HYSIGAT, AND CHEMICAL DATA REPORT

CCOFI Cruises 6504. 6505 (El Galfa II)

data report

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6504 31 March - 24 April 1965

and

CCOFI Cruise 6505 (El Golfo II) 14 May - 17 June 1965

SIO Reference 67-16

UNIVERSITY OF CALIFORNIA

SCRIPPS INSTITUTION OF OCEANOGRAPHY

PHYSICAL AND CHEMICAL DATA

CCOFI Cruise 6504 31 March - 24 April 1965

Sponsored by Marine Research Committee

and

CCOFI Cruise 6505 (El Golfo II) 14 May - 17 June 1965

Sponsored by Marine Research Committee and the National Science Foundation

SIO Reference 67-16

Approved for distribution:

W. A. Nierenberg, Director

CONTENTS

INTRODUCTION	•					٠	٠	٠	,			٠		•	•	•	٠	iii
CRUISE 6504																		
List of Figures																		viii
Personnel																		х
Tabulated Data					9.													1
CRUISE 6505 (El Goli	fo :	II)																
List of Figures												•		•				xii
Personnel																		xiv
Tabulated Data																		27
DISTRIBUTION LIST										rigo.								25

INTRODUCTION

The data presented in this report were collected by the RV <u>Black Douglas</u> of the Bureau of Commercial Fisheries and the RV <u>Alexander Agassiz</u> of the Scripps Institution of Oceanography on Cruise 6504 of the California Cooperative Oceanic Fisheries Investigations program and the RV <u>Alexander Agassiz</u> on Cruise 6505 (EL GOLFO II). 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 6501 (Scripps Institution report, SIO Ref. 66-4) and 6404 and 6407 (SIO Ref. 66-20).

On Cruise 6504 the RV <u>Alexander Agassiz</u> made three-bottle casts in the mixed layer for temperature, salinity and inorganic phosphate-phosphorus at each net haul station. These data are reported with the net haul information.

El Golfo II had as its primary objective an examination of the vertical distribution of zooplankton of the Gulf of California immediately after the conclusion of the winter north winds. This study was a repetition in a different season of El Golfo I (6311-12), when similar collections were made to determine zooplankton vertical distribution immediately after the conclusion of the summer southerly winds. Vertically stratified plankton samples were obtained at 10 depths using standard CalCOFI nets modified to open and close at desired fishing depths. Opening and closing of the nets was accomplished by a strangling noose across the throat of the net that was loosened and tightened by a Leavitt-type, messenger-activated, release mechanism. Oblique samples were obtained at 100-meter intervals between the depth of 100 meters and the surface. Vertically stratified samples were obtained at mid-day and again at midevening on each station; an attempt was made at every second station to obtain two day and two night sets. In addition to net tows, hydrographic casts and bathythermographs were made. Direct current measurements were obtained by parachute drogues set out at plankton-sampling depths.

Continuing a long-range program of sampling the coastal plankton of the Americas, stations were occupied at intervals of 30 to 60 miles along the Pacific coastline of Mexico as far south as the Gulf of Tehuantepec. At shore stations a skiff was launched to sample surface waters with a half-meter plankton net just seaward of the surf zone, as well as half way between the surf zone and the ship which lay to between the 15- and 20-fathom isobaths. Net tows and bathythermographs were taken from the ship to complete the short transect of three or more samples arranged perpendicular to the shoreline. Off the southern Mexican coast otter trawl samples were also taken on sandy bottoms roughly between 10 and 20 fathoms.

Gravity cores were obtained systematically at stations roughly equivalent to every second skiff-station as well as at various localities within the Gulf of California.

Only data from the hydrographic casts and temperature and salinity data at net tow stations are included in this report.

The data are tabulated at observed depths; the interpolated and computed values are tabulated at standard depths and for Cruise 6504 are accompanied by charts of horizontal distribution.

STANDARD PROCEDURES

Processing of the data was carried out using the method described by Klein. $\frac{1}{2}$ The 125-meter level was introduced into the integration to obtain greater accuracy in the determination of ΔD .

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 ±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." The values are recorded to two decimal places where 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.

^{1/}Klein, Hans T. A new technique for processing physical oceanographic data. MS.

^{2/}Quotation from Department of Oceanography, University of Washington, Tech. Rep. No. 66, UW Ref. 60-18, October 1960.

Tabulated Data

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:

Depth in mete	rs
Temperature	°C
Salinity	%
Oxygen	ml/L
Phosphate	μg at/L
Silicate	μg at/L
Nitrite	μg at/L
$\delta_{\mathbf{T}}$	cl/ton
$\sigma_{\mathbf{T}}$	g/L
$\Delta { m D}$	dyn m
	Temperature Salinity Oxygen Phosphate Silicate Nitrite

Extrapolated values and values 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 is the time of messenger release. When more than one cast was made on a station messenger times and wire angles are given in the order of increasing depth and a significant change in position during a multiple cast is listed similarly. Multiple casts are indicated by a footnote letter following all observed depths of each cast except the cast originating at the surface.

On stations where more than one cast is lowered, the various property curves may not agree perfectly. This discrepancy may be caused by changes in geographical position, real property changes with time, slight error in measurement, or a combination of these factors. Stations with overlapping casts have the following footnote: Overlapping casts; reconciliation of property curves when necessary.

FOOTNOTES

Laboratory personnel note any possible imperfections in the sealing of the 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 or 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 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 the property curve was drawn through the value or not.

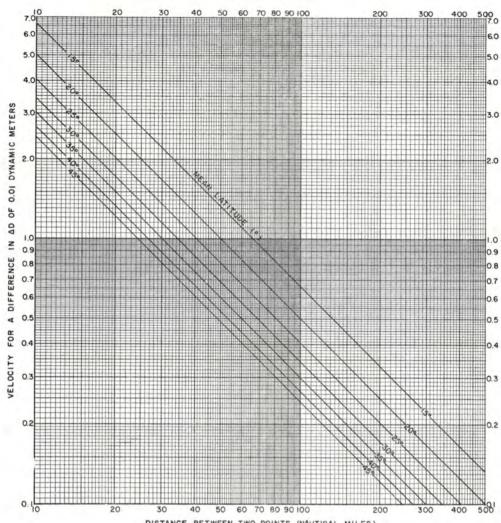
In addition to footnotes, a special notation is used without a footnote because its meaning is always the same.

Values which are not drawn through because they 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).

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.



DISTANCE BETWEEN TWO POINTS (NAUTICAL MILES)
VELOCITY OF GEOSTROPHIC FLOW
(NAUTICAL MILES PER DAY)

crusec	0	1	2	3	4	5	6	7	8	9
0	NM/DAY	0.02	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	9.32	0.41	0.43		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 25.64	1.09	1.11 26.57	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 35.90	1.52	1.53
80	1.55	1.57	1.59 38.23	1.61	1.63	1.65	1.67	1.69	1.71	1.73
90	1.75	177 42.42	1.79	1.81	1.83	1.85	1.86	1.88	1.90	1.92
100	1.94	1.96	1.98	200	2.02	2.04	2.06	2.08	2.10	2.12

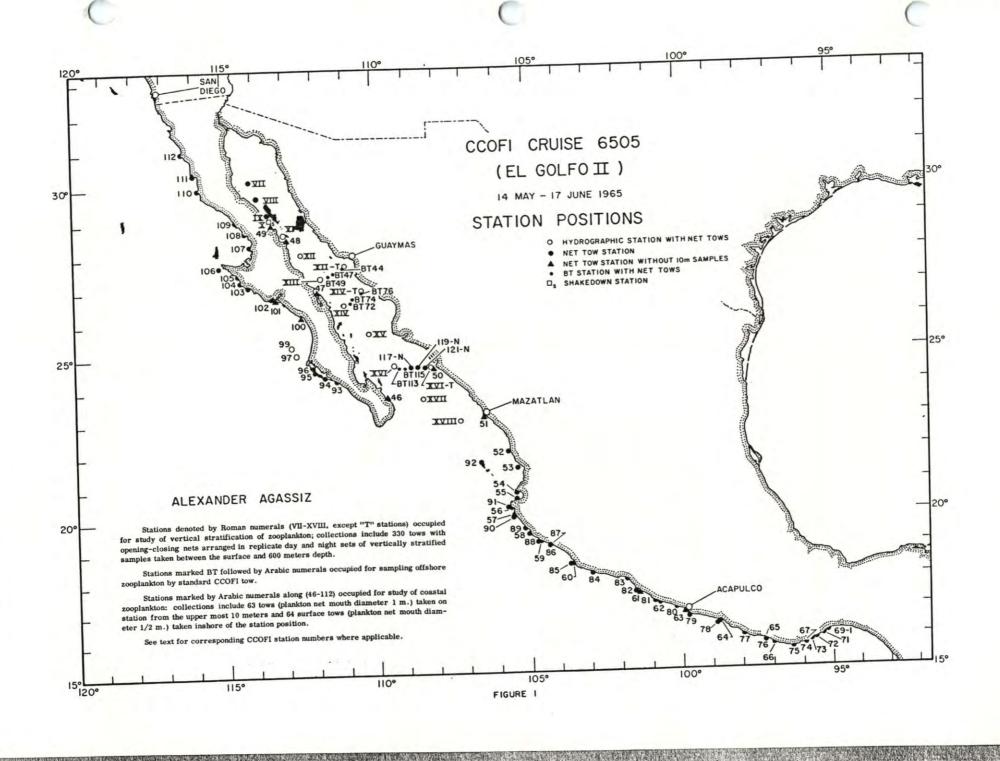
CONVERSION TABLE

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

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

FIGURES Cruise 6505 (El Golfo II)

1. CCOFI Cruise 6505 (El Golfo II), station positions



PERSONNEL Cruise 6505 (El Golfo II)

SHIP'S CAPTAIN

Davis, Laurence, RV Alexander Agassiz

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

RV Alexander Agassiz

Fleminger, Abraham, (chief scientist)
Brennen, Robert E., Senior Marine Technician
Brown, Daniel, Principal Marine Technician
*Bryan, Walter R., Senior Marine Technician
*Crowe, Fred J., Laboratory Assistant
*Davoll, Peter J., Marine Technician
**Jerde, Charles, Postgraduate Research Biologist
Matsui, Tetsuo, Postgraduate Research Biologist
*Mead, Richard V., Principal Marine Technician
Pine, James S., Senior Marine Technician
Shane, Gillian, Assistant Specialist Biologist
Soutar, Andrew, Laboratory Technician
Trowbridge, Ann P., Laboratory Technician
*Wilson, Warren E., Marine Technician

^{*}San Diego to Mazatlan.

^{**}Mazatlan to San Diego.

	089	ERVED	LEV	ELS	0 F	DEP	ТН	STA	NDAR	DLE	VEES	0 F	DEPT	н
			INPUT				COMPUTED		INP	UT			COMPUTED)
2	т	S	DXY	PHO	SIL	NIT	D*T	Z	Т	S	OXY	SIG*T	D*T	DO
XI						C	COF1 6505	EL GOLFO	11				116G.	.24
		SSIZ, MAY		. 1649	GCT, 28	37.5N	112 56W, S	DUNDING 640	FM4 WIND	030 FOR	CE 3# WE	ATHER CL	EAR,	
0	16.50	35.122	4.38	1.91	32	0.41	225.9	0	16450	35.12	4.38	25.74	226.1	
10	16.15	35.108	4.26	2.10	33	0.38	219.9	10	16.18	35211	4.26	25181	219.7	.02
49	15.84	35.085	3.93	2.19	37 40	0.40	214.2	20 30	16301	35.10	4.13	25184	216.8	.04
73	14.40	35.063	3.15	2.50	45	0.12	185.5	50	15.31	35107	3193	25.98	214.1	.10
99	14.17	35:061	3.12	2.52	45	0.11	181.0	75	14.39	35206	3115	26317	185.6	.15
124	13.93	35.060	2.89	2.51	48	0.06	176.3	100	14.15	35.06	3.11	26:22	180.7	.21
149	13.65	35.056 35.057	2.74	2.65	51	0.02	171.0	125 150	13492	35.06	2.88	26.27	176.1	.2
248	13.14	35.026	2.46	2.76	56	0.01	163.3	200	13.42	35.06	2163	26.37	166.2	.3
297	12.76	34.977	2.23	2.86	56	0.03	159.7	250	13113	35102	2145	26140	163.5	-4
396 493	12.42	34.938	2.12	2.86	58 58	0.00	156.2	300	12.73	34197	2.22	26.44	159.6	- 5
591	12.20	34.916	2.06	2.83	60	0.00	155.3	400 500	12,33	34.94	2.11	26.48	155.8	. 7
689	12.08	34.907	1.99	2.86	60	0.00	152.2	600	12319	34391	2105	26.50	154.0	1.0
787	11.93	34.892	1.88	2.91	62	0.00	150.6	700	12407	34.91	1198	26.52	151.8	1.2
886	11.82	34.881	1.88	2.91	62	0.01	149.4	900	11.490	34.89	1788	26154	150.2	1.3
985	11.72	34.868	1.63	2.96	66	0.01	148.5	1000	11.70	34.87	•	26.56	148.0	1.7
KII							COFI 6505	EL GOLFO					120G-	22
	NDER AGA	SSIZ, MAY	17 1965	, 1525	GCT, 28			NDING 500 FM		80 FORCE	34 WEAT	HER CLEA		. 32
EA S	NOOTH, W	IRE ANGLE	19.											
0	21.28	35.329	5.37	0.93	7	0.03	326.5	0	21 228	35.33	9137	24.69	326.4	
23	19.43	35.288	5.35	1.03	10	0.11	302.7 285.8	10	19361	35129	5133	24.95	301.5	.0
47	17.36	351142	4.10	1.85	17	0.45	243.9	30	18497	35.22	4168	25422	276.2	.0
66	15.50	351058	3.05	2.38	28	0.07	208.8	50	16194	35112	3189	25164	235.9	.1
85	15121	351043	3.02	2.44	30	0.06	203.8	75	15.33	33105	3104	24.42	352.0	.2
42	14.98	35.026	2.81	2.49	31	0.04	186.7	100 125	15308	35.01	2.64	26.07	195.1	.3
90	13.36	34.944	2.08	2.73	45	0.02	173.6	150	14.02	34.98	2.31	26.19	183.9	.31
238	12.53	34.887	1.54	2.94	49	0.00	162.0	200	13.18	34.93	1.98	26.32	171.1	.4
285	12.26	34.868	1.34	3.00	51	0.01	158.3	250	12.43	34.88	1.45	26.43	160.6	.5
333	11.49	34.813	1.09	3.01	53 58	0.00	148.5	400	12.05	34.85	.73	26.48	155.8	.6
29	9.48	34.676	.53	3.19	66	0.00	125.1	500	8.39	34.62	-40	26.72	133.4	.7
77	8.69	34.640	.43	3.22	72	-	115.6	600	7.20	34.56	.28	27.07	100.5	1.0
572	7.54	34.575	-28	3.37	82	-	104.0	700	6.03	34.54	.30	27.21	87.1	1.1
70	5.44	34.543	.32	3.49	93	-	90.5 79.7	800	5.40	34.55	.25	27.29	78.9	1.2
111						C	COF1 6505	EL GOLFO	11				126G.	88
		SSIZ, MAY ANGLE 07.	19 1965	, 1131	GCT, 27	42N 11	0 57W, SOU	NDING 305 FM	WIND O	40 FORCE	2 WEAT	HER CLOU	DY, SEA	
0	23.36	35.322	5.59	0.76	1	0.00	383.0	0	23.36	35.32	5159	24.09	383.2	
10	23.29	35.314	5.26	0.76	2	0.04	381.7	10	23.29	35.31	5126	24.10	382.0	.03
40	20.00 18.40	35.175	4.26	1.06	9	0.06	271.1	20 30	22.22	35.26	5137	24.37	356.4	.10
50	17.37	35.004	3.41	1.83	14	0.61	254.1	50	17.37	35.00	3.41	25.44	254.4	.10
64	16.05	34.946	2.68	2.23	20	0.09	228.9	75	15.75	35.02	2475	25.84	217.0	.2
79	15.61	35.032	2.77	2.42	25	0.04	213.1	100	14.61	34.94	2.11	26.03	198.8	.2
99	14.62	34.940	2.11	2.58	30	0.01	199.0	125	14.25	34.92	1175	26.09	193.0	- 3
	14.26	34.925	1.76	2.67	35	0.00	192.8	150 200	13.72	34.82	1.40	26.19	183.1	-3
	13.40	34.888	1.23	2.86	41	-	178.5	250	12.20	34.82	181	26.43	160.8	.5
44	12.67	34.814	.81	2.90	42	-	169.9	300	11.86	34.83	1.08	26.50	153.9	.6
74		7/ 017	.58	2.95	45	-	163.1	400	10-18	34.73	.55	26.73	132.3	.7
144 174 203 233	12.30	34.813												
144 174 203 233 272	12.30	34.836	1.06	3.00	49	-	157.8	500	8.25	34.61	132	26.95	111-4	.9
144 174 203 233 272 330	12.30 12.10 11.50	34.836	1.06	3.00	54		149.0	500	8.25	34.61	132	26.95	111.4	.91
144 174 203 233 272	12.30	34.836	1.06	3.00		-		500	8.25	34.61	132	26.95	111.4	.9

		IRE ANGLE		2, 2,55	0017 20	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		0001101110		,					
0	25.69	35.263	5.14	0.74	4	0.01	454.1		0	25.69	35.26	5114	23.35	454.3	0
10	23.78	35.275	5.47	0.84	3	0.01	398.2		10	23.78	35.28	5 6 4 7	23.94	397.8	.043
25	20.71	35.135	6.00	0.98	4	0.03	325.8		20	21.75	35.19	5.91	24.45	348.9	.080
50	16.76	34.958	3.17	2.09	18	0.36	243.7		30	19.55	35.07	5437	24.95	301.2	.113
70	15.90	34.957	2.68	2.32	21	0.10	224.8		50	16.76	34.96	3.17	25.56	243.5	-167
90	15.04	34.931	2.18	2.50	27	0.06	208.4		75	15.68	34.95	2.53	25.80	220.6	-226
119	13.80	34.893	1.31	2.78	36	0.02	185.9		100	14.55	34.91	1.83	26.02	199.8	.279
149	13.36	34.880	1.03	2.89	41	0.01	178.3		125	13.70	34.89	1.25	26.18	184.2	.328
198	12.47	34.828	.73	2.88	43	0.01	165.2		150	13.35	34.88	1.03	26.25	178.1	.374
247	11.92	34.810	.76	3.00	47	0.00	156.4		200	12.44	34.83	.73	26.39	164.5	-462
295	11.10	34.764	.49	3.06	48	0.01	145.3		250	11.87	34.81	.75	26.49	155.5	.545
345	10.46	34.723	.55	3.11	54	0.00	137.5		300	11.03	34.76	.50	26.60	144.4	.623
393	9.58	34.658	.36	3.17	60	-	128.0		400	9.48	34.65	.37	26.79	127.0	.766
441	8.96	34.626	.38	3.19	65	-	120.7		500	8.20	34.59	.33	26.94	112.1	.894
490	8.32	34.595	.33	3.27	70	-	113.5		600	7.17	34.56	.30	27.07	100.1	1.010
587	7.28	34.562	.29	3.35	80	-	101.4		700	6.31	34.54	.33	27.17	90.5	1.115
686	6.42	34.539	.32	3.45	88	-	92.0		800	5.52	34.53	.38	27.26	81.8	1.211

A) ALTERNATE VALUE, 23.35, NOT USED IN INTERPOLATION.

.39

3.47

103

810

5.44

34.531

	0 8 5 1	ERVED	LEV	ELS	0 F	DEP	тн	STAR	DARD	LEV	ELS	0 F	DEPT	н
			INPUT				COMPUTED		INPL	IT			COMPUTED	
Z	т	S	OXY	PHO	SIL	NIT	D+T	2	T	s	OXY	SIG*T	D*T	DD
xv							COFI 6505	EL GOLFO I	1				1396.	60
	DER AGA	SSI7. MAY	23 1965	5. 155A	GCT. 25	38N 11	O 14W. SOUN	DING 1110 FM	. WIND 3	30 FORCE	3 . WE	THER PAR	TLY CLOU	DY.
		WIRE ANG				24								
0	24.44	35.273	5.17	0.75	3	0.01	417.0	0	24.44	35.27	5.17	23.74	417.2	0
9	24.38	35.284	5.24	0.79	3 4	0.01	414.5 358.0	20	24.00	35.28	5.24	23.76	414.5	.042
60	22.18	35.223	3.53	1.93	15	0.75	250.3	30	22.45	35.24	5.74	24.29	364.0	.121
83	15.88	34.936	2.56	2.35	22	0.07	225.9	50	18.65	35.08	4.52	25.19	278.6	.186
97	15.62	34.946	2.61	2.39	24	0.04	219.6	75	16.04	34.94	2.60	25.71	229.1	-250 -306
110	15.25	34.951	1.74	2.47	27 35	0.04	211.3	100	15.49	34.95	2.15	25.84	216.5	.359
164	13.46	34.889	1.35	2.88	39	0.02	179.5	150	13.94	34.91	1.59	26.15	187.5	-409
195	12.82	34.869	1.10	2.96	45	0.02	168.7	200	12.76	34.87	1.13	26.36	167.5	.500
226	12.52	34.871	1.25	2.95	47	0.02	162.9	250	12.22	34.85	1.17	26.45	158.9	.585
286	11.72	34.815	.95	3.00	50	0.01	152.4	400	9.83	34.80	.39	26.55	149.6	.813
391 503	9.98 8.30	34.678	.39	3.11	58 73	0.02	132.9	500	8.35	34.61	.37	26.94	112.8	.944
629	6.06	34.530	-27	3.46	93	-	88.2	600	6.51	34.54	.28	27.14	93.0	1.056
777	5.00	34.535	.35	3.51	110	-	75.5	700	5.46	34.53	.31	27.27	81.1	1.152
								800	4.89	34.54	-	27.35	74.0	1.238
								F1 C01 F0					146G.	72
XVI							CCOFI 6505	EL GOLFO						
SEA MO	DERATE.	WIRE ANG	25 1965 LE 10.	5, 1444	GCT, 24	37N 1	09 21.5W, SC	OUNDING 1187	FM, WIN	D 230 FOI	RCE 4. I	WEATHER P	ARTLY CL	OUDY,
0	25.42	35.128	4.97	0.65	2	0.00	455.8	0	25.42	35.13	4.97	23.33	455.7	0
10	25.42	35.130	5.05	0.54	3	0.01	455.7	10	25.42	35.13	5105	23.33	455.7	-046
35	19.96	34.896	2.16	2.30	21	0.12	324.1 236.0	20 30	25.40	35.13	5100	23.34	455.1 354.4	.132
89	15.89	34.741	.68	2.67	30	0.12	203.0	50	17.50	34.84	3.57	25.29	269.0	.194
104	13.48	34.746	.54	2.75	32	0.02	190.4	75	14.93	34.77	1129	25.83	217.9	.256
119	13.11	34.803	.41	2.83	35	0.01	179.1	100	13.65	34.74	.59	26.08	194.2	.308
154	12.46	34.771	.25	2.81	34	0.01	169.2	125	13.03	34.80	-38	26.25	177.8	.355
178	12.08	34.776	.30	3.02	43	0.01	161.8	150 200	12.58	34.78	.28	26.32	157.7	.484
213	11.68	34.766	.33	2.99	46	0.01	149.2	250	11.21	34.74	.33	26.55	149.0	.563
317	10.40	34.696	.34	3.11	54	0.01	138.4	300	10.62	34.71	.34	26.64	141.1	.639
435	8.39	34.585	.27	3.27	67	0.00	115.3	400	8.90	34.61	.28	26.85	121.0	-777
562	7.12	34.545	.34	3.34	81	0.02	100.5	500	7.71	34.56	-30	26.99	107-4	.900
704	5.88	34.522	.31	3.42	110	_	86.6 76.5	600 700	5.91	34.54	.33	27.11	96.3 87.1	1.010
867	5.05	34.529	.36	3.51	110		10.5	800	5.31	34.53	.34	27.29	79.4	1.204
								1000	4.71	34.54	27.0	27.37		1.375
														10
TIVX							CCOFI 6505	EL GOLFO					1496.1	21
		SSIZ, MAY E ANGLE O		5, 1048	GCT, 24	37.5N	108 14.5W,	SOUNDING 34	O FM, WI	ND 360 F	ORCE 3,	WEATHER	CLEAR,	
0	25.42	35.072	5.06	0.76	12	0.00	459.9	0	25.42	35.07	5106	23.29	460.0	0
10	25.43	35.059	5.04	0.80	14	0.04	461-1	10	25.43	35.06	5.04	23.28	461.0	.046
30	21.95	34.862	3.77	1.23	14	0.60	377.9	20	22.92	34.92	3.77	23.92	399.9 378.1	.128
55	20.02	34.710	.81	2.39	22	0.28	339.0 286.2	30 50	18.15	34.62	1409	24.96	300.2	.196
70	17.48	34.597	.68	2.55	24	0.07	270.9	75	16.69	34.60	165	25.30	268.2	.268
95	15.02	34.662	.44	2.71	26	0.01	227.6	100	14.77	34.68	.49	25.79	221.1	.330
115	14.14	34.705	.64	2.78	28	0.00	206.5	125	13.62	34.73	146	26.08	194.3	.382
135	13.30	34.746	.34	2.83	30	0.25	186.9	150	13.12	34.77	.35 130	26.21	181.7	.430
155	13.06	34.773	-35	2.89	33	0.00	180.3	200 250	12.39	34.77	.25	26.49	155.5	.604
185	12.66	34.778	.28	2.84	35	2	161.6	300	11.12	34.72	137	26.55		.683
250	11.62	34.753	.25	2.90	37	-	155.2	400	9.59	34.64	129	26.76	129.5	.830
300	11.12	34.719	.37	3.02	41	-	149.0	500	7.99	34.56	.37	26.95	111-4	.959
354	10.33	34.672	.35	3.09	49	-	139.1	600	6.73	34.53	-41	27.11	96.6	1.072
439	8.94	34.604	.25	3.30	61	1	122-1							
524	7.66	34.556	.42	3.36	75 87	-	95.2							
009	6.62	24.000												

	0 B S	ERVED	LE	VELS	0 F	DEP	тн	STA	NDAR	DLE	VELS	0 F	DEPT	н
			INPUT				COMPUTED		INF	UT			COMPUTED	
Z	т	S	OXY	PHO	SIL	NIT	D*T	2	т	s	DXY	SIG*T	D+T	DD
154G.	89					(COFI 6505	EL GOLFO	11					111
ALEXA	NDER AGA	SSIZ, MAY	27 196	5, 2227	GCT, 2	3 40N 10	08 25W, SOUN	DING 1280	FM, WIND	250 FORC	E 2. WE	ATHER CLO		
0	27.18	35.200	4.90	0.63	3	0.00	503.5	0	27.18	35.20	4.90	22.83	503.5	0
29	25.70	35.151 34.998	5.02	0.59	2	0.01	462.4	20	25.70 25.10	35.15	5.02	23.26	462.5	-048
54 68	18.31	34.601	1.63	1.14	19	0.30	305.3	30 50	23.50 19.23	34.98	5.34	23.79	411.6	.137
83	15.36	34.821	1.88	2.50	25	0.04	223.2	75	15.67	34.64	1.78	24.71	324-6	.211
98 127	14.76	34.825	1.49	2.63	32	0.02	210.3 186.5	100 125	14.68	34.82	1.40 .30	25.92	209.0	.337
150	12.82	34.768	.25	2.74	34	0.84	176.1	150	12.82	34.77	.25	26.27	176.0	.434
209	12.39	34.770 34.761	.23	2.89	33	1.40	168.0 157.0	200 250	11.91	34.77	·23	26.45	159.2	.520 .600
270 367	9.60	34.698	.25	3.23	43 50	0.06	147.1	300	10.54	34.67	.23	26.62	142.7	.676
460	8.31	34.554	.28	3.39	61	0.02	116.4	400 500	9.15 7.88	34.59	·25	26.79	126.3	-818 -945
584 728	7.03 5.68	34.521	.24	3.47	77 93	0.05	101.1 85.6	600 700	5.92	34.52	-25 -26	27.08	99.4	1.060
869	4.93	34.522	.33	3.53	105	0.01	75.8	800	5.27	34.51	.29	27.20	88.0	1.162
1072	4.02	34.546	.56	3.46	121	0.00	64.5	1000	4.33	34.54	.49	27.41	68.1	1.424
160G.	128					c	COFI 6505	EL GOLFO	11				XVI	11
ALEXA	NDER AGA	SSIZ, MAY	29 196 06.	5, 0230	GCT, 2	2 59N 10	7 12.5W, SO	UNDING 830	FM, WIND	240 FOR	CE 3, W	EATHER PA	RTLY CLO	UDY,
10	26.40	34.947	4.90	0.44	3	0.00	498.0	0	26.40	34.95	4.90	22.89	497.8	0
30	20.96	34.606	5.00	0.47	3	0.00	491.5 370.5	10 20	26.20	34.95	5100	22.95	491.8	-049
81	16.64	34.628	2.95	1.78	14	0.52	265.0	30	20.96	34.61	5.26	24.23	370.2	-137
96	13.94	34.640	.61	2.62	24	0.05	207.3	50 75	17.00	34.63	3.23	25.25	272.9	-202
110	13.34	34.694	.41	2.71	26 33	0.01	191.5	100 125	13.73	34.66	.53	26.00	201.6	.321
165	12.28	34.760	.39	2.78	35	0.30	166.7	150	12.49	34.75	.39	26.19	183.2	-370 -415
195	11.88	34.745	.34	3.01	39 40	0.07	160.5	200	11.82	34.75	134	26.45	159.0	.500
650	6.58	34.517	.31	3.52	77	-	95.6							
807 974	5.26	34.523	.35	3.65	117	-	79.3							
1181	3.73	34.572	.77	3.55	128	-	59.7							
138.30	0					c	COFI 6505	EL GOLFO	11					97
SEA MO	DER AGA:	SSIZ, JUN WIRE ANG	E 14 190 LE 33.	65, 0538	GCT,	25 03N 1	12 35.5W, SI	OUNDING 160	FM, WIN	D 320 FD	RCE 4, V	EATHER M	ISSING.	
1 9	18.52	33.996	5.60	0.47	-	0.00	354.3	0	18.52	34.00	5.60	24.40	354.0	0
22	17.90	33.996 33.931	5.65	0.47	-	0.01	354.3 344.4	10 20	18.51	33.99	5.66	24.45	354.5	.035
65	14.20	33.837	4.54	1.10	-	0.39	271.3	30	15.90	33.87	5.27	24.92	304.1	.103
84	12.06	34.219	1.98	2.16	-	0.08	234.5	50 75	13.11	33.94	2.19	25.57	242.4	.158
103	11.76	34.309	1.48	2.70	2	0.00	190.4	100 125	11.77	34.29	1.54	26.10	192.0	-266
165	11.66	34.561	.60	2.74	-	0.02	170.1	150	11.78	34.55	.68	26.24	178.8	.313
188	11.36	34.596	.31	2.84	-	0.03	165.4	200 250	11.47	34.61	.37	26.41	163.1	.525
224	11.24	34.617	.33	2.93	-	0.00	158.6					20.75	.,,,,	.,,,
243	10.9 A	34.610	.27	2.99	-	0.00	156.3							
252	10.8 A	34.606	.24	3.01	-	-	151.8							
137.30						С	COF1 6505	EL GOLFO	11					99
ALEXAN SEA MO	DERATE,	SIZ, JUNI	E 14 196	55, 1008	GCT, 2	5 15.5N	112 44W, SC	DUNDING 270	FM, WIN	310 FO	RCE 5, N	EATHER M	ISSING.	
0	16.84	33.972	6.10	0.82	-	0.12	317.3	0	16.84	33.97	6.10	24.78	317.4	0
28	16.32	33.956	6.02	0.84	-	0.18	307.0	10	16.56	33.96	6407	24.84	312.0	.031
52	12.62	34.198	1.46	2.43	-	0.10	268.3	20 30	15.70	33.95	3.98	25.03	294.0	.062
103	12.21	34.266	1.38	2.49	_	0.14	201.7	50 75	12.67	34.19	1450	25.85	215.8	.137
154	11.42	34.522	.81	2.74	-	0.01	168.7	100	12.13	34.25	1.38	25.98	195.5	-189
298	11.24	34.609	.44	3.02	-	0.01	159.2	125	11.82	34.43	.96	26.20	182.6	-288
394 433	10.32	34.592	.25	3.01	-	0.00	144.8	200	11.24	34.61	.44	26.45	170.3	.333
443	10.28	34.587	.28	3.12	_	0.00	144.2	300	10.85	34.61	.32	26.52 26.58	152.4	.498
452	10.24	34.587	.33	3.11	-	0.00	143.9	400	10.31	34.59	-27	26.60	144.8	.729
472	10.22	34.576	.36	3.12	-	0.01	144.3							

A) TEMPERATURE INFERRED FROM PRESSURE THERMOMETER AND WIRE DEPTH.

				DAT	A AT NET	TOW S'	TATION	S			METER	
Station	Date	Time	Latitude	Longitude	Sounding	Wi		Weather	Sea	T	S	$\delta_{\rm T}$
		GCT	North	West	(fm)	Dir	Force			°C	%	cl/to
/П (105G.18)-G	V-14	0535	30°10.0'	114°05.0	200	200°	3	clear	slight	19.21	35.438	266
/Ш (108G.14)-G	14	0940	29°40.01	113°50.0'	360	220°	5	clear	moderate	19.74	35.762	256
X (111G.15)-G	14	1350	29°12.5	113°30.0	510	330°	3	clear	slight	15.60	35.099	208
17N (148G.98)-0	G 26	0530	24°37.0'	108°49.5'	620	240°	2	missing	missing	25.88	35.118	470
19N (148G.110)-	-G 26	0715	24°37.5	108°35.51	645	030°	3	missing	missing	25.70	34.987	474
21N (149G.121)-	-G 26	0900	24°37.5†	108°21.5'	490	010°	3	missing	missing	25.15	35.020	456
52-G	VI-2	0300	22°02.5'	105°40.5'	7	300°	2	missing	missing	26.59	34.762	517
3-G	2	0905	21°30.5'	105°21.0'	7	040°	1	clear	missing	26.41	34.669	518
4-G	2	1710	20°44.0'	105°24.5	10	230°	4	clear	slight	27.60	34.539	564
5-G	2	2000	20°32.01	105°24.5	80	280°	3	partly cloudy	moderate	23.42	34.556	440
6-G	3	0015	20°14.5'	105°36.5'	16	280°	3	partly cloudy	moderate	24.26	34.558	463
67-G	3	0435	20°00.01	105°32.01	9	280°	2	clear	missing	25.30	34.548	494
8-G	3	1015	19°24.0	105°02.5	10	100°	1	clear	missing	24.77	34.520	48
9-G	3	1335	19°12.0'	104°42.0°	10	020°	1	partly cloudy	missing	22.24	34.502	413
0-G	3	2240	18°27.51	103°36.01	8	calm		cloudy	moderate	26.00	34.495	51
2-G	4	1917	17°09.51	100°46.5	11	250°	3	partly cloudy	rough	27.70	34.490	57
4-G	6	0025	16°32.0'	98°47.51	10	270°	3	cloudy	moderate	29.98	34.386	65
55-G	6	1210	15°54.5'	97°14.0'	35	330°	2	cloudy	moderate	27.96	34.055	60

					A AT NET					1	0 METER	
Station	Date	Time	Latitude	Longitude	Sounding	Wi		Weather	Sea	T	S	δT
		GCT	North	West	(fm)	Dir	Force			°C	1/00	cl/to
66-G	VI-6	1450	15°47.0°	96°59.0'	18	270°	3	cloudy	rough	28.22	34.017	621
67-G	6	2330	15°49.0'	95°58.01	12	-	4	cloudy	rough	29.79	34.112	664
9-1-G	7	1210	16°09.01	95°14.0'	5	340°	3	cloudy	rough	30.12	34.036	680
1-G	7	2300	16°03.0'	95°22.01	7	210°	2	cloudy	moderate	30.03	34.084	674
2-G	8	0140	15°56.0	95°37.0'	9	270°	2	missing	slight	29.98	34.089	671
3-G	8	0300	15°53.0°	95°45.5'	7	240°	3	partly cloudy	moderate	29.96	34.074	672
4-G	8	0440	15°44.5'	95°57.0	260	240°	3	missing	moderate	30.06	34.964	683
5-G	8	0743	15°40.01	96°26.0'	50	280°	3	missing	missing	28.69	34.147	626
6-G	8	1245	15°53.0'	97°16.0'	95	130°	3	partly cloudy	moderate	26.96	34.066	579
7-G	8	1720	16°06.0	98°00.5	9	250°	2	partly cloudy	moderate	28.98	34.340	621
8-G	8	2250	16°26.51	98°51.0'	365	230°	4	partly cloudy	moderate	29.34	34.490	622
9-G	9	0433	16°42.0'	99°48.01	97	240°	2	partly cloudy	missing	28.31	34.486	590
0-G	9	0750	16°58.51	100°14.5'	13	180°	2	partly cloudy	moderate	29.03	34.519	610
1-G	9	1230	17°12.5'	100°55.5'	16	350°	4	partly cloudy	moderate	28.33	34.478	591
2-G	9	1645	17°31.5'	101°34.5'	100	270°	2	partly cloudy	moderate	29.30	34.606	612
3-G	9	2000	17°54.0'	101°51.5'	6	250°	3	partly cloudy	moderate	28.11	34.516	581
l-G	10	0245	18°07.51	102°58.5'	20	240°	5	clear	moderate	28.20	34.429	591
5-G	10	0730	18°26.5'	103°39.0'	260	260°	3	partly cloudy	moderate	27.82	34.441	578

				DAT	A AT NET	TOW S	TATION	S		1(METER	(S
Station	Date	Time	Latitude	Longitude	Sounding	Wi		Weather	Sea	T	S	$\delta_{\rm T}$
		GCT	North	West	(fm)	Dir	Force			°C	1/00	cl/ton
86-G	VI-10	1350	19°01.0'	104°26.0°	90	040°	2	partly cloudy	moderate	26.54	34.514	533
87-G	11	0105	19°05.0	104°21.0'	14	260°	4	partly cloudy	moderate	27.46	34.561	558
88-G	11	0355	19°09.0'	104°45.5'	95	290°	3	partly cloudy	moderate	27.14	34.540	549
89-G	11	0900	19°35.5'	105°11.0'	12	030°	2	partly cloudy	moderate	24.32	34.514	468
90-G	11	1205	19°58.0'	105°36.0	80	320°	4	partly cloudy	moderate	27.97	34.661	566
91-G	11	1420	20°15.0'	105°44.5'	95	010°	4	partly cloudy	moderate	27.33	34.640	548
92-G	12	0040	21°38.0'	106°33.0	170	040°	1	clear	calm	28.26	35.010	551
93 (144.21)-G	13	0650	24°13.5'	111°18.01	10	320°	4	clear	moderate	14.81	34.209	257
94 (143.24)-G	13	0945	24°20.0'	111°40.0	30	270°	3	missing	calm	14.15	34.200	243
95 (142.27)-G	13	1330	24°33.0'	112°03.0'	17	320°	4	overcast	calm	15.48	34.378	258
96 (141.28)-G	13	1420	24°37.5'	112°07.0'	18	320°	3	overcast	calm	14.60	34.383	240
102 (129.28)-G	15	0338	26°43.5'	113°30.0'	10	280°	5	clear	moderate	13.66	34.036	246
103 (125.35)-G	15	1040	27°08.0'	114°17.0	7	340°	2	clear	calm	11.77	34.060	209
104 (125.35)-G	15	1305	27°12.0'	114°28.0'	32	330°	3	cloudy	moderate	11.84	34.015	214
105 (124.35)-G	15	1705	27°24.5'	114°31.5'	18	300°	4	partly cloudy	moderate	12.76	34.058	227
106 (121.40)-G	15	2350	27°40.0'	115°08.0'	48	290°	4	partly cloudy	moderate	12.88	34.059	229
107 (121.25)-G	16	1320	28°14.0'	114°06.5'	5	310°	4	cloudy	moderate	16.86	33.830	328
108 (119.23)-G	16	1805	28°39.0'	114°14.5'	12	290°	3	cloudy	slight	16.47	33.827	320

				DAT	A AT NET	TOW S	TATION	S		10	METER	RS
Station	Date	Time GCT	Latitude North	Longitude West	Sounding (fm)		Force	Weather	Sea	T °C	S ‰	δ _T cl/ton
109 (117.25)-G	VI-17	0120	28°58.0'	114°34.5'	4	290°	4	partly cloudy	slight	14.57	33.785	282
110 (110.32)-G	17	1320	29°56.0'	115°48.0'	5	350°	3	cloudy	moderate	12.88	33.753	252
111 (107.30)-G	17	1815	30°22.0'	115°57.5'	7	290°	3	partly cloudy	moderate	12.82	33.865	242
112 (104.30)-G	17	2325	30°57.5'	116°17.0'	5	280°	4	partly cloudy	moderate	13.03	33.863	247