

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

# data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6307  
10 July - 8 August 1963

and

CCOFI Cruise 6309  
3 - 29 September 1963

SIO Reference 64-18  
25 May 1964



INSERT FOR CCOFI CRUISE 6307 (SIO Ref. 64-18)

The CCOFI cruise-numbering and station-numbering system has been slightly revised in order to make it more consistent with the system used by the National Oceanographic Data Center.

Cruise numbers. Hyphenated numbers indicating quarterly cruises (extending over a period of more than one month) will no longer be used. A four-digit number will appear instead, where the first two digits represent the year, and the last two digits the month in which the first data were collected.

Station numbers. Superscript numbers will not be used any longer, either for indication of the station line (before the decimal point) nor the station position along that line (after the decimal point). (Each station number represents, really, an area of about twelve by four nautical miles.) The exact position will be expressed by latitude and longitude.

UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6307  
10 July - 8 August 1963

and

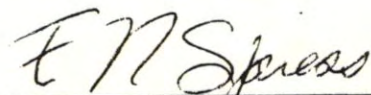
CCOFI Cruise 6309  
3 - 29 September 1963

Sponsored by

Marine Research Committee

SIO Reference 64-18  
25 May 1964

Approved for distribution:

  
F. N. Spiess, Director

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FIGURES

1. CCOFI Cruise <sup>6401</sup>~~6307~~, station positions
2. Horizontal distribution of dynamic height anomaly (0 over 500 d-bar)
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4. Horizontal distribution of temperature at 10 meters
5. Horizontal distribution of salinity at 10 meters
6. Horizontal distribution of thermosteric anomaly at 10 meters
7. Horizontal distribution of depth to the thermocline
8. Horizontal distribution of temperature at 200 meters
9. Horizontal distribution of salinity at 200 meters

*Sigs for close grid area*  
1a

*FIGURES 'FOR' CLOSE 'GRID' AREA*

*19  
4  
---  
76  
18  
---  
94*

*47  
2) 94  
8  
---  
14*



6401

*Insert rough draft of Intro.*

### INTRODUCTION

The data presented in this report were collected by the RV Black Douglas of the Bureau of Commercial Fisheries ~~on Cruise 6307~~ and by the ~~RV Horizon~~ and the RV Alexander Agassiz of the Scripps Institution of Oceanography on Cruise ~~6309~~<sup>6401</sup> 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. The cruises preceding this one in the series are ~~6301-2~~ (SIO Ref. 64-2) and 6304 and 6306 (SIO Ref. 64-13).

*6307 and 6309 (SIO Ref 64-18) and 6310, 6311 and 6311 (El Golfo) (SIO Ref 65-1).*

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. *omit*  
 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> 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 values recorded "have a reproducibility of  $\pm 0.004\%$  salinity at the 95 per cent 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 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

<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.



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 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, two special notations<sup>ok</sup> 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 the following notation.

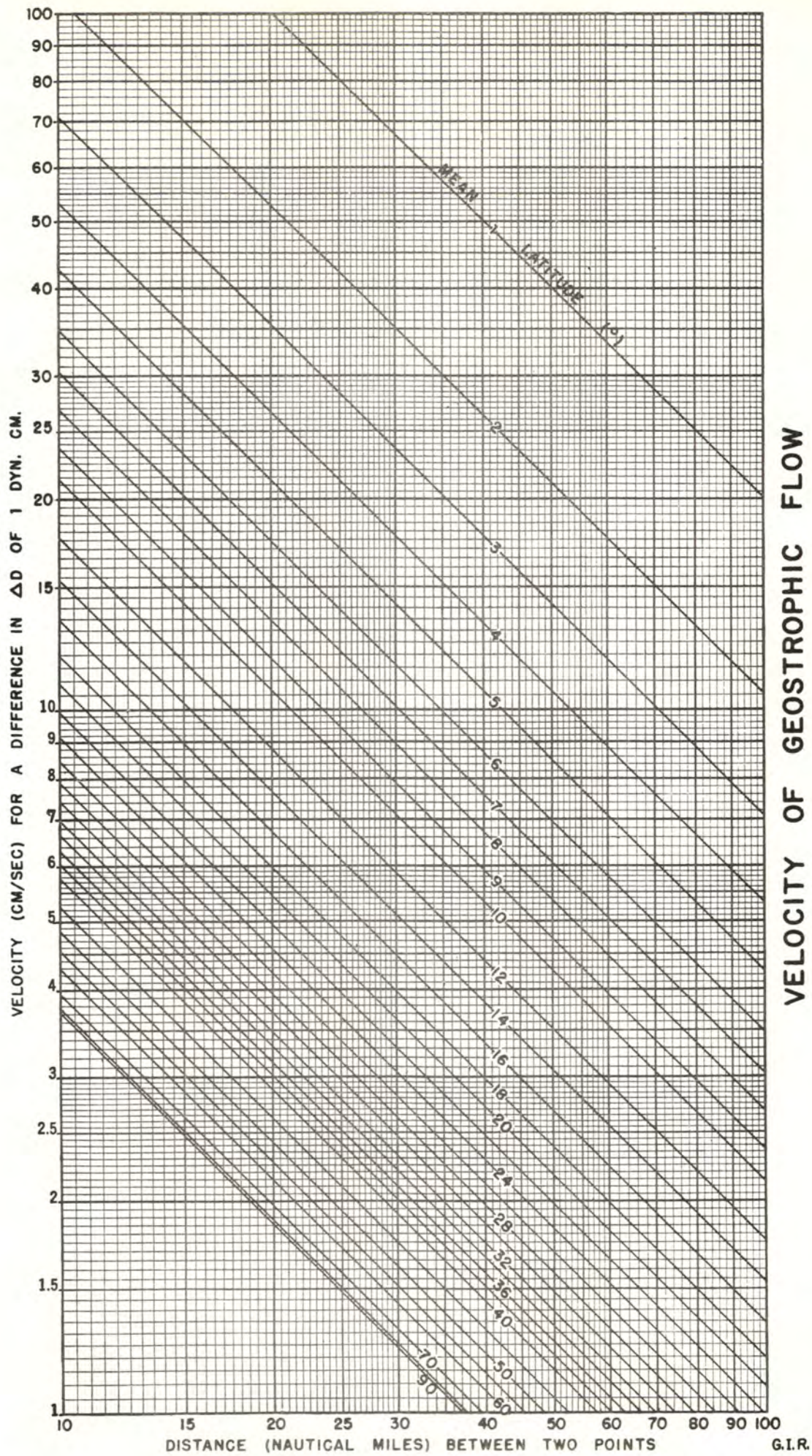
u: uncertain value (value may be correct; occasionally it can influence the drawing of the property curve).

FORMAT

*were collected in part by personnel of and processed completely*  
These data ~~are typed~~ in the format of the University of California Press publication, Oceanic Observations of the Pacific.

~~by the~~ (DE PG, MLR) Scripps Inst of Ocean. They are typed.  
by the Data Collection and Processing Group







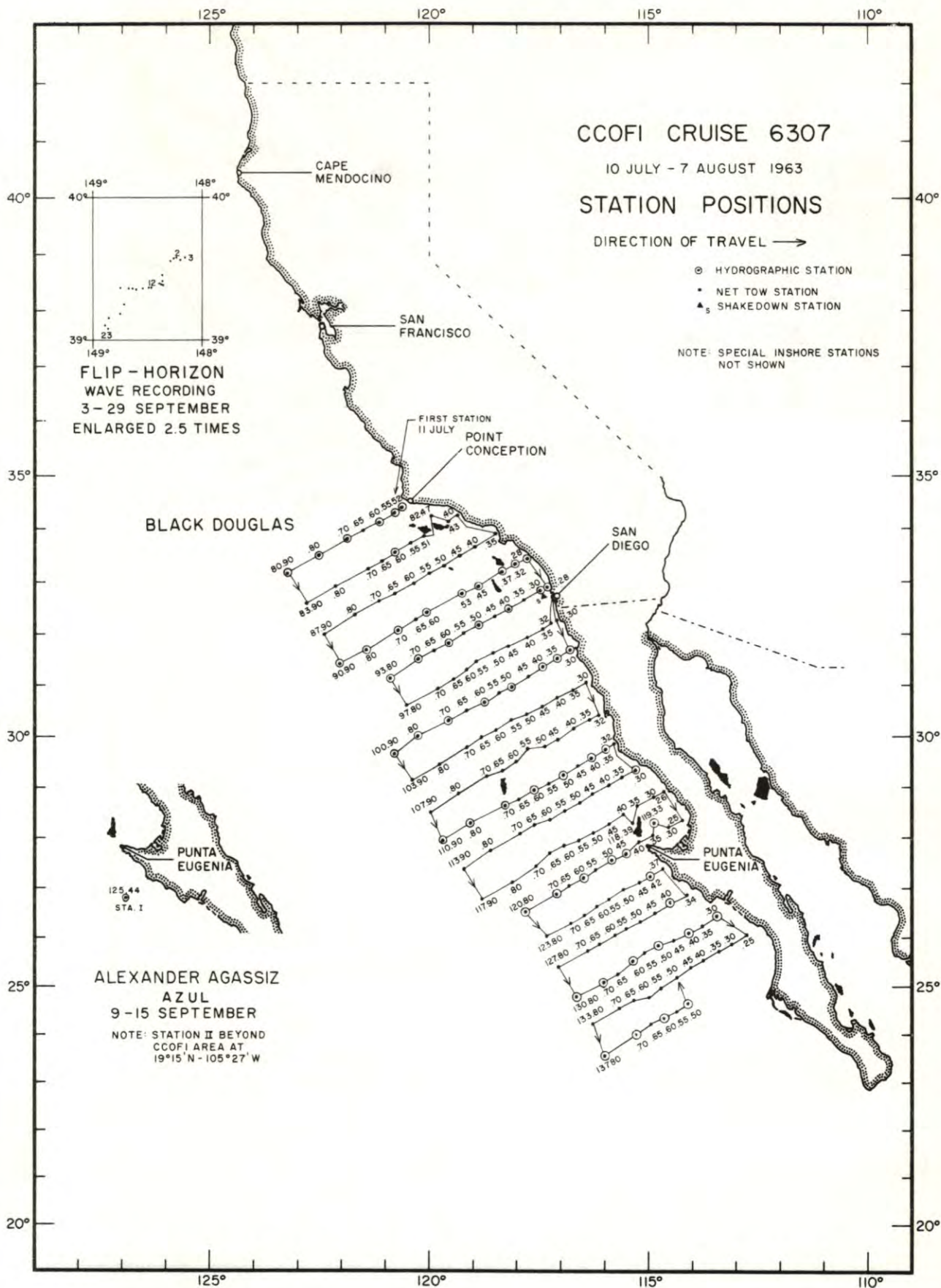


FIGURE 1

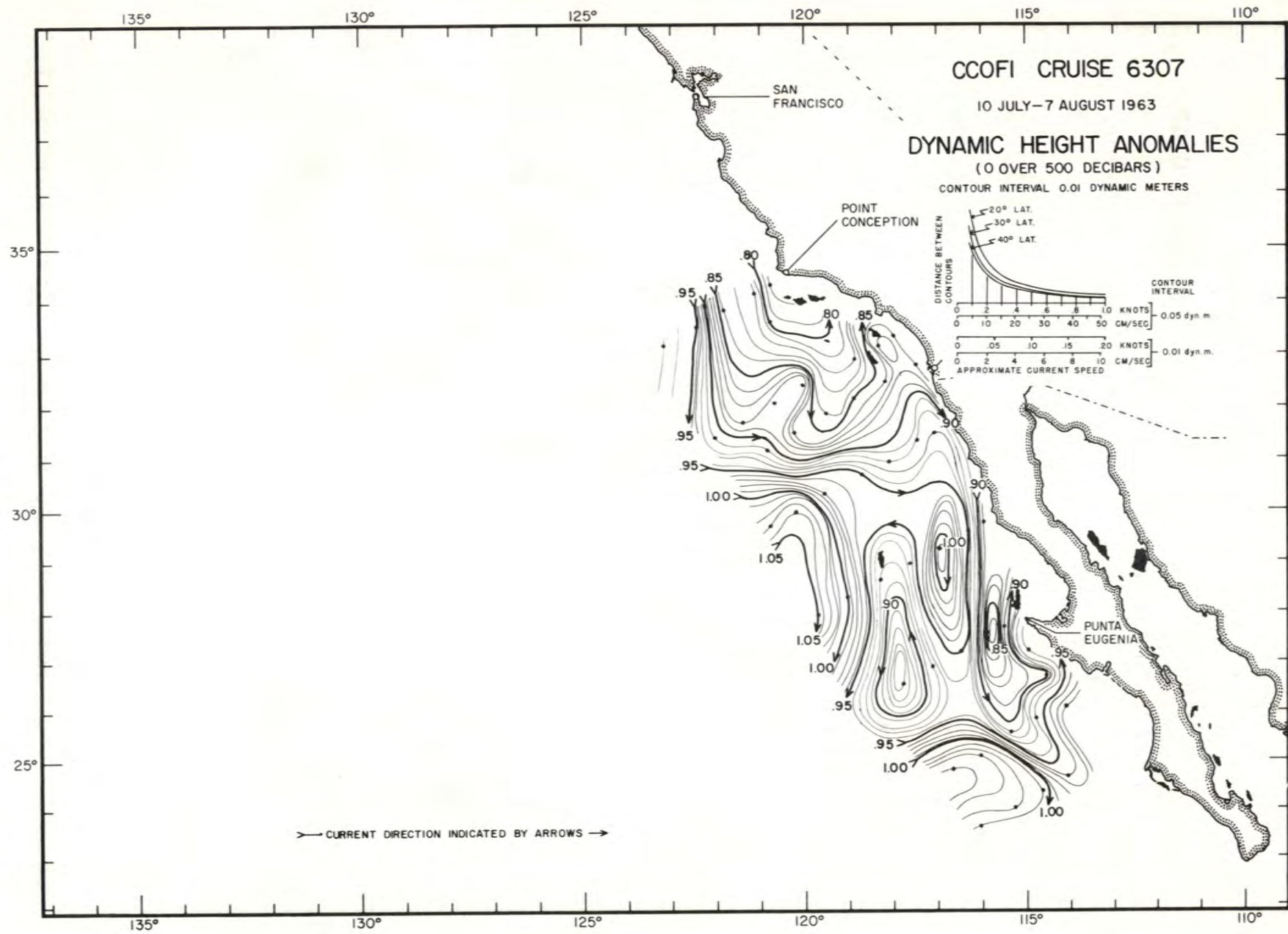


FIGURE 2



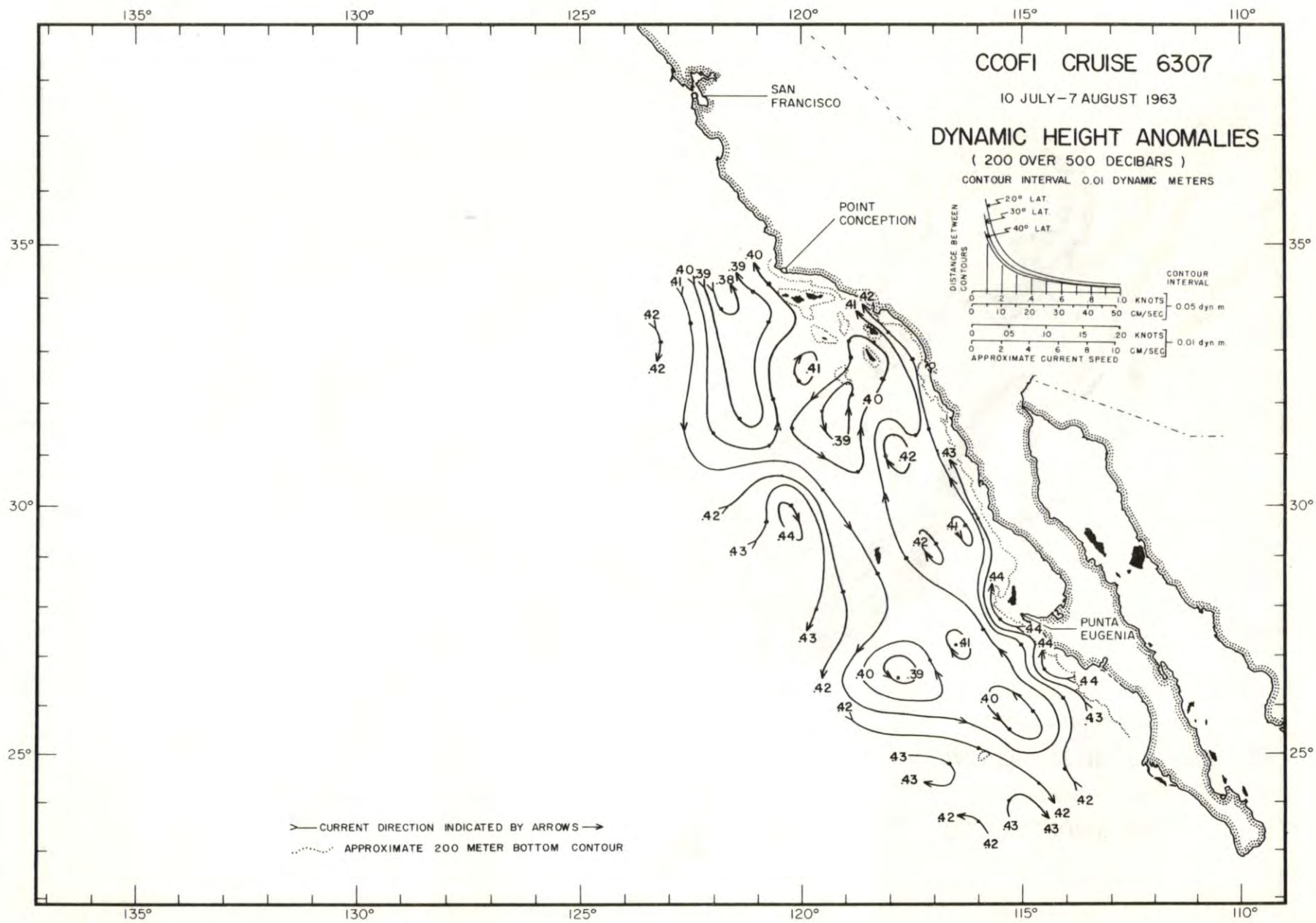


FIGURE 3

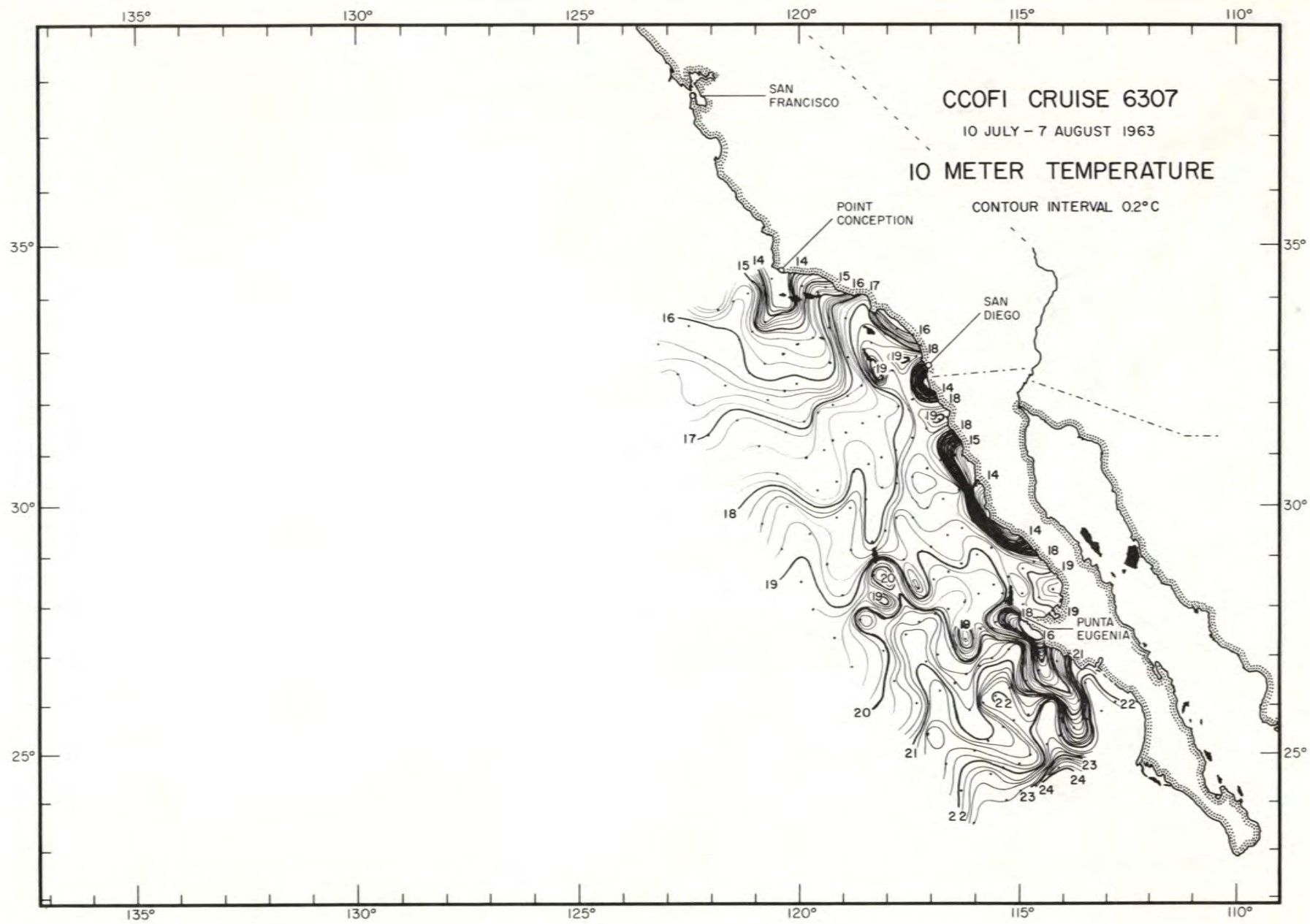


FIGURE 4



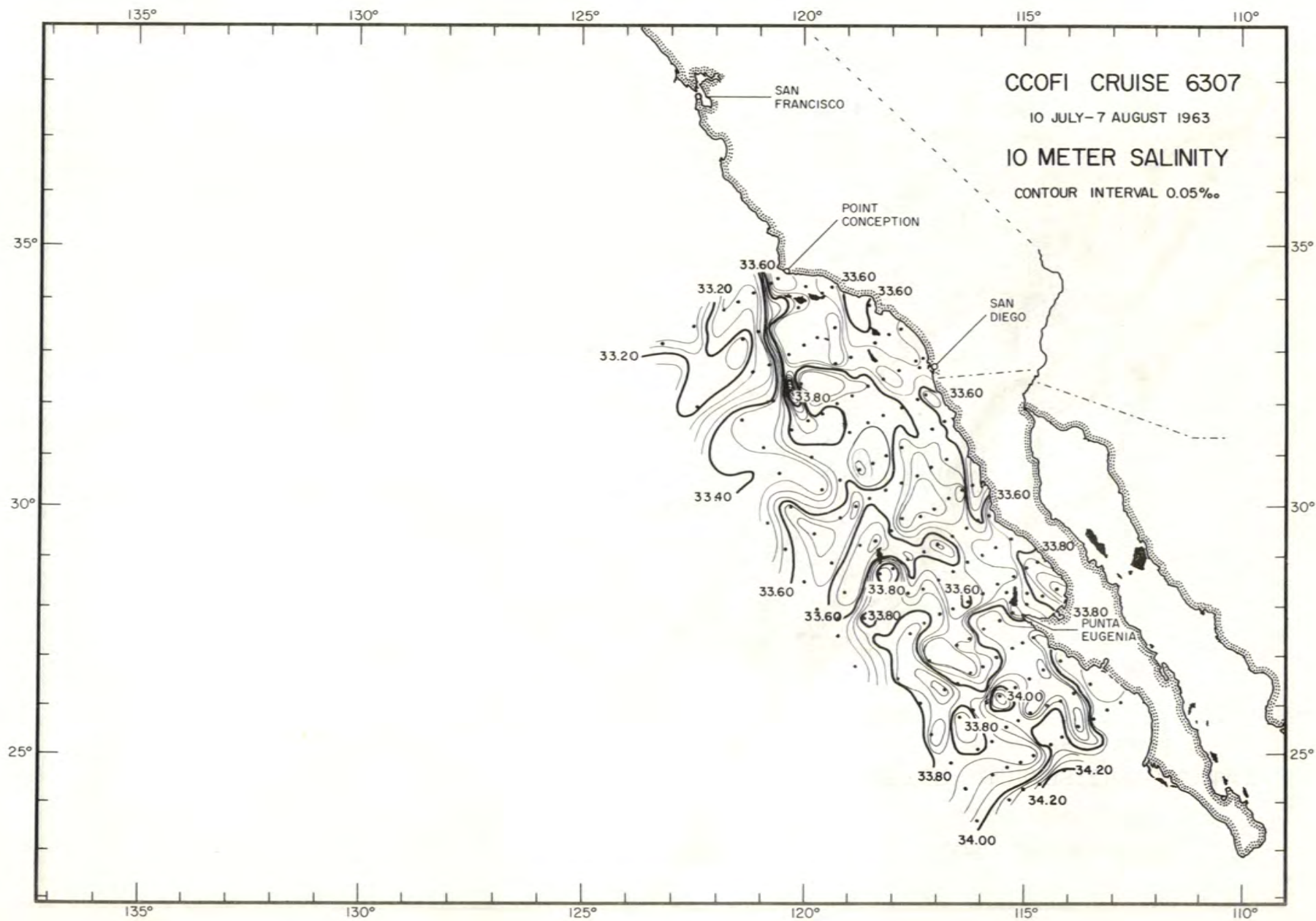


FIGURE 5

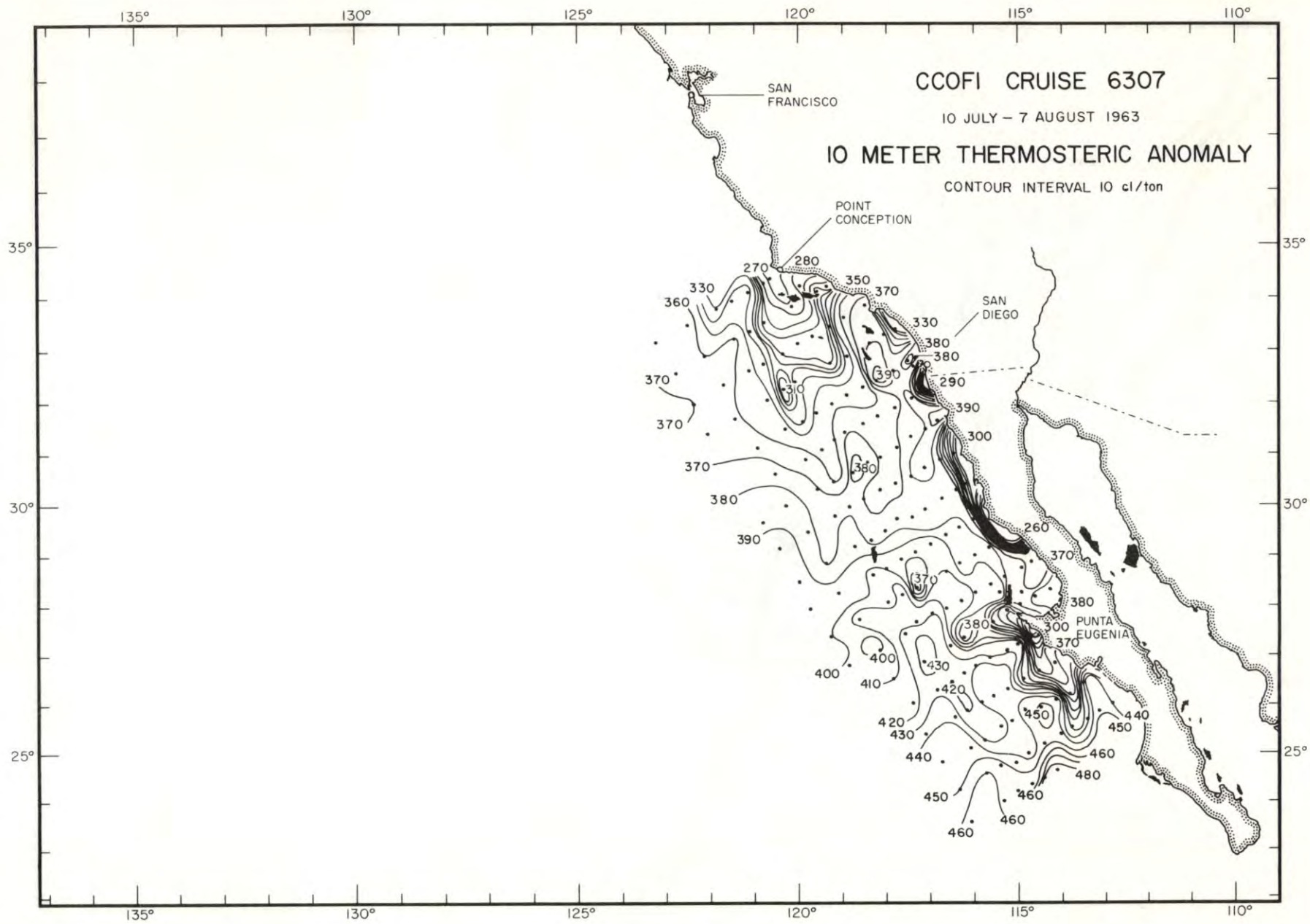


FIGURE 6



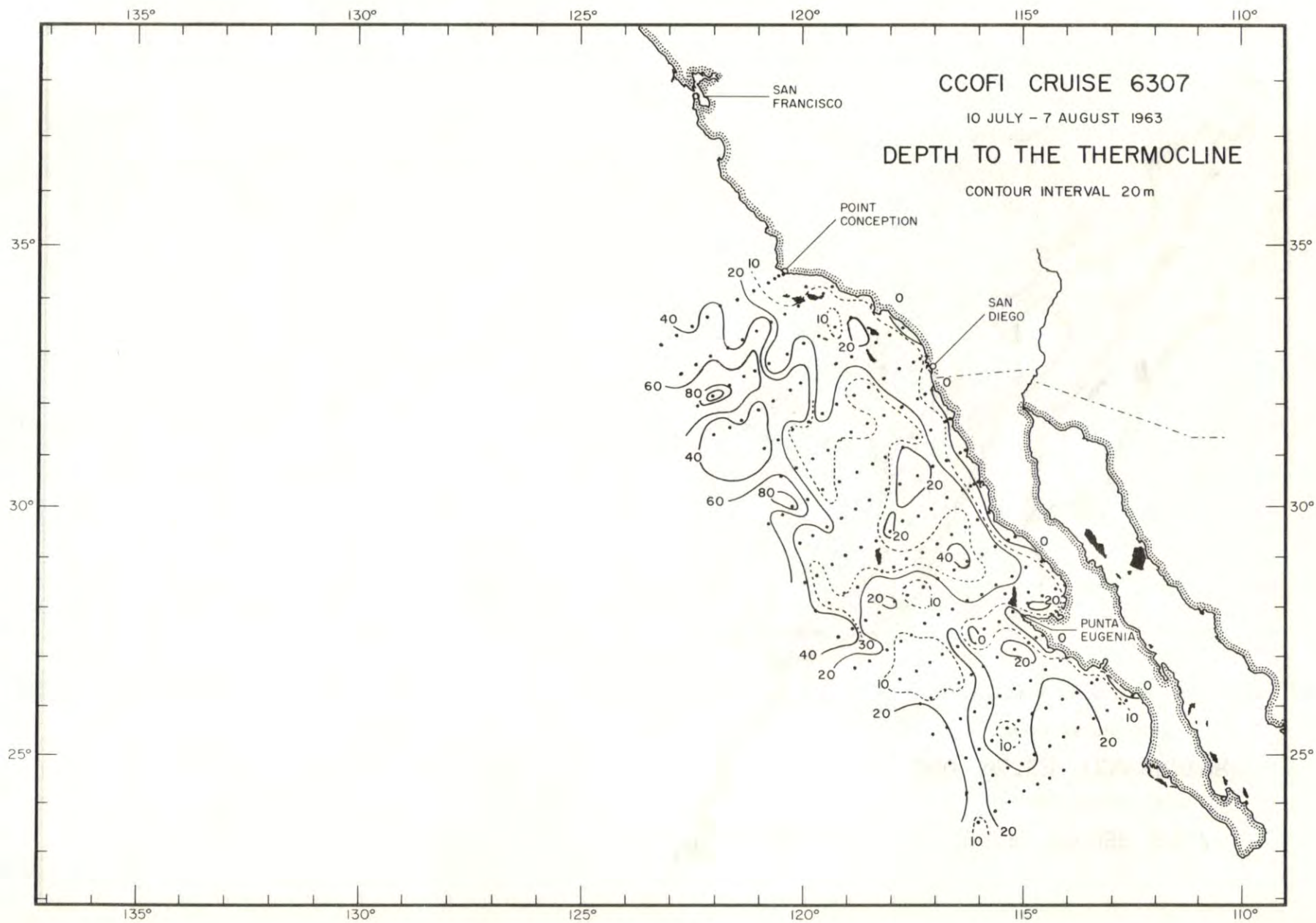


FIGURE 7

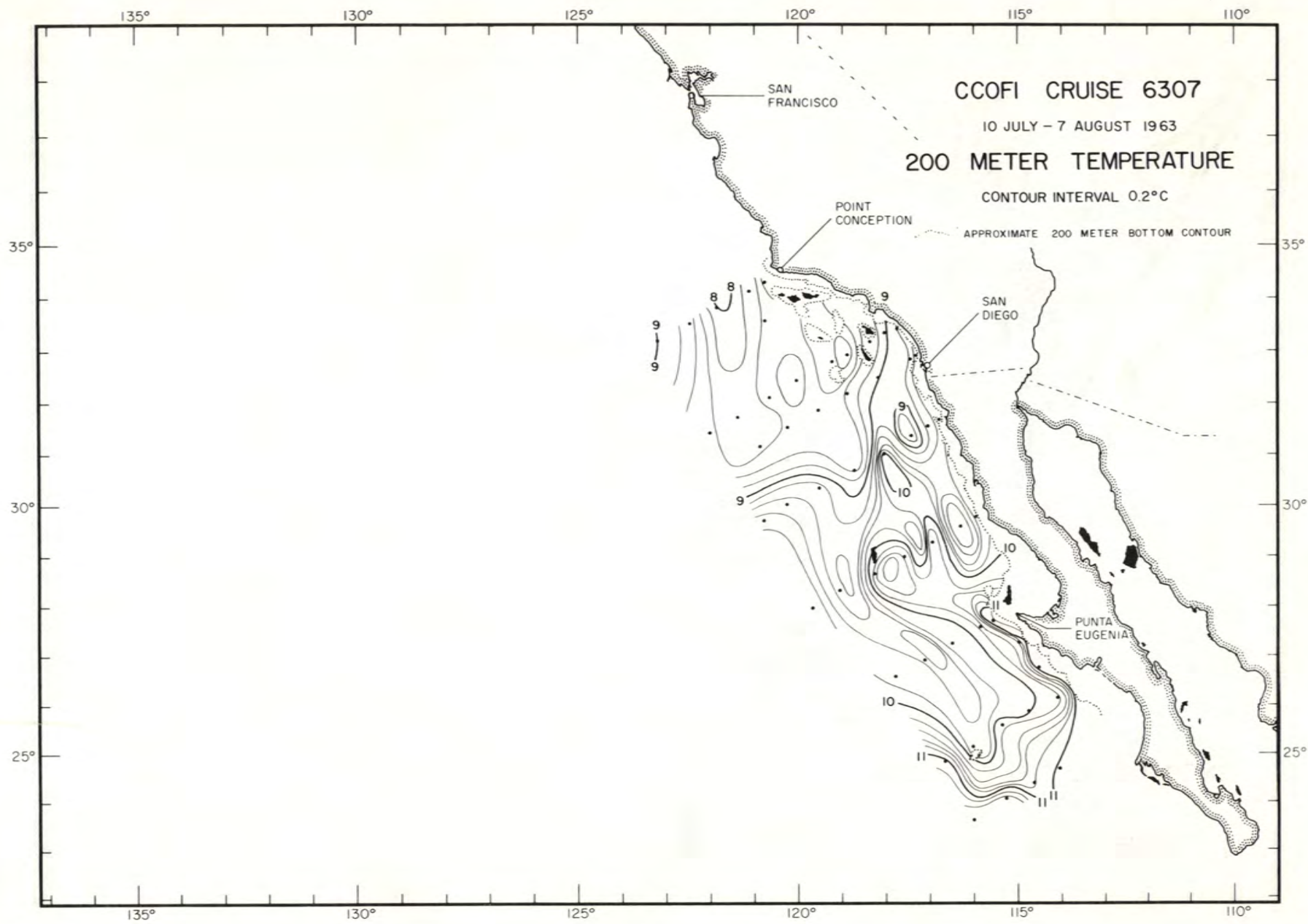


FIGURE 8



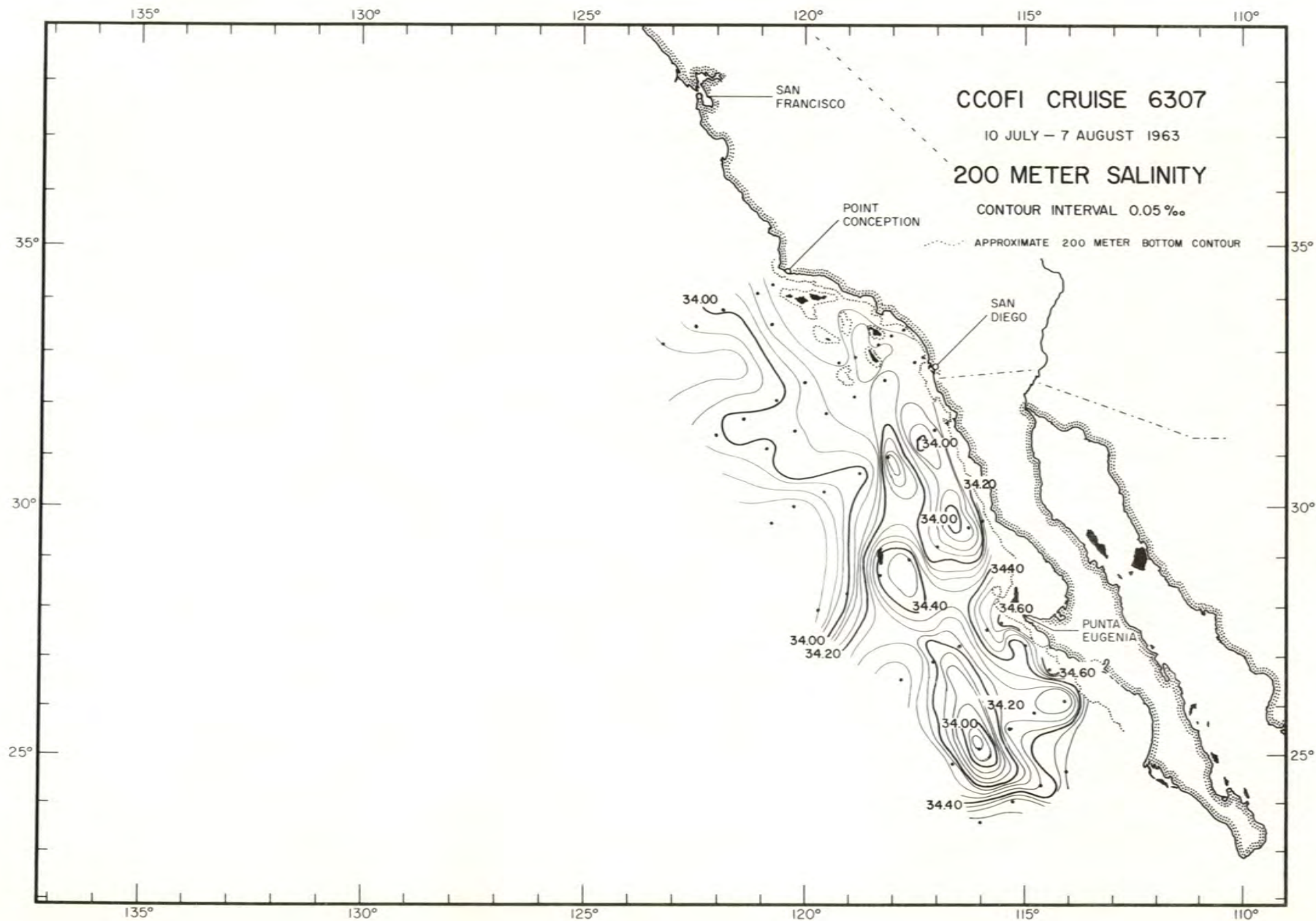


FIGURE 9

PERSONNEL  
Cruise 6307

SHIP'S CAPTAIN

Leed, Bjarne O., RV Black Douglas

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV Black Douglas

Metoyer, Jack D., Fishery Technician, Bureau of Commercial Fisheries  
\*Bradley, Robert P., Fishery Aid, Bureau of Commercial Fisheries  
Bryan, Walter R., Senior Marine Technician  
Crandall, David E., Marine Technician  
Daniel, Dick A., Laboratory Helper  
\*\*Green, Robert S., Summer Trainee  
\*\*Greenfield, David W., Fishery Biologist  
Muus, David A., Marine Technician  
\*\*Paloma, Peter A., Fishery Aid, Bureau of Commercial Fisheries  
Young, Anthony W., Marine Technician

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\*Southern part of cruise only.

\*\*Northern part of cruise 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  
6307

BLACK DOUGLAS; July 11, 1963; 0444 GCT; 34°24.5'N, 120°36.5'W; sounding, 117 fm; wind, 280°, force 5; weather, fog; sea, rough; wire angle, 00°.

80.52

0	14.06	33.760	7.20	274	0	14.06	33.76	7.20	25.24	274	0.00
10	13.47	33.772	6.72	262	10	13.47	33.77	6.72	25.37	262	0.03
29	10.64	33.793	3.57	209	20	12.00	33.78	5.10	25.66	234	0.05
49	9.80	33.833	2.80	193	30	10.62	33.80	3.50	25.93	208	0.07
74	9.57	33.902	2.67	184	50	9.79	33.84	2.79	26.10	192	0.11
98	9.35	33.936	2.78	178	75	9.55	33.90	2.68	26.19	184	0.16
123	9.22	34.010	2.46	170	100	9.34	33.94	2.78	26.25	177	0.21
152	9.12	34.108	1.97	162	125	9.22	34.02	2.42	26.34	170	0.25
					150	9.13	34.10	2.00	26.41	162	0.29

BLACK DOUGLAS; July 11, 1963; 0701 GCT; 34°19'N, 120°48'W; sounding, 400 fm; wind, 280°, force 3; weather, fog; sea, moderate; wire angle, 12°.

80.55

0	14.08	33.757	8.03	275	0	14.08	33.76	8.03	25.23	275	0.00
10	14.00	33.742	8.19	274	10	14.00	33.74	8.19	25.23	274	0.03
28	12.88	33.767	6.45	251	20	12.99	33.76	6.61	25.45	253	0.05
38	11.75	33.793	4.83	228	30	12.83	33.77	6.38	25.49	250	0.08
48	11.06	33.804	3.90	215	50	10.90	33.81	3.71	25.89	212	0.13
62	9.90	33.860	3.03	192	75	9.43	33.91	2.97	26.22	181	0.17
77	9.38	33.921	2.95	179	100	9.11	34.00	2.69	26.34	169	0.22
96	9.12	33.987	2.75	171	125	8.99	34.04	2.46	26.39	165	0.26
121	9.03	34.025	2.49	166	150	8.81	34.10	2.20	26.46	157	0.30
140	8.80	34.071	2.37	159	200	8.73	34.18	1.79	26.54	150	0.38
169	8.84	34.153	1.94	154	250	8.38	34.22	1.52	26.62	142	0.46
198	8.74	34.180	1.81	151	300	7.93	34.27	1.05	26.73	132	0.53
226	8.64	34.203	1.70	147	400	7.23	34.27	0.75	26.83	122	0.66
263	8.22	34.228	1.42	139	500	6.56	34.29	0.60	26.94	112	0.78
320	7.80	34.279	0.94	130							
393	7.27	34.270	0.78	123							
465	6.86	34.281	0.66	117							
542	6.14	34.298	0.52	106							

SIO

CCOFI  
6307

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

80.60 BLACK DOUGLAS; July 11, 1963; 1149 GCT; 34°09'N, 121°09'W; sounding, 1200 fm; wind, 270°, force 1; weather, fog; sea, moderate; wire angle, 18°.

1	15.74	33.254	5.95	346	0	(15.74)	(33.25)	(5.95)	(24.48)	(346)	(0.00)
11	15.74	33.256	5.97	346	10	15.74	33.26	5.97	24.49	345	0.03
27	11.92	33.219	5.66	274	20	15.35	33.25	5.96	24.57	338	0.07
38	11.41	33.269	5.31	261	30	11.70	33.24	5.52	25.30	268	0.10
52	10.90a)	33.320	5.16	248	50	10.99	33.31	5.18	25.48	251	0.15
67	10.25	33.415	4.87	231	75	10.11	33.50	4.63	25.78	222	0.21
90	9.88	33.635	4.24	208	100	9.53	33.73	3.93	26.06	196	0.26
108	9.29	33.783	3.72	188	125	9.06	33.89	3.38	26.26	177	0.31
127	9.01	33.900	3.37	175	150	8.57	33.98	3.25	26.41	163	0.35
145	8.62	33.965	3.34	165	200	8.28	34.11	1.95	26.55	149	0.43
173	8.39	34.043	2.39	156	250	7.83	34.19	1.45	26.68	137	0.51
204	8.26	34.116	1.91	148	300	7.30	34.21	1.10	26.78	128	0.57
232	8.00	34.154	1.67	142	400	6.36	34.22	0.80	26.91	115	0.70
277	7.60	34.215	1.19	132	500	5.80	34.30	0.52	27.05	102	0.82
328	6.94	34.212	1.01	123							
409	6.30	34.229	0.77	114							
492	5.84	34.287	0.53	104							
575	5.42	34.324	0.50	96							

80.70 BLACK DOUGLAS; July 11, 1963; 1806 GCT; 33°49'N, 121°52'W; sounding, 2000+ fm; wind, 280°, force 2; weather, overcast; sea, rough; wire angle, 02°.

1	15.24	33.261	6.03	335	0	(15.24)	(33.26)	(6.03)	(24.60)	(335)	(0.00)
11	15.16	33.305	6.12	330	10	15.17	33.30	6.12	24.65	330	0.03
30	14.81	-	-	-	20	15.25	33.34	6.12	24.66	329	0.07
40	13.67	33.312	6.06	299	30	14.81	33.34	6.11	24.75	320	0.10
55	11.32	33.277	5.51	259	50	11.96	33.28	5.77	25.28	270	0.16
71	10.98	33.303	5.20	251	75	10.92	33.32	5.14	25.50	249	0.22
95	10.02	33.581	4.38	215	100	10.02	33.63	4.25	25.90	211	0.28
114	9.66	33.743	3.67	197	125	9.49	33.84	3.22	26.15	187	0.33
134	9.27	33.845	3.14	183	150	8.83	33.89	3.49	26.30	173	0.38
152	8.80	33.896	3.50	172	200	8.03	34.01	2.90	26.51	153	0.46
182	8.39	33.972	3.19	161	250	7.28	34.06	2.22	26.66	139	0.53
215	7.76	34.037	2.65	147	300	6.65	34.08	1.82	26.76	129	0.60
244	7.34	34.055	2.30	140	400	5.95	34.18	1.05	26.93	113	0.73
292	6.72	34.071	1.88	131	500	5.50	34.28	0.57	27.07	100	0.84
346	6.24	34.103	1.48	122	600	(5.02)	(34.33)	(0.50)	(27.16)	(91)	(0.94)
429	5.84	34.220	0.81	109							
512	5.43	34.282	0.55	99							
596	5.07	34.327	0.50	92							

80.80 BLACK DOUGLAS; July 11, 1963; 2312 GCT; 33°29'N, 122°32'W; sounding, 2400 fm; wind, 320°, force 2; weather, overcast; sea, rough; wire angle, 12°.

1	16.28	33.066	5.76	371	0	(16.28)	(33.07)	(5.76)	(24.22)	(371)	(0.00)
11	16.08	33.068	5.81	367	10	16.08	33.07	5.80	24.27	366	0.04
29	16.04	33.073	5.80	365	20	16.07	33.07	5.80	24.27	366	0.07
58	14.90	33.049	5.86	343	30	16.04	33.07	5.80	24.28	366	0.11
69	14.39	33.114	6.08	328	50	15.50	33.06	5.81	24.39	355	0.18
83	12.76	33.051	6.08	301	75	13.95	33.10	6.08	24.75	320	0.27
97	11.80	33.149	5.74	277	100	11.30	33.18	5.57	25.33	266	0.34
111	10.46	33.257	5.28	246	125	9.97	33.36	4.87	25.70	230	0.40
135	9.72	33.502	4.47	216	150	9.48	33.70	4.18	26.04	197	0.46
153	9.41	33.741	4.15	193	200	8.62	33.96	3.78	26.38	165	0.55
183	8.90	33.906	3.88	173	250	7.95	34.02	2.71	26.53	151	0.63
211	8.46	33.981	3.71	161	300	7.24	34.05	2.19	26.66	139	0.71
240	8.06	34.015	2.94	153	400	6.45	34.15	0.98	26.84	121	0.84
287	7.48	34.043	2.24	143	500	5.53	34.17	0.76	26.98	109	0.96
348	6.52	34.058	2.09	129	600	(5.19)	(34.26)		(27.09)	(98)	(1.07)
419	6.42	34.192	0.82	118							
500	5.53	34.169	0.76	109							
584	5.24	34.225	0.48	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

SIO  
CCOFI  
6307

BLACK DOUGLAS; July 12, 1963; 0458 GCT; 33°09'N, 123°13'W; sounding, 2400 fm; wind, 340°, force 3; weather, overcast; sea, very rough; wire angle, 13°.

80.90

0	16.18	33.119	5.90	365	0	16.18	33.12	5.90	24.28	365	0.00
10	16.20	33.109	5.86	366	10	16.20	33.11	5.86	24.27	366	0.04
28	16.10	33.092	5.90	365	20	16.17	33.10	5.87	24.27	366	0.07
57	14.84	33.108	6.05	338	30	16.09	33.09	5.90	24.28	365	0.11
67	13.90	33.090	6.17	320	50	15.86	33.10	5.94	24.34	360	0.18
82	13.60	33.256	6.14	302	75	13.33	33.11	6.17	24.89	308	0.27
95	12.46	33.305	5.71	277	100	12.23	33.31	5.67	25.25	272	0.34
110	11.60	33.345	5.54	259	125	11.05	33.44	5.19	25.57	242	0.40
133	10.55	33.506	4.86	229	150	9.96	33.60	4.43	25.89	212	0.46
152	9.87	33.612	4.39	210	200	9.00	33.90	3.68	26.28	175	0.56
181	9.31	33.835	3.78a)	185	250	8.18	34.00	3.25	26.48	156	0.65
208	8.88	33.924	3.66a)	172	300	7.23	34.02	2.53	26.64	141	0.72
236	8.43	33.984	3.43	160	400	6.37	34.12	1.32	26.83	123	0.86
281	7.57	34.015	2.84	146	500	5.86	34.22	0.64	26.98	109	0.98
331	6.83	34.045	2.09	134							
412	6.29	34.132	1.19	121							
491	5.90	34.211	0.67	110							
576	5.43	34.257	0.54	101							

BLACK DOUGLAS; July 13, 1963; 0114 GCT; 33°34'N, 120°45'W; sounding, 800 fm; wind, 360°, force 2; weather, clear; sea, rough; wire angle, 16°.

83.60

0	15.86	33.424	6.49	336	0	15.86	33.42	6.49	24.59	336	0.00
10	14.22	33.501	7.46	296	10	14.22	33.50	7.46	25.00	296	0.03
28	13.33	33.584	6.57	273	20	13.59	33.54	7.17	25.16	281	0.06
37	12.96	33.712	5.64	256	30	13.26	33.60	6.44	25.28	270	0.09
52	10.98	33.580	4.62	231	50	11.05	33.58	4.70	25.68	232	0.14
66	11.20	33.767	4.05	221	75	10.30	33.84	3.49	26.02	200	0.19
90	10.13	33.846	3.42	197	100	9.78	33.87	3.33	26.13	189	0.24
109	9.34	33.908	3.22	180	125	9.05	33.97	2.98	26.32	171	0.29
128	9.01	33.983	2.92	169	150	8.92	34.03	2.72	26.39	164	0.33
146	8.94	34.028	2.77	165	200	8.43	34.12	2.07	26.54	150	0.41
174	8.76	34.062	2.49	160	250	8.16	34.22	1.39	26.66	139	0.48
206	8.39	34.129	1.99	149	300	7.82	34.28	1.02	26.76	130	0.55
234	8.28	34.185	1.60	143	400	7.10	34.29	0.78	26.87	119	0.68
282	7.94	34.277	1.07	132	500	6.12	34.31	0.51	27.01	105	0.80
333	7.60	34.276	0.94	127							
413	6.98	34.289	0.75	118							
494	6.18	34.310	0.52	106							
576	5.75	34.357	0.48	97							

BLACK DOUGLAS; July 16, 1963; 2212 GCT; 33°28.5'N, 117°47'W; sounding, 250 fm; wind, 190°, force 2; weather, missing; sea, moderate; wire angle, 06°.

90.28

0	20.05	33.689	5.86	414	0	20.05	33.69	5.86	23.77	414	0.00
10	15.98	33.659	6.51	321	10	15.98	33.66	6.51	24.74	321	0.04
29	12.68	33.649	5.58	256	20	14.25	33.64	6.23	25.10	287	0.07
49	11.72	33.657	4.38	238	30	12.65	33.65	5.58	25.44	255	0.09
74	10.40	33.737	3.30	209	50	11.67	33.66	4.32	25.63	237	0.14
98	10.17	33.773	3.29	203	75	10.39	33.74	3.30	25.92	209	0.20
123	9.84	33.837	3.03	193	100	10.14	33.78	3.28	26.00	202	0.25
161	9.28	34.023	2.45	170	125	9.80	33.85	2.98	26.11	191	0.30
202	9.20	34.164	1.74	159	150	9.39	33.98	2.61	26.28	175	0.35
251	9.15	34.276	1.27	150	200	9.20	34.16	1.78	26.45	159	0.43
300	8.90	34.313	0.91	143	250	9.15	34.28	1.30	26.55	149	0.51
					300	8.90	34.31	0.91	26.61	143	0.59

a) Oxygen samples at 181 and 208 meters appear to have been reversed; they are assumed to be in correct order.



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6307

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

90.32

BLACK DOUGLAS; July 16, 1963; 1952 GCT; 33°21'N, 118°01.5'W; sounding, 400 fm; wind, 220°, force 2; weather, cloudy; sea, slight; wire angle, 01°.

0	18.75	33.635	5.75	386	0	18.75	33.64	5.75	24.07	386	0.00
10	18.18	33.627	5.81	373	10	18.18	33.63	5.81	24.20	373	0.04
28	14.77	33.531	6.35	305	20	17.00	33.59	6.00	24.45	349	0.07
39	12.98	33.543	5.38	269	30	14.70	33.53	6.33	24.92	304	0.11
49	12.24	33.532	5.11	256	50	12.18	33.54	5.07	25.44	255	0.16
64	11.20	33.587	4.59	234	75	10.76	33.63	4.22	25.77	223	0.22
79	10.62	33.647	4.11	220	100	9.98	33.86	3.74	26.09	193	0.28
98	10.02	33.855	3.80	194	125	9.59	33.88	3.30	26.17	186	0.32
123	9.61	33.862	3.36	187	150	9.41	33.99	2.80	26.28	175	0.37
144	9.48	33.963	2.89	178	200	8.89	34.13	2.13	26.48	156	0.45
172	9.10	34.064	2.45	165	250	8.40	34.17	1.90	26.58	146	0.53
202	8.87	34.132	2.12	156	300	7.93	34.18	1.57	26.66	139	0.60
230	8.32	34.094	2.36	151	400	7.08	34.23	0.94	26.82	123	0.74
269	8.48	34.224	1.54	143	500	6.54	34.30	0.59	26.95	111	0.87
328	7.38	34.141	1.59	134							
400	7.08	34.231	0.94	123							
473	6.69	34.291	0.62	114							
550	6.35	34.316	0.56	108							

90.37

BLACK DOUGLAS; July 16, 1963; 1647 GCT; 33°11'N, 118°22.5'W; sounding, 640 fm; wind, 320°, force 1; weather, overcast; sea, slight; wire angle, 07°.

0	18.52	33.618	5.60	382	0	18.52	33.62	5.60	24.11	382	0.00
10	18.38	33.613	5.65	379	10	18.38	33.61	5.65	24.14	379	0.04
30	15.84	33.522	6.00	328	20	18.00	33.59	5.70	24.21	372	0.08
39	14.62	33.513	6.03	303	30	15.84	33.52	6.00	24.67	328	0.11
49	13.90	33.533	6.15	288	50	13.80	33.54	6.14	25.12	285	0.17
64	12.46	33.739	5.19	245	75	11.63	33.66	4.64	25.64	236	0.24
79	11.36a)	33.644	4.46	232	100	10.36	33.69	4.06	25.89	212	0.29
97	10.41	33.677	4.13	214	125	10.02	33.85	3.23	26.07	195	0.35
123	10.06	33.842	3.23	196	150	9.38	33.92	3.06	26.23	179	0.39
142	9.56	33.875	3.19	186	200	8.73	34.10	2.26	26.48	156	0.48
172	9.07	34.052	2.49	165	250	8.01	34.13	1.86	26.61	144	0.56
200	8.73	34.102	2.26	156	300	7.29	34.12	1.68	26.71	134	0.63
229	8.60	34.186	1.71	148	400	7.34	34.32	0.67	26.86	120	0.76
267	7.60	34.104	1.99	140	500	6.66	34.33	0.50	26.96	111	0.88
325	7.25	34.163	1.40	131							
398	7.34	34.318	0.68	120							
471	-	34.322	0.53	-							
550	6.18	34.347	0.45	103							

90.45

BLACK DOUGLAS; July 16, 1963; 1217 GCT; 32°54.5'N, 118°55.5'W; sounding, 900 fm; wind, 290°, force 2; weather, overcast; sea, moderate; wire angle, 13°.

0	17.08	33.657	5.78	346	0	17.08	33.66	5.78	24.49	345	0.00
10	17.13	33.658	5.86	347	10	17.13	33.66	5.86	24.48	347	0.03
28	15.76	33.737	5.96	311	20	16.40	33.71	5.94	24.68	327	0.07
37	12.17	33.640	4.78	247	30	15.40	33.73	5.90	24.93	304	0.10
46	11.32	33.616	4.49	234	50	11.23	33.62	4.42	25.68	232	0.15
61	10.54	33.682	3.96	216	75	10.03	33.77	3.46	26.01	201	0.21
76	10.01	33.777	3.44	200	100	9.61	33.87	3.03	26.16	187	0.26
94	9.74	33.844	3.11	191	125	9.00	33.96	2.83	26.32	171	0.30
118	9.16	33.936	2.86	175	150	8.60	34.01	2.71	26.43	161	0.34
137	8.78	33.985	2.79	166	200	8.14	34.10	1.99	26.57	148	0.42
164	8.42	34.026	2.59	157	250	7.98	34.18	1.49	26.65	139	0.50
193	8.18	34.092	2.02	149	300	7.72	34.25	1.00	26.75	131	0.57
220	8.06	34.125	1.88	145	400	6.99	34.29	0.60	26.88	118	0.70
258	7.96	34.193	1.39	138	500	6.35	34.33	0.42	27.00	107	0.82
315	7.61	34.263	0.90	128							
385	7.09	34.282	0.64	120							
457	6.64	34.321	0.46	111							
534	6.12	34.331	0.41	104							

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a) Alternate value, 11.48°C, not used in interpolation.



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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BLACK DOUGLAS; July 16, 1963; 0930 GCT; 32°47'N, 119°14.5'W; sounding, 250 fm; wind, 300°, force 3; weather, overcast; sea, moderate; wire angle, 05°.

90.53

0	15.82	33.763	6.06	310	0	15.82	33.76	6.06	24.86	310	0.00
10	15.82	33.764	6.05	310	10	15.82	33.76	6.05	24.86	310	0.03
29	11.61	33.766	4.23	228	20	13.12	33.76	5.03	25.43	256	0.06
49	10.24	33.807	3.29	202	30	11.60	33.77	4.22	25.73	227	0.08
74	9.57	33.883	3.10	185	50	10.23	33.81	3.27	26.00	201	0.13
98	9.04	33.975	2.86	170	75	9.55	33.89	3.08	26.18	184	0.18
122	8.80	34.012	2.72	164	100	9.01	33.98	2.83	26.34	169	0.22
161	8.49	34.124	2.08	151	125	8.78	34.02	2.67	26.41	163	0.26
201	8.28	34.189	1.46	143	150	8.58	34.10	2.29	26.50	154	0.30
251	7.72	34.240	1.08	131	200	8.29	34.19	1.51	26.62	143	0.38
300	7.36	34.259	0.82	125	250	7.73	34.24	1.08	26.74	132	0.45
					300	7.36	34.26	0.82	26.81	125	0.52

BLACK DOUGLAS; July 16, 1963; 0321 GCT; 32°24.5'N, 120°04'W; sounding, 530 fm; wind, 300°, force 4; weather, overcast; sea, rough; wire angle, 13°.

90.60

0	16.12	33.472	5.95	338	0	16.12	33.47	5.95	24.56	338	0.00
10	16.08	33.474	6.01	337	10	16.08	33.47	6.01	24.57	337	0.03
28	15.56	33.740	6.01	306	20	15.90	33.61	6.01	24.72	323	0.07
38	15.40	33.723	5.92	304	30	15.49	33.73	5.96	24.91	306	0.10
53	14.74	33.667	5.99	295	50	14.94	33.69	5.97	25.00	297	0.16
67	13.40	33.483	5.68	282	75	13.20	33.50	5.56	25.21	276	0.23
91	11.38	33.559	4.70	239	100	10.94	33.57	4.32	25.69	231	0.29
111	10.50	33.581	4.01	222	125	9.92	33.74	3.49	26.00	201	0.35
129	9.74	33.803	3.33	194	150	9.36	33.90	3.01	26.22	181	0.40
149	9.37	33.889	3.05	182	200	8.72	34.07	2.30	26.46	158	0.48
179	8.95	34.011	2.52	166	250	8.17	34.16	1.78	26.61	144	0.56
211	8.60	34.085	2.22	155	300	7.76	34.20	1.37	26.70	135	0.63
241	8.26	34.143	1.88	146	400	7.06	34.26	0.80	26.85	121	0.77
289	7.84	34.336u	1.48		500	6.38	34.31	0.53	26.98	109	0.89
342	7.44	34.223	1.06	129	600	(5.47)	(34.37)		(27.14)	(93)	(1.00)
424	6.90	34.281	0.72	117							
505	6.34	34.315	0.52	108							
587	5.57	34.369	0.45	94							

BLACK DOUGLAS; July 15, 1963; 2051 GCT; 32°04'N, 120°18.5'W; sounding, 2100 fm; wind, 330°, force 4; weather, overcast; sea, rough; wire angle, 11°.

90.70

0	16.54	33.442	5.92	349	0	16.54	33.44	5.92	24.45	349	0.00
10	16.47	33.414	5.94	350	10	16.47	33.41	5.94	24.44	350	0.03
28	16.02	33.593	6.03	327	20	16.20	33.54	6.02	24.60	335	0.07
58	12.68	33.415	5.44	273	30	15.92	33.59	6.02	24.70	325	0.10
69	12.22	33.507	5.16	258	50	15.05	33.54	5.98	24.86	310	0.17
83	11.42	33.497	4.94	244	75	12.13	33.51	5.12	25.43	256	0.24
97	10.80	33.574	4.57	228	100	10.70	33.59	4.48	25.75	225	0.30
111	10.32	33.648	4.18	215	125	9.92	33.71	4.01	25.98	204	0.35
135	9.68	33.743	3.92	197	150	9.39	33.82	3.62	26.15	187	0.40
153	9.32	33.837	3.57	185	200	8.48	33.99	3.16	26.43	161	0.49
182	8.82	33.939	3.34	170	250	7.90	34.06	2.34	26.57	147	0.57
211	8.30	34.007	3.03	157	300	7.42	34.13	1.73	26.70	135	0.64
240	8.01	34.053	2.46	149	400	6.62	34.24	0.73	26.89	117	0.77
287	7.50	34.103	1.95	139	500	6.00	34.31	0.48	27.03	104	0.89
338	7.24	34.206	1.08	127							
418	6.47	34.249	0.68	114							
498	6.02	34.304	0.48	105							
579	5.48	34.328	0.46	96							



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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

90.80 BLACK DOUGLAS; July 15, 1963; 1454 GCT; 31°42.5'N, 121°24.5'W; sounding, 2000 fm; wind, 290°, force 3; weather, overcast; sea, rough; wire angle, 05°.

0	17.20	33.471	5.59	362	0	17.20	33.47	5.59	24.31	362	0.00
10	17.22	33.473	5.71	362	10	17.22	33.47	5.71	24.31	362	0.04
29	16.95	33.457	5.68	357	20	17.22	33.47	5.70	24.31	362	0.07
59	12.51a)	33.572	5.45	258	30	16.93	33.46	5.68	24.37	357	0.11
69	11.24	33.557	4.94	237	50	16.25	33.47	5.62	24.54	341	0.18
85	10.39	33.682	3.88	213	75	10.85	33.59	4.49	25.73	228	0.25
99	10.06	33.734	4.02	204	100	10.05	33.74	4.02	25.98	203	0.30
113	9.86	33.842	3.80	193	125	9.58	33.84	3.59	26.14	189	0.35
138	9.32	33.838	3.40	185	150	9.14	33.89	3.63	26.25	178	0.40
157	9.04	33.931	3.75	173	200	8.36	34.03	2.61	26.48	156	0.49
186	8.58	34.000	2.81	162	250	7.82	34.06	2.37	26.58	146	0.56
214	8.14	34.052	2.51	151	300	7.03	34.08	1.87	26.71	134	0.64
243	7.91	34.054	2.41	148	400	5.96	34.13	1.05	26.89	117	0.77
291	7.21	34.097	1.91	135	500	5.57	34.23	0.60	27.02	105	0.88
344	6.30	34.060	1.69	126	600	(5.12)	(34.31)	(0.42)	(27.14)	(94)	(0.99)
425	5.82	34.162	0.85	113							
508	5.53	34.240	0.59	104							
590	5.17	34.302	0.43	95							

90.90 BLACK DOUGLAS; July 15, 1963; 0837, 0912 GCT; 31°24'N, 122°01'W; sounding, 2100 fm; wind, 280°, force 5; weather, overcast; sea, rough; wire angle, 12°, 25°.

1	16.91	33.400	5.12	361	0	(16.91)	(33.40)	(5.12)	(24.33)	(361)	(0.00)
11	16.96	33.400	5.31	362	10	16.95	33.40	5.28	24.32	361	0.04
30	16.83	33.398	5.53	359	20	16.96	33.40	5.38	24.32	362	0.07
39	16.39	33.405	5.72	349	30	16.83	33.40	5.53	24.35	359	0.11
55	14.19	33.351	6.25	307	50	14.80	33.37	6.17	24.78	318	0.18
70	12.59	33.322	5.83	278	75	12.20	33.32	5.67	25.27	271	0.25
92	11.10	33.350	5.13	250	100	10.60	33.40	4.82	25.62	238	0.31
113	10.39	33.548	4.46	223	125	10.29	33.67	4.03	25.89	212	0.37
132	9.88	33.715	3.67	203	150	9.40	33.81	3.67	26.14	188	0.42
151	9.39	33.812	3.67	188	200	8.44	33.99	2.98	26.44	160	0.51
					250	7.87	34.06	2.30	26.58	147	0.59
167	9.08	33.899	3.35	176	300	7.28	34.11	1.64	26.70	135	0.66
200	8.44	33.986	2.98	160	400	6.59	34.22	0.80	26.88	118	0.79
228	8.16	34.022	2.65	154	500	5.51	34.25	0.54	27.04	103	0.91
273	7.57	34.095	1.90	140							
323	7.08	34.127	1.43	131							
401	6.58	34.221	0.79	118							
477	5.70	34.241	0.55	106							
557	5.08	34.274	0.54	96							

93.28 BLACK DOUGLAS; July 17, 1963; 0440 GCT; 32°55'N, 117°21.5'W; sounding, 250 fm; wind, 290°, force 1; weather, partly cloudy; sea, moderate; wire angle, 07°.

0	19.90	33.682	5.72	411	0	19.90	33.68	5.72	23.80	411	0.00
10	18.90	33.690	5.93	386	10	18.90	33.69	5.93	24.07	386	0.04
29	12.18	33.608	5.27	250	20	14.60	33.62	5.60	25.02	295	0.07
49	10.87	33.625	4.59	225	30	12.03	33.61	5.23	25.52	247	0.10
73	10.12	33.721	4.04	206	50	10.82	33.63	4.56	25.76	224	0.15
97	9.88	33.858	3.29	192	75	10.09	33.73	4.00	25.97	205	0.20
122	9.78	33.919	3.05	186	100	9.87	33.87	3.23	26.11	191	0.25
161	9.60	34.027	2.86	175	125	9.77	33.93	3.02	26.18	185	0.30
200	9.43	34.117	2.22	166	150	9.64	34.00	2.93	26.25	178	0.35
249	9.44	34.322	1.11	151	200	9.43	34.12	2.22	26.38	165	0.43
297	9.23	34.340	1.10	146	250	9.44	34.32	1.11	26.53	151	0.51
401	8.12	34.344	1.00	129	300	9.20	34.34	1.09	26.59	146	0.59
					400	8.13	34.34	1.00	26.76	130	0.74

a) Alternate value, 11.86°C, not used in interpolation.



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

BLACK DOUGLAS; July 17, 1963; 0634 GCT; 32°50.5'N, 117°30.5'W; sounding, 370 fm; wind, calm; weather, overcast; sea, slight; wire angle, 01°.

93.30

0	19.38	33.641	5.85	401	0	19.38	33.64	5.85	23.91	401	0.00
10	19.08	33.635	5.82	394	10	19.08	33.64	5.82	23.98	394	0.04
29	15.02	33.594	6.75	306	20	17.30	33.60	6.23	24.39	355	0.08
39	13.55	33.609	6.38	275	30	14.80	33.60	6.73	24.96	301	0.11
49	12.11	33.589	5.17	250	50	11.98	33.59	5.02	25.52	247	0.17
64	-	33.629	4.25		75	10.53	33.69	3.93	25.86	215	0.22
79	10.34	33.718	3.82	210	100	9.59	33.89	3.21	26.17	185	0.27
98	9.60	33.880	3.24	186	125	9.51	33.94	3.00	26.23	180	0.32
123	9.52	33.926	3.03	181	150	9.32	34.03	2.67	26.33	170	0.36
143	9.38	33.997	2.80	174	200	9.10	34.13	2.08	26.44	160	0.45
173	9.20	34.095	2.32	164	250	8.88	34.21	1.77	26.54	150	0.53
202	9.10	34.133	2.07	159	300	8.70	34.29	1.23	26.63	142	0.60
231	8.98	34.193	1.95	153	400	7.84	34.34	0.71	26.80	126	0.74
269	8.79	34.235	1.54	147	500	6.79	34.27	0.78	26.89	117	0.87
327	8.61	34.326	1.02	138							
400	7.84	34.336	0.71	126							
473	6.96	34.260	0.83	120							
549	6.64	34.345	0.52	109							

BLACK DOUGLAS; July 17, 1963; 1145 GCT; 32°30'N, 118°11.5'W; sounding, 1000 fm; wind, 220°, force 1; weather, overcast; sea, slight; wire angle, 04°.

93.40

0	19.24	33.704	5.75	393	0	19.24	33.70	5.75	23.99	393	0.00
10	19.22	33.707	5.81	392	10	19.22	33.71	5.81	24.00	392	0.04
29	15.02	33.608	6.65	305	20	17.80	33.68	6.20	24.33	360	0.08
39	13.54	33.577	6.44	277	30	14.85	33.60	6.65	24.95	302	0.11
49	12.26	33.598	-	252	50	12.15	33.60	5.21	25.49	250	0.17
64	11.16	33.634	4.37	230	75	10.90	33.67	4.27	25.78	223	0.22
79	10.60	33.685	4.14	216	100	10.02	33.79	3.52	26.02	199	0.28
98	10.07	33.788	3.53	200	125	9.44	33.87	3.47	26.18	184	0.33
124	9.44	33.866	3.48	184	150	9.35	33.99	2.94	26.29	174	0.37
144	9.40	33.978	3.03	176	200	8.96	34.17	2.00	26.50	155	0.46
172	9.00	34.062	2.50	163	250	8.89	34.34	1.24	26.64	141	0.53
202	8.96	34.180	1.92	154	300	8.35	34.33	0.98	26.72	134	0.60
231	9.11	34.302	1.35	147	400	7.34	34.31	0.72	26.85	121	0.74
270	8.64	34.343	1.15	137	500	6.09	34.28	0.64	26.99	107	0.86
328	8.11	34.328	0.83	130							
402	7.32	34.310	0.72	121							
475	6.25	34.261	0.68	111							
552	5.94	34.323	0.54	102							

BLACK DOUGLAS; July 17, 1963; 1731 GCT; 32°10'N, 118°53'W; sounding, 740 fm; wind, 280°, force 4; weather, overcast; sea, moderate; wire angle, 20°.

93.50

1	17.16	33.561	5.75	354	0	(17.16)	(33.56)	(5.75)	(24.39)	(355)	(0.00)
10	17.17	33.556	5.77	355	10	17.17	33.56	5.77	24.39	355	0.04
28	16.38	33.568	5.91	337	20	17.12	33.56	5.80	24.40	354	0.07
37	13.57	33.527	5.70	282	30	15.70	33.56	5.90	24.73	323	0.10
50	12.10	33.515	5.13	255	50	12.10	33.52	5.13	25.44	255	0.16
64	11.29	33.540	4.65	239	75	10.70	33.61	4.19	25.77	224	0.22
87	10.52	33.667	3.98	216	100	10.20	33.77	3.60	25.98	204	0.28
105	10.09	33.799	3.48	200	125	9.79	33.86	3.27	26.12	190	0.33
124	9.82	33.862	3.26	191	150	9.13	33.91	3.30	26.27	176	0.37
141	9.26	33.876	3.47	181	200	8.62	34.13	2.04	26.52	152	0.46
167	8.96	34.026	2.71	165	250	8.01	34.17	1.47	26.64	141	0.53
199	8.63	34.125	2.09	153	300	7.45	34.19	1.19	26.74	131	0.60
225	8.34	34.160	1.51	146	400	6.99	34.29	0.57	26.88	118	0.73
270	7.76	34.175	1.43	137	500	6.07	34.32	0.45	27.03	104	0.85
318	7.34	34.211	1.03	128							
393	7.06	34.289	0.60	119							
468	6.32	34.311	0.49	108							
545	5.80	34.342	0.36	99							



S10

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6307

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

93.60

BLACK DOUGLAS; July 17, 1963; 2341 GCT; 31°50'N, 119°34'W; sounding, 1500 fm; wind, 330°, force 5; weather, partly cloudy; sea, very rough; wire angle, 20°.

1	17.40	33.617		356	0	(17.40)	(33.62)		(24.38)	(356)	(0.00)
9	17.42	33.617		356	10	17.42	33.62		24.38	356	0.04
32	15.61	33.650		314	20	16.65	33.62		24.56	339	0.07
42	13.50	33.539		279	30	16.20	33.64		24.68	327	0.10
56	11.78	33.511		250	50	12.40	33.51		25.38	261	0.16
70	10.74	33.608		224	75	10.52	33.64		25.82	218	0.22
92	9.97	33.734		203	100	9.76	33.78		26.06	196	0.28
112	9.50	33.853		186	125	9.33	33.89		26.22	181	0.32
131	9.26	33.911		178	150	8.87	33.97		26.35	168	0.37
158	8.76	33.992		165	200	8.44	34.09		26.51	153	0.45
187	8.56	34.068		156	250	7.57	34.09		26.64	140	0.52
224	8.08	34.112		146	300	6.76	34.12		26.78	128	0.59
252	7.53	34.089		140	400	6.59	34.26		26.91	115	0.72
299	6.76	34.118		128	500	6.16	34.32		27.02	105	0.84
359	6.78	34.237		119	600	5.70	34.36		27.11	97	0.94
453	6.32	34.286		110							
539	6.02	34.330		103							
611	5.62	34.366		95							

93.70

BLACK DOUGLAS; July 18, 1963; 0451 GCT; 31°30'N, 120°15'W; sounding, 2080 fm; wind, 290°, force 4; weather, clear; sea, rough; wire angle, 14°.

1	17.18	33.632	5.88	350	0	(17.18)	(33.63)	(5.88)	(24.44)	(350)	(0.00)
11	17.20	33.622	5.88	351	10	17.20	33.62	5.88	24.43	351	0.04
34	15.16a)	33.656	5.93	304	20	17.20	33.62	5.88	24.43	351	0.07
44	13.86a)	33.566	5.56	284	30	15.90	33.65	5.92	24.75	320	0.10
59	12.05	33.530	5.10	253	50	13.05	33.54	5.37	25.27	271	0.16
73	11.39	33.549	4.70	240	75	11.27	33.56	4.62	25.63	237	0.23
97	10.08	33.715	3.73	206	100	10.00	33.74	3.66	25.99	203	0.28
117	9.70	33.809	3.36	193	125	9.50	33.85	3.29	26.16	187	0.33
137	9.21	33.907	2.96	178	150	9.07	33.93	2.86	26.29	174	0.38
164	8.93	33.964	2.73	169	200	8.43	34.04	2.43	26.48	156	0.46
194	8.51	34.046	2.42	157	250	7.60	34.04	2.33	26.60	145	0.54
232	7.85	34.036	2.47	148	300	7.22	34.10	1.69	26.70	135	0.61
260	7.50	34.053	2.23	142	400	6.66	34.22	0.77	26.87	119	0.74
309	7.17	34.114	1.57	133	500	5.89	34.25	0.63	27.00	107	0.86
370	6.94	34.222	0.81	122	600	5.46	34.36	0.41	27.14	94	0.97
466	5.98	34.217	0.73	111							
552	5.80	34.329	0.44	100							
627	5.26	34.377	0.41	90							

93.80

BLACK DOUGLAS; July 18, 1963; 1014 GCT; 31°07.5'N, 120°52.5'W; sounding, 2000 fm; wind, 320°, force 5; weather, clear; sea, rough; wire angle, 20°.

1	17.40	33.467	5.76	367	0	(17.40)	(33.47)	(5.76)	(24.27)	(367)	(0.00)
10	17.44	33.465	5.74	368	10	17.44	33.46	5.74	24.25	368	0.04
28	16.48	33.452	5.96	347	20	17.42	33.46	5.75	24.25	368	0.07
37	15.90	33.484	5.95	332	30	16.30	33.46	5.97	24.52	343	0.11
52	15.31	33.494	6.04	319	50	15.37	33.49	6.04	24.75	321	0.18
65	13.55	33.400	5.76	291	75	12.64	33.42	5.47	25.26	272	0.25
90	11.84	33.451	5.14	255	100	11.30	33.49	4.88	25.57	243	0.32
108	10.33	33.599	4.30	218	125	9.91	33.70	3.83	25.97	204	0.37
127	9.86	33.719	3.78	202	150	9.27	33.86	3.40	26.20	182	0.42
145	9.40	33.839	3.35	186	200	8.31	33.98	3.28	26.45	159	0.51
174	8.74	33.931	3.72	169	250	7.59	34.01	2.72	26.58	147	0.59
206	8.24	33.989	3.22	157	300	6.88	34.03	2.28	26.69	136	0.66
234	7.88	34.006	2.86	151	400	5.98	34.13	1.08	26.89	117	0.79
282	7.07	34.017	2.49	139	500	5.92	34.29	0.48	27.02	104	0.91
333	6.59	34.054	1.85	130							
413	5.94	34.153	0.88	115							
492	5.96	34.289	0.50	105							
574	5.28	34.289	0.47	97							

130

a) The bathythermograph trace indicates an inversion of approximately 1°C between 30 and 40 meters. This was not entered in the property curves because of disagreement with the thermometer readings.



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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BLACK DOUGLAS; July 10, 1963; 0552 GCT; 32°43.5'N, 117°23'W; sounding, 200 fm; wind, 290°, force 2; weather, overcast; sea, moderate; wire angle, 02°. <sup>a)</sup>

94.29

0	18.72	33.651	-	384
5	18.74	33.648	5.88	385
10	18.24	33.656	6.33	372
15	14.67	33.606	6.92	298
20	13.74	33.613	7.25	279
25	12.46	33.643	5.92	252
29	11.64	33.616	4.78	239
34	11.03	33.649	4.12	226
39	10.90	33.656	3.97	224
44	10.76	33.663	4.07	221
49	10.69	33.675	4.01	219
59	10.31	33.733	3.87	208
69	10.08	33.787	3.60	200
79	9.98	33.847	3.26	194
88	9.95	33.869	2.97	192
98	9.88	33.907	2.96	188
108	9.74	33.960	2.70	182

BLACK DOUGLAS; July 21, 1963; 0539 GCT; 31°40.5'N, 116°46.5'W; sounding, 250 fm; wind, 260°, force 2; weather, cloudy; sea, slight; wire angle, 13°.

100.30

0	19.00	33.599	5.30	395	0	19.00	33.60	5.30	23.97	395	0.00
10	19.01	33.577	5.17	396	10	19.01	33.58	5.17	23.96	396	0.04
28	17.20	33.537	5.35	357	20	17.60	33.54	5.32	24.27	366	0.08
48	12.78	33.483	5.07	270	30	16.70	33.53	5.34	24.48	346	0.11
72	11.28	33.632	4.44	232	50	12.60	33.49	5.02	25.32	266	0.17
96	10.53	33.733	3.97	212	75	11.17	33.65	4.38	25.71	229	0.24
120	10.33	33.890	3.58	197	100	10.50	33.75	3.91	25.91	210	0.29
158	9.72	34.111	1.89	171	125	10.25	33.93	3.34	26.09	193	0.34
197	9.57	34.173	1.87	164	150	9.79	34.09	2.00	26.30	173	0.39
245	9.44	34.254	1.60	156	200	9.56	34.18	1.86	26.41	163	0.48
293	9.54	34.342	1.16	151	250	9.45	34.27	1.56	26.49	155	0.56
					300	(9.54)	(34.35)		(26.54)	(150)	(0.64)

BLACK DOUGLAS; July 21, 1963; 0831 GCT; 31°31'N, 117°06.5'W; sounding, 650 fm; wind, 260°, force 3; weather, cloudy; sea, moderate; wire angle, 09°.

100.35

0	18.47	33.604	5.65	382	0	18.47	33.60	5.65	24.11	382	0.00
10	18.49	33.643	5.68	379	10	18.49	33.64	5.68	24.13	379	0.04
29	16.88	33.509	5.97	352	20	17.97	33.60	5.77	24.23	370	0.08
39	16.26	33.487	6.02	340	30	16.85	33.51	5.97	24.43	351	0.11
55	14.03	33.460	6.17	296	50	14.65	33.46	6.16	24.88	308	0.18
70	12.74	33.472	5.48	270	75	12.49	33.49	5.29	25.34	264	0.25
93	11.64	33.549	5.76	244	100	11.35	33.58	4.61	25.63	237	0.31
113	10.72	33.626	4.36	223	125	10.16	33.69	4.07	25.92	209	0.37
133	9.90	33.728	3.93	202	150	9.65	33.84	3.76	26.13	190	0.42
151	9.63	33.840	3.74	189	200	9.22	34.07	2.51	26.38	166	0.51
180	9.22	33.989	3.13	172	250	8.93	34.23	1.54	26.55	150	0.59
215	9.22	34.138	2.09	161	300	8.45	34.29	1.13	26.67	138	0.67
244	8.98	34.223	1.60	151	400	7.58	34.30	0.80	26.81	125	0.80
292	8.51	34.279	1.20	140	500	6.69	34.32	0.56	26.95	112	0.93
343	8.18	34.304	0.95	133	600	(5.74)	(34.33)		(27.08)	(99)	(1.04)
425	7.28	34.296	0.74	121							
508	6.63	34.326	0.54	111							
589	5.84	34.329	0.45	101							

a) Shakedown station.



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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

100.40

BLACK DOUGLAS; July 21, 1963; 1204 GCT; 31°21'N, 117°27'W; sounding, 1050 fm; wind, 320°, force 4; weather, overcast; sea, rough; wire angle, 00°.

0	18.12	33.636	5.60	371	0	18.12	33.64	5.60	24.22	371	0.00
10	18.15	33.599	5.65	374	10	18.15	33.60	5.65	24.18	374	0.04
29	17.00	33.570	5.84	350	20	17.99	33.59	5.75	24.22	371	0.07
39	16.72	33.548	5.84	346	30	16.97	33.57	5.84	24.45	350	0.11
54	15.34	33.501	-	319	50	16.35	33.54	5.83	24.57	338	0.18
69	13.40	33.494	5.72	281	75	12.80	33.51	5.47	25.30	268	0.26
94	11.32	33.558	4.68	238	100	11.09	33.59	4.50	25.68	232	0.32
114	10.56	33.660	4.07	218	125	10.16	33.72	3.86	25.95	207	0.37
134	9.84	33.757	3.71	199	150	9.60	33.85	3.34	26.14	188	0.42
153	9.54	33.861	3.30	186	200	8.61	34.00	3.18	26.42	162	0.51
183	8.78	33.943	3.64	169	250	8.08	34.08	2.40	26.56	148	0.59
217	8.61	34.046	2.83	159	300	8.12	34.23	1.33	26.67	138	0.67
247	8.08	34.067	2.52	149	400	7.15	34.28	0.72	26.85	121	0.80
294	8.14	34.216	1.40	139	500	6.36	34.33	0.52	27.00	107	0.92
347	7.70	34.278	0.92	128	600	(5.66)	(34.33)	(0.42)	(27.09)	(98)	(1.03)
429	6.88	34.287	0.64	117							
510	6.28	34.338	0.51	105							
593	5.70	34.335	0.43	98							

100.50

BLACK DOUGLAS; July 21, 1963; 1909 GCT; 31°00'N, 118°07'W; sounding, 950 fm; wind, 320°, force 4; weather, overcast; sea, rough; wire angle, 08°.

0	17.74	33.558	5.75	368	0	17.74	33.56	5.75	24.25	368	0.00
10	17.74	33.543	5.77	369	10	17.74	33.54	5.77	24.24	369	0.04
30	17.59	33.590	5.73	362	20	17.68	33.55	5.76	24.26	367	0.07
40	17.22	33.567	5.79	355	30	17.59	33.59	5.73	24.31	362	0.11
54	15.86	33.602	6.09	323	50	16.24	33.60	6.02	24.64	331	0.18
69	13.03	33.409	5.71	280	75	12.63	33.43	5.53	25.27	271	0.26
93	11.60	33.583	4.86	241	100	11.00	33.66	4.42	25.75	225	0.32
114	10.24	33.789	3.67	203	125	10.03	33.95	2.81	26.15	188	0.37
132	10.00	34.049	2.25	180	150	10.11	34.26	1.23	26.38	166	0.42
152	10.12	34.279	1.20	165	200	10.02	34.36	0.80	26.47	157	0.50
180	10.06	34.344	1.15	159	250	9.65	34.39	0.80	26.55	149	0.58
214	9.98	34.373	0.64	155	300	9.12	34.40	0.69	26.65	140	0.65
243	9.72	34.386	0.80	150	400	7.98	34.38	0.56	26.81	125	0.79
292	9.20	34.399	0.72	141	500	7.01	34.38	0.44	26.95	111	0.92
344	8.65	34.392	0.62	133	600	(6.15)	(34.38)		(27.07)	(100)	(1.03)
425	7.70	34.378	0.53	121							
506	6.96	34.373	0.44	111							
589	6.24	34.379	0.39	102							

100.60

BLACK DOUGLAS; July 22, 1963; 0138 GCT; 30°40'N, 118°47'W; sounding, 1520 fm; wind, 320°, force 5; weather, overcast; sea, rough; wire angle, 23°.

1	17.98	33.440	5.67	382	0	(17.98)	(33.44)	(5.67)	(24.10)	(382)	(0.00)
11	18.01	33.435	5.70	383	10	18.01	33.44	5.69	24.10	383	0.04
29	17.84	33.420	5.73	380	20	17.99	33.43	5.71	24.09	383	0.08
39	17.06	33.384	5.85	365	30	17.80	33.42	5.73	24.13	379	0.11
53	15.98	33.322	6.08	346	50	16.28	33.34	6.01	24.43	351	0.19
67	14.46	33.291	6.21	317	75	13.28	33.30	5.94	25.04	293	0.27
90	12.78	33.394	5.71	276	100	11.80	33.46	5.41	25.45	254	0.34
110	11.54	33.484	5.34	247	125	10.88	33.62	5.12	25.74	226	0.40
128	10.64	33.660	5.03	219	150	9.69	33.70	4.56	26.01	201	0.45
146	9.82	33.674	4.66	205	200	8.60	33.97	3.70	26.40	164	0.55
174	9.09	33.883	4.03	178	250	7.93	34.03	2.70	26.54	150	0.63
205	8.54	33.981	3.62	162	300	7.17	34.07	2.37	26.68	137	0.70
234	8.27	34.040	2.74	154	400	6.49	34.18	1.10	26.86	120	0.83
279	7.37	34.028	2.70	142	500	5.87	34.27	0.68	27.01	105	0.95
329	6.94	34.132	1.84	129							
410	6.43	34.194	0.95	118							
490	5.93	34.266	0.68	106							
573	5.48	34.319	0.55	97							

132



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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BLACK DOUGLAS; July 22, 1963; 0753 GCT; 30°19.5'N, 119°32.5'W; sounding, 2000 fm; wind, 310°, force 5; weather, cloudy; sea, rough; wire angle, 25°.

100.70

1	17.48	33.416	5.71	372	0	(17.48)	(33.42)	(5.71)	(24.21)	(372)	(0.00)
10	17.51	33.423	5.80	372	10	17.51	33.42	5.80	24.20	373	0.04
28	16.71	33.380	5.92	358	20	17.50	33.42	5.81	24.20	372	0.07
37	16.54	33.432	5.90	350	30	16.67	33.38	5.91	24.37	357	0.11
51	16.02	33.510	5.95	333	50	16.02	33.51	5.95	24.62	333	0.18
64	15.37	33.519	5.94	319	75	15.08	33.51	5.95	24.83	313	0.26
86	14.22	33.484	5.95	298	100	13.20	33.50	5.51	25.21	276	0.34
104	12.98	33.503	5.41	272	125	11.61	33.59	4.63	25.59	241	0.40
121	11.92	33.559	4.84	249	150	10.42	33.73	3.74	25.91	210	0.46
137	10.94	33.661	4.06	224	200	9.23	33.93	3.05	26.26	176	0.56
163	9.94	33.798	3.50	197	250	8.48	34.09	2.41	26.51	153	0.64
193	9.28	33.909	3.10	179	300	7.30	34.05	2.52	26.65	140	0.72
218	8.86	34.020	2.80	164	400	6.20	34.12	1.35	26.85	121	0.85
260	8.35	34.089	2.37	152	500	5.68	34.22	0.70	27.00	107	0.97
306	7.16	34.046	2.52	138							
379	6.32	34.089	1.57	124							
455	5.90	34.192	0.89	112							
536	5.51	34.253	0.60	102							

BLACK DOUGLAS; July 22, 1963; 1353 GCT; 29°59.5'N, 120°16'W; sounding, 1950 fm; wind, 330°, force 5; weather, cloudy; sea, very rough; wire angle, 14°.

100.80

0	18.70	33.687	5.59	381	0	18.70	33.69	5.59	24.12	381	0.00
10	18.73	33.671	5.63	383	10	18.73	33.67	5.63	24.09	383	0.04
29	18.69	33.674	5.60	382	20	18.71	33.67	5.62	24.10	382	0.08
38	18.40	33.777	5.63	367	30	18.69	33.67	5.60	24.10	382	0.11
53	17.94	33.693	5.81	363	50	17.97	33.70	5.78	24.30	363	0.19
68	17.42	33.831	5.91	341	75	16.83	33.80	5.90	24.65	330	0.28
92	15.71	33.742	5.86	309	100	15.10	33.71	5.75	24.98	299	0.36
112	14.13	33.683	5.47	281	125	13.20	33.72	5.15	25.38	260	0.43
131	12.88	33.730	5.04	254	150	11.70	33.66	4.61	25.63	237	0.49
149	11.72	33.653	4.63	238	200	9.50	33.82	4.18	26.13	189	0.60
179	10.24	33.717	-	208	250	8.54	33.97	3.50	26.40	163	0.69
212	9.20	33.867	4.06	181	300	7.71	34.02	2.87	26.57	148	0.77
240	8.72	33.957	3.61	167	400	6.77	34.13	1.36	26.79	127	0.91
288	7.89	34.011	3.08	151	500	5.97	34.23	0.74	26.97	110	1.04
340	7.12	34.065	2.03	136	600	(5.43)					
421	6.64	34.160	1.17	123							
501	5.96	34.229	0.73	109							
584	5.50	-	0.52								

BLACK DOUGLAS; July 22, 1963; 1906 GCT; 29°40.5'N, 120°46'W; sounding, 2100 fm; wind, 320°, force 5; weather, cloudy; sea, very rough; wire angle, 07°.

100.90

0	18.39	33.481	5.76	389	0	18.39	33.48	5.76	24.03	389	0.00
10	18.42	33.490	5.74	389	10	18.42	33.49	5.74	24.03	389	0.04
29	18.00	33.706	5.85	363	20	18.38	33.52	5.78	24.07	386	0.08
39	18.09	33.809	5.78	358	30	18.00	33.71	5.85	24.31	363	0.12
54	17.74	33.810	5.94	350	50	17.90	33.82	5.88	24.41	353	0.19
70	16.68	33.728	5.97	332	75	16.38	33.74	5.97	24.71	324	0.27
93	16.78	34.076	5.93	308	100	15.93	34.05	5.81	25.05	292	0.35
113	15.47	34.023	5.74	284	125	15.00	33.98	5.68	25.21	277	0.42
133	13.88	33.867	5.50	263	150	12.18	33.70	5.28	25.57	243	0.49
151	12.10	33.698	5.25	242	200	9.70	33.82	4.48	26.10	192	0.60
180	10.39	33.758	4.76	208	250	8.52	33.96	3.72	26.40	164	0.69
214	9.26	33.866	4.29	182	300	7.66	34.03	2.71	26.58	146	0.77
243	8.65	33.953	3.83	166	400	6.60	34.21	1.23	26.87	119	0.91
290	7.83	34.018	2.97	149	500	5.92	34.24	0.67	26.98	108	1.03
341	7.02	34.082	1.91	134	600	(5.44)	(34.33)		(27.11)	(96)	(1.14)
421	6.48	34.234	1.07	115							
502	5.90	34.243	0.64	108							
585	5.50	34.324	0.46	97							



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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

110.35 BLACK DOUGLAS; July 27, 1963; 1342 GCT; 29°46'N, 116°00'W; sounding, 700 fm; wind, 300°, force 2; weather, cloudy; sea, moderate; wire angle, 10°.

1	18.63	33.645	6.18	382	0	(18.63)	(33.64)	(6.18)	(24.10)	(383)	(0.00)
11	17.80	33.590	6.19	367	10	17.81	33.59	6.19	24.26	367	0.04
30	14.84	33.475	6.19	311	20	17.20	33.56	6.19	24.38	355	0.07
40	14.37	33.498	6.03	300	30	14.84	33.48	6.19	24.86	310	0.11
55	12.37	33.603	4.99	253	50	12.41	33.60	5.01	25.44	254	0.16
69	11.40	33.811	3.57	221	75	11.17	33.85	3.28	25.87	214	0.22
92	10.71	33.959	2.70	198	100	10.53	34.00	2.42	26.10	192	0.27
112	10.34	34.046	2.17	185	125	10.23	34.09	2.05	26.22	180	0.32
132	10.16	34.105	2.01	178	150	9.96	34.12	2.19	26.29	174	0.37
150	9.96	34.119	2.19	174	200	9.66	34.25	1.80	26.44	159	0.45
179	9.54	34.161	2.09	164	250	9.71	34.36	1.28	26.52	152	0.53
211	9.72	34.285	1.69	158	300	9.59	34.44	1.06	26.60	144	0.61
239	9.70	34.339	1.38	153	400	8.40	34.43	0.90	26.79	127	0.75
286	9.76	34.443	1.02	147	500	7.19	34.40	0.61	26.94	112	0.88
337	9.04	34.430	1.30	136	600	(6.13)	(34.35)		(27.04)	(102)	(0.99)
417	8.22	34.431	0.79	124							
498	7.22	34.400	0.61	113							
583	6.30	34.362	0.61	104							

110.40 BLACK DOUGLAS; July 27, 1963; 1031 GCT; 29°36'N, 116°19'W; sounding, 1200 fm; wind, 300°, force 2; weather, cloudy; sea, moderate; wire angle, 08°.

0	18.73	33.660	5.62	384	0	18.73	33.66	5.62	24.09	384	0.00
10	18.70	33.660	5.65	383	10	18.70	33.66	5.65	24.09	383	0.04
29	18.51	33.653	5.74	379	20	18.64	33.66	5.69	24.11	382	0.08
39	17.50	33.617	5.85	358	30	18.48	33.65	5.74	24.14	378	0.11
49	16.41	33.584	6.11	336	50	16.32	33.58	6.11	24.60	334	0.19
64	15.04	33.564	6.04	308	75	13.96	33.52	5.89	25.07	290	0.26
78	13.60	33.508	5.82	284	100	12.19	33.55	5.26	25.45	254	0.33
96	12.45	33.554	5.36	258	125	10.77	33.58	4.76	25.73	227	0.39
121	10.96	33.568	4.80	231	150	9.82	33.71	4.45	26.00	202	0.45
140	10.12	33.647	4.62	211	200	9.03	34.01	3.11	26.36	167	0.54
168	9.36	33.830	3.98	186	250	7.80	34.01	3.13	26.55	150	0.62
196	9.14	34.019	3.09	168	300	7.25	34.09	2.20	26.69	136	0.70
223	8.40	33.983	3.52	160	400	6.63	34.19	1.10	26.85	121	0.83
260	7.60	34.030	2.92	145	500	6.36	34.33	0.58	27.00	107	0.95
316	7.12	34.112	1.95	133							
388	6.66	34.174	1.23	122							
461	6.52	34.298	0.63	111							
538	6.17	34.359	0.55	102							

110.50 BLACK DOUGLAS; July 28, 1963; 0451 GCT; 29°16'N, 116°59'W; sounding, 1985 fm; wind, 300°, force 4; weather, partly cloudy; sea, moderate; wire angle, 05°.

0	18.67	33.501	5.59	394	0	18.67	33.50	5.59	23.98	394	0.00
10	18.70	33.502	5.63	394	10	18.70	33.50	5.63	23.97	395	0.04
29	18.54	33.499	5.63	391	20	18.60	33.50	5.63	24.00	392	0.08
39	18.26	33.539	5.66	381	30	18.53	33.50	5.63	24.01	391	0.12
49	17.53	33.537	5.86	365	50	17.46	33.54	5.87	24.31	363	0.19
64	16.77	33.600	5.96	343	75	16.13	33.64	5.94	24.69	326	0.28
79	15.86	33.651	5.93	319	100	14.88	33.67	5.74	24.99	297	0.36
99	14.91	33.687	5.75	297	125	12.68	33.72	5.05	25.48	251	0.43
124	12.72	33.713	5.13	252	150	11.14	33.86	3.08	25.88	213	0.49
144	11.49	33.835	3.24	221	200	10.32	34.15	1.95	26.25	177	0.59
173	10.40	33.956	2.76	193	250	8.78	34.11	2.43	26.48	156	0.67
203	10.30	34.163	1.91	176	300	8.07	34.14	1.95	26.61	144	0.75
231	9.20	34.111	2.39	163	400	6.82	34.22	0.99	26.85	121	0.89
269	8.42	34.113	2.44	151	500	6.29	34.30	0.65	26.98	108	1.01
326	7.80	34.178	1.53	137							
398	6.84	34.218	1.01	121							
471	6.43	34.277	0.69	112							
548	6.06	34.321	0.63	104							



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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BLACK DOUGLAS; July 26, 1963; 2247 GCT; 28°58.5'N, 117°39'W; sounding, 2000 fm; wind, 330°, force 3; weather, cloudy; sea, moderate; wire angle, 04°.

110.60

0	19.12	33.566	5.59	400	0	19.12	33.57	5.59	23.92	400	0.00
10	18.84	33.548	5.61	394	10	18.84	33.55	5.61	23.98	394	0.04
29	18.78	33.549	5.59	393	20	18.81	33.55	5.60	23.98	394	0.08
39	18.11	33.545	5.70	377	30	18.77	33.55	5.60	23.99	393	0.12
49	17.10	33.535	6.11	355	50	17.04	33.54	6.10	24.41	353	0.19
65	15.42	33.615	5.96	313	75	13.85	33.65	5.27	25.20	278	0.27
80	13.14	33.681	4.76	262	100	11.74	33.93	2.63	25.83	218	0.34
98	11.77	33.903	2.74	221	125	11.55	34.22	1.13	26.09	193	0.39
124	11.56	34.220	1.12	193	150	10.20	34.20	1.23	26.31	172	0.43
144	10.66	34.191	1.70	180	200	10.37	34.45	0.87	26.48	156	0.52
173	10.78	34.443	0.83	164	250	10.28	34.59	0.28	26.60	144	0.60
203	10.32	34.454	0.87	155	300	9.40	34.50	0.47	26.68	137	0.67
231	10.54	34.584	0.36	149	400	8.46	34.49	0.26	26.82	123	0.81
268	10.17	34.593	0.28	142	500	7.11	34.42	0.28	26.97	110	0.93
325	8.86	34.446	0.50	133							
397	8.48	34.495	0.26	123							
468	7.45	34.435	0.28	113							
545	6.72	34.410	0.28	105							

BLACK DOUGLAS; July 26, 1963; 1645 GCT; 28°37'N, 118°17'W; sounding, 1700 fm; wind, 300°, force 1; weather, overcast; sea, moderate; wire angle, 00°.

110.70

0	20.22	33.829	5.43	408	0	20.22	33.83	5.43	23.83	408	0.00
10	20.18	33.830	5.46	407	10	20.18	33.83	5.46	23.84	407	0.04
29	18.85	33.747	5.70	380	20	20.12	33.82	5.48	23.85	406	0.08
39	17.22	33.583	5.88	354	30	18.77	33.75	5.71	24.15	378	0.12
49	16.44	33.620	6.13	334	50	16.40	33.62	6.12	24.62	333	0.19
64	13.56	33.692	5.29	269	75	12.30	33.70	4.37	25.54	245	0.26
80	12.21	33.716	4.24	242	100	11.17	33.85	3.33	25.87	214	0.32
99	11.12	33.827	3.35	215	125	11.66	34.29	1.11	26.12	190	0.37
124	11.62	34.274	1.13	191	150	11.44	34.43	0.87	26.27	176	0.42
144	11.58	34.432	0.83	178	200	10.29	34.41	0.99	26.46	158	0.51
172	10.54	34.367	1.28	165	250	10.35	34.54	0.52	26.55	149	0.58
201	10.30	34.420	0.98	157	300	9.20	34.45	0.64	26.68	137	0.66
230	10.68	34.571	0.44	152	400	7.79	34.39	0.56	26.85	121	0.80
267	9.86	34.492	0.64	145	500	6.87	34.39	0.48	26.98	109	0.92
324	8.80	34.429	0.61	133							
395	7.84	34.388	0.56	122							
467	7.10	34.376	0.53	113							
545	6.56	34.427	0.38	102							

BLACK DOUGLAS; July 26, 1963; 0929 GCT; 28°16.5'N, 119°02.5'W; sounding, 2000 fm; wind, 320°, force 4; weather, partly cloudy; sea, rough; wire angle, 14°.

110.80

0	18.67	33.519	5.54	393	0	18.67	33.52	5.54	23.99	392	0.00
10	18.70	33.518	5.60	393	10	18.70	33.52	5.60	23.99	393	0.04
29	18.66	33.541	5.52	391	20	18.69	33.52	5.55	23.99	393	0.08
39	17.96	33.593	5.62	370	30	18.65	33.54	5.52	24.02	390	0.12
52	17.42	33.592	5.87	358	50	17.43	33.59	5.86	24.35	358	0.19
67	16.49	33.591	5.94	337	75	16.36	33.62	5.92	24.63	332	0.28
90	15.62	33.678	5.82	312	100	14.50	33.65	5.55	25.06	291	0.36
109	13.48	33.637	5.22	272	125	12.06	33.66	4.62	25.56	244	0.43
127	11.93	33.671	4.55	240	150	10.73	33.73	4.12	25.86	215	0.48
145	10.95	33.715	4.24	220	200	9.28	33.98	3.00	26.30	174	0.58
172	9.90	33.839	3.54	194	250	8.60	34.09	2.38	26.49	155	0.67
204	9.22	33.999	2.94	171	300	7.87	34.14	1.87	26.64	141	0.74
231	8.90	34.072	2.50	161	400	7.03	34.24	0.85	26.84	122	0.88
275	8.18	34.106	2.20	148	500	6.34	34.32	0.50	26.99	107	1.00
326	7.59	34.162	1.54	135							
403	7.00	34.245	0.82	121							
484	6.44	34.307	0.51	110							
567	5.86	34.334	0.47	100							



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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

110.90 BLACK DOUGLAS; July 26, 1963; 0307 GCT; 27°56.5'N, 119°42'W; sounding, 2080 fm; wind, 330°, force 5; weather, partly cloudy; sea, very rough; wire angle, 10°.

0	19.16	33.634	5.56	396	0	19.16	33.63	5.56	23.96	396	0.00
9	19.18	33.634	5.21	396	10	19.18	33.63	5.20	23.95	397	0.04
34	19.10	33.625	5.02	395	20	19.16	33.63	5.16	23.96	396	0.08
44	18.44	33.599	5.15	381	30	19.12	33.62	5.05	23.96	396	0.12
59	17.15	33.584	5.72	353	50	17.90	33.59	5.39	24.24	369	0.20
73	16.65	33.638	5.89	337	75	16.56	33.65	5.91	24.60	335	0.28
97	15.70	33.629	5.98	317	100	15.53	33.62	5.98	24.81	315	0.37
116	14.41	33.571	5.83	295	125	13.56	33.59	5.51	25.21	277	0.44
137	12.76	33.629	5.18	259	150	12.30	33.66	5.03	25.51	248	0.51
165	11.19	33.698	4.69	225	200	9.99	33.84	3.72	26.07	195	0.62
196	10.04	33.809	3.85	198	250	9.04	34.09	2.52	26.42	162	0.71
233	9.30	34.050	2.85	169	300	8.42	34.18	1.87	26.59	146	0.79
261	8.90	34.106	2.36	158	400	7.21	34.26	1.00	26.83	123	0.93
310	8.28	34.199	1.74	142	500	6.35	34.32	0.60	26.99	107	1.05
369	7.54	34.239	1.18	129	600	5.69	34.38	0.51	27.12	95	1.16
465	6.59	34.301	0.70	112							
550	6.02	34.355	0.51	101							
622	5.55	34.380	0.52	93							

113.30 BLACK DOUGLAS; July 27, 1963; 2252 GCT; 29°22'N, 115°18'W; sounding, 30 fm; wind, 300°, force 3; weather, clear; sea, slight; wire angle, 05°.

0	16.39	33.771	6.26	322	0	16.39	33.77	6.26	24.73	322	0.00
10	13.44	33.754	4.86	262	10	13.44	33.75	4.86	25.36	263	0.03
29	11.53	33.714	4.07	230	20	12.80	33.74	4.60	25.48	251	0.05
39	11.26	33.762	3.75	222	30	11.51	33.72	4.06	25.71	229	0.08

119.33 BLACK DOUGLAS; July 31, 1963; 1251 GCT; 28°18'N, 114°53'W; sounding, 60 fm; wind, 300°, force 4; weather, overcast; sea, slight; wire angle, 00°.

1	18.46	33.767	6.27	369	0	(18.46)	(33.77)	(6.27)	(24.24)	(369)	(0.00)
11	18.46	33.762	6.21	370	10	18.46	33.76	6.22	24.23	370	0.04
29	15.00	33.668	5.09	300	20	16.10	33.70	5.38	24.75	321	0.07
50	12.63	33.590	5.09	259	30	14.96	33.66	5.09	24.97	300	0.10
75	11.27	33.830	3.75	217	50	12.63	33.59	5.09	25.39	259	0.16
					75	11.27	33.83	3.75	25.84	217	0.22

120.45 BLACK DOUGLAS; July 31, 1963; 1957 GCT; 27°43'N, 115°33'W; sounding, 1200 fm; wind, 320°, force 3; weather, cloudy; sea, moderate; wire angle, 06°.

0	18.92	33.876	6.38	373	0	18.92	33.88	6.38	24.21	372	0.00
10	18.16	33.861	6.48	356	10	18.16	33.86	6.48	24.38	356	0.04
29	13.19	33.773	4.11	256	20	15.50	33.80	5.65	24.96	301	0.07
40	13.02	33.839	3.42	248	30	13.16	33.78	4.06	25.44	255	0.10
55	12.64	33.990	2.28	230	50	12.80	33.93	2.70	25.62	237	0.15
70	12.42	34.083	1.83	219	75	12.37	34.11	1.74	25.85	216	0.20
94	11.72	34.197	1.27	198	100	11.73	34.26	1.05	26.09	193	0.26
113	11.83	34.325	0.76	190	125	11.92	34.41		26.17	186	0.30
134	11.82	34.524u	0.23u	176	150	11.72	34.48		26.26	177	0.35
152	11.70	34.493	0.52	176	200	11.38	34.63	0.31	26.44	160	0.44
181	11.32	34.563	0.49	164	250	11.07	34.65	0.26	26.51	153	0.52
214	11.24	34.715u	0.26	151	300	10.72	34.65	0.27	26.57	147	0.60
245	11.10	34.646	0.26	154	400	9.62	34.58	0.27	26.71	134	0.74
292	10.78	34.651	0.26	148	500	8.12	34.49	0.32	26.88	118	0.88
344	10.35	34.627	0.28	143	600	(6.75)	(34.41)		(27.01)	(106)	(1.00)
425	9.27	34.595a)	0.25	128							
506	8.04	34.485	0.33	118							
588	6.89	34.419	0.39	107							

a) Possible evaporation; value does not fall on property curve.



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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BLACK DOUGLAS; July 31, 1963; 2314 GCT; 27°33'N, 115°51'W; sounding, 2000 fm; wind, 310°, force 3; weather, cloudy; sea, moderate; wire angle, 05°.

120.50

0	19.84	33.852	6.04	397	0	19.84	33.85	6.04	23.95	397	0.00
10	19.57	33.867	6.17	389	10	19.57	33.87	6.17	24.03	389	0.04
29	13.68	33.703	5.06	271	20	15.50	33.73	5.82	24.90	306	0.07
39	12.98	33.783	3.73	252	30	13.67	33.70	5.02	25.27	271	0.10
49	12.66	33.935	2.93	234	50	12.65	33.94	2.93	25.66	234	0.15
64	11.82	33.871	3.00	224	75	11.00	33.83	3.35	25.89	212	0.21
79	10.86	33.832	3.36	210	100	11.20	34.17	1.69	26.11	191	0.26
98	11.10	34.100	1.94	194	125	11.21	34.33	1.29	26.24	179	0.31
123	11.23	34.324	1.28	180	150	10.60	34.35	1.30	26.36	167	0.35
143	10.82	34.345	1.41	171	200	10.35	34.50	0.69	26.52	152	0.43
172	10.90	34.503	0.74	161	250	10.08	34.56	0.46	26.61	143	0.51
202	10.36	34.504	0.69	152	300	9.61	34.56	0.38	26.69	136	0.58
230	10.06	34.511	0.61	147	400	8.39	34.50	0.36	26.84	122	0.72
267	10.10	34.611	0.34	140	500	7.26	34.46	0.39	26.98	109	0.84
324	9.19	34.521	0.41	132							
396	8.44	34.510	0.36	122							
467	7.64	34.476	0.36	113							
546	6.81	34.449	0.41	104							

BLACK DOUGLAS; August 1, 1963; 0507 GCT; 27°12.5'N, 116°30.5'W; sounding, 2000 fm; wind, 320°, force 3; weather, cloudy; sea, moderate; wire angle, 15°.

120.60

0	20.04	33.688	5.47	414	0	20.04	33.69	5.47	23.77	414	0.00
10	20.08	33.697	5.51	414	10	20.08	33.70	5.51	23.77	414	0.04
28	18.88	33.711	5.68	384	20	20.08	33.70	5.56	23.77	414	0.08
38	17.66	33.678	5.83	357	30	18.50	33.70	5.72	24.17	375	0.12
47	16.64	33.630	6.00	338	50	16.25	33.62	5.99	24.65	330	0.19
62	15.03	33.603	5.87	305	75	13.88	33.62	5.63	25.17	281	0.27
76	13.78	33.622	5.60	279	100	12.20	33.65	4.56	25.52	247	0.34
94	12.53	33.635	4.84	254	125	11.28	33.83	3.34	25.83	217	0.40
118	11.44	33.783	3.62	224	150	10.70	33.98	2.72	26.06	196	0.45
138	10.92	33.932	2.78	204	200	9.88	34.22	1.78	26.38	165	0.54
164	10.02	34.022	2.64	182	250	9.67	34.41	0.88	26.57	148	0.62
192	9.94	34.181	1.95	169	300	8.71	34.33	0.94	26.66	139	0.69
218	9.78	34.285	1.42	159	400	7.85	34.40	0.50	26.85	121	0.83
254	9.64	34.417	0.84	147	500	6.83	34.38	0.41	26.98	109	0.95
308	8.56	34.328	0.95	137							
377	8.08	34.407	0.52	124							
448	7.32	34.380	0.49	116							
524	6.64	34.387	0.37	106							

BLACK DOUGLAS; August 1, 1963; 1045 GCT; 26°53'N, 117°08'W; sounding, 2000 fm; wind, 300°, force 3; weather, overcast; sea, moderate; wire angle, 04°.

120.70

0	20.88	33.638	5.32	439	0	20.88	33.64	5.32	23.51	438	0.00
10	20.87	33.644	5.39	438	10	20.87	33.64	5.39	23.52	438	0.04
29	18.03	33.635	6.02	369	20	19.40	33.65	5.84	23.91	401	0.09
39	16.61	33.561	6.01	342	30	17.80	33.62	6.02	24.29	365	0.12
49	15.74	33.599	5.94	321	50	15.67	33.60	5.93	24.77	319	0.19
64	14.18	33.601	5.51	288	75	13.22	33.61	5.20	25.29	269	0.27
79	12.96	33.616	5.11	263	100	11.53	33.66	4.39	25.66	234	0.33
98	11.62	33.653	4.50	236	125	11.34	34.07	2.19	26.01	201	0.39
123	11.34	34.059	2.18	201	150	9.83	33.98	2.98	26.20	182	0.43
144	10.00	33.985	2.91	184	200	9.58	34.24	1.76	26.45	159	0.52
173	9.18	33.988	3.06	171	250	8.73	34.28	1.32	26.62	143	0.60
203	9.60	34.261	1.63	158	300	8.42	34.33	1.08	26.70	135	0.67
231	9.10	34.291	1.33	148	400	7.61	34.40	0.52	26.88	118	0.80
270	8.50	34.265	1.32	141	500	6.48	34.38	0.43	27.02	105	0.92
326	8.36	34.392	0.73	129							
396	7.66	34.398	0.53	119							
467	6.85	34.379	0.45	109							
543	6.06	34.374	0.42	100							



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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

120.80 BLACK DOUGLAS; August 1, 1963; 1600 GCT; 26°33'N, 117°20.5'W; sounding, 2100 fm; wind, 320°, force 2; weather, overcast; sea, moderate; wire angle, 07°.

0	20.46	33.872	5.58	411	0	20.46	33.87	5.58	23.80	411	0.00
10	20.44	33.869	5.47	411	10	20.44	33.87	5.47	23.81	411	0.04
29	16.16	33.573	5.38	331	20	19.02	33.73	5.42	24.07	386	0.08
39	14.84	33.600	5.54	302	30	16.00	33.57	5.40	24.67	328	0.12
49	14.06	33.655	5.48	282	50	14.00	33.66	5.47	25.17	280	0.18
64	12.54	33.702	4.94	249	75	11.73	33.78	3.83	25.71	229	0.24
79	11.47	33.807	3.48	222	100	10.73	33.91	2.99	26.00	202	0.30
98	10.78	33.885	3.13	205	125	10.39	34.18	1.88	26.27	176	0.34
124	10.41	34.167	1.90	178	150	10.10	34.26	1.59	26.38	166	0.39
143	10.18	34.235	1.71	169	200	9.70	34.37	1.47	26.53	151	0.47
171	9.88	34.325	1.33	157	250	9.30	34.42	1.01	26.64	141	0.54
200	9.70	34.370	1.47	151	300	8.72	34.41	0.83	26.72	133	0.62
229	9.52	34.416	1.07	145	400	7.45	34.39	0.59	26.90	117	0.75
267	9.10	34.416	0.95	138	500	6.47	34.40	0.48	27.04	103	0.86
324	8.44	34.414	0.72	129							
394	7.52	34.396	0.59	117							
465	6.77	34.395	0.49	107							
541	6.10	34.409	0.45	98							

123.42 BLACK DOUGLAS; August 2, 1963; 1725 GCT; 27°14'N, 114°59'W; sounding, 850 fm; wind, 340°, force 4; weather, partly cloudy; sea, moderate; wire angle, 11°.

0	20.88	33.907	5.28	419	0	20.88	33.91	5.28	23.72	419	0.00
10	20.85	33.894	5.28	419	10	20.85	33.89	5.28	23.71	420	0.04
28	17.91	33.772	5.78	356	20	20.72	33.89	5.32	23.75	416	0.08
38	16.68	33.797	5.70	327	30	17.88	33.77	5.78	24.38	356	0.12
53	15.74	33.736	5.67	311	50	15.91	33.75	5.69	24.83	313	0.19
67	14.12	33.773	4.73	274	75	13.19	33.77	4.26	25.42	256	0.26
91	12.15	33.766	3.74	237	100	11.79	33.81	3.39	25.72	228	0.32
110	11.48	33.889	2.98	216	125	11.03	33.96	2.76	25.98	203	0.38
130	10.86	33.985	2.68	199	150	10.66	34.06	2.38	26.12	190	0.43
150	10.66	34.064	2.38	189	200	10.48	34.40	1.25	26.42	162	0.52
179	9.97	34.211	1.96	167	250	10.34	34.55	0.53	26.56	148	0.60
214	10.80	34.539	0.65	157	300	10.17	34.60	0.35	26.63	142	0.67
242	10.40	34.539	0.58	150	400	8.80	34.51	0.34	26.79	127	0.81
290	10.28	34.617	0.34	142	500	7.44	34.43	0.36	26.93	113	0.94
342	9.40	34.516	0.42	136	600	(6.35)	(34.40)		(27.05)	(101)	(1.06)
421	8.58	34.511	0.31	124							
500	7.44	34.431	0.36	113							
583	6.50	34.406	0.36	103							

127.40 BLACK DOUGLAS; August 3, 1963; 0647 GCT; 26°43'N, 114°30.5'W; sounding, 1600 fm; wind, 300°, force 4; weather, clear; sea, rough; wire angle, 13°.

1	18.22	33.843	6.36	358	0	(18.22)	(33.84)	(6.36)	(24.35)	(359)	(0.00)
11	18.12	33.837	6.38	356	10	18.13	33.84	6.37	24.37	356	0.04
30	15.76	33.734	5.72	311	20	17.50	33.80	6.26	24.50	345	0.07
39	14.62	33.731	5.24	288	30	15.76	33.73	5.72	24.85	311	0.10
54	13.22	33.683	4.75	263	50	13.55	33.69	4.87	25.29	269	0.16
68	12.62	33.858	3.17	239	75	12.00	33.90	3.01	25.76	225	0.22
92	11.28	33.942	2.87	209	100	11.64	34.21	1.78	26.06	196	0.28
112	11.90	34.356	1.18	189	125	11.96	34.43	0.89	26.17	185	0.33
132	11.96	34.462	0.78	183	150	11.94	34.56	0.63	26.28	175	0.37
150	11.94	34.560	0.63	175	200	11.53	34.66	0.34	26.43	160	0.46
179	11.82	34.643	0.37	167	250	11.21	34.68	0.30	26.51	153	0.54
212	11.44	34.670	0.35	158	300	10.45	34.62	0.37	26.60	145	0.62
241	11.32	34.683	0.30	155	400	9.56	34.57	0.33	26.71	134	0.76
287	10.56	34.622	0.39	147	500	8.32	34.52	0.35	26.87	119	0.90
338	10.16	34.620	0.31	140	600	(7.09)	(34.46)		(27.00)	(106)	(1.02)
419	9.34	34.555	0.33	132							
499	8.33	34.517	0.35	119							
581	7.31	34.469	0.33	109							



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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BLACK DOUGLAS; August 5, 1963; 1321 GCT; 26°29'N, 113°29'W; sounding, 38 fm; wind, direction missing, force 1; weather, clear; sea, moderate; wire angle, 07°.

130.30

0	22.52	34.127	5.53	446	0	22.52	34.13	5.53	23.43	446	0.00
10	22.32	34.118	5.79	442	10	22.32	34.12	5.79	23.48	441	0.04
20	16.64	33.991	5.25	311	20	16.64	33.99	5.25	24.84	312	0.08
39	14.58	34.256	1.55	248	30	14.30	34.05	2.08	25.41	258	0.11
59	14.54	34.433	0.95	234	50	14.49	34.37	1.08	25.62	238	0.16

BLACK DOUGLAS; August 5, 1963; 0755 GCT; 26°08'N, 114°06'W; sounding, 1100 fm; wind, 340°, force 5; weather, partly cloudy; sea, rough; wire angle, 30°.

130.40

1	21.79	33.932	5.23	441	0	(21.79)	(33.93)	(5.23)	(23.49)	(441)	(0.00)
9	21.80	33.909	5.25	443	10	21.80	33.91	5.25	23.47	443	0.04
26	20.64	33.838	5.46	418	20	21.79	33.91	5.25	23.47	443	0.09
35	18.90	33.822	5.66	376	30	19.30	33.83	5.63	24.07	385	0.13
47	16.68	33.726	5.90	332	50	16.44	33.72	5.88	24.68	327	0.20
60	15.38	33.649	5.74	309	75	14.30	33.60	5.54	25.06	291	0.28
81	13.98	33.598	5.47	284	100	13.48	33.78	4.31	25.37	261	0.35
99	13.51	33.765	-	263	125	11.95	33.90	2.95	25.76	224	0.41
116	12.46	33.911	2.86	232	150	11.70	34.18	2.10	26.03	199	0.46
133	11.44	33.892	3.03	216	200	10.10	34.24	1.62	26.36	167	0.56
159	11.42	34.216	1.77	191	250	9.92	34.40	1.06	26.52	152	0.64
188	10.50	34.218	1.86	175	300	9.71	34.53	0.51	26.65	139	0.72
213	10.10	34.294	1.48	163	400	8.79	34.55	0.30	26.82	124	0.85
254	9.90	34.404	1.01	152	500	7.68	34.50	0.28	26.95	111	0.98
299	9.72	34.527	0.51	140							
372	9.10	34.557	0.32	128							
466	8.28	34.528	0.28	118							
525	7.42	34.487	0.28	109							

BLACK DOUGLAS; August 5, 1963; 0149 GCT; 25°53'N, 114°47.5'W; sounding, 1967 fm; wind, 320°, force 4; weather, partly cloudy; sea, rough; wire angle, 00°.

130.50

0	21.52	33.817	-	442	0	21.52	33.82	-	23.48	442	0.00
11	21.50	33.821	-	441	10	21.50	33.82	-	23.48	441	0.04
29	18.74	33.700	-	381	20	20.80	33.79	-	23.65	425	0.09
40	17.32	33.618	-	354	30	18.73	33.70	-	24.12	381	0.13
55	15.49	33.671	-	310	50	15.75	33.66	-	24.79	316	0.20
70	14.32	33.607	-	291	75	13.78	33.61	-	25.18	280	0.27
94	12.37	33.652	-	250	100	12.00	33.70	-	25.60	240	0.34
114	11.59	33.812	-	224	125	11.40	33.90	-	25.87	214	0.40
134	10.85	33.968	2.73	200	150	10.52	34.03	2.49	26.13	190	0.45
153	10.48	34.038	2.45	188	200	10.00	34.26	1.74	26.39	164	0.54
184	10.16	34.170	2.06	173	250	9.58	34.38	1.26	26.56	149	0.62
217	9.84	34.355	1.41	155	300	9.12	34.46	0.89	26.70	135	0.69
246	9.62	34.380	1.28	149	400	7.82	34.44	0.68	26.88	118	0.82
294	9.19	34.448	0.93	137	500	6.92	34.46	0.35	27.03	104	0.94
347	8.48	34.465	0.78	126	600	(6.08)	(34.46)	(0.54)	(27.14)	(94)	(1.05)
428	7.52	34.437	0.62	114							
509	6.85	34.460	0.33	103							
591	6.14	34.458	0.52	95							



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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

130.60

BLACK DOUGLAS; August 4, 1963; 2009 GCT; 25°33'N, 115°22'W; sounding, 2000 fm; wind, 320°, force 4; weather, partly cloudy; sea, rough; wire angle, 11°.

1	21.22	33.916	5.36	427	0	(21.22)	(33.92)	(5.36)	(23.63)	(427)	(0.00)
11	20.92	33.895	5.52	421	10	21.10	33.91	5.43	23.66	424	0.04
30	17.22	33.566	5.95	355	20	18.06	33.61	5.91	24.21	372	0.08
40	16.82	33.674	5.93	339	30	17.22	33.57	5.95	24.39	355	0.12
55	15.82	33.636	5.97	320	50	15.95	33.64	5.97	24.73	322	0.19
69	14.28	33.607	5.61	290	75	13.50	33.63	5.07	25.25	273	0.26
92	12.48	33.726	4.09	246	100	12.30	33.74	4.00	25.57	242	0.33
112	11.40	33.758	3.69	225	125	11.00	33.87	2.97	25.92	210	0.38
132	10.98	33.949	2.65	203	150	10.67	34.13	2.08	26.18	185	0.43
151	10.66	34.130	2.08	185	200	10.15	34.31	1.53	26.41	163	0.52
180	10.12	34.200	1.77	171	250	9.58	34.43	0.86	26.60	145	0.60
212	9.86	34.330	1.33	157	300	8.88	34.44	0.71	26.72	133	0.67
240	9.70	34.420	0.91	147	400	7.61	34.43	0.44	26.90	116	0.80
285	9.06	34.434	0.77	136	500	6.60	34.45	0.34	27.06	101	0.92
335	8.49	34.450	0.55	127							
414	7.42	34.430	0.42	113							
496	6.64	34.445	0.34	102							
578	6.05	34.447	0.36	94							

130.70

BLACK DOUGLAS; August 4, 1963; 1335 GCT; 25°06'N, 116°00'W; sounding, 1780 fm; wind, 330°, force 3; weather, overcast; sea, moderate; wire angle, 11°.

0	21.50	33.784	5.23	444	0	(21.50)	(33.78)	(5.23)	(23.45)	(444)	(0.00)
11	21.49	33.775	5.24	444	10	21.49	33.78	5.24	23.45	444	0.04
30	18.44	33.507	5.69	388	20	21.44	33.77	5.26	23.46	443	0.09
40	17.86	33.506	5.74	374	30	18.44	33.51	5.69	24.04	388	0.13
55	17.02	33.554	5.89	352	50	17.37	33.53	5.83	24.32	361	0.21
69	16.39	33.629	5.87	332	75	16.22	33.64	5.86	24.67	328	0.29
92	14.64	33.621	5.69	296	100	14.30	33.74	4.97	25.17	280	0.37
111	14.20	33.803	4.75	274	125	13.70	33.79	4.83	25.33	265	0.44
132	13.02	33.770	4.93	253	150	11.92	33.75	4.29	25.65	234	0.50
150	11.92	33.750	4.29	234	200	9.71	33.90	3.09	26.16	186	0.61
179	10.50	33.860	3.32	202	250	9.67	34.29	1.47	26.47	157	0.70
211	9.56	33.950	2.96	180	300	9.41	34.45	0.71	26.64	141	0.77
240	9.68	34.224	1.78	162	400	8.12	34.45	0.37	26.84	121	0.91
286	9.54	34.423	0.84	145	500	7.32	34.44	0.28	26.95	111	1.03
338	9.00	34.460	0.47	134							
417	7.90	34.446	0.34	119							
495	7.36	34.445	0.29	111							
578	6.62	34.437	0.26	102							

130.80

BLACK DOUGLAS; August 4, 1963; 0807 GCT; 24°49'N, 116°39'W; sounding, 2100 fm; wind, 330°, force 4; weather, overcast; sea, moderate; wire angle, 09°.

1	21.64	33.806	5.30	446	0	(21.64)	(33.81)	(5.30)	(23.44)	(446)	(0.00)
11	21.65	33.805	5.29	446	10	21.65	33.81	5.30	23.43	446	0.04
30	19.57	33.866	5.59	389	20	21.00	33.82	5.41	23.62	428	0.09
40	19.76	34.045	5.51	381	30	19.57	33.87	5.59	24.03	389	0.13
54	19.48	34.147	5.70	366	50	19.59	34.11	5.62	24.21	372	0.21
69	18.20	34.030	5.81	344	75	17.76	33.99	5.80	24.58	337	0.29
94	16.37	33.869	5.79	314	100	15.75	33.84	5.61	24.93	303	0.38
113	14.22	33.798	4.84	275	125	13.10	33.77	4.51	25.44	255	0.45
133	12.41	33.768	4.32	242	150	11.19	33.78	4.07	25.81	219	0.51
152	11.10	33.784	4.04	218	200	11.06	34.28	1.66	26.22	180	0.61
181	11.02	34.097	2.40	193	250	10.81	34.53	0.70	26.46	158	0.69
215	11.00	34.382	1.21	172	300	10.23	34.62	0.41	26.64	141	0.77
243	10.87	34.511	0.75	160	400	8.47	34.42	0.59	26.77	129	0.91
291	10.35	34.631	0.41	142	500	6.87	34.33	0.59	26.93	113	1.04
343	9.60	34.526	0.47	138	600	(5.17)	(34.40)		(27.20)	(88)	(1.15)
424	7.93	34.372	0.62	125							
505	6.80	34.326	0.58	113							
586	6.24	34.390	0.39	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	

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BLACK DOUGLAS; August 8, 1963; 0545 GCT; 24°40'N, 114°02'W; sounding, 2100 fm; wind, 320°, force 3; weather, partly cloudy; sea, moderate; wire angle, 15°.

137.50

1	23.95	34.191	5.22	481	0	(23.95)	(34.19)	(5.22)	(23.06)	(481)	(0.00)
11	23.98	34.200	5.22	481	10	23.98	34.20	5.22	23.06	481	0.05
29	19.44	33.920	5.97	382	20	23.90	34.20	5.23	23.09	479	0.10
39	18.10	33.901	6.04	351	30	19.25	33.92	5.99	24.15	377	0.14
53	16.56	33.848	5.91	320	50	16.88	33.86	5.97	24.69	326	0.21
67	15.10	33.833	5.24	290	75	14.52	33.85	4.72	25.21	277	0.29
91	13.52	33.923	3.66	252	100	12.90	33.99	3.09	25.65	235	0.35
111	12.18	34.076	2.45	215	125	12.02	34.19	1.82	25.98	204	0.41
131	11.96	34.240	1.68	199	150	11.40	34.29	1.80	26.17	185	0.46
149	11.42	34.282	1.80	186	200	11.02	34.50	1.31	26.40	163	0.54
178	11.12	34.404	1.59	172	250	10.41	34.54	0.79	26.54	150	0.63
210	10.84	34.498	1.18	160	300	9.78	34.55	0.80	26.66	139	0.70
238	10.56	34.530	0.79	153	400	8.37	34.47	0.63	26.82	124	0.84
283	9.96	34.548	0.84	142	500	7.13	34.44	0.43	26.98	108	0.96
334	9.42	34.547	0.67	134							
413	8.14	34.456	0.62	121							
492	7.18	34.439	0.44	109							
575	6.66	34.483	0.42	99							

BLACK DOUGLAS; August 7, 1963; 2236 GCT; 24°22.5'N, 114°40'W; sounding, 2000 fm; wind, 340°, force 4; weather, partly cloudy; sea, moderate; wire angle, 17°.

137.60

1	22.98	34.128	5.16	459	0	(22.98)	(34.13)	(5.16)	(23.30)	(459)	(0.00)
10	22.85	34.127	5.24	455	10	22.85	34.13	5.24	23.34	455	0.05
29	20.82	34.224	5.48	395	20	22.77	34.13	5.27	23.36	453	0.09
38	19.50	34.013	5.68	377	30	20.72	34.22	5.50	24.00	392	0.13
52	18.55	33.999	5.81	355	50	18.68	34.00	5.80	24.36	358	0.21
66	17.77	33.976	5.72	338	75	17.19	33.94	5.64	24.68	328	0.29
90	16.03	33.867	5.47	307	100	14.68	33.80	4.93	25.14	284	0.37
108	13.80	33.776	4.47	268	125	12.70	33.80	3.84	25.54	245	0.44
127	12.59	33.809	3.79	242	150	11.70	34.08	2.51	25.95	206	0.50
145	11.64	34.024	2.65	209	200	10.85	34.35	1.38	26.32	172	0.59
174	11.20	34.298	1.55	181	250	9.83	34.40	1.04	26.53	151	0.68
205	10.64	34.348	1.32	168	300	9.50	34.49	0.55	26.66	139	0.75
232	9.89	34.344	1.22	156	400	8.08	34.44	0.48	26.84	122	0.89
277	9.78	34.481	0.64	144	500	7.16	34.45	0.36	26.98	108	1.01
327	9.11	34.490	0.50	133							
406	8.00	34.440	0.47	120							
485	7.28	34.450	0.37	110							
570	6.56	34.458	0.29	100							

BLACK DOUGLAS; August 7, 1963; 1630 GCT; 24°01.5'N, 115°18'W; sounding, 2000 fm; wind, 340°, force 3; weather, cloudy; sea, moderate; wire angle, 02°.

137.70

1	22.72	34.055	5.17	457	0	(22.72)	(34.06)	(5.17)	(23.32)	(457)	(0.00)
11	22.74	34.062	5.19	457	10	22.74	34.06	5.17	23.32	457	0.05
30	19.62	33.895	5.70	388	20	22.73	34.06	5.17	23.32	457	0.09
40	18.95	33.962	5.73	367	30	19.62	33.90	5.70	24.04	388	0.13
55	18.22	34.005	5.81	347	50	18.49	34.00	5.78	24.41	353	0.21
70	17.38	33.907	5.80	334	75	17.00	33.88	5.74	24.68	328	0.29
94	15.08	33.800	5.14	292	100	14.30	33.78	4.77	25.20	277	0.37
115	13.17	33.766	4.19	256	125	12.58	33.81	3.69	25.57	242	0.44
135	12.15	33.891	3.16	228	150	11.98	34.15	1.95	25.95	206	0.49
154	11.96	34.202	1.77	202	200	11.51	34.52	0.68	26.33	170	0.59
184	11.51	34.422	0.96	178	250	11.03	34.64	0.30	26.51	153	0.67
217	11.53	34.611	0.41	164	300	10.32	34.61	0.29	26.61	143	0.75
245	11.11	34.645	0.30	154	400	8.93	34.53	0.27	26.78	127	0.89
292	10.46	34.617	0.27	145	500	7.56	34.47	0.28	26.94	112	1.02
343	9.58	34.555	0.31	136	600	(6.84)	(34.49)		(27.06)	(101)	(1.14)
424	8.67	34.526	0.26	124							
504	7.51	34.473	0.28	111							
588	6.92	34.490	0.23	102							

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

137.80

BLACK DOUGLAS; August 7, 1963; 1032 GCT; 23°36'N, 116°00'W; sounding, 2000 fm; wind, 320°, force 3;  
weather, cloudy; sea, moderate; wire angle, 05°.

0	22.78	33.980	5.19	464	0	22.78	33.98	5.19	23.25	464	0.00
10	22.79	33.979	5.23	464	10	22.79	33.98	5.23	23.24	464	0.05
29	19.52	33.969	5.74	380	20	20.40	33.97	5.69	23.89	402	0.09
39	19.18	33.980	5.70	371	30	19.48	33.97	5.73	24.13	379	0.13
54	18.80	34.054	5.82	357	50	18.96	34.04	5.79	24.32	362	0.20
69	17.98	34.001	5.81	341	75	17.50	33.97	5.77	24.63	332	0.29
93	15.66	33.841	5.43	301	100	15.10	33.82	5.22	25.06	291	0.37
114	13.76	33.784	4.51	266	125	12.70	33.83	3.76	25.57	243	0.44
134	12.02	33.927	3.07	223	150	11.80	34.15	2.31	25.99	203	0.49
153	11.67	34.174	-	199	200	11.50	34.57	0.70	26.37	167	0.59
183	11.40	34.427	1.13	175	250	10.90	34.64	0.32	26.53	151	0.67
216	11.35	34.627	0.44	160	300	9.90	34.57	0.39	26.65	140	0.75
246	10.96	34.645	0.32	152	400	8.70	34.55	0.26	26.83	122	0.88
294	9.98	34.564	0.39	141	500	7.69	34.51	0.28	26.96	111	1.01
345	9.36	34.574	0.27	131	600	(6.68)	(34.49)	(0.29)	(27.08)	(99)	(1.12)
426	8.39	34.533	0.26	119							
506	7.64	34.508	0.27	110							
590	6.79	34.495	0.28	100							



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
80.50-B	VII-11	0243	34°28.0'	120°29.0'	10	300°	3	overcast	moderate	12.52	33.745
80.51-B	11	0327	34°26.0'	120°32.0'	150	300°	3	overcast	moderate	12.84	33.738
80.65-B	11	1455	33°59.0'	121°30.0'	1900	280°	1	overcast	moderate	15.78	33.293
82.47-B	13	1040	34°15.0'	119°58.0'	300	310°	4	clear	moderate	14.56	33.728
83.39-B	13	1535	34°15.5'	119°17.5'	9	260°	4	cloudy	moderate	16.74	33.681
83.40-B	13	1454	34°14.0'	119°21.5'	12	260°	4	partly cloudy	moderate	15.09	33.666
83.43-B	13	1320	34°08.0'	119°34.0'	130	250°	4	partly cloudy	moderate	15.89	33.686
83.51-B	13	0645	33°52.0'	120°07.5'	50	320°	4	clear	rough	13.60	33.664
83.55-B	13	0420	33°43.0'	120°25.5'	530	320°	4	clear	rough	14.21	33.705
83.65-B	12	2220	33°23.0'	121°05.0'	1900	var.	1	cloudy	slight	15.39	33.255
83.70-B	12	1955	33°14.0'	121°26.0'	1950	280°	1	overcast	moderate	16.02	33.140
83.80-B	12	1510	32°54.5'	122°07.0'	2200	260°	2	overcast	rough	16.25	33.190
83.90-B	12	0955	32°34.5'	122°47.5'	2200	300°	3	overcast	rough	16.62	33.251
87.32-B	13	2057	33°54.0'	118°26.5'	10	250°	4	clear	moderate	17.30	33.658
87.33-B	13	2130	33°54.0'	118°29.5'	29	250°	4	clear	moderate	17.32	33.607
87.34-B	13	2215	33°52.0'	118°33.5'	37	250°	4	partly cloudy	rough	17.82	33.620
87.35-B	13	2305	33°50.0'	118°37.5'	324	260°	4	clear	rough	18.08	33.613
87.40-B	14	0140	33°40.0'	118°58.0'	410	250°	4	clear	rough	17.67	33.576
87.45-B	14	0440	33°30.0'	119°19.0'	900	280°	6	clear	very rough	16.25	33.773

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
87.50-B	VII-14	0745	33°19.0'	119°40.0'	40	240°	6	partly cloudy	rough	15.32	33.726
87.55-B	14	1010	33°10.0'	120°00.0'	700	280°	5	partly cloudy	very rough	15.52	33.737
87.60-B	14	1300	32°57.0'	120°20.5'	400	260°	4	overcast	rough	15.67	33.745
87.65-B	14	1545	32°46.0'	120°46.0'	2000	270°	4	overcast	moderate	15.83	33.272
87.70-B	14	1835	32°38.0'	121°08.5'	2000	300°	4	overcast	rough	16.01	33.249
87.80-B	14	2245	32°21.0'	121°42.0'	2200	300°	4	overcast	moderate	16.53	33.197
87.90-B	15	0340	31°59.0'	122°24.0'	2200	300°	4	overcast	moderate	16.63	33.185
90.28-B	16	2244	33°29.5'	117°45.0'	12	190°	2	clear	moderate	18.91	33.683
90.65-B	16	0000	32°16.5'	120°18.5'	1950	290°	4	overcast	rough	16.08	33.962
93.26-B	17	0310	32°57.0'	117°17.0'	10	290°	1	partly cloudy	moderate	17.55	33.673
93.27-B	17	0343	32°56.0'	117°19.0'	52	290°	1	partly cloudy	moderate	16.78	33.656
93.35-B	17	0910	32°40.5'	117°51.5'	300	calm		overcast	smooth	18.45	33.666
93.45-B	17	1425	32°20.0'	118°32.0'	630	230°	3	cloudy	moderate	17.16	33.549
93.55-B	17	2021	32°00.0'	119°13.5'	920	330°	5	partly cloudy	very rough	17.32	33.563
93.65-B	18	0230	31°40.0'	119°53.5'	2100	300°	4	clear	very rough	16.81	33.668
97.29-B	20	2310	32°19.5'	117°04.0'	9	calm		partly cloudy	slight	16.86	33.780
97.29-B	20	2341	32°17.5'	117°04.5'	28	calm		partly cloudy	slight	15.84	33.662
97.30-B	19	1750	32°16.0'	117°08.5'	35	320°	2	overcast	moderate	13.90	33.596
97.32-B	19	1637	32°12.0'	117°16.5'	600	320°	2	overcast	rough	16.59	33.537



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
97.35-B	VII-19	1430	32°05.5'	117°28.5'	525	280°	4	overcast	moderate	18.62	33.630
97.40-B	19	1135	31°56.0'	117°48.0'	700	280°	4	cloudy	rough	17.68	33.593
97.45-B	19	0900	31°46.0'	118°12.5'	900	300°	4	overcast	rough	17.84	33.592
97.50-B	19	0625	31°37.0'	118°33.0'	1200	320°	6	missing	very rough	17.78	33.588
97.55-B	19	0305	31°27.5'	118°56.0'	650	320°	6	partly cloudy	very rough	17.80	33.555
97.60-B	19	0033	31°17.0'	119°10.5'	1950	320°	6	partly cloudy	very rough	17.67	33.584
97.65-B	18	2207	31°06.5'	119°27.5'	1930	320°	6	partly cloudy	rough	17.50	33.604
97.70-B	18	1925	30°57.5'	119°48.0'	1900	310°	4	partly cloudy	rough	17.38	33.551
97.80-B	18	1430	30°35.5'	120°30.5'	2000	320°	6	clear	rough	17.58	33.410
100.29-B	21	0413	31°42.0'	116°43.5'	56	260°	2	cloudy	slight	16.90	33.649
100.45-B	21	1455	31°10.0'	117°47.0'	±1000	300°	3	overcast	very rough	18.07	33.658
100.55-B	21	2208	30°50.5'	118°26.0'	1400	320°	4	overcast	very rough	17.89	33.513
100.65-B	22	0430	30°30.0'	119°10.0'	1700	310°	5	cloudy	very rough	17.49	33.590
103.28-B	24	0940	31°08.0'	116°19.0'	9	340°	1	overcast	slight	13.66	33.630
103.29-B	24	0913	31°07.0'	116°21.0'	17	340°	1	overcast	slight	14.32	-
103.30-B	24	0830	31°05.0'	116°25.0'	38	340°	1	overcast	moderate	14.75	33.602
103.35-B	24	0535	30°55.0'	116°45.0'	1100	320°	4	overcast	moderate	18.18	33.631
103.40-B	24	0240	30°46.0'	117°06.0'	800	300°	3	cloudy	moderate	18.68	33.687
103.45-B	24	0000	30°36.5'	117°25.0'	1100	270°	3	overcast	moderate	18.81	33.739

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

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Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
103.50-B	VII-23	2055	30°28.0'	117°48.5'	1400	300°	3	overcast	moderate	18.04	33.641
103.55-B	23	1830	30°21.0'	118°08.0'	1400	330°	4	overcast	rough	17.81	33.608
103.60-B	23	1525	30°09.0'	118°29.5'	1850	300°	4	overcast	rough	18.00	33.610
103.65-B	23	1245	29°59.0'	118°49.0'	1840	310°	4	overcast	very rough	18.61	33.715
103.70-B	23	1000	29°48.0'	119°08.5'	1550	310°	4	overcast	very rough	18.47	33.649
103.80-B	23	0500	29°28.5'	119°46.0'	1900	310°	4	overcast	very rough	18.89	33.735
103.90-B	22	2340	29°07.5'	120°23.0'	2040	330°	4	cloudy	very rough	18.78	33.570
107.30-B	24	1415	30°30.0'	116°03.5'	7	300°	2	overcast	moderate	14.55	33.558
107.31-B	24	1452	30°28.0'	116°07.0'	24	300°	2	overcast	moderate	15.98	-
107.32-B	24	1540	30°26.0'	116°11.0'	350	320°	3	overcast	moderate	15.56	33.486
107.35-B	24	1727	30°20.0'	116°23.0'	960	300°	3	overcast	rough	18.73	33.768
107.40-B	24	2020	30°10.0'	116°43.5'	1550	300°	3	overcast	rough	18.50	33.714
107.45-B	24	2300	29°59.5'	117°04.5'	1000	320°	3	cloudy	rough	18.61	33.776
107.50-B	25	0130	29°49.0'	117°24.5'	1400	320°	4	cloudy	rough	18.48	33.742
107.55-B	25	0400	29°43.5'	117°46.0'	1520	310°	4	partly cloudy	rough	18.75	33.787
107.60-B	25	0620	29°31.0'	118°00.0'	1700	310°	4	clear	rough	18.24	33.610
107.65-B	25	0912	29°20.0'	118°19.5'	1600	300°	4	clear	rough	17.94	33.490
107.70-B	25	1200	29°12.0'	118°41.0'	1600	320°	5	clear	rough	18.36	33.535
107.80-B	25	1705	28°51.0'	119°19.5'	1900	320°	5	clear	very rough	18.59	33.684

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
107.90-B	VII-25	2215	28°30.5'	119°57.5'	2000	320°	5	partly cloudy	very rough	19.13	33.615
110.32-B	27	1535	29°52.0'	115°48.0'	13	320°	3	cloudy	moderate	13.19	33.738
110.45-B	27	0715	29°26.0'	116°39.0'	240	300°	2	overcast	moderate	18.70	33.656
110.55-B	27	0135	29°06.0'	117°19.0'	1950	330°	3	partly cloudy	moderate	19.05	33.592
110.65-B	26	1958	28°46.0'	117°58.0'	1800	320°	3	overcast	moderate	19.98	33.885
113.28-B	27	2122	29°25.0'	115°11.5'	8	300°	2	clear	slight	15.16	33.821
113.29-B	27	2142	29°24.0'	115°13.0'	14	300°	2	clear	slight	16.78	33.827
113.35-B	28	0130	29°11.5'	115°38.0'	580	300°	3	overcast	rough	18.90	33.721
113.40-B	28	0405	29°02.5'	115°57.0'	1000	280°	4	partly cloudy	moderate	19.12	33.720
113.45-B	28	0635	28°52.0'	116°18.0'	940	280°	3	partly cloudy	moderate	18.80	33.657
113.50-B	28	0905	28°41.5'	116°36.5'	1800	290°	3	partly cloudy	moderate	19.34	33.623
113.55-B	28	1135	28°32.0'	116°56.5'	1800	290°	3	overcast	moderate	19.26	33.638
113.60-B	28	1415	28°22.5'	117°15.5'	2000	280°	4	overcast	moderate	18.28	33.739
113.65-B	28	1645	28°14.0'	117°36.5'	2000	300°	3	overcast	moderate	20.10	33.693
113.70-B	28	1910	28°05.0'	117°55.5'	1800	320°	2	overcast	moderate	19.01	-
113.80-B	29	0005	27°44.0'	118°36.5'	2000	320°	3	overcast	moderate	20.50	33.842
113.90-B	29	0420	27°23.5'	119°11.5'	2000	320°	2	cloudy	moderate	19.30	33.625
117.25-B	31	0050	28°58.0'	114°37.0'	28	280°	5	overcast	moderate	16.12	33.830
117.25-B	31	0110	28°58.5'	114°36.5'	10	280°	4	overcast	moderate	14.49	33.794

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

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Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
117.26-B	VII-31	0000	28°56.0'	114°41.0'	40	280°	5	overcast	moderate	18.52	33.847
117.30-B	30	2155	28°48.0'	114°56.5'	55	280°	4	overcast	moderate	18.87	33.859
117.35-B	30	1900	28°38.0'	115°16.0'	130	320°	1	overcast	moderate	18.58	33.677
117.40-B	30	1347	28°28.0'	115°35.0'	440	300°	4	overcast	moderate	19.26	33.674
117.45-B	30	1043	28°18.0'	115°56.0'	1800	290°	4	overcast	moderate	19.32	33.654
117.50-B	30	0755	28°08.0'	116°15.0'	2100	330°	4	partly cloudy	moderate	19.63	33.595
117.55-B	30	0453	27°58.5'	116°36.0'	1900	330°	4	cloudy	moderate	19.70	33.632
117.60-B	30	0205	27°51.5'	116°55.0'	2000	310°	5	partly cloudy	moderate	20.54	33.767
117.65-B	29	2230	27°41.5'	117°15.5'	1750	320°	4	partly cloudy	moderate	20.49	33.840
117.70-B	29	1930	27°27.0'	117°33.0'	2000	330°	2	partly cloudy	moderate	20.86	33.871
117.80-B	29	1500	27°07.5'	118°06.0'	2000	310°	3	cloudy	moderate	19.84	33.793
117.90-B	29	0920	26°46.0'	118°47.5'	2000	320°	2	partly cloudy	moderate	19.36	33.613
118.39-B	30	1545	28°18.5'	115°23.5'	141	320°	1	overcast	moderate	19.48	33.728
120.22-B	31	0602	28°28.0'	114°04.0'	10	320°	3	overcast	moderate	18.22	33.838
120.23-B	31	0625	28°27.0'	114°06.5'	14	320°	3	overcast	moderate	20.06	33.902
120.24-B	31	0710	28°25.0'	114°10.5'	21	320°	3	overcast	moderate	20.10	33.896
120.25-B	31	0755	28°22.5'	114°15.0'	32	320°	3	overcast	moderate	19.74	33.977
120.30-B	31	1020	28°13.0'	114°34.0'	51	300°	4	overcast	slight	19.15	33.837
120.35-B	31	1440	28°03.0'	114°54.0'	42	300°	3	overcast	slight	18.72	33.755

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
120.40-B	VII-31	1645	27°56.5'	115°14.0'	20	320°	4	overcast	moderate	17.04	33.676
120.55-B	VIII-1	0200	27°22.0'	116°11.5'	2000	290°	3	cloudy	moderate	18.33	33.684
120.65-B	1	0759	27°02.5'	116°49.5'	2000	320°	3	cloudy	moderate	20.41	-
123.36-B	2	2052	27°26.0'	114°36.0'	23	300°	4	clear	moderate	15.18	34.083
123.37-B	2	2013	27°24.5'	114°40.0'	40	300°	4	clear	moderate	15.98	33.952
123.45-B	2	1520	27°08.0'	115°11.5'	2300	340°	4	cloudy	moderate	20.67	33.883
123.50-B	2	1205	26°59.0'	115°36.5'	1850	310°	4	cloudy	moderate	20.54	33.766
123.55-B	2	0920	26°49.0'	115°54.0'	2000	300°	3	partly cloudy	moderate	20.80	33.725
123.60-B	2	0647	26°39.5'	116°12.0'	2000	340°	2	overcast	moderate	20.32	33.630
123.65-B	2	0410	26°29.5'	116°29.5'	2000	330°	2	overcast	moderate	20.66	33.760
123.70-B	2	0130	26°19.0'	116°47.0'	2000	320°	2	overcast	moderate	21.41	33.973
123.80-B	1	2107	26°01.5'	117°20.5'	2100	340°	2	overcast	moderate	20.40	33.821
124.36-B	2	2130	27°24.0'	114°32.0'	10	300°	4	clear	moderate	15.20	34.084
127.33-B	3	0205	26°58.5'	114°00.5'	10	290°	5	clear	moderate	18.48	34.056
127.33-B	3	0233	26°57.5'	114°02.0'	35	300°	5	clear	rough	18.90	34.190
127.34-B	3	0320	26°55.5'	114°06.0'	42	300°	5	clear	rough	19.27	34.068
127.45-B	3	0950	26°32.5'	114°50.0'	1800	300°	4	partly cloudy	rough	19.82	33.893
127.50-B	3	1235	26°22.0'	115°11.0'	1500	320°	4	cloudy	rough	21.82	33.957
127.55-B	3	1525	26°11.0'	115°31.0'	2000	320°	4	cloudy	rough	21.98	34.106

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

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Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
127.60-B	VIII-3	1735	26°03.5'	115°46.5'	2000	320°	3	overcast	moderate	21.88	33.999
127.65-B	3	1955	25°54.0'	116°05.0'	2000	320°	3	overcast	moderate	20.76	33.863
127.70-B	3	2225	25°44.0'	116°24.5'	2000	320°	4	overcast	moderate	21.03	33.724
127.80-B	4	0055	25°24.0'	117°03.0'	2100	320°	4	overcast	moderate	21.58	33.911
130.26-B	5	1540	26°37.0'	113°13.0'	16	060°	3	clear	moderate	19.80	34.073
130.26-B	5	1610	26°38.0'	113°11.0'	9	360°	3	clear	moderate	18.14	34.132
130.28-B	5	1435	26°33.0'	113°21.0'	29	060°	3	clear	moderate	20.30	34.049
130.35-B	5	1030	26°17.0'	113°48.5'	120	300°	5	clear	rough	18.99	33.869
130.45-B	5	0446	25°49.0'	114°26.5'	2000	300°	4	partly cloudy	moderate	22.24	33.939
130.55-B	4	2230	25°42.0'	115°05.5'	2000	350°	4	overcast	rough	21.82	33.960
130.65-B	4	1700	25°18.5'	115°42.0'	2000	340°	4	cloudy	moderate	21.04	33.836
133.20-B	5	2210	26°13.5'	112°26.0'	10	250°	4	partly cloudy	slight	23.16	34.261
133.21-B	5	2115	26°12.5'	112°32.5'	24	250°	4	partly cloudy	slight	23.47	34.192
133.23-B	6	0000	26°08.5'	112°40.0'	40	230°	4	partly cloudy	moderate	22.81	34.163
133.25-B	6	0110	26°04.5'	112°48.0'	43	300°	4	partly cloudy	moderate	22.10	34.092
133.30-B	6	0400	25°54.5'	113°07.5'	100	280°	5	clear	rough	22.50	34.086
133.35-B	6	0638	25°44.0'	113°26.5'	300	300°	4	cloudy	rough	21.86	34.120
133.40-B	6	0920	25°33.5'	113°45.5'	1400	320°	4	cloudy	rough	20.49	33.843
133.45-B	6	1200	25°23.5'	114°03.0'	1900	320°	4	cloudy	rough	22.34	34.015

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



Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
133.50-B	VIII-6	1450	25°12.5'	114°23.0'	2000	320°	5	partly cloudy	rough	22.34	34.038
133.55-B	6	1737	25°00.0'	114°43.0'	2000	320°	4	partly cloudy	rough	21.38	33.826
133.60-B	6	2009	24°50.0'	115°00.0'	2000	360°	4	partly cloudy	rough	21.50	33.824
133.65-B	6	2237	24°43.0'	115°19.0'	2000	340°	3	cloudy	rough	22.05	33.870
133.70-B	7	0050	24°34.0'	115°40.0'	2000	320°	2	cloudy	rough	22.39	33.902
133.80-B	7	0520	24°14.5'	116°16.5'	2100	320°	3	cloudy	moderate	22.05	33.881
137.55-B	8	0155	24°30.5'	114°22.0'	1900	320°	4	partly cloudy	moderate	24.14	34.240
137.65-B	7	1950	24°14.5'	114°58.0'	2100	340°	4	partly cloudy	moderate	22.80	34.125

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

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