

data report

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

**CalCOFI Cruise 0310
20 October – 03 November 2003**

**CC Reference 06-03
23 January 2006**

**UNIVERSITY OF CALIFORNIA, SAN DIEGO
SCRIPPS INSTITUTION OF OCEANOGRAPHY
LA JOLLA, CALIFORNIA 92093-0227**

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INTRODUCTION

The data presented in this report were collected during cruise 0310* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV *New Horizon* of Scripps Institution of Oceanography, University of California, San Diego. The CalCOFI program was organized in the late 1940's to study the causes of variations in population size of fishes of importance to the State of California. It is carried out by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, the California Department of Fish and Game, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruises were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. Other SIO staff members and volunteers also assisted in the collection of data and chemical analyses at sea. CalCOFI data presented in this report and collected on previous cruises can be accessed at <http://www.calcofi.org>.

STANDARD PROCEDURES

CTD/Rosette Cast Data

A Sea-Bird Electronics, Inc., Conductivity-Temperature-Depth (CTD) instrument (Seabird 911, Serial number 1049) with a rosette was deployed at each station on these cruises. The rosette was equipped with 24 ten-liter plastic (PVC) bottles equipped with epoxy-coated springs and Viton O-rings. Each CTD/rosette cast usually sampled 20 depths to a maximum sampling depth of 525 meters, bottom depth permitting. Occasional stations have multiple bottles tripped at the same depth to provide more water for ancillary programs. The sample spacing was designed to sample depth intervals as close as 10 meters around the sharp upper thermocline features such as the chlorophyll, oxygen, nitrite maxima and the shallow salinity minimum. Salinity, oxygen and nutrients were determined at sea for all depths sampled. Chlorophyll-*a* and phaeopigments were determined at sea on samples from the top 200 meters, bottom depth permitting.

Pressures and temperatures assigned to the water sample data were derived from the CTD signals recorded just prior to the bottle trip. Pressures have been converted to depths by the Saunders (1981) pressure-to-depth conversion technique. CTD temperatures reported with the bottle data have been rounded to the nearest hundredth of a degree Celsius.

Salinity samples were collected from all rosette bottles and analyzed at sea using a Guildline model 8410 Portasal salinometer. Salinity samples were drawn into 200 ml Kimax high-alumina borosilicate bottles that were rinsed three times with sample prior to filling. The results were compared with the CTD salinity to verify that the rosette bottle did not mis-trip or leak. The salinometer was standardized before and after each group of samples with standardized seawater. Periodic checks on the conductivity of the standardized seawater were made by comparison with IAPSO Standard Seawater batch P134. Salinity values were calculated using the algorithms for the Practical Salinity Scale, 1978 (UNESCO, 1981a) and are reported to three decimal places, provided that accepted standards were met.

Dissolved oxygen analyses were performed with an Ocean Data Facility of Scripps Institution of Oceanography designed automated oxygen titrator using photometric end-point detection based on the absorption of 365nm wavelength ultra-violet light. A computer using PC software controlled the titration of the samples and the data logging. The method used a modified-Winkler titration following the technique of Carpenter (1965) with modifications by Culberson (1991), but with higher concentrations of thiosulfate solution (50 g/l). Standard KIO₃

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

solutions prepared ashore were run at the beginning of each run. Reagent and sea water blanks were determined to account for presence of oxidizing or reducing materials.

Nutrient samples were analyzed at sea by the Scripps Ocean Data Facility for dissolved silicate, phosphate, nitrate and nitrite using procedures similar to those described in Gordon et al., 1993. Samples were collected in 45 ml high-density polypropylene screw-capped tubes, which were rinsed three times prior to filling. Standardizations were done at the beginning and end of each group of samples with a set of mid-concentration range standards prepared fresh for each run. Samples not analyzed immediately after collection were refrigerated and run the following day. Sets of six different concentration standards were analyzed periodically to determine the deviation from linearity as a function of concentration, for the silicate, nitrate and phosphate analyses. Final sample concentrations were corrected for deviations from linearity using a second order polynomial.

Samples for chlorophyll-*a* and phaeopigments were collected in calibrated 138 ml polyethylene bottles and filtered onto Whatman GF/F filters. The pigments were extracted in cold 90% acetone (Venrick and Hayward, 1984) for a minimum of 24 hours. Chlorophyll *a* and phaeopigment concentrations were determined from fluorescence readings before and after acidification with a Turner Designs Fluorometer Model 10-AU-005-CE (Yentsch and Menzel, 1963; Holm-Hansen *et al.*, 1965).

Evaluation of the water sample data involved comparisons with the CTD data, adjacent stations and consideration of the variation of a property as a function of density or depth and the relationships with other properties (Klein, 1973). Precision estimates for routine analyses were made on CalCOFI cruise 9003 and are reported in SIO Ref. 91-4.

Primary Productivity Sampling

Primary productivity samples were taken each day shortly before local apparent noon (LAN). Primary production was estimated from ^{14}C uptake using a simulated *in situ* technique. Light penetration was estimated from the Secchi depth (assuming that the 1% light level is three times the Secchi depth). The depths with ambient light intensities corresponding to light levels simulated by the on-deck incubators were identified and sampled on the rosette upcast. Occasionally an extra bottle or two were tripped in addition to the usual 20 levels sampled in the combined rosette-productivity cast in order to maintain the normal sampling depth resolution. Triplicate samples (two light and one dark control) were drawn from each productivity sample depth into 250 ml polycarbonate incubation bottles. Samples were inoculated with 10 μCi of ^{14}C as NaHCO_3 (200 μl of 50 $\mu\text{Ci}/\text{ml}$ stock) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al.*, 1982). Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

Macrozooplankton Net Tows

Macrozooplankton was sampled with a 71 cm mouth diameter paired net (bongo net) equipped with 0.505mm plankton mesh. Bottom depth permitting, the nets were towed obliquely from 210 meters to the surface. The tow time for a standard tow was 21.5 minutes. Volumes filtered were determined from flowmeter readings and the mouth area of the net. Only one sample of each pair was retained and preserved. The biomass, as wet displacement volume, after removal of large (>5 ml) organisms, was determined in the laboratory ashore. These procedures are summarized in greater detail in Kramer *et al.* (1972). An Optical Plankton Counter (OPC, Dave Checkley, SIO) was routinely used in one side of the paired bongo net frame. The purpose of the OPC is to obtain information on the vertical distributions of size categories of zooplankton, using data from the counter, without affecting the ongoing time series of data obtained from the catches of the integrative bongo net.

Avifauna Observations (Point Reys Bird Observatory)

Sea birds were counted within a 300-meter wide strip off to one side of the ship. Counts were made while underway between stations during periods of daylight. These counts were summed over 20 nautical mile (nm) intervals, or the distance between consecutive stations, whichever was less. Included at the end of this report are individual maps of the most numerous bird species (individuals/nm).

Ancillary Programs

Several ancillary programs produced data on these cruises that are not presented in this report. These programs include:

- 1) *Underway Data*: Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 3 meters. The data were logged in one-minute averages using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinograph and a Wetlabs Wetstar fluorometer.
- 2) *ADCP*: Continuous profiles of ocean currents and acoustic backscatter between 20 and 500 meters deep were measured along the shiptrack from a hull-mounted 150 kHz Acoustic Doppler Current Profiler (ADCP). The ADCP data were averaged over 3-minute intervals. Sixty 8-meter depth bins were recorded. (T. Chereskin, SIO)
- 3) *Taxon-specific pigments*: Water samples were collected from a depth of 10 m for the analysis of taxon-specific pigments (chlorophylls and carotenoids) by high-pressure liquid chromatography (R. Goericke, SIO).
- 4) *Organic carbon*: At each station several samples were drawn from the CTD for total organic carbon concentration profiles. At half of the stations 10 to 15L of surface water were filtered for stable isotope measurements of particulate organic carbon. Several solid phase extracts from filtered seawater were taken for chemical and isotope analyses of dissolved organic carbon. Size and chemically fractionated DOC samples were also drawn at several surface and deep (1000 m) sites to isolate colored dissolved organic matter (CDOM) for an investigation of chemical composition and both the extent and mechanism of CDOM photoreactivity (L. Aluwihare, SIO).

TABULATED DATA

CTD/Rosette Cast Data

The time reported is the Coordinated Universal Time (UTC) of the first rosette bottle trip on the up cast. The rosette bottles tripped on the up cast are reported as cast 2, where cast 1 is considered to be the down CTD profile. The sample number reported is the cast number followed by a two-digit rosette bottle number. Bottom depths, determined acoustically, have been corrected using British Admiralty Tables (Carter, 1980) and are reported in meters. Weather conditions have been coded using WMO code 4501. Secchi depths are reported for most daylight stations.

Data values from discrete sampled CTD rosette were interpolated and are reported for standard depths. Interpolated or extrapolated standard level data are noted by the footnote "ISL" printed after the depth. Multiple bottles tripped at the same depth to provide water for ancillary programs are not used in the calculation of standard depth data. Density-related parameters have been calculated from the International Equation of State of Seawater 1980 (UNESCO, 1981b). Computed values of potential temperature, sigma-theta, specific volume anomaly (SVA), and dynamic height or geopotential anomaly are included with both observed and interpolated standard depth levels.

On stations where primary productivity samples were drawn a footnote appears after each productivity depth sampled. The corresponding primary productivity data are reported in a separate section following the tabulated rosette cast data.

Primary Productivity Data

In addition to the normal hydrographic data that are reported in the rosette cast data section, the tabulated data include: the *in situ* light levels at which the samples were collected, the uptake from each of the replicate light bottles, uptake 1 and uptake 2 (which have been corrected for dark uptake by subtracting the dark value), the mean of the two uptake values and the dark uptake. The uptake values are totals for the incubation period. Also shown are the times of LAN, civil twilight, and the value of the mean uptake integrated from the surface to the deepest sample, assuming the shallowest value continues to the surface and that negative values (when dark uptake exceeds light uptake) are zero. The uptake data are reported to two significant digits (values <1.00) or one decimal (values >1.00). Incubation time, LAN, and civil twilight are given in local Pacific Standard Time (PST); to convert to UTC, add eight hours to the PST time. Incubation light intensities are listed in a footnote at the bottom of each page.

Macrozooplankton Data

Macrozooplankton biomass volumes are tabulated as total biomass volume ($\text{cm}^3/1000\text{m}^3$ strained) and as the total volume minus the volume of larger organisms under the heading "Small." Tow times are given in local PST (+8) time.

FOOTNOTES

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

D: CTD salinity value listed in place of normal shipboard salinity analysis.

ISL: After a depth value indicates that this is an interpolated or extrapolated standard level.

U: Uncertain value. Values which are not used in interpolation because they seem to be in error without apparent reason.

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FIGURES

Cruise 0310

1. CalCOFI Cruise 0310 track and station positions.
2. Horizontal distribution of dynamic height anomaly (0 over 500m). In areas shallower than 500 m, the dynamic heights were extrapolated on the basis of the offshore deeper steric height as described in Reid and Mantyla (1976).
3. Horizontal distributions at 10 meters: A) chlorophyll-*a*; B) potential density; C) temperature; and D) salinity.
4. Horizontal distributions at 200 meters: A) dynamic height anomaly (200 over 500 m); B) potential density; C) temperature; and D) salinity.
5. Sections along CalCOFI line 90 (vertical exaggeration, 1000): A) potential density; B) temperature; C) salinity; D) silicate; E) nitrate; F) phosphate; G) chlorophyll-*a*; H) oxygen saturation; I) oxygen; J) nitrite; and K) phaeopigments.

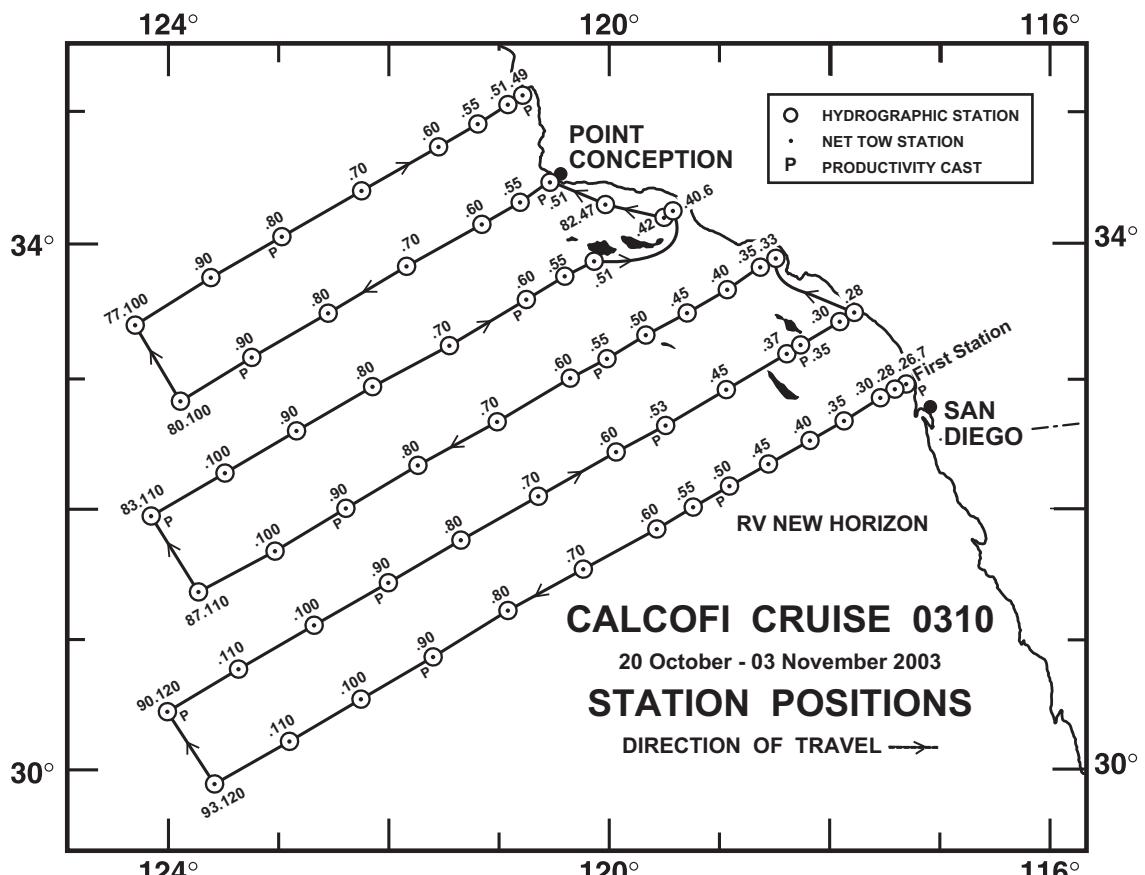


FIGURE 1

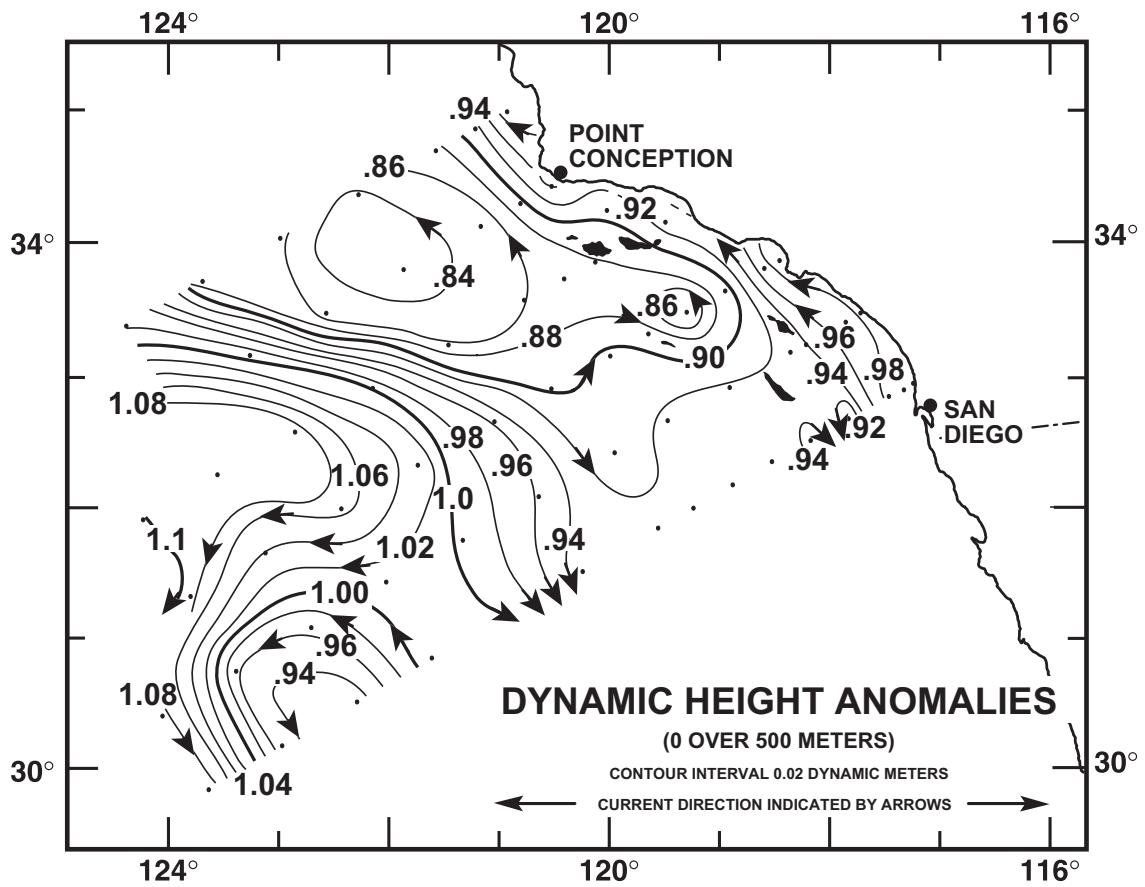


FIGURE 2

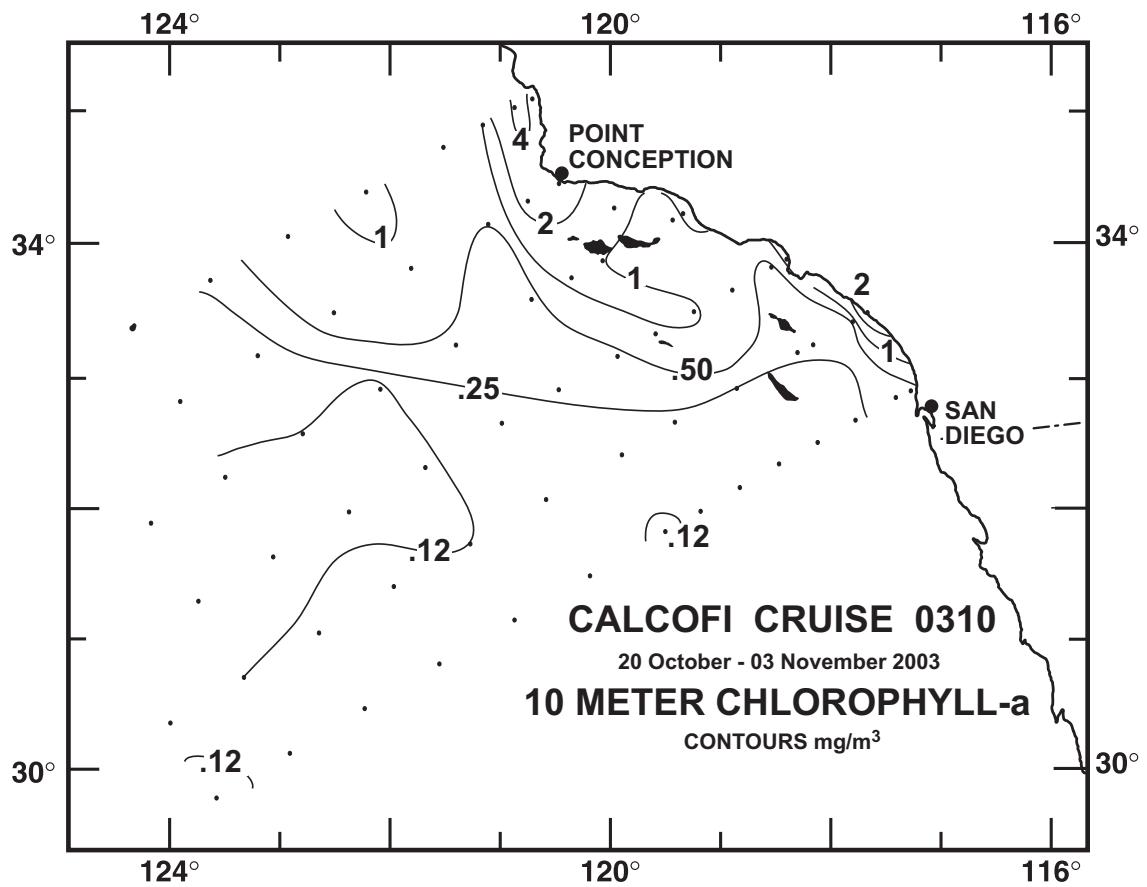


FIGURE 3A

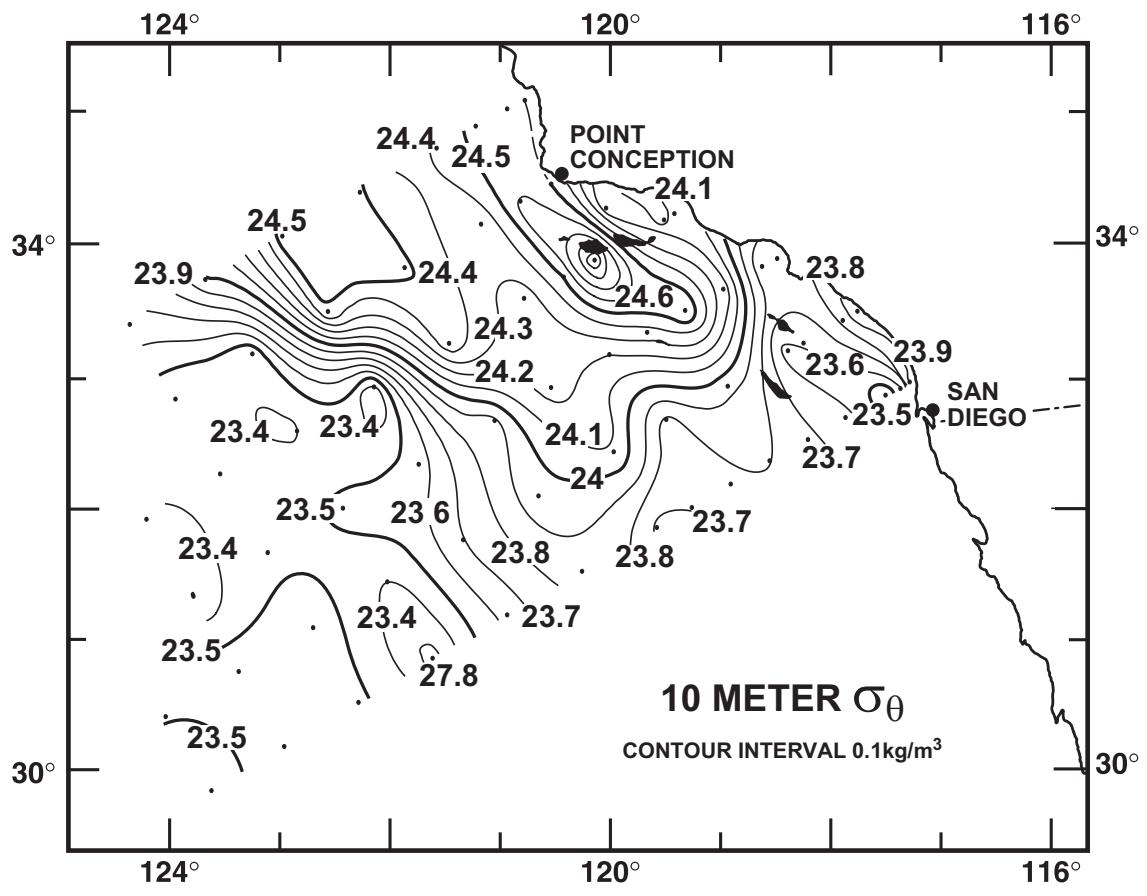


FIGURE 3B

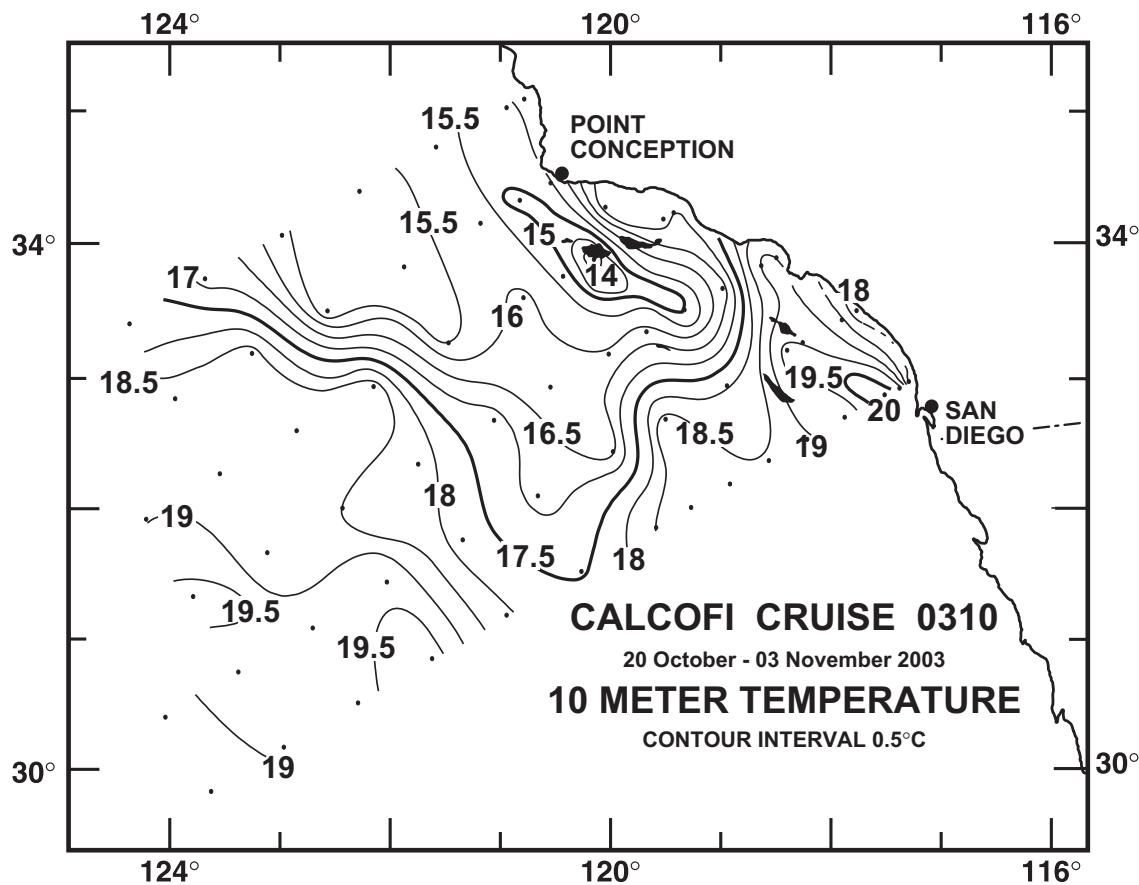


FIGURE 3C

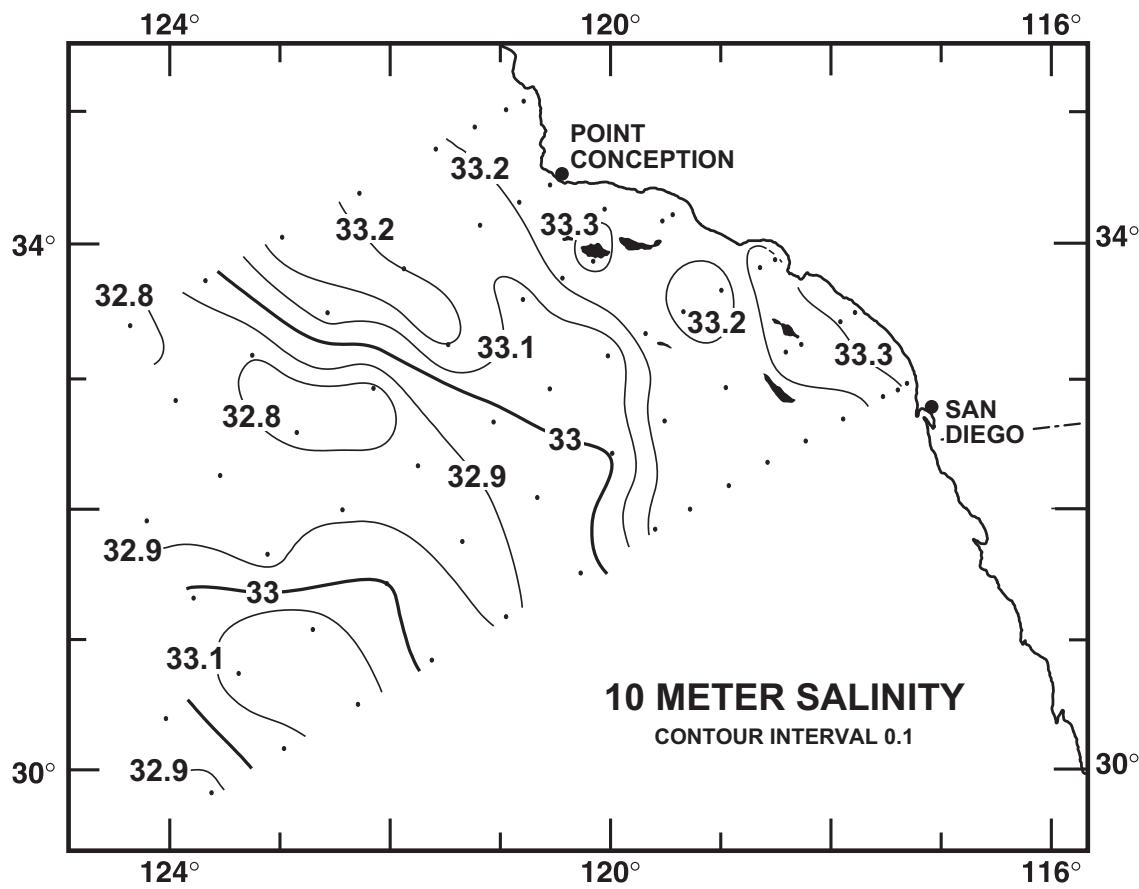


FIGURE 3D

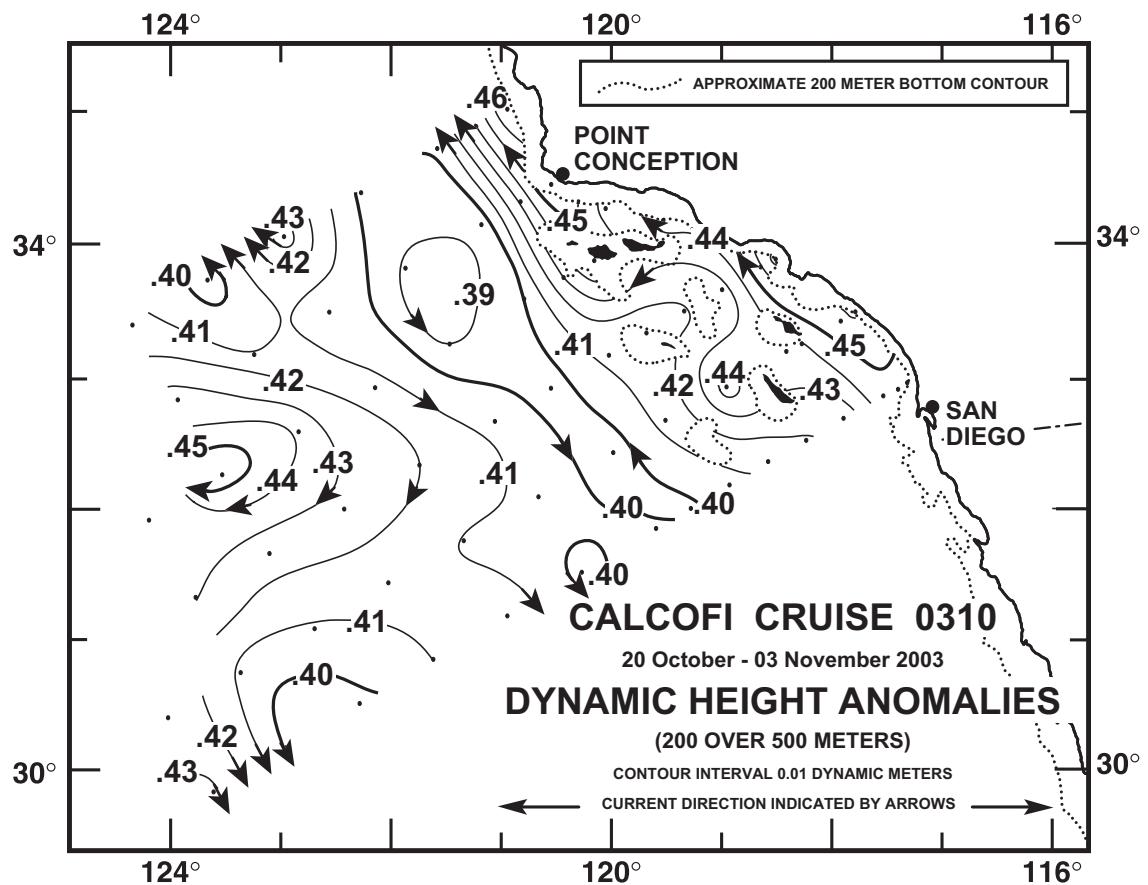


FIGURE 4A

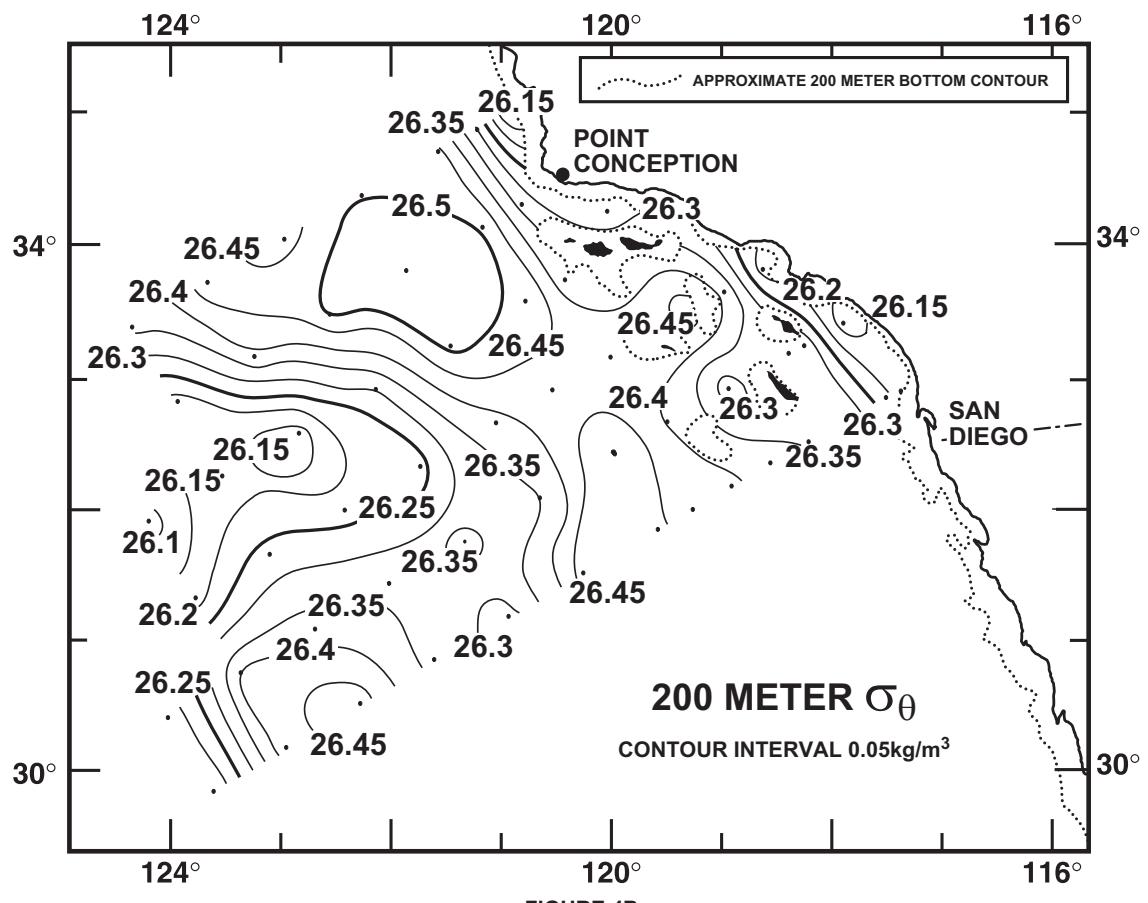


FIGURE 4B

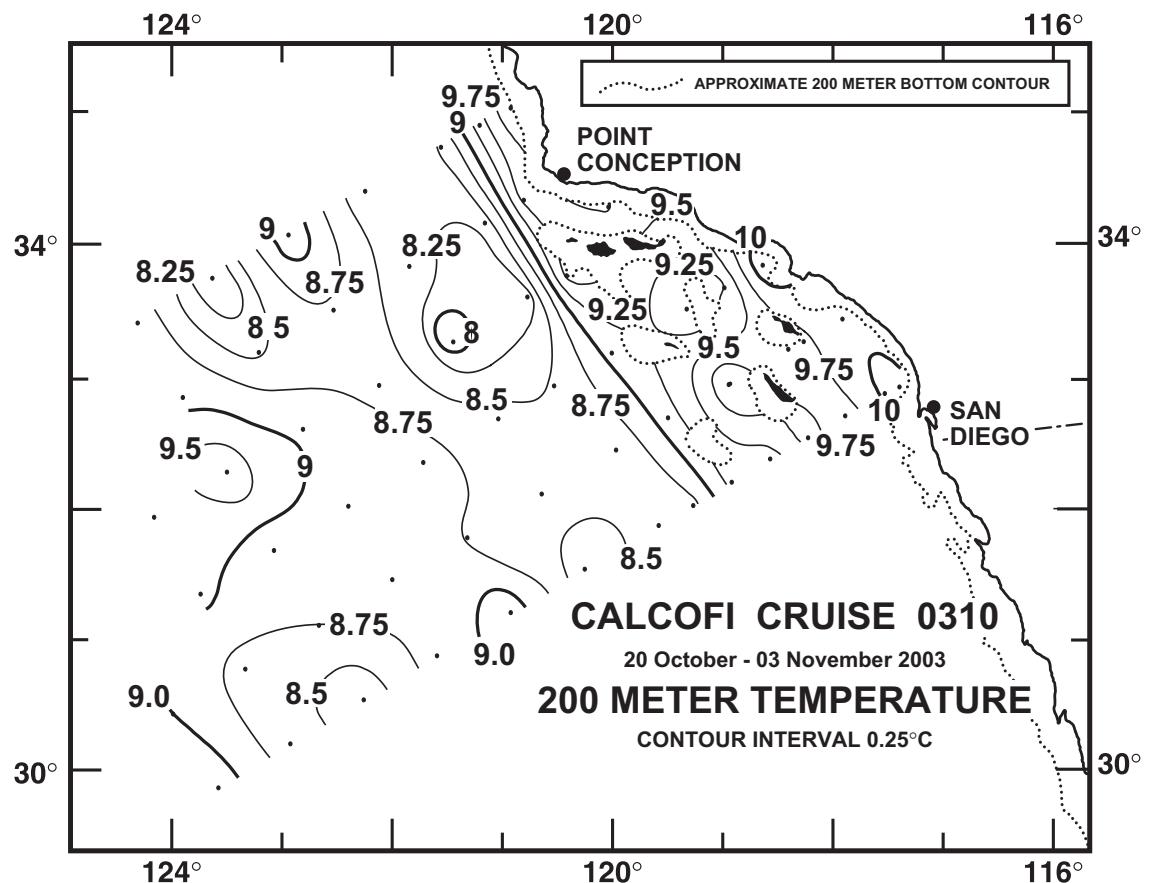


FIGURE 4C

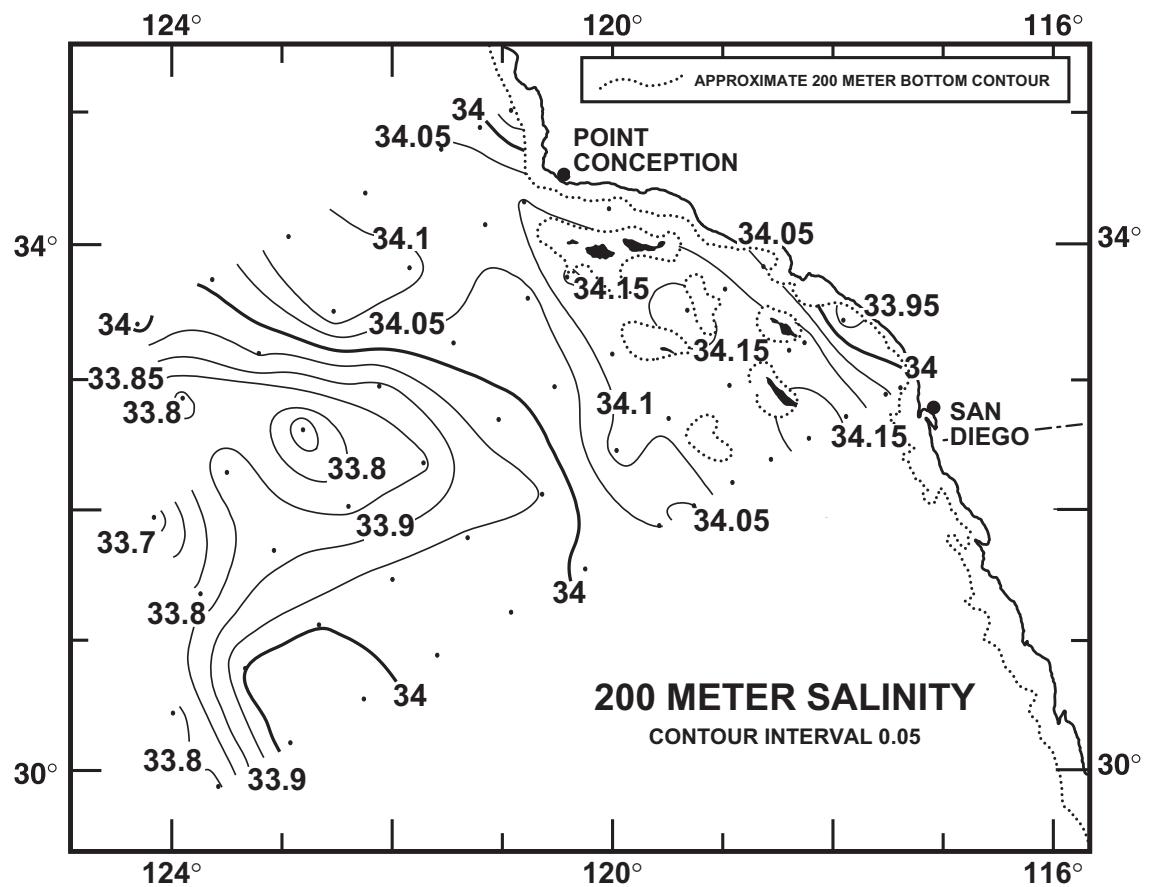


FIGURE 4D

CALCOFI CRUISE 0310

23 - 26 October 2003

POTENTIAL DENSITY (σ_0) ALONG CALCOFI LINE 90

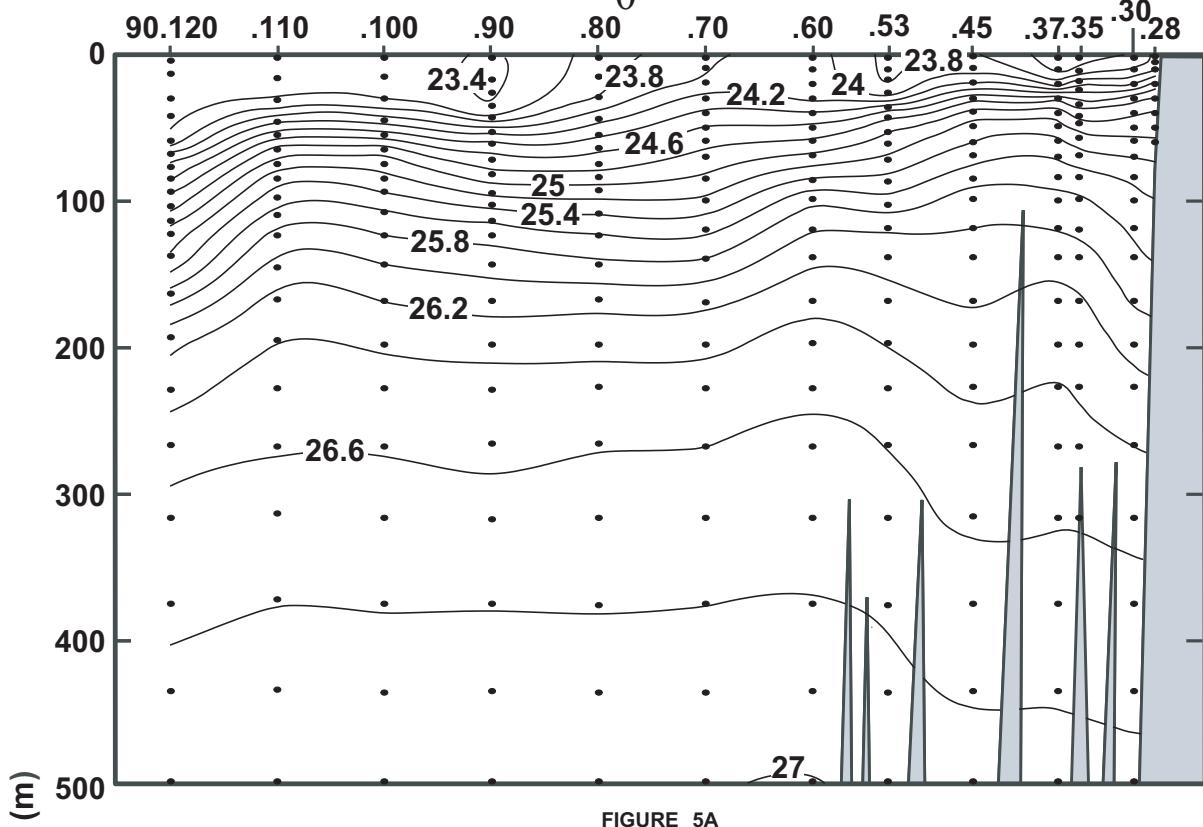


FIGURE 5A

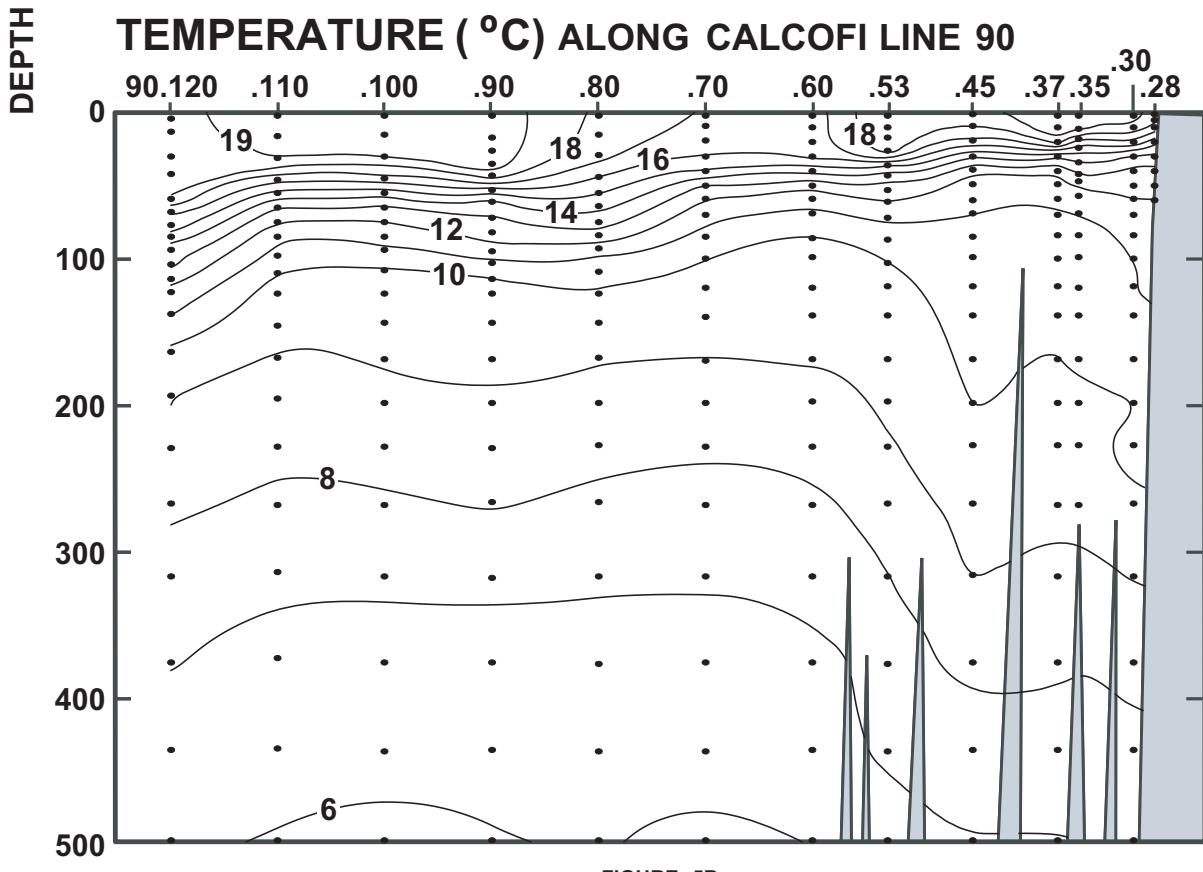
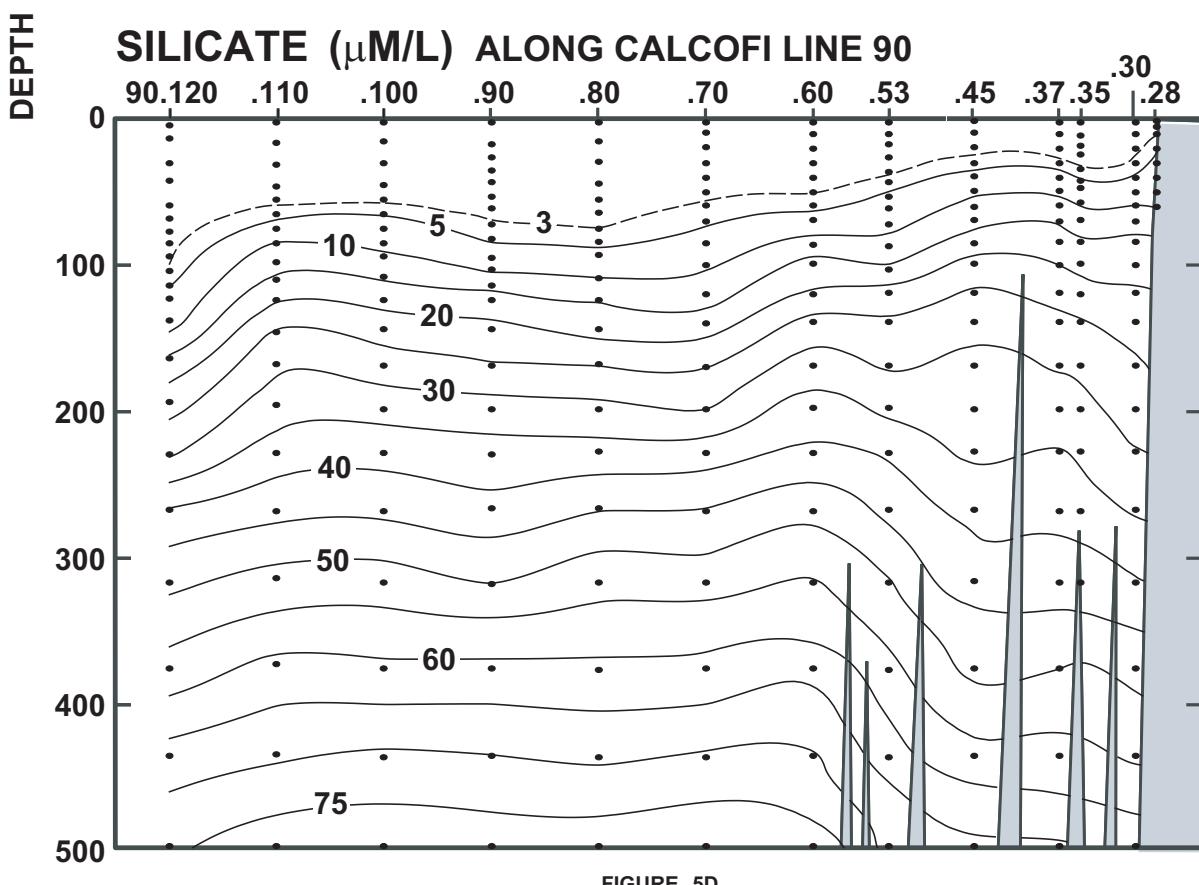
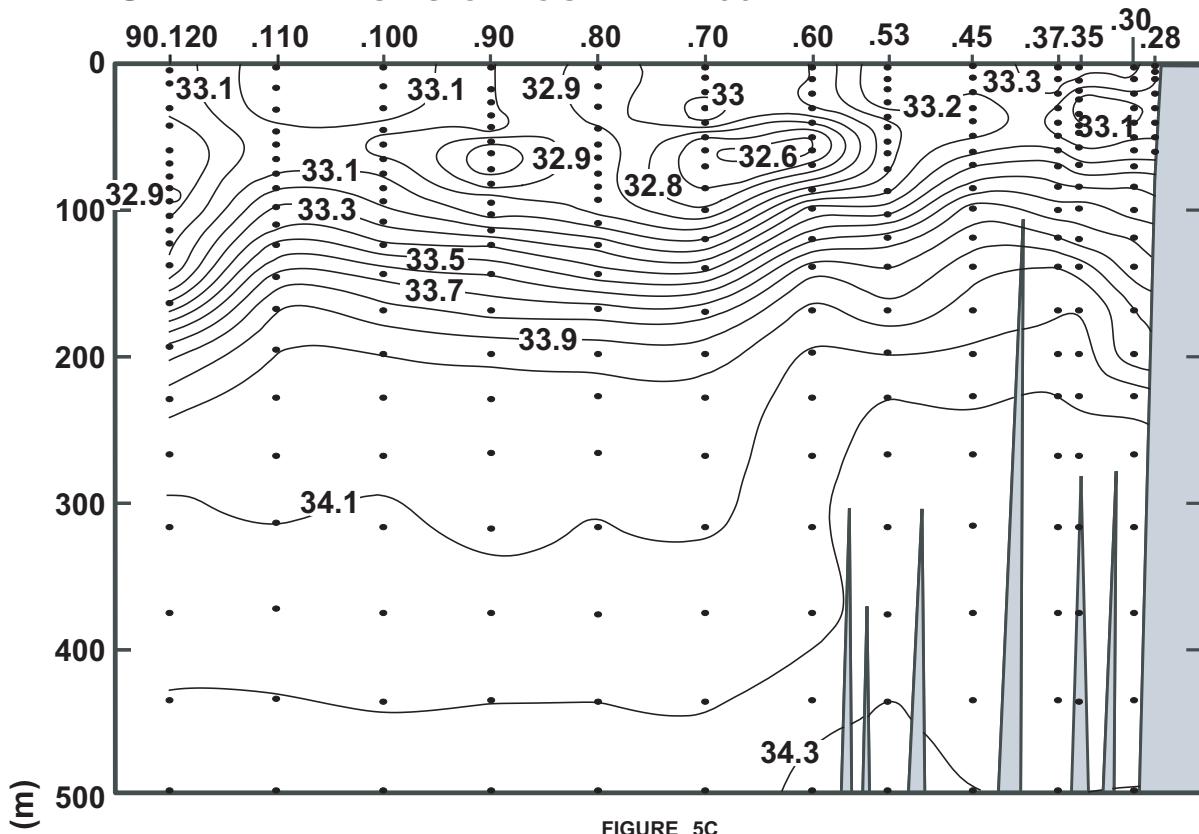


FIGURE 5B

CALCOFI CRUISE 0310

23 - 26 October 2003

SALINITY ALONG CALCOFI LINE 90



CALCOFI CRUISE 0310

23 - 26 October 2003

NITRATE ($\mu\text{M/L}$) ALONG CALCOFI LINE 90

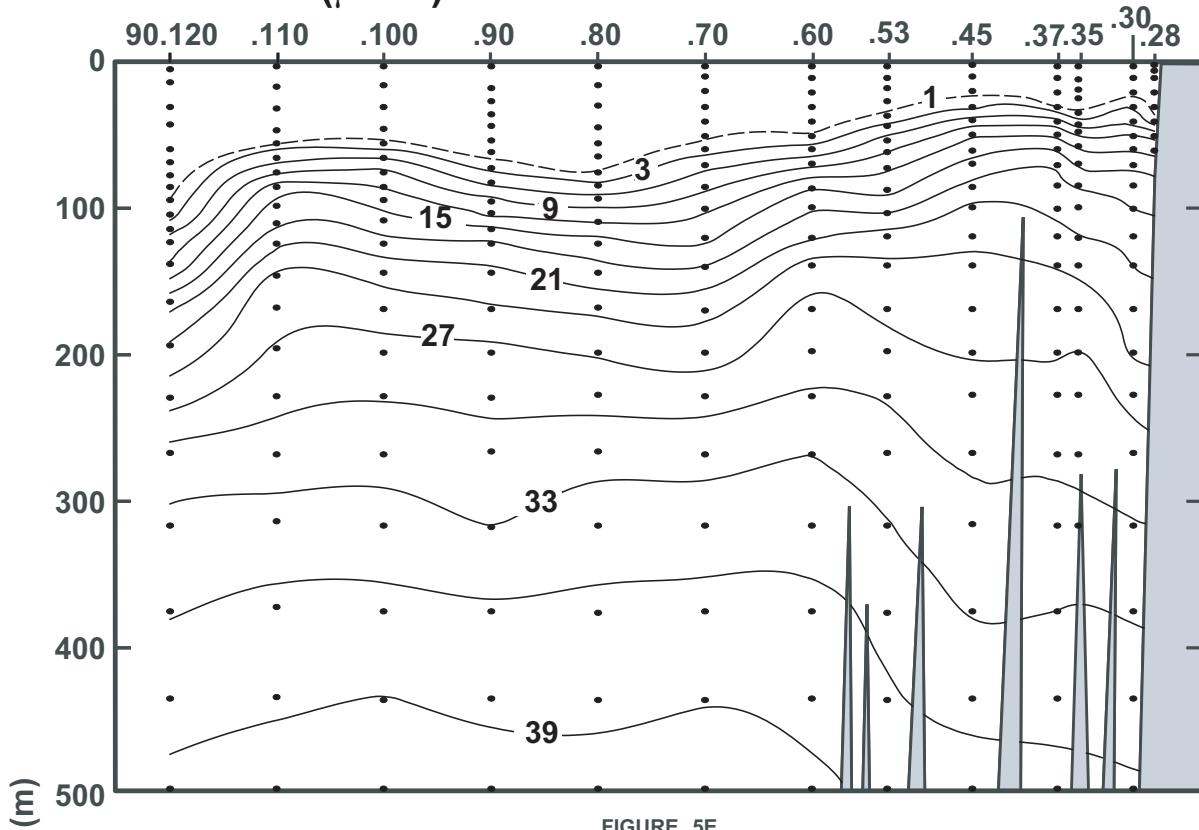


FIGURE 5E

PHOSPHATE ($\mu\text{M/L}$) ALONG CALCOFI LINE 90

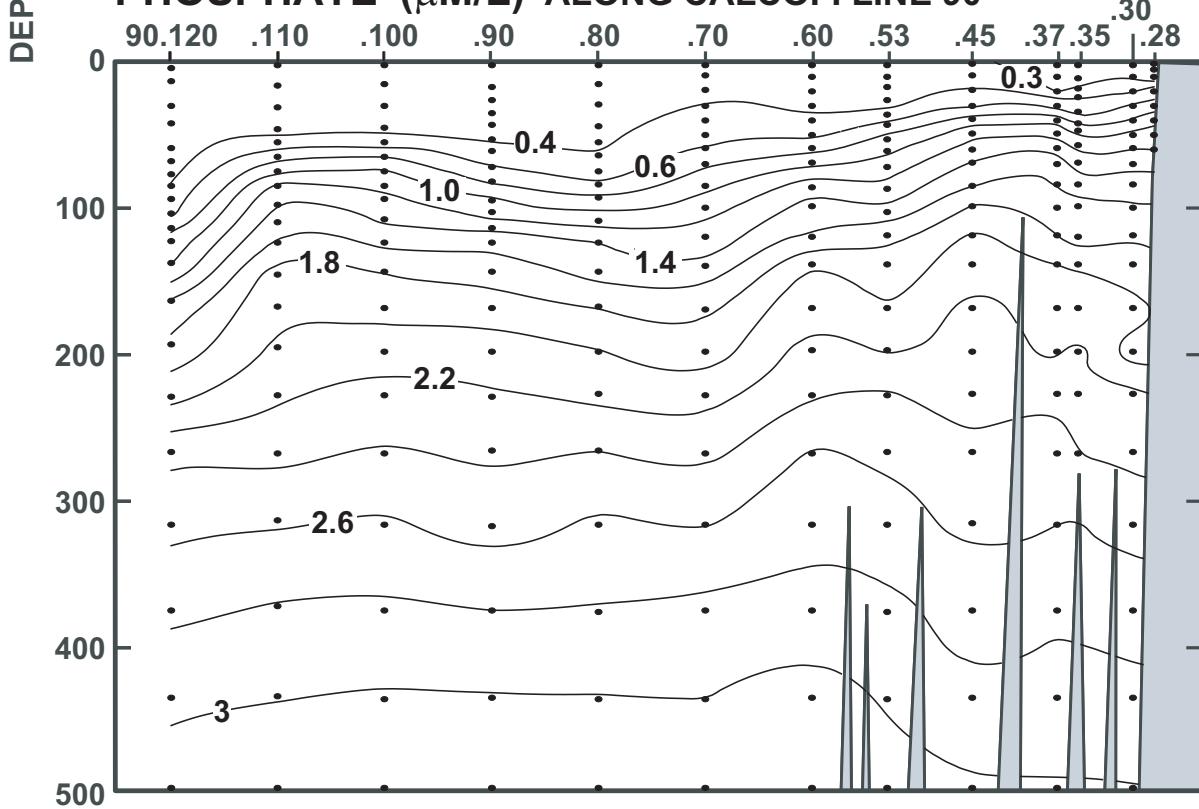


FIGURE 5F

CALCOFI CRUISE 0310

23 - 26 October 2003

CHLOROPHYLL-a ($\mu\text{g/L}$) ALONG CALCOFI LINE 90

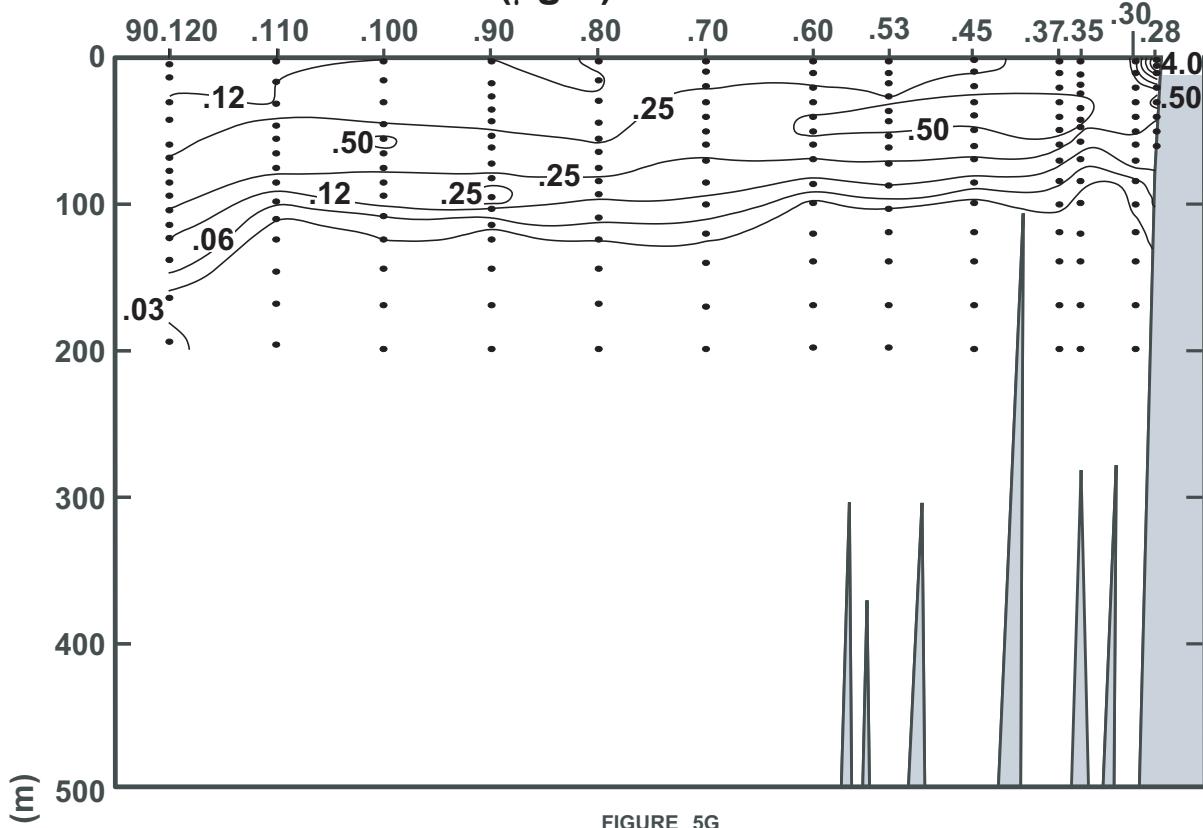


FIGURE 5G

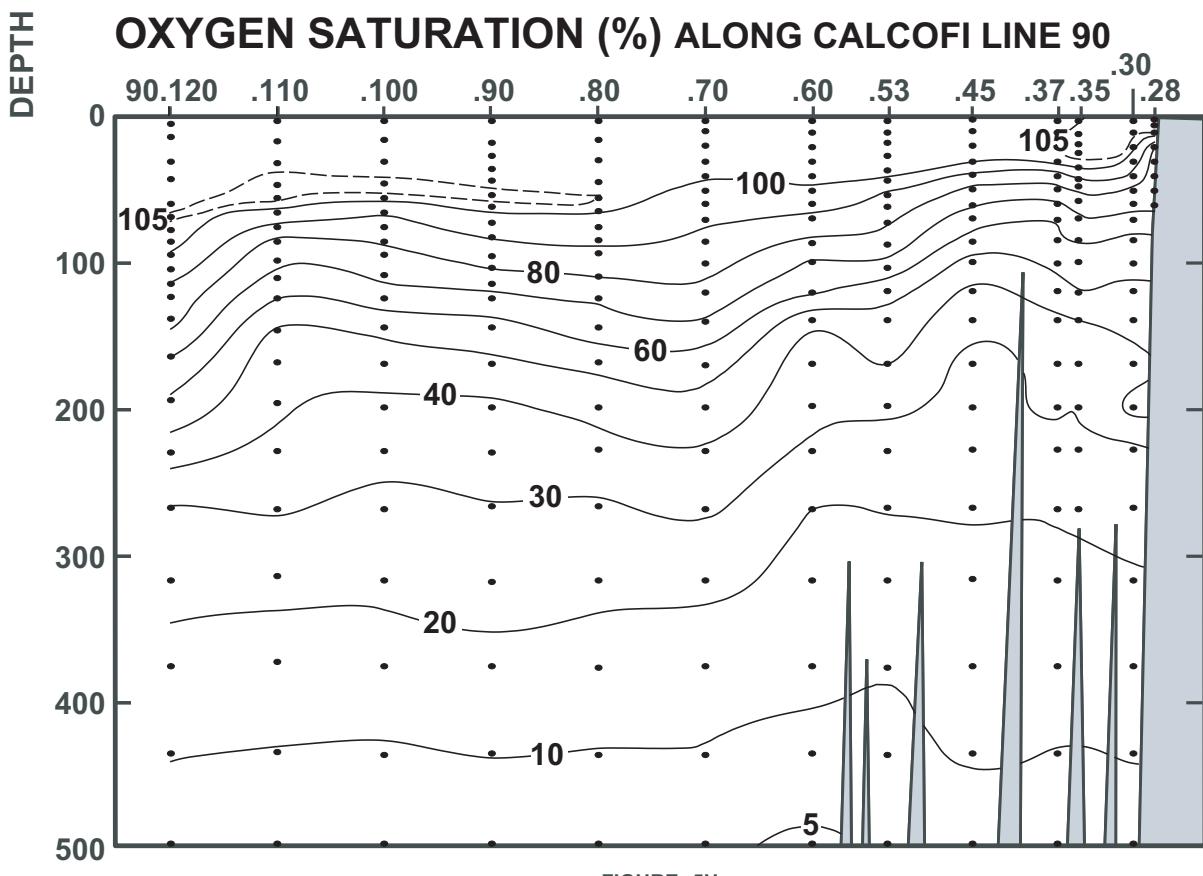
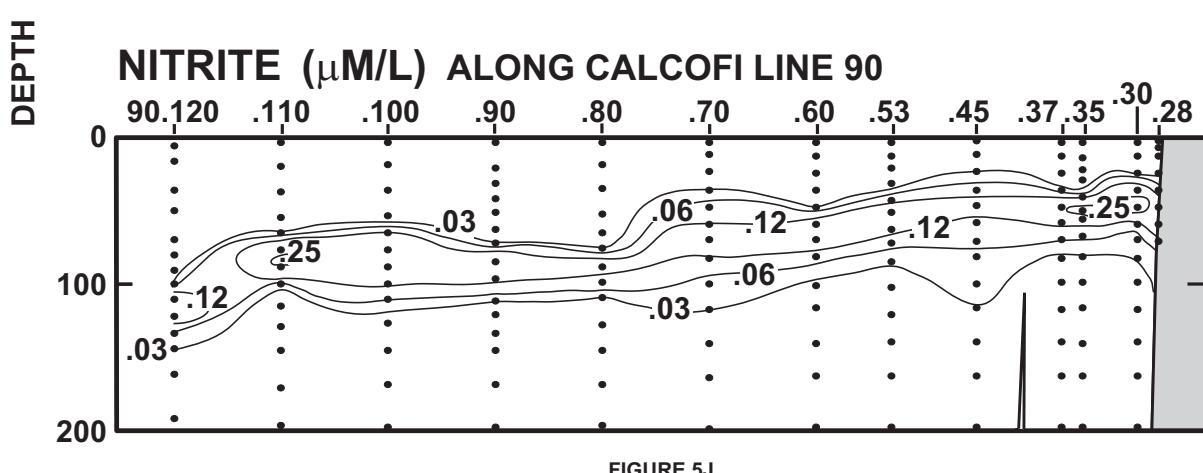
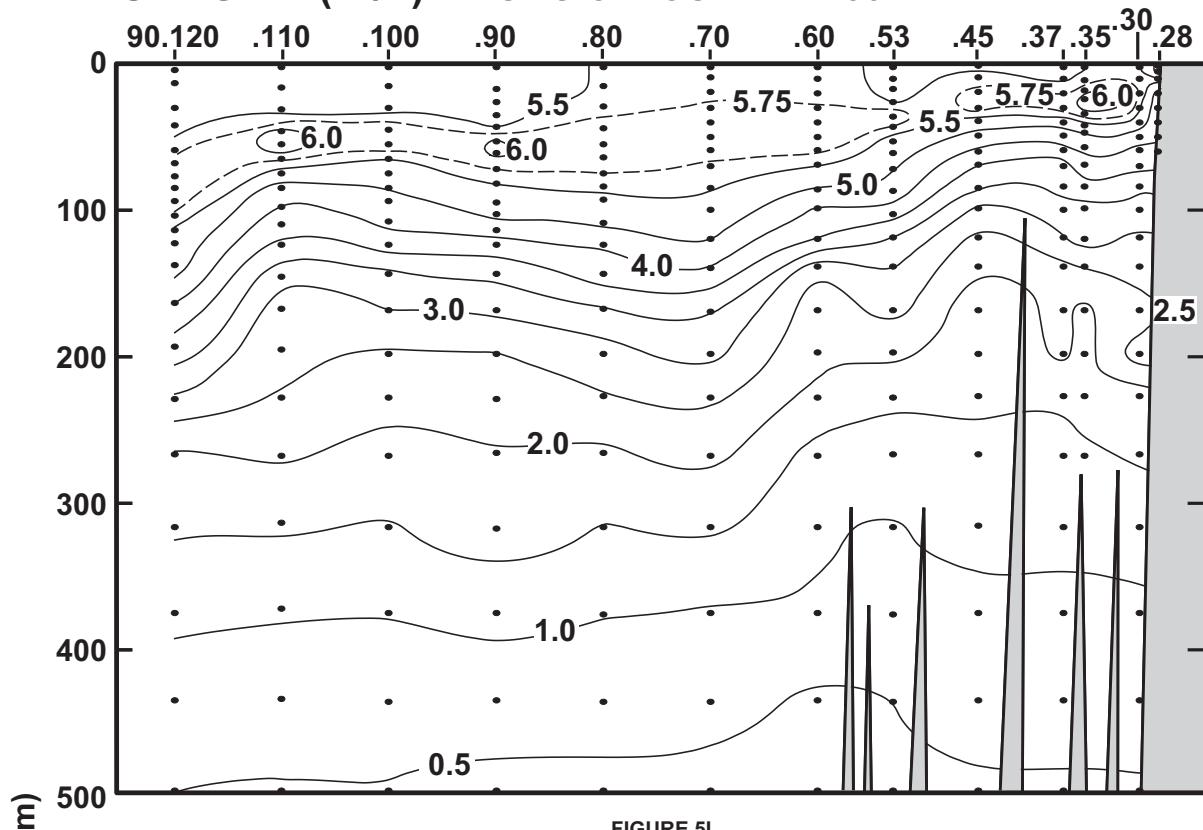


FIGURE 5H

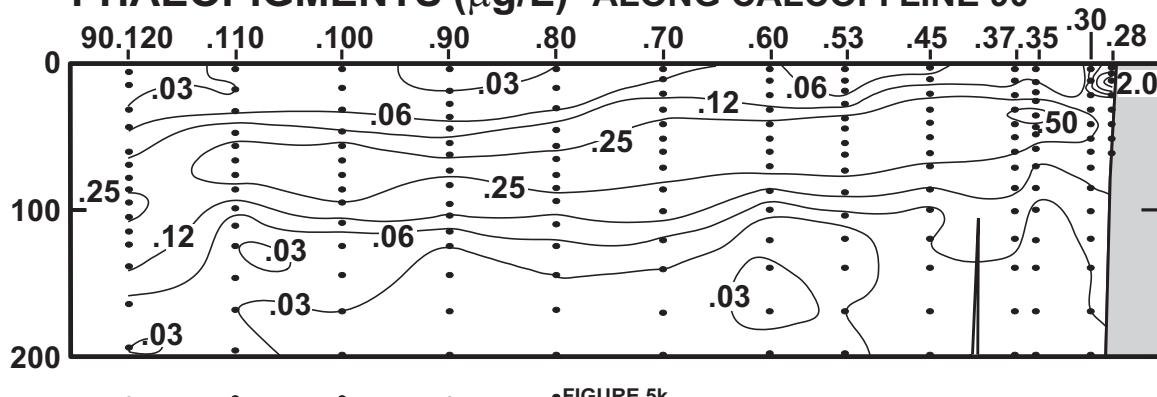
CALCOFI CRUISE 0310

23 - 26 October 2003

OXYGEN (ml/L) ALONG CALCOFI LINE 90



PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90



PERSONNEL

CalCOFI Cruise 0310

SHIP'S CAPTAIN

Murray A. Stein, RV *New Horizon*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Wolgast, David M. (Chief Scientist)	Staff Research Associate, SIO	1,2
Abramenkoff, Dimitry N.	Fishery Biologist, NMFS	1,2
Afghan, Justine	Staff Research Associate, SIO	1,2
de Jesus, Roman P.	Graduate Student, SIO	1,2
Ekern, Lindsey, J	Volunteer	1
Granholm, Robert	Volunteer	2
Hays, Amy E.	Fishery Biologist, NMFS	1,2
Herszage, Julian	Post Graduate Researcher, SIO	1
Keiper, Carol A.	Seabird Biologist, Point Reyes Bird Observatory	1,2
Powell, Jesse	Staff Research Associate, SIO	1,2
Ramiez, Fernando	Staff Research Associate, SIO	1,2
Ramirez, Leticia	Volunteer, CICESE	1,2
Sheldon, Jennifer L.	Scientific Aid, California Dept. of Fish and Game	1,2
Wilkinson, James R.	Programmer Analyst, SIO	1,2
Wolgast, Michael M.	Volunteer	2

Leg 1: San Diego to Dana Point, California, 20-26 October, 2003

Leg 2: Dana Point to San Diego, California, 26 October – 4 November, 2003

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
35 5.3 N	120 45.8 W	03/11/03	1803	UTC	68 m	220	02 kn	300 02 05	1	1018.2 mb	14.8 C	13.5 C	11m	6/8	SC	
0 ISL	15.75	15.75	33.286	24.487	343.7	0.000	5.85	103.3	1.2	0.29	0.2	0.00	2.61	0.96	0	
1 A	15.75	15.75	33.286	24.487	343.7	0.003	5.85	103.3	1.2	0.29	0.2	0.00	2.61	0.96	1	209
6 A	15.73	15.73	33.286	24.491	343.4	0.021	5.83	102.9	1.2	0.29	0.2	0.00	2.62	0.92	6	208
10 ISL	15.67	15.67	33.284	24.503	342.4	0.034	5.80	102.3	1.4	0.31	0.3	0.00	2.49	0.85	10	
15 A	15.59	15.59	33.282	24.520	341.0	0.051	5.76	101.4	1.6	0.33	0.4	0.00	2.00	0.74	15	207
20 ISL	14.59	14.59	33.270	24.728	321.3	0.068	5.37	92.6	4.1	0.61	3.0	0.11	0.85	0.64	20	
22 A	14.17	14.17	33.268	24.815	313.0	0.074	5.21	89.1	5.1	0.73	4.1	0.16	0.43	0.61	22	206
29 A	13.68	13.68	33.266	24.915	303.7	0.096	5.06	85.7	6.2	0.84	5.5	0.21	0.37	0.63	29	205
30 ISL	13.65	13.65	33.267	24.922	303.1	0.099	5.04	85.3	6.3	0.85	5.6	0.21	0.35	0.63	30	
36	13.50	13.49	33.272	24.956	299.9	0.117	4.95	83.5	6.9	0.90	6.3	0.22	0.27	0.59	36	204
42 A	13.16	13.15	33.271	25.024	293.7	0.135	4.84	81.1	7.6	0.97	7.3	0.27	0.26	0.56	42	203
50	12.60	12.59	33.267	25.131	283.6	0.158	4.61	76.3	9.0	1.09	9.1	0.36	0.20	0.39	50	202
59	11.89	11.88	33.309	25.298	267.9	0.183	4.11	67.0	14.0	1.36	12.4	0.24	0.16	0.51	59	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
35 1.4 N	120 55.3 W	03/11/03	1443	UTC	245 m	030	03 kn	280 04 06	1	1015.6 mb	14.0 C	13.1 C	7/8	7/8	SC	
0 ISL	15.20	15.20	33.156	24.508	341.6	0.000	5.88	102.6	1.7	0.30	0.1	0.01	4.21	0.68	0	
2	15.20	15.20	33.156	24.508	341.7	0.007	5.88	102.6	1.7	0.30	0.1	0.01	4.21	0.68	2	215
10	15.34	15.34	33.273	24.568	336.2	0.034	5.91	103.5	1.9	0.31	0.1	0.00	4.39	0.89	10	214
20	15.33	15.33	33.278	24.574	335.9	0.068	5.89	103.1	1.9	0.29	0.1	0.00	3.39	0.87	20	213
30	14.93	14.93	33.261	24.648	329.1	0.101	5.57	96.7	3.1	0.47	0.8	0.12	1.79	0.80	30	212
40	14.36	14.35	33.239	24.753	319.4	0.133	5.23	89.8	4.6	0.65	2.1	0.33	0.88	0.92	40	211
49	13.40	13.39	33.213	24.931	302.7	0.161	4.92	82.8	6.6	0.86	4.8	0.54	0.41	0.43	49	210
50 ISL	13.30	13.29	33.210	24.949	301.0	0.164	4.90	82.3	6.7	0.88	5.0	0.54	0.38	0.43	50	
59	12.51	12.50	33.219	25.111	285.7	0.191	4.70	77.6	8.2	1.02	7.6	0.42	0.23	0.39	59	209
69	11.87	11.86	33.325	25.315	266.5	0.218	4.22	68.8	11.9	1.28	12.0	0.24	0.15	0.25	69	208
75 ISL	11.47	11.46	33.384	25.435	255.2	0.234	4.00	64.7	13.5	1.40	14.2	0.17	0.12	0.20	75	
84	10.98	10.97	33.460	25.582	241.4	0.256	3.74	59.9	15.4	1.53	16.7	0.12	0.09	0.16	84	207
99	10.68	10.67	33.533	25.692	231.2	0.292	3.50	55.7	17.3	1.64	18.4	0.11	0.07	0.16	99	206
100 ISL	10.66	10.65	33.539	25.700	230.4	0.294	3.48	55.3	17.5	1.65	18.5	0.11	0.07	0.16	100	
119	10.44	10.43	33.657	25.831	218.4	0.337	3.14	49.7	20.7	1.78	20.7	0.12	0.06	0.15	120	205
125 ISL	10.38	10.37	33.683	25.862	215.6	0.350	3.07	48.6	21.3	1.81	21.1	0.12	0.05	0.14	126	
139	10.27	10.25	33.735	25.922	210.3	0.379	2.93	46.3	22.5	1.87	22.0	0.11	0.04	0.12	140	204
150 ISL	10.20	10.18	33.785	25.973	205.6	0.402	2.77	43.7	23.8	1.93	22.8	0.11	0.03	0.12	151	
170	10.09	10.07	33.864	26.053	198.4	0.443	2.51	39.5	25.9	2.02	24.0	0.11	0.02	0.12	171	203
200 ISL	9.99	9.97	33.899	26.098	194.8	0.502	2.39	37.5	27.1	2.07	24.8	0.12	0.02	0.15	201	
201	9.98	9.96	33.901	26.101	194.5	0.504	2.39	37.5	27.2	2.07	24.8	0.12	0.02	0.15	202	202
230	9.64	9.61	34.067	26.288	177.3	0.558	1.95	30.4	31.8	2.25	27.3	0.13	0.05	0.21	231	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
34 53.5 N	121 12.3 W	03/11/03	1120	UTC	567 m	280	16 kn	1016.1 mb	14.5 C	13.1 C						
0 ISL	15.25	15.25	33.225	24.550	337.6	0.000	5.94	103.8	1.0	0.36	0.3	0.02	0.86	0.36	0	
1	15.25	15.25	33.225	24.550	337.6	0.003	5.94	103.8	1.0	0.36	0.3	0.02	0.86	0.36	1	220
10	15.24	15.24	33.225	24.553	337.7	0.034	5.94	103.8	1.0	0.34	0.3	0.01	0.87	0.32	10	219
19	15.15	15.15	33.218	24.567	336.6	0.064	5.94	103.6	1.1	0.36	0.3	0.02	0.86	0.33	19	218
20 ISL	15.14	15.14	33.219	24.570	336.3	0.067	5.92	103.2	1.2	0.36	0.4	0.02	0.85	0.33	20	
30	14.37	14.37	33.180	24.705	323.7	0.100	5.76	98.9	2.3	0.53	1.5	0.10	0.69	0.33	30	217
39	12.15	12.14	33.072	25.065	289.5	0.128	5.12	83.8	7.3	1.03	8.5	0.34	0.43	0.32	39	216
50	10.95	10.94	33.017	25.242	272.9	0.159	5.04	80.4	9.6	1.21	12.0	0.25	0.34	0.31	50	215
60	10.49	10.48	33.086	25.376	260.3	0.186	4.82	76.2	11.8	1.33	14.3	0.21	0.25	0.27	60	214
69	10.29	10.28	33.214	25.510	247.7	0.209	4.49	70.7	14.1	1.44	16.2	0.16	0.17	0.23	69	213
75 ISL	10.36	10.35	33.329	25.588	240.5	0.223	4.19	66.1	15.4	1.51	17.3	0.14	0.13	0.21	75	
84	10.51	10.50	33.488	25.687	231.4	0.244	3.76	59.6	17.0	1.60	18.7	0.11	0.09	0.18	84	212
100	10.35	10.34	33.595	25.798	221.1	0.281	3.41	53.9	19.4	1.72	20.3	0.09	0.06	0.13	100	211
119	10.16	10.15	33.795	25.987	203.6	0.321	2.72	42.9	24.3	1.94	23.1	0.08	0.02	0.13	120	210
125 ISL	10.08	10.07	33.824	26.023	200.3	0.333	2.68	42.2	25.0	1.97	23.6	0.08	0.02	0.12	126	
139	9.89	9.87	33.865	26.087	194.4	0.361	2.59	40.6	26.0	2.00	24.4	0.07	0.01	0.09	140	209
150 ISL	9.79	9.77	33.900	26.131	190.5	0.382	2.53	39.6	26.9	2.03	25.0	0.07	0.01	0.09	151	
169	9.64	9.62	33.956	26.200	184.3	0.417	2.41	37.6	28.4	2.08	25.9	0.07	0.01	0.08	170	208
198	9.38	9.36	34.028	26.300	175.4	0.470	2.19	34.0	31.3	2.17	27.4	0.06	0.01	0.09	199	207
200 ISL	9.37	9.35	34.031	26.304	175.0	0.473										

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA	ml/l	PCT	uM/l	uM/l	uM/l	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
34 43.5 N	121 33.4 W	03/11/03	0705	UTC	913 m	300	13 kn									
0 ISL	15.75	15.75	33.196	24.417	350.3	0.000	5.80	102.4	1.9	0.36	0.3	0.02	0.71	0.31	0	
2	15.75	15.75	33.196	24.417	350.3	0.007	5.80	102.4	1.9	0.36	0.3	0.02	0.71	0.31	2	220
10	15.76	15.76	33.197	24.416	350.7	0.035	5.80	102.4	1.9	0.36	0.3	0.02	0.75	0.34	10	219
20	15.76	15.76	33.191	24.412	351.4	0.070	5.80	102.4	1.9	0.36	0.3	0.01	0.71	0.31	20	218
30	15.74	15.74	33.188	24.414	351.5	0.105	5.81	102.5	1.9	0.36	0.3	0.01	0.67	0.29	30	217
40	15.21	15.20	33.142	24.496	343.9	0.140	5.76	100.5	2.3	0.44	0.8	0.09	0.62	0.33	40	216
50	12.01	12.00	32.964	25.008	295.2	0.172	5.41	88.3	6.1	0.96	7.7	0.29	0.50	0.38	50	215
59	11.44	11.43	33.180	25.281	269.4	0.197	4.83	78.0	10.0	1.27	13.2	0.08	0.22	0.23	59	214
69	10.22	10.21	33.270	25.566	242.4	0.223	4.44	69.8	15.2	1.52	17.7	0.08	0.10	0.15	69	213
75 ISL	9.78	9.77	33.296	25.660	233.6	0.237	4.34	67.6	17.1	1.59	19.0	0.08	0.07	0.12	75	
85	9.42	9.41	33.359	25.768	223.4	0.260	4.16	64.3	19.4	1.66	20.4	0.08	0.04	0.09	85	212
99	9.49	9.48	33.611	25.954	206.1	0.290	3.44	53.3	22.8	1.82	23.2	0.08	0.01	0.07	99	211
100 ISL	9.48	9.47	33.622	25.964	205.2	0.292	3.43	53.2	23.0	1.82	23.2	0.08	0.01	0.07	100	
120	9.11	9.10	33.764	26.135	189.3	0.332	3.31	50.9	25.5	1.85	24.2	0.08	0.01	0.10	121	210
125 ISL	9.06	9.05	33.787	26.161	186.9	0.341	3.29	50.6	25.9	1.86	24.4	0.08	0.01	0.09	126	
139	8.97	8.96	33.840	26.217	181.8	0.367	3.19	49.0	27.1	1.89	24.9	0.08	0.00	0.05	140	209
150 ISL	8.96	8.94	33.886	26.255	178.5	0.387	3.00	46.1	28.3	1.95	25.6	0.08	0.00	0.06	151	
169	8.93	8.91	33.962	26.320	172.7	0.420	2.62	40.2	31.1	2.07	27.2	0.07	0.00	0.07	170	208
199	8.50	8.48	34.055	26.460	159.9	0.470	2.19	33.3	37.2	2.25	30.0	0.07	0.00	0.05	200	207
200 ISL	8.48	8.46	34.057	26.464	159.4	0.472	2.17	33.0	37.4	2.26	30.1	0.07			201	
228	8.03	8.01	34.108	26.573	149.5	0.515	1.79	26.9	43.4	2.44	32.3	0.06			229	206
250 ISL	7.85	7.83	34.116	26.606	146.7	0.547	1.68	25.2	45.6	2.50	33.1	0.05			251	
268	7.74	7.71	34.117	26.623	145.3	0.574	1.63	24.4	47.0	2.53	33.5	0.05			270	205
300 ISL	7.46	7.43	34.140	26.681	140.2	0.619	1.39	20.6	51.1	2.64	34.7	0.05			302	
317	7.31	7.28	34.156	26.715	137.1	0.643	1.25	18.5	53.5	2.71	35.4	0.05			319	204
378	6.94	6.90	34.222	26.819	128.0	0.724	0.77	11.3	61.7	2.93	37.5	0.05			380	203
400 ISL	6.83	6.79	34.236	26.845	125.8	0.752	0.67	9.8	64.0	2.98	38.1	0.05			403	
438	6.64	6.60	34.256	26.887	122.3	0.799	0.54	7.9	67.9	3.05	39.0	0.04			441	202
500 ISL	6.29	6.24	34.292	26.962	115.8	0.873	0.36	5.2	75.1	3.16	40.4	0.04			503	
512	6.22	6.17	34.299	26.977	114.5	0.887	0.33	4.8	76.5	3.18	40.7	0.04			516	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA	ml/l	PCT	uM/l	uM/l	uM/l	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
34 23.4 N	122 14.8 W	03/11/03	0105	UTC	4023 m	310	12 kn	330 05 07	1	1016.8 mb	14.9	C 12.0 C	4/8	SC		
0 ISL	15.26	15.26	33.176	24.510	341.4	0.000	5.95	104.0	0.9	0.36	0.2	0.01	1.02	0.26	0	
2	15.26	15.26	33.176	24.510	341.5	0.007	5.95	104.0	0.9	0.36	0.2	0.01	1.02	0.26	2	220
10	15.26	15.26	33.178	24.512	341.5	0.034	5.97	104.3	0.9	0.36	0.1	0.00	1.16	0.33	10	219
20	15.24	15.24	33.180	24.518	341.2	0.068	5.96	104.1	0.9	0.36	0.0	0.00	0.80	0.26	20	218
29	14.07	14.07	33.222	24.800	314.6	0.098	5.45	93.0	4.1	0.74	3.8	0.41	0.86	0.44	29	217
30 ISL	13.93	13.93	33.230	24.836	311.3	0.101	5.39	91.7	4.5	0.78	4.4	0.42	0.82	0.43	30	
40	12.46	12.45	33.316	25.195	277.2	0.130	4.75	78.4	9.1	1.18	11.4	0.48	0.38	0.28	40	216
49	11.23	11.22	33.376	25.471	251.1	0.154	4.21	67.7	13.6	1.48	16.7	0.08	0.23	0.32	49	215
50 ISL	11.12	11.11	33.386	25.499	248.5	0.157	4.16	66.8	14.1	1.51	17.1	0.08	0.22	0.31	50	
59	10.37	10.36	33.470	25.696	229.9	0.178	3.83	60.5	17.8	1.67	20.0	0.06	0.16	0.22	59	214
70	10.04	10.03	33.523	25.794	220.8	0.203	3.71	58.2	19.4	1.72	21.2	0.04	0.07	0.17	70	213
75 ISL	9.89	9.88	33.568	25.854	215.2	0.214	3.58	56.0	20.6	1.76	21.9	0.04	0.05	0.16	75	
85	9.62	9.61	33.657 D	25.969	204.5	0.235	3.33	51.8	22.8	1.84	23.3	0.04	0.03	0.15	85	212
99	9.44	9.43	33.704	26.035	198.4	0.263	3.25	50.4	23.9	1.88	24.0	0.04	0.02	0.13	100	211
100 ISL	9.43	9.42	33.712	26.043	197.7	0.265	3.23	50.1	24.1	1.89	24.1	0.04	0.02	0.13	101	
119	9.22	9.21	33.868	26.199	183.2	0.301	2.75	42.5	28.1	2.02	26.1	0.03	0.01	0.10	120	210
125 ISL	9.12	9.11	33.904	26.243	179.1	0.312	2.68	41.3	29.2	2.04	26.5	0.03	0.01	0.10	126	
138	8.92	8.91	33.965	26.323	171.8	0.335	2.60	39.9	31.1	2.08	27.3	0.03	0.01	0.09	139	209
150 ISL	8.81	8.79	33.992	26.362	168.3	0.355	2.58	39.5	32.1	2.09	27.7	0.03	0.01	0.09	151	
169	8.66	8.64	34.013	26.402	164.8	0.387	2.56	39.1	33.7	2.11	28.2	0.03	0.01	0.08	170	208
198	8.31	8.29	34.061	26.493	156.6	0.434	2.30	34.8	38.4	2.26	30.0	0.03	0.01	0.07	199	207
200 ISL	8.27	8.25	34.061	26.499	156.0	0.437	2.29	34.6	38.8	2.27	30.1	0.03			201	
228	7.83	7.81	34.073	26.574	149.2	0.479	2.05	30.7	43.6	2.38	31.9	0.03			229	206
250 ISL	7.84	7.82	34.131	26.619	145.4	0.512	1.66	24.9	46.3	2.52	32.8	0.03			252	
268	7.84	7.81	34.172	26.651	142.7	0.538	1.34	20.1	48.4	2.63	33.5	0.03			270	205
300 ISL	7.57	7.54	34.194	26.708	137.7	0.583	1.09	16.2	52.8	2.75	34.9	0.02			302	
318	7.36	7.33	34.192	26.737	135.2	0.607	1.02	15.1	55.4	2.80	35.7	0.02			320	204
378	6.66	6.63	34.165	26.812	128.5	0.686	0.92	13.4	63.4</td							

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
34	3.4 N	122 56.7 W	02/11/03	1906	UTC	4241 m	330	11 kn	330 04 08	1	1019.0 mb	17.5	C 14.0 C	14m	3/8	CU
0	ISL	15.61	15.61	33.282	24.515	341.0	0.000	5.88	103.6	0.9	0.42	0.9	0.07	0.88	0.27	0
2	A	15.61	15.61	33.282	24.515	341.1	0.007	5.88	103.6	0.9	0.42	0.9	0.07	0.88	0.27	2 221
9	A	15.58	15.58	33.281	24.521	340.7	0.031	5.89	103.7	0.9	0.41	0.9	0.07	0.86	0.24	9 220
10	ISL	15.58	15.58	33.281	24.521	340.7	0.034	5.89	103.7	0.9	0.41	0.9	0.07	0.86	0.24	10
19	A	15.56	15.56	33.286	24.529	340.2	0.065	5.87	103.3	1.0	0.42	0.9	0.07	0.80	0.28	19 219
20	ISL	15.56	15.56	33.289	24.532	340.0	0.068	5.87	103.3	1.0	0.42	0.9	0.07	0.79	0.28	20
26	A	15.57	15.57	33.307	24.544	339.0	0.088	5.85	102.9	1.0	0.44	1.2	0.08	0.73	0.28	26 218
30	ISL	15.12	15.12	33.338	24.667	327.4	0.102	5.57	97.2	2.3	0.59	3.1	0.35	0.71	0.29	30
37	A	13.72	13.71	33.412	25.020	293.9	0.124	4.79	81.2	6.8	1.00	8.7	0.71	0.63	0.30	37 217
46		11.07	11.06	33.545	25.631	235.8	0.147	3.48	55.9	17.0	1.66	19.6	0.14	0.32	0.30	46 216
50	ISL	10.55	10.54	33.632	25.791	220.7	0.157	3.09	49.1	20.2	1.82	21.9	0.13	0.22	0.26	50
54	A	10.29	10.28	33.712	25.898	210.5	0.165	2.81	44.4	22.6	1.92	23.3	0.11	0.14	0.21	54 215
62		10.04	10.03	33.813	26.020	199.1	0.182	2.48	39.0	25.3	2.03	24.8	0.11	0.08	0.18	62 214
70		9.91	9.90	33.869	26.086	193.1	0.197	2.34	36.7	26.8	2.09	25.6	0.09	0.02	0.11	70 213
75	ISL	9.86	9.85	33.892	26.112	190.7	0.207	2.28	35.7	27.4	2.11	25.9	0.09	0.02	0.11	75
85		9.81	9.80	33.922	26.144	187.9	0.226	2.20	34.4	28.2	2.13	26.3	0.08	0.02	0.10	85 212
99		9.75	9.74	33.950	26.176	185.1	0.252	2.14	33.5	29.0	2.16	26.5	0.08	0.01	0.10	100 211
100	ISL	9.74	9.73	33.953	26.180	184.7	0.254	2.13	33.3	29.1	2.16	26.5	0.08	0.01	0.10	101
119		9.62	9.61	34.003	26.240	179.5	0.288	2.01	31.3	30.7	2.21	27.3	0.07	0.01	0.07	120 210
125	ISL	9.59	9.58	34.014	26.253	178.3	0.299	1.98	30.9	31.1	2.22	27.5	0.07	0.01	0.07	126
140		9.52	9.50	34.040	26.285	175.6	0.326	1.90	29.6	32.0	2.26	28.0	0.06	0.01	0.08	141 209
150	ISL	9.44	9.42	34.067	26.320	172.5	0.343	1.82	28.3	33.1	2.30	28.4	0.06	0.01	0.08	151
169		9.28	9.26	34.118	26.386	166.6	0.375	1.68	26.0	35.3	2.36	29.2	0.06	0.01	0.07	170 208
200		9.14	9.12	34.154	26.437	162.3	0.426	1.55	23.9	37.1	2.41	29.9	0.05	0.01	0.05	201 207
229		8.96	8.94	34.202	26.504	156.5	0.472	1.37	21.1	39.7	2.50	30.8	0.05			230 206
250	ISL	8.87	8.84	34.218	26.531	154.3	0.505	1.29	19.8	40.8	2.54	31.2	0.04			252
269		8.80	8.77	34.223	26.546	153.2	0.534	1.24	19.0	41.7	2.56	31.4	0.04			271 205
300	ISL	8.65	8.62	34.223	26.570	151.5	0.582	1.15	17.6	43.5	2.61	31.9	0.04			302
318		8.55	8.52	34.222	26.585	150.4	0.609	1.10	16.8	44.7	2.64	32.3	0.04			320 204
379		8.03	7.99	34.255	26.690	141.2	0.698	0.88	13.3	50.6	2.77	34.0	0.04			381 203
400	ISL	7.95	7.91	34.262	26.708	139.8	0.727	0.84	12.6	51.6	2.80	34.3	0.04			403
438		7.76	7.72	34.265	26.739	137.4	0.780	0.78	11.7	54.0	2.84	34.9	0.04			441 202
500	ISL	6.96	6.91	34.245	26.836	128.4	0.862	0.64	9.4	63.7	2.97	37.4	0.04			503
511		6.82	6.77	34.242	26.853	126.9	0.876	0.62	9.1	65.4	2.99	37.8	0.04			515 201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
33	43.7 N	123 38.3 W	02/11/03	1330	UTC	4204 m	340	18 kn								
0	ISL	16.79	16.79	32.961	24.000	390.1	0.000	5.61	100.9	1.3	0.38	0.2	0.01	0.28	0.09	0
2		16.79	16.79	32.961	24.000	390.1	0.008	5.61	100.9	1.3	0.38	0.2	0.01	0.28	0.09	2 220
10		16.79	16.79	32.957	23.997	390.6	0.039	5.60	100.7	1.3	0.38	0.2	0.00	0.28	0.09	10 219
20		16.68	16.68	33.086	24.122	379.1	0.078	5.68	102.0	1.2	0.38	0.2	0.01	0.44	0.15	20 218
30	ISL	15.87	15.87	33.274	24.451	348.0	0.114	5.73	101.4	1.2	0.47	1.1	0.10	0.59	0.24	30
31		15.73	15.73	33.288	24.494	344.0	0.117	5.73	101.1	1.2	0.48	1.3	0.11	0.60	0.25	31 217
39		14.06	14.05	33.279	24.847	310.5	0.144	5.54	94.5	2.6	0.76	4.1	0.49	0.65	0.33	39 216
50		12.41	12.40	33.263	25.164	280.4	0.176	4.96	81.8	7.2	1.16	10.9	0.65	0.40	0.31	50 215
59		11.90	11.89	33.305	25.293	268.3	0.201	4.59	74.9	9.6	1.35	14.6	0.26	0.31	0.32	59 214
70		11.20	11.19	33.364	25.468	251.9	0.229	4.19	67.4	13.1	1.62	19.3	0.07	0.20	0.29	70 213
75	ISL	10.77	10.76	33.401	25.573	242.0	0.242	4.06	64.7	15.2	1.62	19.3	0.07	0.15	0.25	75
86		9.94	9.93	33.495	25.789	221.6	0.267	3.82	59.8	19.6	1.74	21.5	0.07	0.05	0.14	86 212
100		9.67	9.66	33.605	25.920	209.4	0.297	3.47	54.0	22.4	1.84	23.3	0.05	0.02	0.08	100 211
119		9.42	9.41	33.752	26.076	194.9	0.336	3.03	47.0	26.0	1.95	25.1	0.05	0.01	0.09	120 210
125	ISL	9.26	9.25	33.785	26.128	190.1	0.347	2.95	45.6	27.3	1.99	25.8	0.05	0.01	0.09	126
140		8.86	8.85	33.857	26.248	178.9	0.375	2.82	43.2	30.1	2.06	27.2	0.05	0.01	0.07	141 209
150	ISL	8.77	8.75	33.914	26.307	173.5	0.393	2.80	42.8	31.1	2.06	27.5	0.05	0.01	0.07	151
168		8.65	8.63	33.997	26.391	165.9	0.423	2.76	42.1	32.7	2.07	27.7	0.04	0.01	0.06	169 208
198		8.13	8.11	34.010	26.480	157.7	0.472	2.73	41.2	37.1	2.13	29.1	0.04	0.00	0.03	199 207
200	ISL	8.09	8.07	34.010	26.486	157.2	0.475	2.75	41.4	37.4	2.13	29.1	0.04			201
229		7.57	7.55	34.008	26.561	150.4	0.519	2.87	42.7	41.7	2.15	29.8	0.03			230 206
250	ISL	7.22	7.20	34.013	26.614	145.5	0.550	2.54	37.5	46.4	2.30	31.8	0.03			251
268		6.95	6.93	34.019	26.656	141.6	0.576	2.17	31.8	50.6	2.45	33.8	0.03			270 205
300	ISL	6.62														

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	17.56	17.56	32.753	23.659	422.6	0.000	5.56	101.4	1.4	0.39	0.0	0.00	0.13	0.04	0	
2	17.56	17.56	32.753	23.659	422.6	0.008	5.56	101.4	1.4	0.39	0.0	0.00	0.13	0.04	2	220
10 ISL	17.55	17.55	32.753	23.662	422.6	0.042	5.56	101.4	1.4	0.39	0.0	0.00	0.13	0.05	10	
15	17.55	17.55	32.754	23.663	422.7	0.063	5.56	101.4	1.4	0.39	0.0	0.00	0.13	0.05	15	219
20 ISL	17.55	17.55	32.757	23.665	422.7	0.085	5.56	101.4	1.4	0.39	0.0	0.00	0.13	0.05	20	
29	17.56	17.56	32.763	23.668	422.7	0.123	5.56	101.4	1.4	0.38	0.0	0.00	0.14	0.05	29	218
30 ISL	17.46	17.46	32.760	23.689	420.7	0.127	5.59	101.8	1.4	0.38	0.0	0.00	0.15	0.06	30	
44	15.57	15.56	32.705	24.081	383.6	0.183	6.06	106.2	1.7	0.40	0.0	0.00	0.26	0.19	44	217
50 ISL	14.71	14.70	32.679	24.248	367.9	0.206	6.10	105.1	1.9	0.42	0.1	0.00	0.30	0.24	50	
55	13.94	13.93	32.655	24.390	354.4	0.224	6.14	104.1	2.1	0.43	0.1	0.00	0.31	0.28	55	216
64	12.35	12.34	32.610	24.670	327.8	0.254	6.03	98.9	3.0	0.58	1.1	0.14	0.27	0.32	64	215
75	11.37	11.36	32.672	24.899	306.1	0.289	5.69	91.4	4.7	0.80	5.0	0.10	0.20	0.23	75	214
85	10.51	10.50	32.772	25.128	284.4	0.319	5.46	86.1	7.2	1.02	9.0	0.04	0.14	0.17	85	213
94	10.09	10.08	32.825	25.241	273.8	0.344	5.34	83.5	9.1	1.14	11.1	0.03	0.10	0.14	94	212
100 ISL	9.90	9.89	32.916	25.344	264.1	0.360	5.25	81.8	10.2	1.18	12.0	0.02	0.07	0.10	100	
110	9.63	9.62	33.089	25.523	247.2	0.386	5.05	78.3	12.3	1.24	13.6	0.02	0.04	0.05	110	211
124	9.18	9.17	33.262	25.731	227.6	0.419	4.66	71.6	16.4	1.45	17.3	0.03	0.02	0.03	125	210
125 ISL	9.16	9.15	33.274	25.744	226.5	0.421	4.64	71.3	16.7	1.46	17.5	0.03	0.02	0.03	126	
144	8.94	8.92	33.502	25.957	206.5	0.462	4.09	62.6	21.6	1.69	21.3	0.03	0.00	0.02	145	209
150 ISL	9.01	8.99	33.595	26.019	200.8	0.474	3.76	57.7	23.4	1.78	22.6	0.03	0.00	0.02	151	
170	9.26	9.24	33.873	26.197	184.4	0.513	2.69	41.6	28.7	2.04	26.4	0.03	0.01	0.04	171	208
198	8.94	8.92	34.007	26.354	170.1	0.563	2.29	35.2	33.1	2.17	28.6	0.02	0.00	0.04	199	207
200 ISL	8.91	8.89	34.014	26.364	169.1	0.566	2.26	34.7	33.5	2.18	28.8	0.02			201	
228	8.53	8.51	34.085	26.479	158.6	0.612	1.93	29.4	38.5	2.33	30.8	0.02			229	206
250 ISL	8.22	8.19	34.104	26.541	153.0	0.646	1.82	27.5	41.8	2.41	31.9	0.02			251	
268	7.95	7.92	34.102	26.580	149.5	0.673	1.78	26.7	44.3	2.46	32.7	0.02			269	205
300 ISL	7.36	7.33	34.071	26.641	143.9	0.720	1.74	25.8	49.1	2.53	34.3	0.02			302	
319	7.02	6.99	34.051	26.673	140.9	0.747	1.71	25.1	52.1	2.58	35.3	0.02			321	204
377	6.34	6.31	34.066	26.776	131.6	0.826	1.29	18.7	61.9	2.81	38.2	0.02			379	203
400 ISL	6.20	6.16	34.098	26.819	127.7	0.856	1.08	15.6	65.6	2.90	39.0	0.02			402	
437	5.99	5.95	34.150	26.887	121.6	0.902	0.79	11.3	71.6	3.02	40.1	0.01			440	202
500 ISL	5.39	5.35	34.152	26.962	114.6	0.977	0.63	8.9	82.3	3.12	42.0	0.01			503	
518	5.22	5.18	34.154	26.984	112.6	0.997	0.59	8.3	85.3	3.15	42.6	0.01			521	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	16.26	16.26	33.233	24.331	358.5	0.000	5.94	105.9	3.1	0.28	0.1	0.01	4.11	0.90	0	
2 A	16.26	16.26	33.233	24.331	358.6	0.007	5.94	105.9	3.1	0.28	0.1	0.01	4.11	0.90	2	211
4 A	16.31	16.31	33.232	24.319	359.8	0.014	5.96	106.4	3.1	0.28	0.1	0.01	4.25	0.98	4	210
9 A	15.77	15.77	33.226	24.436	348.7	0.032	5.77	101.9	3.4	0.34	0.1	0.01	3.12	0.80	9	209
10 ISL	15.45	15.45	33.211	24.496	343.1	0.036	5.66	99.3	3.7	0.39	0.2	0.04	2.71	0.71	10	
14 A	14.13	14.13	33.158	24.738	320.1	0.049	5.21	89.0	5.3	0.62	1.3	0.19	1.13	0.38	14	208
19 A	13.28	13.28	33.139	24.897	305.1	0.064	5.02	84.2	6.6	0.82	3.7	0.36	0.40	0.23	19	207
20 ISL	13.25	13.25	33.135	24.900	304.8	0.067	5.03	84.3	6.6	0.83	3.9	0.38	0.39	0.24	20	
26 A	13.04	13.04	33.113	24.925	302.6	0.086	5.11	85.3	6.2	0.86	4.7	0.48	0.32	0.28	26	206
30 ISL	12.80	12.80	33.120	24.977	297.7	0.098	5.00	83.0	6.7	0.92	5.7	0.49	0.28	0.26	30	
34	12.59	12.59	33.133	25.028	293.0	0.110	4.88	80.7	7.4	0.97	6.7	0.49	0.24	0.24	34	205
39	12.53	12.52	33.138	25.044	291.6	0.124	4.85	80.1	7.7	0.99	7.2	0.46	0.22	0.23	39	204
50	11.90	11.89	33.220	25.227	274.4	0.155	4.54	74.0	10.0	1.17	10.8	0.15	0.16	0.20	50	203
59	11.78	11.77	33.245	25.269	270.6	0.180	4.47	72.7	10.7	1.21	11.5	0.16	0.14	0.19	59	202
65	11.67	11.66	33.267	25.307	267.2	0.196	4.38	71.1	11.3	1.24	12.1	0.14	0.15	0.21	65	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
34 19.3 N	120 48.2 W	31/10/03	2206	UTC	751 m	270	07 kn	310 05 10	1	1011.5 mb	14.9	C 12.9 C	12m	5/8	AC	
0 ISL	14.94	14.94	33.222	24.615	331.4	0.000	5.64	98.0	3.9	0.52	1.5	0.14	2.57	0.74	0	
1	14.94	14.94	33.222	24.615	331.4	0.003	5.64	98.0	3.9	0.52	1.5	0.14	2.57	0.74	1	220
9	14.97	14.97	33.222	24.609	332.3	0.030	5.64	98.0	3.9	0.52	1.5	0.13	2.51	0.87	9	219
10 ISL	14.93	14.93	33.222	24.618	331.5	0.033	5.63	97.8	3.9	0.53	1.6	0.13	2.48	0.85	10	
20 ISL	14.53	14.53	33.224	24.705	323.4	0.066	5.46	94.0	4.5	0.60	2.4	0.18	2.09	0.63	20	
21	14.48	14.48	33.224	24.716	322.4	0.069	5.44	93.6	4.6	0.61	2.5	0.19	2.04	0.60	21	218
30	14.34	14.34	33.217	24.740	320.4	0.098	5.35	91.8	4.9	0.64	2.8	0.22	1.62	0.56	30	217
39	13.13	13.12	33.242	25.007	295.2	0.126	4.91	82.2	7.4	0.92	7.0	0.19	0.82	0.37	39	216
50	11.50	11.49	33.344	25.397	258.2	0.156	4.19	67.8	12.3	1.32	13.8	0.08	0.18	0.19	50	215
59	11.33	11.32	33.358	25.440	254.4	0.179	4.09	65.9	13.0	1.37	14.5	0.06	0.14	0.16	59	214
69	10.93	10.92	33.493	25.616	237.7	0.204	3.62	57.9	16.5	1.56	17.5	0.04	0.09	0.17	69	213
75 ISL	10.69	10.68	33.582	25.728	227.2	0.218	3.35	53.3	18.6	1.67	19.2	0.03	0.07	0.15	75	
84	10.42	10.41	33.694	25.863	214.6	0.238	3.03	48.0	21.3	1.80	21.1	0.03	0.04	0.10	84	212
100	10.35	10.34	33.747	25.916	209.9	0.272	2.82	44.6	22.9	1.87	22.0	0.03	0.03	0.08	101	211
120	10.27	10.26	33.804	25.975	204.8	0.313	2.66	42.0	24.4	1.94	22.8	0.03	0.03	0.07	121	210
125 ISL	10.22	10.21	33.832	26.005	202.0	0.323	2.58	40.7	25.1	1.97	23.2	0.03	0.03	0.07	126	
139	10.08	10.06	33.915	26.094	193.8	0.351	2.34	36.8	27.2	2.07	24.5	0.02	0.02	0.06	140	209
150 ISL	10.01	9.99	33.956	26.138	189.9	0.372	2.23	35.1	28.3	2.11	25.1	0.02	0.03	0.06	151	
169	9.89	9.87	34.011	26.202	184.2	0.408	2.08	32.6	29.9	2.17	25.9	0.02	0.04	0.06	170	208
198	9.59	9.57	34.099	26.321	173.5	0.460	1.81	28.2	33.5	2.29	27.6	0.02	0.03	0.06	199	207
200 ISL	9.56	9.54	34.105	26.331	172.6	0.463	1.79	27.9	33.8	2.30	27.7	0.02			201	
228	9.21	9.18	34.181	26.448	161.9	0.510	1.51	23.3	38.2	2.44	29.4	0.02			229	206
250 ISL	8.99	8.96	34.198	26.496	157.7	0.545	1.42	21.9	40.2	2.49	30.2	0.01			251	
268	8.84	8.81	34.201	26.523	155.5	0.573	1.38	21.2	41.4	2.52	30.7	0.01			270	205
300 ISL	8.58	8.55	34.225	26.582	150.3	0.622	1.23	18.8	44.1	2.60	31.6	0.01			302	
318	8.43	8.40	34.238	26.616	147.4	0.649	1.14	17.3	45.8	2.65	32.1	0.01			320	204
377	7.81	7.77	34.252	26.720	138.1	0.733	0.91	13.6	52.3	2.79	34.1	0.01			379	203
400 ISL	7.64	7.60	34.257	26.749	135.7	0.765	0.84	12.5	54.1	2.83	34.6	0.01			403	
438	7.34	7.30	34.260	26.795	131.7	0.815	0.73	10.8	57.8	2.90	35.6	0.01			441	202
500 ISL	6.55	6.50	34.241	26.888	123.1	0.894	0.56	8.1	69.2	3.05	38.4	0.01			503	
513	6.38	6.33	34.238	26.908	121.2	0.910	0.52	7.5	71.6	3.08	39.0	0.01			517	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
34 8.9 N	121 9.4 W	01/11/03	0218	UTC	2232 m	290	08 kn	310 05 10	1	1012.6 mb	14.6	C 12.3 C	12m	5/8	AC	
0 ISL	15.83	15.83	33.093	24.320	359.5	0.000	5.85	103.4	1.5	0.38	0.2	0.01	0.54	0.20	0	
2	15.83	15.83	33.093	24.320	359.6	0.007	5.85	103.4	1.5	0.38	0.2	0.01	0.54	0.20	2	220
10	15.85	15.85	33.093	24.316	360.2	0.036	5.86	103.6	1.5	0.38	0.1	0.01	0.52	0.21	10	219
20	15.81	15.81	33.091	24.324	359.8	0.072	5.84	103.1	1.5	0.38	0.1	0.01	0.56	0.23	20	218
30	14.39	14.39	33.058	24.607	333.1	0.107	5.81	99.7	3.0	0.58	2.5	0.21	0.75	0.45	30	217
39	12.21	12.20	33.048	25.035	292.4	0.135	5.36	87.9	6.7	1.01	9.1	0.26	0.63	0.61	39	216
50	10.93	10.92	33.251	25.428	255.2	0.165	4.59	73.3	12.4	1.43	16.0	0.03	0.20	0.24	50	215
60	10.69	10.68	33.376	25.567	242.2	0.190	4.22	67.1	15.1	1.57	18.3	0.03	0.11	0.14	60	214
70	10.48	10.47	33.430	25.646	234.9	0.214	4.01	63.5	16.7	1.63	19.5	0.03	0.08	0.11	70	213
75 ISL	10.28	10.27	33.467	25.709	228.9	0.225	3.87	61.0	18.0	1.68	20.4	0.03	0.06	0.10	75	
85	9.79	9.78	33.547	25.854	215.3	0.247	3.62	56.5	20.9	1.78	22.1	0.03	0.03	0.08	85	212
98	9.13	9.12	33.636	26.031	198.7	0.274	3.55	54.6	24.5	1.86	23.6	0.02	0.01	0.06	98	211
100 ISL	9.12	9.11	33.657	26.050	197.0	0.278	3.53	54.3	24.8	1.86	23.7	0.02	0.01	0.06	100	
120	8.99	8.98	33.803	26.185	184.5	0.316	3.27	50.2	26.7	1.90	24.7	0.02	0.01	0.05	121	210
125 ISL	8.95	8.94	33.832	26.214	181.9	0.326	3.19	48.9	27.5	1.92	25.1	0.02	0.01	0.05	126	
139	8.84	8.83	33.903	26.287	175.2	0.351	2.95	45.2	29.9	2.00	26.4	0.02	0.01	0.04	140	209
150 ISL	8.78	8.76	33.952	26.335	170.8	0.370	2.81	43.0	31.4	2.05	27.0	0.02	0.01	0.04	151	
170	8.65	8.63	34.019	26.408	164.3	0.403	2.58	39.4	34.1	2.14	28.0	0.02	0.00	0.04	171	208
199	8.31	8.29	34.065	26.496	156.3	0.450	2.24	33.9	39.0	2.29	30.0	0.02	0.00	0.05	200	207
200 ISL	8.30	8.28	34.065	26.498	156.2	0.451	2.24	33.9	39.1	2.29	30.0	0.02			201	
228	7.92	7.90	34.057	26.549	151.7	0.494	2.23	33.5	42.1	2.32	31.0	0.02			229	206
250 ISL	7.63	7.61	34.081	26.610	146.2	0.527	1.90	28.3	46.5	2.47	32.7	0.02			251	
270	7.38	7.35	34.110	26.669	140.8	0.556	1.54	22.8	50.9	2.63	34.3	0.02			272	205
300 ISL	7.09	7.06	34.138	26.731	135.2	0.597	1.26	18.6	55.7	2.76	35.6	0.02			302	
317	6.95	6.92	34.151	26.761	132.5	0.620	1.15	16.9	58.0	2.81	36.2	0.02			319	204
378	6.61	6.58	34.194	26.841	125.6	0.699	0.79	11.5	65.2	2.98	38.0	0.01			380	203
400 ISL	6.57	6.53	34.226	26.872	123.1	0.726	0.65	9								

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	S103	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
33 49.1 N	121 50.7 W	01/11/03	0757	UTC	3633 m	300	09 kn									
0 ISL	15.28	15.28	33.202	24.526	339.9	0.000	5.98	104.6	0.9	0.43	0.2	0.03	1.00	0.25	0	
1	15.28	15.28	33.202	24.526	339.9	0.003	5.98	104.6	0.9	0.43	0.2	0.03	1.00	0.25	1	220
10	15.28	15.28	33.202	24.526	340.2	0.034	5.97	104.4	0.9	0.40	0.2	0.03	0.96	0.25	10	219
19	15.19	15.19	33.207	24.550	338.2	0.065	5.98	104.4	0.9	0.41	0.3	0.04	1.03	0.26	19	218
20 ISL	15.12	15.12	33.210	24.568	336.6	0.068	5.97	104.1	1.0	0.42	0.4	0.05	1.33	0.32	20	
30	14.08	14.08	33.260	24.828	312.0	0.100	5.82	99.3	2.0	0.63	2.8	0.20	3.90	0.81	30	217
39	12.88	12.87	33.319	25.116	284.8	0.127	5.13	85.4	7.6	1.01	8.0	0.44	2.56	0.56	39	216
49	10.92	10.91	33.453	25.587	240.1	0.153	3.86	61.7	16.3	1.63	19.0	0.07	0.17	0.30	49	215
50 ISL	10.84	10.83	33.465	25.610	237.9	0.156	3.80	60.7	16.8	1.64	19.2	0.07	0.16	0.29	50	
60	10.40	10.39	33.554	25.756	224.2	0.179	3.46	54.7	19.7	1.79	21.6	0.05	0.07	0.23	60	214
70	9.96	9.95	33.612	25.877	212.9	0.201	3.35	52.5	21.9	1.84	22.6	0.04	0.07	0.19	70	213
75 ISL	9.83	9.82	33.648	25.927	208.3	0.211	3.26	51.0	22.9	1.87	23.1	0.04	0.06	0.17	75	
84	9.68	9.67	33.711	26.001	201.4	0.230	3.08	48.0	24.5	1.93	24.0	0.04	0.03	0.16	84	212
100	9.51	9.50	33.799	26.098	192.5	0.261	2.88	44.7	26.2	1.98	25.0	0.04	0.03	0.18	101	211
119	9.29	9.28	33.930	26.236	179.7	0.297	2.51	38.8	29.7	2.10	26.6	0.04	0.01	0.13	120	210
125 ISL	9.20	9.19	33.947	26.264	177.2	0.307	2.50	38.6	30.3	2.11	27.0	0.04	0.01	0.13	126	
139	8.98	8.97	33.973	26.320	172.1	0.332	2.49	38.3	31.6	2.12	27.7	0.04	0.02	0.13	140	209
150 ISL	8.88	8.86	34.008	26.363	168.2	0.350	2.36	36.2	33.2	2.17	28.5	0.04	0.02	0.11	151	
170	8.73	8.71	34.071	26.436	161.6	0.383	2.05	31.3	36.5	2.29	29.8	0.04	0.01	0.08	171	208
200	8.43	8.41	34.122	26.523	153.9	0.431	1.74	26.4	40.7	2.44	31.2	0.03	0.01	0.08	201	207
229	8.04	8.02	34.118	26.579	148.9	0.475	1.72	25.9	44.3	2.49	32.4	0.03			230	206
250 ISL	7.92	7.89	34.166	26.635	144.0	0.505	1.42	21.3	47.8	2.62	33.4	0.03			252	
268	7.84	7.81	34.212	26.683	139.7	0.531	1.13	16.9	50.9	2.75	34.2	0.03			270	205
300 ISL	7.52	7.49	34.234	26.747	134.0	0.575	0.87	12.9	55.9	2.87	35.4	0.03			302	
317	7.33	7.30	34.234	26.774	131.6	0.597	0.79	11.7	58.3	2.91	36.0	0.03			319	204
377	6.78	6.75	34.232	26.849	125.1	0.674	0.64	9.4	65.6	3.03	37.8	0.03			379	203
400 ISL	6.38	6.34	34.197	26.874	122.7	0.703	0.70	10.1	69.4	3.04	38.7	0.03			403	
437	5.80	5.76	34.158	26.917	118.6	0.748	0.76	10.9	75.4	3.06	40.1	0.03			440	202
500 ISL	5.82	5.78	34.269	27.003	111.3	0.820	0.38	5.4	81.4	3.21	41.0	0.03			504	
513	5.82	5.78	34.292	27.021	109.8	0.834	0.30	4.3	82.6	3.24	41.2	0.03			517	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	S103	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
33 29.1 N	122 32.1 W	01/11/03	1341	UTC	3979 m	350	10 kn									
0 ISL	15.14	15.14	33.156	24.521	340.4	0.000	5.93	103.4	1.2	0.43	0.8	0.07	0.63	0.24	0	
1	15.14	15.14	33.156	24.521	340.4	0.003	5.93	103.4	1.2	0.43	0.8	0.07	0.63	0.24	1	220
10	15.15	15.15	33.157	24.520	340.8	0.034	5.92	103.2	1.2	0.43	0.8	0.07	0.69	0.20	10	219
20	15.13	15.13	33.156	24.524	340.7	0.068	5.93	103.3	1.2	0.43	0.8	0.07	0.68	0.22	20	218
30	14.22	14.22	33.261	24.799	314.8	0.101	5.67	97.1	1.6	0.62	2.7	0.24	1.07	0.36	30	217
40	11.68	11.67	33.252	25.293	267.9	0.130	4.67	75.8	9.9	1.30	13.8	0.31	0.37	0.35	40	216
50	10.57	10.56	33.390	25.599	238.9	0.155	4.07	64.6	16.0	1.56	18.3	0.08	0.16	0.29	50	215
58	10.35	10.34	33.454	25.687	230.7	0.174	3.86	61.0	18.0	1.64	19.7	0.06	0.09	0.17	58	214
70	10.09	10.08	33.575	25.826	217.8	0.201	3.49	54.8	20.8	1.78	21.8	0.05	0.08	0.17	70	213
75 ISL	10.05	10.04	33.611	25.861	214.5	0.212	3.37	52.9	22.4	1.85	22.8	0.05	0.07	0.17	75	
85	9.98	9.97	33.670	25.919	209.2	0.233	3.18	49.9	25.1	1.95	24.3	0.05	0.04	0.17	85	212
100	9.69	9.68	33.747	26.028	199.2	0.264	2.98	46.5	25.1	1.95	24.3	0.05	0.04	0.16	101	211
119	9.44	9.43	33.855	26.153	187.6	0.300	2.74	42.5	27.8	2.03	25.5	0.05	0.02	0.14	120	210
125 ISL	9.37	9.36	33.879	26.184	184.9	0.312	2.65	41.1	28.6	2.06	26.1	0.05	0.02	0.13	126	
138	9.22	9.20	33.925	26.244	179.4	0.335	2.46	38.0	30.3	2.13	27.3	0.04	0.02	0.12	139	209
150 ISL	9.10	9.08	33.975	26.302	174.0	0.356	2.32	35.7	32.0	2.18	28.1	0.04	0.02	0.11	151	
169	8.94	8.92	34.052	26.389	166.2	0.389	2.10	32.3	34.8	2.26	29.1	0.04	0.01	0.09	170	208
198	8.72	8.70	34.145	26.496	156.5	0.436	1.63	24.9	39.6	2.47	30.7	0.05	0.01	0.07	199	207
200 ISL	8.72	8.70	34.149	26.500	156.2	0.439	1.61	24.6	39.8	2.48	30.8	0.05			201	
228	8.66	8.64	34.191	26.542	152.7	0.482	1.41	21.5	42.0	2.57	31.5	0.04			229	206
250 ISL	8.37	8.34	34.203	26.596	147.9	0.515	1.26	19.1	45.3	2.65	32.6	0.04			251	
269	8.06	8.03	34.205	26.645	143.5	0.543	1.16	17.5	48.5	2.72	33.6	0.04			271	205
300 ISL	7.62	7.59	34.191	26.699	138.6	0.586	1.11	16.6	52.6	2.79	34.8	0.05			302	
319	7.38	7.35	34.182	26.726	136.2	0.613	1.08	16.0	55.1	2.83	35.5	0.05			321	204
378	6.85	6.81	34.209	26.821	127.8	0.690	0.76	11.1	63.7	3.01	37.6	0.04			380	203
400 ISL	6.69	6.65	34.217	26.849	125.3	0.718	0.68	9.9	66.2	3.06	38.3	0.04			403	
438	6.44	6.40	34.230	26.893	121.5	0.765	0.57	8.3	70.3	3.12	39.3	0.04			441	202
500 ISL	6.04	6.00	34.254	26.964	115.3	0.839	0.42	6.0	77.6	3.22	40.7	0.04			503	
511	5.97	5.9														

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 83 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY PCT	S103 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	PRES db	
33 52.5 N	120 8.1 W	31/10/03	0212	UTC	106 m	310	25 kn			1010.4 mb	14.5 C	12.8 C				
0 ISL	14.11	14.11	33.319	24.866	307.5	0.000	5.16	88.2	7.4	0.85	7.1	0.13	1.37	0.54	0	
2	14.11	14.11	33.319	24.866	307.6	0.006	5.16	88.2	7.4	0.85	7.1	0.13	1.37	0.54	2	210
10	13.45	13.45	33.325	25.006	294.4	0.030	4.87	82.1					0.98	0.39	10	209
19	12.68	12.68	33.341	25.172	278.9	0.056	4.58	76.0	10.4	1.12	10.9	0.14	0.77	0.36	19	208
20 ISL	12.59	12.59	33.337	25.186	277.6	0.059	4.57	75.7	10.5	1.13	11.1	0.14	0.74	0.35	20	
30	11.65	11.65	33.334	25.362	261.1	0.086	4.35	70.6	12.0	1.29	13.4	0.11	0.38	0.24	30	207
40	10.79	10.79	33.510	25.654	233.5	0.110	3.69	58.9	17.0	1.58	17.9	0.07	0.13	0.14	40	206
50	10.67	10.66	33.534	25.694	229.9	0.134	3.61	57.4	17.6	1.61	18.4	0.06	0.10	0.12	50	205
59	10.60	10.59	33.562	25.728	226.9	0.154	3.51	55.8	18.3	1.65	19.1	0.05	0.08	0.10	59	204
70	10.37	10.36	33.678	25.859	214.7	0.178	3.18	50.3	20.7	1.76	20.7	0.04	0.04	0.07	70	203
75 ISL	10.31	10.30	33.720	25.902	210.7	0.189	3.05	48.2	21.9	1.82	21.3	0.04	0.03	0.07	75	
79	10.28	10.27	33.748	25.929	208.2	0.198	2.95	46.6	22.7	1.86	21.8	0.04	0.03	0.07	79	202
92	10.19	10.18	33.811	25.994	202.4	0.224	2.73	43.1	24.4	1.98	22.9	0.05	0.02	0.07	92	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 83 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY PCT	S103 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	PRES db	
33 44.8 N	120 24.8 W	30/10/03	2147	UTC	1034 m	320	24 kn	320 14 08	1	1011.0 mb	14.8 C	12.4 C	08m	2/8	CU	
0 ISL	15.65	15.65	33.232	24.467	345.5	0.000	5.81	102.4	2.6	0.42	1.6	0.06	0.39	0.15	0	
1	15.65	15.65	33.232	24.467	345.5	0.003	5.81	102.4	2.6	0.42	1.6	0.06	0.39	0.15	1	220
9	15.64	15.64	33.234	24.471	345.4	0.031	5.79	102.0	2.5	0.42	1.6	0.06	1.17	0.44	9	219
10 ISL	15.48	15.48	33.229	24.503	342.4	0.035	5.77	101.3	2.7	0.44	1.8	0.07	1.16	0.45	10	
19	13.60	13.60	33.212	24.889	305.9	0.064	5.44	91.9	5.3	0.75	5.2	0.17	1.09	0.56	19	218
20 ISL	13.40	13.40	33.217	24.933	301.7	0.067	5.36	90.2	5.8	0.80	5.9	0.17	1.05	0.55	20	
30	11.78	11.78	33.297	25.309	266.1	0.095	4.58	74.5	10.8	1.24	12.6	0.18	0.60	0.38	30	217
40	11.19	11.19	33.370	25.474	250.6	0.121	4.20	67.5	13.6	1.43	15.6	0.10	0.39	0.29	40	216
49	10.98	10.97	33.419	25.550	243.6	0.143	4.02	64.3	15.1	1.52	16.9	0.08	0.24	0.21	49	215
50 ISL	10.92	10.91	33.432	25.570	241.7	0.146	3.97	63.5	15.5	1.54	17.2	0.08	0.22	0.20	50	
58	10.41	10.40	33.542	25.745	225.2	0.164	3.60	57.0	18.6	1.71	19.7	0.05	0.11	0.16	58	214
69	10.14	10.13	33.635	25.864	214.1	0.188	3.33	52.4	21.3	1.82	21.5	0.05	0.05	0.15	69	213
75 ISL	10.01	10.00	33.699	25.936	207.4	0.201	3.15	49.4	22.8	1.88	22.4	0.04	0.03	0.13	75	
85	9.86	9.85	33.800	26.040	197.7	0.221	2.86	44.8	25.0	1.98	23.7	0.04	0.02	0.09	85	212
99	9.89	9.88	33.878	26.097	192.7	0.249	2.60	40.7	26.7	2.06	24.3	0.07	0.02	0.08	100	211
100 ISL	9.89	9.88	33.883	26.101	192.3	0.251	2.58	40.4	26.8	2.07	24.3	0.07	0.02	0.08	101	
119	9.88	9.87	33.965	26.167	186.5	0.287	2.31	36.2	28.7	2.16	25.2	0.09	0.01	0.08	120	210
125 ISL	9.86	9.85	33.980	26.182	185.1	0.298	2.27	35.6	29.0	2.17	25.4	0.09	0.01	0.08	126	
139	9.78	9.76	34.006	26.216	182.2	0.323	2.22	34.7	29.7	2.20	25.9	0.07	0.01	0.07	140	209
150 ISL	9.67	9.65	34.026	26.250	179.2	0.343	2.14	33.4	30.2	2.23	26.2	0.06	0.01	0.06	151	
169	9.52	9.50	34.066	26.306	174.2	0.377									170	208
198	9.60	9.58	34.155	26.363	169.5	0.427	1.75	27.3	33.9	2.39	27.8	0.04	0.01	0.04	199	207
200 ISL	9.58	9.56	34.160	26.370	168.8	0.430	1.73	27.0	34.1	2.40	27.9	0.04			201	
229	9.20	9.17	34.212	26.473	159.5	0.478	1.50	23.2	38.0	2.52	29.5	0.04			230	206
250 ISL	8.99	8.96	34.241	26.530	154.5	0.511	1.32	20.3	40.7	2.61	30.4	0.03			252	
268	8.84	8.81	34.258	26.567	151.3	0.538	1.19	18.3	42.8	2.67	31.0	0.03			270	205
300 ISL	8.62	8.59	34.263	26.606	148.1	0.586	1.10	16.8	44.9	2.73	31.7	0.03			302	
318	8.50	8.47	34.260	26.622	146.8	0.613	1.07	16.3	46.0	2.75	32.0	0.03			320	204
378	7.95	7.91	34.272	26.715	138.7	0.698	0.84	12.6	52.4	2.89	33.8	0.03			380	203
400 ISL	7.81	7.77	34.274	26.738	136.9	0.729	0.80	12.0	53.9	2.93	34.3	0.03			403	
435	7.58	7.54	34.275	26.772	134.0	0.776	0.74	11.0	56.7	2.98	35.1	0.03			438	202
500 ISL	6.87	6.82	34.274	26.871	125.0	0.860	0.54	7.9	66.6	3.13	37.5	0.03			503	
512	6.74	6.69	34.275	26.890	123.3	0.875	0.50	7.3	68.4	3.16	38.0	0.03			516	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 87 33

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
0 ISL	19.56	19.56	33.317	23.594	428.8	0.000	6.45	122.6	2.3	0.12	0.1	0.01	2.14	0.38	0	
1	19.56	19.56	33.317	23.594	428.8	0.004	6.45	122.6	2.3	0.12	0.1	0.01	2.14	0.38	1	207
5	19.41	19.41	33.318	23.633	425.2	0.021	6.50	123.2	2.3	0.12	0.1	0.01	1.75	0.32	5	206
10	19.00	19.00	33.308	23.730	416.2	0.042	6.60	124.1	2.3	0.17	0.1	0.02	1.30	0.33	10	205
20	15.79	15.79	33.182	24.398	352.7	0.081	5.13	90.6	4.2	0.34	0.1	0.03	0.73	0.35	20	204
30	14.03	14.03	33.111	24.723	322.0	0.115	5.62	95.7	4.1	0.56	0.1	0.03	0.60	0.28	30	203
40	12.53	12.52	33.159	25.060	290.1	0.145	4.90	80.9	7.3	0.96	6.8	0.33	0.29	0.26	40	202
50	12.35	12.34	33.184	25.114	285.2	0.174	4.74	78.0	8.1	1.03	8.4	0.25			50	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 87 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
0 ISL	19.44	19.44	33.355	23.654	423.1	0.000	5.65	107.2	1.7	0.23	0.1	0.01	0.34	0.16	0	
2	19.44	19.44	33.355	23.654	423.2	0.008	5.65	107.2	1.7	0.23	0.1	0.01	0.34	0.16	2	224
10	19.18	19.18	33.347	23.714	417.7	0.042	5.67	107.0	1.9	0.24	0.0	0.01	0.33	0.17	10	223
20	17.86	17.86	33.268	23.982	392.5	0.083	5.81	106.9	2.2	0.29	0.0	0.01	0.81	0.37	20	222
30	15.12	15.12	33.112	24.492	344.0	0.119	5.97	104.0	2.5	0.43	0.1	0.01	0.54	0.26	30	221
40	13.27	13.26	33.060	24.838	311.2	0.152	5.64	94.6	4.3	0.62	0.1	0.04	0.50	0.29	40	220
49	12.33	12.32	33.196	25.127	283.9	0.179	4.68	77.0	8.8	1.07	9.1	0.10	0.25	0.25	49	219
50 ISL	12.29	12.28	33.205	25.142	282.5	0.182	4.63	76.1	9.1	1.08	9.3	0.10	0.25	0.25	50	
59	12.12	12.11	33.248	25.208	276.5	0.207	4.40	72.1	10.4	1.18	11.0	0.05	0.64	U 0.30 U	59	218
69	11.79	11.78	33.250	25.271	270.6	0.234	4.41	71.7	10.8	1.21	12.2	0.04	0.15	0.19	69	217
75 ISL	11.45	11.44	33.346	25.409	257.7	0.250	4.11	66.4	13.0	1.34	14.2	0.04	0.11	0.15	75	
84	10.99	10.98	33.517	25.625	237.3	0.272	3.58	57.3	16.8	1.55	17.3	0.03	0.06	0.10	84	216
100	10.82	10.81	33.641	25.752	225.6	0.309	3.15	50.3	19.8	1.71	19.3	0.02	0.04	0.08	100	215
119	10.73	10.72	33.716	25.827	218.9	0.352		21.6	1.80	20.5	0.01	0.03	0.10	120	214	
125 ISL	10.77	10.75	33.762	25.855	216.3	0.365	2.51	40.1	22.8	1.86	21.1	0.01	0.02	0.09	126	
139	10.83	10.81	33.867	25.927	209.9	0.395	2.30	36.8	25.5	1.99	22.3	0.01	0.01	0.06	140	213
150 ISL	10.64	10.62	33.893	25.981	205.0	0.417	2.41	38.4	25.4	1.98	22.6	0.01	0.01	0.04	151	
170	10.25	10.23	33.920	26.070	196.9	0.458	2.61	41.2	25.3	1.93	23.0	0.01	0.01	0.03	171	212
199	10.23	10.21	34.048	26.174	187.7	0.513	2.12	33.5	28.5	2.10	24.7	0.01	0.02	0.05	200	211
200 ISL	10.22	10.20	34.050	26.177	187.4	0.515	2.11	33.3	28.6	2.10	24.8	0.01			201	
228	9.87	9.84	34.086	26.265	179.5	0.567	1.99	31.2	30.7	2.18	26.2	0.01			229	210
250 ISL	9.69	9.66	34.142	26.339	172.9	0.605	1.80	28.1	33.0	2.27	27.3	0.01			251	
268	9.57	9.54	34.189	26.396	167.9	0.636	1.62	25.2	35.0	2.35	28.1	0.01			270	209
300 ISL	9.36	9.33	34.242	26.472	161.2	0.689	1.38	21.4	37.8	2.45	29.1	0.01			302	
318	9.22	9.18	34.261	26.510	157.9	0.717	1.26	19.5	39.5	2.50	29.7	0.01			320	208
377	8.37	8.33	34.265	26.647	145.5	0.807	0.99	15.0	47.3	2.68	32.2	0.01			379	207
400 ISL	8.13	8.09	34.273	26.690	141.7	0.840	0.88	13.3	50.1	2.74	33.0	0.01			403	
437	7.77	7.73	34.285	26.753	136.1	0.891	0.71	10.6	54.9	2.84	34.2	0.01			440	206
478	7.34	7.29	34.288	26.817	130.3	0.946	0.55	8.2	61.0	2.96	35.7	0.01			481	205
500 ISL	6.93	6.88	34.298	26.882	124.1	0.974	0.45	6.6	67.3	3.05	36.9	0.01			503	
513	6.69	6.64	34.305	26.920	120.4	0.990	0.40	5.8	71.2	3.10	37.5	0.01			516	204
566	6.20	6.15	34.329	27.004	112.7	1.052	0.24	3.5	80.4	3.20	38.5	0.03			570	203
600 ISL	5.99	5.94	34.341	27.040	109.5	1.089	0.20	2.9	84.8	3.23	38.8	0.03			604	
618	5.89	5.84	34.347	27.057	108.0	1.109	0.19	2.7	86.9	3.26	38.9	0.03			622	202
623	5.86	5.81	34.349	27.063	107.5	1.114	0.19	2.7	87.5	3.28	38.9	0.02			627	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	16.93	16.93	33.311	24.236	367.6	0.000	5.87	106.1	1.0	0.28	0.1	0.01	1.15	0.35	0	
2	16.93	16.93	33.311	24.236	367.6	0.007	5.87	106.1	1.0	0.28	0.1	0.01	1.15	0.35	2	209
5	16.66	16.66	33.304	24.293	362.2	0.018	5.88	105.7	1.1	0.28	0.1	0.01	1.17	0.40	5	208
10	16.27	16.27	33.264	24.353	356.8	0.036	5.80	103.5	1.6	0.34	0.6	0.03	0.94	0.36	10	207
20	13.01	13.01	33.092	24.914	303.5	0.069	5.33	88.9	6.1	0.86	6.9	0.23	0.67	0.42	20	206
29	11.83	11.83	33.088	25.137	282.4	0.096	5.07	82.5	8.7	1.09	10.4	0.20	0.48	0.36	29	205
30 ISL	11.73	11.73	33.082	25.151	281.1	0.098	5.06	82.1	8.9	1.10	10.6	0.19	0.47	0.36	30	
40	11.00	11.00	33.046	25.255	271.4	0.126	5.01	80.0	10.4	1.19	12.2	0.11	0.34	0.32	40	204
50	10.75	10.74	33.119	25.357	262.0	0.153	4.76	75.7	12.1	1.29	13.9	0.10	0.20	0.21	50	203
60	10.40	10.39	33.269	25.534	245.3	0.178	4.34	68.5	15.0	1.45	16.5	0.08	0.15	0.17	60	202
69	10.08	10.07	33.498	25.767	223.3	0.199	3.70	58.1	19.7	1.69	20.0	0.07	0.08	0.13	69	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 87 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/L	uM/L	uM/L	uM/L	ug/l	ug/l	db	
0 ISL	16.59	16.59	33.024	24.094	381.0	0.000	5.76	103.3	2.0	0.38	0.1	0.00	0.25	0.09	0	
2 B	16.59	16.59	33.024	24.094	381.1	0.008	5.76	103.3	2.0	0.38	0.1	0.00	0.25	0.09	2	221
10 ISL	16.05	16.05	32.999	24.199	371.4	0.038	5.82	103.2	1.9	0.39	0.1	0.00	0.35	0.17	10	
11 B	15.95	15.95	32.993	24.217	369.7	0.041	5.83	103.2	1.9	0.39	0.1	0.00	0.37	0.18	11	220
20 ISL	15.11	15.11	32.917	24.344	357.8	0.074	5.92	103.0	2.1	0.42	0.2	0.01	0.60	0.29	20	
24 B	14.63	14.63	32.871	24.412	351.5	0.088	5.95	102.5	2.3	0.44	0.3	0.02	0.69	0.35	24	219
30 ISL	13.67	13.67	32.785	24.545	338.9	0.109	5.97	100.8	2.7	0.51	0.9	0.08	0.71	0.48	30	
34 B	13.03	13.03	32.732	24.632	330.7	0.122	5.98	99.6	3.1	0.56	1.4	0.13	0.73	0.56	34	218
45 B	11.82	11.81	32.640	24.792	315.7	0.158	5.83	94.6	4.2	0.71	3.6	0.22	0.49	0.55	45	217
50 ISL	11.48	11.47	32.687	24.891	306.4	0.174	5.69	91.6	5.2	0.82	5.5	0.23	0.38	0.47	50	
56	11.17	11.16	32.764	25.006	295.5	0.192	5.53	88.5	6.4	0.95	7.9	0.25	0.27	0.37	56	216
67 B	10.71	10.70	32.828	25.137	283.2	0.223	5.36	85.0	8.3	1.07	10.2	0.09	0.21	0.32	67	215
75 ISL	10.56	10.55	32.868	25.194	277.9	0.246	5.27	83.3	9.1	1.13	11.3	0.05	0.12	0.31	75	
76	10.53	10.52	32.876	25.206	276.8	0.249	5.26	83.1	9.3	1.14	11.5	0.05	0.11 A	0.31 A	76	214
84	10.05	10.04	32.999	25.383	260.1	0.270	5.01	78.4	12.0	1.29	14.1	0.03	0.06	0.22	84	213
99	9.45	9.44	33.271	25.695	230.7	0.307	4.55	70.3	16.7	1.48	17.7	0.02	0.03	0.05	99	212
100 ISL	9.42	9.41	33.287	25.712	229.0	0.309	4.53	70.0	16.9	1.49	17.9	0.02	0.03	0.05	100	
120	9.12	9.11	33.589	25.997	202.4	0.352	3.98	61.2	20.6	1.65	20.8	0.02	0.01	0.03	121	211
125 ISL	9.13	9.12	33.671	26.059	196.6	0.362	3.70	56.9	22.4	1.73	22.0	0.02	0.01	0.03	126	
140	9.21	9.19	33.879	26.210	182.7	0.391	2.91	44.9	27.7	1.95	25.1	0.02	0.00	0.04	141	210
150 ISL	9.18	9.16	33.924	26.250	179.0	0.409	2.84	43.8	28.9	1.97	25.4	0.02	0.00	0.04	151	
169	9.10	9.08	33.955	26.287	175.9	0.443	2.71	41.7	29.9	2.02	26.0	0.02	0.00	0.03	170	209
199	9.10	9.08	34.120	26.417	164.2	0.494	2.07	31.9	34.9	2.24	27.9	0.02	0.00	0.04	200	208
200 ISL	9.09	9.07	34.122	26.420	163.9	0.495	2.06	31.8	35.1	2.25	28.0	0.02			201	
229	8.73	8.71	34.160	26.507	156.1	0.542	1.78	27.2	39.0	2.38	29.6	0.02			230	206
250 ISL	8.59	8.56	34.184	26.548	152.6	0.574	1.61	24.5	41.2	2.46	30.3	0.02			251	
268	8.49	8.46	34.203	26.578	150.0	0.601	1.46	22.2	43.0	2.52	30.9	0.02			270	205
300 ISL	8.21	8.18	34.238	26.649	143.8	0.648	1.14	17.2	47.3	2.66	32.2	0.02			302	
319	8.04	8.01	34.256	26.689	140.2	0.675	0.97	14.6	50.0	2.74	33.0	0.02			321	204
378	7.56	7.52	34.279	26.778	132.5	0.756	0.69	10.3	56.8	2.90	34.9	0.02			380	203
400 ISL	7.37	7.33	34.283	26.808	129.9	0.785	0.62	9.2	59.4	2.95	35.6	0.02			403	
438	7.03	6.99	34.288	26.860	125.3	0.833	0.51	7.5	64.0	3.02	36.8	0.01			441	202
500 ISL	6.47	6.42	34.306	26.950	117.2	0.908	0.35	5.1	72.6	3.14	38.7	0.02			503	
511	6.37	6.32	34.310	26.966	115.7	0.921	0.32	4.6	74.1	3.16	39.0	0.02			514	201

A) FIRST FLUOROMETER READING NOT RECORDED, CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUMED ACID RATIO INTERPOLATED FROM ADJACENT LEVELS.

B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
33 29.2 N	117 46.2 W	26/10/03	1032	UTC	69 m	280	01 kn									
0 ISL	18.26	18.26	33.227	23.852	404.2	0.000	6.15	114.0	2.5	0.18	0.3	0.01	4.98	0.85	0	
1	18.26	18.26	33.227	23.852	404.2	0.004	6.15	114.0	2.5	0.18	0.3	0.01	4.98	0.85	1	208
5	18.24	18.24	33.228	23.858	403.8	0.020	6.15	114.0	2.4	0.19	0.2	0.01	5.67	0.91	5	207
10	17.64	17.64	33.206	23.987	391.6	0.040	5.77	105.7	2.9	0.22	0.2	0.01	3.46	3.57	10	206
20	15.31	15.31	33.160	24.488	344.2	0.077	4.55	79.6	4.8	0.49	0.2	0.02	0.35	0.19	20	205
30	13.72	13.72	33.162	24.826	312.1	0.110	4.32	73.2	6.1	0.70	0.2	0.07	0.61	0.16	30	204
40	12.74	12.73	33.174	25.031	292.8	0.140	4.43	73.5	7.7	0.95	1.3	0.18	0.26	0.17	40	203
50	12.34	12.33	33.194	25.124	284.2	0.169	4.55	74.9	8.6	1.09	8.1	0.27	0.14	0.19	50	202
60	11.96	11.95	33.239	25.231	274.3	0.197	4.45	72.7	9.7	1.19	11.1	0.09	0.12	0.18	60	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 90 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA			ml/l	PCT	uM/l	uM/l	uM/l	uM/l	ug/l	ug/l	db	
33 25.0 N	117 54.1 W	26/10/03	1252	UTC	620 m	240	02 kn									
0 ISL	19.44	19.44	33.327	23.632	425.1	0.000	5.65	107.2	1.4	0.24	0.2	0.00	0.68	0.22	0	
2	19.44	19.44	33.327	23.632	425.2	0.009	5.65	107.2	1.4	0.24	0.2	0.00	0.68	0.22	2	220
10	18.61	18.61	33.304	23.825	407.1	0.042	5.57	104.0	1.7	0.30	0.2	0.00	0.29	0.12	10	219
20	16.87	16.87	33.195	24.161	375.3	0.081	5.92	106.8	2.2	0.37	0.3	0.01	0.32	0.17	20	218
30	13.78	13.78	33.057	24.733	321.1	0.116	5.73	97.1	3.4	0.64	3.3	0.22	0.40	0.23	30	217
40	12.77	12.76	33.088	24.959	299.7	0.147	5.33	88.4	5.2	0.81	5.4	0.33	0.43	0.31	40	216
50	12.23	12.22	33.200	25.150	281.8	0.176	4.67	76.7	8.5	1.07	9.7	0.05	0.28	0.25	50	215
59	12.04	12.03	33.246	25.221	275.2	0.201	4.36	71.3	10.3	1.20	11.6	0.04	0.22	0.23	59	214
70	11.57	11.56	33.353	25.392	259.2	0.230	4.18	67.7	11.4	1.30	14.1	0.03	0.17	0.15	70	213
75 ISL	11.44	11.43	33.411	25.461	252.7	0.243	3.93	63.5	13.5	1.40	15.3	0.03	0.12	0.13	75	
84	11.27	11.26	33.502	25.563	243.2	0.265	3.50	56.4	17.1	1.56	17.1	0.02	0.05	0.12	84	212
100	11.03	11.02	33.554	25.647	235.6	0.304	3.45	55.3	17.4	1.61	17.9	0.02	0.04	0.09	100	211
119	10.97	10.96	33.693	25.766	224.7	0.347	2.87	46.0	21.0	1.79	20.2	0.01	0.02	0.08	120	210
125 ISL	10.93	10.91	33.711	25.787	222.8	0.361	2.82	45.2	21.4	1.81	20.5	0.01	0.02	0.07	126	
139	10.82	10.80	33.743	25.832	218.9	0.392	2.76	44.1	22.0	1.85	20.9	0.01	0.01	0.06	140	209
150 ISL	10.79	10.77	33.796	25.879	214.7	0.416	2.58	41.2	23.5	1.94	21.6	0.01	0.01	0.06	151	
169	10.74	10.72	33.898	25.968	206.7	0.456	2.35	37.5	25.7	2.05	22.8	0.01	0.01	0.06	170	208
199	9.99	9.97	33.922	26.116	193.1	0.516	2.77	43.5	24.8	1.90	23.4	0.01	0.01	0.05	200	207
200 ISL	10.00	9.98	33.930	26.121	192.6	0.518	2.74	43.0	25.0	1.91	23.5	0.01			201	
228	10.28	10.25	34.160	26.253	180.9	0.570	1.76	27.9	30.5	2.24	26.1	0.01			229	206
250 ISL	10.07	10.04	34.220	26.336	173.4	0.609	1.65	26.0	32.9	2.32	27.2	0.01			251	
268	9.77	9.74	34.232	26.396	167.9	0.640	1.56	24.4	34.4	2.35	27.8	0.01			270	205
300 ISL	9.32	9.29	34.257	26.491	159.5	0.692	1.34	20.8	38.1	2.46	29.3	0.01			302	
318	9.06	9.03	34.263	26.537	155.2	0.720	1.21	18.7	40.4	2.52	30.2	0.01			320	204
377	8.28	8.24	34.276	26.669	143.3	0.808	0.90	13.6	48.3	2.72	32.7	0.00			379	203
400 ISL	8.07	8.03	34.279	26.704	140.3	0.841	0.82	12.4	50.5	2.77	33.4	0.00			403	
437	7.77	7.73	34.284	26.752	136.2	0.892	0.70	10.5	54.1	2.85	34.4	0.00			440	202
500 ISL	7.17	7.12	34.301	26.852	127.2	0.975	0.45	6.6	63.0	3.01	36.4	0.01			503	
511	7.06	7.01	34.305	26.870	125.5	0.989	0.41	6.0	64.6	3.04	36.7	0.01			514	201

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 70

LATITUDE 31 30.8 N	LONGITUDE 120 14.9 W	DAY/MO/YR 22/10/03	CAST 0726	TIME UTC	BOTTOM 3940 m	WIND 320	SPEED 16 kn	WAVES	WEA	BAROMETER 1015.8 mb	DRY 16.2 C	WET 15.7 C	SECCHI	CLD	AMT	TYPE
DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAEAO ug/l	PRES db	
0 ISL	17.46	17.46	32.956	23.838	405.5	0.000	5.55	101.2	1.3	0.39	0.1	0.00	0.15	0.05	0	
2	17.46	17.46	32.956	23.838	405.5	0.008	5.55	101.2	1.3	0.39	0.1	0.00	0.15	0.05	2 220	
10 ISL	17.45	17.45	32.958	23.843	405.4	0.041	5.56	101.3	1.3	0.39	0.0	0.00	0.15	0.05	10	
15	17.45	17.45	32.958	23.843	405.5	0.061	5.56	101.3	1.3	0.39	0.0	0.00	0.15	0.05	15 219	
20 ISL	17.43	17.43	32.964	23.852	404.8	0.081	5.56	101.3	1.3	0.39	0.0	0.00	0.15	0.05	20	
30 ISL	17.40	17.40	32.976	23.869	403.5	0.121	5.56	101.2	1.4	0.39	0.0	0.00	0.18	0.06	30	
31	17.40	17.39	32.977	23.870	403.5	0.126	5.56	101.2	1.4	0.39	0.0	0.00	0.18	0.06	31 218	
45	14.72	14.71	32.724	24.280	364.7	0.179	6.01	103.6	1.9	0.42	0.0	0.00	0.26	0.17	45 217	
50 ISL	13.62	13.61	32.675	24.471	346.5	0.197	5.98	100.7	2.4	0.47	0.4	0.07	0.37	0.28	50	
55	12.63	12.62	32.667	24.660	328.5	0.214	5.95	98.2	3.0	0.55	0.9	0.13	0.45	0.37	55 216	
63	11.75	11.74	32.751	24.891	306.6	0.239	5.64	91.4	4.4	0.73	4.4	0.13	0.30	0.32	63 215	
75	10.73	10.72	32.854	25.154	281.8	0.275	5.31	84.2	8.0	1.07	10.2	0.02	0.17	0.18	75 214	
85	10.25	10.24	32.895	25.269	271.0	0.302	5.21	81.8	9.6	1.18	12.1	0.02	0.11	0.14	85 213	
94	9.86	9.85	33.015	25.428	256.0	0.326	5.03	78.3	11.8	1.28	14.0	0.02	0.08	0.09	94 212	
100 ISL	9.68	9.67	33.136	25.552	244.3	0.341	4.80	74.5	14.0	1.37	15.7	0.02	0.06	0.06	100	
110	9.47	9.46	33.345	25.750	225.7	0.365	4.37	67.6	17.7	1.53	18.5	0.01	0.02	0.03	110 211	
125 ISL	9.28	9.27	33.565	25.953	206.7	0.397	3.91	60.3	21.1	1.68	21.2	0.01	0.01	0.03	126	
126	9.27	9.26	33.576	25.963	205.8	0.399	3.89	60.0	21.3	1.69	21.3	0.01	0.01	0.03	127 210	
145	8.90	8.88	33.719	26.134	189.8	0.437	3.76	57.6	23.8	1.71	22.4	0.01	0.00	0.02	146 209	
150 ISL	8.84	8.82	33.767	26.181	185.5	0.446	3.67	56.1	24.8	1.74	22.9	0.01	0.00	0.02	151	
170	8.65	8.63	33.937	26.344	170.4	0.482	3.26	49.7	29.4	1.88	25.2	0.01	0.00	0.01	171 208	
195	8.32	8.30	34.006	26.449	160.8	0.523	2.80	42.4	34.9	2.05	27.9	0.01	0.00	0.01	196 207	
200 ISL	8.27	8.25	34.016	26.464	159.4	0.531	2.70	40.8	35.9	2.09	28.4	0.01			201	
230	8.00	7.98	34.068	26.546	152.1	0.578	2.08	31.3	41.8	2.33	31.1	0.01			231 206	
250 ISL	7.85	7.83	34.108	26.599	147.3	0.608	1.72	25.8	45.4	2.47	32.4	0.01			251	
268	7.73	7.70	34.144	26.645	143.2	0.634	1.44	21.5	48.3	2.58	33.3	0.01			269 205	
300 ISL	7.58	7.55	34.200	26.711	137.4	0.679	1.06	15.8	52.6	2.73	34.3	0.00			302	
319	7.46	7.43	34.222	26.746	134.4	0.704	0.91	13.5	55.1	2.80	34.8	0.00			321 204	
378	6.66	6.63	34.190	26.832	126.6	0.781	0.78	11.4	64.2	2.93	37.6	0.01			380 203	
400 ISL	6.61	6.57	34.226	26.867	123.6	0.809	0.63	9.2	66.4	2.99	38.1	0.01			402	
438	6.57	6.53	34.293	26.926	118.6	0.855	0.38	5.5	69.9	3.10	38.6	0.01			441 202	
500 ISL	6.02	5.98	34.284	26.990	112.8	0.927	0.33	4.7	77.5	3.22	40.0	0.01			503	
511	5.92	5.88	34.283	27.002	111.7	0.939	0.32	4.6	78.8	3.24	40.3	0.01			514 201	

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 80

LATITUDE 31 10.9 N	LONGITUDE 120 55.3 W	DAY/MO/YR 22/10/03	CAST 1310	TIME UTC	BOTTOM 3833 m	WIND 340	SPEED 12 kn	WAVES	WEA	BAROMETER 1017.4 mb	DRY 16.1 C	WET 15.8 C	SECCHI	CLD	AMT	TYPE
DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAEAO ug/l	PRES db	
0 ISL	18.08	18.08	32.877	23.628	425.5	0.000	5.46	100.7	1.4	0.39	0.2	0.00	0.11	0.03	0	
2	18.08	18.08	32.877	23.628	425.6	0.009	5.46	100.7	1.4	0.39	0.2	0.00	0.11	0.03	2 220	
10 ISL	18.09	18.09	32.878	23.627	426.0	0.043	5.45	100.5	1.5	0.38	0.2	0.00	0.11	0.03	10	
15	18.09	18.09	32.878	23.627	426.1	0.064	5.45	100.5	1.5	0.38	0.2	0.00	0.11	0.03	15 219	
20 ISL	18.09	18.09	32.878	23.628	426.3	0.085	5.45	100.5	1.5	0.38	0.2	0.00	0.11	0.03	20	
30	18.08	18.07	32.878	23.630	426.3	0.128	5.46	100.7	1.6	0.38	0.2	0.00	0.12	0.03	30 218	
45	15.59	15.58	32.789	24.141	377.9	0.188	6.02	105.6	2.0	0.39	0.1	0.00	0.18	0.08	45 217	
50 ISL	15.04	15.03	32.759	24.239	368.8	0.207	6.04	104.8	2.1	0.41	0.1	0.00	0.19	0.11	50	
54	14.70	14.69	32.746	24.302	362.9	0.221	6.06	104.4	2.1	0.42	0.1	0.00	0.20	0.13	54 216	
64	14.25	14.24	32.805	24.442	349.7	0.257	5.98	102.1	2.3	0.42	0.1	0.00	0.25	0.20	64 215	
74	12.97	12.96	32.749	24.658	329.3	0.291	5.84	97.1	3.1	0.55	1.2	0.16	0.41	0.34	74 214	
75 ISL	12.83	12.82	32.746	24.683	326.9	0.294	5.82	96.5	3.3	0.57	1.6	0.15	0.40	0.34	75	
84	11.77	11.76	32.754	24.890	307.2	0.323	5.58	90.5	4.9	0.77	5.2	0.04	0.23	0.25	84 213	
95	11.18	11.17	32.864	25.083	289.1	0.356	5.38	86.2	6.8	0.93	8.3	0.02	0.15	0.16	95 212	
100 ISL	10.95	10.94	32.941	25.184	279.5	0.370	5.19	82.8	8.3	1.04	10.2	0.01	0.12	0.13	100	
110	10.65	10.64	33.109	25.367	262.3	0.397	4.78	75.8	11.3	1.26	13.8	0.01	0.07	0.08	110 211	
124	10.68	10.67	33.319	25.526	247.5	0.433	4.34	69.0	13.7	1.41	16.4	0.01	0.04	0.06	124 210	
125 ISL	10.66	10.65	33.332	25.540	246.3	0.435	4.31	68.5	13.9	1.42	16.6	0.01	0.04	0.06	126	
145	10.08	10.06	33.563	25.820	220.0	0.482	3.61	56.7	19.3	1.67	20.6	0.01	0.02	0.04	146 209	
150 ISL	9.93	9.91	33.626	25.894	213.0	0.493	3.43	53.7	20.9	1.73	21.6	0.01	0.02	0.04	151	
169	9.45	9.43	33.835	26.137	190.2	0.531	2.85	44.2	26.4	1.93	24.7	0.01	0.01	0.03	170 208	
198	9.20	9.18	33.964	26.279	177.3	0.584	2.50	38.6	30.1	2.06	26.6	0.00	0.00	0.03	199 207	
200 ISL	9.15	9.13	33.970	26.292	176.1	0.588	2.51	38.7	30.4	2.06	26.7	0.00			201	
227	8.48	8.46	34.026	26.440	162.2	0.633	2.64	40.1	34.7	2.08	27.8	0.01			228 206	
250 ISL	8.11	8.08	34.049	26.515	155.4	0.670	2.42	36.5	38.9	2.20	29.5	0.01			251	
269	7.89	7.86	34.060	26.556	151.7	0.699	2.17	32.5	42.3	2.31	30.9	0.01			270 205	
300 ISL	7.59	7.56	34.084	26.619	146.2	0.745	1.91	28.4	46.5	2.43	32.2	0.00			302	
319	7.42	7.39	34.097	26.653	143.1	0.773	1.76	26.1	49.0							

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA	ml/l	PCT	um/l	um/l	um/l	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
30 51.2 N	121 35.6 W	22/10/03	1901	UTC	4118 m	350	22 kn	070 05 07	1	1019.0 mb	19.2	C 14.9 C	24m	6/8	SC	
0 ISL	19.82	19.82	32.954	23.250	461.6	0.000	5.28	100.6	1.5	0.36	0.0	0.00	0.10	0.03	0	
3 A	19.82	19.82	32.954	23.250	461.7	0.014	5.28	100.6	1.5	0.36	0.0	0.00	0.10	0.03	3	222
10 ISL	19.81	19.81	32.955	23.254	461.6	0.046	5.28	100.6	1.6	0.36	0.0	0.00	0.10	0.03	10	
15 A	19.81	19.81	32.955	23.254	461.8	0.069	5.28	100.6	1.6	0.36	0.0	0.00	0.10	0.03	15	221
20 ISL	19.74	19.74	32.956	23.273	460.2	0.092	5.30	100.9	1.6	0.36	0.0	0.00	0.10	0.03	20	
30 ISL	19.48	19.47	32.992	23.368	451.5	0.138	5.35	101.4	1.5	0.36	0.0	0.00	0.12	0.04	30	
32 A	19.41	19.40	33.004	23.395	449.0	0.147	5.36	101.4	1.5	0.36	0.0	0.00	0.13	0.04	32	220
40	19.05	19.04	33.094	23.555	433.9	0.182	5.40	101.5	1.4	0.37	0.0	0.00	0.17	0.05	40	219
47 A	17.97	17.96	33.036	23.779	412.8	0.212	5.65	104.0	1.5	0.36	0.0	0.00	0.24	0.11	47	218
50 ISL	17.21	17.20	32.962	23.904	400.8	0.224	5.79	105.0	1.6	0.37	0.0	0.00	0.26	0.13	50	
57	15.48	15.47	32.789	24.166	376.0	0.251	6.05	105.9	1.8	0.39	0.0	0.00	0.28	0.17	57	217
63 A	14.63	14.62	32.698	24.280	365.2	0.273	6.11	105.1	2.0	0.41	0.0	0.00	0.28	0.22	63	216
73	13.62	13.61	32.684	24.478	346.4	0.309	6.01	101.2	2.3	0.47	0.1	0.08	0.45	0.32	73	215
75 ISL	13.40	13.39	32.687	24.525	342.0	0.316	5.96	100.0	2.5	0.50	0.5	0.14	0.43	0.32	75	
82	12.69	12.68	32.738	24.704	325.0	0.339	5.75	95.0	3.5	0.63	2.6	0.31	0.30	0.31	82	214
91 A	12.02	12.01	32.942	24.990	297.9	0.367	5.38	87.8	5.6	0.87	7.2	0.07	0.16	0.15	91	213
100	11.78	11.77	33.122	25.175	280.6	0.393	5.01	81.4	7.7	1.08	10.7	0.01	0.09	0.10	100	212
110	10.87	10.86	33.143	25.355	263.5	0.421	4.92	78.4	9.9	1.16	12.4	0.01	0.07	0.08	110	211
124	9.94	9.93	33.217	25.573	242.9	0.456	4.79	74.8	13.0	1.28	14.7	0.01	0.04	0.05	124	210
125 ISL	9.91	9.90	33.232	25.589	241.3	0.458	4.75	74.2	13.3	1.30	15.0	0.01	0.04	0.05	125	
143	9.57	9.55	33.527	25.876	214.4	0.499	3.93	61.0	19.5	1.61	20.0	0.00	0.01	0.03	144	209
150 ISL	9.43	9.41	33.609	25.963	206.3	0.514	3.71	57.4	21.3	1.68	21.3	0.00	0.01	0.03	151	
169	9.11	9.09	33.779	26.148	189.0	0.552	3.28	50.5	25.4	1.82	23.8	0.00	0.00	0.02	170	208
199	8.87	8.85	33.955	26.324	172.9	0.606	2.87	44.0	30.1	1.96	26.0	0.00	0.00	0.02	200	207
200 ISL	8.86	8.84	33.959	26.329	172.4	0.608	2.87	44.0	30.2	1.96	26.1	0.00			201	
231	8.42	8.40	34.038	26.459	160.5	0.659	2.68	40.7	35.4	2.07	27.8	0.00			232	206
250 ISL	8.10	8.07	34.062	26.526	154.3	0.689	2.33	35.1	39.7	2.22	29.7	0.00			251	
267	7.82	7.79	34.074	26.577	149.6	0.715	2.01	30.1	43.6	2.36	31.4	0.00			268	205
300 ISL	7.42	7.39	34.088	26.646	143.5	0.763	1.80	26.7	48.5	2.48	32.9	0.00			302	
318	7.23	7.20	34.092	26.676	140.8	0.789	1.74	25.7	50.8	2.53	33.4	0.00			320	204
378	6.57	6.54	34.124	26.792	130.3	0.870	1.19	17.3	61.5	2.78	36.5	0.00			380	203
400 ISL	6.44	6.40	34.153	26.832	126.7	0.899	0.97	14.1	65.0	2.87	37.3	0.00			402	
437	6.24	6.20	34.203	26.897	120.9	0.944	0.66	9.5	70.8	3.00	38.5	0.00			440	202
500 ISL	5.73	5.69	34.236	26.988	112.6	1.018	0.45	6.4	80.7	3.13	40.6	0.00			503	
513	5.62	5.58	34.243	27.007	110.9	1.033	0.41	5.8	82.8	3.16	41.0	0.00			516	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY	SIO3	P04	N03	N02	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA	ml/l	PCT	um/l	um/l	um/l	um/l	um/l	um/l	um/l	ug/l	ug/l	db	
30 31.1 N	122 15.6 W	23/10/03	0051	UTC	4180 m	000	20 kn	080 06 06	1	1017.1 mb	18.9	C 17.4 C	24m	6/8	SC	
0 ISL	19.39	19.39	33.148	23.508	436.9	0.000	5.35	101.3	1.4	0.36	0.0	0.00	0.11	0.03	0	
2	19.39	19.39	33.148	23.508	437.0	0.009	5.35	101.3	1.4	0.36	0.0	0.00	0.11	0.03	2	220
9	19.39	19.39	33.149	23.510	437.2	0.039	5.35	101.3	1.3	0.35	0.0	0.00	0.11	0.03	9	219
10 ISL	19.39	19.39	33.150	23.510	437.1	0.044	5.35	101.3	1.3	0.35	0.0	0.00	0.11	0.03	10	
19	19.41	19.41	33.161	23.514	437.1	0.083	5.35	101.3	1.4	0.36	0.0	0.00	0.12	0.03	19	218
20 ISL	19.42	19.42	33.164	23.514	437.2	0.087	5.35	101.3	1.4	0.36	0.0	0.00	0.12	0.03	20	
30	19.51	19.50	33.246	23.554	435.7	0.131	5.34	101.4	1.4	0.35	0.0	0.00	0.14	0.05	30	217
39	18.98	18.98	33.233	23.677	422.3	0.169	5.43	102.1	1.4	0.35	0.0	0.00	0.25	0.09	39	216
49	15.01	15.00	32.996	24.428	350.7	0.208	6.07	105.4	2.4	0.45	0.6	0.04	0.56	0.25	49	215
50 ISL	14.81	14.80	32.996	24.471	346.7	0.212	6.06	104.8	2.5	0.46	0.7	0.06	0.55	0.25	50	
61	13.34	13.33	33.060	24.825	313.1	0.248	5.94	99.7	4.0	0.66	3.7	0.22	0.47	0.27	61	214
70	11.88	11.88	33.133	25.162	281.1	0.275	5.35	87.2	7.3	1.01	9.5	0.23	0.37	0.29	70	213
75 ISL	11.35	11.34	33.169	25.289	269.0	0.288	5.08	81.8	9.1	1.15	11.9	0.16	0.29	0.25	75	
85	10.59	10.58	33.251	25.488	250.3	0.314	4.62	73.2	12.6	1.36	15.5	0.02	0.14	0.15	85	212
100	9.76	9.75	33.449	25.783	222.4	0.350	4.05	63.1	18.0	1.58	19.6	0.01	0.05	0.06	100	211
120	9.40	9.39	33.668	26.014	200.9	0.392	3.38	52.3	23.4	1.81	23.2	0.01	0.01	0.03	121	210
125 ISL	9.39	9.38	33.724	26.059	196.6	0.402	3.21	49.7	24.4	1.86	23.8	0.01	0.01	0.03	126	
141	9.35	9.33	33.877	26.186	185.0	0.433	2.77	42.9	27.3	1.97	25.3	0.00	0.00	0.03	142	209
150 ISL	9.18	9.16	33.924	26.250	179.0	0.449	2.78	42.9	28.6	1.98	25.8	0.00	0.00	0.03	151	
169	8.74	8.72	33.980	26.363	168.5	0.482	2.81	42.9	31.4	1.99	26.7	0.00	0.00	0.03	170	208
199	8.26	8.24	34.030	26.477	158.2	0.531	2.47	37.4	37.3	2.15	29.2	0.00	0.00	0.02	200	207
200 ISL	8.25	8.23	34.031	26.479	158.0	0.533	2.46	37.2	37.4	2.15</td						

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
30 11.0 N	122 55.7 W	23/10/03	0808	UTC	3789 m	130	18 kn			1019.0 mb	19.0 C	17.5 C				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAEO ug/l	PRES db	
m	DEG C	DEG C	THETA				ml/l		um/l	um/l	um/l	um/l				
0 ISL	19.13	19.13	33.058	23.506	437.2	0.000	5.38	101.3	1.4	0.37	0.2	0.00	0.11	0.04	0	
3	19.13	19.13	33.058	23.506	437.3	0.013	5.38	101.3	1.4	0.37	0.2	0.00	0.11	0.04	3 220	
10	19.12	19.12	33.058	23.509	437.3	0.044	5.36	100.9	1.5	0.37	0.2	0.00	0.11	0.03	10 219	
20	19.15	19.15	33.065	23.507	437.8	0.087	5.37	101.1	1.5	0.36	0.1	0.00	0.11	0.03	20 218	
30	19.03	19.02	33.117	23.577	431.4	0.131	5.41	101.7	1.4	0.36	0.1	0.00	0.14	0.05	30 217	
40	16.71	16.70	33.003	24.052	386.4	0.172	5.92	106.4	1.8	0.38	0.1	0.00	0.26	0.14	40 216	
50	14.27	14.26	32.967	24.563	337.9	0.208	6.11	104.5	2.7	0.48	0.9	0.06	0.46	0.28	50 215	
60	13.22	13.21	33.006 D	24.807	314.7	0.241	5.68	95.1	4.0	0.70	4.5	0.34	0.46	0.42	60 214	
70	12.30	12.29	33.067	25.034	293.3	0.271	5.27	86.6	6.0	0.91	8.4	0.05	0.35	0.43	70 213	
75 ISL	11.85	11.84	33.076	25.125	284.7	0.286	5.17	84.1	6.9	0.98	9.6	0.04	0.30	0.36	75	
85	11.07	11.06	33.108	25.292	268.9	0.313	5.00	80.0	9.1	1.10	11.8	0.02	0.20	0.18	85 212	
100	10.34	10.33	33.279	25.553	244.3	0.352	4.51	71.1	14.0	1.40	16.4	0.01	0.08	0.07	100 211	
120	9.68	9.67	33.507	25.842	217.2	0.398	3.90	60.7	19.5	1.64	20.6	0.01	0.01	0.03	120 210	
125 ISL	9.58	9.57	33.556	25.897	212.1	0.409	3.75	58.2	20.6	1.69	21.4	0.01	0.01	0.03	126	
138	9.37	9.35	33.672	26.022	200.4	0.435	3.39	52.4	23.3	1.80	23.2	0.01	0.01	0.03	139 209	
150 ISL	9.24	9.22	33.764	26.115	191.8	0.459	3.10	47.8	25.6	1.89	24.7	0.01	0.01	0.03	151	
169	9.05	9.03	33.886	26.241	180.2	0.494	2.72	41.8	29.3	2.02	26.7	0.00	0.00	0.03	170 208	
199	8.59	8.57	34.038	26.433	162.5	0.546	2.28	34.7	35.6	2.19	29.2	0.00	0.00	0.02	200 207	
200 ISL	8.58	8.56	34.040	26.436	162.2	0.547	2.27	34.6	35.8	2.19	29.2	0.00			201	
230	8.18	8.16	34.072	26.522	154.4	0.595	2.13	32.2	40.0	2.29	30.4	0.00			231 206	
250 ISL	7.93	7.90	34.081	26.566	150.4	0.625	2.02	30.3	42.8	2.35	31.2	0.00			251	
268	7.71	7.68	34.087	26.603	147.1	0.652	1.90	28.4	45.5	2.42	32.1	0.00			269 205	
300 ISL	7.28	7.25	34.106	26.680	140.2	0.698	1.57	23.2	51.3	2.58	34.0	0.00			302	
320	7.04	7.01	34.121	26.725	136.0	0.726	1.35	19.9	55.0	2.69	35.2	0.00			322 204	
374	6.64	6.61	34.172	26.820	127.6	0.797	0.89	13.0	63.2	2.89	37.3	0.00			376 203	
400 ISL	6.48	6.44	34.196	26.860	124.1	0.830	0.72	10.5	66.9	2.96	38.1	0.00			402	
438	6.24	6.20	34.230	26.919	118.9	0.876	0.53	7.7	72.3	3.06	39.1	0.00			441 202	
500 ISL	5.79	5.75	34.279	27.015	110.2	0.947	0.46	6.6	81.3	3.20	40.8	0.00			503	
512	5.70	5.66	34.289	27.034	108.5	0.960	0.45	6.4	83.1	3.23	41.1	0.00			515 201	

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE
29 50.9 N	123 35.0 W	23/10/03	1353	UTC	4126 m	000	20 kn			1019.0 mb	19.0 C	17.8 C				
DEPTH	TEMP	POT TEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAEO ug/l	PRES db	
m	DEG C	DEG C	THETA				ml/l		um/l	um/l	um/l	um/l				
0 ISL	18.91	18.91	32.884	23.428	444.6	0.000	5.37	100.6	2.0	0.38	0.1	0.00	0.14	0.04	0	
2	18.91	18.91	32.884	23.428	444.7	0.009	5.37	100.6	2.0	0.38	0.1	0.00	0.14	0.04	2 220	
10 ISL	18.91	18.91	32.883	23.428	445.0	0.044	5.38	100.8	2.1	0.38	0.1	0.00	0.13	0.04	10	
15	18.91	18.91	32.882	23.428	445.2	0.067	5.38	100.8	2.1	0.38	0.1	0.00			15 219	
20 ISL	18.91	18.91	32.882	23.428	445.4	0.089	5.38	100.8	2.1	0.38	0.1	0.00	0.12	0.04	20	
30	18.91	18.90	32.883	23.429	445.6	0.134	5.38	100.8	2.2	0.38	0.1	0.00	0.11	0.04	30 218	
45	18.55	18.54	32.859	23.501	439.2	0.200	5.42	100.8	2.2	0.39	0.0	0.00	0.14	0.05	45 217	
50 ISL	18.47	18.46	32.858	23.520	437.6	0.222	5.42	100.7	2.2	0.39	0.0	0.00	0.16	0.05	50	
55	18.39	18.38	32.859	23.541	435.8	0.244	5.43	100.7	2.2	0.40	0.0	0.00	0.18	0.06	55 216	
65	18.24	18.23	32.863	23.581	432.2	0.287	5.46	100.9	2.3	0.41	0.0	0.00	0.22	0.08	65 215	
75	16.78	16.77	33.116	24.124	380.7	0.328	5.87	105.7	2.7	0.37	0.0	0.00	0.22	0.12	75 214	
85	15.42	15.41	33.069	24.396	354.9	0.364	5.81	101.8	3.1	0.41	0.0	0.00	0.21	0.19	85 213	
94	14.54	14.53	33.049	24.570	338.4	0.396	5.74	98.8	3.6	0.46	0.1	0.05	0.22	0.23	94 212	
100 ISL	14.23	14.22	33.028	24.619	333.9	0.416	5.72	97.8	3.7	0.48	0.4	0.08	0.21	0.23	100	
110	13.61	13.59	32.983	24.712	325.2	0.449	5.65	95.3	4.3	0.57	0.9	0.11	0.20	0.22	110 211	
124	11.55	11.53	32.947	25.082	290.0	0.492	5.36	86.6	7.4	0.93	6.8	0.02	0.09	0.14	124 210	
125 ISL	11.46	11.44	32.953	25.103	288.0	0.495	5.34	86.1	7.6	0.95	7.1	0.02	0.09	0.13	125	
144	10.33	10.31	33.132	25.441	255.9	0.546	4.94	77.8	12.2	1.23	12.0	0.01	0.04	0.05	145 209	
150 ISL	10.06	10.04	33.196	25.537	246.9	0.562	4.80	75.2	13.8	1.31	13.5	0.01	0.03	0.04	151	
170	9.44	9.42	33.425	25.818	220.4	0.608	4.28	66.2	19.1	1.57	18.2	0.00	0.01	0.02	171 208	
198	9.17	9.15	33.772	26.133	191.0	0.666	3.36	51.8	26.3	1.87	23.1	0.00	0.00	0.02	199 207	
200 ISL	9.15	9.13	33.789	26.150	189.5	0.670	3.31	51.0	26.7	1.89	23.4	0.00			201	
229	8.83	8.81	33.957	26.332	172.7	0.722	2.75	42.1	32.5	2.10	26.6	0.01			230 206	
250 ISL	8.57	8.54	34.021	26.423	164.3	0.758	2.60	39.6	35.8	2.18	27.8	0.01			251	
268	8.34	8.31	34.051	26.482	159.0	0.787	2.53	38.3	38.5	2.23	28.5	0.00			269 205	
300 ISL	7.87	7.84	34.072	26.569	151.1	0.836	2.24	33.6	43.8	2.38	30.5	0.00			302	
319	7.59	7.56	34.075	26.612	147.1	0.865	2.05	30.5	47.1	2.48	31.7	0.00			321 204	
379	6.90	6.86	34.102	26.730	136.4	0.950	1.51	22.1	57.2	2.74	35.0	0.00			381 203	
400 ISL	6.65	6.61	34.116	26.775	132.3	0.978	1.30	18.9	61.4	2.84	36.2	0.00			402	
439	6.23	6.19	34.144	26.852	125.2	1.028	0.94	13.6	69.3	3.01	38.3	0.00			442 202	
500 ISL	5.77	5.73	34.190	26.947	116.6	1.102	0.62	8.9	79.5	3.18	40.4	0.00			503	
511	5.69	5.65	34.198	26.963	115.1	1.115	0.56	8.0	81.3	3.21	40.8	0.00			514 201</	

PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
				11 m	1205 - 1738 PST	1147 PST	1736 PST	610.4 mg C/m ²
35 5.3 N	120 45.8 W	03/11/03	1803 UTC					
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03
m	DEG C	THETA	ml/l	PCT	um/l	um/l	um/l	um/l
1	15.75	33.286	24.487	5.85	103.3	1.2	0.29	0.2
6	15.73	33.286	24.491	5.83	102.9	1.2	0.29	0.2
15	15.59	33.282	24.520	5.76	101.4	1.6	0.33	0.4
22	14.17	33.268	24.815	5.21	89.1	5.1	0.73	4.1
29	13.68	33.266	24.915	5.06	85.7	6.2	0.84	5.5
36	13.50	33.272	24.956	4.95	83.5	6.9	0.90	6.3
42	13.16	33.271	25.024	4.84	81.1	7.6	0.97	7.3
						0.27	0.27	0.26
						0.56	0.28	0.04
							0.04	0.04
								0.04

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
				14 m	1157 - 1744 PST	1156 PST	1743 PST	314.1 mg C/m ²
34 3.4 N	122 56.7 W	02/11/03	1906 UTC					
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03
m	DEG C	THETA	ml/l	PCT	um/l	um/l	um/l	um/l
2	15.61	33.282	24.515	5.88	103.6	0.9	0.42	0.9
9	15.58	33.281	24.521	5.89	103.7	0.9	0.41	0.9
19	15.56	33.286	24.529	5.87	103.3	1.0	0.42	0.9
26	15.57	33.307	24.544	5.85	102.9	1.0	0.44	1.2
37	13.72	33.412	25.020	4.79	81.2	6.8	1.00	8.7
46	11.07	33.545	25.631	3.48	55.9	17.0	1.66	19.6
54	10.29	33.712	25.898	2.81	44.4	22.6	1.92	23.3
						0.11	0.14	0.21
							0.27	0.03
							0.03	0.03
								0.04

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
				7 m	1146 - 1743 PST	1146 PST	1739 PST	497.5 mg C/m ²
34 27.2 N	120 31.5 W	31/10/03	1905 UTC					
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03
m	DEG C	THETA	ml/l	PCT	um/l	um/l	um/l	um/l
2	16.26	33.233	24.331	5.94	105.9	3.1	0.28	0.1
4	16.31	33.232	24.319	5.96	106.4	3.1	0.28	0.1
9	15.77	33.226	24.436	5.77	101.9	3.4	0.34	0.1
14	14.13	33.158	24.738	5.21	89.0	5.3	0.62	1.3
19	13.28	33.139	24.897	5.02	84.2	6.6	0.82	3.7
26	13.04	33.113	24.925	5.11	85.3	6.2	0.86	4.7
						0.48	0.32	0.28
							0.33	0.04
							0.06	0.05
								0.08

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 80 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
				28 m	1158 - 1758 PST	1157 PST	1756 PST	183.9 mg C/m ²
33 9.8 N	123 12.9 W	01/11/03	1901 UTC					
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03
m	DEG C	THETA	ml/l	PCT	um/l	um/l	um/l	um/l
3	18.75	32.801	23.405	5.41	101.0	1.4	0.37	0.1
10	18.74	32.801	23.408	5.41	101.0	1.4	0.37	0.1
18	18.39	32.787	23.484	5.49	101.8	1.5	0.38	0.0
28	16.99	32.784	23.818	5.69	102.7	1.6	0.40	0.0
37	16.64	32.801	23.913	5.75	103.0	1.6	0.40	0.1
46	16.45	32.856	23.999	5.77	103.0	1.6	0.40	0.1
55	14.16	32.629	24.325	6.17	105.1	2.0	0.41	0.0
65	13.15	32.597	24.505	6.17	102.9	2.4	0.47	0.1
75	12.77	32.672	24.637	5.87	97.1	2.9	0.55	1.0
92	11.46	32.859	25.029	5.47	88.1	5.7	0.84	6.4
108	10.19	32.936	25.311	5.21	81.7	9.9	1.13	11.4
						0.02	0.06	0.09
							0.27	0.02
							0.08	0.05
								0.05

A) INCUBATION LIGHT INTENSITIES WERE 89, 38, 13, 4.9, 1.7, 0.27 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 83 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN m/l	OXY PCT	S103 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	MEAN (mg C/m³)	DARK
3	16.07	33.069	24.248	5.77	102.4	1.6	0.38	0.1	0.00	0.40	0.16	74. A	3.2	4.5	3.9	0.09
10	16.07	33.069	24.248	5.78	102.6	1.6	0.38	0.1	0.00	0.39	0.15	36.	8.4	6.4	7.4	0.09
21	15.95	33.076	24.281	5.81	102.9	1.6	0.38	0.1	0.01	0.49	0.17	12.	5.8	5.3	5.6	0.07
29	14.55	33.140	24.436	5.75	99.0	2.6	0.59	2.5	0.22	0.82	0.48					
40	12.11	32.944	24.974	5.50	89.9	5.7	0.91	7.1	0.41	0.44	0.37	1.7	0.65	0.57	0.61	0.03
49	10.99	33.021	25.238	5.12	81.8	9.0	1.19	12.3	0.08	0.26	0.27					
58	10.11	33.158	25.497	4.71	73.8	14.0	1.43	16.4	0.04	0.12	0.15	0.26	0.05	0.04	0.05	0.01

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 83 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN m/l	OXY PCT	S103 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	MEAN (mg C/m³)	DARK
2	18.84	32.831	23.406	5.41	101.2	1.5	0.36	0.0	0.01	0.12	0.03	89. A	2.5	2.2	2.4	0.04
17	18.71	32.826	23.435	5.42	101.1	1.6	0.36	0.0	0.01	0.11	0.05	38.	1.4	1.5	1.5	0.05
26	18.63	32.825	23.454	5.43	101.1	1.5	0.36	0.0	0.01	0.13	0.04					
36	18.50	32.815	23.479	5.44	101.1	1.6	0.36	0.0	0.01	0.17	0.06	13.	0.82	0.79	0.81	0.05
44	18.33	32.824	23.529	5.46	101.1	1.5	0.36	0.0	0.01	0.16	0.05					
53	18.29	32.849	23.558	5.46	101.0	1.5	0.37	0.0	0.01	0.18	0.06	4.9	0.28	0.28	0.28	0.03
61	17.39	32.867	23.789	5.67	103.1	1.6	0.36	0.0	0.01	0.25	0.12					
72	15.11	32.931	24.357	5.97	103.8	2.1	0.37	0.0	0.01	0.26	0.21	1.7	0.19	0.16	0.18	0.02
82	14.01	32.918	24.580	5.86	99.7	2.6	0.45	0.1	0.05	0.27	0.20					
93	13.25	33.034	24.824	5.59	93.7	3.6	0.56	1.9	0.21	0.20	0.17					
104	12.65	33.025	24.935	5.49	90.8	4.5	0.67	4.0	0.10	0.16	0.19	0.27	0.04	0.03	0.03	0.02

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 87 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN m/l	OXY PCT	S103 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	MEAN (mg C/m³)	DARK
2	16.59	33.024	24.094	5.76	103.3	2.0	0.38	0.1	0.00	0.25	0.09	83. A	5.3	5.9	5.6	0.18
11	15.95	32.993	24.217	5.83	103.2	1.9	0.39	0.1	0.00	0.37	0.18	37.	8.4	8.5	8.4	0.17
24	14.63	32.871	24.412	5.95	102.5	2.3	0.44	0.3	0.02	0.69	0.35	11.	5.4	9.6	7.5	0.12
34	13.03	32.732	24.632	5.98	99.6	3.1	0.56	1.4	0.13	0.73	0.56	4.6	5.0	5.0	5.0	0.08
45	11.82	32.640	24.792	5.83	94.6	4.2	0.71	3.6	0.22	0.49	0.55	1.7	1.2	1.5	1.4	0.04
56	11.17	32.764	25.006	5.53	88.5	6.4	0.95	7.9	0.25	0.27	0.37					
67	10.71	32.828	25.137	5.36	85.0	8.3	1.07	10.2	0.09	0.21	0.32	0.24	0.13	0.10	0.12	0.04

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 87 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN m/l	OXY PCT	S103 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	MEAN (mg C/m³)	DARK
2	18.58	32.876	23.505	5.43	101.1	1.6	0.38	0.0	0.00	0.10	0.03	91. A	2.0	1.8	1.9	0.06
11	18.49	32.880	23.530	5.43	100.9	1.6	0.37	0.0	0.00	0.11	0.02					
19	18.42	32.888	23.554	5.43	100.8	1.6	0.37	0.0	0.00	0.11	0.02	40.	2.3	2.2	2.2	0.07
32	18.28	32.890	23.591	5.44	100.7	1.6	0.37	0.0	0.00	0.10	0.03					
43	18.25	32.880	23.591	5.44	100.6	1.7	0.37	0.0	0.00	0.13	0.04	13.	1.6	1.5	1.5	0.05
53	18.07	32.862	23.622	5.46	100.6	1.7	0.38	0.0	0.00	0.21	0.08					
63	16.40	32.761	23.938	5.86	104.5	1.8	0.38	0.0	0.00	0.23	0.18	4.9	1.5	1.7	1.6	0.04
75	14.64	32.779	24.340	6.03	103.8	2.2	0.39	0.0	0.00	0.23	0.24					
84	13.59	32.708	24.503	5.99	100.9	2.5	0.45	0.0	0.07	0.20	0.26	1.8	0.96	0.87	0.91	0.02
97	13.37	32.935	24.723	5.74	96.3	3.1	0.50	0.6	0.16	0.27	0.28					
111	12.75	33.045	24.931	5.54	91.8	4.3	0.61	2.9	0.14	0.12	0.20					
122	11.44	32.959	25.111	5.35	86.2	6.4	0.87	6.8	0.04	0.10	0.12	0.29	0.08	0.07	0.08	0.00

A) INCUBATION LIGHT INTENSITIES WERE 89, 38, 13, 4.9, 1.7, 0.27 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 90 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
				18 m	1138 - 1737 PST	1137 PST	1736 PST	294.4 mg C/m ²								
33 14.7 N	118 15.3 W	26/10/03	1801 UTC													
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/l	OXY PCT	SIO3 uM/l	P04 uM/l	N03 uM/l	N02 uM/l	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	(mg C/m ³) MEAN	DARK
2	19.74	33.317	23.547	5.48	104.5	1.6	0.24	0.1	0.00	0.42	0.15	84. A	12.2	12.0	12.1	0.18
11	19.31	33.292	23.639	5.59	105.8	1.7	0.24	0.1	0.00	0.42	0.15	39.	10.2	10.6	10.4	0.12
18	17.05	33.163	24.095	5.96	107.9	1.9	0.31	0.1	0.00	0.45	0.21					
24	15.66	33.071	24.342	6.11	107.6	2.0	0.40	0.1	0.00	0.42	0.24	13.	4.4	4.5	4.4	0.06
34	13.99	33.041	24.677	5.99	101.9	3.1	0.51	0.6	0.05	0.87	0.70	5.5	3.8	4.0	3.9	0.08
42	13.07	33.118	24.923	5.36	89.5	4.8	0.78	4.6	0.42	0.46	0.41					
47	12.45	33.158	25.075	5.04	83.1	6.5	0.94	7.9	0.13	0.29	0.33	1.8	0.29	0.35	0.32	0.03
57	11.54	33.182	25.264	4.76	77.0	9.0	1.12	11.2	0.07	0.15	0.20					
69	11.09	33.323	25.456	4.32	69.3	11.7	1.30	14.1	0.03	0.08	0.11	0.28	0.02	0.03	0.03	0.01

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 90 53

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
				27 m	1148 - 1738 PST	1142 PST	1736 PST	262.3 mg C/m ²								
32 39.9 N	119 29.4 W	25/10/03	1730 UTC													
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/l	OXY PCT	SIO3 uM/l	P04 uM/l	N03 uM/l	N02 uM/l	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	(mg C/m ³) MEAN	DARK
2	18.78	33.286	23.768	5.41	101.3	1.5	0.32	0.0	0.00	0.15	0.04	89. A	3.7	3.7	3.7	0.08
10	18.75	33.286	23.776	5.41	101.3	1.4	0.32	0.0	0.00	0.15	0.03					
17	18.70	33.286	23.789	5.41	101.2	1.4	0.32	0.0	0.00	0.17	0.05	38.	3.1	3.2	3.1	0.13
26	18.58	33.283	23.817	5.44	101.5	1.4	0.32	0.0	0.00	0.22	0.07					
36	15.02	33.121	24.521	6.01	104.5	2.7	0.48	1.0	0.07	0.74	0.30	13.	6.1	7.7	6.9	0.08
43	13.61	33.064	24.773	5.71	96.4	3.8	0.66	3.5	0.29	0.64	0.43					
53	12.46	33.062	24.999	5.34	88.0	5.7	0.88	7.3	0.12	0.44	0.43	4.9	2.2	2.2	2.2	0.05
61	12.02	33.066	25.086	5.23	85.4	6.7	0.96	8.9	0.07	0.36	0.39					
72	11.21	33.088	25.251	5.02	80.6	8.8	1.12	11.6	0.03	0.23	0.29	1.7	0.39	0.45	0.42	0.05
87	10.35	33.181	25.475	4.81	75.8	11.6	1.25	14.0	0.02	0.12	0.14					
103	10.03	33.395	25.696	4.18	65.5	16.0	1.49	18.0	0.01	0.03	0.05	0.29	0.00	0.01	0.01	0.02

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
				27 m	1157 - 1754 PST	1152 PST	1752 PST	133.8 mg C/m ²								
31 26.0 N	122 0.0 W	24/10/03	1721 UTC													
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/l	OXY PCT	SIO3 uM/l	P04 uM/l	N03 uM/l	N02 uM/l	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	(mg C/m ³) MEAN	DARK
2	19.44	33.006	23.387	5.30	100.3	1.5	0.36	0.1	0.00	0.12	0.03	89. A	1.6	1.6	1.6	0.09
17	19.43	33.006	23.391	5.30	100.3	1.6	0.37	0.1	0.00	0.13	0.03	38.	2.7	2.6	2.6	0.05
26	19.43	33.007	23.392	5.31	100.5	1.6	0.36	0.1	0.00	0.12	0.04					
35	19.43	33.010	23.394	5.31	100.5	1.6	0.36	0.1	0.00	0.13	0.03	14.	1.4	1.4	1.4	0.05
43	18.65	33.080	23.645	5.46	101.9	1.4	0.36	0.1	0.00	0.20	0.08					
53	15.55	32.825	24.178	6.07	106.5	1.9	0.39	0.1	0.00	0.28	0.15	4.9	1.4		1.4	0.07
61	13.78	32.690	24.450	6.07	102.6	2.3	0.44	0.0	0.00	0.31	0.24					
72	12.91	32.777	24.691	5.75	95.5	3.3	0.62	2.4	0.26	0.43	0.32	1.7	1.0	0.90	0.97	0.04
82	12.36	32.844	24.850	5.52	90.7	4.5	0.77	5.2	0.14	0.13	0.13					
95	11.81	33.107	25.157	5.12	83.2	7.3	1.05	10.2	0.02	0.32	0.26					
103	10.60	33.066	25.342	5.13	81.2	9.2	1.08	11.0	0.02	0.09	0.10	0.29	0.01	0.03	0.02	0.03

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE								
				22 m	1231 - 1801 PST	1200 PST	1801 PST	85.4 mg C/m ²								
30 24.6 N	123 59.7 W	23/10/03	1937 UTC													
DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN mL/l	OXY PCT	SIO3 uM/l	P04 uM/l	N03 uM/l	N02 uM/l	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	UPTAKE 1	2	(mg C/m ³) MEAN	DARK
4	18.79	32.939	23.501	5.40	101.0	1.7	0.38	0.2	0.00	0.12	0.02	76. A	1.3	1.3	1.3	0.13
13	18.78	32.939	23.504	5.41	101.1	1.6	0.38	0.2	0.00	0.11	0.03	40.	2.2	2.1	2.2	0.08
30	18.72	32.935	23.516	5.41	101.0	1.6	0.37	0.1	0.00	0.13	0.03	12.	1.3	1.3	1.3	0.18
42	18.37	32.860	23.546	5.44	100.8	1.7	0.37	0.1	0.00	0.16	0.05	5.3	0.89	0.95	0.92	0.08
59	17.97	32.864	23.648	5.56	102.3	1.7	0.38	0.1	0.00	0.24	0.10	1.6	0.57	0.47	0.52	0.07
68	16.03	32.800	24.052	5.98	105.9	2.0	0.38	0.1	0.00	0.25	0.14					
77	15.65	32.969	24.268	5.89	103.6	2.1	0.37	0.1	0.00	0.26	0.20					
85	14.50	32.779	24.370	6.00	103.0	2.2	0.41	0.1	0.00	0.30	0.24	0.27	0.17	0.18	0.18	0.03

A) INCUBATION LIGHT INTENSITIES WERE 89, 38, 13, 4.9, 1.7, 0.27 PERCENT RESPECTIVELY.

PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 57.0 N	117 18.0 W	20/10/03	1907 UTC	1 m	1211 - 1541 PST	1134 PST	1735 PST	2120.1 mg C/m ²

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	1	2	MEAN	DARK	UPTAKE (mg C/m ³)
1	20.49	33.284	23.326	10.57	204.4	2.4	0.20	0.4	0.03	55.25	2.21	22.	A	584.5	669.4	626.9	25.0
2	20.31	33.281	23.371	10.69	206.0	2.4	0.19	0.4	0.07	50.54	3.10	4.	6		948.3	948.3	17.2
3	20.21	33.280	23.397	11.13	214.1	2.6	0.26	0.4	0.06	66.11	10.66	1.00	233.8	216.6	225.2	10.9	
4	19.37	33.273	23.609	9.13	172.9	2.6	0.11	0.4	0.04	16.45	1.83	0.22	5.5	6.8	6.2	2.5	
5	18.61	33.239	23.775	7.32	136.6	3.0	0.15	0.4	0.03	0.70	0.26	0.05	0.09	-0.01	0.04	0.47	

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 10.5 N	118 54.6 W	21/10/03	1820 UTC	22 m	1146 - 1749 PST	1141 PST	1743 PST	221.1 mg C/m ²

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	1	2	MEAN	DARK	UPTAKE (mg C/m ³)
3	18.60	33.238	23.776	5.45	101.7	1.3	0.35	0.1	0.01	0.16	0.03	81.	A	3.7	5.8	4.8	0.13
14	18.53	33.233	23.791	5.45	101.6	1.3	0.35	0.0	0.01	0.16	0.03	38.		3.7	3.5	3.6	0.19
21	18.28	33.197	23.825	5.51	102.2	1.3	0.35	0.0	0.01	0.16	0.04						
30	14.78	32.977	24.462	6.03	104.2	1.9	0.42	0.0	0.01	0.39	0.21	12.		3.8	4.7	4.2	0.13
36	14.52	32.973	24.514	5.94	102.1	2.2	0.43	0.1	0.05	0.51	0.28						
43	13.91	32.993	24.657	5.79	98.3	2.7	0.54	1.4	0.29	0.58	0.41	5.0		3.7	3.5	3.6	0.09
51	12.96	33.059	24.899	5.40	89.9	4.3	0.79	5.9	0.05	0.33	0.33						
59	12.19	33.048	25.040	5.33	87.3	5.7	0.91	7.8	0.04	0.25	0.23	1.6		0.51	0.67	0.59	0.06
71	11.46	33.126	25.236	4.99	80.5	8.3	1.13	11.5	0.02	0.13	0.14						
84	10.73	33.230	25.447	4.65	73.9	11.7	1.33	14.7	0.02	0.07	0.07	0.28		0.41	0.62	0.52	0.04

RV NEW HORIZON

CALCOFI CRUISE 0310

STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
30 51.2 N	121 35.6 W	22/10/03	1901 UTC	24 m	1210 - 1753 PST	1151 PST	1752 PST	97.9 mg C/m ²

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/L	P04 uM/L	N03 uM/L	N02 uM/L	CHL-A ug/l	PHAE0 ug/l	LIGHT PCT	1	2	MEAN	DARK	UPTAKE (mg C/m ³)
3	19.82	32.954	23.250	5.28	100.6	1.5	0.36	0.0	0.00	0.10	0.03	83.	A	1.7	1.9	1.8	0.19
15	19.81	32.955	23.254	5.28	100.6	1.6	0.36	0.0	0.00	0.10	0.03	38.		1.9	1.9	1.9	0.11
32	19.41	33.004	23.395	5.36	101.4	1.5	0.36	0.0	0.00	0.13	0.04	13.		1.3	1.5	1.4	0.09
40	19.05	33.094	23.555	5.40	101.5	1.4	0.37	0.0	0.00	0.17	0.05						
47	17.97	33.036	23.779	5.65	104.0	1.5	0.36	0.0	0.00	0.24	0.11	4.9		1.2	1.2	1.2	0.11
57	15.48	32.789	24.166	6.05	105.9	1.8	0.39	0.0	0.00	0.28	0.17						
63	14.63	32.698	24.280	6.11	105.1	2.0	0.41	0.0	0.00	0.28	0.22	1.8		0.59	0.49	0.54	0.11
73	13.62	32.684	24.478	6.01	101.2	2.3	0.47	0.1	0.08	0.45	0.32						
82	12.69	32.738	24.704	5.75	95.0	3.5	0.63	2.6	0.31	0.30	0.31						
91	12.02	32.942	24.990	5.38	87.8	5.6	0.87	7.2	0.07	0.16	0.15	0.30		0.11	0.08	0.09	0.02

A) INCUBATION LIGHT INTENSITIES WERE 89, 38, 13, 4.9, 1.7, 0.27 PERCENT RESPECTIVELY.

CalCOFI Cruise 0310

MACROZOOPLANKTON BIOMASS

Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST)		Water Volume Strained (m ³)	Max. Tow Depth (m)	Volume per 1000 m ³ Strained	
					Start	End			Total (cm ³)	Small (cm ³)
77	49	35 05.4	120 46.0	11/03	0933	0938	114	45	35	35
77	51	35 01.7	120 56.3	11/03	0734	0755	453	204	102	102
77	55	34 53.9	121 13.1	11/03	0431	0453	450	213	622	622
77	60	34 43.8	121 34.8	11/03	0017	0038	458	208	221	221
77	70	34 23.5	122 15.1	11/02	1814	1835	440	211	193	193
77	80	34 03.6	122 57.8	11/02	1210	1232	464	202	287	287
77	90	33 44.5	123 38.9	11/02	0625	0646	452	213	951	951
77	100	33 23.2	124 18.6	11/02	0043	0105	428	208	82	82
80	51	34 27.4	120 31.0	10/31	1150	1156	124	47	8538	57
80	55	34 19.4	120 49.2	10/31	1527	1548	471	198	23	23
80	60	34 08.9	121 11.3	10/31	1930	1952	457	210	217	217
80	70	33 49.5	121 51.3	11/01	0110	0131	459	194	242	242
80	80	33 29.4	122 32.8	11/01	0635	0657	462	212	251	251
80	90	33 10.3	123 12.0	11/01	1201	1222	525	186	61	61
80	100	32 50.3	123 54.4	11/01	1830	1851	442	207	50	50
82	47	34 16.1	120 03.7	10/31	0801	0822	467	203	30	30
83	40.6	34 13.6	119 25.6	10/31	0315	0318	61	22	82	82
83	42	34 11.2	119 31.3	10/31	0117	0126	200	85	65	65
83	51	33 51.9	120 08.2	10/30	1908	1920	313	108	51	51
83	55	33 44.1	120 25.5	10/30	1508	1531	533	217	26	26
83	60	33 35.0	120 45.9	10/30	0843	0904	483	211	246	246
83	70	33 14.9	121 26.9	10/30	0319	0340	449	202	477	477
83	80	32 55.5	122 06.7	10/29	2125	2147	468	194	53	53
83	90	32 34.5	122 48.9	10/29	1534	1555	461	207	41	41
83	100	32 14.8	123 29.8	10/29	0819	0841	454	217	29	29
83	110	31 53.9	124 10.3	10/29	0301	0322	459	197	61	61
87	33	33 52.1	118 30.3	10/26	1622	1628	125	47	40	40
87	35	33 49.4	118 38.7	10/26	1909	1931	442	211	66	66
87	40	33 40.2	118 59.8	10/26	2319	2340	458	200	74	74
87	45	33 29.9	119 120.1	10/27	0336	0357	462	197	65	65
87	50	33 20.4	119 39.6	10/27	0709	0715	124	51	185	185
87	55	33 09.2	120 00.4	10/27	1109	1130	446	212	117	117
87	63	32 54.8	120 32.2	10/27	1638	1660	470	206	321	321
87	70	32 39.3	121 01.6	10/27	2144	2205	458	210	245	245
87	80	32 19.5	121 44.0	10/28	0331	0352	472	204	78	78
87	90	31 59.6	122 24.0	10/28	0824	0845	450	211	42	42
87	100	31 38.5	123 06.4	10/28	1524	1545	478	198	33	33
87	110	31 18.4	123 46.2	10/28	2053	2115	464	210	30	30
90	28	33 29.7	117 47.2	10/26	0322	0336	288	124	70	70
90	30	33 25.8	117 54.7	10/26	0557	0619	432	216	93	93
90	35	33 15.4	118 15.0	10/26	0907	0928	439	210	57	57
90	37	33 10.3	118 24.8	10/25	2106	2127	443	206	144	144
90	45	32 54.7	118 56.7	10/25	1518	1540	468	200	64	64
90	53	32 39.5	119 29.5	10/25	0833	0854	472	199	38	38
90	60	32 25.6	119 58.2	10/25	0452	0515	479	212	90	90
90	70	32 04.1	120 38.5	10/24	2252	2314	474	203	152	152
90	80	31 45.1	121 19.5	10/24	1552	1614	480	208	371	371
90	90	31 25.6	121 59.5	10/24	0818	0839	460	215	39	39
90	100	31 05.1	122 41.1	10/24	0220	0241	475	196	76	76
90	110	30 46.0	123 21.6	10/23	1941	2003	478	211	80	80
90	120	30 24.9	124 00.7	10/23	1251	1313	507	202	20	20
93	26.7	32 57.8	117 19.0	10/20	1213	1234	466	193	54	54
93	28	32 55.1	117 25.4	10/20	1543	1604	434	211	58	58
93	30	32 50.7	117 33.5	10/20	1838	1859	439	212	96	96
93	35	32 40.7	117 53.8	10/20	2238	2259	454	209	163	163
93	40	32 30.4	118 14.0	10/21	0235	0256	459	202	63	63
93	45	32 21.2	118 35.5	10/21	0640	0701	438	222	94	94
93	50	32 10.8	118 53.9	10/21	0925	0946	454	207	29	29
93	55	32 00.3	119 14.8	10/21	1351	1412	492	187	100	100
93	60	31 51.0	119 36.4	10/21	1852	1914	479	200	40	40
93	70	31 30.0	120 16.9	10/22	0044	0105	504	189	75	75
93	80	31 11.4	120 56.2	10/22	0610	0631	449	215	51	51
93	90	30 52.5	121 37.1	10/22	1213	1235	493	201	26	26
93	100	30 32.4	122 17.2	10/22	1803	1825	465	214	49	49
93	110	30 11.4	122 56.8	10/23	0118	0139	478	197	63	63
93	120	29 51.8	123 35.2	10/23	0655	0717	463	211	24	24

FIGURES

Avifauna Observations

CalCOFI Cruise 0310

- 1a. Northern Fulmar distribution.
- 1b. Red Phalarope distribution.
- 1c. Pink-footed Shearwater distribution.
- 1d. Red-necked Phalarope distribution.
- 1e. Black-vented Shearwater distribution.
- 1f. Western Gull distribution.

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