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UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA
CCOFI CRUISE 5809
(MLR 112)
4-19 September 1958

SIO Reference 58-84
1 December 1958

UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY

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CCOFI CRUISE 5809

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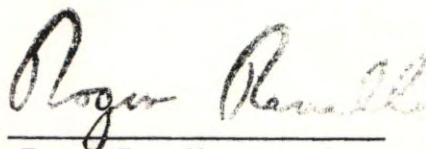
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Marine Research Committee

SIO Reference 58-84

1 December 1958

Approved for distribution:



Roger Revelle, Director

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FIGURES

1. CCOFI Cruise 5809 (MLR 112), station positions
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INTRODUCTION

The data presented in this report were collected on the one hundred and twelfth consecutive cruise of the California Cooperative Oceanic Fisheries Investigations program. The R/V Black Douglas of the U. S. Fish and Wildlife Service and the R/V Orca of the Scripps Institution participated in this cruise.

The data are tabulated at observed depths, and the interpolated and computed values are tabulated at standard depths. They 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, each messenger time and wire angle is 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. Contribution from the Scripps Institution of Oceanography, New Series, No. 000.

FOOTNOTES

Standard footnotes which appear frequently are "loose bottle cap" and "possible evaporation." To avoid any confusion as to their meaning the following explanation is included.

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

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

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

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

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

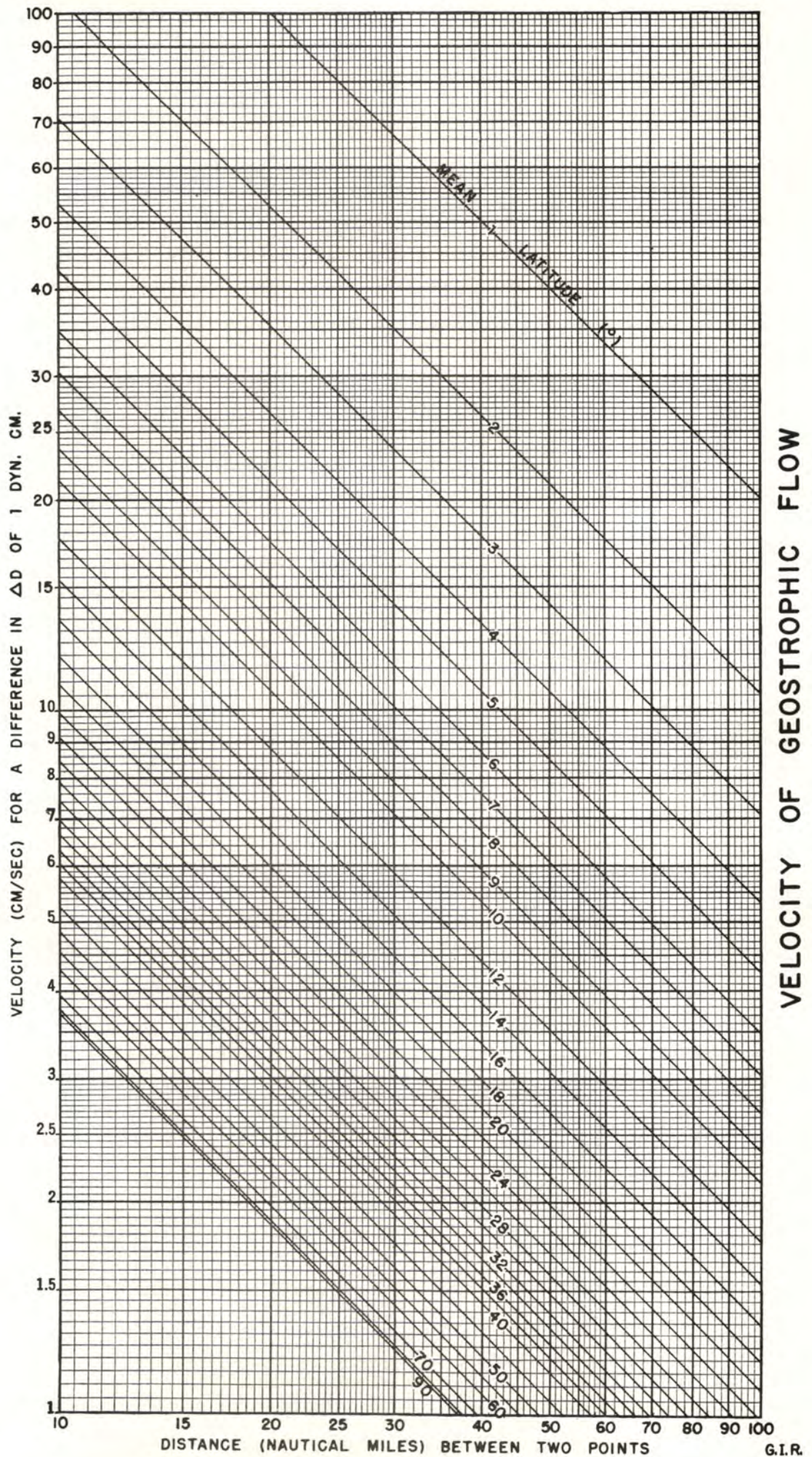
To indicate a premature or a delayed reversal of the water-sampling device which results in certain depth and property errors, the following notation is used.

p: pretrip or posttrip.

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

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

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



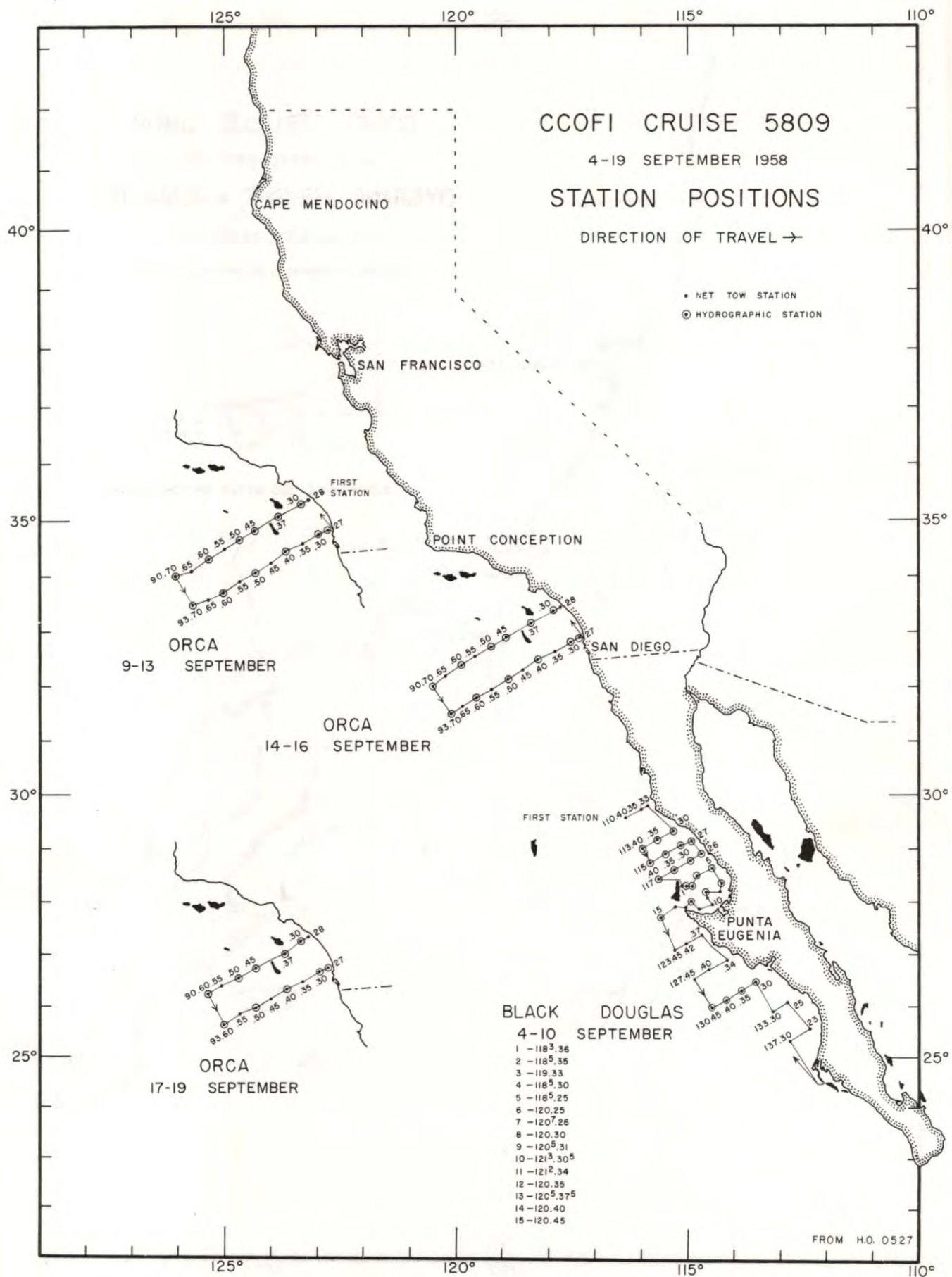


FIGURE 1

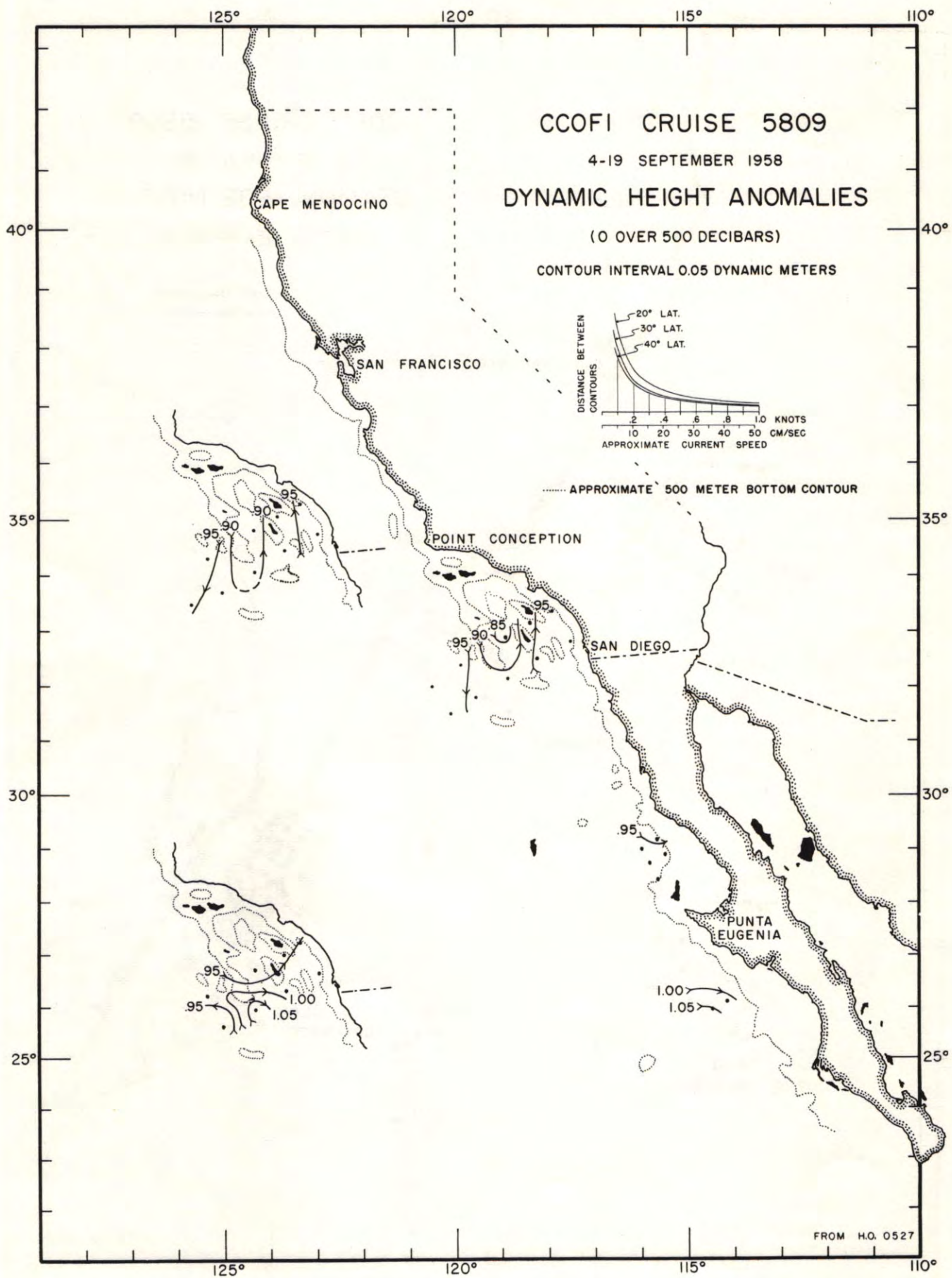


FIGURE 2

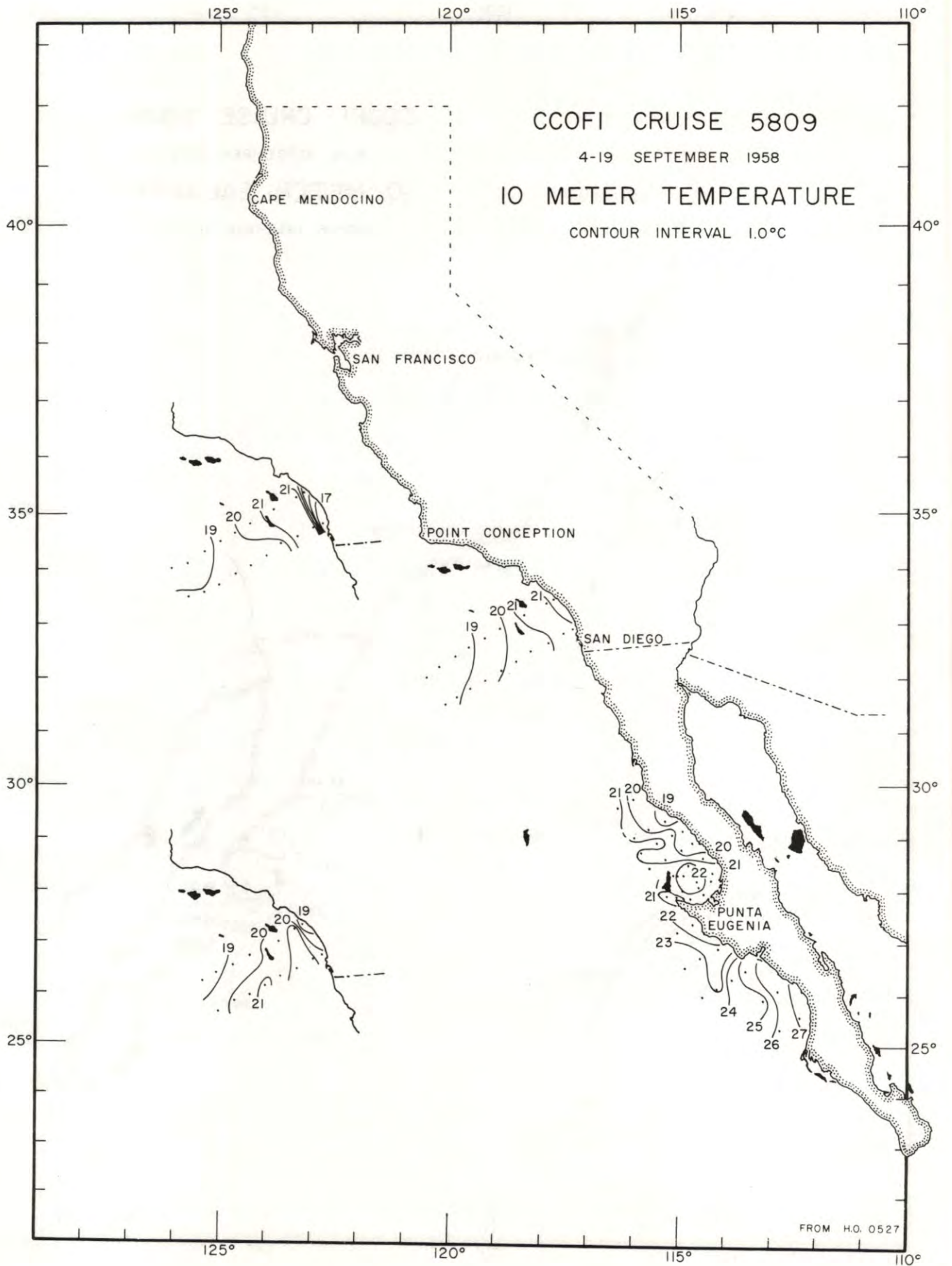


FIGURE 3

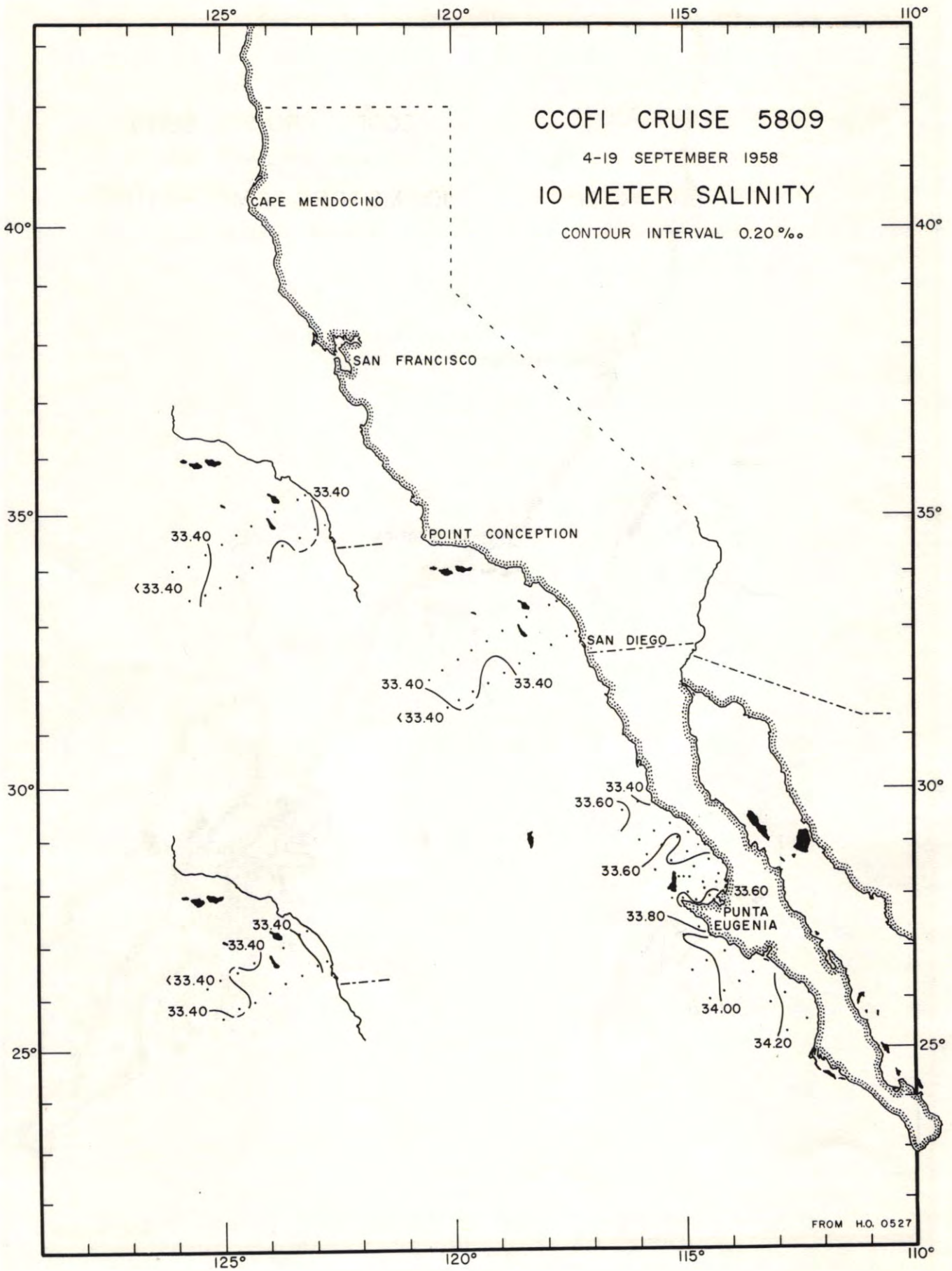


FIGURE 4

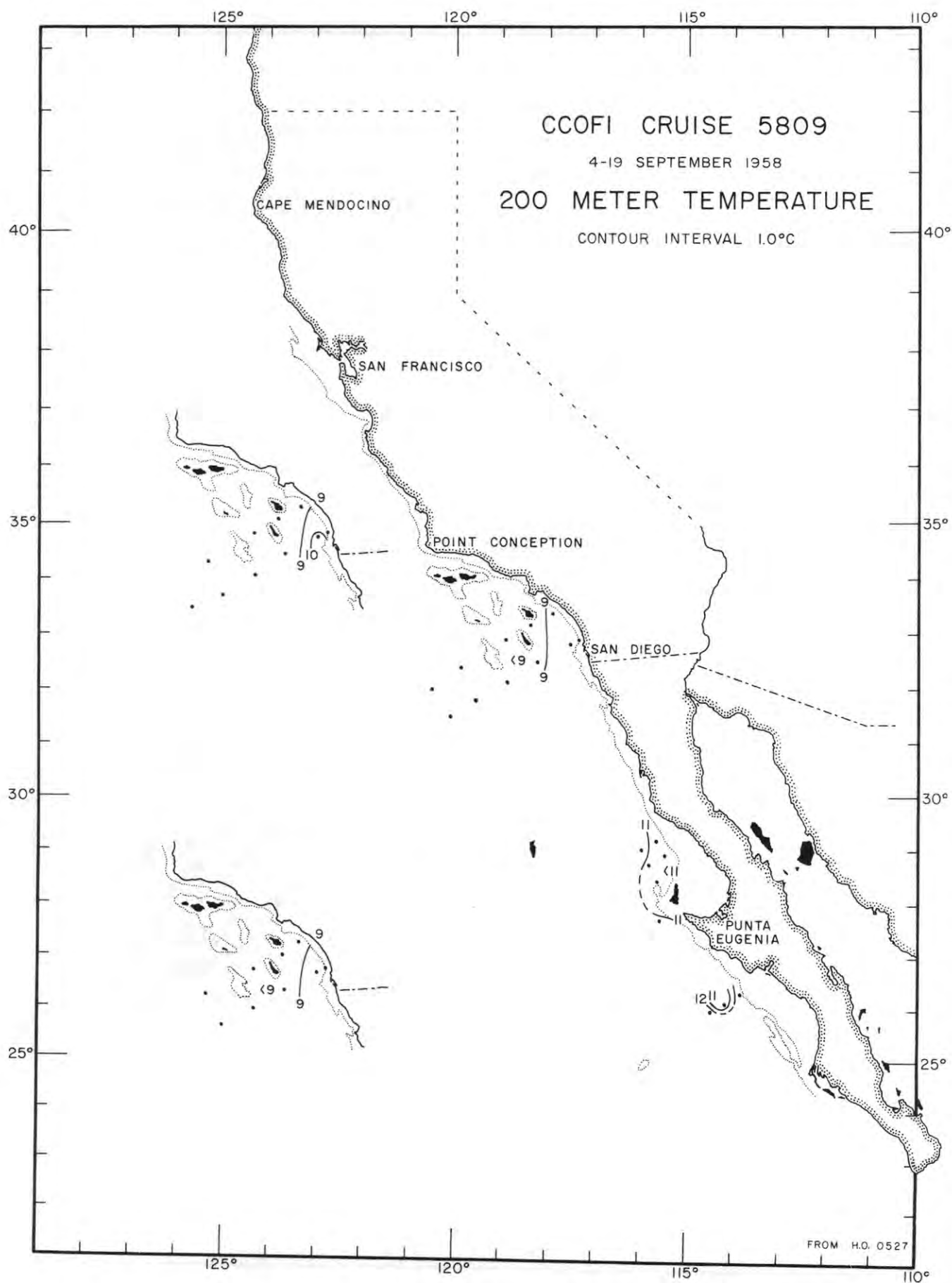


FIGURE 5

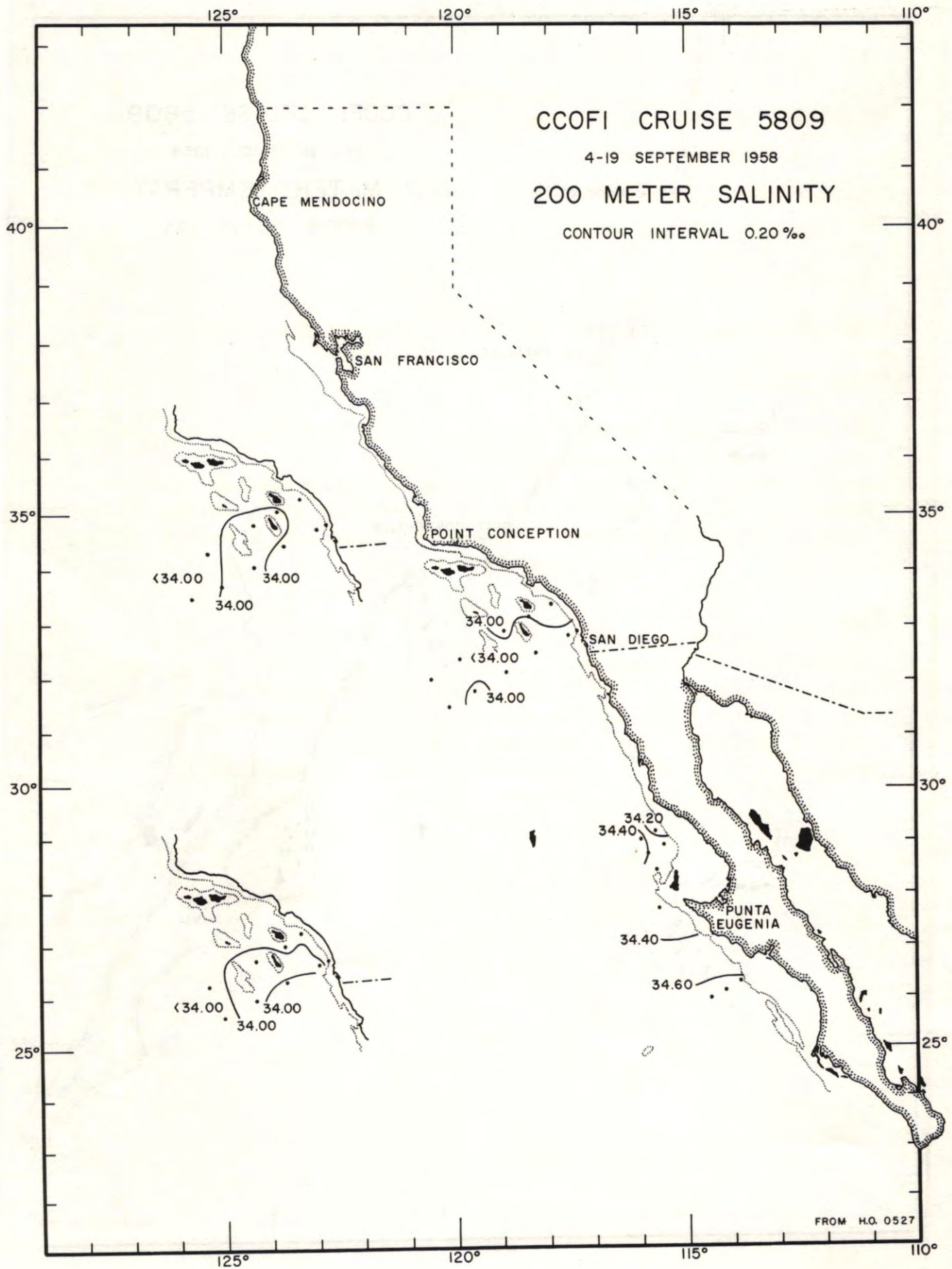


FIGURE 6

PERSONNEL
CRUISE 5809

SHIPS' CAPTAINS

Forster, Charles W. , R/V Black Douglas
Newbegin, Robert C. , R/V Orca

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

R/V Black Douglas

Vrooman, Andrew M. , Fishery Research Biologist, U. S. Fish and Wildlife Service
Joyal, Norman F. , Marine Technician
Kimura, Makota, Fishery Research Biologist, U. S. Fish and Wildlife Service
MacGregor, John S. , Fishery Research Biologist, U. S. Fish and Wildlife Service
Tebble, Norman, Senior Scientific Officer, British Museum of Natural History,
London, England

R/V Orca

Brown, Daniel M. , Senior Marine Technician
Ames, Nicholas C. , Marine Technician (first part of cruise)
Bottom, Kenneth S. , Marine Technician (second part of cruise)
Brennan, Robert E. , Marine Technician
Hubbard, Lyle T. , Jr. , Fishery Aid, U. S. Fish and Wildlife Service
Tracy, Robert S. , Marine Technician

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

ORCA; September 10, 1958; 0940 GCT; 33°24.5'N, 117°55'W; sounding, 340 fm; wind, 240°, force 1; weather, clear; sea, moderate; wire angle, 08°.

9030

1	21.65	33.51	4.53	468	0	(21.65)	(33.51)	(4.53)	(23.20)	(468)	(0.00)
10	21.66	33.53	5.41	467	10	21.66	33.53	5.41	23.21	467	0.05
30	15.70	33.22	6.26	347	20	19.94	33.44	5.68	23.59	431	0.09
40	14.70	33.15	6.29	332	30	15.70	33.22	6.26	24.47	347	0.13
50	13.76	33.18	6.19	311	50	13.76	33.18	6.19	24.86	311	0.20
60	13.01	33.22	5.47	293	75	11.96	33.27	5.10	25.28	270	0.27
71	12.12	33.26	5.18	274	100	10.54	33.37	4.43	25.61	238	0.33
85	11.54	33.31	4.91	260	150	9.41	33.68	3.65	26.02	198	0.44
99	10.56	33.37	4.44	239	200	8.84	33.93	2.59	26.32	171	0.54
114	10.09	33.47	4.17	224	250	8.50	34.07	1.96	26.49	155	0.62
135	9.66	33.64	3.84	205	300	8.08	34.17	1.80	26.63	142	0.70
164	9.15	33.71	3.48	191	400	7.26	34.26	0.86	26.82	124	0.84
196	8.85	33.91	2.60	172	500	6.55	34.31	0.50	26.96	111	0.96
241	8.58	34.05	1.98	157							
315	7.96	34.20	1.75	138							
410	7.20	34.27	0.73	122							
534	6.26	34.32	0.43	106							

ORCA; September 14, 1958; 0530, 0607 GCT; 33°24'N, 117°55.5'W; sounding, 321 fm; wind, calm; weather, clear; sea, moderate; wire angle, 02°, 02°.

9030

0	21.42	33.44	5.36	467	0	21.42	33.44	5.36	23.21	467	0.00
10	21.37	33.48	5.37	462	10	21.37	33.48	5.37	23.26	462	0.05
30	16.01	33.25	6.22	352	20	19.74	33.41	5.66	23.64	426	0.09
40	15.85	33.49	5.98	330	30	16.01	33.25	6.22	24.42	352	0.13
50	14.70	33.44	5.89	311	50	14.70	33.44	5.89	24.85	311	0.20
60	13.24	33.32	5.45	290	75	11.70	33.30	4.97	25.35	264	0.27
70	12.06	33.30	5.13	270	100	11.10	33.53	4.45	25.64	236	0.33
84	11.28	33.32	4.01r	255	150	9.88	33.83	2.78	26.08	194	0.44
98	11.18	33.48	4.61	241	200	9.48	34.07	2.17	26.34	170	0.53
112	10.70	33.68	3.43	218	250	8.38	34.05	2.10	26.49	155	0.62
137	10.16	33.78	2.99	202	300	8.27	34.16	1.50	26.60	145	0.69
165	9.64	33.88	2.59	186	400	7.35	34.25	0.70	26.80	126	0.83
					500	6.41	34.30	0.53	26.96	110	0.96
197	9.52	34.07	2.18	170							
244	8.41	34.04	2.14	156							
321	8.24	34.20	1.33	142							
417	7.14	34.26	0.62	122							
543	6.02	34.33	0.50	103							

ORCA; September 17, 1958; 0948 GCT; 33°24.5'N, 117°55'W; sounding, 300+ fm; wind, calm; weather, clear; sea, smooth; wire angle, 00°.

9030

0	21.25	33.44	5.34	462	0	21.25	33.44	5.34	23.26	462	0.00
10	21.09	33.40	5.34	461	10	21.09	33.40	5.34	23.28	461	0.05
30	16.00	33.15	6.28	359	20	18.50	33.27	5.84	23.84	407	0.09
41	14.79	33.18	6.20	331	30	16.00	33.15	6.28	24.35	359	0.13
49	13.52	33.22	5.92	303	50	13.45	33.23	5.85	24.96	301	0.19
60	12.69	33.38	4.77	276	75	11.40	33.44	4.29	25.50	249	0.26
69	11.33	33.31	4.80	256	100	10.87	33.58	3.80	25.71	229	0.32
83	11.28	33.55	4.19	238	150	9.99	33.79	2.93	26.04	198	0.43
98	10.92	33.58	3.98	229	200	8.81	33.94	2.47	26.34	170	0.53
112	10.74	33.67	3.39	220	250	8.66	34.13	1.70	26.51	153	0.61
135	10.26	33.72	3.15	208	300	8.02	34.14	1.63	26.62	143	0.68
164	9.74	33.86	2.75	189	400	7.38	34.23	0.89	26.79	127	0.82
196	8.84	33.93	2.52	170	500	6.45	34.30	0.52	26.96	110	0.95
244	8.76	34.13	1.72	154							
321	7.83	34.14	1.60	140							
419	7.26	34.25	0.72	124							
548	5.84	34.33	0.42	100							

S10

CCOFI
5809

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	

9037 ORCA; September 10, 1958; 1505, 1555 GCT; 33°10.5'N, 118°23.5'W; sounding, 600+ fm; wind, 290°, force 4; weather, partly cloudy; sea, moderate; wire angle, 18°, 18°.

0	21.36	33.48	5.32	462	0	21.36	33.48	5.32	23.26	462	0.00
10	21.36	33.49	5.37	462	10	21.36	33.49	5.37	23.26	462	0.05
28	17.05	33.27	6.29	373	20	21.35	33.49	5.38	23.27	461	0.09
43	14.32	33.17	6.37	327	30	16.55	33.25	6.34	24.29	364	0.13
52	13.44	33.19	6.18	304	50	13.57	33.18	6.22	24.89	307	0.20
63	12.86	33.22	5.42	291	75	11.72	33.34	4.88	25.38	261	0.27
72	11.95	33.31	4.99	267	100	10.30	33.53	4.08	25.78	223	0.33
91	10.74	33.49	4.38	233	150	9.08	33.82	3.00	26.20	183	0.44
105	10.12	33.55	3.96	219	200	8.52	34.04	2.20	26.47	157	0.52
					250	8.02	34.09	1.64	26.58	146	0.60
119	9.78	33.59	3.73	210	300	7.72	34.17	1.27	26.69	136	0.67
139	9.26	33.75	3.22	190	400	7.10	34.29	0.72	26.86	120	0.81
168	8.82	33.90	2.65	173	500	6.48	34.32	0.48	26.98	109	0.93
204	8.49	34.05	2.17	156							
257	7.96	34.10	1.56	145							
336	7.50	34.23	1.05	129							
436	6.88	34.31	0.56	115							
578	5.95	34.33	0.39	102							

9037 ORCA; September 14, 1958; 1105, 1147 GCT; 33°10.5'N, 118°23.5'W; sounding, 678 fm; wind, 020°, force 1; weather, clear; sea, moderate; wire angle, 05°, 03°.

0	21.20	33.42	5.39	463	0	21.20	33.42	5.39	23.26	463	0.00
10	21.20	33.47	5.37	459	10	21.20	33.47	5.37	23.30	459	0.05
30	17.36	33.37	6.17	372	20	21.16	33.47	5.38	23.31	458	0.09
40	15.14	33.23	6.44	335	30	17.36	33.37	6.17	24.20	372	0.13
50	13.72	33.17	6.36	330	50	13.72	33.17	6.36	24.86	310	0.20
60	13.19	33.17	6.12	300	75	12.26	33.33	5.03	25.26	272	0.27
69	12.60	33.30	5.27	280	100	10.61	33.50	4.07	25.70	230	0.34
84	11.68	33.38	4.71	258	150	9.00	33.85	2.98	26.24	179	0.44
98	10.62	33.50	4.08	230	200	8.53	34.00	2.43	26.44	160	0.53
113	9.96	33.57	3.91	215	250	8.01	34.10	1.92	26.59	146	0.61
136	9.35	33.73	3.40	193	300	7.78	34.18	1.43	26.68	137	0.68
163	8.84	33.91	2.78	172	400	6.99	34.19	0.90	26.81	125	0.82
					500	6.40	34.27	0.46	26.95	112	0.94
198	8.54	34.00	2.44	161							
246	8.01	34.10	1.94	146							
323	7.61	34.20	1.25	133							
422	6.80	34.19	0.80	123							
549	6.13	34.36	0.37	101							

9037 ORCA; September 17, 1958; 1545 GCT; 33°10.5'N, 118°23.5'W; sounding, 600 fm; wind, 270°, force 3; weather, cloudy; sea, slight; wire angle, 03°.

0	20.41	33.44	5.22	441	0	20.41	33.44	5.22	23.49	441	0.00
10	20.38	33.43	4.72	441	10	20.38	33.43	4.72	23.49	441	0.04
30	19.31	33.37	5.25	419	20	20.25	33.42	4.78	23.51	438	0.09
45	14.58	33.15	5.80	329	30	19.31	33.37	5.25	23.72	419	0.13
55	13.60	33.15	5.97	310	50	14.12	33.15	5.88	24.76	320	0.20
66	12.56	33.22	5.47	285	75	11.85	33.30	5.26	25.32	266	0.28
76	11.82	33.30	5.24	266	100	10.30	33.50	4.05	25.75	226	0.34
95	10.44	33.48	4.12	229	150	9.13	33.76	3.32	26.15	188	0.44
110	10.05	33.55	3.94	218	200	8.56	33.99	2.40	26.42	162	0.53
124	9.60	33.63	3.69	204	250	7.92	34.06	1.92	26.57	148	0.61
148	9.16	33.76	3.34	188	300	7.52	34.13	1.43	26.68	137	0.69
176	8.87	33.89	2.73	174	400	6.95	34.23	0.72	26.84	122	0.82
213	8.38	34.02	2.24	157	500	6.38	34.29	0.45	26.96	110	0.94
266	7.76	34.07	1.81	144	600	(5.83)	(34.34)	(0.40)	(27.07)	(100)	(1.05)
347	7.29	34.19	1.01	129							
447	6.64	34.26	0.50	116							
590	5.90	34.33	0.40	102							

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

ORCA; September 10, 1958; 2235, 2248 GCT; 32°55'N, 118°56'W; sounding, 800 fm; wind, 320°, force 5; weather, cloudy; sea, very rough; wire angle, 11°, 11°.

9045

0	20.41	33.51	5.41	436	0	20.41	33.51	5.41	23.54	436	0.00
10	20.40	33.51	5.57	436	10	20.40	33.51	5.57	23.54	436	0.04
					20	15.97	33.35	5.90	24.52	343	0.08
34	14.34	33.30	6.00	313	30	14.80	33.31	5.97	24.74	322	0.12
44	13.38	33.37	5.43	289	50	12.90	33.39	5.18	25.19	279	0.18
58	12.15	33.42	4.83	263	75	11.20	33.50	4.44	25.60	240	0.24
69	11.68	33.48	4.53	250	100	9.90	33.61	3.82	25.90	211	0.30
78	10.86	33.52	4.39	233	150	9.03	33.92	2.69	26.30	174	0.39
98	9.95	33.60	3.83	212	200	8.65	34.10	2.00	26.49	155	0.48
115	9.40	33.78	3.15	190	250	8.16	34.16	1.65	26.61	143	0.55
130	9.44	33.80u	3.13	-	300	7.80	34.17	1.56	26.67	138	0.63
153	8.93	33.93	2.57	172	400	6.99	34.24	1.12	26.85	121	0.76
189	8.75	34.06	2.18	159	500	6.43	34.29	0.64	26.96	111	0.88
226	8.36	34.16	1.73	146	600	5.89	34.36	0.48	27.08	99	0.99
282	7.94	34.16	1.60	140							
368	7.22	34.22	1.37	126							
477	6.58	34.28	0.69	113							
626	5.78	34.38	0.42	96							

ORCA; September 14, 1958; 1643 GCT; 32°57'N, 118°56.5'W; sounding, 950 fm; wind, 120°, force 2; weather, clear; sea, rough; wire angle, 08°.

9045

0	19.78	33.50	5.47	420	0	19.78	33.50	5.47	23.70	420	0.00
10	19.35	33.49	5.64	411	10	19.35	33.49	5.64	23.80	411	0.04
30	13.41	33.35	5.48	291	20	14.08	33.37	5.49	24.93	304	0.08
40	12.31	33.37	4.80	269	30	13.41	33.35	5.48	25.06	291	0.11
51	11.76	33.41	4.53	256	50	11.80	33.41	4.57	25.42	256	0.16
60	11.20	33.46	4.46	243	75	10.15	33.54	3.92	25.81	220	0.22
68	10.38	33.52	4.05	225	100	9.59	33.68	3.44	26.01	201	0.28
85	9.92	33.58	3.80	233	150	8.92	33.99	2.55	26.36	167	0.37
99	9.60	33.68	3.45	201	200	8.40	34.08	1.95	26.51	153	0.45
112	9.43	33.77	3.23	191	250	8.05	34.15	1.70	26.62	143	0.52
136	9.08	33.90	2.78	176	300	7.66	34.19	1.43	26.72	134	0.60
164	8.73	34.05	2.29	160	400	6.84	34.26	0.71	26.88	118	0.73
196	8.44	34.07	2.00	154	500	6.40	34.29	0.50	26.96	110	0.84
243	8.08	34.14	1.72	143							
320	7.46	34.21	1.29	130							
415	6.78	34.27	0.65	116							
541	6.22	34.30	0.47	107							

ORCA; September 17, 1958; 2107, 2149 GCT; 32°55'N, 118°56'W; sounding, 900 fm; wind, 270°, force 3; weather, cloudy; sea, slight; wire angle, 09°, 08°.

9045

0	20.02	33.39	5.51	435	0	20.02	33.39	5.51	23.55	435	0.00
10	19.74	33.38	5.51	428	10	19.74	33.38	5.51	23.62	428	0.04
					20	19.50	33.37	5.53	23.67	423	0.09
30	14.45	33.20	5.83	322	30	14.45	33.20	5.83	24.73	322	0.12
45	13.10	33.33	5.42	287	50	13.01	33.32	5.46	25.11	286	0.18
55	12.92	33.31	5.48a)	285	75	11.44	33.42	4.51	25.49	250	0.25
65	12.16	33.38	4.92	266	100	9.77	33.62	3.80	25.94	208	0.31
74	11.45	33.42	4.52	250	150	8.95	33.90	2.60	26.28	175	0.41
93	10.00	33.59	3.96	214	200	8.62	34.02	2.14	26.44	160	0.49
107	9.59	33.66	3.65	202	250	8.10	34.09	1.70	26.57	148	0.57
121	9.35	33.77	3.07	190	300	7.72	34.11	1.46	26.64	141	0.64
144	8.98	33.89	2.64	176	400	6.99	34.18	0.98	26.80	126	0.78
172	8.85	33.96	2.39	168	500	6.40	34.27	0.62	26.95	112	0.91
209	8.54	34.04	2.07	158	600	(5.82)	(34.35)		(27.08)	(99)	(1.02)
261	8.00	34.10	1.62	146							
340	7.41	34.12	1.32	136							
439	6.71	34.22	0.70	119							
580	5.92	34.33	0.50	101							

a) Alternate value, 5.24 ml/L, not used in interpolation.

S10

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5809

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

9050 ORCA; September 11, 1958; 0255 GCT; 32°44'N, 119°15'W; sounding, 112 fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 20°.

0	19.14	33.45	5.68	409	0	19.14	33.45	5.68	23.82	409	0.00
9	19.14	33.46	5.69	408	10	19.13	33.46	5.69	23.84	407	0.04
28	18.76	33.42	5.71	402	20	19.08	33.45	5.69	23.85	406	0.08
47	14.98	33.28	6.32	328	30	18.70	33.42	5.72	23.90	401	0.12
70	12.26	33.40	4.86	267	50	14.78	33.29	6.25	24.72	324	0.19
94	11.23	33.52	4.26	240	75	12.00	33.42	4.70	25.38	260	0.27
					100	(10.90)	(33.57)	(4.05)	(25.70)	(230)	(0.33)

9050 ORCA; September 14, 1958; 2105 GCT; 32°45.5'N, 119°14.5'W; sounding, 128 fm; wind, 300°, force 3; weather, clear; sea, rough; wire angle, 01°.

0	19.98	33.53	5.68	424	0	19.98	33.53	5.68	23.67	424	0.00
10	19.12	33.48	5.62	406	10	19.12	33.48	5.62	23.85	406	0.04
30	16.64	33.40	5.68	355	20	18.88	33.47	5.63	23.91	401	0.08
50	13.14	33.29	5.80	290	30	16.64	33.40	5.68	24.39	355	0.12
76	11.60	33.40	4.98	254	50	13.14	33.29	5.80	25.07	290	0.18
100	10.67	33.57	3.99	226	75	11.63	33.40	5.01	25.44	256	0.25
					100	10.67	33.57	3.99	25.74	226	0.31

9050 ORCA; September 18, 1958; 0145 GCT; 32°44.5'N, 119°16.5'W; sounding, 180 fm; wind, 300°, force 4; weather, cloudy; sea, moderate; wire angle, 18°.

0	19.08	33.47	5.55	406	0	19.08	33.47	5.55	23.86	406	0.00
9	19.28	33.44	5.60	413	10	19.28	33.44	5.60	23.78	413	0.04
28	17.06	33.36	5.85	367	20	18.05	33.39	5.79	24.05	387	0.08
47	13.62	33.30	5.55	299	30	17.05	33.40	5.85	24.29	364	0.12
73	11.52	33.37	4.84	256	50	13.45	33.33	5.45	25.05	292	0.18
96	9.75	33.62	3.53	208	75	11.40	33.38	4.83	25.46	253	0.25
					100	(9.48)	(33.64)	(3.35)	(26.00)	(202)	(0.31)

9060 ORCA; September 11, 1958; 1055, 1240 GCT; 32°22'N, 119°57.5'W; sounding, 450+ fm; wind, 300°, force 6; weather, clear; sea, very rough; wire angle, 26°, 22°.

0	18.88	33.26	5.86	416	0	18.88	33.26	5.86	23.74	416	0.00
9	18.85	33.31	5.56	412	10	18.86	33.31	5.57	23.78	412	0.04
27	18.89	33.26	5.66	416	20	18.87	33.28	5.61	23.76	415	0.08
40	16.22	33.24	6.19	357	30	18.77	33.25	5.70	23.76	415	0.12
50	15.37	33.25	6.02	338	50	15.37	33.25	6.02	24.57	338	0.20
59	14.66	33.22	6.16	326	75	13.78	33.21	6.09	24.87	309	0.28
69	14.06	33.21	6.13	315	100	11.26	33.27	5.23	25.40	259	0.35
86	13.08	33.21	5.94	295	150	9.23	33.64	4.02	26.05	197	0.47
98	11.36	33.26	5.26	261	200	8.47	33.96	2.93	26.41	163	0.56
111	10.59	33.35	5.08	241	250	7.77	33.99	2.36	26.54	150	0.64
131	9.63	33.44	4.73	220	300	7.12	34.08	1.64	26.70	135	0.71
155	9.16	33.68	3.88	194	400	6.41	34.14	0.82	26.84	122	0.85
					500	5.82	34.20	0.57	26.97	110	0.97
201	8.46	33.96	2.93	163							
251	7.76	33.99	2.35	150							
327	6.86	34.11	1.37	130							
423	6.30	34.15	0.74	120							
559	5.44	34.26	0.48	101							

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

ORCA; September 15, 1958; 0435 GCT; 32°23'N, 119°52.5'W; sounding, 500 fm; wind, 300°, force 3; weather, clear; sea, very rough; wire angle, 08°.

9060

0	18.72	33.38	5.67	404	0	18.72	33.38	5.67	23.88	404	0.00
10	18.65	33.42	-	400	10	18.65	33.42	-	23.92	400	0.04
30	18.42	33.40	5.71	395	20	18.54	33.41	5.68	23.95	397	0.08
40	16.46	33.34	6.14	355	30	18.42	33.40	5.71	23.97	395	0.12
50	15.58	33.31	6.20	338	50	15.58	33.31	6.20	24.56	338	0.19
59	14.71	33.25	6.36	325	75	13.70	33.29	5.60	24.95	302	0.27
70	14.28	33.31	5.51	311	100	11.26	33.31	5.20	25.44	255	0.34
84	12.43	33.23	5.80	283	150	9.40	33.59	4.32	25.98	204	0.46
100	11.26	33.31	5.20	255	200	8.50	33.92	2.92	26.38	166	0.55
114	10.28	33.36	4.74	235	250	7.78	34.05	2.08	26.58	146	0.63
138	9.60	33.48	4.67	216	300	7.38	34.11	1.60	26.70	136	0.71
166	9.14	33.71	3.70	192	400	6.40	34.19	0.90	26.89	117	0.84
199	8.50	33.92	2.92	166	500	5.92	34.27	0.57	27.00	106	0.96
245	7.81	34.04	2.13	148							
319	7.19	34.14	1.36	132							
413	6.32	34.20	0.87	116							
540	5.74	34.31	0.45	100							

ORCA; September 18, 1958; 0858 GCT; 32°25'N, 119°57.5'W; sounding, 450 fm; wind, 240°, force 5; weather, clear; sea, rough; wire angle, 15°.

9060

0	18.83	33.28	5.51	414	0	18.83	33.28	5.51	23.77	414	0.00
10	18.83	33.31	5.53	412	10	18.83	33.31	5.53	23.79	412	0.04
28	18.83	33.28	5.46	414	20	18.83	33.28	5.50	23.77	414	0.08
43	15.48	33.26	6.07	340	30	18.82	33.28	5.46	23.77	414	0.12
53	15.00	33.26	6.06	330	50	15.17	33.26	6.06	24.61	334	0.20
62	14.50	33.31	6.02	316	75	13.66	33.30	5.86	24.97	300	0.28
72	13.90	33.30	5.92	305	100	11.60	33.39	5.27	25.44	255	0.35
92	12.31	33.36	5.44	270	150	9.41	33.51	4.26	25.91	210	0.46
105	11.14	33.41	5.18	246	200	8.72	33.93	2.45	26.35	168	0.56
119	10.37	33.45	4.99	229	250	8.17	34.04	1.83	26.52	152	0.64
142	9.48	33.49	4.41	213	300	7.40	34.04	1.50	26.63	142	0.72
169	9.22	33.73	3.34	191	400	6.41	34.11	0.87	26.82	124	0.86
206	8.62	33.95	2.36	166	500	5.84	34.19	0.50	26.96	111	0.98
256	8.09	34.04	1.77	151							
334	6.92	34.04	1.31	136							
434	6.20	34.15	0.64	118							
573	5.40	34.23	0.33	103							

ORCA; September 11, 1958; 2025, 2048 GCT; 32°05.5'N, 120°36'W; sounding, 2000+ fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 35°, 45°.

9070

0	18.86	33.25	5.62	417	0	18.86	33.25	5.62	23.74	417	0.00
8	18.82	33.28	5.67	414	10	18.82	33.28	5.66	23.77	414	0.04
24	18.82	33.24	5.65	417	20	18.82	33.25	5.65	23.75	416	0.08
36	18.28	33.30	5.74	399	30	18.81	33.24	5.65	23.75	416	0.12
44	16.44	33.30	6.36	358	50	15.46	33.28	6.17	24.57	338	0.20
53	15.30	33.28	6.15	334	75	14.42	33.25	6.14	24.77	318	0.28
62	14.87	33.28	6.16	326	100	13.10	33.35	5.72	25.11	286	0.36
79	14.24	33.24	6.14	316	150	9.56	33.57	4.90	25.92	209	0.48
90	13.56	33.24	6.12	302							
107	11.94	33.40	5.59	260							
129	10.33	33.48	5.15	227							
160	9.30	33.63	4.74	200							

S10

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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 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m

90.70 ORCA; September 15, 1958; 1120 GCT; 32°01.5'N, 120°30'W; sounding, 2100+ fm; wind, 300°, force 2; weather, clear; sea, rough; wire angle, 08°.

0	18.66	33.36	5.62	404	0	18.66	33.36	5.62	23.87	404	0.00
10	18.64	33.42	5.30	399	10	18.64	33.42	5.30	23.92	399	0.04
30	18.71	33.35	5.42	406	20	18.68	33.37	5.40	23.87	404	0.08
39	18.38	33.36	5.45	397	30	18.71	33.35	5.42	23.85	406	0.12
49	15.86	33.33	5.83	342	50	15.80	33.33	5.85	24.53	342	0.20
59	15.20	33.31	5.96	330	75	14.44	33.32	5.85	24.82	313	0.28
68	14.72	33.31	5.89	320	100	13.58	33.40	5.69	25.06	291	0.36
82	14.15	33.35	5.85	306	150	9.20	33.55	4.42	25.95	205	0.48
97	13.69	33.39	5.72	294	200	8.41	33.87	3.18	26.34	169	0.57
110	11.77	33.45	5.24	253	250	7.86	33.96	2.42	26.50	154	0.65
132	9.88	33.51	4.95	218	300	7.32	34.03	1.85	26.64	141	0.73
159	9.13	33.64	4.37	196	400	6.45	34.12	0.98	26.83	123	0.87
191	8.57	33.84	3.35	173	500	5.75	34.13	0.95	26.92	114	0.99
235	8.01	33.94	2.64	158							
309	7.21	34.04	1.77	139							
401	6.44	34.12	0.97	123							
527	5.58	34.13	0.95	112							

93.27 ORCA; September 10, 1958; 0011, 0037 GCT; a) 32°55'N, 117°21.5'W; sounding, 300 fm; wind, 300°, force 4; weather, clear; sea, moderate; wire angle, 15°, 18°.

227	9.10	34.04	2.14	167							
238	8.80	34.07	2.05	160							
247	8.86	34.11	1.64	158							
256	8.80	34.14	1.64	155							
265	8.64	34.16	1.57	151							
274	8.70	34.20	1.38	149							
283	8.61	34.18	1.38	149							
293	8.45	34.18	1.40	146							
302	8.45	34.16	1.33	147							
312	8.36	34.21	1.29	143							
321	8.23	34.20	1.24	142							
330	8.18	34.21	1.21	140							
340	8.00	34.22	1.16	137							
350	7.95	34.21	1.22	137							
359	7.88	34.22	1.09	135							
368	7.84	-	1.13	-							
378	7.77	34.22	0.96	133							

93.27 ORCA; September 13, 1958; 1800, 1828 GCT; 32°55'N, 117°21.5'W; sounding, 228 fm; b) wind, 180°, force 3; weather, clear; sea, moderate; wire angle, 05°, 05°.

0	19.36	33.39	5.97	418	0	19.36	33.39	5.97	23.73	418	0.00
10	16.09	33.30	6.29	350	10	16.09	33.30	6.29	24.44	350	0.04
20	15.24	33.60r	6.24	-	20	15.24	33.33	6.24	24.65	330	0.07
30	14.54	33.59r	6.29	-	30	14.54	33.36	6.29	24.83	313	0.10
40	14.28	33.37	5.95	307	50	13.06	33.35	5.00	25.12	285	0.16
50	13.06	33.35	5.00	285	75	11.53	33.51	4.54	25.54	245	0.23
70	11.64	33.48	4.63	250	100	10.98	33.56	4.17	25.67	233	0.29
90	11.26	33.55	4.30	238	150	10.12	33.75	3.32	25.98	203	0.40
					200	9.55	33.96	2.43	26.24	179	0.50
69	11.78u	33.48u	4.42u	-	250	9.06	34.10	1.89	26.42	162	0.59
93	10.96u	-	4.30u	-	300	8.57	34.17	1.60	26.56	148	0.67
116	10.54	33.58	3.90	223							
139	10.23	33.69	3.50	210							
186	9.68	33.90	2.66	186							
236	9.24	34.07	1.96	166							
282	8.73	34.15	1.86	152							
315p	8.42	34.20	1.47	145							

a) Test cast.

b) Sounding varies from 228 to 195 fathoms.

OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δT	Z	T	S	O ₂	σ_t	δT	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	

ORCA; September 17, 1958; 0000 GCT; 32°55'N, 117°21.5'W; sounding, 275 fm; wind, calm; weather, clear; sea, slight; wire angle, 11°.

9327

0	22.32	33.47	5.30	489	0	22.32	33.47	5.30	22.98	489	0.00
10	21.68	33.41	5.45	476	10	21.68	33.41	5.45	23.12	476	0.05
20	17.80	33.31	6.05	387	20	17.80	33.31	6.05	24.05	387	0.09
29	15.10	33.31	5.67	328	30	15.05	33.31	5.64	24.68	327	0.13
40	13.36	33.33	5.11	291	50	12.52	33.39	4.80	25.26	272	0.19
50	12.52	33.39	4.80	272	75	11.42	33.50	4.23	25.55	244	0.25
60	11.98	33.46	4.72	257	100	11.01	33.53	3.94	25.65	235	0.31
78	11.34	33.51	4.15	242	150	10.04	33.73	3.08	25.98	204	0.42
97	11.02	33.53	3.95	235	200	9.41	33.92	2.57	26.23	180	0.52
126	10.32	33.60	3.68	218	250	8.87	34.09	1.80	26.45	159	0.61
150	10.04	33.73	3.08	204	300	8.39	34.15	1.44	26.57	148	0.69
173	9.87	33.84	2.82	193	400	(7.25)	(34.20)	(1.02)	(26.78)	(128)	(0.83)
196	9.46	33.91	2.59	181							
243	8.94	34.07	1.88	162							
294	8.47	34.14	1.51	149							
341	7.83	34.19	1.08	136							
390	7.28	34.20	1.02	128							

ORCA; September 19, 1958; 1528 GCT; 32°55'N, 117°21.5'W; sounding, 272 fm; wind, 270°, force 1; weather, overcast; sea, slight; wire angle, 09°.

9327

0	20.90	33.44	5.84	453	0	20.90	33.44	5.84	23.36	453	0.00
10	-	33.24	6.19	-	10	20.10	33.24	6.19	23.42	447	0.04
20	15.86	33.29	6.25	346	20	15.86	33.29	6.25	24.48	346	0.08
29	13.90	33.22	6.18	310	30	13.85	33.22	6.15	24.86	310	0.12
39	13.28	33.30	5.68	292	50	12.55	33.26	5.27	25.16	282	0.18
49	12.60	33.26	5.34	283	75	11.10	33.46	4.39	25.58	242	0.24
58	12.09	33.40	4.70	263	100	10.63	33.55	3.92	25.73	227	0.30
78	10.99	33.47	4.32	239	150	10.10	33.78	3.03	26.01	201	0.41
97	10.66	33.55	3.95	227	200	9.57	33.92	2.29	26.20	183	0.51
125	10.39	33.68	3.31	213	250	8.80	34.05	1.78	26.43	161	0.60
149	10.12	33.78	3.03	201	300	8.38	34.17	1.27	26.58	146	0.68
170	10.04	33.88	2.38	193	400	(7.03)	(34.25)	(0.62)	(26.85)	(121)	(0.82)
195	9.64	33.91	2.34	184							
242	8.88	34.02	1.91	165							
294	8.47	34.16	1.36	148							
342	7.60	34.22	0.93	131							
392	7.12	34.25	0.66	123							

ORCA; September 13, 1958; 1505 GCT; 32°50'N, 117°31.5'W; sounding, 400+ fm; wind, 150°, force 2; weather, partly cloudy; sea, moderate; wire angle, 04°.

9330

0	21.72	33.53	-	468	0	21.72	33.53	-	23.20	468	0.00
10	21.32	33.53	5.60	457	10	21.32	33.53	5.60	23.32	457	0.05
30	14.98	33.48a)	6.35	-	20	18.28	33.44	5.97	24.03	389	0.09
40	14.24	33.34	6.05	308	30	14.98	33.36	6.35	24.74	322	0.12
51	13.38	33.39	5.54	288	50	13.46	33.39	5.58	25.08	290	0.18
61	12.40	33.42	4.93	268	75	11.42	33.49	4.34	25.54	245	0.25
71	11.60	33.48	4.57	249	100	10.83	33.63	3.73	25.76	225	0.31
85	11.10	33.50	4.00	238	150	10.40	33.78	2.95	25.96	206	0.42
100	10.83	33.63	3.73	225	200	10.10	33.98	2.24	26.16	187	0.52
114	10.66	33.74a)	3.55	-	250	9.00	34.02	2.34	26.37	166	0.61
138	10.45	33.75	3.14	209	300	8.19	34.06	2.17	26.53	152	0.69
167	10.27	33.86	2.61	198	400	7.48	34.24	1.06	26.78	128	0.84
200	10.10	33.98	2.24	187	500	6.73	34.29	0.53	26.92	114	0.96
247	9.07	34.02	2.36	167							
324	7.88	34.08	1.99	146							
420	7.40	34.27	0.85	125							
548	6.21	34.30	0.37	108							

a) Cracked bottle; value does not fall on property curve.

S10

CCOFI
5809

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

9330

ORCA; September 16, 1958; 2120 GCT; 32°50.5'N, 117°31.5'W; sounding, 400 fm; wind, 300°, force 2; weather, clear; sea, slight; wire angle, 26°.

0	22.55	33.48	5.24	493	0	22.55	33.48	5.24	22.94	493	0.00
9	22.05	33.49	5.42	480	10	21.98	33.49	5.44	23.09	478	0.05
27	17.92	33.31	6.09	390	20	19.80	33.39	5.79	23.61	429	0.09
36	16.44	33.30	6.24	358	30	17.37	33.31	6.15	24.15	377	0.13
44	14.20	33.22	6.09	316	50	13.40	33.30	5.63	25.02	295	0.20
53	12.95	33.35	5.34	283	75	11.32	33.45	4.48	25.53	246	0.27
62	11.99	33.38	4.71	263	100	10.80	33.57	3.70	25.72	228	0.33
75	11.32	33.45	4.48	246	150	10.23	33.83	2.58	26.02	200	0.44
88	11.00	33.53	3.73	235	200	9.56	33.96	2.47	26.24	179	0.53
101	10.79	33.58	3.69	227	250	8.78	34.04	2.23	26.42	162	0.62
120	10.50	33.71	3.18	213	300	8.07	34.09	1.76	26.58	147	0.70
146	10.30	33.82	2.61	201	400	7.50	34.24	0.90	26.76	129	0.84
175	9.92	33.90	2.51	189	500	(6.58)	(34.28)	(0.48)	(26.94)	(113)	(0.97)
218	9.30	34.01	2.43	171							
287	8.19	34.07	1.91	150							
376	7.72	34.22	1.03	133							
497	6.60	34.28	0.50	113							

9330

ORCA; September 19, 1958; 1300 GCT; 32°50'N, 117°31.5'W; sounding, 400 fm; wind, 320°, force 1; weather, overcast; sea, slight; wire angle, 06°.

0	21.71	33.47	5.45	472	0	21.71	33.47	5.45	23.16	472	0.00
11	21.42	33.47	5.48	465	10	21.60	33.47	5.46	23.19	469	0.05
30	13.79	33.17	6.13	312	20	18.90	33.36	5.70	23.82	409	0.09
40	12.38	33.28	5.43	277	30	13.79	33.17	6.13	24.84	312	0.13
49	12.10	33.33	5.18	269	50	12.08	33.34	5.14	25.30	268	0.18
59	11.82	33.46	4.62	254	75	11.42	33.49	4.20	25.54	246	0.25
69	11.65	33.48	4.28	250	100	10.68	33.56	3.55	25.73	227	0.31
83	11.06	33.51	4.12	237	150	10.35	33.79	2.68	25.97	204	0.42
98	10.70	33.56	3.70	227	200	9.89	34.03	2.15	26.23	179	0.52
113	10.61	33.65	3.25	219	250	9.37	34.14	1.73	26.41	163	0.60
135	10.42	33.73	2.96	210	300	8.72	34.16	1.57	26.52	152	0.68
163	10.25	33.84	2.55	199	400	7.40	34.19	1.11	26.74	131	0.83
196	9.95	34.00	2.19	181	500	6.58	34.25	0.60	26.91	115	0.96
243	9.44	34.14	1.78	164							
318	8.46	34.16	1.51	148							
413	7.21	34.20	1.00	128							
541	6.32	34.28	0.47	110							

9340

ORCA; September 13, 1958; 0729 GCT; 32°31'N, 118°13'W; sounding, 900+ fm; wind, 270°, force 5; weather, clear; sea, very rough; wire angle, 18°.

0	19.72	33.31a)	5.59	433	0	19.72	33.31	5.59	23.57	433	0.00
10	19.71	-	5.57	-	10	19.71	33.31	5.57	23.58	432	0.04
28	16.56	-	6.10	-	20	19.10	33.30	5.67	23.72	419	0.08
43	15.30	33.27	6.22	335	30	16.40	33.28	6.14	24.35	358	0.12
57	14.08	33.20	6.14	316	50	14.73	33.23	6.22	24.70	326	0.19
65	13.45	33.17	6.03	305	75	12.55	33.28	5.64	25.17	280	0.27
75	12.55	33.28	5.64	280	100	10.41	33.38	4.80	25.64	236	0.34
93	10.72	33.33	5.09	244	150	9.15	33.75	3.12	26.13	189	0.44
110	10.04	33.49	4.36	222	200	8.60	33.97	2.46	26.40	164	0.53
123	9.74	33.62	3.92	207	250	8.04	34.05	1.94	26.55	150	0.61
144	9.34	33.70	3.28	195	300	7.46	34.12	1.48	26.68	137	0.68
178	8.79	33.91	2.72	171	400	6.80	34.22	0.85	26.86	120	0.82
212	8.46	34.00	2.26	160	500	6.22	34.27	0.48	26.96	110	0.94
265	7.82	34.07	1.72	145	600	(5.62)	(34.29)	(0.34)	(27.07)	(100)	(1.05)
345	7.11	34.18	1.16	128							
450	6.50	34.25	0.57	114							
592	5.70	34.29	0.34	102							

a) Salinity bottle numbers were not recorded on the data sheet. Since standard handling and titrating procedures were used, it is assumed that the salinity values are in the order listed.

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	

ORCA; September 16, 1958; 1325 GCT; 32°30'N, 118°13.5'W; sounding, 900 fm; wind, 290°, force 1; weather, clear; sea, slight; wire angle, 06°.

9340

0	20.51	33.53	5.36	437	0	20.51	33.53	5.36	23.52	437	0.00
10	20.50	33.92r	5.20	-	10	20.50	33.53	5.20	23.52	437	0.04
30	20.20	33.52	5.48	430	20	20.37	33.53	5.32	23.56	434	0.09
40	15.56	33.15	6.19	349	30	20.20	33.52	5.48	23.60	430	0.13
51	14.64	33.19	6.20	328	50	14.78	33.19	6.20	24.64	331	0.21
60	13.96	33.19	6.16	314	75	12.66	33.20	5.60	25.08	289	0.28
70	13.04	33.19	5.76	296	100	10.64	33.33	4.85	25.56	244	0.35
84	11.98	33.24	5.32	273	150	9.12	33.81	3.24	26.19	184	0.46
98	10.70	33.31	4.88	246	200	8.81	33.99	2.44	26.38	166	0.55
112	9.87	33.48	4.44	220	250	7.97	34.05	1.87	26.56	149	0.63
136	9.24	33.80	3.53	186	300	7.45	34.14	1.32	26.69	136	0.70
164	9.06	33.83	3.13	181	400	6.84	34.21	0.78	26.84	122	0.84
196	8.87	34.16u	2.48	-	500	6.21	34.26	0.50	26.96	110	0.96
243	8.03	34.04	1.97	150							
319	7.30	34.15	1.14	132							
415	6.77	34.22	0.71	120							
543	5.93	34.28	0.40	105							

ORCA; September 19, 1958; 0608 GCT; 32°30.5'N, 118°11'W; sounding, 1000 fm; wind, calm; weather, cloudy; sea, moderate; wire angle, 03°.

9340

0	20.78	33.45	5.36	450	0	20.78	33.45	5.36	23.40	450	0.00
10	20.75	33.48	5.40	447	10	20.75	33.48	5.40	23.42	447	0.04
30	20.20	33.51	5.53	430	20	20.66	33.49	5.42	23.45	444	0.09
40	16.10	33.27	6.16	352	30	20.20	33.51	5.53	23.60	430	0.13
50	15.47	33.28	6.18	339	50	15.47	33.28	6.18	24.56	339	0.21
60	14.18	33.17	6.18	320	75	13.80	33.15	6.06	24.82	314	0.29
69	14.10	33.16	6.14	319	100	11.62	33.22	5.27	25.30	268	0.37
84	12.88	33.12	5.92	298	150	9.52	33.62	3.70	25.98	204	0.48
98	11.74	33.22	5.32	270	200	8.59	33.94	2.44	26.37	166	0.58
112	10.48	33.33	4.89	241	250	8.05	34.03	2.18	26.52	152	0.66
135	9.78	33.47	4.28	219	300	7.64	34.10	1.66	26.64	141	0.74
163	9.26	33.80	3.05	186	400	6.79	34.21	0.85	26.84	122	0.87
196	8.62	33.93	2.47	168	500	6.25	34.25	0.62	26.95	112	0.99
244	8.10	34.02	2.21	154							
321	7.46	33.96u	1.41	-							
417	6.66	34.22	0.78	119							
545	6.06	34.26	0.56	108							

ORCA; September 12, 1958; 2210, 2303 GCT; 32°08'N, 118°55'W; sounding, 700 fm; wind, 300°, force 6; weather, partly cloudy; sea, high; wire angle, 30°, 35°.

9350

0	19.92	33.46	5.43	427	0	19.92	33.46	5.43	23.63	427	0.00
8	19.87	33.53	5.49	421	10	19.86	33.53	5.50	23.69	421	0.04
31	16.72	33.37	6.30	359	20	19.84	33.53	5.51	23.70	420	0.08
					30	17.23	33.39	6.18	24.25	368	0.12
40	15.12	33.33	6.59	327	50	13.48	33.37	5.93	25.05	292	0.19
52	13.42	33.37	5.82	290	75	10.96	33.43	4.33	25.58	241	0.26
61	12.18	33.40	4.87	265	100	9.55	33.55	4.06	25.92	209	0.31
70	11.26	33.40	4.51	249	150	9.20	33.89	2.64	26.24	179	0.41
86	10.36	33.53	3.92	224	200	8.52	34.02	2.24	26.45	159	0.50
103	9.46	33.55	4.08	208	250	7.80	34.14	2.00	26.65	140	0.57
115	9.22	33.69	3.52	194	300	7.30	34.14	1.48	26.72	133	0.64
137	9.04	33.78	2.95	184	400	6.59	34.22	0.76	26.88	118	0.78
170	8.70	-	2.53	-	500	5.99	34.30	0.53	27.02	104	0.89
204	8.42	34.04	2.17	156							
254	7.74	34.14	1.96	139							
332	7.02	34.14	1.18	130							
435	6.36	34.27	0.65	111							
574	5.66	34.32	0.43	99							

SIO
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5809

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	

9350 ORCA; September 16, 1958; 0558 GCT; 32°10.5'N, 118°53'W; sounding, 750 fm; wind, 320°, force 2; weather, clear; sea, rough; wire angle, 06°.

0	20.27	33.33	5.42	445	0	20.27	33.33	5.42	23.44	445	0.00
10	19.94	33.25	5.39	442	10	19.94	33.25	5.39	23.48	442	0.04
30	19.83	33.30	5.39	436	20	19.88	33.27	5.39	23.50	440	0.09
40	16.61	33.30	6.19	361	30	19.83	33.30	5.39	23.54	436	0.13
49	14.42	33.30	6.30	315	50	14.30	33.30	6.27	24.83	313	0.21
60	12.90	33.33	5.44	283	75	11.04	33.40	4.46	25.54	245	0.28
67	11.56	33.38	4.60	255	100	9.83	33.55	3.92	25.88	214	0.34
84	10.77	33.45	4.25	236	150	8.90	33.90	2.46	26.29	174	0.43
98	9.85	33.53	3.93	216	200	8.34	33.97	2.27	26.44	160	0.52
112	9.44	33.71	3.13	196	250	7.88	34.05	1.84	26.57	147	0.60
136	9.04	33.85	2.60	180	300	7.38	34.12	1.36	26.69	136	0.67
164	8.76	33.94	2.39	168	400	6.79	34.20	0.81	26.84	122	0.80
197	8.34	33.97	2.27	160	500	6.16	34.25	0.46	26.96	110	0.92
245	7.90	34.05	1.85	148							
322	7.21	34.14	1.21	132							
418	6.64	34.22	0.67	119							
547	5.81	34.26	0.36	105							

9350 ORCA; September 18, 1958; 2255 GCT; 32°10.5'N, 118°54.5'W; sounding, 715 fm; wind, 300°, force 3; weather, cloudy; sea, rough; wire angle, 10°.

0	20.48	33.48	5.38	440	0	20.48	33.48	5.38	23.49	440	0.00
10	20.45	33.41	5.22	444	10	20.45	33.41	5.22	23.45	444	0.04
29	19.58	33.44	5.43	420	20	20.43	33.41	5.23	23.45	444	0.09
43	15.08	33.24	5.93	333	30	19.57	33.44	5.44	23.71	419	0.13
53	14.64	33.23	5.93	325	50	14.82	33.23	5.93	24.68	327	0.21
63	13.68	33.20	6.07	307	75	12.96	33.30	5.48	25.10	287	0.28
72	13.20	33.28	5.67	292	100	11.02	33.44	4.38	25.58	242	0.35
92	11.82	33.38	4.74	260	150	9.08	33.78	3.04	26.17	185	0.46
106	10.40	33.48	4.19	228	200	8.60	34.01	2.02	26.43	161	0.54
119	9.54	33.55	4.08	209	250	7.89	34.06	1.78	26.58	147	0.62
142	9.19	33.73	3.29	190	300	7.26	34.09	1.55	26.68	137	0.70
171	8.87	33.91	2.57	173	400	6.70	34.15	1.00	26.82	124	0.83
208	8.46	34.03	1.93	158	500	6.20	34.26	0.53	26.97	110	0.96
260	7.78	34.07	1.76	144	600	(5.61)	(34.32)		(27.08)	(99)	(1.07)
339	6.87	34.10	1.31	130							
439	6.52	34.22	0.70	117							
581	5.76	34.31	0.37	101							

9360 ORCA; September 12, 1958; 1305, 1400 GCT; 31°46'N, 119°35'W; sounding, 1400 fm; wind, 300°, force 5; weather, clear; sea, very rough; wire angle, 33°, 31°.

0	19.62	33.44	5.46	421	0	19.62	33.44	5.46	23.70	421	0.00
8	19.60	33.47	5.62	418	10	19.60	33.47	5.63	23.72	418	0.04
25	18.76	33.43	5.82	401	20	19.60	33.47	5.63	23.72	418	0.08
38	14.88	33.28	6.31	326	30	16.28	33.33	6.14	24.42	352	0.12
51	14.11	33.30	6.06	309	50	14.20	33.30	6.09	24.85	311	0.19
58	13.38	33.35	5.44	291	75	11.93	33.33	5.02	25.32	266	0.26
67	12.62	33.36	5.16	276	100	10.32	33.54	4.10	25.79	222	0.32
83	11.24	33.30	4.86	256	150	8.93	33.88	2.76	26.28	175	0.42
98	10.38	33.53	4.11	224	200	8.42	34.00	2.28	26.44	160	0.51
110	9.93	33.58	4.07	213	250	7.98	34.10	1.77	26.60	145	0.59
126	9.43	33.71	3.47	196	300	7.59	34.15	1.36	26.68	137	0.66
155	8.86	33.89	2.69	174	400	6.80	34.22	0.95	26.85	121	0.79
185	8.62	33.95	2.48	166	500	6.05	34.26	0.57	26.98	108	0.91
230	8.12	34.08	1.95	149							
303	7.59	34.15	1.36	136							
429	6.59	34.23	0.83	117							
562	5.67	34.29	0.40	101							

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

ORCA; September 15, 1958; 2250 GCT; 31°49.5'N, 119°32'W; sounding, 1400 fm; wind, 290°, force 3; weather, clear; sea, rough; wire angle, 11°.

9360

0	19.98	33.48	5.64	427	0	19.98	33.48	5.64	23.63	427	0.00
10	19.30	33.48	5.53	410	10	19.30	33.48	5.53	23.81	410	0.04
30	19.14	33.46	5.46	408	20	19.14	33.46	5.46	23.83	408	0.08
39	16.64	33.33	5.89	360	30	19.14	33.46	5.46	23.83	408	0.12
49	14.70	33.31	5.78	320	50	14.67	33.31	5.77	24.77	319	0.20
59	13.42	33.28	5.70	297	75	11.70	33.32	4.78	25.36	262	0.27
68	12.70	33.31	5.20	281	100	10.83	33.43	4.52	25.61	239	0.33
82	11.66	33.37	4.72	258	150	9.14	33.79	3.08	26.17	185	0.44
98	10.88	33.42	4.55	241	200	8.58	34.02	2.39	26.44	160	0.53
112	10.09	33.55	4.02	218	250	7.88	34.06	2.10	26.58	147	0.60
134	9.44	33.69	3.42	198	300	7.55	34.14	1.48	26.68	136	0.68
162	8.98	33.86	2.89	178	400	6.76	34.22	0.78	26.86	120	0.81
193	8.66	34.01	2.43	162	500	6.08	34.29	0.41	27.00	106	0.93
239	7.96	34.05	2.17	148							
313	7.42	34.16	1.34	134							
407	6.72	34.22	0.74	119							
532	5.91	34.31	0.36	103							

ORCA; September 18, 1958; 1510 GCT; 31°52.5'N, 119°35'W; sounding, 1500 fm; wind, 320°, force 4; weather, cloudy; sea, very rough; wire angle, 25°.

9360

0	19.44	33.48	5.48	414	0	19.44	33.48	5.48	23.76	414	0.00
9	19.44	33.44	5.41	416	10	19.41	33.44	5.42	23.74	416	0.04
27	19.13	33.46	5.52	408	20	19.18	33.46	5.50	23.81	410	0.08
41	15.34	33.24	6.18	338	30	19.12	33.46	5.53	23.84	407	0.12
51	13.32	33.30	5.49	294	50	13.41	33.29	5.52	25.01	296	0.19
59	12.50	33.35	4.94	274	75	11.27	33.38	4.57	25.49	250	0.26
69	11.80	33.35	4.73	262	100	9.95	33.60	3.73	25.89	212	0.32
86	10.38	33.50	4.16	226	150	8.98	33.80	3.00	26.21	182	0.42
99	9.97	33.60	3.74	212	200	8.32	33.97	2.42	26.44	160	0.51
112	9.60	33.68	3.48	201	250	7.82	34.06	1.83	26.58	146	0.58
134	9.17	33.75	3.19	189	300	7.38	34.12	1.40	26.70	136	0.66
160	8.83	33.84	2.90	177	400	6.76	34.21	0.80	26.85	121	0.79
195	8.36	33.96	2.47	161	500	6.32	34.26	0.51	26.96	101	0.91
244	7.86	34.05	1.85	147							
319	7.24	34.14	1.28	133							
415	6.63	34.22	0.70	118							
549	6.08	34.29	0.42	106							

ORCA; September 12, 1958; 0340, 0435 GCT; 31°31'N, 120°14'W; sounding, 2000+ fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 35°, 38°.

9370

0	19.23	33.17	5.68	432	0	19.23	33.17	5.68	23.58	432	0.00
8	19.20	33.21	5.51	427	10	19.18	33.21	5.51	23.63	427	0.04
28	19.06	33.18	5.52	426	20	19.08	33.19	5.52	23.63	427	0.08
37	17.42	33.40	6.07	372	30	19.02	33.18	5.53	23.64	426	0.13
					50	15.74	33.39	6.09	24.60	335	0.20
48	15.83	33.40	6.09	337	75	14.25	33.39	5.58	24.91	305	0.28
56	15.44	33.36	6.07	332	100	11.43	33.40	4.94	25.47	252	0.36
64	14.90	-	5.98	-	150	9.26	33.82	3.53	26.18	185	0.47
79	13.94	33.40	5.39	298	200	8.55	33.95	2.61	26.39	165	0.56
95	11.75	33.37	5.14	259	250	8.02	34.04	1.92	26.55	150	0.64
106	11.10	33.44	4.74	243	300	7.45	34.13	1.52	26.69	136	0.71
127	9.96	33.53	4.14	217	400	6.78	34.23	0.86	26.87	119	0.84
158	9.08	33.89	3.32	177	500	6.07	34.29	0.51	27.01	106	0.96
190	8.65	33.93	2.79	168							
237	8.14	34.02	2.02	153							
310	7.39	34.14	1.46	134							
409	6.72	34.24	0.85	118							
546	5.72	34.31	0.38	100							

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} cm/g	m	°C	‰	ml/L	g/L	10^{-5} cm/g	dyn. m	

93.70

ORCA; September 15, 1958; 1639 GCT; 31°30'N, 120°06'W; sounding, 2200 fm; wind, 300°, force 2; weather, clear; sea, rough; wire angle, 06°.

0	19.05	33.33	5.61	415	0	19.05	33.33	5.61	23.76	415	0.00
10	18.98	33.39	5.69	410	10	18.98	33.39	5.69	23.82	410	0.04
30	18.61	33.23	5.72	412	20	18.86	33.33	5.70	23.82	410	0.08
41	16.12	33.08	6.23	366	30	18.61	33.23	5.72	23.79	412	0.12
50	15.35	33.30	6.21	334	50	15.35	33.30	6.21	24.61	334	0.20
60	14.78	33.28	6.25	324	75	14.17	33.29	6.00	24.86	310	0.28
70	14.35	33.27	6.11	316	100	12.00	33.37	5.12	25.35	264	0.35
84	13.76	33.34	5.78	299	150	9.45	33.59	3.78	25.96	205	0.47
98	12.16	33.37	5.19	267	200	8.66	33.84	2.76	26.29	174	0.57
113	11.08	33.40	4.73	246	250	8.08	34.03	1.95	26.52	152	0.65
136	9.88	33.50	4.20	218	300	7.61	34.11	1.41	26.66	140	0.73
164	9.18	33.68	3.51	194	400	6.73	34.21	0.70	26.86	120	0.86
197	8.70	33.83	2.91	176	500	6.18	34.26	0.50	26.97	110	0.98
244	8.18	34.01	2.09	155							
320	7.41	34.14	1.28	135							
417	6.62	34.22	0.64	118							
544	5.96	34.28	0.43	106							

113.30

BLACK DOUGLAS; September 5, 1958; 0737 GCT; 29°22.5'N, 115°17.5'W; sounding, 30 fm; wind, 290°, force 4; weather, clear; sea, moderate; wire angle, 00°.

0	18.72	33.60	5.52	388	0	18.72	33.60	5.52	24.04	388	0.00
9	18.69	33.59	5.54	388	10	18.68	33.59	5.54	24.04	388	0.04
19	15.54	33.56	5.20	319	20	15.48	33.56	5.17	24.78	318	0.07
28	13.58	33.58	4.08	278							

113.35

BLACK DOUGLAS; September 5, 1958; 1100 GCT; 29°12'N, 115°39'W; sounding, 620 fm; wind, 310°, force 3; weather, clear; sea, moderate; wire angle, 00°.

0	19.20	33.55	6.03	403	0	19.20	33.55	6.03	23.88	403	0.00
9	19.23	33.54	6.00	404	10	19.22	33.54	6.00	23.87	404	0.04
28	14.97	33.46	5.20	314	20	16.40	33.49	5.46	24.51	343	0.08
37	14.02	33.50	5.03	293	30	14.86	33.46	5.18	24.84	312	0.11
47	12.92	33.46	5.00	274	50	12.76	33.51	4.84	25.31	268	0.17
56	12.57	33.62	4.34	256	75	12.15	33.86	2.89	25.69	231	0.23
65	12.46	33.71	3.57	247	100	11.76	33.87	1.62	25.78	223	0.29
79	12.02a)	33.87	2.72	229	150	11.38	33.94	1.60	25.91	210	0.40
92	11.90	33.87	1.79	225	200	10.44	34.12	1.70	26.21	182	0.50
105	11.66	33.87	1.61	221	250	10.48	34.41	1.02	26.43	161	0.59
127	11.44	33.86	1.65	218	300	9.71	34.42	0.66	26.57	148	0.67
154	11.33	33.96	1.56	208	400	7.60	34.21	1.12	26.73	132	0.81
185	10.36	34.10	1.96	188	500	6.79	34.26	0.53	26.89	117	0.94
230	10.64	34.40	1.14	165							
302	9.70	34.42	0.65	147							
393	7.65	34.21	1.13	133							
514	6.63	34.27	0.41	114							

a) Mean value of 11.96° and 12.08°C.

S10

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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 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m	

115.40

BLACK DOUGLAS; September 5, 1958; 1809 GCT; 28°45'N, 115°47'W; sounding, 620 fm; wind, 290°, force 4; weather, clear; sea, moderate; wire angle, 07°.

0	21.00	33.54a)	5.29	449	0	21.00	33.54	5.29	23.40	449	0.00
10	20.90	33.53	5.45	447	10	20.90	33.53	5.45	23.42	447	0.04
28	17.69	33.52	5.95	370	20	19.30	33.52	5.73	23.84	407	0.09
37	16.18	33.50	5.56	337	30	17.52	33.52	5.93	24.28	365	0.13
47	15.14	33.51	5.33	314	50	14.86	33.52	5.20	24.87	309	0.19
56	14.35	33.53	4.87	297	75	12.22	33.64	4.44	25.51	248	0.26
66	12.82	33.63	4.47	260	100	11.84	33.90	2.41	25.79	222	0.32
80	11.97	33.64	4.42	243	150	11.38	34.22	1.19	26.12	190	0.43
94	11.80	33.83	2.94	226	200	10.90	34.40	1.07	26.34	169	0.52
107	11.86	33.94	2.25	219	250	10.08	34.39	0.95	26.49	155	0.60
129	11.71	34.13	1.71	203	300	9.37	34.37	1.03	26.59	146	0.68
156	11.29	34.26	1.14	186	400	8.68	34.42	0.64	26.73	132	0.82
187	11.14	34.39	1.14	173	500	7.07	34.31	0.58	26.88	118	0.96
231	10.40	34.40	0.92	160							
301	9.37	34.37	1.03	146							
392	8.79	34.42	0.66	133							
512	6.84	34.29	0.56	116							

117.26

BLACK DOUGLAS; September 6, 1958; 0539 GCT; 28°56'N, 114°41'W; sounding, 41 fm; wind, 280°, force 3; weather, clear; sea, moderate; wire angle, 05°.

0	20.28	33.60	5.47	426	0	20.28	33.60	5.47	23.64	426	0.00
9	19.92	33.57	5.58	419	10	19.72	33.56	5.60	23.77	414	0.04
19	16.95	33.51	5.88	354	20	16.80	33.51	5.87	24.44	350	0.08
33	14.82	33.50	5.40	309	30	15.15	33.50	5.53	24.80	316	0.11
57	13.26	33.69	3.58	263	50	13.65	33.63	4.02	25.22	275	0.17

117.30

BLACK DOUGLAS; September 6, 1958; 0758 GCT; 28°48'N, 114°56.5'W; sounding, 55 fm; wind, 280°, force 3; weather, clear; sea, moderate; wire angle, 08°.

0	20.06	33.57	5.44	423	0	20.06	33.57	5.44	23.67	423	0.00
9	19.96	33.53	5.61	423	10	19.94	33.53	5.61	23.68	422	0.04
23	15.65	33.55	5.73	322	20	16.35	33.54	5.72	24.57	337	0.08
42	13.86	33.58	4.91	283	30	14.92	33.56	5.55	24.90	306	0.11
61	13.04	33.79	3.06	252	50	13.40	33.68	3.84	25.31	267	0.17
80	12.86	33.90	2.65	241	75	12.93	33.88	2.74	25.56	243	0.23

117.35

BLACK DOUGLAS; September 6, 1958; 1136 GCT; 28°38'N, 115°16'W; sounding, 104 fm; wind, 280°, force 7; weather, cloudy; sea, moderate; wire angle, 02°.

0	20.78	33.62	5.33	438	0	20.78	33.62	5.33	23.52	438	0.00
9	20.70	33.58	5.44	438	10	20.70	33.58	5.44	23.52	438	0.04
19	19.64	33.58	5.55	412	20	19.53	33.58	5.60	23.82	409	0.09
28	18.78	33.58	5.88	391	30	18.60	33.57	5.88	24.05	387	0.13
41	15.74	33.43	5.81	333	50	14.50	33.42	5.77	24.88	308	0.20
65	13.92	33.53	5.11	288	75	13.08	33.53	4.80	25.26	272	0.27
88	12.78	33.60	4.52	261	100	12.92	33.87	3.48	25.54	245	0.33
124	13.20	34.12	1.82	231	150	12.01	34.07	1.64	25.88	213	0.45
160	11.76	34.07	1.60	208							

a) Salinity bottle numbers appear to have been listed out of order on the original data sheet; present order assumed to be correct, but these salinity data must be considered doubtful.

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	

BLACK DOUGLAS; September 6, 1958; 1440 GCT; 28°28'N, 115°35.5'W; sounding, 400 fm; wind, 310°, force 3; weather, clear; sea, moderate; wire angle, 00°.

11740

0	21.55	33.73	5.16	450	0	21.55	33.73	5.16	23.39	450	0.00
9	21.58	33.71	5.35	452	10	21.20	33.69	5.40	23.47	443	0.04
28	17.30	33.55	5.76	358	20	20.00	33.65	5.52	23.75	416	0.09
37	16.20	33.55	5.59	334	30	16.50	33.51	5.75	24.49	345	0.13
47	15.45	33.67	4.98	309	50	15.30	33.67	4.90	24.90	306	0.19
56	14.96	33.68	4.59	298	75	12.48	33.62	4.21	25.44	254	0.26
65	13.64	33.64	4.20	275	100	13.17	34.25	1.67	25.80	221	0.32
78	12.26	33.62	4.22	250	150	11.54	34.06		25.96	205	0.43
91	13.42	34.27	2.19	224	200	11.07	34.32	1.48	26.25	178	0.53
105	13.00	34.23	1.52	219	250	10.58	34.36	1.04	26.37	167	0.62
127	11.66	33.96	2.51	214	300	9.80	34.39	0.78	26.53	152	0.70
154	11.32	34.05	2.26	202	400	8.32	34.35	0.48	26.74	132	0.84
186	11.18	34.31	1.74	180	500	6.80	34.29	0.36	26.91	115	0.98
230	10.85	34.34	1.18	172							
303	9.76	34.39	0.77	151							
395	8.40	34.35	0.48	133							
517	6.54	34.28	0.35	112							

BLACK DOUGLAS; September 7, 1958; 0236 GCT; 28°40.5'N, 114°25.5'W; sounding, 43 fm; wind, 320°, force 4; weather, partly cloudy; sea, moderate; wire angle, 10°.

1185.25

0	20.80	33.62	5.44	438	0	20.80	33.62	5.44	23.52	438	0.00
9	20.72	33.62	5.26	436	10	20.70	33.62	5.26	23.55	435	0.04
28	16.84	33.43	6.11	357	20	19.74	33.57	5.47	23.76	415	0.09
47	14.68	33.69	4.06	292	30	16.32	33.47	5.72	24.51	343	0.12
70	12.54	33.65	3.00	253	50	14.88	33.80	3.53	25.09	288	0.19

BLACK DOUGLAS; September 6, 1958; 2327 GCT; 28°30.5'N, 114°45.5'W; sounding, 59 fm; wind, 320°, force 4; weather, partly cloudy; sea, moderate; wire angle, 22°.

1185.30

0	22.59	33.68	5.13	481	0	22.59	33.68	5.13	23.07	481	0.00
8	22.55	33.69	5.02	479	10	22.52	33.69	5.03	23.10	478	0.05
26	22.07	33.71	5.22	465	20	22.26	33.71	5.15	23.18	470	0.10
44	18.26	33.64	5.42	374	30	21.90	33.71	5.23	23.28	460	0.14
66	15.60	33.94	3.29	293	50	16.98	33.66	5.05	24.52	343	0.22
88	14.89	34.08	1.90	267	75	15.30	34.00	2.68	25.16	282	0.30

BLACK DOUGLAS; September 6, 1958; 1932 GCT; 28°20.5'N, 115°05'W; sounding, 64 fm; wind, 320°, force 5; weather, partly cloudy; sea, slight; wire angle, 08°.

1185.35

0	22.48	33.70	5.22	476	0	22.48	33.70	5.22	23.12	476	0.00
9	22.45	33.71	5.10	474	10	22.44	33.71	5.10	23.14	474	0.05
28	21.46	33.68	5.29	451	20	22.18	33.71	5.14	23.20	468	0.09
47	17.30	33.81	4.55	339	30	21.10	33.69	5.22	23.49	440	0.14
70	15.94	34.04	2.97	293	50	17.16	33.82	4.45	24.59	335	0.22
94	14.95	34.06	2.01	270	75	15.70	34.04	2.70	25.10	287	0.30
					100	(14.75)	(34.06)	(1.87)	(25.32)	(266)	(0.37)

BLACK DOUGLAS; September 6, 1958; 2124 GCT; 28°19'N, 114°53'W; sounding, 59 fm; wind, 320°, force 5; weather, partly cloudy; sea, moderate; wire angle, 07°.

119.33

0	22.62	33.75	5.24	476	0	22.62	33.75	5.24	23.12	476	0.00
9	22.58	33.71	5.06	478	10	22.56	33.71	5.06	23.10	478	0.05
28	22.36	33.69	5.09	474	20	22.45	33.70	5.08	23.12	476	0.10
47	22.16	33.71	5.08	466	30	22.34	33.69	5.09	23.15	473	0.14
71	18.44	33.57	5.40	384	50	20.50	33.58	5.40	23.56	434	0.23
94	13.82	33.62	3.35	280	75	17.92	33.58	5.19	24.21	372	0.33

BLACK DOUGLAS; September 7, 1958; 0524 GCT; 28°23'N, 114°14.5'W; sounding, 27 fm; wind, 300°, force 3; weather, clear; sea, moderate; wire angle, 02°.

12025

0	21.60	33.69	5.35	454	0	21.60	33.69	5.35	23.35	454	0.00
9	21.50	33.63	5.38	455	10	21.48	33.63	5.38	23.34	455	0.04
28	17.46	33.59	5.53	359	20	20.20	33.62	5.44	23.68	423	0.09
38	16.58	33.67	4.96	334	30	17.15	33.60	5.42	24.43	351	0.13

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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

12030 BLACK DOUGLAS; September 7, 1958; 0915 GCT; 28°13'N, 114°34'W; sounding, 50 fm; wind, calm; weather, clear; sea, slight; wire angle, 00°.

0	22.47	33.75	5.09	473	0	22.47	33.75	5.09	23.15	473	0.00
9	22.49	33.72	5.06	474	10	22.49	33.72	5.06	23.14	474	0.05
24	22.46	33.75	5.08	472	20	22.47	33.74	5.07	23.15	473	0.09
43	22.35	33.71	5.10	472	30	22.42	33.74	5.08	23.16	472	0.14
62	18.54	33.61	5.50	383	50	21.90	33.69	5.14	23.28	461	0.24
81	14.24	33.62	3.97	288	75	15.08	33.62	4.25	24.91	305	0.33

12035 BLACK DOUGLAS; September 7, 1958; 1538 GCT; 28°03'N, 114°54'W; sounding, 47 fm; wind, 360°, force 2; weather, partly cloudy; sea, slight; wire angle, 00°.

0	22.44	33.73	5.49	473	0	22.44	33.73	5.49	23.15	473	0.00
10	22.44	33.66	5.05	478	10	22.44	33.66	5.05	23.10	478	0.05
19	22.40	33.71	5.02	473	20	22.40	33.71	5.02	23.15	473	0.10
33	21.89	33.68	5.25	462	30	22.20	33.70	5.10	23.19	469	0.14
52	18.55	33.63	5.66	381	50	18.90	33.64	5.63	24.02	390	0.23
76	14.32	33.73	2.67	281	75	14.39	33.73	2.72	25.14	283	0.31

12045 BLACK DOUGLAS; September 8, 1958; 0036 GCT; 27°43'N, 115°33'W; sounding, 1200 fm; wind, 320°, force 3; weather, cloudy; sea, rough; wire angle, 21°.

173a)	11.45	34.23	1.22	191
217	10.95	34.38	0.83	171
288	10.41	34.42	0.49	159
378	8.95	34.37	0.53	140
499	7.08	34.27	0.32	121

200	11.12	34.33	0.95	26.26	178
250	10.68	34.40	0.63	26.39	165
300	10.26	34.42	0.49	25.47	157
400	8.59	34.35	0.53	26.70	136
500	(7.07)	(34.27)	(0.31)	26.86	120

13030 BLACK DOUGLAS; September 9, 1958; 1722 GCT; 26°29'N, 113°29'W; sounding, 44 fm; wind, 270°, force 2; weather, partly cloudy; sea, rough; wire angle, 00°.

0	25.94	34.19	4.81	539	0	25.94	34.19	4.81	22.46	539	0.00
10	25.51	34.16	4.87	528	10	25.51	34.16	4.87	22.57	528	0.05
19	21.56	33.82	5.47	443	20	21.00	33.80	5.54	23.60	430	0.10
33	18.80	33.96	5.74	364	30	18.72	33.83	5.70	24.22	371	0.14
57	17.85	34.28	3.49	318	50	18.97	34.28	3.80	24.50	344	0.21

13035 BLACK DOUGLAS; September 9, 1958; 1440 GCT; 26°18.5'N, 113°48.5'W; sounding, 175 fm; wind, variable, force 1; weather, partly cloudy; sea, rough; wire angle, 07°.

0	25.92	34.14	4.73	542	0	25.92	34.14	4.73	22.43	542	0.00
9	24.80	34.16	5.05	508	10	24.60	34.15	5.07	22.84	502	0.05
23	21.50	34.03	5.40	426	20	22.18	34.06	5.33	23.47	443	0.10
47	16.42	33.77	5.37	323	30	18.00	33.82	5.40	24.39	355	0.14
70	15.90	34.46	2.81	261	50	16.30	33.80	5.32	24.78	318	0.21
88	15.82	34.53	1.52	254	75	15.88	34.47	2.55	25.38	260	0.28
119	14.88	34.63	0.97	228	100	15.53	34.58	1.27	25.56	244	0.34
136	14.21	34.63	0.77	213	150	13.93	34.62	0.70	25.93	208	0.46
163	13.62	34.61	0.66	203	200	12.78	34.61	0.49	26.16	187	0.56
208	12.58	34.61	0.45	183	250	11.06	34.56	0.63	26.44	160	0.65
254	10.88	34.55	0.66	158							

a) Because of irregularities in cast, all data above 173 meters are too uncertain to be 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 ⁻⁵ cm/g	m	°C	‰	ml/L	g/L	10 ⁻⁵ cm/g	dyn. m	

BLACK DOUGLAS; September 9, 1958; 1137 GCT; 26°09'N, 114°07'W; sounding, 1100 fm; wind, calm;
weather, clear; sea, rough; wire angle, 00°.

13040

0	24.40	33.87	5.00	517	0	24.40	33.87	5.00	22.69	517	0.00
10	22.98	34.02	5.18	467	10	22.98	34.02	5.18	23.21	467	0.05
28	22.35	34.09	5.22	445	20	22.63	34.06	5.19	23.34	455	0.10
38	21.03	33.98	5.40	418	30	22.20	34.08	5.24	23.48	441	0.14
47	18.85	33.82	5.72	375	50	18.28	33.86	5.71	24.34	359	0.22
56	17.49	33.93	5.56	335	75	15.88	33.97	4.22	25.01	296	0.30
65	16.84	33.94	5.27	320	100	14.53	34.02	2.99	25.33	265	0.37
79	15.29	33.99	3.62	282	150	10.76	33.91	2.14	26.00	202	0.49
92	14.61	34.00	2.99	268	200	10.24	34.20	1.73	26.30	173	0.59
105	13.66	33.93	3.01	254	250	9.67	34.26	1.44	26.44	160	0.67
127	12.88	34.14	2.14	224	300	8.89	34.26	1.22	26.57	148	0.75
153	10.60	33.90	-	201	400	8.06	34.39	0.42	26.81	125	0.89
185	10.40	34.18	1.81	176	500	6.88	34.35	0.34	26.95	112	1.02
230	9.97	34.43u	1.51	-							
301	8.88	34.26	1.21	147							
392	8.17	34.39	0.43	126							
514	6.71	34.34	0.33	110							

BLACK DOUGLAS; September 9, 1958; 0828 GCT; 25°59'N, 114°26'W; sounding, 2000 fm; wind, calm;
weather, clear; sea, rough; wire angle, 02°.

13045

0	24.30	33.91	4.98	511	0	24.30	33.91	4.98	22.75	511	0.00
9	23.34	33.90	5.08	485	10	23.26	33.89	5.08	23.04	483	0.05
28	22.37	33.82	5.05	464	20	22.78	33.85	5.06	23.15	473	0.10
38	20.80	33.72	5.52	431	30	22.00	33.79	5.14	23.32	457	0.14
47	19.36	33.73	5.68	393	50	18.91	33.73	5.70	24.09	383	0.23
57	18.08	33.73	5.76	364	75	14.88	33.46	5.88	24.84	312	0.32
66	16.87	33.55	5.88	349	100	14.32	34.07	2.00	25.42	257	0.39
80	15.26	33.62	5.47	309	150	12.67	34.40	0.94	26.02	200	0.50
93	15.16	33.95	3.46	282	200	12.43	34.64	0.28	26.25	178	0.60
106	14.24	34.30	1.75	238	250	11.60	34.64	0.22	26.41	163	0.69
129	13.29	34.37	1.15	214	300	10.92	34.61	0.22	26.50	154	0.77
155	12.64	34.44	0.87	197	400	9.03	34.46	0.30	26.71	134	0.92
186	12.68	34.63	0.40	184	500	7.66	34.39	0.31	26.86	120	1.05
231	11.85	34.65	0.23	167							
303	10.89	34.61	0.22	153							
394	9.13	34.47	0.29	135							
516	7.44	34.38	0.31	118							

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters		50 Meters	
						Dir	Force			T	S	T	S
90.28-O	IX-10	0727	33°28.5'	117°47.0'	230	300°	1	clear	moderate	18.28	33.42		
90.28-O	14	0320	33°28.0'	117°46.0'	200	320°	1	clear	moderate	20.62	33.49		
90.28-O	17	0750	33°28.5'	117°47.0'	200	calm		clear	smooth	18.86	33.37		
90.55-O	11	0640	32°33.5'	119°37.5'	600+	320°	5	clear	very rough	19.14	33.55		
90.55-O	15	0110	32°34.5'	119°33.0'	600	300°	3	clear	rough	18.92	33.48		
90.55-O	18	0518	32°34.0'	119°38.0'	500	310°	4	partly cloudy	moderate	18.46	33.33		
90.65-O	11	1700	32°10.5'	120°18.0'	2000+	320°	5	clear	very rough	18.60	33.22		
90.65-O	15	0815	32°12.5'	120°12.0'	2000	300°	3	clear	very rough	18.96	33.47		
93.35-O	13	1115	32°40.0'	117°52.0'	300	270°	2	partly cloudy	moderate	21.56	33.55		
93.35-O	16	1718	32°39.5'	117°52.5'	300	310°	3	clear	slight	20.66	33.46		
93.35-O	19	0950	32°39.5'	117°52.0'	350	320°	1	overcast	slight	21.30	33.53		
93.45-O	13	0330	32°20.5'	118°32.0'	500	300°	6	clear	very rough	19.76	33.42		
93.45-O	16	0930	32°20.5'	118°33.0'	425	300°	2	clear	rough	20.43	33.55		
93.45-O	19	0230	32°21.0'	118°32.0'	600	300°	3	cloudy	rough	21.09	33.58		
93.55-O	12	1810	31°58.0'	119°13.0'	800	300°	6	partly cloudy	very rough	19.60	33.46		
93.55-O	16	0220	31°59.5'	119°12.5'	760	290°	3	clear	rough	19.97	33.30		
93.55-O	18	1905	32°02.5'	119°13.5'	750	320°	4	overcast	very rough	20.05	33.34		
93.65-O	12	0910	31°38.0'	119°55.0'	2000+	320°	5	partly cloudy	very rough	19.06	33.48		
93.65-O	15	1922	31°38.5'	119°52.0'	2100	320°	2	clear	rough	18.76	33.42		

TEMPERATURE AND SALINITY AT 10 AND 50 METERS (NET-TOW STATIONS)

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters		50 Meters	
						Dir	Force			T	S	T	S
110.33-B	IX-5	0210	29°50.5'	115°52.0'	50	310°	3	partly cloudy	moderate	-	-		
110.35-B	5	0045	29°46.5'	116°00.0'	740	310°	3	partly cloudy	moderate	19.60	33.40		
110.40-B	4	2203	29°36.5'	116°19.5'	1200	290°	4	cloudy	moderate	21.70	33.73		
118 ³ .36-B	6	1830	28°20.0'	115°11.0'	30	170°	1	partly cloudy	slight	21.34	33.75		
120 ⁷ .26 ⁵ -B	7	0650	28°12.5'	114°15.5'	21	280°	3	clear	moderate	21.78	33.66		
120 ⁵ .31-B	7	1018	28°06.0'	114°33.0'	42	calm		clear	slight	22.51	33.70		
120 ⁵ .37 ⁵ -B	7	1729	27°53.0'	115°01.0'	20	100°	1	partly cloudy	slight	20.26	33.97		
120.40-B	7	1915	27°56.5'	115°14.0'	21	300°	1	cloudy	slight	20.90	33.64		
121 ³ .30 ⁵ -B	7	1145	27°58.5'	114°26.5'	20	calm		clear	slight	21.06	33.58		
121 ² .34-B	7	1335	27°53.0'	114°43.0'	23	320°	1	clear	slight	21.76	33.66		
123.37-B	8	1410	27°24.0'	114°39.5'	40	calm		partly cloudy	moderate	21.48	33.78		
123.42-B	8	1052	27°13.0'	115°01.0'	1500	calm		clear	moderate	22.83	34.00		
123.45-B	8	0613	27°05.0'	115°15.5'	2200	320°	1	partly cloudy	moderate	-	-		
127.34-B	8	2000	26°55.5'	114°06.0'	45	calm		cloudy	moderate	22.20	34.14		
127.40-B	8	2309	26°43.5'	114°29.5'	1500	220°	1	cloudy	very rough	23.56	33.84		
127.45-B	9	0220	26°33.0'	114°48.5'	1800	calm		partly cloudy	moderate	23.75	33.90		
133.25-B	10	0125	26°04.5'	112°48.0'	45	270°	1	cloudy	rough	26.70	34.34		
133.30-B	9	2245	25°54.5'	113°07.5'	100	320°	1	partly cloudy	rough	24.92	34.03		
137.23-B	10	0620	25°34.0'	112°18.5'	42	300°	1	clear	moderate	27.17	34.36		
137.30-B	10	0953	25°20.0'	112°45.5'	150	300°	1	clear	rough	26.04	34.37		

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