

UNIVERSITY OF CALIFORNIA    SCRIPPS INSTITUTION OF OCEANOGRAPHY

# data report

PHYSICAL AND CHEMICAL DATA  
CCOFI CRUISE 5511  
(MLR 78)  
8-20 November 1955

SIO Reference 60-3  
1 July 1959

UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

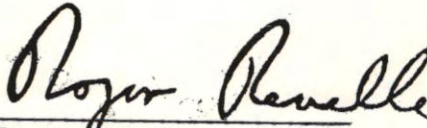
CCOFI CRUISE 5511  
(MLR 78)  
8-20 November 1955

Sponsored by

Marine Research Committee

SIO Reference 60-3  
1 July 1959

Approved for distribution:

  
Roger Revelle, Director

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## INTRODUCTION

The data presented in this report were collected on the seventy-eighth consecutive cruise of the California Cooperative Oceanic Fisheries Investigations program. The R/V Black Douglas of the U. S. Fish and Wildlife Service and the R/V Paolina-T of the Scripps Institution participated in this cruise.

The data are tabulated at observed depths, and the interpolated and computed values are tabulated at standard depths. They 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

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.

## 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.

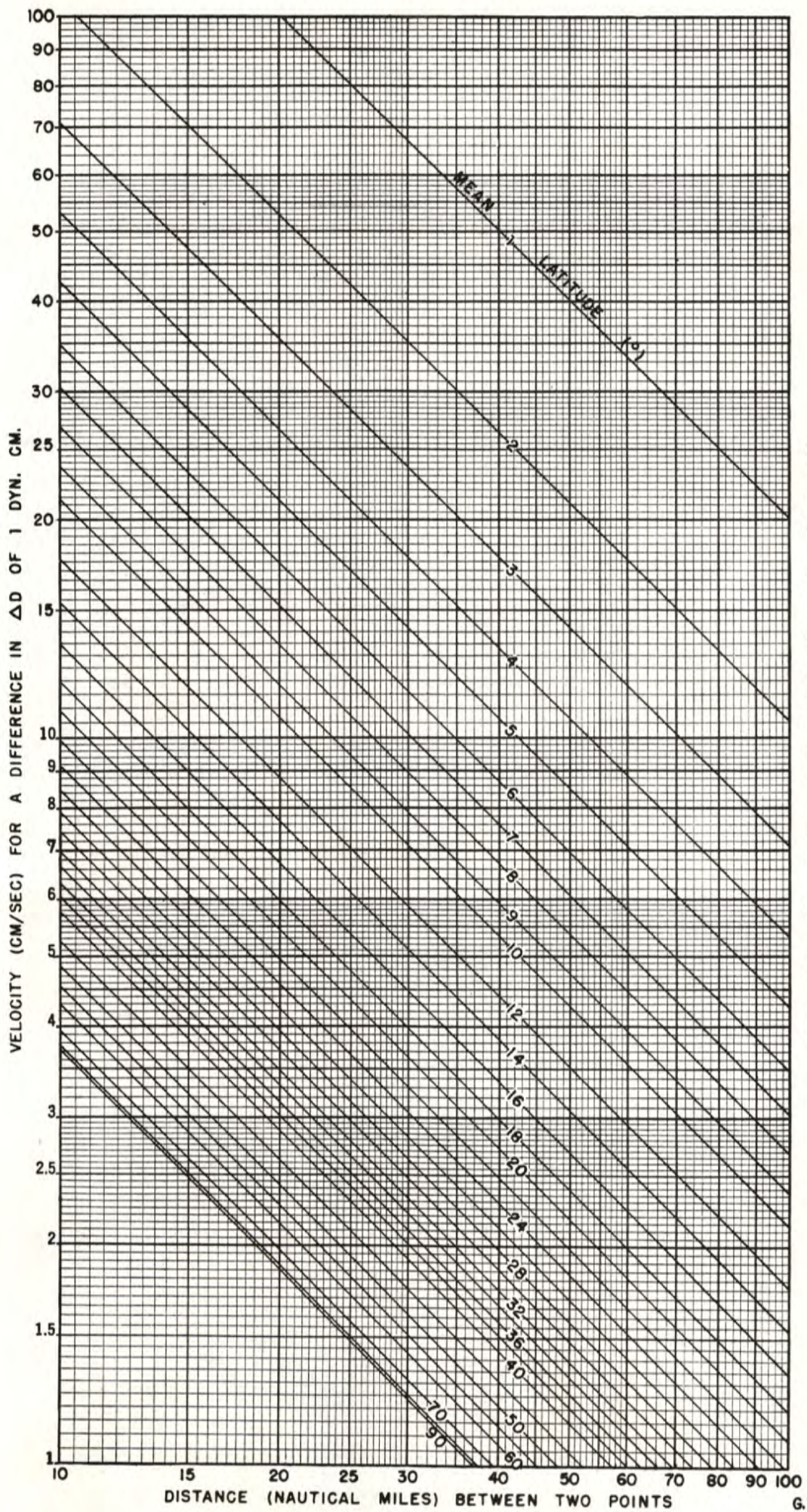
Values which are not drawn through because they seem to be in error without apparent reason are indicated by one of the following notations.

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 1955 volume, the first page of the Cruise 5511 data is numbered 226.



VELOCITY OF GEOSTROPHIC FLOW

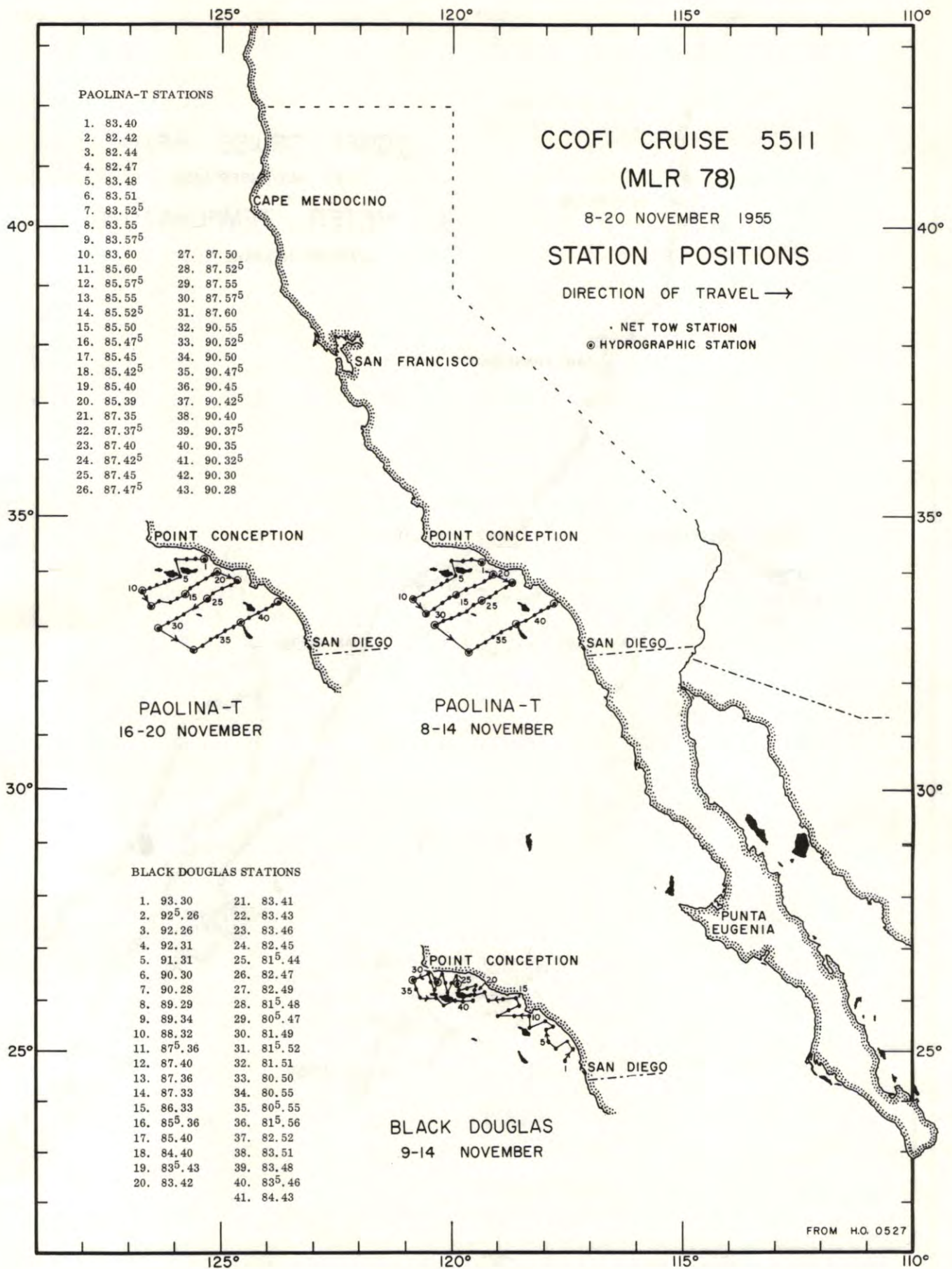


FIGURE 1

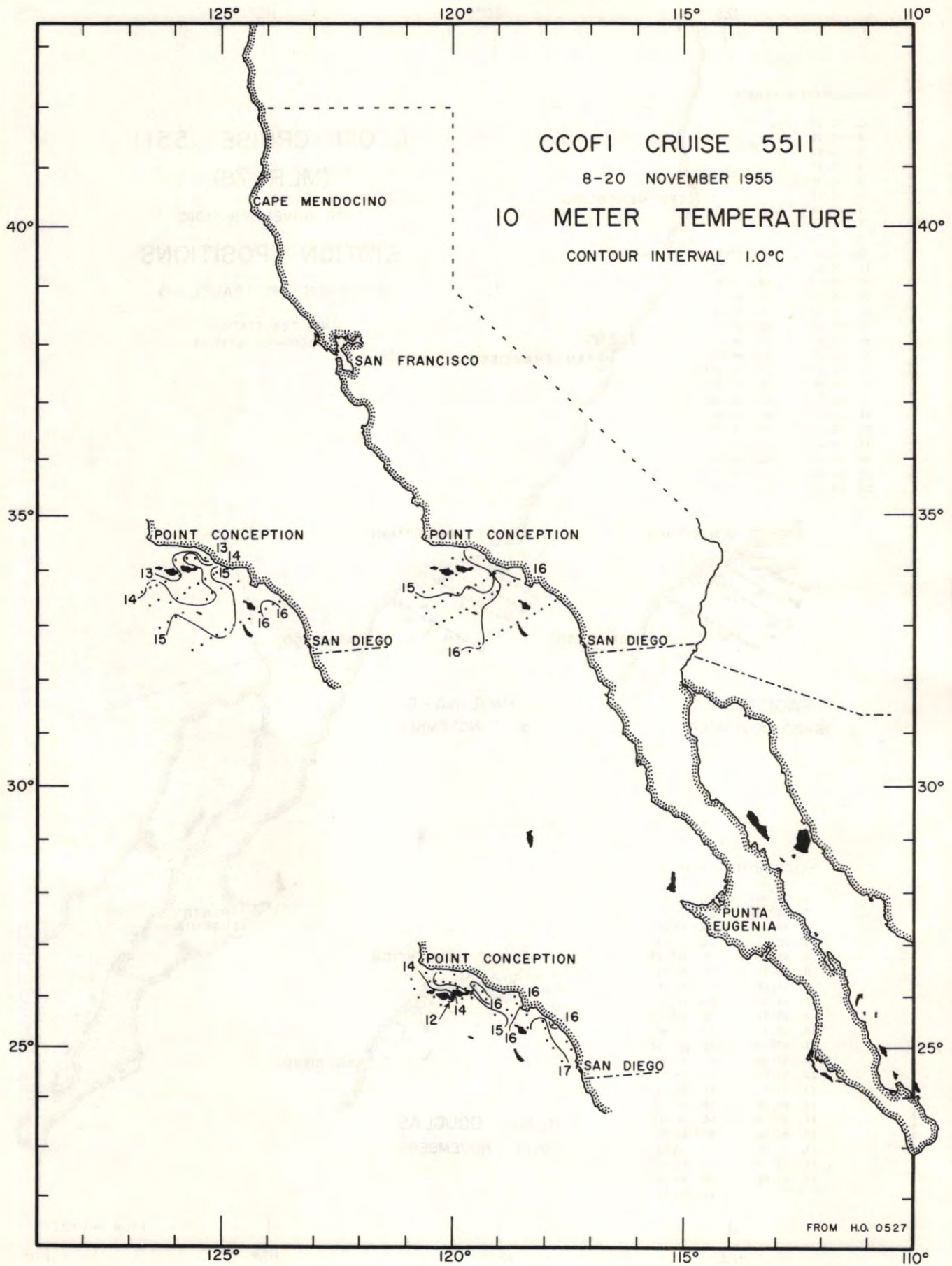


FIGURE 2



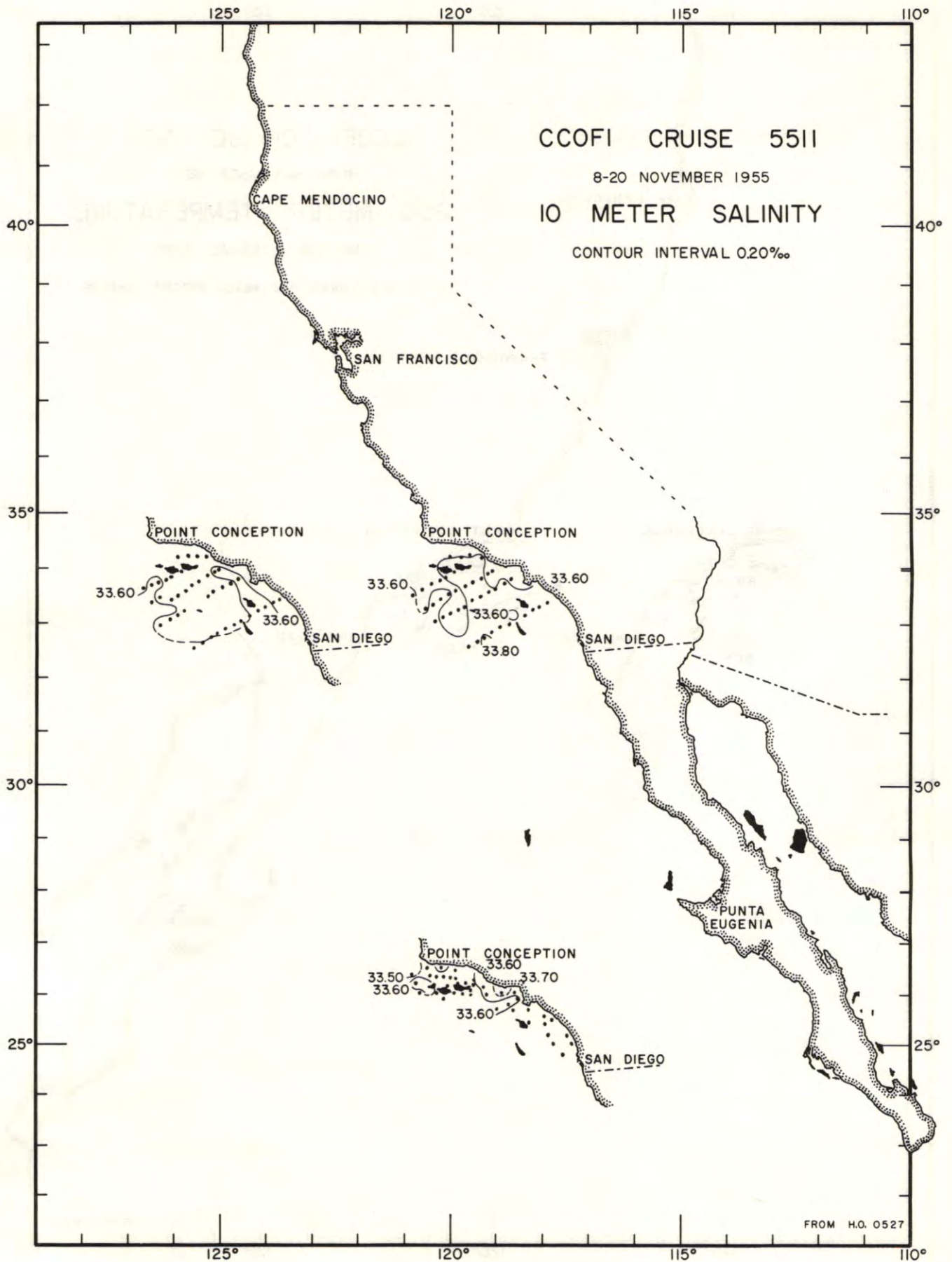


FIGURE 3

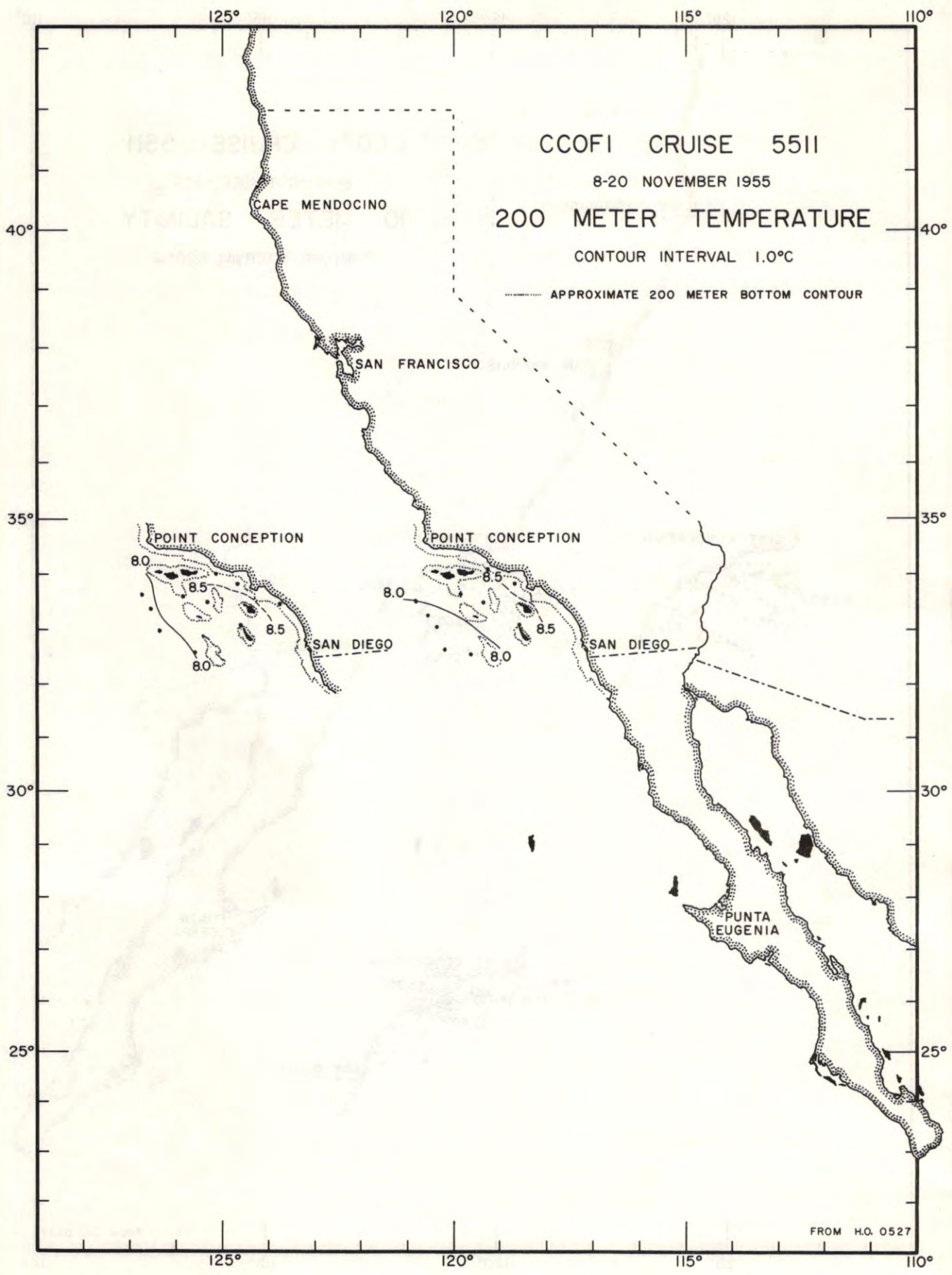


FIGURE 4

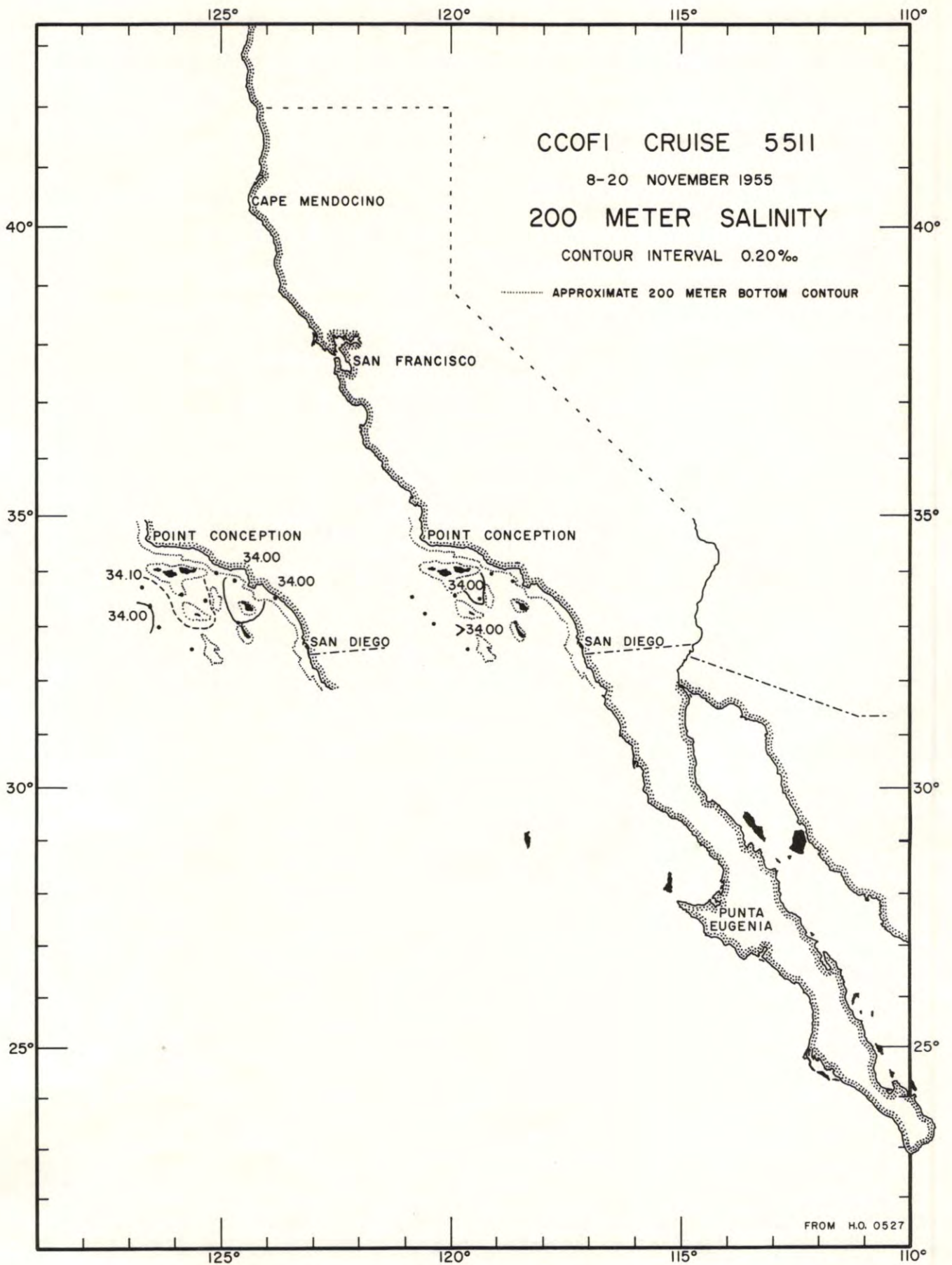


FIGURE 5

## PERSONNEL

### SHIPS' CAPTAINS

Haines, Robert B. , R/V Paolina-T  
Forster, Charles W. , R/V Black Douglas

### PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

#### R/V Black Douglas

Wolf, Robert S. , Biologist, U. S. Fish and Wildlife Service  
Bryer, Bruce A. , Marine Technician  
Vorobiov, Alexander V. , Fishery Aid, U. S. Fish and Wildlife Service

#### R/V Paolina-T

Casey, Harold D. , Biologist, U. S. Fish and Wildlife Service  
Brennen, Robert E. , Marine Technician  
Hinds, James W. , Marine Technician

SIO  
CCOFI  
5511

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

80,55a) BLACK DOUGLAS; November 12, 1955; 2013 GCT; 34°19'N, 120°48'W; sounding, 420 fm; wind, 310°, force 5; weather, clear; sea, very rough; wire angle, 18°.

0	13.4	-			0	13.4	(33.44)				
10	13.38	33.44			10	13.38	33.44				
71	9.9	33.44			20	13.3	(33.44)				
143	8.54	33.99			30	12.6	(33.44)				
214	8.1	34.14			50	10.2	(33.44)				
285	7.86	34.22			75	9.8	33.45				
					100	9.4	33.59				
					150	8.5	34.02				
					200	8.1	34.12				
					250	8.0	34.19				

- a) Because the same station pattern was repeated several times on Cruise 5511, the stations are grouped by tracks. The stations of each track are presented in numerical order. As a result, stations of the same number will not appear together.

OBSERVED				INTERPOLATED				COMPUTED			
Z	T	S	O <sub>2</sub>	$\delta_{T3}$	Z	T	S	O <sub>2</sub>	$\sigma_t$	$\delta_{T3}$	$\Delta D$
m	°C	‰	ml/L	10 cm/g	m	°C	‰	ml/L	g/L	10 cm/g	dyn. m

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5511

BLACK DOUGLAS; November 11, 1955; 2248 GCT; 34°16.5'N, 120°15'W; sounding, 260 fm; wind, 270°, force 3; weather, cloudy; sea, very rough; wire angle, 08°.

81.49

0	15.7	-			0	15.7	(33.59)				
10	15.66	33.59			10	15.66	33.59				
74	10.0	33.62			20	15.0	(33.59)				
148	8.92	33.93			30	13.8	(33.59)				
223	8.4	34.11			50	12.0	(33.60)				
297	8.06	34.22			75	10.0	33.62				
					100	9.5	33.70				
					150	8.9	33.94				
					200	8.5	34.07				
					250	8.3	34.15				
					300	(8.0)	(34.22)				

BLACK DOUGLAS; November 11, 1955; 0708 GCT; 34°13.5'N, 119°51'W; sounding, 250 fm; wind, 360°, force 1; weather, fog; sea, smooth; wire angle, 11°.

82.45

0	15.9	-			0	15.9	(33.57)				
10	15.54	33.57			10	15.54	33.57				
74	10.4	33.57			20	15.1	(33.57)				
147	8.78	33.96			30	14.1	(33.57)				
221	8.4	34.13			50	11.8	(33.57)				
294	8.16	34.20			75	10.4	33.57				
					100	9.3	33.67				
					150	8.7	33.97				
					200	8.5	34.09				
					250	8.3	34.17				
					300	(8.1)	(34.21)				

PAOLINA-T; November 9, 1955; 1725 GCT; 34°12.5'N, 119°20.5'W; sounding, 12 fm; wind, 280°, force 2; weather, partly cloudy; sea, slight; wire angle, 00°.

83.40

0	15.7	-			0	15.7	(33.66)				
10	15.61	33.66			10	15.61	33.66				
15	15.59	33.58			20	15.48	33.58				
20	15.48	33.58									

PAOLINA-T; November 10, 1955; 1125 GCT; 33°32.5'N, 120°49'W; sounding, 1630 fm; wind, 330°, force 4; weather, clear; sea, moderate; wire angle, 09°.

83.60

0	15.2	-			0	15.2	(33.63)				
10	15.24	33.62			10	15.24	33.62				
73	9.9	33.57			20	15.2	(33.61)				
148	8.64	33.94			30	15.2	(33.60)				
222	7.8	34.11			50	12.7	(33.58)				
296	7.19	34.19			75	9.8	33.57				
					100	9.3	33.67				
					150	8.6	33.95				
					200	8.0	34.07				
					250	7.5	34.14				
					300	(7.1)	(34.19)				

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

85.39 PAOLINA-T; November 11, 1955; 1729 GCT; 33°58.5'N, 119°06.5'W; sounding, 370 fm; wind, 100°, force 3; weather, cloudy; sea, moderate; wire angle, 07°.

0	16.2	-			0	16.2	(33.57)				
10	16.24	33.57			10	16.24	33.57				
74	10.2	33.59			20	16.2	(33.57)				
149	8.94	33.93			30	14.1	(33.57)				
223	8.4	34.05			50	11.6	(33.58)				
298	8.02	34.19			75	10.2	33.59				
					100	9.6	33.68				
					150	8.9	33.93				
					200	8.5	34.02				
					250	8.3	34.10				
					300	(8.0)	(34.19)				

85.50 PAOLINA-T; November 10, 1955; 2229 GCT; 33°38'N, 119°53'W; sounding, 125 fm; wind, 270°, force 1; weather, clear; sea, slight; wire angle, 02°.

0	15.5	-			0	15.5	(33.53)				
10	14.20	33.54			10	14.20	33.54				
75	9.5	33.69			20	13.8	(33.56)				
150	8.41	34.05			30	13.5	(33.57)				
200	8.34	34.09			50	12.8	(33.62)				
					75	9.5	33.69				
					100	9.0	33.81				
					150	8.41	34.05				
					200	8.34	34.09				

85.60 PAOLINA-T; November 10, 1955; 1455 GCT; 33°16.5'N, 120°33'W; sounding, 850 fm; wind, 310°, force 3; weather, partly cloudy; sea, moderate; wire angle, 08°.

0	15.6	-			0	15.6	(33.58)				
10	15.57	33.58			10	15.57	33.58				
74	10.2	33.58			20	15.5	(33.58)				
148	8.22	34.02			30	15.5	(33.58)				
223	7.5	34.07			50	11.9	(33.58)				
297	6.46	34.11			75	10.2	33.58				
					100	9.3	33.69				
					150	8.2	34.02				
					200	7.7	34.06				
					250	7.1	34.08				
					300	(6.4)	(34.11)				

87.35 PAOLINA-T; November 11, 1955; 2212 GCT; 33°50'N, 118°41.5'W; sounding, 350+ fm; wind, 100°, force 3; weather, cloudy; sea, moderate; wire angle, 12°.

0	16.0	-			0	16.0	(33.55)				
10	16.04	33.55			10	16.04	33.55				
73	10.6	33.55			20	14.8	(33.55)				
147	9.04	33.89			30	13.4	(33.55)				
220	8.5	34.14			50	11.5	(33.55)				
293	8.14	34.18			75	10.5	33.55				
					100	9.8	33.64				
					150	9.0	33.90				
					200	8.6	34.09				
					250	8.3	34.17				
					300	(8.1)	(34.18)				

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

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PAOLINA-T; November 12, 1955; 0553 GCT; 33°30.5'N, 119°21'W; sounding, 940 fm; wind, 050°, force 1; weather, clear; sea, moderate; wire angle, 00°.

87.45

0	15.6u	-			0	15.9	(33.65)				
10	15.90	33.62			10	15.90	33.62				
75	11.1	33.48			20	15.9	(33.59)				
150	8.78	33.83			30	15.5	(33.57)				
225	8.1	34.04			50	12.8	(33.51)				
300	7.96	34.14			75	11.1	33.48				
					100	10.1	33.56				
					150	8.78	33.83				
					200	8.3	33.98				
					250	8.1	34.08				
					300	7.96	34.14				

PAOLINA-T; November 12, 1955; 1818 GCT; 33°05'N, 120°21'W; sounding, 650 fm; wind, 320°, force 5; weather, clear; sea, rough; wire angle, 09°.

87.60

0	15.6	-			0	15.6	(33.68)				
10	15.61	33.64			10	15.61	33.64				
74	10.6	33.48			20	15.6	(33.61)				
148	8.26	34.02			30	15.6	(33.58)				
222	7.2	34.06			50	13.1	(33.52)				
296	6.66	34.09			75	10.6	33.48				
					100	9.6	34.61				
					150	8.2	34.03				
					200	7.5	34.05				
					250	7.0	34.07				
					300	(6.6)	(34.09)				

PAOLINA-T; November 14, 1955; 2125 GCT; 33°28'N, 117°45'W; sounding, 42 fm; wind, 280°, force 4; weather, partly cloudy; sea, very rough; wire angle, 12°.

90.28

0	16.3	-			0	16.3	(33.65)				
10	16.25	33.65			10	16.25	33.65				
24	16.2	33.64			20	16.2	33.65				
44	12.54	33.51			30	16.2	33.61				
60	11.68	33.48			50	12.1	33.49				

PAOLINA-T; November 13, 1955; 1312 GCT; 33°04.5'N, 118°35'W; sounding, 480 fm; wind, 300°, force 2; weather, partly cloudy; sea, moderate; wire angle, 03°.

90.40

0	16.5	-			0	16.5	(33.60)				
10	16.50	33.60			10	16.50	33.60				
75	10.0	33.58			20	14.8	(33.60)				
150	8.68	34.02			30	13.0	(33.59)				
225	8.2	34.10			50	11.2	(33.59)				
301	7.89	34.21			75	10.0	33.58				
					100	9.3	33.69				
					150	8.68	34.02				
					200	8.3	34.08				
					250	8.1	34.13				
					300	7.9	34.21				



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

90.55

PAOLINA-T; November 13, 1955; 0053 GCT; 32°34'N, 119°38'W; sounding, 350 fm; wind, 320°, force 4; weather, cloudy; sea, very rough; wire angle, 00°.

0	16.1	-			0	16.1	(33.67)				
10	16.11	33.64			10	16.11	33.64				
75	10.5	33.49			20	16.1	(33.61)				
150	8.42	33.91			30	15.2	(33.58)				
225	7.5	34.05			50	12.0	(33.52)				
300	6.84	34.12			75	10.5	33.49				
					100	9.5	33.59				
					150	8.42	33.91				
					200	7.7	34.02				
					250	7.2	34.08				
					300	6.84	34.12				

83.40

PAOLINA-T; November 16, 1955; 1509 GCT; 34°13'N, 119°21.5'W; sounding, 11 fm; wind, 020°, force 3; weather, cloudy; sea, slight; wire angle, 00°.

0	13.4	-			0	13.4					
10	12.66	33.55			10	12.66	33.55				
20	12.2	-			20	12.2					

83.60

PAOLINA-T; November 17, 1955; 0805 GCT; 33°40.5'N, 120°43.5'W; sounding, 820 fm; wind, 240°, force 3; weather, rain; sea, moderate; wire angle, 05°.

0	14.0	-			0	14.0	(33.57)				
10	13.90	33.57			10	13.90	33.57				
75	10.3	33.56			20	13.8	(33.57)				
149	8.30	33.97			30	13.7	(33.57)				
224	7.6	34.09			50	12.8	(33.56)				
300	7.28	34.17			75	10.3	33.56				
					100	9.3	33.65				
					150	8.3	33.97				
					200	7.8	34.06				
					250	7.5	34.12				
					300	7.28	34.17				

85.39

PAOLINA-T; November 18, 1955; 0255 GCT; 33°59'N, 119°06'W; sounding, 280 fm; wind, 290°, force 2; weather, partly cloudy; sea, moderate; wire angle, 16°.

0	15.7	-			0	15.7	(33.62)				
10	15.68	33.61			10	15.68	33.61				
72	10.0	33.59			20	15.7	(33.61)				
144	9.02	33.91			30	15.6	(33.60)				
217	8.8	34.05			50	11.3	(33.59)				
288	8.36	34.18			75	9.9	33.60				
					100	9.2	33.70				
					150	9.0	33.92				
					200	8.9	34.02				
					250	8.6	34.11				

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

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PAOLINA-T; November 17, 1955; 1840 GCT; 33°36'N, 119°48'W; sounding, 230 fm; wind, 320°, force 3; weather, partly cloudy; sea, moderate; wire angle, 06°.

85.50

0	12.9u	-			0	13.8	(33.49)				
10	13.83	33.50			10	13.83	33.50				
75	9.8	33.70			20	13.8	(33.52)				
149	8.52	34.08			30	13.8	(33.54)				
224	8.0	34.22			50	13.3	(33.60)				
298	7.48	34.25			75	9.8	33.70				
					100	9.0	33.82				
					150	8.5	34.08				
					200	8.2	34.19				
					250	7.8	34.23				
					300	(7.4)	(34.25)				

PAOLINA-T; November 17, 1955; 1119 GCT; 33°24'N, 120°32.5'W; sounding, 730 fm; wind, 230°, force 3; weather, rain; sea, moderate; wire angle, 08°.

85.60

0	14.8	-			0	14.8	(33.64)				
10	14.78	33.62			10	14.78	33.62				
74	10.1	33.51			20	14.8	(33.60)				
150	8.47	33.93			30	14.7	(33.58)				
223	7.7	34.03			50	13.2	(33.53)				
298	7.05	34.12			75	10.1	33.51				
					100	9.2	33.62				
					150	8.47	33.93				
					200	7.9	34.00				
					250	7.5	34.06				
					300	(7.0)	(34.13)				

PAOLINA-T; November 18, 1955; 0652 GCT; 33°49.5'N, 118°39'W; sounding, 450 fm; wind, 180°, force 2; weather, partly cloudy; sea, moderate; wire angle, 02°.

87.35

0	15.4	-			0	15.4	(33.63)				
10	15.54	33.62			10	15.54	33.62				
75	10.5	33.55			20	15.6	(33.61)				
150	9.14	33.81			30	12.5	(33.59)				
225	8.8	34.04			50	11.5	(33.57)				
300	8.31	34.14			75	10.5	33.55				
					100	9.5	33.61				
					150	9.14	33.81				
					200	8.9	33.98				
					250	8.6	34.08				
					300	8.31	34.14				

PAOLINA-T; November 18, 1955; 1429 GCT; 33°30.5'N, 119°19.5'W; sounding, 940 fm; wind, 090°, force 1; weather, partly cloudy; sea, moderate; wire angle, 03°.

87.45

0	14.2	-			0	14.2	(33.54)				
10	13.94	33.55			10	13.94	33.55				
75	10.1	33.63			20	13.8	(33.56)				
150	8.82	34.10			30	12.2	(33.57)				
226	8.2	34.17			50	10.7	(33.59)				
300	7.93	34.25			75	10.1	33.63				
					100	9.3	33.77				
					150	8.82	34.10				
					200	8.4	34.16				
					250	8.0	34.19				
					300	7.93	34.25				

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5511

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

87.60 PAOLINA-T; November 19, 1955; 0345 GCT; 33°00'N, 120°21'W; sounding, 450 fm; wind, 320°, force 3; weather, clear; sea, moderate; wire angle, 06°.

0	14.5	-			0	14.5	(33.58)				
10	14.42	33.56			10	14.42	33.56				
75	10.8	33.46			20	14.4	(33.54)				
149	8.64	33.91			30	14.3	(33.52)				
225	7.5	34.05			50	11.5	(33.49)				
298	6.89	34.07			75	10.8	33.46				
					100	9.5	33.56				
					150	8.6	33.91				
					200	7.8	34.02				
					250	7.2	34.06				
					300	(6.8)	(34.07)				

90.28 PAOLINA-T; November 20, 1955; 0405 GCT; 33°27.5'N, 117°46.5'W; sounding, 320 fm; wind, 270°, force 1; weather, fog; sea, moderate; wire angle, 02°.

0	15.6	-			0	15.6	(33.50)				
10	15.30	33.51			10	15.30	33.51				
75	9.5	33.58			20	15.2	(33.52)				
150	9.16	33.91			30	12.8	(33.52)				
225	8.6	34.13			50	11.7	(33.54)				
300	7.98	34.19			75	9.5	33.58				
					100	9.2	33.68				
					150	9.16	33.91				
					200	8.7	34.08				
					250	8.0	34.16				
					300	7.98	34.19				

90.40 PAOLINA-T; November 19, 1955; 2012 GCT; 33°04.5'N, 118°35'W; sounding, 750 fm; wind, 320°, force 2; weather, partly cloudy; sea, moderate; wire angle, 08°.

0	15.6	-			0	15.6	(33.59)				
10	15.19	33.59			10	15.19	33.59				
74	9.8	33.60			20	15.0	(33.59)				
148	8.86	33.86			30	14.9	(33.59)				
224	7.9	34.05			50	11.1	(33.59)				
298	7.54	34.20			75	9.7	33.60				
					100	9.2	33.67				
					150	8.8	33.87				
					200	8.2	34.00				
					250	7.7	34.11				
					300	(7.5)	(34.21)				

90.55 PAOLINA-T; November 19, 1955; 0959 GCT; 32°34.5'N, 119°37'W; sounding, 650 fm; wind, 300°, force 2; weather, partly cloudy; sea, moderate; wire angle, 02°.

0	15.3	-			0	15.3	(33.67)				
10	15.29	33.64			10	15.29	33.64				
76	11.0	33.49			20	15.3	(33.61)				
151	8.39	34.94			30	15.3	(33.58)				
226	7.8	34.09			50	12.5	(33.53)				
301	6.74	34.14			75	11.1	(33.49)				
					100	9.4	33.59				
					150	8.4	33.94				
					200	8.0	34.06				
					250	7.5	34.11				
					300	6.8	34.14				

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
FIRST TRACK											
80.50-B	XI-12	0440	34°26.0'	120°28.0'	30	270°	3	clear	rough	14.56	33.58
80 <sup>5</sup> .47-B	11	2050	34°27.0'	120°09.0'	30	270°	2	overcast	slight	15.56	33.61
80 <sup>5</sup> .55-B	12	2240	34°09.5'	120°43.0'	400	320°	6	clear	very rough	13.14	33.65
81.51-B	12	0255	34°16.5'	120°24.5'	225	280°	3	clear	very rough	14.04	33.58
81 <sup>5</sup> .44-B	11	0855	34°23.5'	119°52.5'	30	120°	2	fog	slight	15.50	33.57
81 <sup>5</sup> .48-B	11	1910	34°16.0'	120°06.5'	310	300°	2	overcast	moderate	15.30	33.58
81 <sup>5</sup> .52-B	12	0050	34°06.0'	120°21.5'	40	280°	3	overcast	very rough	14.02	33.60
81 <sup>5</sup> .56-B	13	0000	34.00.0'	120°38.0'	700	320°	6	clear	very rough	13.32	33.57
82.42-P	9	1910	34°15.5'	119°35.5'	57	280°	2	partly cloudy	slight	15.72	33.58
82.44-P	9	2055	34°13.5'	119°46.5'	128	280°	2	partly cloudy	slight	14.99	33.60
82.47-P	9	2245	34°13.5'	120°01.0'	355	260°	3	partly cloudy	moderate	15.82	33.60
82.47-B	11	1030	34°15.0'	119°58.0'	310	090°	3	fog	slight	15.06	33.57
82.49-B	11	1730	34°05.0'	120°04.0'	28	270°	2	overcast	rough	13.52	33.59
82.52-B	13	0300	34°00.0'	120°18.5'	30	320°	5	clear	moderate	13.17	33.61
83.41-B	11	0100	34°12.0'	119°26.0'	30	190°	1	clear	slight	16.11	33.60
83.42-B	11	0000	34°07.5'	119°28.5'	120	180°	1	clear	slight	15.59	33.58
83.43-B	11	0230	34°08.0'	119°37.5'	150	180°	1	missing	smooth	15.30	33.58
83.46-B	11	0425	34.04.0'	119°49.5'	30	calm		fog	smooth	14.28	33.58

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

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters	
						Dir	Force			T	S
83.48-P	XI-10	0215	33°57.5'	119°55.0'	98	340°	3	partly cloudy	slight	14.96	33.64
83.48-B	13	0655	33.58.0'	119°55.0'	90	350°	2	clear	moderate	12.00	33.58
83.51-P	10	0420	33.51.5'	120°08.0'	230	330°	4	clear	moderate	14.06	33.61
83.51-B	13	0425	33°52.0'	120°08.5'	110	310°	3	clear	moderate	13.90	33.57
83.52 <sup>5</sup> -P	10	0530	33.48.0'	120°13.5'	380	330°	4	clear	moderate	14.26	33.55
83.55-P	10	0730	33°43.5'	120°25.0'	820	330°	4	clear	moderate	14.73	33.58
83.57 <sup>5</sup> -P	10	0920	33°38.0'	120°36.0'	790	310°	4	clear	moderate	14.25	33.56
83 <sup>5</sup> .43-B	10	2245	34°02.5'	119°31.0'	30	180°	1	clear	slight	14.46a)	33.55
83 <sup>5</sup> .46-B	13	0850	33°57.0'	119°42.0'	32	320°	1	clear	moderate	14.79	33.58
84.40-B	10	2010	34.06.0'	119°15.0'	30	180°	1	clear	slight	16.32	33.62
84.43-B	13	1045	33°59.5'	119°29.0'	30	calm		clear	smooth	14.60	33.57
85.40-B	10	1830	33°57.0'	119°10.5'	400	120°	1	partly cloudy	smooth	16.24	33.61
85.40-P	11	1605	33°56.5'	119°11.0'	409	100°	3	overcast	moderate	14.89	33.57
85.42 <sup>5</sup> -P	11	0430	33°51.0'	119°19.0'	480	090°	2	clear	smooth	14.59	33.62
85.45-P	11	0230	33°46.5'	119°31.0'	1050	110°	2	clear	smooth	14.38	33.62
85.47 <sup>5</sup> -P	11	0020	33°42.0'	119°41.5'	900	calm		clear	smooth	15.10	33.64
85.52 <sup>5</sup> -P	10	2040	33°34.5'	120°03.5'	430	270°	1	partly cloudy	slight	15.10	33.64

a) Alternate value, 14.29°C.

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
85.55-P	XI-10	1845	33°28.5'	120°13.5'	760	030°	1	partly cloudy	moderate	15.55	33.64
85.57 <sup>5</sup> -P	10	1650	33°22.5'	120°23.0'	580	310°	3	partly cloudy	moderate	15.84	33.65
85 <sup>5</sup> .36-B	10	1600	33°58.0'	118°52.5'	300	calm		partly cloudy	missing	15.72	33.75
86.33-B	10	1345	33°59.0'	118°34.5'	30	calm		clear	slight	15.94	33.65
87.33-B	10	1230	33°52.5'	118°30.0'	30	calm		fog	missing	15.90	33.58
87.36-B	10	1030	33°46.5'	118°44.0'	490	060°	1	clear	slight	15.69	33.59
87.37 <sup>5</sup> -P	11	2355	33°46.0'	118°49.5'	540	120°	1	overcast	slight	16.27	33.64
87.40-B	10	0755	33°40.0'	118°58.5'	450	220°	1	clear	smooth	14.78	33.59
87.40-P	12	0200	33°40.5'	118°59.5'	510	calm		partly cloudy	slight	15.42	33.60
87.42 <sup>5</sup> -P	12	0340	33°35.5'	119°10.0'	240	calm		clear	moderate	15.70	33.62
87.47 <sup>5</sup> -P	12	0804	33°26.5'	119°31.0'	500	350°	3	partly cloudy	moderate	15.68	33.64
87.50-P	12	1025	33°19.5'	119°41.0'	44	330°	4	partly cloudy	moderate	15.60	33.59
87.52 <sup>5</sup> -P	12	1220	33°16.0'	119°50.5'	50	350°	3	partly cloudy	moderate	15.41	33.58
87.55-P	12	1405	33°12.0'	120°01.5'	600+	350°	3	partly cloudy	rough	15.21	33.59
87.57 <sup>5</sup> -P	12	1610	33°08.5'	120°11.0'	400	320°	5	partly cloudy	rough	15.30	33.58
87 <sup>5</sup> .36-B	10	0500	33°40.0'	118°38.0'	350	240°	1	missing	slight	15.28	33.62
88.32-B	10	0200	33°40.0'	118°17.5'	-	-	-	missing	missing	16.22	33.62
89.29-B	9	2115	33°34.5'	117°58.5'	28	300°	1	partly cloudy	slight	17.05	33.62
89.34-B	10	0000	33°26.5'	118°16.5'	460	270°	1	partly cloudy	slight	16.92	33.66

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
90.28-B	XI-9	1930	33°29.0'	117°45.5'	30	320°	1	partly cloudy	smooth	15.94	33.61
90.30-B	9	1745	33°25.0'	117°55.0'	340	calm		clear	smooth	17.04	33.68
90.30-P	14	1930	33°24.0'	117°54.5'	350	300°	5	partly cloudy	very rough	16.34	33.63
90.32 <sup>5</sup> -P	14	1730	33°19.0'	118°05.0'	480	300°	5	partly cloudy	very rough	16.56	33.67
90.35-P	14	1555	33°15.0'	118°13.5'	250	280°	4	partly cloudy	very rough	16.43	33.68
90.37 <sup>5</sup> -P	13	1510	33°09.5'	118°24.5'	660	310°	2	partly cloudy	moderate	16.59	33.63
90.42 <sup>5</sup> -P	13	1120	33°02.5'	118°44.5'	780	290°	3	partly cloudy	moderate	16.24	33.64
90.45-P	13	0925	32°57.0'	118°56.5'	1050	280°	2	partly cloudy	moderate	16.48	33.64
90.47 <sup>5</sup> -P	13	0710	32°51.0'	119°06.5'	750	300°	3	cloudy	rough	16.69	33.68
90.50-P	13	0525	32°45.5'	119°17.0'	115	300°	3	cloudy	rough	16.63	33.80
90.52 <sup>5</sup> -P	13	0355	32°40.0'	119°27.0'	690	320°	3	partly cloudy	very rough	15.92	33.62
91.31-B	9	1600	33°12.0'	117°52.0'	450	360°	1	clear	slight	17.42	33.69
92.26-B	9	1120	33°12.0'	117°27.5'	30	060°	2	clear	slight	16.48	33.68
92.31-B	9	1400	33°04.0'	117°44.0'	450	060°	1	clear	slight	16.77	33.68
92 <sup>5</sup> .26-B	9	0945	33°04.0'	117°20.0'	180	calm		clear	smooth	16.26	33.63
93.30-B	9	0715	32°50.0'	117°31.5'	480	calm		clear	smooth	17.19	33.68

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

Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	10 Meters		
						Dir	Force			T	S	
SECOND TRACK												
82.42-P	XI-16	1645	34°14.0'	119°34.0'	57	080°	3	cloudy	slight	14.28	33.57	
82.44-P	16	1810	34°14.0'	119°45.5'	115	080°	3	overcast	slight	14.26	33.55	
82.47-P	16	2010	34°13.5'	120°00.0'	350	080°	3	overcast	slight	13.10	33.55	
83.48-P	16	2245	33°57.5'	119°55.0'	120	080°	1	overcast	slight	12.46	33.57	
83.51-P	17	0105	33°51.5'	120°08.0'	160	080°	3	overcast	slight	12.38	33.58	
83.52 <sup>5</sup> -P	17	0222	33°49.5'	120°13.5'	350	270°	3	overcast	moderate	13.34	33.55	
83.55-P	17	0400	33°46.5'	120°23.5'	680	300°	3	rain	moderate	14.48	33.61	
83.57 <sup>5</sup> -P	17	0555	33°43.5'	120°33.5'	650	270°	2	rain	moderate	14.94	33.64	
85.40-P	18	0145	33°57.0'	119°10.0'	500	290°	3	partly cloudy	moderate	15.11	33.61	
85.42 <sup>5</sup> -P	18	0000	33°52.0'	119°21.0'	420	290°	1	partly cloudy	moderate	14.50	33.56	
85.45-P	17	2225	33°47.0'	119°31.0'	1130	300°	5	partly cloudy	rough	13.80	33.57	
85.47 <sup>5</sup> -P	17	2030	33°42.5'	119°41.0'	960	320°	3	partly cloudy	moderate	13.98	33.57	
85.52 <sup>5</sup> -P	17	1650	33°31.0'	119°59.5'	460	300°	3	partly cloudy	moderate	13.29	33.56	
85.55-P	17	1535	33°27.5'	120°07.0'	700+	280°	3	partly cloudy	moderate	14.09	33.57	
85.57 <sup>5</sup> -P	17	1310	33°29.0'	120°22.0'	710	240°	3	rain	moderate	14.40	33.56	
87.37 <sup>5</sup> -P	18	0845	33°45.5'	118°49.0'	570	090°	3	partly cloudy	moderate	15.07	33.58	
87.40-P	18	1035	33°41.0'	119°00.0'	580	090°	3	partly cloudy	moderate	14.18	33.50	
87.42 <sup>5</sup> -P	18	1235	33°36.5'	119°12.0'	255	090°	2	partly cloudy	moderate	13.83	33.51	
87.52 <sup>5</sup> -P	18	2200	33°15.0'	119°50.5'	60	290°	2	partly cloudy	moderate	14.70	33.58	

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
87.55-P	XI-18	2345	33°11.0'	120°00.0'	730	290°	3	partly cloudy	moderate	15.14	33.58
87.57 <sup>5</sup> -P	19	0125	33°06.5'	120°09.0'	450	290°	3	partly cloudy	moderate	14.01	33.53
90.30-P	20	0245	33°24.0'	117°54.5'	380	270°	1	partly cloudy	moderate	16.02	33.56
90.32 <sup>5</sup> -P	20	0100	33°18.5'	118°04.5'	420	270°	2	partly cloudy	moderate	16.20	33.62
90.35-P	19	2335	33°15.0'	118°13.5'	290	270°	3	partly cloudy	moderate	15.86	33.62
90.37 <sup>5</sup> -P	19	2200	33°09.5'	118°25.0'	730	270°	3	partly cloudy	moderate	15.78	33.60
90.42 <sup>5</sup> -P	19	1830	33°01.0'	118°44.5'	840	320°	2	partly cloudy	moderate	15.00	33.58
90.45-P	19	1648	32°56.0'	118°56.5'	1050	320°	2	partly cloudy	moderate	14.92	33.57
90.47 <sup>5</sup> -P	19	1515	32°50.5'	119°06.5'	800	300°	2	partly cloudy	moderate	15.00	33.54
90.50-P	19	1335	32°46.0'	119°15.5'	280	300°	2	partly cloudy	moderate	15.63	33.60
90.52 <sup>5</sup> -P	19	1205	32°40.0'	119°26.0'	760	300°	2	partly cloudy	moderate	15.02	33.60

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

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