

data report

*Physical and Chemical Data*

CalCOFI Cruise 6601  
12 January - 7 February

CalCOFI Cruise 6602  
15 February - 6 March

CalCOFI Cruise 6604  
26 March - 3 May

CalCOFI Cruise 6605  
5-29 May

Special Cruise 6605  
11-14 May

and

CalCOFI Cruise 6606  
12 June - 1 July

SIO Reference 68-3

UNIVERSITY OF CALIFORNIA  
SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CalCOFI Cruise 6601  
12 January - 7 February

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5-29 May

Special Cruise 6605  
11-14 May

and

CalCOFI Cruise 6606  
12 June - 1 July

Sponsored by  
Marine Research Committee

SIO Reference 68-3

Approved for distribution:

*W. A. Nierenberg*  
W. A. Nierenberg, Director

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## INTRODUCTION

The data in this report were collected on Cruises 6601, 6602, 6604, 6605 and 6606 of the California Cooperative Fisheries Investigations (CalCOFI) program by the RV David Starr Jordan of the Bureau of Commercial Fisheries, the RV Alaska of the California Fish and Game Department and the RV Alexander Agassiz of the Scripps Institution of Oceanography. The RV Alexander Agassiz participated in Cruises 6601, 6602, 6604 and Special Cruise 6605; RV David Starr Jordan, in 6601, 6605 and 6606; and the RV Alaska, in 6604 only. The first two figures in this cruise-numbering system represent the year of the cruise; the last two figures, the month. The cruises preceding this one in the series are 6504 and 6505 (El Golfo II), both of which appear in Scripps Institution report, SIO Ref. 67-16; and 6507 and 6509, which appear in SIO Ref. 67-17.

These data were collected in part by personnel of and processed completely by the Data Collection and Processing Group (DCPG, MLR), Scripps Institution of Oceanography.

### TABULATED DATA

On Cruises 6601 and 6604 the Nansen-bottle-cast data are tabulated at observed depths; the values at standard depths are computer interpolations according to a modified Rattray technique<sup>1/</sup>, except that some property values at standard depths have been determined from consideration of other information such as bathythermograph traces and adjacent stations. These property values were entered in the "observed" columns to prevent instabilities or to indicate features not covered by the hydrographic cast. The values are indicated by notations (see FOOTNOTES).

On Cruises 6602, 6605 and 6606 only 10-meter temperature and salinity values were collected.

For the few Nansen-bottle casts made by the Agassiz on Special Cruise 6605, the property values at standard depths were read from property curves before the computations were made.

The Salinity-Temperature-Depth Recorder was not used on any of the cruises in this report.

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<sup>1/</sup>Rattray, Maurice (1962). Interpolation errors and oceanographic sampling. Deep-Sea Res. 9: 25-37.

The data tabulated are of the same type as have previously appeared in these reports; the column headings from the computer are explained as follows:

Z	Depth in meters	
T	Temperature	°C
S	Salinity	‰
OXY	Oxygen	ml/L
PHO	Phosphate	µg at/L
SIL	Silicate	µg at/L
NIT	Nitrite	µg at/L
D*T	$\delta_T$	cl/ton
SIG*T	$\sigma_t$	g/L
DD	$\Delta D$	dyn. m

#### STANDARD PROCEDURES

The observed data have been plotted and then evaluated using the method described by Klein.<sup>2/</sup> This involves consideration of their variation as functions of density or depth and their relation to each other and comparison with concurrent bathythermograph observations and with previous or adjacent observations. The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of  $\Delta D$ .

To indicate degree of accuracy, temperatures are recorded in tenths of a degree when obtained by bucket thermometer, thermograph, or bathythermograph, while temperatures from reversing thermometers are recorded in hundredths of a degree. The salinity values obtained by salinometer are recorded to three decimal places, provided they meet accepted standards. The values recorded "have a reproducibility of  $\pm 0.004\%$  salinity at the 95 per cent probability level, and a probable accuracy of  $\pm 0.01\%$  salinity or better at the same level of probability."<sup>3/</sup> The values are recorded to two decimal places when only one determination per sample was obtained, or where there is doubt concerning the accuracy of a particular sample, or of all samples on a station. The accuracy of all samples obtained by salinometer and recorded to two decimal places is believed to be equal to or better than those obtained by manual titration.

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<sup>2/</sup> Klein, Hans T. A new technique for processing physical oceanographic data. MS.

<sup>3/</sup> Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.

A hyphen is used to indicate a missing observed value. The time is the time of messenger release. When more than one bottle cast was made on station, messenger times and wire angles are given in order of increasing depth, and a significant change in position during a multiple cast is listed similarly. Multiple casts are indicated by a letter following all observed depths of each cast except the cast originating at the surface. Footnotes corresponding to each letter explain the type of cast.

On stations where more than one cast was lowered, slight discrepancies in the property values may be noted. These may be caused by changes in geographical position, real changes with time, slight errors in measurement or a combination of these factors. Values at standard depths in the area of these discrepancies may be determined from reconciliation of the plotted observed values and entered in the "observed" columns with notations.

#### FOOTNOTES

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

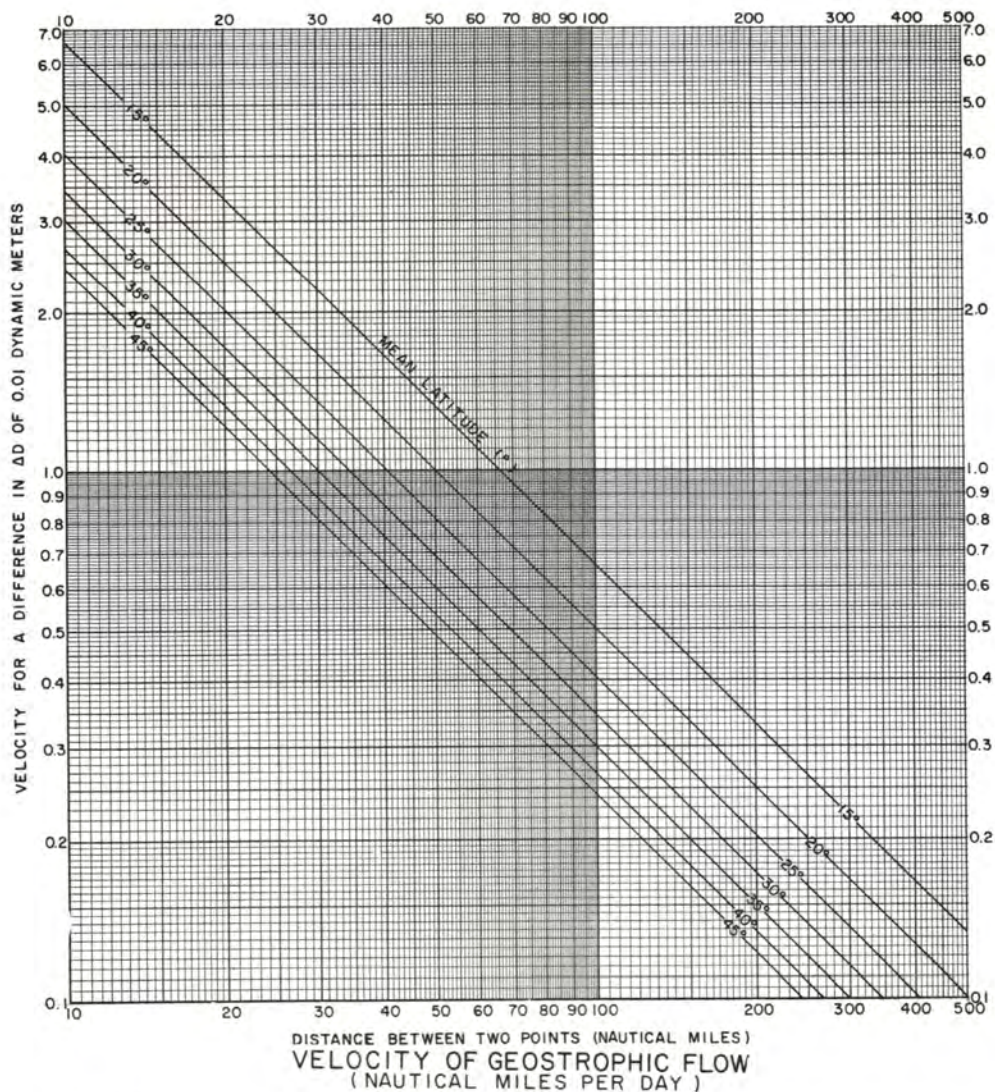
Values which are not used in interpolation because they seem to be in error without apparent reason are indicated by the following notation.

u: uncertain value

Values at standard levels of depth entered in the observed columns to limit machine interpolations may have either of the following notations.

k: a value determined from another measurement such as a bathythermogram or STD recording.

g: a value determined from considerations such as stability or previous or surrounding stations.



cm/sec	0	1	2	3	4	5	6	7	8	9
0	<i>KNOTS</i> 0.02 <i>NM/DAY</i>	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.17	
10	0.19	0.21	0.23	0.25	0.27	0.29	0.31	0.33	0.35	0.37
20	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.52	0.54	0.56
30	0.58	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.74	0.76
40	0.78	0.80	0.82	0.84	0.85	0.87	0.89	0.91	0.93	0.95
50	0.97	0.99	1.01	1.03	1.05	1.07	1.09	1.11	1.13	1.15
60	1.17	1.18	1.20	1.22	1.24	1.26	1.28	1.30	1.32	1.34
70	1.36	1.38	1.40	1.42	1.44	1.46	1.48	1.50	1.52	1.53
80	1.55	1.57	1.59	1.61	1.63	1.65	1.67	1.69	1.71	1.73
90	1.75	1.77	1.79	1.81	1.83	1.85	1.86	1.88	1.90	1.92
100	1.94	1.96	1.98	2.00	2.02	2.04	2.06	2.08	2.10	2.12

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

1 cm/sec = 0.019 kts = 0.466 NAUTICAL MILES / DAY  
 1 kt = 24 NAUTICAL MILES / DAY = 51.48 cm/sec  
 1 NAUTICAL MILE / DAY = 0.042 kts = 2.14 cm/sec

FIGURES  
Cruise 6605

1. CalCOFI Cruise 6605, station positions
2. Horizontal distribution of temperature at 10 meters
3. Horizontal distribution of salinity at 10 meters
4. Horizontal distribution of thermosteric anomaly at 10 meters



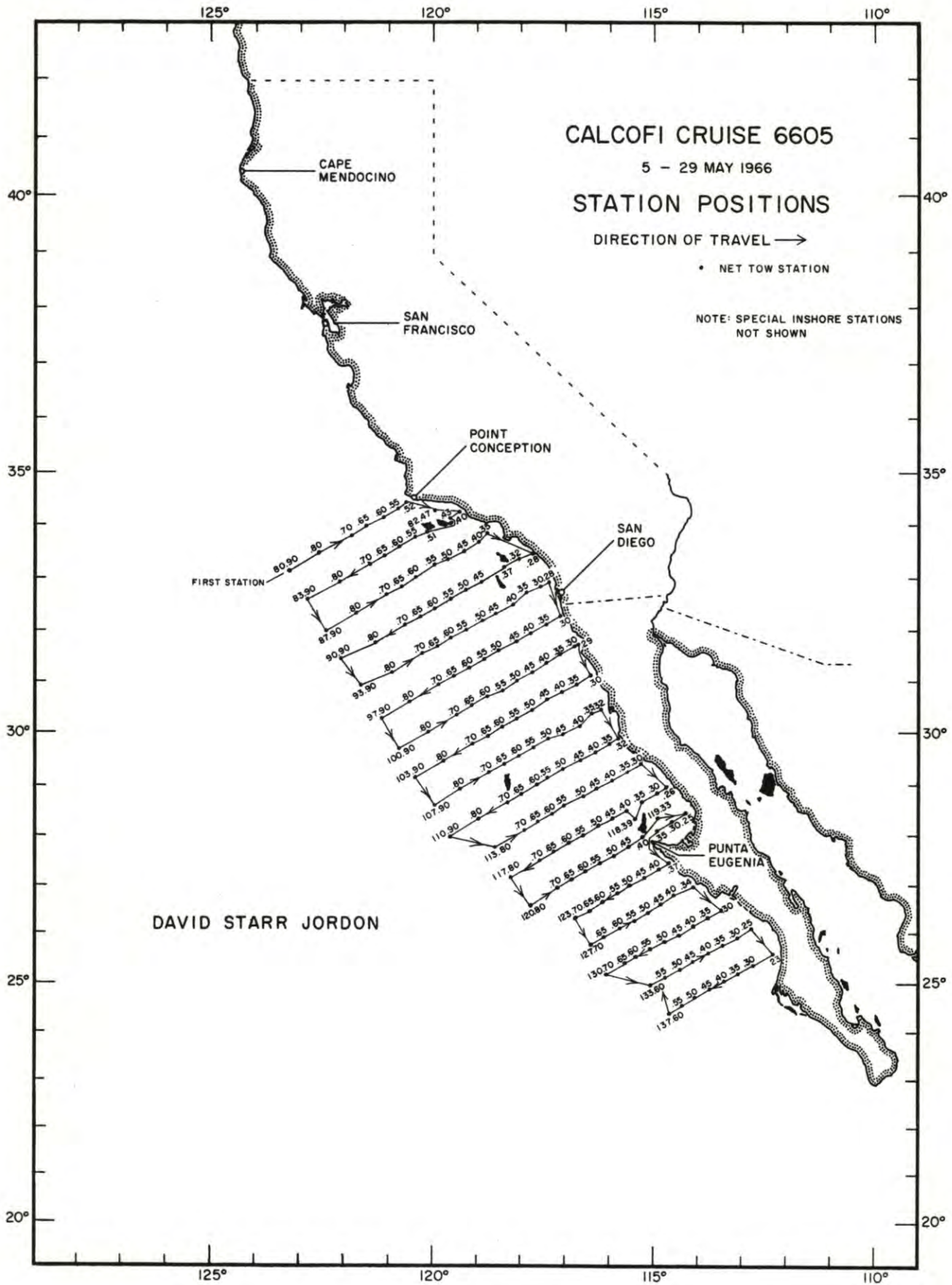


FIGURE 1

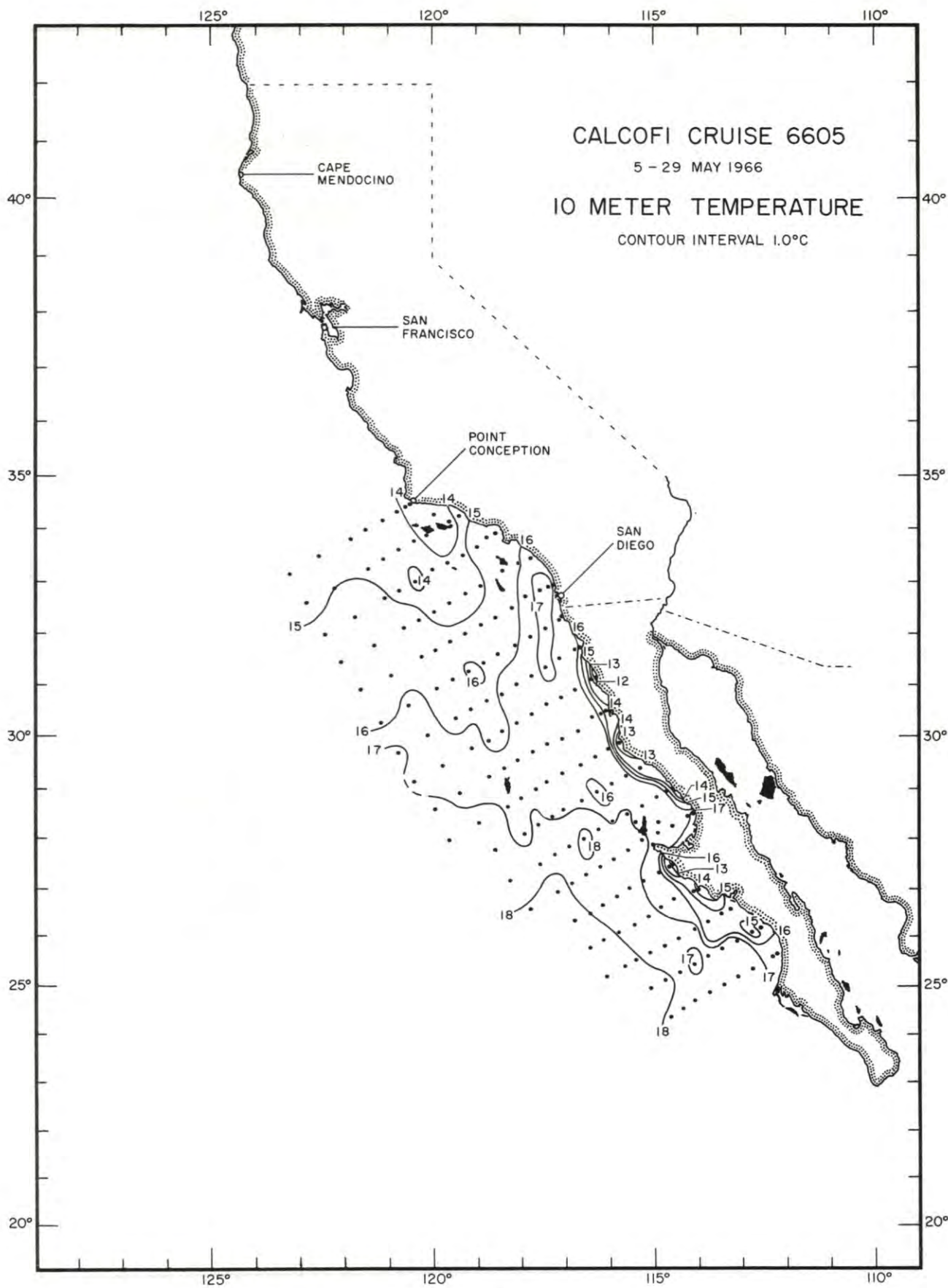


FIGURE 2

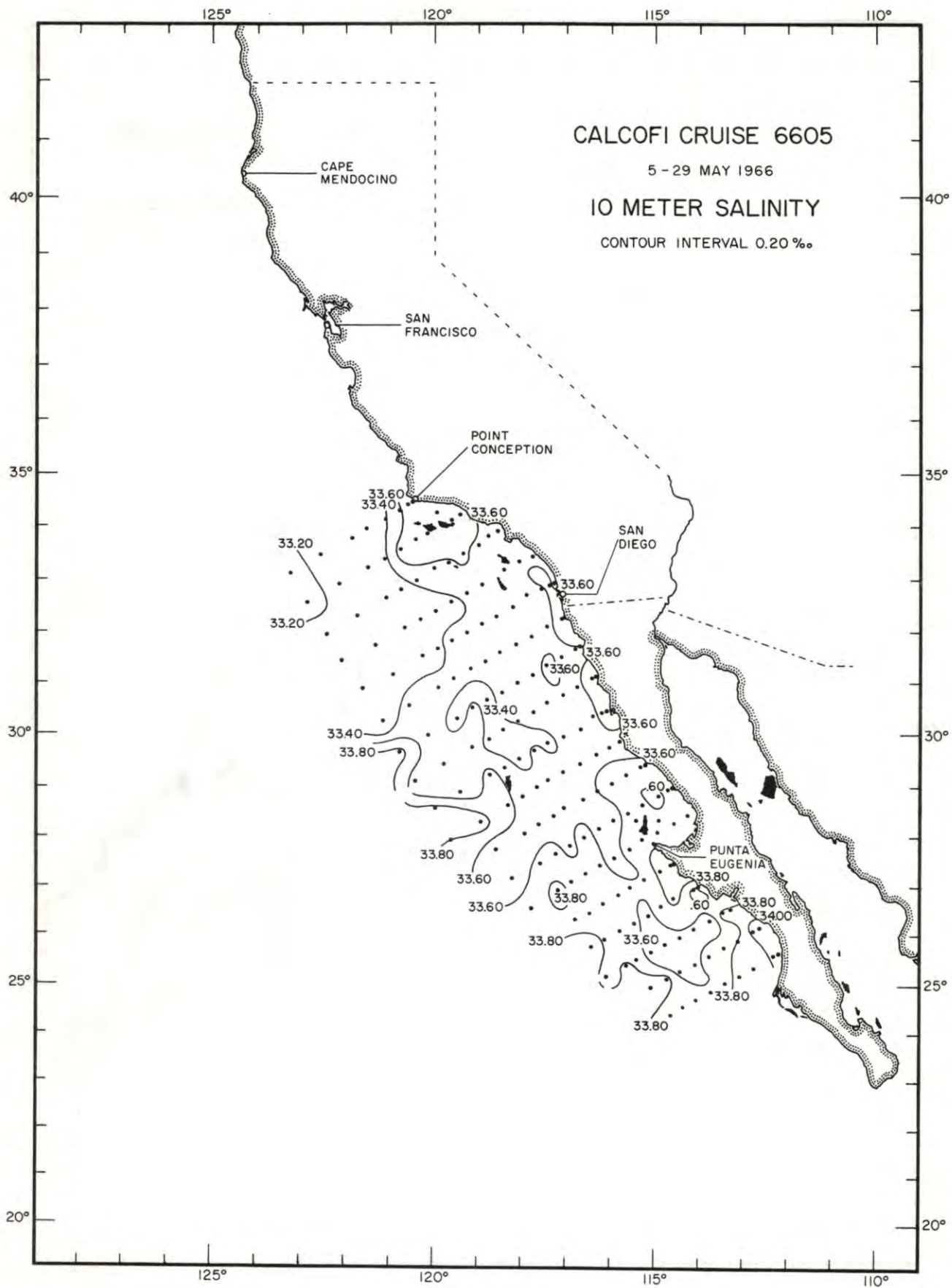


FIGURE 3

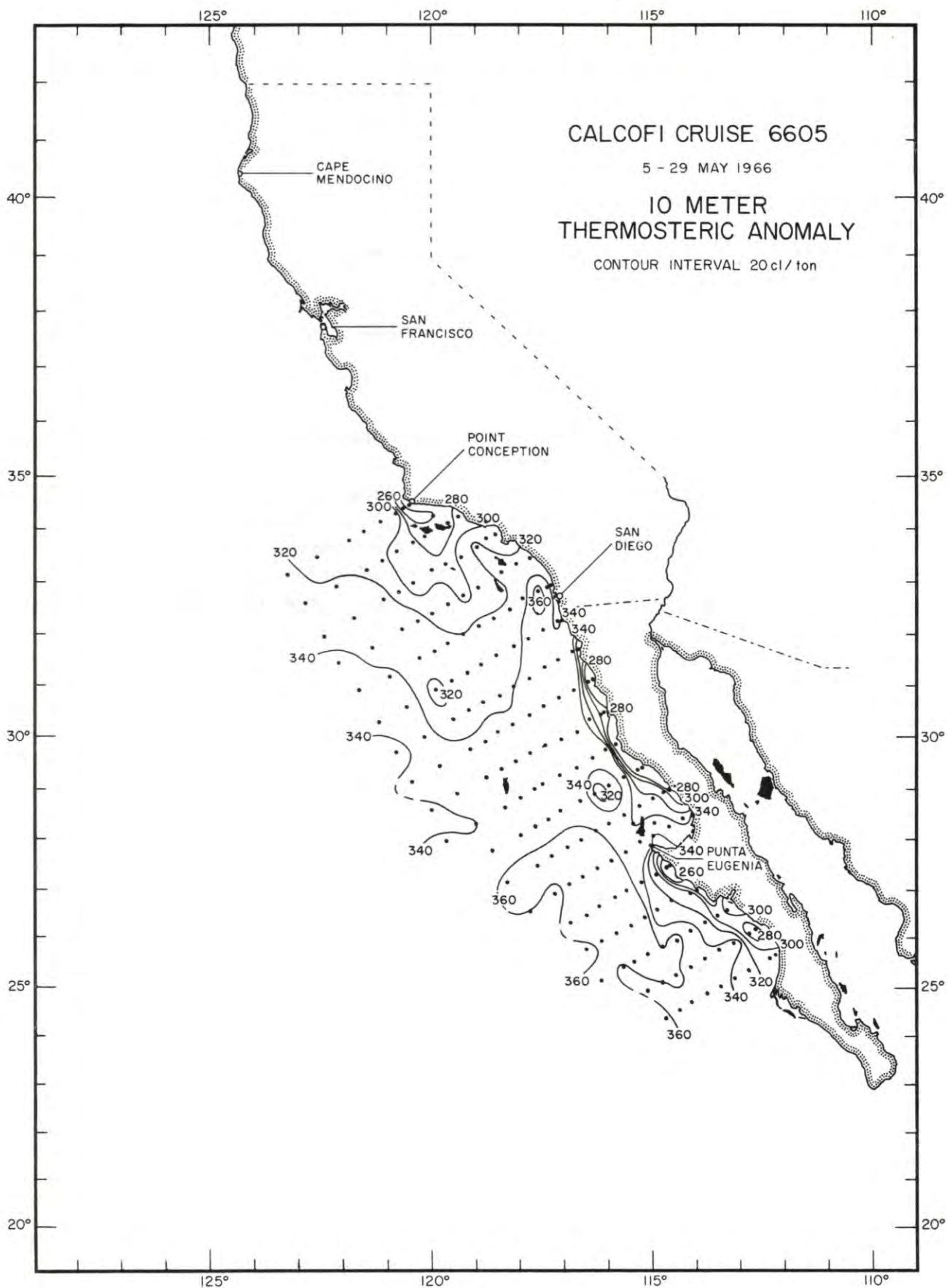


FIGURE 4

PERSONNEL  
Cruise 6605

SHIP'S CAPTAIN

Forster, Charles W., RV David Starr Jordan

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV David Starr Jordan

Counts, Robert C., Fishery Research Biologist (in charge), Bureau of Commercial Fisheries

\*Kirk, Patricia, Physical Science Technician, Bureau of Commercial Fisheries

\*Leong, Roderick, Fishery Biologist, Bureau of Commercial Fisheries

\*O'Connell, Dr. Charles, Fishery Biologist, Bureau of Commercial Fisheries

\*Smith, Dr. Paul, Fishery Biologist, Bureau of Commercial Fisheries

Wagner, Vaughn M., Fisheries Technician, Bureau of Commercial Fisheries

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\*Lines 80-93 only.

Station	Date	Time GCT	DATA AT NET TOW STATIONS						10 METERS		
			Latitude North	Longitude West	Sounding (fm)	Wind Dir Force	Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
80.51-J	V-6	0315	34°26.0'	120°32.5'	60	310° 3	partly cloudy	moderate	13.95	33.730	274
80.52-J	6	0210	34°24.5'	120°37.0'	160	280° 3	partly cloudy	moderate	13.02	33.774	253
80.55-J	6	0020	34°19.0'	120°48.0'	410	200° 2	clear	moderate	14.22	33.356	307
80.60-J	5	2130	34°09.0'	121°09.0'	1200	200° 3	partly cloudy	moderate	14.26	33.375	306
80.65-J	5	1835	33°59.0'	121°30.0'	1800	190° 2	partly cloudy	moderate	14.59	33.320	317
80.70-J	5	1600	33°48.0'	121°50.0'	1950	180° 3	partly cloudy	moderate	14.68	33.366	316
80.80-J	5	1150	33°29.0'	122°32.0'	2300	180° 3	missing	rough	14.11	33.318	308
80.90-J	5	0755	33°08.0'	123°13.0'	2000+	140° 4	partly cloudy	rough	14.32	33.134	325
82.47-J	6	0640	34°15.0'	119°59.0'	310	290° 4	partly cloudy	moderate	13.45	33.792	260
83.40-J	6	1050	34°14.0'	119°22.0'	12	- -	missing	missing	14.23	33.606	289
83.43-J	6	0920	34°08.0'	119°34.0'	150	260° 5	missing	rough	13.62	33.642	274
83.51-J	7	1045	33°52.0'	120°08.5'	63	300° 4	missing	rough	13.29	33.678	265
83.55-J	7	1240	33°45.0'	120°22.0'	600	320° 4	missing	rough	14.04	33.618	284
83.60-J	7	1530	33°34.0'	120°45.0'	900	290° 4	partly cloudy	rough	14.14	33.662	283
83.65-J	7	1835	33°24.0'	121°06.0'	1950	310° 5	cloudy	very rough	14.28	33.388	306
83.70-J	7	2025	33°13.5'	121°26.5'	2000	300° 5	cloudy	very rough	14.74	33.351	318
83.80-J	8	0035	32°54.0'	122°08.0'	2300	300° 4	partly cloudy	very rough	15.00	33.352	323
83.90-J	8	0520	32°33.5'	122°50.0'	2100	300° 3	clear	very rough	14.34	33.142	325
87.33-J	9	1325	33°54.0'	118°29.5'	27	150° 2	overcast	slight	15.09	33.557	310

DATA AT NET TOW STATIONS										10 METERS			
Station	Date	Time GCT	Latitude		Longitude West	Sounding (fm)	Wind		Weather	Sea	T	S	$\delta_T$
			North	West			Dir	Force			$^{\circ}\text{C}$	$\%$	cl/ton
87.35-J	V-9	1220	33°50.0'	118°37.5'	280	150°	2	missing	slight	15.30	33.533	316	
87.40-J	9	1005	33°40.0'	118°58.0'	490	150°	2	missing	slight	15.72	33.580	321	
87.45-J	9	0735	33°30.0'	119°19.0'	900	260°	3	missing	moderate	14.96	33.627	302	
87.50-J	9	0505	33°20.0'	119°39.5'	40	300°	2	missing	rough	14.02	33.525	291	
87.55-J	9	0310	33°13.0'	119°59.0'	530	310°	3	overcast	rough	14.47	33.533	299	
87.60-J	8	2300	33°00.0'	120°21.5'	510	320°	4	overcast	rough	13.82	33.416	294	
87.65-J	8	2035	32°49.5'	120°41.5'	1950	320°	3	overcast	rough	14.47	33.349	313	
87.70-J	8	1820	32°40.0'	121°02.0'	2090	320°	4	overcast	rough	15.12	33.284	330	
87.80-J	8	1355	32°19.5'	121°43.0'	2300	320°	4	overcast	very rough	15.50	33.290	338	
87.90-J	8	0945	31°59.0'	122°25.0'	2300	320°	4	missing	very rough	15.24	33.307	331	
90.28-J	9	1820	33°28.5'	117°47.0'	300	200°	2	overcast	slight	16.13	33.523	334	
90.32-J	9	2120	33°21.0'	118°01.5'	380	300°	2	cloudy	slight	15.96	33.54	329	
90.37-J	10	0110	33°11.0'	118°22.5'	640	240°	3	overcast	moderate	15.86	33.48	332	
90.45-J	10	0505	32°54.5'	118°55.5'	900	300°	1	missing	slight	14.94	33.57	306	
90.50-J	10	0900	32°45.5'	119°15.0'	170	300°	1	missing	rough	14.34	33.51	298	
90.55-J	10	1110	32°35.0'	119°37.0'	520	250°	3	missing	rough	14.78	33.34	319	
90.60-J	10	1315	32°25.0'	119°57.5'	550	250°	1	overcast	rough	14.67	33.33	318	
90.65-J	10	1525	32°14.5'	120°18.0'	2050	240°	2	overcast	rough	15.37	33.35	331	
90.70-J	10	1835	32°05.0'	120°38.5'	2100	300°	2	overcast	very rough	15.36	33.31	333	

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
						Dir	Force					
90.80-J	V-10	2250	31°44.5'	121°19.5'	2000	300°	2	overcast	very rough	15.58	33.31	338
90.90-J	11	1020	31°26.5'	122°03.0'	2200	290°	4	missing	rough	15.89	33.30	345
93.27-J	13	0205	32°56.0'	117°19.0'	50	340°	2	partly cloudy	moderate	16.36	33.574	336
93.28-J	13	0115	32°54.5'	117°22.0'	300	340°	2	partly cloudy	moderate	17.54	33.635	358
93.30-J	13	0000	32°50.5'	117°31.0'	800	340°	2	partly cloudy	rough	17.64	33.592	364
93.35-J	12	2210	32°41.0'	117°52.5'	320	260°	3	overcast	moderate	16.26	33.530	336
93.40-J	12	1730	32°29.5'	118°10.5'	900	260°	3	overcast	moderate	15.40	33.454	324
93.45-J	12	1405	32°19.0'	118°34.5'	850	300°	4	overcast	rough	15.33	-	-
93.50-J	12	1210	32°10.0'	118°52.5'	800	340°	3	missing	rough	15.52	33.435	328
93.55-J	12	0850	32°00.0'	119°13.0'	700	300°	3	missing	rough	15.51	33.541	320
93.60-J	12	0510	31°50.0'	119°35.0'	1600	280°	4	missing	rough	15.48	33.49	323
93.65-J	12	0230	31°40.0'	119°53.5'	2100	310°	3	drizzle	rough	15.5	33.30	336
93.70-J	11	2340	31°32.0'	120°12.0'	2100	300°	4	drizzle	rough	15.40	33.37	330
93.80-J	11	1840	31°10.0'	120°54.0'	2000	280°	3	drizzle	rough	15.71	33.30	342
93.90-J	11	1420	30°53.5'	121°37.0'	2200	320°	4	drizzle	rough	15.84	33.32	343
97.29-J	14	2015	32°17.5'	117°05.0'	27	250°	2	haze	moderate	16.94	33.620	345
97.30-J	14	2100	32°16.0'	117°07.0'	33	250°	2	overcast	moderate	16.29	33.637	330
97.35-J	14	2330	32°05.5'	117°27.5'	650	250°	3	overcast	rough	17.08	33.565	352
97.40-J	15	0135	31°56.0'	117°48.0'	700	270°	1	overcast	rough	16.89	33.539	350



DATA AT NET TOW STATIONS											10 METERS		
Station	Date	Time GCT	Latitude		Longitude West	Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
			North	West			Dir	Force					
97.45-J	V-15	0350	31°46.0'	118°08.5'	900	270°	1	missing	rough	15.93	33.479	333	
97.50-J	15	0620	31°35.5'	118°30.0'	1100	320°	3	missing	rough	15.69	33.423	331	
97.55-J	15	0840	31°25.0'	118°50.0'	330	320°	5	missing	rough	15.82	33.409	336	
97.60-J	15	1055	31°15.0'	119°10.0'	2000	330°	5	missing	rough	16.01	33.445	338	
97.65-J	15	1305	31°05.0'	119°30.5'	1700	330°	5	overcast	rough	15.85	33.422	336	
97.70-J	15	1545	30°55.5'	119°50.5'	1950	320°	4	overcast	very rough	15.12	33.440	319	
97.80-J	15	1940	30°35.0'	120°31.0'	2100	340°	4	overcast	very rough	16.40	33.464	345	
97.90-J	15	2325	30°16.0'	121°10.0'	2100	330°	4	overcast	rough	15.82	33.320	342	
100.29-J	17	0755	31°42.0'	116°43.5'	70	310°	2	missing	moderate	15.71	33.597	320	
100.30-J	17	0705	31°40.5'	116°46.5'	224	310°	2	missing	moderate	17.05	33.579	351	
100.35-J	17	0435	31°30.5'	117°07.0'	650	300°	4	missing	moderate	16.90	33.500	353	
100.40-J	17	0220	31°21.0'	117°27.0'	1050	300°	3	cloudy	moderate	17.14	33.606	351	
100.45-J	16	2350	31°10.5'	117°46.0'	850	300°	4	cloudy	moderate	16.70	33.547	345	
100.50-J	16	2145	31°00.0'	118°06.0'	930	320°	3	overcast	moderate	16.37	33.508	340	
100.55-J	16	1935	30°48.0'	118°27.0'	1450	310°	3	overcast	moderate	16.14	33.501	336	
100.60-J	16	1655	30°40.5'	118°47.5'	1550	340°	4	overcast	rough	15.77	33.346	339	
100.65-J	16	1435	30°31.0'	119°06.0'	2000	340°	4	overcast	rough	15.98	33.435	337	
100.70-J	16	1150	30°20.0'	119°28.0'	2100	340°	4	missing	rough	15.28	33.348	329	
100.80-J	16	0759	30°00.0'	120°06.5'	1950	350°	4	missing	rough	16.19	33.411	344	

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
						Dir	Force					
100.90-J	V-16	0350	29°40.0'	120°47.0'	2150	320°	4	overcast	rough	17.04	33.806	334
103.29-J	17	1135	31°07.0'	116°21.0'	17	090°	2	missing	slight	11.89	-	-
103.30-J	17	1210	31°06.0'	116°24.5'	30	090°	2	overcast	slight	13.56	33.724	267
103.35-J	17	1435	30°56.0'	116°45.0'	975	300°	3	overcast	moderate	16.90	33.499	353
103.40-J	17	1705	30°47.0'	117°04.5'	1000	340°	3	overcast	moderate	16.86	33.593	346
103.45-J	17	1930	30°38.5'	117°25.5'	1050	300°	4	overcast	moderate	16.70	33.550	345
103.50-J	17	2120	30°26.0'	117°44.5'	1500	320°	4	cloudy	moderate	16.50	33.510	343
103.55-J	17	2340	30°16.0'	118°05.0'	1050	320°	4	cloudy	moderate	16.22	33.400	345
103.60-J	18	0145	30°06.0'	118°25.0'	1800	320°	4	cloudy	moderate	15.92	33.342	343
103.65-J	18	0435	29°55.0'	118°44.0'	1750	310°	3	cloudy	moderate	15.94	33.335	344
103.70-J	18	0635	29°46.5'	119°04.0'	2000	320°	3	cloudy	moderate	16.44	33.463	346
103.80-J	18	1030	29°26.0'	119°43.0'	1900	330°	3	missing	moderate	16.64	33.530	345
103.90-J	18	1425	29°06.0'	120°22.0'	2100	310°	3	overcast	rough	16.54	33.498	346
107.31-J	19	2155	30°28.0'	116°07.0'	24	320°	3	overcast	moderate	14.77	33.752	289
107.32-J	19	2100	30°26.0'	116°11.0'	360	320°	3	overcast	moderate	15.36	33.740	302
107.35-J	19	1910	30°21.5'	116°22.5'	950	300°	3	overcast	moderate	16.22	33.529	336
107.40-J	19	1650	30°06.5'	116°40.0'	1600	300°	4	overcast	rough	16.94	33.561	350
107.45-J	19	1435	29°58.5'	117°01.0'	1350	320°	4	overcast	rough	16.63	33.499	347
107.50-J	19	1210	29°50.5'	117°22.0'	1300	320°	4	missing	rough	16.25	33.363	349

Station	Date	Time GCT	DATA AT NET TOW STATIONS				10 METERS			T °C	S ‰	$\delta_T$ cl/ton
			Latitude North	Longitude West	Sounding (fm)	Wind Dir Force	Weather	Sea				
107.55-J	V-19	0940	29°41.0'	117°42.0'	1750	320° 4	missing	moderate	16.29	33.402	347	
107.60-J	19	0740	29°30.5'	118°01.5'	1850	310° 4	cloudy	rough	16.28	33.364	349	
107.65-J	19	0510	29°21.0'	118°21.0'	1700	290° 3	cloudy	rough	16.88	33.582	347	
107.70-J	19	0300	29°11.0'	118°41.0'	1300	300° 3	cloudy	rough	16.88	33.601	345	
107.80-J	18	2250	28°51.0'	119°21.0'	2000	300° 4	cloudy	rough	16.85	33.525	350	
107.90-J	18	1845	28°31.0'	119°58.0'	2100	280° 3	overcast	rough	17.24	33.810	338	
110.32-J	20	0115	29°52.0'	115°48.0'	14	320° 4	overcast	moderate	12.32	33.483	262	
110.35-J	20	0345	29°46.0'	116°00.0'	850	340° 4	overcast	moderate	16.74	33.544	347	
110.40-J	20	0520	29°36.5'	116°19.5'	1300	300° 3	missing	moderate	16.62	33.487	348	
110.45-J	20	0730	29°26.5'	116°40.5'	330	300° 3	missing	moderate	16.65	33.47	350	
110.50-J	20	0945	29°16.0'	117°02.5'	1650	320° 3	missing	moderate	16.78	33.52	349	
110.55-J	20	1205	29°05.5'	117°24.0'	1900	320° 3	missing	moderate	16.62	33.49	348	
110.60-J	20	1345	28°59.0'	117°39.0'	1950	330° 3	cloudy	moderate	16.78	33.54	348	
110.65-J	20	1625	28°46.0'	117°59.0'	2000	330° 4	cloudy	moderate	16.99	33.58	349	
110.70-J	20	1845	28°36.5'	118°18.0'	1850	250° 2	cloudy	moderate	16.96	33.62	345	
110.80-J	20	2230	28°16.5'	118°57.0'	2050	300° 3	cloudy	moderate	17.34	33.82	340	
110.90-J	21	0200	27°56.5'	119°35.0'	2150	310° 2	overcast	moderate	17.60	33.80	347	
113.29-J	22	0700	29°24.0'	115°13.0'	13	300° 4	missing	moderate	13.61	33.763	265	
113.30-J	22	0605	29°22.0'	115°18.0'	37	300° 4	missing	moderate	13.51	33.707	267	

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude		Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
			North	West		Dir	Force					
113.35-J	V-22	0355	29°11.5'	115°38.0'	750	270°	4	missing	moderate	16.83	33.612	344
113.40-J	22	0135	29°02.0'	115°57.0'	950	320°	3	partly cloudy	moderate	16.43	33.62	334
113.45-J	21	2310	28°52.0'	116°18.0'	1000	320°	4	cloudy	moderate	15.70	33.60	320
113.50-J	21	2110	28°41.5'	116°37.0'	2030	320°	3	cloudy	moderate	16.98	33.52	353
113.55-J	21	1830	28°32.0'	117°00.5'	1850	340°	3	cloudy	slight	16.82	33.47 a)	354
113.60-J	21	1530	28°22.0'	117°19.0'	1950	350°	3	cloudy	smooth	-	-	-
113.65-J	21	1325	28°12.0'	117°37.0'	2050	100°	1	cloudy	slight	17.06	33.52	355
113.70-J	21	1110	28°02.0'	117°55.0'	1800	300°	2	missing	slight	16.90	33.45	357
113.80-J	21	0710	27°42.0'	118°33.5'	2000	-	1	missing	moderate	17.14	33.52	357
117.25-J	22	1055	28°58.0'	114°37.0'	30	280°	3	missing	moderate	13.38	33.701	265
117.26-J	22	1150	28°56.0'	114°41.5'	41	280°	4	missing	moderate	15.78	33.706	313
117.30-J	22	1335	28°48.0'	114°56.5'	56	280°	4	overcast	moderate	16.13	33.589	330
117.35-J	22	1645	28°38.0'	115°16.0'	115	280°	2	overcast	moderate	16.38	33.604	334
117.40-J	22	2010	28°28.0'	115°35.5'	530	300°	3	cloudy	moderate	17.04	33.617	348
117.45-J	22	2205	28°18.0'	115°56.0'	2000	310°	3	overcast	moderate	16.98	33.529	353
117.50-J	23	0005	28°08.0'	116°15.0'	2200	310°	3	cloudy	moderate	17.26	33.515	360
117.55-J	23	0300	27°58.0'	116°34.5'	2300	310°	2	cloudy	slight	18.10	33.727	364

a) Alternate value: 33.42‰; 357 cl/ton.

DATA AT NET TOW STATIONS										10 METERS			
Station	Date	Time GCT	Latitude		Longitude West	Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
			North	West			Dir	Force					
117.60-J	V-23	0550	27°48.0'	116°53.0'	1850	310°	2	missing	slight	17.54	33.572	362	
117.65-J	23	0825	27°37.5'	117°13.0'	1850	290°	3	missing	slight	17.80	33.657	362	
117.70-J	23	1020	27°27.5'	117°32.5'	2000	250°	3	missing	moderate	17.73	33.643	362	
117.80-J	23	1420	27°06.5'	118°13.5'	2200	300°	3	overcast	moderate	17.24	33.508	361	
118.39-J	22	1845	28°18.5'	115°23.5'	145	300°	3	overcast	moderate	16.72	33.623	340	
119.33-J	24	1630	28°19.0'	114°53.0'	59	300°	4	overcast	moderate	16.86	33.618	344	
120.24-J	24	2020	28°25.0'	114°10.5'	19	290°	3	cloudy	moderate	17.11	33.737	340	
120.25-J	24	2045	28°22.5'	114°15.0'	31	320°	5	cloudy	slight	16.99	33.733	338	
120.30-J	24	2305	28°13.0'	114°34.0'	52	320°	5	cloudy	moderate	16.88	33.632	343	
120.35-J	25	0120	28°03.0'	114°54.0'	45	330°	5	partly cloudy	moderate	16.96	33.693	340	
120.40-J	24	1305	27°56.5'	115°14.0'	23	320°	4	overcast	moderate	17.70	33.774	351	
120.45-J	24	1050	27°43.0'	115°33.0'	1250	340°	4	missing	moderate	17.30	33.679	349	
120.50-J	23	0825	27°33.0'	115°52.5'	2100	320°	3	missing	moderate	17.58	33.522	367	
120.55-J	24	0620	27°23.0'	116°12.0'	2050	340°	1	missing	moderate	17.88	33.697	361	
120.60-J	24	0335	27°13.0'	116°30.5'	2000	310°	3	cloudy	moderate	17.90	33.705	361	
120.65-J	24	0105	27°03.0'	116°50.5'	2050	320°	4	cloudy	moderate	17.94	33.695	363	
120.70-J	23	2250	26°53.0'	117°10.0'	2000	320°	4	cloudy	moderate	18.07	33.810	357	
120.80-J	23	1830	26°31.0'	117°48.0'	2100	320°	2	cloudy	slight	18.06	33.779	360	
123.36-J	25	0620	27°26.0'	114°36.0'	31	280°	4	missing	moderate	12.72	33.841	243	

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
						Dir	Force					
123.37-J	V-25	0730	27°24.0'	114°40.0'	39	290°	4	missing	moderate	13.58	33.92	253
123.40-J	25	0855	27°18.0'	114°52.0'	225	280°	5	missing	rough	16.38	33.81	319
123.45-J	25	1105	27°08.0'	115°11.5'	2250	320°	4	missing	moderate	16.80	33.61	343
123.50-J	25	1315	26°58.0'	115°31.0'	1750	330°	4	cloudy	moderate	17.83	33.65	363
123.55-J	25	1540	26°48.5'	115°49.0'	2050	340°	3	cloudy	rough	17.74	33.62	363
123.60-J	25	1805	26°37.0'	116°10.0'	2050	340°	4	cloudy	rough	17.83	33.66	363
123.65-J	25	2005	26°26.5'	116°27.0'	2050	330°	4	cloudy	moderate	18.00	33.67	366
123.70-J	25	2145	26°18.5'	116°47.0'	2100	330°	4	overcast	moderate	18.09	33.71	365
127.33-J	26	1905	26°57.5'	114°02.0'	36	270°	3	partly cloudy	moderate	13.60	33.737	267
127.34-J	26	1810	26°55.0'	114°06.5'	45	270°	3	partly cloudy	rough	14.46	33.485	302
127.40-J	26	1530	26°43.0'	114°32.5'	1800	330°	5	partly cloudy	rough	16.82	33.84	327
127.45-J	26	1255	26°33.0'	114°50.0'	1750	330°	4	overcast	rough	16.43	33.77	323
127.50-J	26	1035	26°23.0'	115°08.5'	2200	340°	5	missing	rough	17.44	33.55	362
127.55-J	26	0815	26°13.5'	115°27.0'	1950	330°	5	missing	rough	17.69	33.61	363
127.60-J	26	0600	26°03.5'	115°46.5'	2050	330°	5	overcast	rough	17.91	33.68	363
127.65-J	26	0345	25°53.0'	116°06.0'	2050	330°	4	overcast	moderate	18.15	33.76	363
127.70-J	26	0120	25°44.0'	116°24.5'	2100	330°	4	overcast	moderate	18.42	33.90	359
130.28-J	26	2305	26°33.0'	113°21.0'	30	280°	5	clear	slight	15.62	33.809	303
130.30-J	27	0025	26°29.0'	113°29.0'	43	280°	5	clear	moderate	15.14	33.860	289

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude		Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
			North	West		Dir	Force					
130.35-J	V-27	0250	26°19.0'	113°48.0'	200	270°	5	clear	rough	15.72	33.440	332
130.40-J	27	0455	26°09.0'	114°07.0'	1200	310°	5	clear	rough	17.12	33.538	355
130.45-J	27	0700	25°58.5'	114°26.0'	1900	320°	4	partly cloudy	very rough	17.49	33.558	362
130.50-J	27	0925	25°49.0'	114°45.0'	2000	340°	5	missing	rough	17.44	33.574	360
130.55-J	27	1140	25°40.0'	115°03.5'	2000	340°	4	clear	rough	17.56	33.583	362
130.60-J	27	1350	25°30.0'	115°21.5'	2050	330°	4	overcast	rough	18.04	33.758	361
130.65-J	27	1705	25°21.0'	115°39.5'	2050	330°	4	overcast	rough	18.10	33.802	359
130.70-J	27	1850	25°09.0'	116°02.0'	1900	340°	4	overcast	rough	18.28	33.778	365
133.23-J	28	1800	26°08.5'	112°40.5'	38	-	1	partly cloudy	slight	15.27	34.033	279
133.25-J	28	1640	26°04.5'	112°48.0'	43	310°	3	partly cloudy	slight	14.99	34.037	273
133.30-J	28	1430	25°54.5'	113°07.5'	110	340°	3	cloudy	moderate	17.51	33.800	345
133.35-J	28	1150	25°44.5'	113°26.5'	510	320°	5	missing	rough	17.27	33.770	342
133.40-J	28	0910	25°34.5'	113°45.5'	1750	320°	5	missing	rough	17.27	33.779	341
133.45-J	28	0655	25°24.0'	114°05.0'	2000	320°	4	partly cloudy	rough	16.80	33.528	349
133.50-J	28	0450	25°14.5'	114°24.0'	1900	300°	4	partly cloudy	rough	17.40	33.539	361
133.55-J	28	0240	25°04.5'	114°43.0'	1800	300°	4	cloudy	rough	18.38	33.869	360
133.60-J	28	0000	24°54.5'	115°02.0'	2100	330°	4	cloudy	rough	18.67	33.990	358
137.22-J	28	2120	25°36.0'	112°15.0'	30	300°	4	clear	moderate	16.66	34.053	307
137.23-J	28	2205	25°34.0'	112°19.0'	41	300°	4	clear	moderate	16.66	34.026	309

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude	Longitude	Sounding (fm)	Wind		Weather	Sea	T °C	S ‰	$\delta_T$ cl/ton
			North	West		Dir	Force					
137.30-J	V-29	0050	25°20.0'	112°46.0'	210	300°	4	clear	moderate	17.17	33.886	331
137.35-J	29	0335	25°10.0'	113°04.5'	700	300°	4	partly cloudy	moderate	17.18	33.829	335
137.40-J	29	0535	25°00.0'	113°23.5'	1200	300°	4	partly cloudy	moderate	17.36	33.609	355
137.45-J	29	0745	24°50.0'	113°43.0'	1850	320°	4	partly cloudy	moderate	17.34	33.616	354
137.50-J	29	1200	24°40.0'	114°02.0'	2100	320°	4	missing	moderate	17.52	33.620	358
137.55-J	29	1240	24°30.0'	114°20.5'	2100	320°	3	overcast	moderate	17.74	33.695	358
137.60-J	29	1430	24°20.0'	114°39.5'	2100	330°	4	overcast	moderate	17.92	33.714	361



FIGURES  
Special Cruise 6605

1. Special Cruise 6605, station positions

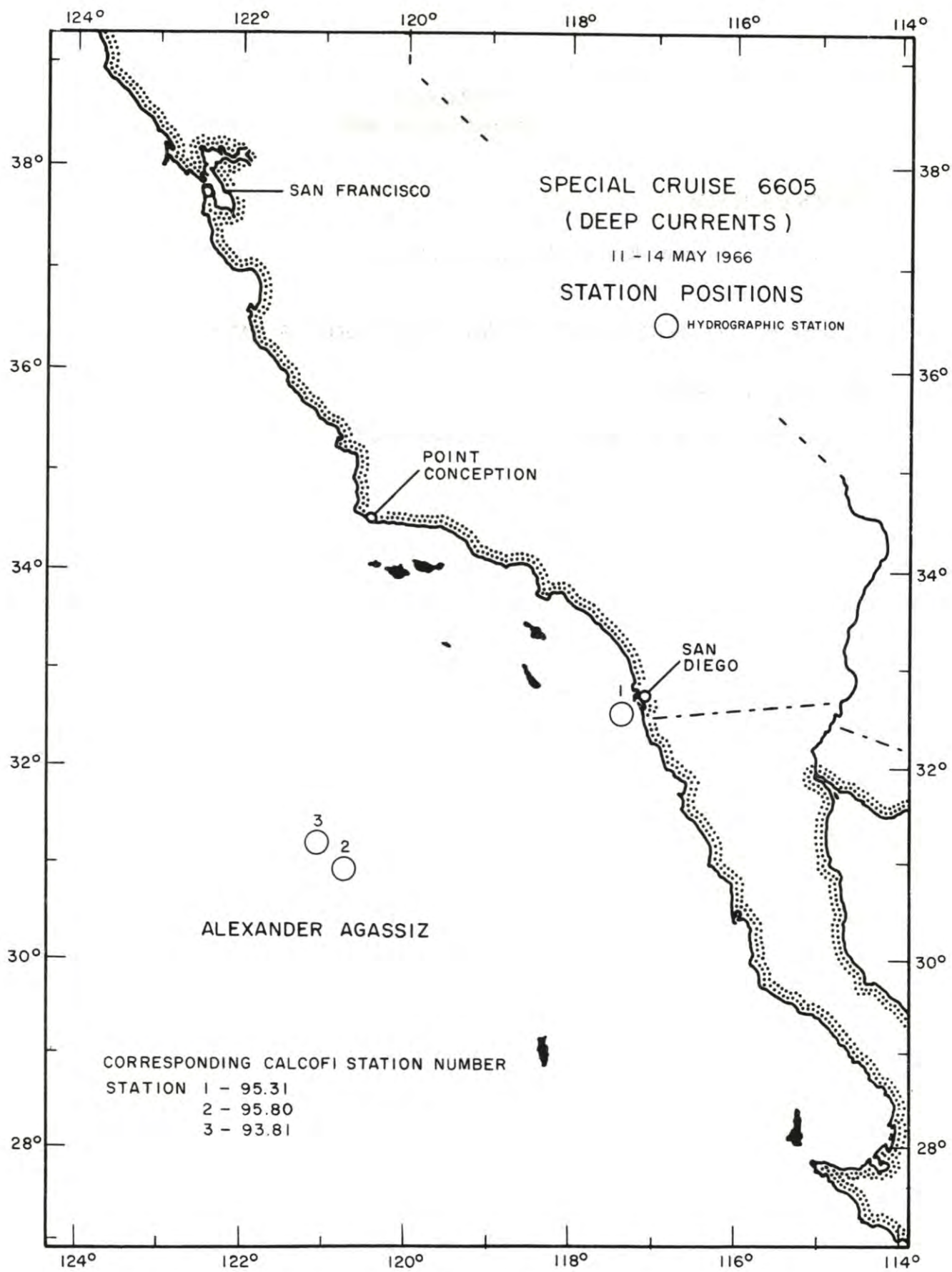


FIGURE 1

PERSONNEL  
Special Cruise 6605

SHIP'S CAPTAIN

Davis, Laurence E., RV Alexander Agassiz

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV Alexander Agassiz

Bryan, Walter R., Senior Marine Technician

## O B S E R V E D   L E V E L S   O F   D E P T H

## S T A N D A R D   L E V E L S   O F   D E P T H

INPUT								COMPUTED								
Z	T	S	QXY	PHO	SIL	NIT	D*T	Z	T	S	QXY	SIG*T	D*T	DD		
1 ( CALCOFI STATION 95.31 )								SPECIAL CRUISE 6605								1
ALEXANDER AGASSIZ, MAY 11 1966, 0006 GMT, 32 32.5N 117 24W, SOUNDING 200 FM, WIND 270 FORCE 3, WEATHER CLOUDY, SEA VERY ROUGH, WIRE ANGLE 10.																
0A	17.27	33.564	4.96	-	-	-	356.7	0	17.27	33.56	4.96	24.37	357.0	0		
10	16.76	33.549	-	-	-	-	346.4	10	16.76	33.55	5.11	24.48	346.3	.035		
20	14.10	33.460	5.55	-	-	-	296.9	20	14.10	33.46	5.55	25.00	296.9	.067		
29	12.72	33.523	4.52	-	-	-	265.8	30	12.63	33.53	4.47	25.35	263.6	.095		
49	11.68	33.625	3.44	-	-	-	239.4	50	11.60	33.63	3.41	25.62	237.6	.146		
69	10.44	33.822	2.84	-	-	-	203.7	75	10.28	33.85	2.80	26.03	199.0	.201		
89	10.06	33.936	2.63	-	-	-	189.1	100	9.97	34.03	1.91	26.22	180.7	.249		
103	9.95	34.048	1.86	-	-	-	179.0	125	9.88	34.13	1.83	26.31	171.8	.293		
128	9.84	34.139	1.83	-	-	-	170.5	150	9.36	34.23	1.60	26.48	156.2	.335		
153	9.28	34.246	1.53	-	-	-	153.8									

2 ( CALCOFI STATION 95.80 )

SPECIAL CRUISE 6605

2

ALEXANDER AGASSIZ, MAY 13 1966, 1736 GMT, 30 54.5N 120 44.5W, SOUNDING 2090 FM, WIND 350 FORCE 4, WEATHER OVERCAST,  
SEA VERY ROUGH, WIRE ANGLE 24.

0A	15.88	33.400	4.40U	-	-	-	338.0	0	15.88	33.40	-	24.57	338.0	0
9	15.89	33.401	5.30	-	-	-	338.2	10	15.89	33.40	5.30	24.56	338.3	.034
28	15.58	33.366	5.38	-	-	-	334.1	20	15.80	33.39	5.35	24.58	337.1	.068
36	15.27	33.326	4.93	-	-	-	330.6	30	15.50	33.36	5.32	24.62	332.9	.101
50	14.62	33.261	5.54	-	-	-	321.9	50	14.62	33.26	5.54	24.73	322.0	.167
63	14.65	33.313	5.56	-	-	-	318.7	75	14.20	33.24	5.56	24.81	315.0	.247
85	13.73	33.203	5.54	-	-	-	308.5	100	13.10	33.20	5.56	25.00	296.6	.324
103	12.94	33.204	5.56	-	-	-	293.3	125	11.43	33.34	4.88	25.43	256.0	.394
121	11.70	33.303	5.00	-	-	-	263.5	150	10.35	33.63	4.19	25.84	216.4	.454
139	10.76	33.514	4.45	-	-	-	231.8	200	9.13	33.96	3.05	26.30	172.7	.553
166	9.90	33.756	3.77	-	-	-	199.8	250	8.19	34.05	2.67	26.52	152.1	.636
198	9.20	33.951	3.04	-	-	-	174.4	300	7.46	34.09	2.00	26.66	139.0	.711
224	8.55	33.996	3.06	-	-	-	161.4	400	6.54	34.20	1.03	26.87	118.8	.845
270	7.90	34.069	2.26	-	-	-	146.6	500	5.93	34.28	.54	27.01	105.3	.963
320	7.20	34.099	1.85	-	-	-	134.8							
397	6.57	34.189	1.06	-	-	-	120.0							
475	6.09	34.273	.56	-	-	-	107.8							
556	5.54	34.299	.50	-	-	-	99.3							

3 ( CALCOFI STATION 93.81 )

SPECIAL CRUISE 6605

3

ALEXANDER AGASSIZ, MAY 14 1966, 1601 1921 GMT, 31 11.5N 121 04W (31 13N 121 13W), SOUNDING 2154 (2245), WIND 330  
FORCE 5, WEATHER OVERCAST, SEA VERY HIGH, WIRE ANGLE 30 31.

2B	15.48	33.311	5.09	-	-	-	336.1	0	15.48	33.31	5.09	24.59	336.1	0
12	15.47	33.316	5.15	-	-	-	335.5	10	15.47	33.31	5.14	24.59	335.9	.034
33	15.50	33.310	5.13	-	-	-	336.5	20	15.48	33.31	5.15	24.59	336.1	.067
50	13.34	33.226	6.29	-	-	-	299.3	30	15.50	33.31	5.14	24.58	336.5	.101
75	11.46	33.217	4.85	-	-	-	265.6	50	13.34	33.23	6.29	24.98	299.0	.165
96	10.49	33.433	4.07	-	-	-	233.3	75	11.46	33.22	4.85	25.33	265.4	.236
121	9.86	33.591	3.72	-	-	-	211.4	100	10.37	33.47	3.98	25.72	228.6	.298
150	9.26	33.827	3.51	-	-	-	184.5	125	9.76	33.62	3.69	25.94	207.7	.353
187	8.78	34.020	2.28	-	-	-	163.0	150	9.26	33.83	3.51	26.18	184.3	.403
232	8.04	34.043	2.18	-	-	-	150.5	200	8.57	34.03	2.24	26.45	159.1	.490
277	7.68	34.120	1.52	-	-	-	139.8	250	7.88	34.07	1.93	26.58	146.3	.568
366	6.68	34.169	.93	-	-	-	122.9	300	7.46	34.14	1.32	26.70	135.3	.641
462	5.80	34.193	.67	-	-	-	110.3	400	6.31	34.18	.82	26.89	117.4	.773
590	5.20	34.298	.40	-	-	-	95.5	500	5.59	34.22	.58	27.01	105.8	.890
731	4.71	34.395	.43	-	-	-	82.9	600	5.16	34.31	.40	27.13	94.2	.997
874	4.23	34.455	.52	-	-	-	73.4	700	4.81	34.38	.42	27.23	85.1	1.093
1014	3.80	34.490	.63	-	-	-	66.6	800	4.48	34.43	.48	27.30	77.9	1.183
1171	3.38	34.533	.83	-	-	-	59.4	1000	3.84	34.49	.62	27.42	67.0	1.344
1323	3.06	34.548	1.12	-	-	-	55.4	1200	3.32	34.53	.88	27.50	59.1	1.488
1427C	2.92	34.563	1.15	-	-	-	53.1	1500	2.76	34.57	1.29	27.59	51.2	1.681
1476	2.79	34.569	1.28	-	-	-	51.5	2000	2.07	34.63	1.88	27.69	41.2	1.957
1640C	2.52	34.589	1.39	-	-	-	47.8	2500	1.78	34.66	2.33	27.74	36.7	2.199
1855C	2.20	34.616	1.62	-	-	-	43.2	3000	1.63	34.67	2.56	27.76	34.9	2.427
2070C	2.02	34.638	1.98	-	-	-	40.2	4000	1.58	34.68	2.72	27.77	33.8	2.887
2260C	1.88	34.649	2.11	-	-	-	38.3							
2451C	1.81	34.657	2.24	-	-	-	37.2							
2639C	1.72	34.665	2.40	-	-	-	35.9							
2784C	1.68	34.670	2.49	-	-	-	35.3							
2928C	1.66	34.670	2.45	-	-	-	35.1							
3070C	1.61	34.669	-	-	-	-	34.8							
3217C	1.60	34.675	2.66	-	-	-	34.3							
3339C	1.58	34.676	2.60	-	-	-	34.1							
3462C	1.57	34.679	2.68	-	-	-	33.8							
3558C	1.56	34.679	2.77	-	-	-	33.7							
3633C	1.56	34.650U	2.38	-	-	-	35.9							
3708C	1.56	34.680	3.11	-	-	-	33.7							
3783C	1.56	34.679	2.77	-	-	-	33.7							
3857C	1.57	34.682	2.76	-	-	-	33.6							
3956C	1.58	34.684	2.83	-	-	-	33.5							
4054C	1.59	34.680	2.53	-	-	-	33.9							

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