

UNIVERSITY OF CALIFORNIA    SCRIPPS INSTITUTION OF OCEANOGRAPHY

# data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6006  
14-30 June 1960

SIO Reference 62-8  
18 August 1961

UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 6006

14-30 June 1960

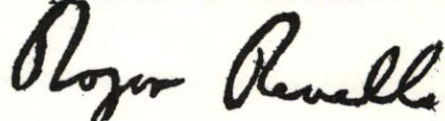
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Marine Research Committee

SIO Reference 62-8

18 August 1961

Approved for distribution:



Roger Revelle, Director



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Approved for distribution  


Roger Revelante, Director

## INTRODUCTION

The data presented in this report were collected by the R/V Black Douglas of the Bureau of Commercial Fisheries and the R/V Orca of the Scripps Institution of Oceanography on Cruise 6006 of the California Cooperative Oceanic Fisheries Investigations program. The first two figures in this cruise numbering system represent the year of the cruise; the last two figures, the month. In the case of quarterly cruises the last figures are hyphenated. The cruises preceding this one in the series and 6001 (Scripps Institution report, SIO Ref. 61-23), 6002 (SIO Ref. 62-3), 6003 (SIO Ref. 62-5), 6004 (SIO Ref. 62-6) and 6005 (SIO Ref. 62-7).

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  $\Delta D$ .

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. The salinity values obtained by salinometer are recorded to three decimal places, provided they meet accepted standards. The third decimal place has been offset to emphasize that the accuracy of the observations is not to one unit in that place, but that the values recorded "have a reproducibility of  $\pm 0.004\%$  salinity at the 95 percent probability level, and a probable accuracy of  $\pm 0.01\%$  salinity or better at the same level of probability."<sup>2/</sup> The values are recorded to two decimal places when

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

<sup>2/</sup>Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.



obtained by chlorinity titration, or by salinometer where only one determination per sample was obtained, or where there is doubt concerning the accuracy of a particular sample, or of all samples on a station. The accuracy of all samples obtained by salinometer and recorded to two decimal places is believed to be equal to or better than those obtained by manual titration.

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.

On stations where more than one cast is lowered, the various property curves may not agree perfectly. This discrepancy may be caused by changes in geographical position, real property changes with time, slight error in measurement, or a combination of these factors. Stations with overlapping casts have the following footnote: Overlapping casts; reconciliation of property curves when necessary.

#### 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.

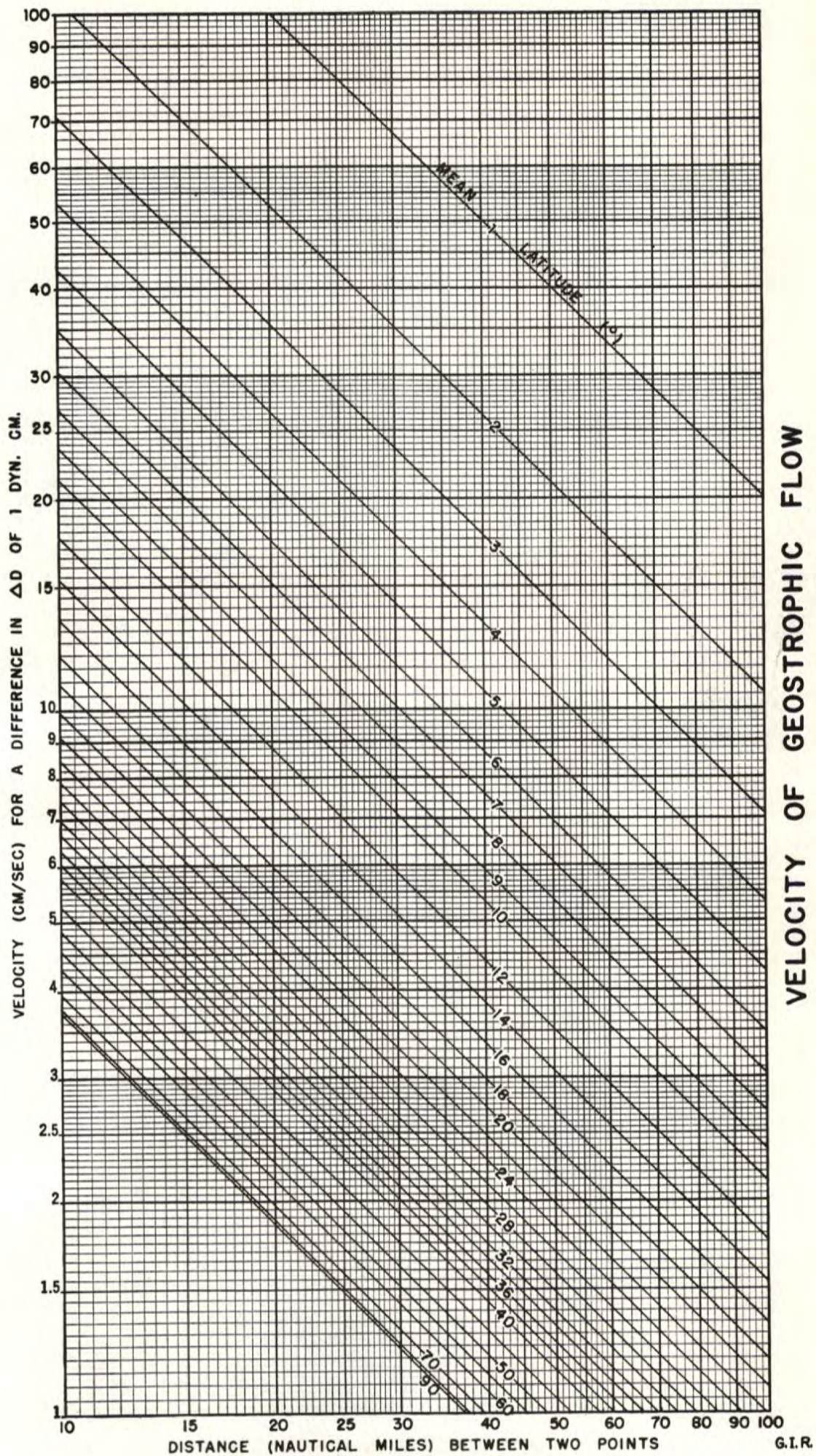
r: rejected value (value seems to be definitely wrong),

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 1960 volume, the first page of Cruise 6006 data is numbered 249.







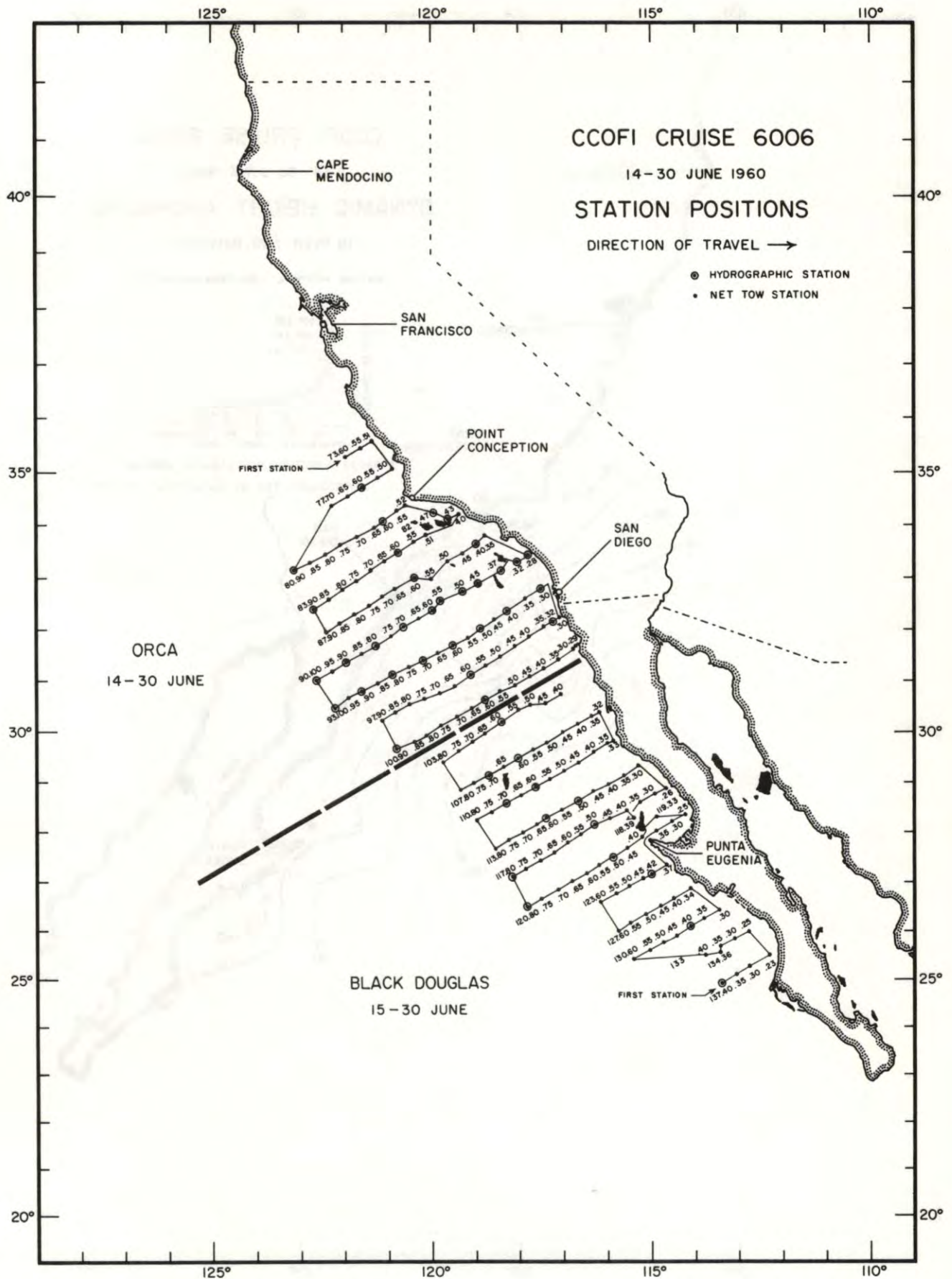


FIGURE 1



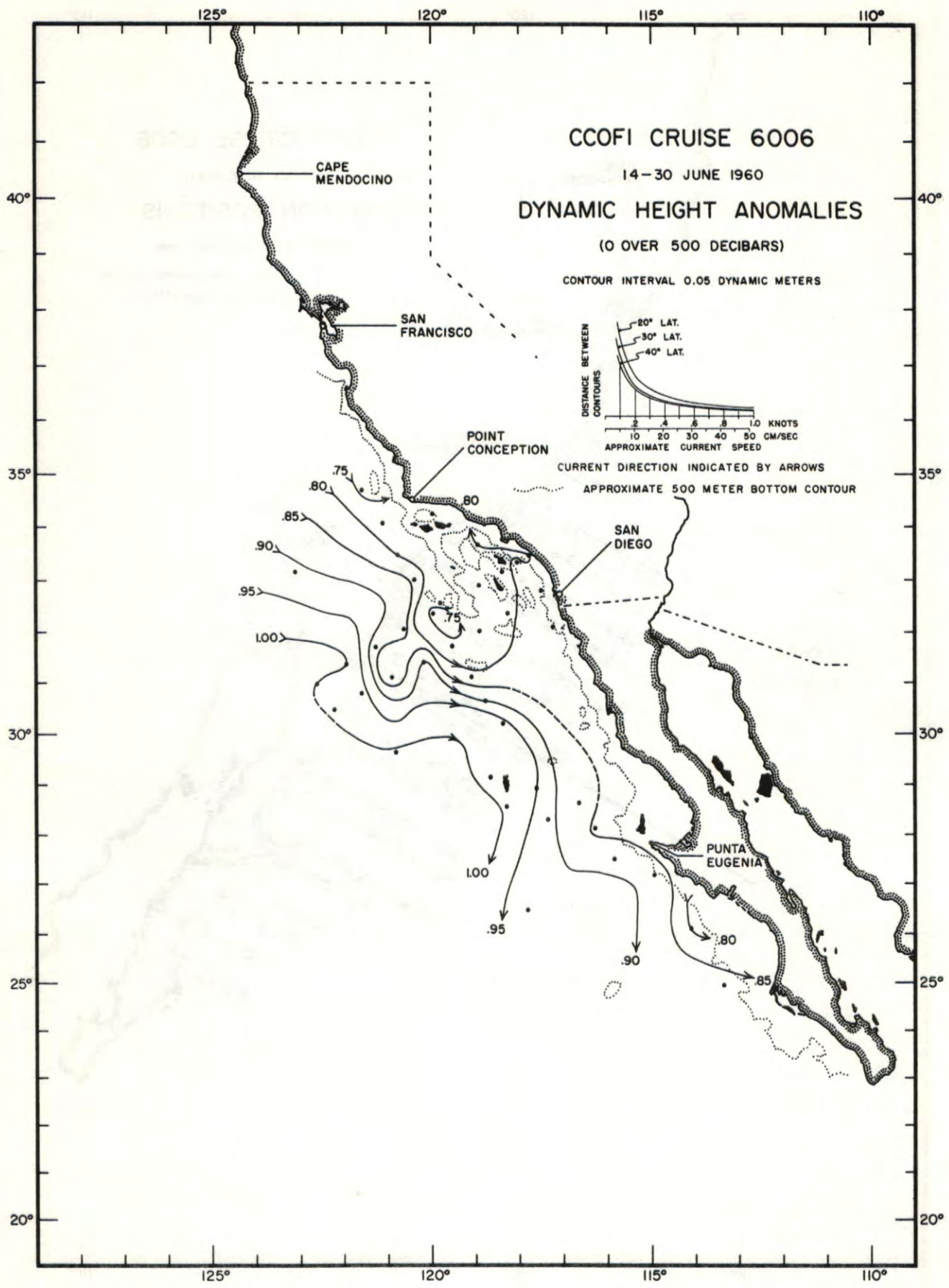


FIGURE 2



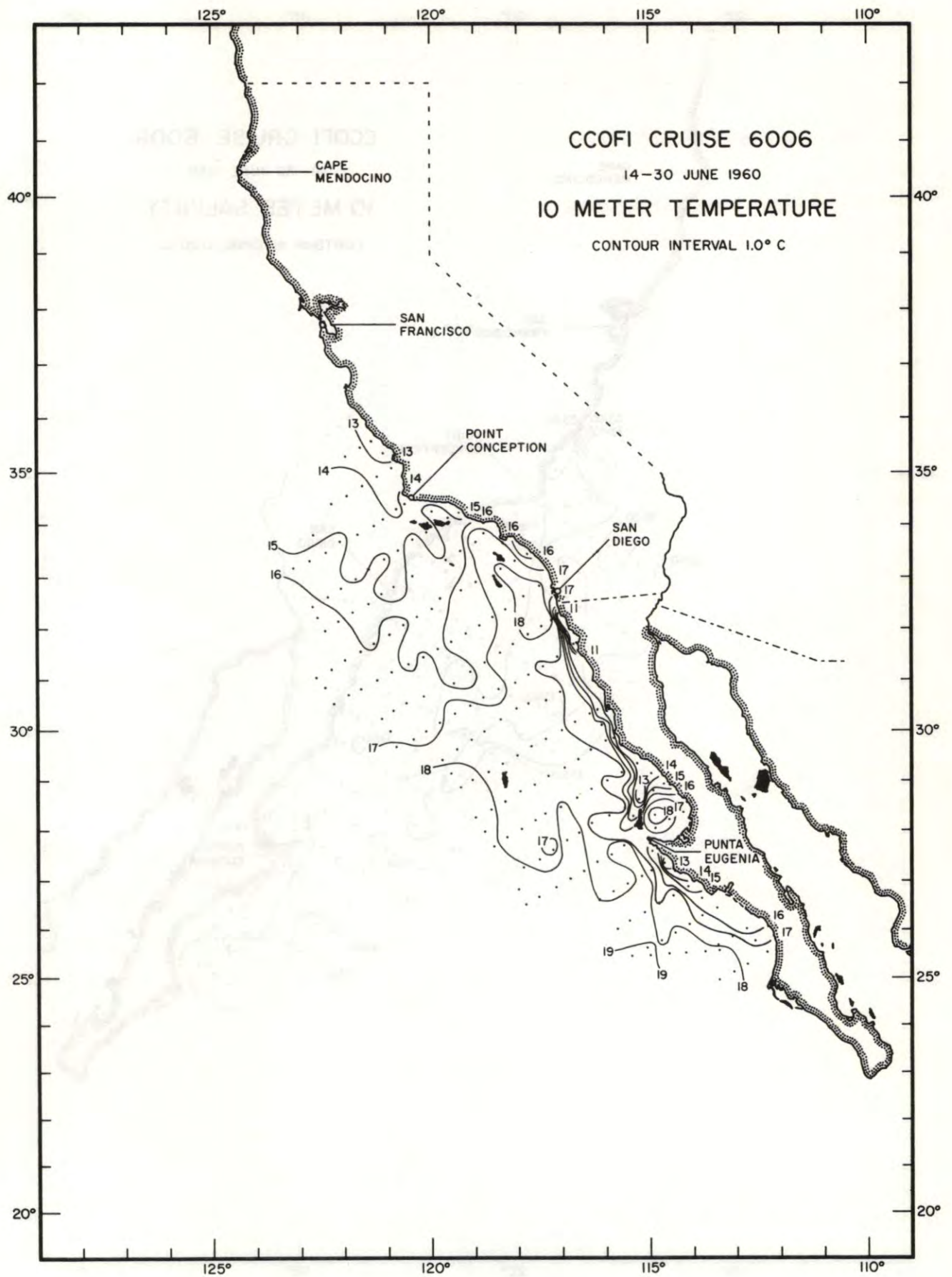


FIGURE 3



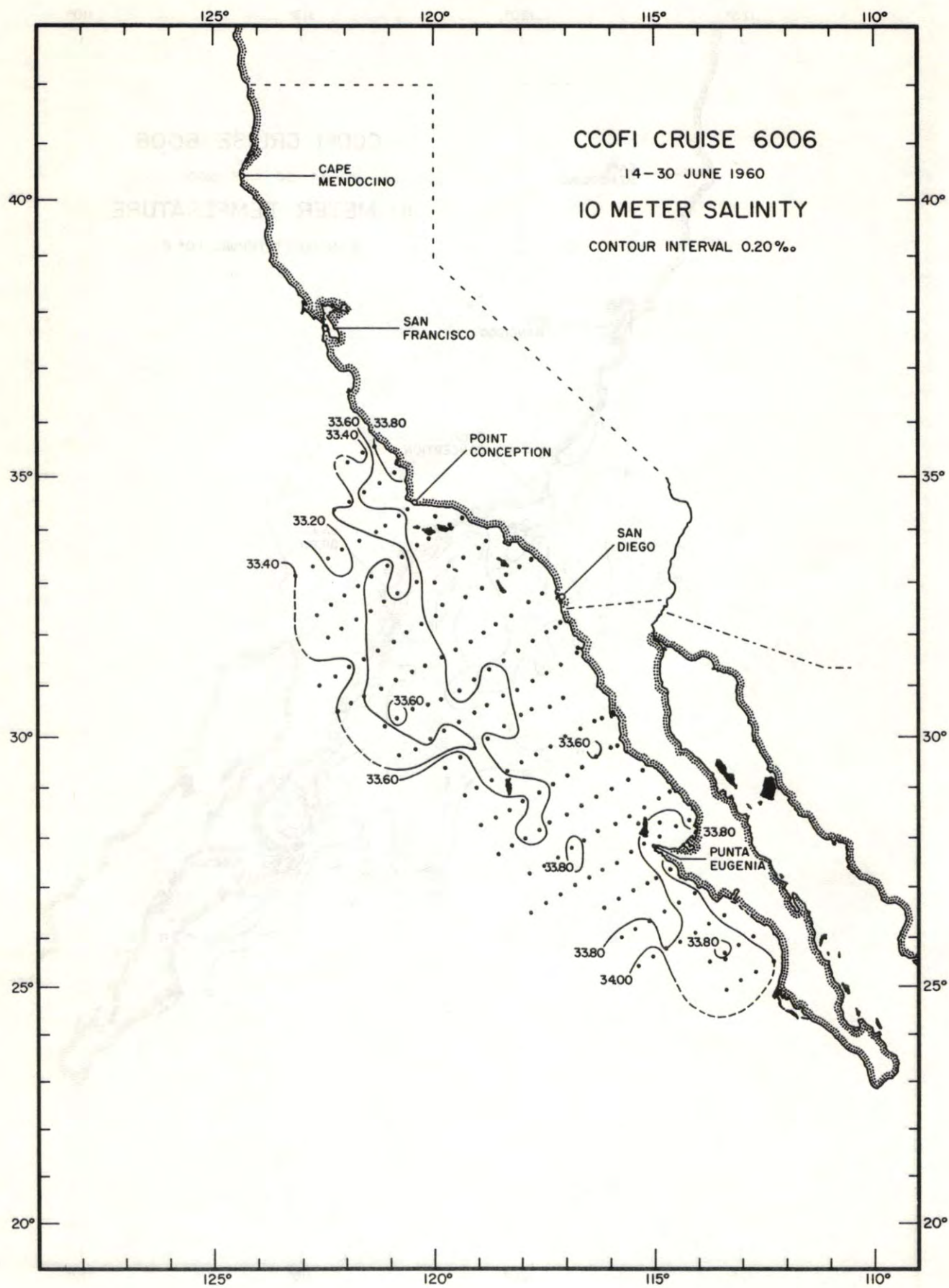


FIGURE 4



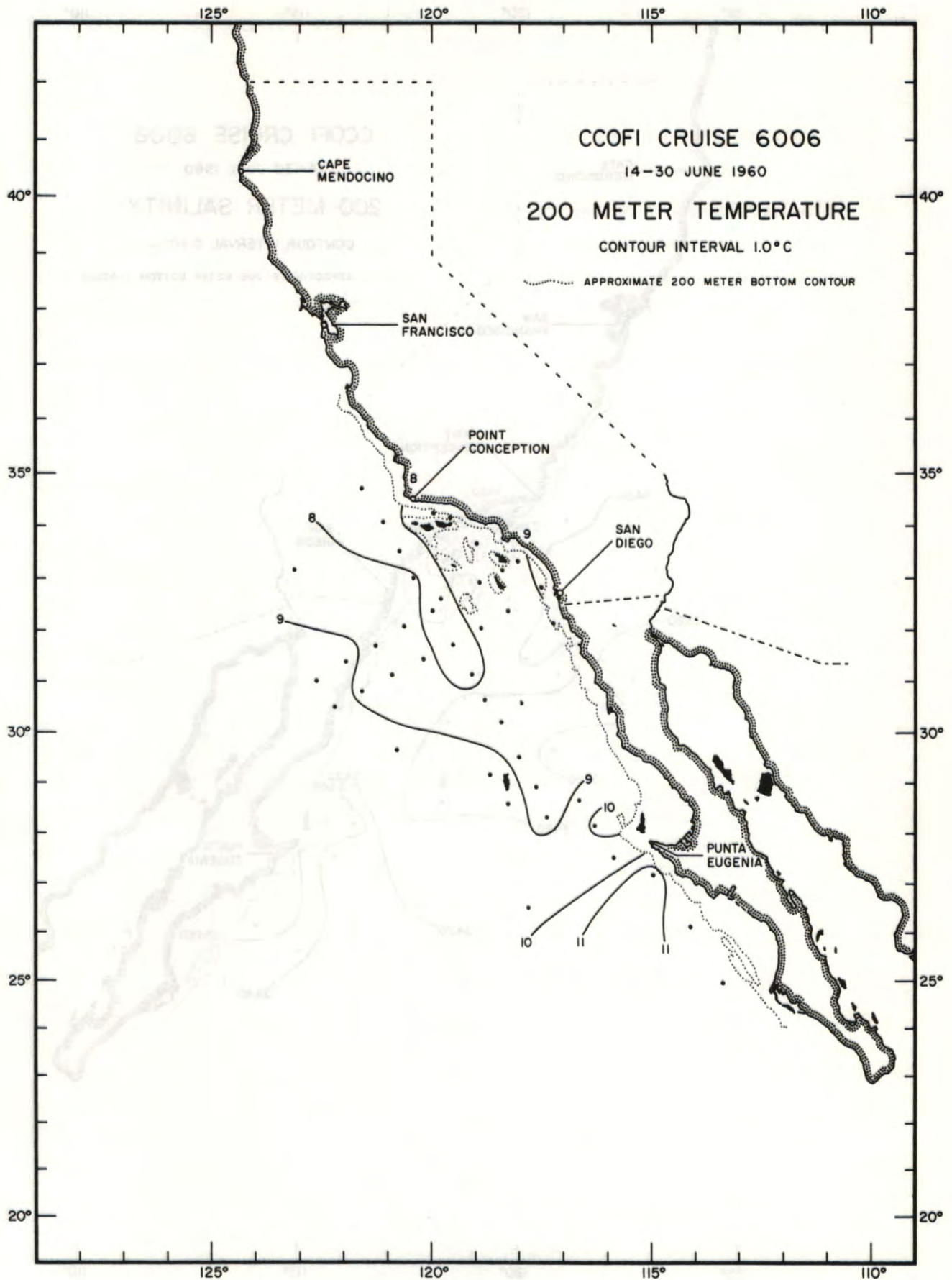


FIGURE 5



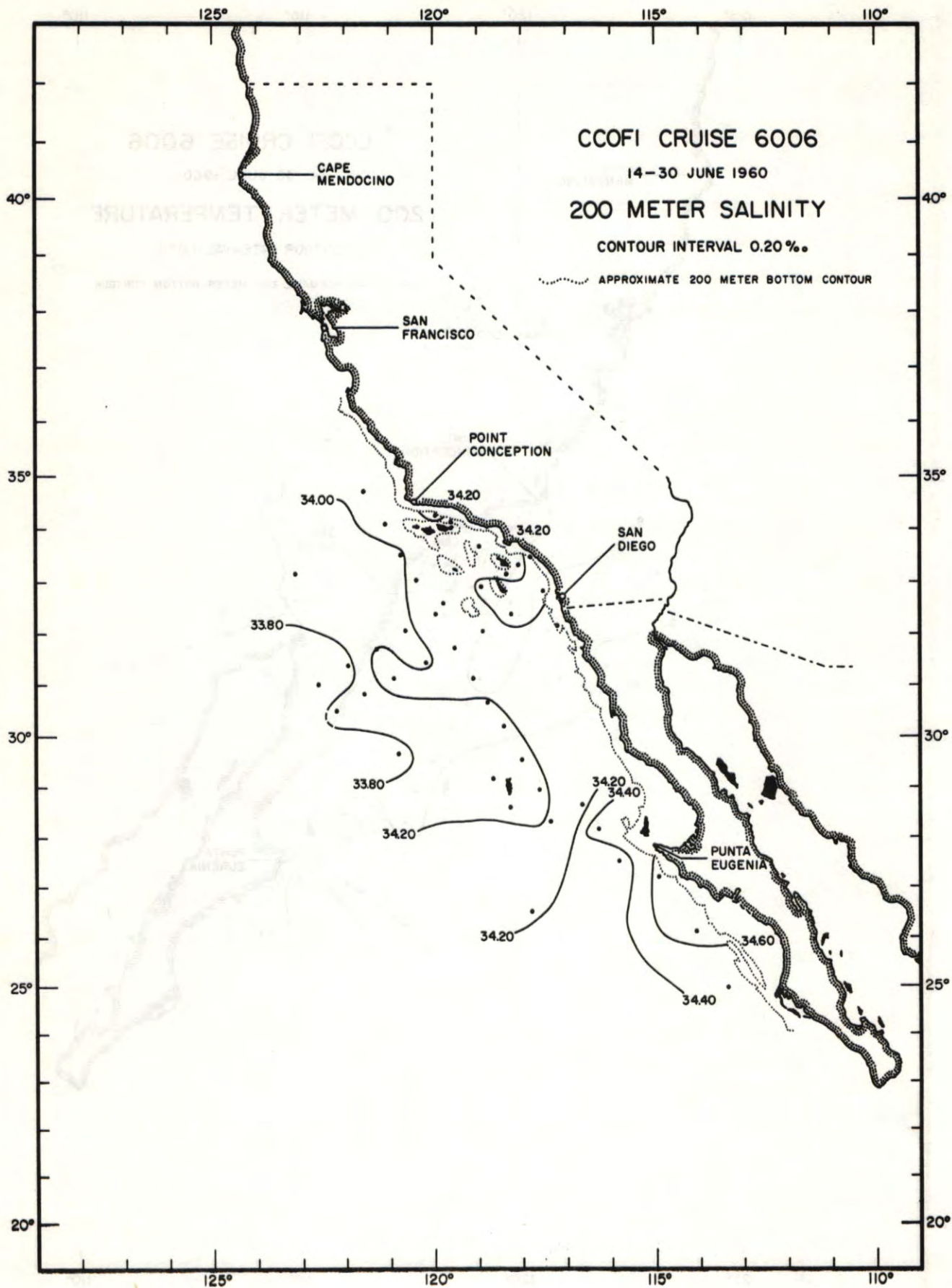


FIGURE 6

## PERSONNEL

### SHIPS' CAPTAINS

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

### PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

#### R/V Black Douglas

Metoyer, Jack D., Fishery Aid, Bureau of Commercial Fisheries  
\*Bello, Eduardo Hernández, Secretary of Industry and Commerce and Fisheries  
Biologist, Head Office of Fisheries, Mexico  
Brennen, Robert E., Marine Technician  
\*\*Grant, Campbell, Botanical Assistant, UCSB  
Hatton, William W., Fishery Aid, Bureau of Commercial Fisheries  
\*\*Muller, Cornelius H., Professor of Botany and Curator of Herbarium, UCSB

#### R/V Orca

Bottom, Kenneth S., Marine Technician  
\*\*\*Costello, James P., Laboratory Technician  
\*\*\*\*Davies, Kenneth R., Laboratory Helper (NSF Summer Trainee)  
\*\*\*Joyal, Norman F., Marine Technician  
\*\*\*\*Kasdan, Mark L., Laboratory Helper (NSF Summer Trainee)  
Kimura, Makota, Fishery Research Biologist, Bureau of Commercial Fisheries

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\*Aboard to observe methods.

\*\*Aboard to call at Cedros Island, Baja California.

\*\*\*Lines 90 and 93 only.

\*\*\*\*Lines 97 and 100 only.



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10  
CCOF1  
6006

ORCA; June 16, 1960; 2041 GCT; 34°44.5'N, 121°34'W; sounding, 470 fm; wind, 140°, force 2; weather, cloudy; sea, moderate; wire angle, 03°.

77.60

1	14.23	33.62	-	288	0	(14.23)	(33.62)		(25.09)	(288)	(0.00)
11	14.13	33.62	6.02	285	10	14.14	33.62		25.12	285	0.03
31	11.16	33.64	5.19	229	20	12.52	33.63	5.55	25.45	254	0.06
41	10.42	33.64	4.38	217	30	11.22	33.64	5.21	25.69	231	0.08
51	10.01	33.65	3.86	210	50	10.03	33.65	3.87	25.91	210	0.12
66	9.74	33.72	3.78	200	75	9.47	33.78	3.33	26.11	191	0.17
81	9.26	33.82	2.87	185	100	8.94	33.86	2.70	26.26	177	0.22
100	8.94	33.86	2.70	177	125	8.54	33.93	2.45	26.38	166	0.26
124	8.54	33.93	2.46	166	150	8.36	33.98	2.20	26.44	160	0.31
144	8.41	33.96	2.28	162	200	7.60	34.06	1.62	26.62	143	0.38
174	7.98	34.04	2.01	150	250	7.07	34.14	1.50	26.75	130	0.45
204	7.54	34.06	1.58	142	300	6.65	34.16	1.25	26.83	123	0.52
234	7.24	34.13	1.54	133	400	5.98	34.27	0.50	27.00	107	0.64
274	6.81	34.14	1.43	127	500	5.63	34.31	0.39	27.08	99	0.74
334	6.42	34.20	0.87	117							
408	5.92	34.27	0.47	106							
482	5.67	34.30	0.41	101							
563	5.43	34.37	0.34	93							

ORCA; June 18, 1960; 0404 GCT; 34°06'N, 121°06.5'W; sounding, 1180 fm; wind, 320°, force 1; weather, overcast; sea, rough; wire angle, 10°.

80.60

1	15.39	33.55	5.93	317	0	(15.39)	(33.55)	(5.93)	(24.79)	(317)	(0.00)
11	14.58	33.55	6.18	300	10	14.70	33.55	6.15	24.95	302	0.03
31	13.66	33.56	5.91	281	20	14.10	33.56	6.11	25.07	290	0.06
40	11.56	33.62	5.24	237	30	13.70	33.56	5.94	25.15	282	0.09
50	11.44	33.64	5.20	235	50	11.44	33.64	5.20	25.65	235	0.14
65	11.16	33.72	4.96	223	75	10.74	33.75	4.57	25.87	214	0.20
79	10.47	33.75	4.37	210	100	9.56	33.80	3.36	26.11	191	0.25
99	9.57	33.80	3.38	191	125	9.05	33.89	2.77	26.26	177	0.30
122	9.09	33.87	2.82	179	150	8.57	33.98	2.54	26.41	163	0.34
142	8.71	33.95	2.60	167	200	7.82	34.07	2.24	26.60	145	0.42
172	8.24	34.04	2.35	154	250	7.11	34.13	1.55	26.74	131	0.49
200	7.82	34.07	2.24	145	300	6.65	34.15	1.31	26.82	124	0.55
229	7.38	34.10	1.74	137	400	6.31	34.25	0.58	26.95	112	0.67
270	6.85	34.14	1.42	127	500	5.73	34.39	0.40	27.12	95	0.78
330	6.49	34.15	1.18	122							
403	6.29	34.26	0.56	111							
478	5.87	34.38	0.43	97							
558	5.41	34.39	0.35	91							

ORCA; June 17, 1960; 1212 GCT; 33°09.5'N, 123°07'W; sounding, 2400 fm; wind, direction missing, force 1; weather, cloudy; sea, slight; wire angle, 02°.

80.90

0	16.16	33.40	5.56	344	0	16.16	33.40	5.56	24.50	344	0.00
10	15.92	33.40	5.37	339	10	15.92	33.40	5.37	24.56	339	0.03
30	14.58	33.39	5.82	312	20	15.88	33.40	5.38	24.57	338	0.07
40	14.38	33.40	5.83	307	30	14.58	33.39	5.82	24.84	312	0.10
50	14.12	33.39	5.70	302	50	14.12	33.39	5.70	24.95	302	0.16
65	13.26	33.39	5.64	286	75	12.86	33.39	5.65	25.19	278	0.23
80	12.70	33.39	5.66	275	100	12.22	33.47	5.50	25.38	261	0.30
100	12.22	33.47	5.50	261	125	11.02	33.50	4.82	25.62	237	0.37
124	11.04	33.50	4.84	238	150	9.84	33.61	4.02	25.91	210	0.42
144	10.06	33.58	4.15	216	200	8.54	33.95	3.56	26.39	165	0.52
175	8.89	33.82	3.64	179	250	7.90	34.00	2.95	26.53	152	0.60
205	8.48	33.96	3.56	163	300	7.20	34.06	2.12	26.68	137	0.67
235	8.08	33.98	3.39	156	400	6.19	34.13	1.16	26.87	119	0.81
274	7.58	34.04	2.40	144	500	5.73	34.24	0.57	27.02	105	0.92
334	6.72	34.08	1.84	129							
408	6.14	34.14	1.09	118							
483	5.82	34.23	0.65	108							
563	5.28	34.28	0.41	98							



SIO		OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
CCOFI	Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD	
6006	m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m	

82.47 ORCA; June 18, 1960; 1322 GCT; 34°15'N, 119°58'W; sounding, 330 fm; wind, 320°, force 1; weather, partly cloudy; sea, moderate; wire angle, 03°.

1	16.03	33.70	5.93	319	0	(16.03)	(33.70)	(5.93)	(24.77)	(319)	(0.00)
11	15.97	33.68	5.95	320	10	15.98	33.68	5.95	24.76	320	0.03
31	11.90	33.73	4.44	236	20	14.20	33.70	5.25	25.16	281	0.06
41	10.94	33.73	3.65	219	30	12.02	33.73	4.47	25.61	238	0.09
51	10.60	33.77	3.59	210	50	10.62	33.77	3.59	25.90	211	0.13
61	10.29	33.80	3.28	203	75	9.73	33.90	2.73	26.16	186	0.18
72	9.82	33.87	2.85	190	100	9.06	34.04	2.12	26.38	166	0.23
87	9.44	33.97	2.44	177	125	8.70	34.13	1.69	26.50	154	0.27
101	9.04	34.04	2.11	166	150	8.53	34.16	1.35	26.56	149	0.31
116	8.79	34.12	1.84	156	200	8.21	34.22	1.12	26.65	140	0.38
140	8.60	34.14	1.48	152	250	7.98	34.18	1.00	26.66	139	0.45
170	8.40	34.20	1.25	144	300	7.50	34.21	0.84	26.75	130	0.52
204	8.19	34.22	1.08	140	400	6.89	34.23	0.51	26.85	121	0.65
254	7.94	34.18	0.98	139	500	6.47	34.27	0.33	26.94	113	0.77
304	7.46	34.22	0.83	130							
408	6.84	34.23	0.49	121							
509	6.42	34.27	0.31	112							

83.43 ORCA; June 18, 1960; 1614 GCT; 34°08'N, 119°36.5'W; sounding, 135 fm; wind, 320°, force 5; weather, cloudy; sea, moderate; wire angle, 10°.

1	15.78	33.69	6.20	315	0	(15.78)	(33.69)	(6.20)	(24.81)	(315)	(0.00)
11	15.76	33.68	6.26	315	10	15.76	33.68	6.26	24.81	315	0.03
31	12.29	33.64	4.78	249	20	13.40	33.65	5.23	25.29	269	0.06
50	10.83	33.69	3.77	220	30	12.41	33.64	4.83	25.48	252	0.09
75	10.12	33.80	3.22	200	50	10.83	33.69	3.77	25.81	220	0.13
99	9.65	33.86	2.86	188	75	10.12	33.80	3.22	26.02	200	0.19
123	9.08	34.00	2.34	169	100	9.64	33.86	2.85	26.14	188	0.24
163	8.65	34.13	1.51	153	125	9.05	34.01	2.32	26.35	169	0.28
202	8.58	34.16	1.31	149	150	8.77	34.10	1.72	26.48	156	0.32
					200	8.58	34.16	1.31	26.55	149	0.40

83.60 ORCA; June 19, 1960; 0524 GCT; 33°31'N, 120°45'W; sounding, 610 fm; wind, 300°, force 5; weather, cloudy; sea, very rough; wire angle, 30°.

1	14.88	33.39	5.85	318	0	(14.88)	(33.39)	(5.85)	(24.78)	(318)	(0.00)
9	14.85	33.37	5.98	319	10	14.85	33.37	5.98	24.77	319	0.03
26	12.29	33.39	5.84	268	20	12.94	33.38	5.87	25.17	280	0.06
35	11.90	33.40	5.79	260	30	12.07	33.40	5.81	25.36	263	0.09
48	11.88	33.58	5.50	246	50	11.83	33.61	5.41	25.56	243	0.14
60	11.46	33.68	5.12	231	75	10.36	33.74	4.24	25.93	208	0.20
80	10.03	-	-	-	100	9.41	33.79	3.34	26.12	190	0.25
97	9.48	33.78	3.42	191	125	8.92	33.85	2.87	26.26	177	0.29
113	9.18	33.82	3.02	184	150	8.74	33.90	2.86	26.32	171	0.34
129	8.86	33.86	2.87	176	200	7.88	33.99	2.27	26.52	152	0.42
154	8.70	33.91	2.86	170	250	7.32	34.07	1.57	26.66	139	0.49
183	8.18	33.98	2.50	157	300	6.84	34.11	1.20	26.77	129	0.56
207	7.78	34.00	2.17	150	400	6.26	34.19	0.67	26.90	116	0.69
248	7.34	34.06	1.61	140	500	5.84	34.31	0.40	27.05	102	0.80
294	6.88	34.11	1.27	130							
365	6.44	34.16	0.82	121							
440	6.05	34.23	0.54	111							
521	5.76	34.33	0.39	99							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO  
CCOFI  
6006

ORCA; June 19, 1960; 2335 GCT; <sup>a)</sup> 32°25.5'N, 122°40'W; sounding, 2000+ fm; wind, 320°, force 6; weather, overcast; sea, high; wire angle, 20°.

83.90

412	6.07	34.13 5	0.96	118
415	6.06	34.13 5	0.94	118
417	6.05	34.14 0	0.94	117
441	5.94	34.18 0	0.76	113
444	5.90	34.18 5	0.68	112
447	5.92	34.18 5	0.69	112
470	5.80	34.21 0	0.62	109
473	5.75	34.22 0	0.62	108
476	5.76	34.21 5	0.54	108
500	5.63	34.24 0	0.47	105
503	5.63	34.24 5	0.51	105
506	5.61	34.25 0	0.49	104
530	5.47	34.26 0	0.44	102
533	5.50	34.26 0	0.42	102
536	5.46	34.26 5	0.39	101
560	5.34	34.28 0	0.40	98
563	5.32	34.28 0	0.40	98
567	5.28	34.28 5	0.37	97

ORCA; June 21, 1960; 1000 GCT; 33°40'N, 118°58.5'W; sounding, 500 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 08°.

87.40

1	17.52	33.73	5.88	350	0	(17.52)	(33.73)	(5.88)	(24.44)	(350)	(0.00)
11	17.52	33.69	6.00	353	10	17.52	33.69	5.99	24.41	353	0.04
31	13.12	33.67	5.56	262	20	17.00	33.69	5.95	24.53	342	0.07
41	12.12	33.64	4.75	246	30	13.21	33.67	5.57	25.35	264	0.10
51	10.75	33.68	4.02	220	50	10.77	33.68	4.03	25.81	220	0.15
66	10.37	33.68	3.73	213	75	10.18	33.71	3.56	25.93	208	0.20
80	10.05	33.73	3.47	205	100	9.54	33.81	3.13	26.12	190	0.25
100	9.54	33.81	3.13	190	125	9.13	33.96	2.64	26.30	173	0.30
123	9.14	33.95	2.66	174	150	9.01	34.01	2.37	26.36	167	0.34
143	9.05	34.00	2.45	169	200	8.59	34.16	1.70	26.55	150	0.42
173	8.86	34.09	2.04	159	250	8.12	34.20	1.27	26.65	140	0.50
202	8.58	34.16	1.69	150	300	7.51	34.28	0.88	26.81	125	0.56
232	8.37	34.19	1.44	144	400	6.64	34.32	0.56	26.95	111	0.69
271	7.84	34.22	1.13	135	500	6.06	34.33	0.45	27.04	103	0.80
330	7.19	34.31	0.72	119							
404	6.61	34.32	0.55	111							
479	6.16	34.32	0.46	105							
560	5.82	34.34	0.45	99							

ORCA; June 20, 1960; 2125 GCT; 33°02.5'N, 120°23'W; sounding, 1700 fm; wind, 320°, force 5; weather, clear; sea, very rough; wire angle, 18°.

87.60

2	15.15	33.46	-	318	0	(15.15)	(33.46)		(24.77)	(318)	(0.00)
11	15.10	33.46	6.03	317	10	15.11	33.46		24.78	317	0.03
30	13.31	33.40	5.90	286	20	15.00	33.45	6.02	24.80	316	0.06
39	13.09	33.42	5.70	280	30	13.31	33.40	5.90	25.11	286	0.09
53	12.42	33.51	5.66	261	50	12.63	33.48	5.68	25.31	267	0.15
66	11.88	33.56	5.18	248	75	11.40	33.65	5.05	25.67	233	0.21
89	11.40	33.70	5.00	229	100	11.00	33.71	4.75	25.79	221	0.27
107	10.62	33.71	4.45	215	125	9.74	33.75	3.63	26.05	197	0.32
124	9.76	33.75	3.64	198	150	8.86	33.90	2.89	26.30	173	0.37
142	8.94	33.89	2.97	175	200	8.12	34.02	2.41	26.51	153	0.45
169	8.65	33.93	2.68	168	250	7.73	34.11	1.63	26.64	141	0.53
200	8.12	34.02	2.41	153	300	7.24	34.15	1.20	26.74	131	0.60
229	7.93	34.10	1.73	144	400	6.43	34.25	0.58	26.93	114	0.72
275	7.45	34.13	1.48	136	500	5.93	34.30	0.41	27.03	104	0.84
325	7.00	34.18	0.93	126							
403	6.40	34.25	0.57	113							
485	6.00	34.29	0.43	105							
567	5.66	34.37	0.35	95							

a) Test cast.

251



SIO

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6006

OBSERVED				COMPUTED	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	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

90.28

ORCA; June 21, 1960; 1815 GCT; 33°28'N, 117°47.5'W; sounding, 360 fm; wind, 280°, force 1; weather, overcast; sea, moderate; wire angle, 08°.

1	17.61	33.68	-	356	0	(17.61)	(33.68)	-	(24.38)	(356)	(0.00)
11	15.44	33.68	6.47	308	10	15.52	33.68		24.86	310	0.03
31	12.47	33.62	5.25	254	20	14.00	33.65	5.86	25.16	281	0.06
41	11.48	33.66	4.57	233	30	12.52	33.62	5.27	25.44	255	0.09
51	10.62	33.69	3.89	216	50	10.66	33.69	3.93	25.84	217	0.14
66	10.11	33.80	3.54	200	75	10.00	33.83	3.44	26.06	196	0.19
81	9.80	33.84	3.25	192	100	9.60	33.93	2.73	26.20	182	0.24
100	9.60	33.93	2.73	182	125	9.51	34.04	2.31	26.30	173	0.28
124	9.52	34.04	2.32	173	150	9.23	34.11	2.06	26.40	164	0.32
143	9.28	34.08	2.12	166	200	9.04	34.23	1.49	26.52	152	0.40
174	9.14	34.20	1.69	155	250	8.60	34.28	1.15	26.65	140	0.48
203	9.02	34.23	1.45	151	300	8.25	34.30	0.94	26.71	134	0.55
232	8.68	34.34u	1.32	-	400	7.19	34.29	0.74	26.86	120	0.68
270	8.50	34.29	1.03	139	500	6.50	34.34	0.45	26.99	108	0.80
330	7.94	34.31	0.88	129							
404	7.16	34.29	0.73	120							
478	6.68	34.34	0.49	110							
558	6.02	34.33	0.37	103							

90.32

ORCA; June 21, 1960; 2037 GCT; 32°20.5'N, 118°03'W; sounding, 400 fm; wind, 280°, force 2; weather, clear; sea, rough; wire angle, 10°.

1	18.96	33.72	5.35	385	0	(18.96)	(33.72)	(5.35)	(24.07)	(385)	(0.00)
11	17.06	33.73	5.66	340	10	17.15	33.73	5.64	24.53	342	0.04
30	13.85	33.62	5.75	280	20	16.00	33.70	5.75	24.77	319	0.07
40	12.88	33.61	5.23	262	30	13.85	33.62	5.75	25.17	280	0.10
50	12.17	33.60	4.85	250	50	12.17	33.60	4.85	25.49	250	0.15
65	11.26	33.64	3.60	231	75	10.32	33.71	3.26	25.91	210	0.21
80	10.30	33.71	3.25	210	100	9.70	33.81	3.02	26.09	193	0.26
99	9.71	33.80	3.03	193	125	9.23	33.93	2.50	26.27	176	0.31
123	9.26	33.93	2.53	177	150	8.88	33.97	2.04	26.35	168	0.35
143	8.98	33.95	2.19	171	200	8.42	34.13	1.37	26.55	150	0.43
172	8.63	34.05	1.67	158	250	7.96	34.20	1.06	26.67	138	0.51
202	8.40	34.13	1.35	150	300	7.66	34.27	0.75	26.77	129	0.57
231	8.16	34.18	1.23	142	400	6.85	34.30	0.54	26.91	115	0.70
271	7.80	34.22	0.91	134	500	6.31	34.34		27.01	106	0.82
330	7.46	34.29	0.65	124							
403	6.82	34.30	0.53	115							
477	6.44	34.33	0.48	108							
557	5.98	34.34	-	101							

90.37

ORCA; June 23, 1960; 1329 GCT; 33°10.5'N, 118°23.5'W; sounding, 642 fm; wind, 280°, force 2; weather, overcast; sea, moderate; wire angle, 00°.

1	18.13	33.75	-	363	0	(18.13)	(33.75)	-	(24.30)	(363)	(0.00)
11	18.09	33.75	5.09	362	10	18.10	33.75		24.31	362	0.04
31	14.66	33.68	5.11	292	20	17.00	33.73	5.10	24.56	339	0.07
41	12.50	33.72	4.89	247	30	15.00	33.69	5.11	24.98	299	0.10
51	11.08	33.76	4.00	219	50	11.16	33.76	4.04	25.81	220	0.16
66	10.08	33.78	3.26	201	75	9.63	33.83	2.92	26.12	190	0.21
101	9.00	33.98	2.36	169	100	9.01	33.97	2.38	26.33	170	0.25
125	8.78	34.00	2.26	164	125	8.78	34.00	2.26	26.40	164	0.29
145	8.54	34.05	2.06	157	150	8.50	34.07	1.98	26.49	155	0.34
175	8.25	34.13	1.59	147	200	8.07	34.15	1.41	26.62	143	0.41
205	8.03	34.16	1.39	142	250	7.73	34.24	1.08	26.73	132	0.48
233	7.84	34.22	1.16	135	300	7.30	34.26	0.84	26.82	124	0.55
274	7.52	34.25	0.91	128	400	6.47	34.32	0.54	26.98	109	0.67
333	7.00	34.27	0.79	120	500	6.00	34.33	0.43	27.05	102	0.78
408	6.40	34.32	0.52	108							
481	6.10	34.33	0.46	104							
562	5.63	34.34	0.35	97							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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ORCA; June 23, 1960; 1738 GCT; 32°55.5'N, 118°56.5'W; sounding, 1000 fm; wind, 280°, force 3; weather, overcast; sea, rough; wire angle, 03°.

9045

1	16.50	33.69	5.86	330	0	(16.50)	(33.69)	(5.86)	(24.65)	(330)	(0.00)
11	16.44	33.71	5.88	328	10	16.45	33.71	5.88	24.67	328	0.03
31	12.80	33.75	5.16	251	20	15.50	33.72	5.67	24.90	306	0.06
41	11.29	33.75	4.16	223	30	13.00	33.75	5.18	25.45	254	0.09
51	10.60	33.79	3.75	209	50	10.67	33.78	3.77	25.91	210	0.14
66	9.88	33.82	3.27	195	75	9.53	33.84	2.98	26.14	188	0.19
81	9.44	33.86	2.88	185	100	9.07	33.95	2.50	26.30	173	0.24
101	9.06	33.95	2.49	173	125	8.79	34.05	2.14	26.43	161	0.28
125	8.79	34.05	2.14	161	150	8.53	34.12	1.81	26.52	152	0.32
145	8.58	34.11	1.87	153	200	8.22	34.22	1.37	26.65	140	0.39
175	8.35	34.16	1.58	146	250	7.70	34.23	1.07	26.73	132	0.46
206	8.17	34.23	1.32	138	300	7.42	34.26	0.87	26.80	126	0.52
235	7.78	34.22	1.14	133	400	6.64	34.32	0.59	26.96	111	0.65
275	7.60	34.24	0.97	130	500	5.98	34.33	0.39	27.05	102	0.76
334	7.16	34.29	0.77	120							
409	6.56	34.32	0.57	110							
483	6.08	34.33	0.41	104							
564	5.62	34.34	0.37	97							

ORCA; June 23, 1960; 2032 GCT; 32°45.5'N, 119°17.5'W; sounding, 58 fm; wind, 310°, force 3; weather, overcast; sea, moderate; wire angle, 05°.

9050

0	17.04	33.77	5.62	337	0	17.04	33.77	5.62	24.58	337	0.00
10	16.42	33.75	5.73	324	10	16.42	33.75	5.73	24.71	324	0.03
30	12.05	33.73	4.79	238	20	14.50	33.74	5.33	25.12	285	0.06
50	9.86	33.82	3.00	194	30	12.05	33.73	4.79	25.61	238	0.09
75	9.34	33.86	2.71	183	50	9.86	33.82	3.00	26.08	194	0.13
					75	9.34	33.86	2.71	26.19	183	0.18

ORCA; June 23, 1960; 2347 GCT; 32°35'N, 119°48'W; sounding, 565 fm; wind, 230°, force 3; weather, overcast; sea, moderate; wire angle, 07°.

9055

2	15.7	33.71	5.96	312	0	15.7	(33.71)	(5.96)	(24.84)	(312)	(0.00)
12	15.52	33.70	6.01	308	10	15.58	33.70	5.99	24.87	309	0.03
31	13.94	33.64	6.09	281	20	15.06	33.69	6.04	24.97	300	0.06
42	12.94	33.64	5.66	262	30	14.01	33.64	6.09	25.15	282	0.09
51	12.33	33.64	5.11	250	50	12.37	33.64	5.13	25.48	251	0.14
66	11.44	33.68	4.52	231	75	10.30	33.71	3.99	25.92	209	0.20
80	10.08	33.73	3.89	205	100	9.82	33.75	3.62	26.03	199	0.25
100	9.82	33.75	3.62	199	125	9.05	33.87	2.74	26.25	178	0.30
123	9.09	33.86	2.81	180	150	8.60	33.97	2.35	26.40	164	0.34
142	8.80	33.93	2.36	170	200	7.86	34.13	1.79	26.63	142	0.42
170	8.12	34.05	2.35	151	250	7.14	34.16	1.29	26.76	129	0.49
200	7.86	34.13	1.79	142	300	6.87	34.24	0.94	26.86	120	0.56
229	7.46	34.13	1.48	136	400	6.32	34.31	0.45	26.99	107	0.67
267	6.90	34.19	1.15	124	500	5.72	34.38	0.30	27.12	95	0.78
325	6.84	34.27	0.78	117							
397	6.34	34.31	0.46	108							
471	5.84	34.36	0.35	98							
551	5.58	34.40	0.24	92							



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6006

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

90.60

ORCA; June 24, 1960; 0255 GCT; 32°24.5'N, 119°58'W; sounding, 850 fm; wind, 290°, force 3; weather, overcast; sea, rough; wire angle, 21°.

2	15.37	33.74	6.05	302	0	(15.37)	(33.74)	(6.05)	(24.95)	(302)	(0.00)
11	15.18	33.71	6.09	300	10	15.18	33.71	6.09	24.97	300	0.03
30	12.20	33.71	5.15	243	20	13.85	33.71	5.65	25.24	274	0.06
39	11.44	33.69	4.72	231	30	12.20	33.71	5.15	25.57	243	0.08
53	10.24	33.76	3.75	205	50	10.28	33.75	3.79	25.94	207	0.13
67	9.78	33.79	3.51	195	75	9.45	33.83	3.34	26.14	188	0.18
90	8.98	33.88	2.96	176	100	8.73	33.93	2.67	26.34	169	0.22
108	8.57	33.96	2.49	164	125	8.37	33.97	2.42	26.43	161	0.27
126	8.36	33.97	2.42	161	150	8.11	34.01	2.25	26.50	154	0.31
144	8.18	34.00	2.31	156	200	7.61	34.11	1.67	26.65	140	0.38
170	7.86	34.04	2.06	148	250	7.20	34.15	1.10	26.74	131	0.45
201	7.60	34.11	1.66	140	300	6.76	34.18	0.87	26.83	123	0.51
228	7.42	34.14	1.35	135	400	6.33	34.28	0.52	26.97	110	0.63
272	6.94	34.16	0.94	127	500	5.63	34.36	0.30	27.12	95	0.74
323	6.60	34.20	0.83	119							
402	6.31	34.28	0.51	110							
483	5.71	34.35	0.31	97							
566	5.38	34.39	0.30	90							

90.70

ORCA; June 24, 1960; 0840 GCT; 32°04'N, 120°38'W; sounding, 2200 fm; wind, 290°, force 3; weather, overcast; sea, rough; wire angle, 19°.

1	16.26	33.55	5.70	335	0	(16.26)	(33.55)	(5.70)	(24.60)	(335)	(0.00)
10	16.26	33.53	5.73	337	10	16.26	33.53	5.73	24.58	337	0.03
29	16.11	33.52	5.78	334	20	16.24	33.53	5.74	24.58	337	0.07
39	14.12	33.48	6.01	296	30	16.10	33.52	5.79	24.61	334	0.10
53	13.42	33.54	5.66	278	50	13.57	33.53	5.75	25.16	281	0.16
67	12.47	33.52	5.40	262	75	12.07	33.53	5.21	25.46	253	0.23
90	11.43	33.57	4.86	239	100	10.96	33.62	4.54	25.73	227	0.29
109	10.55	33.66	4.27	217	125	9.96	33.73	3.73	25.98	203	0.34
126	9.93	33.73	3.70	202	150	9.18	33.84	3.22	26.21	182	0.39
144	9.26	33.81	3.30	186	200	8.49	33.99	2.47	26.43	161	0.48
171	8.86	33.92	2.91	172	250	8.03	34.10	1.70	26.59	146	0.56
204	8.46	34.00	2.41	160	300	7.53	34.18	1.36	26.71	134	0.63
231	8.26	34.06	1.93	153	400	6.62	34.26	0.87	26.91	115	0.76
277	7.72	34.14	1.50	139	500	5.97	34.32	0.39	27.04	103	0.87
329	7.26	34.21	1.16	128							
408	6.52	34.26	0.82	114							
491	6.01	34.32	0.41	103							
576	5.64	34.33	0.37	98							

90.80

ORCA; June 24, 1960; 1405 GCT; 31°43.5'N, 121°17'W; sounding, 2000+ fm; wind, 290°, force 2; weather, overcast; sea, moderate; wire angle, 14°.

1	15.43	33.50		321	0	(15.43)	(33.50)		(24.75)	(321)	(0.00)
11	15.41	33.51		320	10	15.41	33.51		24.76	320	0.03
30	13.62	33.28		301	20	15.39	33.51		24.77	319	0.06
39	12.93	33.33		284	30	13.62	33.28		24.96	301	0.10
49	12.30	33.39		268	50	12.26	33.39		25.31	267	0.15
63	11.62	33.46		251	75	11.33	33.54		25.59	240	0.22
78	11.27	33.57		237	100	11.06	33.70		25.78	223	0.27
97	11.14	33.69		225	125	9.77	33.72		26.01	201	0.33
119	9.98	33.70		205	150	9.17	33.84		26.20	183	0.38
137	9.42	33.77		192	200	8.30	34.00		26.47	157	0.46
164	8.86	33.89		174	250	7.84	34.08		26.61	144	0.54
191	8.41	33.98		161	300	7.00	34.08		26.72	133	0.61
217	8.18	34.04		153	400	6.32	34.17		26.88	118	0.74
255	7.77	34.09		143	500	5.82	34.26		27.01	106	0.86
312	6.88	34.09		132							
384	6.39	34.16		120							
459	6.04	34.23		111							
538	5.54	34.27		101							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

S10  
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6006

ORCA; June 24, 1960; 1919 GCT; 31°23'N, 121°57'W; sounding, 2400 fm; wind, 290°, force 3; weather, overcast; sea, moderate; wire angle, 10°.

90.90

2	16.72	33.44	5.43	353	0	(16.72)	(33.44)	(5.43)	(24.41)	(353)	(0.00)
12	16.64	33.44	5.46	352	10	16.65	33.44	5.45	24.42	352	0.04
31	16.55	33.44	5.49	350	20	16.61	33.44	5.46	24.43	351	0.07
41	15.20	33.42	5.66	322	30	16.55	33.44	5.48	24.44	350	0.11
56	14.60	33.42	5.79	310	50	14.78	33.42	5.75	24.83	313	0.17
71	14.25	33.42	5.70	303	75	14.16	33.42	5.66	24.96	301	0.25
95	13.66	33.42	5.59	291	100	13.57	33.42	5.57	25.08	289	0.32
115	13.12	33.44	5.46	280	125	12.57	33.46	5.34	25.30	268	0.39
134	11.97	33.48	5.28	255	150	11.62	33.61	5.21	25.60	240	0.46
152	11.59	33.63	5.19	238	200	9.27	33.75	3.46	26.11	191	0.57
181	9.86	33.65	3.85	207	250	8.46	33.98	2.63	26.43	161	0.66
214	8.99	33.82	3.28	181	300	7.88	34.07	2.24	26.58	147	0.74
242	8.59	33.96	2.71	164	400	6.80	34.19	0.93	26.83	123	0.88
290	7.95	34.05	2.34	148	500	6.11	34.31	0.45	27.02	105	1.00
342	7.51	34.13	1.53	137	600	(5.62)	(34.37)	(0.36)	(27.12)	(95)	(1.10)
423	6.56	34.22	0.75	117							
506	6.08	34.31	0.44	105							
590	5.65	34.36	0.36	96							

ORCA; June 25, 1960; 0035 GCT; 31°01.5'N, 122°36'W; sounding, 2300 fm; wind, 290°, force 3; weather, overcast; sea, moderate; wire angle, 05°.

90.100

1	16.98	33.40	5.50	362	0	(16.98)	(33.40)	(5.50)	(24.31)	(362)	(0.00)
11	16.81	33.42	5.51	357	10	16.83	33.42	5.50	24.37	357	0.04
32	16.76	33.41	5.58	356	20	16.80	33.42	5.53	24.37	357	0.07
41	16.38	33.34	5.57	353	30	16.77	33.41	5.57	24.37	356	0.11
56	15.10	33.24	5.85	333	50	15.30	33.23	5.78	24.57	338	0.18
71	14.78	33.35	5.85	318	75	14.73	33.40	5.82	24.82	314	0.26
96	14.06	33.48	5.70	295	100	13.87	33.48	5.66	25.06	291	0.34
117	13.06	33.46	5.41	277	125	12.64	33.45	5.33	25.29	270	0.41
135	12.10	33.45	5.27	260	150	11.01	33.46	4.97	25.60	240	0.47
154	10.76	33.48	4.86	234	200	9.09	33.78	4.02	26.17	185	0.58
184	9.42	33.69	4.22	198	250	8.25	33.99	3.11	26.46	158	0.67
219	8.78	33.88	3.80	173	300	7.43	34.09	2.44	26.66	139	0.74
248	8.30	33.98	3.17	159	400	6.47	34.11	1.15	26.81	125	0.88
298	7.45	34.09	2.45	139	500	5.88	34.23	0.57	26.98	108	1.00
352	6.86	34.08	1.68	132	600	5.51	34.36	0.30	27.13	94	1.11
435	6.22	34.14	0.88	119							
519	5.78	34.26	0.49	105							
603	5.50	34.36	0.30	94							

ORCA; June 26, 1960; 2110 GCT; 32°49'N, 117°31'W; sounding, 505 fm; wind, 300°, force 2; weather, partly cloudy; sea, moderate; wire angle, 13°.

93.30

1	18.72	33.67	6.12	383	0	(18.72)	(33.67)	(6.12)	(24.10)	(383)	(0.00)
11	18.06	33.66	6.08	368	10	18.07	33.66	6.08	24.25	368	0.04
30	13.12	33.58	6.19	269	20	16.05	33.62	6.13	24.70	325	0.07
40	12.12	33.58	5.14	251	30	13.12	33.58	6.19	25.29	269	0.10
50	11.40	33.64	4.34	234	50	11.40	33.64	4.34	25.66	234	0.15
64	10.33	33.68	3.72	212	75	10.09	33.71	3.34	25.95	206	0.21
79	10.02	33.73	3.25	204	100	9.60	33.82	3.04	26.12	190	0.26
100	9.60	33.82	3.04	190	125	9.27	34.00	2.47	26.31	172	0.30
122	9.27	33.98	2.54	174	150	9.28	34.12	1.94	26.41	163	0.35
141	9.31	34.09	2.08	166	200	9.05	34.22	1.36	26.52	152	0.43
171	9.16	34.16	1.72	158	250	8.80	34.25	1.08	26.60	145	0.50
200	9.05	34.22	1.36	152	300	8.47	34.30	1.00	26.68	138	0.58
229	9.18	34.31	1.00	148	400	7.51	34.27	0.63	26.80	126	0.71
268	8.48	34.23	1.21	143	500	6.75	34.33	0.45	26.95	112	0.84
326	8.38	34.33	0.79	134							
398	7.53	34.27	0.64	126							
472	7.00	34.31	0.49	116							
552	6.24	34.34	0.40	105							



S10

CCOFI  
6006

OBSERVED				COMPUTED	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	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

93.40

ORCA; June 26, 1960; 1439 GCT; 32°23.5'N, 118°17'W; sounding, 600 fm; wind, 310°, force 4; weather, cloudy; sea, rough; wire angle, 04°.

1	17.19	33.73	5.64	343	0	(17.19)	(33.73)	(5.64)	(24.52)	(343)	(0.00)
11	17.21	33.72	5.68	344	10	17.20	33.72	5.67	24.51	344	0.03
31	12.29	33.62	5.01	251	20	17.17	33.72	5.67	24.52	343	0.07
41	11.74	33.62	5.02	240	30	12.60	33.62	5.05	25.43	256	0.10
56	10.84	33.66	4.38	222	50	11.27	33.64	4.73	25.69	231	0.15
71	10.00	33.73	3.83	204	75	9.89	33.75	3.71	26.02	200	0.20
96	9.58	33.88	3.03	185	100	9.55	33.92	2.87	26.21	182	0.25
117	9.47	34.04	2.36	172	125	9.47	34.06	2.13	26.33	171	0.29
136	9.45	34.07	2.02	170	150	9.37	34.11	2.05	26.39	165	0.34
156	9.32	34.13	2.05	163	200	8.73	34.22	1.49	26.58	147	0.42
186	8.83	34.20	1.66	151	250	8.28	34.31	1.02	26.71	134	0.49
221	8.58	34.27	1.21	141	300	7.80	34.33	0.82	26.80	126	0.55
250	8.28	34.31	1.02	134	400	6.78	34.28	0.66	26.91	116	0.68
300	7.80	34.33	0.82	126	500	5.94	34.33	0.45	27.05	102	0.79
355	7.16	34.25	0.78	123	600	5.30	34.38	0.36	27.17	91	0.89
438	6.44	34.31	0.57	109							
523	5.76	34.33	0.41	99							
608	5.28	34.38	0.35	90							

93.50

ORCA; June 26, 1960; 0909 GCT; 32°03'N, 118°53'W; sounding, 600 fm; wind, 320°, force 4; weather, overcast; sea, rough; wire angle, 12°.

2	16.14	33.69	5.84	323	0	(16.14)	(33.69)	(5.84)	(24.73)	(323)	(0.00)
12	16.09	33.68	5.80	322	10	16.11	33.68	5.82	24.74	322	0.03
31	12.48	33.55	5.46	260	20	14.69	33.63	5.66	25.00	296	0.06
41	12.08	33.58	5.39	250	30	12.67	33.56	5.47	25.36	263	0.09
56	11.50	33.62	5.07	237	50	11.74	33.61	5.21	25.58	242	0.14
70	10.37	33.68	4.16	213	75	10.07	33.70	3.93	25.94	207	0.20
95	9.37	33.78	3.19	190	100	9.31	33.79	3.17	26.14	188	0.25
114	9.14	33.83	3.17	182	125	9.04	33.89	2.76	26.27	176	0.29
132	8.96	33.96	2.49	170	150	8.62	34.04	2.39	26.45	160	0.34
151	8.60	34.04	2.35	159	200	8.28	34.12	1.81	26.56	149	0.41
180	8.44	34.05	2.11	156	250	7.80	34.19	1.38	26.69	137	0.49
214	8.12	34.16	1.59	143	300	7.37	34.24	0.95	26.79	126	0.55
243	7.84	34.18	1.43	138	400	6.49	34.28	0.60	26.95	112	0.68
292	7.44	34.23	1.03	129	500	5.90	34.33	0.45	27.06	101	0.79
346	6.89	34.26	0.71	119	600	(5.37)	(34.38)	(0.32)	(27.17)	(91)	(0.89)
429	6.28	34.30	0.56	108							
513	5.82	34.34	0.42	100							
599	5.38	34.38	0.32	91							

93.60

ORCA; June 26, 1960; 0333 GCT; 31°44'N, 119°31'W; sounding, 2075 fm; wind, 310°, force 4; weather, overcast; sea, rough; wire angle, 21°.

1	16.56	33.79	5.68	324	0	(16.56)	(33.79)	(5.68)	(24.71)	(324)	(0.00)
10	16.55	33.78	5.68	325	10	16.55	33.78	5.68	24.70	325	0.03
29	14.84	33.77	6.02	290	20	16.54	33.78	5.69	24.70	325	0.06
38	11.75	33.74	4.35	232	30	14.70	33.77	5.99	25.11	286	0.10
51	10.18	33.80	3.39	201	50	10.27	33.79	3.45	25.98	203	0.14
65	9.40	33.86	2.87	184	75	9.12	33.92	2.66	26.27	176	0.19
87	8.96	33.95	2.56	171	100	8.82	33.95	2.45	26.34	169	0.24
106	8.76	33.95	2.38	168	125	8.51	34.06	2.10	26.48	156	0.28
123	8.52	34.04	2.16	158	150	8.37	34.13	1.66	26.57	148	0.32
141	8.42	34.13	1.74	150	200	7.83	34.15	1.35	26.66	139	0.39
167	8.24	34.13	1.57	147	250	7.56	34.22	0.96	26.74	131	0.46
198	7.85	34.15	1.37	140	300	7.23	34.23	0.79	26.80	126	0.52
225	7.64	34.20	1.03	134	400	6.62	34.27	0.54	26.91	115	0.65
270	7.48	34.23	0.92	129	500	5.86	34.34	0.33	27.07	100	0.76
321	7.08	34.23	0.71	124							
400	6.62	34.27	0.54	115							
481	6.00	34.33	0.35	102							
565	5.40	34.37	0.31	92							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6006

ORCA; June 25, 1960; 2151 GCT; 31°26.5'N, 120°11'W; sounding, 2300 fm; wind, 320°, force 4; weather, over-cast; sea, rough; wire angle, 07°.

93.70

1	16.30	33.49	5.57	341	0	(16.30)	(33.49)	(5.57)	(24.54)	(341)	(0.00)
11	16.29	33.51	5.64	339	10	16.29	33.51	5.63	24.55	339	0.03
31	14.68	33.49	6.08	307	20	16.28	33.51	5.65	24.56	338	0.07
41	14.14	33.51	6.19	294	30	14.77	33.49	6.04	24.88	308	0.10
55	13.56	33.49	5.64	284	50	13.81	33.50	5.93	25.09	288	0.16
70	13.16	33.51	5.44	275	75	13.05	33.53	5.40	25.26	272	0.23
95	12.58	33.57	5.33	259	100	12.30	33.59	5.27	25.46	253	0.30
114	11.21	33.64	4.70	230	125	10.69	33.67	4.25	25.82	219	0.36
133	10.38	33.69	3.95	212	150	9.78	33.76	3.56	26.05	197	0.41
152	9.71	33.77	3.55	196	200	8.74	33.95	2.71	26.36	167	0.50
183	9.00	33.89	3.03	176	250	7.79	34.08	1.84	26.61	144	0.58
216	8.43	34.00	2.43	160	300	7.38	34.15	1.30	26.72	133	0.65
244	7.86	34.07	1.92	146	400	6.73	34.27	0.64	26.90	116	0.78
294	7.42	34.14	1.38	135	500	6.15	34.32	0.34	27.02	105	0.90
349	7.08	34.22	0.93	124	600	5.46	34.36	0.29	27.13	94	1.00
432	6.50	34.29	0.49	112							
516	6.05	34.33	0.32	103							
601	5.44	34.36	0.29	94							

ORCA; June 25, 1960; 1604 GCT; 31°08'N, 120°53'W; sounding, 2000+ fm; wind, 290°, force 4; weather, over-cast; sea, rough; wire angle, 07°.

93.80

1	16.24	33.51	5.56	338	0	(16.24)	(33.51)	(5.56)	(24.56)	(338)	(0.00)
11	16.23	33.51	5.71	338	10	16.23	33.51	5.70	24.56	338	0.03
31	15.08	33.42	5.98	320	20	16.21	33.51	5.72	24.57	337	0.07
41	13.74	33.42	5.97	293	30	15.18	33.43	5.97	24.75	321	0.10
56	12.88	33.48	5.56	272	50	13.23	33.44	5.80	25.16	282	0.16
70	11.96	33.59	5.35	247	75	11.61	33.58	5.23	25.57	242	0.23
95	10.44	33.55	4.29	224	100	10.22	33.60	4.04	25.84	217	0.28
115	9.68	33.73	3.67	198	125	9.37	33.80	3.46	26.14	188	0.34
134	9.10	33.85	3.25	181	150	8.80	33.90	3.18	26.31	172	0.38
154	8.72	33.91	3.18	170	200	8.28	34.09	1.95	26.54	151	0.46
184	8.42	34.04	2.43	156	250	7.83	34.18	1.36	26.68	137	0.54
219	8.18	34.14	1.54	145	300	7.27	34.25	0.81	26.81	125	0.60
249	7.84	34.18	1.37	138	400	6.60	34.31	0.54	26.96	111	0.73
299	7.28	34.25	0.82	125	500	6.07	34.35	0.44	27.05	102	0.84
353	6.90	34.28	0.63	117	600	5.80	34.37	0.35	27.10	97	0.94
436	6.39	34.33	0.49	107							
519	6.00	34.36	0.42	100							
604	5.76	34.37	0.34	96							

ORCA; June 25, 1960; 1023 GCT; 30°49.5'N, 121°35'W; sounding, 2400 fm; wind, 290°, force 3; weather, over-cast; sea, rough; wire angle, 16°.

93.90

2	16.78	33.40	5.61	358	0	(16.78)	(33.40)	(5.61)	(24.36)	(358)	(0.00)
12	16.80	33.40	5.55	358	10	16.80	33.40	5.56	24.36	358	0.04
31	16.26	33.37	5.65	348	20	16.71	33.39	5.57	24.38	356	0.07
40	15.69	33.35	5.82	338	30	16.27	33.37	5.64	24.45	349	0.11
50	14.85	33.30	5.91	324	50	14.85	33.30	5.91	24.71	324	0.17
64	14.14	33.40	5.97	302	75	14.13	33.42	5.94	24.97	300	0.25
79	13.62	33.39	5.77	293	100	12.38	33.40	5.38	25.30	268	0.32
97	12.52	33.40	5.41	271	125	11.18	33.55	5.10	25.64	236	0.39
120	11.32	33.52	5.15	241	150	10.17	33.67	4.21	25.91	210	0.44
138	10.79	33.64	4.80	223	200	8.91	33.89	2.59	26.29	174	0.54
165	9.60	33.73	3.52	197	250	8.07	34.01	2.34	26.52	153	0.63
193	9.03	33.87	2.66	178	300	7.27	34.05	1.92	26.65	140	0.70
220	8.54	33.95	2.55	164	400	6.50	34.16	0.95	26.85	121	0.84
257	7.94	34.02	2.26	151	500	5.96	34.25	0.47	26.99	108	0.96
312	7.11	34.05	1.85	137							
380	6.55	34.13	1.13	124							
453	6.36	34.23	0.59	114							
531	5.66	34.25	0.42	104							



SIO

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6006

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

93.100

ORCA; June 25, 1960; 0457 GCT; 30°32'N, 122°12'W; sounding, 2350 fm; wind, 290°, force 4; weather, over-cast; sea, rough; wire angle, 10°.

1	16.70	33.39	5.50	357	0	(16.70)	(33.39)	(5.50)	(24.37)	(357)	(0.00)
11	16.70	33.40	5.52	356	10	16.70	33.40	5.52	24.38	356	0.04
31	15.40	33.26	5.80	338	20	16.59	33.39	5.55	24.39	354	0.07
40	14.96	33.27	5.88	328	30	15.47	33.27	5.77	24.55	339	0.11
55	14.45	33.26	6.00	318	50	14.60	33.27	5.96	24.75	321	0.17
70	14.09	33.25	5.97	312	75	13.96	33.25	5.94	24.87	309	0.25
94	13.86	33.43	5.73	294	100	14.10	33.53	5.68	25.05	292	0.33
114	13.82	33.62	5.43	280	125	12.87	33.54	5.27	25.31	268	0.40
132	12.24	33.48	5.19	260	150	11.07	33.48	4.91	25.60	239	0.46
151	11.01	33.48	4.89	238	200	9.03	33.83	3.80	26.22	181	0.57
179	9.50	33.71	4.21	197	250	8.07	33.98	2.99	26.48	156	0.66
214	8.76	33.90	3.48	171	300	7.34	34.04	2.33	26.64	141	0.73
241	8.24	33.96	3.17	160	400	6.37	34.16	1.00	26.87	119	0.87
290	7.42	34.03	2.45	143	500	5.80	34.24	0.47	27.01	106	0.99
343	6.92	34.09	1.77	132	600	(5.40)	(34.34)	(0.32)	(27.13)	(95)	(1.09)
425	6.18	34.19	0.78	115							
508	5.76	34.25	0.47	105							
592	5.42	34.33	0.32	96							

4  
938.299  
30

ORCA; June 14, 1960; 2139 GCT; 32°44'N, 117°25.5'W; sounding, 260 fm; wind, 270°, force 2; weather, over-cast; sea, slight; wire angle, 06°.

0	18.13	33.68	5.53	368							
15	15.09	33.62	5.99	305							
25	13.14	33.64	5.42	265							
35	12.12	33.58	4.75	251							
45	11.30	33.64	3.84	232							
50	11.08	33.64	3.69	228							
55	10.42	33.64	3.49	217							
60	10.22	33.68	3.49	211							
65	9.95	33.70	3.49	205							
70	9.87	33.71	3.52	203							
75	9.88	33.80	3.32	197							
80	9.72	33.84	3.06	191							
85	9.52	33.84	3.37	188							
90	9.44	33.86	3.18	185							
95	9.43	33.93	2.98	180							
104	9.31	33.95	2.73	176							
114	9.32	33.98	2.50	174							
123	9.25	34.04	2.34	169							

97.32

ORCA; June 28, 1960; 0014 GCT; 32°10'N, 117°15.5'W; sounding, 700 fm; wind, 270°, force 2; weather, cloudy; sea, slight; wire angle, 30°.

2	19.00	33.71	5.72	386	0	(19.00)	(33.71)	(5.72)	(24.06)	(386)	(0.00)
10	18.53	33.71	5.66	375	10	18.53	33.71	5.66	24.18	375	0.04
27	14.04	33.59	6.02	286	20	15.82	33.64	5.88	24.76	320	0.07
35	12.86	33.55	5.42	266	30	13.40	33.57	5.77	25.22	276	0.10
44	12.00	33.58	4.37	248	50	11.27	33.64	4.08	25.69	231	0.15
56	10.77	33.68	3.95	220	75	10.12	33.79	3.26	26.01	201	0.21
67	10.29	33.72	3.51	209	100	9.73	33.91	2.80	26.16	186	0.26
83	9.96	33.84	3.09	194	125	9.59	34.00	2.34	26.26	177	0.30
102	9.72	33.91	2.78	185	150	9.30	34.07	2.18	26.36	167	0.35
119	9.66	33.98	2.41	180	200	8.98	34.18	1.60	26.50	154	0.43
142	9.34	34.04	2.23	170	250	8.79	34.28	1.16	26.62	143	0.50
167	9.21	34.11	2.00	163	300	8.21	34.32	0.98	26.73	132	0.58
190	9.04	34.14	1.72	158	400	7.66	34.40	0.50	26.87	119	0.70
221	8.86	34.23	1.43	149	500	(6.47)	(34.36)		(27.01)	(106)	(0.82)
271	8.66	34.31	1.05	140							
333	7.85	34.33	0.88	127							
402	7.64	34.40	0.49	119							
479	6.70	34.36	0.40	109							

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a) Shakedown station.



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO  
CCOFI  
6006

ORCA; June 28, 1960; 1530 GCT; 31°09'N, 119°06'W; sounding, 1950 fm; wind, 310°, force 5; weather, overcast; sea, very rough; wire angle, 15°.

97.60

1	15.84	33.58	5.47	324	0	(15.84)	(33.58)	(5.47)	(24.71)	(324)	(0.00)
10	15.84	33.62	5.82	321	10	15.84	33.62	5.82	24.74	321	0.03
30	14.39	33.61	6.19	292	20	15.75	33.62	5.88	24.77	319	0.06
39	13.34	33.53	5.46	277	30	14.39	33.61	6.19	25.06	292	0.09
54	11.94	33.55	5.18	249	50	12.28	33.53	5.23	25.41	258	0.15
69	11.61	33.61	5.00	239	75	11.54	33.61	4.91	25.62	238	0.21
94	10.46	-	-	-	100	10.20	33.66	3.94	25.90	212	0.27
112	9.90	33.69	3.72	205	125	9.30	33.80	3.21	26.15	187	0.32
131	9.10	33.85	3.03	181	150	8.89	33.88	2.88	26.28	175	0.36
150	8.89	33.88	2.88	175	200	7.83	34.04	2.54	26.56	148	0.45
180	8.19	33.98	2.81	157	250	7.20	34.10	1.81	26.70	135	0.52
212	7.64	34.06	2.34	144	300	6.76	34.15	1.25	26.81	125	0.59
241	7.30	34.09	1.90	137	400	6.08	34.26	0.64	26.98	109	0.71
290	6.82	34.14	1.29	127	500	5.61	34.32	0.43	27.09	98	0.81
345	6.44	34.20	1.01	118	600	(5.22)	(34.38)	(0.35)	(27.18)	(90)	(0.91)
426	5.93	34.28	0.52	105							
510	5.58	34.33	0.42	97							
595	5.24	34.38	0.35	90							

BLACK DOUGLAS; June 15, 1960; 0359, 0437 GCT; 32°10'N, 117°11'W; sounding, 420 fm; wind, 180°, force 2; weather, overcast; sea, moderate; wire angle, 04°, 15°. a)

974.31<sup>9</sup><sub>2</sub>

0	18.65	33.78	5.39								
9	16.48	33.71	5.62								
15	15.40	33.68	5.85								
19	14.34	33.65	5.05								
24	13.08	33.62	5.76								
30	12.16	33.62	4.69								
35	11.82	33.60	4.54								
40	11.49	33.62	4.38								
50	11.42	33.62	4.33								
65	10.57	33.69	3.45								
75	10.00	33.77	3.28								
84	9.82	33.86	3.14								
100	9.60	33.89	2.96								
122	9.55	34.01	2.42								
147	9.20	34.05	2.31								
171	9.58	34.25	1.41								
203	9.44	34.34	1.07								
221	9.30	34.36	0.97								

ORCA; June 30, 1960; 0543 GCT; 30°40'N, 118°47.5'W; sounding, 1600 fm; wind, 310°, force 5; weather, partly cloudy; sea, rough; wire angle, 28°.

100.60

2	16.41	33.45	5.72	346	0	(16.41)	(33.45)	(5.72)	(24.48)	(346)	(0.00)
10	16.42	33.46	5.61	345	10	16.42	33.46	5.61	24.49	345	0.03
28	15.94	33.54	5.77	329	20	16.34	33.48	5.59	24.52	342	0.07
37	15.00	33.51	5.82	312	30	15.81	33.54	5.79	24.69	326	0.10
50	14.50	33.51	6.00	301	50	14.50	33.51	6.00	24.96	301	0.17
63	13.90	33.47	5.57	292	75	13.50	33.49	5.52	25.14	283	0.24
84	13.12	33.53	5.42	273	100	12.22	33.59	4.95	25.47	252	0.31
100	12.22	33.59	4.95	252	125	10.68	33.63	4.11	25.79	221	0.37
116	11.08	33.58	4.48	232	150	9.60	33.78	3.90	26.09	193	0.42
131	10.41	33.69	3.90	213	200	8.34	33.99	3.13	26.45	159	0.51
156	9.40	33.80	3.90	189	250	7.64	34.09	2.36	26.64	142	0.58
183	8.58	33.93	3.28	166	300	7.46	34.16	1.71	26.71	134	0.66
208	8.20	34.01	3.05	155	400	6.60	34.25	0.82	26.90	116	0.79
250	7.64	34.09	2.36	142	500	6.04	34.32	0.48	27.03	104	0.90
298	7.47	34.16	1.71	134							
371	6.79	34.24	0.90	119							
449	6.35	34.28	0.64	110							
529	5.86	34.34	0.41	100							

a) Shakedown station.

259



S10

CCOFI  
6006

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

100.90

ORCA; June 29, 1960; 1245 GCT; 29°41'N, 120°48.5'W; sounding, 2000+ fm; wind, 310°, force 5; weather, cloudy; sea, rough; wire angle, 32°.

2	17.13	33.37	5.53	368	0	(17.13)	(33.37)	(5.53)	(24.25)	(368)	(0.00)
10	17.13	33.37	5.36	368	10	17.13	33.37	5.36	24.25	368	0.04
27	17.12	33.37	5.46	367	20	17.13	33.37	5.40	24.25	368	0.07
35	17.04	33.36	5.57	366	30	17.10	33.37	5.51	24.26	367	0.11
47	16.70	33.50	5.49	349	50	16.50	33.49	5.50	24.50	345	0.18
59	15.94	33.48	5.61	333	75	14.60	33.43	5.74	24.87	309	0.26
79	14.40	33.42	5.75	306	100	13.61	33.42	5.57	25.07	290	0.34
95	13.82	33.40	5.57	296	125	13.12	33.49	5.43	25.22	276	0.41
110	13.50	33.46	5.60	285	150	12.08	33.60	5.10	25.51	249	0.48
127	13.07	33.49	5.39	275	200	9.33	33.77	3.62	26.13	189	0.59
152	11.93	33.61	5.08	245	250	8.23	34.04	2.73	26.51	153	0.68
181	10.00	33.67	4.00	208	300	7.66	34.09	2.15	26.64	141	0.76
206	9.18	33.82	3.54	184	400	6.59	34.20	0.97	26.87	119	0.89
248	8.25	34.04	2.75	154	500	6.02	34.32	0.50	27.03	104	1.01
294	7.72	34.09	2.21	142							
366	6.91	34.18	1.25	125							
441	6.29	34.25	0.74	112							
520	5.94	34.33	0.45	102							

103.60

BLACK DOUGLAS; May 29, 1960; 1439 GCT; 30°13'N, 118°25'W; sounding, 1760 fm; wind, 360°, force 5; weather, partly cloudy; sea, very rough; wire angle, 20°.

1	17.24	33.46	5.36	363	0	(17.24)	(33.46)	(5.36)	(24.30)	(363)	(0.00)
10	17.34	33.44	5.42	367	10	17.34	33.44	5.42	24.26	367	0.04
34	16.74	33.39	5.49	358	20	17.34	33.44	5.43	24.26	367	0.07
43	15.70	33.31	5.63	341	30	17.30	33.44	5.45	24.27	366	0.11
59	15.02	33.42	5.67	319	50	15.39	33.37	5.67	24.66	329	0.18
72	14.77	33.39	5.67	316	75	14.69	33.39	5.66	24.82	314	0.26
97	13.62	33.52	5.03	283	100	13.35	33.52	4.93	25.19	278	0.34
116	12.84	33.64	4.53	259	125	12.60	33.70	4.37	25.49	251	0.40
135	11.92	33.72	4.14	237	150	10.87	33.75	3.90	25.84	217	0.46
192	8.94	33.86	3.51	177	200	8.78	33.90	3.33	26.31	172	0.56
231	8.38	34.05	2.39	154	250	8.07	34.08	2.23	26.56	148	0.64
260	7.94	34.09	2.16	145	300	7.63	34.13	1.82	26.66	139	0.72
308	7.56	34.13	1.74	137	400	6.62	34.21	0.77	26.87	119	0.85
370	6.88	34.17	1.01	125	500	5.96	34.34	0.41	27.06	102	0.97
467	6.15	34.31	0.48	105	600	5.49	34.36	0.38	27.13	94	1.07
554	5.70	34.36	0.37	97							
628	5.34	34.36	0.39	92							

107.60

BLACK DOUGLAS; May 28, 1960; 1043 GCT; 29°32'N, 118°01.5'W; sounding, 1750 fm; wind, 300°, force 4; weather, cloudy; sea, rough; wire angle, 26°.

2	17.63	33.68	5.17	357	0	(17.63)	(33.68)	(5.17)	(24.37)	(357)	(0.00)
11	17.67	33.67	5.31	358	10	17.66	33.67	5.30	24.35	358	0.04
32	17.62	33.68	5.18	356	20	17.65	33.67	5.27	24.36	358	0.07
41	17.58	33.68	5.11	355	30	17.62	33.68	5.19	24.37	356	0.11
54	16.92	33.69	5.31	339	50	17.18	33.69	5.23	24.49	345	0.18
67	15.35	33.51	5.41	319	75	14.76	33.49	5.51	24.88	308	0.26
87	14.11	33.48	5.60	295	100	13.32	33.46	5.34	25.16	281	0.34
104	12.65	33.46	5.08	269	125	11.52	33.51	4.65	25.54	245	0.40
121	11.75	33.48	4.78	251	150	10.33	33.72	3.85	25.92	209	0.46
147	10.46	33.70	3.88	213	200	8.93	33.93	3.41	26.31	172	0.56
172	9.57	33.86	3.73	187							
212	8.70	33.94	3.27	168							
237	8.34	33.98	2.94	159							
424	6.62	34.25	0.80	116							
505	6.14	34.31	0.38	105							
576	5.81	34.33	0.52	100							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

SIO  
CCOF1  
6006

BLACK DOUGLAS; May 28, 1960; 1615 GCT; 29°11'N, 118°41'W; sounding, 1580 fm; wind, 320°, force 4; weather, cloudy; sea, very rough; wire angle, 20°.

107.70

0	17.70	33.58	5.35	365	0	17.70	33.58	5.35	24.28	365	0.00
10	17.73	33.57	5.37	367	10	17.73	33.57	5.37	24.26	367	0.04
33	17.48	33.66	5.39	354	20	17.67	33.60	5.38	24.30	363	0.07
43	17.30	33.68	5.38	349	30	17.53	33.65	5.39	24.38	356	0.11
57	16.12	33.59	5.60	329	50	16.55	33.63	5.53	24.59	336	0.18
72	15.73	33.68	5.59	314	75	15.48	33.64	5.58	24.85	311	0.26
96	13.83	33.60	5.12	281	100	13.30	33.61	4.77	25.28	270	0.33
115	12.96	33.69	4.35	258	125	12.48	33.74	4.12	25.54	245	0.40
134	11.80	33.77	3.93	231	150	11.08	33.85	3.53	25.89	213	0.46
162	10.60	33.89	3.31	201	200	9.39	33.97	2.96	26.28	175	0.56
192	9.52	33.94	3.16	180	250	8.68	34.13	2.10	26.51	153	0.64
230	9.04	34.11	2.25	161	300	8.06	34.25	1.29	26.70	135	0.72
258	8.52	34.14	2.01	150	400	7.71	34.36	0.61	26.84	122	0.85
307	8.02	34.26	1.23	134	500	6.53	34.35	0.36	26.99	107	0.97
372	7.90	34.34	0.81	126	600	5.60	34.33	0.34	27.09	98	1.08
468	6.97	34.38	0.35	110							
559	5.84	34.31	0.37	102							
634	5.42	34.36	0.31	93							

BLACK DOUGLAS; May 27, 1960; 0028 GCT; 28°56.5'N, 117°38'W; sounding, 1800 fm; wind, 350°, force 5; weather, cloudy; sea, rough; wire angle, 25°.

110.60

1	17.06	33.53	5.61	355	0	(17.06)	(33.53)	(5.61)	(24.39)	(355)	(0.00)
10	17.06	33.53	5.65	355	10	17.06	33.53	5.65	24.39	355	0.04
28	16.87	33.53	5.63	351	20	16.97	33.53	5.62	24.41	353	0.07
36	16.76	33.54	5.61	347	30	16.85	33.54	5.60	24.45	349	0.11
48	16.22	33.51	5.67	337	50	16.19	33.51	5.68	24.58	336	0.17
58	16.06	33.51	5.70	334	75	14.44	33.41	5.82	24.89	308	0.26
76	14.32	33.40	5.82	306	100	12.47	33.44	5.16	25.31	267	0.33
90	13.12	33.44	5.44	279	125	11.27	33.59	4.50	25.65	235	0.39
104	12.20	33.44	5.06	262	150	10.19	33.71	4.15	25.93	208	0.45
126	11.21	33.59	4.48	234	200	8.91	33.88	3.40	26.28	175	0.55
146	10.33	33.69	4.19	212	250	8.45	34.08	2.12	26.50	154	0.63
175	9.48	33.77	3.96	192	300	7.70	34.14	1.60	26.67	138	0.71
197	8.96	33.86	3.51	178	400	6.79	34.29	0.70	26.91	115	0.84
231	8.62	34.00	2.53	162	500	(6.05)	(34.32)		(27.03)	(104)	(0.95)
274	8.18	34.14	1.78	145							
346	6.94	34.14	1.31	128							
420	6.71	34.31	0.62	112							
487	6.18	34.32	0.53	105							

BLACK DOUGLAS; May 26, 1960; 1809 GCT; 28°36.5'N, 118°18'W; sounding, 1680 fm; wind, 330°, force 5; weather, partly cloudy; sea, rough; wire angle, 07°.

110.70

1	17.97	33.64	5.47	367	0	(17.97)	(33.64)	(5.47)	(24.26)	(367)	(0.00)
10	17.91	33.67	5.48	364	10	17.91	33.67	5.48	24.30	364	0.04
36	16.64	33.64	5.61	337	20	17.90	33.70	5.48	24.32	362	0.07
46	16.32	33.59	5.70	334	30	17.40	33.69	5.53	24.43	351	0.11
61	15.93	33.59	5.77	325	50	16.25	33.59	5.73	24.63	332	0.18
76	15.34	33.58	5.70	313	75	15.39	33.58	5.71	24.82	314	0.26
100	14.20	33.66	5.35	284	100	14.20	33.66	5.35	25.14	284	0.33
120	13.22	33.69	4.81	263	125	12.60	33.69	4.53	25.48	251	0.40
141	12.38	33.70	4.45	246	150	11.92	33.72	4.26	25.63	237	0.46
171	10.70	33.82	3.91	208	200	9.32	33.97	3.80	26.28	175	0.57
200	9.32	33.97	3.80	175	250	8.50	33.98	2.92	26.42	162	0.65
240	8.64	33.96	3.12	165	300	7.68	34.07	2.16	26.62	143	0.73
270	8.18	34.07	2.48	150	400	6.69	34.21	0.98	26.86	120	0.87
321	7.39	34.07	1.96	139	500	6.28	34.34	0.41	27.02	105	0.99
386	6.76	34.18	1.12	123	600	5.61	34.37	0.30	27.12	95	1.09
486	6.37	34.33	0.45	107							
577	5.72	34.35	0.32	97							
652	5.46	34.42	0.25	89							



SIO

CCOFI  
6006

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

113.50

BLACK DOUGLAS; May 25, 1960; 1518 GCT; 28°40.5'N, 116°41'W; sounding, 1800 fm; wind, 320°, force 5; weather, cloudy; sea, rough; wire angle, 15°.

0	17.26	33.69	5.56	347	0	17.26	33.69	5.56	24.47	347	0.00
10	17.25	33.72	5.61	345	10	17.25	33.72	5.61	24.49	345	0.03
34	16.02	33.64	5.67	323	20	17.24	33.73	5.62	24.50	344	0.07
43	14.67	33.62	5.37	297	30	17.22	33.73	5.64	24.51	343	0.10
59	13.57	33.59	4.85	277	50	14.15	33.60	5.15	25.10	287	0.17
73	12.28	33.66	3.96	248	75	12.13	33.67	3.86	25.56	244	0.23
98	10.96	33.81	3.25	213	100	10.90	33.82	3.22	25.89	212	0.29
117	10.81	33.95	2.72	201	125	10.61	33.95	2.76	26.05	197	0.34
137	10.04	33.96	2.87	187	150	9.85	34.05	2.47	26.25	177	0.39
165	9.68	34.12	2.09	169	200	9.12	34.17	1.90	26.47	157	0.48
194	9.20	34.15	1.96	160	250	8.92	34.35	1.00	26.64	141	0.55
234	8.89	34.31	1.28	143	300	8.51	34.38	0.78	26.73	132	0.62
263	8.94	34.38	0.88	139	400	7.74	34.41	0.39	26.87	119	0.75
311	8.39	34.38	0.75	131	500	6.69	34.40	0.25	27.01	106	0.87
375	7.98	34.41	0.45	122	600	6.00	34.45	0.18	27.14	94	0.97
472	6.96	34.40	0.29	109							
560	6.24	34.42	0.21	99							
632	5.84	34.48	0.19	89							

113.60

BLACK DOUGLAS; May 25, 1960; 2119 GCT; 28°19'N, 117°24'W; sounding, 1800 fm; wind, 310°, force 5; weather, overcast; sea, rough; wire angle, 27°.

3	17.41	33.69	5.54	351	0	(17.41)	(33.69)	(5.54)	(24.43)	(351)	(0.00)
12	17.41	33.70	5.59	350	10	17.41	33.70	5.58	24.44	350	0.04
34	16.57	33.59	5.58	339	20	16.98	33.61	5.59	24.47	347	0.07
43	15.66	33.56	5.61	321	30	16.70	33.59	5.58	24.53	342	0.10
56	14.74	33.56	5.68	303	50	15.39	33.57	5.63	24.81	315	0.17
70	14.19	33.57	5.57	290	75	14.10	33.58	5.53	25.09	288	0.25
91	12.78	33.59	4.90	262	100	11.98	33.65	4.68	25.57	243	0.31
109	11.80	33.71	4.59	235	125	10.89	33.85	3.75	25.92	209	0.37
126	10.84	33.85	3.76	209	150	9.69	33.83	3.64	26.11	191	0.42
153	9.55	33.83	3.61	189	200	8.69	34.02	2.79	26.43	161	0.51
179	8.95	33.95	3.11	171	250	9.48	34.34	1.18	26.55	150	0.59
212	8.64	34.05	2.68	159	300	8.30	34.27	1.21	26.68	137	0.66
239	9.60	34.34	1.16	152	400	7.35	34.37	0.60	26.90	117	0.80
282	8.56	34.27	1.33	141	500	6.46	34.37	0.43	27.02	105	0.91
339	7.86	34.29	0.93	130	600	(5.68)	(34.43)		(27.17)	(91)	(1.02)
430	7.10	34.39	0.53	112							
515	6.32	34.37	0.41	103							
588	5.74	34.42	0.27	92							

117.50

BLACK DOUGLAS; June 24, 1960; 0248 GCT; 28°10.5'N, 116°18'W; sounding, 2400 fm; wind, 320°, force 3; weather, cloudy; sea, rough; wire angle, 07°.

0	17.73	33.68	5.67	359	0	17.73	33.68	5.67	24.35	359	0.00
10	16.67	33.65	6.03	337	10	16.67	33.65	6.03	24.58	337	0.03
20	16.32	33.66	6.27	328	20	16.32	33.66	6.27	24.67	328	0.07
25	15.94	33.64	6.38	321	30	15.68	33.64	6.42	24.79	317	0.10
35	15.34	33.64	6.45	309	50	13.59	33.60	5.24	25.21	277	0.16
55	13.29	33.62	4.93	270	75	11.23	33.78	3.45	25.80	221	0.22
91	10.98	33.84	3.26	211	100	10.78	33.87	3.11	25.96	206	0.28
115	10.18	34.07	2.43	181	125	10.89	34.24	2.21	26.23	180	0.33
134	10.67	34.22	1.67	178	150	10.08	34.23	1.87	26.34	170	0.37
155	10.02	34.23	1.92	167	200	10.23	34.48	0.70	26.53	152	0.45
186	10.05	34.40	0.98	155	250	10.09	34.58	0.32	26.63	142	0.53
220	10.44	34.58	0.36	148	300	9.49	34.61	0.21	26.75	130	0.60
250	10.09	34.58	0.32	142	400	8.30	34.52	0.25	26.87	119	0.72
300	9.49	34.61	0.21	130	500	7.21	34.49	0.19	27.01	106	0.84
355	8.80	34.54	0.25	125	600	6.06	34.47	0.21	27.15	93	0.95
439	7.84	34.51	0.25	113							
526	6.94	34.49	0.17	102							
609	5.94	34.47	0.22	91							



OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

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6006

BLACK DOUGLAS; June 23, 1960; 0951 GCT; <sup>a)</sup> 27°08'N, 118°10.5'W; sounding, 1900 fm; wind, 310°, force 3; weather, overcast; sea, rough; wire angle, 13°.

11780

417	6.91	34.32 0	0.44	115
419	6.82	34.31 5	0.44	114
423	6.81	34.31 5	0.44	114
447	6.78	34.34 0	0.30	111
450	6.76	34.34 0	0.30	111
453	6.77	34.34 0	0.31	111
478	6.60	34.35 5	0.27	108
481	6.58	34.35 5	0.28	107
484	6.56	34.35 5	0.29	107
508	6.42	34.36 0	0.33	105
512	6.40	34.36 0	0.27	105
514	6.35	34.36 0	0.28	104
539	6.17	-	0.28	-
542	6.18	34.37 0	0.27	101
546	6.14	34.37 0	0.27	101
570	5.86	34.36 5	0.28	98
573	5.84	34.36 5	0.27	98
575	5.82	34.36 5	0.27	98

BLACK DOUGLAS; June 22, 1960; 1130, 1213 GCT; 27°33'N, 115°52.5'W; sounding, 2100 fm; wind, 280°, force 2; weather, fog; sea, moderate; wire angle, 03°, 04°.

12050

0	18.14	33.77	5.10	361	0	18.14	33.77	5.10	24.32	361	0.00
10	18.13	33.75	5.23	362	10	18.13	33.75	5.23	24.31	362	0.04
21	17.94	33.71	5.12	362	20	17.94	33.71	5.13	24.32	362	0.07
26	17.94	33.71	5.08	362	30	17.02	33.68	5.18	24.52	343	0.11
36	16.84	33.68	5.21	339	50	15.30	33.56	5.52	24.82	314	0.17
56	15.10	33.55	5.55	311	75	13.19	33.61	4.59	25.30	268	0.25
90	12.02	33.68	3.81	242	100	11.26	33.78	3.41	25.80	221	0.31
115	11.02	33.83	3.29	213	125	10.57	33.89	3.04	26.01	201	0.36
134	10.18	33.94	2.80	190	150	10.06	34.07	2.26	26.24	179	0.41
154	10.02	34.11	2.12	176	200	9.25	34.25	1.54	26.52	153	0.49
184	9.20	34.17	1.96	158	250	8.76	34.33	1.17	26.66	139	0.57
219	9.29	34.34	1.16	147	300	8.28	34.34	0.87	26.74	132	0.64
249	8.77	34.33	1.17	140	400	7.47	34.40	0.40	26.90	116	0.77
298	8.30	34.34	0.88	132	500	6.52	34.39	0.33	27.03	104	0.88
					600	5.79	34.42	0.28	27.14	93	0.99
355	7.91	34.40	0.54	122							
438	7.08	34.40	0.33	111							
523	6.31	34.40	0.33	101							
607	5.76	34.42	0.27	93							

BLACK DOUGLAS; June 23, 1960; 0407 GCT; 26°32.5'N, 117°49'W; sounding, 2000 fm; wind, 300°, force 2; weather, overcast; sea, rough; wire angle, 07°.

12080

1	18.57	33.71	5.30	376	0	(18.57)	(33.71)	(5.30)	(24.17)	(376)	(0.00)
11	18.14	33.71	5.32	366	10	18.17	33.71	5.30	24.26	367	0.04
21	17.96	33.71	5.37	362	20	17.97	33.71	5.36	24.31	362	0.07
26	17.81	33.72	5.31	358	30	17.64	33.71	5.32	24.40	354	0.11
37	16.84	33.66	5.42	340	50	16.21	33.64	5.43	24.68	327	0.18
57	15.86	33.64	5.45	320	75	14.34	33.63	5.19	25.07	290	0.25
91	13.15	33.64	4.76	265	100	12.71	33.68	4.50	25.45	254	0.32
116	11.86	33.74	3.98	235	125	11.46	33.82	3.60	25.79	221	0.38
136	11.10	33.91	3.19	208	150	10.84	34.05	2.60	26.08	194	0.44
156	10.73	34.09	2.36	189	200	9.93	34.18	1.86	26.35	169	0.53
187	10.18	34.14	2.02	176	250	8.37	34.13	2.05	26.56	149	0.61
221	9.56	34.25	1.63	158	300	7.84	34.22	1.45	26.70	135	0.68
251	8.34	34.13	2.06	148	400	7.03	34.33	0.64	26.90	116	0.81
301	7.83	34.22	1.42	135	500	6.38	34.36	0.29	27.02	105	0.93
355	7.27	34.28	0.93	123	600	5.71	34.39	0.29	27.13	94	1.04
441	6.84	34.36	0.44	111							
526	6.18	34.36	0.28	102							
611	5.63	34.40	0.30	93							

a) Test cast.



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6006

OBSERVED				COMPUTED	INTERPOLATED				COMPUTED		
Z	T	S	O <sub>2</sub>	δ <sub>T</sub>	Z	T	S	O <sub>2</sub>	σ <sub>t</sub>	δ <sub>T</sub>	ΔD
m	°C	‰	ml/L	cl/ton	m	°C	‰	ml/L	g/L	cl/ton	dyn m

123.42

BLACK DOUGLAS; June 20-21, 1960; 2314, 0006 GCT; 27°14'N, 114°59'W; sounding, 800 fm; wind, 300°, force 6; weather, partly cloudy; sea, very rough; wire angle, 33°, 34°.

2	18.02	33.77	5.16	359	0	(18.02)	(33.77)	(5.16)	(24.34)	(359)	(0.00)
10	17.96	33.77	5.22	357	10	17.96	33.77	5.22	24.36	357	0.04
30	16.90	33.73	5.55	336	20	17.83	33.77	5.30	24.40	354	0.07
38	16.07	33.67	5.63	323	30	16.90	33.73	5.55	24.58	336	0.11
51	14.86	33.60	5.47	302	50	14.93	33.60	5.48	24.93	303	0.17
63	13.71	33.68	5.04	273	75	12.80	33.73	4.43	25.47	252	0.24
83	12.28	33.75	4.12	241	100	11.38	33.79	3.93	25.79	222	0.30
99	11.41	33.79	3.94	223	125	10.47	33.90	2.79	26.04	198	0.35
115	10.76	33.83	3.12	208	150	11.06	34.39	1.29	26.31	173	0.40
					200	11.29	34.65	0.18	26.47	157	0.48
136	10.28	34.08	2.32	182	250	10.42	34.65	0.22	26.63	142	0.56
159	11.58	34.56	0.36	168	300	9.62	34.60	0.23	26.72	133	0.63
192	11.38	34.63	0.18	160	400	8.22	34.49	0.25	26.86	120	0.76
216	11.04	34.68	0.18	151	500	7.21	34.48	0.16	27.01	106	0.88
258	10.27	34.65	0.23	140							
398	8.24	34.49	0.25	121							
479	7.40	34.49	0.17	109							
551	6.72	34.47	0.14	101							

130.40

BLACK DOUGLAS; June 19, 1960; 0230 GCT; 26°09'N, 114°07'W; sounding, 1320 fm; wind, 320°, force 5; weather, partly cloudy; sea, rough; wire angle, 24°.

1	18.02	33.84	5.51	354	0	(18.02)	(33.84)	(5.51)	(24.40)	(354)	(0.00)
10	17.95	33.81	5.54	354	10	17.95	33.81	5.54	24.40	354	0.04
33	14.30	33.75	4.90	280	20	17.39	33.79	5.47	24.52	343	0.07
42	13.50	33.77	4.33	262	30	14.28	33.73	4.90	25.17	280	0.10
56	11.62	33.69	4.06	234	50	12.17	33.70	4.12	25.57	242	0.15
70	11.16	33.86	3.23	213	75	11.12	33.91	2.99	25.92	209	0.21
93	11.05	34.05	2.26	197	100	10.93	34.09	1.99	26.10	192	0.26
111	10.66	34.14	1.76	184	125	10.43	34.14	1.84	26.23	180	0.31
128	9.97	34.13	2.08	173	150	11.22	34.55	0.68	26.41	163	0.35
156	11.24	34.59	0.34	161	200	10.34	34.64	0.17	26.63	141	0.43
182	10.64	34.65	0.21	147	250	9.60	34.59	0.20	26.72	133	0.50
217	10.10	34.63	0.16	139	300	8.91	34.57	0.18	26.81	124	0.56
243	9.70	34.60	0.20	134	400	8.04	34.56	0.13	26.94	113	0.69
343	8.40	34.56	0.15	117	500	7.34	34.52	0.14	27.01	106	0.80
433	7.88	34.56	0.13	110	600	(6.20)	(34.50)		(27.16)	(92)	(0.90)
517	7.20	34.51	0.14	104							
587	6.37	34.50	0.16	94							

137.40

BLACK DOUGLAS; June 17, 1960; 0615 GCT; 25°00'N, 113°23.5'W; sounding, 1400 fm; wind, 270°, force 3; weather, partly cloudy; sea, slight; wire angle, 23°.

0	18.52	33.82	5.42	367	0	18.52	33.82	5.42	24.26	367	0.00
9	18.42	33.82	5.40	365	10	18.41	33.82	5.40	24.29	365	0.04
19	17.50	33.73	5.67	350	20	17.30	33.71	5.76	24.48	347	0.07
23	17.00	33.69	5.85	342	30	16.20	33.62	5.67	24.66	328	0.11
32	15.91	33.62	5.58	323	50	15.50	33.71	5.44	24.89	307	0.17
50	15.50	33.71	5.44	307	75	12.67	33.77	4.05	25.53	247	0.24
80	12.04	33.78	3.72	235	100	11.37	33.93	2.96	25.89	212	0.30
103	11.08	33.95	2.69	205	125	10.59	34.16	1.80	26.22	181	0.35
121	10.66	34.11	2.00	186	150	10.64	34.33	1.11	26.34	170	0.39
138	10.49	34.23	1.48	174	200	10.29	34.41	0.70	26.46	158	0.47
164	10.78	34.44	0.77	166	250	9.78	34.56	0.36	26.67	139	0.55
196	10.36	34.40	0.71	159	300	9.25	34.54	0.23	26.74	132	0.62
223	10.00	34.56	0.51	142	400	8.28	34.52	0.12	26.87	119	0.75
268	9.64	34.56	0.28	136	500	7.07	34.48	0.16	27.02	105	0.87
319	9.00	34.52	0.22	129							
398	8.30	34.52	0.12	119							
480	7.31	34.49	0.15	107							
563	6.36	34.46	0.18	97							



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
73.51-O	VI-16	0955	35°35.5'	121°21.5'	200	140°	1	overcast	rough	12.50	33.80
73.55-O	16	0725	35°28.0'	121°36.5'	630	140°	1	overcast	rough	13.31	33.26
73.60-O	16	0450	35°17.5'	121°57.5'	1175	320°	3	overcast	rough	13.24	33.50
77.50-O	16	1510	35°05.0'	120°53.0'	190	-	1	overcast	slight	13.04	33.82
77.55-O	16	1745	34°55.5'	121°13.0'	330	140°	2	overcast	moderate	13.60	33.73
77.65-O	16	2355	34°34.0'	121°55.0'	2000+	140°	2	cloudy	moderate	14.66	33.26
77.70-O	17	0235	34°24.0'	122°16.0'	2000+	140°	2	cloudy	moderate	14.22	33.40
80.52-O	18	0925	34°23.5'	120°35.5'	135	140°	3	overcast	rough	14.24	33.62
80.55-O	18	0705	34°18.0'	120°47.5'	440	-	1	overcast	rough	13.76	33.58
80.65-O	18	0205	34°00.5'	121°18.5'	2000	-	1	cloudy	rough	14.39	33.51
80.70-O	17	2320	33°49.5'	121°41.0'	2000	-	1	cloudy	rough	14.35	33.22
80.75-O	17	2045	33°39.0'	122°04.0'	2000	-	1	cloudy	moderate	15.26	33.15
80.80-O	17	1825	33°29.5'	122°24.5'	2000	-	1	overcast	slight	15.28	33.18
80.85-O	17	1535	33°19.5'	122°45.5'	2400	-	1	overcast	slight	15.64	33.34
83.40-O	18	1815	34°14.0'	119°21.5'	12	320°	2	overcast	moderate	14.55	33.73
83.51-O	19	0015	33°52.0'	120°07.5'	60	320°	5	partly cloudy	rough	14.24	33.66
83.55-O	19	0215	33°43.0'	120°23.5'	670	320°	6	cloudy	very rough	15.61	33.77
83.65-O	19	0835	33°21.0'	121°04.0'	650	320°	5	cloudy	very rough	15.12	33.48
83.70-O	19	1105	33°09.5'	121°24.0'	800	320°	5	overcast	very rough	15.00	33.53

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



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
83.75-O	VI-19	1345	32°58.5'	121°43.0'	2000+	320°	6	overcast	high	14.76	33.24
83.80-O	19	1700	32°47.5'	122°01.5'	2000+	330°	6	overcast	high	15.91	33.37
83.85-O	19	2020	32°36.5'	122°21.0'	2000+	330°	6	overcast	high	15.57	33.30
83.90-O	19	2315	32°25.5'	122°40.0'	2000+	320°	6	overcast	high	16.60	33.35
87.35-O	21	1245	33°49.5'	118°48.0'	355	-	1	clear	moderate	17.44	33.66
87.45-O	21	0710	33°30.0'	119°19.5'	500	320°	3	clear	moderate	15.66	33.71
87.50-O	21	0435	33°20.0'	120°39.5'	40	320°	3	clear	moderate	15.06	33.77
87.55-O	21	0015	33°01.0'	120°00.0'	260	320°	4	clear	rough	15.30	33.78
87.65-O	20	1715	32°48.0'	120°51.0'	2100	320°	5	cloudy	high	14.62	33.35
87.70-O	20	1425	32°39.0'	121°09.0'	2000+	320°	6	cloudy	high	14.78	33.49
87.75-O	20	1120	32°29.5'	121°26.5'	2000+	320°	6	partly cloudy	high	15.02	33.51
87.80-O	20	0835	32°19.0'	121°46.5'	2000+	320°	7	cloudy	high	15.64	33.33
87.85-O	20	0610	32°08.5'	122°06.5'	2000	320°	6	cloudy	high	16.30	33.39
87.90-O	20	0325	31°58.5'	122°25.0'	2000+	310°	6	cloudy	high	16.75	33.33
90.65-O	24	0549	32°14.0'	120°18.0'	1900	290°	3	overcast	rough	15.24	33.57
90.75-O	24	1120	31°54.0'	120°56.5'	2400	290°	3	overcast	moderate	16.27	33.53
90.85-O	24	1640	31°33.5'	121°36.5'	2000+	290°	3	overcast	moderate	16.68	33.39
90.95-O	24	2158	31°12.0'	122°16.5'	2300	300°	3	overcast	rough	16.72	33.42
93.35-O	26	1745	32°38.0'	117°52.0'	350	310°	2	overcast	moderate	18.14	33.68

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
93.45-O	VI-26	1155	32°14.0'	118°35.0'	600	310°	4	overcast	rough	16.93	33.68
93.55-O	26	0621	31°53.0'	119°10.5'	1000	310°	4	overcast	rough	16.44	33.68
93.65-O	26	0045	31°35.0'	119°51.0'	2050	320°	3	overcast	rough	15.44	33.58
93.75-O	25	1840	31°17.5'	120°31.0'	2200	290°	3	overcast	moderate	15.82	33.45
93.85-O	25	1320	30°59.0'	121°14.0'	2000+	290°	3	overcast	rough	16.27	33.44
93.95-O	25	0745	30°41.5'	121°54.0'	2400	290°	4	overcast	rough	16.61	33.37
97.30-O	27	2245	32°15.0'	117°08.0'	30	270°	1	partly cloudy	slight	11.08	33.75
97.35-O	28	0205	32°04.5'	117°28.5'	650	270°	3	cloudy	moderate	18.26	33.69
97.40-O	28	0445	31°53.0'	117°48.0'	1000	270°	3	cloudy	moderate	18.03	33.69
97.45-O	28	0715	31°42.0'	118°07.0'	600	270°	3	cloudy	moderate	17.10	33.68
97.50-O	28	0955	31°31.0'	118°26.5'	1200	270°	3	cloudy	moderate	17.50	33.70
97.55-O	28	1235	31°20.0'	118°46.0'	500	310°	4	overcast	rough	16.82	33.57
97.65-O	28	1845	30°56.0'	119°28.5'	2100	310°	4	overcast	very rough	15.71	33.65
97.70-O	28	2115	30°47.0'	119°49.0'	2100	310°	4	overcast	very rough	-	33.51
97.75-O	28	2358	30°41.0'	120°09.5'	2150	310°	4	overcast	very rough	16.77	33.45
97.80-O	29	0245	30°35.0'	120°30.5'	2200	310°	4	overcast	rough	16.64	33.42
97.85-O	29	0515	30°24.5'	120°51.0'	2000+	310°	4	partly cloudy	rough	16.36	33.69
97.90-O	29	0755	30°15.0'	120°08.5'	2000+	310°	4	partly cloudy	rough	16.58	33.39
100.29-O	30	2312	31°42.0'	116°43.5'	100	310°	3	partly cloudy	moderate	10.78	33.79

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
100.30-O	VI-30	2215	31°40.5'	116°46.5'	250	310°	3	partly cloudy	moderate	13.46	33.75
100.35-O	30	1905	31°26.5'	117°08.5'	1000	310°	3	partly cloudy	moderate	17.22	33.63
100.40-O	30	1635	31°16.0'	117°27.0'	1100	310°	2	partly cloudy	moderate	16.96	33.64
100.45-O	30	1415	31°07.0'	117°47.5'	900	310°	5	partly cloudy	rough	17.02	33.64
100.50-O	30	1140	30°57.0'	118°07.0'	980	310°	5	partly cloudy	rough	17.13	33.65
100.55-O	30	0855	30°49.0'	118°27.0'	1000	310°	5	partly cloudy	rough	16.28	33.48
100.65-O	30	0305	30°31.5'	119°05.0'	1900	310°	5	cloudy	rough	17.32	33.46
100.70-O	30	0000	30°20.0'	119°26.5'	1900	310°	6	cloudy	very rough	17.56	33.46
100.75-O	29	2110	30°09.5'	119°47.0'	1900	310°	5	cloudy	rough	16.85	33.38
100.80-O	29	1825	29°59.0'	120°06.0'	1900	310°	5	cloudy	rough	16.53	33.46
100.85-O	29	1547	29°50.0'	120°24.0'	2000+	310°	5	cloudy	rough	16.32	33.38
103.40-B	30	0320	30°46.0'	117°04.5'	1100	330°	4	partly cloudy	very rough	17.26	33.66
103.45-B	30	0040	30°36.0'	117°24.0'	950	340°	5	partly cloudy	rough	17.12	33.66
103.50-B	29	2135	30°33.5'	117°47.0'	1350	330°	5	partly cloudy	rough	17.45	33.71
103.55-B	29	1925	30°28.5'	118°01.0'	1580	330°	5	partly cloudy	rough	17.46	33.61
103.65-B	29	1100	30°00.0'	118°47.0'	2000	320°	6	partly cloudy	very rough	17.67	33.62
103.70-B	29	0735	29°49.0'	119°03.0'	1840	340°	6	clear	very rough	17.24	33.40
103.75-B	29	0455	29°38.5'	119°24.0'	1640	330°	6	partly cloudy	very rough	17.72	33.65
103.80-B	29	0225	29°26.5'	119°44.0'	2000	330°	5	partly cloudy	very rough	17.92	33.67

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
107.32-B	VI-27	2005	30°26.0'	116°11.0'	225	320°	3	overcast	rough	14.66	33.69
107.35-B	27	2150	30°21.5'	116°22.5'	900	320°	3	overcast	moderate	16.44	33.68
107.40-B	28	0010	30°11.0'	116°42.0'	1550	300°	4	cloudy	rough	16.10	33.70
107.45-B	28	0240	30°01.5'	117°02.0'	780	320°	4	cloudy	rough	17.09	33.68
107.50-B	28	0510	29°50.5'	117°22.0'	1080	270°	4	overcast	rough	17.16	33.67
107.55-B	28	0730	29°41.0'	117°42.0'	1690	300°	5	cloudy	rough	17.28	33.68
107.65-B	28	1335	29°21.0'	118°21.0'	1650	320°	5	overcast	rough	17.62	33.61
107.75-B	28	1845	29°01.5'	119°01.0'	1840	330°	5	cloudy	rough	18.36	33.79
107.80-B	28	2100	28°51.5'	119°20.5'	2000	340°	5	cloudy	rough	18.38	33.73
110.33-B	27	1535	29°52.5'	115°52.0'	40	320°	3	fog	rough	14.94	33.65
110.35-B	27	1435	29°49.5'	116°00.0'	400	330°	4	overcast	moderate	16.34	33.68
110.40-B	27	1125	29°38.0'	116°21.0'	1200	330°	6	partly cloudy	rough	17.05	33.60
110.45-B	27	0850	29°26.5'	116°39.5'	1200	320°	6	partly cloudy	rough	17.16	33.63
110.50-B	27	0605	29°16.5'	116°59.0'	1700	330°	5	partly cloudy	rough	17.63	33.62
110.55-B	27	0330	29°06.5'	117°19.0'	2000	330°	4	cloudy	very rough	17.20	33.62
110.65-B	26	2055	28°46.0'	117°59.0'	2000	360°	5	cloudy	rough	17.99	33.64
110.75-B	26	1420	28°26.0'	118°37.0'	2000	320°	5	overcast	rough	18.21	33.76
110.80-B	26	1140	28°16.5'	118°57.5'	2000	340°	5	overcast	rough	18.13	33.71
113.30-B	25	0335	29°22.0'	115°18.0'	30	300°	5	clear	rough	13.89	33.84

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



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
113.35-B	VI-25	0610	29°11.5'	115°38.0'	600	320°	6	cloudy	very rough	17.06	33.69
113.40-B	25	0850	29°01.5'	115°58.0'	900	320°	5	cloudy	rough	16.90	33.69
113.45-B	25	1140	28°51.5'	116°20.0'	1250	320°	5	overcast	very rough	17.23	33.67
113.55-B	25	1815	28°29.0'	117°02.0'	1800	320°	5	overcast	rough	18.10	33.78
113.65-B	25	2325	28°12.0'	117°36.0'	1900	340°	5	overcast	rough	17.21	33.55
113.70-B	26	0150	28°02.0'	117°55.0'	1650	320°	5	cloudy	very rough	17.57	33.53
113.75-B	26	0415	27°52.5'	118°14.0'	1780	320°	4	cloudy	rough	17.58	33.65
113.80-B	26	0640	27°42.0'	118°33.5'	1880	360°	5	cloudy	very rough	18.22	33.77
117.26-B	24	2255	28°56.0'	114°41.5'	43	300°	3	overcast	slight	14.84	33.78
117.30-B	24	2055	28°48.0'	114°56.5'	57	280°	3	cloudy	slight	15.78	33.73
117.35-B	24	1845	28°38.0'	115°16.0'	108	280°	2	overcast	slight	12.34	33.74
117.40-B	24	0845	28°28.0'	115°35.5'	500	330°	4	cloudy	rough	17.03	33.70
117.45-B	24	0600	28°18.0'	115°56.0'	1800	320°	4	cloudy	rough	16.61	33.63
117.55-B	23	2320	28°00.0'	116°37.0'	2150	320°	3	cloudy	moderate	18.05	33.69
117.60-B	23	2050	27°50.0'	116°55.0'	2000	330°	3	cloudy	moderate	18.35	33.85
117.65-B	23	1820	27°37.5'	117°13.5'	1880	280°	3	cloudy	moderate	16.93	33.71
117.70-B	23	1550	27°28.0'	117°32.5'	2000	280°	2	cloudy	moderate	17.58	33.73
117.75-B	23	1305	27°17.0'	117°52.0'	2000	320°	3	cloudy	rough	18.04	33.77
118.39-B	24	1045	28°18.0'	115°23.5'	120	330°	3	cloudy	moderate	14.98	33.70

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
119.33-B	VI-21	1900	28°19.0'	114°53.0'	62	320°	2	partly cloudy	moderate	18.04	33.87
120.25-B	21	1505	28°22.5'	114°15.0'	31	280°	2	partly cloudy	rough	16.02	33.78
120.30-B	21	1240	28°13.0'	114°34.0'	51	300°	3	overcast	moderate	17.58	33.84
120.35-B	21	1000	28°03.0'	114°54.0'	45	calm		clear	slight	17.90	33.86
120.40-B	22	0505	27°56.5'	115°14.0'	21	270°	3	missing	moderate	-	33.84
120.45-B	22	0735	27°43.0'	115°33.0'	1140	270°	2	fog	moderate	18.20	33.78
120.55-B	22	1450	27°23.0'	116°12.0'	2000	320°	2	overcast	rough	17.98	33.77
120.60-B	22	1720	27°13.0'	116°30.5'	2000	320°	2	overcast	moderate	18.10	33.77
120.65-B	22	1950	27°04.0'	116°49.0'	2000+	320°	2	overcast	moderate	18.32	33.78
120.70-B	22	2235	26°53.0'	117°09.0'	1650	320°	2	cloudy	moderate	18.20	33.77
120.75-B	23	0115	26°42.5'	117°30.0'	2000	280°	2	cloudy	rough	18.26	33.73
123.37-B	21	0320	27°24.0'	114°40.0'	39	270°	3	clear	moderate	12.64	34.04
123.45-B	20	1910	27°08.0'	115°11.5'	2200	320°	6	partly cloudy	very rough	18.05	33.75
123.50-B	20	1600	26°58.0'	115°31.0'	1800	320°	7	partly cloudy	high	17.88	33.77
123.55-B	20	1245	26°48.5'	115°49.5'	1900	320°	6	cloudy	high	17.80	33.73
123.60-B	20	0950	26°38.5'	116°09.0'	2000	320°	4	partly cloudy	very rough	18.00	33.73
127.34-B	19	1435	26°55.0'	114°06.5'	44	280°	3	cloudy	moderate	14.11	33.98
127.40-B	19	1720	26°43.5'	114°29.0'	1700	270°	6	cloudy	very rough	17.96	33.86
127.45-B	19	1925	26°33.0'	114°48.5'	1850	300°	6	cloudy	very rough	17.00	33.75

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
127.50-B	VI-20	0005	26°23.0'	115°08.0'	1700	320°	6	cloudy	very rough	18.48	33.80
127.55-B	20	0225	26°13.5'	115°27.0'	2000	320°	7	partly cloudy	very rough	18.67	33.85
127.60-B	20	0450	26°03.5'	115°46.5'	1880	320°	6	partly cloudy	very rough	18.55	33.82
130.30-B	19	0900	26°29.0'	113°29.0'	40	270°	2	clear	moderate	15.26	34.04
130.35-B	19	0620	26°19.0'	113°48.0'	230	300°	5	missing	rough	16.42	33.85
130.45-B	18	2205	25°58.5'	114°26.5'	1850	320°	4	cloudy	moderate	18.16	33.81
130.50-B	18	1940	25°49.0'	114°45.0'	1820	320°	3	overcast	moderate	17.84	33.80
130.55-B	18	1720	25°39.0'	115°04.0'	1900	320°	4	cloudy	moderate	19.02	34.14
130.60-B	18	1445	25°29.0'	115°24.0'	1800	270°	3	cloudy	moderate	19.36	34.02
133.25-B	17	1935	26°04.5'	112°48.0'	40	270°	3	cloudy	slight	15.46	34.07
133.30-B	17	2245	25°54.5'	113°07.5'	100	280°	4	partly cloudy	moderate	17.02	33.90
133.35-B	18	0120	25°44.5'	113°26.5'	400	310°	4	clear	moderate	17.38	33.78
133.40-B	18	0425	25°34.5'	113°45.5'	1460	270°	4	clear	moderate	18.58	33.90
134.36-B	18	0205	28°38.0'	113°25.0'	60	310°	4	clear	moderate	18.25	33.84
137.23-B	17	1510	25°34.0'	112°19.0'	40	270°	3	overcast	slight	17.95	34.00
137.30-B	17	1140	25°20.0'	112°46.0'	125	300°	2	cloudy	slight	17.76	33.88
137.35-B	17	0915	25°10.0'	113°04.5'	420	320°	3	partly cloudy	slight	18.40	33.86

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



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