

# data report

CalCOFI Cruise 1607  
10 - 26 July, 2016

CC Reference 17 - 03  
23 Jun., 2017

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

**PHYSICAL, CHEMICAL AND BIOLOGICAL DATA**

**CalCOFI Cruise 1607  
10 - 26 July, 2016**

**CC Reference 17 - 03  
23 Jun 2017**

## CONTENTS

Introduction .....	2
Literature Cited.....	8
CalCOFI Cruise 1607	
List of Figures .....	10
Personnel.....	21
Tabulated Rosette Cast Data .....	22
Tabulated Primary Productivity Data .....	50
Tabulated Macrozooplankton Data .....	54

## INTRODUCTION

The data presented in this report were collected during cruise 1607\* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the RV Bell M. Shimada. 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 cruise 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 P158. 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 KIO<sub>3</sub> 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.

---

\* 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 and baseline corrections were performed in each run using a high standard and blank respectively 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 monitored throughout the cruise and available to adjust values for nitrate, nitrite, phosphate, and silicate if appropriate. The mean values for  $\text{NO}_2 + \text{NO}_3$ ,  $\text{PO}_4$ , and dissolved reactive silicate species (SIL) for the cruise were calculated and compared to certified manufacturer values (see table below). A separate reference sample was used to monitor ammonium stability throughout the cruise. Samples not analyzed immediately after collection were refrigerated and run the following day.

<b>1607OS</b>	<b><math>\text{NO}_2 + \text{NO}_3</math> (<math>\mu\text{mol/L}</math>)</b>	<b><math>\text{PO}_4</math> (<math>\mu\text{mol/L}</math>)</b>	<b>SIL (<math>\mu\text{mol/L}</math>)</b>
Mean $\pm$ SD (n=31)	$36.45 \pm 0.36$	$2.60 \pm 0.02$	$109.00 \pm 0.45$
Certified Value* (Lot CB)	36.78	2.58	111.82

\*Converted from  $\mu\text{mol/kg}$  using assumed lab temperature of 20°C and salinity 34.374 provided by manufacturer

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 a cruise average of 6.628  $\mu\text{Ci}$  of  $^{14}\text{C}$  as  $\text{NaHCO}_3$  (200 $\mu\text{l}$  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.
- 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) *Underway Sea Surface pCO<sub>2</sub> and pH measurements*: Automated shipboard analysis of the partial pressure of CO<sub>2</sub> and pH were made from the ship's underway flow-through system. pCO<sub>2</sub> measurements were taken with the Shipboard Underway pCO<sub>2</sub> Environmental Recorder (SUPER-CO<sub>2</sub>) sold by Sunburst Sensors designed with a showered equilibrator and a LI-COR 840A CO<sub>2</sub>/H<sub>2</sub>O non-dispersive infrared gas analyzer. pH measurements were taken with a Honeywell Durafet based on Ion Selective Field Effect Transistor (ISFET) technology. The Durafet pH sensor was calibrated before and after the cruise. pCO<sub>2</sub> was calibrated with standard gases traceable to NIST every 4 hours, along with an atmospheric sample. Temperature and salinity were also sampled using a SeaBird Thermosalinograph (SBE45). Measurements were recorded every 4 seconds. (T. Martz, SIO)
- 4) *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. Measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs and the determination of mesozooplankton size structure using a Laser Optical Plankton Counter are sampled for all CalCOFI stations. On CalCOFI lines 90 and 80 measurements also include microscopic counts of heterotrophic and autotrophic phytoplankton for biomass and abundance and mesozooplankton community structure sampled with the Planktonic Rate Processes in Oligotrophic Ocean Systems (PRPOOS) tow net. (M. Ohman, SIO)
- 5) *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)
- 6) *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. Measurements of particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen, taxon-specific phytoplankton pigments, flow-cytometric counts of bacteria and picoautotrophs and the determination of mesozooplankton size structure using a Laser Optical Plankton Counter are sampled for all CalCOFI stations. On CalCOFI lines 90 and 80 measurements also include microscopic counts of heterotrophic and autotrophic phytoplankton for biomass and abundance and mesozooplankton community structure sampled with the Planktonic Rate Processes in Oligotrophic Ocean Systems (PRPOOS) tow net. (M. Ohman, SIO)
- 7) *Inorganic Carbon System*: The CalCOFI group collected samples for the characterization of the inorganic carbon system at selected locations along the cruise track with 14 profile and 8 additional surface water stations. 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)

8) *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)

9) *Microbial Diversity and Gene Expression:* Samples suitable for purification of DNA and RNA from bacterial and microbial eukaryotic biomass are collected for molecular diversity assays targeted to various genetic marker loci (16S and 18S rRNA). DNA samples are collected at every station, in parallel with particulate organic matter (POM) samples, on Whatman GF/F filters. RNA samples are collected in parallel with primary productivity samples on 0.2 µM sterivex filters with a maximum filtration time of 30 min. Additional samples from the mixed layer, chlorophyll max, and two depths below the euphotic zone are collected along lines 80 and 90. (A. Allen, SIO and JCVI)

10) *Harmful Algal Bloom Sampling:* CalCOFI will collect surface and mixed layer water samples at select stations for phycotoxin (domoic acid) analysis and *Pseudo-nitzschia* cell counts. We are examining the dynamics of coastal phytoplankton blooms that lead to detrimental effects on both human and ecosystem health in response to rapid and long-term climate variability in the California Current System. A major goal of this project is the collection of toxin data outside of the very nearshore pier sampling currently funded by the NOAA Integrated Ocean Observing System via the two regional associations in California. Given that the warm anomaly broke temperature records as far back as 1900 and is now interacting with one of the top three ENSO events on record, it is important to quickly capture the influence of these climatic phenomena on harmful algal blooms (C. Anderson and R. Kudela, UCSC).

## 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.

## REFERENCES

- Anderson, G. C., compiler, 1971. "Oxygen Analysis," Marine Technician's Handbook, SIO Ref. No. 71-8, Sea Grant Pub. No. 9.
- Bernhardt, H., and Wilhelms, A., (1967). "The continuous determination of low level iron, soluble phosphate and total phosphate with the AutoAnalyzer," Technicon Symposia, I, pp.385-389 .
- Carpenter, J. H., 1965. The Chesapeake Bay Institute technique for the Winkler dissolved oxygen method. *Limnol. Oceanogr.*, 10: 141-143.
- Carter, D. J. T., 1980. Echo-sounding correction tables. Third Edition. Hydrographic Department, Ministry of Defence, Taunton, U.K., NP 139: 150 pp.
- Culberson, C. H. 1991. Dissolved oxygen. WHP Operations and Methods -- July 1991.
- Fitzwater, S. E., G. A. Knauer and J. H. Martin, 1982. Metal contamination and its effect on primary production measurements. *Limnol. Oceanogr.*, 27: 544-551.
- Gordon, L. I., J. C. Jennings, Jr., A. A. Ross, and J. M. Krest, 1993. A suggested protocol for continuous flow automated analysis of seawater nutrients (phosphate, nitrate, nitrite and silicic acid) in the WOCE Hydrographic Program and the Joint Global Ocean Fluxes Study. WOCE Operations Manual, Part 3.1.3 "WHP Operations and Methods," *WHP Office Report WHPO 91-1*.
- Holm-Hansen, O., C. J. Lorenzen, R. W. Holmes and J. D. H. Strickland, 1965. Fluorometric determination of chlorophyll. *J. Cons. perm. int. Explor. Mer.*, 30: 3-15.
- Klein, H. T., 1973. A new technique for processing physical oceanographic data. SIO Ref. No. 73-14.
- Kerouel, R., Aminot, A., 1997. Fluorometric determination of ammonia in sea and estuarine waters by direct segmented flow analysis. *Mar. Chem.* Vol. 57, no. 3-4, pp. 265-275.
- Kramer, D., M. J. Kalin, E. G. Stevens, J. R. Threlkeld and J. R. Zweifel, 1972. Collecting and processing data on fish eggs and larvae in the California Current region. *NOAA Technical Report NMFS CIRC-370*: 38 pp.
- Lean, D. R. S. and B. K. Burnison, 1979. An evaluation of errors in the  $^{14}\text{C}$  method of primary production measurement. *Limnol. Oceanogr.*, 24: 917-928.
- Reid, J. L. and A. W. Mantyla, 1976. The effect of the geostrophic flow upon coastal sea elevations in the northern North Pacific Ocean. *J. Geophys. Res.*, 81: 3100-3110.
- Parsons, T. R., Y. Maita, C. M. Lalli, 1984. *A Manual of Chemical and Biological Methods for Seawater Analysis*. Pergamon Press Ltd., 3-28.
- Saunders, P. M., 1981. Practical conversion of pressure to depth. *J. Phys. Oceanogr.*, 11: 573-574.
- Scripps Institution of Oceanography, University of California, 1991. Physical, Chemical and Biological Data, CalCOFI Cruises 9003 and 9004. SIO Ref. 91-4, 96 pp.
- UNESCO, 1981, a. Background papers and supporting data on the Practical Salinity Scale, 1978. *UNESCO Tech. Pap. in Mar. Sci.*, No. 37.
- UNESCO, 1981, b. Background papers and supporting data on the International Equation of State 1980. *UNESCO Tech. Pap. in Mar. Sci.*, No. 38.

- Venrick, E. L. and T. L. Hayward, 1984. Determining chlorophyll on the 1984 CalCOFI surveys. *CalCOFI Rep.*, Vol. XXV: 74-79.
- Weiss, R. F., 1970. The solubility of nitrogen, oxygen and argon in water and seawater. *Deep-Sea Res.*, 17: 721-735.
- Yentsch, C. S. and D. W. Menzel, 1963. A method for the determination of phytoplankton, chlorophyll and phaeophytin by fluorescence. *Deep-Sea Res.*, 10: 221-231.

## FIGURES

### Cruise 1607

1. CalCOFI Cruise 1607 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.

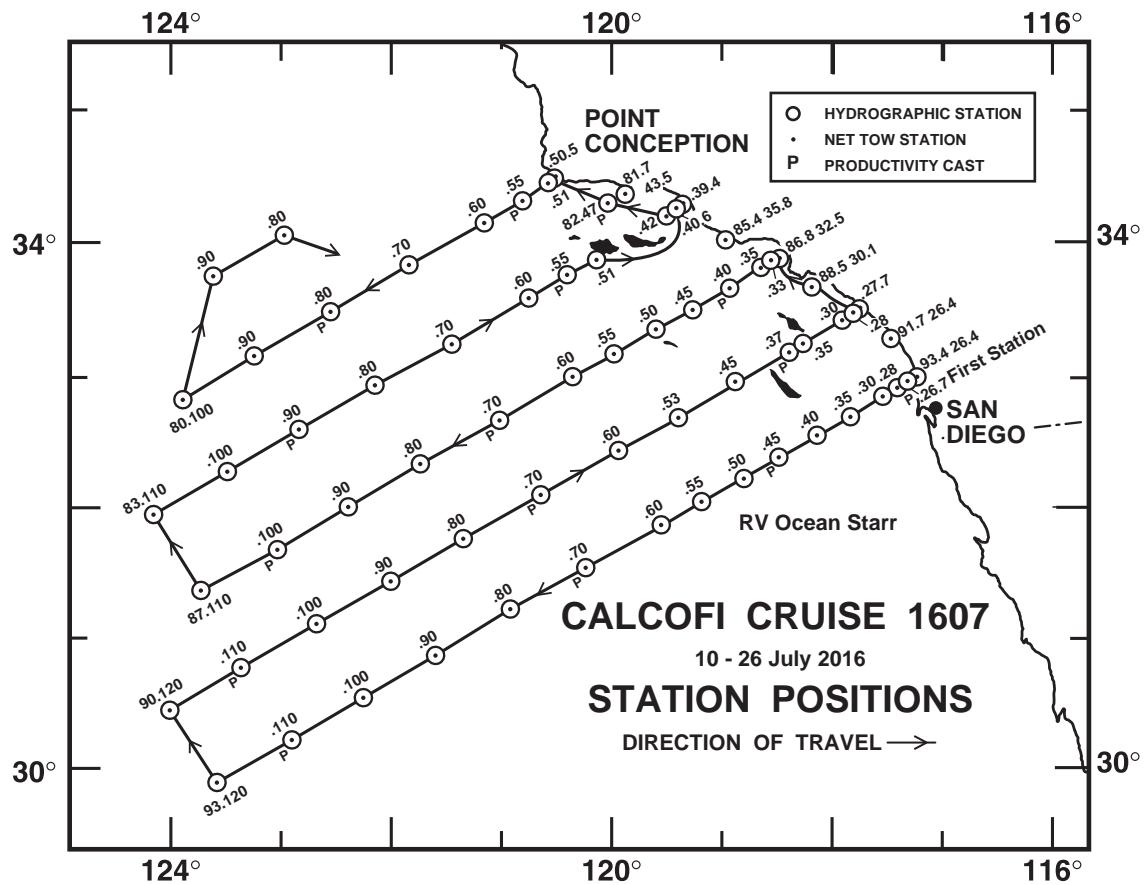


FIGURE 1

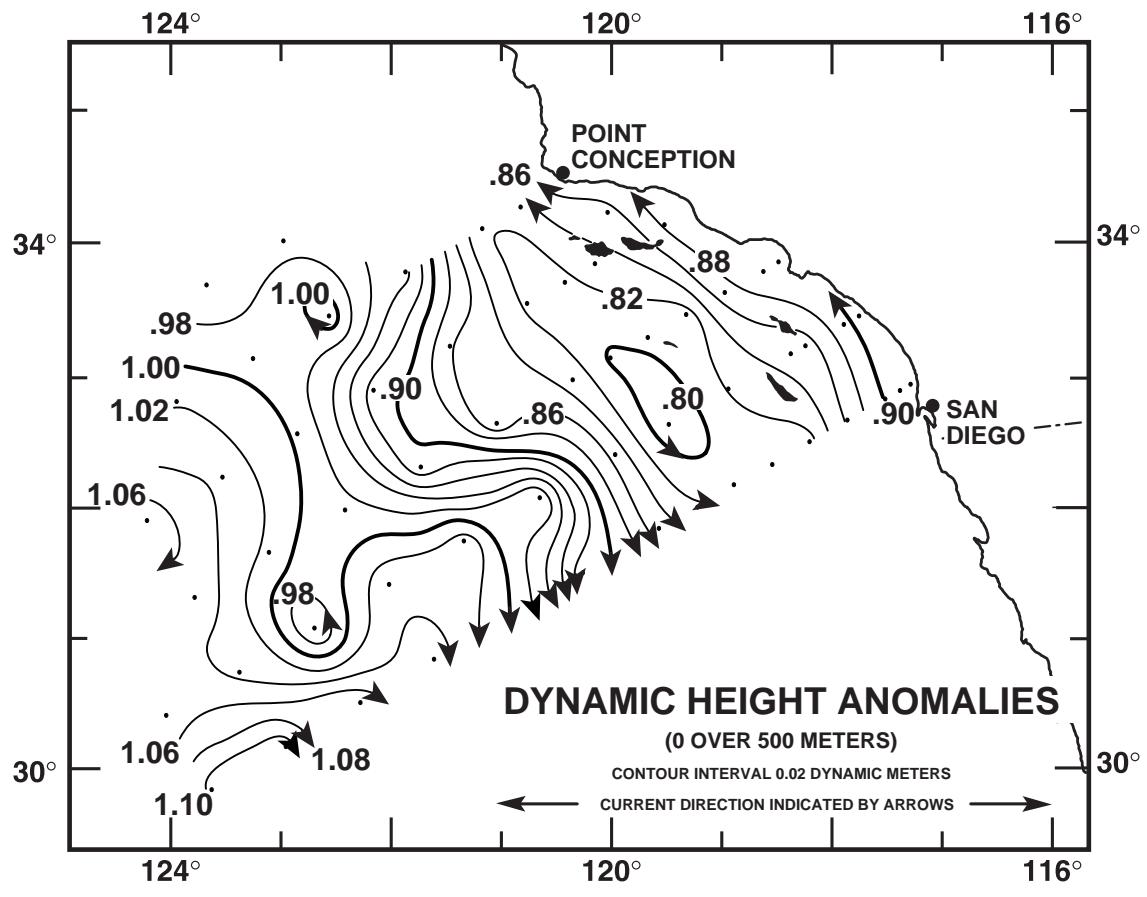


FIGURE 2

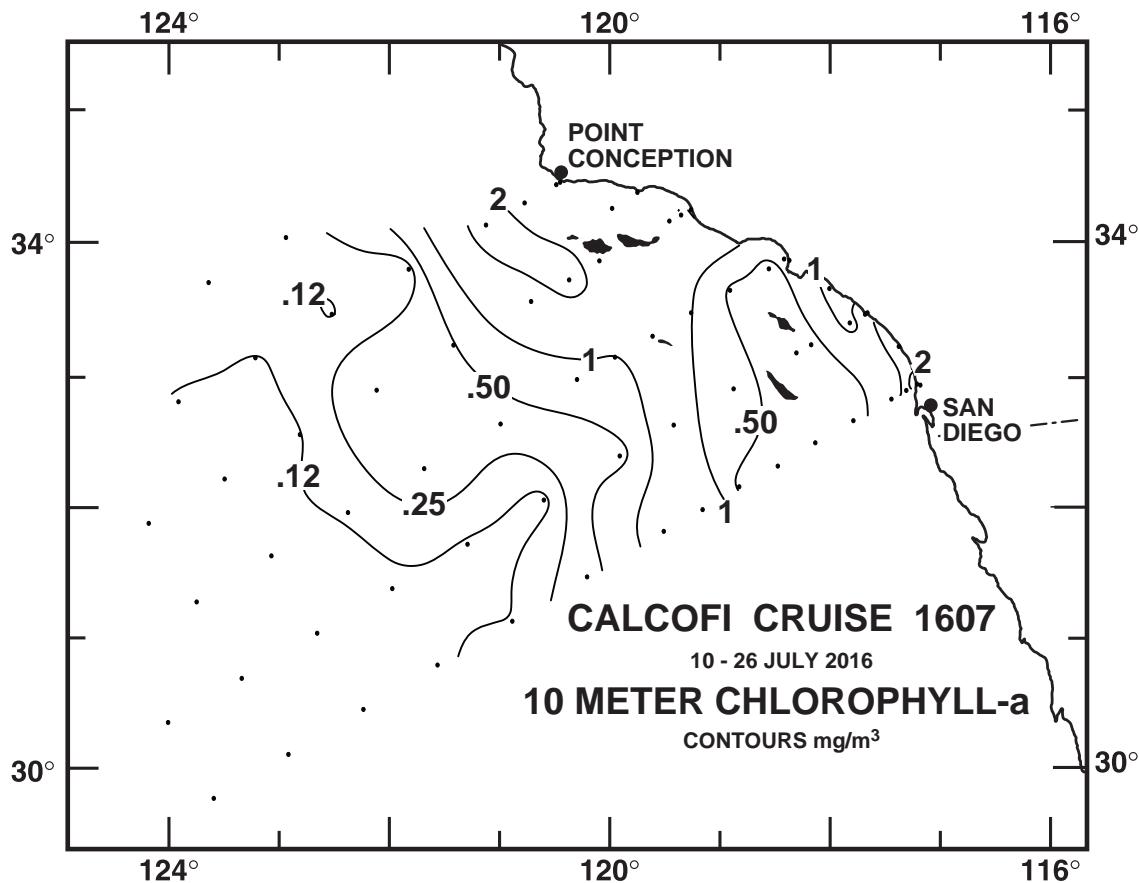


FIGURE 3A

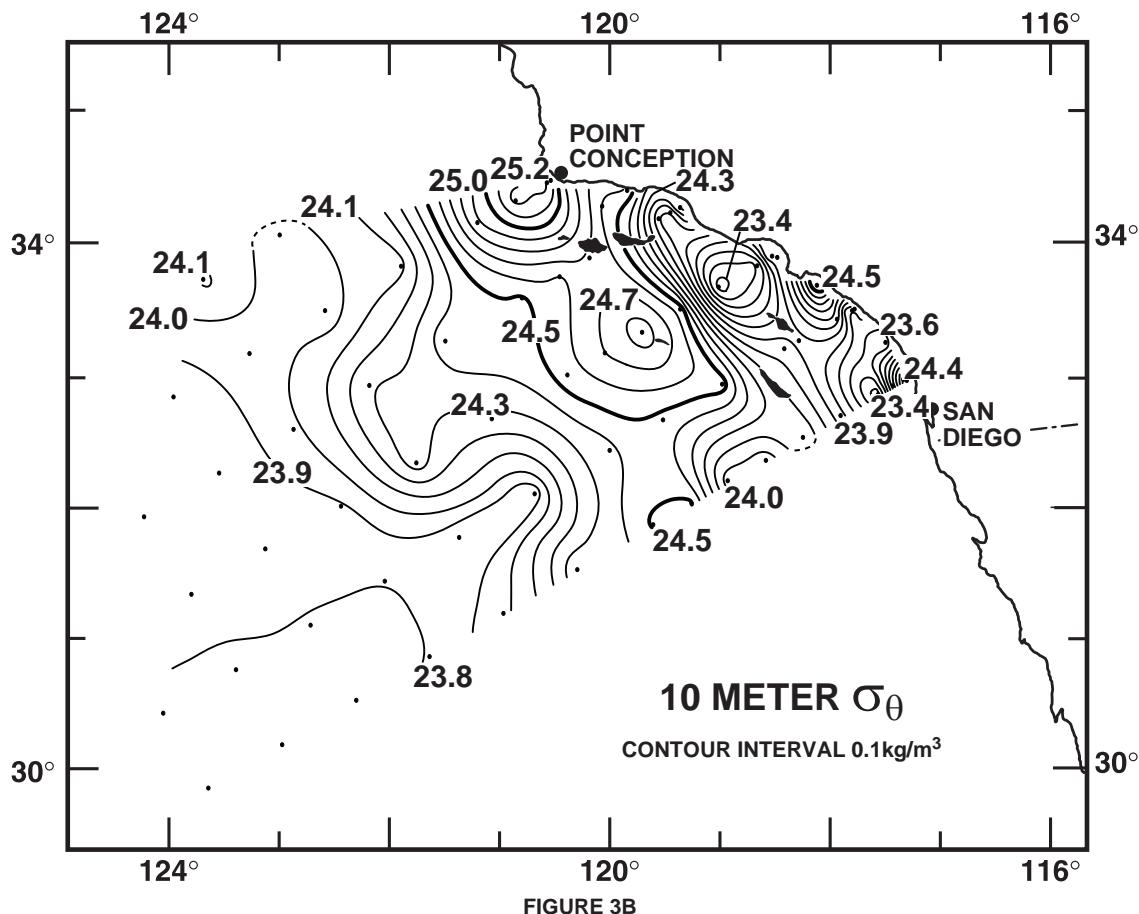


FIGURE 3B

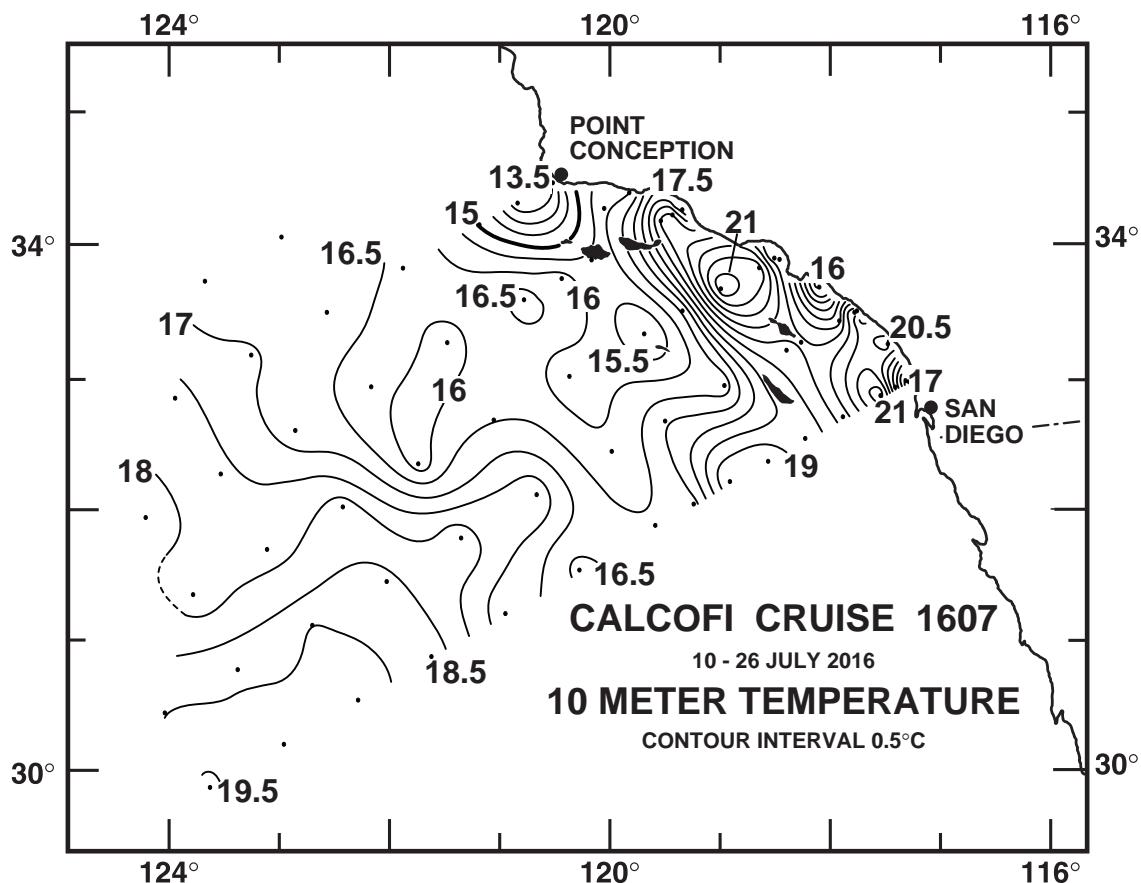


FIGURE 3C

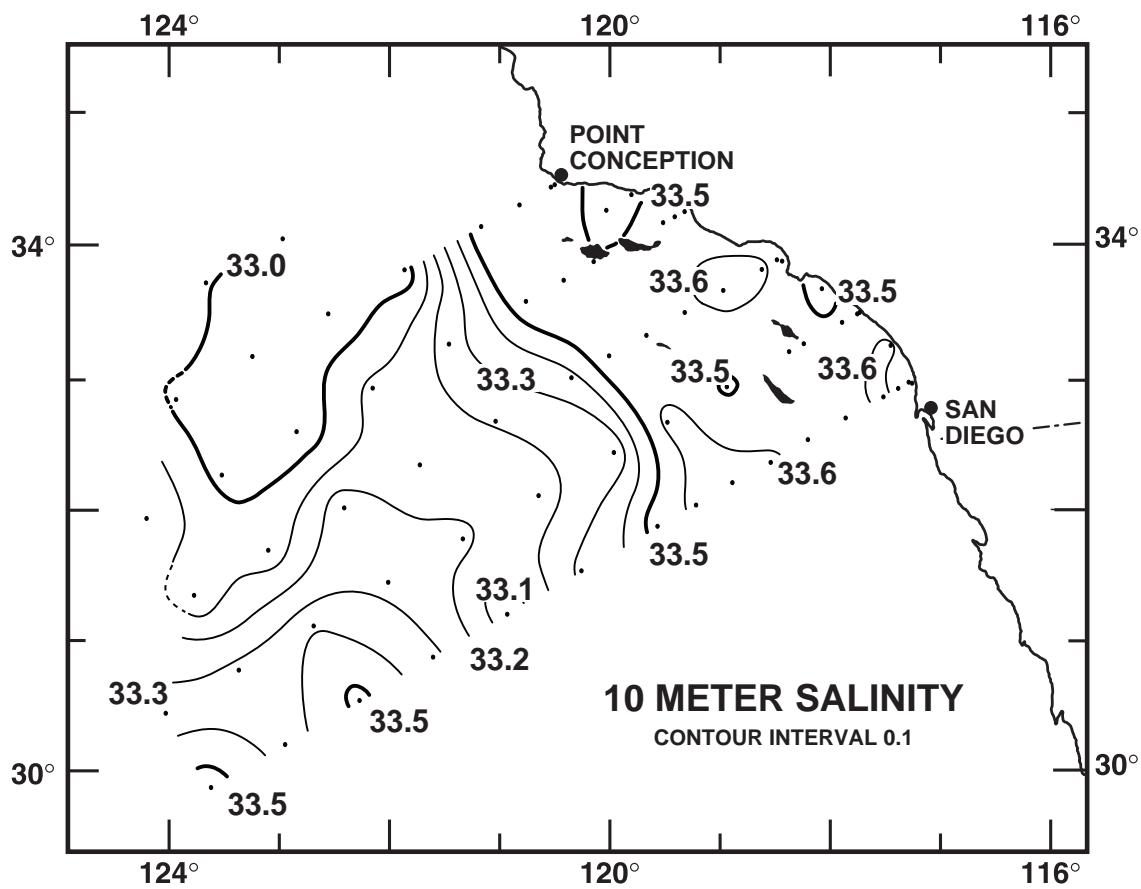


FIGURE 3D

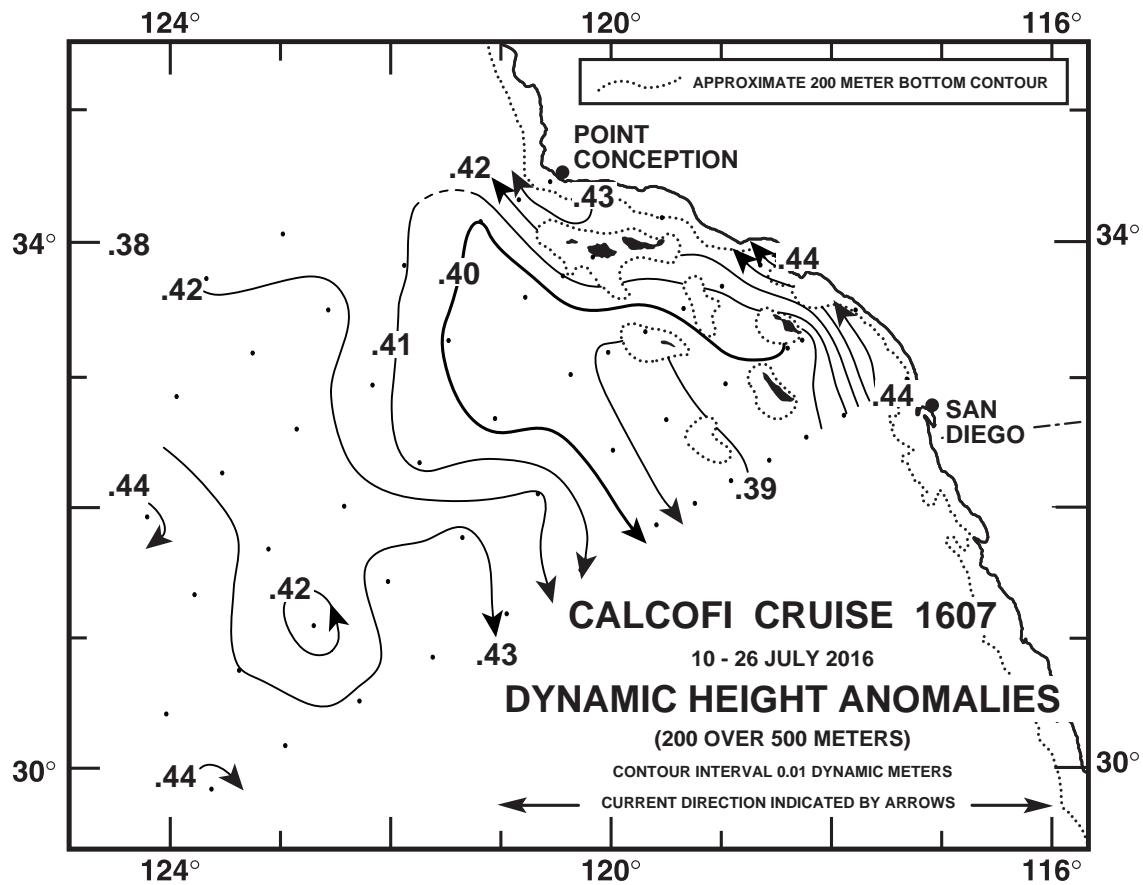


FIGURE 4A

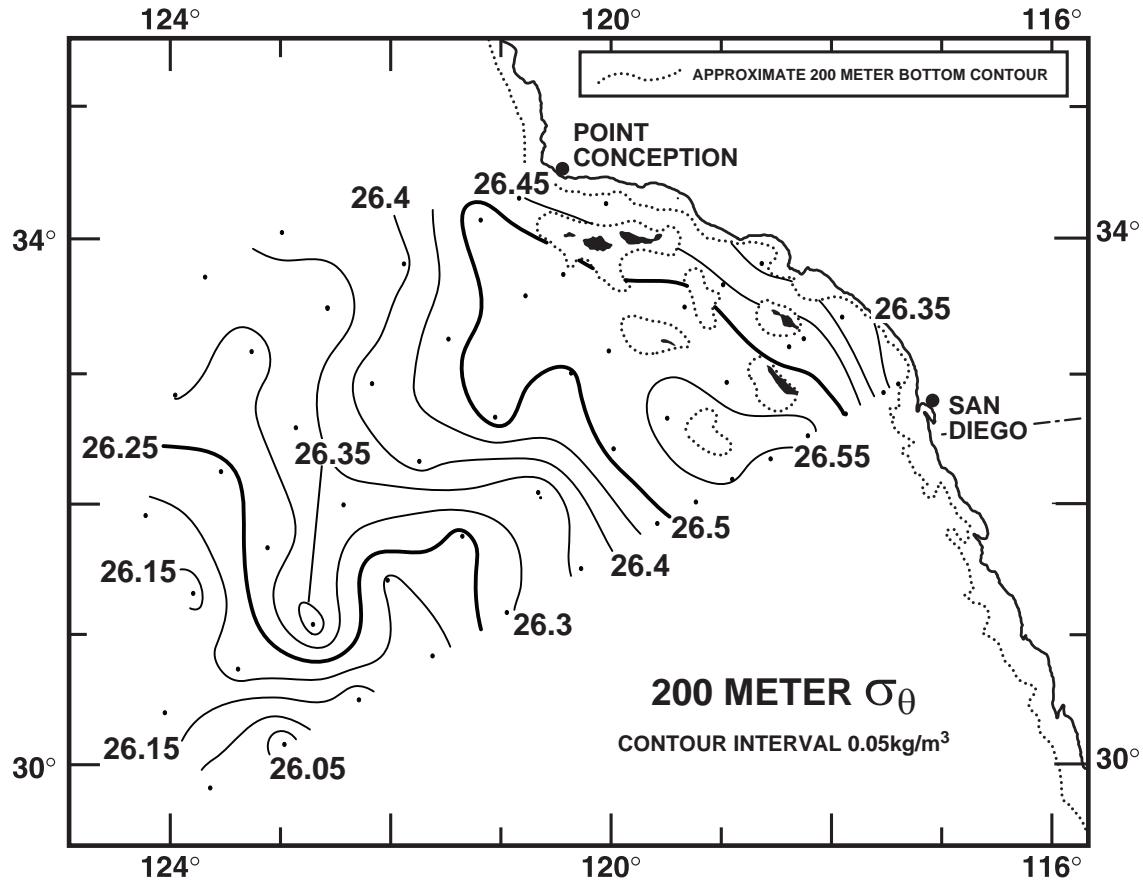


FIGURE 4B

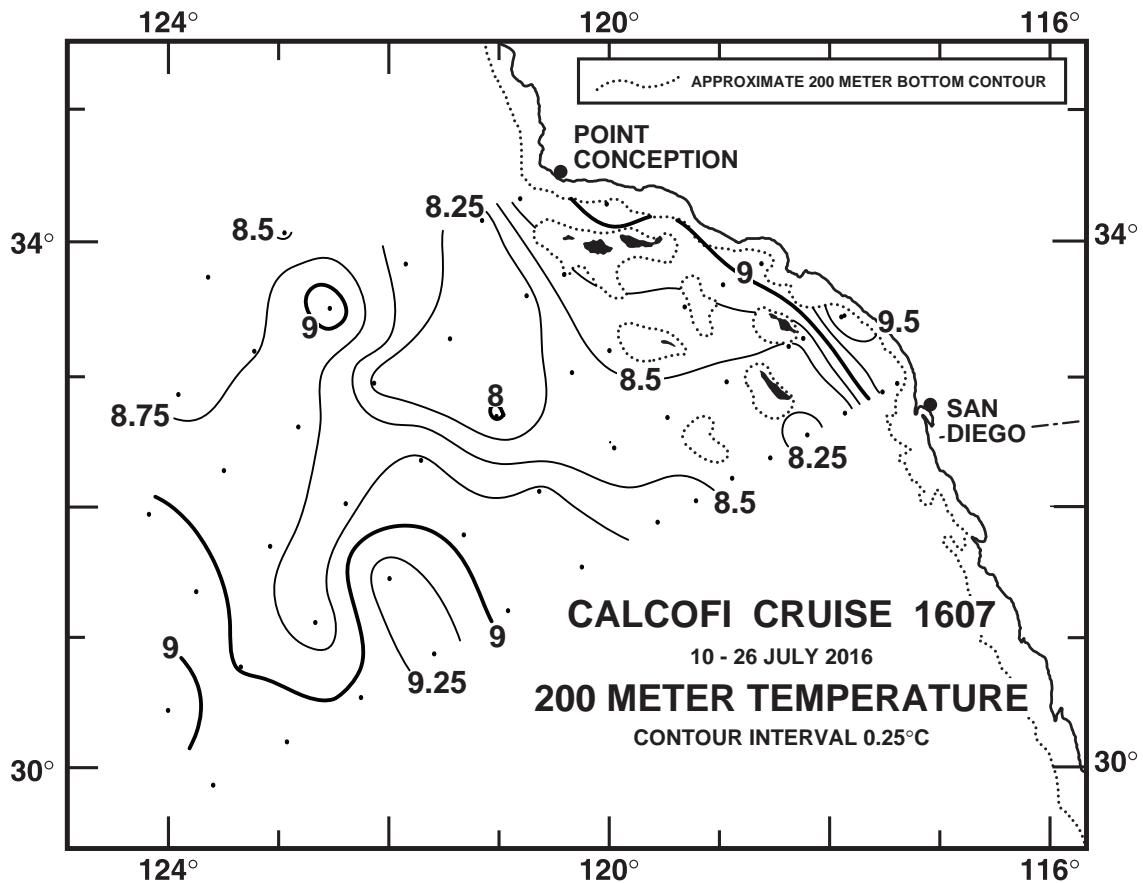


FIGURE 4C

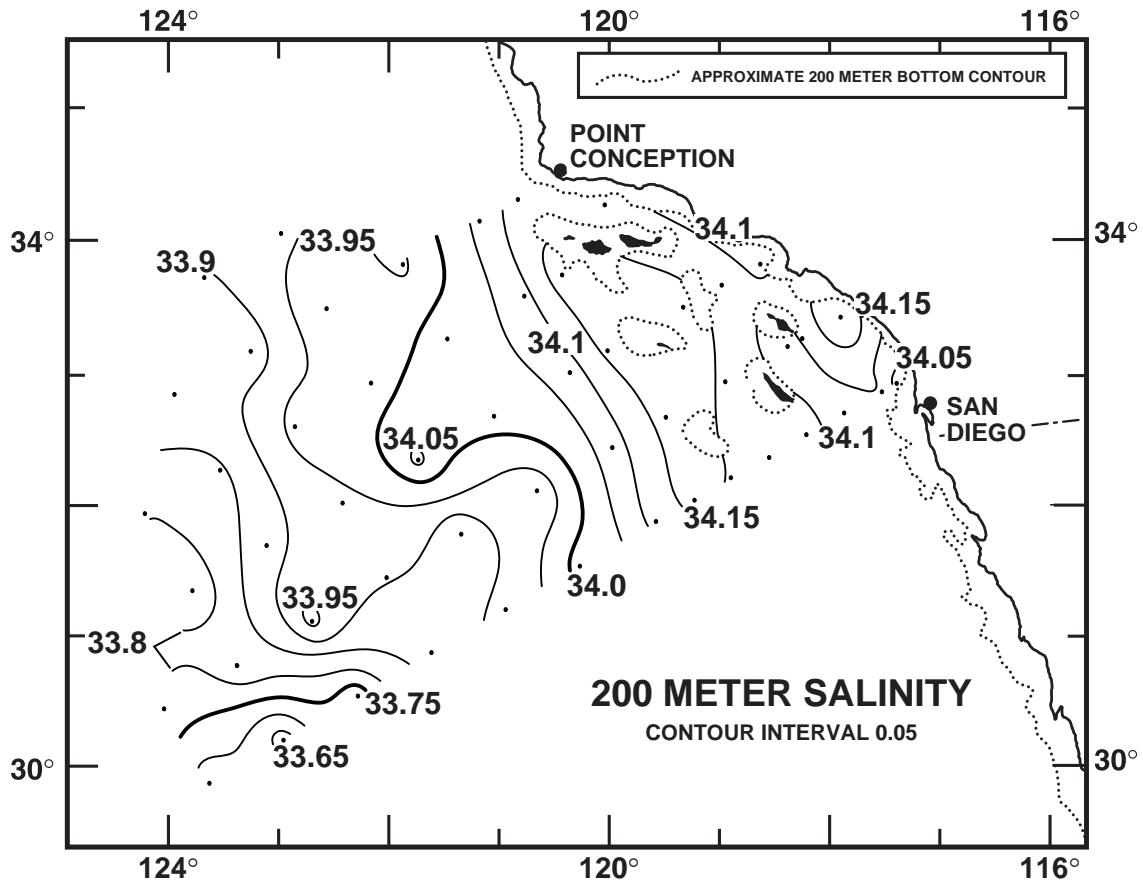


FIGURE 4D

# CALCOFI CRUISE 1607

13 - 17 July 2016

## POTENTIAL DENSITY ( $\sigma_0$ ) ALONG CALCOFI LINE 90

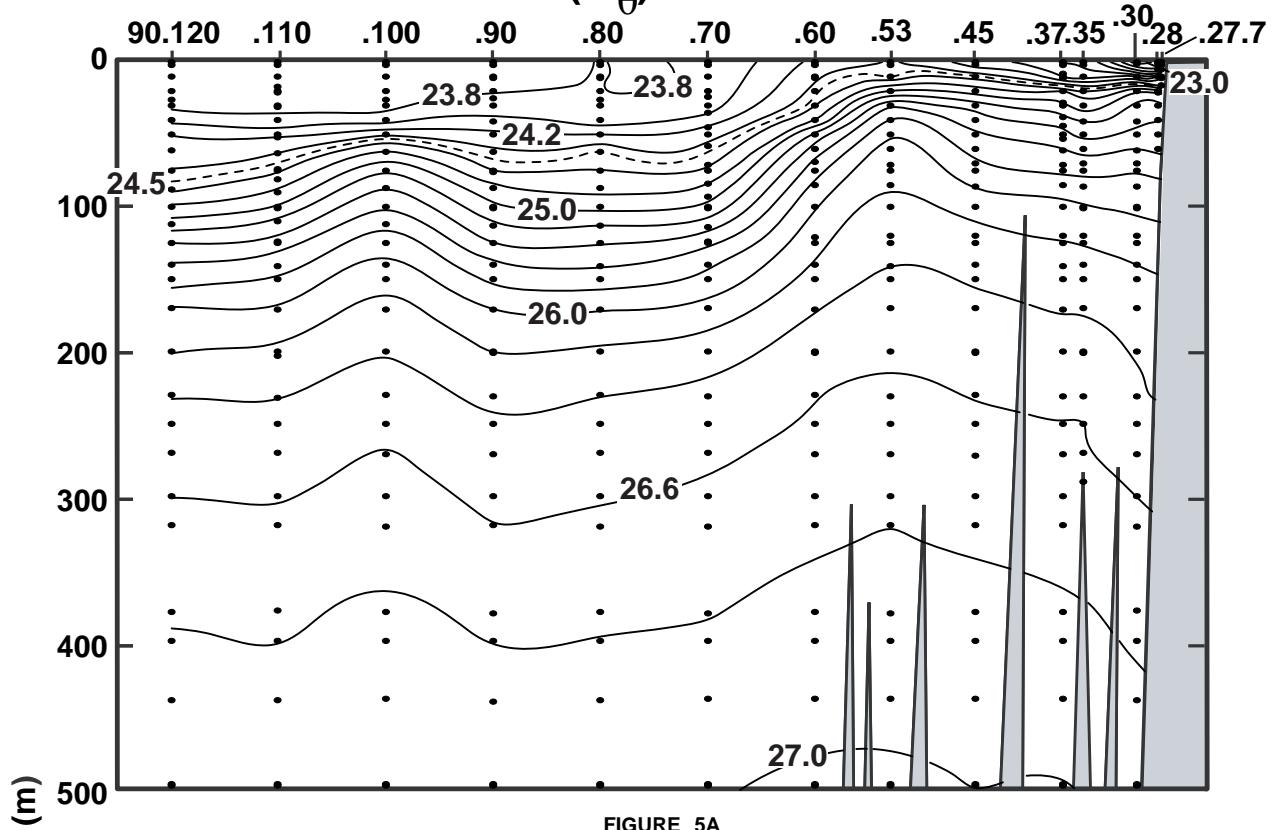


FIGURE 5A

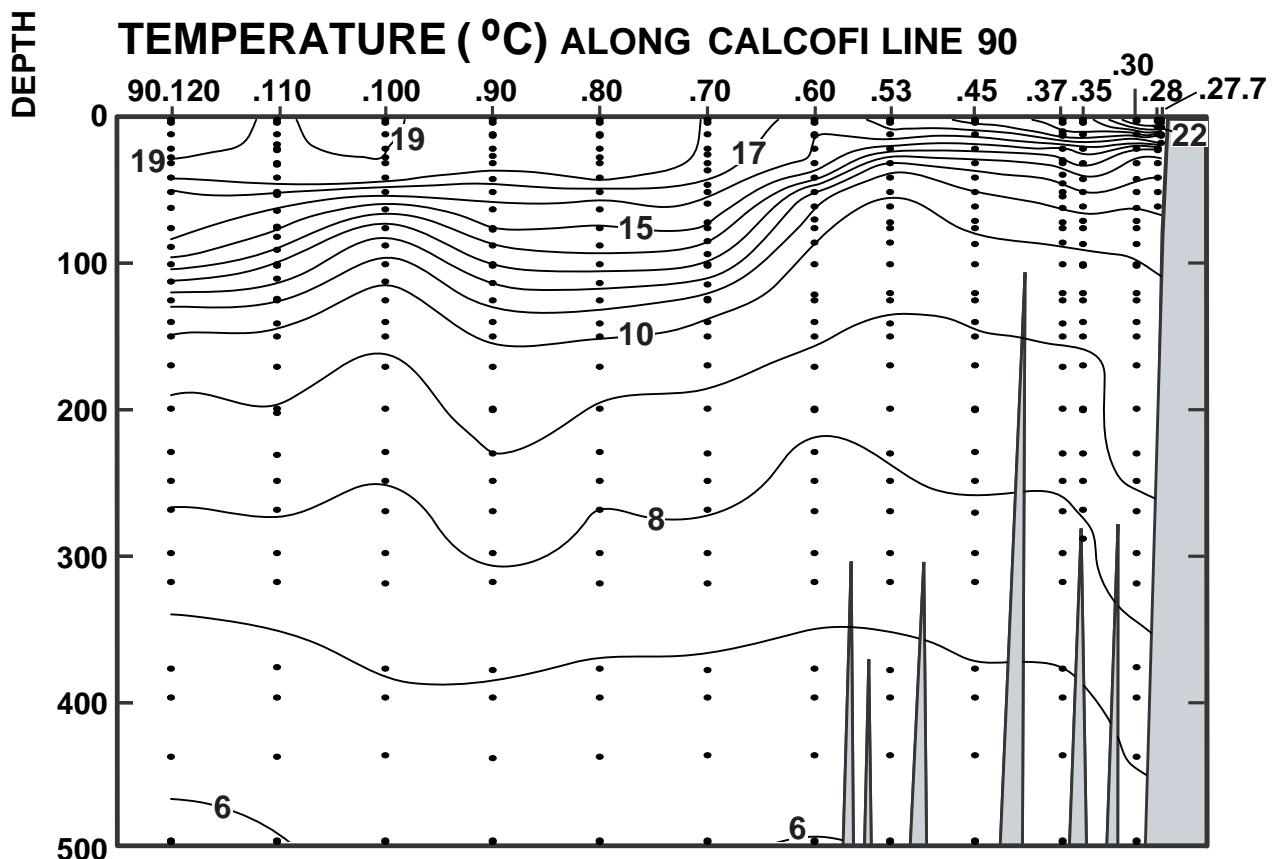
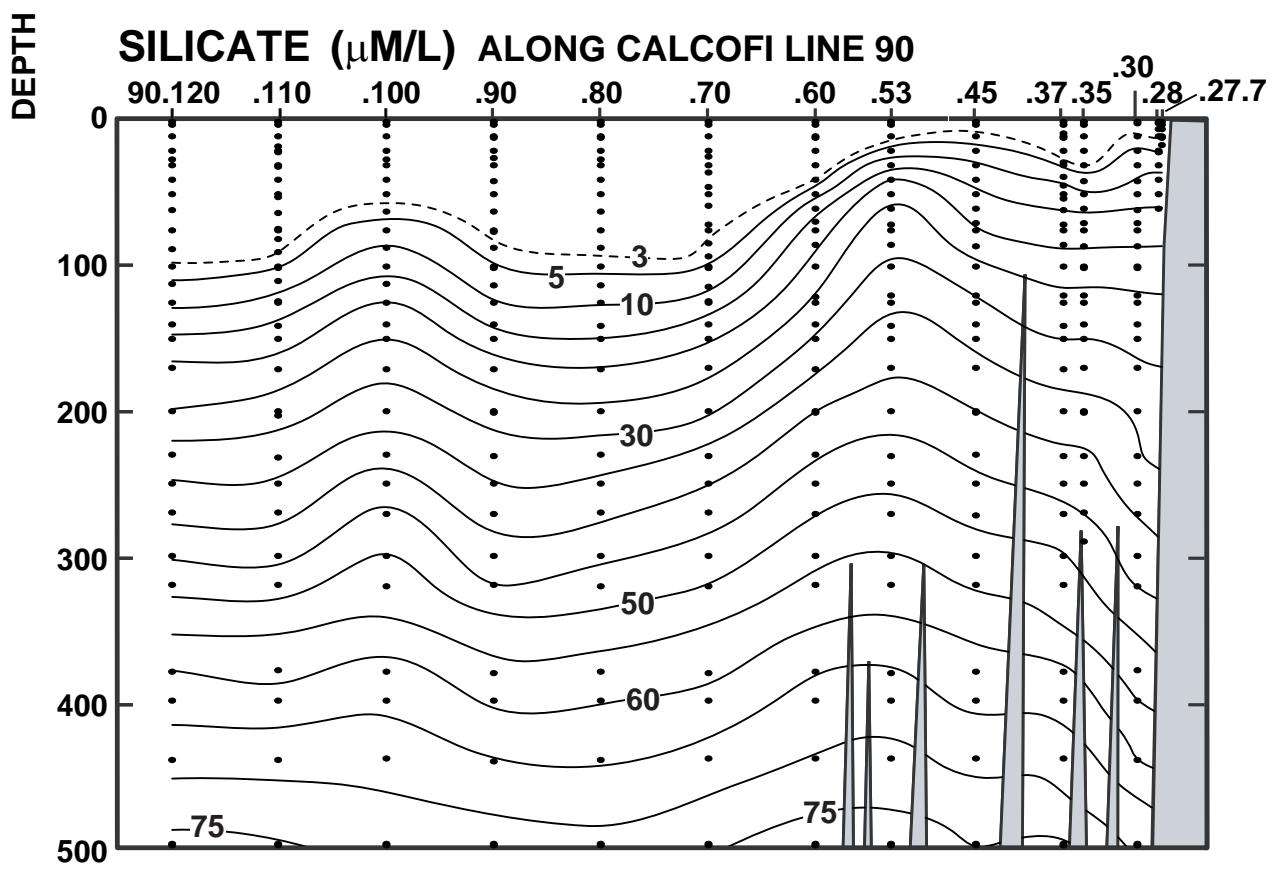
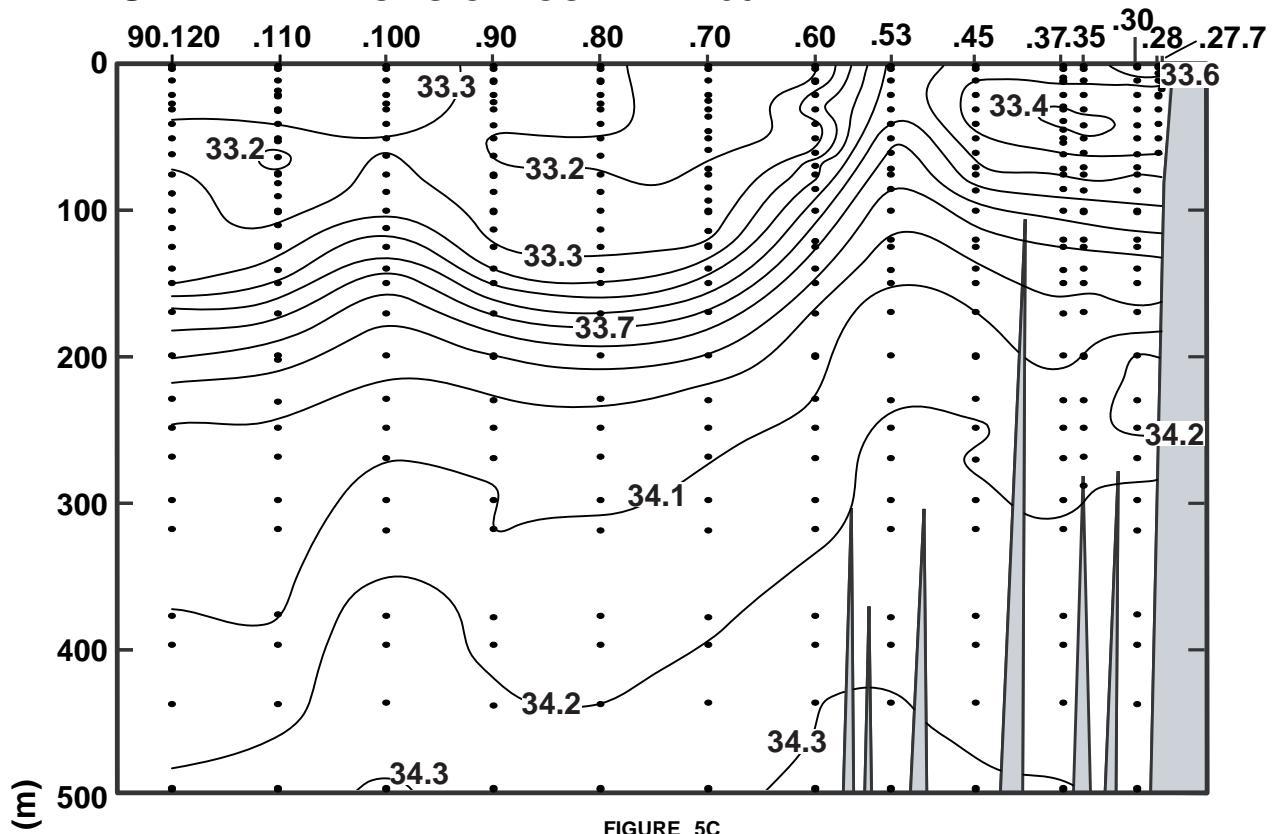


FIGURE 5B

# CALCOFI CRUISE 1607

13- 17 July 2016

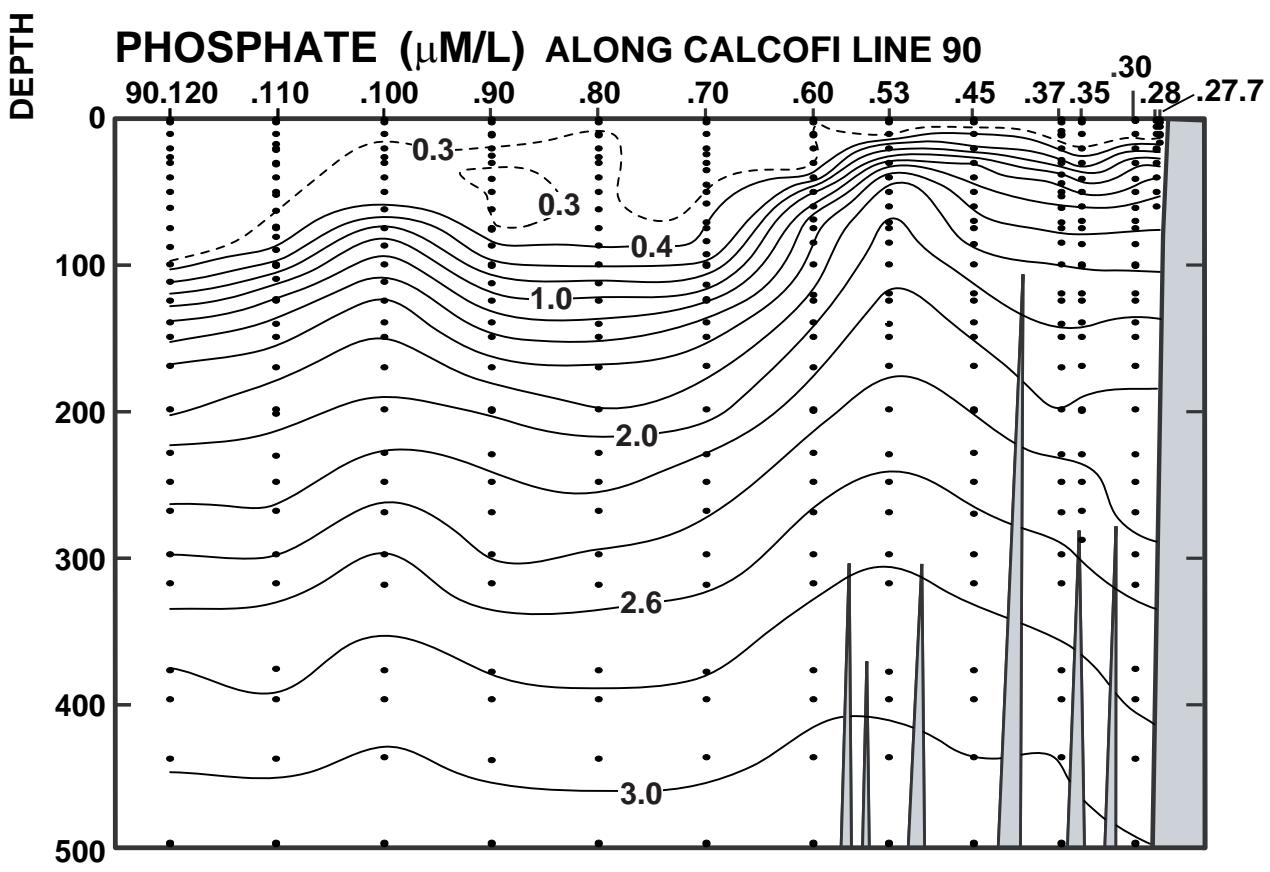
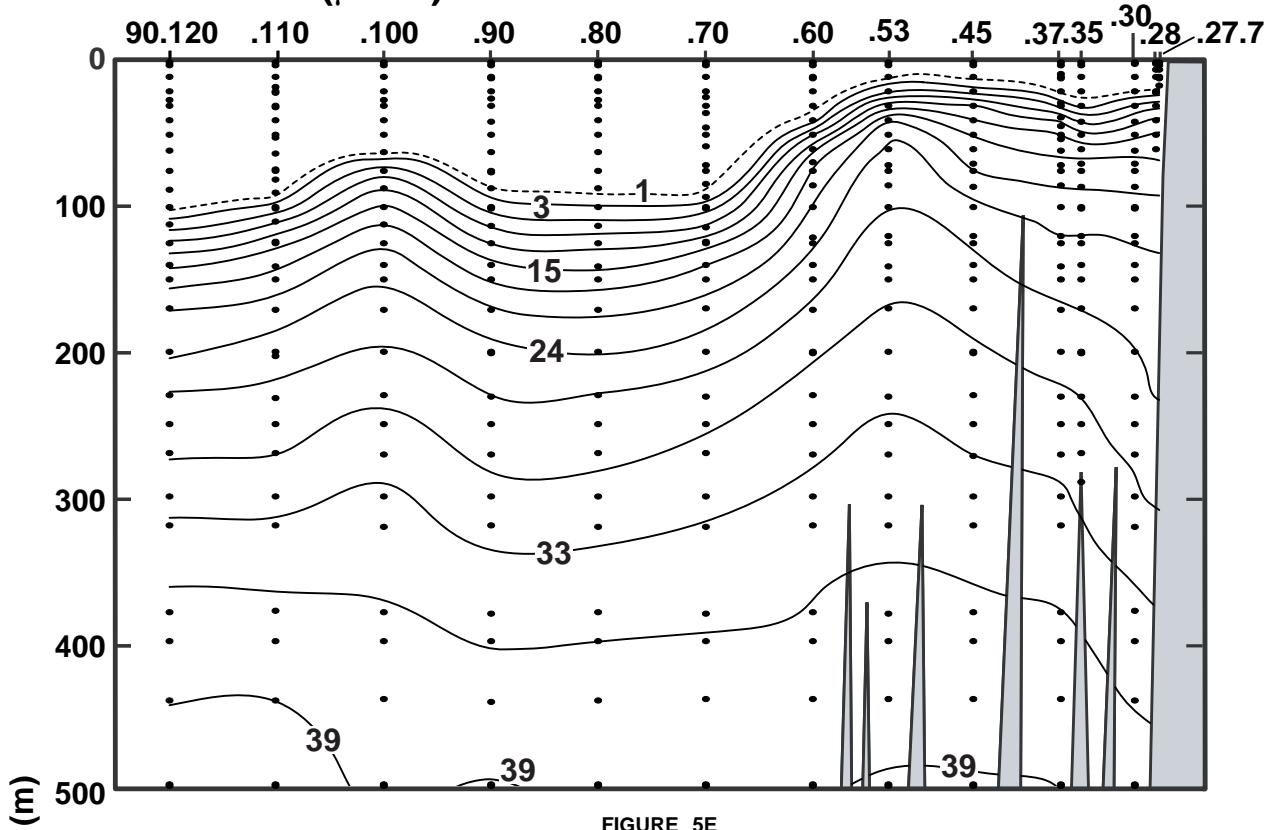
## SALINITY ALONG CALCOFI LINE 90



# CALCOFI CRUISE 1607

13 - 17 July 2016

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



# CALCOFI CRUISE 1607

13 - 17 July 2016

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

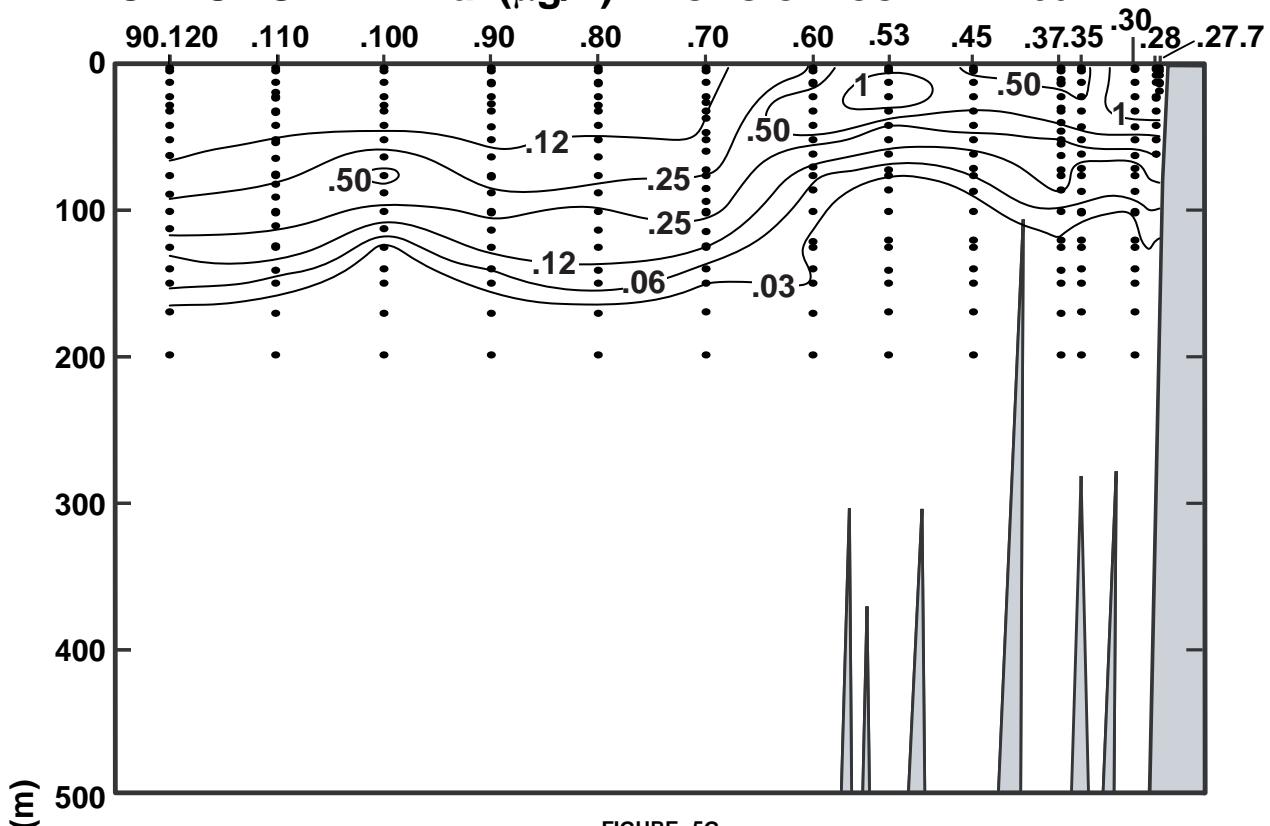


FIGURE 5G

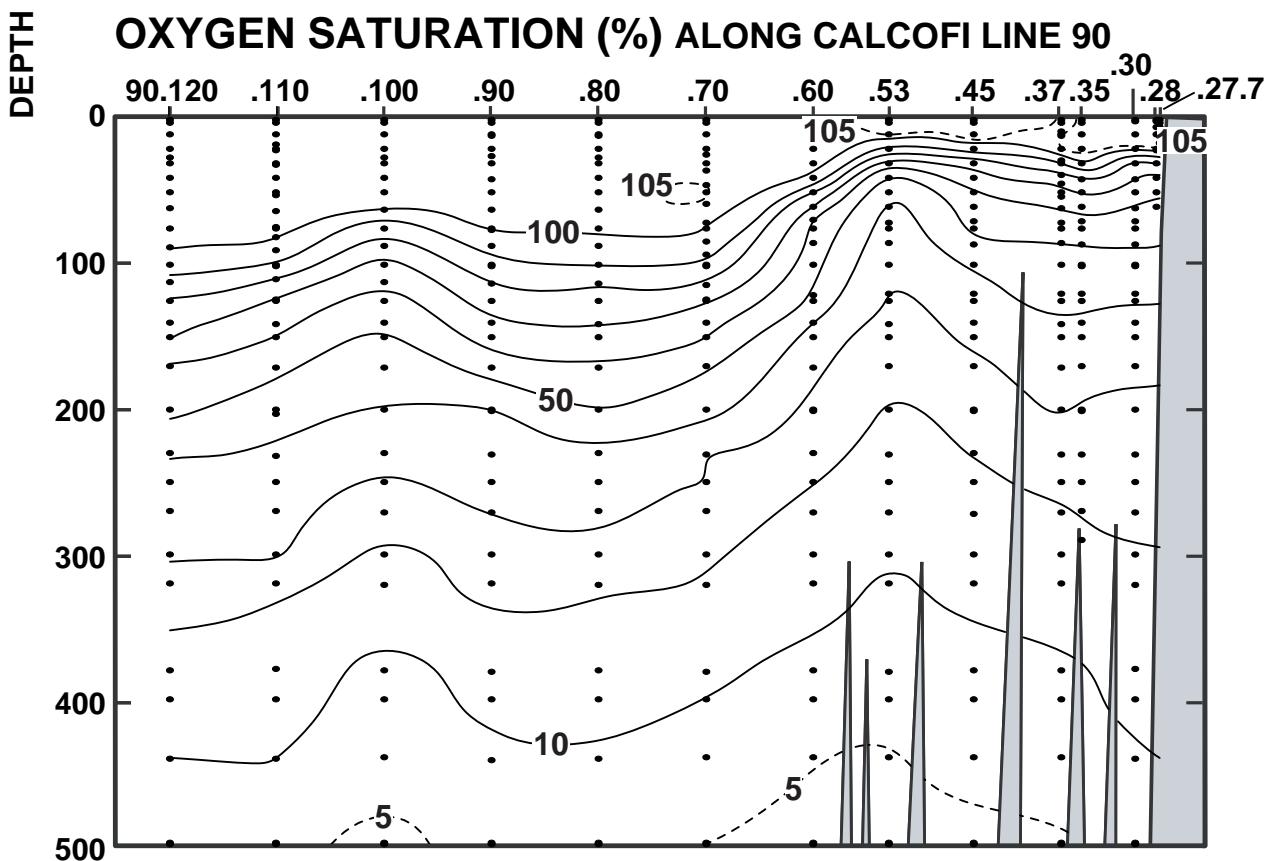
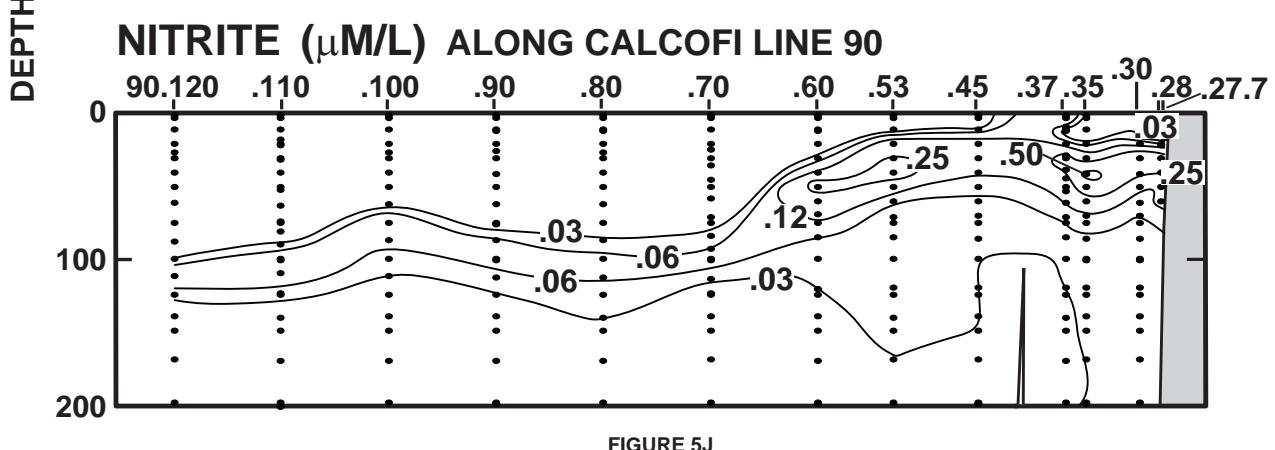
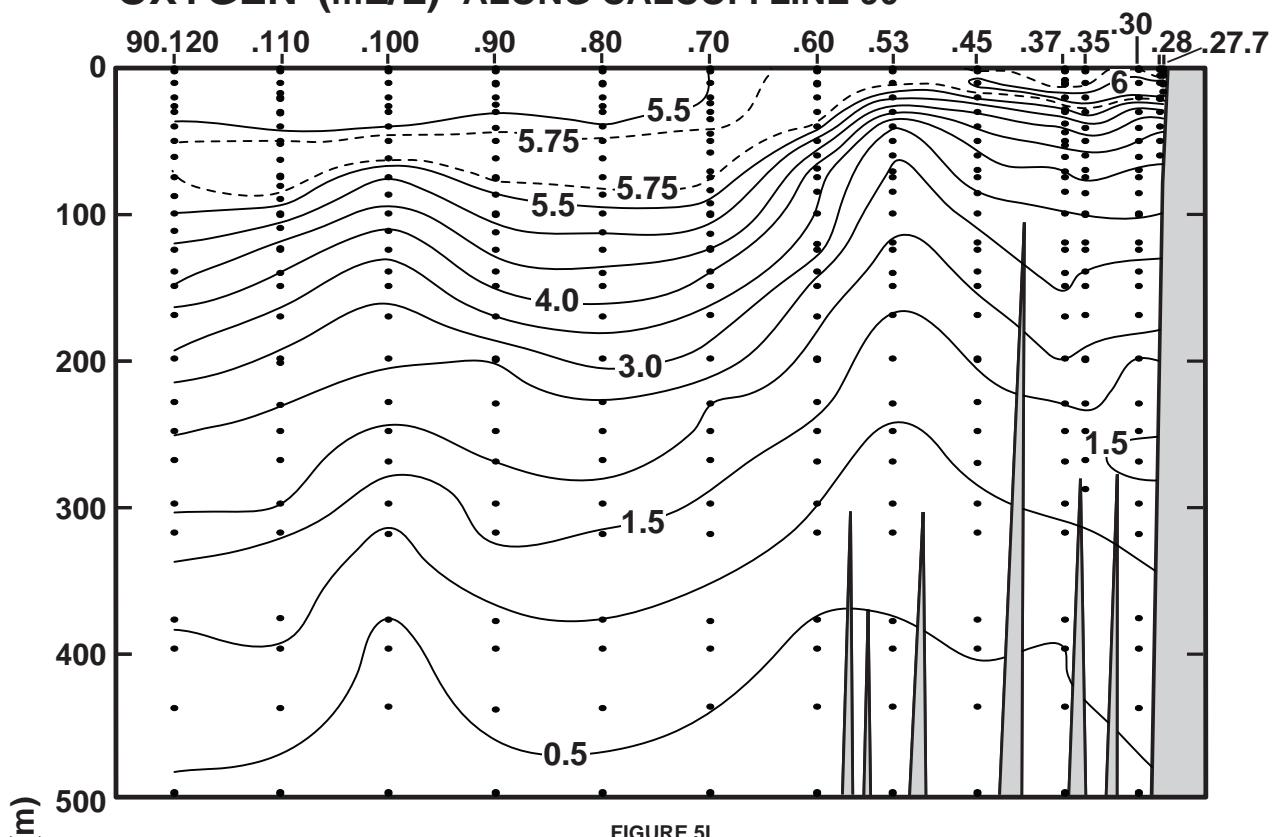


FIGURE 5H

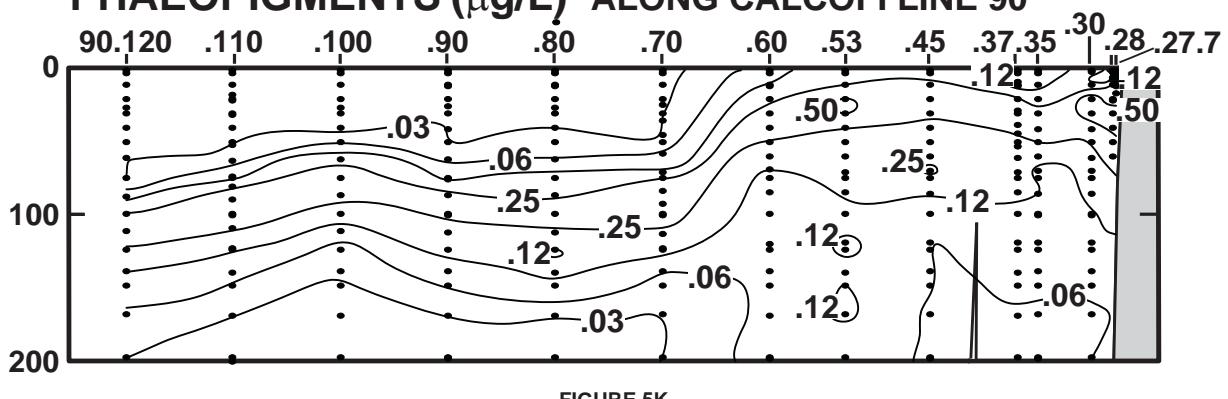
# CALCOFI CRUISE 1607

13 - 17 July 2016

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



## PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90



## PERSONNEL

### CalCOFI Cruise 1607

#### SHIP'S CAPTAIN

Stan Langaker, R/V *Ocean Starr*

#### PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

Hays, Amy (Chief Scientist)	Fishery Biologist, NMFS
Averbuj, Dan	Volunteer
Brewer, Arial	Acoustic Technician, SIO
Dovel, Shonna	Staff Research Associate, SIO
Giddings, Ashlyn	Marine Mammal Observer, MPL
Johnston, Erin	Volunteer
Overcash, Bryan	Fishery Biologist, NMFS
Quackenbush, Cameron	Volunteer
Roadman, Megan	Staff Research Associate, SIO
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO
Schuller, Daniel	Staff Research Associate, SIO
Seibert, Max	Volunteer
Webb, Sophie	Bird Observer, FAIER
Whitaker, Katherine	Marine Mammal Observer, MPL
Wilkinson, James	Information Systems Analyst, SIO
Wolgast, David	Staff Research Associate, SIO

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	16.78	16.78	32.903	23.957	394.1	0.000	5.70	248.7	102.4	0.9	0.24	0.0	0.01	0.00	0.14	0.02	0	
1	16.78	16.78	32.903	23.957	394.1	0.004	5.70	248.7	102.4	0.9	0.24	0.0	0.00	0.00	0.14	0.02	1 20	
10	16.78	16.78	32.904	23.959	394.3	0.039	5.68	248.2	102.2	1.0	0.25	0.0	0.00	0.00	0.14	0.03	10 19	
20	ISL	16.76 D	16.76	32.903	D 23.964	394.2	0.077	5.64	D 245.8	D 101.3	1.0	0.25	0.0	0.01	0.00	0.14	0.03	20
25	16.74	16.73	32.906	23.972	393.7	0.099	5.68	248.0	102.0	0.9	0.25	0.0	0.00	0.00	0.14	0.02	25 18	
30	ISL	16.70 D	16.69	32.898	D 23.975	393.5	0.117	5.65	D 246.3	D 101.4	0.9	0.25	0.0	0.01	0.00	0.15	0.02	30
40	16.53	16.52	32.897	24.014	390.1	0.157	5.71	249.4	102.2	0.9	0.24	0.0	0.00	0.00	0.17	0.02	40 17	
50	ISL	14.54 D	14.54	32.901	D 24.456	348.2	0.194	6.00	D 261.6	D 103.2	1.3	0.26	0.0	0.01	0.00	0.34	0.03	50
51	14.58	14.58	32.900	24.447	349.1	0.198	6.03	263.2	103.7	1.3	0.26	0.0	0.00	0.00	0.36	0.03	51 16	
63	13.18	13.17	32.918	24.748	320.6	0.238	6.00	261.9	100.2	2.1	0.37	0.7	0.13	0.02	0.56	0.21	64 15	
75	12.02	12.01	32.926	24.980	298.7	0.275	5.74	250.5	93.6	3.9	0.67	5.0	1.31	0.02	0.57	0.23	76 14	
88	11.49	11.48	32.966	25.108	286.7	0.313	5.69	248.7	91.9	5.4	0.82	7.7	1.11	0.00	0.29	0.03	89 13	
100	ISL	11.31 D	11.30	33.023	D 25.185	279.7	0.347	5.52	D 240.3	D 88.7	6.8	0.89	9.7	0.10	0.00	0.07	0.05	101
101	11.31	11.29	33.024	25.187	279.5	0.350	5.54	241.8	89.0	6.9	0.90	9.8	0.00	0.06	0.05	0.05	102 12	
113	10.58	10.57	33.210	25.460	253.7	0.382	4.74	207.0	75.1	12.2	1.17	14.0	0.03	0.00	0.06	0.06	114 11	
124	9.81	9.80	33.369	25.715	229.6	0.409	4.13	180.2	64.4	16.6	1.41	17.8	0.03	0.00	0.04	0.04	125 10	
125	ISL	9.86 D	9.85	33.400	D 25.731	228.1	0.411	4.03	D 175.4	D 62.9	16.8	1.41	17.9	0.03	0.00	0.04	0.04	126
141	9.30	9.29	33.644	26.014	201.5	0.446	4.11	179.5	63.5	19.6	1.45	19.4	0.03	0.00	0.02	0.03	142 09	
150	ISL	9.17 D	9.15	33.718	D 26.093	194.2	0.464	3.87	D 168.2	D 59.5	21.0	1.50	20.2	0.03	0.00	0.01	0.04	151
171	8.94	8.92	33.833	26.220	182.5	0.503	3.70	161.4	56.7	24.4	1.63	22.2	0.00	0.04	0.00	0.05	172 08	
200	ISL	8.44 D	8.42	33.941	D 26.383	167.5	0.555	3.10	D 134.8	D 47.0	30.5	1.86	25.5	0.02	0.00	0.00	0.05	202
204	8.40	8.38	33.942	26.390	166.9	0.561	3.09	134.8	46.9	31.3	1.89	25.9	0.00	0.00	0.00	0.05	206 07	
230	8.01	7.99	33.971	26.471	159.4	0.603	2.99	130.4	44.9	34.6	1.95	27.0	0.00	0.00			232 06	
250	ISL	7.70 D	7.67	33.990	D 26.532	153.9	0.636	2.79	D 121.4	D 41.6	38.5	2.09	28.9	0.02	0.00			252
272	7.52	7.49	34.011	26.575	150.1	0.668	2.30	100.3	34.2	42.9	2.24	30.9	0.00	0.00			274 05	
300	ISL	7.11 D	7.08	34.027	D 26.646	143.6	0.711	1.98	D 86.1	D 29.1	48.8	2.38	32.8	0.02	0.00			302
321	6.70	6.67	34.030	26.704	138.2	0.739	1.73	75.4	25.2	53.3	2.49	34.3	0.00	0.00			324 04	
380	6.31	6.28	34.092	26.804	129.3	0.818	1.07	46.7	15.5	62.7	2.76	37.3	0.00	0.00			383 03	
400	ISL	6.20 D	6.16	34.112	D 26.835	126.6	0.846	0.95	D 41.3	D 13.7	65.3	2.82	37.9	0.02	0.00			403
442	6.00	5.96	34.136	26.880	122.7	0.896	0.72	31.5	10.4	70.7	2.94	39.2	0.00	0.00			446 02	
500	ISL	5.68 D	5.64	34.176	D 26.952	116.5	0.968	0.54	D 23.4	D 7.7	77.7	3.05	40.5	0.02	0.00			504
518	5.56	5.51	34.197	26.984	113.6	0.986	0.47	20.6	6.7	79.8	3.09	41.0	0.00	0.00			522 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 76.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	16.44	16.44	33.004	24.113	379.3	0.000	5.77	251.9	103.1	1.3	0.28	0.1	0.02	0.01	0.22	0.05	0	
2 A	16.44	16.44	33.004	24.113	379.3	0.008	5.77	251.9	103.1	1.3	0.28	0.1	0.00	0.01	0.22	0.05	2 24	
8	16.44	16.43	33.003	24.115	379.4	0.030	5.77	251.9	103.1	1.2	0.28	0.0	0.00	0.01	0.21	0.05	8 22	
8	16.44	16.43	33.015	24.124	378.5	0.030											8 23	
10	ISL	16.44 D	16.44	33.004	D 24.115	379.4	0.035	5.75	D 250.8	D 102.8	1.1	0.27	0.0	0.02	0.01	0.22	0.04	10
14 A	16.44	16.44	33.004	24.114	379.7	0.053	5.77	251.8	103.1	1.0	0.26	0.0	0.00	0.01	0.24	0.03	14 21	
18 A	16.43	16.43	33.008	24.120	379.3	0.068	5.77	252.0	103.1	1.0	0.27	0.0	0.00	0.01	0.23	0.05	18 20	
20	ISL	16.44 D	16.43	33.005	D 24.117	379.6	0.073	5.75	D 250.7	D 102.6	1.0	0.27	0.0	0.02	0.01	0.23	0.04	20 20
27	16.41	16.40	33.002	24.122	379.4	0.103	5.77	252.0	103.1	0.9	0.26	0.0	0.00	0.03	0.24	0.03	27 19	
30	ISL	16.36 D	16.36	32.997	D 24.128	378.9	0.111	5.75	D 250.7	D 102.6	1.0	0.26	0.0	0.02	0.03	0.27	0.03	30
34 A	16.34	16.33	32.998	24.135	378.4	0.129	5.81	253.6	103.6	1.0	0.26	0.0	0.00	0.04	0.32	0.03	34 18	
44	15.29	15.28	33.056	24.414	352.1	0.166	6.00	262.0	104.8	0.7	0.29	0.0	0.04	0.16	0.55	0.14	44 17	
50	ISL	14.97 D	14.97	33.086	D 24.506	343.4	0.184	6.03	D 262.7	D 104.7	0.9	0.35	0.8	0.09	0.26	0.56	0.22	50 50
54	14.38	14.37	33.087	24.634	331.3	0.200	5.93	258.9	101.7	1.0	0.39	1.4	0.13	0.33	0.56	0.26	54 16	
64 A	13.15	13.14	33.053	24.837	312.2	0.232	5.68	248.2	95.0	2.6	0.49	1.9	0.29	0.41	0.20	0.52	65 14	
64	13.15	13.14	33.064	24.867	309.3	0.232											65 15	
75	ISL	12.20 D	12.19	32.994	D 24.998	297.0	0.264	5.36	233.3	87.7	5.6	0.71	6.1	0.14	0.07	0.22	0.20	76
76 A	12.17	12.16	32.988	24.999	296.9	0.269	5.33	232.5	87.2	5.9	0.73	6.4	0.12	0.04	0.22	0.17	77 13	
88	11.62	11.61	33.099	25.189	279.1	0.303	4.93	215.4	79.9	9.0	0.95	9.9	0.08	0.04	0.19	0.09	89 12	
100	11.01	11.00	33.247	25.413	258.0	0.335	4.64	202.7	74.3	11.2	1.18	13.7	0.17	0.04	0.09	0.08	101 11	
121	9.78	9.77	33.364	25.750	226.2	0.386	4.16	181.5	64.8	16.6	1.40	17.7	0.04	0.02	0.08	0.05	122 10	
125																		

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	ml/L	μmol/Kg	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	13.93	13.93	33.517	25.056	289.4	0.000	5.13	223.9	87.4	8.3	0.87	8.0	0.25	0.14	1.64	0.26	0		
2	13.93	13.93	33.517	25.056	289.5	0.006	5.13	223.9	87.4	8.3	0.87	8.0	0.25	0.14	1.64	0.26	2	10	
5	13.95	13.95	33.518	25.052	290.0	0.015	5.12	223.4	87.3	8.1	0.85	7.8	0.24	0.13	1.73	0.28	5	09	
10	12.96	12.96	33.516	25.252	271.1	0.029	4.87	212.7	81.4	9.4	0.95	9.5	0.25	0.15	1.42	0.29	10	07	
10	12.96	12.96	33.513	25.250	271.3	0.027											10	08	
20	ISL	12.40	D 12.40	33.534	D 25.376	259.6	0.053	4.45	D 193.7	D 73.4	12.8	1.23	13.6	0.26	0.16	0.76	0.20	20	
21	12.39	12.39	33.533	25.377	259.5	0.058	4.41	192.7	72.9	13.1	1.26	14.0	0.26	0.16	0.70	0.19	21	05	
30	12.02	12.01	33.556	25.467	251.2	0.081	4.26	185.8	69.7	14.1	1.33	15.0	0.26	0.19	0.53	0.21	30	04	
41	11.50	11.50	33.555	25.562	242.4	0.108	3.70	161.7	60.0	15.5	1.43	16.9	0.23	0.11	0.45	0.31	41	03	
50	11.50	11.50	33.561	25.567	242.2	0.130	3.64	158.9	59.0	16.1	1.46	17.2	0.26	0.17	0.39	0.25	50	02	
60	11.07	11.06	33.563	25.647	234.8	0.154	3.56	155.5	57.2	16.3	1.48	17.4	0.26	0.29	0.37	0.29	60	01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	ml/L	μmol/Kg	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	13.13	13.13	33.543	25.239	272.0	0.000	4.97	216.8	83.3	10.9	1.06	10.9	0.20	0.07	1.61	0.52	0		
2 A	13.13	13.13	33.543	25.239	272.1	0.005	4.97	216.8	83.3	10.9	1.06	10.9	0.20	0.07	1.61	0.52	2	24	
7 A	13.12	13.12	33.552	25.248	271.3	0.019	4.89	213.5	82.0	10.7	1.08	10.7	0.19	0.07	1.58	0.51	7	23	
8 A	13.13	13.13	33.545	25.241	272.0	0.022	4.88	213.1	81.9	10.7	1.06	10.8	0.19	0.05	1.64	0.53	8	21	
8	13.13	13.13	33.543	25.239	272.3	0.023										8	22		
10	ISL	13.13	D 13.13	33.543	D 25.240	272.2	0.025	4.89	D 213.1	D 82.0	10.7	1.06	10.8	0.19	0.05	1.65	0.56	10	
16 A	13.12	13.12	33.544	25.242	272.2	0.044	4.90	214.0	82.2	10.7	1.05	10.8	0.19	0.05	1.67	0.64	16	20	
20	ISL	13.09	D 13.09	33.544	D 25.249	271.7	0.052	4.88	D 212.4	D 81.7	10.8	1.06	10.9	0.18	0.05	1.67	0.57	20	
22	12.83	12.83	33.543	25.299	267.0	0.060	4.83	210.6	80.4	10.8	1.07	11.0	0.18	0.05	1.67	0.53	22	19	
29 A	11.10	11.09	33.610	25.678	231.0	0.077	3.38	147.5	54.3	17.7	1.60	18.7	0.22	0.08	0.60	0.37	29	18	
30	ISL	10.94	D 10.93	33.618	D 25.713	227.7	0.077	3.29	D 143.4	D 52.7	17.9	1.61	19.0	0.22	0.07	0.53	0.35	30	
35 A	10.75	10.74	33.625	25.752	224.1	0.091	3.16	137.7	50.3	18.9	1.67	20.1	0.23	0.04	0.18	0.28	35	17	
42	10.50	10.49	33.642	25.809	218.9	0.106	3.07	134.0	48.7	19.8	1.73	21.0	0.17	0.00	0.19	0.24	42	16	
50	ISL	10.26	D 10.25	33.692	D 25.890	211.4	0.122	2.96	D 128.6	D 46.6	21.4	1.79	21.9	0.11	0.00	0.10	0.19	50	
51	10.27	10.26	33.691	25.886	211.7	0.126	2.93	127.8	46.2	21.6	1.80	22.0	0.11	0.00	0.09	0.19	51	15	
60	10.05	10.04	33.723	25.949	205.9	0.144	2.90	126.5	45.6	22.4	1.89	22.5	0.04	0.00	0.04	0.15	60	14	
70	9.99	9.98	33.792	26.013	200.1	0.165	2.62	114.2	41.1	24.8	1.92	23.7	0.09	0.00	0.03	0.16	71	13	
75	ISL	9.86	D 9.85	33.812	D 26.051	196.6	0.173	2.65	D 115.3	D 41.5	25.2	1.97	23.9	0.09	0.00	0.03	0.15	76	
84	9.82	9.81	33.829	26.071	194.9	0.192	2.53	110.4	39.6	25.8	2.05	24.3	0.08	0.00	0.03	0.14	85	12	
100	9.70	9.69	33.870	26.123	190.3	0.223	2.46	107.3	38.4	26.8	2.07	24.7	0.06	0.18	0.02	0.11	101	11	
120	9.65	9.64	33.909	26.163	187.0	0.261	2.32	101.0	36.1	28.0	2.09	25.3	0.06	0.00	0.01	0.10	121	10	
125	ISL	9.64	D 9.62	33.915	D 26.170	186.4	0.269	2.32	D 100.9	D 36.1	28.4	2.10	25.5	0.06	0.00	0.01	0.10	126	
144	9.39	9.38	33.970	26.254	178.8	0.305	2.25	98.2	34.9	29.9	2.12	26.2	0.03	0.00	0.01	0.09	145	09	
150	ISL	9.45	D 9.43	33.993	D 26.264	178.1	0.315	2.23	D 97.0	D 34.6	30.8	2.18	26.6	0.03	0.00	0.01	0.09	151	
170	9.26	9.24	34.061	26.348	170.5	0.350	1.77	77.4	27.4	33.8	2.37	27.8	0.03	0.00	0.01	0.10	171	08	
200	ISL	8.92	D 8.90	34.123	D 26.451	161.2	0.400	1.70	D 74.1	D 26.1	36.5	2.33	28.7	0.02	0.00	0.01	0.06	202	
201	8.91	8.89	34.121	26.451	161.3	0.402	1.70	74.1	26.1	36.6	2.33	28.7	0.00	0.00	0.01	0.06	203	07	
232	8.83	8.80	34.149	26.487	158.4	0.451	1.61	70.3	24.7	37.8	2.37	29.2	0.00	0.00		234	06		
250	ISL	8.67	D 8.65	34.173	D 26.530	154.7	0.480	1.33	D 58.7	D 20.6	39.9	2.44	29.9	0.02	0.00		252		
270	8.53	8.50	34.184	26.562	152.0	0.510	1.30	56.6	19.7	42.2	2.51	30.8	0.00	0.00		272	05		
300	ISL	8.24	D 8.21	34.209	D 26.625	146.4	0.556	1.10	D 47.9	D 16.7	46.4	2.59	31.9	0.02	0.00		302		
318	8.04	8.01	34.218	26.663	143.1	0.581	0.98	42.8	14.8	48.9	2.63	32.5	0.00	0.00		321	04		
380	7.60	7.56	34.227	26.736	137.0	0.668	0.74	32.4	11.1	55.8	2.81	33.8	0.00	0.00		383	03		
400	ISL	7.46	D 7.42	34.246	D 26.771	133.9	0.697	0.70	D 30.3	D 10.4	57.6	2.84	34.4	0.02	0.00		403		
440	7.16	7.12	34.258	26.824	129.4	0.748	0.56	24.5	8.3	61.2	2.89	35.6	0.00	0.00		444	02		
500	ISL	6.44	D 6.39	34.278	D 26.937	118.9	0.826	0.39	D 17.0	D 5.7	70.6	3.04	37.8	0.02	0.00		504		
515	6.32	6.27	34.283	26.958	117.0	0.840	0.39	16.9	5.6	72.9	3.08	38.3	0.00	0.00		519	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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	14.90	14.90	33.573	24.894	304.8	0.000	5.88	256.5	102.2	6.2	0.56	3.2	0.15	0.52	2.58	0.89	0	
1	14.90	14.90	33.573	24.895	304.8	0.003	5.88	256.5	102.2	6.2	0.56	3.2	0.15	0.52	2.58	0.89	1 21	
10	14.89	14.89	33.572	24.896	305.0	0.030	5.89	257.1	102.4	5.5	0.55	3.0	0.21	0.47	2.53	0.90	10 19	
10	14.89	14.89	33.588	24.908	303.9	0.030											10 20	
20	14.88	14.87	33.582	24.908	304.2	0.061	5.85	255.5	101.8	5.3	0.60	3.0	0.17	0.69	2.70	1.01	20 18	
30	ISL 14.42 D	14.41	33.572 D	24.999	295.8	0.090	5.77	251.2	99.3	5.3	0.69	3.3	0.15	1.01	3.07	0.40	30	
31	14.18	14.18	33.573	25.049	291.1	0.094	5.76	251.2	98.7	5.3	0.70	3.4	0.15	1.04	3.11	0.34	31 17	
40	13.06	13.05	33.571	25.278	269.6	0.119	4.72	206.1	79.1	9.0	1.08	8.6	0.28	2.72	0.21	0.20	40 16	
50	11.24	11.23	33.612	25.655	233.8	0.144	3.68	160.6	59.3	15.1	1.49	16.0	0.37	1.15	0.12	0.18	50 15	
60	10.86	10.85	33.598	25.712	228.6	0.167	3.42	149.2	54.6	17.7	1.61	19.4	0.43	0.12	0.05	0.14	60 14	
71	10.00	9.99	33.647	25.898	211.0	0.191	3.14	136.8	49.2	21.0	1.81	22.0	0.16	0.22	0.06	0.14	72 13	
75	ISL 9.92 D	9.91	33.692 D	25.947	206.5	0.200	3.08	D134.0 D	48.2	21.7	1.82	22.5	0.14	0.00	0.07	0.15	76	
86	9.75	9.74	33.730	26.005	201.2	0.222	2.94	128.2	45.9	23.6	1.84	23.8	0.08	0.00	0.08	0.17	87 12	
100	ISL 9.51 D	9.50	33.858 D	26.146	188.1	0.250	2.53	D109.9 D	39.3	26.3	1.98	25.3	0.07	0.00	0.08	0.20	101	
101	9.52	9.50	33.844	26.134	189.3	0.252	2.56	111.5	39.7	26.5	1.99	25.4	0.07	0.18	0.08	0.20	102 11	
121	9.36	9.34	33.927	26.225	181.0	0.289	2.29	100.1	35.5	29.1	2.05	26.7	0.06	0.00	0.08	0.13	122 10	
125	ISL 9.36 D	9.34	33.934 D	26.231	180.6	0.296	2.30	D100.1 D	35.7	29.5	2.06	26.9	0.06	0.00	0.07	0.13	126	
141	9.09	9.08	33.971	26.303	174.0	0.324	2.22	96.8	34.2	31.1	2.10	27.6	0.05	0.01	0.05	0.13	142 09	
150	ISL 8.86 D	8.84	33.995 D	26.359	168.8	0.340	2.20	D95.9 D	33.8	32.6	2.13	28.1	0.05	0.02	0.06	0.13	151	
170	8.50	8.48	34.027	26.440	161.4	0.373	2.17	94.8	33.0	35.9	2.20	29.3	0.04	0.05	0.08	0.12	171 08	
200	8.08	8.06	34.066	26.535	152.9	0.420	1.86	81.0	28.0	40.5	2.31	31.1	0.03	0.00	0.06	0.16	202 07	
231	7.87	7.85	34.086	26.581	149.0	0.467	1.65	72.0	24.7	43.4	2.40	32.1	0.03	0.07		233 06		
250	ISL 7.71 D	7.69	34.106 D	26.622	145.4	0.496	1.47	D64.1 D	22.0	45.5	2.46	32.8	0.03	0.00		252		
271	7.54	7.52	34.110	26.649	143.1	0.525	1.40	61.3	20.9	47.7	2.52	33.6	0.00	0.00		273 05		
300	ISL 7.19 D	7.16	34.145 D	26.727	136.0	0.567	1.10	D47.7 D	16.2	52.8	2.65	35.0	0.02	0.00		302		
321	7.16	7.12	34.176	26.757	133.6	0.594	0.88	38.5	13.0	56.4	2.75	36.1	0.00	0.00		324 04		
379	6.69	6.65	34.202	26.843	126.1	0.669	0.65	28.4	9.5	63.0	2.81	37.7	0.00	0.00		382 03		
400	ISL 6.51 D	6.47	34.234 D	26.891	121.6	0.698	0.52	D22.8 D	7.6	65.5	2.87	38.2	0.02	0.00		403		
440	6.38	6.34	34.255	26.926	118.9	0.743	0.45	19.6	6.5	70.1	2.99	38.9	0.00	0.00		444 02		
500	ISL 6.11 D	6.07	34.287 D	26.987	113.8	0.817	0.33	D14.4 D	4.8	74.5	3.02	39.5	0.02	0.00		504		
517	6.09	6.05	34.289	26.991	113.6	0.833	0.32	D13.7 D	4.6	75.7	3.03	39.7	0.00	0.03		521 01		

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	16.42	16.42	32.925	24.059	384.4	0.000	5.72	249.7	102.1	1.2	0.52	0.0	0.01	0.05	0.15	0.06	0	
2	16.42	16.41	32.925	24.059	384.5	0.008	5.72	249.7	102.1	1.2	0.52	0.0	0.00	0.05	0.15	0.06	2 21	
10	ISL 16.42 D	16.42	32.924 D	24.058	384.9	0.035	5.69	D248.2 D	101.6	1.3	0.40	0.0	0.01	0.03	0.15	0.06	10 20	
10	16.42	16.42	32.926	24.059	384.7	0.037												
11	16.42	16.42	32.925	24.059	384.8	0.042	5.72	249.9	102.2	1.3	0.38	0.0	0.00	0.03	0.15	0.06	11 19	
20	ISL 16.42 D	16.42	32.925 D	24.059	385.1	0.074	5.71	D248.9 D	101.9	1.2	0.34	0.0	0.01	0.00	0.15	0.05	20	
25	16.39	16.38	32.925	24.067	384.5	0.096	5.72	250.0	102.1	1.2	0.31	0.0	0.00	0.00	0.15	0.05	25 18	
30	ISL 16.29 D	16.29	32.937 D	24.098	381.7	0.112	5.70	D248.5 D	101.5	1.5	0.33	0.0	0.01	0.00	0.18	0.07	30	
40	14.50	14.49	32.967	24.516	342.1	0.149	6.04	263.6	103.7	2.1	0.37	0.0	0.00	0.03	0.22	0.11	40 17	
50	13.79	13.78	32.948	24.648	329.8	0.185	5.91	258.1	100.1	2.4	0.36	0.6	0.10	0.08	0.58	0.35	50 16	
62	13.42	13.41	33.055	24.807	315.0	0.224	5.82	254.3	97.9	1.7	0.55	2.4	0.35	0.88	0.63	0.29	63 15	
75	13.25	13.24	33.108	24.882	308.2	0.264	5.75	251.1	96.4	1.6	0.64	3.2	0.36	1.38	0.35	0.17	76 14	
87	11.82	11.81	33.153	25.193	278.8	0.300	5.12	223.4	83.2	6.3	0.90	8.4	0.52	0.33	0.18	0.11	88 13	
100	10.74	10.73	33.279	25.486	251.0	0.334	4.54	198.1	72.2	11.9	1.20	14.1	0.09	0.00	0.09	0.12	101 12	
112	10.02	10.01	33.425	25.724	228.6	0.363	4.15	181.0	65.0	16.5	1.42	18.0	0.04	0.00	0.04	0.06	113 11	
125	9.57	9.56	33.495	25.853	216.4	0.392	3.88	169.3	60.2	18.8	1.54	19.9	0.05	0.00	0.03	0.07	126 10	
140	9.32	9.31	33.621	25.992	203.5	0.423	3.48	151.9	53.8	22.6	1.71	22.6	0.04	0.00	0.02	0.06	141 09	
150	ISL 9.21 D	9.20	33.660 D	26.040	199.1	0.441	3.41	D148.2 D	52.5	24.1	1.76	23.3	0.03	0.00	0.02	0.05	151	
170	8.90	8.88	33.813	26.210	183.3	0.481	3.12	136.2	47.8	27.0	1.86	24.9	0.03	0.02	0.01	0.04	171 08	
200	ISL 8.40 D	8.38	33.938 D	26.387	167.0	0.533	3.21	D139.9 D	48.7	30.9	1.91	26.0	0.02	0.00	0.00	0.03	202	
201	8.41	8.39	33.934	26.382	167.5	0.536	3.15	137.5	47.8	31.0	1.91	26.1	0.00	0.00	0.03	203 07		
230	8.01	7.99	33.991	26.487	157.9	0.583	2.44	106.3	36.6	37.4	2.14	29.3	0.00	0.00		232 06		
250	ISL 7.78 D	7.76	34.038 D	26.558	151.5	0.613	1.96	D 85.2 D	29.3	41.7	2.27	30.9	0.02	0.00		252		
270	7.49	7.46	34.043	26.604	147.3	0.644	1.87	81.4	27.7	46.0	2.40	32.5	0.00	0.00		272 05		
300	ISL 7.49 D	7.46	34.131 D	26.673	141.3	0.687	1.37	D 59.5 D	20.3	51.0	2.59	34.3	0.02	0.00		302		
320	7.23																	

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	S103*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db		
33 28.9 N	122 31.9 W	24/07/2016	1757	UTC	3995 m	350 31 kn	350 07 08	2	1019.0 mb	17.5	16.5 C	24 m	8/8	ST	064			
0	16.92	16.92	32.892	23.916	398.1	0.000	5.63	245.7	101.4	1.3	0.27	0.0	0.02	0.00	0.12	0.03	0	
2 A	16.92	16.92	32.892	23.916	398.1	0.008	5.63	245.7	101.4	1.3	0.27	0.0	0.00	0.00	0.12	0.03	2 24	
8	16.92	16.92	32.891	23.915	398.4	0.032	5.63	0245.4	0101.4	1.6	0.27	0.1	0.00	0.00	0.11	0.03	8 22	
8	16.92	16.92	32.893	23.917	398.3	0.031											8 23	
10 ISL	16.93 D	16.92	32.892 D	23.916	398.4	0.036	5.63	0245.7	0101.6	1.6	0.27	0.1	0.02	0.00	0.11	0.03	10	
14 A	16.92	16.92	32.891	23.916	398.5	0.056	5.64	246.3	101.7	1.5	0.28	0.1	0.00	0.00	0.11	0.03	14 21	
18 A	16.92	16.92	32.892	23.918	398.5	0.072	5.66	247.0	102.0	1.3	0.28	0.0	0.00	0.00	0.11	0.03	18 20	
20 ISL	16.92 D	16.92	32.892 D	23.917	398.7	0.076	5.63	0245.5	0101.5	1.3	0.28	0.0	0.01	0.00	0.11	0.03	20	
27	16.91	16.91	32.892	23.920	398.7	0.108	5.65	246.9	101.9	1.2	0.26	0.0	0.00	0.00	0.11	0.03	27 19	
30 ISL	16.91 D	16.91	32.892 D	23.920	398.7	0.116	5.63	0245.7	0101.6	1.2	0.26	0.0	0.01	0.00	0.12	0.03	30	
34 A	16.90	16.90	32.901	23.930	398.0	0.136	5.65	246.9	101.9	1.2	0.26	0.0	0.00	0.00	0.12	0.03	34 18	
45	16.72	16.71	32.902	23.975	394.0	0.179	5.68	247.9	101.9	1.1	0.26	0.0	0.00	0.00	0.16	0.06	45 17	
50 ISL	15.92 D	15.91	32.951 D	24.196	373.1	0.196	5.76	0251.0	0101.8	1.1	0.28	0.0	0.01	0.00	0.23	0.09	50	
54	15.52	15.52	32.953	24.284	364.8	0.213	5.94	259.6	104.3	1.0	0.29	0.0	0.00	0.00	0.29	0.11	54 16	
63 A	14.84	14.83	32.865	24.365	357.3	0.246	6.05	264.4	104.7	1.6	0.31	0.0	0.00	0.00	0.32	0.14	64 15	
74 A	14.12	14.11	32.828	24.490	345.7	0.284	6.18	269.9	105.3	2.0	0.33	0.0	0.00	0.00	0.34	0.23	75 14	
75 ISL	13.79 D	13.78	32.869 D	24.590	336.1	0.285	6.01	0262.0	0101.7	2.1	0.34	0.2	0.06	0.00	0.35	0.23	76	
88	13.16	13.15	32.962	24.789	317.5	0.330	5.70	249.0	95.3	2.8	0.48	2.1	0.61	0.02	0.38	0.30	89 12	
88	13.16	13.15	32.963	24.789	317.4	0.330											89 13	
100	12.50	12.49	33.161 D	25.072	290.8	0.365	5.19	0226.1 D	085.6								101 11	
121	11.07	11.06	33.251	25.406	259.2	0.425	4.71	205.4	75.4	10.4	1.04	11.9	0.06	0.00	0.12	0.16	122 10	
125 ISL	10.86 D	10.84	33.285 D	25.471	253.1	0.433	4.71	0205.0 D	075.1	11.8	1.13	13.3	0.05	0.00	0.11	0.15	126	
140	9.86	9.85	33.433	25.757	226.0	0.471	4.04	176.2	63.0	17.2	1.47	18.6	0.04	0.00	0.05	0.08	141 09	
150 ISL	9.67 D	9.65	33.506 D	25.846	217.7	0.492	3.92	0170.7 D	061.0	19.2	1.56	20.0	0.03	0.00	0.03	0.06	151	
170	9.26	9.24	33.671	26.043	199.3	0.535	3.44	150.1	53.1	23.2	1.75	22.8	0.03	0.00	0.01	0.04	171 08	
200	9.27	9.25	33.996	26.296	176.1	0.591	2.17	94.7	33.5	30.5	2.11	26.9	0.00	0.00	0.01	0.05	202 07	
231	8.62	8.60	34.020	26.417	164.9	0.644	2.31	100.8	35.2	33.5	2.12	27.8	0.00	0.00			233 06	
250 ISL	8.08 D	8.05	33.999 D	26.483	158.7	0.674	2.51	0109.1 D	037.8	36.7	2.16	29.0	0.02	0.00			252	
271	7.73	7.70	34.018	26.550	152.6	0.707	2.27	99.2	34.0	40.3	2.21	30.4	0.00	0.00			273 05	
300 ISL	7.45 D	7.42	34.050 D	26.617	146.7	0.751	2.03	088.1 D	030.1	45.5	2.38	32.3	0.02	0.00			302	
321	7.30	7.27	34.065	26.649	143.9	0.781	1.60	23.6	49.3	2.51	33.7	0.00	0.00			324 04		
380	6.52	6.48	34.109	26.791	130.8	0.862	1.13	49.4	16.4	60.0	2.74	36.7	0.00	0.00			383 03	
400 ISL	6.25 D	6.22	34.084 D	26.806	129.4	0.890	1.10	47.9	15.9	63.3	2.81	37.5	0.02	0.00			403	
441	5.99	5.95	34.142	26.885	122.3	0.939	0.71	30.9	10.2	70.2	2.95	39.1	0.00	0.00			445 02	
500 ISL	5.49 D	5.45	34.168 D	26.968	114.7	1.012	0.57	024.7 D	8.1	78.5	3.09	40.8	0.01	0.00			504	
515	5.48	5.43	34.190	26.988	113.0	1.025	0.48	20.9	6.8	80.7	3.12	41.2	0.00	0.00			519 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 02;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	S103*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db		
33 9.3 N	123 12.9 W	25/07/2016	0201	UTC	4194 m	340 31 kn	340 08 07	2	1019.6 mb	17.0	11.0 C	8/8	ST	065				
0	17.08	17.08	32.948	23.921	397.5	0.000	5.62	245.6	101.7	1.5	0.27	0.1	0.02	0.00	0.12	0.03	0	
2	17.08	17.08	32.948	23.922	397.6	0.008	5.62	245.6	101.7	1.5	0.27	0.1	0.00	0.00	0.12	0.03	2 20	
10 ISL	17.09 D	17.09	32.948 D	23.921	398.0	0.036	5.60	0244.4	0101.4	1.1	0.26	0.0	0.02	0.00	0.11	0.03	10	
11	17.09	17.09	32.948	23.921	398.0	0.044	5.64	246.1	102.0	1.1	0.26	0.0	0.00	0.00	0.11	0.03	11 19	
20 ISL	17.09 D	17.09	32.948 D	23.921	398.3	0.076	5.60	0244.1	0101.3	1.0	0.26	0.0	0.01	0.00	0.11	0.03	20	
26	17.09	17.08	32.962	23.933	397.4	0.104	5.63	245.7	101.8	1.0	0.26	0.0	0.00	0.00	0.11	0.03	26 18	
30 ISL	17.09 D	17.08	32.947 D	23.921	398.7	0.116	5.60	0244.1	0101.3	0.9	0.26	0.0	0.01	0.00	0.11	0.03	30	
41	17.08	17.07	32.945	23.924	398.8	0.163	5.63	246.0	101.9	0.9	0.27	0.0	0.00	0.00	0.11	0.03	41 17	
50	15.88	15.87	32.903	24.166	375.9	0.198	5.88	256.8	103.8	0.9	0.27	0.0	0.00	0.00	0.20	0.07	50 16	
63	14.56	14.55	32.960	24.499	344.5	0.245	6.02	262.9	103.6	1.1	0.30	0.0	0.00	0.00	0.29	0.12	64 15	
75 ISL	14.08 D	14.07	33.053 D	24.671	328.4	0.283	5.84	0254.6	099.6	1.7	0.37	0.3	0.10	0.00	0.45	0.30	76	
76	13.74	13.73	33.058	24.746	321.3	0.289	5.85	255.3	99.0	1.8	0.38	0.3	0.11	0.18	0.46	0.31	77 14	
88	12.42	12.41	33.153	25.081	289.6	0.325	5.23	228.5	86.2	5.4	0.73	5.9	0.39	0.00	0.25	0.21	89 13	
100	11.20	11.19	33.234	25.369	262.2	0.358	4.70	205.4	75.6	10.0	1.05	11.6	0.04	0.00	0.12	0.18	101 12	
112	10.61	10.59	33.302	25.528	247.3	0.389	4.48	195.4	71.0	11.9	1.19	14.0	0.03	0.00	0.11	0.16	113 11	
125	10.11	10.09	33.380	25.674	336.6	0.420	4.31	188.0	67.6	14.5	1.34	16.5	0.03	0.00	0.07	0.09	126 10	
140	9.62	9.60	33.503	25.852</td														

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA					ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	17.69	17.69	32.975	23.797	409.4	0.000		5.53	241.7	101.3	1.6	0.30	0.0	0.01	0.03	0.08	0.02	0
3	17.69	17.69	32.975	23.797	409.5	0.012		5.53	241.7	101.3	1.6	0.30	0.0	0.00	0.03	0.08	0.02	3 21
10 ISL	17.69	17.69	32.975 D	23.797	409.8	0.035		5.51	240.4	100.9	1.6	0.26	0.0	0.00	0.08	0.02	10	
11	17.67	17.67	32.973	23.801	409.5	0.045		5.54	242.0	101.4	1.6	0.25	0.0	0.00	0.07	0.02	11 19	
11	17.67	17.67	32.975	23.803	409.3	0.044											11 20	
20 ISL	17.69	17.69	32.973 D	23.798	410.1	0.076		5.51	240.3	100.9	1.6	0.26	0.0	0.00	0.00	0.08	0.02	20
26	17.70	17.69	32.975	23.798	410.3	0.107		5.54	241.9	101.4	1.6	0.26	0.0	0.00	0.00	0.08	0.02	26 18
30 ISL	17.70	17.69	32.974 D	23.797	410.5	0.118		5.51	240.5	101.0	1.6	0.26	0.0	0.00	0.08	0.02	30	
40	17.69	17.69	32.980	23.804	410.3	0.164		5.55	242.4	101.6	1.6	0.26	0.0	0.00	0.08	0.02	40 17	
50 ISL	17.60	17.59	32.959 D	23.810	410.0	0.201		5.53	241.1	101.0	1.5	0.27	0.0	0.00	0.08	0.02	50	
51	17.57	17.56	32.962	23.821	409.0	0.209		5.58	243.6	101.9	1.5	0.27	0.0	0.00	0.02	0.08	0.02	51 16
62	16.81	16.80	32.960	23.999	392.4	0.253		5.69	248.5	102.4	1.6	0.27	0.0	0.00	0.12	0.04	62 15	
75	13.73	13.72	33.062	24.749	320.9	0.300		6.04	263.8	102.2	3.0	0.38	0.0	0.00	0.28	0.16	76 14	
86	13.41	13.40	33.085	24.832	313.3	0.335		5.92	258.6	99.6	3.1	0.44	0.5	0.03	0.53	0.30	87 13	
100 ISL	12.04	12.03	33.217 D	25.202	278.3	0.372		4.93	214.9	80.7	7.5	0.88	8.3	0.09	0.05	0.50	0.33	101
101	12.02	12.01	33.223	25.211	277.5	0.379		4.96	216.4	81.0	7.8	0.91	8.8	0.09	0.05	0.50	0.34	102 12
113	11.14	11.12	33.285	25.421	257.6	0.411		4.55	198.8	73.1	11.2	1.16	13.1	0.03	0.00	0.20	0.21	114 11
125	10.28	10.26	33.367	25.635	237.3	0.441		4.26	186.1	67.2	14.6	1.33	16.5	0.00	0.09	0.10	0.26	10 10
140	9.70	9.68	33.450	25.798	222.1	0.475		4.29	187.2	66.7	16.0	1.37	17.4	0.00	0.04	0.06	141 09	
150 ISL	9.50	9.48	33.568 D	25.923	210.4	0.493		4.49	195.5	69.6	18.2	1.44	18.7	0.01	0.00	0.03	0.05	151
172	8.98	8.96	33.756	26.154	188.8	0.541		3.81	166.1	58.4	22.9	1.60	21.7	0.00	0.00	0.03	0.03	173 08
200 ISL	8.65	8.63	33.882 D	26.304	175.0	0.589		3.44	149.8	52.5	27.1	1.73	23.9	0.01	0.00	0.01	0.03	202
202	8.63	8.61	33.881	26.306	174.8	0.595		3.46	151.2	52.8	27.4	1.74	24.1	0.00	0.00	0.01	0.03	204 07
230	8.21	8.18	33.954	26.428	163.6	0.643		3.05	132.9	46.0	32.9	1.91	26.6	0.00	0.00			232 06
250 ISL	8.01	D 7.98	33.983 D	26.481	158.9	0.673		2.85	124.0	42.8	36.1	2.02	28.0	0.01	0.00			252
270	7.74	7.71	33.997	26.533	154.2	0.706		2.59	112.8	38.6	39.3	2.12	29.4	0.00	0.00			272 05
300 ISL	7.39	D 7.36	34.019 D	26.601	148.1	0.750		2.19	95.4	32.5	44.5	2.30	31.6	0.01	0.00			302
321	7.18	7.15	34.033	26.642	144.5	0.782		1.88	82.0	27.7	48.2	2.42	33.1	0.00	0.00			324 04
382	6.38	6.34	34.074	26.781	131.6	0.867		1.23	53.8	17.9	60.8	2.70	37.0	0.00	0.00			385 03
400 ISL	6.21	D 6.18	34.090 D	26.816	128.4	0.889		1.07	46.5	15.4	63.3	2.77	37.6	0.01	0.00			403
443	6.09	6.05	34.150	26.879	123.0	0.944		0.70	30.7	10.1	69.3	2.93	39.1	0.00	0.00			447 02
500 ISL	5.76	D 5.71	34.196 D	26.959	115.9	1.012		0.48	D 20.8	6.8	76.1	3.04	40.3	0.01	0.00			504
516	5.74	5.69	34.217	26.978	114.3	1.030		0.42	18.3	6.0	78.0	3.07	40.6	0.00	0.00			520 01

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 81.7 43.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA					ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	19.44	19.44	33.591	23.834	405.9	0.000		6.23	272.0	118.3	0.4	0.14	0.0	0.02	0.00	1.46	0.26	0
1	19.44	19.44	33.591	23.834	405.9	0.004		6.23	272.0	118.3	0.4	0.14	0.0	0.00	0.00	1.46	0.26	1 05
6	18.27	18.27	33.511	24.154	375.6	0.024		6.27	273.9	116.6	0.7	0.13	0.0	0.00	0.00	1.53	0.27	6 04
10 ISL	15.83	15.83	33.470	24.610	332.2	0.038		6.38	278.6	113.0	3.4	0.31	0.0	0.03	0.00	1.36	0.43	10 03
20 ISL	13.96	D 13.96	33.468 D	25.013	294.2	0.067		5.11	222.4	87.0	7.2	0.68	3.7	0.31	0.00	2.30	0.77	20
21	13.90	13.89	33.460	25.021	293.4	0.072		5.12	223.5	87.1	7.5	0.72	4.1	0.34	0.25	2.40	0.80	21 02
30	12.84	12.83	33.460	25.234	273.3	0.098		4.45	194.3	74.1	9.8	1.04	9.5	0.58	0.13	1.10	0.53	30 01

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA					ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0 B	19.14	19.14	33.601	23.919	397.8	0.000		6.03	263.2	113.9	0.2	0.12	0.0	0.03	0.03	1.27	0.28	0
1 A	19.14	19.14	33.601	23.919	397.8	0.004		6.03	263.2	113.9	0.2	0.12	0.0	0.03	0.03	1.27	0.28	1 24
5 A	19.09	19.09	33.602	23.933	396.7	0.020		6.04	263.8	114.1	0.1	0.11	0.0	0.00	0.00	1.23	0.28	5 23
6 A	18.99	18.99	33.599	23.955	394.5	0.024		6.09	266.0	114.8	0.1	0.11	0.0	0.00	0.00	0.94	0.55	6 22
10 ISL	15.98	D 15.97	33.479 D	24.585	334.6	0.037		6.15	267.9	109.2	1.8	0.32	0.3	0.04	0.00	1.78	0.70	10
12 A	15.07	15.07	33.511	24.810	313.2	0.045		5.97	260.8	104.2	2.7	0.43	0.4	0.05	0.07	2.20	0.77	12 21
20 ISL	13.51	D 13.50	33.485 D															

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 39.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	19.08	19.08	33.558	23.899	399.7	0.000	6.12	267.3	115.5	1.9	0.19	0.0	0.05	0.08	2.27	0.59	0	
2	19.08	19.08	33.558	23.899	399.7	0.008	6.12	267.3	115.5	1.9	0.19	0.0	0.05	0.08	2.27	0.59	2 04	
5	19.04	19.04	33.558	23.911	398.8	0.020	6.12	267.2	115.4	1.9	0.17	0.0	0.04	0.00	2.34	0.65	5 03	
10	17.45	17.45	33.530	24.281	363.6	0.039	6.14	268.1	112.3	3.1	0.28	0.0	0.05	0.02	2.67	0.85	10 01	
10	17.45	17.45	33.513	24.268	364.8	0.041											10 02	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	19.98	19.98	33.592	23.694	419.2	0.000	5.85	255.4	112.2	0.8	0.16	0.0	0.01	0.08	0.61	0.12	0	
2	19.98	19.98	33.592	23.694	419.3	0.008	5.85	255.4	112.2	0.8	0.16	0.0	0.00	0.08	0.61	0.12	2 07	
5	19.97	19.97	33.569	23.681	420.7	0.021	5.86	256.0	112.5	0.8	0.16	0.0	0.00	0.00	0.64	0.12	5 06	
10	19.25	19.25	33.548	23.850	404.8	0.038	5.96	260.2	112.8	1.1	0.18	0.0	0.00	0.00	0.53	0.13	10 04	
10	19.25	19.25	33.573	23.869	402.9	0.043											10 05	
16	12.54	12.53	33.460	25.293	267.4	0.062	4.32	D188.0	D 71.5	7.5	0.86	7.2	0.27	0.00	1.70	0.59	16 03	
20	12.38	12.37	33.456	25.320	264.9	0.073	4.21	183.9	69.5	11.2	1.20	12.3	0.46	0.03	0.71	0.51	20 02	
25	12.32	12.32	33.463	D 25.336	263.5	0.082	4.16	181.6	68.5	11.5	1.23	12.7	0.45	0.03	0.69	0.52	25 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 42.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	19.14	19.14	33.583	23.905	399.1	0.000	5.83	254.4	110.1	1.5	0.19	0.0	0.02	0.00	1.78	0.40	0	
2	19.14	19.14	33.583	23.905	399.2	0.008	5.83	254.4	110.1	1.5	0.19	0.0	0.00	0.00	1.78	0.40	2 12	
10 ISL	19.13	D 19.13	33.580	D 23.905	399.5	0.036	5.80	D252.9	D 109.5	1.4	0.21	0.0	0.01	0.00	2.12	0.15	10	
11	18.84	18.84	33.582	23.980	392.4	0.044	5.86	255.9	110.1	1.4	0.21	0.0	0.00	0.00	2.16	0.12	11 10	
11	18.84	18.84	33.577	23.976	392.8	0.042											11 11	
20 ISL	17.31	D 17.30	33.510	D 24.301	362.1	0.074	5.94	D259.1	D 108.3	2.5	0.33	0.2	0.02	0.00	3.37	0.52	20	
21	16.86	16.86	33.519	24.413	351.4	0.081	5.97	260.8	107.9	2.7	0.34	0.3	0.00	0.17	3.51	0.56	21 09	
30	14.37	14.36	33.453	24.917	303.6	0.111	5.30	231.5	91.1	6.2	0.71	5.4	0.12	0.11	1.27	0.21	30 08	
40	12.19	12.18	33.444	25.347	262.9	0.139	4.12	179.7	67.6	10.8	1.19	13.9	0.26	0.00	0.71	0.41	40 07	
50	11.11	11.10	33.490	25.583	240.6	0.164	3.70	161.6	59.4	14.6	1.42	17.0	0.03	0.00	0.37	0.28	50 06	
60	10.67	10.66	33.579	25.731	226.8	0.188	3.23	141.1	51.4	18.1	1.62	20.1	0.03	0.00	0.10	0.19	60 05	
71	10.43	10.42	33.610	25.797	220.8	0.212	3.19	139.4	50.5	19.2	1.65	20.7	0.03	0.00	0.07	0.17	72 04	
75 ISL	10.41	D 10.40	33.614	D 25.802	220.3	0.219	3.20	D139.3	D 50.6	19.4	1.66	20.8	0.03	0.00	0.07	0.16	76	
86	10.19	10.18	33.639	25.862	214.9	0.245	3.21	140.0	50.5	20.0	1.67	21.1	0.00	0.00	0.06	0.15	87 03	
100 ISL	9.62	D 9.61	33.856	D 26.126	190.0	0.271	2.67	D116.1	D 41.6	25.7	1.91	24.4	0.01	0.00	0.02	0.11	101	
101	9.61	9.60	33.857	26.129	189.7	0.275	2.63	114.9	41.0	26.1	1.93	24.6	0.00	0.00	0.02	0.10	102 02	
121	9.54	9.53	33.891	26.168	186.5	0.313	2.56	111.8	39.8	27.0	1.96	25.0	0.00	0.00	0.01	0.09	122 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	18.22	18.22	33.558	24.114	379.1	0.000	5.89	257.2	109.3	2.1	0.27	0.0	0.02	0.00	0.80	0.19	0	
2	18.22	18.22	33.558	24.114	379.2	0.008	5.89	257.2	109.3	2.1	0.27	0.0	0.00	0.00	0.80	0.19	2 10	
10	15.61	15.61	33.495	24.680	325.6	0.036	5.98	261.2	105.5	3.5	0.41	1.0	0.06	0.00	1.75	0.50	10 08	
10	15.61	15.61	33.495	24.680	325.6	0.036											10 09	
20	13.71	13.71	33.513	25.100	285.9	0.066	5.02	219.1	85.1	7.6	0.82	7.4	0.17	0.00	1.25	1.10	20 07	
30	11.83	11.82	33.566	25.510	247.1	0.093	3.90	170.2	63.6	14.4	1.33	15.2	0.14	0.01	0.63	0.40	30 06	
40	11.20	11.20	33.580	25.636	235.4	0.117	3.58	156.1	57.6	16.3	1.47	17.6	0.12	0.00	0.38	0.36	40 05	
50	10.97	10.96	33.589	25.685	230.9	0.140	3.45	150.6	55.2	17.4	1.54	18.9	0.08	0.00	0.29	0.22	50 04	
60	10.56	10.55	33.625	25.786	221.5	0.163	3.30	144.3	52.5	18.9	1.61	19.9	0.07	0.00	0.20	0.21	60 03	
75	10.62	10.61	33.668	25.809	219.7	0.196	3.29	143.5	52.3	19.9	1.66	20.1	0.09	0.00	0.27	0.24	76 02	
86	10.54	10.53	33.684</															

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	
33 44.4 N	120 24.7 W	21/07/2016	1824	UTC	948 m	320 26 kn	320 05 08	1	1022.0 mb	17.0	15.2 C	09 m	7/8	ST	052			
0	16.28	16.28	33.562	24.578	335.0	0.000	5.46	238.4	97.6	5.5	0.58	3.8	0.10	1.09	2.40	0.22	0	
2 A	16.28	16.28	33.562	24.578	335.0	0.007	5.46	238.4	97.6	5.5	0.58	3.8	0.10	1.09	2.40	0.22	2 24	
5 A	16.28	16.28	33.563	24.581	334.9	0.017	5.46	238.4	97.6	5.5	0.64	3.8	0.10	1.24	2.25	0.43	5 23	
7 A	16.30	16.30	33.562	24.576	335.4	0.023	5.47	238.7	97.8	5.5	0.64	3.9	0.10	1.85	2.46	0.29	7 22	
10 ISL	16.26	D	16.26	33.563	D	24.584	334.8	0.031	5.42 D236.3	D 96.9	5.8	0.63	4.3	0.11	0.95	2.32	0.26	10
13 A	15.82	15.82	33.562	24.683	325.4	0.043	5.33	232.9	94.5	6.2	0.62	4.8	0.11	0.05	2.18	0.22	13 20	
13	15.82	15.82	33.562	24.683	325.4	0.044											13 21	
20 ISL	15.32	D	15.32	33.563	D	24.795	314.9	0.063	5.21 D227.1	D 91.4	7.2	0.69	6.1	0.13	0.00	1.75	0.18	20
25 A	15.17	15.17	33.566	24.831	311.7	0.082	5.09	222.4	89.1	7.9	0.74	7.0	0.14	0.00	1.44	0.16	25 19	
28 A	15.16	15.15	33.562	24.832	311.8	0.091	5.04	220.2	88.1	8.0	0.79	7.3	0.14	0.16	1.57	0.15	28 18	
30 ISL	15.12	D	15.12	33.569	D	24.845	310.5	0.095	4.96 D216.0	D 86.6	8.0	0.78	7.3	0.14	0.00	1.49	0.20	30
34	15.13	15.12	33.569	24.844	310.8	0.110	5.03	219.6	87.9	7.9	0.76	7.3	0.14	0.00	1.35	0.31	34 17	
41	11.15	11.15	33.692	25.732	226.2	0.128	3.30	143.9	53.0	18.5	1.54	18.6	0.31	0.09	0.88	0.30	41 16	
50	10.26	10.25	33.787	D	25.964	204.4	0.145	2.88	125.5	45.4	21.6	1.74	21.7	0.23	0.00	0.34	0.21	50 15
60	9.84	9.83	33.839	26.076	193.9	0.168	2.50	109.1	39.1	25.7	1.94	24.6	0.07	0.00	0.10	0.16	60 14	
70	9.65	9.64	33.909	26.161	186.0	0.187	2.35	102.7	36.7	27.8	2.00	25.5	0.05	0.00	0.04	0.10	71 13	
75 ISL	9.62	D	9.61	33.912	D	26.170	185.3	0.194	2.33 D101.4	D 36.3	28.3	2.02	25.7	0.05	0.00	0.04	0.09	76
86	9.32	9.31	33.984	D	26.274	175.6	0.214	2.20	96.2	34.1	29.4	2.07	26.2	0.05	0.00	0.03	0.08	87 12
100	9.28	9.27	33.991	26.287	174.6	0.240	2.18	94.9	33.7	30.9	2.10	26.9	0.04	0.00	0.03	0.06	101 11	
120	9.23	9.21	34.045	26.339	170.2	0.275	1.94	84.8	30.0	33.0	2.19	27.7	0.04	0.00	0.02	0.09	121 10	
125 ISL	9.21	D	9.20	34.078	D	26.367	167.6	0.281	1.86 D 81.0	D 28.8	33.5	2.21	27.9	0.04	0.00	0.02	0.10	126
140	9.09	9.07	34.103	26.406	164.2	0.308	1.72	75.1	26.5	35.1	2.27	28.5	0.04	0.00	0.02	0.11	141 09	
150 ISL	9.05	D	9.04	34.122	D	26.428	162.4	0.323	1.65 D 71.9	D 25.5	35.9	2.30	28.8	0.03	0.00	0.03	0.10	151
171	8.91	8.89	34.148	26.471	158.7	0.358	1.53	66.6	23.4	37.7	2.35	29.5	0.03	0.00	0.03	0.09	172 08	
200 ISL	8.70	D	8.68	34.183	D	26.532	153.5	0.403	1.32 D 57.4	D 20.2	40.6	2.44	30.4	0.03	0.00	0.03	0.11	202
202	8.67	8.65	34.181	26.536	153.1	0.407	1.32	57.7	20.2	40.8	2.45	30.5	0.03	0.00	0.03	0.11	204 07	
231	8.52	8.49	34.203	26.577	149.7	0.451	1.15	50.0	17.5	43.1	2.53	31.3	0.03	0.00			233 06	
250 ISL	8.31	D	8.28	34.217	D	26.620	146.0	0.478	1.06 D 45.9	D 16.0	45.2	2.58	31.9	0.02	0.00			252
270	8.19	8.17	34.221	26.642	144.2	0.508	0.95	41.7	14.4	47.5	2.63	32.6	0.00	0.00			272 05	
300 ISL	7.96	D	7.93	34.237	D	26.689	140.2	0.550	0.87 D 37.7	D 13.0	50.1	2.69	33.3	0.02	0.00			302
318	7.87	7.84	34.240	26.706	138.9	0.576	0.80	34.8	12.0	51.6	2.72	33.7	0.00	0.00			321 04	
379	7.30	7.26	34.253	26.799	130.8	0.658	0.65	28.3	9.6	58.5	2.83	35.4	0.00	0.00			382 03	
400 ISL	7.22	D	7.18	34.262	D	26.818	129.3	0.686	0.59 D 25.7	D 8.7	60.2	2.86	35.8	0.02	0.00			403
440	6.99	6.95	34.273	26.859	125.9	0.736	0.49	21.2	7.2	63.5	2.92	36.6	0.00	0.00			444 02	
500 ISL	6.65	D	6.60	34.288	D	26.918	120.9	0.812	0.42 D 18.2	D 6.1	68.8	3.01	37.7	0.02	0.00			504
516	6.56	6.52	34.293	26.934	119.6	0.829	0.37	16.2	5.4	70.2	3.03	37.9	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			
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	
33 34.7 N	120 45.1 W	21/07/2016	1342	UTC	1327 m	330 35 kn	330 05 05	1	1022.0 mb	15.8	15.0 C	09 m	1/8	ST	051			
0	16.81	16.81	33.593	24.480	344.2	0.000	5.64	246.2	101.8	3.6	0.40	1.6	0.08	0.00	1.86	0.34	0	
2	16.81	16.81	33.593	24.481	344.3	0.007	5.64	246.2	101.8	3.6	0.40	1.6	0.08	0.00	1.86	0.34	2 21	
10	16.80	16.80	33.593	24.483	344.4	0.034	5.64	246.2	101.8	3.6	0.42	1.6	0.08	0.00	1.70	0.30	10 19	
10	16.80	16.80	33.595	24.484	344.3	0.034											10 20	
20	16.71	16.71	33.597	24.508	342.3	0.069	5.60	244.4	100.9	3.8	0.41	1.9	0.09	0.00	1.77	0.34	20 18	
30	14.96	14.95	33.570	24.882	307.0	0.101	5.11	232.2	89.0	7.1	0.74	6.4	0.17	0.24	1.01	0.31	30 17	
40	12.18	12.18	33.630	25.493	249.0	0.129	3.84	167.7	63.2	14.7	1.35	15.0	0.29	0.58	0.88	0.25	40 16	
50	11.22	11.21	33.661	25.697	229.8	0.153	3.29	143.8	53.1	18.3	1.60	18.9	0.34	0.29	0.33	0.21	50 15	
61	10.80	10.79	33.689	25.794	220.8	0.178	3.17	138.5	50.7	19.2	1.64	19.5	0.33	0.26	0.25	0.18	61 14	
70	10.22	10.22	33.765	25.953	205.9	0.197	2.74	119.5	43.2	23.0	1.85	23.1	0.16	0.00	0.08	0.16	71 13	
75 ISL	10.02	D	10.01	33.802	D	26.016	200.0	0.205	2.68 D116.6	D 42.1	23.8	1.88	23.6	0.12	0.00	0.07	0.15	76
85	9.81	9.80	33.836	26.079	194.2	0.227	2.55	111.1	39.8	25.4	1.94	24.6	0.06	0.00	0.04	0.12	86 12	
100	9.60	9.59	33.928	26.186	184.4	0.255	2.26	98.6	35.2	28.3	2.06	25.9	0.05	0.00	0.03	0.09	101 11	
120	9.37	9.36	34.007	26.286	175.3	0.291	2.08	90.6	32.2	30.8	2.15	26.9	0.04	0.00	0.02	0.09	121 10	
125 ISL	9.32	D	9.31	34.032	D	26.313	172.8	0.298	2.07 D 89.9	D 32.0	31.6	2.17	27.3	0.04	0.00	0.02	0.09	126
141	8.99	8.98	34.063	26.391	165.6	0.327	1.88	82.2	29.0	34.3	2.24	28.4	0.03	0.00	0.02	0.10	142 09	
150 ISL	8.96	D	8.94	34.084	D	26.412	163.8	0.340	1.82 D 79.0	D 27.9	35.1	2.24	28.7	0.04	0.00	0.04	0.11	151
171	8.36	8.34	34.040	26.471	158.5	0.376	2.11	91.9	31.9	37.0	2.23	29.4	0.05	0.00	0.07	0.14	172 08	
200 ISL																		

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	15.82	15.82	33.278	24.466	345.7	0.000	5.84	255.1	103.3	1.2	0.32	0.2	0.04	0.00	0.49	0.17	0
2	15.82	15.82	33.278	24.466	345.7	0.007	5.84	255.1	103.3	1.2	0.32	0.2	0.04	0.00	0.49	0.17	2 21
2	15.82	15.82	33.279	D 24.466	345.7	0.004											2 22
10	15.80	15.80	33.281	24.472	345.4	0.035	5.84	255.1	103.3	1.1	0.31	0.2	0.03	0.00	0.49	0.15	10 19
10	15.80	15.80	33.282	24.472	345.4	0.035											10 20
20	ISL 15.58	D 15.58	33.296	D 24.533	340.0	0.066	5.85	D 254.8	D 102.9	1.1	0.32	0.2	0.03	0.00	0.55	0.20	20
21	15.57	15.57	33.295	24.535	339.8	0.072	5.88	256.8	103.5	1.1	0.32	0.2	0.04	0.00	0.55	0.20	21 18
30	15.00	15.00	33.310	24.671	327.1	0.102	5.87	256.2	102.1	1.3	0.37	0.7	0.07	0.16	0.65	0.28	30 17
41	13.62	13.61	33.317	24.968	299.0	0.137	5.57	243.0	94.1	2.8	0.56	2.8	0.24	1.10	0.63	0.26	41 16
50	12.60	12.59	33.346	25.193	277.8	0.163	4.85	211.9	80.4	7.7	0.98	8.8	0.66	0.89	0.19	0.14	50 15
60	11.91	11.91	33.431	25.390	259.3	0.190	4.41	192.4	72.0	11.1	1.22	13.3	0.74	0.00	0.10	0.12	60 14
70	10.73	10.72	33.469	25.634	236.2	0.214	3.95	172.4	62.9	15.4	1.44	17.6	0.12	0.00	0.07	0.13	71 13
75	ISL 10.39	D 10.38	33.479	D 25.702	229.8	0.224	3.99	D 173.6	D 63.0	16.4	1.48	18.3	0.10	0.00	0.06	0.11	76
86	10.07	10.06	33.538	25.803	220.4	0.251	3.62	158.2	56.9	18.6	1.58	20.1	0.05	0.00	0.04	0.06	87 12
100	ISL 9.47	D 9.46	33.642	D 25.984	203.5	0.279	3.47	D 151.1	D 53.8	21.2	1.67	21.7	0.03	0.00	0.03	0.06	101
101	9.47	9.45	33.634	25.978	204.1	0.282	3.51	153.1	54.4	21.4	1.68	21.8	0.03	0.00	0.03	0.06	102 11
120	9.32	9.30	33.767	26.107	192.2	0.320	3.11	135.5	48.0	24.5	1.81	23.8	0.00	0.00	0.02	0.06	121 10
125	ISL 9.11	D 9.09	33.768	D 26.141	189.0	0.328	3.33	D 144.8	D 51.2	25.1	1.82	24.0	0.02	0.00	0.02	0.06	126
141	8.92	8.90	33.846	26.232	180.7	0.359	3.05	133.1	46.7	26.9	1.85	24.9	0.03	0.00	0.01	0.07	142 09
150	ISL 8.81	D 8.79	33.891	D 26.285	175.8	0.374	2.92	D 127.2	D 44.7	28.7	1.92	25.9	0.02	0.00	0.01	0.07	151
170	8.51	8.49	33.986	26.406	164.6	0.409	2.49	108.6	37.8	32.9	2.09	27.9	0.00	0.00	0.01	0.07	171 08
200	ISL 8.21	D 8.19	34.034	D 26.490	157.1	0.457	2.16	D 94.1	D 32.7	37.3	2.22	29.7	0.01	0.00	0.01	0.05	202
201	8.16	8.14	34.031	26.496	156.6	0.459	2.15	93.7	32.4	37.5	2.22	29.8	0.00	0.00	0.01	0.05	203 07
230	7.89	7.87	34.073	26.569	150.2	0.503	1.78	77.5	26.6	42.3	2.36	31.6	0.00	0.00			232 06
250	ISL 7.81	D 7.79	34.085	D 26.591	148.4	0.533	1.69	D 73.3	D 25.2	45.1	2.46	32.6	0.01	0.00			252
270	7.57	7.54	34.116	26.651	143.0	0.562	1.35	58.9	20.1	47.9	2.55	33.5	0.00	0.00			272 05
300	ISL 7.32	D 7.30	34.137	D 26.702	138.5	0.605	1.18	D 51.2	D 17.4	52.5	2.66	34.9	0.01	0.00			302
322	7.05	7.02	34.156	26.756	133.6	0.634	0.95	41.6	14.0	56.0	2.74	35.9	0.00	0.00			325 04
380	6.57	6.54	34.181	26.841	126.1	0.710	0.68	29.8	9.9	63.6	2.89	37.8	0.00	0.00			383 03
400	ISL 6.45	D 6.41	34.204	D 26.876	123.1	0.737	0.60	D 26.3	D 8.8	66.1	2.94	38.2	0.01	0.00			403
440	6.24	6.20	34.243	26.934	117.9	0.783	0.43	18.5	6.1	71.1	3.03	39.1	0.00	0.00			444 02
500	ISL 5.87	D 5.83	34.270	D 27.003	112.0	0.855	0.31	D 13.6	D 4.5	77.1	3.11	40.2	0.01	0.00			504
516	5.84	5.80	34.279	27.014	111.1	0.870	0.29	12.8	4.2	78.7	3.13	40.5	0.00	0.00			520 01

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	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	16.07	16.07	33.132	24.297	361.7	0.000	5.85	255.3	103.8	1.0	0.31	0.2	0.04	0.00	0.43	0.10	0
2	16.07	16.07	33.132	24.297	361.8	0.007	5.85	255.3	103.8	1.0	0.31	0.2	0.04	0.00	0.43	0.10	2 21
10	ISL 16.06	D 16.05	33.131	D 24.299	361.9	0.033	5.84	D 254.5	D 103.6	1.2	0.32	0.3	0.04	0.00	0.42	0.10	10
11	16.04	16.04	33.127	24.300	361.8	0.040	5.87	256.3	104.1	1.2	0.32	0.4	0.04	0.02	0.41	0.10	11 19
11	16.04	16.04	33.132	24.304	361.5	0.039											11 20
20	15.86	15.86	33.194	24.392	353.3	0.072	5.86	255.9	103.7	1.2	0.33	0.2	0.04	0.00	0.56	0.12	20 18
30	ISL 14.39	D 14.39	33.102	D 24.641	329.9	0.103	5.95	D 259.3	D 102.1	1.4	0.40	1.2	0.16	0.00	0.67	0.24	30
31	14.37	14.36	33.103	24.647	329.4	0.109	5.97	260.7	102.4	1.5	0.41	1.3	0.17	0.12	0.68	0.25	31 17
39	13.93	13.93	33.134	24.762	318.7	0.135	5.89	257.4	100.2	1.9	0.49	2.5	0.25	0.31	0.81	0.33	39 16
50	ISL 13.65	D 13.64	33.179	D 24.855	310.1	0.168	5.78	D 251.8	D 97.7	2.2	0.56	3.2	0.29	0.63	0.68	0.30	50
51	13.68	13.68	33.180	24.850	310.6	0.173	5.81	253.8	98.4	2.2	0.57	3.2	0.29	0.66	0.66	0.30	51 15
60	14.01	14.01	33.529	25.052	291.7	0.200	5.62	245.2	95.9	2.6	0.64	3.5	0.17	2.03	0.23	0.20	60 14
70	12.39	12.38	33.338	25.229	274.9	0.228	5.25	229.3	86.5	5.2	0.82	6.5	0.36	1.16	0.20	0.16	71 13
75	ISL 12.00	D 12.05	33.288	D 25.253	272.7	0.240	5.09	D 221.6	D 83.2	6.7	0.89	8.1	0.32	0.00	0.19	0.15	76
85	11.24	11.23	33.276	25.394	259.5	0.268	4.76	207.9	76.5	9.7	1.02	11.2	0.24	0.00	0.17	0.14	86 12
100	ISL 10.14	D 10.13	33.375	D 25.664	234.0	0.305	4.37	D 190.1	D 68.6	13.9	1.27	15.3	0.09	0.00	0.12	0.10	101
101	10.02	10.01	33.396	25.701	230.4	0.307	4.36	190.5	68.4	14.2	1.29	15.6	0.08	0.00	0.11	0.09	102 11
122	9.24	9.22	33.636	D 26.017	200.8	0.353	3.55	154.8	54.7	22.8	2.23	22.3	0.03	0.00	0.02	0.06	123 10
125	ISL 9.20	D 9.19	33.652	D 26.036	199.0	0.359	3.49	D 152.0	D 53.8	23.5	1.73	22.7	0.03	0.00	0.02	0.06	126
141	8.83	8.82	33.762	26.180	185.6	0.390	3.10	135.1	47.3	27.3	1.86	24.9	0.03	0.00	0.01	0.06	142 09
150	ISL 8.74	D 8.73	33.820	D 26.240	180.1	0.406	3.01	D 130.9	D 45.9	28.2	1.87	25.1	0.03	0.00	0.01	0.05	151
170	8.52	8.50	33.918	26.351	169.8	0.442	3.09	135.0	47.0	30.0	1.88	25.5	0.03	0.00	0.01	0.	

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
32 34.7 N	122 49.0 W	20/07/2016	1632	UTC	4239 m	350 23 kn	360 05	06	1	1026.0 mb	18.2 C	16.8 C	22 m	1/8	CU	048		
0	16.61	16.61	32.891	23.989	391.1	0.000	5.66	247.5	101.5	0.8	0.26	0.0	0.02	0.00	0.12	0.03	0	
2 A	16.61	16.61	32.891	23.989	391.2	0.008	5.66	247.5	101.5	0.8	0.26	0.0	0.00	0.00	0.12	0.03	2 24	
10 ISL	16.60	16.60	32.889	23.989	391.5	0.036	5.66	0246.9	0101.4	0.9	0.25	0.0	0.02	0.00	0.11	0.03	10	
13	16.60	16.60	32.889	23.989	391.6	0.052											13 22	
13	16.60	16.60	32.888	23.989	391.6	0.052											13 22	
14 A	16.59	16.59	32.895	23.996	391.0	0.055	5.68	248.0	101.7	0.9	0.25	0.0	0.00	0.00	0.11	0.03	14 21	
17 A	16.59	16.58	32.889	23.993	391.3	0.066	5.69	248.4	101.9	1.0	0.25	0.0	0.00	0.00	0.12	0.03	17 20	
20 ISL	16.57	16.57	32.890	23.997	391.1	0.075	5.66	0247.0	0101.4	0.9	0.25	0.0	0.02	0.00	0.12	0.03	20	
24	16.54	16.53	32.896	24.010	390.0	0.094	5.69	248.7	101.9	0.8	0.26	0.0	0.00	0.00	0.13	0.04	24 19	
30 ISL	16.13	D 16.12	32.955	D 24.149	376.9	0.114	5.74	0250.2	D 0101.9	0.7	0.27	0.0	0.02	0.00			30	
31	16.01	16.01	32.971	D 24.188	373.2	0.117	5.78	0251.8	D 0102.3								31 18	
40 A	15.70	15.70	33.011	24.288	363.9	0.154	5.86	255.9	103.2	0.5	0.29	0.0	0.00	0.00	0.43	0.15	40 17	
49	15.51	15.51	33.012	24.332	360.1	0.186	5.87	256.6	103.1	0.4	0.29	0.0	0.00	0.01	0.45	0.18	49 16	
50 ISL	15.51	D 15.50	33.021	D 24.339	359.4	0.187	5.86	0255.4	D 0102.8	0.5	0.29	0.0	0.02	0.02	0.46	0.19	50	
57 A	15.31	15.30	33.030	24.391	354.7	0.215	5.89	257.1	102.8	0.6	0.30	0.0	0.03	0.08	0.48	0.25	57 14	
57	15.31	15.30	33.028	24.389	354.9	0.214											57 15	
70 A	14.49	14.48	33.084	24.609	354.2	0.260	5.89	257.1	101.2	1.0	0.40	0.8	0.13	0.38	0.47	0.27	71 13	
75 ISL	14.41	D 14.40	33.116	D 24.652	330.3	0.274	5.83	0254.2	D 0100.1	1.8	0.44	1.4	0.20	0.31	0.39	0.25	76	
85	12.85	12.84	33.014	24.889	307.7	0.308	5.61	244.9	93.1	3.5	0.52	2.7	0.33	0.17	0.23	0.21	86 12	
100 ISL	12.12	D 12.11	33.116	D 25.108	287.2	0.351	5.13	0233.6	D 084.0	6.2	0.76	7.0	0.06	0.00	0.14	0.14	101	
101	12.13	12.12	33.117	D 25.108	287.3	0.354	5.24	229.0	85.8	6.4	0.78	7.3	0.05	0.00	0.14	0.14	102 11	
120	10.50	10.49	33.300	25.545	245.9	0.407	4.55	198.7	72.0	12.2	1.16	13.8	0.04	0.00	0.06	0.08	121 10	
125 ISL	10.35	D 10.33	33.344	D 25.606	240.1	0.417	4.57	0198.8	D 72.0	13.2	1.22	14.7	0.04	0.00	0.05	0.07	126	
141	9.69	9.67	33.471	25.816	220.4	0.456	4.20	183.5	65.4	16.7	1.40	17.7	0.04	0.00	0.03	0.05	142 09	
150 ISL	9.47	D 9.46	33.568	D 25.926	210.0	0.474	4.14	0180.2	D 64.2	19.2	1.51	19.4	0.03	0.00	0.02	0.05	151	
170	8.98	8.96	33.750	26.148	189.3	0.515	3.34	145.6	51.2	24.8	1.77	23.3	0.03	0.00	0.00	0.07	171 08	
200 ISL	8.94	D 8.94	33.977	D 26.333	172.4	0.568	2.55	0110.8	D 39.1	30.3	2.01	26.0	0.02	0.00	0.01	0.05	202	
201	8.93	8.91	33.975	26.334	172.3	0.571	2.53	110.3	38.8	30.4	2.02	26.1	0.00	0.00	0.01	0.05	203 07	
230	8.94	8.92	34.097	26.428	164.0	0.620	1.77	77.1	27.2	35.4	2.27	28.4	0.00	0.00			232 06	
250 ISL	8.91	D 8.88	34.143	D 26.470	160.5	0.652	1.60	69.6	D 24.6	37.5	2.33	29.2	0.02	0.00			252	
270	8.57	8.54	34.132	26.515	156.5	0.685	1.60	69.8	24.4	39.7	2.39	30.0	0.00	0.00			272 05	
300 ISL	8.19	D 8.16	34.184	D 26.614	147.5	0.730	1.17	50.8	D 17.6	45.3	2.53	31.8	0.02	0.00			302	
320	7.91	7.88	34.194	26.664	142.9	0.760	1.02	44.3	15.2	49.0	2.63	32.9	0.00	0.00			323 04	
381	7.18	7.14	34.192	26.768	133.6	0.844	0.82	35.9	12.1	56.4	2.77	35.2	0.00	0.00			384 03	
400 ISL	6.91	D 6.87	34.192	D 26.805	130.2	0.869	0.74	32.1	D 10.8	59.1	2.82	35.8	0.02	0.00			403	
441	6.67	6.63	34.224	26.864	125.1	0.921	0.56	24.3	8.1	64.9	2.93	37.3	0.00	0.00			445 02	
500 ISL	5.97	D 5.93	34.213	D 26.945	117.5	0.994	0.48	21.0	D 6.9	73.4	3.04	39.2	0.02	0.00			504	
515	5.86	5.81	34.212	26.959	116.3	1.010	0.46	20.2	6.6	75.6	3.07	39.7	0.00	0.00			519 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 02;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
32 14.7 N	123 29.4 W	20/07/2016	0918	UTC	4181 m	350 28 kn											047	
0	17.60	17.60	32.965	23.812	407.9	0.000	5.54	241.9	101.3	1.4	0.31	0.0	0.00	0.04	0.08	0.02	0	
2	17.60	17.60	32.965	23.813	408.0	0.008	5.54	241.9	101.3	1.4	0.31	0.0	0.00	0.04	0.08	0.02	2 21	
10	17.59	17.59	32.973	23.821	407.5	0.041	5.55	242.3	101.4	1.4	0.26	0.0	0.00	0.00	0.08	0.02	10 19	
10	17.59	17.59	32.966	23.816	408.0	0.041											10 20	
20 ISL	17.60	D 17.59	32.965	D 23.814	408.5	0.078	5.54	0241.5	D 101.2	1.3	0.27	0.0	0.00	0.00	0.08	0.02	20	
25	17.59	17.59	32.967	23.816	408.5	0.102	5.55	242.3	101.4	1.3	0.27	0.0	0.00	0.00	0.08	0.02	25 18	
30 ISL	17.59	D 17.59	32.966	D 23.816	408.7	0.119	5.54	0241.7	D 101.3	1.3	0.27	0.0	0.00	0.00	0.08	0.02	30	
40	17.56	17.55	32.974	23.832	407.6	0.163	5.55	242.5	101.4	1.3	0.26	0.0	0.00	0.00	0.09	0.03	40 17	
50	17.18	17.17	33.005	23.946	397.0	0.204	5.63	245.9	102.1	1.3	0.24	0.0	0.00	0.00	0.13	0.03	50 16	
62	15.40	15.39	33.051	24.387	355.2	0.249	5.91	258.1	103.5	1.5	0.23	0.0	0.00	0.00	0.14	0.04	62 15	
75	14.90	14.89	33.069	24.510	343.9	0.294	5.86	255.7	101.5	1.6	0.24	0.0	0.00	0.00	0.20	0.07	76 14	
87	14.88	14.86	33.229	24.640	331.9	0.335	5.73	250.2	99.4	2.0	0.24	0.0	0.00	0.00	0.23	0.14	88 13	
100	14.13	14.11	33.275	24.835	313.7	0.377	5.58	243.7	95.4	2.6	0.30	0.1	0.06	0.01	0.28	0.30	101 12	
112	12.75	12.74	33.311	D 25.140	284.7	0.411	5.26	229.5	87.3	4.9	0.58	4.5	0.08	0.00	0.21	0.24	113 11	
125	11.43	11.43	33.303	25.379	262.0	0.448	4.92	214.9	79.5	8.4	0.89	9.5	0.04	0.00	0.16	0.17	126 10	
140	10.19	10.17	33.391	25.670	234.4	0.485	4.70	205.0	73.8	12.2	1.13	13.6	0.00	0.00	0.09	0.09	141 09	
150 ISL	9.76	D 9.74	33.483	D 25.813	220.9	0.507	4.59	0199.9	D 71.6	15.0	1.28	15.9	0.01	0.00	0.07	0.07	151	

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
31	54.7 N	124 10.1 W	20/07/2016	0257	UTC	3999 m	360 14 kn	330 04 07	1	1027.0 mb	18.0 C	11.9 C	4/8	CS	046			
0	18.44	18.44	33.222	23.805	408.7	0.000	5.46	238.2	101.5	1.7	0.25	0.0	0.00	0.00	0.07	0.02	0	
2	18.44	18.44	33.222	23.805	408.7	0.008	5.46	238.2	101.5	1.7	0.25	0.0	0.00	0.00	0.07	0.02	2 21	
10	18.43	18.43	33.225	23.809	408.7	0.041	5.47	238.7	101.7	1.7	0.26	0.0	0.00	0.02	0.08	0.01	10 19	
10	18.43	18.43	33.222	23.807	408.8	0.042											10 20	
20	ISL	18.42 D	18.42	33.221	D 23.809	409.0	0.078	5.43	D 236.8	D 101.0	1.7	0.25	0.0	0.00	0.00	0.07	0.02	20
25		18.39	18.38	33.226	23.821	408.1	0.102	5.45	238.1	101.3	1.7	0.25	0.0	0.00	0.00	0.07	0.02	25 18
30	ISL	18.36 D	18.35	33.222	D 23.826	407.8	0.119	5.44	D 237.2	D 101.0	1.7	0.25	0.0	0.00	0.00	0.08	0.01	30
41		18.35	18.34	33.227	23.834	407.5	0.167	5.47	239.0	101.6	1.7	0.24	0.0	0.00	0.00	0.10	0.00	41 17
50	ISL	18.32 D	18.31	33.217	D 23.834	407.8	0.202	5.44	D 237.5	D 101.0	1.7	0.23	0.0	0.00	0.00	0.09	0.01	50
51		18.30	18.29	33.222	23.843	407.0	0.208	5.49	239.7	101.9	1.7	0.23	0.0	0.00	0.00	0.09	0.02	51 16
62		16.72	16.71	35.161	24.175	375.6	0.251	5.83	254.5	104.8	1.7	0.27	0.0	0.00	0.00	0.15	0.04	62 15
75		15.85	15.84	33.165	24.376	356.8	0.299	5.86	256.0	103.7	1.8	0.28	0.0	0.00	0.00	0.21	0.07	76 14
88		15.31	15.30	33.183	24.511	344.3	0.344	5.87	256.1	102.6	1.9	0.30	0.0	0.00	0.00	0.23	0.10	89 13
100	ISL	14.46 D	14.44	33.202	D 24.710	325.6	0.383	5.67	D 247.1	D 97.5	2.4	0.37	0.0	0.01	0.00	0.24	0.22	101
101		14.56	14.54	33.207	24.692	327.4	0.388	5.72	249.6	98.5	2.4	0.38	0.0	0.00	0.00	0.24	0.23	102 12
112		13.58	13.57	33.227	24.910	306.8	0.423	5.39	235.2	91.0	3.8	0.53	2.4	0.13	0.00	0.24	0.23	113 11
125		12.65	12.63	33.254	25.116	287.3	0.461	4.99	217.9	82.7	6.4	0.78	6.8	0.05	0.00	0.20	0.12	126 10
140		11.20	11.18	33.294	25.418	258.6	0.502	4.51	196.7	72.4	10.7	1.11	12.4	0.00	0.00	0.13	0.12	141 09
150	ISL	10.61 D	10.59	33.363	D 25.576	243.6	0.527	4.37	D 190.3	D 69.4	13.5	1.26	14.9	0.01	0.00	0.09	0.10	151
170		9.65	9.63	33.541	25.879	215.1	0.573	3.71	161.9	57.7	19.1	1.57	19.9	0.00	0.00	0.02	0.04	171 08
200		9.06	9.04	33.800	26.176	187.3	0.634	3.10	135.4	47.7	25.6	1.81	23.8	0.00	0.00	0.00	0.03	202 07
231		8.60	8.58	33.932	26.352	171.0	0.689	2.78	121.3	42.3	30.7	1.95	26.1	0.00	0.00		233 06	
250	ISL	8.40 D	8.38	33.979	D 26.420	164.9	0.722	2.60	D 113.3	D 39.5	33.8	2.05	27.4	0.01	0.00		252	
271		8.12	8.09	34.013	26.489	158.6	0.755	2.34	102.0	35.2	37.2	2.15	28.8	0.00	0.00		273 05	
300	ISL	7.79 D	7.76	34.050	D 26.568	151.5	0.801	1.97	D 85.7	D 29.5	41.7	2.27	30.5	0.01	0.00		302	
320		7.50	7.47	34.038	26.600	148.6	0.831	1.90	82.9	28.2	44.9	2.35	31.7	0.00	0.00		323 04	
380		6.89	6.85	34.095	26.730	136.8	0.916	1.21	53.0	17.8	55.3	2.65	35.3	0.00	0.00		383 03	
400	ISL	6.79 D	6.75	34.120	D 26.765	133.8	0.945	1.02	D 44.2	D 14.9	58.1	2.71	35.9	0.01	0.00		403	
440		6.48	6.44	34.142	26.823	128.7	0.996	0.82	35.9	12.0	63.5	2.84	37.2	0.00	0.00		444 02	
500	ISL	6.17 D	6.12	34.222	D 26.928	119.3	1.073	0.46	D 20.0	D 6.6	70.9	3.01	38.5	0.01	0.00		504	
515		6.12	6.07	34.234	26.944	118.0	1.088	0.42	18.3	6.1	72.8	3.05	38.9	0.00	0.00		519 01	

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
33	53.8 N	118 29.5 W	17/07/2016	1203	UTC	52 m	270 03 kn										86.7 33.0
0	21.01	21.01	33.616	23.438	443.7	0.000	5.74	250.5	112.2	1.7	0.13	0.0	0.02	0.05	0.60	0.13	0
2	21.01	21.01	33.616	23.438	443.8	0.009	5.74	250.5	112.2	1.7	0.13	0.0	0.00	0.05	0.60	0.13	2 08
5	20.72	20.72	33.615	23.516	436.4	0.022	5.74	250.6	111.7	1.6	0.12	0.0	0.00	0.00	0.60	0.11	5 07
10	18.36	18.36	33.565	24.087	382.1	0.043	6.09	266.1	113.4	1.8	0.16	0.0	0.00	0.00	0.70	0.14	10 05
10	18.36	18.36	33.567	24.088	382.0	0.043											10 06
20		12.22	12.22	33.284	25.217	274.7	0.075	3.92	171.0	64.3	14.9	1.70	13.6	1.01	1.17	0.80	20 04
30		11.90	11.89	33.234	25.239	272.8	0.103	3.37	147.3	55.0	18.5	2.01	17.3	0.93	0.48	0.56	30 03
40		11.86	11.85	33.460	25.422	255.7	0.129	3.65	159.4	59.6	13.4	1.35	16.3	0.81	0.47	0.34	40 02
45		11.78	11.77	33.477	25.451	253.1	0.142	3.43	149.8	55.9	14.8	1.44	17.5	0.69	0.06	0.26	45 01

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			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
33	49.4 N	118 37.7 W	17/07/2016	1411	UTC	635 m	310 02 kn	280 01 06	2	1011.0 mb	19.5 C	17.5 C	17 m	8/8	ST 035			
0	21.16	21.16	33.617	23.399	447.4	0.000	5.66	247.3	111.1	1.0	0.11	0.0	0.01	0.00	0.31	0.08	0	
2	21.16	21.16	33.617	23.400	447.4	0.009	5.66	247.3	111.1	1.0	0.11	0.0	0.00	0.31	0.08	2 21		
10	20.92	20.92	33.619	23.467	441.4	0.045	5.68	248.0	110.9	0.9	0.11	0.0	0.00	0.00	0.32	0.08	10 19	
10	20.92	20.92	33.617	23.465	441.5	0.046											10 20	
20		16.00	16.00	33.470	24.573	336.1	0.084	6.26	273.4	111.2	2.4	0.32	0.1	0.00	0.00	0.96	0.30	20 18
30		13.17	13.17	33.437	25.150	281.4	0.114	4.93	215.3	82.7	7.1	0.91	7.1	0.39	0.44	1.00	0.70	30 17
4																		

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	21.45	21.45	33.649	23.346	452.5	0.000	5.44	237.7	107.4	1.4	0.20	0.0	0.02	0.00	0.28	0.07	0			
2 A	21.45	21.45	33.649	23.346	452.5	0.009	5.44	237.7	107.4	1.4	0.20	0.0	0.00	0.00	0.28	0.07	2	24		
10 ISL	21.47	D 21.46	33.627	D 23.325	454.9	0.041	5.46	D 238.2	D 107.6	1.5	0.18	0.0	0.02	0.00	0.40	0.11	10			
11 A	19.55	19.55	33.610	23.821	407.6	0.050	5.68	248.1	108.2	1.5	0.18	0.0	0.03	0.00	0.41	0.11	11	21		
11	19.55	19.55	33.609	23.820	407.7	0.050											11	23		
11	19.55	19.55	33.610	23.821	407.6	0.049											11	22		
14 A	17.44	17.44	33.527	24.281	363.8	0.061	6.26	273.3	114.4	1.7	0.24	0.0	0.03	0.00	0.49	0.14	14	20		
20 ISL	15.32	D 15.32	33.469	D 24.723	321.8	0.078	6.53	D 284.5	D 114.4	3.4	0.46	2.0	0.11	0.00	0.82	0.32	20			
26 A	13.68	13.68	33.441	25.051	290.7	0.100	5.51	240.4	93.3	5.2	0.68	4.1	0.19	0.03	1.15	0.50	26	18		
26	13.68	13.68	33.436	25.047	291.1	0.101											26	19		
30 ISL	13.48	D 13.48	33.454	D 25.101	286.0	0.108	5.55	D 242.0	D 93.8	5.7	0.75	5.3	0.23	0.10	1.04	0.47	30			
36	12.99	12.99	33.454	25.200	276.8	0.128	5.06	220.9	84.5	6.6	0.86	7.1	0.29	0.20	0.88	0.42	36	16		
47 A	12.23	12.22	33.477	25.367	261.2	0.158	4.31	188.1	70.8	10.2	1.17	12.2	0.32	0.23	0.54	0.40	47	17		
50 ISL	12.13	D 12.12	33.482	D 25.389	259.2	0.163	4.31	D 187.5	D 70.7	10.8	1.21	12.8	0.30	0.00	0.51	0.39	50			
57 A	11.87	11.86	33.493	25.447	253.8	0.184	4.02	175.6	65.6	12.1	1.29	14.3	0.24	0.00	0.44	0.36	57	15		
64	11.59	11.58	33.506	25.508	248.1	0.201	3.91	170.8	63.5	13.0	1.35	15.2	0.19	0.00	0.38	0.31	65	14		
71	11.12	11.12	33.551	25.628	236.8	0.218	3.64	159.0	58.5	15.4	1.46	17.3	0.12	0.00	0.25	0.24	72	13		
75 ISL	10.87	D 10.86	33.601	D 25.712	228.9	0.225	3.62	D 157.8	D 57.9	16.3	1.51	18.0	0.11	0.00	0.23	0.22	76			
85	10.57	10.56	33.634	D 25.791	221.7	0.248	3.27	D 142.4	D 51.9								86	12		
100 ISL	10.16	D 10.14	33.724	D 25.933	208.4	0.280	2.97	D 129.4	D 46.8	21.7	1.79	22.0	0.05	0.00	0.07	0.12	101			
101	10.12	10.11	33.721	25.938	208.0	0.285	2.94	128.4	46.3	21.9	1.80	22.1	0.05	0.01	0.06	0.11	102	11		
120	9.56	9.55	33.881	26.156	187.6	0.323	2.61	113.8	40.6	26.2	1.94	24.3	0.04	0.00	0.02	0.10	121	09		
125 ISL	9.50	D 9.48	33.910	D 26.189	184.6	0.329	2.59	D 112.7	D 40.2	26.8	1.96	24.6	0.04	0.00	0.02	0.10	126			
141	9.34	9.32	33.983	D 26.273	177.0	0.359	2.33	D 101.5	D 36.1								142	10		
150 ISL	9.31	D 9.29	34.016	D 26.304	174.2	0.374	2.26	D 98.3	D 35.0	29.9	2.07	25.8	0.03	0.00	0.02	0.10	151			
170	9.14	9.12	34.062	26.367	168.6	0.415	2.01	87.8	31.0	32.4	2.16	26.8	0.03	0.00	0.02	0.10	171	08		
200 ISL	8.90	D 8.88	34.128	D 26.459	160.5	0.459	1.69	D 73.7	D 26.0	36.6	2.31	28.4	0.06	0.00	0.01	0.07	202			
201	8.89	8.87	34.127	26.459	160.4	0.466	1.68	73.4	25.8	36.7	2.31	28.5	0.06	0.00	0.01	0.07	203	07		
230	8.57	8.54	34.166	26.541	153.2	0.512	1.42	62.0	21.7	40.8	2.43	29.8	0.07	0.00			232	06		
250 ISL	8.41	D 8.38	34.186	D 26.581	149.7	0.537	1.34	D 58.3	D 20.3	42.7	2.48	30.4	0.06	0.00			252			
270	8.28	8.25	34.191	26.605	147.8	0.572	1.22	53.1	18.4	44.6	2.52	31.1	0.06	0.00			272	05		
300 ISL	7.97	D 7.97	34.215	D 26.671	141.9	0.610	1.04	D 45.3	D 15.7	48.5	2.62	32.3	0.05	0.00			302			
321	7.74	7.71	34.218	26.707	138.7	0.645	0.92	40.1	13.8	51.3	2.69	33.2	0.04	0.00			324	04		
382	7.19	7.15	34.240	26.805	130.2	0.727	0.67	29.2	9.9	58.7	2.84	35.2	0.03	0.00			385	03		
400 ISL	7.08	D 7.04	34.251	D 26.828	128.2	0.746	0.63	D 27.4	D 9.3	60.6	2.88	35.6	0.03	0.00			403			
440	6.81	6.76	34.266	26.878	123.9	0.800	0.49	21.2	7.1	64.8	2.98	36.6	0.00	0.00			444	02		
500 ISL	6.36	D 6.31	34.303	D 26.968	115.9	0.869	0.34	D 14.8	D 4.9	73.1	3.08	37.7	0.02	0.00			504			
516	6.24	6.19	34.313	26.992	113.7	0.891	0.30	12.9	4.3	75.4	3.11	38.1	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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	20.29	20.29	33.685	23.683	420.3	0.000	5.55	242.4	107.3	1.5	0.14	0.0	0.02	0.00	0.40	0.10	0			
2	20.29	20.29	33.685	23.683	420.4	0.008	5.55	242.4	107.3	1.5	0.14	0.0	0.00	0.00	0.40	0.10	2	21		
10 ISL	16.44	D 16.44	33.573	D 24.551	337.9	0.039	5.98	D 260.7	D 107.3	2.9	0.34	0.6	0.07	0.00	1.02	0.17	10			
10	16.44	16.44	33.552	24.535	339.5	0.040											10	20		
11	16.39	16.39	33.559	24.552	337.8	0.042	5.97	260.6	106.9	3.1	0.37	0.6	0.08	0.00	1.10	0.18	11	19		
20	12.28	12.28	33.473	25.352	261.9	0.069	4.85	211.8	79.9	8.2	0.96	8.8	0.25	0.00	1.93	0.61	20	18		
30	11.24	11.24	33.528	25.587	239.7	0.094	3.69	161.1	59.4	15.1	1.46	17.2	0.11	0.00	0.54	0.29	30	17		
41	10.98	10.98	33.558	25.657	233.3	0.120	3.51	153.4	56.3	16.5	1.54	18.6	0.08	0.00	0.22	0.21	41	16		
50	10.72	10.72	33.588	25.727	226.8	0.141	3.37	147.0	53.7	17.8	1.61	19.5	0.06	0.00	0.14	0.16	50	15		
60	10.23	10.23	33.642	25.855	214.9	0.163	3.17	138.4	50.0	20.1	1.70	20.9	0.04	0.00	0.09	0.13	60	14		
70	9.95	9.94	33.718	25.962	204.9	0.184	2.97	129.6	46.6	22.4	1.79	22.3	0.03	0.00	0.04	0.11	71	13		
75 ISL	9.79	D 9.78	33.765	D 26.027	198.9	0.191	2.98	D 129.7	D 46.6	23.1	1.82	22.7	0.03	0.00	0.03	0.10	76			
86	9.67	9.66	33.811	26.082	193.9	0.216	2.78	121.2	43.3	24.8	1.87	23.5	0.03	0.00	0.03	0.08	87	12		
100	9.47	9.46	33.899	26.184	184.5	0.242	2.57	112.0	39.9	27.2	1.94	24.5	0.00	0.00	0.02	0.07	101	11		
120	9.20	9.19	34.005	26.311	172.8</															

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	16.48	16.48	33.561	24.533	339.3	0.000	5.83	254.7	104.7	4.2	0.44	1.5	0.07	0.06	0.94	0.22	0	
2	16.48	16.47	33.561	24.533	339.3	0.007	5.83	254.7	104.7	4.2	0.44	1.5	0.07	0.06	0.94	0.22	2 09	
5	16.22	16.22	33.559	24.591	333.9	0.017	5.83	254.4	104.0	4.1	0.43	1.4	0.06	0.07	1.03	0.12	5 08	
10 ISL	14.84 D	14.84	33.531	D 24.874	307.1	0.030	5.37	D 233.9	D 93.2	6.2	0.63	4.4	0.18	0.07	1.34	0.18	10	
11	13.58	13.58	33.532	25.140	281.8	0.036	5.06	D 220.3	D 85.5	6.7	0.67	5.1	0.20	0.07	1.40	0.19	11 06	
11	13.58	13.58	33.536	25.143	281.5	0.035											11 07	
20 ISL	12.26 D	12.25	33.471	D 25.354	261.6	0.057	4.39	D 191.2	D 72.2	11.3	1.15	12.4	0.23	0.00	0.73	0.30	20	
21	11.71	11.71	33.476	25.460	251.5	0.063	4.17	D 181.4	D 67.7	11.8	1.20	13.3	0.23	0.00	0.66	0.32	21 05	
30 ISL	11.36 D	11.36	33.545	D 25.579	240.5	0.082	3.72	D 162.0	D 60.1	14.9	1.41	16.7	0.33	0.00	0.38	0.25	30	
31	11.17	11.16	33.583	D 25.644	234.4	0.085	3.63	D 158.0	D 58.3	15.3	1.43	17.1	0.34	0.00	0.34	0.24	31 04	
41	10.84	10.84	33.593	25.710	228.3	0.110	3.43	149.7	54.8	18.2	1.62	19.9	0.11	0.00	0.16	0.13	41 03	
50	10.72	10.72	33.606	25.741	225.5	0.131	3.38	147.3	53.8	18.7	1.64	20.4	0.08	0.00	0.14	0.10	50 02	
61	10.25	10.24	33.700	25.897	210.9	0.155	2.99	130.4	47.1	22.1	1.87	22.6	0.08	0.12	0.06	0.14	61 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	16.41	16.41	33.617	24.592	333.7	0.000	5.85	255.4	104.9	3.0	0.36	0.6	0.06	0.14	0.90	0.16	0	
2	16.41	16.41	33.617	24.592	333.7	0.007	5.85	255.4	104.9	3.0	0.36	0.6	0.06	0.14	0.90	0.16	2 21	
10	15.85	15.85	33.596	24.703	323.4	0.033	5.81	253.5	103.0	3.5	0.40	1.2	0.08	0.21	0.96	0.21	10 19	
10	15.85	15.85	33.596	24.703	323.4	0.034											10 20	
20	15.61	15.60	33.588	24.752	319.1	0.065	5.76	251.4	101.6	4.0	0.45	1.6	0.10	0.28	0.85	0.26	20 18	
30	15.22	15.21	33.578	24.831	311.9	0.097	5.74	250.6	100.5	4.2	0.48	1.9	0.11	0.34	0.94	0.27	30 17	
41	11.85	11.84	33.563	25.504	248.0	0.128	3.96	172.7	64.6	14.4	1.35	15.2	0.41	0.62	0.64	0.39	41 16	
50	10.97	10.96	33.640	25.725	227.1	0.149	3.36	146.6	53.8	18.3	1.59	19.3	0.36	0.11	0.23	0.20	50 15	
60	10.03	10.02	33.731	25.958	205.1	0.171	2.82	123.2	44.3	23.1	1.85	23.4	0.08	0.00	0.06	0.11	60 14	
71	9.81	9.80	33.781	26.035	198.0	0.193	2.67	116.7	41.8	24.8	1.91	24.4	0.06	0.00	0.04	0.12	72 13	
75 ISL	9.73 D	9.72	33.807	D 26.069	194.9	0.198	2.68	D 116.6	D 41.8	25.7	1.93	24.8	0.05	0.00	0.03	0.11	76	
85	9.38	9.37	33.879	26.183	184.2	0.220	2.49	108.9	38.7	27.9	1.99	25.9	0.03	0.00	0.02	0.09	86 12	
100	9.19	9.18	33.982	26.295	173.9	0.247	2.11	92.0	32.6	31.9	2.14	27.6	0.05	0.00	0.02	0.09	101 11	
120	9.04	9.03	34.035	26.360	168.1	0.281	1.95	85.1	30.0	33.9	2.21	28.4	0.04	0.00	0.02	0.10	121 10	
125 ISL	9.04 D	9.03	34.036	D 26.361	168.2	0.287	1.96	D 85.2	D 30.1	34.3	2.22	28.5	0.04	0.00	0.02	0.09	126	
140	8.92	8.91	34.073	26.410	163.8	0.314	1.82	79.5	28.0	35.5	2.25	28.9	0.03	0.00	0.01	0.08	141 09	
150 ISL	8.90 D	8.88	34.088	D 26.426	162.5	0.329	1.80	D 78.1	D 27.6	36.2	2.27	29.2	0.03	0.00	0.01	0.07	151	
170	8.76	8.74	34.114	26.468	158.9	0.363	1.68	73.5	25.8	37.5	2.31	29.6	0.03	0.00	0.01	0.06	171 08	
200	8.59	8.57	34.164	26.534	153.2	0.409	1.41	61.4	21.4	41.5	2.44	30.9	0.00	0.00	0.02	0.07	202 07	
230	8.11	8.09	34.190	26.628	144.7	0.454	1.21	52.9	18.3	45.4	2.56	32.1	0.00	0.00			232 06	
250 ISL	7.97 D	7.94	34.210	D 26.665	141.5	0.482	1.05	D 45.9	D 15.9	48.7	2.64	33.0	0.02	0.00			252	
270	7.74	7.71	34.221	26.709	137.6	0.511	0.91	39.6	13.6	52.1	2.71	34.0	0.00	0.00			272 05	
300 ISL	7.44 D	7.41	34.240	D 26.767	132.5	0.551	0.74	D 32.2	D 11.0	55.6	2.79	35.0	0.02	0.00			302	
321	7.27	7.24	34.246	26.796	130.0	0.579	0.68	29.5	10.0	58.0	2.84	35.7	0.00	0.00			324 03	
379	6.77	6.74	34.286	26.897	121.0	0.652	0.42	18.3	6.1	66.8	3.01	37.5	0.00	0.00			382 03	
400 ISL	6.74 D	6.70	34.291	D 26.906	120.4	0.677	0.40	D 17.5	D 5.9	68.6	3.03	37.7	0.02	0.00			403	
440	6.49	6.45	34.306	26.951	116.6	0.724	0.33	14.3	4.8	71.9	3.07	38.2	0.00	0.00			444 02	
500 ISL	6.18 D	6.13	34.329	D 27.011	111.5	0.794	0.26	D 11.1	D 3.7	77.2	3.14	39.1	0.01	0.00			504	
513	6.12	6.07	34.329	27.020	110.9	0.807	0.25	11.0	3.6	78.3	3.16	39.3	0.00	0.00			517 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	15.64	15.64	33.351	24.560	336.7	0.000	5.84	255.2	103.0	1.1	0.36	0.5	0.07	0.18	0.65	0.22	0	
2	15.64	15.64	33.351	24.560	336.7	0.007	5.84	255.2	103.0	1.1	0.36	0.5	0.07	0.18	0.65	0.22	2 21	
10	15.60	15.60	33.360	24.577	335.4	0.034	5.84	254.9	102.8	1.1	0.33	0.6	0.07	0.17	0.73	0.23	10 19	
10	15.60	15.60	33.360	24.577	335.4	0.034											10 20	
20	15.18	15.17	33.397	24.700	324.0	0.067	5.81	253.9	101.6	1.4	0.39	1.1	0.11	0.45	0.81	0.34	20 18	
30	14.77	14.76	33.414	24.802	314.6	0.099	5.70	249.0	98.8	1.9	0.46	1.9	0.17	0.83	0.75	0.41	30 17	
40	13.67	13.67	33.406	25.026	293.5	0.129	5.36	233.9	90.8	3.9	0.65	4.1	0.25	1.47	0.55	0.44	40 16	
50	11.67	11.66	33.378	25.395	258.6	0.157	4.52	197.5	73.5	11.0	1.18	12.7	0.50	0.33	0.27	0.28	50 15	
60	11.																	

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	16.44	16.44	33.209	24.271	364.2	0.000	5.73	250.4	102.6	1.0	0.32	0.1	0.02	0.14	0.34	0.07	0		
2 A	16.44	16.44	33.209	24.271	364.3	0.007	5.73	250.4	102.6	1.0	0.32	0.1	0.00	0.14	0.34	0.07	2	24	
9 A	16.44	16.44	33.208	24.271	364.5	0.033	5.74	250.6	102.7	1.0	0.32	0.0	0.03	0.14	0.34	0.09	9	22	
9	16.44	16.44	33.209	24.272	364.4	0.034											9	23	
10 ISL	16.43 D	16.43	33.208 D	24.273	364.4	0.033	5.73	0249.8	0102.5	0.9	0.34	0.0	0.04	0.12	0.33	0.10	10		
11 A	16.43	16.43	33.210	24.275	364.2	0.040	5.73	250.2	102.5	0.9	0.35	0.0	0.04	0.09	0.33	0.10	11	21	
20 ISL	15.98 D	15.97	33.207 D	24.377	354.9	0.069	5.80	0252.7	0102.7	1.6	0.40	1.0	0.11	0.22	0.57	0.19	20		
22 A	14.40	14.39	33.180	24.700	324.0	0.079	5.89	257.1	101.1	1.7	0.41	1.2	0.12	0.25	0.62	0.21	22	19	
23	14.04	14.04	33.182	24.776	316.8	0.082											23	20	
30	12.90	12.90	33.244	25.054	290.5	0.104	5.41	236.1	90.1	4.4	0.70	5.1	0.33	0.91	0.59	0.26	30	18	
38 A	12.79	12.79	33.313	25.129	283.6	0.127	5.28	230.3	87.7	4.8	0.81	6.0	0.30	1.81	0.34	0.17	38	17	
48 A	12.38	12.37	33.386	25.267	270.7	0.155	5.06	221.0	83.4	6.7	0.93	7.9	0.37	1.88	0.29	0.17	48	16	
50 ISL	12.37 D	12.37	33.390 D	25.271	270.4	0.157	5.08	0221.3	038.8	7.0	0.96	8.2	0.36	2.00	0.27	0.16	50		
55	12.34	12.33	33.437	25.314	266.5	0.173	4.97	217.1	81.9	7.6	1.02	8.8	0.32	2.30	0.22	0.13	55	15	
60	11.93	11.92	33.480	25.425	256.0	0.186	4.78	208.9	78.2	9.1	1.11	10.2	0.30	2.24	0.12	0.10	60	14	
70	10.84	10.83	33.503	25.642	235.5	0.211	3.86	168.4	61.6	15.7	1.46	17.7	0.20	0.00	0.10	0.09	71	13	
75 ISL	10.72 D	10.71	33.517 D	25.674	232.5	0.220	3.77	0164.2	060.1	17.0	1.52	18.7	0.15	0.00	0.08	0.09	76		
85	9.85	9.84	33.578	25.871	213.9	0.245	3.53	153.9	55.1	19.6	1.63	20.8	0.05	0.01	0.04	0.09	86	12	
100	9.82	9.81	33.805	26.052	197.1	0.276	2.56	111.6	40.0	25.0	1.94	24.8	0.03	0.02	0.01	0.05	101	11	
119	9.54	9.53	33.942	26.207	182.8	0.312	2.29	99.9	35.6	28.5	2.05	26.0	0.04	0.00	0.01	0.05	120	10	
125 ISL	9.55 D	9.53	34.001 D	26.252	178.6	0.321	2.09	91.1	32.6	29.3	2.07	26.4	0.04	0.00	0.01	0.05	126		
141	9.04	9.02	33.994	26.330	171.4	0.351	2.10	91.6	32.3	31.5	2.12	27.4	0.04	0.00	0.01	0.06	142	09	
150 ISL	8.95 D	8.93	34.005 D	26.353	169.4	0.364	2.15	093.5	033.0	32.5	2.12	27.8	0.04	0.00	0.01	0.07	151		
171	8.43	8.41	34.007	26.435	161.9	0.401	2.29	100.1	34.8	34.9	2.13	28.7	0.04	0.00	0.01	0.08	172	08	
200	7.95	7.93	34.034	26.530	153.3	0.447	2.05	89.3	30.7	40.3	2.27	30.7	0.05	0.00	0.01	0.04	202	07	
231	7.64	7.62	34.052 D	26.589	148.1	0.492	1.85	80.4	27.6								233	06	
250 ISL	7.67 D	7.65	34.109 D	26.630	144.6	0.520	1.59	69.0	23.7	47.5	2.51	33.1	0.03	0.00			252		
270	7.41	7.39	34.128	26.681	140.0	0.551	1.26	54.9	18.7	50.4	2.60	34.0	0.03	0.00			272	05	
300 ISL	7.05 D	7.02	34.126 D	26.732	135.5	0.591	1.12	48.9	16.5	55.2	2.68	35.6	0.02	0.00			302		
321	6.68	6.65	34.103	26.763	132.5	0.621	1.07	46.9	15.7	58.5	2.73	36.7	0.00	0.00			324	04	
382	6.38	6.35	34.171	26.857	124.4	0.699	0.69	30.1	10.0	65.6	2.91	38.2	0.00	0.00			385	03	
400 ISL	6.16 D	6.12	34.174 D	26.889	121.5	0.720	0.62	27.1	9.0	67.9	2.96	38.6	0.02	0.00			403		
441	6.01	5.97	34.222	26.946	116.5	0.770	0.44	19.2	6.3	73.2	3.07	39.6	0.00	0.13			445	02	
500 ISL	5.74 D	5.69	34.266 D	27.017	110.5	0.837	0.31	13.5	4.4	79.3	3.13	40.7	0.01	0.00			504		
515	5.65	5.61	34.273	27.032	109.1	0.853	0.29	12.7	4.2	80.9	3.15	40.9	0.00	0.00			519	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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	15.73	15.73	33.107	24.354	356.3	0.000	5.90	257.9	104.1	1.1	0.32	0.1	0.05	0.12	0.41	0.12	0		
2	15.73	15.72	33.107	24.354	356.3	0.007	5.90	257.9	104.1	1.1	0.32	0.1	0.05	0.12	0.41	0.12	2	21	
10 ISL	15.68 D	15.68	33.103 D	24.362	355.9	0.032	5.92	0258.0	0104.3	1.0	0.33	0.0	0.05	0.08	0.40	0.13	10		
11	15.62	15.62	33.104	24.375	354.6	0.039	5.91	258.4	104.1	1.0	0.33	0.0	0.05	0.07	0.40	0.13	11	19	
11	15.62	15.62	33.103	24.374	354.7	0.038											11	20	
20	14.88	14.88	33.025	24.477	345.3	0.071	5.93	259.0	102.7	1.2	0.36	0.1	0.05	0.18	0.51	0.24	20	18	
30	14.44	14.43	32.993	24.547	338.8	0.105	5.94	259.3	101.9	1.4	0.34	0.0	0.06	0.20	0.57	0.30	30	17	
40	14.18	14.17	33.059	24.653	329.1	0.138	5.88	257.0	100.5	1.6	0.43	0.7	0.18	0.40	0.61	0.36	40	16	
50	14.18	14.17	33.183	24.750	320.1	0.171	5.81	253.9	99.4	1.6	0.46	1.5	0.26	0.54	0.54	0.28	50	15	
61	12.99	12.98	33.150	24.967	299.7	0.205	5.56	243.0	92.8	2.7	0.52	2.2	0.28	0.54	0.24	0.17	61	14	
71	13.26	13.25	33.418	25.120	285.4	0.234	5.65	246.6	94.9	0.5	0.64	2.1	0.16	2.87	0.09	0.10	72	13	
75 ISL	12.81 D	12.80	33.402 D	25.197	278.2	0.244	5.67	0247.0	094.3	3.3	0.80	4.8	0.22	2.51	0.09	0.10	76		
85	12.01	12.00	33.452	25.390	260.0	0.272	4.59	200.4	75.1	10.5	1.19	11.6	0.38	1.60	0.07	0.08	86	12	
100	10.11	10.10	33.418	25.702	230.3	0.309	4.13	180.3	64.8	16.6	1.45	18.1	0.10	0.00	0.05	0.07	101	11	
120	10.25	10.24	33.694	25.894	212.6	0.353	3.00	131.0	47.3	21.1	1.78	22.2	0.05	0.00	0.02	0.07	121	10	
125 ISL	10.18 D	10.17	33.755 D	25.955	207.0	0.363	2.99	0130.0	047.1	21.9	1.79	22.6	0.05	0.00	0.02	0.07	126		
141	9.05	9.04	33.754	26.139	189.5	0.396	3.20	139.7	49.2	24.7	1.82	23.7	0.05	0.00	0.01	0.06	142	09	
150 ISL	8.89 D	8.88	33.834 D	26.227	181.														

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
31 59.6 N	122 23.3 W	19/07/2016	0725	UTC	4093 m	340 25 kn			1028.0 mb	16.2 C	15.0 C						043	
0	18.27	18.27	33.271	23.884	401.1	0.000	5.45	237.8	101.0	1.9	0.31	0.0	0.00	0.00	0.09	0.02	0	
2	18.27	18.27	33.271	23.884	401.2	0.008	5.45	237.8	101.0	1.9	0.31	0.0	0.00	0.00	0.09	0.02	2 21	
10	18.28	18.28	33.275	23.885	401.4	0.040	5.44	237.5	100.9	1.8	0.27	0.0	0.00	0.00	0.12	0.00	10 19	
10	18.28	18.28	33.273	23.884	401.5	0.041											10 20	
20	ISL	18.28 D	18.27	33.271 D	23.883	402.0	0.077	5.45	D237.6	D101.0	1.8	0.34	0.0	0.00	0.00	0.10	0.01	20
25	18.28	18.27	33.273	23.885	402.0	0.100	5.44	237.7	101.0	1.8	0.38	0.0	0.00	0.04	0.10	0.02	25 18	
30	ISL	18.28 D	18.28	33.271 D	23.883	402.4	0.117	5.44	D237.4	D101.0	1.8	0.38	0.0	0.00	0.00	0.10	0.02	30
40	18.21	18.20	33.260	23.894	401.7	0.161	5.46	238.5	101.1	1.8	0.37	0.0	0.00	0.00	0.10	0.02	40 17	
50	15.75	15.74	33.002	24.271	365.9	0.199	5.79	253.0	102.1	1.7	0.28	0.0	0.00	0.00	0.18	0.06	50 16	
62	14.78	14.77	33.032	24.507	343.8	0.242	6.01	262.3	103.8	2.1	0.29	0.0	0.00	0.00	0.21	0.08	62 15	
75	13.98	13.97	33.119	24.743	321.5	0.285	5.87	256.4	99.9	2.9	0.33	0.0	0.00	0.00	0.33	0.16	76 14	
87	12.84	12.83	33.217	25.048	292.7	0.322	5.27	230.1	87.6	5.4	0.62	4.6	0.15	0.00	0.36	0.20	88 13	
100	11.27	11.25	33.294	25.405	258.8	0.358	4.62	201.6	74.3	10.3	1.05	11.3	0.06	0.00	0.17	0.16	101 12	
112	10.58	10.57	33.330	25.554	244.8	0.388	4.46	194.8	70.7	12.7	1.22	14.2	0.00	0.00	0.12	0.12	113 11	
125	9.91	9.89	33.436	25.751	226.2	0.419	4.15	181.1	64.8	16.1	1.41	17.4	0.00	0.00	0.06	0.08	126 10	
140	9.49	9.47	33.552	25.911	211.3	0.451	3.80	165.9	58.9	19.7	1.59	20.0	0.00	0.00	0.03	0.06	141 09	
150	ISL	9.24 D	9.22	33.665 D	26.041	199.1	0.471	3.74	D162.8	D57.7	21.6	1.65	21.1	0.01	0.00	0.02	0.05	151
171	8.94	8.92	33.800	26.195	184.8	0.513	3.32	144.8	50.8	25.5	1.78	23.5	0.00	0.00	0.03	0.03	172 08	
200	8.64	8.62	33.930	26.343	171.3	0.564	2.76	120.3	42.0	30.9	1.98	26.4	0.00	0.00	0.00	0.02	202 07	
230	8.31	8.28	34.000	26.450	161.7	0.614	2.49	108.9	37.7	35.0	2.09	28.0	0.00	0.00			232 06	
250	ISL	8.14 D	8.12	34.025 D	26.495	157.7	0.647	2.33	D101.5	D35.2	38.2	2.19	29.2	0.00	0.00			252
271	7.90	7.88	34.053	26.553	152.5	0.679	2.00	87.3	30.0	41.5	2.30	30.5	0.00	0.00			273 05	
300	ISL	7.57 D	7.54	34.086 D	26.627	145.8	0.723	1.66	D72.9	D24.9	46.5	2.45	32.3	0.01	0.00			302
320	7.36	7.33	34.101	26.669	142.0	0.751	1.38	60.4	20.5	49.9	2.56	33.5	0.00	0.00			323 04	
382	6.64	6.60	34.142	26.802	129.9	0.835	0.88	38.6	12.9	60.8	2.81	36.7	0.00	0.00			385 03	
400	ISL	6.45 D	6.41	34.156 D	26.838	126.6	0.860	0.77	D33.3	D11.1	63.6	2.86	37.3	0.01	0.00			403
441	6.17	6.13	34.191	26.902	120.9	0.909	0.57	25.0	8.3	70.1	2.98	38.6	0.00	0.00			445 02	
500	ISL	5.84 D	5.80	34.254 D	26.994	112.7	0.981	0.36	D15.6	D5.1	77.2	3.11	39.7	0.01	0.00			504
516	5.79	5.75	34.268	27.011	111.3	0.996	0.31	13.6	4.4	79.1	3.15	40.1	0.00	0.00			520 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
31 40.1 N	123 4.3 W	19/07/2016	1444	UTC	4141 m	350 25 kn	330 05 07	2	1028.0 mb	17.5 C	15.5 C	29 m	8/8	ST	044			
0	17.60	17.60	33.023	23.857	403.7	0.000	5.55	242.4	101.4	1.4	0.26	0.0	0.01	0.00	0.10	0.03	0	
2 A	17.60	17.60	33.023	23.857	403.8	0.008	5.55	242.4	101.4	1.4	0.26	0.0	0.00	0.00	0.10	0.03	2 24	
10 ISL	17.60 D	17.60	33.020 D	23.855	404.3	0.037	5.52	D240.7	D100.9	1.5	0.26	0.0	0.02	0.00	0.10	0.02	10	
10	17.60	17.60	33.020	23.855	404.2	0.042											10 23	
11	17.60	17.60	33.022	23.857	404.1	0.044	5.53	241.7	101.2	1.6	0.26	0.0	0.00	0.00	0.10	0.02	11 22	
17 A	17.60	17.59	33.021	23.857	404.3	0.069	5.54	242.0	101.2	1.5	0.27	0.0	0.00	0.00	0.09	0.03	17 21	
20 ISL	17.60 D	17.59	33.019 D	23.856	404.5	0.077	5.51	D240.5	D100.8	1.4	0.28	0.0	0.01	0.00	0.10	0.03	20	
22 A	17.61	17.60	33.021	23.854	404.8	0.089	5.56	242.9	101.7	1.4	0.28	0.0	0.00	0.00	0.10	0.03	22 20	
30 ISL	17.66 D	17.66	33.081 D	23.888	401.8	0.118	5.52	D240.7	D101.0	1.4	0.30	0.0	0.01	0.00	0.11	0.02	30	
32	17.67	17.67	33.094	23.895	401.2	0.129	5.52	241.1	101.1	1.4	0.31	0.0	0.00	0.00	0.11	0.02	32 19	
42 A	17.70	17.69	33.105	23.900	401.2	0.169	5.52	241.0	101.1	1.4	0.30	0.0	0.00	0.00	0.13	0.01	42 18	
50 ISL	17.70 D	17.69	33.106 D	23.900	401.5	0.199	5.48	D239.2	D100.5	1.4	0.30	0.0	0.01	0.00	0.12	0.03	50	
53	17.51	17.50	33.101	23.942	397.6	0.213	5.54	241.9	101.1	1.4	0.30	0.0	0.00	0.00	0.12	0.04	53 17	
65	14.89	14.88	33.054	24.501	344.4	0.258	5.99	261.6	103.8	1.7	0.36	0.0	0.00	0.00	0.28	0.06	66 16	
75 ISL	14.15 D	14.14	33.076 D	24.674	328.2	0.290	5.95	D259.4	D101.6	2.3	0.38	0.0	0.01	0.00	0.34	0.17	76	
76 A	14.05	14.04	33.083	24.701	325.6	0.295	5.92	258.5	100.8	2.4	0.38	0.0	0.00	0.00	0.35	0.18	77 15	
84	13.50	13.49	33.095	24.822	314.2	0.320	5.73	250.3	96.5	3.0	0.44	0.2	0.07	0.00	0.54	0.24	85 14	
92 A	13.15	13.13	33.138	24.927	304.4	0.345	5.41	236.3	90.5	4.3	0.58	3.1	0.17	0.00	0.43	0.28	93 13	
100	12.82	12.80	33.249	25.079	290.2	0.369	5.20	227.3	86.5	5.4	0.63	5.1	0.15	0.00	0.35	0.23	101 12	
110	11.96	11.94	33.246	25.241	274.8	0.397	4.96	216.7	81.0	7.5	0.84	8.1	0.09	0.00	0.21	0.25	111 11	
125	10.61	10.60	33.341	25.558	244.8	0.436	4.36	190.5	69.2	12.9	1.25	14.6	0.03	0.00	0.12	0.13	126 10	
140	9.82	9.80	33.482	25.802	221.7	0.471	3.82	166.9	59.6	17.9	1.54	19.2	0.00	0.00	0.04	0.05	141 09	
150 ISL	9.52 D	9.50	33.591 D	25.937	209.0	0.492	3.62	D157.7	D56.2	19.9	1.62	20.5	0.02	0.00	0.03	0.04	151	
170	9.18	9.16	33.718 D	26.092	194.6	0.533	3.27	142.8	50.4	23.8	1.79	23.1	0.00	0.00	0.00	0.03	171 08	
200	8.79	8.77	33.874	26.276	177.7	0.590	2.81	122.7	43.0									

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
31	19.3 N	123 44.4 W	19/07/2016	1952	UTC	3989 m	020 19 kn	020 04	10	1	1030.0 mb	19.9	C	16.0	C	30 m	7/8	ST	045
0	17.65	17.65	32.997	23.824	406.8	0.000	5.54	242.0	101.3	1.4	0.25	0.0	0.01	0.00	0.08	0.02	0		
2	17.65	17.65	32.997	23.825	406.9	0.008	5.54	242.0	101.3	1.4	0.25	0.0	0.00	0.00	0.08	0.02	2	21	
10	17.62	17.62	32.994	23.829	406.7	0.041	5.55	242.3	101.4	1.5	0.25	0.0	0.00	0.00	0.09	0.02	10	19	
11	17.62	17.62	32.994	23.831	406.6	0.043												11	20
20	ISL	17.54 D	17.54	32.983	D 23.841	406.0	0.078	5.55	D 242.3	D 101.4	1.5	0.26	0.0	0.01	0.00	0.09	0.02	20	
26	17.50	17.50	32.988	23.856	404.8	0.106	5.56	243.0	101.5	1.4	0.27	0.0	0.00	0.00	0.10	0.02	26	18	
30	ISL	17.49 D	17.49	32.974	D 23.847	405.7	0.119	5.55	D 242.2	D 101.3	1.4	0.27	0.0	0.01	0.00	0.10	0.02	30	
41	17.57	17.56	32.984	23.837	407.1	0.167	5.56	243.1	101.6	1.4	0.26	0.0	0.00	0.09	0.11	0.03	41	17	
50	16.93	16.92	33.202	24.156	377.0	0.202	5.77	252.0	104.2	1.5	0.21	0.0	0.00	0.00	0.15	0.04	50	16	
62	15.95	15.94	33.149	24.340	359.8	0.246	5.84	255.2	103.5	1.6	0.23	0.0	0.00	0.03	0.17	0.06	62	15	
75	15.44	15.43	33.135	24.444	350.3	0.292	5.84	255.1	102.4	1.7	0.23	0.0	0.00	0.01	0.24	0.09	76	14	
87	14.57	14.55	33.158	24.652	350.8	0.333	5.79	253.1	99.8	1.8	0.25	0.0	0.00	0.05	0.28	0.16	88	13	
100	ISL	13.65 D	13.64	33.191	D 24.867	310.5	0.373	5.45	D 237.5	D 92.1	3.4	0.45	1.3	0.12	0.00	0.28	0.23	101	
101	13.79	13.77	33.187	24.836	313.5	0.378	5.45	238.3	92.5	3.5	0.47	1.4	0.13	0.00	0.28	0.23	102	12	
112	12.89	12.87	33.235	25.055	292.8	0.411	5.16	225.5	85.9	5.3	0.67	5.1	0.06	0.00	0.20	0.20	113	11	
125	11.92	11.91	33.269	25.265	272.9	0.448	4.76	208.0	77.7	8.4	0.93	9.5	0.04	0.00	0.15	0.17	126	10	
140	10.52	10.50	33.346	25.578	243.2	0.487	4.29	187.3	67.9	13.1	1.26	15.0	0.00	0.00	0.08	0.09	141	09	
150	ISL	10.36 D	10.34	33.388	D 25.638	237.6	0.510	4.22	D 183.7	D 66.6	14.8	1.34	16.3	0.02	0.00	0.06	0.07	151	
172	9.45	9.43	33.532	25.903	212.7	0.560	3.95	172.4	61.1	18.5	1.50	19.1	0.00	0.00	0.01	0.03	173	08	
200	ISL	9.16 D	9.14	33.751	D 26.122	192.5	0.617	3.30	D 143.5	D 50.8	24.1	1.75	22.9	0.02	0.00	0.00	0.03	202	
203	9.15	9.13	33.760	26.130	191.8	0.623	3.19	139.5	49.2	24.7	1.78	23.3	0.00	0.00	0.00	0.03	205	07	
229	8.70	8.67	33.923	26.331	173.1	0.670	2.77	120.8	42.2	30.1	1.95	26.1	0.00	0.00			231	06	
250	ISL	8.47 D	8.44	33.985	D 26.415	165.5	0.706	2.60	D 113.2	D 39.5	33.4	2.04	27.4	0.01	0.00			252	
270	8.16	8.14	34.018	26.487	158.9	0.738	2.40	104.6	36.1	36.6	2.12	28.6	0.00	0.00			272	05	
300	ISL	7.72 D	7.69	34.038	D 26.568	151.4	0.786	2.16	D 93.8	D 32.2	42.3	2.30	30.8	0.01	0.00			302	
322	7.49	7.45	34.069	26.626	146.2	0.818	1.70	74.1	25.2	46.5	2.43	32.4	0.00	0.01			325	04	
381	6.87	6.83	34.124	26.757	134.3	0.900	1.06	46.3	15.5	56.8	2.71	35.7	0.00	0.00			384	03	
400	ISL	6.74 D	6.70	34.141	D 26.788	131.6	0.928	0.91	D 39.8	D 13.4	59.4	2.77	36.3	0.01	0.00			403	
440	6.51	6.47	34.179	26.849	126.3	0.977	0.67	29.1	9.7	65.0	2.90	37.6	0.00	0.00			444	02	
500	ISL	6.08 D	6.04	34.228	D 26.943	117.8	1.053	0.46	D 19.8	D 6.6	72.8	3.03	39.1	0.01	0.00			504	
516		5.98	5.94	34.240	26.966	115.8	1.069	0.39	17.0	5.6	74.9	3.06	39.5	0.00	0.00			520	01

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.8 32.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
33	53.2 N	118 26.7 W	17/07/2016	1114	UTC	24 m	210 03 kn				1013.0 mb	19.5	C	17.5	C		033		
0	21.97	21.97	33.649	23.201	466.3	0.000	5.53	241.5	110.1	1.6	0.09	0.0	0.02	0.00	0.75	0.15	0		
1	21.97	21.97	33.649	23.201	466.4	0.005	5.53	241.5	110.1	1.6	0.09	0.0	0.00	0.00	0.75	0.15	1	04	
5	20.96	20.95	33.605 D	23.446	443.1	0.021	5.76	D 251.4	D 112.6	1.6	0.11	0.0	0.00	0.00	0.69	0.14	5	03	
10	19.22	19.22	33.564	23.870	402.9	0.044	6.12	267.2	115.8	1.9	0.17	0.0	0.00	0.00	0.66	0.15	10	02	
15	17.98	17.97	33.520	24.147	376.6	0.064	6.29	274.5	116.1	3.0	0.26	0.1	0.04	0.00	1.02	0.24	15	01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 88.5 30.1

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db		
33	40.5 N	118 5.2 W	17/07/2016	0722	UTC	17 m	290 13 kn				1013.0 mb	19.5	C	18.0	C		032		
0	19.12	19.12	33.554	23.887	400.8	0.000	5.81	253.7	109.7	4.0	0.29	0.0	0.02	0.01	0.98	0.29	0		
2	19.12	19.12	33.554	23.888	400.9	0.008	5.81	253.7	109.7	4.0	0.29	0.0	0.00	0.01	0.98	0.29	2	03	
5	19.09	19.09	33.550 D	23.892	400.5	0.020	5.85	254.6	110.0	4.0	0.27	0.0	0.00	0.00	1.03	0.30	5	02	
10	ISL	15.50 D	15.50	33.442 D	24.662	327.3	0.035	6.37	D 277.8	D 112.1	3.0	0.36	0.0	0.02	0.00	1.15	0.31	10	
11	15.47	15.47	33.452	24.677	325.9	0.041	6.30	275.0	110.7	2.8	0.38	0.0	0.00	0.00	1.18	0.31	11	01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	22.29	22.29	33.636	23.103	475.6	0.000	5.55	242.1	111.1	1.9	0.12	0.0	0.02	0.00	0.51	0.12	0	
1	22.29	22.29	33.636	23.103	475.7	0.005	5.55	242.1	111.1	1.9	0.12	0.0	0.00	0.00	0.51	0.12	1 08	
5	22.07	22.07	33.637	23.164	470.1	0.024	5.55	242.3	110.7	1.8	0.12	0.0	0.00	0.00	0.55	0.09	5 07	
10	20.66	20.66	33.616	23.533	435.0	0.046	5.73	250.0	111.3	1.8	0.15	0.0	0.00	0.00	0.65	0.13	10 06	
20 ISL	13.75 D	13.75	33.394 D	24.999	295.5	0.081	6.09	D 265.4	D 103.4	4.5	0.49	1.4	0.05	0.00	1.51	0.33	20	
21	13.66	13.66	33.395	25.019	293.6	0.086	5.97	260.6	101.1	4.7	0.52	1.5	0.05	0.00	1.60	0.35	21 05	
30	12.59	12.59	33.414	25.246	272.2	0.111	4.83	211.0	80.1	8.2	0.93	8.1	0.36	0.13	1.47	0.66	30 04	
40	11.94	11.94	33.457	25.404	257.4	0.138	4.12	179.7	67.3	11.6	1.21	12.8	0.26	0.00	0.73	0.58	40 03	
50	11.49	11.48	33.477	25.504	248.1	0.163	3.77	164.7	61.1	14.0	1.38	15.6	0.12	0.00	0.42	0.44	50 02	
60	11.37	11.36	33.487	25.534	245.6	0.188	3.61	157.4	58.2	14.9	1.45	16.4	0.17	0.01	0.25	0.38	60 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	23.23	23.23	33.707	22.890	496.0	0.000	5.75	250.9	117.1	1.1	0.11	0.1	0.03	0.07	1.58	0.16	0	
1	23.23	23.22	33.707	22.890	496.1	0.005	5.75	250.9	117.1	1.1	0.11	0.1	0.03	0.07	1.58	0.16	1 21	
10	18.31	18.31	33.522	24.066	384.1	0.045	6.51	284.4	121.1	4.0	0.24	0.3	0.03	0.01	1.20	0.13	10 19	
11	18.31	18.31	33.520	24.065	384.3	0.047											10 20	
20	13.93	13.93	33.435	24.994	296.0	0.079	5.90	257.4	100.5	5.6	0.54	0.4	0.06	0.00	2.01	0.66	20 18	
30	12.59	12.59	33.415	25.247	272.1	0.107	4.58	199.8	75.8	9.0	1.00	6.8	0.44	0.09	1.33	0.59	30 17	
41	12.16	12.16	33.419	25.333	264.3	0.137	4.28	186.9	70.3	10.4	1.12	11.2	0.26	0.00	0.71	0.37	41 16	
50	11.64	11.63	33.444	25.451	253.2	0.160	4.03	176.0	65.5	12.3	1.26	14.1	0.12	0.00	0.32	0.24	50 15	
61	10.92	10.91	33.500	25.625	236.9	0.187	3.66	159.8	58.5	15.7	1.46	17.3	0.06	0.00	0.16	0.17	61 14	
70	10.49	10.48	33.565	25.751	225.0	0.208	3.44	150.1	54.5	17.8	1.56	19.1	0.06	0.00	0.09	0.15	71 13	
75 ISL	10.42 D	10.41	33.612 D	25.799	220.6	0.218	3.35	D 145.9	D 53.0	18.5	1.59	19.6	0.05	0.00	0.09	0.15	76	
86	10.26	10.25	33.623	25.836	217.4	0.243	3.20	139.8	50.5	19.9	1.66	20.6	0.04	0.00	0.08	0.16	87 12	
100 ISL	9.84 D	9.83	33.741 D	25.999	202.1	0.271	3.04	D 132.4	D 47.6	22.4	1.77	22.0	0.03	0.00	0.03	0.11	101	
101	9.94	9.93	33.715	25.964	205.5	0.275	3.01	131.3	47.1	22.6	1.78	22.1	0.03	0.00	0.03	0.11	102 11	
120	9.81	9.80	33.836	26.080	194.9	0.313	2.63	114.9	41.2	25.4	1.91	23.5	0.03	0.00	0.02	0.10	121 10	
125 ISL	9.80 D	9.78	33.864 D	26.104	192.8	0.322	2.60	D 112.9	D 40.6	26.1	1.94	23.8	0.03	0.00	0.02	0.09	126	
140	9.64	9.63	33.961	26.206	183.3	0.351	2.35	102.4	36.6	28.2	2.03	24.9	0.03	0.04	0.02	0.08	141 09	
150 ISL	9.47 D	9.45	33.962 D	26.236	180.7	0.368	2.33	D 101.5	D 36.2	29.0	2.04	25.3	0.03	0.00	0.01	0.07	151	
170	9.27	9.25	34.008	26.305	174.5	0.404	2.32	101.3	35.9	30.5	2.06	26.0	0.03	0.00	0.01	0.05	171 08	
200	9.79	9.77	34.212	26.380	168.3	0.456	1.45	63.4	22.8	34.0	2.34	27.0	0.04	0.00	0.01	0.06	202 07	
231	9.74	9.71	34.242	26.413	166.0	0.507	1.32	57.6	20.6	35.1	2.38	27.3	0.03	0.00			233 06	
250 ISL	9.38 D	9.36	34.226 D	26.460	161.8	0.539	1.39	D 60.3	D 21.5	37.1	2.34	28.2	0.03	0.00			252	
271	8.43	8.40	34.120	26.527	155.3	0.572	1.82	79.5	27.7	39.2	2.30	29.3	0.03	0.00			273 05	
300 ISL	8.69 D	8.66	34.261 D	26.598	149.4	0.618	1.13	D 49.2	D 17.3	42.3	2.46	30.2	0.03	0.00			302	
321	8.45	8.41	34.251	26.629	146.7	0.649	1.10	47.9	16.7	44.6	2.57	30.9	0.03	0.00			324 04	
379	7.69	7.65	34.235	26.730	137.7	0.731	0.86	37.5	12.8	52.2	2.72	33.5	0.03	0.00			382 03	
400 ISL	7.39 D	7.35	34.224 D	26.764	134.5	0.761	0.83	D 36.3	D 12.4	54.8	2.77	34.2	0.02	0.00			403	
441	7.12	7.08	34.248	26.822	129.5	0.814	0.64	27.7	9.4	59.7	2.86	35.5	0.00	0.00			445 02	
500 ISL	6.63 D	6.58	34.275 D	26.911	121.6	0.890	0.44	D 19.3	D 6.5	68.7	3.01	37.4	0.03	0.00			504	
515	6.41	6.36	34.282	26.945	118.3	0.906	0.40	17.6	5.8	71.0	3.05	37.8	0.03	0.00			519 01	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db	SAMP
0	19.33	19.33	33.535	23.820	407.2	0.000	5.54	242.1	105.0	1.1	0.26	0.0	0.02	0.31	0.08	0		
2	19.33	19.33	33.535	23.820	407.3	0.008	5.54	242.1	105.0	1.1	0.26	0.0	0.02	0.31	0.08	2 18		
10	19.07	19.07	33.512	23.869	403.0	0.041	5.59	244.1	105.4	0.8	0.27	0.0	0.00	0.11	0.33	0.09	10 16	
11	19.07	19.07	33.513	23.870	402.9	0.043											10 17	
20	15.57	15.56	33.458	24.662	327.7	0.077	6.14	268.3	108.2	0.8	0.28	0.0	0.03	0.35	0.15	20 15		
30	14.62	14.62	33.431	24.846	310.4	0.109	5.85	255.6	101.1	2.0	0.44	1.4	0.13	0.66	0.27	30 14		
41	12.75	12.74	33.363	25.178	279.1	0.142	4.85	212.0	80.6	6.9	0.91	8.4	0.67	0.03	0.62	0.38	41 13	
50	12.12	12.11	33.405	25.332	264.6	0.166	4.36	190.5	71.5	10.2	1.14	12.5	0.35	0.00	0.36	0.27	50 12	
60	11.44	11.43	33.474	25.511	247.8	0.192	3.92	171.4	63.5	14.2	1.38	16.3	0.21	0.00	0.15	0.14	60 11	
70	10.69	10.68	33.533	25.691	230.8	0.216	3.63	158.5	57.8	16.6	1.52	18.5	0.11	0.06	0.10	0.11		

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
33 11.5 N	118 22.9 W	16/07/2016	1657	UTC	1170 m	270 09 kn	250 02	05	2	1020.0 mb	19.5 C	17.2 C	14 m	8/8	ST	027	
0	19.48	19.48	33.551	23.793	409.8	0.000	5.51	240.5	104.7	0.8	0.23	0.0	0.13	0.04	0.33	0.07	0
2 A	19.48	19.48	33.551	23.793	409.9	0.008	5.51	240.5	104.7	0.8	0.23	0.0	0.13	0.04	0.33	0.07	2 24
8 A	19.03	19.03	33.537	23.898	400.1	0.033	5.57	243.1	104.9	0.5	0.26	0.0	0.05	0.09	0.27	0.07	8 22
9	19.03	19.03	33.540	23.900	399.9	0.035											8 23
10 ISL	18.78 D	18.78	33.542 D	23.964	393.9	0.037	5.58	0243.2 D	104.6	0.5	0.25	0.0	0.03	0.00	0.28	0.08	10
11 A	18.37	18.37	33.534	24.060	384.7	0.044	5.66	247.1	105.3	0.5	0.24	0.0	0.00	0.00	0.29	0.09	11 21
20 A	14.62	14.62	33.405	24.826	312.0	0.076	6.09	265.8	105.1	1.8	0.37	0.5	0.08	0.00	0.82	0.28	20 19
20	14.62	14.62	33.394	24.818	312.7	0.076											20 20
28	13.81	13.80	33.415	25.004	295.3	0.100	5.52	241.3	93.9	3.6	0.62	4.0	0.30	0.00	0.87	0.38	28 18
30 ISL	13.30 D	13.30	33.386 D	25.085	287.6	0.103	5.28	0229.9 D	88.7	4.5	0.70	5.3	0.30	0.00	0.79	0.37	30
38 A	12.47	12.47	33.366	25.232	273.7	0.128	4.65	203.0	76.8	8.3	1.03	10.6	0.29	0.00	0.47	0.30	38 17
44 A	11.89	11.88	33.413	25.381	259.7	0.144	4.29	187.3	70.0	11.0	1.20	13.5	0.14	0.00	0.30	0.25	44 16
50 ISL	11.61 D	11.60	33.452 D	25.462	252.1	0.157	4.24	0184.7 D	68.8	12.4	1.29	15.0	0.16	0.00	0.23	0.19	50
53	11.46	11.46	33.456	25.493	249.3	0.167	4.04	176.5	65.4	13.1	1.34	15.7	0.17	0.00	0.20	0.16	53 15
61	10.92	10.92	33.510	25.632	236.2	0.187	3.74	163.3	59.8	15.0	1.45	17.5	0.12	0.00	0.19	0.16	61 14
71	10.60	10.59	33.566	25.733	226.8	0.210	3.46	151.2	55.0	16.9	1.56	19.1	0.07	0.00	0.14	0.16	72 13
75 ISL	10.47 D	10.46	33.602 D	25.784	222.0	0.216	3.45	0150.0 D	54.6	17.5	1.58	19.5	0.06	0.00	0.14	0.16	76
85	9.99	9.98	33.664	25.914	209.8	0.240	3.20	139.6	50.1	19.1	1.63	20.5	0.05	0.00	0.13	0.14	86 12
100	9.75	9.73	33.781	26.047	197.6	0.271	2.91	127.3	45.5	23.1	1.81	23.0	0.03	0.00	0.05	0.10	101 11
120	9.50	9.49	33.850	26.142	188.9	0.310	2.76	120.6	42.9	25.3	1.87	24.0	0.03	0.00	0.03	0.09	121 10
125 ISL	9.32 D	9.30	33.923 D	26.229	180.7	0.316	2.77	0120.7 D	42.9	26.1	1.89	24.4	0.03	0.00	0.02	0.08	126
141	9.18	9.17	33.942	26.266	177.6	0.348	2.53	110.6	39.1	28.5	1.97	25.6	0.00	0.00	0.01	0.07	142 09
150 ISL	9.11 D	9.09	33.967 D	26.297	174.8	0.361	2.52	0111.6 D	39.5	29.7	2.00	26.1	0.02	0.00	0.01	0.07	151
171	8.82	8.80	34.020	26.385	166.8	0.400	2.32	101.2	35.5	32.4	2.08	27.2	0.00	0.00	0.01	0.06	172 08
200	8.49	8.47	34.064	26.471	159.1	0.447	2.05	89.4	31.1	36.4	2.19	28.8	0.03	0.00	0.01	0.05	202 07
231	8.45	8.43	34.161	26.555	151.8	0.495	1.49	64.8	22.6	40.6	2.38	30.2	0.03	0.00		233 06	
250 ISL	8.13 D	8.11	34.158 D	26.600	147.7	0.522	1.46	0163.6 D	22.1	43.4	2.44	31.1	0.02	0.00		252	
271	7.80	7.77	34.167	26.658	142.5	0.554	1.29	56.3	19.3	46.4	2.50	32.1	0.00	0.00		273 05	
300 ISL	7.58 D	7.55	34.177 D	26.698	139.0	0.594	1.12	0148.7 D	16.7	50.2	2.61	33.2	0.02	0.00		302	
320	7.47	7.44	34.210	26.739	135.5	0.622	0.92	40.2	13.7	52.8	2.68	34.0	0.00	0.00		323 04	
380	6.96	6.92	34.258	26.849	125.7	0.700	0.58	25.2	8.5	61.2	2.88	36.2	0.00	0.00		383 03	
400 ISL	6.73 D	6.69	34.268 D	26.889	122.0	0.726	0.49	015.6 D	7.2	64.0	2.92	36.8	0.02	0.00		403	
440	6.43	6.39	34.279	26.939	117.7	0.773	0.40	17.6	5.9	69.7	3.00	38.1	0.00	0.00		444 02	
500 ISL	6.03 D	5.99	34.306 D	27.012	111.3	0.843	0.31	013.3 D	4.4	75.9	3.09	39.0	0.02	0.00		504	
516	6.01	5.97	34.319	27.025	110.3	0.860	0.27	11.9	3.9	77.6	3.12	39.2	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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 55.3 N	118 55.6 W	16/07/2016	1113	UTC	1685 m	290 14 kn	290 14	kn	1019.0 mb	16.7 C	15.0 C						026
0	18.52	18.52	33.594	24.069	383.4	0.000	5.64	246.1	105.2	1.7	0.24	0.0	0.02	0.05	0.37	0.15	0
2	18.52	18.52	33.594	24.070	383.5	0.008	5.64	246.1	105.2	1.7	0.24	0.0	0.00	0.05	0.37	0.15	2 21
10	16.15	16.15	33.487	24.552	337.8	0.037	6.22	271.4	110.8	3.7	0.38	0.0	0.03	0.01	0.71	0.31	10 19
10	16.15	16.15	33.487	24.552	337.8	0.038											10 20
20	14.50	14.50	33.460	24.894	305.5	0.069	5.63	245.8	97.0	6.0	0.62	3.8	0.17	0.20	0.78	0.37	20 18
30	12.20	12.20	33.458	25.356	261.8	0.097	4.36	190.2	71.6	11.5	1.22	13.2	0.22	0.02	0.42	0.26	30 17
40	11.77	11.77	33.480	25.454	252.7	0.123	4.09	178.8	66.7	13.0	1.32	15.1	0.13	0.00	0.32	0.23	40 16
50	11.00	10.99	33.529	25.633	235.9	0.147	3.70	161.4	59.2	15.7	1.48	17.8	0.08	0.00	0.18	0.17	50 15
60	10.61	10.60	33.577	25.739	226.0	0.170	3.44	150.4	54.7	18.0	1.59	19.5	0.05	0.00	0.10	0.15	60 14
70	10.28	10.27	33.612	25.824	218.1	0.193	3.36	146.6	53.0	19.0	1.62	20.2	0.04	0.00	0.08	0.28	71 13
75 ISL	10.21 D	10.20	33.624 D	25.845	216.2	0.201	3.36	0146.2 D	52.9	20.1	1.67	21.0	0.04	0.00	0.06	0.23	76
86	9.86	9.85	33.725	25.985	203.2	0.226	3.00	131.0	47.0	22.6	1.77	22.7	0.04	0.00	0.03	0.12	87 12
100	9.55	9.54	33.826	26.115	191.1	0.254	2.68	117.2	41.7	26.0	1.92	24.6	0.03	0.00	0.02	0.08	101 11
120	9.15	9.14	33.953	26.279	175.8	0.291	2.36	103.1	36.4	30.2	2.05	26.5	0.03	0.00	0.01	0.06	121 10
125 ISL	9.13 D	9.12	33.963 D	26.289	175.0	0.298	2.39	0104.0 D	36.8	30.7	2.07	26.7	0.03	0.00	0.01	0.06	126
140	9.01	8.99	34.012	26.348	169.7	0.325	2.18	95.2	33.5	32.3	2.13	27.3	0.03	0.00	0.01	0.06	141 09
150 ISL	8.99 D	8.97	34.034 D	26.370	167.9	0.341	2.13	92.5 D	32.7	33.7	2.18	27.9	0.03	0.00	0.01	0.06	151
170	8.76	8.74	34.104	26.460	159.6	0.375	1.79	78.3	27.4	36.5	2.28	29.1	0.00	0.00	0.01	0.05	171 08
200 ISL	8.44 D	8.42	34.146 D	26.544	152.2	0.421	1.53	66.4 D	25.2	40.0	2.39	30.3	0.02	0.00	0.01	0.05	202</

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 53.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED ml/L μmol/Kg	WAVES OXY PCT	WEA SI03*	BAROMETER 1020.0 mb	DRY NO2*	WET NH4*	SECCHI CHL-A	CLD AMT μM μM	TYPE PHAEAO	ORD PRES db	SAMP
																	025
0	17.12	17.12	33.628	24.435	348.6	0.000	5.86	256.1	106.6	1.1	0.20	0.0	0.01	0.00	0.90	0.19	0
2	17.12	17.12	33.628	24.435	348.7	0.007	5.86	256.1	106.6	1.1	0.20	0.0	0.00	0.00	0.90	0.19	2 21
10	17.00	17.00	33.627	24.463	346.3	0.035	5.86	256.0	106.3	1.2	0.21	0.0	0.00	0.00	1.29	0.22	10 19
10	17.00	17.00	33.627	24.463	346.3	0.036											10 20
20	14.57	14.57	33.618	25.001	295.4	0.067	5.11	223.1	88.3	6.6	0.74	5.5	0.18	0.52	1.76	0.54	20 18
30	11.73	11.72	33.640	25.586	239.8	0.094	4.05	176.7	65.9	13.7	1.31	13.7	0.26	0.87	0.78	0.52	30 17
40	10.64	10.63	33.708	25.836	216.3	0.117	3.01	131.6	48.0	20.6	1.72	20.8	0.32	0.21	0.21	0.23	40 16
50	10.13	10.12	33.776	25.976	203.1	0.138	2.65	115.5	41.7	23.8	1.88	23.6	0.18	0.00	0.18	0.19	50 15
60	9.83	9.82	33.825	26.066	194.8	0.158	2.50	109.3	39.2	25.8	1.96	24.5	0.06	0.00	0.09	0.15	60 14
71	9.60	9.59	33.860	26.132	188.8	0.179	2.43	105.9	37.8	27.6	2.02	25.6	0.05	0.00	0.04	0.13	72 13
75 ISL	9.59 D	9.58	33.865 D	26.137	188.4	0.183	2.45	106.5 D	38.1	28.0	2.03	25.8	0.05	0.00	0.03	0.13	76
85	9.49	9.48	33.909	26.188	183.7	0.205	2.29	99.8	35.5	29.0	2.04	26.2	0.05	0.00	0.03	0.13	86 12
100	9.33	9.32	33.963	26.256	177.6	0.232	2.13	93.0	33.0	31.0	2.11	27.0	0.05	0.00	0.02	0.11	101 11
120	9.10	9.09	34.018	26.337	170.3	0.267	1.93	84.1	29.7	33.8	2.22	28.2	0.05	0.00	0.02	0.13	121 10
125 ISL	9.09 D	9.08	34.024 D	26.343	169.8	0.273	1.92 D	83.5 D	29.6	34.4	2.23	28.4	0.05	0.00	0.02	0.13	126
141	8.94	8.93	34.068	26.403	164.5	0.302	1.74	75.9	26.7	36.1	2.28	29.0	0.05	0.00	0.01	0.11	142 09
150 ISL	8.89 D	8.87	34.092 D	26.430	162.1	0.315	1.71 D	74.6 D	26.3	37.2	2.31	29.4	0.04	0.00	0.01	0.12	151
170	8.75	8.73	34.154	26.501	155.8	0.348	1.43	62.5	21.9	39.5	2.39	30.2	0.03	0.00	0.02	0.13	171 08
200	8.41	8.39	34.168	26.566	150.1	0.394	1.28	55.8	19.4	42.8	2.47	31.4	0.03	0.00	0.02	0.10	202 07
231	8.04	8.02	34.193	26.640	143.5	0.440	1.06	46.4	16.0	47.5	2.58	32.7	0.00	0.00			233 06
250 ISL	7.95 D	7.92	34.220 D	26.677	140.4	0.466	0.93 D	40.5 D	14.0	49.5	2.63	33.3	0.02	0.00			252
271	7.72	7.70	34.225	26.714	137.1	0.496	0.86	37.5	12.9	51.7	2.69	34.0	0.00	0.00			273 05
300 ISL	7.38 D	7.35	34.243 D	26.777	131.5	0.534	0.72 D	31.1 D	10.6	55.5	2.78	34.9	0.02	0.00			302
320	7.30	7.27	34.254	26.799	129.7	0.561	0.63	27.4	9.3	58.1	2.84	35.6	0.00	0.00			323 04
381	6.74	6.70	34.268	26.887	121.9	0.638	0.49	21.3	7.1	65.7	2.93	37.4	0.00	0.00			384 03
400 ISL	6.61 D	6.57	34.287 D	26.920	119.0	0.661	0.41 D	17.8 D	6.0	67.8	2.97	37.8	0.02	0.00			403
440	6.35	6.31	34.305	26.969	114.8	0.708	0.33	14.3	4.7	72.2	3.05	38.7	0.00	0.00			444 02
500 ISL	6.05 D	6.01	34.334 D	27.031	109.6	0.776	0.25 D	10.7 D	3.6	78.5	3.14	39.3	0.02	0.00			504
517	5.99	5.95	34.336	27.041	108.8	0.794	0.25	10.8	3.6	80.3	3.16	39.5	0.00	0.00			521 01

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 60.0

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	WIND SPEED ml/L μmol/Kg	WAVES OXY PCT	WEA SI03*	BAROMETER 1021.0 mb	DRY NO2*	WET NH4*	SECCHI CHL-A	CLD AMT μM μM	TYPE PHAEAO	SAMP	
																024	
0	16.38	16.38	33.186	24.266	364.7	0.000	5.78	252.6	103.3	1.1	0.31	0.0	0.02	0.00	0.27	0.08	0
2	16.38	16.38	33.186	24.266	364.7	0.007	5.78	252.6	103.3	1.1	0.31	0.0	0.00	0.00	0.27	0.08	2 20
10 ISL	16.01 D	16.01	33.206 D	24.367	355.4	0.033	5.85 D	254.8 D	103.7	1.1	0.30	0.0	0.01	0.00	0.37	0.12	10
11	15.94	15.93	33.206	24.384	353.8	0.040	5.85	255.7	103.7	1.1	0.30	0.0	0.00	0.00	0.38	0.13	11 19
20	15.94	15.93	33.309	24.464	346.5	0.071	5.88	257.0	104.3	1.1	0.27	0.0	0.00	0.00	0.67	0.21	20 18
30	15.82	15.82	33.402	24.562	337.5	0.105	5.87	256.3	103.8	1.0	0.26	0.0	0.03	0.03	1.02	0.33	30 17
40	14.49	14.49	33.238	24.726	322.2	0.138	5.81	253.8	100.0	1.8	0.43	0.9	0.12	0.51	0.96	0.39	40 16
50	11.68	11.68	33.276	25.312	266.4	0.168	4.83	211.0	78.4	9.1	1.02	9.6	0.34	0.65	0.29	0.22	50 15
60	10.93	10.93	33.290	25.459	252.6	0.194	4.44	193.7	70.9	12.6	1.21	13.5	0.10	0.00	0.20	0.20	60 14
69	10.85	10.85	33.521	25.653	234.4	0.216	3.73	162.8	59.6	16.6	1.50	17.6	0.15	0.02	0.09	0.12	70 13
75 ISL	10.28 D	10.27	33.452 D	25.700	230.0	0.227	3.70	161.0	58.3	17.7	1.54	18.3	0.11	0.00	0.07	0.10	76
85	9.85	9.84	33.559	25.855	215.4	0.251	3.65	159.3	57.0	19.5	1.60	19.5	0.06	0.00	0.05	0.07	86 12
100	9.40	9.38	33.649	26.001	201.8	0.283	3.47	151.5	53.7	22.0	1.69	21.2	0.03	0.00	0.04	0.07	101 11
121	9.20	9.19	33.771	26.128	190.2	0.324	3.11	135.6	47.9	25.3	1.83	23.2	0.03	0.00	0.02	0.06	122 10
125 ISL	9.19 D	9.17	33.785 D	26.141	189.0	0.330	3.00	130.4	46.2	26.0	1.86	23.6	0.03	0.00	0.02	0.06	126
140	9.14	9.13	33.874	26.219	182.0	0.359	2.58	112.6	39.7	28.7	1.99	25.2	0.00	0.00	0.03	0.07	141 09
150 ISL	9.09 D	9.08	33.929 D	26.270	177.3	0.376	2.36 D	102.6 D	36.3	30.5	2.05	25.9	0.02	0.00	0.03	0.07	151
171	8.76	8.74	34.024	26.397	165.6	0.413	2.10	91.5	32.1	34.3	2.18	27.5	0.00	0.06	0.03	0.07	172 08
200 ISL	8.23 D	8.21	34.074 D	26.519	154.4	0.459	1.85 D	80.5 D	28.0	40.1	2.33	29.7	0.02	0.00	0.03	0.08	202
201	8.21	8.19	34.072	26.520	154.4	0.461	1.82	79.3	27.5	40.3	2.34	29.8	0.03	0.00	0.03	0.08	203 07
230	7.83	7.81	34.093	26.594	147.8	0.505	1.64	71.7	24.6	44.5	2.45	31.3	0.03	0.00			232 06
250 ISL	7.90 D	7.87	34.131 D	26.614	146.2	0.534	1.36 D	59.1 D	20.4	47.2	2.53	31.9	0.02	0.00			252
271	7.67	7.65	34.163	26.672	141.0	0.565	1.15	50.1	17.1	49.9	2.62	32.5	0.00	0.00			273 05
300 ISL	7.26 D	7.23	34.139 D	26.713	137.4	0.606	1.01 D	43.9 D	14.9	53.8	2.7						

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32	5.2 N	120 38.3 W	15/07/2016	1657 UTC	3810 m	320 10 kn	300 03 07	2	1024.0 mb	16.6 C	15.2 C	32 m	8/8	ST	023		
0	17.92	17.92	33.125	23.858	403.6	0.000	5.50	240.2	101.2	1.9	0.27	0.0	0.01	0.01	0.09	0.02	0
2 A	17.92	17.92	33.125	23.858	403.7	0.008	5.50	240.2	101.2	1.9	0.27	0.0	0.00	0.01	0.09	0.02	2 24
10	17.91	17.91	33.129	23.863	403.5	0.040	5.50	240.4	101.3	1.8	0.27	0.0	0.00	0.08	0.02	10 22	
10	17.91	17.91	33.124	23.859	403.9	0.041											10 23
20 A	17.91	17.91	33.123	23.859	404.2	0.081	5.50	240.4	101.3	1.8	0.28	0.0	0.00	0.00	0.09	0.02	20 21
24 A	17.92	17.91	33.124	23.859	404.4	0.097	5.51	240.6	101.4	1.8	0.27	0.0	0.00	0.00	0.09	0.02	24 20
30 ISL	17.92 D	17.92	33.136 D	23.867	403.8	0.118	5.52	240.7	101.6	1.7	0.26	0.0	0.00	0.00	0.11	0.03	30
35	17.60	17.59	33.194	23.990	392.3	0.141	5.53	241.8	101.3	1.6	0.26	0.0	0.00	0.00	0.12	0.03	35 19
45 A	16.62	16.61	33.193	24.221	370.6	0.179	5.87	256.5	105.4	1.9	0.29	0.0	0.00	0.00	0.13	0.03	45 18
50 ISL	16.21 D	16.21	33.196 D	24.316	361.7	0.195	5.93	258.5	105.6	1.9	0.30	0.0	0.00	0.00	0.14	0.04	50
58	15.67	15.66	33.190	24.434	350.6	0.226	5.89	257.1	105.7	2.0	0.32	0.0	0.00	0.00	0.16	0.06	58 17
71	15.07	15.06	33.216	24.586	335.6	0.271	5.79	252.9	100.8	2.3	0.39	0.0	0.00	0.00	0.22	0.13	72 16
75 ISL	14.95 D	14.94	33.227 D	24.622	333.3	0.282	5.79	252.3	100.5	2.5	0.41	0.2	0.02	0.00	0.25	0.22	76
84 A	14.07	14.06	33.229	24.810	315.5	0.313	5.59	244.3	95.4	3.1	0.44	0.5	0.04	0.00	0.33	0.42	85 14
85	14.07	14.06	33.230	24.810	315.5	0.315											85 15
93	13.48	13.46	33.228	24.931	304.2	0.341	5.49	239.7	92.5	3.6	0.49	1.5	0.06	0.00	0.34	0.30	94 13
100 ISL	12.91 D	12.90	33.246 D	25.058	292.2	0.361	5.08	221.5 D	84.7	5.2	0.67	4.7	0.07	0.00	0.29	0.39	101
101 A	12.87	12.86	33.247	25.066	291.4	0.365	5.17	225.8	86.0	5.5	0.69	5.2	0.07	0.00	0.28	0.40	102 12
114	11.61	11.60	33.265	25.320	267.4	0.401	4.85	212.0	78.7	8.6	0.93	9.4	0.04	0.00	0.18	0.17	115 11
124	10.57	10.56	33.322	25.550	245.5	0.427	4.53	197.7	71.8	12.3	1.18	13.6	0.00	0.00	0.11	0.14	125 10
125 ISL	10.55 D	10.54	33.329 D	25.559	244.6	0.428	4.50	196.0 D	71.3	12.6	1.20	13.9	0.02	0.00	0.10	0.14	126
140	9.89	9.87	33.467	25.779	223.9	0.465	3.97	173.2	62.0	17.1	1.46	18.1	0.00	0.00	0.05	0.06	141 09
150 ISL	9.77 D	9.75	33.526 D	25.845	217.8	0.486	3.91	170.2 D	61.0	19.2	1.55	19.5	0.01	0.00	0.03	0.05	151
170	9.33	9.31	33.713	26.064	197.4	0.528	3.29	143.8	50.9	23.3	1.74	22.3	0.00	0.00	0.01	0.03	171 08
200	8.82	8.80	33.902	26.294	176.0	0.584	2.84	124.1	43.5	28.8	1.91	25.2	0.00	0.00	0.00	0.03	202 07
231	8.52	8.49	34.048	26.456	161.2	0.636	1.98	86.4	30.1	36.7	2.23	28.7	0.00	0.00			233 06
250 ISL	8.22 D	8.19	34.063 D	26.514	155.9	0.666	1.98	86.1 D	29.9	39.5	2.30	29.6	0.01	0.00			252
270	8.08	8.05	34.099	26.563	151.6	0.697	1.66	72.5	25.0	42.3	2.37	30.5	0.00	0.00			272 05
300 ISL	7.78 D	7.75	34.124 D	26.626	146.0	0.742	1.41	61.3 D	21.1	46.9	2.48	32.1	0.01	0.00			302
321	7.44	7.41	34.121	26.675	141.6	0.772	1.30	56.7	19.3	50.0	2.56	33.1	0.00	0.00			324 04
381	6.93	6.89	34.176	26.790	131.3	0.854	0.82	35.7	12.0	58.9	2.79	35.6	0.00	0.00			384 03
400 ISL	6.76 D	6.73	34.203 D	26.834	127.3	0.880	0.67	29.1 D	9.8	61.5	2.84	36.2	0.01	0.00			403
440	6.50	6.46	34.230	26.891	122.3	0.929	0.52	22.9	7.6	66.8	2.95	37.3	0.00	0.00			444 02
500 ISL	6.09 D	6.05	34.279 D	26.983	114.1	1.002	0.35	15.1 D	5.0	74.1	3.06	38.6	0.01	0.00			504
516	6.04	5.99	34.288	26.997	112.9	1.018	0.32	13.8	4.5	76.0	3.09	38.9	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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
31	45.3 N	121 19.2 W	15/07/2016	1031 UTC	3730 m	320 21 kn	302	1023.0 mb	16.8 C	15.5 C							022
0	18.46	18.46	33.227	23.803	408.8	0.000	5.46	238.6	101.6	2.2	0.27	0.1	0.03	0.04	0.08	0.02	0
2	18.46	18.46	33.227	23.803	408.9	0.008	5.46	238.6	101.6	2.2	0.27	0.1	0.03	0.04	0.08	0.02	2 20
10 ISL	18.46 D	18.46	33.226 D	23.804	409.2	0.037	5.46	238.1	101.6	1.7	0.31	0.0	0.02	0.03	0.08	0.02	10 19
11	18.46	18.46	33.230	23.805	409.1	0.045	5.44	237.6	101.2	1.7	0.32	0.0	0.00	0.03	0.08	0.02	11 19
20 ISL	18.46 D	18.46	33.226 D	23.803	409.7	0.078	5.46	238.3	101.7	1.6	0.31	0.0	0.02	0.00	0.09	0.02	20 18
26	18.44	18.44	33.229	23.811	409.1	0.106	5.45	238.3	101.5	1.5	0.30	0.0	0.00	0.00	0.09	0.02	26 18
30 ISL	18.43 D	18.43	33.228 D	23.813	409.1	0.120	5.46	238.2	101.6	1.5	0.31	0.0	0.02	0.00	0.10	0.03	30
40	18.34	18.33	33.229	23.837	407.2	0.164	5.45	238.3	101.3	1.5	0.35	0.0	0.00	0.03	0.11	0.03	40 17
50	16.46	16.45	33.190	24.255	367.5	0.202	5.86	255.9	104.8	1.6	0.30	0.0	0.00	0.00	0.12	0.04	50 16
62	15.26	15.25	33.190	24.525	342.1	0.245	5.85	255.6	102.2	1.9	0.34	0.0	0.00	0.00	0.20	0.06	62 15
75	14.93	14.92	33.205	24.609	334.5	0.289	5.79	253.1	100.6	2.1	0.35	0.0	0.00	0.00	0.23	0.15	76 14
87	14.45	14.43	33.217	24.723	324.0	0.328	5.72	250.1	98.4	2.3	0.37	0.0	0.03	0.00	0.27	0.21	88 13
100	13.48	13.46	33.250	24.949	302.7	0.369	5.36	234.3	90.4	4.2	0.60	3.3	0.10	0.00	0.24	0.35	101 12
113	12.20	12.19	33.262	25.207	278.2	0.407	4.94	216.0	81.1	6.8	0.84	7.6	0.07	0.00	0.22	0.21	114 11
125	11.25	11.24	33.279	25.396	260.3	0.439	4.67	204.0	75.1	9.8	1.05	11.3	0.04	0.00	0.16	0.11	126 10
141	10.41	10.39	33.337	25.590	242.0	0.479	4.43	193.5	70.0	12.8	1.25	14.5	0.03	0.00	0.11	0.14	142 09
150 ISL	10.07 D	10.06	33.393 D	25.691	232.5	0.500	4.39	191.1 D	68.8	15.2	1.36	16.4	0.03	0.00	0.08	0.10	151
171	9.26	9.24	33.617	26.000	203.4	0.546	3.73	162.9	57.5	20.8	1.63	20.8	0.00	0.00	0.01	0.03	172 08
200	8.94	8.92	33.847	26.232	182.0	0.602	3.26	142.2	50.0	26.1	1.80	23.5	0.00	0.00	0.00	0.02	202 07
230	8.60	8.58	33.989	26.397	166.8	0.6											

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
31 25.3 N	121 59.5 W	15/07/2016	0409	UTC	3799 m	340	17 kn			1024.0 mb	16.8 C	16.1 C					021	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	18.61	18.61	33.265	23.795	409.6	0.000	5.46	238.4	101.9	1.9	0.29	0.0	0.02	0.34	0.09	0.02	0	
2	18.61	18.61	33.265	23.796	409.6	0.008	5.46	238.4	101.9	1.9	0.29	0.0	0.00	0.34	0.09	0.02	2 22	
10 ISL	18.61	18.61	33.264 D	23.795	410.0	0.037	5.44	0237.5	0101.6	1.9	0.27	0.0	0.02	0.07	0.08	0.02	10	
10	18.61	18.61	33.266	23.797	409.8	0.042											10 21	
11	18.61	18.60	33.264	23.796	410.0	0.045	5.47	238.9	102.1	1.9	0.27	0.0	0.00	0.04	0.08	0.02	11 20	
20 ISL	18.60 D	18.60	33.263 D	23.796	410.3	0.078	5.44	0237.4	0101.6	1.8	0.31	0.0	0.02	0.12	0.09	0.02	20	
25	18.56	18.56	33.263	23.807	409.4	0.103	5.45	237.9	101.6	1.8	0.33	0.0	0.00	0.17	0.09	0.02	25 19	
30 ISL	18.54 D	18.54	33.266 D	23.815	408.9	0.120	5.47	0238.5	0101.9	1.9	0.31	0.0	0.02	0.00	0.10	0.03	30	
41	17.35	17.34	33.223	24.073	384.6	0.167	5.72	249.8	104.2	1.9	0.28	0.0	0.00	0.00	0.12	0.03	41 18	
50	16.29	16.28	33.189	24.293	363.9	0.200	5.90	257.8	105.3	2.0	0.30	0.0	0.00	0.03	0.11	0.03	50 17	
62	15.74	15.73	33.197	24.424	351.8	0.243	5.84	254.9	103.0	2.0	0.29	0.0	0.00	0.04	0.13	0.05	62 16	
75 ISL	15.07 D	15.06	33.215 D	24.586	336.7	0.286	5.81	0253.3	0101.2	2.3	0.31	0.0	0.01	0.00	0.18	0.10	76	
76	14.93	14.92	33.216	24.618	333.6	0.292	5.80	253.5	100.7	2.4	0.31	0.0	0.00	0.00	0.18	0.10	77 15	
87	13.94	13.93	33.266	24.864	310.4	0.327	5.49	239.6	93.4	3.4	0.42	0.7	0.08	0.01	0.28	0.29	88 13	
87	13.94	13.93	33.262	24.862	310.7	0.327											88 14	
100 ISL	13.07 D	13.06	33.261 D	25.038	294.1	0.365	5.20	0226.5 D	86.9	5.3	0.64	4.7	0.07	0.00	0.27	0.28	101	
101	13.03	13.02	33.263	25.047	293.2	0.369	5.15	225.1	86.1	5.5	0.66	5.0	0.07	0.00	0.27	0.28	102 12	
113	12.06	12.04	33.273	25.243	274.8	0.403	4.87	212.5	79.6	7.8	0.91	8.6	0.04	0.00	0.21	0.18	114 11	
125	11.39	11.38	33.292	25.381	261.7	0.435	4.65	203.1	75.0	10.2	1.07	11.5	0.03	0.00	0.14	0.15	126 10	
140	10.29	10.27	33.388	25.650	236.2	0.473	4.31	188.2	67.9	14.4	1.30	15.7	0.00	0.01	0.06	0.08	141 09	
150 ISL	10.19 D	10.17	33.485 D	25.744	227.6	0.496	4.07	177.0	64.0	16.7	1.42	17.4	0.02	0.00	0.04	0.06	151	
171	9.59	9.57	33.687	26.002	203.4	0.541	3.55	155.1	55.2	21.5	1.68	21.1	0.00	0.00	0.01	0.03	172 08	
200 ISL	9.48 D	9.46	33.902 D	26.188	186.4	0.595	2.55	0110.9 D	39.6	27.5	1.97	24.9	0.02	0.00	0.00	0.02	202	
201	9.40	9.37	33.907	26.206	184.6	0.600	2.52	109.8	39.0	27.7	1.98	25.1	0.00	0.00	0.00	0.02	203 07	
231	9.03	9.00	34.013	26.349	171.6	0.653	2.20	96.1	33.9	32.1	2.16	27.0	0.00	0.03			233 06	
250 ISL	8.52 D	8.49	34.009 D	26.426	164.4	0.683	2.44	0106.1 D	37.1	34.8	2.22	28.0	0.02	0.00			252	
271	8.40	8.37	34.066	26.489	158.8	0.718	2.00	87.1	30.3	37.7	2.28	29.2	0.00	0.00			273 05	
300 ISL	8.18 D	8.15	34.118 D	26.563	152.2	0.763	1.61	69.8 D	24.2	41.8	2.38	30.6	0.02	0.00			302	
320	7.82	7.78	34.095	26.600	149.8	0.794	1.66	72.4	24.8	44.7	2.45	31.6	0.00	0.00			323 04	
381	7.10	7.06	34.166	26.758	134.5	0.881	0.94	40.9	13.8	56.0	2.79	35.2	0.00	0.03			384 03	
400 ISL	6.84 D	6.80	34.162 D	26.791	131.5	0.906	0.87	037.8 D	12.7	58.8	2.84	35.8	0.01	0.00			403	
442	6.60	6.56	34.208	26.859	125.4	0.960	0.60	26.2	8.8	65.2	2.96	37.3	0.00	0.00			446 02	
500 ISL	6.05 D	6.00	34.226 D	26.947	117.5	1.031	0.46	19.9 D	6.6	73.0	3.08	39.2	0.01	0.00			504	
516	5.91	5.86	34.215	26.955	116.7	1.049	0.45	19.8	6.5	75.2	3.11	39.7	0.00	0.00			520 01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
31 5.2 N	122 39.8 W	14/07/2016	2122	UTC	3971 m	340	17 kn	340 02 05	2	1026.0 mb	19.8 C	17.0 C	28 m	8/8	ST	020		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	S103*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	19.04	19.04	33.372	23.768	412.1	0.000	5.38	235.1	101.4	2.1	0.28	0.0	0.02	0.00	0.08	0.01	0	
2	19.04	19.04	33.372	23.769	412.2	0.008	5.38	235.1	101.4	2.1	0.28	0.0	0.00	0.08	0.01	0.02	20 19	
10 ISL	19.03	19.03	33.393	23.787	410.7	0.041	5.39	235.3	101.4	2.0	0.29	0.0	0.00	0.00	0.07	0.02	10 19	
20 ISL	19.00 D	18.99	33.371 D	23.780	411.8	0.079	5.40	0235.5	0101.6	2.0	0.31	0.0	0.02	0.00	0.08	0.02	20 18	
26	18.99	18.99	33.376	23.786	411.5	0.107	5.39	235.6	101.5	2.0	0.32	0.0	0.00	0.06	0.08	0.02	26 18	
30 ISL	18.99 D	18.98	33.370 D	23.783	412.0	0.120	5.40	0235.6	0101.6	2.0	0.31	0.0	0.02	0.00	0.09	0.02	30	
40	18.90	18.89	33.391	23.822	408.6	0.164	5.40	236.0	101.5	2.0	0.30	0.0	0.00	0.00	0.10	0.02	40 17	
50	16.10	16.10	33.268	24.397	354.0	0.203	5.98	261.2	106.3	2.1	0.31	0.0	0.00	0.00	0.15	0.04	50 16	
62	14.36	14.35	33.310	24.811	314.8	0.243	5.86	255.7	100.5	3.5	0.42	0.0	0.00	0.04	0.32	0.17	62 15	
75	12.54	12.53	33.315	25.181	279.7	0.281	4.95	216.4	81.9	7.3	0.86	7.7	0.14	0.01	0.62	0.41	76 14	
87	11.49	11.48	33.337	25.397	259.3	0.314	4.77	208.5	77.2	10.6	1.11	12.0	0.08	0.00	0.36	0.28	88 13	
100	10.66	10.64	33.372	25.573	242.7	0.346	4.23	184.6	67.1	13.8	1.31	15.4	0.04	0.00	0.18	0.17	101 12	
112	10.06	10.04	33.457	25.743	226.8	0.374	3.97	173.2	62.2	17.0	1.46	18.0	0.03	0.00	0.08	0.08	113 11	
125	9.54	9.52	33.584	25.928	209.4	0.403	3.61	157.8	56.1	20.3	1.62	20.7	0.00	0.00	0.02	0.04	126 10	
140	9.29	9.28	33.684	26.046	198.4	0.433	3.33	145.2	51.4	23.2	1.74	22.7	0.00	0.00	0.01	0.03	141 09	
150 ISL	9.15 D	9.13	33.778 D	26.143	189.4	0.452	3.21	0139.7 D	49.5	25.2	1.80	23.7	0.02	0.00	0.01	0.03	151	
171	8.85	8.84	33.887	26.276	177.1	0.491	2.80	122.4	42.9	29.3	1.94	25.8	0.00	0.00	0.00	0.03	172 08	
200	8.53	8.51	33.969	26.391	166.7	0.541	2.60	113.7	39.6	33.1	2.04	27.3	0.00	0.00	0.00	0.03	202 07	
230	8.12	8.10	34.029	26.501	156.7	0.590	2.19	95.8	33.1	38.8	2.21	29.5	0.00	0.00			232 06	
250 ISL	8.02 D	7.99	34.066 D	26.546														

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
30	44.9 N	123 20.2 W	14/07/2016	1541	UTC	3948 m	340	17 kn	350	05	06	2	1026.0	mb	17.1	C 15.8	C	28 m	8/8	ST 019
0	18.93	18.93	33.345	23.776	411.4	0.000	5.42	236.6	101.8	1.6	0.27	0.0	0.02	0.01	0.08	0.02	0.02	0		
2 A	18.93	18.93	33.345	23.776	411.5	0.008	5.42	236.6	101.8	1.6	0.27	0.0	0.00	0.01	0.08	0.02	0.02	2	24	
10	18.93	18.93	33.344	23.776	411.8	0.041	5.41	235.5	101.7	1.7	0.27	0.0	0.00	0.00	0.10	0.02	0.02	10	23	
17 A	18.93	18.93	33.344	23.776	412.1	0.070	5.40	235.9	101.5	1.5	0.29	0.0	0.00	0.00	0.08	0.02	0.02	17	22	
20 ISL	18.93	D 18.92	33.344	D 23.777	412.1	0.079	5.41	D 236.0	D 101.7	1.5	0.29	0.0	0.02	0.00	0.08	0.02	0.02	20		
21 A	18.93	18.92	33.348	23.780	411.9	0.086	5.40	235.7	101.4	1.4	0.29	0.0	0.00	0.00	0.08	0.02	0.02	21	21	
30 ISL	18.93	D 18.92	33.344	D 23.778	412.5	0.120	5.42	D 236.2	D 101.7	1.4	0.29	0.0	0.02	0.00	0.08	0.02	0.02	30		
31	18.93	18.93	33.344	23.777	412.6	0.128	5.43	237.0	101.9	1.4	0.29	0.0	0.00	0.00	0.09	0.02	0.02	31	20	
40 A	18.89	18.89	33.342	23.786	412.1	0.165	5.39	235.6	101.3	1.4	0.27	0.0	0.00	0.00	0.09	0.02	0.02	40	19	
50 ISL	17.01	D 17.00	33.214	D 24.146	378.0	0.202	5.87	D 256.0	D 106.2	1.5	0.28	0.0	0.02	0.00	0.13	0.03	0.03	50		
52	16.64	16.63	33.229	24.243	368.7	0.212	5.81	253.7	104.3	1.5	0.28	0.0	0.00	0.00	0.13	0.03	0.03	52	18	
63	15.81	15.80	33.178	24.394	354.7	0.251	5.91	258.0	104.3	1.6	0.30	0.0	0.00	0.00	0.15	0.04	0.04	63	17	
74 A	15.16	15.15	33.207	24.561	339.0	0.290	5.86	256.0	102.2	1.9	0.35	0.0	0.00	0.00	0.20	0.09	0.09	75	16	
75 ISL	15.09	D 15.08	33.207	D 24.576	337.6	0.291	5.87	D 255.9	D 102.2	1.9	0.35	0.0	0.02	0.00	0.20	0.10	0.10	76		
81	14.68	14.66	33.219	24.675	328.3	0.313	5.83	254.7	100.7	2.2	0.38	0.0	0.00	0.00	0.25	0.20	0.20	82	15	
90 A	13.92	13.91	33.230	24.842	312.6	0.342	5.72	249.9	97.3	2.6	0.41	0.0	0.03	0.00	0.41	0.39	0.39	91	14	
100 ISL	13.28	D 13.27	33.285	D 25.015	296.4	0.371	5.25	D 228.8	D 88.2	4.7	0.66	4.1	0.12	0.00	0.35	0.36	0.10	101		
100	13.28	13.27	33.278	25.009	296.9	0.372												101	13	
101	13.22	13.20	33.278	25.022	295.7	0.375	5.23	228.6	87.8	4.9	0.68	4.5	0.13	0.00	0.34	0.36	102	12		
110	12.21	12.20	33.318	25.249	274.2	0.401	4.84	211.2	79.4	7.5	0.92	8.7	0.12	0.00	0.28	0.27	111	11		
124	11.34	11.32	33.354	25.439	256.2	0.438	4.34	189.5	69.9	11.7	1.22	13.8	0.04	0.00	0.17	0.12	125	10		
125 ISL	10.95	D 10.93	33.366	D 25.519	248.6	0.440	4.30	D 187.0	D 68.7	11.9	1.23	14.0	0.04	0.00	0.17	0.12	126			
141	10.13	10.11	33.436	25.715	230.0	0.479	3.98	173.7	62.5	15.7	1.45	17.6	0.00	0.00	0.07	0.07	142	09		
150 ISL	9.86	D 9.85	33.517	D 25.823	219.9	0.498	3.83	D 166.8	D 59.9	17.6	1.53	19.0	0.02	0.00	0.05	0.06	151			
171	9.41	9.39	33.665	26.014	202.2	0.543	3.38	147.7	52.4	22.0	1.73	22.3	0.00	0.00	0.01	0.03	172	08		
200 ISL	8.99	D 8.96	33.855	D 26.231	182.1	0.598	2.91	D 126.7	D 44.7	27.2	1.91	25.2	0.02	0.00	0.01	0.03	202			
203	8.97	8.94	33.859	26.238	181.5	0.605	2.87	125.4	44.1	27.7	1.93	25.5	0.00	0.00	0.01	0.03	205	07		
232	8.53	8.51	33.976	26.397	166.8	0.655	2.50	109.3	38.1	33.0	2.08	27.9	0.00	0.00			234	06		
250 ISL	8.44	D 8.42	34.007	D 26.436	163.4	0.685	2.40	D 104.2	D 36.4	35.4	2.14	28.8	0.02	0.00			252			
270	8.11	8.08	34.022	26.498	157.8	0.717	2.25	98.2	33.9	38.0	2.21	29.8	0.00	0.00			272	05		
300 ISL	7.56	D 7.53	34.029	D 26.584	149.8	0.763	2.12	D 92.1	D 31.5	43.7	2.39	31.9	0.02	0.00			302			
320	7.52	7.49	34.090	26.638	145.1	0.792	1.54	67.3	22.9	47.4	2.51	33.3	0.00	0.00			323	04		
379	6.65	6.61	34.088	26.757	134.0	0.875	1.18	51.6	17.2	58.3	2.73	36.5	0.00	0.00			382	03		
400 ISL	6.64	D 6.60	34.129	D 26.792	131.1	0.904	0.99	D 43.2	D 14.5	61.6	2.81	37.4	0.02	0.00			403			
441	6.23	6.19	34.152	26.863	124.6	0.955	0.71	31.1	10.3	68.1	2.96	39.1	0.00	0.00			445	02		
500 ISL	5.96	D 5.91	34.231	D 26.962	115.9	1.028	0.45	D 19.5	D 6.4	75.4	3.08	40.3	0.02	0.00			504			
516	5.80	5.76	34.232	26.982	114.0	1.045	0.40	17.5	5.8	77.4	3.11	40.6	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 02;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
30	25.0 N	123 59.7 W	14/07/2016	0704	UTC	4059 m	010	24 kn	1027.0	mb	19.0	C 16.5	C	018						
0	19.02	19.02	33.334	23.746	414.3	0.000	5.44	237.6	102.4	2.1	0.24	0.0	0.02	0.19	0.07	0.01	0.01	0		
2	19.02	19.01	33.334	23.746	414.4	0.008	5.44	237.6	102.4	2.1	0.24	0.0	0.00	0.19	0.07	0.01	0.01	2	22	
10	19.02	19.02	33.335	23.747	414.6	0.042	5.40	235.8	101.6	2.0	0.23	0.0	0.00	0.00	0.08	0.01	0.01	10	21	
20 ISL	19.02	D 19.02	33.335	D 23.746	415.0	0.079	5.42	D 236.5	D 102.1	2.0	0.22	0.0	0.01	0.00	0.07	0.02	0.02	26	19	
26	19.02	19.02	33.335	23.747	415.2	0.108	5.40	235.9	101.7	1.9	0.22	0.0	0.00	0.00	0.07	0.02	0.02	30		
30 ISL	19.02	D 19.02	33.337	D 23.749	415.2	0.121	5.42	D 236.3	D 102.0	1.9	0.23	0.0	0.01	0.00	0.08	0.02	0.02	40	18	
40	18.13	18.12	33.287	23.934	397.9	0.165	5.55	242.5	102.7	1.9	0.24	0.0	0.00	0.00	0.10	0.02	0.02	40	18	
50	16.73	16.72	33.212	24.211	371.8	0.204	5.77	252.1	103.8	2.0	0.22	0.0	0.00	0.00	0.10	0.02	0.02	50	17	
61	16.46	16.45	33.225	24.283	365.2	0.244	5.77	252.0	103.3	2.0	0.24	0.0	0.00	0.03	0.11	0.03	0.03	61	16	
75	16.24	16.23	33.326	24.412	353.4	0.295	5.74	250.7	102.4	2.1	0.21	0.0	0.00	0.00	0.15	0.03	0.03	76	15	
88	15.84	15.83	33.407	24.565	339.3	0.340	5.67	247.7	100.4	2.4	0.22	0.0	0.00</td							

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db
0	22.83	22.83	33.690	22.989	486.5	0.000	5.81	253.7	117.5	0.4	0.10	0.0	0.04	0.04	0.80	0.16	0
2 A	22.83	22.83	33.690	22.989	486.6	0.010	5.81	253.7	117.5	0.4	0.10	0.0	0.04	0.04	0.80	0.16	2 10
6 A	22.19	22.18	33.680	23.165	470.0	0.029	6.05	264.4	121.0	1.0	0.13	0.0	0.03	0.00	1.00	0.22	6 09
8 A	17.53	17.52	33.648	24.354	356.6	0.037	6.18	269.8	113.2	1.4	0.15	0.0	0.03	0.00	1.07	0.22	8 07
8	17.53	17.52	33.650	24.355	356.5	0.035											8 08
10 ISL	17.25 D	17.25	33.561	D 24.353	356.8	0.040	6.17	268.9	112.4	2.9	0.22	0.0	0.03	0.00	1.08	0.30	10
15 A	15.47	15.46	33.519	24.731	320.9	0.061	6.15	268.5	108.1	6.5	0.40	0.0	0.03	0.02	1.12	0.49	15 05
15	15.47	15.46	33.515	24.727	321.3	0.061											15
20 ISL	13.96 D	13.96	33.483	D 25.024	293.1	0.073	5.76	D 250.8	D 98.2	7.3	0.62	2.5	0.21	0.30	1.08	0.70	20
25 A	12.78	12.78	33.489	25.267	270.1	0.090	4.41	D 192.2	D 73.4	8.2	0.84	5.1	0.39	0.57	1.05	0.92	25 04
30 ISL	12.57 D	12.57	33.474	D 25.297	267.4	0.100	4.12	D 179.3	D 68.2	10.8	1.14	9.9	0.53	0.63	0.54	0.67	30
31 A	12.32	12.31	33.484	25.354	261.9	0.106	4.08	178.2	67.2	11.3	1.20	10.9	0.56	0.64	0.44	0.62	31 03
40	11.88	11.88	33.485	25.437	254.3	0.130	3.90	170.2	63.6	12.6	1.30	13.7	0.21	0.02	0.30	0.64	40 02
50 ISL	11.44 D	11.43	33.508	D 25.537	245.1	0.152	3.65	D 159.1	D 59.1								50
55	11.39	11.38	33.510	D 25.548	244.1	0.164	3.55	D 154.4	D 57.3								55 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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db
0	22.61	22.61	33.672	23.040	481.7	0.000	5.82	254.1	117.2	0.7	0.54	0.1	0.03	1.34	0.63	0.16	0
2	22.61	22.61	33.672	23.040	481.7	0.010	5.82	254.1	117.2	0.7	0.54	0.1	0.03	1.34	0.63	0.16	2 20
10	18.82	18.82	33.555	23.964	393.9	0.045	6.41	279.9	120.3	0.9	0.27	0.1	0.03	0.32	1.15	0.13	10 19
20	15.61	15.61	33.487	24.673	326.6	0.081	6.60	288.3	116.4	5.1	0.42	0.0	0.03	0.32	1.43	0.35	20 18
30	13.75	13.74	33.495	25.079	288.2	0.111	5.50	240.1	93.3	8.1	0.74	1.6	0.11	0.62	3.85	1.26	30 17
40	12.54	12.53	33.493	25.319	265.6	0.139	4.43	193.4	73.3	10.4	1.21	9.9	0.58	1.07	0.93	0.70	40 16
50	11.47	11.47	33.488	D 25.516	247.0	0.161	3.73	162.7	60.3	13.6	1.47	15.8	0.05	0.75	0.33	0.43	50 15
59	10.93	10.92	33.489	25.615	237.8	0.186	3.81	166.2	60.9	15.1	1.51	17.0	0.08	0.37	0.19	0.33	59 14
70	10.62	10.61	33.556	25.721	227.9	0.212	3.48	151.8	55.3	17.3	1.62	18.9	0.05	0.39	0.12	0.22	71 13
75 ISL	10.55 D	10.54	33.570	D 25.745	225.8	0.220	3.52	D 153.0	D 55.8	17.8	1.65	19.3	0.04	0.60	0.11	0.20	76
84	10.30	10.29	33.593	25.806	220.1	0.243	3.42	149.5	54.0	18.8	1.70	20.0	0.04	0.97	0.10	0.16	85 12
100	9.92	9.91	33.698	25.953	206.5	0.278	3.10	135.2	48.5	21.8	1.83	21.8	0.03	0.32	0.05	0.14	101 11
119	9.73	9.72	33.791	26.057	197.0	0.316	2.90	126.8	45.3	24.1	1.89	23.1	0.03	0.34	0.03	0.12	120 10
125 ISL	9.71 D	9.69	33.798	D 26.068	196.1	0.325	2.91	D 126.6	D 45.4	24.8	1.93	23.4	0.03	0.62	0.02	0.12	126
139	9.66	9.64	33.878	26.139	189.7	0.355	2.63	114.8	41.0	26.3	2.01	24.2	0.03	1.28	0.02	0.13	140 09
150 ISL	9.62 D	9.60	33.905	D 26.167	187.3	0.374	2.53	D 109.9	D 39.4	27.2	2.05	24.7	0.03	1.76	0.02	0.11	151
170	9.52	9.50	33.977	26.240	180.8	0.412	2.39	104.2	37.1	28.7	2.11	25.6	0.03	2.64	0.01	0.09	171 08
200	9.25	9.23	34.029	26.325	173.3	0.465	2.33	101.6	36.0	30.8	2.15	26.3	0.03	0.00	0.01	0.07	202 07
230	9.30	9.28	34.160	26.420	165.0	0.516	1.77	77.5	34.4	23.6	27.8	0.03	1.33				232 06
250 ISL	9.16 D	9.13	34.173	D 26.454	162.1	0.548	1.69	D 73.6	D 26.1	35.9	2.41	28.2	0.03	0.94			252
271	9.06	9.03	34.193	26.486	159.6	0.582	1.56	68.1	24.0	37.5	2.47	28.7	0.03	0.54			273 05
300 ISL	8.83 D	8.79	34.234	D 26.556	153.4	0.628	1.26	D 54.9	D 19.3	41.1	2.56	30.2	0.02	0.56			302
320	8.29	8.26	34.202	26.613	148.0	0.659	1.37	59.6	20.7	43.5	2.63	31.2	0.00	0.58			323 04
380	7.72	7.68	34.206	26.703	140.2	0.745	1.06	46.1	15.8	50.0	2.76	33.6	0.00	0.51			383 03
400 ISL	7.70 D	7.66	34.228	D 26.723	138.7	0.774	0.88	D 38.5	D 13.2	52.4	2.84	34.0	0.03	0.43			403
439	7.43	7.38	34.257	26.786	133.2	0.826	0.70	30.4	10.3	57.2	2.99	34.8	0.05	0.27			443 02
500 ISL	6.36 D	6.31	34.293	D 26.960	116.6	0.905	0.38	D 16.7	D 5.6	71.6	3.20	38.3	0.03	0.30			504
515	6.20	6.15	34.308	26.992	113.7	0.919	0.32	14.0	4.6	75.1	3.25	39.1	0.00	0.31			519 01

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db
0	22.16	22.16	33.655	23.152	470.9	0.000	5.93	259.2	118.5	0.3	0.13	0.1	0.03	0.63	0.73	0.13	0
2	22.16	22.16	33.655	23.153	471.0	0.009	5.93	259.2	118.5	0.3	0.13	0.1	0.03	0.63	0.73	0.13	2 20
9	21.82	21.82	33.629	23.229	464.1	0.042	6.01	262.5	119.3	0.4	0.12	0.0	0.03	0.58	0.73	0.14	9 19
10 ISL	21.52 D	21.52	33.640	D 23.319	455.5	0.043	6.06	D 264.3	D 119.6	0.6	0.16	0.1	0.03	0.57	0.74	0.15	10
20	14.74	14.74	33.437	2													

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
32	41.0 N	117 52.4 W	11/07/2016	1033	UTC	615 m	330	11 kn	1013.0 mb	18.5 C	16.9 C	006						
0	21.02	21.02	33.681	23.487	439.0	0.000	5.89	257.4	115.3	1.1	0.08	0.0	0.02	0.09	0.69	0.16	0	
2	21.02	21.02	33.681	23.488	439.0	0.009	5.89	257.4	115.3	1.1	0.08	0.0	0.00	0.09	0.69	0.16	2	20
10	19.25	19.25	33.536	23.841	405.7	0.043	5.75	251.3	108.9	1.4	0.25	0.0	0.00	0.04	0.33	0.07	10	19
20	14.43	14.42	33.438	24.893	305.6	0.078	5.96	260.6	102.6	2.9	0.44	1.0	0.09	0.00	0.52	0.19	20	18
30	13.28	13.27	33.378	25.084	287.7	0.108	5.24	228.8	88.0	5.7	0.80	6.5	0.40	0.01	0.75	0.43	30	17
40	12.91	12.90	33.360	25.144	282.2	0.136	4.97	217.2	82.9	7.3	0.95	9.3	0.17	0.00	0.71	0.52	40	16
50	11.79	11.79	33.341	25.399	258.2	0.163	4.30	187.9	70.1	12.2	1.25	14.3	0.05	0.01	0.26	0.21	50	15
60	11.50	11.50	33.440	25.473	251.3	0.189	4.10	179.0	66.3	13.5	1.33	15.6	0.05	0.01	0.16	0.12	60	14
70	11.04	11.03	33.503	25.607	238.8	0.213	3.84	167.8	61.6	15.6	1.45	17.5	0.04	0.00	0.13	0.12	71	13
75 ISL	10.78 D	10.78	33.549	25.688	231.2	0.223	3.77	0164.3 D	60.2	16.7	1.51	18.4	0.04	0.00	0.11	0.13	76	
85	10.38	10.37	33.611	25.806	220.1	0.248	3.29	143.6	52.0	18.9	1.64	20.3	0.03	0.01	0.09	0.13	86	12
100	9.89	9.88	33.718	25.974	204.5	0.280	3.05	133.3	47.8	22.2	1.76	22.3	0.00	0.02	0.05	0.11	101	11
120	9.37	9.36	33.848	26.161	187.1	0.319	2.83	123.6	43.8	25.9	1.88	24.3	0.00	0.00	0.01	0.07	121	10
125 ISL	9.25 D	9.24	33.902	26.223	181.3	0.326	2.86	0124.3 D	44.2	26.7	1.92	24.7	0.02	0.00	0.01	0.07	126	
140	9.05	9.03	33.947	26.291	175.1	0.355	2.57	112.1	39.5	29.0	2.02	25.8	0.00	0.18	0.01	0.05	141	09
150 ISL	8.88 D	8.86	33.964	26.332	171.4	0.370	2.70	0117.5 D	41.4	30.1	2.03	26.2	0.02	0.12	0.01	0.05	151	
170	8.82	8.80	34.009	26.377	167.6	0.406	2.43	106.0	37.2	32.3	2.06	27.0	0.00	0.01	0.01	0.05	171	08
200	8.33	8.31	34.070	26.500	156.3	0.455	2.06	90.1	31.3	37.5	2.22	29.2	0.00	0.00	0.00	0.05	202	07
230	7.95	7.92	34.105	26.586	148.5	0.501	1.74	75.8	26.1	42.9	2.37	31.2	0.00	0.00			232	06
250 ISL	7.80 D	7.78	34.109	26.611	146.5	0.530	1.64	0171.5 D	24.6	45.3	2.44	32.0	0.02	0.00			252	
270	7.58	7.55	34.121	26.653	142.8	0.559	1.45	63.4	21.6	47.7	2.50	32.8	0.00	0.00			272	05
300 ISL	7.52 D	7.49	34.186	26.713	137.6	0.601	1.09	047.5 D	16.2	50.6	2.64	33.5	0.01	0.00			302	
321	7.71	7.68	34.252	26.739	135.7	0.629	0.79	34.5	11.8	52.5	2.74	34.0	0.00	0.00			324	04
379	7.27	7.23	34.276	26.822	128.6	0.706	0.56	24.5	8.3	58.7	2.87	35.5	0.00	0.00			382	03
400 ISL	7.15 D	7.11	34.282	26.843	126.9	0.735	0.52	022.8 D	7.7	60.5	2.90	36.0	0.02	0.00			403	
440	6.90	6.86	34.280	26.877	124.1	0.783	0.48	21.0	7.1	64.0	2.97	37.0	0.00	0.04			444	02
500 ISL	6.48 D	6.43	34.300	26.950	117.7	0.859	0.36	015.8 D	5.3	72.1	3.07	38.9	0.02	0.06			504	
515	6.18	6.14	34.299	26.987	114.1	0.873	0.33	14.2	4.7	74.1	3.10	39.4	0.00	0.07			519	01

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C		THETA		ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
32	31.0 N	118 12.8 W	11/07/2016	1455	UTC	1642 m	280	10 kn	310 05 10	1	1014.0 mb	18.5 C	17.0 C	14 m	4/8	ST	007	
0	18.76	18.76	33.604	24.017	388.4	0.000	5.58	243.9	104.7	1.3	0.22	0.0	0.02	0.13	0.38	0.11	0	
2	18.76	18.75	33.604	24.018	388.4	0.008	5.58	243.9	104.7	1.3	0.22	0.0	0.00	0.13	0.38	0.11	2	21
10	18.04	18.04	33.603	24.194	372.0	0.038	5.62	245.3	103.9	1.4	0.25	0.0	0.03	0.35	0.40	0.11	10	19
10	18.04	18.04	33.601	24.192	372.1	0.039											10	20
20	13.52	13.51	33.446	25.087	287.1	0.071	5.14	224.7	86.9	5.6	0.78	5.8	0.37	0.83	0.80	0.33	20	18
30	12.47	12.47	33.418	25.273	269.7	0.099	4.63	202.5	76.6	9.0	1.06	10.2	0.53	0.56	0.77	0.28	30	17
40	11.81	11.80	33.482	25.449	253.1	0.125	4.13	180.3	67.3	12.7	1.29	14.2	0.27	0.63	0.22	0.15	40	16
50	10.86	10.85	33.523	25.654	233.9	0.150	3.66	159.9	58.4	16.5	1.53	18.5	0.11	0.15	0.10	0.15	50	15
60	10.47	10.46	33.638	25.812	219.0	0.172	3.19	139.4	50.6	19.9	1.71	21.1	0.06	0.72	0.05	0.08	60	14
70	10.06	10.05	33.686	25.919	209.0	0.194	3.08	134.6	48.4	21.4	1.76	22.0	0.03	0.43	0.03	0.06	71	13
75 ISL	9.90 D	9.89	33.734	25.984	202.9	0.201	3.10	0135.0 D	48.6	22.4	1.79	22.5	0.02	0.33	0.03	0.07	76	
84	9.68	9.67	33.796	26.068	195.1	0.222	2.88	125.7	44.9	24.1	1.84	23.4	0.00	0.15	0.02	0.08	85	12
100 ISL	9.44 D	9.43	33.887	26.179	184.9	0.250	2.66	0115.9 D	41.3	26.5	1.92	24.6	0.01	0.07	0.02	0.08	101	
101	9.44	9.43	33.888	26.181	184.8	0.254	2.68	116.9	41.5	26.6	1.93	24.7	0.00	0.07	0.02	0.08	102	11
120	9.23	9.22	33.954	26.267	177.0	0.288	2.46	107.4	38.0	29.2	2.02	25.9	0.00	0.90	0.02	0.09	121	10
125 ISL	9.17 D	9.16	33.981	26.297	174.2	0.295	2.43	0105.9 D	37.6	30.1	2.05	26.3	0.01	0.70	0.01	0.09	126	
140	8.96	8.95	34.032	26.371	167.5	0.323	2.20	96.2	33.9	32.8	2.12	27.4	0.00	0.09	0.01	0.07	141	09
150 ISL	8.92 D	8.90	34.051	26.393	165.6	0.338	2.14	93.2	32.9	34.2	2.18	28.0	0.01	0.06	0.01	0.07	151	
170	8.69	8.68	34.106	26.472	158.5	0.372	1.81	79.2	27.7	37.0	2.30	29.2	0.00	0.01	0.01	0.07	171	08
200	8.19	8.17	34.130	26.568	149.8	0.418	1.58	68.9	23.8	41.9	2.40	31.0	0.00	0.08	0.02	0.08	202	07
231	7.97	7.95	34.164	26.628	144.6	0.464	1.34	58.5	20.2	45.3	2.50	32.2	0.00	0.09			233	06
250 ISL	7.81 D	7.79	34.179	26.664	141.5	0.491	1.17	50.9 D	17.5	47.3	2.56	32.7	0.01	0.27			252	
271	7.73	7.70	34.189	26.685	139.8	0.521	1.09	47.5	16.3	49.6	2.63	33.3	0.00	0.47			273	05</

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 20.5 N	118 32.9 W	11/07/2016	1944	UTC	1402 m	310 09 kn	330 05	06	1	1016.0 mb	20.2 C	18.1 C	13 m	4/8	ST	008	
0	19.95	19.95	33.633	23.734	415.5	0.000	5.62	245.5	107.8	1.8	0.27	0.1	0.00	1.35	0.38	0.09	0
2 A	19.95	19.95	33.633	23.734	415.5	0.008	5.62	245.5	107.8	1.8	0.27	0.1	0.00	1.35	0.38	0.09	2 24
9 A	19.58	19.58	33.624	23.824	407.2	0.037	5.66	247.1	107.8	1.8	0.32	0.0	0.04	0.85	0.38	0.10	9 22
9	19.58	19.58	33.628	23.827	406.9	0.037											9 23
10 ISL	19.13 D	19.13	33.615 D	23.932	396.9	0.037	5.72	0249.3	108.0	1.9	0.31	0.0	0.03	0.85	0.39	0.11	10
13 A	18.07	18.06	33.600	24.186	372.8	0.053	5.81	253.7	107.5	2.0	0.28	0.0	0.00	0.86	0.41	0.13	13 21
20 ISL	14.82 D	14.82	33.491 D	24.849	309.8	0.073	6.11	0266.4	106.1	2.8	0.49	1.0	0.03	2.12	0.81	0.30	20
21 A	14.88	14.87	33.499	24.844	310.3	0.080	6.25	273.0	108.6	2.9	0.52	1.2	0.03	2.30	0.86	0.32	21 19
21	14.88	14.87	33.488	24.836	311.1	0.080											21 20
30	12.45	12.45	33.482	25.326	264.6	0.105	4.92	215.0	81.3	6.8	1.01	8.4	0.09	0.45	1.25	0.59	30 18
38 A	11.64	11.64	33.507	25.499	248.3	0.126	3.90	170.3	63.3	12.1	1.41	15.0	0.13	1.12	0.61	38 17	
46 A	10.99	10.98	33.512	25.621	236.8	0.145	3.72	162.7	59.6	15.2	1.47	17.0	0.06	0.65	0.66	0.41	46 16
50 ISL	10.75 D	10.74	33.546 D	25.691	230.3	0.152	3.65	0159.1	58.2	16.7	1.52	18.0	0.03	0.42	0.42	0.31	50
53	10.51	10.51	33.565	25.747	225.1	0.161	3.49	152.2	55.3	17.8	1.56	18.7	0.00	0.24	0.24	0.23	53 15
60	10.14	10.13	33.668	25.892	211.4	0.177	3.14	137.0	49.3	21.1	1.75	20.9	0.00	0.33	0.08	0.15	60 14
70	9.92	9.91	33.717	25.966	204.5	0.198	3.04	132.7	47.6	22.6	1.84	22.5	0.00	0.63	0.04	0.10	71 13
75 ISL	9.86 D	9.85	33.746 D	25.999	201.5	0.205	3.04	0132.4	47.6	23.1	1.84	22.6	0.01	0.62	0.03	0.09	76
85	9.66	9.65	33.791	26.067	195.2	0.228	2.92	127.5	45.5	24.3	1.84	22.9	0.00	0.59	0.02	0.07	86 12
100 ISL	9.44 D	9.43	33.875 D	26.170	185.8	0.254	2.74	0119.3	42.5	26.7	1.99	25.1	0.00	1.25	0.01	0.07	101
101	9.41	9.40	33.869	26.170	185.8	0.258	2.72	118.8	42.2	26.9	2.00	25.3	0.00	1.29	0.01	0.07	102 11
120	9.24	9.23	33.949	26.261	177.6	0.293	2.49	108.7	38.5	29.5	2.01	25.5	0.00	0.00	0.01	0.07	121 10
125 ISL	9.22 D	9.21	33.961 D	26.274	176.4	0.299	2.51	0109.3	38.8	29.9	2.04	25.9	0.00	0.00	0.01	0.07	126
140	9.11	9.10	33.996	26.319	172.4	0.328	2.31	101.0	35.7	31.3	2.11	27.0	0.00	0.78	0.02	0.07	141 09
150 ISL	8.89 D	8.88	34.021 D	26.374	167.4	0.342	2.24	097.5	43.4	33.1	2.16	27.6	0.00	0.82	0.01	0.07	151
170	8.57	8.55	34.069	26.462	159.4	0.377	2.04	89.2	31.1	36.8	2.26	28.7	0.00	0.90	0.01	0.06	171 08
200	8.27	8.25	34.109	26.540	152.5	0.424	1.79	78.1	27.1	40.7	2.32	29.9	0.00	0.54	0.01	0.05	202 07
231	8.05	8.02	34.158	26.613	146.1	0.471	1.51	65.7	22.7	45.3	2.54	31.3	0.00	0.41			233 06
250 ISL	7.99 D	7.96	34.202 D	26.657	142.3	0.496	1.13	049.1	17.0	47.5	2.62	31.9	0.00	0.00			252
270	7.89	7.86	34.232	26.696	138.9	0.526	0.94	41.1	14.1	49.9	2.71	32.6	0.00	0.00			272 05
300 ISL	7.65 D	7.62	34.239 D	26.736	135.6	0.566	0.82	035.7	12.3	53.2	2.75	33.7	0.00	0.00			302
321	7.42	7.39	34.227	26.760	133.5	0.596	0.78	34.0	11.6	55.6	2.78	34.5	0.00	0.05			324 04
380	6.94	6.90	34.274	26.865	124.2	0.672	0.53	23.0	7.7	62.9	2.95	36.7	0.00	0.45			383 03
400 ISL	6.74 D	6.70	34.270 D	26.889	122.1	0.696	0.47	20.5	6.9	65.9	2.99	37.3	0.00	0.42			403
441	6.30	6.26	34.284	26.959	115.7	0.745	0.38	16.5	5.5	72.2	3.06	38.5	0.00	0.36			445 02
500 ISL	5.98 D	5.94	34.312 D	27.022	110.3	0.813	0.29	12.7	4.2	77.8	3.14	39.6	0.00	0.34			504
515	5.93	5.89	34.316 D	27.032	109.5	0.830	0.29	12.5	4.1	79.2	3.16	39.8	0.00	0.33			519 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		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 11.2 N	118 53.6 W	12/07/2016	0012	UTC	1394 m	310 25 kn	310 07	05	1	1013.0 mb	18.0 C	16.9 C	15 m	6/8	ST	009	
0	19.16	19.16	33.607	23.917	398.0	0.000	5.52	240.9	104.3	2.4	0.24	0.0	0.00	0.01	0.42	0.11	0
2	19.16	19.16	33.607	23.917	398.0	0.008	5.52	240.9	104.3	2.4	0.24	0.0	0.00	0.01	0.42	0.11	2 20
10	19.13	19.13	33.621	23.936	396.6	0.040	5.54	241.8	104.6	2.3	0.29	0.8	0.00	0.69	0.39	0.11	10 19
20 ISL	17.90 D	17.90	33.611 D	24.235	368.4	0.075	5.65	0246.1	104.2	2.1	0.30	0.2	0.01	0.12	0.71	0.23	20
21	16.28	16.27	33.596	24.608	332.9	0.082	5.65	0246.9	101.1	2.1	0.30	0.1	0.00	0.06	0.74	0.24	21 18
30 ISL	12.54 D	12.54	33.565 D	25.373	260.1	0.105	4.26	0185.6	70.6	9.9	1.08	9.8	0.19	1.19	0.56	0.21	30
31	12.61	12.60	33.552	25.351	262.3	0.111	4.32	188.5	71.6	10.8	1.17	10.8	0.21	1.32	0.54	0.21	31 17
41	11.35	11.34	33.599	25.624	236.5	0.136	3.61	157.5	58.3	15.9	1.48	16.5	0.24	0.53	0.20	0.13	41 16
50	10.89	10.88	33.656	25.751	224.6	0.157	3.24	141.4	51.8	19.1	1.64	19.6	0.18	0.21	0.11	0.14	50 15
60	10.21	10.20	33.702	25.906	210.0	0.178	3.03	0131.9	47.8	21.9	1.77	22.1	0.10	0.06	0.06	0.11	60 14
68	9.94	9.93	33.739	25.981	203.1	0.195	2.86	125.0	44.9	23.6	1.86	23.2	0.05	0.04	0.04	0.12	69 13
75 ISL	9.75 D	9.74	33.797 D	26.058	196.0	0.206	2.88	0125.2	44.9	25.2	1.91	24.0	0.04	0.00	0.03	0.11	76
86	9.55	9.54	33.863	26.142	188.1	0.230	2.44	106.4	37.9	27.6	1.99	25.3	0.00	0.00	0.02	0.09	87 12
99	9.39	9.38	33.919	26.212	181.8	0.254	2.27	99.3	35.3	29.5	26.9	0.00	0.43	0.02	0.08	100 11	
100 ISL	9.38 D	9.37	33.928 D	26.222	180.9	0.253	2.28	099.4	35.4	29.6	2.05	27.0	0.01	0.42	0.02	0.08	101
120	9.06	9.04	33.963	26.302	173.7	0.291	2.20	96.0	33.9	31.6	2.13	27.6	0.00	0.32	0.01	0.06	121 10
125 ISL	8.98 D	8.97	33.980 D	26.327	171.3	0.298	2.21	96.3	34.0	32.4	2.15	27.8	0.00	0.24	0.01	0.06	126
138	8.83	8.81	34.026	26.388	165.8	0.322	2.02	88.3	31.0	34.5	2.21	28.3	0.00	0.03	0.01	0.06	139 09
150 ISL	8.73 D	8.71	34.060 D	26.430	162.0	0.340											

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol}/\text{Kg}$	OXY PCT	SIO3* $\mu\text{M}$	P04* $\mu\text{M}$	N03* $\mu\text{M}$	N02* $\mu\text{M}$	NH4* $\mu\text{M}$	CHL-A $\mu\text{g}/\text{L}$	PHAE0 $\mu\text{g}/\text{L}$	PRES db	SAMP
32	0.9 N	119 13.2 W	12/07/2016	0455	UTC	1562 m	320	25 kn										
0	16.79	16.79	33.640	24.521	340.4	0.000	5.87	256.5	106.1	1.1	0.26	0.0	0.02	0.32	1.65	0.34	0	
2	16.79	16.79	33.640	24.521	340.5	0.007	5.87	256.5	106.1	1.1	0.26	0.0	0.00	0.32	1.65	0.34	2	
10	16.79	16.79	33.628	24.512	341.6	0.034	5.86	256.0	105.9	1.1	0.24	0.0	0.00	0.05	1.71	0.20	10	
10	16.79	16.79	33.626	24.511	341.7	0.036											19	
20	ISL	16.71 D	16.71	33.614 D	24.520	341.2	0.065	5.91	257.5	106.5	1.0	0.28	0.0	0.02	0.31	1.62	0.35	20
21	16.65	16.65	33.623	24.541	339.3	0.072	5.86	256.0	105.6	1.0	0.28	0.0	0.00	0.34	1.61	0.37	21	
30	13.63	13.63	33.430	25.052	290.7	0.100	4.94	215.8	83.6	6.3	0.87	6.1	0.24	1.85	0.71	0.35	30	
40	12.44	12.43	33.377	25.249	272.2	0.128	4.65	203.1	76.8	9.2	1.04	9.5	0.29	1.09	0.28	0.26	40	
50	11.32	11.31	33.375	25.455	252.8	0.154	4.27	186.6	68.8	13.4	1.31	14.2	0.26	0.37	0.14	0.18	50	
60	10.73	10.72	33.500	25.658	233.7	0.179	3.81	166.5	60.7	17.1	1.56	17.7	0.18	0.21	0.13	0.17	60	
70	10.38	10.37	33.590	25.790	221.3	0.201	3.44	150.3	54.4	19.8	1.66	20.0	0.09	0.03	0.12	0.28	71	
75	ISL	10.31 D	10.30	33.655 D	25.853	215.5	0.210	3.35	145.9 D	53.0	21.0	1.73	20.7	0.09	0.08	0.12	0.26	76
85	10.02	10.01	33.728	25.959	205.6	0.234	2.89	126.2	45.4	23.3	1.86	22.2	0.09	0.18	0.13	0.20	86	
100	9.52	9.51	33.778	26.081	194.2	0.264	2.75	120.3	42.8	25.7	1.95	23.8	0.05	0.51	0.08	0.15	101	
121	9.35	9.34	33.909	26.213	182.2	0.303	2.33	101.6	36.0	29.3	2.08	25.6	0.03	0.12	0.05	0.11	122	
125	ISL	9.34 D	9.32	33.929 D	26.230	180.6	0.309	2.32	101.1 D	36.0	29.8	2.10	25.8	0.03	0.11	0.05	0.11	126
141	9.22	9.20	33.974	26.285	175.8	0.339	2.10	91.5	32.4	31.9	2.17	26.7	0.00	0.09	0.03	0.09	142	
150	ISL	9.18 D	9.17	34.038 D	26.341	170.7	0.353	2.08	90.6 D	32.1	33.5	2.22	27.3	0.02	0.11	0.03	0.09	151
170	8.68	8.67	34.072	26.447	160.9	0.388	1.83	79.8	27.9	37.2	2.32	28.6	0.00	0.16	0.02	0.08	171	
200	ISL	8.59 D	8.57	34.172 D	26.541	152.5	0.434	1.34	58.5 D	20.5	41.3	2.49	30.0	0.02	0.11	0.03	0.11	202
202	8.58	8.56	34.171	26.541	152.6	0.438	1.34	58.6	20.5	41.6	2.50	30.1	0.00	0.11	0.03	0.11	204	
230	8.20	8.18	34.204	26.626	144.9	0.480	1.12	49.0	17.0	45.5	2.62	31.2	0.00	0.13			232	
250	ISL	8.00 D	7.98	34.227 D	26.674	140.7	0.508	0.98	42.5 D	14.7	48.9	2.68	32.0	0.01	0.07			252
272	7.71	7.69	34.240	26.727	135.9	0.539	0.82	35.6	12.2	52.7	2.75	32.8	0.00	0.01			274	
300	ISL	7.42 D	7.39	34.253 D	26.780	131.2	0.576	0.66	28.8 D	9.9	57.0	2.85	34.2	0.01	0.07			302
321	7.17	7.14	34.256	26.818	127.8	0.604	0.61	26.6	9.0	60.3	2.93	35.3	0.00	0.12			324	
381	6.83	6.80	34.258	26.867	123.9	0.679	0.53	23.1	7.8	64.6	2.98	36.4	0.00	0.00			384	
400	ISL	6.58 D	6.54	34.274 D	26.914	119.6	0.703	0.44	19.1 D	6.4	67.3	3.02	36.9	0.01	0.00			403
440	6.29	6.25	34.286	26.962	115.4	0.749	0.36	15.9	5.3	72.9	3.11	38.1	0.00	0.00			444	
500	ISL	5.99 D	5.94	34.316 D	27.025	110.0	0.819	0.30	13.0 D	4.3	78.4	3.18	39.1	0.01	0.00			504
514	5.92	5.88	34.322	27.039	108.8	0.832	0.28	12.1	4.0	79.7	3.20	39.3	0.00	0.00			518	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol}/\text{Kg}$	OXY PCT	SIO3* $\mu\text{M}$	P04* $\mu\text{M}$	N03* $\mu\text{M}$	N02* $\mu\text{M}$	NH4* $\mu\text{M}$	CHL-A $\mu\text{g}/\text{L}$	PHAE0 $\mu\text{g}/\text{L}$	PRES db	SAMP
31	51.1 N	119 34.0 W	12/07/2016	0938	UTC	1871 m	290	17 kn										
0	16.58	16.58	33.569	24.516	340.9	0.000	5.88	256.7	105.7	0.6	0.29	0.0	0.01	0.02	1.57	0.58	0	
2	16.58	16.58	33.569	24.516	341.0	0.007	5.88	256.7	105.7	0.6	0.29	0.0	0.00	0.02	1.57	0.58	20	
10	16.57	16.57	33.568	24.517	341.1	0.034	5.87	256.5	105.6	0.7	0.27	0.0	0.00	0.02	1.49	0.42	10	
20	15.33	15.32	33.461	24.716	322.4	0.067	5.79	252.9	101.5	1.2	0.44	0.5	0.06	0.44	1.38	0.56	20	
30	13.69	13.68	33.208	24.870	308.1	0.099	5.51	240.9	93.3	3.3	0.63	2.3	0.18	0.89	0.51	0.33	30	
40	12.82	12.81	33.239	25.067	289.5	0.129	5.27	230.0	87.5	5.1	0.78	4.9	0.30	1.12	0.43	0.29	40	
50	ISL	11.84 D	11.84	33.268 D	25.276	269.8	0.155	4.78	208.4 D	77.9	8.8	1.11	9.7	0.35	0.57	0.33	0.26	50
51	11.79	11.78	33.268	25.286	268.9	0.159	4.74	206.9	77.1	9.2	1.14	10.2	0.35	0.51	0.32	0.25	51	
61	11.04	11.04	33.303	25.449	253.6	0.186	4.41	192.7	70.6	12.2	1.23	13.7	0.16	0.02	0.18	0.15	61	
70	10.82	10.81	33.412	25.574	241.9	0.208	4.11	179.3	65.5	14.6	1.40	16.4	0.05	0.00	0.12	0.14	71	
75	ISL	10.49 D	10.48	33.532 D	25.726	227.6	0.218	3.72	162.1 D	59.0	16.3	1.50	17.7	0.05	0.00	0.10	0.13	76
85	10.24	10.23	33.583	25.810	219.8	0.242	3.50	152.6	55.1	19.5	1.71	20.4	0.04	0.06	0.06	0.12	86	
100	9.75	9.74	33.647	25.941	207.5	0.274	3.23	141.1	50.4	21.7	1.75	21.8	0.03	0.00	0.10	0.14	101	
120	9.50	9.49	33.812	26.112	191.8	0.314	2.67	116.5	41.4	26.0	1.96	24.3	0.03	0.03	0.07	0.25	121	
125	ISL	9.42 D	9.40	33.858 D	26.161	187.2	0.322	2.68	116.5 D	41.5	26.9	2.00	24.8	0.02	0.00	0.07	0.21	126
141	9.31	9.29	33.935	26.240	180.0	0.353	2.21	96.7	34.3	30.0	2.11	26.3	0.00	0.00	0.04	0.10	142	
150	ISL	9.24 D	9.22	33.981 D	26.288	175.7	0.368	2.12	92.4 D	32.8	31.4	2.15	26.8	0.02	0.00	0.04	0.11	151
170	9.02	9.00	34.039	26.369	168.4	0.404	1.88	82.2	29.0	34.6	2.25	27.9	0.03	0.00	0.04	0.12	171	
200	8.69	8.67	34.120	26.484	158.0	0.453	1.57	68.4	24.0	38.9	2.39	29.3	0.00	0.00	0.04	0.13	202	
230	8.24	8.22	34.162	26.587	148.7	0.499	1.29	56.5	19.6	44.2	2.53	31.1	0.00	0.00			232	
250	ISL	7.99 D	7.96	34.175 D	26.635	144.3	0.528	1.17	50.9 D	17.6	47.3	2.60	32.0	0.01	0.00			252
270	7.76	7.73	34.185	26.678	140.6	0.557	1.03											

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
31 30.6 N	120 15.1 W	12/07/2016	1721	UTC	3926 m	300 27 kn	320 07 09	2	1021.0 mb	18.0 C	16.0 C	13 m	8/8	AS	012		
0	16.27	16.27	33.332	24.405	351.5	0.000	5.87	256.7	104.8	0.8	0.29	0.0	0.03	0.05	0.37	0.12	0
2 A	16.27	16.27	33.332	24.405	351.5	0.007	5.87	256.7	104.8	0.8	0.29	0.0	0.03	0.05	0.37	0.12	2 24
8 A	16.27	16.27	33.331	24.404	351.8	0.028	5.87	256.7	104.8	1.0	0.29	0.1	0.03	0.16	0.36	0.15	8 23
10 A	16.26	16.25	33.332	24.409	351.5	0.035	5.90	257.9	105.3	0.8	0.31	0.0	0.06	0.36	0.12	10 21	
11	16.26	16.25	33.341	24.416	350.8	0.037											10 22
18 A	16.24	16.24	33.335	24.414	351.2	0.063	5.89	257.2	105.0	0.8	0.32	0.0	0.03	0.05	0.35	0.14	18 20
20 ISL	16.24 D	16.24	33.325 D	24.407	351.9	0.067	5.92	257.9	105.5	0.8	0.31	0.0	0.03	0.04	0.37	0.15	20
26	16.14	16.13	33.370	24.465	346.6	0.091	5.91	258.2	105.2	0.7	0.28	0.0	0.03	0.02	0.43	0.17	26 19
30 ISL	15.42 D	15.41	33.455 D	24.693	325.0	0.102	5.83	254.1	102.3	1.1	0.37	0.4	0.07	0.38	0.59	0.25	30
34 A	14.60	14.60	33.363	24.798	315.1	0.118	5.75	251.3	99.3	1.6	0.45	0.8	0.12	0.74	0.74	0.34	17
34	14.60	14.60	33.367	24.801	314.8	0.119											34 18
41 A	14.34	14.34	33.368	24.857	309.7	0.139	5.50	240.2	94.4	2.4	0.56	1.8	0.18	1.45	0.45	0.26	41 16
50 ISL	13.41 D	13.41	33.249 D	24.958	300.3	0.165	5.31	231.5	89.4	4.4	0.72	4.1	0.34	1.25	0.32	0.24	50
51	13.46	13.45	33.265	24.962	300.0	0.170	5.24	228.9	88.3	4.7	0.74	4.4	0.36	1.23	0.30	0.24	51 15
60	12.50	12.49	33.257	25.145	282.7	0.196	5.06	221.2	83.6	7.2	0.88	7.8	0.28	0.00	0.39	0.38	60 14
71	11.96	11.95	33.371	25.336	264.7	0.226	4.62	202.1	75.6	11.1	1.17	12.4	0.09	0.02	0.23	0.22	72 13
75 ISL	11.88 D	11.87	33.458 D	25.418	257.0	0.235	4.65	202.7	75.9	12.0	1.24	13.4	0.08	0.00	0.21	0.19	76
85	11.47	11.46	33.475	25.507	248.8	0.262	4.30	187.9	69.6	14.1	1.40	15.9	0.06	0.00	0.16	0.13	86 12
100	10.60	10.59	33.537	25.711	229.6	0.298	3.71	162.2	59.0	17.7	1.60	18.7	0.04	0.00	0.04	0.06	101 11
121	9.90	9.88	33.620	25.896	212.4	0.344	3.38	147.8	53.0	20.9	1.70	20.8	0.03	0.00	0.02	0.06	122 10
125 ISL	9.82 D	9.81	33.648 D	25.932	209.1	0.351	3.36	146.3	52.5	21.7	1.74	21.3	0.03	0.00	0.02	0.06	126
140	9.46	9.44	33.757	26.077	195.5	0.383	2.92	127.3	45.2	24.7	1.87	23.2	0.03	0.00	0.01	0.08	141 09
150 ISL	9.28 D	9.26	33.835 D	26.168	187.1	0.401	2.71	118.0 D	41.9	26.3	1.93	24.0	0.03	0.00	0.01	0.07	151
171	9.19	9.17	33.914	26.243	180.4	0.441	2.41	105.3	37.2	29.5	2.06	25.6	0.03	0.00	0.01	0.05	172 08
200	8.96	8.93	34.025	26.369	169.0	0.492	2.00	87.4	30.7	33.5	2.20	27.1	0.03	0.00	0.01	0.06	202 07
231	8.47	8.45	34.070	26.480	158.9	0.543	1.85	80.9	28.2	37.9	2.33	28.8	0.03	0.00		233 06	
250 ISL	8.23 D	8.20	34.115 D	26.552	152.3	0.572	1.60	69.4 D	24.1	41.1	2.41	29.8	0.03	0.00		252	
270	8.04	8.02	34.143	26.602	147.8	0.602	1.37	59.8	20.6	44.5	2.50	30.9	0.03	0.00		272 05	
300 ISL	7.62 D	7.59	34.165 D	26.682	140.6	0.646	1.15	49.8	17.1	49.7	2.62	32.6	0.02	0.00		302	
320	7.29	7.26	34.167	26.731	136.1	0.673	1.01	43.9	14.9	53.2	2.70	33.7	0.00	0.00		323 04	
381	6.78	6.75	34.183	26.814	128.8	0.754	0.73	32.0	10.7	60.8	2.88	35.7	0.00	0.00		384 03	
400 ISL	6.65 D	6.61	34.207 D	26.852	125.5	0.779	0.61	26.6 D	8.9	64.0	2.93	36.3	0.02	0.00		403	
440	6.29	6.25	34.233	26.920	119.3	0.828	0.45	19.7	6.5	70.8	3.02	37.5	0.00	0.00		444 02	
500 ISL	5.84 D	5.79	34.271 D	27.008	111.4	0.899	0.31	13.4 D	4.4	78.0	3.13	38.8	0.02	0.00		504	
514	5.77	5.73	34.276	27.020	110.4	0.912	0.30	13.0	4.2	79.6	3.16	39.1	0.00	0.00		518 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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SI03* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
31 10.6 N	120 55.2 W	12/07/2016	2248	UTC	3810 m	340 15 kn	340 05 04	1	1017.0 mb	18.4 C	16.5 C	17 m	5/8	AS	013		
0	17.07	17.07	33.018	23.977	392.2	0.000	5.67	247.9	102.7	1.5	0.28	0.0	0.02	0.06	0.11	0.03	0
2	17.07	17.07	33.018	23.978	392.3	0.008	5.67	247.9	102.7	1.5	0.28	0.0	0.00	0.06	0.11	0.03	2 20
10 ISL	17.06 D	17.06	33.013 D	23.977	392.6	0.036	5.65	246.2	102.2	1.2	0.28	0.0	0.02	0.18	0.11	0.03	10
11	17.05	17.05	33.023	23.987	391.7	0.043	5.64	246.6	102.1	1.2	0.28	0.0	0.00	0.19	0.11	0.03	11 19
20 ISL	17.00 D	17.00	33.014 D	23.993	391.5	0.075	5.66	246.7	102.2	1.1	0.29	0.0	0.02	0.42	0.11	0.03	20
25	16.98	16.98	33.018	24.001	390.9	0.098	5.66	247.5	102.3	1.0	0.30	0.0	0.00	0.55	0.11	0.03	25 18
30 ISL	16.93 D	16.93	33.019 D	24.013	389.9	0.114	5.71	249.0	103.0	1.0	0.32	0.0	0.00	0.21	0.13	0.04	30
40	16.75	16.75	33.052	24.081	383.8	0.156	5.72	249.9	102.9	1.0	0.32	0.0	0.00	0.21	0.17	0.05	40 17
50	15.55	15.54	33.071	24.369	356.6	0.193	5.93	259.0	104.1	0.8	0.34	0.0	0.00	0.32	0.25	0.10	50 16
63	14.89	14.88	33.099	24.535	341.1	0.238	5.99	261.7	103.8	0.9	0.35	0.0	0.03	0.09	0.52	0.27	63 15
75 ISL	14.10 D	14.09	33.190 D	24.773	318.7	0.276	5.63	247.7	97.0	3.0	0.47	1.0	0.18	0.24	0.45	0.34	76
76	14.01	14.00	33.183	24.786	317.5	0.281	5.74	250.5	97.7	3.1	0.48	1.1	0.19	0.25	0.45	0.34	77 14
87	13.38	13.36	33.239	24.959	301.3	0.315	5.39	235.6	90.7	4.8	0.68	4.4	0.59	0.04	0.32	0.33	88 13
100	12.79	12.78	33.263	25.094	288.7	0.353	5.15	224.2	85.3	6.3	0.83	7.2	0.13	0.06	0.21	0.22	101 12
112	11.98	11.97	33.291	25.271	272.0	0.387	4.79	209.3	78.3	8.7	0.99	10.0	0.05	0.00	0.13	0.16	113 11
125	11.00	10.99	33.401	25.536	247.0	0.421	4.25	185.8	68.1	13.3	1.30	15.0	0.04	0.01	0.06	0.09	126 10
140	10.09	10.08	33.531	25.795	222.5	0.456	3.72	162.6	58.5	18.2	1.58	19.3	0.03	0.21	0.03	0.07	141 09
150 ISL	9.68 D	9.67	33.631 D	25.941	208.7	0.478	3.43	149.3 D	53.4	20.5	1.68	20.7	0.03	0.18	0.02	0.06	151
170	9.41	9.39	33.782	26.105	193.5	0.518	2.83	123.4	45.8	25.0	1.89	23.7	0.00	0.11	0.05	0.05	171 08

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	014
30	50.9 N	121 35.3 W	13/07/2016	0504	UTC	4032 m	300	22 kn										
0	18.79	18.79	33.326	23.796	409.5	0.000	5.42	236.6	101.5	1.9	0.30	0.1	0.01	0.53	0.07	0.02	0	
2	18.79	18.79	33.326	23.796	409.5	0.008	5.42	236.6	101.5	1.9	0.30	0.1	0.00	0.53	0.07	0.02	2	
10	18.80	18.80	33.328	23.796	409.9	0.041	5.45	D237.7	D102.1	1.8	0.26	0.0	0.00	0.18	0.06	0.02	10	
20	ISL	18.80 D	18.79	33.324	D 23.794	410.5	0.078	5.45	D237.9	D102.2	1.8	0.32	0.1	0.01	1.11	0.07	0.02	20
25	18.80	18.79	33.324	23.794	410.7	0.103	5.44	D237.4	D102.0	1.9	0.35	0.2	0.00	1.58	0.07	0.03	25	
30	ISL	18.80 D	18.79	33.321	D 23.793	411.0	0.120	5.44	D237.1	D101.9	1.8	0.35	0.1	0.01	1.20	0.07	0.02	30
40	18.79	18.78	33.320	23.796	411.2	0.164	5.44	237.5	101.9	1.8	0.35	0.0	0.00	0.43	0.07	0.02	40	
50	17.05	17.04	33.191	24.120	380.4	0.204	5.78	252.3	104.6	1.8	0.33	0.0	0.00	0.25	0.10	0.02	50	
63	15.87	15.86	33.142	24.354	358.5	0.252	5.88	257.0	104.0	1.9	0.30	0.0	0.00	0.06	0.10	0.03	63	
75	15.49	15.48	33.215	24.494	345.5	0.294	5.77	252.1	101.3	2.1	0.32	0.1	0.00	1.43	0.13	0.05	76	
87	15.19	15.17	33.259	24.596	336.2	0.335	5.70	248.7	99.4	2.3	0.31	0.0	0.00	0.26	0.16	0.12	88	
100	14.03	14.01	33.238	24.826	314.5	0.377	5.53	241.6	94.3	3.4	0.50	1.4	0.07	0.18	0.28	0.29	101	
112	12.82	12.81	33.275	25.098	288.7	0.413	5.08	221.9	84.5	6.0	0.77	6.5	0.06	0.10	0.31	0.21	113	
125	ISL	11.70 D	11.68	33.276	D 25.314	268.3	0.448	4.82	D209.9	D 78.2	8.6	0.98	10.0	0.02	0.16	0.18	0.15	126
126	11.70	11.68	33.281	25.317	267.9	0.452	4.75	207.6	77.2	8.8	1.00	10.3	0.00	0.16	0.17	0.15	127	
141	10.36	10.35	33.323	25.587	242.3	0.491	4.54	198.1	71.6	12.2	1.17	14.0	0.00	0.00	0.09	0.12	142	
150	ISL	9.91 D	9.89	33.413	D 25.734	228.4	0.510	4.39	D191.1	D 68.6	14.3	1.30	15.8	0.00	0.00	0.07	0.09	151
171	9.33	9.31	33.556	25.941	209.1	0.558	4.03	175.9	62.2	19.0	1.61	20.0	0.00	1.72	0.02	0.03	172	
200	9.43	9.40	33.865	26.168	188.3	0.616	2.75	120.0	42.6	26.5	1.93	24.9	0.00	0.01	0.00	0.03	202	
230	8.88	8.86	33.961	26.331	173.2	0.670	2.46	107.4	37.7	30.7	2.06	27.0	0.00	0.00			232	
250	ISL	8.38 D	8.35	33.986	D 26.429	164.0	0.702	2.59	D112.7	D 39.2	34.3	2.14	28.4	0.00	0.00			252
270	8.14	8.12	34.032	26.501	157.5	0.735	2.23	97.2	33.6	37.9	2.21	29.8	0.00	0.00			272	
300	ISL	7.93 D	7.90	34.094	D 26.582	150.3	0.781	1.76	D 76.4	D 26.4	43.5	2.41	31.8	0.00	0.00			302
320	7.84	7.81	34.139	26.631	146.0	0.811	1.33	58.2	20.0	47.3	2.54	33.1	0.00	0.00			323	
381	7.08	7.04	34.167	26.762	134.0	0.897	0.90	39.3	13.3	57.1	2.78	36.3	0.00	0.00			384	
400	ISL	6.79 D	6.75	34.159	D 26.796	130.9	0.923	0.85	D 37.1	D 12.5	59.4	2.83	36.8	0.00	0.00			403
440	6.65	6.61	34.205	26.850	126.3	0.973	0.64	27.9	9.3	64.1	2.93	38.0	0.00	0.00			444	
500	ISL	6.17 D	6.13	34.231	D 26.935	118.8	1.049	0.46	D 19.9	D 6.6	72.2	3.05	39.6	0.00	0.00			504
516	6.09	6.04	34.245	26.957	116.8	1.065	0.39	17.1	5.6	74.3	3.08	40.1	0.00	0.00			520	

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

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SIO3*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	015
30	30.9 N	122 15.0 W	13/07/2016	1128	UTC	4126 m	350	15 kn										
0	19.42	19.42	33.532	23.794	409.7	0.000	5.34	233.5	101.5	2.2	0.22	0.2	0.00	0.08	0.02	0		
2	19.42	19.42	33.532	23.794	409.8	0.008	5.34	233.5	101.5	2.2	0.22	0.2	0.00	0.08	0.02	2	21	
10	19.42	19.42	33.533	23.796	409.9	0.041	5.34	233.4	101.4	1.6	0.23	0.0	0.00	0.03	0.07	0.02	10	
20	19.42	19.41	33.529	23.795	410.5	0.082	5.34	233.5	101.4	1.5	0.21	0.0	0.00	0.07	0.02	20		
30	ISL	19.42 D	19.42	33.529	D 23.794	410.9	0.120	5.36	D234.0	D 101.8	1.5	0.21	0.0	0.00	0.07	0.02	30	
40	19.42	19.41	33.534	23.799	410.9	0.164	5.34	233.3	101.3	1.5	0.20	0.0	0.00	0.00	0.07	0.02	40	
50	ISL	17.96 D	17.96	33.388	D 24.052	387.0	0.202	5.67	D247.1	D 104.5	1.5	0.21	0.0	0.00	0.08	0.02	50	
60	17.36	17.35	33.319	24.145	378.4	0.242	5.70	249.2	103.9	1.6	0.22	0.0	0.00	0.00	0.08	0.02	60	
75	ISL	16.67 D	16.66	33.263	D 24.265	367.5	0.296	5.80	D253.0	D 104.3	1.6	0.26	0.0	0.00	0.00	0.10	0.04	76
80	16.38	16.37	33.230	24.306	363.8	0.316	5.79	253.0	103.5	1.6	0.27	0.0	0.00	0.00	0.11	0.04	81	
100	15.12	15.10	33.227	24.588	337.4	0.387	5.72	249.9	99.6	2.1	0.29	0.0	0.00	0.00	0.16	0.09	101	
111	15.09	15.08	33.408	24.733	323.9	0.423	5.47	239.2	95.4	2.7	0.35	0.1	0.03	0.00	0.24	0.16	112	
121	13.97	13.95	33.471	25.020	296.7	0.454	5.27	230.1	89.8	3.6	0.41	1.7	0.14	0.00	0.23	0.17	122	
125	ISL	13.75 D	13.73	33.464	D 25.061	292.9	0.465	5.29	D230.4	D 89.7	4.4	0.52	3.2	0.12	0.00	0.21	0.17	126
130	13.06	13.04	33.359	25.118	287.3	0.480	5.14	224.8	86.0	5.4	0.65	5.0	0.10	0.25	0.18	0.18	131	
141	11.55	11.53	33.268	25.335	266.6	0.511	4.96	216.7	80.2	7.8	0.85	8.7	0.00	0.00	0.14	0.19	142	
150	10.96	10.94	33.336	25.494	251.6	0.534	4.83	211.3	77.3	9.7	0.99	11.0	0.00	0.04	0.12	0.14	151	
160	10.34	10.32	33.370	25.628	238.9	0.559	4.64	202.7	73.2	12.3	1.15	14.0	0.00	0.00	0.09	0.10	161	
176	9.59	9.57	33.479	25.840	218.9	0.595	4.29	187.4	66.6	16.4	1.38	17.7	0.00	0.00	0.04	0.05	177	
195	9.14	9.11	33.670	26.062	198.0	0.635	3.73	163.0	57.4	21.8	1.62	21.6	0.00	0.00	0.01	0.03	196	
200	ISL	9.08 D	9.06	33.713	D 26.105	194.1	0.644	3.76	D163.7	D 57.8	23.2	1.67	22.4	0.00	0.00			202
230	8.50	8.47	33.945	26.378	168.5	0.699	2.75	120.3	41.8	31.8	1.98	27.1	0.00	0.00			232	
250	ISL	8.32 D	8.29	33.978	D 26.432	163.7	0.733	2.62	D114.0	D 39.7	34.4	2.06	28.2	0.00				

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
30 10.6 N	122 55.2 W	13/07/2016	1755	UTC	3858 m	360 10 kn	310 05 07	1	1025.0 mb	20.2 C	18.6 C	29 m	3/8	ST	016			
0	19.18	19.18	33.364	23.726	416.2	0.000	5.38	234.9	101.5	1.9	0.27	0.1	0.03	0.19	0.06	0.01	0	
2 A	19.18	19.18	33.364	23.726	416.3	0.008	5.38	234.9	101.5	1.9	0.27	0.1	0.03	0.19	0.06	0.01	2 24	
10	19.18	19.18	33.364	23.728	416.4	0.042	5.39	D235.2	D101.8	1.9	0.33	0.0	0.03	0.06	0.01	10 23		
17 A	19.16	19.16	33.361	23.730	416.4	0.071	5.39	D235.3	D101.8	1.9	0.26	0.0	0.00	0.06	0.01	17 22		
20 ISL	19.15 D	19.14	33.360 D	23.734	416.2	0.080	5.39	D235.1	D101.7	1.8	0.25	0.0	0.02	0.04	0.06	0.01	20	
22 A	19.14	19.14	33.360	23.736	416.1	0.092	5.38	235.1	101.5	1.8	0.24	0.0	0.00	0.02	0.06	0.02	22 21	
30 ISL	19.12 D	19.11	33.355 D	23.738	416.2	0.122	5.39	D235.2	D101.7	1.8	0.24	0.0	0.02	0.00	0.07	0.01	30	
32	19.11	19.11	33.356	23.740	416.2	0.133	5.38	235.2	101.5	1.8	0.24	0.0	0.00	0.00	0.07	0.01	32 20	
42 A	18.99	18.99	33.357	23.773	413.4	0.175	5.38	235.3	101.3	1.8	0.24	0.0	0.00	0.00	0.07	0.02	42 19	
50 ISL	18.66 D	18.65	33.439 D	23.921	399.6	0.204	5.53	D241.2	D103.4	1.8	0.22	0.0	0.02	0.00	0.07	0.02	50	
53	18.47	18.46	33.456	23.980	394.1	0.219	5.54	241.9	103.2	1.8	0.21	0.0	0.00	0.02	0.07	0.02	53 18	
65	17.80	17.79	33.386	24.091	383.9	0.266	5.63	245.9	103.5	1.8	0.23	0.0	0.00	0.05	0.08	0.02	66 17	
75 ISL	17.43 D	17.41	33.381 D	24.178	375.9	0.301	5.70	D248.6	D104.1	1.8	0.21	0.0	0.02	0.00	0.09	0.03	76	
76 A	17.38	17.36	33.370	24.182	375.6	0.308	5.68	248.2	103.6	1.8	0.21	0.0	0.00	0.00	0.09	0.03	77 16	
84	17.05	17.03	33.365	24.255	368.8	0.337	5.69	248.5	103.1	1.8	0.22	0.0	0.00	0.01	0.10	0.03	85 15	
91 A	16.61	16.59	33.320	24.325	362.3	0.363	5.74	250.6	103.0	1.8	0.23	0.0	0.00	0.00	0.12	0.04	92 14	
100	16.10	16.09	33.367	24.477	348.1	0.395	5.67	248.0	100.9	2.0	0.23	0.0	0.00	0.00	0.14	0.07	101 13	
111	15.62	15.60	33.303	24.537	342.7	0.433	5.67	247.8	99.8	2.1	0.27	0.0	0.00	0.00	0.14	0.09	112 12	
125	14.47	14.46	33.406	24.864	311.7	0.479	5.42	236.9	93.4	3.2	0.37	0.9	0.07	0.02	0.21	0.14	126 10	
125	14.47	14.46	33.398	24.859	312.3	0.480											126 11	
140	12.73	12.71	33.327	25.159	283.7	0.524	5.13	224.1	85.1	5.7	0.64	5.5	0.15	0.00	0.17	0.14	141 09	
150 ISL	11.94 D	11.92	33.313 D	25.299	270.4	0.551	5.12	D223.1 D	83.6	8.3	0.84	8.7	0.11	0.00	0.14	0.13	151	
170	10.07	10.05	33.351	25.660	236.0	0.602	4.55	199.0	71.4	13.4	1.24	15.2	0.03	0.00	0.08	0.09	171 08	
200 ISL	9.23 D	9.21	33.617 D	26.005	203.5	0.668	4.02	D174.9 D	61.9	19.8	1.52	20.0	0.02	0.00	0.01	0.03	202	
201	9.20	9.18	33.619	26.011	203.0	0.670	4.03	176.0	62.0	20.0	1.53	20.2	0.00	0.00	0.01	0.03	203 07	
231	8.69	8.66	33.867	26.287	177.2	0.727	3.41	148.8	51.9	27.0	1.77	24.3	0.00	0.00			233 06	
250 ISL	8.48 D	8.45	33.945 D	26.381	168.6	0.761	3.15	D137.1 D	47.8	30.6	1.89	26.0	0.02	0.00			252	
272	8.13	8.10	33.981	26.462	161.2	0.796	2.78	121.5	41.9	34.8	2.02	28.0	0.00	0.00			274 05	
300 ISL	7.66 D	7.63	34.024 D	26.566	151.6	0.841	2.36	D102.5 D	35.1	41.8	2.27	30.8	0.02	0.00			302	
321	7.27	7.24	34.045	26.638	144.9	0.871	1.91	83.4	28.2	47.1	2.45	32.8	0.00	0.00			324 04	
380	6.79	6.75	34.094	26.743	135.5	0.954	1.27	55.6	18.6	56.9	2.69	36.3	0.00	0.00			383 03	
400 ISL	6.58 D	6.54	34.114 D	26.787	131.5	0.983	1.07	D 46.4 D	15.5	60.5	2.77	37.2	0.02	0.00			403	
440	6.22	6.18	34.152	26.864	124.5	1.032	0.76	33.2	11.0	67.7	2.94	39.0	0.00	0.00			444 02	
500 ISL	5.84 D	5.79	34.207	26.957	116.2	1.107	0.53	D 23.2 D	7.6	74.8	3.07	40.3	0.02	0.00			504	
518	5.79	5.74	34.212	26.968	115.4	1.125	0.51	D 22.2 D	7.3	76.2	3.07	40.4	0.00	0.00			522 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;

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
29 50.8 N	123 35.2 W	14/07/2016	0008	UTC	4124 m	360 15 kn	320 03 05	1	1024.0 mb	20.0 C	17.5 C	30 m	5/8	CS	017			
0	19.67	19.67	33.574	23.761	412.8	0.000	5.33	232.7	101.7	1.8	0.20	0.2	0.03	0.02	0.06	0.02	0	
2	19.67	19.67	33.574	23.762	412.9	0.008	5.33	232.7	101.7	1.8	0.20	0.2	0.03	0.02	0.06	0.02	2 21	
10 ISL	19.66 D	19.66	33.572 D	23.764	413.0	0.038	5.35	D233.5	D102.1	1.7	0.19	0.1	0.02	0.00	0.06	0.01	10 20	
11	19.66	19.66	33.572	23.764	413.0	0.045	5.34	233.3	101.9	1.7	0.19	0.1	0.00	0.00	0.06	0.01	11 20	
20 ISL	19.59 D	19.58	33.564 D	23.777	412.1	0.079	5.36	D233.6	D102.0	1.6	0.19	0.1	0.02	0.00	0.07	0.01	20	
21	19.62	19.62	33.573	23.775	412.4	0.087	5.34	233.0	101.7	1.5	0.19	0.1	0.00	0.00	0.07	0.01	21 19	
30 ISL	19.50 D	19.50	33.557 D	23.795	410.9	0.120	5.36	D233.8	D101.9	1.5	0.19	0.0	0.02	0.00	0.07	0.01	30	
41	19.49	19.48	33.557	23.799	410.9	0.169	5.35	233.7	101.7	1.5	0.19	0.0	0.00	0.00	0.08	0.01	41 18	
50 ISL	19.41 D	19.40	33.570 D	23.830	408.3	0.203	5.35	D232.5	D101.2	1.5	0.18	0.0	0.02	0.00	0.08	0.01	50	
60	18.38	18.37	33.587	24.102	382.7	0.245	5.61	244.8	104.4	1.6	0.17	0.0	0.00	0.00	0.08	0.01	60 17	
75 ISL	17.98 D	17.98	33.575 D	24.190	374.9	0.300	5.62	D246.1	D104.3	1.6	0.18	0.0	0.02	0.00	0.10	0.01	76	
81	17.88	17.88	33.585	24.223	371.9	0.324	5.62	245.3	103.6	1.6	0.18	0.0	0.00	0.01	0.10	0.02	82 16	
100	17.45	17.43	33.697	24.417	354.1	0.393	5.56	243.0	101.8	1.7	0.17	0.0	0.00	0.00	0.16	0.04	101 15	
110	16.83	16.81	33.655	24.531	343.5	0.428	5.50	240.0	99.3	1.9	0.19	0.0	0.00	0.00	0.18	0.11	111 14	
122	15.72	15.70	33.598	24.741	323.7	0.468	5.39	235.3	95.3	2.5	0.26	0.2	0.05	0.00	0.29	0.22	123 13	
125 ISL	15.34 D	15.32	33.566 D	24.802	317.9	0.477	5.45	D237.7	D95.7	2.7	0.28	0.4	0.08	0.00	0.28	0.24	126	
131</td																		

## PRIMARY PRODUCTIVITY CASTS

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 76.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 43.2 N	123 38.0 W	25/07/2016	1951 UTC	24 m	1255 - 1945 PST	1221 PST	1945 PST	214.7 mg C/m <sup>2</sup>	067

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	mean	dark	
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	0.08	
2	16.44	33.004	24.113	5.77	103.1	1.3	0.28	0.1	0.00	0.01	0.22	0.05	88. A	5.4	5.6	5.5	0.19
8	16.44	33.003	24.115	5.77	103.1	1.2	0.28	0.0	0.00	0.01	0.21	0.05					
14	16.44	33.004	24.114	5.77	103.1	1.0	0.26	0.0	0.00	0.01	0.24	0.03	41.	4.7	5.0	4.9	0.17
18	16.43	33.008	24.120	5.77	103.1	1.0	0.27	0.0	0.00	0.01	0.23	0.05	32.	4.6	4.4	4.5	0.24
27	16.41	33.002	24.122	5.77	103.1	0.9	0.26	0.0	0.00	0.03	0.24	0.03					
34	16.34	32.998	24.135	5.81	103.6	1.0	0.26	0.0	0.00	0.04	0.32	0.03	11.	3.1	2.8	2.9	0.23
44	15.29	33.056	24.414	6.00	104.8	0.7	0.29	0.0	0.04	0.16	0.55	0.14					
54	14.38	33.087	24.634	5.93	101.7	1.0	0.39	1.4	0.13	0.33	0.56	0.26					
64	13.15	33.053	24.837	5.68	95.0	2.6	0.49	1.9	0.29	0.41	0.20	0.52	1.7	0.87	0.80	0.84	0.09
76	12.17	32.988	24.999	5.33	87.2	5.9	0.73	6.4	0.12	0.04	0.22	0.17	0.77	0.22	0.23	0.22	0.08

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 19.1 N	120 48.6 W	23/07/2016	1957 UTC	11 m	1255 - 1942 PST	1210 PST	1942 PST	811.6 mg C/m <sup>2</sup>	061

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	mean	dark	
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	0.08	
2	13.13	33.543	25.239	4.97	83.3	10.9	1.06	10.9	0.20	0.07	1.61	0.52	76. A	36.2	40.3	38.3	0.42
7	13.12	33.552	25.248	4.89	82.0	10.7	1.08	10.7	0.19	0.07	1.58	0.51	38.	33.9	42.8	38.4	0.47
8	13.13	33.545	25.241	4.88	81.9	10.7	1.06	10.8	0.19	0.05	1.64	0.53	33.	31.8	48.2	40.0	0.42
16	13.12	33.544	25.242	4.90	82.2	10.7	1.05	10.8	0.19	0.05	1.67	0.64	11.	30.0	33.0	31.5	0.41
22	12.83	33.543	25.299	4.83	80.4	10.8	1.07	11.0	0.18	0.05	1.67	0.53					
29	11.10	33.610	25.678	3.38	54.3	17.7	1.60	18.7	0.22	0.08	0.60	0.37	1.7	1.5	1.1	1.3	0.19
35	10.75	33.625	25.752	3.16	50.3	18.9	1.67	20.1	0.23	0.04	0.18	0.28	0.76	0.24	0.25	0.25	0.12

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 80.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 28.9 N	122 31.9 W	24/07/2016	1757 UTC	24 m	1217 - 1945 PST	1217 PST	1945 PST	115.7 mg C/m <sup>2</sup>	064

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	mean	dark	
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	0.08	
2	16.92	32.892	23.916	5.63	101.4	1.3	0.27	0.0	0.00	0.00	0.12	0.03	88. A	3.2	3.1	3.2	0.17
8	16.92	32.891	23.915	5.630	101.4	1.6	0.27	0.1	0.00	0.00	0.11	0.03					
14	16.92	32.891	23.916	5.64	101.7	1.5	0.28	0.1	0.00	0.00	0.11	0.03	41.	2.7	2.2	2.4	0.16
18	16.92	32.892	23.918	5.66	102.0	1.3	0.28	0.0	0.00	0.00	0.11	0.03	32.	2.7	2.7	2.7	0.18
27	16.91	32.892	23.920	5.65	101.9	1.2	0.26	0.0	0.00	0.00	0.11	0.03					
34	16.90	32.901	23.930	5.65	101.9	1.2	0.26	0.0	0.00	0.00	0.12	0.03	11.	1.5	1.4	1.4	0.19
45	16.72	32.902	23.975	5.68	101.9	1.1	0.26	0.0	0.00	0.00	0.16	0.06					
54	15.52	32.953	24.284	5.94	104.3	1.0	0.29	0.0	0.00	0.00	0.29	0.11					
63	14.84	32.865	24.365	6.05	104.7	1.6	0.31	0.0	0.00	0.00	0.32	0.14	1.8	0.47	0.61	0.54	0.13
74	14.12	32.828	24.490	6.18	105.3	2.0	0.33	0.0	0.00	0.00	0.34	0.23	0.88	0.18	0.15	0.17	0.15

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 16.6 N	120 1.7 W	22/07/2016	1609 UTC	08 m	1207 - 1945 PST	1207 PST	1941 PST	615.0 mg C/m <sup>2</sup>	058

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	mean	dark	
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	0.08	
1	19.14	33.601	23.919	6.03	113.9	0.2	0.12	0.0	0.03	0.03	1.27	0.28	83. A	20.6	21.4	21.0	0.66
5	19.09	33.602	23.933	6.04	114.1	0.1	0.11	0.0	0.00	0.00	1.23	0.28	38.	22.6	22.7	22.7	1.1
6	18.99	33.599	23.955	6.09	114.8	0.1	0.11	0.0	0.00	0.00	0.94	0.55	32.	27.2	27.0	27.1	0.58
12	15.07	33.511	24.810	5.97	104.2	2.7	0.43	0.4	0.05	0.07	2.20	0.77	10.	49.6	44.5	47.0	0.39
22	13.08	33.477	25.200	4.95	82.9	8.0	0.89	7.9	0.23	0.02	0.89	0.50	1.5	3.8	3.1	3.5	0.20
25	12.57	33.503	25.320	4.44	73.5	10.6	1.09	11.2	0.22	0.00	0.55	0.44	0.83	1.0	1.1	1.1	0.14

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 44.4 N	120 24.7 W	21/07/2016	1824 UTC	09 m	1205 - 1940 PST	1208 PST	1935 PST	1142.0 mg C/m <sup>2</sup>	052

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	mean	dark	
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	0.08	
2	16.28	33.562	24.578	5.46	97.6	5.5	0.58	3.8	0.10	1.09	2.40	0.22	71. A	67.2	65.5	66.3	0.38
5	16.28	33.563	24.581	5.46	97.6	5.5	0.64	3.8	0.10	1.24	2.25	0.43	43.	64.7	106.0	85.3	0.44
7	16.30	33.562	24.576	5.47	97.8	5.5	0.64	3.9	0.10	1.85	2.46	0.29	30.	65.1	63.5	64.3	0.60
13	15.82	33.562	24.683	5.33	94.5	6.2	0.62	4.8	0.11	0.05	2.18	0.22	11.	45.2	43.9	44.5	0.39
25	15.17	33.566	24.831	5.09	89.1	7.9	0.74	7.0	0.14	0.00	1.44	0.16	1.4	5.3	4.2	4.8	0.30
28	15.16	33.562	24.832	5.04	88.1	8.0	0.79	7.3	0.14	0.16	1.57	0.15	0.84	1.6	1.8	1.7	0.27

A) INCUBATION LIGHT INTENSITIES WERE 61.2, 40.0, 31.6, 11.3, 1.8, 0.80 PERCENT RESPECTIVELY.

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 83.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 34.7 N	122 49.0 W	20/07/2016	1632 UTC	22 m	1218 - 2000 PST	1218 PST	1941 PST	292.6 mg C/m <sup>2</sup>	048

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	16.61	32.891	23.989	5.66	101.5	0.8	0.26	0.0	0.00	0.00	0.12	0.03	87. A	2.3	2.4	2.4	0.22
14	16.59	32.895	23.996	5.68	101.7	0.9	0.25	0.0	0.00	0.00	0.11	0.03	38.	2.3	2.3	2.3	0.16
17	16.59	32.889	23.993	5.69	101.9	1.0	0.25	0.0	0.00	0.00	0.12	0.03	31.	2.8	3.1	2.9	0.25
24	16.54	32.896	24.010	5.69	101.9	0.8	0.26	0.0	0.00	0.00	0.13	0.04					
40	15.70	33.011	24.288	5.86	103.2	0.5	0.29	0.0	0.00	0.00	0.43	0.15	6.1	8.7	9.0	8.8	0.14
49	15.51	33.012	24.332	5.87	103.1	0.4	0.29	0.0	0.00	0.01	0.45	0.18					
57	15.31	33.030	24.391	5.89	102.8	0.6	0.30	0.0	0.03	0.08	0.48	0.25	1.9	2.6	2.1	2.4	0.14
70	14.49	33.084	24.609	5.89	101.2	1.0	0.40	0.8	0.13	0.38	0.47	0.27	0.76	0.96	1.1	1.0	0.13

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 39.7 N	118 58.5 W	17/07/2016	1820 UTC	18 m	1202 - 1210 PST	1202 PST	1936 PST	670.9 mg C/m <sup>2</sup>	036

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	21.45	33.649	23.346	5.44	107.4	1.4	0.20	0.0	0.00	0.00	0.28	0.07	84. A	11.7	11.4	11.5	0.29
11	19.55	33.610	23.821	5.68	108.2	1.5	0.18	0.0	0.03	0.00	0.41	0.11	39.	16.1	15.7	15.9	0.33
14	17.44	33.527	24.281	6.26	114.4	1.7	0.24	0.0	0.03	0.00	0.49	0.14	30.	16.1	16.8	16.5	0.30
26	13.68	33.441	25.051	5.51	93.3	5.2	0.68	4.1	0.19	0.03	1.15	0.50	11.	21.1	20.1	20.6	0.25
47	12.23	33.477	25.367	4.31	70.8	10.2	1.17	12.2	0.32	0.23	0.54	0.40	1.8	2.4	2.0	2.2	0.11
36	12.99	33.454	25.200	5.06	84.5	6.6	0.86	7.1	0.29	0.20	0.88	0.42					
57	11.87	33.493	25.447	4.02	65.6	12.1	1.29	14.3	0.24	0.00	0.44	0.36	0.77	0.65	0.69	0.67	0.07

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 39.5 N	121 1.5 W	18/07/2016	1812 UTC	15 m	1210 - 1940 PST	1210 PST	1941 PST	316.0 mg C/m <sup>2</sup>	041

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	16.44	33.209	24.271	5.73	102.6	1.0	0.32	0.1	0.00	0.14	0.34	0.07	81. A	11.4	10.9	11.1	0.16
9	16.44	33.208	24.271	5.74	102.7	1.0	0.32	0.0	0.03	0.14	0.34	0.09	40.	9.7	9.9	9.8	0.15
11	16.43	33.210	24.275	5.73	102.5	0.9	0.35	0.0	0.04	0.09	0.33	0.10	32.	9.9	9.9	9.9	0.17
22	14.40	33.180	24.700	5.89	101.1	1.7	0.41	1.2	0.12	0.25	0.62	0.21	11.	10.3	9.7	10.0	0.15
30	12.90	33.244	25.054	5.41	90.1	4.4	0.70	5.1	0.33	0.91	0.59	0.26					
38	12.79	33.313	25.129	5.28	87.7	4.8	0.81	6.0	0.30	1.81	0.34	0.17	2.0	0.68	0.82	0.75	0.22
48	12.38	33.386	25.267	5.06	83.4	6.7	0.93	7.9	0.37	1.88	0.29	0.17	0.74	0.27	0.29	0.28	0.10

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 86.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 40.1 N	123 4.3 W	19/07/2016	1444 UTC	29 m	1225 - 1949 PST	1225 PST	1949 PST	137.4 mg C/m <sup>2</sup>	044

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	17.60	33.023	23.857	5.55	101.4	1.4	0.26	0.0	0.00	0.00	0.10	0.03	90. A	1.5	1.6	1.6	0.10
11	17.60	33.022	23.857	5.53	101.2	1.6	0.26	0.0	0.00	0.00	0.10	0.02					
17	17.60	33.021	23.857	5.54	101.2	1.5	0.27	0.0	0.00	0.00	0.09	0.03	41.	1.8	1.7	1.7	0.16
22	17.61	33.021	23.854	5.56	101.7	1.4	0.28	0.0	0.00	0.00	0.10	0.03	31.	2.2	2.2	2.2	0.09
32	17.67	33.094	23.895	5.52	101.1	1.4	0.31	0.0	0.00	0.00	0.11	0.02					
42	17.70	33.105	23.900	5.52	101.1	1.4	0.30	0.0	0.00	0.00	0.13	0.01	11.	1.7	1.7	1.7	0.12
53	17.51	33.101	23.942	5.54	101.1	1.4	0.30	0.0	0.00	0.00	0.12	0.04					
65	14.89	33.054	24.501	5.99	103.8	1.7	0.36	0.0	0.00	0.00	0.28	0.06					
76	14.05	33.083	24.701	5.92	100.8	2.4	0.38	0.0	0.00	0.00	0.35	0.18	1.8	1.1	1.0	1.1	0.07
84	13.50	33.095	24.822	5.73	96.5	3.0	0.44	0.2	0.07	0.00	0.54	0.24					
92	13.15	33.138	24.927	5.41	90.5	4.3	0.58	3.1	0.17	0.00	0.43	0.28	0.77	0.51	0.54	0.53	0.08

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 11.5 N	118 22.9 W	16/07/2016	1657 UTC	14 m	1200 - 1940 PST	1159 PST	1929 PST	485.1 mg C/m <sup>2</sup>	027

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	19.48	33.551	23.793	5.51	104.7	0.8	0.23	0.0	0.13	0.04	0.33	0.07	80. A	13.7	13.9	13.8	0.39
8	19.03	33.537	23.898	5.57	104.9	0.5	0.26	0.0	0.05	0.09	0.27	0.07	42.	11.9	12.1	12.0	0.31
11	18.37	33.534	24.060	5.66	105.3	0.5	0.24	0.0	0.00	0.00	0.29	0.09	30.	14.9	15.2	15.0	0.28
20	14.62	33.405	24.826	6.09	105.1	1.8	0.37	0.5	0.08	0.00	0.82	0.28	11.	15.4	20.4	17.9	0.30
28	13.81	33.415	25.004	5.52	93.9	3.6	0.62	4.0	0.30	0.00	0.87	0.38					
38	12.47	33.366	25.232	4.65	76.8	8.3	1.03	10.6	0.29	0.00	0.47	0.30	1.6	2.6	2.1	2.4	0.11
44	11.89	33.413	25.381	4.29	70.0	11.0	1.20	13.5	0.14	0.00	0.30	0.25	0.80	0.48	0.51	0.50	0.08

A) INCUBATION LIGHT INTENSITIES WERE 61.2, 40.0, 31.6, 11.3, 1.8, 0.80 PERCENT RESPECTIVELY.

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 5.2 N	120 38.3 W	15/07/2016	1657 UTC	32 m	1206 - 1930 PST	1209 PST	1934 PST	171.4 mg C/m <sup>2</sup>	023

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	17.92	33.125	23.858	5.50	101.2	1.9	0.27	0.0	0.00	0.01	0.09	0.02	91. A	2.5	2.4	2.5	0.08
10	17.91	33.129	23.863	5.50	101.3	1.8	0.27	0.0	0.00	0.00	0.08	0.02					
20	17.91	33.123	23.859	5.50	101.3	1.8	0.28	0.0	0.00	0.00	0.09	0.02	38.	2.2	2.1	2.1	0.08
24	17.92	33.124	23.859	5.51	101.4	1.8	0.27	0.0	0.00	0.00	0.09	0.02	32.	2.2	2.3	2.2	0.09
35	17.60	33.194	23.990	5.53	101.3	1.6	0.26	0.0	0.00	0.00	0.12	0.03					
45	16.62	33.193	24.221	5.87	105.4	1.9	0.29	0.0	0.00	0.00	0.13	0.03	12.	1.8	1.8	1.8	0.06
58	15.67	33.190	24.434	5.89	103.7	2.0	0.32	0.0	0.00	0.00	0.16	0.06					
71	15.07	33.216	24.586	5.79	100.8	2.3	0.39	0.0	0.00	0.00	0.22	0.13					
84	14.07	33.229	24.810	5.59	95.4	3.1	0.44	0.5	0.04	0.00	0.33	0.42	1.8	1.3	1.1	1.2	0.03
93	13.48	33.228	24.931	5.49	92.5	3.6	0.49	1.5	0.06	0.00	0.34	0.30					
101	12.87	33.247	25.066	5.17	86.0	5.5	0.69	5.2	0.07	0.00	0.28	0.40	0.79	0.52	0.53	0.52	0.01

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 44.9 N	123 20.2 W	14/07/2016	1541 UTC	28 m	1218 - 2015 PST	1217 PST	1941 PST	114.3 mg C/m <sup>2</sup>	019

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	18.93	33.345	23.776	5.42	101.8	1.6	0.27	0.0	0.00	0.01	0.08	0.02	90. A	2.3	2.1	2.2	0.08
10	18.93	33.344	23.776	5.41	101.7	1.7	0.27	0.0	0.00	0.00	0.10	0.02					
17	18.93	33.344	23.776	5.40	101.5	1.5	0.29	0.0	0.00	0.00	0.08	0.02	39.	2.2	2.0	2.1	0.04
21	18.93	33.348	23.780	5.40	101.4	1.4	0.29	0.0	0.00	0.00	0.08	0.02	32.	2.0	2.1	2.1	0.05
31	18.93	33.344	23.777	5.43	101.9	1.4	0.29	0.0	0.00	0.00	0.09	0.02					
40	18.89	33.342	23.786	5.39	101.3	1.4	0.27	0.0	0.00	0.00	0.09	0.02	11.	1.5	1.2	1.3	0.05
52	16.64	33.229	24.243	5.81	104.3	1.5	0.28	0.0	0.00	0.00	0.13	0.03					
63	15.81	33.178	24.394	5.91	104.3	1.6	0.30	0.0	0.00	0.00	0.15	0.04					
74	15.16	33.207	24.561	5.86	102.2	1.9	0.35	0.0	0.00	0.00	0.20	0.09	1.7	0.47	0.35	0.41	0.04
81	14.68	33.219	24.675	5.83	100.7	2.2	0.38	0.0	0.00	0.00	0.25	0.20					
90	13.92	33.230	24.842	5.72	97.3	2.6	0.41	0.0	0.03	0.00	0.41	0.39	0.72	0.44	0.42	0.43	0.02

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 57.5 N	117 18.3 W	10/07/2016	1916 UTC	09 m	1200 - 1929 PST	1155 PST	1929 PST	744.3 mg C/m <sup>2</sup>	001

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	22.83	33.690	22.989	5.81	117.5	0.4	0.10	0.0	0.04	0.04	0.80	0.16	71. A	47.5	33.5	40.5	0.75
6	22.19	33.680	23.165	6.05	121.0	1.0	0.13	0.0	0.03	0.00	1.00	0.22	36.	21.3	26.7	24.0	1.0
8	17.53	33.648	24.354	6.18	113.2	1.4	0.15	0.0	0.03	0.00	1.07	0.22	26.	54.1	51.5	52.8	0.83
15	15.47	33.519	24.731	6.15	108.1	6.5	0.40	0.0	0.03	0.02	1.12	0.49	7.7	25.2	24.9	25.1	0.77
25	12.78	33.489	25.267	4.410	73.4	8.2	0.84	5.1	0.39	0.57	1.05	0.92	1.4	7.8	6.3	7.0	0.14
31	12.32	33.484	25.354	4.08	67.2	11.3	1.20	10.9	0.56	0.64	0.44	0.62	0.51	1.2	1.1	1.2	0.10

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 20.5 N	118 32.9 W	11/07/2016	1944 UTC	13 m	1240 - 1930 PST	1200 PST	1929 PST	410.0 mg C/m <sup>2</sup>	008

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	19.95	33.633	23.734	5.62	107.8	1.8	0.27	0.1	0.00	1.35	0.38	0.09	79. A	11.0	10.3	10.7	0.31
9	19.58	33.624	23.824	5.66	107.8	1.8	0.32	0.0	0.04	0.85	0.38	0.10	35.	10.3	13.6	11.9	0.28
13	18.07	33.600	24.186	5.81	107.5	2.0	0.28	0.0	0.00	0.86	0.41	0.13	22.	11.5	11.5	11.5	0.31
21	14.88	33.499	24.844	6.25	108.6	2.9	0.52	1.2	0.03	2.30	0.86	0.32	8.4	14.5	13.4	13.9	0.47
30	12.45	33.482	25.326	4.92	81.3	6.8	1.01	8.4	0.09	0.45	1.25	0.59					
38	11.64	33.507	25.499	3.90	63.3	12.1	1.41	15.0	0.13	1.12	1.12	0.61	1.1	3.5	2.9	3.2	0.12
46	10.99	33.512	25.621	3.72	59.6	15.2	1.47	17.0	0.06	0.65	0.66	0.41	0.44	0.69	0.81	0.75	0.07

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 30.6 N	120 15.1 W	12/07/2016	1721 UTC	13 m	1201 - 1935 PST	1207 PST	1937 PST	310.9 mg C/m <sup>2</sup>	012

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	16.27	33.332	24.405	5.87	104.8	0.8	0.29	0.0	0.03	0.05	0.37	0.12	79. A	9.8	10.2	10.0	0.29
8	16.27	33.331	24.404	5.87	104.8	1.0	0.29	0.1	0.03	0.16	0.36	0.15	39.	10.1	12.0	11.1	0.26
10	16.26	33.332	24.409	5.90	105.3	0.8	0.31	0.0	0.00	0.06	0.36	0.12	31.	10.9	11.1	11.0	0.27
18	16.24	33.335	24.414	5.89	105.0	0.8	0.32	0.0	0.03	0.05	0.35	0.14	12.	10.2	9.9	10.1	0.34
26	16.14	33.370	24.465	5.91	105.2	0.7	0.28	0.0	0.03	0.02	0.43	0.17					
34	14.60	33.363	24.798	5.75	99.3	1.6	0.45	0.8	0.12	0.74	0.74	0.34	1.8	3.6	3.0	3.3	0.18
41	14.34	33.368	24.857	5.50	94.4	2.4	0.56	1.8	0.18	1.45	0.45	0.26	0.79	0.75	0.78	0.76	0.14

A) INCUBATION LIGHT INTENSITIES WERE 61.2, 40.0, 31.6, 11.3, 1.8, 0.80 PERCENT RESPECTIVELY.

RV OCEAN STARR

CALCOFI CRUISE 1607

STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL	TWILIGHT	INTEGRATED	VALUE	ORD
30 10.6 N	122 55.2 W	13/07/2016	1755 UTC	29 m	1215 - 1950 PST	1218 PST	1944 PST		108.9 mg	C/m <sup>2</sup>	016

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	LIGHT	UPTAKE (mg C/m <sup>3</sup> )			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	19.18	33.364	23.726	5.38	101.5	1.9	0.27	0.1	0.03	0.19	0.06	0.01	90. A	1.9	1.9	1.9	0.04
10	19.18	33.364	23.728	5.39D	101.8	1.9	0.33	0.0	0.03	0.06	0.06	0.01					
17	19.16	33.361	23.730	5.39D	101.8	1.9	0.26	0.0	0.00	0.06	0.06	0.01	41.	2.1	1.9	2.0	0.06
22	19.14	33.360	23.736	5.38	101.5	1.8	0.24	0.0	0.00	0.02	0.06	0.02	31.	1.9	2.0	2.0	0.07
32	19.11	33.356	23.740	5.38	101.5	1.8	0.24	0.0	0.00	0.00	0.07	0.01					
42	18.99	33.357	23.773	5.38	101.3	1.8	0.24	0.0	0.00	0.00	0.07	0.02	11.	1.7	1.4	1.5	0.07
53	18.47	33.456	23.980	5.54	103.2	1.8	0.21	0.0	0.00	0.02	0.07	0.02					
65	17.80	33.386	24.091	5.63	103.5	1.8	0.23	0.0	0.00	0.05	0.08	0.02					
76	17.38	33.370	24.182	5.68	103.6	1.8	0.21	0.0	0.00	0.00	0.09	0.03	1.8	0.23	0.16	0.20	0.05
84	17.05	33.365	24.255	5.69	103.1	1.8	0.22	0.0	0.00	0.01	0.10	0.03					
91	16.61	33.320	24.325	5.74	103.0	1.8	0.23	0.0	0.00	0.00	0.12	0.04	0.81	0.03	0.02	0.03	0.06

A) INCUBATION LIGHT INTENSITIES WERE 61.2, 40.0, 31.6, 11.3, 1.8, 0.80 PERCENT RESPECTIVELY.

## CalCOFI Cruise 1607

**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	80.0	34 03.4	122 56.7	07/25	1911	1932	415	210	366	55	
76.7	90.0	33 43.3	123 38.0	07/25	1251	1312	392	224	294	87	
80.0	50.5	34 28.3	120 29.6	07/22	1222	1225	45	16	22	22	
80.0	60.0	34 09.0	121 09.4	07/23	2106	2127	378	216	77	69	
80.0	70.0	33 49.1	121 50.6	07/24	0320	0341	416	213	231	60	
80.0	80.0	33 29.0	122 31.7	07/24	1039	1100	425	210	35	28	
80.0	90.0	33 09.3	123 12.9	07/24	1838	1859	380	221	229	58	
80.0	100.0	32 49.1	123 54.3	07/25	0156	0217	408	205	718	25	
81.7	43.5	34 23.8	119 48.0	07/22	0453	0456	74	25	150	150	
81.8	46.9	34 16.6	120 01.6	07/22	0708	0729	420	204	126	43	
83.3	39.4	34 16.0	119 19.4	07/22	0137	0138	46	6	66	66	
83.3	40.6	34 13.6	119 24.7	07/22	0030	0032	63	21	400	400	
83.3	42.0	34 10.8	119 30.7	07/21	2226	2240	274	130	110	44	
83.3	51.0	33 52.7	120 07.9	07/21	1540	1601	431	190	23	23	
83.3	55.0	33 44.5	120 24.6	07/21	1147	1207	397	209	18	18	
83.3	60.0	33 34.7	120 45.2	07/21	0701	0721	464	211	45	45	
83.3	70.0	33 15.0	121 26.7	07/21	0005	0026	431	203	207	121	
83.3	80.0	32 54.9	122 07.9	07/20	1706	1726	421	202	202	90	
83.3	90.0	32 34.8	122 48.7	07/20	0949	1009	426	199	199	59	
83.3	100.0	32 14.7	123 29.7	07/20	0213	0234	426	201	103	56	
83.3	110.0	31 54.7	124 10.1	07/19	1950	2011	385	217	47	36	
86.7	33.0	33 53.8	118 29.5	07/17	0452	0456	99	33	396	396	
86.7	35.0	33 49.4	118 37.5	07/17	0726	0746	399	210	30	30	
86.7	40.0	33 39.5	118 58.3	07/17	1207	1227	385	211	36	36	
86.7	45.0	33 29.4	119 19.2	07/17	1610	1630	417	203	36	36	
86.7	50.0	33 18.9	119 40.0	07/17	2046	2052	117	61	418	34	
86.7	55.0	33 09.5	120 00.3	07/18	0036	0056	395	206	109	109	
86.7	60.0	32 59.5	120 20.8	07/18	0443	0504	370	217	106	78	
86.7	70.0	32 39.4	121 01.5	07/18	1128	1149	376	202	133	101	
86.7	80.0	32 19.4	121 42.6	07/18	1745	1805	366	220	369	268	
86.7	90.0	31 59.5	122 23.4	07/19	0018	0039	459	176	455	54	
86.7	100.0	31 39.5	123 04.0	07/19	0545	0605	418	200	177	55	
86.7	110.0	31 19.4	123 44.4	07/19	1300	1321	414	210	27	27	
86.8	32.5	33 53.2	118 26.7	07/17	0325	0327	48	10	165	165	
88.5	30.1	33 40.5	118 05.1	07/16	2335	2336	58	4	103	103	
90.0	27.7	33 29.6	117 44.9	07/16	2038	2039	39	13	153	153	
90.0	28.0	33 28.9	117 46.1	07/16	1944	1953	177	90	96	56	
90.0	30.0	33 24.9	117 54.4	07/16	1716	1737	371	217	78	43	
90.0	35.0	33 15.1	118 15.0	07/16	1302	1323	395	208	28	10	
90.0	37.0	33 11.3	118 22.9	07/16	1012	1033	396	213	15	15	
90.0	45.0	32 55.2	118 56.4	07/16	0429	0450	393	206	61	61	
90.0	53.0	32 39.0	119 29.0	07/15	2244	2305	399	204	133	133	
90.0	60.0	32 25.2	119 57.8	07/15	1656	1717	427	211	143	94	
90.0	70.0	32 05.0	120 38.4	07/15	1015	1036	397	208	50	33	
90.0	80.0	31 45.1	121 19.2	07/15	0341	0402	382	225	215	21	
90.0	90.0	31 25.2	121 59.5	07/14	2123	2144	407	213	196	29	
90.0	100.0	31 05.2	122 39.8	07/14	1442	1503	386	219	21	21	
90.0	110.0	30 45.0	123 20.2	07/14	0634	0655	392	214	13	13	
90.0	120.0	30 25.0	123 59.8	07/14	0035	0056	389	219	13	13	
91.7	26.4	33 14.5	117 28.0	07/10	1633	1635	28	17	213	213	
93.3	26.7	32 57.4	117 18.3	07/10	1209	1214	122	36	156	156	
93.3	28.0	32 54.9	117 23.8	07/10	2030	2051	389	218	170	64	
93.3	30.0	32 50.8	117 31.9	07/10	2324	2345	393	219	89	56	
93.3	35.0	32 40.8	117 52.2	07/11	0349	0410	411	199	71	71	
93.3	40.0	32 30.9	118 12.7	07/11	0812	0833	418	202	36	36	
93.3	45.0	32 20.6	118 33.1	07/11	1254	1315	422	208	14	14	
93.3	50.0	32 11.0	118 53.7	07/11	1732	1752	396	208	149	136	
93.3	55.0	32 00.9	119 13.3	07/11	2208	2228	376	212	128	128	
93.3	60.0	31 50.8	119 34.0	07/12	0240	0301	394	208	152	142	
93.3	70.0	31 30.8	120 14.6	07/12	0814	0835	408	216	147	127	
93.3	80.0	31 10.7	120 55.3	07/12	1553	1614	421	216	242	43	
93.3	90.0	30 50.8	121 35.4	07/12	2203	2224	421	209	19	19	
93.3	100.0	30 30.9	122 15.3	07/13	0425	0446	409	212	20	20	
93.3	110.0	30 10.7	122 55.3	07/13	1052	1113	408	208	56	56	
93.3	120.0	29 50.8	123 35.2	07/13	1714	1735	407	209	22	22	
93.4	26.4	32 56.9	117 16.5	07/10	1316	1317	50	11	40	40	