UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

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

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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 KIO3 solutions prepared ashore were run at the beginning of each run. Reagent and sea water blanks were determined to account for presence of oxidizing or reducing materials.

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

Nutrient samples were analyzed at sea using a QuAAtro continuous flow analyzer (SEAL Analytical). Dissolved silicate, nitrate, and nitrite were analyzed using a modification of the method described by Armstrong (1967) and Gordon et al. (1992). Phosphate was measured with a modification of the Murphy and Riley (1962) protocol and ammonium is analyzed using a modified fluorometric method described by Kerouel and Aminot (1997). Samples were collected in 45ml high-density polypropylene screw top tubes which were acid washed and rinsed with sample three times prior to filling. Standardizations and cadmium-reduction coil efficiency determinations were performed at the beginning of every run. Drift 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) 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 NO_2 + NO_3, 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.

1607OS	**NO_2+NO_3 (µmol/L)**	**PO_4 (µmol/L)**	**SIL (µmol/L)**
Mean ± SD (n=31)	36.45 ± 0.36	2.60 ± 0.02	109.00 ± 0.45
Certified Value* (Lot CB)	36.78	2.58	111.82

*Converted from µmol/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}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 µCi of ^{14}C as $NaHCO_3$ (200µl 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 pCO2 and pH measurements: Automated shipboard analysis of the partial pressure of CO2 and pH were made from the ship's underway flow-through system. pCO2 measurements were taken with the Shipboard Underway pCO2 Environmental Recorder (SUPER-CO2) sold by Sunburst Sensors designed with a showered equilibrator and a LI-COR 840A CO2/H2O 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. pCO2 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_2. 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 discreet 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 ($cm^3/1000m^3$ strained) and as the total volume minus the volume of larger organisms under the heading "Small." Tow times are given in local PST (+8) time.

FOOTNOTES

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

D: CTD salinity value listed in place of normal shipboard salinity analysis.
ISL: After a depth value indicates that this is an interpolated or extrapolated standard level.
U: Uncertain value. Values which are not used in interpolation because they seem to be in error without apparent reason.

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FIGURES

Cruise 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.

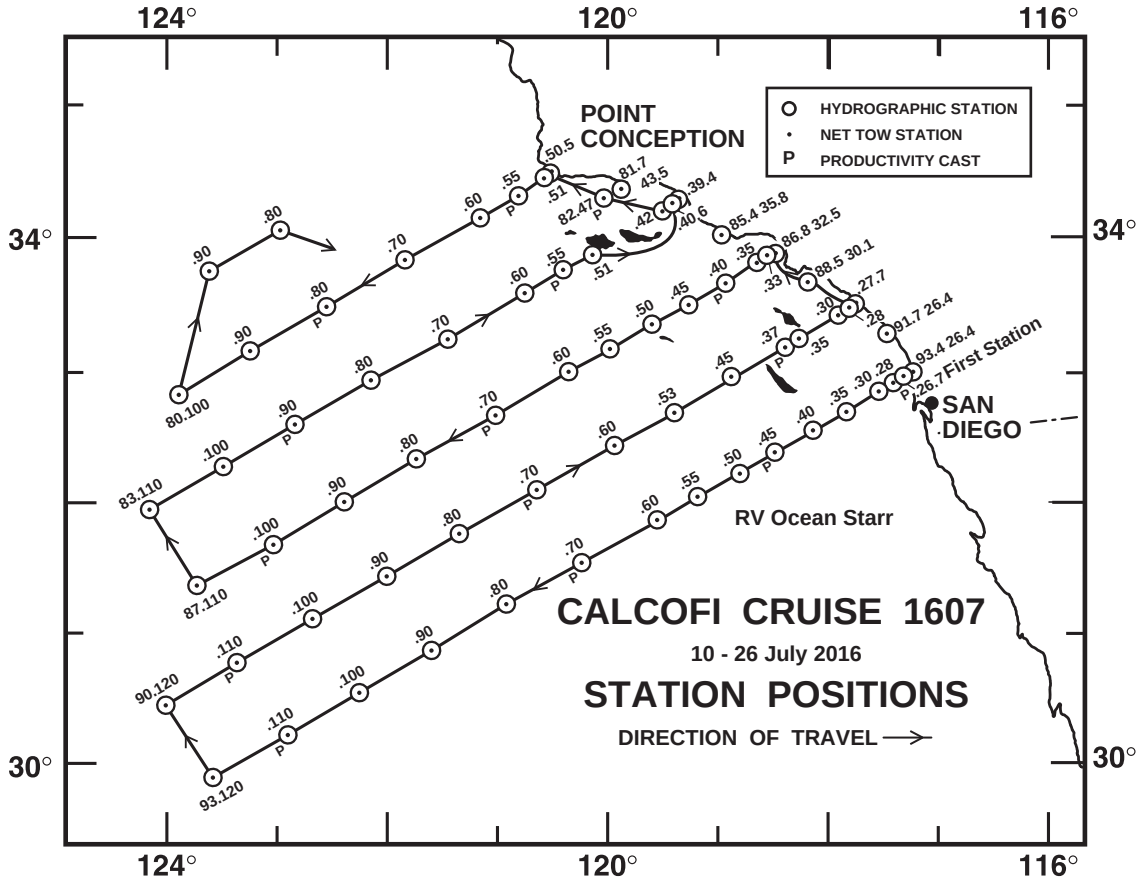

FIGURE 1

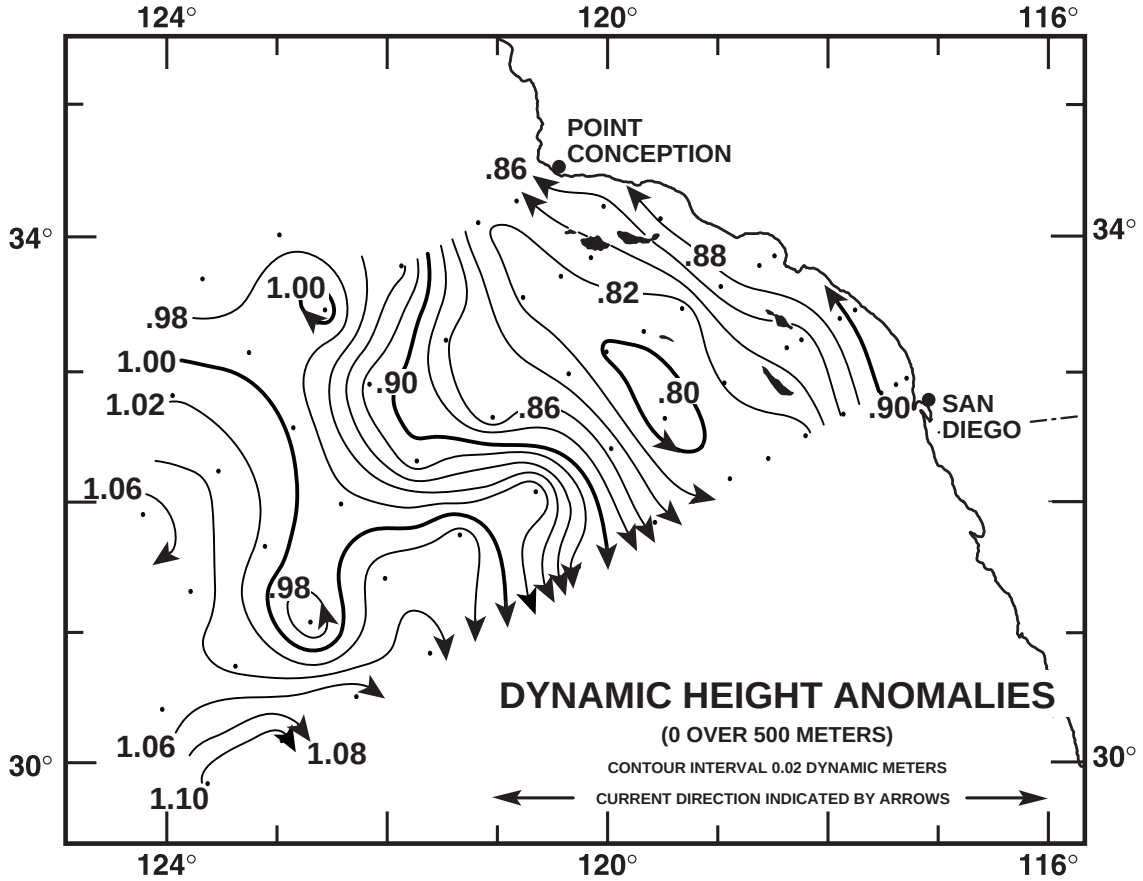

FIGURE 2

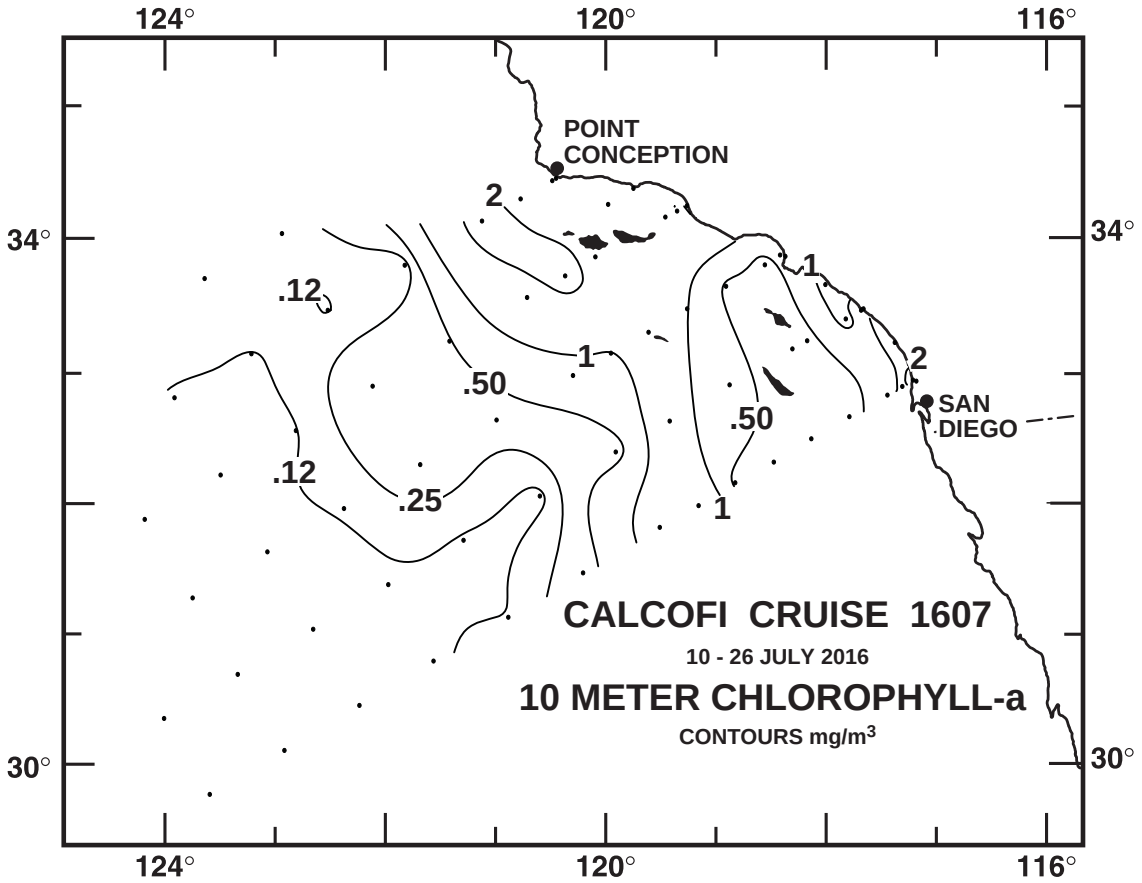

FIGURE 3A

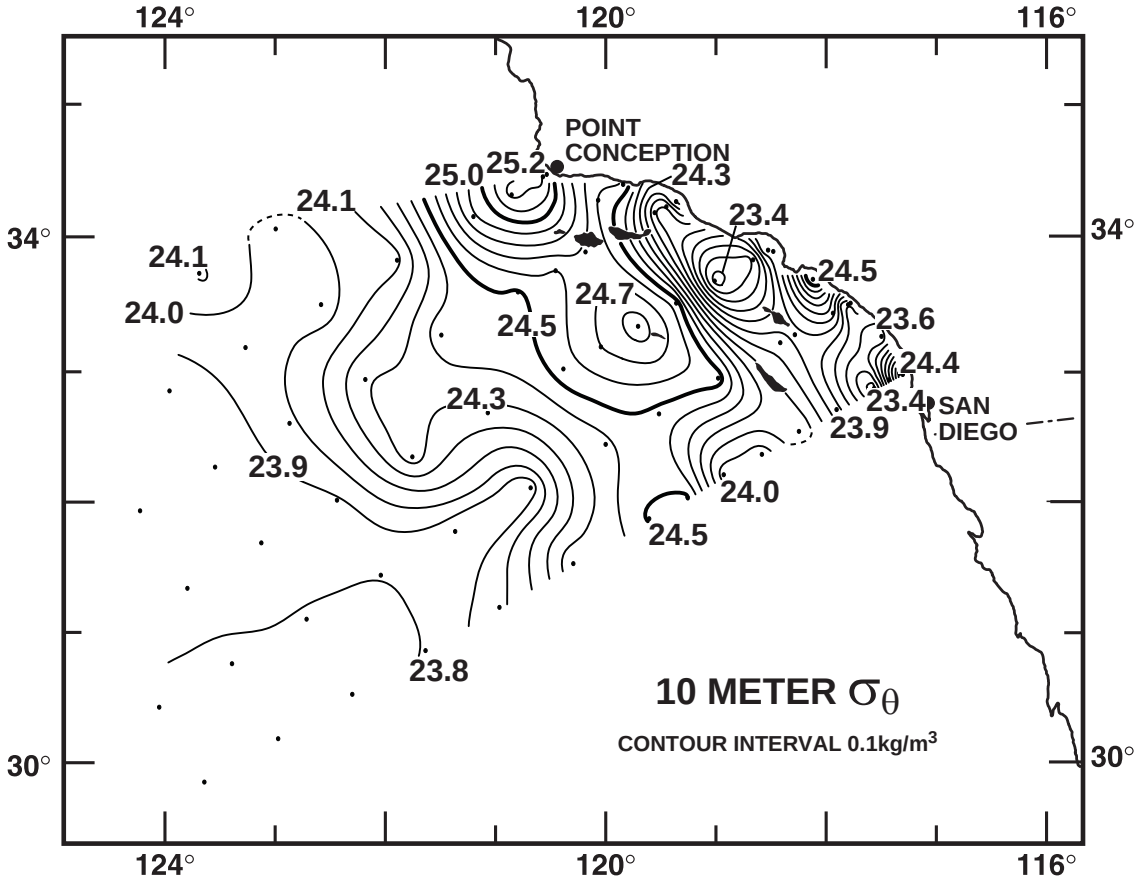

FIGURE 3B

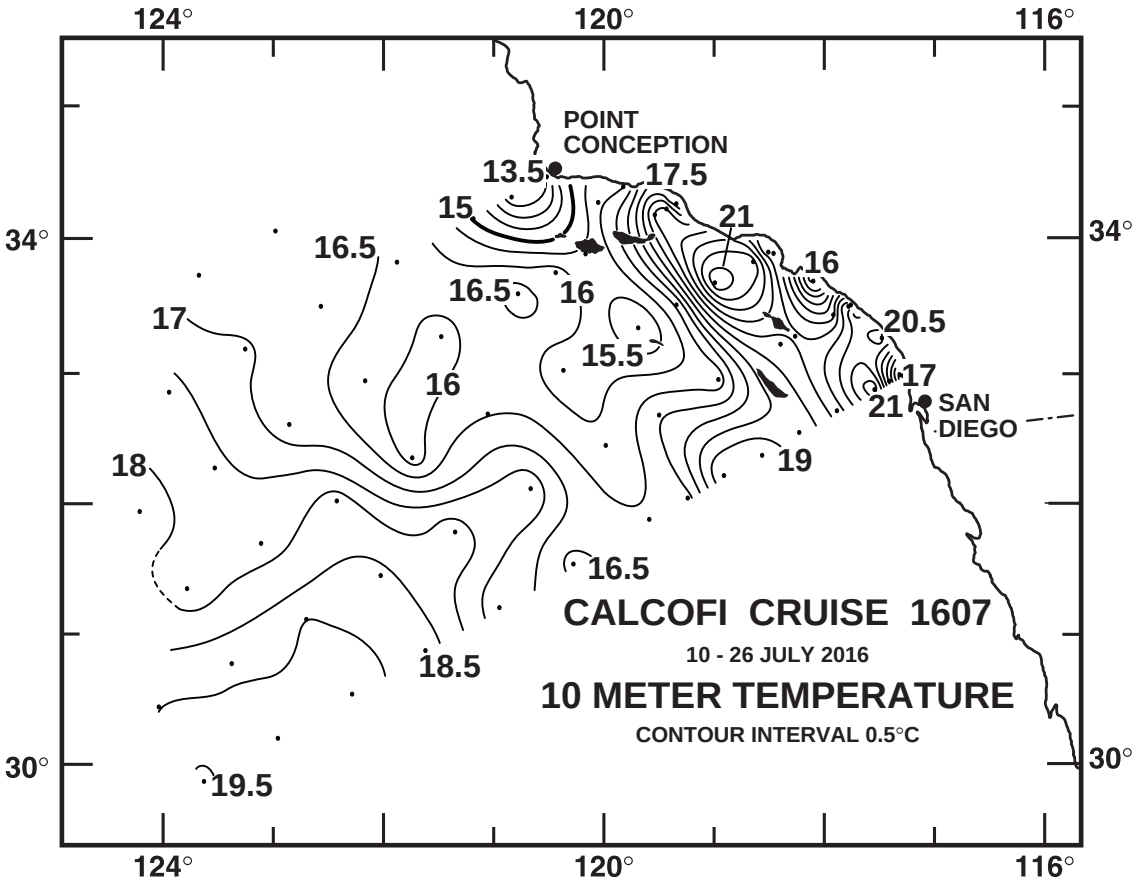

FIGURE 3C

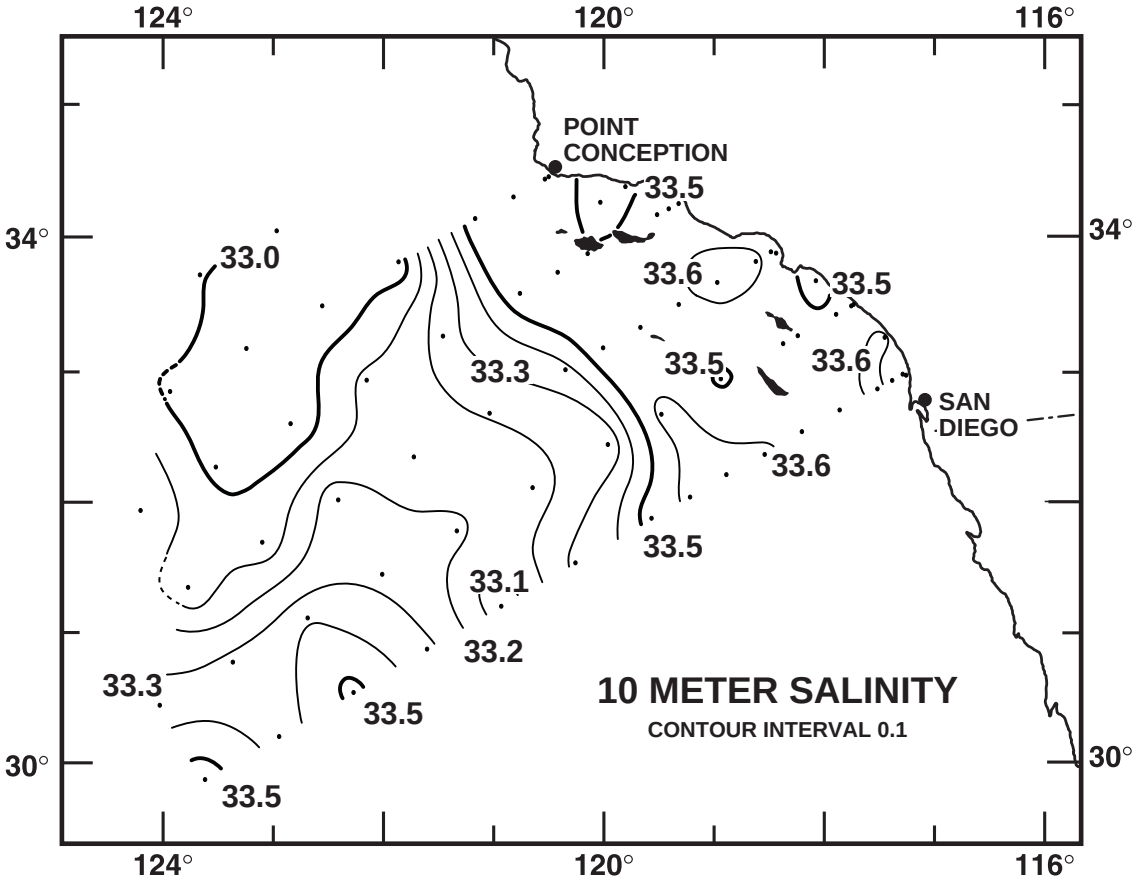

FIGURE 3D

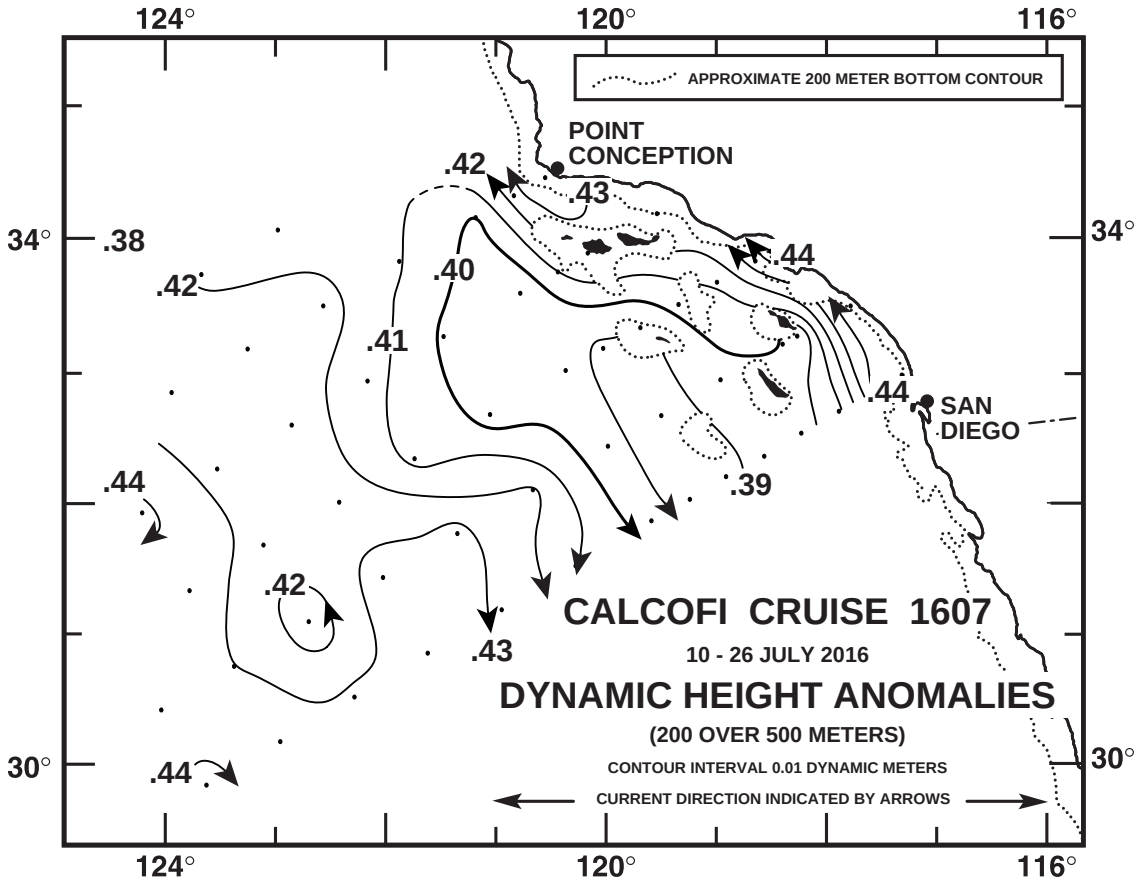

FIGURE 4A

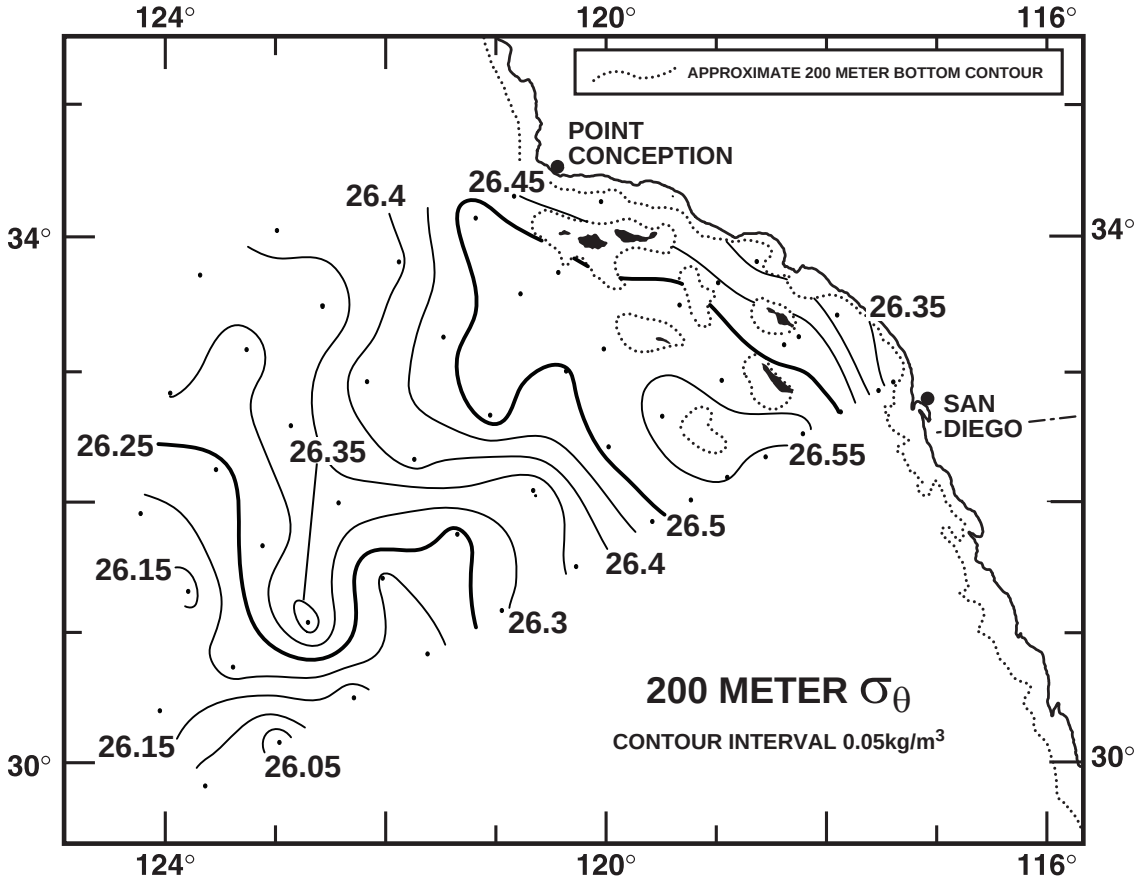

FIGURE 4B

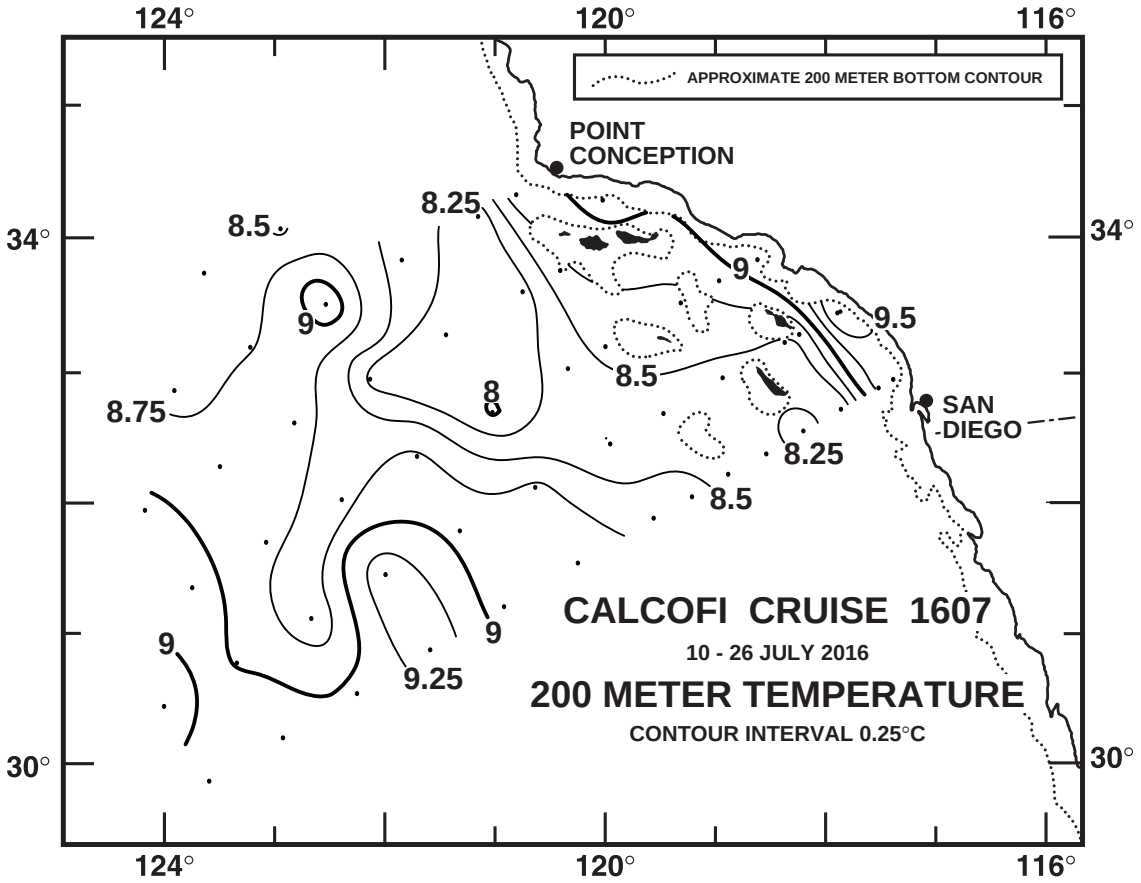

FIGURE 4C

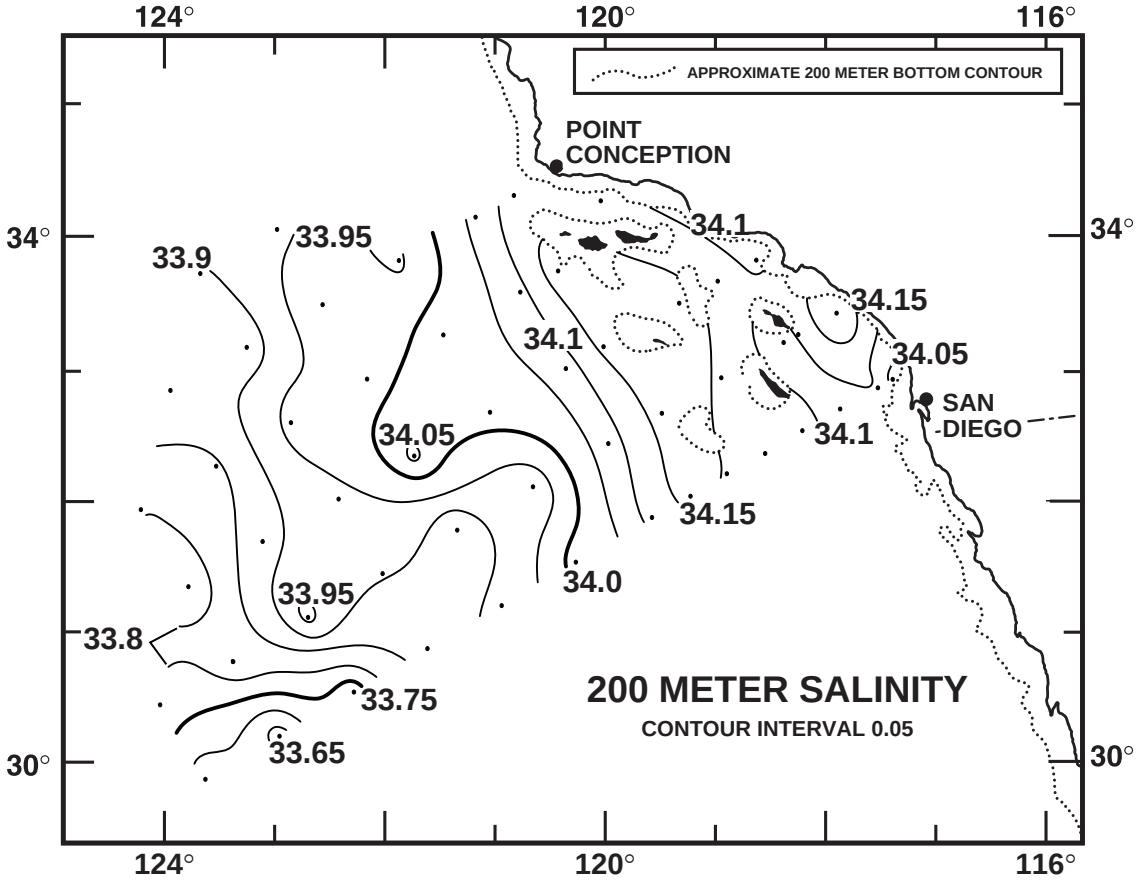

FIGURE 4D

CALCOFI CRUISE 1607

13 - 17 July 2016

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

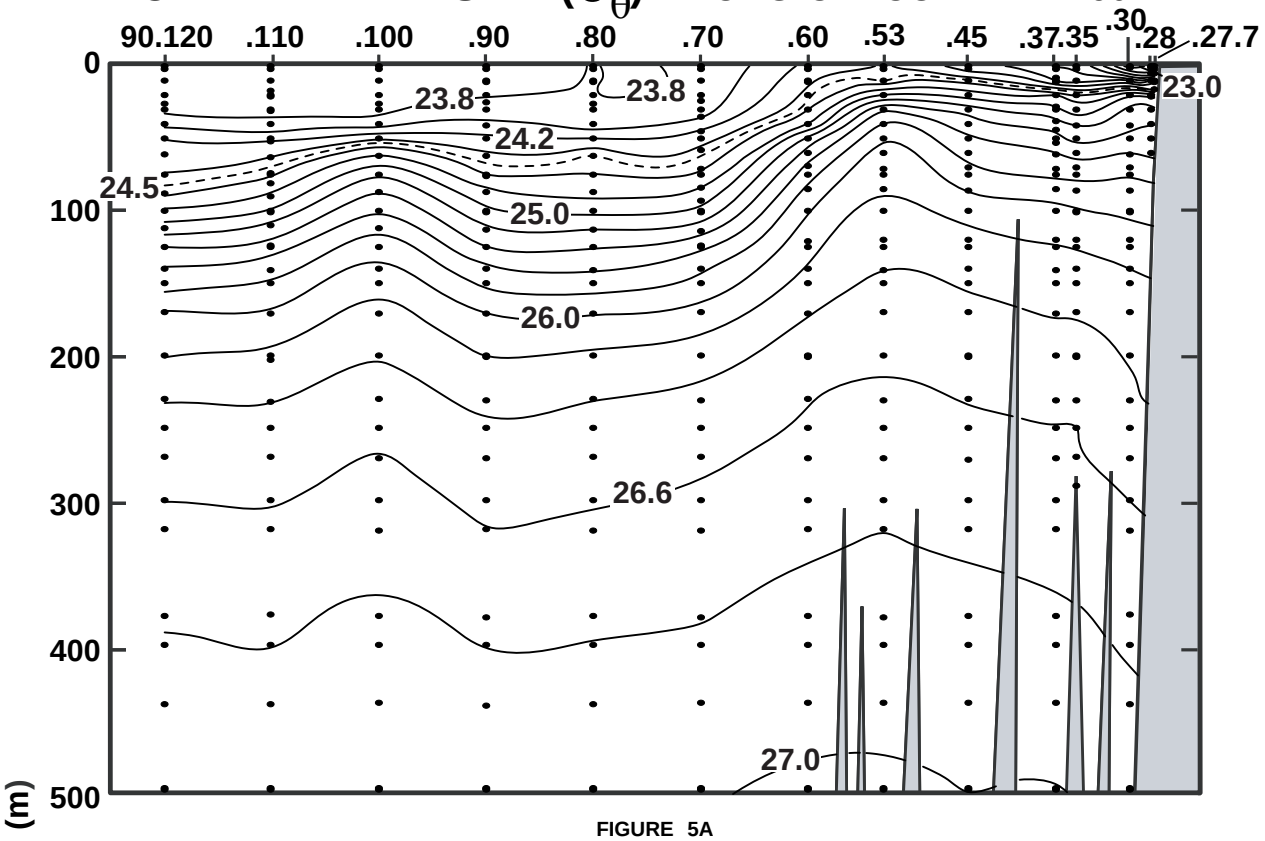

FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

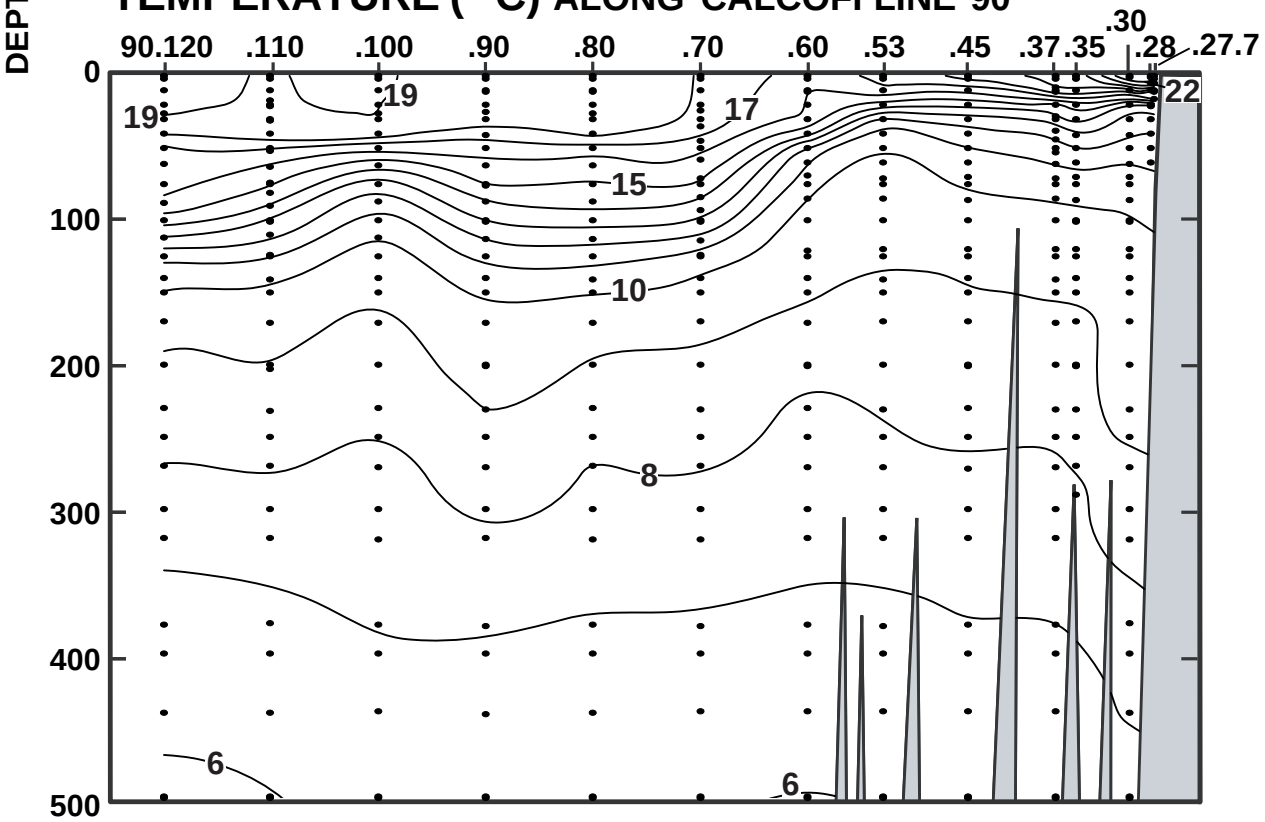

FIGURE 5B

CALCOFI CRUISE 1607

13- 17 July 2016

SALINITY ALONG CALCOFI LINE 90

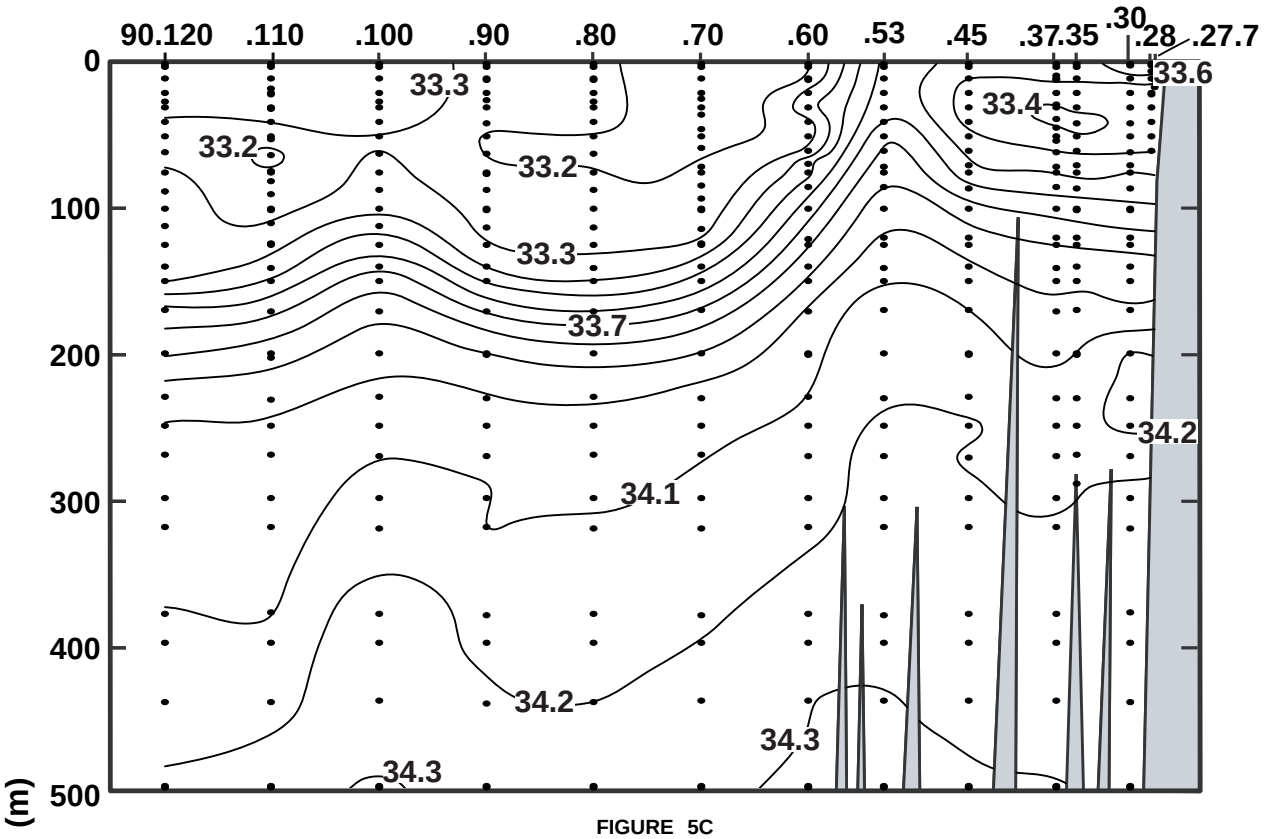

FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

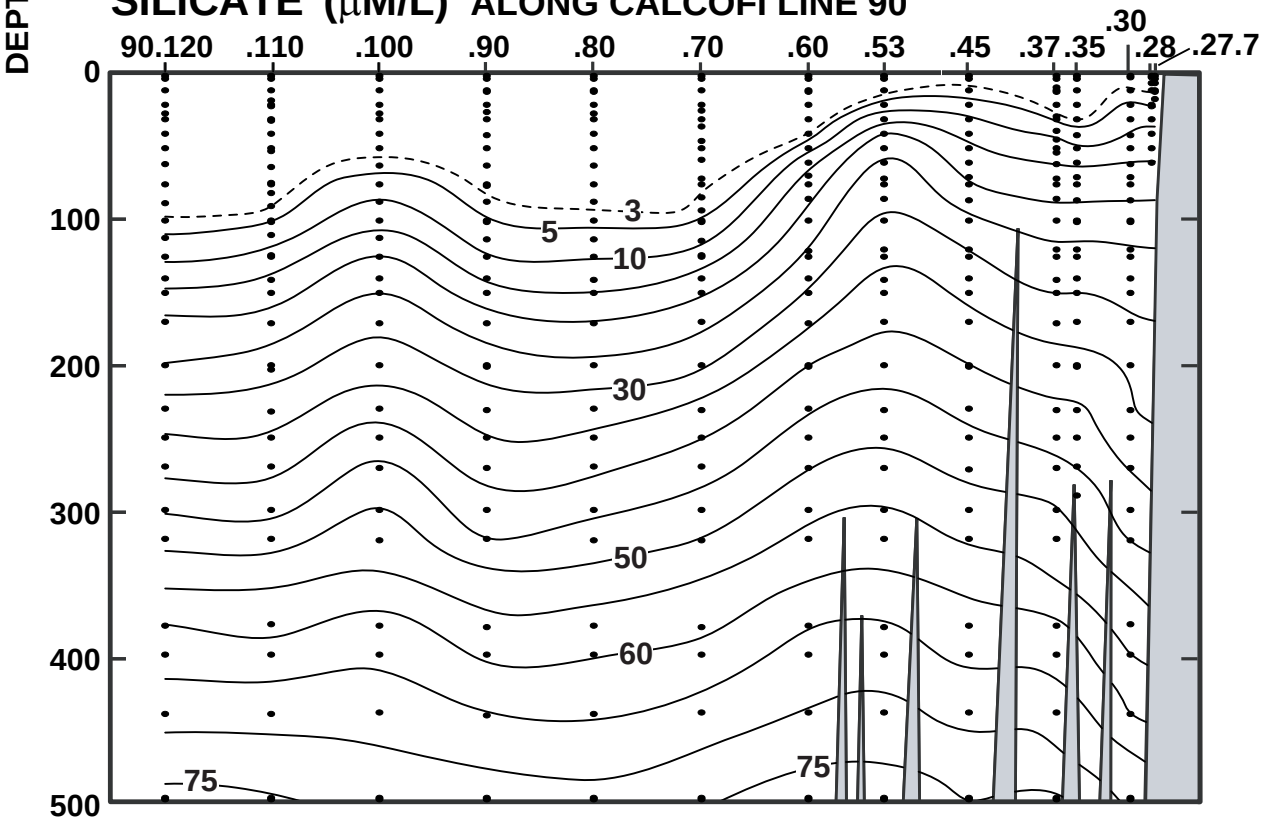

FIGURE 5D

CALCOFI CRUISE 1607

13 - 17 July 2016

NITRATE (μM/L) ALONG CALCOFI LINE 90

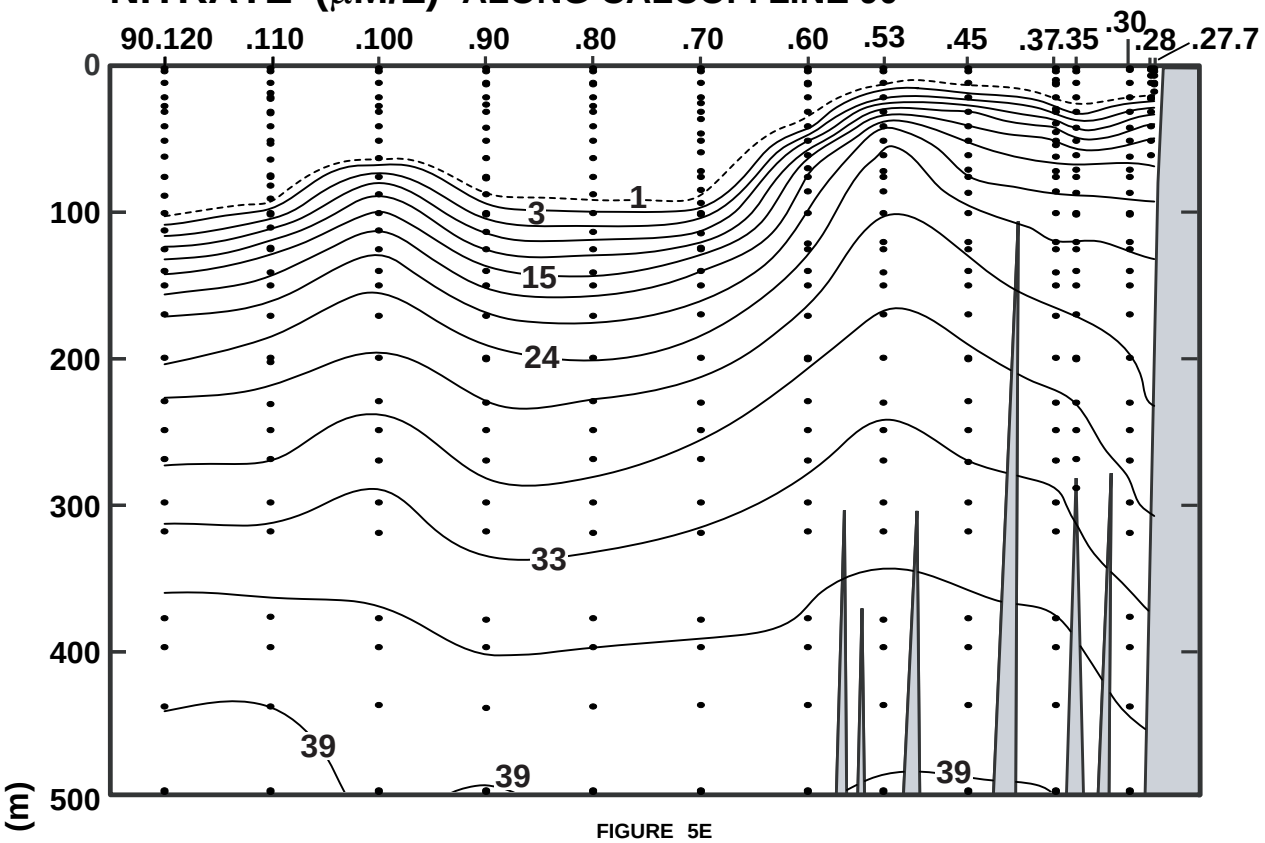

FIGURE 5E

PHOSPHATE (μM/L) ALONG CALCOFI LINE 90

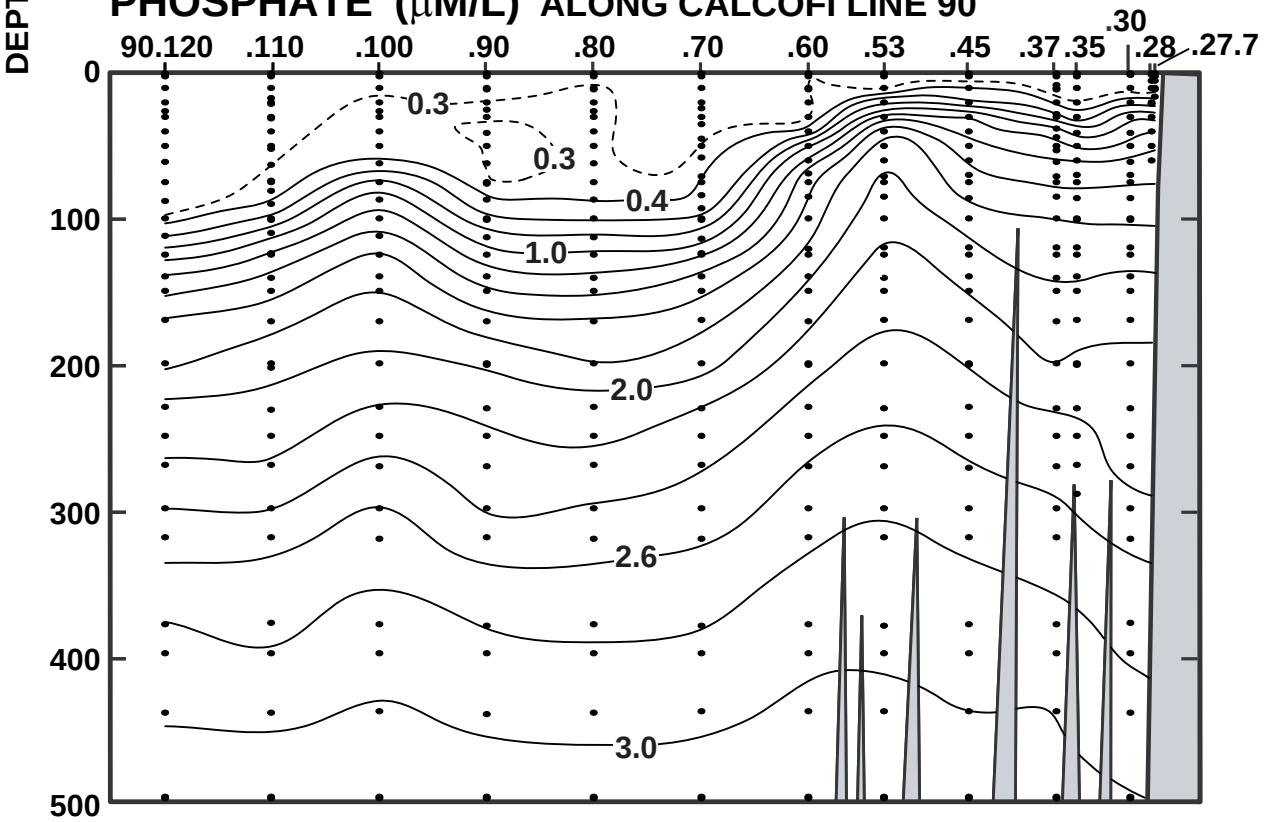

FIGURE 5F

CALCOFI CRUISE 1607

13 - 17 July 2016

CHLOROPHYLL-a (μg/L) ALONG CALCOFI LINE 90

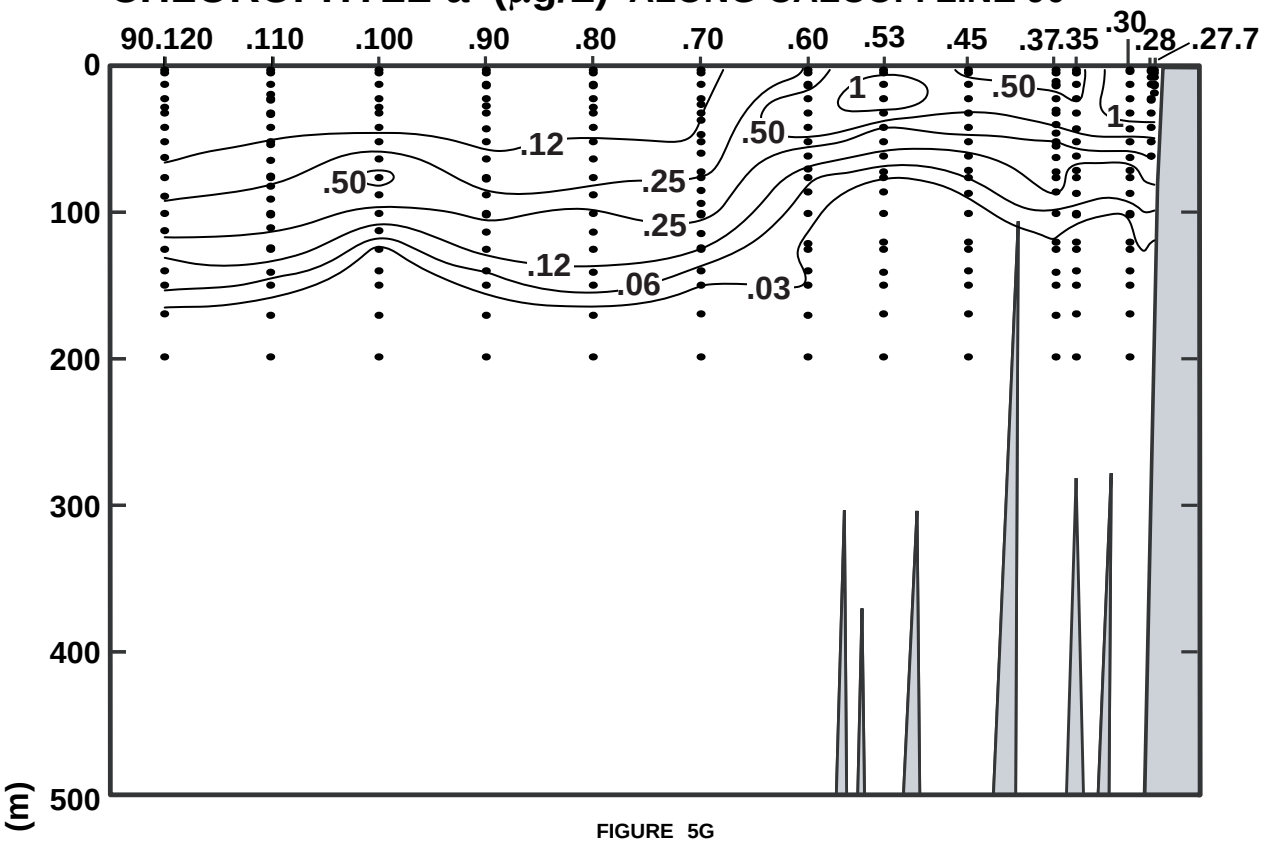

FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

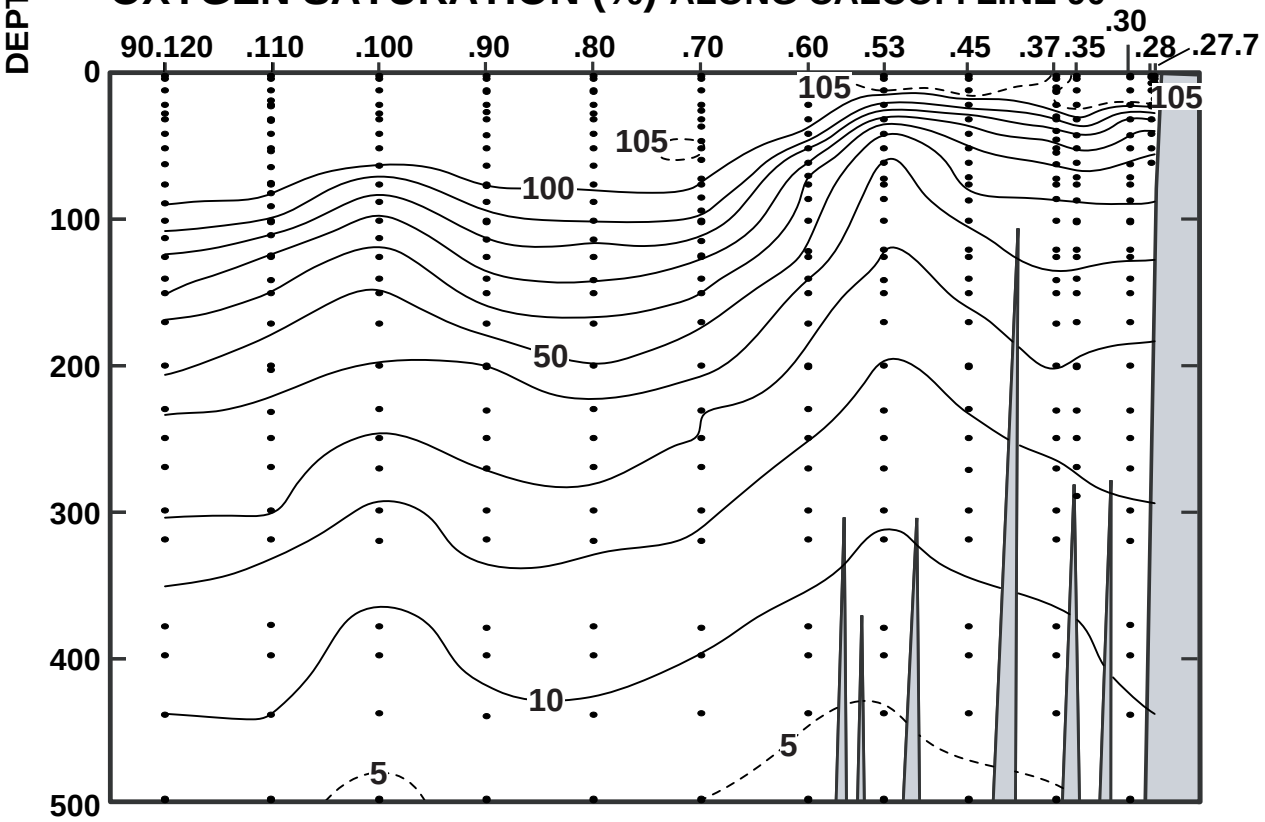

FIGURE 5H

CALCOFI CRUISE 1607

13 - 17 July 2016

OXYGEN (mL/L) ALONG CALCOFI LINE 90

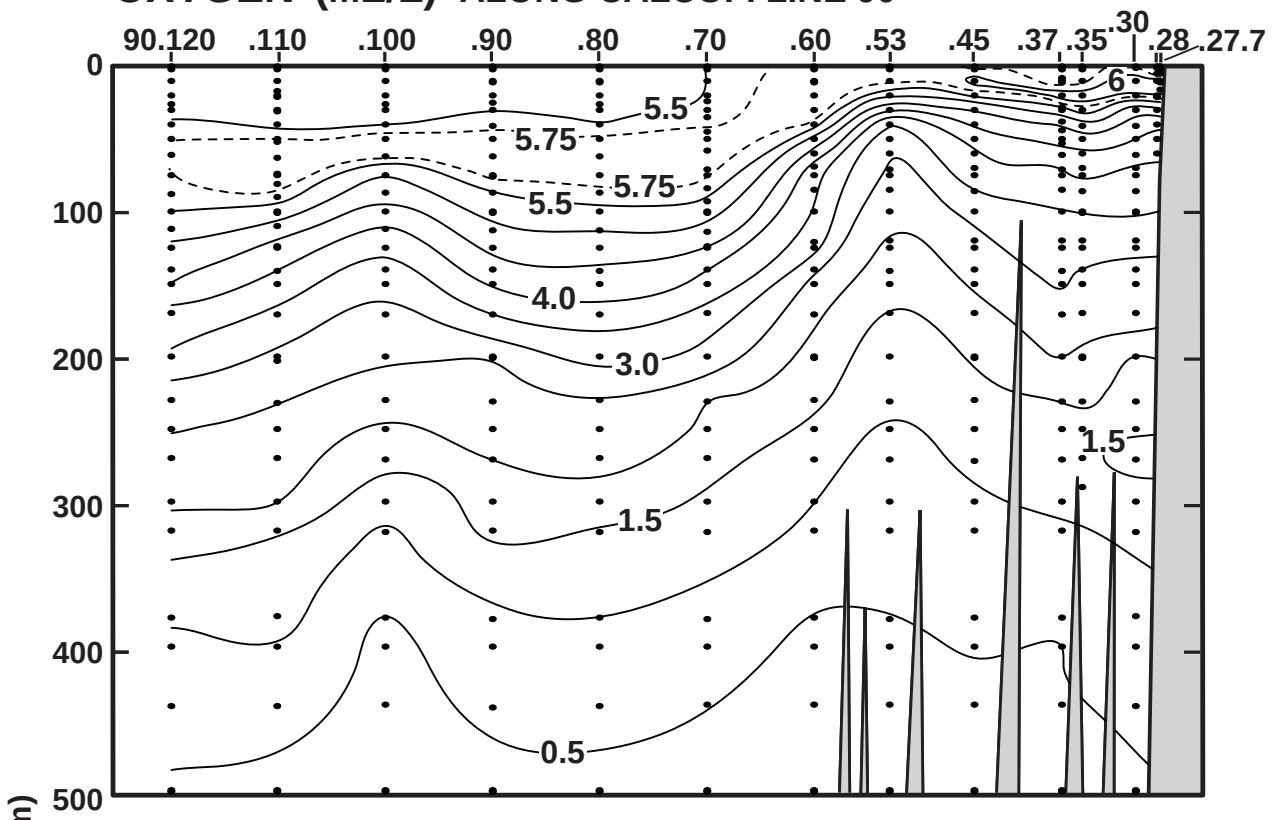

FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

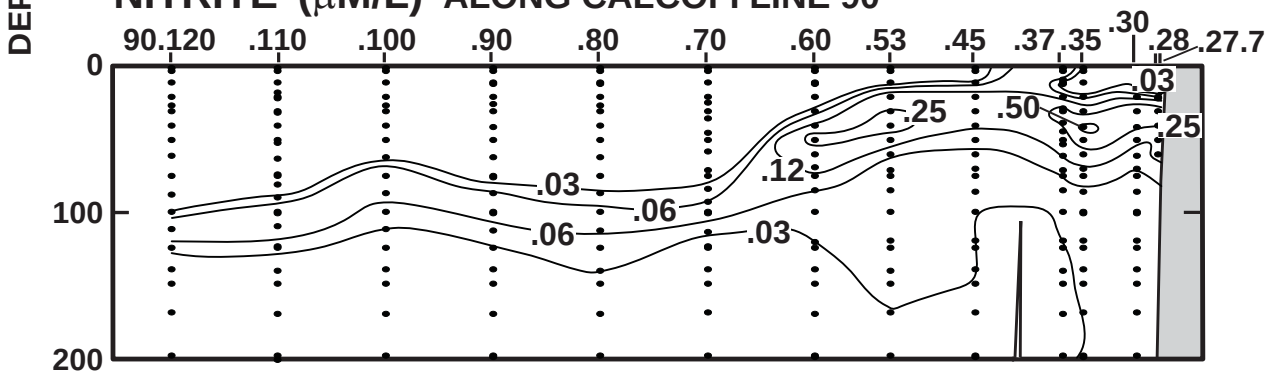

FIGURE 5J

PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90

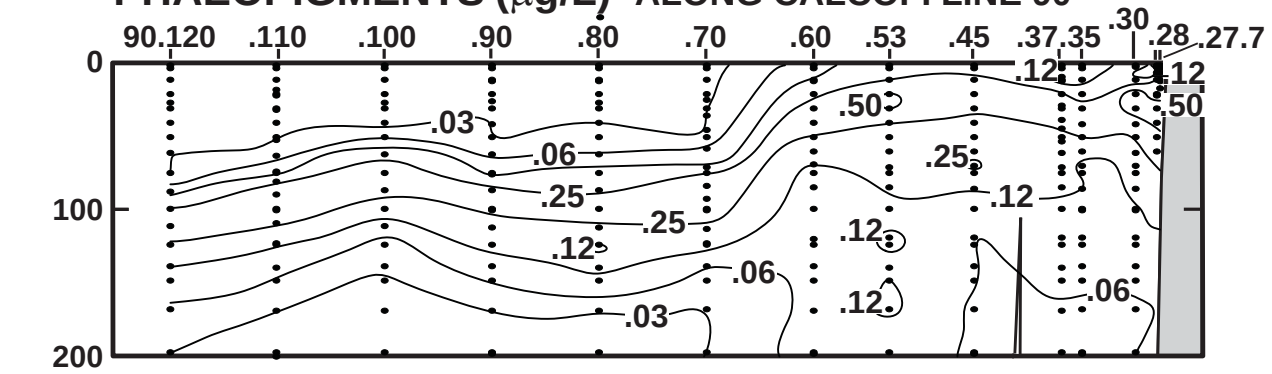

FIGURE 5K

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
34 3.5 N	122 56.5 W	26/07/2016	0217 UTC	4115 m	350 20 kn	340 05 07	2	1021.0 mb	17.0 C	15.8 C		8/8	ST	068

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D245.8	D101.3	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	D246.3	D101.4	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	D261.6	D103.2	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	D240.3	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	D175.4	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	D168.2	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	D134.8	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	D121.4	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 O2;

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
33 43.2 N	123 38.0 W	25/07/2016	1951 UTC	3947 m	010 22 kn	350 07 08	2	1023.0 mb	18.8 C	16.0 C	24 m	8/8	ST	067

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D250.8	D102.8	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	D250.7	D102.7	1.0	0.27	0.0	0.02	0.01	0.23	0.04	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	D250.7	D102.6	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	D262.7	D104.7	0.9	0.35	0.8	0.09	0.26	0.56	0.22	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 ISL	9.90 D	9.88	33.387 D	25.714	229.7	0.394	4.10	D178.5	D 64.1	17.5	1.45	18.4	0.04	0.02	0.06	0.05	126	
140	9.27	9.25	33.534	25.933	209.1	0.428	3.76	164.3	58.1	20.9	1.63	21.1	0.03	0.02	0.02	0.04	141	09
150 ISL	9.13 D	9.12	33.668 D	26.059	197.3	0.447	3.59	D156.2	D 55.2	22.4	1.66	21.8	0.03	0.02	0.02	0.04	151	
169	8.91	8.89	33.779	26.182	186.0	0.485	3.49	152.4	53.5	25.3	1.72	23.2	0.03	0.02	0.01	0.03	170	08
200	8.50	8.48	33.894	26.337	171.8	0.541	3.18	138.8	48.3	29.8	1.86	25.5	0.00	0.03	0.01	0.03	202	07
231	8.09	8.07	33.964	26.453	161.2	0.593	3.11	135.9	46.9	33.7	1.91	26.6	0.00	0.03			233	06
250 ISL	7.95 D	7.92	34.001 D	26.505	156.6	0.622	2.58	D112.2	D 38.7	38.2	2.09	28.7	0.02	0.03			252	
270	7.58	7.56	34.022	26.574	150.2	0.654	2.23	97.2	33.2	42.8	2.27	30.9	0.00	0.04			272	05
300 ISL	7.32 D	7.29	34.072 D	26.651	143.3	0.697	1.69	D 73.4	D 25.0	49.0	2.47	33.3	0.02	0.03			302	
319	7.02	6.99	34.072	26.693	139.4	0.725	1.40	61.1	20.6	52.9	2.59	34.9	0.00	0.02			322	04
380	6.59	6.56	34.121	26.791	130.8	0.807	0.94	40.9	13.6	61.4	2.79	37.3	0.00	0.03			383	03
400 ISL	6.43 D	6.40	34.140 D	26.827	127.6	0.834	0.82	D 35.6	D 11.9	64.0	2.85	37.8	0.02	0.03			403	
440	6.26	6.22	34.189	26.889	122.2	0.883	0.59	25.6	8.5	69.1	2.96	38.9	0.00	0.03			444	02
500 ISL	5.88 D	5.83	34.241 D	26.979	114.2	0.956	0.39	D 16.8	D 5.5	76.0	3.09	40.1	0.01	0.05			504	
515	5.87	5.83	34.255	26.992	113.2	0.971	0.35	15.1	5.0	77.8	3.12	40.4	0.00	0.05			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 50.5

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 28.4 N	120 29.6 W	22/07/2016	2001 UTC	26 m	290 35 kn	290 03 04	1	1020.0 mb	18.5 C	10.5 C		1/8	CC	059

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	14.88	14.88	33.551	24.882	306.0	0.000	5.50	240.1	95.6	6.0	0.64	4.8	0.19	0.11	1.12	0.37	0	
2	14.88	14.88	33.551	24.883	306.0	0.006	5.50	240.1	95.6	6.0	0.64	4.8	0.19	0.11	1.12	0.37	2	06
5	14.87	14.87	33.542	24.878	306.5	0.015	5.48	239.1	95.2	5.9	0.65	4.9	0.19	0.21	1.12	0.29	5	05
10	14.26	14.26	33.540	25.005	294.6	0.030	5.22	227.9	89.6	7.8	0.78	7.0	0.22	0.13	1.91	0.30	10	03
10	14.26	14.26	33.534	25.001	295.0	0.031											10	04
15	13.13	13.13	33.545	25.241	272.3	0.045	4.79	209.3	80.4	11.6	1.10	11.4	0.25	0.23	2.17	0.32	15	02
19	12.97	12.96	33.543	25.272	269.4	0.055	4.70	205.0	78.5	12.0	1.15	11.8	0.26	0.26	2.26	0.33	19	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 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
34 27.3 N	120 31.6 W	22/07/2016	2104 UTC	72 m	310 45 kn	310 04 04	1	1020.0 mb	16.0 C	14.7 C		1/8	CC	060

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D193.7 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
34 19.1 N	120 48.6 W	23/07/2016	1957 UTC	825 m	320 28 kn	320 10 06	0	1027.5 mb	17.1 C	15.0 C	11 m	0/8		061

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D213.1 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	D212.4 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	D143.4 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	D128.6 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	D115.3 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	D100.9 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	1.35 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
34 9.1 N	121 9.3 W	24/07/2016	0421 UTC	2227 m	340 30 kn			1013.0 mb	11.0 C	15.0 C				062

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	D 95.9 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	D 64.1 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	D 47.7 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	D 22.8 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	D 14.4 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	D 13.7 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
33 49.2 N	121 50.7 W	24/07/2016	1043 UTC	3610 m	340 32 kn			1014.0 mb	16.0 C	15.8 C				063

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	D101.6	1.3	0.40	0.0	0.01	0.03	0.15	0.06	10	
10	16.42	16.42	32.926	24.059	384.7	0.037											10	20
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	D101.9	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	D101.5	1.5	0.33	0.0	0.01	0.00	0.18	0.07	30	
40	14.50	14.49	32.967 D	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	0.00	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	7.19	34.144	26.722	136.9	0.716	1.06	46.2	15.7	54.3	2.71	35.5	0.00	0.00			323	04
380	6.58	6.55	34.125	26.795	130.4	0.796	0.92	40.3	13.4	61.5	2.81	37.6	0.00	0.00			383	03
400 ISL	6.34 D	6.30	34.127 D	26.829	127.3	0.822	0.86	D 37.3 D	12.4	64.3	2.86	38.2	0.02	0.00			403	
440	6.05	6.02	34.150	26.884	122.5	0.871	0.68	29.5	9.7	70.0	2.96	39.4	0.00	0.00			444	02
500 ISL	5.95 D	5.90	34.236 D	26.966	115.5	0.944	0.42	D 18.4 D	6.1	76.2	3.06	39.8	0.02	0.00			504	
515	5.87	5.83	34.250	26.988	113.6	0.960	0.38	16.4	5.4	77.8	3.09	40.0	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;

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
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 C	16.5 C	24 m	8/8	ST	064

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D245.4	D101.4	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	D245.7	D101.6	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	D245.5	D101.5	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	D245.7	D101.6	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	D251.0	D101.8	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	D262.0	D101.7	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	D226.1	D 85.6								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	D205.0	D 75.1	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	D170.7	D 61.0	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	D109.1	D 37.8	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	D 88.1	D 30.1	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	69.6	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	D 47.9	D 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	D 24.7	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 O2;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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 C	11.0 C		8/8	ST	065

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D244.4	D101.4	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	D244.1	D101.3	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	D244.1	D101.3	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	D254.6	D 99.6	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	233.6	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	216.9	0.454	3.93	171.4	61.0	18.2	1.52	19.5	0.00	0.00	0.03	0.04	141	09
150 ISL	9.54 D	9.52	33.576 D	25.923	210.4	0.474	3.73	D162.2	D 57.8	20.4	1.61	21.0	0.02	0.00	0.02	0.04	151	
169	9.10	9.08	33.761	26.139	190.2	0.513	3.26	142.2	50.2	24.8	1.79	23.7	0.00	0.00	0.00	0.03	170	08
200 ISL	8.74 D	8.72	33.870 D	26.281	177.3	0.570	3.22	D140.1	D 49.2	27.4	1.83	24.5	0.02	0.00	0.00	0.04	202	
201	8.74	8.71	33.869	26.281	177.3	0.572	3.24	141.6	49.5	27.5	1.83	24.6	0.00	0.00	0.00	0.04	203	07
233	8.21	8.19	33.971	26.442	162.4	0.626	2.91	127.1	44.0	33.2	1.97	27.1	0.00	0.00			235	06
250 ISL	7.96 D	7.93	33.993 D	26.497	157.4	0.654	2.71	D118.0	D 40.7	36.9	2.10	28.7	0.01	0.00			252	
270	7.68	7.65	34.016	26.556	152.0	0.684	2.27	99.0	33.9	41.4	2.25	30.7	0.00	0.00			272	05
300 ISL	7.25 D	7.22	34.029 D	26.628	145.4	0.730	1.95	D 84.9	D 28.8	46.7	2.41	32.6	0.01	0.00			302	
318	7.07	7.04	34.037	26.659	142.7	0.755	1.74	76.1	25.7	49.9	2.50	33.8	0.00	0.00			321	04
381	6.54	6.51	34.083	26.768	133.0	0.842	1.14	49.8	16.6	59.5	2.74	37.0	0.00	0.00			384	03
400 ISL	6.47 D	6.43	34.119 D	26.806	129.6	0.869	0.97	D 42.3	D 14.1	62.6	2.81	37.7	0.01	0.00			403	
440	6.14	6.10	34.142	26.867	124.2	0.918	0.72	31.4	10.4	69.1	2.97	39.1	0.00	0.00			444	02
500 ISL	5.79 D	5.74	34.191 D	26.951	116.7	0.993	0.51	D 22.2	D 7.3	76.3	3.08	40.4	0.01	0.00			504	
516	5.64	5.60	34.189	26.967	115.3	1.009	0.49	21.3	7.0	78.3	3.11	40.8	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 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 49.5 N	123 54.1 W	25/07/2016	0917	UTC	4342 m	360 38 kn			1022.0 mb	17.0 C	16.1 C				066

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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 D	17.69	32.975 D	23.797	409.8	0.035	5.51	D240.4	D100.9	1.6	0.26	0.0	0.00	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	0.00	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 D	17.69	32.973 D	23.798	410.1	0.076	5.51	D240.3	D100.9	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 D	17.69	32.974 D	23.797	410.5	0.118	5.51	D240.5	D101.0	1.6	0.26	0.0	0.00	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	0.00	0.08	0.02	40	17
50 ISL	17.60 D	17.59	32.959 D	23.810	410.0	0.201	5.53	D241.1	D101.0	1.5	0.27	0.0	0.00	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	0.00	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	0.00	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	0.03	0.53	0.30	87	13
100 ISL	12.04 D	12.03	33.217 D	25.202	278.3	0.372	4.93	D214.9	D 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	0.00	0.09	0.10	126	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	0.00	0.04	0.06	141	09
150 ISL	9.50 D	9.48	33.568 D	25.923	210.4	0.493	4.49	D195.5	D 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	0.00	0.03	173	08
200 ISL	8.65 D	8.63	33.882 D	26.304	175.0	0.589	3.44	D149.8	D 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	D124.0	D 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	D 95.4	D 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	D 46.5	D 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	D 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 O2;

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
34 23.8 N	119 48.1 W	22/07/2016	1239	UTC	38 m	110 05 kn			1016.0 mb	20.0 C	18.1 C				057

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	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	D222.4	D 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 O2;

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
34 16.6 N	120 1.7 W	22/07/2016	1609	UTC	571 m	280 05 kn	250 02 06	1	1019.0 mb	20.2 C	19.2 C	08 m	1/8	CC	058

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D267.9	D109.2	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	25.120	284.0	0.067	5.20	D226.6	D 87.9	7.0	0.80	6.4	0.19	0.03	1.15	0.55	20	
22 A	13.08	13.07	33.477	25.200	276.4	0.074	4.95	216.1	82.9	8.0	0.89	7.9	0.23	0.02	0.89	0.50	22	20
25 A	12.57	12.56	33.503	25.320	265.0	0.082	4.44	193.7	73.5	10.6	1.09	11.2	0.22	0.00	0.55	0.44	25	19
30 ISL	11.83 D	11.83	33.522 D	25.475	250.4	0.094	4.31	D187.8	D 70.3	13.4	1.30	14.6	0.15	0.00	0.39	0.37	30	
32	11.54	11.53	33.542	25.545	243.8	0.100	3.79	165.5	61.4	14.5	1.39	15.9	0.12	0.02	0.33	0.34	32	18
40	11.14	11.14	33.563	25.633	235.6	0.119	3.58	156.1	57.5	16.2	1.51	17.6	0.10	0.05	0.24	0.27	40	17
50	10.42	10.42	33.587	25.779	221.9	0.142	3.39	147.9	53.6	18.4	1.63	19.9	0.03	0.00	0.11	0.17	50	16
70	9.99	9.98	33.674	25.921	208.8	0.185	3.14	137.2	49.3	21.1	1.73	21.8	0.00	0.01	0.04	0.12	71	15
75 ISL	9.94 D	9.93	33.683 D	25.937	207.4	0.196	3.15	D136.9	D 49.3	22.5	1.81	22.5	0.07	0.00	0.04	0.19	76	
85	9.99	9.98	33.782	26.006	201.2	0.216	2.58	112.6	40.5	25.3	1.96	23.9	0.17	0.00	0.05	0.33	86	14
100 ISL	9.86 D	9.84	33.839 D	26.074	195.0	0.246	2.38	D103.5	D 37.2	26.9	2.02	24.8	0.13	0.00	0.05	0.33	101	
101	9.84	9.83	33.840	26.077	194.8	0.248	2.38	104.0	37.3	27.0	2.02	24.9	0.13	0.00	0.05	0.34	102	13
120	9.62	9.61	33.880	26.145	188.6	0.284	2.50	109.0	38.9	27.0	2.00	25.1	0.03	0.03	0.02	0.13	121	12
125 ISL	9.59 D	9.57	33.895 D	26.163	187.1	0.294	2.47	D107.5	D 38.5	27.4	2.02	25.3	0.03	0.04	0.02	0.13	126	
142	9.47	9.45	33.949	26.225	181.5	0.325	2.32	101.3	36.1	29.0	2.08	26.0	0.04	0.08	0.01	0.10	143	11
150 ISL	9.46 D	9.44	33.987 D	26.256	178.8	0.340	2.10	D 91.4	D 32.6	30.0	2.12	26.5	0.03	0.00	0.01	0.10	151	
170	9.31	9.29	34.054	26.334	171.8	0.374	1.86	81.3	28.9	32.6	2.23	27.8	0.00	0.00	0.02	0.11	171	10
200 ISL	9.09 D	9.07	34.118 D	26.419	164.3	0.426	1.57	D 68.3	D 24.2	36.8	2.37	29.0	0.02	0.00	0.02	0.11	202	
201	9.07	9.05	34.117	26.423	164.0	0.426	1.54	67.1	23.7	36.9	2.37	29.1	0.00	0.02	0.02	0.11	203	09
230	8.93	8.91	34.153	26.474	159.8	0.473	1.35	59.0	20.8	39.1	2.44	30.0	0.00	0.02			232	08
250 ISL	8.69 D	8.66	34.176 D	26.530	154.7	0.507	1.16	D 50.5	D 17.7	42.0	2.51	30.8	0.02	0.02			252	
270	8.52	8.49	34.180	26.561	152.1	0.536	1.06	46.1	16.1	44.9	2.57	31.6	0.00	0.02			272	07
300 ISL	8.24 D	8.21	34.186 D	26.608	148.1	0.583	0.88	D 38.2	D 13.3	48.9	2.65	32.4	0.01	0.06			302	
320	8.04	8.01	34.186	26.639	145.4	0.610	0.82	35.9	12.4	51.5	2.71	32.9	0.00	0.09			323	06
400 ISL	7.05 D	7.01	34.233 D	26.818	129.1	0.723	0.34	D 15.0	D 5.1	69.1	3.03	33.8	0.02	0.03			403	
401	7.09	7.05	34.232	26.812	129.7	0.721	0.40	17.4	5.9	69.4	3.03	33.8	0.00	0.03			404	05
480	6.61	6.56	34.249	26.893	122.9	0.821	0.14	6.2	2.1	88.2	3.35	29.3	0.00	0.00			484	04
500 ISL	6.53 D	6.48	34.253 D	26.906	121.9	0.850	0.13	D 5.8	D 2.0	87.4	3.32	31.0	0.01	0.00			504	
515	6.51	6.46	34.253	26.909	121.8	0.864	0.12	5.3	1.7	86.9	3.30	32.3	0.00	0.00			519	03
565	6.49	6.44	34.254	26.914	122.2	0.925	0.03	1.5	0.5	92.0	3.48	31.3	0.04	0.39			570	02
570	6.49	6.44	34.255	26.915	122.2	0.931	0.03	1.2	0.4	92.2	3.48	31.5	0.04	0.00			575	01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.
B) SANTA BARBARA BASIN STATION.
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
34 16.0 N	119 19.4 W	22/07/2016	0926 UTC	15 m	140 05 kn			1017.0 mb	19.2 C	17.5 C				056

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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 O2;

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
34 13.6 N	119 24.7 W	22/07/2016	0747 UTC	32 m	270 06 kn			1018.0 mb	18.8 C	17.8 C				055

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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 D	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 O2;

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
34 10.9 N	119 31.0 W	22/07/2016	0524 UTC	133 m	270 20 kn			1017.0 mb	19.8 C	17.0 C				054

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D109.5	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	D108.3	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 O2;

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
33 53.0 N	120 8.5 W	21/07/2016	2239 UTC	92 m	300 30 kn	300 08 04	0	1019.0 mb	19.0 C	17.0 C	10 m	0/8		053

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	25.836	217.4	0.220	3.22	140.5	51.1	20.6	1.66	20.3	0.09	0.00	0.26	0.25	87	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 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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 C	15.2 C	09 m	7/8	ST	052

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 83.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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 C	15.0 C	09 m	1/8	ST	051

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	223.2	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	8.15 D	8.13	34.085 D	26.540	152.4	0.420	1.74	D 75.9 D	26.3	40.9	2.36	31.0	0.03	0.00	0.05	0.10	202	
201	8.12	8.10	34.087	26.545	152.0	0.423	1.74	75.9	26.2	41.1	2.36	31.1	0.03	0.00	0.05	0.10	203	07
230	7.81	7.79	34.110	26.610	146.2	0.466	1.51	66.0	22.6	45.1	2.46	32.5	0.03	0.00			232	06
250 ISL	7.76 D	7.74	34.142 D	26.642	143.5	0.494	1.34	D 58.1 D	20.0	47.9	2.54	33.3	0.02	0.00			252	
270	7.49	7.47	34.148	26.686	139.5	0.523	1.14	49.6	16.9	50.7	2.61	34.2	0.00	0.00			272	05
300 ISL	7.31 D	7.28	34.192 D	26.748	134.2	0.564	0.86	D 37.6 D	12.8	54.3	2.72	35.1	0.02	0.00			302	
320	7.20	7.17	34.202	26.771	132.2	0.591	0.80	34.8	11.8	56.8	2.79	35.7	0.00	0.00			323	04
380	6.86	6.82	34.259	26.864	124.2	0.668	0.51	22.4	7.5	63.9	2.94	37.1	0.00	0.00			383	03
400 ISL	6.69 D	6.65	34.265 D	26.892	121.7	0.693	0.47	D 20.5 D	6.9	66.1	2.98	37.6	0.02	0.00			403	
440	6.41	6.37	34.285	26.946	117.1	0.741	0.36	15.9	5.3	70.6	3.05	38.6	0.00	0.00			444	02
500 ISL	6.01 D	5.97	34.312 D	27.018	110.7	0.810	0.28	D 12.1 D	4.0	77.8	3.12	40.0	0.02	0.00			504	
516	5.84	5.80	34.307	27.036	109.0	0.827	0.28	12.1	4.0	79.7	3.14	40.4	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 83.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 15.0 N	121 26.7 W	21/07/2016	0654	UTC	3880 m	340 28 kn			1024.0 mb	16.5 C	15.6 C				050

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D254.8	D102.9	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	D173.6	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	D151.1	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	D144.8	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	D127.2	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;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.7 N	122 7.9 W	21/07/2016	0008	UTC	4158 m	350 25 kn	340 05 04	0	1024.0 mb	17.6 C	16.2 C	14 m	0/8		049

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D254.5	D103.6	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	D259.3	D102.1	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	D251.8	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	3.3	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	12.06 D	12.05	33.288 D	25.253	272.7	0.240	5.09	D221.6	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	D190.1	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 D	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	1.71	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	D152.0	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	D130.9	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	0.04	171	08
200	8.18	8.16	33.964	26.439	161.9	0.491	2.98	129.9	44.9	33.6	1.94	26.7	0.03	0.00	0.00	0.03	202	07
231	7.84	7.82	33.992	26.513	155.4	0.541	2.67	116.4	40.0	38.0	2.07	28.5	0.00	0.00			233	06
250 ISL	7.76 D	7.73	34.035 D	26.559	151.3	0.570	2.17	D 94.5	D 32.5	41.4	2.24	30.2	0.02	0.00			252	
270	7.69	7.67	34.078	26.603	147.6	0.600	1.68	73.2	25.0	44.9	2.41	31.9	0.00	0.00			272	05
300 ISL	7.27 D	7.24	34.080 D	26.664	142.0	0.644	1.52	D 66.1	D 22.5	49.7	2.55	33.4	0.02	0.00			302	
321	7.20	7.17	34.116	26.703	138.6	0.672	1.19	52.0	17.6	53.1	2.64	34.5	0.00	0.00			324	04
380	6.47	6.43	34.121	26.807	129.2	0.751	0.89	38.8	12.9	62.3	2.81	37.2	0.00	0.00			383	03
400 ISL	6.31 D	6.27	34.139 D	26.843	126.0	0.779	0.78	D 34.0	D 11.3	64.5	2.85	37.6	0.02	0.00			403	
441	6.13	6.09	34.176	26.896	121.5	0.827	0.60	26.3	8.7								445	02
500 ISL	5.96 D	5.92	34.237 D	26.965	115.6	0.901	0.39	D 17.1	D 5.6	75.6	3.07	39.6	0.02	0.00			504	
516	5.83	5.79	34.240	26.984	113.9	0.916	0.38	16.4	5.4	77.4	3.10	39.9	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 83.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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 D	16.60	32.889 D	23.989	391.5	0.036	5.66	D246.9	D101.4	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	23
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 D	16.57	32.890 D	23.997	391.1	0.075	5.66	D247.0	D101.4	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	D250.2	D101.9	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	D251.8	D102.3								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	D255.4	D102.8	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	334.2	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	D254.2	D100.1	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	D223.6	D 84.0	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	D198.8	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	D180.2	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	8.92	33.977 D	26.333	172.4	0.568	2.55	D110.8	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	D 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	D 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	D 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	D 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 O2;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 83.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 14.7 N	123 29.4 W	20/07/2016	0918 UTC	4181 m	350 28 kn			1027.0 mb	16.8 C	15.5 C				047

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D241.5	D101.2	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	D241.7	D101.3	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	11.45	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	D199.9	D 71.6	15.0	1.28	15.9	0.01	0.00	0.07	0.07	151	
171	9.29	9.27	33.651	26.022	201.4	0.552	3.76	164.1	58.1	21.0	1.60	20.8	0.00	0.00	0.01	0.03	172	08
200 ISL	8.90 D	8.88	33.837 D	26.229	182.2	0.608	3.23	D140.6	D 49.5	26.4	1.80	23.9	0.00	0.00	0.00	0.03	202	
201	8.89	8.87	33.840	26.234	181.8	0.610	3.20	139.5	49.0	26.6	1.81	24.1	0.00	0.00	0.00	0.03	203	07
230	8.43	8.41	33.963	26.403	166.2	0.660	2.92	127.3	44.3	31.4	1.92	26.0	0.00	0.00			232	06
250 ISL	8.13 D	8.11	34.008 D	26.483	158.8	0.693	2.54	D110.5	D 38.3	35.2	2.05	27.7	0.00	0.00			252	
269	7.94	7.92	34.021	26.521	155.4	0.723	2.31	100.8	34.7	38.9	2.17	29.3	0.00	0.00			271	05
300 ISL	7.61 D	7.58	34.060 D	26.601	148.3	0.771	1.79	D 77.9	D 26.7	44.3	2.35	31.4	0.00	0.00			302	
321	7.41	7.38	34.076	26.642	144.6	0.801	1.56	67.9	23.1	47.9	2.48	32.9	0.00	0.00			324	04
380	6.76	6.72	34.117	26.765	133.4	0.883	1.00	43.4	14.5	58.3	2.75	36.2	0.00	0.00			383	03
400 ISL	6.58 D	6.55	34.130 D	26.800	130.3	0.911	0.90	D 39.0	D 13.0	61.6	2.81	36.9	0.01	0.00			403	
442	6.14	6.11	34.152	26.874	123.5	0.962	0.67	29.1	9.6	68.5	2.95	38.5	0.00	0.00			446	02
500 ISL	5.72 D	5.67	34.183 D	26.953	116.5	1.035	0.50	D 21.9	D 7.2	76.3	3.04	39.8	0.01	0.00			504	
515	5.63	5.58	34.191	26.971	114.8	1.049	0.46	20.0	6.5	78.3	3.06	40.2	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;

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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D236.8	D101.0	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	D237.2	D101.0	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	D237.5	D101.0	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	33.161	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	D247.1	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	D190.3	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	D113.3	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;

RV OCEAN STARR — CALCOFI CRUISE 1607 — STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 53.8 N	118 29.5 W	17/07/2016	1203 UTC	52 m	270 03 kn			1012.0 mb	19.5 C	17.5 C				034

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.50	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	0.50	45	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 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.00	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
40	11.92	11.92	33.427	25.384	259.3	0.141	4.23	184.8	69.1	10.8	1.20	12.6	0.22	0.00	0.51	0.39	40	16
50	11.35	11.34	33.442	25.503	248.3	0.167	4.01	175.1	64.7	12.8	1.32	14.7	0.12	0.00	0.36	0.40	50	15
58	10.90	10.89	33.511	25.637	235.7	0.186	3.62	157.8	57.8	15.9	1.50	17.7	0.03	0.00	0.18	0.26	58	14
70	10.59	10.58	33.569	25.737	226.4	0.214	3.42	149.2	54.3	18.0	1.59	19.3	0.00	0.00	0.12	0.17	71	13
75 ISL	10.39 D	10.38	33.598 D	25.795	221.0	0.223	3.42	D149.1	D 54.2	19.1	1.64	20.0	0.02	0.00	0.10	0.15	76	
85	10.13	10.12	33.668	25.894	211.8	0.247	3.07	134.1	48.3	21.3	1.75	21.3	0.00	0.00	0.05	0.11	86	12
100	9.80	9.79	33.743	26.008	201.3	0.278	2.95	128.7	46.1	23.2	1.83	22.5	0.00	0.00	0.02	0.07	101	11
120	9.69	9.68	33.812	26.081	194.8	0.317	2.79	121.7	43.5	24.9	1.88	23.5	0.00	0.00	0.02	0.07	121	10
125 ISL	9.68 D	9.67	33.824 D	26.092	193.8	0.325	2.80	D121.8	D 43.7	25.4	1.90	23.7	0.01	0.00	0.01	0.06	126	
140	9.50	9.48	33.879	26.166	187.1	0.356	2.67	116.4	41.4	26.8	1.94	24.4	0.00	0.00	0.01	0.06	141	09
150 ISL	9.47 D	9.45	33.902 D	26.189	185.1	0.373	2.66	D115.6	D 41.3	28.0	1.98	25.0	0.01	0.00	0.01	0.05	151	
170	9.06	9.04	33.971	26.309	174.1	0.410	2.48	108.0	38.1	30.6	2.05	26.2	0.00	0.00	0.00	0.05	171	08
200	9.20	9.18	34.094	26.384	167.7	0.461	1.93	84.0	29.8	33.7	2.18	27.3	0.00	0.00	0.01	0.06	202	07
230	8.59	8.57	34.047	26.444	162.4	0.511	2.17	94.8	33.1	35.7	2.19	28.2	0.00	0.00			232	06
250 ISL	8.58 D	8.55	34.113 D	26.498	157.7	0.543	2.02	D 87.8	D 30.8	38.3	2.30	29.1	0.02	0.00			252	
268	8.45	8.42	34.150	26.548	153.3	0.571	1.59	69.3	24.1	40.7	2.40	29.9	0.00	0.00			270	05
300 ISL	8.49 D	8.46	34.218 D	26.595	149.4	0.620	1.26	D 54.6	D 19.1	43.2	2.51	30.7	0.02	0.00			302	
319	8.37	8.34	34.225	26.619	147.5	0.648	1.12	49.0	17.0	44.7	2.58	31.1	0.00	0.00			322	04
381	7.65	7.61	34.225	26.728	137.9	0.737	0.86	37.5	12.8	53.2	2.74	33.6	0.03	0.00			384	03
400 ISL	7.43 D	7.39	34.238 D	26.770	134.0	0.764	0.78	D 33.9	D 11.6	55.4	2.79	34.3	0.03	0.00			403	
440	7.11	7.06	34.250	26.825	129.2	0.815	0.61	26.4	8.9	60.1	2.91	35.8	0.00	0.00			444	02
500 ISL	6.55 D	6.50	34.280 D	26.926	120.1	0.892	0.43	D 18.5	D 6.2	68.5	3.05	37.2	0.03	0.00			504	
514	6.51	6.46	34.283	26.933	119.5	0.907	0.39	17.1	5.7	70.5	3.08	37.5	0.03	0.00			518	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 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 39.7 N	118 58.5 W	17/07/2016	1820 UTC	772 m	270 12 kn	350 01 06	1	1020.0 mb	20.1 C	18.0 C	18 m	7/8	ST	036

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D238.2	D107.6	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	D284.5	D114.4	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	D242.0 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	D187.5 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	D157.8 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	D142.4 D	51.9								86	12
100 ISL	10.16 D	10.14	33.724 D	25.933	208.4	0.280	2.97	D129.4 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	D112.7 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	D101.5 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	7.94	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
33 29.6 N	119 19.3 W	17/07/2016	2255 UTC	1635 m	270 12 kn	280 02 07	1	1020.0 mb	19.9 C	11.9 C	12 m	2/8	CC	037

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D260.7	D107.3	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	10.99	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	D129.7 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	0.278	2.23	97.4	34.5	30.8	2.07	26.3	0.00	0.00	0.02	0.06	121	10
125 ISL	9.18 D	9.17	34.025 D	26.330	171.1	0.283	2.22	D 96.7 D	34.3	31.6	2.10	26.6	0.02	0.00	0.02	0.07	126	
142	9.13	9.12	34.080	26.381	166.6	0.315	1.86	81.0	28.6	34.2	2.22	27.6	0.03	0.00	0.03	0.10	143	09
150 ISL	9.10 D	9.08	34.120 D	26.419	163.3	0.326	1.73	D 75.4 D	26.7	35.2	2.26	27.9	0.03	0.00	0.03	0.10	151	
171	8.90	8.88	34.153	26.476	158.2	0.363	1.52	66.3	23.3	37.8	2.35	28.9	0.03	0.00	0.03	0.10	172	08
200	8.65	8.63	34.181	26.539	152.8	0.408	1.34	58.6	20.5	40.8	2.43	29.9	0.03	0.00	0.05	0.15	202	07
233	8.51	8.48	34.188	26.567	150.8	0.458	1.27	55.5	19.4	42.4	2.48	30.4	0.05	0.00			235	06
250 ISL	8.42 D	8.39	34.212 D	26.600	147.9	0.481	1.13	D 49.3 D	17.2	44.0	2.52	30.9	0.04	0.00			252	
270	8.24	8.21	34.214	26.630	145.4	0.513	1.09	47.5	16.5	45.8	2.56	31.5	0.00	0.00			272	05
300 ISL	7.85 D	7.81	34.230 D	26.701	139.0	0.554	0.93	D 40.5 D	14.0	50.9	2.67	33.0	0.02	0.00			302	
322	7.51	7.48	34.234	26.753	134.2	0.585	0.79	34.3	11.7	54.6	2.75	34.1	0.00	0.00			325	04
383	7.15	7.11	34.258	26.824	128.3	0.666	0.59	25.8	8.7	60.3	2.87	35.4	0.00	0.00			386	03
400 ISL	6.99 D	6.95	34.275 D	26.860	125.1	0.686	0.51	D 22.0 D	7.4	62.6	2.91	35.7	0.02	0.00			403	
442	6.70	6.65	34.296	26.917	120.2	0.739	0.37	16.3	5.4	68.4	3.01	36.7	0.00	0.00			446	02
500 ISL	6.41 D	6.37	34.329 D	26.982	114.6	0.807	0.25	D 11.1 D	3.7	74.4	3.08	37.2	0.02	0.00			504	
520	6.30	6.25	34.333	27.000	113.1	0.830	0.24	10.5	3.5	76.5	3.10	37.4	0.00	0.00			524	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 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 19.0 N	119 40.0 W	18/07/2016	0310 UTC	71 m	290 11 kn	230 01 06	2	1021.0 mb	16.9 C	15.1 C		7/8	SC	038

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	D233.9 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	D220.3 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	D191.2 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	D181.4 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	D162.0 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	D158.0 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
33 9.6 N	120 0.2 W	18/07/2016	0721 UTC	1193 m	310 08 kn			1023.0 mb	15.5 C	14.1 C				039

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	D116.6 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	04
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
32 59.5 N	120 20.5 W	18/07/2016	1131 UTC	721 m	330 14 kn			1023.0 mb	14.8 C	13.8 C				040

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	11.03	11.02	33.465	25.578	241.3	0.182	3.97	173.4	63.7	14.7	1.41	17.2	0.20	0.00	0.12	0.13	60	14
70	10.35	10.34	33.494	25.720	228.0	0.205	3.79	165.4	59.8	17.1	1.51	19.0	0.06	0.00	0.09	0.14	71	13
75 ISL	10.05 D	10.04	33.552 D	25.817	218.9	0.214	3.75	163.1	58.8	18.0	1.54	19.6	0.06	0.00	0.10	0.13	76	
85	9.46	9.45	33.585	25.941	207.2	0.238	3.66	160.0	56.8	19.9	1.60	20.8	0.06	0.03	0.11	0.10	86	12
100 ISL	9.24 D	9.23	33.716 D	26.079	194.4	0.266	3.36	D146.4 D	51.9	23.0	1.71	22.7	0.04	0.00	0.06	0.11	101	
101	9.22	9.21	33.708	26.076	194.7	0.270	3.37	147.0	51.9	23.2	1.72	22.8	0.04	0.00	0.05	0.12	102	11
120	8.83	8.82	33.847	26.246	178.8	0.305	3.18	138.9	48.7	26.8	1.82	24.7	0.03	0.00	0.04	0.08	121	10
125 ISL	8.89 D	8.88	33.894 D	26.273	176.4	0.312	2.94	D128.1 D	45.1	27.6	1.86	25.1	0.03	0.00	0.04	0.08	126	
140	8.75	8.73	33.927	26.323	172.0	0.341	2.74	119.7	41.9	30.1	1.96	26.5	0.03	0.00	0.04	0.09	141	09
150 ISL	8.67 D	8.66	33.972 D	26.370	167.7	0.356	2.66	D115.7 D	40.6	31.7	2.02	27.2	0.02	0.00	0.04	0.08	151	
170	8.58	8.56	34.020	26.422	163.1	0.391	2.21	96.4	33.6	34.8	2.14	28.7	0.00	0.00	0.04	0.06	171	08
200	8.39	8.37	34.075	26.496	156.7	0.439	1.86	81.3	28.3	38.4	2.27	30.1	0.00	0.00	0.02	0.05	202	07
230	8.25	8.22	34.105	26.542	152.9	0.485	1.65	72.1	25.0	41.0	2.36	31.0	0.00	0.00			232	06
250 ISL	8.02 D	7.99	34.141 D	26.604	147.3	0.514	1.44	D 62.5 D	21.6	44.8	2.47	32.2	0.02	0.00			252	
271	7.73	7.70	34.162	26.663	141.9	0.546	1.25	54.7	18.8	48.8	2.58	33.5	0.00	0.00			273	05
300 ISL	7.40 D	7.37	34.207 D	26.747	134.3	0.585	0.90	D 39.1 D	13.3	53.8	2.70	34.9	0.02	0.00			302	
321	7.17	7.14	34.207	26.779	131.5	0.614	0.77	33.7	11.4	57.4	2.78	35.9	0.00	0.00			324	04
381	6.77	6.73	34.255	26.874	123.3	0.691	0.53	23.3	7.8	63.9	2.94	37.2	0.00	0.00			384	03
400 ISL	6.61 D	6.57	34.271 D	26.907	120.3	0.714	0.44	D 19.0 D	6.4	66.2	2.96	37.4	0.01	0.00			403	
441	6.26	6.22	34.296	26.973	114.3	0.762	0.32	14.0	4.6	71.2	2.99	38.0	0.00	0.00			445	02
500 ISL	5.92 D	5.88	34.306 D	27.025	109.9	0.829	0.27	D 11.9 D	3.9	78.3	3.13	40.0	0.03	0.00			504	
513	5.80	5.75	34.311	27.044	108.1	0.842	0.27	11.6	3.8	79.8	3.16	40.5	0.04	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 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.5 N	121 1.5 W	18/07/2016	1812 UTC	3753 m	330 25 kn	290 07 08	2	1026.0 mb	15.5 C	14.5 C	15 m	8/8	ST	041

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D249.8	D102.5	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	D252.7	D102.7	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	D221.3	D 83.8	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	D164.2	D 60.1	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	D 91.1	D 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	D 93.5	D 33.0	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	D 80.4	D 27.6								233	06
250 ISL	7.67 D	7.65	34.109 D	26.630	144.6	0.520	1.59	D 69.0	D 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	D 48.9	D 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	D 27.1	D 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	D 13.5	D 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
32 19.4 N	121 42.4 W	19/07/2016	0046 UTC	3994 m	340 21 kn	340 05 06	2	1025.0 mb	18.4 C	15.8 C	13 m	8/8	ST	042

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D258.0	D104.3	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	D247.0	D 94.3	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	D130.0	D 47.1	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	181.3	0.411	3.15	D136.9	D 48.2	26.7	1.88	24.7	0.04	0.00	0.01	0.06	151	
169	8.78	8.76	33.956	26.342	170.8	0.446	2.59	113.1	39.6	30.9	2.01	26.8	0.03	0.00	0.01	0.05	170	08
200	8.80	8.78	34.064	26.424	163.7	0.498	1.95	85.0	29.8	34.9	2.22	28.6	0.03	0.00	0.01	0.06	202	07
230	8.06	8.03	34.049	26.526	154.3	0.546	2.06	89.7	30.9	39.1	2.24	30.2	0.03	0.00			232	06
250 ISL	7.74 D	7.71	34.035 D	26.562	151.0	0.576	2.17	D 94.5	D 32.4	42.6	2.33	31.4	0.02	0.00			252	
271	7.45	7.42	34.060	26.623	145.5	0.607	1.74	76.1	25.9	46.2	2.42	32.7	0.00	0.00			273	05
300 ISL	7.15 D	7.12	34.084 D	26.685	140.0	0.649	1.43	D 62.3	D 21.1	51.2	2.55	34.4	0.02	0.00			302	
321	6.89	6.86	34.095	26.729	136.0	0.678	1.21	52.8	17.7	54.7	2.65	35.6	0.00	0.00			324	04
380	6.45	6.41	34.146	26.830	127.1	0.755	0.83	36.2	12.0	63.1	2.85	37.8	0.00	0.00			383	03
400 ISL	6.26 D	6.23	34.156 D	26.862	124.2	0.782	0.71	D 30.8	D 10.2	66.3	2.90	38.4	0.01	0.00			403	
440	6.00	5.96	34.192	26.925	118.6	0.829	0.52	22.5	7.4	72.7	3.00	39.6	0.00	0.00			444	02
500 ISL	5.66 D	5.62	34.237 D	27.003	111.7	0.901	0.37	D 16.1	D 5.3	79.5	3.08	40.8	0.01	0.00			504	
515	5.49	5.45	34.223	27.012	110.8	0.915	0.39	16.8	5.5	81.2	3.10	41.1	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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D 57.7	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	0.00	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	D 35.2	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	1.68	D 72.9	D 24.9	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	D 33.3	D 11.1	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	D 15.6	D 5.1	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D 56.2	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	28.7	1.94	25.8	0.00	0.00	0.00	0.03	202	07
230	8.41	8.39	33.969	26.409	165.5	0.642	2.56	111.9	38.9	33.2	2.07	27.6	0.00	0.00			232	06
250 ISL	8.25 D	8.22	34.000 D	26.459	161.1	0.674	2.44	D106.0	D 36.8	36.1	2.14	28.6	0.01	0.00			252	
270	8.00	7.97	34.019	26.512	156.4	0.706	2.24	97.9	33.7	38.9	2.21	29.7	0.00	0.00			272	05
300 ISL	7.55 D	7.52	34.044 D	26.597	148.6	0.752	1.94	D 84.2	D 28.8	44.6	2.36	31.7	0.01	0.00			302	
321	7.25	7.22	34.056	26.649	143.8	0.783	1.69	73.8	25.0	48.6	2.46	33.1	0.00	0.00			324	04
380	6.61	6.58	34.103	26.774	132.5	0.864	1.07	46.6	15.5	59.8	2.76	36.5	0.00	0.00			383	03
400 ISL	6.38 D	6.34	34.105 D	26.807	129.5	0.891	0.97	D 42.0	D 14.0	62.8	2.82	37.3	0.01	0.00			403	
441	6.04	6.00	34.143	26.881	122.7	0.942	0.73	32.0	10.5	69.0	2.93	38.7	0.00	0.00			445	02
500 ISL	5.75 D	5.71	34.190 D	26.954	116.4	1.015	0.50	D 21.7	D 7.1	76.3	3.06	39.9	0.01	0.00			504	
516	5.66	5.62	34.204	26.977	114.3	1.031	0.45	19.5	6.4	78.2	3.09	40.2	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 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D242.3	D101.4	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	D242.2	D101.3	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	330.8	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	D237.5	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	D183.7	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	D143.5	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	D113.2	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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D251.4	D112.6	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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	23.892	400.5	0.020	5.83	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	D277.8	D112.1	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 27.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 29.6 N	117 44.8 W	17/07/2016	0426 UTC	24 m	280 05 kn			1015.0 mb	23.5 C	19.9 C				031

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	22.34	22.34	33.643	23.094	476.5	0.000	5.58	243.6	111.8	2.0	0.15	0.0	0.01	0.00	0.71	0.19	0	
2	22.34	22.34	33.643	23.094	476.6	0.010	5.58	243.6	111.8	2.0	0.15	0.0	0.00	0.00	0.71	0.19	2	04
5	21.89	21.88	33.628	23.210	465.7	0.024	5.65	246.7	112.3	2.1	0.16	0.0	0.00	0.03	0.83	0.13	5	03
10 ISL	18.80 D	18.80	33.547 D	23.963	394.0	0.041	6.29	D274.4	D118.1	2.9	0.26	0.0	0.01	0.00	1.09	0.35	10	
11	16.47	16.47	33.519	24.503	342.5	0.049	6.26	273.3	112.3	3.1	0.28	0.0	0.00	0.00	1.14	0.39	11	02
16	17.41	17.41	33.526 D	24.288	363.2	0.062	6.46	281.9	118.0	3.5	0.35	0.0	0.00	0.00	1.53	0.55	16	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
33 28.9 N	117 46.1 W	17/07/2016	0251 UTC	68 m	290 10 kn	290 02 06	2	1014.0 mb	21.0 C	19.7 C		6/8	CS	030

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	D265.4	D103.4	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 O2;

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
33 25.0 N	117 54.3 W	16/07/2016	2357 UTC	607 m	290 12 kn	290 01 04	1	1014.0 mb	23.0 C	19.8 C	10 m	3/8	CC	029

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	D145.9	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	D132.4	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	D112.9	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	D101.5	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 O2;

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
33 15.2 N	118 15.0 W	16/07/2016	1948 UTC	309 m	070 14 kn	280 01 03	0	1018.0 mb	21.9 C	19.0 C	15 m	0/8		028

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO 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	0.02	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	0.00	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	0.00	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	0.00	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	71	10
75 ISL	10.62 D	10.61	33.558 D	25.724	227.8	0.225	3.63	D158.2	D 57.8	17.6	1.56	19.2	0.09	0.00	0.10	0.11	76	
86	10.17	10.16	33.649	25.872	213.9	0.251	3.18	138.7	50.0	19.8	1.66	20.8	0.05	0.00	0.09	0.12	87	09
100 ISL	9.82 D	9.81	33.751 D	26.011	201.0	0.278	2.99	D130.2	D 46.8	22.4	1.77	22.3	0.05	0.00	0.04	0.09	101	
101	9.82	9.81	33.749	26.009	201.2	0.282	2.96	129.3	46.3	22.5	1.78	22.4	0.05	0.14	0.04	0.09	102	08
120	9.47	9.45	33.867	26.160	187.2	0.319	2.72	118.7	42.2	26.2	1.89	24.3	0.04	0.00	0.02	0.08	121	07
125 ISL	9.42 D	9.41	33.887 D	26.184	185.1	0.327	2.70	D117.6	D 41.9	26.8	1.92	24.6	0.04	0.00	0.02	0.08	126	
140	9.21	9.19	33.940	26.260	178.1	0.356	2.50	109.0	38.5	28.8	1.99	25.5	0.04	0.00	0.01	0.08	141	06
150 ISL	9.08 D	9.07	33.996 D	26.324	172.2	0.372	2.38	D103.4	D 36.6	30.1	2.02	26.0	0.04	0.00	0.01	0.07	151	
170	8.82	8.81	34.027	26.390	166.3	0.407	2.33	101.7	35.7	32.9	2.09	27.0	0.04	0.00	0.01	0.05	171	05
200 ISL	8.51 D	8.49	34.108 D	26.503	156.1	0.455	1.89	D 82.3	D 28.8	38.0	2.26	29.0	0.03	0.00	0.02	0.05	202	
201	8.49	8.46	34.098	26.499	156.5	0.457	1.88	82.2	28.6	38.1	2.27	29.1	0.03	0.00	0.02	0.05	203	04
231	8.37	8.35	34.147	26.555	151.8	0.504	1.59	69.3	24.1	41.2	2.38	30.1	0.03	0.00			233	03
250 ISL	8.11 D	8.08	34.168 D	26.612	146.6	0.531	1.40	D 60.9	D 21.1	43.0	2.44	30.8	0.03	0.00			252	
270	8.13	8.10	34.172	26.613	146.9	0.561	1.34	58.5	20.2	44.9	2.50	31.4	0.03	0.00			272	02
290	7.83	7.80	34.191	26.672	141.5	0.590	1.15	50.4	17.3	48.5	2.59	32.7	0.03	0.00			292	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 37.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D243.2	D104.6	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	D229.9	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	D184.7	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	D150.0	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	D120.7	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	2.56	D111.6	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	D 63.6	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	D 48.7	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	D 21.5	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	D 13.3	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
32 55.3 N	118 56.6 W	16/07/2016	1113 UTC	1685 m	290 14 kn			1019.0 mb	16.7 C	15.0 C				026

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D146.2	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	D104.0	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	D 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	D 66.4	D 23.2	40.0	2.39	30.3	0.02	0.00	0.01	0.05	202	
201	8.50	8.48	34.141	26.531	153.5	0.423	1.56	68.2	23.8	40.1	2.39	30.3	0.00	0.00	0.01	0.05	203	07
230	8.21	8.19	34.162	26.591	148.2	0.467	1.36	59.2	20.5	43.5	2.48	31.4	0.00	0.00			232	06
250 ISL	8.24 D	8.22	34.213 D	26.627	145.3	0.496	1.20	D 52.4	D 18.2	45.9	2.54	32.1	0.02	0.00			252	
272	7.84	7.81	34.190	26.670	141.4	0.528	1.11	48.6	16.7	48.6	2.61	33.0	0.00	0.00			274	05
300 ISL	7.69 D	7.66	34.217 D	26.713	137.8	0.567	0.94	D 41.0	D 14.1	51.8	2.69	33.8	0.02	0.00			302	
320	7.47	7.44	34.222	26.749	134.6	0.595	0.82	36.0	12.3	54.2	2.75	34.5	0.00	0.00			323	04
380	6.99	6.96	34.256	26.844	126.3	0.673	0.58	25.4	8.5	61.5	2.91	36.3	0.00	0.00			383	03
400 ISL	6.91 D	6.87	34.262 D	26.860	125.0	0.699	0.54	D 23.6	D 8.0	63.4	2.94	36.7	0.02	0.00			403	
440	6.59	6.55	34.275	26.914	120.2	0.747	0.45	19.7	6.6	67.2	2.99	37.6	0.00	0.00			444	02
500 ISL	6.12 D	6.08	34.302 D	26.997	112.8	0.819	0.32	D 13.8	D 4.6	74.7	3.10	39.1	0.01	0.00			504	
514	6.05	6.00	34.307	27.010	111.7	0.833	0.30	13.2	4.3	76.5	3.13	39.5	0.00	0.00			518	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 53.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 39.0 N	119 28.7 W	16/07/2016	0459 UTC	1312 m	330 20 kn			1020.0 mb	18.5 C	10.9 C				025

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D106.5 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 O2;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 90.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 25.1 N	119 57.6 W	15/07/2016	2330 UTC	865 m	320 11 kn	300 02 08	2	1021.0 mb	19.7 C	16.5 C	14 m	8/8	ST	024

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D254.8 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	D102.6 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	2.71	33.8	0.02	0.00			302	
320	7.12	7.09	34.170	26.757	133.5	0.632	0.93	40.6	13.7	56.4	2.77	34.7	0.00	0.00			323	04
380	6.86	6.83	34.277	26.878	122.9	0.709	0.46	19.9	6.7	65.0	2.97	36.1	0.00	0.00			383	03
400 ISL	6.79 D	6.75	34.279 D	26.890	122.0	0.735	0.43	D 18.6 D	6.3	66.7	2.99	36.4	0.02	0.00			403	
440	6.47	6.43	34.299	26.949	116.8	0.781	0.35	15.3	5.1	70.1	3.03	37.0	0.00	0.00			444	02
500 ISL	5.97 D	5.93	34.316 D	27.027	109.8	0.853	0.27	D 11.7 D	3.9	77.9	3.16	38.7	0.02	0.00			504	
516	5.87	5.83	34.326	27.048	108.0	0.866	0.26	11.3	3.7	80.0	3.20	39.2	0.00	0.00			520	01

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

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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.00	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	D240.7	D101.6	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	D258.5	D105.6	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	103.7	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	336.5	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	D252.3	D100.5	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	D221.5	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	D196.0	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	D170.2	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	D 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	D 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	D 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	D 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;

RV OCEAN STARR | CALCOFI CRUISE 1607 | STATION 90.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 45.3 N	121 19.2 W	15/07/2016	1031 UTC	3730 m	320 21 kn			1023.0 mb	16.8 C	15.5 C				022

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D238.1	D101.6	1.7	0.31	0.0	0.02	0.03	0.08	0.02	10	
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	D238.3	D101.7	1.6	0.31	0.0	0.02	0.00	0.09	0.02	20	
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	D238.2	D101.6	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	D191.1	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	0.655	2.47	108.0	37.7	33.2	2.10	27.2	0.00	0.00			232	06
250 ISL	8.40 D	8.37	34.027 D	26.458	161.3	0.688	2.22	D 96.7	D 33.7	36.3	2.17	28.3	0.02	0.00			252	
270	7.96	7.93	34.027	26.524	155.2	0.719	2.21	96.4	33.2	39.3	2.24	29.5	0.00	0.00			272	05
300 ISL	7.85 D	7.82	34.079 D	26.582	150.2	0.766	1.79	D 77.7	D 26.7	44.2	2.43	31.1	0.02	0.00			302	
321	7.68	7.64	34.124	26.643	144.7	0.796	1.40	61.0	20.9	47.7	2.56	32.3	0.00	0.00			324	04
380	6.89	6.85	34.136	26.763	133.7	0.878	1.01	44.2	14.9	57.5	2.77	35.5	0.00	0.00			383	03
400 ISL	6.82 D	6.78	34.180 D	26.808	129.8	0.907	0.82	D 35.5	D 12.0	59.8	2.83	36.0	0.02	0.00			403	
441	6.61	6.57	34.199	26.851	126.2	0.957	0.64	27.7	9.3	64.4	2.96	37.0	0.00	0.00			445	02
500 ISL	6.28 D	6.23	34.266 D	26.949	117.5	1.032	0.39	D 17.1	D 5.7	71.1	3.07	38.2	0.02	0.00			504	
515	6.21	6.16	34.281	26.970	115.7	1.047	0.37	16.0	5.3	72.8	3.10	38.5	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;

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 m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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 D	18.61	33.264 D	23.795	410.0	0.037	5.44	D237.5	D101.6	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	D237.4	D101.6	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	D238.5	D101.9	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	D253.3	D101.2	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	D226.5	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	D110.9	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	D106.1	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	D 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	148.9	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	D 37.8	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	D 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 O2;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 90.0 100.0

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 m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.00	0.08	0.01	2	20
10	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	D235.5	D101.6	2.0	0.31	0.0	0.02	0.00	0.08	0.02	20	
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	D235.6	D101.6	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	D139.7	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	152.8	0.621	1.94	D 84.3	D 29.1	42.5	2.33	30.9	0.02	0.00			252	
271	7.72	7.70	34.098	26.614	146.6	0.652	1.56	67.9	23.3	46.3	2.45	32.4	0.00	0.00			273	05
300 ISL	7.64 D	7.61	34.145 D	26.663	142.4	0.694	1.23	D 53.4	D 18.3	50.5	2.61	33.6	0.02	0.00			302	
321	7.47	7.44	34.187	26.721	137.2	0.723	0.92	40.2	13.7	53.5	2.72	34.5	0.00	0.00			324	04
380	7.05	7.01	34.273	26.850	125.7	0.801	0.46	20.1	6.8	62.6	2.94	36.4	0.00	0.00			383	03
400 ISL	6.90 D	6.86	34.283 D	26.878	123.3	0.827	0.40	D 17.4	D 5.9	64.4	2.97	36.8	0.02	0.00			403	
440	6.73	6.69	34.300	26.915	120.3	0.875	0.34	14.8	5.0	68.0	3.02	37.6	0.00	0.00			444	02
500 ISL	6.41 D	6.37	34.316 D	26.971	115.6	0.948	0.26	D 11.4	D 3.8	73.2	3.09	38.5	0.02	0.00			504	
516	6.36	6.31	34.338	26.996	113.5	0.963	0.25	11.0	3.7	74.5	3.11	38.7	0.00	0.00			520	01

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

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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	
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	2	24
10	18.93	18.93	33.344	23.776	411.8	0.041	5.41	236.5	101.7	1.7	0.27	0.0	0.00	0.00	0.10	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	17	22
20 ISL	18.93 D	18.92	33.344 D	23.777	412.1	0.079	5.41	D236.0	D101.7	1.5	0.29	0.0	0.02	0.00	0.08	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	21	21
30 ISL	18.93 D	18.92	33.344 D	23.778	412.5	0.120	5.42	D236.2	D101.7	1.4	0.29	0.0	0.02	0.00	0.08	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	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	40	19
50 ISL	17.01 D	17.00	33.214 D	24.146	378.0	0.202	5.87	D256.0	D106.2	1.5	0.28	0.0	0.02	0.00	0.13	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	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	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	75	16
75 ISL	15.09 D	15.08	33.207 D	24.576	337.6	0.291	5.87	D255.9	D102.2	1.9	0.35	0.0	0.02	0.00	0.20	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	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	91	14
100 ISL	13.28 D	13.27	33.285 D	25.015	296.4	0.371	5.25	D228.8	D 88.2	4.7	0.66	4.1	0.12	0.00	0.35	0.36	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	D187.0	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	D166.8	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	D126.7	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	D104.2	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 O2;

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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	
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	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	10	20
10	19.02	19.02	33.336	23.748	414.5	0.043											10	21
20 ISL	19.02 D	19.02	33.335 D	23.746	415.0	0.079	5.42	D236.5	D102.1	2.0	0.22	0.0	0.01	0.00	0.07	0.01	20	
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	26	19
30 ISL	19.02 D	19.02	33.337 D	23.749	415.2	0.121	5.42	D236.3	D102.0	1.9	0.23	0.0	0.01	0.00	0.08	0.02	30	
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	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	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	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	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	0.00	0.21	0.08	89	14
100	14.45	14.44	33.365	24.820	315.1	0.379	5.50	240.2	94.6	3.2	0.32	0.1	0.03	0.04	0.35	0.26	101	12
100	14.45	14.44	33.378	24.846	312.7	0.379											101	13
112	12.94	12.93	33.297	25.091	289.3	0.415	5.21	227.6	86.9	5.5	0.59	4.4	0.11	0.00	0.31	0.30	113	11
125	11.33	11.32	33.305	25.402	259.8	0.451	4.90	213.8	78.9	9.0	0.92	9.7	0.04	0.00	0.14	0.24	126	10
140	10.25	10.23	33.343	25.622	238.9	0.488	4.57	199.4	71.9	13.1	1.22	14.5	0.00	0.00	0.09	0.12	141	09
150 ISL	9.99 D	9.97	33.390 D	25.702	231.5	0.511	4.52	D196.9	D 70.8	15.8	1.35	16.6	0.02	0.00	0.07	0.10	151	
170	9.19	9.17	33.631	26.022	201.3	0.554	3.82	166.9	58.9	21.2	1.62	20.9	0.00	0.00	0.02	0.05	171	08
200	8.90	8.88	33.787	26.191	185.8	0.612	3.44	150.2	52.7	25.2	1.76	23.4	0.00	0.00	0.00	0.03	202	07
230	8.54	8.51	33.962	26.385	167.9	0.665	2.66	116.3	40.5	32.3	2.05	27.3	0.00	0.00			232	06
250 ISL	8.05 D	8.02	34.005 D	26.493	157.8	0.699	2.53	D110.0	D 38.0	35.4	2.14	28.5	0.01	0.00			252	
270	8.00	7.98	34.018	26.511	156.5	0.730	2.32	101.3	34.9	38.5	2.22	29.7	0.00	0.00			272	05
300 ISL	7.49 D	7.46	34.035 D	26.598	148.4	0.777	2.11	D 92.0	D 31.4	44.5	2.40	31.9	0.01	0.00			302	
320	7.22	7.19	34.050	26.649	143.8	0.805	1.74	75.8	25.6	48.5	2.52	33.4	0.00	0.00			323	04
380	6.59	6.55	34.106	26.780	131.9	0.887	1.05	45.8	15.3	60.2	2.81	37.1	0.00	0.00			383	03
400 ISL	6.45 D	6.41	34.129 D	26.817	128.6	0.916	0.89	D 38.9	D 13.0	62.9	2.87	37.7	0.01	0.00			403	
441	6.20	6.16	34.158	26.872	123.7	0.965	0.68	29.8	9.9	68.2	2.98	38.9	0.00	0.00			445	02
500 ISL	5.80 D	5.76	34.216 D	26.969	115.0	1.039	0.43	D 18.8	D 6.2	76.5	3.12	40.4	0.01	0.00			504	
516	5.72	5.67	34.227	26.988	113.4	1.054	0.40	17.4	5.7	78.7	3.16	40.8	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 91.7 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
33 14.4 N	117 28.0 W	11/07/2016	0004 UTC	26 m	270 12 kn	170 03 05	0	1015.0 mb	23.1 C	20.0 C		0/8		003

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	23.26	23.26	33.695	22.871	497.8	0.000	5.77	252.2	117.6	0.0	0.17	0.0	0.03	0.50	0.69	0.10	0	
2	23.26	23.26	33.695	22.871	497.9	0.010	5.77	252.2	117.6	0.0	0.17	0.0	0.03	0.50	0.69	0.10	2	06
4	23.02	23.02	33.683	22.930	492.4	0.020	5.89	257.2	119.4	0.1	0.22	0.1	0.03	1.12	0.74	0.13	4	05
10	20.88	20.88	33.679 D	23.524	435.9	0.043	6.23	272.1	121.6	1.4	0.18	0.0	0.04	0.09	1.42	0.28	10	03
10	20.88	20.88	33.591	23.457	442.3	0.046											10	04
15	16.50	16.49	33.554	24.524	340.6	0.067	6.41	280.0	115.0	5.2	0.40	0.0	0.08	0.13	5.32	1.33	15	02
20	15.41	15.41	33.543	24.761	318.2	0.084	5.25	229.4	92.2	8.2	0.84	3.9	0.36	5.35	3.30	1.32	20	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 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME UTC	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 57.5 N	117 18.3 W	10/07/2016	1916		59 m	270 09 kn	120 03 07	0	1016.0 mb	20.5 C	20.0 C	09 m	0/8		001

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	06
20 ISL	13.96 D	13.96	33.483 D	25.024	293.1	0.073	5.76	D250.8	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	D192.2	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	D179.3	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	D159.1	D 59.1								50	
55	11.39	11.38	33.510 D	25.548	244.1	0.164	3.55	D154.4	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 UTC	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 54.6 N	117 24.0 W	11/07/2016	0312		630 m	280 07 kn	240 01 04	1	1013.0 mb	22.0 C	19.8 C		3/8	AS	004

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D153.0	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	D126.6	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	D109.9	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	27.5	34.4	2.36	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 UTC	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 50.7 N	117 32.0 W	11/07/2016	0607		855 m	230 06 kn			1014.0 mb	22.0 C	20.0 C				005

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D264.3	D119.6	0.6	0.16	0.1	0.03	0.57	0.74	0.15	10	
20	14.74	14.74	33.437	24.825	312.1	0.085	6.11	267.1	105.9	3.1	0.54	0.8	0.06	0.44	0.76	0.25	20	18
29	12.48	12.48	33.444	25.291	267.9	0.111	4.51	196.9	74.5	9.3	1.20	10.5	0.21	1.47	1.47	0.77	29	17
30 ISL	12.41 D	12.40	33.436 D	25.299	267.2	0.110	4.53	D197.1	D 74.7	9.6	1.21	10.8	0.20	1.36	1.40	0.74	30	
40	11.74	11.74	33.435	25.424	255.5	0.140	4.09	178.5	66.5	11.8	1.33	14.0	0.12	0.21	0.69	0.46	40	16
50	11.16	11.15	33.495	25.578	241.1	0.165	3.72	162.4	59.8	14.4	1.52	16.8	0.04	0.48	0.25	0.30	50	15
59	10.70	10.70	33.528	25.685	231.1	0.186	3.56	155.4	56.6	16.2	1.58	18.3	0.04	0.43	0.14	0.20	59	14
70	10.50	10.49	33.550	25.738	226.3	0.211	3.51	153.2	55.6	17.5	1.73	19.2	0.03	0.96	0.10	0.16	71	13
75 ISL	10.37 D	10.36	33.600 D	25.800	220.5	0.219	3.51	D152.9	D 55.5	18.5	1.74	19.7	0.03	0.64	0.08	0.14	76	
84	10.01	10.00	33.649	25.899	211.3	0.242	3.30	144.2	51.8	20.3	1.75	20.7	0.03	0.05	0.05	0.10	85	12
100	9.88	9.87	33.787	26.029	199.3	0.275	2.78	121.3	43.5	24.0	1.97	23.0	0.00	0.12	0.03	0.10	101	11
119	9.86	9.84	33.866	26.095	193.4	0.312	2.53	110.4	39.6	25.9	2.06	23.8	0.00	0.73	0.02	0.12	120	10
125 ISL	9.81 D	9.80	33.877 D	26.112	192.0	0.321	2.59	D112.6	D 40.5	26.4	2.08	24.1	0.02	0.70	0.02	0.12	126	
139	9.81	9.79	33.938	26.161	187.7	0.350	2.31	101.0	36.2	27.4	2.13	24.6	0.00	0.63	0.02	0.11	140	09
150 ISL	9.76 D	9.74	33.996 D	26.214	182.8	0.368	2.16	D 93.8	D 33.7	28.3	2.14	25.1	0.02	0.61	0.02	0.10	151	
169	9.45	9.43	34.014	26.281	176.9	0.405	2.21	96.5	34.3	29.9	2.17	25.8	0.03	0.57	0.02	0.08	170	08
200	9.32	9.30	34.100	26.370	169.1	0.459	1.99	87.0	30.9	32.6	2.32	27.2	0.03	1.16	0.01	0.08	202	07
230	9.56	9.53	34.232	26.435	163.7	0.509	1.40	60.9	21.7	35.2	2.50	27.8	0.00	0.26			232	06
250 ISL	9.54 D	9.51	34.261 D	26.462	161.6	0.540	1.32	D 57.6	D 20.6	36.5	2.62	28.2	0.02	1.22			252	
269	9.34	9.31	34.262	26.496	158.8	0.572	1.23	53.5	19.0	37.7	2.73	28.6	0.00	2.13			271	05
300 ISL	9.07 D	9.04	34.278 D	26.552	154.0	0.619	1.10	D 47.9	D 17.0	40.7	2.66	29.9	0.02	1.53			302	
320	8.54	8.51	34.218	26.588	150.6	0.651	1.23	53.6	18.7	42.7	2.62	30.7	0.00	1.15			323	04
380	7.98	7.94	34.241	26.693	141.5	0.739	0.91	39.7	13.7	49.5	2.82	32.9	0.00	0.51			383	03
400 ISL	7.68 D	7.64	34.234 D	26.732	137.9	0.767	0.83	D 36.1	D 12.4	52.6	2.88	33.9	0.02	0.42			403	
440	7.16	7.12	34.238	26.809	130.8	0.821	0.67	29.2	9.9	58.8	3.01	35.9	0.00	0.23			444	02
500 ISL	6.60 D	6.56	34.269 D	26.909	121.7	0.898	0.46	D 19.8	D 6.6	66.8	3.16	37.7	0.02	2.39			504	
514	6.55	6.50	34.279	26.925	120.4	0.913	0.42	18.4	6.1	68.7	3.20	38.1	0.00	2.90			518	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 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	33.414	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 D	25.688	231.2	0.223	3.77	D164.3 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 D	26.223	181.3	0.326	2.86	D124.3 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 D	26.332	171.4	0.370	2.70	D117.5 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 D	26.611	146.5	0.530	1.64	D 71.5 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 D	26.713	137.6	0.601	1.09	D 47.5 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 D	26.843	126.9	0.735	0.52	D 22.8 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 D	26.950	117.7	0.859	0.36	D 15.8 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;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 93.3 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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 D	25.984	202.9	0.201	3.10	D135.0 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 D	26.179	184.9	0.250	2.66	D115.9 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 D	26.297	174.2	0.295	2.43	D105.9 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 D	26.393	165.6	0.338	2.14	D 93.2 D	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 D	26.664	141.5	0.491	1.17	D 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
300 ISL	7.59 D	7.56	34.225 D	26.733	135.8	0.561	0.88	D 38.4 D	13.2	52.9	2.73	34.2	0.02	0.22			302	
321	7.44	7.41	34.244	26.771	132.5	0.589	0.74	32.5	11.1	55.2	2.80	34.8	0.03	0.04			324	04
381	6.78	6.74	34.255	26.872	123.4	0.666	0.54	23.3	7.8	64.2	2.93	37.1	0.00	0.08			384	03
400 ISL	6.72 D	6.68	34.268 D	26.890	122.0	0.690	0.48	D 21.1 D	7.1	65.7	2.96	37.5	0.02	0.09			403	
440	6.51	6.47	34.279	26.928	118.8	0.737	0.43	18.6	6.2	69.0	3.02	38.3	0.00	0.11			444	02
500 ISL	6.21 D	6.16	34.302 D	26.986	114.0	0.809	0.34	D 14.7 D	4.9	74.5	3.08	39.2	0.02	0.05			504	
514	6.12	6.08	34.308	27.002	112.5	0.823	0.34	14.7	4.8	75.8	3.09	39.5	0.03	0.04			518	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 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D249.3	D108.0	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	D266.4	D106.1	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	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	D159.1	D 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	D132.4	D 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	D119.3	D 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	D109.3	D 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	D 97.5	D 34.4	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	D 49.1	D 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	D 35.7	D 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	D 20.5	D 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	D 12.7	D 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;

RV OCEAN STARR CALCOFI CRUISE 1607 STATION 93.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D246.1	D104.2	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	246.9	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	D185.6	D 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	D131.9	D 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	D125.2	D 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	D 99.4	D 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	D 96.3	D 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	2.08	D 90.4	D 31.8	35.7	2.27	28.7	0.00	0.09	0.01	0.05	151	
170	8.68	8.66	34.108	26.476	158.1	0.373	1.72	75.2	26.3	37.7	2.36	29.4	0.00	0.20	0.01	0.05	171	08
200 ISL	8.40 D	8.38	34.149 D	26.552	151.4	0.419	1.49	D 64.7	D 22.6	41.4	2.45	30.6	0.00	0.03	0.01	0.05	202	
201	8.39	8.37	34.148	26.552	151.5	0.421	1.48	64.7	22.5	41.5	2.45	30.6	0.00	0.02	0.01	0.05	203	07
230	8.23	8.20	34.189	26.610	146.4	0.465	1.18	51.7	17.9	45.0	2.54	31.9	0.00	0.18			232	06
250 ISL	7.90 D	7.87	34.201 D	26.669	141.1	0.493	1.09	D 47.4	D 16.4	48.5	2.61	32.8	0.00	0.12			252	
269	7.63	7.61	34.207	26.712	137.2	0.520	0.95	41.3	14.1	51.8	2.67	33.7	0.00	0.06			271	05
300 ISL	7.37 D	7.34	34.218 D	26.760	133.1	0.561	0.83	D 36.0	D 12.3	55.2	2.73	34.6	0.00	0.00			302	
320	7.24	7.21	34.224	26.783	131.1	0.588	0.75	32.7	11.1	57.4	2.77	35.1	0.00	0.00			323	04
381	6.75	6.71	34.255	26.876	123.0	0.666	0.54	23.7	7.9	64.8	2.92	37.2	0.00	0.29			384	03
400 ISL	6.58 D	6.54	34.266 D	26.908	120.2	0.690	0.47	D 20.4	D 6.8	67.2	2.95	37.6	0.00	0.21			403	
442	6.29	6.25	34.288	26.962	115.4	0.738	0.36	15.9	5.3	72.4	3.01	38.5	0.00	0.03			446	02
500 ISL	5.99 D	5.94	34.316 D	27.025	110.0	0.805	0.30	D 12.9	D 4.3	78.0	3.10	39.6	0.00	0.11			504	
514	5.92	5.87	34.318	27.036	109.1	0.819	0.27	11.8	3.9	79.3	3.12	39.9	0.00	0.13			518	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 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 0.9 N	119 13.2 W	12/07/2016	0455 UTC	1562 m	320 25 kn			1013.0 mb	16.0 C	14.9 C				010

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	21
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	19
10	16.79	16.79	33.626	24.511	341.7	0.036											10	20
20 ISL	16.71 D	16.71	33.614 D	24.520	341.2	0.065	5.91	D257.5	D106.5	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	18
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	17
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	16
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	15
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	14
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	13
75 ISL	10.31 D	10.30	33.655 D	25.853	215.5	0.210	3.35	D145.9	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	12
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	11
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	10
125 ISL	9.34 D	9.32	33.929 D	26.230	180.6	0.309	2.32	D101.1	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	09
150 ISL	9.18 D	9.17	34.038 D	26.341	170.7	0.353	2.08	D 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	08
200 ISL	8.59 D	8.57	34.172 D	26.541	152.5	0.434	1.34	D 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	07
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	06
250 ISL	8.00 D	7.98	34.227 D	26.674	140.7	0.508	0.98	D 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	05
300 ISL	7.42 D	7.39	34.253 D	26.780	131.2	0.576	0.66	D 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	04
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	03
400 ISL	6.58 D	6.54	34.274 D	26.914	119.6	0.703	0.44	D 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	02
500 ISL	5.99 D	5.94	34.316 D	27.025	110.0	0.819	0.30	D 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	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 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
31 51.1 N	119 34.0 W	12/07/2016	0938 UTC	1871 m	290 17 kn			1016.0 mb	16.0 C	14.8 C				011

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	2	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	19
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	18
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	17
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	16
50 ISL	11.84 D	11.84	33.268 D	25.276	269.8	0.155	4.78	D208.4	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	15
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	14
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	13
75 ISL	10.49 D	10.48	33.532 D	25.726	227.6	0.218	3.72	D162.1	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	12
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	11
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	10
125 ISL	9.42 D	9.40	33.858 D	26.161	187.2	0.322	2.68	D116.5	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	09
150 ISL	9.24 D	9.22	33.981 D	26.288	175.7	0.368	2.12	D 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	08
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	07
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	06
250 ISL	7.99 D	7.96	34.175 D	26.635	144.3	0.528	1.17	D 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	45.0	15.4	50.3	2.66	33.0	0.00	0.00			272	05
300 ISL	7.66 D	7.63	34.248 D	26.742	135.0	0.598	0.74	D 32.1	D 11.0	53.8	2.78	33.7	0.01	0.00			302	
322	7.46	7.43	34.258	26.779	131.8	0.628	0.64	27.9	9.5	56.4	2.86	34.3	0.00	0.00			325	04
381	6.61	6.57	34.227	26.872	123.2	0.703	0.56	24.5	8.2	66.1	2.96	37.0	0.00	0.00			384	03
400 ISL	6.52 D	6.48	34.231 D	26.888	122.0	0.727	0.53	D 23.2	D 7.8	68.4	3.00	37.5	0.00	0.00			403	
441	6.15	6.12	34.254	26.953	116.1	0.775	0.41	17.7	5.9	73.3	3.09	38.5	0.00	0.00			445	02
500 ISL	5.88 D	5.83	34.296 D	27.023	110.0	0.843	0.30	D 13.1	D 4.3	79.6	3.17	39.5	0.00	0.00			504	
514	5.78	5.73	34.306	27.043	108.2	0.857	0.27	11.9	3.9	81.1	3.19	39.8	0.00	0.00			518	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 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.00	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	D257.9	D105.5	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	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	D231.5 D	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	D202.7 D	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	D146.3 D	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	D118.0 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	D 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	D 49.8 D	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	D 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	D 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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	D249.0	D103.0	1.0	0.31	0.0	0.02	0.44	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	5.68	D247.7 D	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	5.13	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	D149.3 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	43.8	25.0	1.89	23.7	0.00	0.11	0.01	0.05	171	08
200	8.87	8.85	33.917	26.298	175.7	0.573	2.76	120.7	42.4	29.2	1.96	25.0	0.00	0.00	0.00	0.02	202	07
230	8.55	8.52	33.982	26.400	166.5	0.625	2.60	113.3	39.5	32.3	2.03	26.4	0.00	0.19			232	06
250 ISL	8.27 D	8.24	34.027 D	26.478	159.3	0.659	2.35	D102.2 D	35.5	36.1	2.16	28.0	0.02	0.18			252	
271	8.08	8.05	34.068	26.538	153.9	0.690	1.92	83.9	28.9	40.1	2.30	29.6	0.00	0.17			273	05
300 ISL	7.73 D	7.70	34.102 D	26.617	146.9	0.736	1.65	D 71.8 D	24.7	45.1	2.46	31.1	0.02	0.09			302	
323	7.47	7.44	34.137	26.682	140.9	0.767	1.27	55.4	18.9	49.1	2.58	32.4	0.00	0.03			326	04
379	6.88	6.85	34.169	26.790	131.2	0.843	0.87	37.8	12.7	58.4	2.85	35.3	0.00	0.21			382	03
400 ISL	6.70 D	6.66	34.183 D	26.826	127.9	0.874	0.73	D 31.9 D	10.7	61.5	2.89	35.9	0.02	0.15			403	
441	6.40	6.36	34.217	26.893	122.0	0.921	0.55	23.9	7.9	67.5	2.96	37.1	0.00	0.02			445	02
500 ISL	6.00 D	5.96	34.249 D	26.970	115.2	0.997	0.39	D 16.8 D	5.5	74.5	3.10	38.4	0.02	0.04			504	
516	5.94	5.89	34.259	26.986	113.8	1.010	0.39	17.0	5.6	76.4	3.14	38.8	0.00	0.04			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
30 50.9 N	121 35.3 W	13/07/2016	0504 UTC	4032 m	300 22 kn			1019.0 mb	17.8 C	16.1 C				014

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	20
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	19
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	18
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	17
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	16
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	15
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	14
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	13
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	12
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	11
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	10
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	09
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	08
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	07
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	06
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	05
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	04
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	03
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	02
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	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
30 30.9 N	122 15.0 W	13/07/2016	1128 UTC	4126 m	350 15 kn			1018.0 mb	18.5 C	16.5 C				015

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.00	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	0.00	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
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	0.00	0.07	0.02	20	19
30 ISL	19.42 D	19.42	33.529 D	23.794	410.9	0.120	5.36	D234.0	D101.8	1.5	0.21	0.0	0.00	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	18
50 ISL	17.96 D	17.96	33.388 D	24.052	387.0	0.202	5.67	D247.1	D104.5	1.5	0.21	0.0	0.00	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	17
75 ISL	16.67 D	16.66	33.263 D	24.265	367.5	0.296	5.80	D253.0	D104.3	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	16
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	15
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	14
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	13
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	12
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	11
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	10
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	09
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	08
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	07
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	06
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	0.00			252	
271	8.07	8.05	34.005	26.490	158.5	0.766	2.43	106.0	36.5	37.0	2.14	29.3	0.00	0.00			273	05
300 ISL	7.76 D	7.73	34.047 D	26.569	151.3	0.812	2.05	D 89.1	D 30.6	42.7	2.31	31.4	0.00	0.00			302	
321	7.44	7.41	34.063	26.628	145.9	0.843	1.71	74.9	25.4	46.9	2.43	32.9	0.00	0.00			324	04
380	6.86	6.82	34.127	26.760	134.0	0.925	1.03	45.2	15.1	57.4	2.74	36.4	0.00	0.00			383	03
400 ISL	6.67 D	6.64	34.143 D	26.798	130.6	0.954	0.92	D 40.2	D 13.5	60.4	2.81	37.1	0.00	0.00			403	
441	6.40	6.36	34.183	26.866	124.5	1.004	0.63	27.6	9.2	66.6	2.94	38.6	0.00	0.00			445	02
500 ISL	6.03 D	5.99	34.234 D	26.955	116.7	1.078	0.44	D 19.0	D 6.3	73.5	3.06	39.9	0.00	0.00			504	
514	5.98	5.93	34.237	26.964	115.9	1.092	0.41	17.9	5.9	75.2	3.09	40.2	0.00	0.00			518	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 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.06	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	0.06	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 D	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	0.48	20.8	6.8	76.9	3.11	40.7	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
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

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
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	0.02	10	
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	5.33	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	17.99 D	17.98	33.575 D	24.190	374.9	0.300	5.64	D246.1	D104.3	1.6	0.18	0.0	0.02	0.00	0.10	0.01	76	
81	17.89	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	D 95.7	2.7	0.28	0.4	0.08	0.00	0.28	0.24	126	
131	14.96	14.94	33.570	24.887	309.9	0.497	5.32	232.3	92.6	3.1	0.33	1.0	0.14	0.00	0.25	0.26	132	12
141	13.73	13.71	33.474	25.074	292.1	0.527	5.18	226.2	87.9	4.6	0.51	3.7	0.17	0.00	0.23	0.19	142	11
150	11.86	11.84	33.351	25.343	266.2	0.552	5.01	219.0	81.7	7.3	0.79	8.2	0.06	0.00	0.18	0.13	151	10
160	10.49	10.48	33.296	25.545	246.8	0.578	4.75	207.2	75.1	10.7	1.07	12.4	0.04	0.00	0.11	0.14	161	09
174	9.61	9.59	33.415	25.785	224.0	0.611	4.33	189.0	67.2	16.1	1.40	17.8	0.03	0.00	0.06	0.11	175	08
195	9.13	9.11	33.639	26.039	200.2	0.655	3.80	166.1	58.5	21.3	1.61	21.6	0.03	0.00	0.01	0.02	196	07
200 ISL	9.10 D	9.08	33.666 D	26.065	197.8	0.665	3.86	D167.9	D 59.3	22.0	1.63	21.9	0.03	0.00			202	
231	8.74	8.71	33.832	26.252	180.6	0.724	3.38	147.4	51.6	26.5	1.78	24.3	0.03	0.00			233	06
250 ISL	8.52 D	8.49	33.933 D	26.366	170.1	0.758	3.35	D145.6	D 50.9	29.9	1.88	25.7	0.02	0.00			252	
271	8.19	8.16	33.977	26.452	162.2	0.792	2.87	125.1	43.2	33.6	1.99	27.4	0.00	0.00			273	05
300 ISL	7.79 D	7.76	34.028 D	26.551	153.1	0.839	2.32	D100.8	D 34.6	40.0	2.20	30.1	0.02	0.00			302	
321	7.52	7.49	34.045	26.603	148.4	0.870	1.99	87.1	29.6	44.6	2.35	32.1	0.00	0.00			323	04
381	6.88	6.84	34.085	26.724	137.4	0.956	1.37	59.9	20.1	54.9	2.64	35.7	0.00	0.00			384	03
400 ISL	6.71 D	6.67	34.104 D	26.763	134.0	0.983	1.20	D 52.1	D 17.5	58.7	2.73	36.6	0.02	0.00			403	
440	6.25	6.21	34.148	26.858	125.1	1.033	0.80	35.0	11.6	66.7	2.91	38.7	0.00	0.00			444	02
500 ISL	5.88 D	5.84	34.193 D	26.941	117.7	1.109	0.57	D 24.8	D 8.2	74.2	3.04	40.0	0.02	0.00			504	
516	5.79	5.75	34.207	26.963	115.8	1.125	0.51	D 22.2	D 7.3	76.2	3.07	40.4	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 93.4 26.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD
32 57.0 N	117 16.5 W	10/07/2016	2051 UTC	19 m	270 10 kn	280 02 07	1	1015.0 mb	23.2 C	20.7 C		2/8	AC	002

DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN µmol/Kg	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	PRES db	SAMP
0	21.59	21.59	33.693	23.339	453.1	0.000	6.10	266.3	120.5	2.7	0.21	0.1	0.06	0.10	3.53	0.63	0	
2	21.59	21.59	33.693	23.339	453.2	0.009	6.10	266.3	120.5	2.7	0.21	0.1	0.06	0.10	3.53	0.63	2	03
8	18.03	18.03	33.644	24.228	368.6	0.034	5.80	253.5	107.4	3.7	0.39	0.2	0.07	1.17	4.37	0.95	8	02
10	16.66	16.66	33.568	24.497	343.0	0.041	5.53	241.5	99.6	6.0	0.69	1.4	0.12	1.13	4.77	1.32	10	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 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/m2	067

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
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/m2	061

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
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/m2	064

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
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	5.63D	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/m2	058

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
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/m2	052

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
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/m2	048

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	036

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	041

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	044

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	027

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	023

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	019

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	001

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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	4.41D	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/m2	008

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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/m2	012

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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.

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/m2	016

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/L	OXY PCT	SIO3* µM	PO4* µM	NO3* µM	NO2* µM	NH4* µM	CHL-A µg/L	PHAEO µg/L	LIGHT PCT	UPTAKE (mg C/m3) 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.

MACROZOOPLANKTON BIOMASS
Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST) Start	Time (PST) End	Water Volume Strained (m^3)	Max. Tow Depth (m)	Volume per 1000 m^3 Strained Total (cm^3)	Volume per 1000 m^3 Strained Small (cm^3)
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