

# data report

**CalCOFI Cruise 1307**  
**6– 22 July 2013**

**CC Reference 14 -07**  
**06 Oct 2014**

**UNIVERSITY OF CALIFORNIA, SAN DIEGO  
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**PHYSICAL, CHEMICAL AND BIOLOGICAL DATA**

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## CONTENTS

Introduction .....	4
Literature Cited .....	9
CalCOFI Cruise 1307	
List of Figures .....	11
Personnel .....	21
Tabulated Rosette Cast Data .....	22
Tabulated Primary Productivity Data .....	52
Tabulated Macrozooplankton Data .....	55

## INTRODUCTION

The data presented in this report were collected during cruise 1307\* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV *New Horizon*. 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 Wildlife, 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. 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 3161-936) with a rosette was deployed at each station on this cruise. 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 515 meters, bottom depth permitting. Occasional stations have multiple bottles tripped at the same depth to provide more water for ancillary programs. Additional bottle depths also appear in combined hydrographic and primary productivity casts. 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 were 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 P152. 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 Culbertson (1991), but with higher concentrations of thiosulfate solution (50 g/l). Standard KIO3 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.

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

Nutrient samples were analyzed at sea using a QuAatro continuous flow analyzer (SEAL Analytical). Dissolved silicate, nitrate, and nitrite were analyzed using a modification of the method described by Armstrong (1967) and Gordon et al. (1992). Phosphate was measured with a modification of the *Murphy and Riley* (1962) protocol and ammonium is analyzed using a modified fluorometric method described by Kerouel and Aminot (1997). Samples were collected in 45ml high-density polypropylene screw top tubes which were acid washed and rinsed with sample three times prior to filling. Standardizations and cadmium-reduction coil efficiency determinations were performed at the beginning of every run. Drift corrections were performed in each run using a high standard inserted before and after sample sets. A sample of reference material for nutrients in seawater (RMNS), produced by KANSO technos ([www.kanso.co.jp](http://www.kanso.co.jp)) was included in every run and those data were used to adjust values for nitrate, nitrite, phosphate, and silicate if appropriate. Samples not analyzed immediately after collection were refrigerated and run the following day.

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  $^{14}\text{C}$  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 up-cast. 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 11.47  $\mu\text{Ci}$  of  $^{14}\text{C}$  as  $\text{NaHCO}_3$  (50 $\mu\text{l}$  of stock solution) 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).

### *Avifauna Observations (Farallon Institute of Advanced Ecosystem Research)*

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.

### *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 raw data are collected and archived for potential data processing ashore.
- 3) *California Current Ecosystem Long Term Ecological Research Program*: The CCE-LTER program augments standard CalCOFI measurements to further characterize the lower trophic levels as well as the carbon system. These additional samples, taken at all CalCOFI stations, are for measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs, microscopic counts of nano- microplankton, determination of mesozooplankton size structure using a Laser Optical Plankton Counter, and mesozooplankton community structure with a Planktonic Rate Processes in Oligotrophic Ocean Systems (PRPOOS) net. (M. Ohman, SIO)
- 4) *Advanced Laser Fluorometer Analyzer (ALFA)*: Continuous underway analysis of phytoplankton pigment groups and variable fluorescence ( $F_v/F_m$ ). ALFA, developed by A. Chekalyuk at Lamont-Doherty Earth Observatory, uses laser stimulated emission at 405 and 532 nm together with spectral deconvolution analysis to distinguish fluorescence from three types of phycoerythrin, chlorophyll-*a*, and chromophoric dissolved organic matter (CDOM). The ALFA is useful for differentiating the contribution of cyanobacteria and cryptophytes from other phytoplankton taxa present in natural phytoplankton assemblages, as well as for assessing phytoplankton photophysiological status. (R. Goericke, SIO)
- 5) *Southern California Coastal Ocean Observing System (SCCOOS) Nearshore Observations*: The objective of these observations is to extend CalCOFI time series to the nearshore. Nearshore observations consist of 8 stations at the ends and interspersed with current CalCOFI lines on the 20 m isobath with a standard set of CalCOFI hydrographic observations as well as a CalBOBL net tow, particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen and taxon-specific phytoplankton pigments data. (R. Goericke, SIO)
- 6) *Inorganic Carbon System*: The CalCOFI group collected samples for the characterization of the inorganic carbon system at selected locations along the cruise track. Total inorganic carbon and alkalinity will be measured which will allow the calculation of pH and pCO<sub>2</sub>. The objectives of these measurements are first the long-term characterization of the inorganic carbon system and its response to changing ocean climate and second measurements of pH in the coastal zone in order to monitor the impact of 'corrosive' waters on benthic ecosystems in the Southern California Bight. (R. Goericke, SIO)
- 7) *Marine Mammal Observations*: During daylight transits, visual line-transect surveys were conducted by marine mammal observers focusing on cetaceans. Acoustic line-transect surveys were performed using a towed hydrophone array which consists of multiple hydrophone elements that sample sounds up to 100 kHz allowing for localization of calling animals. Acoustic monitoring also takes place on individual stations using sonobuoys. (J. Hildebrand, SIO)

8) *Nitrate Isotope*: Seawater samples are acquired using the CTD-rosette and shipped frozen to Princeton University. The nitrogen and oxygen isotopic composition of nitrate is measured using strains of denitrifying bacteria that reduce nitrate to  $N_2O$ . (P. Rafter, Princeton University).

9) *BioArgo Profiling Float*: An Apex Profiling float with nitrate and oxygen sensors was deployed at CalCOFI station 83.110 on cruise 1307NH. The float is profiling from 1000 m depth to the surface every 5 days. Chemical measurements are made at 60 depths on each profiling with spacing varying from every 5 m in the upper 100 m, every 10 m to 360 m, to every 50 m from 400 to 1000 m. This float should continue to operate for about 5 years. It shows the nitracline near 90 m depth, but shoaling to the surface in January, before relaxing back to depths near 90 m in April. A persistent shallow oxygen maximum (an oceanographic feature first named by Eric Schulenberger and Joe Reid at SIO) is formed in August through October by net community production and then eroded during winter. All data from the float is available at <http://www.mbari.org/chemsensor/floatviz.htm>. This float is identified as 7618CalCurrent, and is one of three operating along the US West Coast. (Ken Johnson, MBARI)

## 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*

## 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 1307

1. CalCOFI Cruise 1307 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.

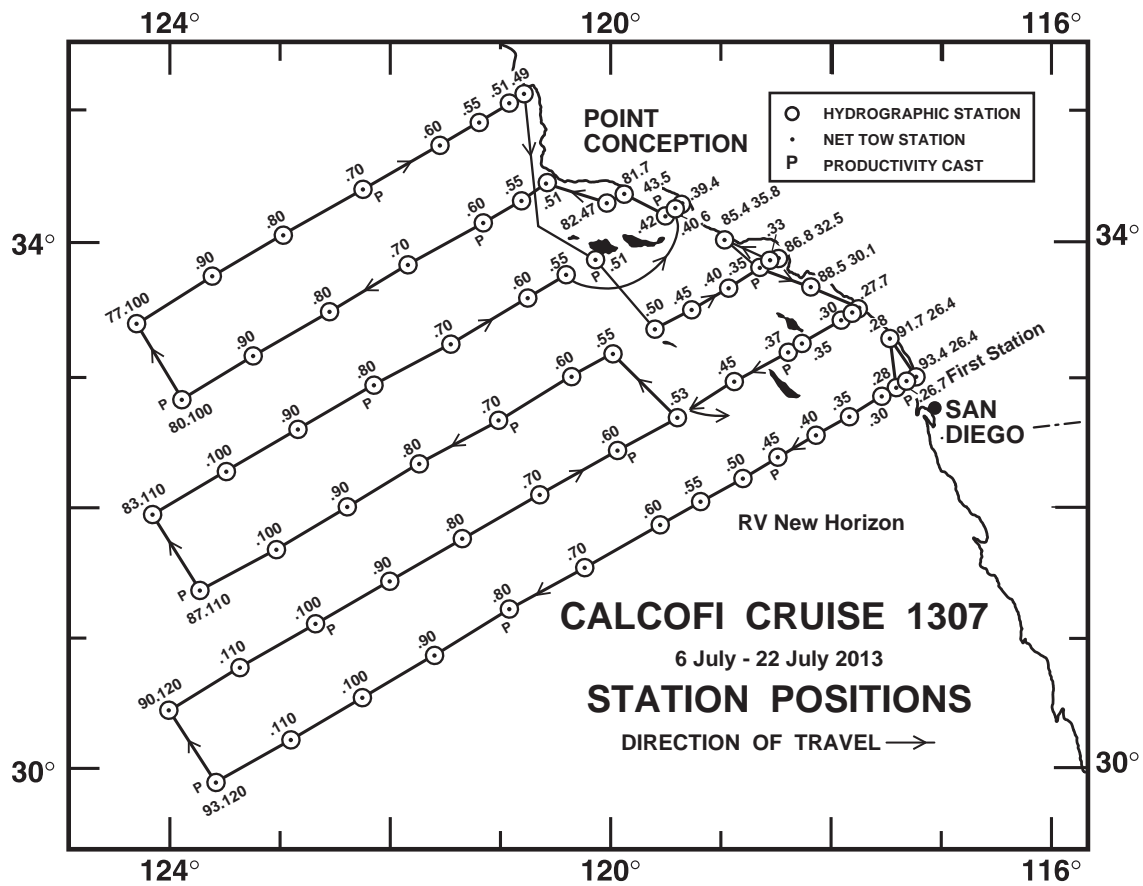


FIGURE 1

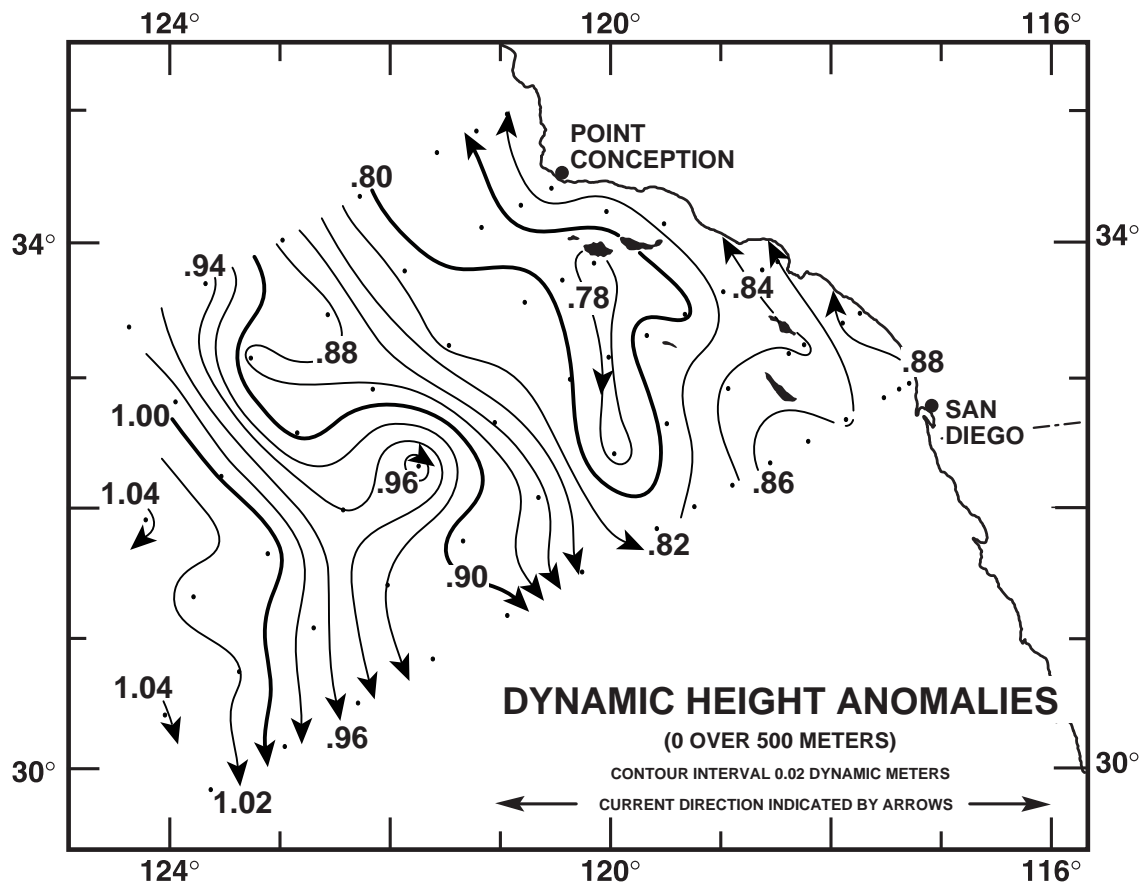


FIGURE 2

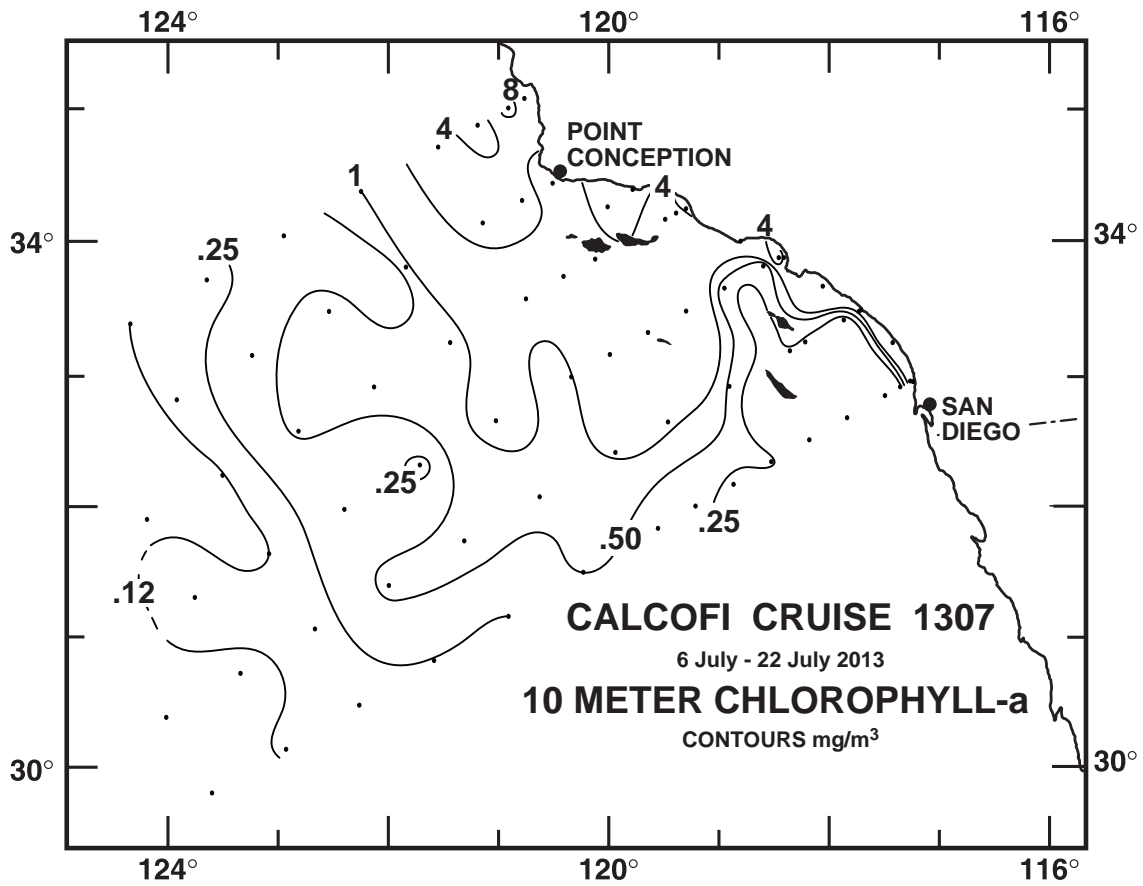


FIGURE 3A

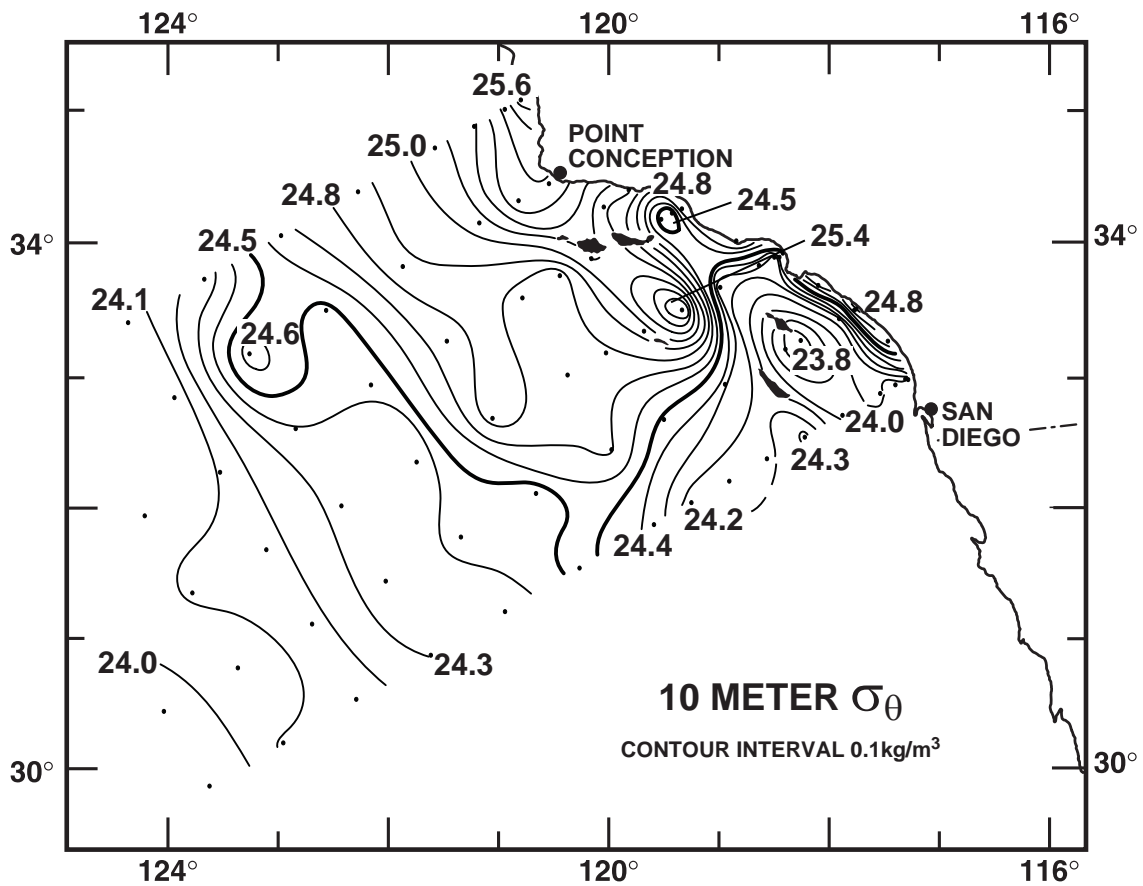


FIGURE 3B

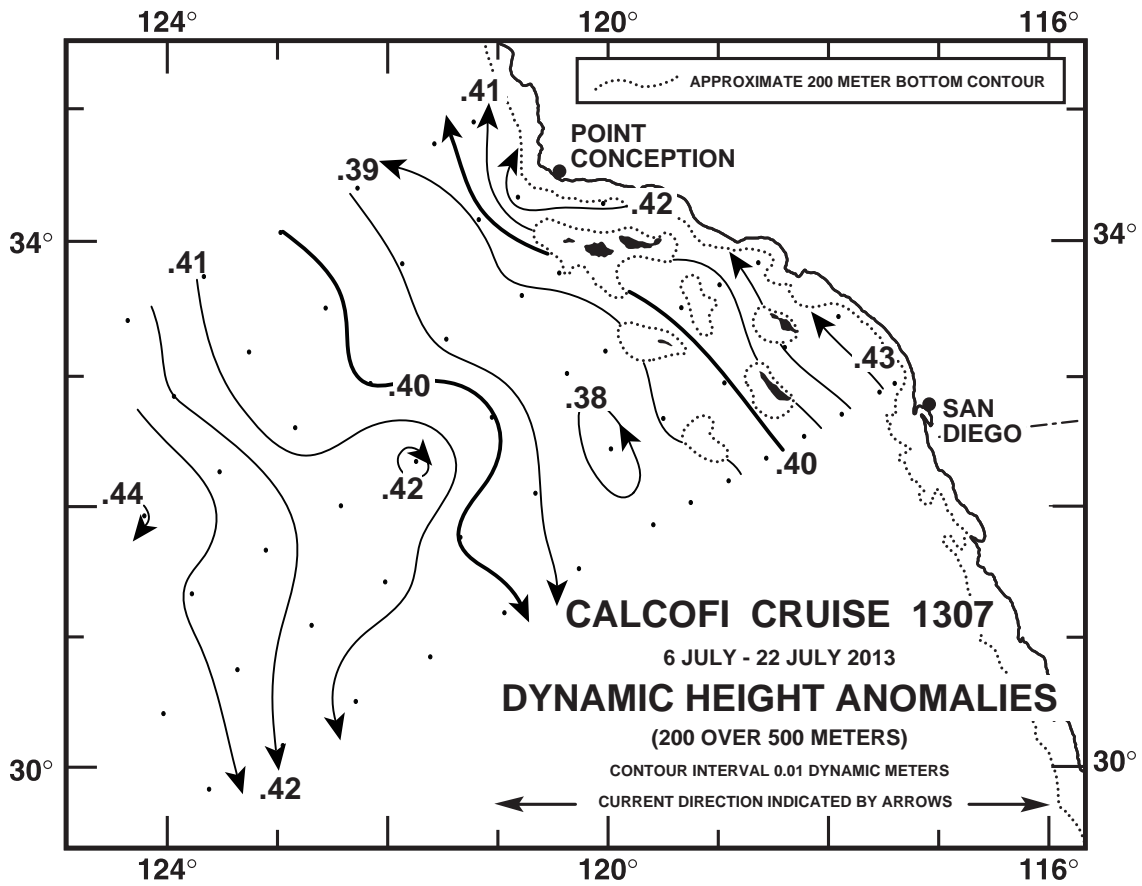


FIGURE 4A

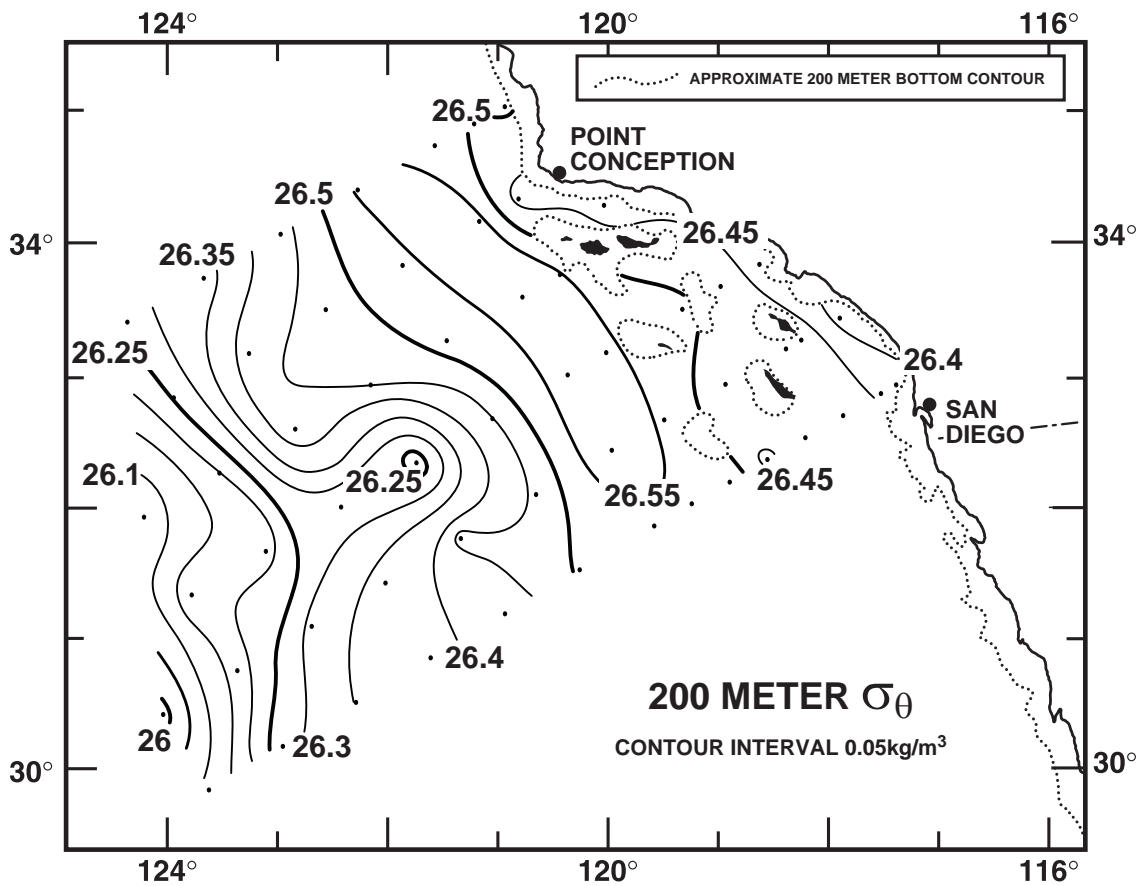


FIGURE 4B

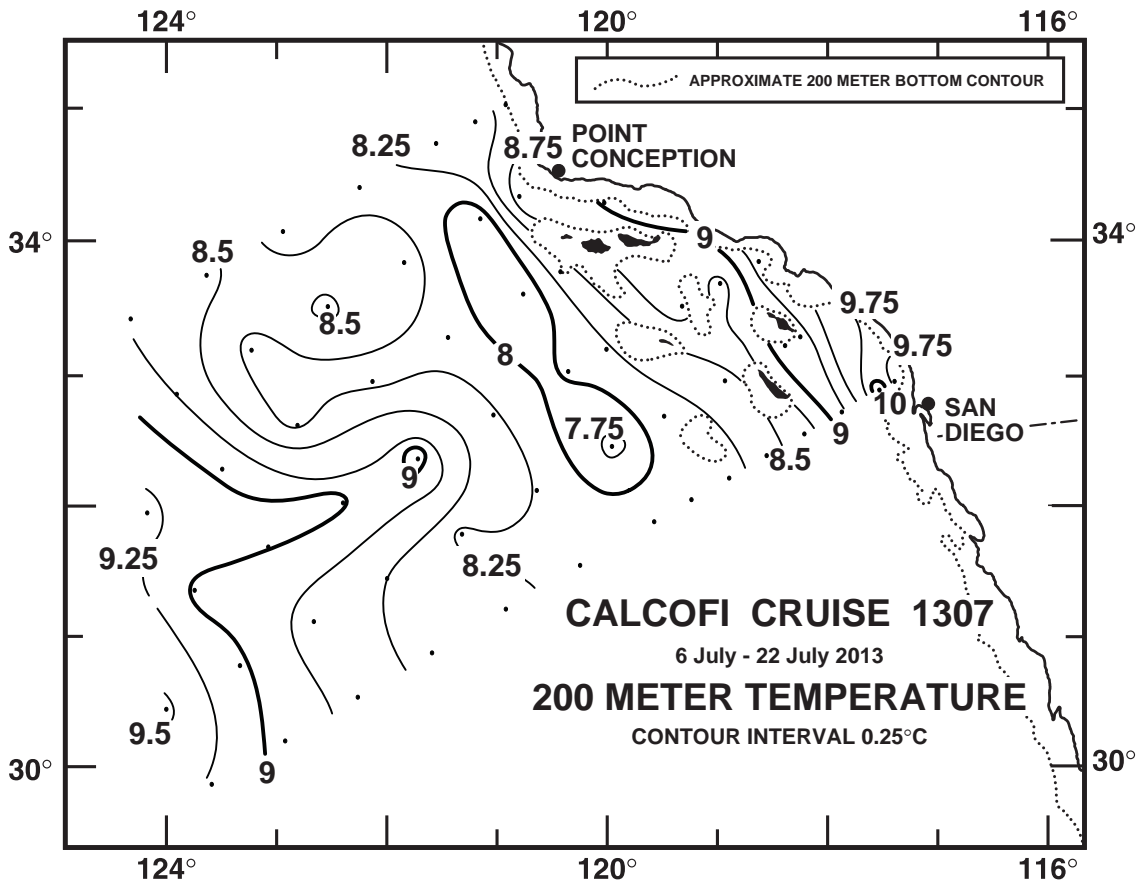


FIGURE 4C

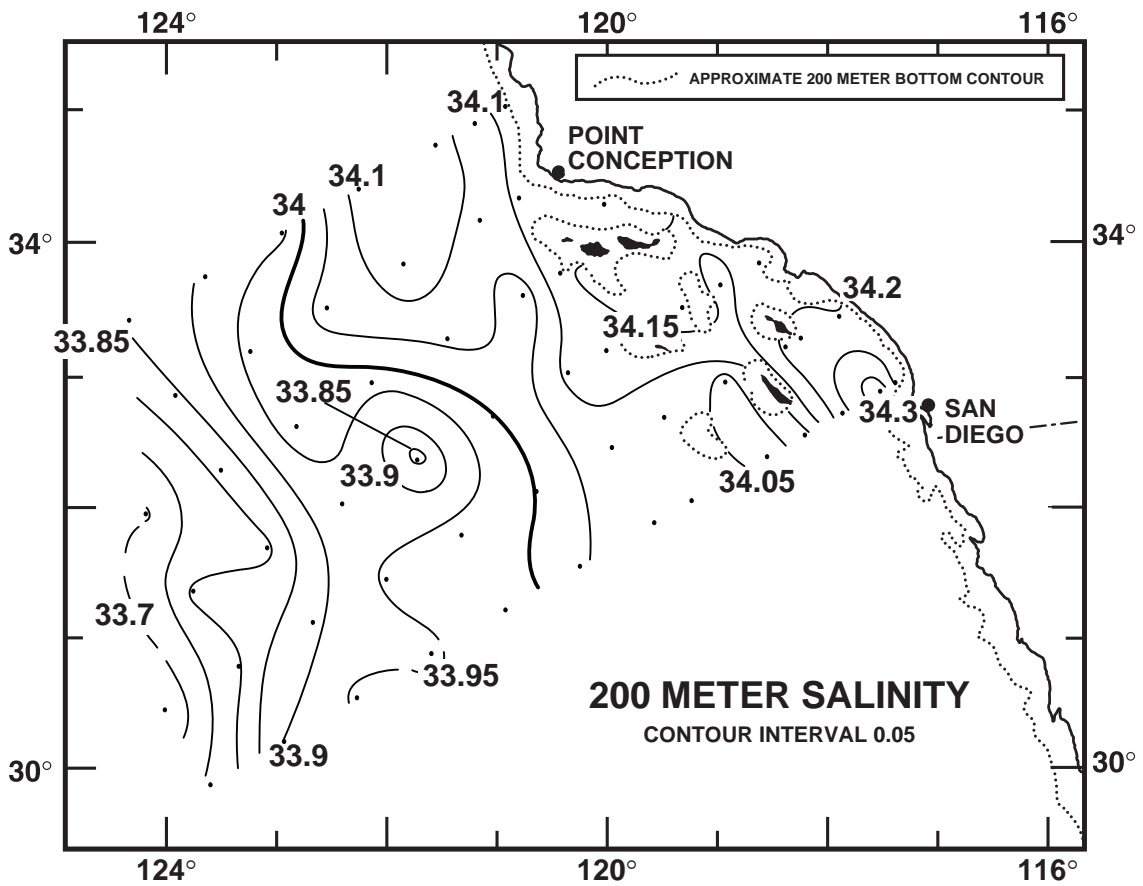


FIGURE 4D

# CALCOFI CRUISE 1307

9 - 12, 20 - 21, July 2013

## POTENTIAL DENSITY ( $\sigma_\theta$ ) ALONG CALCOFI LINE 90

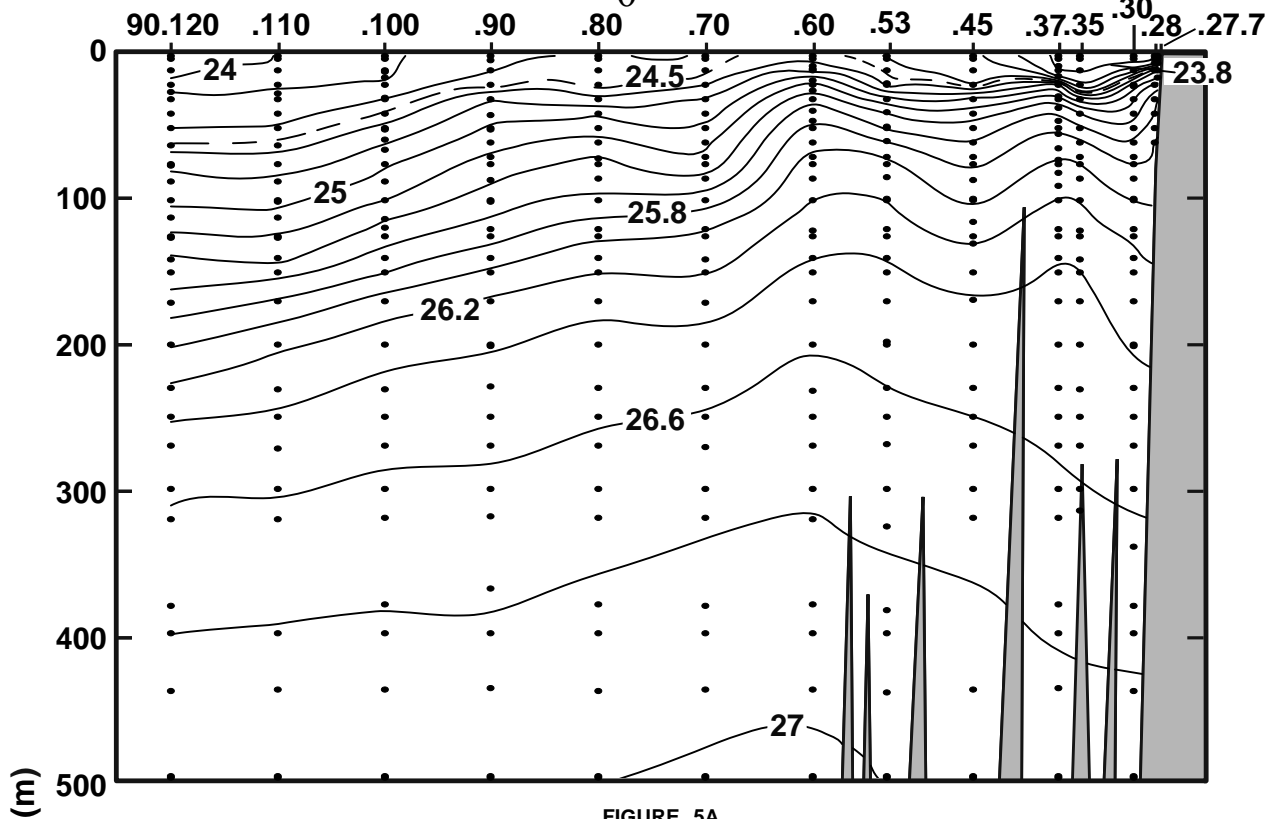


FIGURE 5A

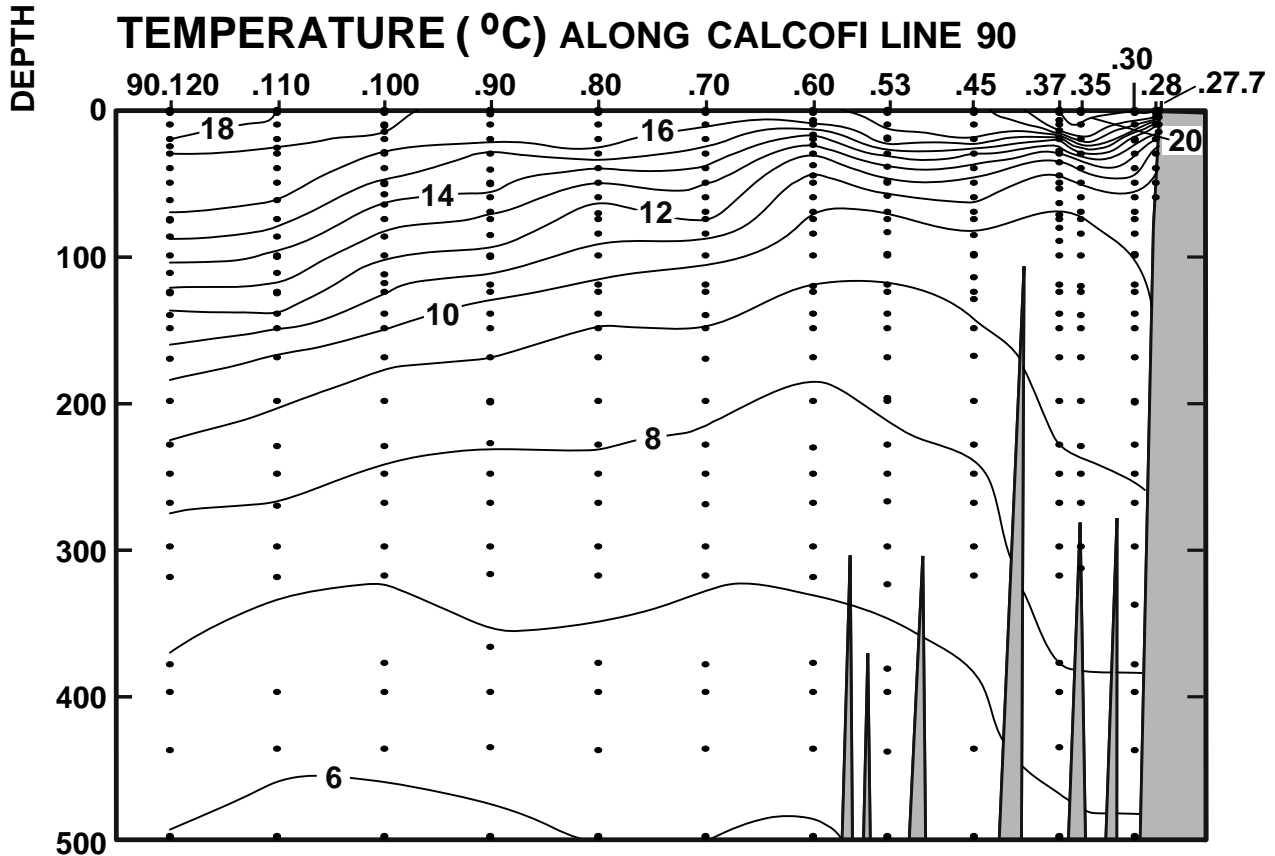


FIGURE 5B



# CALCOFI CRUISE 1307

9 - 12, 20 - 21, July 2013

## SALINITY ALONG CALCOFI LINE 90

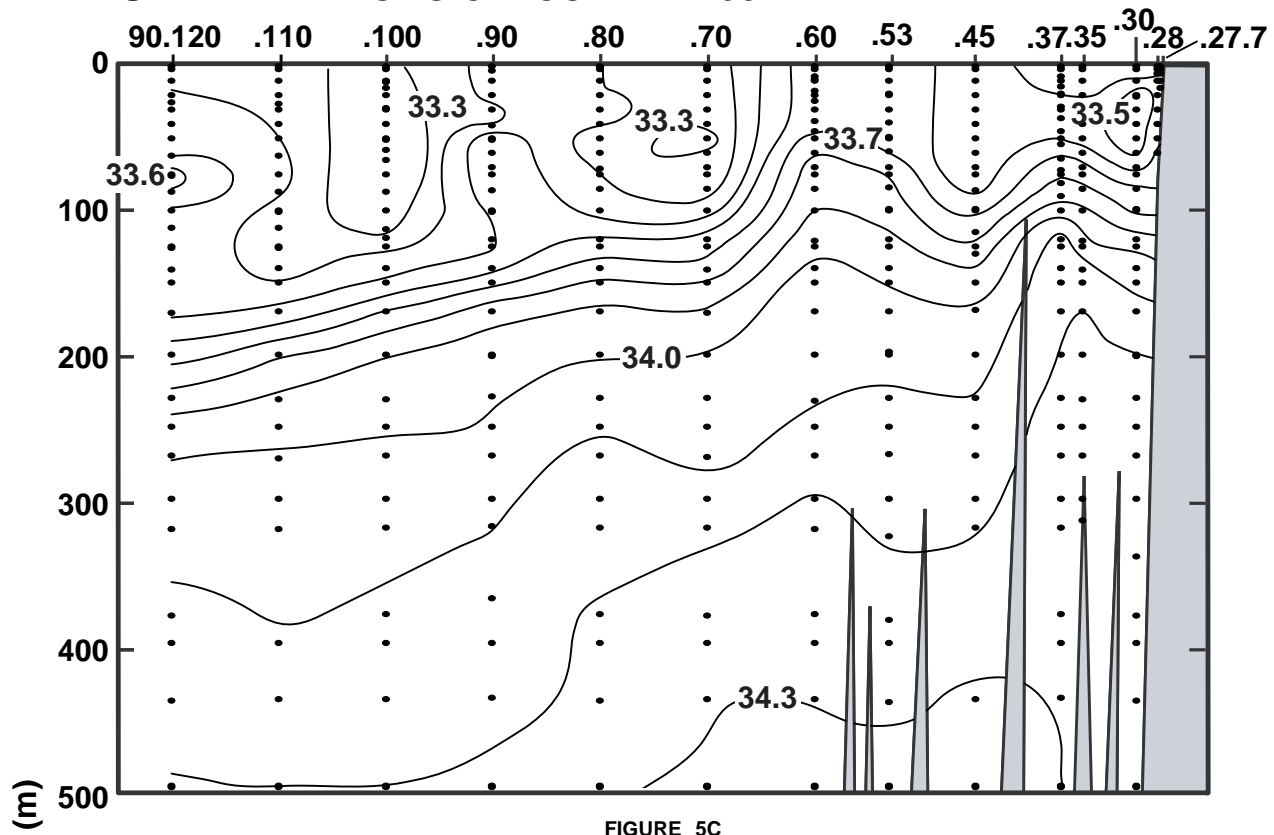


FIGURE 5C

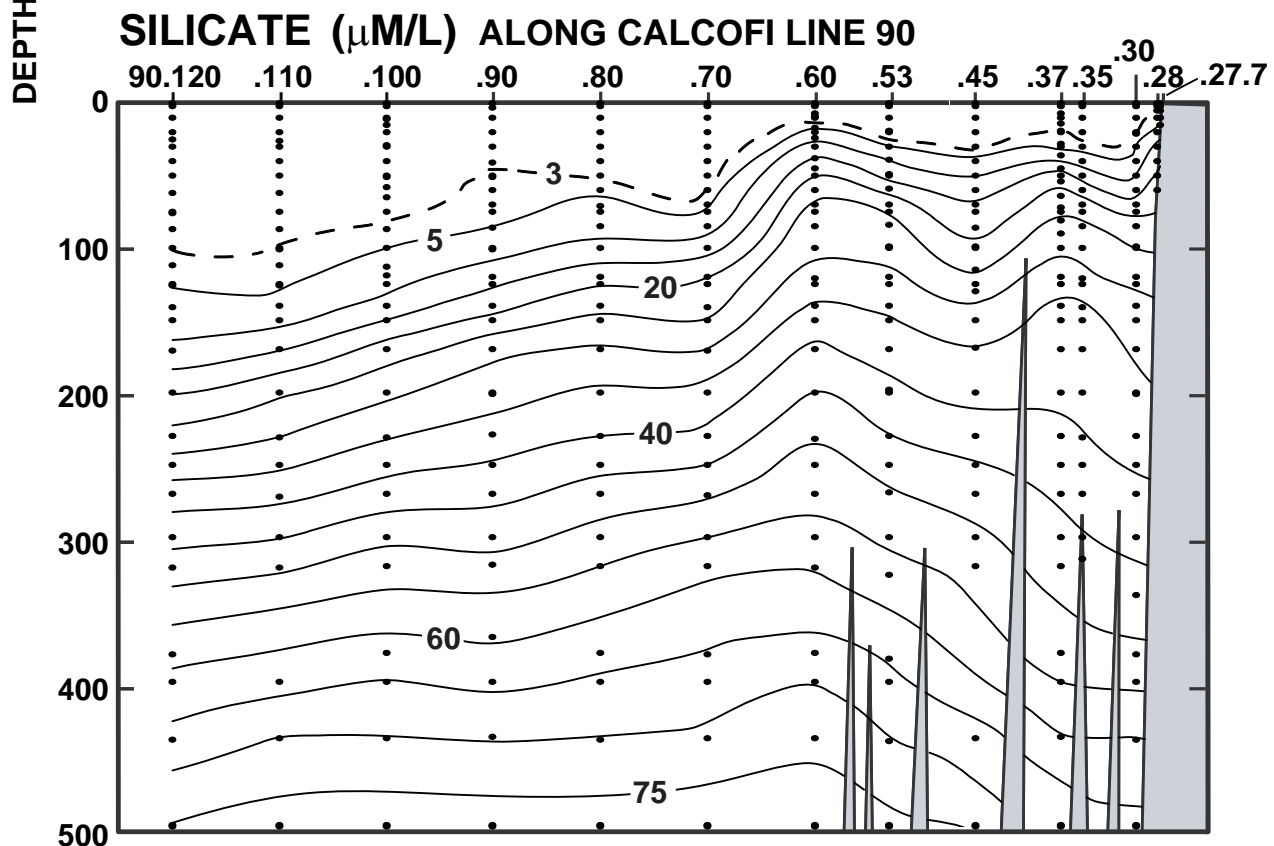


FIGURE 5D

# CALCOFI CRUISE 1307

9 - 12, 20 - 21, July 2013

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

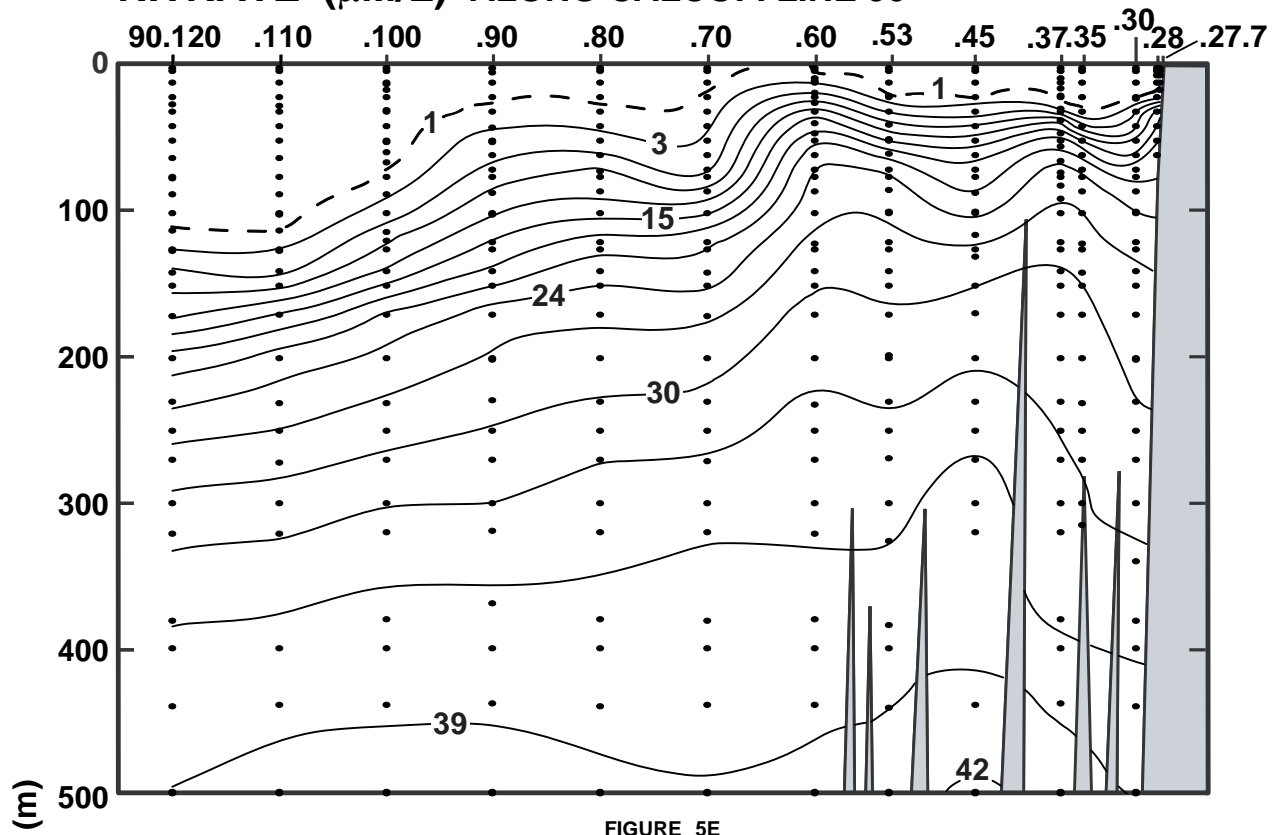


FIGURE 5E

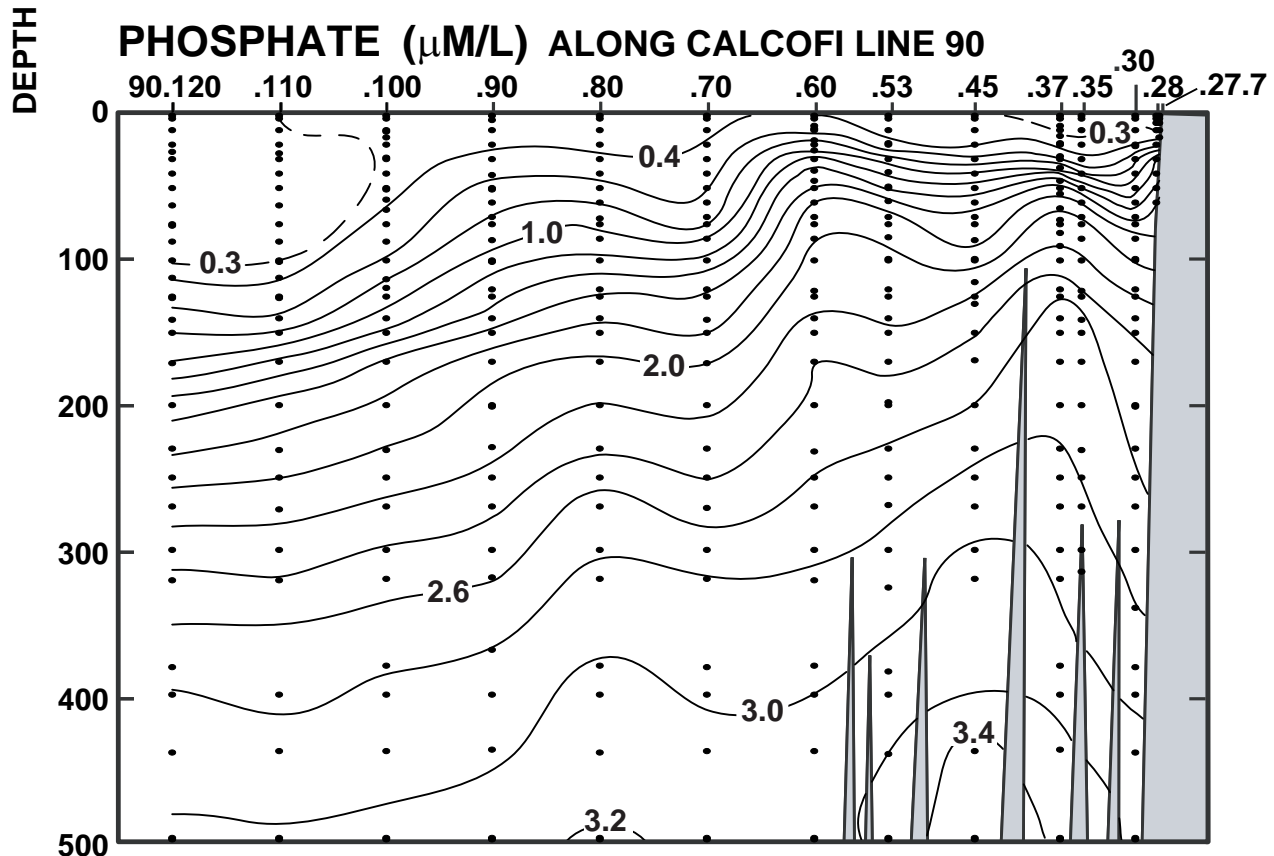


FIGURE 5F

# CALCOFI CRUISE 1307

9 - 12, 20 - 21, July 2013

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

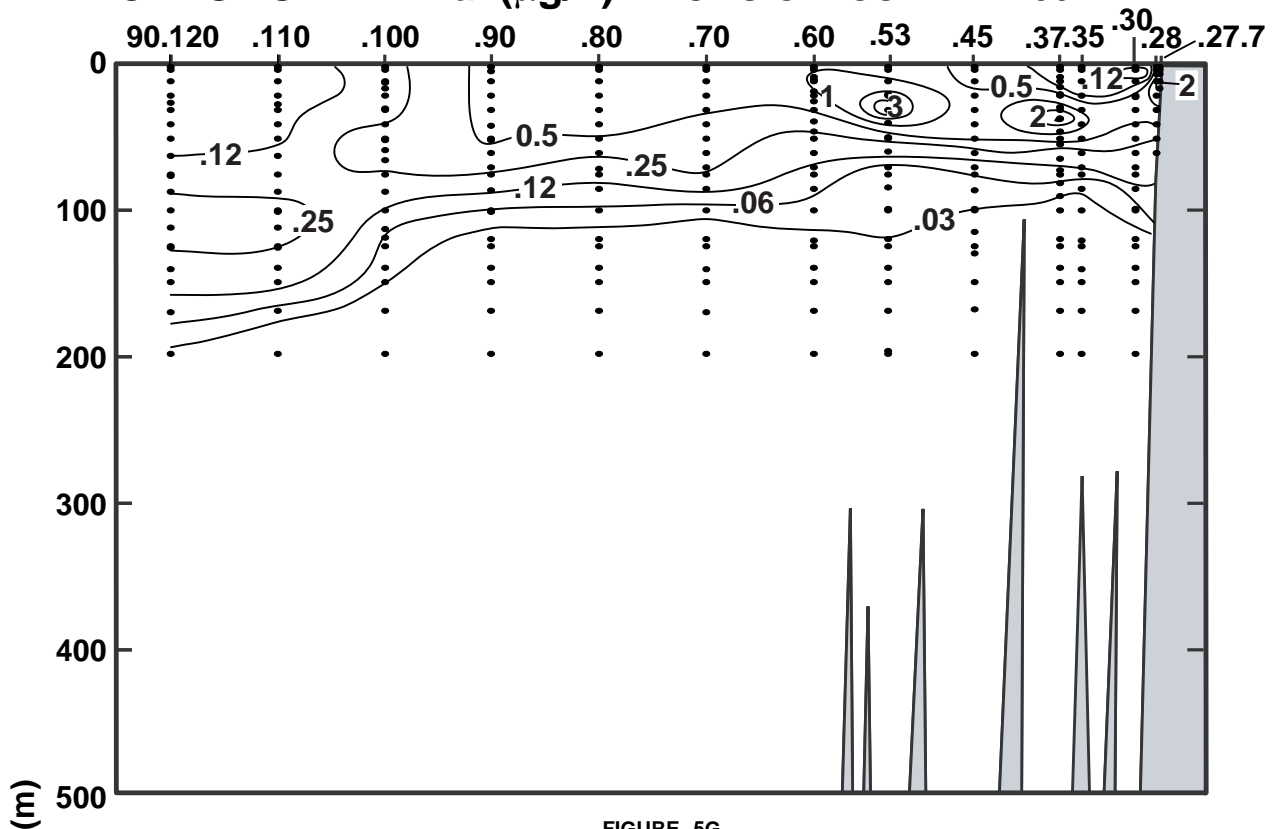


FIGURE 5G

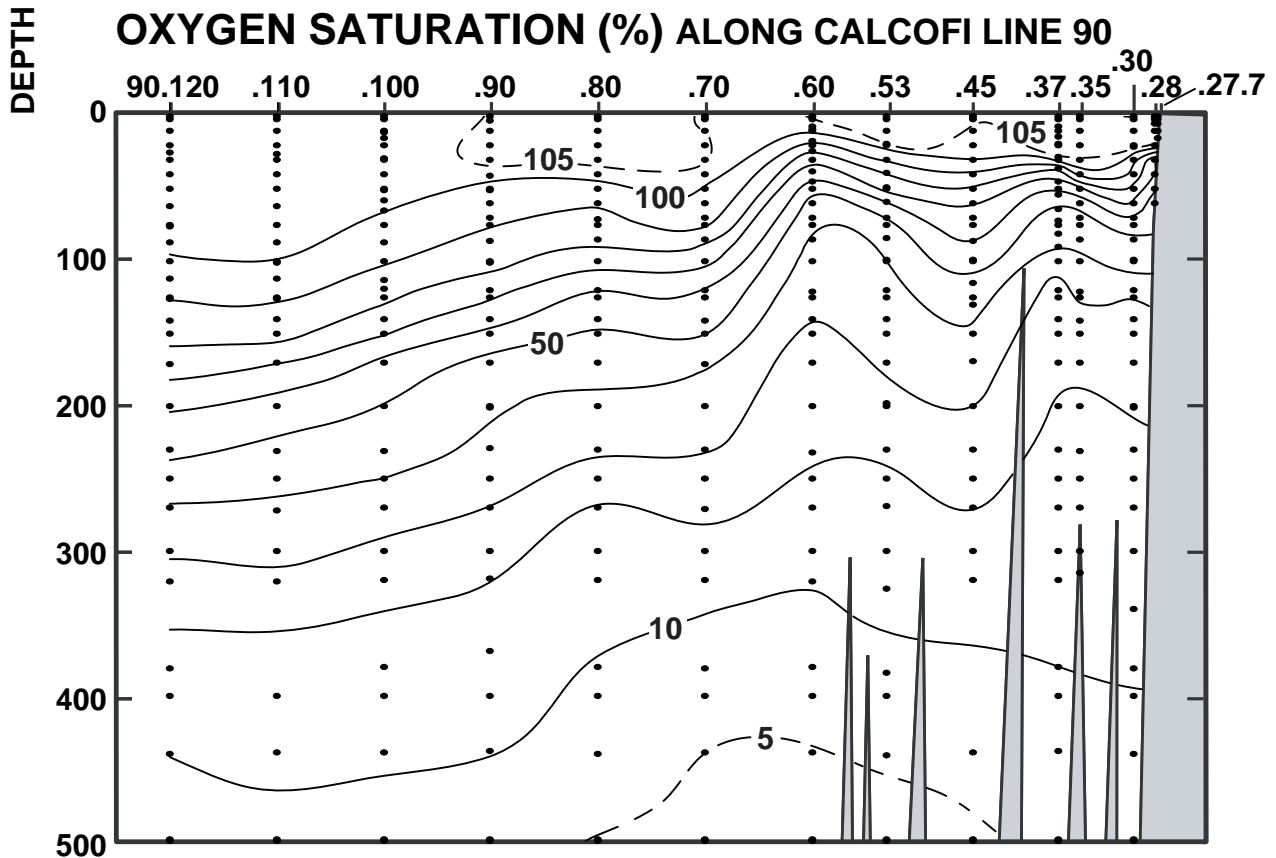


FIGURE 5H

# CALCOFI CRUISE 1307

9 - 12, 20 - 21, July 2013

## OXYGEN (mL/L) ALONG CALCOFI LINE 90

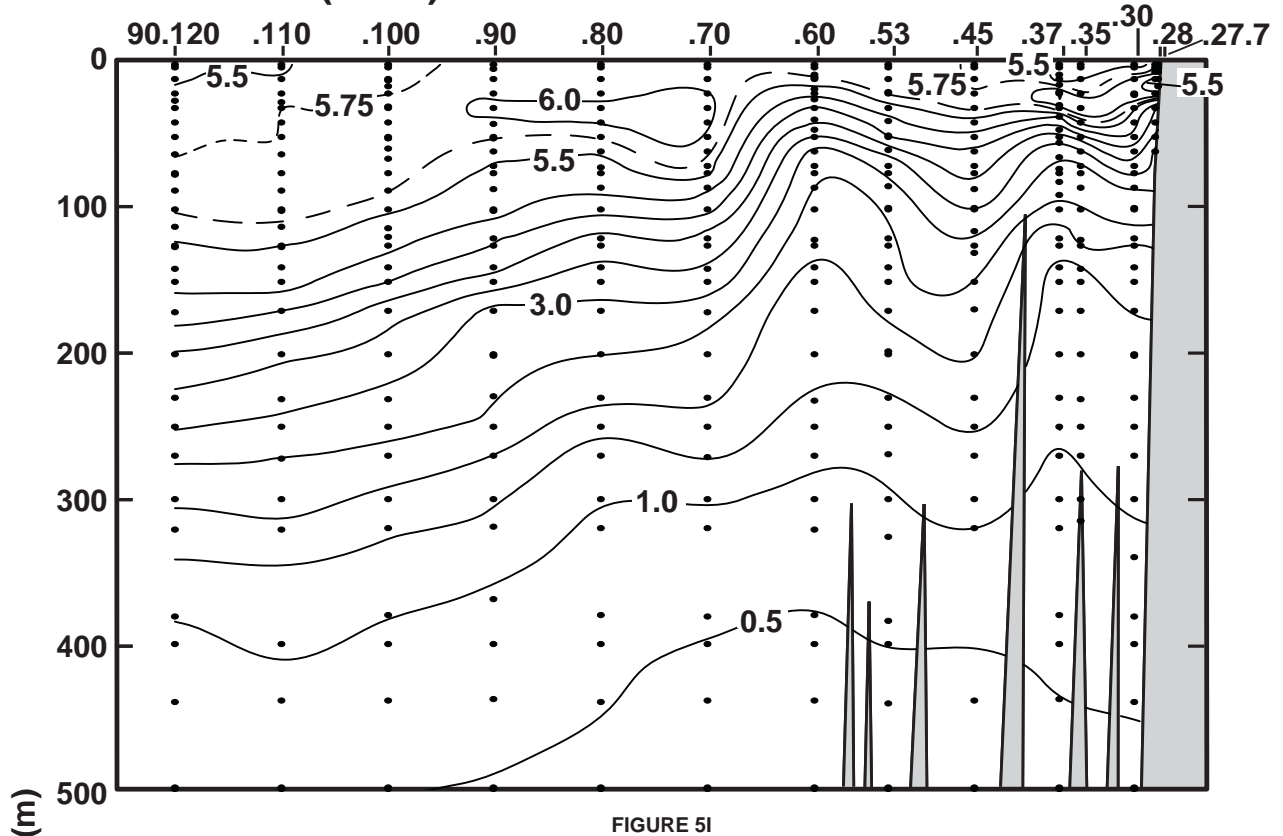


FIGURE 5I

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

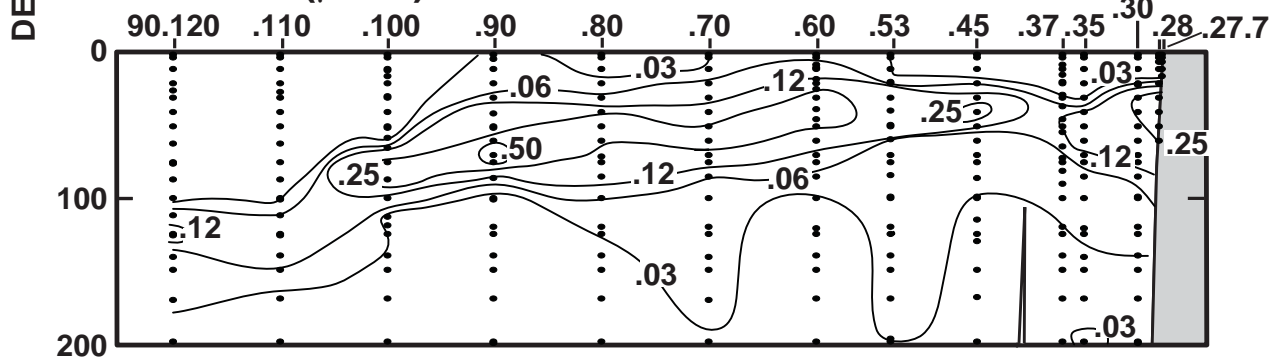


FIGURE 5J

## PHAEOPIGMENTS ( $\mu\text{g/L}$ ) ALONG CALCOFI LINE 90

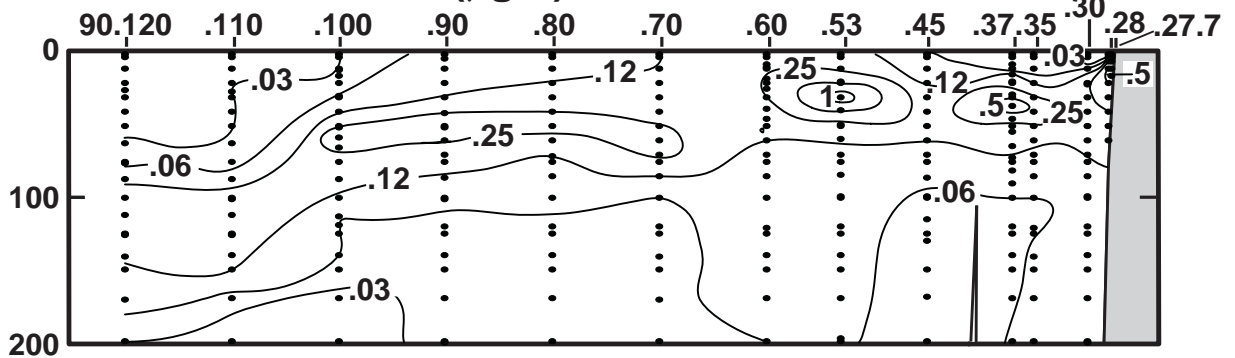


FIGURE 5K

## PERSONNEL

CalCOFI Cruise 1307

### SHIP'S CAPTAIN

Lawrence, Ian, RV New Horizon

### PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

Wolgast, David (Chief Scientist)	Staff Research Associate, SIO
Breese, Dawn	Bird Observer, FIAER
Dovel, Shonna	Staff Research Associate, SIO
Engel, Eric	Volunteer
Faber, David	Staff Research Associate, SIO
Haas, Patty	Marine Mammal Observer, MPL
Hays, Amy	Fishery Biologist, NMFS
Jiorle, Ralph	Staff Research Associate, SIO
Overcash, Bryan	Fishery Biologist, NMFS
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO
Shultz, Dana	Volunteer
Vu, Elizabeth	Marine Mammal Acoustician, MPL
Whitaker, Katherine	Marine Mammal Observer, MPL
Wilkinson, James	Staff Research Associate, SIO

San Diego to San Diego, California, 6 - 22 July 2013









RV NEW HORIZON

CALCOFI CRUISE 1307

STATION 80.0 51.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data from 0 to 60 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; SECONDARY CRUISE-CORRECTED O2;

RV NEW HORIZON

CALCOFI CRUISE 1307

STATION 80.0 55.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data from 0 to 514 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV NEW HORIZON

CALCOFI CRUISE 1307

STATION 80.0 60.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data from 0 to 517 meters.

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

















Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data from 0 to 514 m.

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data from 0 to 769 m.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;









RV NEW HORIZON CALCOFI CRUISE 1307 STATION 88.5 30.1

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data (DEPTH, TEMP, POTTEMP, SALINITY, SIGMA THETA, SVA, DYN HT, OXYGEN, OXYGEN, OXY, SI03, P04, N03, N02, NH4, CHL-A, PHAEO, PRES, SAMP).

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 90.0 27.7

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data (DEPTH, TEMP, POTTEMP, SALINITY, SIGMA THETA, SVA, DYN HT, OXYGEN, OXYGEN, OXY, SI03, P04, N03, N02, NH4, CHL-A, PHAEO, PRES, SAMP).

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 90.0 28.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data (DEPTH, TEMP, POTTEMP, SALINITY, SIGMA THETA, SVA, DYN HT, OXYGEN, OXYGEN, OXY, SI03, P04, N03, N02, NH4, CHL-A, PHAEO, PRES, SAMP).

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 90.0 30.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Includes depth data (DEPTH, TEMP, POTTEMP, SALINITY, SIGMA THETA, SVA, DYN HT, OXYGEN, OXYGEN, OXY, SI03, P04, N03, N02, NH4, CHL-A, PHAEO, PRES, SAMP).

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;















RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 28.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Rows include depth data from 0 to 515 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 30.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Rows include depth data from 0 to 514 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 35.0

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Rows include depth data from 0 to 515 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED 02;



Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Rows include depth data from 0 to 515 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; SECONDARY CRUISE-CORRECTED O2;

Table with columns: LATITUDE, LONGITUDE, DAY/MO/YR, CAST, TIME, BOTTOM, WIND SPEED, WAVES, WEA, BAROMETER, DRY, WET, SECCHI, CLD AMT, TYPE, ORD. Rows include depth data from 0 to 514 meters.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;









LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
29 50.8 N	123 35.3 W	09/07/2013	1936	UTC	4134 m	350 11 kn	320 03 09	1	1019.1 mb	19.8 C	16.0 C	27 m	5/8	SC	017			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	db	
0	18.73	18.73	33.422	23.885	401.0	0.000	5.42	236.6	101.6	2.6	0.29	0.1	0.01	0.20	0.08	0.01	0	
2 A	18.73	18.73	33.422	23.885	401.1	0.008	5.42	236.6	101.6	2.6	0.29	0.1	0.01	0.20	0.08	0.01	2	22
10 ISL	18.67 D	18.67	33.423	23.901	399.9	0.040	5.45	D237.8	D102.0	2.6	0.30	0.0	0.01	0.14	0.09	0.01	10	
16 A	18.63	18.63	33.421	23.910	399.2	0.064	5.43	236.6	101.4	2.6	0.30	0.0	0.01	0.10	0.09	0.01	16	21
20 ISL	18.61 D	18.60	33.417	23.913	399.1	0.080	5.45	D237.9	D101.9	2.6	0.28	0.0	0.01	0.11	0.09	0.02	20	
21 A	18.62	18.62	33.422	23.913	399.2	0.084	5.47	238.8	102.3	2.6	0.28	0.0	0.01	0.11	0.09	0.02	21	20
30 ISL	17.23 D	17.22	33.350	24.198	372.3	0.120	5.72	D249.3	D104.0	2.6	0.29	0.0	0.01	0.13	0.08	0.02	30	
32	17.16	17.15	33.347	24.212	371.1	0.126	5.67	247.1	102.9	2.6	0.29	0.0	0.01	0.14	0.08	0.02	32	19
42 A	16.99	16.98	33.354	24.258	367.0	0.163	5.67	247.3	102.7	2.6	0.29	0.0	0.01	0.11	0.09	0.02	42	18
50 ISL	16.66 D	16.65	33.393	24.264	357.1	0.193	5.76	D251.1	D103.6	2.6	0.28	0.0	0.01	0.16	0.10	0.02	50	
51	16.63	16.62	33.391	24.370	356.6	0.196	5.73	249.6	102.9	2.6	0.28	0.0	0.01	0.17	0.10	0.02	51	17
60	16.34	16.33	33.423	24.463	348.1	0.227	5.75	250.7	102.8	2.6	0.28	0.0	0.02	0.18	0.13	0.04	60	16
72 A	15.37	15.36	33.516	24.752	320.8	0.267	5.85	255.0	102.7	2.6	0.27	0.0	0.02	0.18	0.16	0.05	72	15
75 ISL	14.84 D	14.83	33.350	24.741	321.9	0.279	5.96	D259.7	D103.3	2.6	0.28	0.0	0.01	0.16	0.18	0.06	76	
82	14.36	14.35	33.299	24.803	316.2	0.299	5.95	259.1	102.1	2.7	0.30	0.0	0.01	0.10	0.22	0.09	83	14
92 A	14.35	14.34	33.437	24.912	306.1	0.330	5.86	255.3	100.7	2.7	0.29	0.0	0.01	0.10	0.24	0.13	93	13
99	13.70	13.69	33.330	24.965	301.2	0.352	5.86	255.1	99.2	2.9	0.32	0.0	0.02	0.05	0.28	0.17	100	12
100 ISL	13.73 D	13.71	33.332	24.961	301.6	0.358	5.83	D254.2	D 98.9	3.0	0.33	0.1	0.03	0.05	0.28	0.17	101	
112	13.00	12.98	33.312	25.092	289.3	0.390	5.69	247.8	95.0	3.6	0.42	1.1	0.14	0.05	0.26	0.18	113	
125 ISL	12.19 D	12.17	33.357	25.285	271.1	0.430	5.36	D235.5	D 88.0	4.7	0.54	3.4	0.11	0.05	0.20	0.15	126	11
126	12.46	12.45	33.361	25.235	276.0	0.429	5.44	237.0	89.8	4.8	0.55	3.6	0.11	0.05	0.20	0.15	127	10
141	11.42	11.40	33.379	25.445	256.1	0.469	5.10	222.2	82.4	7.6	0.80	7.9	0.04	0.09	0.12	0.12	142	09
150 ISL	10.85 D	10.83	33.418	25.577	243.6	0.496	4.98	D216.6	D 79.4	9.8	0.94	10.2	0.04	0.11	0.10	0.10	151	
171	10.08	10.06	33.507	25.780	224.7	0.541	4.36	189.7	68.4	14.8	1.28	15.7	0.03	0.14	0.04	0.06	172	08
200	9.22	9.20	33.760	26.119	192.8	0.601	3.60	156.8	55.6	23.0	1.65	21.7	0.00	0.05	0.00	0.02	202	07
230	8.81	8.79	33.919	26.309	175.2	0.657	3.46	150.4	52.9	27.7	1.75	23.4	0.00	0.00	0.00	0.00	232	06
250 ISL	8.49 D	8.46	33.961	26.392	167.6	0.695	3.11	D135.3	D 47.3	32.3	1.93	25.9	0.00	0.00	0.00	0.00	252	
270	8.20	8.17	33.996	26.464	161.0	0.724	2.57	111.7	38.8	36.8	2.10	28.3	0.00	0.02	0.06	0.00	272	05
300 ISL	7.86 D	7.83	34.034	26.546	153.6	0.776	2.24	D 97.3	D 33.5	42.6	2.29	30.6	0.00	0.00	0.00	0.00	302	
320	7.56	7.53	34.062	26.611	147.7	0.801	1.81	78.9	27.0	46.5	2.41	32.1	0.00	0.00	0.00	0.00	322	04
379	7.01	6.97	34.122	26.736	136.4	0.885	1.18	51.4	17.4	56.8	2.69	35.3	0.00	0.00	0.00	0.00	382	03
400 ISL	6.73 D	6.70	34.139	26.787	131.7	0.919	0.99	D 43.0	D 14.4	60.5	2.77	36.2	0.00	0.00	0.00	0.00	403	
439	6.39	6.35	34.173	26.859	125.1	0.963	0.75	32.6	10.9	67.5	2.92	37.9	0.00	0.00	0.04	0.00	443	02
500 ISL	5.90 D	5.85	34.187	26.934	118.4	1.045	0.63	D 27.2	D 9.0	76.0	3.02	39.4	0.00	0.00	0.07	0.00	504	
516	5.77	5.73	34.199	26.960	116.1	1.056	0.54	23.4	7.7	78.3	3.05	39.8	0.00	0.08	0.00	0.00	520	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
32 57.2 N	117 16.8 W	06/07/2013	2000	UTC	19 m	260 05 kn	270 02 08	2	1008.8 mb	21.8 C	20.5 C		7/8	SC	002			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA			mL/L	µmol/Kg	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	db	
0	21.29	21.29	33.691	23.420	445.4	0.000	5.72	249.2	112.4	2.1	0.29	0.0	0.03	0.17	1.68	0.40	0	
2	21.29	21.29	33.691	23.420	445.5	0.009	5.72	249.2	112.4	2.1	0.29	0.0	0.03	0.17	1.68	0.40	2	05
6	20.84	20.84	33.689	23.540	434.2	0.027	5.67	247.4	110.6	2.1	0.27	0.0	0.02	0.15	1.29	0.33	6	03
10	19.44	19.44	33.658	23.885	401.4	0.044	5.83	254.4	110.8	2.7	0.38	0.1	0.04	0.11	2.97	1.02	10	02
15	15.51	15.51	33.616	24.795	314.8	0.062	5.75	250.6	101.3	3.5	0.51	0.9	0.08	0.51	2.46	1.02	15	01

D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

PRIMARY PRODUCTIVITY CASTS

RV NEW HORIZON			CALCOFI CRUISE 1307											STATION 76.7 70.0			
LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME		SECCHI	INCUBATION TIME					LAN	CIVIL TWILIGHT	INTEGRATED VALUE		ORD		
34 23.3 N	122 14.8 W	18/07/2013	1855 UTC		10 m	1213 - 2022 PST					1215 PST	1945 PST	659.8 mg C/m2		055		
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	15.49	33.697	24.860	5.86	103.1	1.4	0.35	1.6	0.08	0.21	0.93	0.19	74. A	30.0	30.4	30.2	0.44
6	15.49	33.696	24.860	5.87	103.3	1.3	0.35	1.6	0.08	0.20	0.94	0.20	40.	37.0	37.0	37.0	0.39
8	15.49	33.696	24.860	5.84	102.9	1.3	0.35	1.6	0.07	0.19	0.93	0.22	29.	30.3	29.3	29.8	0.39
15	15.48	33.699	24.865	5.87	103.3	1.3	0.36	1.6	0.07	0.22	0.97	0.22	10.0	25.5	27.3	26.4	0.41
28	15.46	33.699	24.870	5.83	102.7	1.3	0.35	1.6	0.07	0.22	0.97	0.23	1.4	3.2	2.8	3.0	0.40
33	15.43	33.699	24.878	5.84	102.7	1.3	0.36	1.6	0.08	0.31	0.96	0.23	0.63	1.2	1.0	1.1	0.35

RV NEW HORIZON			CALCOFI CRUISE 1307											STATION 80.0 60.0			
LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME		SECCHI	INCUBATION TIME					LAN	CIVIL TWILIGHT	INTEGRATED VALUE		ORD		
34 9.0 N	121 9.1 W	16/07/2013	1736 UTC		09 m	1208 - 1948 PST					1211 PST	1948 PST	2585.9 mg C/m2		047		
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	14.26	33.601	25.054	6.05	103.8	4.3	0.53	3.5	0.14	0.05	5.72	1.05	75. A	160.6	160.5	160.5	0.43
5	14.26	33.601	25.054	6.04	103.7	4.2	0.56	3.5	0.13	0.04	5.47	0.95	43.	134.3	134.3	134.3	0.44
6	14.26	33.603	25.054	6.04	103.6	4.2	0.52	3.5	0.13	0.06	5.56	1.02	36.	144.4	136.6	140.5	0.40
14	14.23	33.601	25.059	6.02	103.2	4.2	0.52	3.5	0.13	0.05	5.63	0.95	9.2	108.8	114.8	111.8	0.41
24	14.15	33.607	25.081	5.90	101.0	4.4	0.54	4.0	0.14	0.11	6.02	0.93	1.7	14.3	12.7	13.5	0.50
30	13.67	33.606	25.181	5.82	98.7	4.6	0.60	4.5	0.17	0.36	5.54	0.86	0.60	3.8	4.7	4.3	0.33

RV NEW HORIZON			CALCOFI CRUISE 1307											STATION 80.0 100.0			
LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME		SECCHI	INCUBATION TIME					LAN	CIVIL TWILIGHT	INTEGRATED VALUE		ORD		
32 48.9 N	123 54.3 W	17/07/2013	1802 UTC		23 m	1221 - 1953 PST					1222 PST	1953 PST	219.8 mg C/m2		051		
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	17.21	33.115	24.020	5.65	102.6	1.9	0.34	0.0	0.01	0.22	0.14	0.04	88. A	5.0	4.4	4.7	0.16
10	17.19	33.115	24.026	5.65	102.5	1.8	0.34	0.0	0.00	0.14	0.15	0.03					
14	17.18	33.119	24.032	5.64	102.3	1.8	0.34	0.0	0.01	0.00	0.15	0.04	39.	5.2	5.2	5.2	0.18
18	17.12	33.114	24.041	5.65	102.4	1.8	0.34	0.0	0.00	0.00	0.15	0.03	30.	3.6	3.8	3.7	0.33
35	15.34	33.034	24.385	5.98	104.6	2.2	0.33	0.0	0.00	0.00	0.20	0.05	9.7	3.5	3.6	3.6	0.20
44	14.96	33.041	24.474	6.04	104.8	2.1	0.34	0.0	0.00	0.00	0.26	0.08					
53	14.25	33.116	24.683	6.26	107.1	1.8	0.36	0.0	0.00	0.02	0.33	0.13					
62	13.56	33.071	24.791	6.26	105.6	2.5	0.35	0.0	0.00	0.03	0.40	0.18	1.6	0.84	1.0	0.94	0.28
70	13.42	33.134	24.869	6.12	103.0	2.7	0.34	0.1	0.01	0.02	0.51	0.24					
77	13.31	33.186	24.930	6.02	101.1	2.8	0.32	0.0	0.00	0.00	0.40	0.30	0.59	0.42	0.44	0.43	0.15

RV NEW HORIZON			CALCOFI CRUISE 1307											STATION 83.3 42.0			
LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME		SECCHI	INCUBATION TIME					LAN	CIVIL TWILIGHT	INTEGRATED VALUE		ORD		
34 10.7 N	119 30.6 W	15/07/2013	1938 UTC		08 m	1225 - 1941 PST					1204 PST	1941 PST	972.3 mg C/m2		040		
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	17.24	33.645	24.418	5.90	107.6	4.0	0.26	0.1	0.03	0.05	1.66	0.35	68. A	64.0	58.2	61.1	0.52
5	17.25	33.644	24.415	5.89	107.3	4.0	0.27	0.1	0.03	0.07	1.62	0.35	38.	58.9	58.9	58.9	0.47
6	17.24	33.647	24.420	5.87	107.1	4.1	0.26	0.1	0.03	0.03	1.56	0.36	32.	52.8	61.5	57.1	0.51
12	17.15	33.646	24.440	5.92	107.7	3.9	0.24	0.1	0.03	0.03	1.86	0.46	10.0	47.3	51.8	49.5	0.58
21	16.32	33.630	24.623	5.84	104.6	4.2	0.30	0.6	0.04	0.04	1.83	0.52	1.8	7.9	9.1	8.5	0.36
27	13.18	33.499	25.196	5.52	92.6	7.3	0.73	5.8	0.20	0.22	1.03	0.38	0.56	1.8	2.0	1.9	0.19

RV NEW HORIZON			CALCOFI CRUISE 1307											STATION 83.3 51.0			
LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME		SECCHI	INCUBATION TIME					LAN	CIVIL TWILIGHT	INTEGRATED VALUE		ORD		
33 52.6 N	120 8.4 W	19/07/2013	2044 UTC		08 m	1314 - 1935 PST					1207 PST	1935 PST	736.6 mg C/m2		060		
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	16.52	33.589	24.545	5.98	107.4	5.5	0.39	1.1	0.04	0.04	2.05	0.52	68.	52.1	52.2	52.1	0.56
5	16.00	33.589	24.664	5.96	106.0	5.6	0.42	1.4	0.04	0.06	2.20	0.49	38.	57.0	57.0	57.0	0.48
21	11.08	33.622	25.690	3.96	63.5	16.1	1.49	17.1	0.21	0.12	0.46	0.22	1.8	1.5	1.5	1.5	0.18
28	10.44	33.675	25.845	3.40	53.9	19.6	1.73	20.7	0.18	0.11	0.26	0.14	0.46	0.31	0.17	0.24	0.16

RV NEW HORIZON			CALCOFI CRUISE 1307											STATION 83.3 80.0			
LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME		SECCHI	INCUBATION TIME					LAN	CIVIL TWILIGHT	INTEGRATED VALUE		ORD		
32 54.7 N	122 7.8 W	14/07/2013	1820 UTC		12 m	1212 - 1947 PST					1214 PST	1947 PST	379.4 mg C/m2		036		
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	16.27	33.344	24.414	5.86	104.5	1.5	0.38	0.7	0.03	0.00	0.56	0.11	77. A	13.9	11.6	12.7	0.18
7	16.27	33.344	24.415	5.85	104.5	1.4	0.37	0.6	0.03	0.00	0.52	0.11	41.	14.2	14.2	14.2	0.15
9	16.27	33.343	24.413	5.86	104.6	1.4	0.37	0.6	0.03	0.00	0.61	0.11	32.	14.6	13.6	14.1	0.14
18	16.17	33.347	24.439	5.89	104.9	1.4	0.38	0.6	0.03	0.00	0.59	0.12	10.0	14.3	12.6	13.5	0.17
25	14.91	33.290	24.676	6.08	105.5	1.7	0.42	1.0	0.05	0.00	0.63	0.21					
32	13.98	33.246	24.839	6.12	104.2	2.3	0.48	1.7	0.10	0.00	0.61	0.28	1.7	3.0	3.0	3.0	0.13
41	12.77	33.155	25.012	5.93	98.4	3.3	0.57	2.7	0.39	0.00	0.50	0.33	0.53	1.1	1.2	1.1	0.09

A) INCUBATION LIGHT INTENSITIES WERE 60.0, 40.5, 29.97, 9.72, 1.63, 0.55 PERCENT RESPECTIVELY.

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 86.7 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
33 49.5 N	118 37.6 W	20/07/2013	1809 UTC	14 m	1201 - 1927 PST	1201 PST	1927 PST	1216.5 mg C/m2	064								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	18.83	33.594	23.991	5.99	112.4	4.4	0.28	0.0	0.02	0.10	0.29	0.08	80. A	17.7	16.0	16.9	0.35
8	18.64	33.592	24.038	6.06	113.5	4.4	0.26	0.0	0.00	0.10	0.32	0.10	42.	15.0	15.0	15.0	0.32
11	14.96	33.571	24.880	6.61	115.2	5.5	0.27	0.0	0.02	0.11	0.53	0.19	30.	20.6	17.8	19.2	0.57
21	12.10	33.510	25.414	5.78	94.8	9.1	0.77	6.3	0.07	0.11	4.56	0.73	10.0	66.6	69.5	68.1	0.45
30	11.38	33.550	25.580	4.32	69.8	12.5	1.37	13.9	0.60	0.42	1.28	0.49					
38	10.91	33.572	25.681	3.85	61.5	15.2	1.58	16.9	0.57	0.30	0.62	0.39	1.6	1.6	1.3	1.4	0.51
47	10.80	33.582	25.710	3.72	59.4	15.8	1.64	17.5	0.60	0.30	0.68	0.36	0.58	0.59	0.50	0.55	0.25

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
32 59.4 N	121 2.0 W	12/07/2013	1806 UTC	10 m	1210 - 1945 PST	1210 PST	1945 PST	920.4 mg C/m2	028								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
1	15.43	33.652	24.839	5.97	105.0	2.3	0.40	1.4	0.05	0.09	1.26	0.43	86. A	52.3	51.2	51.8	0.43
6	15.38	33.653	24.852	5.98	105.0	2.2	0.40	1.4	0.07	0.09	1.23	0.45	40.	49.6	49.6	49.6	0.41
8	15.37	33.655	24.855	6.01	105.5	2.2	0.40	1.4	0.05	0.11	1.44	0.54	29.	47.7	47.9	47.8	0.33
15	15.36	33.652	24.855	5.98	104.9	2.1	0.44	1.4	0.05	0.11	1.35	0.49	10.0	34.0	32.1	33.0	0.30
27	15.34	33.645	24.856	5.95	104.5	2.1	0.40	1.5	0.05	0.15	1.26	0.51	1.6	4.0	3.2	3.6	0.28
34	13.65	33.384d	25.015	5.97	101.2	2.0	0.49	2.3	0.07	0.25	0.85	0.41	0.54	0.66	0.65	0.65	0.22

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
31 19.4 N	123 44.6 W	13/07/2013	1750 UTC	19 m	1220 - 1950 PST	1221 PST	1950 PST	213.1 mg C/m2	032								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
16	17.12	33.226	24.127	5.64	102.3	2.1	0.32	0.0	0.01	0.21	0.20	0.04	27.	5.8	5.4	5.6	0.22
30	16.42	33.248	24.308	5.66	101.2	2.3	0.31	0.0	0.01	0.06	0.22	0.05	8.9	4.9	5.7	5.3	0.41
2	17.15	33.226	24.118	5.64	102.3	2.1	0.32	0.0	0.01	0.05	0.19	0.04	85.	5.7	5.2	5.4	0.18
10	17.15	33.224	24.119	5.64	102.4	2.1	0.32	0.0	0.01	0.11	0.19	0.04	45.	5.4	5.4	5.4	0.17
40	15.67	33.213	24.451	5.84	102.8	2.4	0.31	0.0	0.01	0.11	0.22	0.06					
51	15.53	33.248	24.511	5.93	104.2	2.1	0.33	0.0	0.01	0.08	0.32	0.12	1.6	1.1	1.7	1.4	0.11
58	15.29	33.268	24.578	5.94	103.9	2.0	0.33	0.0	0.01	0.12	0.34	0.17					
65	14.97	33.286	24.662	5.92	102.9	1.9	0.34	0.0	0.01	0.11	0.38	0.24	0.52	0.55	1.1	0.80	0.13

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 90.0 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
33 11.1 N	118 23.3 W	21/07/2013	1735 UTC	25 m	1200 - 1925 PST	1200 PST	1925 PST	1471.0 mg C/m2	073								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
19	15.55	33.559	24.742	6.54	115.2	3.5	0.37	0.0	0.01	0.18	0.38	0.18	31.	35.6	36.3	35.9	0.37
2	20.00	33.687	23.763	5.44	104.5	1.9	0.30	0.0	0.02	0.03	0.23	0.06	88.	25.2	26.4	25.8	0.30
7	19.92	33.689	23.785	5.44	104.3	1.9	0.30	0.0	0.02	0.02	0.21	0.05					
14	19.54	33.680	23.878	5.46	104.0	1.9	0.31	0.0	0.02	0.07	0.23	0.06	42.	29.2	29.2	29.2	0.25
28	13.23	33.510	25.196	6.46	108.5	3.4	0.46	1.9	0.03	0.12	1.26	0.34					
36	11.55	33.536	25.538	5.02	81.5	6.8	1.00	10.9	0.08	0.12	3.72	0.78	11.	25.5	24.6	25.1	0.54
45	10.98	33.567	25.666	4.11	65.8	14.4	1.53	17.0	0.14	0.05	0.47	0.25					
54	10.37	33.629	25.822	3.53	55.9	18.5	1.78	20.8	0.09	0.04	0.24	0.16					
64	10.09	33.721	25.941	3.01	47.3	22.4	2.00	23.9	0.06	0.03	0.15	0.15	2.0	1.5	1.3	1.4	0.12
72	9.96	33.762	25.996	2.86	44.8	23.8	2.06	24.8	0.04	0.01	0.12	0.12					
81	9.73	33.823	26.082	2.69	42.0	26.0	2.16	26.2	0.03	0.00	0.07	0.09	0.69	0.26	0.29	0.28	0.16

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
32 25.1 N	119 57.5 W	11/07/2013	1837 UTC	11 m	1205 - 1933 PST	1205 PST	1933 PST	742.5 mg C/m2	024								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	ML/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	16.60	33.672	24.591	5.84	105.0	1.0	0.42	1.1	0.06	0.21	0.95B	0.16B	76. A	42.6	37.6	40.1	0.31
7	16.56	33.673	24.599	5.83	104.9	0.9	0.41	0.9	0.06	0.17	1.05	0.18	38.	38.0	38.0	38.0	0.32
9	16.26	33.671	24.667	5.82	104.0	0.9	0.42	0.9	0.07	0.19	1.12	0.18	28.	34.0	37.6	35.8	0.33
17	13.80	33.646	25.184	5.39	91.7	4.5	0.83	6.2	0.20	1.18	0.93	0.32	9.3	22.3	21.8	22.1	0.23
24	13.17	33.684	25.341	4.85	81.4	8.7	1.04	9.5	0.24	0.85	0.76	0.30					
30	12.13	33.667	25.531	4.41	72.4	12.5	1.28	13.3	0.29	0.70	0.53	0.25	1.5	1.8	1.6	1.7	0.16
38	11.11	33.643	25.701	4.05	65.0	15.6	1.47	17.0	0.32	0.22	0.19	0.12	0.50	0.15	0.17	0.16	0.12

B) FIRST FLUOROMETER READING NOT RECORDED CHLOROPHYLL AND PHAEOPIGMENT CALCULATED WITH ASSUMED ACID RATIO INTERPOLATED FROM ADJACENT LEVELS  
A) INCUBATION LIGHT INTENSITIES WERE 60.0, 40.5, 29.97, 9.72, 1.63, 0.55 PERCENT RESPECTIVELY.

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 90.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
31 5.1 N	122 39.7 W	10/07/2013	1547 UTC	19 m	1215 - 1941 PST	1216 PST	1941 PST	92.5 mg C/m2	020								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	mL/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
15	17.05	33.269	24.177	5.65	102.3	1.9	0.32	0.0	0.01	0.18	0.17	0.04	30.	2.9	2.9	2.9	0.12
2	17.09	33.273	24.170	5.64	102.2	1.9	0.32	0.0	0.01	0.00	0.18	0.03	85.	3.3	3.5	3.4	0.15
11	17.09	33.274	24.172	5.64	102.2	1.9	0.32	0.0	0.02	0.15	0.17	0.03	41.	3.5	1.1	2.3	0.13
29	15.84	33.209	24.409	5.92	104.7	2.1	0.31	0.0	0.01	0.00	0.18	0.04	9.6	1.5	1.6	1.5	0.11
40	15.68	33.251	24.479	5.86	103.3	2.2	0.31	0.0	0.01	0.00	0.24	0.08					
51	14.65	33.230	24.687	5.95	102.7	2.0	0.34	0.0	0.01	0.01	0.42	0.26	1.6	0.54	0.68	0.61	0.10
58	14.43	33.252	24.752	5.91	101.6	2.0	0.37	0.0	0.02	0.13	0.48	0.31					
65	13.89	33.245	24.858	5.89	100.2	2.4	0.39	0.3	0.07	0.23	0.39	0.29	0.52	0.22	0.24	0.23	0.08

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
32 57.4 N	117 18.3 W	06/07/2013	1817 UTC	15 m	1150 - 1930 PST	1154 PST	1930 PST	929.3 mg C/m2	001								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	mL/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	21.06	33.699D	23.490	5.49	107.6	2.4	0.28	0.0	0.02	0.18	0.44	0.11	81. A	25.2	26.4	25.8	0.30
9	18.16	33.634D	24.181	5.81	107.8	2.2	0.32	0.4	0.02	1.39	0.43	0.17	40.	29.2	29.2	29.2	0.25
12	15.65	33.567D	24.712	6.31	111.4	2.8	0.37	0.1	0.02	0.33	0.79	0.34	29.	35.6	36.3	35.9	0.37
24	11.96	33.488D	25.423	5.15	84.3	9.2	0.97	9.5	0.22	1.25	1.08	0.49	8.6	25.5	24.6	25.1	0.54
32	11.36	33.517D	25.555	4.52	73.0	11.6	1.19	12.9	0.37	1.12	0.65	0.34					
40	10.92	33.612D	25.709	3.84	61.4	14.4	1.46	15.2	0.30	0.96	0.42	0.30	1.7	1.5	1.3	1.4	0.12
51	10.67	33.643D	25.780	3.27	52.1	17.6	1.70	17.6	0.30	2.57	0.27	0.49	0.54	0.26	0.29	0.28	0.16

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
32 20.9 N	118 33.3 W	07/07/2013	1740 UTC	18 m	1158 - 1935 PST	1159 PST	1934 PST	439.5 mg C/m2	008								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	mL/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	18.55	33.535	24.016	5.57	104.0	1.7	0.31	0.0	0.02	0.58	0.23	0.04	84. A	7.8	7.6	7.7	0.21
11	18.14	33.547	24.126	5.69	105.4	1.5	0.31	0.0	0.02	0.87	0.27	0.06	39.	9.2	9.9	9.6	0.19
14	17.74	33.546	24.225	5.72	105.2	1.4	0.30	0.0	0.02	0.33	0.33	0.06	30.	9.3	7.5	8.4	0.23
20	17.20	33.535	24.346	5.85	106.4	1.3	0.31	0.0	0.02	0.31	0.35	0.08					
27	15.63	33.477	24.661	6.17	108.7	1.6	0.34	0.1	0.03	0.49	0.53	0.16	10.0	11.4	12.2	11.8	0.28
38	13.58	33.411	25.049	6.18	104.5	2.2	0.39	0.6	0.05	0.45	0.73	0.29					
48	13.09	33.379	25.122	5.85	97.9	3.8	0.61	3.8	0.17	0.73	0.58	0.34	1.7	3.7	3.5	3.6	0.13
54	12.83	33.409	25.198	5.69	94.7	4.4	0.71	5.1	0.25	0.82	0.50	0.34					
60	12.72	33.509	25.296	5.43	90.3	5.1	0.86	7.6	0.42	0.62	0.33	0.25	0.60	0.87	0.85	0.86	0.12

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
31 10.8 N	120 55.2 W	08/07/2013	1822 UTC	18 m	1206 - 1941 PST	1209 PST	1941 PST	187.7 mg C/m2	013								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	mL/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
48	14.31	33.292	24.806	6.01	103.0	1.9	0.39	0.4	0.05	0.21	0.47	0.25	1.7	2.5	2.2	2.3	0.11
3	17.05	33.453	24.318	5.71	103.6	0.8	0.32	0.0	0.01	0.07	0.28	0.01	77.	7.1	6.1	6.6	0.17
11	17.01	33.457	24.330	5.84D	105.8	0.8	0.32	0.0	0.01	0.06	0.25	0.04	39.	6.8	7.2	7.0	0.21
14	17.00	33.451	24.329	5.81	105.3	0.8	0.32	0.0	0.01	0.06	0.28	0.03	30.	6.2	6.3	6.3	0.22
20	16.98	33.461	24.341	5.83D	105.7	0.8	0.32	0.0	0.01	0.05	0.31	0.03					
27	16.96	33.449	24.337	5.85D	105.9	0.8	0.32	0.0	0.01	0.06	0.32	0.05	10.0	6.0	6.7	6.3	0.23
39	15.12	33.397	24.713	6.16	107.4	1.0	0.36	0.0	0.02	0.09	0.60	0.12					
54	13.88	33.302	24.905	5.93	100.8	1.8	0.43	0.7	0.06	0.23	0.45	0.28					
61	13.60	33.287	24.951	5.92	100.0	2.7	0.42	0.5	0.12	0.13	0.54	0.35	0.55	0.95	0.47	0.71	0.10

RV NEW HORIZON CALCOFI CRUISE 1307 STATION 93.3 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD								
29 50.8 N	123 35.3 W	09/07/2013	1936 UTC	27 m	1235 - 1947 PST	1220 PST	1947 PST	132.8 mg C/m2	017								
DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03	P04	N03	N02	NH4	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m3)			
m	DEG C		THETA	mL/L	PCT	µM	µM	µM	µM	µM	µg/L	µg/L	PCT	1	2	MEAN	DARK
2	18.73	33.422	23.885	5.42	101.6	2.6	0.29	0.1	0.01	0.20	0.08	0.01	89. A	2.4	2.4	2.4	0.18
16	18.63	33.421	23.910	5.43	101.4	2.6	0.30	0.0	0.01	0.10	0.09	0.01	40.	2.9	2.5	2.7	0.12
21	18.62	33.422	23.913	5.47	102.3	2.6	0.28	0.0	0.01	0.11	0.09	0.02	30.	2.8	2.6	2.7	0.13
32	17.16	33.347	24.212	5.67	102.9	2.6	0.29	0.0	0.01	0.14	0.08	0.02					
42	16.99	33.354	24.258	5.67	102.7	2.6	0.29	0.0	0.01	0.11	0.09	0.02	9.2	1.5	1.6	1.5	0.08
51	16.63	33.391	24.370	5.73	102.9	2.6	0.28	0.0	0.01	0.17	0.10	0.02					
60	16.34	33.423	24.463	5.75	102.8	2.6	0.28	0.0	0.02	0.18	0.13	0.04					
72	15.37	33.516	24.752	5.85	102.7	2.6	0.27	0.0	0.02	0.18	0.16	0.05	1.7	0.27	0.43	0.35	0.13
82	14.36	33.299	24.803	5.95	102.1	2.7	0.30	0.0	0.01	0.10	0.22	0.09					
92	14.35	33.437	24.912	5.86	100.7	2.7	0.29	0.0	0.01	0.10	0.24	0.13	0.53	0.20	0.21	0.21	0.09

A) INCUBATION LIGHT INTENSITIES WERE 60.0, 40.5, 29.97, 9.72, 1.63, 0.55 PERCENT RESPECTIVELY.

## CalCOFI Cruise 1307NH

## MACROZOOPLANKTON BIOMASS

Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST)		Water Volume Strained (m <sup>3</sup> )	Max. Tow Depth (m)	Volume per 1000 m <sup>3</sup> Strained	
					Start	End			Total (cm <sup>3</sup> )	Small (cm <sup>3</sup> )
76.7	49	35 05.6	120 46.6	07/19	0351	0358	123	51	49136	236
76.7	51	35 01.3	120 55.1	07/19	0124	0147	440	214	293	293
76.7	55	34 53.3	121 11.9	07/18	2146	2209	438	212	251	251
76.7	70	34 23.3	122 14.8	07/18	1204	1227	440	214	209	209
76.7	80	34 03.3	122 56.5	07/18	0547	0610	440	213	98	98
76.7	90	33 43.2	123 38.1	07/17	2335	2357	437	213	53	53
76.7	100	33 23.3	124 19.5	07/17	1731	1755	437	215	21	21
80.0	51	34 27.0	120 31.3	07/16	0323	0330	130	56	1209	1209
80.0	55	34 19.0	120 48.1	07/16	0650	0713	441	208	291	291
80.0	60	34 09.0	121 09.0	07/16	1110	1132	412	211	352	330
80.0	70	33 49.0	121 50.6	07/16	1712	1735	421	216	147	147
80.0	80	33 28.9	122 32.0	07/16	2318	2340	435	209	92	92
80.0	90	33 09.0	123 13.3	07/17	0503	0525	423	211	83	83
80.0	100	32 49.0	123 54.3	07/17	1128	1151	446	211	99	27
81.7	43.5	34 24.4	119 48.1	07/15	1913	1915	48	13	41	41
81.8	46.9	34 16.5	120 01.5	07/15	2306	2328	425	210	111	111
83.3	39.4	34 15.6	119 19.4	07/15	1557	1559	44	15	68	68
83.3	40.6	34 13.6	119 24.7	07/15	1447	1451	79	28	290	290
83.3	42	34 10.7	119 30.5	07/15	1242	1257	299	130	144	144
83.3	51	33 52.7	120 08.0	07/19	1342	1355	262	116	279	279
83.3	70	33 14.7	121 26.6	07/14	1804	1826	433	208	208	208
83.3	80	32 54.7	122 07.7	07/14	1128	1151	445	216	31	31
83.3	90	32 34.7	122 48.6	07/14	0510	0533	420	215	69	69
83.3	100	32 14.7	123 29.5	07/13	2304	2327	453	213	44	44
83.3	110	31 54.7	124 10.3	07/13	1641	1703	438	213	16	16
85.4	35.8	34 00.8	118 49.9	07/20	1300	1303	62	20	276	276
86.7	33	33 53.3	118 29.4	07/20	1605	1611	108	42	344	344
86.7	35	33 49.4	118 37.7	07/20	0913	0935	406	212	138	138
86.7	40	33 39.4	118 58.2	07/20	0608	0630	417	212	79	79
86.7	45	33 29.3	119 19.2	07/20	0125	0146	423	212	125	125
86.7	50	33 19.4	119 39.8	07/19	2054	2101	150	55	301	301
86.7	55	33 09.4	120 00.5	07/11	2338	0000	416	214	175	175
86.7	60	32 59.3	120 21.0	07/12	0347	0410	465	206	144	144
86.7	70	32 39.4	121 02.0	07/12	0905	0927	405	214	133	133
86.7	80	32 19.4	121 43.0	07/12	1616	1638	435	216	46	46
86.7	90	31 59.3	122 23.6	07/12	2210	2233	449	214	147	94
86.7	100	31 39.3	123 04.3	07/13	0402	0424	458	207	41	41
86.7	110	31 19.4	123 44.6	07/13	0845	0908	444	211	29	29
86.8	32.5	33 53.3	118 26.7	07/20	1656	1659	62	21	177	177
88.5	30.1	33 40.4	118 05.6	07/20	2008	2010	42	13	988	988
90.0	27.7	33 29.6	117 44.9	07/20	2232	2234	47	13	451	451
90.0	28	33 29.1	117 46.1	07/20	2354	0002	147	62	327	238
90.0	30	33 25.1	117 54.1	07/21	0233	0255	400	211	92	92
90.0	35	33 15.1	118 15.0	07/21	0636	0658	416	210	103	89
90.0	37	33 11.2	118 23.3	07/21	0834	0857	441	211	109	109
90.0	45	32 55.1	118 56.1	07/21	1522	1543	421	210	50	50
90.0	53	32 39.1	119 29.0	07/11	1703	1725	439	206	112	112
90.0	60	32 25.1	119 57.6	07/11	1201	1222	397	212	149	149
90.0	70	32 05.0	120 38.3	07/11	0528	0550	421	213	104	85
90.0	80	31 45.1	121 18.9	07/10	2240	2302	458	207	116	116
90.0	90	31 25.1	121 59.5	07/10	1610	1633	430	216	105	105
90.0	100	31 05.1	122 39.7	07/10	0645	0707	436	214	46	46
90.0	110	30 45.1	123 19.9	07/10	0121	0143	449	211	45	29
90.0	120	30 25.1	123 59.9	07/09	1854	1916	442	215	45	18
91.7	26.4	33 14.8	117 27.8	07/06	1502	1504	39	15	536	536
93.3	26.7	32 57.4	117 18.3	07/06	1112	1120	156	71	270	270
93.3	28	32 54.8	117 23.7	07/06	1918	1940	405	210	163	163
93.3	30	32 50.8	117 31.9	07/06	2216	2238	409	214	103	103
93.3	35	32 40.8	117 52.4	07/07	0241	0303	425	205	141	141
93.3	40	32 30.6	118 12.3	07/07	0643	0705	417	212	70	70
93.3	45	32 20.8	118 33.3	07/07	1103	1125	434	214	217	217
93.3	50	32 10.8	118 53.6	07/07	1510	1532	440	216	45	45
93.3	55	32 00.8	119 14.0	07/07	1911	1933	433	213	220	203
93.3	60	31 50.8	119 34.3	07/07	2323	2346	428	215	73	73
93.3	70	31 30.8	120 14.5	07/08	0513	0536	430	207	100	100
93.3	80	31 10.8	120 55.2	07/08	1149	1211	435	215	90	67
93.3	90	30 50.8	121 35.4	07/08	1752	1815	462	208	97	80
93.3	100	30 30.8	122 15.5	07/08	2320	2343	442	215	156	57
93.3	110	30 10.7	122 55.3	07/09	0646	0708	451	214	20	20
93.3	120	29 50.8	123 35.2	07/09	1238	1301	454	212	20	20
93.4	26.4	32 57.2	117 16.8	07/06	1226	1228	44	15	46	46