.56	149	0.60
217	8.88	34.04	2.64	163	300	7.82	34.15	1.67	26.66	139	0.68
243	8.52	34.13	2.10	151	400	6.74	34.27	0.90	26.91	116	0.81
288	7.95	34.13	1.79	143	500	6.12	34.34	0.39	27.04	103	0.93
348	7.30	34.31	1.13	120	600	5.56	34.38	0.30	27.12	94	1.03
442	6.38	34.26	0.67	112							
528	6.00	34.37	0.34	100							
603	5.54	34.38	0.29	93							

ORCA; January 15, 1960; 1941 GCT; 29°23.5'N, 119°40'W; sounding, 2200 fm; wind, 320°, force 5; weather, cloudy; sea, very high; wire angle, 34°.

103.80

1	15.90	33.48	5.37	333	0	(15.90)	(33.48)	(5.37)	(24.62)	(333)	(0.00)
10	15.90	33.51	5.42	330	10	15.90	33.51	5.42	24.65	330	0.03
30	15.91	33.52	5.44	330	20	15.90	33.52	5.43	24.65	330	0.07
54	15.90	33.50	5.42	331	30	15.91	33.52	5.44	24.65	330	0.10
63	15.91	33.49	5.44	332	50	15.90	33.50	5.42	24.64	331	0.17
79	15.90	33.50	5.44	331	75	15.90	33.50	5.44	24.64	331	0.25
91	15.85	33.51	5.47	329	100	15.40	33.67	5.51	24.88	308	0.33
101	15.21	33.69	5.51	302	125	14.01	33.80	5.21	25.28	270	0.40
125	14.01	33.80	5.21	270	150	11.47	33.69	4.57	25.68	232	0.47
140	12.18	33.68	4.61	244	200	9.20	33.86	3.83	26.21	182	0.57
164	10.71	33.70	4.54	217	250	8.27	34.05	2.91	26.51	153	0.66
191	9.52	33.81	4.11	190	300	7.73	34.15	1.93	26.66	139	0.73
213	8.84	33.91	3.51	172	400	6.75	34.22	1.03	26.86	120	0.87
252	8.24	34.06	2.87	152	500	6.01	34.32	0.49	27.04	103	0.98
305	7.68	34.15	1.87	138							
390	6.85	34.21	1.10	122							
474	6.15	34.29	0.60	107							
546	5.86	34.38	0.42	97							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

103.90

ORCA; January 15, 1960; 1440 GCT; 29°04'N, 120°00'W; sounding, 2000+ fm; wind, 320°, force 5; weather, cloudy; sea, very rough; wire angle, 25°.

2	16.29	33.55	5.43	336	0	(16.29)	(33.55)	(5.43)	(24.59)	(336)	(0.00)
11	16.30	33.53	5.55	338	10	16.30	33.53	5.55	24.57	338	0.03
29	16.31	33.55	5.68	337	20	16.30	33.54	5.63	24.58	337	0.07
56	16.30	33.53	5.51	338	30	16.31	33.55	5.68	24.58	337	0.10
65	16.33	33.57	5.54	335	50	16.30	33.53	5.54	24.57	338	0.17
78	16.33	33.58	5.51	334	75	16.33	33.58	5.52	24.60	335	0.25
91	15.72	33.82	5.49	304	100	15.28	33.86	5.37	25.05	292	0.33
104	14.96	33.86	5.33	285	125	13.37	33.75	5.33	25.37	261	0.40
126	13.28	33.75	5.33	260	150	11.28	33.73	4.64	25.76	224	0.46
143	11.84	33.75	4.76	233	200	9.18	33.76	4.03	26.14	188	0.57
168	10.22	33.72	4.47	208	250	8.37	33.97	3.12	26.43	161	0.66
195	9.28	33.75	4.08	191	300	7.64	34.03	2.34	26.58	146	0.74
221	8.82	33.86	3.79	175	400	6.84	34.20	1.03	26.83	123	0.88
265	8.13	34.00	2.82	155	500	6.19	34.28	0.52	26.99	108	1.00
314	7.48	34.04	2.17	143							
394	6.88	34.19	1.10	124							
474	6.35	34.27	0.60	111							
556	5.78	34.31	0.35	101							

107.32

ORCA; January 17, 1960; 2106 GCT; 30°26'N, 116°11'W; sounding, 250 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 03°.

1	15.10	33.57	5.69	309	0	(15.10)	(33.57)	(5.69)	(24.87)	(309)	(0.00)
11	15.02	33.58	5.82	307	10	15.02	33.58	5.81	24.89	307	0.03
31	15.00	33.65	5.64	302	20	15.00	33.61	5.74	24.92	304	0.06
51	14.18	33.72	4.66	280	30	15.00	33.64	5.66	24.95	302	0.09
76	12.29	33.86	3.39	233	50	14.40	33.71	4.89	25.12	285	0.15
100	11.37	33.89	2.85	215	75	12.35	33.86	3.42	25.66	234	0.22
125	10.59	33.96	2.56	196	100	11.37	33.88	2.85	25.86	215	0.27
165	9.91	34.11	2.05	174	125	10.59	33.96	2.56	26.06	196	0.32
205	9.27	34.27	1.54	152	150	10.15	34.04	2.24	26.20	183	0.37
254	8.80	34.28	1.27	144	200	9.33	34.27	1.56	26.51	153	0.46
304	8.20	34.29	1.10	134	250	8.83	34.28	1.28	26.60	145	0.53
					300	8.26	34.29	1.12	26.70	135	0.61

107.35

ORCA; January 17, 1960; 2353 GCT; 30°19.5'N, 116°22.5'W; sounding, 1025 fm; wind, direction missing, force 1; weather, clear; sea, rough; wire angle, 03°.

1	16.24	33.79	5.52	318	0	(16.24)	(33.79)	(5.52)	(24.78)	(318)	(0.00)
11	16.02	33.79	5.54	313	10	16.03	33.79	5.54	24.83	313	0.03
31	16.00	33.78	5.51	313	20	16.00	33.78	5.52	24.83	313	0.06
55	15.60	33.74	5.33	307	30	16.00	33.78	5.51	24.83	313	0.09
65	13.72	33.68	4.21	273	50	16.00	33.78	5.51	24.83	313	0.16
75	13.04	33.71	3.84	258	75	13.04	33.71	3.84	25.40	258	0.23
90	12.16	33.78	3.34	236	100	11.88	33.83	3.08	25.72	228	0.29
104	11.73	33.86	2.92	223	125	10.96	33.96	2.44	26.00	202	0.34
129	10.81	33.98	2.37	198	150	10.40	34.05	2.13	26.16	187	0.39
149	10.42	34.04	2.14	187	200	9.70	34.19	1.48	26.39	165	0.48
173	9.97	34.13	1.76	173	250	8.95	34.32	1.06	26.61	144	0.56
204	9.64	34.20	1.43	163	300	8.47	34.31	0.98	26.68	137	0.63
232	9.11	34.30	1.11	147	400	7.38	34.32	0.69	26.85	121	0.77
271	8.78	34.32	1.01	141	500	6.46	34.32	0.39	26.98	109	0.89
330	8.08	34.29	0.94	133							
405	7.32	34.32	0.66	120							
479	6.64	34.32	0.42	111							
558	5.94	34.33	0.32	102							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 18, 1960; 0340 GCT; 30°08.5'N, 116°42.5'W; sounding, 1600 fm; wind, 280°, force 1; weather, clear; sea, rough; wire angle, 06°.

10740

2	15.96	33.72	5.46	316	0	(15.96)	(33.72)	(5.46)	(24.80)	(316)	(0.00)
11	15.94	33.72	5.50	316	10	15.94	33.72	5.49	24.80	316	0.03
31	15.92	33.72	5.40	315	20	15.93	33.72	5.46	24.81	315	0.06
56	15.90	33.71	5.43	316	30	15.92	33.72	5.41	24.81	315	0.09
66	13.79	33.55	4.91	284	50	15.90	33.71	5.42	24.80	316	0.16
76	13.04	33.57	4.62	268	75	13.10	33.57	4.65	25.29	269	0.23
90	12.14	33.66	4.03	245	100	11.99	33.74	3.54	25.64	236	0.30
105	11.93	33.77	3.39	233	125	11.38	33.86	2.96	25.84	217	0.35
130	11.20	33.88	2.81	212	150	10.64	33.98	2.25	26.07	195	0.40
150	10.64	33.98	2.25	195	200	9.85	34.21	1.57	26.38	165	0.50
174	10.18	34.11	1.89	178	250	9.29	34.29	1.20	26.54	151	0.58
203	9.80	34.22	1.52	164	300	8.65	34.30	1.00	26.65	140	0.65
233	9.47	34.26	1.31	156	400	7.35	34.31	0.57	26.85	121	0.79
270	9.09	34.31	1.11	146	500	6.53	34.34	0.43	26.99	108	0.91
329	8.20	34.29	0.89	135							
404	7.31	34.31	0.55	120							
477	6.70	34.33	0.47	111							
558	6.08	34.36	0.33	101							

ORCA; January 18, 1960; 0933 GCT; 29°48.5'N, 117°21'W; sounding, 1575 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 04°.

10750

1	15.75	33.62	5.60	319	0	(15.75)	(33.62)	(5.60)	(24.77)	(319)	(0.00)
11	15.76	33.62	5.61	319	10	15.76	33.62	5.61	24.77	319	0.03
31	15.77	33.63	5.58	319	20	15.77	33.62	5.60	24.77	319	0.06
56	15.74	33.61	5.58	320	30	15.77	33.63	5.59	24.77	319	0.10
65	15.74	33.60	5.58	320	50	15.75	33.62	5.58	24.77	319	0.16
75	14.26	33.51	5.51	296	75	14.26	33.51	5.51	25.01	296	0.24
91	13.13	33.53	5.21	273	100	12.30	33.59	5.00	25.45	254	0.31
104	11.90	33.61	4.88	244	125	10.59	33.65	4.52	25.82	219	0.37
129	10.36	33.66	4.44	214	150	10.00	33.77	3.81	26.02	200	0.42
148	10.04	33.77	3.84	201	200	8.64	33.92	3.06	26.35	168	0.51
173	9.14	33.82	3.56	183	250	8.66	34.16	1.78	26.54	150	0.59
203	8.62	33.93	3.02	167	300	8.35	34.32	1.03	26.71	134	0.67
233	8.66	34.08	2.28	156	400	7.29	34.29	0.66	26.84	122	0.80
271	8.65	-	1.31	-	500	6.49	34.34	0.43	26.99	108	0.92
330	7.98	34.32	0.83	129							
403	7.26	34.29	0.64	122							
479	6.64	34.33	0.46	110							
559	6.04	34.38	0.32	100							

ORCA; January 18, 1960; 1557, 1617 GCT; 29°25'N, 117°57.5'W; sounding, 1800 fm; wind, 300°, force 2; weather, partly cloudy; sea, moderate; wire angle, 02°, 03°.

10760

1	15.69	33.53	5.68	324	0	(15.69)	(33.53)	(5.68)	(24.72)	(324)	(0.00)
12	15.71	33.55	5.77	323	10	15.71	33.55	5.76	24.73	323	0.03
32	15.70	33.53	5.78	324	20	15.71	33.54	5.77	24.72	324	0.06
56	15.70	33.54	5.73	324	30	15.70	33.53	5.78	24.72	324	0.10
66	15.72	33.57	5.78	322	50	15.70	33.54	5.75	24.72	324	0.16
76	15.70	33.55	5.77	323	75	15.70	33.55	5.77	24.73	323	0.24
92	14.60	33.67	5.67	292	100	13.55	33.63	5.47	25.25	273	0.32
105	13.09	33.62	5.36	265	125	12.09	33.64	5.06	25.54	245	0.38
130	11.42	33.63	4.88	235	150	9.97	33.73	4.54	26.00	202	0.44
					200	8.81	33.92	3.81	26.33	170	0.54
151	9.90	33.74	4.53	201	250	8.34	34.06		26.50	154	0.62
175	9.20	33.86	4.10	181	300	7.87	34.14		26.64	141	0.70
206	8.73	33.94	3.72	168	400	7.00	34.25	1.00	26.85	121	0.83
236	8.40	34.02	2.97	158	500	6.22	34.32	0.54	27.01	106	0.95
274	8.21	34.11	2.14a)	148							
333	7.40	34.18	1.49a)	132							
409	6.96	34.26	0.92	120							
484	6.35	34.32	0.57	108							
564	5.79	34.32	0.41	100							

a) Oxygen samples at 274 and 333 meters appear to have been reversed; they are assumed to be listed in correct order.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

107.70

ORCA; January 18, 1960; 2156 GCT; 29°12'N, 118°40'W; sounding, 560 fm; wind, 320°, force 1; weather, cloudy; sea, rough; wire angle, 00°.

1	16.58	33.85	5.47	320	0	(16.58)	(33.85)	(5.47)	(24.75)	(320)	(0.00)
11	16.58	33.91u	5.48	-	10	16.58	33.85	5.48	24.75	321	0.03
31	16.56	33.84	5.45	321	20	16.57	33.84	5.47	24.75	321	0.06
56	16.55	33.86	5.42	319	30	16.56	33.84	5.45	24.75	321	0.10
65	16.57	33.86	5.43	319	50	16.55	33.86	5.43	24.76	319	0.16
75	16.57	33.87	5.43	319	75	16.57	33.87	5.43	24.75	319	0.24
90	16.57	33.87	5.39	319	100	15.30	33.83	4.73	25.03	294	0.32
105	14.44	33.82	4.28	277	125	12.90	33.84	3.40	25.53	246	0.39
131	12.64	33.87	3.16	239	150	12.14	33.99	2.58	25.80	221	0.44
150	12.14	33.99	2.58	221	200	10.80	34.08	2.07	26.11	191	0.55
174	11.38	34.04	2.35	204	250	9.85	34.40	1.36	26.52	152	0.64
205	10.70	34.09	2.12	188	300	9.20	34.41	1.02	26.64	140	0.71
235	10.10	34.34	1.54	160	400	7.97	34.42	0.62	26.85	121	0.85
273	9.48	34.42	1.13	144	500	7.13	34.40	0.41	26.95	111	0.97
333	8.94	34.40	0.92	137							
408	7.84	34.42	0.59	120							
483	7.28	34.40	0.43	114							
563	6.52	34.43	0.34	101							

107.80

ORCA; January 19, 1960; 0321 GCT; 28°52'N, 119°19'W; sounding, 2150 fm; wind, calm; weather, partly cloudy; sea, moderate; wire angle, 05°.

1	16.42	33.82	5.37	319	0	(16.42)	(33.82)	(5.37)	(24.76)	(319)	(0.00)
11	16.44	33.82	5.39	320	10	16.43	33.82	5.39	24.76	320	0.03
31	16.44	33.82	5.40	320	20	16.44	33.82	5.40	24.76	320	0.06
55	16.44	33.82	5.36	320	30	16.44	33.82	5.40	24.76	320	0.10
65	16.44	33.82	5.37	320	50	16.44	33.82	5.37	24.76	320	0.16
75	16.44	33.80	5.33	321	75	16.44	33.80	5.33	24.75	321	0.24
89	13.98	33.75	4.48	273	100	12.89	33.75	4.02	25.47	252	0.31
103	12.65	33.75	3.92	248	125	11.47	33.80	3.70	25.78	222	0.37
129	11.21	33.83	3.63	216	150	10.82	33.98	2.58	26.03	199	0.43
148	10.85	33.96	2.63	200	200	10.31	34.24	1.65	26.32	171	0.52
173	10.49	34.12	2.10	182	250	9.63	34.35	1.07	26.52	152	0.60
203	10.28	34.26	1.56	168	300	8.95	34.38	0.90	26.66	139	0.68
231	9.93	34.34	1.17	157	400	7.62	34.42	0.68	26.89	117	0.81
270	9.32	34.34	1.00	147	500	6.69	34.40	0.32	27.02	105	0.93
329	8.56	34.40	0.81	131							
403	7.58	34.42	0.67	116							
478	6.84	34.40	0.37	108							
557	6.35	34.41	0.24	100							

107.90

ORCA; January 19, 1960; 0850 GCT; 28°31'N, 119°57'W; sounding, 2275 fm; wind, 300°, force 2; weather, cloudy; sea, moderate; wire angle, 11°.

1	16.62	33.78	5.42	326	0	(16.62)	(33.78)	(5.42)	(24.69)	(326)	(0.00)
11	16.64	33.77	5.54	328	10	16.64	33.77	5.53	24.67	328	0.03
31	16.64	33.77	5.48	328	20	16.64	33.77	5.51	24.67	328	0.07
56	16.69	33.78	5.48	328	30	16.64	33.77	5.49	24.67	328	0.10
66	16.69	33.78	5.46	328	50	16.68	33.78	5.48	24.67	328	0.16
75	16.70	33.80	5.41	326	75	16.70	33.80	5.41	24.69	326	0.25
89	14.76	33.67	5.48	295	100	14.32	33.70	5.28	25.14	284	0.32
104	13.90	33.70	5.08	275	125	12.10	33.62	4.87	25.52	247	0.39
128	12.08	33.63	4.86	246	150	10.63	33.68	4.59	25.84	217	0.45
147	10.74	33.68	4.63	219	200	9.00	33.86	3.94	26.24	178	0.55
171	9.88	33.71	4.28	203	250	8.57	34.09	2.18	26.49	155	0.64
200	9.00	33.86	3.94	178	300	7.62	34.11	1.85	26.65	140	0.71
229	8.98	34.04	2.37	164	400	6.80	34.23	0.90	26.86	120	0.85
266	8.24	34.13	2.05	147	500	6.28	34.34	0.40	27.02	105	0.96
325	7.20	34.09	1.68	136							
397	6.82	34.23	0.91	120							
471	6.44	34.30	0.45	110							
551	6.04	34.40	0.34	98							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 21, 1960; 1837 GCT; 29°50.5'N, 115°52.5'W; sounding, 50 fm; wind, 090°, force 3; weather, cloudy; sea, slight; wire angle, 00°.

110.33

2	15.08	33.65	5.74	303	0	(15.08)	(33.65)	(5.74)	(24.94)	(303)	(0.00)
12	15.05	33.61	5.73	306	10	15.05	33.61	5.73	24.91	306	0.03
31	15.02	33.67	5.65	300	20	15.04	33.62	5.72	24.92	305	0.06
52	14.24	33.69	4.39	283	30	15.02	33.67	5.66	24.96	301	0.09
77	12.34	33.79	3.14	240	50	14.45	33.69	4.72	25.10	287	0.15
					75	12.55	33.78	3.25	25.55	244	0.22

ORCA; January 21, 1960; 1652 GCT; 29°47'N, 116°01.5'W; sounding, 650 fm; wind, 080°, force 3; weather, partly cloudy; sea, slight; wire angle, 13°.

110.35

1	15.70	33.69	5.62	313	0	(15.70)	(33.69)	(5.62)	(24.83)	(313)	(0.00)
10	15.72	33.68	5.61	314	10	15.72	33.68	5.61	24.82	314	0.03
30	15.69	33.68	5.55	313	20	15.75	33.69	5.59	24.82	314	0.06
60	14.44	33.66	4.62	289	30	15.69	33.68	5.55	24.83	313	0.09
70	13.80	33.68	4.15	275	50	15.21	33.67	5.16	24.92	304	0.16
84	12.52	33.69	3.80	250	75	13.34	33.68	3.98	25.33	266	0.23
98	11.46	33.86	2.72	218	100	11.41	33.88	2.64	25.85	216	0.29
112	11.18	33.97	2.18	205	125	10.83	34.01	2.17	26.06	196	0.34
136	10.52	34.04	2.15	189	150	10.22	34.06	2.13	26.20	182	0.39
155	10.12	34.07	2.10	180	200	9.65	34.28	1.31	26.47	157	0.48
183	9.88	34.21	1.54	166	250	9.09	34.32	0.90	26.59	146	0.55
211	9.47	34.31	1.21	152	300	8.28	34.33	0.84	26.72	133	0.62
238	9.27	34.32	0.94	148	400	7.45	34.30	0.66	26.83	123	0.76
284	8.44	34.34	0.87	134	500	6.48	34.34	0.39	26.99	108	0.88
336	7.98	34.29	0.79	131	600	(5.92)	(34.34)		(27.07)	(100)	(0.99)
419	7.30	34.31	0.62	120							
501	6.47	34.34	0.38	108							
586	5.96	34.34	0.29	101							

ORCA; January 21, 1960; 1339 GCT; 29°40'N, 116°22'W; sounding, 1200 fm; wind, 080°, force 1; weather, clear; sea, slight; wire angle, 07°.

110.40

0	15.95	33.81	5.49	309	0	15.95	33.81	5.49	24.87	309	0.00
10	15.96	33.78	5.51	312	10	15.96	33.78	5.51	24.84	312	0.03
30	15.97	33.80	5.51	310	20	15.96	33.79	5.51	24.85	311	0.06
56	15.95	33.79	5.46	311	30	15.97	33.80	5.51	24.86	310	0.09
65	15.03	33.78	4.55	292	50	15.96	33.79	5.46	24.85	311	0.16
75	14.46	33.79	4.25	280	75	14.46	33.78	4.25	25.18	280	0.23
89	13.16	33.79	3.53	254	100	12.38	33.78	3.37	25.58	241	0.30
104	12.11	33.78	3.32	236	125	10.97	33.91	2.82	25.95	206	0.35
128	10.90	33.92	2.77	204	150	10.74	34.01	2.33	26.07	195	0.40
148	10.76	34.00	2.35	196	200	9.82	34.16	1.75	26.34	169	0.50
172	10.32	34.09	2.01	182	250	9.23	34.27	1.30	26.54	151	0.58
201	9.80	34.16	1.73	168	300	8.52	34.28	1.10	26.66	139	0.65
230	9.43	34.23	1.46	158	400	7.33	34.28	0.64	26.83	123	0.79
269	9.04	34.31	1.17	146	500	6.48	34.33	0.44	26.99	108	0.91
325	8.09	34.26	1.06	135							
399	7.34	34.28	0.65	124							
472	6.70	34.32	0.48	112							
552	6.09	34.34	0.37	103							

S10

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ_T	Z	T	S	O ₂	σ_t	δ_T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

110.50

ORCA; January 21, 1960; 0743 GCT; 29°18'N, 117°01.5'W; sounding, 1700 fm; wind, direction missing, force 1; weather, clear; sea, slight; wire angle, 00°.

1	15.99	33.74	5.58	315	0	(15.99)	(33.74)	(5.58)	(24.81)	(315)	(0.00)
11	16.03	33.77	5.66	314	10	16.03	33.77	5.66	24.82	314	0.03
31	16.00	33.80	5.65	311	20	16.02	33.78	5.66	24.83	313	0.06
55	16.02	33.82	5.64	311	30	16.00	33.80	5.65	24.85	311	0.09
65	16.04	33.84	5.60	309	50	16.01	33.81	5.64	24.85	311	0.16
75	15.58	33.77	5.51	304	75	15.58	33.77	5.51	24.92	304	0.23
90	13.32	33.59	5.22	272	100	12.39	33.62	5.00	25.46	253	0.30
104	12.05	33.64	4.87	245	125	10.62	33.67	4.24	25.83	218	0.36
129	10.36	33.68	4.09	212	150	9.77	33.81	3.26	26.08	194	0.42
149	9.78	33.81	3.27	194	200	9.73	34.18	1.82	26.38	166	0.51
173	9.60	33.97	2.70	179	250	9.02	34.25	1.40	26.56	149	0.59
203	9.74	34.20	1.71	164	300	8.42	34.30	1.09	26.68	137	0.66
233	9.20	34.23	1.54	154	400	7.22	34.30	0.67	26.86	120	0.80
272	8.82	34.29	1.17	144	500	6.32	34.31	0.45	26.99	108	0.92
331	7.90	34.29	1.00	130							
406	7.18	34.30	0.64	120							
481	6.48	34.30	0.48	110							
561	5.94	34.36	0.33	100							

110.60

ORCA; January 20, 1960; 0735 GCT; 28°54.5'N, 117°38.5'W; sounding, 1910 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 07°.

1	15.62	33.51	5.52	324	0	(15.62)	(33.51)	(5.52)	(24.71)	(324)	(0.00)
11	15.64	33.49	5.56	326	10	15.64	33.49	5.56	24.69	326	0.03
30	15.63	33.50	5.57	325	20	15.64	33.49	5.56	24.69	326	0.07
56	15.66	33.48	5.55	327	30	15.63	33.50	5.57	24.70	325	0.10
66	15.68	33.53	5.54	324	50	15.64	33.49	5.56	24.68	327	0.16
75	15.67	33.50	5.53	326	75	15.67	33.50	5.53	24.69	326	0.24
89	13.84	33.37	5.56	298	100	13.00	33.47	5.26	25.23	275	0.32
105	13.24	33.56	5.22	273	125	11.99	33.79	3.77	25.67	233	0.38
129	11.68	33.77	3.56	228	150	9.89	33.68	4.33	25.96	205	0.44
147	9.96	33.66	4.34	208	200	9.53	33.97	2.62	26.24	179	0.54
172	9.46	33.76	4.19	192	250	8.79	34.06	2.29	26.44	160	0.62
201	9.54	33.97	2.61	178	300	7.87	34.11	1.73	26.62	143	0.70
237	9.04	34.02	2.43	167	400	6.90	34.19	0.91	26.82	124	0.84
268	8.21	34.07	2.01	151	500	6.51	34.30	0.45	26.96	110	0.96
326	7.63	34.14	1.51	138							
400	6.90	34.19	0.91	124							
476	6.72	34.30	0.49	114							
556	5.80	34.29	0.41	103							

110.60

ORCA; January 20, 1960; 0955 GCT; ^{a)} 28°54.5'N, 117°38.5'W; sounding, 1910 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 04°.

70	15.63	33.47	5.54	327							
90	13.64	33.34	5.53	297							
95	13.88	33.52	5.38	288							
100	13.64	33.56	5.21	280							
105	12.96	33.53	5.06	270							
110	13.02	33.70	4.08	258							
115	12.67	33.71	3.83	250							
120	12.18	33.71	3.85	242							
125	11.81	33.77	3.46	231							
130	11.58	33.80	3.24	224							
135	11.54	33.85	2.85	220							
140	11.43	33.88	2.76	216							
145	11.34	33.91	2.61	212							
150	11.28	33.93	2.56	210							
155	11.14	33.94	2.58	206							
160	11.25	34.00	2.26	204							
199	10.10	34.10	2.01	178							
219	9.72	34.14	1.86	168							

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a) This special cast was made for close coverage of temperature inversions indicated by the bathythermograph observation. Note that the values of δ_t are very close to those of the regular cast for this station although the temperature and salinity values differ below 125 meters.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 20, 1960; 0136 GCT; 28°36'N, 118°19.5'W; sounding, 1940 fm; wind, 030°, force 1; weather, partly cloudy; sea, rough; wire angle, 00°.

110.70

0	16.10	33.69	5.33	322	0	16.10	33.69	5.33	24.74	322	0.00
11	16.12	33.69	5.40	322	10	16.12	33.69	5.40	24.74	322	0.03
30	16.11	33.70	5.41	321	20	16.12	33.69	5.40	24.74	322	0.06
55	16.02	33.66	5.37	322	30	16.11	33.70	5.41	24.75	321	0.10
65	16.02	33.75u	5.34	-	50	16.04	33.67	5.38	24.74	322	0.16
75	15.98	33.66	5.35	321	75	15.98	33.66	5.35	24.75	321	0.24
89	14.44	33.62	5.09	292	100	13.62	33.67	4.39	25.26	272	0.32
104	13.39	33.69	4.14	266	125	12.29	33.82	3.05	25.63	236	0.38
128	12.12	33.84	2.88	231	150	11.70	33.98	2.21	25.88	213	0.44
148	11.74	33.98	2.21	214	200	10.77	34.14	1.76	26.17	186	0.54
174	11.00	34.00	2.21	200	250	9.92	34.29	1.22	26.44	160	0.63
203	10.74	34.16	1.68	184	300	9.06	34.30	1.04	26.58	147	0.71
232	10.32	34.29	1.31	167	400	7.91	34.33	0.51	26.78	127	0.85
271	9.42	34.29	1.14	153	500	6.81	34.35	0.37	26.95	111	0.98
330	8.71	34.30	0.90	141							
405	7.85	34.33	0.49	126							
480	7.00	34.34	0.40	114							
560	6.26	34.39	0.28	101							

ORCA; January 19, 1960; 2017 GCT; 28°21'N, 118°57.5'W; sounding, 2175 fm; wind, 320°, force 1; weather, cloudy; sea, rough; wire angle, 00°.

110.80

1	16.83	33.75	5.43	334	0	(16.83)	(33.75)	(5.43)	(24.61)	(334)	(0.00)
11	16.62	33.84u	5.46	-	10	16.63	33.77	5.45	24.68	327	0.03
32	16.60	33.77	5.47	327	20	16.61	33.77	5.46	24.68	327	0.07
56	16.58	33.72	5.45	330	30	16.60	33.77	5.47	24.68	327	0.10
67	16.63	33.77	5.44	327	50	16.58	33.73	5.46	24.66	329	0.16
77	16.58	33.77	5.46	326	75	16.60	33.77	5.45	24.69	326	0.25
92	14.67	33.68	4.99	292	100	13.85	33.74	4.77	25.27	271	0.32
106	13.40	33.78	4.68	260	125	12.79	33.78	4.47	25.62	237	0.39
131	11.88	33.78	4.42	231	150	10.63	33.82	3.97	25.94	207	0.44
150	10.63	33.82	3.97	207	200	9.50	34.01	2.85	26.28	175	0.54
175	10.09	33.86	3.60	195	250	8.80	34.19	1.86	26.54	151	0.62
204	9.39	34.03	2.69	172	300	8.29	34.28	1.29	26.69	136	0.70
234	8.94	34.14	2.11	156	400	7.29	34.37	0.61	26.90	116	0.83
272	8.62	34.25	1.54	144	500	6.60	34.43	0.38	27.05	102	0.94
331	7.97	34.32	1.06	129							
405	7.25	34.37	0.59	115							
480	6.76	34.42	0.40	105							
560	6.08	34.45	0.33	94							

ORCA; January 19, 1960; 1401 GCT; 27°53'N, 119°36'W; sounding, 2290 fm; wind, 320°, force 1; weather, partly cloudy; sea, moderate; wire angle, 05°.

110.90

1	16.62	33.84	5.49	322	0	(16.62)	(33.84)	(5.49)	(24.74)	(322)	(0.00)
11	16.66	33.86	5.50	321	10	16.65	33.86	5.50	24.75	321	0.03
31	16.64	33.82	5.54	324	20	16.65	33.84	5.52	24.73	323	0.06
56	16.66	33.84	5.62	323	30	16.64	33.82	5.54	24.72	324	0.10
65	16.68	33.84	5.56	323	50	16.65	33.83	5.60	24.72	323	0.16
75	16.62	33.84	5.52	322	75	16.62	33.84	5.52	24.74	322	0.24
90	13.04	33.68	4.19	260	100	12.42	33.68	3.84	25.50	249	0.32
105	12.13	33.69	3.64	242	125	11.12	33.81	3.48	25.85	216	0.37
129	10.95	33.84	3.47	211	150	10.14	33.93	3.01	26.11	191	0.42
150	10.14	33.93	3.01	191	200	9.58	34.13	2.25	26.36	167	0.52
174	9.82	33.98	2.77	182	250	8.65	34.30	1.49	26.65	140	0.60
202	9.55	34.14	2.19	166	300	8.29	34.39	1.05	26.78	128	0.66
231	8.81	34.21	1.76	149	400	7.24	34.41	0.53	26.94	113	0.79
270	8.52	34.40	1.19	130	500	6.06	34.35	0.41	27.05	102	0.90
329	7.98	34.35	0.90	126							
403	7.21	34.41	0.51	112							
478	6.24	34.34	0.43	104							
557	5.73	34.42	0.31	92							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

113.30

ORCA; January 22, 1960; 0115 GCT; 29°22'N, 115°17'W; sounding, 35 fm; wind, 290°, force 3; weather, partly cloudy; sea, slight; wire angle, 03°.

1	15.93	33.85	5.73	306	0	(15.93)	(33.85)	(5.73)	(24.90)	(306)	(0.00)
11	15.66	33.85	5.77	300	10	15.67	33.85	5.77	24.96	300	0.03
31	15.72	33.86	5.64	300	20	15.68	33.85	5.77	24.95	300	0.06
42	15.80	33.89	5.62	300	30	15.72	33.86	5.65	24.96	300	0.09

113.35

ORCA; January 22, 1960; 0408 GCT; 29°12'N, 115°38.5'W; sounding, 825 fm; wind, 290°, force 2; weather, clear; sea, slight; wire angle, 25°.

1	16.03	33.74	5.51	316	0	(16.03)	(33.74)	(5.51)	(24.79)	(316)	(0.00)
10	16.05	33.73	5.55	318	10	16.05	33.73	5.55	24.78	318	0.03
28	15.96	33.75	5.54	314	20	16.01	33.73	5.55	24.80	316	0.06
56	15.42	33.68	5.66	308	30	15.92	33.74	5.56	24.83	313	0.09
65	14.90	33.66	5.31	298	50	15.46	33.68	5.65	24.87	309	0.16
78	13.47	33.58	4.83	276	75	13.48	33.57	4.85	25.22	276	0.23
91	12.54	33.76	3.22	245	100	12.21	33.80	2.89	25.64	236	0.30
104	12.10	33.81	2.80	233	125	11.26	33.98	2.41	25.96	206	0.35
125	11.26	33.98	2.41	206	150	10.82	34.14	1.90	26.16	186	0.41
143	10.96	34.13	1.95	190	200	10.18	34.26	1.37	26.36	167	0.49
167	10.50	34.16	1.78	180	250	9.17	34.29	1.16	26.56	149	0.57
191	10.30	34.23	1.46	171	300	8.61	34.34	0.95	26.68	137	0.65
215	9.94	34.30	1.24	160	400	7.68	34.33	0.47	26.82	124	0.78
256	9.03	34.29	1.15	147	500	6.68	34.34	0.31	26.96	110	0.90
303	8.59	34.34	0.93	136							
376	7.98	34.34	0.51	127							
453	7.04	34.32	0.39	116							
535	6.42	34.36	0.25	105							

113.40

ORCA; January 22, 1960; 0705 GCT; 29°02.5'N, 115°57.5'W; sounding, 950 fm; wind, 310°, force 2; weather, clear; sea, slight; wire angle, 08°.

1	16.49	33.78	5.45	323	0	(16.49)	(33.78)	(5.45)	(24.73)	(323)	(0.00)
10	16.50	33.76	5.43	325	10	16.50	33.76	5.43	24.70	325	0.03
30	16.53	33.75	5.46	326	20	16.51	33.75	5.45	24.69	326	0.06
60	15.66	33.69	5.40	312	30	16.53	33.75	5.46	24.69	326	0.10
71	14.55	33.58	5.26	298	50	16.36	33.74	5.45	24.71	324	0.16
84	13.11	33.55	4.95	271	75	14.03	33.57	5.16	25.09	288	0.24
99	12.42	33.64	4.26	252	100	12.39	33.64	4.24	25.48	251	0.31
115	11.20	33.63	3.63	231	125	10.61	33.70	3.39	25.86	215	0.37
139	10.22	33.82	3.19	200	150	10.31	33.92	2.82	26.08	194	0.42
158	10.40	34.00	2.37	190	200	10.09	34.19	1.68	26.32	171	0.51
188	10.14	34.18	1.75	172	250	9.62	34.36	1.06	26.54	151	0.59
217	10.04	34.20	1.59	169	300	8.91	34.37	0.85	26.66	139	0.67
245	9.68	34.34	1.10	153	400	7.58	34.38	0.44	26.87	119	0.80
294	8.99	34.37	0.89	140	500	6.62	34.37	0.33	27.00	107	0.92
345	8.28	34.40	0.56	127	600	(5.88)	(34.39)	(0.28)	(27.11)	(96)	(1.03)
428	7.26	34.36	0.41	116							
513	6.52	34.38	0.29	105							
597	5.90	34.39	0.28	97							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 22, 1960; 1256 GCT; 28°37.5'N, 116°32'W; sounding, 1900 fm; wind, 330°, force 3; weather, clear; sea, slight; wire angle, 15°.

113.50

2	16.51	33.75	5.42	326	0	(16.51)	(33.75)	(5.42)	(24.69)	(326)	(0.00)
11	16.50	33.73	5.45	327	10	16.50	33.73	5.45	24.68	327	0.03
29	16.52	33.73	5.43	327	20	16.50	33.73	5.44	24.68	327	0.07
58	16.50	33.73	5.43	327	30	16.52	33.73	5.43	24.68	327	0.10
67	16.52	33.74	5.42	327	50	16.50	33.73	5.43	24.68	327	0.16
82	14.61	33.68	4.52	291	75	15.28	33.71	4.79	24.94	303	0.24
95	13.62	33.63	4.65	275	100	13.31	33.63	4.61	25.29	269	0.32
109	12.78	33.64	4.46	258	125	11.90	33.72	3.75	25.64	236	0.38
133	11.48	33.75	3.43	227	150	10.78	33.76	3.31	25.87	214	0.44
150	10.78	33.76	3.31	214	200	10.05	34.14	1.80	26.29	174	0.53
178	10.00	33.95	2.66	187	250	9.32	34.25	1.32	26.50	154	0.62
205	10.06	34.17	1.65	172	300	8.78	34.33	0.89	26.65	140	0.70
232	9.58	34.22	1.46	160	400	7.72	34.35	0.46	26.83	123	0.83
279	8.94	34.29	1.06	146	500	6.61	34.33	0.31	26.97	110	0.95
330	8.58	34.38	0.64	133	600	(5.84)	(34.34)		(27.07)	(100)	(1.06)
412	7.54	34.34	0.45	122							
497	6.64	34.33	0.32	110							
580	5.96	34.34	0.25	101							

ORCA; January 22, 1960; 1835, 2028 GCT; 28°14.5'N, 117°16.5'W; sounding, 2100 fm; wind, 310°, force 3; weather, partly cloudy; sea, rough; wire angle, 10°, 15°.

113.60

1	16.34	33.68	5.39	328	0	(16.34)	(33.68)	(5.39)	(24.68)	(328)	(0.00)
11	16.28	33.66	5.48	328	10	16.28	33.66	5.48	24.68	328	0.03
30	16.28	33.65	5.47	328	20	16.28	33.65	5.47	24.68	328	0.07
61	16.26	33.69	5.47	325	30	16.28	33.65	5.47	24.68	328	0.10
70	16.28	33.69	5.47	326	50	16.27	33.68	5.47	24.69	326	0.16
85	16.26	33.68	5.42	326	75	16.28	33.69	5.45	24.70	326	0.25
99	13.69	33.57	5.24	280	100	13.69	33.58	5.23	25.18	280	0.32
114	12.98	33.64	4.93	262	125	12.41	33.66	4.72	25.49	250	0.39
138	11.48	33.68	4.40	232	150	10.58	33.71	4.03	25.86	215	0.45
156	10.20	33.72	3.83	207	200	9.08	33.94	2.90	26.30	174	0.55
185	9.36	33.86	3.19	184	250	8.73	34.12	1.86	26.50	154	0.63
214	8.83	34.00	2.61	165	300	8.08	34.22	1.35	26.67	138	0.71
241	8.83	34.11	1.97	157	400	7.45	34.36	0.58	26.87	119	0.84
289	8.18	34.19	1.46	142	500	6.61	34.38	0.36	27.01	106	0.96
342	7.80	34.32	0.92	126	600	5.73	34.35	0.28	27.10	97	1.07
424	7.26	34.36	0.47	116	700	5.16	34.38	0.30	27.20	88	1.17
508	6.54	34.38	0.35	105	800	4.69	34.42	0.36	27.28	80	1.26
590	5.82	34.36	0.28	98	1000	3.99	34.50	0.58	27.41	68	1.42
					1200	3.51	34.53	0.76	27.48	61	1.57
391a)	7.82	34.35 7	0.46	124	1500	2.81	34.59	1.18	27.60	50	1.76
489	6.55	34.31 8	0.39	110	2000	2.13	34.63	1.86	27.69	41	2.05
588	5.80	34.35 6	0.28	98	2500	1.80	34.66	2.40	27.74	37	2.28
780	4.78	34.41 8	0.34	82	3000	1.64	34.67	2.63	27.76	34	2.51
971	4.08	34.49 1	0.56	69							
1163	3.60	34.52 9	0.70	62							
1353	3.13	34.56 9	0.98	54							
1546	2.72	34.59 6	1.24	49							
1737	2.44	34.61 5	1.55	45							
1932	2.21	34.62 9	1.76	42							
2125	2.03	34.64 4	2.04	40							
2319	1.92	34.65 5	2.23	38							
2515	1.80	34.66 2	2.40	37							
2711	1.70	34.66 8	2.51	35							
2809	1.68	34.66 9	2.66	35							
2908	1.66	34.67 2	2.59	34							
3010	1.64	34.67 2	2.64	34							
3110	1.64	34.66 9	2.69	34							

a) Overlapping casts; reconciliation of property curves when necessary.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

113.70

ORCA; January 23, 1960; 0203 GCT; 27°57'N, 117°55'W; sounding, 1700 fm; wind, 320°, force 2; weather, partly cloudy; sea, high; wire angle, 04°.

0	17.48	33.94	5.35	334	0	17.48	33.94	5.35	24.61	334	0.00
10	17.49	33.93	5.39	335	10	17.49	33.93	5.39	24.60	335	0.03
31	17.42	33.93	5.35	334	20	17.46	33.93	5.37	24.61	334	0.07
56	17.39	33.93	5.34	333	30	17.42	33.93	5.35	24.61	334	0.10
66	17.40	33.93	5.39	333	50	17.40	33.93	5.34	24.62	333	0.17
76	17.25	33.91	5.31	331	75	17.28	33.91	5.32	24.64	331	0.25
91	15.20	33.86	5.25	290	100	15.02	33.86	5.23	25.10	287	0.33
106	14.25	33.84	5.03	272	125	12.71	33.73	4.72	25.49	250	0.40
130	12.40	33.71	4.66	246	150	11.02	33.73	4.16	25.80	220	0.46
150	11.02	33.73	4.16	220	200	9.46	33.92	2.89	26.22	180	0.56
175	9.94	33.80	3.45	197	250	8.94	34.12	2.04	26.46	158	0.64
205	9.38	33.95	2.77	177	300	8.35	34.23	1.38	26.64	141	0.72
234	9.13	34.05	2.31	166	400	7.34	34.34	0.62	26.87	119	0.86
272	8.64	34.19	1.73	148	500	6.46	34.37	0.38	27.01	106	0.98
331	8.06	34.27	1.01	134							
405	7.30	34.34	0.59	118							
480	6.64	34.36	0.40	108							
560	5.96	34.40	0.34	96							

113.80

ORCA; January 23, 1960; 0653 GCT; 27°41.5'N, 118°30.5'W; sounding, 2200 fm; wind, 340°, force 3; weather, clear; sea, high; wire angle, 11°.

1	16.70	33.84	5.37	324	0	(16.70)	(33.84)	(5.37)	(24.72)	(324)	(0.00)
11	16.70	33.82	5.51	325	10	16.70	33.82	5.50	24.70	325	0.03
30	16.68	33.79	5.44	327	20	16.69	33.80	5.47	24.69	326	0.06
56	16.60	33.82	5.39	323	30	16.68	33.79	5.44	24.68	327	0.10
66	16.50	33.84	5.37	319	50	16.62	33.80	5.41	24.71	324	0.16
75	15.63	33.79	5.25	304	75	15.63	33.79	5.25	24.92	304	0.24
90	13.84	33.74	4.37	271	100	13.20	33.72	4.37	25.38	260	0.31
105	12.60	33.71	4.39	250	125	11.66	33.77	3.42	25.72	228	0.38
129	11.47	33.78	3.22	224	150	10.00	33.72	4.06	25.97	204	0.43
149	10.04	33.71	4.07	206	200	9.47	34.06	2.27	26.33	170	0.52
173	9.40	33.86	3.28	184	250	8.66	34.19	1.60	26.56	149	0.61
202	9.48	34.08	2.20	169	300	7.81	34.19	1.52	26.69	136	0.68
231	9.48	34.25	1.39	156	400	7.28	34.34	0.55	26.88	118	0.81
268	7.90	34.13	1.90	142	500	6.44	34.32	0.36	26.98	108	0.93
325	7.74	34.23	1.16	132							
398	7.30	34.34	0.56	118							
472	6.61	34.32	0.41	110							
550	6.17	34.34	0.29	104							

113.90

ORCA; January 23, 1960; 1155 GCT; 27°26'N, 119°10'W; sounding, 2000+ fm; wind, 020°, force 3; weather, clear; sea, very rough; wire angle, 05°.

1	16.68	33.77	5.49	328	0	(16.68)	(33.77)	(5.49)	(24.67)	(328)	(0.00)
11	16.70	33.77	5.49	328	10	16.70	33.77	5.49	24.67	328	0.03
32	16.68	33.81	5.45	326	20	16.70	33.78	5.48	24.67	328	0.07
62	16.57	33.84	5.37	321	30	16.69	33.81	5.46	24.70	326	0.10
72	16.44	33.80	5.34	321	50	16.63	33.83	5.40	24.73	323	0.16
87	13.13	33.68	4.29	262	75	16.22	33.79	5.28	24.79	317	0.24
102	12.25	33.72	3.86	242	100	12.35	33.71	3.91	25.54	245	0.32
116	11.70	33.73	3.63	232	125	11.22	33.74	3.49	25.78	222	0.37
141	10.34	33.81	3.17	203	150	9.99	33.88	2.93	26.11	191	0.43
160	9.81	33.95	2.76	184	200	9.78	34.16	1.92	26.35	168	0.52
189	9.98	34.14	1.85	172	250	8.34	34.12	1.97	26.55	149	0.60
219	9.12	34.13	2.05	160	300	7.78	34.20	1.51	26.70	135	0.67
247	8.39	34.11	1.99	151	400	6.82	34.30	0.68	26.91	115	0.80
296	7.82	34.19	1.54	136	500	6.26	34.32	0.41	27.01	106	0.92
350	7.16	34.25	0.95	123	600	5.64	34.35	0.30	27.11	96	1.03
434	6.62	34.31	0.56	112							
519	6.14	34.33	0.37	104							
604	5.60	34.35	0.29	96							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

ORCA; January 25, 1960; 0912 GCT; 28°54.5'N, 114°41'W; sounding, 44 fm; wind, 250°, force 2; weather, cloudy; sea, moderate; wire angle, 01°.

117.26

1	16.26	33.87	5.65	312	0	(16.26)	(33.87)	(5.65)	(24.84)	(312)	(0.00)
11	16.24	33.87	5.63	312	10	16.25	33.87	5.63	24.84	312	0.03
31	15.85	33.85	5.83	304	20	16.09	33.86	5.70	24.88	308	0.06
51	14.98	33.81	4.28	289	30	15.87	33.85	5.82	24.92	305	0.09
					50	15.10	33.81	4.50	25.06	291	0.15

ORCA; January 25, 1960; 0712 GCT; 28°48'N, 114°55'W; sounding, 55 fm; wind, 240°, force 3; weather, partly cloudy; sea, moderate; wire angle, 02°.

117.30

1	16.40	33.91	5.56	312	0	(16.40)	(33.91)	(5.56)	(24.84)	(312)	(0.00)
11	16.40	33.87	5.61	315	10	16.40	33.87	5.61	24.81	315	0.03
32	16.34	33.86	5.64	314	20	16.38	33.86	5.62	24.81	315	0.06
52	16.02	33.80	5.54	312	30	16.37	33.86	5.63	24.82	314	0.09
76	14.19	33.68	4.69	282	50	16.06	33.81	5.55	24.84	312	0.16
					75	14.28	33.68	4.72	25.14	284	0.23

ORCA; January 25, 1960; 0425 GCT; 28°37.5'N, 115°17'W; sounding, 120 fm; wind, 310°, force 3; weather, cloudy; sea, moderate; wire angle, 02°.

117.35

1	16.66	34.00	5.43	311	0	(16.66)	(34.00)	(5.43)	(24.85)	(311)	(0.00)
11	16.71	34.00	5.38	312	10	16.70	34.00	5.39	24.84	312	0.03
32	16.78	34.04	5.29	311	20	16.76	34.02	5.36	24.84	312	0.06
50	16.38	33.95	5.32	309	30	16.78	34.04	5.29	24.85	311	0.09
75	14.87	33.86	3.32	283	50	16.38	33.95	5.32	24.87	309	0.16
100	12.59	33.95	2.73	232	75	14.87	33.86	3.32	25.14	283	0.23
124	11.59	34.02	2.34	208	100	12.59	33.95	2.73	25.68	232	0.30
153	11.62	34.29	1.35	190	125	11.58	34.02	2.33	25.94	208	0.35
					150	11.61	34.28	1.36	26.12	190	0.40

ORCA; January 25, 1960; 0055 GCT; 28°26.5'N, 115°35.5'W; sounding, 600 fm; wind, 320°, force 3; weather, cloudy; sea, moderate; wire angle, 10°.

117.40

1	16.68	33.97	5.55	314	0	(16.68)	(33.97)	(5.55)	(24.82)	(314)	(0.00)
11	16.60	33.93	5.57	315	10	16.61	33.93	5.57	24.81	315	0.03
30	16.23	33.86	5.54	312	20	16.53	33.92	5.56	24.82	314	0.06
40	15.80	33.77	5.48	309	30	16.23	33.86	5.54	24.84	312	0.09
56	14.42	33.95	3.08	268	50	14.90	33.89	3.78	25.16	282	0.15
70	13.05	33.95	2.78	240	75	12.93	33.96	2.75	25.62	238	0.22
95	11.98	34.11	2.00	209	100	11.88	34.12	1.95	25.94	207	0.28
114	11.60	34.13	1.85	201	125	11.32	34.17	1.64	26.10	192	0.33
134	11.04	34.25	1.36	182	150	10.81	34.29	1.23	26.28	175	0.37
153	10.78	34.30	1.21	174	200	10.39	34.42	0.76	26.46	158	0.46
182	10.76	34.42	0.83	165	250	9.46	34.40	0.70	26.60	145	0.53
216	9.98	34.42	0.69	152	300	9.11	34.40	0.67	26.65	140	0.61
244	9.52	34.40	0.70	146	400	7.99	34.37	0.54	26.81	125	0.74
293	9.16	34.40	0.68	141	500	6.69	34.35	0.41	26.98	110	0.87
347	8.72	34.38	0.61	135	600	5.98					
431	7.58	34.37	0.50	120							
515	6.53	34.34	0.39	108							
600	5.98	-	-	-							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

117.50

ORCA; January 24, 1960; 1826 GCT; 28°08'N, 116°16.5'W; sounding, 2200 fm; wind, 320°, force 3; weather, overcast; sea, rough; wire angle, 25°.

2	16.44	33.84	5.50	318	0	(16.44)	(33.84)	(5.50)	(24.78)	(318)	(0.00)
10	16.42	33.85	5.57	317	10	16.42	33.85	5.57	24.79	317	0.03
31	16.54	33.93	5.53	314	20	16.49	33.90	5.54	24.81	315	0.06
57	16.50	33.98	5.57	310	30	16.54	33.93	5.53	24.82	314	0.09
64	16.52	33.98	5.44	310	50	16.52	33.97	5.56	24.86	310	0.16
80	13.09	33.68	4.27	261	75	14.00	33.75	4.59	25.24	274	0.23
92	12.62	33.96	3.12	232	100	12.14	33.95	2.98	25.77	224	0.29
106	12.00	33.95	2.94	221	125	12.27	34.19	1.92	25.93	208	0.35
129	12.30	34.25	1.59	205	150	11.56	34.33	1.36	26.18	185	0.40
145	11.72	34.29	1.47	191	200	10.47	34.44	0.86	26.46	158	0.48
170	11.10	34.43	0.92	170	250	9.77	34.42	0.78	26.56	148	0.56
197	10.52	34.44	0.87	159	300	8.98	34.42	0.69	26.69	136	0.64
220	10.12	34.43	0.80	153	400	7.78	34.39	0.52	26.85	121	0.77
260	9.64	34.42	0.78	147	500	6.69	34.34	0.31	26.97	110	0.89
313	8.74	34.42	0.64	133							
397	7.82	34.39	0.53	121							
477	6.90	34.34	0.34	113							
549	6.29	34.37	0.28	103							

117.60

ORCA; January 24, 1960; 1014 GCT; 27°48'N, 116°56'W; sounding, 1900 fm; wind, 020°, force 2; weather, clear; sea, moderate; wire angle, 00°.

1	16.58	33.72	5.49	330	0	(16.58)	(33.72)	(5.49)	(24.65)	(330)	(0.00)
11	16.61	33.73	5.50	330	10	16.60	33.73	5.50	24.65	330	0.03
31	16.61	33.73	5.50	330	20	16.61	33.73	5.50	24.65	330	0.07
61	16.54	33.73	5.50	328	30	16.61	33.73	5.50	24.65	330	0.10
70	16.56	33.75	5.51	327	50	16.57	33.73	5.50	24.66	329	0.16
85	15.56	33.63	5.34	314	75	16.55	33.75	5.51	24.68	327	0.25
100	13.48	33.65	4.63	271	100	13.48	33.65	4.63	25.27	271	0.32
115	12.94	33.69	4.27	257	125	12.39	33.72	4.01	25.54	245	0.39
140	11.44	33.78	3.58	224	150	11.09	33.84	3.27	25.87	214	0.45
160	10.81	33.91	2.84	203	200	10.21	34.12	1.99	26.25	178	0.55
189	10.34	34.07	2.19	184	250	9.68	34.33	1.26	26.50	154	0.63
219	9.98	34.23	1.53	166	300	8.64	34.29	1.15	26.64	141	0.71
248	9.72	34.33	1.26	154	400	7.66	34.34	0.65	26.82	124	0.84
299	8.66	34.29	1.15	141	500	6.49	34.34	0.46	26.98	108	0.97
352	8.26	34.34	0.73	132	600	5.83	34.36	0.29	27.09	98	1.08
437	7.10	34.34	0.60	115							
523	6.30	34.34	0.40	105							
608	5.78	34.36	0.27	98							

117.70

ORCA; January 24, 1960; 0445 GCT; 27°28'N, 117°32.5'W; sounding, 2100 fm; wind, 020°, force 3; weather, overcast; sea, very rough; wire angle, 06°.

1	17.40	33.96	5.36	331	0	(17.40)	(33.96)	(5.36)	(24.64)	(331)	(0.00)
11	17.40	33.95	5.40	331	10	17.40	33.95	5.40	24.64	331	0.03
31	17.41	33.93	5.34	334	20	17.40	33.94	5.36	24.63	332	0.07
62	17.40	33.93	5.35	334	30	17.41	33.93	5.35	24.62	333	0.10
71	17.44	33.98	5.32	330	50	17.40	33.93	5.35	24.62	333	0.17
86	17.44	33.96	5.32	331	75	17.44	33.97	5.32	24.65	330	0.25
101	15.77	33.84	5.33	304	100	16.00	33.85	5.33	24.88	308	0.33
116	14.90	33.87	5.13	283	125	14.19	33.87	4.97	25.30	268	0.40
140	12.52	33.82	4.73	240	150	11.60	33.78	4.53	25.74	226	0.47
160	10.92	33.77	4.19	215	200	9.56	33.86	3.37	26.16	187	0.57
189	9.88	33.82	3.59	194	250	8.78	34.15	1.94	26.50	154	0.66
217	8.10	33.93	2.96	174	300	8.50	34.26	1.24	26.64	141	0.74
245	8.80	34.12	2.04	156	400	7.32	34.30	0.60	26.84	122	0.87
293	8.56	34.25	1.29	142	500	6.50	34.34	0.31	26.98	108	0.99
346	7.88	34.27	0.85	131	600	(5.77)	(34.38)	(0.28)	(27.11)	(96)	(1.10)
428	7.09	34.31	0.49	118							
512	6.41	34.34	0.28	106							
596	5.79	34.38	0.28	96							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; January 23, 1960; 2253 GCT; 27°07'N, 118°09.5'W; sounding, 2250 fm; wind, 020°, force 4; weather, cloudy; sea, very rough; wire angle, 15°.

11780

1	16.89	33.85	5.43	327	0	(16.89)	(33.85)	(5.43)	(24.68)	(327)	(0.00)
10	16.94	33.84	5.44	329	10	16.94	33.84	5.44	24.66	329	0.03
30	16.96	33.89	5.43	326	20	16.95	33.86	5.44	24.67	328	0.07
59	17.00	33.91	5.40	326	30	16.96	33.89	5.43	24.69	326	0.10
68	17.04	33.93	5.40	325	50	16.98	33.90	5.41	24.70	326	0.16
84	16.30	33.96	5.40	306	75	17.03	33.94	5.40	24.71	324	0.24
97	15.66	34.05	5.25	286	100	15.29	34.02	5.20	25.17	280	0.32
113	14.14	33.93	5.02	263	125	13.07	33.86	4.86	25.52	247	0.39
137	11.88	33.80	4.66	230	150	10.99	33.78	4.50	25.85	216	0.45
156	10.64	33.78	4.44	210	200	9.12	33.92	3.52	26.28	175	0.55
185	9.34	33.83	4.04	186	250	8.24	34.10	2.46	26.56	149	0.63
214	8.95	34.00	3.01	167	300	7.87	34.19	1.71	26.68	137	0.70
242	8.34	34.08	2.61	152	400	7.08	34.36	0.60	26.92	114	0.84
290	7.95	34.16	1.91	140	500	6.25	34.40	0.36	27.06	101	0.95
344	7.46	34.31	0.98	123	600	(5.78)	(34.43)	(0.28)	(27.16)	(92)	(1.05)
427	6.92	34.37	0.48	111							
510	6.18	34.40	0.34	99							
594	5.80	34.43	0.28	92							

ORCA; January 23, 1960; 1753 GCT; 26°47'N, 118°44.5'W; sounding, 2200 fm; wind, 340°, force 4; weather, partly cloudy; sea, very rough; wire angle, 10°.

11790

2	16.72	33.73	5.43	332	0	(16.72)	(33.73)	(5.43)	(24.63)	(332)	(0.00)
12	16.70	33.73	5.53	332	10	16.70	33.73	5.50	24.63	332	0.03
31	16.70	33.73	5.49	332	20	16.70	33.73	5.51	24.63	332	0.07
62	16.66	33.72	5.47	332	30	16.70	33.73	5.49	24.63	332	0.10
71	16.68	33.73	5.49	332	50	16.68	33.73	5.48	24.64	332	0.17
86	16.66	33.72	5.49	332	75	16.68	33.73	5.49	24.64	332	0.25
100	16.74	34.15	5.32	302	100	16.74	34.15	5.32	24.94	302	0.33
115	15.36	34.05	5.16	280	125	14.69	34.00	5.07	25.29	269	0.40
140	13.10	33.86	4.83	248	150	11.92	33.78	4.60	25.68	232	0.46
159	10.80	33.73	4.37	217	200	9.38	33.88	3.51	26.21	182	0.57
187	9.82	33.84	3.65	192	250	8.25	34.00	2.66	26.48	156	0.66
217	8.78	33.94	3.40	168	300	7.88	34.15	1.74	26.65	140	0.73
246	8.30	33.99	2.78	158	400	7.30	34.31	0.66	26.85	121	0.87
294	7.89	34.13	1.84	142	500	6.42	34.35	0.37	27.01	106	0.99
347	7.74	34.27	1.03	129	600	(5.73)	(34.38)	(0.33)	(27.12)	(95)	(1.10)
430	6.99	34.31	0.53	116							
513	6.34	34.36	0.35	104							
598	5.76	34.38	0.33	96							

ORCA; January 26, 1960; 0815 GCT; 28°17.5'N, 115°24'W; sounding, 145 fm; wind, 290°, force 2; weather, partly cloudy; sea, moderate; wire angle, 03°.

11839

1	16.43	34.02	5.50	305	0	(16.43)	(34.02)	(5.50)	(24.91)	(305)	(0.00)
11	16.43	34.00	5.52	306	10	16.43	34.00	5.52	24.90	306	0.03
31	16.46	34.05	5.38	304	20	16.44	34.02	5.48	24.91	305	0.06
51	15.97	34.09	4.73	290	30	16.46	34.05	5.38	24.93	304	0.09
76	13.01	34.01	2.94	235	50	16.10	34.08	4.84	25.04	293	0.15
101	11.68	34.17	2.04	199	75	13.12	34.01	3.01	25.62	238	0.22
126	11.42	34.32	1.50	184	100	11.72	34.16	2.05	26.02	200	0.27
166	10.68	34.39	1.19	166	125	11.43	34.32	1.51	26.18	184	0.32
206	10.12	34.43	0.87	153	150	10.99	34.37	1.30	26.30	173	0.37
					200	10.20	34.42	0.94	26.49	155	0.45

ORCA; January 25, 1960; 1848 GCT; 28°17.5'N, 114°51'W; sounding, 60 fm; wind, 310°, force 2; weather, partly cloudy; sea, rough; wire angle, 00°.

11933

1	16.78	34.02	5.40	312	0	(16.78)	(34.02)	(5.40)	(24.84)	(312)	(0.00)
11	16.76	34.03	5.42	311	10	16.76	34.03	5.42	24.85	311	0.03
31	16.72	34.02	5.39	311	20	16.73	34.02	5.40	24.85	311	0.06
51	16.70	34.00	5.35	312	30	16.72	34.02	5.39	24.85	311	0.09
76	16.21	34.02	4.70	300	50	16.70	34.00	5.35	24.84	312	0.16
					75	16.23	34.02	4.73	24.96	301	0.23

SIO

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6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD	
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m	

120.25 ORCA; January 25, 1960; 1339 GCT; 28°25'N, 114°14.5'W; sounding, 33 fm; wind, 280°, force 2; weather, light fog; sea, moderate; wire angle, 03°.

1	16.15	33.95	5.55	304	0	(16.15)	(33.95)	(5.55)	(24.92)	(304)	(0.00)
11	16.16	33.96	5.52	303	10	16.16	33.96	5.52	24.93	303	0.03
31	16.08	33.96	5.28	301	20	16.14	33.96	5.42	24.94	302	0.06
42	15.80	33.97	5.11	294	30	16.09	33.96	5.29	24.96	301	0.09

120.30 ORCA; January 25, 1960; 1634 GCT; 28°13'N, 114°34.5'W; sounding, 55 fm; wind, 290°, force 3; weather, cloudy; sea, rough; wire angle, 02°.

1	16.36	34.00	5.50	305	0	(16.36)	(34.00)	(5.50)	(24.92)	(305)	(0.00)
11	16.36	34.00	5.49	305	10	16.36	34.00	5.49	24.92	305	0.03
31	16.38	34.00	5.41	305	20	16.37	34.00	5.45	24.92	305	0.06
51	16.36	34.00	5.20	305	30	16.38	34.00	5.41	24.91	305	0.09
76	15.78	34.98	5.24	293	50	16.37	34.00	5.21	24.92	305	0.15
					75	15.81	33.98	5.23	25.03	294	0.23

120.35 ORCA; January 25, 1960; 2059 GCT; 28°03'N, 114°55.5'W; sounding, 47 fm; wind, 200°, force 2; weather, partly cloudy; sea, moderate; wire angle, 00°.

1	17.12	34.13	5.43	312	0	(17.12)	(34.13)	(5.43)	(24.84)	(312)	(0.00)
11	16.78	34.11	5.49	306	10	16.79	34.11	5.48	24.90	306	0.03
31	16.73	34.14	5.43	302	20	16.74	34.13	5.46	24.93	304	0.06
41	16.73	34.11	5.40	305	30	16.73	34.14	5.43	24.94	302	0.09

120.45 BLACK DOUGLAS; February 6, 1960; 0105 GCT; 27°43'N, 115°33'W; sounding, 1100 fm; wind, 360°, force 6; weather, cloudy; sea, rough; wire angle, 21°.

1	16.32	34.05	5.08	300	0	(16.32)	(34.05)	(5.08)	(24.97)	(300)	(0.00)
10	16.31	34.05	5.10	300	10	16.31	34.05	5.10	24.97	300	0.03
29	16.04	34.04	4.89	294	20	16.20	34.05	5.03	24.99	298	0.06
57	15.92	34.05	4.66	291	30	16.03	34.04	4.88	25.03	294	0.09
66	15.54	34.03	4.35	285	50	15.96	34.04	4.74	25.04	293	0.15
80	13.31	34.00	2.36	242	75	14.36	34.01	3.23	25.37	262	0.22
94	12.35	34.14	2.04	214	100	12.07	34.14	1.98	25.92	209	0.28
108	11.76	34.14	1.91	203	125	11.02	34.19	1.79	26.16	186	0.33
130	10.90	34.21	1.74	183	150	10.84	34.35	1.17	26.32	171	0.37
149	10.82	34.34	1.20	172	200	10.80	34.51	0.67	26.45	159	0.46
176	10.92	34.48	0.82	163	250	10.24	34.60	0.35	26.62	143	0.53
204	10.78	34.52	0.61	158	300	9.47	34.56	0.30	26.71	134	0.60
232	10.42	34.60	0.39	146	400	7.79	34.41	0.37	26.87	119	0.74
279	9.82	34.59	0.31	137	500	6.88	34.43	0.29	27.02	105	0.85
330	8.96	34.50	0.30	130							
410	7.64	34.41	0.38	118							
490	6.97	34.43	0.30	107							
574	6.30	34.43	0.23	99							

a) Shakedown station.

b) Mean value of 14.12 and 14.23°C.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10
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BLACK DOUGLAS; February 5, 1960; 2053 GCT; 27°27.5'N, 115°55.5'W; sounding, 2100 fm; wind, 320°, force 4; weather, partly cloudy; sea, rough; wire angle, 17°.

120.50

2	16.95	34.00	4.99	318	0	(16.95)	(34.00)	(4.99)	(24.78)	(318)	(0.00)
12	16.91	34.01	5.08	316	10	16.93	34.01	5.07	24.80	316	0.03
31	16.82	34.00	5.12	315	20	16.87	34.01	5.10	24.80	316	0.06
60	16.80	34.04	5.02	312	30	16.83	34.00	5.11	24.81	315	0.09
70	16.48	34.04	4.45	305	50	16.80	34.02	5.07	24.83	313	0.16
81	14.06	33.86	3.41	267	75	15.80	33.98	4.03	25.04	293	0.23
97	12.64	33.88	3.00	238	100	12.60	33.90	2.95	25.64	236	0.30
111	12.12	33.93	2.67	225	125	11.97	34.01	2.46	25.85	216	0.36
134	11.24a)	34.07	2.13	199	150	10.86	34.19	1.73	26.19	184	0.41
154	10.78	34.22	1.62	180	200	10.44	34.39	1.02	26.42	162	0.50
181	10.52	34.36	1.18	165	250	9.86	34.47	0.74	26.58	146	0.58
208	10.39	34.40	0.92	160	300	9.24	34.45	0.62	26.67	138	0.65
237	10.00	34.47	0.77	149	400	7.84	34.40	0.55	26.85	121	0.78
284	9.49	34.47	0.67	141	500	6.84	34.38	0.38	26.98	109	0.90
335	8.63	34.41	0.52	132	600	(5.87)	(34.36)		(27.08)	(99)	(1.01)
416	7.66	34.40	0.55	119							
498	6.86	34.38	0.39	110							
583	5.99	34.36	0.36	100							

BLACK DOUGLAS; February 5, 1960; 1516 GCT; 27°11'N, 116°39'W; sounding, 2000 fm; wind, 360°, force 5; weather, partly cloudy; sea, rough; wire angle, 18°.

120.60

0	16.48	33.75	5.49	326	0	16.48	33.75	5.49	24.69	326	0.00
10	16.45	33.74	5.53	326	10	16.45	33.74	5.53	24.69	326	0.03
24	16.48	33.75	5.56	326	20	16.46	33.75	5.54	24.69	326	0.07
57	16.42	33.77	5.43	323	30	16.45	33.76	5.53	24.70	325	0.10
66	16.45	33.75	5.53	325	50	16.43	33.76	5.47	24.71	324	0.16
80	15.94	33.86	5.12	306	75	16.44	33.75	5.53	24.70	325	0.24
94	13.92	33.64	4.76	280	100	13.86	33.65	4.68	25.19	278	0.32
110	13.24	33.73	4.21	260	125	12.38	33.73	4.04	25.54	245	0.39
131	11.71	33.72	3.87	233	150	11.30	33.97	2.67	25.94	207	0.44
149	11.36	33.97	2.69	208	200	9.59	34.07	2.18	26.31	172	0.54
177	9.90	34.04	2.34	179	250	9.26	34.26	1.37	26.51	153	0.62
203	9.54	34.07	2.17	171	300	8.92	34.34	0.91	26.64	141	0.70
231	9.30	34.20	1.63	158	400	7.56	34.34	0.46	26.84	122	0.84
279	9.20	34.34	1.04	146	500	6.63	34.35	0.30	26.98	109	0.96
330	8.40	34.33	0.73	135							
410	7.43	34.34	0.46	120							
493	6.68	34.35	0.32	109							
577	6.03	34.39	0.27	99							

BLACK DOUGLAS; February 5, 1960; 0954 GCT; 26°53.5'N, 117°13'W; sounding, 1900 fm; wind, 360°, force 5; weather, partly cloudy; sea, very rough; wire angle, 08°.

120.70

1	17.20	33.89	5.31	331	0	(17.20)	(33.89)	(5.31)	(24.64)	(331)	(0.00)
11	17.20	33.87	5.40	333	10	17.20	33.87	5.39	24.63	332	0.03
31	17.22	33.86	5.38	334	20	17.20	33.86	5.39	24.61	334	0.07
61	17.22	33.89	5.41	332	30	17.22	33.86	5.38	24.61	334	0.10
70	17.24	33.88	5.34	333	50	17.23	33.87	5.39	24.62	333	0.17
86	17.26	33.89	5.35	333	75	17.26	33.88	5.35	24.62	333	0.25
101	16.82	33.84	5.40	327	100	16.88	33.85	5.39	24.67	328	0.34
115	15.44	33.95	5.32	288	125	14.42	33.89	5.11	25.26	272	0.41
140	12.77	33.75	4.77	250	150	11.90	33.73	4.54	25.65	235	0.47
160	11.14	33.73	4.34	222	200	9.54	33.85	3.37	26.15	187	0.58
191	9.72	33.80	3.61	194	250	9.04	34.09	2.25	26.42	162	0.67
219	9.22	33.96	2.84	174	300	8.34	34.22	1.46	26.64	141	0.75
251	9.03	34.09	2.24	162	400	7.17	34.28	0.70	26.86	120	0.89
300	8.34	34.22	1.46	141	500	6.44	34.34	0.43	27.00	107	1.01
357	7.61	34.25	1.08	129	600	5.78	34.39	0.30	27.12	95	1.11
442	6.84	34.33	0.47	113							
526	6.24	34.35	0.43	104							
613	5.72	34.39	0.26	94							

a) Alternate value, 10.95°C, not used in interpolation.

SIO		OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
CCOFI	Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD	
6001	m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m	

120.80 BLACK DOUGLAS; February 5, 1960; 0440 GCT; 26°32.5'N, 117°49'W; sounding, 1920 fm; wind, 360°, force 5; weather, partly cloudy; sea, very rough; wire angle, 15°.

1	17.10	33.82	5.56	334	0	(17.10)	(33.82)	(5.56)	(24.61)	(334)	(0.00)
11	17.10	33.85	5.64	332	10	17.10	33.85	5.63	24.63	332	0.03
30	17.12	33.82	5.67	335	20	17.12	33.84	5.65	24.61	334	0.07
59	17.06	33.81	5.48	334	30	17.12	33.82	5.67	24.60	335	0.10
68	17.06	33.84	5.59	332	50	17.09	33.81	5.56	24.60	335	0.17
83	16.99	33.84	5.59	330	75	17.03	33.84	5.59	24.64	331	0.25
97	16.91	33.84	5.49	328	100	16.87	33.89	5.47	24.71	324	0.33
111	16.65	34.04	5.42	308	125	15.76	34.03	5.27	25.07	290	0.41
135	15.10	34.00	5.17	278	150	13.08	33.83	4.97	25.49	250	0.48
154	12.46	33.79	4.93	242	200	10.03	33.83	3.80	26.05	197	0.59
182	10.79	33.74	4.47	216	250	8.79	34.03	2.58	26.42	162	0.69
210	9.61	33.87	3.42	187	300	8.23	34.16	1.92	26.60	145	0.77
239	8.94	33.99	2.79	168	400	7.40	34.29	0.78	26.83	123	0.91
286	8.36	34.13	2.08	149	500	6.54	34.35	0.53	27.00	107	1.03
340	7.87	34.22	1.40	135	600	(5.92)	(34.33)		(27.06)	(101)	(1.14)
421	7.24	34.31	0.64	120							
504	6.50	34.35	0.53	107							
588	5.96	34.33	0.52	102							

120.90 BLACK DOUGLAS; February 4, 1960; 2335 GCT; 26°13'N, 118°27'W; sounding, 2000 fm; wind, 350°, force 5; weather, overcast; sea, very rough; wire angle, 12°.

2	18.06	34.16	5.38	332	0	(18.06)	(34.16)	(5.38)	(24.63)	(332)	(0.00)
12	18.04	34.17	5.43	330	10	18.05	34.17	5.42	24.65	330	0.03
31	17.96	34.11	5.42	333	20	18.01	34.14	5.42	24.63	332	0.07
42	17.88	34.09	5.37	333	30	17.97	34.11	5.42	24.62	333	0.10
56	16.98	33.92	5.48	324	50	17.30	33.97	5.46	24.67	328	0.17
71	16.86	34.02	5.30	314	75	16.85	34.02	5.29	24.82	314	0.25
95	15.18	33.96	5.19	282	100	15.10	33.97	5.18	25.18	280	0.32
114	13.90	33.88	5.05	262	125	13.09	33.81	4.92	25.48	251	0.39
135	12.56	33.78	4.80	244	150	11.63	33.74	4.55	25.70	230	0.45
154	11.30	33.73	4.48	225	200	9.48	33.80	3.86	26.12	190	0.56
183	9.92	33.74	4.16	201	250	8.56	34.03	2.43	26.45	159	0.65
217	9.04	33.87	3.51	178	300	8.30	34.17	1.57	26.60	144	0.72
247	8.58	34.02	2.53	160	400	7.37	34.28	0.75	26.82	124	0.86
295	8.34	34.17	1.63	145	500	6.56	34.34	0.46	26.99	108	0.98
349	7.84	34.22	1.14	135	600	5.83	34.36	0.36	27.09	98	1.09
433	7.05	34.31	0.59	117							
518	6.42	34.34	0.44	107							
603	5.79	34.36	0.36	98							

123.37 BLACK DOUGLAS; February 3, 1960; 1537 GCT; 27°24'N, 114°40'W; sounding, 40 fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 00°.

1	17.10	34.14	5.49	311	0	(17.10)	(34.14)	(5.49)	(24.85)	(311)	(0.00)
11	17.10	34.16	5.51	309	10	17.10	34.16	5.51	24.87	309	0.03
31	16.14	34.07	5.03	295	20	17.10	34.15	5.47	24.87	309	0.06
51	13.54	33.90	3.79	253	30	16.20	34.07	5.07	25.01	296	0.09
					50	13.58	33.90	3.80	25.45	254	0.15

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10
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6001

BLACK DOUGLAS; February 3, 1960; 1810, 1824 GCT; 27°14'N, 114°59'W; sounding, 740 fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 15°, 22°.

123.42

1	16.52	34.11	5.42	300	0	(16.52)	(34.11)	(5.42)	(24.97)	(300)	(0.00)
10	16.51	34.09	5.39	301	10	16.51	34.09	5.39	24.96	301	0.03
29	16.52	34.09	5.34	301	20	16.52	34.09	5.34	24.96	301	0.06
					30	16.52	34.09	5.34	24.96	301	0.09
38	16.48	34.11	4.99	299	50	16.27	34.07	5.20	24.99	298	0.15
53	16.15	34.04	5.33	297	75	13.72	33.94	3.24	25.45	254	0.22
66	14.06	33.91	3.53	263	100	12.22	34.02	2.56	25.80	220	0.28
90	12.76	33.98	2.80	233	125	11.64	34.15	1.96	26.01	201	0.33
107	11.91	34.06	2.37	211	150	11.48	34.32	1.41	26.18	184	0.38
126	11.64	34.15	1.95	200	200	10.57	34.47	0.92	26.46	158	0.47
144	11.59	34.29	1.52	189	250	10.03	34.48	0.59	26.56	149	0.55
170	11.06	34.40	1.12	171	300	9.53	34.49	0.44	26.66	139	0.62
202	10.56	34.47	0.91	158	400	8.25	34.44	0.25	26.82	124	0.76
232	10.22	34.47	0.63	152	500	6.98	34.40	0.26	26.97	109	0.88
277	9.76	34.48	0.56	144							
328	9.27	34.50	0.35	135							
407	8.16	34.43	0.25	123							
488	7.08	34.40	0.27	111							
576	6.47	34.40	0.24	103							

BLACK DOUGLAS; February 3-4, 1960; 2310, 0050 GCT; 26°58'N, 115°31'W; sounding, 2000 fm; wind, 330°, force 6; weather, clear; sea, high; wire angle, 15°, 07°.

123.50

2	17.19	34.12	5.48	314	0	(17.19)	(34.12)	(5.48)	(24.82)	(314)	(0.00)
11	17.17	34.11	5.36	314	10	17.17	34.11	5.36	24.82	314	0.03
30	17.19	34.14	5.34	313	20	17.18	34.12	5.35	24.82	314	0.06
41	17.18	34.16	5.26	311	30	17.19	34.14	5.34	24.83	313	0.09
55	17.17	34.13	5.20	313	50	17.17	34.14	5.23	24.84	312	0.16
70	15.96	34.00	4.40	296	75	15.30	33.99		25.15	282	0.23
93	13.39	33.98	-	245	100	12.85	33.98		25.65	235	0.30
112	12.05	33.97	-	221	125	10.96	33.90		25.95	206	0.35
132	10.39	33.86	-	200	150	9.74	33.91		26.17	186	0.40
149	9.76	33.90	-	187	200	9.31	34.19	1.89	26.46	158	0.49
178	9.40	34.11	2.31	166	250	9.13	34.36	0.87	26.61	144	0.57
241	9.26	34.34	0.99	147	300	8.55	34.39	0.62	26.73	132	0.64
289	8.58	34.37	0.68	134	400	7.68	34.42	0.29	26.88	118	0.77
343	8.28	34.42	0.43	126	500	6.64	34.40	0.23	27.02	105	0.88
426	7.19	34.40	0.23	112	600	5.88	34.41	0.18	27.12	95	0.99
509	6.56	34.40	0.22	104	700	5.33	34.44	0.29	27.22	86	1.09
594	5.92	34.40	0.21	96	800	4.87	34.45	0.34	27.28	80	1.18
					1000	4.04	34.51	0.57	27.42	67	1.34
393a)	7.80	34.42 2	0.33	119	1200	3.53	34.55	0.74	27.50	59	1.48
492	6.75	34.40 0	0.25	106	1500	2.93	34.59	1.10	27.59	51	1.68
591	5.98	34.41 7	0.18	95	2000	2.17	34.63	1.92	27.69	41	1.96
691	5.38	34.43 9	0.27	87	2500	(1.86)	(34.65)	(2.25)	(27.74)	(37)	(2.20)
791	4.94	34.45 2	0.31	81							
989	4.08	34.50 4	0.55	68							
1187	3.56	34.54 9	0.70	59							
1387	3.13	34.56 7	0.96	54							
1586	2.75	34.60 2	1.17	48							
1785	2.42	34.62 5	1.53	44							
1984	2.18	34.63 3	1.89	41							
2184	2.01	34.65 0	2.05	39							
2285	1.94	34.65 9	2.18	38							
2384	1.87	34.65 7	2.23	37							
2485	1.86	34.64 8	2.25	37							

a) Overlapping casts; reconciliation of property curves when necessary.

SIO

CCOFI
6001

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ_T	Z	T	S	O ₂	σ_t	δ_T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

123.60

BLACK DOUGLAS; February 4, 1960; 0615 GCT; 26°39'N, 116°11'W; sounding, 1920 fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 13°.

1	16.97	34.05	4.94	314	0	(16.97)	(34.05)	(4.94)	(24.82)	(314)	(0.00)
11	16.96	34.09	4.93	311	10	16.96	34.09	4.93	24.85	311	0.03
30	17.04	34.09	4.85	313	20	17.00	34.09	4.88	24.84	312	0.06
59	17.00	34.16	4.73	307	30	17.04	34.09	4.85	24.83	313	0.09
68	16.98	34.14	4.84	308	50	17.03	34.14	4.77	24.87	309	0.16
83	16.85	34.12	4.58	307	75	16.93	34.13	4.68	24.89	307	0.23
97	13.60	33.89	3.12	255	100	13.41	33.89	3.09	25.47	252	0.30
112	12.32	33.87	2.98	233	125	12.03	33.94	2.83	25.78	223	0.36
136	11.29	34.04	2.32	202	150	10.28	34.00	2.44	26.14	188	0.42
156	10.20	34.00	2.44	187	200	9.52	34.17	1.87	26.41	163	0.50
185	10.03	34.16	1.91	172	250	9.06	34.29	1.28	26.57	148	0.58
214	9.15	34.18	1.83	157	300	8.59	34.34	0.95	26.68	137	0.66
243	9.08	34.27	1.34	149	400	7.24	34.33	0.57	26.88	118	0.79
292	8.74	34.34	1.00	139	500	6.39	34.40	0.35	27.05	102	0.90
345	7.77	34.30	0.79	127	600	(5.83)	(34.43)	(0.35)	(27.14)	(93)	(1.01)
429	6.97	34.35	0.48	113							
512	6.30	34.40	0.35	101							
597	5.84	34.43	0.35	93							

123.70

BLACK DOUGLAS; February 4, 1960; 1112 GCT; 26°21.5'N, 116°49'W; sounding, 1800 fm; wind, 340°, force 5; weather, clear; sea, very rough; wire angle, 15°.

4	16.93	33.84	5.36	329	0	16.9	(33.84)		(24.66)	(329)	(0.00)
13	16.88	33.85	5.44	327	10	16.90	33.85	5.43	24.68	327	0.03
32	16.92	33.86	5.36	328	20	16.90	33.85	5.43	24.68	327	0.07
61	16.91	33.84	5.30	328	30	16.92	33.86	5.37	24.68	327	0.10
70	16.90	33.84	5.47	328	50	16.93	33.85	5.32	24.67	328	0.16
84	16.81	33.86	5.36	325	75	16.83	33.85	5.38	24.69	326	0.25
98	16.32	33.95	5.15	307	100	15.57	33.88	4.95	25.01	296	0.33
112	14.60	33.79	4.72	283	125	13.22	33.75	4.30	25.40	258	0.40
135	12.68	33.75	4.13	249	150	11.58	33.82	3.58	25.78	223	0.46
154	11.32	33.84	3.44	217	200	10.36	34.19	2.00	26.28	175	0.56
182	10.32	33.98	2.81	190	250	10.03	34.36	1.12	26.46	158	0.64
209	10.35	34.26	1.59	170	300	9.40	34.41	0.89	26.62	143	0.72
238	10.16	34.34	1.18	161	400	8.08	34.39	0.46	26.81	125	0.86
289	9.54	34.40	0.98	147	500	6.63	34.37	0.33	27.00	107	0.98
341	8.84	34.43	0.61	133	600	(5.89)	(34.41)	(0.26)	(27.12)	(95)	(1.09)
425	7.77	34.38	0.42	121							
507	6.51	34.37	0.32	106							
592	5.91	34.41	0.26	95							

123.80

BLACK DOUGLAS; February 4, 1960; 1638 GCT; 25°59'N, 117°25.5'W; sounding, 2200 fm; wind, 360°, force 6; weather, overcast; sea, high; wire angle, 15°.

1	17.62	33.98	5.20	335	0	(17.62)	(33.98)	(5.20)	(24.60)	(335)	(0.00)
11	17.62	33.99	5.15	334	10	17.62	33.99	5.16	24.61	334	0.03
30	17.64	33.98	4.97	335	20	17.63	33.99	5.14	24.61	334	0.07
59	17.61	33.96	5.22	335	30	17.64	33.98	4.97	24.60	335	0.10
69	17.62	34.00	5.17	333	50	17.63	33.97	5.14	24.60	335	0.17
84	17.48	33.96	5.08	333	75	17.58	33.99	5.12	24.62	333	0.25
98	16.28	34.02	5.60	302	100	16.20	34.01	5.58	24.97	300	0.33
113	14.98	33.94	5.39	280	125	13.40	33.80	5.10	25.39	259	0.40
137	12.78	33.78	4.98	248	150	11.65	33.74	4.74	25.69	231	0.46
156	11.23	33.73	4.68	224	200	9.51	33.87	3.53	26.18	185	0.57
186	9.91	33.81	3.80	196	250	8.91	34.10	2.33	26.45	159	0.66
215	9.16	33.93	3.21	175	300	8.68	34.26	1.37	26.62	143	0.74
246	8.92	34.09	2.39	160	400	7.78	34.36	0.60	26.83	123	0.88
295	8.72	34.25	1.42	145	500	6.84	34.38	0.34	26.98	109	1.00
348	8.08	34.32	0.89	131	600	6.04	34.42	0.22	27.11	96	1.11
433	7.58	34.38	0.48	119							
516	6.68	34.38	0.33	107							
603	6.02	34.42	0.22	96							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6001

BLACK DOUGLAS; February 3, 1960; 1025 GCT; 26°55'N, 114°06.5'W; sounding, 40 fm; wind, 350°, force 4; weather, clear; sea, rough; wire angle, 00°.

127.34

0	17.19	34.25u	5.44	-	0	17.19	(34.14)	5.44	(24.83)	(313)	(0.00)
10	17.20	34.14	5.50	313	10	17.20	34.14	5.50	24.83	313	0.03
30	17.17	34.16	5.45	311	20	17.19	34.15	5.49	24.83	313	0.06
50	15.67	34.14	3.95	279	30	17.17	34.16	5.45	24.85	311	0.09
					50	15.67	34.14	3.95	25.19	279	0.15

BLACK DOUGLAS; February 3, 1960; 0610 GCT; 26°43.5'N, 114°29'W; sounding, 1600 fm; wind, 320°, force 6; weather, clear; sea, very rough; wire angle, 21°.

127.40

1	17.59	34.14	5.31	322	0	(17.59)	(34.14)	(5.31)	(24.74)	(322)	(0.00)
10	17.58	34.11	5.25	324	10	17.58	34.11	5.25	24.71	324	0.03
33	17.62	34.16	5.44	321	20	17.59	34.11	5.27	24.71	324	0.06
62	15.46	33.93	4.71	291	30	17.60	34.15	5.40	24.74	322	0.10
71	13.68	33.77	4.26	266	50	17.57	34.15	5.41	24.75	321	0.16
90	12.65	33.82	3.58	243	75	13.41	33.78	4.08	25.38	260	0.23
105	12.20	33.90	3.04	229	100	12.34	33.86	3.27	25.66	234	0.30
118	11.78	34.07	2.25	208	125	11.65	34.15	2.04	26.02	200	0.35
147	11.36	34.33	1.51	182	150	11.32	34.34	1.45	26.23	180	0.40
166	10.98	34.35	1.25	174	200	10.88	34.52	0.71	26.44	160	0.49
194	10.96	34.50	0.79	162	250	10.23	34.56	0.36	26.60	145	0.56
227	10.52	34.56	0.38	150	300	9.36	34.49	0.39	26.69	136	0.64
256	10.16	34.56	0.35	145	400	7.97	34.44	0.32	26.86	120	0.77
303	9.30	34.49	0.39	136	500	7.00	34.44	0.22	27.00	107	0.89
366	8.36	34.43	0.38	126	600	6.24	34.44	0.21	27.10	97	1.00
463	7.34	34.45	0.22	110							
551	6.58	34.42	0.22	103							
625	6.13	34.45	0.21	95							

BLACK DOUGLAS; February 3, 1960; 0035 GCT; 26°25.5'N, 115°06'W; sounding, 1700 fm; wind, 330°, force 4; weather, overcast; sea, very rough; wire angle, 20°.

127.50

1	17.59	34.00	5.20	332	0	(17.59)	(34.00)	(5.20)	(24.63)	(332)	(0.00)
10	17.58	33.98	5.29	334	10	17.58	33.98	5.29	24.61	334	0.03
29	17.56	33.96	5.37	334	20	17.57	33.96	5.33	24.61	334	0.07
58	17.13	33.93	5.27	327	30	17.55	33.96	5.36	24.61	334	0.10
67	17.05	33.95	5.34	324	50	17.29	33.94	5.29	24.65	330	0.17
81	15.81	33.89	4.89	301	75	16.44	33.92	5.04	24.84	312	0.25
94	13.96	33.82	4.79	268	100	13.40	33.80	4.62	25.40	258	0.32
108	12.64	33.78	4.37	245	125	11.29	33.77	3.92	25.79	222	0.38
131	10.94	33.77	3.83	216	150	10.16	33.82	3.20	26.03	199	0.43
149	10.17	33.82	3.23	199	200	9.53	34.15	1.95	26.39	165	0.52
176	9.77	34.02	2.53	178	250	9.02	34.33	1.38	26.61	144	0.60
203	9.52	34.16	1.90	164	300	8.61	34.39	1.00	26.72	133	0.68
231	9.30	34.26	1.58	153	400	7.92	34.45	0.34	26.88	118	0.81
277	8.68	34.39a)	1.18	134	500	6.92	34.46	0.28	27.03	104	0.92
327	8.49	34.38	0.70	132							
408	7.84	34.45	0.33	117							
488	7.04	34.47	0.28	105							
571	6.24	34.42	0.28	98							

a) The use of this value results in an unusual density structure, but nevertheless the value was accepted in drawing the property curve.

SIO

CCOFI
600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ_T	Z	T	S	O ₂	σ_t	δ_T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

127.60

BLACK DOUGLAS; February 2, 1960; 1859 GCT; 26°08'N, 115°43'W; sounding, 1800 fm; wind, 330°, force 4; weather, cloudy; sea, very rough; wire angle, 10°.

2	18.07	34.01	5.30	343	0	(18.07)	(34.01)	(5.30)	(24.52)	(343)	(0.00)
12	18.04	34.01	5.37	342	10	18.04	34.01	5.37	24.53	342	0.03
32	18.05	34.05	5.40	339	20	18.04	34.03	5.39	24.54	340	0.07
72	17.94	33.98	5.34	341	30	18.05	34.05	5.40	24.55	339	0.10
86	15.02	33.78	5.06	292	50	18.03	34.02	5.37	24.54	340	0.17
91	14.41	33.77	4.74	280	75	17.00	33.88	5.28	24.68	327	0.25
100	13.66	33.74	4.42	267	100	13.66	33.74	4.42	25.31	267	0.33
115	12.68	33.74	4.15	249	125	12.00	33.76	3.80	25.65	235	0.39
140	11.34	33.86	3.21	216	150	11.06	33.97	2.75	25.98	203	0.45
160	10.83	34.07	2.34	192	200	10.50	34.34	1.31	26.38	166	0.54
189	10.58	34.27	1.61	173	250	10.15	34.46	0.71	26.52	152	0.62
219	10.39	34.42	1.00	159	300	9.43	34.45	0.62	26.64	141	0.70
250	10.15	34.46	0.71	152	400	8.20	34.46	0.33	26.84	122	0.84
299	9.44	34.45	0.63	141	500	7.16	34.45	0.21	26.99	108	0.96
353	8.76	34.46	0.48	130	600	6.26	34.44	0.18	27.10	97	1.07
438	7.78	34.45	0.22	116							
522	6.96	34.45	0.21	105							
606	6.20	34.44	0.18	96							

127.70

BLACK DOUGLAS; February 2, 1960; 1346 GCT; 25°46'N, 116°23'W; sounding, 2000 fm; wind, 330°, force 4; weather, partly cloudy; sea, rough; wire angle, 10°.

0	18.22	34.14	5.12	337	0	18.22	34.14	5.12	24.58	337	0.00
10	18.21	34.11	5.16	339	10	18.21	34.11	5.16	24.56	339	0.03
30	18.18	34.09	5.20	339	20	18.20	34.10	5.18	24.56	339	0.07
59	18.03	34.09	5.09	336	30	18.18	34.09	5.20	24.55	339	0.10
69	16.56	33.92	5.09	315	50	18.13	34.09	5.17	24.56	338	0.17
84	13.99	33.86	3.71	265	75	15.60	33.89	4.91	25.01	296	0.25
99	13.36	34.02	2.66	242	100	13.33	34.03	2.62	25.59	240	0.32
114	12.80	34.10	2.31	225	125	12.01	34.09	2.21	25.90	211	0.37
139	11.26	34.09	2.16	198	150	11.41	34.21	1.70	26.10	192	0.42
158	11.62	34.31	1.41	188	200	11.17	34.47	1.03	26.36	167	0.52
188	11.25	34.42	1.01	173	250	10.83	34.57	0.52	26.49	155	0.60
217	11.06	34.54	1.11	161	300	10.28	34.61	0.35	26.62	143	0.68
248	10.85	34.56	0.54	156	400	8.95	34.53	0.30	26.79	127	0.82
298	10.32	34.61	0.35	143	500	7.33	34.48	0.25	26.99	108	0.94
352	9.52	34.56	0.33	134	600	5.56	34.47	0.30	26.21	87	1.04
436	8.47	34.51	0.25	122							
522	6.92	34.47	0.25	103							
606	5.46	34.47	0.33	85							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10
CCOFI
6001

BLACK DOUGLAS; February 2, 1960; 0535, 0730 GCT; 25°24'N, 117°03'W; sounding, 2000 fm; wind, 320°, force 3; weather, clear; sea, very rough; wire angle, 12°, 04°.

127.80

0	18.16	34.04	5.27	343	0	18.16	34.04	5.27	24.52	343	0.00
10	18.14	34.07	5.34	340	10	18.14	34.07	5.34	24.55	340	0.03
30	18.08	34.04	5.27	340	20	18.12	34.06	5.31	24.54	340	0.07
59	17.26	33.89	5.35	333	30	18.08	34.04	5.27	24.54	340	0.10
70	16.72	33.82	5.31	325	50	17.34	33.90	5.34	24.61	334	0.17
84	14.76	33.81	4.78	285	75	16.05	33.81	5.18	24.84	312	0.25
99	13.53	33.77	4.55	263	100	13.48	33.77	4.52	25.37	262	0.32
114	12.25	33.71	4.21	243	125	11.53	33.72	3.95	25.70	230	0.39
139	10.77	33.77	3.54	213	150	10.64	33.92	2.92	26.02	200	0.44
159	10.52	34.04	2.27	189	200	9.63	34.16	1.92	26.38	166	0.53
189	9.86	34.16	2.00	169	250	9.12	34.27	1.29	26.55	149	0.62
218	9.36	34.16	1.84	162	300	8.65	34.40	0.84	26.72	133	0.69
249	9.13	34.27	1.30	150	400	7.60	34.36	0.46	26.85	121	0.82
299	8.67	34.40	0.85	133	500	6.70	34.42	0.27	27.03	104	0.94
353	7.91	34.36	0.57	125	600	5.92	34.41	0.25	27.12	95	1.04
437	7.18	34.40	0.31	112	700	5.26	34.43	0.29	27.22	86	1.14
521	6.52	34.42	0.26	102	800	4.80	34.49	0.32	27.31	77	1.23
606	5.84	34.41	0.23	95	1000	4.18	34.53	0.49	27.41	68	1.39
					1200	3.64	34.57	0.69	27.50	59	1.53
391a)	7.77	34.35 1	0.58	123	1500	2.98	34.59	1.08	27.59	51	1.73
490	6.86	34.36 9	0.36	110	2000	2.14	34.64	1.93	27.69	41	2.01
591	6.02	34.40 6	0.27	97	2500	1.79	34.67	2.37	27.75	36	2.25
692	5.32	34.42 5	0.29	87	3000	1.62	34.68	2.70	27.77	34	2.48
792	4.83	34.48 0	0.30	78							
992	4.22	34.52 2	0.48	68							
1194	3.66	34.62 0u	0.67	-							
1396	3.18	34.57 5	0.95	54							
1596	2.80	34.61 1	1.20	49							
1794	2.44	34.62 4	1.55	44							
1992	2.15	34.64 0	1.93	41							
2189	1.94	34.65 3	2.12	38							
2388	1.84	34.67 0	2.34	37							
2586	1.75	34.67 2	2.43	36							
2788	1.68	34.67 7	2.69	35							
2989	1.63	34.68 8	2.66	34							
3089	1.62	34.68 2	2.80	34							
3189	1.62	34.67 6	2.68	34							

BLACK DOUGLAS; February 1, 1960; 0333 GCT; 26°29'N, 113°29'W; sounding, 40 fm; wind, 300°, force 3; weather, partly cloudy; sea, moderate; wire angle, 00°.

130.30

0	17.65	34.22	5.31	317	0	17.65	34.22	5.31	24.78	317	0.00
10	17.41	34.16	5.33	316	10	17.41	34.16	5.33	24.80	316	0.03
30	17.42	34.18	5.32	315	20	17.41	34.17	5.33	24.80	316	0.06
50	17.37	34.20	5.23	312	30	17.42	34.18	5.32	24.81	315	0.09
					50	17.37	34.20	5.23	24.84	312	0.16

BLACK DOUGLAS; February 1, 1960; 0610 GCT; 26°19'N, 113°48'W; sounding, 160 fm; wind, 320°, force 3; weather, partly cloudy; sea, moderate; wire angle, 12°.

130.35

0	17.65	34.14	5.32	323	0	17.65	34.14	5.32	24.72	323	0.00
10	17.62	34.14	5.38	323	10	17.62	34.14	5.38	24.73	323	0.03
30	17.37	34.13	5.41	318	20	17.40	34.13	5.41	24.78	318	0.06
49	17.26	34.14	5.35	314	30	17.37	34.13	5.41	24.78	318	0.10
73	15.60	34.07	4.53	283	50	17.24	34.14	5.33	24.82	314	0.16
96	13.39	34.13	2.17	234	75	14.70	34.08	3.63	25.35	264	0.23
120	12.38	34.31	1.39	202	100	13.39	34.15	2.12	25.67	233	0.30
159	12.14	34.42	0.51	189	125	12.33	34.33	1.37	26.02	200	0.35
197	11.40	34.52	0.98	169	150	12.21	34.40	1.27	26.10	192	0.40
247	10.88	34.55	0.35	158	200	11.36	34.52	0.93	26.36	168	0.49
					250	(10.87)	(34.55)	(0.35)	(26.47)	(157)	(0.57)

a) Overlapping casts; reconciliation of property curves when necessary.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

130.40

BLACK DOUGLAS; February 1, 1960; 0907 GCT; 26°09'N, 114°07'W; sounding, 1100 fm; wind, 300°, force 4; weather, cloudy; sea, moderate; wire angle, 06°.

0	17.97	34.14	5.38	331	0	17.97	34.14	5.38	24.64	331	0.00
10	17.98	34.13	5.31	332	10	17.98	34.13	5.31	24.63	332	0.03
30	17.63	34.09	5.50	327	20	17.78	34.10	5.38	24.66	329	0.07
71	16.86	33.98	5.15	317	30	17.63	34.09	5.50	24.68	327	0.10
86	14.08	33.77	4.43	274	50	17.63	34.11	5.43	24.70	325	0.16
96	13.68	33.77	4.18	266	75	16.50	33.96	4.98	24.86	310	0.24
100	13.01	33.79	3.96	252	100	13.01	33.79	3.96	25.47	252	0.32
115	11.95	33.80	3.43	231	125	11.83	33.99	2.84	25.86	215	0.37
140	11.67	34.21	1.83	196	150	11.52	34.25	1.63	26.12	190	0.43
160	11.40	34.29	1.47	186	200	10.87	34.44	1.00	26.39	165	0.52
189	11.04	34.42	1.07	170	250	10.53	34.53	0.62	26.52	153	0.60
219	10.62	34.47	0.88	159	300	9.94	34.58	0.40	26.66	139	0.67
251	10.52	34.53	0.61	153	400	8.44	34.47	0.40	26.81	125	0.81
300	9.94	34.58	0.40	139	500	7.12	34.41	0.32	26.97	110	0.93
353	9.18	34.52	0.37	132	600	6.21	34.43	0.32	27.10	97	1.04
440	7.80	34.43	0.45	118							
524	6.90	34.41	0.31	108							
610	6.11	34.43	0.36	96							

130.50

BLACK DOUGLAS; February 1, 1960; 1400 GCT; 25°49'N, 114°45'W; sounding, 1700 fm; wind, 320°, force 4; weather, clear; sea, moderate; wire angle, 14°.

0	17.85	34.03	5.37	336	0	17.85	34.03	5.37	24.59	336	0.00
9	17.84	34.05	5.39	334	10	17.84	34.05	5.39	24.61	334	0.03
29	17.76	34.03	5.39	334	20	17.81	34.04	5.39	24.61	334	0.07
59	17.18	34.05	5.33	319	30	17.75	34.03	5.39	24.61	334	0.10
69	16.84	34.03	5.21	313	50	17.30	34.05	5.33	24.74	322	0.17
83	15.06	33.84	4.70	289	75	16.25	33.96	5.04	24.92	305	0.24
97	13.31	33.84	3.96	253	100	13.01	33.87	3.67	25.53	246	0.31
112	12.55	34.01	2.72	227	125	12.38	34.14	2.13	25.87	214	0.37
137	12.20	34.22	1.77	205	150	11.76	34.23	1.57	26.06	196	0.42
156	11.58	34.24	1.53	192	200	10.62	34.37	1.23	26.38	166	0.52
185	10.84	34.34	1.30	172	250	10.30	34.52	0.62	26.55	150	0.60
214	10.38	34.40	1.13	160	300	9.58	34.50	0.48	26.66	139	0.67
243	10.36	34.52	0.68	151	400	8.24	34.47	0.38	26.85	121	0.81
292	9.78	34.51	0.48	142	500	7.14	34.47	0.31	27.01	106	0.93
345	8.78	34.47	0.48	130	600	(6.34)	(34.47)	(0.23)	(27.11)	(96)	(1.03)
428	7.97	34.47	0.31	117							
510	7.02	34.47	0.31	105							
594	6.38	34.47	0.23	96							

130.60

BLACK DOUGLAS; February 1, 1960; 1918 GCT; 25°29'N, 115°24'W; sounding, 1940 fm; wind, 320°, force 3; weather, clear; sea, moderate; wire angle, 08°.

0	18.36	34.00	5.25	350	0	18.36	34.00	5.25	24.44	350	0.00
10	18.30	33.98	5.24	350	10	18.30	33.98	5.24	24.44	350	0.04
30	18.27	34.00	5.35	348	20	18.27	33.99	5.27	24.45	349	0.07
69	17.96	33.98	5.23	342	30	18.27	34.00	5.35	24.46	348	0.10
79	17.19	33.92	5.23	329	50	18.19	34.00	5.31	24.48	346	0.17
85	16.26	33.82	5.20	316	75	17.82	33.97	5.23	24.55	340	0.26
100	14.73	33.75	4.67	289	100	14.73	33.75	4.67	25.08	289	0.34
115	13.88	33.67	4.30	277	125	12.30	33.66	3.70	25.51	248	0.41
139	10.74	33.79	3.37	211	150	10.77	33.94	2.78	26.02	200	0.46
160	10.79	34.06	2.18	192	200	10.67	34.39	1.09	26.38	166	0.56
189	10.74	34.34	1.27	170	250	10.30	34.51	0.66	26.54	151	0.64
220	10.54	34.44	0.84	160	300	9.90	34.58	0.40	26.66	139	0.71
250	10.30	34.51	0.66	151	400	8.64	34.53	0.27	26.83	123	0.85
300	9.90	34.58	0.40	139	500	7.58	34.48	0.27	26.95	112	0.97
354	9.08	34.56	0.33	128	600	6.64	34.45	0.24	27.06	101	1.09
439	8.26	34.51	0.24	119							
525	7.30	34.47	0.28	108							
610	6.58	34.45	0.23	100							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 31, 1960; 2015 GCT; 26°04.5'N, 112°48'W; sounding, 45 fm; wind, 300°, force 3; weather, partly cloudy; sea, slight; wire angle, 00°.

133.25

1	18.78	34.38	5.31	333	0	(18.78)	(34.38)	(5.31)	(24.62)	(333)	(0.00)
11	18.63	34.41	5.25	327	10	18.64	34.41	5.26	24.68	327	0.03
31	18.01	34.34	5.23	317	20	18.30	34.37	5.24	24.74	322	0.07
51	17.91	34.36	5.11	313	30	18.03	34.34	5.23	24.78	318	0.10
					50	17.91	34.36	5.11	24.83	313	0.16

BLACK DOUGLAS; January 31, 1960; 1743 GCT; 25°54.5'N, 113°07.5'W; sounding, 100 fm; wind, 320°, force 4; weather, clear; sea, moderate; wire angle, 06°.

133.30

0	18.58	34.42	5.22	325	0	18.58	34.42	5.22	24.70	325	0.00
10	18.54	34.38	5.26	327	10	18.54	34.38	5.26	24.68	327	0.03
30	18.54	34.40	5.24	325	20	18.54	34.39	5.25	24.69	326	0.07
50	18.48	34.40	5.14	324	30	18.54	34.40	5.24	24.70	325	0.10
75	15.16	34.03	3.51	277	50	18.48	34.40	5.14	24.71	324	0.16
100	13.09	34.21	1.95	222	75	15.16	34.03	3.51	25.21	277	0.24
125	12.65	34.36	1.01	203	100	13.09	34.21	1.95	25.79	222	0.30
155	12.00	34.54	0.43	178	125	12.65	34.36	1.01	25.98	203	0.36
					150	12.13	34.50	0.52	26.20	183	0.40

BLACK DOUGLAS; January 31, 1960; 0955 GCT; 25°33.5'N, 113°37.5'W; sounding, 850 fm; wind, direction missing, force 1; weather, cloudy; sea, slight; wire angle, 10°.

133.40

1	19.24	34.40	5.13	342	0	(19.24)	(34.40)	(5.13)	(24.53)	(342)	(0.00)
11	19.22	34.42	5.26	340	10	19.23	34.42	5.25	24.54	341	0.03
31	18.22	34.23	5.31	330	20	19.05	34.39	5.27	24.56	338	0.07
55	18.04	34.23	5.21	326	30	18.22	34.23	5.31	24.65	330	0.10
65	17.01	34.09	4.83	312	50	18.08	34.23	5.26	24.68	327	0.17
75	15.36	34.00	3.61	283	75	15.36	34.00	3.61	25.14	283	0.24
89	13.72	33.95	3.23	253	100	13.23	34.02	2.76	25.60	239	0.31
104	13.02	34.04	2.56	234	125	12.02	34.08	2.10	25.90	211	0.37
128	11.97	34.11	2.05	209	150	12.07	34.41	1.10	26.12	189	0.42
146	12.09	34.37	1.25	192	200	11.34	34.65	0.43	26.46	158	0.51
171	11.80	34.56	0.53	172	250	10.78	34.59	0.32	26.52	152	0.58
200	11.34	34.65	0.43	158	300	9.95	34.59	0.31	26.66	139	0.66
229	11.12	34.61	0.33	157	400	8.66	34.49	0.24	26.80	126	0.80
270	10.40	34.58	0.31	147	500	7.38	34.47	0.17	26.97	110	0.92
329	9.60	34.60	0.30	133							
402	8.64	34.49	0.24	126							
476	7.70	34.47	0.20	114							
555	6.70	34.46	0.16	101							

BLACK DOUGLAS; January 31, 1960; 0459 GCT; 25°13'N, 114°20.5'W; sounding, 1820 fm; wind, 360°, force 2; weather, cloudy; sea, moderate; wire angle, 06°.

133.50

0	19.19	34.41	5.12	340	0	19.19	34.41	5.12	24.55	340	0.00
10	19.20	34.41	4.94	341	10	19.20	34.41	4.94	24.54	341	0.03
30	19.18	34.39	5.24	341	20	19.20	34.40	5.10	24.54	341	0.07
61	17.96	34.22	5.23	325	30	19.18	34.39	5.24	24.54	341	0.10
71	16.56	34.02	5.05	307	50	18.03	34.22	5.23	24.69	326	0.17
86	14.55	33.77	4.37	283	75	15.80	33.90	4.86	24.97	299	0.25
101	13.38	33.96	2.85	246	100	13.42	33.96	2.87	25.52	247	0.32
116	12.52	34.05	2.32	223	125	12.07	34.16	1.94	25.94	207	0.37
141	11.91	34.34	1.33	191	150	11.91	34.39	1.13	26.15	187	0.42
161	11.92	34.44	1.01	183	200	11.44	34.59	0.56	26.40	164	0.51
191	11.62	34.59	0.59	167	250	10.62	34.53	0.45	26.49	155	0.60
221	11.10	34.57	0.51	160	300	10.21	34.60	0.27	26.63	142	0.67
251	10.62	34.53	0.45	154	400	8.62	34.52	0.30	26.83	123	0.81
301	10.20	34.60	0.26	142	500	7.36	34.45	0.34	26.96	111	0.93
357	9.22	34.54	0.31	131	600	6.44	34.44	0.32	27.07	100	1.04
442	8.05	34.50	0.30	117							
527	7.05	34.43	0.38	108							
612	6.33	34.44	0.31	98							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

133.60

BLACK DOUGLAS; January 30, 1960; 2342 GCT; 24°54.5'N, 115°02'W; sounding, 2000 fm; wind, 360°, force 4; weather, cloudy; sea, rough; wire angle, 08°.

1	18.84	34.24	5.24	344	0	(18.84)	(34.24)	(5.24)	(24.50)	(344)	(0.00)
11	18.80	34.26	5.23	342	10	18.81	34.26	5.23	24.52	342	0.03
32	18.71	34.23	5.21	341	20	18.76	34.25	5.22	24.53	341	0.07
60	18.69	34.18	5.15	345	30	18.71	34.23	5.21	24.53	341	0.10
71	18.60	34.19	5.13	342	50	18.70	34.20	5.16	24.50	344	0.17
84	18.28	34.13	5.10	339	75	18.53	34.19	5.12	24.54	341	0.26
100	14.70	33.89	4.24	278	100	14.70	33.89	4.24	25.20	278	0.34
114	13.18	33.95	3.15	243	125	12.77	34.08	2.42	25.75	225	0.40
138	12.39	34.31	1.50	202	150	12.04	34.34	1.29	26.08	194	0.45
158	11.92	34.36	1.17	189	200	11.50	34.63	0.53	26.42	162	0.54
187	11.76	34.60	0.55	169	250	11.09	34.64	0.30	26.50	154	0.62
216	11.17	34.63	0.52	156	300	10.30	34.63	0.19	26.63	142	0.70
246	11.10	34.64	0.31	154	400	8.66	34.53	0.25	26.83	123	0.84
295	10.36	34.63	0.18	143	500	7.30	34.49	0.21	27.00	107	0.96
349	9.55	34.57	0.26	134	600	6.44	34.44	0.22	27.08	99	1.07
432	8.12	34.51	0.24	117							
515	7.12	34.48	0.20	105							
601	6.43	34.44	0.22	99							

137.23

BLACK DOUGLAS; January 29, 1960; 0833 GCT; 25°34'N, 112°19'W; sounding, 40 fm; wind, 340°, force 3; weather, cloudy; sea, rough; wire angle, 00°.

0	18.47	34.40	5.25	324	0	18.47	34.40	5.25	24.71	324	0.00
10	18.44	34.40	5.23	323	10	18.44	34.40	5.23	24.72	323	0.03
30	17.66	34.38	3.97	306	20	18.28	34.40	5.06	24.76	320	0.06
40	16.55	34.35	3.14	283	30	17.66	34.38	3.97	24.90	306	0.10

137.30

BLACK DOUGLAS; January 29, 1960; 1202 GCT; 25°20'N, 112°46'W; sounding, 160 fm; wind, 320°, force 2; weather, cloudy; sea, rough; wire angle, 00°.

0	19.03	34.40	5.08	337	0	19.03	34.40	5.08	24.58	337	0.00
10	19.02	34.42	5.05	335	10	19.02	34.42	5.05	24.60	335	0.03
30	19.02	34.40	5.04	337	20	19.02	34.41	5.04	24.59	336	0.07
50	19.02	34.40	4.96	337	30	19.02	34.40	5.04	24.58	337	0.10
75	15.57	34.00	3.86	287	50	19.02	34.40	4.96	24.58	337	0.17
100	14.28	34.22	2.26	245	75	15.57	34.00	3.86	25.10	287	0.25
125	13.06	34.48	0.95	202	100	14.28	34.22	2.26	25.54	245	0.31
165	11.75	34.54	0.45	173	125	13.06	34.48	0.95	26.00	202	0.37
206	11.38	34.64	0.19	159	150	12.14	34.52	0.58	26.21	182	0.42
					200	11.43	34.62	0.23	26.42	162	0.51

137.35

BLACK DOUGLAS; January 29, 1960; 1450 GCT; 25°11'N, 113°05.5'W; sounding, 600 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 03°.

0	19.12	34.37	4.78	341	0	19.12	34.37	4.78	24.54	341	0.00
10	19.13	34.35	4.80	343	10	19.13	34.35	4.80	24.52	343	0.03
30	18.67a)	34.25	4.62	339	20	19.08	34.34	4.79	24.52	343	0.07
55	18.25	34.23	4.67	331	30	18.67	34.25	4.62	24.55	339	0.10
65	17.90	34.23	4.71	323	50	18.37	34.23	4.62	24.62	333	0.17
76	15.23	33.96	3.46	283	75	15.35	33.96	3.52	25.11	286	0.25
91	13.92	34.02	2.72	252	100	13.45	34.11	2.29	25.63	237	0.31
106	13.18	34.16	1.93	228	125	12.90	34.40	0.95	25.97	205	0.37
131	12.82	34.45	0.81	199	150	12.46	34.51	0.73	26.13	189	0.42
151	12.44	34.51	0.72	189	200	11.58	34.61	0.60	26.39	165	0.51
177	11.75	34.60	0.71	169	250	10.56	34.58	0.45	26.56	149	0.59
206	11.52	34.61	0.57	164	300	9.73	34.54	0.47	26.66	139	0.66
236	10.78	34.60	0.40	152	400	8.44	34.48	0.37	26.82	124	0.80
278	10.13	34.56	0.62	144	500	7.13	34.43	0.39	26.98	109	0.92
337	9.16	34.51	0.33	132							
412	8.32	34.47	0.39	123							
487	7.30	34.43	0.41	112							
567	6.44	34.45	0.31	99							

a) Alternate value, 18.92°C, not used in interpolation.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 29, 1960; 1729 GCT; 25°02'N, 113°25'W; sounding, 1600 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 05°.

13740

0	19.45	34.43	5.00	345	0	19.45	34.43	5.00	24.49	345	0.00
10	19.44	34.42	5.06	346	10	19.44	34.42	5.06	24.48	346	0.03
30	19.46	34.42	5.12	346	20	19.45	34.42	5.09	24.48	346	0.07
55	19.18	34.40	4.95	341	30	19.46	34.42	5.12	24.48	346	0.10
65	19.08	34.34	4.99	343	50	19.24	34.40	4.97	24.53	342	0.17
75	18.54	34.23a)	4.91	338	75	18.54	34.23	4.91	24.56	338	0.26
90	18.22	34.40a)	4.83	318	100	15.60	34.08	3.37	25.15	282	0.34
105	14.66	34.03	3.00	267	125	12.81	34.23	1.65	25.85	216	0.40
131	12.72	34.25	1.54	212	150	11.99	34.49	1.34	26.22	181	0.45
150	11.99	34.49	1.34	181	200	11.60	34.57	0.62	26.35	168	0.54
175	11.83	34.51	0.88	177	250	10.88	34.60	0.45	26.50	154	0.62
205	11.53	34.58	0.59	166	300	10.11	34.59	0.37	26.63	142	0.70
234	11.02	34.59	0.47	157	400	8.44	34.50	0.23	26.83	123	0.84
276	10.57	34.60	0.44	148	500	7.10	34.43	0.28	26.98	109	0.96
335	9.44	34.56	0.31	133							
410	8.28	34.49	0.23	121							
486	7.26	34.44	0.30	110							
565	6.63	34.42	0.19	104							

BLACK DOUGLAS; January 29, 1960; 2242, 2255 GCT; 24°42'N, 114°04'W; sounding, 1850 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 00°, 05°.

13750

0	19.26	34.33	5.11	348	0	19.26	34.33	5.11	24.46	348	0.00
9	19.02	34.33	5.09	342	10	19.01	34.33	5.09	24.53	342	0.03
30	18.64	34.22	5.12	341	20	18.82	34.27	5.11	24.54	341	0.07
55	18.58	34.20	5.11	341	30	18.64	34.22	5.12	24.54	341	0.10
65	18.35	34.19	5.22	336	50	18.59	34.21	5.11	24.54	341	0.17
75	18.03	34.11	5.22	334	75	18.03	34.11	5.22	24.61	334	0.26
90	15.62	33.83	4.42	301	100	14.36	33.94	3.06	25.31	267	0.33
106	14.36	33.99	2.96	263	125	12.63	33.97	2.45	25.68	232	0.40
					150	12.04	34.18	1.80	25.96	205	0.45
132	12.56b)	33.98	2.42	229	200	11.75	34.55	0.54	26.31	172	0.55
151	12.03	34.18	1.79	205	250	10.92	34.54	0.39	26.45	159	0.63
177	11.92	34.33	1.24	192	300	10.07	34.49	0.43	26.56	148	0.71
206	11.71	34.58	0.49	169	400	8.72	34.50	0.33	26.79	127	0.85
236	11.28	34.58	0.37	162	500	7.33	34.45	0.20	26.97	110	0.98
278	10.31	34.47	0.46	154							
338	9.61	34.51	0.35	139							
413	8.51	34.49	0.33	124							
488	7.49	34.46	0.21	112							
568	6.45	34.45	0.18	99							

a) Salinity samples at 75 and 90 meters appear to have been reversed; they are assumed to be listed in correct order.

b) Alternate value, 12.76°C, not used in interpolation.

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

137.60

BLACK DOUGLAS; January 30, 1960; 0340 GCT; 24°23.5'N, 114°43'W; sounding, 1850 fm; wind, 320°, force 2; weather, partly cloudy; sea, moderate; wire angle, 05°.

0	19.08	34.22	4.98	352	0	19.08	34.22	4.98	24.42	352	0.00
10	19.08	34.22	5.07	352	10	19.08	34.22	5.07	24.42	352	0.04
30	19.02	34.23	5.14	349	20	19.06	34.23	5.12	24.43	351	0.07
55	19.00	34.25	5.10	347	30	19.02	34.23	5.14	24.45	349	0.11
65	18.98	34.25	5.21	347	50	19.00	34.25	5.10	24.47	347	0.17
76	18.23	34.08	5.02	341	75	18.26	34.07	5.04	24.52	342	0.26
89	14.61	33.69	4.98	290	100	14.15	33.83	4.32	25.27	271	0.34
104	13.82	33.86	4.00	262	125	12.07	33.92	3.08	25.75	225	0.40
130	12.04	33.95	2.97	222	150	11.45	34.14	1.95	26.05	197	0.46
149	11.46	34.14	1.96	198	200	10.91	34.47	0.79	26.40	164	0.55
175	11.15	34.34	1.36	177	250	10.53	34.51	0.59	26.50	154	0.63
205	10.88	34.47	0.77	163	300	9.81	34.52	0.49	26.63	142	0.71
237	10.76	34.51	0.58	158	400	8.96	34.52	0.35	26.77	128	0.85
275	10.14	34.51	0.60	148	500	7.66	34.45	0.31	26.91	115	0.98
334	9.46	34.52	0.39	137							
409	8.88	34.52	0.35	127							
484	7.84	34.45	0.32	118							
565	7.00	34.45	0.29	106							

137.70

BLACK DOUGLAS; January 30, 1960; 0829 GCT; 24°02'N, 115°19'W; sounding, 2000 fm; wind, 320°, force 3; weather, partly cloudy; sea, moderate; wire angle, 10°.

1	19.98	34.37	5.00	363	0	(19.98)	(34.37)	(5.00)	(24.30)	(363)	(0.00)
11	19.98	34.39	5.00	361	10	19.98	34.39	5.00	24.32	361	0.04
31	19.98	34.40	4.80	361	20	19.98	34.40	4.90	24.32	361	0.07
55	19.96	34.40	4.82	360	30	19.98	34.40	4.80	24.32	361	0.11
65	19.84	34.35	4.83	361	50	19.97	34.40	4.81	24.33	360	0.18
75	19.66	34.35	4.88	356	75	19.66	34.35	4.88	24.37	356	0.27
90	16.36	33.86	5.22	315	100	16.04	33.92	4.30	24.94	303	0.35
105	16.14	34.16	3.31	288	125	13.96	34.28	1.92	25.66	234	0.42
129	13.88	34.34	1.79	228	150	13.37	34.46	1.28	25.92	209	0.48
148	13.42	34.45	1.34	211	200	11.46	34.51	0.67	26.32	171	0.58
172	12.56	34.51	0.86	190	250	10.44	34.53	0.40	26.53	152	0.66
201	11.44	34.51	0.66	170	300	9.50	34.50	0.37	26.67	138	0.73
231	10.84	34.53	0.42	158	400	8.54	34.47	0.42	26.80	126	0.87
270	10.02	34.52	0.38	145	500	7.43	34.43	0.37	26.94	113	1.00
330	9.10	34.49	0.37	133							
404	8.48	34.47	0.43	125							
478	7.62	-	0.40	-							
558	6.98	34.43	0.30	107							

137.80

BLACK DOUGLAS; January 30, 1960; 1312 GCT; 23°40'N, 115°55'W; sounding, 2000+ fm; wind, 340°, force 2; weather, cloudy; sea, moderate; wire angle, 07°.

1	18.94	34.07	5.41	359	0	(18.94)	(34.07)	(5.41)	(24.34)	(359)	(0.00)
11	18.92	34.08	5.09	357	10	18.92	34.08	5.10	24.36	357	0.04
32	18.91	34.09	5.05	356	20	18.92	34.09	5.07	24.36	357	0.07
57	18.47	34.05	5.17	349	30	18.91	34.09	5.05	24.37	356	0.11
66	18.34	33.98	5.13	351	50	18.78	34.08	5.08	24.40	354	0.18
76	18.25	33.95	5.20	351	75	18.26	33.95	5.19	24.43	351	0.27
90	16.02	33.78	5.23	313	100	14.59	33.63	4.54	25.03	294	0.35
105	14.14	33.60	4.35	287	125	12.76	33.75	3.72	25.50	249	0.42
129	12.43	33.78	3.65	242	150	10.82	33.82	3.22	25.91	210	0.48
149	10.84	33.82	3.24	211	200	10.63	34.28	1.51	26.30	173	0.57
174	10.60	34.05	2.27	190	250	10.16	34.40	0.82	26.48	156	0.66
203	10.64	34.31	1.43	172	300	9.72	34.46	0.54	26.60	145	0.74
232	10.23	34.36	1.00	161	400	8.44	34.49	0.31	26.83	123	0.88
272	10.08	34.45	0.67	151	500	7.38	34.48	0.23	26.98	109	1.00
331	9.32	34.47	0.47	138							
405	8.38	34.49	0.30	122							
480	7.59	34.48	0.23	112							
559	6.76	34.45	0.23	103							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 28, 1960; 2203 GCT; 24°45.5'N, 112°24'W; sounding, 60 fm; wind, 340°, force 2; weather, cloudy; sea, rough; wire angle, 01°.

140.30

1	19.14	34.40	5.16	339	0	(19.14)	(34.40)	(5.16)	(24.55)	(339)	(0.00)
11	18.94	34.40	5.21	335	10	18.95	34.40	5.20	24.60	335	0.03
31	18.90	34.42	5.18	332	20	18.92	34.42	5.19	24.62	333	0.07
51	17.43	34.33	3.93	305	30	18.90	34.42	5.18	24.63	332	0.10
76	15.14	34.34	2.06	254	50	17.50	34.33	3.98	24.90	306	0.16
102	13.73	34.58	0.76	207	75	15.21	34.33	2.16	25.44	256	0.23
					100	13.74	34.58	0.77	25.93	208	0.29

BLACK DOUGLAS; January 28, 1960; 2003 GCT; 24°35.5'N, 112°42.5'W; sounding, 200 fm; wind, 340°, force 3; weather, cloudy; sea, moderate; wire angle, 05°.

140.35

0	19.18	34.39	5.19	342	0	19.18	34.39	5.19	24.53	342	0.00
10	19.12	34.38	5.24	340	10	19.12	34.38	5.24	24.54	340	0.03
30	19.10	34.35	5.24	343	20	19.10	34.36	5.24	24.53	342	0.07
50	18.51	34.27	4.81	334	30	19.10	34.35	5.24	24.52	343	0.10
75	15.02	34.05	2.87	273	50	18.51	34.27	4.81	24.61	334	0.17
100	13.67	34.42	1.13	218	75	15.02	34.05	2.87	25.25	273	0.25
126	12.74	34.54	0.63	191	100	13.67	34.42	1.13	25.82	218	0.31
165	12.06	34.65	0.44	171	125	12.75	34.54	0.66	26.10	192	0.36
206	11.33	34.67	0.18	156	150	12.31	34.61	0.50	26.25	178	0.41
257	10.70	34.61	0.18	150	200	11.43	34.67	0.20	26.46	158	0.49
306	9.78	34.58	0.19	137	250	10.79	34.61	0.18	26.54	151	0.57
					300	9.90	34.58	0.19	26.66	139	0.65

BLACK DOUGLAS; January 28, 1960; 1721 GCT; 24°25.5'N, 113°02'W; sounding, 1480 fm; wind, 340°, force 5; weather, cloudy; sea, rough; wire angle, 02°.

140.40

2	19.43	34.45	4.96	343	0	(19.43)	(34.45)	(4.96)	(24.51)	(343)	(0.00)
12	19.42	34.42	4.99	345	10	19.43	34.43	4.97	24.49	345	0.03
32	19.40	34.43	4.96	344	20	19.42	34.42	4.97	24.49	345	0.07
62	18.82	34.35	4.54	336	30	19.40	34.43	4.96	24.50	344	0.10
73	17.14	34.39	3.80	293	50	19.40	34.45	4.83	24.52	342	0.17
88	15.40	34.34	2.62	259	75	16.90	34.39	3.69	25.09	288	0.25
103	14.50	34.29	1.77	244	100	14.58	34.29	1.83	25.54	246	0.32
118	13.94	34.39	1.20	226	125	13.65	34.50	0.89	25.89	212	0.38
144	12.78	34.60	0.48	188	150	12.70	34.62	0.43	26.18	185	0.43
164	12.50	34.66	0.33	178	200	11.64	34.67	0.22	26.43	161	0.52
194	11.78	34.67	0.22	164	250	10.75	34.67	0.20	26.59	146	0.59
224	11.14	34.67	0.22	153	300	10.08	34.65	0.21	26.68	137	0.67
255	10.66	34.67	0.20	145	400	8.67	34.56	0.16	26.85	121	0.80
305	10.00	34.64	0.22	136	500	7.52	34.52	0.11	26.99	108	0.92
360	9.21	34.60	0.22	127	600	6.56	34.51	0.13	27.11	96	1.03
445	8.14	34.53	0.13	116							
530	7.20	34.51	0.11	104							
616	6.40	34.51	0.17	94							

BLACK DOUGLAS; January 28, 1960; 1130 GCT; 24°05.5'N, 113°35'W; sounding, 1700 fm; wind, 340°, force 6; weather, missing; sea, rough; wire angle, 10°.

140.50

1	18.96	34.26	5.13	346	0	(18.96)	(34.26)	(5.13)	(24.48)	(346)	(0.00)
12	18.95	34.25	5.15	346	10	18.95	34.25	5.14	24.48	346	0.03
33	18.98	34.28	5.21	345	20	18.96	34.25	5.17	24.48	346	0.07
61	18.36	34.18	4.98	337	30	18.97	34.27	5.19	24.48	346	0.10
72	16.00	33.89	4.60	305	50	18.95	34.29	5.17	24.51	343	0.17
86	14.23	33.91	3.70	267	75	15.35	33.91	4.20	25.07	290	0.25
101	13.37	33.92	3.44	249	100	13.40	33.92	3.45	25.50	249	0.32
115	12.72	34.04	2.50	228	125	12.37	34.13	1.98	25.86	215	0.38
140	12.20	34.30	1.46	199	150	12.01	34.36	1.24	26.11	191	0.43
159	11.86	34.40	1.14	186	200	11.07	34.49	0.80	26.39	165	0.52
188	11.33	34.49	0.98	169	250	10.47	34.55	0.54	26.55	150	0.60
218	10.78	34.49	0.67	160	300	9.90	34.56	0.42	26.65	140	0.68
248	10.51	34.55	0.56	151	400	8.58	34.52	0.29	26.83	123	0.81
297	9.94	34.56	0.43	141	500	7.41	34.48	0.26	26.97	109	0.94
350	9.44	34.59	0.26	131	600	6.44	34.43	0.22	27.07	100	1.05
433	8.14	34.50	0.31	118							
519	7.19	34.47	0.26	107							
604	6.42	34.43	0.22	100							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

140.60

BLACK DOUGLAS; January 28, 1960; 0323, 0503 GCT; 23°45.5'N, 114°17.5'W; sounding, 1750 fm; wind, 340°, force 5; weather, cloudy; sea, very rough; wire angle, 20°, 12°.

1	19.22	34.27	4.92	351	0	(19.22)	(34.27)	(4.92)	(24.43)	(351)	(0.00)
10	19.20	34.27	5.44	351	10	19.20	34.27	5.44	24.43	351	0.04
29	19.22	34.29	5.41	350	20	19.22	34.28	5.43	24.44	350	0.07
58	19.18	34.25	4.89	352	30	19.22	34.29	5.41	24.44	350	0.10
67	18.98	34.23	4.49	348	50	19.20	34.27	5.04	24.43	351	0.18
81	15.42	33.80	4.12	299	75	18.60	34.18	4.38	24.53	342	0.26
96	14.46	33.99	2.39	265	100	14.29	34.02	2.11	25.39	259	0.34
109	13.91	34.09	1.54	247	125	13.44	34.25	0.67	25.74	226	0.40
133	13.06a)	34.26	0.43	218	150	13.07	34.43	0.34	25.96	205	0.46
151	13.07	34.44	0.34	205	200	11.92	34.59	0.24	26.31	172	0.55
179	12.19	34.55	0.28	180	250	10.96	34.58	0.12	26.48	156	0.64
207	11.82	34.60	0.23	170	300	10.30	34.59	0.10	26.60	145	0.71
236	11.18	34.58	0.15	160	400	9.02	34.53	0.19	26.76	129	0.86
283	10.48	34.58	0.10	148	500	7.62	34.49	0.10	26.96	111	0.98
335	9.94	34.59	0.10	139	600	6.58	34.46	0.11	27.07	100	1.09
415	8.82	34.51	0.20	127	700	5.66	34.47	0.14	27.20	88	1.19
496	7.62	34.50	0.09	111	800	5.17	34.48	0.17	27.26	82	1.29
578	6.88	34.46	0.10	104	1000	4.32	34.53	0.30	27.40	69	1.45
					1200	3.64	34.57	0.55	27.50	59	1.60
389b)	9.20	34.55 5	0.18	130	1500	2.99	34.59	0.95	27.58	52	1.80
486	7.86	34.48 7	0.10	115	2000	2.13	34.64	1.77	27.69	41	2.08
583	6.76	34.47 7	0.16	100	2500	1.81	34.67	2.18	27.74	37	2.32
680	5.79	34.47 1	0.14	89	3000	1.64	34.67	2.50	27.76	35	2.55
777	5.28	34.47 6	0.16	83							
974	4.42	34.51 3	0.27	71							
1166	3.74	34.56 6	0.51	60							
1367	3.25	34.57 8	0.78	55							
1559	2.89	34.59 9	1.00	50							
1761	2.50	34.62 0	1.39	45							
1960	2.18	34.63 0	1.70	42							
2155	2.00	34.64 8	1.98	39							
2353	1.88	34.66 3	2.15	37							
2551	1.80	34.66 7	2.25	36							
2750	1.74	34.66 4	2.41	36							
2951	1.66	34.66 8	2.38	35							
3050	1.64	34.66 8	2.59	35							
3150	1.64	34.66 9	2.56	35							

143.26

BLACK DOUGLAS; January 27, 1960; 0400 GCT; 24°19'N, 111°48'W; sounding, 40 fm; wind, 300°, force 4; weather, partly cloudy; sea, rough; wire angle, 01°.

0	19.49	34.60	5.10	334	0	19.49	34.60	5.10	24.61	334	0.00
10	19.50	34.61	5.08	333	10	19.50	34.61	5.08	24.62	333	0.03
30	19.21	34.60	4.90	327	20	19.40	34.61	4.98	24.64	331	0.07
50	18.98	34.55	4.88	325	30	19.21	34.60	4.90	24.68	327	0.10
					50	18.98	34.55	4.88	24.70	325	0.16

143.30

BLACK DOUGLAS; January 27, 1960; 0557 GCT; 24°11'N, 112°03'W; sounding, 105 fm; wind, 300°, force 5; weather, partly cloudy; sea, very rough; wire angle, 02°.

0	19.00	34.52	5.19	328	0	19.00	34.54	5.19	24.67	328	0.00
10	19.00	34.54	5.05	326	10	19.00	34.52	5.05	24.69	326	0.03
30	19.00	34.53	5.13	327	20	19.00	34.53	5.09	24.69	326	0.07
50	18.46	34.54	4.78	313	30	19.00	34.53	5.13	24.68	327	0.10
75	17.16	34.48	3.12	287	50	18.46	34.54	4.78	24.83	313	0.16
100	15.40	34.50	1.58	248	75	17.16	34.48	1.61	25.10	287	0.24
125	13.91	34.63	0.59	207	100	15.40	34.50	1.58	25.51	248	0.30
155	12.50	-	0.26	-	125	13.91	34.63	0.59	25.94	207	0.36
					150	12.70		0.29			

a) Alternate value, 12.91°C, not used in interpolation.

b) Overlapping casts; reconciliation of property curves when necessary.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 27, 1960; 0838 GCT; 24°01'N, 112°22'W; sounding, 500 fm; wind, 290°, force 5; weather, partly cloudy; sea, rough; wire angle, 06°.

143.35

1	19.32	34.38	4.99	345	0	(19.32)	(34.38)	(4.99)	(24.49)	(345)	(0.00)
10	19.34	34.34	4.80	349	10	19.34	34.34	4.80	24.45	349	0.03
31	19.36	34.37	5.05	348	20	19.36	34.36	5.00	24.46	348	0.07
62	18.00	34.16	4.93	330	30	19.36	34.37	5.04	24.46	348	0.10
71	16.01	33.94	4.66	301	50	19.10	34.33	5.02	24.50	344	0.17
85	15.22	33.86	4.19	290	75	15.76	33.91	4.54	24.98	298	0.25
100	13.96	34.09	2.75	248	100	13.96	34.09	2.75	25.51	248	0.32
115	13.30	34.21	2.07	226	125	13.20	34.35	1.63	25.87	214	0.38
140	12.66	34.41	1.17	200	150	12.45	34.46	0.97	26.10	192	0.43
160	12.26	34.50	0.83	186	200	11.54	34.65	0.47	26.43	161	0.52
190	11.68	34.62	0.56	166	250	10.71	34.60	0.42	26.54	151	0.60
220	11.28	34.67	0.36	155	300	10.05	34.56	0.33	26.62	143	0.68
251	10.70	34.60	0.43	151	400	8.29	34.50	0.28	26.87	119	0.82
300	10.05	34.56	0.33	143	500	7.09	34.47	0.25	27.02	105	0.93
355	8.92	34.52	0.34	128	600	6.29	34.45	0.22	27.11	96	1.04
439	7.78	34.49	0.23	114							
524	6.84	34.47	0.26	103							
609	6.22	34.45	0.21	96							

BLACK DOUGLAS; January 27, 1960; 1143 GCT; 23°50.5'N, 112°41'W; sounding, 1500 fm; wind, 290°, force 5; weather, missing; sea, rough; wire angle, 21°.

143.40

1	19.44	34.43	5.33	345	0	(19.44)	(34.43)	(5.33)	(24.49)	(345)	(0.00)
10	19.46	34.45	5.33	344	10	19.46	34.45	5.33	24.50	344	0.03
29	19.42	34.47	5.15	342	20	19.44	34.47	5.20	24.52	342	0.07
56	19.14	34.49	5.15	333	30	19.42	34.47	5.15	24.53	341	0.10
65	19.07	34.44	4.89	335	50	19.21	34.49	5.15	24.60	335	0.17
78	17.12	34.21	3.88	306	75	18.25	34.33	4.35	24.73	323	0.25
91	14.60	34.05	3.03	264	100	13.60	34.04	2.77	25.55	244	0.33
104	13.37	34.04	2.71	240	125	12.95	34.25	1.94	25.84	217	0.38
126	12.94	34.26	1.89	216	150	12.78	34.46	1.14	26.04	198	0.44
143	12.90	34.45	1.18	201	200	11.66	34.55	0.70	26.32	171	0.53
168	12.24	34.46	1.09	188	250	10.88	34.61	0.30	26.52	153	0.61
194	11.76	34.52	0.82	175	300	10.07	34.57	0.38	26.63	142	0.69
220	11.34	34.61	0.41	161	400	8.88	34.54	0.23	26.80	126	0.83
264	10.67	34.61	0.30	150	500	7.64	34.50	0.21	26.96	111	0.95
312	9.89	34.56	0.39	140							
388	9.02	34.54	0.23	128							
472	8.00	34.51	0.23	115							
550	7.02	34.47	0.10	105							

BLACK DOUGLAS; January 27, 1960; 1640 GCT; 23°33.5'N, 113°19'W; sounding, 1700 fm; wind, 360°, force 5; weather, partly cloudy; sea, rough; wire angle, 14°.

143.50

2	20.98	34.63	4.74	369	0	(20.98)	(34.63)	(4.74)	(24.24)	(369)	(0.00)
12	20.97	34.60	4.90	371	10	20.97	34.61	4.87	24.22	371	0.04
31	20.98	34.61	4.86	370	20	20.97	34.61	4.88	24.22	371	0.07
60	21.00	34.60	4.83	372	30	20.98	34.61	4.86	24.22	371	0.11
70	20.98	34.58	4.91	373	50	21.00	34.60	4.84	24.21	371	0.19
85	17.36	34.22	3.43	311	75	20.90	34.57	4.90	24.21	371	0.28
99	15.90	34.11	3.38	287	100	15.78	34.09	3.38	25.12	285	0.36
113	13.98	33.92	3.40	261	125	13.32	34.08	2.68	25.64	236	0.43
138	12.84	34.23	1.93	216	150	12.49	34.34	1.38	26.00	202	0.48
157	12.30	34.39	1.14	194	200	11.43	34.53	0.65	26.35	168	0.58
187	11.63	34.52	0.76	173	250	10.89	34.61	0.37	26.52	152	0.66
216	11.24	34.54	0.52	164	300	10.03	34.53	0.36	26.60	145	0.74
246	10.96	34.62	0.37	154	400	8.72	34.53	0.32	26.82	124	0.88
295	10.11	34.53	0.37	146	500	7.31	34.43	0.25	26.95	111	1.00
350	9.54	34.56	0.27	134	600	6.41	34.43	0.21	27.07	100	1.11
432	8.21	34.50	0.32	119							
516	7.12	34.42	0.24	110							
601	6.40	34.43	0.21	100							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

143.60

BLACK DOUGLAS; January 27, 1960; 2150 GCT; 23°10.5'N, 113°55.5'W; sounding, 1800 fm; wind, 320°, force 4; weather, cloudy; sea, very rough; wire angle, 05°.

1	21.49	34.61	4.75	384	0	(21.49)	(34.61)	(4.75)	(24.08)	(384)	(0.00)
11	21.48	34.60	4.91	384	10	21.48	34.60	4.90	24.08	384	0.04
31	21.07	34.60	4.82	374	20	21.45	34.60	4.90	24.09	383	0.08
62	20.88	34.56	4.74	372	30	21.10	34.60	4.83	24.19	374	0.11
71	18.70	34.27	3.97	339	50	20.95	34.58	4.76	24.21	372	0.19
86	16.16	34.07	3.44	295	75	17.62	34.16	3.76	24.75	321	0.28
101	14.97	34.23	2.00	258	100	15.07	34.23	2.07	25.38	260	0.35
117	14.02	34.37	1.38	229	125	13.80	34.47	0.95	25.84	217	0.41
142	13.38	34.61	0.43	198	150	13.09	34.64	0.45	26.11	191	0.46
161	12.80	34.66	0.47	184	200	12.28	34.76	0.22	26.37	166	0.55
191	12.41	34.74	0.29	171	250	11.31	34.68	0.14	26.49	155	0.64
222	11.88	34.77	0.12	159	300	10.66	34.62	0.11	26.57	148	0.72
255	11.22	34.67	0.14	154	400	8.88	34.55	0.14	26.80	126	0.86
305	10.60	34.62	0.10	147	500	7.49	34.44	0.14	26.94	113	0.98
360	9.72	34.61	0.11	134	600	6.60	34.45	0.14	27.06	101	1.09
446	8.04	34.47	0.18	119							
531	7.22	34.44	0.13	110							
616	6.45	34.45	0.16	99							

147.20

BLACK DOUGLAS; January 26, 1960; 2248 GCT; 23°56'N, 111°03.5'W; sounding, 70 fm; wind, 300°, force 3; weather, partly cloudy; sea, moderate; wire angle, 04°.

0	21.28	34.69	5.00	373	0	21.28	34.69	5.00	24.20	373	0.00
11	21.20	34.68	4.98	372	10	21.21	34.68	4.99	24.21	372	0.04
31	20.48	34.67	4.38	353	20	21.10	34.68	4.90	24.24	369	0.07
51	18.68	34.59	3.16	315	30	20.58	34.67	4.46	24.38	356	0.11
76	17.20	34.52	2.28	285	50	18.72	34.59	3.17	24.81	315	0.18
101	15.28	34.60	1.23	238	75	17.22	34.52	2.30	25.11	286	0.25
					100	15.29	34.60	1.24	25.62	238	0.32

147.25

BLACK DOUGLAS; January 26, 1960; 2040 GCT; 23°49'N, 111°17'W; sounding, 250 fm; wind, 330°, force 5; weather, cloudy; sea, rough; wire angle, 06°.

2	21.07	34.68	4.87	368	0	(21.07)	(34.68)	(4.87)	(24.25)	(368)	(0.00)
12	21.05	34.68	4.94	367	10	21.05	34.68	4.93	24.26	367	0.04
32	20.28	34.61	4.90	353	20	21.05	34.68	4.94	24.26	367	0.07
52	18.88	34.52	3.89	325	30	20.45	34.63	4.93	24.38	356	0.11
77	16.18	34.36	-	274	50	18.91	34.52	3.94	24.69	326	0.18
102	14.45	34.65	0.98	217	75	16.38	34.37		25.19	278	0.25
126	13.73	34.74	0.61	195	100	14.52	34.64	1.01	25.81	219	0.32
167	12.80	34.72	0.39	179	125	13.75	34.74	0.63	26.06	196	0.37
207	12.04	34.78	0.26	161	150	13.15	34.73	0.45	26.17	185	0.42
257	11.04	34.72	0.13	148	200	12.17	34.78	0.28	26.41	163	0.51
307	10.24	34.67	0.22	138	250	11.17	34.73	0.15	26.56	149	0.59
415	9.02	34.63	0.20	122	300	10.33	34.67	0.21	26.66	139	0.66
					400	9.16	34.63	0.20	26.83	123	0.80

147.30

BLACK DOUGLAS; January 26, 1960; 1718 GCT; 23°36.5'N, 111°37.5'W; sounding, 145 fm; wind, 330°, force 5; weather, cloudy; sea, rough; wire angle, 13°.

0	19.92	34.59	5.31	345	0	19.92	34.59	5.31	24.49	345	0.00
10	19.90	34.58	5.21	346	10	19.90	34.58	5.21	24.48	346	0.03
30	19.89	34.60	5.26	344	20	19.90	34.59	5.24	24.50	344	0.07
49	18.81	34.43	4.21	330	30	19.89	34.60	5.26	24.50	344	0.10
73	16.11	34.22	2.94	283	50	18.72	34.42	4.11	24.67	328	0.17
107	13.74	34.14	2.54	240	75	15.86	34.20	2.89	25.18	279	0.25
122	13.14	34.42	1.40	208	100	14.03	34.14	2.60	25.53	246	0.31
161	12.96	34.72	0.45	182	125	13.10	34.47	1.24	25.98	204	0.37
201	12.14	34.71	0.42	168	150	13.01	34.67	0.54	26.16	187	0.42
					200	12.16	34.71	0.42	26.35	168	0.51

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 26, 1960; 1150 GCT; 23°16'N, 112°19'W; sounding, 1600 fm; wind, 330°, force 4; weather, cloudy; sea, rough; wire angle, 16°.

147.40

0	20.76	34.58	5.23	367	0	20.76	34.58	5.23	24.26	367	0.00
10	20.78	34.61	5.10	366	10	20.78	34.61	5.10	24.27	366	0.04
29	20.68	34.60	5.15	363	20	20.76	34.61	5.12	24.28	365	0.07
38	19.74	34.37	5.11	357	30	20.65	34.59	5.15	24.30	363	0.11
53	19.68	34.42	5.15	352	50	19.70	34.41	5.14	24.41	353	0.18
68	18.87	34.32	3.85	339	75	16.80	34.07	3.90	24.87	309	0.26
91	14.47	33.91	3.98	271	100	13.69	33.96	3.47	25.47	252	0.34
110	13.30	34.09	2.70	235	125	13.22	34.39	1.38	25.90	211	0.39
128	13.28	34.43	1.30	210	150	12.91	34.55	0.70	26.08	194	0.45
147	13.00	34.53	0.77	197	200	11.82	34.66	0.30	26.38	166	0.54
174	12.37	34.61	0.49	179	250	10.91	34.65	0.30	26.54	150	0.62
209	11.62	34.66	0.29	162	300	10.23	34.67	0.30	26.67	138	0.69
239	11.08	34.65	0.29	153	400	8.52	34.59	0.18	26.90	116	0.82
286	10.46	34.67	0.31	141	500	7.30	34.54	0.22	27.04	103	0.94
339	9.56	34.64	0.24	129	600	(6.43)	(34.52)		(27.14)	(93)	(1.04)
420	8.24	34.58	0.17	114							
504	7.25	34.54	0.22	103							
588	6.52	34.52	0.22	94							

BLACK DOUGLAS; January 26, 1960; 0559 GCT; 22°55.5'N, 112°56.5'W; sounding, 1840 fm; wind, 320°, force 3; weather, partly cloudy; sea, rough; wire angle, 05°.

147.50

0	21.36	34.66	5.08	377	0	21.36	34.66	5.08	24.15	377	0.00
10	21.36	34.65	5.06	378	10	21.36	34.65	5.06	24.14	378	0.04
30	21.32	34.65	5.04	376	20	21.33	34.65	5.05	24.15	377	0.08
60	21.32	34.65	4.99	376	30	21.32	34.65	5.04	24.16	376	0.11
70	21.27	34.65	4.82	375	50	21.32	34.65	5.01	24.16	376	0.19
85	19.20	34.60	3.01	327	75	21.22	34.65	4.74	24.19	374	0.28
100	18.28	34.85	1.99	287	100	18.28	34.85	1.99	25.10	287	0.37
116	17.12	34.87	1.67	258	125	16.52	34.87	1.47	25.55	244	0.43
141	15.60	34.86	1.12	225	150	15.00	34.84	0.93	25.86	215	0.49
161	14.34	34.81	0.72	203	200	12.81	34.80	0.36	26.30	173	0.59
191	13.08	34.81	0.43	178	250	11.57	34.68	0.29	26.44	160	0.68
221	12.26	34.77	0.26	166	300	11.03	34.75	0.22	26.60	145	0.76
252	11.54	34.68	0.29	159	400	9.17	34.60	0.18	26.80	126	0.90
303	10.98	34.76	0.21	143	500	7.85	34.56	0.19	26.98	109	1.02
357	9.95	34.66	0.22	134	600	6.81	34.53	0.20	27.09	98	1.13
442	8.56	34.57	0.16	119							
527	7.57	34.56	0.20	106							
612	6.70	34.52	0.20	97							

BLACK DOUGLAS; January 26, 1960; 0028 GCT; 22°35.5'N, 113°35'W; sounding, 2000 fm; wind, 320°, force 2; weather, cloudy; sea, rough; wire angle, 06°.

147.60

0	22.49	34.73	4.84	402	0	22.49	34.73	4.84	23.89	402	0.00
10	22.36	34.76	4.76	397	10	22.36	34.76	4.76	23.95	397	0.04
30	22.28	34.76	4.73	394	20	22.32	34.76	4.75	23.97	395	0.08
56	21.72	34.72	4.40	382	30	22.28	34.76	4.73	23.98	394	0.12
66	20.98	34.67	3.82	366	50	21.97	34.74	4.60	24.05	387	0.20
76	19.22	34.52	2.95	333	75	19.40	34.53	3.04	24.59	336	0.29
91	17.25	34.51	1.78	287	100	17.09	34.52	1.65	25.14	283	0.37
106	16.64	34.51	1.27	274	125	15.02	34.58	0.60	25.66	234	0.43
131	14.56	34.63	0.47	220	150	14.00	34.80	0.15	26.06	196	0.49
152	13.94	34.81	0.14	194	200	12.18	34.72	0.18	26.36	168	0.58
176	13.09	34.76	0.16	182	250	11.59	34.77	0.10	26.52	153	0.66
206	12.05	34.72	0.18	166	300	10.78	34.70	0.10	26.61	144	0.74
236	11.78	34.79	0.11	155	400	9.15	34.61	0.13	26.81	125	0.88
277	11.17	34.72	0.10	150	500	7.90	34.60	0.11	27.00	107	1.00
337	10.14	34.67	0.11	136							
413	8.98	34.60	0.13	123							
487	8.06	34.60	0.11	109							
568	7.05	34.53	0.11	101							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

150.19 BLACK DOUGLAS; January 24, 1960; 2032 GCT; 23°23.5'N, 110°39'W; sounding, 100 fm; wind, 320°, force 2; weather, cloudy; sea, rough; wire angle, 01°.

0	20.56	34.61	5.17	360	0	20.56	34.61	5.17	24.33	360	0.00
9	20.20	34.58	5.27	353	10	20.13	34.57	5.26	24.43	351	0.04
29	18.24	34.49	3.17	312	20	19.30	34.53	4.45	24.61	334	0.07
49	16.13	34.52	1.72	262	30	18.03	34.49	3.00	24.89	307	0.10
74	15.18	34.58	1.19	237	50	16.10	34.53	1.68	25.38	260	0.16
100	13.68	34.74	0.63	195	75	15.17	34.59	1.17	25.64	236	0.22
124	13.16	34.72	0.47	186	100	13.68	34.74	0.63	26.07	195	0.28
154	12.86	34.70	0.45	182	125	13.15	34.72	0.46	26.17	186	0.32
					150	12.89	34.70	0.46	26.20	182	0.37

150.25 BLACK DOUGLAS; January 24, 1960; 2341 GCT; 23°11'N, 111°01'W; sounding, 700 fm; wind, 310°, force 2; weather, cloudy; sea, rough; wire angle, 07°.

0	20.43	34.58	5.52	359	0	20.43	34.58	5.52	24.34	359	0.00
10	20.20	34.61	5.21	351	10	20.20	34.61	5.21	24.43	351	0.04
30	20.05	34.58	5.45	350	20	20.12	34.59	5.33	24.44	350	0.07
55	17.32	34.16	3.79	314	30	20.05	34.58	5.45	24.44	350	0.11
64	16.33	34.05	3.98	300	50	19.65	34.51	5.31	24.50	344	0.17
75	15.90	34.38	2.36	267	75	15.90	34.38	2.36	25.31	267	0.25
90	15.21	34.60	1.34	236	100	14.17	34.58	0.74	25.85	216	0.31
104	13.98	-	0.65	-	125	13.44	34.71	0.50	26.10	192	0.36
128	13.37	34.73	0.49	189	150	12.85	34.75	0.43	26.25	178	0.41
147	12.94	34.76	0.45	179	200	11.83	34.72	0.30	26.43	161	0.50
172	12.42	34.72	0.38	172	250	11.08	34.73	0.24	26.57	147	0.58
201	11.81	34.72	0.30	161	300	9.98	34.66	0.21	26.71	134	0.65
230	11.50	34.77	0.26	152	400	8.88	34.57	0.26	26.82	124	0.78
270	10.58	34.68	0.23	142	500	7.76	34.54	0.28	26.97	110	0.90
329	9.50	34.63	0.21	129							
402	8.86	34.57	0.27	124							
476	8.06	34.54	-	114							
555	7.01	34.55	0.28	99							

150.30 BLACK DOUGLAS; January 25, 1960; 0228 GCT; 23°00.5'N, 111°20'W; sounding, 1300 fm; wind, 310°, force 2; weather, partly cloudy; sea, rough; wire angle, 19°.

1	21.10	34.67	5.08	370	0	(21.10)	(34.67)	(5.08)	(24.23)	(370)	(0.00)
10	21.04	34.63	5.08	371	10	21.04	34.63	5.08	24.22	371	0.04
30	20.92	34.61	5.03	369	20	20.99	34.62	5.05	24.23	370	0.07
58	20.69	34.58	4.82	366	30	20.92	34.61	5.03	24.24	369	0.11
67	19.90	34.42	4.60	357	50	20.78	34.59	4.92	24.26	367	0.18
81	16.26	34.09	3.65	296	75	18.00	34.24	4.37	24.71	324	0.27
95	16.24	34.58	1.71	260	100	16.20	34.63	1.57	25.44	255	0.34
108	15.42	34.61	1.23	240	125	14.37	34.63	0.82	25.85	216	0.40
131	14.10	34.65	0.71	210	150	13.48	34.70	0.48	26.09	193	0.46
149	13.50	34.70	0.49	194	200	12.24	34.67	0.38	26.31	172	0.55
176	12.92	34.67	0.45	185	250	11.39	34.70	0.15	26.49	155	0.63
203	12.16	34.67	0.36	171	300	10.60	34.69	0.13	26.63	142	0.71
230	11.66	34.70	0.15	160	400	8.93	34.60	0.13	26.84	122	0.85
275	11.02	34.69	0.15	150	500	7.58	34.57	0.12	27.03	104	0.97
325	10.17	34.68	0.11	136							
404	8.88	34.60	0.13	121							
485	7.73	34.58	0.11	106							
568	7.18	34.56	0.13	100							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
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600I

BLACK DOUGLAS; January 25, 1960; 0737 GCT; 22°41.5'N, 111°57'W; sounding, 1640 fm; wind, 320°, force 3; weather, partly cloudy; sea, rough; wire angle, 10°.

15040

0	21.20	34.63	4.96	375	0	21.20	34.63	4.96	24.18	375	0.00
10	21.20	34.65	4.73	374	10	21.20	34.65	4.73	24.19	374	0.04
30	20.69	34.56	4.86	367	20	21.00	34.62	4.80	24.23	370	0.07
40	20.60	34.54	4.70	366	30	20.69	34.56	4.70	24.26	367	0.11
54	20.38	34.52	4.84	362	50	20.41	34.52	4.82	24.30	363	0.18
69	19.89	34.43	4.56	356	75	19.33	34.40	4.22	24.50	344	0.27
94	16.00	34.24	2.86	279	100	15.64	34.29	2.54	25.31	267	0.35
114	14.40	34.42	1.51	233	125	14.11	34.47	1.30	25.78	223	0.41
134	13.93	34.52	1.14	216	150	13.52	34.66	0.78	26.05	197	0.47
154	13.39	34.67	0.74	194	200	11.92	34.67	0.50	26.38	166	0.56
183	12.32	34.67	0.56	174	250	11.33	34.74	0.33	26.54	151	0.64
217	11.69	34.68	0.47	162	300	10.58	34.69	0.31	26.63	142	0.72
249	11.34	34.74	0.33	151	400	9.10	34.63	0.24	26.84	122	0.85
298	10.61	34.69	0.31	143	500	7.85	34.53	0.32	26.96	111	0.98
352	9.77	34.67	0.28	130	600	6.88	34.52	0.25	27.08	99	1.09
436	8.66	34.60	0.23	118							
521	7.60	34.52	0.35	109							
606	6.84	34.52	0.24	99							

BLACK DOUGLAS; January 25, 1960; 1239 GCT; 22°22'N, 112°35'W; sounding, 1600 fm; wind, 320°, force 3; weather, partly cloudy; sea, rough; wire angle, 03°.

15050

0	21.35	34.67	5.06	376	0	21.35	34.67	5.06	24.17	376	0.00
10	21.36	34.68	5.12	376	10	21.36	34.68	5.12	24.17	376	0.04
30	21.32	34.66	5.09	376	20	21.35	34.67	5.11	24.17	376	0.08
60	21.08	34.65	4.98	371	30	21.32	34.66	5.09	24.17	376	0.11
70	20.78	34.60	4.76	366	50	21.19	34.65	5.02	24.20	373	0.19
86	17.75	34.32	3.19	313	75	20.53	34.57	4.57	24.32	361	0.28
101	16.98	34.71	1.72	267	100	16.97	34.71	1.73	25.31	267	0.36
116	15.94	34.79	1.20	238	125	15.02	34.79	1.05	25.81	219	0.42
141	14.26	34.67	0.86	204	150	13.88	34.75	0.64	26.04	198	0.47
161	13.40	34.72	0.40	191	200	12.54	34.79	0.29	26.34	169	0.57
192	12.64	34.76	0.34	174	250	11.84	34.80	0.15	26.48	156	0.65
222	12.28	34.83	0.18	162	300	10.82	34.69	0.18	26.58	147	0.73
253	11.78	34.79	0.15	155	400	9.33	34.61	0.13	26.78	128	0.87
302	10.78	34.68	0.19	146	500	8.01	34.56	0.11	26.94	113	1.00
360	9.80	34.61	0.17	135	600	6.81	34.51	0.12	27.08	99	1.11
443	8.85	34.60	0.11	121							
528	7.61	34.52	0.11	109							
612	6.72	34.51	0.13	98							

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600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

150.60

BLACK DOUGLAS; January 25, 1960; 1709, 1845 GCT; 22°04'N, 113°09.5'W; sounding, 1650 fm; wind, 320°, force 2; weather, partly cloudy; sea, rough; wire angle, 05°, 07°.

0	21.42	34.65	4.94	379	0	21.42	34.65	4.94	24.13	379	0.00
10	21.40	34.67	-	377	10	21.40	34.67	4.99	24.15	377	0.04
30	21.34	34.69	5.04	374	20	21.38	34.69	5.02	24.17	375	0.08
55	19.89	34.51	4.20	351	30	21.34	34.69	5.04	24.19	374	0.11
65	18.09	34.33	3.17	320	50	21.12	34.67	4.96	24.23	370	0.19
75	17.16	34.42	2.40	292	75	17.16	34.42	2.40	25.05	292	0.27
90	14.98	34.16	2.87	264	100	14.00	34.16	2.58	25.55	244	0.34
104	13.49	34.13	2.32	236	125	13.82	34.65	0.80	25.97	204	0.40
129	13.86	34.73	0.60	199	150	13.23	34.76	0.36	26.18	185	0.44
149	13.24	34.76	0.37	185	200	12.05	34.71	0.20	26.38	166	0.53
174	12.74	34.72	0.26	178	250	11.29	34.76	0.11	26.56	148	0.62
204	11.96	34.71	0.19	164	300	10.65	34.72	0.10	26.64	141	0.69
234	11.47	34.78	0.11	151	400	9.32	34.63	0.12	26.80	126	0.83
274	11.02	34.74	0.12	146	500	7.75	34.50	0.13	26.94	112	0.95
334	10.12	34.69	0.07	134	600	6.54	34.47	0.14	27.09	98	1.06
408	9.24	34.63	0.10	125	700	5.75	34.50	0.16	27.21	87	1.16
483	8.08	34.53	0.13	115	800	5.21	34.49	0.21	27.27	81	1.25
563	7.19	34.49	0.19	106	1000	4.39	34.52	0.38	27.39	70	1.42
					1200	3.78	34.54	0.50	27.46	63	1.57
393a)	9.43	34.62 1	0.13	128	1500	3.09	34.60	1.00	27.58	52	1.78
490	7.87	34.50 5	0.13	114	2000	2.19	34.64	1.91	27.69	41	2.05
589	6.66	34.47 7	0.14	100	2500	1.84	34.66	2.35	27.74	37	2.30
688	5.84	34.50 8	0.16	87	3000	1.66	34.68	2.65	27.77	34	2.53
787	5.27	34.48 3	0.19	82							
988	4.44	34.51 7	0.37	71							
1182	3.84	34.53 6	0.47	64							
1383	3.30	34.58 0	0.81	55							
1581	2.94	34.60 0	1.12	50							
1781	2.54	34.61 9	1.49	46							
1981	2.20	34.63 8	1.90	42							
2181	2.02	34.64 8	2.12	40							
2381	1.90	34.65 9	2.29	38							
2582	1.81	34.65 8	2.40	36							
2784	1.72	34.66 6	2.59	36							
2985	1.66	34.67 5	2.62	34							
3086	1.63	34.67 4	2.79	34							
3187	1.64	34.67 3	2.77	34							

153.16

BLACK DOUGLAS; January 16, 1960; 0640 GCT; 22°55'N, 110°07.5'W; sounding, 250 fm; wind, 320°, force 4; weather, overcast; sea, rough; wire angle, 18°.

1	21.58	34.67	4.79	382	0	(21.58)	(34.67)	(4.79)	(24.11)	(382)	(0.00)
10	21.58	34.69	4.74	381	10	21.58	34.69	4.74	24.12	381	0.04
30	20.60	34.54	4.18	366	20	21.55	34.69	4.70	24.12	380	0.08
49	17.75	34.34	3.00	311	30	20.60	34.54	4.18	24.27	366	0.11
73	16.22	34.60	1.45	258	50	17.62	34.34	2.91	24.88	308	0.18
99	14.77	34.63	0.83	225	75	16.19	34.61	1.42	25.42	257	0.25
123	13.83	34.70	0.49	201	100	14.73	34.63	0.79	25.77	224	0.31
162	12.60	34.74	0.18	174	125	13.77	34.71	0.46	26.02	200	0.37
201	11.58	34.72	0.15	157	150	12.94	34.74	0.24	26.22	181	0.42
251	10.76	34.72	0.10	143	200	11.60	34.72	0.15	26.47	157	0.50
301	9.88	34.65	0.09	134	250	10.78	34.72	0.10	26.62	143	0.58
404	8.64	34.63	0.11	115	300	9.89	34.65	0.09	26.71	134	0.65
					400	8.69	34.63	0.11	26.90	116	0.78

a) Overlapping casts; reconciliation of property curves when necessary.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6001

BLACK DOUGLAS; January 16, 1960; 0948 GCT; 22°47'N, 110°22'W; sounding, 600 fm; wind, 320°, force 5; weather, overcast; sea, very rough; wire angle, 21°.

153.20

2	20.90	34.66	4.85	365	0	(20.90)	(34.66)	(4.85)	(24.28)	(365)	(0.00)
11	20.88	34.65	4.91	365	10	20.88	34.65	4.91	24.28	365	0.04
30	20.90	34.66	4.83	365	20	20.89	34.66	4.87	24.28	365	0.07
39	20.89	34.63	4.80	367	30	20.90	34.66	4.83	24.28	365	0.11
53	18.26	34.45	2.91	315	50	19.60	34.53	3.86	24.53	342	0.18
68	16.71	34.56	1.82	272	75	16.38	34.58	1.68	25.36	263	0.26
92	14.68	34.55	1.24	229	100	14.60	34.62	1.06	25.79	222	0.32
110	14.02	34.75	0.45	201	125	13.54	34.72	0.43	26.09	193	0.37
129	13.38	34.71	0.42	191	150	12.53	34.67	0.33	26.26	177	0.42
148	12.56	34.67	0.34	178	200	11.71	34.71	0.18	26.44	160	0.50
176	12.18	34.72	0.26	168							
208	11.55	34.70	0.18	158							
239	11.16	34.69	0.23	152							

BLACK DOUGLAS; January 16, 1960; 1612 GCT; 22°27'N, 110°59'W; sounding, 1600 fm; wind, 310°, force 5; weather, overcast; sea, very rough; wire angle, 35°.

153.30

1	21.52	34.64	4.87	383	0	(21.52)	(34.64)	(4.87)	(24.10)	(383)	(0.00)
9	21.52	34.66	4.84	381	10	21.52	34.66	4.84	24.12	381	0.04
25	21.52	34.61	4.94	385	20	21.52	34.63	4.91	24.10	383	0.08
34	21.54	34.62	4.82	385	30	21.53	34.62	4.88	24.07	385	0.11
46	21.49	34.60	4.79	385	50	21.43	34.59	4.80	24.08	384	0.19
58	21.24	34.56	4.82	381	75	17.32	34.47	2.37	25.05	292	0.28
78	17.22	34.47	2.31	290	100	15.28	34.58	1.18	25.61	239	0.34
95	15.65	34.57	1.34	248	125	14.18	34.65	0.72	25.90	211	0.40
111	14.72	34.60	0.97	226	150	13.80	34.77	0.56	26.07	195	0.45
129	14.09	34.67	0.67	208	200	12.44	34.75	0.20	26.32	171	0.55
153	13.74	34.77	0.54	194	250	11.58	34.74	0.19	26.48	156	0.63
181	12.60	34.70	0.25	177	300	10.64	34.71	0.18	26.63	142	0.71
206	12.39	34.76	0.20	169	400	9.20	34.64	0.16	26.82	124	0.84
292	10.76	34.71	0.19	143	500	7.60	34.54	0.13	26.99	108	0.96
366	9.76	34.69	0.15	128							
445	8.42	34.57	0.15	117							
522	7.34	34.54	0.11	104							

BLACK DOUGLAS; January 24, 1960; 0820 GCT; 22°07'N, 111°36.5'W; sounding, 1550 fm; wind, 360°, force 1; weather, partly cloudy; sea, moderate; wire angle, 00°.

153.40

0	21.42	34.63	5.09	380	0	21.42	34.63	5.09	24.12	380	0.00
10	21.41	34.63	5.18	380	10	21.41	34.63	5.18	24.12	380	0.04
30	20.78	34.60	5.18	366	20	21.10	34.61	5.18	24.20	373	0.08
55	20.70	34.64	5.05	361	30	20.78	34.60	5.18	24.27	366	0.11
66	20.53	34.60	4.81	360	50	20.73	34.64	5.09	24.32	362	0.19
75	17.20	34.15	4.17	312	75	17.20	34.15	4.17	24.84	312	0.27
90	15.32	34.23	2.61	265	100	14.63	34.32	1.88	25.55	244	0.34
105	14.31	34.35	1.63	236	125	13.09	34.44	1.30	25.96	205	0.40
131	12.91	34.47	1.21	199	150	12.98	34.66	0.59	26.15	187	0.45
150	12.98	34.66	0.59	187	200	11.89	34.67	0.25	26.38	166	0.54
175	12.22	34.67	0.37	172	250	11.11	34.69	0.20	26.54	151	0.62
205	11.82	34.67	0.24	165	300	10.42	34.67	0.16	26.64	141	0.69
236	11.34	34.70	0.22	154	400	8.79	34.55	0.19	26.82	124	0.83
277	10.72	34.67	0.19	146	500	7.51	34.52	0.11	26.98	108	0.95
336	9.96	34.66	0.11	134							
410	8.52	34.52	0.20	122							
485	7.68	34.52	0.11	110							
566	6.84	34.48	0.11	102							

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600I

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

153.40

BLACK DOUGLAS; January 24, 1960; 0917 GCT; ^{a)} 22° 07'N, 111° 36.5'W; sounding, 1550 fm; wind, 360°, force 1; weather, partly cloudy; sea, moderate; wire angle, 00°.

436	8.34	34.53	0.19	118
439	8.31	34.54	0.17	117
442	8.28	34.52	0.20	118
467	7.98	34.54	0.15	113
471	7.92	34.54	0.15	111
474	7.84	34.51	0.19	113
499	7.72	34.52	0.14	110
502	7.74	34.56	0.16	108
505	7.58	34.54	0.15	107
530	7.25	34.50	0.15	106
533	7.28	34.54	0.15	103
536	7.24	34.52	0.17	104
561	6.97	34.51	0.16	101
564	7.05	34.52	0.13	101
567	7.08	34.52	0.14	102
592	6.78	34.55	0.15	95
595	6.73	34.49	0.15	99
599	6.70	34.52	0.14	97

153.50

BLACK DOUGLAS; January 24, 1960; 0302 GCT; 21° 46.5'N, 112° 13'W; sounding, 1700 fm; wind, 010°, force 2; weather, partly cloudy; sea, rough; wire angle, 07°.

0	22.74	34.51	4.74	424	0	22.74	34.51	4.74	23.66	424	0.00
10	22.68	34.60	4.91	417	10	22.68	34.60	4.91	23.74	417	0.04
30	21.40	34.63	5.02	380	20	22.20	34.64	4.97	23.91	401	0.08
55	21.09	34.63	5.10	372	30	21.40	34.63	5.02	24.12	380	0.12
65	20.09	34.49	4.36	357	50	21.14	34.63	5.09	24.19	374	0.20
75	17.00	34.59	1.02	276	75	17.00	34.59	1.02	25.22	276	0.28
89	14.89	34.63	0.51	227	100	13.85	34.53	0.83	25.88	213	0.34
104	13.24	34.49	0.98	205	125	13.34	34.76	0.57	26.15	187	0.39
128	13.18	34.78	0.38	182	150	12.83	34.78	0.15	26.28	175	0.44
147	12.92	34.78	0.18	177	200	11.77	34.76	0.20	26.47	157	0.52
172	12.29	34.78	0.12	166	250	10.87	34.71	0.16	26.60	145	0.60
201	11.76	34.76	0.20	157	300	10.33	34.71	0.16	26.69	136	0.67
230	11.02	34.70	0.21	149	400	8.81	34.60	0.20	26.85	121	0.81
270	10.74	34.72	0.15	142	500	7.51	34.61	0.21	27.06	101	0.92
328	9.90	34.69	0.18	131							
401	8.80	34.60	0.20	120							
475	7.80	34.60	0.20	106							
556	6.98	34.63	0.22	92							

153.60

BLACK DOUGLAS; January 23, 1960; 2103 GCT; 21° 26.5'N, 112° 50.5'W; sounding, 1800 fm; wind, 350°, force 2; weather, partly cloudy; sea, rough; wire angle, 05°.

1	22.46	34.54	4.86	415	0	(22.46)	(34.54)	(4.86)	(23.76)	(415)	(0.00)
11	22.22	34.56	4.91	407	10	22.23	34.56	4.91	23.83	408	0.04
31	21.40	34.44	4.77	394	20	22.21	34.56	4.91	23.84	407	0.08
42	18.66	34.43	3.15	326	30	21.55	34.46	4.82	23.95	397	0.12
52	16.88	34.36	2.07	290	50	17.00	34.35	2.16	25.04	293	0.19
66	15.32	34.67	0.19	233	75	14.63	34.67	0.25	25.81	219	0.26
81	14.18	34.65	0.27	211	100	13.69	34.70	0.23	26.03	198	0.31
100	13.69	34.70	0.23	198	125	13.00	34.76	0.12	26.23	180	0.36
125	13.00	34.76	0.12	180	150	12.47	34.81	0.10	26.38	166	0.40
144	12.56	34.81	0.11	168	200	11.75	34.79	0.08	26.50	154	0.48
173	12.12	34.89u	0.06	-	250	11.09	34.77	0.06	26.60	144	0.56
204	11.68	34.79	0.08	154	300	10.45	34.73	0.06	26.68	137	0.63
232	11.29	34.76	0.05	149	400	9.07	34.62	0.08	26.83	123	0.76
272	10.85	34.78	0.06	140	500	7.72	34.57	0.10	27.00	107	0.88
332	9.98	34.67	0.06	133							
406	8.99	34.62	0.09	122							
481	7.96	34.58	0.09	109							
561	7.13	34.56	0.10	100							

82

a) Test cast.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 23, 1960; 1520 GCT; 21°01.5'N, 113°26'W; sounding, 2000+ fm; wind, 360°, force 3; weather, clear; sea, moderate; wire angle, 13°.

153.70

0	21.80	34.58	4.81	394	0	21.80	34.58	4.81	23.98	394	0.00
10	21.79	34.58	4.72	394	10	21.79	34.58	4.72	23.98	394	0.04
29	21.72	34.60	4.60	391	20	21.77	34.59	4.67	23.99	393	0.08
40	21.66	34.64	4.51	386	30	21.72	34.60	4.60	24.01	391	0.12
49	18.66	34.63	2.27	312	50	18.00	34.63	1.78	25.01	296	0.19
64	16.02	34.63	0.49	251	75	15.42	34.65	0.31	25.63	237	0.25
77	15.31	34.65	0.30	234	100	13.70	34.73	0.17	26.07	195	0.31
97	13.98	34.72	0.20	202	125	13.03	34.82	0.09	26.26	177	0.36
120	13.10	34.81	0.09	178	150	12.46	34.81	0.10	26.37	166	0.40
139	12.69	34.82	0.09	170	200	11.69	34.79	0.07	26.50	154	0.48
167	12.16	34.79	0.10	162	250	10.99	34.72	0.06	26.58	147	0.56
195	11.75	34.79	0.08	155	300	10.29	34.68	0.09	26.67	138	0.63
223	11.44	34.77	0.06	151	400	8.82	34.60	0.08	26.86	120	0.76
261	10.80	34.70	0.06	145	500	7.63	34.55	0.09	27.00	107	0.88
318	10.04	34.68	0.09	134							
391	8.96	34.61	0.07	122							
462	8.08	34.58	0.09	111							
543	7.14	34.52	0.10	103							

BLACK DOUGLAS; January 23, 1960; 1014 GCT; 20°46'N, 114°04'W; sounding, 2000+ fm; wind, 330°, force 2; weather, partly cloudy; sea, moderate; wire angle, 05°.

153.80

0	21.10	34.60	5.01	374	0	21.10	34.60	5.01	24.18	374	0.00
11	21.10	34.58	4.96	376	10	21.10	34.58	4.97	24.17	376	0.04
31	21.00	34.59	5.02	373	20	21.03	34.59	5.00	24.19	374	0.08
57	21.02	34.61	4.87	372	30	21.00	34.59	5.01	24.20	373	0.11
66	19.56	34.31	5.05	357	50	21.02	34.61	4.88	24.21	372	0.19
77	17.22	33.97	5.02	326	75	17.38	33.98	5.03	24.66	329	0.27
91	16.00	33.98	4.79	298	100	14.97	33.94	4.45	25.18	279	0.35
106	14.19	33.92	4.07	265	125	12.80	34.08	2.48	25.74	226	0.42
132	12.62	34.15	2.09	218	150	12.85	34.55	0.71	26.09	193	0.47
151	12.86	34.56	0.69	192	200	12.17	34.78	0.15	26.41	163	0.56
177	12.26	34.62	0.58	176	250	11.36	34.77	0.12	26.55	150	0.64
206	12.13	34.81	0.12	160	300	10.78	34.76	0.12	26.65	140	0.72
237	11.56	34.76	0.13	154	400	9.43	34.66	0.16	26.81	125	0.85
277	11.01	34.78	0.11	143	500	7.77	34.55	0.16	26.98	109	0.98
336	10.38	34.72	0.14	136							
412	9.23	34.65	0.16	124							
487	7.96	34.56	0.14	111							
568	6.86	34.52	0.27	99							

BLACK DOUGLAS; January 17, 1960; 1040 GCT; 22°33'N, 109°23'W; sounding, 1450 fm; wind, 320°, force 5; weather, overcast; sea, rough; wire angle, 25°.

157.10

4	22.66	34.72	4.56	408	0	22.7	(34.72)		(23.82)	(409)	(0.00)
14	22.66	34.71	4.60	408	10	22.66	34.71	4.59	23.83	408	0.04
30	22.66	34.74	4.61	406	20	22.66	34.72	4.60	23.83	408	0.08
39	21.88	34.71	4.11	387	30	22.66	34.74	4.61	23.85	406	0.12
52	19.12	34.52	3.33	331	50	19.15	34.52	3.34	24.64	331	0.20
64	18.20	34.70	2.67	296	75	16.15	34.74	1.47	25.53	246	0.27
84	15.43	-	-	-	100	14.27	34.72	0.77	25.93	208	0.33
101	14.28	34.74	0.75	207	125	14.09	34.87	0.57	26.09	193	0.38
116	14.16	34.83	0.64	198	150	12.89	34.80	0.38	26.29	174	0.42
131	13.52	34.87	0.42	182	200	11.63	34.73	0.16	26.46	158	0.51
155	12.74	34.79	0.37	173	250	10.94	34.69	0.14	26.56	148	0.59
180	12.09	34.74	0.20	165	300	10.12	34.67	0.10	26.69	136	0.66
205	11.53	34.72	0.16	156	400	8.83	34.60	0.09	26.85	121	0.79
243	11.05	34.69	0.15	150	500	7.59	34.56	0.07	27.01	106	0.91
287	10.30	34.68	0.10	138							
356	9.42	34.63	0.11	128							
432	8.40	34.58	0.08	116							
513	7.46	34.56	0.07	104							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

157.15 BLACK DOUGLAS; January 17, 1960; 0711 GCT; 22°23'N, 109°42'W; sounding, 1540 fm; wind, 320°, force 3; weather, overcast; sea, rough; wire angle, 03°.

2	23.04	34.65	4.67	422	0	(23.04)	(34.65)	(4.67)	(23.68)	(422)	(0.00)
12	23.04	34.63	4.62	424	10	23.04	34.63	4.63	23.66	424	0.04
37	23.02	34.67	4.61	421	20	23.04	34.65	4.61	23.67	423	0.08
47	22.93	34.67	4.50	418	30	23.04	34.66	4.61	23.69	421	0.13
62	19.92	34.60	2.95	344	50	22.55	34.66	4.31	23.82	409	0.21
78	16.77	34.65	1.59	266	75	17.25	34.65	1.80	25.20	277	0.30
103	14.59	34.67	0.35	218	100	14.77	34.67	0.45	25.78	222	0.36
123	13.74	34.77	0.14	194	125	13.67	34.77	0.15	26.10	192	0.41
143	13.02	34.75	0.21	181	150	12.88	34.76	0.19	26.26	177	0.46
173	12.47	34.81	0.14	167	200	12.02	34.81	0.19	26.46	158	0.54
203	11.98	34.81	0.19	157	250	11.27	34.76	0.13	26.56	148	0.62
243	11.39	34.77	0.11	150	300	10.54	34.72	0.26	26.65	140	0.70
274	10.86	34.72	0.21	144	400	9.10	34.66	0.18	26.86	120	0.83
324	10.27	34.71	0.27	135	500	7.62	34.59	0.18	27.03	104	0.95
390	9.24	34.67	0.19	122	600	6.41	34.55	0.17	27.16	91	1.05
489	7.79	34.60	0.18	106							
580	6.60	34.56	0.16	92							
655	6.04	34.53	0.19	88							

157.20 BLACK DOUGLAS; January 17, 1960; 0341 GCT; 22°13'N, 110°00'W; sounding, 1500 fm; wind, 320°, force 6; weather, overcast; sea, very rough; wire angle, 24°.

2	22.83	34.57	4.69	423	0	(22.83)	(34.57)	(4.69)	(23.68)	(423)	(0.00)
11	22.84	34.52	4.73	427	10	22.84	34.52	4.73	23.63	427	0.04
34	22.84	34.60	4.69	421	20	22.84	34.55	4.72	23.66	424	0.08
61	21.09	34.65	3.63	371	30	22.84	34.59	4.70	23.69	422	0.13
71	18.72	34.54	2.31	320	50	22.68	34.60	4.62	23.75	416	0.21
90	16.26	34.52	1.32	265	75	18.20	34.53	2.05	24.88	308	0.30
104	14.94	34.67	0.85	225	100	15.28	34.63	0.98	25.65	235	0.37
117	14.20	34.69	0.37	209	125	13.79	34.69	0.33	26.02	200	0.43
146	12.90	34.70	0.28	182	150	12.85	34.71	0.25	26.22	181	0.47
165	12.76	34.80	0.11	172	200	11.94	34.81	0.10	26.47	157	0.56
193	12.04	34.81	0.09	159	250	11.25	34.79	0.11	26.58	146	0.64
225	11.59	34.80	0.11	151	300	10.59	34.73	0.10	26.66	139	0.71
254	11.19	34.78	0.11	146	400	9.14	34.66	0.11	26.85	121	0.85
301	10.58	34.73	0.10	139	500	7.90	34.61	0.10	27.01	106	0.97
364	9.64	34.69	0.11	127	600	6.88	34.57	0.10	27.12	95	1.08
460	8.36	34.62	0.11	112							
548	7.39	34.60	0.10	100							
622	6.67	34.56	0.11	94							

157.30 BLACK DOUGLAS; January 16, 1960; 2050 GCT; 21°52.5'N, 110°37.5'W; sounding, 1600 fm; wind, 310°, force 6; weather, overcast; sea, very rough; wire angle, 30°.

2	22.92	34.54	4.57	428	0	(22.92)	(34.54)	(4.57)	(23.62)	(428)	(0.00)
10	22.92	34.52	4.84	429	10	22.92	34.52	4.84	23.61	429	0.04
32	22.90	34.53	4.85	428	20	22.91	34.52	4.84	23.62	428	0.09
40	22.86	34.52	4.47	427	30	22.90	34.53	4.85	23.62	428	0.13
53	18.82	34.12	5.04	352	50	22.20	34.40	4.52	23.72	418	0.21
64	17.66	34.43	1.91	303	75	16.80	34.53	1.24	25.22	276	0.30
84	15.54	34.63	0.61	241	100	14.73	34.75	0.10	25.86	215	0.36
99	14.74	34.75	0.10	216	125	13.57	34.74	0.40	26.10	192	0.41
115	14.17	34.72	0.22	206	150	12.68	34.77	0.34	26.30	173	0.46
137	13.11	34.76	0.48	182	200	11.97	34.82	0.10	26.48	156	0.54
160	12.48	34.77	0.23	170	250	11.29	34.80	0.10	26.59	146	0.62
190	12.12	34.85a)	0.10	157	300	10.69	34.72	0.11	26.64	141	0.70
214	11.72	34.78	0.10	155	400	9.28	34.67	0.08	26.84	122	0.83
254	11.22	34.80	0.10	145	500	8.02	34.63	0.09	27.01	106	0.95
308	10.58	34.71	0.12	140							
394	9.36	34.67	0.08	124							
476	8.30	34.67	0.09	108							
548	7.45	34.54	0.09	106							

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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BLACK DOUGLAS; January 22, 1960; 0615 GCT; 21°33'N, 111°15.5'W; sounding, 1620 fm; wind, 300°, force 2; weather, cloudy; sea, moderate; wire angle, 00°.

157.40

0	23.46	34.42	4.64	451	0	23.46	34.42	4.64	23.38	451	0.00
10	23.46	34.42	4.60	451	10	23.46	34.42	4.60	23.38	451	0.04
30	23.46	34.49	4.46	446	20	23.46	34.46	4.47	23.41	448	0.09
40	22.77	34.45	4.52	430	30	23.46	34.49	4.46	23.43	446	0.13
50	20.94	34.28	4.30	394	50	20.94	34.28	4.30	23.98	394	0.22
65	16.24	34.17	2.53	290	75	14.54	34.20	1.86	25.47	252	0.30
81	14.26	34.24	1.63	243	100	13.78	34.42	0.77	25.80	220	0.36
101	13.78	34.43	0.71	219	125	13.68	34.74		26.07	195	0.41
126	13.64	34.74	-	194	150	13.00	34.77		26.24	179	0.46
146	13.09	34.76	-	182	200	11.99	34.80		26.46	158	0.55
176	12.40	34.85	-	162	250	11.28	34.78		26.58	147	0.62
206	11.89	34.79	-	157	300	10.61	34.73		26.66	139	0.70
236	11.48	34.79	-	150	400	9.12	34.61		26.82	124	0.84
278	10.88	34.75	-	143	500	7.81	34.59		27.01	106	0.96
338	10.13	34.71	-	133							
414	8.92	34.60	-	122							
488	7.95	34.60	-	108							
569	7.05	34.54	-	100							

BLACK DOUGLAS; January 22, 1960; 1125 GCT; 21°15'N, 111°53'W; sounding, 1800 fm; wind, 330°, force 3; weather, partly cloudy; sea, moderate; wire angle, 08°.

157.50

0	21.55	34.58	4.53	388	0	21.55	34.58	4.53	24.04	388	0.00
10	21.54	34.60	4.61	386	10	21.54	34.60	4.61	24.06	386	0.04
30	21.51	34.60	4.69	385	20	21.53	34.60	4.67	24.07	385	0.08
40	17.94	34.55	1.55	300	30	21.51	34.60	4.69	24.07	385	0.12
55	15.87	34.68	0.42	245	50	16.35	34.66	0.55	25.43	256	0.18
70	14.74	34.73	0.19	217	75	14.52	34.74	0.16	25.89	212	0.24
95	13.76	34.76	0.11	195	100	13.58	34.76	0.16	26.11	191	0.29
114	13.10	34.78	0.26	181	125	12.72	34.80	0.24	26.31	172	0.34
133	12.52	34.82	0.20	167	150	12.24	34.82	0.14	26.42	162	0.38
154	12.16	34.82	0.13	160	200	11.38	34.77	0.13	26.55	150	0.46
182	11.68	34.78	0.14	154	250	10.62	34.74	0.18	26.66	139	0.53
217	11.09	34.76	0.12	146	300	10.00	34.69	0.17	26.73	132	0.60
248	10.64	34.74	0.18	139	400	8.83	34.62	0.24	26.87	119	0.73
297	10.03	34.70	0.17	132	500	7.62	34.60	0.17	27.04	103	0.85
351	9.41	34.63	0.23	128	600	6.48	34.57	0.18	27.17	90	0.95
436	8.41	34.62	0.24	113							
520	7.38	34.59	0.15	100							
605	6.43	34.57	0.18	90							

BLACK DOUGLAS; January 22, 1960; 1640 GCT; 20°53.5'N, 112°30.5'W; sounding, 1580 fm; wind, 360°, force 3; weather, partly cloudy; sea, moderate; wire angle, 08°.

157.60

0	21.41	34.64	4.65	380	0	21.41	34.64	4.65	24.12	380	0.00
10	21.40	34.64	4.63	380	10	21.40	34.64	4.63	24.12	380	0.04
30	21.40	34.66	4.65	378	20	21.40	34.65	4.64	24.13	379	0.08
40	21.34	34.69	4.48	374	30	21.40	34.66	4.65	24.14	378	0.11
55	16.17	34.67	0.57	252	50	17.60	34.67	1.57	25.14	283	0.18
69	15.39	34.72	0.18	231	75	15.09	34.75	0.12	25.78	223	0.24
93	14.28	34.80	0.06	202	100	14.07	34.81	0.06	26.05	197	0.30
113	13.73	34.81	0.06	191	125	13.44	34.79	0.06	26.16	186	0.35
134	13.23	34.78	0.06	183	150	12.93	34.80	0.06	26.27	176	0.39
153	12.88	34.80	0.06	175	200	12.01	34.81	0.06	26.46	158	0.48
184	12.40	34.81	0.06	165	250	10.72	34.77	0.04	26.67	138	0.55
217	11.57	34.80	0.06	151	300	9.23	34.65	0.06	26.83	123	0.62
247	10.80	34.78	0.04	139	400	7.64	34.56	0.09	27.01	106	0.74
297	9.32	34.66	0.06	124	500	6.60	34.51	0.10	27.11	96	0.84
352	8.14	34.56	0.06	113	600	6.04	34.54	0.10	27.21	87	0.94
435	7.28	34.56	0.11	102							
520	6.42	34.51	0.11	94							
605	6.02	34.54	0.10	87							

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OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

15770

BLACK DOUGLAS; January 22, 1960; 2120 GCT; 20°32'N, 113°06'W; sounding, 1800 fm; wind, 360°, force 3; weather, partly cloudy; sea, moderate; wire angle, 10°.

2	22.00	34.56	4.81	401	0	(22.00)	(34.56)	(4.81)	(23.90)	(401)	(0.00)
12	21.71	34.59	4.62	391	10	21.73	34.59	4.67	24.00	392	0.04
36	21.66	34.56	4.56	392	20	21.68	34.58	4.60	24.01	391	0.08
47	19.76	34.58	2.78	342	30	21.67	34.57	4.57	24.00	392	0.12
60	16.06	34.18	3.01	285	50	19.10	34.52	2.79	24.65	330	0.19
76	14.06	34.00	2.95	256	75	14.12	34.00	2.96	25.41	257	0.26
100	12.92	34.46	1.17	201	100	12.92	34.46	1.17	26.01	201	0.32
120	13.14	34.63	0.68	192	125	13.14	34.65	0.61	26.11	191	0.37
139	12.39	34.67	0.39	175	150	12.29	34.71	0.25	26.32	171	0.42
169	12.18	34.78	0.08	163	200	11.69	34.80	0.17	26.52	153	0.50
200	11.69	34.80	0.17	153	250	10.89	34.73	0.08	26.61	144	0.58
239	11.08	34.76	0.10	146	300	10.07	34.70	0.05	26.72	133	0.65
270	10.48	34.70	0.06	140	400	8.54	34.59	0.09	26.89	117	0.78
321	9.81	34.69	0.05	129	500	7.30	34.55	0.10	27.05	102	0.89
384	8.79	34.60	0.09	120	600	6.44	34.56	0.11	27.16	91	0.99
484	7.46	34.56	0.10	104							
575	6.62	34.56	0.10	93							
651	6.12	34.55	0.12	87							

15780

BLACK DOUGLAS; January 23, 1960; 0205, 0405 GCT; 20°12'N, 113°42'W; sounding, 2000+ fm; wind, 300°, force 3; weather, partly cloudy; sea, moderate; wire angle, 12°, 25°.

0	21.63	34.61	4.96	388	0	21.63	34.61	4.96	24.04	388	0.00
10	21.52	34.60	4.83	386	10	21.52	34.60	4.83	24.06	386	0.04
29	21.45a)	34.57	4.89	386	20	21.48	34.58	4.86	24.06	386	0.08
59	21.02	34.60	4.89	373	30	21.45	34.57	4.89	24.06	386	0.12
69	18.42	34.14	4.59	342	50	21.40	34.57	4.89	24.07	385	0.19
83	15.48	34.00	4.15	286	75	17.85	34.13	4.51	24.66	329	0.28
97	13.54	33.93	3.46	252	100	13.37	33.95	3.25	25.52	247	0.36
112	12.94	34.09	2.40	228	125	12.32	34.18	1.83	25.91	210	0.41
135	12.08	34.24	1.59	202	150	12.06	34.52	0.86	26.22	181	0.46
156	12.05	34.57	0.74	177	200	11.19	34.56	0.49	26.42	162	0.55
184	11.52	34.54	0.51	169	250	10.46	34.63	0.28	26.60	145	0.63
213	10.96	34.58	0.47	156	300	9.70	34.63	0.20	26.74	132	0.70
243	10.56	34.62	0.30	147	400	8.40	34.60	0.18	26.92	114	0.83
290	9.84	34.63	0.21	134	500	7.36	34.55	0.15	27.04	103	0.94
345	9.04	34.63	0.15	122	600	6.43	34.49	0.16	27.12	95	1.05
427	8.02	34.60	0.15	109	700	5.71	34.49	0.20	27.21	87	1.14
510	7.26	34.55	0.15	102	800	5.13	34.50	0.26	27.28	80	1.24
594	6.39	34.52	0.17	93	1000	4.33	34.53	0.45	27.40	69	1.40
					1200	3.72	34.57	0.64	27.49	60	1.55
381b)	8.69	34.51 6	0.27	125	1500	2.93	34.59	1.20	27.59	51	1.74
478	7.58	34.50 0	0.28	110	2000	2.13	34.63	2.08	27.68	42	2.03
574	6.71	34.48 2	0.19	99	2500	1.79	34.65	2.60	27.73	37	2.28
671	5.91	34.49 1	0.19	89	3000	1.60	34.66	2.80	27.75	36	2.51
769	5.29	34.49 6	0.21	82							
964	4.46	34.52 5	0.43	71							
1155	3.86	34.55 8	0.60	62							
1350	3.30	34.61 1	0.89	53							
1544	2.84	34.58 5	1.30	51							
1740	2.50	34.61 2	1.71	46							
1936	2.20	34.62 0	1.99	43							
2134	2.02	34.64 5	2.33	40							
2328	1.90	34.64 9	2.39	38							
2524	1.78	34.65 7	2.61	37							
2722	1.71	34.66 7	2.73	36							
2921	1.64	34.65 8	2.78	36							
3020	1.60	34.65 1	2.80	36							
3120	1.61	34.67 3	2.91	35							

- a) Alternate value, 21.30°C, not used in interpolation.
b) Overlapping casts; reconciliation of property curves when necessary.

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ _T	Z	T	S	O ₂	σ _t	δ _T	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO
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6001

BLACK DOUGLAS; January 19, 1960; 0408 GCT; 23°40'N, 109°27.5'W; sounding, 270 fm; wind, 320°, force 6; weather, cloudy; sea, very rough; wire angle, 30°.

71516.40

1	19.78	35.26	4.32	293	0	(19.78)	(35.26)	(4.32)	(25.04)	(293)	(0.00)
9	19.76	35.28	4.40	291	10	19.76	35.28	4.39	25.06	291	0.03
27	19.78	35.28	4.27	292	20	19.77	35.28	4.31	25.06	291	0.06
45	19.81	35.25	4.31	294	30	19.79	35.28	4.28	25.05	292	0.09
66	19.74	35.28	4.18	291	50	19.80	35.26	4.28	25.03	294	0.15
87	19.64	35.24	4.25	291	75	19.71	35.26	4.22	25.06	291	0.22
109	16.34	34.87	1.01	240	100	16.80	34.91	1.39	25.51	248	0.29
146	14.24	34.76	0.38	204	125	15.00	34.81	0.52	25.84	217	0.35
181	12.58	34.78	0.20	170	150	13.90	34.76	0.33	26.04	198	0.40
225	11.77	34.76	0.11	157	200	12.19	34.77	0.15	26.40	164	0.49
270	11.10	34.74	0.07	147	250	11.39	34.75	0.08	26.54	151	0.57
369	9.45	34.65	0.07	127	300	10.65	34.71	0.07	26.64	141	0.65

BLACK DOUGLAS; January 17, 1960; 1432 GCT; 22°40.5'N, 109°09'W; sounding, 1500+ fm; wind, 320°, force 7; weather, cloudy; sea, rough; wire angle, 15°.

71576.25

1	22.38	34.64	4.78	406	0	22.38	34.64	4.78	(23.85)	(406)	(0.00)
10	22.38	34.67	4.78	403	10	22.38	34.67	4.78	23.88	403	0.04
34	21.63	34.58	4.45	390	20	22.38	34.67	4.77	23.88	403	0.08
44	20.12	34.58	4.03	351	30	22.38	34.67	4.77	23.88	403	0.12
58	18.15	34.46	2.05	312	50	18.80	34.45	2.82	24.67	328	0.19
73	18.26	34.92	2.18	281	75	18.30	34.94	2.17	25.17	281	0.27
98	14.54	34.63	0.83	220	100	14.52	34.63	0.83	25.81	219	0.34
118	14.23	34.81	0.91	201	125	13.98	34.81	0.84	26.06	196	0.39
136	13.61	34.80	0.68	189	150	13.27	34.82	0.54	26.22	181	0.44
166	12.89	34.84	0.42	172	200	11.90	34.77	0.22	26.45	159	0.52
195	12.06	34.78	0.25	161	250	10.88	34.70	0.14	26.59	146	0.60
234	11.11	34.72	0.15	149	300	10.11	34.68	0.09	26.71	134	0.67
264	10.67	34.69	0.13	144	400	8.56	34.59	0.11	26.89	117	0.80
312	9.92	34.68	0.09	132	500	7.52	34.59	0.10	27.05	102	0.92
378	8.82	34.60	0.11	121	600	6.50	34.57	0.08	27.17	91	1.02
475	7.78	34.60	0.11	105							
564	6.84	34.58	0.08	94							
638	6.20	34.57	0.08	87							

BLACK DOUGLAS; January 17, 1960; 1712 GCT; 22°48'N, 108°55'W; sounding, 1500 fm; wind, 320°, force 7; weather, overcast; sea, very rough; wire angle, 30°.

71576.40

1	22.28	34.75	4.86	395	0	(22.28)	(34.75)	(4.86)	(23.97)	(395)	(0.00)
9	22.26	34.77	4.89	393	10	22.26	34.77	4.89	23.99	393	0.04
27	22.29	34.81	4.89	391	20	22.28	34.80	4.89	24.01	391	0.08
36	22.04	34.88	4.65	379	30	22.28	34.81	4.87	24.02	390	0.12
50	21.40	35.08	4.10	348	50	21.40	35.08	4.10	24.46	348	0.19
64	18.46	34.72	2.62	300	75	16.60	34.59	1.25	25.31	267	0.27
85	15.98	34.58	0.93	254	100	15.40	34.73	0.98	25.69	231	0.33
102	15.02	34.74	1.01	222	125	13.96	34.82	0.69	26.08	194	0.39
120	14.08	34.78	0.66	200	150	13.34	34.88	0.70	26.25	178	0.43
138	13.64	34.89	0.77	183	200	12.01	34.81	0.24	26.46	158	0.52
194	12.13	34.81	0.28	160	250	11.18	34.79	0.14	26.60	145	0.60
221	11.66	34.83	0.20	150	300	10.24	34.67	0.10	26.67	138	0.67
264	10.92	34.76	0.12	143	400	9.06	34.64	0.12	26.84	122	0.80
312	10.06	34.66	0.10	136	500	7.55	34.58	0.08	27.04	103	0.92
386	9.26	34.64	0.12	124							
465	8.02	34.61	0.11	108							
546	7.07	34.56	0.07	99							

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
40.55-H	II-4	1502	41°14.5'	125°42.0'	1660	160°	6	drizzle	very rough	10.90	32.84
60.52-H	I-24	0616	37°54.0'	123°02.0'	42	090°	3	overcast	moderate	12.08	33.46
63.52-H	II-11	2020	37°17.5'	122°36.5'	45	360°	2	clear	very rough	12.51	33.33
77.50-H	I-17	1730	35°04.0'	120°52.5'	80	090°	2	partly cloudy	very rough	13.00	33.56
80.52-H	17	0725	34°25.0'	120°35.0'	135	320°	3	partly cloudy	moderate	13.30	33.57
87.50-H	12	1350	33°20.0'	119°39.5'	37	320°	7	partly cloudy	high	13.70	33.54
93.35-O	9	0609	32°40.5'	117°51.5'	380	180°	1	cloudy	moderate	15.33	33.63
93.45-O	9	1135	32°18.0'	118°33.0'	900	170°	3	cloudy	moderate	16.38	33.76
93.55-O	9	1750	31°55.0'	119°11.0'	600	170°	4	cloudy	moderate	15.68	33.70
97.35-O	12	0540	32°03.0'	117°29.0'	600	290°	2	cloudy	rough	15.67	33.65
97.45-O	12	0018	31°47.5'	118°06.5'	650	300°	4	cloudy	high	16.44	33.81
97.55-O	11	1818	31°28.5'	118°48.5'	2000+	300°	5	cloudy	very rough	16.01	33.77
100.29-O	13	1535	31°42.0'	116°43.5'	50	200°	3	overcast	rough	14.76	33.62
100.35-O	13	1925	31°31.0'	117°06.5'	580	290°	2	partly cloudy	very rough	15.27	33.65
100.45-O	14	0150	31°08.0'	117°45.5'	1100	290°	4	cloudy	high	15.32	33.64
100.55-O	14	0750	30°48.0'	118°22.5'	1500	290°	4	partly cloudy	very rough	15.50	33.66
103.45-O	17	0205	30°39.0'	117°23.0'	1500	310°	5	cloudy	very rough	15.98	33.75
103.55-O	16	2001	30°21.5'	118°03.5'	1600	310°	5	partly cloudy	high	15.66	33.71
107.45-O	18	0643	30°00.0'	117°04.0'	1050	calm		clear	very rough	16.09	33.84

TEMPERATURE AND SALINITY AT 10 METERS (NET-TOW STATIONS)

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
107.55-O	I-18	1219	29°35.0'	117°39.5'	1750	-	1	partly cloudy	moderate	15.56	33.63
110.45-O	21	1026	29°29.5'	116°41.5'	1675	-	1	clear	slight	15.91	33.74
110.55-O	21	0440	29°07.0'	117°21.0'	1830	-	1	clear	slight	15.70	33.65
113.45-O	22	0952	28°50.0'	116°15.0'	1500	310°	1	clear	slight	16.30	33.71
113.55-O	22	1522	28°24.5'	116°49.5'	2000+	300°	2	partly cloudy	moderate	16.08	33.65
117.45-O	24	2120	28°16.5'	115°56.0'	1745	310°	3	cloudy	rough	16.84	34.07
117.55-O	24	1302	27°58.0'	116°37.0'	2000	320°	3	cloudy	rough	16.28	33.68
120.40-O	26	0505	27°56.0'	115°14.5'	21	310°	3	clear	rough	16.28	34.09
120.55-B	II- 5	1810	27°20.0'	116°13.5'	2100	360°	4	partly cloudy	rough	16.76	33.96
123.45-B	3	2010	27°08.0'	115°11.5'	2200	340°	6	clear	high	16.78	34.12
123.55-B	4	0345	26°48.5'	115°49.5'	2000	320°	5	clear	high	17.26	33.95
127.45-B	3	0310	26°33.0'	114°48.5'	1800	320°	5	partly cloudy	very rough	17.25	34.06
127.55-B	2	2145	26°15.5'	115°25.5'	2000	320°	4	overcast	high	17.92	34.04
130.45-B	1	1140	25°58.5'	114°26.5'	1800	310°	4	clear	moderate	17.62	34.11
130.55-B	1	1645	25°39.0'	115°04.0'	1850	320°	3	clear	rough	17.96	34.03
133.35-B	I-31	1330	25°44.5'	113°26.5'	320	300°	3	partly cloudy	moderate	18.24	34.29
133.45-B	31	0745	25°23.0'	113°59.5'	2120	320°	2	cloudy	moderate	19.10	34.42
133.55-B	31	0215	25°03.0'	114°42.0'	1800	360°	3	cloudy	moderate	18.68	34.18
134.36-B	31	1200	25°34.0'	113°22.5'	95	300°	2	cloudy	slight	18.12	34.29

TEMPERATURE AND SALINITY AT 10 METERS (NET-TOW STATIONS)

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
137.45-B	I-29	1945	24°53.5'	113°43.5'	1800	320°	2	overcast	moderate	19.19	34.38
137.55-B	30	0120	24°33.0'	114°26.0'	1800	320°	2	overcast	moderate	19.04	34.34
140.45-B	28	1420	24°15.0'	113°21.0'	1800	340°	4	cloudy	rough	19.54	34.51
140.55-B	28	0835	23°55.5'	113°58.5'	1800	340°	6	missing	very rough	19.11	34.33
143.45-B	27	1400	23°45.0'	113°00.0'	1600	320°	4	partly cloudy	rough	21.02	34.65
143.55-B	27	1915	23°23.0'	113°37.0'	1820	320°	6	cloudy	rough	21.22	34.67
147.35-B	26	1435	23°25.0'	112°00.0'	1000	330°	4	cloudy	rough	20.53	34.58
147.45-B	26	0900	23°05.5'	112°37.5'	1700	330°	3	clear	rough	20.72	34.62
147.55-B	26	0315	22°45.5'	113°15.0'	1950	320°	3	cloudy	rough	21.84	34.94
150.35-B	25	0500	22°51.0'	111°38.5'	1540	320°	3	partly cloudy	rough	20.66	34.63
150.45-B	25	1005	22°33.0'	112°16.0'	1700	320°	3	partly cloudy	rough	21.26	34.70
150.55-B	25	1430	22°13.0'	112°54.0'	1750	320°	2	partly cloudy	rough	21.54	34.70
153.25-B	16	1250	22°37.0'	110°40.0'	1300	300°	5	overcast	very rough	21.07	34.70
153.35-B	24	1210	22°17.0'	111°17.5'	1800	310°	3	partly cloudy	moderate	21.62	34.74
153.45-B	24	0545	21°57.0'	111°55.0'	1640	360°	2	partly cloudy	rough	21.30	34.68
153.55-B	23	2350	21°36.5'	112°31.5'	1700	010°	3	partly cloudy	rough	22.34	34.60
157.25-B	17	0015	22°02.5'	110°19.0'	1000	350°	7	overcast	very rough	23.10	34.60
157.35-B	22	0340	21°42.5'	110°56.0'	1600	300°	2	cloudy	moderate	22.87	34.56
157.45-B	22	0850	21°24.0'	111°34.0'	1850	330°	4	partly cloudy	rough	23.08	34.44
157.55-B	22	1355	21°06.5'	112°11.0'	1600	330°	3	partly cloudy	moderate	21.26	34.67

TEMPERATURE AND SALINITY AT 10 METERS (NET-TOW STATIONS)

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