

UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL OCEANOGRAPHIC DATA

CalCOFI Cruise 8012
26 November - 20 December 1980

CalCOFI Cruise 8101
8 - 31 January 1981

CalCOFI Cruise 8102
13 February - 10 March 1981

CalCOFI Cruise 8104
1 - 27 April 1981

SIO Reference 85-9
17 June 1985

UNIVERSITY OF CALIFORNIA
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL OCEANOGRAPHIC DATA

CalCOFI Cruise 8012
26 November - 20 December 1980

CalCOFI Cruise 8101
8 - 31 January 1981

CalCOFI Cruise 8102
13 February - 10 March 1981

and

CalCOFI Cruise 8104
1 - 27 April 1981

SIO Reference 85-9
17 June 1985

Approved for distribution:


W. A. Nierenberg, Director

CONTENTS

Introduction	3
Literature Cited	4
Cruise 8012	
List of Figures	6
Personnel	16
Tabulated Data	17
10 Meter Data	33
Cruise 8101	
List of Figures	40
Personnel	50
Tabulated Data	51
10 Meter Data	58
Cruise 8102	
List of Figures	63
Personnel	73
Tabulated Data	74
10 Meter Data	84
Cruise 8104	
List of Figures	94
Personnel	104
Tabulated Data	105
10 Meter Data	120
Distribution List	132

INTRODUCTION

The data in this report were collected during Cruises 8012*, 8101, 8102, and 8104 of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV *David Starr Jordan* of the National Marine Fisheries Service and the RV *New Horizon* of the Scripps Institution of Oceanography.

These data were collected and processed by personnel of the Marine Life Research Group (MLRG), the Physical and Chemical Oceanographic Data Facility (PACODF), and the Southwest Fisheries Center, National Marine Fisheries Service (NMFS).

STANDARD PROCEDURES

In-situ Conductivity/Temperature/Depth Recorder (CTD) Data

CTD lowerings were made on cardinal CalCOFI line stations on all cruises except 8012 *New Horizon*. Temperature and salinity corrections were applied to the CTD data, based upon comparisons with shallow and deep Nansen cast data or rosette cast data (8102 *New Horizon*).

Hydrographic Cast Data

The hydrographic casts were lowered on cardinal CalCOFI line stations on cruise 8012 *New Horizon*. The casts consisted of 18 or fewer Nansen bottles lowered to a maximum sampling depth of 500 meters, bottom depth permitting. Temperature and salinity were determined for all depths sampled.

Paired protected reversing thermometers were used to determine temperatures which are recorded to hundredths of a degree Celsius. Sampling bottles used below a depth of 100 meters were equipped with unprotected thermometers for determination of the depth of sampling.

Salinity samples were analyzed at sea on inductive-type salinometers standardized with Wormley Standard Seawater. The salinity values are reported to three decimal places.

The observed data have been evaluated using the method described by Klein (1973). This involves consideration of their variation as functions of density or depth and their relationships to each other, and comparisons with adjacent observations.

TABULATED DATA

The time reported is Greenwich Mean Time. For CTD lowerings it is the "start down" time and for Nansen casts it is the time of messenger release.

Bottom depths, determined acoustically, have been corrected using Matthews (1939) tables and are reported in meters. Weather conditions have been coded using WMO code 4051.

Data in this report were obtained by CTD lowerings, rosette samples, or Nansen casts and appear in three forms:

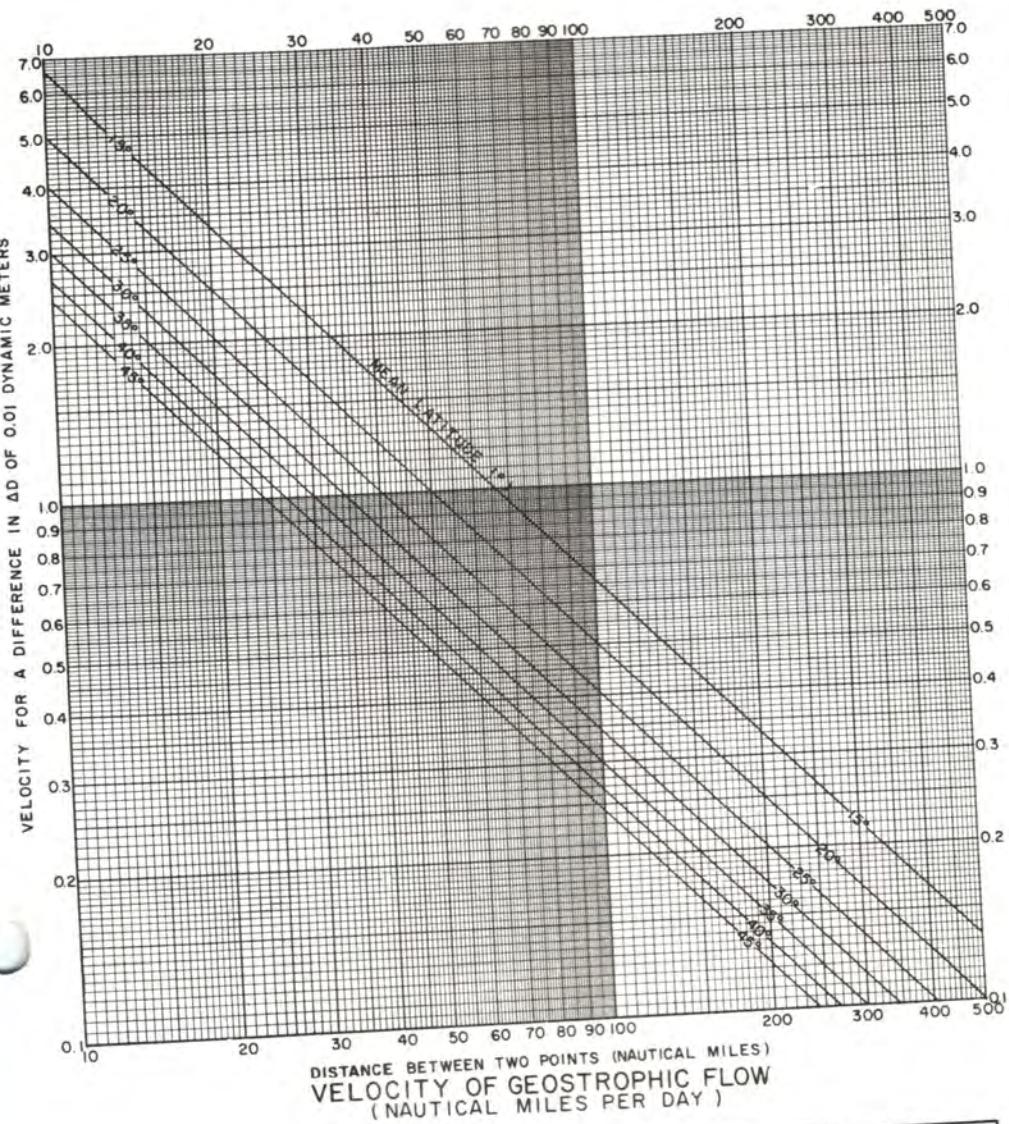
1. Observed and interpolated standard depth data from Nansen casts have been interspersed and are presented together in depth sequence. Interpolated or extrapolated standard level data are noted by the footnote "ISL" printed after the depth. Density related parameters have been calculated from the International Equation of State of Seawater 1980 (EOS80, UNESCO, 1981). Some of the differences between EOS80 and the older equations of state are discussed in the introduction to SIO Ref. 84-18. Computed values of potential temperature, sigma-theta, specific volume anomaly (SVA), dynamic height or geopotential anomaly, and pressure are included with both observed and interpolated standard depth levels.

* The first two digits represent the year and the second two digits the month of the cruise.

2. Data from CTD lowerings are presented with two stations printed side by side. Temperature and salinity are tabulated at closer standard intervals than the interpolated standard depth bottle data. The computed values are the same as for the bottle data.
3. Ten-meter temperature and salinity data from net tow station 10-meter bottles and CTD 10-meter check bottles appear as separate sections.

LITERATURE CITED

- Klein, Hans T., 1973. A new technique for processing physical oceanographic data. SIO Ref. No. 73-14, 17 pp.
- Matthews, D. J., 1939. Tables of the velocity of sound in pure water and seawater for use in echo-sounding and sound-ranging. Second Edition. Hydrographic Department, Admiralty, H. D. 282, 52 pp.
- Scripps Institution of Oceanography, University of California, 1984. Physical, Chemical and Biological Data, CalCOFI Cruise 8401, 4-27 January 1984. SIO Ref. No. 84-18, 120 pp.
- UNESCO, 1981. Background papers and supporting data on the International Equation of State 1980. UNESCO Tech. Pap. in Mar. Sci., No. 38, 192 pp.



cm/sec	0	1	2	3	4	5	6	7	8	9
0	KNOTS NM/DAY	0.02 0.47	0.04 0.93	0.06 1.40	0.08 1.86	0.10 2.33	0.12 2.80	0.14 3.26	0.16 3.73	0.17 4.20
10	0.19 4.66	0.21 5.13	0.23 5.59	0.25 6.06	0.27 6.53	0.29 6.99	0.31 7.46	0.33 7.93	0.35 8.39	0.37 8.86
20	0.39 9.32	0.41 9.79	0.43 10.26	0.45 10.72	0.47 11.19	0.49 11.66	0.51 12.12	0.52 12.59	0.54 13.05	0.56 13.52
30	0.58 13.99	0.60 14.45	0.62 14.92	0.64 15.38	0.66 15.85	0.68 16.32	0.70 16.78	0.72 17.25	0.74 17.72	0.76 18.18
40	0.78 18.65	0.80 19.11	0.82 19.58	0.84 20.05	0.85 20.51	0.87 20.98	0.89 21.45	0.91 21.91	0.93 22.38	0.95 22.84
50	0.97 23.31	0.99 23.78	1.01 24.24	1.03 24.71	1.05 25.17	1.07 25.64	1.09 26.11	1.11 26.57	1.13 27.04	1.15 27.51
60	1.17 27.98	1.18 28.44	1.20 28.90	1.22 29.37	1.24 29.84	1.26 30.30	1.28 30.77	1.30 31.24	1.32 31.70	1.34 32.17
70	1.36 32.63	1.38 33.10	1.40 33.57	1.42 34.03	1.44 34.50	1.46 34.96	1.48 35.43	1.50 35.90	1.52 36.36	1.53 36.83
80	1.55 37.30	1.57 37.76	1.59 38.23	1.61 38.69	1.63 39.16	1.65 39.63	1.67 40.09	1.69 40.56	1.71 41.03	1.73 41.49
90	1.75 41.96	1.77 42.42	1.79 42.89	1.81 43.36	1.83 43.82	1.85 44.29	1.86 44.76	1.88 45.22	1.90 45.69	1.92 46.15
100	1.94 46.62	1.96 47.09	1.98 47.55	2.00 48.02	2.02 48.48	2.04 48.95	2.06 49.42	2.08 49.88	2.10 50.35	2.12 50.82

CONVERSION TABLE

(CENTIMETERS / SECOND - KNOTS - NAUTICAL MILES / DAY)

1 cm/sec = 0.019 kts = 0.466 NAUTICAL MILES / DAY

1 kts = 24 NAUTICAL MILES / DAY = 51.48 cm/sec

1 NAUTICAL MILE / DAY = 0.042 kts = 2.14 cm/sec

FIGURES

Cruise 8101

1. CalCOFI Cruise 8101, station positions.
2. Horizontal distribution of dynamic height anomaly (0 over 500 m).
3. Horizontal distribution of dynamic height anomaly (200 over 500 m).
4. Horizontal distribution of temperature at 10 meters.
5. Horizontal distribution of salinity at 10 meters.
6. Horizontal distribution of sigma-theta at 10 meters.
7. Horizontal distribution of temperature at 200 meters.
8. Horizontal distribution of salinity at 200 meters.
9. Horizontal distribution of sigma-theta at 200 meters.

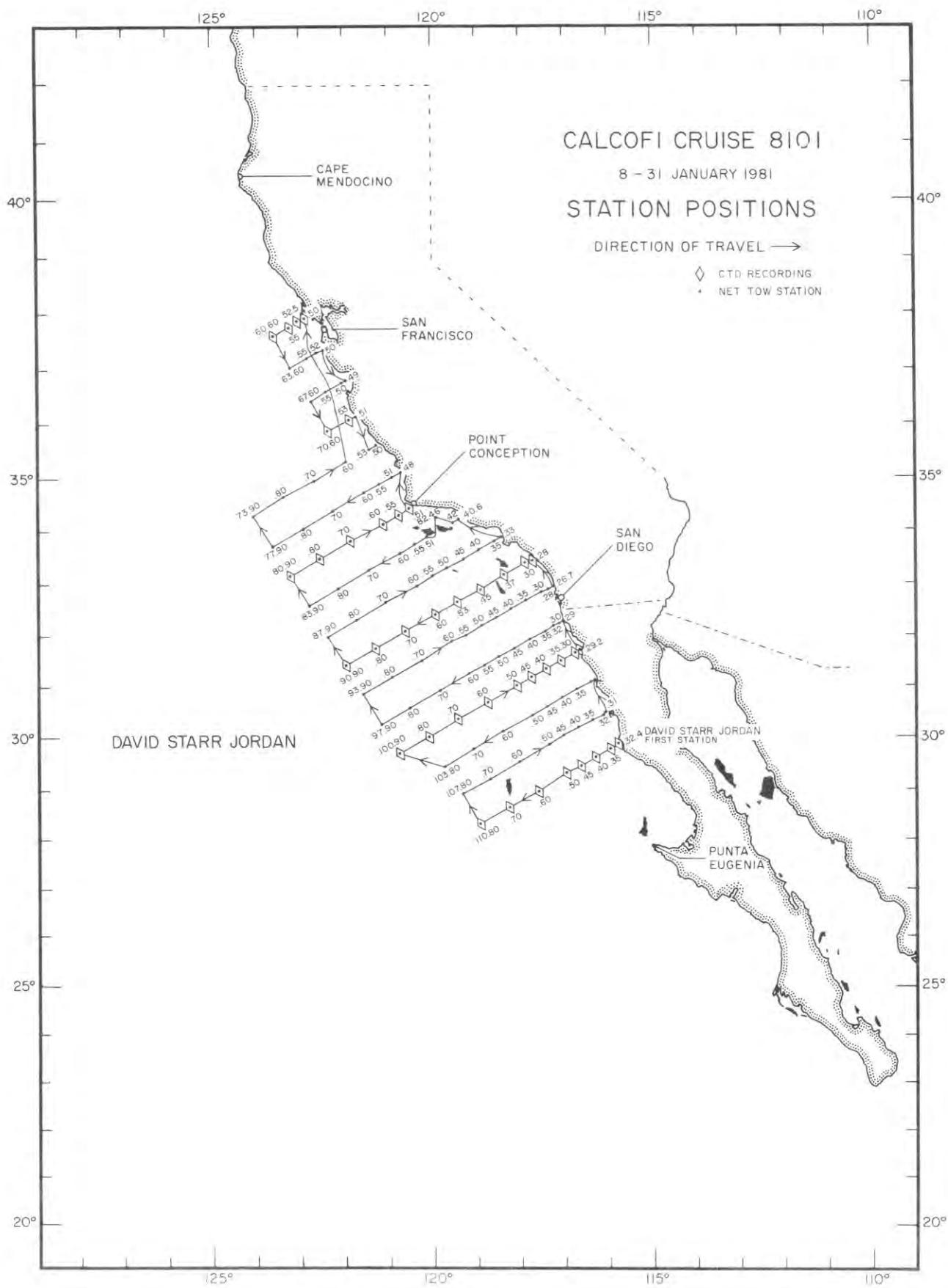


FIGURE I

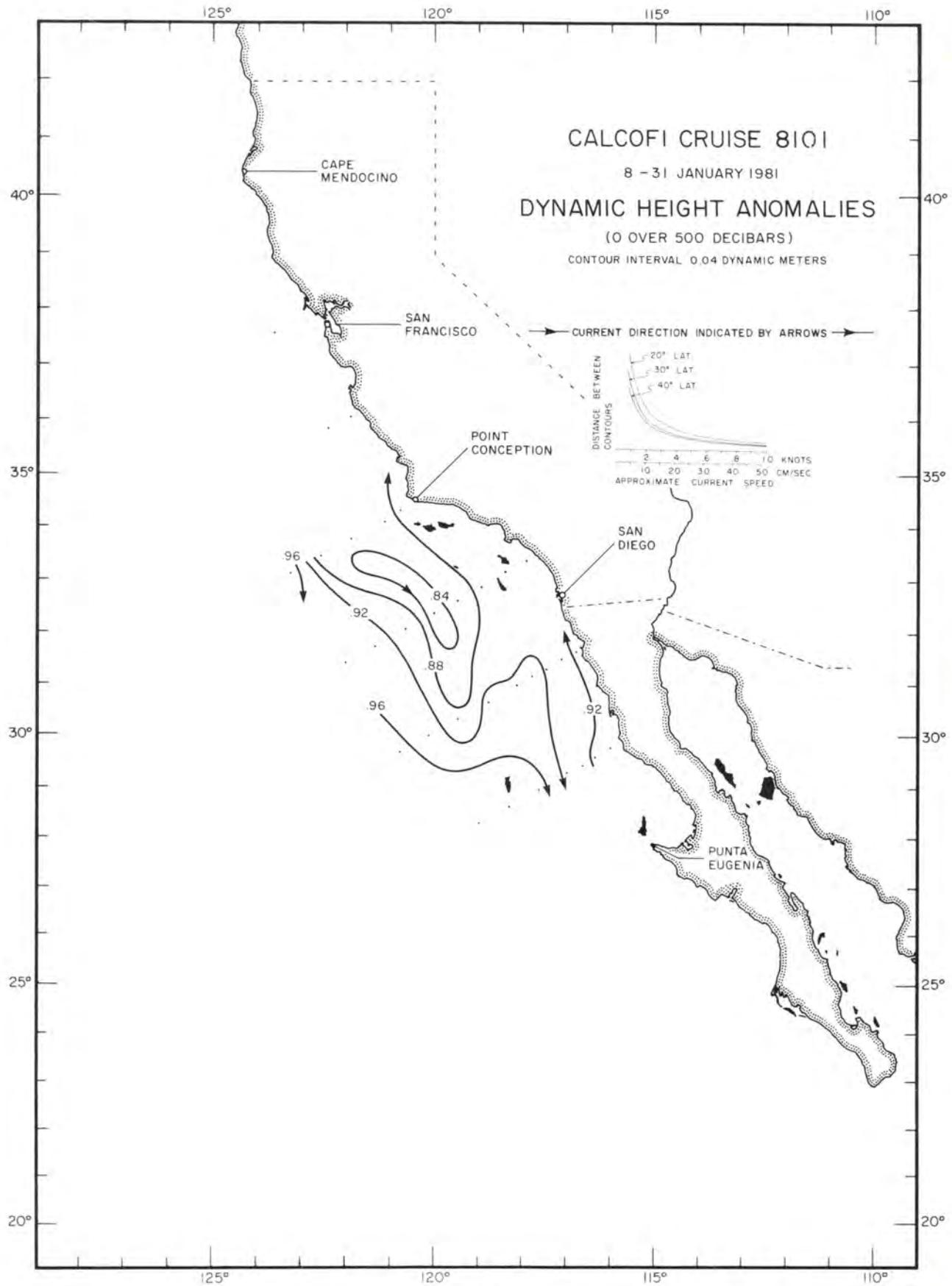


FIGURE 2

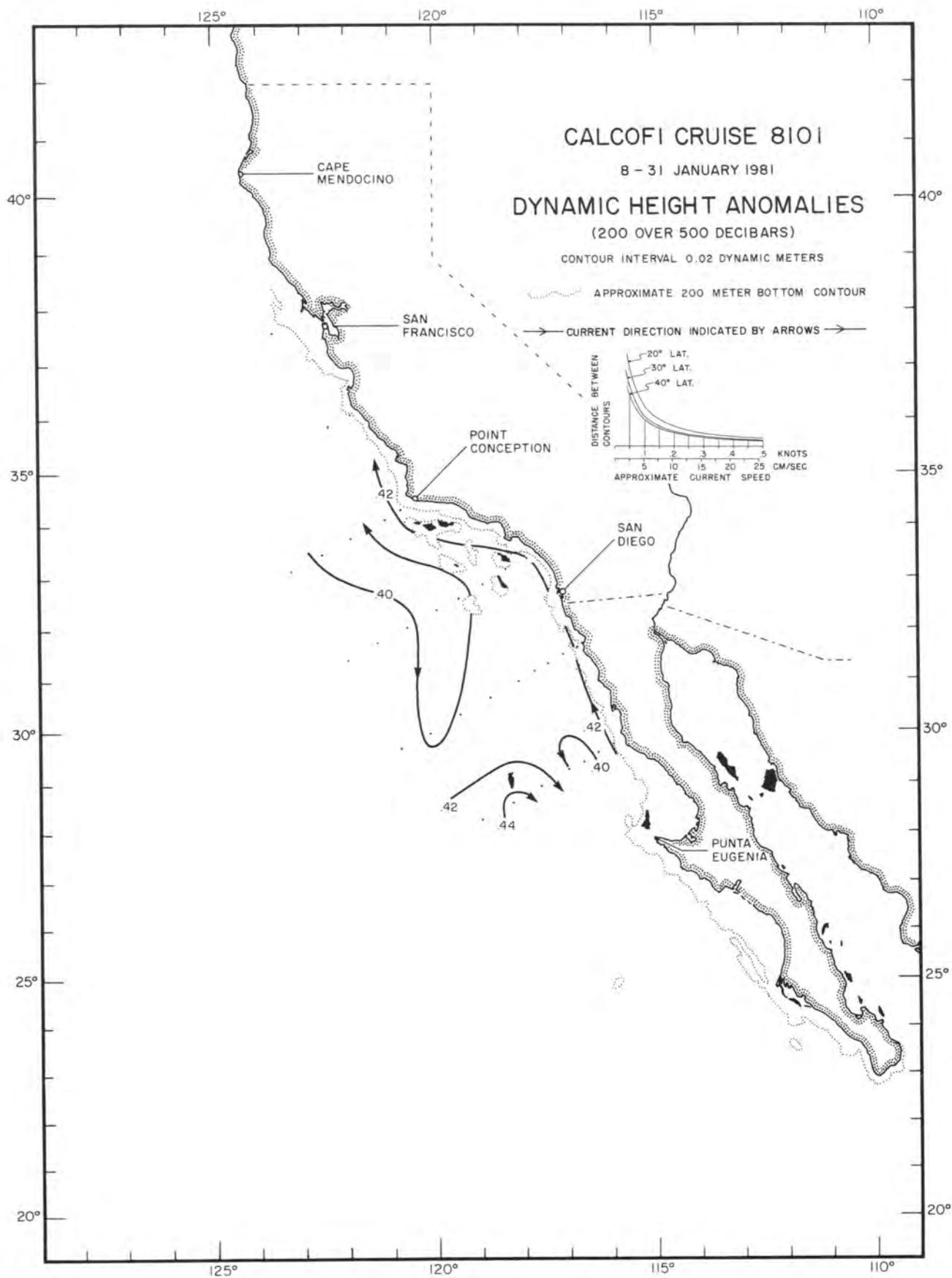


FIGURE 3

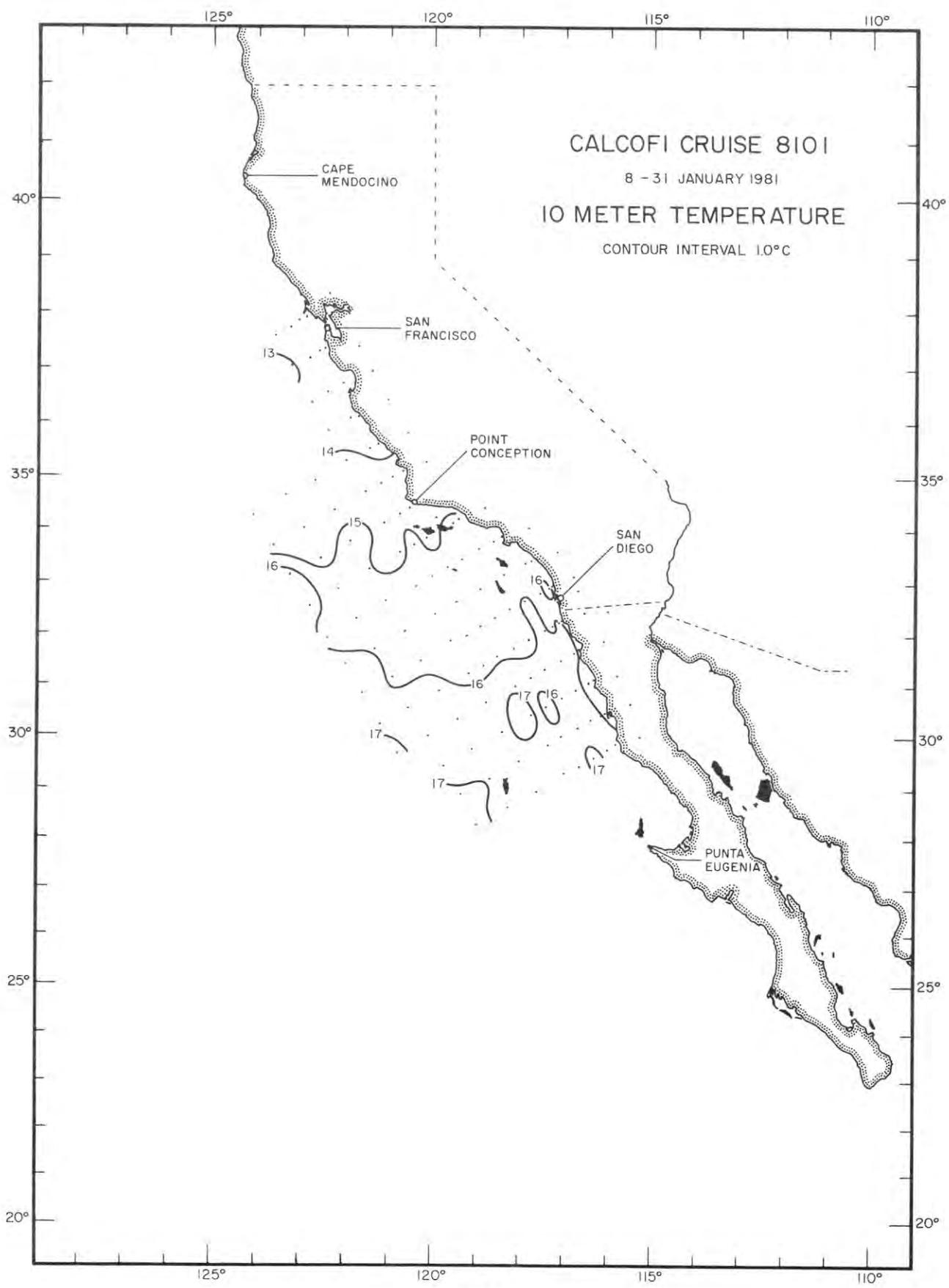


FIGURE 4

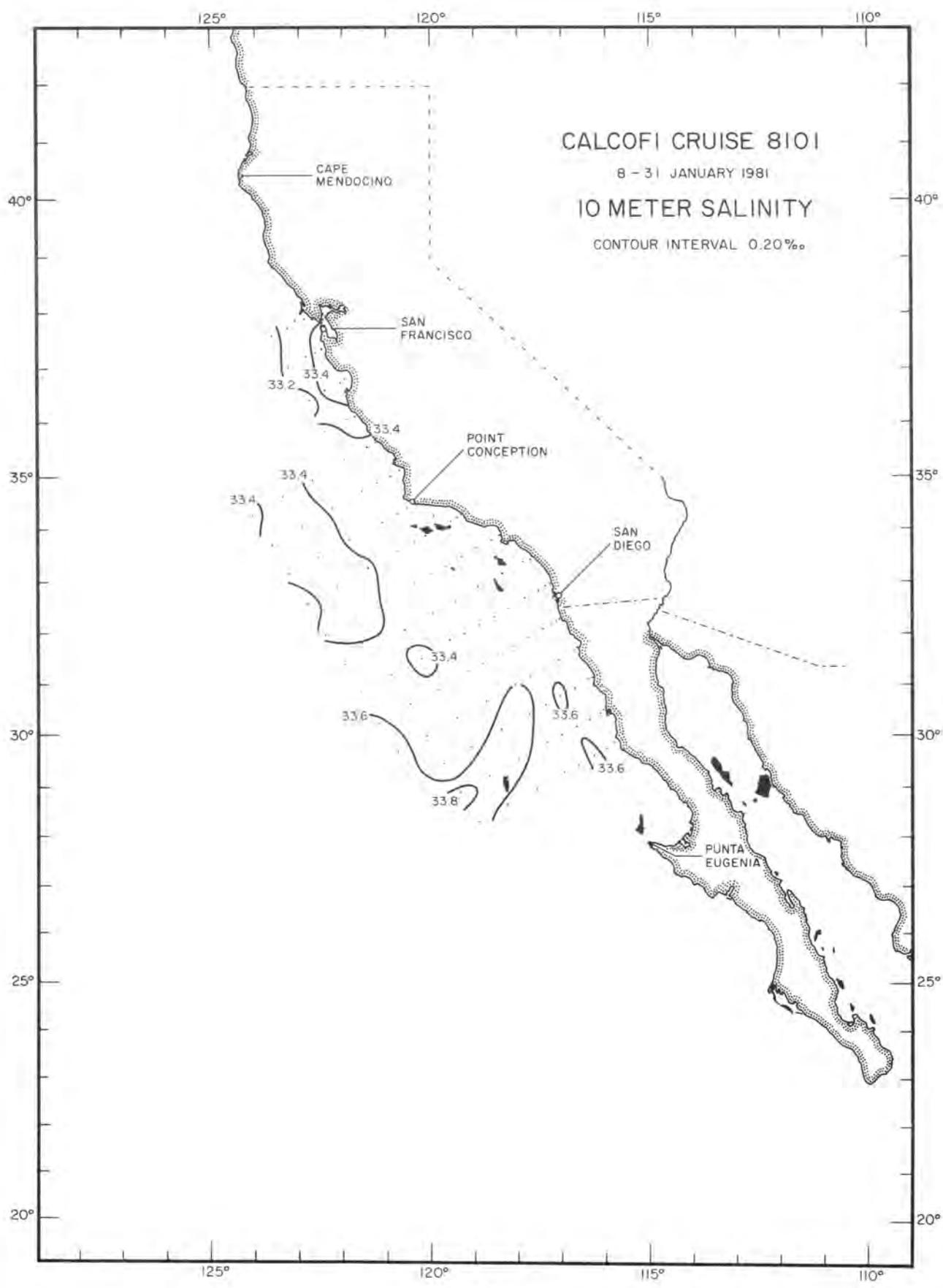


FIGURE 5

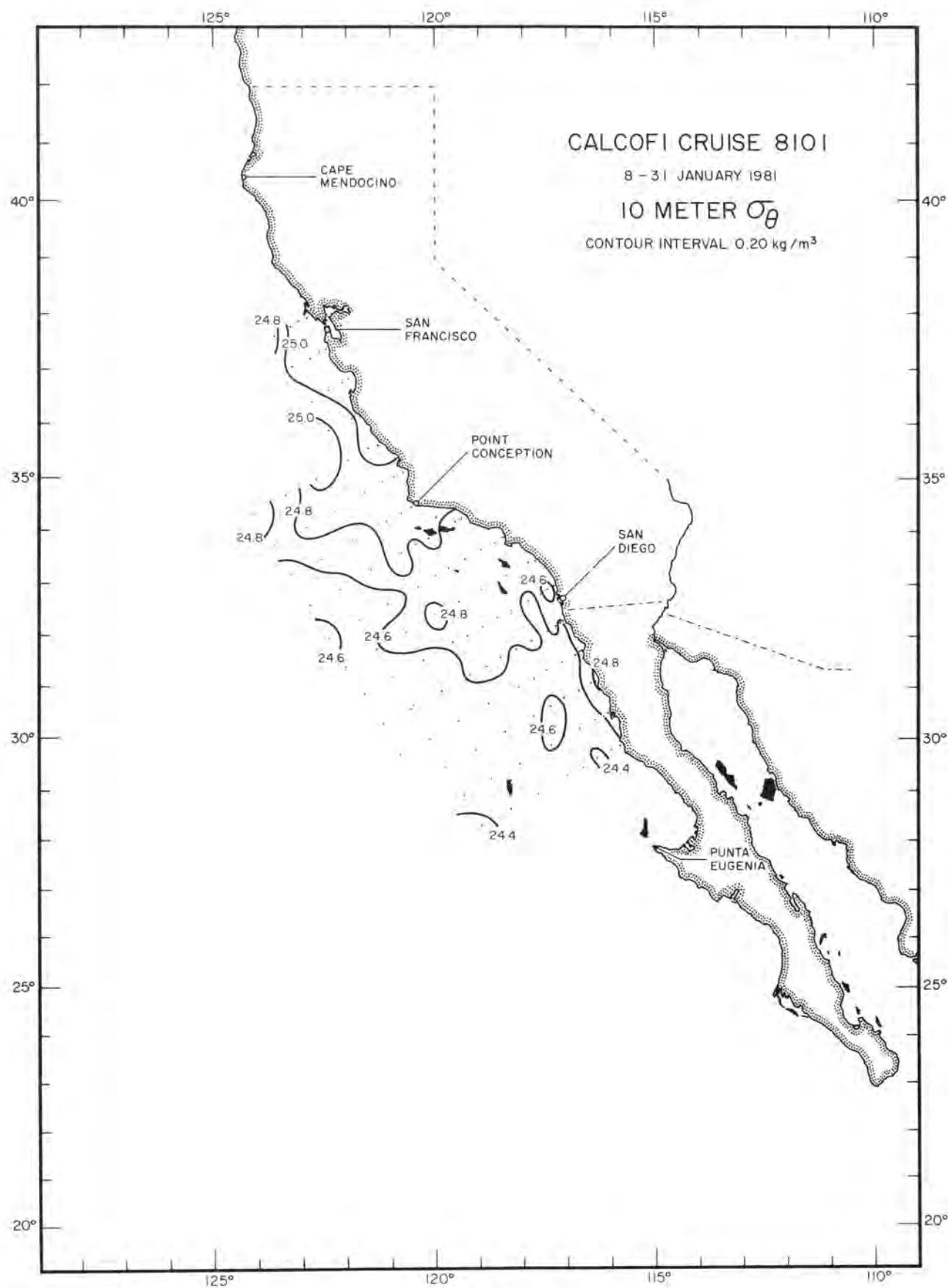


FIGURE 6

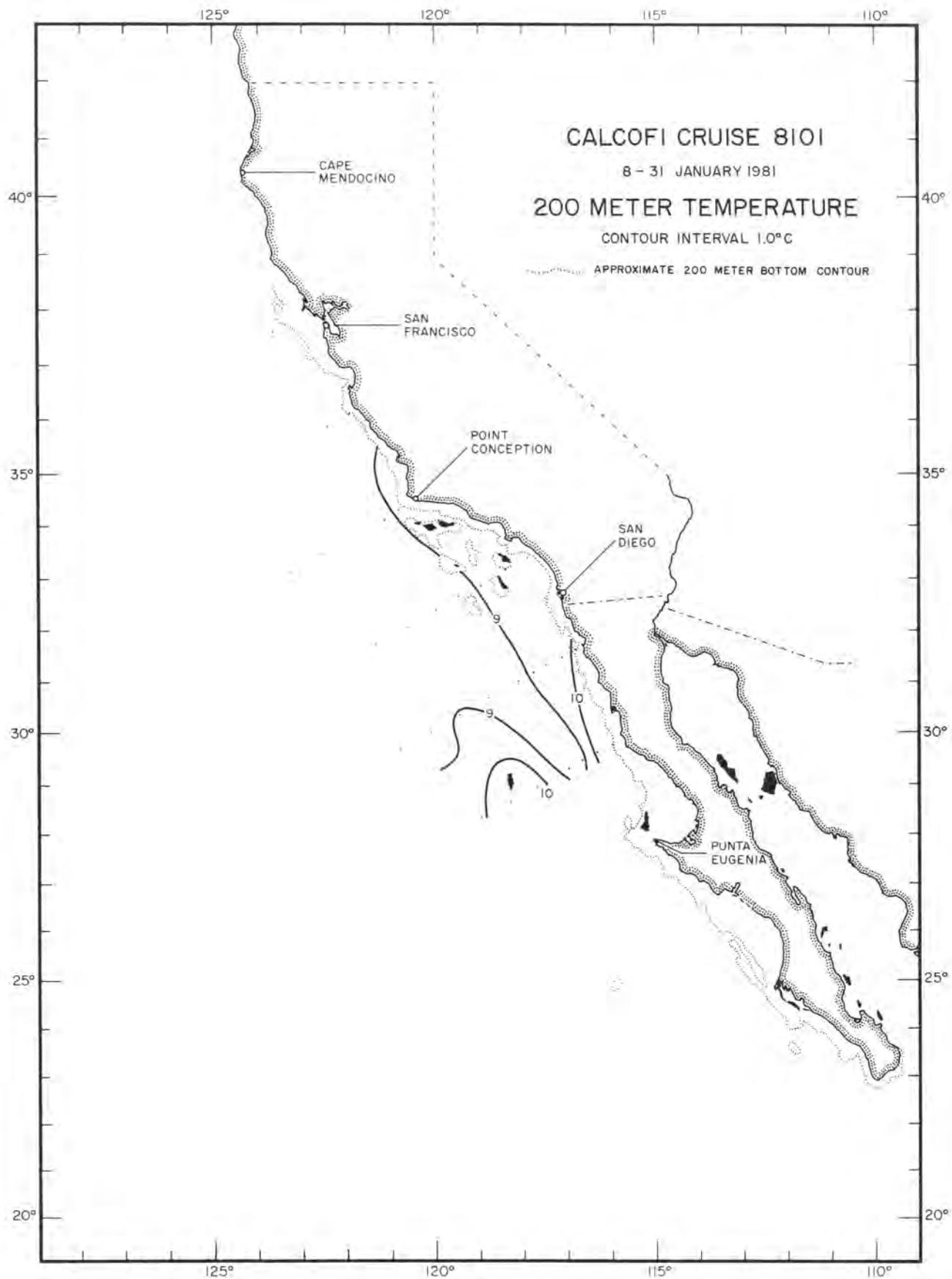


FIGURE 7

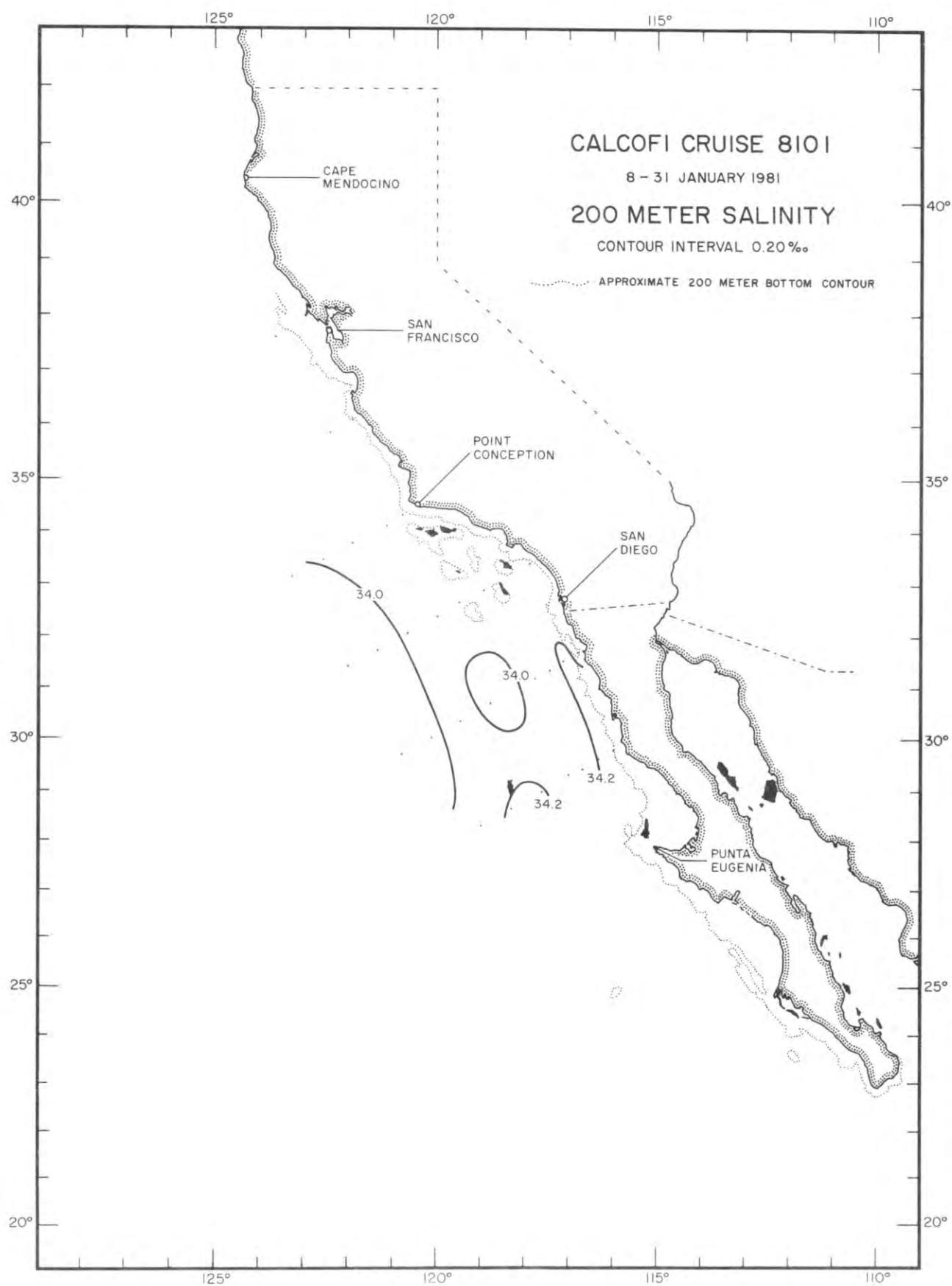


FIGURE 8

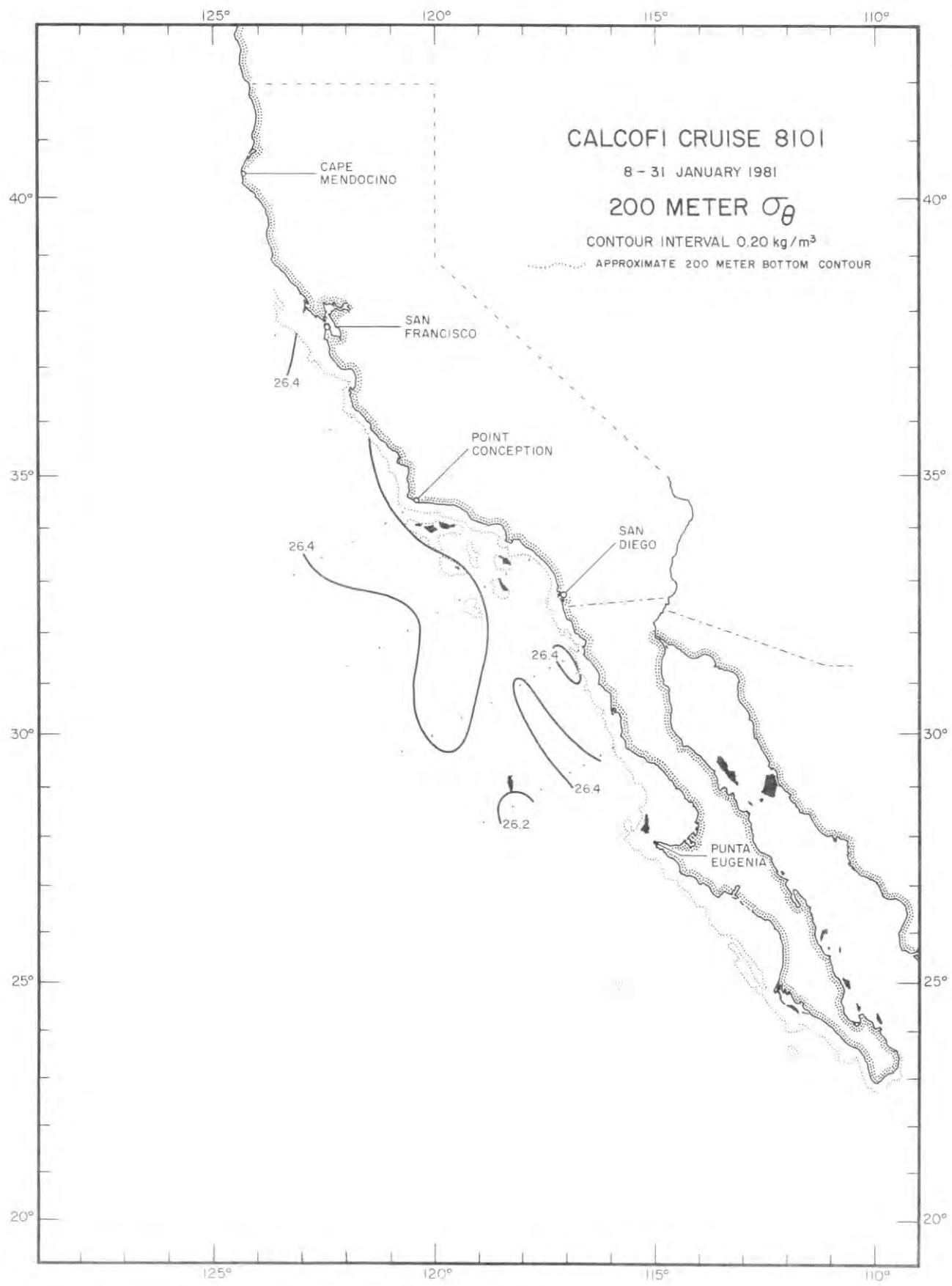


FIGURE 9

PERSONNEL

Cruise 8101

SHIP'S CAPTAIN

Roll, Milton, RV *David Starr Jordan*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV *David Starr Jordan*

Metoyer, Jack D. (in charge)	Biological Technician, NMFS
Abramenkoff, Dimitry N.	Biological Technician, NMFS
Alvarez-Mendoza, Manuel	Oceanographer, INP
Bryan, Walter R.	Marine Technician, SIO
Mead, Richard V.	Marine Technician, SIO
Ortuño-Manzanares, Guillermo	Biological Technician, INP

RV DAVID STARR JORDAN		CALCOFF CRUISE 6101			TO METER DATA							
LINE	STA				T	I	S	DE	DT	SIS	TH	SVA
60	50	29/01/81 1937GMT 37 56.8N 122 52.9W WEATH 1 BOTTOM 47M WIND 330 07 KT WAVES 260 09 10 BAR 1013.7MB DRY 11.0C WET 9.6C CLOUDS 3/7 CU			10	13.24	33.356			25.080	257.4	
60	52.5	29/01/81 2216GMT 37 51.8N 123 03.8W WEATH 2 BOTTOM 134M WIND 300 20 KT WAVES 280 10 10 BAR 1014.0MB DRY 11.3C WET 9.7C CLOUDS 7/5 NS			10	13.04	33.332			25.094	266.1	
60	55	30/01/81 0037GMT 37 46.8N 123 14.7W WEATH 1 BOTTOM 134M WIND 320 30 KT WAVES 280 14 12 BAR 1015.5MB DRY 12.0C WET 10.5C CLOUDS 5/2 SC			10	13.30	33.371			25.073	286.2	
60	60	30/01/81 0349GMT 37 36.8N 123 36.5W WEATH 1 BOTTOM 5354M WIND 340 23 KT WAVES BAR 1018.1MB DRY 11.5C WET 8.2C CLOUDS			10	13.30	33.012			24.795	314.6	
63	50	30/01/81 1458GMT 37 22.6N 122 28.4W WEATH 1 BOTTOM 30M WIND 330 19 KT WAVES 310 02 DE BAR 1020.5MB DRY 11.8C WET 8.3C CLOUDS 6/3 CU			10	13.42	33.446			25.104	285.1	
63	52	30/01/81 1343GMT 37 18.7N 122 37.5W WEATH 1 BOTTOM 90M WIND 320 20 KT WAVES BAR 1020.1MB DRY 12.0C WET 8.4C CLOUDS			10	13.51	33.463			25.101	285.4	
63	55	30/01/81 1140GMT 37 12.6N 122 50.1W WEATH 1 BOTTOM 297M WIND 300 18 KT WAVES BAR 1020.0MB DRY 11.1C WET 7.9C CLOUDS			10	13.42	33.324			25.012	293.9	
63	60	30/01/81 0848GMT 37 02.6N 123 11.7W WEATH 1 BOTTOM 2660M WIND 300 20 KT WAVES BAR 1019.8MB DRY 11.8C WET 8.9C CLOUDS			10	12.96	33.244			25.042	291.1	
67	49	30/01/81 1938GMT 36 49.2N 121 59.1W WEATH 1 BOTTOM 205M WIND 320 04 KT WAVES 310 10 10 BAR 1024.8MB DRY 12.5C WET 9.0C CLOUDS 5/8 CU			10	13.77	33.460			25.046	290.7	
67	50	30/01/81 2052GMT 36 47.2N 122 03.4W WEATH 1 BOTTOM 205M WIND 280 10 KT WAVES 310 10 10 BAR 1024.8MB DRY 12.0C WET 9.0C CLOUDS 5/8 CB			10	13.80	33.477			25.053	290.0	
67	55	31/01/81 0012GMT 36 37.2N 122 24.9W WEATH 1 BOTTOM 2785M WIND 330 19 KT WAVES 310 10 10 BAR 1024.8MB DRY 12.3C WET 9.1C CLOUDS 2/9 CU			10	13.69	33.410			25.023	292.8	
67	60	31/01/81 0305GMT 36 27.3N 122 46.4W WEATH 1 BOTTOM 2974M WIND 330 20 KT WAVES 310 12 10 BAR 1025.6MB DRY 12.0C WET 9.0C CLOUDS			10	13.85	33.173			24.888	313.4	
70	51	31/01/81 1435GMT 36 10.7N 121 43.9W WEATH 1 BOTTOM 205M WIND 010 06 KT WAVES 280 06 08 BAR 1026.2MB DRY 10.7C WET 7.3C CLOUDS 1/8 CU			10	13.60	33.373			25.013	293.8	
70	53	31/01/81 1227GMT 36 07.1N 121 52.6W WEATH 1 BOTTOM 944M WIND 010 16 KT WAVES BAR 1026.2MB DRY 11.3C WET 8.9C CLOUDS			10	13.60	33.326			24.977	297.3	
70	60	31/01/81 0803GMT 35 52.9N 122 21.9W WEATH 1 BOTTOM 3164M WIND 350 20 KT WAVES BAR 1027.8MB DRY 12.2C WET 9.1C CLOUDS			10	13.74	33.484			25.070	288.3	
73	50	31/01/81 2150GMT 35 38.6N 121 15.3W WEATH 1 BOTTOM 34M WIND 300 09 KT WAVES 270 06 10 BAR 1027.3MB DRY 12.3C WET 9.3C CLOUDS 3/5 AS			10	13.49	33.428			25.078	287.7	
73	53	31/01/81 1920GMT 35 32.6N 121 28.0W WEATH 1 BOTTOM 696M WIND 140 07 KT WAVES 270 06 10 BAR 1027.8MB DRY 12.6C WET 9.0C CLOUDS 4/8 AS			10	13.83	33.487			25.054	289.9	
73	60	27/01/81 1803GMT 35 18.6N 121 57.7W WEATH 1 BOTTOM 2410M WIND 170 28 KT WAVES 200 10 05 BAR 1010.2MB DRY 15.0C WET 13.8C CLOUDS 8/8 SC			10	14.15	33.477			24.980	297.0	
73	70	27/01/81 1506GMT 34 58.3N 122 40.1W WEATH 1 BOTTOM 4111M WIND 200 26 KT WAVES BAR 1009.7MB DRY 14.3C WET 13.3C CLOUDS 5/8 CU			10	14.12	33.518			25.018	293.4	
73	80	27/01/81 0810GMT 34 38.8N 123 21.9W WEATH 1 BOTTOM 3926M WIND 200 23 KT WAVES BAR 1012.0MB DRY 15.3C WET 14.0C CLOUDS			10	14.38	33.225			24.738	320.0	
73	90	27/01/81 0312GMT 34 18.4N 124 03.4W WEATH 2 BOTTOM 3263M WIND 230 21 KT WAVES 270 08 10 BAR 1014.7MB DRY 14.1C WET 14.1C CLOUDS 8/8 SC			10	14.40	33.433			24.894	305.2	
77	48	25/01/81 1906GMT 35 07.3N 120 42.3W WEATH 1 BOTTOM 30M WIND 040 11 KT WAVES 300 05 08 BAR 1018.9MB DRY 14.0C WET 9.9C CLOUDS 1/8 CU			10	14.54	33.487			24.906	304.1	
77	51	25/01/81 2057GMT 35 01.3N 120 55.1W WEATH 0 BOTTOM 220M WIND 350 15 KT WAVES 290 11 08 BAR 1017.2MB DRY 13.3C WET 9.6C CLOUDS			10	14.56	33.509			24.918	302.8	
77	55	26/01/81 0445GMT 34 53.3N 121 11.8W WEATH 1 BOTTOM 574M WIND 350 20 KT WAVES BAR 1017.8MB DRY 12.8C WET 10.4C CLOUDS			10	14.48	33.439			24.881	306.4	
77	60	26/01/81 0718GMT 34 43.2N 121 32.9W WEATH 1 BOTTOM 888M WIND 350 21 KT WAVES BAR 1018.1MB DRY 13.0C WET 10.9C CLOUDS			10	14.46	33.455			24.898	304.8	
77	70	26/01/81 1158GMT 34 23.3N 122 14.7W WEATH 1 BOTTOM 4015M WIND 340 18 KT WAVES BAR 1018.3MB DRY 13.5C WET 11.3C CLOUDS 5/8 CU			10	14.64	33.402			24.819	312.3	

RV DAVID STARR JORDAN

CALCOFF CRUISE R101

10 METER DATA

LINE	STA		Z	T	S	02	02 PCT	SIG TH	SVA
77	80	26/01/81 1704GMT 34 03.3N 122 56.4W WEATH 1 BOTOM 4117M WIND 270 09 KT WAVES 280 07 DE BAR 1018.9MB DRY 15.0C WET 12.7C CLOUDS 7/8 SC	10	14.61	33.307			24.870	313.7
77	90	26/01/81 2152GMT 33 45.3N 123 38.8W WEATH 2 BOTOM 3926M WIND 230 15 KT WAVES 270 08 DE BAR 1017.2MB DRY 15.3C WET 14.0C CLOUDS 8/8 SC	10	14.60	33.294			24.736	320.7
80	51	25/01/81 1255GMT 34 27.1N 120 31.5W WEATH 0 BOTOM 65M WIND 360 20 KT WAVES BAR 1014.8MB DRY 11.0C WET 8.4C CLOUDS	10	14.44	33.180			24.952	299.6
80	55	25/01/81 1007GMT 34 19.0N 120 48.1W WEATH 1 BOTOM 768M WIND 360 30 KT WAVES BAR 1017.0MB DRY 12.8C WET 9.6C CLOUDS 3/7 CU	10	14.76	33.455			24.834	310.9
80	60	25/01/81 0614GMT 34 09.0N 121 09.0W WEATH BOTOM 2222M WIND 360 27 KT WAVES BAR 1020.5MB DRY 12.9C WET 11.0C CLOUDS	10	14.84	33.303			24.854	309.0
80	70	25/01/81 0018GMT 33 49.0N 121 50.6W WEATH 1 BOTOM 4117M WIND 350 23 KT WAVES 330 10 DE BAR 1022.2MB DRY 13.0C WET 12.2C CLOUDS 4/8 CU	10	15.26	33.1405			24.687	324.9
80	80	24/01/81 1839GMT 33 28.9N 122 32.0W WEATH 1 BOTOM 4213M WIND 010 16 KT WAVES 330 10 DE BAR 1026.0MB DRY 14.0C WET 10.8C CLOUDS 1/5 CU	10	14.80	33.331			24.730	320.8
80	90	24/01/81 1322GMT 33 08.9N 123 13.1W WEATH 1 BOTOM 4213M WIND 360 13 KT WAVES 340 10 DE BAR 1025.3MB DRY 14.2C WET 10.3C CLOUDS 3/7 CU	10	16.12	33.373			24.470	345.8
82	46	23/01/81 0627GMT 34 16.2N 119 56.2W WEATH 6 BOTOM 51VM WIND 270 15 KT WAVES BAR 1019.2MB DRY 13.0C WET 12.9C CLOUDS 8/8 NS	10	14.84	33.516			24.864	308.1
83	40.6	23/01/81 0149GMT 34 13.5N 119 24.7W WEATH 7 BOTOM 34M WIND 140 09 KT WAVES BAR 1021.0MB DRY 16.0C WET 14.2C CLOUDS 7/8 AS	10	15.48	33.525			24.731	320.7
83	42	23/01/81 0300GMT 34 10.7N 119 30.5W WEATH 2 BOTOM 157M WIND 100 18 KT WAVES BAR 1020.5MB DRY 15.3C WET 14.1C CLOUDS 8/8 AS	10	15.54	33.521			24.715	322.5
83	51	23/01/81 1050GMT 33 52.7N 120 08.0W WEATH 5 BOTOM 95M WIND 020 03 KT WAVES BAR 1019.7MB DRY 13.6C WET 12.4C CLOUDS 8/8 SC	10	14.62	33.499			24.898	304.8
83	55	23/01/81 1306GMT 33 44.7N 120 24.6W WEATH 3 BOTOM 1036M WIND 250 08 KT WAVES 250 11 DE BAR 1019.8MB DRY 14.8C WET 13.3C CLOUDS 3/7 CU	10	15.41	33.425			24.669	326.6
83	60	23/01/81 1614GMT 33 34.6N 120 45.1W WEATH 1 BOTOM 1498M WIND 300 11 KT WAVES 260 11 DE BAR 1021.2MB DRY 14.8C WET 12.4C CLOUDS 3/8 CU	10	14.87	33.519			24.860	308.5
83	70	23/01/81 2134GMT 33 14.7N 121 26.6W WEATH 1 BOTOM 3738M WIND 300 13 KT WAVES 260 10 DE BAR 1023.0MB DRY 14.7C WET 12.0C CLOUDS 2/8 CU	10	15.02	33.399			24.735	320.4
83	80	24/01/81 0237GMT 32 54.7N 122 07.7W WEATH 1 BOTOM 4117M WIND 320 13 KT WAVES 260 10 DE BAR 1024.8MB DRY 14.4C WET 12.0C CLOUDS 4/8 CU	10	15.53	33.262			24.517	341.1
83	90	24/01/81 0757GMT 32 34.7N 122 48.7W WEATH 1 BOTOM 3926M WIND 360 19 KT WAVES BAR 1025.2MB DRY 14.2C WET 11.8C CLOUDS 4/8 CU	10	16.28	33.455			24.497	343.0
87	33	22/01/81 1337GMT 33 53.4N 118 29.4W WEATH 2 BOTOM 52M WIND 00 WAVES BAR 1019.0MB DRY 15.2C WET 14.5C CLOUDS 8/8 AS	10	15.20	33.460			24.742	319.6
87	35	22/01/81 1143GMT 33 49.4N 118 37.7W WEATH 1 BOTOM 778M WIND 270 03 KT WAVES BAR 1018.9MB DRY 15.3C WET 14.4C CLOUDS 7/8 AS	10	15.28	33.469			24.732	320.6
87	40	22/01/81 0813GMT 33 39.4N 118 58.5W WEATH 1 BOTOM 787M WIND 100 03 KT WAVES BAR 1020.1MB DRY 15.8C WET 14.8C CLOUDS 7/8 AS	10	15.64	33.507			24.681	325.4
87	45	22/01/81 0514GMT 33 29.4N 119 19.4W WEATH 1 BOTOM 1701M WIND 250 05 KT WAVES BAR 1021.5MB DRY 16.0C WET 14.8C CLOUDS 3/8 SC	10	15.86	33.540			24.658	327.8
87	50	22/01/81 0239GMT 33 19.4N 119 39.8W WEATH BOTOM 73M WIND 200 06 KT WAVES BAR 1020.3MB DRY 16.2C WET 14.8C CLOUDS	10	15.56	33.517			24.707	323.0
87	55	21/01/81 2350GMT 33 09.4N 120 00.4W WEATH 1 BOTOM 1202M WIND 170 10 KT WAVES 250 09 DE BAR 1019.9MB DRY 16.3C WET 15.1C CLOUDS 6/8 CU	10	15.46	33.460			24.681	325.5
87	60	21/01/81 2105GMT 32 59.4N 120 21.0W WEATH 1 BOTOM 558M WIND 180 09 KT WAVES 250 10 DE BAR 1019.9MB DRY 17.6C WET 15.9C CLOUDS 5/8 CU	10	15.59	33.455			24.653	328.2
87	70	21/01/81 1658GMT 32 39.4N 121 01.9W WEATH 1 BOTOM 3926M WIND 180 11 KT WAVES 250 10 DE BAR 1019.0MB DRY 17.0C WET 15.0C CLOUDS 8/8 SC	10	15.88	33.414			24.556	337.3
87	80	21/01/81 1125GMT 32 19.4N 121 42.9W WEATH 1 BOTOM 3926M WIND 180 14 KT WAVES 250 10 DE BAR 1018.6MB DRY 15.5C WET 14.8C CLOUDS 7/8 AS	10	15.52	33.4561			24.596	333.6

RV DAVID STARR JORDAN CRUISE 8101									10 METER DATA										
LINE	STA							Z	T	S	D2	D7	PCT	SIR	TH	SVA			
103	80	13/01/81 0507GMT	29 26.9N	119 44.0W	WEATH	1	BOTTOM	3546M	WIND	350 09 KT	WAVES			10	16.19	33.450	24.516	341.2	
		BAR 1017.2MB	DRY 16.3C	WET 15.8C	CLOUDS	7/F SC													
107	31	11/01/81 1710GMT	30 29.5N	116 05.8W	WEATH	6	BOTTOM	22M	WIND	100 03 KT	WAVES	330 08 08	BAR 1016.4MB	DRY 19 OC	WET 17.8C	CLOUDS	8/X NS	24.725	321.3
		BAR 1014.5MB	DRY 16.8C	WET 15.1C	CLOUDS	8/F NS													
107	32	11/01/81 1513GMT	30 27.5N	116 09.6W	WEATH	6	BOTTOM	187M	WIND	300 08 KT	WAVES	330 06 06	BAR 1014.5MB	DRY 16.8C	WET 15.1C	CLOUDS	8/F NS	24.595	335.6
		BAR 1013.2MB	DRY 17.6C	WET 15.1C	CLOUDS	8/F ST													
107	35	11/01/81 1242GMT	30 21.5N	116 21.8W	WEATH	2	BOTTOM	1849M	WIND	360 10 KT	WAVES		BAR 1014.5MB	DRY 17.1C	WET 14.9C	CLOUDS	8/F SC	24.575	335.6
		BAR 1013.2MB	DRY 17.6C	WET 15.1C	CLOUDS	8/F ST													
107	40	11/01/81 0922GMT	30 11.5N	116 41.8W	WEATH	2	BOTTOM	2602M	WIND	330 11 KT	WAVES		BAR 1013.2MB	DRY 17.6C	WET 15.1C	CLOUDS	8/F ST	24.588	334.3
		BAR 1012.5MB	DRY 17.6C	WET 15.1C	CLOUDS	8/F ST													
107	45	11/01/81 0559GMT	30 01.5N	117 01.7W	WEATH	5	BOTTOM	2043M	WIND	230 08 KT	WAVES		BAR 1014.5MB	DRY 16.3C	WET 15.8C	CLOUDS	8/B ST	24.490	343.6
		BAR 1013.2MB	DRY 17.6C	WET 15.1C	CLOUDS	8/B ST													
107	50	11/01/81 0238GMT	29 51.3N	117 21.7W	WEATH	2	BOTTOM	2791M	WIND	030 11 KT	WAVES	320 10 12	BAR 1012.2MB	DRY 17.2C	WET 16.3C	CLOUDS	8/R ST	24.605	332.7
		BAR 1011.5MB	DRY 17.6C	WET 15.1C	CLOUDS	8/R ST													
107	60	10/01/81 2113GMT	29 31.5N	118 01.3W	WEATH	2	BOTTOM	2322M	WIND	020 06 KT	WAVES	320 10 12	BAR 1014.3MB	DRY 17.0C	WET 15.6C	CLOUDS	8/F ST	24.461	346.4
		BAR 1013.5MB	DRY 17.6C	WET 15.1C	CLOUDS	8/F ST													
107	70	10/01/81 1555GMT	29 11.4N	118 40.7W	WEATH	1	BOTTOM	3169M	WIND	010 12 KT	WAVES	310 10 11	BAR 1015.5MB	DRY 16.5C	WET 15.3C	CLOUDS	4/F CS	24.496	343.1
		BAR 1014.8MB	DRY 17.0C	WET 15.6C	CLOUDS	4/F CS													
107	80	10/01/81 1045GMT	28 51.5N	119 20.2W	WEATH		BOTTOM	3546M	WIND	030 12 KT	WAVES		BAR 1015.7MB	DRY 15.8C	WET 14.0C	CLOUDS		24.499	342.9
		BAR 1015.0MB	DRY 17.0C	WET 15.6C	CLOUDS														
110	32.4	08/01/81 2050GMT	29 52.4N	115 49.5W	WEATH	1	BOTTOM	39M	WIND	310 12 KT	WAVES	300 05 07	BAR 1017.5MB	DRY 16.9C	WET 14.5C	CLOUDS	6/F CU	24.590	334.1
		BAR 1016.8MB	DRY 17.6C	WET 15.1C	CLOUDS	6/F CU													
110	35	09/01/81 0106GMT	29 47.2N	115 59.8W	WEATH	1	BOTTOM	836M	WIND	320 11 KT	WAVES	300 08 07	BAR 1017.0MB	DRY 15.7C	WET 13.8C	CLOUDS	3/F SC	24.499	342.9
		BAR 1016.3MB	DRY 16.0C	WET 14.0C	CLOUDS	3/F SC													
110	40	09/01/81 0507GMT	29 37.2N	116 19.6W	WEATH		BOTTOM	2227M	WIND	340 09 KT	WAVES		BAR 1018.0MB	DRY 16.0C	WET 14.1C	CLOUDS		24.387	353.5
		BAR 1017.3MB	DRY 16.0C	WET 14.1C	CLOUDS														
110	45	09/01/81 0845GMT	29 27.2N	116 39.5W	WEATH		BOTTOM	502M	WIND	350 10 KT	WAVES		BAR 1017.4MB	DRY 15.3C	WET 13.8C	CLOUDS		24.500	342.8
		BAR 1016.7MB	DRY 16.0C	WET 13.8C	CLOUDS														
110	50	09/01/81 1223GMT	29 17.0N	116 59.5W	WEATH		BOTTOM	3452M	WIND	350 13 KT	WAVES		BAR 1017.2MB	DRY 15.4C	WET 13.9C	CLOUDS		24.449	347.6
		BAR 1016.5MB	DRY 16.0C	WET 13.9C	CLOUDS														
110	60	09/01/81 1809GMT	28 57.1N	117 38.7W	WEATH	1	BOTTOM	3738M	WIND	020 11 KT	WAVES	020 02 07	BAR 1018.8MB	DRY 16.7C	WET 14.8C	CLOUDS	3/F CU	24.470	345.6
		BAR 1018.1MB	DRY 16.0C	WET 14.8C	CLOUDS	3/F CU													
110	70	10/01/81 0004GMT	28 37.2N	118 18.0W	WEATH	1	BOTTOM	3263M	WIND	040 08 KT	WAVES	300 06 07	BAR 1015.8MB	DRY 16.8C	WET 14.1C	CLOUDS	7/F CU	24.486	344.0
		BAR 1015.1MB	DRY 16.0C	WET 14.1C	CLOUDS	7/F CU													
110	80	10/01/81 0535GMT	28 17.2N	118 57.1W	WEATH		BOTTOM	3926M	WIND	040 06 KT	WAVES	020 04 06	BAR 1016.9MB	DRY 16.8C	WET 14.5C	CLOUDS		24.382	354.0
		BAR 1016.2MB	DRY 16.8C	WET 14.5C	CLOUDS														

DISTRIBUTION LIST

INTER-AMERICAN TROPICAL TUNA COMMISSION
(C/O SCRIPPS INSTITUTION OF OCEANOGRAPHY)

DR. JAMES JOSEPH

NATIONAL MARINE FISHERIES SERVICE
(C/O SCRIPPS INSTITUTION OF OCEANOGRAPHY)

DIRECTOR'S OFFICE

MR. RON DOTSON

DR. REUBEN LASKER

DR. A. ALVARINO DE LEIRA

LIBRARY (2)

MR. RONALD LYNN

DR. GEOFFREY MOSER

DR. ROBERT OWEN, JR.

MR. NELSON C. ROSS, JR.

DR. PAUL SMITH

SCRIPPS INSTITUTION OF OCEANOGRAPHY

DR. MARK ABBOTT

DR. LAURENCE ARMI

DR. EDWARD BRINTON

DR. RICHARD W. EPPLEY

DR. ABRAHAM FLEMINGER

DR. JORIS M. T. M. GIESKES

DR. LOREN R. HAURY

DR. THOMAS L. HAYWARD

MRS. KITTIE KUHNS

LIBRARY, SIO (DR. PETER BRUEGGEMAN)

LIBRARY, SIO (STELLA WADE) (4)

MR. ARNOLD W. MANTYLA

DR. JOHN A. McGOWAN

DR. W. A. NIERENBERG

DR. PEARL P. NIILER

PROF. JOSEPH L. REID

DR. RICHARD H. ROSENBLATT

DR. JAMES J. SIMPSON

DR. KENNETH L. SMITH

MR. GEORGE H. SNYDER

DR. ROBERT E. STEVENSON

DR. MIZUKI TSUCHIYA

AFRICA

M. Henri Rotschi
Centre de Recherches
Oceanographiques
29, Rue des Pecheurs
B.P.V. 18 - Abidjan
Republique de Cote d'Ivoire

AUSTRALIA

Dr. John A. T. Bye
Flinders Institute for Atmospheric
and Marine Sciences
The Flinders University of S.A.
Bedford Park 5042, S.A.
Australia

Prof. R. Radok, Director
Horace Lamb Institute of Oceanography
P. O. Box 167
Kingswood 5062, S.A.
Australia

CANADA

Director
Institute of Oceanography
University of British Columbia
Vancouver, B.C. V6T 1W5
Canada

Library
Pacific Biological Station
Fisheries and Marine Service
Nanaimo, B.C. V9R 5K6
Canada

Dr. C. S. Wong
Institute of Ocean Sciences
Department of Fisheries and
Environment
P. O. Box 6000
Sidney, B.C. V8L 4B2
Canada

Library
Science Services
Dalhousie University
Halifax, N.S. B3H 4J3
Canada

Dr. Cedric R. Mann
Bedford Institution of Oceanography
P. O. Box 1006
Dartmouth, N.S. B2Y 4A2
Canada

Prof. Gordon A. Riley
Institute of Oceanography
Dalhousie University
Halifax, N.S. B3H 3J5
Canada

GERMANY

Akademie der Wissenschaften der DDR
Institut fur Meereskunde Bibliothek
253 Warnemunde
East Germany

Deutsches-Hydrographisches Institut
Tauschstelle
Postfach 220
Bernhard-Hocht-Str. 78
D-2000 Hamburg
West Germany

Dr. Reimer Simonsen
Institut fur Meeresforschung
285 Bremerhaven
Am Handelshafen 12
West Germany

ICELAND

Dr. Unnsteinn Stefansson
Hafrannsoknastofnunin
Skulagata 4
Reykjavik
Iceland

JAPAN

Dr. Kiyomitsu Kitano
Hokkaido Regional Fisheries
Research Laboratory
Katsurakoi 116, Kushiro City
Hokkaido
Japan

Director
Kobe Marine Observatory
Nakayamate 7
Kobe, 650
Japan

The Public Health Institute
of Hyogo Prefecture
Arata-Cho, Hyogo-Ku
2-1 Kobe
Japan

Prof. Hideo Kawai
Kyoto University
Department of Fisheries
Faculty of Agriculture
Kyoto
Japan

Mr. Hajime Yamanaka
Far Seas Fisheries
Research Laboratory
Orido, Shimizu 424
Shizuoka-Ken
Japan

Director
Japan Oceanographic Data Center
Hydrographic Department
Maritime Safety Agency
No. 3-1, 5 Chome, Tsukiji
Chuo-Ku, Tokyo
Japan 104

Library
Ocean Research Institute
University of Tokyo
Nakano-Ku, Tokyo
Japan

Oceanography Division
Marine Department
Japan Meteorological Agency
1-3-4 Oite-Machi, Chiyoda-Ku
Tokyo, 100
Japan

KOREA

Library
Fisheries Research and
Development Agency
16-2KA, Namhang Dong
Youngdo-Ku Busan 606
Korea

MEXICO

Biblioteca
Centro de Investigacion Cientifica y
Educacion Superior de Ensenada
Apartado Postal 2732
Ensenada, Baja California
Mexico

Biblioteca
Instituto Nacional de Pesca
Centro de Investigacion Pesquera
Apartado Postal 1306
Ensenada, Baja California
Mexico

Biblioteca
Unidad de Ciencias Marinas
Universidad Autonoma de Baja
California
Apartado de Correos 453
Ensenada, Baja California
Mexico

Biblioteca, U.N.A.M.
Centro de Ciencias del
Mar y Limnologia
Apartado Postal 811
Mazatlan, Sinaloa
Mexico

Biblioteca
Centro de Promocion Pesquera
Apartado Postal 396
Mazatlan, Sinaloa
Mexico

Biblioteca
Centro de Investigacion Pesquera
Seccion de Hidrologia
Instituto Nacional de Pesca
Apartado Postal 550
Mazatlan, Sinaloa
Mexico

American Embassy (4)
Regional Fishery Attaché
Apartado Postal 83-BIS
Mexico 1, D.F.
Mexico

Biblioteca
Departamento de Pesca
Alvaro Oregon 269
Mexico 7, D.F.
Mexico

Biblioteca Universidad Nacional Autonoma de Mexico Apartado Postal 70-223 Mexico 20, D.F. Mexico	UNITED STATES	Director Operations Research Branch Department of Fish and Game 1416 Ninth Street Sacramento, CA 95814
Director Inst. de Geofisica Torre de Ciencias, 3ER Piso Universidad Nacional Autonoma de Mexico Villa Obregon, D.F. Mexico	ALASKA	Mr. David Farris Department of Biology San Diego State University San Diego, CA 92182
NEW ZEALAND	CALIFORNIA	Intersea Research Corporation 11760 Sorrento Valley Road San Diego, CA 92121
Director New Zealand Oceanographic Institute P. O. Box 8009 Wellington New Zealand	Library Department of Oceanography Humboldt State University Arcata, CA 95521	Library Department of the Navy Naval Ocean Systems Center San Diego, CA 92152
PERU	Marine Technical Information Center Department of Fish and Game 245 W. Broadway, Suite 350 Long Beach, CA 90802	Library San Diego Society of Natural History P. O. Box 1390 San Diego, CA 92112
Biblioteca, Instituto del Mar Apartado Postal 22 Callao Peru	Dr. Donn S. Gorsline Department of Geology University of Southern California Los Angeles, CA 90007	Eric Shulenberger San Diego Natural History Museum P. O. Box 1390 San Diego, CA 92112
UNITED KINGDOM	Hancock Library of Biology and Oceanography University of Southern California Los Angeles, CA 90007	Library California Academy of Sciences Golden Gate Park San Francisco, CA 94118
Science Reference Library (A) 25 Southampton Buildings Chancery Lane London WC2A 1AW England United Kingdom	Dr. Dale Straughan University of Southern California Los Angeles, CA 90007	Director Center for Coastal Marine Studies University of California Santa Cruz, CA 95064
Library Subscription Department New South Wales Government Offices 66 Strand London, WC2N 5LZ, England United Kingdom	Naval Environmental Prediction Research Facility Monterey, CA 93940	NMFS/NOAA Tiburon Laboratory 3150 Paradise Drive Tiburon, CA 94920
Library Fisheries Laboratory Ministry of Agriculture, Fisheries and Food Lowestoft, Suffolk NR33 0HT, England United Kingdom	Prof. C. N. K. Mooers, Chairman Department of Oceanography U. S. Naval Postgraduate School Monterey, CA 93940	CONNECTICUT
Head of Library and Information Service Plymouth PL1 2PB, England United Kingdom	Director Pacific Environmental Group NMFS/NOAA C/O Fleet Numerical Weather Central Monterey, CA 93940	Prof. George Veronis Department of Geology and Geophysics Yale University P. O. Box 2161, Yale Station New Haven, CT 06520
Library Inst. of Oceanographic Science Wormley, Godalming Surrey GU8 5UB, England United Kingdom	Commanding Officer (Code 40) (2) Fleet Numerical Weather Central Monterey, CA 93940	FLORIDA
Library Department of Agriculture and Fisheries for Scotland Marine Laboratory P. O. Box 101, Victoria Road Torry, Aberdeen AB9 8DB, Scotland United Kingdom	Library Geology-Oceanography Department California State University Northridge, CA 91324	R.S.M.A.S. Library University of Miami 4600 Rickenbacker Causeway Miami, FL 33149
Bernard Cohenour Code 3144, Bldg. 514 Pacific Missile Test Center Point Mugu, CA 93042	E. J. List California Technical Institution Pasadena, CA 91125	Library Southwest Fisheries Center NMFS/NOAA 75 Virginia Beach Drive Miami, FL 33149

HAWAII

Library
Southwest Fisheries Center
NMFS/NOAA
P. O. Box 3830
Honolulu, HI 96812

MAINE

Director
Center for Marine Studies
University of Maine
Orono, ME 04469

MARYLAND

Secretary for Publications
Chesapeake Bay Institute
The Johns Hopkins University
Baltimore, MD 21218

Acquisitions Section, JRDB/D823
Library and Information Services
Division, NOAA
6009 Executive Blvd.
Rockville, MD 20852

Chief
Oceanic Services Division (W16)
Office of Meteorology and
Oceanography
National Weather Service
8060 13th Street, Room 1213
Silver Spring, MD 20910

MASSACHUSETTS

Dr. John M. Edmond
Department of Earth and
Planetary Sciences
Bldg. 54, Room 1326
Mass. Institute of Technology
Cambridge, MA 02139

Prof. Henry M. Stommel
Dept. of Physical Oceanography
Woods Hole Oceanographic Inst.
Woods Hole, MA 02543

Dr. Bruce A. Warren
Woods Hole Oceanographic Inst.
Woods Hole, MA 02543

Dr. L. V. Worthington
Woods Hole Oceanographic Inst.
Woods Hole, MA 02543

MISSISSIPPI

NAV OCEAN
NSTL Station, MS 39522

NEW JERSEY

Princeton Geology Library
Department of Geological and
Geophysical Sciences
Guyot Hall
Princeton University
Princeton, NJ 08540

NEW YORK

Prof. Gerhard Neumann
Department of Meteorology
and Oceanography
New York University
Bronx.
New York, NY 10453

Dr. Arnold L. Gordon
Lamont-Doherty Geological
Observatory of Columbia Univ.
Palisades, NY 10964

OREGON

Pattullo Study
School of Oceanography
Oregon State University
Corvallis, OR 97331

Pacific Marine Fisheries Commission
528 S. W. Mill
Portland, OR 97201

RHODE ISLAND

Pell Marine Science Library
University of Rhode Island
Narragansett Bay Campus
Narragansett, RI 02882

TEXAS

Working Collection
Department of Oceanography
Texas A&M University
College Station, TX 77843

VIRGINIA

Professor Ronald E. Johnson
Institute of Oceanography
Old Dominion University
Norfolk, VA 23508

WASHINGTON

Library
Fisheries-Oceanography WB-30
151 Oceanography Teaching Bldg.
University of Washington
Seattle, WA 98195

Prof. Gunnar I. Roden
Dept. of Oceanography WB-10
University of Washington
Seattle, WA 98195

WASHINGTON, D.C.

British Navy Staff
British Embassy
3100 Massachusetts Avenue, N.W.
Attn: Scientific Information Officer
Washington, DC 20008

Commanding Officer
U. S. Coast Guard Oceanographic Unit
Bldg. 159-E, Navy Yard Annex
Washington, DC 20590

Commander (2)
U. S. Naval Oceanographic Office
Library Code 3330
Washington, DC 20373

Director (3)
National Oceanographic Data Center
NOAA
Washington, DC 20235

Director (6)
World Data Center A
NOAA
Washington, DC 20235

Dr. Robert H. Gibbs, Jr.
Division of Fisheries
U. S. National Museum
Washington, DC 20560

Director
National Marine Fisheries Service
NOAA
Washington, DC 20235