

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 5905
6-27 May 1959

SIO Reference 60-38
26 April 1960

Hebden

*Errata 28 Oct 63 -
p. 206*

UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

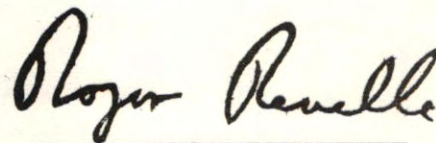
CCOFI CRUISE 5905

6-27 May 1959

Sponsored by
Marine Research Committee

SIO Reference 60-38
26 April 1960

Approved for distribution:



Roger Revelle, Director

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6. Horizontal distribution of salinity at 200 meters

INTRODUCTION

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

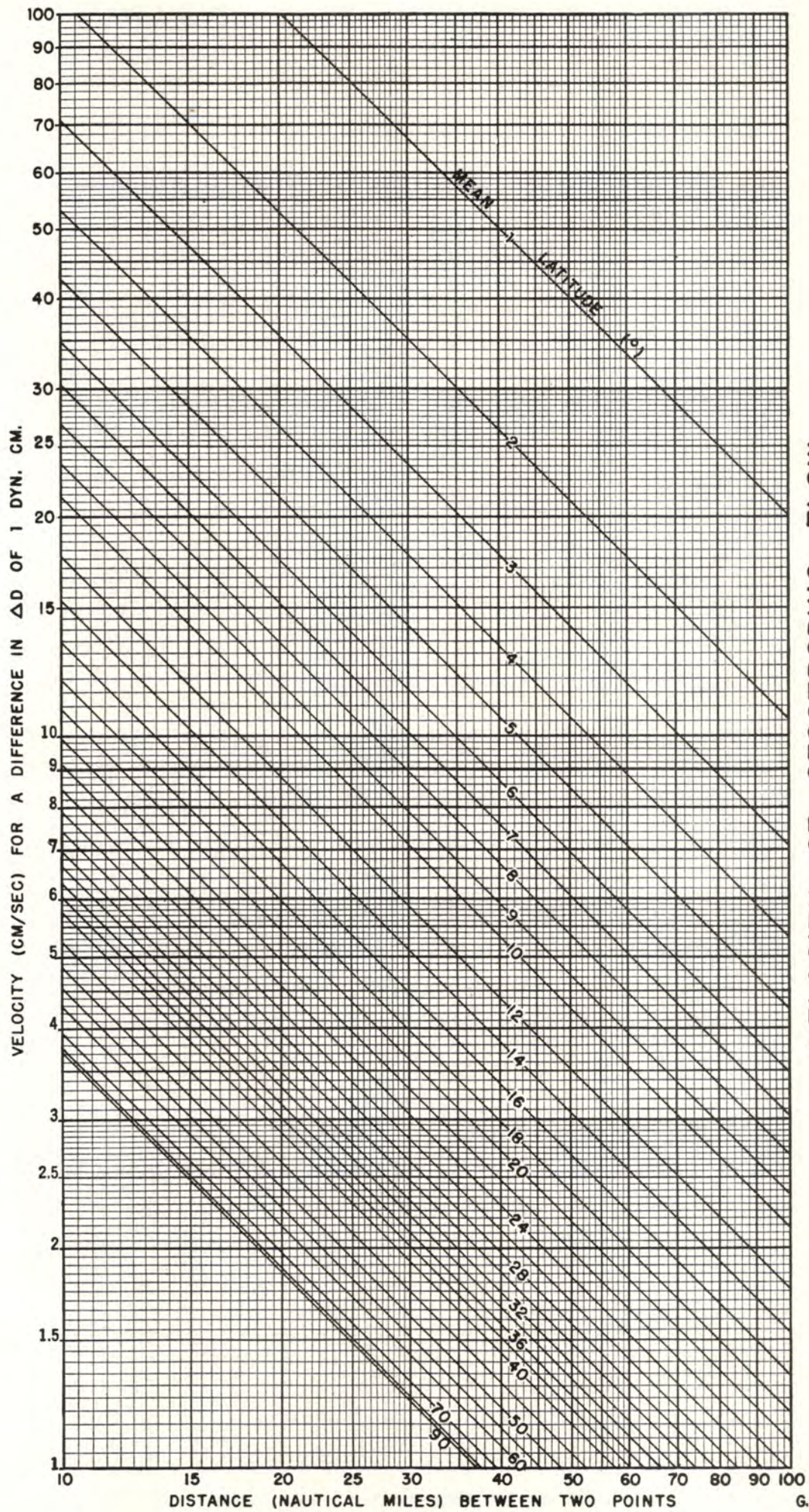
The data are tabulated at observed depths; the interpolated and computed values are tabulated at standard depths and are accompanied by charts of horizontal distribution. The presentation of data in this report does not constitute publication; however, the data contained in this report have been carefully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

STANDARD PROCEDURES

Processing of the data was carried out using the method described by Klein.^{1/} Certain approximations have been introduced for the determination of the integrated pressure terms which may result in errors whose maximum values are less than 0.5 dynamic centimeter at 0 over 200 decibars, 1.0 dynamic centimeter at 0 over 500 decibars, and 2.0 dynamic centimeters at 0 over 1000 decibars. The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of ΔD . The interpolated values at 125 meters are not tabulated.

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. 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.

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



VELOCITY OF GEOSTROPHIC FLOW

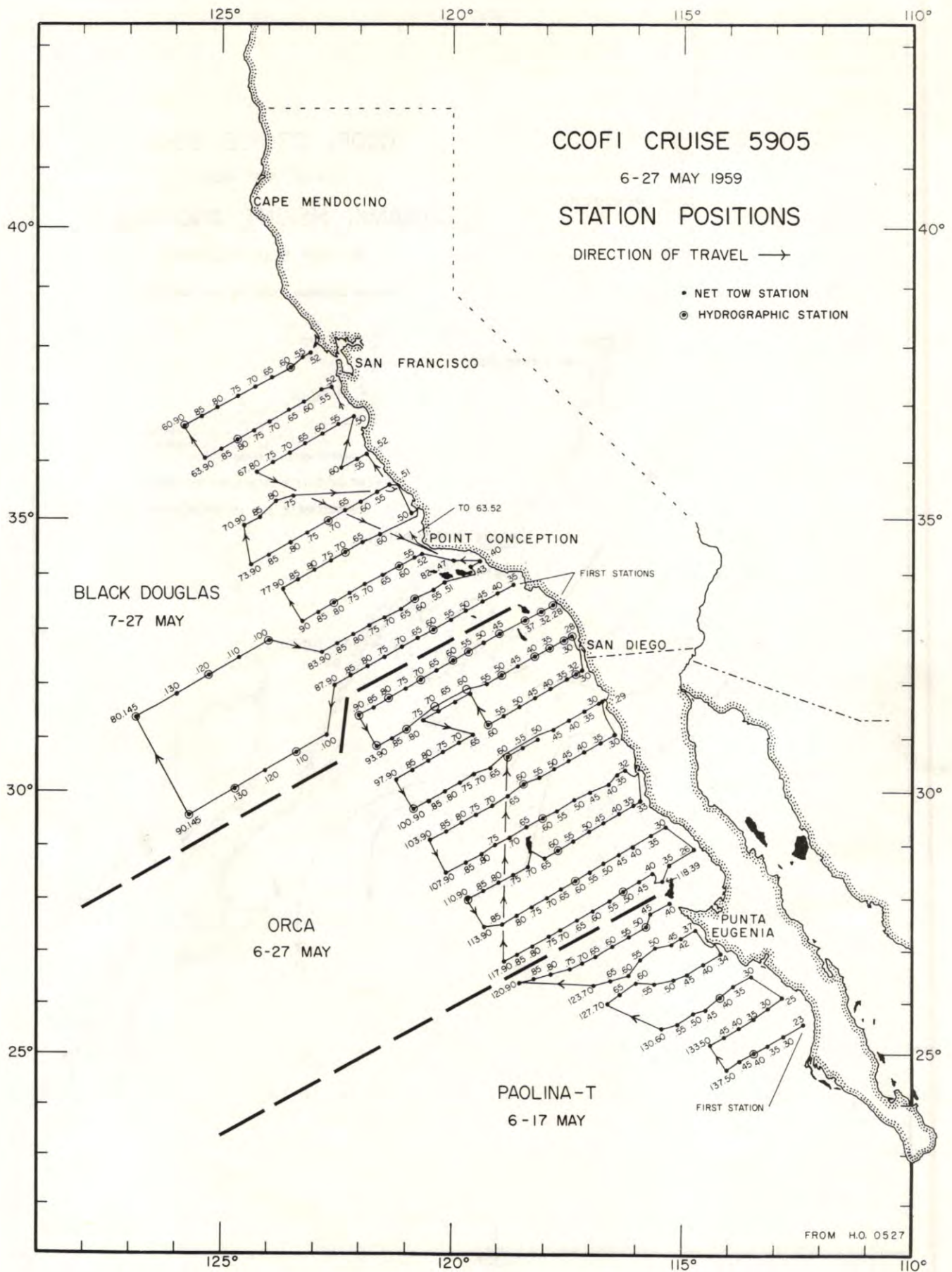


FIGURE 1

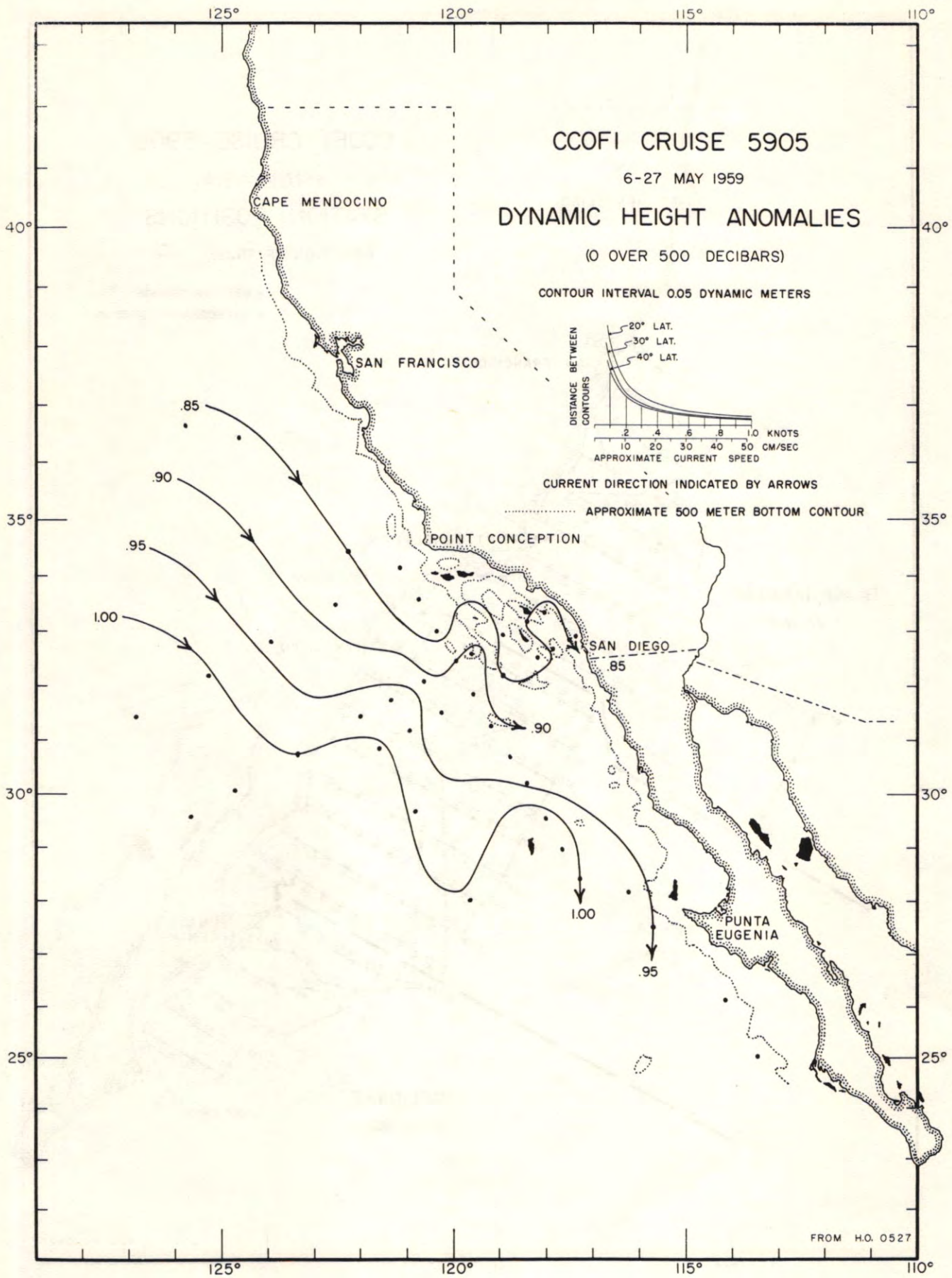


FIGURE 2

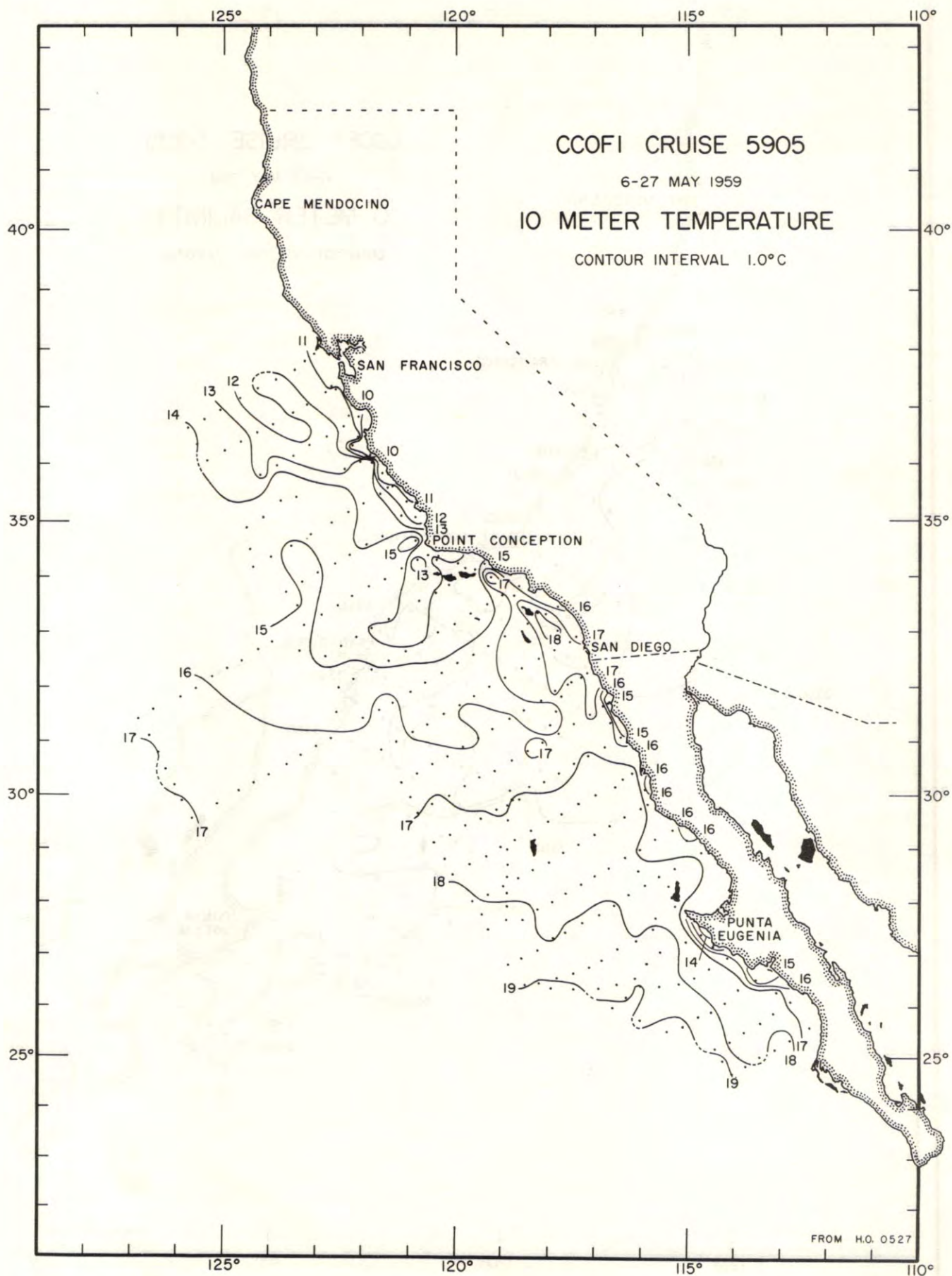


FIGURE 3

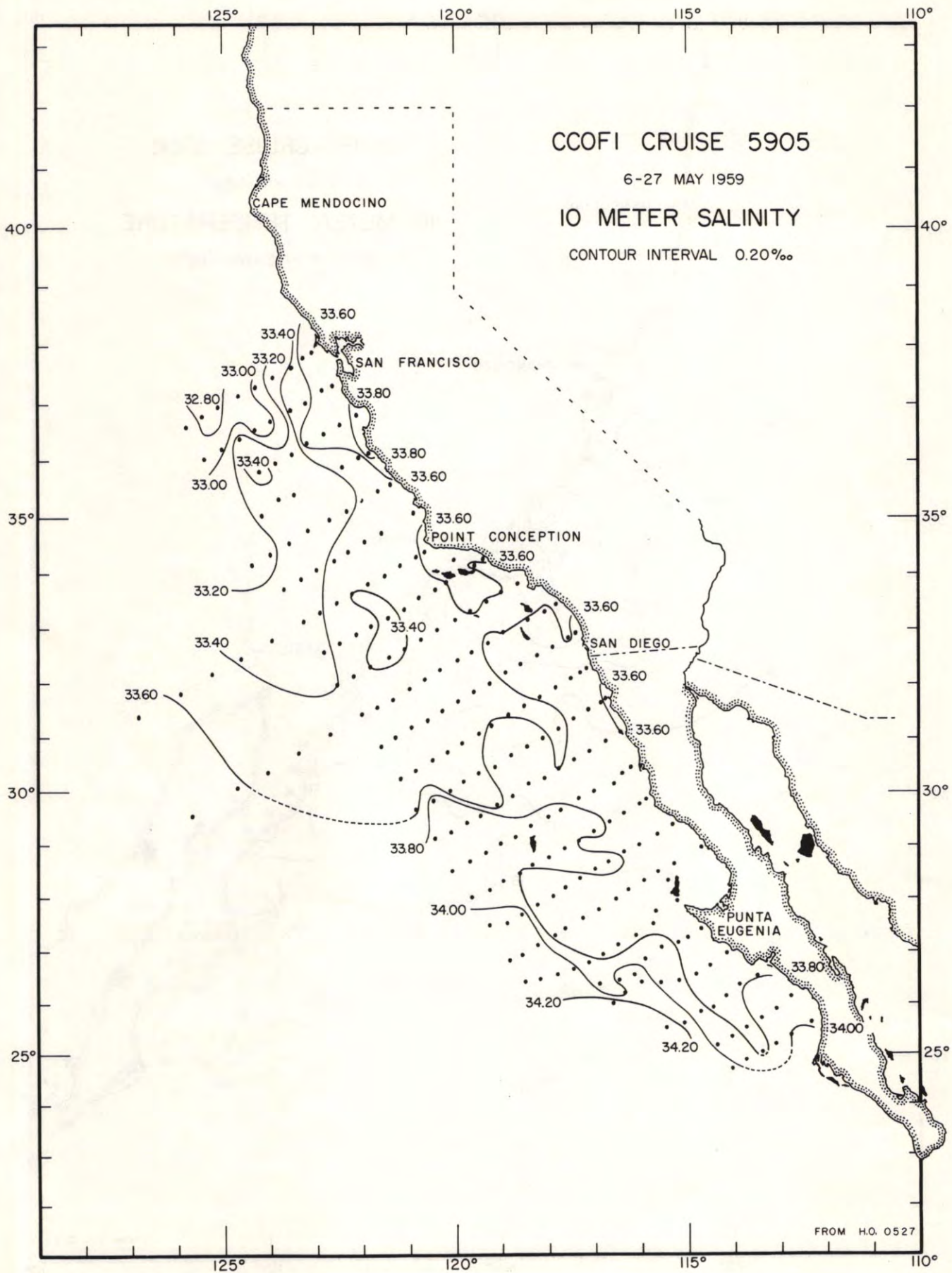


FIGURE 4

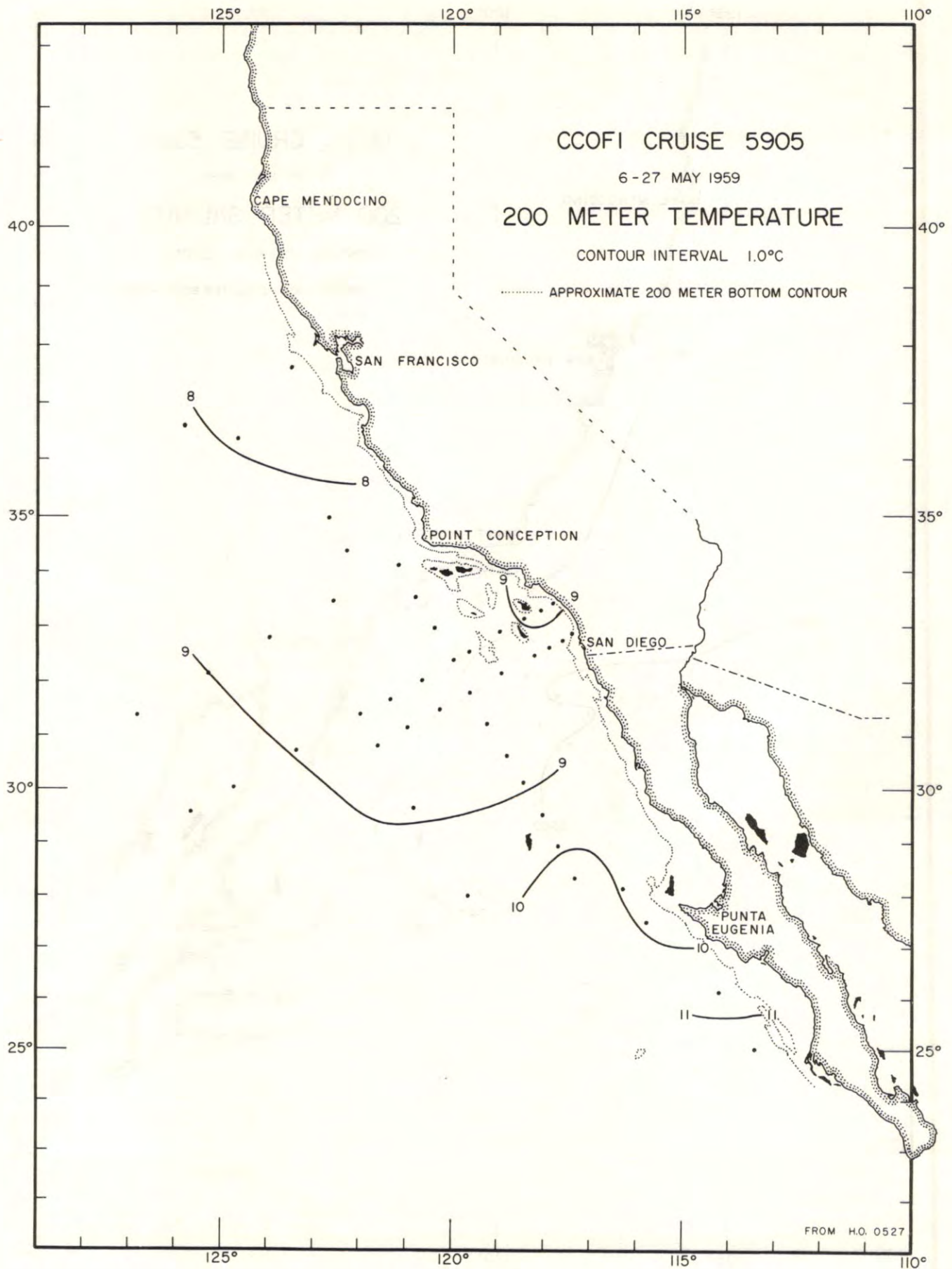


FIGURE 5

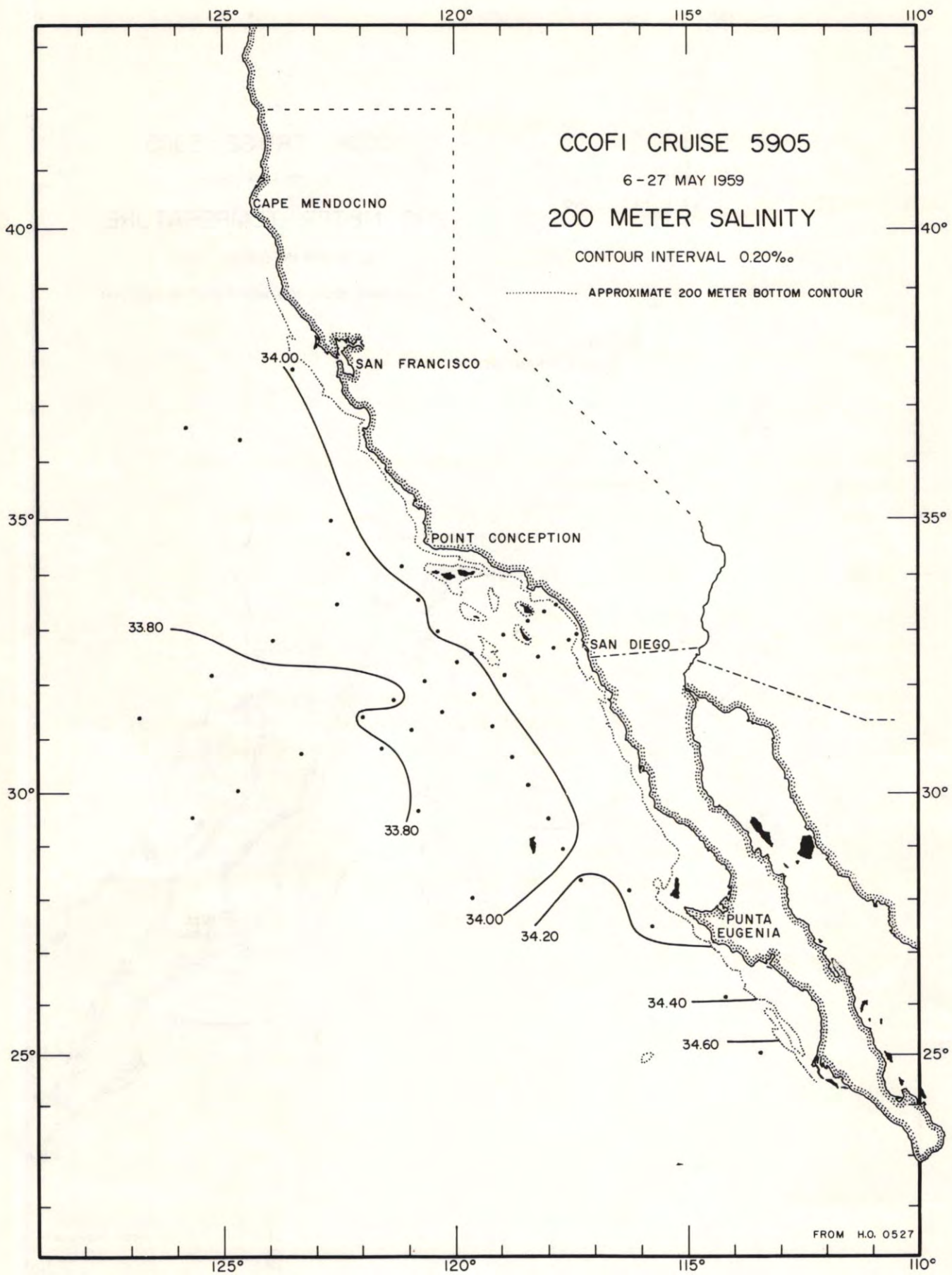


FIGURE 6

PERSONNEL

SHIPS' CAPTAINS

Forster, Charles W., R/V Black Douglas
Phinney, Alan W., R/V Orca
Miller, Frank, R/V Paolina-T

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

R/V Black Douglas

Reid, Charles F., Fishery Research Biologist, Bureau of Commercial Fisheries
Lawson, Jan B., Marine Technician
Metoyer, Jack D., Fishery Aid, Bureau of Commercial Fisheries

R/V Orca

Brennen, Robert E., Marine Technician
*Bingman, Allen R., Marine Technician
*Hester, Arthur W., Marine Technician
Joyal, Norman F., Marine Technician (transferred from Paolina-T)
Leong, Roderick J. H., Fishery Research Biologist, Bureau of Commercial Fisheries

R/V Paolina-T

Joyal, Norman F., Marine Technician
Blackburn, Gene T., Fishery Aid, Bureau of Commercial Fisheries

*Participated in part of cruise.

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OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δT_3	Z	T	S	O ₂	σ_t	δT_3	ΔD	
m	°C	‰	ml/L	10^{-5} cm/g	m	°C	‰	ml/L	g/L	10^{-5} cm/g	dyn. m	

60.60

BLACK DOUGLAS; May 25, 1959; 0828 GCT; 37°38.5'N, 123°29'W; sounding, 1580 fm; wind, 270°, force 3; weather, overcast; sea, moderate; wire angle, 29°.

1	11.36	33.40	5.94	250	0	(11.36)	(33.40)	(5.94)	(25.49)	(250)	(0.00)
9	11.34	33.40	6.04	250	10	11.34	33.40	6.04	25.49	250	0.02
24	10.30	33.42	5.16	231	20	10.72	33.41	5.56	25.61	239	0.05
31	9.90	33.46	4.93	223	30	9.92	33.45	4.95	25.78	223	0.07
41	9.85	33.56	5.31	214	50	9.75	33.61	5.26	25.93	208	0.12
52	9.72	33.62	5.19	207	75	9.46	33.70	4.42	26.04	198	0.17
68	9.46	33.68	4.34	199	100	9.35	33.81	4.21	26.15	187	0.22
82	9.46	33.71	4.68	196	150	8.28	33.97	2.13	26.44	160	0.30
94	9.48	33.77	4.72	192	200	7.61	34.04	1.63	26.60	144	0.38
107	8.97	33.82	3.33	180	250	7.15	34.09	1.37	26.70	135	0.45
125	8.55	33.89	2.31	169	300	6.89	34.10	1.09	26.75	131	0.52
142	8.37	33.95	2.21	162							
158	8.20	33.98	2.02	157							
181	7.78	34.02	1.81	148							
208	7.54	34.05	1.55	143							
255	7.11	34.09	1.36	134							
310	6.83	34.10	1.05	130							
369	6.50	34.14	0.82	120							

60.90

BLACK DOUGLAS; May 24, 1959; 1742 GCT; 36°37'N, 125°47'W; sounding, 2340 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 00°.

1	14.06	32.95	6.15	334	0	(14.06)	(32.95)	(6.15)	(24.61)	(334)	(0.00)
10	14.06	32.99	6.14	331	10	14.06	32.99	6.14	24.64	331	0.03
28	13.82	33.04	6.13	322	20	13.98	33.02	6.14	24.68	327	0.07
37	11.96	32.98	6.17	292	30	12.70	33.00	6.17	24.93	304	0.10
46	11.50	33.04	5.91	279	50	11.35	33.04	5.86	25.21	277	0.16
59	11.02	33.04	5.78	271	75	9.87	33.23	4.92	25.62	238	0.22
72	9.89	33.19	4.99	242	100	9.39	33.50	4.41	25.91	210	0.28
90	9.64	33.42	4.56	221	150	8.60	33.82	3.06	26.28	175	0.37
112	9.12	33.60	4.20	199	200	8.10	33.95	3.25	26.46	158	0.46
131	8.88	33.75	3.54	184	250	7.30	33.98	2.63	26.60	145	0.54
158	8.59	33.86	2.98	172	300	6.62	34.00	2.12	26.70	135	0.61
185	8.26	33.91	2.93	164	400	5.34	34.02	1.44	26.89	118	0.74
212	7.85	33.95	3.36	155	500	4.87	34.11	0.75	27.01	106	0.86
247	7.34	33.98	2.67	146							
301	6.60	34.00	2.11	134							
368	5.56	34.00	1.74	122							
436	5.16	34.05	1.08	114							
509	4.82	34.12	0.69	105							

63.80

BLACK DOUGLAS; May 24, 1959; 0835 GCT; 36°23'N, 124°38'W; sounding, 2200 fm; wind, 250°, force 2; weather, cloudy; sea, moderate; wire angle, 06°.

0	14.18	33.21	6.24	317	0	14.18	33.21	6.24	24.79	317	0.00
9	13.53	33.21	6.32	304	10	13.52	33.21	6.33	24.93	304	0.03
27	13.32	33.22	6.35	299	20	13.40	33.22	6.35	24.96	301	0.06
54	12.70	33.19	6.25	290	30	13.25	33.21	6.35	24.98	298	0.09
63	11.40	33.30	5.91	258	50	12.82	33.19	6.28	25.05	292	0.15
76	11.19	33.42	5.17	246	75	11.20	33.42	5.18	25.53	246	0.22
90	10.18	33.42	5.04	229	100	9.83	33.46	4.74	25.80	220	0.28
103	9.74	33.48	4.64	217	150	8.45	33.76	3.93	26.26	177	0.38
126	9.16	33.64	4.04	197	200	7.86	33.95	4.02	26.49	155	0.47
143	8.54	33.71a)	3.98	182	250	7.18	33.98	2.90	26.62	144	0.54
170	8.28	33.91a)	3.82	164	300	6.98	34.10	1.82	26.74	132	0.61
197	7.93	33.95	4.04	156	400	6.23	34.16	0.89	26.88	118	0.74
224	7.48	33.96	3.39	149	500	5.54	34.21	0.47	27.02	105	0.86
268	7.03	34.00	2.61	140							
318	6.93	34.14	1.41	128							
394	6.28	34.16	0.91	119							
470	5.74	34.20	0.54	109							
546	5.23	34.23	0.38	101							

184

a) Salinity samples at 143 and 170 meters appear to have been reversed; they are assumed to be in the order listed.

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_{-5}^3	Z	T	S	O ₂	σ_t	δT_{-5}^3	ΔD
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m

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BLACK DOUGLAS; May 18, 1959; 0410 GCT; 34°58'N, 122°40'W; sounding, 2200 fm; wind, 340°, force 5; weather, partly cloudy; sea, very rough; wire angle, 14°.

73.70

2	14.35	33.23	5.73	318	0	(14.35)	(33.23)	(5.73)	(24.77)	(318)	(0.00)
10	14.34	33.25	5.63	317	10	14.34	33.25	5.63	24.79	317	0.03
33	14.20	33.29	5.52	311	20	14.32	33.27	5.56	24.82	314	0.06
59	13.82	33.27	5.48	305	30	14.23	33.29	5.54	24.84	312	0.09
67	13.58a)	33.30	5.43	298	50	13.98	33.28	5.48	24.88	308	0.16
85	12.86	33.31	5.29	284	75	13.14	33.30	5.35	25.08	290	0.23
98	12.18	33.33	5.16	270	100	12.14	33.34	5.12	25.31	268	0.30
110	11.21	33.35	4.86	252	150	9.16	33.64	3.90	26.05	197	0.42
137	9.54	33.53	4.19	211	200	8.52	33.92	3.00	26.37	167	0.51
154	9.07	33.68	3.84	193							
181	8.72	33.84	3.72	175							
211	8.40	33.95	2.73	163							
236	8.06	34.02	2.53	153							
419b)	6.47	34.25	0.76	114							
499b)	5.86	34.22	0.48	109							
567b)	5.41	34.23	0.35	103							

BLACK DOUGLAS; May 14, 1959; 1623 GCT; 34°24'N, 122°16'W; sounding, 2100 fm; wind, 320°, force 4; weather, drizzle; sea, moderate; wire angle, 09°.

77.70

2	14.52	33.49	5.69	303	0	(14.52)	(33.49)	(5.69)	(24.93)	(303)	(0.00)
11	14.52	33.49	5.69	303	10	14.52	33.49	5.69	24.93	303	0.03
33	13.81	33.49	5.67	289	20	14.40	33.49	5.69	24.96	300	0.06
42	13.30	33.49	5.47	279	30	14.00	33.49	5.69	25.04	293	0.09
56	12.28	33.48	5.16	261	50	12.70	33.48	5.29	25.30	268	0.15
69	11.86	33.49	4.86	252	75	11.42	33.50	4.60	25.55	244	0.21
91	10.10	33.51	3.86	221	100	9.99	33.60	3.58	25.88	213	0.27
109	9.89	33.68	3.32	205	150	8.96	33.82	2.88	26.22	180	0.37
127	9.53	33.75	3.04	194	200	8.40	33.96	2.28	26.42	162	0.45
154	8.88	33.83	2.83	179	250	7.95	34.10	1.58	26.60	144	0.53
181	8.67	33.91	2.47	170	300	7.14	34.10	1.45	26.71	134	0.60
217	8.18	34.01	2.07	155	400	6.50	34.19	0.70	26.87	119	0.74
244	8.02	34.10	1.59	146	500	5.89	34.28	0.43	27.02	105	0.85
288	7.24	34.09	1.56	136	600	(5.24)	(34.32)		(27.13)	(94)	(0.96)
346	6.88	34.14	1.02	128							
435	6.28	34.22	0.55	114							
515	5.80	34.29	-	103							
583	5.35	34.31	0.34	96							

BLACK DOUGLAS; May 13, 1959; 1101 GCT; 34°09'N, 121°09'W; sounding, 1200 fm; wind, 150°, force 2; weather, overcast; sea, slight; wire angle, 02°.

80.60

1	14.63	33.66	5.64	293	0	(14.63)	(33.66)	(5.64)	(25.04)	(293)	(0.00)
10	14.61	33.55	5.56	301	10	14.61	33.55	5.56	24.96	301	0.03
28	14.24	33.53	5.40	294	20	14.49	33.54	5.47	24.98	298	0.06
37	12.96	33.55	4.77	268	30	14.13	33.53	5.36	25.04	292	0.09
51	11.39	33.57	3.96	238	50	11.39	33.57	3.97	25.61	239	0.14
64	10.55	33.67	3.46	216	75	9.92	33.71	3.22	25.98	203	0.20
86	9.41	33.74	3.03	193	100	9.26	33.78	2.89	26.14	188	0.25
104	9.20	33.79	2.83	186	150	9.05	33.97	2.34	26.31	171	0.34
122	9.00	33.82	2.77	181	200	8.65	34.14	1.44	26.52	152	0.42
139	8.94	33.91	2.52	173	250	8.16	34.22	1.12	26.66	139	0.49
167	9.04	34.05	1.80	165	300	7.64	34.28	0.94	26.78	128	0.56
198	8.67	34.14	1.45	152	400	6.66	34.21	0.64	26.87	119	0.69
225	8.39	34.20	1.28	144	500	5.89	34.28	0.40	27.02	105	0.81
270	7.98	34.24	0.99	135							
319	7.43	34.29	0.89	124							
395	6.70	34.21	0.68	120							
472	6.04	34.26	0.45	108							
549	5.70	34.31	0.35	100							

a) Mean value of 13.52 and 13.64°C.

b) Pretrip; depths too uncertain for interpolation.

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OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ_{T-5}^3	Z	T	S	O ₂	σ_t	δ_{T-5}^3	ΔD
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m

80.80

BLACK DOUGLAS; May 13, 1959; 2055 GCT; 33°29'N, 122°32'W; sounding, 2400 fm; wind, 280°, force 3;
weather, clear; sea, moderate; wire angle, 00°.

1	14.66	33.48	5.73	307	0	(14.66)	(33.48)	(5.73)	(24.89)	(307)	(0.00)
10	14.19	33.46	5.73	298	10	14.19	33.46	5.73	24.98	298	0.03
28	13.49	33.49	5.79	282	20	13.64	33.49	5.76	25.12	286	0.06
55	13.35	33.48	5.66	281	30	13.47	33.49	5.77	25.15	282	0.09
64	13.31	33.64u	5.56	-	50	13.37	33.48	5.68	25.16	281	0.14
77	12.88	33.49	5.38	271	75	12.96	33.49	5.42	25.25	273	0.21
91	11.69	33.49	4.49	250	100	11.05	33.56	4.13	25.67	233	0.28
104	10.72	33.58	3.99	226	150	8.90	33.77	3.34	26.19	183	0.38
126	9.46	33.60	3.63	205	200	8.44	33.95	2.48	26.41	163	0.47
143	8.99	33.75	3.35	186	250	7.76	34.05	1.90	26.58	146	0.55
171	8.70	33.84	3.31	175	300	7.17	34.09	1.45	26.70	135	0.62
198	8.46	33.94	2.52	164	400	6.45	34.17	0.72	26.87	119	0.75
224	8.10	34.04	2.08	152	500	5.82	34.25	0.44	27.00	106	0.87
270	7.50	34.05	1.78	143							
319	6.99	34.11	1.27	131							
395	6.48	34.17	0.72	120							
473	5.97	34.23	0.48	109							
550	5.54	34.29	0.35	100							

80.100

BLACK DOUGLAS; May 11, 1959; 1431 GCT; 32°49'N, 123°54'W; sounding, 2200 fm; wind, 320°, force 4;
weather, partly cloudy; sea, very rough; wire angle, 06°.

1	15.18	33.36	5.69	326	0	(15.18)	(33.36)	(5.69)	(24.69)	(326)	(0.00)
10	15.16	33.37	5.53	325	10	15.16	33.37	5.53	24.70	325	0.03
28	15.18	33.33	5.56	328	20	15.17	33.35	5.54	24.69	326	0.06
55	15.16	33.35	5.54	326	30	15.18	33.33	5.56	24.67	328	0.10
64	14.92	33.34	5.56	322	50	15.18	33.34	5.55	24.68	327	0.16
78	13.90	33.28	5.74	306	75	14.15	33.28	5.71	24.85	311	0.24
91	12.78	33.32	5.51	282	100	11.80	33.38	5.11	25.38	260	0.32
104	11.40	33.40	4.90	251	150	9.15	33.69	4.08	26.09	193	0.43
127	9.96	33.52	3.95	218	200	8.55	33.92	3.60	26.36	167	0.52
144	9.28	33.65	4.12	198	250	7.76	33.99	2.44	26.54	150	0.60
171	8.84	33.80	3.94	180	300	6.96	34.00	2.15	26.66	139	0.68
198	8.58	33.91	3.62	168	400	6.12	34.10	1.08	26.85	121	0.81
225	8.22	34.34r	2.51	-	500	5.40	34.16	0.60	26.99	108	0.93
269	7.39	34.28r	2.42	-							
318	6.75	34.02	1.94	135							
395	6.15	34.09	1.11	121							
471	5.51	34.14	0.68	110							
548	5.22	34.20	0.49	103							

80.120

BLACK DOUGLAS; May 11, 1959; 0431 GCT; 32°10.5'N, 125°14'W; sounding, 2400 fm; wind, 360°, force 5;
weather, cloudy; sea, very rough; wire angle, 22°.

3	15.88	33.53	5.51	329	0	(15.88)	(33.53)	(5.51)	(24.66)	(329)	(0.00)
11	15.88	33.54	5.40	328	10	15.88	33.54	5.41	24.67	328	0.03
32	15.90	33.51	5.38	330	20	15.89	33.53	5.40	24.67	328	0.06
55	15.87	33.53	5.39	329	30	15.90	33.51	5.38	24.65	330	0.10
64	15.68	33.53	5.45	324	50	15.89	33.52	5.39	24.66	330	0.16
80	15.18	33.52	5.54	314	75	15.31	33.52	5.53	24.79	317	0.24
93	14.97	33.57	5.48	306	100	14.87	33.62	5.48	24.95	301	0.32
105	14.76	33.66	5.48	295	150	11.54	33.60	4.79	25.60	239	0.46
130	12.66	33.55	5.15	262	200	9.00	33.71	3.87	26.12	190	0.57
147	11.62	33.56	4.87	243	250	8.32	33.95	3.58	26.43	161	0.66
200	9.00	33.71	3.87	190	300	7.40	33.96	3.01	26.57	148	0.74
225	8.68	33.91	3.74	170	400	6.04	34.00	2.03	26.78	128	0.88
267	8.04	33.96	3.47	157	500	5.40	34.12	0.83	26.96	110	1.01
324	6.96	33.97	2.68	141							
410	5.93	34.00	1.91	126							
489	5.42	34.11	0.93	112							
556	5.31	34.18	0.49	106							

OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δT_3	Z	T	S	O ₂	σ_t	δT_3	ΔD	
m	°C	‰	ml/L	10^{-5} cm/g	m	°C	‰	ml/L	g/L	10^{-5} cm/g	dyn. m	

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BLACK DOUGLAS; May 10, 1959; 1559 GCT; 31°25.5'N, 126°50'W; sounding, 2000+ fm; wind, 340°, force 5; weather, rain; sea, very rough; wire angle, 12°.

80.145

3	16.58	33.69	5.29	332	0	(16.58)	(33.69)	(5.29)	(24.63)	(332)	(0.00)
11	16.56	33.71	5.38	330	10	16.56	33.71	5.37	24.65	330	0.03
34	16.57	33.69	5.29	332	20	16.56	33.70	5.34	24.64	331	0.07
60	16.58	33.70	5.35	331	30	16.56	33.69	5.30	24.64	331	0.10
69	17.00	33.93	5.29	324	50	16.57	33.69	5.29	24.63	332	0.16
87	17.08	34.04	5.44	318	75	17.03	33.98	5.39	24.74	321	0.25
100	17.10	34.10	5.38	314	100	17.10	34.10	5.38	24.82	314	0.33
113	15.76	33.94	5.31	296	150	13.53	33.78	5.03	25.37	262	0.47
140	14.02	33.79	5.11	271	200	9.80	33.69	4.03	25.98	203	0.59
157	13.17	33.78	4.95	255	250	8.63	33.89	3.39	26.33	170	0.69
183	10.68	33.63	4.20	222	300	7.90	33.99		26.52	152	0.77
214	9.34	33.73	3.91	193	400	6.49	34.07		26.78	128	0.92
241	8.78	33.86	3.49	175	500	5.69	34.15	0.68	26.95	112	1.04
285	8.10	33.96	3.06	157							
432	6.08	34.11	1.03	120							
511	5.62	34.16	0.63	110							
578	5.31	34.22	0.47	102							

BLACK DOUGLAS; May 12, 1959; 1228 GCT; 33°34'N, 120°45'W; sounding, 800 fm; wind, 100°, force 1; weather, overcast; sea, moderate; wire angle, 04°.

83.60

1	14.08	33.48	5.52	295	0	(14.08)	(33.48)	(5.52)	(25.02)	(295)	(0.00)
9	13.43	33.50	5.29	281	10	13.42	33.50	5.29	25.17	280	0.03
27	13.09	33.60	5.36	267	20	13.19	33.58	5.35	25.27	271	0.06
54	12.50	33.60	5.08	256	30	13.04	33.60	5.33	25.32	266	0.08
63	12.26	33.64	4.95	249	50	12.60	33.60	5.12	25.41	258	0.14
77	11.98	33.66	4.80	242	75	12.02	33.66	4.84	25.56	243	0.20
90	11.14	33.60	4.13	232	100	9.93	33.64	3.45	25.92	209	0.26
105	9.81	33.68	3.29	204	150	9.09	33.84	2.80	26.22	181	0.35
125	9.48	33.78	2.80	192	200	8.37	33.98	2.24	26.44	160	0.44
143	9.20	33.84	2.82	183	250	7.72	34.12	1.72	26.65	140	0.52
171	8.76	33.84	2.63	176	300	7.20	34.14	1.32	26.73	132	0.59
197	8.40	33.96	2.30	162	400	6.42	34.23	0.68	26.92	114	0.71
224	8.07	34.08	1.97	148	500	5.94	34.27	0.43	27.01	106	0.83
269	7.44	34.13	1.56	136							
318	7.06	34.14	1.24	130							
395	6.44	34.23	0.71	115							
472	6.07	34.25	0.48	109							
549	5.72	34.31	0.34	100							

BLACK DOUGLAS; May 8, 1959; 0204, 0232 GCT; 33°00'N, 120°21.5'W; sounding, 400 fm; wind, 320°, force 4; weather, clear; sea, rough; wire angle, 26°, 28°.

87.60

2	14.60	33.63	5.74	295	0	(14.60)	(33.63)	(5.74)	(25.02)	(295)	(0.00)
10	14.53	33.58	5.67	296	10	14.53	33.58	5.67	25.00	296	0.03
26	14.13	33.62	5.52	286	20	14.30	33.60	5.58	25.07	290	0.06
50	14.07	33.65	5.39	282	30	14.12	33.63	5.48	25.13	284	0.09
58	13.54	33.78r	5.12	-	50	14.07	33.65	5.39	25.16	282	0.14
70	12.49	33.57	4.68	258	75	11.93	33.56	4.39	25.51	248	0.21
82	11.08	33.57	4.01	233	100	9.87	33.67	3.56	25.96	206	0.27
94	10.12	33.64	3.70	212	150	8.73	33.89	2.66	26.32	171	0.36
114	9.42	33.75	3.21	193	200	8.19	34.02	2.10	26.50	154	0.45
130	9.16	33.79	3.04	186	250	7.58	34.06	1.79	26.62	142	0.52
154	8.64	33.91	2.60	169	300	7.20	34.15	1.38	26.74	131	0.59
177	8.43	34.15r	2.34	-	400	6.51	34.26	0.61	26.92	114	0.72
201	8.18	34.02	2.09	154	500	6.07	34.31	0.42	27.02	105	0.83
240	7.66	34.05	1.86	145							
285	7.32	34.13	1.51	134							
354	6.76	34.20	0.85	121							
432	6.35	34.29	0.47	109							
508	6.02	34.31	0.39	104							

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OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δT_{-5}^3	Z	T	S	O ₂	σ_t	δT_{-5}^3	ΔD	
m	°C	‰	ml/L	10 ⁻⁵ cm ³ /g	m	°C	‰	ml/L	g/L	10 ⁻⁵ cm ³ /g	dyn. m	

90.28 ORCA; May 7, 1959; 0525 GCT; 33°28.5'N, 117°47'W; sounding, 250 fm; wind, 120°, force 1; weather, clear; sea, slight; wire angle, 00°.

1	18.65	33.60	6.17	386	0	(18.65)	(33.60)	(6.17)	(24.06)	(386)	(0.00)
11	15.82	33.53	5.74	327	10	16.20	33.53	5.85	24.60	335	0.04
31	12.14	33.56	3.43	252	20	15.45	33.53	5.57	24.76	320	0.07
51	11.12	33.66	3.09	227	30	12.30	33.56	3.53	25.43	256	0.10
76	10.42	33.69	3.17	213	50	11.15	33.66	3.09	25.73	227	0.15
101	9.94	33.80	2.64	197	75	10.43	33.69	3.17	25.88	213	0.20
126	9.62	33.89	2.45	186	100	9.95	33.80	2.65	26.05	197	0.25
166	9.32	34.05	1.92	169	150	9.42	33.99	2.17	26.28	175	0.35
206	9.06	34.19	1.51	155	200	9.10	34.18	1.55	26.48	156	0.43
256	8.57	34.22	1.37	145	250	8.62	34.22	1.40	26.59	146	0.51
306	8.20	34.24	0.94	138	300	8.23	34.24	1.00	26.66	139	0.58

90.32 ORCA; May 7, 1959; 0834 GCT; 33°20.5'N, 118°03'W; sounding, 410 fm; wind, 190°, force 1; weather, clear; sea, slight; wire angle, 02°.

0	17.42	33.61	5.46	357	0	17.42	33.61	5.46	24.37	357	0.00
10	17.02	33.64	5.46	346	10	17.02	33.64	5.46	24.48	346	0.04
30	15.34	33.56	5.80	315	20	16.75	33.63	5.50	24.54	340	0.07
41	13.57	33.54	5.56	280	30	15.34	33.56	5.80	24.81	315	0.10
50	13.18	33.55	4.68	272	50	13.18	33.55	4.68	25.26	272	0.16
65	12.32	33.58	4.28	254	75	11.92	33.64	4.14	25.58	242	0.22
81	11.58	33.68	4.07	234	100	10.71	33.69	3.87	25.82	218	0.28
101	10.70	33.69	3.87	218	150	9.69	34.04	2.50	26.28	176	0.38
126	10.08	33.89	3.54	193	200	9.19	34.14	1.82	26.44	160	0.47
146	9.74	34.02	2.55	178	250	8.27	34.07	1.80	26.53	152	0.55
176	9.54	34.14	2.23	166	300	8.02	34.18	1.06	26.65	140	0.62
206	9.09	34.14	1.77	159	400	7.09	34.25	0.74	26.84	122	0.76
236	8.42	34.05	1.93	155	500	6.29	34.27	0.53	26.96	110	0.88
276	8.12	34.14	1.31	144							
336	7.88	34.24	0.83	134							
411	6.96	34.25	0.72	120							
486	6.35	34.27	0.53	111							
566	6.04	34.27	0.41	107							

90.37 ORCA; May 7, 1959; 1218 GCT; 33°11'N, 118°24'W; sounding, 640 fm; wind, 190°, force 1; weather, clear; sea, slight; wire angle, 03°.

1	16.76	33.60	5.35	343	0	(16.76)	(33.60)	(5.35)	(24.52)	(343)	(0.00)
11	16.26	33.60	5.66	332	10	16.28	33.60	5.65	24.62	332	0.03
31	13.14	33.55	4.85	272	20	16.10	33.60	5.65	24.67	328	0.07
41	12.65	33.53	4.35	264	30	13.26	33.56	4.90	25.24	273	0.10
51	12.10	33.55	4.08	252	50	12.12	33.55	4.08	25.46	252	0.15
66	11.45	33.58	3.79	239	75	11.11	33.60	3.68	25.69	231	0.21
81	10.90	33.62	3.62	226	100	10.08	33.68	3.30	25.92	209	0.27
101	10.06	33.68	3.29	208	150	9.37	33.91	2.36	26.23	180	0.36
126	9.60	33.86	2.58	188	200	9.07	34.12	1.71	26.44	160	0.45
146	9.42	33.89	2.41a)	182	250	8.51	34.16	1.29	26.56	148	0.53
176	9.04	34.04	1.89	166	300	7.71	34.17	1.06	26.69	136	0.60
207	9.08	34.14	1.67	159	400	6.82	34.23	0.67	26.86	120	0.73
237	8.73	34.16	1.38	152	500	6.24	34.28	0.42	26.98	109	0.85
277	8.01	34.16	1.12	141							
337	7.28	34.20	0.95	128							
412	6.76	34.24	0.61	118							
487	6.31	34.27	0.43	110							
568	5.86	34.33	0.32	101							

a) Alternate value, 2.58 ml/L, not used in interpolation.

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_3	Z	T	S	O ₂	σ_t	δT_3	ΔD
m	°C	‰	ml/L	10^{-5} cm/g	m	°C	‰	ml/L	g/L	10^{-5} cm/g	dyn. m

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ORCA; May 7, 1959; 1726 GCT; 32°56.5'N, 118°57'W; sounding, 975 fm; wind, 270°, force 1; weather, clear; sea, moderate; wire angle, 13°.

90.45

0	16.22	33.58	5.57	332	0	16.22	33.58	5.57	24.63	332	0.00
10	16.06	33.60	5.60	327	10	16.06	33.60	5.60	24.68	327	0.03
29	15.94	33.61	5.67	324	20	16.01	33.60	5.62	24.69	326	0.06
39	14.16	33.58	5.36	290	30	15.93	33.61	5.67	24.72	323	0.10
53	11.66	33.56	4.14	244	50	12.25	33.56	4.46	25.44	254	0.16
68	10.66	33.64	3.66	221	75	10.45	33.68	3.44	25.86	215	0.21
92	10.06	33.75	2.98	203	100	9.86	33.77	2.82	26.04	198	0.27
112	9.57	33.80	2.62	191	150	9.01	33.93	2.25	26.30	173	0.36
130	9.28	33.86	2.46	183	200	8.45	34.08	1.78	26.50	154	0.44
149	9.02	33.93	2.26	174	250	8.19	34.14	1.25	26.60	145	0.52
178	8.76	34.05	2.07	160	300	7.60	34.17	1.01	26.70	135	0.59
211	8.33	34.09	1.60	151	400	6.73	34.24	0.58	26.88	118	0.72
240	8.26	34.14	1.29	146	500	6.12	34.28	0.32	26.99	107	0.84
288	7.72	34.16	1.09	137	600	(5.67)	(34.34)	(0.36)	(27.10)	(97)	(0.95)
340	7.23	34.22	0.80	126							
424	6.56	34.25	0.50	115							
508	6.08	34.29	0.30	106							
593	5.70	34.34	0.35	98							

ORCA; May 8, 1959; 0028, 0115 GCT; 32°34.5'N, 119°37'W; sounding, 510 fm; wind, 310°, force 2; weather, clear; sea, rough; wire angle, 22°, 31°.

90.55

1	16.36	33.53	5.65	339	0	(16.36)	(33.53)	(5.65)	(24.56)	(339)	(0.00)
10	15.52	33.53	5.70	321	10	15.52	33.53	5.70	24.75	321	0.03
29	15.44	33.53	5.75	319	20	15.47	33.53	5.72	24.76	320	0.06
57	15.01	33.53	5.65	310	30	15.43	33.53	5.75	24.77	319	0.10
66	14.52	33.50	5.55	302	50	15.25	33.53	5.71	24.81	315	0.16
78	12.50	33.42	4.93	269	75	13.50	33.46	5.30	25.12	285	0.24
93	11.04	33.37	4.23	247	100	10.78	33.47	4.00	25.64	236	0.30
106	10.64	33.55	3.88	227	150	9.41	33.79	3.24	26.12	190	0.41
129	9.92	33.71	3.49	203	200	8.65	34.00	2.33	26.42	163	0.50
147	9.44	33.78	3.29	191	250	8.07	34.11	1.72	26.58	146	0.58
174	9.26	33.86	2.93	182	300	7.61	34.16	1.37	26.70	136	0.65
201	8.62	34.00	2.32	162	400	6.85	34.21	0.76	26.84	122	0.78
					500	6.21	34.28	0.42	26.98	108	0.91
224	8.23	34.06	1.89	152							
269	7.92	34.14	1.59	141							
319	7.39	34.18	1.17	131							
399	6.86	34.21	0.77	122							
482	6.32	34.27	0.42	110							
566	5.82	34.31	0.35	102							

ORCA; May 8, 1959; 0520 GCT; 32°24.5'N, 119°57.5'W; sounding, 500 fm; wind, 310°, force 2; weather, partly cloudy; sea, rough; wire angle, 04°.

90.60

1	15.84	33.55	5.67	326	0	(15.84)	(33.55)	(5.67)	(24.69)	(326)	(0.00)
11	15.74	33.55	5.61	324	10	15.75	33.55	5.62	24.72	324	0.03
30	15.56	33.57	5.59	319	20	15.60	33.57	5.58	24.76	320	0.06
60	13.73	33.33	5.67	299	30	15.56	33.57	5.59	24.77	319	0.10
71	13.06	33.30	5.37	289	50	15.30	33.54	5.60	24.81	315	0.16
85	11.50	33.39	4.74	254	75	12.33	33.33	5.08	25.25	273	0.23
101	10.85	33.49	4.36	235	100	10.88	33.48	4.38	25.64	236	0.30
115	10.10	33.56	4.07	218	150	9.24	33.73	3.48	26.10	192	0.41
140	9.44	33.68	3.67	198	200	8.39	33.92	2.56	26.40	164	0.50
160	9.03	33.77	3.28	185	250	7.81	34.02	1.91	26.56	149	0.58
190	8.56	33.89	2.75	169	300	7.50	34.13	1.29	26.69	137	0.65
220	8.06	33.99	2.15	155	400	6.56	34.18	0.77	26.86	120	0.78
250	7.81	34.02	1.91	149	500	6.08	34.23	0.43	26.96	110	0.90
299	7.51	34.13	1.30	137	600	5.48	34.32	0.27	27.10	97	1.01
355	6.86	34.16	0.93	126							
440	6.36	34.20	0.61	116							
526	5.96	34.25	0.37	108							
613	5.37	34.33	0.26	94							

S10

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5905

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_{-5}^3	Z	T	S	O ₂	σ_t	δT_{-5}^3	ΔD
m	°C	‰	ml/L	10 ⁻⁵ cm ³ /g	m	°C	‰	ml/L	g/L	10 ⁻⁵ cm ³ /g	dyn. m

90.70

ORCA; May 8, 1959; 1141 GCT; 32°04'N, 120°38.5'W; sounding, 2000+ fm; wind, 300°, force 2; weather, overcast; sea, moderate; wire angle, 10°.

2	15.17	33.46	5.62	318	0	(15.17)	(33.46)	(5.62)	(24.78)	(318)	(0.00)
12	15.17	33.48	6.13u	317	10	15.17	33.48		24.79	317	0.03
32	14.98	33.48	5.62	314	20	15.09	33.48		24.81	315	0.06
61	14.96	33.46	5.48	314	30	14.99	33.48	(5.62)	24.82	314	0.09
71	14.77	33.59	5.57	300	50	14.97	33.47	5.55	24.82	314	0.16
86	13.28	33.42	5.16	284	75	14.60	33.57	5.56	24.98	299	0.23
102	11.71	33.38	4.69	258	100	11.90	33.38	4.72	25.38	261	0.30
117	10.14	33.46	4.34	226	150	9.34	33.80	3.00	26.15	188	0.42
141	9.58	33.73	3.17	196	200	8.59	33.98	2.35	26.41	163	0.51
160	9.09	33.86	2.89	180	250	7.84	34.05	1.72	26.58	147	0.59
190	8.76	33.95	2.50	167	300	7.32	34.10	1.28	26.70	136	0.66
220	8.07	34.05	1.84	151	400	6.52	34.19	0.75	26.88	119	0.79
249	7.84	34.05	1.72a)	147	500	5.94	34.26	0.39	27.00	106	0.91
299	7.33	34.10	1.29	136	600	5.46	34.32	0.35	27.10	97	1.02
353	6.91	34.16	1.04	126							
438	6.23	34.22	0.54	114							
524	5.82	34.28	0.38	104							
610	5.40	34.32	0.35	96							

90.80

ORCA; May 8, 1959; 1816 GCT; 31°43'N, 121°19'W; sounding, 2000 fm; wind, 260°, force 3; weather, overcast; sea, moderate; wire angle, 10°.

1	16.18	33.55	5.48	333	0	(16.18)	(33.55)	(5.48)	(24.62)	(333)	(0.00)
11	16.16	33.53	5.50	334	10	16.16	33.53	5.50	24.60	334	0.03
31	16.16	33.53	5.57	334	20	16.16	33.53	5.52	24.60	334	0.07
60	16.02	33.53	5.54	332	30	16.16	33.53	5.56	24.60	334	0.10
70	15.18	33.40	5.59	324	50	16.05	33.53	5.55	24.63	332	0.17
86	14.38	33.30	5.65	314	75	15.10	33.39	5.60	24.74	322	0.25
100	13.50	33.32	5.95	296	100	13.50	33.32	5.95	25.02	296	0.33
116	12.24	33.37	5.18	268	150	10.12	33.56	4.40	25.83	218	0.46
140	10.62	33.52	4.58	229	200	8.91	33.77	3.80	26.19	184	0.56
160	9.70	33.60	4.27	208	250	8.19	33.92	2.79	26.42	162	0.65
190	9.08	33.73	4.03	189	300	7.41	34.04	2.00	26.63	142	0.73
219	8.62	33.84	3.32	174	400	6.37	34.16	0.98	26.86	120	0.86
249	8.20	33.92	2.81	162	500	5.78	34.22	0.65	26.99	108	0.98
298	7.44	34.04	2.03	143	600	5.22	34.30	0.50	27.12	96	1.09
354	6.74	34.12	1.31	127							
438	6.12	34.18	0.76	115							
523	5.64	34.24	0.61	105							
608	5.19	34.31	0.48	94							

90.90

ORCA; May 9, 1959; 0018 GCT; 31°25'N, 121°59'W; sounding, 2000+ fm; wind, 310°, force 4; weather, overcast; sea, rough; wire angle, 17°.

1	15.80	33.49	5.71	330	0	(15.80)	(33.49)	(5.71)	(24.65)	(330)	(0.00)
11	15.78	33.51	5.67	328	10	15.78	33.51	5.67	24.68	328	0.03
30	15.68	33.51	5.67	326	20	15.72	33.51	5.67	24.69	326	0.06
58	15.66	33.48	5.67	328	30	15.68	33.51	5.67	24.70	326	0.10
68	15.55	33.48	5.74	325	50	15.67	33.50	5.67	24.69	326	0.16
82	14.96	33.40	5.73	319	75	15.25	33.44	5.74	24.74	322	0.24
96	14.49	33.37	5.80	311	100	14.28	33.36	5.80	24.89	307	0.32
111	12.89	33.35	5.62	282	150	9.98	33.56	4.62	25.86	216	0.46
139	10.72	33.45	4.76	236	200	8.53	33.85	3.43	26.32	172	0.56
154	9.68	33.60	4.56	208	250	8.09	33.99	2.52	26.50	155	0.64
182	8.75	33.72	3.88	184	300	7.40	34.03	1.92	26.62	142	0.72
211	8.44	33.91	3.20	166	400	6.39	34.16	1.10	26.87	119	0.85
240	8.22	33.98	2.67	158	500	5.78	34.20	0.70	26.98	109	0.97
287	7.53	34.02	2.00	145	600	(5.26)	(34.30)	(0.34)	(27.12)	(96)	(1.08)
342	7.00	34.07	1.66	134							
423	6.20	34.18	0.96	116							
508	5.73	34.20	0.67	109							
592	5.30	34.29	0.36	97							

190

a) Alternate value, 1.94 ml/L, not used in interpolation.

OBSERVED					INTERPOLATED				COMPUTED		
Z m	T °C	S ‰	O ₂ ml/L	δT_3 10 ⁻⁵ cm/g	Z m	T °C	S ‰	O ₂ ml/L	σ_t g/L	δT_3 10 ⁻⁵ cm/g	ΔD dyn. m

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5905

BLACK DOUGLAS; May 9, 1959; 0430 GCT; 30°44.5'N, 123°20'W; sounding, 2000+ fm; wind, 340°, force 4; weather, overcast; sea, moderate; wire angle, 11°.

90.110

1	16.31	33.52	5.35	338	0	(16.31)	(33.52)	(5.35)	(24.56)	(338)	(0.00)
10	16.29	33.53	5.27	337	10	16.29	33.53	5.27	24.58	337	0.03
27	16.30	33.54	5.23	337	20	16.30	33.53	5.27	24.58	337	0.07
54	16.16	33.60	5.30	329	30	16.30	33.55	5.23	24.59	336	0.10
63	15.94	33.59	5.28	325	50	16.23	33.59	5.27	24.64	332	0.17
76	15.60	33.48	5.31	326	75	15.61	33.48	5.30	24.69	326	0.25
89	15.62	33.55	5.35	321	100	16.20	33.77	5.34	24.78	318	0.33
103	15.69	33.70	5.32	312	150	10.92	33.58	4.65	25.71	229	0.47
125	13.17	33.49	5.21	276	200	8.98	33.72	3.80	26.14	188	0.58
142	11.52	33.58	4.79	240	250	8.09	33.95	2.56	26.46	158	0.67
168	9.54	33.57	4.31	208	300	7.42	34.02	1.94	26.62	144	0.75
195	9.05	33.69	3.91	192	400	6.44	34.15	0.87	26.85	121	0.88
221	8.57	33.88	3.05	170	500	5.66	34.26	0.50	27.04	103	1.00
264	7.89	33.98	2.38	153							
314	7.25	34.04	1.76	140							
389	6.52	34.14	0.93	123							
464	5.88	34.23	0.60	109							
541	5.54	34.31	0.40	98							

BLACK DOUGLAS; May 9, 1959; 1710 GCT; 30°04.5'N, 124°40'W; sounding, 2400 fm; wind, 360°, force 4; weather, cloudy; sea, rough; wire angle, 14°.

90.130

1	16.51	33.57	5.42	339	0	(16.51)	(33.57)	(5.42)	(24.56)	(339)	(0.00)
9	16.51	33.63	5.40	335	10	16.51	33.63	5.40	24.60	335	0.03
27	16.52	33.62	5.42	336	20	16.52	33.62	5.41	24.60	335	0.07
53	15.96	33.57	5.45	327	30	16.52	33.62	5.43	24.59	336	0.10
61	15.96	33.60	5.41	325	50	16.00	33.56	5.45	24.66	328	0.17
74	16.96	33.96	5.38	321	75	16.96	33.96	5.38	24.75	321	0.25
87	16.97	33.99	5.39	319	100	16.70	33.99	5.40	24.83	313	0.33
101	16.40	33.95	5.40	309	150	11.57	33.54	4.71	25.56	244	0.47
122	13.68	33.56	5.29	282	200	9.55	33.74	4.22	26.07	195	0.58
139	12.24	33.55	4.87	255	250	8.48	33.91	3.19	26.38	166	0.67
166	10.73	33.55	4.53	228	300	7.59	33.99	2.54	26.56	148	0.76
192	9.76	33.71	4.36	201	400	6.59	34.11	1.03	26.80	126	0.90
219	9.12	33.80	3.86	184	500	5.74	34.20	0.53	26.98	109	1.02
262	8.22	33.95	2.97	160							
310	7.43	34.00	2.44	145							
385	6.74	34.10	1.16	129							
460	5.96	34.16	0.66	114							
538	5.63	34.25	0.41	104							

BLACK DOUGLAS; May 10, 1959; 0030 GCT; 29°34.5'N, 125°40'W; sounding, 2400 fm; wind, 360°, force 5; weather, cloudy; sea, rough; wire angle, 15°.

90.145

2	17.14	33.76	5.34	339	0	(17.14)	(33.76)	(5.34)	(24.55)	(339)	(0.00)
11	17.12	33.74	5.37	340	10	17.12	33.74	5.36	24.54	340	0.03
33	17.10	33.78	5.33	337	20	17.12	33.74	5.37	24.54	340	0.07
60	16.76	34.00	5.32	314	30	17.11	33.76	5.35	24.56	338	0.10
69	16.94	34.14	5.26	307	50	17.04	33.92	5.33	24.70	326	0.17
87	16.34	34.13	5.38	294	75	17.00	34.21	5.29	24.93	304	0.25
100	15.12	33.95	5.29	282	100	15.12	33.95	5.29	25.16	282	0.32
113	13.77	33.75	5.11	269	150	11.89	33.72	4.73	25.64	236	0.45
139	11.97	33.63	4.73	244	200	9.89	33.76	4.43	26.02	200	0.56
157	11.82	33.77	4.73	231	250	8.68	33.85	3.72	26.29	174	0.66
183	10.63	33.76	4.65	212	300	7.75	33.97	3.33	26.52	152	0.74
213	9.40	33.77	4.23	191	400	6.67	34.10	1.64	26.78	128	0.89
240	8.88	33.82	3.85	179	500	5.68	34.16	0.76	26.96	111	1.01
283	8.08	33.95	3.35	158							
340	7.06	34.00	3.30	140							
427	6.49	34.13	1.05	123							
507	5.62	34.17	0.74	110							
574	5.32	34.23	0.50	102							

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5905

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT	Z	T	S	O ₂	σ_t	δT	ΔD
m	°C	‰	ml/L	$\frac{-5}{10} \frac{3}{\text{cm/g}}$	m	°C	‰	ml/L	g/L	$\frac{-5}{10} \frac{3}{\text{cm/g}}$	dyn. m

93.28 BLACK DOUGLAS; May 7, 1959; 0427 GCT; ^{a)} 32°55'N, 117°22'W; sounding, 324 fm; wind, 270°, force 2; weather, partly cloudy; sea, moderate; wire angle, 03°.

204	9.13	34.26	1.02	150
213	9.12	34.29	0.92	148
221	8.88	34.31	0.91	143
230	8.78	34.30	0.89	142
239	8.72	34.26	0.81	144
248	8.63	34.30	0.80	140
257	8.60	34.29	0.76	140
266	8.62	34.29	0.74	140
275	8.54	34.30	0.77	138
284	8.36	34.32	0.80	134
292b)	8.45	34.32	0.68	136

93.28 ORCA; May 11, 1959; 0147 GCT; 32°54.5'N, 117°22'W; sounding, 324 fm; wind, 200°, force 1; weather, partly cloudy; sea, slight; wire angle, 00°.

0	18.07	33.63	5.76	370	0	18.07	33.63	5.76	24.23	370	0.00
10	16.70	33.61	6.14	341	10	16.70	33.61	6.14	24.54	341	0.04
30	12.33	33.58	4.24	254	20	15.00	33.59	5.51	24.90	306	0.07
40	11.58	33.64	3.61	237	30	12.33	33.58	4.24	25.44	254	0.10
50	11.06	33.68	3.14	225	50	11.06	33.68	3.61	25.76	225	0.14
60	10.70	33.73	3.17	215	75	10.26	33.76	3.01	25.97	205	0.20
71	10.34	33.78	3.01	206	100	9.76	33.83	2.82	26.10	192	0.25
86	10.08	33.76	2.94	201	150	9.48	34.04	2.00	26.32	172	0.34
101	9.74	33.84	2.77	191	200	8.94	34.14	1.62	26.48	156	0.42
116	9.66	33.87	2.22	188	250	8.78	34.22	1.22	26.57	148	0.50
141	9.52	34.03	2.03	174	300	8.44	34.27	0.96	26.66	140	0.58
171	9.36	34.06	1.93	169	400	7.29	34.25	0.72	26.81	125	0.71
206	8.90	34.16	1.57	154	500	6.45	34.30	0.47	26.97	110	0.83
257	8.74	34.23	1.13	146							
306	8.38	34.27	0.93	138							
412	7.17	34.25	0.69	123							
512	6.35	34.31	0.42	108							

93.30 ORCA; May 10, 1959; 2341 GCT; 32°50'N, 117°31.5'W; sounding, 450 fm; wind, 310°, force 1; weather, partly cloudy; sea, slight; wire angle, 06°.

1	18.27	33.62	5.54	376	0	(18.27)	(33.62)	(5.54)	(24.17)	(376)	(0.00)
11	17.40	33.58	5.73	358	10	17.47	33.58	5.72	24.34	360	0.04
31	15.02	33.58	5.93	307	20	16.20	33.58	5.88	24.64	332	0.07
41	13.27	33.52	5.00	276	30	15.15	33.58	5.93	24.87	309	0.10
51	11.93	33.58	3.90	247	50	12.10	33.57	4.04	25.48	251	0.16
67	11.08	33.71	3.21	223	75	10.70	33.76	3.10	25.88	213	0.22
81	10.40	33.77	3.04	207	100	10.00	33.78	2.96	26.02	200	0.27
101	9.94	33.78	2.96	198	150	9.59	34.14	1.68	26.38	166	0.36
126	9.53	33.95	2.39	180	200	8.74	34.14	1.63	26.51	154	0.44
146	9.62	34.14	1.68	167	250	8.44	34.23	1.20	26.62	142	0.52
175	9.06	34.14	1.70	158	300	8.19	34.26	0.96	26.69	136	0.59
205	8.69	34.14	1.60	152	400	7.39	34.28	0.78	26.83	123	0.72
235	8.49	34.22	1.33	144	500	6.53	34.31	0.44	26.96	110	0.85
275	8.40	34.25	1.05	140							
335	7.84	34.27	0.88	131							
411	7.30	34.29	0.74	122							
484	6.64	34.31	0.48	112							
567	6.08	34.31	0.35	105							

a) Special cast.

b) The last seven bottles of this cast were omitted because of pretripping which may have started at this depth.

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_{-5}^3	Z	T	S	O ₂	σ_t	δT_{-5}^3	ΔD
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m

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5905

ORCA; May 10, 1959; 2055 GCT; 32°40'N, 117°52'W; sounding, 350 fm; wind, 320°, force 1; weather, partly cloudy; sea, slight; wire angle, 05°.

93.35

1	17.94	33.60	5.36	370	0	(17.94)	(33.60)	(5.36)	(24.24)	(370)	(0.00)
11	17.68	33.61	5.78	363	10	17.72	33.61	5.75	24.30	364	0.04
31	14.86	33.55	5.80	306	20	16.90	33.59	5.80	24.48	346	0.07
41	13.22	33.52	4.84	276	30	15.25	33.56	5.80	24.83	313	0.10
55	11.62	33.58	3.72	242	50	12.05	33.56	4.00	25.48	251	0.16
70	10.94	33.66	3.49a)	224	75	10.78	33.68	3.39	25.81	220	0.22
95	10.26	33.75	3.01	206	100	10.09	33.76	2.92	25.99	203	0.27
115	9.86	33.85	2.65	192	150	9.73	34.07	1.88	26.29	174	0.37
135	9.74	33.98	2.27	180	200	8.75	34.08	1.87	26.46	158	0.45
155	9.72	34.09	1.80	172	250	8.16	34.14	1.59	26.60	145	0.53
186	8.94	34.06	1.95	163	300	8.32	34.29	0.93	26.70	136	0.60
220	8.49	34.11	1.71	152	400	6.96	34.22	0.75	26.83	123	0.74
250	8.16	34.14	1.59	145	500	6.22	34.22	0.74	26.94	113	0.86
300	8.32	34.29	0.93	136	600	5.75	34.31	0.53	27.06	101	0.97
355	7.46	34.23	0.85	129							
437	6.64	34.22	0.69b)	118							
526	6.07	34.23	0.74	111							
611	5.71	34.33	0.47	99							

ORCA; May 10, 1959; 1735, 1752 GCT; 32°30'N, 118°12.5'W; sounding, 950 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 13°, 22°.

93.40

0	16.58	33.63	5.22	336	0	16.58	33.63	5.22	24.58	336	0.00
10	16.57	33.62	5.47	337	10	16.57	33.62	5.47	24.57	337	0.03
29	13.28	33.53	4.98	276	20	16.54	33.62	5.47	24.58	336	0.07
39	12.67	33.54	4.86	264	30	13.15	33.53	4.95	25.25	273	0.10
54	11.68	33.58	4.57	243	50	12.08	33.56	4.72	25.48	251	0.15
68	10.82	33.65	3.36	223	75	10.74	33.66	3.30	25.80	221	0.21
93	10.03	33.73	3.03	204	100	10.00	33.74	3.01	25.99	202	0.26
112	9.78	33.86	2.56	190	150	9.08	34.06	2.03	26.39	165	0.36
131	9.32	33.98	2.20	174	200	8.73	34.16	1.64	26.52	152	0.44
149	9.10	34.05	2.04	166	250	8.43	34.23	1.14	26.63	142	0.51
179	8.82	34.13	1.73	156	300	7.80	34.23	1.04	26.73	133	0.58
					400	6.98	34.27	0.62	26.87	119	0.71
211	8.69	34.18	1.57	150	500	6.22	34.29	0.41	26.99	108	0.83
237	8.58	34.23	1.19	144	600	(5.70)	(34.33)		(27.09)	(98)	(0.94)
285	7.92	34.22	1.11	135							
338	7.57	34.27	0.81	127							
420	6.80	34.27	0.57	117							
503	6.18	34.29	0.40	107							
586	5.72	34.33	0.33	99							

a) Alternate value, 3.74 ml/L, not used in interpolation.

b) Mean value of 0.61 and 0.77 ml/L.

S10
CCOF1
5905

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_{-5}^3	Z	T	S	O ₂	σ_t	δT_{-5}^3	ΔD
m	°C	‰	ml/L	10 ⁻⁵ cm ³ /g	m	°C	‰	ml/L	g/L	10 ⁻⁵ cm ³ /g	dyn. m

93.50

ORCA; May 10, 1959; 1101 GCT; 32°09.5'N, 118°54'W; sounding, 700 fm; wind, 250°, force 6; weather, cloudy; sea, very rough; wire angle, 20°.

1	16.44	33.65	5.57	332	0	(16.44)	(33.65)	(5.57)	(24.63)	(332)	(0.00)
10	16.46	33.64	5.72	333	10	16.46	33.64	5.72	24.62	333	0.03
34	16.18	-	5.54	-	20	16.46	33.64	5.72	24.62	333	0.07
44	14.42	33.57	5.45	295	30	16.46	33.64	5.72	24.62	333	0.10
58	12.68	33.58	4.65	261	50	13.70	33.58	5.17	25.17	280	0.16
71	11.26	33.55	4.19	238	75	11.08	33.56	4.05	25.67	233	0.22
93	10.42	33.67	3.49	214	100	10.04	33.70	-	25.95	206	0.28
111	9.50	33.75	3.56u	194	150	9.03	33.93	2.33	26.30	174	0.38
130	9.15	33.87	2.66	180	200	8.34	34.08	1.69	26.52	152	0.46
158	8.98	33.96	2.23	170	250	7.93	34.14	1.32	26.63	142	0.53
185	8.50	34.06	1.82	156	300	7.51	34.18	1.05	26.73	132	0.60
221	8.16	34.11	1.51	147	400	6.73	34.27	0.72	26.90	116	0.73
249	7.94	34.14	1.33	142	500	6.22	34.31	0.51	27.00	107	0.85
295	7.55	34.18	1.06	133	600	5.69	34.31	0.31	27.07	100	0.96
357	7.04	34.23	0.74	123							
451	6.42	34.30	0.70	110							
539	6.06	34.31	0.35	105							
612	5.60	34.31	0.31	99							

93.60

ORCA; May 10, 1959; 0331 GCT; 31°50.5'N, 119°34'W; sounding, 2000+ fm; wind, 320°, force 7; weather, cloudy; sea, high; wire angle, 42°. ^a

3	15.70	33.55	5.66	323	0	(15.70)	(33.55)	(5.66)	(24.72)	(323)	(0.00)
10	15.71	33.55	5.72	323	10	15.71	33.55	5.72	24.72	323	0.03
31	15.70	33.54	5.68	324	20	15.71	33.55	5.72	24.72	323	0.06
54	15.62	-	-	-	30	15.70	33.54	5.68	24.71	324	0.10
63	14.60	33.48	5.67	306	50	15.65	33.53	5.68	24.72	323	0.16
79	12.61	33.33	5.26	278	75	13.02	33.35	5.34	25.13	284	0.24
91	11.90	33.46	5.03	256	100	11.41	33.53	4.39	25.58	241	0.30
103	11.24	33.55	4.23	237	150	9.70	33.73	3.45	26.04	198	0.42
127	10.38	33.64	3.84	216	200	8.83	33.98	2.44	26.36	167	0.51
142	9.90	33.69	3.60	205	250	8.21	34.06	1.73	26.53	151	0.59
166	9.35	33.82	3.20	186	300	7.57	34.14	1.30	26.68	137	0.66
192	8.92	33.95	2.48	170	400	6.77	34.23	0.64	26.86	120	0.80
215	8.68	34.02	2.39	162	500	6.28	34.31	-	27.00	107	0.92
254	8.14	34.07	1.64	150							
307	7.50	34.15	1.27	135							
394	6.80	34.22	0.67	120							
478	6.34	34.30	0.54	108							
551	6.14	34.34	-	103							

93.70

ORCA; May 9, 1959; 2037 GCT; 31°31'N, 120°14'W; sounding, 2000 fm; wind, 320°, force 7; weather, cloudy; sea, high; wire angle, 42°. ^a

2	15.76	33.50	5.48	328	0	(15.76)	(33.50)	(5.48)	(24.67)	(328)	(0.00)
10	15.76	33.52	5.69	326	10	15.76	33.52	5.69	24.69	326	0.03
30	15.74	33.48	5.93	329	20	15.75	33.50	5.86	24.67	328	0.06
54	15.20	33.42	5.69	322	30	15.74	33.48	5.93	24.66	329	0.10
62	14.52	33.40	5.77	310	50	15.70	33.47	5.90	24.66	329	0.16
78	13.20	33.37	5.52	286	75	13.32	33.38	5.56	25.10	288	0.24
90	12.13	33.35	-	268	100	11.58	33.35	5.01	25.41	258	0.31
101	11.44	33.35	4.97	256	150	9.22	33.67	3.75	26.06	196	0.42
126	9.74	33.48	4.57	218	200	8.52	33.92	3.10	26.38	166	0.52
143	9.37	33.63	3.94	201	250	7.75	34.08	2.42	26.61	144	0.60
165	8.91	33.78	3.30	183	300	7.30	34.20	1.71	26.76	129	0.67
192	8.64	33.89	3.29	171	400	6.57	34.18	0.76	26.86	120	0.80
217	8.22	33.96	2.79	159	500	5.93	34.24	0.54	26.99	108	0.92
254	7.70	34.09	2.35	142							
305	7.26	34.20	1.70	128							
389	6.64	34.18	0.84	122							
472	6.09	34.22	0.55	112							
545	5.70	34.29	0.54	102							

194

a) Depth determination indicates wire angle to be lower than recorded.

OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δT_{-5}^3	Z	T	S	O ₂	σ_t	δT_{-5}^3	ΔD	
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m	

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ORCA; May 9, 1959; 1235 GCT; 31°10'N, 120°55'W; sounding, 2000 fm; wind, 320°, force 5; weather, cloudy; sea, rough; wire angle, 27°.

93.80

2	15.65	33.44	5.64	330	0	(15.65)	(33.44)	(5.64)	(24.65)	(330)	(0.00)
12	15.66	33.42	5.43	332	10	15.66	33.42	5.44	24.63	332	0.03
29	15.53	33.42	5.53	329	20	15.60	33.42	5.47	24.64	331	0.07
56	15.40	33.40	-	328	30	15.52	33.42	5.53	24.67	328	0.10
64	15.40	33.40	5.50	328	50	15.42	33.41	5.51	24.67	328	0.16
78	15.36	33.40	5.65	326	75	15.37	33.40	5.64	24.68	327	0.25
90	14.52	33.45	5.67	306	100	13.83	33.46	5.60	25.05	292	0.33
103	13.76	33.47	5.59	289	150	9.68	33.55	4.28	25.90	212	0.45
124	11.58	33.51	4.96	246	200	8.58	33.87	2.90	26.33	171	0.55
142	10.08	33.52	4.43	220	250	7.74	33.99	2.31	26.54	150	0.63
167	9.01	33.68	3.94	192	300	7.09	34.05	1.73	26.68	137	0.70
192	8.67	33.84	3.11	175	400	6.29	34.14	1.00	26.86	120	0.84
219	8.28	33.94	2.56	162	500	5.69	34.22	0.54	27.00	107	0.96
262	7.55	34.00	2.21	147							
312	6.98	34.06	1.64	134							
389	6.36	34.13	1.06	121							
468	5.84	34.20	0.62	110							
550	5.46	34.25	0.42	102							

ORCA; May 9, 1959; 0551 GCT; 30°50'N, 121°35'W; sounding, 2000+ fm; wind, 310°, force 5; weather, over-cast; sea, rough; wire angle, 15°.

93.90

1	16.58	33.60	5.52	339	0	(16.58)	(33.60)	(5.52)	(24.56)	(339)	(0.00)
10	16.56	33.58	5.48	339	10	16.56	33.58	5.48	24.56	339	0.03
30	16.56	33.60	5.48	338	20	16.56	33.59	5.48	24.56	339	0.07
59	16.52	33.60	5.48	337	30	16.56	33.60	5.48	24.57	338	0.10
70	15.88	33.54	5.62	328	50	16.54	33.60	5.48	24.57	338	0.17
83	16.56	33.86	5.52	319	75	16.25	33.72	5.57	24.73	322	0.25
97	16.23	33.89	5.50	310	100	16.00	33.87	5.48	24.90	306	0.33
113	14.94	33.79	5.35	290	150	10.70	33.52	4.67	25.70	230	0.47
137	12.10	33.51	5.00	256	200	8.96	33.75	3.59	26.17	186	0.58
156	10.28	33.53	4.52	223	250	8.23	33.92	3.00	26.41	163	0.66
185	9.19	33.70	3.76	193	300	7.49	34.02	2.07	26.60	145	0.74
214	8.79	33.81	3.44	178	400	6.61	34.12	1.15	26.80	126	0.88
243	8.34	33.90	3.10	166	500	5.83	34.21	0.55	26.97	109	1.01
291	7.60	34.00	2.19	148	600	(5.34)	(34.26)	(0.35)	(27.08)	(99)	(1.12)
346	7.09	34.07	1.64	136							
428	6.36	34.14	0.88	121							
511	5.78	34.22	0.50	108							
594	5.38	34.26	0.36	100							

PAOLINA-T; May 7, 1959; 0005 GCT; ^{a)} 32°11'N, 117°16.5'W; sounding, 830 fm; wind, 300°, force 2; weather, cloudy; sea, rough; wire angle, 16°.

97.32

416	7.20	34.46u	0.66	-							
426	7.12	34.29	0.37	119							
436	6.94	34.31	0.19	116							
446	6.82	34.30	0.21	115							
455	6.77	34.40u	0.00u	-							
465	6.70	34.27	0.00u	116							
475	6.73	34.31	0.00u	113							
485	6.59	34.32	0.23	110							
495	6.52	34.32	0.14	109							
505	6.50	34.31	0.20	110							
514	6.38	34.33	0.25	107							
524	6.33	34.34	0.50	105							
534	6.24	34.33	0.40	105							
544	6.18	34.32	0.38	105							
554	6.14	34.34	0.40	103							
564	6.06	34.34	0.40	102							
574	6.00	34.34	0.48	102							
583	5.96	34.34	0.48	101							

a) Special cast.

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S10

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OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_3	Z	T	S	O ₂	σ_t	δT_3	ΔD
m	°C	‰	ml/L	$10^{-5} \text{cm}^3/\text{g}$	m	°C	‰	ml/L	g/L	$10^{-5} \text{cm}^3/\text{g}$	dyn. m

97.60

ORCA; May 12, 1959; 1647 GCT; 31°15'N, 119°11.5'W; sounding, 1950 fm; wind, 170°, force 1; weather, cloudy; sea, slight; wire angle, 04°.

0	16.45	33.60	5.65	336	0	16.45	33.60	5.65	24.59	336	0.00
10	16.35	33.60	5.39	334	10	16.35	33.60	5.39	24.61	334	0.03
30	16.16	33.58	5.51a)	331	20	16.25	33.59	5.45	24.62	332	0.07
56	14.54	33.40	5.58	310	30	16.16	33.58	5.51	24.64	331	0.10
65	13.45	33.35	5.33	292	50	16.10	33.57	5.54	24.65	330	0.17
76	12.64	33.52	4.53	264	75	12.70	33.51	4.56	25.32	266	0.24
91	11.84	33.57	4.17	246	100	11.24	33.59	4.03	25.65	235	0.30
105	10.90	33.60	3.94	228	150	9.54	33.78	3.06	26.09	193	0.41
131	10.00	33.73	3.43	204	200	8.93	33.96	2.41	26.34	170	0.50
151	9.52	33.78	3.05	192	250	8.24	34.12	1.78	26.57	148	0.58
176	9.18	33.89	2.71	179	300	7.60	33.17	1.25	26.70	135	0.66
206	8.86	33.98	2.32	167	400	6.80	33.22	0.80	26.86	120	0.79
235	8.48	34.11	1.90	152	500	6.04	33.32	0.42	27.03	104	0.91
275	7.86	34.14	1.50	140							
336	7.34	34.20	0.98	129							
411	6.70	34.23	0.76	118							
486	6.12	34.31	0.42	106							
567	5.66	34.32	0.41	99							

100.60

ORCA; May 26, 1959; 1000 GCT; 30°40.5'N, 118°47'W; sounding, 1550 fm; wind, 310°, force 3; weather, cloudy; sea, moderate; wire angle, 05°.

1	16.68	33.62	5.44	340	0	(16.68)	(33.62)	(5.44)	(24.54)	(340)	(0.00)
11	16.69	33.62	5.44	340	10	16.69	33.62	5.44	24.54	340	0.03
30	16.69	33.61	5.44	340	20	16.69	33.62	5.44	24.54	340	0.07
60	14.54	33.40	5.58	310	30	16.69	33.61	5.44	24.54	340	0.10
70	13.46	33.31	5.53	296	50	16.00	33.54	5.51	24.65	330	0.17
84	12.32	33.35	5.01	271	75	13.09	33.31	5.44	25.09	288	0.25
99	11.86	33.40	4.60	260	100	11.85	33.40	4.59	25.40	259	0.32
115	11.40	33.53	4.16	242	150	10.03	33.68	3.38	25.93	208	0.43
140	10.38	33.64	3.55	216	200	8.57	33.95	2.48	26.39	165	0.53
160	9.70	33.75	3.14	197	250	8.03	34.09	1.72	26.58	147	0.61
189	8.72	33.91	2.62	170	300	7.61	34.13	1.32	26.67	138	0.68
219	8.35	34.00	2.21	158	400	6.80	34.20	0.74	26.84	122	0.82
248	8.06	34.09	1.73	147	500	6.04	34.26	0.46	26.98	108	0.94
298	7.62	34.13	1.33	138	600	5.52	34.29	0.30	27.07	100	1.05
353	7.20	34.18	1.00	129							
438	6.45	34.21	0.54	117							
523	5.92	34.27	0.41	106							
608	5.48	34.29	0.29	99							

100.90

ORCA; May 14, 1959; 0710 GCT; 29°40.5'N, 120°47.5'W; sounding, 2000+ fm; wind, 310°, force 2; weather, partly cloudy; sea, slight; wire angle, 15°.

1	16.94	33.58	5.31	348	0	(16.94)	(33.58)	(5.31)	(24.46)	(348)	(0.00)
11	16.94	33.58	5.39	348	10	16.94	33.58	5.39	24.46	348	0.03
30	16.68	33.58	5.39	343	20	16.81	33.58	5.39	24.49	346	0.07
58	16.58	33.58	5.44	340	30	16.68	33.58	5.39	24.51	343	0.10
68	16.29	33.59	5.48	333	50	16.61	33.58	5.43	24.54	341	0.17
82	15.56	33.60	5.50	316	75	15.90	33.60	5.50	24.72	324	0.26
95	14.17	33.62	5.28	286	100	13.60	33.59	5.18	25.20	278	0.33
110	12.69	33.53	4.97	264	150	10.04	33.58	4.15	25.86	216	0.46
133	10.92	33.51	4.53	235	200	8.84	33.81	3.03	26.23	180	0.56
153	9.92	33.60	4.05	212	250	8.09	34.00	2.31	26.50	154	0.64
182	9.18	33.73	3.47	190	300	7.38	34.06	1.94	26.66	140	0.72
210	8.64	33.88	2.65	172	400	6.42	34.12	0.96	26.83	123	0.86
239	8.24	33.98	2.38	158	500	5.81	34.23	0.50	27.00	107	0.98
286	7.53	34.05	2.05	143	600	(5.38)	(34.32)	(0.40)	(27.11)	(96)	(1.08)
339	7.04	34.10	1.52	133							
422	6.22	34.14	0.81	119							
505	5.78	34.24	0.49	106							
590	5.41	34.31	0.40	97							

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a) Alternate value, 5.70 ml/L, not used in interpolation.

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_3	Z	T	S	O ₂	σ_t	δT_3	ΔD
m	°C	‰	ml/L	10^{-5} cm/g	m	°C	‰	ml/L	g/L	10^{-5} cm/g	dyn. m

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ORCA; May 16, 1959; 1950, 2035 GCT; 30°10'N, 118°25'W; sounding, 1800 fm; wind, 300°, force 2; weather, overcast; sea, rough; wire angle, 18°, 21°.

103.60

1	16.81	33.66	5.43	340	0	(16.81)	(33.66)	(5.43)	(24.55)	(340)	(0.00)
10	16.74	33.66	5.36	338	10	16.74	33.66	5.36	24.57	338	0.03
29	16.72	33.64	5.42	339	20	16.73	33.65	5.39	24.56	338	0.07
57	15.98	33.56	5.46	328	30	16.72	33.64	5.42	24.57	339	0.10
67	14.78	33.48	5.51	310	50	16.70	33.63	5.43	24.56	338	0.17
81	13.44	33.40	5.31	288	75	14.03	33.43	5.43	24.99	298	0.25
95	12.24	33.47	4.99	260	100	11.84	33.50	4.91	25.48	252	0.32
110	11.28	33.53	4.79	240	150	9.68	33.65	3.98	25.98	204	0.44
133	10.32	33.57	4.31	220	200	8.62	33.87	3.03	26.32	172	0.53
152	9.60	33.66	3.93	202	250	7.89	34.01	2.20	26.54	150	0.61
180	8.84	33.81	3.23	180	300	7.33	34.09	1.79	26.68	138	0.69
208	8.52	33.90	2.93	168	400	6.48	34.18	1.00	26.86	120	0.82
237	8.04	33.98	2.38	155	500	6.03	34.32	0.52	27.03	104	0.94
284	7.50	34.07	1.91	141	600	(5.40)	(34.35)		(27.14)	(94)	(1.04)
336	7.00	34.12	1.50	130							
419	6.34	34.20	0.84	116							
501	6.02	34.32	0.52	104							
585	5.50	34.35	0.36	95							

ORCA; May 18, 1959; 1459 GCT; 29°31.5'N, 118°00.5'W; sounding, 1800 fm; wind, 320°, force 4; weather, cloudy; sea, very rough; wire angle, 19°.

107.60

1	17.51	33.88	5.41	339	0	(17.51)	(33.88)	(5.41)	(24.56)	(339)	(0.00)
10	17.50	33.87	5.29	340	10	17.50	33.87	5.29	24.55	340	0.03
30	17.53	33.87	5.30	340	20	17.50	33.87	5.30	24.55	340	0.07
58	17.52	33.91	5.36	337	30	17.53	33.87	5.30	24.55	340	0.10
69	17.52	33.88	5.27	339	50	17.52	33.90	5.34	24.57	338	0.17
83	17.10	33.83	5.32	334	75	17.52	33.87	5.28	24.57	338	0.25
97	16.07	33.77	5.18	315	100	15.25	33.70	4.99	24.94	302	0.34
111	14.78	33.67	4.88	295	150	11.57	33.64	4.19	25.63	236	0.47
136	12.44	33.64	4.38	252	200	9.79	33.86	2.92	26.12	190	0.58
154	11.34	33.64	4.11	232	250	8.72	34.04	2.36	26.43	161	0.67
183	9.89	33.71	3.48	203	300	8.20	34.14	1.67	26.59	146	0.75
212	9.69	33.96	2.53	182	400	6.80	34.16	1.08	26.80	125	0.89
242	8.84	34.02	2.44	164	500	6.02	34.23	0.52	26.96	110	1.02
291	8.31	34.13	1.76	148	600	(5.40)	(34.29)	(0.38)	(27.09)	(98)	(1.13)
345	7.55	34.14	1.34	137							
428	6.50	34.17	0.95	120							
513	5.96	34.24	0.44	108							
598	5.41	34.29	0.38	99							

ORCA; May 20, 1959; 1556 GCT; 28°55.5'N, 117°39'W; sounding, 2000 fm; wind, 310°, force 2; weather, cloudy; sea, very rough; wire angle, 18°.

110.60

2	17.51	33.81	5.42	344	0	(17.51)	(33.81)	(5.42)	(24.50)	(344)	(0.00)
11	17.50	33.82	5.34	343	10	17.50	33.82	5.35	24.51	343	0.03
31	17.53	33.81	5.32	345	20	17.52	33.82	5.33	24.50	344	0.07
60	17.48	33.83	5.36	342	30	17.53	33.81	5.32	24.49	345	0.10
69	17.48	33.83	5.32	342	50	17.49	33.82	5.35	24.50	344	0.17
83	17.00	33.78	5.41	335	75	17.20	33.80	5.38	24.57	338	0.26
98	16.46	33.75	5.38	325	100	16.28	33.74	5.37	24.74	322	0.34
112	14.83	33.59	5.17	302	150	11.58	33.64	3.78	25.64	236	0.48
136	12.60	33.61	4.26	257	200	9.80	33.92	2.76	26.17	186	0.59
155	11.22	33.66	3.61	229	250	9.47	34.20	1.69	26.44	160	0.68
185	10.21	33.86	2.96	198	300	8.05	34.12	1.80	26.60	145	0.76
214	9.48	33.98	2.54	177	400	7.34	34.25	0.77	26.80	126	0.90
243	9.55	34.18	1.68	163	500	6.68	34.31	0.56	26.94	112	1.02
291	8.14	34.11	1.86	147	600	(5.99)	(34.32)	(0.39)	(27.04)	(103)	(1.14)
344	7.74	34.19	1.28	135							
428	7.12	34.27	0.62	121							
512	6.60	34.31	0.53	111							
596	6.01	34.32	0.40	104							

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5905

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δT_3	Z	T	S	O ₂	σ_t	δT_3	ΔD
m	°C	‰	ml/L	10^{-5} cm ³ /g	m	°C	‰	ml/L	g/L	10^{-5} cm ³ /g	dyn. m

110.90

ORCA; May 21, 1959; 1425 GCT; 28°00'N, 119°38'W; sounding, 2000+ fm; wind, 330°, force 3; weather, partly cloudy; sea, very rough; wire angle, 10°.

1	18.05	33.95	5.29	347	0	(18.05)	(33.95)	(5.29)	(24.48)	(347)	(0.00)
11	18.08	33.93	5.27	349	10	18.08	33.93	5.27	24.45	349	0.03
31	18.07	33.93	5.27a)	349	20	18.08	33.93	5.27	24.45	349	0.07
61	18.07	33.94	5.24	348	30	18.07	33.93	5.27	24.45	349	0.10
70	17.96	34.02	5.36	340	50	18.07	33.94	5.25	24.46	348	0.17
85	17.00	33.90	5.41	326	75	17.60	33.98	5.40	24.60	334	0.26
101	15.34	33.73	4.94	302	100	15.45	33.74	4.99	24.92	304	0.34
115	14.12	33.79	4.81	273	150	11.40	33.67	4.07	25.69	231	0.47
140	11.88	33.64	4.07	242	200	9.64	33.86	3.17	26.15	188	0.58
160	10.96	33.71	4.07	220	250	9.08	34.13	2.11	26.45	159	0.67
190	9.75	33.78	3.55	196	300	8.62	34.26	1.47	26.62	143	0.75
219	9.47	34.02	2.46	174	400	7.42	34.31	0.72	26.84	122	0.89
249	9.09	34.13	2.12	160	500	6.64	34.34	0.42	26.95	110	1.01
300	8.62	34.26	1.47	143	600	5.87	34.37	0.30	27.09	98	1.12
355	7.88	34.26	1.08	132							
439	7.16	34.34	0.52	116							
524	6.42	34.34	0.38	107							
609	5.82	34.37	0.29	97							

113.60

ORCA; May 22, 1959; 1331 GCT; 28°20'N, 117°17.5'W; sounding, 1900 fm; wind, 310°, force 2; weather, cloudy; sea, rough; wire angle, 05°.

1	17.50	33.80	5.34	345	0	(17.50)	(33.80)	(5.34)	(24.50)	(345)	(0.00)
11	17.52	33.77	5.36	347	10	17.51	33.77	5.36	24.47	347	0.03
30	17.53	33.77	5.29	347	20	17.52	33.77	5.33	24.47	347	0.07
60	17.36	33.78	5.33	343	30	17.53	33.77	5.29	24.47	347	0.10
71	17.25	33.77	5.53	341	50	17.44	33.77	5.30	24.49	345	0.17
86	16.22	33.73	5.49	321	75	16.65	33.75	5.52	24.66	330	0.26
100	14.56	33.62	5.29	294	100	14.56	33.62	5.29	25.02	294	0.34
115	12.76	33.61	4.86	260	150	10.49	33.71	3.99	25.88	213	0.46
140	10.88	33.65	4.42	224	200	10.59	34.21	1.70	26.26	177	0.56
160	10.32	33.78	3.56	205	250	10.00	34.33	1.20	26.45	159	0.65
190	10.50	34.14	2.04	181	300	9.67	34.43	0.79	26.58	146	0.73
220	10.64	34.31	1.21	171	400	8.20	34.37	0.60	26.77	128	0.87
250	10.00	34.33	1.20	159	500	7.37	34.41	0.40	26.93	113	1.00
301	9.66	34.43	0.79	146	600	6.10	34.35	0.34	27.05	102	1.11
356	8.53	34.33	0.82	136							
441	7.92	34.41	0.40	121							
526	7.06	34.41	0.40	110							
611	5.96	34.34	0.33	101							

117.50

ORCA; May 24, 1959; 0839 GCT; 28°08'N, 116°15'W; sounding, 2500 fm; wind, 300°, force 2; weather, cloudy; sea, moderate; wire angle, 08°.

0	17.68	33.76	5.22	352	0	17.68	33.76	5.22	24.42	352	0.00
10	17.68	33.75	5.29	352	10	17.68	33.75	5.29	24.42	352	0.04
30	17.50	33.73	5.35	350	20	17.61	33.74	5.33	24.42	352	0.07
59	16.56	33.77	5.38	326	30	17.50	33.73	5.35	24.44	350	0.10
69	16.08	33.75	5.36	317	50	17.25	33.74	5.37	24.51	344	0.17
84	15.06	33.66	5.27	302	75	15.75	33.72	5.34	24.84	312	0.26
99	13.63	33.70	4.82	270	100	13.55	33.70	4.80	25.30	269	0.33
114	12.14	33.62	4.40	248	150	10.70	33.90	2.70	26.00	202	0.45
140	10.60	33.67	3.96	218	200	9.99	34.16	1.72	26.32	171	0.54
160	10.83	34.05	2.12	194	250	9.44	34.28	1.29	26.50	154	0.63
190	10.06	34.14	1.79	175	300	8.39	34.23	1.21	26.63	142	0.70
220	9.93	34.23	1.56	165	400	8.10	34.40	0.45	26.82	124	0.84
249	9.46	34.28	1.29	154	500	6.75	34.35	0.30	26.96	111	0.96
299	8.39	34.23	1.21	142	600	6.00	34.34	0.27	27.06	102	1.08
354	8.54	34.42	0.53	130							
438	7.60	34.38	0.39	120							
523	6.51	34.34	0.29	108							
609	5.96	34.34	0.26	101							

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a) Mean value of 5.34 and 5.20 ml/L.

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O ₂	δ_T	Z	T	S	O ₂	σ_t	δ_T	ΔD
m	°C	‰	ml/L	$\frac{-5}{10} \frac{3}{\text{cm/g}}$	m	°C	‰	ml/L	g/L	$\frac{-5}{10} \frac{3}{\text{cm/g}}$	dyn. m

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PAOLINA-T; May 17, 1959; 0700 GCT; 27°29'N, 115°44'W; sounding, 2450 fm; wind, 320°, force 4; weather, cloudy; sea, rough; wire angle, 10°.

120.50

2	18.11	33.71	5.47	365	0	(18.11)	(33.71)	(5.47)	(24.28)	(365)	(0.00)
12	18.11	33.71	5.26	365	10	18.11	33.71	5.26	24.28	365	0.04
31	17.99	33.76	5.25	359	20	18.07	33.73	5.25	24.31	362	0.07
41	17.02	33.70	5.37	342	30	18.00	33.76	5.25	24.34	359	0.11
56	16.51	33.70	5.34	330	50	16.72	33.70	5.34	24.61	334	0.18
71	15.02	33.58	5.62	307	75	14.68	33.58	5.58	24.97	300	0.26
96	12.80	33.60	4.82	262	100	12.65	33.61	4.70	25.40	258	0.33
115	11.76	33.69	3.56	236	150	9.98	33.73	3.41	25.99	202	0.44
135	10.72	33.69	3.61	218	200	9.81	34.15	1.61	26.34	170	0.54
155	9.84	33.77	3.29	198	250	9.09	34.22	1.44	26.52	153	0.62
184	9.84	34.04	2.00	178	300	8.22	34.20	1.36	26.64	142	0.70
219	9.66	34.22	1.45	162	400	7.01	34.24	0.72	26.84	122	0.84
248	9.12	34.22	1.44	153	500	6.21	34.32	0.45	27.01	106	0.95
298	8.24	34.20	1.37	142	600	5.69	34.43	0.35	27.16	91	1.06
353	7.36	34.21	0.99	128							
437	6.76	34.27	0.56	116							
521	6.06	34.34	0.42	102							
606	5.66	34.43	0.34	91							

PAOLINA-T; May 11, 1959; 1530 GCT; 26°05'N, 114°08.5'W; sounding, 1200 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 09°.

130.40

2	17.38	33.72	5.42	347	0	(17.38)	(33.72)	(5.42)	(24.47)	(347)	(0.00)
12	17.30	33.73	5.08	345	10	17.32	33.73	5.15	24.48	346	0.03
31	16.92	33.72	5.18	338	20	17.10	33.73	5.12	24.54	341	0.07
56	16.69	33.72	5.22	332	30	16.94	33.72	5.16	24.57	338	0.10
66	16.48	33.73	5.14	327	50	16.81	33.72	5.20	24.60	335	0.17
76	16.06	33.74	5.14	317	75	16.09	33.74	5.14	24.78	318	0.25
91	13.90	33.73	4.30	273	100	12.80	33.71	3.97	25.45	254	0.32
106	12.30	33.70	3.80	245	150	11.08	34.09	1.99	26.07	195	0.43
131	11.25	34.00	2.44	204	200	10.72	34.38	0.90	26.36	167	0.52
150	11.08	34.09	1.99	195	250	10.04	34.48	0.65	26.56	149	0.61
175	11.04	34.29	1.22	180	300	9.47	34.48	0.52	26.66	139	0.68
205	10.62	34.40	0.84	164	400	8.37	34.49	0.39	26.84	122	0.82
234	10.25	34.48	0.67	152	500	7.23	34.42	0.33	26.95	112	0.94
274	9.72	34.47	0.64	144							
333	9.17	34.50	0.34	133							
408	8.27	34.48	0.39	122							
482	7.42	34.42	-	114							
561	6.60	34.42	0.28	103							

PAOLINA-T; May 9, 1959; 2055 GCT; 25°00'N, 113°23.5'W; sounding, 1300 fm; wind, 280°, force 5; weather, cloudy; sea, very rough; wire angle, 17°.

137.40

2	17.84	33.78	5.19	354	0	(17.84)	(33.78)	(5.19)	(24.40)	(354)	(0.00)
11	17.74	33.77	4.99	352	10	17.75	33.77	4.99	24.41	353	0.04
30	17.42	33.76	5.07	346	20	17.47	33.76	5.07	24.47	347	0.07
59	15.25	33.68	4.64	304	30	17.42	33.76	5.07	24.48	346	0.10
68	14.03	33.68	4.03	280	50	17.33	33.76	5.07	24.50	344	0.17
83	13.30	33.73	3.58	261	75	13.71	33.69	3.84	25.26	272	0.25
97	12.83	33.91	2.56	240	100	12.72	33.92	2.51	25.63	236	0.32
111	12.02	33.93	2.43	224	150	12.19	34.54	0.52	26.22	180	0.42
135	11.88	34.33	1.12	191	200	11.29	34.65	0.20	26.47	157	0.51
155	12.26	34.61	0.36	178	250	10.13	34.55	0.43	26.60	145	0.58
182	11.56	34.63	0.28	163	300	9.69	34.56	0.19	26.68	137	0.66
212	11.11	34.65	0.18	154	400	8.07	34.45	0.24	26.85	121	0.79
240	10.26	34.55	0.47	147	500	7.09	34.46	0.22	27.00	107	0.91
287	9.84	34.57	0.19	139	600	(6.11)	(34.44)		(27.12)	(96)	(1.02)
340	9.15	34.52	0.26	131							
421	7.78	34.43	0.24	118							
503	7.06	34.46	0.22	106							
587	6.26	34.44	0.20	97							

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
60.52-B	V-25	1225	37°53.5'	123°02.0'	44	340°	4	overcast	rough	10.75	33.76
60.55-B	25	1040	37°47.5'	123°15.0'	60	300°	4	overcast	rough	11.20	33.63
60.65-B	25	0515	37°28.0'	123°54.5'	1960	320°	4	overcast	moderate	12.51	33.35
60.70-B	25	0305	37°19.0'	124°16.0'	2150	320°	4	overcast	moderate	12.27	33.09
60.75-B	25	0100	37°09.0'	124°39.0'	2150	320°	4	overcast	slight	11.99	32.90
60.80-B	24	2240	36°57.5'	125°04.0'	2200	330°	1	overcast	moderate	13.08	32.75
60.85-B	24	2000	36°47.0'	125°25.0'	2200	310°	1	cloudy	moderate	12.47	32.66
63.52-B	23	1815	37°19.0'	122°36.0'	48	090°	4	cloudy	slight	11.34	33.69
63.55-B	23	2008	37°14.0'	122°49.5'	150	090°	3	cloudy	rough	11.56	33.78
63.60-B	23	2315	37°02.5'	123°11.5'	1350	140°	2	cloudy	rough	12.14	33.44
63.65-B	24	0150	36°53.0'	123°32.0'	1900	150°	1	clear	rough	12.64	33.44
63.70-B	24	0400	36°43.0'	123°55.5'	2100	180°	1	cloudy	rough	12.26	32.94
63.75-B	24	0610	36°33.0'	124°17.0'	2150	180°	1	cloudy	slight	12.92	32.94
63.85-B	24	1100	36°13.0'	124°59.0'	2400	250°	2	overcast	moderate	13.44	32.99
63.90-B	24	1315	36°03.0'	125°21.0'	2400	290°	2	drizzle	rough	13.80	32.85
67.50-B	21	0930	36°49.0'	122°04.5'	57	310°	3	partly cloudy	rough	10.09	33.85
67.55-B	21	1140	36°39.0'	122°26.0'	1100	300°	4	clear	very rough	11.84	33.62
67.60-B	21	1430	36°29.0'	122°47.5'	1600	330°	5	cloudy	very rough	12.48	33.64
67.65-B	21	1700	36°19.0'	123°09.0'	1750	320°	6	cloudy	high	12.49	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
67.70-B	V-21	1920	36°08.0'	123°30.0'	1750	320°	6	partly cloudy	very high	12.72	33.28
67.75-B	21	2220	35°58.0'	123°51.0'	2100	340°	7	partly cloudy	very high	13.82	33.30
67.80-B	22	0215	35°48.0'	124°13.0'	2200	340°	8	cloudy	very high	12.88	33.46
70.52-B	20	2030	36°08.5'	121°50.0'	350	320°	7	partly cloudy	high	9.48	33.89
70.55-B	20	2225	36°03.0'	122°02.0'	700	310°	6	clear	high	13.03	33.59
70.60-B	21	0030	35°53.0'	122°23.0'	1650	320°	7	partly cloudy	high	12.96	33.53
70.75-B	19	0600	35°24.0'	123°27.5'	2100	330°	7	partly cloudy	very rough	14.54	33.28
70.80-B	19	0325	35°19.0'	123°48.0'	2200	350°	7	partly cloudy	very rough	14.32	33.22
70.85-B	19	0020	35°03.0'	124°09.0'	2300	350°	6	partly cloudy	rough	14.43	33.22
73.51-B	17	1745	35°35.5'	121°20.0'	160	300°	3	partly cloudy	rough	11.16	33.58
73.55-B	17	1940	35°27.5'	121°37.5'	550	300°	4	cloudy	rough	12.80	33.46
73.60-B	17	2225	35°18.0'	121°58.5'	1300	320°	5	overcast	rough	13.94	33.42
73.65-B	18	0055	35°08.5'	122°18.5'	2100	320°	6	partly cloudy	very rough	14.08	33.30
73.75-B	18	0730	34°45.5'	123°07.0'	2250	340°	6	partly cloudy	very rough	14.68	33.30
73.80-B	18	1020	34°33.5'	123°27.5'	2100	320°	6	partly cloudy	very rough	15.04	33.33
73.85-B	18	1300	34°21.0'	123°59.0'	2250	330°	5	partly cloudy	rough	14.24	33.06
73.90-B	18	1520	34°10.5'	124°21.0'	2300	340°	6	partly cloudy	rough	14.08	33.04
77.50-B	16	1715	35°04.5'	120°52.0'	70	320°	6	clear	high	11.45	33.58
77.60-B	14	2255	34°44.0'	121°34.0'	480	330°	7	clear	very rough	13.68	33.45

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
77.65-B	V-14	1915	34°34.0'	121°55.0'	2000	360°	7	partly cloudy	rough	13.85	33.42
77.75-B	14	1245	34°14.0'	122°36.0'	2100	320°	3	overcast	moderate	14.47	33.42
77.80-B	14	1020	34°04.0'	122°57.0'	2200	320°	5	overcast	moderate	15.07	33.24
77.85-B	14	0803	33°54.0'	123°18.0'	2300	270°	5	cloudy	rough	15.19	33.33
77.90-B	14	0545	33°44.0'	123°39.0'	2000+	270°	3	cloudy	moderate	14.81	33.33
80.52-B	13	0625	34°24.5'	120°36.0'	117	140°	3	overcast	slight	13.62	33.68
80.55-B	13	0810	34°19.0'	120°48.0'	400	140°	2	overcast	slight	12.85	33.57
80.65-B	13	1345	33°59.0'	121°30.0'	1850	calm		overcast	slight	14.56	33.46
80.70-B	13	1438	33°50.0'	121°52.0'	2100	180°	1	overcast	slight	14.38	33.55
80.75-B	13	1810	33°40.0'	122°12.0'	2100	220°	2	partly cloudy	moderate	14.64	33.40
80.85-B	13	2315	33°19.0'	122°53.0'	2400	270°	3	clear	moderate	14.72	33.37
80.90-B	14	0130	33°09.0'	123°13.0'	2400	270°	3	clear	moderate	15.56	33.32
80.110-B	11	0930	32°29.0'	124°34.5'	2400	330°	4	partly cloudy	very rough	15.39	33.37
80.130-B	10	2250	31°49.0'	125°56.0'	2400	330°	5	cloudy	rough	16.18	33.56
82.47-B	13	0245	34°15.0'	119°58.0'	305	calm		overcast	slight	14.10	33.66
83.40-B	12	2330	34°14.0'	119°22.0'	12	calm		overcast	smooth	15.24	33.61
83.43-B	12	2155	34°08.0'	119°34.0'	135	120°	1	overcast	slight	14.05	33.59
83.51-B	12	1650	33°52.0'	120°08.5'	50	100°	3	overcast	slight	14.28	33.60
83.55-B	12	1515	33°44.0'	120°24.5'	530	100°	2	overcast	moderate	14.04	33.51

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
83.65-B	V-12	0910	33°22.0'	121°04.5'	2000	160°	3	overcast	moderate	14.87	33.44
83.70-B	12	0640	33°14.0'	121°26.5'	2100	090°	3	overcast	moderate	14.72	33.37
83.75-B	12	0430	33°04.0'	121°46.5'	2200	090°	3	overcast	rough	13.98	33.43
83.80-B	12	0210	32°54.0'	122°07.0'	2200	320°	2	cloudy	rough	14.84	33.46
83.85-B	11	2355	32°44.0'	122°27.5'	2200	320°	1	cloudy	rough	14.58	33.46
83.90-B	11	2140	32°34.0'	122°47.5'	2100	340°	1	cloudy	rough	14.76	33.39
87.35-B	7	1320	33°50.0'	118°37.5'	350	270°	1	partly cloudy	slight	15.45	33.57
87.40-B	7	1545	33°40.0'	118°58.5'	470	270°	1	partly cloudy	moderate	15.97	33.60
87.45-B	7	1820	33°30.0'	119°19.0'	900	240°	1	clear	moderate	14.63	33.60
87.50-B	7	2034	33°20.0'	119°39.5'	40	270°	1	clear	moderate	14.18	33.64
87.55-B	7	2310	33°10.0'	120°00.5'	680	310°	3	clear	rough	14.38	33.58
87.65-B	8	0510	32°50.0'	120°41.5'	2000	270°	3	clear	rough	14.00	33.53
87.70-B	8	0755	32°39.5'	121°03.0'	2000	270°	3	overcast	rough	14.94	33.39
87.75-B	8	1040	32°29.0'	121°25.5'	2000+	320°	3	overcast	rough	14.88	33.39
87.80-B	8	1315	32°19.0'	121°47.5'	2200	320°	4	overcast	rough	15.04	33.40
87.85-B	8	1550	32°09.0'	122°09.5'	2150	320°	3	overcast	rough	15.40	33.42
87.90-B	8	1815	31°59.0'	122°32.0'	2200	320°	3	overcast	rough	15.36	33.40
90.50-O	7	2130	32°44.5'	119°16.5'	58	320°	1	clear	moderate	15.42	33.63
90.65-O	8	0830	32°14.5'	120°17.5'	2050	300°	2	cloudy	rough	15.24	33.46

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
90.75-O	V-8	1450	31°54.0'	120°58.5'	2240	320°	3	overcast	moderate	15.80	33.48
90.85-O	8	2105	31°34.5'	121°39.0'	2200	310°	3	overcast	moderate	16.38	33.58
90.100-B	8	2340	31°04.5'	122°40.0'	2500	340°	4	overcast	moderate	16.02	33.48
90.120-B	9	1236	30°24.5'	124°00.5'	2000+	320°	4	partly cloudy	moderate	16.56	33.55
93.45-O	10	1425	32°20.0'	118°33.0'	600	320°	3	cloudy	very rough	16.74	33.68
93.55-O	10	0715	32°00.0'	119°14.0'	850	320°	6	partly cloudy	high	14.98	33.56
93.60-O	12	2140	31°50.5'	119°34.0'	1220	260°	1	cloudy	slight	15.78	33.57
93.65-O	13	0030	31°40.0'	119°54.5'	2000	260°	1	cloudy	slight	15.97	33.58
93.70-O	13	0300	31°31.0'	120°14.0'	2000+	270°	1	cloudy	moderate	15.60	33.46
93.75-O	9	1630	31°20.0'	120°35.0'	2000	320°	5	cloudy	very rough	15.44	33.46
93.75-O	13	0600	31°20.0'	120°35.0'	2000+	240°	1	rain	slight	15.60	33.44
93.85-O	9	0910	31°00.0'	121°15.0'	2000+	310°	5	overcast	very rough	16.04	33.53
97.30-O	11	2300	32°15.0'	117°08.5'	36	250°	1	cloudy	slight	17.86	33.64
97.32-O	12	0030	32°11.5'	117°16.5'	700	250°	1	cloudy	slight	16.94	33.61
97.35-O	12	0210	32°05.5'	117°28.5'	670	250°	1	cloudy	slight	16.76	33.66
97.40-O	12	0500	31°55.0'	117°50.0'	300	-	-	clear	slight	17.02	33.64
97.45-O	12	0805	31°45.0'	118°10.0'	800	-	-	clear	slight	16.85	33.67
97.50-O	12	1050	31°35.0'	118°30.5'	1300	110°	1	cloudy	slight	15.64	33.48
97.55-O	12	1340	31°25.0'	118°50.0'	245	200°	1	cloudy	slight	16.04	33.59

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
97.65-O	V-13	1245	31°04.0'	119°29.0'	1800	270°	1	cloudy	slight	16.00	33.51
97.70-O	13	1530	30°54.0'	119°50.0'	2000+	280°	1	cloudy	slight	15.96	33.49
97.75-O	13	1830	30°44.0'	120°10.0'	2000+	280°	1	partly cloudy	slight	16.28	33.55
97.80-O	13	2115	30°35.0'	120°29.0'	2000+	280°	1	partly cloudy	slight	16.12	33.51
97.85-O	13	2330	30°24.5'	120°50.5'	2000+	300°	2	partly cloudy	slight	16.14	33.52
97.90-O	14	0215	30°14.0'	121°09.0'	2000+	300°	2	partly cloudy	slight	16.40	33.51
100.29-O	15	2215	31°42.0'	116°43.5'	87	270°	2	partly cloudy	rough	14.03	33.59
100.30-O	15	2115	31°40.5'	116°46.5'	250	320°	2	partly cloudy	rough	16.22	33.62
100.35-O	15	1900	31°31.5'	117°06.0'	600	320°	2	overcast	rough	17.10	33.64
100.40-O	15	1555	31°21.5'	117°25.5'	850	310°	4	overcast	rough	16.26	33.62
100.45-O	15	1250	31°10.5'	117°46.0'	1100	330°	6	overcast	rough	16.02	33.58
100.50-O	26	1615	31°00.0'	118°07.0'	1250	320°	5	overcast	rough	17.01	33.65
100.55-O	26	1320	30°50.0'	118°27.0'	1400	320°	4	overcast	rough	17.02	33.62
100.65-O	14	2230	30°28.0'	119°07.0'	2000+	330°	6	partly cloudy	rough	16.78	33.65
100.70-O	14	1945	30°21.0'	119°29.0'	2000	320°	3	cloudy	rough	16.48	33.58
100.75-O	14	1630	30°11.0'	119°48.0'	2000	320°	3	cloudy	moderate	16.36	33.50
100.80-O	14	1330	30°01.0'	120°07.5'	2000	320°	2	cloudy	moderate	16.74	33.56
100.85-O	14	1030	29°50.0'	120°28.0'	2000+	320°	5	partly cloudy	moderate	17.63	33.82
103.30-O	16	0300	31°05.0'	116°25.0'	39	calm		cloudy	rough	15.03	33.60

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
103.35-O	V-16	0530	30°55.0'	116°45.0'	1000	310°	1	cloudy	rough	16.08	33.61
103.40-O	16	0805	30°45.0'	117°05.5'	1040	320°	1	overcast	rough	17.12	33.62
103.45-O	16	1100	30°35.5'	117°25.0'	1200	320°	1	overcast	rough	16.95	33.64
103.50-O	16	1345	30°26.0'	117°45.0'	1250	320°	1	cloudy	rough	16.86	33.60
103.55-O	16	1630	30°16.0'	118°05.0'	1200	300°	1	overcast	rough	16.81	33.67
103.65-O	17	0020	29°56.0'	118°45.0'	1700	300°	5	overcast	very rough	17.00	33.68
103.70-O	17	0320	29°43.5'	119°05.5'	1800	300°	4	cloudy	very rough	16.54	33.53
103.75-O	17	0605	29°34.0'	119°26.0'	1800	290°	4	cloudy	very rough	17.47	33.84
103.80-O	17	0900	29°25.0'	119°46.0'	1860	300°	2	cloudy	very rough	17.50	33.84
103.85-O	17	1200	29°15.0'	120°06.0'	2000+	350°	2	cloudy	very rough	17.57	33.86
103.90-O	17	1445	29°05.5'	120°26.0'	2000+	350°	3	cloudy	very rough	17.73	33.87
107.32-O	19	0745	30°26.0'	116°11.0'	350	320°	3	cloudy	rough	17.76	33.71
107.35-O	19	0600	30°20.0'	116°23.0'	1000	320°	3	cloudy	very rough	17.72	33.70
107.40-O	19	0345	30°10.5'	116°32.5'	500	320°	3	partly cloudy	very rough	17.60	33.71
107.45-O	19	0045	30°01.0'	116°58.0'	1250	320°	5	partly cloudy	very rough	17.21	33.66
107.50-O	18	2145	29°51.5'	117°20.0'	1800	330°	5	partly cloudy	very rough	17.13	33.68
107.55-O	18	1820	29°39.0'	117°42.5'	1800	340°	5	partly cloudy	very rough	17.65	33.87
107.65-O	18	1115	29°21.0'	118°22.0'	2000+	330°	4	cloudy	very rough	17.75	33.88
107.70-O	18	0805	29°10.0'	118°43.0'	2000+	340°	4	cloudy	very rough	17.72	33.86

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
107.75-O	V-18	0500	29°01.5'	119°01.0'	2000+	340°	4	cloudy	very rough	17.30	33.91
107.80-O	18	0215	28°51.5'	119°20.0'	2000+	340°	5	cloudy	very rough	17.80	33.86
107.85-O	17	2310	28°42.0'	119°39.5'	2000+	340°	5	overcast	very rough	17.90	33.89
107.90-O	17	1945	28°30.0'	120°03.0'	2000+	350°	4	partly cloudy	very rough	17.86	33.85
110.33-O	20	0015	29°50.0'	115°52.0'	48	280°	2	overcast	rough	16.69	33.64
110.35-O	20	0130	29°46.0'	116°00.0'	700	290°	2	overcast	rough	17.64	33.68
110.40-O	20	0435	29°36.0'	116°19.5'	1000	290°	2	cloudy	rough	17.06	33.61
110.45-O	20	0730	29°26.0'	116°40.0'	550	300°	2	cloudy	rough	17.36	33.72
110.50-O	20	1000	29°16.0'	116°59.0'	1950	300°	2	cloudy	rough	17.60	33.86
110.55-O	20	1300	29°05.5'	117°19.0'	1100	210°	2	cloudy	very rough	17.49	33.80
110.65-O	20	1910	28°45.0'	117°58.5'	2000	300°	3	partly cloudy	very rough	17.85	33.86
110.70-O	21	0240	28°36.0'	118°19.0'	1750	320°	5	cloudy	high	17.66	33.82
110.75-O	21	0525	28°27.0'	118°37.5'	2000	320°	5	cloudy	high	17.65	33.80
110.80-O	21	0820	28°18.0'	118°58.0'	2050	320°	5	overcast	high	17.76	33.83
110.85-O	21	1110	28°08.0'	119°17.0'	2000+	320°	4	cloudy	high	17.65	33.86
113.30-O	23	0830	29°22.5'	115°17.5'	36	320°	2	cloudy	moderate	16.22	33.61
113.35-O	23	0500	29°12.0'	115°39.0'	600	320°	2	cloudy	moderate	16.82	33.65
113.40-O	23	0135	28°58.5'	116°02.0'	1040	320°	2	cloudy	moderate	16.92	33.64
113.45-O	22	2250	28°50.0'	116°20.0'	1000	320°	2	cloudy	moderate	17.20	33.65

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
113.50-O	V-22	1930	28°39.5'	116°40.5'	2000	330°	1	overcast	rough	17.72	33.86
113.55-O	22	1640	28°30.0'	116°59.0'	1900	310°	2	cloudy	rough	17.71	33.82
113.65-O	22	0940	28°10.0'	117°36.0'	1000	310°	2	cloudy	rough	17.80	33.78
113.70-O	22	0650	28°00.0'	117°54.0'	1850	300°	2	cloudy	rough	17.88	33.74
113.75-O	22	0400	27°49.5'	118°13.0'	2000+	320°	2	cloudy	very rough	17.90	33.77
113.80-O	22	0130	27°40.5'	118°33.0'	2000+	310°	2	cloudy	very rough	18.66	34.05
113.85-O	21	2230	27°31.0'	118°52.5'	2000+	320°	2	partly cloudy	very rough	18.70	34.05
113.90-O	21	1925	27°28.5'	119°17.0'	2000+	310°	3	partly cloudy	very rough	18.56	34.05
117.26-O	23	1330	28°56.0'	114°41.0'	41	310°	2	cloudy	moderate	16.88	33.69
117.35-O	23	1740	28°38.0'	115°16.0'	120	310°	2	cloudy	moderate	17.22	33.69
117.40-O	24	0115	28°28.0'	115°35.5'	300	300°	2	partly cloudy	slight	17.58	33.71
117.45-O	24	0415	28°18.0'	115°55.0'	1700	300°	3	partly cloudy	moderate	17.88	33.69
117.55-O	24	1145	27°57.0'	116°33.0'	2400	300°	3	overcast	moderate	18.01	33.68
117.60-O	24	1430	27°46.5'	116°53.5'	2100	300°	3	overcast	moderate	18.15	33.69
117.65-O	24	1715	27°36.0'	117°15.0'	1800	310°	3	overcast	moderate	18.14	33.71
117.70-O	24	2015	27°25.0'	117°37.0'	2100	320°	2	cloudy	moderate	18.18	33.71
117.75-O	24	2155	27°17.0'	117°52.0'	2000+	310°	2	overcast	moderate	17.96	33.75
117.80-O	25	0030	27°06.0'	118°13.0'	2000+	310°	2	partly cloudy	moderate	18.70	34.04
117.85-O	25	0315	26°55.0'	118°34.5'	2100	310°	2	partly cloudy	moderate	18.82	34.04

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
117.90-O	V-25	0515	26°47.5'	118°49.5'	2300	310°	3	partly cloudy	moderate	18.78	34.04
118.39-O	23	2050	28°18.5'	115°23.0'	114	-	1	partly cloudy	slight	17.56	33.69
120.40-P	17	1235	27°56.5'	115°14.0'	40	-	1	cloudy	slight	17.76	33.77
120.45-P	17	0830	27°42.0'	115°40.5'	700	340°	5	cloudy	moderate	17.24	33.64
120.55-P	17	0130	27°17.0'	116°06.0'	2200	320°	4	cloudy	high	18.08	33.67
120.60-P	16	2228	27°06.5'	116°28.0'	2250	320°	4	cloudy	very rough	18.03	33.70
120.65-P	16	1905	26°54.0'	116°50.0'	2250	-	1	cloudy	very rough	18.17	33.75
120.70-P	16	1635	26°46.5'	117°07.0'	2300	320°	3	cloudy	very rough	18.74	33.99
120.75-P	16	1340	26°39.5'	117°26.0'	2250	340°	6	cloudy	very rough	18.77	34.02
120.80-P	16	1045	26°32.0'	117°48.5'	2380	340°	6	cloudy	very rough	18.90	34.16
120.85-P	16	0733	26°27.0'	118°11.0'	2400	340°	5	cloudy	very rough	19.06	34.13
120.90-P	16	0500	26°24.0'	118°28.0'	2400	300°	4	cloudy	rough	18.94	34.09
123.37-P	14	1810	27°24.0'	114°39.5'	42	240°	5	missing	rough	14.00	33.75
123.42-P	14	2135	27°15.0'	114°59.5'	870	320°	6	partly cloudy	high	17.62a)	33.68a)
123.45-P	15	0025	27°07.5'	115°11.0'	2350	320°	7	cloudy	high	18.14	33.69
123.50-P	15	0530	27°04.5'	115°34.5'	2300	320°	6	overcast	high	18.53	33.97
123.55-P	15	0840	26°49.5'	115°51.5'	2300+	320°	6	cloudy	very rough	18.60	33.97

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

a) Depth, 11 meters.

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
123.60-P	V-15	1205	26°32.5'	116°07.0'	2280	320°	6	cloudy	very rough	18.88	34.05
123.65-P	15	1535	26°26.5'	116°30.0'	2200	320°	5	cloudy	very rough	18.62	34.02
123.70-P	15	1810	26°20.0'	116°53.0'	2350	320°	4	cloudy	very rough	18.58	33.93
127.34-P	13	1105	26°55.5'	114°06.0'	40	360°	2	partly cloudy	moderate	16.76	33.75
127.40-P	13	0735	26°43.0'	114°29.5'	1750	360°	4	partly cloudy	moderate	17.28a)	33.75
127.45-P	13	0435	26°33.0'	114°49.0'	2000	320°	4	partly cloudy	moderate	16.14	33.74
127.50-P	13	0124	26°26.5'	115°09.0'	2350	320°	2	cloudy	moderate	18.34	33.82
127.55-P	12	2218	26°22.0'	115°34.5'	2250	360°	2	cloudy	moderate	18.45	33.88
127.60-P	12	1911	26°23.5'	115°58.0'	2100	360°	2	cloudy	moderate	19.00	34.10
127.65-P	12	1600	26°10.0'	116°18.5'	2250	280°	3	cloudy	slight	18.84	34.00
127.70-P	12	1300	25°58.0'	116°35.5'	2350	270°	3	rain	moderate	19.27	34.25
130.30-P	11	0910	26°30.0'	113°29.5'	42	270°	3	missing	moderate	14.59	33.79
130.35-P	11	1235	26°19.0'	113°52.0'	450	320°	3	missing	slight	17.29	33.78
130.45-P	11	1910	25°53.0'	114°56.5'	2110	280°	1	overcast	moderate	18.07	33.78
130.50-P	11	2150	25°47.0'	114°43.0'	2200	300°	2	cloudy	rough	18.27	33.84
130.55-P	12	0105	25°35.0'	115°04.0'	2250	320°	4	cloudy	rough	19.40	34.18
130.60-P	12	0413	25°30.0'	115°24.0'	2200	320°	4	partly cloudy	rough	19.48	34.23

a) Alternate value, 17.41°C.

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
133.25-P	V-11	0218	26°04.5'	112°44.5'	45	270°	4	missing	rough	16.16	33.92
133.30-P	10	2318	25°52.0'	113°06.5'	110	320°	5	missing	very rough	17.62	33.85
133.35-P	10	2025	25°40.0'	113°23.5'	350	320°	5	missing	very rough	17.90	33.84
133.40-P	10	1735	25°28.5'	113°44.0'	1910	320°	6	cloudy	high	17.80	33.78
133.45-P	10	1435	25°18.5'	114°04.0'	1900	320°	6	cloudy	high	17.92	33.86
133.50-P	10	1154	25°09.0'	114°22.5'	2000+	320°	5	cloudy	high	18.47	33.93
137.23-P	9	1035	25°34.0'	112°19.0'	40	-	-	missing	moderate	16.16	33.98
137.30-P	9	1425	25°19.5'	112°44.0'	130	280°	4	cloudy	rough	18.06	34.00
137.35-P	9	1743	25°07.5'	113°05.0'	650	280°	5	cloudy	very rough	18.95	33.89
137.45-P	10	0014	24°50.0'	113°42.5'	1900+	280°	5	missing	very rough	18.03	33.85
137.50-P	10	0315	24°41.0'	114°00.0'	2050	320°	5	missing	high	19.00	34.04

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

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