UNIVERSITY OF CALIFORNIA, SAN DIEGO SCRIPPS INSTITUTION OF OCEANOGRAPHY

data report

PHYSICAL, CHEMICAL AND BIOLOGICAL DATA

CalCOFI Cruise 0302
30 January – 15 February 2003

CC Reference 06-02
20 January 2006

UNIVERSITY OF CALIFORNIA, SAN DIEGO

SCRIPPS INSTITUTION OF OCEANOGRAPHY

LA JOLLA, CALIFORNIA 92093-0227

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INTRODUCTION

The data presented in this report were collected during the 0302 cruise of the California Cooperative Oceanic Fisheries Investigations (CalCOFI) program aboard the aboard the NOAA ship RV *David Starr Jordan.* The CalCOFI program was organized in the late 1940's to study the causes of variations in population size of fishes of importance to the State of California. It is carried out by NOAA's National Marine Fisheries Service Southwest Fisheries Science Center, the California Department of Fish and Game, and the Integrative Oceanography Division (IOD) at Scripps Institution of Oceanography (SIO). IOD contributes to this program by investigations of the physical, chemical and biological structure of the California Current. Data from the cruises were collected and processed by personnel of the Integrative Oceanography Division and the Southwest Fisheries Science Center. Other SIO staff members and volunteers also assisted in the collection of data and chemical analyses at sea. CalCOFI data presented in this report and collected on previous cruises can be accessed at http://www.calcofi.org.

STANDARD PROCEDURES

CTD/Rosette Cast Data

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

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

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

Dissolved oxygen samples were collected in calibrated 100 ml iodine flasks, allowing at least 200% overflow. The dissolved oxygen samples were analyzed at sea by the Winkler method, as modified by Carpenter (1965), using the equipment and procedure outlined by Anderson (1971). Percent oxygen saturation was calculated from the equations of Weiss (1970).

Nutrient samples were analyzed at sea by the Scripps Ocean Data Facility for dissolved silicate, phosphate, nitrate and nitrite using procedures similar to those described in Gordon et al., 1993. Samples were collected in 45 ml high-density polypropylene screw-capped tubes which were rinsed three times prior to filling. Standardizations were done at the beginning and end of each group of samples with a set of mid-concentration range standards prepared fresh for each run. Samples not analyzed immediately after collection were refrigerated and run the

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

following day. Sets of six different concentration standards were analyzed periodically to determine the deviation from linearity as a function of concentration, for the silicate, nitrate and phosphate analyses. Final sample concentrations were corrected for deviations from linearity using a second order polynomial.

Samples for chlorophyll-*a* and phaeopigments were collected in calibrated 138 ml polyethylene bottles and filtered onto Whatman GF/F filters. The pigments were extracted in cold 90% acetone (Venrick and Hayward, 1984) for a mimimum of 24 hours. Chlorophyll a and pheopigment 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 10 µCi of ^{14}C as $NaHCO_3$ (200 µl of 50 µCi/ml stock) prepared in a 0.3 g/liter solution of sodium carbonate (Fitzwater *et al*., 1982). Samples were incubated from LAN to civil twilight in seawater-cooled incubators with neutral-density screens which simulate *in situ* light levels. At the end of the incubation, the samples were filtered onto Millipore HA filters and placed in scintillation vials. One half ml of 10% HCl was added to each sample. The sample was then allowed to sit, without a cap, at room temperature for 12 hours (after Lean and Burnison, 1979). Following this, 10 ml of scintillation cocktail were added to each sample and the samples were returned to SIO where the radioactivity was determined with a scintillation counter. Salinity, oxygen, nutrients, chlorophyll-*a* and phaeopigments were determined from all rosette productivity bottles.

Macrozooplankton Net Tows

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

Avifauna Observations (Point Reys Bird Observatory)

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

Ancillary Programs

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

1) *Underway Data*. Continuous near surface measurements of temperature, salinity and *in vivo* chlorophyll fluorescence were recorded from seawater pumped through the ship's uncontaminated seawater system. Water was drawn from a depth of approximately 3 meters. The data were logged in one-minute averages using a Sea-Bird Electronics, Inc., SBE 45 MicroTSG Thermosalinograph and a Wetlabs Wetstar fluorometer.

2) *ADCP*. Continuous profiles of ocean currents and acoustic backscatter between 20 and 500 meters deep were measured along the shiptrack from a hull-mounted 150 kHz Acoustic Doppler Current Profiler (ADCP). The ADCP data were averaged over 3-minute intervals. Sixty 8-meter depth bins were recorded. (T. Chereskin, SIO)

3) Taxon-specific pigments. Water samples were collected from a depth of 10 m for the analysis of taxon-specific pigments (chlorophylls and carotenoids) by high-pressure liquid chromatography (R. Goericke, SIO).

4) *Trace metals*. Surface seawater samples were obtained for iron analysis (dissolved and total iron) at 31 stations using a trace metal-clean pole sampler. Iron addition incubations were also performed at 3 stations to assay for iron limitation in the phytoplankton community. (K. Barbeau, SIO).

TABULATED DATA

CTD/Rosette Cast Data

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

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

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

Primary Productivity Data

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

Macrozooplankton Data

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

FOOTNOTES

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

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

LITERATURE CITED

Anderson, G. C., compiler, 1971. "Oxygen Analysis," Marine Technician's Handbook, SIO Ref. No. 71-8, Sea Grant Pub. No. 9.

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.

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.

Kramer, D., M. J. Kalin, E. G. Stevens, J. R. Thrailkill 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 0302

1. CalCOFI Cruise 0302 track and station positions.

2. Horizontal distribution of dynamic height anomaly (0 over 500m). In areas shallower than 500 m, the dynamic heights were extrapolated on the basis of the offshore deeper steric height as described in Reid and Mantyla (1976).

3. Horizontal distributions at 10 meters: A) chlorophyll-*a*; B) potential density; C) temperature; and D) salinity.

4. Horizontal distributions at 200 meters: A) dynamic height anomaly (200 over 500 m); B) potential density; C) temperature; and D) salinity.

5. Sections along CalCOFI line 90 (vertical exaggeration, 1000): A) potential density; B) temperature; C) salinity; D) silicate; E) nitrate; F) phosphate; G) chlorophyll-*a*; H) oxygen saturation; I) oxygen; J) nitrite; and K) phaeopigments.

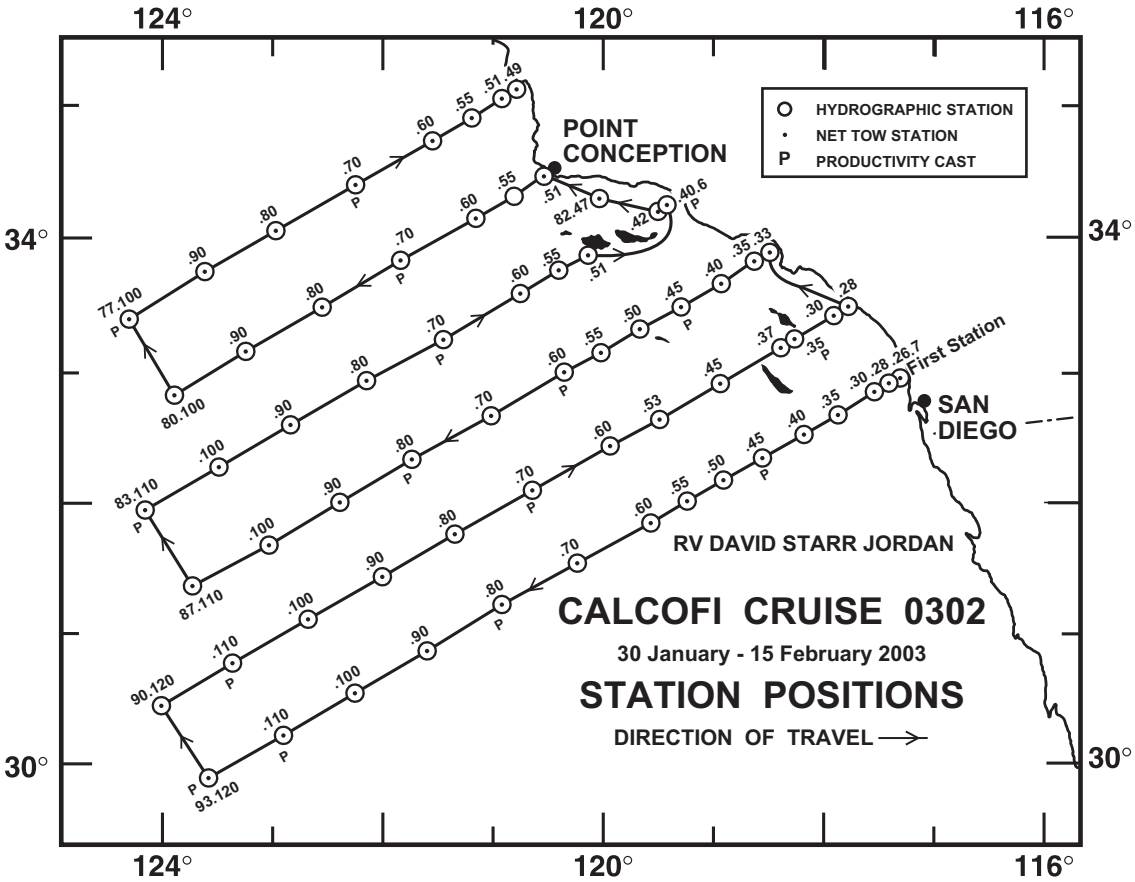

FIGURE 1

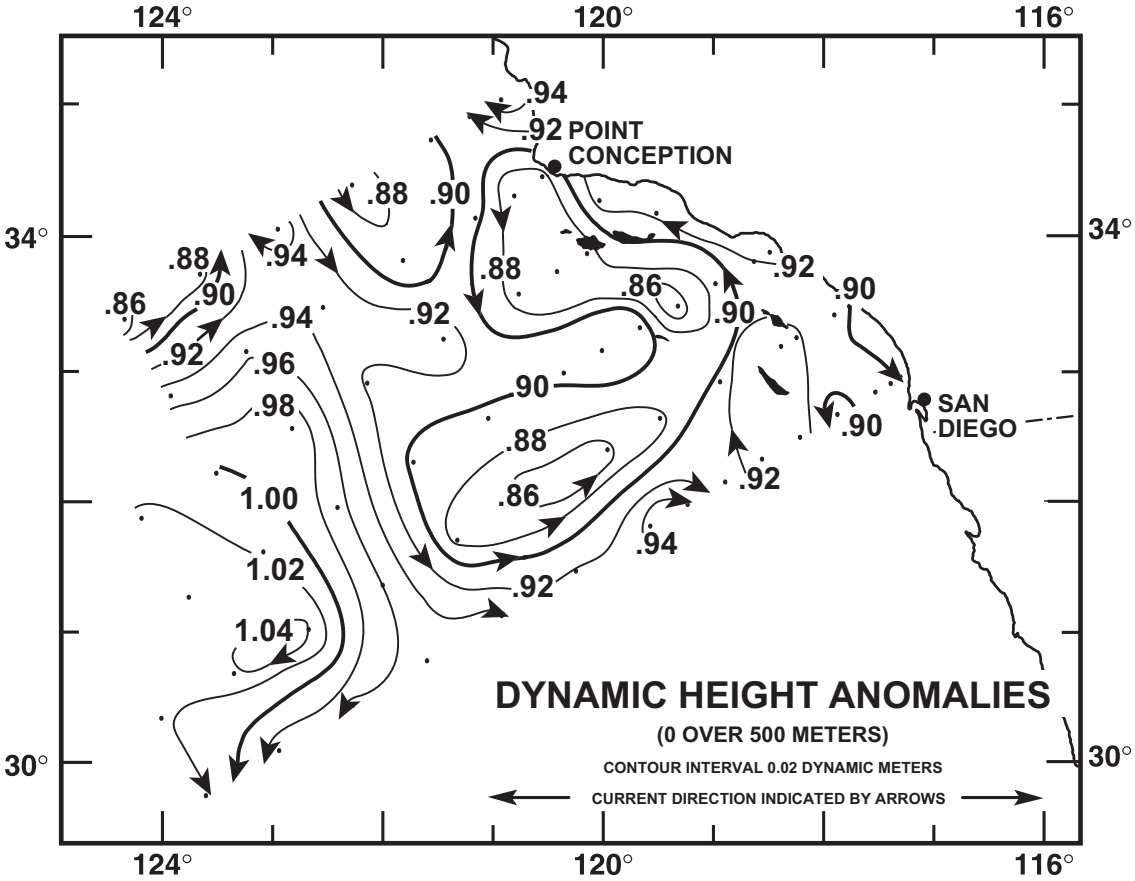

FIGURE 2

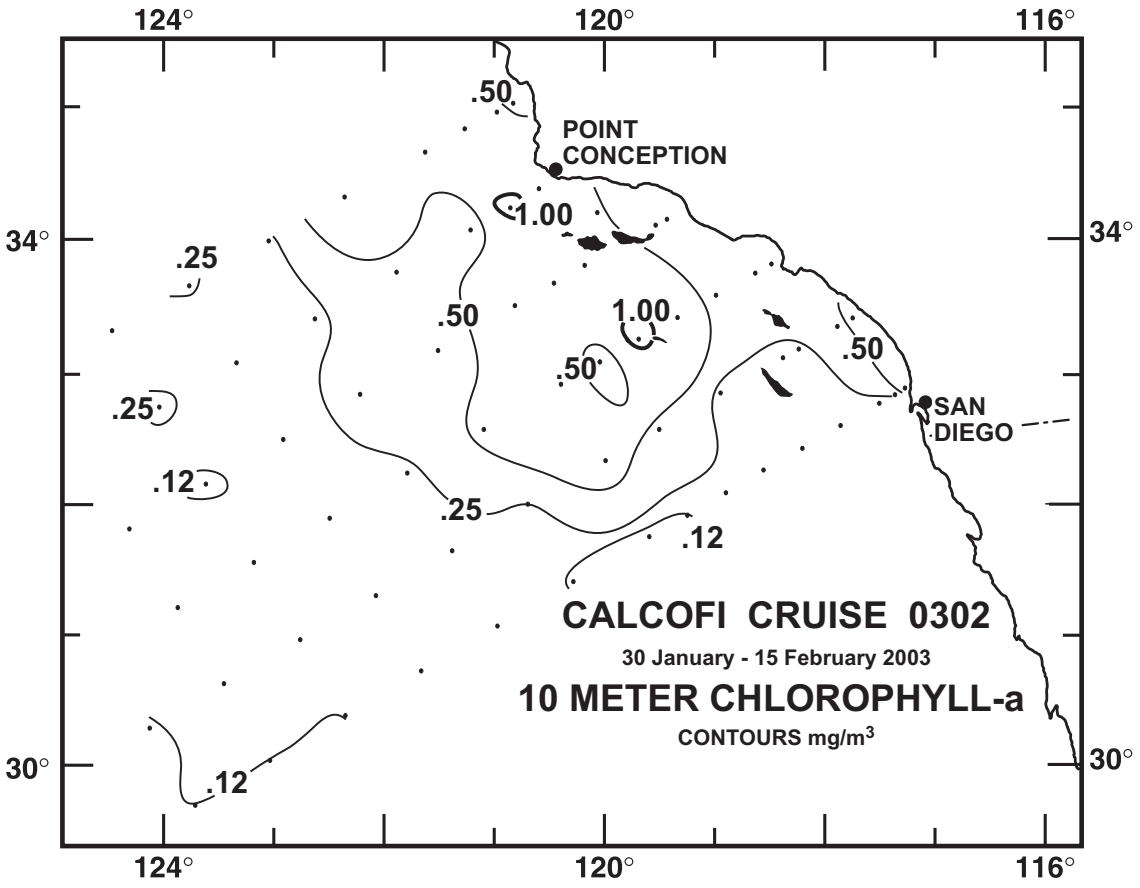

FIGURE 3A

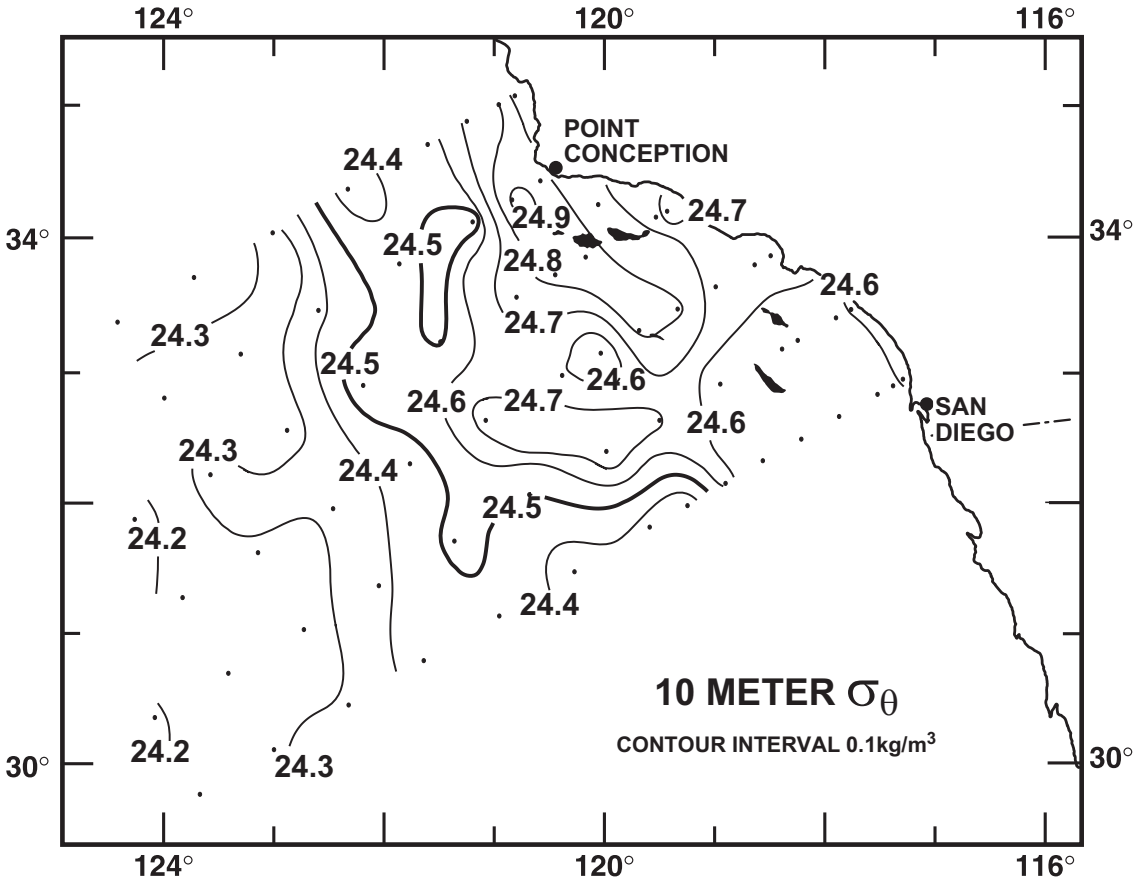

FIGURE 3B

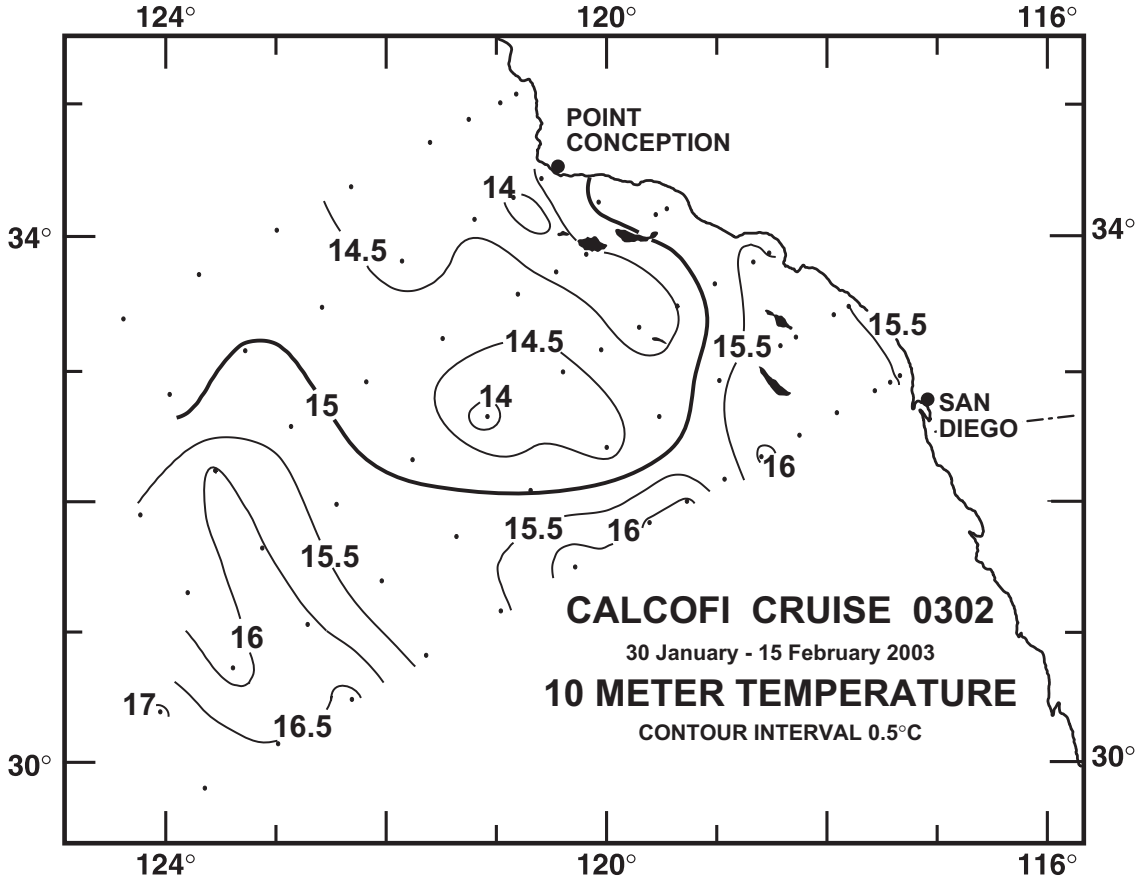

FIGURE 3C

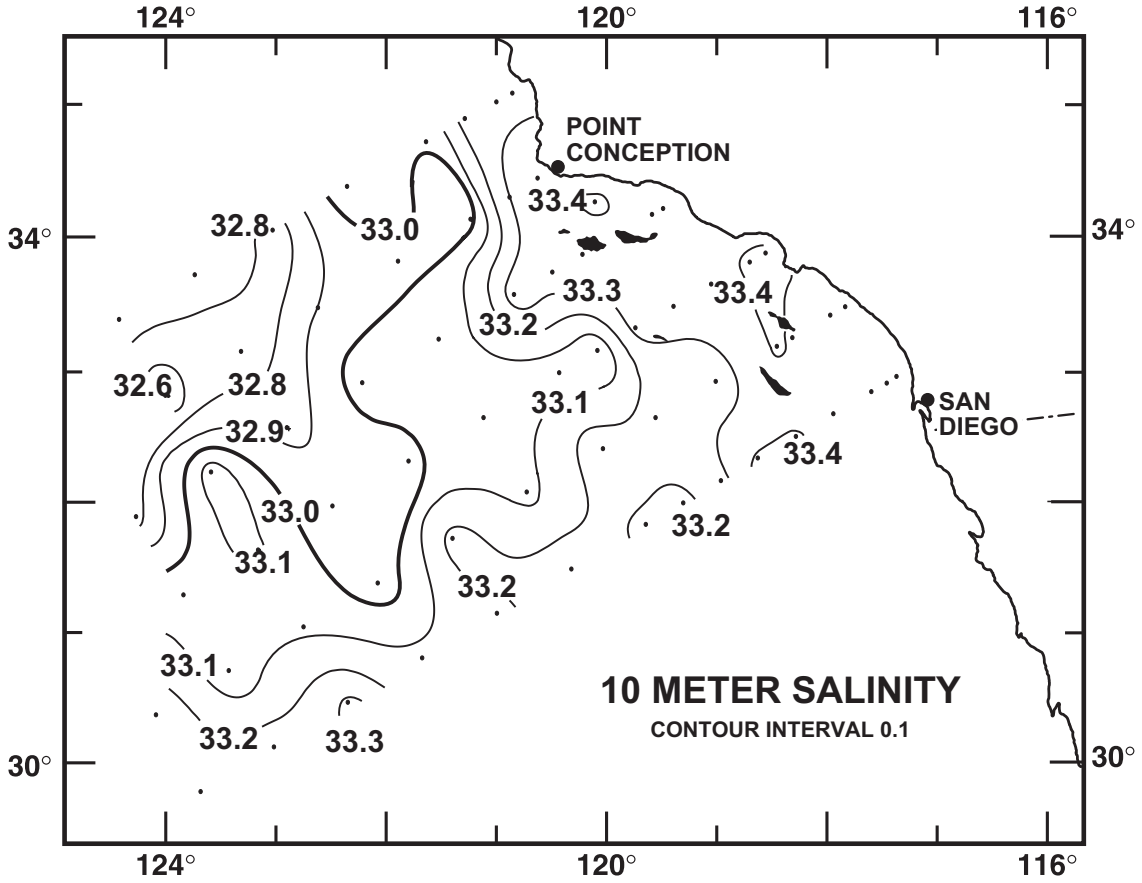

FIGURE 3D

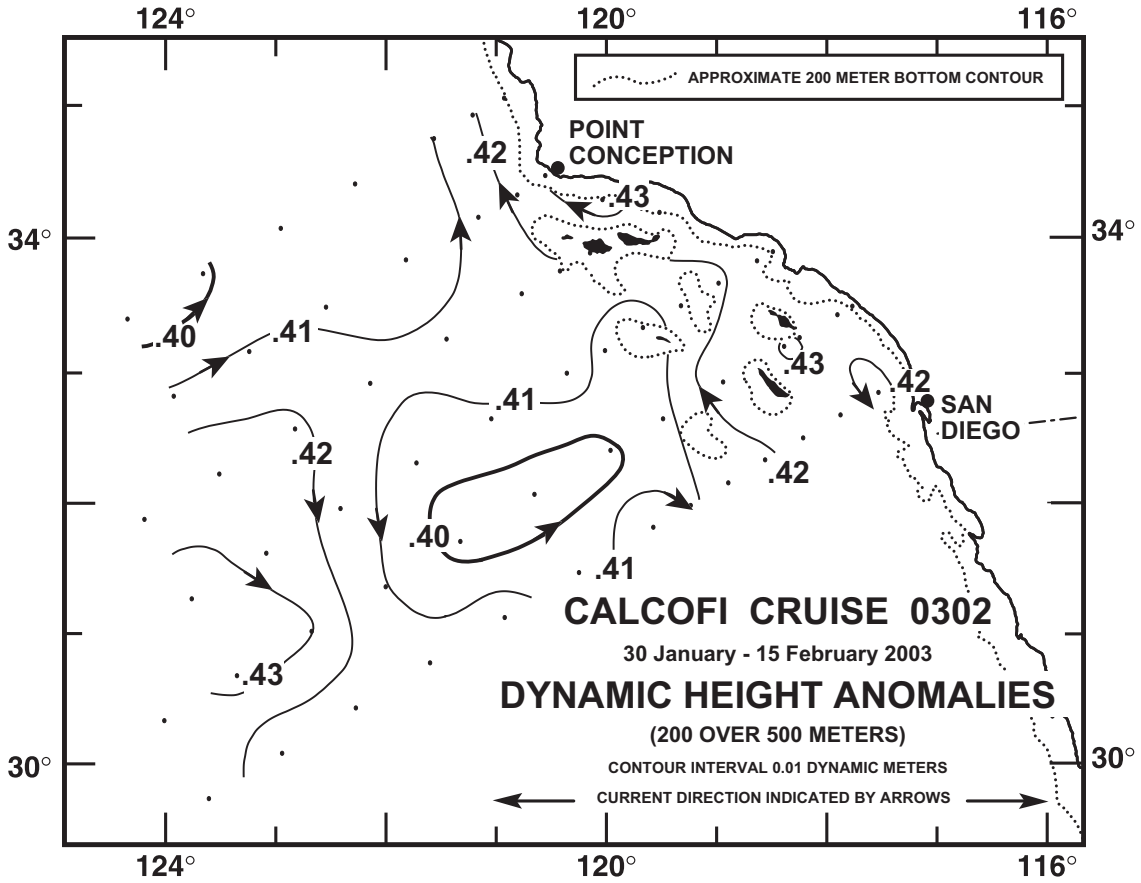

FIGURE 4A

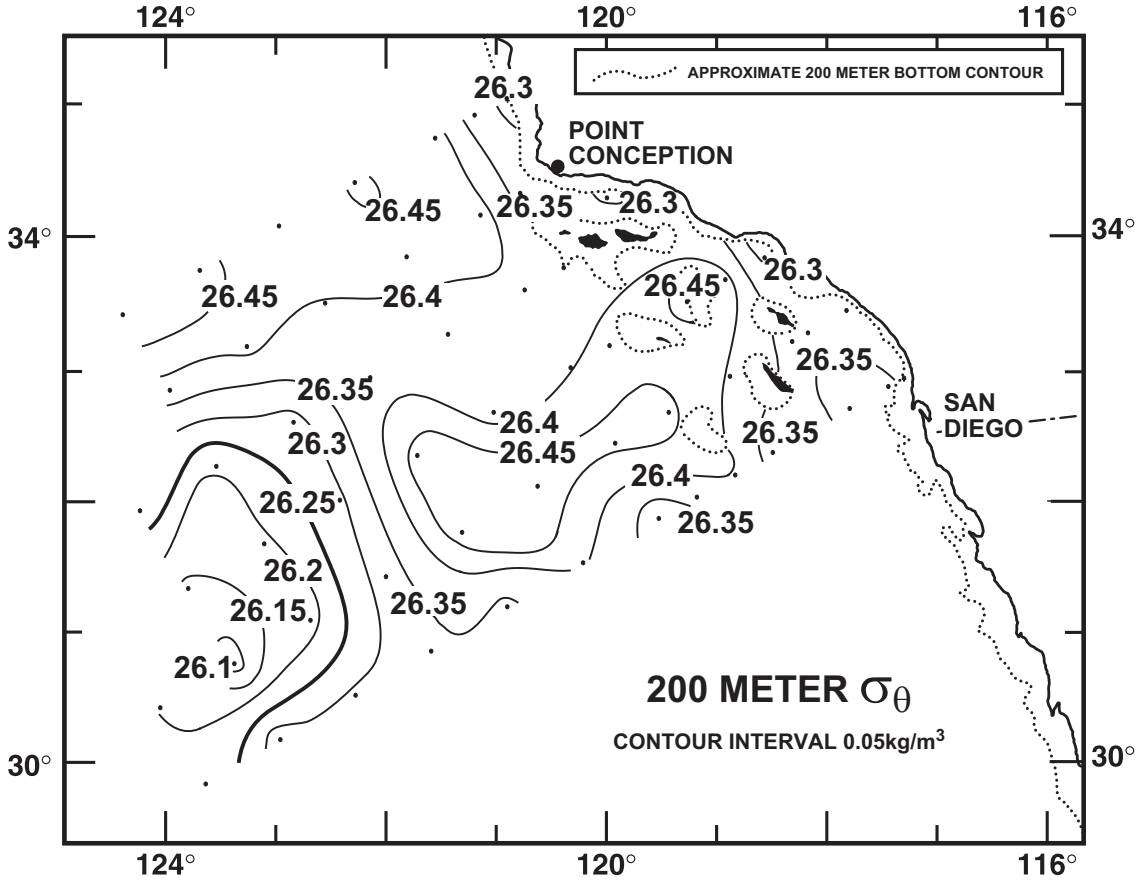

FIGURE 4B

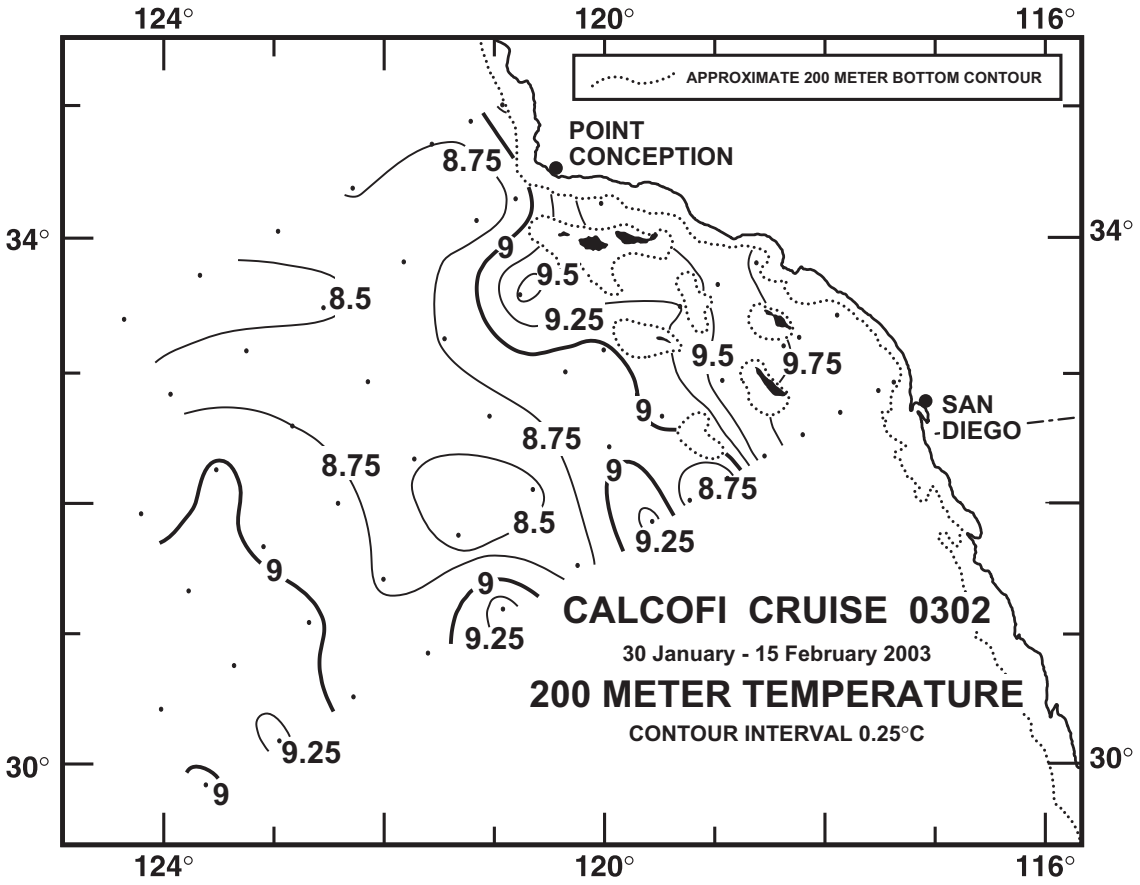

FIGURE 4C

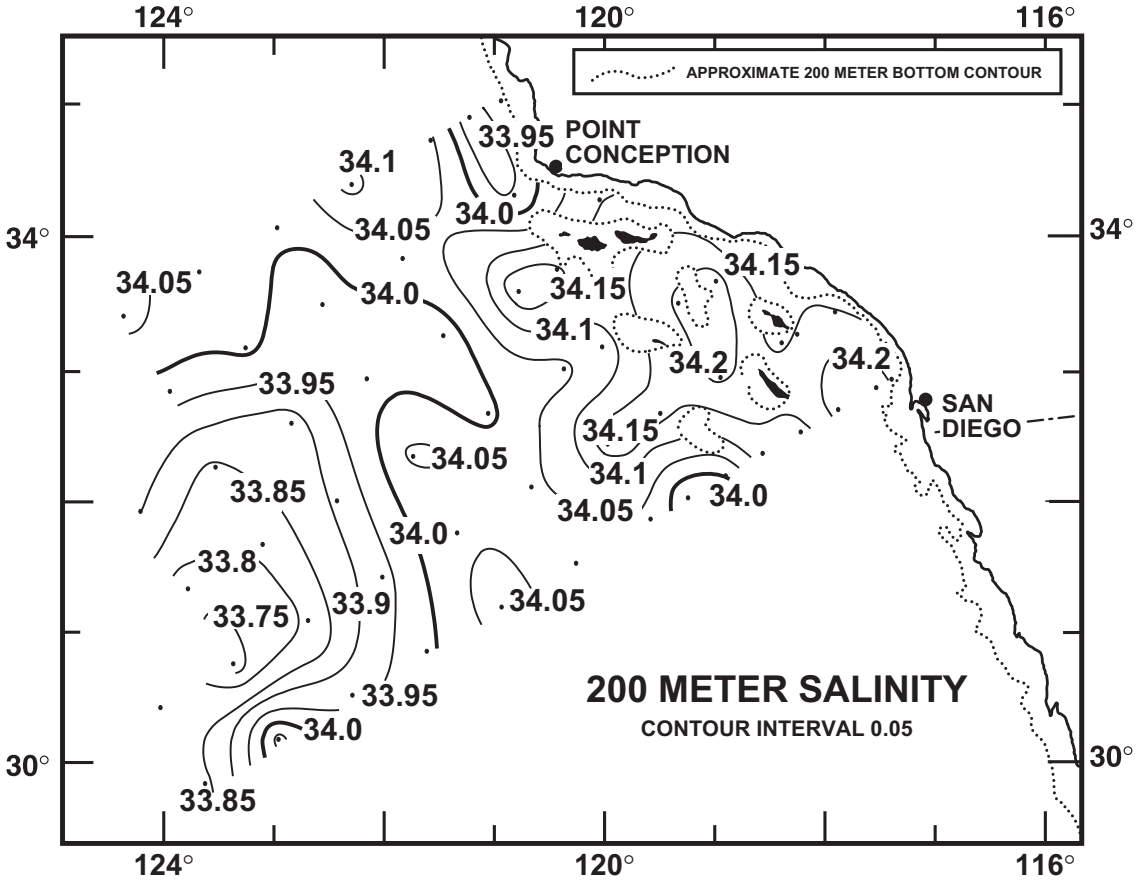

FIGURE 4D

CALCOFI CRUISE 0302

3 - 6 February 2003

POTENTIAL DENSITY (σ_θ) ALONG CALCOFI LINE 90

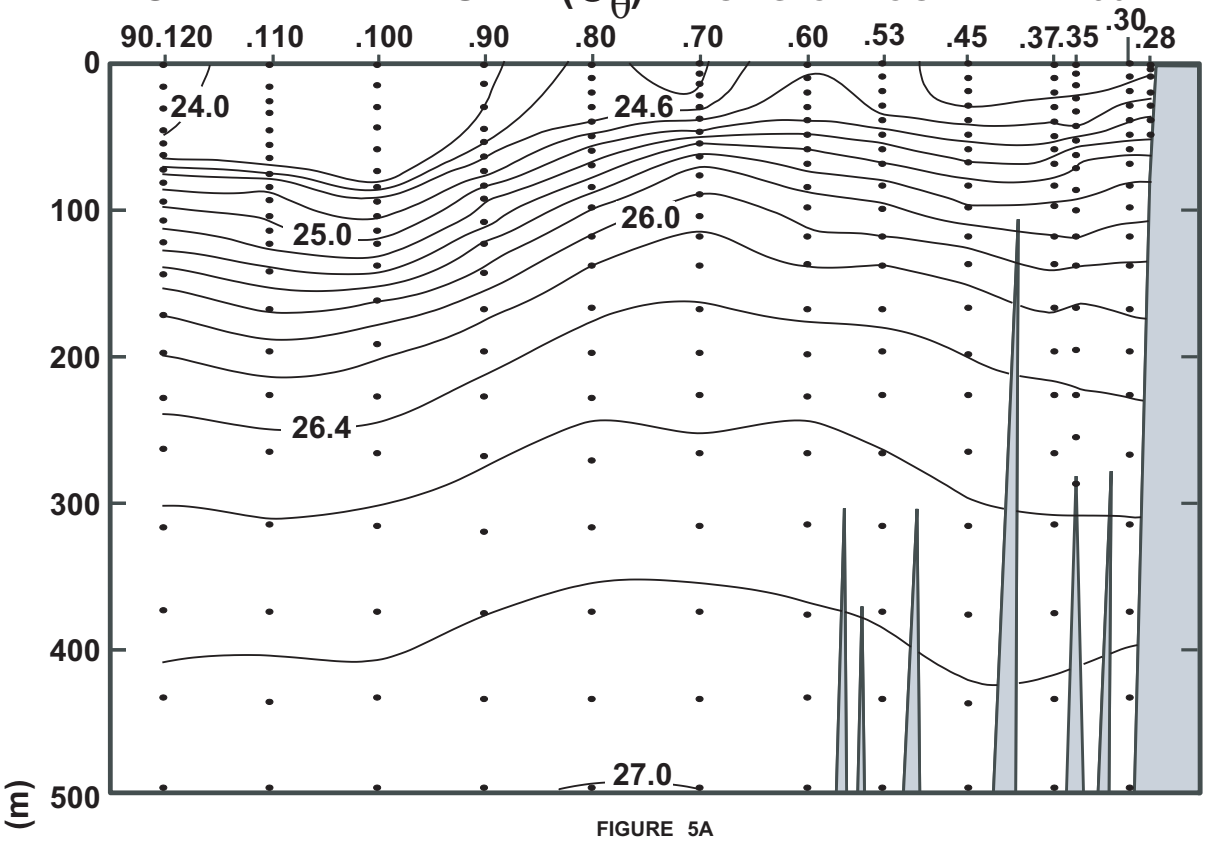

FIGURE 5A

TEMPERATURE (°C) ALONG CALCOFI LINE 90

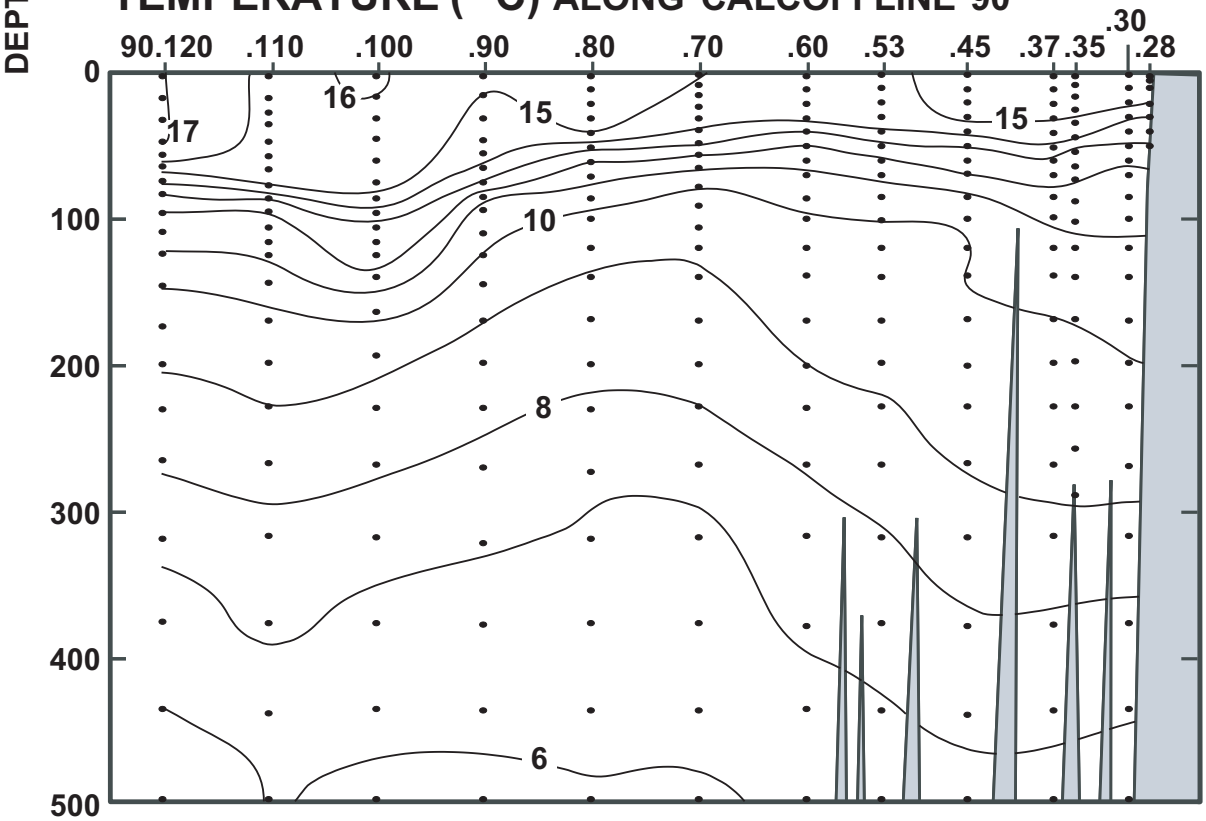

FIGURE 5B

CALCOFI CRUISE 0302

3 - 6 February 2003

SALINITY ALONG CALCOFI LINE 90

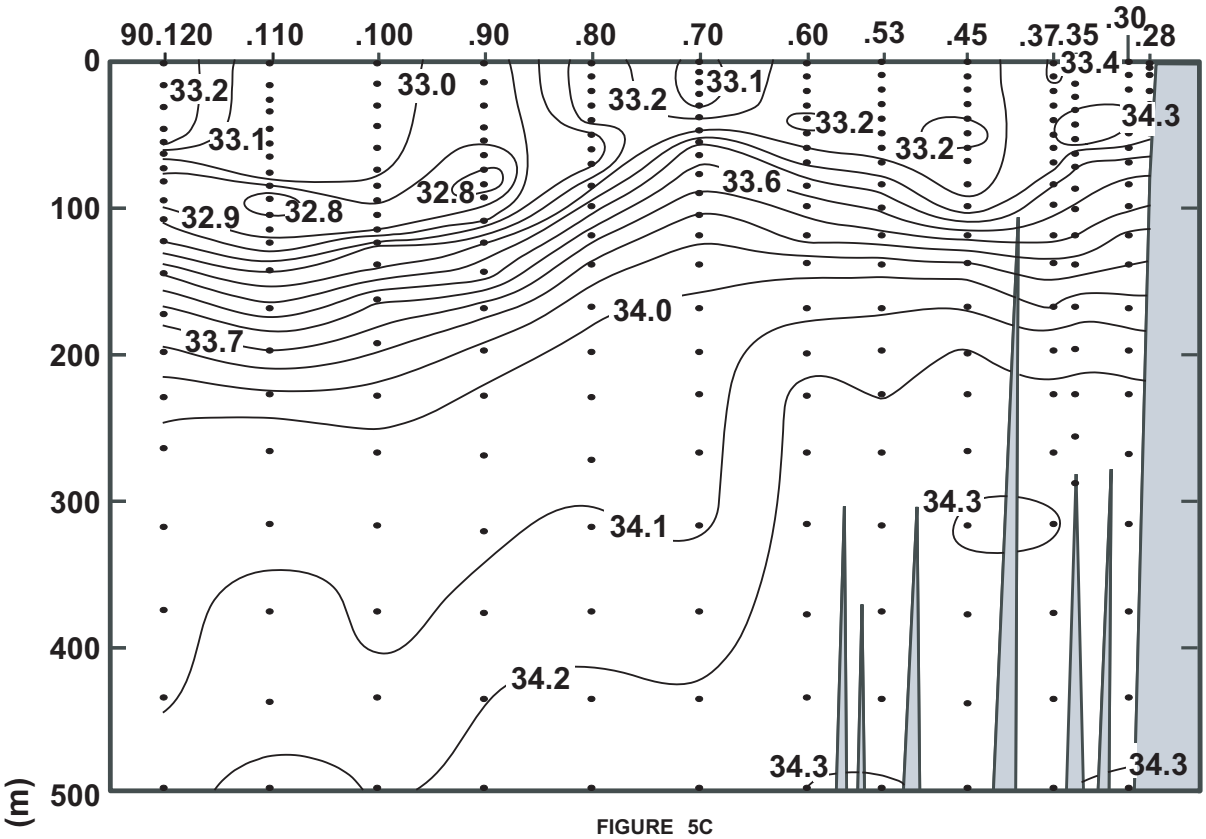

FIGURE 5C

SILICATE (μM/L) ALONG CALCOFI LINE 90

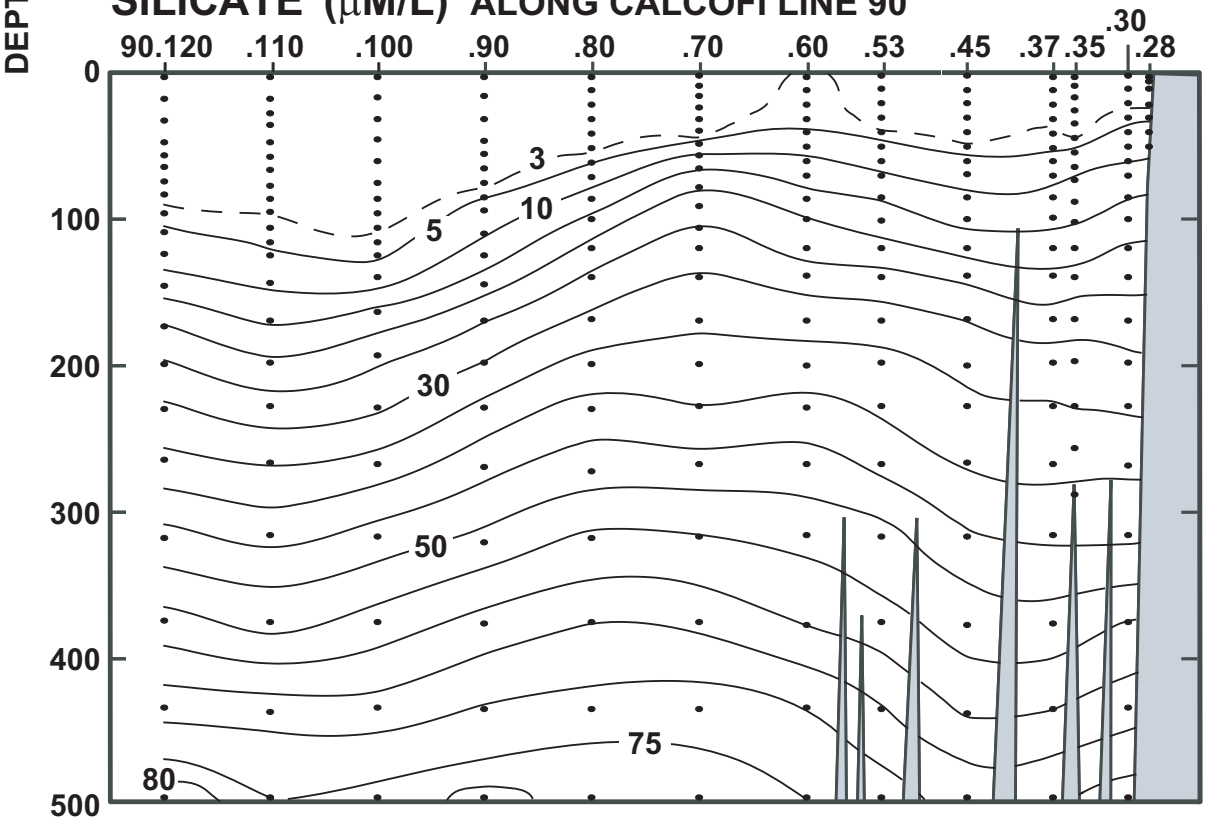

FIGURE 5D

CALCOFI CRUISE 0302

3 - 6 February 2003

NITRATE (μM/L) ALONG CALCOFI LINE 90

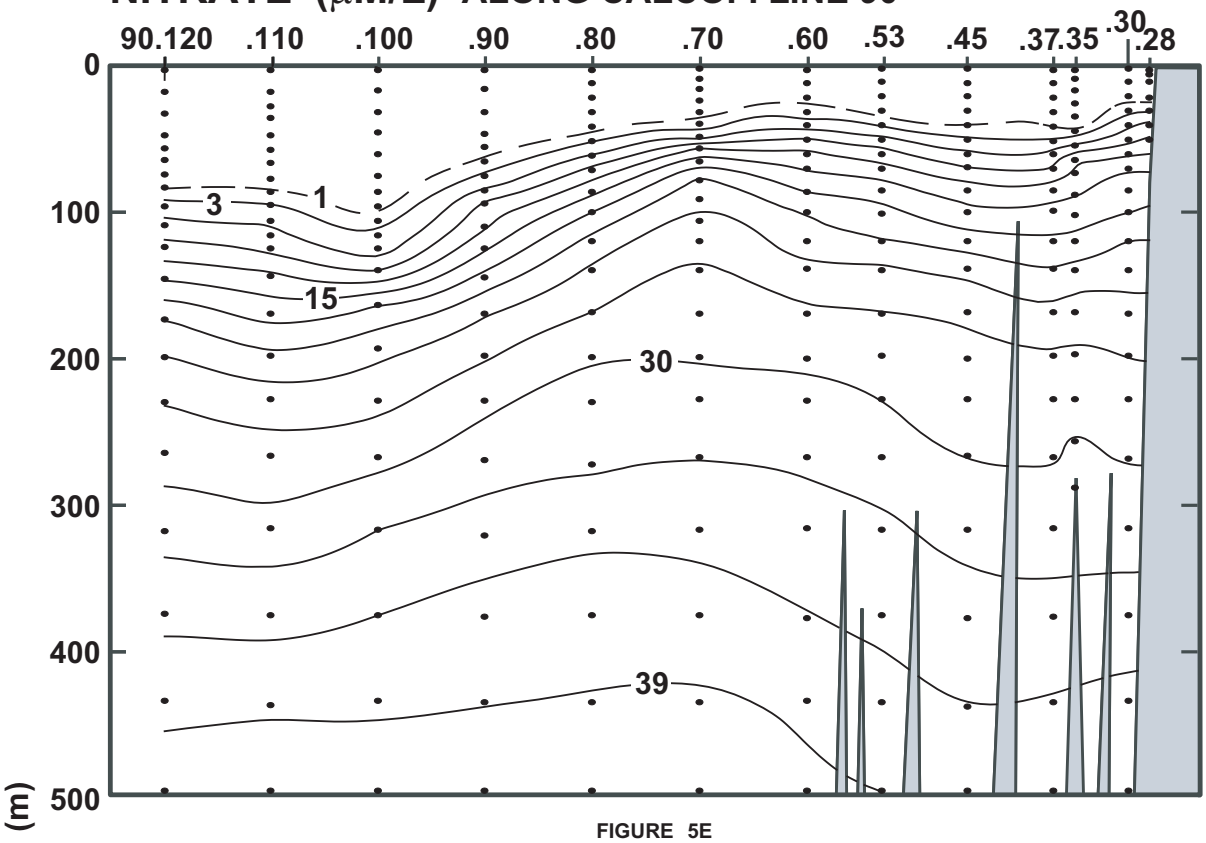

FIGURE 5E

PHOSPHATE (μM/L) ALONG CALCOFI LINE 90

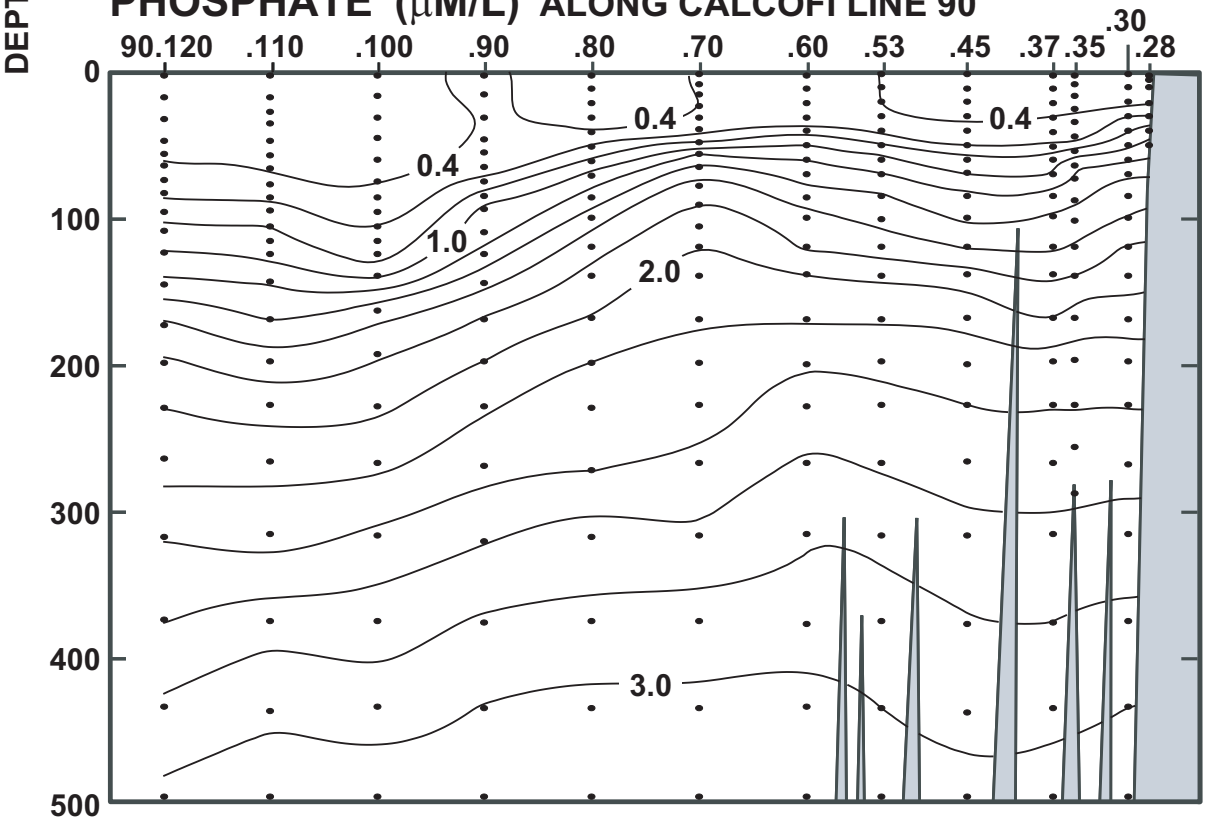

FIGURE 5F

CALCOFI CRUISE 0302

3 - 6 February 2003

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

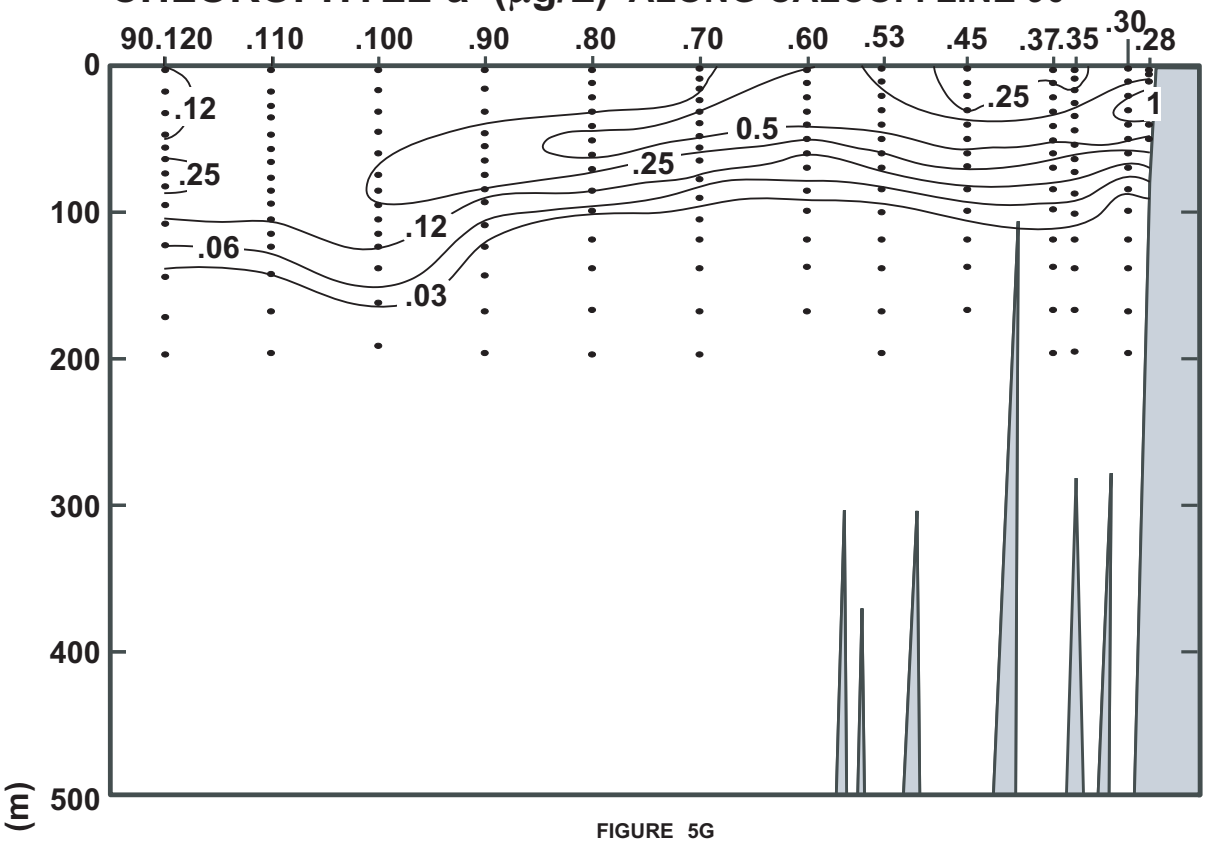

FIGURE 5G

OXYGEN SATURATION (%) ALONG CALCOFI LINE 90

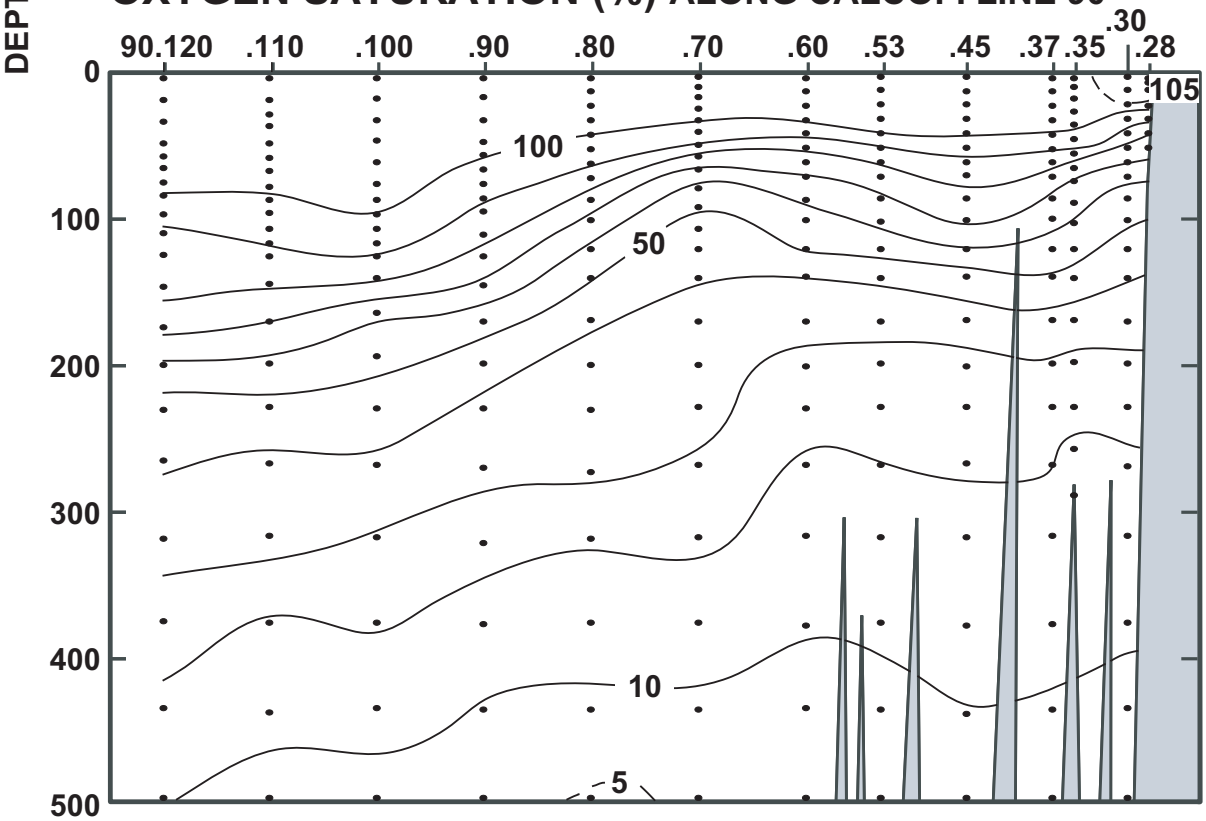

FIGURE 5H

CALCOFI CRUISE 0302

3 - 6 February 2003

OXYGEN (mL/L) ALONG CALCOFI LINE 90

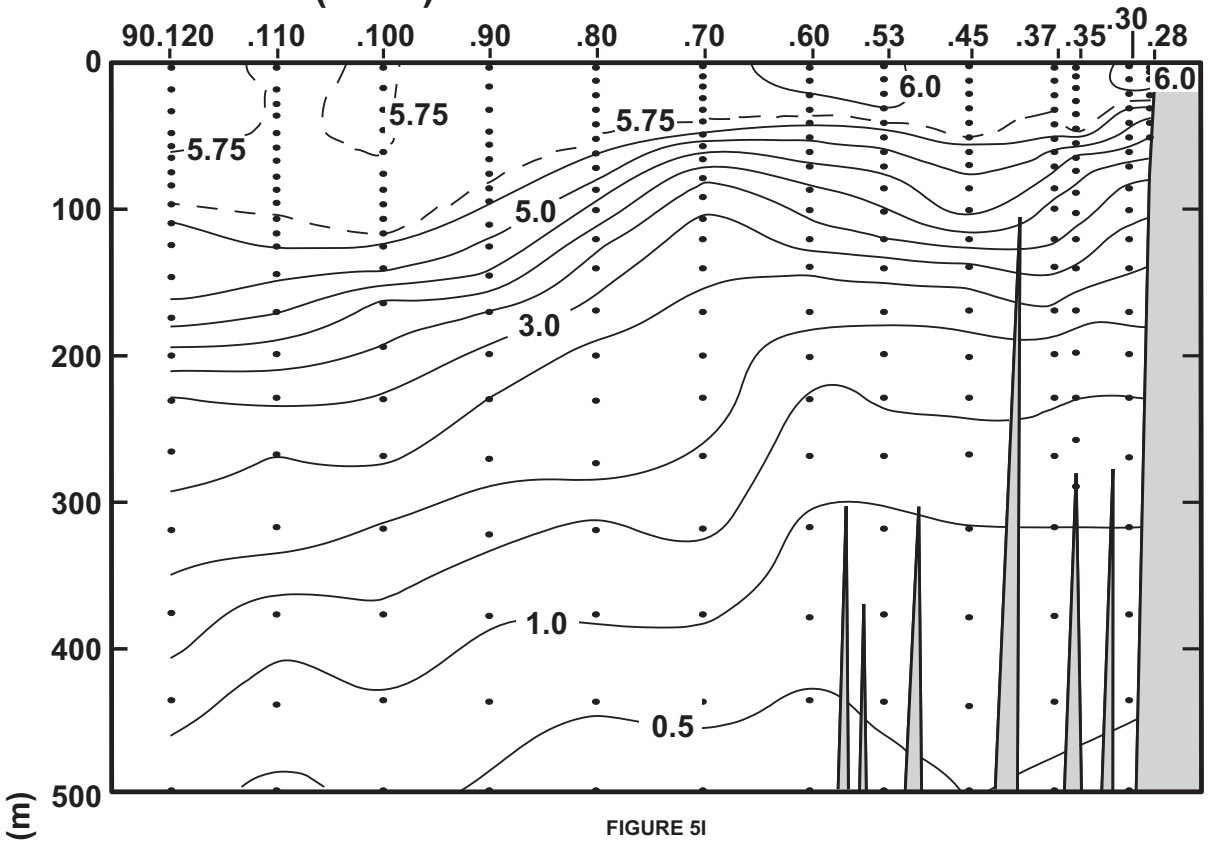

FIGURE 5I

NITRITE (μM/L) ALONG CALCOFI LINE 90

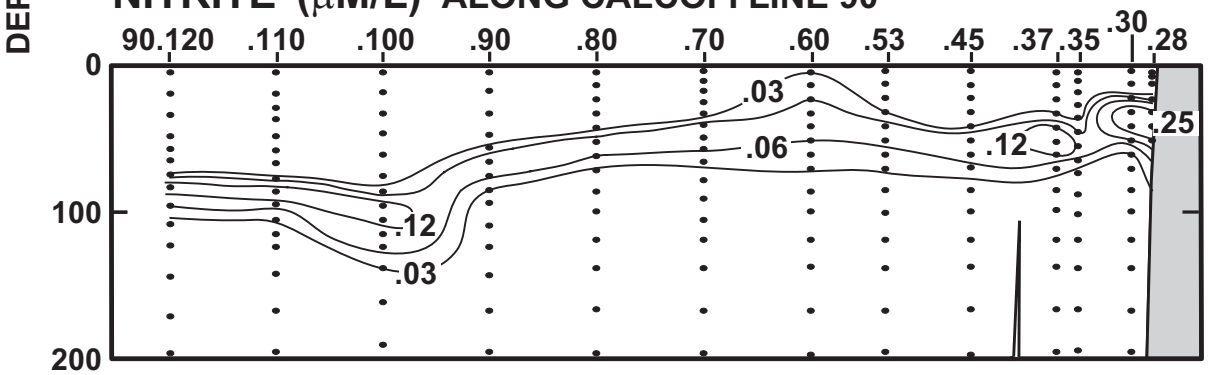

FIGURE 5J

PHAEOPIGMENTS (μg/L) ALONG CALCOFI LINE 90

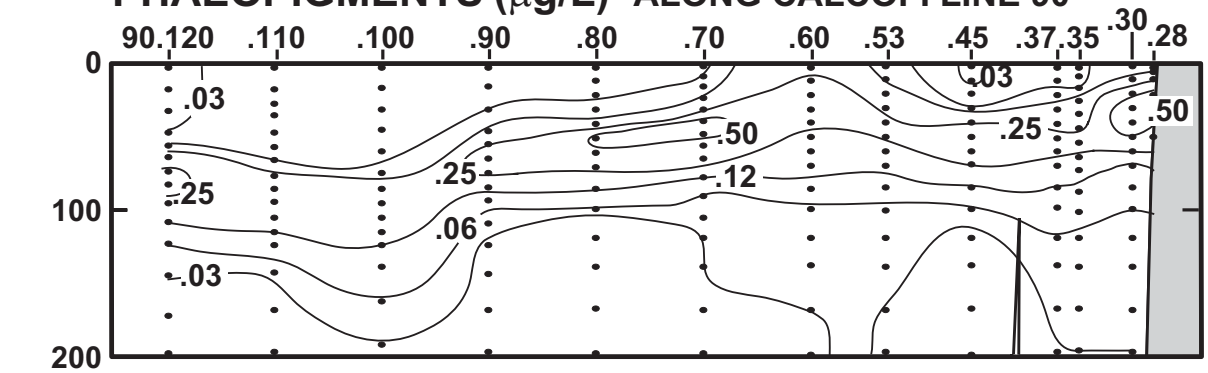

FIGURE 5K

PERSONNEL

CalCOFI Cruise 0302

SHIP'S CAPTAIN

Chris Moore, RV *David Starr Jordan*

PERSONNEL PARTICIPATING IN THE COLLECTION OF DATA

		Participating (Legs)
Dotson, Ronald C. (Chief Scientist)	Fishery Biologist, NMFS	1,2,3
Andreassi, Valerie A.	Oceanographer, NMFS	1
Ramirez, Fernando	Staff Research Associate, SIO	1,2
Gardner, David	Seabird Biologist, Pt. Reyes Bird Observatory	1,2,3
Hays, Amy E.	Fishery Biologist, NMFS	1,2,3
Holtermann, Karie E.	Staff Research Associate, SIO	1,2
King, Andrew L.	Graduate Student, SIO	1,2
Manion, Susan M.	Fishery Biologist, NMFS	1,2,3
Masten, Douglas M.	Staff Research Associate, SIO	1,2
Powell, Jesse R.	Staff Research Associate, SIO	1,2
Sheldon, Jennifer L.	Scientific Aid, CDFG	2,3
Wilkinson, James R.	Programmer Analyst, SIO	1,2
Wolgast, David M.	Staff Research Associate, SIO	1,2

Leg 1: San Diego to Dana Point, California, 30 January - 5 February, 2003
Leg 2: Dana Point to Monterey, California, 5 – 18 February, 2003
Leg 3: Monterey to San Diego, California, 18 – 25 February , 2003

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 77 49

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
35 5.3 N	120 46.4 W	15/02/03	0947 UTC	66 m	320 18 kn			1016.0 mb	13.3 C	12.4 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.13	14.13	33.189	24.762	317.5	0.000	5.80	99.1	3.8	0.55	1.3	0.12	0.39	0.14	0	
1	14.13	14.13	33.189	24.762	317.5	0.003	5.80	99.1	3.8	0.55	1.3	0.12	0.39	0.14	1	208
5	14.12	14.12	33.190	24.765	317.3	0.016	5.80	99.1	3.8	0.55	1.3	0.12	0.35	0.15	5	207
10	14.12	14.12	33.232	24.797	314.4	0.032	5.79	98.9	4.1	0.54	1.5	0.12	0.45	0.17	10	206
20	14.11	14.11	33.299	24.851	309.5	0.063	5.77	98.6	4.6	0.55	1.8	0.12	0.50	0.23	20	205
30	14.06	14.06	33.292	24.857	309.3	0.094	5.77	98.5	4.6	0.56	1.9	0.12	0.53	0.27	30	204
40	13.79	13.78	33.242	24.874	307.9	0.125	5.76	97.7	4.3	0.57	2.1	0.13	0.59	0.29	40	203
49	13.79	13.78	33.343	24.952	300.7	0.152	5.63	95.6	5.8	0.63	2.7	0.15	0.58	0.43	49	202
50 ISL	13.77	13.76	33.344	24.957	300.3	0.155	5.61	95.2	5.9	0.64	2.8	0.15	0.56	0.42	50	
59	13.54	13.53	33.350	25.009	295.6	0.182	5.47	92.4	6.8	0.70	3.9	0.19	0.42	0.28	59	201

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LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
35 1.3 N	120 55.0 W	15/02/03	0706 UTC	235 m	310 14 kn			1016.8 mb	13.3 C	12.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.34	14.34	33.298	24.802	313.7	0.000	5.83	100.1	3.9	0.50	1.2	0.08	0.53	0.20	0	
2	14.34	14.34	33.298	24.802	313.7	0.006	5.83	100.1	3.9	0.50	1.2	0.08	0.53	0.20	2	214
10 ISL	14.34	14.34	33.297	24.801	314.0	0.031	5.81	99.7	3.9	0.49	1.1	0.08	0.55	0.21	10	
11	14.34	14.34	33.297	24.801	314.0	0.035	5.81	99.7	3.9	0.49	1.1	0.08	0.55	0.21	11	213
20 ISL	14.34	14.34	33.300	24.804	314.0	0.063	5.80	99.6	3.9	0.49	1.1	0.08	0.56	0.18	20	
21	14.34	14.34	33.300	24.804	314.1	0.066	5.80	99.6	3.9	0.49	1.1	0.08	0.56	0.18	21	212
30	14.37	14.37	33.330	24.821	312.7	0.094	5.77	99.1	4.1	0.51	1.2	0.08	0.49	0.18	30	211
41	14.37	14.36	33.367	24.850	310.3	0.128	5.72	98.3	4.4	0.52	1.3	0.09	0.45	0.22	41	210
50 ISL	14.33	14.32	33.365	24.857	309.8	0.156	5.70	97.9	4.5	0.53	1.4	0.10	0.47	0.18	50	
51	14.33	14.32	33.364	24.856	310.0	0.159	5.70	97.9	4.5	0.53	1.4	0.10	0.47	0.17	51	209
60	14.30	14.29	33.364	24.863	309.6	0.187	5.69	97.6	4.6	0.53	1.5	0.10	0.38	0.16	60	208
70	14.23	14.22	33.359	24.874	308.8	0.218	5.66	97.0	4.8	0.55	1.7	0.11	0.32	0.17	70	207
75 ISL	14.21	14.20	33.360	24.879	308.5	0.234	5.65	96.7	4.8	0.55	1.8	0.11	0.32	0.17	75	
86	14.17	14.16	33.362	24.889	307.8	0.268	5.62	96.2	4.9	0.56	2.0	0.11	0.31	0.15	86	206
100	13.52	13.51	33.336	25.003	297.2	0.310	5.30	89.5	6.2	0.72	4.2	0.33	0.21	0.14	100	205
120	12.08	12.06	33.409	25.342	265.3	0.366	4.43	72.6	10.4	1.10	10.4	0.10	0.15	0.15	121	204
125 ISL	11.40	11.38	33.433	25.487	251.5	0.379	4.31	69.6	12.7	1.24	12.9	0.09	0.12	0.13	126	
140	9.58	9.56	33.563	25.903	211.9	0.414	3.93	61.0	20.1	1.64	20.3	0.06	0.02	0.05	141	203
150 ISL	9.66	9.64	33.760	26.044	198.7	0.434	3.33	51.9	23.8	1.84	23.1	0.07	0.02	0.06	151	
170	9.83	9.81	33.975	26.184	185.9	0.473	2.20	34.4	29.2	2.11	26.0	0.08	0.01	0.07	171	202
200 ISL	9.28	9.26	33.992	26.288	176.5	0.527	2.21	34.2	33.2	2.18	27.1	0.16	0.01	0.10	201	
202	9.24	9.22	33.993	26.295	175.8	0.531	2.21	34.2	33.5	2.19	27.2	0.17	0.01	0.10	203	201

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LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
34 53.8 N	121 12.1 W	15/02/03	0310 UTC	570 m	310 21 kn			1016.5 mb	13.8 C	12.0 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.45	14.45	33.228	24.724	321.0	0.000	5.87	101.0	2.4	0.45	0.6	0.04	0.62	0.21	0	
2	14.45	14.45	33.228	24.725	321.1	0.006	5.87	100.9	2.4	0.45	0.6	0.04	0.62	0.21	2	220
10 ISL	14.46	14.46	33.228	24.723	321.5	0.032	5.88	101.1	2.3	0.45	0.6	0.04	0.61	0.22	10	
16	14.47	14.47	33.230	24.722	321.7	0.051	5.88	101.2	2.3	0.45	0.6	0.04	0.61	0.24	16	219
20 ISL	14.49	14.49	33.236	24.723	321.7	0.064	5.87	101.0	2.4	0.45	0.6	0.04	0.62	0.25	20	
30 ISL	14.52	14.52	33.255	24.731	321.2	0.096	5.84	100.6	2.6	0.46	0.7	0.05	0.66	0.28	30	
31	14.52	14.52	33.257	24.733	321.1	0.100	5.84	100.6	2.6	0.46	0.7	0.05	0.67	0.28	31	218
45	14.50	14.49	33.285	24.759	319.0	0.144	5.82	100.2	2.8	0.46	0.8	0.06	0.85	0.33	45	217
50 ISL	14.14	14.13	33.297	24.844	311.0	0.160	5.70	97.4	3.8	0.54	1.9	0.13	0.66	0.31	50	
55	13.67	13.66	33.314	24.954	300.6	0.175	5.51	93.3	5.1	0.66	3.5	0.19	0.44	0.28	55	216
65	12.67	12.66	33.375	25.201	277.3	0.204	4.83	80.1	8.5	0.99	8.6	0.21	0.23	0.20	65	215
75	12.27	12.26	33.469	25.351	263.3	0.231	4.39	72.2	11.1	1.17	11.3	0.15	0.16	0.14	75	214
86	11.93	11.92	33.495	25.436	255.4	0.260	4.18	68.3	12.5	1.26	12.9	0.10	0.13	0.14	86	213
94	11.77	11.76	33.505	25.474	252.0	0.280	4.06	66.1	13.2	1.31	13.6	0.09	0.13	0.13	94	212
100 ISL	11.51	11.50	33.550	25.557	244.2	0.295	3.83	62.0	14.6	1.41	15.1	0.06	0.10	0.11	100	
109	11.07	11.06	33.625	25.695	231.2	0.317	3.48	55.9	16.8	1.56	17.5	0.02	0.05	0.08	110	211
125	10.60	10.59	33.659	25.805	221.1	0.353	3.38	53.7	18.9	1.66	19.2	0.02	0.04	0.08	126	210
145	10.50	10.48	33.833	25.958	207.0	0.396	2.63	41.8	22.9	1.89	22.2	0.01	0.01	0.06	146	209
150 ISL	10.27	10.25	33.831	25.997	203.4	0.406	2.70	42.7	23.5	1.89	22.7	0.01	0.01	0.06	151	
170	9.27	9.25	33.800	26.139	190.0	0.445	3.14	48.5	25.7	1.91	24.3	0.01	0.01	0.04	171	208
199	8.83	8.81	33.939	26.318	173.4	0.498	2.71	41.5	31.0	2.07	27.1	0.00	0.01	0.04	200	207
200 ISL	8.81	8.79	33.943	26.324	172.9	0.500	2.71	41.5	31.2	2.07	27.2	0.00			201	
232	8.27	8.25	34.021	26.469	159.6	0.553	2.64	39.9	36.3	2.14	28.7	0.00			233	206
250 ISL	7.99	7.96	34.035	26.521	154.7	0.581	2.48	37.3	39.5	2.22	29.9	0.00			251	
269	7.73	7.70	34.039	26.563	151.0	0.610	2.28	34.1	42.7	2.31	31.2	0.00			271	205
300 ISL	7.36	7.33	34.044	26.620	145.9	0.656	2.04	30.2	47.0	2.44	32.8	0.00			302	
318	7.21	7.18	34.054	26.649	143.3	0.682	1.88	27.7	49.3	2.51	33.6	0.00			320	204
380	7.28	7.24	34.204	26.758	134.1	0.768	1.00	14.8	56.5	2.81	35.3	0.00			382	203
400 ISL	7.14	7.10	34.221	26.791	131.2	0.795	0.84	12.4	60.0	2.89	35.9	0.00			403	
442	6.75	6.71	34.237	26.858	125.3	0.849	0.61	8.9	67.9	3.02	37.2	0.00			445	202
500 ISL	6.26	6.22	34.272	26.950	116.9	0.919	0.42	6.1	77.1	3.13	38.8	0.01			503	
518	6.11	6.06	34.284	26.979	114.2	0.940	0.36	5.2	79.9	3.17	39.3	0.01			522	201

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LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 43.4 N	121 33.1 W	14/02/03	2245 UTC	926 m	320 18 kn	290 05 05	2	1016.1 mb	14.7 C	12.4 C	14m	8/8	CB

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.40	14.40	32.995	24.555	337.1	0.000	5.93	101.7	0.4	0.44	0.4	0.02	0.58	0.11	0	
2	14.40	14.40	32.995	24.555	337.2	0.007	5.93	101.7	0.4	0.44	0.4	0.02	0.58	0.11	2	220
10	14.40	14.40	32.999	24.559	337.1	0.034	5.93	101.7	0.4	0.43	0.3	0.02	0.58	0.11	10	219
20	14.40	14.40	32.995	24.556	337.6	0.067	5.92	101.6	0.4	0.43	0.3	0.02	0.58	0.12	20	218
30	14.39	14.39	32.995	24.558	337.7	0.101	5.92	101.5	0.3	0.43	0.3	0.01	0.59	0.14	30	217
40	14.38	14.37	32.995	24.561	337.8	0.135	5.90	101.2	0.1	0.43	0.3	0.02	0.56	0.13	40	216
50	13.96	13.95	33.028	24.674	327.2	0.168	5.80	98.6	1.0	0.52	1.6	0.04	0.54	0.20	50	215
60	12.62	12.61	33.073	24.977	298.5	0.200	5.45	90.1	3.8	0.84	6.1	0.04	0.38	0.24	60	214
70	11.59	11.58	33.084	25.179	279.4	0.228	5.25	85.0	6.4	1.03	9.4	0.02	0.23	0.18	70	213
75 ISL	11.14	11.13	33.128	25.295	268.4	0.242	5.07	81.3	8.4	1.16	11.6	0.01	0.19	0.15	75	
85	10.40	10.39	33.250	25.520	247.2	0.268	4.67	73.7	12.6	1.40	15.8	0.01	0.14	0.11	85	212
100	9.75	9.74	33.428	25.768	223.8	0.303	4.21	65.6	17.1	1.59	19.4	0.01	0.05	0.05	100	211
120	9.33	9.32	33.718	26.064	196.1	0.345	3.37	52.1	23.3	1.84	23.5	0.01	0.01	0.03	121	210
125 ISL	9.29	9.28	33.751	26.096	193.1	0.355	3.29	50.8	23.9	1.86	23.8	0.01	0.01	0.03	126	
140	9.23	9.21	33.817	26.158	187.6	0.383	3.14	48.5	25.1	1.90	24.3	0.01	0.00	0.03	141	209
150 ISL	9.13	9.11	33.883	26.226	181.3	0.402	2.94	45.3	27.1	1.96	25.3	0.01	0.00	0.03	151	
169	8.92	8.90	33.996	26.348	170.0	0.435	2.56	39.3	31.0	2.08	27.2	0.01	0.00	0.03	170	208
199	8.76	8.74	34.058	26.422	163.6	0.485	2.29	35.0	33.9	2.20	28.5	0.00	0.00	0.02	200	207
200 ISL	8.76	8.74	34.061	26.424	163.4	0.487	2.28	34.9	34.0	2.21	28.5	0.00			201	
230	8.65	8.63	34.132	26.498	157.0	0.535	1.85	28.2	37.8	2.36	29.8	0.01			231	206
250 ISL	8.50	8.47	34.149	26.534	153.8	0.566	1.71	26.0	39.9	2.42	30.6	0.01			251	
269	8.32	8.29	34.159	26.570	150.7	0.595	1.60	24.2	42.1	2.48	31.4	0.00			271	205
300 ISL	8.01	7.98	34.206	26.654	143.2	0.641	1.21	18.2	47.7	2.65	33.0	0.00			302	
318	7.81	7.78	34.231	26.703	138.7	0.666	1.00	15.0	51.2	2.74	33.9	0.00			320	204
379	7.01	6.97	34.219	26.807	129.2	0.748	0.83	12.2	60.1	2.88	36.2	0.00			381	203
400 ISL	6.81	6.77	34.215	26.832	127.1	0.775	0.78	11.4	62.6	2.92	36.9	0.00			403	
440	6.51	6.47	34.215	26.872	123.6	0.825	0.69	10.0	66.8	2.99	38.1	0.00			443	202
500 ISL	6.30	6.25	34.258	26.934	118.4	0.897	0.49	7.1	72.6	3.08	39.1	0.00			503	
511	6.26	6.21	34.266	26.945	117.5	0.910	0.45	6.5	73.7	3.10	39.3	0.00			515	201

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LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 23.3 N	122 15.9 W	14/02/03	1719 UTC	3994 m	320 17 kn	320 06 05	2	1016.7 mb	14.9 C	13.3 C	15m	8/8	CB

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.14	14.14	33.062	24.661	327.0	0.000	6.01	102.6	1.1	0.43	0.1	0.01	1.71	0.37	0	
2 A	14.14	14.14	33.062	24.661	327.1	0.007	6.01	102.6	1.1	0.43	0.1	0.01	1.71	0.37	2	221
9 A	14.14	14.14	33.067	24.666	326.9	0.029	6.01	102.6	1.1	0.42	0.1	0.01	0.93	0.23	9	220
10 ISL	14.14	14.14	33.067	24.666	326.9	0.033	6.01	102.6	1.1	0.42	0.1	0.01	0.93	0.23	10	
19 A	14.13	14.13	33.062	24.664	327.3	0.062	6.01	102.6	1.0	0.42	0.1	0.01	0.97	0.25	19	219
20 ISL	14.13	14.13	33.062	24.664	327.3	0.065	6.01	102.6	1.0	0.42	0.1	0.01	0.94	0.25	20	
30 A	14.12	14.12	33.063	24.667	327.3	0.098	6.01	102.5	1.2	0.42	0.2	0.01	0.63	0.28	30	218
42 A	13.35	13.34	33.104	24.856	309.6	0.136	5.54	93.1	3.0	0.63	3.3	0.06	0.44	0.31	42	217
50	12.20	12.19	33.165	25.128	283.8	0.160	5.24	86.0	6.6	0.97	8.5	0.05	0.25	0.20	50	216
57 A	11.42	11.41	33.219	25.315	266.2	0.179	4.90	79.1	9.5	1.18	12.0	0.03	0.17	0.16	57	215
65	11.11	11.10	33.251	25.396	258.6	0.200	4.75	76.2	10.9	1.27	13.4	0.02	0.13	0.12	65	214
70	10.84	10.83	33.255	25.447	253.8	0.213	4.72	75.2	11.6	1.33	14.4	0.02	0.05	0.05	70	213
75 ISL	10.57	10.56	33.287	25.519	247.1	0.226	4.61	73.1	12.8	1.40	15.6	0.02	0.04	0.05	75	
85	10.07	10.06	33.382	25.679	232.0	0.250	4.34	68.1	15.7	1.53	18.1	0.02	0.02	0.04	85	212
100	9.47	9.46	33.519	25.885	212.6	0.283	4.01	62.1	19.7	1.68	20.8	0.01	0.01	0.03	100	211
120	9.09	9.08	33.745	26.124	190.4	0.323	3.31	50.9	25.0	1.88	24.0	0.01	0.00	0.04	121	210
125 ISL	9.11	9.10	33.800	26.163	186.7	0.333	3.15	48.5	26.1	1.93	24.6	0.01	0.00	0.04	126	
140	9.16	9.14	33.930	26.258	178.1	0.360	2.73	42.1	29.2	2.05	26.2	0.01	0.01	0.04	141	209
150 ISL	9.14	9.12	33.983	26.302	174.0	0.378	2.50	38.6	30.8	2.12	27.0	0.01	0.01	0.04	151	
169	9.11	9.09	34.058	26.366	168.4	0.410	2.15	33.1	33.5	2.23	28.2	0.01	0.00	0.03	170	208
199	8.79	8.77	34.111	26.459	160.1	0.459	1.86	28.5	37.7	2.36	29.9	0.01	0.00	0.00	200	207
200 ISL	8.78	8.76	34.112	26.461	159.9	0.461	1.85	28.3	37.9	2.36	30.0	0.01			201	
230	8.35	8.33	34.137	26.547	152.1	0.508	1.70	25.8	42.3	2.48	31.4	0.01			231	206
250 ISL	8.16	8.13	34.149	26.586	148.7	0.538	1.56	23.6	44.4	2.54	32.2	0.01			251	
269	8.00	7.97	34.159	26.618	146.0	0.566	1.42	21.4	46.3	2.60	32.9	0.01			271	205
300 ISL	7.70	7.67	34.176	26.675	140.9	0.610	1.27	19.0	50.2	2.69	33.8	0.01			302	
319	7.51	7.48	34.184	26.709	137.9	0.637	1.19	17.7	52.9	2.74	34.4	0.01			321	204
378	6.85	6.81	34.189	26.805	129.3	0.716	0.90	13.2	61.7	2.91	36.8	0.01			380	203
400 ISL	6.76	6.72	34.208	26.833	126.9	0.744	0.78	11.4	64.0	2.96	37.3	0.01			403	
437	6.62	6.58	34.238	26.875	123.3	0.790	0.61	8.9	68.0	3.04	38.0	0.01			440	202
500 ISL	5.91	5.87	34.227	26.959	115.6	0.865	0.48	6.9	78.1	3.15	40.2	0.01			503	
519	5.69	5.65	34.225	26.984	113.2	0.887	0.44	6.3	81.1	3.18	40.9	0.01			523	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 77 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 3.6 N	122 56.2 W	14/02/03	0801 UTC	4231 m	310 15 kn			1016.1 mb	14.5 C	12.5 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.94	14.94	32.756	24.256	365.6	0.000	5.89	102.0	0.2	0.42	0.0	0.00	0.22	0.06	0	
1	14.94	14.94	32.756	24.256	365.6	0.004	5.89	102.0	0.2	0.42	0.0	0.00	0.22	0.06	1	220
10 ISL	14.94	14.94	32.756	24.256	365.9	0.037	5.90	102.2	0.1	0.41	0.0	0.00	0.21	0.05	10	
15	14.94	14.94	32.756	24.257	366.0	0.055	5.90	102.2	0.1	0.41	0.0	0.00	0.21	0.05	15	219
20 ISL	14.94	14.94	32.756	24.257	366.2	0.073	5.89	102.0	0.1	0.41	0.0	0.00	0.21	0.05	20	
30	14.94	14.94	32.755	24.256	366.5	0.110	5.88	101.8	0.2	0.41	0.0	0.00	0.21	0.06	30	218
45	14.92	14.91	32.767	24.270	365.6	0.165	5.95	103.0	0.4	0.41	0.0	0.00	0.26	0.08	45	217
50 ISL	14.65	14.64	32.828	24.375	355.7	0.183	5.95	102.5	0.4	0.42	0.1	0.02	0.47	0.22	50	
55	14.31	14.30	32.900	24.503	343.7	0.200	5.96	102.0	0.5	0.45	0.2	0.05	0.64	0.34	55	216
65	13.57	13.56	33.023	24.750	320.3	0.233	5.82	98.2	1.1	0.56	1.5	0.21	0.45	0.28	65	215
75	11.59	11.58	32.786	24.948	301.5	0.265	5.80	93.7	3.5	0.81	5.3	0.03	0.19	0.17	75	214
84	11.06	11.05	32.850	25.093	287.8	0.291	5.60	89.5	5.4	0.94	7.7	0.02	0.12	0.12	84	213
95	10.61	10.60	33.034	25.316	266.8	0.322	5.23	82.8	8.4	1.14	11.5	0.02	0.09	0.09	95	212
100 ISL	10.43	10.42	33.098	25.397	259.2	0.335	5.09	80.3	9.6	1.21	12.8	0.02	0.07	0.07	100	
109	10.11	10.10	33.213	25.541	245.7	0.357	4.84	75.9	12.1	1.34	15.1	0.02	0.04	0.04	109	211
124	9.56	9.55	33.466	25.830	218.4	0.392	4.25	65.9	17.7	1.60	19.5	0.02	0.01	0.02	125	210
125 ISL	9.53	9.52	33.476	25.842	217.2	0.394	4.23	65.6	17.9	1.61	19.6	0.02	0.01	0.02	126	
143	9.15	9.13	33.615	26.013	201.4	0.432	3.92	60.3	21.2	1.70	21.5	0.02	0.01	0.02	144	209
150 ISL	9.06	9.04	33.677	26.076	195.5	0.446	3.74	57.5	22.7	1.76	22.5	0.02	0.01	0.02	151	
168	8.89	8.87	33.827	26.220	182.1	0.480	3.24	49.6	26.9	1.91	25.0	0.01	0.00	0.02	169	208
200	8.58	8.56	34.002	26.406	165.0	0.535	2.56	39.0	33.9	2.14	28.4	0.01	0.00	0.01	201	207
231	8.24	8.22	34.062	26.505	156.1	0.585	2.08	31.4	39.2	2.33	30.6	0.01			232	206
250 ISL	7.95	7.92	34.072	26.556	151.4	0.614	1.95	29.3	42.4	2.40	31.6	0.01			251	
269	7.65	7.62	34.075	26.603	147.2	0.643	1.86	27.7	45.6	2.46	32.6	0.01			271	205
300 ISL	7.21	7.18	34.086	26.674	140.7	0.687	1.61	23.8	51.1	2.59	34.3	0.01			302	
319	6.98	6.95	34.093	26.711	137.3	0.714	1.45	21.3	54.3	2.67	35.2	0.01			321	204
379	6.48	6.45	34.123	26.802	129.2	0.794	1.07	15.5	63.0	2.86	37.4	0.01			381	203
400 ISL	6.37	6.33	34.138	26.829	126.9	0.821	0.95	13.8	65.4	2.92	37.9	0.01			403	
443	6.16	6.12	34.170	26.882	122.4	0.874	0.74	10.7	70.3	3.02	38.9	0.01			446	202
500 ISL	5.72	5.68	34.204	26.964	114.9	0.942	0.51	7.3	79.4	3.13	40.5	0.01			503	
515	5.61	5.57	34.213	26.985	113.0	0.959	0.45	6.4	81.8	3.16	40.9	0.01			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 77 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 43.5 N	123 38.4 W	14/02/03	0131 UTC	4179 m	320 20 kn	280 05 07	1	1012.9 mb	14.9 C	12.9 C		7/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.63	14.63	32.851	24.396	352.3	0.000	5.95	102.5	0.6	0.41	0.0	0.00	0.25	0.05	0	
2	14.63	14.63	32.851	24.396	352.4	0.007	5.95	102.5	0.6	0.41	0.0	0.00	0.25	0.05	2	220
10 ISL	14.62	14.62	32.852	24.399	352.3	0.035	5.94	102.3	0.7	0.41	0.0	0.00	0.26	0.06	10	
11	14.62	14.62	32.852	24.399	352.3	0.039	5.94	102.3	0.7	0.41	0.0	0.00	0.26	0.06	11	219
20 ISL	14.53	14.53	32.864	24.427	349.9	0.070	5.98	102.8	0.6	0.41	0.0	0.00	0.38	0.11	20	
21	14.51	14.51	32.866	24.433	349.4	0.074	5.99	102.9	0.6	0.41	0.0	0.00	0.41	0.12	21	218
30	14.22	14.22	32.902	24.522	341.1	0.105	6.06	103.5	0.7	0.43	0.1	0.01	0.80	0.24	30	217
41	13.43	13.42	32.869	24.659	328.4	0.142	6.06	101.8	1.5	0.55	1.4	0.04	0.97	0.37	41	216
50	12.71	12.70	33.073	24.959	300.0	0.170	5.59	92.6	3.5	0.77	5.0	0.05	0.42	0.29	50	215
60	10.73	10.72	32.854	25.154	281.5	0.199	5.57	88.3	6.8	1.04	9.2	0.02	0.18	0.13	60	214
70	10.95	10.94	33.269	25.439	254.7	0.226	4.66	74.5	11.4	1.35	14.8	0.02	0.10	0.09	70	213
75 ISL	10.74	10.73	33.336	25.528	246.3	0.238	4.60	73.2	12.6	1.42	16.0	0.02	0.07	0.07	75	
85	10.15	10.14	33.367	25.654	234.4	0.262	4.48	70.4	14.2	1.48	17.3	0.02	0.04	0.05	85	212
100	9.77	9.76	33.473	25.800	220.8	0.297	4.18	65.2	17.2	1.62	19.7	0.02	0.02	0.04	100	211
119	9.22	9.21	33.675	26.048	197.5	0.336	3.55	54.7	22.9	1.83	23.3	0.01	0.01	0.02	120	210
125 ISL	9.14	9.13	33.728	26.102	192.5	0.348	3.37	51.9	24.4	1.89	24.2	0.01	0.01	0.02	126	
139	9.03	9.02	33.834	26.203	183.2	0.374	2.99	46.0	27.4	2.00	25.9	0.01	0.00	0.02	140	209
150 ISL	8.90	8.88	33.904	26.279	176.2	0.394	2.75	42.2	29.6	2.07	27.1	0.01	0.00	0.02	151	
170	8.65	8.63	33.996	26.390	166.0	0.428	2.44	37.2	33.1	2.17	28.8	0.01	0.00	0.02	171	208
199	8.32	8.30	34.039	26.474	158.4	0.475	2.32	35.1	36.8	2.24	29.9	0.01	0.00	0.01	200	207
200 ISL	8.30	8.28	34.039	26.478	158.1	0.477	2.32	35.1	36.9	2.24	29.9	0.01			201	
229	7.86	7.84	34.039	26.543	152.2	0.522	2.28	34.2	40.8	2.31	31.1	0.01			230	206
250 ISL	7.61	7.59	34.061	26.597	147.4	0.553	2.01	29.9	44.5	2.43	32.4	0.01			251	
268	7.43	7.40	34.083	26.640	143.5	0.580	1.74	25.8	47.7	2.54	33.6	0.01			270	205
300 ISL	7.16	7.13	34.103	26.694	138.7	0.625	1.49	22.0	52.0	2.65	34.8	0.01			302	
317	7.02	6.99	34.109	26.719	136.6	0.648	1.40	20.6	54.1	2.70	35.3	0.01			319	204
378	6.34	6.31	34.110	26.810	128.3	0.729	1.06	15.3	63.6	2.88	38.0	0.01			380	203
400 ISL	6.10	6.06	34.114	26.844	125.2	0.757	0.95	13.7	67.7	2.94	38.9	0.01			403	
438	5.75	5.71	34.130	26.901	120.0	0.803	0.78	11.1	74.7	3.04	40.2	0.01			441	202
500 ISL	5.46	5.42	34.197	26.990	112.2	0.875	0.49	6.9	83.2	3.17	41.5	0.01			503	
516	5.39	5.35	34.215	27.013	110.1	0.893	0.42	5.9	85.4	3.20	41.8	0.01			520	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 23.4 N	124 19.4 W	13/02/03	1906 UTC	4430 m	290 14 kn	300 03 06	1	1011.1 mb	16.1 C	15.1 C	20m	7/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.76	14.76	32.862	24.376	354.2	0.000	5.93	102.4	0.5	0.42	0.0	0.00	0.21	0.05	0	
2 A	14.76	14.76	32.862	24.376	354.2	0.007	5.93	102.4	0.5	0.42	0.0	0.00	0.21	0.05	2	222
10 ISL	14.72	14.72	32.866	24.388	353.3	0.035	5.95	102.7	0.4	0.41	0.0	0.00	0.22	0.04	10	
13 A	14.70	14.70	32.871	24.396	352.6	0.046	5.95	102.6	0.4	0.41	0.0	0.00	0.23	0.04	13	221
19	14.64	14.64	32.894	24.427	349.9	0.067	5.93	102.2	0.4	0.41	0.0	0.00	0.25	0.05	19	220
20 ISL	14.64	14.64	32.896	24.429	349.7	0.071	5.95	102.5	0.4	0.41	0.0	0.00	0.28	0.07	20	
26	14.54	14.54	32.937 D	24.482	344.9	0.091									26	219
30 ISL	14.33	14.33	33.032	24.599	333.8	0.105	6.07	104.0	0.6	0.43	0.0	0.01	0.67	0.27	30	
33	14.15	14.15	33.103	24.692	325.0	0.115	6.09	104.0	0.7	0.44	0.0	0.01	0.82	0.34	33	218
41 A	13.84	13.83	33.143	24.787	316.2	0.140	5.93	100.7	1.4	0.52	0.8	0.10	1.07	0.40	41	217
47	13.16	13.15	33.165	24.942	301.6	0.159	5.55	92.9	3.2	0.74	4.3	0.07	0.51	0.28	47	216
50 ISL	12.63	12.62	33.163	25.044	291.9	0.168	5.35	88.6	4.8	0.89	6.7	0.06	0.37	0.24	50	
54 A	11.92	11.91	33.163	25.179	279.0	0.179	5.10	83.2	7.0	1.08	9.9	0.05	0.26	0.20	54	215
65	10.90	10.89	33.230	25.417	256.6	0.209	4.77	76.1	10.8	1.31	14.1	0.05	0.16	0.12	65	214
75 ISL	10.41	10.40	33.335	25.584	240.9	0.234	4.50	71.1	13.6	1.47	16.9	0.05	0.10	0.07	75	
76 A	10.37	10.36	33.347	25.600	239.3	0.236	4.47	70.6	13.9	1.48	17.1	0.05	0.09	0.07	76	213
88	9.85	9.84	33.506	25.813	219.4	0.264	3.98	62.2	18.1	1.66	20.4	0.05	0.03	0.04	88	212
100	9.64	9.63	33.612	25.930	208.4	0.289	3.64	56.6	20.7	1.77	22.2	0.05	0.02	0.04	100	211
120	9.00	8.99	33.752	26.143	188.5	0.329	3.34	51.3	25.6	1.91	24.9	0.05	0.00	0.04	121	210
125 ISL	8.89	8.88	33.776	26.179	185.1	0.338	3.31	50.7	26.4	1.93	25.3	0.05	0.00	0.04	126	
140	8.65	8.64	33.843	26.270	176.8	0.365	3.21	48.9	28.7	1.97	26.2	0.05	0.00	0.03	141	209
150 ISL	8.60	8.58	33.908	26.328	171.4	0.383	2.97	45.2	30.6	2.03	27.1	0.05	0.00	0.03	151	
168	8.56	8.54	34.014	26.418	163.3	0.413	2.50	38.1	34.0	2.15	28.8	0.05	0.00	0.02	169	208
198	8.33	8.31	34.069	26.497	156.3	0.461	2.08	31.5	38.3	2.32	30.8	0.05	0.00	0.02	199	207
200 ISL	8.30	8.28	34.071	26.503	155.7	0.464	2.07	31.3	38.6	2.33	30.9	0.05			201	
229	7.81	7.79	34.077	26.580	148.7	0.508	1.95	29.2	42.5	2.42	32.2	0.04			230	206
250 ISL	7.42	7.40	34.063	26.626	144.5	0.539	1.90	28.2	46.4	2.48	33.3	0.04			251	
268	7.12	7.09	34.055	26.661	141.3	0.565	1.83	27.0	49.9	2.53	34.3	0.04			270	205
300 ISL	6.86	6.83	34.093	26.727	135.4	0.609	1.46	21.4	55.3	2.69	35.9	0.04			302	
317	6.76	6.73	34.117	26.760	132.5	0.632	1.25	18.3	57.9	2.77	36.7	0.04			319	204
377	6.20	6.17	34.112	26.830	126.3	0.709	1.03	14.9	66.3	2.91	38.9	0.04			379	203
400 ISL	6.12	6.08	34.137	26.860	123.7	0.738	0.89	12.8	68.8	2.97	39.4	0.04			403	
437	6.03	5.99	34.185	26.910	119.5	0.783	0.65	9.3	72.7	3.06	40.1	0.04			440	202
500 ISL	5.66	5.62	34.235	26.996	111.8	0.856	0.42	6.0	81.0	3.16	41.6	0.04			503	
515	5.57	5.53	34.247	27.016	110.0	0.873	0.37	5.3	83.0	3.19	41.9	0.04			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 27.0 N	120 32.7 W	11/02/03	1142 UTC	83 m	330 27 kn			1011.5 mb	13.1 C	10.9 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.60	14.60	33.389	24.817	312.2	0.000	5.90	101.9	3.0	0.42	0.4	0.04	0.77	0.25	0	
1	14.60	14.60	33.389	24.817	312.2	0.003	5.90	101.9	3.0	0.42	0.4	0.04	0.77	0.25	1	209
5	14.60	14.60	33.395	24.822	311.9	0.016	5.88	101.5	3.1	0.42	0.4	0.04	0.79	0.23	5	208
10	14.60	14.60	33.392	24.819	312.2	0.031	5.92	102.2	3.2	0.42	0.4	0.04	0.78	0.25	10	207
20	14.46	14.46	33.414	24.867	308.1	0.062	5.87	101.1	3.6	0.45	0.8	0.04	0.86	0.09	20	206
30 ISL	14.43	14.43	33.414	24.873	307.7	0.093	5.83	100.3	3.8	0.47	1.0	0.05	0.69	0.25	30	
31	14.43	14.43	33.414	24.873	307.8	0.096	5.83	100.3	3.8	0.47	1.0	0.05	0.66	0.27	31	205
41	13.94	13.93	33.416	24.978	298.1	0.126	5.44	92.7	5.7	0.66	3.6	0.18	0.28	0.22	41	204
50	12.49	12.48	33.423	25.273	270.1	0.152	4.57	75.5	9.7	1.06	10.0	0.12	0.21	0.24	50	203
60	12.55	12.54	33.424	25.262	271.4	0.179	4.65	77.0	9.6	1.05	9.8	0.14	0.20	0.23	60	202
73	12.34	12.33	33.436	25.312	266.9	0.214	4.56	75.1	10.4	1.10	10.6	0.14	0.21	0.26	73	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 18.4 N	120 47.9 W	11/02/03	1514 UTC	747 m	330 37 kn	110 10 05	2	1017.9 mb	12.9 C	11.6 C		8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	13.85	13.85	33.330	24.928	301.6	0.000	5.92	100.6	4.6	0.49	1.4	0.04	1.05	0.51	0	
2	13.85	13.85	33.330	24.928	301.6	0.006	5.92	100.6	4.6	0.49	1.4	0.04	1.05	0.51	2	220
10 ISL	13.85	13.85	33.334	24.932	301.5	0.030	5.93	100.8	4.5	0.49	1.4	0.04	1.08	0.43	10	
12	13.85	13.85	33.335	24.933	301.5	0.036	5.93	100.8	4.5	0.49	1.4	0.04	1.08	0.41	12	219
20 ISL	13.84	13.84	33.337	24.936	301.4	0.060	5.86	99.6	4.9	0.50	1.6	0.05	1.03	0.46	20	
21	13.84	13.84	33.337	24.937	301.4	0.063	5.85	99.4	4.9	0.50	1.6	0.05	1.02	0.47	21	218
30	13.23	13.23	33.401	25.110	285.1	0.090	5.31	89.1	7.1	0.75	5.3	0.15	0.73	0.45	30	217
42	11.63	11.62	33.487	25.485	249.7	0.122	4.07	66.1	12.2	1.29	13.8	0.04	0.26	0.20	42	216
50 ISL	11.21	11.20	33.571	25.627	236.4	0.141	3.71	59.7	15.0	1.46	15.9	0.02	0.10	0.11	50	
51	11.18	11.17	33.580	25.639	235.2	0.144	3.68	59.2	15.3	1.47	16.0	0.02	0.09	0.10	51	215
59	11.08	11.07	33.613	25.683	231.2	0.162	3.55	57.0	16.1	1.52	17.3	0.02	0.06	0.08	59	214
72	10.85	10.84	33.703	25.794	220.9	0.192	3.26	52.1	18.4	1.65	19.1	0.02	0.03	0.06	72	213
75 ISL	10.81	10.80	33.720	25.815	219.1	0.198	3.18	50.8	19.0	1.68	19.5	0.02	0.03	0.06	75	
86	10.66	10.65	33.781	25.889	212.2	0.222	2.91	46.4	21.1	1.78	20.9	0.01	0.02	0.07	86	212
100 ISL	10.49	10.48	33.867	25.986	203.3	0.251	2.68	42.6	23.8	1.92	22.8	0.01	0.01	0.06	101	
103	10.46	10.45	33.883	26.004	201.7	0.257	2.64	41.9	24.3	1.95	23.2	0.01	0.01	0.06	104	211
120	10.35	10.34	33.924	26.055	197.2	0.291	2.53	40.1	25.4	2.01	24.0	0.01	0.01	0.05	121	210
125 ISL	10.21	10.20	33.923	26.078	195.1	0.301	2.56	40.4	25.7	2.01	24.2	0.01	0.01	0.05	126	
144	9.60	9.58	33.898	26.161	187.4	0.337	2.68	41.7	26.8	1.99	25.0	0.02	0.01	0.04	145	209
150 ISL	9.43	9.41	33.883	26.177	186.0	0.348	2.84	44.1	26.8	1.97	25.1	0.02	0.01	0.04	151	
169	9.02	9.00	33.854	26.221	182.1	0.383	3.26	50.1	27.2	1.92	25.3	0.03	0.01	0.04	170	208
194	8.83	8.81	33.930	26.311	174.0	0.428	3.05	46.7	29.8	1.98	26.4	0.02	0.00	0.03	195	207
200 ISL	8.76	8.74	33.945	26.333	172.0	0.438	3.02	46.2	30.5	1.99	26.6	0.02			201	
238	8.30	8.28	34.014	26.459	160.6	0.501	2.81	42.5	35.0	2.06	28.1	0.02			239	206
250 ISL	8.19	8.16	34.022	26.482	158.6	0.521	2.71	40.9	36.3	2.10	28.7	0.02			252	
267	8.03	8.00	34.029	26.511	156.0	0.547	2.56	38.5	38.5	2.18	29.7	0.01			269	205
300 ISL	7.49	7.46	34.040	26.598	148.0	0.598	2.21	32.8	44.8	2.36	32.0	0.01			302	
319	7.17	7.14	34.047	26.649	143.3	0.625	2.00	29.5	48.7	2.46	33.3	0.01			321	204
375	6.65	6.62	34.071	26.739	135.3	0.703	1.51	22.0	56.9	2.68	36.1	0.01			377	203
400 ISL	6.49	6.45	34.097	26.781	131.6	0.737	1.26	18.3	60.7	2.78	37.2	0.01			403	
437	6.32	6.28	34.145	26.841	126.2	0.784	0.90	13.0	66.0	2.92	38.5	0.00			440	202
500 ISL	6.24	6.20	34.243	26.930	118.8	0.861	0.53	7.7	72.6	3.08	39.4	0.01			503	
513	6.22	6.17	34.263	26.948	117.2	0.877	0.45	6.5	74.0	3.11	39.6	0.01			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 8.5 N	121 9.0 W	12/02/03	0758 UTC	2182 m	120 25 kn			1009.5 mb	14.5 C	14.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.50	14.50	32.962	24.509	341.5	0.000	5.93	101.9	1.4	0.56	0.1	0.01	0.32	0.09	0	
1	14.50	14.50	32.962	24.509	341.6	0.003	5.93	101.9	1.4	0.56	0.1	0.01	0.32	0.09	1	220
10 ISL	14.50	14.50	32.963	24.510	341.7	0.034	5.95	102.3	1.3	0.55	0.0	0.01	0.31	0.08	10	
15	14.50	14.50	32.963	24.510	341.9	0.051	5.96	102.4	1.2	0.55	0.0	0.01	0.31	0.08	15	219
20 ISL	14.50	14.50	32.963	24.510	342.0	0.068	5.95	102.3	1.2	0.55	0.0	0.01	0.31	0.08	20	
30 ISL	14.50	14.50	32.963	24.510	342.3	0.103	5.92	101.7	1.1	0.55	0.0	0.00	0.31	0.09	30	
31	14.50	14.50	32.963	24.510	342.3	0.106	5.92	101.7	1.1	0.55	0.0	0.00	0.31	0.09	31	218
45	14.50	14.49	32.964	24.512	342.6	0.154	5.93	101.9	0.9	0.55	0.0	0.00	0.32	0.10	45	217
50 ISL	14.09	14.08	32.962	24.596	334.6	0.171	5.88	100.2	1.3	0.60	0.7	0.08	0.43	0.20	50	
56	13.42	13.41	32.949	24.723	322.7	0.191	5.82	97.8	2.0	0.68	1.8	0.15	0.53	0.31	56	216
65	12.31	12.30	32.887	24.892	306.7	0.219	5.75	94.4	3.3	0.83	4.1	0.08	0.38	0.31	65	215
75	11.43	11.42	32.942	25.098	287.2	0.249	5.45	87.8	6.1	1.07	8.3	0.02	0.20	0.20	75	214
86	10.69	10.68	33.103	25.355	262.9	0.279	5.05	80.2	9.9	1.31	12.9	0.01	0.11	0.08	86	213
96	10.31	10.30	33.192	25.490	250.2	0.305	4.82	75.9	11.9	1.43	15.0	0.01	0.07	0.05	96	212
100 ISL	10.22	10.21	33.230	25.535	246.0	0.314	4.73	74.4	12.6	1.47	15.7	0.01	0.06	0.05	100	
110	10.02	10.01	33.329	25.646	235.6	0.339	4.52	70.8	14.3	1.55	17.4	0.01	0.05	0.05	111	211
125 ISL	9.45	9.44	33.477	25.856	215.9	0.372	4.18	64.7	18.1	1.69	20.0	0.01	0.01	0.03	126	
127	9.37	9.36	33.499	25.886	213.1	0.377	4.13	63.8	18.7	1.71	20.4	0.01	0.01	0.03	128	210
145	9.03	9.01	33.754	26.141	189.2	0.413	3.39	52.1	24.5	1.92	24.1	0.01	0.00	0.02	146	209
150 ISL	8.99	8.97	33.803	26.185	185.1	0.422	3.21	49.3	25.8	1.97	24.9	0.01	0.00	0.02	151	
170	8.87	8.85	33.940	26.312	173.4	0.458	2.67	40.9	30.0	2.12	27.2	0.00	0.00	0.03	171	208
200 ISL	8.58	8.56	34.017	26.418	163.9	0.509	2.42	36.9	33.6	2.22	28.8	0.00	0.00	0.03	201	
202	8.56	8.54	34.019	26.422	163.5	0.512	2.41	36.7	33.8	2.22	28.9	0.00	0.00	0.03	203	207
229	8.31	8.29	34.051	26.486	157.9	0.555	2.21	33.5	36.9	2.31	30.2	0.00			230	206
250 ISL	7.95	7.92	34.051	26.540	153.0	0.588	2.18	32.7	39.9	2.35	31.0	0.00			251	
269	7.59	7.56	34.046	26.589	148.5	0.617	2.17	32.3	42.9	2.39	31.8	0.00			271	205
300 ISL	7.15	7.12	34.049	26.653	142.6	0.662	1.96	28.9	48.1	2.50	33.3	0.00			302	
319	6.93	6.90	34.054	26.687	139.5	0.689	1.79	26.3	51.2	2.58	34.3	0.00			321	204
381	6.48	6.45	34.085	26.773	132.0	0.773	1.28	18.6	59.6	2.79	37.0	0.00			383	203
400 ISL	6.40	6.36	34.107	26.801	129.6	0.798	1.11	16.1	62.1	2.86	37.6	0.00			403	
437	6.29	6.25	34.158	26.855	124.9	0.845	0.81	11.7	66.8	2.98	38.5	0.00			440	202
500 ISL	6.21	6.17	34.261	26.948	117.0	0.921	0.47	6.8	73.1	3.11	39.3	0.00			503	
511	6.20	6.15	34.279	26.964	115.7	0.934	0.41	5.9	74.2	3.13	39.4	0.00			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 49.6 N	121 48.3 W	12/02/03	1736 UTC	3612 m	150 14 kn	130 08 05	4	1004.0 mb	16.1 C	15.6 C	15m	8/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.30	14.30	32.978	24.563	336.4	0.000	6.03	103.2	0.8	0.41	0.1	0.01	0.43	0.10	0	
2 A	14.30	14.30	32.978	24.563	336.4	0.007	6.03	103.2	0.8	0.41	0.1	0.01	0.43	0.10	2	222
10 A	14.28	14.28	32.978	24.568	336.2	0.034	5.98	102.3	0.7	0.41	0.1	0.01	0.42	0.10	10	221
19 A	14.28	14.28	32.979	24.569	336.4	0.064	5.97	102.2	0.5	0.41	0.1	0.01	0.41	0.11	19	220
20 ISL	14.28	14.28	32.979	24.569	336.4	0.067	5.97	102.2	0.5	0.41	0.1	0.01	0.41	0.11	20	
30 A	14.27	14.27	32.980	24.572	336.4	0.101	5.98	102.3	0.4	0.41	0.1	0.01	0.45	0.10	30	219
41 A	14.18	14.17	32.989	24.598	334.2	0.138	5.95	101.6	0.5	0.43	0.4	0.03	0.48	0.13	41	218
50	12.21	12.20	32.937	24.949	300.8	0.166	5.69	93.2	3.0	0.75	4.7	0.14	0.44	0.29	50	217
58 A	11.33	11.32	32.933	25.109	285.8	0.190	5.53	88.9	5.1	0.92	7.7	0.05	0.27	0.27	58	216
65	11.01	11.00	32.992	25.212	276.1	0.209	5.38	85.9	6.6	1.04	9.9	0.03	0.19	0.23	65	215
70	10.71	10.70	33.046	25.307	267.1	0.223	5.23	83.0	8.1	1.14	11.7	0.02	0.17	0.13	70	214
75 ISL	10.52	10.51	33.128	25.404	258.0	0.236	5.03	79.6	9.8	1.25	13.5	0.01	0.14	0.11	75	
85	10.23	10.22	33.296	25.585	241.0	0.261	4.61	72.5	13.1	1.44	16.8	0.01	0.09	0.07	85	213
100 ISL	9.69	9.68	33.442	25.789	221.8	0.296	4.15	64.6	16.9	1.61	19.8	0.01	0.04	0.03	100	
101	9.66	9.65	33.450	25.800	220.8	0.298	4.12	64.1	17.1	1.62	19.9	0.01	0.04	0.03	101	212
120	9.35	9.34	33.643	26.002	201.9	0.338	3.58	55.4	21.2	1.78	22.6	0.00	0.01	0.03	121	211
125 ISL	9.31	9.30	33.684	26.041	198.4	0.348	3.45	53.3	22.1	1.82	23.2	0.00	0.01	0.03	126	
140	9.20	9.18	33.789	26.141	189.2	0.377	3.12	48.1	24.8	1.92	24.9	0.00	0.00	0.03	141	210
150 ISL	9.08	9.06	33.847	26.206	183.2	0.396	2.97	45.7	26.5	1.97	25.8	0.00	0.00	0.03	151	
170	8.83	8.81	33.940	26.318	172.8	0.432	2.72	41.6	29.7	2.06	27.3	0.00	0.00	0.02	171	209
199	8.53	8.51	34.027	26.433	162.4	0.480	2.35	35.8	33.9	2.20	29.4	0.00	0.00	0.03	200	208
200 ISL	8.52	8.50	34.029	26.436	162.1	0.482	2.34	35.6	34.1	2.21	29.5	0.00			201	
229	8.06	8.04	34.057	26.528	153.7	0.528	2.05	30.9	39.4	2.35	31.6	0.00			230	207
250 ISL	7.74	7.72	34.060	26.578	149.3	0.559	1.94	29.0	42.6	2.41	32.6	0.00			251	
269	7.45	7.42	34.057	26.617	145.7	0.587	1.88	27.9	45.4	2.46	33.3	0.00			271	206
300 ISL	6.98	6.95	34.058	26.683	139.6	0.632	1.76	25.8	50.6	2.56	34.6	0.00			302	
320	6.71	6.68	34.061	26.723	136.0	0.659	1.66	24.2	54.0	2.63	35.4	0.00			322	205
379	6.17	6.14	34.094	26.820	127.3	0.737	1.17	16.9	64.0	2.85	38.1	0.00			381	204
400 ISL	6.06	6.03	34.114	26.850	124.7	0.763	1.00	14.4	67.0	2.92	38.8	0.00			403	
439	5.89	5.85	34.152	26.901	120.2	0.811	0.74	10.6	72.3	3.04	40.0	0.00			442	203
500 ISL	5.54	5.50	34.192	26.976	113.5	0.882	0.54	7.7	80.4	3.14	41.2	0.00			503	
515	5.46	5.42	34.202	26.994	111.9	0.899	0.47	6.7	82.3	3.16	41.6	0.00			519	201
515	5.46	5.42	34.202	26.994	111.9	0.899	0.49	6.9	82.4	3.16	41.5	0.00			519	202

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 28.7 N	122 31.7 W	12/02/03	2346 UTC	3983 m	150 14 kn	170 07 05	1	1012.7 mb	17.5 C	16.5 C	18m	2/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.94	14.94	32.906	24.372	354.6	0.000	5.94	103.0	0.4	0.40	0.0	0.00	0.20	0.04	0	
3	14.94	14.94	32.906	24.372	354.7	0.011	5.94	103.0	0.4	0.40	0.0	0.00	0.20	0.04	3	220
10 ISL	14.91	14.91	32.904	24.377	354.4	0.035	5.92	102.6	0.1	0.40	0.0	0.00	0.20	0.05	10	
11	14.90	14.90	32.904	24.379	354.2	0.039			0.1	0.40	0.0	0.00	0.20	0.05	11	219
20	14.82	14.82	32.905	24.397	352.8	0.071	5.90	102.0	0.2	0.40	0.0	0.00	0.21	0.05	20	218
29	14.81	14.81	32.905	24.400	352.8	0.103	5.90	102.0	0.3	0.40	0.0	0.00	0.22	0.06	29	217
30 ISL	14.81	14.81	32.905	24.400	352.8	0.106	5.90	102.0	0.3	0.40	0.0	0.00	0.22	0.06	30	
40	14.80	14.79	32.906	24.403	352.8	0.141	5.90	102.0	0.1	0.40	0.0	0.00	0.25	0.06	40	216
50	14.47	14.46	32.926	24.489	344.9	0.176	5.92	101.6	0.3	0.42	0.1	0.01	0.43	0.24	50	215
60	13.09	13.08	32.909	24.758	319.4	0.209	5.85	97.6	1.7	0.60	1.9	0.12	0.47	0.35	60	214
70	12.22	12.21	32.877	24.901	305.9	0.241	5.72	93.7	3.2	0.76	4.5	0.05	0.28	0.32	70	213
75 ISL	11.68	11.67	32.886	25.009	295.7	0.256	5.62	91.0	4.3	0.85	6.2	0.04	0.21	0.25	75	
85	10.73	10.72	32.945	25.225	275.2	0.284	5.41	85.9	6.8	1.03	9.6	0.03	0.12	0.11	85	212
100	10.27	10.26	33.094	25.421	256.9	0.324	5.13	80.7	9.8	1.22	13.0	0.03	0.06	0.05	100	211
120	9.69	9.68	33.337	25.708	229.9	0.373	4.60	71.5	15.1	1.48	17.5	0.02	0.02	0.02	121	210
125 ISL	9.58	9.57	33.389	25.766	224.5	0.384	4.48	69.5	16.2	1.53	18.3	0.02	0.02	0.02	126	
140	9.30	9.28	33.536	25.927	209.5	0.417	4.09	63.1	19.3	1.65	20.6	0.02	0.01	0.02	141	209
150 ISL	9.18	9.16	33.645	26.031	199.7	0.437	3.74	57.6	21.9	1.76	22.4	0.02	0.01	0.02	151	
170	8.97	8.95	33.836	26.215	182.7	0.476	3.13	48.0	26.8	1.94	25.4	0.02	0.00	0.01	171	208
199	8.50	8.48	33.973	26.395	166.0	0.526	2.97	45.1	31.6	2.00	27.1	0.02	0.00	0.01	200	207
200 ISL	8.49	8.47	33.976	26.399	165.6	0.528	2.95	44.8	31.8	2.01	27.2	0.02			201	
229	8.18	8.16	34.045	26.501	156.4	0.574	2.22	33.5	38.4	2.29	30.8	0.02			230	206
250 ISL	7.87	7.85	34.053	26.553	151.6	0.607	2.14	32.1	41.6	2.36	31.9	0.02			251	
269	7.58	7.55	34.049	26.592	148.1	0.635	2.06	30.7	44.0	2.39	32.5	0.02			271	205
300 ISL	7.17	7.14	34.052	26.653	142.6	0.680	1.91	28.2	48.6	2.49	33.8	0.02			302	
319	6.94	6.91	34.055	26.687	139.6	0.707	1.79	26.3	51.5	2.56	34.6	0.02			321	204
378	6.39	6.36	34.083	26.783	131.0	0.787	1.27	18.4	60.9	2.79	37.4	0.02			380	203
400 ISL	6.18	6.14	34.096	26.820	127.6	0.815	1.13	16.3	64.8	2.86	38.3	0.02			403	
440	5.85	5.81	34.123	26.883	121.8	0.865	0.89	12.7	71.6	2.98	39.8	0.02			443	202
500 ISL	5.54	5.50	34.172	26.960	115.0	0.936	0.50	7.1	79.7	3.11	41.3	0.02			503	
510	5.49	5.45	34.180	26.973	113.9	0.948	0.44	6.2	81.1	3.13	41.6	0.02			513	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 9.0 N	123 13.3 W	13/02/03	0613 UTC	4239 m	220 08 kn			1005.1 mb	15.0 C	14.5 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.04	15.04	32.724	24.210	370.0	0.000	5.87	101.9	0.6	0.41	0.0	0.00	0.17	0.03	0	
2	15.04	15.04	32.724	24.210	370.1	0.007	5.87	101.8	0.6	0.41	0.0	0.00	0.17	0.03	2	220
10 ISL	15.04	15.04	32.724	24.210	370.3	0.037	5.86	101.7	0.7	0.41	0.0	0.00	0.16	0.04	10	
11	15.04	15.04	32.724	24.210	370.3	0.041	5.86	101.7	0.7	0.41	0.0	0.00	0.16	0.04	11	219
20	15.01	15.01	32.724	24.217	369.9	0.074	5.87	101.8	0.6	0.41	0.0	0.00	0.17	0.04	20	218
30	14.81	14.81	32.732	24.266	365.5	0.111	5.90	101.9	0.6	0.40	0.2	0.00	0.22	0.06	30	217
41	14.49	14.48	32.805	24.391	353.9	0.150	5.97	102.5	0.7	0.42	0.2	0.01	0.44	0.16	41	216
50 ISL	14.36	14.35	32.943	24.525	341.4	0.182	6.00	102.8	0.6	0.41	0.1	0.01	0.60	0.24	50	
51	14.35	14.34	32.958	24.539	340.2	0.185	6.00	102.8	0.6	0.41	0.1	0.01	0.61	0.24	51	215
61	14.37	14.36	33.032	24.592	335.4	0.219	5.94	101.8	0.6	0.42	0.3	0.03	0.43	0.18	61	214
70	12.70	12.69	32.799	24.749	320.4	0.248	5.88	97.2	2.3	0.66	3.2	0.09	0.27	0.26	70	213
75 ISL	12.04	12.03	32.763	24.847	311.2	0.264	5.85	95.4	3.1	0.74	4.4	0.07	0.20	0.23	75	
84	11.15	11.14	32.772	25.017	295.1	0.291	5.77	92.3	4.6	0.85	6.5	0.02	0.11	0.13	84	212
100	10.08	10.07	32.823	25.241	273.9	0.337	5.56	86.9	8.2	1.10	10.9	0.02	0.06	0.05	100	211
120	9.71	9.70	33.229	25.620	238.3	0.388	4.90	76.2	12.6	1.32	15.5	0.02	0.02	0.02	121	210
125 ISL	9.64	9.63	33.302	25.689	231.9	0.400	4.74	73.6	13.9	1.39	16.6	0.02	0.02	0.02	126	
138	9.48	9.46	33.462	25.840	217.7	0.429	4.31	66.8	17.5	1.56	19.5	0.02	0.01	0.02	139	209
150 ISL	9.30	9.28	33.597	25.975	205.1	0.455	3.90	60.2	20.8	1.70	21.8	0.02	0.01	0.02	151	
170	8.99	8.97	33.790	26.175	186.4	0.494	3.24	49.7	26.2	1.91	25.1	0.01	0.00	0.02	171	208
199	8.61	8.59	34.011	26.408	164.8	0.545	2.41	36.7	33.7	2.17	28.9	0.01	0.00	0.02	200	207
200 ISL	8.60	8.58	34.014	26.412	164.4	0.546	2.40	36.6	33.9	2.18	29.0	0.01			201	
229	8.32	8.30	34.057	26.489	157.6	0.593	2.15	32.6	38.0	2.29	30.4	0.01			230	206
250 ISL	7.96	7.93	34.065	26.549	152.1	0.625	2.01	30.2	41.8	2.38	31.6	0.01			251	
269	7.64	7.61	34.068	26.599	147.6	0.654	1.90	28.3	45.2	2.45	32.7	0.01			271	205
300 ISL	7.40	7.37	34.090	26.651	143.0	0.699	1.66	24.6	48.9	2.56	33.9	0.01			302	
319	7.27	7.24	34.101	26.678	140.7	0.726	1.52	22.5	51.0	2.62	34.6	0.01			321	204
378	6.48	6.45	34.095	26.780	131.3	0.806	1.23	17.9	61.1	2.80	37.3	0.01			380	203
400 ISL	6.42	6.38	34.127	26.814	128.4	0.835	1.04	15.1	63.7	2.87	37.8	0.01			403	
438	6.33	6.29	34.183	26.870	123.6	0.883	0.73	10.6	68.3	2.99	38.7	0.01			441	202
500 ISL	5.61	5.57	34.182	26.960	115.2	0.957	0.54	7.7	80.1	3.12	41.1	0.01			503	
509	5.50	5.46	34.182	26.973	113.9	0.967	0.51	7.2	81.8	3.14	41.4	0.01			512	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 80 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 49.2 N	123 54.3 W	13/02/03	1235 UTC	4407 m	280 10 kn			1006.7 mb	14.9 C	14.0 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.61	14.61	32.586	24.196	371.4	0.000	5.93	101.9	0.6	0.43	0.0	0.00	0.26	0.06	0	
2	14.61	14.61	32.586	24.196	371.5	0.007	5.93	101.9	0.6	0.43	0.0	0.00	0.26	0.06	2	220
10 ISL	14.61	14.61	32.588	24.197	371.5	0.037	5.94	102.1	0.6	0.42	0.0	0.00	0.25	0.06	10	
11	14.61	14.61	32.588	24.197	371.5	0.041	5.94	102.1	0.6	0.42	0.0	0.00	0.25	0.06	11	219
20 ISL	14.70	14.70	32.659	24.233	368.4	0.074	5.95	102.5	0.5	0.42	0.0	0.00	0.26	0.08	20	
21	14.70	14.70	32.665	24.238	368.0	0.078	5.95	102.5	0.5	0.42	0.0	0.00	0.26	0.09	21	218
30	14.46	14.46	32.785	24.382	354.5	0.110	5.88	100.9	0.6	0.43	0.1	0.02	0.49	0.19	30	217
41	14.28	14.27	32.929	24.531	340.6	0.149	6.00	102.6	0.5	0.43	0.0	0.00	0.67	0.23	41	216
50	14.45	14.44	33.070	24.604	333.9	0.179	5.95	102.2	0.3	0.40	0.0	0.00	0.48	0.21	50	215
60	14.41	14.40	33.082	24.622	332.5	0.212	5.91	101.4	0.2	0.40	0.1	0.00	0.27	0.15	60	214
71	14.23	14.22	33.089	24.666	328.7	0.249	5.89	100.7	0.3	0.44	0.3	0.04	0.27	0.14	71	213
75 ISL	13.40	13.39	32.973	24.746	321.0	0.262	5.85	98.3	1.3	0.55	1.9	0.04	0.24	0.14	75	
85	11.22	11.21	32.766	25.000	296.8	0.293	5.75	92.1	4.8	0.89	6.8	0.03	0.15	0.15	85	212
100	10.82	10.81	33.106	25.335	265.1	0.335	5.10	81.2	9.4	1.19	12.3	0.02	0.08	0.08	100	211
119	10.01	10.00	33.370 D	25.680	232.6	0.382	4.58	71.7	14.4	1.46	17.2	0.01	0.03	0.04	120	210
125 ISL	9.82	9.81	33.435	25.763	224.9	0.396	4.38	68.3	16.0	1.53	18.5	0.01	0.02	0.04	126	
139	9.48	9.46	33.567	25.922	210.0	0.426	3.92	60.8	19.7	1.67	21.1	0.02	0.01	0.04	140	209
150 ISL	9.28	9.26	33.662	26.029	200.0	0.449	3.63	56.0	22.1	1.76	22.8	0.02	0.01	0.03	151	
170	9.00	8.98	33.810	26.190	185.1	0.487	3.18	48.8	26.2	1.90	25.2	0.01	0.01	0.02	171	208
199	8.65	8.63	33.972	26.372	168.3	0.538	2.67	40.7	32.1	2.07	28.0	0.01	0.00	0.02	200	207
200 ISL	8.64	8.62	33.975	26.375	167.9	0.540	2.66	40.6	32.2	2.07	28.1	0.01			201	
230	8.35	8.33	34.030	26.464	160.0	0.589	2.38	36.1	36.4	2.20	29.8	0.01			231	206
250 ISL	8.13	8.10	34.061	26.521	154.8	0.621	2.12	32.0	39.9	2.31	31.1	0.01			251	
271	7.87	7.84	34.084	26.578	149.7	0.653	1.87	28.0	43.6	2.43	32.4	0.01			273	205
300 ISL	7.45	7.42	34.081	26.636	144.4	0.695	1.74	25.8	47.7	2.51	33.7	0.00			302	
319	7.19	7.16	34.077	26.670	141.4	0.723	1.67	24.6	50.3	2.56	34.4	0.00			321	204
381	6.68	6.64	34.134	26.785	131.1	0.807	1.09	15.9	60.2	2.81	37.1	0.00			383	203
400 ISL	6.50	6.46	34.148	26.820	127.9	0.832	0.96	13.9	63.6	2.89	37.9	0.00			402	
433	6.20	6.16	34.170	26.876	122.8	0.873	0.77	11.1	69.4	3.00	39.3	0.00			436	202
500 ISL	5.66	5.62	34.204	26.971	114.1	0.952	0.51	7.3	80.2	3.12	41.1	0.00			503	
514	5.55	5.51	34.212	26.991	112.3	0.968	0.45	6.4	82.4	3.14	41.5	0.00			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 82 47

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
34 16.3 N	120 1.7 W	11/02/03	0623 UTC	578 m	330 14 kn			1011.0 mb	15.6 C	13.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.13	15.13	33.406	24.716	321.8	0.000	5.89	102.8	2.3	0.38	0.1	0.01	0.50	0.25	0	
1 A	15.13	15.13	33.406	24.716	321.9	0.003	5.89	102.8	2.3	0.38	0.1	0.01	0.50	0.25	1	224
10	15.12	15.12	33.405	24.718	322.0	0.032	5.90	103.0	2.3	0.37	0.0	0.01	0.53	0.23	10	223
20 ISL	15.00	15.00	33.401	24.741	320.1	0.064	5.92	103.1	2.3	0.38	0.1	0.01	0.70	0.29	20	
21	14.99	14.99	33.401	24.743	319.9	0.067	5.92	103.0	2.3	0.38	0.1	0.01	0.72	0.30	21	222
30	14.98	14.98	33.407	24.750	319.5	0.096	5.90	102.7	2.1	0.38	0.1	0.01	0.72	0.34	30	221
40	14.49	14.48	33.391	24.843	310.9	0.128	5.55	95.6	3.6	0.54	1.7	0.12	0.84	0.35	40	220
50	13.85	13.84	33.357	24.951	300.9	0.158	5.30	90.1	4.9	0.69	3.7	0.25	0.62	0.30	50	219
60	13.18	13.17	33.322	25.060	290.7	0.188	5.05	84.6	5.8	0.83	5.9	0.16	0.51	0.39	60	218
70	12.26	12.25	33.412	25.309	267.2	0.216	4.44	73.0	9.2	1.12	10.8	0.05	0.22	0.23	70	217
75 ISL	11.99	11.98	33.455	25.394	259.2	0.229	4.23	69.2	10.6	1.21	12.3	0.04	0.18	0.18	75	
85	11.69	11.68	33.523	25.502	249.1	0.254	3.95	64.2	12.5	1.32	14.2	0.02	0.11	0.12	85	216
100	11.59	11.58	33.554	25.545	245.4	0.292	3.82	62.0	13.2	1.38	15.0	0.02	0.08	0.10	100	215
120	11.17	11.16	33.616	25.670	233.9	0.339	3.58	57.6	15.7	1.51	17.0	0.02	0.05	0.09	121	214
125 ISL	10.95	10.93	33.686	25.764	225.0	0.351	3.31	53.0	17.8	1.62	18.6	0.02	0.04	0.08	126	
139	10.36	10.34	33.895	26.031	199.9	0.381	2.53	40.1	24.0	1.94	23.1	0.02	0.01	0.05	140	213
150 ISL	10.26	10.24	33.979	26.114	192.3	0.402	2.26	35.7	26.2	2.04	24.6	0.02	0.01	0.05	151	
169	10.10	10.08	34.015	26.170	187.4	0.438	2.05	32.3	28.2	2.12	25.7	0.01	0.01	0.05	170	212
199	9.76	9.74	34.096	26.291	176.4	0.493	1.67	26.1	32.3	2.28	27.8	0.01	0.01	0.04	200	211
200 ISL	9.75	9.73	34.098	26.294	176.1	0.495	1.66	26.0	32.4	2.28	27.8	0.01			201	
229	9.55	9.52	34.152	26.370	169.5	0.545	1.42	22.1	36.2	2.40	28.9	0.01			230	210
250 ISL	9.17	9.14	34.166	26.443	162.9	0.580	1.23	19.0	39.9	2.50	30.5	0.01			251	
268	8.81	8.78	34.172	26.505	157.1	0.608	1.07	16.4	43.3	2.59	31.9	0.01			270	209
300 ISL	8.41	8.38	34.188	26.579	150.4	0.658	0.87	13.2	49.2	2.71	33.1	0.01			302	
318	8.23	8.20	34.196	26.613	147.5	0.684	0.78	11.8	52.4	2.77	33.5	0.01			320	208
378	7.67	7.63	34.214	26.711	138.9	0.770	0.63	9.4	61.0	2.93	34.2	0.01			380	207
400 ISL	7.42	7.38	34.220	26.751	135.2	0.801	0.58	8.6	65.1	3.00	34.0	0.01			403	
437	7.00	6.96	34.229	26.817	129.2	0.849	0.42	6.2	75.6	3.16	33.6	0.01			440	206
477	6.64	6.60	34.239	26.874	124.1	0.900	0.08	1.2	95.4	3.47	29.2	0.01			480	205
500 ISL	6.57	6.52	34.241	26.885	123.3	0.929	0.05	0.7	102.4	3.58	27.0	0.01			503	
512	6.55	6.50	34.241	26.888	123.2	0.943	0.03	0.4	105.3	3.63	25.8	0.01			516	204
537	6.52	6.47	34.243	26.894	123.0	0.974	0.01	0.1	111.3	3.74	22.9	0.01			541	203
562	6.50	6.45	34.242	26.896	123.2	1.005	0.01	0.1							566	202
566	6.50	6.45	34.242	26.896	123.2	1.010	0.01	0.1	115.2	3.80	21.2	0.01			570	201

A) SANTA BARBARA BASIN STATION.

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 13.3 N	119 24.7 W	10/02/03	1805 UTC	34 m	040 12 kn	330 01 06	2	1017.3 mb	15.5 C	12.1 C	21m	8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.10	15.10	33.387	24.708	322.6	0.000	5.90	102.9	2.2	0.37	0.0	0.01	0.53	0.13	0	
1 B	15.10	15.10	33.387	24.708	322.6	0.003	5.90	102.9	2.2	0.37	0.0	0.01	0.53	0.13	1	205
5	15.06	15.06	33.388	24.717	321.8	0.016	5.94	103.5	2.1	0.37	0.0	0.01	0.51	0.13	5	204
10 ISL	15.06	15.06	33.389	24.718	321.9	0.032	5.92	103.2	2.1	0.37	0.0	0.01	0.50	0.14	10	
12 B	15.06	15.06	33.389	24.718	322.0	0.039	5.90	102.8	2.1	0.37	0.0	0.01	0.50 A	0.14 A	12	203
19	15.05	15.05	33.388	24.720	322.0	0.061	5.91	103.0	2.2	0.37	0.0	0.01	0.55	0.16	19	202
20 ISL	15.05	15.05	33.388	24.720	322.0	0.064	5.91	103.0	2.2	0.37	0.0	0.01	0.56	0.16	20	
26 B	15.05	15.05	33.388	24.720	322.2	0.084	5.90	102.8	2.1	0.37	0.0	0.01	0.60	0.18	26	201

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

B) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 42

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
34 10.7 N	119 30.7 W	10/02/03	1506 UTC	129 m	290 02 kn	330 01 06	2	1017.2 mb	14.5 C	12.1 C	23m	8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.23	15.23	33.366	24.663	326.8	0.000	5.91	103.3	2.1	0.36	0.1	0.01	0.29	0.09	0	
2	15.23	15.23	33.366	24.663	326.9	0.007	5.91	103.3	2.1	0.36	0.1	0.01	0.29	0.09	2	212
5	15.22	15.22	33.366	24.665	326.8	0.016	5.91	103.3	2.1	0.36	0.1	0.01	0.31	0.08	5	211
10 ISL	15.23	15.23	33.366	24.663	327.1	0.033	5.90	103.2	2.1	0.36	0.1	0.01	0.29	0.09	10	
11	15.23	15.23	33.366	24.663	327.1	0.036	5.90	103.2	2.1	0.36	0.1	0.01	0.28	0.09	11	210
20 ISL	15.23	15.23	33.366	24.664	327.4	0.065	5.91	103.3	2.1	0.36	0.1	0.01	0.29	0.08	20	
21	15.23	15.23	33.366	24.664	327.4	0.069	5.91	103.3	2.1	0.36	0.1	0.01	0.29	0.08	21	209
30 ISL	15.19	15.19	33.364	24.671	327.0	0.098	5.91	103.2	2.1	0.36	0.1	0.01	0.34	0.09	30	
31	15.19	15.19	33.364	24.671	327.0	0.101	5.91	103.2	2.1	0.36	0.1	0.01	0.35	0.09	31	208
40	13.69	13.68	33.272	24.918	303.7	0.130	5.77	97.7	3.6	0.54	1.6	0.10	0.72	0.28	40	207
50	12.83	12.82	33.255	25.077	288.8	0.159	5.26	87.5	5.8	0.83	6.2	0.14	0.50	0.35	50	206
60	12.44	12.43	33.262	25.158	281.3	0.188	5.13	84.6	6.6	0.92	7.7	0.10	0.42	0.31	60	205
70	11.75	11.74	33.376	25.377	260.7	0.215	4.60	74.8	9.8	1.14	11.6	0.05	0.19	0.19	70	204
75 ISL	11.59	11.58	33.451	25.465	252.4	0.228	4.27	69.3	11.5	1.25	13.3	0.05	0.13	0.15	75	
84	11.47	11.46	33.567	25.577	241.9	0.250	3.76	60.9	13.9	1.42	15.5	0.05	0.09	0.10	84	203
100 ISL	11.41	11.40	33.584	25.602	240.0	0.289	3.71	60.0	14.5	1.45	15.9	0.05	0.08	0.10	100	
102	11.40	11.39	33.586	25.605	239.7	0.293	3.70	59.8	14.5	1.45	15.9	0.05	0.08	0.10	102	202
121	10.96	10.95	33.714	25.784	223.0	0.337	3.18	51.0	18.4	1.66	19.0	0.05	0.04	0.08	122	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 51

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 52.7 N	120 8.4 W	10/02/03	0908 UTC	104 m	00 kn			1017.8 mb	13.2 C	11.9 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.56	14.56	33.374	24.814	312.5	0.000	5.92	102.1	3.6	0.49	1.5	0.04	0.53	0.19	0	
2	14.56	14.56	33.374	24.814	312.5	0.006	5.92	102.1	3.6	0.49	1.5	0.04	0.53	0.19	2	211
5	14.54	14.54	33.373	24.818	312.3	0.016	5.83	100.5	3.6	0.49	1.5	0.04	0.49	0.19	5	210
10	14.45	14.45	33.372	24.836	310.7	0.031	5.79	99.7	3.8	0.52	1.7	0.04	0.54	0.20	10	209
20	14.19	14.19	33.365	24.885	306.3	0.062	5.69	97.4	4.1	0.54	2.1	0.05	0.56	0.22	20	208
30	13.22	13.22	33.345	25.069	289.1	0.092	5.32	89.3	6.3	0.78	5.7	0.11	0.71	0.34	30	207
40	12.53	12.52	33.390	25.239	273.0	0.120	4.86	80.4	8.6	0.99	8.9	0.11	0.53	0.31	40	206
50	12.12	12.11	33.438	25.355	262.3	0.147	4.59	75.3	10.4	1.11	10.9	0.10	0.37	0.25	50	205
60	11.75	11.74	33.433	25.421	256.2	0.173	4.42	71.9	11.1	1.20	12.5	0.09	0.32	0.26	60	204
69	11.71	11.70	33.436	25.431	255.5	0.196	4.40	71.5	11.3	1.21	12.7	0.09	0.33	0.23	69	203
75 ISL	11.64	11.63	33.459	25.462	252.7	0.211	4.32	70.1	12.0	1.24	13.1	0.09	0.28	0.23	75	
81	11.51	11.50	33.492	25.511	248.1	0.226	4.19	67.9	13.0	1.30	13.9	0.09	0.22	0.24	81	202
90	11.13	11.12	33.545	25.622	237.8	0.248	3.91	62.8	14.9	1.43	15.9	0.09	0.14	0.16	90	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 83 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 44.7 N	120 24.7 W	10/02/03	0511	UTC	979 m	330 08 kn			1018.5 mb	14.0 C	12.5 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.59	14.59	33.367	24.802	313.6	0.000	6.04	104.3	2.9	0.40	0.1	0.02	0.66	0.19	0	
2	14.59	14.59	33.367	24.802	313.7	0.006	6.04	104.3	2.9	0.40	0.1	0.02	0.66	0.19	2	220
10	14.44	14.44	33.366	24.833	310.9	0.031	6.04	103.9	2.8	0.41	0.3	0.02	0.71	0.22	10	219
20	14.36	14.36	33.368	24.852	309.4	0.062	5.95	102.2	3.1	0.43	0.7	0.03	1.12	0.38	20	218
30	14.23	14.23	33.364	24.877	307.4	0.093	5.84	100.1	3.7	0.47	1.4	0.05	1.20	0.40	30	217
40	13.41	13.40	33.357	25.040	292.1	0.123	5.49	92.5	5.4	0.67	4.3	0.10	1.44 A	0.49 A	40	216
50 ISL	12.93	12.92	33.357	25.136	283.2	0.152	5.11	85.2	7.1	0.84	7.2	0.14	1.07	0.39	50	
51	12.86	12.85	33.359	25.151	281.7	0.155	5.06	84.3	7.3	0.86	7.6	0.14	1.01	0.38	51	215
60	11.51	11.50	33.438	25.469	251.6	0.179	4.35	70.4	11.5	1.22	13.2	0.06	0.55	0.32	60	214
70	11.31	11.30	33.490	25.546	244.5	0.203	4.15	66.9	12.9	1.30	14.7	0.05	0.24	0.20	70	213
75 ISL	11.06	11.05	33.546	25.635	236.2	0.215	3.94	63.2	14.5	1.39	16.1	0.04	0.22	0.18	75	
85	10.54	10.53	33.671	25.824	218.4	0.238	3.47	55.1	18.0	1.58	19.1	0.02	0.17	0.15	85	212
100	10.22	10.21	33.797	25.978	204.1	0.270	3.02	47.7	21.9	1.76	21.5	0.02	0.05	0.07	101	211
119	10.04	10.03	33.912	26.098	193.0	0.308	2.62	41.2	25.4	1.92	23.7	0.01	0.02 A	0.05 A	120	210
125 ISL	10.00	9.99	33.935	26.123	190.8	0.319	2.53	39.8	26.0	1.95	24.1	0.01	0.02	0.05	126	
140	9.92	9.90	33.983	26.174	186.2	0.347	2.35	36.9	27.3	2.01	24.9	0.01	0.01	0.06	141	209
150 ISL	9.85	9.83	34.019	26.214	182.6	0.366	2.21	34.6	28.5	2.06	25.6	0.01	0.01	0.05	151	
169	9.72	9.70	34.083	26.286	176.2	0.400	1.97	30.8	30.8	2.16	26.8	0.01	0.01	0.04	170	208
198	9.50	9.48	34.157	26.381	167.7	0.450	1.70	26.5	34.0	2.28	28.3	0.01	0.01	0.04	199	207
200 ISL	9.48	9.46	34.160	26.387	167.2	0.453	1.69	26.3	34.2	2.29	28.4	0.01			201	
227	9.20	9.18	34.195	26.460	160.7	0.497	1.54	23.8	37.1	2.38	29.4	0.02			228	206
250 ISL	9.03	9.00	34.224	26.510	156.4	0.534	1.36	20.9	39.3	2.46	30.2	0.02			251	
268	8.87	8.84	34.240	26.548	153.0	0.562	1.24	19.0	41.2	2.51	30.9	0.01			270	205
300 ISL	8.35	8.32	34.235	26.625	146.1	0.610	1.18	17.9	45.4	2.58	32.1	0.01			302	
318	8.03	8.00	34.226	26.667	142.3	0.636	1.17	17.6	47.9	2.62	32.8	0.01			320	204
378	7.31	7.27	34.206	26.755	134.4	0.719	1.02	15.1	55.5	2.74	34.9	0.01			380	203
400 ISL	7.10	7.06	34.217	26.794	131.0	0.748	0.89	13.1	58.7	2.81	35.8	0.01			403	
437	6.79	6.75	34.242	26.856	125.4	0.795	0.67	9.8	64.2	2.92	37.2	0.01			440	202
500 ISL	6.30	6.25	34.270	26.943	117.5	0.872	0.45	6.5	73.2	3.04	39.1	0.01			503	
515	6.18	6.13	34.277	26.964	115.6	0.889	0.40	5.8	75.3	3.07	39.5	0.01			519	201

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

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 83 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 34.6 N	120 45.5 W	10/02/03	0051	UTC	1443 m	00 kn	240 01 08	2	1018.2 mb	15.9 C	13.3 C	12m	2/8	CS

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.77	14.77	33.364	24.761	317.5	0.000	6.11	105.9	2.5	0.40	0.1	0.01	0.83	0.20	0	
2	14.77	14.77	33.364	24.761	317.6	0.006	6.11	105.9	2.5	0.40	0.1	0.01	0.83	0.20	2	220
10	14.59	14.59	33.365	24.801	314.0	0.032	6.12	105.6	2.6	0.40	0.1	0.01	0.90	0.23	10	219
20	14.37	14.37	33.360	24.844	310.2	0.063	5.96	102.4	3.0	0.45	0.8	0.02	1.20	0.40	20	218
30	13.60	13.60	33.351	24.997	295.9	0.093	5.45	92.2	5.2	0.71	4.6	0.10	0.84	0.40	30	217
40	12.78	12.77	33.360	25.167	279.9	0.122	5.06	84.1	7.0	0.90	7.5	0.12	0.40 A	0.25 A	40	216
50	11.84	11.83	33.395	25.374	260.4	0.149	4.57	74.5	10.0	1.16	11.8	0.09	0.30	0.26	50	215
60	11.48	11.47	33.427	25.466	251.9	0.175	4.36	70.5	11.2	1.25	13.3	0.05	0.22	0.20	60	214
70	11.09	11.08	33.495	25.589	240.3	0.199	4.11	66.0	13.3	1.37	15.3	0.03	0.15	0.14	70	213
75 ISL	10.84	10.83	33.569	25.692	230.7	0.211	3.84	61.3	15.3	1.48	17.0	0.03	0.10	0.10	75	
85	10.40	10.39	33.716	25.883	212.7	0.233	3.30	52.2	19.2	1.69	20.2	0.02	0.03	0.05	85	212
99	10.19	10.18	33.774	25.965	205.2	0.262	3.09	48.7	21.3	1.79	21.5	0.01	0.03	0.06	99	211
100 ISL	10.19	10.18	33.781	25.970	204.7	0.264	3.07	48.4	21.4	1.80	21.6	0.01	0.03	0.06	101	
119	10.17	10.16	33.892	26.061	196.6	0.303	2.72	42.9	23.5	1.90	23.0	0.01	0.01	0.03	120	210
125 ISL	10.13	10.12	33.916	26.086	194.3	0.314	2.64	41.6	24.2	1.93	23.4	0.01	0.01	0.03	126	
140	10.00	9.98	33.965	26.147	188.8	0.343	2.48	39.0	25.9	2.01	24.4	0.01	0.00	0.03	141	209
150 ISL	9.87	9.85	33.992	26.190	184.9	0.362	2.40	37.6	27.2	2.06	25.1	0.01	0.00	0.03	151	
171	9.64	9.62	34.057	26.279	176.8	0.400	2.18	34.0	30.1	2.16	26.6	0.02	0.00	0.04	172	208
199	9.60	9.58	34.189	26.390	167.0	0.448	1.62	25.3	33.9	2.35	28.3	0.01	0.00	0.05	200	207
200 ISL	9.58	9.56	34.190	26.394	166.6	0.449	1.62	25.3	34.0	2.35	28.4	0.01			201	
229	9.07	9.05	34.202	26.486	158.2	0.497	1.54	23.7	38.2	2.46	29.9	0.01			230	206
250 ISL	8.87	8.84	34.229	26.540	153.5	0.529	1.33	20.4	40.8	2.54	30.8	0.00			251	
269	8.70	8.67	34.245	26.579	150.1	0.558	1.17	17.9	43.1	2.60	31.5	0.00			271	205
300 ISL	8.10	8.07	34.196	26.632	145.2	0.604	1.29	19.5	47.1	2.62	32.7	0.00			302	
318	7.76	7.73	34.165	26.658	142.9	0.630	1.39	20.8	49.3	2.63	33.4	0.00			320	204
378	7.36	7.32	34.203	26.746	135.3	0.713	1.03	15.3	54.8	2.78	34.9	0.00			380	203
400 ISL	7.15	7.11	34.215	26.785	131.8	0.743	0.90	13.3	58.2	2.85	35.7	0.00			403	
438	6.78	6.74	34.235	26.852	125.8	0.792	0.70	10.2	64.3	2.96	37.1	0.00			441	202
500 ISL	6.41	6.36	34.270	26.929	119.0	0.867	0.48	7.0	72.1	3.09	38.7	0.00			503	
516	6.32	6.27	34.279	26.948	117.4	0.886	0.42	6.1	74.1	3.12	39.1	0.00			520	201

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

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 14.5 N	121 26.3 W	09/02/03	1846 UTC	3796 m	340 06 kn	040 01 06	1	1019.8 mb	16.9 C	13.1 C	25m	7/8	CC

DEPTH m		TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0	ISL	14.85	14.85	33.013	24.474	344.9	0.000	5.91	102.3	0.5	0.40	0.1	0.00	0.25	0.05	0	
1	A	14.85	14.85	33.013	24.474	344.9	0.003	5.91	102.3	0.5	0.40	0.1	0.00	0.25	0.05	1	221
10	ISL	14.80	14.80	33.013	24.485	344.1	0.034	5.91	102.2	0.5	0.40	0.1	0.00	0.25	0.06	10	
16	A	14.76	14.76	33.013	24.493	343.5	0.055	5.91	102.1					0.25	0.07	16	220
20	ISL	14.76	14.76	33.013	24.493	343.6	0.069	5.92	102.3	0.6	0.40	0.1	0.00	0.25	0.07	20	
30	ISL	14.75	14.75	33.014	24.497	343.6	0.103	5.93	102.5	0.6	0.40	0.1	0.00	0.28	0.07	30	
31	A	14.75	14.75	33.014	24.497	343.6	0.107	5.93	102.5	0.6	0.40	0.1	0.00	0.28	0.07	31	219
40		14.76	14.75	33.017	24.497	343.8	0.138	5.90	102.0	0.6	0.40	0.1	0.00	0.33	0.10	40	218
50	A	14.47	14.46	32.998	24.544	339.6	0.172	5.87	100.8	0.9	0.45	0.5	0.04	0.54	0.22	50	217
60		12.81	12.80	32.869	24.782	317.1	0.205	5.79	96.0	2.4	0.67	3.0	0.09	0.39	0.28	60	216
68	A	11.71	11.70	32.826	24.957	300.5	0.229	5.71	92.5	4.2	0.84	5.9	0.03	0.23	0.25	68	215
75	ISL	11.17	11.16	32.809	25.042	292.5	0.250	5.66	90.6	5.3	0.93	7.3	0.02	0.18	0.19	75	
77		11.06	11.05	32.814	25.065	290.3	0.256	5.64	90.1	5.6	0.95	7.6	0.02	0.17	0.17	77	214
86		10.66	10.65	32.936	25.230	274.7	0.281	5.42	85.9	7.8	1.08	10.3	0.02	0.09	0.11	86	213
95	A	10.37	10.36	33.050	25.369	261.7	0.305	5.23	82.4	9.6	1.17	12.3	0.01	0.06	0.07	95	212
100	ISL	10.25	10.24	33.140	25.460	253.2	0.318	5.04	79.2	10.9	1.24	13.6	0.01	0.05	0.06	100	
110		10.07	10.06	33.305	25.619	238.2	0.343	4.68	73.4	13.5	1.38	16.0	0.01	0.03	0.04	111	211
125		9.87	9.86	33.395	25.723	228.6	0.378	4.51	70.4	15.4	1.47	17.6	0.01	0.02	0.04	126	210
145		9.30	9.28	33.678	26.038	199.0	0.421	3.66	56.5	22.1	1.73	22.1	0.01	0.00	0.02	146	209
150	ISL	9.23	9.21	33.730	26.090	194.2	0.430	3.51	54.2	23.3	1.77	22.9	0.01	0.00	0.02	151	
169		9.07	9.05	33.876	26.230	181.3	0.466	3.13	48.2	26.9	1.89	24.9	0.01	0.00	0.03	170	208
199		8.79	8.77	33.966	26.345	170.8	0.519	2.98	45.6	30.1	1.96	26.1	0.01	0.00	0.02	200	207
200	ISL	8.78	8.76	33.968	26.348	170.6	0.521	2.97	45.4	30.3	1.96	26.2	0.01			201	
229		8.34	8.32	34.029	26.464	159.9	0.569	2.66	40.3	35.2	2.10	28.3	0.01			230	206
250	ISL	8.09	8.06	34.064	26.529	154.0	0.602	2.32	35.0	39.2	2.24	30.0	0.01			251	
269		7.90	7.87	34.089	26.577	149.7	0.630	2.02	30.3	42.7	2.37	31.4	0.01			271	205
300	ISL	7.64	7.61	34.115	26.636	144.6	0.676	1.71	25.5	46.9	2.51	33.0	0.01			302	
320		7.49	7.46	34.126	26.666	141.9	0.705	1.55	23.0	49.3	2.58	33.8	0.01			322	204
378		6.97	6.93	34.163	26.769	132.8	0.784	1.08	15.9	58.0	2.80	36.2	0.01			380	203
400	ISL	6.83	6.79	34.188	26.808	129.4	0.813	0.93	13.6	61.2	2.87	36.9	0.01			403	
438		6.61	6.57	34.234	26.874	123.5	0.861	0.66	9.6	66.6	2.99	38.0	0.01			441	202
500	ISL	6.28	6.24	34.293	26.964	115.6	0.935									503	
514		6.20	6.15	34.306 D	26.985	113.7	0.951									517	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 83 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 54.9 N	122 7.7 W	09/02/03	1255 UTC	4181 m	00 kn			1018.1 mb	14.7 C	12.0 C			

DEPTH m		TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0	ISL	14.49	14.49	33.067	24.592	333.6	0.000	6.01	103.3	1.0	0.42	0.1	0.00	0.36	0.10	0	
2		14.49	14.49	33.067	24.592	333.7	0.007	6.01	103.3	1.0	0.42	0.1	0.00	0.36	0.10	2	220
10		14.47	14.47	33.068	24.597	333.4	0.033	6.01	103.3	1.0	0.43	0.1	0.00	0.37	0.09	10	219
20		14.45	14.45	33.071	24.604	333.1	0.067	6.01	103.3	1.0	0.42	0.1	0.00	0.38	0.21	20	218
30		14.33	14.33	33.099	24.651	328.9	0.100	6.03	103.4	1.4	0.42	0.1	0.00	0.92	0.26	30	217
40		14.01	14.00	33.127	24.740	320.7	0.132	5.90	100.5	2.1	0.50	0.9	0.12	0.85	0.35	40	216
49		13.75	13.74	33.196	24.847	310.7	0.161	5.80	98.3	3.1	0.56	1.9	0.27	0.43	0.29	49	215
50	ISL	13.69	13.68	33.201	24.863	309.2	0.164	5.76	97.5	3.3	0.58	2.2	0.26	0.40	0.29	50	
60		12.97	12.96	33.231	25.031	293.4	0.194	5.32	88.7	5.5	0.80	5.9	0.07	0.21	0.26	60	214
69		12.37	12.36	33.228	25.145	282.7	0.220	5.08	83.7	7.1	0.95	8.3	0.02	0.15	0.18	69	213
75	ISL	12.23	12.22	33.265	25.201	277.6	0.237	4.93	81.0	7.8	1.01	9.2	0.02	0.13	0.17	75	
84		12.09	12.08	33.344	25.289	269.4	0.261	4.67	76.5	9.0	1.09	10.6	0.01	0.10	0.16	84	212
99		11.35	11.34	33.477	25.529	246.8	0.300	4.12	66.5	12.9	1.35	14.8	0.01	0.05	0.11	99	211
100	ISL	11.28	11.27	33.475	25.540	245.8	0.302	4.13	66.5	13.0	1.36	14.9	0.01	0.05	0.11	100	
119		10.02	10.01	33.433	25.728	228.1	0.347	4.39	68.8	14.9	1.44	17.0	0.00	0.02	0.05	120	210
125	ISL	9.86	9.85	33.474	25.787	222.6	0.361	4.26	66.5	16.1	1.49	18.0	0.00	0.02	0.05	126	
138		9.65	9.63	33.591	25.913	210.8	0.389	3.87	60.2	19.0	1.62	20.2	0.00	0.01	0.05	139	209
150	ISL	9.38	9.36	33.678	26.025	200.4	0.414	3.64	56.3	21.8	1.72	22.0	0.00	0.00	0.04	151	
168		9.00	8.98	33.798	26.180	185.9	0.449	3.31	50.8	26.0	1.87	24.5	0.00	0.00	0.02	169	208
198		8.67	8.65	33.976	26.372	168.3	0.502	2.58	39.4	33.0	2.13	28.3	0.00	0.00	0.06	199	207
200	ISL	8.64	8.62	33.982	26.381	167.4	0.505	2.56	39.0	33.3	2.14	28.4	0.00			201	
229		8.21	8.19	34.029	26.484	158.0	0.552	2.42	36.6	37.5	2.22	29.8	0.00			230	206
250	ISL	7.93	7.90	34.044	26.537	153.2	0.585	2.26	33.9	40.5	2.30	30.9	0.00			251	
267		7.71	7.68	34.049	26.574	149.9	0.611	2.14	32.0	42.9	2.36	31.8	0.00			269	205
300	ISL	7.26	7.23	34.048	26.637	144.2	0.659	2.03	30.0	47.2	2.44	33.0	0.00			302	
317		7.05	7.02	34.049	26.667	141.5	0.684	1.96	28.8	49.6	2.49	33.6	0.00			319	204
378		6.52	6.49	34.101	26.780	131.3	0.767	1.26	18.3	60.4	2.79	36.8	0.00			380	203
400	ISL	6.35	6.31	34.110	26.809	128.7	0.795	1.13	16.4	63.5	2.85	37.6	0.00			403	
437		6.09	6.05	34.123	26.853	124.9	0.842	0.96	13.8	68.5	2.93	38.8	0.00			440	202
500	ISL	5.65	5.61	34.168	26.944	116.7	0.918	0.64	9.1	78.7	3.08	40.7	0.00			503	
515		5.55	5.51	34.179	26.965	114.8	0.936	0.57	8.1	81.1	3.12	41.1	0.00			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 83 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 34.7 N	122 48.5 W	09/02/03	0716 UTC	4265 m	350 05 kn			1018.1 mb	14.0 C	12.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.33	15.33	32.857	24.249	366.3	0.000	5.84	102.0	0.5	0.40	0.1	0.00	0.15	0.04	0	
2	15.33	15.33	32.857	24.249	366.3	0.007	5.84	102.0	0.5	0.40	0.1	0.00	0.15	0.04	2	220
10 ISL	15.39	15.39	32.875	24.250	366.5	0.037	5.85	102.3	0.5	0.40	0.1	0.00	0.15	0.05	10	
16	15.48	15.48	32.900	24.250	366.7	0.059	5.85	102.5	0.5	0.40	0.1	0.00	0.15	0.05	16	219
20 ISL	15.55	15.55	32.937	24.263	365.6	0.073	5.83	102.3	0.4	0.40	0.1	0.00	0.15	0.05	20	
30	15.73	15.73	33.029	24.294	362.9	0.110	5.77	101.7	0.2	0.41	0.1	0.00	0.16	0.04	30	218
45	15.84	15.83	33.075	24.306	362.3	0.164	5.77	101.9	0.3	0.38	0.0	0.00	0.22	0.07	45	217
50 ISL	15.66	15.65	33.050	24.327	360.4	0.182	5.78	101.7	0.3	0.39	0.1	0.01	0.26	0.10	50	
55	15.40	15.39	33.013	24.356	357.8	0.200	5.80	101.5	0.3	0.40	0.1	0.01	0.30	0.14	55	216
65	14.70	14.69	32.924	24.439	350.1	0.236	5.84	100.7	0.3	0.42	0.0	0.00	0.32	0.22	65	215
75	13.99	13.98	32.888	24.560	338.7	0.270	5.86	99.6	0.8	0.48	0.4	0.12	0.38	0.23	75	214
85	12.16	12.15	32.777	24.836	312.5	0.303	5.93	96.9	2.5	0.62	2.2	0.09	0.25	0.23	85	213
95	11.07	11.06	32.699	24.974	299.4	0.333	5.88	93.9	4.3	0.83	5.7	0.02	0.14	0.14	95	212
100 ISL	10.78	10.77	32.712	25.035	293.6	0.348	5.83	92.5	5.1	0.89	6.9	0.02	0.11	0.11	100	
110	10.47	10.46	32.812	25.167	281.2	0.377	5.65	89.1	6.7	0.99	8.9	0.01	0.08	0.07	110	211
125	10.30	10.29	33.109	25.428	256.8	0.417	5.15	81.0	9.9	1.19	12.7	0.01	0.03	0.05	126	210
144	9.71	9.69	33.365	25.727	228.6	0.463	4.70	73.1	13.7	1.35	15.9	0.01	0.01	0.02	145	209
150 ISL	9.58	9.56	33.426	25.796	222.2	0.477	4.54	70.5	15.2	1.42	17.1	0.01	0.01	0.02	151	
169	9.25	9.23	33.593	25.980	205.0	0.517	4.01	61.8	20.2	1.65	20.9	0.01	0.00	0.03	170	208
199	8.76	8.74	33.866	26.271	177.8	0.575	3.28	50.1	27.7	1.90	25.2	0.00	0.00	0.02	200	207
200 ISL	8.75	8.73	33.872	26.278	177.2	0.576	3.26	49.8	27.9	1.91	25.3	0.00			201	
228	8.37	8.35	34.001	26.438	162.4	0.624	2.76	41.8	34.3	2.09	28.2	0.00			229	206
250 ISL	8.15	8.12	34.038	26.500	156.8	0.659	2.46	37.1	37.8	2.21	29.8	0.00			251	
268	7.98	7.95	34.047	26.533	154.0	0.687	2.27	34.1	40.3	2.29	30.8	0.00			269	205
300 ISL	7.62	7.59	34.062	26.597	148.2	0.735	2.00	29.8	44.9	2.42	32.4	0.00			302	
318	7.41	7.38	34.066	26.630	145.2	0.762	1.87	27.7	47.5	2.49	33.2	0.00			320	204
378	6.68	6.65	34.079	26.741	135.1	0.846	1.47	21.4	56.6	2.69	35.9	0.00			380	203
400 ISL	6.43	6.39	34.091	26.784	131.2	0.875	1.28	18.6	61.1	2.78	37.1	0.00			402	
438	6.05	6.01	34.115	26.852	125.0	0.924	0.98	14.1	68.8	2.93	38.9	0.00			441	202
500 ISL	5.67	5.63	34.156	26.932	117.8	0.999	0.70	10.0	77.4	3.06	40.4	0.00			503	
512	5.60	5.56	34.164	26.947	116.5	1.013	0.64	9.1	79.1	3.08	40.7	0.00			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 83 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 14.7 N	123 29.6 W	09/02/03	0114 UTC	4164 m	310 13 kn	290 02 09	1	1016.0 mb	15.0 C	12.1 C		5/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.03	16.03	33.180	24.342	357.4	0.000	5.72	101.5	0.6	0.38	0.0	0.00	0.12	0.02	0	
2	16.03	16.03	33.180	24.342	357.5	0.007	5.72	101.5	0.6	0.38	0.0	0.00	0.12	0.02	2	220
10 ISL	16.03	16.03	33.180	24.343	357.7	0.036	5.73	101.7	0.6	0.38	0.0	0.00	0.11	0.03	10	
16	16.03	16.03	33.180	24.343	357.9	0.057	5.73	101.7	0.6	0.38	0.0	0.00	0.11	0.03	16	219
20 ISL	16.02	16.02	33.181	24.346	357.7	0.072	5.73	101.7	0.6	0.38	0.0	0.00	0.11	0.03	20	
30 ISL	16.01	16.01	33.184	24.351	357.6	0.107	5.72	101.5	0.7	0.38	0.0	0.00	0.12	0.03	30	
31	16.01	16.01	33.184	24.351	357.6	0.111	5.72	101.5	0.7	0.38	0.0	0.00	0.12	0.03	31	218
45	16.01	16.00	33.186	24.353	357.8	0.161	5.73	101.6	0.7	0.37	0.0	0.00	0.12	0.03	45	217
50 ISL	16.01	16.00	33.187	24.354	357.9	0.179	5.72	101.5	0.7	0.37	0.0	0.00	0.12	0.03	50	
55	16.00	15.99	33.188	24.357	357.8	0.197	5.72	101.4	0.7	0.38	0.0	0.00	0.13	0.04	55	216
65	15.90	15.89	33.203	24.391	354.8	0.232	5.74	101.6	0.8	0.39	0.0	0.00	0.16	0.07	65	215
75	14.74	14.73	33.171	24.621	333.1	0.267	5.85	101.1	1.7	0.45	0.2	0.05	0.32	0.19	75	214
85	13.10	13.09	32.910	24.757	320.1	0.299	5.92	98.8	2.2	0.57	1.1	0.18	0.29	0.26	85	213
95	12.93	12.92	33.108	24.944	302.6	0.331	5.65	94.1	3.6	0.66	2.9	0.09	0.19	0.19	95	212
100 ISL	12.35	12.34	33.061	25.020	295.4	0.346	5.59	91.9	4.5	0.76	4.7	0.06	0.15	0.16	100	
110	11.06	11.05	32.955	25.176	280.6	0.374	5.46	87.3	6.6	0.98	8.6	0.02	0.09	0.10	110	211
125	10.37	10.36	33.199	25.486	251.3	0.414	5.02	79.2	10.5	1.22	13.2	0.01	0.03	0.04	126	210
144	9.77	9.75	33.375	25.724	228.9	0.460	4.64	72.3	14.4	1.41	16.6	0.01	0.01	0.02	145	209
150 ISL	9.64	9.62	33.439	25.796	222.2	0.473	4.46	69.3	15.8	1.47	17.7	0.01	0.01	0.02	151	
169	9.34	9.32	33.631	25.995	203.6	0.514	3.89	60.1	20.2	1.65	20.8	0.01	0.00	0.02	170	208
199	9.06	9.04	33.818	26.187	185.9	0.572	3.35	51.5	25.1	1.82	23.9	0.01	0.00	0.02	200	207
200 ISL	9.05	9.03	33.824	26.193	185.4	0.574	3.33	51.2	25.3	1.83	24.0	0.01			201	
229	8.68	8.66	33.982	26.375	168.5	0.625	2.82	43.0	31.7	2.03	27.1	0.01			230	206
250 ISL	8.41	8.38	34.026	26.452	161.6	0.660	2.62	39.7	35.0	2.13	28.5	0.01			251	
269	8.18	8.15	34.041	26.498	157.4	0.690	2.49	37.6	37.6	2.20	29.4	0.01			270	205
300 ISL	7.85	7.82	34.060	26.562	151.7	0.738	2.29	34.3	41.5	2.31	30.8	0.01			302	
319	7.64	7.61	34.066	26.598	148.5	0.767	2.14	31.9	44.2	2.38	31.7	0.01			321	204
379	6.82	6.78	34.099	26.739	135.5	0.852	1.34	19.6	56.8	2.73	36.1	0.01			381	203
400 ISL	6.60	6.56	34.115	26.781	131.7	0.880	1.15	16.7	60.8	2.82	37.2	0.01			402	
438	6.26	6.22	34.147	26.851	125.3	0.929	0.87	12.6	67.7	2.95	38.7	0.00			441	202
500 ISL	5.81	5.77	34.199	26.949	116.4	1.004	0.57	8.1	77.7	3.10	40.5	0.00			503	
514	5.71	5.67	34.211	26.971	114.4	1.020	0.50	7.1	80.0	3.13	40.9	0.00			517	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 54.6 N	124 10.2 W	08/02/03	1923	UTC	4205 m	090	08 kn	010 03 07	1	1017.2 mb	15.1 C	13.1 C	35m	6/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.59	15.59	32.771	24.126	378.0	0.000			0.6	0.40	0.1	0.00	0.16	0.04	0	
2 A	15.59	15.59	32.771	24.126	378.1	0.008			0.6	0.40	0.1	0.00	0.16	0.04	2	223
10 ISL	15.53	15.53	32.766	24.136	377.4	0.038			0.6	0.40	0.0	0.00	0.16	0.05	10	
12	15.51	15.51	32.764	24.139	377.2	0.045			0.6	0.40	0.0	0.00	0.16	0.05	12	222
20 ISL	15.49	15.49	32.763	24.142	377.1	0.075			0.6	0.39	0.0	0.00	0.18	0.05	20	
21 A	15.49	15.49	32.763	24.143	377.1	0.079	5.81	101.7	0.6	0.39	0.0	0.00	0.18	0.05	21	221
30 ISL	15.49	15.49	32.763	24.143	377.3	0.113	5.80	101.6	0.6	0.39	0.0	0.00	0.17	0.05	30	
32	15.49	15.49	32.763	24.143	377.4	0.121	5.80	101.6	0.6	0.39	0.0	0.00	0.17	0.05	32	220
44 A	15.49	15.48	32.762	24.143	377.8	0.166	5.82	101.9	0.6	0.39	0.0	0.00	0.17	0.05	44	219
50 ISL	15.49	15.48	32.762	24.143	377.9	0.189	5.80	101.6	0.6	0.40	0.0	0.00	0.17	0.05	50	
53	15.49	15.48	32.762	24.143	378.0	0.200	5.79	101.4	0.6	0.40	0.0	0.00	0.17	0.05	53	218
62	15.48	15.47	32.762	24.145	378.1	0.234	5.79	101.4	0.6	0.39	0.0	0.00	0.17	0.06	62	217
70 A	15.48	15.47	32.762	24.146	378.3	0.264	5.81	101.7	0.6	0.39	0.0	0.00	0.19	0.05	70	216
75 ISL	15.30	15.29	32.763	24.186	374.6	0.283	5.80	101.2	0.7	0.40	0.1	0.02	0.22	0.11	75	
78	15.05	15.04	32.760	24.238	369.7	0.294	5.80	100.7	0.8	0.41	0.1	0.03	0.25	0.16	78	215
86	13.53	13.52	32.737	24.538	341.1	0.323	5.86	98.6	1.9	0.57	1.8	0.08	0.32	0.22	86	214
95 A	11.95	11.94	32.695	24.811	315.0	0.352	5.96	96.9	3.4	0.76	4.2	0.02	0.22	0.18	95	213
100 ISL	11.16	11.15	32.654	24.923	304.3	0.368	5.94	95.0	4.4	0.84	5.6	0.02	0.16	0.14	100	
107	10.31	10.30	32.615	25.041	293.2	0.389	5.92	92.9	5.7	0.94	7.3	0.02	0.10	0.08	107	212
119	9.87	9.86	32.665	25.153	282.6	0.423	5.81	90.3	7.5	1.05	9.3	0.02	0.06	0.05	119	211
125 ISL	10.02	10.01	32.822	25.251	273.5	0.440	5.58	87.1	8.0	1.05	9.9	0.02	0.05	0.04	126	
132 A	10.20	10.18	33.025	25.379	261.5	0.459	5.29	83.0	8.7	1.06	10.6	0.02	0.04	0.04	133	210
150 ISL	9.39	9.37	33.242	25.683	232.8	0.503	4.91	75.8	13.3	1.30	15.1	0.02	0.01	0.02	151	
151	9.33	9.31	33.252	25.700	231.2	0.505	4.89	75.4	13.6	1.32	15.4	0.02	0.01	0.02	152	209
170	9.24	9.22	33.627	26.008	202.3	0.547	4.11	63.4	19.3	1.54	19.6	0.02	0.01	0.01	171	208
199	8.90	8.88	33.897	26.274	177.6	0.602	3.25	49.8	27.6	1.87	24.8	0.02	0.00	0.01	200	207
200 ISL	8.89	8.87	33.902	26.279	177.1	0.604	3.22	49.3	27.8	1.88	24.9	0.02			201	
229	8.60	8.58	34.002	26.403	165.8	0.653	2.61	39.8	33.8	2.11	28.2	0.02			230	206
250 ISL	8.44	8.41	34.042	26.459	160.8	0.688	2.31	35.1	36.8	2.22	29.7	0.02			251	
268	8.30	8.27	34.062	26.497	157.6	0.716	2.13	32.2	39.0	2.30	30.6	0.02			269	205
300 ISL	7.93	7.90	34.080	26.566	151.3	0.766	1.90	28.5	43.1	2.41	32.1	0.02			302	
319	7.68	7.65	34.084	26.606	147.7	0.794	1.80	26.9	45.8	2.47	32.9	0.02			321	204
379	6.83	6.79	34.092	26.732	136.2	0.879	1.40	20.5	56.4	2.70	36.0	0.01			381	203
400 ISL	6.56	6.52	34.113	26.784	131.3	0.907	1.22	17.7	61.5	2.81	37.2	0.01			402	
438	6.16	6.12	34.159	26.873	123.1	0.956	0.91	13.1	70.3	2.99	39.2	0.01			441	202
500 ISL	5.85	5.81	34.209	26.952	116.2	1.030	0.55	7.9	77.8	3.11	40.5	0.01			503	
511	5.80	5.76	34.218	26.965	115.0	1.043	0.49	7.0	79.1	3.13	40.7	0.01			514	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 33

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 53.3 N	118 29.2 W	06/02/03	0825	UTC	56 m	340	10 kn			1014.9 mb	14.5 C	13.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.48	15.48	33.412	24.643	328.7	0.000	5.89	103.5	1.8	0.36	0.1	0.01	0.46	0.12	0	
1	15.48	15.48	33.412	24.644	328.7	0.003	5.89	103.5	1.8	0.36	0.1	0.01	0.46	0.12	1	207
6	15.47	15.47	33.412	24.646	328.7	0.020	5.90	103.7	1.8	0.36	0.1	0.01	0.50	0.12	6	206
10 ISL	15.48	15.48	33.412	24.644	329.0	0.033	5.90	103.7	1.7	0.36	0.1	0.01	0.48	0.12	10	
11	15.48	15.48	33.412	24.644	329.0	0.036	5.90	103.7	1.7	0.36	0.1	0.01	0.48	0.12	11	205
20 ISL	15.46	15.46	33.409	24.646	329.1	0.066	5.91	103.8	1.7	0.36	0.1	0.01	0.56	0.14	20	
21	15.46	15.46	33.409	24.646	329.1	0.069	5.91	103.8	1.7	0.36	0.1	0.01	0.57	0.14	21	204
30	15.16	15.16	33.388	24.696	324.6	0.098	5.82	101.6	2.4	0.43	0.5	0.06	1.02	0.27	30	203
41	13.90	13.89	33.308	24.902	305.2	0.133	5.14	87.4	6.0	0.83	4.2	0.36	0.72	0.41	41	202
50	12.81	12.80	33.312	25.125	284.2	0.160	4.60	76.5	8.8	1.08	9.0	0.73	0.43	0.32	50	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 49.2 N	118 37.8 W	06/02/03	1035	UTC	685 m	340	12 kn			1014.7 mb	14.0 C	10.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.61	15.61	33.413	24.615	331.4	0.000	5.84	102.9	2.1	0.36	0.1	0.01	0.36	0.12	0	
1	15.61	15.61	33.413	24.615	331.4	0.003	5.84	102.9	2.1	0.36	0.1	0.01	0.36	0.12	1	220
10	15.62	15.62	33.412	24.613	332.0	0.033	5.85	103.1	2.1	0.36	0.1	0.01	0.32	0.09	10	219
20	15.62	15.62	33.412	24.613	332.2	0.066	5.85	103.1	2.0	0.37	0.1	0.01	0.36	0.11	20	218
30	15.62	15.62	33.411	24.613	332.6	0.100	5.85	103.1	2.1	0.36	0.0	0.01	0.30	0.11	30	217
40	14.60	14.59	33.318	24.763	318.5	0.132	5.79	99.9	3.0	0.47	0.5	0.06	0.56	0.28	40	216
50	13.92	13.91	33.281	24.878	307.9	0.163	5.63	95.8	3.7	0.59	2.1	0.14	0.68	0.31	50	215
59	12.72	12.71	33.238	25.085	288.2	0.190	5.24	86.9	5.7	0.85	6.5	0.12	0.42	0.30	59	214
70	12.38	12.37	33.358	25.244	273.4	0.221	4.65	76.7	7.9	1.05	9.7	0.05	0.31	0.31	70	213
75 ISL	12.26	12.25	33.392	25.294	268.8	0.235	4.49	73.8	8.6	1.10	10.6	0.04	0.27	0.28	75	
85	12.03	12.02	33.444	25.378	261.0	0.261	4.27	69.9	9.8	1.19	12.1	0.03	0.19	0.20	85	212
99	11.58	11.57	33.526	25.525	247.2	0.297	4.03	65.4	12.1	1.34	14.4	0.03	0.09	0.12	99	211
100 ISL	11.54	11.53	33.533	25.538	246.0	0.299	4.01	65.0	12.3	1.35	14.6	0.03	0.08	0.11	100	
119	10.76	10.75	33.683	25.796	221.9	0.344	3.54	56.5	16.8	1.57	18.3	0.02	0.02	0.05	120	210
125 ISL	10.60	10.59	33.722	25.854	216.4	0.357	3.41	54.2	18.0	1.62	19.2	0.02	0.02	0.05	126	
140	10.32	10.30	33.817	25.977	205.0	0.388	3.08	48.7	20.9	1.76	21.2	0.01	0.01	0.06	141	209
150 ISL	10.22	10.20	33.898	26.057	197.6	0.409	2.76	43.6	23.2	1.88	22.7	0.01	0.01	0.05	151	
168	10.11	10.09	34.025	26.176	186.8	0.443	2.23	35.1	27.1	2.08	25.0	0.01	0.01	0.04	169	208
198	9.80	9.78	34.091	26.280	177.4	0.498	2.01	31.5	30.5	2.20	26.5	0.01	0.01	0.04	199	207
200 ISL	9.78	9.76	34.098	26.289	176.6	0.501	1.99	31.1	30.8	2.21	26.6	0.01			201	
228	9.43	9.40	34.201	26.428	164.0	0.549	1.64	25.5	34.9	2.37	28.6	0.01			229	206
250 ISL	9.19	9.16	34.254	26.508	156.7	0.584	1.37	21.2	38.1	2.48	29.7	0.01			251	
268	8.99	8.96	34.279	26.560	152.0	0.612	1.19	18.3	40.7	2.56	30.4	0.01			270	205
300 ISL	8.55	8.52	34.275	26.626	146.1	0.660	1.03	15.7	45.0	2.66	31.9	0.01			302	
318	8.30	8.27	34.264	26.656	143.5	0.686	0.98	14.9	47.4	2.70	32.7	0.01			320	204
378	7.60	7.56	34.271	26.766	133.7	0.769	0.74	11.0	55.8	2.87	35.0	0.01			380	203
400 ISL	7.37	7.33	34.276	26.802	130.4	0.798	0.65	9.6	58.9	2.93	35.7	0.01			403	
437	7.01	6.97	34.288	26.862	125.0	0.845	0.52	7.6	64.4	3.01	36.9	0.01			440	202
500 ISL	6.42	6.37	34.315	26.963	115.8	0.921	0.35	5.1	74.5	3.13	38.7	0.01			503	
515	6.28	6.23	34.322	26.987	113.6	0.938	0.31	4.5	76.9	3.16	39.1	0.01			519	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 39.3 N	118 58.7 W	06/02/03	1448 UTC	708 m	270 07 kn	290 01 06	1	1015.6 mb	14.0 C	11.9 C	19m	1/8	AC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.26	15.26	33.368	24.658	327.3	0.000	5.94	103.9	2.1	0.38	0.1	0.00	0.26	0.05	0	
2	15.26	15.26	33.368	24.658	327.4	0.007	5.94	103.9	2.1	0.38	0.1	0.00	0.26	0.05	2	220
10	15.26	15.26	33.369	24.659	327.5	0.033	5.92	103.6	2.1	0.38	0.0	0.00	0.27	0.05	10	219
20	15.26	15.26	33.368	24.659	327.9	0.066	5.93	103.7	2.2	0.38	0.0	0.00	0.28	0.07	20	218
30	15.22	15.22	33.364	24.665	327.6	0.098	5.94	103.8	2.2	0.38	0.0	0.00	0.29	0.07	30	217
39	14.15	14.14	33.296	24.841	311.0	0.127	5.77	98.7	3.5	0.54	1.6	0.09	0.67	0.26	39	216
49	12.88	12.87	33.308	25.108	285.8	0.157	5.11	85.1	6.3	0.87	6.8	0.14	0.53	0.30	49	215
50 ISL	12.74	12.73	33.306	25.134	283.4	0.160	5.07	84.2	6.6	0.90	7.3	0.13	0.50	0.29	50	
59	11.71	11.70	33.312	25.334	264.4	0.184	4.75	77.2	9.0	1.12	11.2	0.04	0.26	0.22	59	214
69	11.37	11.36	33.426 D	25.485	250.3	0.210	4.35	70.2	11.5	1.27	13.7	0.02	0.15	0.16	69	213
75 ISL	11.09	11.08	33.479	25.577	241.6	0.225	4.17	66.9	12.9	1.35	15.1	0.02	0.10	0.12	75	
84	10.70	10.69	33.558	25.708	229.4	0.246	3.91	62.3	15.0	1.47	17.0	0.02	0.05	0.08	84	212
99	10.35	10.34	33.723	25.898	211.6	0.279	3.35	53.0	19.0	1.66	20.0	0.02	0.02	0.05	99	211
100 ISL	10.34	10.33	33.732	25.906	210.8	0.281	3.32	52.5	19.2	1.67	20.1	0.02	0.02	0.05	100	
119	10.19	10.18	33.879	26.047	197.9	0.320	2.83	44.6	23.0	1.87	22.4	0.01	0.01	0.04	120	210
125 ISL	10.15	10.14	33.910	26.078	195.1	0.332	2.71	42.7	24.0	1.92	23.0	0.01	0.01	0.04	126	
139	10.05	10.03	33.974	26.146	189.0	0.359	2.44	38.4	26.3	2.01	24.4	0.02	0.02	0.05	140	209
150 ISL	9.95	9.93	34.038	26.213	182.8	0.379	2.22	34.9	28.3	2.09	25.5	0.02	0.02	0.04	151	
169	9.79	9.77	34.139	26.319	173.2	0.413	1.88	29.4	31.4	2.23	27.1	0.01	0.01	0.03	170	208
198	9.65	9.63	34.221	26.406	165.4	0.462	1.58	24.7	34.4	2.37	28.3	0.01	0.00	0.03	199	207
200 ISL	9.63	9.61	34.223	26.411	165.0	0.465	1.57	24.5	34.6	2.38	28.4	0.01			201	
228	9.31	9.28	34.232	26.471	159.8	0.511	1.40	21.7	37.5	2.46	29.5	0.01			229	206
250 ISL	9.07	9.04	34.264	26.535	154.0	0.545	1.21	18.7	40.5	2.55	30.4	0.01			251	
270	8.84	8.81	34.291	26.593	148.8	0.576	1.05	16.1	43.3	2.63	31.2	0.01			272	205
300 ISL	8.43	8.40	34.281	26.649	143.9	0.620	0.96	14.6	47.0	2.70	32.3	0.01			302	
319	8.18	8.15	34.268	26.677	141.4	0.647	0.93	14.1	49.3	2.74	33.0	0.01			321	204
379	7.57	7.53	34.275	26.773	133.0	0.729	0.72	10.7	56.6	2.87	35.1	0.01			381	203
400 ISL	7.44	7.40	34.277	26.793	131.3	0.757	0.68	10.1	58.2	2.90	35.6	0.01			403	
439	7.22	7.18	34.281	26.828	128.5	0.807	0.61	9.0	61.3	2.95	36.3	0.01			442	202
500 ISL	6.74	6.69	34.298	26.908	121.4	0.884	0.45	6.6	69.0	3.07	37.8	0.01			503	
513	6.64	6.59	34.302	26.924	119.9	0.899	0.41	6.0	70.6	3.09	38.1	0.01			517	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 29.3 N	119 19.1 W	06/02/03	1900 UTC	1636 m	350 05 kn	260 01 07	1	1017.0 mb	15.9 C	14.0 C	19m	5/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.52	14.52	33.342	24.798	314.0	0.000	6.04	104.1	3.5	0.45	0.7	0.03	0.94	0.17	0	
1 A	14.52	14.52	33.342	24.798	314.1	0.003	6.04	104.1	3.5	0.45	0.7	0.03	0.94	0.17	1	222
10 ISL	14.40	14.40	33.340	24.822	312.0	0.031	6.03	103.7	3.5	0.46	0.7	0.04	0.98	0.18	10	
12 A	14.37	14.37	33.340	24.828	311.5	0.038	6.03	103.6	3.5	0.46	0.7	0.04	0.99	0.18	12	221
19	13.48	13.48	33.338	25.011	294.3	0.059	5.55	93.6	5.4	0.68	4.2	0.11	0.73	0.27	19	220
20 ISL	13.33	13.33	33.337	25.040	291.5	0.062	5.48	92.2	5.8	0.72	4.8	0.12	0.72	0.28	20	
25 A	12.73	12.73	33.335	25.157	280.5	0.076	5.20	86.4	7.3	0.87	7.2	0.15	0.68	0.32	25	219
30 ISL	12.64	12.64	33.335	25.175	278.9	0.090	5.12	84.9	7.6	0.91	7.8	0.15	0.66	0.35	30	
32	12.61	12.61	33.335	25.181	278.4	0.096	5.11	84.6	7.7	0.92	7.9	0.15	0.65	0.35	32	218
39 A	12.33	12.32	33.331	25.232	273.7	0.115	5.02	82.7	8.4	0.99	8.9	0.15	0.53	0.31	39	217
45	11.56	11.55	33.311	25.361	261.6	0.131	4.77	77.3	10.3	1.15	11.6	0.09	0.33	0.24	45	216
50 ISL	11.38	11.37	33.356	25.429	255.2	0.144	4.62	74.6	11.1	1.21	12.8	0.09	0.28	0.22	50	
52 A	11.35	11.34	33.376	25.450	253.2	0.149	4.57	73.7	11.3	1.23	13.1	0.09	0.27	0.21	52	215
62	10.83	10.82	33.358	25.529	245.9	0.174	4.50	71.8	12.5	1.31	14.4	0.06	0.20	0.17	62	214
72 A	10.38	10.37	33.497	25.716	228.3	0.198	4.04	63.9	16.0	1.50	17.6	0.03	0.07	0.10	72	213
75 ISL	10.38	10.37	33.546	25.754	224.7	0.204	3.90	61.7	16.8	1.54	18.2	0.03	0.06	0.10	75	
86	10.39	10.38	33.677	25.855	215.4	0.229	3.43	54.3	19.1	1.66	19.8	0.02	0.04	0.09	86	212
100	10.32	10.31	33.780	25.947	207.0	0.258	3.08	48.7	21.1	1.77	21.2	0.01	0.02	0.07	101	211
120	9.78	9.77	33.917	26.146	188.4	0.298	2.76	43.2	25.6	1.93	24.0	0.01	0.01	0.06	121	210
125 ISL	9.71	9.70	33.941	26.176	185.6	0.307	2.69	42.0	26.4	1.96	24.5	0.01	0.01	0.05	126	
140	9.57	9.55	34.006	26.250	178.9	0.334	2.47	38.5	28.7	2.05	25.7	0.01	0.00	0.04	141	209
150 ISL	9.52	9.50	34.056	26.298	174.6	0.352	2.26	35.2	30.4	2.13	26.5	0.01	0.00	0.03	151	
170	9.45	9.43	34.144	26.379	167.4	0.386	1.84	28.6	33.6	2.28	28.0	0.01	0.00	0.03	171	208
200	9.22	9.20	34.209	26.467	159.5	0.435	1.52	23.5	37.3	2.42	29.5	0.01	0.00	0.03	201	207
229	9.08	9.05	34.267	26.536	153.6	0.481	1.21	18.7	40.2	2.55	30.5	0.01			230	206
250 ISL	8.86	8.83	34.277	26.579	149.8	0.513	1.10	16.9	42.6	2.61	31.2	0.01			251	
269	8.62	8.59	34.275	26.615	146.6	0.541	1.04	15.9	44.9	2.65	31.9	0.01			271	205
300 ISL	8.23	8.20	34.274	26.674	141.4	0.585	0.93	14.1	48.9	2.73	33.1	0.01			302	
318	8.02	7.99	34.273	26.705	138.6	0.611	0.87	13.1	51.2	2.77	33.7	0.01			320	204
379	7.50	7.46	34.272	26.781	132.2	0.693	0.74	11.0	57.1	2.87	35.3	0.00			381	203
400 ISL	7.44	7.40	34.272	26.789	131.7	0.721	0.71	10.5	57.7	2.89	35.5	0.00			403	
438	7.32	7.28	34.276	26.810	130.2	0.771	0.65	9.6	59.4	2.92	36.0	0.00			441	202
500 ISL	6.64	6.59	34.303	26.925	119.7	0.848	0.42	6.1	70.1	3.07	38.3	0.00			503	
514	6.49	6.44	34.310	26.950	117.3	0.865	0.37	5.4	72.5	3.11	38.8	0.00			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 19.6 N	119 39.7 W	06/02/03	2307 UTC	79 m	080 03 kn	160 01 08	1	1014.1 mb	16.0 C	13.1 C	13m	2/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.50	14.50	33.321	24.786	315.2	0.000	6.05	104.2	3.5	0.46	0.8	0.06	1.20	0.41	0	
2	14.50	14.50	33.321	24.786	315.2	0.006	6.05	104.2	3.5	0.46	0.8	0.06	1.20	0.41	2	209
6	14.43	14.43	33.326	24.805	313.6	0.019	6.04	103.9	3.5	0.45	0.8	0.07	1.18	0.42	6	208
10 ISL	14.30	14.30	33.332	24.837	310.6	0.031	6.06	104.0	3.6	0.45	0.8	0.07	1.13	0.43	10	
11	14.27	14.27	33.333	24.844	310.0	0.034	6.07	104.1	3.6	0.45	0.8	0.07	1.12	0.43	11	207
20 ISL	14.15	14.15	33.333	24.869	307.8	0.062	6.00	102.6	3.6	0.48	1.1	0.09	1.37	0.53	20	
21	14.15	14.15	33.332	24.868	307.9	0.065	5.99	102.4	3.6	0.48	1.1	0.09	1.40	0.54	21	206
30	14.08	14.08	33.329	24.881	307.0	0.093	5.93	101.3	3.7	0.49	1.4	0.09	1.39	0.51	30	205
41	13.91	13.90	33.322	24.911	304.4	0.127	5.84	99.4	4.0	0.53	2.0	0.11	1.01	0.55	41	204
50	12.97	12.96	33.308	25.090	287.5	0.153	5.24	87.4	6.7	0.83	6.7	0.13	0.32	0.26	50	203
60	11.41	11.40	33.296	25.377	260.4	0.181	4.76	76.8	10.3	1.17	12.0	0.07	0.14	0.17	60	202
69	11.13	11.12	33.325	25.450	253.6	0.204	4.62	74.1	11.4	1.24	13.3	0.06	0.10	0.13	69	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 9.4 N	120 0.3 W	07/02/03	0250 UTC	1200 m	00 kn			1014.5 mb	14.0 C	12.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.77	14.77	33.003	24.483	344.0	0.000	5.99	103.5	0.7	0.40	0.0	0.00	0.31	0.08	0	
2	14.77	14.77	33.003	24.483	344.1	0.007	5.99	103.5	0.7	0.40	0.0	0.00	0.31	0.08	2	220
10 ISL	14.75	14.75	33.001	24.486	344.0	0.034	6.00	103.7	0.7	0.40	0.0	0.00	0.33	0.08	10	
12	14.75	14.75	33.001	24.486	344.1	0.041	6.00	103.7	0.7	0.40	0.0	0.00	0.33	0.08	12	219
20 ISL	14.65	14.65	32.997	24.505	342.5	0.069	5.99	103.3	0.7	0.40	0.0	0.00	0.38	0.10	20	
21	14.64	14.64	32.997	24.507	342.4	0.072	5.99	103.3	0.7	0.40	0.0	0.00	0.39	0.10	21	218
30 ISL	14.59	14.59	32.998	24.518	341.5	0.103	5.99	103.2	0.7	0.40	0.0	0.00	0.54	0.15	30	
31	14.58	14.58	32.999	24.521	341.2	0.106	5.99	103.1	0.7	0.40	0.0	0.00	0.56	0.16	31	217
40	14.45	14.44	33.010	24.557	338.0	0.137	5.98	102.7	0.8	0.42	0.1	0.01	0.77	0.22	40	216
50	14.06	14.05	33.011	24.640	330.4	0.170	5.87	100.0	1.4	0.50	1.1	0.06	0.66	0.28	50	215
60	13.19	13.18	33.010	24.816	313.9	0.203	5.74	96.0	2.6	0.65	3.1	0.09	0.38	0.24	60	214
70	12.30	12.29	32.991	24.975	298.9	0.233	5.60	91.9	4.2	0.81	5.6	0.05	0.23	0.19	70	213
75 ISL	11.75	11.74	33.013	25.095	287.6	0.248	5.45	88.5	5.8	0.93	7.7	0.04	0.17	0.15	75	
85	10.74	10.73	33.102	25.346	263.8	0.275	5.10	81.0	9.4	1.17	12.1	0.02	0.09	0.08	85	212
100	10.07	10.06	33.288	25.606	239.3	0.313	4.64	72.7	13.7	1.39	15.9	0.01	0.04	0.05	100	211
119	9.96	9.95	33.428 D	25.734	227.5	0.358	4.19	65.6	16.4	1.52	18.2	0.01	0.02	0.03	120	210
125 ISL	9.95	9.94	33.508	25.798	221.5	0.371	3.97	62.2	17.6	1.58	19.0	0.01	0.02	0.03	126	
139	9.90	9.88	33.706	25.961	206.4	0.401	3.42	53.5	20.9	1.74	21.1	0.01	0.01	0.04	140	209
150 ISL	9.82	9.80	33.829	26.071	196.2	0.423	2.99	46.8	23.7	1.87	22.8	0.01	0.01	0.04	151	
169	9.58	9.56	33.983	26.231	181.3	0.459	2.42	37.7	28.2	2.05	25.3	0.01	0.00	0.03	170	208
199	8.90	8.88	34.064	26.405	165.2	0.511	2.35	36.1	33.2	2.17	27.7	0.01	0.00	0.03	200	207
200 ISL	8.88	8.86	34.067	26.410	164.7	0.513	2.34	35.9	33.4	2.18	27.8	0.01			201	
229	8.48	8.46	34.147	26.535	153.3	0.559	1.86	28.3	39.4	2.39	30.0	0.01			230	206
250 ISL	8.37	8.34	34.177	26.576	149.8	0.591	1.65	25.0	41.7	2.47	30.7	0.01			251	
268	8.30	8.27	34.194	26.600	147.8	0.617	1.51	22.9	43.4	2.53	31.2	0.01			270	205
300 ISL	8.00	7.97	34.227	26.672	141.5	0.664	1.19	17.9	48.2	2.67	32.7	0.01			302	
318	7.81	7.78	34.242	26.712	137.9	0.689	1.03	15.4	51.0	2.75	33.5	0.01			320	204
378	7.29	7.25	34.268	26.807	129.5	0.769	0.72	10.7	58.7	2.91	35.6	0.01			380	203
400 ISL	7.09	7.05	34.266	26.834	127.2	0.797	0.66	9.7	61.4	2.95	36.3	0.01			403	
437	6.77	6.73	34.259	26.872	123.8	0.844	0.59	8.6	65.7	3.01	37.4	0.01			440	202
500 ISL	6.34	6.29	34.259	26.930	118.9	0.920	0.49	7.1	72.2	3.09	39.0	0.01			503	
516	6.23	6.18	34.260	26.945	117.6	0.939	0.46	6.6	73.8	3.11	39.4	0.01			520	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 59.4 N	120 21.0 W	07/02/03	0712 UTC	719 m	340 06 kn			1014.8 mb	13.9 C	12.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.60	14.60	33.055	24.559	336.7	0.000	6.05	104.3	1.4	0.40	0.0	0.00	0.38	0.11	0	
1	14.60	14.60	33.055	24.559	336.7	0.003	6.05	104.3	1.4	0.40	0.0	0.00	0.38	0.11	1	220
10	14.41	14.41	33.057	24.601	333.0	0.034	6.06	104.0	1.5	0.41	0.0	0.01	0.62	0.23	10	219
20	14.34	14.34	33.061	24.619	331.6	0.067	6.01	103.0	1.6	0.42	0.1	0.01	0.96	0.42	20	218
30	14.34	14.34	33.071	24.627	331.1	0.100	6.06	103.9	1.6	0.41	0.1	0.01	1.00	0.38	30	217
40	14.20	14.19	33.064	24.652	329.1	0.133	6.01	102.7	1.8	0.44	0.3	0.02	1.01	0.41	40	216
50	12.86	12.85	32.968	24.848	310.5	0.165	5.75	95.5	3.2	0.68	3.7	0.07	0.40	0.31	50	215
60	12.22	12.21	32.941	24.951	300.9	0.195	5.66	92.7	4.3	0.79	5.3	0.07	0.28	0.27	60	214
70	10.88	10.87	33.033	25.267	270.9	0.224	5.27	84.0	8.5	1.11	10.8	0.03	0.12	0.10	70	213
75 ISL	10.86	10.85	33.126	25.343	263.8	0.237	5.11	81.4	9.5	1.17	12.0	0.03	0.11	0.10	75	
85	10.82	10.81	33.237	25.437	255.1	0.263	4.80	76.5	11.0	1.24	13.4	0.02	0.08	0.09	85	212
100	10.68	10.67	33.452	25.629	237.2	0.300	4.21	67.0	14.3	1.41	16.4	0.02	0.04	0.07	100	211
120	9.97	9.96	33.667	25.919	210.0	0.345	3.58	56.1	19.8	1.66	20.6	0.02	0.01	0.05	121	210
125 ISL	9.92	9.91	33.682	25.939	208.2	0.355	3.53	55.3	20.2	1.68	20.9	0.02	0.01	0.05	126	
140	9.82	9.80	33.707	25.976	205.0	0.386	3.45	53.9	21.0	1.71	21.3	0.02	0.01	0.06	141	209
150 ISL	9.62	9.60	33.761	26.051	198.0	0.407	3.33	51.8	22.8	1.77	22.3	0.02	0.01	0.05	151	
169	9.20	9.18	33.882	26.214	182.8	0.443	3.05	47.1	26.9	1.90	24.7	0.02	0.01	0.03	170	208
200	8.80	8.78	34.034	26.397	166.0	0.497	2.51	38.4	33.3	2.12	27.7	0.02	0.01	0.03	201	207
229	8.64	8.62	34.090	26.466	159.9	0.544	2.20	33.6	36.8	2.25	29.1	0.02			230	206
250 ISL	8.62	8.59	34.159	26.524	154.9	0.577	1.81	27.6	39.7	2.39	30.1	0.01			251	
268	8.57	8.54	34.211	26.573	150.6	0.605	1.50	22.9	42.3	2.51	30.9	0.01			270	205
300 ISL	8.16	8.13	34.213	26.637	144.9	0.652	1.38	20.8	46.2	2.61	32.2	0.01			302	
318	7.87	7.84	34.197	26.667	142.1	0.678	1.31	19.6	48.4	2.64	33.0	0.01			320	204
377	7.01	6.97	34.175	26.773	132.5	0.759	1.07	15.7	58.1	2.81	36.1	0.01			379	203
400 ISL	6.77	6.73	34.174	26.805	129.6	0.789	0.96	14.0	61.5	2.87	37.0	0.01			403	
437	6.45	6.41	34.182	26.854	125.2	0.836	0.79	11.5	66.8	2.97	38.3	0.01			440	202
500 ISL	6.07	6.03	34.226	26.938	117.8	0.913	0.52	7.5	75.0	3.10	39.9	0.01			503	
515	5.98	5.93	34.236	26.957	116.1	0.930	0.46	6.6	77.0	3.13	40.3	0.01			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 87 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 39.2 N	121 2.0 W	07/02/03	1311	UTC	3799 m	270	03 kn	310 01 07	1	1013.1 mb	14.3 C	12.4 C		5/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.02	14.02	33.095	24.712	322.2	0.000	5.98	101.9	2.1	0.47	0.7	0.04	0.58	0.17	0	
1	14.02	14.02	33.095	24.712	322.2	0.003	5.98	101.9	2.1	0.47	0.7	0.04	0.58	0.17	1	220
10 ISL	13.97	13.97	33.148	24.763	317.6	0.032	6.03	102.6	2.6	0.49	0.9	0.05	0.62	0.16	10	
11	13.96	13.96	33.158	24.773	316.7	0.035	6.03	102.6	2.7	0.49	0.9	0.05	0.63	0.16	11	219
20 ISL	14.37	14.37	33.365	24.848	309.9	0.063	5.97	102.6	3.9	0.47	0.7	0.06	0.73	0.36	20	
21	14.42	14.42	33.386	24.853	309.3	0.066	5.96	102.5	4.0	0.47	0.7	0.06	0.74	0.38	21	218
30	14.38	14.38	33.389	24.865	308.5	0.094	5.91	101.6	4.1	0.48	1.1	0.09	0.74	0.40	30	217
40	14.31	14.30	33.385	24.876	307.7	0.125	5.80	99.5	4.1	0.51	1.3	0.13	0.55	0.42	40	216
50	14.23	14.22	33.385	24.894	306.4	0.156	5.84	100.1	4.4	0.53	1.6	0.12	0.50	0.36	50	215
60	13.95	13.94	33.373	24.943	301.9	0.186	5.68	96.8	5.1	0.60	2.8	0.17	0.35	0.28	60	214
70	12.41	12.40	33.321	25.210	276.6	0.215	4.98	82.1	8.2	1.00	9.1	0.11	0.15	0.18	70	213
75 ISL	11.67	11.66	33.289	25.324	265.8	0.229	4.93	80.0	9.4	1.12	11.2	0.07	0.10	0.14	75	
83	10.72	10.71	33.266	25.477	251.3	0.249	4.85	77.1	11.0	1.24	13.5	0.02	0.05	0.10	83	212
99	10.29	10.28	33.406	25.661	234.1	0.288	4.46	70.3	13.8	1.37	15.9	0.02	0.03	0.06	99	211
100 ISL	10.28	10.27	33.413	25.668	233.4	0.291	4.44	70.0	13.9	1.38	16.0	0.02	0.03	0.06	100	
119	10.18	10.17	33.540	25.784	222.8	0.334	3.94	62.0	17.5	1.57	18.8	0.02	0.02	0.06	120	210
125 ISL	10.21	10.20	33.636	25.854	216.3	0.347	3.51	55.3	19.5	1.69	20.2	0.02	0.02	0.06	126	
139	10.27	10.25	33.870	26.027	200.3	0.376	2.57	40.6	24.2	1.95	23.2	0.01	0.01	0.07	140	209
150 ISL	9.86	9.84	33.900	26.120	191.6	0.398	2.73	42.8	26.0	1.95	24.4	0.01	0.01	0.06	151	
170	9.00	8.98	33.881	26.245	179.8	0.435	3.01	46.2	28.1	1.95	25.7	0.01	0.01	0.05	171	208
199	8.65	8.63	33.986	26.383	167.2	0.485	2.70	41.2	32.8	2.08	27.8	0.02	0.01	0.04	200	207
200 ISL	8.64	8.62	33.988	26.386	166.9	0.487	2.70	41.2	32.9	2.08	27.8	0.02			201	
230	8.18	8.16	34.022	26.483	158.1	0.536	2.67	40.3	36.6	2.13	28.9	0.02			231	206
250 ISL	7.93	7.90	34.033	26.529	154.0	0.567	2.52	37.8	39.4	2.21	30.0	0.02			251	
269	7.69	7.66	34.039	26.569	150.4	0.596	2.32	34.6	42.4	2.30	31.2	0.01			271	205
300 ISL	7.16	7.13	34.049	26.652	142.7	0.641	1.96	28.9	49.2	2.48	33.5	0.01			302	
319	6.86	6.83	34.056	26.698	138.4	0.668	1.74	25.5	53.4	2.59	34.8	0.01			321	204
379	6.41	6.38	34.085	26.782	131.1	0.749	1.31	19.0	61.7	2.79	37.2	0.01			381	203
400 ISL	6.27	6.23	34.112	26.821	127.5	0.776	1.10	15.9	65.5	2.88	38.1	0.01			403	
440	6.01	5.97	34.165	26.897	120.8	0.826	0.72	10.3	72.7	3.03	39.7	0.01			443	202
500 ISL	5.64	5.60	34.201	26.971	114.1	0.896	0.52	7.4	80.5	3.14	41.1	0.01			503	
512	5.57	5.53	34.208	26.985	112.8	0.910	0.48	6.8	82.1	3.16	41.4	0.01			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 19.6 N	121 42.6 W	07/02/03	1902	UTC	3997 m	240	08 kn	240 01 07	2	1013.5 mb	15.7 C	12.9 C	22m	8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.91	14.91	32.902	24.375	354.3	0.000	5.89	102.0	0.6	0.40	0.0	0.00	0.18	0.05	0	
1 A	14.91	14.91	32.902	24.375	354.3	0.004	5.89	102.0	0.6	0.40	0.0	0.00	0.18	0.05	1	221
10 ISL	14.82	14.82	32.939	24.423	350.0	0.035	5.92	102.4	0.7	0.40	0.0	0.00	0.21	0.06	10	
14 A	14.73	14.73	32.974	24.470	345.7	0.049	5.94	102.6	0.7	0.40	0.0	0.00	0.23	0.06	14	220
20 ISL	14.54	14.54	33.044	24.564	336.9	0.070	5.98	102.9	1.0	0.40	0.0	0.00	0.34	0.11	20	
21	14.51	14.51	33.054	24.578	335.6	0.073	5.99	103.0	1.1	0.40	0.0	0.00	0.36	0.12	21	219
29 A	14.48	14.48	33.070	24.597	334.0	0.100	5.99	103.0	1.2	0.40	0.0	0.00	0.50	0.14	29	218
30 ISL	14.45	14.45	33.069	24.603	333.5	0.103	5.98	102.7	1.3	0.41	0.0	0.01	0.52	0.15	30	
36	13.97	13.96	33.030	24.673	326.9	0.123	5.92	100.7	1.8	0.48	0.9	0.06	0.60	0.21	36	217
45 A	12.06	12.05	32.827	24.892	306.1	0.151	5.75	93.8	3.5	0.78	4.6	0.06	0.37	0.28	45	216
50 ISL	11.68	11.67	32.823	24.960	299.8	0.167	5.72	92.6	4.2	0.85	5.7	0.04	0.28	0.26	50	
53	11.54	11.53	32.834	24.994	296.6	0.175	5.70	92.0	4.6	0.87	6.2	0.03	0.24	0.25	53	215
60 A	11.01	11.00	32.830	25.086	287.9	0.196	5.61	89.5	5.9	0.96	7.9	0.02	0.18	0.15	60	214
73	10.70	10.69	32.976	25.254	272.2	0.232	5.39	85.5	7.8	1.07	10.3	0.02	0.10	0.10	73	213
75 ISL	10.66	10.65	33.014	25.291	268.8	0.238	5.34	84.7	8.2	1.09	10.8	0.02	0.09	0.09	75	
83 A	10.54	10.53	33.174	25.437	255.1	0.259	5.08	80.4	10.0	1.19	12.7	0.01	0.05	0.05	83	212
100	10.34	10.33	33.416	25.660	234.2	0.300	4.37	69.0	14.0	1.41	16.5	0.01	0.02	0.05	100	211
120	9.64	9.63	33.556	25.887	212.9	0.345	4.09	63.6	18.0	1.55	19.3	0.01	0.01	0.02	121	210
125 ISL	9.53	9.52	33.593	25.934	208.6	0.356	3.98	61.8	19.0	1.59	20.0	0.01	0.01	0.02	126	
140	9.29	9.27	33.709	26.064	196.5	0.386	3.63	56.1	22.2	1.72	22.1	0.01	0.00	0.03	141	209
150 ISL	9.17	9.15	33.799	26.154	188.1	0.405	3.38	52.1	24.5	1.80	23.5	0.01	0.00	0.03	151	
170	8.95	8.93	33.957	26.313	173.4	0.441	2.92	44.8	29.2	1.96	25.9	0.01	0.00	0.02	171	208
199	8.52	8.50	34.054	26.456	160.2	0.490	2.45	37.3	35.6	2.16	28.6	0.01	0.00	0.02	200	207
200 ISL	8.51	8.49	34.057	26.460	159.9	0.491	2.43	37.0	35.8	2.17	28.7	0.01			201	
229	8.28	8.26	34.110	26.537	153.0	0.537	1.99	30.1	39.9	2.34	30.5	0.01			230	206
250 ISL	8.07	8.04	34.126	26.581	149.1	0.568	1.82	27.4	42.7	2.43	31.5	0.01			251	
269	7.87	7.84	34.134	26.617	146.0	0.596	1.70	25.5	45.1	2.49	32.2	0.01			271	205
300 ISL	7.60	7.57	34.156	26.674	141.0	0.641	1.43	21.3	49.2	2.61	33.5	0.01			302	
319	7.44	7.41	34.168	26.707	138.1	0.667	1.27	18.9	51.8	2.68	34.3	0.01			321	204
379	6.85	6.81	34.181	26.799	129.9	0.748	0.95	13.9	60.6	2.85	36.6	0.01			381	203
400 ISL	6.67	6.63	34.194	26.834	126.8	0.775	0.83	12.1	63.8	2.91	37.4	0.01			403	
438	6.38	6.34	34.226	26.898	121.0	0.822	0.63	9.1	69.4	3.01	38.6	0.01			441	202
500 ISL	6.08	6.04	34.287	26.985	113.4	0.895	0.37	5.3	76.6	3.14	40.0	0.01			503	
515	6.01	5.96	34.302	27.006	111.6	0.911	0.31	4.5	78.4	3.17	40.3	0.01			518	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 87 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 59.4 N	122 23.8 W	08/02/03	0113	UTC	4102 m	340	19 kn	340 02 09	1	1011.5 mb	14.1 C	11.2 C		4/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.23	15.23	32.898	24.303	361.2	0.000	5.92	103.2	0.5	0.40	0.1	0.00	0.15	0.05	0	
2	15.23	15.23	32.898	24.303	361.2	0.007	5.92	103.2	0.5	0.40	0.1	0.00	0.15	0.05	2	220
10 ISL	15.23	15.23	32.898	24.303	361.4	0.036	5.92	103.2	0.5	0.40	0.1	0.00	0.15	0.04	10	
16	15.23	15.23	32.898	24.303	361.6	0.058	5.92	103.2	0.5	0.40	0.1	0.00	0.15	0.04	16	219
20 ISL	15.16	15.16	32.900	24.320	360.1	0.072	5.93	103.2	0.5	0.40	0.1	0.00	0.17	0.04	20	
30 ISL	14.97	14.97	32.905	24.365	356.1	0.108	5.96	103.4	0.4	0.40	0.1	0.00	0.22	0.06	30	
31	14.95	14.95	32.906	24.371	355.6	0.112	5.96	103.3	0.4	0.40	0.1	0.00	0.23	0.06	31	218
45	14.92	14.91	32.914	24.384	354.8	0.161	5.94	102.9	0.3	0.40	0.1	0.00	0.23	0.06	45	217
50 ISL	14.86	14.85	32.913	24.396	353.8	0.179	5.95	103.0	0.4	0.41	0.1	0.00	0.30	0.11	50	
55	14.80	14.79	32.912	24.408	352.8	0.197	5.96	103.0	0.4	0.41	0.1	0.01	0.36	0.17	55	216
65	13.13	13.12	32.848	24.703	324.8	0.231	5.89	98.3	1.8	0.60	1.8	0.15	0.34	0.29	65	215
75 ISL	12.19	12.18	32.795	24.844	311.5	0.262	5.83	95.4	3.1	0.75	3.9	0.06	0.21	0.25	75	
76	12.12	12.11	32.790	24.853	310.6	0.266	5.82	95.1	3.2	0.76	4.1	0.05	0.20	0.25	76	214
85	11.31	11.30	32.774	24.990	297.7	0.293	5.78	92.8	4.8	0.87	6.3	0.02	0.15	0.19	85	213
95	10.77	10.76	32.819	25.120	285.4	0.322	5.65	89.7	6.5	0.99	8.5	0.02	0.11	0.14	95	212
100 ISL	10.60	10.59	32.862	25.183	279.5	0.336	5.56	87.9	7.4	1.05	9.6	0.02	0.09	0.11	100	
110	10.31	10.30	32.985	25.329	265.8	0.363	5.33	83.8	9.4	1.17	11.9	0.02	0.06	0.06	110	211
125	9.75	9.74	33.253	25.632	237.2	0.401	4.88	75.9	13.9	1.40	16.2	0.01	0.02	0.03	126	210
145	9.22	9.20	33.536	25.940	208.3	0.446	4.20	64.7	20.1	1.65	20.8	0.01	0.01	0.02	146	209
150 ISL	9.16	9.14	33.581	25.985	204.1	0.456	4.07	62.6	21.1	1.68	21.4	0.01	0.01	0.02	151	
169	9.05	9.03	33.714	26.106	192.9	0.494	3.66	56.2	24.1	1.79	23.3	0.01	0.00	0.02	170	208
200	8.85	8.83	33.910	26.292	175.9	0.551	3.26	49.9	30.1	2.03	26.9	0.01	0.00	0.02	201	207
230	8.45	8.43	34.011	26.433	162.9	0.602	2.45	37.2	35.5	2.17	29.3	0.01			231	206
250 ISL	8.16	8.13	34.036	26.497	157.1	0.634	2.34	35.3	38.5	2.24	30.4	0.01			251	
268	7.88	7.85	34.043	26.544	152.8	0.662	2.25	33.7	41.2	2.30	31.2	0.01			269	205
300 ISL	7.37	7.34	34.053	26.626	145.4	0.709	2.00	29.6	46.9	2.44	32.9	0.01			302	
318	7.11	7.08	34.058	26.666	141.7	0.735	1.84	27.1	50.2	2.52	33.9	0.01			320	204
378	6.52	6.49	34.100	26.779	131.4	0.817	1.22	17.7	61.0	2.79	37.1	0.01			380	203
400 ISL	6.35	6.31	34.121	26.818	127.9	0.846	1.04	15.1	64.8	2.87	38.0	0.01			402	
439	6.09	6.05	34.156	26.879	122.4	0.895	0.79	11.4	71.0	2.99	39.3	0.01			442	202
500 ISL	5.72	5.68	34.189	26.952	116.0	0.967	0.57	8.1	78.8	3.09	40.7	0.01			503	
515	5.63	5.59	34.197	26.969	114.5	0.985	0.52	7.4	80.7	3.12	41.1	0.01			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 87 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 39.6 N	123 4.1 W	08/02/03	0706	UTC	4120 m	070	12 kn			1013.9 mb	14.0 C	11.0 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.01	16.01	33.110	24.293	362.1	0.000	5.75	102.0	0.6	0.40	0.0	0.01	0.17	0.05	0	
1	16.01	16.01	33.110	24.293	362.1	0.004	5.75	102.0	0.6	0.40	0.0	0.01	0.17	0.05	1	220
10 ISL	16.01	16.01	33.109	24.292	362.5	0.036	5.74	101.8	0.6	0.39	0.0	0.01	0.17	0.04	10	
15	16.01	16.01	33.109	24.293	362.6	0.054	5.74	101.8	0.6	0.39	0.0	0.01	0.17	0.04	15	219
20 ISL	16.01	16.01	33.109	24.293	362.8	0.072	5.74	101.8	0.6	0.39	0.0	0.01	0.17	0.04	20	
29	16.01	16.01	33.109	24.293	363.0	0.105	5.74	101.8	0.6	0.39	0.0	0.01	0.17	0.05	29	218
30 ISL	16.01	16.01	33.109	24.293	363.0	0.109	5.74	101.8	0.6	0.39	0.0	0.01	0.17	0.05	30	
45	16.01	16.00	33.108	24.293	363.5	0.163	5.72	101.4	0.6	0.39	0.0	0.01	0.17	0.05	45	217
50 ISL	16.01	16.00	33.108	24.293	363.7	0.181	5.72	101.4	0.6	0.39	0.0	0.01	0.18	0.05	50	
54	16.01	16.00	33.108	24.293	363.8	0.196	5.73	101.6	0.6	0.39	0.0	0.01	0.18	0.05	54	216
64	16.01	16.00	33.109	24.294	364.0	0.232	5.74	101.8	0.6	0.39	0.0	0.01	0.17	0.04	64	215
75	14.99	14.98	33.066	24.487	345.9	0.271	5.84	101.4	1.2	0.43	0.0	0.02	0.29	0.19	75	214
85	13.69	13.68	32.955	24.674	328.2	0.305	5.95	100.5	1.9	0.54	0.6	0.13	0.29	0.18	85	213
94	12.53	12.52	32.861	24.831	313.3	0.334	5.88	96.9	3.1	0.66	2.5	0.16	0.25	0.18	94	212
100 ISL	12.11	12.10	32.842	24.896	307.2	0.353	5.83	95.2	3.6	0.72	3.6	0.12	0.21	0.17	100	
110	11.65	11.64	32.870	25.003	297.1	0.383	5.69	92.1	4.7	0.82	5.6	0.03	0.14	0.14	110	211
125	10.89	10.87	33.039	25.271	271.8	0.426	5.33	84.9	7.6	1.03	9.8	0.02	0.07	0.08	126	210
144	10.26	10.24	33.307	25.589	241.8	0.474	4.80	75.6	12.1	1.29	14.5	0.02	0.02	0.04	145	209
150 ISL	10.03	10.01	33.367	25.675	233.8	0.489	4.65	72.9	13.6	1.36	15.8	0.02	0.02	0.04	151	
169	9.39	9.37	33.530	25.908	211.8	0.531	4.19	64.8	18.4	1.56	19.4	0.02	0.01	0.03	170	208
200	8.94	8.92	33.807	26.197	184.9	0.592	3.40	52.1	25.7	1.83	24.0	0.01	0.00	0.01	201	207
229	8.58	8.56	33.968	26.380	168.0	0.644	3.10	47.2	31.1	1.95	26.3	0.01			230	206
250 ISL	8.28	8.25	34.015	26.463	160.4	0.678	2.80	42.4	35.1	2.08	28.2	0.01			251	
269	8.01	7.98	34.032	26.516	155.5	0.708	2.50	37.6	38.8	2.21	29.9	0.01			270	205
300 ISL	7.58	7.55	34.064	26.604	147.5	0.755	2.06	30.7	45.0	2.40	32.2	0.01			302	
318	7.35	7.32	34.078	26.648	143.5	0.781	1.84	27.3	48.4	2.50	33.3	0.01			320	204
378	6.80	6.76	34.112	26.751	134.3	0.865	1.35	19.7	57.5	2.73	35.9	0.01			380	203
400 ISL	6.61	6.57	34.126	26.788	131.0	0.894	1.17	17.0	61.1	2.81	36.9	0.01			402	
437	6.32	6.28	34.151	26.846	125.8	0.941	0.90	13.0	67.0	2.94	38.5	0.01			440	202
500 ISL	5.92	5.88	34.204	26.939	117.5	1.018	0.58	8.3	76.1	3.09	40.2	0.01			503	
514	5.83	5.79	34.216	26.960	115.6	1.034	0.51	7.3	78.1	3.12	40.6	0.01			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 87 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 19.4 N	123 44.5 W	08/02/03	1301	UTC	4030 m	360 06 kn			1015.0 mb	14.0 C	11.4 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.93	15.93	33.089	24.295	361.9	0.000	5.74	101.6	0.5	0.39	0.1	0.00	0.14	0.03	0	
2	15.93	15.93	33.089	24.295	362.0	0.007	5.74	101.6	0.5	0.39	0.1	0.00	0.14	0.03	2	220
10 ISL	15.92	15.92	33.089	24.297	362.0	0.036	5.74	101.6	0.5	0.39	0.1	0.00	0.14	0.04	10	
15	15.92	15.92	33.089	24.297	362.2	0.054	5.75	101.8	0.5	0.39	0.1	0.00	0.14	0.04	15	219
20 ISL	15.92	15.92	33.089	24.298	362.3	0.072	5.76	101.9	0.5	0.39	0.1	0.00	0.14	0.04	20	
30 ISL	15.92	15.92	33.089	24.298	362.6	0.109	5.77	102.1	0.5	0.39	0.0	0.00	0.14	0.04	30	
31	15.92	15.92	33.089	24.298	362.6	0.112	5.77	102.1	0.5	0.39	0.0	0.00	0.14	0.04	31	218
46	15.93	15.92	33.089	24.296	363.2	0.167	5.76	102.0	0.5	0.39	0.1	0.00	0.13	0.04	46	217
50 ISL	15.93	15.92	33.089	24.296	363.4	0.181	5.75	101.8	0.5	0.39	0.1	0.00	0.14	0.04	50	
55	15.92	15.91	33.087	24.297	363.4	0.199	5.74	101.6	0.5	0.39	0.1	0.00	0.15	0.04	55	216
65	15.89	15.88	33.084	24.302	363.3	0.236	5.75	101.7	0.6	0.39	0.0	0.00	0.14	0.04	65	215
75	14.77	14.76	33.082	24.546	340.2	0.271	5.82	100.6	1.0	0.43	0.1	0.01	0.28	0.17	75	214
85	12.67	12.66	32.829	24.779	318.0	0.304	5.95	98.4	2.6	0.87 U	1.6	0.12	0.28	0.24	85	213
95	11.89	11.88	32.796	24.901	306.5	0.335	5.83	94.8	3.8	0.75	3.9	0.04	0.21	0.25	95	212
100 ISL	11.55	11.54	32.812	24.976	299.4	0.350	5.74	92.6	4.6	0.82	5.3	0.03	0.17	0.23	100	
109	11.08	11.07	32.881	25.114	286.4	0.377	5.56	88.9	6.1	0.94	7.8	0.02	0.12	0.19	109	211
125	10.78	10.77	33.105	25.342	265.0	0.421	5.20	82.7	8.5	1.08	10.9	0.01	0.07	0.09	126	210
145	10.43	10.41	33.313	25.565	244.2	0.472	4.77	75.4	11.4	1.24	13.9	0.01	0.04	0.05	146	209
150 ISL	10.27	10.25	33.363	25.631	238.0	0.484	4.63	72.9	12.5	1.29	14.9	0.01	0.03	0.05	151	
169	9.65	9.63	33.539	25.873	215.3	0.527	4.12	64.1	17.2	1.49	18.6	0.01	0.02	0.04	170	208
199	9.18	9.16	33.758	26.121	192.2	0.588	3.59	55.3	23.0	1.71	22.4	0.01	0.00	0.02	200	207
200 ISL	9.16	9.14	33.765	26.129	191.4	0.590	3.57	55.0	23.2	1.72	22.5	0.01			201	
229	8.74	8.72	33.948	26.339	171.9	0.642	3.02	46.1	30.0	1.94	26.2	0.01			230	206
250 ISL	8.52	8.49	34.001	26.415	165.1	0.678	2.82	42.9	33.0	2.03	27.7	0.01			251	
270	8.30	8.27	34.020	26.464	160.7	0.710	2.68	40.6	35.6	2.11	28.7	0.01			271	205
300 ISL	7.81	7.78	34.045	26.556	152.2	0.757	2.35	35.2	41.5	2.28	30.8	0.01			302	
318	7.51	7.48	34.055	26.608	147.5	0.784	2.15	32.0	45.2	2.38	32.1	0.01			320	204
379	6.77	6.73	34.087	26.736	135.7	0.871	1.57	22.9	56.2	2.66	35.4	0.01			381	203
400 ISL	6.62	6.58	34.106	26.771	132.6	0.899	1.37	19.9	59.4	2.74	36.3	0.01			402	
438	6.39	6.35	34.140	26.828	127.5	0.948	1.05	15.2	64.9	2.88	37.8	0.01			441	202
500 ISL	5.90	5.86	34.182	26.924	118.8	1.025	0.72	10.3	74.8	3.04	39.9	0.01			503	
512	5.81	5.77	34.191	26.943	117.1	1.039	0.66	9.4	76.7	3.07	40.3	0.01			515	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 29.1 N	117 46.1 W	06/02/03	0116	UTC	65 m	340 10 kn	290 01 06	0	1012.9 mb	16.0 C	13.9 C		0/8	

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.78	15.78	33.382	24.554	337.3	0.000	6.01	106.3	1.9	0.32	0.1	0.00	0.33	0.09	0	
2	15.78	15.78	33.382	24.554	337.3	0.007	6.01	106.3	1.9	0.32	0.1	0.00	0.33	0.09	2	207
5	15.69	15.69	33.383	24.575	335.4	0.017	6.04	106.6	2.0	0.31	0.1	0.00	0.35	0.12	5	206
10	15.50	15.50	33.369	24.606	332.6	0.034	6.08	106.9	2.0	0.31	0.1	0.00	0.56	0.21	10	205
20 ISL	14.98	14.98	33.349	24.705	323.5	0.066	5.94	103.3	2.5	0.37	0.5	0.05	1.45	0.60	20	
21	14.91	14.91	33.347	24.719	322.2	0.070	5.93	103.0	2.5	0.38	0.5	0.05	1.53	0.63	21	204
30	13.99	13.99	33.322	24.894	305.7	0.098	5.48	93.4	4.3	0.60	2.4	0.25	1.36	0.58	30	203
40	13.34	13.33	33.329	25.032	292.8	0.128	4.76	80.1	6.8	0.91	7.2	0.57	0.83	0.52	40	202
50	12.95	12.94	33.371	25.143	282.5	0.157	4.48	74.8	8.5	1.07	9.5	0.21	0.41	0.37	50	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 25.3 N	117 54.2 W	05/02/03	2222	UTC	618 m	200 08 kn	130 01 07	0	1012.9 mb	17.9 C	15.1 C	15m	0/8	

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.96	15.96	33.384	24.515	341.0	0.000	6.04	107.2	1.8	0.30	0.1	0.00	0.41	0.10	0	
1	15.96	15.96	33.384	24.515	341.0	0.003	6.04	107.2	1.8	0.30	0.1	0.00	0.41	0.10	1	220
10	15.65	15.65	33.379	24.581	335.0	0.034	6.09	107.4	1.8	0.30	0.1	0.00	0.43	0.13	10	219
20	15.37	15.37	33.366	24.633	330.3	0.067	5.97	104.7	2.3	0.35	0.1	0.04	0.86	0.38	20	218
30	14.05	14.05	33.301	24.866	308.4	0.099	5.47	93.3	4.5	0.61	2.9	0.45	1.35	0.78	30	217
40	13.41	13.40	33.299	24.995	296.3	0.129	5.13	86.4	5.6	0.78	5.4	0.36	0.89	0.63	40	216
50	12.89	12.88	33.321	25.116	285.1	0.158	4.77	79.5	7.0	0.95	8.0	0.07	0.59	0.54	50	215
60	12.20	12.19	33.420	25.326	265.3	0.186	4.32	71.0	9.7	1.17	11.6	0.02	0.19	0.26	60	214
70	11.68	11.67	33.528	25.508	248.2	0.212	3.86	62.8	12.5	1.36	14.5	0.01	0.09	0.09	70	213
75 ISL	11.62	11.61	33.575	25.556	243.8	0.224	3.68	59.8	13.5	1.43	15.5	0.01	0.06	0.09	75	
85	11.50	11.49	33.619	25.612	238.6	0.248	3.42	55.4	14.9	1.52	16.8	0.01	0.03	0.08	85	212
100	11.35	11.34	33.678	25.686	232.0	0.283	3.19	51.5	16.6	1.61	17.9	0.01	0.02	0.06	100	211
120	10.72	10.71	33.823	25.912	210.9	0.328	2.77	44.2	20.8	1.82	21.1	0.01	0.01	0.04	121	210
125 ISL	10.64	10.63	33.844	25.942	208.1	0.338	2.71	43.2	21.5	1.85	21.5	0.01	0.01	0.04	126	
140	10.48	10.46	33.898	26.012	201.7	0.369	2.55	40.5	23.2	1.92	22.6	0.01	0.01	0.05	141	209
150 ISL	10.36	10.34	33.945	26.070	196.5	0.389	2.41	38.2	24.6	1.98	23.5	0.01	0.01	0.04	151	
170	10.16	10.14	34.039	26.178	186.6	0.427	2.14	33.8	27.5	2.10	25.2	0.01	0.01	0.03	171	208
199	9.98	9.96	34.150	26.296	176.0	0.480	1.82	28.6	30.8	2.30	26.9	0.01	0.00	0.03	200	207
200 ISL	9.97	9.95	34.153	26.300	175.7	0.481	1.81	28.5	30.9	2.30	27.0	0.01			201	
229	9.76	9.73	34.227	26.394	167.4	0.531	1.49	23.3	34.2	2.39	28.3	0.01			230	206
250 ISL	9.51	9.48	34.260	26.461	161.3	0.566	1.32	20.6	36.8	2.47	29.2	0.01			251	
270	9.24	9.21	34.279	26.520	156.0	0.597	1.20	18.6	39.2	2.54	29.9	0.01			272	205
300 ISL	8.93	8.90	34.289	26.578	150.9	0.643	1.07	16.4	42.0	2.62	30.9	0.01			302	
318	8.72	8.69	34.288	26.610	148.1	0.670	1.00	15.3	44.0	2.66	31.5	0.01			320	204
378	7.65	7.61	34.274	26.761	134.2	0.755	0.76	11.3	55.3	2.86	34.7	0.00			380	203
400 ISL	7.40	7.36	34.276	26.798	130.8	0.784	0.67	9.9	58.4	2.92	35.5	0.00			403	
437	7.06	7.02	34.283	26.852	126.0	0.832	0.53	7.8	63.2	3.00	36.7	0.00			440	202
500 ISL	6.52	6.47	34.307	26.944	117.8	0.908	0.35	5.1	73.2	3.14	38.2	0.01			503	
511	6.42	6.37	34.312	26.961	116.2	0.921	0.32	4.6	74.9	3.16	38.5	0.01			514	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 15.2 N	118 14.7 W	05/02/03	1838 UTC	300 m	350 12 kn	100 01 07	1	1015.0 mb	17.1 C	15.2 C	27m	1/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.82	15.82	33.386	24.548	337.8	0.000	5.84	103.3	2.0	0.36	0.1	0.00	0.22	0.06	0	
2 A	15.82	15.82	33.386	24.548	337.9	0.007	5.84	103.3	2.0	0.36	0.1	0.00	0.22	0.06	2	218
8	15.81	15.81	33.386	24.550	337.9	0.027	5.83	103.1	1.8	0.36	0.1	0.00	0.21	0.04	8	217
10 ISL	15.80	15.80	33.384	24.551	337.8	0.034	5.83	103.1	1.8	0.36	0.1	0.00	0.22	0.04	10	
16 A	15.76	15.76	33.387	24.563	336.9	0.054	5.83	103.0	1.9	0.36	0.1	0.00	0.24	0.05	16	216
20 ISL	15.63	15.63	33.372	24.580	335.4	0.067	5.85	103.1	1.9	0.37	0.1	0.00	0.30	0.10	20	
25	15.41	15.41	33.347	24.610	332.7	0.084	5.88	103.2	2.0	0.39	0.1	0.00	0.39	0.16	25	215
30 ISL	15.16	15.16	33.321	24.645	329.5	0.101	5.90	103.0	2.2	0.40	0.1	0.00	0.48	0.18	30	
34 A	14.93	14.92	33.296	24.676	326.7	0.114	5.92	102.8	2.3	0.42	0.1	0.01	0.56	0.18	34	214
44	14.19	14.18	33.214	24.770	318.0	0.146	5.94	101.6	2.7	0.49	0.6	0.03	0.76	0.22	44	213
50 ISL	13.15	13.14	33.174	24.951	300.8	0.165	5.55	92.9	4.3	0.71	4.0	0.10	0.57	0.24	50	
54 A	12.51	12.50	33.188	25.087	287.9	0.176	5.21	86.0	5.8	0.88	6.7	0.14	0.40	0.25	54	212
64	12.23	12.22	33.460	25.352	263.0	0.204	4.36	71.7	9.9	1.17	11.6	0.04	0.20	0.19	64	211
73 A	12.04	12.03	33.491	25.412	257.4	0.227	4.18	68.5	10.7	1.23	12.6	0.03	0.16	0.15	73	210
75 ISL	11.99	11.98	33.501	25.429	255.8	0.233	4.14	67.7	11.0	1.25	12.9	0.03	0.15	0.14	75	
88	11.63	11.62	33.566	25.547	244.9	0.265	3.91	63.5	12.8	1.37	14.8	0.02	0.08	0.11	88	209
100 ISL	11.27	11.26	33.600	25.640	236.4	0.294	3.73	60.1	14.4	1.46	16.3	0.02	0.05	0.08	100	
102 A	11.21	11.20	33.606	25.655	234.9	0.299	3.70	59.6	14.7	1.47	16.5	0.02	0.05	0.08	102	208
120	10.86	10.85	33.697	25.789	222.6	0.340	3.34	53.4	17.5	1.62	18.8	0.01	0.02	0.05	121	207
125 ISL	10.72	10.71	33.729	25.839	217.9	0.351	3.25	51.8	18.5	1.66	19.6	0.01	0.02	0.05	126	
140	10.31	10.29	33.836	25.994	203.5	0.382	2.95	46.6	21.8	1.80	21.9	0.00	0.01	0.04	141	206
150 ISL	10.18	10.16	33.925	26.085	194.9	0.402	2.63	41.5	24.3	1.92	23.4	0.00	0.01	0.04	151	
169	10.05	10.03	34.077	26.226	182.0	0.438	2.05	32.3	28.7	2.14	25.8	0.01	0.01	0.05	170	205
198	9.82	9.80	34.179	26.345	171.3	0.489	1.72	27.0	32.4	2.29	27.5	0.00	0.00	0.03	199	204
200 ISL	9.81	9.79	34.183	26.350	170.8	0.493	1.71	26.8	32.5	2.30	27.6	0.00			201	
229	9.66	9.63	34.225	26.409	165.9	0.542	1.51	23.6	34.7	2.38	28.4	0.00			230	203
250 ISL	9.32	9.29	34.268	26.498	157.7	0.576	1.24	19.2	38.5	2.51	29.7	0.01			251	
258	9.19	9.16	34.283	26.531	154.7	0.588	1.15	17.8	39.9	2.55	30.2	0.01			259	202
290	9.12	9.09	34.294	26.552	153.4	0.637	1.12	17.3	40.7	2.57	30.4	0.00			292	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 37

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
33 11.3 N	118 23.1 W	05/02/03	1538 UTC	1176 m	00 kn	270 01 06	1	1013.1 mb	14.9 C	14.1 C	30m	1/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.81	15.81	33.409	24.568	335.9	0.000	5.83	103.2	2.1	0.37	0.1	0.00	0.25	0.06	0	
2	15.81	15.81	33.409	24.568	336.0	0.007	5.83	103.2	2.1	0.37	0.1	0.00	0.25	0.06	2	220
10 ISL	15.80	15.80	33.411	24.572	335.9	0.034	5.82	103.0	2.0	0.37	0.1	0.00	0.25	0.06	10	
11	15.80	15.80	33.411	24.572	335.9	0.037	5.82	103.0	2.0	0.37	0.1	0.00	0.25	0.06	11	219
20 ISL	15.64	15.64	33.394	24.595	334.0	0.067	5.81	102.4	2.2	0.39	0.2	0.01	0.35	0.09	20	
21	15.61	15.61	33.391	24.599	333.6	0.070	5.81	102.4	2.2	0.39	0.2	0.01	0.37	0.10	21	218
30 ISL	15.13	15.13	33.362	24.683	325.9	0.100	5.80	101.2	2.7	0.43	0.3	0.03	0.58	0.16	30	
31	15.07	15.07	33.359	24.694	324.9	0.103	5.80	101.1	2.8	0.44	0.3	0.03	0.60	0.17	31	217
41	14.50	14.49	33.335	24.798	315.2	0.135	5.56	95.8	3.5	0.55	1.6	0.14	0.61	0.22	41	216
50 ISL	13.94	13.93	33.323	24.906	305.2	0.163	5.36	91.3	4.5	0.68	3.3	0.19	0.53	0.28	50	
51	13.87	13.86	33.322	24.920	303.9	0.166	5.33	90.6	4.6	0.70	3.6	0.19	0.51	0.28	51	215
60	13.06	13.05	33.337	25.095	287.3	0.193	4.92	82.3	6.3	0.89	7.0	0.08	0.31	0.24	60	214
70	12.47	12.46	33.351	25.221	275.5	0.221	4.77	78.8	7.7	1.01	9.1	0.04	0.20	0.23	70	213
75 ISL	12.18	12.17	33.400	25.315	266.7	0.235	4.56	74.9	9.0	1.10	10.7	0.03	0.15	0.19	75	
85	11.69	11.68	33.512	25.494	249.9	0.260	4.12	67.0	11.7	1.29	13.8	0.02	0.08	0.11	85	212
99	11.29	11.28	33.586	25.625	237.7	0.295	3.86	62.3	13.9	1.42	15.8	0.02	0.05	0.09	99	211
100 ISL	11.25	11.24	33.589	25.635	236.8	0.297	3.85	62.0	14.0	1.43	15.9	0.02	0.05	0.09	100	
120	10.61	10.60	33.664	25.807	220.8	0.343	3.56	56.6	17.0	1.57	18.6	0.01	0.02	0.06	121	210
125 ISL	10.55	10.54	33.705	25.849	216.8	0.354	3.45	54.8	18.0	1.62	19.3	0.01	0.02	0.05	126	
139	10.43	10.41	33.825	25.964	206.3	0.383	3.12	49.5	20.8	1.76	21.1	0.01	0.01	0.04	140	209
150 ISL	10.26	10.24	33.891	26.045	198.8	0.406	2.87	45.3	22.9	1.85	22.4	0.01	0.01	0.03	151	
169	9.97	9.95	33.986	26.169	187.4	0.442	2.46	38.6	26.4	2.00	24.5	0.01	0.00	0.03	170	208
199	9.73	9.71	34.135	26.326	173.1	0.496	1.92	30.0	31.5	2.23	27.2	0.01	0.00	0.03	200	207
200 ISL	9.72	9.70	34.138	26.330	172.7	0.498	1.91	29.9	31.7	2.24	27.3	0.01			201	
229	9.45	9.42	34.212	26.433	163.5	0.547	1.57	24.4	35.5	2.39	28.8	0.01			230	206
250 ISL	9.33	9.30	34.237	26.472	160.1	0.581	1.43	22.2	37.2	2.45	29.4	0.01			251	
269	9.22	9.19	34.251	26.501	157.7	0.611	1.33	20.6	38.5	2.49	29.9	0.01			271	205
300 ISL	8.93	8.90	34.283	26.573	151.4	0.659	1.11	17.1	41.8	2.59	30.9	0.01			302	
318	8.73	8.70	34.296	26.615	147.7	0.686	1.00	15.3	44.0	2.65	31.5	0.01			320	204
379	7.86	7.82	34.273	26.729	137.3	0.773	0.84	12.6	51.6	2.80	34.0	0.01			381	203
400 ISL	7.62	7.58	34.273	26.765	134.2	0.801	0.77	11.5	54.5	2.85	34.8	0.01			403	
438	7.24	7.20	34.278	26.823	129.0	0.851	0.63	9.3	59.9	2.94	36.2	0.01			441	202
500 ISL	6.68	6.63	34.298	26.916	120.6	0.929	0.43	6.3	68.8	3.07	38.2	0.01			503	
515	6.55	6.50	34.303	26.937	118.7	0.947	0.38	5.5	71.0	3.10	38.7	0.01			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 55.5 N	118 56.2 W	05/02/03	1022 UTC	1753 m	320 09 kn			1013.5 mb	14.9 C	14.2 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.51	15.51	33.228	24.495	342.8	0.000	5.83	102.4	0.6	0.39	0.1	0.00	0.14	0.03	0	
1	15.51	15.51	33.228	24.495	342.9	0.003	5.83	102.4	0.6	0.39	0.1	0.00	0.14	0.03	1	220
10 ISL	15.49	15.49	33.228	24.500	342.7	0.034	5.87	103.1	0.5	0.39	0.0	0.00	0.15	0.03	10	
11	15.49	15.49	33.228	24.500	342.7	0.038	5.87	103.1	0.5	0.39	0.0	0.00	0.15	0.03	11	219
20	15.49	15.49	33.228	24.500	343.0	0.069	5.83	102.4	0.5	0.39	0.0	0.00	0.15	0.03	20	218
30	15.37	15.37	33.235	24.533	340.2	0.103	5.88	103.0	1.0	0.39	0.0	0.00	0.21	0.05	30	217
40	14.41	14.40	33.256	24.756	319.2	0.136	6.03	103.6	2.2	0.42	0.1	0.02	0.66	0.24	40	216
50	12.83	12.82	33.033	24.905	305.2	0.167	5.78	96.0	3.1	0.67	3.2	0.10	0.69	0.37	50	215
60	12.70	12.69	33.257	25.104	286.5	0.196	5.23	86.7	6.3	0.86	6.9	0.09	0.46	0.34	60	214
69	12.06	12.05	33.224	25.201	277.4	0.222	5.11	83.6	7.5	0.98	8.9	0.04	0.25	0.27	69	213
75 ISL	11.49	11.48	33.224	25.307	267.4	0.238	5.01	81.0	8.8	1.09	10.8	0.03	0.17	0.20	75	
85	10.63	10.62	33.252	25.482	250.8	0.264	4.85	77.0	11.1	1.25	13.7	0.02	0.09	0.10	85	212
100	10.15	10.14	33.313	25.612	238.7	0.301	4.74	74.4	13.1	1.36	15.6	0.02	0.05	0.05	100	211
120	9.90	9.89	33.655	25.921	209.8	0.346	3.79	59.3	18.6	1.58	19.5	0.01	0.01	0.02	121	210
125 ISL	9.93	9.92	33.729	25.974	204.9	0.356	3.54	55.5	20.0	1.66	20.5	0.01	0.01	0.02	126	
139	10.05	10.03	33.906	26.092	194.0	0.384	2.90	45.6	23.6	1.87	22.9	0.01	0.00	0.02	140	209
150 ISL	9.97	9.95	33.998	26.178	186.1	0.405	2.58	40.5	26.1	1.99	24.4	0.01	0.00	0.02	151	
169	9.76	9.74	34.103	26.295	175.3	0.439	2.20	34.4	29.8	2.14	26.3	0.01	0.01	0.02	170	208
200 ISL	9.66	9.64	34.206	26.393	166.7	0.492	1.69	26.4	33.7	2.33	28.1	0.01	0.00	0.02	201	
201	9.66	9.64	34.208	26.395	166.6	0.494	1.68	26.2	33.8	2.33	28.1	0.01	0.00	0.02	202	207
229	9.51	9.48	34.240	26.445	162.4	0.540	1.54	24.0	35.7	2.40	28.7	0.01			230	206
250 ISL	9.30	9.27	34.251	26.488	158.6	0.574	1.48	22.9	37.4	2.44	29.2	0.01			251	
268	9.09	9.06	34.258	26.528	155.1	0.602	1.42	21.9	39.1	2.48	29.8	0.01			270	205
300 ISL	8.78	8.75	34.286	26.599	148.8	0.651	1.15	17.6	43.1	2.60	31.1	0.01			302	
319	8.59	8.56	34.301	26.641	145.2	0.678	0.98	15.0	45.6	2.68	31.9	0.01			321	204
380	7.93	7.89	34.291	26.733	137.0	0.765	0.80	12.0	52.4	2.81	33.9	0.01			382	203
400 ISL	7.72	7.68	34.286	26.760	134.7	0.792	0.76	11.4	54.7	2.85	34.6	0.01			403	
441	7.30	7.26	34.279	26.815	129.8	0.846	0.67	9.9	59.5	2.93	36.0	0.01			444	202
500 ISL	6.80	6.75	34.288	26.892	123.0	0.920	0.51	7.5	66.5	3.03	37.7	0.01			503	
511	6.71	6.66	34.290	26.906	121.8	0.934	0.48	7.0	67.8	3.05	38.0	0.01			514	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 53

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 39.2 N	119 28.8 W	05/02/03	0451 UTC	1315 m	330 08 kn			1013.8 mb	14.9 C	14.5 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.65	14.65	33.254	24.702	323.1	0.000	6.04	104.3	1.9	0.40	0.0	0.01	0.48	0.09	0	
1	14.65	14.65	33.254	24.702	323.1	0.003	6.04	104.3	1.9	0.40	0.0	0.01	0.48	0.09	1	220
10	14.63	14.63	33.257	24.709	322.8	0.032	6.03	104.1	1.9	0.40	0.0	0.01	0.47	0.10	10	219
20	14.50	14.50	33.256	24.736	320.5	0.064	6.04	104.0	1.9	0.40	0.0	0.01	0.63	0.17	20	218
30	14.42	14.42	33.250	24.749	319.6	0.096	5.99	103.0	2.0	0.41	0.1	0.02	0.83	0.21	30	217
40	13.97	13.96	33.249	24.842	310.9	0.128	5.78	98.4	3.0	0.53	1.8	0.09	0.70	0.27	40	216
50	12.59	12.58	33.243	25.114	285.2	0.158	5.21	86.2	6.5	0.88	7.4	0.07	0.38	0.26	50	215
60	11.86	11.85	33.257	25.264	271.2	0.186	4.94	80.5	8.4	1.05	10.3	0.04	0.23	0.21	60	214
70	11.30	11.29	33.312	25.409	257.5	0.212	4.66	75.0	10.6	1.21	13.0	0.03	0.14	0.14	70	213
75 ISL	11.02	11.01	33.357	25.495	249.5	0.225	4.50	72.1	12.0	1.29	14.3	0.03	0.10	0.12	75	
85	10.51	10.50	33.456	25.661	233.7	0.249	4.21	66.7	14.6	1.42	16.7	0.02	0.05	0.08	85	212
100 ISL	10.04	10.03	33.575	25.835	217.5	0.283	3.93	61.7	17.4	1.54	18.8	0.02	0.02	0.05	100	
101	10.02	10.01	33.582	25.844	216.7	0.285	3.91	61.3	17.6	1.55	18.9	0.02	0.02	0.05	101	211
120	9.75	9.74	33.727	26.002	202.0	0.325	3.48	54.3	21.1	1.70	21.2	0.02	0.01	0.04	121	210
125 ISL	9.70	9.69	33.784	26.055	197.1	0.335	3.29	51.3	22.5	1.76	22.1	0.02	0.01	0.04	126	
140	9.57	9.55	33.948	26.205	183.2	0.363	2.72	42.3	26.9	1.96	24.6	0.02	0.00	0.04	141	209
150 ISL	9.49	9.47	34.008	26.265	177.7	0.381	2.50	38.9	28.9	2.04	25.6	0.02	0.00	0.04	151	
170	9.32	9.30	34.081	26.350	170.0	0.416	2.19	33.9	32.0	2.17	27.1	0.01	0.00	0.03	171	208
199	9.08	9.06	34.169	26.458	160.3	0.464	1.73	26.7	36.7	2.35	29.1	0.01	0.00	0.03	200	207
200 ISL	9.07	9.05	34.170	26.461	160.0	0.465	1.72	26.5	36.8	2.35	29.1	0.01			201	
229	8.88	8.86	34.194	26.510	155.9	0.511	1.56	23.9	39.2	2.44	30.0	0.01			230	206
250 ISL	8.70	8.67	34.219	26.558	151.6	0.544	1.43	21.9	41.4	2.51	30.6	0.02			251	
269	8.50	8.47	34.241	26.607	147.3	0.572	1.30	19.8	43.7	2.57	31.2	0.02			271	205
300 ISL	8.11	8.08	34.261	26.682	140.6	0.617	1.06	16.0	48.9	2.70	32.8	0.01			302	
319	7.87	7.84	34.268	26.723	136.9	0.643	0.92	13.8	52.1	2.77	33.7	0.01			321	204
378	7.44	7.40	34.268	26.786	131.6	0.722	0.75	11.1	57.4	2.87	35.2	0.01			380	203
400 ISL	7.24	7.20	34.271	26.817	128.9	0.751	0.68	10.1	60.2	2.92	36.0	0.01			403	
438	6.88	6.84	34.279	26.873	123.9	0.799	0.56	8.2	65.4	3.00	37.3	0.01			441	202
500 ISL	6.36	6.31	34.302	26.961	116.0	0.873	0.38	5.5	73.7	3.12	39.0	0.01			503	
516	6.23	6.18	34.309	26.983	113.9	0.892	0.33	4.8	75.9	3.15	39.5	0.01			520	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 25.2 N	119 57.3 W	05/02/03	0004	UTC	987 m	320	09 kn	310 02 06	1	1014.0 mb	14.9 C	14.9 C	17m	7/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	14.43	14.43	33.257	24.751	318.5	0.000	6.07	104.4	3.4	0.43	0.3	0.03	0.49	0.19	0	
2	14.43	14.43	33.257	24.751	318.5	0.006	6.07	104.4	3.4	0.43	0.3	0.03	0.49	0.19	2	220
10 ISL	14.22	14.22	33.279	24.813	312.9	0.032	6.06	103.8	3.6	0.44	0.5	0.04	0.72	0.30	10	
11	14.19	14.19	33.283	24.822	312.0	0.035	6.06	103.7	3.6	0.44	0.5	0.04	0.76	0.32	11	219
20 ISL	14.11	14.11	33.292	24.846	310.0	0.063	5.99	102.3	3.7	0.46	0.8	0.06	0.98	0.42	20	
21	14.11	14.11	33.292	24.846	310.1	0.066	5.98	102.2	3.7	0.46	0.8	0.06	1.00	0.43	21	218
30 ISL	14.10	14.10	33.297	24.852	309.7	0.094	5.91	100.9	3.9	0.49	1.3	0.07	1.00	0.38	30	
31	14.10	14.10	33.297	24.852	309.7	0.097	5.89	100.6	3.9	0.49	1.3	0.07	1.00	0.38	31	217
40	12.98	12.97	33.174	24.984	297.4	0.124	5.57	92.9	5.3	0.72	4.6	0.09	0.45	0.30	40	216
50	11.94	11.93	33.215	25.216	275.5	0.153	5.05	82.4	8.6	1.01	9.5	0.06	0.20	0.19	50	215
60	11.11	11.10	33.267	25.408	257.3	0.179	4.78	76.6	11.0	1.20	12.8	0.03	0.11	0.15	60	214
70	10.93	10.92	33.378	25.527	246.3	0.205	4.43	70.8	13.0	1.31	14.7	0.03	0.08	0.14	70	213
75 ISL	10.79	10.78	33.434	25.595	239.9	0.217	4.25	67.7	14.1	1.37	15.7	0.03	0.07	0.13	75	
86	10.40	10.39	33.546	25.751	225.3	0.242	3.91	61.8	16.7	1.50	17.9	0.02	0.05	0.09	86	212
100	9.84	9.83	33.651	25.928	208.7	0.273	3.61	56.4	20.5	1.67	20.8	0.02	0.02	0.05	100	211
120	9.77	9.76	33.747	26.015	200.9	0.314	3.30	51.5	22.5	1.77	22.1	0.02	0.01	0.05	121	210
125 ISL	9.76	9.75	33.800	26.058	196.9	0.324	3.11	48.6	23.8	1.83	22.8	0.02	0.01	0.05	126	
139	9.69	9.67	33.951	26.188	184.8	0.350	2.59	40.4	27.6	2.00	24.9	0.01	0.01	0.04	140	209
150 ISL	9.52	9.50	34.007	26.260	178.2	0.370	2.43	37.8	29.6	2.07	26.0	0.01	0.01	0.04	151	
170	9.18	9.16	34.067	26.362	168.8	0.405	2.26	34.9	32.5	2.16	27.4	0.01	0.01	0.03	171	208
200 ISL	9.01	8.99	34.177	26.476	158.6	0.454	1.70	26.2	37.6	2.37	29.5	0.01	0.00	0.03	201	
201	9.01	8.99	34.180	26.478	158.4	0.456	1.68	25.9	37.8	2.38	29.6	0.01	0.00	0.03	202	207
230	8.74	8.72	34.229	26.560	151.2	0.501	1.39	21.3	41.4	2.51	30.7	0.01			231	206
250 ISL	8.40	8.37	34.225	26.609	146.7	0.530	1.33	20.2	44.4	2.57	31.6	0.01			251	
269	8.08	8.05	34.216	26.651	142.9	0.558	1.28	19.3	47.3	2.62	32.5	0.01			271	205
300 ISL	7.84	7.81	34.244	26.708	137.9	0.601	1.02	15.3	51.1	2.73	33.6	0.01			302	
318	7.75	7.72	34.262	26.736	135.5	0.626	0.87	13.0	53.1	2.79	34.2	0.01			320	204
380	7.24	7.20	34.264	26.811	129.1	0.708	0.72	10.6	59.6	2.89	36.0	0.01			382	203
400 ISL	6.98	6.94	34.271	26.853	125.3	0.734	0.62	9.1	63.4	2.96	36.9	0.01			403	
437	6.54	6.50	34.288	26.926	118.6	0.779	0.45	6.5	70.3	3.08	38.5	0.01			440	202
500 ISL	6.25	6.21	34.301	26.974	114.6	0.852	0.37	5.3	74.9	3.12	39.5	0.01			503	
509	6.21	6.16	34.303	26.981	114.0	0.862	0.36	5.2	75.6	3.13	39.6	0.01			512	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 5.7 N	120 38.6 W	04/02/03	1808	UTC	3812 m	160	04 kn	320 01 07	1	1016.9 mb	16.2 C	16.0 C	24m	2/8	AS

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.04	15.04	33.077	24.482	344.1	0.000	5.90	102.6	0.6	0.41	0.0	0.00	0.19	0.05	0	
1 A	15.04	15.04	33.077	24.482	344.1	0.003	5.90	102.6	0.6	0.41	0.0	0.00	0.19	0.05	1	222
8	14.96	14.96	33.064	24.489	343.6	0.028	5.90	102.4	0.9	0.41	0.0	0.00	0.22	0.06	8	221
10 ISL	14.95	14.95	33.064	24.492	343.5	0.034	5.90	102.4	0.9	0.41	0.0	0.00	0.22	0.06	10	
15 A	14.94	14.94	33.067	24.496	343.2	0.052	5.90	102.4	0.7	0.40	0.0	0.00	0.23	0.07	15	220
20 ISL	14.92	14.92	33.067	24.501	342.9	0.069	5.90	102.3	0.7	0.40	0.0	0.00	0.26	0.08	20	
23	14.91	14.91	33.072	24.507	342.4	0.079	5.90	102.3	0.7	0.40	0.0	0.00	0.30	0.10	23	219
30 ISL	14.76	14.76	33.082	24.547	338.8	0.103	5.97	103.2	0.9	0.42	0.1	0.01	0.49	0.19	30	
31 A	14.72	14.72	33.078	24.552	338.3	0.106	5.98	103.3	0.9	0.42	0.1	0.01	0.52	0.21	31	218
39	14.05	14.04	33.202	24.789	315.9	0.132	5.85	99.8	1.8	0.51	0.7	0.07	0.81	0.54	39	217
48 A	13.23	13.22	33.262	25.003	295.8	0.160	5.52	92.6	4.2	0.74	4.4	0.13	0.62	0.50	48	216
50 ISL	12.93	12.92	33.323	25.110	285.7	0.166	5.29	88.2	5.9	0.86	6.4	0.11	0.53	0.48	50	
56	12.01	12.00	33.505	25.428	255.4	0.182	4.60	75.3	11.1	1.22	12.5	0.05	0.29	0.40	56	215
65 A	11.07	11.06	33.553	25.638	235.6	0.204	4.20	67.4	14.4	1.42	16.2	0.03	0.20	0.31	65	214
75 ISL	10.12	10.11	33.626	25.861	214.6	0.227	3.69	58.0	19.1	1.66	20.4	0.02	0.10	0.13	75	
78	9.90	9.89	33.648	25.915	209.4	0.233	3.56	55.7	20.4	1.72	21.4	0.02	0.07	0.08	78	213
91 A	9.68	9.67	33.710	26.000	201.6	0.260	3.30	51.4	22.4	1.79	22.9	0.01	0.04	0.05	91	212
100 ISL	9.51	9.50	33.766	26.072	194.9	0.277	3.08	47.8	24.2	1.87	24.0	0.01	0.03	0.04	100	
106	9.40	9.39	33.805	26.120	190.4	0.289	2.94	45.6	25.4	1.92	24.8	0.01	0.02	0.04	107	211
120	9.12	9.11	33.882	26.226	180.7	0.315	2.76	42.5	28.2	2.00	26.3	0.01	0.01	0.03	121	210
125 ISL	9.06	9.05	33.900	26.250	178.5	0.324	2.73	42.0	28.8	2.02	26.6	0.01	0.01	0.03	126	
140	8.92	8.91	33.941	26.304	173.6	0.350	2.64	40.5	30.3	2.06	27.2	0.01	0.00	0.03	141	209
150 ISL	8.81	8.79	33.971	26.345	169.9	0.368	2.54	38.9	31.7	2.10	27.8	0.01	0.00	0.03	151	
170	8.61	8.59	34.021	26.416	163.5	0.401	2.35	35.8	34.4	2.18	29.0	0.01	0.00	0.02	171	208
200	8.41	8.39	34.047	26.467	159.1	0.449	2.24	34.0	36.3	2.24	29.8	0.01	0.00	0.02	201	207
229	7.98	7.96	34.054	26.537	152.8	0.495	2.31	34.7	39.9	2.28	30.6	0.01			230	206
250 ISL	7.68	7.66	34.060	26.586	148.4	0.526	2.13	31.8	43.4	2.37	31.8	0.01			251	
269	7.41	7.38	34.066	26.630	144.5	0.554	1.91	28.3	46.8	2.46	32.9	0.01			271	205
300 ISL	6.97	6.94	34.071	26.695	138.5	0.598	1.74	25.5	52.1	2.57	34.3	0.01			302	
319	6.74	6.71	34.077	26.731	135.2	0.624	1.64	23.9	55.2	2.63	35.1	0.01			321	204
378	6.40	6.37	34.143	26.829	126.6	0.701	1.06	15.4	64.1	2.87	37.5	0.01			380	203
400 ISL	6.29	6.25	34.166	26.861	123.8	0.729	0.88	12.7	67.2	2.94	38.3	0.01			403	
438	6.11	6.07	34.204	26.915	119.1	0.775	0.61	8.8	72.3	3.04	39.4	0.01			441	202
500 ISL	5.85	5.81	34.270	27.000	111.7	0.846	0.38	5.4	79.4	3.16	40.5	0.01			503	
515	5.79	5.75	34.286	27.020	109.9	0.863	0.33	4.7	81.1	3.19	40.8	0.01			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 44.8 N	121 18.8 W	04/02/03	1140 UTC	3649 m	330 05 kn			1015.9 mb	15.0 C	14.1 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.43	15.43	33.254	24.533	339.2	0.000	5.84	102.5	0.4	0.38	0.1	0.00	0.20	0.05	0	
2	15.43	15.43	33.254	24.533	339.3	0.007	5.84	102.5	0.4	0.38	0.1	0.00	0.20	0.05	2	220
10 ISL	15.43	15.43	33.254	24.533	339.5	0.034	5.84	102.5	0.5	0.38	0.0	0.01	0.20	0.06	10	
11	15.43	15.43	33.254	24.533	339.5	0.037	5.84	102.5	0.5	0.38	0.0	0.01	0.20	0.06	11	219
20 ISL	15.39	15.39	33.251	24.540	339.2	0.068	5.84	102.4	0.5	0.38	0.0	0.01	0.22	0.05	20	
21	15.38	15.38	33.251	24.542	339.0	0.071	5.84	102.3	0.5	0.38	0.0	0.01	0.22	0.05	21	218
30 ISL	15.37	15.37	33.253	24.546	338.9	0.102	5.84	102.3	0.5	0.39	0.0	0.01	0.24	0.08	30	
31	15.37	15.37	33.253	24.546	338.9	0.105	5.84	102.3	0.5	0.39	0.0	0.01	0.24	0.08	31	217
41	15.34	15.33	33.250	24.551	338.8	0.139	5.82	101.9	0.5	0.39	0.0	0.01	0.29	0.10	41	216
50 ISL	13.42	13.41	33.089	24.831	312.2	0.168	5.86	98.6	2.1	0.56	1.6	0.08	0.83	0.51	50	
51	13.18	13.17	33.072	24.866	308.9	0.171	5.86	98.1	2.3	0.59	1.9	0.09	0.88	0.55	51	215
61	11.96	11.95	33.026	25.066	290.0	0.201	5.57	90.8	4.9	0.87	6.4	0.05	0.56	0.46	61	214
71	11.22	11.21	33.073	25.238	273.8	0.230	5.28	84.8	7.5	1.06	9.9	0.02	0.26	0.28	71	213
75 ISL	11.04	11.03	33.126	25.311	266.9	0.240	5.15	82.4	8.6	1.13	11.1	0.02	0.20	0.23	75	
86	10.59	10.58	33.292	25.520	247.2	0.269	4.79	76.0	11.8	1.29	14.3	0.02	0.12	0.12	86	212
100	9.73	9.72	33.448	25.787	222.0	0.302	4.39	68.4	16.1	1.48	18.0	0.02	0.03	0.03	100	211
120	9.34	9.33	33.656	26.014	200.8	0.344	3.70	57.2	21.4	1.71	21.9	0.01	0.01	0.03	121	210
125 ISL	9.24	9.23	33.701	26.065	196.0	0.354	3.58	55.2	22.6	1.75	22.6	0.01	0.01	0.03	126	
140	8.97	8.95	33.819	26.201	183.4	0.382	3.29	50.5	25.9	1.86	24.5	0.01	0.00	0.02	141	209
150 ISL	8.86	8.84	33.882	26.268	177.2	0.400	3.12	47.8	27.8	1.91	25.4	0.01	0.00	0.02	151	
169	8.69	8.67	33.972	26.365	168.3	0.433	2.83	43.2	31.1	2.01	27.0	0.01	0.00	0.02	170	208
200	8.30	8.28	34.039	26.478	158.1	0.484	2.34	35.4	36.9	2.21	29.7	0.01	0.00	0.02	201	207
231	7.79	7.77	34.056	26.567	150.0	0.531	2.12	31.7	42.2	2.34	31.6	0.01			232	206
250 ISL	7.47	7.45	34.048	26.607	146.4	0.560	2.16	32.1	44.7	2.36	32.1	0.01			251	
274	7.13	7.10	34.046	26.653	142.2	0.594	2.20	32.4	47.9	2.39	32.6	0.01			276	205
300 ISL	7.00	6.97	34.093	26.708	137.3	0.630	1.75	25.7	52.4	2.56	34.1	0.01			302	
320	6.93	6.90	34.131	26.748	133.8	0.658	1.36	20.0	56.0	2.70	35.4	0.01			322	204
378	6.33	6.30	34.140	26.835	126.0	0.733	1.07	15.5	64.9	2.85	37.6	0.01			380	203
400 ISL	6.30	6.26	34.178	26.870	123.0	0.760	0.87	12.6	67.5	2.93	38.2	0.01			403	
438	6.26	6.22	34.241	26.925	118.3	0.806	0.53	7.7	71.7	3.05	39.1	0.01			441	202
500 ISL	5.98	5.94	34.296	27.005	111.4	0.877	0.33	4.7	78.6	3.16	40.3	0.01			503	
513	5.92	5.88	34.308	27.022	109.9	0.892	0.29	4.2	80.0	3.18	40.6	0.01			516	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 24.7 N	121 59.3 W	04/02/03	0533 UTC	3951 m	030 07 kn			1016.3 mb	14.9 C	14.1 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.02	15.02	32.927	24.371	354.7	0.000	5.87	101.9	0.6	0.41	0.0	0.00	0.17	0.04	0	
2	15.02	15.02	32.927	24.371	354.8	0.007	5.87	101.9	0.6	0.41	0.0	0.00	0.17	0.04	2	220
10 ISL	14.99	14.99	32.928	24.378	354.3	0.035	5.86	101.7	0.5	0.41	0.0	0.01	0.17	0.05	10	
15	14.96	14.96	32.928	24.385	353.8	0.053	5.86	101.6	0.5	0.41	0.0	0.01	0.17	0.05	15	219
20 ISL	14.94	14.94	32.927	24.389	353.6	0.071	5.86	101.6	0.5	0.41	0.0	0.01	0.17	0.05	20	
30 ISL	14.88	14.88	32.924	24.399	352.9	0.106	5.86	101.5	0.4	0.40	0.0	0.01	0.18	0.05	30	
31	14.87	14.87	32.923	24.401	352.7	0.110	5.86	101.4	0.4	0.40	0.0	0.01	0.18	0.05	31	218
46	14.65	14.64	32.911	24.439	349.5	0.162	5.88	101.3	0.6	0.42	0.1	0.01	0.36	0.15	46	217
50 ISL	14.56	14.55	32.912	24.459	347.7	0.176	5.88	101.1	0.7	0.43	0.1	0.02	0.39	0.18	50	
55	14.40	14.39	32.909	24.491	344.9	0.194	5.88	100.8	0.8	0.45	0.1	0.03	0.42	0.22	55	216
65	13.79	13.78	32.871	24.588	335.8	0.228	5.84	98.8	1.2	0.53	1.0	0.13	0.49	0.26	65	215
75	13.07	13.06	32.830	24.701	325.2	0.261	5.81	96.9	2.1	0.64	2.5	0.10	0.40	0.26	75	214
85	11.23	11.22	32.760	24.993	297.4	0.292	5.71	91.5	4.9	0.90	6.6	0.02	0.20	0.14	85	213
94	10.66	10.65	32.859	25.171	280.6	0.318	5.51	87.3	7.1	1.04	9.4	0.01	0.09	0.08	94	212
100 ISL	10.51	10.50	32.900	25.229	275.2	0.335	5.43	85.7	7.9	1.09	10.4	0.01	0.08	0.06	100	
110	10.40	10.39	32.992	25.319	266.8	0.362	5.29	83.4	9.0	1.14	11.6	0.01	0.05	0.05	110	211
125	10.03	10.02	33.313	25.633	237.3	0.399	4.82	75.5	12.3	1.28	14.6	0.02	0.02	0.02	126	210
145	9.31	9.29	33.432	25.844	217.4	0.445	4.44	68.5	17.7	1.55	19.0	0.01	0.01	0.02	146	209
150 ISL	9.21	9.19	33.494	25.909	211.4	0.456	4.25	65.4	19.2	1.61	20.1	0.01	0.01	0.02	151	
170	8.98	8.96	33.749	26.145	189.3	0.496	3.47	53.2	24.8	1.82	23.7	0.01	0.01	0.02	171	208
199	8.75	8.73	33.927	26.321	173.1	0.548	2.89	44.2	30.1	2.00	26.6	0.01	0.00	0.02	200	207
200 ISL	8.74	8.72	33.931	26.326	172.7	0.550	2.87	43.8	30.3	2.01	26.7	0.01			201	
230	8.31	8.29	34.018	26.460	160.3	0.600	2.49	37.7	36.3	2.17	29.2	0.01			231	206
250 ISL	7.99	7.96	34.042	26.527	154.2	0.631	2.33	35.0	39.9	2.26	30.5	0.01			251	
271	7.67	7.64	34.054	26.583	149.0	0.663	2.17	32.4	43.4	2.34	31.6	0.01			272	205
300 ISL	7.34	7.31	34.069	26.642	143.7	0.706	1.87	27.7	48.0	2.48	33.3	0.01			302	
323	7.11	7.08	34.081	26.684	140.0	0.738	1.61	23.7	51.6	2.59	34.5	0.01			325	204
379	6.56	6.53	34.129	26.797	129.8	0.814	1.05	15.3	61.8	2.83	37.2	0.01			381	203
400 ISL	6.44	6.40	34.156	26.834	126.5	0.841	0.88	12.8	65.0	2.90	37.9	0.01			402	
438	6.24	6.20	34.200	26.895	121.1	0.888	0.64	9.2	70.5	3.01	38.9	0.01			441	202
500 ISL	5.70	5.66	34.223	26.981	113.2	0.960	0.46	6.6	80.3	3.13	40.8	0.01			503	
508	5.63	5.59	34.226	26.992	112.2	0.969	0.44	6.3	81.6	3.15	41.0	0.01			511	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 5.0 N	122 39.5 W	03/02/03	2312	UTC	4014 m	350 10 kn	010 05 07	1	1016.5 mb	16.3 C	14.5 C	31m	6/8	CC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.12	16.12	33.068	24.236	367.6	0.000	5.73	101.8	0.4	0.38	0.1	0.00	0.15	0.03	0	
2	16.12	16.12	33.068	24.236	367.6	0.007	5.73	101.8	0.4	0.38	0.1	0.00	0.15	0.03	2	220
10 ISL	16.05	16.05	33.063	24.248	366.7	0.037	5.74	101.8	0.4	0.38	0.0	0.00	0.15	0.04	10	
16	15.99	15.99	33.059	24.259	365.9	0.059	5.74	101.7	0.4	0.38	0.0	0.00	0.15	0.04	16	219
20 ISL	15.98	15.98	33.059	24.261	365.8	0.073	5.74	101.7	0.5	0.38	0.0	0.00	0.15	0.04	20	
30 ISL	15.97	15.97	33.058	24.263	365.9	0.110	5.74	101.7	0.6	0.38	0.0	0.00	0.16	0.03	30	
31	15.97	15.97	33.058	24.263	365.9	0.114	5.74	101.7	0.6	0.38	0.0	0.00	0.16	0.03	31	218
45	15.95	15.94	33.057	24.267	366.0	0.165	5.73	101.4	0.6	0.38	0.0	0.00	0.17	0.04	45	217
50 ISL	15.95	15.94	33.057	24.267	366.1	0.183	5.74	101.6	0.6	0.38	0.0	0.00	0.17	0.04	50	
60	15.95	15.94	33.056	24.267	366.5	0.220	5.75	101.8	0.5	0.38	0.0	0.00	0.18	0.05	60	216
75	15.93	15.92	33.044	24.263	367.3	0.275	5.74	101.6	0.6	0.39	0.0	0.01	0.21	0.06	75	215
86	14.74	14.73	32.963	24.461	348.6	0.314	5.83	100.7	1.1	0.44	0.0	0.03	0.28	0.20	86	214
96	13.74	13.73	32.937	24.650	330.8	0.348	5.93	100.3	1.8	0.49	0.3	0.14	0.24	0.20	96	213
100 ISL	13.26	13.25	32.884	24.706	325.5	0.361	5.92	99.1	2.1	0.53	0.7	0.15	0.23	0.19	100	
106	12.60	12.59	32.812	24.780	318.5	0.381	5.91	97.5	2.7	0.61	1.6	0.17	0.20	0.18	106	212
116	11.98	11.97	32.820	24.903	306.8	0.412	5.78	94.1	3.7	0.72	4.1	0.04	0.14	0.17	116	211
125	12.75	12.73	33.205	25.055	292.8	0.439	5.48	90.9	4.3	0.69	4.3	0.08	0.13	0.11	126	210
140	11.75	11.73	33.266	25.293	270.3	0.481	5.09	82.7	7.2	0.97	8.9	0.03	0.10	0.11	141	209
150 ISL	11.12	11.10	33.392	25.506	250.2	0.507	4.59	73.7	10.8	1.21	12.8	0.02	0.07	0.09	151	
164	10.33	10.31	33.585	25.795	222.8	0.540	3.90	61.6	16.3	1.51	18.0	0.01	0.03	0.05	165	208
194	9.13	9.11	33.765	26.134	190.9	0.602	3.48	53.6	23.7	1.77	23.0	0.01	0.00	0.03	195	207
200 ISL	9.05	9.03	33.799	26.173	187.2	0.614	3.39	52.1	24.7	1.81	23.6	0.01			201	
230	8.86	8.84	33.936	26.311	174.7	0.668	2.95	45.2	29.2	1.96	26.1	0.01			231	206
250 ISL	8.52	8.49	33.993	26.409	165.7	0.702	2.75	41.8	33.1	2.06	27.7	0.01			251	
269	8.16	8.13	34.028	26.491	158.0	0.733	2.58	38.9	37.0	2.15	29.1	0.01			270	205
300 ISL	7.64	7.61	34.053	26.587	149.2	0.780	2.19	32.6	43.4	2.33	31.6	0.01			302	
319	7.35	7.32	34.058	26.633	145.0	0.808	1.95	28.9	47.2	2.44	33.0	0.01			321	204
378	6.65	6.62	34.076	26.743	135.0	0.891	1.46	21.3	57.2	2.69	36.0	0.01			380	203
400 ISL	6.46	6.42	34.088	26.778	131.8	0.920	1.28	18.6	60.7	2.77	37.0	0.01			402	
437	6.19	6.15	34.116	26.835	126.7	0.968	1.00	14.4	66.6	2.89	38.5	0.01			440	202
500 ISL	5.82	5.78	34.192	26.942	117.1	1.045	0.59	8.4	76.7	3.07	40.3	0.01			503	
514	5.74	5.70	34.209	26.966	115.0	1.061	0.50	7.1	78.9	3.11	40.7	0.01			517	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
30 45.3 N	123 20.0 W	03/02/03	1741	UTC	4029 m	070 12 kn	350 08 08	1	1018.4 mb	15.8 C	14.8 C	28m	3/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.79	15.79	33.010	24.265	364.8	0.000	5.80	102.3	0.6	0.39	0.1	0.00	0.15	0.04	0	
2 A	15.79	15.79	33.010	24.265	364.8	0.007	5.80	102.3	0.6	0.39	0.1	0.00	0.15	0.04	2	222
10 ISL	15.78	15.78	33.010	24.268	364.8	0.036	5.77	101.8	0.6	0.39	0.1	0.00	0.16	0.04	10	
17 A	15.77	15.77	33.010	24.270	364.8	0.062	5.75	101.4	0.5	0.39	0.0	0.00	0.16	0.04	17	221
20 ISL	15.77	15.77	33.010	24.270	364.9	0.073	5.75	101.4	0.5	0.39	0.0	0.00	0.16	0.04	20	
27	15.77	15.77	33.009	24.270	365.1	0.099	5.76	101.6	0.5	0.39	0.0	0.00	0.15	0.04	27	220
30 ISL	15.77	15.77	33.009	24.270	365.2	0.109	5.76	101.6	0.5	0.39	0.0	0.00	0.15	0.04	30	
35 A	15.77	15.76	33.009	24.270	365.4	0.128	5.76	101.6	0.5	0.39	0.0	0.00	0.16	0.04	35	219
47	15.77	15.76	33.010	24.271	365.6	0.172	5.76	101.6	0.4	0.40	0.0	0.00	0.16	0.04	47	218
50 ISL	15.77	15.76	33.010	24.271	365.7	0.183	5.76	101.6	0.4	0.40	0.0	0.00	0.16	0.04	50	
57 A	15.77	15.76	33.009	24.271	366.0	0.208	5.76	101.6	0.3	0.39	0.0	0.00	0.15	0.05	57	217
66	15.67	15.66	33.007	24.292	364.2	0.241	5.78	101.7	0.2	0.39	0.0	0.00	0.16	0.06	66	216
75 ISL	15.25	15.24	33.095	24.453	349.2	0.273	5.81	101.4	0.7	0.41	0.1	0.02	0.22	0.12	75	
77 A	15.16	15.15	33.134	24.502	344.5	0.280	5.82	101.5	0.9	0.42	0.1	0.03	0.23	0.14	77	215
86	12.87	12.86	32.865	24.768	319.1	0.310	5.95	98.8	2.0	0.56	1.0	0.19	0.19	0.21	86	214
95	12.04	12.03	32.781	24.861	310.3	0.338	5.86	95.6	2.8	0.69	3.1	0.06	0.17	0.23	95	213
100 ISL	11.74	11.73	32.786	24.921	304.7	0.354	5.79	93.8	3.3	0.74	4.3	0.05	0.15	0.20	100	
106 A	11.51	11.50	32.813	24.984	298.8	0.372	5.71	92.1	4.0	0.80	5.6	0.03	0.12	0.15	106	212
116	11.34	11.33	32.845 D	25.040	293.7	0.401									116	211
125	11.09	11.07	32.913	25.138	284.5	0.427	5.53	88.4	5.4	0.94	8.2	0.02	0.07	0.09	126	210
144	10.51	10.49	33.183	25.450	255.1	0.479	5.10	80.7	9.1	1.18	12.7	0.01	0.03	0.03	145	209
150 ISL	10.32	10.30	33.246	25.532	247.5	0.494	4.97	78.3	10.2	1.23	13.7	0.01	0.02	0.03	151	
170	9.74	9.72	33.430	25.773	224.8	0.541	4.53	70.5	14.2	1.39	16.7	0.01	0.01	0.02	171	208
199	9.23	9.21	33.699	26.067	197.4	0.602	3.76	58.0	20.7	1.68	21.5	0.01	0.01	0.02	200	207
200 ISL	9.22	9.20	33.707	26.074	196.7	0.604	3.74	57.7	20.9	1.69	21.6	0.01			201	
229	9.00	8.98	33.914	26.272	178.5	0.659	3.11	47.8	26.9	1.90	25.3	0.01			230	206
250 ISL	8.81	8.78	34.022	26.387	167.9	0.695	2.74	41.9	31.1	2.04	27.0	0.01			251	
268	8.59	8.56	34.082	26.468	160.4	0.724	2.50	38.1	34.6	2.14	28.1	0.01			269	205
300 ISL	7.94	7.91	34.083	26.567	151.3	0.774	2.37	35.6	40.1	2.25	29.9	0.01			302	
318	7.59	7.56	34.070	26.608	147.5	0.801	2.30	34.3	43.1	2.31	30.8	0.01			320	204
378	7.26	7.22	34.165	26.730	136.7	0.886	1.23	18.2	52.9	2.70	34.8	0.01			380	203
400 ISL	6.91	6.87	34.171	26.783	131.7	0.916	1.02	15.0	58.3	2.81	36.3	0.01			402	
440	6.27	6.23	34.180	26.875	123.0	0.967	0.76	11.0	67.8	2.98	38.7	0.01			443	202
500 ISL	6.03	5.99	34.249	26.961	115.5	1.039	0.47	6.8	74.9	3.11	40.0	0.01			503	
512	5.98	5.94	34.263	26.979	114.0	1.052	0.41	5.9	76.3	3.13	40.2	0.01			515	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 90 120

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
30 25.4 N	123 59.4 W	03/02/03	0726	UTC	4221 m	010	26 kn			1018.9 mb	14.1 C	13.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	17.03	17.03	33.287	24.194	371.6	0.000	5.63	102.0	0.8	0.36	0.1	0.01	0.12	0.03	0	
2	17.03	17.03	33.287	24.194	371.6	0.007	5.63	102.0	0.8	0.36	0.1	0.01	0.12	0.03	2	220
10 ISL	17.03	17.03	33.291	24.197	371.6	0.037	5.64	102.1	0.8	0.36	0.1	0.01	0.11	0.03	10	
17	17.03	17.03	33.294	24.200	371.6	0.063	5.64	102.1	0.8	0.36	0.1	0.01	0.11	0.03	17	219
20 ISL	17.03	17.03	33.293	24.199	371.7	0.074	5.64	102.1	0.8	0.36	0.1	0.01	0.11	0.03	20	
30 ISL	17.04	17.04	33.290	24.195	372.5	0.112	5.63	102.0	0.8	0.36	0.0	0.01	0.12	0.03	30	
32	17.04	17.03	33.289	24.194	372.6	0.119	5.63	102.0	0.8	0.36	0.0	0.01	0.12	0.03	32	218
47	17.04	17.03	33.288	24.194	373.1	0.175	5.63	102.0	0.8	0.36	0.0	0.01	0.11	0.03	47	217
50 ISL	16.96	16.95	33.273	24.201	372.5	0.186	5.64	102.0	0.7	0.36	0.0	0.01	0.12	0.04	50	
56	16.81	16.80	33.244	24.214	371.5	0.208	5.65	101.8	0.6	0.37	0.0	0.01	0.14	0.05	56	216
64	15.44	15.43	33.034	24.364	357.3	0.238	5.85	102.5	0.7	0.42	0.0	0.01	0.26	0.19	64	215
74	14.32	14.31	32.942	24.533	341.3	0.272	5.96	102.0	1.4	0.47	0.1	0.03	0.35	0.25	74	214
75 ISL	14.17	14.16	32.929	24.555	339.3	0.276	5.96	101.7	1.5	0.48	0.1	0.04	0.35	0.25	75	
83	13.03	13.02	32.843	24.719	323.7	0.302	5.98	99.6	2.2	0.56	0.9	0.14	0.29	0.26	83	213
96	11.92	11.91	32.856	24.942	302.6	0.343	5.74	93.4	3.7	0.71	4.1	0.06	0.18	0.22	96	212
100 ISL	11.72	11.71	32.891	25.006	296.6	0.355	5.66	91.7	4.3	0.76	5.1	0.04	0.15	0.19	100	
109	11.39	11.38	32.983	25.138	284.2	0.381	5.48	88.2	5.6	0.87	7.2	0.02	0.10	0.12	109	211
124	10.94	10.93	33.094	25.305	268.6	0.423	5.31	84.7	7.5	1.01	9.9	0.02	0.06	0.06	125	210
125 ISL	10.90	10.88	33.107	25.323	266.9	0.425	5.31	84.7	7.7	1.02	10.1	0.02	0.06	0.06	126	
146	10.06	10.04	33.388	25.686	232.6	0.478	5.30	83.1	12.7	1.26	14.7	0.01	0.02	0.03	147	209
150 ISL	9.94	9.92	33.432	25.741	227.5	0.487	5.25	82.1	13.8	1.32	15.7	0.01	0.02	0.03	151	
174	9.40	9.38	33.650	26.000	203.2	0.539	4.71	72.9	20.4	1.64	21.0	0.01	0.00	0.01	175	208
200	9.06	9.04	33.825	26.192	185.4	0.589	3.80	58.4	25.6	1.83	24.1	0.01	0.00	0.01	201	207
231	8.71	8.69	33.962	26.355	170.5	0.644	2.94	44.9	31.0	2.00	26.9	0.01			232	206
250 ISL	8.41	8.38	34.003	26.433	163.3	0.676	2.79	42.3	33.8	2.06	27.8	0.01			251	
266	8.14	8.11	34.022	26.489	158.1	0.702	2.75	41.5	36.3	2.10	28.5	0.01			267	205
300 ISL	7.54	7.51	34.036	26.588	149.0	0.754	2.44	36.3	42.9	2.28	30.8	0.01			302	
320	7.20	7.17	34.036	26.636	144.6	0.783	2.24	33.1	47.0	2.39	32.2	0.01			322	204
377	6.46	6.43	34.047	26.745	134.5	0.863	1.82	26.4	57.0	2.59	35.2	0.01			379	203
400 ISL	6.26	6.22	34.059	26.781	131.4	0.894	1.60	23.1	61.1	2.68	36.4	0.01			402	
437	5.99	5.95	34.084	26.835	126.5	0.941	1.23	17.6	68.0	2.83	38.1	0.01			440	202
500 ISL	5.44	5.40	34.146	26.952	115.7	1.018	0.75	10.6	81.0	3.04	40.7	0.01			503	
505	5.40	5.36	34.151	26.961	114.9	1.023	0.71	10.0	82.0	3.06	40.9	0.01			508	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 26.7

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 57.7 N	117 18.3 W	30/01/03	2218	UTC	59 m	350	04 kn	330 02 06	4	1016.5 mb	15.0 C	15.0 C	13m	8/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.67	15.67	33.364	24.564	336.3	0.000	6.17	108.8	3.4	0.31	0.0	0.00	0.99	0.12	0	
2	15.67	15.67	33.364	24.564	336.3	0.007	6.17	108.8	3.4	0.31	0.0	0.00	0.99	0.12	2	207
6	15.60	15.60	33.364	24.580	334.9	0.020	6.18	108.9	3.3	0.31	0.0	0.00	0.93	0.17	6	206
10 ISL	15.38	15.38	33.360	24.626	330.7	0.033	6.15	107.9	3.3	0.31	0.0	0.00	0.96	0.21	10	
11	15.29	15.29	33.358	24.644	329.0	0.037	6.14	107.5	3.3	0.31	0.0	0.00	0.98	0.22	11	205
20 ISL	13.81	13.81	33.296	24.911	303.8	0.065	5.33	90.5	5.3	0.67	3.4	0.39	1.16	0.60	20	
21	13.64	13.64	33.290	24.941	300.9	0.068	5.23	88.5	5.5	0.71	3.8	0.44	1.17	0.64	21	204
30 ISL	13.36	13.36	33.295	25.002	295.4	0.095	5.08	85.5	6.0	0.79	5.2	0.37	0.90	0.69	30	
31	13.36	13.36	33.298	25.004	295.2	0.098	5.07	85.3	6.0	0.79	5.3	0.36	0.86	0.70	31	203
41	12.77	12.76	33.365	25.173	279.4	0.127	4.61	76.6	8.1	0.99	8.6	0.26	0.47	0.40	41	202
50 ISL	12.65	12.64	33.398	25.223	274.9	0.152	4.36	72.3	9.2	1.09	10.0	0.43	0.33	0.32	50	
51	12.64	12.63	33.402	25.228	274.4	0.154	4.33	71.8	9.3	1.10	10.1	0.45	0.31	0.31	51	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 28

LATITUDE	LONGITUDE	DAY/MO/YR	CAST	TIME	BOTTOM	WIND	SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 54.7 N	117 23.6 W	31/01/03	0107	UTC	604 m	330	05 kn	160 02 06	4	1016.4 mb	15.0 C	14.1 C		8/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.91	15.91	33.397	24.536	339.0	0.000	5.89	104.4	2.7	0.34	0.0	0.00	0.21	0.05	0	
2	15.91	15.91	33.397	24.536	339.0	0.007	5.89	104.4	2.7	0.34	0.0	0.00	0.21	0.05	2	220
10 ISL	15.82	15.82	33.398	24.557	337.2	0.034	5.89	104.2	2.6	0.34	0.0	0.00	0.21	0.04	10	
11	15.80	15.80	33.397	24.561	336.9	0.037	5.89	104.2	2.6	0.34	0.0	0.00	0.21	0.04	11	219
20 ISL	15.56	15.56	33.373	24.596	333.8	0.067	5.93	104.4	2.9	0.34	0.0	0.00	0.28	0.10	20	
21	15.51	15.51	33.369	24.604	333.1	0.071	5.93	104.3	3.0	0.34	0.0	0.00	0.29	0.11	21	218
30 ISL	14.74	14.74	33.327	24.740	320.4	0.100	5.94	102.8	3.7	0.40	0.1	0.02	1.22	0.60	30	
31	14.62	14.62	33.322	24.762	318.3	0.103	5.94	102.6	3.9	0.41	0.1	0.02	1.30	0.65	31	217
40	13.12	13.11	33.306	25.059	290.3	0.131	4.97	83.2	6.9	0.85	6.4	0.06	0.57	0.50	40	216
50	12.61	12.60	33.349	25.192	277.8	0.159	4.71	78.0	8.3	1.08	8.5	0.03	0.29	0.34	50	215
61	12.23	12.22	33.458	25.350	263.0	0.189	4.26	70.0	10.4	1.17	11.5	0.02	0.12	0.17	61	214
71	11.98	11.97	33.531	25.454	253.4	0.215	3.94	64.5	12.3	1.30	13.5	0.02	0.08	0.11	71	213
75 ISL	11.89	11.88	33.569	25.501	249.0	0.225	3.79	61.9	13.2	1.36	14.3	0.02	0.06	0.09	75	
85	11.70	11.69	33.655	25.603	239.5	0.249	3.47	56.5	15.3	1.49	16.2	0.02	0.03	0.06	85	212
100	11.46	11.45	33.709	25.690	231.6	0.284	3.24	52.5	17.0	1.58	17.6	0.01	0.02	0.06	100	211
119	11.07	11.06	33.852	25.872	214.7	0.327	2.83	45.5	20.5	1.76	20.2	0.01	0.01	0.04	120	210
125 ISL	10.94	10.92	33.895	25.929	209.4	0.340	2.79	44.7	21.8	1.82	21.1	0.01	0.01	0.04	126	
139	10.66	10.64	33.982	26.047	198.5	0.368	2.69	42.9	24.6	1.96	23.0	0.01	0.00	0.04	140	209
150 ISL	10.46	10.44	34.025	26.115	192.2	0.390	2.46	39.1	26.3	2.03	24.1	0.01	0.00	0.04	151	
169	10.18	10.16	34.081	26.208	183.8	0.425	2.02	31.9	28.9	2.13	25.5	0.01	0.00	0.03	170	208
200	9.90	9.88	34.191	26.341	171.7	0.480	1.64	25.8	33.1	2.30	27.5	0.02	0.00	0.04	201	207
229	9.69	9.66	34.255	26.427	164.2	0.529	1.41	22.0	36.1	2.41	28.5	0.01			230	206
250 ISL	9.53	9.50	34.282	26.475	160.0	0.563	1.27	19.8	37.9	2.47	29.1	0.01			251	
269	9.36	9.33	34.297	26.515	156.5	0.593	1.16	18.0	39.5	2.52	29.7	0.01			271	205
300 ISL	9.03	9.00	34.312	26.580	150.8	0.641	1.01	15.6	42.5	2.61	30.6	0.01			302	
319	8.79	8.76	34.313	26.619	147.4	0.669	0.93	14.3	44.7	2.66	31.2	0.01			321	204
378	7.82	7.78	34.276	26.738	136.5	0.753	0.80	12.0	53.7	2.80	34.0	0.01			380	203
400 ISL	7.60	7.56	34.277	26.771	133.6	0.783	0.73	10.9	56.3	2.85	34.7	0.01			403	
437	7.28	7.24	34.285	26.823	129.0	0.831	0.59	8.7	60.9	2.93	35.9	0.01			440	202
500 ISL	6.55	6.50	34.308	26.941	118.1	0.909	0.37	5.4	72.5	3.09	38.2	0.01			503	
515	6.38	6.33	34.314	26.968	115.6	0.927	0.32	4.6	75.3	3.13	38.8	0.01			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 30

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 50.9 N	117 31.9 W	31/01/03	0439 UTC	843 m	020 02 kn			1017.6 mb	14.9 C	14.9 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.80	15.80	33.394	24.558	336.8	0.000	5.95	105.3	2.6	0.32	0.1	0.00	0.23	0.05	0	
2	15.80	15.80	33.394	24.558	336.9	0.007	5.95	105.3	2.6	0.32	0.1	0.00	0.23	0.05	2	221
10	15.78	15.78	33.391	24.561	336.9	0.034	5.98	105.7	2.7	0.32	0.1	0.00	0.25	0.05	10	220
20	15.40	15.40	33.366	24.626	331.0	0.067	6.00	105.3	2.9	0.32	0.0	0.00	0.32	0.09	20	219
30	14.86	14.86	33.345	24.728	321.5	0.100	6.03	104.6	3.6	0.34	0.0	0.01	0.62	0.26	30	218
40	13.54	13.53	33.289	24.961	299.6	0.131	5.30	89.5	5.3	0.71	4.0	0.11	0.88	0.59	40	217
50	12.76	12.75	33.349	25.163	280.6	0.160	4.78	79.4	7.5	0.97	8.0	0.05	0.46	0.34	50	216
60	12.32	12.31	33.435	25.315	266.3	0.187	4.40	72.5	9.5	1.11	10.8	0.03	0.20	0.21	60	214
60	12.32	12.31	33.435	25.315	266.3	0.187	4.40	72.5	9.6	1.11	10.8	0.03	0.20	0.23	60	215
70	11.91	11.90	33.497	25.441	254.6	0.213	4.10	67.0	11.5	1.24	13.0	0.02	0.12	0.14	70	213
75 ISL	11.75	11.74	33.536	25.501	249.0	0.226	3.96	64.5	12.5	1.30	14.0	0.02	0.09	0.11	75	
85	11.46	11.45	33.624	25.623	237.6	0.250	3.68	59.6	14.5	1.43	15.8	0.01	0.03	0.07	85	212
100	11.06	11.05	33.765 D	25.806	220.5	0.284									100	211
120	10.84	10.83	33.926	25.971	205.3	0.327	2.57	41.1	22.3	1.88	21.8	0.01	0.00	0.04	121	210
125 ISL	10.82	10.80	33.947	25.991	203.5	0.337	2.50	40.0	22.8	1.91	22.2	0.01	0.00	0.04	126	
140	10.71	10.69	33.994	26.047	198.5	0.367	2.32	37.0	24.4	1.98	23.2	0.01	0.00	0.04	141	209
150 ISL	10.48	10.46	34.034	26.119	191.9	0.387	2.19	34.8	26.3	2.04	24.3	0.01	0.00	0.04	151	
169	10.05	10.03	34.115	26.256	179.2	0.422	1.91	30.1	30.0	2.17	26.3	0.01	0.00	0.03	170	208
199	10.00	9.98	34.238	26.361	169.9	0.475	1.42	22.4	33.8	2.37	27.9	0.01	0.00	0.03	200	207
200 ISL	9.99	9.97	34.239	26.364	169.6	0.476	1.42	22.3	33.9	2.37	27.9	0.01			201	
229	9.70	9.67	34.253	26.424	164.5	0.525	1.36	21.3	35.6	2.41	28.7	0.01			230	206
250 ISL	9.57	9.54	34.271	26.460	161.4	0.559	1.28	20.0	36.9	2.46	29.1	0.01			251	
268	9.47	9.44	34.285	26.487	159.2	0.588	1.21	18.8	38.2	2.50	29.4	0.01			270	205
300 ISL	9.19	9.16	34.298	26.544	154.4	0.638	1.10	17.0	40.8	2.57	30.2	0.01			302	
318	8.99	8.96	34.301	26.578	151.3	0.665	1.04	16.0	42.5	2.61	30.8	0.01			320	204
377	8.18	8.14	34.304	26.706	139.7	0.751	0.79	11.9	50.3	2.77	33.1	0.01			379	203
400 ISL	7.84	7.80	34.293	26.748	135.9	0.783	0.74	11.1	53.6	2.82	34.1	0.01			403	
437	7.33	7.29	34.277	26.809	130.3	0.832	0.66	9.8	59.0	2.89	35.6	0.01			440	202
500 ISL	6.73	6.68	34.298	26.909	121.3	0.911	0.43	6.3	68.7	3.04	37.8	0.01			503	
515	6.59	6.54	34.304	26.932	119.1	0.930	0.38	5.5	71.0	3.07	38.3	0.01			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
32 40.9 N	117 52.5 W	31/01/03	0853 UTC	621 m	320 11 kn			1017.5 mb	17.5 C	16.5 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.82	15.82	33.368	24.534	339.2	0.000	5.93	104.9	2.1	0.34	0.0	0.00	0.18	0.06	0	
2	15.82	15.82	33.368	24.534	339.2	0.007	5.93	104.9	2.1	0.34	0.0	0.00	0.18	0.06	2	220
10 ISL	15.81	15.81	33.368	24.536	339.2	0.034	5.95	105.3	2.1	0.32	0.0	0.00	0.17	0.06	10	
12	15.81	15.81	33.368	24.536	339.3	0.041	5.96	105.4	2.1	0.32	0.0	0.00	0.17	0.06	12	219
20 ISL	15.39	15.39	33.351	24.617	331.8	0.068	6.03	105.8	2.3	0.34	0.0	0.01	0.21	0.09	20	
21	15.32	15.32	33.348	24.630	330.6	0.071	6.03	105.6	2.4	0.35	0.0	0.01	0.22	0.10	21	218
30 ISL	14.52	14.52	33.311	24.775	317.1	0.100	5.82	100.3	3.2	0.45	0.4	0.07	0.47	0.22	30	
32	14.30	14.30	33.303	24.815	313.3	0.106	5.77	99.0	3.4	0.47	0.5	0.08	0.52	0.25	32	217
40	13.19	13.18	33.295	25.036	292.4	0.131	5.08	85.2	6.3	0.81	5.8	0.30	0.58	0.29	40	216
50	12.42	12.41	33.341	25.223	274.9	0.159	4.71	77.7	8.4	1.02	9.5	0.05	0.50	0.36	50	215
60	11.92	11.91	33.423	25.381	260.0	0.186	4.34	70.9	10.6	1.18	12.0	0.03	0.23	0.22	60	214
70	11.73	11.72	33.526	25.497	249.2	0.211	3.94	64.1	12.8	1.32	14.0	0.02	0.14	0.15	70	213
75 ISL	11.62	11.61	33.560	25.544	244.9	0.223	3.84	62.4	13.5	1.36	14.7	0.02	0.10	0.12	75	
85	11.33	11.32	33.626	25.649	235.1	0.247	3.64	58.8	15.1	1.45	16.1	0.02	0.05	0.08	85	212
99	10.74	10.73	33.772	25.868	214.5	0.279	3.07	49.0	19.8	1.70	19.8	0.02	0.02	0.06	99	211
100 ISL	10.72	10.71	33.780	25.878	213.6	0.281	3.04	48.5	20.1	1.71	20.0	0.02	0.02	0.06	100	
119	10.46	10.45	33.903	26.019	200.6	0.320	2.59	41.1	23.9	1.91	22.4	0.01	0.01	0.06	120	210
125 ISL	10.41	10.40	33.939	26.056	197.2	0.332	2.47	39.2	24.9	1.96	23.1	0.01	0.01	0.05	126	
140	10.29	10.27	34.021	26.141	189.5	0.361	2.19	34.7	27.2	2.07	24.6	0.01	0.01	0.04	141	209
150 ISL	10.20	10.18	34.071	26.196	184.5	0.380	2.03	32.1	28.7	2.14	25.4	0.01	0.01	0.03	151	
169	10.04	10.02	34.149	26.284	176.5	0.414	1.79	28.2	31.3	2.24	26.7	0.01	0.01	0.03	170	208
199	9.81	9.79	34.220	26.379	168.1	0.466	1.54	24.1	34.3	2.35	28.0	0.01	0.01	0.04	200	207
200 ISL	9.80	9.78	34.222	26.382	167.8	0.468	1.53	24.0	34.4	2.35	28.0	0.01			201	
228	9.59	9.56	34.274	26.458	161.1	0.514	1.33	20.8	37.0	2.46	28.9	0.01			229	206
250 ISL	9.41	9.38	34.293	26.503	157.2	0.549	1.22	19.0	38.8	2.52	29.5	0.01			251	
268	9.25	9.22	34.300	26.535	154.6	0.577	1.15	17.8	40.3	2.56	30.0	0.01			270	205
300 ISL	8.98	8.95	34.311	26.587	150.1	0.626	1.03	15.9	42.8	2.63	30.8	0.01			302	
318	8.78	8.75	34.311	26.619	147.3	0.652	0.97	14.9	44.7	2.67	31.3	0.01			320	204
377	7.61	7.57	34.286	26.776	132.7	0.735	0.74	11.0	56.1	2.88	34.7	0.00			379	203
400 ISL	7.35	7.31	34.284	26.812	129.5	0.765	0.67	9.9	59.3	2.93	35.6	0.00			403	
437	7.05	7.01	34.287	26.856	125.6	0.812	0.56	8.2	63.7	3.00	36.7	0.01			440	202
500 ISL	6.60	6.55	34.308	26.934	118.8	0.889	0.42	6.1	71.3	3.10	38.3	0.01			503	
516	6.48	6.43	34.314	26.955	116.9	0.908	0.39	5.7	73.2	3.13	38.7	0.01			520	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 40

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 30.7 N	118 12.8 W	31/01/03	1246 UTC	1658 m	360 06 kn			1016.0 mb	17.2 C	16.2 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.85	15.85	33.414	24.563	336.4	0.000	5.88	104.1	2.8	0.34	0.1	0.00	0.18	0.04	0	
2	15.85	15.85	33.414	24.563	336.5	0.007	5.88	104.1	2.8	0.34	0.1	0.00	0.18	0.04	2	220
10	15.84	15.84	33.407	24.560	337.0	0.034	5.85	103.6	2.8	0.32	0.1	0.00	0.18	0.04	10	219
20	15.76	15.76	33.409	24.580	335.4	0.067	5.85	103.4	2.8	0.33	0.1	0.00	0.20	0.06	20	218
30	15.29	15.29	33.370	24.654	328.6	0.100	5.90	103.3	3.2	0.34	0.1	0.00	0.28	0.10	30	217
40	14.32	14.31	33.321	24.825	312.6	0.133	5.66	97.1	4.3	0.48	1.1	0.13	0.59	0.25	40	216
50	13.86	13.85	33.307	24.910	304.7	0.163	5.43	92.3	5.0	0.61	2.7	0.20	0.58	0.29	50	215
60	13.14	13.13	33.314	25.061	290.6	0.193	5.05	84.6	6.4	0.84	6.0	0.12	0.72	0.36	60	214
70	12.72	12.71	33.334	25.160	281.4	0.222	4.82	80.0	7.5	0.93	7.9	0.06	0.52	0.34	70	213
75 ISL	12.51	12.50	33.368	25.227	275.1	0.236	4.68	77.4	8.2	1.00	9.0	0.04	0.39	0.31	75	
84	12.15	12.14	33.448	25.358	262.9	0.260	4.38	71.9	10.0	1.14	11.3	0.02	0.19	0.23	84	212
99	11.63	11.62	33.589	25.565	243.5	0.298	3.64	59.1	14.4	1.42	15.6	0.01	0.07	0.12	99	211
100 ISL	11.61	11.60	33.595	25.574	242.7	0.300	3.61	58.6	14.6	1.43	15.8	0.01	0.07	0.11	100	
119	11.21	11.20	33.715	25.740	227.2	0.345	3.12	50.3	18.1	1.63	18.5	0.01	0.02	0.05	120	210
125 ISL	11.03	11.01	33.776	25.820	219.8	0.358	2.98	47.8	19.6	1.71	19.6	0.01	0.02	0.05	126	
138	10.63	10.61	33.906	25.993	203.6	0.386	2.72	43.3	22.9	1.87	21.9	0.01	0.01	0.04	139	209
150 ISL	10.32	10.30	33.978	26.103	193.3	0.410	2.52	39.9	25.6	1.97	23.5	0.01	0.01	0.03	151	
168	9.97	9.95	34.049	26.218	182.7	0.444	2.27	35.7	28.9	2.07	25.2	0.01	0.01	0.03	169	208
199	9.80	9.78	34.131	26.311	174.5	0.499	1.95	30.5	31.8	2.21	26.7	0.02	0.00	0.03	200	207
200 ISL	9.79	9.77	34.135	26.316	174.1	0.501	1.94	30.4	31.9	2.22	26.8	0.02			201	
228	9.56	9.53	34.233	26.431	163.7	0.548	1.57	24.5	35.7	2.38	28.5	0.01			229	206
250 ISL	9.43	9.40	34.271	26.483	159.2	0.583	1.38	21.5	37.6	2.46	29.3	0.01			251	
268	9.30	9.27	34.285	26.515	156.5	0.612	1.26	19.5	39.2	2.51	29.8	0.01			270	205
300 ISL	8.79	8.76	34.295	26.605	148.3	0.661	1.07	16.4	43.7	2.62	31.3	0.01			302	
318	8.48	8.45	34.296	26.654	143.8	0.687	0.98	14.9	46.4	2.68	32.1	0.01			320	204
377	7.98	7.94	34.306	26.738	136.6	0.770	0.78	11.7	52.6	2.81	33.7	0.01			379	203
400 ISL	7.69	7.65	34.301	26.776	133.1	0.801	0.71	10.6	56.0	2.87	34.7	0.01			403	
438	7.20	7.16	34.293	26.840	127.3	0.850	0.60	8.9	61.7	2.96	36.3	0.01			441	202
500 ISL	6.71	6.66	34.306	26.918	120.4	0.927	0.45	6.6	69.0	3.07	38.2	0.01			503	
515	6.59	6.54	34.309	26.937	118.8	0.945	0.41	6.0	70.8	3.10	38.6	0.01			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 21.0 N	118 33.4 W	31/01/03	1803 UTC	1328 m	010 06 kn	300 01 05	1	1016.0 mb	18.0 C	17.5 C	34m	7/8	CS

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.15	16.15	33.418	24.498	342.6	0.000	5.79	103.2	2.8	0.35	0.0	0.00	0.19	0.04	0	
2 A	16.15	16.15	33.418	24.498	342.7	0.007	5.79	103.2	2.8	0.35	0.0	0.00	0.19	0.04	2	222
10 ISL	16.10	16.10	33.413	24.506	342.2	0.034	5.78	102.9	2.8	0.35	0.0	0.00	0.20	0.04	10	
11	16.09	16.09	33.412	24.507	342.0	0.038	5.78	102.8	2.8	0.35	0.0	0.00	0.20	0.04	11	221
20 ISL	16.04	16.04	33.406	24.514	341.7	0.068	5.80	103.1	2.7	0.35	0.0	0.01	0.22	0.05	20	
21 A	16.03	16.03	33.407	24.517	341.4	0.072	5.80	103.1	2.7	0.35	0.0	0.01	0.22	0.05	21	220
30 ISL	15.68	15.68	33.356	24.557	337.9	0.102	5.84	103.0	2.8	0.37	0.0	0.01	0.30	0.10	30	
32	15.60	15.60	33.345	24.566	337.1	0.109	5.85	103.0	2.8	0.37	0.0	0.01	0.32	0.11	32	219
44 A	15.48	15.47	33.339	24.589	335.3	0.150	5.89	103.5	2.8	0.37	0.1	0.01	0.43	0.15	44	218
50 ISL	14.82	14.81	33.291	24.696	325.2	0.169	5.83	101.0	3.3	0.43	0.2	0.03	0.74	0.22	50	
51	14.69	14.68	33.281	24.716	323.3	0.173	5.82	100.6	3.4	0.44	0.2	0.03	0.79	0.23	51	217
59	13.69	13.68	33.202	24.864	309.4	0.198	5.69	96.3	4.4	0.58	1.8	0.08	0.77	0.35	59	216
68 A	13.12	13.11	33.181	24.963	300.2	0.225	5.50	92.0	5.4	0.70	3.7	0.11	0.67	0.41	68	215
75 ISL	12.68	12.67	33.240	25.095	287.7	0.246	5.17	85.7	7.0	0.86	6.4	0.08	0.47	0.38	75	
80	12.44	12.43	33.305	25.192	278.6	0.260	4.89	80.7	8.2	0.97	8.4	0.05	0.33	0.34	80	214
92 A	12.44	12.43	33.469	25.319	266.8	0.293	4.32	71.3	10.4	1.13	10.8	0.03	0.20	0.22	92	213
100 ISL	11.96	11.95	33.494	25.430	256.4	0.314	4.19	68.5	11.8	1.22	12.6	0.02	0.12	0.15	100	
105	11.58	11.57	33.503	25.508	249.0	0.326	4.14	67.1	12.7	1.28	13.7	0.02	0.08	0.11	105	212
116	10.87	10.86	33.581	25.697	231.2	0.353	3.95	63.1	15.3	1.41	16.3	0.02	0.03	0.05	117	211
125 ISL	10.66	10.65	33.635	25.776	223.9	0.373	3.77	60.0	16.7	1.48	17.5	0.02	0.02	0.04	126	
130 A	10.59	10.57	33.668	25.814	220.4	0.384	3.66	58.2	17.6	1.52	18.1	0.02	0.02	0.04	131	210
144	10.10	10.08	33.812	26.011	201.9	0.414	3.24	51.0	22.0	1.74	21.3	0.02	0.01	0.04	145	209
150 ISL	10.06	10.04	33.851	26.048	198.4	0.426	3.16	49.7	22.8	1.77	21.9	0.02	0.01	0.04	151	
170	9.91	9.89	33.916	26.124	191.6	0.465	2.91	45.6	24.8	1.86	23.1	0.02	0.00	0.03	171	208
200	9.71	9.69	34.131	26.326	173.1	0.520	2.00	31.3	32.2	2.32	26.9	0.02	0.00	0.02	201	207
229	8.85	8.83	34.106	26.446	161.9	0.568	2.17	33.3	36.2	2.21	28.6	0.01			230	206
250 ISL	8.61	8.58	34.148	26.517	155.5	0.601	1.91	29.1	39.6	2.32	29.8	0.01			251	
269	8.52	8.49	34.198	26.570	150.8	0.631	1.57	23.9	42.6	2.47	30.7	0.01			271	205
300 ISL	8.28	8.25	34.242	26.641	144.5	0.676	1.22	18.5	46.9	2.61	31.9	0.01			302	
319	8.13	8.10	34.260	26.678	141.3	0.704	1.05	15.8	49.3	2.68	32.6	0.01			321	204
377	7.60	7.56	34.279	26.772	133.1	0.783	0.75	11.2	56.6	2.83	34.8	0.01			379	203
400 ISL	7.29	7.25	34.265	26.805	130.1	0.813	0.72	10.7	59.8	2.87	35.7	0.01			403	
437	6.81	6.77	34.245	26.856	125.4	0.861	0.68	10.0	65.1	2.93	37.2	0.01			440	202
500 ISL	6.40	6.35	34.285	26.942	117.8	0.937	0.42	6.1	73.5	3.06	39.0	0.01			503	
516	6.29	6.24	34.296	26.965	115.7	0.956	0.36	5.2	75.6	3.09	39.4	0.01			519	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 50

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 10.8 N	118 53.4 W	31/01/03	2111 UTC	1459 m	020 10 kn	310 02 07	1	1014.3 mb	19.5 C	18.0 C	27m	2/8	CI

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.20	15.20	33.244	24.576	335.2	0.000	5.95	103.9	2.5	0.39	0.0	0.00	0.18	0.03	0	
1	15.20	15.20	33.244	24.576	335.2	0.003	5.95	103.9	2.5	0.39	0.0	0.00	0.18	0.03	1	220
10 ISL	15.11	15.11	33.280	24.623	330.9	0.033	5.96	103.9	2.6	0.38	0.0	0.00	0.20	0.03	10	
11	15.09	15.09	33.285	24.632	330.2	0.037	5.96	103.9	2.6	0.38	0.0	0.00	0.20	0.03	11	219
20	14.98	14.98	33.281	24.653	328.4	0.066	5.97	103.8	2.6	0.38	0.0	0.00	0.22	0.04	20	218
30	14.55	14.55	33.252	24.723	322.0	0.099	6.06	104.4	2.5	0.39	0.0	0.00	0.27	0.08	30	217
41	14.32	14.31	33.242	24.764	318.4	0.134	6.02	103.3	2.7	0.44	0.2	0.05	0.68	0.22	41	216
50	13.67	13.66	33.189	24.858	309.7	0.162	5.78	97.8	3.8	0.57	2.2	0.20	0.60	0.31	50	215
60	12.52	12.51	33.105	25.021	294.3	0.192	5.50	90.8	5.7	0.78	5.6	0.08	0.35	0.27	60	214
70	11.97	11.96	33.132	25.146	282.6	0.221	5.30	86.5	7.2	0.92	7.9	0.04	0.20	0.23	70	213
75 ISL	11.85	11.84	33.185	25.210	276.6	0.235	5.12	83.4	8.2	0.99	9.0	0.04	0.17	0.21	75	
85	11.53	11.52	33.297	25.356	262.9	0.262	4.77	77.2	10.5	1.13	11.6	0.03	0.13	0.15	85	212
100	10.08	10.07	33.375	25.672	233.0	0.299	4.54	71.2	15.2	1.42	16.6	0.02	0.04	0.05	100	211
121	9.35	9.34	33.553	25.932	208.6	0.346	4.10	63.4	20.0	1.60	20.0	0.02	0.01	0.03	122	210
125 ISL	9.25	9.24	33.590	25.977	204.4	0.354	4.02	62.0	20.9	1.63	20.6	0.02	0.01	0.03	126	
141	8.93	8.91	33.735	26.141	189.0	0.386	3.70	56.7	24.6	1.74	22.7	0.01	0.00	0.01	142	209
150 ISL	8.84	8.82	33.809	26.214	182.3	0.402	3.45	52.8	26.8	1.83	24.0	0.01	0.00	0.01	151	
170	8.73	8.71	33.936	26.330	171.6	0.438	2.96	45.2	30.9	2.01	26.3	0.01	0.00	0.01	171	208
200	8.58	8.56	33.997	26.402	165.4	0.488	2.75	41.9	33.6	2.06	27.5	0.01	0.00	0.01	201	207
230	8.20	8.18	34.043	26.496	156.9	0.537	2.60	39.3	38.0	2.15	28.9	0.01			231	206
250 ISL	8.28	8.25	34.113	26.539	153.2	0.568	2.16	32.7	40.5	2.29	29.9	0.01			251	
268	8.39	8.36	34.179	26.575	150.3	0.595	1.70	25.8	42.7	2.43	30.7	0.01			270	205
300 ISL	8.24	8.21	34.249	26.653	143.4	0.642	1.18	17.9	47.6	2.63	32.2	0.01			302	
319	8.07	8.04	34.273	26.698	139.4	0.669	0.97	14.6	50.4	2.72	33.0	0.01			321	204
377	7.54	7.50	34.275	26.777	132.5	0.748	0.77	11.5	56.6	2.84	34.8	0.01			379	203
400 ISL	7.33	7.29	34.275	26.807	129.9	0.778	0.71	10.5	59.2	2.89	35.5	0.01			403	
437	7.01	6.97	34.277	26.854	125.8	0.825	0.61	9.0	63.6	2.96	36.5	0.01			440	202
500 ISL	6.56	6.51	34.301	26.934	118.7	0.902	0.42	6.1	71.2	3.07	38.4	0.01			503	
516	6.45	6.40	34.307	26.953	117.0	0.921	0.37	5.4	73.1	3.10	38.9	0.01			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 55

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
32 0.8 N	119 13.8 W	01/02/03	0121 UTC	1579 m	340 08 kn	330 02 07	1	1013.9 mb	17.5 C	16.9 C		3/8	CS

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.28	16.28	33.160	24.270	364.3	0.000	5.75	102.5	0.8	0.37	0.1	0.00	0.11	0.02	0	
2	16.28	16.28	33.160	24.270	364.4	0.007	5.75	102.5	0.8	0.37	0.1	0.00	0.11	0.02	2	220
10 ISL	16.11	16.11	33.169	24.316	360.2	0.036	5.75	102.2	0.9	0.38	0.0	0.00	0.12	0.02	10	
15	15.98	15.98	33.177	24.352	357.0	0.054	5.75	101.9	0.9	0.38	0.0	0.00	0.13	0.02	15	219
20 ISL	15.95	15.95	33.184	24.364	356.0	0.072	5.75	101.9	0.9	0.38	0.0	0.00	0.14	0.02	20	
30 ISL	15.91	15.91	33.188	24.376	355.1	0.108	5.76	102.0	0.8	0.37	0.0	0.00	0.15	0.03	30	
31	15.91	15.91	33.188	24.376	355.1	0.111	5.76	102.0	0.8	0.37	0.0	0.00	0.15	0.03	31	218
45	15.67	15.66	33.159 D	24.408	352.5	0.161	5.78	101.8	0.6	0.38	0.0	0.01	0.16	0.03	45	217
50 ISL	15.58	15.57	33.164	24.432	350.4	0.178	5.79	101.8	0.7	0.39	0.0	0.01	0.19	0.04	50	
56	15.48	15.47	33.170	24.459	348.0	0.199	5.83	102.3	0.8	0.41	0.0	0.01	0.23	0.06	56	216
64	14.38	14.37	33.091	24.635	331.3	0.226	5.94	101.9	1.4	0.44	0.1	0.01	0.48	0.28	64	215
75	13.15	13.14	32.959	24.785	317.2	0.262	5.89	98.4	2.6	0.59	1.8	0.11	0.51	0.40	75	214
85	12.41	12.40	33.038	24.991	297.8	0.293	5.66	93.2	4.2	0.72	4.4	0.05	0.29	0.30	85	213
95	10.91	10.90	33.058	25.282	270.1	0.321	5.26	83.9	8.2	1.07	10.5	0.02	0.11	0.12	95	212
100 ISL	10.60	10.59	33.132	25.394	259.5	0.334	5.07	80.3	9.9	1.18	12.4	0.02	0.09	0.10	100	
109	10.33	10.32	33.289	25.563	243.6	0.357	4.76	75.0	12.7	1.31	14.9	0.02	0.05	0.06	109	211
124	9.65	9.64	33.478	25.824	219.0	0.392	4.28	66.5	16.8	1.50	18.4	0.01	0.01	0.03	125	210
125 ISL	9.64	9.63	33.486	25.832	218.2	0.394	4.26	66.2	16.9	1.51	18.5	0.01	0.01	0.03	126	
145	9.50	9.48	33.587	25.934	208.9	0.437	3.96	61.4	19.3	1.59	20.0	0.01	0.01	0.02	146	209
150 ISL	9.41	9.39	33.639	25.990	203.7	0.447	3.81	59.0	20.7	1.64	20.9	0.01	0.01	0.02	151	
169	9.02	9.00	33.834	26.205	183.6	0.484	3.26	50.1	26.3	1.83	24.3	0.01	0.00	0.02	170	208
199	8.63	8.61	33.948	26.356	169.7	0.537	2.96	45.1	30.6	1.96	26.4	0.01	0.00	0.02	200	207
200 ISL	8.62	8.60	33.951	26.360	169.4	0.538	2.94	44.8	30.8	1.97	26.5	0.01			201	
228	8.23	8.21	34.029	26.481	158.3	0.584	2.43	36.7	37.2	2.18	29.4	0.01			229	206
250 ISL	7.98	7.95	34.055	26.539	153.1	0.619	2.25	33.8	40.5	2.27	30.5	0.01			251	
268	7.78	7.75	34.064	26.575	149.8	0.646	2.15	32.2	42.9	2.33	31.2	0.01			269	205
300 ISL	7.35	7.32	34.080	26.650	143.1	0.693	1.84	27.3	48.6	2.49	33.0	0.01			302	
319	7.11	7.08	34.092	26.693	139.1	0.720	1.64	24.2	52.1	2.58	34.1	0.01			321	204
378	6.76	6.73	34.165	26.799	129.8	0.799	1.01	14.8	61.0	2.82	36.6	0.01			380	203
400 ISL	6.68	6.64	34.199	26.836	126.5	0.827	0.82	12.0	63.9	2.90	37.3	0.01			402	
437	6.53	6.49	34.250	26.897	121.2	0.873	0.57	8.3	68.7	3.01	38.2	0.01			440	202
500 ISL	6.03	5.99	34.270	26.978	114.0	0.947	0.39	5.6	77.2	3.12	39.9	0.01			503	
516	5.90	5.86	34.275	26.998	112.1	0.965	0.35	5.0	79.4	3.15	40.3	0.01			519	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 60

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 51.1 N	119 34.1 W	01/02/03	0529 UTC	1990 m	340 09 kn			1014.9 mb	16.9 C	16.5 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.18	16.18	33.191	24.317	359.9	0.000	5.75	102.4	1.0	0.37	0.0	0.00	0.11	0.02	0	
2	16.18	16.18	33.191	24.317	359.9	0.007	5.75	102.4	1.0	0.37	0.0	0.00	0.11	0.02	2	220
10 ISL	16.10	16.10	33.184	24.330	358.9	0.036	5.76	102.4	1.0	0.36	0.0	0.00	0.11	0.02	10	
16	16.02	16.02	33.177	24.343	357.9	0.057	5.76	102.2	1.0	0.36	0.0	0.00	0.11	0.02	16	219
20 ISL	16.00	16.00	33.178	24.348	357.5	0.072	5.76	102.2	1.0	0.36	0.0	0.00	0.11	0.02	20	
30 ISL	15.96	15.96	33.181	24.360	356.7	0.107	5.76	102.1	0.9	0.36	0.0	0.00	0.14	0.03	30	
31	15.96	15.96	33.181	24.360	356.7	0.111	5.76	102.1	0.9	0.36	0.0	0.00	0.14	0.03	31	218
46	15.48	15.47	33.197	24.480	345.7	0.164	5.84	102.5	0.8	0.38	0.0	0.00	0.24	0.07	46	217
50 ISL	15.39	15.38	33.199	24.501	343.8	0.178	5.85	102.5	0.9	0.39	0.0	0.00	0.25	0.10	50	
56	15.01	15.00	33.169	24.561	338.3	0.198	5.87	102.0	1.3	0.40	0.0	0.00	0.29	0.16	56	216
65	13.30	13.29	33.008	24.793	316.3	0.227	5.81	97.4	2.5	0.61	2.2	0.14	0.49	0.32	65	215
75	11.63	11.62	32.975	25.087	288.2	0.258	5.59	90.5	5.8	0.87	6.9	0.05	0.23	0.20	75	214
85	10.86	10.85	33.076	25.304	267.7	0.285	5.26	83.8	8.7	1.09	10.9	0.03	0.14	0.16	85	213
94	11.34	11.33	33.375	25.452	254.0	0.309	4.77	76.9	9.5	1.07	11.2	0.02	0.09	0.11	94	212
100 ISL	11.24	11.23	33.428	25.511	248.5	0.324	4.60	74.0	10.4	1.13	12.2	0.02	0.07	0.09	100	
109	10.86	10.85	33.437	25.586	241.5	0.346	4.45	71.0	11.9	1.24	13.9	0.02	0.06	0.08	109	211
124	10.42	10.41	33.572	25.768	224.5	0.381	4.17	66.0	14.6	1.35	15.9	0.02	0.02	0.04	125	210
125 ISL	10.39	10.38	33.581	25.781	223.4	0.383	4.15	65.6	14.8	1.36	16.1	0.02	0.02	0.04	126	
144	9.94	9.92	33.746	25.986	204.1	0.424	3.75	58.8	18.9	1.54	19.0	0.02	0.01	0.02	145	209
150 ISL	9.80	9.78	33.784	26.039	199.2	0.436	3.75	58.6	19.6	1.55	19.4	0.02	0.01	0.02	151	
169	9.47	9.45	33.887	26.174	186.7	0.473	3.76	58.4	21.8	1.57	20.4	0.01	0.00	0.02	170	208
199	9.39	9.37	34.034	26.303	175.1	0.527	2.79	43.3	28.3	1.94	24.9	0.01	0.00	0.02	200	207
200 ISL	9.37	9.35	34.035	26.307	174.7	0.529	2.79	43.3	28.4	1.94	25.0	0.01			201	
229	8.77	8.75	34.043	26.409	165.4	0.578	2.77	42.4	32.4	2.01	26.7	0.01			230	206
250 ISL	8.38	8.35	34.052	26.476	159.2	0.612	2.48	37.6	36.4	2.15	28.8	0.01			251	
268	8.06	8.03	34.058	26.529	154.3	0.640	2.18	32.8	40.1	2.28	30.7	0.01			269	205
300 ISL	7.46	7.43	34.059	26.618	146.2	0.688	1.92	28.5	46.4	2.43	32.9	0.01			302	
321	7.12	7.09	34.061	26.667	141.6	0.719	1.81	26.7	50.3	2.50	33.9	0.01			323	204
378	6.63	6.60	34.093	26.759	133.4	0.797	1.50	21.8	58.3	2.67	35.7	0.01			380	203
400 ISL	6.44	6.40	34.107	26.795	130.1	0.826	1.31	19.0	62.0	2.75	36.7	0.01			402	
437	6.17	6.13	34.141	26.857	124.6	0.873	0.97	14.0	68.2	2.89	38.3	0.01			440	202
500 ISL	5.97	5.93	34.245	26.966	115.1	0.949	0.47	6.7	77.1	3.09	40.1	0.01			503	
510	5.94	5.90	34.261	26.982	113.6	0.960	0.39	5.6	78.5	3.12	40.4	0.01			513	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT TYPE
31 31.0 N	120 14.4 W	01/02/03	1153 UTC	3937 m	340 11 kn			1015.2 mb	15.0 C	14.9 C		

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.43	16.43	33.275	24.324	359.2	0.000	5.69	101.8	1.1	0.37	0.0	0.00	0.11	0.02	0	
2	16.43	16.43	33.275	24.324	359.2	0.007	5.69	101.8	1.1	0.37	0.0	0.00	0.11	0.02	2	220
10 ISL	16.42	16.42	33.278	24.329	359.0	0.036	5.71	102.2	1.2	0.37	0.0	0.00	0.11	0.01	10	
15	16.41	16.41	33.280	24.333	358.8	0.054	5.72	102.3	1.2	0.37	0.0	0.00	0.12	0.01	15	219
20 ISL	16.13	16.13	33.221	24.352	357.2	0.072	5.76	102.4	1.1	0.38	0.0	0.00	0.13	0.01	20	
29	15.54	15.54	33.103	24.393	353.4	0.104	5.84	102.6	0.9	0.39	0.0	0.00	0.15	0.03	29	218
30 ISL	15.50	15.50	33.098	24.398	353.0	0.107	5.84	102.5	0.9	0.39	0.0	0.00	0.15	0.03	30	
45	14.96	14.95	33.022	24.458	347.7	0.160	5.92	102.7	0.9	0.40	0.0	0.00	0.24	0.07	45	217
50 ISL	14.11	14.10	32.956	24.587	335.5	0.177	5.98	101.9	1.7	0.46	0.2	0.03	0.28	0.13	50	
54	13.41	13.40	32.908	24.693	325.5	0.190	6.01	101.0	2.3	0.52	0.5	0.06	0.32	0.17	54	216
64	12.42	12.41	32.829	24.826	312.9	0.222	5.97	98.2	3.2	0.63	1.9	0.16	0.40	0.22	64	215
74	11.87	11.86	32.961	25.032	293.5	0.252	5.66	92.1	5.3	0.81	5.5	0.07	0.33	0.22	74	214
75 ISL	11.80	11.79	32.963	25.047	292.1	0.255	5.64	91.6	5.5	0.83	5.8	0.06	0.31	0.22	75	
84	11.14	11.13	32.977	25.178	279.8	0.281	5.44	87.1	7.2	0.99	8.8	0.03	0.17	0.15	84	213
95	10.43	10.42	33.125	25.417	257.1	0.311	5.14	81.1	10.2	1.17	12.5	0.02	0.06	0.05	95	212
100 ISL	10.28	10.27	33.213	25.512	248.2	0.323	4.93	77.6	11.8	1.26	14.1	0.02	0.05	0.05	100	
110	10.08	10.07	33.383	25.678	232.6	0.347	4.50	70.6	15.1	1.43	16.9	0.02	0.04	0.05	110	211
125 ISL	9.69	9.68	33.539	25.865	215.1	0.381	4.01	62.4	19.0	1.61	19.9	0.01	0.02	0.04	126	
126	9.67	9.66	33.547	25.875	214.2	0.383	3.98	61.9	19.2	1.62	20.1	0.01	0.02	0.04	127	210
146	9.34	9.32	33.707	26.054	197.5	0.424	3.46	53.5	23.4	1.78	22.9	0.02	0.01	0.03	147	209
150 ISL	9.29	9.27	33.741	26.089	194.3	0.432	3.34	51.6	24.3	1.81	23.5	0.02	0.01	0.03	151	
170	9.04	9.02	33.890	26.246	179.8	0.469	2.81	43.2	28.8	1.97	26.1	0.02	0.01	0.03	171	208
200	8.62	8.60	34.006	26.403	165.3	0.521	2.43	37.0	34.0	2.14	28.6	0.01	0.00	0.03	201	207
229	8.24	8.22	34.054	26.499	156.6	0.568	2.21	33.4	38.5	2.26	30.2	0.01			230	206
250 ISL	7.93	7.90	34.076	26.563	150.8	0.600	2.00	30.0	42.2	2.36	31.5	0.01			251	
267	7.68	7.65	34.086	26.607	146.8	0.625	1.84	27.5	45.3	2.44	32.5	0.01			268	205
300 ISL	7.23	7.20	34.081	26.667	141.3	0.673	1.71	25.3	50.6	2.54	34.0	0.01			302	
318	7.03	7.00	34.083	26.697	138.7	0.698	1.63	24.0	53.3	2.59	34.7	0.01			320	204
379	6.87	6.83	34.212	26.821	127.8	0.779	0.91	13.3	60.6	2.85	36.3	0.01			381	203
400 ISL	6.61	6.57	34.202	26.848	125.4	0.806	0.84	12.2	64.2	2.90	37.2	0.01			402	
439	6.11	6.07	34.173	26.890	121.4	0.854	0.78	11.2	71.0	2.97	38.9	0.01			442	202
500 ISL	5.78	5.74	34.228	26.976	113.9	0.926	0.53	7.6	79.0	3.11	40.5	0.01			503	
508	5.74	5.70	34.235	26.986	113.0	0.935	0.50	7.1	80.0	3.13	40.7	0.01			511	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
31 11.1 N	120 54.7 W	01/02/03	1830 UTC	3825 m	340 10 kn	310 03 06	2	1017.0 mb	15.0 C	14.9 C	24m	8/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.43	15.43	33.180	24.476	344.7	0.000	5.87	102.9	0.8	0.38	0.0	0.00	0.16	0.03	0	
2 A	15.43	15.43	33.180	24.476	344.7	0.007	5.87	102.9	0.8	0.38	0.0	0.00	0.16	0.03	2	222
10 ISL	15.42	15.42	33.180	24.479	344.7	0.034	5.88	103.1	0.8	0.38	0.0	0.00	0.17	0.03	10	
15 A	15.41	15.41	33.181	24.482	344.6	0.052	5.89	103.2	0.8	0.38	0.0	0.00	0.17	0.03	15	221
20 ISL	15.41	15.41	33.187	24.486	344.3	0.069	5.90	103.4	0.8	0.38	0.0	0.00	0.19	0.04	20	
30 A	15.38	15.38	33.200	24.503	343.0	0.103	5.92	103.7	0.8	0.37	0.0	0.00	0.23	0.05	30	220
39	15.31	15.30	33.201	24.520	341.7	0.134	5.97	104.4	0.8	0.38	0.0	0.00	0.27	0.06	39	219
48 A	14.32	14.31	33.151	24.694	325.3	0.164	6.41	109.9	1.5	0.43	0.1	0.04	0.54	0.27	48	218
50 ISL	14.24	14.23	33.152	24.712	323.7	0.171	6.30	107.8	1.6	0.44	0.2	0.07	0.54	0.27	50	
56	14.02	14.01	33.153	24.758	319.4	0.190	5.89	100.3	2.0	0.48	0.7	0.17	0.55	0.26	56	217
65 A	13.26	13.25	33.111	24.880	307.9	0.218	5.74	96.2	3.2	0.62	2.7	0.22	0.28	0.21	65	216
74	12.24	12.23	33.025	25.013	295.4	0.245	5.63	92.3	4.7	0.79	5.5	0.05	0.17	0.19	74	215
75 ISL	12.11	12.10	33.009	25.025	294.3	0.248	5.62	91.9	4.9	0.81	5.8	0.05	0.16	0.19	75	
83	11.22	11.21	32.905	25.108	286.5	0.271	5.53	88.7	6.3	0.97	7.8	0.03	0.14	0.14	83	214
91 A	10.78	10.77	32.909	25.189	278.9	0.294	5.48	87.0	7.5	1.03	9.4	0.03	0.11	0.09	91	213
100 ISL	10.41	10.40	33.037	25.352	263.4	0.318	5.28	83.3	9.5	1.15	11.8	0.02	0.06	0.06	100	
101	10.38	10.37	33.056	25.372	261.5	0.321	5.25	82.7	9.7	1.16	12.1	0.02	0.05	0.06	101	212
111	10.18	10.17	33.236	25.547	245.1	0.346	4.96	77.9	11.9	1.28	14.3	0.02	0.02	0.03	111	211
125 ISL	9.80	9.79	33.372	25.717	229.2	0.380	4.58	71.4	15.3	1.44	17.3	0.02	0.01	0.02	126	
126	9.77	9.76	33.380	25.728	228.2	0.382	4.55	70.9	15.6	1.45	17.5	0.02	0.01	0.02	127	210
145	9.31	9.29	33.629	25.998	202.8	0.423	3.91	60.4	20.9	1.65	21.1	0.02	0.01	0.02	146	209
150 ISL	9.27	9.25	33.680	26.044	198.5	0.433	3.74	57.7	22.2	1.70	22.0	0.02	0.01	0.02	151	
170	9.12	9.10	33.820	26.178	186.2	0.471	3.12	48.0	26.4	1.88	24.8	0.02	0.00	0.02	171	208
200 ISL	9.45	9.43	34.083	26.332	172.4	0.525	2.44	37.9	30.2	2.09	26.2	0.02	0.00	0.02	201	
201	9.46	9.44	34.089	26.335	172.2	0.527	2.43	37.8	30.3	2.09	26.2	0.02	0.00	0.02	202	207
229	8.66	8.64	34.046	26.428	163.5	0.574	3.12	47.6	31.6	1.91	25.5	0.02			230	206
250 ISL	8.52	8.49	34.096	26.490	158.0	0.608	2.63	40.0	35.4	2.09	27.4	0.02			251	
268	8.47	8.44	34.145	26.536	154.0	0.636	2.03	30.9	39.4	2.31	29.5	0.02			269	205
300 ISL	7.83	7.80	34.126	26.617	146.5	0.684	1.93	28.9	45.1	2.43	31.4	0.02			302	
319	7.42	7.39	34.106	26.661	142.4	0.711	1.87	27.7	48.3	2.47	32.3	0.02			321	204
380	6.87	6.83	34.165	26.784	131.3	0.795	1.17	17.1	58.9	2.77	35.7	0.01			382	203
400 ISL	6.71	6.67	34.181	26.818	128.3	0.821	1.00	14.6	62.1	2.84	36.6	0.01			402	
436	6.44	6.40	34.206	26.874	123.3	0.866	0.74	10.7	67.5	2.95	38.0	0.01			439	202
500 ISL	6.06	6.02	34.249	26.957	115.9	0.943	0.48	6.9	75.7	3.09	39.6	0.01			503	
511	6.00	5.96	34.256	26.971	114.8	0.955	0.43	6.2	77.1	3.11	39.9	0.01			514	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 90

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
30 51.0 N	121 35.2 W	02/02/03	0057 UTC	4085 m	010 24 kn	350 05 06	2	1016.2 mb	15.2 C	14.8 C		8/8	SC

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	15.31	15.31	33.130	24.464	345.8	0.000	5.88	102.8	0.8	0.39	0.0	0.00	0.18	0.04	0	
2	15.31	15.31	33.130	24.464	345.9	0.007	5.88	102.8	0.8	0.39	0.0	0.00	0.18	0.04	2	220
10 ISL	15.32	15.32	33.131	24.463	346.2	0.035	5.87	102.7	0.8	0.39	0.0	0.00	0.18	0.03	10	
15	15.32	15.32	33.132	24.464	346.3	0.052	5.87	102.7	0.8	0.39	0.0	0.00	0.18	0.03	15	219
20 ISL	15.29	15.29	33.129	24.468	346.0	0.069	5.88	102.8	0.8	0.39	0.0	0.00	0.19	0.04	20	
30 ISL	15.23	15.23	33.123	24.477	345.5	0.104	5.89	102.8	0.9	0.38	0.0	0.01	0.23	0.05	30	
31	15.22	15.22	33.122	24.478	345.4	0.107	5.89	102.8	0.9	0.38	0.0	0.01	0.24	0.05	31	218
46	14.64	14.63	33.035	24.537	340.2	0.159	5.88	101.4	1.0	0.42	0.2	0.03	0.44	0.16	46	217
50 ISL	14.58	14.57	33.041	24.554	338.7	0.172	5.88	101.3	1.1	0.42	0.2	0.03	0.44	0.17	50	
55	14.50	14.49	33.063	24.588	335.6	0.189	5.89	101.3	1.2	0.42	0.2	0.04	0.43	0.19	55	216
64	14.23	14.22	33.128	24.696	325.6	0.219	5.81	99.4	1.5	0.47	0.4	0.17	0.58	0.34	64	215
73	13.97	13.96	33.143	24.761	319.6	0.248	5.86	99.7	2.2	0.51	0.9	0.16	0.36	0.20	73	214
75 ISL	13.55	13.54	33.082	24.800	315.9	0.254	5.84	98.5	2.6	0.56	1.6	0.14	0.32	0.18	75	
85	11.33	11.32	32.819	25.021	294.8	0.285	5.70	91.6	5.1	0.83	6.0	0.02	0.16	0.14	85	213
95	10.74	10.73	32.892	25.182	279.5	0.313	5.52	87.6	7.2	1.01	9.2	0.02	0.09	0.09	95	212
100 ISL	10.59	10.58	32.966	25.266	271.6	0.327	5.41	85.6	8.1	1.07	10.4	0.02	0.07	0.07	100	
110	10.41	10.40	33.137	25.431	256.2	0.354	5.14	81.1	10.0	1.17	12.6	0.01	0.04	0.04	110	211
125	10.19	10.18	33.368	25.649	235.8	0.391	4.61	72.5	13.6	1.35	15.6	0.02	0.03	0.04	126	210
144	9.40	9.38	33.601	25.962	206.3	0.433	3.95	61.1	19.9	1.61	20.4	0.01	0.01	0.02	145	209
150 ISL	9.36	9.34	33.657	26.012	201.6	0.445	3.80	58.8	21.0	1.65	21.2	0.01	0.01	0.02	151	
169	9.22	9.20	33.770	26.123	191.4	0.482	3.44	53.1	23.6	1.74	22.8	0.01	0.00	0.02	170	208
198	8.96	8.94	33.986	26.334	171.9	0.535	3.01	46.2	29.2	1.91	25.3	0.01	0.00	0.01	199	207
200 ISL	8.92	8.90	33.991	26.344	171.0	0.538	3.00	46.0	29.5	1.92	25.4	0.01			201	
228	8.40	8.38	34.027	26.453	161.0	0.585	2.89	43.8	34.2	2.02	27.4	0.01			229	206
250 ISL	8.13	8.10	34.059	26.520	155.0	0.619	2.60	39.2	38.0	2.15	28.9	0.01			251	
268	7.94	7.91	34.081	26.565	150.9	0.647	2.32	34.8	41.1	2.26	30.1	0.01			269	205
300 ISL	7.51	7.48	34.097	26.640	144.1	0.694	1.99	29.6	46.7	2.42	32.1	0.01			302	
318	7.27	7.24	34.101	26.678	140.7	0.720	1.83	27.1	49.8	2.50	33.1	0.01			320	204
377	6.63	6.60	34.121	26.781	131.3	0.800	1.31	19.1	59.7	2.72	36.1	0.01			379	203
400 ISL	6.39	6.35	34.137	26.826	127.3	0.830	1.10	15.9	64.6	2.82	37.3	0.01			402	
440	6.06	6.02	34.177	26.900	120.5	0.879	0.77	11.1	72.4	2.98	39.1	0.01			443	202
500 ISL	6.04	6.00	34.276	26.981	113.7	0.950	0.40	5.8	77.1	3.12	40.0	0.01			503	
515	6.03	5.98	34.301	27.002	111.9	0.967	0.31	4.5	78.3	3.16	40.2	0.01			518	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
30 31.0 N	122 15.5 W	02/02/03	0708 UTC	4212 m	350 21 kn			1018.0 mb	14.5 C	14.1 C			

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.68	16.68	33.326	24.305	360.9	0.000	5.67	102.0	1.1	0.36	0.0	0.00	0.11	0.02	0	
1	16.68	16.68	33.326	24.305	361.0	0.004	5.67	102.0	1.1	0.36	0.0	0.00	0.11	0.02	1	219
10 ISL	16.68	16.68	33.326	24.306	361.2	0.036	5.66	101.8	1.0	0.36	0.0	0.00	0.12	0.03	10	
15	16.68	16.68	33.326	24.306	361.4	0.054	5.65	101.7	1.0	0.36	0.0	0.00	0.12	0.03	15	218
20 ISL	16.69	16.69	33.328	24.305	361.6	0.072	5.65	101.7	1.0	0.36	0.0	0.00	0.12	0.03	20	
29	16.71	16.71	33.330	24.303	362.2	0.105	5.66	101.9	1.1	0.36	0.0	0.00	0.11	0.03	29	217
30 ISL	16.71	16.71	33.331	24.303	362.1	0.108	5.66	101.9	1.1	0.36	0.0	0.00	0.11	0.03	30	
46	16.65	16.64	33.340	24.325	360.6	0.166	5.67	102.0	1.0	0.35	0.0	0.00	0.13	0.03	46	216
50 ISL	16.23	16.22	33.293	24.385	354.9	0.181	5.76	102.7	1.1	0.36	0.0	0.00	0.17	0.06	50	
54	15.75	15.74	33.240	24.453	348.6	0.195	5.85	103.3	1.2	0.38	0.0	0.00	0.22	0.10	54	215
65	14.52	14.51	33.118	24.627	332.2	0.232	5.90	101.5	1.8	0.46	0.2	0.03	0.36	0.19	65	214
75 ISL	13.28	13.27	33.027	24.812	314.7	0.264	5.82	97.6	2.9	0.58	1.8	0.11	0.34	0.19	75	
76	13.15	13.14	33.021	24.833	312.7	0.268	5.81	97.1	3.1	0.60	2.1	0.12	0.34	0.19	76	213
85	11.86	11.85	33.033	25.090	288.3	0.295	5.54	90.1	5.4	0.85	6.4	0.06	0.24	0.17	85	212
94	11.35	11.34	33.124	25.255	272.8	0.320	5.23	84.2	7.5	1.00	9.3	0.03	0.16	0.19	94	211
100 ISL	11.14	11.13	33.212	25.361	262.7	0.336	5.02	80.5	8.9	1.09	11.0	0.03	0.13	0.16	100	
109	10.87	10.86	33.348	25.515	248.3	0.359	4.69	74.8	11.1	1.22	13.3	0.02	0.10	0.09	109	210
125	10.27	10.26	33.527	25.759	225.4	0.397	4.12	65.0	15.8	1.46	17.2	0.01	0.05	0.06	126	209
145	10.49	10.47	33.799	25.934	209.3	0.440	3.14	49.8	20.2	1.70	20.7	0.01	0.04	0.05	146	208
150 ISL	10.30	10.28	33.808	25.974	205.6	0.451	3.18	50.3	21.1	1.72	21.2	0.01	0.03	0.04	151	
171	9.31	9.29	33.798	26.131	190.8	0.492	3.34	51.6	24.5	1.78	23.2	0.01	0.00	0.02	172	207
199	8.84	8.82	33.933	26.312	174.1	0.543	2.85	43.6	30.2	1.99	26.6	0.01	0.00	0.03	200	206
200 ISL	8.82	8.80	33.937	26.318	173.5	0.545	2.84	43.5	30.4	1.99	26.7	0.01			201	
229	8.42	8.40	34.029	26.452	161.1	0.594	2.66	40.4	35.2	2.09	28.1	0.01			230	205
250 ISL	8.21	8.18	34.079	26.523	154.7	0.627	2.50	37.8	38.0	2.17	29.0	0.01			251	
268	8.05	8.02	34.107 D	26.569	150.6	0.654									269	220
300 ISL	7.70	7.67	34.114	26.627	145.5	0.702	2.06	30.8	45.3	2.39	31.4	0.01			302	
318	7.47	7.44	34.109	26.656	142.9	0.728	1.89	28.1	48.1	2.47	32.3	0.01			320	204
379	6.50	6.47	34.119	26.797	129.8	0.811	1.30	18.9	61.4	2.76	36.4	0.01			381	203
400 ISL	6.36	6.32	34.140	26.832	126.6	0.838	1.10	15.9	64.8	2.84	37.3	0.01			402	
437	6.20	6.16	34.179	26.884	122.1	0.884	0.81	11.7	70.2	2.96	38.5	0.01			440	202
500 ISL	5.72	5.68	34.203	26.963	115.0	0.958	0.57	8.1	79.9	3.10	40.5	0.01			503	
509	5.65	5.61	34.207	26.975	113.9	0.969	0.54	7.7	81.3	3.12	40.8	0.01			512	201

RV DAVID STARR JORDAN CALCOFI CRUISE 0302 STATION 93 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
30 10.9 N	122 55.5 W	02/02/03	1751 UTC	3754 m	020 19 kn	350 10 08	1	1019.0 mb	16.0 C	15.0 C	27m	7/8	CU

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.56	16.56	33.266	24.287	362.7	0.000	5.66	101.6	1.0	0.38	0.1	0.01	0.11	0.03	0	
2 A	16.56	16.56	33.266	24.287	362.7	0.007	5.66	101.6	1.0	0.38	0.1	0.01	0.11	0.03	2	222
10 ISL	16.55	16.55	33.266	24.290	362.7	0.036	5.66	101.5	1.1	0.37	0.1	0.00	0.12	0.02	10	
17 A	16.55	16.55	33.266	24.290	362.9	0.062	5.66	101.5	1.1	0.37	0.1	0.00	0.12	0.02	17	221
20 ISL	16.55	16.55	33.267	24.291	363.0	0.073	5.66	101.5	1.1	0.37	0.1	0.00	0.12	0.02	20	
26	16.55	16.55	33.267	24.291	363.1	0.094	5.66	101.5	1.0	0.37	0.0	0.00	0.11	0.02	26	220
30 ISL	16.56	16.56	33.267	24.289	363.5	0.109	5.66	101.6	0.9	0.37	0.0	0.00	0.11	0.02	30	
34 A	16.56	16.55	33.267	24.289	363.6	0.123	5.67	101.7	0.9	0.37	0.0	0.00	0.12	0.02	34	219
45	16.55	16.54	33.273	24.297	363.2	0.163	5.67	101.7	0.9	0.36	0.0	0.00	0.13	0.03	45	218
50 ISL	16.53	16.52	33.281	24.307	362.4	0.182	5.67	101.7	0.9	0.37	0.0	0.01	0.14	0.04	50	
54 A	16.52	16.51	33.287	24.314	361.8	0.196	5.68	101.8	1.0	0.37	0.0	0.01	0.15	0.04	54	217
65	16.06	16.05	33.312	24.439	350.3	0.235	5.72	101.6	1.3	0.37	0.0	0.00	0.25	0.11	65	216
73 A	14.95	14.94	33.210	24.606	334.5	0.263	5.87	101.9	2.0	0.44	0.2	0.03	0.33	0.23	73	215
75 ISL	14.55	14.54	33.170	24.661	329.3	0.269	5.86	100.9	2.3	0.48	0.6	0.05	0.33	0.22	75	
84	13.02	13.01	33.076	24.902	306.4	0.298	5.72	95.4	3.8	0.65	2.7	0.13	0.33	0.19	84	214
93	12.81	12.80	33.219	25.054	292.1	0.325	5.50	91.4	5.0	0.76	4.4	0.13	0.29	0.17	93	213
100 ISL	11.99	11.98	33.178	25.179	280.2	0.345	5.33	87.0	6.5	0.91	7.3	0.08	0.23	0.15	100	
102 A	11.76	11.75	33.172	25.217	276.6	0.350	5.26	85.5	7.0	0.96	8.2	0.06	0.21	0.15	102	212
114	11.93	11.92	33.515	25.452	254.6	0.382	4.48	73.2	10.1	1.17	11.6	0.04	0.14	0.14	114	211
124	10.15	10.14	33.353	25.644	236.2	0.407	4.61	72.4	13.6	1.36	15.8	0.02	0.04	0.05	125	210
125 ISL	10.12	10.11	33.365	25.658	234.9	0.409	4.60	72.2	13.9	1.37	16.1	0.02	0.04	0.05	126	
146	9.51	9.49	33.527	25.886	213.5	0.456	4.13	64.0	18.3	1.56	19.5	0.01	0.01	0.04	147	209
150 ISL	9.43	9.41	33.561	25.926	209.8	0.465	4.01	62.1	19.3	1.60	20.2	0.01	0.01	0.04	151	
169	9.21	9.19	33.735	26.097	193.9	0.503	3.42	52.7	23.9	1.79	23.3	0.01	0.00	0.02	170	208
199	9.32	9.30	34.068	26.341	171.5	0.558	2.76	42.8	29.1	1.96	25.1	0.01	0.00	0.01	200	207
200 ISL	9.31	9.29	34.072	26.346	171.1	0.560	2.74	42.4	29.3	1.97	25.2	0.01			201	
230	8.90	8.88	34.123	26.452	161.5	0.609	2.35	36.1	34.4	2.15	27.7	0.01			231	206
250 ISL	8.50	8.47	34.137	26.525	154.7	0.641	2.11	32.1	38.9	2.28	29.4	0.01			251	
268	8.12	8.09	34.140	26.585	149.1	0.668	1.93	29.1	42.9	2.38	30.7	0.01			269	205
300 ISL	7.59	7.56	34.126	26.652	143.0	0.715	1.79	26.7	47.4	2.47	32.3	0.01			302	
321	7.30	7.27	34.115	26.685	140.1	0.745	1.73	25.6	49.9	2.52	33.1	0.01			323	204
379	6.73	6.70	34.136	26.780	131.6	0.824	1.30	19.0	59.2	2.74	35.8	0.01			381	203
400 ISL	6.48	6.44	34.148	26.823	127.6	0.851	1.11	16.1	63.7	2.83	37.0	0.01			402	
438	6.05	6.01	34.174	26.899	120.6	0.898	0.80	11.5	71.8	2.97	39.0	0.01			441	202
500 ISL	5.66	5.62	34.220	26.984	112.9	0.970	0.52	7.4	80.6	3.10	40.8	0.01			503	
513	5.58	5.54	34.230	27.002	111.4	0.985	0.46	6.5	82.5	3.13	41.2	0.01			516	201

A) PRIMARY PRODUCTIVITY SAMPLES WERE TAKEN FROM THESE LEVELS.

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	BOTTOM	WIND SPEED	WAVES	WEA	BAROMETER	DRY	WET	SECCHI	CLD AMT	TYPE
29 50.8 N	123 35.2 W	02/02/03	2356 UTC	4070 m	030 25 kn	010 08 08	1	1017.3 mb	15.2 C	13.9 C	25m	6/8	ST

DEPTH m	TEMP DEG C	POT TEMP DEG C	SALINITY	SIGMA THETA	SVA	DYN HT	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	PRES db	SAMP
0 ISL	16.69	16.69	33.218	24.220	369.0	0.000	5.68	102.1	0.8	0.39	0.0	0.00	0.11	0.02	0	
2	16.69	16.69	33.218	24.220	369.1	0.007	5.68	102.1	0.8	0.39	0.0	0.00	0.11	0.02	2	220
10 ISL	16.68	16.68	33.213	24.219	369.5	0.037	5.68	102.1	0.8	0.39	0.0	0.01	0.12	0.03	10	
16	16.67	16.67	33.209	24.219	369.7	0.059	5.68	102.1	0.7	0.39	0.0	0.01	0.13	0.03	16	219
20 ISL	16.63	16.63	33.201	24.222	369.6	0.074	5.68	102.0	0.7	0.39	0.0	0.01	0.13	0.03	20	
30 ISL	16.51	16.51	33.173	24.228	369.3	0.111	5.69	101.9	0.6	0.39	0.0	0.01	0.13	0.03	30	
31	16.49	16.49	33.170	24.231	369.1	0.115	5.69	101.9	0.6	0.39	0.0	0.01	0.13	0.03	31	218
46	16.25	16.24	33.118	24.246	368.0	0.170	5.74	102.3	0.5	0.39	0.0	0.01	0.18	0.05	46	217
50 ISL	16.27	16.26	33.142	24.260	366.8	0.184	5.72	102.0	0.6	0.39	0.0	0.01	0.19	0.05	50	
57	16.35	16.34	33.197	24.284	364.8	0.210	5.69	101.6	0.7	0.39	0.0	0.01	0.21	0.06	57	216
65	16.40	16.39	33.245	24.310	362.6	0.239	5.71	102.1	0.7	0.39	0.0	0.01	0.22	0.09	65	215
75 ISL	15.42	15.41	33.215	24.508	344.0	0.275	5.90	103.4	1.1	0.40	0.0	0.01	0.25	0.16	75	
76	15.29	15.28	33.210	24.532	341.6	0.278	5.92	103.5	1.2	0.40	0.0	0.01	0.25	0.17	76	214
86	14.36	14.35	33.174	24.704	325.4	0.311	5.87	100.7	1.7	0.46	0.3	0.06	0.28	0.22	86	213
95	13.39	13.38	33.078	24.830	313.6	0.340	5.80	97.5	2.1	0.55	1.3	0.11	0.26	0.20	95	212
100 ISL	13.09	13.08	33.059	24.875	309.3	0.356	5.76	96.2	2.2	0.58	1.8	0.10	0.23	0.19	100	
111	12.58	12.57	33.058	24.974	300.1	0.389	5.65	93.3	2.8	0.67	3.5	0.05	0.16	0.16	111	211
125	11.62	11.60	33.088	25.178	280.8	0.430	5.43	87.9	4.7	0.89	7.1	0.03	0.09	0.09	125	210
144	10.73	10.71	33.352	25.543	246.3	0.480	5.11	81.3	7.3	1.00	9.7	0.02	0.04	0.04	145	209
150 ISL	10.42	10.40	33.410	25.643	237.0	0.494	4.87	77.0	9.4	1.13	11.8	0.02	0.03	0.03	151	
170	9.54	9.52	33.575	25.919	210.9	0.539	4.07	63.2	16.8	1.59	18.8	0.02	0.01	0.01	171	208
198	9.01	8.99	33.819	26.195	185.1	0.595	3.61	55.4	22.7	1.81	22.5	0.01	0.00	0.01	199	207
200 ISL	8.99	8.97	33.831	26.208	183.9	0.598	3.58	55.0	23.2	1.82	22.7	0.01			201	
229	8.69	8.67	33.952	26.350	170.9	0.650	3.20	48.8	29.9	2.00	25.4	0.01			230	206
250 ISL	8.29	8.26	34.000	26.449	161.7	0.685	2.96	44.8	34.7	2.13	27.3	0.01			251	
269	7.89	7.86	34.024	26.528	154.4	0.715	2.77	41.5	38.9	2.25	28.9	0.01			270	205
300 ISL	7.36	7.33	34.033	26.611	146.7	0.761	2.55	37.8	44.6	2.39	30.8	0.01			302	
318	7.10	7.07	34.031	26.646	143.5	0.787	2.42	35.6	47.7	2.47	31.8	0.01			320	204
379	6.49	6.46	34.061	26.752	133.9	0.872	1.63	23.7	58.6	2.82	35.7	0.01			381	203
400 ISL	6.26	6.22	34.072	26.791	130.4	0.900	1.43	20.6	62.9	2.91	36.8	0.01			402	
437	5.88	5.84	34.095	26.857	124.3	0.947	1.15	16.5	70.4	3.05	38.6	0.01			440	202
500 ISL	5.39	5.35	34.139	26.952	115.6	1.023	0.78	11.0	81.7	3.23	40.8	0.01			503	
514	5.28	5.24	34.149	26.973	113.7	1.039	0.70	9.9	84.2	3.27	41.3	0.01			517	201

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 77 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 23.3 N	122 15.9 W	14/02/03	1719 UTC	15 m		1223 - 1813 PST	1223 PST	1813 PST	305.3 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.14	33.062	24.661	6.01	102.6	1.1	0.43	0.1	0.01	1.71	0.37	81. A	7.3	6.7	7.0	0.10
9	14.14	33.067	24.666	6.01	102.6	1.1	0.42	0.1	0.01	0.93	0.23	40.	14.1	12.9	13.5	0.11
19	14.13	33.062	24.664	6.01	102.6	1.0	0.42	0.1	0.01	0.97	0.25	14.	8.1	8.4	8.3	0.11
30	14.12	33.063	24.667	6.01	102.5	1.2	0.42	0.2	0.01	0.63	0.28	4.6	4.3	3.9	4.1	0.09
42	13.35	33.104	24.856	5.54	93.1	3.0	0.63	3.3	0.06	0.44	0.31	1.4	1.2	1.3	1.3	0.07
50	12.20	33.165	25.128	5.24	86.0	6.6	0.97	8.5	0.05	0.25	0.20					
57	11.42	33.219	25.315	4.90	79.1	9.5	1.18	12.0	0.03	0.17	0.16	0.29	0.02	0.03	0.03	0.05

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 77 100

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 23.4 N	124 19.4 W	13/02/03	1906 UTC	20 m		1231 - 1821 PST	1231 PST	1821 PST	185.4 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.76	32.862	24.376	5.93	102.4	0.5	0.42	0.0	0.00	0.21	0.05	86. A	2.7	2.9	2.8	0.08
13	14.70	32.871	24.396	5.95	102.6	0.4	0.41	0.0	0.00	0.23	0.04	37.	3.0	3.0	3.0	0.11
19	14.64	32.894	24.427	5.93	102.2	0.4	0.41	0.0	0.00	0.25	0.05					
26	14.54	32.937 D	24.482													
33	14.15	33.103	24.692	6.09	104.0	0.7	0.44	0.0	0.01	0.82	0.34					
41	13.84	33.143	24.787	5.93	100.7	1.4	0.52	0.8	0.10	1.07	0.40	4.3	4.6	4.6	4.6	0.10
47	13.16	33.165	24.942	5.55	92.9	3.2	0.74	4.3	0.07	0.51	0.28					
54	11.92	33.163	25.179	5.10	83.2	7.0	1.08	9.9	0.05	0.26	0.20	1.6	0.65	0.66	0.65	0.04
65	10.90	33.230	25.417	4.77	76.1	10.8	1.31	14.1	0.05	0.16	0.12					
76	10.37	33.347	25.600	4.47	70.6	13.9	1.48	17.1	0.05	0.09	0.07	0.29	0.01	0.02	0.02	0.03

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 80 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 49.6 N	121 48.3 W	12/02/03	1736 UTC	15 m		1220 - 1815 PST	1221 PST	1815 PST	180.4 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	14.30	32.978	24.563	6.03	103.2	0.8	0.41	0.1	0.01	0.43	0.10	81. A	3.2	3.4	3.3	0.09
10	14.28	32.978	24.568	5.98	102.3	0.7	0.41	0.1	0.01	0.42	0.10	36.	6.8	6.9	6.8	0.09
19	14.28	32.979	24.569	5.97	102.2	0.5	0.41	0.1	0.01	0.41	0.11	14.	5.3	5.4	5.3	0.10
30	14.27	32.980	24.572	5.98	102.3	0.4	0.41	0.1	0.01	0.45	0.10	4.6	2.8	2.7	2.8	0.08
41	14.18	32.989	24.598	5.95	101.6	0.5	0.43	0.4	0.03	0.48	0.13	1.5	1.3	1.4	1.3	0.06
50	12.21	32.937	24.949	5.69	93.2	3.0	0.75	4.7	0.14	0.44	0.29					
58	11.33	32.933	25.109	5.53	88.9	5.1	0.92	7.7	0.05	0.27	0.27	0.26	0.10	0.11	0.10	0.05

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 40.6

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
34 13.3 N	119 24.7 W	10/02/03	1805 UTC	21 m		1212 - 1802 PST	1212 PST	1802 PST	228.7 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	15.10	33.387	24.708	5.90	102.9	2.2	0.37	0.0	0.01	0.53	0.13	93. A	10.1	9.4	9.8	0.09
5	15.06	33.388	24.717	5.94	103.5	2.1	0.37	0.0	0.01	0.51	0.13					
12	15.06	33.389	24.718	5.90	102.8	2.1	0.37	0.0	0.01	0.50 B	0.14 B	42.	10.4		10.4	0.09
19	15.05	33.388	24.720	5.91	103.0	2.2	0.37	0.0	0.01	0.55	0.16					
26	15.05	33.388	24.720	5.90	102.8	2.1	0.37	0.0	0.01	0.60	0.18	15.	4.8	5.2	5.0	0.07

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

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 14.5 N	121 26.3 W	09/02/03	1846 UTC	25 m		1220 - 1810 PST	1220 PST	1812 PST	185.8 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	14.85	33.013	24.474	5.91	102.3	0.5	0.40	0.1	0.00	0.25	0.05	94. A	1.8	1.7	1.8	0.09
16	14.76	33.013	24.493	5.91	102.1					0.25	0.07	37.	3.2	3.1	3.1	0.10
31	14.75	33.014	24.497	5.93	102.5	0.6	0.40	0.1	0.00	0.28	0.07	15.	2.7	3.1	2.9	0.11
40	14.76	33.017	24.497	5.90	102.0	0.6	0.40	0.1	0.00	0.33	0.10					
50	14.47	32.998	24.544	5.87	100.8	0.9	0.45	0.5	0.04	0.54	0.22	4.6	3.1	3.1	3.1	0.06
60	12.81	32.869	24.782	5.79	96.0	2.4	0.67	3.0	0.09	0.39	0.28					
68	11.71	32.826	24.957	5.71	92.5	4.2	0.84	5.9	0.03	0.23	0.25	1.5	0.70	0.82	0.76	0.04
77	11.06	32.814	25.065	5.64	90.1	5.6	0.95	7.6	0.02	0.17	0.17					
86	10.66	32.936	25.230	5.42	85.9	7.8	1.08	10.3	0.02	0.09	0.11					
95	10.37	33.050	25.369	5.23	82.4	9.6	1.17	12.3	0.01	0.06	0.07	0.29	0.02	0.02	0.02	0.03

A) INCUBATION LIGHT INTENSITIES WERE 94, 41, 15, 4.5, 1.6, 0.30 PERCENT RESPECTIVELY.

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 83 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 54.6 N	124 10.2 W	08/02/03	1923 UTC	35 m		1231 - 1819 PST	1231 PST	1819 PST	155.4 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.59	32.771	24.126			0.6	0.40	0.1	0.00	0.16	0.04	92. A	1.4	1.4	1.4	0.06
12	15.51	32.764	24.139			0.6	0.40	0.0	0.00	0.16	0.05					
21	15.49	32.763	24.143	5.81	101.7	0.6	0.39	0.0	0.00	0.18	0.05	40.	2.2	2.2	2.2	0.07
32	15.49	32.763	24.143	5.80	101.6	0.6	0.39	0.0	0.00	0.17	0.05					
44	15.49	32.762	24.143	5.82	101.9	0.6	0.39	0.0	0.00	0.17	0.05	15.	1.6	1.7	1.7	0.06
53	15.49	32.762	24.143	5.79	101.4	0.6	0.40	0.0	0.00	0.17	0.05					
62	15.48	32.762	24.145	5.79	101.4	0.6	0.39	0.0	0.00	0.17	0.06					
70	15.48	32.762	24.146	5.81	101.7	0.6	0.39	0.0	0.00	0.19	0.05	4.6	0.94	0.93	0.93	0.05
78	15.05	32.760	24.238	5.80	100.7	0.8	0.41	0.1	0.03	0.25	0.16					
86	13.53	32.737	24.538	5.86	98.6	1.9	0.57	1.8	0.08	0.32	0.22					
95	11.95	32.695	24.811	5.96	96.9	3.4	0.76	4.2	0.02	0.22	0.18	1.6	1.2	0.60	0.89	0.04
107	10.31	32.615	25.041	5.92	92.9	5.7	0.94	7.3	0.02	0.10	0.08					
119	9.87	32.665	25.153	5.81	90.3	7.5	1.05	9.3	0.02	0.06	0.05					
132	10.20	33.025	25.379	5.29	83.0	8.7	1.06	10.6	0.02	0.04	0.04	0.31	0.02	0.00	0.01	0.04

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 29.3 N	119 19.1 W	06/02/03	1900 UTC	19 m		1210 - 1805 PST	1211 PST	1805 PST	514.6 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	14.52	33.342	24.798	6.04	104.1	3.5	0.45	0.7	0.03	0.94	0.17	92. A	15.9	16.4	16.2	0.11
12	14.37	33.340	24.828	6.03	103.6	3.5	0.46	0.7	0.04	0.99	0.18	38.	20.3	19.3	19.8	0.14
19	13.48	33.338	25.011	5.55	93.6	5.4	0.68	4.2	0.11	0.73	0.27					
25	12.73	33.335	25.157	5.20	86.4	7.3	0.87	7.2	0.15	0.68	0.32	13.	8.2	8.3	8.2	0.10
32	12.61	33.335	25.181	5.11	84.6	7.7	0.92	7.9	0.15	0.65	0.35					
39	12.33	33.331	25.232	5.02	82.7	8.4	0.99	8.9	0.15	0.53	0.31	4.3	3.5	3.5	3.5	0.07
45	11.56	33.311	25.361	4.77	77.3	10.3	1.15	11.6	0.09	0.33	0.24					
52	11.35	33.376	25.450	4.57	73.7	11.3	1.23	13.1	0.09	0.27	0.21	1.5	0.81	0.85	0.83	0.06
62	10.83	33.358	25.529	4.50	71.8	12.5	1.31	14.4	0.06	0.20	0.17					
72	10.38	33.497	25.716	4.04	63.9	16.0	1.50	17.6	0.03	0.07	0.10	0.30	0.01	0.02	0.01	0.04

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 87 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 19.6 N	121 42.6 W	07/02/03	1902 UTC	22 m		1220 - 1820 PST	1221 PST	1820 PST	162.3 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	14.91	32.902	24.375	5.89	102.0	0.6	0.40	0.0	0.00	0.18	0.05	93. A	2.2	2.3	2.3	0.09
14	14.73	32.974	24.470	5.94	102.6	0.7	0.40	0.0	0.00	0.23	0.06	38.	3.7	3.4	3.5	0.15
21	14.51	33.054	24.578	5.99	103.0	1.1	0.40	0.0	0.00	0.36	0.12					
29	14.48	33.070	24.597	5.99	103.0	1.2	0.40	0.0	0.00	0.50	0.14	13.	4.4	4.4	4.4	0.12
36	13.97	33.030	24.673	5.92	100.7	1.8	0.48	0.9	0.06	0.60	0.21					
45	12.06	32.827	24.892	5.75	93.8	3.5	0.78	4.6	0.06	0.37	0.28	4.3	1.4	1.4	1.4	0.06
53	11.54	32.834	24.994	5.70	92.0	4.6	0.87	6.2	0.03	0.24	0.25					
60	11.01	32.830	25.086	5.61	89.5	5.9	0.96	7.9	0.02	0.18	0.15	1.5	0.31	0.32	0.32	0.07
73	10.70	32.976	25.254	5.39	85.5	7.8	1.07	10.3	0.02	0.10	0.10					
83	10.54	33.174	25.437	5.08	80.4	10.0	1.19	12.7	0.01	0.05	0.05	0.31	0.01	0.01	0.01	0.04

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 90 35

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
33 15.2 N	118 14.7 W	05/02/03	1838 UTC	27 m		1207 - 1802 PST	1207 PST	1802 PST	170.9 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.82	33.386	24.548	5.84	103.3	2.0	0.36	0.1	0.00	0.22	0.06	89. A	1.3	1.3	1.3	0.06
8	15.81	33.386	24.550	5.83	103.1	1.8	0.36	0.1	0.00	0.21	0.04					
16	15.76	33.387	24.563	5.83	103.0	1.9	0.36	0.1	0.00	0.24	0.05	40.	2.7	2.7	2.7	0.06
25	15.41	33.347	24.610	5.88	103.2	2.0	0.39	0.1	0.00	0.39	0.16					
34	14.93	33.296	24.676	5.92	102.8	2.3	0.42	0.1	0.01	0.56	0.18	14.	4.1	4.5	4.3	0.07
44	14.19	33.214	24.770	5.94	101.6	2.7	0.49	0.6	0.03	0.76	0.22					
54	12.51	33.188	25.087	5.21	86.0	5.8	0.88	6.7	0.14	0.40	0.25	4.6	1.4	1.4	1.4	0.04
64	12.23	33.460	25.352	4.36	71.7	9.9	1.17	11.6	0.04	0.20	0.19					
73	12.04	33.491	25.412	4.18	68.5	10.7	1.23	12.6	0.03	0.16	0.15	1.6	0.26	0.31	0.29	0.04
88	11.63	33.566	25.547	3.91	63.5	12.8	1.37	14.8	0.02	0.08	0.11					
102	11.21	33.606	25.655	3.70	59.6	14.7	1.47	16.5	0.02	0.05	0.08	0.30	0.00	0.01	0.00	0.03

A) INCUBATION LIGHT INTENSITIES WERE 94, 41, 15, 4.5, 1.6, 0.30 PERCENT RESPECTIVELY.

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 90 70

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 5.7 N	120 38.6 W	04/02/03	1808 UTC	24 m		1215 - 1800 PST	1217 PST	1800 PST	217.1 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
1	15.04	33.077	24.482	5.90	102.6	0.6	0.41	0.0	0.00	0.19	0.05	94. A	2.7	2.3	2.5	0.05
8	14.96	33.064	24.489	5.90	102.4	0.9	0.41	0.0	0.00	0.22	0.06					
15	14.94	33.067	24.496	5.90	102.4	0.7	0.40	0.0	0.00	0.23	0.07	38.	3.5	3.4	3.4	0.08
23	14.91	33.072	24.507	5.90	102.3	0.7	0.40	0.0	0.00	0.30	0.10					
31	14.72	33.078	24.552	5.98	103.3	0.9	0.42	0.1	0.01	0.52	0.21	14.	4.9	5.2	5.0	0.06
39	14.05	33.202	24.789	5.85	99.8	1.8	0.51	0.7	0.07	0.81	0.54					
48	13.23	33.262	25.003	5.52	92.6	4.2	0.74	4.4	0.13	0.62	0.50	4.6	2.8	3.0	2.9	0.04
56	12.01	33.505	25.428	4.60	75.3	11.1	1.22	12.5	0.05	0.29	0.40					
65	11.07	33.553	25.638	4.20	67.4	14.4	1.42	16.2	0.03	0.20	0.31	1.6	0.67	0.65	0.66	0.02
78	9.90	33.648	25.915	3.56	55.7	20.4	1.72	21.4	0.02	0.07	0.08					
91	9.68	33.710	26.000	3.30	51.4	22.4	1.79	22.9	0.01	0.04	0.05	0.30	0.01	0.01	0.01	0.02

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 90 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
30 45.3 N	123 20.0 W	03/02/03	1741 UTC	28 m		1225 - 1810 PST	1227 PST	1814 PST	102.1 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.79	33.010	24.265	5.80	102.3	0.6	0.39	0.1	0.00	0.15	0.04	90. A	0.72	0.52	0.62	0.03
17	15.77	33.010	24.270	5.75	101.4	0.5	0.39	0.0	0.00	0.16	0.04	39.	2.1	2.1	2.1	0.04
27	15.77	33.009	24.270	5.76	101.6	0.5	0.39	0.0	0.00	0.15	0.04					
35	15.77	33.009	24.270	5.76	101.6	0.5	0.39	0.0	0.00	0.16	0.04	15.	1.5	1.6	1.5	0.04
47	15.77	33.010	24.271	5.76	101.6	0.4	0.40	0.0	0.00	0.16	0.04					
57	15.77	33.009	24.271	5.76	101.6	0.3	0.39	0.0	0.00	0.15	0.05	4.4	0.79	0.78	0.79	0.03
66	15.67	33.007	24.292	5.78	101.7	0.2	0.39	0.0	0.00	0.16	0.06					
77	15.16	33.134	24.502	5.82	101.5	0.9	0.42	0.1	0.03	0.23	0.14	1.5	0.58	0.63	0.60	0.02
86	12.87	32.865	24.768	5.95	98.8	2.0	0.56	1.0	0.19	0.19	0.21					
95	12.04	32.781	24.861	5.86	95.6	2.8	0.69	3.1	0.06	0.17	0.23					
106	11.51	32.813	24.984	5.71	92.1	4.0	0.80	5.6	0.03	0.12	0.15	0.30	0.04	0.00	0.02	0.02

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 93 45

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
32 21.0 N	118 33.4 W	31/01/03	1803 UTC	34 m		1205 - 1759 PST	1207 PST	1759 PST	334.6 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	16.15	33.418	24.498	5.79	103.2	2.8	0.35	0.0	0.00	0.19	0.04	91. A	3.1	3.2	3.2	0.05
11	16.09	33.412	24.507	5.78	102.8	2.8	0.35	0.0	0.00	0.20	0.04					
21	16.03	33.407	24.517	5.80	103.1	2.7	0.35	0.0	0.01	0.22	0.05	39.	4.0	4.5	4.2	0.06
32	15.60	33.345	24.566	5.85	103.0	2.8	0.37	0.0	0.01	0.32	0.11					
44	15.48	33.339	24.589	5.89	103.5	2.8	0.37	0.1	0.01	0.43	0.15	14.	4.5	4.7	4.6	0.06
51	14.69	33.281	24.716	5.82	100.6	3.4	0.44	0.2	0.03	0.79	0.23					
59	13.69	33.202	24.864	5.69	96.3	4.4	0.58	1.8	0.08	0.77	0.35					
68	13.12	33.181	24.963	5.50	92.0	5.4	0.70	3.7	0.11	0.67	0.41	4.6	3.5	3.3	3.4	0.03
80	12.44	33.305	25.192	4.89	80.7	8.2	0.97	8.4	0.05	0.33	0.34					
92	12.44	33.469	25.319	4.32	71.3	10.4	1.13	10.8	0.03	0.20	0.22	1.6	0.66	0.60	0.63	0.02
105	11.58	33.503	25.508	4.14	67.1	12.7	1.28	13.7	0.02	0.08	0.11					
116	10.87	33.581	25.697	3.95	63.1	15.3	1.41	16.3	0.02	0.03	0.05					
130	10.59	33.668	25.814	3.66	58.2	17.6	1.52	18.1	0.02	0.02	0.04	0.28	0.01	0.02	0.02	0.00

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 93 80

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
31 11.1 N	120 54.7 W	01/02/03	1830 UTC	24 m		1215 - 1802 PST	1218 PST	1802 PST	127.8 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	15.43	33.180	24.476	5.87	102.9	0.8	0.38	0.0	0.00	0.16	0.03	88. A	2.2	2.3	2.2	0.07
15	15.41	33.181	24.482	5.89	103.2	0.8	0.38	0.0	0.00	0.17	0.03	38.	2.3	2.3	2.3	0.07
30	15.38	33.200	24.503	5.92	103.7	0.8	0.37	0.0	0.00	0.23	0.05	15.	1.5	1.5	1.5	0.06
39	15.31	33.201	24.520	5.97	104.4	0.8	0.38	0.0	0.00	0.27	0.06					
48	14.32	33.151	24.694	6.41	109.9	1.5	0.43	0.1	0.04	0.54	0.27	4.6	2.2	2.3	2.3	0.04
56	14.02	33.153	24.758	5.89	100.3	2.0	0.48	0.7	0.17	0.55	0.26					
65	13.26	33.111	24.881	5.74	96.2	3.2	0.62	2.7	0.22	0.28	0.21	1.6	0.56	0.51	0.54	0.04
74	12.24	33.025	25.013	5.63	92.3	4.7	0.79	5.5	0.05	0.17	0.19					
83	11.22	32.905	25.108	5.53	88.7	6.3	0.97	7.8	0.03	0.14	0.14					
91	10.78	32.909	25.189	5.48	87.0	7.5	1.03	9.4	0.03	0.11	0.09	0.30	0.02	0.02	0.02	0.01

RV DAVID STARR JORDAN — CALCOFI CRUISE 0302 — STATION 93 110

LATITUDE	LONGITUDE	DAY/MO/YR	CAST TIME	SECCHI	FOREL	INCUBATION TIME	LAN	CIVIL TWILIGHT	INTEGRATED VALUE
30 10.9 N	122 55.5 W	02/02/03	1751 UTC	27 m		1225 - 1816 PST	1226 PST	1816 PST	96.5 mg C/m2

DEPTH m	TEMP DEG C	SALINITY	SIGMA THETA	OXYGEN ml/l	OXY PCT	SIO3 uM/l	PO4 uM/l	NO3 uM/l	NO2 uM/l	CHL-A ug/l	PHAEO ug/l	LIGHT PCT	UPTAKE (mg C/m3) 1	2	MEAN	DARK
2	16.56	33.266	24.287	5.66	101.6	1.0	0.38	0.1	0.01	0.11	0.03	89. A	0.95	1.0	0.97	0.03
17	16.55	33.266	24.290	5.66	101.5	1.1	0.37	0.1	0.00	0.12	0.02	38.	1.9	1.9	1.9	0.04
26	16.55	33.267	24.291	5.66	101.5	1.0	0.37	0.0	0.00	0.11	0.02					
34	16.56	33.267	24.289	5.67	101.7	0.9	0.37	0.0	0.00	0.12	0.02	14.	1.2	1.2	1.2	0.04
45	16.55	33.273	24.297	5.67	101.7	0.9	0.36	0.0	0.00	0.13	0.03					
54	16.52	33.287	24.314	5.68	101.8	1.0	0.37	0.0	0.01	0.15	0.04	4.6	0.73	0.69	0.71	0.03
65	16.06	33.312	24.439	5.72	101.6	1.3	0.37	0.0	0.00	0.25	0.11					
73	14.95	33.210	24.606	5.87	101.9	2.0	0.44	0.2	0.03	0.33	0.23	1.6	0.83	0.88	0.85	0.03
84	13.02	33.076	24.902	5.72	95.4	3.8	0.65	2.7	0.13	0.33	0.19					
93	12.81	33.219	25.054	5.50	91.4	5.0	0.76	4.4	0.13	0.29	0.17					
102	11.76	33.172	25.217	5.26	85.5	7.0	0.96	8.2	0.06	0.21	0.15	0.30	0.03	0.04	0.03	0.03

A) INCUBATION LIGHT INTENSITIES WERE 94, 41, 15, 4.5, 1.6, 0.30 PERCENT RESPECTIVELY.

MACROZOOPLANKTON BIOMASS
Net Mesh Size: 0.505mm

Line	Sta.	Latitude N	Longitude W	Date Mo/Day	Time (PST) Start	Time (PST) End	Water Volume Strained (m^3)	Max. Tow Depth (m)	Volume per 1000 m^3 Strained Total (cm^3)	Volume per 1000 m^3 Strained Small (cm^3)
77	49	35 04.7	120 46.6	02/15	0233	0239	135	56	74	74
77	51	35 00.7	120 55.5	02/15	0003	0025	498	210	108	108
77	55	34 54.6	121 13.6	02/14	2021	2043	516	209	29	29
77	60	34 43.4	121 34.0	02/14	1558	1620	496	209	22	22
77	70	34 23.2	122 15.4	02/14	0827	0849	473	210	38	38
77	80	34 03.6	122 56.4	02/14	0106	0127	482	213	37	37
77	90	33 43.8	123 39.4	02/13	1830	1852	495	213	30	30
77	100	33 23.2	124 19.9	02/13	1209	1231	500	211	16	16
80	51	34 27.6	120 33.1	02/11	0446	0453	184	64	120	120
80	60	34 09.0	121 09.0	02/24	1548	1610	471	208	32	32
80	70	33 49.2	121 49.8	02/12	0833	0854	509	211	26	26
80	80	33 27.7	122 31.3	02/12	1700	1722	508	210	8	8
80	90	33 08.7	123 13.	02/12	2313	2334	477	213	42	42
80	100	32 49.5	123 54.3	02/13	0544	0605	450	212	73	73
82	47	34 16.3	120 01.0	02/10	2355	0017	437	220	43	43
83	40.6	34 14.0	119 24.4	02/10	0929	0932	62	20	32	32
83	42	34 11.2	119 30.7	02/10	0759	0809	222	101	77	77
83	51	33 53.1	120 09.2	02/10	0158	0208	230	96	74	74
83	55	33 44.6	120 26.0	02/09	2228	2250	466	214	32	32
83	60	33 34.8	120 46.6	02/09	1807	1828	458	210	52	52
83	70	33 14.6	121 25.4	02/09	1148	1209	449	213	33	33
83	80	32 55.5	122 07.0	02/09	0558	0620	468	210	53	53
83	90	32 35.0	122 47.6	02/09	0020	0042	472	212	32	32
83	100	32 15.3	123 29.4	02/08	1823	1845	454	210	46	46
83	110	31 55.2	124 09.8	02/08	1221	1243	453	216	29	29
87	33	33 53.5	118 29.0	02/06	0107	0112	118	49	42	42
87	35	33 49.6	118 37.5	02/06	0343	0404	448	210	47	47
87	40	33 39.3	118 59.7	02/06	0806	0828	435	214	37	37
87	45	33 29.1	119 18.7	02/06	1212	1233	437	213	39	39
87	50	33 20.3	119 38.8	02/06	1555	1604	166	67	54	54
87	55	33 09.1	119 58.8	02/06	2005	2027	469	214	34	34
87	60	32 58.9	120 20.6	02/07	0025	0046	443	214	68	68
87	70	32 38.3	121 02.2	02/07	0610	0631	470	209	53	53
87	80	32 19.0	121 42.1	02/07	1211	1233	472	210	25	25
87	90	31 59.7	122 24.7	02/07	1814	1836	489	223	27	27
87	100	31 40.2	123 04.8	02/08	0007	0029	475	213	40	40
87	110	31 19.7	123 44.5	02/08	0605	0627	458	213	46	46
90	28	33 29.1	117 47.2	02/05	1816	1838	463	211	136	125
90	30	33 25.1	117 54.7	02/05	1532	1553	459	211	20	20
90	35	33 15.2	118 14.8	02/05	1143	1204	455	210	20	20
90	37	33 11.2	118 23.1	02/05	0854	0916	438	214	50	50
90	45	32 55.8	118 57.0	02/05	0327	0348	454	212	24	24
90	53	32 38.4	119 29.0	02/04	2207	2229	463	211	67	67
90	60	32 25.3	119 57.1	02/04	1715	1737	449	210	51	51
90	70	32 05.5	120 39.2	02/04	1119	1141	466	211	26	26
90	80	31 45.0	121 19.2	02/04	0441	0502	462	210	37	37
90	90	31 24.6	121 58.8	02/03	2234	2256	460	216	46	46
90	100	31 05.2	122 39.3	02/03	1622	1643	474	210	40	40
90	110	30 45.8	123 20.5	02/03	0824	0846	473	212	19	19
90	120	30 25.9	123 59.5	02/03	0047	0108	490	212	27	27
93	26.7	32 57.9	117 19.1	01/30	1519	1541	478	209	33	33
93	28	32 54.6	117 23.8	01/30	1832	1854	461	211	28	28
93	30	32 50.6	117 32.3	01/30	2200	2222	476	211	67	67
93	35	32 41.1	117 53.3	01/31	0205	0227	467	213	47	47
93	40	32 31.0	118 12.7	01/31	0555	0616	461	210	46	46
93	45	32 21.1	118 34.0	01/31	0855	0917	452	210	35	35
93	50	32 10.5	118 53.3	01/31	1426	1448	472	228	17	17
93	55	32 00.9	119 14.1	01/31	1829	1850	466	209	28	28
93	60	31 51.3	119 34.2	01/31	2239	2301	451	214	38	38
93	70	31 31.6	120 14.7	02/01	0502	0524	476	212	92	92
93	80	31 11.6	120 54.4	02/01	1136	1158	434	215	16	16
93	90	30 51.2	121 35.3	02/01	1803	1825	501	222	26	26
93	100	30 31.1	122 16.0	02/02	0022	0043	519	206	42	42
93	110	30 11.4	122 56.2	02/02	0829	0851	497	217	22	22
93	120	29 51.0	123 35.9	02/02	1705	1727	477	217	19	19

FIGURES

Avifauna Observations

CalCOFI Cruise 0302

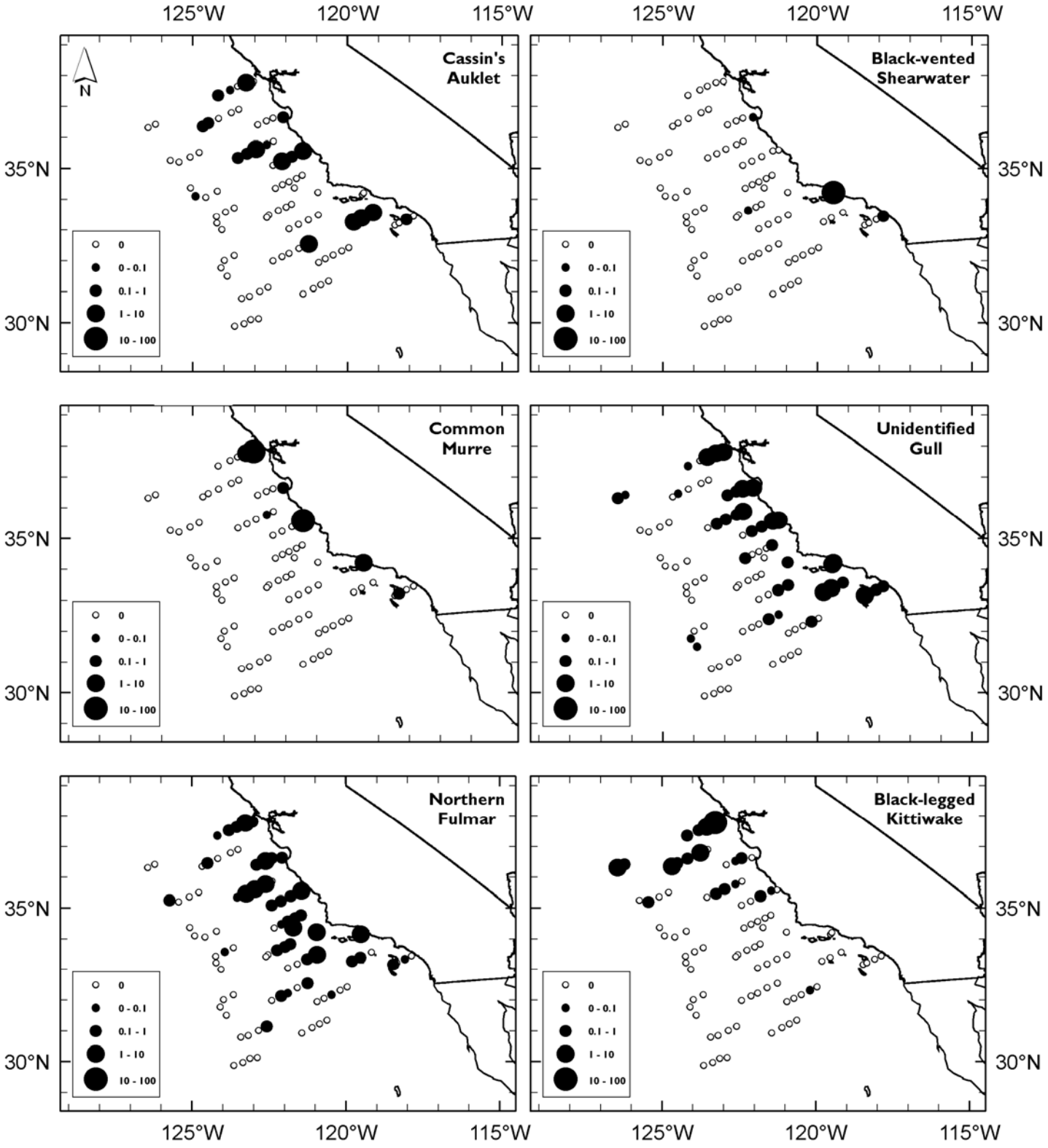
1a. Cassin's Auklet distribution.

1b. Black-vented Shearwater distribution.

1c. Common Murre distribution.

1d. Unidentified Gull distribution.

1e. Northern Fulmar distribution.

1f. Black-legged Kittiwake distribution.

CalCOFI Cruise 0302