

Cover. Copy :
STATION POSITIONS HS

data report

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 5309
(MLR 52)
9-19 September 1953

CCOFI CRUISE 5310
(MLR 53)
7-24 October 1953

CCOFI CRUISE 5311
(MLR 54)
9-14 November 1953

CCOFI CRUISE 5312
(MLR 55)
1-13 December 1953

SIO Reference 58-44
1 August 1958

UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI CRUISE 5309

(MLR 52)

9-19 September 1953

CCOFI CRUISE 5310

(MLR 53)

7-24 October 1953

CCOFI CRUISE 5311

(MLR 54)

9-14 November 1953

CCOFI CRUISE 5312

(MLR 55)

1-13 December 1953

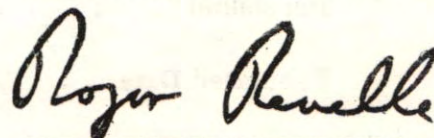
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Marine Research Committee

SIO Reference 58-44

1 August 1958

Approved for distribution:



Roger Revelle, Director

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INTRODUCTION

The data in this report were collected on the fifty-second, the fifty-third, the fifty-fourth and the fifty-fifth cruises of the California Cooperative Oceanic Fisheries Investigations program. The R/V Yellowfin of the California Department of Fish and Game and the R/V Crest, the R/V Horizon and the R/V Paolina-T of the Scripps Institution of Oceanography participated in the fifty-second cruise. The R/V Crest and the R/V Paolina-T participated in the fifty-third cruise. The R/V Paolina-T participated in the fifty-fourth cruise. The R/V Crest and the R/V Paolina-T participated in the fifty-fifth cruise.

The data are tabulated at observed depths; the interpolated and computed values are tabulated at standard depths accompanied by charts of horizontal distribution. The presentation of data in this report does not constitute publication, and the interpretations herein may be subject to modification as the program continues.

STANDARD PROCEDURES

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, each messenger time and wire angle is given in the order of increasing depth. A line is left blank between the observed data of each cast.

FOOTNOTES

In addition to standard 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).

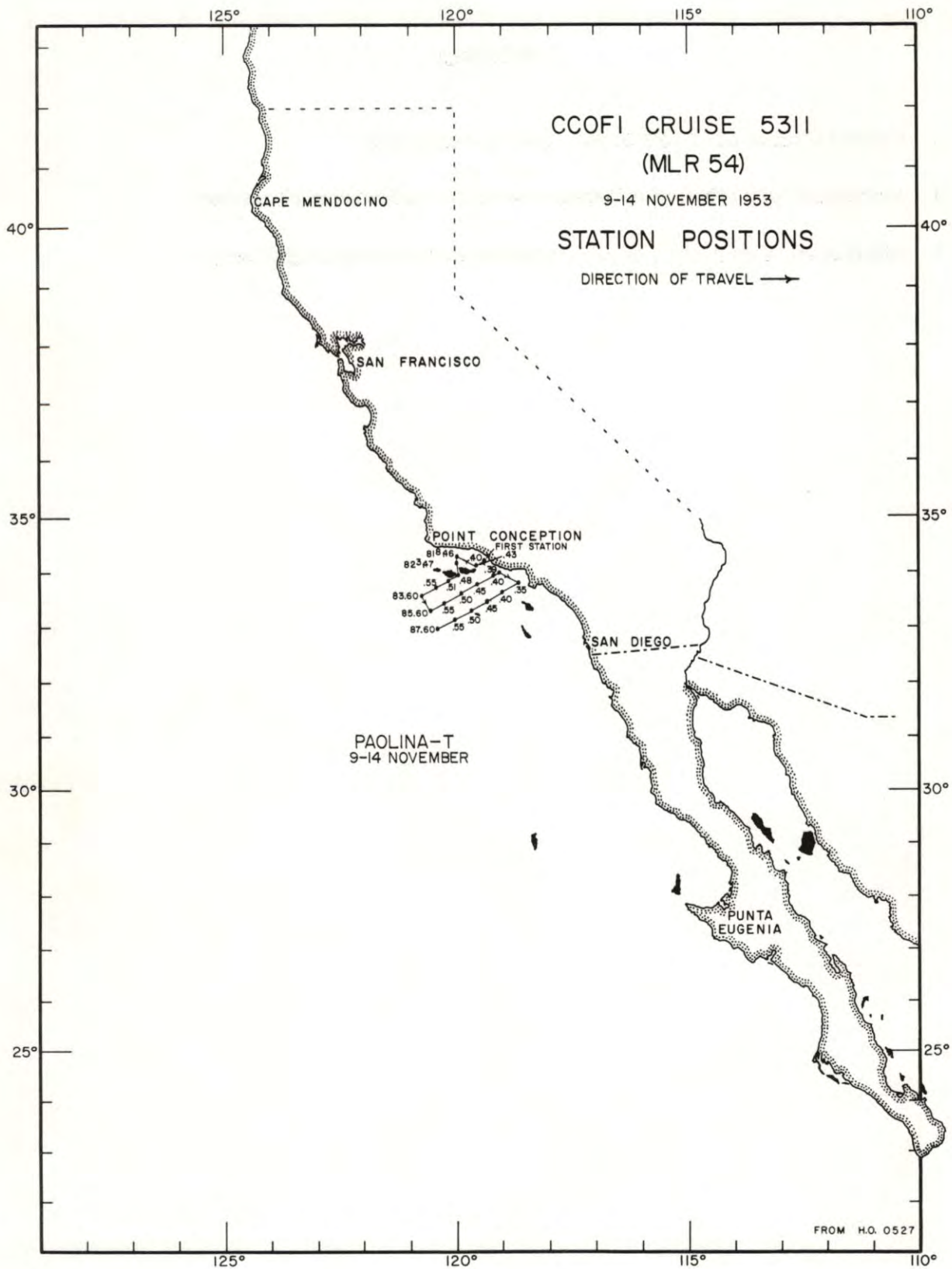
u: uncertain value (value may be correct; occasionally it can influence the drawing of the property curve).

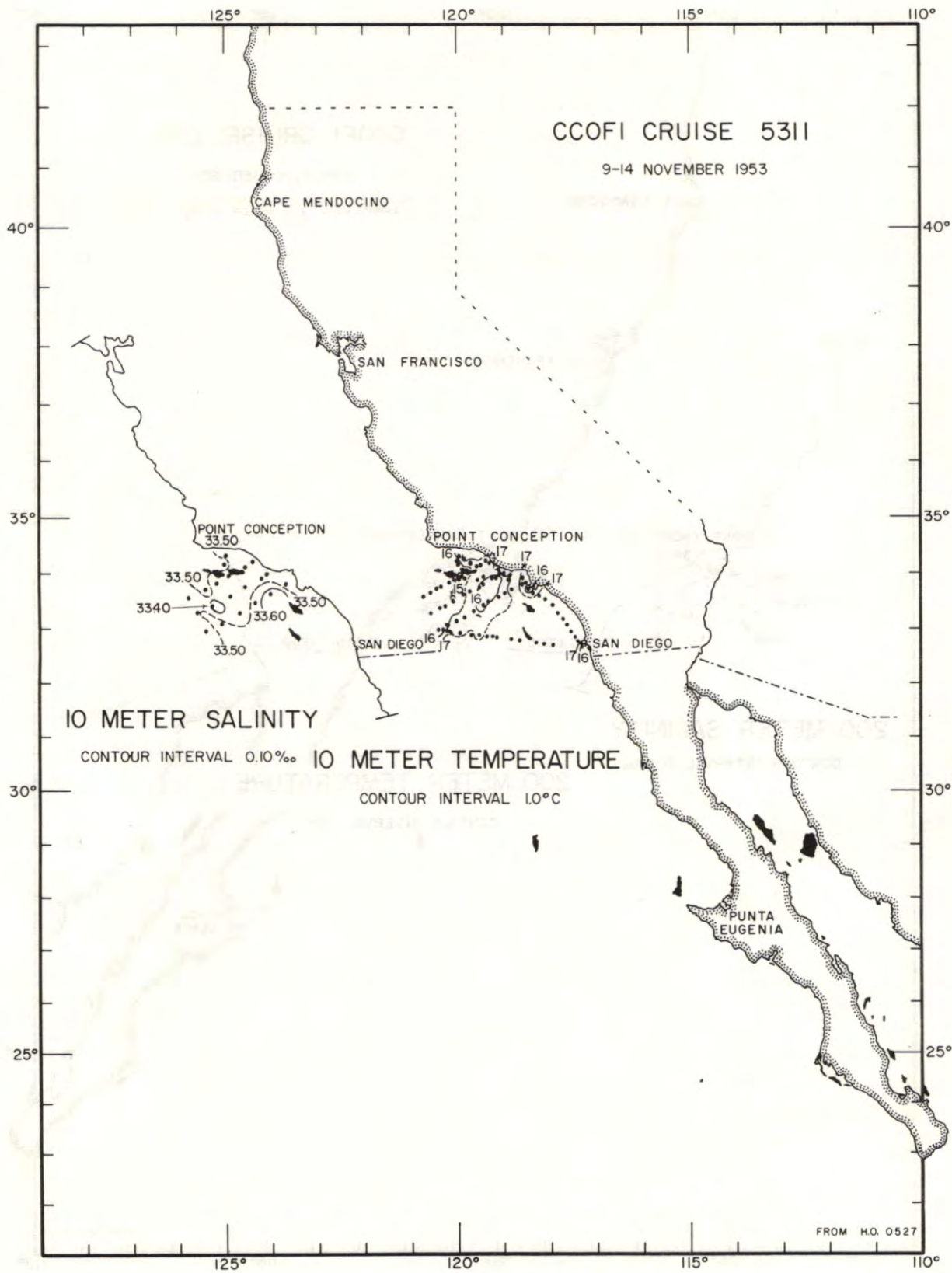
FORMAT

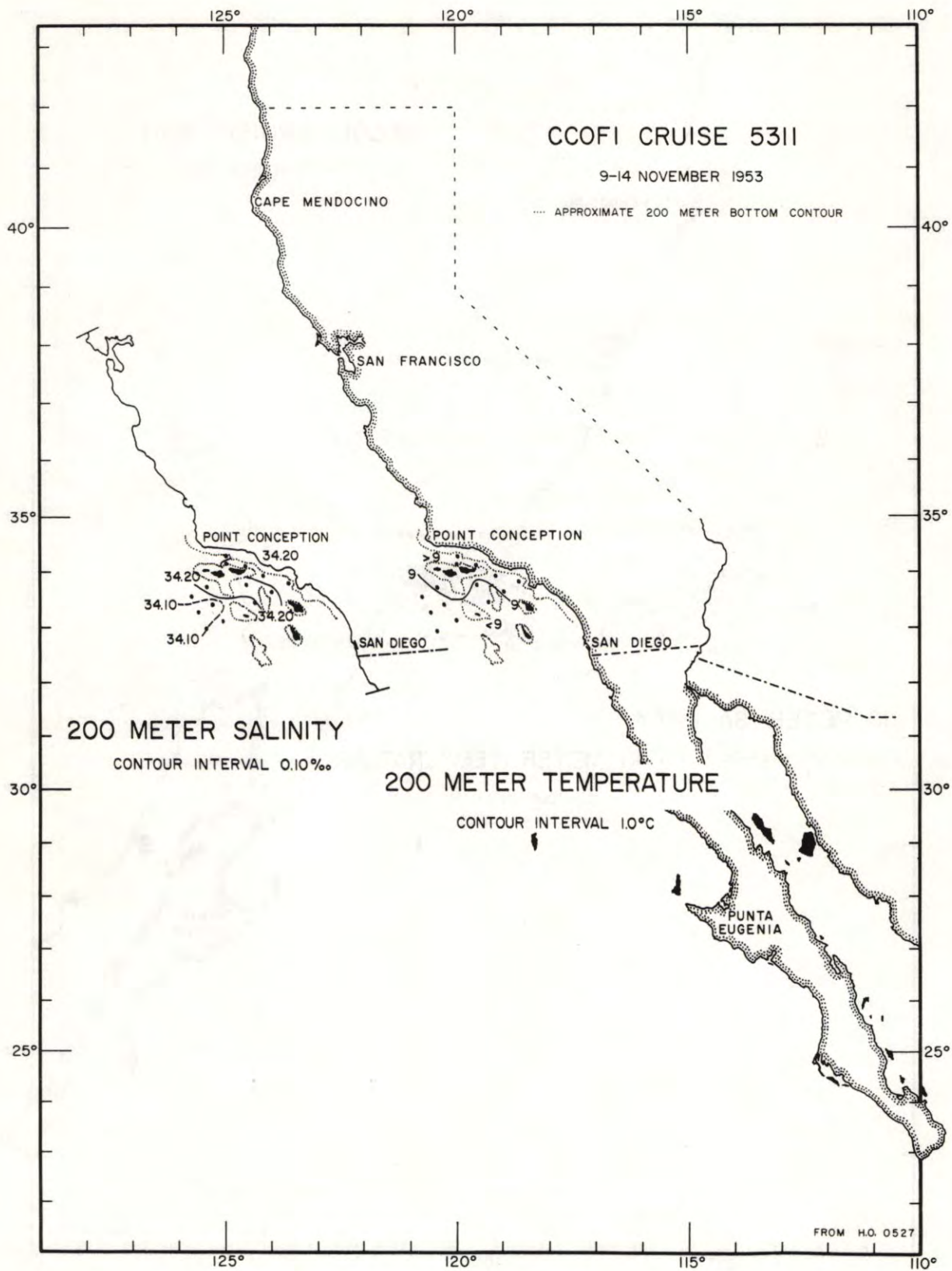
These data are typed in the format of the University of California Press publication, "Oceanic Observations of the Pacific." So that these pages can be used as copy for the 1953 volume, the first page of the Cruise 5309 data is numbered 344; Cruise 5310, 353; Cruise 5311, 375; Cruise 5312, 379.

FIGURES

1. CCOFI Cruise 5311 (MLR 54), station positions
2. Horizontal distribution of temperature and salinity at 10 meters
3. Horizontal distribution of temperature and salinity at 200 meters







CRUISE 5311
PERSONNEL

SHIPS' CAPTAINS

Greenway, Glynn C., R/V Paolina-T

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

R/V Paolina-T

Worrall, Charles G., Senior Marine Technician
Anderson, Norman E., Marine Technician
King, Robert D., Marine Technician
Kivlen, John C., Marine Technician

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	$10^{-5} \text{cm}^3/\text{g}$	dyn. m

SIO
CCOFI
5311

PAOLINA-T; November 10, 1953; 2210 GCT; 34°18.5'N, 119°58'W; sounding, 295 fm; wind, 320°, force 1; weather, cloudy; sea, moderate; wire angle, 00°.

81⁸.46

0	16.55	33.45		0	16.55	33.45		24.45	349	0.00
9	16.38	33.45		10	16.34	33.45		24.50	344	0.04
23	15.89	33.44		20	16.02	33.44		24.56	339	0.07
46	11.88	33.40		30	14.77	33.42		24.82	314	0.10
69	10.48	33.57		50	11.50	33.41		25.47	252	0.16
92	10.06	33.73		75	10.36	33.62		25.83	218	0.22
142	9.56	34.00		100	9.94	33.78		26.03	199	0.27
189	9.39	34.20		150	9.53	34.05		26.31	172	0.36
236	9.06	34.23		200	9.32	34.21		26.47	157	0.45
282	8.61	34.25		250	8.94	34.24		26.55	149	0.53
334	7.96	34.27		300	8.39	34.26		26.65	140	0.60
381	7.35	34.30								

PAOLINA-T; November 11, 1953; 0007 GCT; 34°11'N, 119°59'W; sounding, 340 fm; wind, 320°, force, missing; weather, partly cloudy; sea, moderate; wire angle, 04°.

82³.47

0	15.55	33.52		0	15.55	33.52		24.73	322	0.00
10	15.48	33.52		10	15.48	33.52		24.75	320	0.03
24	15.48	33.54		20	15.48	33.54		24.76	320	0.06
47	11.74	33.47		30	14.80	33.51		24.89	307	0.10
70	10.20	33.67		50	11.42	33.48		25.54	245	0.15
93	9.84	33.88		75	10.08	33.78		26.01	201	0.21
144	9.61	34.00 ^{a)}		100	9.80	33.91		26.16	186	0.26
191	9.23	34.17 ^{a)}		150	9.56	(34.02)		(26.28)	(175)	(0.35)
237	8.72	34.24 ^{a)}		200	9.15	(34.19)		(26.48)	(156)	(0.43)
284	8.08	34.42r		250	8.52	(34.25)		(26.63)	(142)	(0.51)
336	7.61	34.26		300	7.91	(34.26)		(26.73)	(132)	(0.58)

PAOLINA-T; November 10, 1953; 1550 GCT; 34°14'N, 119°22'W; sounding, 12 fm; wind, 320°, force 1; weather, cloudy; sea, slight; wire angle, 00°.

83.40

0	16.46	33.48		0	16.46	33.48		24.49	345	0.00
5	16.46	33.47		10	16.38	33.46		24.50	344	0.03
10	16.38	33.46								
14	15.82	33.46								

PAOLINA-T; November 10, 1953; 1736 GCT; 34°08'N, 119°33.5'W; sounding; 142 fm; wind, 350°, force 2; weather, cloudy; sea, smooth; wire angle, 06°.

8343

0	16.24	33.50		0	16.24	33.50		24.56	339	0.00
10	16.12	33.49		10	16.12	33.49		24.58	337	0.03
23	15.18	33.42		20	15.45	33.43		24.68	327	0.07
47	12.39	33.42		30	14.27	33.42		24.93	303	0.10
70	10.90	33.46		50	12.15	33.42		25.36	262	0.16
93	10.20	33.62		75	10.71	33.49		25.67	233	0.22
143	9.64	33.95		100	10.09	33.67		25.92	209	0.27
191	9.30	34.11		150	9.59	33.98		26.24	179	0.37
				200	(9.24)	(34.13)		(26.42)	(162)	(0.46)

PAOLINA-T; November 11, 1953; 0242 GCT; 33°58'N, 119°58.5'W; sounding, 64 fm; wind, 130°, force 1; weather, partly cloudy; sea, slight; wire angle, 00°.

8348

0	15.69	33.49		0	15.69	33.49		24.68	327	0.00
9	14.66	33.48		10	14.54	33.48		24.92	304	0.03
18	13.89	33.49		20	13.78	33.49		25.09	288	0.06
28	12.43	33.49		30	12.34	33.49		25.37	262	0.09
46	11.81	33.51								

a) Assumed order of salinity samples.

S10

CCOFI
5311

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	$10^{-5} \text{cm}^3/\text{g}$	dyn. m

8351

PAOLINA-T; November 11, 1953; 0508 GCT; 33°52'N, 120°09'W; sounding, 175 fm; wind, 280°, force 2; weather, cloudy; sea, moderate; wire angle, 00°.

0	16.21	33.49		0	16.21	33.49		24.56	339	0.00
9	14.88	33.45		10	14.77	33.45		24.85	311	0.03
18	14.24	33.44		20	13.95	33.44		25.01	296	0.06
28	11.92	33.42		30	11.56	33.43		25.47	252	0.09
46	10.10	33.61		50	10.00	33.64		25.91	210	0.14
71	9.76	33.76		75	(9.76)	(33.77)		(26.05)	(197)	(0.19)

8355

PAOLINA-T; November 11, 1953; 0805 GCT; 33°44'N, 120°24.5'W; sounding, 460 fm; wind, 280°, force 2; weather, cloudy; sea, rough; wire angle, 08°.

0	15.31	33.46		0	15.31	33.46		24.74	321	0.00
10	14.90	33.53		10	14.90	33.53		24.88	308	0.03
23	14.00	33.47		20	14.24	33.48		24.98	299	0.06
46	12.14	33.49		30	13.38	33.47		25.15	282	0.09
69	10.27	33.57		50	11.79	33.50		25.48	251	0.14
92	9.76	33.79		75	10.04	33.61		25.88	213	0.20
142	9.44	34.06		100	9.69	33.85		26.13	189	0.25
187	9.16	34.20		150	9.41	34.09		26.36	167	0.34
279	8.19	34.26		200	9.03	34.21		26.52	152	0.43
377	7.30	34.35		250	8.48	34.24		26.63	142	0.50
470	6.62	34.39		300	7.98	34.29		26.74	131	0.57
570	5.80	34.42		400	7.12	34.36		26.92	114	0.70
				500	6.38	34.40		27.05	102	0.82

8360

PAOLINA-T; November 11, 1953; 1200 GCT; 33°35'N, 120°43.5'W; sounding, 820 fm; wind, 290°, force 2; weather, cloudy; sea, moderate; wire angle, 08°.

0	15.48	33.45		0	15.48	33.45		24.69	326	0.00
9	15.26	33.45		10	15.24	33.45		24.75	320	0.03
23	15.12	33.48		20	15.20	33.48		24.78	318	0.06
46	11.77	33.47		30	13.87	33.48		25.06	291	0.10
68	10.15	33.54		50	11.39	33.48		25.54	245	0.15
91	9.41	33.69		75	9.85	33.58		25.89	212	0.21
140	9.02	33.97		100	9.33	33.76		26.12	190	0.26
186	8.40	34.12		150	8.89	34.01		26.38	166	0.35
277	7.70	34.27		200	8.28	34.16		26.59	146	0.43
376	6.81	34.27		250	7.93	34.25		26.72	133	0.50
470	6.08	34.37		300	6.99	34.27		26.87	119	0.56
569	5.30	34.39		400	6.61	34.29		26.93	113	0.68
				500	5.85	34.38		27.10	097	0.80

8539

PAOLINA-T; November 12, 1953; 0936 GCT; 34°00'N, 119°04'W; sounding, 125 fm; wind, 270°, force 3; weather, cloudy; sea, moderate; wire angle, 03°.

0	16.91	33.51		0	16.91	33.51		24.41	353	0.00
10	16.78	33.48		10	16.78	33.48		24.42	352	0.04
18	15.92	33.33		20	14.94	33.33		24.72	323	0.07
28	12.24	33.34		30	12.00	33.35		25.33	265	0.10
46	10.88	33.42		50	10.71	33.44		25.63	237	0.15
70	10.27	33.56		75	10.19	33.59		25.84	217	0.21
93	10.00	33.73								

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	$10^{-5} \text{cm}^3/\text{g}$	dyn. m

SIO
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5311

PAOLINA-T; November 12, 1953; 0741 GCT; 33°57'N, 119°10.5'W; sounding, 387 fm; wind, 270°, force 3; weather, cloudy; sea, moderate; wire angle, 00°.

8540

0	16.03	33.56		0	16.03	33.56		24.65	330	0.00
10	16.01	33.49		10	16.01	33.49		24.61	334	0.03
24	15.00	33.47		20	15.40	33.47		24.73	322	0.07
47	12.14	33.40		30	14.12	33.45		24.99	298	0.10
70	10.42	33.46		50	11.85	33.40		25.40	259	0.15
94	9.97	33.67		75	10.26	33.50		25.76	224	0.21
143	9.81	33.96		100	9.94	33.71		25.98	204	0.27
189	9.37	34.14		150	9.76	33.99		26.22	181	0.36
280	8.66	34.31		200	9.27	34.18		26.45	159	0.45
377	7.70	34.31		250	8.90	34.29		26.60	145	0.53
470	6.80	34.34		300	8.47	34.31		26.68	137	0.60
569	6.08	34.36		400	7.48	34.32		26.84	122	0.74
				500	6.56	34.35		26.99	108	0.86

PAOLINA-T; November 12, 1953; 0156 GCT; 33°47'N, 119°31.5'W; sounding, 1000 fm; wind, 270°, force 3; weather, cloudy; sea, moderate; wire angle, 08°.

8545

0	16.30	33.51		0	16.30	33.51		24.55	340	0.00
10	15.22	33.47		10	15.22	33.47		24.77	319	0.03
23	14.22	33.46		20	14.42	33.46		24.93	303	0.06
46	11.90	33.49		30	13.60	33.46		25.10	287	0.09
69	10.02	33.68		50	11.48	33.51		25.55	244	0.15
92	9.82	33.89		75	9.95	33.75		26.01	201	0.20
143	9.36	33.96		100	9.76	33.90		26.15	187	0.25
189	9.00	34.24		150	9.31	34.00		26.31	172	0.34
280	8.10	34.32		200	8.90	34.26		26.58	146	0.42
377	7.12	34.34		250	8.43	34.31		26.69	136	0.50
469	6.54	34.39		300	7.83	34.32		26.79	127	0.57
567	5.94	34.41		400	6.90	34.35		26.94	112	0.69
				500	6.34	34.40		27.06	101	0.80

PAOLINA-T; November 11, 1953; 2235 GCT; 33°37.5'N, 119°52'W; sounding, 110 fm; wind, 320°, force 2; weather, cloudy; sea, moderate; wire angle, 00°.

8550

0	16.14	33.50		0	16.14	33.50		24.58	337	0.00
10	15.92	33.45		10	15.92	33.45		24.59	336	0.03
19	15.81	33.48		20	15.73	33.48		24.66	329	0.06
28	14.66	33.42		30	14.37	33.41		24.90	306	0.10
47	12.23	33.36		50	12.20	33.37		25.31	267	0.16
70	9.79	33.64		75	9.68	33.72		26.03	199	0.22
93	9.56	33.93		100	9.54	33.97		26.25	178	0.26
117	9.50	34.03								

PAOLINA-T; November 11, 1953; 1858 GCT; 33°26'N, 120°16'W; sounding, 500 fm; wind, 300°, force 1; weather, cloudy; sea, rough; wire angle, 12°.

8555

0	15.65	33.43		0	15.65	33.43		24.64	331	0.00
9	15.39	33.40		10	15.35	33.40		24.68	327	0.03
23	15.08	33.44		20	15.15	33.43		24.75	320	0.06
46	12.80	33.38		30	14.70	33.43		24.85	311	0.10
69	10.92	33.44		50	12.38	33.39		25.29	269	0.16
92	10.36	33.44		75	10.76	33.44		25.62	238	0.22
141	8.72	34.01		100	10.03	33.51		25.81	220	0.28
186	8.29	34.01		150	8.66	34.01		26.42	162	0.37
277	7.54	34.16		200	8.16	34.03		26.51	153	0.45
373	6.80	34.21		250	7.74	34.13		26.65	140	0.53
466	6.26	34.29		300	7.34	34.17		26.74	131	0.60
565	5.52	34.27		400	6.64	34.24		26.89	117	0.73
				500	6.01	34.29		27.01	106	0.85

S10
CCOFI
5311

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	$10^5 \text{ cm}^3/\text{g}$	dyn. m

8560

PAOLINA-T; November 11, 1953; 1543 GCT; 33°18.5'N, 120°32.5'W; sounding, 600 fm; wind, 120°, force 1; weather, cloudy; sea, moderate; wire angle, missing.

0	15.30	33.48		0	15.30	33.48		24.76	320	0.00
9	15.20	33.50		10	15.20	33.50		24.79	317	0.03
23	15.10	33.48		20	15.12	33.48		24.80	316	0.06
37p	15.04	33.45		30	15.08	33.47		24.80	316	0.10
46	12.68	33.43		50	12.38	33.44		25.33	265	0.15
62p	11.68	33.51		75	10.84	33.64		25.77	223	0.22
115p	9.42	33.86		100	9.80	33.81		26.08	194	0.27
163p	8.72	33.96		150	8.89	33.93		26.32	171	0.36
260p	7.86	34.18		200	8.38	34.07		26.51	153	0.44
362p	7.02	34.23		250	7.97	34.17		26.65	140	0.52
460p	5.99	34.28		300	7.59	34.20		26.73	132	0.59
563p	5.43	34.22		400	6.54	34.25		26.91	115	0.72
				500	5.73	34.27		27.03	104	0.83

8735

PAOLINA-T; November 12, 1953; 1323 GCT; 33°50'N, 118°37.5'W; sounding, 250 fm; wind, 300°, force 2; weather, cloudy; sea, moderate; wire angle, 00°.

0	17.04	33.48		0	17.04	33.48		24.36	358	0.00
9	17.06	33.45		10	17.03	33.45		24.34	360	0.04
23	15.77	33.42		20	16.11	33.43		24.54	340	0.07
46	11.80	33.28		30	14.18	33.36		24.90	306	0.10
69	10.92	33.39		50	11.60	33.29		25.36	262	0.16
92	10.36	33.56		75	10.74	33.44		25.63	237	0.22
142	9.96	33.78		100	10.28	33.60		25.83	218	0.28
188	9.49	34.11		150	9.89	33.85		26.09	193	0.38
235	8.90	34.15		200	9.33	34.12		26.40	164	0.48
282	8.53	34.23		250	8.77	34.17		26.53	151	0.56

8740

PAOLINA-T; November 12, 1953; 1653 GCT; 33°40'N, 118°58.5'W; sounding, 490 fm; wind, 280°, force 3; weather, partly cloudy; sea, rough; wire angle, 00°.

2	16.78	33.58		0	(16.78)	(33.57)		(24.49)	(345)	(0.00)
11	16.70	33.61		10	16.74	33.61		24.53	341	0.03
25	14.20	33.39		20	15.10	33.44		24.77	319	0.08
48	11.30	33.39		30	13.37	33.38		25.09	288	0.10
71	10.22	33.67		50	11.16	33.40		25.52	247	0.15
94	10.00	33.82		75	10.26	33.70		25.91	210	0.21
145	9.69	34.06		100	9.98	33.85		26.08	194	0.26
191	9.27	34.20		150	9.66	34.08		26.31	172	0.35
238	8.80	34.27		200	9.16	34.22		26.50	154	0.44
286	8.58	34.32		250	8.73	34.29		26.63	142	0.51

8745

PAOLINA-T; November 12, 1953; 2032 GCT; 33°30'N, 119°19'W; sounding, 1000 fm; wind, 290°, force 3; weather, partly cloudy; sea, rough; wire angle, 06°.

0	16.03	33.51		0	16.03	33.51		24.62	333	0.00
9	15.75	33.54		10	15.72	33.54		24.71	324	0.03
23	15.27	33.42		20	15.42	33.44		24.70	325	0.06
46	11.41	33.43		30	13.76	33.41		25.03	294	0.10
69	10.12	33.66		50	11.10	33.46		25.58	242	0.15
92	9.52	33.75		75	9.93	33.68		25.95	206	0.21
144	9.14	34.07		100	9.43	33.81		26.14	188	0.26
189	8.92	34.20		150	9.13	34.10		26.41	163	0.34
283	8.13	34.22		200	8.84	34.20		26.54	150	0.42
380	7.32	34.28		250	8.42	34.21		26.61	144	0.50
472	6.54	34.31		300	8.01	34.23		26.69	136	0.57
569	5.92	34.36		400	7.14	34.29		26.86	120	0.71
				500	6.35	34.32		26.99	108	0.83

OBSERVED				INTERPOLATED				COMPUTED		
Z	T	S	O ₂	Z	T	S	O ₂	σ_t	δ_{T_3}	ΔD
m	°C	‰	ml/L	m	°C	‰	ml/L	g/L	10 ⁵ cm ³ /g	dyn. m

S10
CCOFI
5311

PAOLINA-T; November 13, 1953; 0002 GCT; 33°20'N, 119°39.5'W; sounding, 45 fm; wind, 290°, force 1; weather, cloudy; sea, very rough; wire angle, 00°.

87.50

0	16.60	33.42		0	16.60	33.42		24.42	352	0.00
10	16.56	33.46		10	16.56	33.46		24.46	348	0.03
19	16.41	33.46		20	16.39	33.46		24.50	344	0.07
28	15.95	33.42		30	15.60	33.40		24.63	332	0.10
47	12.70	33.18								

PAOLINA-T; November 13, 1953; 0308 GCT; 33°10'N, 120°00.5'W; sounding, 700 fm; wind, 330°, force 2; weather, clear; sea, moderate; wire angle, 00°.

87.55

0	16.80	33.47		0	16.80	33.47		24.41	353	0.00
10	16.72	33.50		10	16.72	33.50		24.45	349	0.04
23	15.76	33.47		20	16.13	33.48		24.57	338	0.07
47	11.62	33.32		30	14.13	33.43		24.97	300	0.10
70	10.50	33.48		50	11.40	33.33		25.42	257	0.16
93	9.93	33.60		75	10.37	33.51		25.75	225	0.22
144	8.94	33.95r		100	9.74					
191	8.58	34.21r		150	8.89					
284	7.42	34.22r		200	8.44					
382	7.19	34.35r		250	7.70					
476	6.44	34.21r		300	7.38					
580	5.76	34.39r		400	7.07					
				500	6.26					
				600	(5.67)					

PAOLINA-T; November 13, 1953; 0648 GCT; 32°59.5'N, 120°23'W; sounding, 520 fm; wind, 320°, force 1; weather, partly cloudy; sea, moderate; wire angle, 06°.

87.60

0	15.85	33.35		0	15.85	33.35		24.53	341	0.00
9	15.44	33.48		10	15.41	33.48		24.73	322	0.03
23	15.00	33.40		20	15.20	33.42		24.73	322	0.06
46	11.89	33.20		30	14.00	33.32		24.91	305	0.10
69	9.67	33.30		50	11.36	33.21		25.34	264	0.15
92	9.16	33.63		75	9.46	33.38		25.80	221	0.21
143	9.11	34.02		100	9.14	33.73		26.12	190	0.26
189	8.60	34.09		150	9.06	34.04		26.38	166	0.35
281	7.32	34.18		200	8.43	34.10		26.52	152	0.43
378	6.70	34.24		250	7.64	34.15		26.68	137	0.51
470	6.12	34.30		300	7.18	34.19		26.78	128	0.58
569	5.60	34.34		400	6.54	34.26		26.92	114	0.70
				500	5.95	34.32		27.04	103	0.82

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CANADA

Mr. Milton C. James
Pacific Marine Fishery Commission
340 State Office Building
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Los Angeles 24, California