UNIVERSITY OF CALIFORNIA SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6507
15 June - 11 August 1965

and

CCOFI Cruise 6509
31 August - 25 September 1965

SIO Reference 67-17

UNIVERSITY OF CALIFORNIA

SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6507
15 June - 11 August 1965

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CCOFI Cruise 6509
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Sponsored by

Marine Research Committee

SIO Reference 67-17

Approved for distribution:

W. A. Nierenberg

W. A. Nierenberg, Director

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INTRODUCTION

The data presented in this report were collected by the RV Black Douglas of the Bureau of Commercial Fisheries and by the RV Alexander Agassiz of the Scripps Institution of Oceanography on Cruise 6507 and the RV Black Douglas on Cruise 6509 of the California Cooperative Oceanic Fisheries Investigations program. 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 6404 and 6407 (Scripps Institution report, SIO Ref. 66-20) and 6504 and 6505 (SIO Ref. 67-16).

The data are accompanied by charts of horizontal distribution.

TABULATED DATA

On Cruise 6507 the data were obtained by bottle casts and by the in situ Salinity/Temperature/Depth Monitoring and Recording System (STD) and are presented in two forms:

1. When a station consisted of a bottle cast only such as those occupied by the RV Black Douglas, the data are presented in the usual fashion with bottle cast data to the left and standard depth values, interpolated and computed from the bottle cast data, to the right.

2. When a station included both a bottle cast and an STD lowering such as those on the RV Alexander Agassiz, both sets of data are shown with the bottle cast data to the left and the standard depth and computed values determined from the STD record to the right.

On Cruise 6509 only 10 meter temperature and salinity values at net tow stations were collected.

STANDARD PROCEDURES

In situ Salinity/Temperature/Depth Recorder

The manufacturer of the STD claims for the temperature an accuracy of $\pm 0.05^{\circ}C$ on all ranges with repeatability of $\pm 0.01^{\circ}C$ and for the salinity an accuracy of

±0.03‰ on all ranges with repeatability of ±0.01‰. [1] Except for the depth range corresponding to the steepest part of the thermocline, where the salinity trace appears to fluctuate more widely than the bottle samples can confirm, the results of this cruise support the manufacturer's claims.

For Cruise 6507 the close agreement between the bottle cast data and the STD records makes any corrections to the values read from the records unnecessary.

Hydrographic Casts

The observed data have been plotted and then evaluated using the method described by Klein. [2] This involves consideration of their variation as functions of density or depth and their relations to each other, and comparison with concurrent bathythermogram or STD observations and with previous or adjacent observations.

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 of the collected samples when determined by salinometer is recorded to three decimal places, provided it meets accepted standards. The values recorded "have a reproducibility of ±0.004‰ salinity at the 95 per cent probability level and a probable accuracy of ±0.01‰ salinity or better at the same level of probability." [3] 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.

On stations consisting of bottle casts only, extrapolated values and values interpolated between remote observations are not indicated but can be determined from the tabulation of observed depths. A hyphen is used to indicate a missing observed or interpolated value. The time on these stations is the time of messenger release for the bottle cast. On stations having both bottle casts and STD lowerings the first time listed in the heading

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[1] In situ Salinity/Temperature/Depth Monitoring and Recording System, Model 9006, Tech. Rep. No. 102, HYTECH Marine Products, The Bissett-Berman Corporation.

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

[3] Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.

is the time of messenger release for the bottle cast. The second time listed is the startdown time for the STD lowering usually about one-half hour before the bottle cast. When more than one bottle cast was made on station, messenger times and wire angles are given in the 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 will 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 error in measurement or a combination of these factors. Reconciled property curves from these bottle casts were used for interpolated values deeper than the 600 meter STD lowering.

FOOTNOTES

Laboratory personnel note any possible imperfections in the sealing of the sample bottles as follows:

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

Use of the above values in interpolation on stations where no STD lowering was made, depends upon consistency with other values of salinity and other properties and these footnotes are supplemented with "falls on property curve" or "does not fall on property curve," depending upon whether or not the property curve was drawn through the value.

In addition to footnotes, one special notation is used without a footnote because the meaning is always the same. Values which seem to be in error without apparent reason are indicated by the following notation:

u: uncertain value (value may be correct; occasionally it can influence the drawing of the property curve on stations where no STD lowering was made).

FORMAT

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.

FIGURES
Cruise 6509

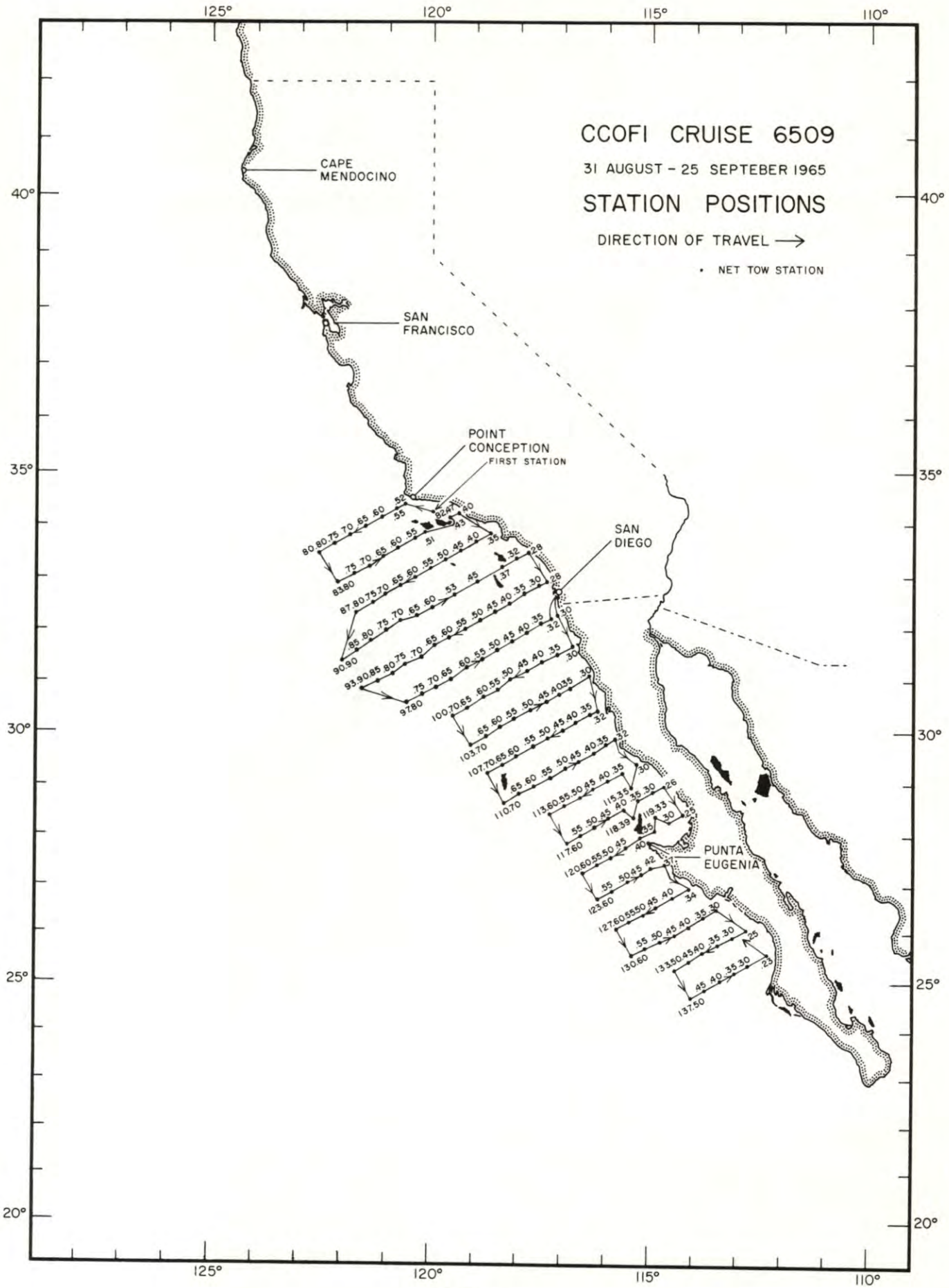
CCOFI CRUISE 6509
31 AUGUST - 25 SEPTEBER 1965
STATION POSITIONS
DIRECTION OF TRAVEL →
• NET TOW STATION
CAPE MENDOCINO
SAN FRANCISCO
POINT CONCEPTION
FIRST STATION
SAN DIEGO
PUNTA EUGENIA
125°
120°
115°
110°
40°
35°
30°
25°
20°

FIGURE 1

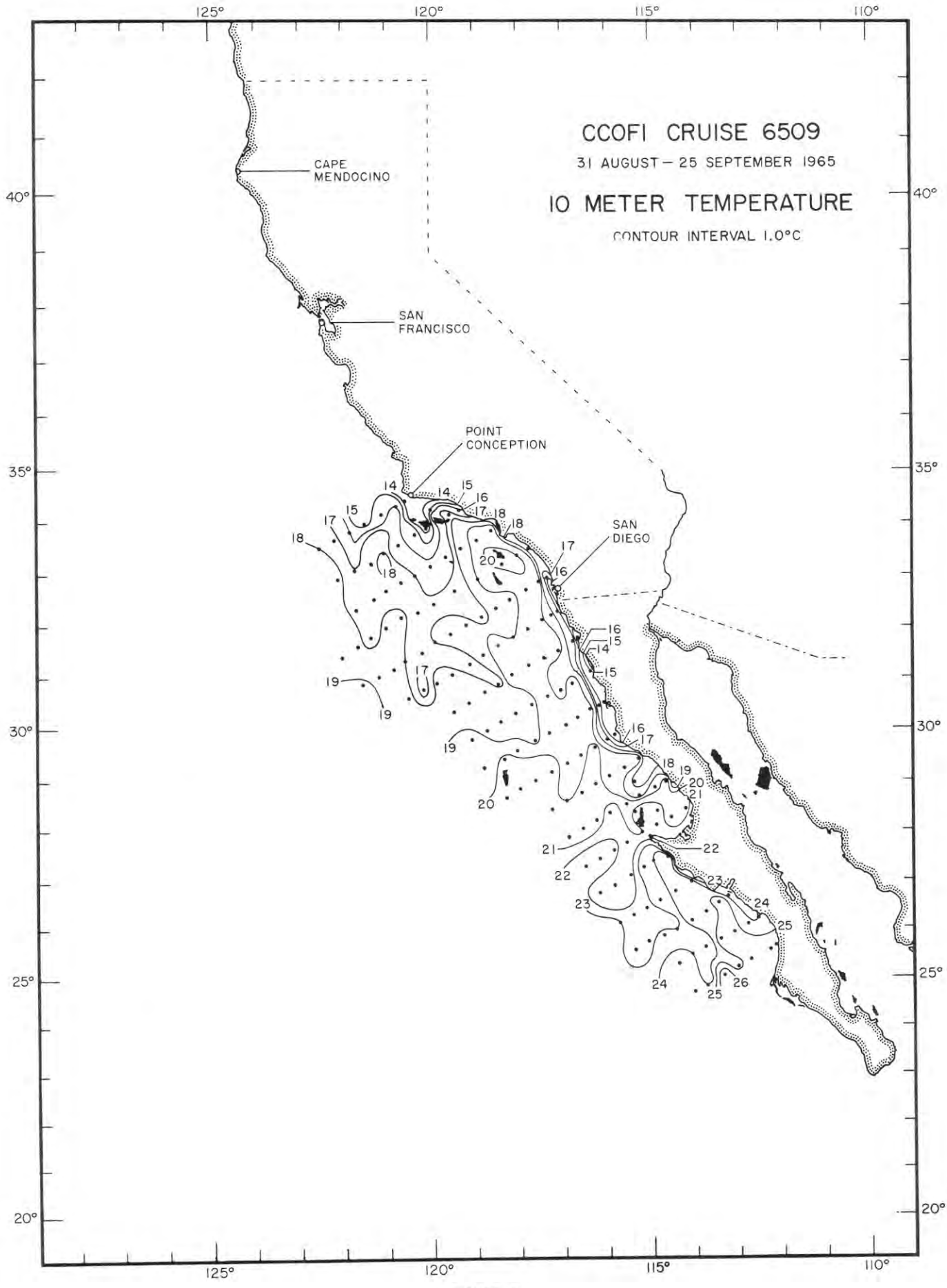
CCOFI CRUISE 6509
31 AUGUST – 25 SEPTEMBER 1965
10 METER TEMPERATURE
CONTOUR INTERVAL 1.0°C
CAPE MENDOCINO
SAN FRANCISCO
POINT CONCEPTION
SAN DIEGO
125°
120°
115°
110°
40°
35°
30°
25°
20°

FIGURE 2

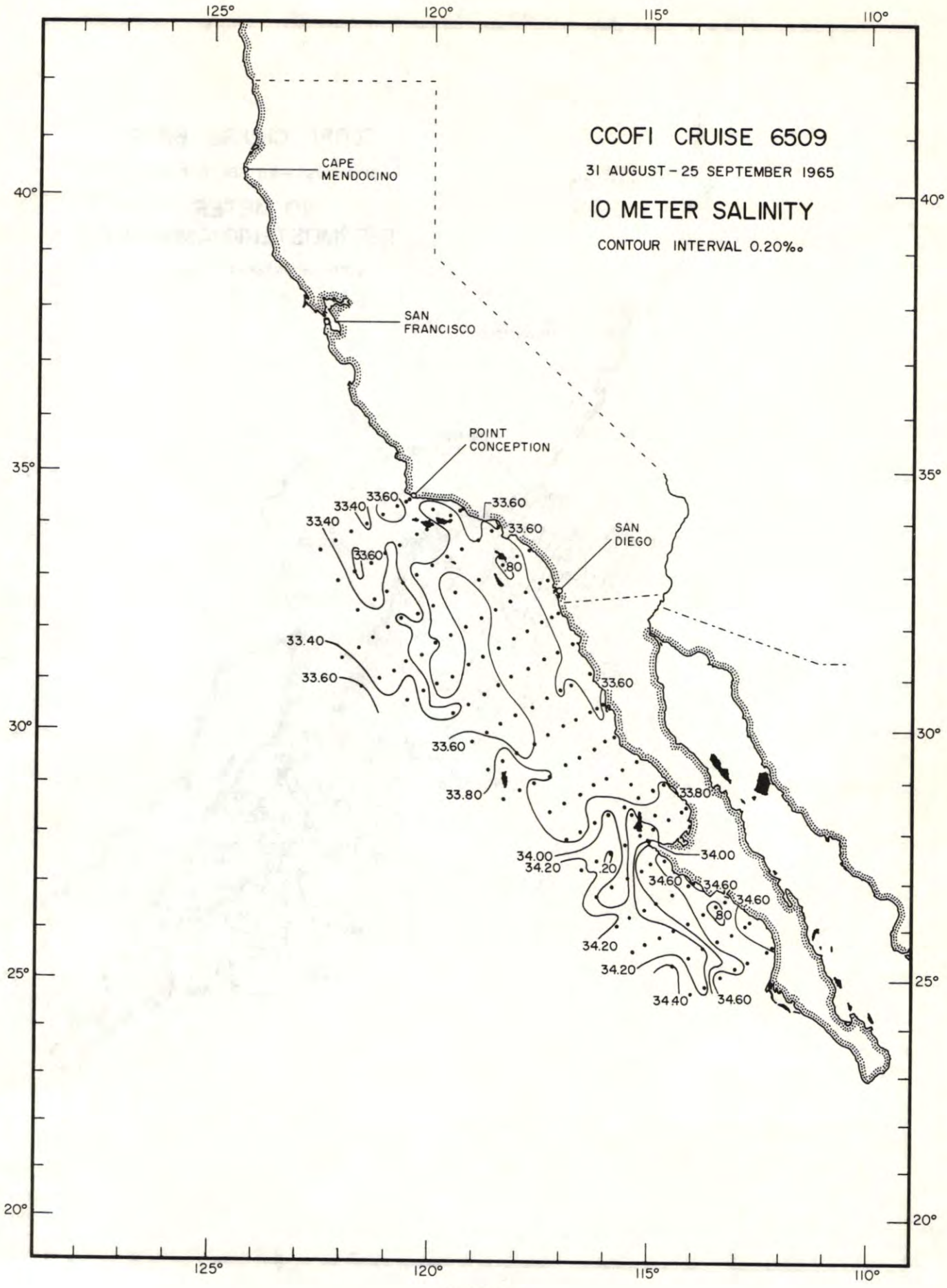
CCOFI CRUISE 6509
31 AUGUST - 25 SEPTEMBER 1965
10 METER SALINITY
CONTOUR INTERVAL 0.20‰
CAPE MENDOCINO
SAN FRANCISCO
POINT CONCEPTION
SAN DIEGO
125°
120°
115°
110°
40°
35°
30°
25°
20°
33.40
33.60
33.80
34.00
34.20
34.40
34.60

FIGURE 3

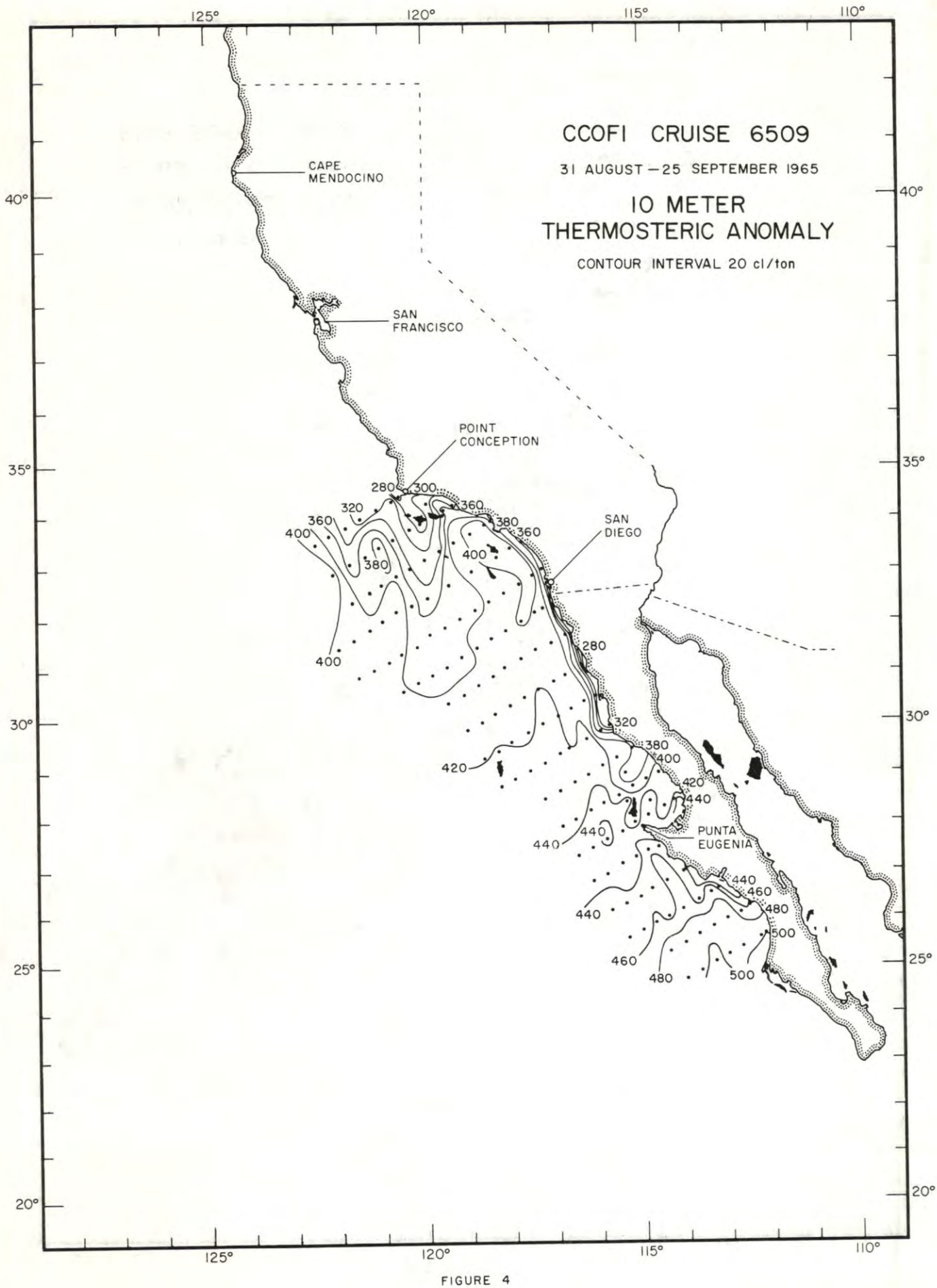
CCOFI CRUISE 6509
31 AUGUST – 25 SEPTEMBER 1965
10 METER
THERMOSTERIC ANOMALY
CONTOUR INTERVAL 20 cl/ton
CAPE MENDOCINO
SAN FRANCISCO
POINT CONCEPTION
SAN DIEGO
PUNTA EUGENIA
125°
120°
115°
110°
40°
35°
30°
25°
20°
280
300
320
360
380
400
420
440
460
480
500

FIGURE 4

PERSONNEL
Cruise 6509

SHIP'S CAPTAIN

Forster, Charles W., RV Black Douglas

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV Black Douglas

Counts, Robert C., Fishery Research Biologist, Bureau of Commercial Fisheries
Wagner, Vaughn M., Fisheries Technician, Bureau of Commercial Fisheries

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
80.50-B	VIII-31	2025	34°28.0'	120°29.0'	10	290°	5	clear	very rough	13.34	33.562	274
80.51-B	31	2120	34°26.0'	120°32.5'	80	290°	5	clear	rough	13.94	33.581	284
80.52-B	31	2245	34°24.5'	120°36.5'	150	290°	5	clear	moderate	13.60	33.575	278
80.55-B	IX-1	0015	34°19.0'	120°48.0'	430	280°	5	clear	rough	16.04	33.635	324
80.60-B	1	0245	34°09.0'	121°09.0'	1250	300°	5	overcast	rough	15.60	33.615	316
80.65-B	1	0515	33°59.0'	121°30.0'	1800	320°	4	missing	rough	14.44	33.331	313
80.70-B	1	0730	33°48.5'	121°51.0'	2050	320°	5	missing	rough	16.24	33.556	334
80.75-B	1	0950	33°38.5'	122°11.5'	2200	290°	5	missing	rough	17.40	33.448	368
80.80-B	1	1220	33°28.5'	122°32.0'	2200	320°	6	missing	very rough	18.05	33.324	392
82.47-B	VIII-31	1635	34°15.0'	119°59.0'	300	270°	3	overcast	slight	14.96	33.725	295
83.39-B	IX-2	1630	34°15.5'	119°17.5'	8	260°	2	cloudy	moderate	16.66	33.582	342
83.40-B	2	1550	34°13.5'	119°22.0'	13	260°	2	cloudy	moderate	16.23	33.571	333
83.43-B	2	1330	34°08.0'	119°34.0'	135	260°	4	cloudy	rough	17.91	33.640	366
83.51-B	2	0830	33°52.0'	120°08.5'	61	320°	7	missing	rough	13.74	33.536	284
83.55-B	2	0620	33°45.5'	120°21.5'	480	320°	6	missing	rough	15.35	33.559	315
83.60-B	2	0315	33°34.0'	120°45.0'	800	320°	6	missing	rough	16.43	33.505	342
83.65-B	2	0050	33°24.0'	121°06.0'	1980	320°	5	clear	rough	17.99	33.410	384
83.70-B	1	2230	33°12.0'	121°24.0'	1950	290°	5	partly cloudy	rough	17.52	33.437	371
83.75-B	1	1940	33°04.5'	121°46.5'	2050	330°	5	cloudy	rough	17.14	33.602	351

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
83.80-B	IX-1	1700	32°54.0'	122°07.0'	2050	320°	5	overcast	rough	18.68	33.304	409
87.32-B	2	2225	33°55.0'	118°26.5'	8	220°	2	cloudy	moderate	18.46	33.597	382
87.33-B	2	2255	33°54.0'	118°29.5'	28	230°	2	cloudy	moderate	16.74	33.550	345
87.34-B	2	2345	33°52.0'	118°33.5'	37	250°	3	cloudy	moderate	18.41	33.592	381
87.35-B	3	0110	33°50.0'	118°37.5'	260	280°	3	partly cloudy	moderate	19.47	33.625	404
87.40-B	3	0340	33°40.0'	118°58.0'	400	280°	3	missing	moderate	19.40	33.598	404
87.45-B	3	0615	33°30.0'	119°19.0'	920	290°	4	missing	rough	18.66	33.617	385
87.50-B	3	0900	33°20.0'	119°39.5'	40	290°	4	missing	rough	16.56	33.648	334
87.55-B	3	1135	33°10.0'	120°00.0'	670	290°	4	missing	rough	16.28	33.629	330
87.60-B	3	1400	33°00.0'	120°21.5'	400	280°	4	cloudy	rough	16.96	33.664	342
87.65-B	3	1635	32°50.0'	120°41.0'	1800	320°	4	overcast	rough	17.68	33.390	379
87.70-B	3	1855	32°40.0'	121°00.0'	2050	330°	5	overcast	rough	17.38	33.349	375
87.75-B	3	2125	32°31.0'	121°19.0'	2200	320°	4	overcast	very rough	17.80	33.463	376
87.80-B	4	0015	32°19.5'	121°43.0'	2200	330°	5	overcast	very rough	17.86	33.307	388
90.28-B	5	1450	33°28.5'	117°46.5'	200	230°	2	overcast	moderate	17.58	33.540	366
90.28-B	5	1600	33°29.5'	117°44.5'	10	230°	1	overcast	moderate	17.10	33.547	354
90.32-B	5	1215	33°21.0'	118°01.5'	400	230°	2	overcast	moderate	20.04	33.673	414

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
90.37-B	IX-5	0930	33°11.0'	118°22.5'	640	310°	2	overcast	moderate	20.62	33.820a)	418
90.45-B	5	0540	32°54.5'	118°55.5'	900	320°	2	overcast	moderate	18.96	33.636	391
90.53-B	5	0205	32°39.0'	119°28.5'	720	320°	4	overcast	rough	17.40	33.397	372
90.60-B	4	2235	32°25.0'	119°57.5'	480	320°	4	overcast	rough	17.17	33.694	345
90.65-B	4	2000	32°15.0'	120°19.0'	2000	310°	4	overcast	rough	17.50	33.342	378
90.70-B	4	1720	32°10.0'	120°41.5'	2150	340°	4	overcast	rough	18.44	33.456	392
90.75-B	4	1450	31°59.0'	121°00.0'	2200	340°	5	overcast	very rough	18.21	33.352	394
90.80-B	4	1200	31°47.0'	121°22.0'	2000+	310°	5	overcast	very rough	17.72	33.327	384
90.85-B	4	0910	31°36.0'	121°41.0'	2250	310°	5	overcast	rough	18.23	33.329	396
90.90-B	4	0630	31°24.0'	122°01.0'	2000	330°	5	overcast	rough	18.44	33.415	394
93.27-B	5	2035	32°57.0'	117°16.5'	10	230°	1	cloudy	slight	17.06	33.571	351
93.27-B	5	2105	32°56.0'	117°19.0'	75	230°	1	cloudy	slight	14.89	33.422	316
93.28-B	5	2225	32°54.5'	117°22.0'	300	210°	2	overcast	slight	16.49	33.561	340
93.30-B	6	0015	32°50.5'	117°31.0'	450	230°	3	cloudy	moderate	19.54	33.498	415
93.35-B	6	0250	32°40.5'	117°51.5'	350	270°	4	cloudy	moderate	19.16	33.626	396
93.40-B	6	0530	32°30.0'	118°11.5'	1050	280°	3	cloudy	rough	18.84	33.663	386
93.45-B	6	0805	32°20.0'	118°32.0'	800	250°	3	cloudy	rough	18.69	33.631	385

a) Possible evaporation.

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
93.50-B	IX-6	1040	32°10.0'	118°52.5'	820	270°	3	cloudy	rough	17.63	33.473	372
93.55-B	6	1255	32°00.0'	119°13.5'	850	300°	3	cloudy	rough	18.19	33.580	377
93.60-B	6	1535	31°50.0'	119°34.0'	1200	270°	3	overcast	moderate	18.80	33.665	385
93.65-B	6	1750	31°41.5'	119°54.0'	2000	270°	1	cloudy	moderate	18.02	33.513	378
93.70-B	6	2030	31°28.5'	120°13.0'	2000+	230°	2	partly cloudy	moderate	17.54	33.570	362
93.75-B	6	2250	31°19.5'	120°35.0'	2000	240°	3	cloudy	moderate	18.04	33.333	391
93.80-B	7	0105	31°08.0'	120°53.0'	2100	270°	3	cloudy	moderate	18.16	33.376	391
93.85-B	7	0335	31°00.0'	121°13.5'	2000+	290°	3	overcast	moderate	18.39	33.381	396
93.90-B	7	0605	30°50.5'	121°34.5'	2250	280°	3	partly cloudy	moderate	19.18	33.603	398
97.29-B	10	2315	32°19.5'	117°04.0'	-	-	-	missing	missing	14.72	33.498	306
97.29-B	10	2350	32°17.5'	117°04.5'	-	-	-	missing	missing	15.68	33.511	326
97.30-B	11	0030	32°16.0'	117°07.0'	-	-	-	missing	missing	17.55	33.551	364
97.32-B	8	1335	32°12.0'	117°15.0'	600	320°	3	cloudy	rough	18.54	33.584	385
97.35-B	8	1140	32°07.0'	117°29.0'	720	340°	4	cloudy	rough	19.24	33.634	398
97.40-B	8	0855	31°56.0'	117°48.0'	740	310°	5	cloudy	rough	19.38	33.643	401
97.45-B	8	0610	31°46.0'	118°08.5'	850	330°	5	cloudy	moderate	19.04	33.626	393
97.50-B	8	0335	31°36.0'	118°29.0'	1250	320°	4	partly cloudy	moderate	19.17	33.731	389
97.55-B	8	0115	31°25.5'	118°49.5'	575	360°	4	partly cloudy	moderate	18.30	33.513	384
97.60-B	7	2215	31°15.5'	119°10.0'	1900	340°	3	partly cloudy	moderate	17.84	33.540	372

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
97.65-B	IX-7	2010	31°01.5'	119°31.0'	2000	330°	3	partly cloudy	moderate	18.24	33.745	366
97.70-B	7	1730	30°53.0'	119°52.0'	1920	340°	4	partly cloudy	moderate	18.38	33.729	370
97.75-B	7	1500	30°45.0'	120°11.0'	2020	320°	3	cloudy	moderate	16.90	33.380	362
97.80-B	7	1200	30°35.0'	120°31.0'	2000	300°	1	missing	moderate	18.26	33.431	389
100.29-B	11	0510	31°42.0'	116°43.5'	60	300°	2	missing	moderate	15.10	33.473	316
100.30-B	11	0540	31°40.5'	116°46.5'	250	300°	2	missing	moderate	17.28	33.490	362
100.35-B	11	0845	31°30.5'	117°07.0'	600	300°	4	cloudy	rough	19.28	33.626	399
100.40-B	11	1115	31°22.5'	117°27.5'	1000	320°	4	cloudy	rough	19.11	33.647	393
100.45-B	11	1345	31°12.0'	117°48.5'	840	310°	4	cloudy	very rough	19.36	33.692	397
100.50-B	11	1700	31°02.5'	118°11.0'	830	320°	4	cloudy	rough	19.31	33.719	393
100.55-B	11	1925	30°50.5'	118°27.5'	1300	320°	4	cloudy	rough	17.90	33.418	382
100.60-B	11	2200	30°41.0'	118°47.0'	1650	300°	4	partly cloudy	moderate	18.37	33.406	393
100.65-B	12	0025	30°29.0'	119°09.5'	1900	320°	3	partly cloudy	rough	18.40	33.436	392
100.70-B	12	0255	30°19.0'	119°29.0'	2000+	320°	3	partly cloudy	rough	18.46	33.400	396
103.29-B	13	0640	31°07.0'	116°21.0'	18	300°	3	missing	very rough	13.64	33.578	279
103.29-B	13	0725	31°08.0'	116°19.0'	9	300°	3	missing	very rough	13.53	33.525	280
103.30-B	13	0555	31°06.0'	116°24.5'	40	300°	4	missing	very rough	15.24	33.493	317
103.35-B	13	0220	30°51.5'	116°49.0'	1100	320°	5	partly cloudy	very rough	19.34	33.639	399
103.40-B	12	2310	30°45.0'	117°04.5'	900	320°	5	partly cloudy	very rough	18.44	33.584	382

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
103.45-B	IX-12	2050	30°36.5'	117°21.5'	1100	320°	5	partly cloudy	very rough	19.48	33.688	400
103.50-B	12	1815	30°26.0'	117°44.5	1430	330°	5	partly cloudy	rough	18.90	33.683	386
103.55-B	12	1525	30°16.0'	118°05.0'	1250	330°	4	partly cloudy	rough	18.58	33.577	386
103.60-B	12	1245	30°06.0'	118°25.0'	1650	320°	4	overcast	rough	18.32	33.473	387
103.65-B	12	1015	29°56.5'	118°44.0'	1800	330°	4	cloudy	moderate	18.91	33.588	393
103.70-B	12	0725	29°46.5'	119°04.0'	1850	330°	4	cloudy	slight	19.42	33.705	397
107.30-B	13	1205	30°30.0'	116°03.5'	8	-	1	partly cloudy	moderate	15.36	33.626	310
107.31-B	13	1255	30°28.0'	116°07.0'	24	-	1	partly cloudy	moderate	15.88	33.647	320
107.32-B	13	1335	30°26.0'	116°11.0'	200	310°	2	partly cloudy	moderate	16.87	33.480	354
107.35-B	13	1510	30°21.5'	116°22.5'	900	320°	4	cloudy	rough	19.30	33.688	395
107.40-B	13	1830	30°12.0'	116°41.5'	1380	300°	5	partly cloudy	rough	19.34	33.662	398
107.45-B	13	2100	30°03.0'	116°59.5'	1200	320°	5	partly cloudy	very rough	19.53	33.704	400
107.50-B	13	2345	29°54.0'	117°20.0'	1400	320°	5	partly cloudy	very rough	19.42	33.607	405
107.55-B	14	0220	29°44.0'	117°39.0'	1640	330	6	partly cloudy	very rough	18.98	33.605	394
107.60-B	14	0500	29°32.5'	118°01.5'	1850	330°	4	partly cloudy	very rough	19.14	33.600	398
107.65-B	14	0755	29°21.0'	118°21.0'	1500	320°	4	cloudy	very rough	20.15	33.807	408
107.70-B	14	1035	29°11.0'	118°41.0'	1700	320°	4	cloudy	very rough	19.62	33.753	399
110.32-B	15	1220	29°52.0'	115°48.0'	14	300°	5	fog	rough	15.81	33.641	319
110.35-B	15	1025	29°46.0'	116°00.0'	700	300°	5	missing	rough	17.40	33.620	356

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
110.40-B	IX-15	0720	29°36.0'	116°18.0'	1250	300°	5	missing	rough	20.18	33.781	411
110.45-B	15	0435	29°25.5'	116°38.0'	400	320°	5	partly cloudy	rough	19.46	33.670	400
110.50-B	15	0215	29°17.0'	116°55.5'	1850	310°	5	partly cloudy	rough	19.64	33.676	404
110.55-B	14	2330	29°06.5'	117°17.0'	1800	330°	5	clear	rough	20.29	33.795	412
110.60-B	14	2055	28°56.5'	117°38.0'	1800	340°	4	partly cloudy	rough	20.28	33.783	412
110.65-B	14	1800	28°46.0'	117°59.0'	1850	360°	5	partly cloudy	very rough	20.50	33.828	415
110.70-B	14	1510	28°36.5'	118°18.0'	2000+	330°	5	cloudy	very rough	20.13	33.847	405
113.28-B	15	1810	29°25.0'	115°11.5'	8	300°	3	fog	moderate	17.94	33.658	365
113.29-B	15	1848	29°24.0'	115°13.0'	14	300°	5	fog	moderate	17.44	33.640	355
113.30-B	15	2000	29°22.0'	115°18.0'	30	300°	5	fog	very rough	19.20	33.738	389
113.35-B	16	0310	29°11.5'	115°38.0'	600	320°	5	overcast	very rough	19.26	33.684a)	395
113.40-B	16	0540	29°02.0'	115°57.0'	850	320°	5	missing	very rough	19.89	33.733	407
113.45-B	16	0810	28°52.0'	116°18.0'	1200	320°	5	overcast	very rough	20.16	33.737	413
113.50-B	16	1035	28°41.5'	116°36.5'	1600	300°	4	overcast	very rough	20.08	33.787	408
113.55-B	16	1300	28°32.0'	116°57.0'	1900	310°	4	overcast	very rough	20.04	33.742	410
113.60-B	16	1515	28°22.0'	117°16.5'	2000	310°	3	overcast	very rough	20.14	33.711	415
115.35-B	15	2345	28°54.5'	115°25.0'	500	300°	4	overcast	rough	17.96	33.653	366

a) Possible evaporation.

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
117.24-B	IX-17	1825	28°58.5'	114°36.5'	10	320°	1	cloudy	moderate	18.72	33.762	376
117.25-B	17	1800	28°58.0'	114°37.0'	30	320°	1	cloudy	moderate	19.08	33.729	387
117.26-B	17	1715	28°56.0'	114°41.5'	40	320°	2	overcast	moderate	20.41	33.834	413
117.30-B	17	1440	28°48.0'	114°56.5'	55	-	1	overcast	slight	19.18	33.702	392
117.35-B	17	1220	28°38.0'	115°16.0'	125	-	1	overcast	slight	18.84	33.698	384
117.40-B	17	0645	28°28.0'	115°35.5'	450	280°	4	overcast	rough	20.82	33.921	416
117.45-B	17	0350	28°18.0'	115°56.0'	1600	310°	3	overcast	rough	21.56	34.058	426
117.50-B	17	0120	28°08.0'	116°15.0'	2200	270°	2	overcast	moderate	20.65	33.806	421
117.55-B	16	2247	27°58.0'	116°34.5'	2200	310°	1	overcast	moderate	20.32	33.763	415
117.60-B	16	2010	27°48.0'	116°53.0'	1900	300°	3	overcast	moderate	20.31	33.787	413
118.39-B	17	0850	28°18.5'	115°23.5'	120	230°	3	overcast	rough	21.36	34.050	421
119.33-B	18	0630	28°19.0'	114°53.0'	63	var.	3	overcast	moderate	21.22	33.836	433
120.22-B	17	2315	28°28.0'	114°04.0'	8	240°	2	partly cloudy	slight	21.72	33.909	441
120.23-B	17	2350	28°27.0'	114°06.5'	13	260°	3	partly cloudy	slight	20.68	33.894	416
120.24-B	18	0035	28°25.0'	114°10.5'	18	270°	1	partly cloudy	slight	21.06	33.834	429
120.25-B	18	0130	28°22.5'	114°15.0'	31	260°	3	partly cloudy	slight	20.88	33.837	424
120.30-B	18	0350	28°13.0'	114°34.0'	50	210°	3	partly cloudy	moderate	20.36	33.891	407
120.35-B	18	0900	28°03.0'	114°54.0'	47	200°	4	overcast	moderate	21.58	34.010	430
120.40-B	18	1155	27°56.5'	115°14.0'	23	280°	4	drizzle	moderate	20.98	34.146	404

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
120.45-B	IX-19	2310	27°43.0'	115°33.0'	1200	310°	4	partly cloudy	moderate	21.49	33.985	429
120.50-B	20	0130	27°33.0'	115°52.5'	2200	310°	3	partly cloudy	moderate	22.55	34.220	441
120.55-B	20	0350	27°23.0'	116°12.0'	1900	310°	4	partly cloudy	moderate	22.03	34.090	436
120.60-B	20	0610	27°13.0'	116°30.5'	2150	300°	4	partly cloudy	moderate	22.53	34.255	437
123.35-B	21	0055	27°24.0'	114°32.0'	10	280°	5	partly cloudy	high	22.82	34.468	431
123.36-B	21	0005	27°26.0'	114°36.0'	25	300°	5	clear	high	23.52	34.606a)	439
123.37-B	20	2320	27°24.0'	114°40.0'	35	300°	6	clear	high	24.38	34.682	458
123.42-B	20	2040	27°20.0'	114°59.0'	600	300°	5	partly cloudy	rough	24.02	34.522	459
123.45-B	20	1845	27°12.5'	115°11.0'	2150	330°	4	partly cloudy	moderate	23.18	34.478	439
123.50-B	20	1545	27°03.0'	115°30.0'	1900	340°	4	cloudy	moderate	21.32	33.950	427
123.55-B	20	1300	26°51.0'	115°51.5'	2000	310°	4	overcast	moderate	21.36	33.975	427
123.60-B	20	1030	26°41.5'	116°10.5'	2000	300°	4	cloudy	moderate	21.56	34.004	430
127.33-B	21	0530	26°58.5'	114°00.5'	10	360°	5	partly cloudy	moderate	22.97	34.580	426
127.33-B	21	0610	26°57.5'	114°02.0'	35	360°	4	partly cloudy	moderate	23.98	34.637	450
127.34-B	21	0710	26°55.0'	114°06.5'	45	360°	4	partly cloudy	moderate	24.14	34.606	456
127.40-B	21	1010	26°43.0'	114°29.5'	1700	320°	4	partly cloudy	moderate	24.24	34.568	462
127.45-B	21	1230	26°33.0'	114°51.0'	1850	340°	4	partly cloudy	rough	23.46	34.404	452

a) Possible evaporation.

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
127.50-B	IX-21	1450	26°23.0'	115°08.0'	1400	340°	3	partly cloudy	rough	22.86	34.281	444
127.55-B	21	1720	26°15.0'	115°27.0'	1950	340°	5	clear	rough	22.46	34.150	443
127.60-B	21	1945	26°06.0'	115°45.0'	2050	340°	5	clear	rough	23.04	34.163	458
130.25-B	22	2045	26°38.0'	113°11.0'	9	220°	2	clear	slight	23.46	34.715	430
130.26-B	22	2005	26°37.0'	113°31.0'	16	030°	1	clear	slight	23.50	34.701	432
130.28-B	22	1805	26°33.0'	113°21.0'	29	030°	3	clear	moderate	25.10	34.806	470
130.30-B	22	1650	26°29.0'	113°29.0'	43	030°	4	clear	moderate	25.62	34.906	477
130.35-B	22	1350	26°19.0'	113°47.5'	200	340°	2	partly cloudy	moderate	24.24	34.629	458
130.40-B	22	1100	26°07.0'	114°06.5'	1250	300°	3	missing	moderate	24.20	34.485	467
130.45-B	22	0805	25°58.0'	114°26.0'	1900	320°	4	missing	rough	22.98	34.129	459
130.50-B	22	0535	25°49.0'	114°45.0'	1950	330°	4	missing	rough	23.14	34.129	463
130.55-B	22	0305	25°41.0'	115°05.5'	2020	340°	4	missing	rough	22.69	34.153	449
130.60-B	22	0030	25°32.0'	115°23.0'	2080	330°	4	clear	rough	22.29	34.079	444
133.19-B	24	0205	26°13.5'	112°26.0'	8	270°	2	partly cloudy	slight	24.32	34.487	470
133.21-B	24	0305	26°12.5'	112°32.0'	27	270°	1	missing	slight	23.14	34.423	442
133.23-B	24	0400	26°08.5'	112°40.0'	40	270°	2	missing	slight	24.56	34.501	476
133.25-B	24	0525	26°04.5'	112°48.0'	45	270°	3	missing	moderate	24.52	34.474	477
133.30-B	24	0810	25°55.0'	113°07.0'	110	310°	4	missing	moderate	25.44	34.707	487
133.35-B	24	1100	25°45.0'	113°27.5'	400	320°	5	missing	rough	25.14	34.621	484

DATA AT NET TOW STATIONS										10 METERS		
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)	Wind Dir	Wind Force	Weather	Sea	T °C	S ‰	δ_T cl/ton
133.40-B	IX-24	1340	25°36.5'	113°47.5'	1800	310°	5	cloudy	rough	23.90	34.148	483
133.45-B	24	1640	25°25.0'	114°05.0'	2000	330°	5	partly cloudy	very rough	24.04	34.171	485
133.50-B	24	1920	25°13.5'	114°25.0'	2050	330°	5	cloudy	very rough	24.54	34.401	483
137.20-B	25	1650	25°40.0'	112°07.0'	6	300°	1	partly cloudy	moderate	25.60	34.710	491
137.21-B	25	1605	25°38.0'	112°11.0'	15	300°	1	clear	moderate	25.69	34.634	500
137.22-B	25	1520	25°36.0'	112°15.0'	30	-	1	partly cloudy	moderate	25.49	34.599	496
137.23-B	25	1425	25°34.0'	112°19.0'	40	-	1	partly cloudy	moderate	25.34	34.607	491
137.30-B	25	1100	25°20.0'	112°46.0'	180	320°	4	cloudy	rough	25.46	34.620a)	494
137.35-B	25	0815	25°10.0'	113°04.5'	650	320°	4	cloudy	rough	24.89	34.507	485
137.40-B	25	0515	25°00.0'	113°23.5'	1650	320°	5	missing	rough	26.38	34.703	515
137.45-B	25	0230	24°49.0'	113°44.5'	1850	320°	4	cloudy	rough	24.00	34.176	484
137.50-B	24	2345	24°39.5'	114°03.0'	2000	320°	5	cloudy	rough	24.70	34.322	493

a) Possible evaporation.

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