

UNIVERSITY OF CALIFORNIA    SCRIPPS INSTITUTION OF OCEANOGRAPHY

# data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6003  
10-29 March

SIO Reference 62-5  
18 August 1961



UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY

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CCOFI CRUISE 6003

10-29 March 1960

Sponsored by

Marine Research Committee

SIO Reference 62-5  
18 August 1961

Approved for distribution:



Roger Revelle, Director

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## INTRODUCTION

The data presented in this report were collected by the R/V Black Douglas of the Bureau of Commercial Fisheries and the R/V Horizon of the Scripps Institution of Oceanography on Cruise 6003 of the California Cooperative Oceanic Fisheries Investigations program. The first two figures in this cruise numbering system represent the year of the cruise; the last two figures, the month. In the case of quarterly cruises the last figures are hyphenated. The cruises preceding this one in the series are 5911 and 5912 (Scripps Institution report, SIO Ref. 61-21), 6001 (SIO Ref. 61-23) and 6002 (SIO Ref. 62-3).

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.<sup>1/</sup> 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  $\Delta D$ .

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."<sup>2/</sup> The values are recorded to two decimal places when obtained by chlorinity titration, or by salinometer where only one determination

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<sup>1/</sup>Klein, Hans T. A new technique for processing physical oceanographic data. MS.

<sup>2/</sup>Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.



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.

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 or 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.

Values which are not drawn through because they seem to be in error without apparent reason are indicated by one of the following notations.

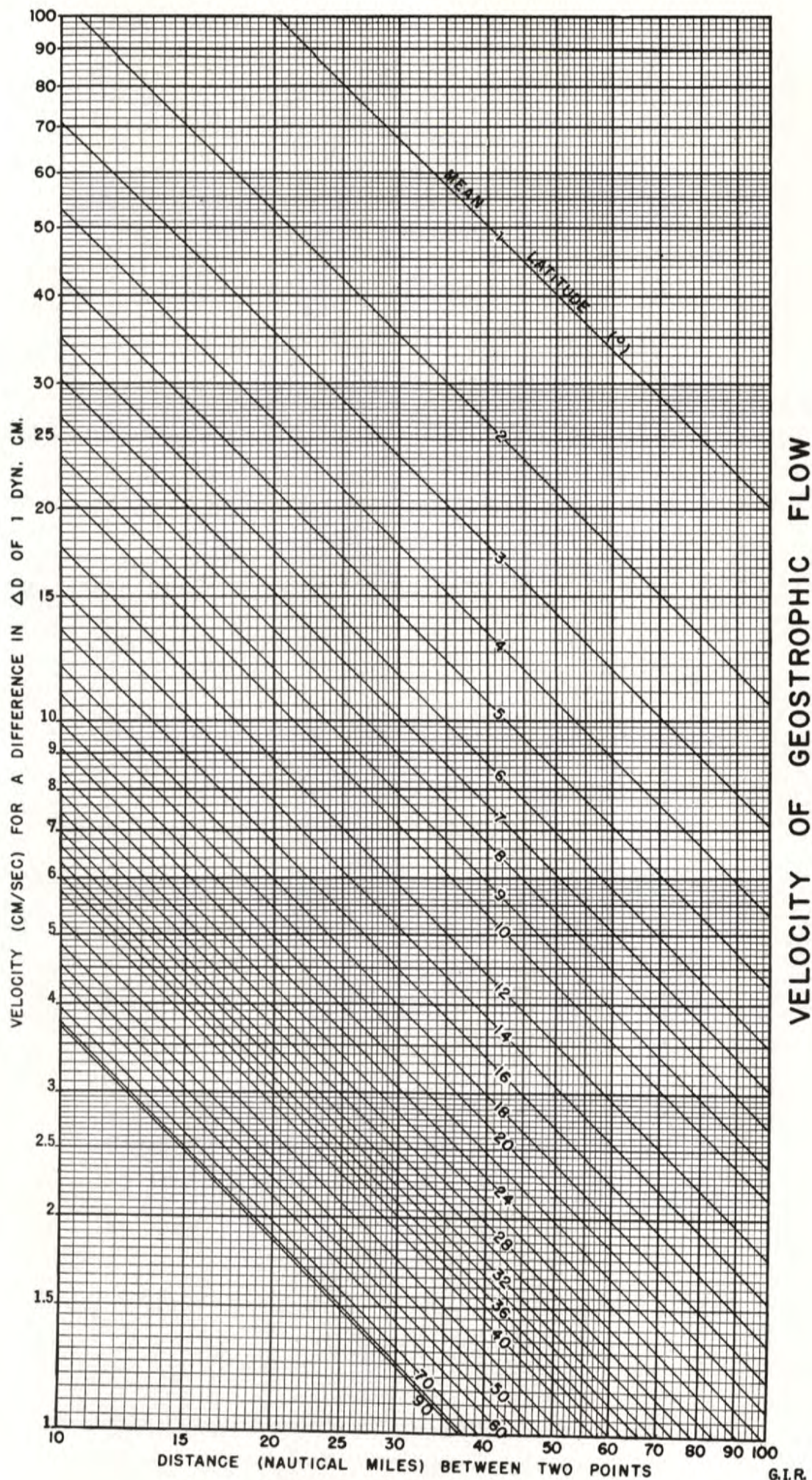
r: rejected value (value seems to be definitely wrong),

u: uncertain value (value may be correct; occasionally it can influence the drawing of the property curve).

#### FORMAT

These data are typed in the format of the University of California Press publication, Oceanic Observations of the Pacific. So that these pages can be used as copy for the 1960 volume, the first page of Cruise 6003 data is numbered 118.







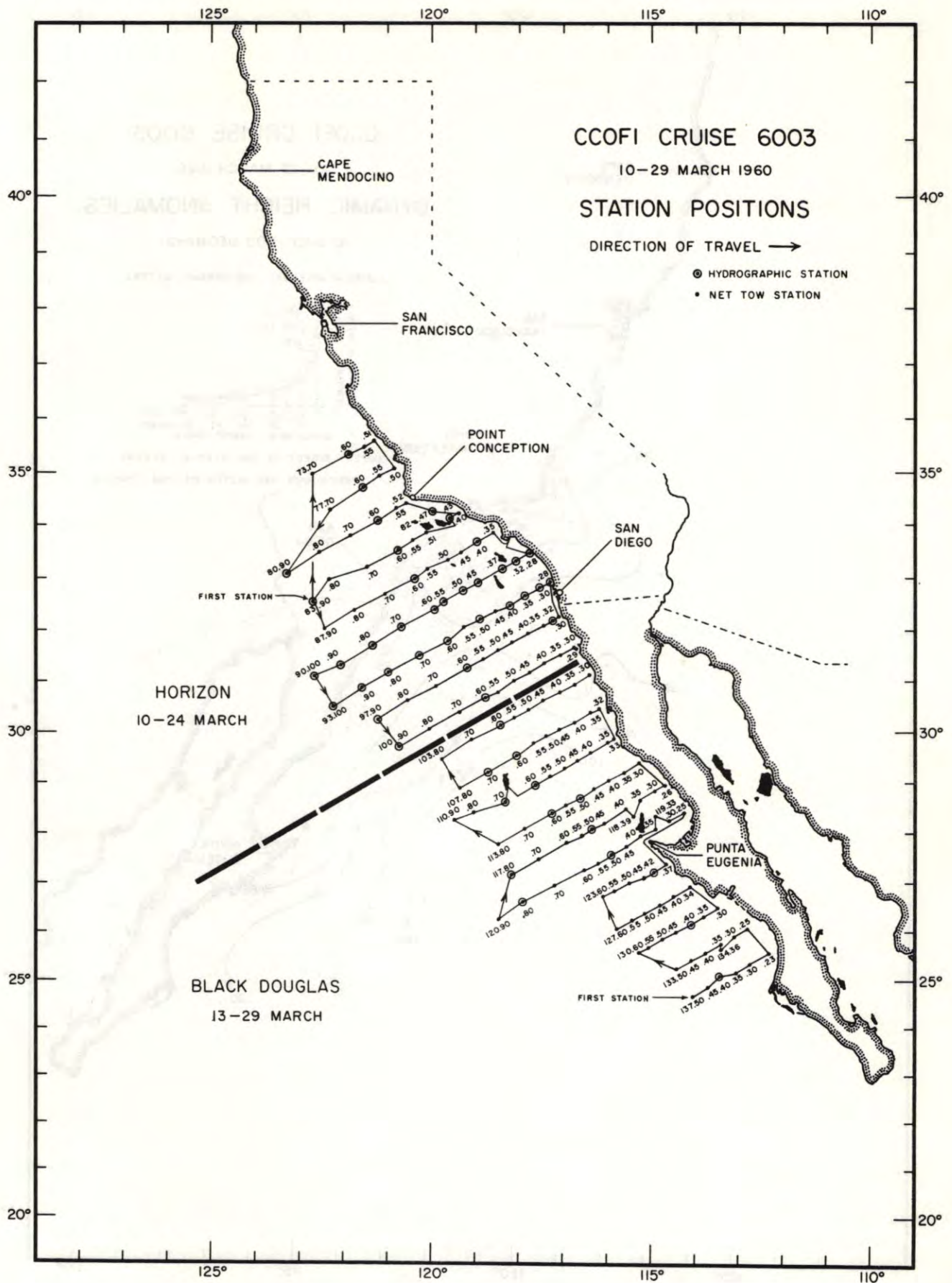


FIGURE 1



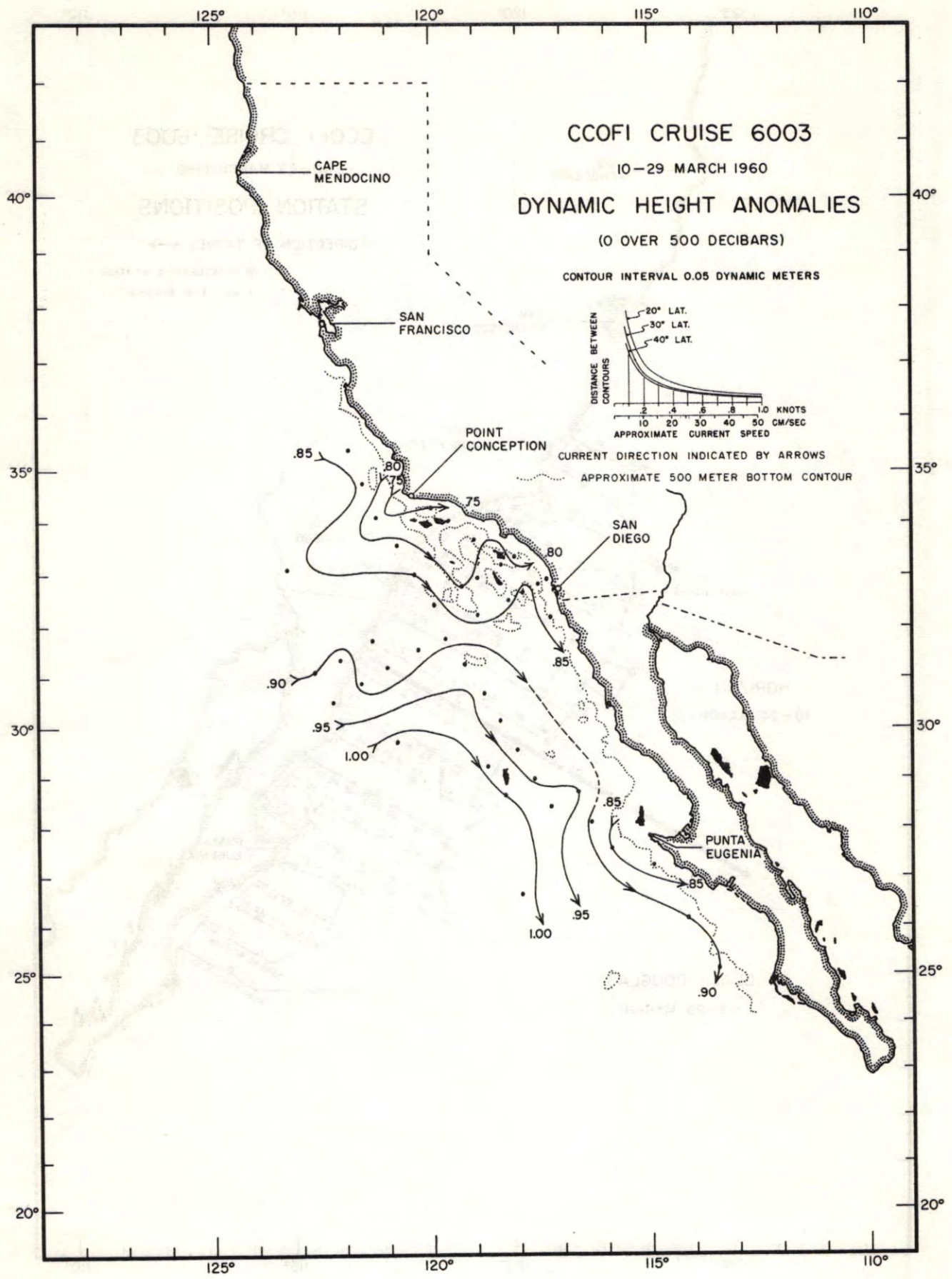


FIGURE 2



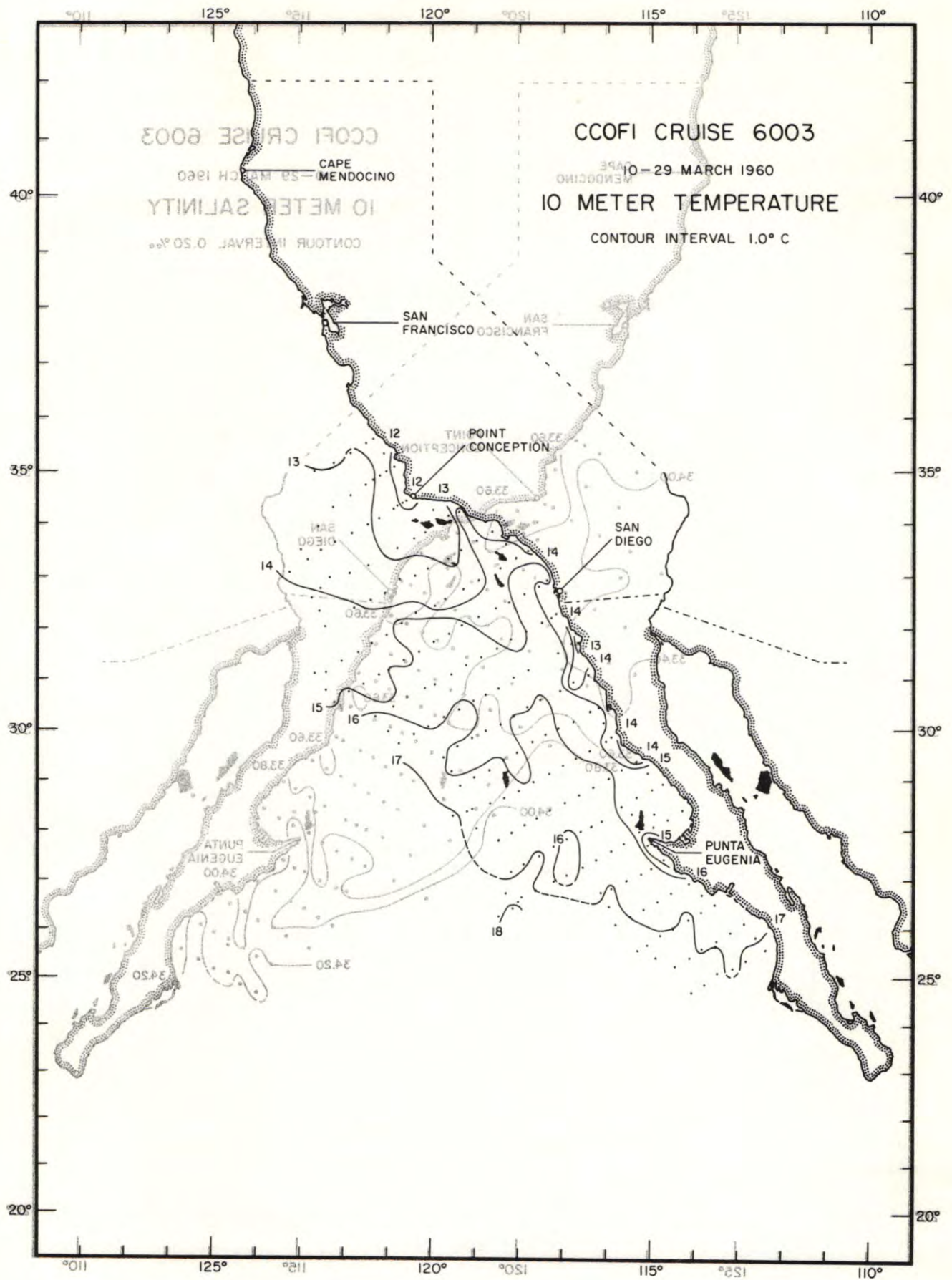


FIGURE 3



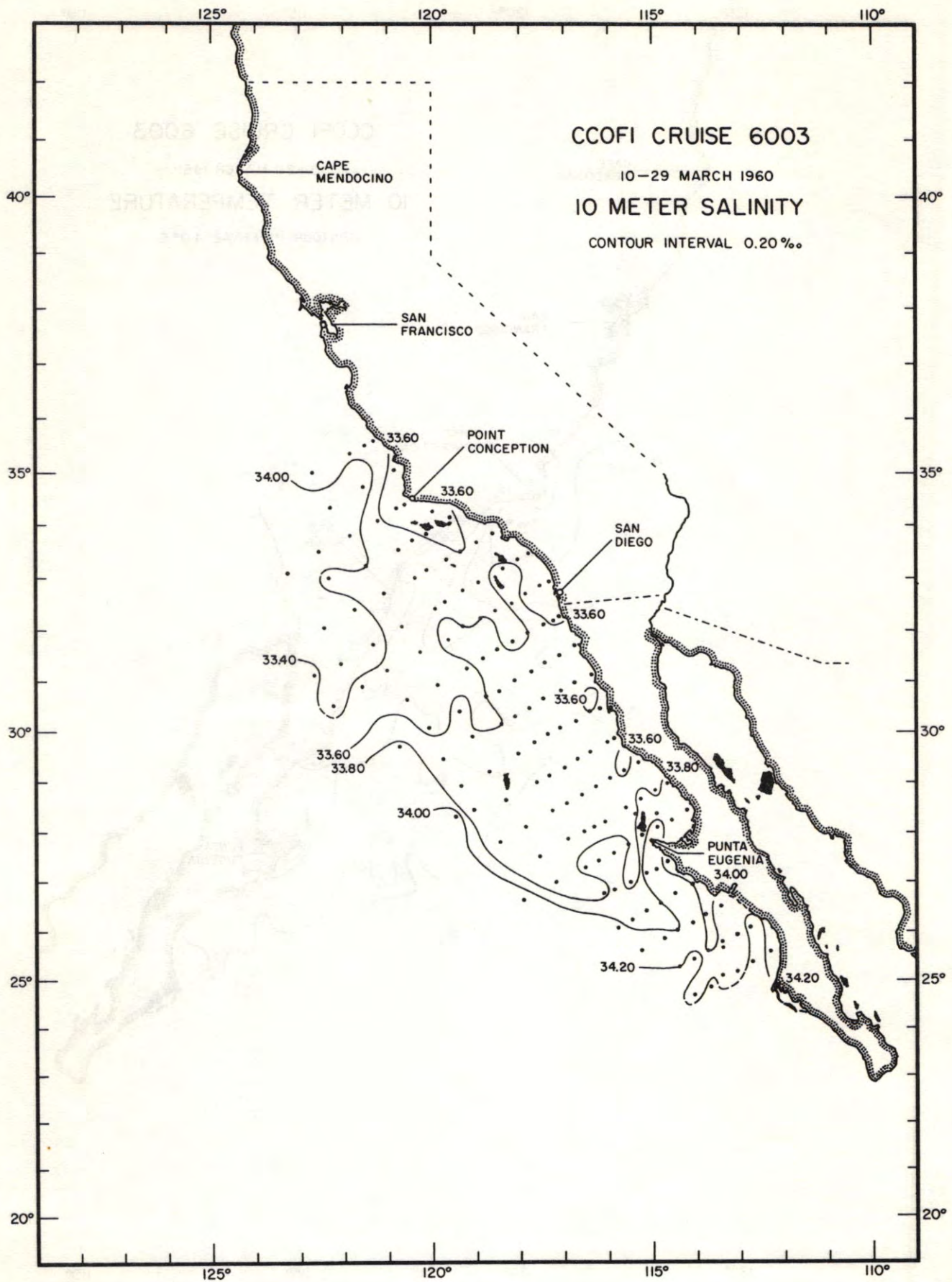


FIGURE 4



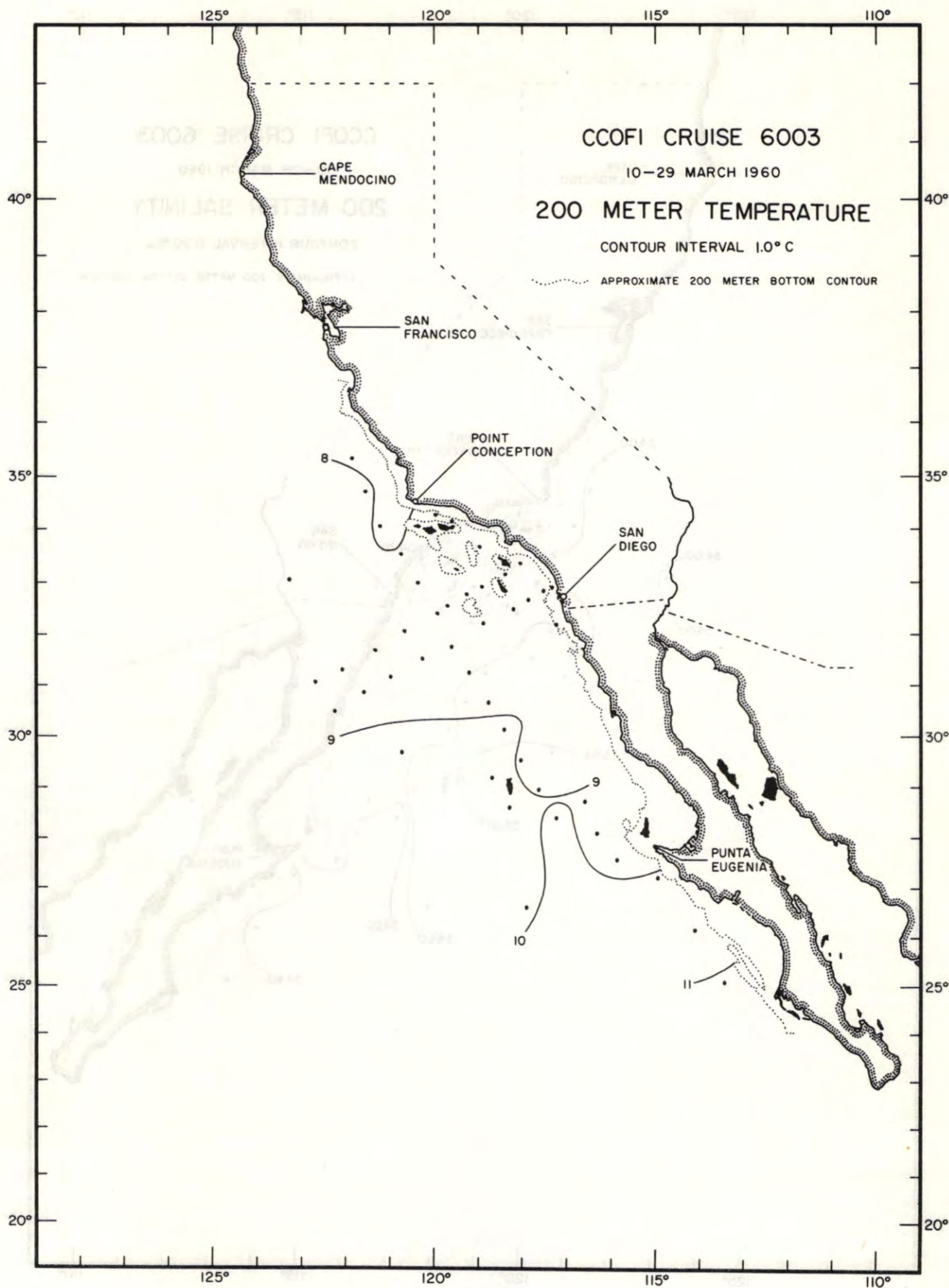


FIGURE 5



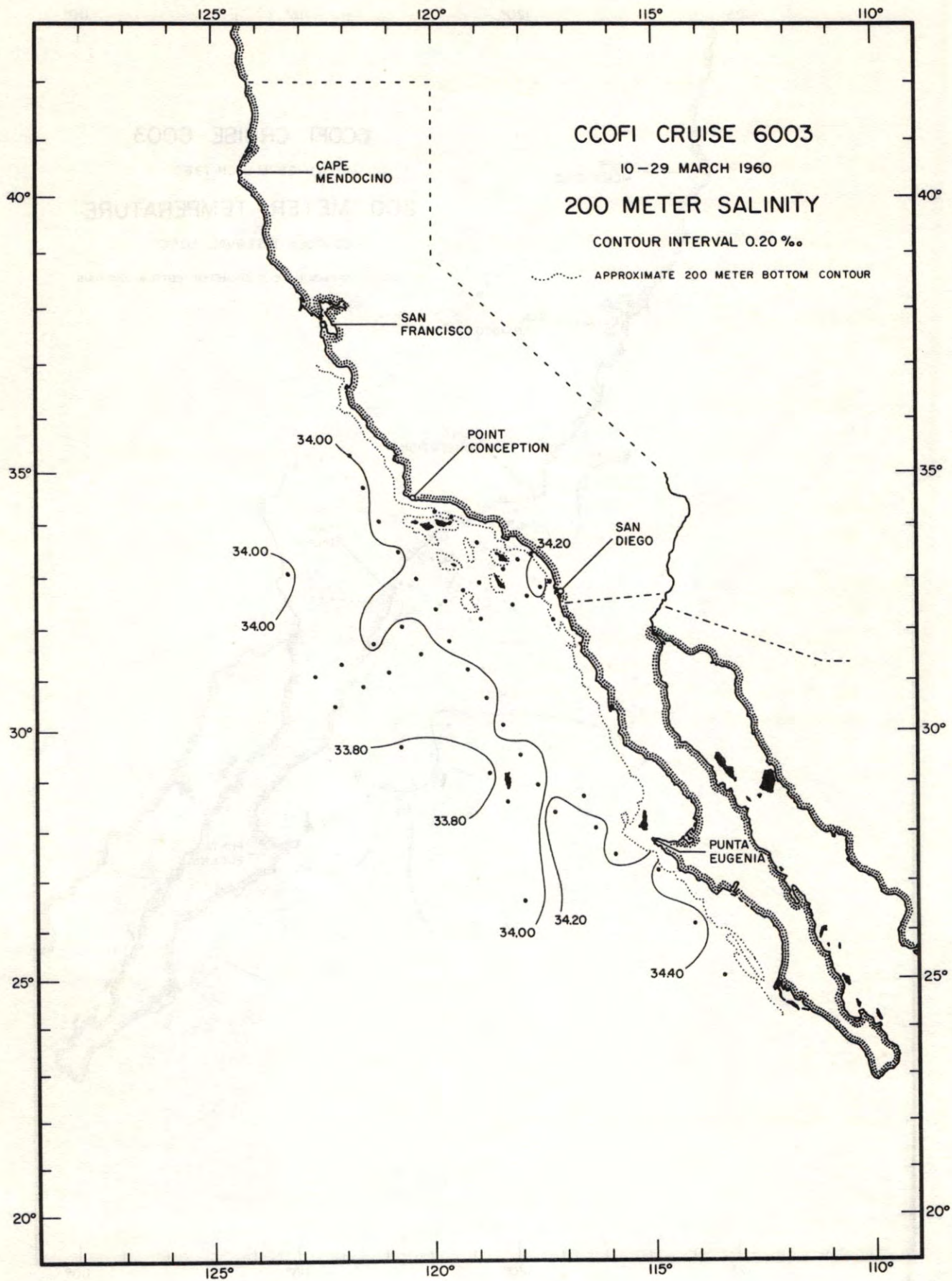


FIGURE 6



PERSONNEL			PERSONNEL			PERSONNEL			PERSONNEL		
NO.	NAME	POSITION	NO.	NAME	POSITION	NO.	NAME	POSITION	NO.	NAME	POSITION

**SHIPS' CAPTAINS**

- Collinson, Barnes, R/V Horizon
- Forster, Charles W., R/V Black Douglas

**PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA**

R/V Black Douglas

- Counts, Robert C., Fishery Research Biologist, Bureau of Commercial Fisheries
- Perkins, Herbert C., Fishery Aid, Bureau of Commercial Fisheries
- Pine, James S., Marine Technician

R/V Horizon

- Kiwal, Robert S., Senior Marine Technician
- \*Bassel, John B., Marine Technician
- \*Hester, Arthur W., Marine Technician
- Justice David K., Fishery Aid, Bureau of Commercial Fisheries

\*Lines 90 through 100 only.



S10

CCOFI  
6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

73.60

HORIZON; March 12, 1960; 1825 GCT; 35°20.5'N, 121°51.5'W; sounding, 2000+ fm; wind, 240°, force 3; weather, drizzle; sea, moderate; wire angle, 24°.

0	13.08	33.36	5.88	284	0	13.08	33.36	5.88	25.13	284	0.00
9	13.01	33.40	5.81	280	10	13.00	33.41	5.80	25.18	280	0.03
28	12.94	33.45	5.72	275	20	12.96	33.44	5.76	25.21	276	0.06
54	12.47	33.44	5.38	267	30	12.93	33.45	5.70	25.23	274	0.08
63	11.30	33.45	4.51	245	50	12.91	33.45	5.70	25.23	274	0.14
76	10.34	33.49	4.04	227	75	10.40	33.49	4.08	25.72	228	0.20
88	9.90	33.64	3.56	208	100	9.59	33.68	3.37	26.01	200	0.26
102	9.54	33.69	3.33	199	125	9.30	33.78	2.91	26.14	189	0.30
124	9.28	33.78	2.92	189	150	8.78	33.91	2.67	26.32	171	0.35
142	8.89	33.89	2.72	174	200	7.90	34.00	2.88	26.53	151	0.43
165	8.59	33.93	2.62	167	250	7.26	34.03	2.34	26.64	141	0.51
193	7.98	34.00	2.89	153	300	6.82	34.04	1.89	26.71	135	0.58
219	7.68	34.00	2.57	149	400	6.11	34.19	0.95	26.92	114	0.71
263	7.12	34.04	2.23	138	500	5.71	34.23	0.49	27.01	106	0.82
310	6.75	34.04	1.75	133							
385	6.16	34.18	1.04	115							
464	5.95	34.22	0.62	110							
546	5.32	34.24	0.44	101							

7760

HORIZON; March 13, 1960; 0840 GCT; 34°43.5'N, 121°32.5'W; sounding, 520 fm; wind, 270°, force 5; weather, partly cloudy; sea, moderate; wire angle, 29°.

0	13.42	33.40	6.02	288	0	13.42	33.40	6.02	25.09	288	0.00
9	13.43	33.33	5.90	293	10	13.43	33.33	5.90	25.04	293	0.03
28	13.37	33.34	5.91	291	20	13.41	33.33	5.90	25.04	293	0.06
55	13.17	33.39	5.88	284	30	13.36	33.34	5.91	25.06	291	0.09
64	12.55	33.39	5.43	273	50	13.26	33.38	5.90	25.11	286	0.15
78	11.44	33.39	4.96	253	75	11.70	33.39	5.04	25.42	257	0.21
91	10.33	33.50	4.32	226	100	9.85	33.63	3.80	25.92	209	0.27
105	9.66	33.68	3.62	202	125	9.23	33.79	3.40	26.15	187	0.32
127	9.18	33.80	3.39	185	150	8.83	33.89	3.21	26.29	174	0.37
146	8.89	33.87	3.26	176	200	8.10	33.95	2.79	26.46	158	0.45
172	8.46	33.96	2.72	163	250	7.40	34.03	2.06	26.62	143	0.53
199	8.12	33.95	2.79	158	300	6.86	34.08	1.75	26.74	132	0.60
224	7.78	34.04	2.20	147	400	5.95	34.14	0.87	26.90	116	0.73
269	7.14	34.03	1.98	139	500	5.34	34.21	0.48	27.04	103	0.84
317	6.70	34.11	1.56	127							
393	6.00	34.14	0.90	117							
471	5.50	34.20	0.54	106							
553	5.07	34.23	0.40	100							

8060

HORIZON; March 14, 1960; 1345 GCT; 34°04.5'N, 121°13.5'W; sounding, 1800 fm; wind, 320°, force 6; weather, clear; sea, very rough; wire angle, 29°.

0	12.37	33.58	5.73	255	0	12.37	33.58	5.73	25.43	255	0.00
9	12.36	33.58	5.71	255	10	12.36	33.58	5.71	25.43	255	0.03
31	11.92	33.58	5.42	247	20	12.34	33.58	5.68	25.44	255	0.05
58	10.38	33.68	3.80	213	30	12.00	33.58	5.47	25.51	248	0.08
67	10.30	33.75	3.65	207	50	10.60	33.63	4.14	25.81	220	0.12
84	10.02	33.80	3.32	199	75	10.18	33.78	3.50	25.99	203	0.18
97	9.67	33.86	2.69	189	100	9.53	33.86	2.69	26.16	186	0.22
109	9.09	33.86	2.70	180	125	8.84	33.90	2.59	26.31	172	0.27
136	8.69	33.97	2.45	165	150	8.44	34.04	2.32	26.47	157	0.31
153	8.40	34.04	2.30	156	200	7.87	34.07	1.88	26.59	145	0.39
179	8.14	34.04	2.16	152	250	7.44	34.15	1.58	26.71	134	0.46
209	7.76	34.10	1.77	142	300	7.09	34.19	1.27	26.81	126	0.53
235	7.54	34.14	1.65	137	400	6.28	34.24	0.83	26.94	113	0.65
279	7.23	34.17	1.40	130	500	5.62	34.29	0.46	27.07	100	0.76
337	6.78	34.23	1.06	119	600	(5.45)	(34.35)		(27.13)	(94)	(0.86)
427	6.08	34.24	0.75	110							
511	5.56	34.31	0.41	98							
583	5.46	34.35	0.29	94							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10  
CCOF1  
6003

HORIZON: March 13, 1960; 2245 GCT; 33° 05'N, 123° 16'W; sounding, 2000+ fm; wind, 320°, force 7; weather, cloudy; sea, rough; wire angle, 33°.

8090

1	13.72	33.29	5.94	301	0	(13.72)	(33.29)	(5.94)	(24.95)	(301)	(0.00)
11	13.72	33.31	5.87	300	10	13.72	33.31	5.88	24.96	300	0.03
34	13.50	33.30	5.83	297	20	13.66	33.31	5.85	24.98	299	0.06
60	12.96	33.34	5.72	284	30	13.56	33.30	5.83	24.99	297	0.09
70	12.92	33.44	5.58	275	50	13.30	33.33	5.79	25.07	290	0.15
88	12.34	33.47	5.20	263	75	12.60	33.43	5.43	25.28	270	0.22
101	10.72	33.58	3.92	226	100	11.00	33.57	4.08	25.69	231	0.28
114	9.98	33.64	3.54	210	125	9.48	33.69	3.46	26.04	198	0.34
140	9.26	33.77	3.40	189	150	9.04	33.83	3.24	26.22	181	0.38
156	8.90	33.87	3.07	176	200	8.26	34.02	2.60	26.49	155	0.47
182	8.43	34.01	2.63	159	250	7.52	34.05	2.15	26.62	143	0.55
211	8.16	34.03	2.55	153	300	6.80	34.09	1.79	26.75	130	0.62
235	7.84	34.05	2.28	147	400	6.01	34.15	0.95	26.90	117	0.74
277	7.03	34.06	1.98	136	500	5.35	34.24	0.54	27.06	101	0.86
333	6.52	34.12	1.46	124							
421	5.86	34.16	0.83	113							
503	5.33	34.25	0.53	100							
575	5.04	34.31	0.37	93							

HORIZON: March 14, 1960; 2255 GCT; 34° 15'N, 119° 58.5'W; sounding, 310 fm; wind, 310°, force 4; weather, clear; sea, rough; wire angle, 22°.

82.47

1	13.38	33.64	6.58	269	0	(13.38)	(33.64)	(6.58)	(25.29)	(269)	(0.00)
10	12.76	33.64	6.41	258	10	12.76	33.64	6.41	25.41	258	0.03
19	12.32	33.66	5.51	249	20	12.25	33.66	5.38	25.52	247	0.05
37	10.78	33.73	3.67	216	30	10.91	33.69	3.90	25.79	221	0.08
46	10.44	33.78	3.36a)	207	50	10.28	33.81	3.21	26.00	202	0.12
55	10.06	33.84	3.05	196	75	9.62	33.89	2.71	26.17	185	0.17
64	9.75	33.89	2.84	188	100	9.00	34.04	2.00	26.39	165	0.21
74	9.63	33.89	2.73	185	125	8.69	34.07	1.83	26.46	158	0.25
87	9.24	33.99	2.32	172	150	8.47	34.12	1.65	26.54	151	0.29
100	9.00	34.04	2.00a)	165	200	8.31	34.16	1.47	26.59	145	0.36
113	8.86	34.05	1.86	162	250	7.78	34.19	1.19	26.70	136	0.44
135	8.54	34.09	1.79	154	300	7.45	34.23	0.71	26.78	128	0.50
162	8.44	34.13	1.58	150	400	6.74	34.27	0.33	26.91	116	0.63
194	8.36	34.16	1.48	146	500	(6.49)	(34.29)		(26.96)	(111)	(0.75)
238	7.83	34.18	1.29	137							
282	7.60	34.22	0.83	131							
381	6.82	34.27	0.40	117							
476	6.54	34.29	0.13	112							

HORIZON: March 15, 1960; 0142 GCT; 34° 08'N, 119° 34.5'W; sounding, 130 fm; wind, 280°, force 3; weather, clear; sea, moderate; wire angle, 15°.

83.43

1	12.98	33.64	6.58	262	0	(12.98)	(33.64)	(6.58)	(25.37)	(262)	(0.00)
11	12.80	33.66	6.55	257	10	12.82	33.66	6.56	25.41	258	0.03
30	12.00	33.62	5.53	245	20	12.47	33.65	6.22	25.47	252	0.05
48	11.40	33.66	4.78	232	30	12.00	33.62	5.53	25.54	245	0.08
72	10.44	33.78	3.56	207	50	11.31	33.67	4.69	25.70	230	0.12
96	9.46	33.89	2.77	183	75	10.31	33.79	3.44	25.98	204	0.18
120	8.90	34.04	2.08	163	100	9.32	33.92	2.59	26.25	178	0.23
160	8.54	34.13	1.68	151	125	8.83	34.05	2.03	26.43	161	0.27
199	8.43	34.16	1.40	147	150	8.60	34.11	1.77	26.51	153	0.31
					200	(8.42)	(34.17)	(1.38)	(26.58)	(147)	(0.39)

a) Oxygen samples at 46 and 100 meters appear to have been reversed; they are assumed to be listed in correct order.



S10  
CCOF1  
6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

83.60

HORIZON; March 15, 1960; 1555, 1700 GCT; 33°32'N, 120°45.5'W; sounding, 1100 fm; wind, 310°, force 5; weather, partly cloudy; sea, very rough; wire angle, 40°, 48°.

1	12.52	33.55	6.00	260	0	(12.52)	(33.55)	(6.00)	(25.38)	(260)	(0.00)
10	12.53	33.53	5.82	262	10	12.53	33.53	5.82	25.37	262	0.03
27	12.40	33.58	5.81	256	20	12.49	33.54	5.81	25.39	260	0.05
35	12.16	33.59	5.66	250	30	12.32	33.59	5.77	25.45	254	0.08
45	11.84	33.64	5.46	241	50	11.73	33.64	5.39	25.60	239	0.13
55	11.72	33.64	5.36	239	75	11.41	33.64	5.05	25.66	234	0.19
72	11.43	33.64	5.08	235	100	10.40	33.70	3.77	25.89	212	0.24
115	9.48	33.78	3.00	191	125	9.23	33.79	2.99	26.15	187	0.29
135	9.07	33.80	2.99	184	150	8.86	33.86	2.95	26.27	176	0.34
160	8.70	33.89	2.91	171	200	8.04	33.99	2.34	26.50	154	0.42
181	8.30	33.93	2.67	163	250	7.43	34.05	1.16	26.63	142	0.50
215	7.86	34.02	2.11	150	300	7.02	34.11	1.19	26.73	132	0.57
					400	6.30	34.23	0.64	26.93	113	0.70
242	7.52	34.04	1.16	143	500	(5.96)	(34.30)		(27.03)	(104)	(0.81)
317	6.89	34.13	1.19	129							
392	6.34	34.22	0.69	115							
462	6.06	34.28	0.42	107							

83.90

HORIZON; March 11, 1960; 2310 GCT; <sup>a)</sup> 32°34.5'N, 122°40'W; sounding, 2000+ fm; wind, 320°, force 3; weather, partly cloudy; sea, rough; wire angle, 18°.

412	5.94	34.14	0.83	116
421	5.90	34.19	0.92	112
431	5.90	34.20	0.75	111
441	5.86	34.19	0.68	111
452	5.84	34.18	0.61	112
462	5.84	34.21	0.52	109
471	5.88	34.25	0.47	107
481	5.80	34.25	0.40	106
490	5.79	34.26	0.40	105
500	5.74	34.27	0.39	104
510	5.62	34.26	0.39	103
520	5.58	34.26	0.37	102
529	5.52	34.26	0.37	102
539	5.50	34.28	0.39	100
548	5.41	34.27	0.36	100
558	5.40	34.29	0.35	98
567	5.38	34.29	0.38	98
579	5.28	34.27	0.31	99

87.40

HORIZON; March 17, 1960; 1505 GCT; 33°40.5'N, 118°58.5'W; sounding, 480 fm; wind, direction missing, force 1; weather, partly cloudy; sea, moderate; wire angle, 08°.

0	14.18	33.53	6.09	293	0	14.18	33.53	6.09	25.04	293	0.00
10	14.14	33.52	5.96	293	10	14.14	33.52	5.96	25.04	293	0.03
30	12.91	33.53	5.59	269	20	13.32	33.50	5.75	25.19	279	0.06
58	10.98	33.61	4.07	228	30	12.91	33.53	5.59	25.30	269	0.09
68	10.40	33.65	3.75	216	50	11.57	33.59	4.54	25.59	240	0.14
82	9.87	33.73	3.32	201	75	10.10	33.69	3.51	25.93	208	0.19
96	9.58	33.77	3.18	193	100	9.52	33.78	3.16	26.10	192	0.24
111	9.37	33.82	3.04	187	125	9.18	33.89	2.70	26.24	179	0.29
136	9.01	33.96	2.32	171	150	8.88	34.02	2.16	26.39	164	0.33
156	8.84	34.04	2.09	162	200	8.42	34.11	1.62	26.54	151	0.41
184	8.64	34.07	1.87	157	250	7.92	34.23	1.22	26.70	135	0.49
213	8.24	34.16	1.43	145	300	7.43	34.25	0.90	26.79	127	0.55
242	8.00	34.22	1.27	137	400	6.74	34.29	0.59	26.92	115	0.68
291	7.52	34.24	0.97	129	500	6.21	34.34	0.36	27.03	104	0.79
345	7.08	34.27	0.71	121	600	(5.56)	(34.38)	(0.27)	(27.14)	(93)	(0.90)
427	6.60	34.30	0.53	112							
509	6.16	34.35	0.34	102							
593	5.62	34.38	0.27	94							

a) Test cast.



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6003

HORIZON; March 17, 1960; 0555 GCT; 33°00'N, 120°21.5'W; sounding, 400 fm; wind, 330°, force 3; weather, partly cloudy; sea, moderate; wire angle, 18°.

87.60

1	13.62	33.53	5.79	282	0	(13.62)	(33.53)	(5.79)	(25.15)	(282)	(0.00)
11	13.59	33.53	5.87	281	10	13.60	33.53	5.87	25.16	281	0.03
29	13.48	33.51	5.50	281	20	13.52	33.52	5.70	25.16	281	0.06
58	13.48	33.55	5.42	278	30	13.48	33.51	5.49	25.16	281	0.08
67	13.08	33.57	5.12	269	50	13.48	33.53	5.44	25.18	280	0.14
83	11.89	33.56	4.21	248	75	12.58	33.57	4.70	25.39	260	0.21
95	10.84	33.69	3.49	221	100	10.57	33.71	3.37	25.87	214	0.27
110	10.24	33.74	3.20	207	125	9.95	33.82	2.84	26.06	196	0.32
134	9.78	33.88	2.59	189	150	9.46	33.92	2.43	26.22	181	0.37
153	9.38	33.93	2.37	179	200	8.70	34.13	1.74	26.50	154	0.45
181	8.93	34.07	1.87	161	250	8.24	34.19	1.49	26.62	143	0.53
212	8.57	34.15	1.66	150	300	7.58	34.20	1.21	26.73	133	0.60
240	8.36	34.18	1.54	145	400	6.79	34.25	0.69	26.87	119	0.73
287	7.73	34.20	1.30	135	500	6.39	34.29	0.55	26.97	110	0.85
340	7.20	34.20	0.95	127							
423	6.67	34.26	0.65	116							
506	6.36	34.29	0.54	109							

HORIZON; March 18, 1960; 0209 GCT; 33°28.5'N, 117°46.5'W; sounding, 160 fm; wind, 280°, force 2; weather, partly cloudy; sea, slight; wire angle, 04°.

90.28

0	14.75	33.57	6.10	302	0	14.75	33.57	6.10	24.95	302	0.00
10	13.98	33.58	6.27	286	10	13.98	33.58	6.27	25.12	286	0.03
30	12.16	33.65	4.41	246	20	12.75	33.58	5.20	25.38	262	0.06
49	10.85	33.72	3.34	218	30	12.16	33.65	4.41	25.53	246	0.08
74	9.76	33.84	2.35	191	50	10.80	33.72	3.29	25.84	217	0.13
98	9.32	33.91	2.35	179	75	9.74	33.84	2.35	26.12	191	0.18
123	9.08	33.99	2.11	170	100	9.29	33.92	2.34	26.25	178	0.23
163	8.94	34.13	1.65	157	125	9.07	34.00	2.07	26.35	169	0.27
201	8.68	34.19	1.43	149	150	8.99	34.09	1.78	26.43	161	0.31
250	8.56	34.20	1.35	146	200	8.70	34.19	1.44	26.56	149	0.39
					250	8.56	34.20	1.35	26.58	146	0.46

HORIZON; March 18, 1960; 0435 GCT; 33°20.5'N, 118°04'W; sounding, 400 fm; wind, direction missing, force 1; weather, partly cloudy; sea, slight; wire angle, 16°.

90.32

1	14.98	33.58	5.74	306	0	(14.98)	(33.58)	(5.74)	(24.90)	(306)	(0.00)
11	14.50	33.58	5.95	296	10	14.54	33.58	5.94	25.00	297	0.03
30	11.80	33.60	4.35	243	20	13.37	33.59	5.42	25.25	273	0.06
39	11.12	33.64	3.79	229	30	11.80	33.60	4.35	25.56	243	0.08
53	10.52	33.71	3.45	213	50	10.83	33.68	3.60	25.80	221	0.13
68	9.96	33.76	3.24	200	75	9.73	33.78	3.16	26.07	195	0.18
91	9.39	33.85	2.92	185	100	9.29	33.88	2.83	26.22	181	0.23
109	9.20	33.92	2.70	177	125	9.10	34.02	2.34	26.36	168	0.27
128	9.07	34.03	2.32	167	150	8.95	34.08	2.17	26.43	161	0.32
147	8.98	34.07	2.19	162	200	8.52	34.15	1.63	26.55	150	0.40
175	8.72	34.12	-	155	250	8.28	34.24	1.37	26.66	139	0.47
208	8.48	34.15	1.60	149	300	7.70	34.25	1.05	26.75	131	0.54
236	8.40	34.23	1.44	142	400	6.81	34.34	0.69	26.95	112	0.66
283	7.88	34.24	1.12	134	500	6.23	34.33	0.36	27.02	105	0.78
337	7.34	34.27	0.94	124	600	(5.72)	(34.38)		(27.12)	(95)	(0.88)
416	6.70	34.34	0.62	110							
498	6.24	34.33	0.37	105							
582	5.82	34.38	0.30	97							



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6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

90.37

HORIZON; March 18, 1960; 0715 GCT; 33°10'N, 118°23.5'W; sounding, 630 fm; wind, 290°, force 4; weather, partly cloudy; sea, slight; wire angle, 19°.

1	14.72	33.61	5.77	298	0	(14.72)	(33.61)	(5.77)	(24.98)	(298)	(0.00)
10	14.69	33.62	5.86	297	10	14.69	33.62	5.86	25.00	297	0.03
29	13.98	33.57	5.90	286	20	14.52	33.61	5.90	25.03	294	0.06
38	13.46	33.57	5.46	276	30	13.96	33.57	5.89	25.12	286	0.09
51	12.65	33.56	5.04	262	50	12.72	33.56	5.08	25.36	263	0.14
65	11.74	33.60	4.33	242	75	11.28	33.64	4.08	25.69	231	0.20
88	10.72	33.68	3.84	219	100	10.30	33.70	3.62	25.91	210	0.26
105	10.13	33.71	3.52	207	125	9.57	33.82	3.18	26.13	190	0.31
124	9.58	33.82	3.19	190	150	9.16	33.91	2.68	26.26	177	0.36
142	9.31	33.88	2.93	181	200	8.27	34.10	1.90	26.55	150	0.44
168	8.82	34.01	1.86	164	250	8.02	34.19	1.25	26.66	139	0.51
200	8.27	34.10	1.90	150	300	7.77	34.24	0.99	26.74	132	0.58
226	8.16	34.17	1.44	143	400	7.03	34.31	0.70	26.89	117	0.71
273	7.90	34.22a)	1.08	135	500	(6.37)	(34.33)	(0.40)	(27.00)	(106)	(0.83)
324	7.62	34.27a)	0.92	128							
403	7.00	34.31	0.67	117							
484	6.40	34.33	0.42	107							

90.45

HORIZON; March 18, 1960; 1100 GCT; 32°55'N, 118°56.5'W; sounding, 920 fm; wind, 290°, force 3; weather, clear; sea, slight; wire angle, 04°.

1	13.79	33.58	6.10	282	0	(13.79)	(33.58)	(6.10)	(25.16)	(282)	(0.00)
11	13.43	33.54	6.12	278	10	13.44	33.54	6.12	25.19	278	0.03
31	13.20	33.55	5.94	273	20	13.37	33.54	6.08	25.21	277	0.06
40	12.87	33.57	5.58	265	30	13.22	33.55	5.96	25.25	273	0.08
55	12.26	33.58	5.29	253	50	12.49	33.58	5.40	25.41	257	0.14
69	11.60	33.61	4.54	239	75	11.30	33.63	4.34	25.67	232	0.20
95	10.02	33.68	3.73	207	100	9.79	33.70	3.61	26.00	202	0.25
114	9.31	33.77	3.31	189	125	9.05	33.84	3.12	26.22	181	0.30
134	8.92	33.88	2.99	176	150	8.72	33.94	2.87	26.35	168	0.34
154	8.68	33.95	2.82	167	200	8.31	34.10	1.62	26.55	150	0.43
183	8.46	34.07	1.84	155	250	7.99	34.19	1.20	26.66	139	0.50
218	8.17	34.13	1.45	146	300	7.58	34.23	0.94	26.75	130	0.57
247	8.01	34.18	1.24	140	400	6.88	34.29	0.60	26.90	117	0.70
296	7.61	34.23	0.96	131	500	6.25	34.33	0.44	27.02	105	0.81
351	7.22	34.25	0.80	124	600	5.62					
434	6.66	34.31	0.52	112							
518	6.15	34.34	0.44	103							
602	5.60	-	-	-							

90.50

HORIZON; March 18, 1960; 1400 GCT; 32°45'N, 119°17.5'W; sounding, 350 fm; wind, 290°, force 1; weather, partly cloudy; sea, rough; wire angle, 05°.

1	13.62	33.58	6.18	279	0	(13.62)	(33.58)	(6.18)	(25.19)	(279)	(0.00)
11	13.44	33.57	6.02	276	10	13.46	33.57	6.03	25.22	276	0.03
31	12.96	33.57	5.78	267	20	13.16	33.57	5.88	25.27	271	0.06
40	12.79	33.58	5.51	263	30	12.97	33.57	5.79	25.31	267	0.08
55	12.44	33.58	5.18	257	50	12.59	33.58	5.30	25.40	259	0.13
70	11.44	33.60	4.35	237	75	11.08	33.62	4.12	25.71	229	0.20
95	10.20	33.68	3.66	210	100	10.08	33.69	3.59	25.94	207	0.25
115	9.68	33.74	3.25	197	125	9.42	33.79	3.03	26.12	190	0.30
134	9.20	33.85	2.86	182	150	9.01	33.91	2.76	26.29	175	0.35
154	8.96	33.93	2.70	172	200	8.39	34.07	1.95	26.51	153	0.43
183	8.64	34.03	2.20	160	250	7.69	34.17	1.37	26.69	136	0.50
218	8.12	-	1.62	-	300	7.35	34.21	1.13	26.77	128	0.57
247	7.72	34.16	1.40	137	400	6.48	34.29	0.58	26.95	111	0.70
297	7.36	34.21	1.14	128	500	5.75	34.36	0.40	27.10	97	0.80
352	6.94	34.25	0.80	120	600	5.38	34.40	0.41	27.18	90	0.90
435	6.16	34.32	0.48	105							
518	5.66	34.37	0.39	95							
602	5.38	34.40	0.41	90							

a) Salinity samples at 273 and 324 meters appear to have been reversed; they are assumed to be listed in correct order.



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	ci/ton	m	°C	‰	ml/L	g/L	ci/ton	dyn m

S10  
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6003

HORIZON; March 18, 1960; 1710 GCT; 32°34'N, 119°42'W; sounding, 500+ fm; wind, direction missing, force 1; weather, partly cloudy; sea, rough; wire angle, 09°.

90.55

1	13.70	33.56	5.89	281	0	(13.70)	(33.56)	(5.89)	(25.16)	(281)	(0.00)
11	13.53	33.57	5.90	277	10	13.54	33.57	5.90	25.20	278	0.03
31	13.40	33.57	5.84	275	20	13.47	33.57	5.85	25.22	276	0.06
40	13.08	33.55	5.87	271	30	13.41	33.57	5.84	25.23	275	0.08
55	12.90	33.60	5.73	263	50	12.99	33.59	5.82	25.32	266	0.14
70	12.60	33.58	5.44	259	75	12.50	33.57	5.38	25.41	258	0.20
94	11.17	33.62	4.27	231	100	10.30	33.68	3.69	25.89	212	0.26
113	10.05	33.73	3.51	205	125	9.78	33.77	3.38	26.05	196	0.32
133	9.53	33.81	3.25	190	150	8.95	33.90	2.97	26.29	174	0.36
152	8.90	33.92	2.92	172	200	8.31	34.12	2.30	26.56	149	0.44
182	8.43	34.11	2.43	151	250	7.79	34.15	1.48	26.66	139	0.52
216	8.22	34.08u	2.10	-	300	7.29	34.19	1.21	26.77	129	0.59
245	7.84	34.14	1.52	141	400	6.66	34.25	0.75	26.89	117	0.71
294	7.34	34.19	1.26	130							
349	6.98	34.22	0.95	123							
432	6.54	34.25	0.68	115							

HORIZON; March 18, 1960; 2034 GCT; 32°25'N, 119°55'W; sounding, 470 fm; wind, 290°, force 2; weather, partly cloudy; sea, moderate; wire angle, 12°.

90.60

1	14.31	33.57	5.36	293	0	(14.31)	(33.57)	(5.36)	(25.04)	(293)	(0.00)
11	13.94	33.53	5.41	289	10	13.96	33.53	5.40	25.08	289	0.03
30	13.66	33.54	5.38	282	20	13.79	33.54	5.39	25.13	284	0.06
39	13.58	33.52	5.27	282	30	13.66	33.54	5.38	25.15	282	0.09
53	13.38	33.55	5.04	276	50	13.44	33.54	5.12	25.19	278	0.14
68	12.86	33.55	4.63	266	75	12.46	33.56	4.47	25.40	258	0.21
92	11.26	33.58	4.00	235	100	10.70	33.60	3.74	25.76	224	0.27
110	10.23	33.65	3.49	213	125	9.79	33.73	3.23	26.02	200	0.32
130	9.64	33.76	3.15	196	150	9.19	33.87	2.81	26.22	180	0.37
150	9.19	33.87	2.81	180	200	8.57	34.03	2.23	26.46	158	0.46
177	8.92	33.95	2.61	170	250	8.17	34.16	1.49	26.62	143	0.54
213	8.44	34.09	2.02	153	300	7.68	34.20	1.15	26.71	134	0.61
240	8.26	34.15	1.64	146	400	6.69	34.22	0.78	26.87	119	0.74
287	7.83	34.20	1.19	136	500	6.07	34.29	0.46	27.01	106	0.86
341	7.16	34.20	1.11	127	600	(5.75)	(34.36)		(27.10)	(97)	(0.96)
423	6.53	34.23	0.69	116							
506	6.04	34.30	0.45	105							
589	5.76	34.36	0.34	97							

HORIZON; March 19, 1960; 0155 GCT; 32°04'N, 120°41.5'W; sounding, 2000 fm; wind, 290°, force 3; weather, partly cloudy; sea, rough; wire angle, 15°.

90.70

1	15.20	33.57	5.39	311	0	(15.20)	(33.57)	(5.39)	(24.85)	(311)	(0.00)
10	15.05	33.58	5.42	308	10	15.05	33.58	5.42	24.89	308	0.03
29	14.62	33.59	5.43	298	20	14.64	33.59	5.43	24.99	298	0.06
38	14.62	33.58	5.35	298	30	14.62	33.59	5.42	24.99	298	0.09
48	14.59	33.58	5.29	298	50	14.58	33.58	5.27	25.00	298	0.15
62	14.53	33.57	5.24	297	75	13.89	33.51	5.23	25.08	289	0.22
76	13.82	33.51	5.22	288	100	11.81	33.48	4.38	25.47	253	0.29
94	12.17	33.46	4.55	260	125	10.49	33.60	3.74	25.81	220	0.35
118	10.79	33.57	3.90	228	150	9.45	33.76	3.27	26.09	192	0.40
137	9.89	33.68	3.51	205	200	8.73	33.98	2.51	26.38	165	0.50
164	9.18	33.85	3.02	182	250	8.03	34.06	1.91	26.56	149	0.58
193	8.82	33.95	2.60	169	300	7.43	34.12	1.49	26.69	136	0.65
221	8.44	34.04	2.29	157	400	6.62	34.23	0.68	26.89	118	0.78
259	7.87	34.07	1.81	146	500	(6.09)	(34.29)		(27.00)	(107)	(0.90)
316	7.26	34.14	1.35	133							
387	6.70	34.22	0.74	119							
455	6.30	34.27	0.46	110							



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6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

90.80

HORIZON; March 19, 1960; 0650 GCT; 31°42'N, 121°21'W; sounding, 2000 fm; wind, 290°, force 3; weather, partly cloudy; sea, rough; wire angle, 13°.

1	14.47	33.30	5.82	316	0	(14.47)	(33.30)	(5.82)	(24.80)	(316)	(0.00)
11	14.32	33.30	5.85	313	10	14.33	33.30	5.84	24.83	313	0.03
30	13.58	33.32	5.89	297	20	14.00	33.31	5.88	24.89	307	0.06
39	13.54	33.33	5.88	295	30	13.58	33.32	5.89	25.00	297	0.09
48	13.46	33.35	5.84	292	50	13.43	33.35	5.83	25.06	291	0.15
63	13.23	33.37	5.81	287	75	12.86	33.42	5.51	25.21	277	0.22
77	12.69	33.45	5.33	271	100	11.39	33.46	4.79	25.52	247	0.29
96	11.56	33.46	4.86	249	125	9.55	33.72	3.66	26.05	197	0.34
121	9.72	33.68	3.65	202	150	9.09	33.86	3.54	26.24	179	0.39
140	9.24	33.80	3.71	187	200	8.23	34.04	2.71	26.51	154	0.48
168	8.84	33.93	3.24	171	250	7.76	34.09	2.27	26.62	143	0.55
197	8.26	34.04	2.74	154	300	7.08	34.12	1.80	26.74	132	0.62
226	8.01	34.05	2.51	150	400	6.40	34.21	0.79	26.90	117	0.75
265	7.58	34.11	2.18	139	500	6.03	34.33	0.43	27.04	103	0.87
322	6.82	34.13	1.57	127							
395	6.43	34.20	0.85	117							
468	6.17	34.29	0.51	107							
546	5.71	34.38	0.38	95							

90.90

HORIZON; March 19, 1960; 1139 GCT; 31°19'N, 122°03'W; sounding, 2000 fm; wind, 310°, force 2; weather, partly cloudy; sea, rough; wire angle, 09°.

1	14.54	33.31	5.78	317	0	(14.54)	(33.31)	(5.78)	(24.79)	(317)	(0.00)
11	14.21	33.26	5.88	314	10	14.21	33.26	5.87	24.82	314	0.03
30	13.91	33.30	5.90	305	20	14.01	33.29	5.89	24.89	307	0.06
39	13.86	33.30	5.91	304	30	13.91	33.30	5.90	24.91	305	0.09
54	13.72	33.30	5.91	301	50	13.76	33.30	5.91	24.95	302	0.15
68	13.58	33.32	5.80	297	75	13.43	33.33	5.78	25.04	293	0.23
92	12.74	33.37	5.65	277	100	12.43	33.39	5.53	25.28	270	0.30
110	11.98	33.41	5.26	261	125	11.13	33.48	4.60	25.59	240	0.36
130	10.72	33.53	4.31	230	150	9.82	33.66	3.78	25.96	206	0.42
149	9.82	33.66	3.79	206	200	8.67	33.91	3.06	26.34	169	0.52
177	9.17	33.79	3.41	186	250	7.94	34.06	2.16	26.57	148	0.60
211	8.46	33.96	2.88	163	300	7.39	34.13	1.53	26.70	136	0.67
239	8.08	34.04	2.33	151	400	6.62	34.24	0.76	26.90	116	0.80
286	7.57	34.09	1.78	141	500	5.90	34.30	0.44	27.03	104	0.92
339	7.02	34.18	1.13	127							
420	6.51	34.26	0.68	114							
502	5.88	34.30	0.44	104							

90.100

HORIZON; March 19, 1960; 1554 GCT; 31°05'N, 122°39'W; sounding, 2000 fm; wind, 310°, force 1; weather, partly cloudy; sea, rough; wire angle, 03°.

1	14.74	33.45	5.77	311	0	(14.74)	(33.45)	(5.77)	(24.85)	(311)	(0.00)
11	14.72	33.47	5.78	309	10	14.72	33.47	5.78	24.87	309	0.03
31	14.23	33.46	5.93	299	20	14.50	33.46	5.84	24.92	304	0.06
40	14.24	33.48	5.82	298	30	14.23	33.46	5.92	24.97	300	0.09
54	14.18	33.47	5.68	298	50	14.21	33.47	5.70	24.99	298	0.15
69	13.82	33.47	5.60	291	75	13.66	33.48	5.54	25.10	287	0.22
94	12.50	33.50	5.18	263	100	12.01	33.48	4.99	25.43	256	0.29
113	11.10	33.48	4.48	240	125	10.58	33.57	4.20	25.76	225	0.36
133	10.26	33.62	4.04	216	150	9.71	33.72	3.76	26.02	200	0.41
153	9.62	33.73	3.71	197	200	8.73	33.94	2.99	26.35	168	0.50
182	8.97	33.87	3.32	177	250	7.88	34.05	2.72	26.57	148	0.58
217	8.54	33.99	2.79	161	300	7.29	34.09	2.03	26.69	136	0.66
246	7.95	34.04	2.79	149	400	6.34	34.16	1.00	26.87	119	0.79
295	7.34	34.09	2.10	137	500	5.80	34.28	0.65	27.03	104	0.90
350	6.76	34.16	1.40	124	600	5.23	34.34	0.41	27.14	93	1.01
432	6.15	34.16	0.86	117							
516	5.70	34.31	0.58	100							
600	5.23	34.34	0.41	93							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10  
CCOF1  
6003

HORIZON; March 21, 1960; 0945 GCT; 32°54.5'N, 117°21'W; sounding, 310 fm; wind, direction missing, force 1; weather, fog; sea, calm; wire angle, 00°.

93.28

1	15.52	33.58	6.18	317	0	(15.52)	(33.58)	(6.18)	(24.79)	(317)	(0.00)
11	15.44	33.57	5.99	316	10	15.45	33.57	6.01	24.79	316	0.03
31	12.88	33.53	5.47	268	20	13.70	33.53	5.63	25.14	284	0.06
40	12.27	33.56	5.91u	255	30	12.90	33.53	5.48	25.30	269	0.09
49	11.44	33.59	4.25	238	50	11.37	33.59	4.21	25.64	236	0.14
59	10.66	33.64	3.87	221	75	10.20	33.69	3.71	25.92	209	0.20
69	10.36	33.68	3.79	213	100	9.48	33.82	3.11	26.14	188	0.25
84	9.96	33.71	3.49	204	125	9.17	33.92	2.62	26.27	176	0.29
98	9.52	33.82	3.15	189	150	8.90	33.99	2.40	26.37	167	0.34
112	9.32	33.87	2.78	182	200	8.93	34.17	1.72	26.51	154	0.42
137	9.06	33.96	2.54	172	250	8.70	34.22	1.45	26.58	147	0.49
165	8.72	34.03	2.25	161	300	8.42	34.23	1.19	26.63	142	0.57
199	8.93	34.17	1.74	154	400	7.30	34.26	0.87	26.82	124	0.70
247	8.71	34.22	1.47	147	500	(6.32)	(34.30)	(0.47)	(26.98)	(108)	(0.83)
295	8.46	34.23	1.21	143							
398	7.31	34.26	0.88	124							
496	6.36	34.30	0.48	109							

HORIZON; March 21, 1960; 0751 GCT; 32°49.5'N, 117°32.5'W; sounding, 480 fm; wind, direction missing, force 1; weather, overcast; sea, calm; wire angle, 13°.

93.30

1	15.37	33.58	5.91	314	0	(15.37)	(33.58)	(5.91)	(24.82)	(314)	(0.00)
11	14.68	33.58	5.96	300	10	14.70	33.58	5.95	24.96	300	0.03
30	13.55	33.57	5.96	278	20	14.00	33.57	5.96	25.11	286	0.06
39	12.84	33.55	5.54	266	30	13.55	33.57	5.96	25.20	278	0.09
48	12.22	33.57	5.06	253	50	12.09	33.58	4.92	25.49	250	0.14
63	11.05	33.64	3.98	227	75	10.27	33.68	3.77	25.90	211	0.20
78	10.10	33.69	3.69	208	100	9.54	33.85	3.15	26.16	187	0.25
96	9.61	33.82	3.23	190	125	9.17	33.99	2.57	26.32	171	0.29
119	9.22	33.96	2.69	174	150	8.99	34.07	2.10	26.42	162	0.34
138	9.06	34.04	2.28	166	200	8.96	34.22	1.45	26.54	151	0.42
166	8.92	34.12	1.86	157	250	8.74	34.24	1.34	26.58	146	0.49
195	8.99	34.22	1.45	151	300	8.54	34.25	1.21	26.63	142	0.56
223	8.82	34.21	1.46	149	400	7.35	34.27	0.83	26.82	124	0.70
261	8.71	34.25	1.29	145	500	6.46	34.29	0.48	26.96	111	0.83
318	8.46	34.25	1.18	141							
390	7.45	34.27	0.87	126							
463	6.76	34.28	0.57	116							
541	6.17	34.31	0.39	106							

HORIZON; March 21, 1960; 0500 GCT; 32°40'N, 117°52.5'W; sounding, 320 fm; wind, direction missing, force 1; weather, overcast; sea, calm; wire angle, 07°.

93.35

0	15.55	33.58	5.86	318	0	15.55	33.58	5.86	24.78	318	0.00
10	15.54	33.58	5.93	318	10	15.54	33.58	5.93	24.78	318	0.03
30	14.50	33.58	6.04	296	20	14.77	33.58	6.01	24.95	302	0.06
39	13.64	33.58	5.97	279	30	14.50	33.58	6.04	25.01	296	0.09
54	13.13	33.58	5.57	269	50	13.27	33.58	5.71	25.26	272	0.15
68	12.73	33.58	5.28	261	75	12.40	33.59	5.05	25.43	255	0.22
93	11.52	33.62	4.23	237	100	10.83	33.65	3.95	25.78	223	0.28
111	10.55	33.68	3.84	216	125	10.02	33.78	3.43	26.02	200	0.33
131	9.84	33.82	3.26	194	150	9.40	33.94	2.80	26.25	178	0.38
151	9.38	33.95	2.77	177	200	8.73	34.10	2.02	26.48	156	0.46
179	9.18	34.07	2.35	165	250	8.37	34.15	1.64	26.58	147	0.54
214	8.52	34.12	1.86	151	300	7.94	34.23	1.31	26.70	135	0.61
242	8.42	34.14	1.70	149	400	6.87	34.26	0.64	26.88	118	0.74
292	8.03	34.23	1.40	137	500	6.15	34.32	0.34	27.02	105	0.86
345	7.39	34.24	0.88	127	600	(5.59)	(34.36)	(0.28)	(27.12)	(95)	(0.97)
427	6.62	34.27	0.55	114							
511	6.08	34.33	0.32	103							
595	5.61	34.36	0.28	95							



SIO

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6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

93.40

HORIZON; March 21, 1960; 0142 GCT; 32°30'N, 118°12.5'W; sounding, 920 fm; wind, 310°, force 3; weather, overcast; sea, slight; wire angle, 22°.

1	15.39	33.60	5.69	313	0	(15.39)	(33.60)	(5.69)	(24.83)	(313)	(0.00)
10	14.94	33.61	5.86	303	10	14.94	33.61	5.86	24.94	303	0.03
29	14.60	33.60	5.80	297	20	14.76	33.60	5.81	24.97	299	0.06
37	14.36	33.62	5.80	290	30	14.57	33.60	5.80	25.01	296	0.09
46	13.99	33.61	5.60	283	50	13.65	33.59	5.36	25.20	277	0.15
60	12.67	33.57	4.81	261	75	11.63	33.60	4.29	25.59	240	0.21
74	11.68	33.60	4.32	241	100	10.37	33.72	3.69	25.91	210	0.27
91	10.72	33.67	3.87	219	125	9.73	33.80	3.36	26.08	194	0.32
114	9.90	33.78	3.46	198	150	9.26	33.91	2.87	26.25	178	0.37
132	9.61	33.82	3.27	190	200	8.55	34.13	1.90	26.53	152	0.45
158	9.12	33.96	2.71	173	250	8.24	34.21	1.47	26.64	141	0.53
185	8.66	34.04	2.31	160	300	7.78	34.23	1.17	26.73	133	0.60
211	8.49	34.16	1.72	148	400	6.83	34.33	0.68	26.93	113	0.72
248	8.26	34.21	1.49	141	500	6.06	34.40	0.41	27.09	98	0.83
303	7.74	34.23	1.15	132							
372	7.06	34.31	0.76	117							
443	6.48	34.36	0.56	106							
520	5.94	34.42	0.36	95							

93.50

HORIZON; March 20, 1960; 2026 GCT; 32°13'N, 118°54.5'W; sounding, 646 fm; wind, 310°, force 2; weather, overcast; sea, rough; wire angle, 04°.

1	14.79	33.58	5.75	302	0	(14.79)	(33.58)	(5.75)	(24.95)	(302)	(0.00)
11	14.58	33.60	5.75	296	10	14.61	33.60	5.75	25.00	297	0.03
31	13.73	33.57	5.66	281	20	14.32	33.59	5.70	25.06	291	0.06
40	13.51	33.56	5.85	278	30	13.74	33.57	5.66	25.16	281	0.09
50	13.22	33.54	5.30	274	50	13.22	33.54	5.30	25.24	274	0.14
65	12.80	33.55	5.07	265	75	11.85	33.56	4.56	25.52	247	0.21
80	11.52	33.57	4.41	241	100	10.44	33.65	3.95	25.84	217	0.27
99	10.48	33.64	3.98	218	125	9.52	33.78	3.27	26.10	192	0.32
124	9.54	33.77	3.31	193	150	9.06	33.94	2.83	26.30	173	0.36
144	9.14	33.91	2.91	177	200	8.44	34.11	2.01	26.53	152	0.45
173	8.76	34.04	2.52	161	250	8.06	34.21	1.35	26.67	138	0.52
203	8.40	34.11	1.95	151	300	7.53	34.24	1.07	26.77	129	0.59
231	8.23	34.19	1.46	142	400	6.65	34.29	0.50	26.93	113	0.72
271	7.86	34.22	1.25	135	500	5.94	34.35	0.36	27.07	100	0.83
330	7.25	34.27	0.86	123							
404	6.60	34.29	0.52	113							
478	6.06	34.34	0.39	103							
557	5.76	34.37	0.29	96							

93.60

HORIZON; March 20, 1960; 1458 GCT; 31°47'N, 119°37'W; sounding, 1820 fm; wind, 320°, force 3; weather, cloudy; sea, rough; wire angle, 03°.

1	15.30	33.65	5.35	307	0	(15.30)	(33.65)	(5.35)	(24.89)	(307)	(0.00)
11	15.30	33.64	5.40	308	10	15.30	33.64	5.39	24.88	308	0.03
31	14.57	33.59	5.49	297	20	14.58	33.59	5.47	25.00	297	0.06
40	14.50	33.62	5.48	293	30	14.57	33.59	5.48	25.00	297	0.09
55	14.32	33.59	5.44	291	50	14.38	33.60	5.46	25.05	292	0.15
70	14.10	33.61	5.37	286	75	13.86	33.60	5.22	25.15	282	0.22
95	12.48	33.53	4.51	261	100	11.95	33.56	4.32	25.49	250	0.29
114	10.85	33.68	3.73	221	125	10.64	33.73	3.48	25.87	214	0.35
134	10.47	33.77	3.31	208	150	9.90	33.79	3.22	26.05	197	0.40
154	9.76	33.80	3.20	194	200	8.75	34.04	2.34	26.43	161	0.49
183	8.74	33.96	2.83	167	250	8.43	34.19	1.58	26.59	145	0.57
218	8.78	34.12	1.86	155	300	7.95	34.22	1.18	26.69	136	0.64
247	8.44	34.19	1.59	146	400	6.94	34.30	0.61	26.90	116	0.77
296	8.00	34.22	1.21	137	500	6.32	34.33	0.55	27.01	106	0.89
351	7.36	34.26	0.86	125	600	5.54	34.38	0.32	27.14	93	0.99
433	6.73	34.32	0.53	112							
518	6.18	34.34	0.56	104							
602	5.52	34.38	0.31	93							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10  
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6003

HORIZON; March 20, 1960; 1027 GCT; 31°32'N, 120°16.5'W; sounding, 2000+ fm; wind, 310°, force 3; weather, overcast; sea, rough; wire angle, 07°.

93.70

1	15.28	33.55	5.28	314	0	(15.28)	(33.55)	(5.28)	(24.81)	(314)	(0.00)
11	15.28	33.56	5.37	314	10	15.28	33.56	5.36	24.82	314	0.03
31	14.78	33.58	5.43	302	20	14.89	33.57	5.41	24.92	304	0.06
40	14.7	33.57	5.37	300	30	14.80	33.58	5.43	24.95	302	0.09
55	14.74	33.58	5.34	300	50	14.70	33.57	5.35	24.96	300	0.15
69	14.32	33.57	5.29	293	75	13.74	33.54	5.12	25.13	284	0.23
94	11.90	33.46	4.55	255	100	11.44	33.48	4.42	25.53	246	0.29
113	10.60	33.57	4.04	225	125	10.12	33.65	3.75	25.90	211	0.35
134	9.79	33.70	3.57	202	150	9.32	33.79	3.43	26.14	188	0.40
152	9.24	33.80	3.41	187	200	8.57	33.95	2.69	26.39	165	0.49
181	8.80	33.89	2.91	173	250	8.03	34.05	2.06	26.55	150	0.57
216	8.38	33.99	2.52	159	300	7.49	34.14	1.41	26.69	136	0.65
245	8.09	34.04	2.13	151	400	6.69	34.24	0.73	26.89	118	0.78
293	7.54	34.13	1.46	137	500	6.07	34.32	0.39	27.03	104	0.89
348	7.10	34.18	1.10	128	600	(5.50)	(34.37)	(0.25)	(27.14)	(93)	(1.00)
430	6.44	34.27	0.58	112							
514	6.00	34.33	0.35	102							
598	5.50	34.37	0.25	93							

HORIZON; March 20, 1960; 0526 GCT; 31°11'N, 120°59'W; sounding, 2000+ fm; wind, 310°, force 2; weather, overcast; sea, rough; wire angle, 08°.

93.80

1	14.98	33.49	5.75	313	0	(14.98)	(33.49)	(5.75)	(24.83)	(313)	(0.00)
11	15.00	33.51	5.77	312	10	14.99	33.51	5.76	24.84	312	0.03
31	14.40	33.49	5.76	301	20	14.39	33.49	5.76	24.96	301	0.06
40	14.27	33.49	5.77	297	30	14.40	33.49	5.76	24.96	301	0.09
54	14.38	33.51	5.79	299	50	14.34	33.50	5.78	24.98	298	0.15
69	14.19	33.49	5.74	296	75	13.80	33.48	5.78	25.08	289	0.22
93	12.40	33.48	5.85	263	100	11.93	33.49	5.41	25.46	253	0.29
112	11.06	33.51	4.41	237	125	10.16	33.64	4.03	25.88	213	0.35
131	9.86	33.68	3.93	205	150	9.23	33.81	3.80	26.17	185	0.40
151	9.20	33.82	3.79	184	200	8.34	33.99	3.13	26.45	159	0.49
179	8.66	33.91	3.33	169	250	7.53	34.05	2.21	26.62	143	0.57
214	8.11	34.02	3.01	153	300	6.99	34.11	1.50	26.74	131	0.64
242	7.62	34.04	2.36	145	400	6.32	34.23	0.62	26.93	113	0.77
290	7.06	34.09	1.66	134	500	5.85	34.32	0.37	27.06	101	0.88
344	6.66	34.19	0.95	121	600	(5.38)	(34.36)	(0.29)	(27.15)	(92)	(0.98)
427	6.20	34.26	0.51	110							
510	5.79	34.33	0.36	100							
594	5.38	34.36	0.29	93							

HORIZON; March 20, 1960; 0108 GCT; 30°53'N, 121°34'W; sounding, 2000+ fm; wind, 340°, force 2; weather, partly cloudy; sea, rough; wire angle, 14°.

93.90

1	15.12	33.40	5.90	322	0	(15.12)	(33.40)	(5.90)	(24.74)	(322)	(0.00)
11	14.78	33.46	5.70	311	10	14.79	33.46	5.71	24.85	311	0.03
30	14.26	33.38	5.77	306	20	14.27	33.39	5.76	24.90	306	0.06
39	14.24	33.37	5.71	306	30	14.26	33.38	5.77	24.90	306	0.09
53	14.18	33.44	5.69	300	50	14.20	33.42	5.70	24.95	302	0.15
68	14.20	33.50	5.63	296	75	14.19	33.50	5.62	25.02	295	0.23
92	12.94	33.49	5.41	272	100	12.10	33.48	5.08	25.41	257	0.30
112	11.00	33.48	4.64	239	125	10.09	33.62	4.15	25.88	213	0.36
131	9.79	33.69	3.99	203	150	9.50	33.76	3.88	26.09	193	0.41
151	9.48	33.76	3.87	193	200	8.39	33.98	3.11	26.44	160	0.50
179	8.76	33.93	3.39	169	250	7.65	34.05	2.57	26.60	145	0.58
213	8.18	34.01	2.96	155	300	7.01	34.06	1.90	26.70	135	0.65
240	7.80	34.04	2.66	147	400	6.17	34.17	0.87	26.90	116	0.78
288	7.15	34.05	2.12	138	500	5.76	34.30	0.42	27.06	102	0.89
342	6.64	34.13	1.29	125	600	(5.34)	(34.34)	(0.33)	(27.13)	(94)	(1.00)
424	6.02	34.20	0.73	112							
506	5.76	34.31	0.39	101							
590	5.40	34.34	0.34	95							



S10  
CCOFI  
6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

93.100

HORIZON; March 19, 1960; 2040 GCT; 30°31.5'N, 122°13'W; sounding, 2000+ fm; wind, 310°, force 3; weather, partly cloudy; sea, rough; wire angle, 09°.

1	15.42	33.40	5.63	328	0	(15.42)	(33.40)	(5.63)	(24.67)	(328)	(0.00)
11	14.87	33.37	5.70	319	10	14.89	33.37	5.70	24.76	319	0.03
31	14.66	33.31	5.71	319	20	14.72	33.33	5.70	24.76	319	0.06
40	14.64	33.34	5.70	316	30	14.66	33.31	5.71	24.76	319	0.10
50	14.62	33.35	5.68	315	50	14.62	33.35	5.68	24.80	315	0.16
63	14.44	33.36	5.69	311	75	13.60	33.28	5.69	24.97	300	0.24
79	13.46	33.28	5.69	297	100	12.97	33.40	5.30	25.18	279	0.31
98	13.08	33.40	5.34	281	125	10.99	33.49	4.57	25.62	237	0.38
123	11.09	33.48	4.62	240	150	9.67	33.67	3.94	25.99	202	0.43
142	9.86	33.63	4.03	209	200	8.46	33.93	3.17	25.39	165	0.52
171	9.18	33.78	3.69	187	250	7.73	34.03	2.43	26.58	147	0.60
200	8.46	33.93	3.17	165	300	6.99	34.12	1.78	26.75	131	0.68
229	8.00	33.97	2.81	155	400	6.27	34.22	0.93	26.92	114	0.80
269	7.48	34.09	2.10	139	500	5.66	34.35	0.43	27.10	97	0.91
327	6.61	34.14	1.51	124							
401	6.26	34.22	0.89	114							
475	5.79	34.34a)	0.49	99							
553	5.44	34.37a)	0.36	93							

5  
94<sup>29</sup>  
30

HORIZON; March 10, 1960; 2000, 2050 GCT; 32°37'N, 117°20'W; sounding, 60 fm; wind, 320°, force 3; weather, clear; sea, moderate; wire angle, 06°, 07°. b)

1	14.12	33.62	6.20	285
6	13.78	33.60	6.07	280
11	13.72	33.58	5.99	280
16	13.18	33.62	5.58	267
20	12.92	33.60	6.21u	264
26	12.59	33.60	5.25	258
31	12.20	33.62	4.58	249
36	11.92	33.64	4.28	242
40	11.61	33.65	3.92	236
44	11.08	33.66	3.57	226
50	10.60	33.74	3.30	212
55	10.08	33.80	3.08	200
60	9.87	33.84	2.99	193
65	9.70	33.83	2.97	191
70	9.66	33.87	2.85	188
75	9.66	33.87	2.87	188
79	9.62	33.88	2.84	186
84	9.55	33.93	2.81	181

973<sup>5</sup>  
2

BLACK DOUGLAS; March 13, 1960; 0150 GCT; 32°13.5'N, 117°13'W; sounding, 400 fm; wind, 290°, force 4; weather, partly cloudy; sea, moderate; wire angle, 00°. b)

0	14.60	33.55		300
5	14.57	33.55		300
10	14.32	33.55		294
15	14.18	33.55		292
20	13.34	33.55		275
25	12.90	33.55		267
30	12.24	33.58		253
35	12.05	33.57		250
40	11.76	33.56		245
45	11.24	33.62		232
50	10.72	33.66		220
55	10.66	33.68		218
60	10.59	33.67		217
65	10.47	33.69		214
70	10.18	33.73		206
75	9.90	33.78		198
80	9.87	33.78		197
85	9.85	33.80		196

128

- a) Salinity samples at 475 and 553 meters appear to have been reversed; they are assumed to be listed in correct order.  
b) Shakedown station.



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10

CCOF1  
6003

HORIZON; March 21, 1960; 1850 GCT; 32° 11'N, 117° 16.5'W; sounding, 350 fm; wind, 340°, force 1; weather, overcast; sea, slight; wire angle, 00°.

97.32

1	15.45	33.58	5.83	316	0	(15.45)	(33.58)	(5.83)	(24.80)	(316)	(0.00)
11	-	33.62	5.73	-	10	14.68	33.57	5.76	24.96	301	0.03
31	13.70	33.55	5.58	282	20	14.60	33.59	5.72	25.00	297	0.06
40	12.92	33.57	4.97	266	30	13.71	33.55	5.60	25.15	282	0.09
50	12.22	33.58	4.74	252	50	12.22	33.58	4.74	25.47	252	0.14
65	11.62	33.61	4.25	240	75	11.10	33.65	3.89	25.73	227	0.20
80	10.81	33.68	3.71	220	100	10.03	33.73	3.40	25.97	204	0.26
99	10.04	33.73	3.40	204	125	9.56	33.87	3.04	26.17	186	0.31
124	9.57	33.86	3.05	187	150	9.17	33.97	2.53	26.31	172	0.35
145	9.22	33.96	2.59	174	200	8.61	34.09	2.08	26.49	155	0.44
174	8.96	34.01	2.33	167	250	8.15	34.18	1.46	26.63	141	0.51
203	8.56	34.09	2.04	154	300	7.73	34.28	1.02	26.78	128	0.58
232	8.30	34.13	1.73	148	400	6.77	34.37	0.62	26.97	109	0.70
273	7.94	34.23	1.20	135	500	6.14	34.38	0.48	27.07	100	0.81
331	7.48	34.33	0.85	122							
405	6.71	34.37	0.60	108							
479	6.26	34.38	0.51	102							
558	5.90	34.38	0.39	97							

HORIZON; March 22, 1960; 0843 GCT; 31° 15.5'N, 119° 12'W; sounding, 800 fm; wind, direction missing, force 1; weather, overcast; sea, calm; wire angle, 10°.

97.60

1	15.68	33.58	5.71	321	0	(15.68)	(33.58)	(5.71)	(24.75)	(321)	(0.00)
11	15.66	33.58	5.68	320	10	15.66	33.58	5.69	24.76	320	0.03
31	15.38	33.58	5.68	315	20	15.54	33.58	5.68	24.78	318	0.06
40	15.28	33.57	5.67	313	30	15.40	33.58	5.68	24.81	314	0.10
49	15.21	33.64	5.68	306	50	15.19	33.64	5.68	24.90	306	0.16
63	15.03	33.57	5.69	308	75	14.74	33.55	5.69	24.95	302	0.23
78	14.63	33.55	5.69	301	100	13.14	33.48	5.30	25.21	277	0.31
96	13.55	33.49	5.43	284	125	11.21	33.52	4.58	25.61	239	0.37
121	11.42	33.49	4.69	245	150	10.03	33.68	4.09	25.93	208	0.43
140	10.46	33.62	4.24	219	200	8.68	33.94	3.39	26.36	167	0.52
168	9.44	33.78	3.87	191	250	7.82	34.12	2.67	26.63	142	0.60
197	8.74	33.93	3.43	169	300	7.22	34.14	1.91	26.73	132	0.68
226	8.16	34.02	3.08	154	400	6.32	34.22	0.95	26.92	114	0.80
265	7.61	34.16	2.44	136	500	5.73	34.31	0.50	27.06	101	0.92
322	6.98	34.13	1.66	129							
395	6.35	34.22	0.97	115							
468	5.82	34.26	0.60	105							
546	5.58	34.36	0.41	95							

HORIZON; March 22, 1960; 2115 GCT;<sup>a)</sup> 30° 14.5'N, 121° 13.5'W; sounding, 2000+ fm; wind, 350°, force 2; weather, overcast; sea, rough; wire angle, 06°.

97.90

421	6.81	34.31	0.68	114							
430	6.75	34.32	0.59	113							
441	6.66	34.32	0.58	111							
450	6.60	34.32	0.37	111							
461	6.54	34.32	0.48	110							
470	6.44	34.34	0.38	107							
480	6.40	34.33	0.41	107							
490	6.34	34.33	0.37	107							
500	6.31	34.36	0.37	104							
509	6.27	34.36	0.40	103							
519	6.22	34.36	0.39	103							
529	6.16	34.36	0.36	102							
539	6.12	34.36	0.37	101							
549	6.06	34.42	0.37	97							
558	5.98	34.38	0.36	99							
568	5.92	34.38	0.30	98							
578	5.86	34.41	0.31	95							
586	5.82	34.40	0.31	95							

a) Test cast.

129



S10

CCOF1  
6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

10060

HORIZON; March 23, 1960; 1542 GCT; 30°40.5'N, 118°47'W; sounding, 2000 fm; wind, 320°, force 3; weather, overcast; sea, rough; wire angle, 04°.

1	16.01	33.59	5.70	327	0	(16.01)	(33.59)	(5.70)	(24.68)	(327)	(0.00)
11	15.98	33.60	5.48	325	10	15.98	33.60	5.50	24.70	325	0.03
31	15.70	33.58	5.47	321	20	15.87	33.58	5.48	24.74	322	0.06
60	15.48	33.62	5.45	313	30	15.71	33.58	5.47	24.75	321	0.10
70	15.42	33.57	5.43	316	50	15.55	33.61	5.46	24.81	315	0.16
85	14.84	33.54	5.43	306	75	15.24	33.56	5.43	24.83	313	0.24
99	13.64	33.56	5.16	281	100	13.58	33.56	5.14	25.18	279	0.31
114	12.26	33.56	4.84	255	125	11.54	33.58	4.63	25.59	240	0.38
139	10.56	33.62	4.35	220	150	10.21	33.69	4.04	25.91	210	0.44
159	9.95	33.75	3.65	201	200	8.81	33.91	3.33	26.32	171	0.53
188	9.04	33.90	3.32	176	250	8.10	34.13	1.70	26.60	145	0.62
219	8.48	33.95	3.34	164	300	8.13	34.24	1.57	26.68	137	0.69
248	8.11	34.13	1.72	145	400	6.79	34.25	0.74	26.88	118	0.82
296	8.16	34.24	1.61	137	500	6.19	34.33	0.44	27.03	104	0.94
351	7.16	34.19	1.13	128	600	5.56	34.36	0.31	27.13	95	1.04
434	6.60	34.29	0.57	113							
518	6.08	34.34	0.43	103							
602	5.55	34.36	0.30	95							

10090

HORIZON; March 23, 1960; 0205 GCT; 29°42'N, 120°44.5'W; sounding, 2000+ fm; wind, 300°, force 3; weather, cloudy; sea, rough; wire angle, 08°.

1	16.73	33.82	5.40	326	0	(16.73)	(33.82)	(5.40)	(24.69)	(326)	(0.00)
11	16.68	33.82	5.41	325	10	16.69	33.82	5.41	24.70	325	0.03
31	16.50	33.80	5.36	323	20	16.60	33.81	5.38	24.71	324	0.07
40	16.32	33.78	5.39	320	30	16.52	33.80	5.36	24.72	323	0.10
50	16.36	33.79	5.18	320	50	16.36	33.79	5.18	24.76	320	0.16
65	16.28	33.78	5.25	319	75	16.28	33.78	5.31	24.77	319	0.24
80	16.28	33.78	5.37	319	100	16.18	33.77	5.36	24.78	318	0.32
99	16.18	33.77	5.37	317	125	15.39	33.78	5.24	24.97	300	0.40
124	15.40	33.78	5.25	300	150	12.92	33.71	4.58	25.43	256	0.47
144	13.34	33.71	4.70	264	200	9.81	33.79	4.01	26.06	196	0.58
174	11.00	33.75	4.01	218	250	8.90	33.96	3.20	26.34	169	0.68
203	9.73	33.80	4.01	194	300	7.92	34.05	2.32	26.57	148	0.76
232	9.25	33.87	3.62	181	400	6.91	34.21	1.05	26.83	123	0.90
272	8.44	34.02	2.81	158	500	(6.02)	(34.23)		(26.96)	(110)	(1.02)
331	7.46	34.09	1.90	139							
405	6.86	34.21	1.00	122							
479	6.17	34.23	0.63	112							

10360

BLACK DOUGLAS; March 28, 1960; 1743 GCT; 30°06'N, 118°25'W; sounding, 1840 fm; wind, 270°, force 4; weather, partly cloudy; sea, moderate; wire angle, 26°.

1	15.74	33.58	5.30	322	0	(15.74)	(33.58)	(5.30)	(24.74)	(322)	(0.00)
10	15.63	33.60	5.46	318	10	15.63	33.60	5.46	24.78	318	0.03
29	15.60	33.60	5.31	318	20	15.61	33.60	5.38	24.79	317	0.06
56	15.12	33.58	5.36	309	30	15.60	33.60	5.31	24.79	317	0.10
65	14.67	33.50	5.61	306	50	15.37	33.61	5.33	24.84	312	0.16
78	14.46	33.60	5.42	294	75	14.63	33.59	5.50	24.99	298	0.23
91	12.50	33.53	4.68	261	100	12.00	33.60	4.35	25.52	247	0.30
104	11.60	33.64	4.14	237	125	10.50	33.70	3.89	25.87	214	0.36
124	10.52	33.69	3.92	215	150	9.97	33.83	3.22	26.07	195	0.42
142	10.10	33.78	3.38	201	200	9.22	34.03	2.41	26.34	169	0.51
167	9.70	33.94	2.88	183	250	8.41	34.13	1.83	26.55	150	0.59
191	9.30	34.01	2.53	172	300	7.79	34.14	1.56	26.65	140	0.66
217	9.10	34.05	2.25	166	400	6.89	34.24	0.81	26.86	120	0.80
258	8.26	34.14	1.74	146	500	5.96	34.29	0.48	27.02	105	0.92
304	7.74	34.14	1.53	139							
377	7.18	34.24	0.92	124							
451	6.24	34.24	0.65	112							
529	5.82	34.31	0.37	102							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO  
CCOFI  
6003

BLACK DOUGLAS; March 27, 1960; 1852 GCT; 29°32'N, 118°01.5'W; sounding, 1800 fm; wind, 270°, force 4; weather, overcast; sea, rough; wire angle, 10°.

107.60

1	15.84	33.64	5.55	320	0	(15.84)	(33.64)	(5.55)	(24.76)	(320)	(0.00)
11	15.82	33.68	5.57	316	10	15.82	33.68	5.57	24.80	316	0.03
31	15.84	33.65	5.57	319	20	15.83	33.67	5.57	24.79	317	0.06
40	15.42	33.62	5.58	312	30	15.84	33.65	5.57	24.77	319	0.10
55	15.29	33.62	5.57	309	50	15.42	33.64	5.57	24.86	311	0.16
70	14.73	33.55	5.50	303	75	14.59	33.54	5.46	24.97	300	0.23
94	13.23	33.49	5.10	278	100	12.85	33.49	4.97	25.27	271	0.31
115	11.86	33.49	4.66	252	125	11.11	33.53	4.56	25.63	237	0.37
134	10.56	33.60	4.46	222	150	10.12	33.74	3.75	25.97	205	0.43
153	10.04	33.77	3.59	201	200	8.83	33.92	2.93	26.32	171	0.52
182	9.10	33.86	3.15	180	250	8.49	34.14	1.87	26.55	149	0.60
216	8.66	33.98	2.69	164	300	7.65	34.16	1.50	26.68	137	0.68
245	8.54	34.13	1.95	151	400	6.43	34.19	1.02	26.88	118	0.81
293	7.76	34.16	1.50	138	500	6.12	34.37	0.42	27.07	100	0.93
346	6.90	34.15	1.43	127	600	(5.66)	(34.40)	(0.29)	(27.15)	(93)	(1.03)
428	6.25	34.23	0.81	113							
513	6.08	34.40	0.37	98							
599	5.67	34.40	0.30	93							

BLACK DOUGLAS; March 28, 1960; 0009 GCT; 29°11'N, 118°41'W; sounding, 1500 fm; wind, 290°, force 3; weather, overcast; sea, moderate; wire angle, 13°.

107.70

0	16.13	33.68	5.50	323	0	16.13	33.68	5.50	24.73	323	0.00
10	16.10	33.67	5.58	323	10	16.10	33.67	5.58	24.73	323	0.03
29	16.16	33.75	5.56	318	20	16.13	33.71	5.58	24.75	321	0.06
59	16.16	33.77	5.52	317	30	16.16	33.75	5.55	24.78	318	0.10
69	16.11	33.74	5.59	318	50	16.16	33.77	5.53	24.79	317	0.16
84	16.08	33.75	5.56	317	75	16.10	33.74	5.58	24.79	317	0.24
98	15.29	33.62	5.64	309	100	15.35	33.66	5.63	24.88	308	0.32
112	14.76	33.71	5.41	292	125	14.42	33.83	5.21	25.21	277	0.39
136	12.72	33.71	4.90	252	150	11.59	33.67	4.67	25.66	234	0.46
154	11.26	33.66	4.61	230	200	9.47	33.78	4.17	26.11	191	0.57
184	9.90	33.74	4.32	201	250	8.78	34.02	2.69	26.41	163	0.66
212	9.21	33.82	4.00	184	300	8.38	34.21	1.52	26.63	143	0.74
241	8.85	33.98	2.98	167	400	6.79	34.22	1.09	26.86	120	0.87
289	8.50	34.20	1.65	146	500	6.05	34.33	0.52	27.04	103	0.99
343	7.76	34.22	1.30	133	600	(5.47)	(34.34)	(0.33)	(27.10)	(95)	(1.10)
426	6.40	34.22	0.98	115							
510	6.01	34.34	0.47	102							
594	5.50	34.34	0.34	96							

BLACK DOUGLAS; March 26, 1960; 1001 GCT; 28°56.5'N, 117°38'W; sounding, 1800 fm; wind, 300°, force 4; weather, overcast; sea, moderate; wire angle, 07°.

110.60

1	16.04	33.63	5.58	325	0	(16.04)	(33.63)	(5.58)	(24.70)	(325)	(0.00)
11	16.02	33.62	5.61	325	10	16.02	33.62	5.61	24.70	325	0.03
31	15.40	33.57	5.70	316	20	16.00	33.63	5.66	24.71	324	0.06
61	15.23	33.57	5.68	312	30	15.42	33.57	5.70	24.80	316	0.10
71	15.05	33.57	5.73	308	50	15.28	33.57	5.69	24.83	313	0.16
87	14.62	33.60	5.47	297	75	14.99	33.58	5.70	24.90	306	0.24
102	14.30	33.69	5.28	284	100	14.08	33.61	5.30	25.12	285	0.31
117	12.84	33.66	4.86	258	125	12.16	33.69	4.54	25.57	243	0.38
141	11.07	33.78	4.02	218	150	10.40	33.78	3.94	25.95	206	0.44
162	9.60	33.78	3.84	193	200	8.82	33.93	3.43	26.33	171	0.53
191	8.96	33.89	3.59	175	250	7.89	34.04	2.50	26.56	149	0.61
221	8.52	34.00	3.04	161	300	8.01	34.26	1.18	26.71	135	0.69
250	7.89	34.04	2.50	149	400	7.33	34.32	0.67	26.85	121	0.82
299	8.02	34.25	1.21	135	500	6.62	34.40	0.38	27.02	105	0.94
354	7.68	34.31	0.84	126	600	5.84	34.42	0.30	27.13	94	1.04
440	7.04	34.33	0.51	116							
525	6.44	34.42	0.34	101							
610	5.76	34.41	0.29	93							



SIO

CCOF1  
6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

110.70

BLACK DOUGLAS; March 26, 1960; 0211 GCT; 28°36.5'N, 118°18'W; sounding, 1800 fm; wind, 330°, force 5; weather, overcast; sea, rough; wire angle, 07°.

0	16.47	33.66	5.51	332	0	16.47	33.66	5.51	24.63	332	0.00
10	16.46	33.66	5.46	332	10	16.46	33.66	5.46	24.63	332	0.03
30	16.28	33.66	5.55	328	20	16.38	33.66	5.50	24.65	330	0.07
60	15.81	33.62	5.54	320	30	16.28	33.66	5.55	24.67	328	0.10
70	15.71	33.63	5.56	317	50	15.97	33.63	5.55	24.73	323	0.16
85	15.66	33.65	5.54	315	75	15.60	33.62	5.55	24.80	316	0.24
101	15.30	33.64	5.58	308	100	15.32	33.64	5.58	24.88	308	0.32
115	14.86	33.64	5.36	299	125	13.73	33.62	4.99	25.19	278	0.40
139	13.24	33.71	4.72	262	150	12.68	33.72	4.55	25.49	250	0.46
159	12.04	33.72	4.39	239	200	9.50	33.86	3.55	26.17	186	0.58
188	9.77	33.77	4.03	196	250	8.32	34.01	2.77	26.47	157	0.66
217	9.20	33.97	2.92	173	300	8.12	34.12	1.99	26.59	146	0.74
246	8.36	34.00	2.84	158	400	7.05	34.28	0.92	26.87	119	0.88
295	8.16	34.11	2.06	147	500	6.33	34.34	0.47	27.01	106	1.00
350	7.73	34.29	1.16	128	600	5.63	34.45	0.31	27.19	89	1.10
434a)	6.60	34.27	0.78	114							
519a)	6.24	34.36	0.38	103							
604a)	5.60	34.45	0.30	88							

113.50

BLACK DOUGLAS; March 24, 1960; 2049 GCT; 28°41.5'N, 116°36.5'W; sounding, 1800 fm; wind, 290°, force 3; weather, cloudy; sea, moderate; wire angle, 13°.

2	16.88	33.78	5.25	332	0	(16.88)	(33.78)	(5.25)	(24.63)	(332)	(0.00)
12	16.78	33.78	5.38	330	10	16.80	33.78	5.34	24.64	331	0.03
31	16.29	33.74	5.47	322	20	16.59	33.76	5.46	24.69	326	0.07
60	15.76	33.75	5.33	310	30	16.31	33.74	5.47	24.74	322	0.10
71	15.50	33.72	5.37	306	50	15.95	33.75	5.37	24.82	314	0.16
86	14.82	33.64	5.23	298	75	15.34	33.70	5.36	24.92	305	0.24
101	14.28	33.71	4.77	282	100	14.30	33.71	4.79	25.15	283	0.31
115	13.26	33.73	3.94	261	125	13.20	33.97	3.10	25.57	242	0.38
139	12.50	34.07	2.16	222	150	11.63	34.05	2.30	25.94	208	0.44
159	10.92	34.02	2.43	197	200	9.50	34.04	2.40	26.31	172	0.53
188	9.58	34.00	2.61	177	250	9.00	34.19	1.75	26.51	154	0.62
218	9.46	34.10	2.09	167	300	8.70	34.32	0.98	26.66	139	0.69
247	9.02	34.18	1.81	155	400	7.59	34.35	0.60	26.85	121	0.83
296	8.74	34.32	1.00	140	500	6.67	34.37	0.41	27.00	107	0.95
352	7.96	34.34	0.79	127	600	5.83	34.48	0.28	27.19	89	1.05
434	7.34	34.36	0.51	117							
520	6.48	34.39	0.37	104							
606	5.79	34.49	0.27	88							

113.60

BLACK DOUGLAS; March 25, 1960; 0207 GCT; 28°22'N, 117°16.5'W; sounding, 1900 fm; wind, 320°, force 5; weather, partly cloudy; sea, rough; wire angle, 13°.

1	16.76	33.69	5.53	336	0	(16.76)	(33.69)	(5.53)	(24.59)	(336)	(0.00)
10	16.75	33.72	5.44	334	10	16.75	33.72	5.44	24.61	334	0.03
30	16.34	33.73	5.45	324	20	16.75	33.76	5.44	24.64	331	0.07
59	15.92	33.77	5.42	312	30	16.34	33.73	5.45	24.72	324	0.10
70	15.62	33.76	5.29	306	50	16.10	33.76	5.44	24.80	316	0.16
85	15.24	33.69	5.30	303	75	15.48	33.73	5.30	24.91	305	0.24
98	14.76	33.66	5.02	295	100	14.59	33.65	4.95	25.04	293	0.32
114	13.34	33.66	4.44	267	125	12.80	33.82	3.63	25.54	245	0.38
138	12.32	33.87	3.18	233	150	11.85	33.91	3.00	25.80	221	0.44
156	11.64	33.95	2.91	215	200	10.82	34.30	1.43	26.28	175	0.54
186	11.07	34.19	1.84	187	250	10.09	34.46	0.79	26.54	151	0.63
213	10.60	34.38	1.07	165	300	9.46	34.41	0.80	26.61	144	0.71
242	10.18	34.45	0.80	153	400	7.79	34.36	0.68	26.82	124	0.84
289	9.66	34.43	0.78	146	500	6.78	34.42	0.32	27.01	106	0.96
341	8.58	34.33	0.96	137	600	(6.00)	(34.41)		(27.10)	(97)	(1.07)
421	7.54	34.37	0.57	119							
505	6.73	34.42	0.31	105							
588	6.08	34.41	0.27	97							

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a) Owing to malfunction of the unprotected thermometers, the depths of the last three Nansen bottles were determined from an extrapolated depth curve.



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6003

BLACK DOUGLAS; March 22, 1960; 2332 GCT; 28°04'N, 116°20'W; sounding, 2300 fm; wind, 180°, force 2; weather, cloudy; sea, moderate; wire angle, 00°.

117.50

0	16.98	33.71	5.40	339	0	16.98	33.71	5.40	24.55	339	0.00
10	16.28	33.78	5.52	319	10	16.28	33.78	5.52	24.77	319	0.03
30	15.57	33.66	5.58	312	20	15.75	33.68	5.56	24.81	315	0.06
40	14.46	33.66	5.55	289	30	15.57	33.66	5.58	24.84	312	0.10
50	14.16	33.66	5.50	283	50	14.16	33.66	5.50	25.15	283	0.16
65	13.82	33.71	5.41	273	75	13.29	33.69	5.10	25.35	264	0.22
81	13.09	33.70	4.92	260	100	12.62	33.99	2.73	25.71	229	0.29
101	12.62	34.00	2.68	229	125	11.82	34.11	1.89	25.96	206	0.34
126	11.80	34.11	1.87	206	150	10.05	34.03	2.36	26.21	182	0.39
146	10.23	34.03	2.37	185	200	9.95	34.29	1.45	26.43	161	0.48
176	9.48	34.07	2.24	170	250	10.10	34.52	0.49	26.58	147	0.56
206	10.03	34.34	1.18	159	300	9.24	34.46	0.53	26.68	137	0.63
237	10.22	34.51	0.49	149	400	8.09	34.39	0.52	26.81	125	0.77
276	9.70	34.49	0.52	142	500	6.91	34.43	0.35	27.00	107	0.89
337	8.66	34.43	0.55	131							
412	7.98	34.38	0.52	124							
487	7.03	34.43	0.37	108							
568	6.26	34.36	0.29	103							

BLACK DOUGLAS; March 22, 1960; 0658 GCT; <sup>a)</sup> 27°08'N, 118°10.5'W; sounding, 2100 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 00°.

117.80

439	6.71	34.27	0.66	116							
442	6.72	34.33u	0.61	-							
445	6.69	34.27	0.58	116							
471	6.60	34.31	0.51	112							
474	6.58	34.31	0.46	111							
477	6.55	34.33	0.45	109							
503	6.44	34.34	0.33	107							
506	6.40	34.34	0.32	106							
509	6.38	34.33	0.32	107							
535	6.18	34.38	0.32	101							
538	6.12	34.38	0.29	100							
541	6.12	34.36	0.34	102							
567	5.92	34.44u	0.26	-							
570	5.92	34.36	0.30	99							
573	5.89	34.36	0.29	99							
599	5.77	34.35	0.29	98							
602	5.72	34.38	0.27	95							
606	5.72	34.38	0.28	95							

BLACK DOUGLAS; March 21, 1960; 0522 GCT; 27°33'N, 115°52.5'W; sounding, 2000 fm; wind, 300°, force 2; weather, clear; sea, moderate; wire angle, 00°.

120.50

0	17.55	33.82	5.38	344	0	17.55	33.82	5.38	24.54	344	0.00
10	16.94	33.86	5.38	328	10	16.94	33.86	5.38	24.67	328	0.03
30	15.69	33.82	5.58	303	20	16.31	33.85	5.49	24.81	315	0.07
40	15.08	33.78	5.27	294	30	15.69	33.82	5.58	24.94	303	0.10
50	13.84	33.68	4.56	276	50	13.84	33.68	4.56	25.22	276	0.15
65	13.16	33.74	4.05	258	75	12.58	33.82	4.20	25.58	242	0.22
80	12.22	33.86	4.29	232	100	11.44	33.93	2.70	25.88	213	0.28
101	11.45	33.93	2.68	213	125	10.69	34.01	2.37	26.08	194	0.33
126	10.68	34.01	2.36	194	150	9.54	34.03	2.45	26.29	174	0.38
146	9.62	34.00	2.50	178	200	9.05	34.16	1.77	26.47	157	0.46
176	9.25	34.14	2.01	161	250	8.86	34.32	1.05	26.63	142	0.53
206	9.01	34.16	1.71	156	300	8.56	34.38	0.62	26.73	133	0.60
235	8.90	34.27	1.25	146	400	7.60	34.39	0.41	26.88	118	0.74
276	8.78	34.38	0.73	136	500	6.76	34.41	0.25	27.01	106	0.85
335	8.23	34.38	0.54	128							
409	7.50	34.40	0.39	117							
483	6.90	34.41	0.26	108							
566	6.20	34.41	0.24	99							

a) Test cast.



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6003

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

120.80

BLACK DOUGLAS; March 21, 1960; 1903 GCT; 26°37'N, 117°55'W; sounding, 2100 fm; wind, 180°, force 3; weather, partly cloudy; sea, moderate; wire angle, 03°.

0	18.16	34.14	5.72	335	0	18.16	34.14	5.72	24.60	335	0.00
10	17.80	34.13	5.35	328	10	17.80	34.13	5.35	24.67	328	0.03
30	17.58	34.12	5.23	323	20	17.66	34.13	5.27	24.71	324	0.07
56	17.56	34.11	5.19	323	30	17.58	34.12	5.23	24.72	323	0.10
65	17.50	34.10	5.18	323	50	17.56	34.11	5.19	24.72	323	0.16
76	17.50	34.09	5.21	323	75	17.50	34.09	5.21	24.72	323	0.24
91	17.44	34.08	5.32	323	100	17.33	34.06	5.31	24.75	321	0.33
106	17.00	34.05	5.21	315	125	15.99	34.10	5.04	25.08	289	0.40
131	15.22	34.07	4.97	275	150	13.07	33.96	4.60	25.60	240	0.47
151	12.92	33.95	4.58	238	200	9.87	33.86	3.87	26.10	192	0.58
176	11.00	33.84	4.30	212	250	8.91	34.06	2.51	26.42	162	0.67
205	9.71	33.87	3.76	188	300	7.96	34.11	2.09	26.61	144	0.75
236	9.18	34.03	2.73	168	400	6.77	34.21	0.90	26.85	121	0.89
276	8.43	34.11	2.23	152	500	6.25	34.36	0.47	27.04	103	1.01
336	7.30	-	1.91	-							
411	6.68	34.23	0.73	118							
485	6.33	34.34	0.49	106							
567	5.88	34.40	0.37	96							

123.42

BLACK DOUGLAS; March 19, 1960; 1143 GCT; 27°13.5'N, 114°56'W; sounding, 800 fm; wind, 310°, force 2; weather, partly cloudy; sea, moderate; wire angle, 08°.

0	16.22	34.05	4.47	298	0	16.22	34.05	4.47	24.99	298	0.00
10	16.21	34.04	4.64	298	10	16.21	34.04	4.64	24.99	298	0.03
30	13.90	33.97	3.59	255	20	16.15	34.03	4.63	24.99	298	0.06
40	13.36	34.00	3.18a)	243	30	13.90	33.97	3.59	25.44	255	0.09
55	12.44	33.96	2.63	229	50	12.85	33.98	2.84	25.65	235	0.14
71	12.08	34.11	2.28	211	75	11.99	34.10	2.21	25.91	210	0.19
95	11.56	34.04	2.05	207	100	11.37	34.03	2.07	25.98	204	0.24
115	10.53	34.04	2.23	189	125	10.14	34.06	2.13	26.22	181	0.29
134	9.95	34.09	2.04	176	150	9.88	34.16	1.78	26.33	170	0.34
154	9.88	34.18	1.70	168	200	10.11	34.42	0.83	26.50	154	0.42
184	10.12	34.34	1.01	160	250	9.92	34.52	0.35	26.62	143	0.50
218	10.08	34.51	0.64	147	300	9.12	34.52	0.22	26.75	131	0.57
248	9.94	34.52	0.38	144	400	8.19	34.55	0.14	26.91	115	0.69
297	9.16	34.52	0.23	132	500	7.05	34.48	0.14	27.02	105	0.81
352	8.68	34.53	0.19	123	600	6.09	34.43	0.19	27.11	96	0.91
436	7.81	34.55	0.13	110							
522	6.80	34.45	0.15	103							
606	6.03	34.43	0.19	96							

130.40

BLACK DOUGLAS; March 17, 1960; 2350 GCT; 26°10.5'N, 114°06'W; sounding, 1100 fm; wind, 310°, force 3; weather, partly cloudy; sea, rough; wire angle, 10°.

0	17.61	34.07	4.72	328	0	17.61	34.07	4.72	24.67	328	0.00
10	17.26	34.06	4.73	320	10	17.26	34.06	4.73	24.75	320	0.03
30	17.14	34.14	5.17	312	20	17.20	34.11	4.99	24.81	315	0.06
40	16.30	33.94	4.99	308	30	17.14	34.14	5.17	24.84	312	0.10
50	16.24	33.96	4.90	305	50	16.24	33.96	4.90	24.91	305	0.16
64	16.36	34.04	4.51	301	75	15.70	33.98	4.45	25.05	292	0.23
79	15.31	33.95	4.43	286	100	13.35	33.89	3.22	25.49	250	0.30
98	13.51	33.89	3.32	254	125	11.93	33.95	2.64	25.81	220	0.36
123	12.00	33.95	2.65	221	150	10.86	34.04	2.30	26.07	195	0.41
142	11.15	33.98	2.48	204	200	10.18	34.31	1.24	26.41	163	0.50
170	10.30	34.17	1.77	175	250	10.16	34.51	0.50	26.56	148	0.58
200	10.18	34.31	1.24	163	300	9.66	34.56	0.27	26.69	137	0.66
230	10.22	-	0.71	-	400	7.99	34.49	0.20	26.90	116	0.79
269	10.08	34.56	0.36	143	500	6.90	34.43	0.18	27.01	106	0.90
326	9.26	34.55	0.23	131							
401	7.98	34.49	0.19	116							
475	7.15	34.43	0.19	110							
556	6.35	34.44	0.17	98							

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



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

BLACK DOUGLAS; March 16, 1960; 0115 GCT; 25°05.5'N, 113°26.5'W; sounding, 1580 fm; wind, 320°, force 4; weather, clear; sea, moderate; wire angle, 09°.

13740

0	17.75	34.16	4.34	324	0	17.75	34.16	4.34	24.71	324	0.00
10	17.74	34.16	4.26	324	10	17.74	34.16	4.26	24.71	324	0.03
30	17.48	34.16	4.60	318	20	17.50	34.14	4.54	24.76	320	0.06
60	17.14	34.14	3.82	312	30	17.48	34.16	4.60	24.78	318	0.10
70	16.63	34.14	3.57	301	50	17.14	34.12	3.90	24.83	313	0.16
84	16.14	34.12	3.61	291	75	16.41	34.13	3.59	25.01	296	0.24
99	13.52	33.96	2.53	249	100	13.43	33.96	2.46	25.52	247	0.30
114	12.80	34.03	1.96	230	125	12.51	34.12	1.59	25.83	218	0.36
138	12.24	34.25	1.17	204	150	12.11	34.36	0.88	26.09	193	0.42
159	12.00	34.43	0.67	186	200	11.24	34.56	0.28	26.41	163	0.51
188	11.42	34.54	0.35	168	250	10.42	34.63	0.13	26.61	144	0.58
217	10.98	34.58	0.23a)	157	300	9.66	34.67	0.13	26.76	129	0.66
246	10.50	34.63	0.13	145	400	8.38	34.55	0.10	26.89	118	0.78
295	9.74	34.67b)	0.13	130	500	7.19	34.52	0.06	27.04	104	0.90
350	9.00	-	0.12	-	600	6.20	-	(0.07)	-	-	-
433	7.98	34.51	0.09	115	-	-	-	-	-	-	-
518	6.92	34.51	0.06	100	-	-	-	-	-	-	-
602	6.18	-	0.07	-	-	-	-	-	-	-	-

- a) Mean value of 0.18 and 0.28 ml/L.
- b) Alternate value, 34.72‰, not used in interpolation.



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
73.51-H	III-12	2230	35°35.0'	121°20.5'	180	210°	1	drizzle	moderate	12.06	33.51
73.55-H	12	2115	35°30.0'	121°30.0'	420	210°	2	overcast	rough	12.28	33.46
73.70-H	12	1325	34°59.0'	122°41.5'	2170	220°	3	drizzle	rough	13.02	33.48
77.50-H	13	0035	35°04.5'	120°50.5'	162	-	1	drizzle	moderate	11.54	33.63
77.55-H	13	0545	34°56.5'	121°12.0'	298	260°	3	drizzle	moderate	12.30	-
77.70-H	13	1315	34°18.0'	122°17.5'	2000	290°	4	drizzle	rough	13.47	33.35
80.52-H	14	1910	34°24.5'	120°35.5'	110	340°	4	partly cloudy	very rough	11.73	33.68
80.55-H	14	1815	34°19.5'	120°48.5'	400	340°	5	partly cloudy	very rough	12.42	33.66
80.70-H	14	0840	33°48.5'	121°50.0'	2060	320°	7	cloudy	very rough	13.42	33.33
80.80-H	14	0345	33°29.0'	122°32.0'	2000	320°	7	cloudy	very rough	13.54	33.37
83.40-H	15	0340	34°13.5'	119°22.0'	12	320°	2	clear	moderate	14.06a)	33.58a)
83.51-H	15	0840	33°52.0'	120°07.5'	55	320°	5	clear	rough	12.16	33.68
83.55-H	15	1045	33°43.5'	120°24.5'	700	320°	7	clear	rough	12.44	33.58
83.70-H	15	2125	33°12.5'	121°28.0'	2000	320°	7	partly cloudy	high	13.41	33.40
83.80-H	16	0205	32°58.0'	122°20.0'	2222	320°	7	partly cloudy	high	13.42	33.46
87.35-H	17	1750	33°51.0'	118°37.5'	160	-	1	partly cloudy	slight	13.52	33.58
87.45-H	17	1215	33°30.5'	119°19.5'	900	020°	1	partly cloudy	moderate	13.02	33.60

a) Depth, 5 meters.

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
87.50-H	III-17	1015	33°21.5'	119°37.5'	50	-	1	partly cloudy	moderate	12.52	33.58
87.55-H	17	0740	33°10.0'	120°05.0'	700	320°	3	cloudy	rough	13.31	33.51
87.70-H	17	0000	32°40.0'	121°03.0'	2000	320°	4	cloudy	very rough	13.69	33.53
87.80-H	16	1910	32°23.0'	121°46.0'	2000	340°	7	partly cloudy	very rough	14.36	33.30
87.90-H	16	0940	32°01.0'	122°26.0'	2000	350°	8	cloudy	high	14.50	33.30
93.45-H	20	2305	32°22.5'	118°32.5'	592	320°	3	overcast	moderate	14.76	33.56
93.55-H	20	1735	32°03.0'	119°18.5'	890	320°	3	overcast	rough	15.40	33.60
97.30-H	21	1745	32°15.5'	117°08.0'	25	-	1	overcast	slight	14.37	33.59
97.35-H	21	2045	32°05.5'	117°28.5'	660	-	1	cloudy	slight	15.37	33.63
97.40-H	21	2310	31°56.5'	117°50.0'	550	320°	2	cloudy	slight	15.08	33.60
97.45-H	22	0115	31°46.0'	118°11.5'	830	320°	2	cloudy	slight	14.62	33.57
97.50-H	22	0340	31°36.0'	118°30.0'	1320	320°	3	overcast	slight	15.44	33.64
97.55-H	22	0605	31°25.5'	118°51.5'	660	320°	3	overcast	slight	15.32	33.62
97.70-H	22	1310	30°54.5'	119°53.5'	1920	-	1	overcast	slight	15.28	33.50
97.80-H	22	1700	30°37.0'	120°32.0'	2100	330°	2	overcast	rough	15.11	33.46
100.29-H	24	0745	31°40.0'	116°43.5'	100	310°	3	cloudy	slight	12.15	33.75
100.30-H	24	0640	31°41.0'	116°47.0'	220	320°	3	partly cloudy	slight	14.08	33.68
100.35-H	24	0425	31°31.0'	117°05.5'	680	310°	3	partly cloudy	slight	15.71	33.68
100.40-H	24	0205	31°21.5'	117°27.5'	1000	310°	3	partly cloudy	rough	-	33.66

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

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Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
100.45-H	III-23	2345	31°11.0'	117°46.5'	1000	310°	3	partly cloudy	rough	15.52	33.68
100.50-H	23	2135	31°01.0'	118°07.5'	1200	310°	3	partly cloudy	rough	15.52	33.67
100.55-H	23	1830	30°46.5'	118°29.0'	1300	320°	3	cloudy	rough	15.80	33.69
100.70-H	23	1045	30°23.5'	119°22.0'	2400	320°	3	cloudy	moderate	16.46	33.68
100.80-H	23	0635	30°03.0'	120°03.5'	2000+	320°	2	overcast	moderate	15.96	33.58
103.30-B	29	0920	31°06.0'	116°24.5'	41	320°	6	clear	rough	14.25	33.63
103.35-B	29	0645	30°56.0'	116°45.0'	960	320°	5	clear	very rough	13.56	33.64
103.40-B	29	0410	30°46.0'	117°04.5'	940	320°	5	clear	very rough	15.38	33.64
103.45-B	29	0118	30°36.0'	117°28.5'	1000	320°	4	partly cloudy	rough	16.01	33.64
103.50-B	28	2245	30°25.0'	117°47.0'	1400	310°	5	partly cloudy	rough	15.90	33.66
103.55-B	28	2030	30°16.0'	118°06.0'	1150	310°	5	partly cloudy	moderate	16.00	33.64
103.70-B	28	1330	29°50.0'	119°04.0'	1900	280°	4	cloudy	rough	15.98	33.62
103.80-B	28	0905	29°26.5'	119°44.0'	2000	260°	4	missing	moderate	16.12	33.69
107.32-B	27	0500	30°26.0'	116°11.0'	250	300°	4	partly cloudy	moderate	15.10	33.64
107.35-B	27	0640	30°21.5'	116°22.5'	940	270°	4	missing	rough	15.12	33.60
107.40-B	27	0905	30°10.5'	116°44.5'	1450	330°	4	missing	moderate	15.83	33.64
107.45-B	27	1125	30°02.0'	117°05.0'	810	330°	3	missing	moderate	15.99	33.64
107.50-B	27	1335	29°55.0'	117°22.5'	1100	320°	4	overcast	rough	16.07	33.69
107.55-B	27	1545	29°46.5'	117°41.0'	1600	290°	4	overcast	rough	16.30	33.66

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
107.80-B	III-28	0435	28°51.5'	119°20.5'	2000	270°	3	missing	moderate	16.34	33.66
110.33-B	27	0000	29°50.0'	115°52.0'	50	330°	4	partly cloudy	moderate	14.12	33.68
110.35-B	26	2245	29°46.0'	116°00.0'	650	330°	4	cloudy	moderate	14.50	33.66
110.40-B	26	1945	29°34.5'	116°23.0'	1440	320°	4	overcast	rough	15.50	33.64
110.45-B	26	1730	29°25.5'	116°41.0'	300	320°	4	overcast	rough	16.04	33.62
110.50-B	26	1520	29°16.5'	116°59.0'	1700	330°	5	overcast	rough	16.18	33.68
110.55-B	26	1255	29°06.5'	117°19.0'	1750	300°	4	overcast	rough	16.39	33.66
110.80-B	25	2105	28°23.0'	119°01.5'	2000	310°	4	overcast	rough	16.42	33.68
110.90-B	25	1730	28°14.0'	119°27.5'	2100	320°	4	overcast	rough	17.42	34.04
113.30-B	24	1055	29°22.0'	115°18.0'	34	280°	4	clear	rough	13.72	33.69
113.35-B	24	1315	29°11.5'	115°38.0'	600	300°	4	partly cloudy	rough	15.35	33.59
113.40-B	24	1534	29°02.0'	115°57.0'	950	280°	3	cloudy	rough	16.58	33.62
113.45-B	24	1805	28°52.0'	116°18.0'	840	300°	4	cloudy	rough	16.96	33.77
113.55-B	24	2325	28°32.0'	116°57.0'	1700	300°	4	cloudy	moderate	16.88	33.75
113.70-B	25	0640	28°03.5'	117°52.0'	1840	320°	5	cloudy	very rough	16.61	33.66
113.80-B	25	1050	27°46.0'	118°27.0'	2000	300°	4	cloudy	moderate	16.32	33.66
117.26-B	24	0620	28°56.0'	114°41.5'	40	270°	4	clear	moderate	15.62	33.81
117.30-B	24	0430	28°48.0'	114°56.5'	53	270°	3	partly cloudy	moderate	15.36	33.74
117.35-B	24	0155	28°38.0'	115°16.0'	120	300°	5	partly cloudy	rough	15.79	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
117.40-B	III-23	1015	28°28.0'	115°35.5'	450	040°	1	clear	slight	15.73	33.72
117.45-B	23	0435	28°10.5'	116°04.0'	2400	-	-	clear	missing	16.31	33.68
117.55-B	22	1930	27°58.0'	116°34.5'	1840	090°	2	overcast	moderate	16.66	33.70
117.60-B	22	1550	27°48.0'	116°53.0'	1700	100°	2	cloudy	moderate	15.56	33.67
117.70-B	22	1120	27°28.0'	117°32.5'	2000	030°	1	fog	missing	17.02	33.75
118.39-B	23	1230	28°18.5'	115°23.5'	130	-	-	clear	slight	15.12	33.68
119.33-B	20	1315	28°19.0'	114°53.0'	60	calm		clear	slight	15.65	33.87
120.25-B	20	0905	28°22.5'	114°15.0'	30	calm		partly cloudy	slight	15.62	33.87
120.30-B	20	1105	28°13.0'	114°34.0'	53	calm		partly cloudy	slight	15.36	33.85
120.35-B	20	1515	28°03.0'	114°54.0'	45	calm		clear	slight	15.48	34.02
120.40-B	20	1730	27°56.5'	115°14.0'	20	230°	2	clear	slight	15.67	33.85
120.45-B	20	2305	27°43.0'	115°33.0'	1200	300°	2	partly cloudy	moderate	16.64	33.80
120.55-B	21	0755	27°23.5'	116°12.0'	2100	270°	2	clear	moderate	16.06	33.81
120.60-B	21	1010	27°15.0'	116°31.0'	2000	calm		fog	missing	16.20	33.82
120.70-B	21	1420	26°57.0'	117°11.0'	2000	210°	2	partly cloudy	moderate	16.07	33.68
120.90-B	22	0015	26°13.0'	118°27.0'	2200	180°	2	partly cloudy	slight	17.86	-
123.37-B	19	1405	27°24.0'	114°40.0'	34	080°	1	partly cloudy	slight	14.64	33.96
123.45-B	19	0950	27°07.5'	115°09.5'	2100	330°	3	partly cloudy	moderate	16.33	34.04
123.50-B	19	0715	26°59.0'	115°30.0'	1840	320°	4	partly cloudy	rough	16.38	33.73

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
123.55-B	III-19	0450	26°50.0'	115°50.5'	1920	320°	4	partly cloudy	rough	17.10	33.92
123.60-B	19	0045	26°43.5'	116°06.0'	1850	320°	3	partly cloudy	rough	16.19	33.78
127.34-B	18	0930	26°55.0'	114°06.5'	43	360°	4	partly cloudy	moderate	16.18	34.00
127.40-B	18	1220	26°43.5'	114°29.0'	1600	290°	1	partly cloudy	moderate	16.14	34.08
127.45-B	18	1500	26°33.0'	114°48.5'	1750	320°	3	cloudy	rough	16.24	34.00
127.50-B	18	1710	26°23.0'	115°08.0'	1860	320°	3	cloudy	moderate	16.06	33.82
127.55-B	18	1935	26°13.5'	115°27.0'	1940	320°	3	cloudy	rough	17.00	33.93
127.60-B	18	2210	26°03.5'	115°46.5'	2000	340°	3	cloudy	rough	17.66	34.05
130.30-B	18	0435	26°29.0'	113°29.0'	44	320°	4	partly cloudy	moderate	16.04	34.15
130.35-B	18	0225	26°19.5'	113°49.0'	200	280°	3	partly cloudy	rough	16.64	33.98
130.45-B	17	2100	26°00.0'	114°27.0'	1700	310°	2	partly cloudy	moderate	16.85	34.00
130.50-B	17	1845	25°51.0'	114°45.5'	1800	320°	3	partly cloudy	rough	17.19	34.04
130.55-B	17	1603	25°39.0'	115°04.0'	1840	320°	4	partly cloudy	rough	17.34	-
130.60-B	17	1358	25°33.0'	115°16.0'	1850	330°	4	partly cloudy	rough	17.60	34.09
133.25-B	16	1458	26°04.5'	112°48.0'	43	320°	3	clear	moderate	16.46	34.22
133.30-B	16	1723	25°54.5'	113°07.5'	100	270°	4	clear	rough	16.10	34.05
133.35-B	17	0058	25°44.5'	113°26.5'	400	300°	4	partly cloudy	rough	16.75	34.04
133.40-B	17	0345	25°34.5'	113°45.5'	1300	320°	4	partly cloudy	rough	16.96	34.00
133.45-B	17	0530	25°24.0'	114°05.0'	1950	320°	4	partly cloudy	rough	17.71	34.23

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

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Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
133.50-B	III-17	0750	25° 14.5'	114° 24.0'	2000	320°	4	partly cloudy	rough	17.54	34.20
134.36-B	16	2349	25° 38.0'	113° 25.0'	95	300°	5	partly cloudy	rough	17.00	34.11
137.23-B	16	0955	25° 34.0'	112° 19.0'	40	020°	2	clear	moderate	17.20	34.14
137.30-B	16	0645	25° 20.0'	112° 46.0'	230	310°	3	clear	moderate	17.48	34.22
137.35-B	16	0425	25° 10.0'	113° 04.5'	760	320°	4	clear	rough	16.86	34.07
137.45-B	15	2225	24° 51.0'	113° 43.5'	1800	330°	4	clear	moderate	17.86	34.22
137.50-B	15	1940	24° 40.0'	114° 02.0'	1990	320°	5	partly cloudy	moderate	17.62	34.13



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