

CORRECTIONS MADE :

STATION POSITIONS ~~419~~

10/62 Corr. - 11/58

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

## data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 5811  
13-24 November 1958

and

CCOFI Cruise 5812  
1-11 December 1958

SIO Reference 59-50  
22 April 1959

*Note: Parentheses should be added to top and or bottom levels of values at standard depths to indicate extrapolation where first observed depth is greater than zero or the bottom depth is less than the deepest standard depth*

UNIVERSITY OF CALIFORNIA

*Errata*

SCRIPPS INSTITUTION OF OCEANOGRAPHY

*28 Oct 63*

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 5811  
13-24 November 1958

and

CCOFI CRUISE 5812  
1-11 December 1958

Sponsored by

Marine Research Committee

SIO Reference 59-50  
22 April 1959

Approved for distribution:

*Roger Revelle*

Roger Revelle, Director

UNIVERSITY OF CALIFORNIA  
KIPPERLYN BIRD CENTER OF OCEANOGRAPHY

**CONTENTS**

**INTRODUCTION . . . . . iii**

**CRUISE 5811**

    List of Figures . . . . . vi

    Personnel . . . . . vii

    Tabulated Data . . . . . 352

**CRUISE 5812**

    List of Figures . . . . . viii

    Personnel . . . . . ix

    Tabulated Data . . . . . 362

**DISTRIBUTION LIST . . . . . 373**

## INTRODUCTION

The data presented in this report were collected on the one hundred and fourteenth and one hundred and fifteenth consecutive cruises of the California Cooperative Oceanic Fisheries Investigations program. The R/V Paolina-T participated in the one hundred and fourteenth cruise and the R/V Orca participated in the one hundred and fifteenth cruise.

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

## STANDARD PROCEDURES

Processing of the data was carried out using the method described by Klein.<sup>1/</sup> Certain approximations have been introduced for the determination of the integrated pressure terms which may result in errors whose maximum values are less than 0.5 dynamic centimeter at 0 over 200 decibars, 1.0 dynamic centimeter at 0 over 500 decibars, and 2.0 dynamic centimeters at 0 over 1000 decibars. The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of  $\Delta D$ . 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.

---

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

## FOOTNOTES

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 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.

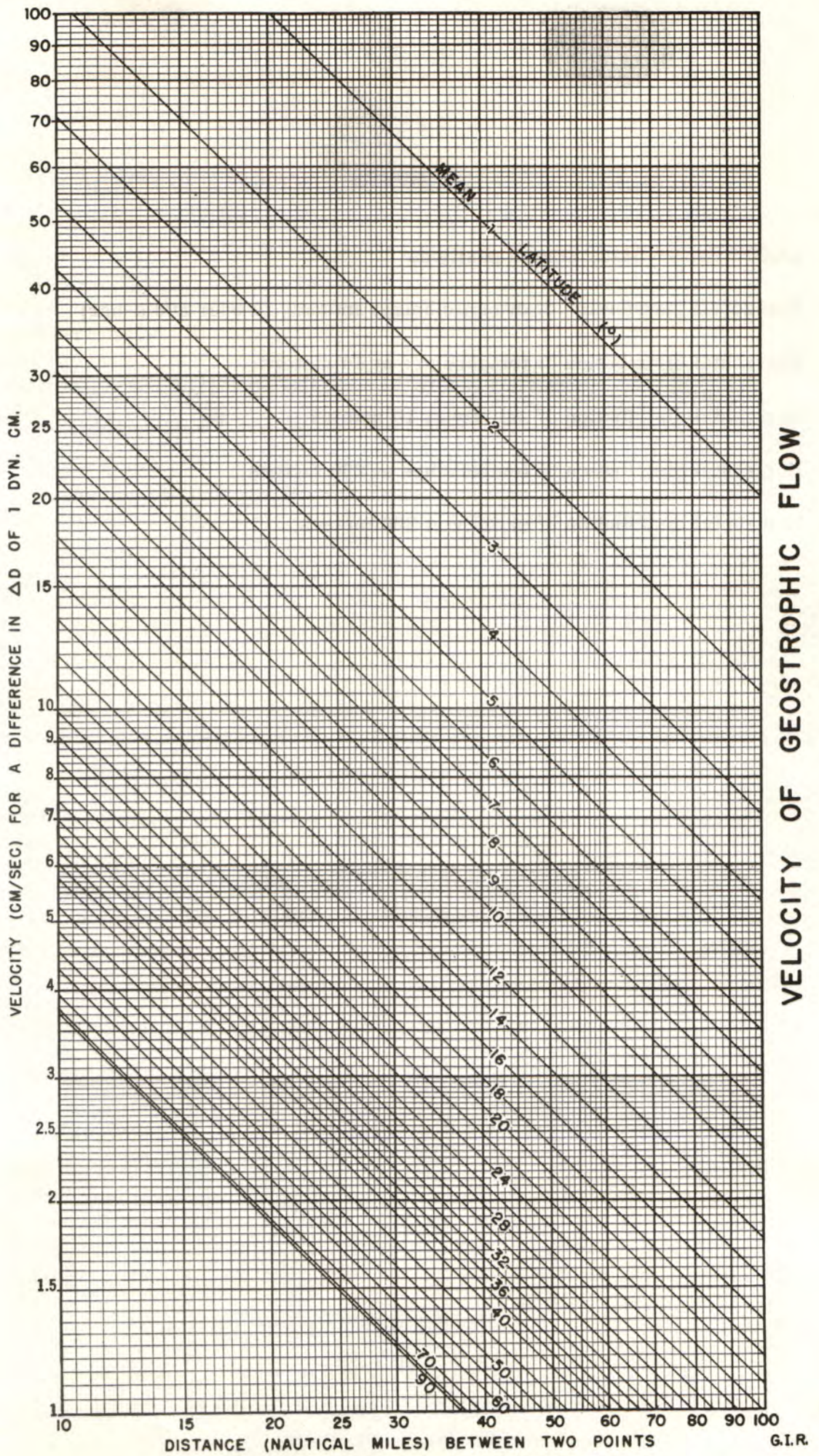
Values which are not drawn through because they seem to be in error without apparent reason are indicated by one of the following notations.

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 1958 volume, the first page of the Cruise 5811 data is numbered 352; the first page of the Cruise 5812 data, 362.



REVERSE SIDE AND SUBJECT TO REVISIONS AND SUPPLEMENTS

### FIGURES

1. CCOFI Cruise 5812, 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





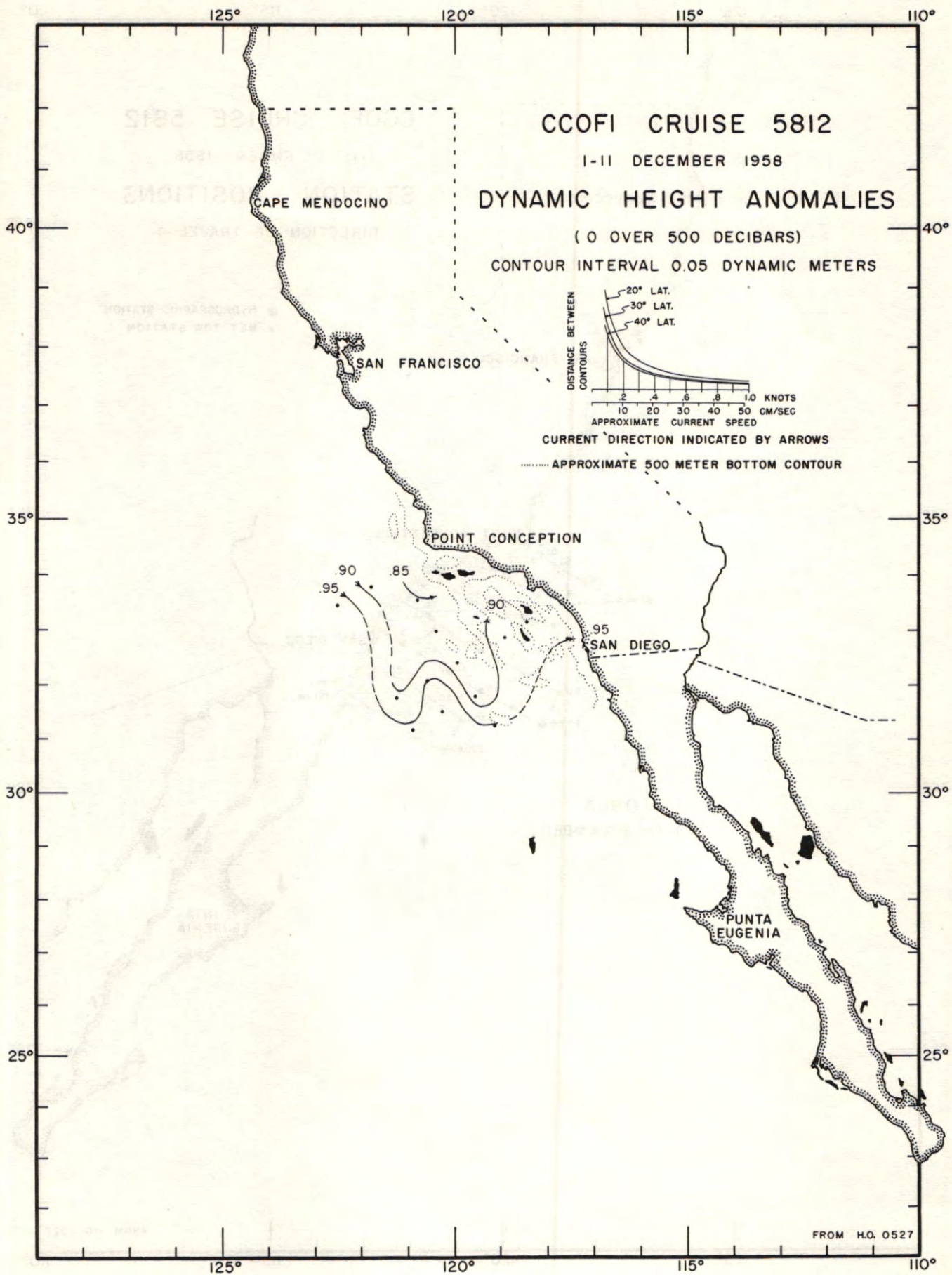


FIGURE 2

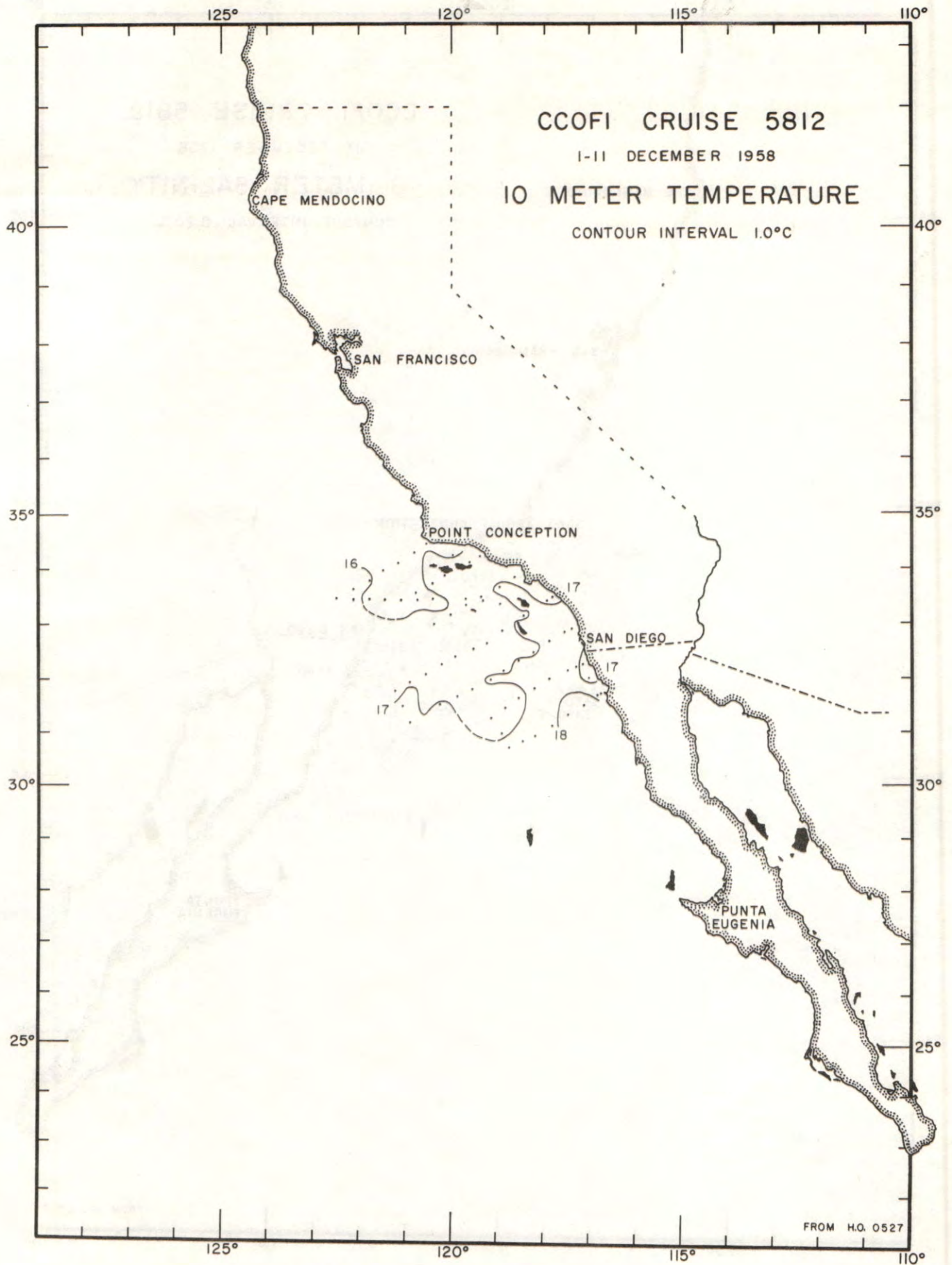


FIGURE 3

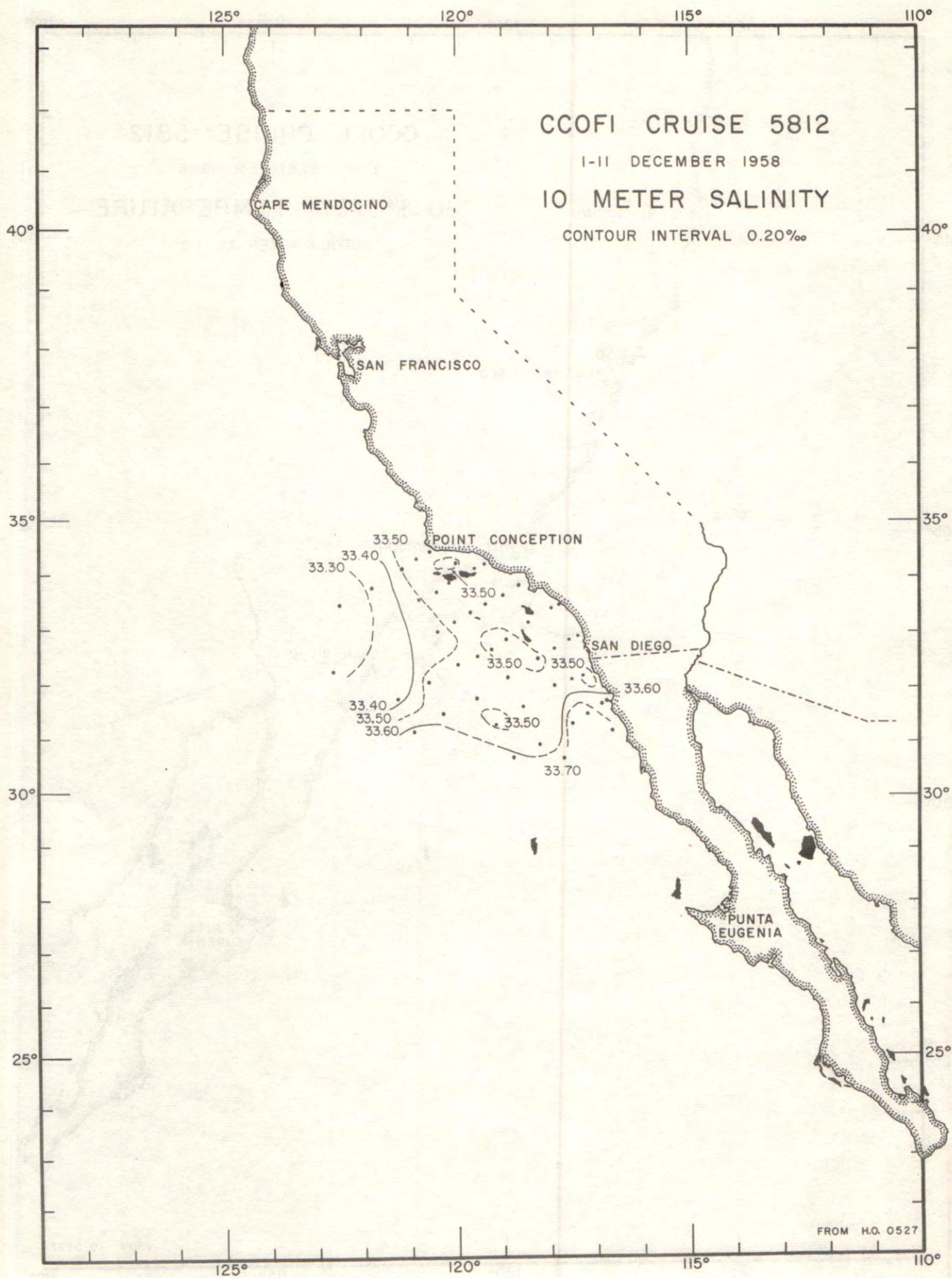


FIGURE 4

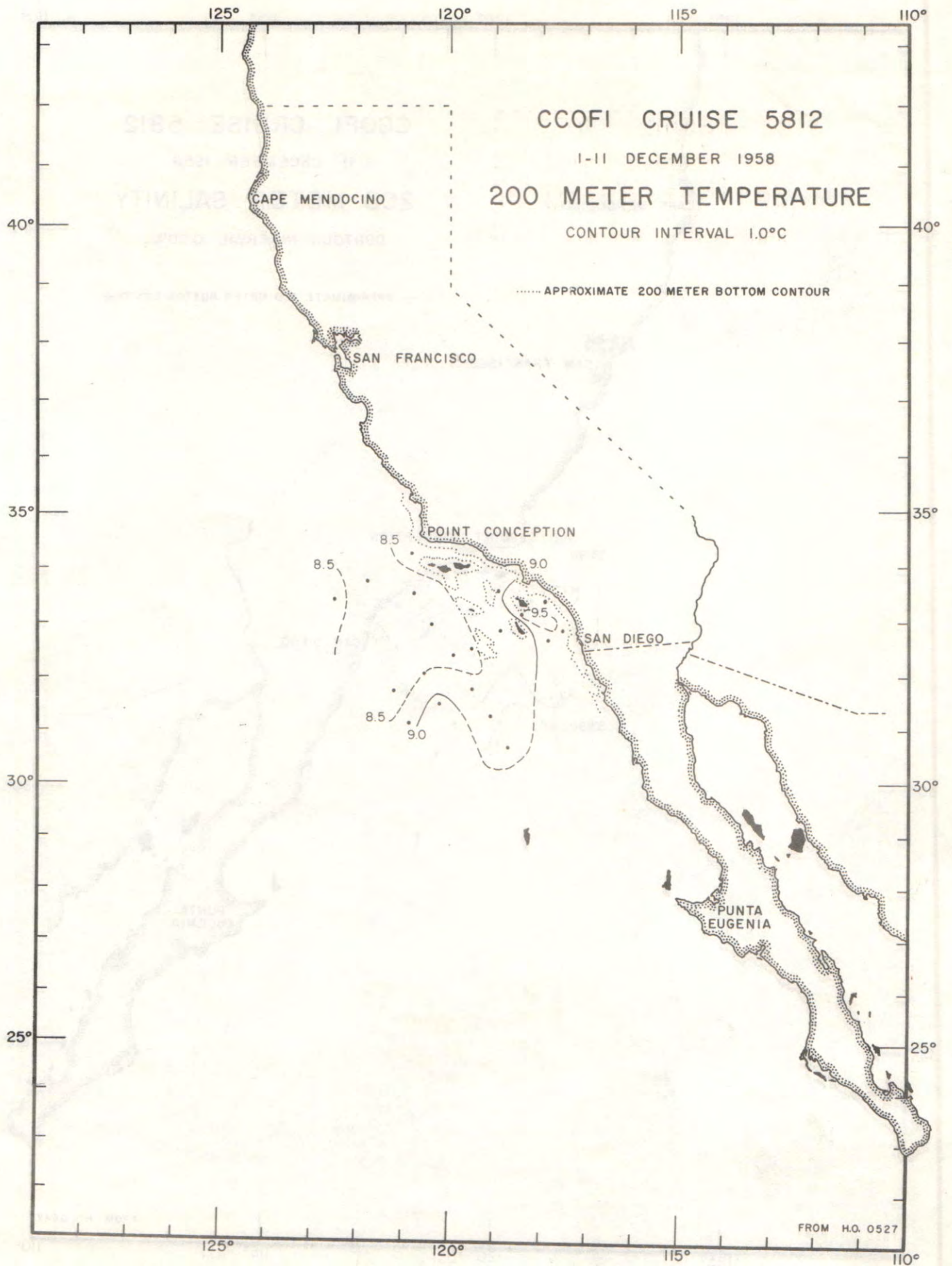


FIGURE 5

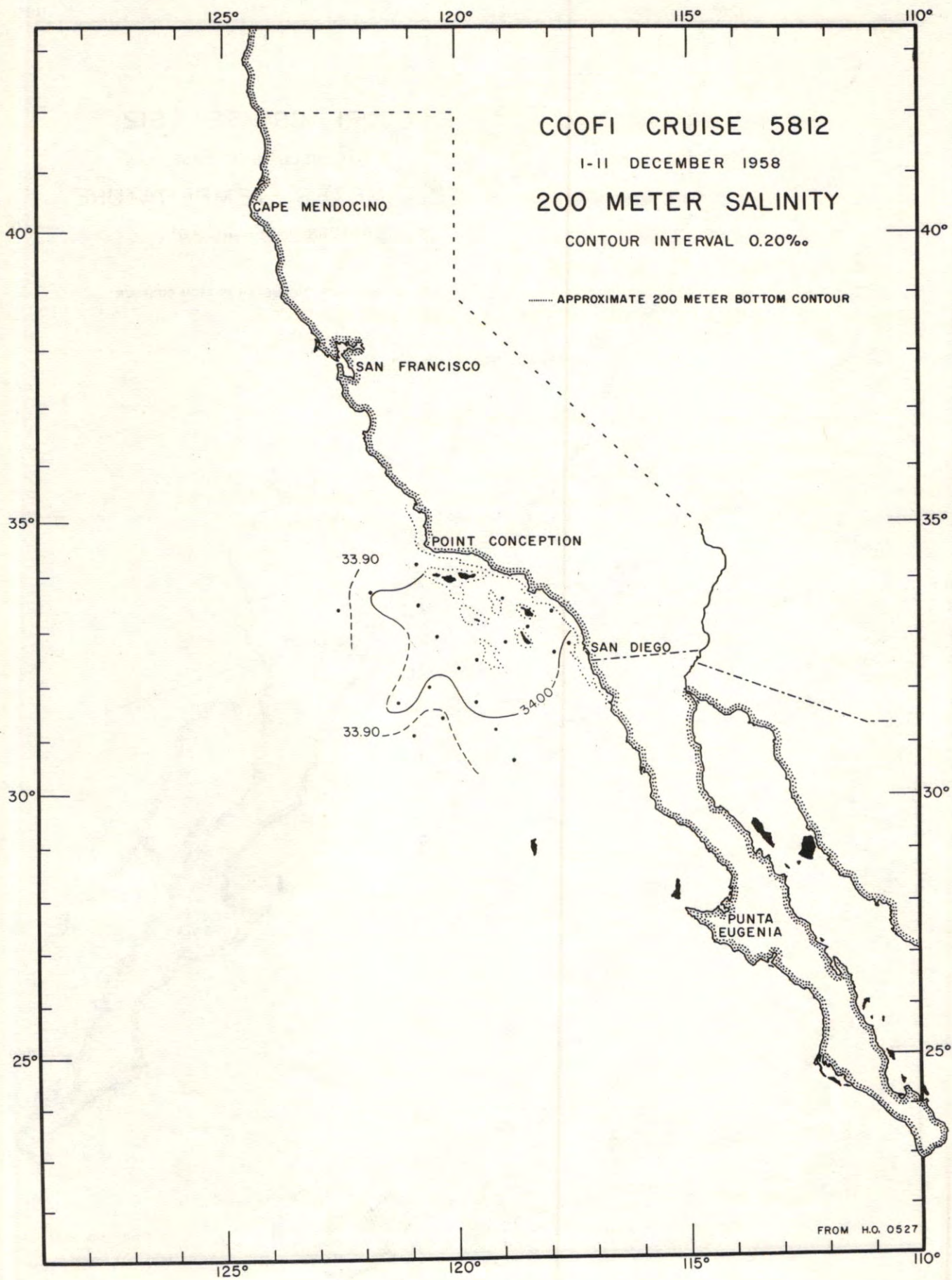


FIGURE 6

DATE		OBTAINED				TOTAL			
NO.	TIME	NO.	TIME	NO.	TIME	NO.	TIME	NO.	TIME

**PERSONNEL  
Cruise 5812**

**SHIP'S CAPTAIN**

Hopkins, Marvin F. , R/V Orca

**PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA**

R/V Orca

- Gilkey, Robert W. , Senior Marine Technician
- Begnoche, Donald J. , Marine Technician
- Bingman, Allen R. , Marine Technician
- \*Blackburn, Gene T. , Fishery Aid, Bureau of Commercial Fisheries
- Merino, Jose, Fishery Aid, Bureau of Commercial Fisheries

\*1-3 December only.

SIO

CCOFI  
5812

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T_{-5}^3$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_{-5}^3$	$\Delta D$
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m

80.51 ORCA; December 9, 1958; 1145 GCT; 34°26.5'N, 120°31.5'W; sounding, 71 fm; wind, 320°, force 3; weather, clear; sea, rough; wire angle, 05°.

1	15.94	33.55	5.51	328	0	15.94	33.55	5.51	24.67	328	0.00
11	15.94	33.57	5.47	327	10	15.94	33.57	5.48	24.68	327	0.03
31	15.70	33.54	5.46	324	20	15.92	33.56	5.47	24.69	326	0.06
51	14.40	33.48	4.93	301	30	15.71	33.54	5.46	24.71	324	0.10
					50	14.43	33.48	4.97	24.94	302	0.16

80.55 ORCA; December 9, 1958; 1439 GCT; 34°17'N, 120°48'W; sounding, 414 fm; wind, 320°, force 4; weather, cloudy; sea, very rough; wire angle, 32°.

2	15.60	33.53	5.60	322	0	15.60	33.53	5.60	24.74	322	0.00
12	15.60	33.53	5.53	322	10	15.60	33.53	5.54	24.74	322	0.03
33	14.66	33.52	5.40	304	20	15.53	33.53	5.51	24.75	321	0.06
42	14.08	33.48	5.06	295	30	15.24	33.53	5.48	24.81	315	0.10
55	12.89	33.51	4.91	270	50	13.45	33.50	4.96	25.17	281	0.16
63	11.98	33.53	4.54	251	75	11.56	33.59	4.16	25.59	240	0.22
71	11.68	33.58	4.23	243	100	10.80	33.66	3.72	25.79	222	0.28
88	11.10	33.61	3.97	230	150	9.58	33.87	2.83	26.16	186	0.38
103	10.68	33.68	3.62	218	200	8.94	33.94	2.37	26.32	171	0.47
116	10.32	33.75	3.30	207	250	8.63	34.03	2.26	26.44	160	0.56
133	10.02	33.78	3.13	201	300	8.18	34.18	1.82	26.63	142	0.64
165	9.28	33.91	2.64	179	400	7.02	34.25	0.86	26.84	122	0.77
196	8.98	33.94	2.38	172	500	6.18					
245	8.64	34.03	2.27	160							
320	7.99	34.21	1.61	137							
421	6.80	34.25	0.66	118							
557	5.66	34.05r	1.61r	-							

80.60 ORCA; December 9, 1958; 1847 GCT; 34°06'N, 121°08'W; sounding, 1250 fm; wind, 320°, force 5; weather, partly cloudy; sea, high; wire angle, 35°.

2a)	15.17	33.49		316	0	15.17	33.49		24.80	316	0.00
10	15.18	33.50		316	10	15.18	33.50		24.80	316	0.03
28	13.54	33.40		290	20	13.88	33.42		25.02	295	0.06
34	13.16	33.45		279	30	13.42	33.41		25.10	287	0.09
41	11.54	33.31		260	50	11.44	33.58		25.61	239	0.14
47	10.84	33.36		244							
53	11.06	33.55		234							
66	10.64	33.58		225							

80.70 ORCA; December 10, 1958; 0040, 0053 GCT; 33°47.5'N, 121°47'W; sounding, 1800 fm; wind, 320°, force 5; weather, cloudy; sea, high; wire angle, 31°, 34°.

4	16.37	33.30		356	0	16.4	(33.30)		(24.38)	(356)	(0.00)
13	16.32	33.31		354	10	16.33	33.31		24.39	354	0.04
					20	16.25	33.31		24.42	352	0.07
29b)	15.86	33.30		345	30	15.85	33.30		24.50	345	0.10
38	15.80	33.30		343	50	15.65	33.37		24.60	336	0.17
51	15.63	33.37		335	75	12.00	33.20		25.21	277	0.25
60	15.11	33.31		328	100	9.80	33.35		25.72	228	0.31
69	13.01	33.13		300	150	8.68	33.75		26.21	181	0.42
80	11.36	33.24		262	200	8.10	34.00		26.49	155	0.50
96	10.21	33.31		238	250	7.48	34.08		26.65	140	0.58
106	9.40	33.42		217	300	6.88	34.11		26.76	130	0.65
122	9.00	33.57		200	400	6.02	34.13		26.89	117	0.78
148	8.69	33.73		183	500	(5.39)	(34.14)		(26.97)	(109)	(0.89)
174	8.42	33.92		166							
215	7.89	34.03		149							
276	7.19	34.10		134							
364	6.24	34.13		120							
485	5.46	34.14		110							

a) Depths adjusted to agree with bathythermograph data.

b) Possible posttrip beginning at 29 meters.

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T_3$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_3$	$\Delta D$
m	°C	‰	ml/L	10 <sup>-5</sup> cm/g	m	°C	‰	ml/L	g/L	10 <sup>-5</sup> cm/g	dyn. m

SIO  
CCOFI  
5812

ORCA; December 10, 1958; 0715, 0730 GCT; 33°27.5'N, <sup>122</sup>112°30'W; sounding, 2000 fm; wind, 320°, force 5; weather, clear; sea, high; wire angle, 18°, 17°.

80.80

1	16.50	33.24		363	0	16.50	33.24		24.30	363	0.00
10	16.50	33.24		363	10	16.50	33.24		24.30	363	0.04
					20	16.50	33.23		24.29	364	0.07
36	16.48	33.22		365	30	16.49	33.22		24.29	364	0.11
63	15.75	33.24		347	50	16.27	33.22		24.34	360	0.18
72	15.60	-		-	75	15.55	33.30		24.57	338	0.27
86	15.30	33.35		329	100	12.60	33.15		25.06	291	0.35
95	13.48	33.15		308	150	9.32	33.65		26.04	198	0.47
114	11.24	33.22		262	200	8.57	33.88		26.34	170	0.56
128	10.25	33.42		231	250	7.80	34.00		26.55	149	0.65
146	9.40	33.61		203	300	7.19	34.08		26.69	136	0.72
170	9.08	33.74		189	400	6.34	34.17		26.88	118	0.85
197	8.60	33.86		172	500	5.73	34.26		27.03	104	0.97
225	8.16	33.96		158	600	5.20	34.33		27.14	93	1.08
280	7.38	34.05		141							
364	6.60	34.14		124							
472	5.88	34.23		108							
617	5.08	34.34		91							

ORCA; December 8, 1958; 1511 GCT; 33°33.5'N, 120°46'W; sounding, 700 fm; wind, 320°, force 4; weather, partly cloudy; sea, very rough; wire angle, 30°.

83.60

2	15.37	33.49	5.75	321	0	15.37	33.49	5.75	24.75	321	0.00
10	15.37	33.50	5.75	320	10	15.37	33.50	5.75	24.76	320	0.03
26a)	15.32	33.53	6.09	316	20	15.35	33.52	5.98	24.78	318	0.06
39	14.10	33.40	5.88	301	30	14.58	33.45	5.99	24.89	307	0.10
47	14.00	33.48	5.44	293	50	13.78	33.49	5.34	25.08	288	0.15
54	13.42	33.49	5.24	281	75	11.10	33.57	4.41	25.67	233	0.22
62	12.33	33.52	4.79	259	100	9.99	33.69	3.72	25.96	206	0.28
79	10.86	33.58	4.33	228	150	8.75	33.93	2.76	26.34	169	0.37
91	10.18	33.60	4.08	216	200	8.18	34.04	2.26	26.52	153	0.45
103	9.92	33.73	3.59	202	250	7.79	34.11	1.86	26.64	141	0.53
121	9.20	33.79	3.41	186	300	7.28	34.13	1.57	26.72	133	0.60
139	8.92	33.89	2.91	175	400	6.64	34.18	0.98	26.85	121	0.73
164	8.58	33.96	2.62	164	500	(6.10)	(34.28)		(27.00)	(107)	(0.85)
201	8.17	34.04	2.25	152							
260	7.67	34.12	1.82	140							
343	6.93	34.14	1.27	128							
466	6.27	34.25	0.67	112							

ORCA; December 7, 1958; 2143 GCT; 33°39'N, 118°57'W; sounding, 260 fm; wind, 290°, force 3; weather, fog; sea, moderate; wire angle, 10°.

87.40

1	17.12	33.53	5.25b)	356	0	17.12	33.53		24.38	356	0.00
11	17.04	33.53	6.00	354	10	17.05	33.53		24.39	354	0.04
25	16.98	33.52	4.82	354	20	17.00	33.52		24.40	354	0.07
35	16.09	33.46	4.45	338	30	16.97	33.52		24.41	353	0.11
40	15.76	33.43	4.06	333	50	13.84	33.41		25.01	296	0.17
45	14.86	33.41	5.10	316	75	12.29	33.56		25.44	255	0.24
50	13.84	33.41	5.76	296	100	10.61	33.58		25.76	224	0.30
55	13.04	33.40	4.87	281	150	9.64	33.88		26.16	187	0.40
60	12.64	33.42	3.82	272	200	8.97	34.03		26.39	165	0.49
65	12.56	33.52	2.94	263							
70	12.47	33.55	3.33	259							
75	12.29	33.56	3.16	255							
85	11.78	33.66	3.20	238							
101	10.58	33.58	3.63	223							
125	10.22	33.81	2.47	201							
150	9.64	33.88	2.85	187							
205	8.92	34.05	2.20	163							

a) Possible posttrip beginning at 26 meters.

b) Oxygen values appear to be erratic; therefore no interpolated values are given.



SIO  
CCOFI  
5812

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T_{3-5}$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_{3-5}$	$\Delta D$
m	°C	‰	ml/L	10 <sup>-5</sup> cm/g	m	°C	‰	ml/L	g/L	10 <sup>-5</sup> cm/g	dyn. m

8760 ORCA; December 8, 1958; 0856 GCT; 33°00'N, 120°21.5'W; sounding, 400 fm; wind, 310°, force 5; weather, clear; sea, very rough; wire angle, 18°.

2	16.52	33.52	4.54	343	0	16.52	33.52	4.54	24.51	343	0.00
13	16.55	33.49	4.89	346	10	16.55	33.49	4.80	24.49	346	0.03
36	15.92	33.48	4.83	333	20	16.42	33.49	4.89	24.51	343	0.07
65	12.42	33.42	4.85	268	30	16.13	33.48	4.86	24.58	337	0.10
75	11.58	33.48	4.53	248	50	13.60	33.44	4.85	25.09	288	0.16
89	10.78	33.49	4.34	233	75	11.58	33.48	4.53	25.51	248	0.23
99	10.46	33.53	3.93	226	100	10.45	33.53	3.92	25.75	225	0.29
118	9.54	33.69	3.39	199	150	9.03	33.84	3.06	26.22	181	0.39
132	9.20	33.78	3.04	187	200	8.27	34.06	2.05	26.52	152	0.48
151	9.03	33.84	3.06	181	250	7.94	34.16	1.58	26.65	140	0.55
175	8.69	33.96	2.52	166	300	7.58	34.20	1.46	26.73	132	0.62
203	8.21	34.07	2.00	151	400	6.70	34.26	0.79	26.90	117	0.75
232	8.02	34.12	1.65	145	500	6.20	34.33	0.55	27.02	105	0.87
289	7.66	34.19	1.52	135	600	5.81	34.36	0.44	27.09	98	0.98
375	6.85	34.23	0.92	121							
488	6.24	34.32	0.58	106							
635	5.64	34.36	0.41	96							

9028 ORCA; December 11, 1958; 1222 GCT; 33°28.5'N, 117°46.5'W; sounding, 240 fm; wind, calm; weather, clear; sea, smooth; wire angle, 00°.

0	16.92	33.55	5.58	350	0	16.92	33.55	5.58	24.44	350	0.00
10	16.94	33.55	5.46	350	10	16.94	33.55	5.46	24.44	350	0.04
30	15.34	33.43	5.23	324	20	16.47	33.51	5.37	24.53	342	0.07
50	14.10	33.46	4.87	297	30	15.34	33.43	5.23	24.71	324	0.10
75	12.86	33.61	3.71	262	50	14.10	33.46	4.87	25.00	297	0.16
100	12.35	33.80	3.60	238	75	12.86	33.61	3.71	25.36	262	0.23
125	11.43	33.75	3.27	226	100	12.35	33.80	3.60	25.61	238	0.30
155	10.34	33.87	2.76	198	150	10.52	33.85	2.80	25.99	203	0.41

9030 ORCA; December 11, 1958; 1045 GCT; 33°25'N, 117°53.5'W; sounding, 340 fm; wind, 070°, force 2; weather, fog; sea, slight; wire angle, 00°.

1	16.92	33.56	5.68	349	0	16.92	33.56	5.68	24.45	349	0.00
11	16.92	33.54	5.25	350	10	16.92	33.54	5.26	24.44	350	0.04
32	16.80	33.57	5.39	345	20	16.87	33.54	5.26	24.44	350	0.07
42	15.66	33.49	4.77	327	30	16.81	33.57	5.37	24.48	346	0.10
52	14.76	33.45	5.54	310	50	14.92	33.45	5.44	24.82	314	0.17
62	13.92	33.49	4.80	291	75	13.17	33.58	4.74	25.27	271	0.24
72	13.41	33.58	4.75	275	100	11.70	33.80	3.22	25.72	228	0.31
87	12.27	33.55	4.62	256	150	9.80	33.79	3.32	26.06	196	0.42
101	11.75	33.80	3.21	228	200	9.42	34.08	1.98	26.34	169	0.51
116	11.22	33.80	2.91	218	250	8.78	34.14	1.85	26.50	154	0.59
141	9.82	33.71	3.56	202	300	8.18	34.19	1.56	26.64	141	0.67
170	9.78	33.98	2.48	182	400	7.33	34.31	0.90	26.86	120	0.80
205	9.37	34.09	1.96	167	500	6.46					
254	8.72	34.14	1.85	153							
332	7.87	34.23	1.35	134							
432	7.08	34.34	0.71	116							
559	5.86	-	-	-							

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T$	$\Delta D$
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

SIO  
CCOFI  
5812

ORCA; December 7, 1958; 1246, 1330 GCT; 33°09'N, 118°25'W; sounding, 600 fm; wind, 270°, force 2; weather, overcast; sea, slight; wire angle, 03°, 03°.

90.37

1	17.00	33.57	5.32	350	0	17.00	33.57	5.32	24.44	350	0.00
11	16.99	33.55	5.65	351	10	16.98	33.55	5.60	24.43	351	0.04
31	16.37	33.54	5.46	339	20	16.97	33.55	5.67	24.43	350	0.07
41	15.57	33.49	5.00	325	30	16.81	33.55	5.64	24.47	348	0.10
51	14.60	33.48	5.26	305	50	14.75	33.48	5.23	24.86	308	0.17
60	13.96	33.49	4.37u	292	75	12.39	33.54	4.75	25.41	258	0.24
71	12.86	33.54	4.75	267	100	11.48	33.65	3.77	25.65	234	0.30
86	12.04	33.58	4.04	249	150	10.30	33.87	2.83	26.04	198	0.41
102	11.39	33.65	3.76	233	200	9.59	34.04	2.37	26.29	174	0.51
117	11.10	33.75	3.37	220	250	8.56	34.13	1.93	26.54	151	0.59
					300	8.09	34.17	1.69	26.64	142	0.67
137	10.60	33.84	2.98	205	400	7.47	34.25	1.04	26.78	127	0.81
167	9.94	33.89	2.67	190	500	6.67	34.35	0.63	26.98	109	0.93
202	9.57	34.04	2.23	173							
250	8.56	34.13	1.93	151							
329	7.90	34.18	1.54	138							
429	7.28	34.29	0.82	122							
557	5.96	34.40	0.51	97							

ORCA; December 7, 1958; 0757 GCT; 32°51.5'N, 118°53.5'W; sounding, 350 fm; wind, 300°, force 2; weather, partly cloudy; sea, moderate; wire angle, 03°.

90.45

1	16.83	33.47	5.45	353	0	16.83	33.47	5.45	24.40	353	0.00
11	16.83	33.48	5.60	353	10	16.83	33.48	5.57	24.40	353	0.04
31	16.83	33.46	5.43	354	20	16.83	33.47	5.52	24.40	354	0.07
41	16.82	33.49	5.41	352	30	16.83	33.46	5.46	24.39	354	0.11
51	15.95	33.46	5.63	335	50	16.10	33.46	5.60	24.57	338	0.18
61	15.14	33.46	5.61	318	75	13.40	33.47	5.28	25.15	282	0.25
71	13.85	33.46	5.32	292	100	11.53	33.49	4.80	25.52	248	0.32
86	12.62	33.49	5.16	266	150	9.21	33.74	3.60	26.12	190	0.43
101	11.45	33.49	4.78	245	200	8.59	34.01	2.23	26.43	160	0.52
116	10.32	33.53	4.54	223	250	8.20	34.13	1.92	26.59	146	0.60
141	9.38	33.70	3.75	195	300	7.65	34.19	1.50	26.71	134	0.67
171	9.00	33.83	3.25	181	400	6.93	34.26	0.80	26.87	119	0.80
205	8.53	34.02	2.19	159	500	6.30	34.32	0.49	27.02	106	0.92
254	8.19	34.14	1.90	145							
335	7.29	34.22	1.20	127							
433	6.74	34.28	0.69	115							
563	5.86	34.36	0.37	99							

ORCA; December 7, 1958; 0450 GCT; 32°40.5'N, 119°13.5'W; sounding, 108 fm; wind, 320°, force 4; weather, overcast; sea, slight; wire angle, 08°.

90.50

1	16.68	33.49	5.51	349	0	16.68	33.49	5.51	24.45	349	0.00
11	16.65	33.49	5.35	347	10	16.66	33.49	5.40	24.46	348	0.03
31	16.41	33.48	5.34	344	20	16.60	33.49	5.36	24.47	347	0.07
50	14.10	33.40	5.14	301	30	16.44	33.48	5.36	24.50	344	0.10
75	12.08	33.44	4.73	260	50	14.10	33.40	5.14	24.96	301	0.17
100	10.02	33.61	3.57	213	75	12.08	33.44	4.73	25.38	260	0.24
125	9.63	33.69	3.54	201	100	10.02	33.61	3.57	25.88	213	0.30
155	9.26	33.72	3.51	193	150	9.35	33.71	3.53	26.08	194	0.40

SIO

CCOFI  
5812

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T_{3-5}$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_{3-5}$	$\Delta D$
m	°C	‰	ml/L	10 <sup>-5</sup> cm/g	m	°C	‰	ml/L	g/L	10 <sup>-5</sup> cm/g	dyn. m

90.55 ORCA; December 7, 1958; 0215 GCT; 32°32.5'N, 119°31'W; sounding, 300 fm; wind, 300°, force 2; weather, overcast; sea, slight; wire angle, 06°.

3	16.71	33.51	5.43	348	0	16.71	33.51	5.43	24.46	348	0.00
13	16.70	33.54	5.46	345	10	16.71	33.54	5.46	24.48	346	0.03
33	16.58	33.57	5.40	341	20	16.71	33.54	5.44	24.49	346	0.07
53	13.41	33.42	5.16	286	30	16.70	33.55	5.43	24.49	345	0.10
77	11.00	33.50	4.36	237	50	14.10	33.45	5.33	24.99	298	0.17
103	10.26	33.56	3.89	220	75	11.06	33.50	4.40	25.63	238	0.23
128	9.52	33.70	3.48	198	100	10.37	33.55	3.94	25.79	222	0.29
166	8.60	34.02	2.30	161	150	8.93	33.90	2.77	26.29	174	0.40
206	8.08	34.10	1.84	147	200	8.18	34.09	1.89	26.57	148	0.48
256	7.59	34.14	1.39	137	250	7.63	34.15	1.42	26.67	138	0.55
306	7.38	34.22	1.12	128	300	7.40	34.22	1.16	26.77	129	0.62
410	6.46	34.27	0.58	113	400	6.59	34.26	0.66	26.92	115	0.74

90.60 ORCA; December 6, 1958; 2246 GCT; 32°23.5'N, 119°55'W; sounding, 450 fm; wind, 310°, force 2; weather, overcast; sea, moderate; wire angle, 12°.

2	16.28	33.50	5.42	340	0	16.28	33.50	5.42	24.55	340	0.00
12	16.24	33.53	5.49	337	10	16.26	33.52	5.47	24.58	338	0.03
31	15.62	33.48	5.51	327	20	16.10	33.52	5.52	24.61	334	0.07
41	15.11	33.47	5.35	316	30	15.67	33.49	5.53	24.68	327	0.10
51	14.10	33.40	5.53	301	50	14.22	33.41	5.51	24.94	303	0.16
61	13.25	33.42	5.40	283	75	12.61	33.42	5.40	25.27	271	0.24
70	12.85	33.42	5.39	276	100	10.50	33.51	4.91	25.72	228	0.30
85	11.98	33.44	5.48	258	150	9.07	33.81	4.02	26.20	183	0.40
100	10.50	33.51	4.91	228	200	8.35	34.02	2.56	26.47	157	0.49
114	9.83	33.60	4.80	210	250	7.79	34.11	2.01	26.64	142	0.56
138	9.34	33.73	4.54	193	300	7.30	34.17	1.53	26.75	130	0.64
167	8.71	33.92	3.28	169	400	6.72	34.27	0.90	26.91	116	0.76
202	8.34	34.02	2.55	157	500	6.19	34.35	0.58	27.05	103	0.88
249	7.80	34.11	2.02	142							
325	7.10	34.20	1.35	126							
422	6.62	34.29	0.85	113							
549	5.88	34.38	0.46	97							

90.70 ORCA; December 6, 1958; 1747 GCT; 32°04'N, 120°33.5'W; sounding, 2000 fm; wind, 300°, force 4; weather, overcast; sea, moderate; wire angle, 04°.

1	16.99	33.50	5.19	355	0	16.99	33.50	5.19	24.38	355	0.00
11	16.96	33.51	5.21	354	10	16.97	33.51	5.21	24.40	354	0.04
31	16.94	33.49	5.33	354	20	16.96	33.50	5.26	24.40	354	0.07
41	16.86	33.48	5.51	354	30	16.95	33.49	5.32	24.40	354	0.11
51	16.50	33.48	5.24	346	50	16.56	33.48	5.28	24.47	347	0.18
61	16.18	33.51	5.21	336	75	14.80	33.45	4.88	24.85	311	0.26
71	15.32	33.43	4.86	324	100	12.50	33.49	4.36	25.35	264	0.33
86	14.24	33.48	4.93	298	150	9.55	33.60	3.17	25.96	206	0.45
102	12.22	33.49	4.27	259	200	8.50	33.92	2.16	26.37	166	0.54
116	11.22	33.48	3.77	242	250	7.90	34.03	1.69	26.56	149	0.63
141	9.90	33.55	3.35	215	300	7.40	34.09	1.30	26.67	138	0.70
171	8.92	33.78	2.57	183	400	6.48	34.18	0.77	26.86	120	0.84
206	8.40	33.95	2.09	163	500	5.83	34.25	0.53	27.01	106	0.95
256	7.82	34.04	1.63	148							
335	7.08	34.13	1.03	131							
434	6.20	34.20	0.67	114							
563	5.61	34.30	0.42	100							

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δT <sub>3</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δT <sub>3</sub>	ΔD
m	°C	‰	ml/L	10 <sup>-5</sup> cm/g	m	°C	‰	ml/L	g/L	10 <sup>-5</sup> cm/g	dyn. m

ORCA; December 6, 1958; 1212 GCT; 31°45'N, 121°14'W; sounding, 2000 fm; wind, 320°, force 3; weather, overcast; sea, moderate; wire angle, 02°.

90.80

1	16.54	33.41	5.03	351	0	16.54	33.41	5.03	24.43	351	0.00
11	16.52	33.39	4.40	352	10	16.50	33.39	4.45	24.42	352	0.04
31	16.48	33.42	4.36	350	20	16.50	33.41	4.36	24.43	351	0.07
56	15.80	33.40	4.93	336	30	16.48	33.42	4.36	24.44	350	0.10
66	15.42	33.43	4.54	326	50	16.06	33.41	4.78	24.54	341	0.17
76	13.74	33.40	4.53	294	75	13.80	33.40	4.53	25.02	295	0.25
86	13.12	33.42	4.22	281	100	12.06	33.44	4.16	25.38	260	0.33
101	12.00	33.44	4.16	259	150	9.10	33.76	2.57	26.16	187	0.44
116	10.46	33.54	3.51	225	200	8.23	34.02	2.02	26.49	155	0.52
135	9.74	33.69	2.81	202	250	7.48	34.05	1.90	26.63	142	0.60
155	8.98	33.78	2.57	184	300	6.80	34.09	1.28	26.76	130	0.67
181	8.62	33.89	2.56	170	400	6.22	34.20	0.67	26.91	115	0.80
205	8.18	34.03	1.95	153	500	5.74	34.30	0.32	27.06	101	0.91
255	7.40	34.05	1.89	141							
334	6.52	34.13	0.88	123							
433	6.06	34.24	0.55	110							
562	5.40	34.34	0.12	94							

ORCA; December 4, 1958; 2059 GCT; 32°54.5'N, 117°22'W; sounding, 300 fm; wind, 200°, force 4; weather, cloudy; sea, smooth; wire angle, 13°.

93.27

2	17.44	33.55	5.57	362	0	17.44	33.55	5.57	24.31	362	0.00
11	17.39	33.57	5.44	359	10	17.39	33.57	5.45	24.34	360	0.04
31	17.36	33.53	5.54	361	20	17.37	33.55	5.52	24.33	360	0.07
					30	17.36	33.53	5.54	24.32	361	0.11

ORCA; December 4, 1958; 2307 GCT; 32°50'N, 117°31'W; sounding, 450 fm; wind, 200°, force 2; weather, overcast; sea, rough; wire angle, 07°.

93.30

2	17.24	33.51	5.48	360	0	17.24	33.51	5.48	24.33	360	0.00
12	17.22	33.53	5.42	358	10	17.23	33.53	5.44	24.34	359	0.04
32	15.44	33.39	5.80	330	20	16.90	33.51	5.47	24.41	353	0.07
47	14.25	33.50	4.91	297	30	15.55	33.39	5.78	24.63	332	0.10
57	13.98	33.57	4.46	286	50	14.17	33.53	5.64	25.04	293	0.17
66	13.78	33.58	4.46	282	75	13.70	33.61	4.16	25.20	278	0.24
76	13.68	33.62	4.09	277	100	12.78	33.68	3.70	25.44	255	0.31
96	13.00	33.66	3.80	261	150	10.75	33.90	2.67	25.99	203	0.42
110	12.20	33.73	3.38	241	200	9.44	33.96	2.53	26.25	178	0.52
125	11.81	33.77	3.14	231	250	8.78	34.12	1.90	26.49	155	0.60
150	10.75	33.90	2.67	203	300	8.17	34.16	1.59	26.62	143	0.68
178	9.66	33.85	2.84	189	400	7.37	34.25	1.00	26.80	126	0.82
217	9.32	34.07	2.18	167	500	6.60	34.33	0.58	26.97	110	0.95
272	8.43	34.14	1.76	149	600	5.90	34.36	0.40	27.08	99	1.06
356	7.72	34.20	1.29	134							
461	6.86	34.31	0.66	115							
606	5.85	34.36	0.38	98							

ORCA; December 5, 1958; 0228 GCT; 32°39.5'N, 117°51.5'W; sounding, 300 fm; wind, 220°, force 2; weather, overcast; sea, rough; wire angle, 06°.

93.35

2	17.44	33.56	5.56	361	0	17.44	33.56	5.56	24.32	361	0.00
11	17.42	33.58	5.56	359	10	17.43	33.58	5.56	24.34	360	0.04
32	17.40	33.53	5.53	362	20	17.42	33.57	5.55	24.34	359	0.07
52	14.56	33.42	5.74	309	30	17.40	33.53	5.53	24.32	362	0.11
76	12.60	33.51	4.40	264	50	14.70	33.42	5.75	24.85	311	0.18
102	11.67	33.63	3.84	239	75	12.68	33.51	4.45	25.32	266	0.25
126	10.83	33.77	3.02	215	100	11.78	33.63	3.90	25.59	241	0.31
165	10.02	33.89	2.67	192	150	10.38	33.85	2.76	26.02	200	0.42
204	9.13	34.04	2.24	167	200	9.20	34.03	2.29	26.34	169	0.52
253	8.32	34.14	1.83	147	250	8.39	34.13	1.86	26.56	148	0.60
302	7.80	34.19	1.37	136	300	7.82	34.19	1.38	26.69	136	0.67
406	6.88	34.26	0.74	119	400	6.95	34.26	0.76	26.87	120	0.80

S10  
CCOFI  
5812

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T_3$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_3$	$\Delta D$
m	°C	‰	ml/L	10 <sup>-5</sup> cm/g	m	°C	‰	ml/L	g/L	10 <sup>-5</sup> cm/g	dyn. m

93.40 ORCA; December 5, 1958; 0555 GCT; 32°29'N, 118°11.5'W; sounding, 800 fm; wind, 270°, force 2; weather, overcast; sea, slight; wire angle, 06°.

1	16.96	33.50	4.94	355	0	16.96	33.50	4.94	24.39	355	0.00
11	16.94	33.49	3.79	355	10	16.95	33.49	3.87	24.39	355	0.04
30	16.81	33.49	3.90	352	20	16.85	33.49	3.85	24.41	353	0.07
40	16.82	33.49	4.08	352	30	16.81	33.49	3.90	24.42	352	0.10
50	15.92	33.48	3.51	333	50	15.92	33.48	3.51	24.62	333	0.17
60	14.50	33.42	3.56	308	75	13.42	33.44	3.75	25.12	285	0.25
70	13.76	33.44	3.67	291							
85	12.83	33.44	3.90	274							

93.50 ORCA; December 5, 1958; 1200 GCT; 32°08'N, 118°51.5'W; sounding, 700 fm; wind, 270°, force 2; weather, overcast; sea, slight; wire angle, 03°.

2	16.83	33.56	5.29	347	0	16.83	33.56	5.29	24.47	347	0.00
12	16.83	33.57	5.26	346	10	16.83	33.57	5.25	24.47	347	0.03
32	16.84	33.56	5.23	347	20	16.83	33.56	5.25	24.47	347	0.07
42	16.46	33.53	5.35	341	30	16.83	33.56	5.24	24.47	347	0.10
53	14.47	33.45	5.31	305	50	14.70	33.46	5.32	24.87	309	0.17
62	12.51	33.49	4.68	264	75	11.27	33.50	4.33	25.58	242	0.24
72	11.46	33.49	4.38	246	100	9.76	33.67	3.53	25.98	204	0.30
87	10.34	33.57	4.08	220	150	8.99	33.89	2.57	26.28	176	0.39
102	9.70	33.69	3.47	202							
117	9.36	33.75	3.19	191							
142	9.08	33.86	2.69	180							
172	8.72	33.95	2.34	167							

93.60 ORCA; December 5, 1958; 1848, 1907 GCT; 31°46'N, 119°31.5'W; sounding, 1000 fm; wind, 280°, force 6; weather, overcast; sea, rough; wire angle, 07°, 15°.

1	16.74	33.55	5.40	346	0	16.74	33.55	5.40	24.48	346	0.00
11	16.74	33.57	5.56	345	10	16.74	33.56	5.53	24.49	345	0.03
30	16.38	33.55	5.66	338	20	16.74	33.57	5.56	24.50	344	0.07
40	15.82	33.49	5.71	330	30	16.38	33.55	5.66	24.57	338	0.10
50	14.75	33.48	5.47	308	50	14.75	33.48	5.47	24.88	308	0.17
60	13.28	33.46	5.12	281	75	11.63	33.50	4.66	25.52	248	0.24
70	12.00	33.50	4.73	254	100	10.50	33.59	3.97	25.79	222	0.30
84	11.17	33.51	4.53	239	150	9.01	33.85	2.89	26.24	179	0.40
99	10.56	33.58	4.00	223	200	8.64	34.01	2.24	26.42	162	0.48
115	9.84	33.68	3.63	205	250	8.04	34.14	1.72	26.62	143	0.56
140	9.22	33.79	3.16	187	300	7.54	34.19	1.48	26.72	133	0.63
					400	6.58	34.27	0.81	26.93	114	0.76
					500	5.78	34.35	0.44	27.09	98	0.87
167	8.84	33.92	2.60	172							
200	8.64	34.01	2.24	162							
247	8.08	34.14	1.73	144							
322	7.36	34.20	1.41	129							
418	6.39	34.29	0.74	111							
546	5.45	34.38	0.37	92							

OBSERVED					INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	$\delta T_3$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_3$	$\Delta D$
m	°C	‰	ml/L	$\frac{1}{10} \text{ cm/g}$	m	°C	‰	ml/L	g/L	$\frac{1}{10} \text{ cm/g}$	dyn. m

ORCA; December 6, 1958; 0022, 0058 GCT; 31°30'N, 120°15'W; sounding, 2000 fm; wind, 270°, force 2; weather, cloudy; sea, moderate; wire angle, 04°, 04°.

93.70

1	17.04	33.51	5.42	356	0	17.04	33.51	5.42	24.38	356	0.00
12	17.04	33.51	5.54	356	10	17.04	33.51	5.53	24.38	356	0.04
31	17.01	33.49	5.51	356	20	17.03	33.50	5.52	24.38	356	0.07
57	17.05	33.55	5.48	353	30	17.01	33.49	5.51	24.37	356	0.11
67	16.85	33.55	5.46	348	50	17.04	33.54	5.49	24.40	353	0.18
77	15.04	33.48	5.71	315	75	15.30	33.48	5.69	24.76	320	0.26
87	14.72	33.50	5.65	306	100	14.34	33.51	5.52	24.99	298	0.34
102	14.24	33.51	5.50	296	150	10.42	33.72	3.34	25.90	211	0.46
116	12.06	33.49	4.89	256	200	9.46	33.90	2.36	26.21	182	0.56
136	10.74	33.60	4.00	225	250	8.75	34.04	1.57	26.43	161	0.65
156	10.30	33.76	3.11	206	300	7.93	34.12	1.40	26.62	143	0.73
180	9.79	33.86	2.58	190	400	6.60	34.19	1.02	26.86	120	0.87
204	9.40	33.91	2.31	181	500	5.87	34.25	0.64	27.00	107	0.99
254	8.68	34.05	1.50	159							
333	7.39	34.16	1.36	133							
423	6.40	34.20	0.89	117							
552	5.52	34.31	0.45	98							

ORCA; December 6, 1958; 0625 GCT; 31°10.5'N, 120°53'W; sounding, 1800 fm; wind, 310°, force 2; weather, overcast; sea, moderate; wire angle, 08°.

93.80

0	17.71	33.66	4.88	360	0	17.71	33.66	4.88	24.34	360	0.00
11	17.68	33.66	5.50	359	10	17.68	33.66	5.45	24.34	359	0.04
30	17.68	33.65	4.55	360	20	17.68	33.65	5.05	24.34	359	0.07
55	18.08	33.84	5.48	356	30	17.68	33.65	4.55	24.34	360	0.11
65	16.57	33.57	3.49	340	50	17.80	33.70	5.28	24.35	358	0.18
75	15.11	33.44	3.47	319	75	15.11	33.44	3.47	24.77	319	0.26
85	14.93	33.52	4.08	309	100	13.78	33.57	3.47	25.15	282	0.34
100	13.78	33.57	3.47	282	150	9.90	33.55	3.34	25.86	215	0.46
114	12.24	33.51	3.46	258	200	8.70	33.85	2.28	26.29	174	0.56
134	10.54	33.49	3.33	230	250	7.80	34.00	2.15	26.54	150	0.65
154	9.78	33.57	3.34	212	300	7.30	34.08	1.61	26.67	138	0.72
179	9.08	33.75	2.67	188	400	6.37	34.16	0.83	26.87	119	0.86
203	8.63	33.86	2.22	173	500	5.79	34.24	0.50	27.00	106	0.97
252	7.77	34.00	2.13	150							
330	7.02	34.12	1.23	131							
429	6.08	34.17	0.71	116							
557	5.62	34.31	0.35	100							

ORCA; December 2, 1958; 0025 GCT;<sup>a)</sup> 32°11'N, 117°16'W; sounding, 700 fm; wind, 330°, force 4; weather, clear; sea, slight; wire angle, 17°.

97.32

429	6.98	34.24	0.84b)	121							
439	6.94	34.25	0.51	120							
449	6.87	34.27	0.50	118							
459	6.73	34.26	0.65	117							
469	6.69	34.27	0.53	115							
479	6.65	34.29	0.47	114							
489	6.49	34.29	0.42	112							
498	6.52	34.29	0.64	112							
508	6.40	34.29	0.57	110							
518	6.38	34.30	0.51	108							
528	6.20	34.29	0.49	107							
537	6.18	34.31	0.53	105							
547	6.08	34.31	0.48	105							
557	6.00	34.34	0.40	102							
567	5.98	34.37	0.38	99							
577	5.92	34.36	0.43	99							
587	5.82	34.34	0.39	100							

a) Test cast.

b) Alternate value, 1.09 ml/L, not used in interpolation.

S10

CCOFI  
5812

OBSERVED					INTERPOLATED				COMPUTED			
Z	T	S	O <sub>2</sub>	$\delta T_3$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta T_3$	$\Delta D$	
m	°C	‰	ml/L	$10^{-5} \text{ cm}^3/\text{g}$	m	°C	‰	ml/L	g/L	$10^{-5} \text{ cm}^3/\text{g}$	dyn. m	

97.60

ORCA; December 3, 1958; 0507 GCT; 31°16.5'N, 119°08.5'W; sounding, 1000 fm; wind, 300°, force 2; weather, clear; sea, smooth; wire angle, 14°.

1	16.78	33.49	5.49	351	0	16.78	33.49	5.49	24.43	351	0.00
11	16.78	33.50	5.51	350	10	16.78	33.50	5.50	24.44	350	0.04
30	16.74	33.51	5.40	349	20	16.76	33.51	5.45	24.45	349	0.07
59	15.88	33.50	5.42	331	30	16.74	33.51	5.40	24.45	349	0.10
69	15.40	33.53	5.53	318	50	16.60	33.51	5.40	24.48	346	0.17
79	14.01	33.45	5.51	296	75	14.69	33.49	5.53	24.89	307	0.26
94	12.81	33.56	5.00	266	100	12.49	33.58	4.96	25.42	257	0.33
108	12.00	33.59	4.94	248	150	9.50	33.63	3.96	25.98	203	0.44
120	10.88	33.57	4.78	230	200	8.62	33.92	3.01	26.36	168	0.54
140	9.83	33.57	4.34	213	250	8.12	34.04	2.30	26.52	152	0.62
160	9.26	33.70	3.60	194	300	7.57	34.10	1.66	26.66	140	0.70
187	8.82	33.87	3.15	175	400	6.68	34.20	0.98	26.85	121	0.83
210	8.44	33.95	3.90	164	500	6.13	34.28	0.63	26.99	108	0.95
261	8.01	34.05	2.16	150	600	(5.55)	(34.36)		(27.13)	(95)	(1.06)
340	7.01	34.14	1.31	131							
445	6.42	34.23	0.83	115							
580	5.65	34.34	0.37	98							

100.50

ORCA; December 2, 1958; 1805 GCT; 30°54'N, 118°11'W; sounding, 950 fm; wind, 320°, force 2; weather, clear; sea, moderate; wire angle, 02°.

0	17.50	33.51	5.70	366	0	17.50	33.51	5.70	24.27	366	0.00
5	17.46	33.53	4.89	364	10	17.42	33.52	5.22	24.29	364	0.04
10	17.42	33.52	5.22	364	20	17.42	33.53	4.93	24.31	363	0.07
15	17.44	33.54	4.77	364	30	17.42	33.53	5.30	24.31	363	0.11
20	17.42	33.53	4.93	363	50	14.78	33.66	3.76	25.01	296	0.17
25	17.43	33.53	4.43	362	75	14.22	33.75	3.34	25.21	277	0.25
30	17.42	33.53	5.30	363	100	13.68	33.83	2.88	25.37	262	0.32
35	17.40	33.54	4.86	362	150	11.20	33.86	2.59	25.87	214	0.44
40	15.94	33.46	4.96	335							
50	14.78	33.66	3.76	296							
60	14.54	33.70	3.38	288							
71	14.34	33.75	3.44	280							
80	14.04	33.79	3.05	272							
90	13.90	33.81	3.05	267							
120	13.10	33.87	2.29	247							
150	11.20	33.86	2.59	214							
180	10.17	33.96	2.36	189							

100.60

ORCA; December 2, 1958; 2248 GCT; 30°41.5'N, 118°45'W; sounding, 1500 fm; wind, 330°, force 5; weather, clear; sea, rough; wire angle, 14°.

2	17.89	33.66	5.44	364	0	17.89	33.66	5.44	24.29	364	0.00
11	17.84	33.60	5.42	367	10	17.86	33.61	5.44	24.26	367	0.04
31	17.26	33.49	5.13	362	20	17.77	33.58	5.38	24.26	367	0.07
61	15.34	33.44	5.53	323	30	17.27	33.49	5.13	24.31	362	0.11
70	14.66	33.46	5.61	309	50	17.20	33.48	5.16	24.32	361	0.18
79	13.80	33.46	5.40	291	75	14.28	33.46	5.53	24.98	299	0.26
93	12.44	33.46	5.00	266	100	12.08	33.47	4.94	25.40	258	0.34
108	11.60	33.48	4.87	249	150	9.80	33.56	4.13	25.88	213	0.45
122	10.82	33.50	4.47	234	200	8.75	33.94	2.89	26.36	168	0.55
141	10.10	33.50	4.28	222	250	8.24	34.08	2.13	26.53	151	0.63
159	9.48	33.69	3.82	198							
188	8.88	33.89	3.07	174							
211	8.62	33.97	2.79	165							
263	8.15	34.11	2.02	147							

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
82.47-O	XII-9	0735	34°14.5'	119°58.0'	315	320°	2	partly cloudy	slight	15.88	33.50
83.40-O	9	0350	34°12.0'	119°21.5'	14	320°	3	overcast	smooth	16.68	33.53
83.43-O	9	0150	34°07.0'	119°35.0'	140	320°	3	cloudy	smooth	16.27	33.53
83.51-O	8	2102	33°52.0'	120°07.5'	84	330°	3	cloudy	moderate	16.10	33.51
83.55-O	8	1828	33°44.0'	120°24.5'	552	320°	4	cloudy	rough	16.40	33.57
87.35-O	7	1845	33°50.0'	118°37.0'	160	280°	3	fog	smooth	16.88	33.53
87.45-O	8	0025	33°28.5'	119°20.0'	900	280°	2	clear	rough	16.71	33.55
87.50-O	8	0315	33°20.5'	119°40.0'	40	310°	1	clear	smooth	16.68	33.55
87.55-O	8	0545	33°09.0'	120°00.0'	600	270°	2	clear	very rough	16.46	33.53
97.30-O	3	2130	32°14.0'	117°08.0'	48	330°	1	fog	slight	16.54	-
97.32-O	3	2025	32°11.0'	117°16.0'	700	140°	1	clear	very rough	17.07	33.50
97.35-O	3	1810	32°05.0'	117°27.5'	600	290°	2	clear	very rough	17.27	33.55
97.40-O	3	1532	32°00.0'	117°51.0'	400	320°	2	clear	very rough	17.18	33.57
97.50-O	3	1015	31°37.0'	118°32.0'	1300	300°	2	clear	smooth	16.58	33.54
100.29-O	2	0553	31°42.0'	116°44.0'	100	160°	1	clear	smooth	17.76	33.68
100.30-O	2	0647	31°41.0'	116°46.5'	300	160°	2	clear	smooth	17.76	33.65
100.35-O	2	0935	31°29.0'	117°07.5'	650	270°	2	clear	smooth	18.43	33.74
100.40-O	2	1230	31°18.0'	117°28.5'	1100	270°	2	clear	smooth	18.28	33.72

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



## DISTRIBUTION LIST

Dr. E. H. Ahlstrom  
Bureau of Commercial Fisheries  
c/o Scripps Institution of Oceanography  
La Jolla, California

Mr. William Anderson  
Bureau of Commercial Fisheries  
Brunswick, Georgia

Dr. Leo D. Berner  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Dr. Edward Brinton  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Librarian  
Bureau of Commercial Fisheries  
Biological Laboratory  
P. O. Box 3830  
Honolulu 12, Hawaii

Dr. Wayne V. Burt  
Assoc. Prof. of Oceanography  
School of Science  
Oregon State College  
Corvallis, Oregon

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

Chief, Division of Fisheries  
Commonwealth Scientific and Industrial  
Research Organization  
P. O. Box 21  
Crunulla, N. S. W., Australia

Dr. Ernest R. Anderson  
Code 2233  
U. S. Navy Electronics Laboratory  
San Diego 52, California

Mr. Thomas S. Austin  
Bureau of Commercial Fisheries  
Biological Laboratory  
P. O. Box 3830  
Honolulu 12, Hawaii

Dr. Rolf Bolin  
Hopkins Marine Station  
Pacific Grove, California

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

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

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

Mr. Harold B. Clemens, Jr.  
Marine Resources Operations  
California State Fisheries Laboratory  
Terminal Island, California

Mr. R. S. Croker, Director  
California Department of Fish and Game  
Marine Fisheries Laboratory Branch  
772 Capitol Avenue  
Sacramento 14, California

Herrn Professor Dr. A. Defant  
Sternwartestrasse 38  
Innsbruck  
Austria

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

Mr. Jeffery D. Frautschy  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

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

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

Director  
Instituto de Geofísica  
Torre de Ciencias, 3er piso  
Universidad Nacional Autónoma de  
México  
Villa Obregón, D. F.  
México

Mr. Milton C. James  
Pacific Marine Fishery Commission  
340 State Office Building  
1400 S. W. Fifth Avenue  
Portland 1, Oregon

Dr. Martin W. Johnson  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Chief  
Division of Biological Research  
U. S. Fish and Wildlife Service  
Bureau of Commercial Fisheries  
Washington 25, D. C.

Dr. Richard H. Fleming  
University of Washington  
Oceanographic Laboratories  
Seattle 5, Washington

Dr. Paul M. Fye  
Woods Hole Oceanographic Institution  
Woods Hole, Massachusetts

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

Mr. T. Hirano  
Tokai Regional Fisheries Research  
Laboratory  
Tsukishima  
Tokyo, Japan

Mr. John D. Isaacs  
Program Director, Marine Life Research  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Japan Meteorological Agency  
Oceanographical Section  
Tokyo, Japan

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

Mr. Hans T. Klein  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Dr. E. C. LaFond  
Code 2235  
U. S. Navy Electronics Laboratory  
San Diego 52, California

Mr. John C. Marr  
Bureau of Commercial Fisheries  
Biological Laboratory  
P. O. Box 3830  
Honolulu 12, Hawaii

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

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

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

National Marine Consultants, Inc.  
2913 De la Vina  
Santa Barbara, California  
Attn: Dr. Richard Kent

Mr. Kenneth S. Norris, Curator  
Marineland of the Pacific  
Portuguese Bend  
Marineland, California

Director  
Norwegian Polar Institute  
Observatoriengt 1  
Oslo, Norway

Dr. E. Koto  
Institute of Fisheries  
Hokkaido University  
Hakodate, Japan

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

Mr. Jotaro Masuzuwa  
Japan Meteorological Agency  
Oceanographical Section  
Tokyo, Japan

Dr. Hugh J. McLellan  
Atlantic Oceanographic Group  
St. Andrews, New Brunswick  
Canada

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

Mr. Garth I. Murphy  
Coordinator, CCOFI  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Mr. A. W. H. Needler, Director  
Pacific Biological Station  
Nanaimo, B. C.  
Canada

Dr. Robert M. Norris  
Department of Physical Sciences  
University of California  
Santa Barbara Campus  
Goleta, California

Chief of Naval Research  
Office of Naval Research  
Geophysics Branch  
Washington 25, D. C.

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

Mr. Don Powell  
Bureau of Commercial Fisheries  
2725 Montlake Boulevard  
Seattle 2, Washington

Pusan Fisheries College  
Pusan  
Korea

Mr. Joseph L. Reid, Jr.  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

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

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

Mr. Don T. Saxby  
California Division  
California Packing Corporation  
2600 Seventh Street  
Berkeley 10, California

Mr. Richard A. Schwartzlose  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

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

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

Mr. John Radovich  
California Department of Fish and Game  
California State Fisheries Laboratory  
Terminal Island, California

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

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

Mr. Gunnar I. Roden  
University of California  
Institution of Oceanography  
La Jolla, California

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

Dr. O. E. Sette, Chief  
Bureau of Commercial Fisheries  
Biological Laboratory  
450-B Jordan Hall  
Stanford, California

Mr. D. Shoji  
Japanese Hydrographic Office  
Tsukiji  
Tokyo, Japan

Mr. Henry M. Stommel  
Woods Hole Oceanographic Institution  
Woods Hole, Massachusetts

Dr. Y. Takenouti  
Oceanographical Section  
Japan Meteorological Agency  
Chuo-ku  
Tokyo, Japan

Department of Oceanography  
Texas A. and M. College  
College Station, Texas

Dr. M. Uda  
Tokyo University of Fisheries  
Minato-ku  
Tokyo, Japan

Library, Code 2420 (2)  
U. S. Navy Electronics Laboratory  
San Diego 52, California

Library (4)  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

University of California (2)  
Serials Department  
General Library  
Berkeley 4, California

Librarian  
University of Washington  
Oceanographic Laboratories  
Friday Harbor, Washington

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

Miss Margaret Storey, Librarian  
Natural History Museum  
Stanford, California

Mr. Norman Tebble  
Annelida Section  
British Museum (Natural History)  
Cromwell Road  
London SW7, England

Dr. John P. Tully  
Pacific Oceanographic Group  
P. O. Drawer 6  
Nanaimo, B. C.  
Canada

U. S. Hydrographic Office (2)  
Navy Department  
Washington 25, D. C.  
Attn: Dr. John Lyman

University of California  
Department of Zoology  
Berkeley 4, California

Library  
University of California  
Scripps Institution of Oceanography  
Scripps Field Annex  
La Jolla, California

Director  
University of Miami  
Marine Laboratory  
Coral Gables, Florida

Librarian (2)  
University of Washington  
Oceanographic Laboratories  
Seattle 5, Washington

Director  
University of Washington  
School of Fisheries  
Seattle 4, Washington

Mr. Richard C. Vetter  
Secretary to the Committee  
on Oceanography  
National Academy of Sciences  
2101 Constitution Avenue  
Washington 25, D. C.

Dr. Boyd W. Walker  
University of California  
Department of Zoology  
Los Angeles 24, California

Dr. Warren S. Wooster  
University of California  
Scripps Institution of Oceanography  
La Jolla, California

Dr. Kozo Yoshida  
Geophysical Institute  
Tokyo University  
Bunkyo-ku  
Tokyo, Japan

Mr. Gilbert C. Van Camp, Sr.  
772 Tuna Street  
Terminal Island, California

Dr. Lionel A. Walford, Chief  
Atlantic Fishery Oceanographic  
Research Center  
Bureau of Commercial Fisheries  
734 Jackson Place, N. W.  
Washington 25, D. C.

Mr. William E. Warne  
California Department of Fish and Game  
926 J Street  
Sacramento 14, California

Mr. Charles G. Worrall (20)  
University of California  
Scripps Institution of Oceanography  
La Jolla, California