MRS. MARGARET K. ROBINSON
UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY
LA JOLLA, CALIF.

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

DATA REPORT

PHYSICAL AND CHEMICAL DATA
CCOFI CRUISE 5211
(MLR 43)
6-21 November 1952

SIO Reference 57-22
14 May 1957

UNIVERSITY OF CALIFORNIA

SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 5211

(MLR 43)

6-21 November 1952

Sponsored by

Marine Research Committee

SIO Reference 57-22

14 May 1957

Approved for distribution:

Roger Revelle

Roger Revelle, Director

CONTENTS

FIGURES

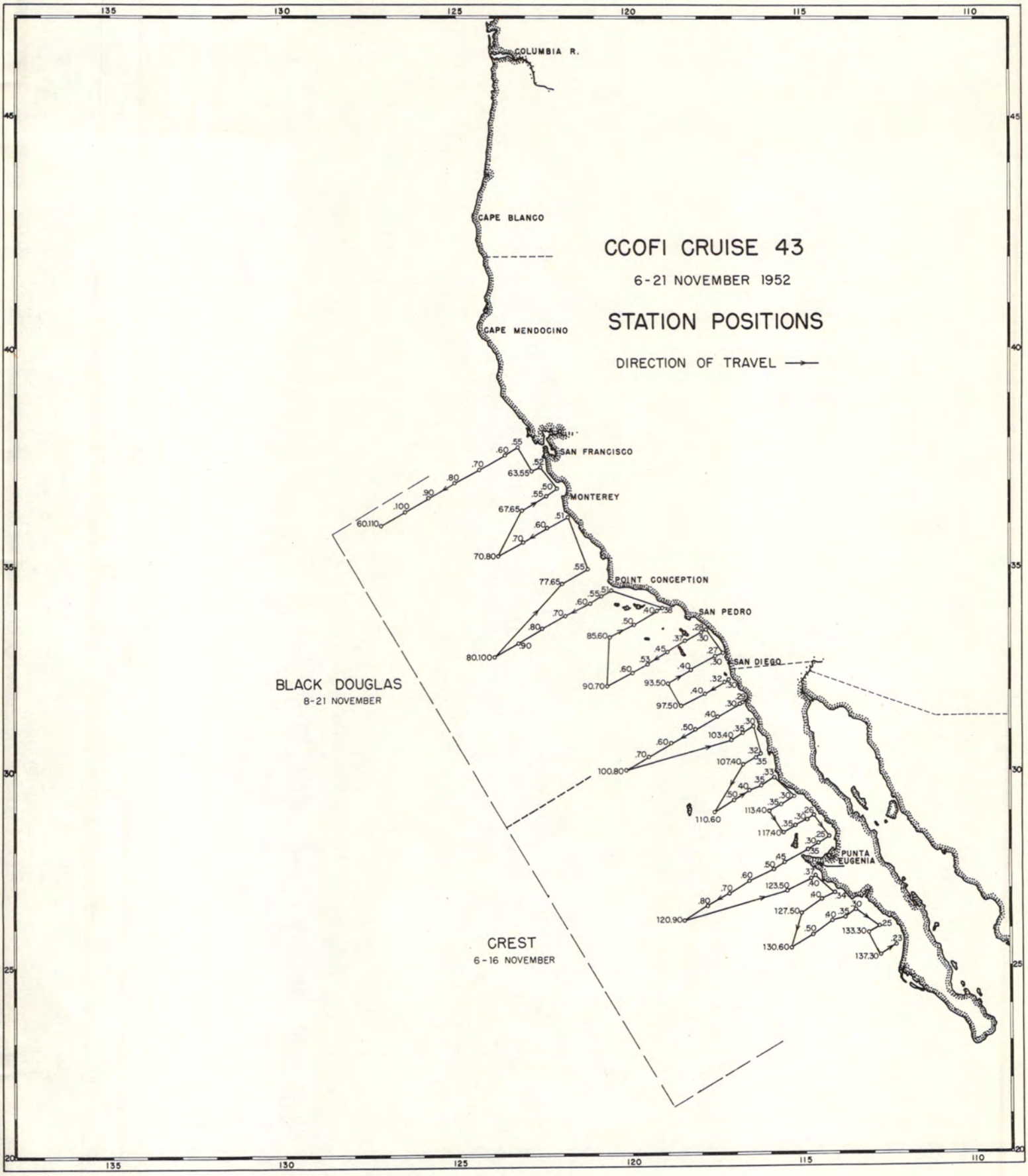
CCOFI CRUISE 43
6-21 NOVEMBER 1952
STATION POSITIONS
DIRECTION OF TRAVEL
COLUMBIA R.
CAPE BLANCO
CAPE MENDOCINO
SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN PEDRO
SAN DIEGO
PUNTA EUGENIA
BLACK DOUGLAS
8-21 NOVEMBER
CREST
6-16 NOVEMBER
135
130
125
120
115
110
45
40
35
30
25
20

FIGURE 1

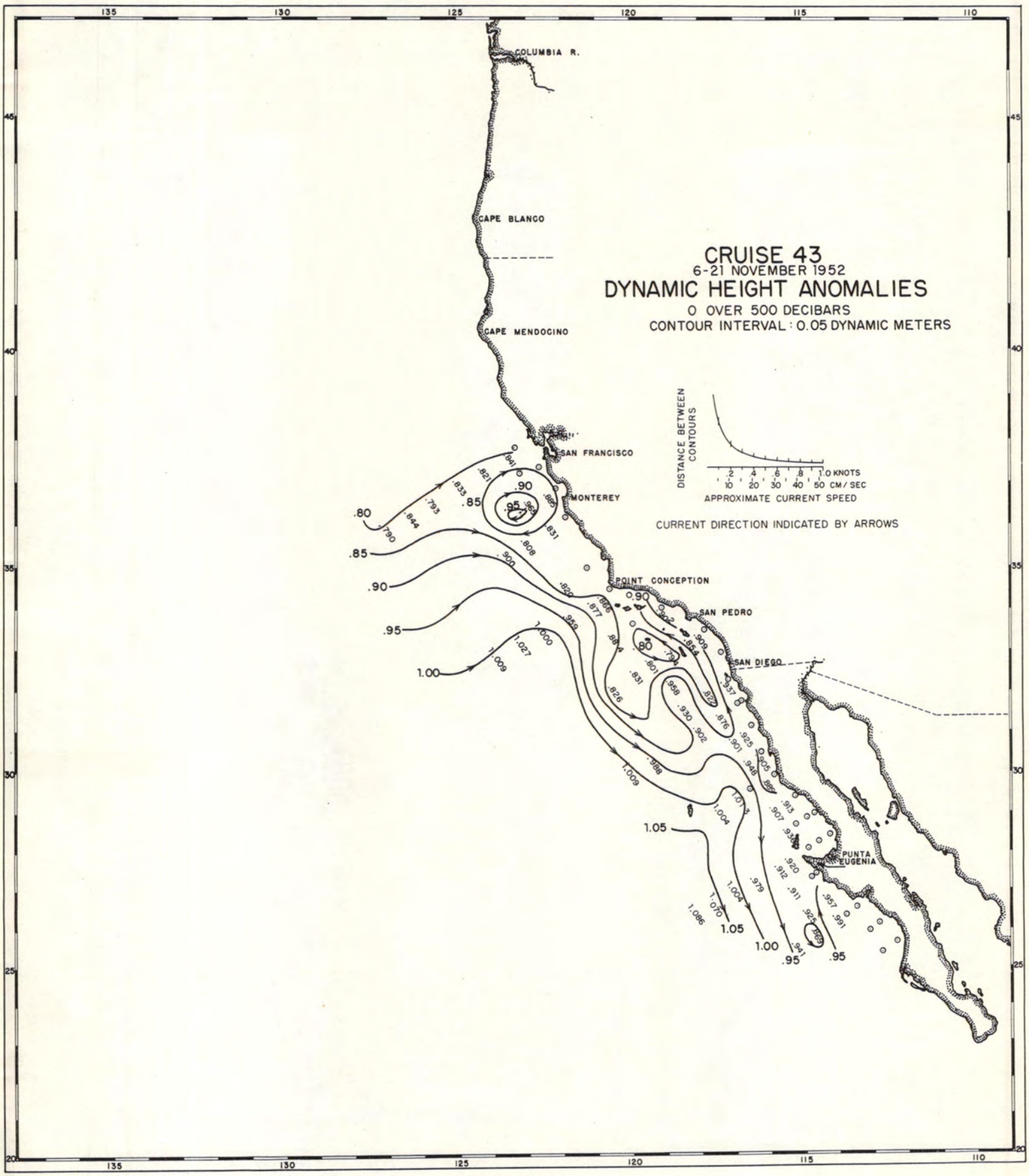
CRUISE 43
6-21 NOVEMBER 1952
DYNAMIC HEIGHT ANOMALIES
0 OVER 500 DECIBARS
CONTOUR INTERVAL : 0.05 DYNAMIC METERS
DISTANCE BETWEEN CONTOURS
.2 .4 .6 .8 1.0 KNOTS
10 20 30 40 50 CM/SEC
APPROXIMATE CURRENT SPEED
CURRENT DIRECTION INDICATED BY ARROWS
COLUMBIA R.
CAPE BLANCO
CAPE MENDOCINO
SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN PEDRO
SAN DIEGO
PUNTA EUGENIA
135
130
125
120
115
110
45
40
35
30
25
20

FIGURE 2

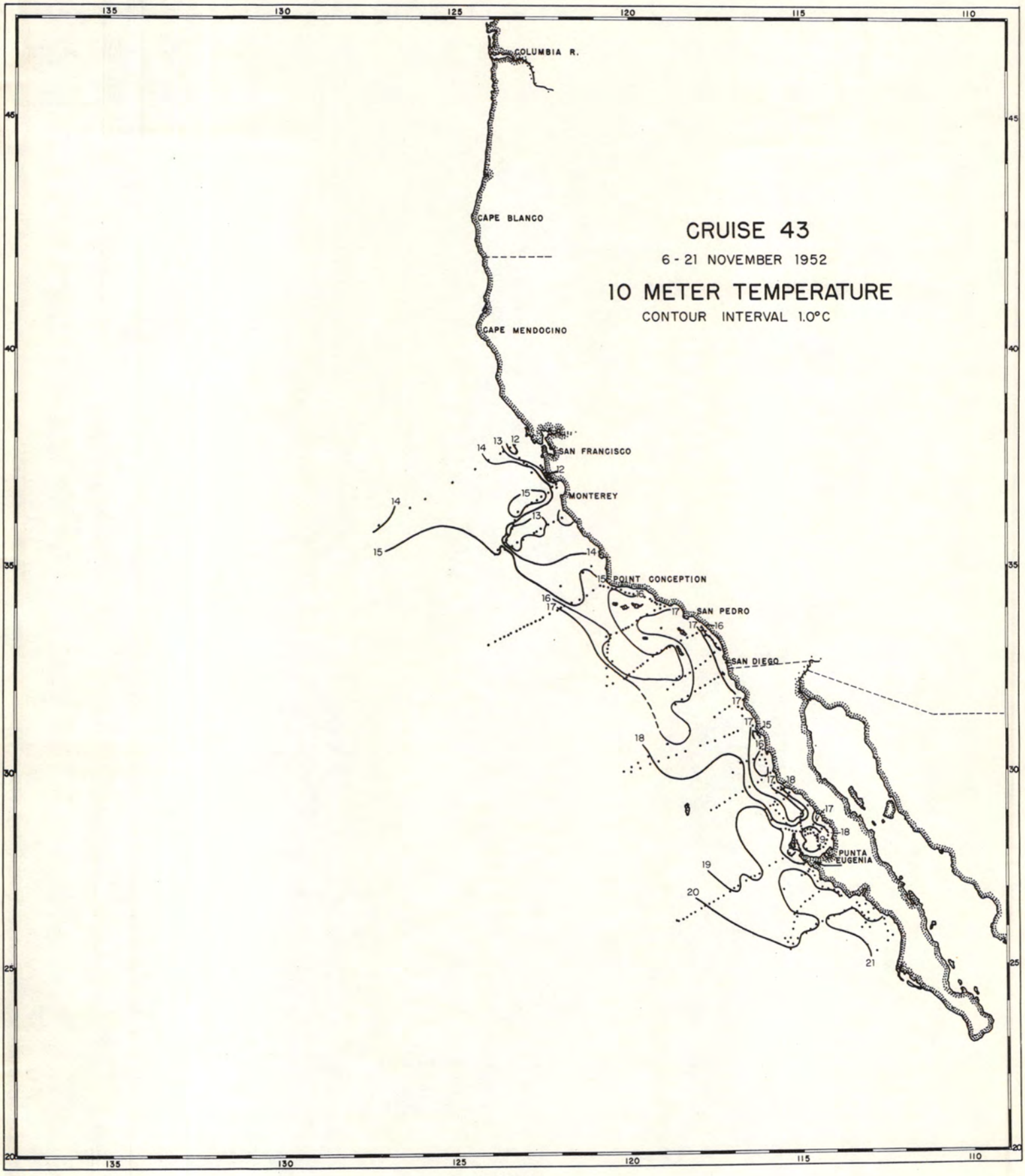
CRUISE 43
6 - 21 NOVEMBER 1952
10 METER TEMPERATURE
CONTOUR INTERVAL 1.0°C
COLUMBIA R.
CAPE BLANCO
CAPE MENDOCINO
SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN PEDRO
SAN DIEGO
PUNTA EUGENIA
135
130
125
120
115
110
46
40
35
30
25
20

FIGURE 3

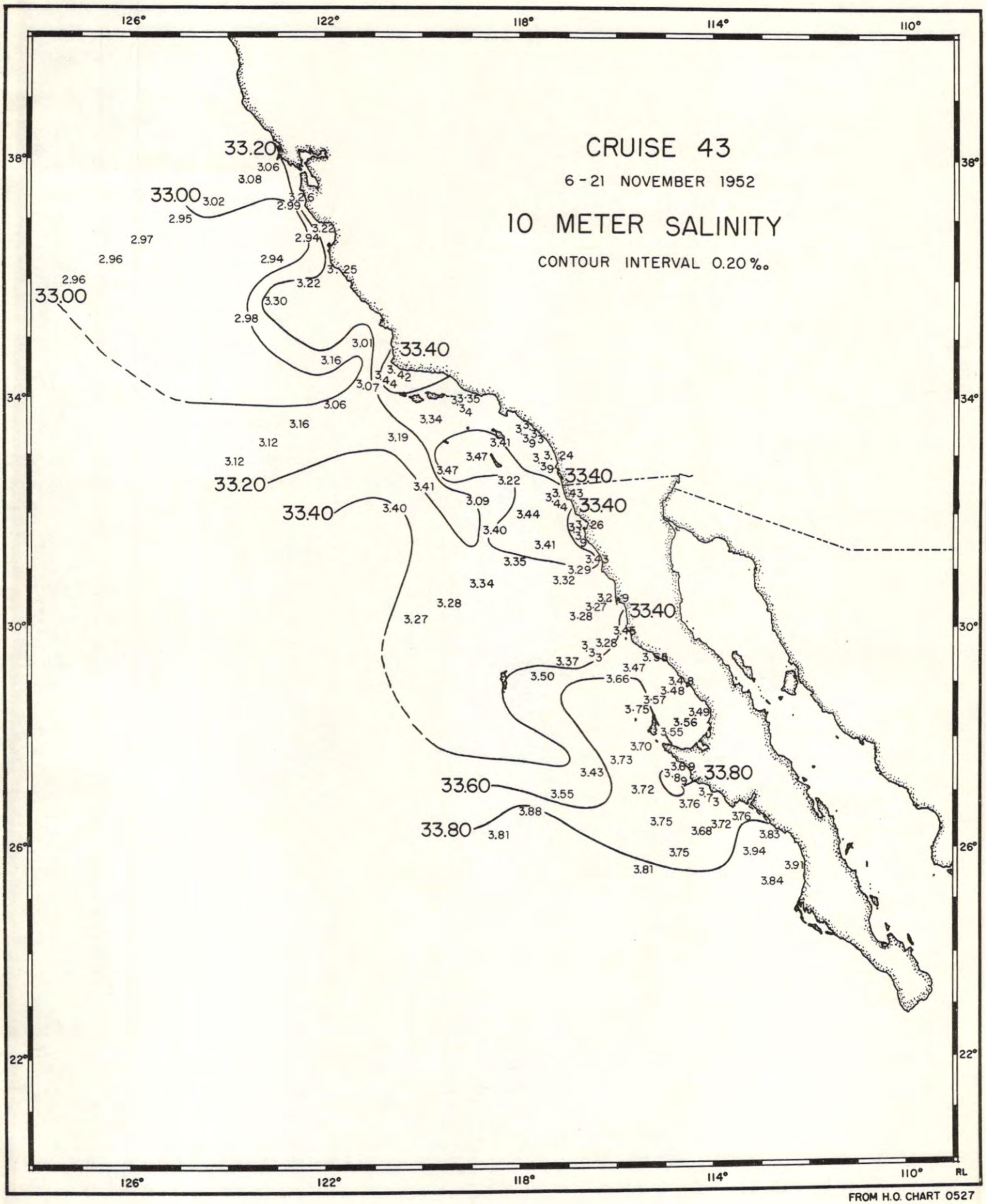
CRUISE 43
6 - 21 NOVEMBER 1952
10 METER SALINITY
CONTOUR INTERVAL 0.20 ‰
126°
122°
118°
114°
110°
38°
34°
30°
26°
22°
RL
33.20
33.00
33.40
33.60
33.80
FROM H.O. CHART 0527

FIGURE 4

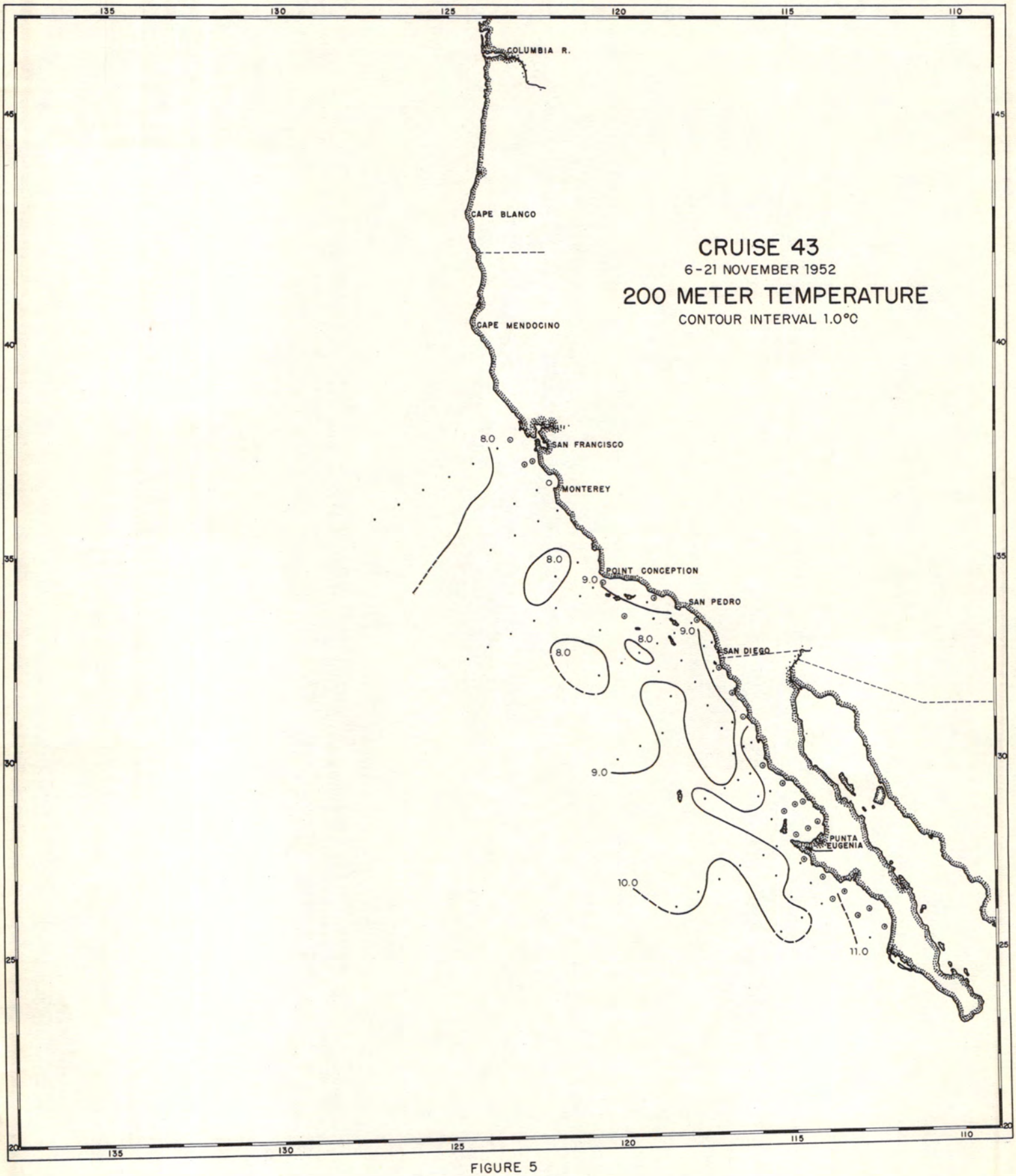
CRUISE 43
6-21 NOVEMBER 1952
200 METER TEMPERATURE
CONTOUR INTERVAL 1.0°C
COLUMBIA R.
CAPE BLANCO
CAPE MENDOCINO
SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN PEDRO
SAN DIEGO
PUNTA EUGENIA
8.0
9.0
10.0
11.0
135
130
125
120
115
110
45
40
35
30
25
20

FIGURE 5

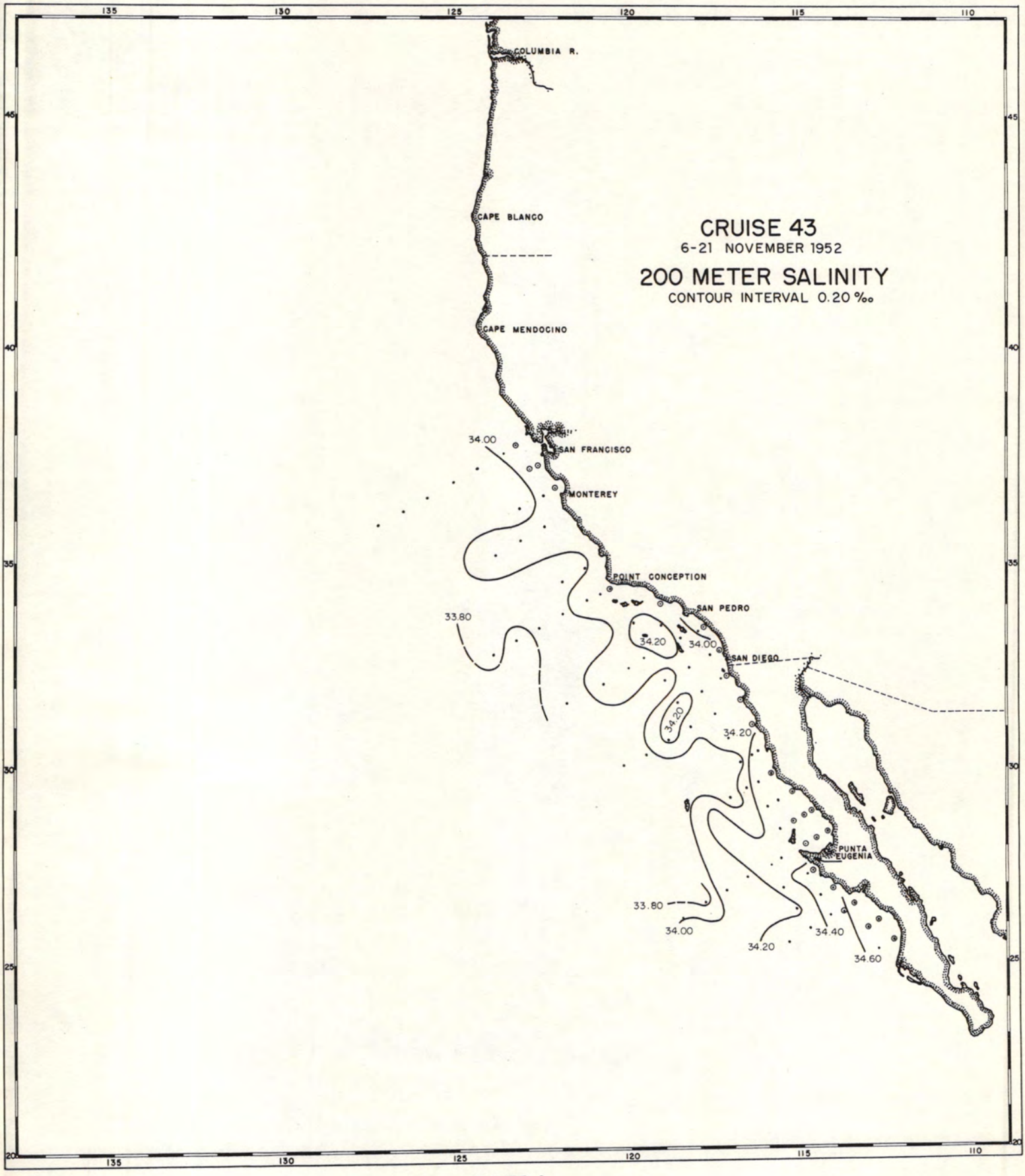
CRUISE 43
6-21 NOVEMBER 1952
200 METER SALINITY
CONTOUR INTERVAL 0.20 ‰
COLUMBIA R.
CAPE BLANCO
CAPE MENDOCINO
SAN FRANCISCO
MONTEREY
POINT CONCEPTION
SAN PEDRO
SAN DIEGO
PUNTA EUGENIA
34.00
33.80
34.20
34.00
34.20
34.20
33.80
34.00
34.20
34.40
34.60
135
130
125
120
115
110
45
40
35
30
25
20

FIGURE 6

INTRODUCTION

The data in this report were collected on the forty-third full-scale cruise conducted in the Marine Life Research Program. The two ships participating were the MV BLACK DOUGLAS, of the U. S. Fish and Wildlife Service and the MV CREST of Scripps Institution of Oceanography.

Data are presented in the form of values tabulated at standard depths, and on charts of horizontal distributions. Values of observed depths will be included in a final publication, OCEANIC OBSERVATIONS OF THE PACIFIC. The presentation of data in these Physical and Chemical Reports does not constitute publication, and these interpretations may be subject to modification as the program continues.

In the tabulated data extrapolated values are indicated by parentheses. The time given is the time that the messenger was released. When more than one cast was made on a station, both messenger times and both wire angles are given; the time and the wire angle given first are for the shallow cast. Horizontal lines separate the casts.

PERSONNEL

Ships' Captains

Kandie, H., MV BLACK DOUGLAS
Colbeth, C., MV CREST

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

MV BLACK DOUGLAS

Ball, Orville P., Biologist, U. S. Fish and Wildlife Service (in charge)
Moyer, John S., Marine Technician
O'Connell, Charles P., Fishery Aid, U. S. Fish and Wildlife Service
Lamplugh, Roscoe W., Marine Technician
Livingstone, Robert Jr., Biologist, U. S. Fish and Wildlife Service (replacement for Ball)

MV CREST

Worrall, Charles G., Sr. Marine Technician (in charge)
Duiker, Wesley J., Marine Technician
Wyllie, John G., Marine Technician
Michaux, Claude M., Chemist
King, Robert D., Marine Technician

STATION 60.55 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 37°48' 123°15'; November 20, 1952; 1005 GCT; wire angle: 0°; sounding: 60 fms; depth of observation: 50 m; weather: clear; sea: slight; wind: 340°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	12.32	33.07	25.05		.000	5.47
10	12.32	33.06	25.04		.029	5.31
20	12.28	33.11	25.09		.058	4.88
30	11.37	33.31	25.41		.086	4.16
50	10.54	33.46	25.68		.135	3.36

STATION 60.60 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 37°37' 123°37'; November 20, 1952; 1335 GCT; wire angle: 7°; sounding: 1850 fms; depth of observation: 1167 m; weather: clear; sea: slight; wind: 340°, force 3.

0	13.75	33.07	24.77	.000	4.67
10	13.74	33.08	24.78	.032	4.66
20	13.72	33.08	24.78	.064	4.62
30	13.10	33.11	24.93	.095	4.51
50	10.12	33.29	25.62	.149	3.60
75	8.82	33.40	25.92	.205	3.46
100	8.70	33.63	26.11	.256	2.75
150	8.67	33.89	26.32	.347	2.03
200	8.44	33.98	26.43	.432	1.61
250	7.90	34.10	26.60	.510	1.42
300	7.44	34.12	26.69	.582	1.19
400	6.82	34.19	26.83	.718	0.72
500	6.07	34.22	26.95	.841	0.51
600	5.03	34.19	27.05	.954	0.43
700	4.57	34.26	27.16	1.058	0.31
800	4.21	34.33	27.25	1.152	0.22
1000	3.69	34.46	27.41	1.318	0.32

STATION 60.70 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 37°17' 124°21'; November 20, 1952; 1943 GCT; wire angle: 4°; sounding: 2200 fms; depth of observation: 592 m; weather: cloudy; sea: moderate; wind: 340°, force 4.

Depth (m)	T	S (‰)	σ_t (10^5 mg/cm^3)	ΔD (dyn.m.)	O_2 (ml/L)
0	14.16	33.01	24.64	.000	4.53
10	14.03	33.02	24.67	.033	4.60
20	13.40	33.01	24.79	.065	4.62
30	13.02	33.07	24.92	.096	4.66
50	10.24	33.06	25.42	.153	4.31
75	9.65	33.31	25.71	.214	3.52
100	8.36	33.47	26.04	.267	3.47
150	7.68	33.83	26.42	.358	2.98
200	7.04	33.91	26.58	.437	2.40
250	6.82	33.98	26.66	.510	1.62
300	6.43	34.02	26.75	.579	1.17
400	5.86	34.14	26.91	.706	0.58
500	5.43	34.22	27.03	.821	0.35
600	(5.00)	(34.26)	(27.11)	(.928)	(0.30)

STATION 60.80 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°57' 125°04; November 21, 1952; 0250, 0315 GCT; wire angle: 33°, 35°; sounding: 2400 fms; depth of observation: 872 m; weather: cloudy; sea: moderate; wind: 340°, force 5.

0	14.68	32.98	24.51	.000	4.78
10	14.67	32.95	24.48	.034	4.62
20	14.67	32.95	24.48	.069	4.57
30	14.66	32.94	24.48	.104	4.56
50	10.60	32.90	25.23	.166	4.56
75	9.58	33.09	25.55	.231	4.02
100	8.92	33.46	25.95	.288	3.09
150	8.03	33.79	26.34	.383	2.35
200	7.49	33.94	26.54	.464	2.05
250	6.92	33.96	26.63	.539	1.78
300	6.40	33.97	26.71	.610	1.49
400	5.23	34.18	27.02	.734	0.80
500	4.38	34.33	27.24	.833	0.27
600	4.45	34.31	27.21	.924	0.28
700	4.45	34.32	27.22	1.017	0.29
800	4.16	34.36	27.28	1.107	0.27

STATION 60.90 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°37' 125°47'; November 21, 1952; 0935 GCT; wire angle: 24°; sounding: 2440 fms; depth of observation: 590 m; weather: overcast; sea: moderate; wind: 340°, force 6.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3) 1058	ΔD (dyn.m.)	O_2 (ml/L)
0	14.57	32.92	24.48	.000	4.51
10	14.57	32.97	24.52	.034	4.57
20	14.56	32.91	24.48	.069	4.54
30	14.56	32.92	24.49	.104	4.56
50	10.35	33.07	25.41	.164	3.75
75	9.10	33.29	25.79	.224	3.50
100	8.46	33.53	26.07	.267	2.79
150	7.69	33.86	26.45	.336	2.36
200	7.22	33.95	26.58	.413	2.09
250	6.78	34.01	26.69	.486	1.53
300	6.28	34.03	26.77	.554	1.05
400	5.31	34.05	26.91	.680	0.85
500	4.82	34.16	27.05	.793	0.51
600	(4.52)	(34.24)	(27.15)	(.896)	(0.32)

STATION 60.100 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°17' 126°30'; November 21, 1952; 1537 GCT; wire angle: 3°; sounding: 2460 fms; depth of observation: 777 m; weather: overcast; sea: moderate; wind: 340°, force 4.

0	14.28	32.97	24.58	.000	4.58
10	14.27	32.96	24.58	.034	4.64
20	14.27	32.96	24.58	.067	4.59
30	14.28	32.96	24.57	.101	4.52
50	13.26	33.03	24.84	.166	4.51
75	9.50	33.19	25.64	.235	3.70
100	8.50	33.43	25.99	.290	3.08
150	7.92	33.78	26.35	.384	2.43
200	7.46	33.95	26.55	.465	2.05
250	7.12	34.04	26.67	.539	1.54
300	6.49	34.08	26.78	.607	1.20
400	5.72	34.15	26.94	.731	0.69
500	4.98	34.18	27.05	.844	0.51
600	4.59	34.21	27.12	.948	0.33
700	4.43	34.30	27.21	1.046	0.26

STATION 60.110 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 35°57' 127°12; November 21, 1952; 2113 GCT; wire angle: 19°; sounding: 2580 fms; depth of observation: 561 m; weather: partly cloudy; sea: slight; wind: 350°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t ($10^5\delta$) (mg/cm^3)	ΔD (dyn.m)	O_2 (ml/L)
0	13.58	32.95	24.71	.000	4.72
10	13.54	32.96	24.73	.032	4.64
20	13.50	32.97	24.74	.065	4.73
30	13.50	32.97	24.74	.097	4.68
50	10.34	33.03	25.38	.155	4.30
75	8.95	33.39	25.89	.214	3.45
100	8.32	33.60	26.15	.265	3.03
150	7.62	33.92	26.50	.351	2.46
200	7.04	33.94	26.60	.427	2.13
250	6.70	34.10	26.77	.497	1.44
300	6.28	34.15	26.87	.561	1.08
400	5.42	34.14	26.97	.680	0.77
500	4.88	34.19	27.07	.790	0.57

STATION 63.52 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 37°19' 122°36'; November 20, 1952; 0226 GCT; wire angle: 0°; sounding: 46 fms; depth of observation: 75 m; weather: clear; sea: smooth; wind: 340°, force 2.

0	12.74	33.15	25.03	.000	4.76
10	12.72	33.26	25.12	.029	4.77
20	12.58	33.25	25.14	.057	4.70
30	12.46	33.26	25.17	.086	4.74
50	12.24	33.33	25.27	.141	4.66
75	11.04	33.52	25.64	.205	3.30

STATION 63.55 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 37°14' 122°50'; November 20, 1952; 0433 GCT; wire angle: 2°; sounding: 120 fms; depth of observation: 152 m; weather: clear; sea: smooth; wind: 340°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3) 1058	ΔD (dyn.m.)	O_2 (ml/L)
0	14.36	32.95	24.55	.000	4.79
10	14.26	32.99	24.60	.034	4.74
20	14.00	32.98	24.65	.067	4.71
30	13.40	32.97	24.76	.100	4.67
50	9.35	32.98	25.50	.156	4.33
75	8.76	33.15	25.73	.216	3.84
100	8.85	33.54	26.02	.270	3.02
150	9.01	33.99	26.35	.363	1.76

STATION 67.50 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°49' 122°05'; November 19, 1952; 2116 GCT; wire angle: 0°; sounding: 57 fms; depth of observation: 75 m; weather: clear; sea: smooth; wind: 340°, force 1.

0	13.26	33.26	25.01	.000	4.68
10	13.06	33.22	25.02	.029	4.67
20	12.82	33.30	25.13	.058	4.61
30	12.48	33.33	25.22	.086	4.42
50	12.14	33.42	25.36	.140	4.16
75	11.02	33.45	25.59	.204	3.28

STATION 67.55 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°39' 122°26'; November 19, 1952; 1750 GCT; wire angle: 0°; sounding: 1250 fms; depth of observation: 586 m; weather: clear; sea: slight; wind: 5°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (10^5 mg/cm^3)	ΔD (dyn.m.)	O_2 (ml/L)
0	15.58	32.94	24.28	.000	4.49
10	15.56	32.94	24.28	.037	4.50
20	15.56	32.96	24.30	.073	4.56
30	15.55	32.98	24.32	.109	4.74
50	11.32	32.94	25.14	.174	4.69
75	10.16	33.12	25.48	.241	3.96
100	8.88	33.26	25.80	.301	3.53
150	8.16	33.72	26.27	.401	2.81
200	8.34	34.02	26.47	.486	1.78
250	7.71	34.08	26.62	.562	1.62
300	6.81	34.06	26.73	.634	1.37
400	6.28	34.14	26.86	.765	0.80
500	5.72	34.20	26.98	.885	0.44
600	(4.90)	(34.26)	(27.12)	(.993)	-

STATION 67.65 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°19' 123°09'; November 19, 1952; 1123 GCT; wire angle: 12°; sounding: 1800 fms; depth of observation: 582 m; weather: clear; sea: slight; wind: 5°, force 2.

0	15.76	32.93	24.23	.000	4.37
10	15.76	32.94	24.24	.037	4.75
20	15.76	32.95	24.25	.074	4.61
30	15.76	32.94	24.24	.111	4.61
50	13.30	32.91	24.74	.180	5.13
75	11.83	33.24	25.28	.254	4.48
100	10.38	33.32	25.60	.319	3.41
150	9.58	33.65	25.99	.431	2.49
200	8.87	33.92	26.31	.526	1.80
250	8.54	33.98	26.41	.611	1.52
300	7.40	33.96	26.57	.691	2.02
400	6.20	33.96	26.73	.836	1.14
500	5.62	34.12	26.93	.965	0.65
600	(5.22)	(34.15)	(27.00)	(1.082)	-

STATION 70.51 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 36°10' 121°46'; November 18, 1952; 0257 GCT; wire angle: 3°; sounding: 260 fms; depth of observation: 199 m; weather: clear; sea: calm; wind: calm.

Depth (m)	T (°C)	S (‰)	σ_t (10^5 mg/cm^3)	ΔD (dyn.m.)	O_2 (ml/L)
0	13.02	33.24	25.05	.000	4.59
10	12.55	33.25	25.15	.029	4.52
20	12.42	33.27	25.19	.057	4.38
30	12.22	33.28	25.23	.085	4.22
50	11.06	33.27	25.44	.138	3.92
75	10.51	33.35	25.60	.200	3.52
100	9.83	33.53	25.85	.257	2.82
150	9.20	33.84	26.20	.358	2.00
200	(8.92)	(34.04)	(26.40)	(.446)	-

STATION 70.60 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 35°53' 122°23'; November 18, 1952; 1028 GCT; wire angle: 8°; sounding: 1700 fms; depth of observation: 1148 m; weather: clear; sea: slight; wind: 340°, force 2.

0	13.30	33.22	24.98	.000	4.79
10	13.29	33.22	24.98	.030	4.77
20	13.27	33.23	24.99	.060	4.76
30	13.24	33.25	25.01	.089	4.68
50	11.11	33.28	25.44	.145	3.84
75	9.35	33.48	25.89	.203	3.43
100	9.17	33.65	26.06	.255	2.55
150	8.58	33.86	26.31	.348	2.20
200	8.21	34.03	26.50	.431	2.00
250	7.82	34.14	26.65	.506	1.71
300	7.59	34.16	26.70	.578	0.98
400	6.43	34.17	26.86	.710	0.63
500	5.81	34.20	26.97	.831	0.41
600	5.30	34.25	27.07	.943	0.30
700	4.90	34.29	27.15	1.047	0.28
800	4.52	34.36	27.24	1.143	0.28
1000	3.84	34.49	27.42	1.310	0.33

STATION 70.70 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 35°33' 123°06'; November 18, 1952; 1605 GCT; wire angle: 0°; sounding: 2180 fms; depth of observation: 589 m; weather: clear; sea: calm; wind: 340°, force 1.

Depth (m)	T (°C)	S (‰)	σ_t 10^5 (mg/cm^3)	ΔD (dyn.m.)	O_2 (ml/L)
0	13.11	33.30	25.08	.000	4.72
10	13.10	33.30	25.08	.029	4.72
20	13.08	33.32	25.10	.058	4.73
30	13.00	33.34	25.13	.086	4.33
50	10.76	33.36	25.56	.139	3.52
75	9.60	33.50	25.87	.197	3.05
100	8.93	33.72	26.15	.247	2.55
150	8.41	33.91	26.38	.337	2.17
200	8.20	34.07	26.53	.418	1.49
250	7.62	34.10	26.64	.492	1.08
300	7.14	34.17	26.77	.562	0.83
400	6.41	34.20	26.89	.690	0.58
500	5.76	34.23	27.00	.808	0.40
600	(5.45)	(34.32)	(27.11)	(.916)	-

STATION 70.80 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 35°13' 123°48'; November 18, 1952; 2227 GCT; wire angle: 7°; sounding: 2240 fms; depth of observation: 1159 m; weather: partly cloudy; sea: slight; wind: 320°, force 2.

0	15.24	32.97	24.38	.000	4.62
10	15.09	32.98	24.42	.035	4.55
20	15.04	32.97	24.42	.071	4.58
30	15.02	32.98	24.43	.106	4.63
50	13.30	33.15	24.92	.172	4.72
75	10.00	33.00	25.41	.242	4.43
100	9.05	33.23	25.75	.303	3.58
150	8.96	33.85	26.25	.405	2.11
200	8.59	34.03	26.44	.491	1.55
250	8.10	34.12	26.59	.569	1.30
300	7.54	34.12	26.67	.642	1.18
400	6.19	34.10	26.84	.777	1.00
500	5.60	34.15	26.95	.900	0.62
600	5.22	34.24	27.07	1.012	0.35
700	4.74	34.30	27.17	1.114	0.28
800	4.42	34.36	27.25	1.208	0.30
1000	3.83	34.46	27.40	1.376	0.39

STATION 77.55 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 34°54' 121°13'; November 15, 1952; 0825 GCT; wire angle: 28°; sounding: 300 fms; depth of observation: 418 m; weather: cloudy; sea: moderate; wind: 220°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	15.00	33.01	24.46		.000	4.63
10	14.98	33.01	24.46		.035	4.66
20	14.99	33.00	24.45		.070	4.63
30	15.00	32.98	24.44		.105	4.71
50	12.32	32.87	24.90		.171	4.93
75	10.62	32.94	25.26		.243	4.27
100	9.53	33.31	25.73		.306	3.58
150	8.51	33.76	26.25		.408	2.51
200	8.08	33.95	26.46		.494	2.05
250	7.91	34.15	26.64		.571	1.10
300	7.47	34.16	26.71		.642	0.98
400	6.36	34.14	26.85		.774	0.73

STATION 77.65 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 34°34' 121°55'; November 15, 1952; 0116 GCT; wire angle: 8°; sounding: 2060 fms; depth of observation: 633 m; weather: partly cloudy; sea: slight; wind: 300°, force 3.

0	14.04	33.17	24.79		.000	4.78
10	14.02	33.16	24.78		.032	4.81
20	13.98	33.19	24.81		.063	4.83
30	13.71	33.21	24.89		.095	4.85
50	11.65	33.27	25.33		.152	4.20
75	9.61	33.56	25.91		.212	2.92
100	8.92	33.71	26.14		.262	2.53
150	8.30	33.90	26.39		.351	2.20
200	7.75	33.95	26.51		.432	2.00
250	7.13	34.02	26.65		.507	1.53
300	6.69	34.08	26.76		.577	1.10
400	5.98	34.13	26.89		.705	0.67
500	5.51	34.25	27.04		.820	0.40
600	5.09	34.31	27.14		.925	0.29

STATION 80.51 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 34°26' 120°32'; November 12, 1952; 2224, 2235 GCT; wire angle: 6°, 6°; sounding: 65 fms; depth of observation: 75 m; weather: partly cloudy; sea: moderate; wind: 310°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	15.60	33.43	24.65	327.7	.000	4.68
10	15.60	33.42	24.64	328.7	.033	4.56
20	14.98	33.42	24.78	316.0	.065	4.53
30	13.74	33.39	25.02	293.6	.096	4.26
50	12.08	33.27	25.25	271.6	.153	4.07
75	10.95	33.33	25.51	248.0	.219	3.49

STATION 80.55 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 34°19' 120°48'; November 13, 1952; 0124 GCT; wire angle: 13°; sounding: 410 fms; depth of observation: 577 m; weather: partly cloudy; sea: moderate; wind: 310°, force 4.

0	15.30	33.40	24.69	323.6	.000	4.72
10	15.29	33.44	24.73	320.7	.032	4.72
20	15.28	33.39	24.69	324.5	.065	4.65
30	15.26	33.40	24.70	323.6	.098	4.66
50	12.62	33.33	25.20	277.1	.158	4.13
75	10.75	33.45	25.64	235.7	.218	3.25
100	9.68	33.76	26.06	195.8	.267	2.44
150	9.15	33.90	26.25	178.1	.362	1.86
200	8.98	34.04	26.39	166.1	.449	1.65
250	8.61	34.18	26.56	151.0	.529	1.30
300	8.17	34.24	26.67	140.8	.603	1.20
400	7.13	34.20	26.79	130.4	.741	1.00
500	6.13	34.24	26.96	115.3	.866	0.50

STATION 80.60 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 34°09' 121°09'; November 13, 1952; 0519 GCT; wire angle: 17°; sounding: 1190 fms; depth of observation: 1131 m; weather: partly cloudy; sea: slight; wind: 310°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	15.21	33.09	24.48	344.4	.000	4.66
10	15.20	33.07	24.46	345.9	.035	4.69
20	15.15	33.09	24.49	343.7	.069	4.60
30	14.40	33.08	24.64	329.4	.103	4.58
50	11.52	32.97	25.12	283.8	.165	4.53
75	10.32	33.17	25.49	249.3	.232	3.85
100	9.77	33.49	25.83	217.2	.291	2.95
150	9.12	33.91	26.27	176.9	.391	1.93
200	8.75	34.06	26.44	161.1	.476	1.41
250	8.08	34.09	26.57	149.7	.555	1.21
300	7.44	34.13	26.69	138.4	.628	0.96
400	6.59	34.23	26.89	120.8	.760	0.54
500	5.95	34.30	27.03	108.5	.877	0.31
600	5.42	34.30	27.09	102.9	.985	0.26
700	5.02	34.31	27.15	98.2	1.087	0.24
800	4.61	-	-	-	-	0.22
1000	3.95	-	-	-	-	0.32

STATION 80.70 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°49' 121°51'; November 13, 1952; 1203 GCT; wire angle: 23°; sounding: 2020 fms; depth of observation: 564 m; weather: clear; sea: moderate; wind: 320°, force 5.

0	17.34	33.08	23.98	391.4	.000	4.36
10	17.32	33.06	23.97	392.7	.039	4.38
20	17.32	33.05	23.96	393.7	.079	4.39
30	17.29	33.08	23.99	391.2	.118	4.39
50	13.56	32.96	24.72	322.1	.190	5.03
75	11.66	33.02	25.14	283.1	.266	4.75
100	10.98	33.05	25.28	269.7	.336	4.30
150	9.12	33.68	26.09	193.9	.453	2.52
200	8.86	33.95	26.34	170.9	.545	1.79
250	8.12	34.05	26.53	153.3	.627	1.52
300	7.52	34.10	26.66	141.7	.702	1.26
400	6.39	34.14	26.84	124.8	.838	0.78
500	5.87	34.23	26.98	112.6	.959	0.41

STATION 80.80 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°29' 122°32'; November 13, 1952; 1806 GCT; wire angle: 2°; sounding: 2060 fms; depth of observation: 1158 m; weather: partly cloudy; sea: slight; wind: 320°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5 s$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.58	33.16	23.99		.000	4.41
10	17.56	33.16	23.99		.039	4.41
20	17.57	33.14	23.97		.079	4.35
30	17.58	33.14	23.97		.118	4.38
50	16.72	33.17	24.20		.195	4.61
75	12.61	33.01	24.95		.280	4.84
100	11.82	33.13	25.19		.353	4.52
150	9.46	33.33	25.76		.480	3.71
200	8.54	33.84	26.30		.581	2.54
250	7.97	33.99	26.51		.664	2.12
300	7.35	34.05	26.64		.740	1.78
400	6.52	34.14	26.83		.877	0.87
500	5.96	34.22	26.96		1.000	0.42
600	5.38	34.29	27.09		1.111	0.27
700	4.94	34.30	27.15		1.213	0.28
800	4.52	34.36	27.24		1.309	0.30
1000	3.85	34.49	27.42		1.477	0.43

STATION 80.90 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°09' 123°13'; November 14, 1952; 0032 GCT; wire angle: 5°; sounding: 2400 fms; depth of observation: 587 m; weather: partly cloudy; sea: slight; wind: 300°, force 3.

0	17.61	33.10	23.93		.000	4.64
10	17.59	33.12	23.95		.040	4.35
20	17.54	33.19	24.02		.079	4.43
30	17.53	33 .21	23.27		.122	4.47
50	17.55	33.08	23.93		.208	4.37
75	13.40	32.95	24.75		.298	4.90
100	11.97	32.97	25.04		.375	4.81
150	9.52	33.19	25.64		.509	3.71
200	8.62	33.73	26.20		.615	2.68
250	8.11	34.03	26.52		.701	2.17
300	7.60	34.13	26.67		.775	1.61
400	6.53	34.20	26.87		.909	0.90
500	5.78	34.27	27.03		1.027	0.52
600	(5.07)	(34.34)	(27.17)		(1.131)	-

STATION 80.100 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°49' 123°54'; November 14, 1952; 0616 GCT; wire angle: 20°; sounding: 2250 fms; depth of observation: 1113 m; weather: partly cloudy; sea: slight; wind: 330°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.49	33.12	23.98		.000	4.33
10	17.48	33.12	23.98		.039	4.26
20	17.45	33.10	23.97		.079	4.41
30	17.43	33.08	23.96		.118	4.44
50	17.35	33.09	23.99		.198	4.37
75	13.90	33.13	24.78		.287	4.92
100	11.49	32.98	25.14		.362	4.86
150	9.26	33.41	25.85		.488	3.25
200	8.89	33.89	26.29		.587	1.99
250	8.45	34.05	26.48		.672	1.42
300	8.04	34.15	26.62		.749	1.17
400	6.97	34.22	26.83		.887	0.80
500	5.92	34.23	26.98		1.009	0.50
600	5.38	34.26	27.07		1.121	0.36
700	4.93	34.30	27.15		1.225	0.32
800	4.55	34.38	27.26		1.320	0.34
1000	3.92	34.47	27.39		1.488	0.49

STATION 85.38 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 34°01' 119°02'; November 12, 1952; 1212 GCT; wire angle: 0°; sounding: 130 fms; depth of observation: 152 m; weather: fog; sea: slight; wind: 75°, force 2.

0	16.28	33.34	24.43	348.9	.000	4.69
10	16.24	33.35	24.45	347.6	.035	4.69
20	14.70	33.27	24.72	321.3	.069	4.70
30	12.60	33.24	25.13	282.9	.099	4.70
50	11.42	33.26	25.37	260.7	.154	3.94
75	11.04	33.31	25.47	251.0	.218	3.72
100	10.74	33.36	25.57	242.7	.281	3.53
150	9.76	33.72	26.01	201.0	.393	2.41

STATION 85.40 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°57' 119°10'; November 12, 1952; 1011 GCT; wire angle: 7°; sounding: 380 fms; depth of observation: 580 m; weather: clear; sea: slight; wind: 75°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	16.61	33.35	24.36	355.4	.000	4.87
10	16.64	33.34	24.35	357.1	.036	4.66
20	16.58	33.36	24.38	354.6	.072	4.63
30	15.40	33.27	24.57	336.0	.106	4.81
50	11.96	33.19	25.21	275.4	.168	4.28
75	10.70	33.32	25.54	244.5	.233	3.55
100	9.85	33.49	25.82	218.5	.292	3.09
150	9.62	33.85	26.14	189.2	.395	2.18
200	9.18	34.08	26.39	166.2	.485	1.70
250	8.55	34.13	26.53	153.8	.566	1.40
300	8.18	34.22	26.66	142.4	.641	1.05
400	7.49	34.30	26.82	128.1	.779	0.50
500	6.54	34.32	26.97	114.8	.902	0.28
600	(5.68)	(34.40)	(27.14)	(98.8)	(1.011)	-

STATION 85.50 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°37' 119°52'; November 12, 1952; 0405 GCT; wire angle: 4°; sounding: 130 fms; depth of observation: 125 m; weather: partly cloudy; sea: slight; wind: 300°, force 3.

0	16.76	33.35	24.33	358.7	.000	4.44
10	16.74	33.34	24.32	359.3	.036	4.46
20	14.64	33.31	24.77	317.1	.070	4.72
30	12.73	33.21	25.08	287.5	.101	4.30
50	10.97	33.33	25.50	247.8	.155	3.69
75	9.74	33.54	25.88	212.5	.213	2.91
100	9.17	33.81	26.18	184.1	.263	2.34

STATION 85.60 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°17' 120°34'; November 11, 1952; 2142 GCT; wire angle: 11°; sounding: 750 fms; depth of observation: 570 m; weather: cloudy; sea: slight; wind: 320°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	16.32	33.16	24.28	362.9	.000	4.55
10	16.24	33.19	24.32	359.3	.036	4.51
20	15.55	33.22	24.50	342.6	.072	4.64
30	14.40	33.21	24.74	319.8	.105	4.72
50	12.40	33.09	25.05	290.7	.166	4.63
75	10.80	33.19	25.42	255.8	.235	3.75
100	9.93	33.60	25.89	211.6	.294	2.71
150	9.22	33.89	26.24	179.9	.393	2.04
200	8.18	33.96	26.45	160.0	.479	2.02
250	7.73	34.08	26.61	145.4	.557	1.60
300	7.65	34.17	26.69	138.4	.629	1.03
400	7.10	34.26	26.84	125.5	.763	0.56
500	5.73	34.21	26.98	112.3	.884	0.47

STATION 90.28 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°28' 117°47'; November 9, 1952; 1920 GCT; wire angle: 0°; sounding: 48 fms; depth of observation: 50 m; weather: partly cloudy; sea: calm; wind: calm.

0	16.82	33.36	24.32	359.3	.000	4.53
10	16.48	33.33	24.38	354.3	.036	4.65
20	14.54	33.21	24.71	322.4	.070	4.66
30	13.68	33.26	24.93	301.9	.101	4.73
50	12.18	33.29	25.25	272.0	.159	4.21

STATION 90.30 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°24' 117°55'; November 10, 1952; 0745 GCT; wire angle: 0°; sounding: 330 fms; depth of observation: 483 m; weather: fog; sea: calm; wind: calm.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.38	33.38	24.20	370.4	.000	4.58
10	17.37	33.39	24.21	369.8	.037	4.68
20	17.25	33.33	24.20	371.8	.075	4.78
30	14.90	33.27	24.68	325.6	.110	4.82
50	12.42	33.23	25.16	280.8	.171	4.72
75	10.85	33.37	25.55	243.3	.237	3.85
100	10.10	33.57	25.84	216.6	.295	3.32
150	9.68	33.88	26.15	188.0	.397	2.14
200	8.74	33.94	26.35	169.8	.488	2.08
250	8.21	34.06	26.53	153.9	.570	1.45
300	7.91	34.12	26.62	145.9	.646	1.30
400	7.37	34.28	26.82	127.9	.785	0.75
500	(6.63)	(34.31)	(26.95)	(116.8)	(.909)	-

STATION 90.37 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 33°11' 118°24'; November 10, 1952; 1230 GCT; wire angle: 15°; sounding: 620 fms; depth of observation: 923 m; weather: cloudy; sea: smooth; wind: 180°, force 1.

0	17.50	33.41	24.20	371.0	.000	4.46
10	17.47	33.41	24.20	370.6	.037	4.46
20	15.60	33.31	24.56	337.0	.073	4.98
30	13.10	33.23	25.02	293.0	.105	5.00
50	10.96	33.19	25.40	257.9	.160	3.94
75	10.02	33.44	25.75	224.4	.221	3.25
100	10.01	33.67	25.93	207.8	.276	2.67
150	9.15	33.95	26.29	174.4	.372	2.01
200	8.62	34.08	26.48	157.6	.456	1.89
250	8.25	34.16	26.60	147.0	.534	1.39
300	7.75	34.22	26.72	136.1	.605	1.00
400	7.15	34.32	26.88	121.8	.737	0.48
500	6.43	34.37	27.02	109.6	.854	0.28
600	5.72	34.38	27.12	100.8	.962	0.23
700	5.13	34.42	27.22	91.5	1.060	0.22
800	4.67	34.45	27.30	84.6	1.150	0.23
1000	(4.10)	(34.46)	(27.37)	(78.8)	(1.318)	-

STATION 90.45 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°54' 118°56'; November 10, 1952; 1737 GCT; wire angle: 0°; sounding: 960 fms; depth of observation: 586 m; weather: cloudy; sea: calm; wind: 290°, force 1.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	16.46	33.46	24.48	344.1	.000	4.53
10	16.40	33.47	24.50	342.3	.035	4.58
20	14.06	33.32	24.90	304.7	.067	4.93
30	12.50	33.32	25.21	275.2	.096	4.40
50	10.72	33.49	25.67	231.7	.147	3.45
75	9.62	33.60	25.94	206.2	.203	2.82
100	9.01	33.87	26.25	177.2	.251	2.45
150	8.56	34.01	26.43	161.0	.337	2.14
200	8.78	34.30	26.63	143.8	.414	1.30
250	8.53	34.37	26.72	135.7	.485	0.92
300	8.09	34.33	26.76	133.0	.553	0.80
400	7.30	34.48	26.99	112.1	.678	0.46
500	6.50	34.31	26.96	115.0	.794	0.25
600	(5.74)	(34.37)	(27.11)	(101.8)	(.904)	-

STATION 90.53 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°38' 119°29'; November 10, 1952; 2255 GCT; wire angle: 3°; sounding: 680 fms; depth of observation: 970 m; weather: partly cloudy; sea: smooth; wind: 260°, force 1.

0	16.07	33.44	24.55	337.0	.000	4.64
10	15.42	33.47	24.72	324.9	.033	4.76
20	14.20	33.37	24.91	303.8	.065	4.74
30	12.70	33.35	25.20	276.6	.094	4.54
50	10.46	33.45	25.68	230.4	.145	3.32
75	9.84	33.67	25.96	204.5	.200	3.01
100	9.31	33.67	26.05	196.6	.251	2.68
150	8.37	33.95	26.42	162.6	.341	2.08
200	7.93	34.05	26.56	149.6	.421	1.73
250	7.41	34.16	26.72	134.9	.493	1.32
300	7.22	34.19	26.77	130.8	.560	1.13
400	6.42	34.24	26.92	117.7	.687	0.48
500	5.85	34.31	27.05	106.4	.801	0.33
600	5.46	34.34	27.12	100.4	.907	0.30
700	5.01	34.38	27.20	92.9	1.006	0.32
800	4.62	34.43	27.29	85.5	1.097	0.28
1000	(3.98)	(34.47)	(27.39)	(76.6)	(1.263)	(0.48)

STATION 90.60 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°25' 119°58'; November 11, 1952; 0344 GCT; wire angle: 5°; sounding: 450 fms; depth of observation: 583 m; weather: partly cloudy; sea: smooth; wind: calm.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	15.66	33.39	24.61	331.9	.000	4.79
10	15.16	33.41	24.73	320.2	.033	4.87
20	13.76	33.32	24.96	298.8	.064	4.91
30	12.40	33.19	25.13	282.9	.093	4.66
50	10.78	33.14	25.39	258.6	.148	4.04
75	10.30	33.37	25.65	234.2	.210	3.15
100	9.42	33.58	25.96	205.0	.265	2.80
150	8.96	34.00	26.36	167.8	.360	1.82
200	8.59	34.14	26.53	152.7	.441	1.75
250	8.08	34.21	26.66	140.8	.515	0.98
300	7.59	34.22	26.74	133.8	.585	0.87
400	6.87	34.29	26.90	120.1	.714	0.60
500	6.02	34.32	27.03	107.9	.831	0.37
600	(5.55)	(34.34)	(27.11)	(101.6)	(.937)	-

STATION 90.70 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°04' 120°39'; November 11, 1952; 1017 GCT; wire angle: 11°; sounding: 2060 fms; depth of observation: 1134 m; weather: partly cloudy; sea: slight; wind: 340°, force 2.

0	17.34	33.41	24.24	367.3	.000	4.41
10	17.30	33.40	24.24	367.5	.037	4.45
20	17.30	33.45	24.28	364.1	.074	4.44
30	17.32	33.44	24.26	365.6	.110	4.49
50	12.50	33.41	25.28	269.0	.174	4.77
75	9.65	33.68	26.00	200.8	.234	2.65
100	8.89	33.78	26.20	182.1	.282	2.49
150	8.49	33.99	26.43	161.4	.369	2.14
200	7.90	34.07	26.58	147.7	.447	1.68
250	7.53	34.15	26.70	137.4	.520	1.24
300	7.17	34.19	26.78	130.2	.588	0.90
400	6.47	34.26	26.93	116.9	.713	0.54
500	5.93	34.36	27.08	103.8	.826	0.28
600	5.33	34.41	27.19	93.6	.927	0.27
700	4.91	34.44	27.26	87.3	1.019	0.29
800	4.57	34.47	27.33	81.9	1.106	0.36
1000	3.95	34.52	27.43	72.6	1.265	0.47

STATION 93.27 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°56' 117°19'; November 9, 1952; 1416 GCT; wire angle: 0°; sounding: 100 fms; depth of observation: 122 m; weather: partly cloudy; sea: calm; wind: calm.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	15.88	33.26	24.46	346.1	.000	4.84
10	15.20	33.24	24.59	333.5	.034	4.86
20	14.80	33.25	24.69	324.8	.067	4.96
30	13.74	33.27	24.93	302.4	.099	4.96
50	12.18	33.29	25.25	272.0	.157	3.99
75	11.60	33.34	25.40	258.5	.224	3.75
100	10.92	33.42	25.58	241.4	.287	3.26

STATION 93.30 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°50' 117°32'; November 9, 1952; 1030 GCT; wire angle: 0°; sounding: 460 fms; depth of observation: 588 m; weather: cloudy; sea: smooth; wind: 280°, force 1.

0	17.47	33.37	24.17	373.2	.000	4.48
10	17.30	33.39	24.23	368.2	.037	4.54
20	13.30	33.30	25.04	291.4	.070	4.81
30	12.30	33.30	25.23	273.0	.099	4.30
50	11.49	33.31	25.39	258.2	.152	3.66
75	11.12	33.39	25.52	246.5	.216	3.42
100	10.91	33.41	25.57	241.9	.278	3.28
150	9.93	33.75	26.01	201.6	.390	2.38
200	9.52	34.07	26.33	172.4	.484	1.72
250	8.99	34.21	26.52	154.6	.567	1.29
300	8.25	34.19	26.62	145.7	.643	1.15
400	7.51	34.31	26.82	127.7	.782	0.62
500	6.73	34.36	26.97	114.5	.905	0.33
600	(5.83)	(34.39)	(27.11)	(101.5)	(1.015)	-

STATION 93.40 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°30' 118°12'; November 9, 1952; 0427 GCT; wire angle: 0°; sounding: 1200 fms; depth of observation: 588m; weather: clear; sea: slight; wind: 300°, force 1.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	16.42	33.18	24.27	363.6	.000	4.36
10	16.34	33.22	24.32	359.2	.036	4.42
20	15.30	33.26	24.59	334.4	.071	4.76
30	14.65	33.25	24.72	322.0	.104	4.80
50	12.38	33.14	25.09	286.7	.166	4.53
75	10.50	33.23	25.51	247.8	.233	3.90
100	9.49	33.47	25.86	214.3	.291	3.18
150	8.64	33.86	26.30	173.3	.389	2.61
200	8.30	34.04	26.50	155.8	.473	2.12
250	7.72	34.11	26.64	143.0	.548	1.75
300	7.32	34.20	26.77	131.5	.618	1.43
400	6.71	34.32	26.94	115.7	.744	0.73
500	6.15	34.45	27.12	100.0	.854	0.35
600	(5.59)	(34.40)	(27.15)	(97.6)	(.955)	-

STATION 93.50 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°10' 118°54'; November 8, 1952; 2218 GCT; wire angle: 0°; sounding: 840 fms; depth of observation: 584 m; weather: partly cloudy; sea: smooth; wind: 300°, force 1.

0	16.80	33.09	24.12	378.6	.000	4.47
10	16.46	33.09	24.20	371.4	.038	4.34
20	16.41	33.15	24.25	366.2	.075	4.41
30	16.25	33.11	24.26	365.9	.112	4.51
50	14.44	33.06	24.62	332.2	.182	4.59
75	11.45	33.01	25.17	280.2	.259	4.25
100	10.50	33.23	25.51	248.3	.326	3.40
150	9.68	33.80	26.09	193.9	.437	2.40
200	8.47	33.88	26.35	170.2	.529	2.29
250	7.94	34.04	26.55	151.4	.611	1.87
300	7.43	34.11	26.68	139.7	.685	1.09
400	6.84	34.24	26.86	123.4	.818	0.58
500	6.28	34.32	27.00	111.3	.938	0.32
600	(5.59)	(34.34)	(27.10)	(102.1)	(1.047)	-

STATION 97.30 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°15' 117°09'; November 8, 1952; 0130 GCT; wire angle: 0°; sounding: 23 fms; depth of observation: 30 m; weather: cloudy; sea: smooth; wind: 150°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.28	33.23	24.11	379.1	.000	4.47
10	17.26	33.43	24.27	364.2	.037	4.27
20	17.40	33.40	24.21	370.0	.074	4.21
30	17.66	33.35	24.11	379.9	.112	4.18

STATION 97.32 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 32°12' 117°17'; November 8, 1952; 0336 GCT; wire angle: 4°; sounding: 730 fms; depth of observation: 579 m; weather: partly cloudy; sea: calm; wind: calm.

0	18.05	33.43	24.08	382.2	.000	4.34
10	18.03	33.44	24.09	381.3	.038	4.43
20	17.96	33.33	24.02	388.0	.077	4.30
30	17.75	33.29	24.05	386.4	.116	4.61
50	12.80	33.18	25.04	291.5	.184	4.48
75	10.55	33.33	25.58	241.2	.251	3.70
100	10.10	33.57	25.84	216.6	.309	2.62
150	9.91	33.86	26.10	193.1	.413	2.00
200	9.63	34.16	26.38	167.5	.504	1.21
250	9.25	34.23	26.50	157.2	.586	1.13
300	8.82	34.21	26.55	152.9	.665	0.93
400	7.42	34.21	26.76	133.8	.810	0.63
500	6.68	34.34	26.96	115.3	.937	0.39

STATION 97.40 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 31°56' 117°50'; November 8, 1952; 0911 GCT; wire angle: 0°; sounding: 520 fms; depth of observation: 586 m; weather: cloudy; sea: smooth; wind: 250°, force 1.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5 s$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.35	33.41	24.23	367.6	.000	4.45
10	17.32	33.44	24.26	365.0	.037	4.49
20	15.68	33.40	24.61	332.2	.072	4.89
30	12.80	33.33	25.16	280.0	.103	4.80
50	10.75	33.39	25.59	239.6	.155	3.45
75	10.00	33.60	25.88	212.3	.212	2.90
100	9.34	33.76	26.11	190.5	.263	2.54
150	9.02	34.09	26.42	162.0	.352	1.85
200	8.60	34.15	26.54	152.1	.432	1.47
250	8.69	34.32	26.66	141.9	.507	0.92
300	8.25	34.36	26.75	133.2	.576	0.67
400	7.11	34.33	26.90	120.5	.705	0.48
500	6.36	34.38	27.04	108.0	.822	0.27
600	(5.82)	(34.37)	(27.10)	(102.9)	(.929)	-

STATION 97.50 (Interpolated Values at Standard Depths)

BLACK DOUGLAS: 31°36' 118°30'; November 8, 1952; 1529, 1549 GCT; wire angle: 1°, 1°; sounding: 1280 fms; depth of observation: 586 m; weather: partly cloudy; sea: smooth; wind: 250°, force 1.

0	17.24	33.45	24.29	362.2	.000	4.33
10	17.22	33.40	24.26	365.6	.037	4.39
20	17.22	33.39	24.25	366.7	.073	4.33
30	17.12	33.36	24.25	366.9	.110	4.45
50	12.87	33.15	25.01	295.0	.177	4.70
75	10.65	33.36	25.58	240.7	.244	3.70
100	10.11	33.57	25.84	216.8	.302	2.52
150	9.96	34.03	26.22	181.4	.403	1.43
200	9.90	34.20	26.36	168.9	.492	1.04
250	9.55	34.23	26.45	162.0	.575	0.85
300	8.69	34.22	26.58	150.2	.654	0.95
400	7.68	34.25	26.75	134.6	.799	0.62
500	6.89	34.28	26.89	122.6	.930	0.34
600	(6.23)	(34.31)	(27.00)	(112.8)	(1.050)	-

STATION 100.29 (Interpolated Values at Standard Depths)

CREST: 31°42' 116°44'; November 6, 1952; 0410 GCT; wire angle: 8°; sounding: 150 fms; depth of observation: 99 m; weather: clear; sea: smooth; wind: 300°, force 1.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.91	33.37	24.07		.000	5.76
10	15.63	33.26	24.51		.036	6.31
20	12.60	33.23	25.12		.068	6.09
30	11.88	33.27	25.29		.096	5.41
50	11.32	33.33	25.44		.148	5.16
75	10.87	33.32	25.51		.211	4.74
100	(10.43)	(33.59)	(25.80)		(.270)	(3.51)

STATION 100.30 (Interpolated Values at Standard Depths)

CREST: 31°40' 116°47'; November 6, 1952; 0510 GCT; wire angle: 8°; sounding: 250 fms; depth of observation: 287 m; weather: partly cloudy; sea: smooth; wind: 300°, force 1.

0	17.86	33.39	24.10		.000	5.75
10	17.83	33.39	24.10		.038	5.81
20	17.79	33.38	24.10		.077	5.91
30	14.67	33.34	24.78		.112	5.96
50	12.88	33.19	25.04		.173	5.85
75	11.61	33.23	25.31		.243	5.09
100	10.50	33.56	25.76		.305	3.65
150	9.78	33.94	26.18		.408	2.24
200	9.61	34.11	26.34		.499	1.88
250	9.16	34.22	26.50		.581	1.40

STATION 100.40 (Interpolated Values at Standard Depths)

CREST: 31°21' 117°27'; November 6, 1952; 1013 GCT; wire angle: 11°; sounding: 1000 fms; depth of observation: 860 m; weather: clear; sea: smooth; wind: 280°, force 1.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.77	33.37	24.10		.000	5.90
10	17.72	33.41	24.14		.038	5.84
20	17.60	33.29	24.08		.076	6.34
30	14.80	33.23	24.67		.112	6.42
50	12.08	33.22	25.21		.172	5.89
75	10.22	33.31	25.62		.237	4.60
100	9.78	33.50	25.84		.294	3.89
150	8.82	33.90	26.31		.393	3.24
200	8.74	34.12	26.49		.476	2.13
250	8.44	34.25	26.64		.552	1.37
300	8.17	34.30	26.72		.623	0.84
400	7.14	34.29	26.86		.756	0.59
500	6.35	34.32	26.99		.876	0.34
600	5.72	34.37	27.11		.985	0.26
700	5.15	34.45	27.24		1.083	0.29
800	4.64	34.50	27.34		1.170	0.37

STATION 100.50 (Interpolated Values at Standard Depths)

CREST: 31°01' 118°06'; November 6, 1952; 1522 GCT; wire angle: 0°; sounding: 960 fms; depth of observation: 588 m; weather: partly cloudy; sea: smooth; wind: 320°, force 3.

0	16.37	33.34	24.43		.000	5.91
10	16.38	33.35	24.41		.035	5.96
20	16.36	33.31	24.39		.071	5.96
30	16.10	33.18	24.35		.106	6.20
50	12.30	33.16	25.13		.171	5.93
75	10.58	33.42	25.64		.236	4.55
100	10.13	33.57	25.83		.293	3.70
150	9.90	34.04	26.24		.394	1.95
200	8.96	33.99	26.35		.482	2.63
250	8.23	34.28	26.69		.560	1.45
300	8.49	34.24	26.62		.632	1.32
400	7.38	34.19	26.75		.774	0.93
500	6.65	34.32	26.95		.902	0.42
600	(5.88)	(34.31)	(27.04)		(1.016)	-

STATION 100.60 (Interpolated Values at Standard Depths)

CREST: 30°41' 118°47'; November 6, 1952; 2005 GCT; wire angle: 10°; sounding: 1600 fms; depth of observation: 968 m; weather: cloudy; sea: smooth; wind: 280°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.40	33.32	24.15		.000	5.83
10	17.08	33.34	24.24		.037	5.88
20	16.64	33.34	24.35		.074	6.05
30	15.70	33.30	24.53		.109	6.12
50	12.54	33.19	25.10		.172	6.05
75	10.85	33.35	25.54		.239	4.74
100	9.93	33.60	25.89		.296	3.55
150	9.84	34.02	26.23		.395	2.29
200	9.43	34.18	26.43		.482	1.81
250	9.08	34.26	26.55		.562	1.37
300	8.49	34.28	26.66		.637	1.28
400	7.25	34.30	26.85		.773	0.76
500	6.40	34.27	26.95		.896	0.40
600	5.63	34.36	27.11		1.007	0.32
700	5.14	34.43	27.23		1.105	0.32
800	4.72	34.40	27.25		1.197	0.37
1000	(4.02)	(34.40)	(27.33)		(1.372)	(0.63)

STATION 100.70 (Interpolated Values at Standard Depths)

CREST: 30°20' 119°27'; November 7, 1952; 0105 GCT; wire angle: 6°; sounding: 2000+ fms; depth of observation: 579 m; weather: partly cloudy; sea: smooth; wind: 310°, force 3.

0	18.35	33.36	23.95		.000	5.66
10	18.36	33.28	23.89		.040	5.81
20	18.31	33.36	23.96		.080	5.86
30	18.34	33.39	23.98		.119	5.80
50	16.63	33.27	24.29		.196	6.27
75	13.90	33.19	24.83		.281	6.37
100	12.59	33.20	25.10		.356	6.10
150	9.42	33.57	25.95		.481	4.35
200	8.57	33.91	26.35		.576	3.44
250	7.94	34.02	26.53		.657	3.08
300	7.35	34.09	26.67		.732	2.01
400	6.58	34.16	26.84		.867	1.07
500	5.92	34.24	26.98		.988	0.64

STATION 100.80 (Interpolated Values at Standard Depths)

CREST: 30°01' 120°06'; November 7, 1952; 0552 GCT; wire angle: 15°; sounding: 2000+ fms; depth of observation: 930 m; weather: partly cloudy; sea: slight; wind: 320°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	18.29	(33.27)	(23.90)		(.000)	(5.64)
10	18.31	33.27	23.89		.040	5.64
20	18.42	33.28	23.87		.081	5.61
30	18.56	33.28	23.84		.121	5.58
50	16.27	33.08	24.23		.199	6.16
75	14.11	33.05	24.68		.287	6.35
100	13.14	33.43	25.17		.363	5.69
150	9.82	33.37	25.73		.491	4.74
200	8.95	33.82	26.22		.595	3.92
250	8.08	34.00	26.50		.681	3.15
300	7.57	34.11	26.66		.756	2.33
400	6.74	34.22	26.86		.891	0.84
500	5.82	34.28	27.03		1.009	0.48
600	5.29	34.32	27.12		1.115	0.35
700	4.84	34.37	27.22		1.213	0.35
800	4.45	34.41	27.29		1.304	0.39
1000	(4.03)	(34.47)	(27.38)		(1.470)	-

STATION 103.30 (Interpolated Values at Standard Depths)

CREST: 31°05' 116°25'; November 8, 1952; 0328 GCT; wire angle: 0°; sounding: 40 fms; depth of observation: 30 m; weather: partly cloudy; sea: smooth; wind: 320°, force 1.

0	18.24	33.39	24.00	.000	5.80
10	17.90	33.43	24.12	.039	5.84
20	16.48	33.37	24.41	.075	6.19
30	13.68	33.20	24.88	.109	6.58

STATION 103.35 (Interpolated Values at Standard Depths)

CREST: 30°56' 116°45'; November 8, 1952; 0049 GCT; wire angle: 12°; sounding: 1020 fms; depth of observation: 574 m; weather: cloudy; sea: smooth; wind: 280°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.75	33.33	24.08		.000	5.88
10	17.46	33.29	24.11		.038	5.88
20	17.40	33.34	24.17		.076	5.91
30	17.07	33.32	24.23		.114	6.11
50	14.48	33.11	24.65		.184	6.62
75	11.82	33.14	25.20		.260	5.99
100	10.84	33.37	25.56		.326	4.81
150	9.14	33.75	26.14		.435	3.76
200	8.66	34.03	26.43		.524	2.92
250	8.82	34.30	26.62		.602	1.54
300	8.26	34.30	26.71		.674	1.13
400	7.27	34.34	26.88		.806	0.64
500	6.34	34.32	26.99		.925	0.42

STATION 103.40 (Interpolated Values at Standard Depths)

CREST: 30°46' 117°06'; November 7, 1952; 2149, 2211 GCT; wire angle: 16°, 15°; sounding: 850 fms; depth of observation: 561 m; weather: overcast; sea: smooth; wind: 200°, force 3.

0	17.78	33.37	24.10		.000	5.83
10	17.18	33.32	24.20		.038	6.02
20	16.86	33.38	24.33		.074	6.05
30	16.45	33.27	24.34		.111	6.43
50	13.00	33.04	24.90		.177	6.49
75	11.90	33.18	25.22		.251	5.77
100	10.24	33.23	25.55		.316	4.50
150	9.06	33.91	26.28		.422	3.05
200	8.79	34.13	26.49		.506	2.29
250	8.63	34.26	26.62		.583	1.33
300	8.08	34.30	26.73		.654	0.96
400	7.15	34.33	26.89		.784	0.57
500	6.27	34.36	27.03		.901	0.38

STATION 107.32 (Interpolated Values at Standard Depths)

CREST: 30°26' 116°12'; November 8, 1952; 0735 GCT; wire angle: 0°; sounding: 550 fms; depth of observation: 242 m; weather: clear; sea: smooth; wind: 120°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	16.04	33.29	24.45		.000	6.33
10	15.44	33.29	24.58		.034	6.50
20	14.92	33.30	24.70		.067	6.49
30	14.20	33.30	24.85		.099	6.42
50	12.94	33.27	25.09		.159	5.37
75	12.10	33.37	25.33		.229	4.61
100	11.62	33.50	25.52		.294	3.50
150	11.23	33.95	25.94		.409	1.85
200	10.80	34.23	26.23		.508	1.43
250	(9.90)	(34.29)	(26.43)		(.595)	(1.40)

STATION 107.35 (Interpolated Values at Standard Depths)

CREST: 30°20' 116°23'; November 8, 1952; 0934 GCT; wire angle: 15°; sounding: 900 fms; depth of observation: 567 m; weather: cloudy; sea: slight; wind: 180°, force 3.

0	16.36	33.26	24.35		.000	6.27
10	15.77	33.27	24.49		.035	6.37
20	14.85	33.18	24.62		.069	6.61
30	14.56	33.26	24.75		.102	6.44
50	13.64	33.33	24.99		.164	5.35
75	11.68	33.33	25.37		.234	5.23
100	10.87	33.56	25.70		.296	3.99
150	10.68	34.14	26.18		.401	1.88
200	10.22	34.33	26.41		.490	1.53
250	9.13	34.23	26.52		.571	1.58
300	8.66	34.28	26.63		.647	1.03
400	7.72	34.39	26.86		.784	0.59
500	6.62	(34.36)	(26.99)		(.905)	-

STATION 107.40 (Interpolated Values at Standard Depths)

CREST: 30°10' 116°44'; November 8, 1952; 1232 GCT; wire angle: 0°; sounding: 1450 fms; depth of observation: 587 m; weather: partly cloudy; sea: smooth; wind: 280°, force 2.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	18.20	33.41	24.03		.000	5.74
10	18.24	33.28	23.92		.039	5.76
20	17.89	33.40	24.10		.079	5.80
30	17.55	33.35	24.14		.117	5.83
50	15.54	33.17	24.46		.190	6.38
75	12.84	33.20	25.05		.270	6.24
100	10.93	33.22	25.42		.339	5.58
150	9.82	33.73	26.01		.454	3.35
200	8.56	33.94	26.38		.548	3.34
250	8.03	34.04	26.54		.629	2.78
300	7.46	34.13	26.69		.703	1.93
400	6.63	34.28	26.92		.833	0.85
500	6.27	34.35	27.03		.948	0.44
600	(5.69)	(34.39)	(27.13)		(1.055)	-

STATION 110.33 (Interpolated Values at Standard Depths)

CREST: 29°50' 115°52'; November 9, 1952; 1213 GCT; wire angle: 2°; sounding: 50 fms; depth of observation: 50 m; weather: partly cloudy; sea: slight; wind: 350°, force 4.

0	17.04	33.39	24.29	.000	5.98
10	16.52	33.45	24.46	.036	6.13
20	15.32	33.47	24.74	.069	5.49
30	14.99	33.36	24.73	.101	5.49
50	12.71	33.42	25.25	.161	4.70

STATION 110.35 (Interpolated Values at Standard Depths)

CREST: 29°39' 116°13'; November 9, 1952; 0929 GCT; wire angle: 30°; sounding: 1180 fms; depth of observation: 511 m; weather: partly cloudy; sea: slight; wind: 340°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.12	33.26	24.17		.000	6.01
10	17.05	33.28	24.20		.037	6.11
20	15.26	33.26	24.60		.073	6.53
30	14.64	33.21	24.69		.106	6.57
50	12.52	33.16	25.08		.168	5.76
75	11.41	33.40	25.48		.236	4.65
100	10.75	33.69	25.82		.295	3.42
150	9.84	33.97	26.20		.396	2.78
200	9.52	34.22	26.44		.484	2.08
250	9.40	34.38	26.59		.562	1.22
300	8.59	34.39	26.73		.635	1.01
400	7.53	34.34	26.85		.768	0.73
500	6.65	34.36	26.98		.889	0.43

STATION 110.40 (Interpolated Values at Standard Depths)

CREST: 29°30' 116°33'; November 9, 1952; 0612 GCT; wire angle: 23°; sounding: 280 fms; depth of observation: 358 m; weather: partly cloudy; sea: slight; wind: 340°, force 3.

0	18.15	33.35	23.99		.000	5.76
10	18.13	33.33	23.98		.039	5.78
20	17.95	33.28	23.99		.079	5.89
30	17.75	33.26	24.02		.118	5.92
50	17.51	33.27	24.09		.195	5.95
75	13.70	33.16	24.85		.283	6.33
100	11.69	33.04	25.15		.357	5.74
150	9.82	33.73	26.01		.480	3.70
200	9.47	34.15	26.40		.572	2.36
250	8.67	34.23	26.59		.652	1.76
300	8.12	34.37	26.78		.723	0.97

STATION 110.50 (Interpolated Values at Standard Depths)

CREST: 29°17' 117°01'; November 9, 1952; 0133 GCT; wire angle: 10°; sounding: 1750 fms; depth of observation: 963 m; weather: partly cloudy; sea: slight; wind: 340°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	18.51	33.47	24.00		.000	5.76
10	18.49	33.37	23.93		.040	5.74
20	18.25	33.35	23.97		.079	5.78
30	18.13	33.32	23.98		.119	5.80
50	18.03	33.29	23.98		.198	5.83
75	15.37	33.31	24.61		.289	6.33
100	13.29	33.30	25.04		.368	5.85
150	10.60	33.63	25.80		.498	3.76
200	9.00	33.86	26.25		.599	3.40
250	8.14	34.02	26.50		.684	3.15
300	7.62	34.10	26.64		.760	2.22
400	6.73	34.24	26.88		.895	0.86
500	6.45	34.38	27.03		1.013	0.32
600	5.87	34.40	27.12		1.120	0.24
700	5.28	34.42	27.20		1.220	0.29
800	4.81	34.46	27.29		1.311	0.38
1000	(4.04)	(34.54)	(27.44)		(1.473)	(0.62)

STATION 110.60 (Interpolated Values at Standard Depths)

CREST: 29°00' 117°33'; November 8, 1952; 2125 GCT; wire angle: 2°; sounding: 1900 fms; depth of observation: 586 m; weather: partly cloudy; sea: slight; wind: 330°, force 4.

0	18.69	33.43	23.92		.000	5.78
10	18.48	33.50	24.03		.039	5.72
20	18.30	33.41	24.00		.079	5.78
30	18.23	33.44	24.04		.118	5.75
50	16.58	33.42	24.42		.192	6.33
75	14.57	33.42	24.87		.275	6.30
100	12.66	33.37	25.22		.349	5.47
150	11.12	33.88	25.90		.472	2.44
200	10.88	34.19	26.19		.572	1.50
250	9.82	34.28	26.44		.661	1.86
300	8.63	34.22	26.59		.740	1.80
400	7.48	34.31	26.83		.880	0.87
500	6.39	34.28	26.96		1.004	0.50
600	(6.11)	(34.38)	(27.07)		(1.117)	-

STATION 113.30 (Interpolated Values at Standard Depths)

CREST: 29°22' 115°18'; November 9, 1952; 1701 GCT; wire angle: 1°; sounding: 32 fms; depth of observation: 31 m; weather: partly cloudy; sea: slight; wind: 330°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	18.00	33.52	24.16		.000	6.10
10	17.98	33.55	24.19		.038	6.15
20	17.98	33.49	24.14		.075	6.15
30	16.93	33.45	24.36		.112	5.90

STATION 113.35 (Interpolated Values at Standard Depths)

CREST: 29°12' 115°39'; November 9, 1952; 1948 GCT; wire angle: 2°; sounding: 700 fms; depth of observation: 632 m; weather: partly cloudy; sea: slight; wind: 340°, force 4.

0	17.94	33.45	24.12	.000	6.19
10	17.90	33.47	24.15	.038	6.19
20	17.76	33.49	24.20	.076	6.16
30	17.35	33.46	24.27	.113	6.05
50	14.53	33.37	24.84	.181	5.60
75	10.90	33.58	25.71	.249	3.90
100	10.86	33.89	25.96	.304	2.28
150	10.77	34.18	26.20	.402	1.84
200	10.24	34.25	26.35	.492	1.23
250	9.60	34.33	26.52	.574	0.92
300	8.98	34.38	26.66	.650	0.75
400	8.02	34.38	26.80	.789	0.48
500	6.85	34.38	26.97	.913	0.37
600	6.00	34.40	27.10	1.024	0.33

STATION 113.40 (Interpolated Values at Standard Depths)

CREST: 29°02' 115°58'; November 9, 1952; 2245, 2314 GCT; wire angle: 18°, 17°; sounding: 1020 fms; depth of observation: 612 m; weather: partly cloudy; sea: rough; wind: 320°, force 5.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.23	33.68	23.98		.000	6.02
10	19.16	33.66	23.98		.039	5.95
20	18.22	33.56	24.14		.078	5.92
30	16.85	33.41	24.35		.115	6.12
50	13.63	33.25	24.93		.181	5.99
75	11.48	33.46	25.51		.251	4.05
100	10.98	33.58	25.69		.311	3.82
150	10.12	34.05	26.21		.415	2.44
200	9.91	34.30	26.44		.503	1.44
250	9.48	34.28	26.50		.583	1.17
300	8.82	34.41	26.71		.658	0.93
400	7.63	34.43	26.90		.790	0.55
500	6.53	34.40	27.03		.907	0.37
600	5.90	34.42	27.13		1.013	0.28

STATION 117.26 (Interpolated Values at Standard Depths)

CREST: 28°56' 114°41'; November 10, 1952; 1611 GCT; wire angle: 2°; sounding: 40 fms; depth of observation: 50 m; weather: clear; sea: slight; wind: 320°, force 3.

0	18.05	33.51	24.14		.000	5.60
10	18.04	33.48	24.12		.038	5.63
20	17.54	33.49	24.25		.075	5.52
30	16.51	33.42	24.44		.111	5.54
50	13.18	33.45	25.18		.175	4.49

STATION 117.30 (Interpolated Values at Standard Depths)

CREST: 28°48' 114°56'; November 10, 1952; 1356 GCT; wire angle: 2°; sounding: 50 fms; depth of observation: 50 m; weather: partly cloudy; sea: slight; wind: 320°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	17.79	33.59	24.26		.000	5.98
10	16.90	33.48	24.39		.036	6.00
20	15.90	33.44	24.59		.071	5.77
30	15.64	33.52	24.71		.104	5.61
50	14.18	33.50	25.01		.166	5.09

STATION 117.35 (Interpolated Values at Standard Depths)

CREST: 28°38' 115°16'; November 10, 1952; 0648 GCT; wire angle: 4°; sounding: 132 fms; depth of observation: 150 m; weather: clear; sea: moderate; wind: 310°, force 4.

0	18.57	33.53	24.03		.000	5.86
10	18.54	33.57	24.07		.039	5.88
20	16.70	33.50	24.45		.076	5.83
30	14.70	33.45	24.86		.109	5.76
50	12.92	33.46	25.24		.167	5.50
75	12.34	33.56	25.43		.234	4.04
100	11.35	33.71	25.73		.295	3.57
150	10.96	34.11	26.11		.401	1.82

STATION 117.40 (Interpolated Values at Standard Depths)

CREST: 28°28' 115°36'; November 10, 1952; 0353 GCT; wire angle: 10°; sounding: 550 fms; depth of observation: 484 m; weather: cloudy; sea: slight; wind: 340°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.44	33.74	23.97		.000	5.75
10	19.40	33.75	23.99		.039	5.83
20	16.90	33.65	24.52		.076	5.79
30	16.03	33.54	24.64		.110	5.55
50	14.55	33.57	24.99		.173	4.83
75	12.12	33.44	25.38		.243	4.92
100	12.48	33.80	25.59		.307	3.40
150	11.80	34.35	26.14		.415	1.34
200	10.68	34.32	26.32		.507	1.44
250	10.23	34.43	26.49		.591	0.96
300	9.47	34.40	26.59		.669	0.74
400	8.18	34.39	26.79		.812	0.54
500	(6.90)	(34.41)	(26.99)		(.936)	(0.35)

STATION 120.25 (Interpolated Values at Standard Depths)

CREST: 28°23' 114°15'; November 10, 1952; 2305 GCT; wire angle: 5°; sounding: 30 fms; depth of observation: 30 m; weather: clear; sea: slight; wind: 330°, force 5.

0	18.48	33.47	24.00		.000	5.64
10	18.48	33.49	24.02		.039	5.61
20	16.85	33.39	24.34		.077	5.59
30	15.17	33.42	24.74		.111	5.21

STATION 120.30 (Interpolated Values at Standard Depths)

CREST: 28°13' 114°34'; November 11, 1952; 0525 GCT; wire angle: 0°; sounding: 50 fms; depth of observation: 50 m; weather: clear; sea: moderate; wind: 360°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.36	33.55	23.84		.000	5.17
10	19.38	33.56	23.85		.041	5.31
20	19.38	33.55	23.84		.081	5.26
30	19.37	33.56	23.85		.122	5.22
50	19.37	33.55	23.84		.204	5.22

STATION 120.35 (Interpolated Values at Standard Depths)

CREST; 28°03' 114°54'; November 11, 1952; 0907 GCT; wire angle: 1°; sounding: 44 fms; depth of observation: 50 m; weather: clear; sea: moderate; wind: 360°, force 4.

0	19.12	33.55	23.90		.000	5.31
10	19.14	33.55	23.90		.040	5.31
20	19.15	33.56	23.90		.080	5.23
30	19.09	33.56	23.92		.120	5.27
50	17.80	33.55	24.23		.198	5.19

STATION 120.45 (Interpolated Values at Standard Depths)

CREST: 27°43' 115°33'; November 12, 1952; 0657 GCT; wire angle: 20°; sounding: 1250 fms; depth of observation: 922 m; weather: partly cloudy; sea: moderate; wind: 350°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.74	33.68	23.84		.000	5.40
10	19.77	33.70	23.85		.041	5.41
20	19.76	33.68	23.84		.081	5.40
30	19.30	33.57	23.87		.122	5.44
50	13.65	33.27	24.94		.193	5.97
75	12.05	33.39	25.35		.264	4.85
100	11.29	33.61	25.66		.326	3.75
150	10.19	34.06	26.21		.432	2.16
200	9.62	34.22	26.43		.519	1.78
250	9.29	34.39	26.61		.598	1.27
300	8.93	34.47	26.73		.669	0.77
400	8.03	34.48	26.88		.800	0.38
500	6.85	34.42	27.00		.920	0.26
600	5.97	34.39	27.10		1.029	0.26
700	5.33	34.44	27.21		1.130	0.29
800	4.82	34.48	27.31		1.220	0.36
1000	(4.00)	(34.50)	(27.41)		(1.383)	-

STATION 120.50 (Interpolated Values at Standard Depths)

CREST: 27°32' 115°51'; November 12, 1952; 1012 GCT; wire angle: 16°; sounding: 2000+ fms; depth of observation: 567 m; weather: clear; sea: slight; wind: 360°, force 4.

0	19.82	33.75	23.88		.000	5.33
10	19.75	33.73	23.88		.040	5.38
20	19.30	33.48	23.81		.081	5.42
30	17.40	33.33	24.16		.121	5.78
50	14.27	33.31	24.85		.190	5.91
75	12.55	33.49	25.33		.262	3.93
100	11.35	33.67	25.70		.324	3.15
150	10.13	34.00	26.17		.430	2.49
200	9.86	34.32	26.46		.517	1.14
250	9.26	34.41	26.63		.594	0.80
300	8.47	34.36	26.72		.665	0.73
400	7.39	34.40	26.91		.796	0.40
500	6.57	34.41	27.03		.912	0.24

STATION 120.60 (Interpolated Values at Standard Depths)

CREST: 27°15' 116°34'; November 12, 1952; 1455 GCT; wire angle: 8°; sounding: 2000+ fms; depth of observation: 963 m; weather: partly cloudy; sea: slight; wind: 350°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.01	33.42	23.83		.000	5.33
10	19.02	33.43	23.84		.041	5.33
20	18.99	33.45	23.86		.081	5.32
30	18.90	33.45	23.88		.122	5.43
50	16.00	33.26	24.43		.198	5.98
75	14.12	33.23	24.82		.281	5.97
100	11.97	33.19	25.21		.355	5.40
150	9.78	33.73	26.02		.476	3.47
200	9.24	34.10	26.40		.569	2.36
250	8.77	34.24	26.58		.648	1.62
300	8.30	34.23	26.65		.723	1.05
400	7.33	34.33	26.87		.858	0.61
500	6.57	34.34	26.98		.979	0.33
600	5.83	34.40	27.12		1.089	0.27
700	5.26	34.45	27.23		1.187	0.27
800	4.83	34.49	27.31		1.276	0.32
1000	(4.08)	(34.53)	(27.43)		(1.437)	(0.59)

STATION 120.70 (Interpolated Values at Standard Depths)

CREST: 26°52' 117°10'; November 12, 1952; 1931 GCT; wire angle: 11°; sounding: 2000+ fms; depth of observation: 578 m; weather: partly cloudy; sea: slight; wind: 340°, force 4.

0	19.57	33.58	23.81		.000	5.25
10	19.60	33.55	23.78		.041	5.23
20	19.60	33.58	23.80		.082	5.23
30	19.24	33.52	23.85		.123	5.30
50	17.38	33.40	24.22		.201	5.70
75	14.40	33.30	24.81		.287	5.91
100	12.54	33.26	25.16		.363	5.44
150	10.62	33.70	25.85		.488	3.16
200	10.13	34.12	26.26		.588	1.87
250	9.44	34.32	26.53		.672	1.29
300	8.74	34.38	26.69		.747	0.82
400	7.55	34.32	26.83		.882	0.48
500	6.74	34.39	27.00		1.004	0.29

STATION 120.80 (Interpolated Values at Standard Depths)

CREST: 26°32' 117°48'; November 13, 1952; 0017 GCT; wire angle: 20°; sounding: 2000+ fms; depth of observation: 603 m; weather: cloudy; sea: moderate; wind: 5°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	20.12	33.67	23.74		.000	5.16
10	20.12	33.88	23.90		.041	5.23
20	20.11	33.88	23.90		.081	5.19
30	20.10	33.84	23.87		.122	5.19
50	19.60	33.69	23.89		.202	5.29
75	16.70	33.52	24.47		.297	5.81
100	15.96	33.81	24.86		.379	5.58
150	11.71	33.37	25.40		.523	4.93
200	9.65	33.75	26.06		.639	3.61
250	8.78	34.06	26.44		.730	2.66
300	8.13	34.16	26.62		.808	2.13
400	7.31	34.28	26.83		.947	0.84
500	6.49	34.32	26.97		1.070	0.44
600	5.84	34.34	27.07		1.182	0.37

STATION 120.90 (Interpolated Values at Standard Depths)

CREST; 26°13' 118°28'; November 13, 1952; 0503 GCT; wire angle: 15°; sounding: 2000+ fms; depth of observation: 573 m; weather: cloudy; sea: moderate; wind: 20°, force 6.

0	20.84	33.85	23.68		.000	5.09
10	20.85	33.81	23.65		.042	5.08
20	20.86	33.91	23.72		.085	5.08
30	20.84	33.88	23.71		.127	5.09
50	20.79	33.75	23.62		.212	5.06
75	17.19	33.56	24.39		.310	5.73
100	15.50	33.46	24.70		.396	5.60
150	12.06	33.59	25.50		.541	4.28
200	9.94	33.97	26.18		.651	2.90
250	9.26	34.17	26.45		.739	2.05
300	8.90	34.27	26.58		.818	1.29
400	7.91	34.34	26.79		.961	0.54
500	6.76	34.38	26.98		1.086	0.35

STATION 123.37 (Interpolated Values at Standard Depths)

CREST: 27°24' 114°40'; November 14, 1952; 0439 GCT; wire angle: 5°; sounding: 38 fms; depth of observation: 50 m; weather: partly cloudy; sea: slight; wind: 330°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.73	33.71	23.87		.000	5.26
10	19.76	33.69	23.85		.041	5.31
20	19.56	33.35	23.64		.082	5.30
30	16.72	33.60	24.53		.121	5.81
50	14.82	33.64	24.98		.185	4.89

STATION 123.40 (Interpolated Values at Standard Depths)

CREST: 27°18' 114°47'; November 14, 1952; 0234 GCT; wire angle: 24°; sounding: 250 fms; depth of observation: 323 m; weather: clear; sea: slight; wind: 340°, force 4.

0	20.77	33.91	23.75		.000	5.08
10	20.79	33.88	23.72		.042	5.15
20	20.75	33.88	23.73		.084	5.12
30	20.20	33.81	23.82		.125	5.27
50	15.00	33.37	24.74		.198	5.69
75	12.65	33.41	25.25		.273	4.80
100	12.20	33.89	25.71		.336	2.92
150	12.02	34.46	26.19		.441	0.84
200	10.76	34.46	26.42		.530	0.82
250	10.38	34.56	26.56		.610	0.55
300	9.48	34.48	26.65		.684	0.58

STATION 123.50 (Interpolated Values at Standard Depths)

CREST: 26°58' 115°31'; November 13, 1952; 2145 GCT; wire angle: 8°; sounding: 2000+ fms; depth of observation: 630 m; weather: partly cloudy; sea: moderate; wind: 340°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	19.94	33.71	23.82		.000	5.41
10	19.93	33.72	23.83		.041	5.43
20	19.88	33.62	23.76		.082	5.44
30	19.80	33.62	23.78		.124	5.45
50	16.30	33.40	24.47		.200	5.83
75	11.85	33.53	25.50		.275	4.05
100	10.36	33.66	25.87		.333	3.56
150	9.68	34.08	26.31		.431	2.38
200	8.87	34.28	26.60		.512	1.53
250	9.13	34.29	26.56		.588	1.23
300	8.51	34.37	26.72		.661	0.67
400	7.67	34.39	26.86		.793	0.36
500	6.58	34.43	27.05		.911	0.30
600	5.84	34.38	27.10		1.018	0.27

STATION 127.34 (Interpolated Values at Standard Depths)

CREST: 26°56' 114°06'; November 14, 1952; 1605 GCT; wire angle: 2°; sounding: 40 fms; depth of observation: 50 m; weather: partly cloudy; sea: slight; wind: 300°, force 3.

0	19.96	33.76	23.85		.000	5.26
10	19.94	33.73	23.83		.041	5.28
20	19.84	33.78	23.89		.081	5.25
30	17.04	33.60	24.45		.119	5.05
50	13.91	33.62	25.16		.182	4.14

STATION 127.40 (Interpolated Values at Standard Depths)

CREST; 26°44' 114°29'; November 14, 1952; 1917 GCT; wire angle: 3°; sounding: 1750 fms; depth of observation: 580 m; weather: partly cloudy; sea: slight; wind: 350°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	20.90	33.74	23.58		.000	5.07
10	20.80	33.76	23.63		.043	5.07
20	20.77	33.73	23.61		.086	5.12
30	20.72	33.45	23.41		.130	5.90
50	15.34	33.43	24.71		.207	5.92
75	12.77	33.31	25.15		.284	5.05
100	11.28	33.86	25.86		.346	2.90
150	11.47	34.28	26.15		.448	1.50
200	10.83	34.46	26.41		.538	0.86
250	10.41	34.56	26.56		.618	0.55
300	9.73	34.60	26.71		.692	0.38
400	8.37	34.41	26.78		.830	0.25
500	7.18	34.41	26.95		.957	0.25
600	(6.02)	(34.41)	(27.11)		(1.069)	-

STATION 127.50 (Interpolated Values at Standard Depths)

CREST: 26°23' 115°08'; November 15, 1952; 0038 GCT; wire angle: 8°; sounding: 2000+ fms; depth of observation: 633 m; weather: cloudy; sea: moderate; wind: 330°, force 4.

0	20.68	33.74	23.64		.000	5.16
10	20.72	33.75	23.64		.043	5.21
20	20.70	33.67	23.58		.086	5.17
30	16.53	33.49	24.49		.125	5.94
50	14.34	33.51	24.99		.189	5.42
75	11.30	33.53	25.60		.257	4.08
100	10.85	33.78	25.87		.314	3.11
150	10.45	34.20	26.27		.413	1.79
200	10.48	34.16	26.23		.503	0.63
250	9.91	34.12	26.30		.594	0.45
300	9.21	34.44	26.67		.674	0.40
400	7.82	34.45	26.89		.809	0.30
500	6.87	34.50	27.06		.925	0.23
600	6.01	34.47	27.15		1.029	0.23

STATION 130.30 (Interpolated Values at Standard Depths)

CREST: 26°29' 113°29'; November 15, 1952; 2250 GCT; wire angle: 3°; sounding: 44 fms; depth of observation: 50 m; weather: cloudy; sea: slight; wind: 350°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	20.92	33.80	23.62		.000	5.17
10	20.60	33.76	23.68		.043	5.23
20	18.53	33.69	24.16		.083	5.36
30	16.81	33.56	24.47		.119	5.13
50	14.28	33.33	24.86		.185	5.64

STATION 130.35 (Interpolated Values at Standard Depths)

CREST: 26°19' 113°49'; November 15, 1952; 2014 GCT; wire angle: 1°; sounding: 180 fms; depth of observation: 100 m; weather: cloudy; sea: smooth; wind: 5°, force 1.

0	21.56	33.74	23.40		.000	5.06
10	21.28	33.72	23.47		.045	5.04
20	21.26	33.75	23.49		.089	5.08
30	21.21	33.70	23.47		.133	5.07
50	16.16	33.39	24.49		.212	5.85
75	14.01	33.47	25.02		.292	5.34
100	13.10	34.01	25.63		.359	2.91

STATION 130.40 (Interpolated Values at Standard Depths)

CREST: 26°14' 114°11'; November 15, 1952; 1712 GCT; wire angle: 6°; sounding: 1260 fms; depth of observation: 963 m; weather: cloudy; sea: slight; wind: 340°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	21.58	33.81	23.45		.000	5.00
10	21.59	33.68	23.35		.045	5.01
20	21.53	33.77	23.44		.090	5.03
30	20.17	33.77	23.80		.133	5.15
50	17.42	33.43	24.23		.211	5.78
75	14.10	33.34	24.90		.296	5.84
100	11.78	33.55	25.53		.366	4.31
150	10.52	33.86	25.99		.479	2.92
200	10.55	34.40	26.41		.572	1.44
250	9.25	34.27	26.53		.653	1.46
300	8.92	34.41	26.69		.728	0.90
400	8.28	34.44	26.81		.865	0.32
500	7.47	34.45	26.94		.991	0.18
600	6.04	34.48	27.16		1.101	0.22
700	5.39	34.49	27.25		1.197	0.23
800	4.89	34.49	27.31		1.286	0.26
1000	(4.07)	(34.49)	(27.40)		(1.451)	(0.56)

STATION 130.50 (Interpolated Values at Standard Depths)

CREST: 25°50' 114°46'; November 15, 1952; 1201 GCT; wire angle: 8°; sounding: 1820 fms; depth of observation: 585 m; weather: partly cloudy; sea: moderate; wind: 330°, force 4.

0	20.62	33.75	23.67		.000	5.09
10	20.62	33.75	23.67		.042	5.11
20	18.87	33.65	24.04		.083	5.12
30	15.20	33.46	24.76		.118	5.29
50	13.01	33.55	25.29		.177	4.53
75	11.40	33.52	25.57		.242	3.95
100	10.71	33.71	25.84		.300	3.25
150	10.01	34.24	26.38		.396	1.71
200	9.62	34.31	26.50		.478	0.99
250	9.28	34.40	26.62		.555	0.52
300	8.70	34.46	26.76		.625	0.43
400	7.73	34.48	26.93		.753	0.23
500	6.70	34.41	27.02		.869	0.22
600	(5.81)	(34.45)	(27.16)		(.975)	-

STATION 130.60 (Interpolated Values at Standard Depths)

CREST: 25°29' 115°24'; November 15, 1952; 0652 GCT; wire angle: 16°; sounding: 2000+ fms; depth of observation: 836 m; weather: partly cloudly; sea: moderate; wind: 330°, force 3.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	20.06	33.75	23.81		.000	5.34
10	20.11	33.81	23.85		.041	5.36
20	19.41	33.69	23.94		.081	5.46
30	18.16	33.50	24.11		.120	5.64
50	15.75	33.26	24.49		.193	5.98
75	12.64	33.19	25.08		.273	5.89
100	11.04	33.24	25.42		.341	5.09
150	10.14	33.92	26.11		.455	2.48
200	9.82	34.31	26.46		.544	1.41
250	9.32	34.46	26.66		.620	0.94
300	8.98	34.46	26.72		.691	0.59
400	7.99	34.48	26.89		.823	0.31
500	7.16	34.50	27.02		.941	0.20
600	6.06	34.48	27.16		1.047	0.20
700	5.36	34.48	27.24		1.143	0.23
800	4.78	34.47	27.30		1.233	0.34
1000	(3.75)	(34.47)	(27.41)		(1.395)	-

STATION 133.25 (Interpolated Values at Standard Depths)

CREST: 26°05' 112°48'; November 16, 1952; 0332 GCT; wire angle: 8°; sounding: 40 fms; depth of observation: 50 m; weather: partly cloudy; sea: slight; wind: 310°, force 5.

0	20.87	33.84	23.67		.000	5.08
10	20.87	33.83	23.66		.042	5.13
20	20.70	33.82	23.70		.085	5.17
30	17.76	33.71	24.36		.124	5.46
50	15.45	33.64	24.85		.191	5.28

STATION 133.30 (Interpolated Values at Standard Depths)

CREST: 25°54' 113°08'; November 16, 1952; 0605 GCT; wire angle: 8°; sounding: 103 fms; depth of observation: 119 m; weather: clear; sea: slight; wind: 300°, force 4.

Depth (m)	T (°C)	S (‰)	σ_t (mg/cm^3)	$10^5\delta$	ΔD (dyn.m.)	O_2 (ml/L)
0	21.37	33.93	23.60		.000	5.12
10	21.37	33.94	23.61		.043	5.10
20	21.38	33.98	23.64		.086	5.12
30	19.63	33.71	23.90		.127	5.36
50	15.90	33.58	24.70		.200	5.43
75	13.75	33.78	25.32		.275	3.98
100	13.06	34.07	25.68		.338	2.25

STATION 137.23 (Interpolated Values at Standard Depths)

CREST: 25°34' 112°19'; November 16, 1952; 1335 GCT; wire angle: 3°; sounding: 40 fms; depth of observation: 50 m; weather: cloudy; sea: moderate; wind: 330°, force 3.

0	22.02	34.01	23.48		.000	5.01
10	22.04	33.91	23.40		.045	4.98
20	22.04	33.95	23.43		.089	4.99
30	22.04	33.93	23.42		.134	5.00
50	17.53	33.89	24.56		.213	4.94

STATION 137.30 (Interpolated Values at Standard Depths)

CREST: 25°20' 112°46'; November 16, 1952; 1022 GCT; wire angle: 9°; sounding: 175 fms; depth of observation: 197 m; weather: partly cloudy; sea: slight; wind: 340°, force 4.

0	21.53	33.91	23.54		.000	5.06
10	21.56	33.84	23.48		.044	5.11
20	21.57	33.93	23.55		.088	5.07
30	21.59	33.91	23.53		.131	5.10
50	16.75	33.72	24.61		.209	5.74
75	14.24	33.71	25.16		.286	4.30
100	13.72	34.28	25.71		.351	2.42
150	12.40	34.60	26.22		.455	0.91
200	(11.49)	(34.76)	(26.52)		(.540)	(0.17)

DISTRIBUTION LIST

Dr. E. H. Ahlstrom
U. S. Fish & Wildlife Service
c/o Scripps Institution of Oceanography
La Jolla, California

British Joint Services
(Navy Staff)
1910 K Street N.W.
Washington, D. C.

Librarian (4)
Department of Fish & Game
California State Fisheries Laboratory
Terminal Island, California

Chief, Division of Fisheries
Commonwealth Scientific & Industrial
Research Organization
P. O. Box 21
Crunulla, NSW, AUSTRALIA

Herrn Professor Dr. A. Defant
Sternwartestrasse 38
Innsbruck
AUSTRIA

Mr. Seth Gordon, Director
California Department of Fish & Game
Marine Fisheries Branch
926 J Street
Sacramento 14, California

Mr. John Hawk
c/o Seafarers' International Union
of North America
450 Harrison Street
San Francisco 5, California

Mr. Milton C. James
Pacific Mar. Fish. Comm.
340 State Office Building
1400 S. W. Fifth Avenue
Portland 1, Oregon

Mr. Joseph Mardesich
Franco-Italian Packing Company
Fish Harbor Wharf
Terminal Island, California

Dr. J. L. McHugh
Virginia Fisheries Laboratory
Gloucester Point, Virginia

Dr. Rolf L. Bolin
Hopkins Marine Station
Pacific Grove, California

Mr. J. G. Burnette, Chairman
Marine Research Committee
P. O. Box 807
Los Altos, California

Mr. Ray Cannon
Research Education
Ocean Fish Protective Association
645 N. Serrano Street
Los Angeles 4, California

Dr. R. S. Croker
California Department of Fish & Game
926 J Street
Sacramento 14, California

Director of Research
Fish Commission of Oregon
Route 1, Box 31A
Clackamas, Oregon

Hancock Library of Biology & Oceanography
Allan Hancock Foundation
University of Southern California
Los Angeles 7, California

Dr. Robert W. Hiatt
University of Hawaii
Honolulu, T. H.

Dr. H. Kitamura
Oceanographic Section
Kobe Marine Observatory
Kobe, JAPAN

Mr. J. C. Marr
U. S. Fish & Wildlife Service
c/o Scripps Institution of Oceanography
La Jolla, California

Dr. H. J. McLellan
Atlantic Oceanographic Group
St. Andrews, New Brunswick
CANADA

Mr. Arthur H. Mendonca
c/o R. E. Booth Company, Inc.
280 Battery Street
San Francisco 11, California

Mr. John V. Morris
French Sardine Company
582 Tuna Street
Terminal Island, California

Dr. Yngve H. Olsen
Journal of Marine Research
Yale University
New Haven, Connecticut

Dr. E. L. Pickard
Institute of Oceanography
University of British Columbia
Vancouver, B. C.
CANADA

Dr. D. W. Pritchard
Chesapeake Bay Institute
The Johns Hopkins University
121 Maryland Hall
Baltimore 18, Maryland

Dr. Gordon A. Riley
Bingham Oceanographic Foundation
Yale University
New Haven, Connecticut

Mr. J. F. Theodore Saur
Code 2235
U. S. Navy Electronics Laboratory
San Diego 52, California

Dr. M. B. Schaefer
Inter-American Tropical Tuna Commission
c/o Scripps Institution of Oceanography
La Jolla, California

Mr. O. E. Sette, Chief
Ocean Research
U. S. Fish & Wildlife Service
450-B Jordan Hall
Stanford, California

Mr. W. E. Stewart
c/o California State Chamber of Commerce
350 Bush Street
San Francisco 4, California

Dr. R. C. Miller
California Academy of Sciences
Golden Gate Park
San Francisco 18, California

Dr. A. W. H. Needler, Director
Pacific Biological Station
Nanaimo, B. C.
CANADA

Librarian
Pacific Oceanic Fishery Investigations
P. O. Box 3830
Honolulu, T. H.

Mr. Don Powell
U. S. Fish & Wildlife Service
2725 Montlake Boulevard
Seattle 2, Washington

Dr. Roger Revelle
University of California
Scripps Institution of Oceanography
La Jolla, California

Mrs. Margaret K. Robinson
University of California
Scripps Institution of Oceanography
La Jolla, California

Mr. Don T. Saxby
California Packing Corporation
215 Freemont Street
San Francisco, California

Library
Scripps Institution of Oceanography
La Jolla, California

President Robert G. Sproul
University of California
Berkeley 4, California

Miss Margaret Storey, Librarian
Natural History Museum
Stanford, California