

UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

CalCOFI Cruise 1704
28 March – 20 April, 2017

CC Reference 18 - 01
7 Feb., 2018

**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 1704* of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the FSV 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. Due to inclement weather, this cruise was broken up into 2 Legs. No water samples were taken during Leg II, only net tows and CTD profiles were performed yielding standard levels for several parameters. Many 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

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

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

Nutrient samples were analyzed at sea using a QuAAstro 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 $\text{NO}_2 + \text{NO}_3$, 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.

1704SH	$\text{NO}_2 + \text{NO}_3$ ($\mu\text{mol/L}$)	PO_4 ($\mu\text{mol/L}$)	SIL ($\mu\text{mol/L}$)
Mean \pm SD (n=30)	$36.78 \pm .22$	$2.57 \pm .02$	$111.03 \pm .75$
Certified Value* (Lot CB)	36.78	2.58	111.82

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

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

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

Primary Productivity Sampling

Primary productivity samples were taken each day shortly before local apparent noon (LAN). Primary production was estimated from ^{14}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 6.34 μCi of ^{14}C as NaHCO_3 (200 μl 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).

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 5 meters. The data were logged in one-second increments using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinographs for internal and external measurements, and a WetLabs C-star transmissometer and Wetlabs FLNTU and Eco-triplet fluorometers. The data has been processed to show 10 minute averages.

2) *ADCP:* Continuously sample profiles of currents using the RDI/Teledyne Acoustic Doppler Current Profiler. This will be dependent on the ability to sync the ADCP's output with the EK60 and ME70. The EK60 and ME70 will hold priority over the ADCP. The ADCP raw data are collected and archived for potential data processing ashore. The National Centers for Environmental Information (NCEI) in collaboration with the E.Firing Acoustic Doppler Current Profiler (ADCP) Laboratory at the University of Hawaii have established the Joint Archive for Shipboard ADCP (JASADCP). The JASADCP is responsible for the acquisition, review, documentation, archival, and distribution of shipboard ADCP data sets, data may be accessed through their website (<http://ilikai.soest.hawaii.edu/sadcp/index.html>). Shipboard ADCP data is acquired by University of Hawaii Data Acquisition System (UDHAS) and uses Common Ocean Data Access System (CODAS) processing to incrementally build a dataset of averaged, edited ocean velocities for each ADCP and ping type specified. Processed data and plots are served on the shipboard network, and daily status summaries are emailed and available online (http://currents.soest.hawaii.edu/uhdas_fromships.html).

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) *Southern California Coastal Ocean Observing System (SCCOOS) Nearshore Observations*: The objective of these observations is to extend CalCOFI time series to the nearshore. Nearshore observations consist of 8 stations at the ends and interspersed with current CalCOFI lines on the 20 m isobath with a standard set of CalCOFI hydrographic observations as well as a CalBOBL net tow, particulate organic carbon and nitrogen, dissolved organic carbon and nitrogen and taxon-specific phytoplankton pigments data. (R. Goericke, SIO)
- 7) *Laser Optical Plankton Counter (LOPC)*: The instrumentation was assessed for the response to known types of zooplankton. The LOPC has been deployed in one side of the bongo net during its routine deployment on quarterly CalCOFI cruises since 2005. The LOPC is, in essence, a low-resolution line-scan camera. It generates coarse images of objects larger than about one millimeter that pass through it into the bongo net. On this cruise the plankton collected in the port side of the routine bongo deployment was inspected prior to its preservation in ethanol. Individual plankters of specific types were removed from samples. These were then passed through an LOPC in the laboratory equipped with a flow cell through which water moved at the same rate it moves through the LOPC in the bongo net in the sea. The response of the LOPC to each plankter was recorded. The types used included euphausiids, copepods, pteropods, pyrosome salps and radiolarians. The data will be analyzed ashore to develop rules with which to classify particles sensed and counted by the LOPC in the bongo net deployments in the sea over the past 11 years. This work will allow estimates of the distribution and abundance of euphausiids, large copepods and pelagic tunicates (salps and doliolids) in the CalCOFI region. (D. Checkley, SIO)
- 8) *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)
- 9) *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)
- 10) *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 μ M 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)

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

FOOTNOTES

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

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

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

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

REFERENCES

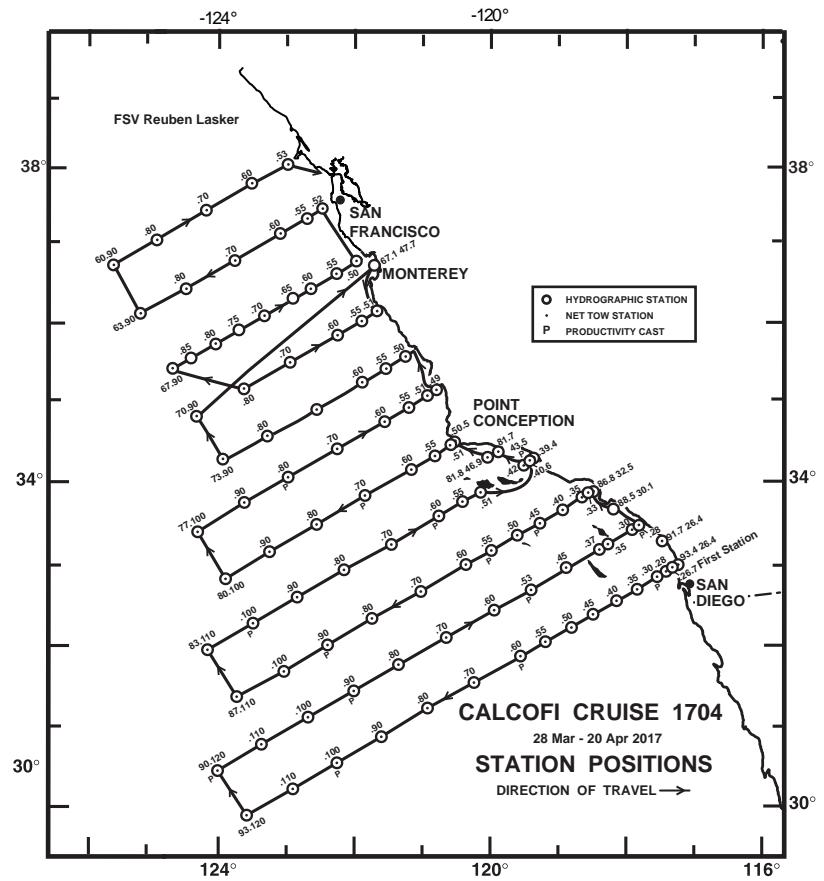
- Anderson, G. C., compiler, 1971. "Oxygen Analysis," Marine Technician's Handbook, SIO Ref. No. 71-8, Sea Grant Pub. No. 9.
- Bernhardt, H., and Wilhelms, A., (1967). "The continuous determination of low level iron, soluble phosphate and total phosphate with the AutoAnalyzer," Technicon Symposia, I,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

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

FIGURES

Cruise 1704

1. CalCOFI Cruise 1704 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.



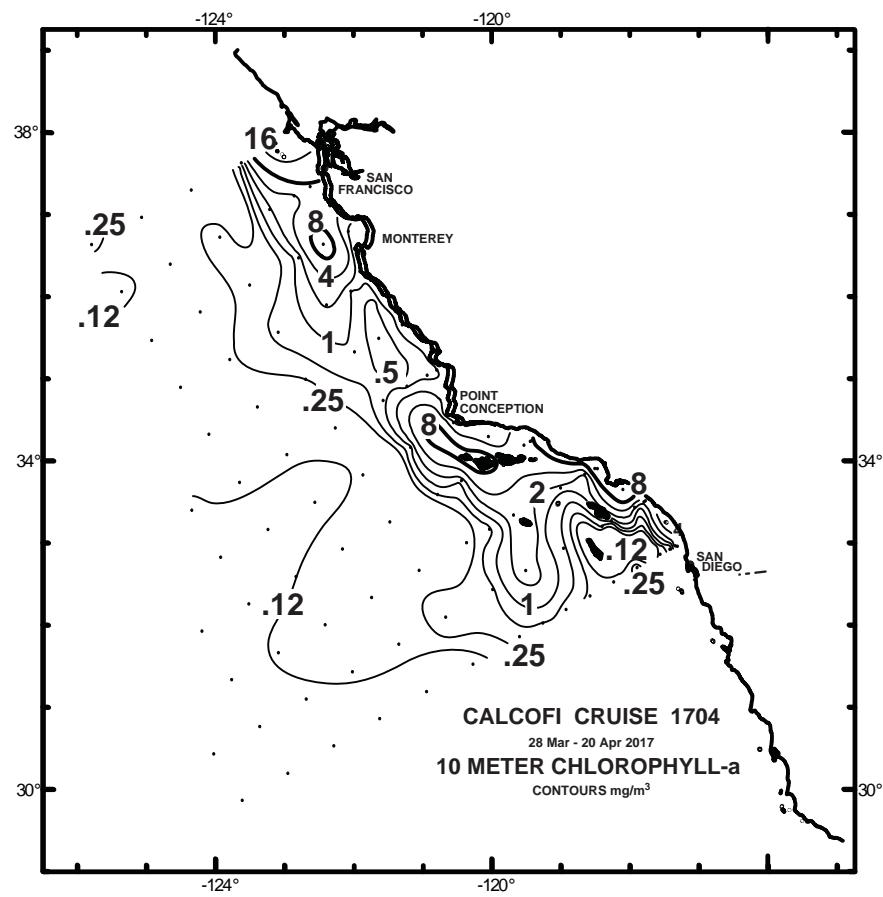


FIGURE 3A

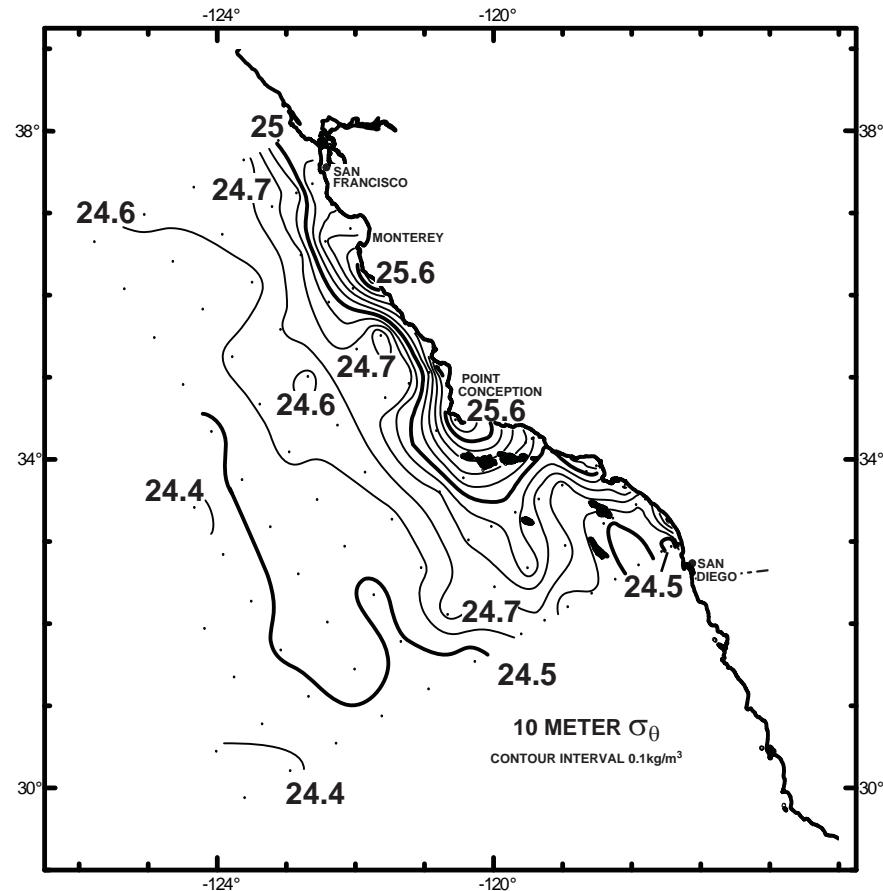


FIGURE 3B

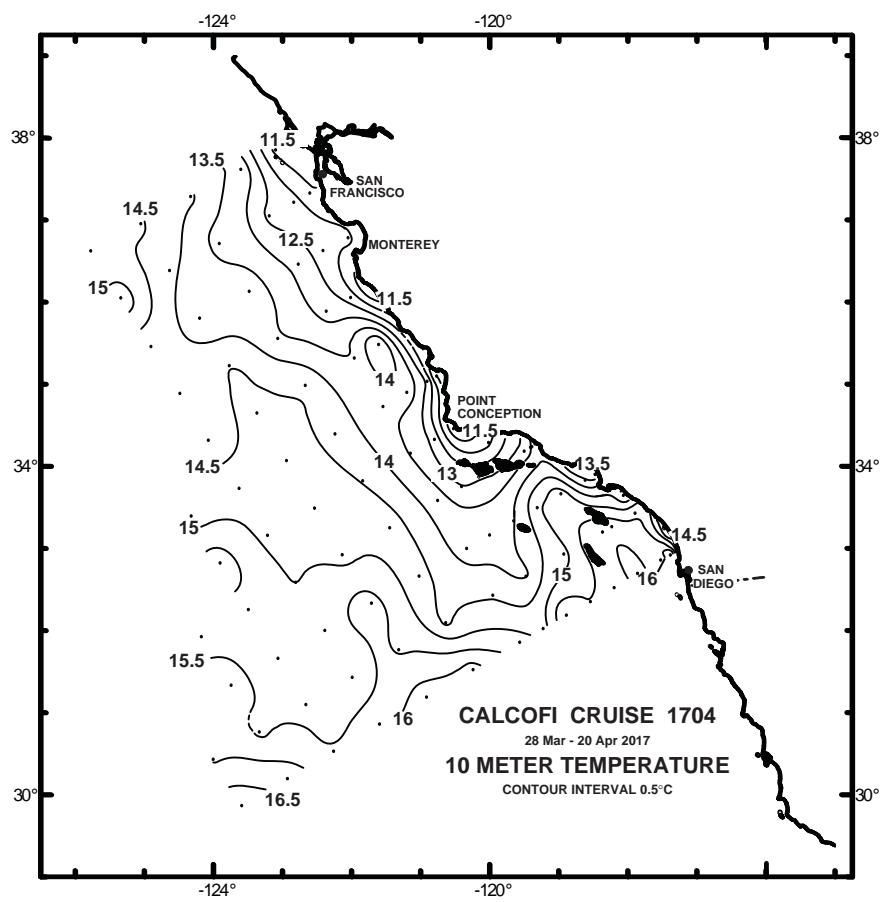


FIGURE 3C

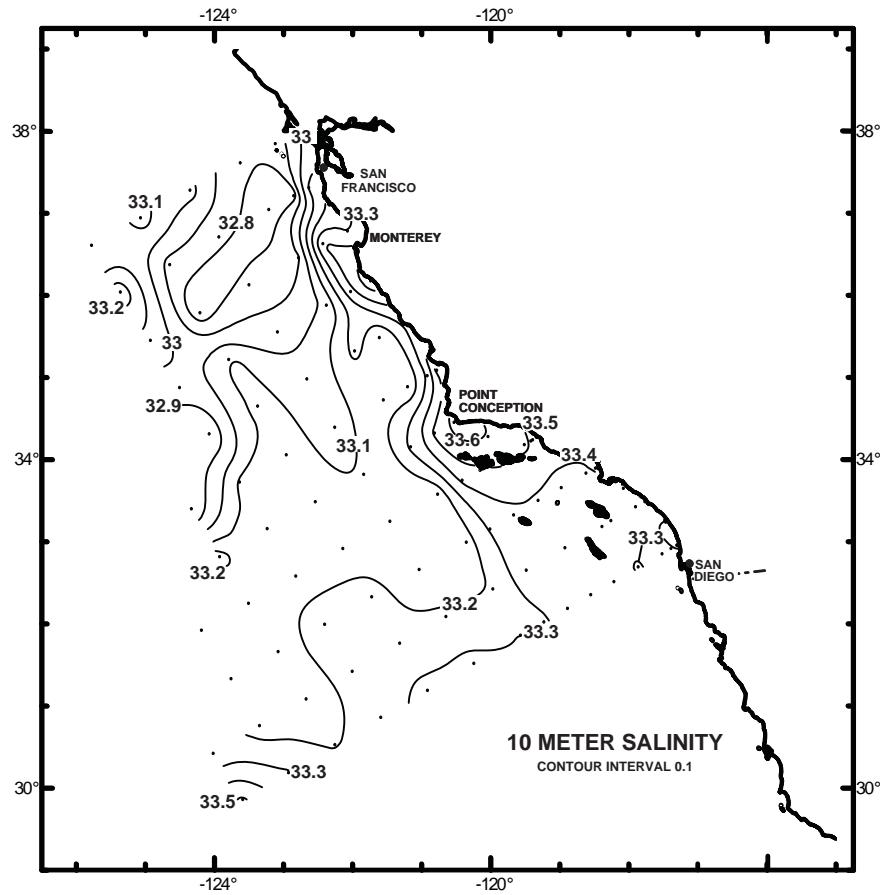


FIGURE 3D

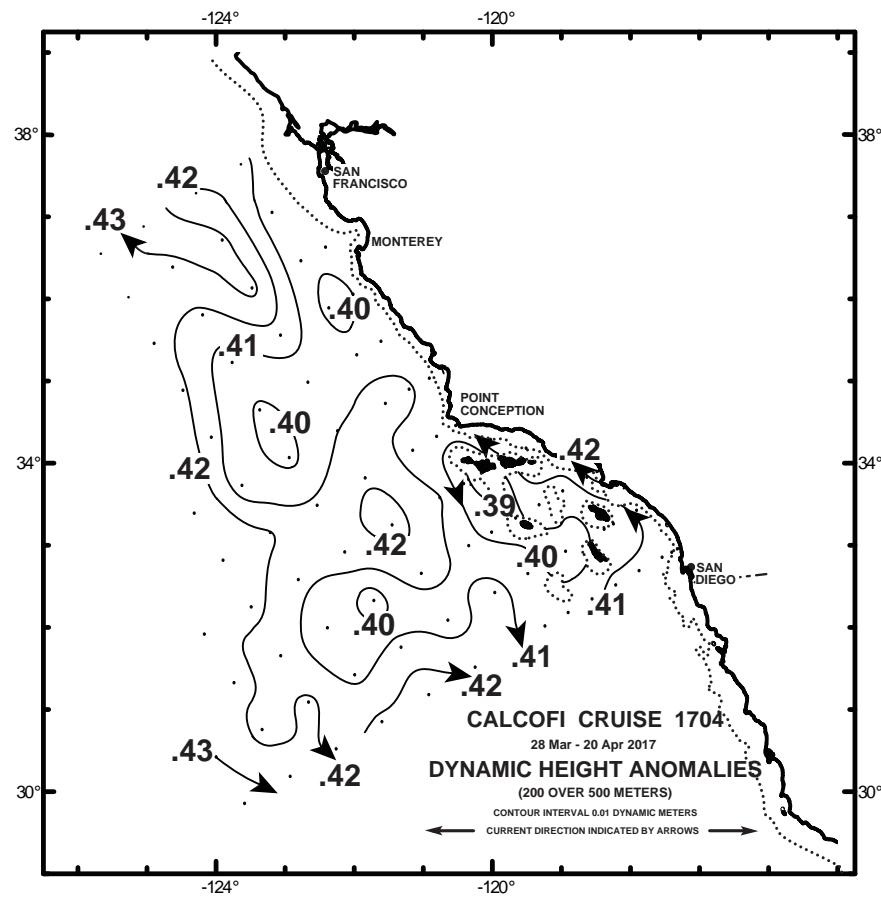


FIGURE 4A

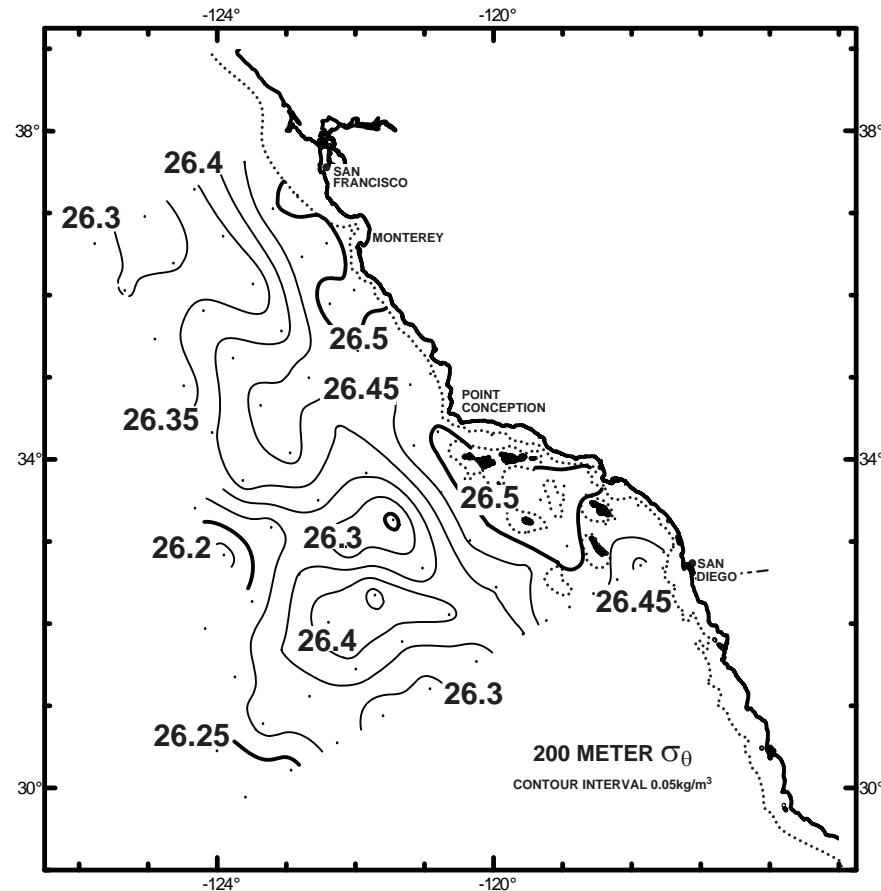


FIGURE 4B

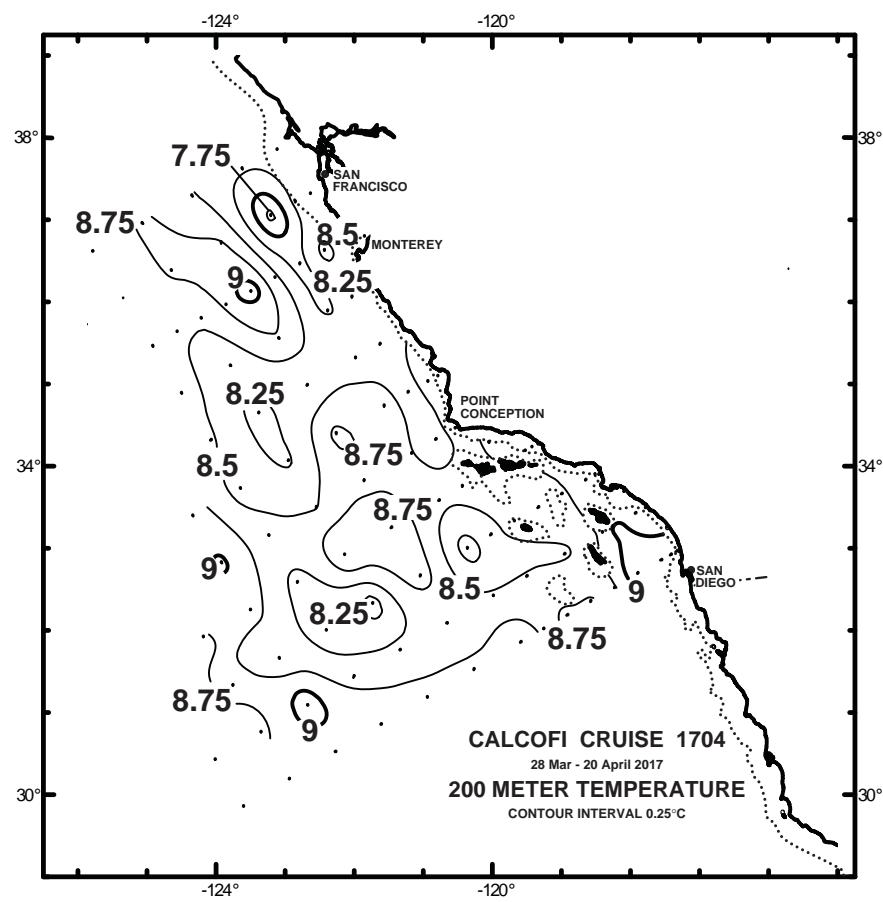


FIGURE 4C

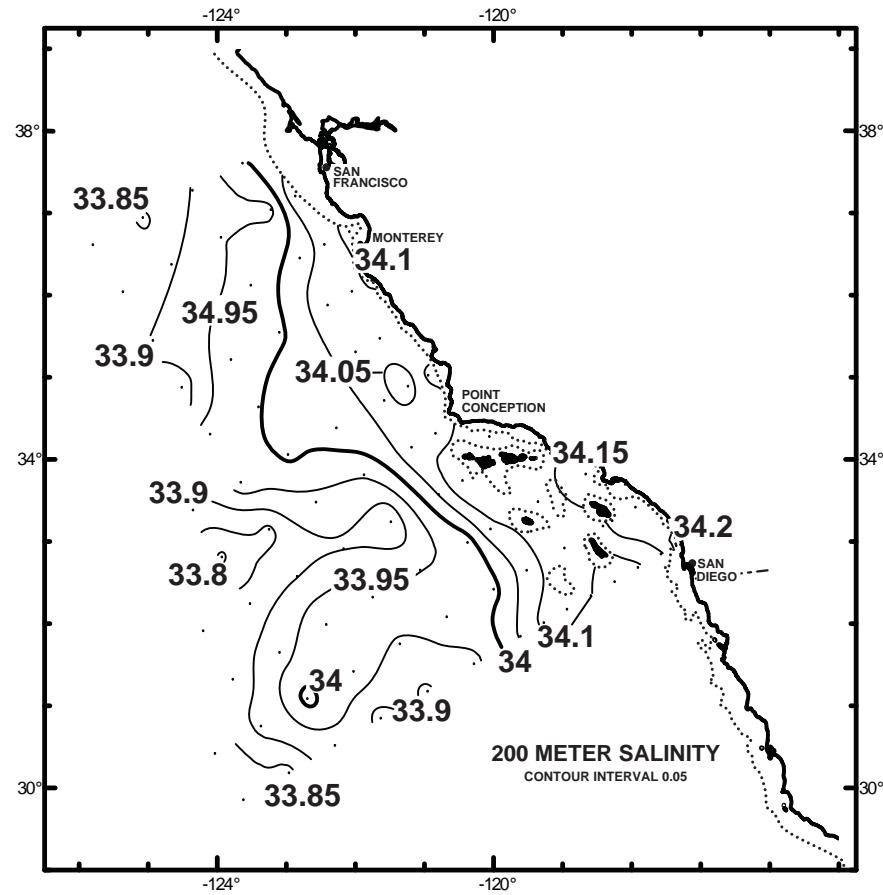


FIGURE 4D

CALCOFI CRUISE 1704

2 - 5 April 2017

POTENTIAL DENSITY (σ_0) ALONG CALCOFI LINE 90

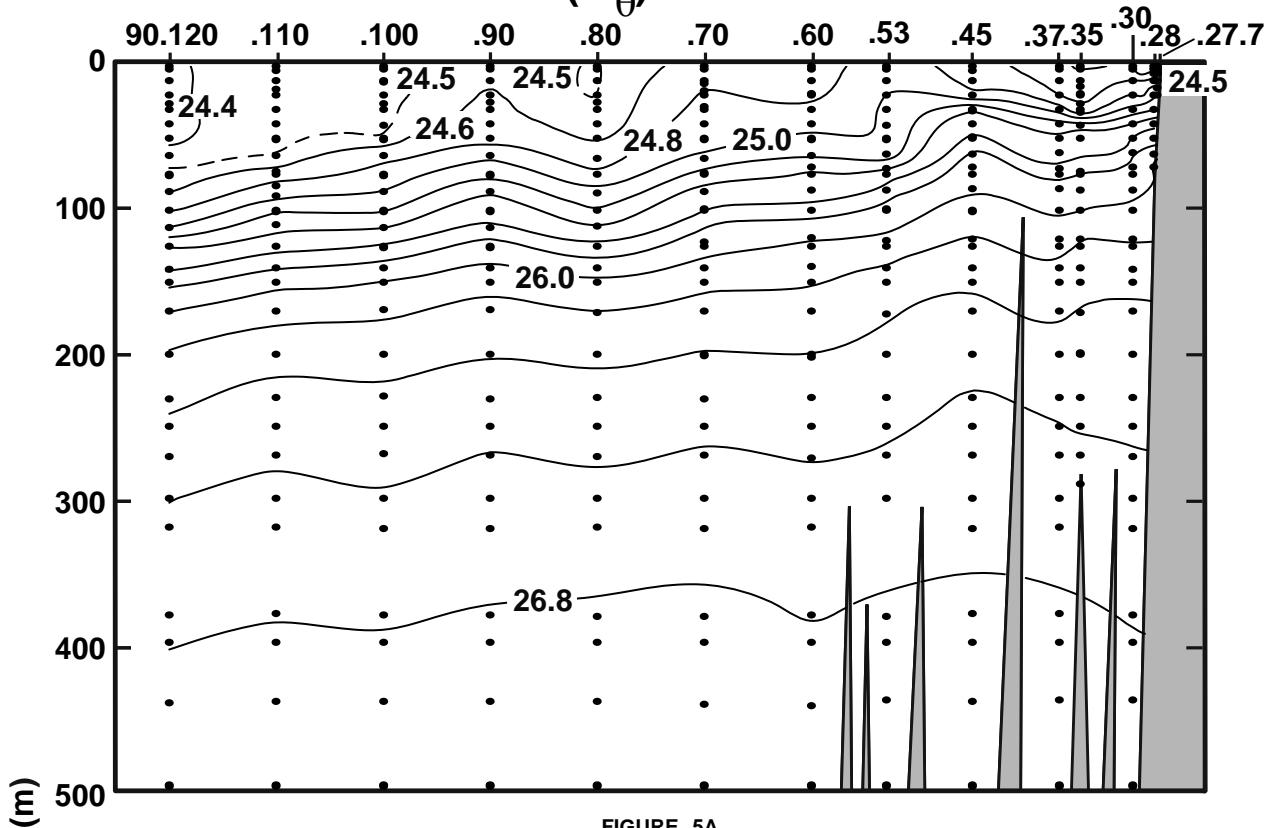


FIGURE 5A

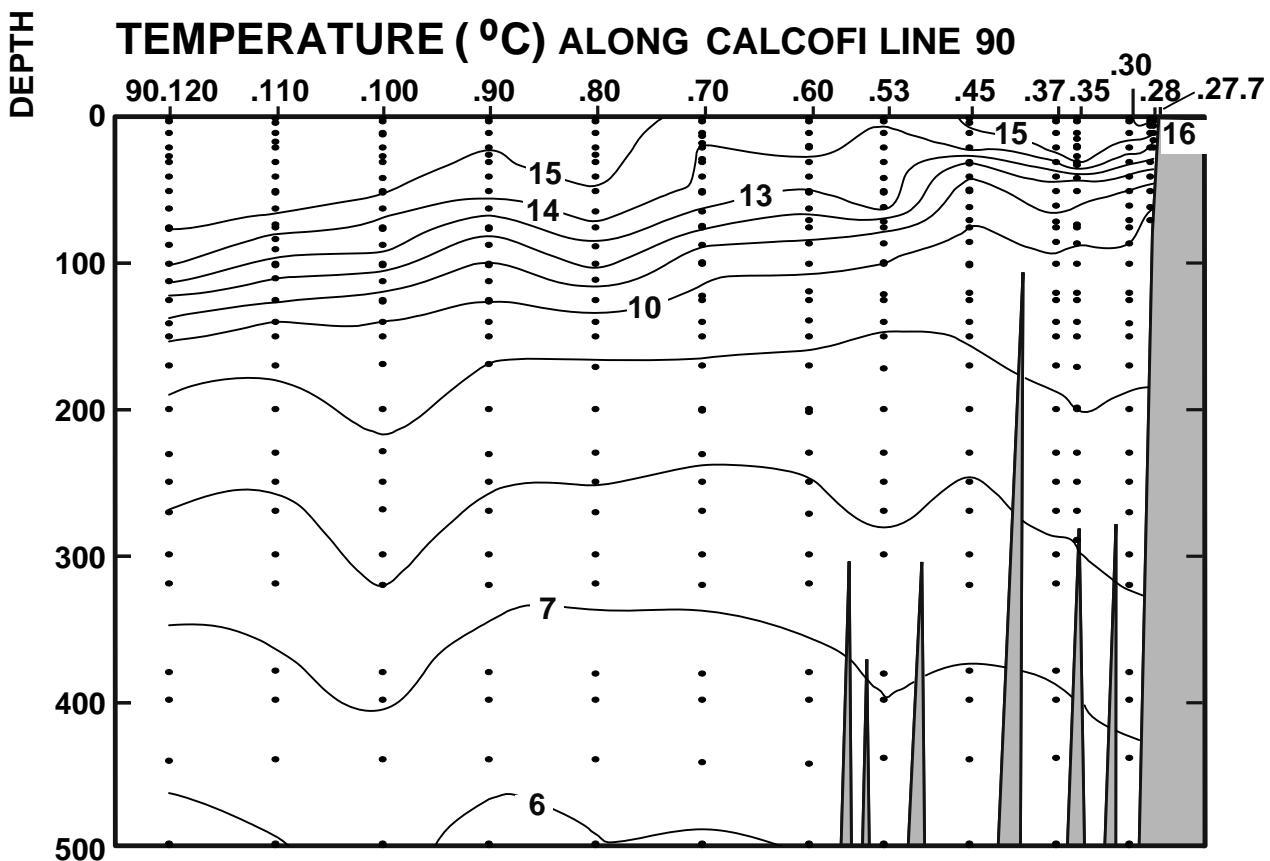
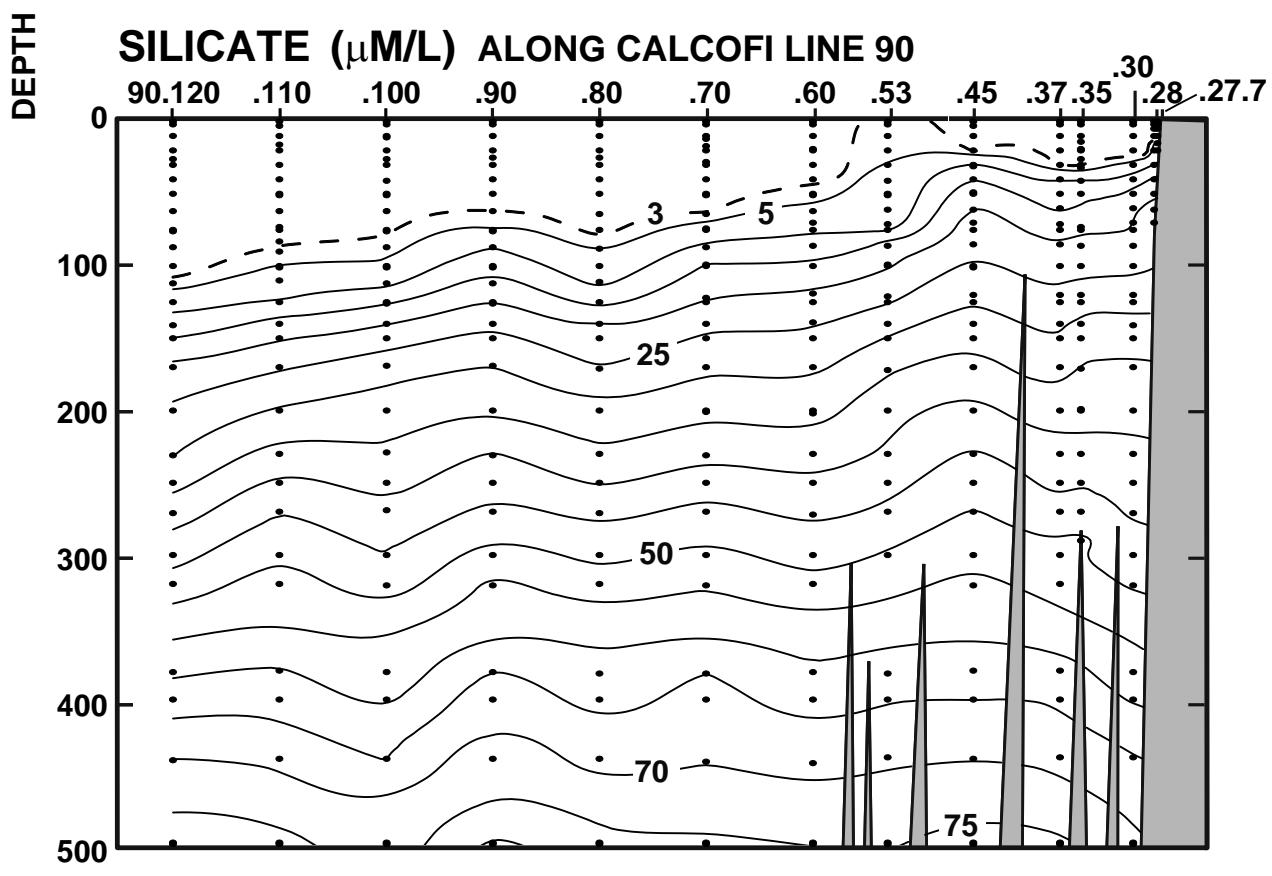
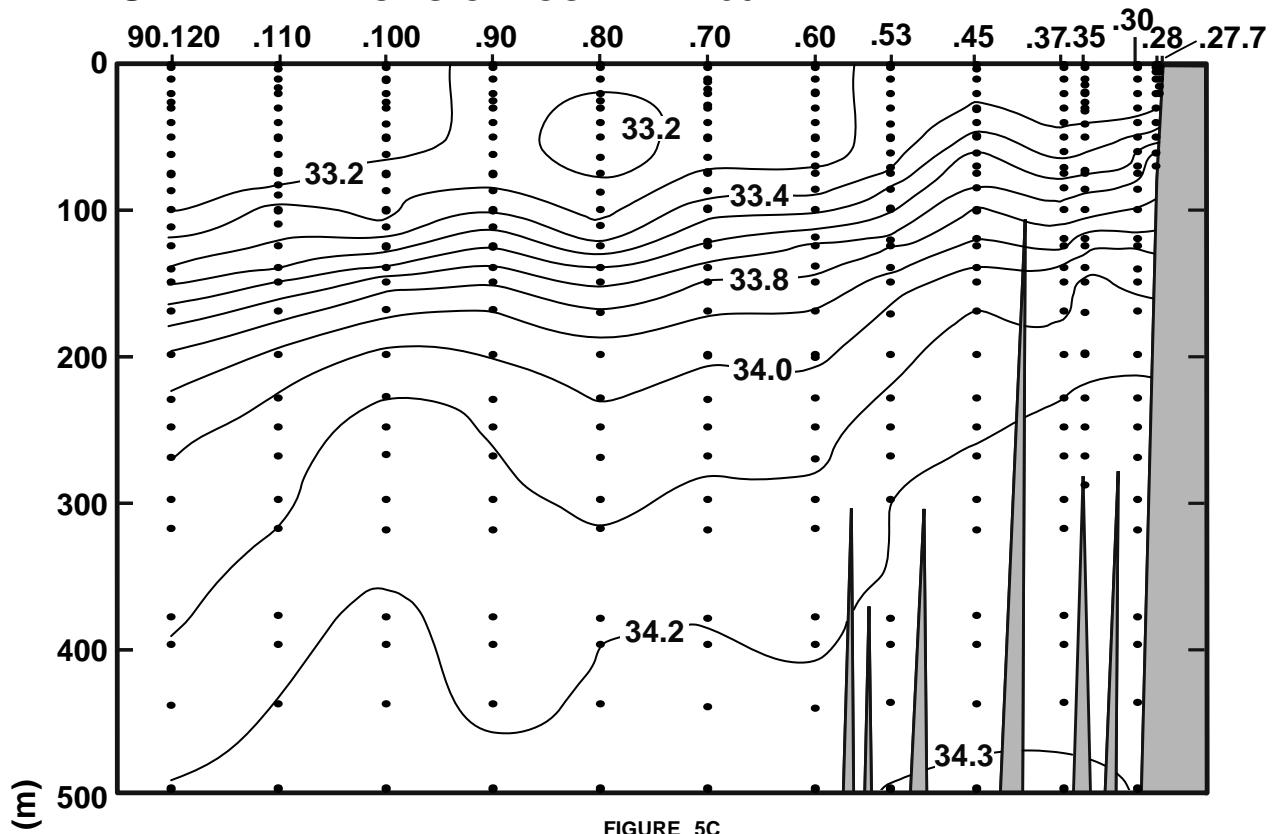


FIGURE 5B

CALCOFI CRUISE 1704

2 - 5 April 2017

SALINITY ALONG CALCOFI LINE 90



CALCOFI CRUISE 1704

2 - 5 April 2017

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

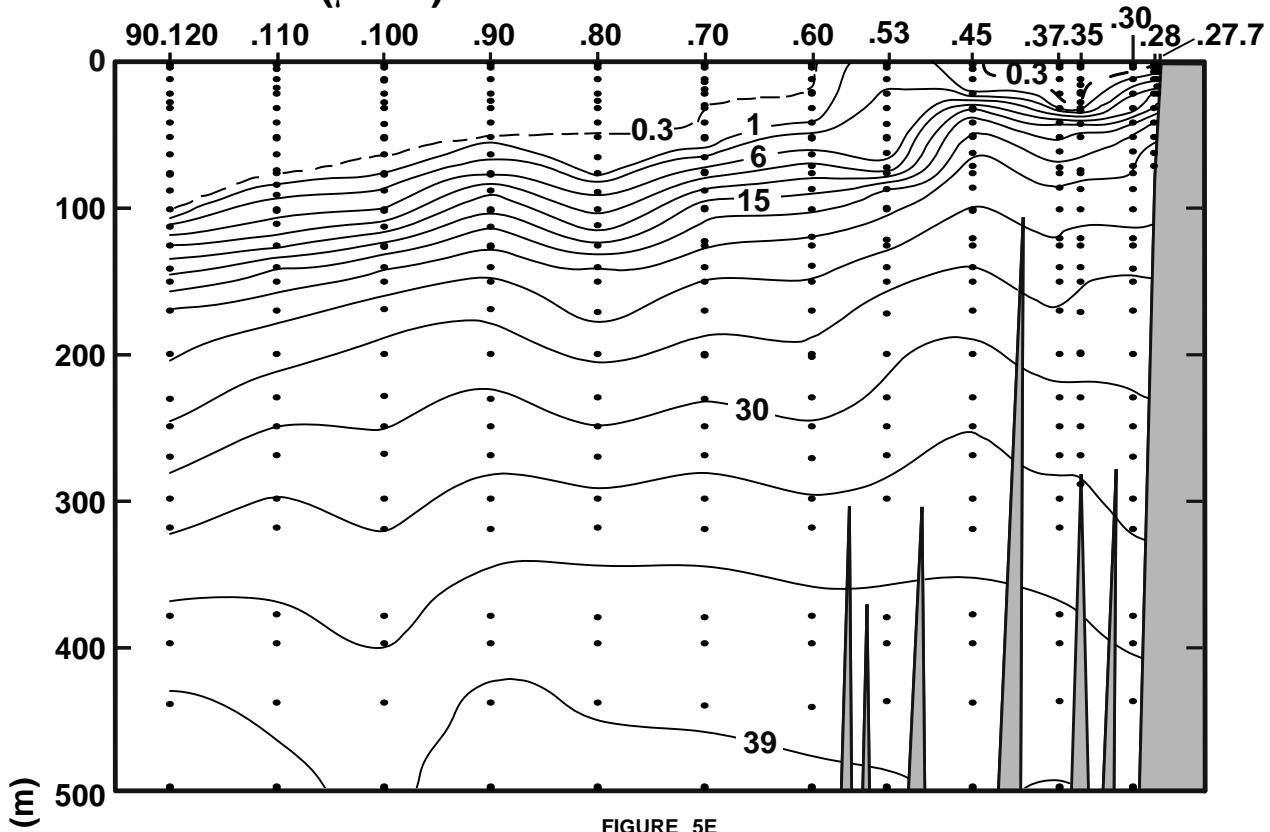


FIGURE 5E

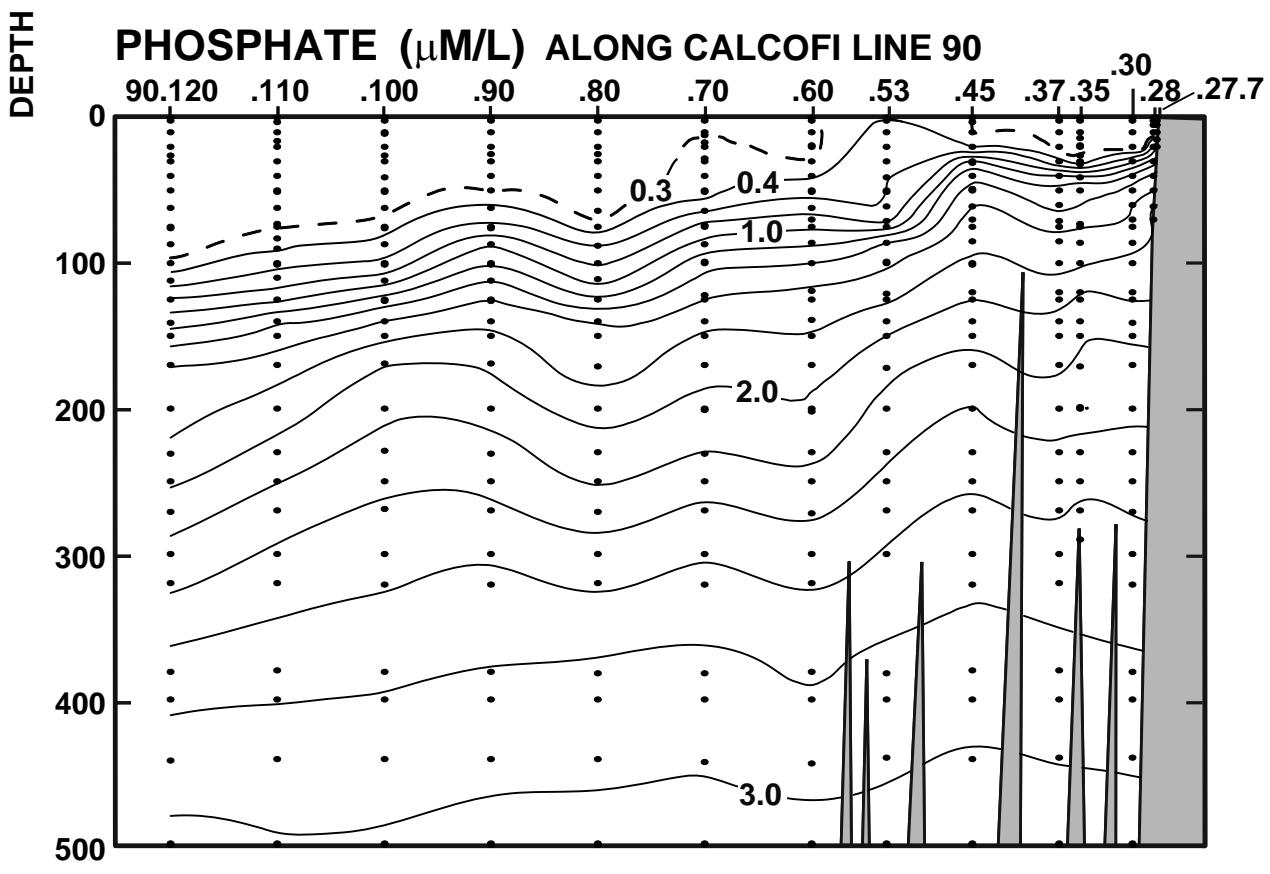


FIGURE 5F

CALCOFI CRUISE 1704

2 - 5 April 2017

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

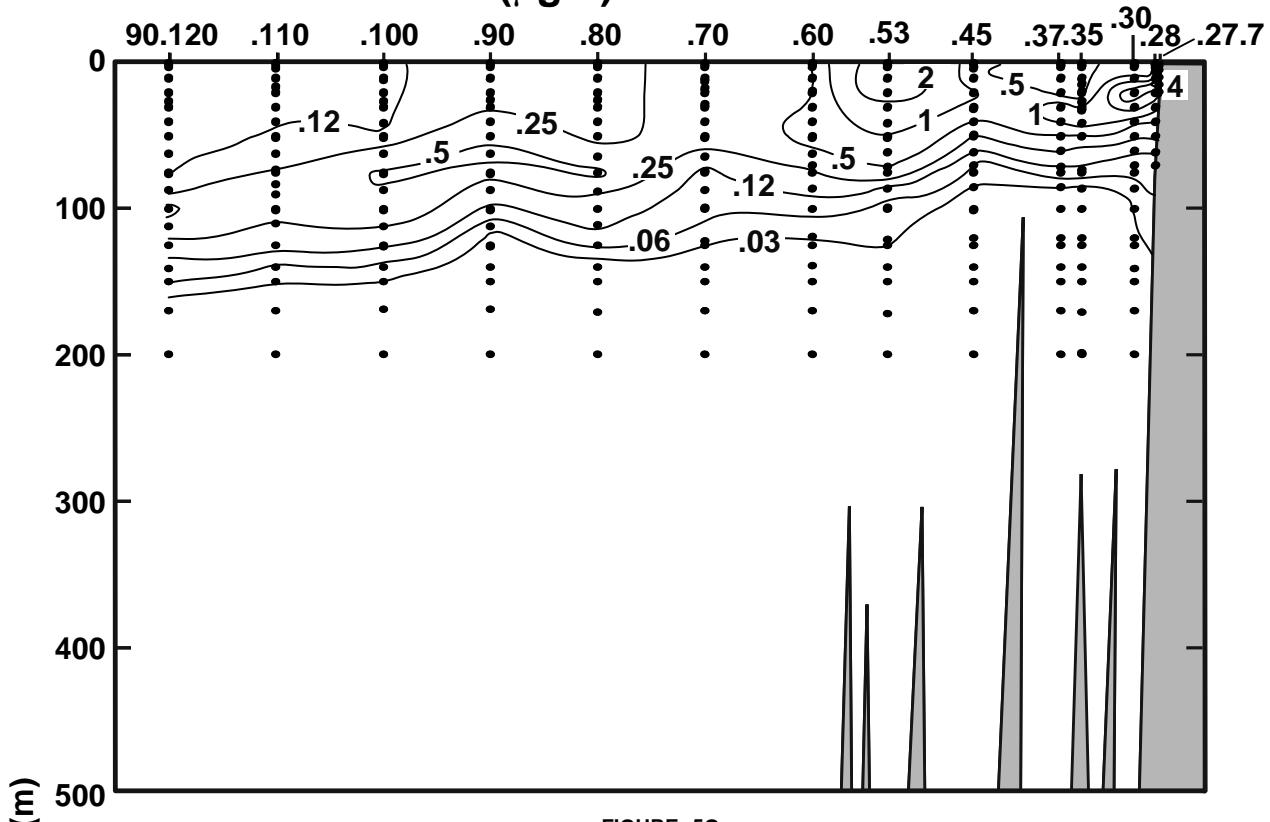


FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

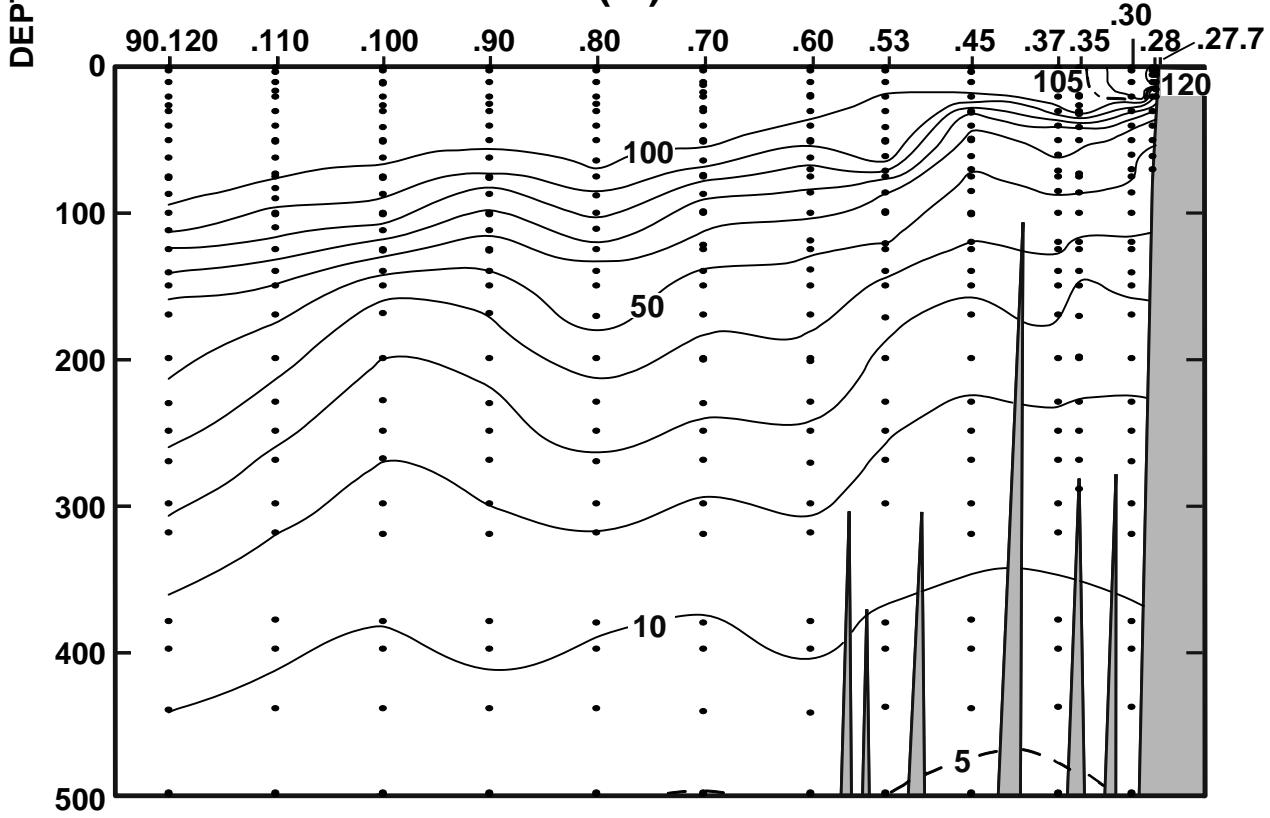


FIGURE 5H

CALCOFI CRUISE 1704

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OXYGEN (mL/L) ALONG CALCOFI LINE 90

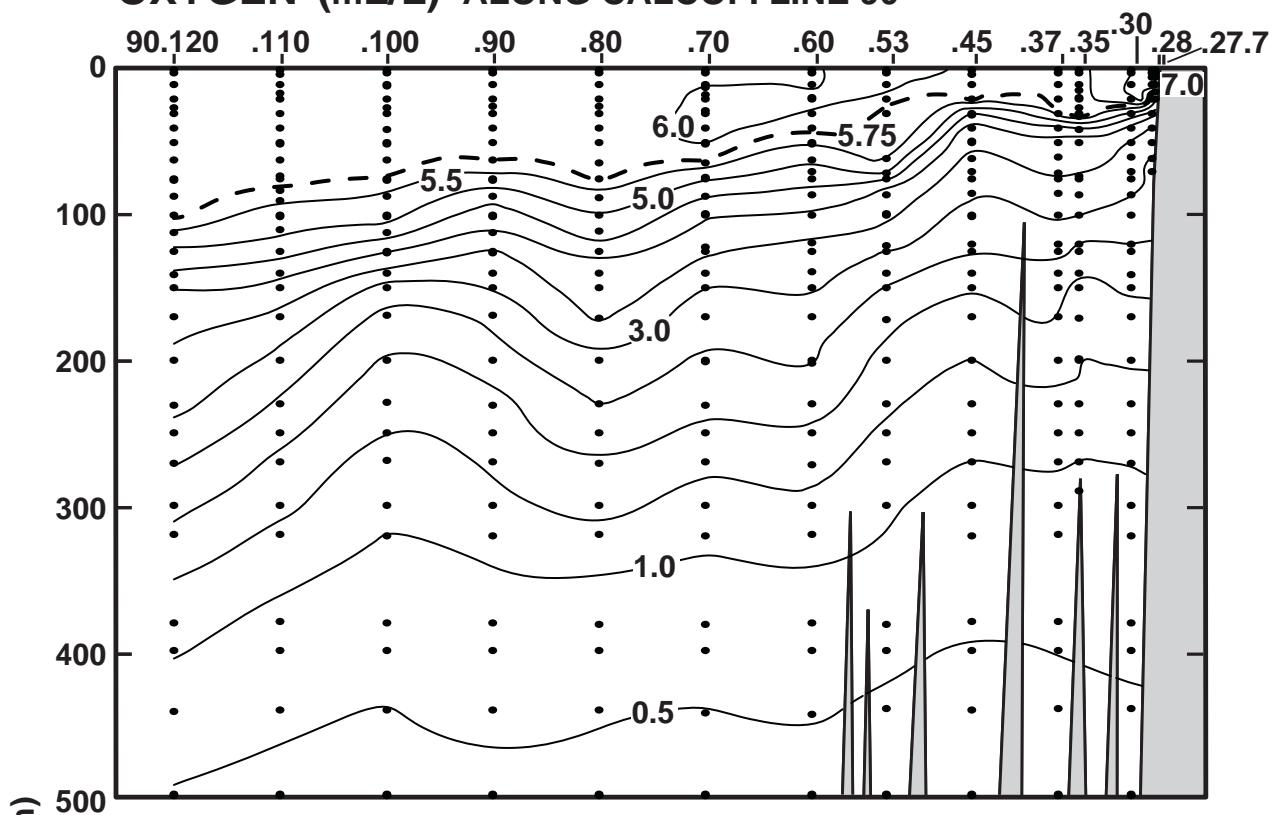


FIGURE 5I

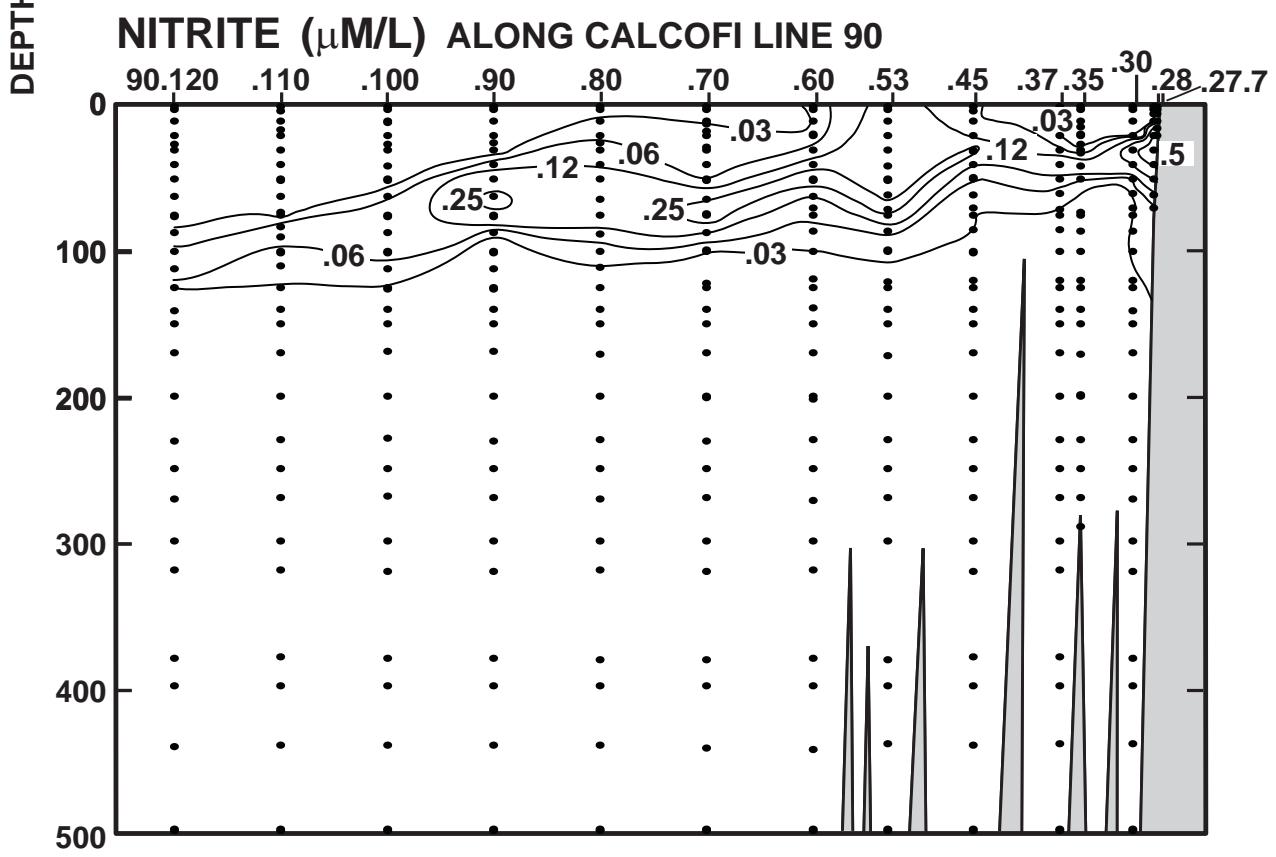


FIGURE 5J

PERSONNEL

CalCOFI Cruise 1704

SHIP'S COMMANDER

Paul Kunicki, NOAA Ship *Bell M. Shimada*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Hays, Amy (Chief Scientist)	Fishery Biologist, NMFS	1-2
Dovel, Shonna	Staff Research Associate, SIO	1
Baran, Melody	Marine Mammal Observer, MPL	1-2
Guazzo, Regina	Marine Mammal Observer, MPL	1-2
Kacev, Dovi	J.Craig Vetner Institute	2
Ostresh, Stephanie	Volunteer	1-2
Overcash, Bryan	Fishery Biologist, NMFS	1-2
Roadman, Megan	Staff Research Associate, SIO	1
Rodgers-Wolgast, Jennifer	Staff Research Associate, SIO	1
Rosenthal, Hailey	Volunteer	1-2
Scheer, Matthias	Marine Mammal Observer, MPL	1-2
Schuller, Daniel	Staff Research Associate, SIO	1
Thompson, Luke	J.Craig Vetner Institute	2
Webb, Sophie	Bird Observer, FAIER	1
Wilkinson, James	Information Systems Analyst, SIO	1
Wolgast, David	Staff Research Associate, SIO	1
Zeigler, Lisa	J.Craig Vetner Institute	2

Leg 1: San Diego to Monterrey, California, 28 March – 14 April, 2017

Leg 2: Monterrey to San Francisco, California, 14 – 21 April, 2017

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 60.0 53.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db	
0	13.63	13.63	28.365	D 21.140	663.6	0.000	7.59	332.6	124.6				8.43	0.83	0		
2	13.63	13.63	28.365	D 21.140	663.6	0.007	7.59	332.6	124.6				8.43	0.83	2	06	
10	11.35	11.35	32.836	D 25.029	292.3	0.045	6.38	D278.0	D102.6				25.52	1.36	10	05	
20	ISL	10.68	D 10.68	33.134	D 25.380	259.1	0.073	4.88	D212.5	D 77.4				7.15	0.91	20	
21	10.57	10.57	33.212	D 25.460	251.5	0.076	4.54	D197.9	D 72.0				5.32	0.87	21	04	
30	ISL	10.03	D 10.02	33.508	D 25.785	220.9	0.097	3.99	D173.8	D 62.6				3.74	0.71	30	
50	9.37	9.37	33.716	26.055	195.6	0.145	3.04	132.9	47.1				0.24	0.35	50	03	
70	8.98	8.97	33.837	D 26.213	181.0	0.177	2.78	121.3	42.6				0.17	0.39	71	02	
75	ISL	8.97	D 8.96	33.840	D 26.217	180.7	0.186	2.74	D119.4	D 42.1				0.18	0.57	76	
81		8.93	8.92	33.869	26.246	178.1	0.202	2.68	117.0	41.1				0.20	0.78	82	01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 60.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP		
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db		
0	13.40	13.40	32.838	D 24.640	329.0	0.000	6.33	276.6	106.3				0.68	0.06	0			
2	13.47	13.47	32.824	D 24.615	331.5	0.007	6.31	275.8	106.1				0.60	0.13	2	13		
10	13.40	13.40	32.838	D 24.641	329.3	0.030	6.33	276.6	106.3	2.0A	0.28A	0.0A	0.00A	0.68	0.06	10	12	
20	12.69	12.69	32.839	D 24.782	316.1	0.063	6.37	D277.6	D105.3				0.68	0.20	20	10		
30	ISL	12.59	D 12.58	32.844	D 24.806	314.1	0.094	6.31	D275.0	D104.2				0.82	0.25	30		
41	12.56	12.56	32.848	D 24.814	313.6	0.129	6.19	270.4	102.1	2.2	0.34	0.3	0.07	0.26	0.96	0.30	41	09
50	ISL	12.33	D 12.32	32.832	D 24.847	310.7	0.157	6.09	D265.3	D 99.9				0.71	0.25	50		
70	11.61	11.61	32.992	D 25.105	286.6	0.217	5.48	239.3	88.6				0.15	0.12	71	08		
75	ISL	11.39	D 11.38	33.054	D 25.194	278.2	0.232	5.30	D230.7	D 85.3				0.12	0.12	76		
100	10.04	10.02	33.526	25.799	221.1	0.296	3.67	160.2	57.6				0.02	0.10	101	07		
121	9.37	9.35	33.716	D 26.059	196.8	0.339	3.06	133.8	47.4				0.01	0.07	122	06		
125	ISL	9.31	D 9.29	33.737	D 26.085	194.4	0.347	3.01	D130.8	D 46.4				0.01	0.07	126		
141	8.96	8.95	33.839	D 26.220	181.9	0.377	2.81	122.6	43.1	28.4	1.90	25.4	0.00	0.00	0.01	0.07	142	05
150	ISL	8.69	D 8.67	33.858	D 26.278	176.4	0.393	2.96	D128.8	D 45.2				0.01	0.07	151		
200	ISL	8.28	D 8.26	33.996	D 26.451	160.9	0.478	2.40	D104.4	D 36.3				0.03	0.08	202		
201		8.27	8.24	33.997	D 26.453	160.7	0.480	2.42	105.6	36.6				0.03	0.08	203	04	
250	ISL	7.93	D 7.90	34.065	D 26.558	151.5	0.557	1.77	D 77.0	D 26.6						252		
271		7.90	7.87	34.098	D 26.589	149.1	0.589	1.51	65.8	22.6						273	03	
300	ISL	7.60	D 7.57	34.105	D 26.638	144.8	0.632	1.42	D 61.8	D 21.2						303		
380		7.06	7.02	34.173	D 26.770	133.3	0.744	0.88	38.3	12.9						383	02	
400	ISL	6.75	D 6.71	34.158	D 26.799	130.6	0.771	0.83	D 36.1	D 12.1						403		
500	ISL	5.90	D 5.86	34.176	D 26.925	119.3	0.897	0.58	D 25.3	D 8.3						504		
516		5.81	5.77	34.188	26.946	117.5	0.912	0.53	23.1	7.6	75.6	3.01	39.7	0.00	0.00	521	01	

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 60.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db	
0	14.32	14.32	33.002	D 24.577	335.1	0.000	6.09	265.9	104.3				0.35	0.01	0		
2	14.32	14.32	33.002	D 24.577	335.1	0.003	6.09	265.9	104.3				0.35	0.01	2	12	
9	14.30	14.30	33.003	D 24.582	334.8	0.030	6.07	265.2	103.9				0.27	0.04	9	13	
20	13.78	13.78	33.066	D 24.739	320.2	0.063	6.09	265.9	103.2				0.34	0.07	20	10	
30	ISL	13.58	D 13.58	33.036	D 24.758	318.8	0.095	6.10	265.8	102.9				0.55	0.19	30	
50		13.28	13.27	32.998	D 24.790	316.3	0.159	6.13	267.6	102.7				0.97	0.43	50	09
70	12.20	12.19	33.102	D 25.082	288.9	0.220	5.87	256.3	96.2				0.31	0.33	71	08	
75	ISL	11.97	D 11.96	33.104	D 25.127	284.7	0.235	5.81	D253.3	D 94.8				0.28	0.31	76	
100	10.85	10.83	33.339	D 25.514	248.4	0.303	4.94	215.8	78.8				0.13	0.21	101	07	
120	10.14	10.13	33.464	D 25.734	227.8	0.350	4.42	192.9	69.4				0.06	0.09	121	06	
125	ISL	9.89	D 9.87	33.513	D 25.815	220.2	0.361	4.16	D181.0	D 65.0				0.05	0.09	126	
140	9.28	9.26	33.672	D 26.039	199.1	0.393	3.97	173.1	61.2				0.02	0.08	141	05	
150	ISL	9.15	D 9.13	33.714	D 26.093	194.1	0.413	3.73	D162.5	D 57.5				0.02	0.08	151	
200	8.51	8.49	33.898	D 26.339	171.6	0.505	2.95	128.9	44.9				0.01	0.11	202	04	
250	ISL	7.53	D 7.50	33.959	D 26.532	153.8	0.587	2.78	D121.0	D 41.4						252	
270		7.33	7.30	33.956	D 26.559	151.5	0.618	2.76	120.5	40.8						272	03
300	ISL	6.94	D 6.91	33.979	D 26.631	144.9	0.663	2.38	D103.7	D 35.0						303	
380		6.15	6.12	34.043	D 26.786	130.8	0.774	1.37	59.9	19.8						383	02
400	ISL	6.23	D 6.20	34.088	D 26.812	128.8	0.800	1.06	D 46.1	D 15.3						403	
500	ISL	5.95	D 5.91	34.231	D 26.962	115.9	0.924	0.42	D 18.4	D 6.1						504	
515		5.89	5.85	34.256	26.989	113.5	0.936	0.41	17.9	5.9							

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 60.0 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY										
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
36 56.7 N	125 2.8 W	19/04/2017	1616	UTC	4238 m	190	14 kn	260	04	08	0	1022.3	mb	14.8	C 13.8	C	0/8	0.12	0.02	0	
0	14.58	14.58	33.153	24.638	329.2	0.000	5.89	257.2	101.5									0.12	0.02	0	
2	14.58	14.58	33.153	24.638	329.3	0.007	5.89	257.2	101.5									0.12	0.02	2 12	
10	14.57	14.57	33.154	D 24.643	329.1	0.030	5.89	257.2	101.5	2.0A	0.23A	0.0A	0.00A	0.00A	0.11	0.02	10	11			
20	ISL	14.39 D	14.39	33.162	D 24.687	325.2	0.063	5.89	D256.7	D101.1								0.11	0.02	20	
25	14.39	14.38	33.163	D 24.690	325.1	0.079	5.94	259.4	101.9								0.11	0.03	25	10	
30	ISL	14.39 D	14.39	33.171	D 24.694	324.8	0.096	5.88	D256.4	D101.0							0.12	0.03	30		
50	ISL	14.38 D	14.38	33.186	D 24.709	324.1	0.161	5.89	D256.6	D101.1							0.16	0.05	50		
63	14.38	14.37	33.188	D 24.712	324.2	0.204	5.90	257.5	101.2								0.19	0.05	64	09	
75	ISL	14.35 D	14.34	33.187	D 24.719	324.0	0.243	5.88	D256.2	D100.8							0.46	0.11	76		
85	13.78	13.77	33.146	D 24.805	315.9	0.275	5.95	259.8	100.8	2.0	0.26	0.0	0.00	0.00	0.69	0.16	86	08			
100	12.29	12.28	33.252	25.182	280.2	0.321	5.37	234.6	88.3							0.33	0.27	101	07		
125	ISL	11.01 D	11.00	33.394	D 25.528	247.7	0.387	4.22	D183.9	D 67.6							0.15	0.15	126		
126	10.99	10.98	33.399	D 25.536	247.0	0.389	4.25	185.6	68.0							0.14	0.14	127	06		
141	10.09	10.07	33.526	D 25.793	222.7	0.425	3.93	171.7	61.7	17.2	1.39	17.9	0.00	0.00	0.03	0.08	142	05			
150	ISL	9.68 D	9.67	33.599	D 25.917	211.0	0.444	3.62	D157.5	D 56.3							0.02	0.07	151		
200	ISL	8.78 D	8.75	33.837	D 26.250	180.2	0.543	3.61	D157.1	D 55.2							0.00	0.03	202		
202	8.78	8.76	33.846	D 26.257	179.6	0.546	3.60	157.2	55.0							0.00	0.02	204	04		
250	ISL	8.27 D	8.25	33.960	D 26.424	164.4	0.630	3.10	D134.9	D 46.9									252		
272	8.02	7.99	33.996	D 26.491	158.4	0.665	2.63	114.8	39.5										274	03	
300	ISL	7.53 D	7.50	34.033	D 26.591	149.1	0.709	2.19	D 95.1	D 32.5										303	
381	6.59	6.56	34.046	D 26.732	136.4	0.826	1.54	67.2	22.4										384	02	
400	ISL	6.36 D	6.32	34.053	D 26.768	133.1	0.851	1.34	D 58.4	D 19.4										403	
500	ISL	5.54 D	5.49	34.119	D 26.924	118.9	0.979	0.75	D 32.4	D 10.6										504	
515	5.44	5.40	34.125	D 26.940	117.4	0.997	0.70	30.4	9.9	78.6	2.94	41.3	0.03	0.00					520	01	

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 60.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD				
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY										
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
36 36.9 N	125 46.2 W	19/04/2017	1059	UTC	4550 m	180	11 kn													100	
0	14.02	14.02	32.897	24.559	336.8	0.000	6.07	265.5	103.3								0.24	0.02	0		
3	14.02	14.02	32.897	24.559	336.9	0.010	6.07	265.5	103.3								0.24	0.02	3 12		
10	14.01	14.01	32.898	D 24.563	336.7	0.029	6.08	265.6	103.3								0.29	0.02	10 11		
20	13.98	13.98	33.037	D 24.676	326.2	0.062	6.02	263.2	102.4								0.21	0.04	20 10		
30	ISL	13.84 D	13.84	33.010	D 24.684	325.7	0.095	6.01	D262.1	D102.0							0.28	0.06	30		
50	13.58	13.57	33.054	D 24.774	317.8	0.160	6.01	262.8	101.4								0.43	0.11	50 09		
71	12.89	12.88	33.046	D 24.906	305.8	0.226	6.10	266.7	101.5								0.37	0.18	72 08		
75	ISL	12.73 D	12.72	33.068	D 24.955	301.2	0.238	5.95	D259.1	D 98.6							0.35	0.18	76		
100	ISL	11.85 D	11.85	33.201	D 25.226	275.9	0.311	5.26	D229.0	D 85.6							0.24	0.22	101		
101	11.88	11.86	33.193	25.214	277.1	0.316	5.37	234.6	87.4							0.24	0.22	102 07			
121	10.41	10.40	33.348	D 25.597	240.9	0.366	4.73	206.8	74.8							0.13	0.07	122 06			
125	ISL	10.10 D	10.08	33.429	D 25.714	229.8	0.375	4.36	D189.8	D 68.4							0.11	0.06	126		
140	9.56	9.54	33.571	D 25.915	210.9	0.409	4.08	178.3	63.4							0.03	0.05	141 05			
150	ISL	9.33 D	9.31	33.636	D 26.004	202.6	0.430	3.97	D172.7	D 61.3							0.03	0.05	151		
200	ISL	8.56 D	8.54	33.887	D 26.323	173.2	0.524	3.06	D135.2	D 46.6							0.00	0.05	202		
201	8.53	8.51	33.885	D 26.325	173.0	0.526	3.12	136.3	47.4							0.00	0.05	203 04			
250	ISL	7.79 D	7.76	33.966	D 26.501	156.9	0.607	2.77	D117.7	D 40.5									252		
270	7.52	7.49	33.993	D 26.560	151.5	0.639	2.53	110.3	37.5										272 03		
300	ISL	7.17 D	7.14	34.006	D 26.621	146.1	0.683	2.18	D 94.9	D 32.2										302	
380	6.03	6.00	34.007	D 26.772	132.0	0.796	1.51	66.1	21.7										383	02	
400	ISL	5.86 D	5.83	34.019	D 26.803	129.2	0.822	1.34	D 58.1	D 19.1										403	
500	ISL	5.22 D	5.18	34.088	D 26.936	117.3	0.947	0.78	D 34.0	D 11.0										504	
516	5.12	5.08	34.108	D 26.964	114.8	0.962	0.66	28.9	9.3										521	01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 63.3 52.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY								
m	DEG C	DEG C		</th															

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 63.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	095	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	db	
37	12.5 N	122 50.2 W	18/04/2017	1005	UTC	301 m	150 09 kn	6.65	290.7	109.3					3.15	0.57	0
0	12.39	12.39	32.782	24.793	314.4	0.000		6.65	290.7	109.3					3.15	0.57	2 10
2	12.39	12.39	32.782	24.793	314.5	0.006		6.65	290.7	109.3					3.33	0.17	10 09
10	12.23	12.23	32.791	D 24.831	311.2	0.028		6.43	281.2	105.4					1.14	0.48	20 08
20	11.72	11.72	32.902	D 25.013	294.1	0.059		5.89	257.3	95.5					0.99	0.42	30
30	ISL	10.87	D 10.87	33.336	D 25.505	247.5	0.086	4.65	D 202.6	D 74.3					0.69	0.32	50 07
50		10.43	10.43	33.497	D 25.707	228.7	0.134	4.45	194.6	70.5					0.37	0.33	71 06
70		9.85	9.84	33.602	D 25.888	211.9	0.179	4.02	175.4	62.8					0.32	0.31	76
75	ISL	9.77	D 9.76	33.617	D 25.913	209.6	0.189	3.80	D 165.5	D 59.3					0.07	0.21	101
100	ISL	9.12	D 9.11	33.827	D 26.184	184.4	0.239	2.74	D 119.0	D 42.1					0.06	0.21	102 05
101		9.08	9.07	33.818	26.184	184.4	0.242	2.79	121.8	42.9					0.05	0.14	121 04
120		8.98	8.97	33.949	D 26.303	173.5	0.275	2.26	98.5	34.7					0.05	0.13	126
125	ISL	8.97	D 8.95	33.954	D 26.309	173.0	0.283	2.22	D 96.7	D 34.1					0.04	0.12	141 03
140		8.74	8.73	33.976	D 26.361	168.4	0.309	2.30	100.4	35.2					0.04	0.12	151
150	ISL	8.67	D 8.65	34.002	D 26.393	165.5	0.326	2.15	D 93.4	D 32.8					0.04	0.14	202 02
200		8.31	8.29	34.096	D 26.524	154.0	0.407	1.54	67.3	23.3					0.04	0.14	252
250	ISL	7.76	D 7.74	34.142	D 26.642	143.6	0.482	1.19	D 51.9	D 17.8					299	01	
297		7.52	7.49	34.151	26.685	140.2	0.548	1.08	47.0	16.0							

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 63.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	096	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	db	
37	2.5 N	123 11.5 W	18/04/2017	1334	UTC	2535 m	170 04 kn	6.42	280.5	105.5					1.68	0.56	0
0	12.43	12.43	32.749	24.761	317.5	0.000		6.42	280.5	105.5					1.68	0.56	2 12
2	12.43	12.42	32.749	24.761	317.5	0.006		6.42	280.5	105.5					1.88	0.51	10 11
10	12.35	12.35	32.752	D 24.778	316.2	0.029		6.37	278.3	104.5					1.44	0.46	20 10
20	12.32	12.31	32.762	D 24.793	315.0	0.061		6.33	276.4	103.8					1.13	0.45	30
30	ISL	12.23	D 12.23	32.811	D 24.848	310.0	0.092	6.30	D 274.7	D 103.2					0.49	0.42	50
50	ISL	11.01	D 11.00	33.140	D 25.329	264.7	0.150	4.93	D 214.6	D 78.8					0.46	0.42	51 09
51		10.98	10.98	33.145	D 25.337	264.0	0.153	5.18	226.5	82.8					0.13	0.15	71 08
70		10.47	10.46	33.432	D 25.651	234.6	0.200	4.24	185.2	67.1					0.12	0.14	76
75	ISL	10.34	D 10.33	33.487	D 25.716	228.5	0.212	3.79	D 164.9	D 59.8					0.08	0.11	101 07
100		9.66	9.65	33.667	25.972	204.6	0.268	3.08	134.6	48.0					0.06	0.14	121 06
120		9.12	9.11	33.799	D 26.163	186.8	0.306	2.89	126.3	44.5					0.06	0.12	126
125	ISL	9.10	D 9.09	33.804	D 26.170	186.3	0.316	2.94	D 127.7	D 45.2					0.05	0.08	141 05
140		8.82	8.81	33.896	D 26.286	175.5	0.343	2.65	115.5	40.5					0.05	0.09	151
150	ISL	8.65	D 8.64	33.945	D 26.351	169.5	0.360	2.45	D 107.0	D 37.5					0.04	0.10	202 04
200		7.64	7.62	33.935	D 26.497	156.3	0.443	3.06	133.6	45.6					272	03	
250	ISL	7.73	D 7.71	34.076	D 26.594	148.0	0.519	1.65	D 71.8	D 24.7					303		
270		7.49	7.47	34.065	D 26.621	145.7	0.549	1.69	D 73.3	D 25.0					383	02	
300	ISL	7.24	D 7.21	34.127	D 26.705	138.1	0.592	1.17	D 50.9	D 17.3					403		
380		6.75	6.71	34.195	D 26.828	127.5	0.699	0.69	30.1	10.1					504		
400	ISL	6.64	D 6.60	34.206	D 26.852	125.5	0.725	0.62	D 27.1	D 9.1					520	01	
500	ISL	5.95	D 5.90	34.258	D 26.984	113.8	0.845	0.37	D 16.2	D 5.3							
515		5.87	5.83	34.255	26.991	113.3	0.858	0.37	16.2	5.3							

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 63.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	097	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	db	
36	42.3 N	123 54.8 W	18/04/2017	1851	UTC	3828 m	270 02 kn	260	04 08	1	1020.3	mb	14.5	C 12.9	C	1/8 SC 097	
0	13.54	13.54	32.800	24.581	334.7	0.000		6.23	272.7	104.9					0.50	0.17	0
2	13.54	13.54	32.800	24.581	334.7	0.007		6.23	272.4	104.9					0.50	0.17	2 12
10	13.25	13.25	32.804	D 24.644	329.0	0.030		6.23	272.1	104.2	1.5A	0.25A	0.0A	0.00A	0.53	0.16	10 11
20	ISL	13.21	D 13.21	32.805	D 24.653	328.4	0.063	6.20	D 270.4	D 103.7					0.77	0.23	20
30	ISL	13.14	D 13.13	32.809	D 24.672	326.9	0.096	6.18	D 269.4	D 102.8	1.5	0.25	0.0	0.00	1.01	0.29	30
35		13.01	13.01	32.821	D 24.705	323.9	0.113	6.17	269.9	102.8	1.5	0.25	0.0	0.00	1.13	0.33	35 10
50	ISL	12.50	D 12.55	32.909	D 24.862	309.3	0.161	5.74	D 250.3	D 94.8					0.29	0.24	50
51		12.57	12.56	32.908	D 24.859	309.6	0.164	5.79	253.2	95.6					0.23	0.24	51 09
70		11.89	11.88	33.098	D 25.136	283.7	0.220	5.47	238.9	89.1					0.14	0.16	71 08
75	ISL	11.57	D 11.56	33.120	D 25.214	276.4	0.235	5.53	D 240.9	D 89.5					0.13	0.17	76
100		10.68	10.67	33.358	25.558	244.2	0.301	4.64	202.5	73.7					0.10	0.21	101 07
120		9.84	9.82	33.520	D 25.829	218.7	0.347	4.13	180.2	64.4					0.04	0	

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 63.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
36 22.5 N	124 37.8 W	19/04/2017	0000	UTC	4100 m	260	08 kn	220 04 09	1	1020.5 mb	16.8	C 15.2 C	1/8	CI	098			
0	14.83	14.83	32.831	24.337	357.9	0.000	6.00	262.2	103.7						0.15	0.05	0	
2	14.83	14.83	32.831	24.338	357.9	0.007	6.00	262.2	103.7						0.15	0.05	2	12
10	14.11	14.11	32.863	24.515	341.3	0.032	6.03	263.7	102.8						0.15	0.04	10	11
20	14.03	14.03	32.898	24.558	337.5	0.066	6.04	264.1	102.8						0.20	0.08	20	10
30	14.05	14.05	33.001	24.634	330.6	0.100	6.05	263.8	103.1						0.30	0.13	30	
ISL																		
50	13.38	13.38	32.989	24.763	318.9	0.165	6.07	265.2	101.9						0.49	0.24	50	09
70	12.33	12.32	33.058	25.022	294.6	0.227	5.76	251.9	94.7						0.33	0.22	71	08
75	12.33	12.32	33.120	25.072	290.0	0.242	5.51	240.1	D 90.6						0.30	0.21	76	
100	11.32	11.30	33.292	25.394	259.9	0.312	4.80	209.9	77.4						0.13	0.16	101	07
120	10.55	10.53	33.487	25.683	232.8	0.360	3.90	170.5	61.9						0.06	0.26	121	06
125	10.35	10.33	33.544	25.762	225.3	0.372	3.57	D 155.5	D 56.4						0.05	0.23	126	
140	9.90	9.88	33.626	25.902	212.3	0.405	3.35	146.4	52.5						0.03	0.12	141	05
150	9.72	D 9.70	33.682	25.976	205.4	0.426	3.18	D 138.4	D 49.6						0.02	0.11	151	
200	8.79	8.76	33.891	26.291	176.3	0.522	2.97	129.9	45.5						0.01	0.07	202	04
250	7.98	D 7.95	33.975	26.479	159.1	0.607	2.73	D 118.9	D 41.1								252	
270	7.85	7.82	34.019	26.533	154.2	0.639	2.34	102.1	35.0								272	03
300	7.54	D 7.51	34.038	26.594	148.8	0.684	2.02	D 87.8	D 30.0								302	
380	6.30	6.27	34.045	26.768	132.7	0.798	1.56	68.1	22.5								383	02
400	6.14	D 6.10	34.058	26.800	129.9	0.825	1.26	D 54.9	D 18.2								403	
500	5.45	D 5.41	34.145	26.954	115.9	0.949	0.63	D 27.3	D 8.9								504	
515	5.38	5.33	34.154	26.971	114.5	0.962	0.57	24.7	8.0								520	01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 63.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
36 2.5 N	125 20.1 W	19/04/2017	0520	UTC	4484 m	200	09 kn			1022.3 mb	15.7	C 14.7 C	099					
0	15.44	15.44	33.266	24.541	338.5	0.000	5.81	D 253.0	D 101.9						0.09	0.02	0	
2	15.44	15.44	33.266	24.541	338.6	0.007	5.81	D 253.0	D 101.9						0.09	0.02	2	12
10	15.43	15.43	33.267	D 24.544	338.6	0.031	5.83	254.6	102.2	2.0A	0.22A	0.0A	0.00A	0.00A	0.08	0.03	10	11
20	15.10	D 15.10	33.299	D 24.642	329.5	0.064	5.80	D 252.8	D 101.1						0.09	0.02	20	
26	15.09	15.09	33.302	D 24.645	329.4	0.084	5.81	254.0	101.3						0.09	0.02	26	10
30	15.09	D 15.08	33.301	D 24.647	329.4	0.098	5.80	D 252.7	D 101.0						0.13	0.03	30	
50	14.14	D 14.14	33.089	D 24.684	326.4	0.164	5.95	D 259.5	D 101.7						0.33	0.06	50	
70	13.18	13.17	33.110	D 24.899	306.4	0.227	6.03	263.6	100.9	2.1	0.25	0.1	0.00	0.00	0.52	0.09	71	09
75	12.76	D 12.75	33.101	D 24.973	299.4	0.243	6.02	D 262.3	D 99.9						0.45	0.12	76	
87	12.12	12.10	33.035	D 25.046	292.7	0.279	6.04	263.9	98.8						0.29	0.22	88	08
100	12.10	12.09	33.124	25.119	286.2	0.317	5.87	256.6	96.1						0.23	0.16	101	07
125	11.19	D 11.18	33.362	D 25.472	253.1	0.384	5.20	D 226.6	D 83.6						0.14	0.08	126	
126	11.18	11.16	33.365	D 25.477	252.7	0.386	5.23	228.4	84.0						0.13	0.08	127	06
140	10.39	10.38	33.430	D 25.665	234.9	0.421	4.80	209.7	75.8	11.3	1.01	12.4	0.03	0.00	0.11	0.03	141	05
150	10.03	D 10.02	33.501	D 25.782	224.0	0.444	4.32	D 188.3	D 67.8						0.09	0.03	151	
200	8.58	8.56	33.853	D 26.293	176.0	0.545	3.71	161.9	56.4						0.00	0.03	202	04
250	7.81	D 7.78	33.949	D 26.484	158.5	0.629	3.10	D 134.7	D 46.3								252	
270	7.51	7.48	33.963	D 26.539	155.3	0.661	3.00	131.2	44.6								272	03
300	7.13	D 7.10	33.974	D 26.601	147.9	0.706	2.64	D 114.9	D 38.9								302	
380	6.20	6.16	33.998	D 26.745	134.8	0.820	1.76	76.7	25.3								383	02
400	5.97	5.94	34.006	D 26.780	131.6	0.847	1.55	D 67.6	D 22.3								403	
500	5.24	D 5.20	34.110	D 26.951	115.9	0.972	0.73	D 31.8	D 10.3								504	
515	5.15	5.11	34.118	26.969	114.4	0.985	0.69	30.2	9.7	83.5	3.01	40.9	0.00	0.00			519	01

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 66.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
36 46.5 N	122 3.2 W	15/04/2017	2127	UTC	406 m	300	12 kn	300 04 07	1	1016.8 mb	12.5	C 10.3 C	6/8	CS	083			
0	12.62	12.62	33.296	25.148	280.7	0.000	6.04	263.8	100.1						1.18	0.39	0	
2	12.62	12.62	33.296	25.148	280.8	0.006	6.04	263.8	100.1						1.18	0.39	2	12
10	12.16	12.15	33.296	D 25.237	272.5	0.025	6.07	265.0	99.5	12.1A	0.94A	9.2A	0.18A	0.40A	1.36	0.51	10	11
10	12.16	12.15	33.296	D 25.2														

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 66.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	12.40	12.40	33.398	25.270	269.1	0.000	7.61	332.5	125.6								12.02	1.79	0	
1	12.40	12.40	33.398	25.270	269.1	0.003	7.61	332.5	125.6								12.02	1.79	1 12	
10	12.27	12.27	33.413	D 25.307	265.8	0.026	7.57	330.7	124.5	7.7A	0.66A	3.6A	0.20A	0.08A	12.31	1.86	10 11			
20	11.83	11.83	33.471	D 25.435	253.9	0.052	6.16	268.9	100.4	12.8	1.00	10.0	0.22	0.29	7.78	1.12	20 10			
30 ISL	11.78 D	11.77	33.479	D 25.452	252.6	0.077	5.88	D 256.0	D 95.7							5.34	0.93	30		
50	9.98	9.98	33.699	D 25.941	206.5	0.124	3.21	140.3	50.4							0.45	0.55	50 09		
70	9.72	9.71	33.769	D 26.041	197.4	0.164	2.96	129.3	46.2							0.15	0.47	71 08		
75 ISL	9.63 D	9.62	33.800	D 26.080	193.8	0.174	2.85	D 123.9	D 44.3							0.14	0.42	76		
100	9.36	9.35	33.854	D 26.167	186.1	0.222	2.56	111.9	39.7							0.10	0.21	101 07		
120	9.23	9.22	33.902	D 26.226	180.9	0.259	2.42	105.4	37.3							0.08	0.42	121 06		
125 ISL	9.21 D	9.20	33.907	D 26.234	180.3	0.268	2.36	D 102.6	D 36.4							0.07	0.38	126		
140	9.01	8.99	33.928	D 26.283	175.9	0.295	2.42	105.6	37.2	31.5	2.03	26.4	0.07	0.00	0.05	0.27	141 05			
150 ISL	8.86 D	8.84	33.943	D 26.318	172.7	0.312	2.49	D 108.2	D 38.1							0.06	0.54	151		
200	8.59	8.57	34.065	D 26.458	160.4	0.396	1.67	72.7	25.4							0.11	1.89	202 04		
250 ISL	8.06 D	8.04	34.141	D 26.598	147.9	0.474	1.25	D 54.4	D 18.8									252		
270	7.65	7.63	34.170	D 26.681	140.2	0.503	1.02	44.4	15.2									272 03		
300 ISL	7.26 D	7.23	34.196	D 26.758	133.2	0.545	0.81	D 35.4	D 12.0									302		
380	6.83	6.79	34.213	D 26.833	127.2	0.650	0.67	29.2	9.8									383 02		
400 ISL	6.69 D	6.66	34.217	D 26.854	125.4	0.675	0.62	D 27.1	D 9.1									403		
500 ISL	6.30 D	6.25	34.256	D 26.938	118.6	0.798	0.42	D 18.1	D 6.0									504		
515	6.21	6.17	34.270	D 26.961	116.6	0.811	0.38	16.7	5.5	76.5	3.05	38.2	0.00	0.00				520 01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 66.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	12.98	12.98	32.885	24.759	317.7	0.000	6.35	277.6	105.8								1.13	0.31	0	
2	12.98	12.98	32.885	24.759	317.8	0.006	6.35	277.6	105.8							1.13	0.31	2 12		
10	12.90	12.90	32.885	D 24.775	316.4	0.029	6.32	D 275.6	D 105.1	4.0A	0.35A	0.6A	0.09A	1.22	0.35	10 11				
20	12.86	12.86	32.884	D 24.782	316.1	0.061	6.35	277.6	105.5	3.5	0.33	0.5	0.06	0.08	1.25	0.37	20 10			
30 ISL	12.83 D	12.83	32.887	D 24.792	315.4	0.092	6.23	D 271.5	D 103.4							0.95	0.36	30		
50	12.11	12.10	33.148	D 25.133	283.5	0.153	5.69	248.7	93.2							0.36	0.33	50 09		
70	11.08	11.07	33.332	D 25.466	252.2	0.207	4.84	211.6	77.6							0.19	0.15	71 08		
75 ISL	10.80 D	10.79	33.375	D 25.549	244.5	0.219	4.66	D 200.1	D 73.3							0.16	0.14	76		
100	9.86	9.85	33.517	D 25.822	218.9	0.279	4.15	181.1	64.8							0.05	0.06	101 07		
120	9.42	9.40	33.758	D 26.083	194.5	0.319	2.98	130.2	46.2							0.05	0.14	121 06		
125 ISL	9.32 D	9.30	33.812	D 26.142	189.0	0.329	2.62	D 113.9	D 40.5							0.04	0.12	126		
140	9.02	9.01	33.906	D 26.263	177.8	0.357	2.49	108.6	38.2	31.1	1.99	26.2	0.00	0.00	0.02	0.07	141 05			
150 ISL	8.85 D	8.83	33.937	D 26.315	173.0	0.374	2.43	D 105.6	D 37.2							0.02	0.08	151		
200	8.22	8.20	34.027	D 26.483	157.9	0.458	2.18	95.1	32.9							0.01	0.09	202 04		
250 ISL	7.89 D	7.87	34.125	D 26.610	146.6	0.534	1.35	D 58.7	D 20.3									252		
270	7.63	7.61	34.130	D 26.652	142.9	0.564	1.24	D 54.1	D 18.6									272 03		
300 ISL	7.24 D	7.21	34.123	D 26.703	138.4	0.606	1.20	D 52.2	D 17.8									302		
381	6.29	6.26	34.113	D 26.823	127.5	0.715	1.00	43.8	14.5									384 02		
400 ISL	6.14 D	6.10	34.125	D 26.853	124.8	0.739	0.87	D 37.9	D 12.6									403		
500 ISL	5.26 D	5.22	34.154	D 26.984	112.9	0.859	0.55	D 24.1	D 7.8									504		
515	5.18	5.14	34.160	D 26.998	111.7	0.872	0.52	22.9	7.4	86.0	3.05	40.7	0.00	0.00				520 01		

A) SELECTED NUTRIENTS DRAWN FROZEN AND RUN LATER FOR J.CRAIG VENTER INSTITUTE.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 66.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	13.93	13.93	32.841	24.534	339.2	0.000	6.00	262.4	101.9								0.24	0.02	0	
2	13.93	13.93	32.841	24.534	339.2	0.007	6.00	262.4	101.9							0.24	0.02	2 12		
10	13.94	13.93	32.861	D 24.549	338.0	0.031	6.03	263.4	102.3							0.25	0.05	10 11		
20 ISL	13.92 D	13.92	32.999	D 24.660	327.8	0.064	6.03	262.8	102.4							0.28	0.05	20		
25	13.87	13.87	33.032	D 24.696	324.5	0.081	6.03	263.5	102.4							0.30	0.05	25 10		
30 ISL	13.84 D	13.83	33.049	D 24.715	322.8	0.097	6.03	262.8	102.3							0.31	0.06	30		
50 ISL	13.77 D	13.76	33.039	D 24.724	322.6	0.162	6.02	D 262.3	D 101.9											

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 66.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db		
35	47.7 N	124 11.8 W	17/04/2017	1040	UTC	3903 m	240 05 kn									090	
0	13.56	13.56	32.739	24.530	339.5	0.000	6.14	268.4	103.4					0.20	0.04	0	
2	13.56	13.56	32.739	24.531	339.5	0.007	6.14	268.4	103.4					0.20	0.04	2 12	
10	13.57	13.57	32.733 D	24.524	340.4	0.031	6.13	268.1	103.3	1.0A	0.24A	0.1A	0.00A	0.00A	0.18	0.05	10 11
20	13.58	13.58	32.734 D	24.524	340.7	0.065	6.13	267.9	103.3					0.18	0.06	20 10	
30	ISL	13.58 D	13.58	32.734 D	24.525	340.9	0.100	6.11	D266.3	D102.9					0.26	0.07	30
50	ISL	13.72 D	13.72	33.083 D	24.767	318.5	0.166	5.89	D256.9	D 99.8					0.43	0.08	50
56	13.36	13.35	33.068 D	24.829	312.7	0.185	5.90	257.6	99.0	2.1	0.35	0.3	0.05	0.16	0.48	0.08	56 09
70	12.22	12.21	33.051 D	25.038	293.1	0.228	5.70	248.9	93.4					0.20	0.13	71 08	
75	ISL	12.23 D	12.22	33.167 D	25.126	284.9	0.242	5.35	D233.2	D 87.9					0.21	0.15	76
100	10.65	10.64	33.372 D	25.573	242.7	0.310	4.40	192.3	69.9					0.26	0.23	101 07	
120	9.86	9.85	33.583 D	25.874	214.4	0.355	3.51	153.4	54.9					0.07	0.08	121 06	
125	ISL	9.73 D	9.72	33.619 D	25.924	209.8	0.365	3.34	D145.4	D 52.1					0.06	0.08	126
141	9.27	9.25	33.718 D	26.077	195.5	0.398	3.54	154.5	54.6	22.7	1.61	21.4	0.00	0.00	0.02	0.07	142 05
150	ISL	9.13 D	9.12	33.771 D	26.140	189.6	0.415	3.31	D144.2	D 51.0					0.01	0.07	151
200	8.53	8.51	33.940 D	26.367	168.9	0.506	2.96	129.3	45.0					0.01	0.08	202 04	
250	ISL	7.84 D	7.81	34.003 D	26.522	154.9	0.587	2.50	D108.7	D 37.4						252	
271	7.42	7.39	33.997 D	26.579	149.7	0.620	2.40	104.9	35.6						273	03	
300	ISL	7.26 D	7.24	34.048 D	26.640	144.3	0.663	1.93	D 83.9	D 28.5						302	
381	6.37	6.34	34.082 D	26.789	130.9	0.775	1.23	53.6	17.8						384	02	
400	ISL	6.03 D	6.00	34.059 D	26.814	128.4	0.800	1.22	D 52.8	D 17.4						403	
500	ISL	5.63 D	5.59	34.189 D	26.969	114.8	0.923	0.48	D 21.0	D 6.9						504	
516	5.49	5.44	34.187	26.984	113.4	0.937	0.46	19.9	6.5	81.2	3.05	40.6	0.00	0.00	520	01	

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RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 66.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db		
35	26.9 N	124 54.0 W	17/04/2017	0513	UTC	4337 m	270 03 kn									089	
0	14.06	14.06	33.064	24.680	325.2	0.000	5.99	261.6	102.0					0.12	0.00	0	
2	14.06	14.06	33.064	24.680	325.3	0.007	5.99	261.6	102.0					0.12	0.00	2 12	
10	14.04	14.04	33.061 D	24.681	325.4	0.030	5.96	260.6	101.6	1.8A	0.26A	0.1A	0.00A	0.00A	0.15	0.01	10 11
20	ISL	14.02 D	14.02	33.060 D	24.686	325.3	0.062	5.98	D260.7	D101.8					0.14	0.02	20 11
25	13.99	13.99	33.059 D	24.691	325.0	0.079	5.99	261.8	102.0					0.14	0.02	25 10	
30	ISL	13.96 D	13.96	33.057 D	24.696	324.6	0.095	5.98	D260.5	D101.6					0.17	0.03	30
50	ISL	13.68 D	13.67	33.042 D	24.744	320.7	0.160	6.01	D262.0	D101.6					0.29	0.08	50
75	13.06	13.04	33.020 D	24.853	311.0	0.240	5.99	D261.0	D 99.9	1.8	0.27	0.1	0.00	0.00	0.45	0.14	76 09
87	12.27	12.26	33.130 D	25.091	288.5	0.276	5.83	254.8	95.8					0.34	0.21	88 08	
100	11.17	11.15	33.253 D	25.390	260.2	0.312	5.27	230.0	84.5					0.18	0.09	101 07	
125	10.14	10.13	33.473 D	25.741	227.2	0.373	4.57	199.4	71.8					0.05	0.06	126 06	
140	9.73	9.71	33.553 D	25.873	215.0	0.407	4.10	179.2	64.0	18.0	1.39	18.2	0.00	0.00	0.02	0.04	141 05
150	ISL	9.28 D	9.26	33.674 D	26.042	199.0	0.428	3.92	D170.6	D 60.5					0.02	0.04	151
200	8.53	8.51	33.903 D	26.339	171.6	0.521	3.35	146.2	50.9					0.01	0.02	202 04	
250	ISL	7.75 D	7.73	33.962 D	26.502	156.7	0.604	2.94	D128.0	D 44.0						252	
270	7.50	7.47	33.972 D	26.547	152.7	0.635	2.77	120.9	41.1						272	03	
300	ISL	7.05 D	7.02	33.990 D	26.625	145.6	0.680	2.41	D104.8	D 35.4						302	
380	6.38	6.34	34.058 D	26.769	132.7	0.792	1.40	61.2	20.3						383	02	
400	ISL	6.48 D	6.44	34.121 D	26.806	129.6	0.819	1.01	D 44.0	D 14.7						403	
500	ISL	5.56 D	5.52	34.162 D	26.955	116.0	0.943	0.60	D 26.0	D 8.5						504	
515	5.38	5.34	34.162 D	26.976	114.0	0.955	0.59	25.6	8.3	79.3	3.04	40.7	0.00	0.00	519	01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 70.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db		
36	10.9 N	121 43.7 W	16/04/2017	0323	UTC	269 m	120 07 kn									084	
0	11.24	11.24	33.553	25.606	237.2	0.000	4.87	212.5	78.4					0.65	0.24	0	
2	11.24	11.24	33.553	25.606	237.2	0.005	4.87	212.5	78.4					0.65	0.24	2 10	
10	10.73	10.72	33.582 D	25.721	226.4	0.021	4.35	190.0	69.4	20.0A	1.50A	18.3A	0.30A	0.00A	0.59	0.29	10 09
20	10.41	10.41	33.638 D	25.820	217.3	0.043	4.06	177.3	64.3	21.8	1.60	20.1	0.34	0.06	0.57	0.38	20 08
30	ISL	10.10 D	10.09	33.685 D	25.910	208.9	0.065	3.42	D148.7	D 53.7					0.45	0.33	30
50	9.68	9.68	33.769 D	26.046	196.4	0.106	3.06	133.7	47.7					0.23	0.24	50 07	
70	9.56	9.55	33.796 D	26.089	192.9	0.145	2.92	127.6	45.5					0.17	0.28	71 0	

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 70.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μg/L	db		
36	2.8 N	122 1.0 W	16/04/2017	0634	UTC	1291 m	300 09 kn	5.69	248.5	93.6			0.89	0.35	0	
0	12.26	12.26	33.366	25.271	269.0	0.000		5.69	248.5	93.6			0.89	0.35	2	12
2	12.26	12.26	33.366	25.271	269.1	0.005		5.69	248.5	93.6			0.99	0.31	10	11
10	12.27	12.26	33.368 D	25.272	269.1	0.025		5.70	249.0	93.8			1.15	0.25	20	10
20	12.04	12.04	33.380 D	25.324	264.5	0.051		5.60	244.6	91.7			0.82	0.26	30	
30	ISL	11.61 D	11.61	33.429 D	25.443	253.4	0.077	5.23	D227.8 D	84.9			0.17	0.29	50	09
50	9.92	9.92	33.615 D	25.886	211.7	0.124		3.34	145.6	52.2			0.06	0.36	71	08
70	9.38	9.37	33.750 D	26.081	193.6	0.165		3.06	133.5	47.3			0.06	0.35	76	
75	ISL	9.35 D	9.34	33.762 D	26.096	192.2	0.175	3.03	D131.7 D	46.8			0.05	0.26	101	
100	ISL	9.24 D	9.23	33.867 D	26.197	183.2	0.222	2.53	D109.9 D	39.0			0.05	0.25	102	07
101	9.23	9.22	33.867 D	26.198	183.2	0.225		2.55	111.2	39.3			0.02	0.24	121	06
120	9.09	9.07	33.936 D	26.276	176.2	0.258		2.26	98.6	34.8			0.02	0.23	126	
125	ISL	9.03 D	9.02	33.945 D	26.292	174.7	0.267	2.24	D 97.6 D	34.5			0.02	0.21	142	05
141	8.86	8.85	33.984 D	26.349	169.6	0.295		2.17	94.8	33.3			0.02	0.20	151	
150	ISL	8.76 D	8.75	34.002 D	26.379	166.9	0.310	2.07	D 89.9 D	31.6			0.02	0.17	202	04
200	8.38	8.36	34.081 D	26.501	156.2	0.392		1.63	71.2	24.7					252	
250	ISL	7.85 D	7.83	34.115 D	26.609	146.7	0.468	1.39	D 60.5 D	20.9					273	03
271	7.68	7.66	34.135 D	26.649	143.2	0.499		1.26	55.0	18.8					302	
300	ISL	7.31 D	7.28	34.140 D	26.706	138.1	0.540	1.10	D 47.7 D	16.2					384	02
381	6.66	6.63	34.196 D	26.841	126.2	0.648		0.65	28.3	9.5					403	
400	ISL	6.55 D	6.51	34.214 D	26.870	123.6	0.672	0.57	D 25.0 D	8.4					504	
500	ISL	6.04 D	6.00	34.287 D	26.995	112.9	0.791	0.33	D 14.4 D	4.8					521	01
516	5.93	5.89	34.299 D	27.018	110.8	0.805		0.30	12.9	4.3						

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 70.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μg/L	db		
35	52.8 N	122 22.1 W	16/04/2017	1000	UTC	3020 m	260 04 kn	6.37	278.3	105.7			2.07	0.68	0	
0	12.76	12.76	33.031	24.915	302.8	0.000		6.37	278.3	105.7			2.07	0.68	2	12
2	12.76	12.76	33.031	24.915	302.9	0.006		6.37	278.3	105.7			2.19	0.65	10	11
10	12.76	12.76	33.032 D	24.916	303.0	0.028		6.34	277.1	105.2			2.43	0.68	20	10
20	12.68	12.68	33.020 D	24.924	302.6	0.058		6.31	275.5	104.4			0.39	0.21	50	09
30	ISL	12.32 D	12.32	33.058 D	25.022	293.5	0.088	6.12	D266.8 D	100.6			0.39	0.23	71	08
50	11.03	11.02	33.301 D	25.451	253.1	0.143		4.87	212.7	78.0			0.34	0.23	76	
70	10.41	10.40	33.509 D	25.722	227.8	0.191		4.43	193.3	70.0			0.08	0.22	101	07
75	ISL	10.32 D	10.31	33.529 D	25.753	224.9	0.203	4.26	D185.5 D	67.3			0.05	0.19	122	06
100	9.80	9.79	33.626	25.917	209.9	0.259		3.32	144.7	51.8			0.02	0.16	141	05
121	9.27	9.25	33.770 D	26.117	191.2	0.300		2.92	127.7	45.2			0.02	0.15	151	
125	ISL	9.06 D	9.04	33.802 D	26.176	185.7	0.308	3.01	D131.0 D	46.3			0.02	0.10	202	04
140	8.56	8.54	33.877 D	26.312	172.9	0.335		3.54	154.5	53.8			0.02	0.10	252	
150	ISL	8.65 D	8.64	33.969 D	26.370	167.7	0.352	2.48	D107.9 D	37.8			0.02	0.15	302	
200	8.22	8.20	34.094 D	26.536	152.9	0.433		1.60	69.8	24.2			0.02	0.10	383	02
250	ISL	7.78 D	7.76	34.132 D	26.632	144.5	0.508	1.29	D 56.1 D	19.3					403	
272	7.70	7.67	34.173 D	26.677	140.6	0.539		1.03	45.1	15.4					504	
300	ISL	7.47 D	7.44	34.188 D	26.721	136.8	0.579	0.90	D 38.9 D	13.3					520	01
380	6.82	6.79	34.219 D	26.838	126.7	0.685		0.61	26.4	8.9						
400	ISL	6.64 D	6.61	34.234 D	26.874	123.4	0.710	0.53	D 22.8 D	7.7						
500	ISL	6.04 D	6.00	34.284 D	26.993	113.1	0.830	0.32	D 14.1 D	4.7						
516	5.97	5.93	34.297 D	27.012	111.4	0.844		0.32	13.8	4.6						

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 70.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μg/L	db		
35	32.9 N	123 4.1 W	16/04/2017	1517	UTC	3779 m	180 13 kn	6.17	269.6	103.9			0.57	0.10	0	
0	13.49	13.49	32.941 D	24.701	323.2	0.000		6.17	269.6	103.9			0.57	0.10	2	12
2	13.49	13.49	32.941 D	24.701	323.3	0.003		6.17	269.6	103.9			0.63	0.03	10	11
10	13.49	13.49	32.942 D	24.703	323.4	0.029		6.17	269.4	103.8			0.60	0.05	20	10
20	ISL	13.56 D	13.56	32.967 D	24.707	323.2	0.062	6.08	D265.0 D	102.5			0.59	0.05	25	10
25	13.61	13.60	32.980 D	24.709	323.2	0.078		6.07	265.2	102.4			0.54	0.08	30	
30	ISL	13.64 D	13.64	32.993 D	24.712	323.1	0.094	6.03	D262.8 D	101.8			0.54	0.17	50	
50	ISL	13.08 D	13.07	33.165 D	24.959	300.1	0.157	5.76	D251.2 D	96.3			0.52	0.23	63	09
62	12.56	12.55	33.230 D	25.111	286.0	0.193		5.56	243.0	92.0			0.36	0.17	76	
75	ISL	11.80 D	11.79	33.322 D	25.328	265.6	0.229	5.15	D224.1 D	83.8			0.20	0.11	89	08
88	11.12	11.11	33.368 D	25.487	250.7	0.263		4.85	211.7	77.8			0.10	0.06	103	
100	ISL	10.51 D	10.50	33.416 D	25.633	237.0	0.292	4.42	D192.3 D	70.0			0.02	0.05	126	06

RV BEII M SHTMADA

CALCOET CRUISE 1704

STATION 70-0 80-0

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 70.0 90.0

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
35 38.3 N	121 16.3 W	13/04/2017	1802	UTC	50 m	250	16 kn	290 03 08	5		13.0	C	12.0	C	10 m	5/8	CU	076	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	S103*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	µmol/Kg	µM	µM	µM	µM	µM	µM	µM	µg/L	µg/L	db		
0	13.04	13.04	33.161	24.961	298.4	0.000		5.79	252.8	96.6	7.9	0.68	5.8	0.14	0.31	1.26	0.33	0	
2 A	13.04	13.04	33.161	24.962	298.5	0.006		5.79	252.8	96.6	7.9	0.68	5.8	0.14	0.31	1.26	0.33	2 08	
6 A	12.58	12.58	33.249	25.120	283.5	0.018		5.62	245.5	93.0	10.9	0.86	8.9	0.20	0.33	1.41	0.51	6 07	
9 A	12.37	12.36	33.300	25.201	275.9	0.026		5.54	242.0	91.3	12.3	0.96	10.5	0.22	0.39	1.32	0.61	9 06	
10 ISL	12.35	d 12.35	33.299	d 25.203	275.8	0.026		5.52	d 240.3	d 90.8	12.4	0.97	10.6	0.22	0.39	1.34	0.61	10	
15 A	12.26	12.26	33.308	25.227	273.6	0.043		5.50	240.4	90.5	12.6	0.99	11.0	0.23	0.39	1.44	0.62	15 04	
15	12.26	12.26	33.314	25.231	273.2	0.043												15 05	
20 ISL	12.06	d 12.05	33.392	d 25.331	263.8	0.053		5.39	d 234.9	d 88.3	15.3	1.16	13.8	0.26	0.45	1.42	0.72	20	
22	11.99	11.98	33.431	25.374	259.8	0.061		5.34	233.1	87.3	16.4	1.23	15.0	0.28	0.48	1.41	0.76	22 03	
28 A	11.15	11.15	33.580	25.644	234.2	0.076		4.45	194.5	71.6	20.2	1.47	18.9	0.32	0.49	0.85	0.58	28 02	
30 ISL	11.15	d 11.14	33.587	d 25.651	233.6	0.078		4.45	d 193.9	d 71.6	20.3	1.48	19.1	0.32	0.50	0.84	0.57	30	
35 A	11.09	11.08	33.599	25.671	231.8	0.092		4.38	191.4	70.4	20.5	1.50	19.5	0.32	0.53	0.81	0.56	35 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 BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
35 28.4 N	121 36.7 W	13/04/2017	2101	UTC	986 m	300 16 kn	290 03 07	1	1018.7 mb	14.8 C	12.7 C	6/8	SC 077			
0	14.63	14.63	33.078	24.571	335.7	0.000	5.97	260.7	102.9	1.7	0.26	0.1	0.00	0.02	0.19	0.04
2	14.63	14.63	33.078	24.571	335.7	0.007	5.97	260.7	102.9	1.7	0.26	0.1	0.00	0.00	0.19	0.04
10	14.61	14.61	33.075	D 24.574	335.7	0.031	5.97	260.9	103.0	1.8	0.26	0.1	0.00	0.00	0.23	0.04
20	ISL 14.46 D	14.46	33.061	D 24.594	334.1	0.064	5.99	D 261.3	D 103.0	1.7	0.27	0.1	0.00	0.00	0.30	0.05
25	14.35	14.35	33.048	D 24.607	333.0	0.081	6.03	263.3	103.3	1.6	0.27	0.1	0.00	0.00	0.34	0.06
30	ISL 14.29 D	14.28	33.047	D 24.621	331.8	0.098	6.03	D 262.7	D 103.2	2.0	0.31	0.5	0.00	0.00	0.39	0.10
50	ISL 13.75 D	13.74	33.049	D 24.735	321.5	0.164	6.05	D 263.5	D 102.4	3.5	0.48	2.4	0.00	0.00	0.59	0.28
62	12.72	12.71	33.254	D 25.100	287.1	0.201	5.57	243.4	92.5	4.4	0.58	3.5	0.32	0.31	0.71	0.38
75	ISL 11.15 D	11.14	33.449	D 25.545	244.8	0.235	4.15	D 180.9	D 66.7	10.8	1.01	10.7	0.18	0.00	0.38	0.24
87	10.61	10.60	33.514	D 25.692	231.1	0.264	3.70	161.6	58.8	16.7	1.41	17.3	0.06	0.00	0.08	0.10
100	10.27	10.25	33.634	D 25.844	216.9	0.295	3.30	143.9	52.0	20.0	1.58	20.1	0.00	0.00	0.05	0.10
125	9.55	9.54	33.798	D 26.093	193.7	0.346	2.76	120.3	42.8	25.9	1.88	24.3	0.00	0.00	0.03	0.09
140	9.25	9.23	33.885	D 26.211	182.8	0.374	2.60	113.4	40.1	28.5	1.92	25.7	0.00	0.00	0.02	0.08
150	ISL 9.03 D	9.02	33.912	D 26.266	177.7	0.392	2.48	D 107.8	D 38.1	30.2	1.97	26.4	0.00	0.00	0.02	0.08
200	ISL 8.39 D	8.37	34.055	D 26.480	158.2	0.477	1.81	D 78.9	D 27.5	38.3	2.22	30.4	0.00	0.00	0.01	0.06
201	8.39	8.37	34.054	D 26.479	158.3	0.479	1.86	81.3	28.2	38.4	2.23	30.4	0.00	0.00	0.01	0.06
250	ISL 8.02 D	7.99	34.109	D 26.579	149.7	0.555	1.47	D 64.0	D 22.1	44.9	2.41	32.7	0.00	0.00		252
270	7.83	7.80	34.131	D 26.624	145.7	0.584	1.31	57.3	19.7	47.5	2.48	33.7	0.00	0.00		272
300	ISL 7.57 D	7.54	34.159	D 26.684	140.4	0.628	1.08	D 46.9	D 16.1	51.8	2.58	35.1	0.00	0.00		302
381	6.74	6.70	34.193	D 26.829	127.5	0.737	0.68	29.8	10.0	63.3	2.86	38.9	0.00	0.14		384
400	ISL 6.56 D	6.53	34.207	D 26.863	124.4	0.761	0.59	D 25.8	D 8.6	65.1	2.88	39.1	0.00	0.00		403
500	ISL 6.10 D	6.05	34.247	D 26.957	116.5	0.883	0.41	D 17.7	D 5.9	74.7	3.01	40.6	0.00	0.00		504
518	5.99	5.95	34.247	D 26.970	115.4	0.899	0.38	16.6	5.5	76.5	3.03	40.9	0.00	0.00		522
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D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
35 18.6 N	121 57.8 W	14/04/2017	0037	UTC	2409 m	330 19 kn	290 05 06	1	1019.9 mb	13.6 C	11.1 C	4/8	SC 078			
0	13.63	13.63	33.243	24.907	303.6	0.000	6.44	281.4	108.9	4.3	0.48	2.2	0.12	0.14	1.07	0.29
2	13.63	13.63	33.243	24.907	303.6	0.006	6.44	281.4	108.9	4.3	0.48	2.2	0.12	0.14	1.07	0.29
10	13.52	13.52	33.228	D 24.917	303.0	0.028	6.46	282.0	108.9	4.3	0.48	2.3	0.12	0.09	0.94	0.30
20	12.46	12.46	33.285	D 25.171	279.0	0.057	6.05	264.4	99.9	6.6	0.66	4.9	0.18	0.24	0.77	0.65
30	ISL 11.47 D	11.47	33.436	D 25.474	250.5	0.083	5.29	D 230.3	D 85.6	11.2	0.98	9.8	0.21	0.00	0.61	0.54
50	10.29	10.28	33.610	D 25.820	218.0	0.131	3.78	165.0	59.7	20.5	1.62	19.7	0.28	0.00	0.29	0.32
70	9.75	9.74	33.729	D 26.004	200.9	0.173	2.87	125.3	44.8	24.7	1.83	23.8	0.05	0.00	0.07	0.22
75	ISL 9.65 D	9.64	33.758	D 26.045	197.2	0.183	2.73	D 118.6	D 42.5	25.2	1.85	24.2	0.05	0.00	0.07	0.23
100	9.41	9.40	33.819	D 26.131	189.5	0.233	2.50	108.9	38.7	27.8	1.93	25.8	0.03	0.00	0.05	1.01
120	9.08	9.07	33.870	D 26.225	180.9	0.269	2.69	117.5	41.4	28.4	1.88	25.5	0.00	0.00	0.03	0.25
125	ISL 9.01 D	9.00	33.882	D 26.246	179.0	0.278	2.67	D 116.3	D 41.1	29.4	1.92	26.0	0.00	0.00	0.03	0.23
140	8.87	8.86	33.958	D 26.327	171.6	0.305	2.33	101.6	35.7	32.4	2.04	27.6	0.00	0.00	0.02	0.18
150	ISL 8.68 D	8.66	33.987	D 26.381	166.7	0.322	2.34	D 101.6	D 35.7	33.7	2.08	28.1	0.00	0.00	0.02	0.16
200	8.32	8.30	34.065	D 26.498	156.5	0.403	1.79	78.3	27.2	39.8	2.26	30.1	0.00	0.00	0.01	0.07
250	ISL 7.91 D	7.88	34.130	D 26.612	146.4	0.479	1.32	D 57.5	D 19.8	46.6	2.45	33.2	0.00	0.00		252
270	7.72	7.70	34.148	D 26.653	142.8	0.509	1.18	D 51.3	D 17.6	49.3	2.53	34.2	0.00	0.00		272
300	ISL 7.54 D	7.51	34.166	D 26.695	139.3	0.551	1.06	D 46.0	D 15.7	53.4	2.61	35.3	0.00	0.00		302
381	6.63	6.59	34.185	D 26.836	126.6	0.660	0.69	30.1	10.0	64.7	2.84	38.2	0.00	0.00		384
400	ISL 6.50 D	6.47	34.188	D 26.855	125.0	0.684	0.64	D 28.0	D 9.3	66.8	2.87	38.5	0.00	0.00		403
500	ISL 5.87 D	5.83	34.247	D 26.985	113.7	0.805	0.37	D 15.9	D 5.2	77.9	3.02	40.4	0.00	0.00		504
516	5.79	5.75	34.301	D 27.038	108.8	0.819	0.36	15.6	5.1	79.7	3.04	40.7	0.00	0.00		520
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D) CTD DATA USED ON STANDARD LEVELS AND MISSING FIELDS; PRIMARY T; PRIMARY CORRECTED SALINITY; PRIMARY CRUISE-CORRECTED O2;

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
34 58.5 N	122 40.3 W	14/04/2017	0624	UTC	4007 m	350 22 kn	298.8	WEA	1022.2 mb	12.6 C	10.5 C	079				
0	14.48	14.48	33.045	24.578	335.0	0.000	6.03	263.3	103.6	2.1	0.28	0.0	0.00	0.22	0.09	0
2	14.48	14.48	33.045	24.578	335.0	0.007	6.03	263.3	103.6	2.1	0.28	0.0	0.00	0.22	0.09	2
10	ISL 14.48 D	14.48	33.049	D 24.581	335.0	0.030	5.99	D 261.2	D 103.0	1.9	0.25	0.0	0.00	0.22	0.07	10
11	14.49	14.49	33.048	D 24.578	335.3	0.034	6.04	263.8	103.8	1.9	0.25	0.0	0.00	0.22	0.07	11
20	14.47	14.47	33.048	D 24.582	335.2</td											

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
34 38.4 N	123 22.1 W	14/04/2017	1206	UTC	4099 m	350 20 kn			1022.4 mb	12.9 μM	9.8 μM						080
0	14.65	14.65	33.128	24.605	332.4	0.000	5.98	261.2	103.2	1.5	0.26	0.0	0.00	0.00	0.20	0.01	0
2	14.65	14.65	33.128	24.605	332.4	0.007	5.98	261.2	103.2	1.5	0.26	0.0	0.00	0.00	0.20	0.01	2 12
10	14.65	14.65	33.131	D 24.608	332.4	0.030	5.95	259.7	102.6	1.3	0.25	0.0	0.00	0.00	0.18	0.02	10 11
20	ISL 14.62 D	14.62	33.132	D 24.616	332.0	0.063	5.94	D 258.7	D 102.4	1.3	0.25	0.0	0.00	0.00	0.17	0.03	20
26	14.49	14.48	33.126	D 24.639	329.9	0.084	5.96	260.2	102.4	1.3	0.25	0.0	0.00	0.00	0.17	0.03	26 10
30	ISL 14.36 D	14.35	33.127	D 24.668	327.3	0.097	5.97	D 260.1	D 102.4	1.6	0.28	0.3	0.00	0.00	0.27	0.05	30
50	ISL 14.29 D	14.28	33.126	D 24.682	326.6	0.163	5.95	D 259.3	D 101.9	3.1	0.42	1.8	0.00	0.00	0.73	0.18	50
62	12.70	12.69	33.204	D 25.065	290.4	0.200	5.58	243.8	92.6	4.0	0.51	2.7	0.16	0.00	1.01	0.25	63 09
75	ISL 11.05 D	11.04	33.383	D 25.511	248.0	0.235	4.16	D 181.2	D 66.7	9.9	0.94	9.9	0.10	0.00	0.67	0.18	76
88	10.44	10.43	33.460	D 25.679	232.3	0.267	3.88	169.3	61.3	15.9	1.36	17.1	0.03	0.00	0.32	0.11	89 08
100	ISL 10.00 D	9.98	33.530	D 25.809	220.2	0.294	3.69	D 160.7	D 57.9	18.3	1.48	19.2	0.00	0.00	0.14	0.10	101
102	9.99	9.98	33.533	D 25.813	219.9	0.300	3.64	158.7	57.0	18.7	1.50	19.5	0.00	0.00	0.11	0.10	103
125	9.37	9.36	33.696	D 26.042	198.5	0.347	3.24	141.5	50.1	23.9	1.72	22.9	0.00	0.00	0.02	0.06	126 06
140	9.04	9.02	33.789	D 26.169	186.7	0.376	3.14	137.0	48.2	26.5	1.77	24.2	0.00	0.00	0.01	0.05	141 05
150	ISL 8.82 D	8.80	33.831	D 26.237	180.4	0.395	3.20	D 139.1	D 48.9	28.1	1.81	24.9	0.00	0.00	0.01	0.05	151
200	ISL 8.17 D	8.15	33.998	D 26.468	159.3	0.480	2.70	D 117.5	D 40.7	36.2	2.03	28.1	0.00	0.00	0.01	0.04	202
203	8.13	8.11	33.998	D 26.473	158.8	0.485	2.55	111.2	38.4	36.7	2.04	28.3	0.00	0.00	0.01	0.04	205 04
250	ISL 7.49 D	7.47	34.042	D 26.602	147.1	0.558	1.99	D 86.4	D 29.5	45.1	2.26	31.5	0.00	0.00			252
270	7.26	7.24	34.048	D 26.640	143.8	0.587	1.85	80.5	27.3	48.7	2.36	32.9	0.00	0.00			272 03
300	ISL 6.84 D	6.81	34.057	D 26.705	137.8	0.629	1.56	D 67.8	D 22.8	54.0	2.49	34.5	0.00	0.00			302
380	6.12	6.09	34.113	D 26.845	125.3	0.736	0.85	37.2	12.3	68.1	2.82	38.9	0.00	0.00			383 02
400	ISL 6.06 D	6.02	34.139	D 26.874	122.8	0.761	0.76	D 33.0	D 10.9	70.6	2.86	39.3	0.00	0.00			403
500	ISL 5.38 D	5.34	34.202	D 27.007	110.9	0.879	0.43	D 18.7	D 6.1	83.1	3.04	41.4	0.00	0.00			504
518	5.38	5.34	34.234	D 27.033	108.7	0.894	0.33	14.5	4.7	85.3	3.07	41.7	0.00	0.00			522 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
34 18.4 N	124 4.3 W	14/04/2017	1803	UTC	3149 m	360 23 kn	320 03 05	1	1024.6 mb	13.8 μM	10.3 μM						081
0	14.16	14.16	32.795	24.452	347.0	0.000	5.99	261.2	102.1	2.8	0.24	0.0	0.00	0.02	0.16	0.08	0
2	14.16	14.15	32.795	D 24.452	347.0	0.007	5.99	261.2	102.1	2.8	0.24	0.0	0.00	0.00	0.16	0.08	2 12
10	ISL 14.15 D	14.15	32.796	D 24.455	347.0	0.032	6.00	261.7	102.3	2.6	0.22	0.0	0.00	0.00	0.18	0.03	10
11	14.15	14.15	32.795	D 24.454	347.1	0.035	6.01	261.8	102.4	2.5	0.22	0.0	0.00	0.00	0.19	0.02	11 11
20	ISL 14.23 D	14.22	32.839	D 24.472	345.6	0.066	5.97	D 260.4	D 102.0	2.1	0.21	0.0	0.00	0.00	0.15	0.03	20
25	14.58	14.58	33.177	D 24.659	328.0	0.084	5.91	257.7	101.9	1.8	0.20	0.0	0.00	0.00	0.13	0.03	25 10
30	ISL 14.50 D	14.50	33.194	D 24.690	325.3	0.100	5.90	D 257.2	D 101.5	1.8	0.20	0.0	0.00	0.00	0.16	0.05	30
50	ISL 14.33 D	14.32	33.204	D 24.735	321.6	0.165	5.89	D 256.7	D 101.0	1.9	0.21	0.0	0.00	0.00	0.27	0.12	50
62	13.58	13.57	33.207	D 24.893	306.9	0.203	5.94	258.9	100.3	1.9	0.21	0.0	0.00	0.00	0.34	0.16	63 09
75	ISL 13.14 D	13.13	33.188	D 24.967	300.1	0.243	5.94	D 259.0	D 99.5	4.1	0.46	3.3	0.00	0.00	0.28	0.11	76
87	11.67	11.66	33.214	D 25.268	271.6	0.277	5.24	228.3	85.0	6.1	0.69	6.4	0.07	0.15	0.23	0.06	88 08
100	ISL 11.18 D	11.16	33.362	D 25.473	252.3	0.312	4.46	D 194.2	D 71.6	10.5	1.00	11.5	0.03	0.00	0.12	0.12	101
102	10.99	10.98	33.359	D 25.504	249.4	0.318	4.54	197.6	72.6	11.2	1.05	12.2	0.03	0.00	0.11	0.12	103
125	ISL 10.07 D	10.06	33.502	D 25.776	223.9	0.371	4.45	D 193.6	D 69.8	14.4	1.15	14.8	0.00	0.00	0.04	0.05	126
126	10.05	10.03	33.504	D 25.781	223.4	0.374	4.48	195.0	70.3	14.6	1.15	15.0	0.00	0.00	0.03	0.05	127 06
140	9.69	9.67	33.558	D 25.884	213.9	0.405	4.17	181.6	65.0	17.7	1.34	17.8	0.00	0.00	0.02	0.07	141 05
150	ISL 9.38 D	9.37	33.640	D 25.998	203.2	0.426	3.91	D 170.3	D 60.5	20.2	1.44	19.3	0.00	0.00	0.02	0.06	151
200	ISL 8.50 D	8.48	33.966	D 26.393	166.5	0.519	2.62	D 114.0	D 39.8	33.0	1.94	26.9	0.00	0.00	0.01	0.04	202
203	8.47	8.45	33.973	D 26.403	165.6	0.524	2.57	111.7	39.0	33.7	1.97	27.3	0.00	0.00	0.01	0.04	205 04
250	ISL 8.04 D	8.01	34.019	D 26.506	156.6	0.600	2.26	D 98.2	D 33.9	40.7	2.15	30.0	0.00	0.00			252
270	7.63	7.60	34.052	D 26.592	148.6	0.631	2.19	95.1	32.6	43.7	2.22	31.2	0.00	0.08			272 03
300	ISL 7.40 D	7.37	34.089	D 26.654	143.1	0.675	1.51	D 65.9	D 22.5	48.5	2.35	32.8	0.00	0.00			302
381	6.57	6.54	34.123	D 26.795	130.5	0.787	0.99	42.9	14.4	61.6	2.71	37.2	0.00	0.00			384 02
400	ISL 6.31 D	6.27	34.121	D 26.828	127.3	0.812	0.89	D 38.5	D 12.8	64.8	2.75	37.9	0.00	0.00			403
500	ISL 5.35 D	5.31	34.153	D 26.972	114.1	0.933	0.58	D 25.1	D 8.1	81.3	2.95	41.4	0.00	0.00			504
515	5.29	5.25	34.162	D 26.987	112.8	0.946	0.52	22.8	7.4	83.7	2.98	41.9	0.00	0.00			519 01

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 49.0

LATITUDE	LONG

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
35	1.5 N	120 54.6 W	13/04/2017	1047	UTC	230 m	150 10 kn	5.95	259.9	99.6	7.7	0.67	4.9	0.18	0.22	0.79	0.46	0
0	13.13	13.13	33.309	25.057	289.3	0.000		5.95	259.9	99.6	7.7	0.67	4.9	0.18	0.22	0.79	0.46	3 16
3	13.13	13.13	33.309	25.057	289.4	0.009		5.95	259.9	99.6	7.7	0.67	4.9	0.18	0.22	0.79	0.46	10 14
10	12.99	12.99	33.314	25.090	286.5	0.029		5.94	259.5	99.2	7.9	0.68	5.9	0.18	0.18	0.78	0.52	10 15
20	12.30	12.30	33.388	25.282	268.5	0.057		5.66	247.2	93.2	10.2	0.87	9.0	0.20	0.12	1.00	0.59	20 13
30	11.86	11.86	33.393	25.368	260.5	0.083		5.19	226.5	84.6	10.4	0.96	10.7	0.34	0.19	0.96	0.62	30 12
40	10.93	10.93	33.467	25.596	239.1	0.108		4.30	187.7	68.7	14.6	1.31	16.6	0.46	0.31	0.64	0.37	40 11
50	10.75	10.74	33.559	25.700	229.4	0.132		4.20	183.3	66.9	17.4	1.45	18.8	0.44	0.16	0.35	0.42	50 10
60	10.50	10.49	33.614	25.788	221.3	0.154		3.82	166.8	60.6	19.4	1.57	21.0	0.46	0.06	0.26	0.33	60 09
70	10.19	10.18	33.631	25.854	215.3	0.176		3.55	155.0	55.9	20.3	1.62	22.2	0.33	0.00	0.17	0.27	71 08
75 ISL	10.13 D	10.12	33.648	25.878	213.1	0.183		3.40	d147.9	53.4	21.5	1.68	23.1	0.24	0.00	0.13	0.22	76
85	9.74	9.73	33.715	25.996	202.0	0.207		2.98	150.0	46.5	23.9	1.80	24.9	0.06	0.00	0.05	0.10	86 07
100	9.64	9.63	33.745	26.036	198.6	0.237		2.90	126.7	45.2	24.8	1.83	25.5	0.05	0.00	0.05	0.17	101 06
120	9.32	9.30	33.871	26.188	184.5	0.276		2.54	110.7	39.2	28.3	1.97	27.6	0.03	0.00	0.02	0.13	121 05
125 ISL	9.31 D	9.30	33.890	26.204	183.1	0.282		2.50	d108.8	53.7	29.0	1.99	27.8	0.03	0.00	0.02	0.13	126
141	9.14	9.12	33.952	26.281	176.1	0.313		2.30	100.5	35.5	31.2	2.07	28.8	0.04	0.00	0.02	0.14	142 04
150 ISL	9.10 D	9.08	33.967	26.299	174.6	0.327		2.26	d98.5	53.4	31.9	2.10	29.1	0.04	0.00	0.02	0.13	151
171	9.04	9.02	34.012	26.345	170.7	0.365		2.04	89.2	31.5	33.7	2.16	30.0	0.05	0.00	0.02	0.11	172 03
200	8.67	8.65	34.112	26.481	158.3	0.413		1.62	70.7	24.7	38.9	2.35	32.0	0.05	0.00	0.01	0.13	202 02
210	8.47	8.44	34.139	26.534	153.3	0.429		1.39	60.7	21.1	42.8	2.46	33.1	0.07	0.12		212 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
34	53.5 N	121 12.3 W	13/04/2017	0737	UTC	556 m	140 09 kn	6.05	264.2	103.1	2.0	0.27	0.0	0.02	0.03	0.33	0.12	0
0	14.10	14.10	33.086	24.689	324.4	0.000		6.05	264.2	103.1	2.0	0.27	0.0	0.00	0.33	0.12	2 21	
2	14.10	14.10	33.086	24.689	324.5	0.007		6.05	264.2	103.1	2.0	0.27	0.0	0.00	0.33	0.12	10 19	
10	13.82	13.82	33.098	24.756	318.4	0.032		6.08	265.7	103.1	2.4	0.30	0.3	0.05	0.00	0.69	0.26	10 20
20	13.22	13.21	33.212	24.967	298.5	0.063		6.01	262.5	100.7	4.8	0.49	2.9	0.16	0.00	1.43	0.56	20 18
30	13.11	13.11	33.229	25.001	295.5	0.093		5.99	261.7	100.2	5.2	0.54	3.5	0.17	0.00	1.22	0.73	30 17
40	13.01	13.00	33.237	25.028	293.3	0.122		5.97	260.9	99.7	5.4	0.55	3.8	0.17	0.00	1.19	0.85	40 16
50	12.09	12.09	33.310	25.262	271.2	0.150		5.50	240.2	90.0	8.6	0.85	8.2	0.29	0.22	0.88	0.48	50 15
60	11.60	11.59	33.364	25.397	258.6	0.177		5.06	221.1	82.1	10.6	1.03	11.0	0.37	0.27	0.69	0.37	60 14
70	10.87	10.86	33.438	25.585	240.9	0.202		4.10	179.3	65.5	14.3	1.28	15.3	0.14	0.00	0.16	0.20	71 13
75 ISL	10.75 D	10.74	33.462	25.626	237.1	0.212		4.03	d175.5	64.2	15.1	1.32	15.9	0.12	0.00	0.13	0.24	76
85	10.47	10.46	33.495	25.701	230.2	0.237		3.83	167.4	60.7	16.5	1.39	17.0	0.08	0.00	0.09	0.31	86 12
100 ISL	10.04 D	10.03	33.618	25.870	214.4	0.269		3.32	d144.7	52.2	20.6	1.59	19.9	0.03	0.00	0.05	0.15	101
101	10.02	10.01	33.619	25.874	214.0	0.273		3.33	145.5	52.3	20.9	1.60	20.1	0.03	0.00	0.04	0.14	102 11
120	9.61	9.60	33.764	26.057	197.0	0.312		2.80	122.5	43.6	25.3	1.82	23.1	0.00	0.00	0.02	0.11	121 10
125 ISL	9.54 D	9.52	33.794	26.092	193.8	0.320		2.66	d115.7	41.3	26.3	1.85	23.5	0.00	0.00	0.02	0.11	126
141	9.14	9.13	33.882	26.225	181.4	0.352		2.51	109.6	38.7	29.5	1.96	25.1	0.00	0.00	0.02	0.11	142 09
150 ISL	9.00 D	9.05	33.914	26.263	178.0	0.367		2.42	d106.9	37.8	30.6	1.98	25.6	0.00	0.00	0.02	0.10	151
170	8.70	8.68	33.959	26.356	169.5	0.403		2.42	105.8	37.0	32.9	2.03	26.7	0.00	0.00	0.02	0.10	171 08
200	8.33	8.31	34.031	26.470	159.2	0.452		2.01	87.6	30.4	38.0	2.20	28.7	0.00	0.00	0.01	0.08	202 07
230	8.20	8.18	34.057	26.510	155.9	0.499		1.82	79.7	27.6	40.3	2.27	29.6	0.00	0.00		232 06	
250 ISL	8.06 D	8.03	34.086	26.556	151.9	0.530		1.66	d72.1	25.0	42.7	2.35	30.4	0.00	0.00		252	
270	7.90	7.87	34.098	26.589	149.0	0.560		1.51	65.8	22.6	45.1	2.42	31.2	0.00	0.00		272 05	
300 ISL	7.52 D	7.49	34.118	26.660	142.6	0.604		1.31	d56.8	19.4	50.0	2.53	32.6	0.00	0.00		302	
321	7.31	7.28	34.140	26.707	138.4	0.633		1.12	49.0	16.6	53.5	2.61	33.5	0.00	0.00		324 04	
380	6.88	6.84	34.182	26.801	130.2	0.713		0.78	34.2	11.5	61.7	2.79	35.4	0.00	0.00		383 03	
400 ISL	6.81 D	6.77	34.216	26.837	127.0	0.740		0.65	d28.1	9.4	63.9	2.84	35.8	0.00	0.00		403	
440	6.61	6.57	34.239	26.883	123.2	0.789		0.51	22.3	7.5	68.4	2.93	36.6	0.00	0.00		444 02	
500 ISL	6.20 D	6.15	34.271	26.963	116.1	0.863		0.38	d16.6	5.5	74.9	3.03	37.8	0.00	0.00		504	
515	6.15	6.10	34.272	26.970	115.6	0.878		0.37	15.9	5.3	76.5	3.05	38.1	0.00	0.00		519 01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN HT	OXYGEN	OXYGEN	OXY						

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
34 23.1 N	122 14.5 W	12/04/2017	2226	UTC	3962 m	190 06 kn	250 06 08	1	1017.2 mb	17.1	15.0 C	23 m	2/8	C 071			
0	14.64	14.64	33.069	24.561	336.5	0.000	5.97	260.9	103.0	1.7	0.25	0.0	0.01	0.01	0.20	0.05	0
2	14.64	14.64	33.069	24.561	336.6	0.007	5.97	260.9	103.0	1.7	0.25	0.0	0.00	0.00	0.20	0.05	2 20
10	14.28	14.27	33.059	24.631	330.2	0.033	6.02	262.9	103.0	1.7	0.25	0.0	0.00	0.00	0.20	0.05	10 19
20	13.92	13.92	33.038	24.689	325.0	0.066	6.06	265.0	103.0	1.8	0.25	0.0	0.00	0.00	0.38	0.11	20 18
30	13.75	13.75	33.014	24.706	323.6	0.099	6.14	268.2	103.9	2.6	0.28	0.1	0.05	0.00	0.77	0.40	30 17
40	13.66	13.65	33.104	24.796	315.5	0.131	6.08	265.6	102.8	3.2	0.35	1.0	0.08	0.09	0.57	0.36	40 16
50	13.32	13.31	33.283	D 25.003	295.9	0.159	5.98	D 260.6	D 100.5								50 15
59	12.82	12.81	33.396	25.189	278.5	0.187	5.71	249.6	95.1	6.3	0.70	6.1	0.22	0.44	0.17	0.29	59 14
70	12.01	12.00	33.418	25.362	262.2	0.217	5.24	229.0	85.8	8.1	0.89	8.7	0.37	0.68	0.19	0.20	71 13
75 ISL	11.43 D	11.42	33.457	D 25.500	249.2	0.228	4.79	D 208.6	D 77.4	10.3	1.03	11.3	0.34	0.00	0.18	0.20	76
84	10.96	10.95	33.484	25.607	239.2	0.252	4.13	180.3	66.1	14.2	1.29	15.8	0.30	0.00	0.16	0.19	85 12
98	10.45	10.43	33.588	25.778	223.2	0.284	3.44	150.2	54.4	18.7	1.56	20.0	0.05	0.00	0.07	0.15	99 11
100 ISL	10.06 D	10.05	33.640	D 25.884	213.1	0.287	3.24	D 141.1	D 50.9	19.2	1.58	20.3	0.05	0.00	0.07	0.15	101
121	9.80	9.78	33.752	26.016	200.9	0.332	2.83	123.6	44.2	24.3	1.81	23.5	0.03	0.00	0.03	0.14	122 10
125 ISL	9.81 D	9.79	33.804	D 26.055	197.4	0.339	2.58	D 112.2	D 40.3	25.1	1.85	24.0	0.03	0.00	0.03	0.13	126
140	9.49	9.47	33.888	26.175	186.3	0.369	2.41	105.3	37.5	28.3	1.98	25.7	0.00	0.00	0.03	0.10	141 09
150 ISL	9.40 D	9.39	33.910	D 26.205	183.6	0.387	2.35	D 102.4	D 36.5	29.5	2.02	26.3	0.02	0.00	0.02	0.10	151
170	9.14	9.12	33.975	26.299	175.0	0.423	2.17	94.9	33.5	31.8	2.09	27.4	0.00	0.00	0.02	0.10	171 08
200	8.83	8.81	34.036	26.397	166.3	0.475	1.95	85.1	29.9	35.1	2.19	28.7	0.00	0.00	0.02	0.09	202 07
229	8.43	8.40	34.074	26.490	157.9	0.522	1.88	82.0	28.5	38.7	2.26	30.2	0.00	0.00			231 06
250 ISL	8.08 D	8.06	34.109	D 26.570	150.6	0.554	1.62	D 70.6	D 24.4	42.8	2.38	31.6	0.02	0.00			252
269	7.90	7.88	34.144	26.624	145.7	0.582	1.33	58.1	20.0	46.4	2.49	32.8	0.00	0.00			271 05
300 ISL	7.60 D	7.57	34.170	D 26.689	140.0	0.627	1.08	D 47.1	D 16.1	50.8	2.60	33.9	0.01	0.00			302
320	7.51	7.48	34.193	26.720	137.3	0.654	0.96	41.8	14.2	53.6	2.67	34.6	0.00	0.00			323 04
382	7.09	7.06	34.220	26.801	130.4	0.737	0.71	31.0	10.5	60.4	2.80	36.2	0.00	0.00			385 03
400 ISL	6.95 D	6.91	34.225	D 26.826	128.2	0.763	0.65	D 28.1	D 9.5	62.6	2.84	36.7	0.01	0.00			403
440	6.63	6.59	34.259	26.896	122.0	0.810	0.50	21.8	7.3	67.3	2.94	38.0	0.00	0.00			444 02
500 ISL	6.17 D	6.12	34.279	D 26.974	115.1	0.885	0.36	D 15.7	D 5.2	74.1	3.03	39.4	0.01	0.00			504
517	6.09	6.04	34.291	26.993	113.5	0.900	0.33	14.4	4.8	76.0	3.06	39.8	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 BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
34 3.6 N	122 56.5 W	12/04/2017	1703	UTC	4179 m	270 09 kn	250 05 07	1	1017.2 mb	16.0 C	14.2 C	26 m	6/8	ST 070			
0	14.95	14.95	33.129	24.542	338.4	0.000	5.93	259.1	102.9	1.3	0.26	0.0	0.01	0.01	0.12	0.02	0
2 A	14.95	14.95	33.129	24.542	338.5	0.007	5.93	259.1	102.9	1.3	0.26	0.0	0.00	0.00	0.12	0.02	2 24
10	14.63	14.62	33.132	24.614	331.8	0.034	5.97	261.2	103.0	1.3	0.26	0.0	0.00	0.00	0.14	0.02	10 22
16 A	14.52	14.52	33.129	24.635	330.1	0.054	5.98	261.4	102.9	1.3	0.28	0.1	0.00	0.10	0.17	0.03	16 21
20 ISL	14.51 D	14.51	33.125	D 24.634	330.3	0.064	6.00	261.3	103.2	1.3	0.27	0.0	0.00	0.00	0.21	0.03	20
23 A	14.49	14.49	33.129	24.641	329.7	0.077	6.01	262.8	103.3	1.3	0.27	0.0	0.00	0.00	0.23	0.03	23 20
30 ISL	14.48 D	14.48	33.125	D 24.640	330.0	0.097	5.99	261.1	103.0	1.3	0.26	0.0	0.00	0.00	0.25	0.04	30
40 A	14.38	14.38	33.129	24.665	328.0	0.133	5.96	260.9	102.4	1.3	0.25	0.0	0.00	0.00	0.27	0.06	40 19
50	14.07	14.07	33.127	24.728	322.2	0.165	5.98	261.7	102.0	1.5	0.27	0.0	0.00	0.00	0.43	0.13	50 18
62	12.59	12.58	33.209	25.089	288.1	0.202	5.43	237.4	89.8	4.9	0.59	4.3	0.17	0.00	0.78	0.36	63 17
75 A	11.11	11.10	33.332	25.461	252.7	0.231	4.58	200.2	75.4	10.5	1.04	12.2	0.08	0.00	0.50	0.41	74 15
73	11.11	11.10	33.310	25.444	254.4	0.231											74 16
75 ISL	11.00 D	10.99	33.368	D 25.508	248.3	0.235	4.40	D 191.6	D 70.4	11.2	1.09	13.0	0.07	0.00	0.45	0.38	76
82	10.53	10.52	33.408	25.623	237.5	0.254	4.13	180.5	65.4	13.9	1.26	15.9	0.04	0.00	0.29	0.27	83 14
91 A	10.16	10.14	33.491	25.751	225.5	0.274	3.91	171.1	61.5	16.9	1.41	18.5	0.00	0.00	0.09	0.08	92 13
100	9.95	9.93	33.578	25.855	215.8	0.294	3.52	154.0	55.2	19.5	1.57	20.7	0.00	0.00	0.10	0.10	101 12
110	9.57	9.56	33.659	25.980	204.1	0.315	3.29	143.9	51.2	22.5	1.70	22.7	0.00	0.00	0.02	0.05	111 11
125	9.28	9.27	33.731	26.084	194.5	0.345	3.18	138.9	49.1	24.4	1.76	24.0	0.00	0.00	0.02	0.03	126 10
140	9.03	9.02	33.815	26.190	184.7	0.374	3.00	131.0	46.1	27.3	1.85	25.3	0.00	0.00	0.01	0.03	141 09
150 ISL	8.89 D	8.87	33.871	D 26.257	178.5	0.391	2.88	D 125.2	D 44.1	28.7	1.89	25.9	0.01	0.00	0.01	0.03	151
171	8.66	8.64	33.945	26.351	169.9	0.428	2.68	117.3	40.9	31.7	1.98	27.3	0.00	0.00	0.01	0.02	172 08
200 ISL	8.21 D	8.18	34.012	D 26.474	158.7	0.476	2.33	D 101.3	D 35.2	36.6	2.11	29.0	0.01	0.00	0.01	0.03	202
201	8.19	8.17	34.006	26.471	159.0	0.478	2.41	105.3	36.4	36.8	2.11	29.0	0.00	0.00	0.01	0.03	203 07
230	7.71	7.69	3														

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP
33 43.3 N	123 37.6 W	12/04/2017	1149	UTC	4220 m	320 07 kn			1015.9 mb	15.8	C 15.0 C						069	
0	14.87	14.87	33.110	24.543	338.3	0.000	5.93	259.6	102.9	1.6	0.27	0.0	0.01	0.00	0.16	0.04	0	
2	14.87	14.87	33.110	24.543	338.3	0.007	5.93	259.6	102.9	1.6	0.27	0.0	0.00	0.00	0.16	0.04	2 20	
10	14.86	14.85	33.112	24.549	338.0	0.034	5.95	260.2	103.1	1.5	0.25	0.0	0.00	0.00	0.15	0.03	10 19	
20 ISL	14.39 D	14.39	33.126	D 24.660	327.8	0.064	6.01	261.9	103.1	1.5	0.26	0.0	0.01	0.00	0.18	0.04	20	
21	14.40	14.40	33.119	24.652	328.5	0.071	6.01	263.0	103.3	1.5	0.26	0.0	0.00	0.00	0.18	0.04	21 18	
30	14.28	14.28	33.116	24.675	326.6	0.100	6.00	262.2	102.7	1.5	0.26	0.0	0.00	0.00	0.25	0.06	30 17	
40	14.25	14.25	33.116	24.682	326.3	0.133	6.02	263.1	103.0	1.5	0.25	0.0	0.00	0.00	0.27	0.10	40 16	
50	14.11	14.10	33.120	24.716	323.4	0.165	6.02	263.2	102.7	1.5	0.25	0.0	0.00	0.00	0.30	0.13	50 15	
60	13.56	13.55	33.143	24.847	311.1	0.197	5.85	256.0	98.7	2.6	0.37	1.1	0.29	0.00	0.53	0.22	60 14	
69	12.61	12.60	33.196	25.077	289.4	0.224	5.37	234.7	88.8	5.2	0.66	5.8	0.16	0.11	0.33	0.21	70 13	
75 ISL	12.18 D	12.17	33.242	D 25.194	278.4	0.239	5.09	0221.8	D 83.5	6.9	0.78	8.0	0.12	0.00	0.24	0.19	76	
84	11.61	11.59	33.312	25.356	263.1	0.265	4.65	203.4	75.4	9.5	0.95	11.2	0.05	0.00	0.12	0.15	85 12	
100	10.59	10.58	33.435	25.634	236.9	0.305	4.04	176.8	64.2	14.6	1.28	16.5	0.03	0.00	0.03	0.09	101 11	
121	9.64	9.62	33.580	25.908	211.1	0.352	3.65	159.5	56.7	19.8	1.53	20.6	0.00	0.00	0.03	0.07	122 10	
125 ISL	9.39 D	9.38	33.693	D 26.037	199.0	0.359	3.44	0149.6	D 53.2	21.1	1.58	21.3	0.02	0.00	0.03	0.07	126	
139	9.13	9.12	33.759	26.130	190.3	0.388	3.24	141.8	49.9	25.5	1.74	23.8	0.00	0.00	0.01	0.05	140 09	
150 ISL	9.01 D	8.99	33.831	D 26.207	183.3	0.407	3.09	0134.3	D 47.4	27.1	1.79	24.7	0.01	0.00	0.01	0.05	151	
170	8.72	8.70	33.904	26.310	173.8	0.445	2.87	125.4	43.8	30.0	1.88	26.2	0.00	0.00	0.01	0.04	171 08	
200	8.35	8.33	33.987	26.433	162.7	0.495	2.42	105.9	36.7	35.0	2.07	28.8	0.00	0.00	0.01	0.04	202 07	
232	7.93	7.91	34.030	26.529	154.0	0.546	2.19	95.5	32.8	41.0	2.21	30.4	0.00	0.00		234 06		
250 ISL	7.54 D	7.51	34.023	D 26.581	149.2	0.572	2.19	95.3	D 32.6	43.7	2.27	31.4	0.01	0.00		252		
271	7.37	7.35	34.037	26.616	146.1	0.604	1.94	84.8	28.8	46.9	2.34	32.5	0.00	0.00		273 05		
300 ISL	7.08 D	7.05	34.049	D 26.667	141.6	0.645	1.72	75.0	D 25.4	51.8	2.47	34.0	0.01	0.00		302		
320	6.97	6.94	34.079	26.705	138.3	0.673	1.42	62.0	20.8	55.2	2.56	35.0	0.00	0.00		323 04		
381	6.45	6.41	34.132	26.818	128.2	0.755	0.92	40.1	13.3	64.8	2.79	37.7	0.00	0.00		384 03		
400 ISL	6.44 D	6.41	34.171	D 26.851	125.4	0.780	0.72	D 31.4	D 10.5	68.1	2.84	38.5	0.01	0.00		403		
440	5.68	5.64	34.130	26.914	119.2	0.829	0.71	31.1	10.1	75.3	2.94	40.2	0.00	0.00		444 02		
500 ISL	5.33 D	5.28	34.177	D 26.995	112.0	0.899	0.49	D 21.4	D 7.0	82.5	3.04	41.5	0.01	0.00		504		
516	5.25	5.21	34.182	27.008	110.9	0.916	0.45	19.7	6.4	84.4	3.07	41.8	0.00	0.00		520 01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP
33 23.0 N	124 19.2 W	12/04/2017	0620	UTC	4507 m	220 10 kn			1017.6 mb	16.3	C 15.7 C						068	
0	14.73	14.73	32.798	24.334	358.3	0.000	5.93	259.4	102.3	2.6	0.24	0.0	0.01	0.02	0.12	0.03	0	
2	14.73	14.73	32.798	24.334	358.3	0.007	5.93	259.4	102.3	2.6	0.24	0.0	0.00	0.00	0.12	0.03	2 20	
10	14.71	14.71	32.797	24.338	358.2	0.036	5.94	259.6	102.4	2.6	0.24	0.0	0.00	0.00	0.12	0.02	10 19	
20 ISL	14.47 D	14.47	32.793	D 24.385	353.9	0.068	5.96	260.1	102.3	2.7	0.24	0.0	0.00	0.00	0.13	0.03	20	
25	14.41	14.41	32.795	24.400	352.7	0.089	5.97	261.1	102.3	2.7	0.24	0.0	0.00	0.00	0.13	0.03	18	
30 ISL	14.37 D	14.36	32.799	D 24.413	351.6	0.104	5.96	260.4	102.1	2.5	0.24	0.0	0.00	0.00	0.16	0.04	30	
41	14.19	14.19	33.132	24.707	323.9	0.143	5.93	259.4	101.4	2.0	0.24	0.0	0.00	0.00	0.23	0.07	41 17	
50	14.01	14.00	33.131	24.746	320.6	0.172	5.93	259.4	101.1	1.9	0.24	0.0	0.00	0.00	0.24	0.10	50 16	
62	13.29	13.28	33.116	24.880	308.0	0.210	5.94	259.6	99.6	2.0	0.27	0.0	0.00	0.00	0.47	0.26	63 15	
75 ISL	12.16 D	12.15	33.015	D 25.022	294.7	0.248	5.92	255.5	96.9	3.7	0.47	2.3	0.00	0.00	0.28	0.18	76	
76	12.13	12.12	33.015	25.027	294.3	0.252	5.91	258.5	96.8	3.8	0.48	2.5	0.50	0.00	0.27	0.18	77 14	
87	12.56	12.54	33.209	25.097	288.0	0.284	5.48	239.7	90.7	4.6	0.50	4.0	0.10	0.00	0.24	0.23	88 13	
100 ISL	12.08 D	12.06	33.327	D 25.281	270.8	0.319	5.23	216.9	85.6	6.0	0.61	6.1	0.05	0.00	0.19	0.15	101	
101	11.96	11.95	33.319	25.297	269.3	0.323	5.21	227.7	85.1	6.1	0.62	6.3	0.04	0.00	0.19	0.15	102 12	
113	10.89	10.88	33.343	25.509	249.1	0.354	4.88	213.2	77.9	9.8	0.91	10.8	0.00	0.00	0.08	0.07	114 11	
124	10.66	10.65	33.410	25.603	240.5	0.381	4.57	199.9	72.7	12.5	1.10	13.9	0.00	0.00	0.05	0.05	125 10	
125 ISL	10.64 D	10.63	33.413	D 25.608	240.0	0.382	4.52	0197.0	D 71.9	12.8	1.11	14.1	0.00	0.00	0.05	0.05	126	
141	9.77	9.76	33.490	25.817	220.3	0.420	4.16	181.8	64.8	17.1	1.35	17.8	0.00	0.00	0.02	0.04	142 09	
150 ISL	9.71 D	9.70	33.552	D 25.875	215.0	0.439	4.03	0175.6	D 62.8	19.4	1.47	19.5	0.00	0.00	0.02	0.04	151	
170	9.36	9.34	33.713	26.060	197.8	0.481	3.26	142.6	50.5	24.4	1.74	23.4	0.00	0.00	0.01	0.04	171 08	
199	8.86	8.84	33.866	26.259	179.3	0.536	3.03	132.2	46.4	29.0	1.86	25.5	0.00	0.00	0.01	0.04	201 07	
230	8.79	8.76	34.001	26.377	168.8	0.590	2.18	95.0	33.3	34.4	2.13	28.5	0.00	0.00		232 06		
250 ISL	8.28 D	8.26	33.992	D 26.448	162.2	0.623	2.52	0109.8	D 38.2	36.6	2.09	28.7	0.00	0.00		252		
271	7.82																	

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD					
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	DEG C	DEG C	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
34 26.9 N	120 31.7 W	10/04/2017	1714	UTC	75 m	300 15 kn	300 05 10	0	1019.0 mb	13.4	11.2 C	07 m	0/8	061							
0	11.20	11.20	33.630	25.673	230.7	0.000	4.04	176.3	65.0	18.4	1.48	17.8	0.28	0.10	1.69	0.39	0				
2 A	11.20	11.20	33.630	25.673	230.8	0.005	4.04	176.3	65.0	18.4	1.48	17.8	0.28	0.10	1.69	0.39	2	12			
4 A	11.18	11.18	33.627	25.675	230.7	0.009	4.03	176.0	64.9	18.2	1.46	17.8	0.27	0.14	1.64	0.34	4	11			
6 A	11.16	11.16	33.628	25.679	230.3	0.014	4.02	175.6	64.7	18.2	1.49	18.0	0.27	0.14	1.62	0.34	6	10			
10 ISL	11.11	11.11	33.633	25.692	229.2	0.021	3.92	D170.6	D 63.0	18.3	1.51	18.2	0.27	0.09	1.69	0.42	10				
11 A	11.06	11.05	33.633	25.702	228.3	0.025	3.91	170.6	62.7	18.3	1.51	18.2	0.27	0.08	1.70	0.44	11	07			
11	11.06	11.05	33.633	25.702	228.3	0.025											11	09			
20 A	10.43	10.43	33.684	25.851	214.3	0.045	3.10	135.5	49.2	21.0	1.66	21.1	0.25	0.06	0.72	0.39	20	06			
24 A	10.29	10.29	33.717	25.902	209.6	0.054	2.93	127.9	46.3	22.5	1.75	22.4	0.19	0.00	0.40	0.29	24	05			
30 ISL	10.09	D 10.08	33.764	D 25.974	202.8	0.064	2.67	D116.3	D 42.0	23.9	1.82	23.4	0.14	0.00	0.22	0.26	30				
32	10.08	10.07	33.764	25.976	202.8	0.070	2.67	116.4	41.9	24.3	1.84	23.8	0.12	0.00	0.16	0.25	32	04			
40	10.06	10.05	33.770	25.984	202.2	0.087	2.65	115.6	41.6	24.3	1.85	24.0	0.12	0.00	0.16	0.27	40	03			
50	9.93	9.93	33.799	26.028	198.3	0.107	2.57	112.0	40.2	25.2	1.89	24.5	0.11	0.13	0.12	0.25	50	02			
60	9.91	9.90	33.817	26.046	196.7	0.126	2.52	110.2	39.6	26.1	1.94	24.9	0.12	0.21	0.11	0.29	60	01			

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD					
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	DEG C	DEG C	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
34 19.0 N	120 48.3 W	10/04/2017	2012	UTC	813 m	320 23 kn	310 06 06	0	1018.8 mb	14.0	C 12.0 C	06 m	0/8	062							
0	12.81	12.81	33.516	25.281	268.0	0.000	6.36	277.9	105.9	5.5	0.34	3.7	0.16	0.06	11.97	0.54	0				
2	12.81	12.81	33.516	25.281	268.1	0.005	6.36	277.9	105.9	5.5	0.34	3.7	0.16	0.06	11.97	0.54	2	23			
10	12.82	12.82	33.517	25.281	268.3	0.027	6.37	278.3	106.1	5.3	0.33	3.6	0.15	0.00	11.98	0.52	10	20			
10	12.82	12.82	33.516	25.281	268.4	0.028											10	22			
11	12.79	12.79	33.516	25.286	267.9	0.029											11	21			
20	12.77	12.77	33.515	25.290	267.8	0.054	6.23	272.1	103.6	5.3	0.37	4.0	0.15	0.00	11.47	0.66	20	18			
20	12.77	12.77	33.519	25.292	267.6	0.055											20	19			
30	12.52	12.52	33.514	25.337	263.6	0.080	5.95	259.8	98.4	7.8	0.60	6.4	0.16	0.20	7.31	0.74	30	17			
40	12.28	12.27	33.521	25.390	258.8	0.106	5.74	250.6	94.4	10.1	0.75	8.6	0.20	0.25	5.24	0.59	40	16			
50	11.21	11.20	33.569	25.627	235.6	0.131	4.63	202.4	74.6	16.3	1.35	16.1	0.36	0.17	0.57	0.52	50	15			
61	10.96	10.95	33.578	25.679	231.7	0.157	4.34	189.5	69.5	17.1	1.38	16.9	0.29	0.17	0.53	0.53	61	14			
70	10.22	10.21	33.618	25.839	216.7	0.177	3.36	146.7	53.0	19.9	1.62	20.4	0.16	0.00	0.17	0.25	71	13			
75 ISL	10.07	D 10.06	33.672	D 25.906	210.4	0.186	3.09	D134.4	D 48.5	214.1	1.69	21.4	0.13	0.00	0.13	0.22	76				
85	9.84	9.83	33.740	25.998	201.9	0.209	2.83	123.7	44.3	24.3	1.82	23.3	0.06	0.00	0.05	0.16	86	12			
100	9.63	9.62	33.806	26.085	193.9	0.238	2.66	116.0	41.4	26.3	1.90	24.4	0.04	0.00	0.04	0.16	101	11			
120	9.14	9.12	33.883	26.226	180.8	0.276	2.60	113.6	40.1	29.2	1.97	26.0	0.03	0.00	0.03	0.16	121	10			
125 ISL	9.07	D 9.06	33.893	D 26.245	179.2	0.284	2.60	D113.2	D 40.0	29.9	1.99	26.3	0.03	0.00	0.03	0.15	126				
140	8.86	8.84	33.946	26.321	172.2	0.311	2.42	105.9	37.1	32.0	2.05	27.3	0.03	0.00	0.02	0.12	141	09			
150 ISL	8.83	D 8.81	33.962	D 26.339	170.7	0.327	2.36	D102.6	D 36.1	33.3	2.09	27.8	0.03	0.00	0.03	0.11	151				
171	8.53	8.51	34.021	26.431	162.4	0.363	2.12	92.4	32.2	36.1	2.18	28.9	0.03	0.00	0.03	0.09	172	08			
200 ISL	8.31	D 8.28	34.071	D 26.505	155.8	0.409	1.79	D 77.9	D 27.1	39.8	2.30	30.4	0.03	0.00	0.02	0.08	202				
201	8.30	8.28	34.071	26.505	155.8	0.411	1.80	78.6	27.3	39.9	2.30	30.5	0.03	0.00	0.02	0.08	203	07			
231	8.04	8.01	34.104	26.572	150.0	0.457	1.56	67.9	23.4	43.8	2.42	31.8	0.03	0.00	0.02	0.08	233	06			
250 ISL	7.89	D 7.87	34.125	D 26.610	146.6	0.485	1.39	D 60.5	D 20.9	46.1	2.49	32.5	0.03	0.00	0.02	0.08	252				
271	7.79	7.76	34.151	26.646	143.6	0.515	1.22	53.4	18.3	48.7	2.56	33.2	0.03	0.00	0.02	0.08	273	05			
300 ISL	7.57	D 7.54	34.180	D 26.702	138.7	0.557	1.05	D 44.8	D 15.3	52.0	2.65	34.2	0.00	0.00	0.02	0.08	302				
321	7.44	7.41	34.193	26.731	136.2	0.585	0.91	39.8	13.5	54.4	2.71	34.8	0.00	0.00	0.02	0.08	324	04			
382	7.02	6.99	34.242	26.828	127.8	0.666	0.62	27.0	9.1	61.8	2.87	36.3	0.00	0.00	0.02	0.08	385	03			
400 ISL	6.92	D 6.89	34.253	D 26.851	125.8	0.690	0.57	D 24.9	D 8.4	63.7	2.90	36.8	0.00	0.00	0.02	0.08	403				
439	6.61	6.57	34.260	26.899	121.6	0.737	0.50	21.8	7.3	67.9	2.96	37.9	0.00	0.00	0.02	0.08	443	02			
500 ISL	6.33	D 6.28	34.268	D 26.944	118.1	0.813	0.41	D 18.0	D 6.0	73.8	3.05	38.9	0.00	0.00	0.02	0.08	504				
517	6.18	6.13	34.288	26.980	114.8	0.829	0.36	15.6	5.2	75.4	3.07	39.3	0.00	0.00	0.02	0.08	521	01			

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED
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RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db		
0	14.47	14.47	33.106	24.627	330.3	0.000	5.95	259.8	102.2	1.9	0.26	0.0	0.00	0.00	0.15	0.02	0.02	0		
2	14.47	14.47	33.106	24.627	330.3	0.007	5.95	259.8	102.2	1.9	0.26	0.0	0.00	0.00	0.15	0.02	0.02	22		
10	14.47	14.47	33.106	24.626	330.7	0.033	5.94	259.7	102.2	1.8	0.26	0.0	0.00	0.00	0.18	0.03	10	20		
10	14.47	14.47	33.107	24.627	330.6	0.032												21		
20	ISL	14.47	33.107	D	24.627	330.9	0.063	5.94	D258.7	D102.1	1.8	0.25	0.0	0.00	0.00	0.17	0.04	20		
25	14.47	14.47	33.105	24.627	331.1	0.083	5.95	260.1	102.3	1.8	0.25	0.0	0.00	0.00	0.17	0.04	25	19		
30	ISL	14.47	D	14.47	33.107	D	24.628	331.2	0.097	5.95	259.3	102.3	1.9	0.25	0.0	0.00	0.17	0.04	30	
40	14.47	14.47	33.105	24.627	331.5	0.132	5.94	259.7	102.1	2.0	0.25	0.0	0.00	0.00	0.16	0.03	40	18		
50	14.00	13.99	33.096	24.720	323.0	0.165	5.98	261.4	101.8	2.0	0.24	0.0	0.00	0.00	0.19	0.06	50	17		
62	12.68	12.67	33.025	24.930	303.2	0.203	6.11	266.9	101.1	2.5	0.29	0.3	0.03	0.00	0.49	0.34	63	16		
74	12.28	12.27	33.045	25.022	294.7	0.239												75	15	
75	12.27	12.26	33.052	25.030	294.0	0.242	5.88	257.0	96.5	3.9	0.46	2.8	0.31	0.00	0.40	0.36	76	14		
86	11.69	11.68	33.232	25.279	270.5	0.273	5.26	230.0	85.4	6.4	0.65	6.6	0.04	0.00	0.31	0.33	87	13		
100	10.81	10.80	33.349	25.528	247.0	0.309	4.75	207.5	75.7	10.9	0.98	12.0	0.03	0.00	0.13	0.10	101	12		
112	10.29	10.27	33.424	25.678	232.9	0.338	4.45	194.6	70.2	14.2	1.18	15.2	0.00	0.00	0.07	0.06	113	11		
124	10.04	10.03	33.476	25.761	225.3	0.365	4.29	187.5	67.3	16.1	1.28	17.0	0.00	0.00	0.04	0.04	125	10		
125	ISL	10.03	D	10.02	33.485	D	25.768	224.6	0.366	4.23	D184.2	D 66.4	16.4	1.30	17.2	0.01	0.00	0.04	0.04	126
140	9.42	9.40	33.633	25.986	204.1	0.399	3.87	169.2	60.0	21.2	1.52	20.7	0.00	0.00	0.01	0.04	141	09		
150	ISL	9.27	D	9.25	33.726	D	26.083	195.1	0.419	3.53	D153.4	D 54.4	23.9	1.66	22.6	0.01	0.00	0.01	0.04	151
169	9.05	9.03	33.850	26.216	182.9	0.455	2.79	121.7	42.9	29.1	1.92	26.3	0.00	0.00	0.01	0.03	170	08		
200	ISL	8.67	D	8.65	33.956	D	26.359	169.8	0.510	2.60	D113.1	D 39.7	32.6	2.01	27.5	0.00	0.00	0.01	0.03	202
201	8.70	8.68	33.950	26.350	170.7	0.512	2.58	112.6	39.4	32.7	2.01	27.6	0.00	0.00	0.01	0.03	203	07		
229	8.14	8.12	33.981	26.460	160.6	0.558	2.76	120.3	41.5	35.9	2.02	28.2	0.00	0.00			231	06		
250	ISL	7.83	D	7.81	34.008	D	26.527	154.4	0.592	2.48	D107.7	D 37.1	40.0	2.11	29.6	0.00			252	
270	7.45	7.42	34.007	26.582	149.4	0.622	2.42	105.5	35.9	43.9	2.19	30.9	0.00	0.00			272	05		
300	ISL	7.09	D	7.06	34.021	D	26.644	143.8	0.667	2.06	D89.8	D 30.4	48.9	2.36	32.8	0.00			302	
320	7.06	7.03	34.048	26.670	141.7	0.694	1.76	77.0	25.9	52.3	2.47	34.0	0.00	0.00			323	04		
379	6.49	6.46	34.080	26.772	132.5	0.775	1.22	53.1	17.7	62.1	2.71	37.2	0.00	0.00			382	03		
400	ISL	6.15	D	6.11	34.059	D	26.799	129.9	0.805	1.24	D 53.8	D 17.8	65.5	2.76	38.1	0.00			403	
441	5.84	5.80	34.085	26.859	124.5	0.854	0.95	41.4	13.5	72.2	2.87	39.8	0.00	0.00			445	02		
500	ISL	5.64	D	5.60	34.172	D	26.953	116.3	0.929	0.54	D 23.5	D 7.7	78.4	3.05	41.0	0.00			504	
515	5.67	5.63	34.208	26.979	114.2	0.942	0.45	19.4	6.3	79.9	3.09	41.3	0.00					519	01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db		
0	14.88	14.88	33.130	24.558	336.9	0.000	5.86	256.3	101.6	1.9	0.24	0.0	0.00	0.02	0.10	0.03	0			
2	14.88	14.87	33.130	24.558	336.9	0.007	5.86	256.3	101.6	1.9	0.24	0.0	0.00	0.00	0.10	0.03	22			
10	14.88	14.87	33.127	24.557	337.3	0.034	5.86	256.4	101.7	1.8	0.22	0.0	0.00	0.00	0.10	0.02	10	20		
10	14.88	14.87	33.127	24.557	337.3	0.033											21			
20	ISL	14.88	D	14.88	33.130	D	24.559	337.5	0.064	5.86	255.4	101.6	1.8	0.21	0.0	0.00	0.10	0.03	20	
26	14.88	14.88	33.127	24.557	337.8	0.088	5.85	256.0	101.5	1.8	0.21	0.0	0.00	0.00	0.10	0.03	26	19		
30	ISL	14.80	D	14.80	33.137	D	24.582	335.6	0.099	5.87	256.0	101.7	1.8	0.22	0.0	0.00	0.11	0.03	30	
40	14.52	14.51	33.124	24.633	331.0	0.135	5.93	259.1	102.0	1.6	0.23	0.0	0.00	0.00	0.13	0.03	40	18		
50	14.18	14.17	33.105	24.690	325.9	0.167	6.01	262.5	102.6	1.6	0.24	0.0	0.00	0.00	0.17	0.07	50	17		
63	13.46	13.45	33.099	24.832	312.6	0.209	6.02	263.3	101.4	1.8	0.23	0.0	0.00	0.00	0.26	0.17	64	16		
74	12.80	12.79	33.131	24.988	298.0	0.242											75	15		
75	12.77	D	12.76	33.141	D	25.004	296.6	0.244	5.80	252.6	96.2	2.8	0.34	1.5	0.19	0.00	0.33	0.29	76	
76	12.72	12.71	33.135	25.009	296.1	0.249	5.78	252.6	95.8	2.9	0.35	1.6	0.21	0.00	0.34	0.30	77	14		
88	12.16	12.15	33.168	25.141	283.7	0.283	5.50	240.3	90.1	4.8	0.55	4.9	0.08	0.00	0.28	0.22	89	13		
100	ISL	11.54	D	11.53	33.295	D	25.355	263.6	0.315	4.87	212.2	78.9	8.6	0.88	10.0	0.04	0.00	0.18	0.14	101
101	11.38	11.36	33.295	25.385	260.8	0.319	4.82	210.8	77.8	9.0	0.91	10.5	0.03	0.00	0.17	0.14	102	12		
112	10.78	10.77	33.373	25.552	245.0	0.347	4.41	192.6	70.2	12.5	1.14	14.3	0.00	0.00	0.09	0.10	113	11		
125	ISL	10.05	D	10.04	33.485	D	25.766	224.9	0.376	4.23	D184.0	D 66.3	15.5	1.26	16.6	0.02	0.00	0.03	0.05	126
126	10.00	9.99	33.477	25.768	224.7	0.380	4.23	185.1	66.4	15.7	1.27	16.8	0.00	0.00	0.02	0.05	127	10		
141	9.52	9.50	33.566	25.918	210.6	0.412	4.06	177.2	62.9	18.5	1.42	19.1	0.00	0.00	0.01	0.03	142	09		
150	ISL	9.24	D	9.22	33.695	D	26.065	196.8	0.429	3.76	D163.5	D 57.9	20.9	1.52	20.6	0.00	0.00	0.01	0.03	151
171	8.98	8.96																		

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	14.98	14.98	33.096	24.509	341.5	0.000	5.91	258.3	102.6	1.5	0.25	0.0	0.01	0.01	0.11	0.02	0	
2 A	14.98	14.98	33.096	24.509	341.6	0.007	5.91	258.3	102.6	1.5	0.25	0.0	0.00	0.00	0.11	0.02	2 23	
10 ISL	14.88	D 14.87	33.133	D 24.561	336.9	0.031	5.94	258.8	102.9	1.5	0.24	0.0	0.00	0.00	0.11	0.02	10	
13 A	14.74	14.74	33.118	24.579	335.3	0.044	5.95	260.1	102.8	1.5	0.24	0.0	0.00	0.00	0.11	0.02	13 21	
13	14.74	14.74	33.118	24.579	335.2	0.043											13 22	
19 A	14.65	14.65	33.114	24.595	333.9	0.064	5.94	259.9	102.6	1.8	0.24	0.0	0.00	0.00	0.13	0.03	19 20	
20 ISL	14.65	D 14.64	33.119	D 24.600	333.5	0.064	5.95	259.3	102.6	1.8	0.24	0.0	0.00	0.00	0.14	0.03	20	
26	14.45	14.44	33.110	24.636	330.3	0.087	5.98	261.2	102.7	1.8	0.26	0.0	0.00	0.00	0.16	0.04	26 19	
30 ISL	14.38	D 14.37	33.110	D 24.650	329.0	0.098	5.98	260.7	102.6	1.6	0.26	0.0	0.00	0.00	0.17	0.05	30	
34 A	14.34	14.33	33.113	24.662	328.0	0.114	5.99	261.8	102.7	1.5	0.25	0.0	0.00	0.00	0.17	0.05	34 18	
43	14.21	14.20	33.104	24.682	326.4	0.143	6.02	263.0	102.9	1.4	0.25	0.0	0.00	0.00	0.17	0.04	43 17	
50 ISL	14.16	D 14.16	33.112	D 24.698	325.1	0.164	6.03	262.6	102.9	1.5	0.26	0.0	0.01	0.00	0.18	0.06	50	
52	14.04	14.04	33.102	24.715	323.5	0.172	6.03	263.6	102.7	1.5	0.26	0.0	0.00	0.00	0.18	0.07	52 16	
62 A	13.94	13.93	33.107	24.741	321.3	0.205	6.01	262.9	102.3	1.7	0.26	0.0	0.00	0.00	0.27	0.14	63 15	
75 ISL	13.52	D 13.51	33.081	D 24.808	315.3	0.244	6.07	264.5	102.3	1.9	0.29	0.0	0.07	0.00	0.34	0.21	76	
76	13.47	13.46	33.075	24.813	314.8	0.250											77 14	
77 A	13.44	13.43	33.076	24.820	314.2	0.252	6.08	265.8	102.3	1.9	0.30	0.0	0.08	0.09	0.35	0.22	78 13	
88	13.07	13.06	33.118	24.928	304.2	0.286	5.96	260.7	99.6	2.7	0.40	0.9	0.51	0.00	0.27	0.23	89 12	
100 ISL	12.48	D 12.47	33.193	D 25.100	288.1	0.321	5.56	242.4	91.8	4.2	0.49	3.8	0.14	0.00	0.18	0.21	101	
101	12.48	12.47	33.190	25.098	288.3	0.325	5.53	241.8	91.3	4.3	0.50	4.1	0.11	0.00	0.17	0.21	102 11	
119	11.43	11.42	33.330	25.403	259.5	0.374	5.04	220.4	81.4	8.0	0.78	8.9	0.00	0.00	0.10	0.09	120 10	
125 ISL	11.01	D 11.00	33.366	D 25.507	249.7	0.389	4.84	D 210.6	D 77.4	9.4	0.87	10.4	0.02	0.00	0.08	0.07	126	
140	10.37	10.36	33.450	25.685	233.0	0.426	4.57	199.7	72.2	13.1	1.10	14.2	0.00	0.00	0.03	0.03	141 09	
150 ISL	9.90	D 9.88	33.534	D 25.830	219.3	0.448	4.37	D 190.3	D 68.4	16.1	1.25	16.6	0.02	0.00	0.02	0.02	151	
170	9.27	9.25	33.664	26.035	200.1	0.490	3.77	164.9	58.3	22.0	1.56	21.5	0.00	0.00	0.01	0.02	171 08	
200 ISL	8.64	D 8.62	33.837	D 26.270	178.2	0.547	3.69	D 160.5	D 56.2	26.6	1.64	23.1	0.00	0.00	0.00	0.02	202	
201	8.63	8.60	33.822	26.261	179.1	0.549	3.75	164.0	57.1	26.7	1.64	23.2	0.00	0.00	0.00	0.02	203 07	
231	8.34	8.32	33.942	26.399	166.4	0.601	3.04	132.9	46.0	33.0	1.91	26.8	0.00	0.00			233 06	
250 ISL	7.86	D 7.84	33.967	D 26.491	157.9	0.632	2.77	D 120.5	D 41.5	37.8	2.05	28.8	0.00	0.00			252	
270	7.59	7.56	34.007	26.562	151.3	0.663	2.34	102.1	34.8	42.9	2.20	30.8	0.00	0.00			272 05	
300 ISL	7.02	D 6.99	33.999	D 26.635	144.6	0.708	2.22	D 96.4	D 32.6	48.5	2.32	32.6	0.00	0.00			302	
320	6.82	6.79	34.008	26.670	141.5	0.735	2.04	89.1	29.8	52.3	2.40	33.7	0.00	0.00			323 04	
381	6.56	6.52	34.102	26.780	131.8	0.819	1.10	48.0	16.0	61.8	2.73	37.3	0.00	0.00			384 03	
400 ISL	6.47	D 6.44	34.129	D 26.813	128.9	0.846	0.95	D 41.1	D 13.7	65.1	2.78	38.0	0.00	0.00			403	
441	5.82	5.78	34.117	26.887	121.9	0.896	0.84	36.7	12.0	72.3	2.90	39.5	0.00	0.00			445 02	
500 ISL	5.50	D 5.46	34.180	D 26.977	113.9	0.968	0.51	D 22.0	D 7.2	81.0	3.04	41.2	0.00	0.00			504	
512	5.46	5.42	34.186	26.986	113.1	0.979	0.46	19.9	6.5	82.8	3.07	41.6	0.00	0.00			516 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 BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	15.94	15.94	33.226	24.397	352.2	0.000	5.76	251.7	102.0	1.7	0.22	0.0	0.01	0.00	0.06	0.02	0	
2	15.94	15.94	33.226	24.398	352.2	0.007	5.76	251.7	102.0	1.7	0.22	0.0	0.00	0.00	0.06	0.02	2 22	
10	15.86	15.86	33.223	24.414	350.9	0.035	5.79	253.1	102.4	1.5	0.21	0.0	0.00	0.00	0.08	0.01	10 20	
10 ISL	15.58	D 15.57	33.178	D 24.443	348.5	0.067	5.79	D 252.5	D 101.9	1.4	0.20	0.0	0.01	0.00	0.08	0.01	20	
25	15.40	15.39	33.179	24.484	344.8	0.087	5.82	254.3	101.9	1.4	0.20	0.0	0.00	0.00	0.07	0.01	25 19	
30 ISL	15.39	D 15.38	33.166	D 24.477	345.6	0.102	5.81	D 253.3	D 101.8	1.5	0.21	0.0	0.00	0.00	0.08	0.01	30	
40	15.37	15.36	33.164	24.480	345.6	0.139	5.81	253.8	101.7	1.5	0.22	0.0	0.00	0.00	0.08	0.01	40 18	
50	15.21	15.21	33.150	24.504	343.7	0.174	5.86	256.3	102.3	1.6	0.20	0.0	0.00	0.00	0.09	0.03	50 17	
62	14.92	14.91	33.133	24.555	339.1	0.215	5.88	257.0	102.0	1.6	0.21	0.0	0.00	0.00	0.10	0.02	62 16	
75	14.83	14.82	33.136	24.577	337.5	0.259	5.89	257.4	102.0	1.6	0.22	0.0	0.00	0.00	0.11	0.02	76 15	
87	14.54	14.53	33.133	24.638	332.1	0.299	5.90	258.0	101.6	1.5	0.21	0.0	0.00	0.00	0.19	0.06	88 14	
99	13.43	13.42	33.078	24.824	314.5	0.339	5.95	259.9	100.0	1.7	0.27	0.2	0.05	0.00	0.41	0.22	100 13	
100	13.42	13.41	33.077	24.826	314.3	0.341	5.95	259.9	100.0	1.7	0.27	0.2	0.05	0.00	0.34	0.31	113 11	
112	13.34	13.32	33.185	24.927	305.1	0.378	5.65	246.8	94.9	2.8	0.37	1.7	0.12	0.00	0.34	0.31	113 11	
125 ISL	11.97	D 11.95	33.313	D 25.292	270.4	0.415	4.93	D 214.7	D 80.5	6.6	0.71	7.7	0.05	0.00	0.21	0.20	126	
126	11.91	11.90	33.306	25.296	270.0	0.418	4.99	218.0	81.4	6.9	0.74	8.1	0.04	0.00	0.20	0.19	127 10	
141	11.45	11.4																

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 81.8 46.9

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	11.89	11.89	33.597	25.522	245.2	0.000	5.49	240.0	89.8	16.2	1.09	12.2	0.25	0.10	2.53	0.74	0	
2	11.89	11.89	33.597	25.522	245.2	0.005	5.49	240.0	89.8	16.2	1.09	12.2	0.25	0.10	2.53	0.74	2	
10	11.89	11.89	33.596	25.521	245.5	0.025	5.44	237.8	89.0	16.2	1.08	12.2	0.25	0.11	2.77	0.80	10	
20	10.83	10.83	33.645	25.752	223.8	0.048	3.84	167.6	61.3	19.7	1.54	18.9	0.33	0.15	1.07	0.56	20	
30	10.52	10.52	33.660	25.818	217.7	0.070	3.38	147.6	53.7	21.3	1.66	20.7	0.30	0.00	0.65	0.38	30	
40	10.21	10.21	33.706	25.907	209.5	0.092	3.15	137.5	49.6	23.1	1.74	21.9	0.22	0.00	0.46	0.28	40	
49	10.11	10.11	33.723	25.938	206.7	0.110	3.03	132.2	47.6	23.8	1.79	22.6	0.18	0.00	0.23	0.23	49	
50	10.11	10.11	33.730	25.944	206.2	0.111	2.99	D130.1	0 D 47.0	24.1	1.81	22.8	0.17	0.00	0.23	0.23	50	
60	9.76	9.75	33.841	26.090	192.5	0.132	2.51	109.5	39.2	27.3	1.96	24.8	0.04	0.00	0.17	0.28	60	
70	9.60	9.59	33.891	26.156	186.5	0.151	2.36	103.0	36.7	29.0	2.02	25.6	0.04	0.00	0.11	0.22	71	
75	ISL	9.55	33.927	D 26.192	183.2	0.159	2.20	D 95.9	D 34.3	29.7	2.05	25.9	0.03	0.00	0.10	0.21	76	
85	9.49	9.48	33.944	26.217	181.1	0.179	2.16	94.4	33.6	31.0	2.10	26.5	0.03	0.00	0.09	0.19	86	
100	9.47	9.46	33.963	26.234	179.8	0.206	2.13	92.8	33.0	31.1	2.10	26.6	0.03	0.00	0.09	0.18	101	
120	9.41	9.40	34.042	26.306	173.4	0.241	2.00	87.5	31.1	32.3	2.15	27.0	0.03	0.00	0.06	0.14	121	
125	ISL	9.39	D 9.38	D 34.057	D 26.322	171.9	0.249	1.93	D 83.8	D 29.9	32.8	2.17	27.2	0.03	0.00	0.05	0.14	126
140	9.30	9.28	34.074	26.350	169.6	0.276	1.85	80.6	28.6	34.1	2.22	27.6	0.04	0.00	0.05	0.15	141	
150	ISL	9.25	D 9.23	D 34.093	D 26.373	167.6	0.292	1.77	D 76.8	D 27.3	35.2	2.25	28.0	0.03	0.00	0.05	0.14	151
170	9.07	9.05	34.118	26.422	163.3	0.326	1.63	71.0	25.1	37.4	2.31	28.8	0.00	0.00	0.05	0.12	171	
200	8.82	8.80	34.133	26.475	158.9	0.374	1.43	62.4	21.9	40.4	2.39	29.8	0.00	0.00	0.09	0.14	202	
231	8.55	8.53	34.149	26.530	154.3	0.422	1.20	52.5	18.3	44.5	2.50	30.9	0.00	0.00		233	10	
250	ISL	8.29	D 8.26	D 34.163	D 26.582	149.6	0.452	1.00	D 43.4	D 15.1	47.3	2.56	31.6	0.00	0.00		252	
270	8.17	8.14	34.168	26.603	147.9	0.481	0.94	40.9	14.2	50.3	2.63	32.4	0.00	0.00		272	9	
300	ISL	7.95	D 7.92	D 34.185	D 26.650	143.9	0.526	0.89	D 38.7	D 13.4	51.9	2.65	33.2	0.00	0.00		302	
320	7.70	7.67	34.176	26.680	141.3	0.554	0.97	42.4	14.5	53.0	2.66	33.8	0.00	0.00		323	8	
380	7.36	7.32	34.210	26.757	134.8	0.636	0.64	27.9	9.5	61.9	2.84	34.4	0.00	0.00		383	7	
400	ISL	7.17	D 7.13	D 34.223	D 26.794	131.5	0.665	0.52	D 22.8	D 7.7	66.3	2.91	34.1	0.00	0.00		403	
440	6.92	6.88	34.237	26.841	127.5	0.715	0.30	12.9	4.3	75.2	3.05	33.5	0.00	0.00		444	6	
480	6.70	6.65	34.250	26.881	124.1	0.765	0.08	3.3	1.1	88.2	3.23	30.2	0.00	0.00		484	5	
500	ISL	6.65	D 6.60	D 34.254	D 26.891	123.4	0.793	0.04	D 1.6	D 0.5	95.1	3.37	26.0	0.00	0.00		504	
515	6.61	6.56	34.253	26.896	123.2	0.809	0.02	1.0	0.3	100.3	3.48	22.8	0.00	0.10		519	4	
535	6.59	6.54	34.254	26.900	123.1	0.833	0.01	0.3	0.1	105.1	3.63	19.1	0.00	0.28		540	3	
555	6.58	6.53	34.254	26.902	123.3	0.858	0.02	0.7	0.2	106.0	3.64	18.6	0.00	0.21		560	2	
560	6.58	6.53	34.255	26.903	123.3	0.864	0.01	0.2	0.1	106.3	3.68	18.5	0.00	0.21		565	1	

A) SANTA BARBARA BASIN STATION.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 39.4

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	14.16	14.16	33.475	24.976	297.0	0.000	6.70	292.7	114.7	2.5	0.21	0.1	0.04	0.03	9.28	0.15	0	
2	14.16	14.16	33.475	24.976	297.1	0.006	6.70	292.7	114.7	2.5	0.21	0.1	0.04	0.00	9.28	0.15	2	
5	14.14	14.14	33.478	24.983	296.6	0.015	6.70	292.7	114.7	2.4	0.21	0.1	0.04	0.00	8.97	0.50	5	
10	14.02	14.01	33.477	25.008	294.3	0.030	6.59	287.9	112.5	2.9	0.24	0.8	0.07	0.00	9.12	0.50	10	
10	14.02	14.01	33.478	25.009	294.2	0.031										0.03	0	
20	12.97	12.97	33.500	25.238	272.7	0.058	5.32	232.2	88.8	9.2	0.74	7.3	0.32	0.28	5.12	0.60	20	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	13.47	13.47	33.492	25.133	282.2	0.000	6.13	267.8	103.5	6.9	0.54	4.3	0.21	0.18	5.42	0.60	0	
2	13.47	13.46	33.492	25.133	282.2	0.006	6.13	267.8	103.5	6.9	0.54	4.3	0.21	0.18	5.42	0.60	2	
5	13.44	13.44	33.492	25.137	281.8	0.014	6.14	268.1	103.5	6.6	0.50	4.1	0.20	0.00	5.19	0.78	5	
10	13.31	13.31	33.494	25.166	279.3	0.028	5.95	260.0	100.2	7.7	0.60	5.3	0.23	0.12	4.89	0.52	10	
10	13.31	13.31	33.496	25.167	279.2	0.029										0.03	0	
20	12.94	12.94	33.504	25.247	271.8	0.056	5.47	239.1	91.4	9.7	0.78	7.4	0.29	0.30	3.06	0.77	20	
30	12.45	12.44	33.533	25.367	260.7	0.081	5.69	248.5	94.1	11.0	0.89	9.6	0.21	0.43	3.78	0.42	30	
42	11.44	11.43	33.598	25.607	238.2	0.111	4.10	179.0	66.4	17.0	1.38	15.9	0.43	0.45	0.90	0.46	42	
50	ISL	11.17	D 11.16	D 33.627	D 26.79</td													

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	NO3*	NO2*	NH4*	CHL-A	PHAEAO	PRES	SAMP		
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db			
0	12.93	12.93	33.485	25.234	272.5	0.000	5.90	257.8	98.5	6.4	0.56	5.8	0.18	0.10	8.82	0.49	0	
2	12.93	12.93	33.485	25.234	272.5	0.005	5.90	257.8	98.5	6.4	0.56	5.8	0.18	0.10	8.82	0.49	2	
10	12.92	12.91	33.484	25.236	272.6	0.027	5.88	256.9	98.1	5.9	0.56	5.6	0.18	0.07	9.28	0.33	10	
10	12.92	12.91	33.483	25.236	272.6	0.028											10	
20	ISL	12.51	12.51	33.511	D 25.338	263.2	0.052	5.55	241.5	91.8	8.1	0.71	8.0	0.20	0.20	7.84	0.33	20
21	12.51	12.51	33.509	25.336	263.4	0.057	5.51	240.8	91.2	8.4	0.72	8.2	0.21	0.21	7.69	0.33	21	
30	12.44	12.43	33.515	25.355	261.9	0.080	5.40	235.8	89.2	8.8	0.86	8.8	0.21	0.33	6.81	0.25	30	
40	12.44	12.43	33.519	25.359	261.8	0.106	5.38	235.2	88.9	9.1	0.77	8.9	0.21	0.23	6.40	0.56	40	
50	12.43	12.42	33.524	25.365	261.5	0.133	5.24	229.1	86.6	9.6	0.81	9.4	0.21	0.21	5.97	0.06	50	
60	11.96	11.95	33.560	D 25.483	250.5	0.157	4.78	D 208.0	D 78.1								60	
71	11.88	11.87	33.564	25.500	249.2	0.186	4.71	205.6	76.8	12.7	1.03	12.1	0.21	0.18	4.60	0.21	72	
75	ISL	11.73	D 11.72	33.588	D 25.547	244.7	0.194	4.59	D 199.8	D 74.7	13.8	1.11	13.0	0.20	0.17	4.08	0.31	76
80	11.47	11.46	33.604	25.607	239.2	0.208	4.32	188.7	69.9	15.1	1.21	14.1	0.20	0.15	3.43	0.44	81	
90	11.42	11.41	33.634	25.640	236.3	0.232	4.07	177.6	65.8	16.9	1.29	15.6	0.19	0.12	2.70	0.50	91	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD			
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	NO3*	NO2*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	13.01	13.01	33.417	25.166	279.0	0.000	5.78	D 251.6	D 96.5	6.4	0.70	6.1	0.21	0.36	1.05	0.42	0	
3 A	13.01	13.01	33.417	25.166	279.1	0.008	5.78	D 251.6	D 96.5	6.4	0.70	6.1	0.21	0.36	1.05	0.42	3	
8 A	13.00	13.00	33.418	25.169	279.0	0.022	5.81	253.8	97.1	6.5	0.70	6.1	0.20	0.38	0.93	0.35	8	
10	ISL	13.00	D 13.00	33.419	D 25.169	279.0	0.024	5.79	252.2	96.7	6.5	0.70	6.2	0.20	0.38	0.93	0.34	10
11	12.99	12.99	33.419	25.171	278.9	0.032											11	
12 A	13.00	12.99	33.419	25.171	278.9	0.034	5.77	252.1	96.4	6.5	0.70	6.2	0.20	0.38	0.92	0.34	12	
12	13.00	12.99	33.419	25.170	278.9	0.032											20	
20	A	13.00	12.99	33.419	25.171	279.1	0.056	5.78	252.3	96.5	6.6	0.71	6.2	0.20	0.38	1.00	0.33	20
27	12.99	12.99	33.419	25.172	279.2	0.075	5.75	251.4	96.1	6.6	0.71	6.2	0.20	0.39	0.99	0.33	27	
30	ISL	13.00	D 12.99	33.420	D 25.172	279.3	0.080	5.78	D 250.0	D 95.9	6.6	0.71	6.2	0.20	0.39	0.96	0.33	30
37 A	12.99	12.98	33.421	25.175	279.2	0.103	5.74	D 250.0	D 95.9	6.6	0.71	6.3	0.20	0.39	0.96	0.34	37	
44 A	12.98	12.98	33.422	25.177	279.2	0.123	5.75	251.2	96.0	6.5	0.71	6.3	0.20	0.41	0.96	0.35	44	
50	ISL	12.97	D 12.96	33.422	D 25.180	279.1	0.136	5.71	D 248.8	D 95.4	6.6	0.73	6.4	0.21	0.45	0.90	0.37	50
52	12.97	12.96	33.423	25.182	279.0	0.145	5.74	250.8	95.9	6.7	0.73	6.4	0.21	0.46	0.88	0.37	52	
60	12.95	12.94	33.423	25.185	278.9	0.167	5.73	250.1	95.6	6.9	0.73	6.5	0.21	0.44	0.82	0.36	60	
71	12.83	12.82	33.424	25.210	276.9	0.198	5.61	245.3	93.5	7.2	0.76	6.9	0.24	0.46	0.75	0.35	72	
75	ISL	12.37	D 12.36	33.426	D 25.300	268.3	0.206	5.41	D 235.5	D 89.1	8.6	0.88	8.8	0.30	0.38	0.58	0.31	76
84	11.07	11.06	33.425	25.541	245.5	0.232	4.48	192.3	70.6	11.9	1.15	13.1	0.45	0.20	0.21	0.85	12	
100	9.71	9.70	33.656	25.955	206.3	0.268	3.36	147.0	52.4	22.2	1.66	22.0	0.05	0.00	0.06	0.11	101	
120	9.28	9.26	33.803	26.141	188.9	0.308	2.91	127.0	44.9	26.4	1.86	24.6	0.04	0.00	0.04	0.11	121	
125	ISL	9.30	D 9.28	33.885	D 26.202	183.3	0.314	2.67	D 116.0	D 41.2	27.6	1.92	25.1	0.04	0.00	0.04	0.11	141
140	9.30	9.28	33.984	26.280	176.2	0.344	2.28	99.5	35.2	31.0	2.08	26.6	0.03	0.00	0.04	0.11	151	
150	ISL	9.28	D 9.27	34.024	D 26.314	173.2	0.359	2.12	D 92.3	D 32.8	32.1	2.12	27.1	0.03	0.00	0.05	0.10	202
171	9.05	9.03	34.057	26.378	167.8	0.398	1.97	85.8	30.3	34.5	2.19	28.0	0.03	0.00	0.05	0.09	172	
200	ISL	8.61	D 8.58	34.160	D 26.529	153.7	0.442	1.44	D 62.5	D 21.9	40.8	2.39	30.5	0.03	0.00	0.03	0.06	202
204	8.50	8.47	34.160	26.546	152.1	0.450	1.42	61.9	21.5	41.7	2.42	30.9	0.03	0.00	0.03	0.05	206	
229	8.19	8.17	34.156	26.590	148.3	0.488	1.34	58.5	20.3	44.4	2.47	31.7	0.00				231	
250	ISL	7.95	D 7.93	34.179	D 26.644	143.5	0.517	1.13	D 49.1	D 17.0	47.8	2.55	32.8	0.01			252	
267	7.72	7.69	34.185	26.683	140.0	0.543	1.07	46.6	16.0	50.6	2.61	33.7	0.00			269		
300	ISL	7.46	D 7.43	34.216	D 26.746	134.5	0.587	0.84	D 36.5	D 12.5	54.8	2.71	34.8	0.01			302	
320	7.25	7.22	34.230	26.786	130.9	0.615	0.75	32.8	11.1	57.4	2.77	35.5	0.00			323		
382	6.85	6.82	34.256	26.863	124.3	0.694	0.56	24.6	8.2	64.0	2.89	36.9	0.00			385		
400	ISL	6.78	D 6.74	34.266	D 26.882	122.8	0.716	0.51	D 22.1	D 7.4	65.9	2.92	37.3	0.00			403	
439	6.55	6.51	34.282	26.925	119.1	0.763	0.42	18.4	6.1	70.1	2.98	38.2	0.00			443		
500	ISL	6.26	D 6.22	34.298	D 26.976	114.9	0.836	0.36	D 15.4	D 5.1	74.7	3.05	39.2	0.01			504	
520	6.15	6.10	34.300	26.992	113.6	0.858	0.32	14.1	4.6	76.2	3.07	39.6	0.00			524		

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA</
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RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP
33 14.4 N	121 27.0 W	09/04/2017	0415	UTC	3755 m	340 26 kn			1020.9 mb	14.0	C 10.8	C					051	
0	14.80	14.80	33.114	24.562	336.5	0.000	5.86	256.0	101.5	1.7	0.24	0.0	0.01	0.00	0.11	0.01	0	
2	14.80	14.80	33.114	24.562	336.6	0.007	5.86	256.0	101.5	1.7	0.24	0.0	0.00	0.00	0.11	0.01	2 21	
10	14.81	14.81	33.123	24.568	336.2	0.034	5.89	257.5	102.0	1.7	0.25	0.0	0.00	0.00	0.10	0.02	10 19	
10	14.81	14.81	33.115	24.562	336.8	0.035											10 20	
20	ISL 14.82 D	14.81	33.114 D	24.560	337.3	0.064	5.88	0256.4	0101.8	1.7	0.25	0.0	0.00	0.00	0.11	0.02	20	
25	14.81	14.81	33.113	24.560	337.5	0.084	5.89	257.2	101.9	1.7	0.25	0.0	0.00	0.00	0.11	0.02	25 18	
30	ISL 14.81 D	14.81	33.115 D	24.562	337.5	0.099	5.88	0256.5	0101.9	1.7	0.25	0.0	0.00	0.00	0.11	0.02	30	
40	14.80	14.79	33.113	24.564	337.6	0.135	5.89	257.4	102.0	1.7	0.25	0.0	0.00	0.00	0.11	0.02	40 17	
50	14.69	14.68	33.108	24.584	336.0	0.169	5.88	257.0	101.6	1.7	0.23	0.0	0.00	0.00	0.11	0.03	50 16	
62	14.47	14.46	33.102	24.627	332.3	0.209	5.92	0258.5	101.7	1.7	0.27	0.0	0.00	0.00	0.22	0.06	63 15	
75	ISL 14.37 D	14.36	33.106 D	24.651	330.4	0.250	5.91	0257.8	0101.4	1.7	0.26	0.0	0.00	0.00	0.28	0.10	76	
76	14.27	14.26	33.103	24.670	328.6	0.255	5.94	259.4	101.6	1.7	0.26	0.0	0.00	0.00	0.28	0.10	77 14	
88	13.58	13.57	33.103	24.812	315.3	0.294	5.94	259.3	100.2	2.1	0.31	0.4	0.10	0.00	0.49	0.27	89 13	
100	13.33	13.32	33.216	24.952	302.4	0.331	5.71	249.3	95.9	3.3	0.51	2.4	0.72	0.00	0.27	0.22	101 12	
112	12.61	12.59	33.199	25.081	290.3	0.366	5.49	239.8	90.8	4.3	0.52	4.0	0.09	0.00	0.23	0.22	113 11	
125	ISL 11.74 D	11.73	33.290 D	25.316	268.1	0.402	5.14	0223.7	0 83.5	6.7	0.70	7.3	0.03	0.00	0.15	0.14	126	
126	11.68	11.67	33.282	25.320	267.7	0.406	5.15	224.9	83.6	6.9	0.71	7.6	0.03	0.00	0.14	0.13	127 10	
139	10.70	10.68	33.393	25.584	242.7	0.439	4.69	204.7	74.5	11.8	1.05	12.9	0.00	0.00	0.05	0.05	140 09	
150	ISL 10.24 D	10.23	33.478 D	25.729	229.0	0.464	4.49	0195.5 D	70.7	13.8	1.16	14.6	0.02	0.00	0.04	0.04	151	
169	9.76	9.74	33.560	25.875	215.4	0.507	4.29	187.5	67.0	17.3	1.34	17.5	0.00	0.00	0.01	0.03	170 08	
200	ISL 9.00 D	8.98	33.853 D	26.227	182.4	0.569	3.94	0171.3 D	60.5	22.5	1.50	20.7	0.01	0.00	0.00	0.02	202	
201	8.97	8.95	33.796	26.187	186.2	0.571	4.00	174.8	61.4	22.7	1.51	20.8	0.00	0.00	0.00	0.02	203 07	
231	8.40	8.37	33.935	26.385	167.8	0.625	3.49	152.2	52.8	31.1	1.79	25.0	0.00	0.00			233 06	
250	ISL 7.91 D	7.89	33.954 D	26.473	159.6	0.655	3.11	0135.1 D	46.6	36.3	1.98	27.4	0.01	0.00			252	
271	7.61	7.58	33.988	26.544	153.1	0.688	2.59	112.9	38.5	42.0	2.18	30.1	0.00	0.00			273 05	
300	ISL 7.15 D	7.12	34.006 D	26.624	145.7	0.732	2.21	096.1 D	32.6	47.9	2.33	32.1	0.01	0.00			302	
319	6.89	6.86	34.007 D	26.659	142.5	0.759	2.05	89.4	30.0	51.7	2.43	33.4	0.00	0.00			322 04	
382	6.37	6.33	34.054	26.767	132.9	0.846	1.37	59.8	19.8	61.6	2.71	37.0	0.00	0.00			385 03	
400	ISL 6.27 D	6.24	34.078 D	26.799	130.1	0.870	1.13	049.1 D	16.3	64.8	2.79	37.8	0.01	0.00			403	
438	5.98	5.94	34.120	26.869	123.7	0.918	0.81	35.3	11.6	71.5	2.95	39.5	0.00	0.00			442 02	
500	ISL 5.89 D	5.84	34.206 D	26.951	116.9	0.994	0.48	020.8 D	6.9	78.1	3.11	40.5	0.01	0.00			504	
517	5.83	5.79	34.239	26.984	113.9	1.012	0.38	16.5	5.4	80.0	3.15	40.8	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP
32 54.7 N	122 8.2 W	08/04/2017	1935	UTC	4127 m	320 15 kn	310 08 08	1	1022.4 mb	16.8	C 13.8	C	24 m	2/8	SC	050		
0	14.82	14.82	33.124	24.566	336.1	0.000	5.92	258.7	102.5	1.2	0.24	0.0	0.01	0.00	0.15	0.03	0	
3 A	14.82	14.82	33.124	24.566	336.2	0.010	5.92	258.7	102.5	1.2	0.24	0.0	0.00	0.00	0.15	0.03	3 24	
10	14.81	14.81	33.124	24.569	336.2	0.034	5.94	259.7	102.9	1.3	0.24	0.0	0.00	0.00	0.16	0.03	10 22	
10	14.81	14.81	33.124	24.568	336.2	0.034											10 23	
14 A	14.81	14.80	33.123	24.568	336.3	0.047	5.91	258.3	102.3	1.2	0.24	0.0	0.00	0.00	0.18	0.02	14 21	
20	ISL 14.76 D	14.76	33.123 D	24.579	335.5	0.063	5.92	0257.9	0102.3	1.1	0.23	0.0	0.00	0.00	0.19	0.02	20	
21 A	14.77	14.76	33.123	24.578	335.6	0.071	5.92	258.8	102.4	1.1	0.23	0.0	0.00	0.00	0.19	0.02	21 20	
30	ISL 14.52 D	14.51	33.119 D	24.628	331.2	0.096	5.96	0260.0	0102.6	1.1	0.23	0.0	0.00	0.00	0.20	0.03	30	
37 A	14.50	14.49	33.117	24.631	331.1	0.124	5.95	260.3	102.4	1.1	0.23	0.0	0.00	0.00	0.20	0.04	37 19	
48	14.29	14.28	33.133	24.688	326.0	0.160	6.00	262.1	102.7	1.1	0.24	0.0	0.00	0.00	0.37	0.10	48 18	
50	ISL 14.28 D	14.27	33.125 D	24.684	326.5	0.163	5.99	0261.2	0102.6	1.1	0.24	0.0	0.00	0.00	0.41	0.12	50	
57	14.12	14.12	33.134	24.724	322.9	0.189	6.07	265.5	103.7	1.1	0.25	0.0	0.00	0.00	0.54	0.18	57 17	
68 A	13.83	13.82	33.162	24.808	315.2	0.224	6.01	262.7	102.0	1.4	0.29	0.1	0.07	0.00	0.58	0.36	69 15	
68	13.83	13.82	33.160	24.806	315.3	0.225											69 16	
75	ISL 13.75 D	13.74	33.184 D	24.840	312.3	0.243	5.90	257.0	99.9	1.8	0.33	0.7	0.14	0.00	0.51	0.36	76	
76	13.73	13.72	33.183	24.843	312.0	0.249	5.88	257.1	99.6	1.9	0.34	0.8	0.15	0.00	0.50	0.36	77 14	
83 A	13.53	13.52	33.210	24.906	306.3	0.271	5.61	245.4	94.7	2.8	0.44	2.2	0.23	0.00	0.42	0.29	84 13	
100	ISL 12.36 D	12.35	33.283 D	25.193	279.2	0.318	4.97	0216.4 D	81.8	6.3	0.76	7.6	0.11	0.00	0.22	0.24	101	
101	12.28	12.27	33.278	25.204	278.2	0.324	5.00	218.4	82.1	6.5	0.78	8.0	0.11	0.00	0.21	0.23	102 12	
110	11.40	11.38	33.345	25.421	257.6	0.348	4.56	199.2	73.6	10.1	1.03	12.1	0.07	0.00	0.12	0.12	111 11	
125	ISL 10.79 D	10.77	33.441 D	25.605	240.4	0.383	4.01	0174.6 D	63.9	13.4	1.25	15.5	0.03	0.00	0.09			

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP
32 34.5 N	122 48.6 W	08/04/2017	1123	UTC	4210 m	320 20 kn			1018.1 mb	14.9	C 12.1	C					049	
0	14.97	14.97	33.123	24.533	339.2	0.000	5.87	256.5	101.9	2.0	0.25	0.0	0.01	0.01	0.12	0.03	0	
3	14.97	14.97	33.123	24.533	339.3	0.010	5.87	256.5	101.9	2.0	0.25	0.0	0.00	0.00	0.12	0.03	3 22	
10	14.98	14.98	33.120	24.529	340.0	0.034	5.89	257.7	102.4	1.6	0.23	0.0	0.00	0.00	0.12	0.02	10 20	
10	14.98	14.98	33.115	24.525	340.3	0.032											10 21	
20	ISL 14.57 D	14.56	33.118 D	24.617	331.9	0.063	5.94	D258.8	D102.3	1.5	0.24	0.0	0.00	0.00	0.14	0.04	20	
25	14.54	14.53	33.114	24.619	331.8	0.084	5.93	259.4	102.1	1.5	0.24	0.0	0.00	0.00	0.15	0.05	25 19	
30	ISL 14.52 D	14.52	33.114 D	24.623	331.6	0.096	5.95	D259.3	D102.4	1.5	0.24	0.0	0.00	0.00	0.16	0.05	30	
40	14.49	14.48	33.115	24.631	331.2	0.134	5.92	258.8	101.8	1.5	0.23	0.0	0.00	0.00	0.19	0.06	40 18	
50	14.47	14.46	33.114	24.635	331.1	0.167	5.93	259.0	101.9	1.4	0.24	0.0	0.00	0.00	0.21	0.06	50 17	
62	14.41	14.40	33.116	24.650	330.1	0.207	5.92	258.6	101.6	1.4	0.24	0.0	0.00	0.00	0.36	0.17	62 16	
75	ISL 13.66 D	13.65	33.232 D	24.895	307.0	0.245	5.55	D241.8	D93.9	3.1	0.44	2.4	0.25	0.00	0.41	0.31	76	
76	13.56	13.55	33.228	24.914	305.3	0.251	5.58	243.9	94.2	3.2	0.45	2.6	0.27	0.00	0.41	0.32	77 15	
88	12.85	12.84	33.223	25.052	292.4	0.287	5.43	237.2	90.3	4.6	0.57	4.7	0.20	0.00	0.25	0.26	89 14	
100	11.98	11.96	33.250	25.240	274.7	0.321	5.20	227.1	84.9	6.1	0.67	6.9	0.04	0.00	0.20	0.22	101 13	
114	11.40	11.39	33.306	25.390	260.7	0.359	4.83	211.2	78.0	8.9	0.89	10.4	0.03	0.00	0.11	0.13	115 12	
125	10.89	10.88	33.364	25.526	247.8	0.387	4.50	196.9	71.9	11.3	1.07	13.3	0.00	0.00	0.07	0.07	126 10	
140	10.17	10.15	33.512	25.768	225.1	0.422	3.84	167.7	60.4	17.2	1.42	18.8	0.00	0.00	0.02	0.05	141 09	
150	ISL 9.64 D	9.62	33.631 D	25.950	207.9	0.441	3.64	D158.3 D	D56.6	19.5	1.50	20.3	0.01	0.00	0.02	0.04	151	
170	9.14	9.12	33.749	26.122	191.8	0.484	3.44	150.3	53.0	24.0	1.67	23.3	0.00	0.00	0.00	0.02	171 08	
200	8.42	8.40	33.898	26.353	170.3	0.539	3.51	153.5	53.3	29.1	1.72	24.8	0.00	0.00	0.00	0.02	202 07	
230	8.13	8.11	33.979	26.460	160.6	0.588	2.89	126.4	43.6	34.9	1.95	27.9	0.00	0.00			232 06	
250	ISL 8.02 D	7.99	34.011 D	26.502	156.9	0.618	2.43	D105.6 D	D36.5	39.1	2.11	30.0	0.01	0.00			252	
269	7.70	7.67	34.037	26.569	150.7	0.649	2.04	88.9	30.4	43.0	2.26	31.9	0.00	0.00			271 05	
300	ISL 7.28 D	7.25	34.061 D	26.648	143.5	0.694	1.66	D 72.3 D	D 24.6	48.8	2.43	34.0	0.01	0.00			302	
321	7.05	7.02	34.079	26.695	139.3	0.725	1.40	61.2	20.6	52.8	2.54	35.4	0.00	0.00			324 04	
381	6.69	6.65	34.158	26.807	129.5	0.805	0.83	36.1	12.1	61.3	2.77	37.9	0.00	0.00			384 03	
400	ISL 6.59 D	6.55	34.184 D	26.842	126.4	0.830	0.67	D 29.3 D	9.8	63.4	2.82	38.4	0.01	0.00			403	
440	6.39	6.35	34.216	26.893	122.0	0.879	0.52	22.6	7.5	67.8	2.94	39.5	0.00	0.00			444 02	
500	ISL 5.87 D	5.82	34.221 D	26.965	115.5	0.952	0.45	D 19.5 D	6.4	75.6	3.04	40.7	0.01	0.00			504	
515	5.89	5.85	34.251	26.986	113.8	0.967	0.37	16.0	5.2	77.5	3.06	41.0	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP
32 14.6 N	123 29.6 W	08/04/2017	0527	UTC	4110 m	230 10 kn			1017.1 mb	16.4	C 15.2	C					048	
0	15.28	15.28	33.112	24.456	346.6	0.000	5.83	254.7	101.8	1.8	0.23	0.0	0.00	0.08	0.01	0		
2	15.28	15.28	33.112	24.456	346.6	0.007	5.83	254.7	101.8	1.8	0.23	0.0	0.00	0.08	0.01	2 21		
10	15.27	15.27	33.114	24.461	346.4	0.035	5.84	255.1	102.0	1.8	0.22	0.0	0.00	0.08	0.01	10 19		
10	15.27	15.27	33.113	24.460	346.5	0.034											10 20	
20	ISL 14.99 D	14.99	33.116 D	24.523	340.8	0.066	5.88	256.1	102.1	1.7	0.23	0.0	0.00	0.09	0.02	20		
25	14.78	14.78	33.112	24.565	337.0	0.086	5.90	257.7	102.0	1.7	0.24	0.0	0.00	0.09	0.02	25 18		
30	ISL 14.75 D	14.75	33.113 D	24.574	336.4	0.100	5.91	D257.5	D102.1	1.7	0.24	0.0	0.00	0.10	0.02	30		
40	14.71	14.70	33.112	24.582	335.9	0.136	5.88	257.1	101.6	1.7	0.23	0.0	0.00	0.10	0.02	40 17		
50	ISL 14.63 D	14.62	33.110 D	24.599	334.6	0.168	5.89	D256.6	D101.5	1.7	0.22	0.0	0.00	0.13	0.03	50		
52	14.60	14.60	33.107	24.602	334.4	0.177	5.89	257.5	101.6	1.7	0.22	0.0	0.00	0.13	0.04	52 16		
62	14.13	14.12	33.084	24.685	326.7	0.210	5.94	259.8	101.4	1.8	0.24	0.0	0.00	0.23	0.10	62 15		
75	13.66	13.65	33.079	24.777	318.2	0.252	5.93	259.3	100.3	1.9	0.26	0.0	0.00	0.43	0.21	76 14		
88	13.20	13.19	33.100	24.887	308.1	0.292	5.87	256.5	98.3	2.3	0.32	0.8	0.16	0.51	0.27	89 13		
99	13.07	13.06	33.117	24.927	304.7	0.326	5.82	254.4	97.2	2.5	0.37	1.3	0.27	0.07	0.45	0.33	100 12	
100	ISL 13.03 D	13.02	33.137 D	24.949	302.5	0.328	5.76	D251.0 D	96.1	2.7	0.38	1.5	0.26	0.00	0.44	0.32	101	
112	12.31	12.30	33.215	25.150	283.7	0.364	5.42	237.0	89.2	4.5	0.53	4.5	0.08	0.00	0.28	0.22	113 11	
125	ISL 11.36 D	11.34	33.324 D	25.413	258.8	0.399	4.71	D205.2 D	76.0	8.7	0.82	9.5	0.05	0.00	0.17	0.15	126	
126	11.22	11.20	33.324 D	25.438	256.4	0.401	4.71	D205.3 D	75.8								127 10	
141	10.36	10.34	33.415	25.660	235.4	0.439	4.32	188.8	68.2	13.9	1.18	15.7	0.00	0.00	0.04	0.06	142 09	
150	ISL 9.84 D	9.82	33.542 D	25.847	217.7	0.459	4.15	D180.5 D	64.8	16.6	1.31	17.6	0.00	0.00	0.03	0.05	151	
169	9.17	9.15	33.691	26.072	196.5	0.499	3.67	160.5	56.6	22.2	1.58	21.6	0.00	0.00	0.01	0.02	170 08	
200	8.87	8.85	33.876	26.266	178.7	0.557	2.91	127.3	44.6	28.9	1.86	25.9	0.00	0.00	0.00	0.03	202 07	
230	8.45	8.42	33.990	26.421	164.5	0.609	2.42	105.6	36.7	35.0	2.08	28.6	0.00	0.00			232 06	
269	8.10	8.07	34.034	26.509	156.7	0.672	2.12	92.6	31.9	39.7	2.21	30.3	0.00					

RV BEII M SHTMADA

CALCOET CRUISE 1704

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 10.3 W	07/04/2017	2353	UTC	4138 m	240 07 kn	280 07 09	1	1014.6 mb	17.0 C	16.0 C	26 m	7/8	SC	PRES	SAMP		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES	SAMP
m	deg c	deg c	theta			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	15.38	15.38	33.108	24.431	349.0	0.000	5.87	256.6	102.8	1.7	0.23	0.0	0.01	0.01	0.11	0.01	0	
2	15.38	15.38	33.108	24.431	349.0	0.007	5.87	256.6	102.8	1.7	0.23	0.0	0.00	0.00	0.11	0.01	2	
10	15.33	15.33	33.109	24.444	348.1	0.035	5.85	255.8	102.4	1.5	0.22	0.0	0.00	0.00	0.11	0.02	10	
10	15.33	15.33	33.111	24.445	348.0	0.036											10	
20	ISL	14.95	d	14.95	35.115	d	24.531	340.1	0.066	5.86	255.4	101.7	1.5	0.21	0.0	0.01	0.00	0.12
26	14.93	14.92	33.114	24.536	339.8	0.090	5.86	256.2	101.7	1.5	0.21	0.0	0.00	0.00	0.12	0.03	26	
30	ISL	14.91	d	14.91	35.113	d	24.539	339.7	0.100	5.89	256.6	d102.1	1.5	0.21	0.0	0.01	0.00	0.12
41	14.88	14.88	33.111	24.544	339.5	0.141	5.87	256.5	101.7	1.5	0.21	0.0	0.00	0.00	0.14	0.03	41	
50	ISL	14.85	d	14.84	33.111	d	24.553	339.0	0.169	5.88	256.1	d101.8	1.5	0.21	0.0	0.01	0.00	0.16
51	14.85	14.84	33.109	24.551	339.2	0.175	5.87	256.7	101.7	1.5	0.21	0.0	0.00	0.00	0.16	0.04	51	
63	14.80	14.79	33.115	24.567	338.1	0.215	5.88	256.9	101.7	1.5	0.22	0.0	0.00	0.10	0.19	0.05	64	
75	ISL	14.59	d	14.58	33.137	d	24.628	332.6	0.254	5.85	254.9	d100.8	1.5	0.22	0.0	0.01	0.00	0.35
76	14.49	14.47	33.120	24.638	331.6	0.259	5.87	256.7	101.0	1.6	0.22	0.0	0.00	0.00	0.36	0.18	77	
88	13.48	13.47	33.208	24.915	305.5	0.297	5.57	243.3	93.8	3.0	0.41	2.2	0.08	0.00	0.51	0.48	89	
100	ISL	12.90	d	12.89	33.272	d	25.080	290.1	0.331	5.15	d224.2	d 85.7	4.3	0.54	4.5	0.10	0.00	0.43
101	12.69	12.68	33.261	25.112	287.0	0.336	5.30	231.4	87.8	4.4	0.55	4.7	0.10	0.00	0.43	0.51	102	
113	12.11	12.10	33.278	25.237	275.4	0.369	5.04	220.3	82.6	6.4	0.71	7.4	0.04	0.00	0.24	0.39	114	
125	ISL	11.22	d	11.21	33.354	d	25.460	254.3	0.400	4.63	d201.6	d 74.4	10.1	0.96	11.3	0.03	0.00	0.16
126	11.06	11.04	33.357	25.492	251.2	0.403											126	
140	10.20	10.18	33.439	25.706	230.9	0.437	4.24	185.4	66.8	14.7	1.28	16.3	0.00	0.00	0.06	0.06	141	
150	ISL	9.79	d	9.77	33.544	d	25.857	216.7	0.459	3.90	d169.9	d 60.9	17.2	1.39	18.1	0.02	0.00	0.05
172	9.14	9.12	33.672	26.062	197.5	0.506	3.56	155.5	54.8	2.2	1.63	22.1	0.00	0.00	0.01	0.02	173	
200	ISL	8.73	d	8.71	33.874	d	26.285	176.8	0.557	3.13	d136.2	d 47.8	28.4	1.79	25.0	0.01	0.00	0.03
201	8.73	8.71	33.872	26.284	177.0	0.560	3.17	138.4	48.4	28.6	1.80	25.1	0.00	0.00	0.00	0.03	203	
232	8.33	8.30	33.966	26.421	164.4	0.613	2.64	115.3	40.0	33.9	1.99	27.6	0.00	0.00			234	
250	ISL	8.16	d	8.14	33.999	d	26.471	159.9	0.641	2.46	d107.0	d 37.1	37.1	2.08	28.9	0.01	0.00	252
271	7.83	7.81	34.020	26.536	154.0	0.675	2.22	97.1	33.3	40.9	2.19	30.5	0.00	0.00			273	
300	ISL	7.49	d	7.46	34.056	d	26.616	146.7	0.718	1.78	d 77.4	d 26.4	46.8	2.37	32.5	0.01	0.00	302
320	7.23	7.20	34.076	26.667	142.1	0.748	1.51	66.1	22.3	50.8	2.49	33.9	0.00	0.00			323	
380	6.73	6.69	34.141	26.789	131.2	0.830	0.90	39.2	13.1	61.2	2.76	37.1	0.00	0.00			383	
400	ISL	6.51	d	6.48	34.163	d	26.835	127.0	0.856	0.72	d 31.3	d 10.5	64.7	2.83	37.8	0.01	0.00	403
441	6.12	6.08	34.191	26.909	120.2	0.906	0.54	23.6	7.8	7.20	2.97	39.2	0.00	0.00			445	
500	ISL	5.75	d	5.71	34.255	d	27.006	111.5	0.976	0.35	d 15.0	d 4.9	80.3	3.06	40.4	0.01	0.00	504
516	5.62	5.57	34.252	27.020	110.2	0.993	0.33	14.2	4.6	82.5	3.09	40.8	0.00	0.00			520	

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

RV BEILI M SHTMADA

CALCOET CRUISE 1704

STATION 85-4 35-8

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
34	0.6 N	118 50.3 W	05/04/2017	0916	UTC	40 m	360	08 kn		1017.4 mb	14.9 C	14.0 C					033		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT		μM	μM	μM	μM	μM	μg/L	μg/L	db		
0	14.56	14.56	33.393	24.828	311.1	0.000	6.39	279.4	110.3	2.4	0.26	0.6	0.07		3.98	0.74	0		
3	14.56	14.56	33.393	24.828	311.2	0.009	6.39	279.4	110.3	2.4	0.26	0.6	0.07		3.98	0.74	3 06		
5	14.75	14.75	33.392	24.787	315.2	0.016	6.36	277.9	110.1	2.4	0.25	0.7	0.07		3.94	0.68	5 05		
10	13.03	13.03	33.408	25.155	280.3	0.031	5.62	245.7	94.0	4.8	0.49	5.1	0.24		8.52	1.08	10 03		
10	13.03	13.03	33.406	25.155	280.5	0.031											10 04		
20	12.29	12.29	33.449	25.330	263.9	0.058	4.70	205.2	77.3	9.9	0.97	11.6	0.47		3.35	0.68	20 02		
25	12.28	12.27	33.453	25.337	263.4	0.071	4.53	198.0	74.6	10.9	1.05	12.6	0.50		2.95	0.72	25 01		

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

R V BELL M SHTMADA

CALCOET CRUISE 1704

STATION 867330

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SVA	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAE0	PRES	SAMP
m	DEG C	DEG C		THETA				ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db		
0	14.53	14.53	33.396	24.837	310.2	0.000	7.66	334.6	132.0	0.1	0.06	0.0	0.01		3.89	0.34	0		
2 A	14.53	14.53	33.396	24.838	310.3	0.006	7.66	334.6	132.0	0.0	0.06	0.0	0.00		3.89	0.34	2 09		
4 A	14.39	14.39	33.395	24.866	307.6	0.012	7.54	329.4	129.6	1.3	0.14	0.3	0.05		4.88	0.60	4 08		
5 A	13.64	13.64	33.393	25.020	293.0	0.015	7.52	328.7	127.4	0.9	0.11	0.1	0.04		5.08	0.57	5 07		
9 A	12.79	12.78	33.408	25.203	275.7	0.027	5.46	283.7	90.9	5.9	0.55	6.7	0.28		11.97	0.94	9 05		
9	12.79	12.78	33.404	25.200	276.0	0.027												9 06	
10 ISL	12.97 D	12.97	33.411	D 25.169	279.0	0.027	5.59	D 243.7	D 93.4	6.1	0.58	7.0	0.28		11.38	0.91	10		
17 A	12.59	12.59	33.414 D	25.246	271.8	0.046	4.79	D 208.7	D 79.4									17 04	
20 ISL	12.56 D	12.55	33.417 D	25.255	271.0	0.054	4.77	D 207.7	D 78.9	8.7	0.90	9.9	0.28		5.51	0.57	20		
21 A	12.35	12.34	33.410	25.290	267.8	0.060	4.64	202.7	76.4	9.0	0.93	10.2	0.29		4.93	0.54	21 03		
30	11.73	11.73	33.432	25.423	255.3	0.083	4.09	178.5	66.5	12.3	1.21	14.0	0.33		1.87	0.47	30 02		
45	11.03	11.03	33.483	25.591	239.7	0.120	3.34	145.7	53.5	18.5	1.75	18.7	0.39		0.67	0.38	45 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 BELL M SHIMADA

CALCOFI CRUISE 1704

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	14.99	14.99	33.363	24.713	322.1	0.000	6.27	274.1	109.1	2.2	0.26	0.1	0.03	1.45	0.33	0		
2	14.99	14.99	33.363	24.713	322.1	0.006	6.27	274.1	109.1	2.2	0.26	0.1	0.03	1.45	0.33	2	21	
10	13.57	13.56	33.380	25.026	292.6	0.031	5.32	232.7	90.0	5.7	0.64	5.0	0.19	1.41	0.48	10	19	
10	13.57	13.56	33.371	25.019	293.3	0.031										10	20	
20	12.81	12.81	33.400	25.193	277.0	0.060	4.75	207.8	79.1	8.6	0.91	9.3	0.29	1.78	0.53	20	18	
30	12.35	12.35	33.417	25.295	267.5	0.087	4.44	194.0	73.2	10.3	1.03	11.5	0.37	1.64	0.51	30	17	
40	11.34	11.33	33.502	25.551	243.4	0.112	3.38	147.8	54.6	15.8	1.48	18.3	0.54	0.58	0.48	40	16	
50	10.67	10.67	33.573	25.725	227.1	0.136	3.30	144.0	52.5	18.3	1.59	19.8	0.03	0.19	0.21	50	15	
60	10.45	10.45	33.617	25.797	220.4	0.158	3.20	139.8	50.7	19.6	1.65	20.7	0.00	0.12	0.16	60	14	
70	10.25	10.24	33.657	25.864	214.3	0.180	3.10	135.6	49.0	20.8	1.71	21.5	0.00	0.09	0.14	71	13	
75 ISL	10.21 D	10.20	33.685 D	25.893	211.7	0.189	3.04	0132.3 D	47.9	22.3	1.78	22.3	0.03	0.10	0.17	76		
85	10.02	10.01	33.790	26.008	201.0	0.211	2.57	112.1	40.3	25.2	1.91	23.9	0.06	0.10	0.24	86	12	
100	9.88	9.86	33.846	26.076	194.8	0.241	2.52	110.2	39.5	26.3	1.94	24.3	0.03	0.07	0.14	101	11	
120	9.56	9.55	33.996	26.246	179.1	0.278	2.17	94.6	33.7	30.5	2.10	26.2	0.00	0.04	0.11	121	10	
125 ISL	9.48 D	9.47	34.034 D	26.289	175.1	0.286	2.03	0132.4 D	31.6	31.2	2.12	26.4	0.00	0.04	0.11	126		
141	9.38	9.36	34.076	26.339	170.7	0.315	1.88	82.3	29.2	33.3	2.20	27.3	0.00	0.03	0.12	142	09	
150 ISL	9.29 D	9.28	34.123 D	26.390	166.1	0.329	1.76	076.5 D	27.2	34.5	2.24	27.7	0.00	0.03	0.10	151		
170	9.20	9.18	34.174	26.445	161.2	0.363	1.56	68.1	24.1	37.1	2.34	28.7	0.00	0.02	0.08	171	08	
200	8.97	8.95	34.204	26.507	156.0	0.411	1.39	60.5	21.3	39.8	2.43	29.6	0.00	0.03	0.14	202	07	
230	8.75	8.72	34.232	26.565	151.0	0.457	1.07	46.7	16.4	42.6	2.52	30.6	0.00			232	06	
250 ISL	8.65 D	8.63	34.241 D	26.587	149.3	0.487	1.14	049.4 D	17.4	43.8	2.55	31.0	0.00			252		
271	8.53	8.50	34.251	26.615	147.0	0.518	1.06	46.3	16.2	45.0	2.58	31.3	0.00			273	05	
300 ISL	8.27 D	8.24	34.255 D	26.657	143.4	0.561	0.96	041.8 D	14.5	47.9	2.65	32.2	0.00			302		
321	8.10	8.07	34.259	26.687	140.9	0.590	0.87	37.8	13.1	50.0	2.70	32.9	0.00			324	04	
380	7.67	7.64	34.265	26.756	135.2	0.671	0.72	31.5	10.8	54.8	2.79	34.5	0.00			383	03	
400 ISL	7.64 D	7.60	34.262 D	26.759	135.2	0.700	0.71	031.1 D	10.7	56.8	2.82	35.0	0.00			403		
442	7.19	7.15	34.265	26.825	129.3	0.754	0.57	24.8	8.4	60.9	2.89	36.3	0.00			446	02	
500 ISL	6.67 D	6.62	34.279 D	26.909	121.8	0.830	0.44	019.1 D	6.4	68.9	3.02	38.0	0.00			504		
516	6.51	6.46	34.291	26.939	119.0	0.846	0.37	16.1	5.4	71.1	3.05	38.5	0.00			520	01	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 40.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
0	16.33	16.33	33.354	24.409	351.1	0.000	6.10	266.5	109.0	1.8	0.23	0.0	0.00	0.52	0.12	0		
2	16.33	16.33	33.354	24.409	351.2	0.007	6.10	266.5	109.0	1.8	0.23	0.0	0.00	0.52	0.12	2	21	
10	15.34	15.34	33.360	24.636	329.8	0.034	6.41	280.1	112.3	1.1	0.21	0.0	0.00	1.16	0.25	10	19	
10	15.34	15.34	33.362	24.637	329.7	0.034										10	20	
20	14.26	14.26	33.355	24.864	308.3	0.066	5.97	260.9	102.4	3.2	0.40	1.5	0.10	2.60	0.53	20	18	
30	13.56	13.56	33.360	25.012	294.5	0.096	5.33	232.9	90.1	5.7	0.62	5.1	0.19	2.01	0.65	30	17	
40	12.26	12.25	33.394	25.295	267.8	0.124	4.48	195.8	73.7	10.3	1.04	11.4	0.26	0.75	0.49	40	16	
50	11.55	11.54	33.429	25.456	252.7	0.150	4.10	179.0	66.4	12.7	1.22	14.1	0.16	0.49	0.42	50	15	
61	10.88	10.87	33.479	25.616	237.7	0.177	3.79	165.5	60.5	15.7	1.38	17.3	0.07	0.23	0.22	61	14	
70	10.45	10.45	33.573	25.763	223.9	0.198	3.40	148.4	53.8	18.5	1.55	19.8	0.03	0.12	0.16	71	13	
75 ISL	10.32 D	10.31	33.646 D	25.844	216.4	0.207	3.17	0138.1 D	50.1	19.8	1.62	20.6	0.03	0.09	0.14	76		
85	10.11	10.10	33.717	25.936	207.8	0.231	2.96	129.3	46.6	22.3	1.75	22.2	0.00	0.03	0.09	86	12	
100 ISL	9.82 D	9.81	33.809 D	26.056	196.7	0.259	2.82	0122.7 D	44.1	24.2	1.83	23.4	0.01	0.02	0.06	101		
101	9.80	9.79	33.808	26.059	195.5	0.263	2.82	0123.2 D	44.1	24.3	1.83	23.5	0.00	0.02	0.06	102	11	
121	9.55	9.53	33.913	26.183	185.1	0.301	2.56	111.7	39.8	27.4	1.95	25.0	0.00	0.02	0.07	122	10	
125 ISL	9.47 D	9.45	33.972 D	26.242	179.5	0.306	2.45	0106.8 D	38.1	28.4	1.99	25.4	0.01	0.02	0.07	126		
140	9.27	9.25	34.036	26.326	171.9	0.335	2.15	94.0	33.3	32.2	2.12	26.8	0.00	0.02	0.09	141	09	
150 ISL	9.23 D	9.22	34.070 D	26.358	169.1	0.350	2.02	87.7 D	31.2	33.2	2.16	27.3	0.00	0.02	0.07	151		
171	9.02	9.00	34.096	26.413	164.2	0.387	1.87	81.5	28.7	35.2	2.23	28.4	0.00	0.01	0.04	172	08	
200	8.69	8.66	34.155	26.513	155.2	0.433	1.52	66.5	23.3	39.5	2.36	30.0	0.00	0.01	0.04	202	07	
230	8.43	8.40	34.185	26.577	149.7	0.479	1.28	56.1	19.5	43.6	2.46	31.1	0.00			232	06	
250 ISL	8.31 D	8.28	34.203 D	26.609	147.0	0.508	1.20	052.0 D	18.1	45.4	2.52	31.7	0.00			252		
269	8.19	8.16	34.210	26.634	145.0	0.537	1.10	48.2	16.7	47.2	2.57	32.3	0.00			271	05	
300 ISL	7.79 D	7.76	34.238 D	26.716	137.6	0.580	0.87	037.8 D	13.0	51.6	2.68	33.6	0.00			302		
320	7.60	7.56	34.249	26.753	134.3	0.608	0.76	33.0	11.3	54.4	2.75	34.5	0.00			323	04	
381	7.10	7.06	34.261	26.834	127.3	0.687	0.56	24.6	8.3	61.7	2.87	36.2	0.00			384	03	
400 ISL	6.95 D	6.92	34.268 D	26.859	125.1	0.712	0.											

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	PO4* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
33 29.1 N	119 19.2 W	06/04/2017	0126	UTC	1613 m	280 12 kn	270 02 12	1	1015.8 mb	14.6	C 13.2 C	10 m	6/8	CS	038		
0	14.99	14.99	33.389	24.732	320.3	0.000	6.24	272.8	108.7	3.3	0.33	1.1	0.10	1.94	0.57	0	
1	14.99	14.99	33.389	24.732	320.3	0.003	6.24	272.8	108.7	3.3	0.33	1.1	0.10	1.94	0.57	1	
10	14.91	14.91	33.386	24.748	319.1	0.032	6.26	273.3	108.7	3.0	0.32	1.0	0.10	1.90	0.42	10	
10	14.91	14.91	33.385	24.747	319.2	0.033										10	
20	14.54	14.53	33.383	24.827	311.9	0.064	6.22	271.7	107.2	3.0	0.34	1.4	0.11	1.94	0.38	20	
30	13.76	13.75	33.383	24.990	296.6	0.094	6.01	262.7	102.1	3.5	0.39	2.5	0.15	2.55	0.69	30	
40	12.02	12.01	33.453	25.387	259.1	0.122	4.37	190.9	71.5	11.8	1.10	12.4	0.43	0.73	0.48	40	
50	11.07	11.07	33.507	25.602	238.8	0.147	3.85	168.1	61.8	15.6	1.35	16.6	0.20	0.31	0.30	50	
60	10.59	10.58	33.577	25.743	225.6	0.170	3.46	151.1	54.9	18.6	1.52	19.2	0.10	0.17	0.21	60	
71	10.12	10.11	33.647	25.878	213.0	0.194	3.22	140.4	50.6	21.3	1.65	21.1	0.06	0.08	0.16	72	
75 ISL	10.00 D	9.99	33.702 D	25.941	207.0	0.202	3.03	0132.0 D	47.6	22.4	1.70	21.8	0.05	0.07	0.15	76	
85	9.78	9.77	33.762	26.026	199.2	0.223	2.80	122.4	43.8	25.0	1.83	23.6	0.04	0.03	0.11	86	
100	9.56	9.55	33.843	26.125	190.1	0.252	2.58	112.8	40.2	27.3	1.93	24.8	0.05	0.03	0.10	101	
120	9.28	9.27	33.938	26.246	179.0	0.289	2.29	100.0	35.4	30.9	2.06	26.5	0.03	0.01	0.08	121	
125 ISL	9.25 D	9.24	33.951 D	26.261	177.7	0.298	2.27	098.7 D	35.1	31.2	2.07	26.7	0.03	0.01	0.08	126	
140	9.17	9.15	33.986	26.303	174.0	0.324	2.15	93.7	33.1	32.2	2.11	27.3	0.00	0.01	0.08	141	
150 ISL	9.09 D	9.07	34.015 D	26.339	170.8	0.342	2.10	91.2 D	32.3	33.3	2.15	27.6	0.00	0.01	0.07	151	
170	8.98	8.96	34.076	26.404	165.1	0.375	1.87	81.8	28.8	35.7	2.23	28.4	0.00	0.01	0.06	171	
200	8.69	8.67	34.122	26.487	157.7	0.423	1.60	69.9	24.5	39.4	2.35	29.9	0.00	0.01	0.06	202	
230	8.50	8.48	34.164	26.549	152.4	0.470	1.38	60.2	21.0	42.3	2.44	30.8	0.00			232	
250 ISL	8.25 D	8.22	34.183 D	26.603	147.5	0.502	1.22	053.3 D	18.5	44.6	2.50	31.5	0.00			252	
271	8.16	8.13	34.205	26.635	144.9	0.531	1.12	48.7	16.8	47.0	2.56	32.2	0.00			273	
300 ISL	7.94 D	7.91	34.207 D	26.669	142.0	0.575	1.02	044.3 D	15.3	49.7	2.63	33.1	0.00			302	
321	7.84	7.81	34.233	26.705	139.0	0.602	0.90	39.2	13.5	51.7	2.68	33.7	0.00			324	
380	7.24	7.20	34.248	26.804	130.3	0.681	0.63	27.6	9.3	59.8	2.83	35.8	0.00			383	
400 ISL	7.08 D	7.04	34.260 D	26.836	127.5	0.711	0.56	24.5 D	8.3	61.8	2.87	36.2	0.01			403	
440	6.87	6.82	34.269	26.873	124.4	0.757	0.49	21.2	7.1	65.6	2.94	37.0	0.00			444	
500 ISL	6.44 D	6.40	34.300 D	26.955	117.2	0.835	0.36	15.4 D	5.2	73.9	3.05	38.0	0.00			504	
517	6.32	6.27	34.306	26.976	115.3	0.850	0.33	14.4	4.8	76.2	3.08	38.3	0.00			521	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	PO4* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
33 19.4 N	119 39.6 W	06/04/2017	0512	UTC	80 m	280 07 kn											
0	14.10	14.10	33.379	24.914	303.0	0.000	6.24	272.5	106.6	4.7	0.51	3.5	0.16	0.43	1.02	0.10	
2	14.10	14.10	33.379	24.914	303.0	0.006	6.24	272.5	106.6	4.7	0.51	3.5	0.16	0.43	1.02	0.10	
5	14.08	14.08	33.377	24.918	302.7	0.015	6.20	271.1	106.0	4.6	0.50	3.5	0.16	0.39	1.03	0.09	
10	13.97	13.97	33.378	24.940	300.8	0.030	6.22	272.0	106.1	4.6	0.52	3.6	0.16	0.39	1.18	0.09	
10	13.97	13.97	33.376	24.939	300.9	0.031										10	
20	13.81	13.80	33.367	24.967	298.5	0.060	6.17	269.8	104.9	4.4	0.50	3.5	0.16	0.36	1.17	0.13	
30	13.01	13.01	33.362	25.124	283.8	0.089	5.67	247.7	94.7	5.6	0.65	5.5	0.21	0.55	0.89	0.38	
40	12.50	12.49	33.404	25.257	271.5	0.117	5.30	231.6	87.6	8.5	0.85	8.5	0.28	0.54	0.71	0.39	
50	11.03	11.03	33.455	25.569	241.9	0.143	4.33	189.0	69.3	13.7	1.23	14.6	0.25	0.13	0.35	0.26	
60	10.63	10.62	33.593	25.749	225.0	0.166	3.67	160.2	58.3	19.1	1.51	18.7	0.18	0.14	0.20	0.23	
70	10.12	10.11	33.657	25.886	212.2	0.188	3.31	144.6	52.1	22.0	1.68	21.4	0.13	0.09	0.11	0.20	

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	SIO3* μM	PO4* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
33 9.1 N	120 0.5 W	06/04/2017	0928	UTC	1198 m	210 06 kn											
0	14.27	14.27	33.309	24.826	311.4	0.000	6.01	262.6	103.0	2.7	0.41	1.8	0.11	0.14	0.36	0.21	
3	14.27	14.27	33.309	24.826	311.5	0.009	6.01	262.6	103.0	2.7	0.41	1.8	0.11	0.14	0.36	0.21	
10	14.10	14.10	33.310	24.861	308.3	0.031	6.00	262.4	102.6	2.5	0.41	1.7	0.10	0.13	0.34	0.23	
10	14.10	14.10	33.309	24.860	308.4	0.031										10	
20	13.86	13.85	33.322	24.922	302.8	0.062	6.00	262.3	102.0	2.5	0.40	1.9	0.10	0.10	0.44	0.39	
30	13.68	13.68	33.332	24.966	299.0	0.092	5.99	261.7	101.4	2.4	0.43	2.2	0.12	0.19	0.58	0.30	
40	13.53	13.52	33.338	25.003	295.7	0.121	5.86	255.9	98.9	2.7	0.54	2.7	0.14	0.76	0.45	0.37	
50	12.47	12.46	33.299	25.183	278.8	0.150	5.41	236.6	89.4	5.2	0.65	5.7	0.18	0.46	0.32	0.24	
60	11.16	11.15	33.347	25.463	252.2	0.177	4.75	207.4	76.2	10.3	0.99	11.5	0.18	0.07	0.14	0.11	
70	10.54	10.53	33.406	25.619	237.6	0.201	4.48	195.8	71.0	13.1	1.15	14.5	0.07	0.00	0.10	0.10	
75 ISL	10.49 D	10.48	33.431 D	25.647	235.1	0.210	4.32	188.0 D	68.4	14.5	1.24	15.8	0.07	0.00	0.08	0.10	
85	10.32	10.31</td															

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 60.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
0	14.01	14.01	33.123	24.735	320.0	0.000	6.03	263.7	102.7	1.8	0.29	0.0	0.03	0.16	0.15	0.05	0
2	14.01	14.01	33.123	24.735	320.0	0.006	6.03	263.7	102.7	1.8	0.29	0.0	0.03	0.16	0.15	0.05	2 21
10	13.76	13.75	33.161	24.818	312.4	0.032	6.00	262.1	101.6	2.0	0.34	0.6	0.08	0.20	0.23	0.07	10 19
10	13.76	13.75	33.165	24.821	312.2	0.033											10 20
20	13.50	13.50	33.232	24.925	302.5	0.062	5.98	261.2	100.8	2.5	0.41	1.7	0.12	0.22	0.36	0.18	20 18
30	13.34	13.33	33.238	24.963	299.2	0.093	5.99	261.7	100.6	2.8	0.42	2.0	0.14	0.16	0.38	0.19	30 17
40	13.27	13.26	33.267	25.000	295.9	0.122	5.94	259.7	99.8	3.2	0.45	2.6	0.14	0.15	0.47	0.32	40 16
50	13.16	13.15	33.282	25.034	293.0	0.152	5.83	254.8	97.7	3.6	0.50	3.3	0.15	0.29	0.42	0.32	50 15
60	13.05	13.04	33.353	25.112	285.9	0.181	5.79	253.1	96.8	4.2	0.61	4.7	0.17	0.60	0.42	0.33	60 14
70	12.04	12.03	33.277	25.247	273.2	0.209	5.29	231.3	86.6	5.8	0.69	6.7	0.14	0.18	0.24	0.25	71 13
75 ISL	11.59 D	11.58	33.292	25.344	264.1	0.220	5.08	0221.1	D 82.2	8.2	0.84	9.3	0.11	0.00	0.21	0.22	76
85	10.52	10.51	33.406	25.622	237.7	0.247	4.38	191.3	69.4	12.9	1.15	14.6	0.06	0.00	0.14	0.14	86 12
100	9.65	9.64	33.568	25.896	211.8	0.281	4.04	176.5	62.8	18.2	1.40	18.9	0.00	0.00	0.09	0.09	101 11
120	9.25	9.24	33.766	26.117	191.2	0.321	3.32	145.0	51.2	24.3	1.70	23.2	0.00	0.00	0.03	0.07	121 10
125 ISL	9.16 D	9.15	33.814	26.168	186.5	0.329	3.12	0235.6	D 48.0	25.1	1.73	23.6	0.00	0.00	0.02	0.07	126
141	8.96	8.94	33.865	26.241	179.8	0.360	3.07	131.5	46.2	27.9	1.83	25.2	0.00	0.00	0.02	0.06	142 09
150 ISL	8.81 D	8.79	33.887	26.282	176.1	0.375	3.06	0233.0	D 46.8	29.2	1.88	25.9	0.00	0.00	0.01	0.06	151
171	8.71	8.70	33.957	26.352	169.9	0.412	2.58	112.7	39.4	32.2	1.99	27.5	0.00	0.00	0.01	0.06	172 08
200 ISL	8.10 D	8.08	33.973	26.459	160.1	0.459	2.86	0242.5	D 43.1	35.5	1.97	27.8	0.00	0.00	0.01	0.05	202
202	8.08	8.06	33.971	26.460	160.0	0.463	2.87	125.2	43.1	35.7	1.97	27.8	0.00	0.00	0.01	0.05	204 07
232	7.97	7.94	34.052	26.542	152.8	0.510	2.05	89.4	30.8	41.6	2.25	30.7	0.00	0.00			234 06
250 ISL	8.05 D	8.02	34.130	26.591	148.5	0.537	1.48	64.3	D 22.3	45.2	2.39	32.1	0.00	0.00			252
272	7.75	7.72	34.168	26.665	141.7	0.570	1.17	51.0	17.5	49.5	2.56	33.8	0.00	0.00			274 05
300 ISL	7.56 D	7.53	34.193	26.712	137.7	0.609	0.97	0 42.2	D 14.5	53.1	2.65	34.6	0.00	0.00			302
322	7.39	7.36	34.211	26.752	134.3	0.639	0.82	35.7	12.1	55.9	2.72	35.3	0.00	0.00			325 04
380	7.04	7.01	34.238	26.823	128.3	0.715	0.63	27.3	9.2	60.9	2.83	36.7	0.00	0.00			383 03
400 ISL	6.86 D	6.82	34.256	26.862	124.8	0.741	0.54	0 23.4	D 7.9	63.7	2.88	37.3	0.00	0.00			403
442	6.58	6.54	34.287	26.926	119.2	0.791	0.40	17.4	5.8	69.5	2.98	38.4	0.00	0.00			446 02
500 ISL	6.16 D	6.12	34.319	27.005	112.1	0.861	0.29	0 12.6	D 4.2	76.0	3.06	39.6	0.00	0.00			504
515	6.12	6.07	34.325	27.016	111.2	0.875	0.27	11.8	3.9	77.7	3.08	39.9	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 BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
0	15.12	15.12	33.105	24.485	343.8	0.000	5.93	259.2	103.3	1.7	0.25	0.0	0.00	0.08	0.15	0.04	0
2 A	15.12	15.12	33.105	24.485	343.9	0.007	5.93	259.2	103.3	1.7	0.25	0.0	0.00	0.15	0.04	0.04	2 24
10 ISL	14.71 D	14.71	33.101	D 24.573	335.8	0.031	5.94	259.0	102.6	1.7	0.25	0.0	0.00	0.15	0.03	0.10	10 23
10	14.71	14.71	33.105	24.576	335.5	0.035											10 23
11	14.64	14.64	33.103	24.589	334.3	0.037	5.94	259.9	102.5	1.7	0.25	0.0	0.00	0.15	0.03	0.11	22
16 A	14.50	14.50	33.108	24.621	331.4	0.054	5.95	260.1	102.3	1.6	0.24	0.0	0.00	0.13	0.03	0.16	21
20 ISL	14.36 D	14.36	33.101	D 24.646	329.1	0.064	6.00	0261.3	D 102.8	1.7	0.25	0.0	0.00	0.14	0.04	0.20	
24 A	14.31	14.31	33.099	24.655	328.3	0.080	6.00	262.3	102.8	1.7	0.25	0.0	0.00	0.15	0.04	0.24	20
30 ISL	14.28 D	14.27	33.099	D 24.663	327.8	0.097	6.00	0261.5	D 102.7	1.7	0.24	0.0	0.00	0.16	0.05	0.30	
32	14.27	14.26	33.099	24.665	327.6	0.107	5.97	261.0	102.2	1.7	0.24	0.0	0.00	0.16	0.06	0.32	19
42 A	14.17	14.17	33.098	24.685	326.1	0.139	5.98	261.4	102.1	1.6	0.25	0.0	0.00	0.19	0.06	0.42	18
50 ISL	14.12 D	14.11	33.097	D 24.695	325.4	0.163	5.99	0261.2	D 102.3	1.6	0.25	0.0	0.00	0.25	0.10	0.50	
54	14.02	14.02	33.099	24.717	323.4	0.178	6.00	262.3	102.1	1.6	0.25	0.0	0.00	0.29	0.12	54 17	
63	13.58	13.57	33.099	24.809	314.9	0.207	5.97	261.1	100.8	2.0	0.29	0.3	0.08	0.00	0.47	0.26	64 15
63	13.58	13.57	33.097	24.807	315.0	0.208											64 16
75 ISL	13.16 D	13.15	33.190	D 24.963	300.5	0.242	5.80	252.7	97.1	2.8	0.43	1.9	0.34	0.00	0.39	0.36	76
76 A	13.03	13.02	33.177	24.980	298.9	0.247	5.79	252.9	96.6	2.9	0.44	2.1	0.37	0.09	0.39	0.37	77 14
85	12.49	12.48	33.252	25.144	283.5	0.273	5.29	231.5	87.4	5.6	0.67	6.1	0.27	0.00	0.20	0.19	86 13
95 A	11.90	11.88	33.283	25.281	270.7	0.301	4.97	217.2	81.0	7.6	0.82	8.7	0.10	0.00	0.15	0.16	96 12
100 ISL	11.44 D	11.42	33.343	D 25.412	258.2	0.313	4.78	0208.3	D 77.3	9.0	0.91	10.2	0.07	0.00	0.13	0.14	101 11
109	11.27	11.25	33.359	25.456	254.3	0.338	4.44	194.3	71.5	11.5	1.08	13.1	0.04	0.00	0.09	0.11	110 11
124	10.26	10.25	33.584	25.807	221.0	0.373	3.47	151.6	54.7	19.5	1.58	20.3	0.00	0.00	0.02	0.05	125 10
125 ISL	10.08 D	10.06	33.607	D 25.857	216.2	0.374	3.44	0249.8	D 54.1	19.6	1.59	20.4	0.00	0.00	0.02	0.05	126
141	9.87	9.86	33.641	25.918	210.8	0.410	3.29	143.9	51.5	21.5	1.67	21.7	0.00	0.00	0.01	0.05	142 09
150 ISL	9.54 D	9.53	33.727	D 26.040	199.3	0											

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db		
32	19.2 N	121 42.9 W	07/04/2017	0050	UTC	3999 m	210	12 kn	230	04	08	1	1014.8	mb	16.8	C 15.7	23 m	5/8	SC 043
0	15.87	15.87	33.253	24.434	348.7	0.000	5.81	254.0	102.8	1.5	0.27	0.0	0.00	0.03	0.12	0.02	0		
2	15.87	15.87	33.253	24.434	348.8	0.007	5.81	254.0	102.8	1.5	0.27	0.0	0.00	0.00	0.12	0.02	2	21	
10	15.78	15.78	33.257	24.458	346.7	0.035	5.83	254.7	102.9	1.4	0.26	0.0	0.00	0.00	0.11	0.02	10	19	
11	15.66	15.66	33.258	24.485	344.2	0.038											11	20	
20	ISL	15.43 D	15.43	33.278	D 24.552	338.1	0.066	5.86	D 255.6	D 102.9	1.4	0.27	0.0	0.00	0.00	0.15	0.03	20	
26	15.38	15.37	33.278	24.565	337.1	0.089	5.86	256.0	102.6	1.4	0.27	0.0	0.00	0.00	0.17	0.03	26	18	
30	ISL	15.31 D	15.30	33.273	D 24.576	336.2	0.100	5.87	D 255.9	D 102.7	1.4	0.27	0.0	0.00	0.00	0.21	0.05	30	
40	15.03	15.02	33.265	24.632	331.2	0.136	5.92	258.8	103.0	1.5	0.26	0.0	0.00	0.00	0.28	0.09	40	17	
49	15.00	15.00	33.277	24.647	330.0	0.166	5.90	258.0	102.6	1.5	0.27	0.0	0.00	0.00	0.38	0.16	49	16	
50	ISL	14.99 D	14.98	33.281	D 24.654	329.4	0.167	5.88	D 256.5	D 102.3	1.6	0.28	0.1	0.02	0.00	0.40	0.18	50	
62	14.02	14.02	33.289	24.865	309.6	0.208	5.73	250.4	97.6	2.6	0.38	1.2	0.13	0.00	0.68	0.36	62	15	
74	12.40	12.39	33.318	25.212	276.7	0.243	4.73	206.9	78.0	7.7	0.87	9.3	0.16	0.00	0.40	0.47	75	14	
75	ISL	12.23 D	12.22	33.327	D 25.251	273.0	0.243	4.55	D 198.2	D 74.8	8.0	0.90	9.7	0.15	0.00	0.39	0.46	76	
87	11.15	11.14	33.375	25.488	250.6	0.277	4.16	181.9	66.8	12.0	1.20	14.7	0.05	0.00	0.22	0.36	88	13	
100	ISL	10.61 D	10.60	33.446	D 25.639	236.4	0.307	3.87	D 168.3	D 61.4	14.7	1.35	17.2	0.03	0.00	0.14	0.17	101	
102	10.59	10.58	33.439	25.637	236.7	0.313	3.87	169.0	61.4	15.1	1.37	17.5	0.00	0.00	0.13	0.15	103	12	
112	10.13	10.12	33.527	25.785	222.8	0.336	3.62	158.3	56.9	18.1	1.54	20.0	0.00	0.00	0.06	0.07	113	11	
125	9.82	9.80	33.602	25.896	212.4	0.365	3.49	152.4	54.4	20.3	1.63	21.4	0.00	0.00	0.03	0.03	126	10	
140	9.27	9.25	33.683	26.050	198.0	0.396	3.38	147.7	52.2	22.6	1.69	22.4	0.00	0.00	0.01	0.02	141	09	
150	ISL	9.05 D	9.04	33.790	D 26.167	187.1	0.413	3.30	D 143.6	D 50.7	24.7	1.72	23.1	0.00	0.00	0.01	0.02	151	
170	8.63	8.62	33.903	26.322	172.6	0.451	3.33	145.4	50.7	28.9	1.78	24.6	0.00	0.00	0.00	0.02	171	08	
200	8.10	8.08	34.003	26.482	157.8	0.501	2.49	109.0	37.6	36.9	2.10	28.7	0.00	0.00	0.00	0.02	202	07	
230	7.68	7.66	34.027	26.563	150.6	0.547	2.24	97.7	33.4	42.1	2.23	30.6	0.00	0.00		232	06		
250	ISL	7.46 D	7.44	34.058	D 26.619	145.5	0.576	1.83	D 79.7	D 27.2	46.0	2.34	31.9	0.00	0.00		252		
271	7.06	7.04	34.049	26.668	141.0	0.607	1.78	78.0	26.2	50.0	2.45	33.3	0.00	0.00		273	05		
300	ISL	6.77 D	6.74	34.057	D 26.715	136.8	0.647	1.57	D 68.5	D 23.0	55.4	2.54	34.8	0.00	0.00		302		
320	6.40	6.37	34.041	26.752	133.4	0.675	1.54	67.2	22.3	59.1	2.60	35.7	0.00	0.00		323	04		
381	6.11	6.07	34.131	26.862	123.7	0.753	0.82	35.6	11.7	68.7	2.89	38.8	0.00	0.00		384	03		
400	ISL	6.13 D	6.10	34.171	D 26.890	121.4	0.777	0.66	D 28.5	D 9.5	70.0	2.93	38.9	0.00	0.00		403		
441	6.17	6.13	34.243	26.942	117.1	0.825	0.42	18.5	6.1	72.8	3.03	39.1	0.00	0.00		445	02		
500	ISL	5.87 D	5.83	34.273	D 27.005	111.7	0.894	0.32	D 14.1	D 4.6	79.1	3.11	40.1	0.00	0.00		504		
517	5.74	5.70	34.277	27.024	110.0	0.912	0.31	13.3	4.4	81.0	3.13	40.4	0.00	0.00		521	01		

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db		
31	59.3 N	122 23.3 W	07/04/2017	0614	UTC	4055 m	220	13 kn	230	04	08	1	1016.6	mb	15.9	C 15.0	15.0 C	044	
0	15.56	15.56	33.275	24.519	340.6	0.000	5.85	255.6	102.9	2.1	0.28	0.0	0.01	0.02	0.17	0.03	0		
2	15.56	15.56	33.275	24.519	340.6	0.007	5.85	255.6	102.9	2.1	0.28	0.0	0.00	0.00	0.17	0.03	2	21	
10	15.54	15.53	33.277	24.528	340.0	0.034	5.85	255.9	102.9	2.0	0.29	0.0	0.00	0.00	0.17	0.03	10	19	
10	15.54	15.53	33.275	24.526	340.2	0.034											10	20	
20	15.16	15.16	33.272	24.607	332.9	0.068	5.90	257.8	102.9	2.0	0.28	0.0	0.00	0.00	0.21	0.04	20	18	
30	15.07	15.07	33.271	24.626	331.3	0.101	5.90	258.1	102.8	2.0	0.29	0.0	0.00	0.00	0.25	0.07	30	17	
40	15.04	15.03	33.270	24.634	330.9	0.134	5.89	257.7	102.6	2.0	0.28	0.0	0.00	0.00	0.30	0.09	40	16	
50	ISL	14.72 D	14.71	33.243	D 24.682	326.7	0.165	5.92	D 257.8	D 102.3	2.0	0.29	0.0	0.02	0.00	0.56	0.22	50	
51	14.69	14.68	33.244	24.690	326.0	0.170	5.92	259.0	102.4	2.0	0.29	0.0	0.00	0.00	0.58	0.23	51	15	
60	12.73	12.73	33.301	25.133	283.8	0.198	5.03	219.9	83.5	7.0	0.80	7.9	0.12	0.00	0.64	0.55	60	14	
71	11.36	11.35	33.355	25.434	255.4	0.227	4.37	191.0	70.5	11.2	1.12	13.1	0.04	0.00	0.31	0.30	72	13	
75	ISL	11.12 D	11.11	33.382	D 25.499	249.3	0.236	4.25	D 185.0	D 68.2	12.2	1.18	14.1	0.03	0.00	0.26	0.24	76	
85	10.61	10.59	33.439	25.634	236.6	0.262	4.02	175.9	63.9	15.0	1.33	16.7	0.00	0.00	0.13	0.10	86	12	
100	ISL	10.16 D	10.15	33.594	D 25.831	218.1	0.294	3.35	D 145.8	D 52.7	19.8	1.62	20.6	0.01	0.00	0.04	0.06	101	
101	10.12	10.11	33.592	25.837	217.6	0.298	3.37	147.2	52.9	20.1	1.64	20.8	0.00	0.00	0.04	0.06	102	11	
121	9.50	9.48	33.726	26.045	198.1	0.340	2.11	136.1	48.3	24.2	1.79	23.4	0.00	0.00	0.01	0.04	122	10	
125	ISL	9.37 D	9.36	33.750	D 26.085	194.4	0.346	3.16	D 137.3	D 48.8	24.4	1.79	23.5	0.01	0.00	0.01	0.04	126	
140	9.23	9.21	33.764	26.120	191.4	0.377	3.21	140.5	49.6	24.9	1.77	23.8	0.00	0.00	0.01	0.03	141	09	
150	ISL	8.95 D	8.94	33.877	D 26.252	179.0	0.394	2.98	D 129.7	D 45.8	27.1	1.81	24.6	0.01	0.00	0.01			

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
31 39.0 N	123 3.9 W	07/04/2017	1148	UTC	4039 m	210 13 kn			1014.9 mb	16.1 C	15.3 C					045	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db
0	15.21	15.21	33.167	24.515	341.0	0.000	5.86	256.3	102.4	1.9	0.25	0.0	0.00	0.04	0.13	0.03	0
2	15.21	15.21	33.167	24.515	341.0	0.007	5.86	256.3	102.4	1.9	0.25	0.0	0.00	0.00	0.13	0.03	2 21
10	15.21	15.21	33.166	24.515	341.3	0.034	5.85	255.7	102.1	1.6	0.25	0.0	0.00	0.00	0.13	0.04	10 19
11	15.21	15.21	33.166	24.515	341.4	0.037											11 20
20 ISL	14.89	D 14.89	33.134	D 24.559	337.4	0.065	5.89	D 256.5	D 102.1	1.5	0.24	0.0	0.00	0.00	0.13	0.03	20
26	14.87	14.87	33.166	24.589	334.8	0.088	5.89	257.5	102.1	1.5	0.24	0.0	0.00	0.00	0.13	0.03	26 18
30 ISL	14.84	D 14.83	33.171	D 24.600	333.8	0.099	5.90	D 257.0	D 102.2	1.4	0.24	0.0	0.00	0.00	0.14	0.03	30
40	14.73	14.73	33.169	24.621	332.2	0.135	5.94	259.9	102.8	1.4	0.23	0.0	0.00	0.00	0.17	0.05	40 17
50 ISL	14.41	D 14.40	33.162	D 24.685	326.3	0.166	5.90	257.2	101.3	1.5	0.25	0.0	0.00	0.00	0.32	0.14	50
51	14.47	14.46	33.158	24.670	327.8	0.171	5.90	257.8	101.4	1.5	0.25	0.0	0.00	0.00	0.33	0.15	51 16
61	13.72	13.71	33.178	24.841	311.8	0.203	5.76	252.0	97.6	2.2	0.33	0.8	0.14	0.00	0.47	0.34	61 15
74	13.06	13.05	33.208	24.997	297.2	0.243	5.43	237.3	90.7	4.2	0.52	4.1	0.08	0.00	0.35	0.30	75 14
75 ISL	13.05	D 13.03	33.220	D 25.010	296.0	0.244	5.37	D 234.0	D 89.7	4.3	0.53	4.3	0.08	0.00	0.34	0.29	76
88	12.46	12.44	33.263	D 25.159	282.1	0.282	5.13	D 223.6	D 84.7								89 13
100 ISL	11.59	D 11.57	33.322	D 25.368	262.4	0.315	4.73	D 205.9	D 76.6	8.7	0.90	10.2	0.03	0.00	0.17	0.20	101
101	11.49	11.48	33.318	25.382	261.1	0.318	4.77	208.4	77.1	8.8	0.91	10.4	0.03	0.00	0.16	0.20	102 12
111	10.87	10.86	33.363	25.529	247.3	0.344	4.41	192.6	70.3	12.3	1.13	14.1	0.00	0.00	0.10	0.12	112 11
125	10.05	10.04	33.495	25.773	224.1	0.377	4.14	181.1	65.0	16.3	1.34	17.4	0.00	0.00	0.03	0.05	126 10
141	9.42	9.40	33.587	25.950	207.5	0.411	3.76	164.4	58.2	20.5	1.56	20.8	0.00	0.00	0.01	0.03	142 09
150 ISL	9.28	D 9.26	33.672	D 26.039	199.3	0.429	3.63	D 157.9	D 56.0	22.2	1.62	21.7	0.01	0.00	0.01	0.03	151
171	8.97	8.95	33.800	26.190	185.3	0.470	3.32	144.9	50.9	26.3	1.75	24.0	0.00	0.00	0.00	0.02	172 08
200 ISL	8.54	D 8.52	33.922	D 26.352	170.4	0.522	3.02	D 131.3	D 45.9	30.6	1.88	25.7	0.00	0.00	0.00	0.02	202
201	8.53	8.51	33.917	26.350	170.6	0.524	3.07	134.2	46.7	30.8	1.88	25.8	0.00	0.00	0.00	0.02	203 07
231	8.11	8.08	33.991	26.472	159.4	0.573	2.61	113.9	39.3	36.8	2.06	28.7	0.00	0.00			233 06
250 ISL	7.91	D 7.88	34.035	D 26.537	153.5	0.603	2.20	D 95.5	D 32.9	40.8	2.19	30.2	0.00	0.00			252
272	7.54	7.51	34.049	26.602	147.6	0.636	1.90	82.9	28.2	45.4	2.34	31.9	0.00	0.00			274 05
300 ISL	7.33	D 7.30	34.084	D 26.660	142.4	0.677	1.50	D 65.3	D 22.2	50.2	2.49	33.7	0.00	0.00			302
322	7.05	7.02	34.098	26.709	138.0	0.708	1.29	56.4	19.0	54.0	2.60	35.1	0.00	0.00			325 04
379	6.57	6.54	34.141	26.809	129.1	0.784	0.85	36.9	12.3	63.5	2.82	37.7	0.00	0.00			382 03
400 ISL	6.53	D 6.50	34.167	D 26.836	126.9	0.812	0.73	D 31.9	D 10.7	66.5	2.88	38.3	0.00	0.00			403
440	6.11	6.07	34.181	26.902	120.8	0.861	0.58	25.2	8.3	72.1	2.98	39.5	0.00	0.00			444 02
500 ISL	5.86	D 5.82	34.225	D 26.968	115.2	0.934	0.44	D 19.0	D 6.2	77.4	3.07	40.2	0.00	0.00			504
516	5.87	5.83	34.254	26.991	113.3	0.949	0.34	14.8	4.9	78.8	3.10	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 BELL M SHIMADA

CALCOFI CRUISE 1704

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 19.2 N	123 44.5 W	07/04/2017	1757	UTC	3806 m	210 12 kn	290 09 09	1	1016.7 mb	16.2 C	15.4 C	29 m	5/8	AS	046		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db
0	15.79	15.79	33.175	24.393	352.6	0.000	5.77	252.2	101.9	1.7	0.23	0.0	0.00	0.07	0.04	0	
2 A	15.79	15.79	33.175	24.393	352.6	0.007	5.77	252.2	101.9	1.7	0.23	0.0	0.00	0.07	0.04	2 24	
9	15.74	15.74	33.175	24.403	351.9	0.032	5.77	252.3	101.8	1.7	0.22	0.0	0.00	0.00	0.07	0.02	9 22
10 ISL	15.75	D 15.75	33.174	D 24.402	352.1	0.032	5.77	D 251.5	D 101.8	1.8	0.22	0.0	0.00	0.07	0.02	10	
10	15.75	15.75	33.174	24.402	352.1	0.034										23	
18 A	15.77	15.77	33.198	24.415	351.1	0.063	5.75	251.5	101.6	1.8	0.22	0.0	0.00	0.07	0.01	18	
20 ISL	15.78	D 15.78	33.217	D 24.428	349.9	0.067	5.77	D 251.5	D 101.9	1.8	0.22	0.0	0.00	0.07	0.01	20	
25 A	15.55	15.55	33.204	24.470	346.1	0.088	5.82	254.5	102.4	1.8	0.22	0.0	0.00	0.00	0.08	0.01	25 20
30 ISL	15.51	D 15.51	33.198	D 24.473	346.0	0.102	5.80	D 252.9	D 101.9	1.8	0.22	0.0	0.00	0.08	0.01	30	
37	15.40	15.40	33.172	24.479	345.7	0.129	5.80	253.7	101.7	1.7	0.21	0.0	0.00	0.08	0.02	37 19	
45 A	15.39	15.38	33.186	24.493	344.6	0.157	5.77	252.3	101.1	1.8	0.22	0.0	0.00	0.07	0.01	45 18	
50 ISL	15.40	D 15.39	33.176	D 24.484	345.7	0.172	5.80	D 252.9	D 101.7	1.8	0.22	0.0	0.00	0.09	0.02	50	
57	15.39	15.38	33.187	24.494	344.9	0.198	5.80	253.4	101.6	1.8	0.22	0.0	0.00	0.12	0.03	57 17	
70	15.18	15.17	33.183	24.538	341.1	0.243	5.85	255.6	102.0	1.8	0.23	0.0	0.00	0.15	0.04	71 16	
75 ISL	15.10	D 15.09	33.236	D 24.596	335.8	0.258	5.79	D 252.5	D 100.9	2.0	0.23	0.0	0.00	0.20	0.10	76	
81 A	15.03	15.02	33.298	24.659	329.9	0.280	5.75	251.3	100.0	2.3	0.23	0.0	0.00	0.27	0.18	82 14	
82	14.92	14.91	33.299	24.683	327.6	0.282										83 15	
92	14.15	14.13	33.353	24.890	308.1	0.315	5.61	245.3	96.0	2.7	0.28	0.7	0.05	0.00	0.38	0.35	93 13
100 ISL	13.37	D 13.36	33.284	D 24.996	298.1	0.338	5.45	D 237.4	D 91.6	3.8	0.42	2.8	0.09	0.00	0.34	0.28	101
101 A	13.36	13.35	33.306	25.015	296.4	0.342	5.46	238.5	91.8	3.9	0.44	3.1	0.09	0.00	0.34	0.27	102 12
112	12.63	12.61	33.345	25.190	279.9	0.374	5.24	229.1	86.8	5.4	0.57	5.4	0.05	0.00	0.24	0.24	113 11
124	11.39	11.38	3														

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 88.5 30.1

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	15.18	15.18	33.363	24.672	326.0	0.000	7.30	318.9	127.4	1.0	0.07	0.0	0.02	4.79	0.69	0			
2	15.18	15.17	33.363	24.673	326.0	0.007	7.30	318.9	127.4	1.0	0.07	0.0	0.00	4.79	0.69	2	05		
5	15.17	15.17	33.362	24.674	326.0	0.016	7.36	321.8	128.6	0.8	0.07	0.0	0.00	5.06	0.22	5	04		
10	13.92	13.92	33.364	24.941	300.7	0.032	6.01	262.5	102.2	2.0	0.26	1.9	0.15	18.76	1.24	10	03		
15	12.81	12.81	33.386	25.181	278.0	0.047	4.44	194.2	74.0	8.5	0.96	10.5	0.62	4.21	0.54	15	02		
20	12.64	12.64	33.390	25.218	274.6	0.060	4.31	188.4	71.5	9.4	1.00	11.4	0.65	2.86	0.52	20	01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	16.19	16.19	33.368	24.452	347.0	0.000	6.91	301.9	123.1	1.6	0.16	0.1	0.03	1.84	0.39	0			
2	16.19	16.18	33.368	24.452	347.1	0.007	6.91	301.9	123.1	1.6	0.16	0.1	0.03	1.84	0.39	2	05		
5	15.68	15.68	33.368	24.566	336.3	0.017	7.06	308.4	124.5	1.1	0.13	0.0	0.00	2.11	0.19	5	04		
10	15.17	15.17	33.359	24.672	326.4	0.034	7.12	311.1	124.3	1.7	0.17	0.0	0.05	3.56	0.93	10	03		
15	14.06	14.06	33.354	24.904	304.4	0.050	5.42	236.8	92.5	6.2	0.53	4.4	0.34	5.40	0.77	15	02		
20	13.24	13.24	33.378	25.090	286.8	0.064	4.48	195.8	75.2	9.5	0.96	10.5	0.71	1.68	0.67	20	01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 90.0 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	16.26	16.26	33.368	24.435	348.6	0.000	6.74	294.4	120.2	0.7	0.21	0.0	0.02	0.89	0.14	0			
2	16.26	16.25	33.368	24.435	348.6	0.007	6.74	294.4	120.2	0.7	0.21	0.0	0.00	0.88	0.12	5	08		
5	16.23	16.23	33.369	24.442	348.1	0.018	6.73	294.2	120.1	0.3	0.18	0.0	0.00	1.20	0.22	10	07		
10	15.43	15.43	33.364	24.619	331.4	0.035	6.96	304.2	122.2	0.2	0.17	0.0	0.00	3.04	0.62	20	06		
20	14.96	14.96	33.360	24.718	322.3	0.067	7.08	309.3	123.1	0.5	0.21	0.0	0.03	1.02	0.59	30	05		
30	12.86	12.86	33.393	25.178	278.7	0.097	4.20	183.7	70.0	10.3	1.10	12.6	0.84	40	0.43	40	04		
40	11.28	11.27	33.479	25.544	244.1	0.123	3.44	150.2	55.4	16.0	1.48	18.5	0.56	50	0.35	50	03		
50	10.78	10.77	33.522	25.667	232.6	0.147	3.33	145.4	53.0	18.5	1.58	20.1	0.27	0.29	0.35	0.29	0.29		
61	9.99	9.99	33.732	25.965	204.4	0.171	2.92	127.4	45.8	23.1	1.83	22.6	0.09	0.13	0.18	61	02		
70	9.86	9.85	33.799	26.041	197.4	0.189	2.77	121.0	43.4	24.7	1.85	23.6	0.05	0.08	0.17	71	01		

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 90.0 30.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C	THETA			ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μM	μM	μM	μg/L	μg/L	db	
0	15.84	15.84	33.348	24.514	341.0	0.000	6.45	281.7	114.1	1.3	0.19	0.0	0.02	0.90	0.19	0			
2	15.84	15.84	33.348	24.515	341.1	0.007	6.45	281.7	114.1	1.3	0.19	0.0	0.00	0.90	0.19	2	21		
10	15.42	15.42	33.346	24.607	332.6	0.034	6.58	287.6	115.5	1.0	0.18	0.0	0.00	1.46	0.27	10	19		
11	15.24	15.24	33.346	24.646	328.9	0.036	6.39	279.3	109.8	1.1	0.20	0.0	0.03	0.00	0.75	20	18		
20	14.39	14.39	33.346	24.830	311.6	0.066	4.82	212.5	81.5	6.4	0.75	6.8	0.39	0.06	2.40	0.60	30	17	
30	13.18	13.17	33.352	25.083	287.7	0.096	4.82	167.2	62.3	12.2	1.25	14.7	0.24	0.00	0.54	0.40	40	16	
40	11.81	11.80	33.431	25.409	257.0	0.123	3.83	167.2	62.3	12.2	1.25	14.7	0.24	0.00	0.54	0.40	40	16	
50	10.93	10.92	33.514	25.634	235.8	0.148	3.44	150.5	55.1	16.2	1.48	18.4	0.05	0.00	0.28	0.27	50	15	
60	10.56	10.56	33.572	25.744	225.5	0.171	3.36	146.8	53.3	18.2	1.56	19.6	0.03	0.00	0.14	0.16	60	14	
70	10.28	10.27	33.614	25.825	218.0	0.193	3.30	144.2	52.1	19.6	1.62	20.5	0.03	0.00	0.09	0.13	71	13	
75	10.24	10.23	33.645	25.856	215.2	0.202	3.26	141.8	51.4	20.5	1.66	21.0	0.03	0.00	0.07	0.12	76		
86	10.02	10.01	33.737	25.966	204.9	0.227	3.01	131.4	47.2	22.5	1.75	22.1	0.00	0.00	0.05	0.09	87	12	
100	10.01	9.99	33.806	26.023	199.9	0.255	2.81	122.9	44.2	23.9	1.84	22.8	0.00	0.00	0.03	0.07	101	11	
120	9.61	9.60	33.920	26.178	185.6	0.294	2.52	110.3	39.3	27.3	1.95	24.6	0.00	0.00	0.02	0.06	121	10	
125	9.69	9.67	33.993	26.223	181.4	0.301	2.34	101.7	36.5	28.3	1.99	25.1	0.02	0.00	0.02	0.06	126		
141	9.32	9.31	34.040	26.320	172.5	0.332	2.17	94.6	33.6	31.5	2.11	26.8	0.00	0.00	0.01	0.04	142	09	
150	9.25	9.23	34.049	26.340	170.8	0.345	2.16	94.2	33.5										

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
33 15.2 N	118 14.6 W	04/04/2017	1648	UTC	305 m	050 02 kn	270 03 09	2	1016.9 mb	15.2	13.9 C	21 m	8/8	ST 028			
0	15.91	15.91	33.351	24.500	342.4	0.000	5.86	256.2	103.9	2.1	0.29	0.0	0.00	0.00	0.27	0.06	0
2 A	15.91	15.91	33.351	24.500	342.4	0.007	5.86	256.2	103.9	2.1	0.29	0.0	0.00	0.00	0.27	0.06	2 21
10 ISL	15.86	33.352	D 24.513	341.5	0.031	5.86	255.6	103.8	2.2	0.28	0.0	0.01	0.00	0.27	0.07	10	
13	15.85	15.85	33.348	24.513	341.6	0.046											13 20
14 A	15.84	15.84	33.349	24.515	341.4	0.048	5.86	256.3	103.8	2.2	0.28	0.0	0.00	0.00	0.27	0.08	14 18
14	15.84	15.84	33.350	24.516	341.4	0.046											14 19
19 A	15.82	15.82	33.348	24.521	341.1	0.065	5.87	256.6	103.8	2.2	0.29	0.0	0.00	0.00	0.30	0.08	19 17
20 ISL	15.82	D 15.81	33.351	D 24.523	340.9	0.065	5.91	D 257.4	D 104.5	2.2	0.29	0.0	0.01	0.00	0.34	0.09	20
26	15.41	15.41	33.337	24.603	335.5	0.088	5.99	261.8	105.1	2.3	0.30	0.0	0.00	0.00	0.59	0.14	26 16
30 ISL	15.28	D 15.27	33.342	D 24.636	330.5	0.099	5.99	D 261.2	D 104.9	2.7	0.33	0.3	0.03	0.00	1.03	0.28	30
32 A	15.01	15.01	33.342	24.695	324.9	0.108	5.88	256.8	102.3	2.9	0.34	0.5	0.04	0.00	1.25	0.36	32 15
41	12.11	12.10	33.405	25.332	264.3	0.135	4.25	185.9	69.7	10.6	1.10	12.3	0.20	0.00	1.18	0.66	41 13
41	12.11	12.10	33.399	25.328	264.7	0.136											41 14
50	11.30	11.30	33.466	25.529	245.7	0.158	3.82	166.9	61.6	14.2	1.33	16.1	0.06	0.00	0.40	0.31	50 12
60 A	11.01	11.00	33.448	25.601	239.2	0.181	3.70	161.9	59.3	15.5	1.41	17.4	0.04	0.00	0.23	0.25	60 11
73 A	10.35	10.34	33.581	25.787	221.7	0.212	3.46	151.1	54.7	18.8	1.57	20.0	0.00	0.00	0.10	0.11	74 10
75 ISL	10.32	D 10.31	33.590	D 25.801	220.4	0.215	3.44	D 149.8	D 54.3	19.3	1.59	20.3	0.00	0.00	0.09	0.10	76
86	9.98	9.97	33.688	25.935	207.9	0.240	3.18	139.1	49.9	21.8	1.71	21.9	0.00	0.00	0.02	0.06	87 09
100	9.92	9.91	33.753	25.997	202.4	0.269	3.01	131.4	47.1	23.1	1.78	22.8	0.00	0.00	0.01	0.05	101 08
120	9.62	9.61	33.954	26.204	183.1	0.307	2.44	106.6	38.0	28.3	2.01	25.4	0.00	0.00	0.01	0.03	121 07
125 ISL	9.62	D 9.61	33.980	D 26.224	181.4	0.316	2.39	D 104.1	D 37.3	28.9	2.04	25.6	0.00	0.00	0.01	0.04	126
140	9.63	9.62	34.070	26.293	175.1	0.343	2.07	90.5	32.3	30.9	2.12	26.3	0.00	0.00	0.01	0.05	141 06
150 ISL	9.61	D 9.59	34.130	D 26.344	170.5	0.360	1.82	D 79.0	D 28.3	32.5	2.19	26.9	0.00	0.00	0.01	0.12	151
171	9.33	9.31	34.179	26.430	162.8	0.396	1.59	69.5	24.7	35.9	2.33	28.2	0.00	0.00	0.01	0.26	172 05
199	9.06	9.04	34.208	26.495	157.1	0.440	1.45	63.4	22.4	38.5	2.40	29.3	0.00	0.00	0.00	0.04	201 04
200 ISL	9.05	D 9.03	34.203	D 26.493	157.3	0.442	1.47	D 63.9	D 22.6	38.6	2.40	29.3	0.00	0.00			202
230	8.69	8.66	34.215	26.561	151.4	0.488	1.27	55.6	19.5	42.0	2.47	30.7	0.00	0.00			232 03
250 ISL	8.55	D 8.52	34.219	D 26.586	149.3	0.519	1.23	D 53.6	D 18.8	44.9	2.56	31.6	0.00	0.00			252
270	8.26	8.23	34.242	26.648	143.7	0.547	0.97	42.1	14.6	47.8	2.65	32.5	0.00	0.00			272 02
290	7.99	7.96	34.250	26.696	139.4	0.576	0.85	37.3	12.9	50.9	2.70	33.5	0.00	0.00			292 01

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
33 11.3 N	118 22.6 W	04/04/2017	1356	UTC	1159 m	080 07 kn	270 04 10	2	1015.4 mb	13.9 C	12.9 C	18 m	8/8	ST 027			
0	15.87	15.87	33.353	24.511	341.4	0.000	5.84	255.4	103.5	2.2	0.28	0.0	0.00	0.00	0.30	0.08	0
2	15.87	15.87	33.353	24.511	341.4	0.007	5.84	255.4	103.5	2.2	0.28	0.0	0.00	0.00	0.30	0.08	2 22
10	15.84	15.84	33.351	24.517	341.2	0.034	5.86	256.0	103.7	1.9	0.26	0.0	0.00	0.00	0.30	0.10	10 20
10	15.84	15.84	33.352	24.517	341.1	0.035											10 21
20	15.49	15.49	33.345	24.590	334.5	0.068	5.89	257.6	103.6	2.0	0.26	0.0	0.00	0.00	0.35	0.12	20 19
30	13.86	13.86	33.339	24.935	301.9	0.100	5.65	246.8	96.0	2.6	0.42	1.1	0.07	0.00	1.53	0.20	30 18
40	12.31	12.30	33.387	25.281	269.2	0.128	4.23	184.8	69.6	9.9	1.06	11.6	0.20	0.00	1.00	0.68	40 16
40	12.31	12.30	33.388	25.282	269.1	0.128											40 17
50	11.70	11.69	33.416	25.419	256.3	0.155	3.93	171.8	63.9	12.4	1.23	14.5	0.09	0.00	0.42	0.47	50 15
60	11.40	11.39	33.463	25.510	247.9	0.180	3.81	166.7	61.6	14.3	1.32	16.0	0.05	0.00	0.26	0.33	60 14
71	10.62	10.62	33.543	25.711	228.9	0.206	3.51	153.3	55.8	17.5	1.50	18.8	0.03	0.00	0.11	0.11	72 13
75 ISL	10.59	D 10.58	33.556	D 25.727	227.5	0.213	3.49	D 152.1	D 55.5	18.4	1.55	19.4	0.03	0.00	0.09	0.10	76
85	10.15	10.14	33.657	25.882	212.9	0.237	3.21	140.4	50.6	20.5	1.66	21.0	0.00	0.00	0.03	0.08	86 12
100	9.95	9.94	33.713	25.959	205.9	0.268	3.08	134.4	48.2	22.3	1.72	22.1	0.00	0.00	0.02	0.05	101 11
120	9.68	9.67	33.848	26.110	192.0	0.308	2.73	119.1	42.5	25.9	1.87	24.0	0.00	0.00	0.01	0.04	121 10
125 ISL	9.67	D 9.65	33.878	D 26.137	189.6	0.317	2.68	D 116.7	D 41.8	26.8	1.92	24.4	0.00	0.00	0.01	0.04	126
140	9.76	9.75	34.013	26.227	181.4	0.346	2.22	96.8	34.7	29.3	2.05	25.5	0.00	0.00	0.01	0.05	141 09
150 ISL	9.71	D 9.69	34.049	D 26.264	178.1	0.363	2.22	D 96.5	D 34.7	30.3	2.07	25.9	0.00	0.00	0.01	0.04	151
170	9.30	9.28	34.059	26.340	171.3	0.399	2.11	92.1	32.6	32.3	2.12	26.9	0.00	0.00	0.00	0.03	171 08
200	8.79	8.76	34.114	26.465	159.8	0.448	1.94	84.9	29.8	36.6	2.21	28.4	0.00	0.00	0.00	0.00	202 07
230	8.64	8.61	34.199	26.556	151.8	0.495	1.35	58.9	20.6	41.8	2.43	30.3	0.00	0.00			232 06
250 ISL	8.41	D 8.38	34.218	D 26.606	147.3	0.525	1.19	D 51.7	D 18.1	43.9	2.49	31.0	0.00	0.00			252
270	8.33	8.30	34.224	26.624	146.0	0.555	1.09	47.8	16.6	46.0	2.55	31.7	0.00	0.00			272 05
300 ISL	7.95	D 7.92	34.250	D 26.702	139.0	0.598	0.88	D 38.1	D								

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 90.0 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db	
0	15.12	15.12	33.373	24.693	324.0	0.000	5.93	259.2	103.5	2.3	0.30	0.5	0.07	0.06	0.16	0	
3	15.12	15.12	33.373	24.693	324.1	0.010	5.93	259.2	103.5	2.3	0.30	0.5	0.07	0.06	0.16	3	
10	14.85	14.85	33.366	24.745	319.3	0.032	5.94	259.5	103.0	2.2	0.30	0.3	0.06	0.00	0.58	0.22	
10	14.85	14.85	33.371	24.750	318.9	0.032										10	
20	14.46	14.46	33.366	24.830	311.6	0.064	5.88	256.8	101.2	2.3	0.35	1.1	0.11	0.08	1.12	0.32	
30	ISL	11.90 D	11.89	33.422	25.385	259.0	0.088	4.47	194.7	73.0	10.4	1.02	11.6	0.25	0.00	0.76	
31	11.87	11.87	33.415	25.384	259.1	0.095	4.33	189.1	70.6	11.2	1.09	12.7	0.26	0.00	0.73	0.42	
40	11.01	11.00	33.470	25.585	240.1	0.117	3.84	167.6	61.5	15.0	1.34	16.6	0.11	0.00	0.46	0.29	
49	10.71	10.70	33.515	25.673	231.9	0.139	3.61	157.7	57.5	17.1	1.46	18.5	0.06	0.00	0.25	0.21	
50	ISL	10.62 D	10.62	33.537 D	25.706	228.9	0.137	3.61	157.3 D	57.4	17.4	1.47	18.6	0.06	0.00	0.24	
61	10.24	10.24	33.609	25.827	217.6	0.166	3.29	143.8	51.9	20.2	1.61	20.8	0.04	0.00	0.10	0.12	
70	10.07	10.07	33.650	25.888	211.9	0.185	3.18	138.8	49.9	21.6	1.68	21.6	0.03	0.00	0.05	0.10	
75	ISL	9.99 D	9.98	33.670 D	25.920	209.1	0.191	3.15	137.3 D	49.5	22.0	1.70	22.0	0.03	0.00	0.05	0.09
85	9.85	9.84	33.698	25.964	205.1	0.216	3.06	133.7	47.9	22.6	1.75	22.7	0.00	0.00	0.03	0.07	
100	ISL	9.50 D	9.49	33.813 D	26.112	191.4	0.242	2.81	122.1 D	43.6	25.7	1.84	24.2	0.02	0.00	0.01	0.05
101	9.50	9.49	33.807	26.107	191.8	0.248	2.81	122.9	43.7	25.9	1.85	24.3	0.00	0.00	0.01	0.05	
120	9.30	9.29	33.900	26.213	182.2	0.283	2.57	112.3	39.8	28.9	1.97	25.6	0.00	0.00	0.01	0.05	
125	ISL	9.27 D	9.26	33.916 D	26.230	180.6	0.289	2.54	110.6 D	39.3	29.6	2.00	26.0	0.02	0.00	0.01	0.05
140	9.13	9.12	34.003	26.322	172.2	0.319	2.23	97.3	34.4	31.8	2.09	27.1	0.00	0.00	0.01	0.05	
150	ISL	9.06 D	9.04	34.054 D	26.374	167.5	0.333	2.04	88.8 D	31.4	33.5	2.15	27.7	0.02	0.00	0.01	0.05
170	8.80	8.78	34.103	26.453	160.3	0.369	1.78	77.8	27.3	36.7	2.27	29.0	0.00	0.00	0.01	0.04	
200	8.45	8.43	34.148	26.544	152.2	0.416	1.49	64.9	22.6	41.4	2.41	30.8	0.00	0.00	0.01	0.04	
230	8.10	8.07	34.174	26.618	145.6	0.460	1.27	55.5	19.2	45.4	2.51	32.1	0.00	0.00		232	
250	ISL	7.96 D	7.94	34.191 D	26.651	142.8	0.487	1.15 D	50.0 D	17.3	47.8	2.58	32.9	0.02	0.00		252
270	7.77	7.75	34.205	26.691	139.3	0.517	0.99	43.2	14.8	50.2	2.64	33.7	0.00	0.00		272	
300	ISL	7.57 D	7.54	34.226 D	26.737	135.3	0.557	0.85	36.9 D	12.7	53.7	2.73	34.5	0.02	0.00		302
321	7.43	7.40	34.231	26.762	133.3	0.587	0.75	32.9	11.2	56.1	2.79	35.1	0.00	0.00		324	
380	6.95	6.91	34.256	26.850	125.6	0.663	0.55	24.0	8.1	62.6	2.90	37.0	0.00	0.00		383	
400	ISL	6.79 D	6.75	34.269 D	26.882	122.8	0.687	0.48 D	20.9 D	7.0	64.9	2.94	37.5	0.01	0.00		403
441	6.54	6.50	34.282	26.927	119.0	0.738	0.39	17.0	5.7	69.8	3.02	38.4	0.00	0.00		445	
500	ISL	6.21 D	6.17	34.311 D	26.993	113.3	0.806	0.30 D	13.1 D	4.4	76.8	3.10	38.6	0.01	0.00		504
516	6.18	6.13	34.321	27.005	112.4	0.824	0.26	11.4	3.8	78.7	3.12	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 02;

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	NH4*	CHL-A	PHAEAO	PRES	SAMP		
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	db		
0	14.04	14.04	33.371	24.920	302.4	0.000	6.09	266.0	103.9	3.7	0.42	2.1	0.15	0.03	2.70	0.46	0	
2	14.04	14.04	33.371	24.920	302.4	0.006	6.09	266.0	103.9	3.7	0.42	2.1	0.15	0.00	2.70	0.46	2	
10	13.90	13.90	33.379	24.957	299.2	0.030	6.08	265.6	103.5	4.1	0.45	2.5	0.16	0.00	3.00	0.43	10	
11	13.90	13.90	33.379	24.957	299.2	0.032											19	
20	13.65	13.65	33.377	25.006	294.8	0.060	5.87	256.3	99.3	4.6	0.51	3.4	0.17	0.15	2.97	0.38	20	
30	13.51	13.50	33.370	25.031	292.8	0.089	5.62	245.7	94.9	5.1	0.57	4.2	0.20	0.35	1.22	0.40	30	
41	13.50	13.50	33.370	25.033	292.9	0.121	5.65	246.7	95.3	5.2	0.59	4.3	0.20	0.36	1.03	0.34	41	
50	ISL	13.49 D	13.48	33.371 D	25.037	292.7	0.146	5.62	245.0 D	94.9	5.3	0.59	4.3	0.20	0.36	1.01	0.34	
51	13.49	13.49	33.370	25.035	293.0	0.151	5.60	244.7	94.5	5.3	0.59	4.4	0.20	0.36	1.01	0.34	51	
61	13.37	13.37	33.374	25.063	290.7	0.180	5.54	242.0	93.2	5.8	0.62	5.0	0.23	0.38	0.64	0.30	61	
71	11.62	11.61	33.373	25.400	258.6	0.207	5.26	229.9	85.4	7.1	0.73	6.8	0.29	0.28	0.50	0.33	72	
75	ISL	11.30 D	11.29	33.414 D	25.490	250.1	0.216	4.34	189.0 D	69.9	9.9	0.92	9.9	0.23	0.00	0.38	0.28	
86	10.30	10.29	33.509	25.740	226.4	0.244	3.79	165.7	59.9	17.3	1.44	18.5	0.07	0.00	0.07	0.13	87	
99	10.04	10.03	33.565	25.829	218.2	0.273	3.59	156.9	56.4	19.4	1.55	20.2	0.04	0.00	0.06	0.10	100	
100	ISL	10.00 D	9.99	33.582 D	25.849	216.4	0.274	3.60	156.8 D	56.5	19.6	1.56	20.3	0.04	0.00	0.06	0.10	
121	9.47	9.45	33.712	26.040	198.6	0.319	3.26	142.2	50.5	23.7	1.73	23.0	0.00	0.00	0.03	0.09	122	
125	ISL	9.35 D	9.33	33.802 D	26.129	190.2	0.325	2.94	127.9 D	45.5	24.7	1.77	23.5	0.02	0.00	0.03	0.08	126
140	9.18	9.17	33.864	26.204	183.4	0.355	2.73	119.2	42.1	28.3	1.93	25.5	0.00	0.00	0.02	0.05	141	
150	ISL	8.92 D	8.90	33.955 D	26.319	172.7	0.371	2.46	106.9 D	37.7	30.2	2.00	26.4	0.01	0.00	0.02	0.05	
172	8.81	8.79	34.015	26.383	167.0	0.411	2.13	92.8	32.5	34.5	2.15	28.4	0.00	0.00	0.01	0.05	173	
200	8.67	8.65	34.067	26.446	161.6	0.457	1.82	79.6	27.8	38.3	2.27	29.6	0.00	0.00	0.01	0.05	202	
230	8.53	8.51	34.116	26.507	156.4	0.504	1.59	69.6	24.3	40.7	2.37	30.5	0.00	0.00		232		
250	ISL	8.31 D	8.29	34.154 D	26.571	150.6	0.534	1.38	60.0 D	20.9	43.3	2.45	31.4	0.02	0.00		252	
270	8.17	8.14	34.182	26.614	146.8	0.565	1.23	53.8	18.6	46.0	2							

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
32 25.1 N	119 57.7 W	03/04/2017	2230	UTC	858 m	310	16 kn	300 05 06	2	1013.9 mb	14.7	C 13.2 C	16 m	8/8	ST	024		
0	14.47	14.47	33.210	24.707	322.6	0.000	5.97	260.7	102.6	1.9	0.29	0.2	0.04	0.04	0.49	0.16	0	
2	14.47	14.46	33.210	24.708	322.7	0.007	5.97	260.7	102.6	1.9	0.29	0.2	0.04	0.00	0.49	0.16	2 20	
10	14.45	14.45	33.211	24.711	322.6	0.032	5.99	261.7	103.0	1.5	0.28	0.0	0.03	0.00	0.43	0.18	10 19	
19	14.28	14.28	33.211	24.748	319.3	0.061	6.01	262.5	102.9	1.5	0.28	0.0	0.04	0.00	0.47	0.22	19 18	
20 ISL	14.19 D	14.18	33.216 D	24.771	317.2	0.061	6.01	261.7	102.7	1.6	0.28	0.1	0.04	0.00	0.48	0.24	20	
30	13.90	13.89	33.218	24.834	311.5	0.096	6.01	262.5	102.1	1.7	0.30	0.4	0.07	0.00	0.58	0.40	30 17	
40	13.50	13.49	33.217	24.915	304.0	0.127	5.82	254.4	98.1	2.5	0.40	1.6	0.16	0.00	0.70	0.52	40 16	
50 ISL	12.86 D	12.85	33.242 D	25.062	290.3	0.154	5.55	241.7	92.3	4.0	0.53	3.6	0.37	0.00	0.65	0.46	50	
51	13.00	13.00	33.229	25.024	294.0	0.159	5.52	241.3	92.1	4.1	0.54	3.8	0.39	0.00	0.65	0.46	51 15	
62	12.22	12.21	33.242	25.186	278.8	0.191	5.10	222.8	83.7	6.0	0.71	7.0	0.09	0.00	0.38	0.33	62 14	
70	11.77	11.76	33.285	25.304	267.7	0.213	4.79	209.1	77.8	8.1	0.88	9.7	0.09	0.00	0.27	0.34	71 13	
75 ISL	11.23 D	11.22	33.346 D	25.451	253.8	0.224	4.70	204.6 D	75.5	9.4	0.97	11.1	0.07	0.00	0.24	0.29	76	
86	10.96	10.95	33.368	25.516	247.9	0.254	4.30	187.9	68.7	12.1	1.16	14.2	0.04	0.00	0.15	0.20	87 12	
100	10.30	10.29	33.477	25.717	229.0	0.287	3.93	171.7	62.0	16.1	1.40	17.6	0.00	0.00	0.08	0.11	101 11	
119	9.59	9.57	33.647	25.969	205.3	0.328	3.44	150.3	53.5	20.7	1.63	21.0	0.00	0.00	0.03	0.06	120 10	
125 ISL	9.48 D	9.47	33.725 D	26.048	198.0	0.338	3.28	142.6 D	50.8	21.8	1.67	21.7	0.02	0.00	0.03	0.05	126	
139	9.29	9.27	33.769	26.114	192.0	0.368	3.16	138.0	48.8	24.5	1.75	23.2	0.00	0.00	0.02	0.03	140 09	
150 ISL	9.12 D	9.11	33.824 D	26.183	185.6	0.387	3.07	133.8 D	47.3	26.1	1.81	24.1	0.01	0.00	0.01	0.03	151	
170	8.89	8.87	33.902	26.282	176.5	0.425	2.79	122.0	42.8	29.1	1.91	25.7	0.00	0.00	0.02	0.02	171 08	
200 ISL	8.53 D	8.51	33.984 D	26.403	165.6	0.475	2.54	110.4 D	38.6	33.2	2.01	27.3	0.01	0.00	0.00	0.02	202	
202	8.52	8.49	33.983	26.404	165.5	0.480	2.52	110.1	38.3	33.5	2.02	27.4	0.00	0.00	0.00	0.02	204 07	
230	8.18	8.15	34.030	26.493	157.5	0.525	2.23	97.2	33.6	38.0	2.15	29.0	0.00	0.00			232 06	
250 ISL	7.96 D	7.93	34.065 D	26.554	152.0	0.555	1.92	83.5 D	28.8	41.0	2.25	30.2	0.01	0.00			252	
272	7.78	7.75	34.082	26.593	148.6	0.589	1.67	72.9	25.0	44.2	2.37	31.7	0.00	0.00			274 05	
300 ISL	7.52 D	7.49	34.103 D	26.647	143.8	0.629	1.44	62.5 D	21.4	48.3	2.49	33.1	0.01	0.00			302	
320	7.35	7.32	34.116	26.683	140.7	0.658	1.26	55.1	18.7	51.3	2.57	34.1	0.00	0.00			323 04	
381	6.80	6.77	34.158	26.792	131.0	0.741	0.82	35.9	12.0	60.6	2.77	36.5	0.00	0.00			384 03	
400 ISL	6.72 D	6.68	34.180 D	26.821	128.5	0.766	0.74	32.2 D	10.8	62.9	2.82	37.0	0.01	0.00			403	
444	6.40	6.36	34.213	26.889	122.4	0.821	0.53	23.3	7.7	68.4	2.93	38.3	0.00	0.00			448 02	
500 ISL	6.06 D	6.01	34.260 D	26.972	115.1	0.889	0.38	16.3 D	5.4	74.8	3.05	39.4	0.01	0.00			504	
520	5.92	5.87	34.274	27.001	112.5	0.911	0.32	13.9	4.6	77.1	3.09	39.8	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
32 4.9 N	120 38.5 W	03/04/2017	1626	UTC	3766 m	300	13 kn	270 08 12	2	1015.1 mb	14.2	C 13.0 C	18 m	8/8	ST	023		
0	14.83	14.83	33.228	24.644	328.6	0.000	5.89	257.3	102.0	1.6	0.30	0.0	0.00	0.00	0.45	0.15	0	
2 A	14.83	14.82	33.228	24.645	328.7	0.007	5.89	257.3	102.0	1.6	0.30	0.0	0.00	0.00	0.45	0.15	2 22	
10 ISL	14.38 D	14.38	33.226 D	24.739	319.9	0.030	5.99	260.9	102.8	1.5	0.30	0.1	0.03	0.00	0.39	0.21	10 21	
11	14.26	14.25	33.223	24.762	317.8	0.037												
12 A	14.23	14.22	33.223	24.768	317.2	0.039	6.01	262.7	102.9	1.4	0.30	0.1	0.03	0.00	0.37	0.22	12 20	
17 A	14.07	14.07	33.221	24.800	314.4	0.055	6.05	264.5	103.3	1.4	0.32	0.1	0.03	0.00	0.41	0.28	17 19	
20 ISL	13.93 D	13.93	33.221 D	24.828	311.7	0.061	6.04	263.4	102.8	1.4	0.33	0.2	0.03	0.00	0.41	0.30	20	
28 A	13.92	13.92	33.219	24.830	311.8	0.089	6.02	263.0	102.4	1.4	0.34	0.2	0.04	0.11	0.42	0.35	28 17	
30 ISL	13.92 D	13.91	33.222 D	24.833	311.6	0.093	6.02	262.3	102.4	1.4	0.34	0.2	0.04	0.11	0.43	0.36	30	
40	13.88	13.88	33.220	24.839	311.3	0.127	6.03	263.3	102.4	1.5	0.32	0.3	0.05	0.11	0.45	0.39	40 16	
50 ISL	13.87 D	13.86	33.223 D	24.845	311.1	0.156	6.03	262.7 D	102.4	1.5	0.35	0.3	0.05	0.18	0.38	0.37	50	
51 A	13.85	13.84	33.220	24.847	310.9	0.161	6.00	262.2	101.9	1.5	0.35	0.3	0.05	0.19	0.38	0.37	51 15	
64 A	12.82	12.81	33.265	25.089	288.1	0.200	5.71	249.7	95.0	3.2	0.58	3.1	0.21	1.04	0.15	0.65	14 14	
74	12.20	12.19	33.307	25.241	273.9	0.228	5.09	222.3	83.5	6.6	0.86	7.3	0.39	1.08	0.11	0.11	75 13	
75 ISL	12.15 D	12.14	33.319 D	25.259	272.2	0.229	5.03	219.1 D	82.5	6.9	0.88	7.7	0.37	0.00	0.11	0.11	76	
87	11.08	11.07	33.357	25.487	250.7	0.262	4.52	197.7	72.5	11.1	1.06	12.5	0.10	0.00	0.11	0.12	88 12	
99	10.33	10.32	33.448	25.688	231.7	0.291	4.09	178.6	64.5	15.1	1.33	16.8	0.03	0.00	0.08	0.09	100 11	
100 ISL	10.28 D	10.27	33.468 D	25.713	229.3	0.292	4.05	176.1 D	63.8	15.3	1.34	16.9	0.03	0.00	0.08	0.08	101	
122	9.83	9.81	33.586	25.882	213.7	0.342	3.64	158.8	56.8	19.6	1.57	20.2	0.00	0.00	0.04	0.05	123 10	
125 ISL	9.71 D	9.70	33.621 D	25.929	209.3	0.347	3.60	156.8 D	56.1	20.3	1.60	20.7	0.02	0.00	0.03	0.05	126	
140	9.38	9.36	33.722	26.062	196.9	0.379	3.18	139.1	49.3	23.8	1.75	23.1	0.00	0.00	0.01	0.03	141 09	
150 ISL	9.21 D	9.19																

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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 45.2 N	121 19.2 W	03/04/2017	1024	UTC	3652 m	330	14 kn		1014.9 mb	14.0	C 13.1	C				022		
0	15.42	15.42	33.201	24.494	343.0	0.000	5.79	253.3	101.6	1.7	0.23	0.0	0.00	0.00	0.13	0.02	0	
2	15.42	15.42	33.201	24.494	343.1	0.007	5.79	253.3	101.6	1.7	0.23	0.0	0.00	0.00	0.13	0.02	2 20	
10	15.42	15.42	33.200	24.494	343.3	0.034	5.79	252.9	101.4	1.5	0.22	0.0	0.00	0.00	0.12	0.03	10 19	
20	ISL	15.43 D	15.42	33.201	D 24.494	343.6	0.066	5.80	252.7	101.7	1.5	0.22	0.0	0.00	0.00	0.13	0.03	20
25	15.30	15.29	33.192	24.516	341.7	0.086	5.80	253.7	101.5	1.5	0.22	0.0	0.00	0.00	0.13	0.03	25 18	
30	ISL	15.19 D	15.19	33.178	D 24.528	340.7	0.100	5.87	D 255.8	D 102.4	1.5	0.22	0.0	0.00	0.00	0.14	0.03	30
40	15.16	15.15	33.174	24.533	340.6	0.137	5.87	256.6	102.4	1.5	0.22	0.0	0.00	0.00	0.15	0.04	40 17	
50	14.92	14.91	33.162	24.576	336.8	0.171	5.87	256.5	101.8	1.5	0.23	0.0	0.00	0.00	0.22	0.06	50 16	
64	14.30	14.29	33.189	24.731	322.4	0.217	5.94	259.7	101.8	1.7	0.24	0.0	0.00	0.00	0.32	0.16	65 15	
75	13.85	13.84	33.191	24.825	313.8	0.252	5.79	253.0	98.3	2.3	0.34	0.8	0.19	0.00	0.56	0.39	76 14	
88	12.69	12.68	33.239	25.095	288.3	0.291	5.30	231.6	87.8	5.0	0.60	5.4	0.08	0.00	0.26	0.28	89 13	
100	12.29	12.28	33.282	25.206	278.0	0.325	4.96	216.8	81.6	7.2	0.78	8.3	0.04	0.00	0.17	0.19	101 12	
111	11.31	11.30	33.305	25.405	259.1	0.355	4.77	208.4	76.8	9.0	0.91	10.5	0.03	0.00	0.14	0.17	112 11	
125	10.48	10.46	33.424	25.646	236.4	0.389	4.24	185.5	67.2	13.9	1.23	15.6	0.00	0.00	0.07	0.08	126 10	
140	9.71	9.69	33.608	25.919	210.5	0.423	3.52	153.9	54.9	20.3	1.60	21.1	0.00	0.00	0.01	0.04	141 09	
150	ISL	9.33 D	9.31	33.675	D 26.034	199.8	0.443	3.66	D 160.1	D 56.9	21.9	1.62	21.7	0.00	0.00	0.01	0.03	151
171	8.92	8.90	33.811	26.206	183.8	0.484	3.58	156.6	54.9	25.2	1.65	22.9	0.00	0.00	0.00	0.02	172 08	
200	8.58	8.56	33.940	26.361	169.6	0.535	2.86	124.9	43.5	31.7	1.92	26.5	0.00	0.00	0.01	0.02	202 07	
230	8.27	8.25	33.995	26.451	161.5	0.584	2.51	109.7	38.0	35.7	2.05	28.4	0.00	0.00			232 06	
250	ISL	8.04 D	8.01	34.024	D 26.509	156.2	0.617	2.35	D 102.0	D 35.3	39.7	2.18	30.0	0.00	0.00			252
271	7.74	7.71	34.056	26.579	149.8	0.648	1.89	82.6	28.2	43.9	2.31	31.7	0.00	0.00			273 05	
300	ISL	7.37 D	7.34	34.072	D 26.645	143.9	0.692	1.70	D 73.8	D 25.1	48.8	2.46	33.3	0.00	0.00			302
320	7.21	7.18	34.102	26.691	139.8	0.719	1.34	58.7	19.8	52.2	2.56	34.4	0.00	0.00			323 04	
382	6.74	6.71	34.182	26.819	128.4	0.802	0.73	32.1	10.7	61.2	2.83	37.2	0.00	0.00			385 03	
400	ISL	6.70 D	6.67	34.201	D 26.839	126.7	0.828	0.65	D 28.1	D 9.5	63.3	2.87	37.6	0.00	0.00			403
441	6.48	6.44	34.223	26.887	122.7	0.876	0.53	D 22.9	D 7.7	67.9	2.95	38.5	0.00	0.00			445 02	
500	ISL	5.99 D	5.94	34.265	D 26.985	113.8	0.950	0.38	D 16.4	D 5.4	76.0	3.06	39.9	0.00	0.00			504
516	5.92	5.88	34.276	27.002	112.3	0.964	0.32	14.0	4.6	78.2	3.09	40.3	0.00	0.00			520 01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
31 25.0 N	121 59.6 W	03/04/2017	0434	UTC	3819 m	340	15 kn		1017.6 mb	15.0	C 13.2	C				021		
0	15.02	15.02	33.227	24.602	332.7	0.000	5.87	256.7	102.2	1.7	0.27	0.0	0.00	0.00	0.19	0.04	0	
2	15.02	15.02	33.227	24.602	332.8	0.007	5.87	256.7	102.2	1.7	0.27	0.0	0.00	0.00	0.19	0.04	2 22	
10	15.03	15.03	33.227	24.601	333.1	0.033	5.91	258.3	102.8	1.7	0.27	0.0	0.00	0.00	0.21	0.02	10 20	
10	15.03	15.03	33.225	24.600	333.2	0.034											10 21	
20	ISL	15.02 D	15.01	33.227	D 24.604	333.1	0.064	5.89	256.6	102.4	1.6	0.27	0.0	0.00	0.00	0.22	0.05	20
25	14.93	14.93	33.222	24.619	331.9	0.083	5.87	256.7	102.0	1.6	0.27	0.0	0.00	0.00	0.23	0.06	25 19	
30	ISL	14.91 D	14.91	33.223	D 24.624	331.5	0.097	5.88	256.2	102.0	1.6	0.27	0.0	0.00	0.00	0.25	0.07	30
40	14.87	14.86	33.225	24.636	330.8	0.133	5.89	257.2	102.1	1.6	0.28	0.0	0.00	0.00	0.28	0.09	40 18	
50	14.52	14.51	33.222	24.709	324.1	0.166	5.92	258.5	101.8	1.6	0.28	0.0	0.00	0.00	0.38	0.15	50 17	
62	13.26	13.25	33.220	24.968	299.7	0.203	5.75	251.3	96.4	3.1	0.47	2.3	0.28	0.00	0.64	0.47	62 15	
63	13.23	13.22	33.226	24.978	298.8	0.205											63 16	
75	ISL	12.47 D	12.46	33.229	D 25.128	284.7	0.239	5.38	234.2	88.7	5.2	0.64	5.4	0.23	0.00	0.31	0.25	76
76	12.34	12.33	33.229	25.154	282.3	0.244	5.35	233.7	88.0	5.4	0.65	5.7	0.22	0.00	0.28	0.24	77 14	
87	11.53	11.52	33.321	25.378	261.1	0.274	4.59	200.5	74.3	10.1	1.00	11.6	0.03	0.00	0.17	0.15	88 13	
100	ISL	10.97 D	10.95	33.388	D 25.532	246.7	0.305	4.33	188.4	69.2	12.5	1.17	14.2	0.02	0.00	0.10	0.09	101
101	10.88	10.87	33.385	25.544	245.6	0.309	4.31	188.2	68.7	12.7	1.18	14.4	0.00	0.00	0.10	0.08	102 12	
112	10.27	10.25	33.489	25.732	227.9	0.335	3.95	172.7	62.3	16.8	1.40	18.0	0.00	0.00	0.03	0.05	113 11	
125	ISL	10.07 D	10.06	33.595	D 25.848	217.0	0.363	3.44	D 149.7	D 54.0	19.9	1.60	20.5	0.00	0.00	0.02	0.04	126
126	10.01	10.00	33.596	25.859	216.0	0.367	3.43	150.0	53.9	20.1	1.61	20.7	0.00	0.00	0.02	0.04	127 10	
140	9.46	9.44	33.711	26.041	198.9	0.396	3.23	141.0	50.0	23.8	1.75	23.2	0.00	0.00	0.01	0.03	141 09	
150	ISL	9.27 D	9.25	33.788	D 26.132	190.5	0.414	3.03	D 132.5	D 47.0	25.9	1.83	24.3	0.00	0.00	0.01	0.03	151
169	8.99	8.97	33.896	26.261	178.6	0.450	2.63	114.8	40.4	29.9	1.97	26.4	0.00	0.00	0.00	0.02	170 08	
200	8.66	8.64	33.990	26.388	167.1	0.504	2.26	98.9	34.5	34.3	2.12	28.6	0.00	0.00	0.00	0.02	202 07	
231	8.27	8.25	34.077	26.516	155.4	0.554	1.80	78.6	27.2	40.4	2.30	30.5	0.00	0.00			233 06	
250	ISL	8.09 D	8.06	34.086	D 26.551	152.3	0.583	1.74	D 75.9	D 26.3	43.1	2.36	31.4	0.00	0.00			252
270	7.81	7.79	34.105	26.607	147.3	0.613	1.57	68.6	23.5	45.9	2.43	32.4	0.00	0.00			272 05	
300	ISL	7.34 D	7.31	34.104	D 26.675	141.1	0.657	1.37	D 59.6	D 20.3	51.8	2.57	34.1	0.00	0.00			302
321	7.12	7.09	34.128	26.724	136.6	0.685	1.12	48.9	16.5	55.9	2.66	35.4	0.00	0.00			324 04	
381	6.43	6.39	34.124	26.814	128.5	0.765	0.91											

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db		
31	5.1 N	122 39.7 W	02/04/2017	2253	UTC	3963 m	340	14 kn	330	06	07	2	1018.1	mb	15.9	C 14.7	24 m	8/8	SC 020
0	15.43	15.43	33.150	24.453	346.9	0.000	5.81	254.0	101.9	1.7	0.23	0.0	0.01	0.00	0.10	0.02	0		
2	15.43	15.43	33.150	24.453	347.0	0.007	5.81	254.0	101.9	1.7	0.23	0.0	0.00	0.00	0.10	0.02	2	20	
10	ISL	15.42 D	33.147 D	24.453	347.2	0.032	5.81	253.2	101.8	1.6	0.23	0.1	0.01	0.00	0.10	0.02	10		
11	15.43	15.43	33.150	24.453	347.2	0.038	5.81	253.9	101.8	1.6	0.23	0.1	0.00	0.00	0.10	0.02	11	19	
20	ISL	15.36 D	15.35 D	33.146 D	24.467	346.2	0.066	5.80	252.7	101.5	1.6	0.23	0.0	0.01	0.00	0.10	0.02	20	
26	15.31	15.30	33.152	24.484	344.8	0.090	5.79	253.1	101.2	1.6	0.23	0.0	0.00	0.00	0.10	0.02	26	18	
30	ISL	15.29 D	15.29 D	33.145 D	24.481	345.2	0.101	5.81	253.1	101.5	1.6	0.23	0.0	0.01	0.00	0.10	0.02	30	
41	15.27	15.27	33.142	24.484	345.3	0.142	5.85	255.9	102.3	1.5	0.23	0.0	0.00	0.00	0.11	0.02	41	17	
50	ISL	15.19 D	15.15 D	33.144 D	24.511	343.0	0.171	5.84	254.4	101.8	1.5	0.22	0.0	0.01	0.00	0.14	0.03	50	
51	15.17	15.16	33.140	24.505	343.6	0.176	5.83	255.1	101.7	1.5	0.22	0.0	0.00	0.00	0.14	0.03	51	16	
62	14.23	14.22	33.177	24.736	321.9	0.213	5.94	259.8	101.7	2.0	0.27	0.0	0.00	0.00	0.37	0.19	62		
75	ISL	13.76 D	13.75 D	33.255 D	24.894	307.2	0.252	5.71	248.6	96.7	2.7	0.35	1.1	0.07	0.00	0.53	0.30	76	
76	13.74	13.72	33.237	24.885	308.1	0.257	5.69	248.6	96.4	2.8	0.36	1.2	0.08	0.00	0.54	0.31	77	14	
87	13.38	13.36	33.296	25.003	297.1	0.290	5.43	237.5	91.4	3.9	0.46	3.2	0.11	0.00	0.47	0.26	88	13	
100	ISL	12.33 D	12.35 D	33.276 D	25.187	279.7	0.326	5.15	0224.5	84.9	5.8	0.65	6.2	0.07	0.00	0.40	0.28	101	
101	12.36	12.34	33.275	25.188	279.7	0.331	5.17	225.9	85.1	5.9	0.66	6.5	0.07	0.00	0.39	0.28	102	12	
112	11.44	11.42	33.318	25.393	260.3	0.360	4.74	207.3	76.6	9.0	0.91	10.4	0.05	0.00	0.24	0.28	113	11	
125	ISL	10.69 D	10.67 D	33.473 D	25.648	236.3	0.391	3.96	0172.6	63.0	14.5	1.28	15.9	0.03	0.00	0.13	0.13	126	
126	10.63	10.61	33.463	25.650	236.0	0.395	4.00	174.6	63.5	15.0	1.31	16.3	0.03	0.00	0.12	0.12	127	10	
140	9.96	9.94	33.598	25.870	215.3	0.427	3.36	146.7	52.6	19.9	1.61	20.7	0.00	0.00	0.05	0.05	141	09	
150	ISL	9.86 D	9.84 D	33.761 D	26.014	201.9	0.446	2.79	0121.2	43.6	22.6	1.74	22.3	0.00	0.00	0.03	0.04	151	
169	9.57	9.55	33.870	26.148	189.5	0.486	2.38	104.0	37.0	27.7	1.99	25.4	0.00	0.00	0.01	0.02	170	08	
200	9.22	9.19	34.020	26.324	173.4	0.542	1.94	84.7	29.9	32.3	2.16	27.7	0.00	0.00	0.00	0.02	202	07	
229	8.96	8.94	34.097	26.425	164.3	0.591	1.68	73.3	25.8	35.7	2.27	29.0	0.00	0.00		231	06		
250	ISL	8.80 D	8.78	34.135 D	26.481	159.4	0.623	1.51	065.7	23.1	38.6	2.35	29.9	0.00	0.00		252		
269	8.60	8.57	34.165	26.537	154.4	0.655	1.32	57.6	20.1	41.3	2.43	30.6	0.00	0.00		271	05		
300	ISL	8.24 D	8.21	34.191 D	26.612	147.7	0.700	1.12	048.5	16.9	45.1	2.52	32.0	0.00	0.00		302		
321	8.04	8.01	34.199	26.648	144.5	0.732	0.99	43.2	14.9	47.7	2.58	32.8	0.00	0.00		324	04		
381	7.34	7.30	34.233	26.778	132.9	0.815	0.69	30.2	10.2	56.8	2.77	35.2	0.00	0.00		384	03		
400	ISL	7.12 D	7.08	34.241 D	26.816	129.4	0.840	0.61	026.4	9.0	59.4	2.81	35.8	0.00	0.00		403		
441	6.81	6.77	34.259	26.873	124.4	0.892	0.49	21.4	7.2	64.8	2.90	37.0	0.00	0.00		445	02		
500	ISL	6.36 D	6.32 D	34.294 D	26.960	116.6	0.964	0.35	015.1	5.0	71.9	3.02	38.2	0.00	0.00		504		
515	6.32	6.27	34.298	26.969	116.0	0.981	0.30	13.2	4.4	73.6	3.05	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db		
30	45.0 N	123 20.1 W	02/04/2017	1708	UTC	3963 m	360	12 kn	330	06	10	2	1020.2	mb	16.0	C 15.0	25 m	6/8	ST 019
0	15.40	15.40	33.153	24.461	346.1	0.000	5.81	253.9	101.8	2.0	0.25	0.1	0.00	0.00	0.10	0.02	0		
3 A	15.40	15.40	33.153	24.461	346.2	0.010	5.81	253.9	101.8	2.0	0.25	0.1	0.00	0.00	0.10	0.02	3	24	
10	15.39	15.38	33.151	24.464	346.1	0.035	5.84	255.3	102.3	2.0	0.26	0.1	0.00	0.00	0.11	0.03	10	22	
10	15.39	15.38	33.151	24.465	346.1	0.036											10	23	
16 A	15.39	15.39	33.153	24.465	346.3	0.055	5.82	254.2	101.9	1.9	0.24	0.0	0.00	0.00	0.10	0.02	16	21	
20	ISL	15.38 D	15.38 D	33.152 D	24.467	346.2	0.064	5.82	253.5	101.9	1.9	0.24	0.0	0.00	0.00	0.11	0.02	20	
23	15.38	15.38	33.152 D	24.467	346.3	0.075											23	20	
30	ISL	15.38 D	15.37 D	33.152 D	24.468	346.5	0.099	5.82	253.5	101.9	1.9	0.24	0.0	0.00	0.00	0.11	0.02	30	
40 A	15.37	15.37	33.150	24.468	346.8	0.138	5.82	254.3	101.8	1.8	0.24	0.1	0.00	0.00	0.12	0.02	40	19	
50	ISL	15.34 D	15.33 D	33.148 D	24.475	346.4	0.169	5.80	252.9	101.5	1.7	0.25	0.0	0.00	0.00	0.13	0.03	50	
51	15.33	15.32	33.146	24.475	346.4	0.177	5.80	253.6	101.5	1.7	0.25	0.0	0.00	0.00	0.13	0.03	51	18	
62	15.18	15.17	33.141	24.504	344.1	0.215	5.86	256.0	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.05	62	17	
73 A	14.59	14.58	33.129	24.624	333.0	0.252	5.94	259.5	102.3	1.7	0.27	0.0	0.00	0.00	0.25	0.10	74	16	
75	ISL	14.38 D	14.37 D	33.166 D	24.696	326.1	0.255	5.88	256.4	101.0	1.9	0.29	0.3	0.02	0.00	0.29	0.14	76	
83	13.68	13.67	33.202	24.869	309.8	0.284	5.67	248.1	96.0	2.7	0.37	1.5	0.08	0.00	0.45	0.29	84	15	
90 A	13.43	13.42	33.215	24.930	304.2	0.305	5.57	243.6	93.8	3.4	0.38	2.4	0.10	0.00	0.40	0.30	91	13	
90	13.43	13.42	33.207	24.924	304.8	0.305											91	14	
100	ISL	12.68 D	12.66 D	33.351 D	25.185	280.1	0.332	5.27	0229.6	87.4	5.2	0.55	4.9	0.04	0.00	0.31	0.21	101	
101	12.64	12.63	33.353	25.193	279.3	0.338	5.24	228.9	86.8</										

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 90.0 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
30 25.1 N	124 0.0 W	02/04/2017	1046	UTC	4238 m	350	17 kn											018
0	15.93	15.93	33.215	24.391	352.7	0.000	5.71	249.8	101.2	1.5	0.29	0.0	0.02	0.22	0.08	0.01	0	
2	15.93	15.93	33.215	24.392	352.8	0.007	5.71	249.8	101.2	1.5	0.29	0.0	0.00	0.22	0.08	0.01	2	22
10	15.93	15.93	33.214	24.391	353.1	0.035	5.76	251.6	102.0	1.6	0.25	0.0	0.00	0.14	0.08	0.01	10	20
10	15.93	15.93	33.215	24.392	353.1	0.036											10	21
20 ISL	15.94	15.93	33.216	24.392	353.4	0.067	5.73	249.8	101.5	1.6	0.24	0.0	0.00	0.00	0.08	0.01	20	
26	15.94	15.93	33.225	24.399	352.9	0.092	5.71	249.8	101.2	1.6	0.24	0.0	0.00	0.00	0.07	0.01	26	19
30 ISL	15.94	15.93	33.216	24.392	353.7	0.103	5.71	249.1	101.2	1.5	0.24	0.0	0.00	0.00	0.08	0.01	30	
40	15.94	15.93	33.216	24.393	354.0	0.141	5.71	249.6	101.2	1.4	0.24	0.0	0.00	0.00	0.09	0.00	40	18
50	15.94	15.93	33.215	24.392	354.4	0.177	5.72	249.8	101.3	1.4	0.27	0.0	0.00	0.00	0.08	0.01	50	17
62	15.82	15.81	33.208	24.414	352.7	0.219	5.74	250.9	101.4	1.3	0.25	0.0	0.00	0.00	0.09	0.02	62	16
75 ISL	14.98	14.97	33.136	24.544	340.6	0.262	5.84	254.7	101.5	1.3	0.24	0.0	0.00	0.00	0.12	0.04	76	
76	14.97	14.96	33.135	24.545	340.6	0.268	5.85	255.8	101.6	1.3	0.24	0.0	0.00	0.00	0.12	0.04	77	15
87	14.80	14.79	33.128	24.578	337.8	0.305	5.85	255.7	101.2	1.4	0.25	0.0	0.00	0.00	0.18	0.06	88	14
100	14.08	14.06	33.198	24.786	318.3	0.348	5.81	254.0	99.1	1.9	0.32	0.2	0.07	0.00	0.55	0.36	101	12
100	14.08	14.06	33.201	24.788	318.1	0.348											101	13
112	13.16	13.14	33.228	24.996	298.5	0.385	5.46	238.7	91.4	3.6	0.50	3.4	0.11	0.07	0.41	0.31	113	11
125	11.63	11.61	33.356	25.388	261.2	0.421	4.86	212.5	78.9	8.1	0.83	9.2	0.03	0.00	0.16	0.20	126	10
141	10.84	10.82	33.399	25.564	244.6	0.461	4.43	193.5	70.6	12.4	1.13	14.0	0.00	0.00	0.09	0.10	142	09
150 ISL	10.15	10.14	33.488	25.752	226.8	0.482	3.99	0173.6	62.7	15.1	1.28	16.2	0.00	0.00	0.06	0.08	151	
170	9.36	9.34	33.632	25.996	203.8	0.526	3.68	160.9	56.9	21.2	1.60	21.3	0.00	0.00	0.01	0.02	171	08
200	8.85	8.83	33.813	26.219	183.1	0.584	3.40	148.7	52.1	25.9	1.72	23.7	0.00	0.00	0.00	0.02	202	07
231	8.53	8.51	33.917	26.351	171.1	0.639	3.15	137.6	47.9	29.9	1.84	25.6	0.00	0.00			233	06
250 ISL	8.26	8.23	33.975	26.439	163.1	0.670	2.81	0122.2	42.5	33.6	1.97	27.3	0.00	0.00			252	
271	7.98	7.95	33.998	26.498	157.7	0.705	2.53	110.4	38.0	37.5	2.11	29.1	0.00	0.00			273	05
300 ISL	7.50	7.47	34.033	26.596	148.6	0.749	2.11	091.6	D 31.3	43.1	2.26	31.2	0.00	0.00			302	
320	7.33	7.29	34.035	26.622	146.4	0.779	1.92	83.8	28.4	47.0	2.36	32.7	0.00	0.00			323	04
381	6.63	6.60	34.087	26.759	133.9	0.864	1.18	51.7	17.2	59.2	2.69	36.6	0.00	0.00			384	03
400 ISL	6.50	6.46	34.105	26.791	131.1	0.890	1.05	45.8	D 15.3	62.6	2.76	37.5	0.00	0.00			403	
442	6.13	6.09	34.137	26.864	124.4	0.943	0.70	30.5	10.1	70.2	2.92	39.5	0.00	0.00			446	02
500 ISL	5.75	5.7	34.207	26.968	115.1	1.014	0.48	020.7	D 6.8	78.1	3.05	40.8	0.00	0.00			504	
515	5.67	5.62	34.227	26.994	112.7	1.030	0.39	16.9	5.5	80.1	3.08	41.1	0.00	0.00			519	01

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
33 14.3 N	117 28.0 W	29/03/2017	0905	UTC	22 m	070	07 kn											003
0	15.57	15.57	33.291	24.530	339.6	0.000	6.20	271.4	109.2	3.2	0.29	0.3	0.07	0.05	2.36	0.54	0	
2	15.57	15.57	33.291	24.530	339.6	0.007	6.20	271.4	109.2	3.2	0.29	0.3	0.07	0.00	2.36	0.54	2	05
5	15.11	15.11	33.284	24.626	330.5	0.017	6.08	265.8	105.9	3.6	0.30	0.2	0.08	0.00	4.26	0.68	5	04
10	13.79	13.79	33.293	24.912	303.4	0.033	5.15	225.3	87.4	4.9	0.55	2.4	0.38	0.00	5.93	1.03	10	02
10	13.79	13.79	33.297	24.915	303.1	0.033											10	03
20	12.95	12.95	33.338	25.117	284.2	0.062	4.39	192.1	73.3	8.5	0.97	9.5	0.65	0.51	1.33	0.81	20	01

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db	
32 56.9 N	117 19.0 W	29/03/2017	0408	UTC	215 m	100	04 kn										001	
0	16.90	16.90	33.285	24.222	368.9	0.000	5.98	261.7	108.1	1.4	0.22	0.1	0.00	0.03	0.27	0.04	0	
2	16.90	16.90	33.285	24.222	368.9	0.007	5.98	261.7	108.1	1.4	0.22	0.1	0.00	0.00	0.27	0.04	2	14
10	15.65	15.64	33.277	24.503	342.4	0.036	6.12	267.7	107.8	1.7	0.20	0.0	0.00	0.00	0.78	0.13	10	13
20	12.79	12.78	33.336	25.148	281.3	0.067	4.77	208.5	79.3	7.7	0.85	8.3	0.37	0.00	1.29	0.62	20	12
30	11.62	11.62	33.403	25.421	255.5	0.094	4.08	178.3	66.1	12.6	1.21	14.5	0.10	0.00	0.37	0.31	30	11
40	10.62	10.62	33.537	25.705	228.7	0.118	3.48	152.0	55.2	17.5	1.51	19.1	0.04	0.00	0.13	0.13	40	10
50	10.22	10.21	33.622	25.842	215.9	0.140	3.15	137.6	49.6	20.7	1.67	21.5	0.04	0.00	0.03	0.06	50	09
60	9.86	9.85	33.733	25.989	202.1	0.161	2.97	129.7	46.4	23.3	1.77	23.0	0.03	0.16	0.02	0.08	60	08
70	9.71	9.71	33.818	26.080	193.7	0												

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 28.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
32 54.5 N	117 23.8 W	29/03/2017	1134	UTC	595 m	030	05	km	5.89	257.8	105.8	1.3	0.20	0.0	0.03	0.00	0.24	0.06	0
0	16.57	16.57	33.307	24.317	359.8	0.000			5.89	257.8	105.8	1.3	0.20	0.0	0.03	0.00	0.24	0.06	2 20
2	16.57	16.57	33.307	24.317	359.9	0.007			5.89	257.8	105.8	1.3	0.20	0.0	0.03	0.00	0.24	0.06	
10	16.48	16.48	33.318	24.346	357.4	0.036			5.88	257.1	105.3	1.6	0.22	0.0	0.03	0.00	0.21	0.05	10 19
20	14.25	14.24	33.326	24.844	310.2	0.069			6.08	266.1	104.3	2.1	0.28	0.0	0.03	0.00	0.25	0.10	20 18
30	13.30	13.29	33.318	25.033	292.5	0.099			5.31	232.1	89.2	5.4	0.62	5.0	0.27	0.00	0.66	0.45	30 17
40	12.03	12.02	33.373	25.324	265.1	0.127			4.36	190.6	71.3	10.4	1.05	11.9	0.18	0.00	0.41	0.25	40 16
50	11.02	11.01	33.484	25.594	239.5	0.153			3.73	163.0	59.7	15.2	1.37	17.0	0.08	0.00	0.17	0.13	50 15
60	10.63	10.62	33.550	25.715	228.3	0.176			3.44	150.5	54.7	17.7	1.53	19.1	0.07	0.00	0.10	0.10	60 14
70	10.30	10.29	33.625	25.830	217.5	0.198			3.25	141.9	51.2	19.2	1.61	20.5	0.06	0.00	0.05	0.08	71 13
75 ISL	10.23	D 10.22	33.658	D 25.869	213.9	0.206			3.24	D 141.0	D 51.1	20.2	1.65	21.1	0.06	0.00	0.04	0.07	76
85	10.02	10.01	33.725	25.957	205.8	0.230			2.99	130.6	46.9	22.2	1.74	22.5	0.06	0.00	0.01	0.05	86 12
100	9.62	9.61	33.769	26.059	196.4	0.260			2.85	124.7	44.4	24.6	1.81	23.8	0.05	0.00	0.01	0.04	101 11
120	9.48	9.47	33.907	26.189	184.4	0.298			2.55	111.5	39.6	27.8	1.95	25.4	0.05	0.00	0.01	0.03	121 10
125 ISL	9.56 D	9.54	33.988	D 26.241	179.7	0.305			2.37	D 103.0	D 36.8	28.6	1.99	25.6	0.05	0.00	0.01	0.04	126
140	9.64	9.62	34.050	26.276	176.7	0.335			2.05	89.7	32.0	30.8	2.09	26.4	0.05	0.00	0.01	0.05	141 09
150 ISL	9.60 D	9.58	34.084	D 26.310	173.8	0.350			2.01	D 87.3	D 31.3	31.9	2.15	26.8	0.06	0.00	0.01	0.05	151
170	9.51	9.49	34.139	26.368	168.7	0.386			1.62	71.0	25.3	34.1	2.27	27.7	0.06	0.00	0.01	0.04	171 08
200	9.10	9.08	34.178	26.466	159.9	0.436			1.48	64.8	22.9	37.8	2.35	29.2	0.06	0.00	0.01	0.03	202 07
228	9.08	9.06	34.245	26.522	155.2	0.480			1.21	52.9	18.7	39.9	2.44	29.7	0.06	0.00		230 06	
250 ISL	8.85 D	8.82	34.239	D 26.555	152.4	0.511			1.21	D 52.8	D 18.6	41.7	2.45	30.5	0.06	0.00		252	
270	8.52	8.49	34.206	26.581	150.2	0.544			1.35	58.9	20.5	43.3	2.46	31.2	0.06	0.00		272 05	
300 ISL	8.57 D	8.54	34.295	D 26.643	145.0	0.586			0.91	D 39.6	D 13.9	46.3	2.60	31.9	0.06	0.00		302	
320	8.38	8.34	34.319	26.692	140.6	0.617			0.68	29.8	10.4	48.3	2.69	32.5	0.06	0.00		323 04	
380	7.45	7.41	34.268	26.791	131.7	0.699			0.62	27.0	9.2	57.5	2.80	35.5	0.06	0.00		383 03	
400 ISL	7.31 D	7.27	34.279	D 26.819	129.3	0.724			0.58	D 25.1	D 8.6	59.6	2.84	36.1	0.06	0.00		403	
440	6.99	6.95	34.284	26.868	125.0	0.776			0.45	19.5	6.6	63.8	2.92	37.1	0.06	0.00		444 02	
500 ISL	6.47 D	6.43	34.314	D 26.962	116.6	0.848			0.33	D 14.2	D 4.8	72.2	3.03	38.9	0.07	0.00		504	
522	6.26	6.21	34.317	26.992	113.8	0.874			0.27	11.9	3.9	75.3	3.07	39.6	0.07	0.00		526 01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SWA	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
32 50.8 N	117 32.2 W	29/03/2017	1422	UTC	851 m	360	05	km	280	04	06	0	1016.4	mb	16.2	C 14.4	C 21 m	0/8	005
0	16.45	16.45	33.366	24.389	353.0	0.000			5.77	251.6	103.4	2.1	0.26	0.0	0.00	0.00	0.23	0.03	0
3	16.45	16.45	33.366	24.389	353.1	0.011			5.77	251.6	103.4	2.1	0.26	0.0	0.00	0.00	0.23	0.03	3 20
10	15.62	15.62	33.349	24.564	336.6	0.035			5.83	254.3	102.8	2.2	0.27	0.1	0.00	0.00	0.18	0.03	10 19
20	13.93	13.93	33.340	24.921	302.9	0.067			5.91	257.6	100.6	3.2	0.38	1.2	0.08	0.00	0.49	0.19	20 18
30 ISL	13.02 D	13.01	33.344	D 25.109	285.3	0.091			4.98	D 217.0	D 83.2	5.8	0.65	5.4	0.29	0.00	0.98	0.48	30
31	13.01	13.01	33.332	25.101	286.1	0.099			5.14	224.0	85.9	6.1	0.68	5.8	0.31	0.00	1.02	0.51	31 17
40	12.47	12.46	33.366	25.233	273.7	0.124			4.67	203.2	77.1	8.7	0.90	9.5	0.23	0.00	0.99	0.57	40 16
50	11.47	11.46	33.407	25.453	253.0	0.151			4.14	180.1	66.9	12.3	1.18	14.2	0.09	0.00	0.50	0.35	50 15
60	11.12	11.12	33.455	25.554	243.7	0.175			3.81	166.1	61.2	14.0	1.32	16.1	0.04	0.00	0.30	0.33	60 14
71	10.47	10.46	33.512	25.714	228.6	0.201			3.56	154.8	56.3	17.7	1.50	19.1	0.00	0.00	0.08	0.09	72 13
75 ISL	10.42 D	10.41	33.550	D 25.751	225.1	0.206			3.61	D 157.0	D 57.1	18.3	1.53	19.5	0.02	0.00	0.06	0.08	76
85	10.11	10.10	33.617	25.857	215.3	0.233			3.38	146.9	53.1	19.8	1.60	20.7	0.00	0.00	0.03	0.06	86 12
100	9.77	9.76	33.694	25.975	204.4	0.264			3.18	138.4	49.7	22.2	1.70	22.3	0.00	0.00	0.01	0.04	101 11
120	9.53	9.52	33.809	26.105	192.5	0.304			2.91	126.4	45.2	25.1	1.82	24.1	0.00	0.00	0.01	0.02	121 10
125 ISL	9.49 D	9.47	33.809	D 26.112	191.9	0.310			2.95	D 128.4	D 45.8	25.7	1.84	24.3	0.00	0.00	0.01	0.03	126
140	9.27	9.25	33.883	26.206	183.3	0.341			2.78	120.8	42.9	27.4	1.88	25.2	0.00	0.00	0.00	0.03	141 09
150 ISL	9.14 D	9.12	33.931	D 26.265	177.9	0.356			2.67	D 116.4	D 41.2	28.9	1.94	25.7	0.00	0.00	0.00	0.03	151
170	9.04	9.02	34.036	26.363	168.9	0.394			2.34	102.0	36.1	31.9	2.06	26.9	0.00	0.00	0.02	0.02	171 08
200 ISL	9.05 D	9.03	34.144	D 26.447	161.7	0.441			1.94	D 84.5	D 29.9	35.3	2.18	27.9	0.00	0.00	0.00	0.02	202 07
201	9.08	9.05	34.167	26.462	160.3	0.445			1.94	84.4	29.9	35.4	2.18	27.9	0.00	0.00	0.00	0.02	203 07
230	8.82	8.80	34.206	26.533	154.1	0.491			1.52	66.0	23.2	39.2	2.34	29.4	0.00	0.00		232 06	
250 ISL	8.58 D	8.55	34.189	D 26.557	152.1														

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db		
32 41.0 N	117 52.2 W	29/03/2017	1828	UTC	609 m	330	04	kn	280	03	06	0	1018.1	mb	17.3	C 16.2 C	19 m	0/8	006
0	17.12	17.12	33.306	24.188	372.1	0.000	5.94	259.7	107.7	2.5	0.23	0.0	0.03	0.00	0.34	0.05	0.05	0	
2 A	17.12	17.12	33.306	24.188	372.2	0.007	5.94	259.7	107.7	2.5	0.23	0.0	0.03	0.00	0.34	0.05	0.05	2 23	
10 ISL	16.14	D 16.14	33.288	D 24.400	352.2	0.033	5.93	258.5	105.5	2.3	0.21	0.0	0.02	0.00	0.37	0.07	0.07	10	
11 A	16.12	16.12	33.305	24.418	350.6	0.040	5.93	259.3	105.5	2.2	0.21	0.0	0.00	0.00	0.38	0.07	0.07	11 21	
11	16.12	16.12	33.289	24.406	351.7	0.038												11 22	
17 A	15.87	15.87	33.288	D 24.463	346.5	0.058	5.98	261.7	105.9	2.2	0.22	0.0	0.00	0.00	0.50	0.11	0.11	17 20	
20 ISL	15.75	D 15.74	33.288	D 24.491	343.9	0.068	5.97	260.3	105.5	2.2	0.23	0.0	0.02	0.00	0.53	0.14	0.14	20	
29 A	15.44	15.44	33.318	D 24.582	335.6	0.099	5.93	259.5	104.1	2.0	0.26	0.0	0.00	0.00	0.63	0.21	0.21	29 19	
30 ISL	15.42	D 15.41	33.319	D 24.588	335.0	0.102	5.93	258.7	104.2	2.1	0.26	0.0	0.02	0.00	0.66	0.23	0.23	30	
37	14.82	14.81	33.366	D 24.755	319.3	0.126	5.94	259.8	103.0	2.2	0.28	0.0	0.03	0.00	0.87	0.33	0.33	37 17	
37	14.82	14.81	33.366	D 24.751	319.5	0.126												37 18	
45	12.77	12.76	33.358	D 25.170	279.9	0.150	4.69	205.2	78.0	7.6	0.83	8.3	0.25	0.00	0.84	0.48	0.48	45 16	
50 ISL	12.09	D 12.08	33.401	D 25.334	264.4	0.163	4.41	D 192.1	D 72.3	9.5	0.99	11.0	0.16	0.00	0.62	0.42	0.42	50	
54 A	11.97	11.96	33.408	D 25.362	261.9	0.174	4.06	177.6	66.4	11.0	1.12	13.0	0.08	0.00	0.44	0.38	0.38	54 15	
66 A	11.29	11.28	33.435	25.508	248.1	0.206	3.89	170.1	62.7	13.0	1.26	15.2	0.04	0.00	0.25	0.31	0.31	67 14	
75 ISL	10.71	D 10.70	33.513	D 25.672	232.7	0.226	3.74	D 162.7	D 59.5	15.5	1.41	17.6	0.04	0.00	0.14	0.18	0.18	76	
77	10.59	10.58	33.581	D 25.747	225.7	0.231	3.64	159.1	57.8	16.0	1.44	18.2	0.03	0.00	0.12	0.15	0.15	78 13	
86	10.32	10.31	33.600	25.808	220.0	0.252	3.34	146.2	52.8	18.9	1.54	20.0	0.00	0.00	0.05	0.08	0.08	87 12	
100 ISL	10.22	D 10.21	33.663	D 25.875	214.0	0.282	3.21	D 139.5	D 50.5	20.2	1.62	21.1	0.03	0.00	0.03	0.06	0.06	101	
101	10.22	10.21	33.662	25.875	214.0	0.285	3.15	137.9	49.7	20.3	1.63	21.2	0.03	0.00	0.03	0.06	0.06	102 11	
121	9.96	9.95	33.845	D 26.062	196.7	0.325	2.86	124.9	44.8	23.2	1.76	22.7	0.00	0.00	0.02	0.05	0.05	122 10	
125 ISL	9.93	D 9.92	33.855	D 26.075	195.6	0.333	2.76	D 120.1	D 43.3	23.9	1.79	23.1	0.02	0.00	0.01	0.05	0.05	126	
140	9.65	9.64	33.921	D 26.173	186.5	0.362	2.57	112.3	40.1	26.5	1.89	24.4	0.00	0.00	0.01	0.04	0.04	141 09	
150 ISL	9.54	D 9.52	33.943	D 26.210	183.2	0.380	2.54	D 110.7	D 39.6	27.6	1.93	25.0	0.00	0.00	0.01	0.03	0.03	151	
171	9.36	9.34	34.008	D 26.291	175.9	0.419	2.27	99.1	35.1	30.0	2.02	26.1	0.00	0.00	0.00	0.03	0.03	172 08	
200	9.21	9.18	34.090	26.380	168.1	0.468	1.95	85.3	30.2	33.4	2.13	27.5	0.00	0.00	0.00	0.03	0.03	202 07	
229	8.97	8.95	34.223	26.522	155.2	0.515	1.31	57.2	20.1	39.3	2.39	29.5	0.00	0.00				231 06	
250 ISL	8.81	D 8.79	34.276	D 26.589	149.2	0.548	1.14	D 49.5	D 17.4	41.7	2.47	30.2	0.00	0.00				252	
271	8.64	8.61	34.279	26.619	146.7	0.578	0.96	41.8	14.6	44.2	2.54	30.9	0.00	0.00				273 05	
300 ISL	8.33	D 8.30	34.284	D 26.672	142.1	0.621	0.84	D 36.5	D 12.7	47.0	2.60	31.8	0.00	0.00				302	
319	8.22	8.18	34.292	26.695	140.2	0.647	0.76	33.0	11.4	48.9	2.64	32.4	0.00	0.00				322 04	
379	7.45	7.41	34.306	26.820	128.9	0.728	0.60	26.1	8.9	56.2	2.78	35.0	0.00	0.00				382 03	
400 ISL	7.33	D 7.29	34.297	D 26.830	128.3	0.758	0.52	D 22.7	D 7.7	58.5	2.82	35.6	0.00	0.00				403	
442	6.95	6.91	34.302	D 26.887	123.2	0.811	0.42	18.2	6.1	63.1	2.90	36.8	0.00	0.00				446 02	
500 ISL	6.60	D 6.56	34.313	D 26.944	118.5	0.882	0.35	D 15.3	D 5.1	69.3	2.98	38.0	0.00	0.00				504	
518	6.48	6.43	34.315	26.963	116.8	0.898	0.31	13.6	4.5	71.2	3.01	38.4	0.00	0.00				522 01	

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

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

RV BELL M SHIMADA

CALCOFI CRUISE 1704

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		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SV	DYN	HT	OXYGEN	OXYGEN	OXY	N03*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP	
m	DEG C	DEG C							ml/L	μmol/Kg	PCT	μM	μM	μM	μg/L	μg/L	db		
32 30.6 N	118 12.5 W	29/03/2017	2341	UTC	1660 m	280	08	kn	280	04	06	1	1016.6	mb	17.4	C 16.8 C	25 m	1/8	CS 007
0	16.64	16.64	33.378	24.354	356.3	0.000	5.77	252.1	103.8	1.4	0.25	0.0	0.00	0.00	0.17	0.03	0		
2	16.64	16.64	33.378	24.354	356.4	0.007	5.77	252.1	103.8	1.4	0.25	0.0	0.00	0.00	0.17	0.03	2 21		
10	15.69	15.69	33.377	24.571	336.0	0.035	5.82	254.2	102.6	1.4	0.25	0.0	0.00	0.00	0.19	0.06	10 19		
10	15.69	15.69	33.375	24.569	336.1	0.035											10 20		
20	15.63	15.63	33.381	24.588	334.7	0.068	5.83	254.8	102.8	1.1	0.25	0.0	0.00	0.00	0.25	0.05	20 18		
30	15.52	15.52	33.370	24.605	333.4	0.102	5.83	254.7	102.5	1.1	0.25	0.0	0.00	0.00	0.33	0.10	30 17		
40	15.25	15.24	33.358	24.656	328.9	0.135	5.79	253.2	101.3	1.4	0.28	0.0	0.03	0.00	0.55	0.20	40 16		
50	14.76	14.75	33.354	24.758	319.4	0.167	5.63	246.0	97.5	2.3	0.36	1.1	0.10	0.00	0.69	0.28	50 15		
61	14.09	14.08	33.347	24.895	306.7	0.202	5.49	240.1	93.8	3.2	0.45	2.3	0.18	0.00	0.61	0.33	61 14		
70	13.13	13.12	33.352	25.094	287.9	0.228	4.87	213.0	81.6	6.4	0.75	7.0	0.32	0.00	0.38	0.28	71 13		
75 ISL	12.76	D 12.75	33.358	D 25.173	280.4	0.241	4.72	D 205.5	D 78.4	8.1	0.88	9.1	0.23	0.00	0.31	0.24	76		
85	11.78	11.77	33.408	25.398	259.2	0.270	4.16	181.6	67.7	11.5	1.13	13.3	0.06	0.00	0.16	0.15	86 12		
100	10.73	10.72	33.523	25.677	232.8	0.306	3.64	158.9	57.9	16.4	1.42	18.0	0.03	0.00	0.06	0.07	101 11		
121	9.99	9.97	33.681	25.930	209.2	0.353	3.18	139.0	49.9	21.3	1.65	21.5	0.00	0.00	0.02	0.04			

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 45.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SWA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 20.4 N	118 33.1 W	30/03/2017	0338	UTC	1396 m	300 10 kn											008
0	15.96	15.96	33.369	24.503	342.1	0.000	5.78	252.5	102.5	1.7	0.30	0.0	0.02	0.08	0.22	0.04	0
2	15.96	15.96	33.369	24.503	342.2	0.007	5.78	252.5	102.5	1.7	0.30	0.0	0.00	0.08	0.22	0.04	2 21
10 ISL	15.51	15.51	33.358 D	24.597	333.5	0.031	5.81	253.1	102.1	1.7	0.28	0.0	0.01	0.00	0.21	0.06	10
10	15.51	15.51	33.360	24.598	333.4	0.034											20
11	15.50	15.49	33.360	24.601	333.2	0.037	5.81	253.9	102.1	1.7	0.28	0.0	0.00	0.00	0.21	0.06	11 19
20	15.40	15.40	33.354	24.618	331.8	0.067	5.81	254.1	102.0	1.7	0.27	0.0	0.00	0.00	0.26	0.07	20 18
30 ISL	15.30 D	15.29	33.350 D	24.638	330.2	0.097	5.82	253.5	101.8	1.8	0.29	0.1	0.01	0.00	0.42	0.14	30
31	15.23	15.22	33.350	24.673	328.8	0.104	5.82	254.3	101.7	1.8	0.29	0.1	0.00	0.00	0.44	0.15	31 17
40	15.13	15.13	33.350	24.675	327.1	0.133	5.79	253.0	101.0	2.1	0.31	0.3	0.03	0.00	0.54	0.16	40 16
50 ISL	13.27 D	13.26	33.353 D	25.067	289.9	0.162	4.72	205.4 D	79.2	7.0	0.77	7.2	0.10	0.00	0.84	0.48	50
51	13.17	13.16	33.361	25.094	287.4	0.167	4.66	203.7	78.1	7.4	0.82	7.9	0.11	0.00	0.87	0.52	51 15
60	11.88	11.87	33.386	25.362	262.0	0.191	4.16	182.0	67.9	11.4	1.13	13.1	0.04	0.00	0.24	0.34	60 14
69	11.11	11.10	33.452	25.554	243.8	0.214	3.85	168.4	61.9	14.6	1.34	16.6	0.00	0.00	0.13	0.19	70 13
75 ISL	10.96 D	10.95	33.469 D	25.594	240.1	0.227	3.84	167.1 D	61.4	15.5	1.39	17.5	0.02	0.00	0.11	0.17	76
85	10.56	10.55	33.523	25.706	229.7	0.252	3.60	157.4	57.2	17.2	1.46	18.9	0.00	0.00	0.08	0.13	86 12
100 ISL	10.26 D	10.25	33.624 D	25.838	217.5	0.284	3.33	144.9 D	52.5	19.9	1.60	20.5	0.01	0.00	0.03	0.08	101
102	10.12	10.10	33.637	25.873	214.2	0.290	3.30	144.1	51.9	20.2	1.62	20.8	0.00	0.00	0.02	0.07	103 11
121	9.66	9.65	33.818	26.090	193.9	0.329	2.83	123.8	44.2	25.0	1.82	23.8	0.00	0.00	0.01	0.04	122 10
125 ISL	9.61 D	9.59	33.843 D	26.119	191.3	0.335	2.84	123.4 D	44.2	25.5	1.84	24.1	0.01	0.00	0.01	0.04	126
143	9.45	9.44	33.910	26.197	184.2	0.370	2.62	114.3	40.6	27.9	1.92	25.2	0.00	0.00	0.01	0.04	144 09
150 ISL	9.42 D	9.40	33.923 D	26.213	182.9	0.382	2.59	112.6 D	40.1	29.1	1.96	25.7	0.01	0.00	0.01	0.04	151
171	9.05	9.03	34.032	26.358	169.5	0.420	2.23	97.3	34.3	32.6	2.07	27.3	0.00	0.00	0.01	0.03	172 08
200	8.78	8.75	34.102	26.457	160.6	0.468	1.87	81.8	28.7	36.9	2.24	29.2	0.00	0.00	0.00	0.00	202 07
228	8.55	8.52	34.145	26.527	154.4	0.512	1.58	69.0	24.1	40.6	2.35	30.4	0.00	0.00			230 06
250 ISL	8.43 D	8.41	34.165 D	26.561	151.6	0.546	1.48	64.2 D	22.4	42.7	2.42	31.0	0.01	0.00			252
269	8.32	8.30	34.200	26.606	147.7	0.574	1.27	55.3	19.2	44.4	2.48	31.5	0.00	0.00			271 05
300 ISL	7.92 D	7.89	34.191 D	26.660	142.9	0.620	1.11	48.2 D	16.7	48.5	2.58	32.9	0.01	0.00			302
321	7.76	7.73	34.203	26.693	140.1	0.649	1.00	43.6	14.9	51.3	2.64	33.8	0.00	0.00			324 04
382	7.25	7.21	34.278	26.825	128.3	0.730	0.58	25.2	8.5	59.5	2.86	35.9	0.00	0.00			385 03
400 ISL	7.10 D	7.06	34.279 D	26.848	126.3	0.756	0.53 D	23.1 D	7.8	61.8	2.89	36.4	0.01	0.00			403
440	6.81	6.76	34.287	26.895	122.2	0.803	0.43	18.9	6.3	66.8	2.96	37.5	0.00	0.00			444 02
500 ISL	6.26 D	6.22	34.309 D	26.985	114.1	0.878	0.33 D	14.2 D	4.7	74.9	3.06	39.0	0.01	0.00			504
515	6.18	6.14	34.321	27.005	112.4	0.891	0.28	12.3	4.1	77.0	3.09	39.3	0.00	0.00			519 01

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD	
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SWA	DYN HT	OXYGEN ml/L	OXYGEN μmol/Kg	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A μg/L	PHAEAO μg/L	PRES db
32 10.5 N	118 54.0 W	30/03/2017	0708	UTC	1456 m	290 15 kn											009
0	16.08	16.08	33.404	24.503	342.1	0.000	5.71	249.7	101.6	2.3	0.29	0.1	0.03	0.00	0.27	0.06	0
2	16.08	16.08	33.404	24.503	342.2	0.007	5.71	249.7	101.6	2.3	0.29	0.1	0.03	0.00	0.27	0.06	2 20
10 ISL	16.08 D	16.07	33.404	24.505	342.3	0.034	5.71	249.7	101.6	1.8	0.27	0.0	0.00	0.00	0.27	0.06	10 19
20 ISL	15.86 D	15.85	33.404 D	24.555	337.8	0.065	5.73	249.8	101.5	1.6	0.28	0.0	0.02	0.00	0.30	0.08	20
25	15.84	15.84	33.413	24.565	337.1	0.085	5.74	250.8	101.6	1.6	0.28	0.0	0.00	0.00	0.31	0.09	25 18
30 ISL	15.84 D	15.84	33.404 D	24.559	337.8	0.099	5.77	251.6 D	102.2	1.5	0.28	0.0	0.01	0.00	0.34	0.10	30
40	15.80	15.80	33.403	24.567	337.4	0.136	5.75	251.2	101.7	1.5	0.27	0.0	0.00	0.00	0.39	0.10	40 17
50	15.71	15.71	33.401	24.586	335.9	0.169	5.73	250.6	101.2	1.6	0.28	0.0	0.00	0.00	0.50	0.14	50 16
62	14.21	14.20	33.382	24.898	306.4	0.208	5.40	236.0	92.5	3.4	0.46	2.2	0.09	0.00	0.80	0.32	62 15
75 ISL	11.67 D	11.66	33.417 D	25.424	256.4	0.243	4.03	175.5 D	65.5	11.8	1.15	13.2	0.05	0.00	0.36	0.27	76
76	11.61	11.60	33.416	25.436	255.4	0.247	4.01	175.3	65.1	12.5	1.20	14.1	0.05	0.00	0.33	0.27	77 14
87	11.25	11.24	33.454	25.531	246.5	0.275	3.83	167.4	61.7	14.0	1.31	15.7	0.04	0.00	0.22	0.21	88 13
99	10.79	10.78	33.486	25.639	236.5	0.304	3.73	162.8	59.4	15.7	1.39	17.5	0.03	0.00	0.13	0.13	100 12
100 ISL	10.75 D	10.74	33.497 D	25.654	235.0	0.305	3.73	162.4 D	59.4	16.0	1.40	17.7	0.03	0.00	0.12	0.13	101
112	10.21	10.19	33.582	25.815	220.0	0.333	3.43	149.8	54.0	19.3	1.56	20.3	0.00	0.00	0.05	0.10	113 11
125 ISL	9.65 D	9.64	33.731 D	26.024	200.2	0.360	3.07	133.4 D	47.7	22.8	1.72	22.7	0.02	0.00	0.01	0.05	126
126	9.64	9.62	33.720	26.018	200.9	0.363	3.08	134.4	47.9	23.1	1.73	22.9	0.00	0.00	0.01	0.04	127 10
141	9.43	9.41	33.877	26.175	186.2	0.392	2.70	117.9	41.9	21.7	1.88	24.8	0.00	0.00	0.05	0.05	142 09
150 ISL	9.39 D	9.37	33.911 D	26.209	183.2	0.408	2.61	113.7 D	40.5	28.4	1.94	25.4	0.02	0.00	0.00	0.05	151
170	9.17	9.15	34.019	26.329	172.2	0.444	2.25	98.1	34.7	31.6	2.06	26.8	0.00	0.00	0.03	0.03	171 08
200	8.78	8.76	34.136	26.483	158.1	0.494	1.72	74.9	26.3	38.1	2.25	29.3	0.00	0.00	0.00	0.03	202 07
230	8.51	8.48	34.181	26.562	151.2	0.540	1.41</										

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
32	0.7 N	119 14.1 W	30/03/2017	1042	UTC	1556 m	310	15 kn										
0	14.82	14.82	33.267	24.675	325.7	0.000	5.90	257.7	102.2	1.4	0.26	0.0	0.03	0.01	0.45	0.12	0	
3	14.82	14.82	33.267	24.676	325.8	0.010	5.90	257.7	102.2	1.4	0.26	0.0	0.03	0.00	0.45	0.12	3 21	
10	14.81	14.81	33.267	24.678	325.8	0.033	5.87	256.7	101.8	1.3	0.26	0.0	0.00	0.00	0.46	0.14	10 19	
10	14.81	14.81	33.266	24.678	325.8	0.033											10 20	
20	ISL	14.80 D	14.79	33.265	D 24.681	325.8	0.061	5.88	256.1	101.8	1.4	0.27	0.0	0.02	0.00	0.51	0.15	20
21	14.76	14.76	33.266	24.689	325.1	0.069	5.88	256.9	101.7	1.4	0.27	0.0	0.03	0.00	0.52	0.15	21 18	
30	14.55	14.54	33.272	24.740	320.5	0.098	5.92	258.9	102.1	1.6	0.27	0.0	0.03	0.00	0.69	0.31	30 17	
40	14.08	14.08	33.280	24.843	310.9	0.129	5.53	241.6	94.4	3.0	0.44	2.2	0.11	0.00	0.64	0.32	40 16	
50	ISL	13.59 D	13.59	33.291	D 24.954	300.7	0.156	5.37	D 233.9	D 90.7	4.3	0.55	4.0	0.15	0.00	0.56	0.35	50
51	13.57	13.56	33.290	24.957	300.4	0.163	5.32	232.4	89.8	4.4	0.56	4.2	0.16	0.00	0.56	0.35	51 15	
60	12.70	12.69	33.322	25.156	281.6	0.189	4.82	210.7	80.0	7.2	0.81	8.1	0.17	0.00	0.42	0.34	60 14	
70	11.83	11.82	33.357	25.349	263.4	0.216	4.38	191.3	71.3	10.1	1.04	12.0	0.06	0.00	0.24	0.27	71 13	
75	ISL	11.45 D	11.44	33.407	D 25.458	253.1	0.226	4.25	D 185.2	D 68.8	11.7	1.14	13.5	0.05	0.00	0.19	0.22	76
86	10.86	10.85	33.476	25.617	238.2	0.256	3.80	166.1	60.7	15.1	1.36	17.0	0.03	0.00	0.09	0.11	87 12	
100	ISL	10.32 D	10.31	33.581	D 25.793	221.8	0.285	3.49	D 152.1	D 55.2	18.6	1.54	19.6	0.02	0.00	0.04	0.07	101
101	10.32	10.31	33.582	25.794	221.7	0.291	3.44	150.4	54.4	18.8	1.55	19.8	0.00	0.00	0.04	0.06	102 11	
121	9.95	9.93	33.644	25.907	211.4	0.334	3.30	144.1	51.7	20.8	1.63	21.3	0.00	0.00	0.02	0.05	122 10	
125	ISL	9.70 D	9.68	33.735	D 26.020	200.7	0.339	3.20	D 139.1	D 49.8	22.0	1.68	22.0	0.02	0.00	0.02	0.05	126
140	9.47	9.45	33.868	26.162	187.5	0.372	2.70	118.1	42.0	26.5	1.88	24.6	0.00	0.00	0.01	0.04	141 09	
150	ISL	9.30 D	9.29	33.906	D 26.219	182.3	0.387	2.66	D 115.6	D 41.1	28.4	1.94	25.4	0.02	0.00	0.01	0.03	151
171	9.09	9.07	34.033	26.353	169.9	0.427	2.20	96.2	33.9	32.4	2.07	27.0	0.00	0.00	0.00	0.02	172 08	
200	ISL	8.70 D	8.68	34.115	D 26.480	158.4	0.473	1.82	D 79.1	D 27.8	36.8	2.22	29.0	0.02	0.00	0.00	0.03	202
201	8.71	8.68	34.108	26.473	159.1	0.476	1.83	79.8	27.9	37.0	2.22	29.0	0.00	0.00	0.00	0.00	203 07	
230	8.44	8.42	34.162	26.557	151.6	0.521	1.49	65.3	22.7	41.6	2.37	30.5	0.00	0.00			232 06	
250	ISL	8.31 D	8.29	34.183	D 26.594	148.4	0.550	1.35	D 58.8	D 20.5	43.9	2.44	31.4	0.02	0.00			252
271	8.04	8.01	34.185	26.637	144.6	0.582	1.23	53.7	18.5	46.3	2.51	32.3	0.00	0.00			273 05	
300	ISL	7.91 D	7.88	34.227	D 26.689	140.1	0.623	0.99	D 43.0	D 14.9	50.3	2.60	33.4	0.02	0.00			302
320	7.65	7.62	34.227	26.727	136.7	0.652	0.86	37.5	12.8	53.0	2.67	34.1	0.00	0.00			323 04	
380	7.09	7.05	34.254	26.830	127.7	0.731	0.58	25.4	8.6	61.0	2.84	36.3	0.00	0.00			383 03	
400	ISL	6.91 D	6.87	34.254	D 26.854	125.6	0.756	0.57	D 24.7	D 8.3	63.7	2.89	36.9	0.01	0.00			403
442	6.51	6.47	34.279	26.928	118.9	0.808	0.41	17.9	6.0	69.5	2.98	38.2	0.00	0.00			446 02	
500	ISL	6.28 D	6.23	34.305	D 26.980	114.7	0.876	0.33	D 14.4	D 4.8	73.2	3.03	39.0	0.01	0.00			504
518	6.26	6.22	34.305	26.981	114.7	0.896	0.31	13.6	4.5	74.4	3.05	39.3	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;

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH	TEMP	POTTEMP	SALINITY	SIGMA	THETA	SVA	DYN HT	OXYGEN	OXYGEN	OXY	N03*	P04*	N02*	NH4*	CHL-A	PHAEAO	PRES	SAMP
m	DEG C	DEG C						ml/L	μmol/Kg	PCT	μM	μM	μM	μM	μg/L	μg/L	db	
31	50.7 N	119 34.4 W	30/03/2017	1434	UTC	1752 m	320	24 kn	290	08 09	1	1015.9	mb	14.9	C 14.0	C 15 m	3/8 ST 011	
0	15.26	15.26	33.302	24.607	332.2	0.000	5.85	255.8	102.4	1.6	0.27	0.0	0.03	0.00	0.35	0.09	0	
3	15.26	15.26	33.302	24.607	332.3	0.010	5.85	255.8	102.4	1.6	0.27	0.0	0.03	0.00	0.35	0.09	3 20	
10	15.25	15.25	33.302	24.610	332.3	0.033	5.84	255.2	102.1	1.7	0.27	0.0	0.00	0.00	0.37	0.08	10 19	
20	ISL	15.27 D	15.27	33.302	D 24.607	332.9	0.062	5.84	254.4	102.1	1.6	0.27	0.0	0.02	0.00	0.36	0.08	20
26	15.27	15.27	33.307	24.610	332.8	0.087	5.84	255.1	102.1	1.5	0.27	0.0	0.00	0.00	0.35	0.08	26 18	
30	ISL	15.26 D	15.25	33.302	D 24.610	333.0	0.096	5.83	254.0	101.9	1.5	0.27	0.0	0.02	0.00	0.39	0.08	30
39	15.23	15.23	33.301	24.615	332.7	0.130	5.81	254.0	101.5	1.5	0.28	0.0	0.00	0.00	0.47	0.07	39 17	
50	ISL	15.20 D	15.19	33.301	D 24.623	332.4	0.163	5.80	252.6	101.2	1.6	0.28	0.0	0.02	0.00	0.56	0.10	50
51	15.20	15.19	33.301	24.624	332.3	0.170	5.80	253.3	101.2	1.6	0.28	0.0	0.00	0.00	0.57	0.11	51 16	
62	14.25	14.25	33.312	24.834	312.5	0.205	5.62	245.5	96.2	2.8	0.40	1.6	0.14	0.00	0.90	0.31	62 15	
74	12.71	12.70	33.308	25.144	283.2	0.241	5.06	221.1	83.9	6.1	0.72	6.5	0.21	0.00	0.63	0.54	75 14	
75	ISL	12.43 D	12.42	33.324	D 25.210	276.9	0.240	4.92	D 214.5	D 81.2	6.5	0.75	7.0	0.20	0.00	0.60	0.52	76
87	11.52	11.51	33.365	25.413	257.8	0.276	4.30	187.9	69.6	11.2	1.11	13.0	0.06	0.00	0.23	0.24	88 13	
100	10.35	10.34	33.529	25.749	225.9	0.307	3.65	159.3	57.6	17.5	1.48	19.0	0.03	0.00	0.07	0.09	101 12	
112	10.28	10.27	33.548	25.776	223.7	0.334	3.57	156.0	56.3	18.3	1.53	19.6	0.03	0.00	0.05	0.07	113 11	
125	9.92	9.90	33.658	25.923	209.9	0.362	3.28	143.3	51.3	21.1	1.66	21.6	0.00	0.00	0.02	0.05	126 10	
140	9.63	9.61	33.789	26.074	195.8	0.393	2.92	127.7	45.5	24.6	1.81	23.7	0.00	0.00	0.02	0.05	141 09	
150	ISL	9.47 D	9.46	33.887	D 26.176	186.4	0.409	2.73	D 118.9	D 42.4	26.0	1.87	24.4	0.02	0.00	0.01	0.04	151
172	9.35	9.33	33.952	26.248	180.1	0.453	2.47	107.9	38.3	29.0	1.99	25.9	0.00	0.00	0.00</td			

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
31 30.6 N	120 14.8 W	30/03/2017	2118	UTC	3884 m	320 25 kn	320 12 09	1	1017.1 mb	15.6	C 14.7 C	5/8	SC 012				
0	16.26	16.26	33.330	24.406	351.3	0.000	5.68	248.2	101.3	1.5	0.20	0.0	0.02	0.00	0.08	0.01	0
2	16.26	16.25	33.330	24.407	351.4	0.007	5.68	248.2	101.3	1.5	0.20	0.0	0.00	0.00	0.08	0.01	2 20
10 ISL	16.26	16.25	33.325 D	24.403	352.0	0.032	5.69	248.1	101.5	1.4	0.20	0.0	0.02	0.00	0.08	0.01	10
11	16.25	16.25	33.326	24.405	351.9	0.039	5.69	248.1	101.5	1.4	0.20	0.0	0.00	0.00	0.08	0.01	11 19
20 ISL	16.26	16.26	33.325 D	24.403	352.4	0.067	5.69	248.2	101.6	1.4	0.20	0.0	0.01	0.00	0.08	0.01	20
25	16.25	16.24	33.329	24.409	351.9	0.088	5.68	248.2	101.3	1.4	0.20	0.0	0.00	0.00	0.08	0.01	25 18
30 ISL	16.24	16.23	33.328 D	24.411	351.9	0.103	5.69	247.9	101.4	1.4	0.20	0.0	0.01	0.00	0.08	0.01	30
41	16.24	16.24	33.332	24.413	352.1	0.144	5.70	249.0	101.6	1.4	0.21	0.0	0.00	0.00	0.09	0.01	41 17
50 ISL	16.24	16.23	33.345 D	24.424	351.4	0.174	5.68	247.5	101.2	1.4	0.21	0.0	0.01	0.00	0.10	0.02	50
51	16.16	16.16	33.342	24.440	349.9	0.180	5.66	247.5	100.9	1.4	0.21	0.0	0.00	0.00	0.10	0.02	51 16
61	14.45	14.45	33.213	24.716	323.8	0.213	5.82	254.6	100.1	1.9	0.28	0.0	0.00	0.00	0.41	0.21	61 15
75	13.92	13.91	33.296	24.891	307.5	0.257	5.45	238.0	92.7	3.5	0.43	2.3	0.09	0.00	0.46	0.27	76 14
89	12.47	12.46	33.342	25.217	276.6	0.298	5.12	223.9	84.6	5.5	0.62	5.7	0.08	0.00	0.40	0.36	90 13
99	11.70	11.69	33.343	25.363	262.9	0.325	4.70	205.4	76.4	8.5	0.87	9.8	0.04	0.00	0.31	0.23	100 12
100 ISL	11.54 D	11.53	33.354 D	25.401	259.2	0.327	4.71	d205.1 D	76.2	8.8	0.89	10.1	0.04	0.00	0.30	0.22	101
112	10.68	10.67	33.396	25.588	241.6	0.358	4.48	192.4	70.0	12.7	1.16	14.2	0.03	0.00	0.16	0.13	113 11
124	10.16	10.14	33.465	25.732	228.1	0.386	4.02	175.5	63.2	15.7	1.35	17.2	0.00	0.00	0.09	0.09	125 10
125 ISL	10.14 D	10.12	33.476 D	25.745	226.9	0.388	4.10	d178.5 D	64.4	16.0	1.36	17.4	0.02	0.00	0.09	0.09	126
140	9.64	9.62	33.596	25.922	210.3	0.421	3.70	161.6	57.5	19.6	1.53	20.3	0.00	0.00	0.04	0.04	141 09
150 ISL	9.36 D	9.34	33.729 D	26.071	196.2	0.441	3.34	d145.2 D	51.6	21.4	1.60	21.4	0.02	0.00	0.03	0.04	151
171	9.24	9.22	33.786	26.136	190.5	0.483	3.13	136.9	48.4	25.1	1.76	23.6	0.00	0.00	0.01	0.02	172 08
200	8.82	8.79	33.926	26.313	174.2	0.536	2.71	118.5	41.5	30.3	1.94	26.3	0.00	0.00	0.00	0.02	202 07
229	8.41	8.38	33.997	26.433	163.3	0.585	2.47	107.7	37.4	34.6	2.06	28.2	0.00	0.00			231 06
250 ISL	8.16 D	8.14	34.029 D	26.495	157.7	0.618	2.33	d101.4 D	35.2	37.8	2.15	29.3	0.02	0.00			252
271	7.92	7.89	34.056	26.553	152.4	0.651	2.04	89.0	30.6	41.1	2.23	30.4	0.00	0.00			273 05
300 ISL	7.65 D	7.62	34.084 D	26.615	146.9	0.695	1.77	d77.0 D	26.4	45.7	2.36	32.1	0.02	0.00			302
320	7.40	7.37	34.105	26.667	142.2	0.724	1.51	65.9	22.4	48.9	2.45	33.2	0.00	0.00			323 04
381	6.92	6.88	34.158	26.777	132.5	0.807	0.98	42.9	14.4	57.7	2.72	36.1	0.00	0.06			384 03
400 ISL	6.77 D	6.73	34.179 D	26.813	129.2	0.833	0.84	d36.4 D	12.2	60.5	2.77	36.7	0.01	0.00			403
440	6.43	6.39	34.203	26.878	123.5	0.883	0.67	d29.1 D	9.7	66.4	2.87	37.8	0.00	0.00			444 02
500 ISL	6.06 D	6.01	34.256 D	26.969	115.4	0.956	0.50	d21.7 D	7.2	74.1	3.01	39.5	0.01	0.00			504
514	5.99	5.94	34.264	26.984	114.0	0.971	0.52	22.6	7.4	75.8	3.04	39.9	0.00	0.00			518 01

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	S103* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db
31 10.6 N	120 55.1 W	31/03/2017	1700	UTC	3778 m	300 26 kn	330 12 11	0	1016.1 mb	14.8	C 13.0 C	0/8	013				
0	16.27	16.27	33.339	24.409	351.0	0.000	5.65	246.8	100.8	1.7	0.23	0.0	0.00	0.00	0.09	0.02	0
4 A	16.27	16.27	33.339	24.410	351.1	0.014	5.65	246.8	100.8	1.7	0.23	0.0	0.00	0.00	0.09	0.02	4 24
10	16.26	16.26	33.337	24.410	351.3	0.035	5.66	247.3	101.0	1.7	0.22	0.0	0.00	0.00	0.08	0.02	10 22
10	16.26	16.26	33.337	24.411	351.3	0.034											10 23
17 A	16.27	16.27	33.336	24.409	351.7	0.060	5.65	247.0	100.9	1.6	0.24	0.0	0.00	0.00	0.09	0.01	17 21
20 ISL	16.27 D	16.27	33.336 D	24.409	351.8	0.064	5.65	246.4	100.9	1.6	0.23	0.0	0.00	0.00	0.09	0.01	20
23 A	16.28	16.27	33.339	24.409	351.8	0.081	5.65	247.0	100.9	1.6	0.22	0.0	0.00	0.00	0.09	0.02	23 20
30 ISL	16.28 D	16.27	33.337 D	24.409	352.2	0.099	5.65	246.4	100.9	1.6	0.22	0.0	0.00	0.00	0.09	0.01	30
41 A	16.28	16.27	33.339	24.412	352.3	0.144	5.65	247.0	100.9	1.6	0.23	0.0	0.00	0.00	0.09	0.01	41 19
50 ISL	16.27 D	16.26	33.336 D	24.411	352.7	0.170	5.74	d250.3 D	102.5	1.6	0.25	0.0	0.00	0.00	0.08	0.02	50
51	16.27	16.26	33.337	24.412	352.6	0.179	5.66	247.4	101.0	1.6	0.25	0.0	0.00	0.00	0.08	0.02	51 18
65	15.96	15.95	33.321	24.471	347.4	0.228	5.67	247.7	100.5	1.6	0.23	0.0	0.00	0.00	0.10	0.02	66 17
74 A	15.00	14.99	33.233	24.615	333.9	0.259	5.79	252.8	100.6	1.7	0.27	0.0	0.00	0.00	0.19	0.07	75 16
75 ISL	14.86 D	14.85	33.225 D	24.639	331.6	0.257	5.88	d256.2 D	101.9	1.7	0.27	0.0	0.00	0.00	0.20	0.08	76 16
84	14.50	14.49	33.231	24.722	324.0	0.292	5.85	255.6	100.7	1.8	0.28	0.0	0.00	0.00	0.30	0.15	85 15
91 A	13.98	13.96	33.240	24.838	313.0	0.314	5.74	250.7	97.7	2.2	0.33	0.4	0.04	0.00	0.47	0.27	92 14
100 ISL	13.11 D	13.10	33.296 D	25.057	292.3	0.337	5.33	d232.3 D	89.2	4.1	0.50	3.7	0.08	0.00	0.38	0.26	101 11
102	13.04	13.03	33.302	25.075	290.6	0.347	5.26	229.8	87.9	4.5	0.54	4.4	0.09	0.00	0.37	0.26	103 12
109	12.77	12.75	33.328	25.150	283.7	0.368	5.18	226.4	86.1	5.1	0.59	5.3	0.07	0.00	0.30	0.20	110 11
125 ISL	11.50 D	11.49	33.320 D	25.383	261.6	0.407	4.66	d203.0 D	75.4	8.9	0.94	10.7	0.03	0.00	0.18	0.15	126
126	11.42	11.41	33.316	25.395	260.5	0.414	4.68	204.6	75.6	9.2	0.96	11.1	0				

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP	
30 50.8 N	121 35.9 W	01/04/2017	0924	UTC	4058 m	350 20 kn			1015.9 mb	15.0	C 13.0	C				014		
0	15.86	15.86	33.250	24.433	348.8	0.000	5.74	251.0	101.6	1.7	0.25	0.0	0.00	0.00	0.10	0.02	0	
2	15.86	15.86	33.250	24.433	348.8	0.007	5.74	251.0	101.6	1.7	0.25	0.0	0.00	0.00	0.10	0.02	2 20	
10	15.87	15.86	33.251	24.435	349.0	0.035	5.72	250.2	101.3	1.6	0.25	0.0	0.00	0.00	0.10	0.02	10 19	
20	ISL	15.87 D	15.87	33.248 D	24.432	349.6	0.067	5.73	249.8	101.4	1.6	0.25	0.0	0.00	0.00	0.10	0.02	20
26	15.87	15.87	33.249	24.433	349.7	0.091	5.73	250.7	101.5	1.6	0.25	0.0	0.00	0.00	0.11	0.02	26 18	
30	ISL	15.87 D	15.87	33.248 D	24.431	350.0	0.102	5.73	249.9	101.4	1.6	0.25	0.0	0.00	0.00	0.10	0.02	30
40	15.87	15.87	33.248	24.433	350.2	0.140	5.73	250.3	101.3	1.6	0.25	0.0	0.00	0.00	0.10	0.02	40 17	
50	ISL	15.85 D	15.84	33.245 D	24.436	350.3	0.173	5.73	249.7	101.3	1.6	0.26	0.0	0.00	0.00	0.11	0.02	50
51	15.80	15.79	33.246	24.449	349.0	0.178	5.73	250.4	101.2	1.6	0.26	0.0	0.00	0.00	0.11	0.02	51 16	
61	14.36	14.35	33.207	24.731	322.3	0.212	5.94	259.5	101.9	2.2	0.30	0.0	0.00	0.00	0.37	0.23	61 15	
75	13.61	13.60	33.223	24.899	306.7	0.256	5.59	244.3	94.5	3.5	0.45	2.4	0.10	0.00	0.57	0.51	76 14	
88	12.25	12.24	33.233	25.174	280.7	0.294	5.13	224.2	84.3	5.9	0.72	6.9	0.04	0.00	0.25	0.28	89 13	
100	11.43	11.42	33.305 D	25.384	260.9	0.325	4.80	D209.1	D 77.5								101 12	
112	10.81	10.80	33.363	25.539	246.3	0.357	4.41	193.0	70.4	12.4	1.16	14.1	0.00	0.00	0.10	0.11	113 11	
125	ISL	10.12 D	10.10	33.488 D	25.757	225.7	0.387	4.03	D175.5 D	63.3	15.3	1.33	16.8	0.02	0.00	0.05	0.07	126
126	10.15	10.13	33.449	25.721	229.2	0.390	4.12	180.0	64.7	15.5	1.34	17.1	0.00	0.00	0.05	0.07	127 10	
140	9.60	9.58	33.595	25.928	209.7	0.421	3.77	164.7	58.6	20.3	1.55	20.4	0.00	0.00	0.02	0.03	141 09	
150	ISL	9.35 D	9.33	33.698 D	26.049	198.4	0.441	3.61	D157.0 D	55.8	22.5	1.64	21.7	0.01	0.00	0.02	0.04	151
171	9.15	9.13	33.824	26.180	186.4	0.482	3.03	132.3	46.6	27.1	1.84	24.7	0.00	0.00	0.00	0.04	172 08	
200	ISL	8.99 D	8.96	33.877 D	26.248	180.5	0.535	2.82	D124.5 D	43.9	28.4	1.89	25.5	0.01	0.00	0.00	0.02	202
201	8.97	8.94	33.871	26.247	180.6	0.537	2.89	126.2	44.3	28.5	1.89	25.5	0.00	0.00	0.00	0.02	203 07	
230	8.47	8.45	34.009	26.432	163.4	0.587	2.31	100.9	35.1	35.8	2.11	28.8	0.00	0.00			232 06	
250	ISL	8.16 D	8.13	34.050 D	26.512	156.1	0.619	2.09	D 90.7 D	31.5	39.7	2.22	30.2	0.01	0.00			252
270	7.89	7.86	34.071	26.569	150.9	0.650	1.82	79.6	27.3	43.6	2.33	31.6	0.00	0.00			272 05	
300	ISL	7.54 D	7.51	34.099 D	26.641	144.4	0.695	1.48	D 64.3 D	22.0	49.2	2.47	33.3	0.01	0.00			302
320	7.30	7.27	34.111	26.685	140.4	0.723	1.32	57.8	19.6	52.9	2.57	34.5	0.00	0.00			323 04	
382	6.95	6.91	34.157	26.772	133.0	0.807	0.97	42.2	14.2	58.4	2.75	36.3	0.00	0.00			385 03	
400	ISL	6.85 D	6.81	34.169 D	26.795	131.1	0.833	0.85	D 36.9 D	12.4	61.1	2.80	36.9	0.01	0.00			403
442	6.52	6.48	34.216	26.876	123.8	0.885	0.61	26.6	8.9	67.6	2.93	38.2	0.00	0.00			446 02	
500	ISL	6.09 D	6.04	34.250 D	26.960	116.2	0.957	0.41	D 17.7 D	5.8	75.5	3.05	39.6	0.01	0.00			504
519	6.05	6.01	34.275	26.984	114.2	0.976	0.35	15.1	5.0	78.1	3.09	40.1	0.00	0.00			523 01	

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

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD	AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol/Kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	NH4* μM	CHL-A $\mu\text{g/L}$	PHAEAO $\mu\text{g/L}$	PRES db	SAMP	
30 30.9 N	122 15.7 W	01/04/2017	0922	UTC	4106 m	320 11 kn	300 06 11 11	1	1018.1 mb	15.7	C 14.2	C	26 m	4/8	ST	015		
0	15.52	15.52	33.193	24.466	345.6	0.000	5.76	251.8	101.2	1.5	0.24	0.0	0.02	0.05	0.09	0.02	0	
3 A	15.52	15.52	33.193	24.466	345.7	0.010	5.76	251.8	101.2	1.5	0.24	0.0	0.00	0.00	0.09	0.02	3 24	
10	15.51	15.51	33.192	24.468	345.8	0.035	5.75	251.6	101.0	1.3	0.25	0.0	0.00	0.00	0.10	0.02	10 23	
10	15.51	15.51	33.191	24.467	345.9	0.035											10 23	
17 A	15.50	15.50	33.190	24.469	345.9	0.059	5.76	251.9	101.2	1.4	0.25	0.0	0.00	0.00	0.10	0.02	17 21	
20	ISL	15.50 D	15.50	33.191 D	24.470	345.9	0.064	5.80	D252.8 D	101.9	1.4	0.24	0.0	0.00	0.00	0.11	0.02	20
23 A	15.50	15.50	33.191	24.470	346.0	0.080	5.81	254.0	102.0	1.4	0.23	0.0	0.00	0.00	0.11	0.02	23 20	
30	ISL	15.50 D	15.50	33.192 D	24.471	346.1	0.099	5.78	D252.1 D	101.6	1.4	0.23	0.0	0.00	0.00	0.11	0.02	30
40 A	15.50	15.49	33.193	24.474	346.3	0.138	5.77	252.4	101.3	1.4	0.24	0.0	0.00	0.00	0.10	0.02	40 19	
50	ISL	15.49 D	15.48	33.192 D	24.475	346.5	0.169	5.78	D251.8 D	101.4	1.3	0.26	0.0	0.00	0.00	0.11	0.02	50
53	15.49	15.48	33.192	24.475	346.6	0.183	5.77	252.5	101.3	1.3	0.26	0.0	0.00	0.00	0.11	0.02	53 18	
64	15.34	15.33	33.183	24.502	344.4	0.221	5.79	253.2	101.3	1.3	0.24	0.0	0.00	0.00	0.12	0.03	65 17	
74 A	14.37	14.36	33.174	24.704	325.3	0.255	5.92	259.2	101.6	1.4	0.27	0.0	0.00	0.00	0.30	0.13	75 16	
75	ISL	14.36 D	14.35	33.175 D	24.708	325.0	0.255	5.93	D258.5 D	101.7	1.4	0.27	0.0	0.00	0.00	0.32	0.15	76 15
82	14.17	14.16	33.233	24.791	317.2	0.281	5.89	257.7	100.7	1.4	0.29	0.0	0.00	0.00	0.42	0.29	83 14	
82	14.17	14.16	33.231	24.790	317.3	0.280											83 15	
90 A	13.53	13.51	33.187	24.889	308.1	0.306	5.70	249.3	96.1	2.3	0.39	1.1	0.19	0.00	0.50	0.40	91 13	
100	12.82	12.80	33.209	25.048	293.1	0.336	5.39	235.8	89.6	4.0	0.53	4.1	0.12	0.00	0.33	0.28	101 12	
108	12.36	12.35	33.242	25.161	282.5	0.359	5.16	226.0	85.0	5.5	0.66	6.3	0.07	0.00	0.22	0.25	109 11	
125	ISL	11.16 D	11.14	33.357 D	25.475	252.8	0.402	4.52	D196.9 D	72.6	10.4	1.00	11.9	0.03	0.00	0.11	0.12	126
126	11.11	11.10	33.356	25.482	252.2	0.407	4.56	199.5	73.2	10.7	1.02	12.3	0.03	0.00	0.11	0.11	127 10	
143	10.05	10.03	33.501	25.779	224.0	0.447	4.10	179.4	64.3	16.0	1.35	17.5	0.00	0.00	0.04	0.04	14	

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol}/\text{kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g}/\text{L}$	PHAEAO $\mu\text{g}/\text{L}$	PRES db
30 10.9 N	122 55.7 W	01/04/2017	2259	UTC	3755 m	340 15 kn	290 08 08	1	1017.4 mb	16.0	C 14.7	36 m	6/8	SC 016			
0	16.38	16.38	33.310	24.363	355.4	0.000	5.69	248.6	101.7	1.7	0.22	0.0	0.00	0.00	0.07	0.01	0
3	16.38	16.38	33.310	24.363	355.5	0.011	5.69	248.6	101.7	1.7	0.22	0.0	0.00	0.00	0.07	0.01	3 20
10	16.38	16.37	33.310	24.364	355.7	0.036	5.69	248.7	101.8	1.6	0.22	0.0	0.00	0.00	0.07	0.01	10 19
20	ISL 16.31 D	16.30	33.310	D 24.380	354.5	0.066	5.69	248.0	101.6	1.6	0.22	0.0	0.00	0.00	0.08	0.01	20
26	16.27	16.26	33.309	24.390	353.8	0.092	5.69	248.6	101.5	1.5	0.22	0.0	0.00	0.00	0.08	0.01	26 18
30	ISL 16.24 D	16.24	33.308	D 24.394	353.5	0.102	5.69	248.2	101.5	1.5	0.22	0.0	0.00	0.00	0.08	0.01	30
39	16.24	16.23	33.308	24.396	353.7	0.138	5.71	249.3	101.7	1.6	0.22	0.0	0.00	0.00	0.08	0.02	39 17
50	ISL 16.23 D	16.22	33.308	D 24.398	353.8	0.173	5.72	249.2	101.9	1.5	0.21	0.0	0.00	0.00	0.08	0.01	50
51	16.23	16.22	33.309	24.400	353.7	0.181	5.72	249.9	102.0	1.5	0.21	0.0	0.00	0.00	0.08	0.01	51 16
61	16.23	16.22	33.307	24.399	354.1	0.216	5.73	250.5	102.2	1.5	0.22	0.0	0.00	0.00	0.09	0.01	61 15
75	16.21	16.20	33.315	24.410	353.6	0.266	5.70	249.3	101.7	1.5	0.22	0.0	0.00	0.00	0.10	0.02	76 14
88	15.35	15.34	33.449	24.706	325.7	0.310	5.66	247.3	99.2	2.2	0.23	0.0	0.00	0.00	0.32	0.20	89 13
100	ISL 14.49 D	14.47	33.497	D 24.931	304.6	0.344	5.44	237.2	D 93.8	3.2	0.35	1.6	0.09	0.00	0.37	0.24	101
101	14.47	14.45	33.501	24.938	304.0	0.351	5.44	237.6	93.7	3.3	0.36	1.7	0.10	0.00	0.38	0.25	102 12
113	12.87	12.85	33.403	25.189	280.1	0.386	5.35	233.9	89.2	4.0	0.47	3.4	0.07	0.00	0.34	0.21	114 11
125	12.08	12.06	33.390	25.331	266.7	0.418	5.07	221.5	83.0	6.7	0.70	7.1	0.03	0.00	0.20	0.13	126 10
141	11.29	11.28	33.442	25.517	249.3	0.460	4.86	212.2	78.3	8.6	0.83	9.4	0.00	0.00	0.14	0.10	142 09
150	ISL 10.70 D	10.68	33.496	D 25.665	235.3	0.480	4.55	D 198.2	D 72.4	12.2	1.05	12.7	0.02	0.00	0.10	0.07	151
170	9.51	9.49	33.615	25.959	207.4	0.526	3.83	167.2	59.3	20.1	1.55	20.2	0.00	0.00	0.02	0.03	171 08
200	ISL 8.95 D	8.93	33.832	D 26.218	183.3	0.583	3.29	D 143.1	D 50.4	26.2	1.79	23.9	0.01	0.00	0.00	0.02	202
201	8.95	8.93	33.828	26.215	183.6	0.586	3.27	143.0	50.2	26.4	1.80	24.1	0.00	0.00	0.00	0.02	203 07
229	8.64	8.62	33.953	26.362	170.1	0.636	2.76	120.6	42.1	31.2	2.00	26.7	0.00	0.00			231 06
250	ISL 8.29 D	8.26	34.000	D 26.453	161.7	0.670	2.61	D 113.6	D 39.5	36.0	2.14	28.7	0.01	0.00			252
269	8.02	7.99	34.044	26.528	154.8	0.701	2.07	90.5	31.1	40.4	2.27	30.4	0.00	0.00			271 05
300	ISL 7.75 D	7.72	34.080	D 26.596	148.8	0.748	1.68	D 72.9	D 25.0	45.1	2.43	32.1	0.01	0.00			302
321	7.63	7.60	34.116	26.644	144.6	0.778	1.43	62.6	21.4	48.3	2.54	33.2	0.00	0.00			324 04
380	6.99	6.95	34.153	26.764	133.8	0.861	0.95	41.3	13.9	58.0	2.78	36.2	0.00	0.00			383 03
400	ISL 6.69 D	6.65	34.153	D 26.804	130.1	0.888	0.88	D 38.2	D 12.8	61.4	2.84	37.1	0.01	0.00			403
440	6.27	6.23	34.173	26.875	123.5	0.937	0.65	28.5	9.4	68.0	2.96	38.8	0.00	0.00			444 02
500	ISL 6.02 D	5.98	34.248	D 26.967	115.5	1.012	0.41	D 18.0	D 6.0	75.4	3.08	39.8	0.01	0.00			504
517	5.90	5.86	34.256	26.988	113.6	1.029	0.39	17.1	5.6	77.5	3.12	40.1	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 BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 93.3 120.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE	ORD		
DEPTH m	TEMP DEG C	POTTEMP DEG C	SALINITY	SIGMA THETA	SV	DYN HT	OXYGEN ml/L	OXYGEN $\mu\text{mol}/\text{kg}$	OXY PCT	SIO3* μM	P04* μM	N03* μM	N02* μM	NH4* μM	CHL-A $\mu\text{g}/\text{L}$	PHAEAO $\mu\text{g}/\text{L}$	PRES db
29 51.2 N	123 35.4 W	02/04/2017	0445	UTC	4049 m	360 15 kn			1019.3 mb	15.8	C 14.2	36 m	6/8	SC 017			
0	16.91	16.91	33.520	24.401	351.9	0.000	5.60	244.7	101.3	1.9	0.21	0.0	0.00	0.00	0.07	0.01	0
3	16.91	16.91	33.520	24.401	351.9	0.011	5.60	244.7	101.3	1.9	0.21	0.0	0.00	0.00	0.07	0.01	3 20
10	ISL 16.91 D	16.91	33.519	D 24.401	352.2	0.030	5.61	244.7	101.5	1.9	0.19	0.0	0.00	0.00	0.06	0.01	10
11	16.91	16.91	33.520	24.401	352.2	0.039	5.61	245.3	101.6	1.9	0.19	0.0	0.00	0.00	0.06	0.01	11 19
20	ISL 16.90 D	16.89	33.518	D 24.403	352.3	0.066	5.61	244.7	101.5	1.9	0.20	0.0	0.00	0.00	0.06	0.01	20
26	16.86	16.86	33.514	24.409	352.1	0.092	5.61	245.2	101.4	1.8	0.21	0.0	0.00	0.00	0.06	0.01	26 18
30	ISL 16.86 D	16.86	33.512	D 24.408	352.3	0.101	5.62	244.9	101.5	1.8	0.21	0.0	0.00	0.00	0.06	0.01	30
41	16.75	16.74	33.497	24.423	351.2	0.144	5.64	246.3	101.6	1.8	0.20	0.0	0.00	0.00	0.06	0.01	41 17
50	16.72	16.71	33.488	24.425	351.4	0.176	5.70	248.9	102.6	1.8	0.18	0.0	0.00	0.00	0.07	0.01	50 16
62	16.35	16.34	33.441	24.475	347.0	0.218	5.63	248.4	101.6	1.8	0.21	0.0	0.00	0.00	0.08	0.01	62 15
75	ISL 15.07 D	15.06	33.152	D 24.538	341.2	0.259	5.83	254.1	101.5	1.7	0.24	0.0	0.00	0.00	0.17	0.05	76
76	15.06	15.05	33.152	24.541	341.0	0.266	5.84	255.3	101.6	1.6	0.24	0.0	0.00	0.00	0.17	0.05	77 14
87	14.69	14.68	33.148	24.616	334.1	0.303	5.83	254.8	100.7	1.7	0.25	0.0	0.00	0.00	0.24	0.14	88 13
100	14.06	14.05	33.301	24.868	310.5	0.345	5.60	244.8	95.6	2.8	0.34	1.2	0.10	0.00	0.30	0.16	101 12
113	13.94	13.93	33.554	25.088	289.9	0.384	5.25	229.3	89.4	4.4	0.44	3.4	0.08	0.00	0.29	0.14	114 11
125	ISL 12.98 D	12.96	33.539	D 25.273	272.5	0.416	5.11	D 222.6	D 85.4	6.1	0.59	5.8	0.04	0.00	0.18	0.20	126 126
126	12.69	12.68	33.533	25.324	267.6	0.420	5.07	221.4	84.1	6.2	0.60	6.0	0.04	0.00	0.17	0.20	127 10
140	11.79	11.77	33.496	25.468	250.4	0.457	4.87	212.7	79.3	8.7	0.81	9.3	0.00	0.00	0.12	0.11	141 09
150	ISL 10.89 D	10.87	33.485	D 25.622	239.4	0.480	4.56	D 198.7	D 72.9	11.7	0.99	12.2	0.02	0.00	0.09	0.08	151
170	9.75	9.73	33.610	25.916	211.6	0.526	4.18	182.8	65.2	17.8	1.35	18.0	0.00	0.00	0.02	0.02	171 08
200	ISL 8.97 D	8.95	33.824	D 26.210	184.1	0.585	3.54</										

PRIMARY PRODUCTIVITY CASTS

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 73.3 50.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
35 38.3 N	121 16.3 W	13/04/2017	1802 UTC	10 m	1205 - 1905 PST	1205 PST	1902 PST	751.7 mg C/m ²	076

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	(mg C/m ³)		
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	mean	dark
2	13.04	33.161	24.962	5.79	96.6	7.9	0.68	5.8	0.14	0.31	1.26	0.33	74. A	19.7	18.3	19.0	0.25
6	12.58	33.249	25.120	5.62	93.0	10.9	0.86	8.9	0.20	0.33	1.41	0.51	40.	36.0	31.2	33.6	0.35
9	12.37	33.300	25.201	5.54	91.3	12.3	0.96	10.5	0.22	0.39	1.32	0.61	25.	55.6	47.4	51.5	0.39
15	12.26	33.308	25.227	5.50	90.5	12.6	0.99	11.0	0.23	0.39	1.44	0.62	10.	33.5	26.1	29.8	0.30
22	11.99	33.431	25.374	5.34	87.3	16.4	1.23	15.0	0.28	0.48	1.41	0.76					
28	11.15	33.580	25.644	4.45	71.6	20.2	1.47	18.9	0.32	0.49	0.85	0.58	1.4	4.3	3.4	3.9	0.19
35	11.09	33.599	25.671	4.38	70.4	20.5	1.50	19.5	0.32	0.53	0.81	0.56	0.46	1.2	1.3	1.3	0.23

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 76.7 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 3.6 N	122 56.5 W	12/04/2017	1703 UTC	26 m	1210 - 1920 PST	1212 PST	1935 PST	325.5 mg C/m ²	070

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	(mg C/m ³)		
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	mean	dark
2	14.95	33.129	24.542	5.93	102.9	1.3	0.26	0.0	0.00	0.00	0.12	0.02	89. A	4.4	2.6	3.5	0.17
10	14.63	33.132	24.614	5.97	103.0	1.3	0.26	0.0	0.00	0.00	0.14	0.02					
16	14.52	33.129	24.635	5.98	102.9	1.3	0.28	0.1	0.00	0.10	0.17	0.03	39.	4.4	3.5	4.0	0.21
23	14.49	33.129	24.641	6.01	103.3	1.3	0.27	0.0	0.00	0.00	0.23	0.03	26.	7.8	5.8	6.8	0.21
40	14.38	33.129	24.665	5.96	102.4	1.3	0.25	0.0	0.00	0.00	0.27	0.06	9.4	4.2	3.9	4.0	0.16
50	14.07	33.127	24.728	5.98	102.0	1.5	0.27	0.0	0.00	0.00	0.43	0.13					
62	12.59	33.209	25.089	5.43	89.8	4.9	0.59	4.3	0.17	0.00	0.78	0.36					
73	11.11	33.332	25.461	4.58	73.4	10.5	1.04	12.2	0.08	0.00	0.50	0.41	1.3	2.8	2.5	2.6	0.08
82	10.53	33.408	25.623	4.13	65.4	13.9	1.26	15.9	0.04	0.00	0.29	0.27					
91	10.16	33.491	25.751	3.91	61.5	16.9	1.41	18.5	0.00	0.00	0.09	0.08	0.46	0.30	0.44	0.37	0.06

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 51.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
34 26.9 N	120 31.7 W	10/04/2017	1714 UTC	07 m	1200 - 1855 PST	1203 PST	1858 PST	637.1 mg C/m ²	061

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	(mg C/m ³)		
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	mean	dark
2	11.20	33.630	25.673	4.04	65.0	18.4	1.48	17.8	0.28	0.10	1.69	0.39	64. A	46.0	49.9	48.0	0.49
4	11.18	33.627	25.675	4.03	64.9	18.2	1.46	17.8	0.27	0.14	1.64	0.34	42.	50.6	51.5	51.1	0.33
6	11.16	33.628	25.679	4.02	64.7	18.2	1.49	18.0	0.27	0.14	1.62	0.34	27.	39.8	52.8	46.3	0.31
11	11.06	33.633	25.702	3.91	62.7	18.3	1.51	18.2	0.27	0.08	1.70	0.44	9.0	32.7	29.6	31.2	0.31
20	10.43	33.684	25.851	3.10	49.2	21.0	1.66	21.1	0.25	0.06	0.72	0.39	1.2	1.7	1.4	1.6	0.20
24	10.29	33.717	25.902	2.93	46.3	22.5	1.75	22.4	0.19	0.00	0.40	0.29	0.52	0.35	0.36	0.16	

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 80.0 90.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 8.9 N	123 13.0 W	11/04/2017	1828 UTC	22 m	1215 - 1910 PST	1214 PST	1908 PST	183.1 mg C/m ²	066

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	(mg C/m ³)		
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	mean	dark
2	14.98	33.096	24.509	5.91	102.6	1.5	0.25	0.0	0.00	0.00	0.11	0.02	87. A	2.6	2.6	2.6	0.13
13	14.74	33.118	24.579	5.95	102.8	1.5	0.24	0.0	0.00	0.00	0.11	0.02	40.	2.8	2.9	2.9	0.17
19	14.65	33.114	24.595	5.94	102.6	1.8	0.24	0.0	0.00	0.00	0.13	0.03	27.	3.7	3.7	3.7	0.16
26	14.45	33.110	24.636	5.98	102.7	1.8	0.26	0.0	0.00	0.00	0.16	0.04					
34	14.34	33.113	24.662	5.99	102.7	1.5	0.25	0.0	0.00	0.00	0.17	0.05	9.3	3.6	3.3	3.5	0.12
43	14.21	33.104	24.682	6.02	102.9	1.4	0.25	0.0	0.00	0.00	0.17	0.04					
52	14.04	33.102	24.715	6.03	102.7	1.5	0.26	0.0	0.00	0.00	0.18	0.07					
62	13.94	33.107	24.741	6.01	102.3	1.7	0.26	0.0	0.00	0.00	0.27	0.14	1.3	1.1	0.91	1.0	0.13
77	13.44	33.076	24.820	6.08	102.3	1.9	0.30	0.0	0.08	0.09	0.35	0.22	0.46	0.57	0.59	0.58	0.13

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 55.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 44.6 N	120 24.8 W	09/04/2017	1706 UTC	13 m	1205 - 1940 PST	1203 PST	1851 PST	508.1 mg C/m ²	055

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	chl-a	phaeo	light	uptake	(mg C/m ³)		
m	deg c	theta	ml/l	pct	μm	μm	μm	μm	μm	μm	μg/l	μg/l	pct	1	2	mean	dark
3	13.01	33.417	25.166	5.85D	97.8	6.4	0.70	6.1	0.21	0.36	1.05	0.42	70. A	13.3	14.6	13.9	0.26
8	13.00	33.418	25.169	5.81	97.1	6.5	0.70	6.1	0.20	0.38	0.93	0.35	39.	21.2	21.0	21.1	0.25
12	13.00	33.419	25.171	5.77	96.4	6.5	0.70	6.2	0.20	0.38	0.92	0.34	24.	19.0	20.0	19.5	0.24
20	13.00	33.419	25.172	5.78	96.5	6.6	0.71	6.2	0.20	0.38	1.00	0.33	9.4	16.1	15.1	15.6	0.22
27	12.99	33.419	25.172	5.75	96.1	6.6	0.71	6.2	0.20	0.39	1.00	0.32					
37	12.99	33.421	25.175	5.81D	97.1	6.6	0.71	6.3	0.20	0.39	0.96	0.34	1.3	2.0	1.7	1.9	0.18
44	12.98	33.422	25.177	5.75	96.0	6.5	0.71	6.3	0.20	0.41	0.96	0.35	0.55	0.57	0.54	0.56	0.18

A) INCUBATION LIGHT INTENSITIES WERE 93.0, 39.6, 25.8, 9.34, 1.31, 0.48 PERCENT RESPECTIVELY.

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 83.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 54.7 N	122 8.2 W	08/04/2017	1935 UTC	24 m	1235 - 1910 PST	1210 PST	1857 PST	186.7 mg C/m ²	050

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	14.82	33.124	24.566	5.92	102.5	1.2	0.24	0.0	0.00	0.00	0.15	0.03	83. A	2.1	2.2	2.1	0.13
10	14.81	33.124	24.569	5.94	102.9	1.3	0.24	0.0	0.00	0.00	0.16	0.03					
14	14.81	33.123	24.568	5.91	102.3	1.2	0.24	0.0	0.00	0.00	0.18	0.02	41.	1.1	3.3	2.2	0.16
21	14.77	33.123	24.578	5.92	102.4	1.1	0.23	0.0	0.00	0.00	0.19	0.02	26.	3.3	3.4	3.3	0.13
37	14.50	33.117	24.631	5.95	102.4	1.1	0.23	0.0	0.00	0.00	0.20	0.04	9.4	2.8	2.6	2.7	0.18
48	14.29	33.133	24.688	6.00	102.7	1.1	0.24	0.0	0.00	0.00	0.37	0.10					
57	14.12	33.134	24.724	6.07	103.7	1.1	0.25	0.0	0.00	0.00	0.54	0.18					
68	13.83	33.162	24.808	6.01	102.0	1.4	0.29	0.1	0.07	0.00	0.58	0.36	1.3	1.9	1.8	1.9	0.11
76	13.73	33.183	24.843	5.88	99.6	1.9	0.34	0.8	0.15	0.00	0.50	0.36					
83	13.53	33.210	24.906	5.61	94.7	2.8	0.44	2.2	0.23	0.00	0.42	0.29	0.49	0.40	0.57	0.49	0.06

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 33.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 53.4 N	118 29.0 W	05/04/2017	1655 UTC	07 m	1155 - 1900 PST	1156 PST	1846 PST	1741.8 mg C/m ²	036

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	14.53	33.396	24.838	7.66	132.0	0.0	0.06	0.0	0.00	0.00	3.89	0.34	64. A	48.8	46.7	47.8	0.74
4	14.39	33.395	24.866	7.54	129.6	1.3	0.14	0.3	0.05	0.00	4.88	0.60	42.	88.1	98.0	93.0	1.2
5	13.64	33.393	25.020	7.52	127.4	0.9	0.11	0.1	0.04	0.00	5.08	0.57	33.	124.1	96.5	110.3	0.93
9	12.79	33.408	25.203	5.46	90.9	5.9	0.55	6.7	0.28	0.00	11.97	0.94	14.	155.7	166.6	161.1	0.63
17	12.59	33.414D	25.246	4.79D	79.4	7.4	0.55	6.7	0.28	0.00	11.97	0.94	2.4	37.1	31.9	34.5	0.51
21	12.35	33.410	25.290	4.64	76.4	9.0	0.93	10.2	0.29	0.00	4.93	0.54	1.0	4.4	5.4	4.9	0.50

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 39.0 N	121 1.6 W	06/04/2017	1857 UTC	27 m	1210 - 1855 PST	1206 PST	1855 PST	227.0 mg C/m ²	042

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	15.12	33.105	24.485	5.93	103.3	1.7	0.25	0.0	0.00	0.08	0.15	0.04	89. A	2.8	2.7	2.8	0.09
11	14.64	33.103	24.589	5.94	102.5	1.7	0.25	0.0	0.00	0.00	0.15	0.03					
16	14.50	33.108	24.621	5.95	102.3	1.6	0.24	0.0	0.00	0.00	0.13	0.03	40.	2.3	3.2	2.8	0.22
24	14.31	33.099	24.655	6.00	102.8	1.7	0.25	0.0	0.00	0.00	0.15	0.04	26.	3.5	3.3	3.4	0.18
32	14.27	33.099	24.665	5.97	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.06					
42	14.17	33.098	24.685	5.98	102.1	1.6	0.25	0.0	0.00	0.00	0.19	0.06	9.2	2.7	2.7	2.7	0.20
54	14.02	33.099	24.717	6.00	102.1	1.6	0.25	0.0	0.00	0.00	0.29	0.12					
63	13.58	33.099	24.809	5.97	100.8	2.0	0.29	0.3	0.08	0.00	0.47	0.26					
76	13.03	33.177	24.980	5.79	96.6	2.9	0.44	2.1	0.37	0.09	0.39	0.37	1.3	2.2	2.0	2.1	0.10
85	12.49	33.252	25.144	5.29	87.4	5.6	0.67	6.1	0.27	0.00	0.20	0.19					
95	11.90	33.283	25.281	4.97	81.0	7.6	0.82	8.7	0.10	0.00	0.15	0.16	0.45	0.31	0.36	0.34	0.06

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 86.7 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 19.2 N	123 44.5 W	07/04/2017	1757 UTC	29 m	1215 - 1900 PST	1217 PST	1905 PST	99.3 mg C/m ²	046

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	15.79	33.175	24.393	5.77	101.9	1.7	0.23	0.0	0.00	0.00	0.07	0.04	90. A	1.6	1.7	1.6	0.09
9	15.74	33.175	24.403	5.77	101.8	1.7	0.22	0.0	0.00	0.00	0.07	0.02					
18	15.77	33.198	24.415	5.75	101.6	1.8	0.22	0.0	0.00	0.00	0.07	0.01	39.	1.8	1.8	1.8	0.09
25	15.55	33.204	24.470	5.82	102.4	1.8	0.22	0.0	0.00	0.00	0.08	0.01	27.	1.5	1.6	1.6	0.13
37	15.40	33.172	24.479	5.80	101.7	1.7	0.21	0.0	0.00	0.00	0.08	0.02					
45	15.39	33.186	24.493	5.77	101.1	1.8	0.22	0.0	0.00	0.00	0.07	0.01	9.2	0.87	0.82	0.84	0.07
57	15.39	33.187	24.494	5.80	101.6	1.8	0.22	0.0	0.00	0.00	0.12	0.03					
70	15.18	33.183	24.538	5.85	102.0	1.8	0.23	0.0	0.00	0.00	0.15	0.04					
81	15.03	33.298	24.659	5.75	100.0	2.3	0.23	0.0	0.00	0.00	0.27	0.18	1.4	0.56	0.43	0.49	0.08
92	14.15	33.353	24.890	5.61	96.0	2.7	0.28	0.7	0.05	0.00	0.38	0.35					
101	13.36	33.306	25.015	5.46	91.8	3.9	0.44	3.1	0.09	0.00	0.34	0.27	0.48	0.42	0.42	0.42	0.05

RV BELL M SHIMADA

CALCOFI CRUISE 1704

STATION 90.0 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
33 15.2 N	118 14.6 W	04/04/2017	1648 UTC	21 m	1155 - 1839 PST	1156 PST	1839 PST	548.6 mg C/m ²	028

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	15.91	33.351	24.500	5.86	103.9	2.1	0.29	0.0	0.00	0.00	0.27	0.06	86.	5.1	5.3	5.2	0.24
14	15.84	33.349	24.515	5.86	103.8	2.2	0.28	0.0	0.00	0.00	0.27	0.08	36.	6.8	6.8	6.8	0.16
19	15.82	33.348	24.521	5.87	103.8	2.2	0.29	0.0	0.00	0.00	0.30	0.08	25.	7.5	7.6	7.6	0.19
26	15.41	33.357	24.603	5.99	105.1	2.3	0.30	0.0	0.00	0.00	0.59	0.14					
32	15.01	33.342	24.695	5.88	102.3	2.9	0.34	0.5	0.04	0.00	1.25	0.36	9.6	17.7	17.6	17.7	0.20
41	12.11	33.405	25.332	4.25	69.7	10.6	1.10	12.3	0.20	0.00	1.18	0.66					
50	11.30	33.466	25.529	3.82	61.6	14.2	1.33	16.1	0.06	0.00	0.40	0.31					
73	10.35	33.581	25.787	3.46	54.7	18.8	1.57	20.0	0.00	0.00	0.10	0.11	0.48	0.14	0.55	0.34	0.03

A) INCUBATION LIGHT INTENSITIES WERE 93.0, 39.6, 25.8, 9.34, 1.31, 0.48 PERCENT RESPECTIVELY.

RV BELL M SHIMADA CALCOFI CRUISE 1704 STATION 90.0 70.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 4.9 N	120 38.5 W	03/04/2017	1626 UTC	18 m	1205 - 1845 PST	1206 PST	1845 PST	441.6 mg C/m ²	023

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	14.83	33.228	24.645	5.89	102.0	1.6	0.30	0.0	0.00	0.00	0.45	0.15	84. A	11.4	12.4	11.9	0.10
12	14.23	33.223	24.768	6.01	102.9	1.4	0.30	0.1	0.03	0.00	0.37	0.22	36.	12.0	12.3	12.1	0.17
17	14.07	33.221	24.800	6.05	103.3	1.4	0.32	0.1	0.03	0.00	0.41	0.28	23.	13.2	13.5	13.4	0.12
28	13.92	33.219	24.830	6.02	102.4	1.4	0.34	0.2	0.04	0.11	0.42	0.35	9.2	8.4	7.9	8.2	0.16
40	13.88	33.220	24.839	6.03	102.4	1.5	0.32	0.3	0.05	0.11	0.45	0.39					
51	13.85	33.220	24.847	6.00	101.9	1.5	0.35	0.3	0.05	0.19	0.38	0.37	1.3	1.2	1.0	1.1	0.12
64	12.82	33.265	25.089	5.71	95.0	3.2	0.58	3.1	0.21	1.04	0.15	0.14	0.43	0.14	0.15	0.14	0.07

RV BELL M SHIMADA CALCOFI CRUISE 1704 STATION 90.0 110.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 45.0 N	123 20.1 W	02/04/2017	1708 UTC	25 m	1215 - 1900 PST	1217 PST	1855 PST	94.3 mg C/m ²	019

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	15.40	33.153	24.461	5.81	101.8	2.0	0.25	0.1	0.00	0.00	0.10	0.02	83. A	1.7	1.7	1.7	0.04
10	15.39	33.151	24.464	5.84	102.3	2.0	0.26	0.1	0.00	0.00	0.11	0.03					
16	15.39	33.153	24.465	5.82	101.9	1.9	0.24	0.0	0.00	0.00	0.10	0.02	37.	2.0	1.9	1.9	0.05
40	15.37	33.150	24.468	5.82	101.8	1.8	0.24	0.1	0.00	0.00	0.12	0.02	8.6	1.2	1.1	1.2	0.06
51	15.33	33.146	24.475	5.80	101.5	1.7	0.25	0.0	0.00	0.00	0.13	0.03					
62	15.18	33.141	24.504	5.86	102.2	1.7	0.24	0.0	0.00	0.00	0.16	0.05					
73	14.59	33.129	24.624	5.94	102.3	1.7	0.27	0.0	0.00	0.00	0.25	0.10	1.1	0.37	0.30	0.34	0.05
83	13.68	33.202	24.869	5.67	96.0	2.7	0.37	1.5	0.08	0.00	0.45	0.29					
90	13.43	33.215	24.930	5.57	93.8	3.4	0.38	2.4	0.10	0.00	0.40	0.30	0.40	0.34	0.35	0.35	0.05

RV BELL M SHIMADA CALCOFI CRUISE 1704 STATION 93.3 35.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
32 41.0 N	117 52.2 W	29/03/2017	1828 UTC	19 m	1208 - 1850 PST	1256 PST	1912 PST	521.2 mg C/m ²	006

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
2	17.12	33.306	24.188	5.94	107.7	2.5	0.23	0.0	0.03	0.00	0.34	0.05	85. A	6.5	6.5	6.5	0.17
11	16.12	33.305	24.418	5.93	105.5	2.2	0.21	0.0	0.00	0.00	0.38	0.07	41.	9.6	11.6	10.6	0.33
17	15.87	33.288D	24.463	5.98	105.9	2.2	0.22	0.0	0.00	0.00	0.50	0.11	25.	10.8	10.5	10.7	0.17
29	15.44	33.318D	24.582	5.93	104.1	2.0	0.26	0.0	0.00	0.00	0.63	0.21	9.6	14.3	13.6	14.0	0.28
37	14.82	33.366D	24.755	5.94	103.0	2.2	0.28	0.0	0.03	0.00	0.87	0.33					
45	12.77	33.358D	25.170	4.69	78.0	7.6	0.83	8.3	0.25	0.00	0.84	0.48					
54	11.97	33.408D	25.362	4.06	66.4	11.0	1.12	13.0	0.08	0.00	0.44	0.38	1.3	2.2	2.1	2.2	0.07
66	11.29	33.435	25.508	3.89	62.7	13.0	1.26	15.2	0.04	0.00	0.25	0.31	0.48	0.88	0.81	0.84	0.03

RV BELL M SHIMADA CALCOFI CRUISE 1704 STATION 93.3 80.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
31 10.6 N	120 55.1 W	31/03/2017	1700 UTC	19 m	1213 - 1900 PST	1208 PST	1849 PST	96.6 mg C/m ²	013

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
4	16.27	33.339	24.410	5.65	100.8	1.7	0.23	0.0	0.00	0.00	0.09	0.02		0.95	1.0	0.98	0.07
10	16.26	33.337	24.410	5.66	101.0	1.7	0.22	0.0	0.00	0.00	0.08	0.02					
17	16.27	33.336	24.409	5.65	100.9	1.6	0.24	0.0	0.00	0.00	0.09	0.01		1.5	1.5	1.5	0.05
23	16.28	33.339	24.409	5.65	100.9	1.6	0.22	0.0	0.00	0.00	0.09	0.02		1.6	1.6	1.6	0.09
41	16.28	33.339	24.412	5.65	100.9	1.6	0.23	0.0	0.00	0.00	0.09	0.01		1.3	1.3	1.3	0.06
51	16.27	33.337	24.412	5.66	101.0	1.6	0.25	0.0	0.00	0.00	0.08	0.02					
65	15.96	33.321	24.471	5.67	100.5	1.6	0.23	0.0	0.00	0.00	0.10	0.02					
74	15.00	33.233	24.615	5.79	100.6	1.7	0.27	0.0	0.00	0.00	0.19	0.07		0.65	0.46	0.56	0.05
84	14.50	33.231	24.722	5.85	100.7	1.8	0.28	0.0	0.00	0.00	0.30	0.15					
91	13.98	33.240	24.838	5.74	97.7	2.2	0.33	0.4	0.04	0.00	0.47	0.27		0.57	0.66	0.61	0.05

RV BELL M SHIMADA CALCOFI CRUISE 1704 STATION 93.3 100.0

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE	ORD
30 30.9 N	122 15.7 W	01/04/2017	0922 UTC	26 m	1213 - 1900 PST	1213 PST	1855 PST	133.9 mg C/m ²	015

DEPTH	TEMP	SALINITY	SIGMA	OXYGEN	OXY	SI03*	P04*	N03*	N02*	NH4*	CHL-A	PHAEAO	LIGHT	UPTAKE (mg C/m ³)			
m	DEG C	THETA	ml/L	PCT	μM	μM	μM	μM	μM	μM	μg/L	μg/L	PCT	1	2	MEAN	DARK
3	15.52	33.193	24.466	5.76	101.2	1.5	0.24	0.0	0.00	0.00	0.09	0.02	84. A	1.6	1.6	1.6	0.07
10	15.51	33.192	24.468	5.75	101.0	1.5	0.25	0.0	0.00	0.00	0.10	0.02					
17	15.50	33.190	24.469	5.76	101.2	1.4	0.25	0.0	0.00	0.00	0.10	0.02	37.	2.1	2.0	2.0	0.10
23	15.50	33.191	24.470	5.81	102.0	1.4	0.23	0.0	0.00	0.00	0.11	0.02	26.	2.5	2.4	2.5	0.07
40	15.50	33.193	24.474	5.77	101.3	1.4	0.24	0.0	0.00	0.00	0.10	0.02	9.4	1.7	1.7	1.7	0.08
53	15.49	33.192	24.475	5.77	101.3	1.3	0.26	0.0	0.00	0.00	0.11	0.02					
64	15.34	33.183	24.502	5.79	101.3	1.3	0.24	0.0	0.00	0.00	0.12	0.03					
74	14.37	33.174	24.704	5.92	101.6	1.4	0.27	0.0	0.00	0.00	0.30	0.13	1.3	0.90	0.73	0.81	0.05
82	14.17	33.233	24.791	5.89	100.7	1.4	0.29	0.0	0.00	0.00	0.42	0.29					
90	13.53	33.187	24.889	5.70	96.1	2.3	0.39	1.1	0.19	0.00	0.50	0.40	0.49	0.73	0.72	0.72	0.03

A) INCUBATION LIGHT INTENSITIES WERE 93.0, 39.6, 25.8, 9.34, 1.31, 0.48 PERCENT RESPECTIVELY.

MACROZOOPLANKTON BIOMASS
Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Mo/Day	Date	Time (PST)	Water Volume Strained (m³)	Max. Tow Depth (m)	Volume per	
					Start	End			1000 m³ Strained Total (cm³)	Small (cm³)
60.0	53.0	37 50.8	123 06.0	04/20	0018	0024	129	67	101	101
60.0	60.0	37 36.6	123 36.4	04/19	1955	2016	444	210	176	90
60.0	70.0	37 16.8	124 19.8	04/19	1422	1443	435	210	30	30
60.0	80.0	36 56.8	125 03.1	04/19	0909	0930	480	211	19	19
60.0	90.0	36 36.8	125 46.3	04/19	0402	0423	456	212	99	77
63.3	52.0	37 19.2	122 36.3	04/18	0002	0008	122	55	776	417
63.3	55.0	37 12.6	122 50.1	04/18	0257	0318	478	192	40	40
63.3	60.0	37 02.5	123 11.7	04/18	0628	0649	409	208	49	49
63.3	70.0	36 42.5	123 54.8	04/18	1150	1211	441	208	424	50
63.3	80.0	36 22.5	124 37.9	04/18	1653	1714	435	207	930	57
63.3	90.0	36 02.6	125 20.5	04/18	2224	2245	480	209	110	46
66.7	50.0	36 46.6	122 03.1	04/15	1410	1431	427	210	80	80
66.7	55.0	36 37.1	122 24.9	04/17	1839	1900	451	206	528	138
66.7	60.0	36 27.1	122 46.3	04/17	1414	1435	430	211	58	58
66.7	70.0	36 07.2	123 28.9	04/17	0853	0914	445	205	29	29
66.7	80.0	35 47.2	124 11.7	04/17	0339	0400	424	210	269	177
66.7	90.0	35 27.2	124 54.2	04/16	2211	2232	437	212	217	183
70.0	51.0	36 10.9	121 43.6	04/15	2014	2035	440	202	624	148
70.0	55.0	36 02.9	122 00.6	04/15	2337	2358	407	214	381	229
70.0	60.0	35 52.9	122 22.1	04/16	0304	0325	411	207	114	114
70.0	70.0	35 32.9	123 04.4	04/16	0811	0832	449	201	33	33
70.0	80.0	35 13.1	123 46.5	04/16	1401	1422	415	212	891	123
70.0	90.0	34 52.8	124 28.7	04/14	1701	1722	429	210	629	210
73.3	50.0	35 38.4	121 16.1	04/13	1042	1048	140	45	72	72
73.3	55.0	35 28.6	121 36.6	04/13	1356	1417	444	206	1586	167
73.3	60.0	35 18.6	121 57.7	04/13	1734	1755	428	209	428	171
73.3	70.0	34 58.5	122 40.1	04/13	2321	2343	486	204	617	109
73.3	80.0	34 38.5	123 21.9	04/14	0517	0538	439	208	933	39
73.3	90.0	34 18.5	124 03.8	04/14	1102	1123	421	212	76	14
76.7	49.0	35 05.3	120 46.5	04/13	0544	0549	126	38	805	104
76.7	51.0	35 01.3	120 54.9	04/13	0333	0352	408	190	255	120
76.7	55.0	34 53.3	121 12.0	04/13	0041	0102	413	212	685	87
76.7	60.0	34 43.3	121 32.8	04/12	2055	2116	464	211	831	82
76.7	70.0	34 23.3	122 14.7	04/12	1536	1557	485	212	225	39
76.7	80.0	34 03.4	122 56.5	04/12	1022	1044	456	211	821	24
76.7	90.0	33 43.3	123 37.9	04/12	0448	0509	447	212	652	52
76.7	100.0	33 23.3	124 19.3	04/11	2332	2353	415	212	715	101
80.0	50.5	34 27.8	120 29.7	04/10	0837	0839	59	26	34	34
80.0	51.0	34 27.0	120 31.4	04/10	1009	1015	134	64	15	15
80.0	55.0	34 19.0	120 48.0	04/10	1330	1351	408	208	235	206
80.0	60.0	34 09.0	121 09.0	04/10	1828	1849	442	210	161	120
80.0	70.0	33 48.9	121 50.5	04/11	0004	0025	407	213	676	59
80.0	80.0	33 28.9	122 32.0	04/11	0539	0600	453	209	455	53
80.0	90.0	33 08.9	123 13.1	04/11	1148	1209	465	210	764	32
80.0	100.0	32 48.8	123 54.4	04/11	1747	1808	463	210	50	13
81.7	43.5	34 23.9	119 48.1	04/10	0127	0130	65	26	77	77
81.8	46.9	34 16.5	120 01.6	04/10	0445	0506	418	212	77	48
83.3	39.4	34 13.5	119 23.7	04/09	2251	2253	59	19	34	34
83.3	40.6	34 13.3	119 25.0	04/09	2152	2157	110	43	163	91
83.3	42.0	34 10.5	119 30.6	04/09	1945	2006	449	200	116	116
83.3	51.0	33 52.8	120 08.1	04/09	1353	1404	221	105	63	63
83.3	55.0	33 44.5	120 24.2	04/09	1029	1050	472	220	66	32
83.3	60.0	33 34.6	120 45.4	04/09	0445	0507	457	214	190	55
83.3	70.0	33 14.7	121 26.6	04/08	2118	2139	466	205	479	49
83.3	80.0	32 54.7	122 07.9	04/08	1404	1425	482	214	482	52
83.3	90.0	32 34.7	122 48.6	04/08	0434	0455	418	219	481	38
83.3	100.0	32 14.7	123 29.5	04/07	2236	2257	443	210	1242	54
83.3	110.0	31 54.7	124 10.3	04/07	1655	1716	437	203	57	18
85.4	35.8	34 00.7	118 50.3	04/05	0128	0131	72	25	139	139
86.7	33.0	33 53.4	118 29.0	04/05	0809	0813	82	28	171	171
86.7	35.0	33 49.4	118 37.7	04/05	0510	0531	386	209	47	47
86.7	40.0	33 39.4	118 58.7	04/05	1503	1523	425	209	28	28
86.7	45.0	33 29.4	119 19.2	04/05	1845	1906	447	202	523	119
86.7	50.0	33 19.4	119 39.8	04/05	2159	2205	121	54	182	182
86.7	55.0	33 09.3	120 00.3	04/06	0223	0244	418	199	1779	249
86.7	60.0	32 59.4	120 20.9	04/06	0637	0658	393	206	150	89
86.7	70.0	32 39.3	121 01.9	04/06	1246	1247	405	221	37	37
86.7	80.0	32 19.3	121 42.9	04/06	1805	1826	431	210	107	23
86.7	90.0	31 59.4	122 23.6	04/06	2326	2347	439	207	672	57
86.7	100.0	31 39.3	123 04.3	04/07	0448	0509	423	213	1051	54
86.7	110.0	31 19.3	123 44.5	04/07	1101	1122	422	213	69	14
86.8	32.5	33 53.3	118 26.7	04/05	0730	0732	62	11	113	113
88.5	30.1	33 38.2	118 04.6	04/04	2019	2021	54	20	92	92
90.0	27.7	33 29.8	117 45.1	04/04	1800	1802	45	17	22	22
90.0	28.0	33 29.1	117 46.3	04/04	1640	1701	417	209	53	53
90.0	30.0	33 25.1	117 54.5	04/04	1422	1443	436	210	34	34
90.0	35.0	33 15.1	118 14.7	04/04	1018	1039	387	207	52	16
90.0	37.0	33 11.1	118 22.9	04/04	0718	0739	437	197	14	14
90.0	45.0	32 55.2	118 56.2	04/04	0158	0219	428	196	505	44
90.0	53.0	32 38.9	119 29.1	04/03	2036	2057	457	214	271	59
90.0	60.0	32 25.1	119 57.5	04/03	1554	1615	465	212	108	75
90.0	70.0	32 05.1	120 38.3	04/03	0954	1015	468	193	220	94
90.0	80.0	31 45.2	121 19.0	04/03	0400	0420	445	206	429	27
90.0	90.0	31 25.1	121 59.4	04/02	2202	2223	449	207	1106	53
90.0	100.0	31 05.2	122 39.7	04/02	1617	1638	468	206	30	23
90.0	110.0	30 45.0	123 19.9	04/02	1035	1056	462	212	19	19
90.0	120.0	30 25.1	123 59.8	04/02	0408	0429	421	202	55	24
91.7	26.4	33 14.4	117 28.0	03/29	0117	0119	46	18	173	173
93.3	26.7	32 57.5	117 19.1	03/28	2111	2129	355	169	164	34
93.3	28.0	32 54.7	117 23.7	03/29	0445	0506	425	206	120	31
93.3	30.0	32 50.8	117 32.0	03/29	0742	0803	430	206	42	21
93.3	35.0	32 40.8	117 52.5	03/29	1135	1156	436	193	11	11
93.3	40.0	32 30.8	118 12.7	03/29	1704	1725	475	212	240	40
93.3	45.0	32 20.8	118 33.2	03/29	2047	2107	487	210	436	51
93.3	50.0	32 10.8	118 53.8	03/30	0020	0041	498	190	118	38
93.3	55.0	32 00.7	119 14.1	03/30	0356	0417	440	208	109	30
93.3	60.0	31 50.8	119 34.3	03/30	0758	0820	457	203	66	37
93.3	70.0	31 30.8	120 14.8	03/30	1413	1435	452	205	22	7
93.3	90.0	30 50.9	121 35.7	04/01	0238	0259	442	222	174	20
93.3	100.0	30 30.9	122 15.5	04/01	1038	1059	469	213	15	15
93.3	110.0	30 10.8	122 55.5	04						