

*Errata 28 Oct 63 ✓
p. 217*

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 5908
13-31 August 1959

and

CCOFI Cruise 5909
9 September - 1 October 1959

SIO Reference 61-19
12 September 1961

UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 5908
13-31 August 1959

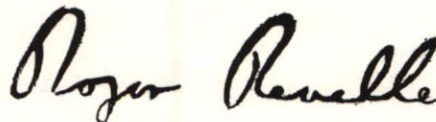
and

CCOFI CRUISE 5909
9 September - 1 October 1959

Sponsored by
Marine Research Committee

SIO Reference 61-19
12 September 1961

Approved for distribution:



Roger Revelle, Director

UNIVERSITY OF MICHIGAN
SCIENTIFIC INSTITUTION OF OCEANOGRAPHY
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Approved for distribution:

Roger Revelle, Director

INTRODUCTION

The data presented in this report were collected on the one hundred and twenty-third and the one hundred and twenty-fourth consecutive cruises of the California Cooperative Oceanic Fisheries Investigations program. The Scripps Institution's Tuna Oceanography Research (STOR) program conducted a cruise called TO-59-2 from 13 August through 22 September 1959, using the R/V Hugh M. Smith. The cruise extended far to the south of the area of the CCOFI surveys, but the first part of it, from 13 August through 29 August, was devoted to occupying regular CCOFI stations (lines 130-153, in part) off the Pacific coast of Baja California. The observations made at these stations consisted of those regularly made in the CCOFI investigations together with other biological, chemical (silicate, nitrite, nitrate, acidity and alkalinity) and physical observations particularly required by the STOR program. Continuity with the oceanography of the region north of line 130 was provided by R/V Black Douglas, of the U. S. Bureau of Commercial Fisheries, and the R/V Orca, of the Scripps Institution, which occupied stations on lines 77-100 and lines 103-127, respectively, at the same period. For CCOFI purposes, all of the data collected by the three ships along regular CCOFI station lines have been included in Cruise 5908. All of the STOR observations, together with all observations made on the remaining part of TO-59-2 and on two other cruises, will be published by the U. S. Bureau of Commercial Fisheries which sponsored the STOR investigations. This publication will appear as a Special Scientific Report (Fisheries) of the U. S. Fish and Wildlife Service, entitled "Physical, chemical, and biological investigations in the eastern tropical Pacific Ocean: three cruises to the Gulf of Tehuantepec, 1958-1959." The R/V Black Douglas of the U. S. Bureau of Commercial Fisheries and the R/V Orca of the Scripps Institution participated in Cruise 5909.

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

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

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.

FOOTNOTES

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

Loose bottle cap:

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

Possible evaporation:

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

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

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

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

p: pretrip or posttrip.

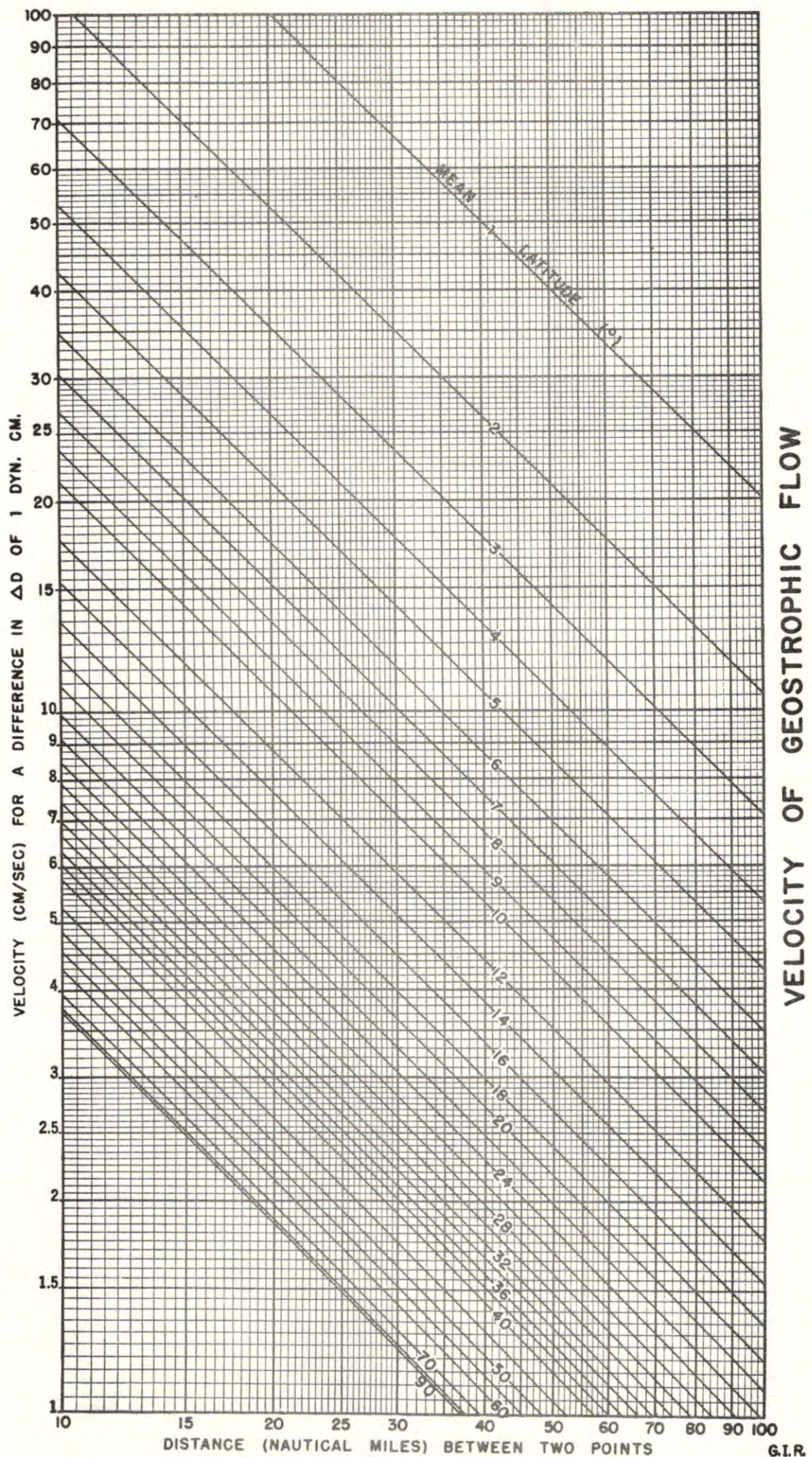
Values which are not drawn through because they seem to be in error without apparent reason are indicated by one of the following notations.

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

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

FORMAT

These data are typed in the format of the University of California Press publication, Oceanic Observations of the Pacific. So that these pages can be used as copy for the 1959 volume, the first page of the Cruise 5908 data is numbered 304; Cruise 5909, 368.



VELOCITY OF GEOSTROPHIC FLOW

FIGURES

1. CCOFI Cruise 5909, station positions
2. Horizontal distribution of dynamic height anomaly (0 over 500 d-bar)
3. Horizontal distribution of temperature at 10 meters
4. Horizontal distribution of salinity at 10 meters
5. Horizontal distribution of temperature at 200 meters
6. Horizontal distribution of salinity at 200 meters

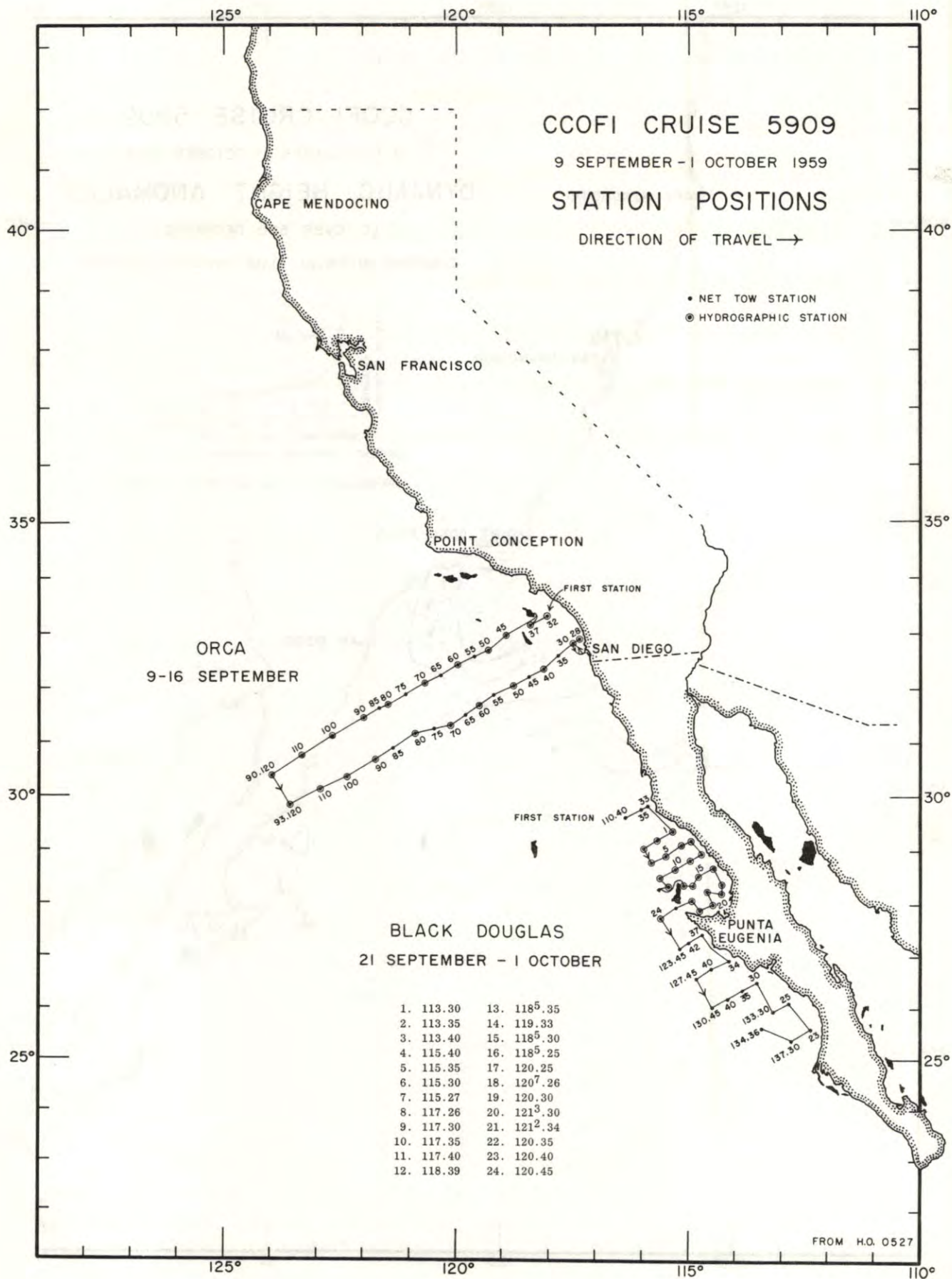


FIGURE 1

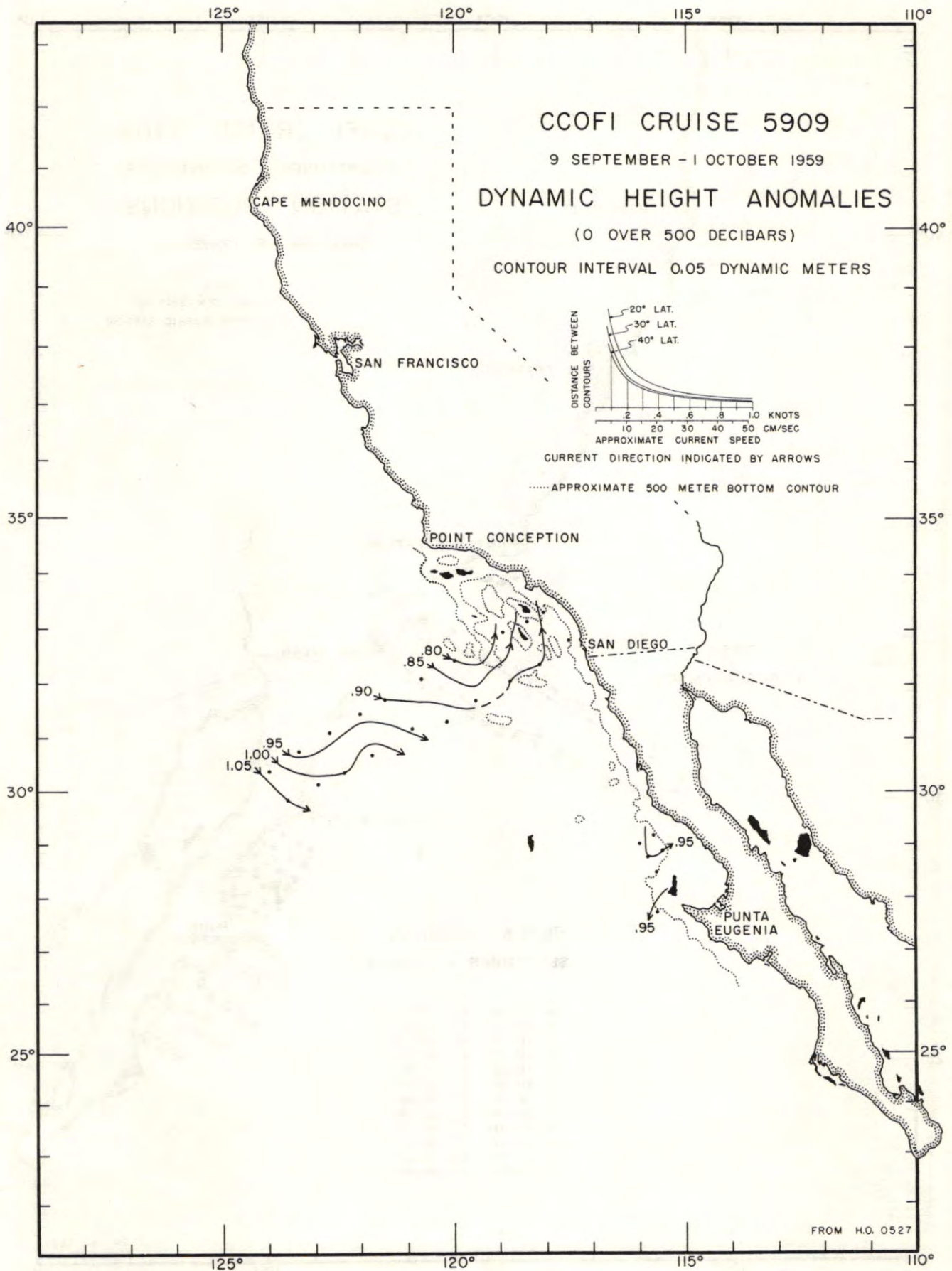


FIGURE 2

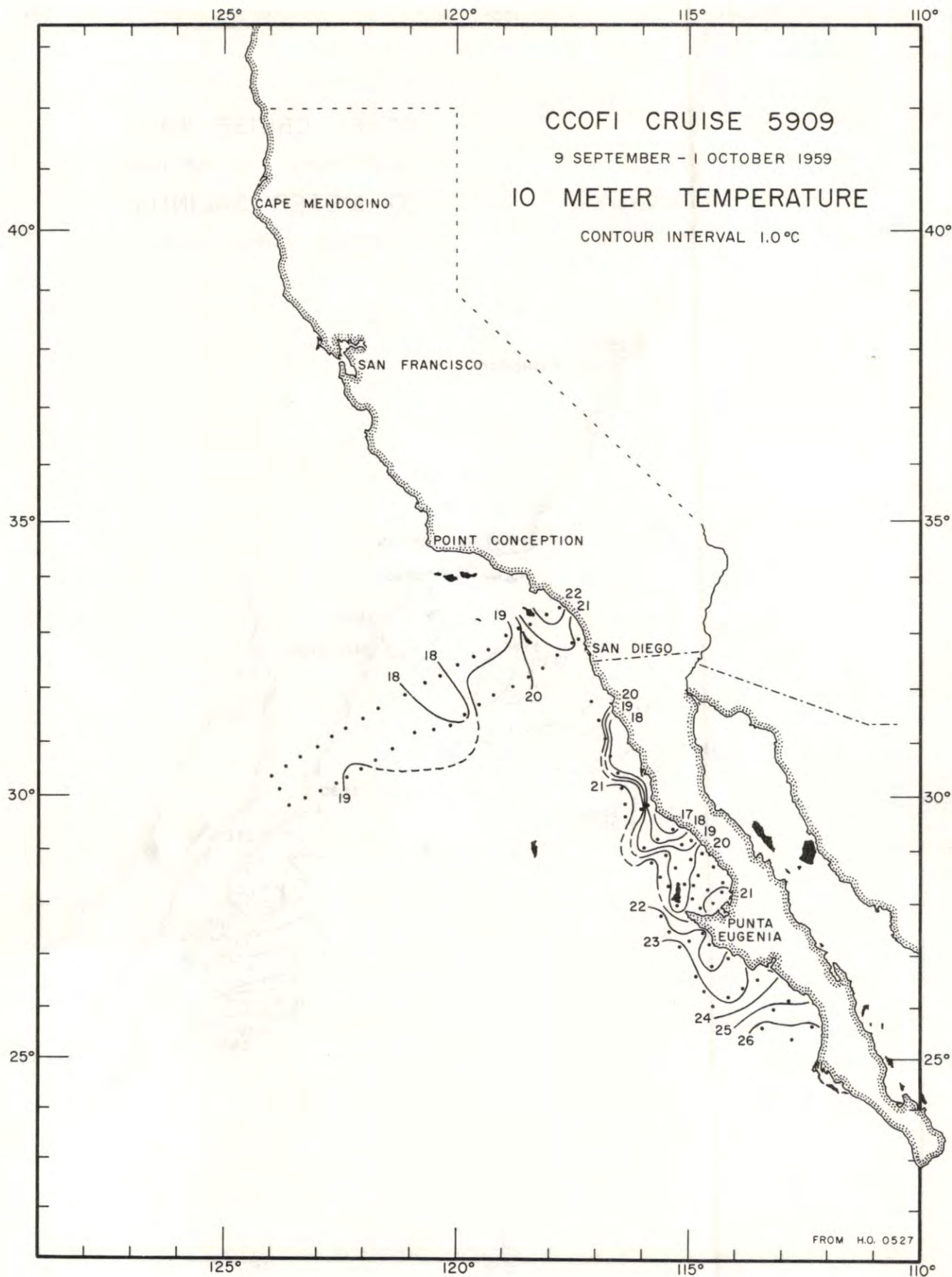


FIGURE 3

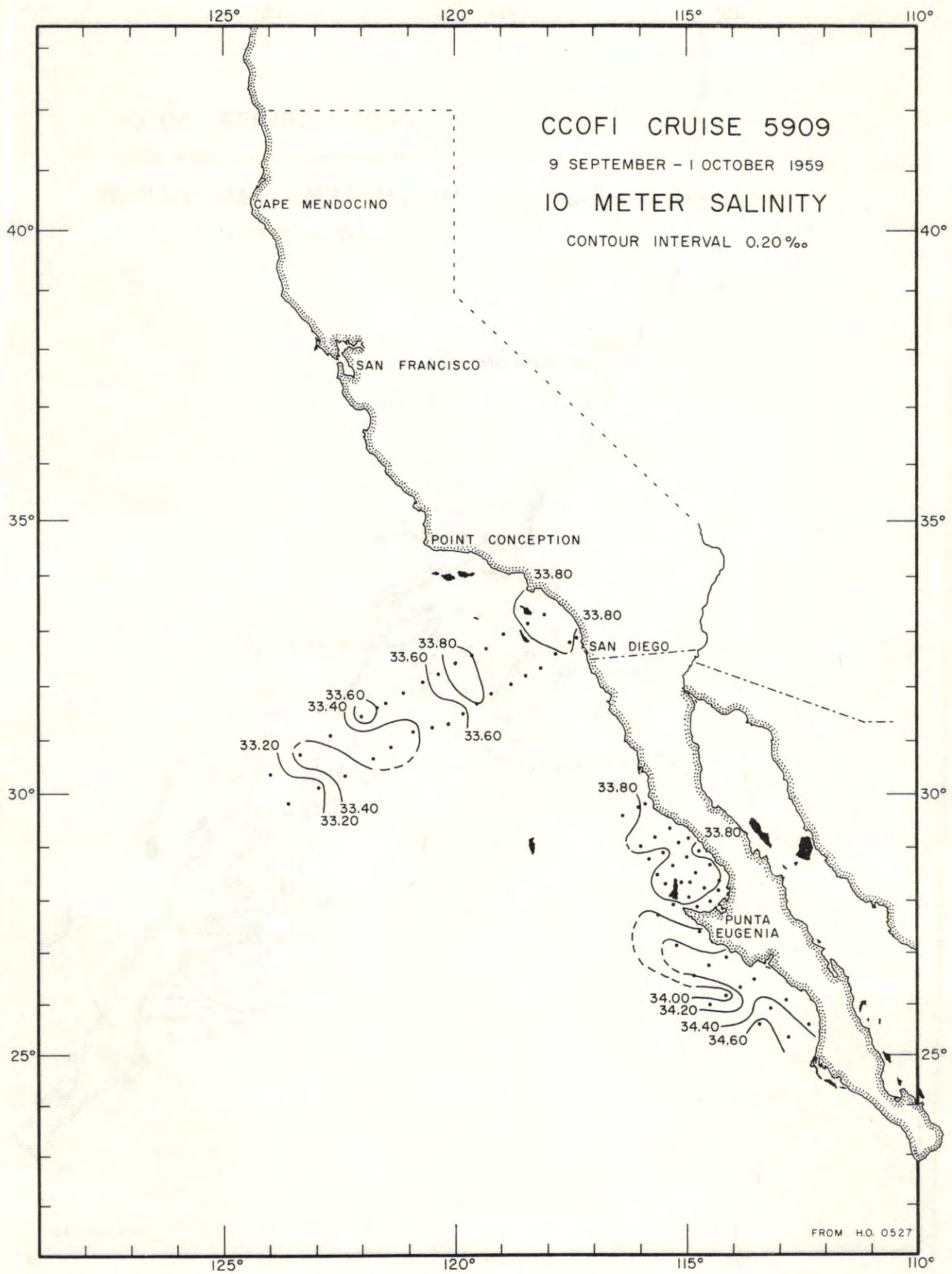


FIGURE 4

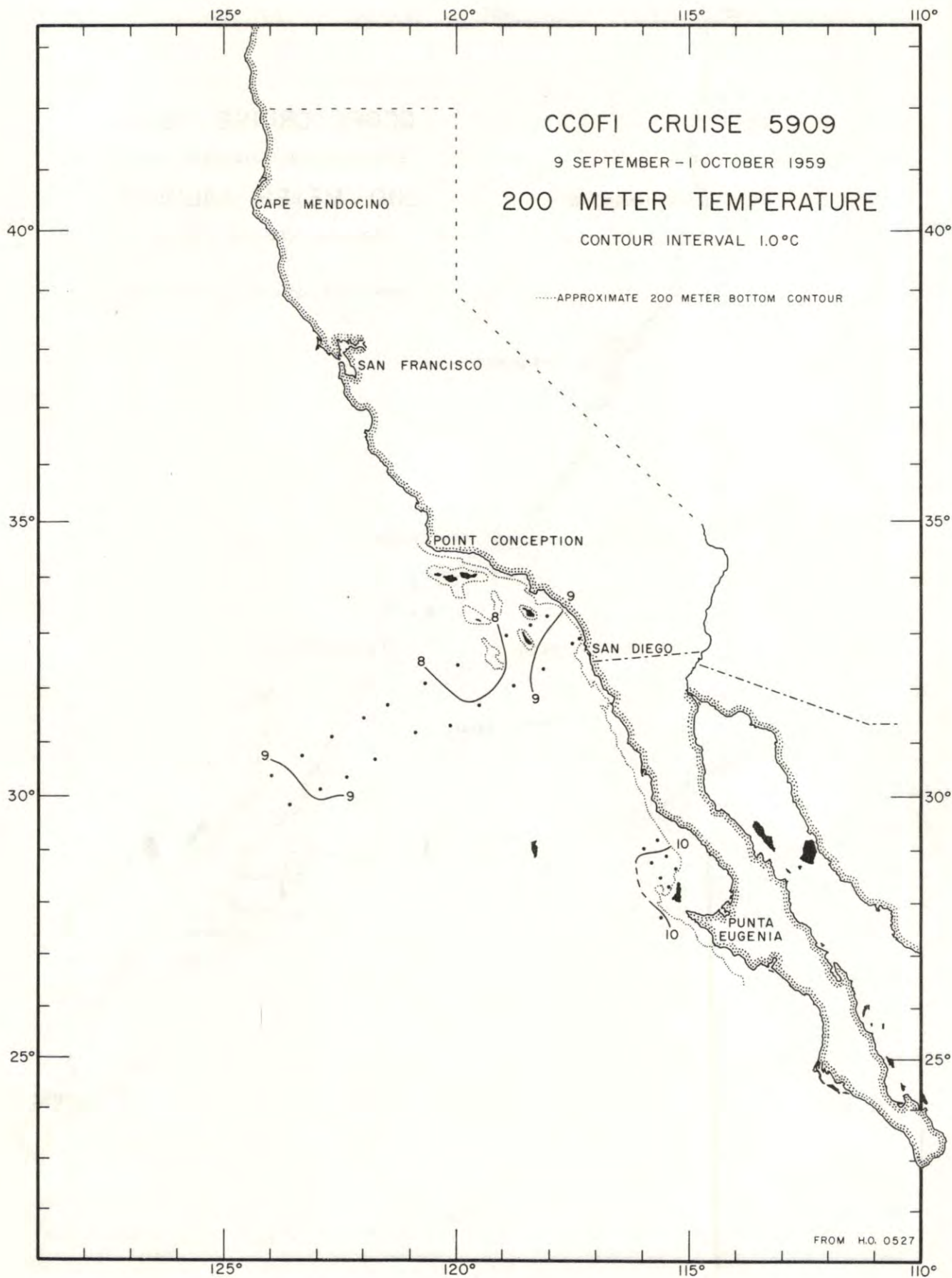


FIGURE 5

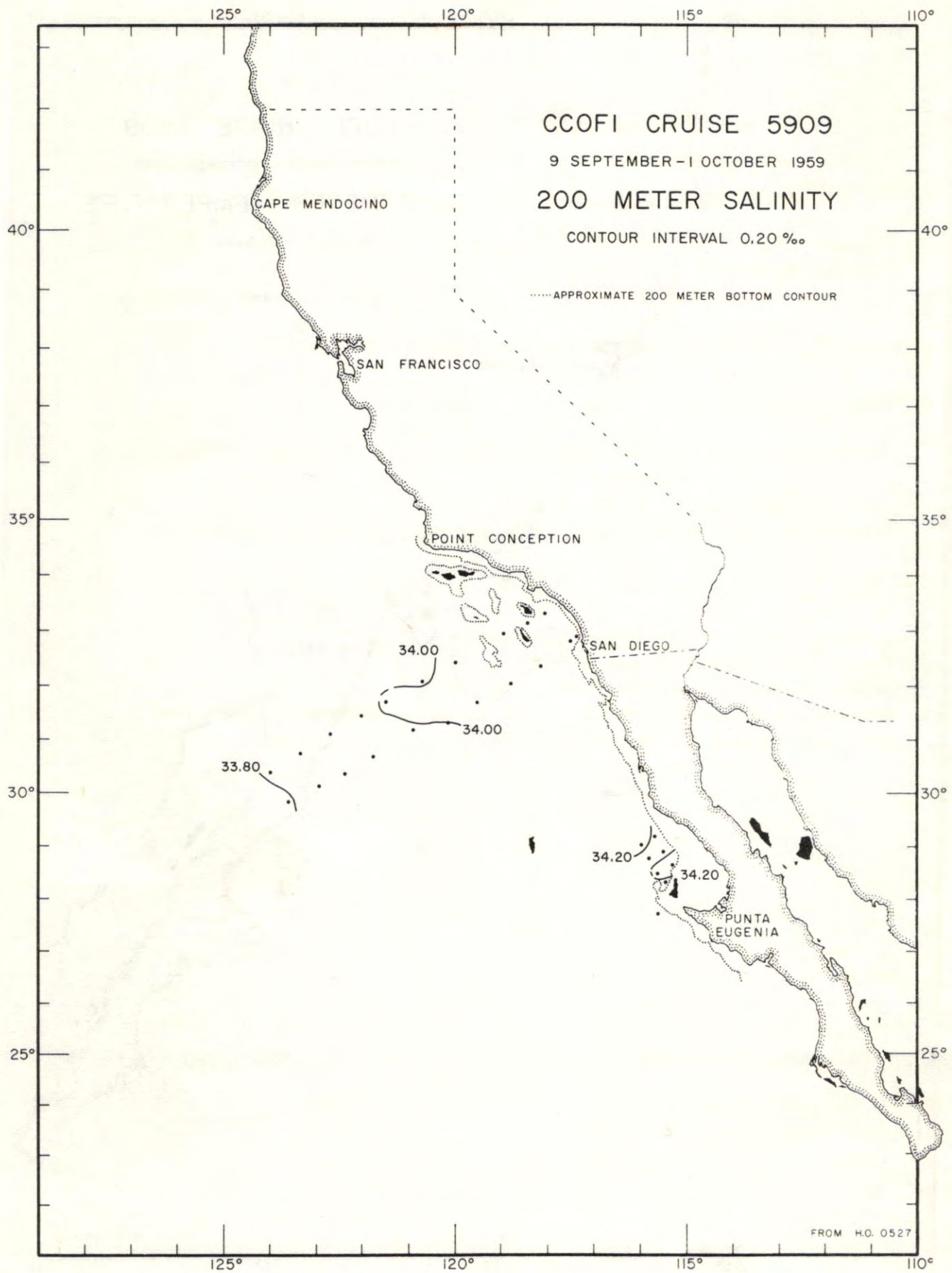


FIGURE 6

PERSONNEL
Cruise 5909

SHIPS' CAPTAINS

Forster, Charles W., R/V Black Douglas
Hopkins, Marvin H., R/V Orca

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

R/V Black Douglas

Counts, Robert C., Fishery Research Biologist, U. S. Bureau of Commercial Fisheries
Joyal, Norman F., Marine Technician
Justice, David K., Fishery Aid, U. S. Bureau of Commercial Fisheries

R/V Orca

Lawson, Jan B., Senior Marine Technician
Bottom, Kenneth S., Marine Technician
Hester, Arthur W., Marine Technician
Metoyer, Jack D., Fishery Aid, U. S. Bureau of Commercial Fisheries
Pettengill, Donald A., Project Engineer, Ampex Corporation

S10

CCOFI
5909

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	

90.32

ORCA; September 9, 1959; 0930 GCT; 33°20.5'N, 118°03'W; sounding, 400 fm; wind, direction missing, force 1; weather, clear; sea, slight; wire angle, 00°.

1	22.67	33.86	4.78	470	0	(22.67)	(33.86)	(4.78)	(23.18)	(470)	(0.00)
11	22.20	33.81	5.02	461	10	22.28	33.82	5.00	23.26	462	0.05
31	16.24	33.62	5.55	330	20	19.78	33.73	5.38	23.87	404	0.09
41	14.07	33.53	5.06	291	30	16.46	33.63	5.55	24.61	334	0.13
51	13.48	33.53	4.86	280	50	13.51	33.53	4.87	25.17	280	0.19
66	12.44	33.57	4.43	257	75	11.93	33.60	4.05	25.54	246	0.25
81	11.62	33.62	3.82	239	100	10.59	33.69	3.53	25.85	216	0.31
101	10.57	33.69	3.52	215	150	9.54	33.91	2.73	26.20	183	0.41
127	9.86	33.77	3.18	198	200	8.79	34.02	2.31	26.41	163	0.50
146	9.60	33.89	2.80	185	250	8.38	34.16	1.59	26.58	147	0.58
175	9.24	33.96	2.45	174	300	8.09	34.20	1.20	26.66	139	0.66
204	8.72	34.03	2.26	161	400	7.11	34.25	0.66	26.83	123	0.79
234	8.39	34.13	1.77	149	500	6.34	34.30	0.41	26.98	109	0.91
274	8.37	34.19	1.31	144							
333	7.72	34.22	1.06	133							
408	7.04	34.25	0.61	122							
483	6.44	34.29	0.43	111							
562	6.03	34.33	0.34	103							

90.37

ORCA; September 9, 1959; 1236 GCT; 33°10.5'N, 118°23.5'W; sounding, 600 fm; wind, direction missing, force 1; weather, cloudy; sea, slight; wire angle, 00°.

0	21.95	33.85	4.88	451	0	21.95	33.85	4.88	23.39	451	0.00
10	21.71	33.84	4.92	445	10	21.71	33.84	4.92	23.44	445	0.04
30	16.04	33.58	6.06	328	20	19.80	33.75	5.33	23.88	403	0.09
40	13.98	33.58	5.03	286	30	16.04	33.58	6.06	24.67	328	0.12
50	12.76	33.58	4.33	262	50	12.76	33.58	4.33	25.37	262	0.18
65	11.32	33.62	3.82	234	75	10.73	33.65	3.64	25.80	221	0.24
80	10.48	33.67	3.53	216	100	9.92	33.78	3.09	26.04	198	0.30
100	9.92	33.78	3.09	198	150	9.26	34.02	2.29	26.34	170	0.39
125	9.39	33.89	2.80	182	200	8.77	34.18	1.64	26.54	151	0.47
145	9.29	34.00	2.40	172	250	8.24	34.22	1.36	26.65	140	0.54
175	9.04	34.14	1.72	158	300	7.84	34.22	1.15	26.71	134	0.62
204	8.71	34.18	1.62	150	400	7.05	34.28	0.69	26.87	119	0.75
234	8.37	34.21	1.42	142	500	6.41	34.30	0.47	26.96	110	0.87
273	8.06	34.23	1.28	137							
333	7.56	34.22	0.96	130							
408	6.98	34.29	0.65	118							
483	6.51	34.29	0.50	112							
563	6.10	34.34	0.35	103							

90.45

ORCA; September 10, 1959; 1918 GCT; 32°58'N, 118°56'W; sounding, 900+ fm; wind, 280°, force 4; weather, partly cloudy; sea, rough; wire angle, 18°.

1	19.31	33.84	4.97	384	0	(19.31)	(33.84)	(4.97)	(24.08)	(384)	(0.00)
10	18.14	33.78	5.11	361	10	18.14	33.78	5.11	24.32	361	0.04
29	12.67	33.55	4.37	262	20	15.40	33.66	4.80	24.87	309	0.07
39	11.40	33.64	3.93	233	30	12.62	33.55	4.36	25.38	261	0.10
48	11.14	33.65	3.83	228	50	11.07	33.65	3.82	25.73	227	0.15
62	10.64	33.68	3.56	217	75	10.30	33.71	3.38	25.91	210	0.20
76	10.28	33.71	3.37	209	100	9.72	33.80	3.11	26.09	193	0.25
95	9.82	33.78	3.17	197	150	8.75	33.99	2.52	26.39	165	0.34
118	9.30	33.87	2.87	182	200	8.10	34.12	1.86	26.59	146	0.42
137	8.87	33.96	2.62	168	250	7.66	34.15	1.56	26.68	137	0.49
165	8.60	34.02	2.37	160	300	7.79	34.30	1.11	26.78	128	0.56
192	8.19	34.11	1.91	148	400	7.00	34.32	0.57	26.90	116	0.69
219	7.92	34.13	1.77	142	500	6.43	34.33	0.35	26.99	108	0.81
255	7.64	34.16	1.50	136							
310	7.80	34.32	-	126							
380	7.14	34.32	0.64	118							
451	6.69	34.32	0.41	112							
528	6.28	34.34	0.33	105							

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; September 10, 1959; 2327 GCT;^{a)} 32°42.5'N, 119°18.5'W; sounding, 200 fm; wind, 320°, force 5; weather, partly cloudy; sea, very rough; wire angle, 08°.

90.50

2	18.36	33.78	5.41	366	0	(18.36)	(33.78)	(5.41)	(24.27)	(366)	(0.00)
5	18.34	33.78	5.36	365	10	18.33	33.77	5.36	24.28	365	0.04
8	18.34	33.78	5.35	365	20	17.53	33.69	5.39	24.41	353	0.07
11	18.33	33.77	5.36	366	30	14.45	33.44	5.40	24.91	305	0.11
14	18.25	33.75	5.39	366	50	13.00	33.41	4.92	25.18	279	0.16
17	17.74	33.70	5.42	358	75	10.48	33.62	3.61	25.81	220	0.23
20	17.53	33.69	5.39	353							
23	17.38	33.66	5.40	352							
26	16.32	33.58	5.36	334							
29	14.46	33.44	5.43	305							
32	14.41	33.42	5.32	306							
35	14.32	33.42	5.31	304							
38	14.32	33.39	5.20	304							
41	14.18	33.40	5.11	298							
47	13.96	33.39	5.08	292							
56	13.56	33.44	4.77	270							
66	12.62	33.58	4.05	235							
76	10.46	33.62	3.60	219							

ORCA; September 11, 1959; 0525 GCT; 32°24.5'N, 119°57.5'W; sounding, 485 fm; wind, 320°, force 2; weather, partly cloudy; sea, very rough; wire angle, 28°.

90.60

2	18.88	33.86	5.13	373	0	(18.88)	(33.86)	(5.13)	(24.20)	(373)	(0.00)
10	18.87	33.88	5.24	371	10	18.87	33.88	5.24	24.22	371	0.04
28	18.46	33.84	5.11	364	20	18.84	33.88	5.23	24.22	371	0.07
37	16.80	33.80	4.87	329	30	18.31	33.83	5.07	24.32	361	0.11
50	12.66	33.67	4.09	254	50	12.66	33.67	4.09	25.45	254	0.17
63	10.74	33.75	3.14	214	75	9.93	33.80	2.81	26.06	196	0.23
85	9.46	33.84	2.63	186	100	9.03	33.90	2.54	26.27	176	0.28
103	8.94	33.91	2.50	174	150	8.35	34.04	1.92	26.49	155	0.36
120	8.64	33.96	2.22	166	200	7.69	34.11	1.53	26.65	140	0.43
138	8.52	34.01	2.02	160	250	7.34	34.18	1.19	26.75	130	0.50
164	8.11	34.07	1.78	150	300	7.02	34.20	0.98	26.82	124	0.57
195	7.75	34.11	1.58	142	400	6.34	34.31	0.42	26.98	108	0.69
221	7.50	34.13	1.40	137	500	5.85	34.35	0.36	27.08	99	0.80
265	7.26	34.22	1.07	127							
314	6.92	34.20	0.94	123							
391	6.39	34.30	0.43	109							
471	6.00	34.34	0.38	102							
553	5.56	34.36	0.30	94							

ORCA; September 11, 1959; 1134 GCT; 32°03.5'N, 120°40'W; sounding, 2000+ fm; wind, 320°, force 5; weather, partly cloudy; sea, very rough; wire angle, 20°.

90.70

2	17.52	33.48	5.37	368	0	(17.52)	(33.48)	(5.37)	(24.25)	(368)	(0.00)
11	17.52	33.50	5.36	367	10	17.52	33.50	5.36	24.26	367	0.04
30	17.47	33.48	5.35	367	20	17.51	33.49	5.36	24.26	367	0.07
39	17.12	33.50	5.44	358	30	17.47	33.48	5.35	24.26	367	0.11
53	14.38	33.48	5.64	301	50	14.47	33.48	5.64	24.94	303	0.18
67	13.50	33.48	4.71	284	75	12.85	33.49	4.56	25.28	270	0.25
91	11.58	33.55	4.38	243	100	10.95	33.57	4.30	25.70	230	0.31
110	10.32	33.61	4.20	217	150	9.05	33.83	3.24	26.22	181	0.42
129	9.41	33.77	3.38	191	200	8.25	33.98	2.93	26.46	158	0.50
147	9.08	33.82	3.25	182	250	7.56	34.03	1.96	26.60	145	0.58
176	8.66	33.91	3.06	169	300	7.06	34.09	1.45	26.71	134	0.65
209	8.08	34.00	2.84	154	400	6.40	34.22	0.74	26.91	116	0.78
238	7.71	34.02	2.15	148	500	5.74	34.29	0.40	27.04	103	0.89
286	7.19	34.07	1.57	137	600	(5.22)	(34.32)	(0.28)	(27.14)	(94)	(1.00)
423	6.26	34.25	0.60	111							
507	5.70	34.29	0.38	102							
591	5.27	34.32	0.28	95							

a) Special cast.

SIO

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5909

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

90.80 ORCA; September 11, 1959; 1819 GCT; 31°41'N, 121°27.5'W; sounding, 2000+ fm; wind, 320°, force 5; weather, cloudy; sea, very rough; wire angle, 19°.

2	18.48	33.60	5.34	382	0	(18.48)	(33.60)	(5.34)	(24.10)	(382)	(0.00)
11	18.4	33.57	5.30	382	10	18.40	33.57	5.30	24.10	382	0.04
30	18.36	33.58	5.38	380	20	18.40	33.57	5.30	24.10	382	0.08
59	14.44	33.55	5.79	297	30	18.36	33.58	5.38	24.12	380	0.11
67	13.34	33.55	5.56	275	50	17.60	33.57	5.46	24.29	364	0.19
81	12.20	33.57	4.60	253	75	12.65	33.56	4.98	25.37	262	0.27
96	11.01	33.58	4.25	231	100	10.86	33.59	4.26	25.72	228	0.33
109	10.50	33.61	4.29	220	150	9.12	33.79	3.53	26.18	185	0.43
132	9.43	33.72	3.46	195	200	8.23	34.01	2.29	26.49	155	0.52
150	9.12	33.79	3.53	185	250	7.66	34.10	1.80	26.64	141	0.60
177	8.76	33.92	2.77	170	300	7.19	34.15	1.20	26.75	130	0.67
204	8.14	34.02	2.23	154	400	6.36	34.24	0.77	26.93	114	0.79
231	7.88	34.07	2.00	146	500	5.80	34.34	0.38	27.08	99	0.90
277	7.36	34.13	1.46	135							
328	6.98	34.18	0.95	126							
406	6.32	34.24	0.76	113							
487	5.85	34.34	0.40	100							
570	5.68	34.34	0.31	98							

90.90 ORCA; September 11, 1959; 2339 GCT; 31°25'N, 122°00'W; sounding, 2000+ fm; wind, 320°, force 5; weather, partly cloudy; sea, rough; wire angle, 25°.

1	18.64	33.60	5.27	386	0	(18.64)	(33.60)	(5.27)	(24.06)	(386)	(0.00)
9	18.64	33.61	5.22	385	10	18.64	33.61	5.22	24.07	385	0.04
28	18.48	33.58	5.19	384	20	18.57	33.60	5.21	24.08	384	0.08
36	18.15	33.58	5.33	376	30	18.45	33.58	5.20	24.09	383	0.12
50	14.41	33.15	5.99a)	326	50	14.41	33.15	5.99	24.69	326	0.19
63	13.96	33.21	5.90	312	75	13.61	33.34	5.50	25.01	296	0.26
85	13.30	33.44	5.14	282	100	12.20	33.40	4.94	25.34	265	0.34
103	11.93	33.40	4.88	260	150	9.63	33.71	3.87	26.03	199	0.45
120	10.74	33.51	4.45	232	200	8.50	33.97	3.14	26.42	162	0.54
138	9.94	33.65	3.89	208	250	7.72	34.03	2.65	26.58	147	0.62
163	9.28	33.78	3.85	189	300	7.19	34.12	1.46	26.72	133	0.70
192	8.64	33.96	3.01	166	400	6.06	34.16	0.85	26.90	116	0.82
218	8.20	33.98	3.39	158	500	5.54	34.24	0.43	27.04	103	0.94
260	7.59	34.04	2.46	144							
309	7.08	34.13	1.35	131							
383	6.22	34.15	0.95	119							
461	5.70	34.22	0.49	107							
541	5.40	34.27	0.38	100							

90.100 ORCA; September 12, 1959; 0456 GCT; 31°05'N, 122°39.5'W; sounding, 2000+ fm; wind, 310°, force 4; weather, cloudy; sea, rough; wire angle, 15°.

1	18.56	33.35	5.34	402	0	(18.56)	(33.35)	(5.34)	(23.90)	(402)	(0.00)
11	18.56	33.35	5.37	402	10	18.56	33.35	5.37	23.90	402	0.04
30	18.44	33.37	5.38	398	20	18.53	33.36	5.38	23.92	400	0.08
39	16.40	33.24	5.97	361	30	18.44	33.37	5.38	23.94	398	0.12
54	14.32	33.17	6.04	322	50	14.58	33.17	6.04	24.67	328	0.19
69	13.50	33.27	5.63	299	75	13.13	33.32	5.45	25.08	289	0.27
92	12.04	33.40	5.04	262	100	11.52	33.44	4.86	25.49	250	0.34
111	10.87	33.51	4.62	234	150	9.18	33.78	4.08	26.16	187	0.45
131	9.78	33.61	4.28	209	200	8.39	33.95	3.22	26.42	162	0.54
151	9.16	33.78	4.07	186	250	7.71	34.05	2.52	26.59	146	0.62
179	8.68	33.89	3.60	171	300	7.13	34.06	2.04	26.68	137	0.69
212	8.24	33.99	3.02	157	400	6.11	34.18	0.95	26.91	115	0.82
241	7.83	34.04	2.59	148	500	5.38	34.26	0.52	27.07	100	0.93
289	7.22	34.05	2.18	139	600	(5.02)	(34.33)	(0.30)	(27.16)	(91)	(1.04)
343	6.86	34.16	1.22	126							
426	5.78	34.18	0.88	111							
509	5.36	34.27	0.47	99							
594	5.04	34.33	0.30	92							

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; September 12, 1959; 1000 GCT; 30°43'N, 123°19'W; sounding, 2000+ fm; wind, 310°, force 4; weather, partly cloudy; sea, rough; wire angle, 16°.

90.110

7	18.41	33.44	5.37	392	0	18.4	(33.44)	(5.37)	(24.00)	(392)	(0.00)
26	18.22	33.46	5.38	386	10	18.39	33.45	5.37	24.01	391	0.04
35	18.00	33.40	5.31	386	20	18.29	33.47	5.38	24.04	388	0.08
50	14.34	33.04	6.16	332	30	18.14	33.44	5.37	24.06	386	0.12
65	13.25	33.08	5.88	308	50	14.34	33.04	6.16	24.63	332	0.19
88	12.46	33.30	5.35	277	75	12.81	33.18	5.58	25.05	292	0.27
107	11.02	33.38	4.97	246	100	11.65	33.35	5.14	25.40	259	0.34
126	10.50	33.56	4.37	224	150	9.35	33.76	4.04	26.11	191	0.45
145	9.48	33.73	4.10	195	200	8.44	33.96	3.57	26.41	163	0.54
173	8.92	33.89	3.77	174	250	7.73	34.06	2.40	26.61	144	0.62
205	8.36	33.97	3.52	160	300	6.92	34.09	1.84	26.73	132	0.69
234	7.98	34.05	2.66	149	400	6.02	34.18	0.94	26.92	114	0.82
281	7.20	34.08	2.07	136	500	5.55	34.22	0.51	27.02	105	0.93
335	6.61	34.10	1.56	127							
416	5.92	34.20	0.83	111							
498	5.56	34.22	0.52	105							
566	5.22	34.33	0.34	93							
576	5.20	34.31	0.35	94							

ORCA; September 12, 1959; 1513 GCT; 30°22.5'N, 123°57'W; sounding, 2000+ fm; wind, 330°, force 3; weather, partly cloudy; sea, rough; wire angle, 16°.

90.120

1	18.34	33.13	5.42	413	0	(18.34)	(33.13)	(5.42)	(23.78)	(413)	(0.00)
11	18.34	33.12	5.18	414	10	18.34	33.12	5.19	23.77	414	0.04
29	18.12	33.10	5.36	410	20	18.31	33.11	5.19	23.78	413	0.08
39	18.01	33.12	5.37	406	30	18.05	33.10	5.37	23.83	408	0.12
54	17.63	33.68	5.73	357	50	18.19	33.51	5.51	24.10	382	0.20
68	16.58	33.68	5.82	333	75	16.19	33.68	5.80	24.71	324	0.29
92	15.48	33.69	5.76	308	100	15.18	33.72	5.72	24.97	300	0.37
111	14.78	33.79	5.63	286	150	11.80	33.68	5.03	25.62	237	0.51
130	13.82	33.86	5.14	262	200	9.21	33.82	4.18	26.18	184	0.61
149	11.94	33.69	5.04	239	250	8.34	33.98	2.88	26.44	160	0.70
177	10.00	33.68	4.50	207	300	7.64	34.04	2.13	26.60	145	0.78
210	8.93	33.87	4.06	176	400	6.59	34.18	1.01	26.85	121	0.92
238	8.49	33.95	3.20	164	500	5.80	34.23	0.53	26.99	108	1.04
285	7.90	34.03	2.28	149	600	(5.29)	(34.35)		(27.15)	(93)	(1.15)
336	7.00	34.06	1.86	135							
417	6.48	34.20	0.83	118							
499	5.81	34.23	0.54	108							
583	5.34	34.32	0.40	96							

ORCA; September 9, 1959; 0207 GCT; ^{a)} 32°55'N, 117°21.5'W; sounding, 300 fm; wind, 320°, force 1; weather, partly cloudy; sea, slight; wire angle, 03°.

93.28

286	8.64	34.22	1.22	146							
289	8.58	34.22	1.22	145							
292	8.54	34.22	1.01	144							
316	8.32	34.23	0.99	140							
319	8.28	34.24	0.96	139							
322	8.29	34.22	0.98	141							
346	8.06	34.23	0.86	137							
349	8.08	34.26	0.86	135							
352	8.02	34.25	0.83	135							
376	7.68	34.29	0.59	127							
379	7.62	34.25	0.71	130							
382	7.58	34.22	0.68	131							
407	7.33	-	-	-							
409	7.32	34.29	0.58	122							
413	7.28	34.29	0.59	122							
437	7.12	34.28	0.58	120							
440	7.12	34.30	0.58	119							
442	7.11	34.25	0.60	122							

a) Special cast.

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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	$10^{-5} \frac{3}{\text{cm/g}}$	m	°C	‰	ml/L	g/L	$10^{-5} \frac{3}{\text{cm/g}}$	dyn. m

93.28

ORCA; September 16, 1959; 2040 GCT; 32° 54'N, 117° 22'W; sounding, 150 fm; wind, 310°, force 2; weather cloudy; sea, moderate; wire angle, 26°.

1	20.74	33.73	5.23	428	0	(20.74)	(33.73)	(5.23)	(23.62)	(428)	(0.00)
9	20.51	33.73	5.39	422	10	20.49	33.73	5.39	23.68	422	0.04
28	16.46	33.58	5.47	338	20	17.54	33.59	5.47	24.32	361	0.08
45	14.96	33.57	5.20	306	30	16.21	33.58	5.45	24.63	332	0.12
67	13.52	33.55	4.48	279	50	14.62	33.56	5.08	24.97	300	0.18
88	12.42	33.58	3.98	256	75	13.03	33.56	4.24	25.29	269	0.25
107	11.94	33.62	3.83	244	100	12.08	33.61	3.87	25.51	248	0.32
140	10.50	33.81	3.06	206	150	10.28	33.85	2.93	26.03	199	0.43
172	9.94	33.97	2.62	184	200	9.61	34.05	2.31	26.29	174	0.52
214	9.46	34.08	2.17	169							

93.30

ORCA; September 16, 1959; 1900 GCT; 32° 50'N, 117° 30'W; sounding, 585 fm; wind, 310°, force 3; weather, cloudy; sea, moderate; wire angle, 15°.

0	21.82	33.81	5.08	451	0	21.82	33.81	5.08	23.38	451	0.00
10	21.78	33.83	5.11	448	10	21.78	33.83	5.11	23.41	448	0.04
29	16.38	33.57	5.64	336	20	19.95	33.74	5.35	23.84	407	0.09
38	14.88	33.51	5.64	309	30	16.26	33.56	5.64	24.61	334	0.12
48	14.02	33.54	5.29	290	50	13.90	33.54	5.20	25.10	287	0.19
62	12.78	33.55	4.54	265	75	11.98	33.63	3.87	25.55	244	0.25
76	11.96	33.64	3.84	243	100	10.87	33.70	3.76	25.81	220	0.31
95	11.02	33.69	3.83	223	150	10.11	33.83	3.06	26.04	198	0.42
119	10.42	33.77	3.48	207	200	9.59	34.08	2.24	26.32	171	0.51
138	10.23	33.79	3.16	203	250	8.89	34.17	1.93	26.51	153	0.59
166	9.92	33.89	2.93	190	300	8.23	34.19	1.46	26.63	142	0.67
195	9.66	34.05	2.30	174	400	7.35	34.29	0.77	26.83	123	0.81
223	9.25	34.20	2.07	157	500	6.36	34.34	0.43	27.01	106	0.93
261	8.76	34.16	1.87	152							
319	8.00	34.22	1.28	137							
395	7.38	34.29	0.79	123							
463	6.74	34.31	0.54	113							
541	5.96	34.38	0.35	98							

93.40

ORCA; September 14, 1959; 2056 GCT; 32° 21'N, 118° 07'W; sounding, 400 fm; wind, 340°, force 5; weather, cloudy; sea, very rough; wire angle, 28°.

2	20.20	33.75	5.06	413	0	(20.20)	(33.75)	(5.06)	(23.78)	(413)	(0.00)
11	20.20	33.73	5.05	415	10	20.20	33.73	5.05	23.76	415	0.04
30	14.56	33.49	5.64	304	20	17.90	33.62	5.30	24.26	367	0.08
37	14.31	33.52	5.52	296	30	14.56	33.49	5.64	24.92	304	0.11
50	12.96	33.55	4.53	268	50	12.96	33.55	4.53	25.30	268	0.17
62	11.17	33.61	3.93	231	75	10.74	33.68	3.47	25.82	219	0.23
84	10.56	33.77	3.10	209	100	10.26	33.83	2.93	26.02	200	0.28
100	10.26	33.83	2.93	200	150	9.73	33.97	2.57	26.22	181	0.38
116	10.19	33.86	2.77	197	200	9.56	34.12	1.82	26.36	167	0.47
132	9.98	33.88	2.77	192	250	9.43	34.28	1.27	26.50	154	0.55
156	9.66	34.01	2.48	177	300	8.92	34.29	1.08	26.59	145	0.63
184	9.56	34.07	2.11	171	400	7.58	34.27	0.82	26.78	127	0.77
209	9.55	34.16	1.61	164	500	6.64	34.29	0.43	26.94	113	0.90
250	9.43	34.28	1.27	154							
298	8.96	34.29	1.10	146							
372	7.90	34.27	0.94	132							
449	7.10	34.27	0.57	121							
529	6.42	34.31	0.38	109							

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 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m	

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ORCA; September 14, 1959; 1535 GCT; 32°03'N, 118°46'W; sounding, 700 fm; wind, 320°, force 5; weather, partly cloudy; sea, high; wire angle, 16°.

93.50

2	19.44	33.72	5.13	397	0	(19.44)	(33.72)	(5.13)	(23.95)	(397)	(0.00)
11	19.45	33.68	5.12	400	10	19.45	33.68	5.12	23.92	400	0.04
35	16.42	33.51	5.71a)	342	20	19.45	33.68	5.14	23.92	400	0.08
45	14.98	33.46	5.77	315	30	18.14	33.60	5.41	24.18	374	0.12
60	14.09	33.43	5.41	299	50	14.70	33.45	5.68	24.86	310	0.19
74	13.05	33.45	5.11	277	75	13.02	33.45	5.10	25.20	277	0.26
98	11.28	33.55	4.48	238	100	11.19	33.56	4.43	25.64	236	0.33
117	10.38	33.66	4.01	215	150	9.22	33.88	2.85	26.23	180	0.43
137	9.42	33.78	3.25	190	200	8.39	34.15	2.10	26.56	148	0.51
166	9.03b)	33.98	2.51	170	250	7.85	34.13	1.57	26.64	141	0.59
195	8.47	34.15	2.33	149	300	7.49	34.21	1.17	26.75	130	0.66
234	8.00	34.10	1.74	146	400	6.82	34.30	0.70	26.91	115	0.78
264	7.75	34.16	1.44	138	500	6.10	34.35	0.35	27.05	102	0.90
313	7.42	34.23	1.09	128	600	5.60	34.38	0.32	27.13	94	1.00
376	7.00	34.29	0.82	118							
475	6.26	34.34	0.41	105							
564	5.78	34.37	0.32	97							
638	5.40	34.39	0.31	91							

ORCA; September 14, 1959; 0923 GCT; 31°41'N, 119°30'W; sounding, 2000+ fm; wind, 340°, force 4; weather, clear; sea, very rough; wire angle, 15°.

93.60

1	19.08	33.78	5.23	383	0	(19.08)	(33.78)	(5.23)	(24.09)	(383)	(0.00)
10	19.08	33.80	5.21	382	10	19.08	33.80	5.21	24.11	382	0.04
34	16.22	33.50	5.57	338	20	19.01	33.80	5.21	24.12	381	0.08
44	13.80	33.33	5.61	300	30	17.90	33.67	5.31	24.31	363	0.11
58	12.72	33.42	5.03	273	50	13.30	33.37	5.40	25.09	288	0.18
73	11.94	33.48	4.67	255	75	11.82	33.49	4.62	25.47	252	0.25
97	10.24	33.60	4.03	217	100	10.10	33.61	3.98	25.87	214	0.30
116	9.54	33.65	3.77	202	150	8.96	33.83	3.12	26.23	180	0.40
135	9.17	33.75	3.50	189	200	8.12	34.09	2.08	26.56	149	0.49
164	8.74	33.91	2.73	171	250	7.78	34.16	1.55	26.67	138	0.56
192	8.23	34.06	2.19	152	300	7.59	34.24	1.10	26.76	129	0.63
231	7.88	34.13	1.81	142	400	6.59	34.29	0.54	26.94	112	0.76
260	7.74	34.17	1.46	137	500	6.02	34.38	0.35	27.08	99	0.87
308	7.55	34.25	1.06	128	600	5.49	34.46	0.27	27.21	87	0.96
370	6.80	34.27	0.67	117							
467	6.22	34.35	0.40	104							
554	5.74	34.42	0.29	93							
629	5.32	34.48	0.25	83							

ORCA; September 14, 1959; 0327 GCT; 31°18'N, 120°07'W; sounding, 2000+ fm; wind, 340°, force 4; weather, cloudy; sea, very rough; wire angle, 29°.

93.70

3	18.26	33.55	5.37	380	0	(18.26)	(33.55)	(5.37)	(24.12)	(380)	(0.00)
11	18.25	33.55	5.41	380	10	18.25	33.55	5.40	24.12	380	0.04
33	18.19	33.55	5.36	380	20	18.23	33.55	5.38	24.12	380	0.08
41	16.24	33.36	5.94	348	30	18.21	33.55	5.37	24.13	380	0.11
54	15.06	33.35	5.97	325	50	15.15	33.35	5.97	24.68	327	0.18
67	14.53	33.46	5.86	306	75	14.02	33.48	5.66	25.03	294	0.26
88	13.20	33.52	5.04	275	100	12.22	33.51	4.60	25.41	258	0.33
104	11.98	33.51	4.53	253	150	9.80	33.67	3.62	25.96	205	0.45
121	11.28	33.55	4.34	238	200	8.60	34.00	2.48	26.42	162	0.54
144	10.09	33.62	3.80	213	250	8.01	34.18	1.62	26.65	140	0.62
167	9.08	33.84	3.23	181	300	7.58	34.24	1.11	26.76	130	0.69
200	8.60	34.00	2.48	162	400	6.73	34.28	0.57	26.92	115	0.82
223	8.46	34.11	1.91	152	500	6.08	34.29	0.36	27.01	106	0.93
263	7.86	34.20	1.51	137							
316	7.44	34.25	0.98	127							
402	6.72	34.28	0.56	115							
481	6.20	34.29	0.37	108							
550	5.74	34.31	0.36	101							

a) Alternate value, 5.59 ml/L, not used in interpolation.

b) Alternate value, 9.15°C, not used in interpolation.

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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 ³ /g	m	°C	‰	ml/L	g/L	10 ⁻⁵ cm ³ /g	dyn. m

93.80 ORCA; September 13, 1959; 2140 GCT; 31°10.5'N, 120°52.5'W; sounding, 2000+ fm; wind, 340°, force 4; weather, cloudy; sea, rough; wire angle, 28°.

2	18.58	33.31	5.17	406	0	(18.58)	(33.31)	(5.17)	(23.85)	(406)	(0.00)
11	18.59	33.31	5.18	406	10	18.59	33.31	5.18	23.86	406	0.04
28	18.52	33.31	5.15	404	20	18.57	33.31	5.16	23.86	405	0.08
37	18.32	33.33	5.17	397	30	18.49	33.31	5.15	23.88	403	0.12
50	16.04	33.40	5.61	342	50	16.04	33.40	5.61	24.53	342	0.20
63	14.70	33.31	5.70	320	75	13.89	33.30	5.57	24.92	304	0.28
84	13.24	33.30	5.39	292	100	12.32	33.46	4.98	25.36	263	0.35
101	12.22	33.46	4.96	261	150	9.38	33.74	3.82	26.09	193	0.46
118	10.74	33.51	4.42	232	200	8.37	33.98	3.00	26.45	159	0.55
135	9.83	33.66	4.04	206	250	7.69	34.08	2.07	26.62	143	0.63
159	9.16	33.78	3.70	187	300	7.04	34.10	1.47	26.73	133	0.70
188	8.62	33.95	3.09	166	400	6.12	34.19	0.70	26.92	114	0.83
214	8.09	34.01	2.95	154	500	5.52	34.28	0.41	27.07	100	0.94
256	7.63	34.09	1.91	142							
304	6.99	34.10	1.45	132							
378	6.28	34.17	0.86	118							
455	5.74	34.23	0.52	107							
535	5.38	34.33	0.35	95							

93.90 ORCA; September 13, 1959; 1436 GCT; 30°39'N, 121°44'W; sounding, 2000+ fm; wind, 360°, force 5; weather, overcast; sea, rough; wire angle, 10°.

2	18.79	33.35	5.18	408	0	(18.79)	(33.35)	(5.18)	(23.83)	(408)	(0.00)
12	18.79	33.35	5.17	408	10	18.79	33.35	5.17	23.83	408	0.04
32	18.80	33.35	5.11	408	20	18.79	33.35	5.15	23.83	408	0.08
41	18.65	33.40	5.21	401	30	18.80	33.35	5.12	23.83	408	0.12
55	17.23	33.56	5.52	356	50	17.60	33.55	5.49	24.28	366	0.20
70	16.31	33.53	5.41	338	75	16.01	33.50	5.40	24.62	333	0.29
94	14.72	33.46	5.38	309	100	14.70	33.49	5.37	24.90	306	0.37
114	13.29	33.52	5.17	277	150	11.02	33.64	4.46	25.73	227	0.50
133	12.29	33.60	4.97	252	200	8.95	33.89	3.92	26.28	175	0.60
152	10.81	33.65	4.38	223	250	8.01	34.01	3.02	26.51	153	0.69
182	9.39	33.78	4.11	190	300	7.25	34.05	2.35	26.66	139	0.77
215	8.63	33.95	3.68	166	400	6.40	34.17	1.13	26.87	119	0.90
245	8.10	34.00	3.10	154	500	5.71	34.26	0.47	27.03	104	1.02
293	7.34	34.04	2.43	141	600	(5.30)	(34.34)	(0.37)	(27.14)	(93)	(1.12)
348	6.74	34.07	1.81	131							
431	6.22	34.21	0.75	114							
514	5.63	34.27	0.44	102							
599	5.31	34.34	0.37	94							

93.100 ORCA; September 13, 1959; 0857 GCT; 30°21'N, 122°20'W; sounding, 2000+ fm; wind, 350°, force 5; weather, cloudy; sea, very rough; wire angle, 09°.

1	19.10	33.48a)	5.26	406	0	(19.10)	(33.48)	(5.26)	(23.86)	(406)	(0.00)
10	19.10	33.47	5.20	406	10	19.10	33.47	5.20	23.85	406	0.04
30	18.94	33.48	5.25	401	20	19.06	33.47	5.21	23.86	405	0.08
40	17.87	33.46	5.46	378	30	18.94	33.48	5.25	23.90	401	0.12
54	16.68	33.51	5.69	347	50	17.20	33.50	5.62	24.33	360	0.20
69	15.70	33.55	5.75	323	75	15.85	33.62	5.76	24.75	321	0.28
94	14.72	33.68	5.52	293	100	14.51	33.69	5.46	25.09	288	0.36
114	14.06	33.75	5.33	275	150	11.03	33.69	4.78	25.77	224	0.49
134	12.56	33.68	5.02	251	200	8.99	33.87	4.04	26.26	177	0.59
153	10.82	33.69	4.74	220	250	8.09	34.05	3.20	26.54	151	0.68
183	9.44	33.78	4.27	191	300	7.29	34.08	1.99	26.67	138	0.75
217	8.64	33.96	3.81	165	400	6.39	34.19	1.00	26.89	117	0.89
246	8.16	34.04	3.29	152	500	5.74	34.28	0.51	27.04	103	1.00
295	7.35	34.07	2.05	139	600	5.28	34.38	0.35	27.17	91	1.11
350	6.81	34.14	1.35	127							
435	6.12	34.22	0.78	112							
519	5.65	34.30	0.44	100							
605	5.26	34.38	0.35	90							

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a) Salinity bottle numbers were not recorded on the data sheet. Since standard handling and titrating procedures were used, these salinity values 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 ⁻⁵ cm/g	m	°C	‰	ml/L	g/L	10 ⁻⁵ cm/g	dyn. m

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ORCA; September 13, 1959; 0235 GCT; 30°06.5'N, 122°53.5'W; sounding, 2000+ fm; wind, 045°, force 4; weather, cloudy; sea, very rough; wire angle, 24°.

93.110

1	18.26	33.17	5.37	408	0	(18.26)	(33.17)	(5.37)	(23.83)	(408)	(0.00)
10	18.26	33.16	5.40	409	10	18.26	33.16	5.40	23.82	409	0.04
29	18.20	33.15	5.31	408	20	18.24	33.16	5.34	23.82	409	0.08
37	18.04	33.13	5.37	406	30	18.19	33.15	5.31	23.83	408	0.12
51	17.58	33.52	5.62	367	50	17.60	33.47	5.59	24.22	371	0.20
65	15.50	33.38	5.94	331	75	15.50	33.52	5.85	24.75	321	0.29
87	15.18	33.55	5.74	312	100	14.78	33.62	5.61	24.98	299	0.37
105	14.62	33.66	5.54	292	150	10.71	33.54	4.60	25.71	229	0.50
122	13.58	33.68	5.40	270	200	8.88	33.83	3.93	26.24	179	0.60
141	11.34	33.51	4.81	242	250	7.98	34.00	3.36	26.51	153	0.69
168	9.70	33.64	4.30	205	300	7.22	34.04	2.30	26.66	139	0.76
199	8.92	33.83	3.94	179	400	6.22	34.15	0.95	26.88	119	0.90
227	8.33	33.95	3.70	162	500	5.78	34.29	0.51	27.04	103	1.02
271	7.67	34.02	3.00	147							
322	6.92	34.05	1.83	135							
401	6.22	34.15	0.94	118							
480	5.88	34.27	0.55	106							
562	5.46	34.33	0.37	96							

ORCA; September 13, 1959; 0344 GCT;^{a)} 30°06.5'N, 122°53.5'W; sounding, 2000+ fm; wind, 045°, force 4; weather, cloudy; sea, very rough; wire angle, 12°.

93.110

34	18.12	33.23	5.40	400							
43	18.09	33.39	5.45	388							
50	16.48	33.28	5.83	360							
58	15.78	33.36	5.82	339							
61	15.44	33.38	5.90	330							
64	15.07	33.34	5.92	325							
67	15.29	33.49	5.88	319							
70	15.45	33.55	5.83	318							
73	15.48	33.57	5.83	317							
76	15.60	33.62	5.70	316							
89	15.32b)	33.64	5.72	308							
92	15.18	33.64	5.72	306							
95	15.18	33.67	5.67	304							
98	15.18	33.68	5.65	303							
101	14.92	33.66	5.60	299							
104	14.83	33.69	5.53	295							
107	14.58	33.71	5.55	288							
137	11.82	33.48	5.00	252							

ORCA; September 12, 1959; 2044 GCT; 29°49.5'N, 123°34'W; sounding, 2000+ fm; wind, 360°, force 4; weather, cloudy; sea, rough; wire angle, 18°.

93.120

1	18.72	33.16	5.23	420	0	(18.72)	(33.16)	(5.23)	(23.71)	(420)	(0.00)
10	18.69	33.19	5.24	417	10	18.69	33.19	5.24	23.74	417	0.04
29	18.58	33.17	5.19	416	20	18.64	33.18	5.23	23.74	417	0.08
39	18.51	33.23	5.11	410	30	18.58	33.17	5.18	23.75	416	0.12
53	17.94	33.60	5.49	370	50	18.20	33.53	5.40	24.12	381	0.20
67	16.67	33.75	5.59	330	75	16.40	33.77	5.56	24.74	322	0.29
91	16.00	33.78	5.47	312	100	15.70	33.79	5.45	24.90	306	0.37
110	15.24	33.80	5.43	295	150	11.39	33.62	4.70	24.65	235	0.51
128	13.98	33.78	5.10	271	200	9.32	33.79	4.16	26.14	188	0.62
146	11.73	33.62	4.75	240	250	8.37	33.89	3.03	26.36	167	0.71
170	9.84	33.66	4.45	206	300	7.58	34.03	2.40	26.59	146	0.79
204	9.26	33.80	4.13	187	400	6.37	34.12	1.14	26.84	122	0.93
232	8.70	33.84	3.30	175	500	5.82	34.20	0.57	26.97	110	1.05
277	7.94	33.96	2.84	154							
327	7.14	34.04	1.92	138							
407	6.32	34.13	1.09	121							
488	5.88	34.20	0.62	111							
571	5.47	34.25	0.36	102							

a) Special cast.

b) Alternate value, 15.52°C, not used in interpolation.

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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	$\frac{-5}{10} \text{ cm/g}$	m	°C	‰	ml/L	g/L	$\frac{-5}{10} \text{ cm/g}$	dyn. m

97.32 BLACK DOUGLAS; September 21, 1959; 2316 GCT;^{a)} 32°11'N, 117°17'W; sounding, 700 fm; wind, 270°, force 3; weather, cloudy; sea, moderate; wire angle, 19°.

423	6.80	34.35	0.39	111
425	6.81	34.34	0.35	112
428	6.76	34.33	0.36	112
452	6.59	34.33	0.26	110
455	6.60	34.34	0.25	109
458	6.56	34.34	0.25	108
482	6.40	34.34	0.27	106
485	6.40	34.35	0.24	106
488	6.39	34.37	0.27	104
512	6.18	34.39	0.25	100
515	6.16	34.36	0.27	102
517	6.16	34.36	0.30	102
542	6.00	-	-	-
545	5.98	34.34	0.31	102
547	5.94	34.36	0.35	99
572	5.84	34.36	0.25	98
574	5.83	34.38	0.30	96
577	5.82	34.42	0.29	94

113.30 BLACK DOUGLAS; September 23, 1959; 0036 GCT; 29°22'N, 115°18'W; sounding, 30 fm; wind, 260°, force 3; weather, cloudy; sea, moderate; wire angle, 05°.

0	18.49	33.70	5.64	375	0	18.49	33.70	5.64	24.18	375	0.00
9	16.56	33.62	5.64	336	10	16.40	33.62	5.63	24.62	333	0.04
28	14.90	33.64	5.29	300	20	15.38	33.63	5.44	24.86	310	0.07
48	13.57	33.61	4.50	275	30	14.85	33.64	5.27	24.98	299	0.10
					50	(13.40)	(33.61)	(4.40)	(25.26)	(272)	(0.16)

2 113.35 BLACK DOUGLAS; September 23, 1959; 0405 GCT; 29°11.5'N, 115°38'W; sounding, 740 fm; wind, 270°, force 4; weather, partly cloudy; sea, moderate; wire angle, 10°.

0	17.94	33.66	5.25	365	0	17.94	33.66	5.25	24.28	365	0.00
9	17.86	33.64	5.47	364	10	17.85	33.63	5.48	24.29	364	0.04
28	15.83	33.59	5.27	324	20	17.45	33.61	5.48	24.36	357	0.07
38	15.39	33.64	5.11	310	30	15.75	33.60	5.22	24.76	320	0.11
54	13.85	33.66	4.61	278	50	14.87	33.66	4.96	24.98	298	0.17
69	13.33	33.64	4.35	269	75	13.10	33.67	4.28	25.37	262	0.24
93	11.79	33.74	4.13	233	100	11.29	33.74	3.97	25.76	224	0.30
111	10.83	33.79	3.69	213	150	10.35	34.03	2.29	26.16	187	0.40
132	10.68	33.92	2.73	200	200	9.72	34.22	1.42	26.41	163	0.49
152	10.32	34.04	2.25	186	250	9.93	34.38	0.68	26.51	153	0.57
181	9.79	34.18	1.64	166	300	9.36	34.40	0.66	26.61	144	0.65
216	9.73	34.25	1.22	160	400	7.91	34.30	0.67	26.76	130	0.79
245	9.96	34.38	0.70	154	500	6.80	34.34	0.37	26.95	112	0.92
294	9.40	34.40	0.67	144	600	(5.85)	(34.38)	(0.22)	(27.10)	(97)	(1.03)
349	9.09	34.43	0.56	137							
433	7.24	34.25	0.72	124							
516	6.68	34.36	0.31	108							
595	5.90	34.38	0.22	97							

a) Special cast.

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; September 23, 1959; 0705 GCT; 29°02'N, 115°57'W; sounding, 600 fm; wind, 260°, force 4; weather, cloudy; sea, moderate; wire angle, 24°.

11340

5	19.15	33.84	4.77	381	0	19.3	(33.84)	(4.77)	(24.07)	(385)	(0.00)
13	18.89	33.70	4.86	385	10	18.99	33.73	4.85	24.08	384	0.04
31	17.86	33.80	4.81	353	20	18.72	33.70	4.86	24.11	381	0.08
41	17.68	33.84	4.48	346	30	17.89	33.79	4.82	24.39	354	0.11
55	15.74	33.64	4.93	318	50	17.53	33.72	4.82	24.66	329	0.18
69	14.47	33.67	4.34	289	75	14.00	33.67	4.03	25.18	280	0.26
92	12.44	33.66	2.83	251	100	12.16	33.68	2.62	25.56	244	0.32
110	11.96	33.71	2.51	238	150	11.09	33.82	2.06	25.86	215	0.44
128	11.60	33.76	2.05	228	200	9.87	34.08	2.05	26.28	176	0.54
147	11.18	33.81	2.03	217	250	9.33	34.21	1.45	26.47	157	0.62
175	10.38	33.93	2.36	194	300	8.82	34.34	0.98	26.66	140	0.70
207	9.74	34.10	1.93	172	400	7.46	34.33	0.60	26.84	122	0.84
234	9.44	34.16	1.66	163	500	6.58	34.33	0.47	26.97	110	0.96
280	9.10	34.33	1.09	145							
332	8.28	34.33	0.85	133							
410	7.36	34.32	0.60	120							
490	6.64	34.33	0.48	110							
573	6.02	34.35	0.31	102							

3

BLACK DOUGLAS; September 23, 1959; 1848 GCT; 29°11'N, 114°55'W; sounding, 40 fm; wind, 270°, force 1; weather, overcast; sea, moderate; wire angle, 00°.

115.27

0	19.18	33.69	5.51	392	0	19.18	33.69	5.51	24.00	392	0.00
9	18.60	33.68	5.59	379	10	18.58	33.68	5.59	24.14	378	0.04
29	15.64	33.59	5.35	319	20	16.85	33.62	5.50	24.51	343	0.07
49	13.72	33.57	4.65	281	30	15.54	33.59	5.32	24.79	317	0.11
					50	(13.60)	(33.57)	(4.61)	(25.18)	(279)	(0.17)

7

BLACK DOUGLAS; September 23, 1959; 1645 GCT; 29°05'N, 115°08'W; sounding, 50 fm; wind, 260°, force 3; weather, overcast; sea, moderate; wire angle, 00°.

115.30

0	18.72	33.66	4.75	384	0	18.72	33.66	4.75	24.08	384	0.00
10	18.73	33.69	4.81	382	10	18.73	33.69	4.81	24.10	382	0.04
30	14.94	33.61	4.36	301	20	17.94	33.68	4.80	24.30	364	0.08
50	12.94	33.62	4.11	263	30	14.94	33.61	4.36	24.96	301	0.11
75	11.62	33.78	2.32	227	50	12.94	33.62	4.11	25.36	263	0.16
					75	11.62	33.78	2.32	25.73	227	0.23

5

BLACK DOUGLAS; September 23, 1959; 1349 GCT; 28°53'N, 115°28'W; sounding, 500 fm; wind, 320°, force 4; weather, drizzle; sea, rough; wire angle, 06°.

115.35

0	20.37	33.83	4.82	411	0	20.37	33.83	4.82	23.80	411	0.00
10	20.43	33.81	4.96	415	10	20.43	33.81	4.96	23.76	415	0.04
30	17.66	33.73	5.41	354	20	18.92	33.77	5.23	24.12	380	0.08
39	16.31	33.67	5.50	328	30	17.66	33.73	5.41	24.40	354	0.12
54	15.30	33.66	5.35	307	50	15.52	33.66	5.41	24.85	311	0.18
70	13.70	33.70	4.44	272	75	14.00	33.83	4.29	25.30	268	0.26
96	12.54	33.75	3.16	246	100	12.80	33.86	2.91	25.57	242	0.32
116	12.82	34.10	1.79	226	150	10.95	34.01	2.47	26.04	198	0.43
136	11.56	34.05	2.20	206	200	10.36	34.22	1.55	26.30	173	0.53
156	10.78	34.01	2.51	196	250	9.43	34.22	1.65	26.46	158	0.61
185	10.36	34.14	1.81	178	300	8.69	34.29	1.26	26.63	142	0.69
222	10.37	34.29	1.43	168	400	7.72	34.34	0.62	26.82	124	0.83
252	9.38	34.22	1.67	157	500	6.56	34.37	0.32	27.01	106	0.95
301	8.68	34.29	1.25	142	600	5.99	34.39	0.22	27.10	98	1.06
356	8.29	34.34	0.76	132							
442	7.16	34.36	0.50	115							
526	6.37	34.38	0.26	103							
611	5.96	34.39	0.22	97							

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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

115.40 BLACK DOUGLAS; September 23, 1959; 1050 GCT; 28°45'N, 115°47'W; sounding, 475 fm; wind, 300°, force 3; weather, cloudy; sea, moderate; wire angle, 14°.

0	21.12	33.86	-	429	0	21.12	33.86		23.61	429	0.00
8	21.13	33.86	5.67	429	10	21.11	33.86	5.67	23.61	429	0.04
28	16.94	33.75	5.46	336	20	18.81	33.77	5.54	24.40	354	0.08
37	15.92	33.73	5.20	315	30	16.93	33.75	5.45	24.60	335	0.12
52	14.48	33.64	5.37	292	50	14.90	33.66	5.34	24.98	298	0.18
67	13.89	33.70	4.89	275	75	13.08	33.78	3.60	25.45	254	0.25
91	13.06a)	34.04	2.40	234	100	12.78	34.06	2.06	25.73	227	0.31
112	12.51a)	34.11	1.73	219	150	11.77	34.14	1.49	25.98	203	0.42
131	11.97a)	34.10	1.68	209	200	10.89	34.26	1.47	26.24	179	0.52
151	11.78	34.14	1.48	203	250	10.47	34.43	0.88	26.45	159	0.60
181	11.25	34.20	1.59	190	300	9.65	34.40	0.90	26.56	148	0.68
216	10.66	34.34	1.25	169	400	8.00	34.36	0.70	26.79	127	0.82
249	10.48	34.43	0.89	160	500	6.59	34.32	0.57	26.96	111	0.95
298	9.68	34.40	0.92	149	600	5.93	34.39	0.29	27.10	97	(1.06)
353	9.01	34.41	0.70	138							
438	7.24	34.33	0.69	119							
524	6.42	34.33	0.50	108							
609	5.87	34.40	0.27	96							

117.26 BLACK DOUGLAS; September 23, 1959; 2110 GCT; 28°56'N, 114°41.5'W; sounding, 41 fm; wind, 300°, force 3; weather, cloudy; sea, moderate; wire angle, 00°.

0	20.28	33.83	5.21	409	0	20.28	33.83	5.21	23.82	409	0.00
9	20.27	33.86	5.28	407	10	20.26	33.86	5.29	23.85	406	0.04
29	13.88	33.56	4.31	285	20	16.00	33.64	4.74	24.73	323	0.08
49	12.44	33.62	2.93	254	30	13.76	33.56	4.25	25.15	283	0.11
					50	(12.40)	(33.62)	(2.86)	(25.46)	(253)	(0.16)

117.30 BLACK DOUGLAS; September 24, 1959; 0235 GCT; 28°48'N, 114°56.5'W; sounding, 55 fm; wind, 320°, force 3; weather, partly cloudy; sea, moderate; wire angle, 06°.

0	20.02	33.75	5.20	408	0	20.02	33.75	5.20	23.82	408	0.00
10	19.37	33.64	5.23	400	10	19.37	33.64	5.23	23.92	400	0.04
30	15.34	33.57	4.75	314	20	18.50	33.61	5.19	24.10	382	0.08
50	13.12	33.62	4.66	266	30	15.34	33.57	4.75	24.82	314	0.11
74	11.72	33.77	2.63	230	50	13.12	33.62	4.66	25.32	266	0.17
					75	(11.70)	(33.78)	(2.52)	(25.72)	(228)	(0.23)

117.35 BLACK DOUGLAS; September 24, 1959; 0510 GCT; 28°38'N, 115°16'W; sounding, 130 fm; wind, 320°, force 4; weather, missing; sea, moderate; wire angle, 14°.

0	19.53	33.73	5.39	398	0	19.53	33.73	5.39	23.94	398	0.00
8	19.48	33.72	5.13	398	10	19.46	33.72	5.12	23.95	397	0.04
27	19.14	33.71	5.19	390	20	19.32	33.72	5.14	23.98	394	0.08
46	16.06	33.64	5.40	324	30	19.01	33.71	5.23	24.06	386	0.12
70	15.34	34.03	3.16	280	50	15.90	33.78	4.83	24.86	310	0.19
93	13.93	33.94	3.03	258	75	14.97	34.00	3.10	25.24	274	0.26
116	12.68	33.91	2.65	237	100	13.30	33.90	2.88	25.50	249	0.33
153	10.76	33.86	2.26	206	150	10.84	33.85	2.28	25.93	208	0.44
190	10.30	34.03	2.17	186	200	(10.21)	(34.06)	(2.15)	(26.20)	(183)	(0.54)

a) A strong temperature inversion was indicated by the bathythermograph observation taken one hour before the hydrographic cast.

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

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BLACK DOUGLAS; September 24, 1959; 0810 GCT; 28°28'N, 115°35.5'W; sounding, 450 fm; wind, 280°, force 4; weather, cloudy; sea, moderate; wire angle, 05°.

11740

0	20.84	33.82	5.40	424	0	20.84	33.82	5.40	23.66	424	0.00
9	20.88	33.78	5.45	429	10	20.88	33.78	5.46	23.61	429	0.04
29	20.30	33.76	5.58	415	20	20.86	33.77	5.47	23.62	428	0.08
39	18.32	33.73	6.08	369	30	20.20	33.76	5.61	23.78	412	0.13
53	16.80	33.69	6.34	337	50	16.94	33.70	6.32	24.54	340	0.20
68	14.54	33.68	5.50	290	75	14.09	33.70	5.20	25.18	279	0.28
93	12.49	-	3.91	-	100	12.09	33.83	3.73	25.68	232	0.35
114	11.98	33.84	3.66	229	150	10.96	33.92	2.67	25.96	205	0.46
134	11.24	33.84	2.68	216	200	10.57	34.18	1.97	26.24	179	0.56
154	10.91	33.94	2.66	203	250	10.11	34.29	1.41	26.40	164	0.64
184	10.72	34.11	2.26	187	300	8.72	34.24	1.71	26.59	146	0.72
220	10.37	34.25	1.57	170	400	7.82	34.33	0.96	26.80	126	0.86
250	10.11	34.29	1.41	164	500	6.65	34.32	0.56	26.96	111	0.99
300	8.72	34.24	1.71	146	600	5.99	34.38	0.35	27.08	98	1.10
355	8.46	34.33	1.13	136							
440	7.30	34.33	0.78	119							
525	6.42	34.33	0.48	108							
609	5.95	34.39	0.34	97							

BLACK DOUGLAS; September 24, 1959; 1026 GCT; 28°18.5'N, 115°23.5'W; sounding, 140 fm; wind, 320°, force 3; weather, cloudy; sea, moderate; wire angle, 05°.

118.39

0	20.15	33.74	5.13	412	0	20.15	33.74	5.13	23.78	412	0.00
10	20.09	33.74	5.16	411	10	20.09	33.74	5.16	23.80	411	0.04
29	18.60	33.67	4.99	380	20	18.99	33.68	5.04	24.03	389	0.08
49	15.36	33.64	4.66	309	30	18.46	33.67	4.96	24.15	377	0.12
74	13.10	33.63	3.99	265	50	15.24	33.64	4.64	24.89	307	0.19
99	11.36	33.75	3.00	224	75	13.00	33.63	3.96	25.36	263	0.26
123	11.27	33.87	2.47	214	100	11.33	33.76	2.96	25.77	224	0.32
162	10.81	34.05	1.95	193	150	10.96	34.00	2.12	26.03	199	0.43
201	10.32	34.21	1.36	173	200	10.33	34.21	1.37	26.30	174	0.52

BLACK DOUGLAS; September 25, 1959; 0349 GCT; 28°40.5'N, 114°25.5'W; sounding, 42 fm; wind, 320°, force 4; weather, cloudy; sea, moderate; wire angle, 06°.

118⁵.25

0	20.26	33.77	5.54	414	0	20.26	33.77	5.54	23.77	414	0.00
10	20.28	33.78	5.36	414	10	20.28	33.78	5.36	23.77	414	0.04
30	16.22	33.76	5.35	319	20	17.01	33.76	5.35	24.58	336	0.08
49	15.04	33.66	5.27	302	30	16.22	33.76	5.35	24.76	319	0.11
74	12.57	33.67	3.27	252	50	15.03	33.66	5.26	24.95	302	0.17
					75	(12.51)	(33.67)	(3.25)	(25.48)	(251)	(0.24)

BLACK DOUGLAS; September 25, 1959; 0122 GCT; 28°30.5'N, 114°45.5'W; sounding, 60 fm; wind, 330°, force 5; weather, cloudy; sea, moderate; wire angle, 04°.

118⁵.30

0	20.64	33.78	5.02	422	0	20.64	33.78	5.02	23.68	422	0.00
10	20.66	33.78	5.11	422	10	20.66	33.78	5.11	23.68	422	0.04
29	17.90	33.62	4.88	367	20	19.38	33.68	5.02	23.94	398	0.08
49	13.31	33.62	3.97	270	30	16.50	33.62	4.66	24.59	336	0.12
73	12.15	33.90	2.71	228	50	13.25	33.62	3.95	25.29	269	0.18
98	11.32	33.91	2.15	212	75	12.17	33.92	2.66	25.74	226	0.24
					100	(11.27)	(33.91)	(2.14)	(25.90)	(211)	(0.30)

BLACK DOUGLAS; September 24, 1959; 2137 GCT; 28°20.5'N, 115°05'W; sounding, 65 fm; wind, 330°, force 4; weather, cloudy; sea, moderate; wire angle, 03°.

118⁵.35

0	19.30	33.62	5.88	400	0	19.30	33.62	5.88	23.91	400	0.00
9	19.26	33.68	5.81	395	10	19.25	33.68	5.80	23.97	395	0.04
29	18.94	33.77	5.57	380	20	19.16	33.74	5.69	24.04	388	0.08
49	14.78	33.62	5.21	299	30	18.92	33.77	5.56	24.13	380	0.12
74	12.64	33.62	4.09	258	50	14.70	33.62	5.20	24.99	298	0.18
99	11.74	33.72	3.20	234	75	12.61	33.62	4.07	25.42	257	0.25
					100	(11.73)	(33.72)	(3.17)	(25.67)	(233)	(0.32)

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OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O ₂	δ_{T_3}	Z	T	S	O ₂	σ_t	δ_{T_3}	ΔD	
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m	

119.33 BLACK DOUGLAS; September 24, 1959; 2320 GCT; 28°19'N, 114°53'W; sounding, 60 fm; wind, 330°, force 4; weather, cloudy; sea, moderate; wire angle, 10°.

0	20.69	33.74	6.20	426	0	20.69	33.74	6.20	23.64	426	0.00
9	20.68	33.73	6.22	426	10	20.68	33.73	6.22	23.64	426	0.04
28	20.10	33.88	5.89	402	20	20.64	33.74	6.20	23.66	425	0.08
48	16.90	33.62	6.26	344	30	19.73	33.86	5.92	23.98	394	0.13
73	12.82	33.78	4.19	249	50	16.54	33.63	6.14	24.59	336	0.20
97	11.60	33.93	2.83	216	75	12.68	33.79	4.08	25.54	246	0.27
					100	(11.59)	(33.96)	(2.75)	(25.88)	(213)	(0.33)

120.25 BLACK DOUGLAS; September 25, 1959; 0616 GCT; 28°22.5'N, 114°15'W; sounding, 30 fm; wind, 300°, force 4; weather, cloudy; sea, rough; wire angle, 08°.

0	20.16	33.77	5.49	410	0	20.16	33.77	5.49	23.81	410	0.00
10	20.18	33.80	5.46	409	10	20.18	33.80	5.46	23.82	409	0.04
30	16.98	33.63	5.45	344	20	17.72	33.65	5.45	24.32	361	0.08
49	15.82	33.68	5.36	316	30	16.98	33.63	5.45	24.50	344	0.11
					50	(15.78)	(33.68)	(5.35)	(24.81)	(315)	(0.18)

120.30 BLACK DOUGLAS, September 25, 1959; 0926 GCT; 28°13'N, 114°34'W; sounding, 51 fm; wind, 300°, force 5; weather, overcast; sea, rough; wire angle, 00°.

0	20.50	33.73	5.21	422	0	20.50	33.73	5.21	23.68	422	0.00
10	20.52	33.75	5.22	421	10	20.52	33.75	5.22	23.69	421	0.04
30	20.50	33.75	5.27	421	20	20.51	33.75	5.25	23.69	421	0.08
50	16.68	33.65	5.25	337	30	20.50	33.75	5.27	23.69	421	0.13
75	13.10	33.68	4.09	261	50	16.68	33.65	5.25	24.58	337	0.20
					75	13.10	33.68	4.09	25.38	261	0.28

120.35 BLACK DOUGLAS; September 25, 1959; 1503 GCT; 28°03'N, 114°54'W; sounding, 47 fm; wind, 340°, force 4; weather, cloudy; sea, rough; wire angle, 00°.

0	20.64	33.74	5.21	425	0	20.64	33.74	5.21	23.65	425	0.00
10	20.66	33.74	5.27	426	10	20.66	33.74	5.27	23.65	426	0.04
30	20.64	33.73	5.33	426	20	20.65	33.74	5.30	23.65	426	0.08
50	18.56	33.68	5.01	378	30	20.64	33.73	5.33	23.65	426	0.13
75	13.92	33.64	3.78	280	50	18.56	33.68	5.01	24.14	378	0.21
					75	13.92	33.64	3.78	25.17	280	0.29

120.45 BLACK DOUGLAS; September 25, 1959; 2010 GCT; 27°43'N, 115°33'W; sounding, 1106 fm; wind, 320°, force 5; weather, partly cloudy; sea, very rough; wire angle, 07°.

0	22.48	34.02	4.66	453	0	22.48	34.02	4.66	23.36	453	0.00
10	22.47	34.00	4.65	454	10	22.47	34.00	4.65	23.35	454	0.04
30	22.41	34.00	4.64	453	20	22.44	34.00	4.64	23.36	454	0.09
40	18.14	33.75	5.25	363	30	22.41	34.00	4.64	23.36	453	0.14
55	15.76	33.66	5.21	316	50	16.38	33.67	5.23	24.66	329	0.21
70	13.78	33.74	4.15	270	75	13.16	33.76	3.74	25.42	257	0.29
95	11.47	33.79	2.90	224	100	11.21	33.80	2.87	25.82	218	0.35
115	10.80	33.89	2.75	205	150	10.63	34.18	1.52	26.22	181	0.45
135	10.68	34.04	1.89	192	200	9.91	34.33	1.12	26.47	157	0.54
155	10.61	34.20	1.48	179	250	9.67	34.44	0.76	26.58	146	0.61
185	10.00	34.29	1.27	162	300	9.25	34.47	0.55	26.68	137	0.69
220	9.86	34.37	0.98	154	400	7.78	34.41	0.47	26.86	120	0.82
251	9.66	34.44	0.75	146	500	6.77	34.41	0.30	27.01	106	0.94
301	9.24	34.47	0.54	137	600	5.98	34.43	0.22	27.12	95	1.04
356	8.40	34.45	0.50	126							
442	7.26	34.39	0.43	114							
526	6.59	34.42	0.26	103							
611	5.88	34.43	0.21	93							

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	

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BLACK DOUGLAS; September 25, 1959; 0715 GCT; 28°12.5'N, 114°15.5'W; sounding, 21 fm; wind, 320°, force 4; weather, cloudy; sea, rough; wire angle, 00°.

1207.26

0	21.34	33.84	4.80	436	0	21.34	33.84	4.80	23.54	436	0.00
10	21.40	33.84	4.87	438	10	21.40	33.84	4.87	23.52	438	0.04
30	16.54	33.62	4.89	336	20	18.50	33.70	4.88	24.18	375	0.08
					30	16.54	33.62	4.89	24.59	336	0.12

18

BLACK DOUGLAS; September 25, 1959; 1310 GCT; 27°53'N, 114°43'W; sounding, 22 fm; wind, 320°, force 4; weather, cloudy; sea, rough; wire angle, 00°.

1212.34

0	22.00	33.90	4.52	449	0	22.00	33.90	4.52	23.40	449	0.00
10	20.99	33.86	4.90	425	10	20.99	33.86	4.90	23.65	425	0.04
30	17.46	33.65	4.96	355	20	20.01	33.80	4.94	23.87	404	0.08
					30	17.46	33.65	4.96	24.39	355	0.12

21

BLACK DOUGLAS; September 25, 1959; 1116 GCT; 27°58.5'N, 114°26.5'W; sounding, 21 fm; wind, 320°, force 4; weather, overcast; sea, rough; wire angle, 00°.

1213.30

0	21.74	33.95	4.95	438	0	21.74	33.95	4.95	23.51	438	0.00
10	21.75	33.94	5.02	439	10	21.75	33.94	5.02	23.50	439	0.04
25	17.66	33.66	5.25	358	20	20.03	33.82	5.12	23.87	404	0.09

20

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
90.55-O	IX-11	0210	32°33.5'	119°37.0'	500	320°	4	partly cloudy	very rough	18.50	33.80
90.65-O	11	0820	32°13.0'	120°19.5'	2050	320°	5	partly cloudy	very rough	17.80	33.78
90.75-O	11	1505	31°52.0'	121°05.0'	2000+	320°	5	cloudy	very rough	18.22	33.55
90.85-O	11	2030	31°36.5'	121°40.0'	2000+	320°	5	partly cloudy	very rough	18.56	33.60
93.35-O	15	0052	32°36.5'	117°49.0'	450	300°	4	partly cloudy	rough	20.18	33.72
93.45-O	14	1820	32°13.0'	118°26.0'	600	320°	5	cloudy	rough	19.98	33.69
93.55-O	14	1215	31°52.0'	119°12.0'	2000+	320°	5	partly cloudy	very rough	19.84	33.78
93.65-O	14	0630	31°30.0'	119°48.0'	2000+	340°	4	clear	very rough	17.86	33.53
93.75-O	14	0032	31°14.5'	120°28.5'	2000+	340°	4	cloudy	very rough	18.58	33.51
93.85-O	13	1758	30°53.0'	121°21.0'	2000+	340°	4	cloudy	rough	18.68	33.30
110.33-B	22	1950	29°50.0'	115°52.0'	50	320°	4	partly cloudy	moderate	17.75	33.66
110.35-B	22	1830	29°46.0'	116°00.0'	740	270°	4	cloudy	moderate	20.70	33.97
110.40-B	22	1540	29°36.5'	116°19.5'	-	270°	3	cloudy	moderate	21.44	33.95
120.40-B	25	1715	27°56.5'	115°14.0'	20	320°	3	cloudy	moderate	19.63	33.91
123.37-B	26	0445	27°24.0'	114°40.0'	38	270°	3	clear	moderate	22.06	34.02
123.42-B	26	0205	27°14.0'	114°59.0'	950	340°	5	partly cloudy	rough	22.32	-
123.45-B	26	0023	27°08.0'	115°10.5'	2200	340°	5	partly cloudy	rough	23.31	34.22
127.34-B	26	0925	26°55.0'	114°06.5'	41	260°	4	clear	moderate	22.56	34.28
127.40-B	26	1220	26°43.5'	114°29.0'	1700	320°	4	partly cloudy	rough	21.78	34.23

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
127.45-B	IX-26	1445	26°33.0'	114°48.5'	1750	340°	3	partly cloudy	moderate	23.62	34.20
130.30-B	27	0225	26°29.0'	113°29.0'	43	300°	3	clear	moderate	23.37	34.26
130.35-B	27	0010	26°19.0'	113°48.0'	160	290°	4	clear	rough	22.98	34.22
130.40-B	26	2152	26°09.0'	114°07.0'	1100	320°	3	partly cloudy	moderate	22.98	33.94
130.45-B	26	1900	25°58.5'	114°26.5'	1840	320°	3	partly cloudy	moderate	23.24	34.18
133.25-B	27	0923	26°04.5'	112°48.0'	45	300°	2	clear	moderate	24.62	34.34
133.30-B	27	0700	25°54.5'	113°07.5'	108	280°	2	clear	moderate	25.13	34.45
134.36-B	27	2355	25°36.0'	113°22.5'	88	320°	4	missing	missing	-	34.64
137.23-B	27	1338	25°34.0'	112°19.0'	41	280°	3	partly cloudy	moderate	26.04	34.28
137.30-B	27	1640	25°20.0'	112°45.0'	140	300°	4	partly cloudy	moderate	26.10	34.56

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

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U. S. NAVY ELECTRONICS LABORATORY
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