CORRECTIONS MADE :
STATION POSITIONS ~~AS~~

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 5411
(MLR 66)
10-16 November 1954

and

CCOFI Cruise 5412
(MLR 67)
30 November - 16 December 1954

SIO Reference 60-1
10 September 1959

UNIVERSITY OF CALIFORNIA

SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 5411
(MLR 66)
10-16 November 1954

and

CCOFI CRUISE 5412
(MLR 67)
30 November - 16 December 1954

Sponsored by

Marine Research Committee

SIO Reference 60-1
10 September 1959

Approved for distribution:

Roger Revelle

Roger Revelle, Director

CONTENTS

INTRODUCTION

The data presented in this report were collected on the sixty-sixth and sixty-seventh consecutive cruises of the California Cooperative Oceanic Fisheries Investigations program. The R/V Crest of the Scripps Institution participated in the sixty-sixth cruise, and the R/V Crest and R/V Paolina-T participated in the sixty-seventh cruise.

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

STANDARD PROCEDURES

Processing of the Cruise 5411 data only was carried out using the method described by Klein.[1/] Certain approximations have been introduced for the determination of the integrated pressure terms which may result in errors whose maximum values are less than 0.5 dynamic centimeter at 0 over 200 decibars, 1.0 dynamic centimeter at 0 over 500 decibars, and 2.0 dynamic centimeters at 0 over 1000 decibars. The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of ΔD. The interpolated values at 125 meters are not tabulated.

To indicate degree of accuracy, temperatures are recorded in tenths of a degree when obtained by bucket thermometer, thermograph, or bathythermograph, while temperatures from reversing thermometers are recorded in hundredths of a degree. Extrapolated values and values interpolated between remote observations are entered within parentheses. A hyphen is used to indicate a missing observed value. The time is the time of messenger release. When more than one cast was made on a station, 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.

[1/] Klein, Hans T. A new technique for processing physical oceanographic data. MS.

FOOTNOTES

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

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

Loose bottle cap:	The cap is definitely loose so that it could be moved with very little applied pressure. The salinity values obtained from these samples may be usable depending on time and/or conditions of storage.
Possible evaporation:	Either the cap was sealed with less than usual pressure, the bottle edge chipped, the rubber washer cracked, or the bale broke on opening, etc.

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

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

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

p: pretrip or posttrip.

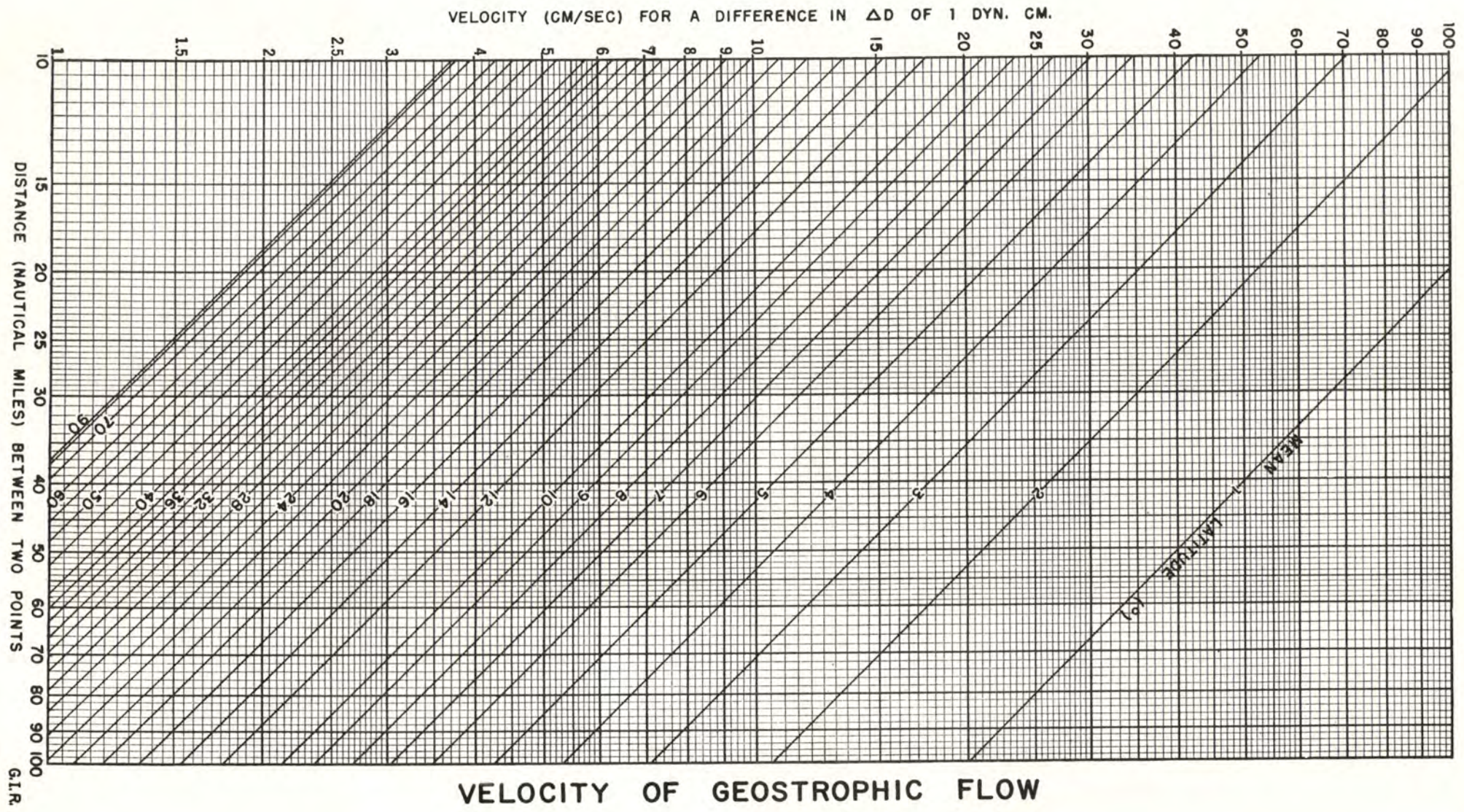
Values which are not drawn through because they seem to be in error without apparent reason are indicated by one of the following notations.

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

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

FORMAT

These data are typed in the format of the University of California Press publication, "Oceanic Observations of the Pacific." So that these pages can be used as copy for the 1954 volume, the first page of the Cruise 5411 data is numbered 277.



VELOCITY OF GEOSTROPHIC FLOW

FIGURES

CCOFI CRUISE 5411

10–16 NOVEMBER 1954

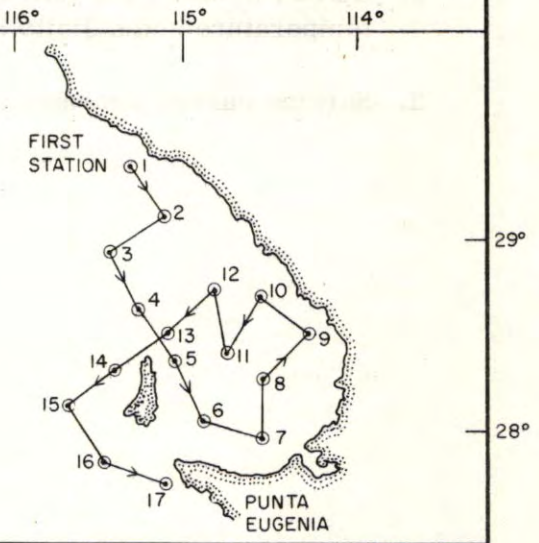
CREST

STATION POSITIONS

DIRECTION OF TRAVEL ⟶

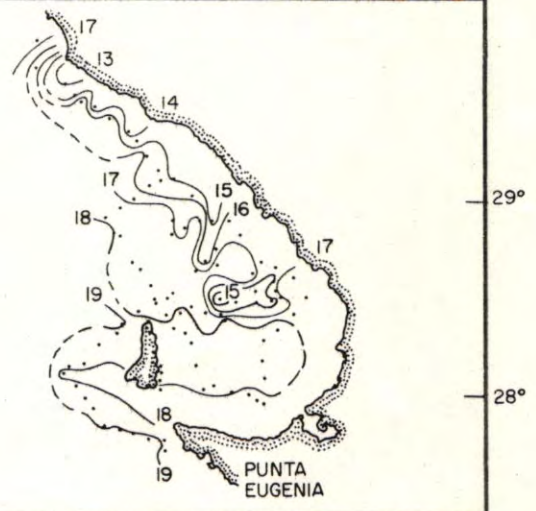
⊙ HYDROGRAPHIC STATION

1. 113.30	7. 121.32	13. 118.34
2. 115.30	8. 120.29	14. 118.39
3. 115.35	9. $119^{5}.24$	15. 118.44
4. 117.35	10. 118.26	16. 120.43
5. $118^{5}.35$	11. 119.31	17. 121.40
6. 120.35	12. $117^{5}.29$	



10 METER TEMPERATURE

CONTOUR INTERVAL 1.0 °C



10 METER SALINITY

CONTOUR INTERVAL 0.20 ‰

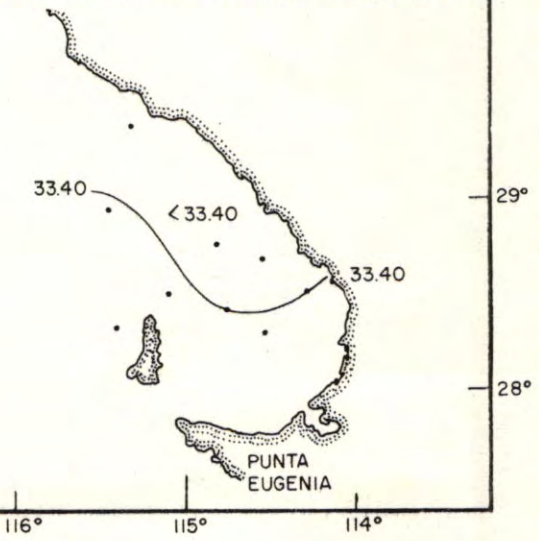


FIGURE 1

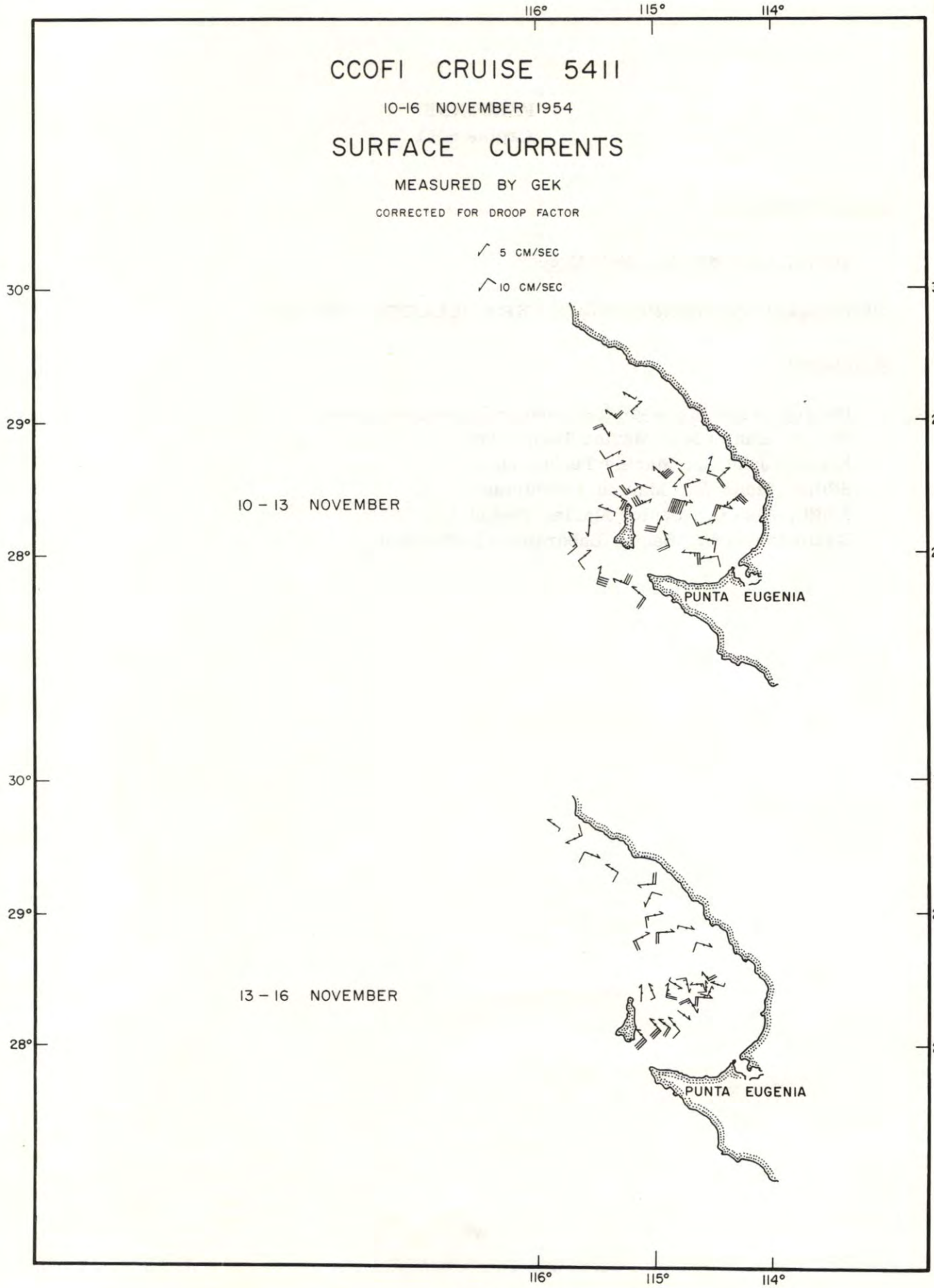

CCOFI CRUISE 5411
10-16 NOVEMBER 1954
SURFACE CURRENTS
MEASURED BY GEK
CORRECTED FOR DROOP FACTOR
5 CM/SEC
10 CM/SEC
116°
115°
114°
30°
29°
28°
10 – 13 NOVEMBER
PUNTA EUGENIA
13 – 16 NOVEMBER
PUNTA EUGENIA

FIGURE 2

PERSONNEL
Cruise 5411

SHIP'S CAPTAIN

Davis, Laurence E., R/V Crest

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

R/V Crest

Horrer, Paul L., Assistant Research Oceanographer
Brown, Daniel M., Marine Technician
Kivlen, John C., Marine Technician
Sibley, Slade W., Marine Technician
Smith, Alan C., Senior Marine Technician
Wyllie, John G., Senior Laboratory Technician

OBSERVED				INTERPOLATED				COMPUTED		
Z m	T °C	S ‰	O_2 ml/L	Z m	T °C	S ‰	O_2 ml/L	σ_t g/L	δ_{T_3} 10^{-5}cm^3/g	ΔD dyn. m

CREST; November 10, 1954; 2000 GCT; 29°22'N, 115°19'W; sounding, 35 fm; wind, 110°, force 1; weather, rain; sea, moderate; wire angle, 00°. 113.30

0	16.74	33.38	5.90	0	16.74	33.38	5.90	24.35	358	0.00
5	16.43	33.36	5.82	10	13.94	33.32	5.64	24.92	304	0.03
10	13.94	33.32	5.64	20	12.22	33.33	4.61	25.27	271	0.06
15	13.18	33.31	4.96	30	11.98	33.48	3.90	25.44	255	0.09
20	12.22	33.33	4.61	50	11.54	33.48	3.29	25.52	248	0.14
25	12.08	33.42	4.07							
30	11.98	33.48	3.90							
35	11.95	33.40u	3.78							
50	11.54	33.48	3.29							

CREST; November 10, 1954; 2259 GCT; 29°06'N, 115°07.5'W; sounding, 53 fm; wind, 200°, force 3; weather, cloudy; sea, moderate; wire angle, 00°. 115.30

0	16.38	33.35	5.69	0	16.38	33.35	5.69	24.41	353	0.00
10	15.64	33.34	5.82	10	15.64	33.34	5.82	24.58	337	0.03
15	15.46	33.35	5.78	20	14.32	33.33	5.62	24.86	310	0.07
20	14.32	33.33	5.62	30	11.75	33.44	3.90	25.45	254	0.10
25	12.34	33.40	4.71	50	10.68	33.69	2.23	25.83	218	0.14
30	11.75	33.44	3.90							
35	11.46	33.53	3.74							
45	10.87	33.68	2.57							
55	10.60	33.69	1.55							
70	10.64	33.71	1.89							

CREST; November 11, 1954; 0209 GCT; 28°55'N, 115°27'W; sounding, 610 fm; wind, 180°, force 2; weather, cloudy; sea, smooth; wire angle, 00°. 115.35

0	17.77	33.44	5.50	0	17.77	33.44	5.50	24.16	377	0.00
10	17.68	33.42	5.52	10	17.68	33.42	5.52	24.16	377	0.04
30	16.65	33.40	5.66	20	17.44	33.41	5.60	24.21	372	0.08
40	14.24	33.41	5.66	30	16.65	33.40	5.66	24.39	355	0.11
50	12.64	33.26	5.57	50	12.64	33.26	5.57	25.14	284	0.18
60	11.62	33.28	5.01	75	11.36	33.53	3.97	25.59	240	0.24
70	11.23	33.35	4.64	100	11.26	33.84	2.52	25.84	216	0.30
81	11.45	33.64	3.52	150	10.50	34.14	1.82	26.22	181	0.40
91	11.45	33.80	2.74	200	9.91	34.24	1.66	26.40	164	0.49
101	11.23	33.85	2.50	250	9.62	34.32	1.12	26.50	154	0.57
155	10.47	34.16	1.79	300	9.13	34.35	0.78	26.61	144	0.64
206	9.86	34.25	1.60	400	7.93	34.36	0.50	26.80	126	0.78
265	9.54	34.34	0.95	500	6.90	34.35	0.30	26.94	112	0.91
370	8.23	34.36	0.58	600	5.90	34.38	0.37	27.10	97	1.02
490	7.00	34.35	0.29							
614	5.78	34.39	0.38							

CREST; November 11, 1954; 0511 GCT; 28°37.5'N, 115°16'W; sounding, 115 fm; wind, 110°, force 2; weather, overcast; sea, smooth; wire angle, 00°. 117.35

0	17.88	33.43	5.54	0	17.88	33.43	5.54	24.12	381	0.00
10	17.86	33.44	5.57	10	17.86	33.44	5.57	24.14	379	0.04
15	17.30	33.38	5.66	20	17.08	33.37	5.70	24.26	367	0.08
20	17.08	33.37	5.70	30	16.64	33.32	5.76	24.32	361	0.11
25	17.06	33.37	5.68	50	13.90	33.33	5.57	24.94	302	0.18
30	16.64	33.32	5.76	75	12.12	33.56	3.93	25.47	252	0.25
35	15.54	33.22	5.97	100	11.09	33.78	2.88	25.82	218	0.31
45	14.50	33.33	5.63	150	9.88	34.08	2.38	26.28	176	0.41
56	12.89	33.33	5.46							
66	12.23	33.42	4.67							
81	11.95	33.70	3.14							
101	11.04	33.78	2.88							
121	10.06	33.88	2.97							
156	9.81	34.10	2.26							

SIO
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5411

OBSERVED				INTERPOLATED				COMPUTED		
Z m	T °C	S ‰	O_2 ml/L	Z m	T °C	S ‰	O_2 ml/L	σ_t g/L	$\delta_{T,3}$ 10^{-5} cm/g	ΔD dyn. m

1175.29 CREST; November 12, 1954; 0453 GCT; 28°44'N, 114°49'W; sounding, 55 fm; wind, 320°, force 2; weather, partly cloudy; sea, slight; wire angle, 00°.

0	17.87	33.37	0	17.87	33.37	24.08	384	0.00
10	16.40	33.30	10	16.40	33.30	24.38	356	0.04
15	14.72	33.24	20	14.12	33.26	24.84	312	0.07
20	14.12	33.26	30	13.67	33.25	24.93	304	0.10
25	13.85	33.21	50	11.62	33.27	25.34	265	0.16
30	13.67	33.25	75	10.86	33.70	25.81	220	0.22
35	13.40	33.25						
45	11.92	33.23						
55	11.34	33.39						
65	11.15	33.57						
80	10.82	33.75						
100a)	-	33.96						

118.26 CREST; November 11, 1954; 2257 GCT; 28°41'N, 114°33'W; sounding, 50 fm; wind, 320°, force 2; weather, fog; sea, slight; wire angle, 00°.

0	17.56	33.36	0	17.56	33.36	24.14	378	0.00
10	16.03	33.33	10	16.03	33.33	24.48	346	0.04
15	15.82	33.35	20	15.80	33.33	24.53	342	0.07
20	15.80	33.33	30	14.84	33.33	24.74	322	0.10
25	15.52	33.34	50	11.65	33.36	25.40	258	0.16
30	14.84	33.33	75	10.90	33.81	25.89	212	0.22
35	12.84	33.22						
45	11.76	33.28						
55	11.66	33.48						
65	11.08	33.68						
80	10.84	33.85						
90a)	-	33.86						

118.34 CREST; November 12, 1954; 0702, 0824 GCT; 28°30'N, 115°06'W; sounding, 80 fm; wind, 220°, force 3; weather, fog; sea, slight; wire angle, 00°, 00°.

0	17.73	33.39	0	17.73	33.39	24.12	380	0.00
10	17.55	33.43	10	17.55	33.43	24.20	373	0.04
15	17.29	33.37	20	16.39	33.30	24.37	356	0.07
			30	15.08	33.25	24.62	332	0.11
20	16.39	33.30	50	13.08	33.19	25.00	296	0.17
25	15.74	33.29	75	12.83	33.69	25.42	256	0.24
30	15.08	33.25	100	12.18	34.02	25.82	219	0.30
35	14.18	33.26						
45	13.42	33.24						
55	12.89	33.17						
65	12.04	33.36						
80	12.81	33.73						
100	12.18	34.02						
125	11.52	34.05						

a) On seven stations occupied by the R/V Crest on Cruise 5411, a Nansen bottle for salinity sample only was placed on the cast one meter above the bottom.

OBSERVED				INTERPOLATED				COMPUTED		
Z	T	S	O_2	Z	T	S	O_2	σ_t	δ_T	ΔD
m	°C	‰	ml/L	m	°C	‰	ml/L	g/L	10^{-5} cm^3/g	dyn. m

CREST; November 12, 1954; 1127, 1206 GCT; 28°19.5'N, 115°24.5'W; sounding, 165 fm; wind, 320°, force 4; weather, cloudy; sea, slight; wire angle, 07°, 05°. 118.39

0	19.00	33.51	0	19.00	33.51		23.90	401	0.00
10	18.89	33.53	10	18.89	33.53		23.95	397	0.04
15	18.15	33.45	20	16.88	33.44		24.37	357	0.08
20	16.88	33.44	30	16.16	33.39		24.50	344	0.11
25	16.79	33.47	50	13.19	33.24		25.01	296	0.18
30	16.16	33.39	75	11.93	33.51		25.47	252	0.24
35	16.12	33.40	100	11.65	33.85		25.78	222	0.30
45	13.59	33.22	150	10.94	34.14		26.13	189	0.41
55	12.82	33.27	200	10.78	34.33		26.32	172	0.50
70	12.20	33.46	250	9.95	34.38		26.50	154	0.58
84	11.40	33.58							
105	11.34	33.86							
135	11.56	34.13							
170	11.05	34.27							
204	10.72	34.34							
254	9.86	34.38							

CREST; November 12, 1954; 1508 GCT; 28°07'N, 115°42'W; sounding, 800 fm; wind, 340°, force 4; weather, cloudy; sea, rough; wire angle, 00°. 118.44

0	18.44	33.49	0	18.44	33.49	24.03	389	0.00
10	17.49	33.42	10	17.49	33.42	24.21	372	0.04
31	13.90	33.31	20	15.90	33.36	24.53	342	0.08
41	12.66	33.30	30	14.10	33.31	24.89	307	0.11
51	12.50	33.49	50	12.51	33.46	25.32	266	0.16
61	12.85	33.85	75	12.50	33.96	25.70	230	0.22
71	12.66	33.91	100	12.18	34.16	25.92	209	0.28
80	12.34	34.03	150	11.73	34.42	26.21	182	0.38
90	12.20	34.09	200	11.17	34.50	26.38	166	0.47
100	12.18	34.16	250	10.45	34.48	26.48	156	0.55
155	11.68	34.43	300	9.56	34.49	26.65	140	0.63
205	11.10	34.50	400	7.83	34.46	26.90	116	0.76
264	10.22	34.47	500	6.78	34.36	26.96	110	0.88
369	8.28	34.51	600	5.96	34.39	27.10	98	0.99
487	6.90	34.36						
613	5.88	34.39						

CREST; November 11, 1954; 0805 GCT; 28°21'N, 115°04'W; sounding, 69 fm; wind, 210°, force 2; weather, cloudy; sea, slight; wire angle, 00°. 118 5.35

1	18.45	33.46	5.54	0	18.45	33.46	5.54	24.00	392	0.00
11	18.09	33.43	5.59	10	18.11	33.43	5.58	24.06	386	0.04
16	17.80	33.44	5.64	20	16.71	33.40	5.83	24.37	356	0.08
21	16.70	33.40	5.83	30	16.68	33.39		24.38	356	0.11
26	16.68	33.39	6.25	50	14.34	33.28		24.81	314	0.18
31	16.68	33.39	5.78	75	11.80	33.53	3.80	25.51	248	0.25
36	16.60	33.36	5.83	100	12.09	34.00	1.83	25.82	219	0.31
46	14.55	33.29	6.34							
56	13.74	33.26	5.78							
66	11.85	33.35	5.41							
81	12.28	33.74	2.89							
101	12.09	34.01	1.82							
125a)	-	34.01	-							

a) See footnote, page 278.

SIO

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5411

OBSERVED				INTERPOLATED				COMPUTED		
Z m	T °C	S ‰	O_2 ml/L	Z m	T °C	S ‰	O_2 ml/L	σ_t g/L	δ_T 10^{-5} cm^3/g	ΔD dyn. m
119.31	CREST; November 12, 1954; 0155 GCT; 28°24'N, 114°45'W; sounding, 57 fm; wind, 360°, force 1; weather, cloudy; sea, slight; wire angle, 06°.									
0	18.28	33.41		0	18.28	33.41		24.01	391	0.00
10	18.16	33.40		10	18.16	33.40		24.02	390	0.04
15	17.68	33.39		20	17.3	33.36		24.20	372	0.08
20	17.3	33.36		30	16.49	33.39		24.42	352	0.11
25	16.9	33.37		50	13.89	33.18		24.83	313	0.18
30	16.49	33.39		75	11.72	33.53		25.52	247	0.25
35	16.35	33.33								
45	14.32	33.18								
55	12.73	33.24								
65	11.83	33.42								
80	11.63	33.68								
103a)	-	33.93								
1195.24	CREST; November 11, 1954; 2025 GCT; 28°30.5'N, 114°17'W; sounding, 42 fm; wind, 320°, force 2; weather, cloudy; sea, slight; wire angle, 00°.									
0	17.72	33.39		0	17.72	33.39		24.12	380	0.00
10	17.39	33.40		10	17.39	33.40		24.22	371	0.04
15	16.76	33.40		20	15.27	33.33		24.65	330	0.07
20	15.27	33.33		30	13.18	33.25		25.03	294	0.10
25	13.90	33.21		50	11.60	33.39		25.44	255	0.16
30	13.18	33.25								
35	12.90	33.29								
40	12.32	33.33								
50	11.60	33.39								
76a)	-	33.68								
120.29	CREST; November 11, 1954; 1720 GCT; 28°17'N, 114°32.5'W; sounding, 55 fm; wind, 060°, force 2; weather, partly cloudy; sea, smooth; wire angle, 00°.									
0	19.08	33.48		0	19.08	34.48		23.86	406	0.00
10	18.92	33.49		10	18.92	33.49		23.91	401	0.04
15	18.86	33.46		20	18.86	33.47		23.90	402	0.08
20	18.86	33.47		30	18.82	33.48		23.93	399	0.12
25	18.86	33.46		50	18.00	33.40		24.07	385	0.20
30	18.82	33.48		75	12.25	33.40		25.32	266	0.28
35	18.76	33.49								
45	18.42	33.45								
55	16.62	33.30								
66	14.15	33.21								
80	12.05	33.46								
120.35	CREST; November 11, 1954; 1112, 1123 GCT; 28°03'N, 114°53'W; sounding, 47 fm; wind, 240°, force 3; weather, drizzle; sea, slight; wire angle, 03°, missing.									
2	18.84	33.48	6.00	0	18.84	33.48	6.00	23.92	400	0.00
12	18.53	33.47	5.43	10	18.62	33.47	5.57	23.97	395	0.04
17	18.34	33.47	5.58	20	18.20	33.45	5.58	24.06	386	0.08
22	18.16	33.44	5.58	30	17.99	33.42	5.69	24.08	384	0.12
				50	16.50	33.37	5.86	24.40	353	0.19
27	18.07	33.42	5.54	75	(11.50)	(33.46)		(25.51)	(248)	(0.27)
32	17.98	33.42	5.72							
37	17.70	33.44	5.76							
47	16.86	33.40	5.84							
57	14.25	33.25	5.94							
72	12.08	33.40	4.43							
85a)	-	33.58	-							

a) See footnote, page 278.

OBSERVED				INTERPOLATED				COMPUTED		
Z m	T °C	S ‰	O_2 ml/L	Z m	T °C	S ‰	O_2 ml/L	σ_t g/L	δ_T 10^{-5} cm^3/g	ΔD dyn. m

CREST; November 12, 1954; 1813 GCT; 27°51'N, 115°28'W; sounding, 100 fm; wind, 350°, force 4; weather, clear; sea, moderate; wire angle, 04°. 120.43

0	19.04	33.67	0	19.04	33.67	24.01	391	0.00
10	18.99	33.67	10	18.99	33.67	24.03	389	0.04
15	18.92	33.68	20	18.58	33.69	24.15	377	0.08
20	18.58	33.69	30	14.74	33.39	24.81	315	0.11
25	16.96	33.55	50	12.70	33.60	25.38	260	0.17
30	14.74	33.39	75	12.10	33.90	25.74	226	0.23
36	13.57	33.37	100	11.93	34.18	25.98	203	0.28
46	13.34	33.58	150	11.83	34.39	26.17	185	0.38
56	12.40	33.62						
66	12.36	33.87						
81	11.90	33.93						
101	11.94	34.18						
121	12.04	34.29						
155	11.78	34.41						

CREST; November 11, 1954; 1409 GCT; 27°57'N, 114°32'W; sounding, 27 fm; wind, 180°, force 1; weather, partly cloudy; sea, slight; wire angle, 01°. 121.32

0	18.23	33.45	0	18.23	33.45	24.04	388	0.00
10	17.26	33.41	10	17.26	33.41	24.26	368	0.04
15	16.58	33.37	20	15.86	33.33	24.52	342	0.07
20	15.86	33.33	30	14.50	33.33	24.82	314	0.11
25	15.35	33.32						
30	14.50	33.33						
48a)	-	33.40						

CREST; November 12, 1954; 2119 GCT; 27°43'N, 115°07'W; sounding, 53 fm; wind, 320°, force 4; weather, clear; sea, moderate; wire angle, 05°. 121.40

0	19.58	33.64	0	19.58	33.64	23.86	406	0.00
10	18.85	33.64	10	18.85	33.64	24.04	388	0.04
15	18.56	33.65	20	16.98	33.48	24.38	356	0.08
20	16.98	33.48	30	14.32	33.34	24.86	310	0.11
25	14.54	33.35	50	13.21	33.47	25.18	279	0.17
30	14.32	33.34	75	13.31	33.76	25.39	259	0.24
35	13.96	33.30						
45	13.26	33.41						
55	13.16	33.68						
65	13.26	33.73						
80	13.32	33.78						

a) See footnote, page 278.

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