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**OCEANOGRAPHIC OBSERVATIONS FROM THE EASTERN  
PACIFIC OCEAN COLLECTED BY THE  
R/V *SHOYO MARU*, OCTOBER 1963-MARCH 1964**

**OBSERVACIONES OCEANOGRAFICAS DEL OCEANO  
PACIFICO ORIENTAL RECOLECTADAS POR EL BARCO  
*SHOYO MARU*, OCTUBRE 1963-MARZO 1964**

by — por

**ERIC D. FORSBERGH and/y WILLIAM W. BROENKOW**

La Jolla, California

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**CONTENTS—INDICE**  
**ENGLISH VERSION—VERSION EN INGLES**

	Page
INTRODUCTION .....	85
SCIENTIFIC PERSONNEL .....	85
ACKNOWLEDGEMENTS .....	86
METHODS .....	86
TREATMENT OF DATA .....	89
FEATURES OF INTEREST.....	91

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LIST OF FIGURES—LISTA DE LAS FIGURAS.....	94
FIGURES—FIGURAS .....	96

**VERSION EN ESPANOL—SPANISH VERSION**

	Página
INTRODUCCION .....	127
PERSONAL CIENTIFICO .....	127
RECONOCIMIENTO .....	128
METODOS .....	128
TRATAMIENTO DE LOS DATOS.....	131
ELEMENTOS DE INTERES .....	133

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LITERATURE CITED—BIBLIOGRAFIA CITADA.....	136
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APPENDIX A—APENDICE A .....	139
Physical and chemical observations—Observaciones físicas y químicas	
APPENDIX B—APENDICE B .....	213
Surface observations—Observaciones de superficie	
APPENDIX C—APENDICE C .....	220
Biological observations—Observaciones biológicas	
APPENDIX D .....	234
Computation and interpolation of hydrographic station data	
APENDICE D .....	236
Cómputo e interpolación de datos de estaciones hidrográficas	

OCEANOGRAPHIC OBSERVATIONS FROM THE EASTERN PACIFIC  
OCEAN COLLECTED BY THE R/V *SHOYO MARU*,  
OCTOBER 1963 - MARCH 1964

by

Eric D. Forsbergh and William W. Broenkow<sup>1</sup>

INTRODUCTION

The Nankai Regional Fisheries Research Laboratory of Kochi, Japan conducted a long-line fishery exploration and hydrographic survey in the eastern Pacific Ocean aboard the R/V *Shoyo Maru* during October 1963-March 1964. An invitation to the Inter-American Tropical Tuna Commission to participate in the cruise gave its investigators the opportunity to make surface biological observations and to preserve water samples for subsequent analyses of nutrients. The result of this survey is a comprehensive body of physical, chemical and biological data covering a large portion of the eastern half of the Pacific Ocean.

The Nankai Laboratory has generously allowed the Tuna Commission to publish all oceanographic results. By incorporating the results of the two agencies into one report, the data will be readily accessible for detailed study. A complete listing of data is given in the Appendices. Observed values of temperature, chlorinity, oxygen, weather, sea state, water transparency and zooplankton volumes have also been presented by the Japan Ministry of Agriculture and Forestry, Fishing Agency, Investigation Research Division, First Research Section (1964).

No attempt has been made to give extensive interpretations of these data, but some features of general interest have been described briefly. It is hoped that this report will complement previous descriptive studies of the eastern tropical Pacific Ocean such as those by Wooster and Cromwell (1958) and Bennett (1963).

SCIENTIFIC PERSONNEL

The following scientific personnel participated in Cruise 13 of the R/V *Shoyo Maru*:

Dr. Yoichi Yabuta	Japan Fisheries Agency, Nankai Regional Fisheries
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We are most grateful to Mr. Joseph L. Reid, Dr. Milner B. Schaefer, Dr. Warren S. Wooster, Mr. Hajime Yamanaka and Dr. Ichiro Yamanaka for critically reviewing the manuscript. We wish also to thank the following persons: Mr. Witold L. Klawe for collecting much of the biological data and Mr. Susumu Kato for assisting him; Mr. Edward B. Bennett for frequent helpful criticism and advice; and Mr. Christopher T. Psaropulos for writing the computer programs.

The U. S. Bureau of Commercial Fisheries, Tuna Resources Laboratory, La Jolla, California assisted in the analyses of samples ashore.

#### METHODS

In addition to long-line fishing operations, investigators of the Nankai Laboratory made hydrographic casts, chlorinity titrations, oxygen analyses, larval net tows, weather observations and bathythermograph and Secchi disc lowerings. Tuna Commission scientists preserved water samples for the analyses of nutrients and plant pigments and conducted carbon fixation experiments aboard ship. The nutrient and pigment analyses were made ashore by staff members of the Bureau of Commercial Fisheries and the Tuna Commission.

##### Station spacing

Because the primary purpose of the survey was fishery research, hydrographic stations were spaced farther apart than might have been planned for a solely oceanographic survey. Hydrographic stations were planned to be about 120 to 160 miles apart, with two surface stations and bathythermograph casts between. The bathythermograph became inoperative at station H-89 (Fig. 1) and, to offset this loss of data, hydrographic stations from H-89 to H-153 were made at approximately 60-mile intervals. After station H-153, the original spacing of hydrographic stations was resumed, because replacement of the bathythermograph made such observations again possible.



### Depth

Two Nansen bottle casts were made at each hydrographic station. For the first cast the bottles were lowered to nominal depths of 25, 50, 75, 100 and 150 m, and actual sampling depths were determined by wire angle. The second cast to nominal depths of 200, 300, 400 and 600 m utilized unprotected reversing thermometers, and the actual depth of sampling was determined thermometrically. Surface samples were collected with a bucket.

### Temperature

Subsurface temperatures were determined with a single protected reversing thermometer on each Nansen bottle. Bathythermograph lowerings were made to about 200 m at each hydrographic station and frequently between stations. Surface temperatures were determined by bucket thermometer. The precision of the single reversing thermometer readings is about  $\pm 0.04$  C (Wooster and Taft, 1958).

### Chlorinity

Chlorinity determinations were made aboard ship by the standard silver nitrate titration using fluorescein as the indicator. Precision of the analyses was about  $\pm 0.03$ /<sub>00</sub> Cl, or about  $\pm 0.06$ /<sub>00</sub> S (Strickland and Parsons, 1960).

### Dissolved-oxygen

Dissolved-oxygen analyses were performed aboard ship using the Winkler sodium thiosulfate titration. Precision of the method is about  $\pm 0.03$  ml/L (Strickland and Parsons, 1960).

### Nutrients

Immediately after the hydrographic stations were completed, 250-ml sea water samples were drawn from the Nansen bottles into polyethylene bags, which were placed into protective outer bags and then frozen. The samples were stored at  $-10$  to  $-15$  C for shipment to San Diego, California for analyses. Maximum storage time was 24 weeks. The effect of freezing on the accuracy of the determinations was not ascertained, but Stefansson and Richards (1963) have shown that the agreement between samples analyzed fresh and those analyzed after frozen storage is good (their samples for phosphate were stored for 4 weeks, those for nitrate for 2 weeks, and those for silicate for 10 weeks).

In the laboratory, the samples were thawed overnight at room temperature. They were filtered through Whatman Number 42 filter paper and were analyzed using methods described by Strickland and Parsons (1960): for inorganic nitrite-nitrogen, using sulfanilamide and N-(1-naphthyl)-ethylene-diamine for color development; for inorganic nitrate-nitrogen, by reduction with hydrazine and subsequent analysis for nitrite; and for reactive silicate-silicon, using metol-sulfite and oxalic acid to reduce the silico-

molybdate complex. Analyses of inorganic phosphate-phosphorus were made by the ascorbic acid, potassium antimony tartrate method of J. P. Riley as described by J. D. H. Strickland and T. R. Parsons (*unpublished*). The precisions of the analyses were: phosphate,  $\pm 0.03 \mu\text{g-at/L}$ ; nitrate,  $\pm 0.3 \mu\text{g-at/L}$  at the  $4.5 \mu\text{g-at/L}$  level and  $\pm 1.3 \mu\text{g-at/L}$  at the  $30 \mu\text{g-at/L}$  level; nitrite,  $\pm 0.03 \mu\text{g-at/L}$ ; silicate,  $\pm 0.25 \mu\text{g-at/L}$  at the  $10 \mu\text{g-at/L}$  level and  $\pm 1.4 \mu\text{g-at/L}$  at the  $60 \mu\text{g-at/L}$  level (from Strickland and Parsons, 1960 and *unpublished*).

#### Plant pigments

Samples of surface water were collected with a bucket, magnesium carbonate was added and the samples were filtered immediately through Whatman GF/C glass filters. During filtration suction was maintained at pressures between 25 and 35 cm of mercury. The filters were desiccated under vacuum in the dark. The samples were maintained dry, dark and frozen for up to 6 weeks before analysis, the maximum period considered allowable for such storage by Parsons and Strickland (1960). Analyses for plant pigments were made in San Diego by the Richards with Thompson (1952) method. Concentrations were computed using the equations of Parsons and Strickland (1963). Precisions of the analysis are from J. D. H. Strickland and T. R. Parsons (*unpublished*): chlorophyll *a*,  $\pm 0.05 \text{ mg/m}^3$  at the  $1 \text{ mg/m}^3$  level; chlorophyll *b*,  $\pm 0.04 \text{ mg/m}^3$  at the  $0.1 \text{ mg/m}^3$  level; plant carotenoids,  $\pm 0.03 \text{ mSPU}$  at the  $0.3 \text{ mSPU}$  level. Chlorophyll *c* determinations are inaccurate and unprecise.

On 28 occasions samples were simultaneously filtered through Whatman GF/C filters with Millipore HA filters beneath. This was done to determine the amount of phytoplankton which was retained by the glass filter compared to that which was retained by the Millipore filter. On the average, 80% (with a range of 64% to 96%) of the phytoplankton was retained by the glass filter as indicated by measurements of optical density at  $665 \text{ m}\mu$ . To compensate for loss through the glass filters, all pigment values were therefore multiplied by a factor of 1.25.

From station H-26 through station H-153 the pigments were extracted for 18 hours; from station H-154 through station P-98 the glass filters and phytoplankton were ground in a tissue grinder by the method of Yentsch and Menzel (1963), and the pigments were extracted for 2 hours. The relationship between carbon fixation and chlorophyll *a* as determined by the two extraction methods was essentially the same. Thus it appears that in this case the two methods of extracting the pigments gave similar results.

#### Carbon fixation

The rate of carbon fixation by surface phytoplankton was measured by the radiocarbon (carbon<sup>14</sup>) method of Steemann Nielsen (1952). Samples of surface water were collected with a polyethylene bucket. They were incubated at sea-surface temperature under natural light between sunrise

and noon or between noon and sunset. Procedures for standardization, counting and the calculations are identical with those given by Forsbergh and Joseph (1964). The same radiocarbon solution was used throughout the cruise. Twenty mC of radioactivity were added to each sample. The precision at the 15 mgC/m<sup>3</sup> day level was  $\pm 1.5$  mgC/m<sup>3</sup> day (from Strickland and Parsons, 1960).

### Zooplankton

Description of larval nets and procedures are given by Japan Ministry of Agriculture and Forestry, Fishery Agency (1964). The surface net was 1.4 m in diameter and was towed 10 minutes at about 2 knots. The sub-surface net was 2.0 m in diameter and was towed 10 minutes at the same speed at about 20 m depth. Volumes of wet zooplankton which were collected by the larval nets were measured by displacement. Volumes of organisms longer than 5 cm were measured separately.

Griffiths (1963), using total variance, has shown that the 95% confidence limits of a single oblique zooplankton tow are  $\frac{1}{3}$  and 3 times the value for the tow, which probably approximate the confidence limits of horizontal tows.

### TREATMENT OF DATA

All data computations and interpolations were processed by a Control Data Corporation 3600 computer (see Appendix D for program methods). At observed depths, density was determined from observed temperature and chlorinity. Both temperature and density values were interpolated at standard depths by two-point logarithmic interpolation. Salinity values at standard depths were computed from these interpolated values of temperature and density.

Only observed oceanographic variables have been illustrated in this report. Computed properties such as the interpolated values, density, transport function and apparent oxygen utilization have not been used.

Sections were drawn so that the distributions of all variables were consistent with one another. Anomalous data points were eliminated on the basis of inconsistencies between the distributions of different properties. These apparently erroneous results have been noted in the data listings. Isopleths were drawn by linear interpolation except in the case of temperature where bathythermograph data were available (Sections I, VII, VIII and IX). In these instances the bathythermograph sections were drawn first, and the isotherms between hydrographic stations then drawn in accordance with the bathythermograph data.

Sections were drawn with a linear scale for either latitude or longitude. The vertical exaggerations of the sections vary, because they are oriented

at different angles to the meridian. The approximate vertical exaggerations are:

Section I	6,700:1	Section VI	7,600:1
Section II	10,900:1	Section VII	8,400:1
Section III	9,300:1	Section VIII	5,700:1
Section IV	10,800:1	Section IX	8,000:1
Section V	5,800:1	Section X	6,800:1

Because samples for pigment determinations were taken at different times of the day, an attempt was made to detect diurnal periodicity in pigment concentrations. Concentrations of chlorophyll *a* were grouped by time of collection. Median and rank tests showed no significant difference in chlorophyll *a* concentrations between time groups. The data were therefore not corrected for time of collection.

Distributions of surface chlorophyll *a* corresponding to the physical and chemical sections are shown by line graphs because observations were too close together to be shown as bar graphs. Values for chlorophyll *a* and carbon fixation are shown on logarithmic scales for ease of reading.

The areal distributions of the biological variables were constructed from running means of values at consecutive stations to eliminate some of the variation owing to patchiness and to the low precision of the methods. The number of observations used in each of the running means was selected so that comparable distances were represented by each of the means. Because observations on carbon-fixation were far apart, individual values were used. The areal distribution of chlorophyll *a* (Fig. 7a) is represented by running means of values from 5 consecutive stations.

To construct the areal distribution of zooplankton volume (Fig. 7c), factors were computed to correct for differences in zooplankton volume owing to diurnal migration, depth dependence and size of sampling net. The net tows can be divided into four types: a) surface tows during the night, b) surface tows during the day, c) 20-m tows during the night, and d) 20-m tows during the day. The volumes collected by these tows were compared at individual stations and between adjacent stations. The median values of ratios for each comparison were used as factors to determine volumes equivalent to surface tows during the night:

Surface tows during the day	4.0
20-m tows during the night	0.2
20-m tows during the day	0.5

The areal distribution of zooplankton is shown by running means of these corrected volumes for three consecutive stations.

The areal distribution of water transparency (Fig. 7d) is represented by running means of Secchi disc depths for three consecutive stations.

## FEATURES OF INTEREST

Strong horizontal gradients dominate the distributions of properties at the southern portions of Sections II and V (Figs. 3, 4). The steeply sloping isotherms, which here are approximately parallel to isopycnals, show the effects of the eastward-flowing west-wind drift between the southern ends of these sections and about 25°S. In these sections at the south, surface Subantarctic Water was cool and of low salinity (13 C, 34<sup>0</sup>/<sub>00</sub>) compared to warm, high-salinity (27 C, 36<sup>0</sup>/<sub>00</sub>) Eastern South Pacific Central Water to the north. Appreciable phosphate and nitrate concentrations and barely detectable silicate concentrations were found near 40°S. Detectable nitrite concentrations were found only in the thermocline, and the amount of nitrite was greatest near 40°S. The productive nature of the Subantarctic Water is demonstrated by relatively high values for chlorophyll *a* and carbon-fixation in the southern portions of these sections.

Evidence of the Peru-Chile Undercurrent (Wooster and Gilmartin, 1961) is seen in both Sections III and IV (Fig. 3) between 200 and 300 m. The eastern portions of these sections show a core of relatively high-salinity, nutrient-rich and oxygen-poor water which is attributed to the southward-flowing undercurrent.

The northern edge of the Peru Current is clearly shown in Sections VI and VII (Figs. 4b; 5b) by the sharp gradient in surface salinity across the equator where high-salinity (>35<sup>0</sup>/<sub>00</sub>) water from the Peru Current meets low-salinity (<33<sup>0</sup>/<sub>00</sub>) water from the Panama Bight. The westward extension of the Peru Current affects the surface distribution of properties as shown in Section V (Fig. 4). Surface water with high nutrient concentrations near 10°S probably originated in the upwelling areas near the coast of Peru and Chile and was transported offshore by the Peru Current. These waters had high values of chlorophyll *a* and carbon-fixation. The thermocline in the westward extension of the Peru Current contained particularly high nitrite concentrations.

The dissolved-oxygen content decreased toward the north at all depths as shown in Section V (Fig. 4c). This feature has been noted before and is associated with an east-west oriented, low-oxygen layer in the intermediate water of the eastern tropical Pacific Ocean (Wooster and Cromwell, 1958; Bennett, 1963). There are two such low-oxygen layers in the tropical Pacific; one north of the equator and one south of the equator. The northern one appears to be centered at about 15°N in Section VIII (Fig. 5c) and at about 12°N in Section X. The southern low-oxygen layer is centered near 10°S in Sections V and VI (Fig. 4c) and at 3°S in Section X (Fig. 6c). Both the northern and southern low-oxygen layers are markedly narrower in the west than in the east. East of the Galapagos Islands in Sections VI and VII, the low-oxygen layer is continuous across the equator.

The presence of zonal surface currents is indicated by the temperature structure in Sections I, VII, IX and X (Figs. 2a, d; 5a, d; 6a, d). The North

and South Equatorial Currents cause the isotherms to slope upward toward the equator. These currents appear to be strongest in the western sections (Sections I, X and IX). The North Equatorial Countercurrent causes the isotherms to slope upward toward the north. This countercurrent appears between 3°N and 8°N in Section I, between 4°N and 10°N in both Sections X and IX and between 5°N and 7°N in Section VIII.

Isotherms which slope upward toward the south as shown in Section I (Figs. 2a, d) between 8°S and 10°S, Section XI (Fig. 4a) between 8°S and 10°S, Section VII (Figs. 5a, d) between 7°S and 9°S, Section VIII (Fig. 5d) between 7°S and 9°S and in Section IX (Fig. 6d) between 6°S and 8°S may be taken as evidence of a weak South Equatorial Countercurrent first described by Reid (1959). In Sections VIII and IX this sloping of isotherms is not well defined, and in Section X no such sloping is apparent.

Evidence for the Equatorial Undercurrent or Cromwell Current (Knauss, 1960) is shown by the following features in each section crossing the equator: in Section I, by a weak thermocline (Figs. 2a, d) and a slight trough in oxygen isopleths (Fig. 2c); in Section VI, by a weak thermocline (Fig. 4a), a trough in oxygen isopleths (Fig. 4c), and troughs in phosphate, nitrate, and silicate isopleths (Figs. 4d, e, g); in Section VII, by a weak thermocline (Figs. 5a, d) and a trough in oxygen isopleths (Fig. 5c); in Section VIII by a slightly weak thermocline (Fig. 5d) and a trough in oxygen isopleths (Fig. 5c); and in Sections IX and X, by low surface temperature and a weak thermocline (Fig. 6a, d) and a trough in oxygen isopleths (Fig. 6c). This trough in oxygen isopleths was markedly wider in the east than in the west, a phenomenon which may be associated with mixing caused by shear from the eastward flowing Undercurrent. The center of the Undercurrent, as indicated by the weak thermocline, shoaled from west to east from about 180 m at 180° to about 100 m at 100°W.

From the areal distributions of biological variables (Figs. 7a, b, c), it can be seen that primary production and the relative abundance of phytoplankton and zooplankton are high near the coast of Chile and moderately high near 40°S in Subantarctic Water. Sections II, III and IV (Figs. 3d, e, g) show surface nutrient concentrations to be relatively high in both of these areas. In the central south Pacific, however, primary production and standing crops are very low, which is consistent with low nutrient concentrations in this area (Section II, Fig. 3). In the equatorial zone plankton abundance and primary production are high in the easternmost region and decrease toward the west. Equatorial Sections VII, VIII, IX, X and I (Figs. 5a, d; 6a, d; 2a, d) show the thermocline to be shallow in the east and to deepen toward the west. The high productivity and plankton abundance in the east may be related to rapid replenishment of nutrients facilitated by a shallow thermocline, and to the south and east of the Galapagos Islands it may also be related to nutrient-rich water originating from coastal upwelling. The coincidence of zones of relatively low plankton production and abundance centered at 7°N between 115°W and 100°W (Figs. 7a, b, c) may

be related to the North Equatorial Countercurrent located at this latitude (Sections VIII, IX and X). The distribution of Secchi disc depths (Fig. 7d) corresponds to the distributions of the biological variables, with the less transparent water occurring in biologically-rich areas.

## LIST OF FIGURES—LISTA DE LAS FIGURAS

- FIGURE 1.** Track chart and hydrographic station positions. Roman numerals refer to the sections.
- FIGURA 1.** Mapa del derrotero y posiciones de las estaciones hidrográficas. Los números romanos se refieren a las secciones.
- FIGURE 2.** Distributions of properties along Section I (Oct. 6-12, 1963)
- FIGURA 2.** Distribuciones de las propiedades a lo largo de la Sección I (oct. 6-12, 1963)
- a) Temperature, contour interval = 2 C  
Temperatura, intervalo del contorno = 2 C
  - b) Salinity, contour interval =  $0.2^{\circ}/_{\infty}$   
Salinidad, intervalo del contorno =  $0.2^{\circ}/_{\infty}$
  - c) Dissolved oxygen, contour interval = 1.0 ml/L  
Oxígeno disuelto, intervalo del contorno = 1.0 ml/L
  - d) Bathythermograph temperature, contour interval = 2 C  
Temperatura batitermográfica, intervalo del contorno = 2 C
- FIGURE 3.** Distributions of properties along Sections II (Oct. 18-Nov. 15, 1963), III (Nov. 16-23, 1963), and IV (Dec. 5-8, 1963).
- FIGURA 3.** Distribuciones de las propiedades a lo largo de las Secciones II (oct. 18-nov. 15, 1963), III (nov. 16-23, 1963), y IV (dic. 5-8, 1963).
- a) Temperature, contour interval = 2 C  
Temperatura, intervalo del contorno = 2 C
  - b) Salinity, contour interval =  $0.2^{\circ}/_{\infty}$   
Salinidad, intervalo del contorno =  $0.2^{\circ}/_{\infty}$
  - c) Dissolved oxygen, contour interval = 1.0 ml/L  
Oxígeno disuelto, intervalo del contorno = 1.0 ml/L
  - d) Inorganic phosphate-phosphorus, contour interval =  $0.4 \mu\text{g-at/L}$   
Fósforo inorgánico en forma de fosfato, intervalo del contorno =  $0.4 \mu\text{g-at/L}$
  - e) Inorganic nitrate-nitrogen, contour interval =  $5 \mu\text{g-at/L}$   
Nitrógeno inorgánico en forma de nitrato, intervalo del contorno =  $5 \mu\text{g-at/L}$
  - f) Inorganic nitrite-nitrogen, contour interval =  $0.2 \mu\text{g-at/L}$   
Nitrógeno inorgánico en forma de nitrito, intervalo del contorno =  $0.2 \mu\text{g-at/L}$
  - g) Reactive silicate-silicon, contour interval =  $5 \mu\text{g-at/L}$   
Silicio reactivo en forma de silicato, intervalo del contorno =  $5 \mu\text{g-at/L}$
  - h) Surface distributions of chlorophyll *a*,  $\text{mg}/\text{m}^3$  and carbon fixation,  $\text{mg}/\text{m}^3\text{day}$   
Distribuciones en la superficie de la clorofila *a*,  $\text{mg}/\text{m}^3$  y fijación del carbono,  $\text{mg}/\text{m}^3\text{día}$
- FIGURE 4.** Distributions of properties along Sections V (Dec. 8-21, 1963) and VI (Dec. 21-26, 1963)
- FIGURA 4.** Distribuciones de las propiedades a lo largo de las Secciones V (dic. 8-21, 1963) y VI (dic. 21-26, 1963)
- a) Temperature, contour interval = 2 C  
Temperatura, intervalo del contorno = 2 C
  - b) Salinity, contour interval =  $0.2^{\circ}/_{\infty}$   
Salinidad, intervalo del contorno =  $0.2^{\circ}/_{\infty}$
  - c) Dissolved oxygen, contour interval = 1.0 ml/L  
Oxígeno disuelto, intervalo del contorno = 1.0 ml/L
  - d) Inorganic phosphate-phosphorus, contour interval =  $0.4 \mu\text{g-at/L}$   
Fósforo inorgánico en forma de fosfato, intervalo del contorno =  $0.4 \mu\text{g-at/L}$
  - e) Inorganic nitrate-nitrogen, contour interval =  $5 \mu\text{g-at/L}$   
Nitrógeno inorgánico en forma de nitrato, intervalo del contorno =  $5 \mu\text{g-at/L}$
  - f) Inorganic nitrite-nitrogen, contour interval =  $0.2 \mu\text{g-at/L}$   
Nitrógeno inorgánico en forma de nitrito, intervalo del contorno =  $0.2 \mu\text{g-at/L}$



- g) Reactive silicate-silicon, contour interval =  $0.2 \mu\text{g-at/L}$   
Silicio reactivo en forma de silicato, intervalo del contorno =  $0.2 \mu\text{g-at/L}$
- h) Surface distributions of chlorophyll *a*,  $\text{mg/m}^3$  and carbon fixation,  $\text{mg/m}^3\text{day}$   
Distribuciones en la superficie de la clorofila *a*,  $\text{mg/m}^3$  y fijación del carbono,  $\text{mg/m}^3\text{día}$

FIGURE 5. Distributions of properties along Sections VII (Jan. 4-10, 1964) and VIII (Jan. 10-22, 1964)

FIGURA 5. Distribuciones de las propiedades a lo largo de las Secciones VII (enero 4-10, 1964) y VIII (enero 10-22, 1964)

- a) Temperature, contour interval = 2 C  
Temperatura, intervalo del contorno = 2 C
- b) Salinity, contour interval =  $0.2\text{‰}$   
Salinidad, intervalo del contorno =  $0.2\text{‰}$
- c) Dissolved oxygen, contour interval = 1.0 ml/L  
Oxígeno disuelto, intervalo del contorno = 1.0 ml/L
- d) Bathythermograph temperature, contour interval = 2 C  
Temperatura batitermográfica, intervalo del contorno = 2 C
- e) Surface distributions of chlorophyll *a*,  $\text{mg/m}^3$  and carbon fixation,  $\text{mg/m}^3\text{day}$   
Distribuciones en la superficie de la clorofila *a*,  $\text{mg/m}^3$  y fijación del carbono,  $\text{mg/m}^3\text{día}$

FIGURE 6. Distributions of properties along Sections IX (Jan. 31-Feb. 14, 1964) and X (Feb. 14-23, 1964)

FIGURA 6. Distribuciones de las propiedades a lo largo de las Secciones X (enero 31-feb. 14, 1964) y X (feb. 14-23, 1964)

- a) Temperature, contour interval = 2 C  
Temperatura, intervalo del contorno = 2 C
- b) Salinity, contour interval =  $0.2\text{‰}$   
Salinidad, intervalo del contorno =  $0.2\text{‰}$
- c) Dissolved oxygen, contour interval = 1.0 ml/L  
Oxígeno disuelto, intervalo del contorno = 1.0 ml/L
- d) Bathythermograph temperature, contour interval = 2 C  
Temperatura batitermográfica, intervalo del contorno = 2 C
- e) Surface distributions of chlorophyll *a*,  $\text{mg/m}^3$  and carbon fixation,  $\text{mg/m}^3\text{day}$   
Distribuciones en la superficie de la clorofila *a*,  $\text{mg/m}^3$  y fijación del carbono,  $\text{mg/m}^3\text{día}$

FIGURE 7. Distributions of biological properties at the surface and water transparency.

FIGURA 7. Distribuciones de las propiedades biológicas en la superficie y transparencia del agua.

- a) Chlorophyll *a*,  $\text{mg/m}^3$   
Clorofila *a*,  $\text{mg/m}^3$
- b) Carbon fixation,  $\text{mg/m}^3\text{day}$   
Fijación del carbono,  $\text{mg/m}^3\text{día}$
- c) Zooplankton volume (organisms less than 5 cm long only), ml/net tow  
Volumen del zooplancton (solamente organismos de menos de 5 cm de largo), ml por arrastre
- d) Secchi disc depth, m  
Profundidad del disco Secchi, m

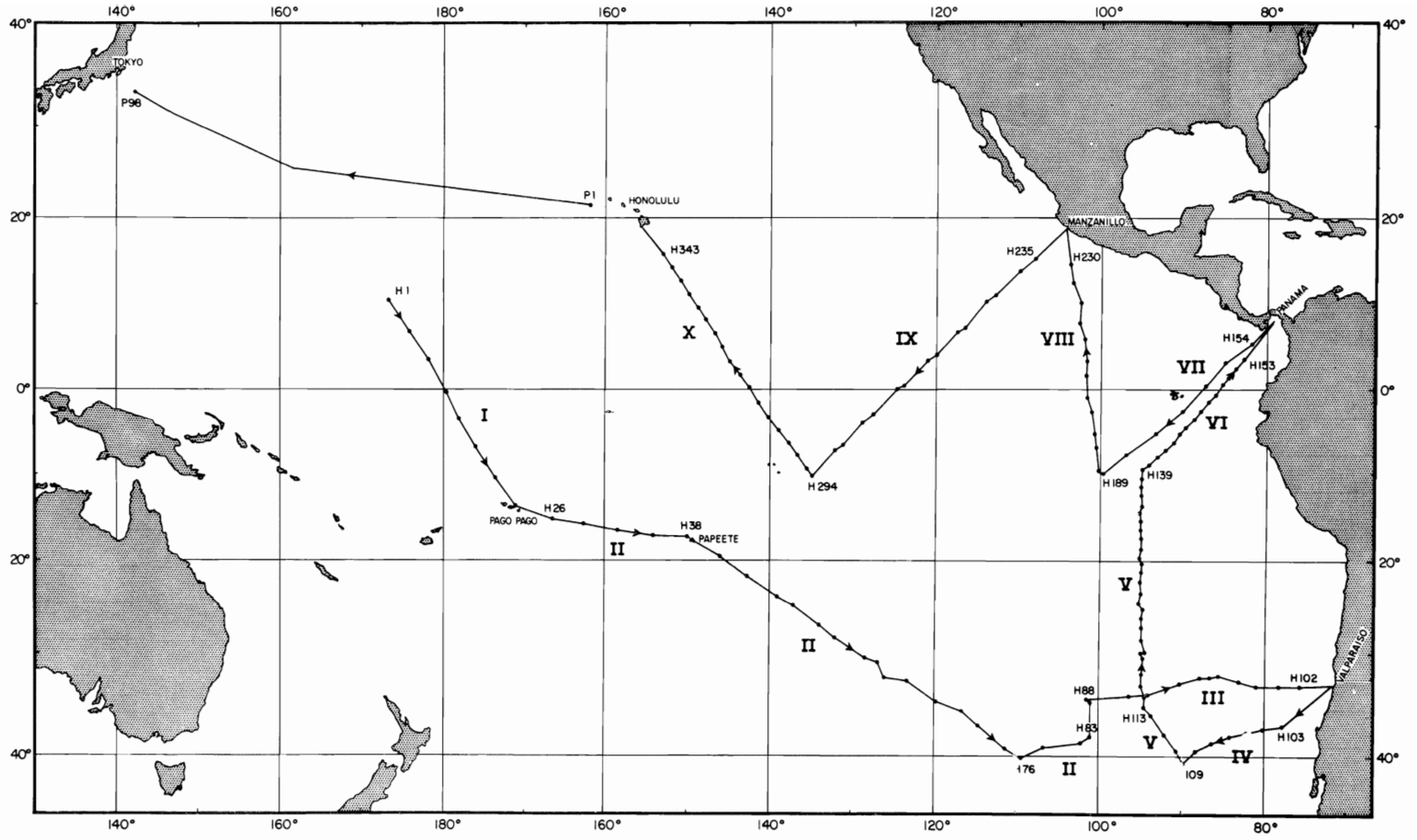


FIGURE 1 — FIGURA 1

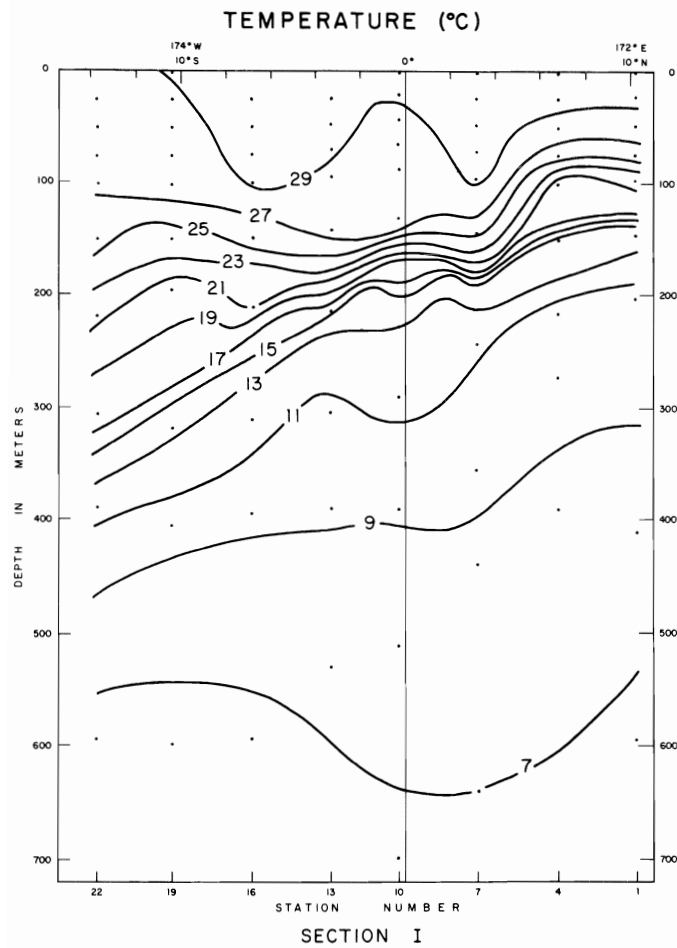


FIGURE 2a — FIGURA 2a

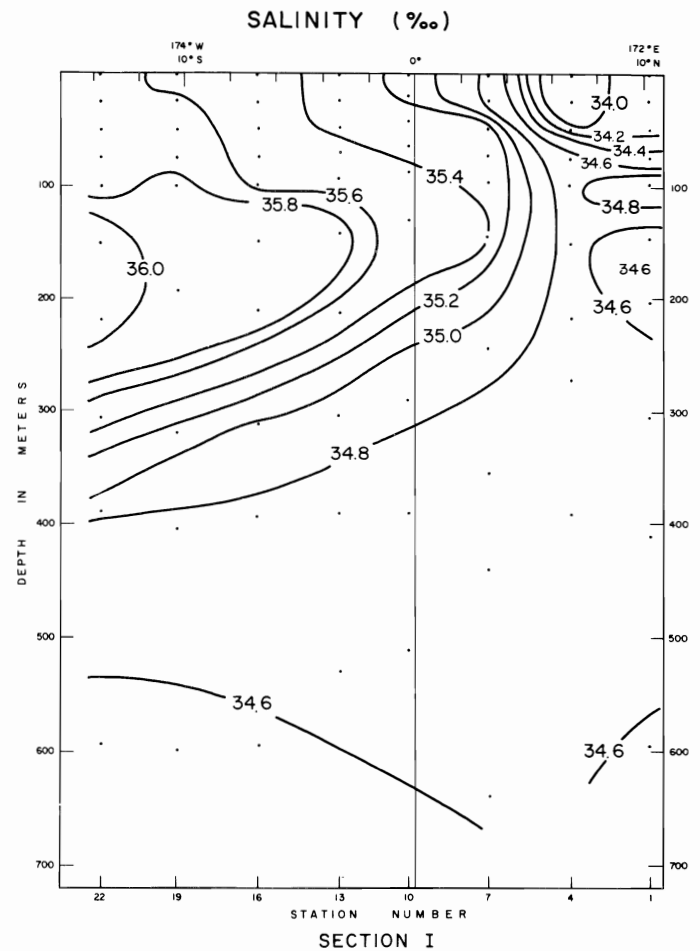


FIGURE 2b — FIGURA 2b

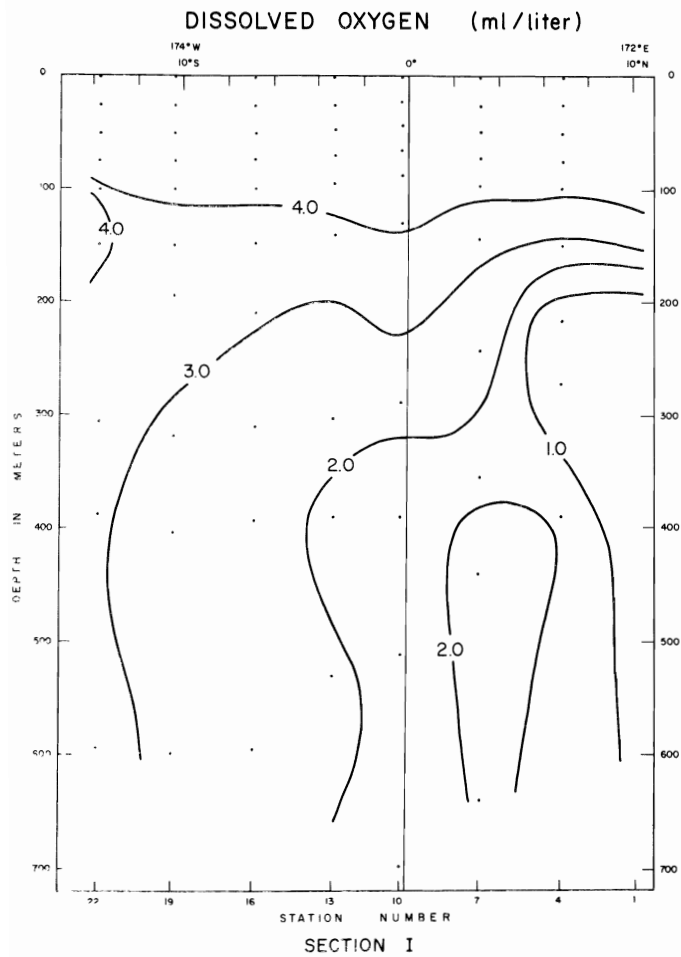


FIGURE 2c — FIGURA 2c

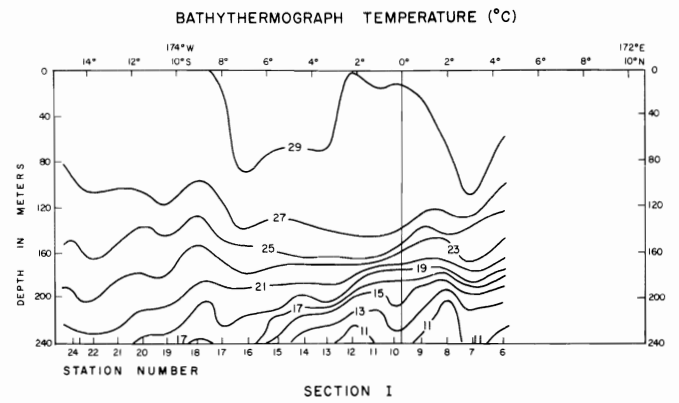
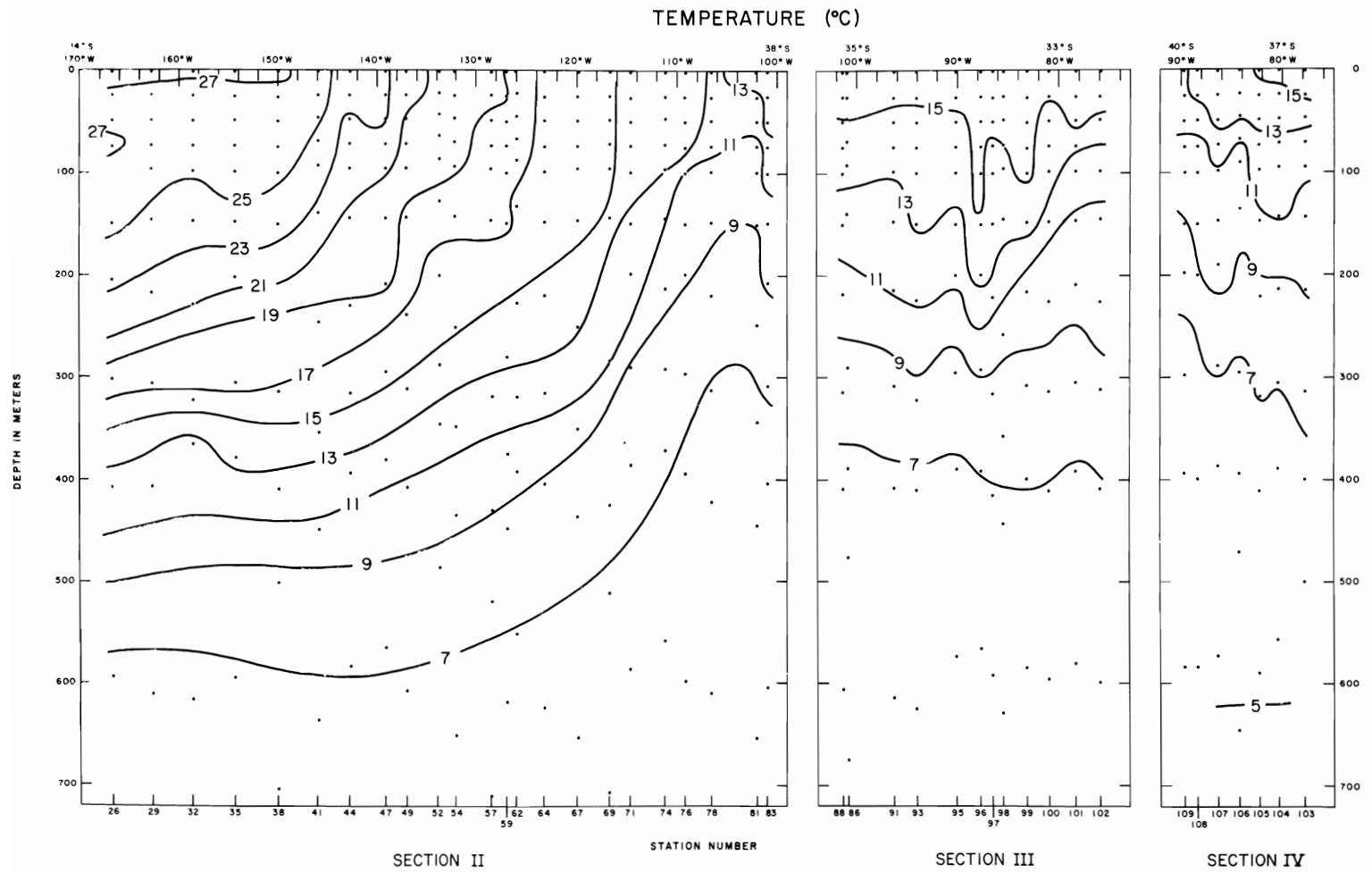


FIGURE 2d — FIGURA 2d



EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

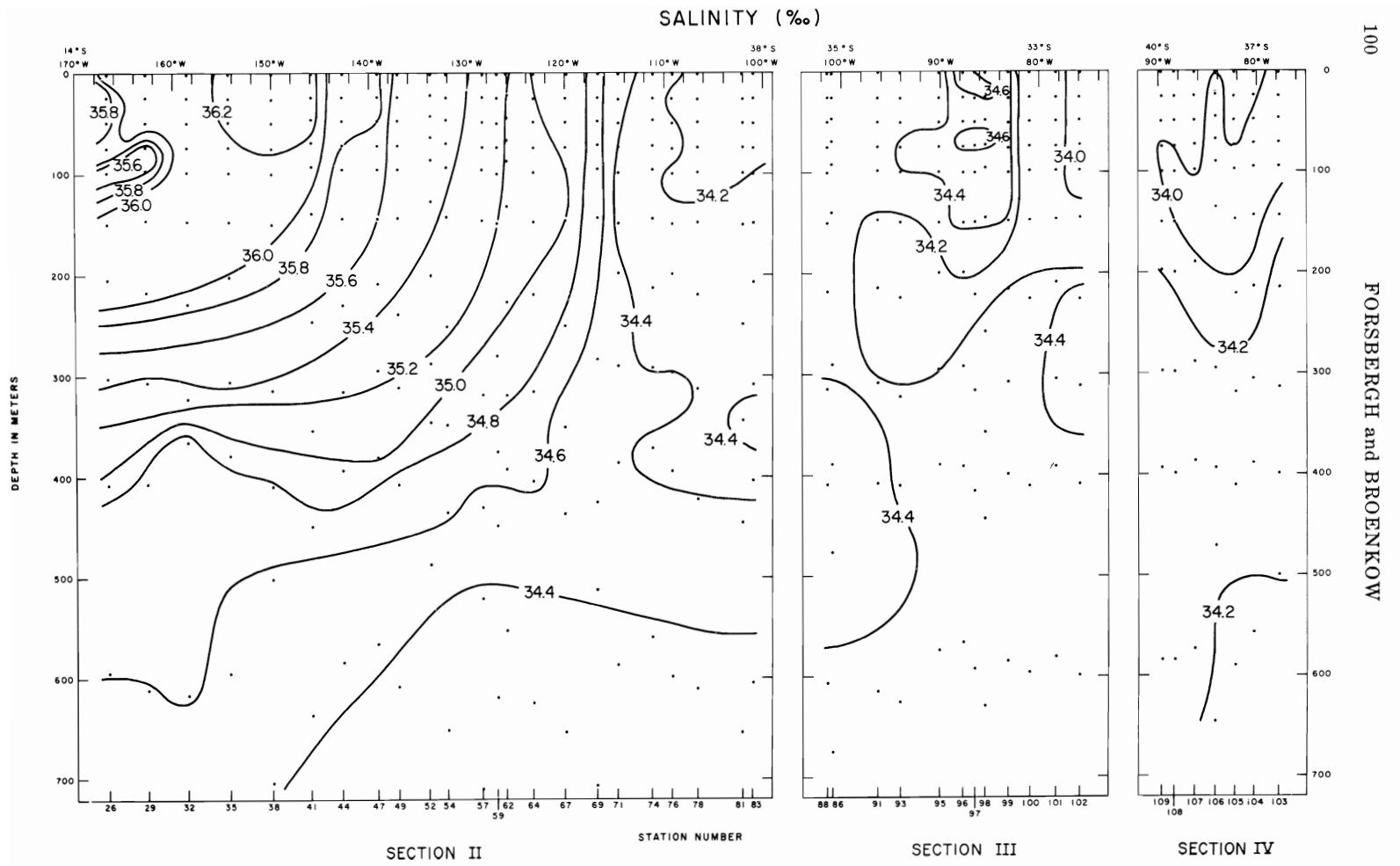


FIGURE 3b — FIGURA 3b

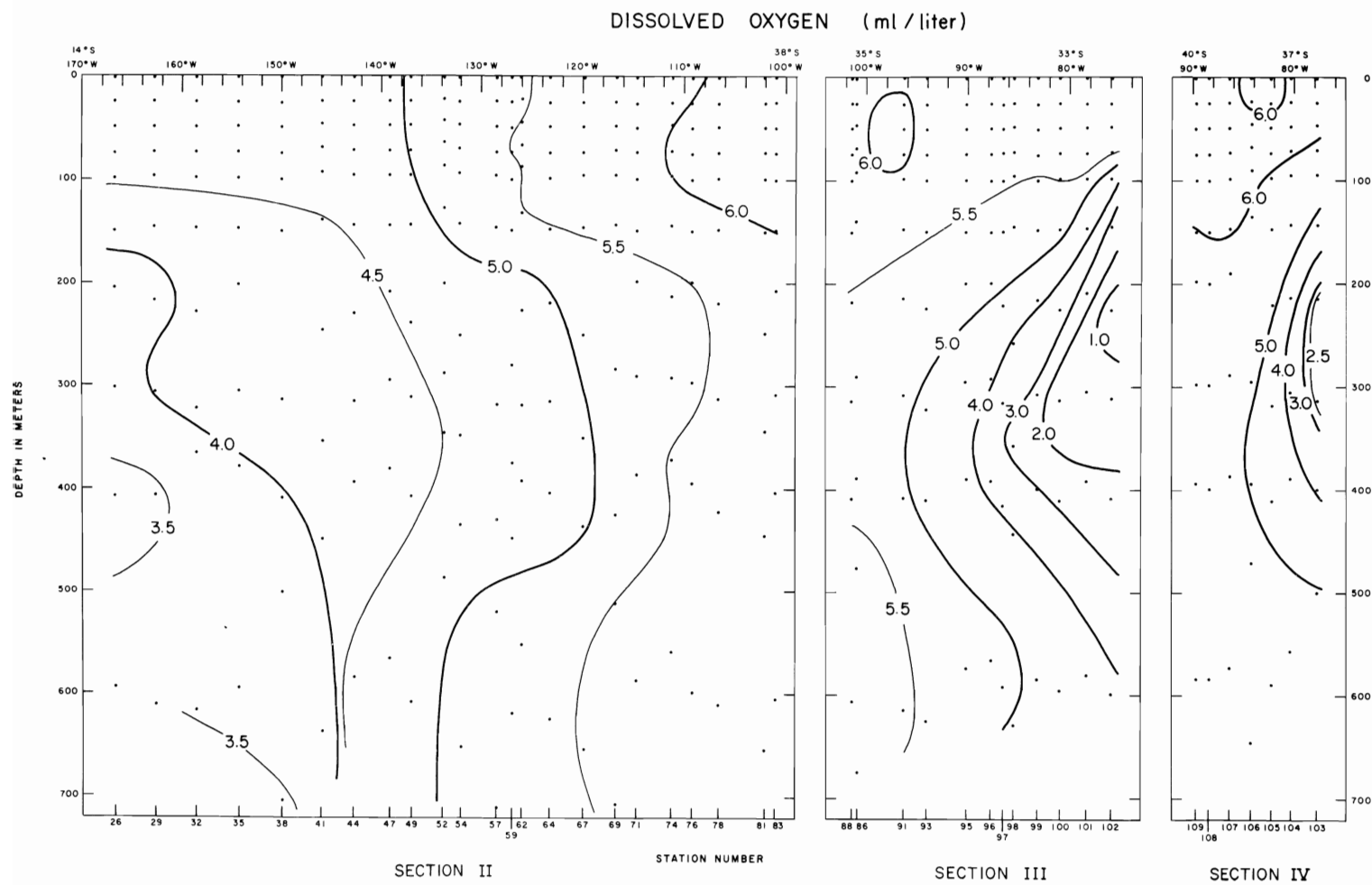


FIGURE 3c — FIGURA 3c

INORGANIC PHOSPHATE - PHOSPHORUS ( $\mu\text{g-at./liter}$ )

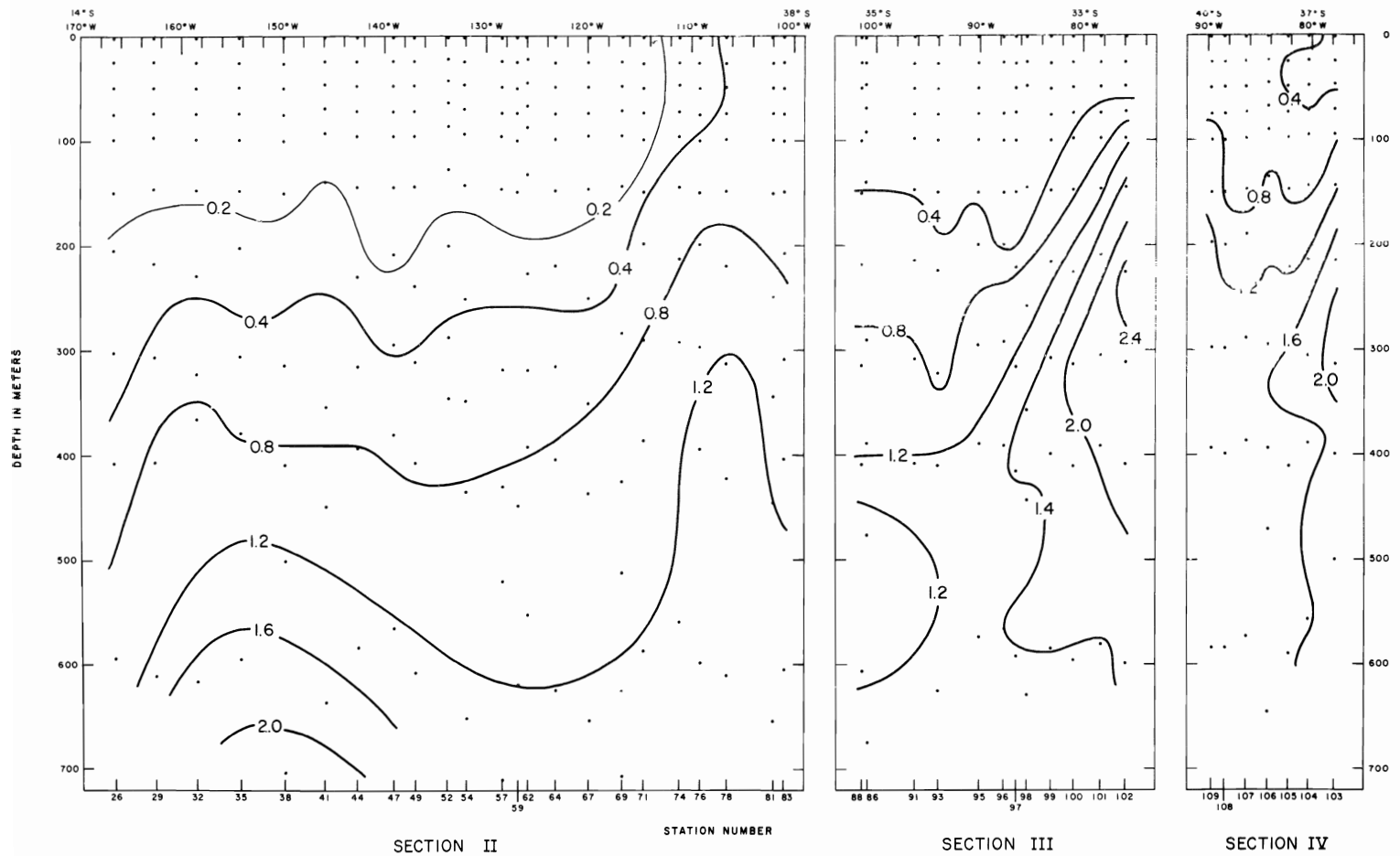


FIGURE 3d — FIGURA 3d



INORGANIC NITRATE-NITROGEN ( $\mu\text{g-at./liter}$ )

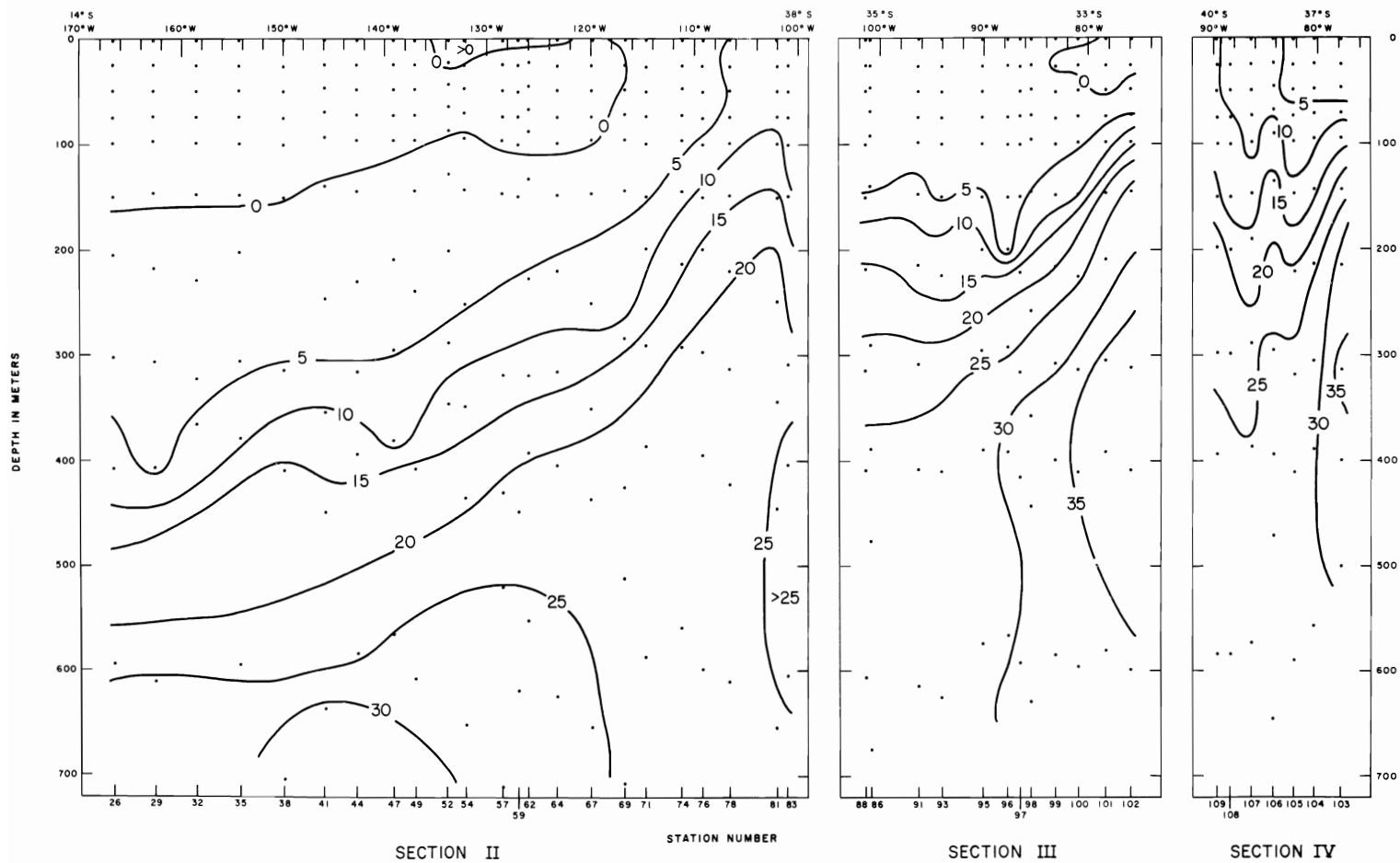
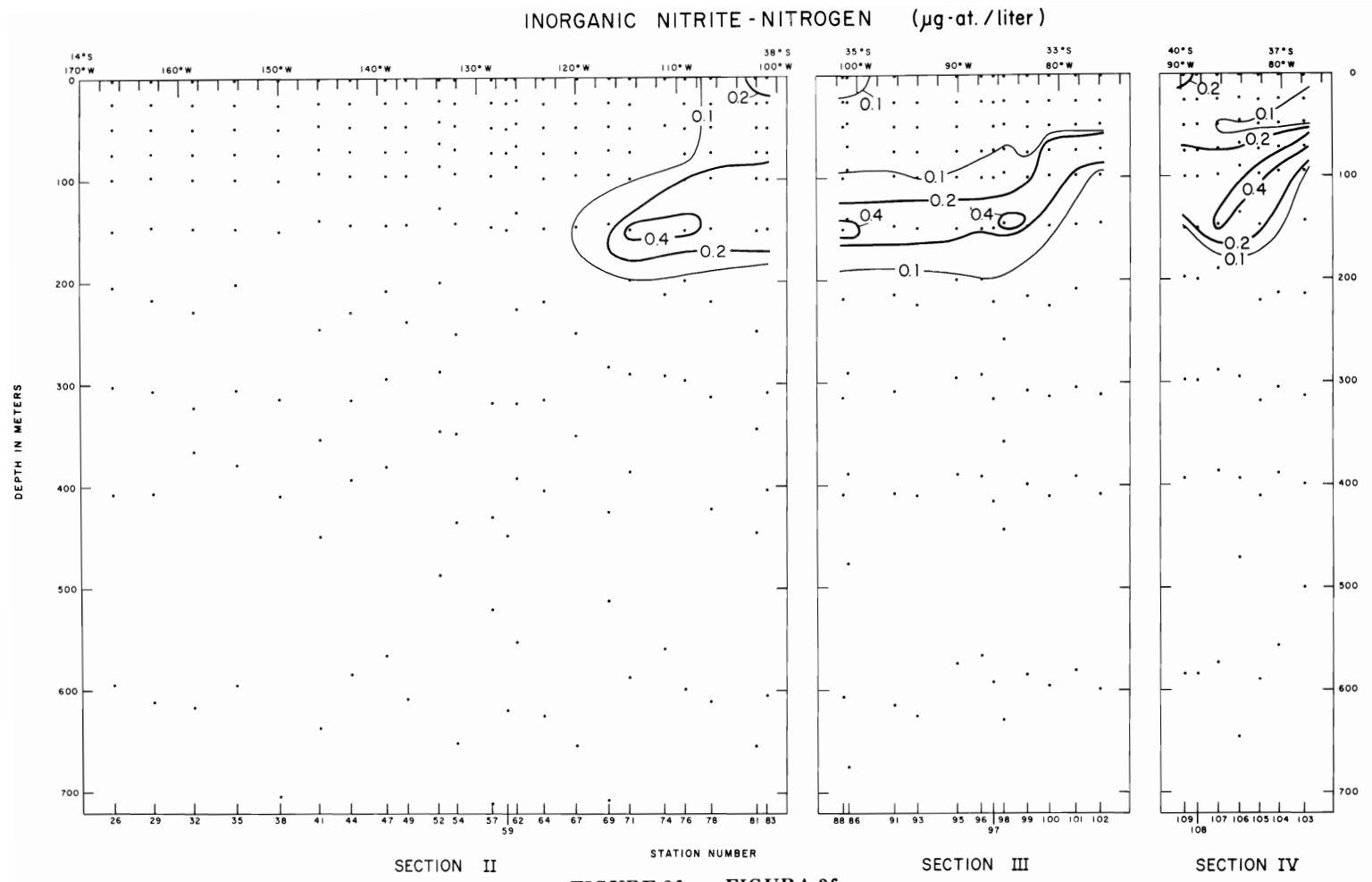
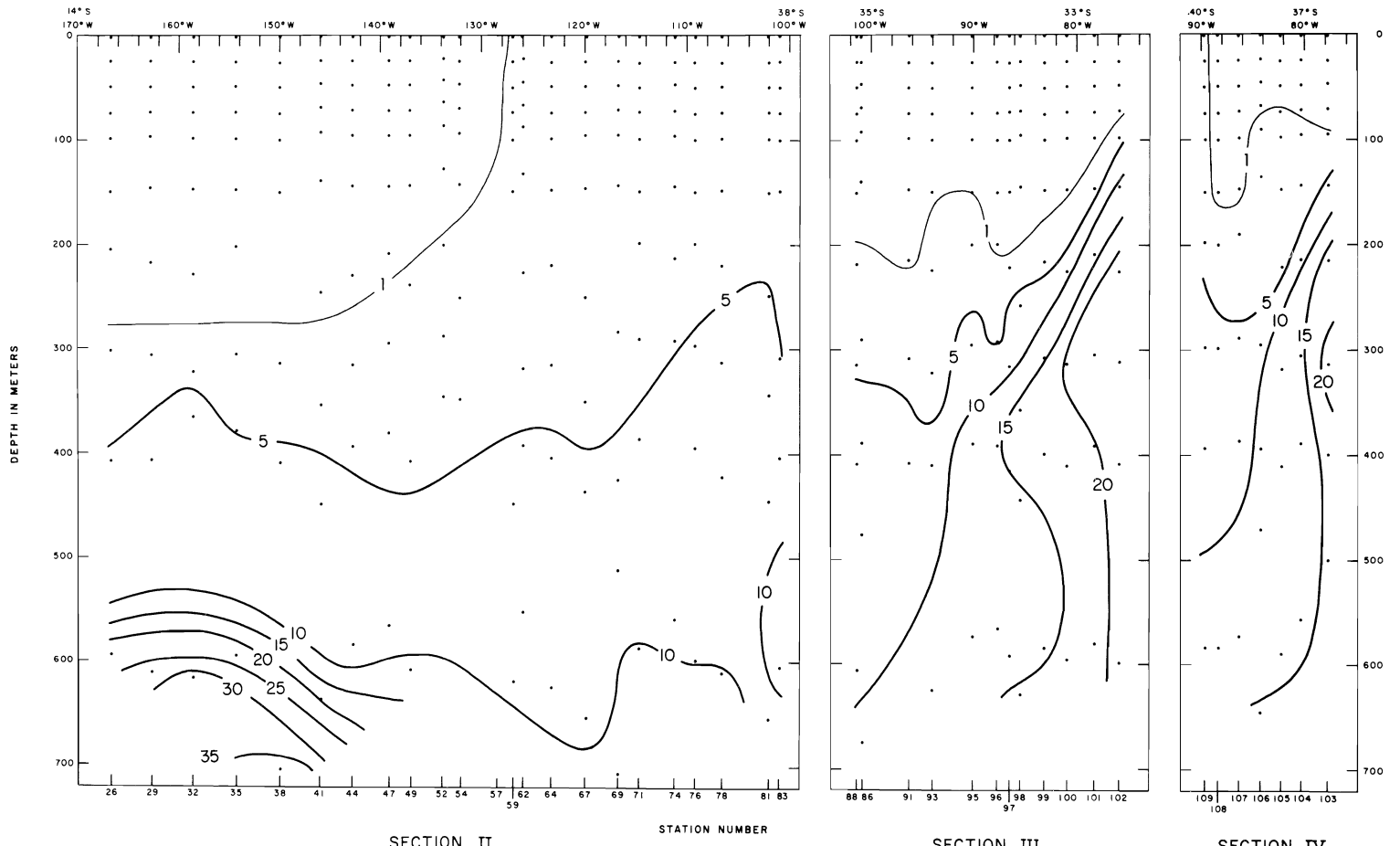


FIGURE 3e — FIGURA 3e



REACTIVE SILICATE - SILICON ( $\mu\text{g-at./liter}$ )



SECTION II

FIGURE 3g — FIGURA 3g

SECTION III

SECTION IV

EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

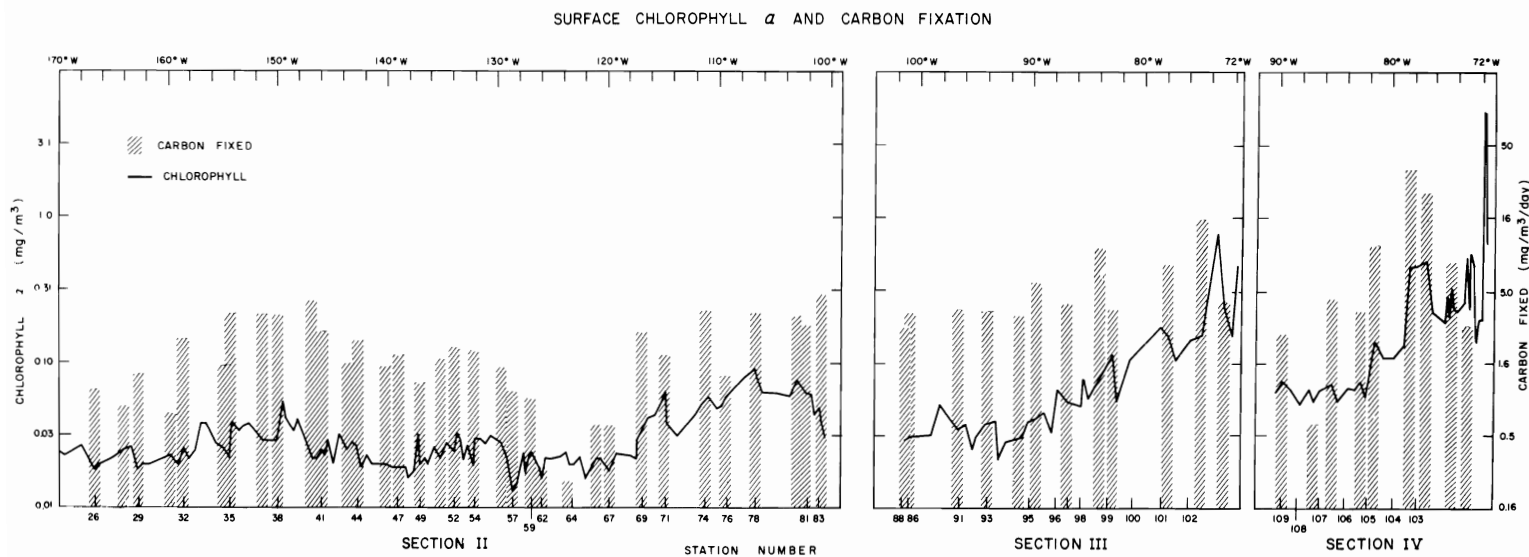
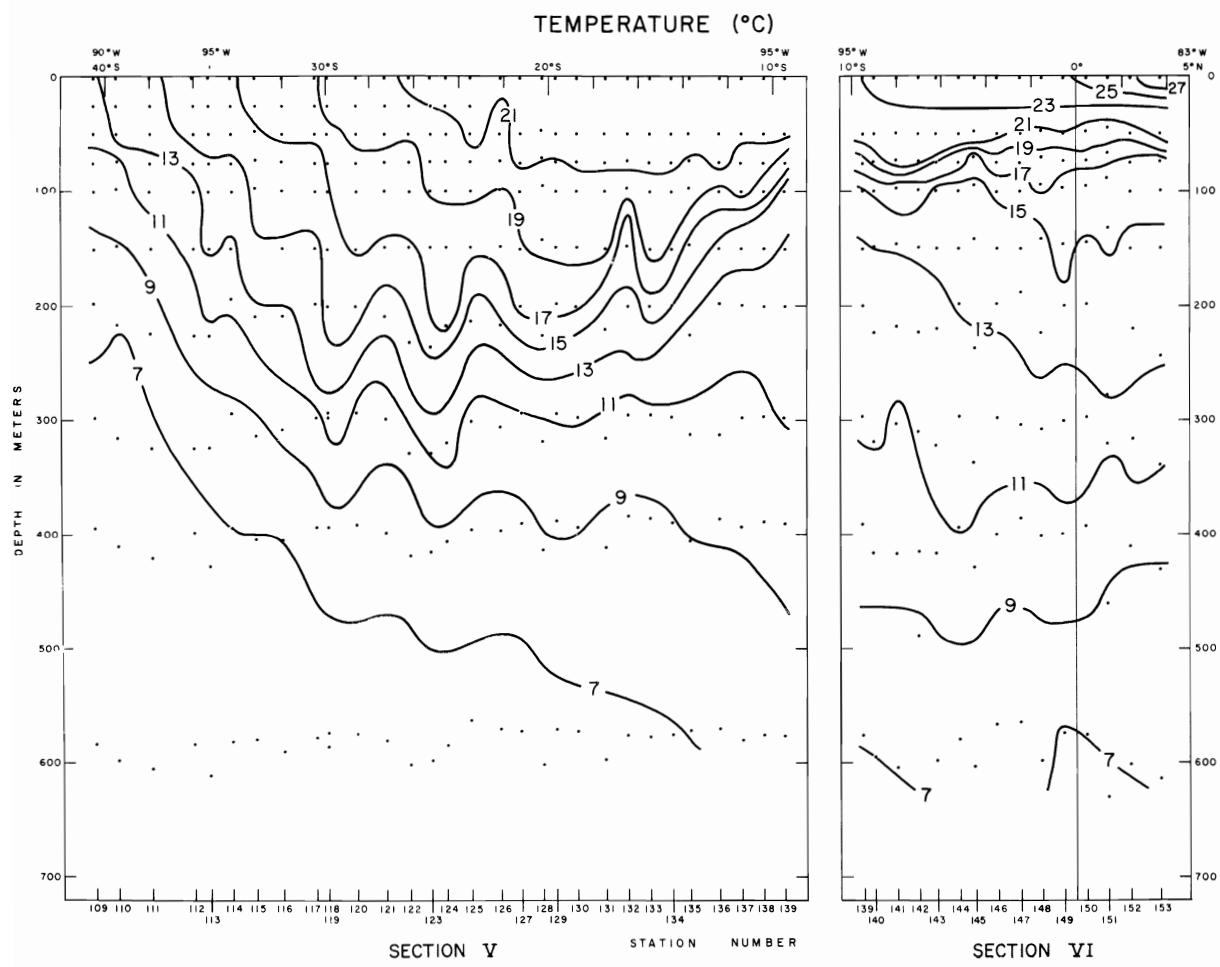


FIGURE 3h — FIGURA 3h



**FIGURE 4a — FIGURA 4a**

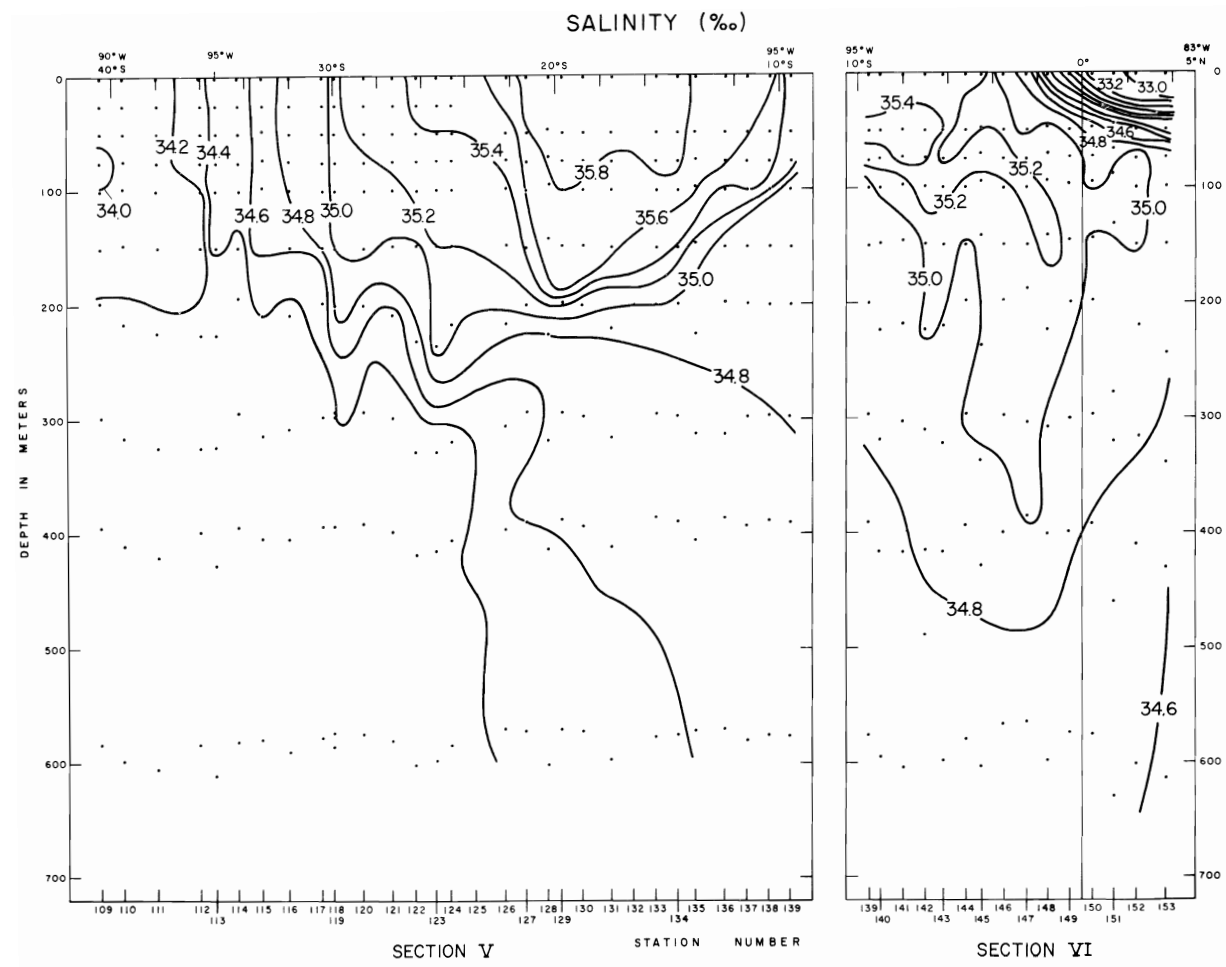
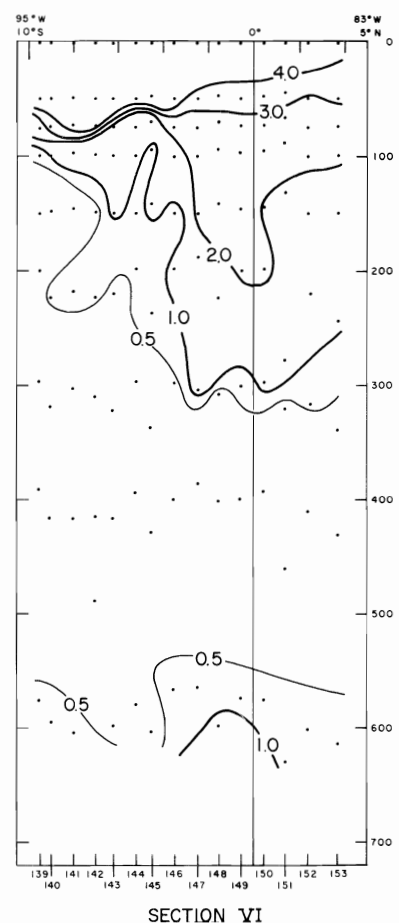
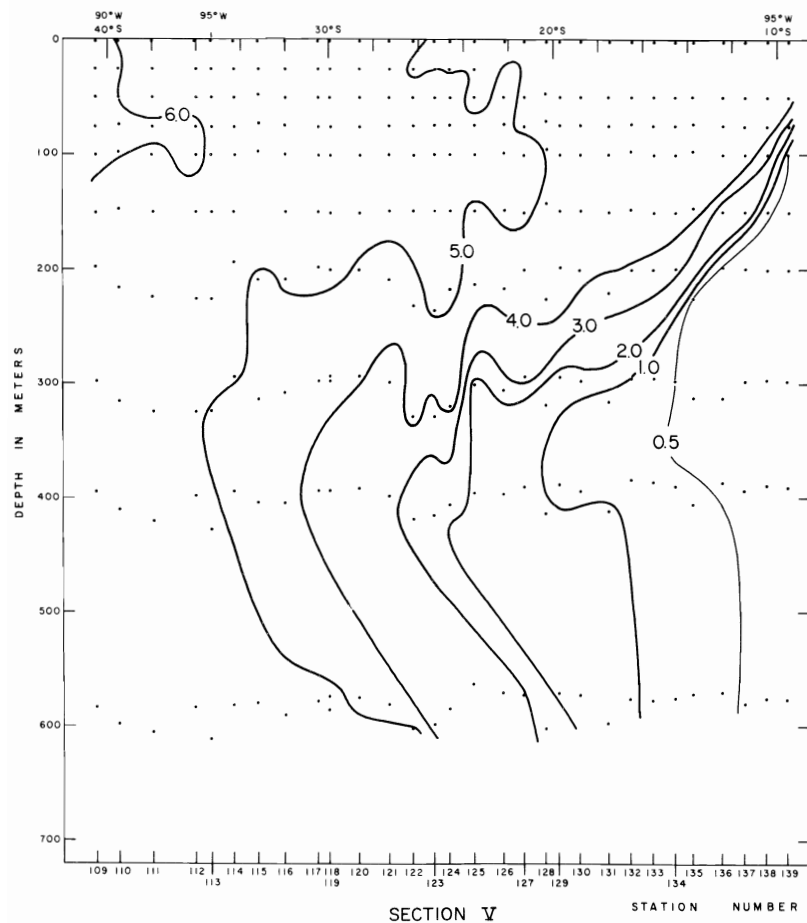


FIGURE 4b — FIGURA 4b

DISSOLVED OXYGEN ( ml/liter )



SECTION V

SECTION VI

FIGURE 4c — FIGURA 4c

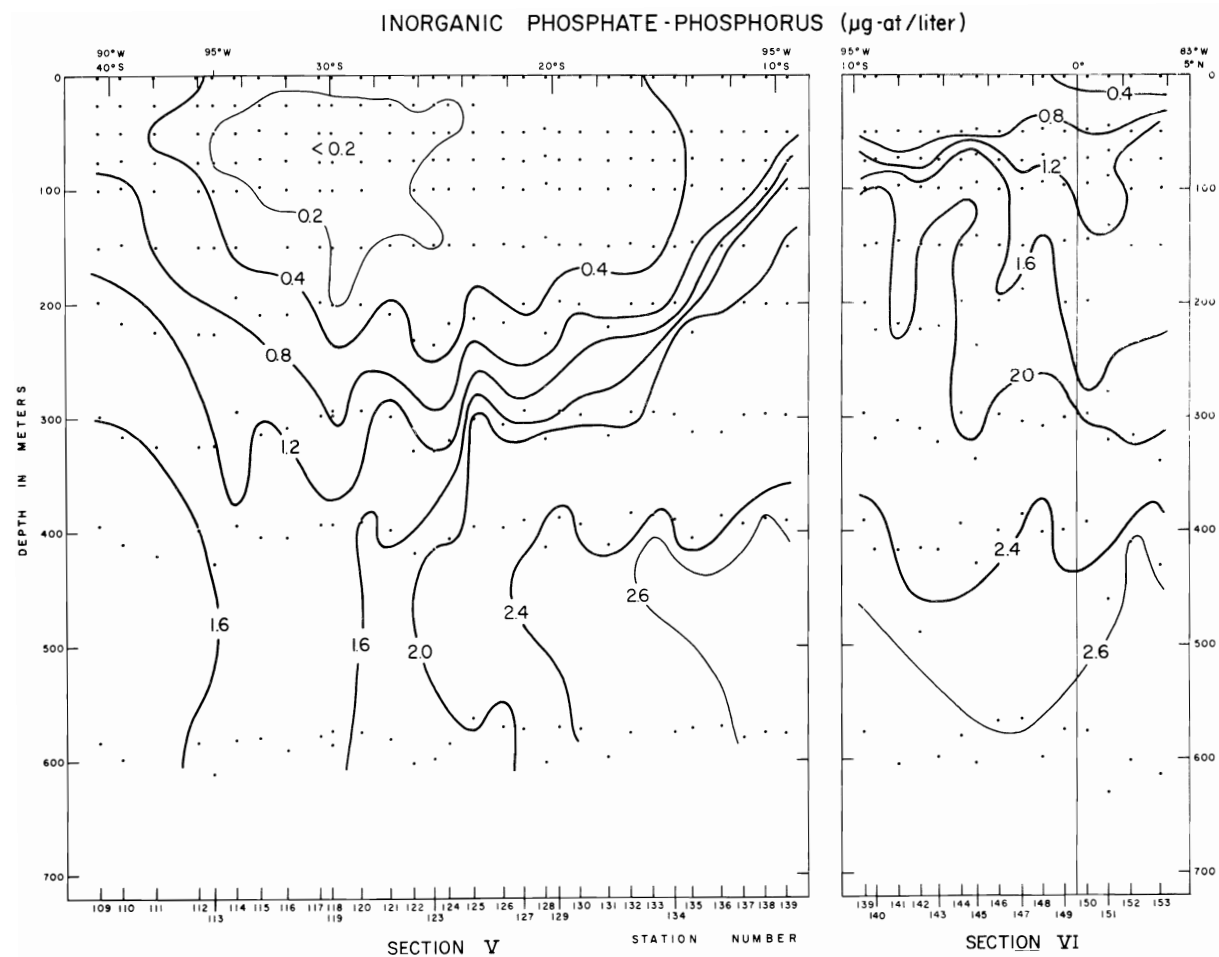


FIGURE 4d — FIGURA 4d



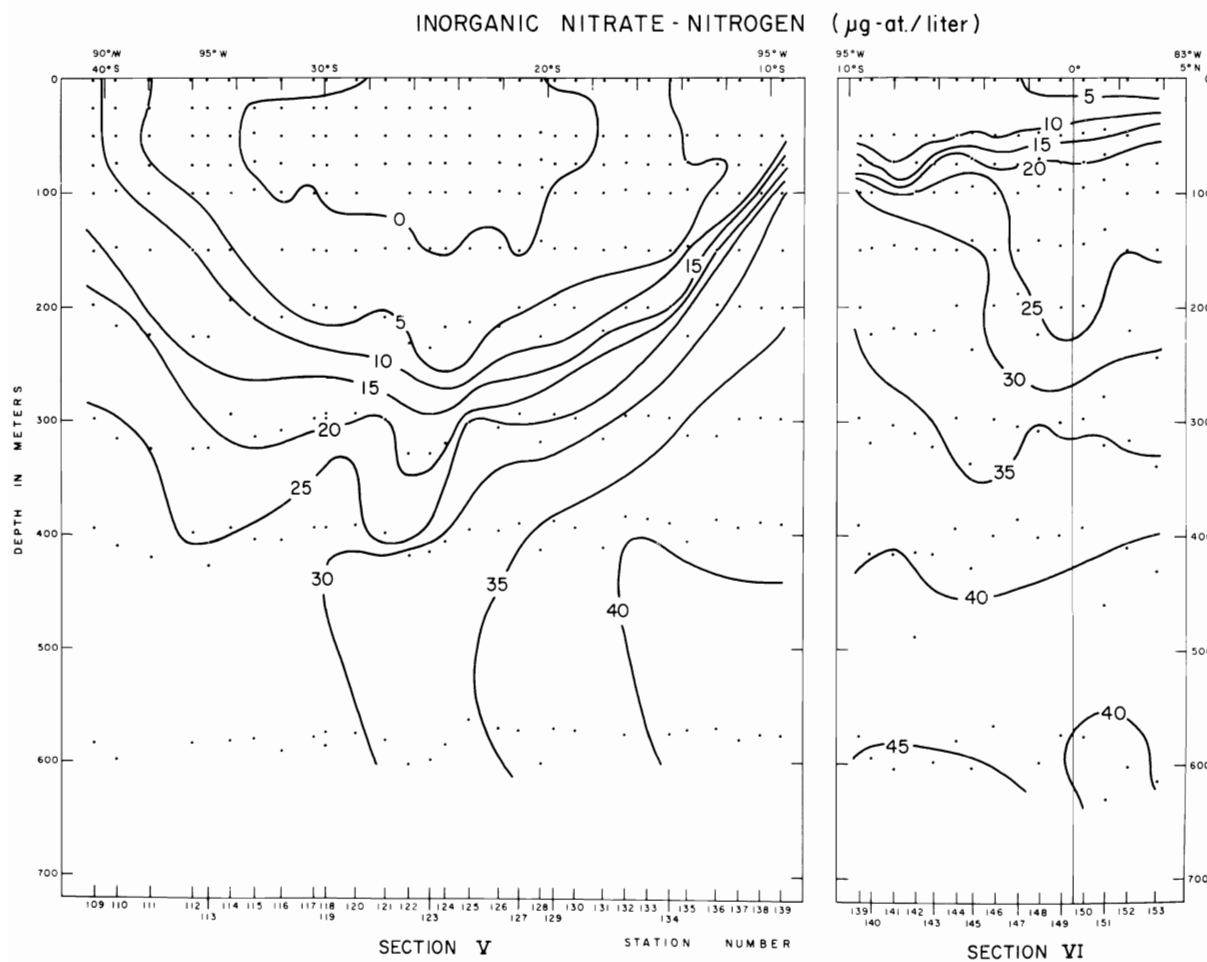
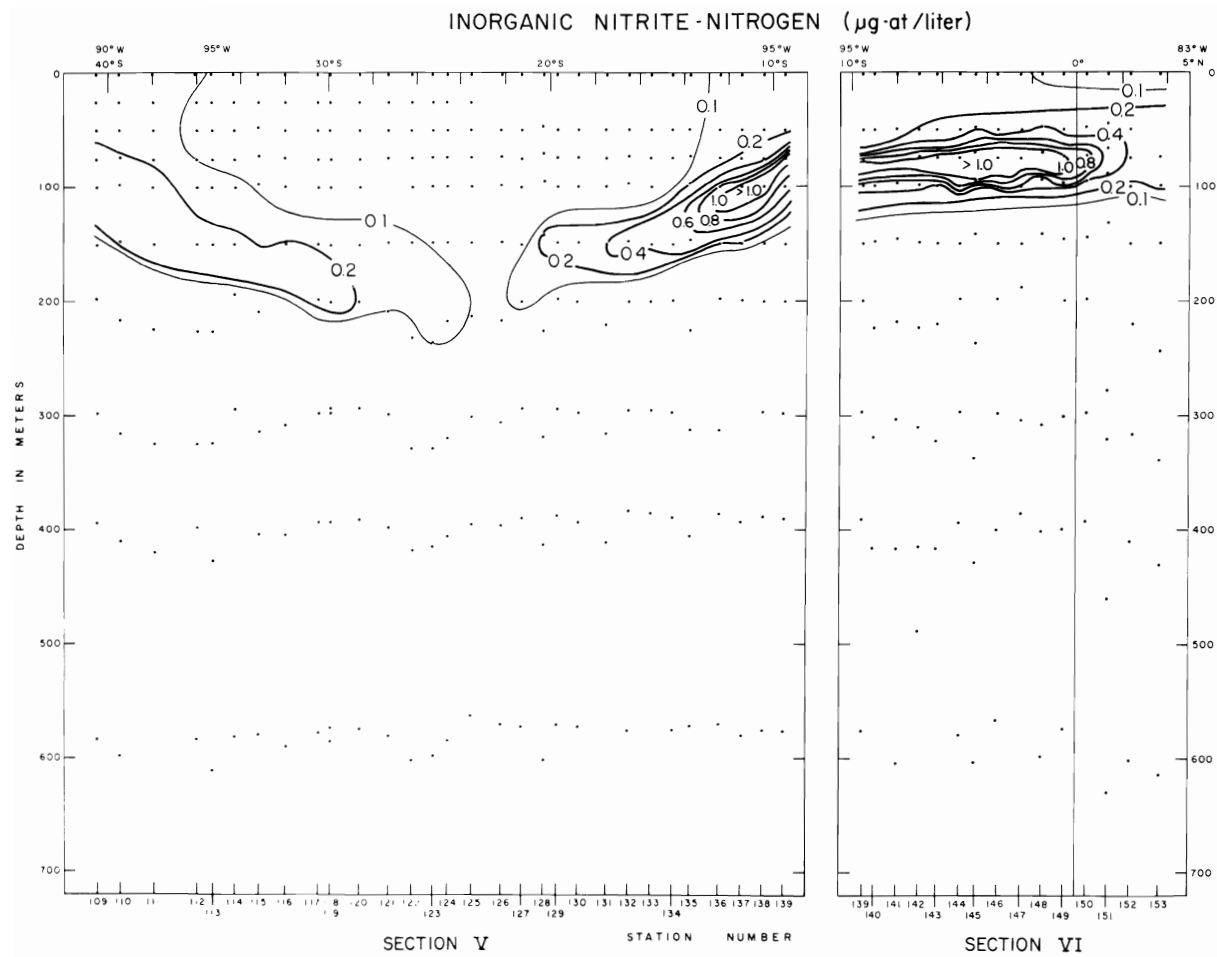


FIGURE 4e — FIGURA 4e



**FIGURE 4f — FIGURA 4f**



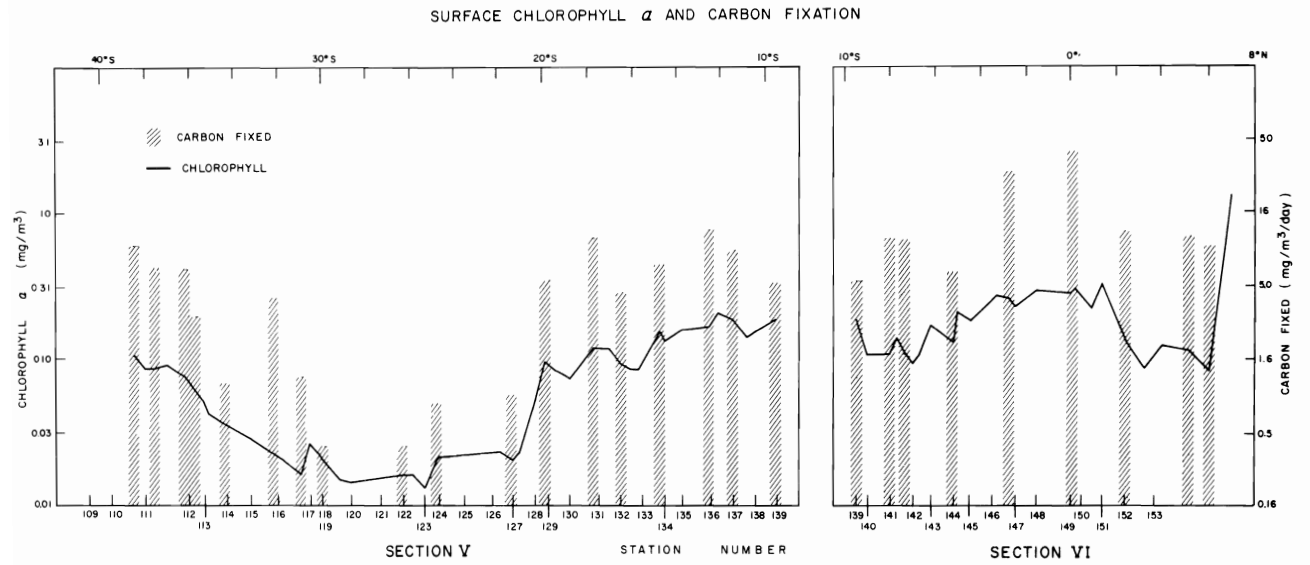


FIGURE 4h — FIGURA 4h

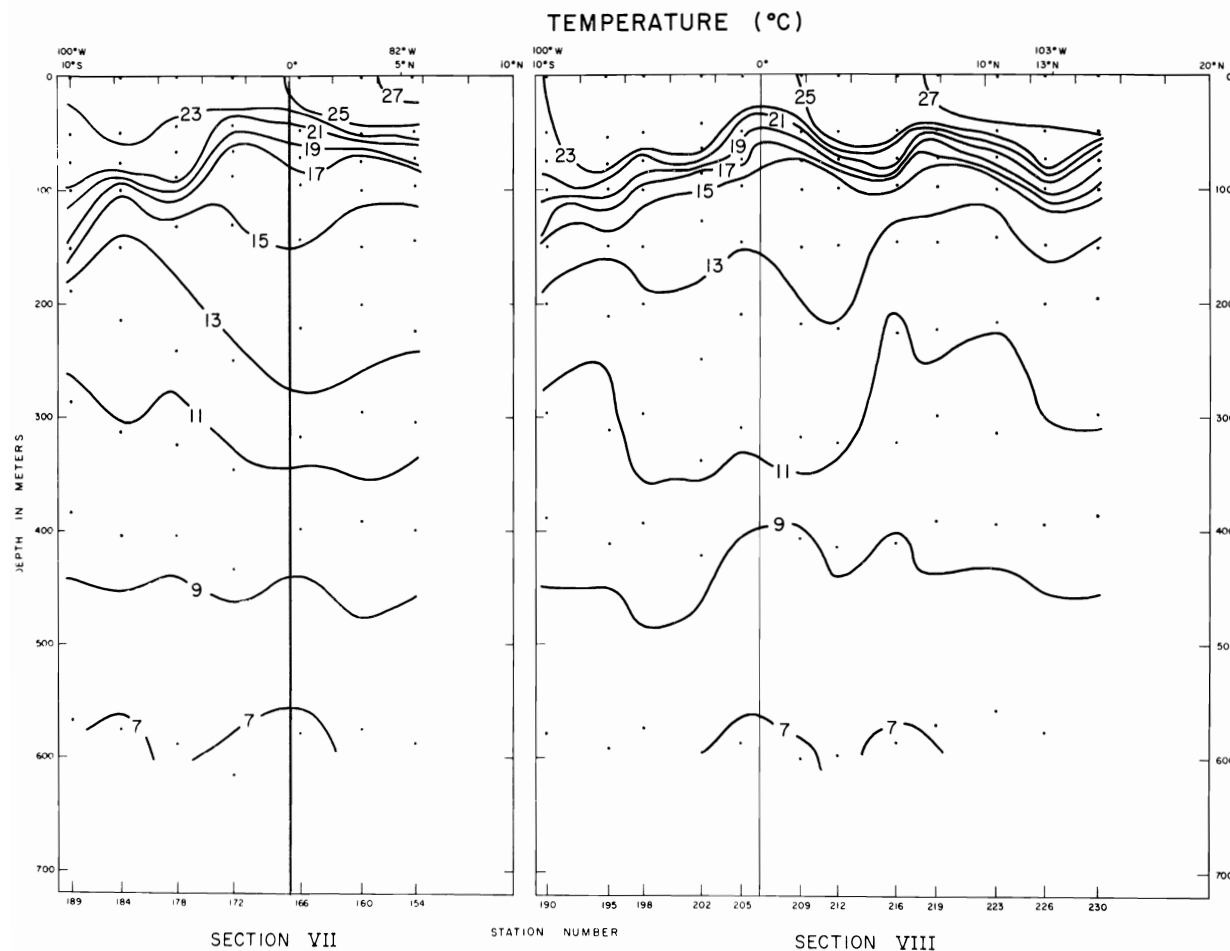


FIGURE 5a — FIGURA 5a

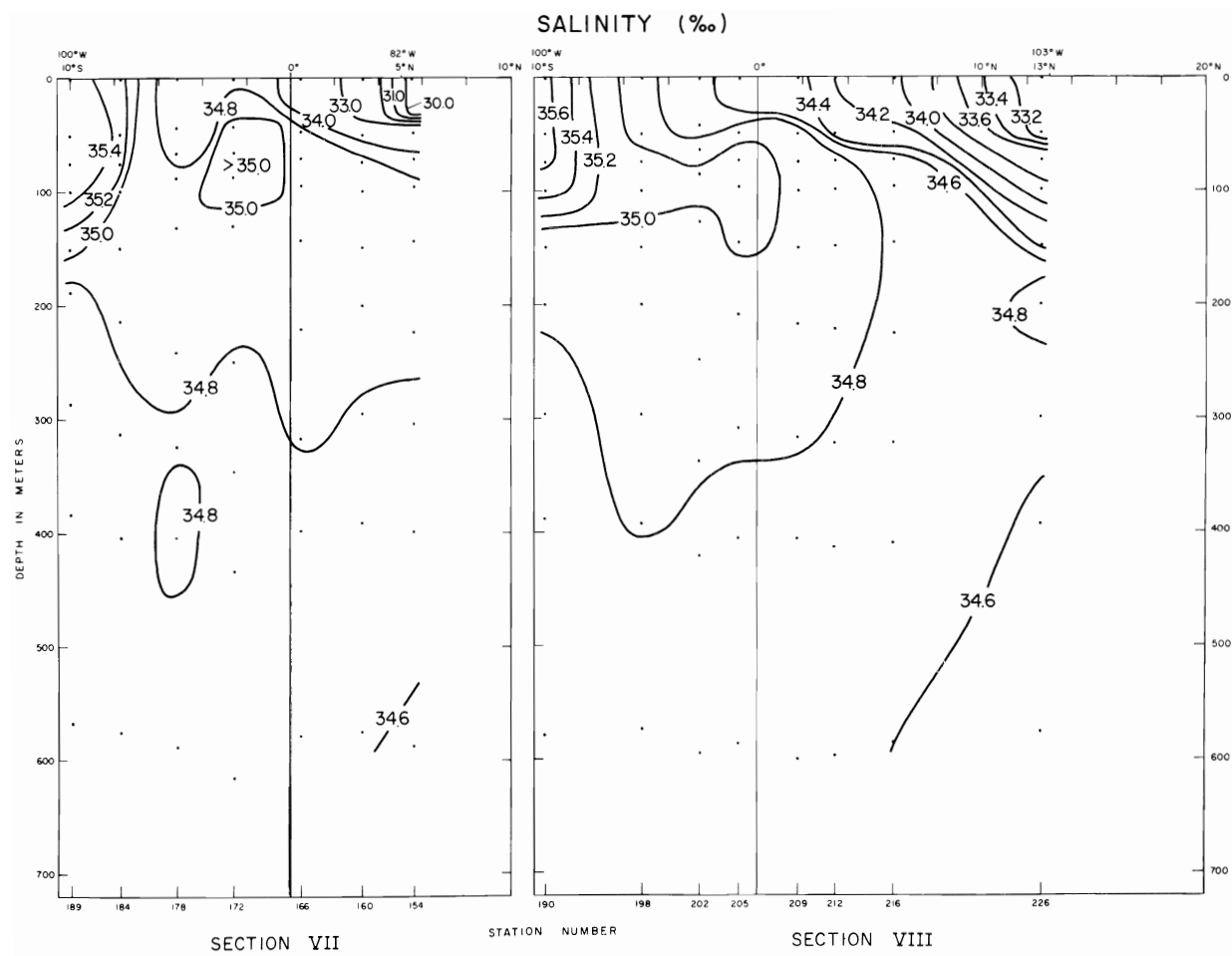


FIGURE 5b — FIGURA 5b

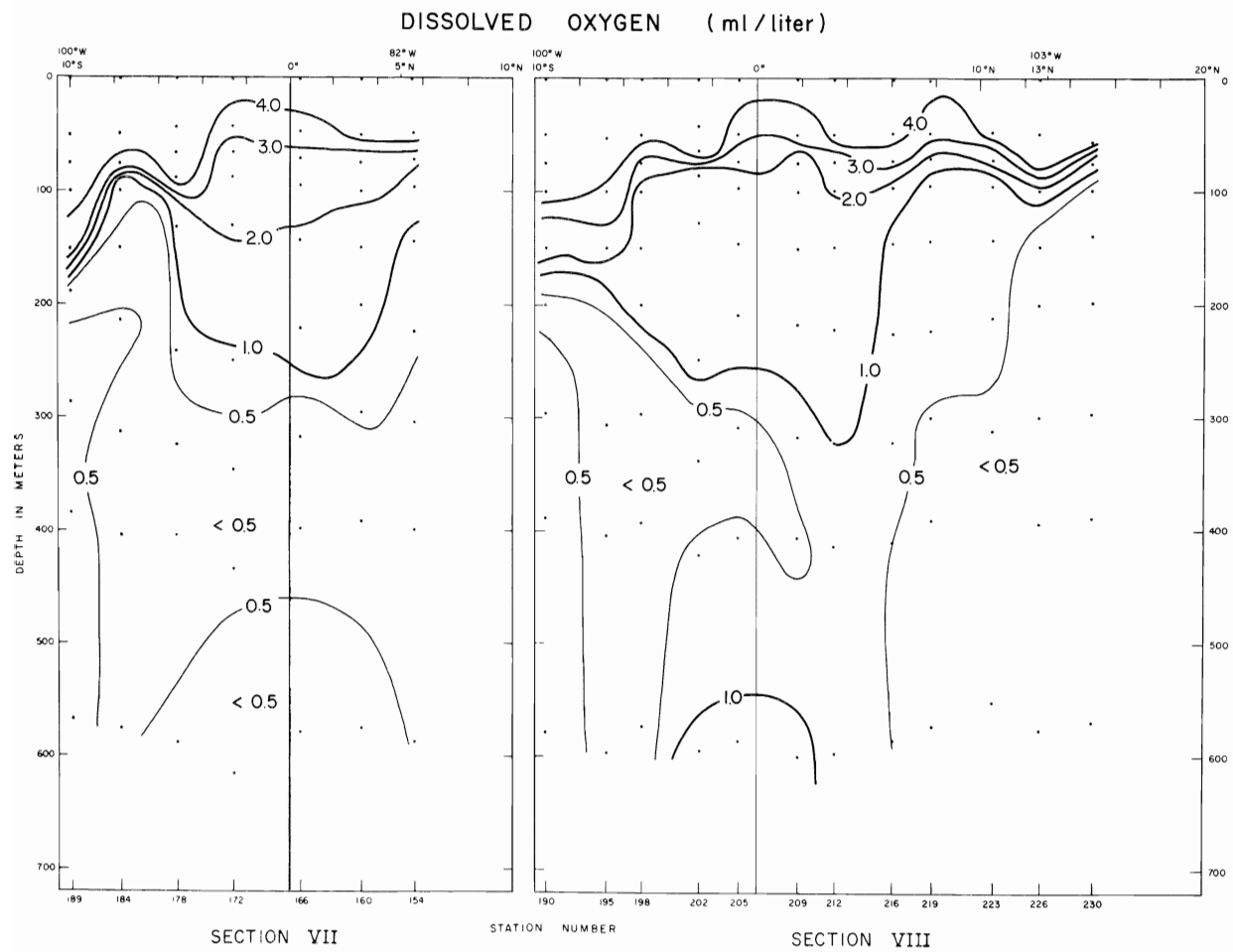
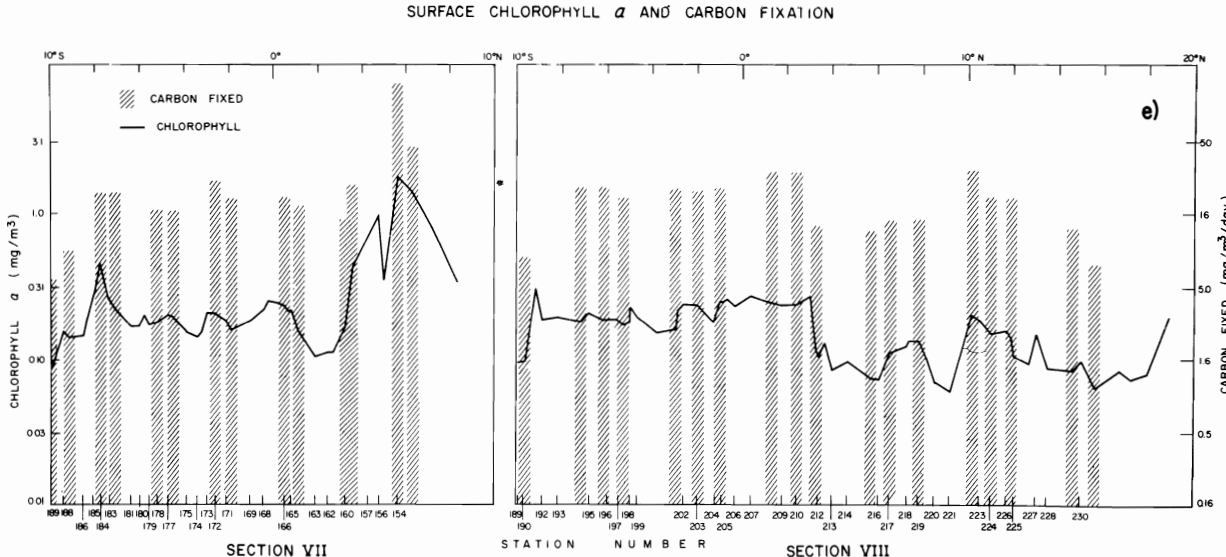
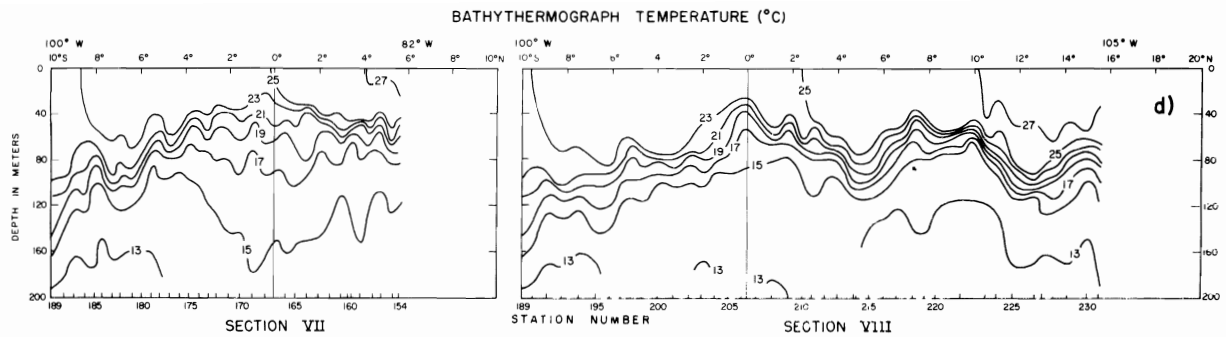


FIGURE 5c — FIGURA 5c



FIGURES 5d, e — FIGURAS 5d, e



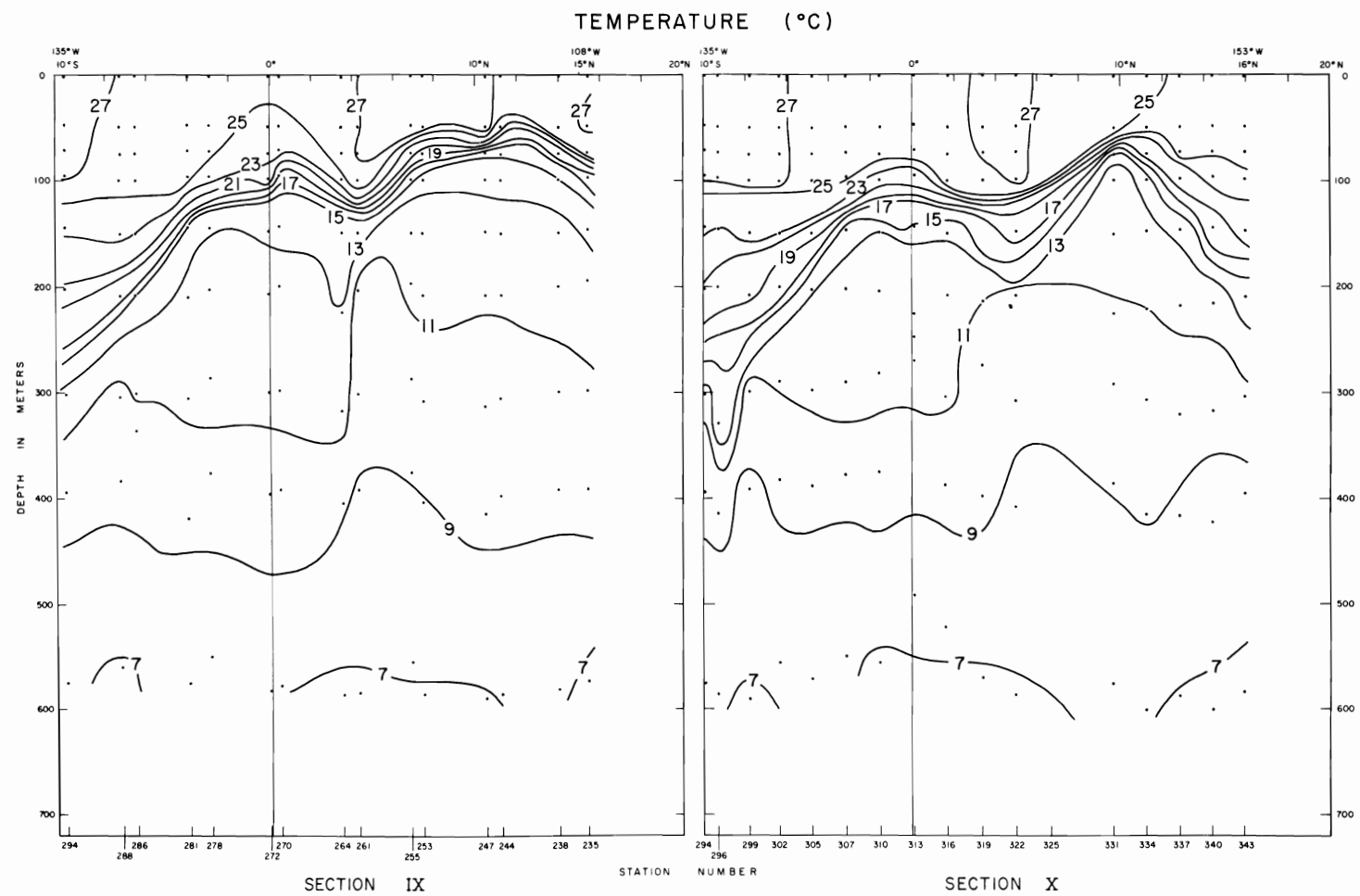
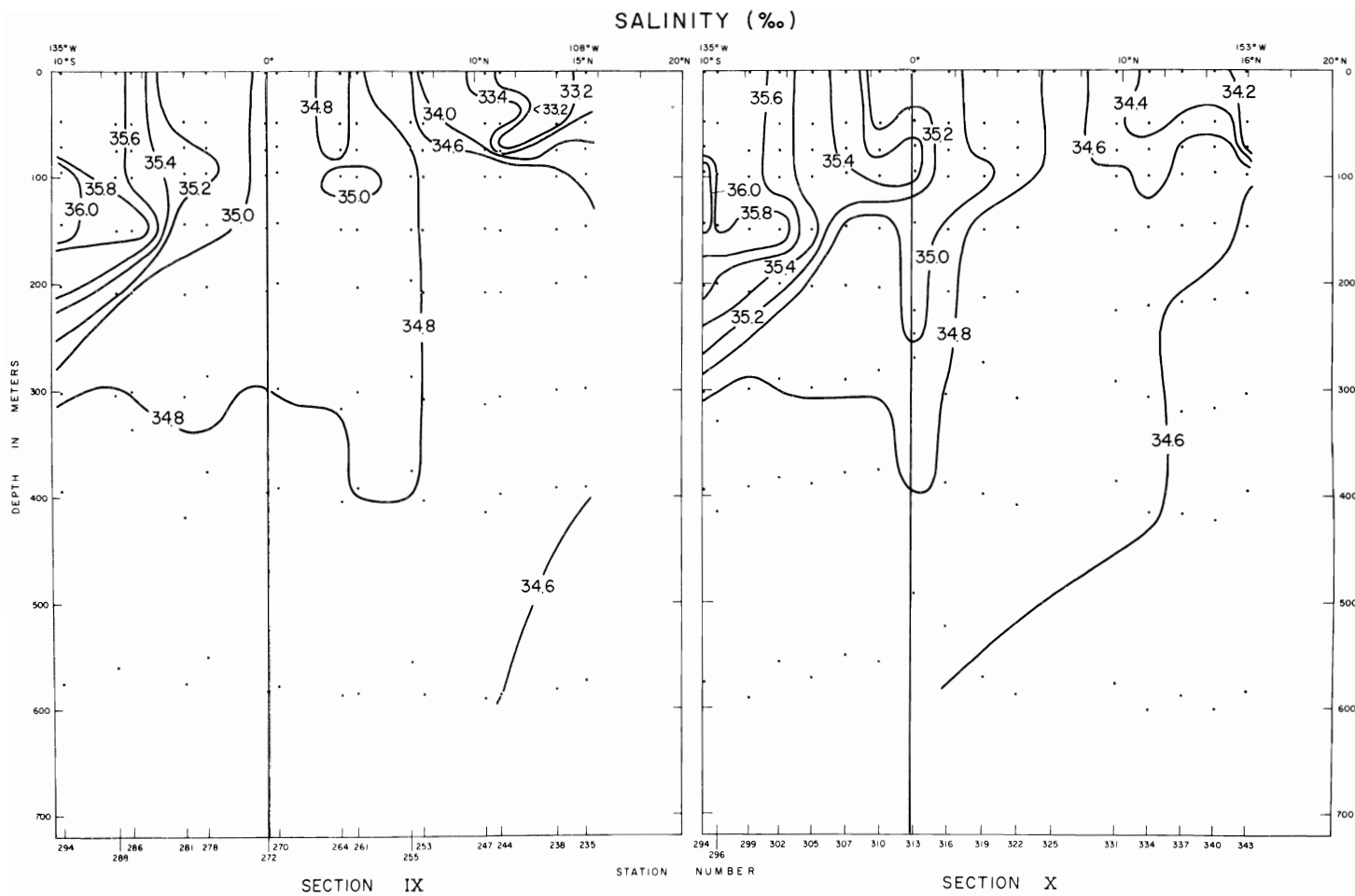


FIGURE 6a — FIGURA 6a



**FIGURE 6b — FIGURA 6b**

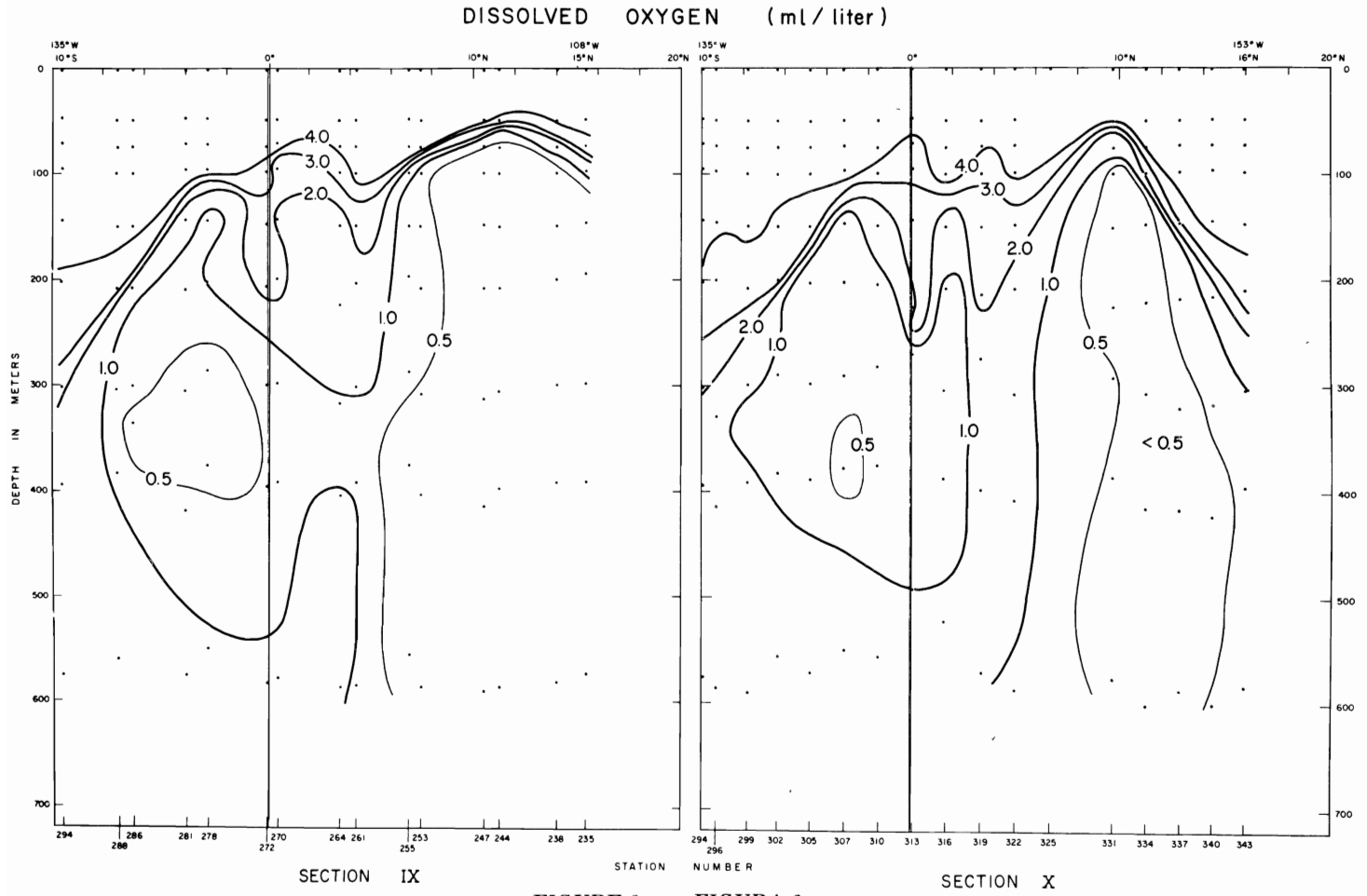
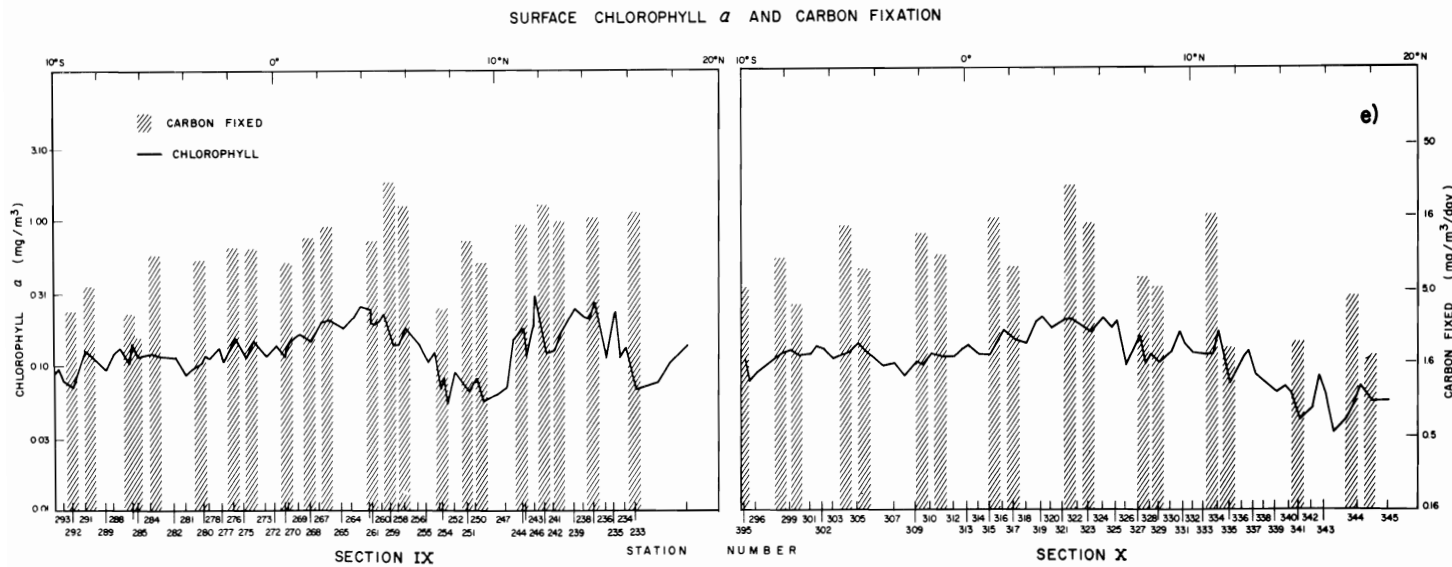
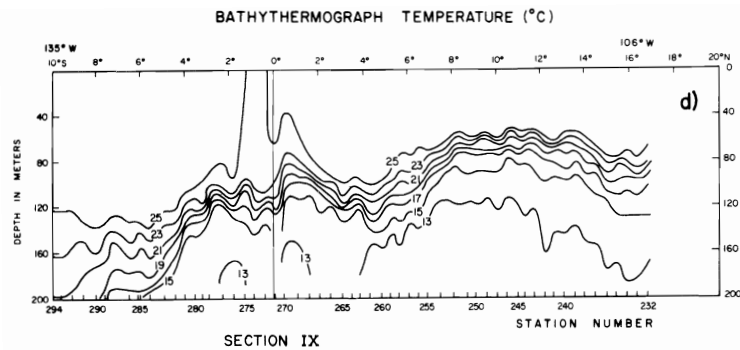


FIGURE 6c — FIGURA 6c



FIGURES 6d, e — FIGURAS 6d, e

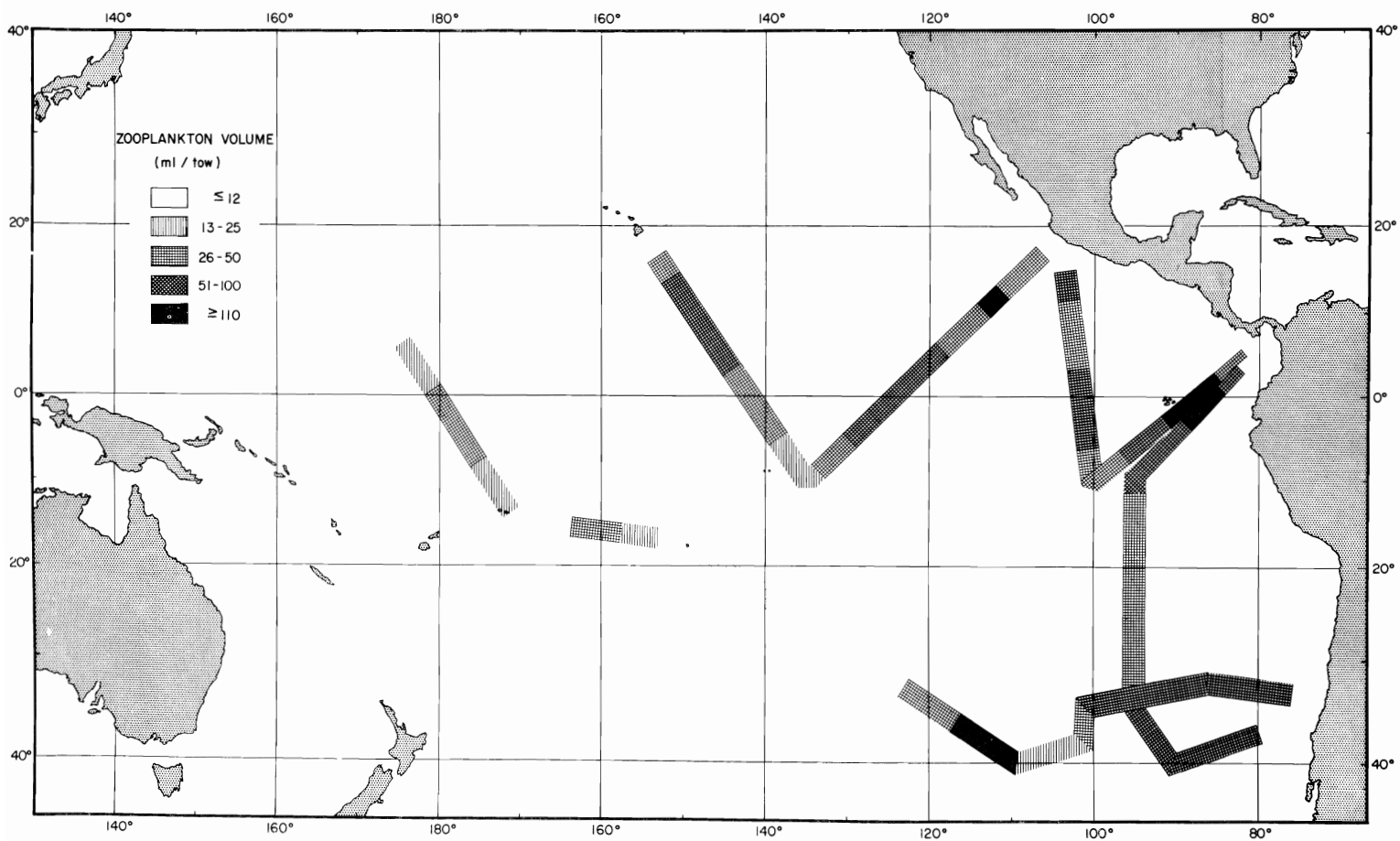


FIGURE 7c — FIGURA 7c

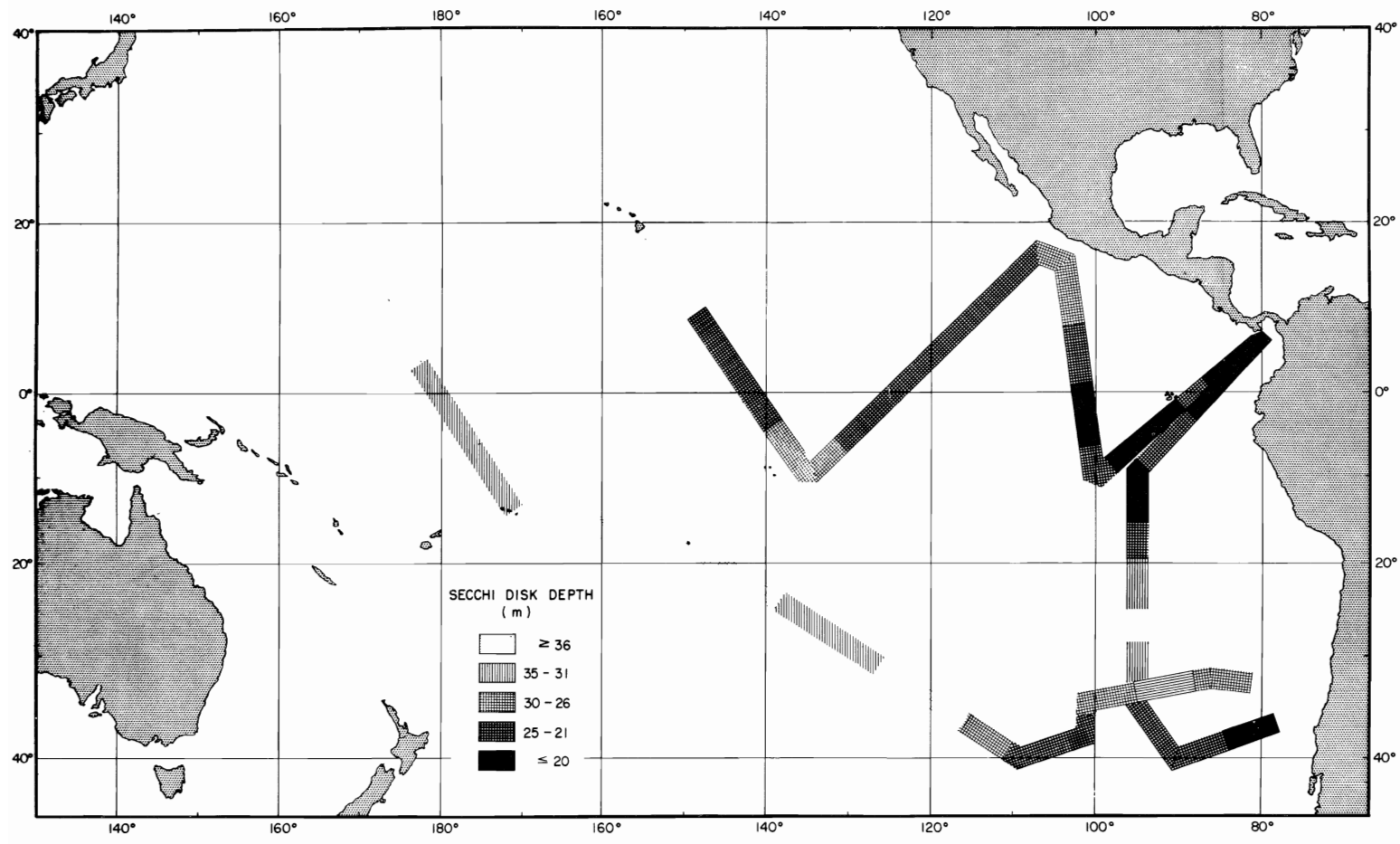


FIGURE 7d — FIGURA 7d

OBSERVACIONES OCEANOGRAFICAS DEL OCEANO PACIFICO  
ORIENTAL, RECOLECTADAS POR EL BARCO *SHOYO MARU*  
OCTUBRE 1963 - MARZO 1964

por

Eric D. Forsbergh y William W. Broenkow<sup>1</sup>

INTRODUCCION

El Nankai Regional Fisheries Research Laboratory de Kochi, Japón, llevó a cabo una exploración pesquera con palangre y un reconocimiento hidrográfico en el Océano Pacífico oriental, a bordo del barco de investigación *Shoyo Maru*, desde octubre de 1963 hasta marzo de 1964. Una invitación dirigida a la Comisión Interamericana del Atún Tropical para participar en el crucero, confirió a sus investigadores la oportunidad de hacer observaciones biológicas superficiales y conservar muestras de agua para el subsecuente análisis de los nutrientes. El resultado de este reconocimiento es un conjunto de datos físicos, químicos y biológicos que abarcan una gran parte del sector medio oriental del Océano Pacífico.

El Nankai Laboratory, ha permitido generosamente que la Comisión del Atún publique todos los resultados oceanográficos. Incorporando los resultados de las dos agencias en un solo informe, los datos serán fácilmente accesibles para estudios detallados. Se suministra una lista completa de los datos en los Apéndices. Los valores observados de la temperatura, clorinidad, oxígeno, estado atmosférico, estado del mar, transparencia del agua y de los volúmenes de zooplancton han sido también presentados por el Japan Ministry of Agriculture and Forestry, Fishing Agency, Investigation Research Division, First Research Section (1964).

No se ha tratado de interpretar extensamente estos datos, pero se han descrito brevemente algunas características de interés general. Se espera que este informe sea el complemento de estudios previos descriptivos del Océano Pacífico oriental tropical, tales como los de Wooster y Cromwell (1958) y Bennett (1963).

PERSONAL CIENTIFICO

El siguiente personal científico participó en el Crucero No. 13 del *Shoyo Maru*:

Dr. Yoichi Yabuta	Japan Fisheries Agency
Jefe de Investigación	Nankai Regional Fisheries Research Laboratory
Sr. Kozo Nagai	Japan Fisheries Agency, Second Deep Sea Section

<sup>1</sup> U.S. Bureau of Commercial Fisheries, Tuna Resources Laboratory, La Jolla, California.  
*Dirección actual:* Department of Oceanography, University of Washington, Seattle, Wash. 98105.

Sr. Keiichiro Mori	Japan Fisheries Agency, Nankai Regional Fisheries Laboratory
Sr. Izumi Nakamura	Kyoto University, Department of Fisheries
Sr. Susumu Kato	U. S. Bureau of Commercial Fisheries, Tuna Resources Laboratory
Sr. Witold L. Klawe	Comisión Interamericana del Atún Tropical
Sr. Eric D. Forsbergh	Comisión Interamericana del Atún Tropical

### RECONOCIMIENTO

Los autores están agradecidos con el Japan Fisheries Agency y el Nankai Regional Fisheries Research Laboratory, por invitar a la Comisión Interamericana del Atún Tropical para participar en el Crucero No. 13 del *Shoyo Maru*. Estamos especialmente obligados con el Dr. Yoichi Yabuta y sus colegas por su inapreciable asistencia y con el Capitán Sadamu Tanabe, sus oficiales y la tripulación del *Shoyo Maru* por su cooperación entusiástica. También estamos muy agradecidos con el Sr. Joseph L. Reid, el Dr. Milner B. Schaefer, el Dr. Warren S. Wooster, el Sr. Hajime Yamanaka y el Dr. Ichiro Yamanaka por la revisión crítica de este manuscrito. Deseamos agradecer también al Sr. Witold L. Klawe por recolectar muchos de los datos biológicos y al Sr. Susumu Kato quien le asistió; al Sr. Edward B. Bennett por su consejo y criticismo; y al Sr. Christopher T. Psarópulos por escribir los programas del computador.

El U.S. Bureau of Commercial Fisheries, Tuna Resources Laboratory en La Jolla, California, suministró ayuda en los análisis de las muestras.

### METODOS

Además de las operaciones pesqueras con palangre, los investigadores del Nankai Laboratory hicieron lanzamientos hidrográficos, titulaciones de clorinidad, análisis de oxígeno, arrastres con redes para la recolección de larvas, observaciones meteorológicas y batitermográficas, y descendimientos del disco Secchi. El personal de la Comisión del Atún preservó muestras de agua para los análisis de los nutrientes y de los pigmentos de las plantas, y condujo experimentos de la fijación de carbono a bordo. Los análisis de los nutrientes y de los pigmentos fueron hechos en tierra firme por científicos del Bureau of Commercial Fisheries y de la Comisión del Atún.

#### Distancia entre las estaciones

Como el propósito principal del reconocimiento fue investigar la pesquería, las estaciones hidrográficas fueron más espaciadas de lo que se hubiera planeado para solamente un reconocimiento oceanográfico. Se proyectó que las estaciones hidrográficas estuvieran separadas de 120 a 160 millas, con dos estaciones de superficie y lanzamientos batitermográficos entre ellas. El batitermógrafo cesó de funcionar en la estación H-89 (Fig. 1), y para compensar esta pérdida de datos, las estaciones hidrográficas desde la H-89



hasta la H-153 fueron hechas aproximadamente con 60 millas de intervalo. Después de la estación H-153 se volvió a asumir el espacio original de las estaciones hidrográficas, ya que con el reemplazo del batitermógrafo fue posible reanudar estas observaciones.

#### Profundidad

Dos lanzamientos de botellas Nansen fueron hechos en cada estación hidrográfica. Para el primer lanzamiento se descendieron las botellas hasta una profundidad nominal de 25, 50, 75, 100 y 150 m, y se determinaron las profundidades actuales del muestreo por medio del ángulo del cable. En el segundo lanzamiento a profundidades nominales de 200, 300, 400 y 600 m se utilizaron termómetros reversibles sin protección, siendo la profundidad actual del muestreo determinada termométricamente.

#### Temperatura

Las temperaturas de la subsuperficie fueron determinadas usando un solo termómetro reversible protegido en cada botella Nansen. Los descendimientos batitermográficos fueron hechos hasta cerca de 200 m en cada estación hidrográfica y frecuentemente entre estaciones. Las temperaturas de la superficie fueron determinadas por un termómetro de cubo. La precisión de la lectura de un solo termómetro reversible es de cerca de  $\pm 0.04$  C (Wooster y Taft, 1958).

#### Clorinidad

Las determinaciones de la clorinidad fueron hechas a bordo por medio de la titulación estándar de nitrato de plata, usando el fluoresceín como indicador. La precisión de los análisis fue alrededor de  $\pm 0.03$ ‰ Cl, o cerca de  $\pm 0.06$ ‰ S (Strickland y Parsons, 1960).

#### Oxígeno disuelto

Los análisis del oxígeno disuelto fueron ejecutados a bordo, se usó la titulación de Winkler de tiosulfato de sodio. La precisión del método es por ahí de  $\pm 0.03$  ml/L (Strickland y Parsons, 1960).

#### Nutrientes

Inmediatamente después de que se terminaron las estaciones hidrográficas, se sacaron de las botellas Nansen que estaban dentro de bolsas de polietileno, muestras de 250 ml de agua de mar, las que fueron colocadas dentro de otras bolsas protectoras y se congelaron. Las muestras fueron guardadas a una temperatura de  $-10$  hasta  $-15$  C para su envío a San Diego, California, para su análisis correspondiente. El tiempo máximo de almacenaje fue de 24 semanas. El efecto de la congelación sobre la exactitud del análisis no fue determinado, pero Stefansson y Richards (1963) han demostrado que hay un buen acuerdo entre las muestras analizadas frescas y las analizadas después de haber sido congeladas (sus muestras para analizar

el fosfato estuvieron en depósito 4 semanas, para el nitrato 2 semanas y aquellas para el silicato 10 semanas).

Se dejaron las muestras en el laboratorio para que se descongelaran durante la noche a la temperatura del cuarto. Se filtraron a través de un papel filtrador Whatman #42, y se analizaron según el método descrito por Strickland y Parsons (1960): para el nitrógeno inorgánico en forma de nitrito, se usó sulfanilamida y N-(1-naftil)-etileno-diamina para el desarrollo del color; para el nitrógeno inorgánico en forma de nitrato, por medio de la reducción con hidrazina y el análisis subsecuente de nitrato; y para el silicio reactivo en forma de silicato se usó metol-sulfato y ácido oxálico para reducir el complejo silico-molibdato. El análisis del fósforo inorgánico en forma de fosfato fue hecho por medio de la utilización de ácido ascórbico, método de J. P. Riley de tartrato antimónico de potasio según ha sido descrito por J. D. H. Strickland y T. R. Parsons (*sin publicar*). La precisión de los análisis fue: fosfato,  $\pm 0.03 \mu\text{g-at/L}$ ; nitrato,  $\pm 0.3 \mu\text{g-at/L}$  al nivel de  $4.5 \mu\text{g-at/L}$  y  $\pm 1.3 \mu\text{g-at/L}$  al nivel de  $30 \mu\text{g-at/L}$ ; nitrito,  $\pm 0.03 \mu\text{g-at/L}$ ; y silicato  $\pm 0.25 \mu\text{g-at/L}$  al nivel de  $10 \mu\text{g-at/L}$  y  $\pm 1.4 \mu\text{g-at/L}$  al nivel de  $60 \mu\text{g-at/L}$  (según Strickland y Parsons, 1960, y *sin publicar*).

#### Pigmento de las plantas

Las muestras de agua de la superficie fueron recolectadas con un cubo, se agregó carbonato de magnesio y las muestras fueron inmediatamente filtradas por medio de filtros de cristal Whatman GF/C. Durante la filtrada se mantuvo la succión a presiones entre 25 y 35 cm de mercurio. Se desecaron los filtros al vacío en la obscuridad. Las muestras se mantuvieron secas y congeladas en la obscuridad hasta 6 semanas antes del análisis, período de tiempo máximo permitido, considerado para tal depósito por Parsons y Strickland (1960). Los análisis del pigmento de las plantas fueron hechos por el método de Richards con Thompson (1952), en el laboratorio de San Diego. Se computaron las concentraciones haciendo uso de las ecuaciones de Parsons y Strickland (1963). Las precisiones de los análisis fueron según J. D. H. Strickland y T. R. Parsons (*sin publicar*): clorofila *a*,  $\pm 0.05 \text{ mg/m}^3$  al nivel de  $1 \text{ mg/m}^3$ ; clorofila *b*,  $\pm 0.04 \text{ mg/m}^3$  al nivel de  $0.1 \text{ mg/m}^3$ ; carotenoides de las plantas,  $\pm 0.03 \text{ mSPU}$  al nivel de  $0.3 \text{ mSPU}$ . Las determinaciones de la clorofila *c* son inexactas y sin precisión.

En 28 ocasiones las muestras fueron simultáneamente filtradas a través de filtros Whatman GF/C con filtros Millipore HA por debajo. Esto se hizo para determinar la cantidad de fitoplancton que fue retenida por los filtros de cristal, comparándola con la retenida por los filtros Millipore. En promedio el 80% (con una amplitud de 64% hasta 96%) de fitoplancton fue retenido por el filtro de cristal como lo indicaron las medidas de  $665 \text{ m}\mu$  de la densidad óptica. Para compensar la pérdida a través de los filtros de cristal, todos los valores de los pigmentos fueron multiplicados por lo tanto, por el factor de 1.25.

Se extrajeron los pigmentos durante 18 horas de la estación H-26 hasta la estación H-153; de la estación H-154 a la estación P-98 los filtros de cristal y el fitoplancton fueron pulverizados en un tejido pulverizador por el método de Yentsch y Menzel (1963), y se extrajeron los pigmentos por dos horas. La relación entre la fijación de carbono y la clorofila  $a$  según ha sido determinada por los dos métodos de extracción fue esencialmente la misma. Así que parece que en este caso los dos métodos de la extracción de los pigmentos dieron resultados similares.

#### Fijación de carbono

La tasa de la fijación de carbono del fitoplancton de la superficie, fue medida por medio del empleo del método de radiocarbono (carbono <sup>14</sup>) de Steemann Nielsen (1952). Muestras del agua de la superficie fueron recolectadas con un cubo de polietileno. Se incubaron a la temperatura de la superficie del mar bajo la luz natural entre el orto y el mediodía o entre el medio día y el ocaso. Los procedimientos para la estandarización, la enumeración y los cálculos son idénticos a los presentados por Forsbergh y Joseph (1964). La misma solución de radiocarbono fue usada en todo el crucero. Se agregaron veinte mC de radioactividad a cada muestra. La precisión al nivel de 15 mg C/m<sup>3</sup> día fue  $\pm 1.5$  mg C/m<sup>3</sup> día (según Strickland y Parsons, 1960).

#### Zooplancton

La descripción de las redes para la recolección de larvas y su procedimiento ha sido presentado por el Japan Ministry of Agriculture and Forestry, Fishery Agency (1964). La red de superficie era de 1.4 m en diámetro y fue arrastrada a una velocidad de 2 nudos, durante 10 minutos. La red de profundidad media era de 2.0 m en diámetro y fue arrastrada a la misma velocidad a unos 20 m de profundidad, durante 10 minutos. Los volúmenes de zooplancton húmedo que fueron recolectados por medio de estas redes fueron medidos por desplazamiento. Los volúmenes de los organismos de una longitud mayor de 5 cm fueron medidos separadamente.

Griffiths (1963), habiendo usado la variancia total, ha demostrado que el 95% de los límites de confianza de un solo arrastre oblicuo de zooplancton es 1/3 y 3 veces el valor del arrastre, que probablemente se aproxima a los límites de confianza de los arrastres horizontales.

### TRATAMIENTO DE LOS DATOS

Todos los cálculos de los datos y las interpolaciones fueron procesados por el computador 3600 del Control Data Corporation (véase Apéndice D referente a los métodos del programa). A profundidades observadas, fue determinada la densidad según las observaciones de temperatura y clorinidad. Tanto los valores de la temperatura como de la densidad, fueron interpolados a profundidades estándar por medio de interpolaciones logarítmicas de dos puntos. Los valores de la salinidad a profundidades estándar, fue-

ron computados por medio de estos valores interpolados de temperatura y densidad.

Unicamente las variables oceanográficas observadas han sido ilustradas en este informe. Las propiedades computadas tales como las de los valores interpolados, la densidad, la función del transporte y la utilización aparente del oxígeno no han sido usadas.

Se dibujaron las secciones para que la distribución de todas las variables fueran consistentes una con otra. Puntos anómalos de los datos fueron eliminados, basándose en la inconsistencia entre la distribución de las diferentes propiedades. Estos resultados aparentemente erróneos han sido anotados en el registro de los datos. Las isopleas fueron diseñadas por interpolación lineal, excepto en el caso de la temperatura en donde se dispuso de los datos batitermográficos (Secciones I, VII, VIII y IX). En estos casos las secciones batitermográficas fueron primero dibujadas, luego el espacio isotérmico fue diseñado entre las estaciones hidrográficas de acuerdo a los datos batitermográficos.

Se dibujaron secciones con una escala lineal tanto para la latitud como para la longitud. Las exageraciones verticales de las secciones varían porque están orientadas a diferentes ángulos hacia el meridiano. Las exageraciones verticales aproximadas son:

Sección I	6,700 :1	Sección VI	7,600 :1
Sección II	10,900 :1	Sección VII	8,400 :1
Sección III	9,300 :1	Sección VIII	5,700 :1
Sección IV	10,800 :1	Sección IX	8,000 :1
Sección V	5,800 :1	Sección X	6,800 :1

A causa de que las determinaciones para las muestras de pigmentos fueron tomadas a diferentes horas del día, se hizo un esfuerzo para averiguar el ciclo diurno en las concentraciones de pigmentos. Las concentraciones de clorofila *a* fueron agrupadas por tiempo de recolección. Pruebas medianas y de rango no mostraron diferencias significativas en las concentraciones de clorofila *a* entre los grupos de tiempo. Por lo tanto no se corrigieron los datos de tiempo de la recolección.

La distribución de la clorofila *a* superficial correspondiente a las secciones físicas y químicas, está indicada por líneas gráficas porque las observaciones estaban muy juntas para ser indicadas como barras gráficas. Los valores de la fijación de la clorofila *a* y del carbono están indicados en escalas logarítmicas para facilitar su lectura.

La distribución de las variables biológicas fue construida de las medias sucesivas de los valores en estaciones consecutivas, con el fin de eliminar alguna de la variación debida a las agrupaciones de plancton y a la precisión inferior de los métodos. El número de observaciones utilizado en cada una de las medias sucesivas fue elegido para que así las distancias comparativas fueran representadas por cada una de las medias. Debido a que las observaciones de la fijación de carbono estaban muy separadas, se usaron valores

individuales. La distribución areal de la clorofila *a* (Fig. 7a) está representada por medias sucesivas de valores de 5 estaciones consecutivas.

Para construir la distribución areal del volumen de zooplancton (Fig. 7c), se computaron los factores para corregir las diferencias en el volumen del zooplancton debidas a la migración diurna, dependiente de la profundidad y del tamaño de la red del muestreo. El arrastre de la red puede ser dividido en cuatro tipos: a) arrastres de superficie nocturnos, b) arrastres de superficie diurnos, c) arrastres nocturnos a 20 m, y d) arrastres diurnos a 20 m. Los volúmenes recolectados por estos arrastres fueron comparados en estaciones individuales y entre estaciones adyacentes. Los valores medianos de las razones de cada comparación se usaron como factores para determinar los volúmenes equivalentes a los arrastres superficiales nocturnos:

Arrastres superficiales diurnos	4.0
Arrastres nocturnos a 20 m	0.2
Arrastres diurnos a 20 m	0.5

La distribución areal de zooplancton está indicada por las medias sucesivas de estos volúmenes corregidos de tres estaciones consecutivas.

La distribución areal de la transparencia del agua (Fig. 7d), está representada por medias sucesivas de las profundidades del disco Secchi de tres estaciones consecutivas.

#### ELEMENTOS DE INTERES

Fuertes gradientes horizontales dominan la distribución de las propiedades de los sectores meridionales de las Secciones II y V (Figs. 3, 4). La precipitación de las isotermas que aquí son aproximadamente paralelas a las isopicnals, muestran los efectos de un flujo hacia el este de la corriente del viento oeste entre los extremos meridionales de estas secciones y cerca de los 25°S. En estas secciones al sur, la superficie del Agua Subantártica era fría y de baja salinidad (13 C, 34<sup>0</sup>/<sub>00</sub>) comparada con la parte oriental de la masa de agua central del Pacífico Sur hacia el norte, cálida y de alta salinidad (27 C, 36<sup>0</sup>/<sub>00</sub>). Se encontraron concentraciones apreciables de fosfato y nitrato, y escasamente concentraciones de silicato cerca a los 40°S. Se descubrieron concentraciones de nitrito únicamente en la termoclina, siendo la cantidad de nitrito mayor cerca a los 40°S. La naturaleza productiva del Agua Subantártica está demostrada por valores relativamente altos de clorofila *a*, y de la fijación de carbono en los sectores meridionales de estas secciones.

Se ve la evidencia de la Subcorriente Perú-Chile (Wooster y Gilmartin, 1961) en ambas Secciones III y IV (Fig. 3) entre los 200 y 300 m. La parte oriental de estas secciones muestran un centro de agua de salinidad relativamente alta, rico en nutrientes y pobre en oxígeno, que se atribuye al flujo meridional de la subcorriente.

El margen septentrional de la Corriente del Perú es claramente indicado en las Secciones VI y VII (Figs. 4b; 5b), por una gradiente aguda en la

salinidad de la superficie a través del ecuador, en donde la alta salinidad del agua ( $>35^{\circ}/_{\text{oo}}$ ) de la Corriente del Perú se encuentra con el agua de baja salinidad ( $<33^{\circ}/_{\text{oo}}$ ) del Golfo de Panamá. La extensión hacia el oeste de la Corriente del Perú, afecta la distribución superficial de las propiedades como se demostró en la Sección V (Fig. 4). El agua de la superficie con concentraciones altas de nutrientes cerca a los  $10^{\circ}\text{S}$ , se origina probablemente en las áreas de afloramiento cerca a las costas del Perú y Chile, y fue transportada mar afuera por la Corriente del Perú. Estas aguas tienen valores altos de clorofila *a* y de fijación de carbono. La termoclina en la extensión hacia el oeste de la Corriente del Perú contiene concentraciones particularmente altas de nitrito.

El contenido de oxígeno disuelto disminuye hacia el norte en todas las profundidades como se indica en la Sección V (Fig. 4c). Se ha observado antes esta característica, y se asocia con una capa baja en oxígeno, orientada este-oeste en las aguas intermedias del Océano Pacífico oriental tropical (Wooster y Cromwell, 1958; Bennett, 1963). Hay dos de estas capas bajas en oxígeno en el Pacífico tropical; una al norte del ecuador y una al sur del ecuador. La del norte parece estar centralizada cerca a los  $15^{\circ}\text{N}$  en la Sección VIII (Fig. 5c) y por ahí a los  $12^{\circ}\text{N}$  en la Sección X. La capa meridional, baja en oxígeno está centralizada cerca a los  $10^{\circ}\text{S}$  en las Secciones V y VI (Fig. 4c), y a los  $3^{\circ}\text{S}$  en la Sección X (Fig. 6c). Ambas capas la del norte y la del sur, pobres en oxígeno, son notablemente más angostas al oeste que al este. Al este de las Islas Galápagos en las Secciones VI y VII, la capa baja en oxígeno es continua a través del ecuador.

La presencia de corrientes superficiales por zonas, es indicada por la estructura de la temperatura en las Secciones I, VIII, IX y X (Figs. 2a, d; 5a, d; 6a, d). La Corriente Ecuatorial del Norte y del Sur son la causa del declive ascendente de las isotermas hacia el ecuador. Estas corrientes parecen ser más fuertes en las secciones del oeste (Secciones I, X y IX). La Contracorriente Ecuatorial del Norte es la causa del declive ascendente de las isotermas hacia el norte. Esta contracorriente aparece entre los  $3^{\circ}\text{N}$  y los  $8^{\circ}\text{N}$  en la Sección I, entre los  $4^{\circ}\text{N}$  y los  $10^{\circ}\text{N}$  en ambas Secciones X y IX, y entre los  $5^{\circ}\text{N}$  y los  $7^{\circ}\text{N}$  en la Sección VIII.

Las isotermas cuya gradiente ascendente hacia el sur es indicada en la Sección I (Figs. 2a, d) entre los  $8^{\circ}\text{S}$  y los  $10^{\circ}\text{S}$ , Sección XI (Fig. 4a) entre los  $8^{\circ}\text{S}$  y los  $10^{\circ}\text{S}$ , Sección VII (Figs. 5a, d) entre los  $7^{\circ}\text{S}$  y los  $9^{\circ}\text{S}$ , Sección VIII (Fig. 5d) entre los  $7^{\circ}\text{S}$  y los  $9^{\circ}\text{S}$ , y en la Sección IX (Fig. 6d) entre los  $6^{\circ}\text{S}$  y los  $8^{\circ}\text{S}$  pueden ser tomadas como la evidencia de una débil Contracorriente Ecuatorial del Sur, habiendo sido descrita primero por Reid (1959). En las Secciones VIII y IX esta gradiente de las isotermas no está bien definida, y en la Sección X dicha gradiente no es aparente.

La evidencia de la Subcorriente Ecuatorial o Corriente de Cromwell (Knauss, 1960) es demostrada por las siguientes características en cada sección que atraviesa el ecuador: en la Sección I, por una termoclina débil

(Figs. 2a, d) y por medio de una ligera depresión en las isopletras del oxígeno (Fig. 2c); en la Sección VI, por una termoclina débil (Fig. 4a), una depresión en las isopletras del oxígeno (Fig. 4c), y depresiones en las isopletras de fosfato, nitrato y silicato (Figs. 4d, e, g); en la Sección VII, por una termoclina débil (Figs. 5a, d) y una depresión en las isopletras del oxígeno (Fig. 5c); en la Sección VIII por una termoclina ligeramente débil (Fig. 5d) y una depresión en las isopletras del oxígeno (Fig. 5c); y en las Secciones IX y X, por una temperatura superficial baja y una termoclina débil (Figs. 6a, d) y una depresión en las isopletras del oxígeno (Fig. 6c). Esta depresión en las isopletras del oxígeno fue señaladamente más ancha al este que en el oeste, un fenómeno que puede asociarse con la mezcla causada por la subcorriente que fluye hacia el este. El centro de la subcorriente conforme es indicado por la termoclina débil, disminuye en profundidad de oeste a este aproximadamente de 180 m a los 180° hasta cerca de 100 m a los 100°W.

Según las distribuciones areales de las variables biológicas (Figs. 7a, b, c), puede verse que la primera producción y la abundancia relativa de fitoplancton y zooplancton son altas cerca a la costa de Chile, y moderadamente altas cerca a los 40°S en el Agua Subantártica. Las Secciones II, III y IV (Figs. 3d, e, g) muestran que las concentraciones de nutrientes en la superficie son relativamente altas en estas dos áreas. En el Pacífico central del sur, sin embargo, la producción primaria y la cosecha estable son muy bajas, lo que es compatible con las concentraciones bajas de nutrientes en esta área (Sección II, Fig. 3). En la zona ecuatorial la abundancia de plancton y la producción primaria son altas en la mayor parte de la región oriental y disminuye hacia el oeste. Las Secciones Ecuatoriales VII, VIII, IX, X y I, muestran que la termoclina es poco profunda en el este y que se profundiza hacia el oeste. La alta productividad y la abundancia de plancton en el este puede estar relacionada con el rápido reabastecimiento de nutrientes facilitado por la termoclina de poca profundidad, y hacia el sur y al este de las Islas Galápagos puede también estar relacionada con aguas ricas en nutrientes originadas del afloramiento costanero. La coincidencia de zonas de producción y abundancia relativamente bajas de plancton, centralizadas a los 7°N entre los 115°W y los 100°W (Figs. 7a, b, c) puede estar relacionada con la Contracorriente Ecuatorial del Norte localizada en esta latitud (Secciones VIII, IX y X). La distribución de profundidad del disco Secchi (Fig. 7d), corresponde a la distribución de las variables biológicas, con el apareamiento de un agua menos transparente en las áreas biológicamente ricas.

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## APPENDIX A—APENDICE A

PHYSICAL AND CHEMICAL OBSERVATIONS—OBSERVACIONES  
FISICAS Y QUIMICAS

## Explanation of table headings

## Explicación de los títulos de las tablas

Time Local times of start and finish of hydrographic observations  
Hora local del comienzo y de la terminación de las observaciones hidrográficas

D (m) Secchi disc depth, meters  
Profundidad del disco Secchi, metros

## Observed and computed values at observed depths

## Valores observados y calculados en las profundidades observadas

Z (m) Sampling depth, meters  
Profundidad del muestreo, metros

T (C) *In situ* temperature, degrees Celsius  
Temperatura *in situ*, centígrados

Cl (‰) Chlorinity, grams per kilogram  
Clorinidad, gramos por kilogramo

S (‰) Salinity, grams per kilogram  
Salinidad, gramos por kilogramo

O<sub>2</sub> (ml/L) Dissolved oxygen concentration, milliliters per liter  
Concentración de oxígeno disuelto, mililitros por litro

$\sigma_T$  (gm/L) Potential density anomaly, grams per liter  
Anomalía de densidad potencial, gramos por litro

$\delta_T$  (cl/T) Thermosteric anomaly, centiliters per metric ton  
Anomalía termostérica, centilitros por tonelada métrica

AOU (ml/L) Apparent oxygen utilization (difference between equilibrium oxygen solubility and observed oxygen content), milliliters per liter  
Utilización aparente de oxígeno (la diferencia entre la solubilidad equilibrada de oxígeno y el contenido de oxígeno observado) mililitros por litro

PO<sub>4</sub> ( $\mu$ g-at/L) Inorganic phosphate-phosphorus concentration, microgram-atoms per liter  
Concentración de fósforo inorgánico en forma de fosfato, microgramos-átomos por litro

NO<sub>3</sub> ( $\mu$ g-at/L) Inorganic nitrate-nitrogen concentration, microgram-atoms per liter  
Concentración de nitrógeno inorgánico en forma de nitrato, microgramos-átomos por litro

SiO<sub>4</sub> ( $\mu$ g-at/L) Reactive silicate-silicon concentration, microgram-atoms per liter  
Concentración de silicio reactivo en forma de silicato, miligramos-átomos por litro

NO<sub>2</sub> ( $\mu$ g-at/L) Inorganic nitrite-nitrogen concentration, microgram-atoms per liter  
Concentración de nitrógeno inorgánico en forma de nitrito, miligramos-átomos por litro

## Interpolated and computed values at standard depths

## Valores interpolados y calculados a profundidades estándar

Z (m) Standard depth, meters  
Profundidad estándar, metros

T (C) Interpolated temperature, degrees Celsius  
Temperatura interpolada, centígrados

## APPENDIX A (Continued)

Cl ( $^{\circ}/_{\infty}$ )	Interpolated chlorinity, grams per kilogram Clorinidad interpolada, gramos por kilogramo
S ( $^{\circ}/_{\infty}$ )	Interpolated salinity, grams per kilogram Salinidad interpolada, gramos por kilogramo
$\sigma_T$ (gm/L)	Interpolated potential density anomaly, grams per liter Anomalía interpolada de densidad potencial, gramos por litro
$\delta_T$ (cl/T)	Interpolated thermosteric anomaly, centiliters per metric ton Anomalía termostérica interpolada, centilitros por tonelada métrica
$\delta$ (cl/T)	Interpolated specific volume anomaly, centiliters per metric ton Anomalía interpolada del volumen específico, centilitros por tonelada métrica
$\Delta D_{z/o}$ (dyn m)	Dynamic height between the interpolated depth and the sea surface, dynamic meters Altitud dinámica entre la profundidad interpolada y la superficie del mar, metros dinámicos
$\Delta D_{z/z}$ (dyn m)	Dynamic height between the interpolated depth and the maximum interpolated depth, dynamic meters Altitud dinámica entre la profundidad interpolada y la profundidad máxima interpolada, metros dinámicos
$Q_z$ (m-dyn m)	Transport function between the interpolated depth and the maximum interpolated depth, meters-dynamic meters Función de transporte entre la profundidad interpolada y la profundidad máxima interpolada, metros-metros dinámicos

## Missing data—Datos que faltan

999.00	No observation of either temperature, chlorinity or dissolved oxygen No hubo observaciones de temperatura, clorinidad o oxígeno disuelto
—0	No observation—No hubo observación
0	Observation was made and its value is zero Se hizo observación y su valor es cero

## Explanation of notes

## Explicación de las notas

- a) Questionable value 19.18 $^{\circ}/_{\infty}$ —Valor cuestionable de 19.18 $^{\circ}/_{\infty}$
- b) Questionable value 3.32 ml/L—Valor cuestionable de 3.32 ml/L
- c) All chlorinities were questionable. Observed values were:  
Todas las clorinidades fueron cuestionables. Los valores observados fueron:  
0 m = 19.10 $^{\circ}/_{\infty}$ ; 49 m = 19.76 $^{\circ}/_{\infty}$ ; 74 m = 19.55 $^{\circ}/_{\infty}$ ; 99 m = 19.42 $^{\circ}/_{\infty}$ ; 148 m = 19.39 $^{\circ}/_{\infty}$ ;  
212 m = 19.33 $^{\circ}/_{\infty}$ ; 300 m = 19.29 $^{\circ}/_{\infty}$ ; 395 m = 19.21 $^{\circ}/_{\infty}$ ; 562 m = 19.16 $^{\circ}/_{\infty}$
- d) All chlorinities were questionable. Observed values were:  
Todas las clorinidades fueron cuestionables. Los valores observados fueron:  
0 m = 19.81 $^{\circ}/_{\infty}$ ; 48 m = 19.76 $^{\circ}/_{\infty}$ ; 73 m = 19.73 $^{\circ}/_{\infty}$ ; 98 m = 19.63 $^{\circ}/_{\infty}$ ; 147 m = 19.60 $^{\circ}/_{\infty}$ ;  
200 m = 19.18 $^{\circ}/_{\infty}$ ; 295 m = 19.12 $^{\circ}/_{\infty}$ ; 383 m = 19.10 $^{\circ}/_{\infty}$ ; 575 m = 19.06 $^{\circ}/_{\infty}$
- e) Questionable value, 4.72 ml/L—Valor cuestionable de 4.72 ml/L
- f) Extrapolated value used instead of questionable value of 18.73 $^{\circ}/_{\infty}$   
Se usó el valor extrapolado en vez del valor cuestionable de 18.73 $^{\circ}/_{\infty}$
- g) Questionable value 19.41 $^{\circ}/_{\infty}$ —Valor cuestionable de 19.41 $^{\circ}/_{\infty}$
- h) Questionable value 3.86 ml/L—Valor cuestionable de 3.86 ml/L
- i) Extrapolated value used in place of missing datum  
Se usó el valor extrapolado en vez del dato que falta
- j) Extrapolated value used instead of questionable value of 19.36 $^{\circ}/_{\infty}$   
Se usó el valor extrapolado en vez del valor cuestionable de 19.36 $^{\circ}/_{\infty}$
- k) Extrapolated value used in place of missing datum  
Se usó el valor extrapolado en vez del dato que falta

STATION	DATE	TIME	LATITUDE	LONGITUDE	D
H 001	OCT 6, 1963	1220-1320	10° 14.1'N	172° 50.0'E	35

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	29.10	18.30	34.14	4.92	21.41	639.6	-5.7	-0	-0	-0	-0
24	29.20	18.95	34.23	4.46	21.44	636.3	-1.2	-0	-0	-0	-0
49	28.95	18.92	34.18	4.45	21.49	632.7	-0.9	-0	-0	-0	-0
74	26.05	19.11	34.52	4.47	22.68	518.0	.08	-0	-0	-0	-0
97	22.10	19.34	34.94	4.58	24.16	376.4	.26	-0	-0	-0	-0
146	14.70	19.09	34.49	3.21	25.60	235.8	2.35	-0	-0	-0	-0
203	10.01	19.14	34.58	.70	26.64	140.8	5.24	-0	-0	-0	-0
305	999.00	19.19	34.67	.91	999.00	999.0	999.00	-0	-0	-0	-0
410	8.54	19.17	34.63	.90	26.92	114.0	5.44	-0	-0	-0	-0
595	6.28	19.14	34.58	.98	27.20	87.3	5.72	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	29.10	18.90	34.14	21.41	639.6	639.7	0	1.302	249.4	
10	29.17	18.32	34.12	21.42	638.7	639.2	.064	1.238	236.7	
20	29.19	18.74	34.22	21.43	637.2	638.2	.128	1.174	224.7	
30	29.16	18.45	34.23	21.45	635.5	636.9	.192	1.111	213.3	
50	28.88	18.92	34.19	21.51	629.7	631.9	.318	.984	192.3	
75	25.21	19.12	34.54	22.73	512.7	516.0	.462	.840	169.5	
100	21.55	19.31	34.88	24.27	365.8	369.6	.573	.730	149.9	
150	14.32	19.09	34.48	25.74	226.2	230.6	.723	.580	117.2	
200	10.22	19.13	34.57	26.59	145.0	149.6	.818	.485	90.6	
250	9.57	19.15	34.59	26.72	132.9	138.3	.890	.413	68.1	
300	7.19	19.15	34.60	26.80	125.9	132.2	.957	.345	49.2	
400	8.59	19.17	34.63	26.91	115.0	122.8	1.085	.217	21.1	
500	7.34	19.15	34.59	27.07	99.8	108.3	1.200	.102	5.1	
600	6.25	19.14	34.58	27.21	86.7	95.6	1.302	0	0	

H 001

STATION	DATE	TIME	LATITUDE	LONGITUDE	D
H 004	OCT 7, 1963	1220-1318	06° 49.0'N	175° 15.0'E	43

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	30.10	18.73	33.84	4.42	20.84	694.1	-1.3	-0	-0	-0	-0
25	29.42	18.70	33.78	4.39	21.03	675.8	-0.5	-0	-0	-0	-0
50	28.91	18.85	34.05	4.54	21.41	640.0	-1.7	-0	-0	-0	-0
75	25.49	19.19	34.67	4.81	22.96	491.0	-2.2	-0	-0	-0	-0
100	21.54	19.26	34.79	4.22	24.48	346.1	.76	-0	-0	-0	-0
150	14.80	19.15	34.60	2.68	25.72	227.9	2.87	-0	-0	-0	-0
216	10.01	19.19	34.67	.81	26.61	144.0	5.24	-0	-0	-0	-0
272	7.45	19.15	34.65	.80	26.79	126.5	5.41	-0	-0	-0	-0
330	6.44	19.13	34.65	1.92	26.95	111.2	4.44	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	30.10	18.73	33.84	20.84	694.1	694.2	0	1.076	140.7	
10	29.93	18.72	33.82	20.89	689.5	690.0	.069	1.027	130.1	
20	29.65	18.71	33.80	20.97	681.9	682.9	.138	.958	120.2	
30	29.34	18.72	33.82	21.05	670.7	672.1	.206	.891	111.0	
50	25.21	18.85	34.05	21.40	640.0	642.2	.337	.759	94.5	
75	21.49	19.19	34.67	22.96	491.0	494.1	.479	.617	77.3	
100	17.54	19.26	34.79	24.48	346.1	349.8	.585	.512	63.1	
150	10.80	19.15	34.60	25.72	227.9	232.4	.730	.366	41.2	
200	11.50	19.17	34.63	26.42	161.8	166.8	.830	.266	25.4	
250	9.27	19.18	34.65	26.72	132.9	138.5	.906	.190	14.0	
300	7.17	19.18	34.65	26.83	122.4	128.6	.973	.123	6.7	
400	6.27	19.17	34.65	26.96	110.1	117.8	1.096	0	0	

H 004

STATION		DATE		TIME	LATITUDE	LONGITUDE	D				
H 007		OCT 8, 1963		1220-1310	03°09.5'N	177°48.0'E	3A				
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —			
0	30.70	19.26	34.79	4.43	21.35	645.2	-20	-0	-0	-0	-0
24	29.93	19.27	34.81	4.45	21.63	618.5	-17	-0	-0	-0	-0
48	29.85	19.52	35.26	4.48	22.00	583.5	-21	-0	-0	-0	-0
72	29.61	19.52	35.26	4.43	22.08	575.7	-14	-0	-0	-0	-0
96	29.15	19.59	35.39	4.30	22.33	551.7	.01	-0	-0	-0	-0
144	26.15	19.60	35.41	3.28	23.32	457.3	1.24	-0	-0	-0	-0
243	11.45	19.23	34.83	2.48	26.58	146.5	3.46	-0	-0	-0	-0
355	10.08	19.24	34.76	1.58	26.77	128.6	4.54	-0	-0	-0	-0
439	8.64	19.21	34.70	2.46	26.96	110.1	3.87	-0	-0	-0	-0
639	7.02	19.18	34.65	2.08	27.16	91.4	4.50	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/0</sub>	ΔD <sub>Z/Z MAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	30.70	19.26	34.79	21.35	645.2	645.3	0	1.676	364.0	
10	30.50	19.26	34.80	21.42	638.2	638.7	.064	1.612	347.5	
20	30.15	19.27	34.81	21.55	626.1	627.1	.127	1.549	331.7	
30	29.91	19.32	34.90	21.70	611.8	613.1	.190	1.487	316.5	
50	29.83	19.52	35.26	22.00	582.9	585.1	.309	1.367	288.0	
75	29.56	19.53	35.28	22.10	573.0	576.3	.455	1.227	255.6	
100	28.98	19.59	35.40	22.39	545.7	550.0	.595	1.081	226.8	
150	25.51	19.57	35.35	23.47	442.3	448.4	.845	.831	179.0	
200	17.73	19.25	34.77	25.18	279.4	286.1	1.028	.648	142.1	
250	11.35	19.28	34.82	26.59	145.2	151.3	1.138	.538	112.4	
300	10.69	19.26	34.79	26.68	136.6	143.6	1.212	.465	87.3	
400	9.27	19.27	34.72	26.88	118.2	126.5	1.347	.330	47.6	
500	8.08	19.20	34.68	27.03	103.6	112.9	1.466	.210	20.6	
600	7.29	19.18	34.66	27.13	94.6	104.7	1.575	.101	5.1	
700	6.63	19.18	34.64	27.21	86.9	97.7	1.676	0	0	

H 007

STATION		DATE		TIME	LATITUDE	LONGITUDE	D				
H 010		OCT 9, 1963		1200-1300	00°18.0'S	179°47.0'E	30				
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —			
0	29.30	19.44	35.12	4.47	22.07	576.0	-16	-0	-0	-0	-0
22	29.26	19.46	35.16	4.34	22.11	572.1	-23	-0	-0	-0	-0
43	28.88	19.51	35.25	4.65	22.31	553.4	-32	-0	-0	-0	-0
65	28.74	19.56	35.34	4.31	22.47	542.5	.03	-0	-0	-0	-0
87	28.52	19.60	35.41	4.25	22.55	530.3	.10	-0	-0	-0	-0
130	28.17	19.63	35.46	4.10	22.71	515.4	.28	-0	-0	-0	-0
289	11.67	19.27	34.81	2.44	26.52	151.8	3.47	-0	-0	-0	-0
390	9.05	19.18	34.65	1.13	26.86	120.3	5.14	-0	-0	-0	-0
511	8.16	19.20	34.69	1.08	27.02	104.4	5.32	-0	-0	-0	-0
698	6.52	19.11	34.52	1.59	27.13	94.4	5.07	-0	-0	-0	-0

H 010

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/0</sub>	ΔD <sub>Z/Z MAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	29.30	19.44	35.12	22.07	576.0	576.1	0	1.760	394.0	
10	29.29	19.45	35.13	22.08	574.9	575.4	.058	1.702	376.7	
20	29.27	19.46	35.15	22.11	572.8	573.7	.115	1.645	360.0	
30	29.16	19.47	35.18	22.16	567.2	568.5	.172	1.588	343.8	
50	28.84	19.52	35.27	22.34	550.4	552.6	.284	1.476	313.2	
75	28.65	19.58	35.37	22.48	537.4	540.6	.421	1.339	278.0	
100	28.43	19.61	35.42	22.59	526.2	530.5	.555	1.205	246.2	
150	26.86	19.56	35.34	23.04	483.8	490.0	.810	.950	192.3	
200	21.53	19.30	34.87	24.27	366.0	373.4	1.026	.734	150.2	
250	15.39	19.20	34.68	25.66	233.7	241.3	1.179	.581	117.3	
300	11.34	19.26	34.79	26.56	147.8	155.2	1.279	.482	90.8	
400	8.97	19.18	34.65	26.87	118.5	126.9	1.420	.340	49.7	
500	8.23	19.20	34.68	27.01	105.7	115.1	1.541	.219	21.7	
600	7.32	19.15	34.60	27.08	99.3	109.4	1.653	.107	5.4	
700	6.50	19.11	34.52	27.13	94.3	104.9	1.760	0	0	

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 013		01 9, 1963	1230-1310	03° 18.8'S	178° 14.0'W	31					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	22.55	19.56	35.34	4.65	22.15	568.5	-0.36	-0	-0	-0	-0
24	22.64	19.55	35.32	4.52	22.11	572.8	-0.24	-0	-0	-0	-0
47	22.45	19.56	35.34	4.50	22.19	565.3	-0.21	-0	-0	-0	-0
70	22.17	19.69	35.57	4.42	22.46	539.4	-0.11	-0	-0	-0	-0
94	23.27	19.67	35.57	4.46	22.52	533.0	-0.14	-0	-0	-0	-0
141	27.78	19.64	35.64	3.79	23.12	475.9	.60	-0	-0	-0	-0
214	18.53	19.64	35.55	2.72	25.58	241.4	2.41	-0	-0	-0	-0
304	10.29	19.30	34.67	2.54	26.82	124.0	3.55	-0	-0	-0	-0
390	7.18	19.24	34.74	1.62	26.91	115.6	4.43	-0	-0	-0	-0
530	7.62	19.20	34.69	2.23	27.10	96.8	4.25	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	22.55	19.56	35.34	22.15	568.5	568.7	0	1.443	238.9	
10	22.62	19.55	35.32	22.12	571.7	572.2	.057	1.386	224.7	
20	22.64	19.55	35.32	22.11	572.5	573.5	.114	1.329	211.1	
30	22.61	19.55	35.32	22.12	571.3	572.7	.172	1.272	196.1	
50	22.42	19.57	35.35	22.21	563.0	565.2	.265	1.158	173.8	
75	22.13	19.67	35.57	22.47	538.2	541.4	.424	1.019	146.6	
100	23.36	19.70	35.60	22.58	527.6	531.8	.558	.885	122.8	
150	26.37	19.42	35.41	23.36	453.3	459.5	.806	.637	84.8	
200	20.20	19.67	35.54	25.13	283.9	291.1	.993	.450	57.6	
250	14.88	19.45	35.14	26.13	189.5	196.9	1.115	.328	38.1	
300	10.60	19.31	34.88	26.77	128.5	135.5	1.198	.245	23.8	
400	9.05	19.23	34.73	26.92	114.1	122.2	1.327	.116	5.8	
500	7.72	19.20	34.69	27.06	100.4	109.5	1.443	0	0	

H 013

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 016		01 10, 1963	1230-1315	06° 49.7'S	176° 05.0'W	25					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	29.60	19.60	35.52	4.56	22.27	557.2	-0.28	-0	-0	-0	-0
25	23.60	19.64	35.48	4.46	22.24	559.5	-0.18	-0	-0	-0	-0
49	22.42	19.68	35.55	4.49	22.36	548.8	-0.20	-0	-0	-0	-0
74	21.33	19.67	35.57	4.17	22.40	544.6	.13	-0	-0	-0	-0
99	22.02	19.69	35.57	4.33	22.48	536.8	-0.02	-0	-0	-0	-0
148	26.85	19.67	35.90	3.59	23.46	443.4	.87	-0	-0	-0	-0
210	22.07	19.73	36.00	3.53	24.98	298.6	1.26	-0	-0	-0	-0
311	12.24	19.35	34.96	1.89	26.93	151.5	3.94	-0	-0	-0	-0
394	9.14	19.26	34.79	2.32	26.95	111.0	3.93	-0	-0	-0	-0
594	6.42	19.14	34.58	2.85	27.18	90.0	3.81	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	29.60	19.66	35.52	22.27	557.2	557.3	0	1.610	313.5	
10	29.60	19.65	35.49	22.25	559.1	559.2	.056	1.554	297.7	
20	29.60	19.64	35.48	22.24	559.6	559.7	.112	1.498	282.4	
30	29.56	19.65	35.49	22.26	558.1	559.5	.168	1.442	267.7	
50	29.42	19.68	35.55	22.36	548.6	550.8	.279	1.331	240.0	
75	29.72	19.69	35.57	22.40	544.3	547.6	.416	1.194	208.4	
100	29.06	19.69	35.57	22.49	535.7	539.9	.552	1.058	180.3	
150	26.74	19.67	35.90	23.50	440.0	446.1	.799	.811	133.6	
200	23.12	19.92	35.98	24.66	328.9	336.5	.994	.615	97.9	
250	18.37	19.65	35.49	25.58	241.8	250.3	1.141	.469	70.8	
300	13.24	19.36	35.01	26.37	166.4	174.6	1.247	.363	50.0	
400	9.04	19.25	34.78	26.96	110.2	118.4	1.394	.216	21.1	
500	7.60	19.18	34.66	27.08	98.8	107.6	1.507	.103	5.2	
600	6.43	19.14	34.57	27.18	89.4	98.5	1.610	0	0	

H 016

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 019		OCT 11, 1963	1220-1345	10° 23.7'S	173° 49.2'W	40					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	29.10	19.66	35.52	4.42	22.44	541.0	-1.11	-0	-0	-0	-0
25	28.50	19.81	35.79	4.47	22.84	502.5	-1.13	-0	-0	-0	-0
50	28.14	19.75	35.68	4.47	22.86	498.7	-1.10	-0	-0	-0	-0
75	28.04	19.75	35.68	4.18	22.91	495.7	-1.20	-0	-0	-0	-0
100	28.04	19.82	35.81	4.38	23.01	486.7	-1.00	-0	-0	-0	-0
150	24.87	19.80	35.80	3.56	23.00	499.0	999.00	-0	-0	-0	-0
194	20.53	19.82	35.81	3.62	25.25	272.6	1.32	-0	-0	-0	-0
319	13.80	19.42	35.08	2.95	26.31	172.0	2.79	-0	-0	-0	-0
404	9.64	19.19	34.67	2.59	26.77	128.2	3.60	-0	-0	-0	-0
598	6.26	19.12	34.54	2.97	27.18	89.3	3.73	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	29.10	19.66	35.52	22.44	541.0	541.2	0	1.531	314.4		
10	28.95	19.70	35.58	22.54	531.4	531.9	.054	1.477	299.3		
20	28.70	19.76	35.70	22.71	515.3	516.3	.106	1.425	284.8		
30	28.44	19.80	35.77	22.85	501.8	503.1	.157	1.374	270.8		
50	28.14	19.75	35.68	22.88	498.7	501.1	.257	1.274	244.3		
75	28.04	19.75	35.68	22.91	495.7	498.9	.382	1.149	214.1		
100	28.04	19.82	35.80	23.01	486.7	470.7	.506	1.025	186.9		
150	24.87	19.77	35.72	23.95	397.0	403.0	.730	.801	141.2		
200	20.12	19.79	35.75	25.32	266.5	273.7	.899	.632	105.4		
250	17.10	19.58	35.37	25.79	221.4	229.5	1.025	.506	76.9		
300	14.63	19.45	35.14	26.18	184.5	193.2	1.130	.401	54.2		
400	9.82	19.20	34.68	26.75	130.0	138.7	1.296	.235	22.5		
500	7.80	19.14	34.58	26.99	107.3	116.3	1.424	.107	5.4		
600	6.23	19.12	34.54	27.18	89.4	98.3	1.531	0	0		

H 019

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 022		OCT 12, 1963	1225-1310	13° 42.2'S	171° 13.4'W	38					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	28.90	19.81	35.79	4.38	22.71	515.2	-0.06	-0	-0	-0	-0
25	27.90	19.78	35.73	4.44	23.00	487.5	-0.05	-0	-0	-0	-0
50	27.71	19.79	35.75	4.50	23.08	480.2	-0.10	-0	-0	-0	-0
75	27.54	19.79	35.75	4.42	23.13	475.0	-0.01	-0	-0	-0	-0
100	27.38	19.76	35.70	3.94	23.14	473.9	.48	-0	-0	-0	-0
150	25.36	20.06	36.24	4.47	24.19	374.2	.08	-0	-0	-0	-0
218	22.44	19.97	36.08	3.69	24.93	303.4	1.09	-0	-0	-0	-0
306	17.55	19.61	35.43	3.59	25.73	227.6	1.64	-0	-0	-0	-0
388	11.85	19.28	34.83	3.13	26.50	153.7	2.75	-0	-0	-0	-0
594	6.47	19.10	34.51	3.46	27.12	95.1	3.21	-0	-0	-0	-0

H 022

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	28.90	19.81	35.79	22.71	515.2	515.3	0	1.629	352.3		
10	28.65	19.80	35.77	22.78	508.3	508.8	.051	1.577	336.2		
20	28.23	19.79	35.75	22.90	496.7	497.6	.102	1.527	320.7		
30	27.86	19.78	35.74	23.01	486.1	487.5	.151	1.478	305.7		
50	27.71	19.79	35.75	23.07	480.2	482.4	.248	1.381	277.1		
75	27.54	19.79	35.75	23.13	475.0	478.2	.366	1.261	244.1		
100	27.38	19.76	35.70	23.14	473.9	478.1	.487	1.141	214.1		
150	25.36	20.06	36.24	24.19	374.2	380.2	.702	.927	162.4		
200	23.37	20.00	36.13	24.70	324.8	332.5	.880	.749	120.5		
250	20.93	19.85	35.87	25.19	278.3	287.4	1.035	.594	86.9		
300	17.97	19.64	35.48	25.66	233.5	243.5	1.168	.461	60.6		
400	11.47	19.26	34.79	26.55	149.5	159.3	1.369	.260	24.5		
500	8.65	19.15	34.59	26.87	118.8	128.5	1.513	.116	5.8		
600	6.34	19.10	34.50	27.14	93.7	102.7	1.629	0	0		



STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 026		OCT 18, 1963		1220-1300		15° 20.3S		166° 45.8W		43	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/T)	(ml/L)	— (μg at./L) —			
0	27.80	19.96	36.06	4.47	23.28	461.0	-.09	.18	.2	.5	.02
25	26.95	19.73	35.64	4.55	23.24	464.6	-.09	.05	.2	.6	.01
50	26.60	19.83	35.82	4.56	23.49	441.0	-.09	.15	.3	1.6	.01
75	27.19	19.93	36.00	4.72	23.43	446.0	-.29	.18	.1	.7	.06
99	26.20	19.68	35.55	4.59	23.41	448.4	-.08	.12	.1	.6	0
149	25.39	19.94	36.02	4.18	24.01	390.6	.38	.12	0	.7	.05
204	23.31	19.95	36.04	3.76	24.65	329.9	.95	.25	3.6	.7	.05
302	18.38	19.68	35.55	3.81	25.62	237.9	1.34	.25	3.5	1.3	.02
408	12.64	19.36	34.97	3.46	26.46	157.6	2.32	.47	8.7	6.2	.01
593	6.75	19.18	34.65	3.81	27.20	87.9	2.81	1.08	23.1	22.5	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/Z</sub> MAX	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	27.80	19.96	36.06	23.28	461.0	461.1	0	1.626	360.1	
10	27.59	19.89	35.93	23.25	463.7	464.2	.046	1.580	344.0	
20	27.23	19.80	35.77	23.24	464.4	465.3	.093	1.533	328.5	
30	26.89	19.74	35.66	23.27	461.2	462.6	.139	1.487	313.4	
50	26.60	19.83	35.82	23.48	441.0	443.1	.230	1.396	284.5	
75	27.19	19.93	36.00	23.43	446.0	449.2	.341	1.285	251.0	
100	26.19	19.65	35.56	23.42	447.6	451.8	.454	1.172	220.3	
150	25.36	19.94	36.02	24.02	389.7	395.8	.666	.960	167.0	
200	23.50	19.95	36.04	24.59	335.4	343.1	.850	.776	123.6	
250	21.36	19.84	35.84	25.05	291.5	300.8	1.011	.615	88.9	
300	18.52	19.69	35.56	25.59	240.2	250.4	1.149	.477	61.6	
400	13.05	19.38	35.00	26.40	163.3	174.0	1.361	.265	24.5	
500	8.44	19.23	34.74	26.86	119.7	130.2	1.514	.113	5.6	
600	6.57	19.18	34.65	27.22	85.7	95.0	1.626	0	0	

H 026

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 029		OCT 19, 1963		1225-1300		15° 51.0S		162° 43.5W		36	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/T)	(ml/L)	— (μg at./L) —			
0	27.60	19.97	36.08	4.54	23.36	453.5	-.14	.19	.1	.7	.02
24	26.90	19.95	36.04	4.55	23.55	434.5	-.10	.15	0	.5	0
49	26.52	19.96	36.06	4.61	23.69	421.7	-.14	.13	.2	.5	0
73	25.81	19.65	35.50	4.62	23.49	440.7	-.08	.10	.2	.6	.02
97	25.61	19.65	35.50	4.63	23.55	434.8	-.07	.12	.2	.6	0
146	24.67	19.93	36.00	4.75	24.22	371.0	.36	.19	.2	.6	.02
217	21.80	19.95	36.04	3.84	25.08	288.8	.99	.30	1.7	.6	.03
306	17.11	19.54	35.30	4.05	25.74	226.7	1.23	.54	2.5	1.5	.01
406	11.64	19.26	34.79	3.46	26.52	152.6	2.45	1.03	4.8	6.2	0
611	6.19	19.03	34.38	3.63	27.06	101.1	3.09	1.30	25.3	27.4	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/Z</sub> MAX	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	27.60	19.97	36.08	23.35	453.5	453.6	0	1.573	354.8	
10	27.42	19.96	36.07	23.41	448.5	449.0	.045	1.527	339.3	
20	27.10	19.96	36.05	23.50	439.9	440.9	.090	1.483	324.2	
30	26.82	19.95	36.04	23.58	431.7	433.3	.133	1.439	309.6	
50	26.50	19.94	36.03	23.67	423.0	425.2	.219	1.353	281.7	
75	25.79	19.65	35.50	23.49	440.3	443.4	.328	1.245	249.2	
100	25.56	19.66	35.51	23.58	432.3	436.4	.438	1.135	219.4	
150	24.55	19.93	36.00	24.26	367.4	373.4	.640	.932	167.8	
200	22.65	19.94	36.02	24.83	313.1	320.7	.814	.759	125.5	
250	20.33	19.92	35.80	25.30	267.0	276.8	.963	.610	91.3	
300	17.51	19.57	35.36	25.68	231.5	241.3	1.093	.480	64.0	
400	11.95	19.27	34.81	26.47	156.8	166.8	1.297	.276	26.2	
500	8.86	19.11	34.53	26.79	126.3	136.3	1.448	.124	6.2	
600	6.43	19.03	34.39	27.03	103.3	112.4	1.573	0	0	

H 029

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 032		OCT 20, 1963	1220-1300	16° 33.0'S	158° 36.0'W	37					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	$\sigma_T$ (gm/L)	$\delta_T$ (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.10	19.96	36.06	4.58	23.50	439.4	-1.15	.20	.2	1.2	-0
25	26.11	19.93	36.00	4.68	23.78	413.3	-1.18	.13	.2	.2	0
49	25.72	19.96	36.06	4.68	23.94	397.8	-1.15	.17	.1	.4	0
73	25.34	19.95	36.04	4.86	24.04	387.9	-1.30	.14	.2	.5	.02
98	25.08	19.97	36.08	4.68	24.15	377.7	-1.10	.14	.1	.5	0
147	24.07	19.97	36.08	4.30	24.45	348.6	.35	.20	.3	.4	.07
228	21.10	19.84	35.84	4.08	25.13	284.7	.81	.39	1.5	.5	.02
322	16.18	19.53	35.28	4.03	25.94	207.2	1.34	.59	4.3	3.3	.02
365	11.17	19.21	34.70	3.66	26.53	150.9	2.32	1.07	5.5	11.3	0
616	6.32	19.21	34.70	3.52	27.30	78.4	3.16	1.91	15.2	32.5	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	$\sigma_T$ (gm/L)	$\delta_T$ (cl/T)	$\delta$ (cl/T)	$\Delta D_{Z/0}$ (dyn m)	$\Delta D_{Z/Z MAX}$ (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.10	19.96	36.06	23.50	439.4	439.5	0	1.462	325.0	
10	26.85	19.95	36.04	23.57	432.8	433.4	.044	1.418	310.6	
20	26.44	19.94	36.02	23.68	422.0	422.9	.086	1.375	296.6	
30	26.04	19.93	36.01	23.80	410.5	411.8	.128	1.334	283.1	
50	25.71	19.96	36.06	23.94	397.4	399.5	.209	1.253	257.2	
75	25.32	19.95	36.04	24.05	387.1	390.2	.308	1.154	227.1	
100	25.05	19.97	36.08	24.16	376.7	380.7	.404	1.057	199.5	
150	23.99	19.97	36.07	24.47	346.7	352.6	.588	.874	151.2	
200	22.33	19.89	35.94	24.86	310.3	317.8	.755	.707	111.7	
250	20.16	19.78	35.72	25.29	269.0	278.0	.904	.558	80.1	
300	17.57	19.61	35.43	25.72	228.0	237.9	1.033	.429	55.4	
400	10.32	19.20	34.68	26.67	138.3	147.3	1.226	.236	22.2	
500	8.25	19.19	34.67	26.99	107.3	116.7	1.358	.104	5.2	
600	6.56	19.21	34.70	27.26	82.0	91.3	1.462	0	0	

H 032

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 035		OCT 21, 1963	1220-1310	17° 07.0'S	154° 17.0'W	35					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	$\sigma_T$ (gm/L)	$\delta_T$ (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.00	20.08	36.27	4.55	23.70	420.7	-1.12	.23	.2	.8	0
25	26.93	20.05	36.22	4.62	23.68	422.5	-1.18	.18	.1	.8	.01
49	26.31	20.05	36.22	4.63	23.88	403.7	-1.15	.17	.1	.7	0
74	25.92	20.00	36.13	4.66	23.93	398.5	-1.15	.16	.1	.7	.02
99	25.64	19.99	36.11	4.67	24.00	391.5	-1.14	.15	0	.8	0
148	24.67	19.97	36.08	4.45	24.27	365.8	.16	.17	0	.9	0
202	21.90	19.92	35.99	4.04	25.01	295.4	.78	.30	1.6	.8	.02
305	17.97	19.61	35.43	4.18	25.62	237.4	1.01	.43	3.0	1.5	.01
378	13.67	19.36	34.47	3.99	26.25	177.4	1.67	.73	8.2	4.6	0
594	6.80	19.06	34.43	3.74	27.02	104.7	2.88	1.88	21.5	24.8	0

H 035

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	$\sigma_T$ (gm/L)	$\delta_T$ (cl/T)	$\delta$ (cl/T)	$\Delta D_{Z/0}$ (dyn m)	$\Delta D_{Z/Z MAX}$ (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.00	20.08	36.27	23.70	420.7	420.8	0	1.552	360.9	
10	26.98	20.07	36.25	23.68	422.0	422.5	.042	1.510	345.6	
20	26.95	20.06	36.23	23.68	422.4	423.3	.064	1.468	330.7	
30	26.85	20.05	36.23	23.71	419.7	421.0	.127	1.426	316.2	
50	26.30	20.05	36.22	23.88	403.5	405.6	.209	1.343	283.5	
75	25.91	20.00	36.13	23.93	398.2	401.4	.310	1.242	256.2	
100	25.62	19.99	36.11	24.01	391.1	395.2	.410	1.143	226.4	
150	24.59	19.97	36.07	24.29	363.8	369.8	.601	.951	174.1	
200	22.04	19.92	35.99	24.98	298.7	306.4	.770	.787	130.7	
250	20.31	19.79	35.75	25.27	270.7	279.6	.917	.636	95.3	
300	18.21	19.63	35.46	25.59	240.6	250.7	1.049	.503	66.8	
400	12.81	19.30	34.87	26.35	168.3	178.9	1.264	.288	27.2	
500	9.42	19.13	34.56	26.73	132.4	142.8	1.425	.128	6.4	
600	6.65	19.06	34.43	27.04	103.1	112.4	1.552	0	0	

STATION		DATE	TIME	LATITUDE	LONGITUDE	D
H 038		OCT 22, 1963	1220-1305	17° 20.3'S	150° 04.0'W	39

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	27.45	20.14	36.38	4.53	23.63	426.8	-1.13	.14	.2	.7	.03
25	26.53	20.09	36.29	4.58	23.86	405.1	-1.11	.12	0	.6	0
50	26.22	20.09	36.29	4.64	23.96	395.8	-1.15	.12	0	.7	.01
75	25.80	20.05	36.22	4.68	24.04	388.4	-1.16	.10	0	.5	.02
100	25.35	20.00	36.13	4.66	24.11	381.7	-1.10	.10	0	.5	.01
150	24.69	20.02	36.17	4.54	24.34	359.8	-.06	.10	0	.6	.02
314	16.73	19.54	35.30	4.10	25.83	218.1	1.22	.44	7.1	2.1	.02
410	11.54	19.23	34.74	3.76	26.49	154.8	2.17	1.00	17.7	7.9	.01
501	8.34	19.09	34.49	3.73	26.84	121.8	2.65	-0	-0	-0	-0
704	5.80	19.08	34.47	3.44	27.18	89.6	3.34	2.05	31.6	35.3	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.45	20.14	36.38	23.63	426.8	426.9	0	1.648	425.2	
10	27.22	20.13	36.36	23.69	421.4	421.9	.042	1.606	408.9	
20	26.84	20.11	36.32	23.78	412.3	413.3	.084	1.564	391.1	
30	26.47	20.09	36.29	23.88	403.5	404.8	.125	1.523	377.7	
50	26.22	20.09	36.29	23.96	395.8	397.9	.205	1.443	348.0	
75	25.80	20.05	36.22	24.04	388.4	391.6	.304	1.344	313.2	
100	25.35	20.00	36.13	24.11	381.7	385.7	.401	1.247	280.8	
150	24.69	20.02	36.17	24.34	359.8	365.8	.589	1.059	223.1	
200	22.97	19.89	35.93	24.67	328.0	335.7	.764	.884	174.5	
250	20.75	19.75	35.67	25.09	287.9	296.9	.923	.726	134.3	
300	17.76	19.59	35.38	25.64	235.7	245.6	1.058	.590	101.4	
400	12.05	19.25	34.78	26.43	161.0	171.2	1.267	.382	52.8	
500	8.37	19.09	34.49	26.84	122.1	131.6	1.418	.230	22.2	
600	6.79	19.08	34.47	27.02	104.7	114.5	1.541	.107	5.4	
700	5.84	19.08	34.47	27.17	90.1	99.8	1.648	0	0	

H 038

STATION		DATE	TIME	LATITUDE	LONGITUDE	D
H 041		OCT 29, 1963	1200-1300	19° 40.2'S	146° 04.1'W	35

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	25.40	20.07	36.26	4.67	24.19	374.0	-1.12	.16	0	.5	.02
23	25.63	20.06	36.24	4.65	24.10	382.1	-1.12	.14	0	.5	0
46	25.40	20.09	36.29	4.62	24.22	371.4	-.07	.12	0	.5	.01
69	24.64	20.03	36.18	4.68	24.37	357.1	-.07	.10	.1	.5	.04
92	24.36	20.01	36.15	4.70	24.42	351.7	-.07	.10	0	.5	.01
139	22.44	19.89	35.73	4.35	24.82	313.8	.43	.23	.6	.5	.05
246	18.17	19.65	35.50	4.24	25.63	236.8	.93	.40	4.0	.9	.02
354	14.88	19.45	35.14	4.18	26.12	190.0	1.34	.44	4.2	1.1	.01
449	10.72	19.26	34.79	4.18	26.68	136.6	1.85	1.05	16.8	5.8	.02
636	6.16	19.04	34.40	3.94	27.08	99.3	2.79	1.92	30.1	19.6	0

H 041

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.40	20.07	36.26	24.19	374.0	374.1	0	1.413	335.4	
10	25.57	20.06	36.24	24.12	380.1	380.6	.038	1.375	321.5	
20	25.62	20.06	36.24	24.11	381.8	382.7	.076	1.337	307.9	
30	25.58	20.07	36.25	24.13	379.7	381.0	.114	1.299	294.7	
50	25.31	20.08	36.28	24.23	369.4	371.5	.189	1.224	269.5	
75	24.57	20.03	36.18	24.38	355.8	358.8	.281	1.133	240.1	
100	24.12	19.99	36.12	24.47	346.7	350.7	.369	1.044	212.9	
150	22.12	19.87	35.89	24.88	307.8	313.5	.535	.878	164.8	
200	20.36	19.76	35.70	25.22	275.6	282.8	.684	.729	124.7	
250	18.07	19.64	35.49	25.64	235.3	243.7	.816	.597	91.5	
300	16.66	19.55	35.32	25.86	214.9	224.4	.933	.480	64.6	
400	12.87	19.34	34.94	26.39	164.2	174.8	1.133	.280	26.6	
500	9.31	19.17	34.64	26.80	125.1	135.4	1.288	.125	6.3	
600	6.92	19.07	34.44	27.01	105.6	115.2	1.413	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 044		OCT 30, 1963		1200-		21° 43.8'S		142° 46.2'W		37	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
		(μg at./L)									
0	23.70	19.83	35.82	4.79	24.37	356.4	-1.0	.15	0	.6	.01
24	23.80	19.82	35.81	4.79	24.33	360.5	-1.11	.14	0	.5	0
48	22.91	19.81	35.79	4.85	24.58	337.1	-1.0	.16	0	.6	0
72	22.65	19.81	35.79	4.84	24.65	330.0	-0.7	.10	.1	.6	.01
96	21.86	19.73	35.64	4.88	24.76	319.1	-0.4	.10	0	.6	0
144	20.36	19.71	35.61	4.44	25.15	282.7	.53	.16	1.0	.6	.06
230	18.48	19.64	35.48	4.34	25.54	245.5	.80	.25	2.9	.6	.01
315	15.09	19.51	35.25	4.41	26.16	186.5	1.08	.51	6.7	1.8	.01
394	11.86	19.32	34.90	4.25	26.56	146.5	1.63	.85	13.4	4.4	.01
583	7.19	19.07	34.45	4.87	26.98	108.5	1.69	.76	23.6	5.0	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	23.70	19.83	35.82	24.37	356.4	356.5	0	1.325	317.3		
10	23.77	19.82	35.81	24.34	359.5	360.0	.036	1.289	304.2		
20	23.79	19.82	35.81	24.33	360.3	361.2	.072	1.253	291.5		
30	23.64	19.82	35.80	24.37	356.2	357.5	.108	1.217	279.2		
50	22.89	19.81	35.79	24.58	336.5	338.5	.177	1.147	255.5		
75	22.57	19.80	35.77	24.66	328.7	331.7	.261	1.083	227.9		
100	21.76	19.73	35.64	24.79	316.6	320.5	.343	.982	202.3		
150	20.25	19.71	35.60	25.17	280.5	285.9	.494	.830	157.0		
200	19.21	19.67	35.53	25.39	259.8	266.8	.632	.692	119.0		
250	17.80	19.61	35.43	25.66	233.4	241.7	.760	.565	87.6		
300	15.80	19.53	35.29	26.03	198.4	207.7	.872	.453	62.1		
400	11.68	19.31	34.88	26.57	147.0	156.9	1.054	.270	26.0		
500	9.02	19.15	34.59	26.81	124.2	134.3	1.200	.125	6.2		
600	6.85	19.06	34.43	27.01	105.5	115.1	1.325	0	0		

H 044

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 047		OCT 31, 1963		1200-1300		23° 53.8'S		139° 09.4'W		35	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
		(μg at./L)									
0	23.35	19.83	35.82	4.84	24.48	346.6	-1.13	.15	0	.5	0
24	23.42	19.84	35.84	4.83	24.47	347.3	-1.12	.10	0	.5	0
48	23.11	19.83	35.82	4.86	24.55	340.0	-1.13	.10	0	.5	0
72	22.22	19.78	35.73	4.91	24.73	322.2	-1.10	.09	0	.5	0
96	21.58	19.74	35.66	4.97	24.86	310.4	-1.11	.10	0	.5	0
144	20.60	19.70	35.59	5.02	25.07	290.1	-0.7	-0	-0	.2	-0
208	19.23	19.68	35.55	4.65	25.40	258.4	.42	.14	.6	.6	.09
294	16.11	19.56	35.34	4.49	26.00	201.7	.89	.33	4.5	1.5	.01
380	12.75	19.39	35.03	4.39	26.48	155.7	1.38	.64	9.7	2.6	.02
565	7.48	19.10	34.51	4.59	26.98	108.3	1.92	1.30	25.1	7.8	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	23.35	19.83	35.82	24.47	346.6	346.7	0	1.321	317.0		
10	23.40	19.84	35.84	24.47	347.1	347.6	.035	1.286	304.0		
20	23.42	19.84	35.84	24.47	347.2	348.1	.070	1.251	291.3		
30	23.36	19.84	35.84	24.48	345.9	347.2	.104	1.216	279.0		
50	23.06	19.83	35.82	24.56	338.9	340.9	.173	1.148	255.3		
75	22.15	19.78	35.72	24.74	320.9	323.8	.256	1.064	227.7		
100	21.51	19.74	35.65	24.87	309.0	312.7	.336	.985	202.1		
150	20.49	19.70	35.58	25.09	287.6	293.1	.487	.833	156.6		
200	19.43	19.68	35.56	25.35	263.1	270.1	.628	.693	118.5		
250	17.89	19.62	35.45	25.66	233.7	242.0	.756	.565	87.0		
300	15.89	19.55	35.31	26.03	198.7	208.0	.869	.452	61.6		
400	12.07	19.34	34.94	26.55	149.5	159.7	1.052	.268	25.6		
500	9.10	19.17	34.63	26.83	122.9	133.1	1.199	.122	6.1		
600	6.68	19.07	34.46	27.06	101.2	110.5	1.321	0	0		

H 047

STATION		DATE		TIME	LATITUDE	LONGITUDE	D						
H 049		NOV 1, 1963		0600-0650	24° 55.7'S	137° 03.2'W	35						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS													
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)		
0	21.60	19.67	35.53	5.06	24.75	320.0	-2.20	.14	.2	.8	.03		
24	21.74	19.64	35.48	4.97	24.67	327.7	-1.12	.14	.3	.7	.02		
48	20.74	19.66	35.52	5.08	24.98	298.9	-1.14	.15	.1	.7	.06		
72	20.28	19.66	35.52	5.05	25.10	287.2	-1.07	.13	.2	.7	.05		
96	19.89	19.68	35.55	4.94	25.23	274.8	.07	.15	.3	.7	.03		
144	18.88	19.64	35.48	4.75	25.44	255.1	.35	.15	.6	.8	.08		
227	16.73	19.54	35.30	4.63	25.83	218.1	.69	.24	3.3	1.2	.05		
311	14.32	19.41	35.07	4.50	26.27	175.7	1.13	.44	-0	-0	-0		
407	10.55	19.21	34.70	4.47	26.64	140.4	1.59	.66	16.6	4.5	-0		
608	6.58	19.01	34.34	4.69	26.98	108.6	1.97	1.23	28.6	12.0	.03		

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.60	19.67	35.53	24.75	320.0	320.2	0	1.213	299.4	
10	21.70	19.65	35.49	24.69	325.7	326.2	.032	1.181	287.5	
20	21.73	19.64	35.48	24.68	327.2	328.1	.065	1.148	275.8	
30	21.49	19.64	35.49	24.75	320.6	321.8	.098	1.116	264.5	
50	20.69	19.66	35.52	24.99	297.8	299.7	.160	1.054	242.8	
75	20.22	19.66	35.52	25.12	285.4	288.2	.233	.980	217.4	
100	19.79	19.68	35.54	25.25	272.8	276.4	.304	.909	193.8	
150	18.69	19.63	35.46	25.47	251.9	257.1	.437	.776	151.6	
200	17.36	19.57	35.35	25.71	228.9	235.5	.560	.653	115.9	
250	15.92	19.50	35.22	25.95	206.0	213.7	.673	.541	86.1	
300	14.25	19.42	35.09	26.22	180.7	189.3	.773	.440	61.6	
400	10.77	19.22	34.72	26.62	142.6	152.0	.944	.269	26.1	
500	8.51	19.09	34.49	26.82	124.1	133.7	1.087	.126	6.3	
600	6.71	19.01	34.35	26.97	109.7	119.1	1.213	0	0	

H 049

STATION		DATE		TIME	LATITUDE	LONGITUDE	D						
H 052		NOV 2, 1963		1200-1250	26° 59.1'S	133° 55.8'W	29						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS													
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)		
0	20.72	19.67	35.53	5.08	25.00	297.1	-1.14	.12	.6	.7	.09		
21	20.74	19.67	35.53	5.03	24.99	297.6	-1.09	.11	.4	.8	.09		
42	20.34	19.66	35.52	5.08	25.03	293.8	-1.13	.13	.2	.7	.05		
64	19.68	19.64	35.48	5.16	25.23	274.7	-1.13	.13	.3	.7	.03		
85	19.21	19.64	35.48	5.07	25.35	263.1	-1.00	.16	.3	.7	.03		
127	18.26	19.58	35.37	5.17	25.51	248.1	-1.01	.18	.3	.8	.05		
200	16.06	19.50	35.23	4.77	25.93	208.6	.62	.29	3.5	1.2	.02		
283	14.89	19.49	35.21	4.52	26.39	164.5	1.10	.48	8.2	2.1	.09		
345	12.03	19.26	34.79	4.48	26.43	160.7	1.38	.62	14.2	3.6	.08		
486	7.05	19.09	34.49	4.66	26.88	117.6	1.76	-0	-0	-0	-0		

H 052

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	20.72	19.67	35.53	24.99	297.1	297.2	0	1.013	215.1	
10	20.74	19.67	35.53	24.99	297.5	298.0	.030	.983	205.1	
20	20.74	19.67	35.53	24.99	297.6	298.5	.060	.953	195.4	
30	20.67	19.67	35.53	25.00	296.4	297.6	.089	.923	186.0	
50	20.20	19.65	35.50	25.09	287.6	289.5	.148	.865	168.2	
75	19.67	19.64	35.48	25.30	268.3	271.0	.218	.794	147.4	
100	17.33	19.61	35.43	25.41	257.1	260.6	.285	.728	128.4	
150	17.45	19.55	35.31	25.66	233.6	238.6	.409	.603	95.1	
200	16.06	19.50	35.23	25.93	208.6	214.8	.523	.490	67.8	
250	14.73	19.49	35.21	26.21	181.6	189.0	.624	.389	45.8	
300	13.40	19.44	35.11	26.40	163.7	172.0	.714	.299	28.6	
400	10.35	19.17	34.63	26.63	142.1	151.1	.876	.137	6.9	
500	7.77	19.09	34.47	26.92	114.1	122.9	1.013	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 054		NOV 3, 1963		0600-0650		28° 22.0'S		132° 03.0'W		33	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
		————— (μg at./L) —————									
0	19.80	19.67	35.53	5.26	25.24	273.8	-.24	.19	.7	.7	.10
24	19.96	19.64	35.48	5.13	25.16	281.7	-.13	.16	.2	.7	.05
47	19.71	19.64	35.48	5.07	25.22	275.5	-.04	.16	.2	.6	.04
70	19.51	19.63	35.46	5.11	25.26	271.8	-.06	.19	.4	.6	.03
94	19.33	19.61	35.43	5.17	25.28	270.0	-.11	.20	.5	.7	.08
141	18.17	19.60	35.41	5.12	25.56	243.4	.05	.18	.5	.7	.06
251	15.28	19.49	35.21	4.77	26.09	193.1	.70	.30	4.7	1.2	.03
348	12.98	19.35	34.96	4.53	26.38	165.3	1.21	.51	11.0	2.6	.03
435	10.06	19.18	34.65	4.57	26.69	136.3	1.56	.88	19.4	-.0	.02
651	6.41	17.00	34.33	5.22	26.99	107.8	1.47	1.25	28.3	-.0	.03

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	19.00	19.67	35.53	25.24	273.8	273.9	0	1.296	376.2	
10	19.92	19.65	35.49	25.18	279.7	280.2	.028	1.269	363.4	
20	19.95	19.64	35.48	25.16	281.3	282.1	.056	1.241	350.8	
30	19.91	19.64	35.48	25.17	280.5	281.7	.084	1.212	338.6	
50	19.69	19.64	35.48	25.23	275.1	276.9	.140	1.157	314.9	
75	19.46	19.63	35.46	25.26	271.5	274.2	.209	1.088	286.8	
100	19.22	19.61	35.42	25.30	267.6	271.2	.277	1.019	260.5	
150	18.00	19.59	35.39	25.59	240.3	245.4	.406	.890	212.7	
200	16.88	19.55	35.31	25.80	220.4	226.9	.524	.772	171.7	
250	15.37	19.49	35.21	26.08	193.7	201.3	.631	.665	135.2	
300	14.27	19.42	35.09	26.23	179.9	188.6	.729	.568	104.4	
400	11.22	19.24	34.76	26.56	147.8	157.5	.902	.395	56.3	
500	8.80	19.11	34.52	26.79	126.4	136.3	1.049	.248	24.2	
600	7.15	19.03	34.37	26.93	113.6	123.5	1.179	.118	5.9	
700	5.75	18.98	34.29	27.04	102.7	112.2	1.296	0	0	

H 054

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 057		NOV 4, 1963		1200-1250		30° 29.0'S		128° 31.0'W		36	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
		————— (μg at./L) —————									
0	19.40	19.55	35.32	5.27	25.18	279.6	-.21	.16	.4	-.0	.04
24	19.13	19.55	35.32	5.27	25.25	273.0	-.19	.16	.2	-.0	.03
49	18.90	19.56	35.34	4.74	25.32	266.1	-.36	.15	.3	-.0	.02
73	18.56	19.57	35.35	5.48	25.42	256.6	-.34	.15	.1	-.0	.03
97	18.20	19.53	35.28	5.32	25.46	253.3	-.15	.14	.1	-.0	.03
146	17.18	19.51	35.25	5.30	25.68	232.2	-.03	.12	.5	-.0	.04
319	12.07	19.29	34.95	4.60	26.48	156.3	1.26	.60	13.4	-.0	.02
430	9.00	19.11	34.52	4.74	26.77	128.9	1.54	1.00	21.0	-.0	.03
520	7.24	19.03	34.36	5.30	26.32	114.5	1.25	1.16	25.6	-.0	.02
710	6.02	18.99	34.31	5.21	27.02	104.4	1.54	1.26	28.9	-.0	.03

H 057

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	19.40	19.55	35.32	25.18	279.6	279.7	0	1.230	356.1	
10	19.33	19.55	35.32	25.20	277.9	278.3	.028	1.202	343.9	
20	19.21	19.55	35.32	25.23	274.9	275.7	.056	1.174	332.1	
30	19.07	19.55	35.32	25.26	271.7	272.5	.083	1.147	320.5	
50	18.89	19.56	35.34	25.32	265.4	267.6	.137	1.093	298.1	
75	18.53	19.57	35.35	25.42	256.3	259.0	.203	1.027	271.6	
100	18.15	19.53	35.28	25.47	252.2	255.7	.267	.962	246.7	
150	17.09	19.51	35.24	25.69	230.8	235.0	.390	.860	201.7	
200	15.78	19.44	35.11	25.90	210.8	217.0	.503	.726	162.5	
250	14.04	19.35	34.96	26.17	189.6	192.7	.606	.624	128.7	
300	12.57	19.30	34.87	26.40	163.7	171.6	.697	.533	99.8	
400	9.74	19.15	34.59	26.69	135.6	144.2	.855	.375	54.4	
500	7.60	19.04	34.40	26.86	117.5	126.2	.990	.240	23.7	
600	6.68	19.01	34.34	26.97	109.7	119.2	1.113	.117	9.9	
700	6.08	18.99	34.31	27.02	104.8	114.8	1.230	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 059		NOV 5, 1963		0600-0710		30° 58.0'S		126° 52.0'W		33	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	18.96	19.57	35.35	5.28	25.32	266.2	-.18	.11	2.0	1.3	.07
25	19.18	19.55	35.32	5.32	25.24	274.2	-.24	.08	.2	1.7	.01
50	18.91	19.55	35.32	5.26	25.31	267.6	-.16	.07	.1	2.3	.01
75	18.41	19.54	35.30	5.53	25.42	256.9	-.38	.08	.2	1.7	.02
100	18.18	19.53	35.28	5.32	25.46	252.8	-.15	.07	.2	1.5	-.0
149	17.27	19.50	35.23	5.45	25.64	235.6	-.19	.08	.5	1.2	.03
280	13.32	19.34	34.94	4.73	26.30	173.2	.97	-.0	-.0	-.0	-.0
375	10.63	19.22	34.72	4.68	26.64	140.4	1.37	.98	-.0	-.0	-.0
448	8.46	19.13	34.56	4.81	26.88	118.2	1.55	-.0	23.1	6.8	-.02
619	6.41	19.00	34.33	5.39	26.99	107.8	1.30	1.08	27.0	9.7	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	18.96	19.57	35.35	25.32	266.2	266.3	0	1.111	278.3		
10	19.12	19.56	35.33	25.26	272.1	272.6	.027	1.084	267.3		
20	19.17	19.55	35.32	25.24	273.7	274.5	.054	1.057	256.6		
30	19.14	19.55	35.32	25.24	273.3	274.4	.082	1.029	246.1		
50	18.91	19.55	35.32	25.30	267.6	269.5	.136	.975	226.1		
75	18.41	19.54	35.30	25.42	256.9	259.6	.202	.909	202.6		
100	18.18	19.53	35.28	25.46	252.8	256.3	.267	.844	180.7		
150	17.25	19.50	35.23	25.64	235.2	240.2	.391	.720	141.6		
200	15.84	19.43	35.10	25.88	212.7	218.9	.506	.605	108.4		
250	14.16	19.36	34.98	26.16	186.5	193.7	.609	.502	80.7		
300	12.68	19.31	34.88	26.38	165.4	173.4	.701	.410	57.9		
400	9.84	19.18	34.66	26.73	132.3	141.0	.858	.253	24.7		
500	7.76	19.08	34.47	26.91	114.7	123.6	.990	.121	6.0		
600	6.61	19.01	34.34	26.98	108.8	118.1	1.111	0	0		

H 059

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 062		NOV 6, 1963		1200-1250		32° 25.0'S		126° 09.0'W		40	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	18.08	19.52	35.26	5.43	25.47	251.7	-.25	.12	.5	1.2	.07
22	17.94	19.47	35.17	5.33	25.44	255.0	-.13	.08	.1	1.2	.02
44	17.79	19.50	35.23	5.53	25.52	247.6	-.32	.08	.2	1.1	.03
66	17.80	19.48	35.19	5.60	25.49	250.4	-.39	.07	.2	1.2	.05
88	17.51	19.48	35.19	5.46	25.56	243.7	-.22	.09	.2	1.4	.02
132	16.72	19.43	35.10	5.56	25.68	232.3	-.24	.09	.3	1.2	.04
225	14.56	19.40	35.05	4.82	26.12	190.0	.73	.30	5.2	1.9	.03
319	12.31	19.31	34.88	4.66	26.46	158.1	1.17	.55	12.5	3.4	.07
382	9.92	19.16	34.61	4.69	26.68	136.7	1.46	.76	18.7	5.3	.02
552	6.96	18.97	34.27	5.32	26.87	118.9	1.28	1.24	26.2	8.5	.02

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	18.08	19.52	35.26	25.47	251.7	251.9	0	1.096	282.0		
10	18.04	19.49	35.22	25.44	254.2	254.7	.025	1.070	271.2		
20	17.96	19.47	35.18	25.44	254.9	255.7	.051	1.045	260.6		
30	17.90	19.48	35.19	25.46	253.0	254.1	.076	1.019	250.3		
50	17.79	19.49	35.22	25.51	248.5	250.2	.127	.969	230.4		
75	17.70	19.48	35.19	25.51	248.1	250.7	.189	.906	207.0		
100	17.34	19.47	35.17	25.58	241.1	244.5	.251	.844	185.1		
150	16.41	19.42	35.09	25.74	226.3	231.1	.370	.726	145.8		
200	15.31	19.41	35.06	25.97	204.7	210.8	.481	.615	112.3		
250	14.05	19.38	35.01	26.20	182.5	189.7	.581	.515	84.1		
300	12.85	19.33	34.92	26.38	165.4	173.5	.672	.424	60.6		
400	9.55	19.13	34.56	26.71	134.4	142.9	.830	.266	26.1		
500	7.76	19.01	34.35	26.82	123.7	132.6	.968	.128	6.4		
600	6.29	18.94	34.21	26.91	114.9	123.7	1.096	0	0		

H 062

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 064		NOV 7, 1963		0605-0650		32° 47.0'S		123° 20.0'W		32	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	16.90	19.37	34.99	5.63	25.55	244.3	-0.32	.09	.4	.9	.07
25	16.94	19.38	35.01	5.48	25.56	243.9	-0.18	.07	.2	1.4	.03
49	16.81	19.38	35.01	5.63	25.59	240.9	-0.31	.07	.2	1.5	.05
74	16.83	19.37	35.03	5.78	25.60	240.1	-0.47	.07	.2	1.6	.03
99	16.64	19.40	35.05	5.56	25.65	234.5	-0.23	.08	.1	1.0	.05
148	16.32	19.48	35.19	5.25	25.84	216.9	.11	.11	1.1	1.3	.10
219	14.11	19.35	34.96	4.79	26.15	187.5	.82	.28	5.2	1.2	.04
315	993.00	19.21	34.70	4.84	26.00	199.0	999.00	.60	13.6	3.6	.07
404	8.42	19.20	34.69	4.95	26.95	106.2	1.41	1.01	23.3	7.3	.03
624	6.45	19.02	34.36	5.44	27.01	105.6	1.24	1.23	27.2	9.4	.03

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.90	19.37	34.99	25.55	244.3	244.4	0	1.008	252.2	
10	16.93	19.38	35.00	25.55	244.2	244.6	.024	.983	242.3	
20	16.94	19.38	35.01	25.55	244.6	244.8	.049	.959	232.6	
30	16.92	19.38	35.01	25.56	243.5	244.6	.073	.934	223.1	
50	16.81	19.38	35.01	25.58	240.9	242.6	.122	.885	204.9	
75	16.82	19.39	35.03	25.60	239.9	242.4	.183	.825	183.5	
100	16.83	19.40	35.05	25.65	234.3	237.5	.243	.765	163.7	
150	16.28	19.48	35.19	25.84	216.2	221.0	.357	.650	126.3	
200	14.68	19.38	35.01	26.07	195.0	200.9	.463	.545	98.4	
250	12.88	19.30	34.86	26.33	170.3	177.1	.557	.450	73.5	
300	11.19	19.24	34.76	26.58	146.8	154.0	.640	.367	53.1	
400	8.51	19.20	34.69	26.97	109.5	117.3	.776	.232	23.1	
500	7.45	19.11	34.52	27.00	106.9	115.6	.892	.115	5.8	
600	6.63	19.03	34.39	27.01	105.9	115.2	1.008	0	0	

H 064

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 067		NOV 8, 1963		1200-1250		34° 46.0'S		119° 52.0'W		45	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	16.60	19.37	34.99	5.60	25.62	237.6	-0.26	.13	.2	.5	.08
24	16.44	19.36	34.97	5.54	25.64	235.3	-0.18	.10	.1	.5	.02
49	16.33	19.37	34.99	5.70	25.68	231.6	-0.33	.11	.1	.5	.02
73	16.36	19.36	34.97	5.79	25.66	233.6	-0.43	.10	.1	.5	.04
97	16.36	19.38	35.01	5.61	25.69	230.9	-0.25	.08	.2	.5	.03
146	16.02	19.38	35.01	5.56	25.77	223.5	-0.16	.13	1.2	.8	.08
250	13.11	19.24	34.76	5.60	26.20	182.4	.13	.35	8.1	1.6	.04
350	10.31	19.12	34.54	5.00	26.56	148.4	1.10	.75	17.1	3.3	.03
437	8.20	19.05	34.42	4.89	26.81	125.1	1.52	.93	24.6	6.0	.0
653	6.25	19.02	34.36	5.52	27.04	103.1	1.19	1.31	28.3	9.6	.03

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.60	19.37	34.99	25.62	237.6	237.7	0	1.179	349.1	
10	16.56	19.37	34.99	25.63	237.0	237.4	.024	1.155	337.5	
20	16.49	19.36	34.98	25.64	236.0	236.7	.047	1.131	326.0	
30	16.42	19.36	34.98	25.65	234.7	235.7	.071	1.108	314.9	
50	16.33	19.37	34.99	25.68	231.7	233.4	.118	1.061	293.2	
75	16.36	19.36	34.98	25.66	233.4	235.9	.177	1.002	267.4	
100	16.35	19.38	35.01	25.69	230.6	233.8	.235	.943	243.1	
150	15.95	19.38	35.00	25.78	222.5	227.2	.351	.828	198.8	
200	14.90	19.32	34.91	25.94	206.9	212.9	.461	.718	160.1	
250	13.11	19.24	34.76	26.20	182.4	189.2	.561	.618	126.7	
300	11.71	19.17	34.64	26.38	165.4	172.9	.652	.527	98.1	
400	9.04	19.07	34.46	26.71	134.4	142.5	.809	.369	53.3	
500	7.55	19.04	34.39	26.88	117.8	126.5	.944	.235	23.1	
600	6.66	19.02	34.37	26.99	107.8	117.1	1.066	.113	5.7	
700	5.91	19.02	34.36	27.08	99.3	109.1	1.179	0	0	

H 067



STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 069		NOV 9, 1963		0605-0720		35° 46.0'S		116° 47.0'W		37	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	15.20	19.19	34.67	5.80	25.69	231.0	-0.30	.14	1.0	.8	.08
24	15.13	19.19	34.67	5.69	25.71	229.5	-0.18	.13	.3	1.3	0
48	15.05	19.18	34.65	5.88	25.71	229.2	-0.36	.13	.4	1.6	.01
71	15.06	19.20	34.69	5.91	25.74	226.7	-0.40	.10	.5	.8	.04
95	15.15	19.20	34.69	5.84	25.72	228.6	-0.34	.12	.5	1.1	.01
143	14.95	19.18	34.65	5.78	25.73	227.1	-0.25	.14	.3	1.0	.01
283	10.97	19.11	34.52	5.23	26.43	161.1	.78	.57	10.3	2.1	.07
425	7.39	19.08	34.47	5.37	26.97	109.8	1.21	.99	20.7	7.1	.02
512	6.80	19.06	34.43	5.50	27.02	104.7	1.12	.99	20.9	7.6	.01
706	6.00	19.03	34.38	5.54	27.08	98.7	1.21	1.22	22.1	10.4	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	15.20	19.19	34.67	25.69	231.0	231.1	0	1.123	327.3	
10	15.18	19.19	34.67	25.67	230.6	231.0	.023	1.100	316.2	
20	15.15	19.19	34.67	25.70	229.9	230.7	.046	1.077	305.3	
30	15.11	19.19	34.66	25.71	229.4	230.5	.069	1.053	294.6	
50	15.05	19.18	34.65	25.71	229.0	230.6	.115	1.007	274.0	
75	15.08	19.20	34.69	25.73	227.1	229.5	.173	.950	249.6	
100	15.14	19.20	34.68	25.72	228.5	231.6	.230	.892	226.5	
150	14.83	19.18	34.64	25.75	225.2	229.7	.346	.777	184.8	
200	13.55	19.14	34.58	25.98	203.7	209.4	.456	.667	148.7	
250	11.85	19.12	34.53	26.27	175.5	181.9	.553	.569	117.8	
300	10.47	19.10	34.50	26.50	153.8	160.7	.639	.484	91.5	
400	7.93	19.08	34.47	26.38	117.5	124.8	.782	.341	50.2	
500	6.88	19.06	34.44	27.01	105.3	113.4	.901	.222	22.1	
600	6.41	19.04	34.40	27.05	101.8	110.8	1.013	.110	5.5	
700	6.02	19.03	34.38	27.08	98.9	108.8	1.123	0	0	

H 069

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 071		NOV 10, 1963		0610-0650		37° 02.0'S		114° 41.0'W		30	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	14.57	19.06	34.43	5.83	25.65	235.1	-0.25	.20	.7	.8	.07
25	14.52	19.05	34.42	5.95	25.64	235.4	-0.37	.16	.4	1.4	.03
50	14.91	19.06	34.43	5.78	25.79	221.8	-0.13	.16	.4	1.6	.04
74	14.23	19.04	34.40	5.82	25.67	230.8	-0.20	.15	.5	1.0	.04
99	13.62	19.01	34.34	6.12	25.78	222.7	-0.43	.19	.9	1.2	.10
149	12.27	19.01	34.34	5.75	26.05	197.1	.10	.39	4.7	1.2	.44
198	11.49	19.05	34.42	5.49	26.25	177.8	.46	.50	8.9	1.7	.11
290	8.72	19.05	34.42	5.21	26.73	132.8	1.12	.87	18.6	3.9	.02
385	7.19	19.04	34.40	5.39	26.94	112.5	1.17	1.09	22.7	7.4	.01
586	6.18	19.03	34.38	5.74	27.06	100.9	.98	1.18	23.9	10.1	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	14.57	19.06	34.43	25.65	235.1	235.2	0	.945	238.4	
10	14.56	19.06	34.43	25.64	235.3	235.7	.024	.921	229.1	
20	14.54	19.05	34.42	25.64	235.4	236.1	.047	.898	220.0	
30	14.45	19.05	34.42	25.66	233.5	234.4	.071	.874	211.1	
50	13.91	19.06	34.43	25.79	221.8	223.3	.116	.829	194.1	
75	14.21	19.04	34.40	25.69	230.6	232.3	.173	.772	174.1	
100	13.60	19.01	34.34	25.78	222.3	225.2	.231	.714	159.5	
150	12.26	19.01	34.34	26.05	198.8	200.8	.337	.608	122.4	
200	11.44	19.05	34.41	26.26	177.6	181.9	.433	.512	94.4	
250	9.91	19.04	34.40	26.52	152.1	157.7	.518	.427	71.0	
300	8.54	19.05	34.41	26.75	130.3	136.2	.591	.354	51.4	
400	7.10	19.04	34.39	26.95	111.4	118.1	.718	.227	22.4	
500	6.56	19.03	34.38	27.01	105.3	113.0	.834	.111	5.5	
600	6.12	19.03	34.38	27.07	100.3	109.0	.945	0	0	

H 071

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 074		NOV 11, 1963	1200-	39° 13.0'S	111° 23.0'W	26					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	14.35	19.03	34.38	5.95	25.65	234.6	-.35	.23	1.0	.9	.08
24	13.91	19.01	34.34	5.97	25.72	228.4	-.31	.20	.9	1.4	-.0
48	13.46	18.99	34.31	6.03	25.78	222.2	-.32	.22	1.4	1.4	-.05
72	13.24	18.97	34.27	6.07	25.80	220.7	-.33	.23	1.9	.8	-.0
96	12.99	18.99	34.31	5.96	25.88	213.2	-.19	.35	2.1	1.1	-.0
144	11.07	18.93	34.20	6.07	26.16	186.5	-.06	.48	7.7	1.2	-.0
213	9.95	19.03	34.38	5.44	26.50	154.5	.71	.69	13.6	1.6	+.02
292	8.11	19.01	34.34	5.37	26.76	129.2	1.05	1.01	20.4	4.7	+.01
371	7.11	19.03	34.38	5.65	26.94	112.8	.92	-.0	-.0	-.0	-.0
559	6.27	19.03	34.38	5.80	27.05	102.0	.91	1.28	25.2	9.8	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	14.35	19.03	34.38	25.65	234.6	234.7	0	.912	232.2	
10	14.23	19.02	34.37	25.67	233.0	233.4	.023	.888	223.2	
20	14.04	19.02	34.35	25.70	230.2	230.9	.047	.865	214.4	
30	13.82	19.01	34.34	25.73	227.2	228.2	.070	.842	205.9	
50	13.44	18.99	34.30	25.78	222.1	223.6	.115	.797	189.5	
75	13.21	18.97	34.27	25.81	219.9	222.0	.170	.741	170.3	
100	12.86	18.99	34.30	25.90	211.4	214.1	.225	.687	152.4	
150	10.95	18.94	34.22	26.19	183.2	186.8	.325	.586	120.6	
200	10.13	19.01	34.35	26.44	159.7	164.2	.413	.499	93.5	
250	9.02	19.02	34.35	26.63	141.7	146.8	.491	.421	70.5	
300	8.00	19.01	34.35	26.78	127.4	132.9	.561	.351	51.2	
400	6.96	19.03	34.38	26.96	110.8	117.4	.686	.226	22.4	
500	6.50	19.03	34.38	27.02	105.0	112.6	.801	.111	5.5	
600	6.12	19.03	34.38	27.07	100.2	108.9	.912	0	0	

H 074

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 076		NOV 12, 1963	0555-0630	40° 07.0'S	109° 22.0'W	25					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	13.81	18.94	34.22	5.94	25.64	235.7	-.27	.33	3.0	.6	.09
25	13.52	18.91	34.16	6.02	25.66	234.0	-.31	.29	2.9	.4	-.06
50	13.31	18.94	34.22	6.06	25.74	226.0	-.33	.29	2.8	.5	-.06
75	13.38	18.96	34.25	6.12	25.76	224.7	-.40	.32	2.8	.4	-.06
100	10.99	18.90	34.14	6.18	26.13	189.1	-.16	.49	7.5	.5	-.19
150	10.50	18.94	34.22	5.87	26.27	175.5	.22	.61	10.7	.8	-.42
199	9.54	19.02	34.36	5.30	26.55	149.3	.91	.88	15.8	2.3	-.02
297	7.52	19.04	34.40	5.35	26.89	117.0	1.16	1.06	21.5	5.4	-.01
394	6.78	19.02	34.36	5.44	26.97	109.8	1.19	1.31	22.8	7.3	-.0
598	5.99	19.02	34.36	5.69	27.07	100.0	1.07	1.29	24.6	9.8	-.01

H 076

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	13.81	18.94	34.22	25.64	235.7	235.8	0	.881	224.5	
10	13.74	18.93	34.20	25.64	235.3	235.7	.024	.857	215.8	
20	13.62	18.92	34.18	25.65	234.6	235.3	.047	.834	207.3	
30	13.43	18.91	34.17	25.67	233.0	233.9	.071	.810	199.1	
50	13.31	18.94	34.22	25.74	226.0	227.5	.117	.764	183.3	
75	13.38	18.96	34.25	25.76	224.7	226.8	.174	.707	165.0	
100	10.99	18.90	34.14	26.13	189.1	191.6	.226	.655	147.9	
150	10.50	18.94	34.22	26.27	175.5	179.1	.318	.562	117.5	
200	9.51	19.02	34.36	26.55	148.9	153.2	.402	.479	91.4	
250	8.39	19.03	34.37	26.74	130.9	135.7	.474	.407	69.3	
300	7.49	19.04	34.40	26.89	116.7	122.0	.538	.343	50.5	
400	6.75	19.02	34.36	26.97	109.5	115.8	.657	.224	22.2	
500	6.33	19.02	34.36	27.02	104.2	111.7	.771	.110	5.5	
600	5.98	19.02	34.36	27.07	99.9	108.4	.881	0	0	

STATION		DATE	TIME	LATITUDE	LONGITUDE	D	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
H 078		NOV 13, 1963	0600-0650	39° 10.0'S	106° 43.0'W	23	Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	12.97	18.91	34.16	6.13	25.77	223.5	-0.36	.50	4.9	.5	.13							
25	12.82	18.91	34.16	6.13	25.80	220.6	-0.34	.41	5.9	.8	.18							
49	12.44	18.90	34.14	6.18	25.86	214.7	-0.34	.42	4.8	.5	.18							
74	11.29	18.92	34.18	6.31	26.10	191.6	-0.33	.44	6.6	.6	.16							
99	10.69	18.92	34.18	6.23	26.21	181.4	-0.17	.77	9.3	.8	.24							
148	9.86	18.95	34.23	5.84	26.40	163.8	.33	.65	12.9	.9	.21							
220	8.05	19.03	34.38	5.91	26.80	125.7	.52	.92	17.7	2.8	.06							
313	6.99	19.04	34.40	5.64	26.97	109.9	.95	1.23	22.7	6.4	.01							
422	6.49	19.06	34.43	5.59	27.06	100.7	1.08	1.47	23.7	7.9	.01							
610	5.81	19.02	34.36	5.81	27.09	97.8	.98	1.28	24.7	10.5	.01							

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	12.97	18.91	34.16	25.77	223.5	223.6	0	.825	212.2	
10	12.93	18.91	34.16	25.78	222.7	223.1	.022	.803	204.0	
20	12.87	18.91	34.16	25.79	221.6	222.2	.045	.780	196.1	
30	12.77	18.91	34.16	25.81	219.8	220.7	.067	.758	188.4	
50	12.41	18.90	34.14	25.87	214.2	215.6	.110	.715	173.7	
75	11.26	18.92	34.18	26.11	191.1	193.1	.161	.664	156.5	
100	10.67	18.92	34.18	26.22	180.9	183.4	.209	.616	140.5	
150	9.80	18.95	34.24	26.41	162.5	165.8	.296	.529	111.8	
200	8.49	19.01	34.34	26.70	134.8	138.8	.372	.453	87.3	
250	7.67	19.03	34.38	26.86	119.9	124.5	.438	.387	66.3	
300	7.12	19.04	34.39	26.95	111.8	116.8	.498	.327	48.4	
400	6.58	19.06	34.43	27.04	102.4	108.6	.611	.214	21.4	
500	6.18	19.04	34.40	27.08	99.4	106.7	.718	.107	5.3	
600	5.84	19.02	34.36	27.09	98.0	106.3	.825	0	0	

H 078

STATION		DATE	TIME	LATITUDE	LONGITUDE	D	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
H 081		NOV 14, 1963	1200-	38° 42.0'S	102° 06.0'W	26	Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	13.49	18.90	34.14	6.13	25.65	234.7	-0.42	.53	7.8	.7	.25							
25	12.72	18.90	34.14	6.41	25.81	220.1	-0.61	.41	7.4	1.1	.13							
50	12.39	18.87	34.09	6.13	25.83	217.9	-0.28	.53	7.5	1.3	.13							
75	10.49	18.91	34.16	6.53	26.23	179.4	-0.44	.92	6.2	1.0	.13							
100	10.14	18.92	34.18	6.26	26.31	172.3	-0.12	.86	11.4	1.2	.27							
150	9.02	18.95	34.23	5.93	26.54	150.7	.36	.65	16.3	2.0	.29							
248	7.10	19.00	34.33	5.64	26.89	116.7	.94	1.08	23.6	5.5	.02							
343	6.58	19.04	34.40	5.76	27.02	104.6	.90	1.05	23.7	7.8	.02							
445	6.20	19.04	34.40	5.87	27.07	99.8	.85	1.20	25.2	9.3	.01							
655	5.50	19.02	34.36	5.83	27.13	94.2	1.01	1.16	24.6	8.8	.01							

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	13.49	18.90	34.14	25.65	234.7	234.7	0	.909	274.4	
10	13.30	18.90	34.14	25.69	231.1	231.5	.023	.886	265.4	
20	12.98	18.90	34.14	25.75	225.0	225.6	.046	.863	256.7	
30	12.66	18.89	34.13	25.81	219.7	220.6	.068	.841	248.2	
50	12.39	18.87	34.09	25.83	217.9	219.4	.112	.797	231.8	
75	10.49	18.91	34.16	26.23	179.4	181.2	.163	.746	212.5	
100	10.14	18.92	34.18	26.31	172.3	174.6	.207	.702	194.4	
150	9.02	18.95	34.23	26.54	150.7	153.8	.289	.620	161.4	
200	7.92	18.97	34.28	26.74	131.2	135.0	.361	.548	132.2	
250	7.09	19.00	34.33	26.90	116.4	120.6	.425	.484	106.4	
300	6.79	19.02	34.37	26.97	109.6	114.4	.484	.425	83.7	
400	6.36	19.04	34.40	27.05	101.8	107.8	.595	.314	46.7	
500	5.99	19.03	34.39	27.09	98.1	105.3	.702	.207	20.7	
600	5.66	19.02	34.37	27.12	95.5	103.6	.806	.103	5.1	
700	5.38	19.02	34.36	27.14	93.2	102.2	.909	0	0	

H 081

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 083		NOV 15, 1963		0615-0700		38° 13.0'S		101° 03.0'W		22	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	13.70	18.90	34.14	6.04	25.61	238.8	-0.35	.36	6.9	1.0	.22
25	13.80	18.87	34.07	6.19	25.55	244.8	-0.51	.71	4.7	1.1	.11
50	13.44	18.86	34.07	6.09	25.61	239.1	-0.37	.57	4.8	1.3	.11
75	11.71	18.84	34.04	6.25	25.92	209.6	-0.31	.43	6.9	.9	.18
100	11.33	18.99	34.31	6.10	26.20	183.0	-0.13	.50	8.1	1.0	.24
149	10.35	18.94	34.22	6.11	26.30	173.0	-0.00	.52	11.1	1.2	.36
207	9.25	18.94	34.22	5.78	26.49	155.5	.48	.0	-0	-0	-0
308	7.27	19.00	34.33	5.54	26.87	118.9	1.01	1.03	22.1	5.0	.03
403	6.35	19.02	34.36	5.46	27.02	104.4	1.24	1.16	26.7	8.9	.02
604	5.61	19.03	34.38	5.73	27.13	94.1	1.09	1.39	27.6	10.9	.02

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	13.70	18.90	34.14	25.61	238.8	239.0	0	.878	220.3		
10	13.77	18.88	34.10	25.56	243.2	243.6	.024	.853	211.7		
20	13.77	18.87	34.09	25.55	244.4	245.1	.049	.829	203.3		
30	13.75	18.87	34.09	25.55	244.0	244.9	.073	.804	195.1		
50	13.44	18.86	34.07	25.60	239.1	240.6	.122	.756	179.5		
75	11.71	18.84	34.04	25.41	209.6	211.6	.178	.699	161.3		
100	11.33	18.97	34.31	26.19	183.0	185.5	.228	.650	144.4		
150	10.33	18.94	34.22	26.30	172.7	176.2	.318	.559	114.2		
200	9.37	18.94	34.22	26.46	157.3	161.6	.403	.475	88.3		
250	8.31	18.96	34.26	26.67	138.2	143.0	.479	.399	66.5		
300	7.40	18.97	34.32	26.84	121.4	126.6	.546	.331	48.3		
400	6.38	19.02	34.36	27.02	104.8	110.9	.665	.213	21.1		
500	5.96	19.02	34.37	27.08	98.9	106.0	.773	.104	5.2		
600	5.62	19.03	34.38	27.13	94.3	102.4	.878	0	0		

H 083

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 086		NOV 16, 1963		1200-1238		34° 44.0'S		101° 01.0'W		28	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	16.08	19.02	34.36	5.80	25.26	272.2	-0.38	.22	1.6	.7	.10
23	15.61	19.04	34.40	5.99	25.33	259.4	-0.53	.16	1.0	1.1	.03
46	15.27	19.04	34.40	5.93	25.47	252.2	-0.43	.17	.9	.8	.03
69	14.62	19.12	34.54	5.91	25.68	232.3	-0.36	.14	.4	.7	.03
92	14.18	19.09	34.49	5.86	25.77	223.2	-0.24	.26	1.2	.8	.09
139	12.96	19.00	34.33	5.79	25.90	211.3	-0.02	.31	3.4	.7	.27
290	8.37	19.02	34.36	5.14	26.74	131.6	1.24	.97	21.2	3.5	.03
388	6.69	19.04	34.40	5.47	27.01	106.0	1.17	1.11	25.4	7.3	.01
476	6.23	19.05	34.42	5.64	27.08	98.8	1.07	1.11	26.2	9.3	.01
675	5.45	19.01	34.34	5.68	27.12	95.0	1.17	1.26	27.5	11.8	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)		
0	16.08	19.02	34.36	25.26	272.2	272.3	0	1.054	299.3		
10	15.95	19.03	34.37	25.29	268.7	269.1	.027	1.027	288.9		
20	15.72	19.04	34.39	25.36	262.4	263.1	.054	1.001	278.7		
30	15.52	19.04	34.40	25.41	257.5	258.6	.080	.975	268.8		
50	15.20	19.05	34.41	25.49	249.5	251.1	.131	.924	249.9		
75	14.67	19.11	34.53	25.70	230.1	232.4	.191	.863	227.5		
100	14.01	19.08	34.47	25.79	221.4	224.3	.248	.806	206.7		
150	12.69	19.00	34.32	25.95	206.5	210.6	.357	.697	169.1		
200	11.20	18.99	34.31	26.22	180.6	185.5	.456	.598	136.7		
250	9.50	19.00	34.33	26.52	151.2	156.6	.542	.513	108.9		
300	8.17	19.02	34.36	26.77	128.6	134.3	.614	.440	85.1		
400	6.62	19.04	34.40	27.02	104.9	111.2	.737	.317	47.2		
500	6.12	19.04	34.40	27.09	98.3	105.6	.845	.209	20.9		
600	5.71	19.02	34.37	27.11	96.3	104.5	.950	.104	5.2		
700	5.37	19.01	34.34	27.13	94.6	103.6	1.054	0	0		

H 086

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 088		NOV 17, 1963	0545-	34° 38.0'S	101° 33.0'W	33						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
0	15.40	19.05	34.42	5.77	25.45	253.7	-28	.21	2.5	.3	.11	
25	15.25	19.01	34.34	6.00	25.43	255.8	-49	.21	1.7	.2	.04	
50	14.91	19.01	34.34	5.82	25.50	248.7	-28	.20	1.3	.1	.04	
75	13.57	19.02	34.36	6.08	25.80	220.4	-39	0	0	0	0	
100	13.02	18.99	34.31	6.04	25.87	213.8	-28	.26	3.1	.2	.10	
150	11.58	18.96	34.25	5.96	26.11	191.4	-02	.40	7.7	.4	.43	
218	10.27	19.04	34.40	5.28	26.45	158.4	.83	.60	15.3	1.3	.04	
314	7.56	19.05	34.42	5.17	26.90	116.2	1.33	1.08	23.4	4.8	.01	
409	6.60	19.04	34.40	5.25	27.02	104.8	1.40	1.27	25.6	7.5	.01	
606	5.69	19.02	34.36	5.73	27.11	96.4	1.08	1.04	26.2	9.3	.02	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	15.40	19.05	34.41	25.45	253.7	253.8	0	.920	227.1	
10	15.36	19.03	34.38	25.43	255.2	255.6	.025	.894	218.1	
20	15.30	19.02	34.36	25.43	255.6	256.4	.051	.869	209.3	
30	15.20	19.01	34.34	25.44	254.8	255.8	.077	.843	200.7	
50	14.91	19.01	34.34	25.50	248.7	250.3	.127	.793	184.3	
75	13.57	19.02	34.36	25.80	220.4	222.6	.186	.733	165.3	
100	13.02	18.99	34.31	25.87	213.8	216.6	.241	.679	147.6	
150	11.58	18.96	34.25	26.11	191.4	195.2	.344	.576	110.3	
200	10.57	19.02	34.36	26.37	166.0	170.7	.436	.484	89.8	
250	9.25	19.04	34.39	26.62	142.5	147.8	.515	.404	67.6	
300	7.90	19.05	34.41	26.84	121.4	127.0	.584	.336	49.0	
400	6.68	19.04	34.40	27.01	105.8	112.1	.704	.216	21.4	
500	6.14	19.03	34.38	27.06	100.5	107.8	.814	.106	5.3	
600	5.71	19.02	34.36	27.10	96.6	104.8	.920	0	0	

H 088

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 091		NOV 18, 1963	1200-	34° 05.0'S	096° 27.0'W	27						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
0	16.18	18.98	34.29	5.89	25.18	279.0	-48	.26	1.9	.3	.07	
25	15.21	18.94	34.22	6.04	25.34	264.2	-53	.19	1.8	.2	.04	
50	14.48	18.96	34.25	6.03	25.53	246.5	-44	.19	1.7	.2	.05	
74	13.50	18.98	34.29	6.02	25.76	224.4	-31	.22	2.2	.2	.09	
98	13.18	18.96	34.25	5.87	25.80	220.8	-13	.28	3.3	.2	.16	
147	11.82	18.86	34.07	5.96	25.92	208.9	-04	.38	7.2	.3	.24	
214	11.07	18.91	34.16	5.41	26.13	189.2	.60	.57	12.5	.8	.05	
308	7.99	18.93	34.20	5.20	26.67	138.3	1.25	1.07	22.7	3.9	.02	
408	6.66	19.06	34.43	5.23	27.04	102.9	1.41	1.22	26.9	7.6	.01	
614	5.58	18.94	34.22	5.59	27.01	105.9	1.24	1.62	28.4	0	.03	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.18	18.98	34.29	25.18	279.0	279.0	0	.926	243.9	
10	15.94	18.97	34.27	25.22	275.3	276.2	.028	.958	234.2	
20	15.53	18.95	34.24	25.29	269.3	270.1	.055	.931	224.0	
30	15.09	18.94	34.22	25.37	261.4	262.4	.082	.904	215.6	
50	14.48	18.96	34.25	25.53	246.5	248.0	.133	.853	198.0	
75	13.48	18.98	34.29	25.76	224.2	226.4	.192	.794	177.4	
100	13.11	18.95	34.24	25.80	220.2	223.0	.248	.738	158.5	
150	11.78	18.86	34.08	25.93	207.9	211.7	.357	.629	124.1	
200	11.21	18.90	34.15	26.09	192.7	197.6	.459	.527	95.2	
250	9.76	18.91	34.16	26.36	167.4	172.9	.552	.434	71.1	
300	8.21	18.93	34.19	26.63	141.9	147.6	.632	.354	51.4	
400	6.75	19.05	34.42	27.01	105.4	111.8	.762	.224	22.5	
500	6.12	19.00	34.32	27.02	104.4	111.7	.873	.113	5.6	
600	5.64	18.95	34.23	27.01	105.8	113.0	.986	0	0	

H 091

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 093		NOV 19, 1963		0610-		33° 59.0'S		094° 08.0'W		31	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	15.80	18.95	34.23	5.66	25.22	275.4	-.21	.23	3.0	1.1	-.0
25	15.43	18.92	34.18	5.56	25.27	271.4	-.07	.19	1.6	.9	.04
50	14.20	18.99	34.31	5.89	25.63	236.9	-.27	.20	1.4	1.0	.05
75	14.15	19.07	34.45	5.65	25.75	225.3	-.03	.20	1.3	.7	.06
100	14.01	19.06	34.43	5.58	25.77	223.8	.06	.21	1.8	.8	.08
150	13.10	18.93	34.20	5.52	25.77	223.3	.24	.27	4.7	1.1	.20
223	11.14	18.92	34.18	5.05	26.13	189.0	.95	.56	12.1	1.4	.04
322	8.30	18.95	34.23	4.71	26.65	140.0	1.69	.72	-.0	1.7	-.0
410	6.67	18.97	34.27	4.82	26.91	115.1	1.83	1.25	27.3	9.0	.01
625	5.57	18.94	34.22	5.45	27.01	105.8	1.38	1.20	27.9	10.9	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	15.80	18.95	34.23	25.22	275.4	275.5	0	1.026	256.9	
10	15.71	18.94	34.22	25.23	274.4	274.8	.028	.998	246.8	
20	15.55	18.93	34.20	25.25	272.8	273.5	.055	.971	237.0	
30	15.24	18.93	34.19	25.32	266.5	267.6	.082	.944	227.4	
50	14.20	18.99	34.31	25.63	236.9	238.4	.133	.893	209.0	
75	14.15	19.07	34.45	25.75	225.3	227.5	.191	.835	187.4	
100	14.01	19.06	34.43	25.76	223.8	226.7	.248	.778	167.3	
150	13.10	18.93	34.20	25.77	223.3	227.4	.361	.665	131.2	
200	11.68	18.92	34.18	26.03	198.4	203.5	.469	.557	100.7	
250	10.26	18.92	34.19	26.29	173.8	179.5	.565	.461	75.2	
300	8.85	18.94	34.22	26.55	149.4	155.5	.648	.377	54.3	
400	6.84	18.97	34.26	26.88	117.7	124.1	.788	.238	23.5	
500	6.15	18.95	34.24	26.96	110.8	118.1	.909	.116	5.8	
600	5.68	18.94	34.22	27.00	106.7	114.8	1.026	0	0	

H 093

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 095		NOV 20, 1963		0830-0909		32° 59.0'S		090° 19.0'W		38	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	16.70	19.03	34.38	5.50	25.13	284.5	-.15	.24	1.8	1.0	.06
25	16.09	19.00	34.33	5.51	25.23	275.0	-.09	.22	1.2	.9	.03
50	14.55	18.99	34.31	5.81	25.55	243.9	-.23	.21	1.1	1.0	.05
75	14.17	19.03	34.38	5.67	25.69	231.0	-.05	.23	1.6	.8	.08
100	13.64	18.99	34.31	5.57	25.75	225.8	.12	.29	2.8	.8	.15
150	12.75	18.93	34.20	5.46	25.84	216.7	.34	.34	5.3	1.0	.37
200	11.38	18.90	34.14	5.00	26.06	195.8	.97	.62	13.2	1.6	.04
295	8.28	18.93	34.20	4.37	26.62	142.4	2.03	1.08	24.6	6.9	.01
389	6.68	18.97	34.27	4.39	26.91	115.3	2.26	1.29	28.8	11.2	.01
573	5.51	18.95	34.23	5.19	27.03	103.8	1.65	1.23	29.7	12.4	.02

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	16.70	19.03	34.38	25.13	284.5	284.6	0	1.007	248.9	
10	16.55	19.02	34.36	25.15	282.1	282.6	.028	.978	239.0	
20	16.29	19.01	34.34	25.19	278.2	279.0	.056	.950	229.3	
30	15.84	19.00	34.32	25.28	270.1	271.2	.084	.923	220.0	
50	14.55	18.99	34.31	25.55	243.9	245.5	.136	.871	202.0	
75	14.17	19.03	34.38	25.69	231.0	233.2	.195	.811	181.0	
100	13.64	18.99	34.31	25.74	225.8	228.6	.253	.754	161.4	
150	12.75	18.93	34.20	25.84	216.7	220.7	.366	.641	126.6	
200	11.38	18.90	34.14	26.06	195.8	200.8	.471	.536	97.1	
250	9.60	18.91	34.16	26.38	165.2	170.6	.564	.443	72.6	
300	8.18	18.93	34.20	26.64	140.7	146.4	.643	.364	52.5	
400	6.60	18.97	34.27	26.92	114.4	120.7	.777	.230	22.8	
500	5.92	18.96	34.24	26.99	107.8	114.9	.894	.113	5.6	
600	5.37	18.95	34.23	27.04	102.4	110.1	1.007	0	0	

H 095

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 096		NOV 20, 1963		2015-2100		32° 23.0'S		087° 51.0'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	17.10	19.18	34.65	5.45	25.24	273.8	-0.15	.21	1.4	.8	.06
25	16.50	19.13	34.56	5.63	25.31	260.9	-0.26	.14	.2	.9	.02
50	15.78	19.12	34.54	5.55	25.46	252.5	-0.11	-0	-0	-0	-0
75	15.48	19.16	34.61	5.54	25.59	240.9	-0.07	.17	.5	.9	.04
100	14.98	19.15	34.60	5.38	25.68	231.7	-0.15	.19	1.2	.8	.10
150	15.18	19.19	34.67	5.36	25.70	230.6	-0.14	.18	1.8	.6	.10
199	13.92	19.07	34.65	5.12	25.80	220.7	-0.53	.32	4.8	.6	.20
292	9.15	18.97	34.27	4.46	26.54	150.6	1.81	.97	22.0	4.9	.01
391	7.05	18.99	34.31	3.81	26.89	117.4	2.78	1.51	30.5	14.0	.01
565	5.52	18.97	34.27	5.12	27.06	101.2	1.72	1.60	29.1	12.7	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	17.10	19.18	34.65	25.24	273.8	273.9	0	1.043	256.1	
10	16.95	19.17	34.63	25.26	272.1	272.5	.027	1.016	245.8	
20	16.70	19.15	34.59	25.29	269.2	270.0	.054	.939	235.8	
30	16.39	19.13	34.55	25.33	264.9	265.9	.081	.962	226.1	
50	15.78	19.12	34.54	25.46	252.5	254.2	.133	.910	207.3	
75	15.48	19.16	34.61	25.59	240.9	243.2	.195	.848	185.4	
100	14.98	19.15	34.60	25.68	231.7	234.7	.255	.788	164.9	
150	15.18	19.19	34.67	25.69	230.6	235.1	.373	.671	128.5	
200	13.88	19.07	34.45	25.80	220.1	225.8	.488	.555	97.8	
250	11.31	18.99	34.32	26.21	182.0	188.1	.591	.452	72.6	
300	8.99	18.97	34.27	26.57	147.5	153.6	.677	.367	52.1	
400	6.96	18.99	34.30	26.90	116.4	122.9	.815	.228	22.4	
500	6.03	18.97	34.28	27.00	106.6	113.7	.933	.110	5.5	
600	5.27	18.97	34.27	27.08	98.6	106.2	1.043	0	0	

H 096

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 097		NOV 21, 1963		0600-0640		32° 22.0'S		086° 40.0'W		31	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	16.50	19.05	34.42	5.53	25.20	277.4	-0.16	.34	1.2	.4	.08
25	16.12	19.06	34.43	5.52	25.30	267.8	-0.11	.19	.5	.2	.03
50	15.38	19.04	34.40	5.64	25.44	254.6	-0.15	.22	.4	.3	.03
75	14.70	19.03	34.38	5.63	25.58	241.7	-0.07	.20	.9	.3	.05
100	14.52	19.05	34.42	5.53	25.64	235.4	.05	.21	1.6	.4	.11
149	14.03	19.03	34.38	5.43	25.72	228.2	.21	.26	2.8	.4	.25
221	11.18	18.89	34.13	4.80	26.08	193.7	1.20	.94	16.0	1.4	.02
316	8.34	18.97	34.27	3.78	26.67	137.9	2.61	1.27	27.1	9.6	.01
416	6.82	18.99	34.31	3.53	26.92	114.4	3.09	1.79	32.9	15.0	.01
592	5.34	18.96	34.25	5.10	27.07	100.5	1.77	1.43	30.1	13.5	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.50	19.05	34.41	25.20	277.4	277.6	0	1.034	254.3	
10	16.41	19.05	34.42	25.23	275.0	275.5	.028	1.006	244.1	
20	16.25	19.06	34.43	25.27	271.0	271.8	.055	.978	234.1	
30	16.01	19.06	34.43	25.32	265.8	266.8	.082	.952	224.5	
50	15.38	19.04	34.40	25.44	254.6	256.2	.134	.899	206.0	
75	14.70	19.03	34.38	25.58	241.7	244.0	.197	.837	184.3	
100	14.52	19.05	34.41	25.64	235.4	238.4	.257	.776	164.1	
150	14.00	19.03	34.38	25.72	227.7	232.1	.375	.659	128.2	
200	11.98	18.92	34.19	25.98	203.4	208.5	.485	.549	98.1	
250	10.20	18.91	34.16	26.28	174.5	180.1	.582	.451	73.0	
300	8.75	18.95	34.24	26.58	146.0	152.0	.665	.368	52.5	
400	7.04	18.99	34.30	26.88	117.7	124.3	.803	.230	22.6	
500	6.05	18.97	34.27	26.99	107.1	114.3	.923	.111	5.5	
600	5.28	18.96	34.25	27.07	100.0	107.6	1.034	0	0	

H 097

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 098		NOV 22, 1963	2015-2100	32° 16.0'S	085° 44.0'W						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	16.80	19.13	34.56	5.42	25.24	273.6	-.09	.20	1.5	.5	.08
24	16.64	19.17	34.63	5.47	25.34	264.8	-.12	.19	.4	.2	.05
48	15.11	19.06	34.43	5.64	25.53	246.2	-.12	.20	.5	.4	.03
72	15.03	19.17	34.63	5.42	25.70	230.1	-.10	-.0	1.5	.3	.11
96	14.41	19.08	34.47	5.79	25.71	229.2	-.20	-.0	1.5	.2	.08
144	13.53	19.03	34.38	5.37	25.82	218.3	.33	.36	5.1	.5	.50
258	7.38	18.98	34.29	3.91	26.52	152.2	2.33	1.05	24.3	7.3	.01
358	7.68	19.00	34.33	2.71	26.81	124.5	3.78	1.59	34.1	16.7	.01
443	6.31	18.97	34.27	4.58	26.96	110.6	2.13	1.42	30.6	11.7	0
629	5.12	18.94	34.22	4.91	27.06	100.7	2.00	1.40	31.6	15.6	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.80	19.13	34.56	25.24	273.6	273.7	0	.992	246.6	
10	16.76	19.14	34.58	25.27	271.3	271.7	.027	.964	236.8	
20	16.69	19.16	34.61	25.31	267.3	268.0	.054	.937	227.3	
30	16.36	19.15	34.60	25.38	260.8	261.9	.081	.911	218.1	
50	15.10	19.07	34.45	25.55	244.6	246.2	.132	.860	200.4	
75	14.94	19.16	34.61	25.70	229.9	232.3	.191	.800	179.6	
100	14.32	19.07	34.46	25.72	228.1	231.1	.249	.742	160.3	
150	13.24	19.02	34.37	25.87	213.7	217.9	.362	.630	126.0	
200	11.19	18.99	34.30	26.21	181.1	186.0	.462	.529	97.1	
250	9.60	18.98	34.29	26.48	155.7	161.1	.549	.442	72.8	
300	8.60	18.99	34.30	26.65	139.4	145.3	.626	.366	52.6	
400	6.97	18.98	34.29	26.89	117.3	123.8	.760	.231	22.7	
500	5.90	18.96	34.25	26.99	107.2	114.3	.880	.112	5.6	
600	5.28	18.94	34.22	27.05	102.1	109.7	.992	0	0	

H 098

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 099		NOV 22, 1963	0830-0915	32° 43.0'S	083° 19.0'W	20					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	16.50	19.07	34.45	5.48	25.23	274.8	-.11	.25	.9	.4	.08
25	16.24	19.09	34.49	5.56	25.32	266.5	-.17	.21	.3	.3	.02
50	15.95	19.12	34.54	5.60	25.43	256.2	-.18	.21	.3	.3	.02
75	15.48	19.16	34.61	5.54	25.59	240.9	-.07	.20	.6	.2	.04
99	15.40	19.16	34.61	5.37	25.60	239.2	.11	.29	1.0	.4	.10
148	13.46	19.03	34.38	4.91	25.84	217.0	.80	.50	8.1	.6	.06
216	10.62	18.93	34.20	4.37	26.24	178.9	1.70	1.07	19.3	3.3	.02
307	8.66	19.01	34.34	3.02	26.68	137.2	3.32	1.67	28.4	13.0	.02
399	7.12	19.01	34.34	3.14	26.91	115.6	3.43	1.80	31.8	16.4	.01
584	5.38	18.98	34.29	4.97	27.09	98.2	1.89	1.56	28.7	13.5	.02

H 099

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.50	19.07	34.45	25.23	274.8	274.9	0	1.004	246.2	
10	16.43	19.07	34.46	25.25	272.7	273.2	.027	.976	236.3	
20	16.33	19.08	34.47	25.29	269.2	270.0	.055	.949	226.7	
30	16.19	19.09	34.50	25.33	264.9	265.9	.081	.922	217.3	
50	15.95	19.12	34.54	25.42	256.2	257.9	.134	.870	199.4	
75	15.48	19.16	34.61	25.59	240.9	243.2	.196	.807	178.4	
100	15.37	19.16	34.61	25.61	238.8	241.9	.257	.747	159.0	
150	13.39	19.03	34.37	25.85	216.0	220.2	.373	.631	124.6	
200	11.26	18.95	34.23	26.15	187.4	192.3	.476	.528	95.6	
250	9.81	18.96	34.25	26.42	161.6	167.0	.566	.438	71.4	
300	8.79	19.00	34.33	26.65	140.0	146.0	.644	.360	51.5	
400	7.11	19.01	34.34	26.91	115.5	122.2	.778	.226	22.2	
500	6.09	18.99	34.31	27.01	105.3	112.6	.895	.109	5.4	
600	5.26	18.98	34.29	27.10	97.0	104.6	1.004	0	0	



STATION		DATE		TIME		LATITUDE		LONGITUDE		D		
H 100		NOV 22, 1963		2010-2055		33° 08.0'S		081° 03.0'W				
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> —	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —	
0	16.30	18.83	34.02	5.55	24.94	302.0	-1.14	.25	1.2	.2	.06	
25	15.20	18.84	34.04	5.67	25.21	277.2	-1.15	.24	.1	0	.02	
49	13.89	18.86	34.07	5.69	25.51	247.9	-.02	.34	2.0	.1	.08	
73	13.57	18.80	33.96	5.49	25.50	249.5	.22	.37	3.5	.3	.34	
98	13.31	18.83	34.02	5.53	25.59	240.5	.21	.41	4.4	.4	.34	
147	12.24	18.87	34.09	5.31	25.86	215.2	.56	.62	9.7	.7	.16	
225	9.80	18.95	34.23	3.55	26.41	162.8	2.63	1.39	24.3	8.3	.03	
313	8.51	999.00	999.00	1.66	999.00	999.0	999.00	2.09	34.3	21.1	.02	
410	6.94	18.90	34.14	2.85	26.77	128.0	3.76	1.89	35.2	18.1	.02	
595	5.33	18.94	34.22	4.70	27.04	103.1	2.17	1.65	31.3	16.0	.02	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.30	18.83	34.02	24.94	302.0	302.1	0	1.031	257.7	
10	16.02	18.83	34.02	25.01	295.8	296.2	.030	1.007	247.6	
20	15.57	18.84	34.03	25.12	285.4	286.2	.059	.972	237.7	
30	14.96	18.84	34.04	25.26	271.8	272.8	.087	.944	228.1	
50	13.87	18.86	34.07	25.51	248.0	249.5	.139	.892	209.7	
75	13.55	18.80	33.97	25.50	248.7	250.9	.202	.830	188.2	
100	13.26	18.83	34.02	25.60	239.3	242.1	.263	.768	168.2	
150	12.12	18.87	34.10	25.88	212.7	216.6	.378	.653	132.7	
200	10.48	18.92	34.19	26.25	177.3	182.0	.478	.554	102.5	
250	9.39	18.95	34.23	26.47	156.7	162.0	.564	.468	77.0	
300	8.68	18.94	34.23	26.58	146.1	152.1	.642	.389	55.6	
400	7.08	18.90	34.15	26.76	129.5	136.1	.786	.245	23.9	
500	6.08	18.92	34.18	26.91	114.8	122.0	.915	.116	5.8	
600	5.29	18.94	34.22	27.04	102.5	110.2	1.031	0	0	

H 100

STATION		DATE		TIME		LATITUDE		LONGITUDE		D		
H 101		NOV 23, 1963		0830-0900		33° 14.0'S		078° 28.0'W		20		
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> —	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —	
0	15.80	18.88	34.11	5.62	25.13	284.6	-1.16	.43	.4	.2	.06	
25	15.40	18.85	34.05	5.67	25.17	280.0	-1.17	.36	.1	0	.02	
49	15.21	18.91	34.16	5.65	25.30	268.1	-.13	.30	.1	0	.02	
73	13.07	18.93	34.20	5.43	25.78	222.7	.33	.47	4.5	.6	.42	
98	12.76	18.93	34.20	5.38	25.84	216.8	.42	.51	6.9	.6	.16	
147	10.44	18.87	34.09	4.38	26.19	183.9	1.72	1.08	20.5	3.6	.03	
208	9.39	18.95	34.23	2.48	26.48	156.3	3.76	1.68	28.6	14.1	.02	
304	8.42	19.05	34.42	1.32	26.77	128.3	5.05	2.16	35.7	23.1	.02	
391	6.94	19.01	34.34	2.83	26.93	113.2	3.77	2.01	34.9	18.9	.02	
580	5.23	18.98	34.29	4.68	27.11	96.6	2.21	1.55	31.7	16.7	.02	

H 101

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	15.80	18.88	34.11	25.13	284.6	284.7	0	.941	231.3	
10	15.70	18.87	34.09	25.14	283.5	283.9	.028	.912	222.0	
20	15.53	18.86	34.07	25.16	281.6	282.3	.057	.884	213.0	
30	15.37	18.86	34.07	25.19	278.3	279.4	.085	.856	204.3	
50	15.15	18.91	34.16	25.31	266.8	268.4	.140	.801	187.8	
75	13.04	18.93	34.20	25.78	222.2	224.3	.201	.740	168.5	
100	12.64	18.93	34.19	25.86	215.2	217.9	.256	.684	150.7	
150	10.38	18.97	34.10	26.20	182.3	185.8	.357	.583	119.0	
200	9.51	18.94	34.22	26.44	159.5	163.8	.445	.496	92.0	
250	8.92	19.00	34.32	26.62	142.8	147.9	.523	.418	69.2	
300	8.45	19.05	34.41	26.76	129.3	135.1	.593	.347	50.0	
400	6.84	19.01	34.34	26.94	112.3	118.7	.720	.220	21.6	
500	5.87	18.97	34.30	27.04	102.8	109.9	.835	.106	5.3	
600	5.08	18.98	34.29	27.12	95.1	102.5	.941	0	0	

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 102		NOV 23, 1963	2010-2100	33° 18.0'S	077° 55.0'W							
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
0	16.60	18.77	33.91	5.49	24.79	316.5	-.11	.31	.3	.3	.09	
24	15.92	18.74	33.86	5.52	24.91	305.6	-.07	.29	.1	.2	.02	
48	14.91	18.75	33.87	5.47	25.14	283.0	.09	.26	3.5	.3	.05	
72	13.00	18.76	33.89	5.54	25.55	243.9	.24	.51	4.9	.7	.31	
96	12.16	18.78	33.93	4.72	25.75	225.7	1.16	1.13	14.4	2.5	.05	
144	10.44	18.89	34.13	2.89	26.21	181.2	3.21	1.67	26.4	10.3	.03	
224	10.06	19.12	34.54	.85	26.60	144.3	5.28	2.50	—	21.3	—	
312	8.41	19.05	34.42	1.19	26.77	128.2	5.18	2.31	36.8	24.2	.02	
408	6.97	19.00	34.33	2.38	26.91	115.0	4.22	2.04	36.5	22.1	.02	
599	5.26	18.95	34.23	4.05	27.06	101.0	2.83	1.91	34.9	21.3	.02	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/0</sub>	ΔD <sub>Z/Z MAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	16.60	18.77	33.91	24.79	316.5	316.6	0	.967	236.8	
10	16.42	18.76	33.89	24.82	313.6	314.1	.032	.936	227.3	
20	16.11	18.75	33.87	24.87	308.7	309.5	.063	.905	218.1	
30	15.73	18.74	33.86	24.95	301.5	302.6	.093	.874	209.2	
50	14.78	18.75	33.87	25.17	280.3	281.9	.152	.816	192.3	
75	12.88	18.76	33.90	25.58	241.3	243.4	.217	.750	172.7	
100	11.99	18.79	33.95	25.79	221.2	223.9	.276	.692	154.7	
150	10.40	18.91	34.16	26.25	177.8	181.3	.377	.590	122.7	
200	10.16	19.01	34.43	26.50	153.8	158.3	.462	.505	95.3	
250	9.51	19.09	34.50	26.66	138.9	144.3	.538	.430	71.9	
300	8.61	19.06	34.43	26.75	130.1	136.0	.608	.360	52.2	
400	7.08	19.00	34.33	26.90	116.0	122.6	.737	.230	22.7	
500	6.06	18.97	34.27	26.99	107.6	114.8	.856	.112	5.6	
600	5.25	18.95	34.23	27.06	100.9	108.5	.967	0	0	

H 102

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 103		DEC 5, 1963	0830-0934	37° 05.8'S	077° 55.2'W	11						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
0	15.40	18.80	33.96	6.02	25.11	286.6	-.52	.36	1.3	.5	.15	
24	15.17	18.81	33.98	6.16	25.17	280.5	-.63	.23	.1	.2	.02	
48	13.98	18.80	33.96	6.11	25.41	257.6	-.45	.33	.6	.2	.05	
71	12.36	18.78	33.93	5.96	25.71	229.3	-.10	.51	6.4	.7	.55	
95	11.47	18.78	33.93	5.66	25.88	213.4	.31	.77	12.1	1.0	.04	
143	10.01	18.86	34.07	4.33	26.25	178.2	1.83	1.13	23.8	5.6	.04	
215	9.04	19.00	34.33	2.34	26.60	144.3	3.95	1.83	31.2	17.2	.03	
314	7.68	19.03	34.38	2.27	26.85	120.5	4.22	2.33	36.6	20.3	.05	
400	6.46	18.98	34.29	3.85	26.95	111.1	2.83	1.74	34.0	15.7	.04	
600	5.16	18.93	34.20	5.15	27.04	102.5	1.75	1.80	31.5	15.2	.03	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/0</sub>	ΔD <sub>Z/Z MAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	15.40	18.80	33.96	25.10	286.6	286.8	0	.925	230.1	
10	15.34	18.80	33.97	25.12	285.0	285.4	.029	.897	221.0	
20	15.24	18.81	33.98	25.15	282.3	283.0	.057	.868	212.1	
30	14.98	18.81	33.98	25.21	276.6	277.7	.085	.840	203.6	
50	13.86	18.80	33.96	25.43	255.5	257.0	.139	.787	187.3	
75	12.19	18.78	33.93	25.74	226.3	228.4	.199	.726	168.4	
100	11.29	18.79	33.94	25.92	209.0	211.5	.254	.671	151.0	
150	9.90	18.88	34.10	26.29	174.2	177.6	.351	.574	119.8	
200	9.21	18.97	34.28	26.54	150.3	154.5	.434	.491	93.2	
250	8.50	19.01	34.34	26.70	134.8	139.7	.508	.417	70.5	
300	7.84	19.03	34.37	26.82	123.4	128.8	.575	.350	51.4	
400	6.46	18.98	34.29	26.95	111.1	117.3	.698	.227	22.5	
500	5.74	18.95	34.24	27.00	106.4	113.3	.814	.112	5.6	
600	5.16	18.93	34.20	27.04	102.5	110.0	.925	0	0	

H 103

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 104		DEC 5, 1963		2010-2140		37° 22.8'S		080° 09.9'W		11	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	15.00	18.85	34.05	6.01	25.26	271.7	-4.7	.43	6.0	.9	.16
24	14.47	18.84	34.04	6.14	25.36	262.1	-5.4	.38	4.5	.9	.11
48	13.74	18.79	33.95	6.14	25.45	254.2	-4.5	.38	4.6	1.0	.09
71	12.70	18.81	33.98	6.28	25.68	231.6	-4.7	.40	5.6	.8	.12
95	12.08	18.81	33.98	6.15	25.80	220.3	-2.6	.50	7.0	.9	.21
143	11.09	18.77	33.91	5.70	25.93	208.1	.32	.62	13.3	1.8	.0
214	8.59	18.89	34.13	4.34	26.52	152.3	2.02	1.35	24.2	8.1	.02
306	7.10	18.96	34.25	3.99	26.84	122.1	2.59	1.65	28.8	13.1	.01
390	6.10	18.95	34.23	4.93	26.96	110.8	1.81	1.35	28.6	11.6	.01
557	5.15	18.91	34.16	5.62	27.02	105.1	1.29	1.44	27.2	13.1	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	15.00	18.85	34.05	25.26	271.7	271.8	0	.943	234.0	
10	14.86	18.85	34.05	25.29	269.2	269.6	.027	.916	224.7	
20	14.62	18.84	34.04	25.33	264.9	265.6	.054	.890	215.6	
30	14.33	18.83	34.02	25.38	260.5	261.5	.080	.863	206.9	
50	13.66	18.79	33.95	25.46	252.6	254.1	.132	.812	190.1	
75	12.58	18.81	33.98	25.70	229.5	231.6	.192	.751	170.6	
100	11.96	18.80	33.97	25.82	218.7	221.4	.249	.694	152.5	
150	10.79	18.78	33.93	26.00	201.5	205.1	.356	.588	120.5	
200	9.01	18.87	34.08	26.42	161.7	165.8	.448	.495	93.4	
250	7.94	18.72	34.18	26.66	139.1	143.8	.526	.418	70.6	
300	7.18	18.96	34.24	26.82	123.7	128.8	.594	.350	51.4	
400	6.03	18.95	34.23	26.96	110.4	116.1	.716	.227	27.6	
500	5.44	18.92	34.18	27.00	106.8	113.4	.831	.112	5.6	
600	4.95	18.90	34.15	27.03	104.0	111.1	.943	0	0	

H 104

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 105		DEC 6, 1963		0840-0935		37° 49.1'S		082° 14.7'W		25	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	15.10	18.90	34.14	5.96	25.31	267.2	-4.3	.43	4.3	.7	.14
25	14.94	18.86	34.07	5.98	25.29	269.1	-4.3	.37	4.0	.7	.08
49	13.93	18.87	34.09	6.10	25.52	247.3	-4.4	.36	4.0	.8	.03
73	12.50	18.82	34.00	6.03	25.74	226.6	-1.9	.44	6.0	1.2	.29
98	11.94	18.80	33.96	5.91	25.82	219.1	-0.0	.60	8.1	1.0	.49
147	10.92	18.79	33.95	5.91	25.99	202.6	.13	.66	10.8	1.1	.33
221	8.68	18.88	34.11	5.22	26.49	154.9	1.13	1.18	20.4	4.1	.02
319	7.09	18.95	34.23	4.12	26.82	123.3	2.46	1.78	27.8	11.3	.02
411	6.08	18.95	34.23	4.93	26.96	110.5	1.82	1.53	27.3	11.9	.01
590	5.18	18.92	34.18	5.59	27.03	104.1	1.31	1.63	27.5	13.0	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	15.10	18.90	34.14	25.31	267.2	267.3	0	.952	237.0	
10	15.06	18.88	34.11	25.29	268.6	269.0	.027	.925	227.6	
20	14.99	18.87	34.09	25.29	269.0	269.7	.054	.898	218.5	
30	14.81	18.86	34.08	25.32	265.8	266.8	.081	.872	209.6	
50	13.88	18.87	34.09	25.53	246.6	248.1	.132	.820	192.7	
75	12.45	18.82	34.00	25.74	225.9	228.0	.192	.761	173.0	
100	11.89	18.80	33.96	25.82	218.2	220.9	.248	.705	154.6	
150	10.81	18.79	33.95	26.01	200.2	203.8	.354	.598	122.1	
200	9.23	18.85	34.06	26.37	166.6	170.8	.448	.505	94.5	
250	8.15	18.90	34.15	26.60	144.3	149.0	.527	.425	71.2	
300	7.36	18.94	34.21	26.77	128.6	133.8	.598	.354	51.8	
400	6.19	18.95	34.23	26.94	111.9	117.8	.724	.228	22.7	
500	5.59	18.93	34.20	26.99	107.0	113.8	.840	.112	5.6	
600	5.14	18.92	34.18	27.03	103.8	111.2	.952	0	0	

H 105

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 106		DEC 6, 1963		2000-2050		38° 06.2'S		084° 13.2'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	14.50	18.82	34.00	5.99	25.33	265.4	-.39	.49	6.6	.7	.15
23	14.38	18.81	33.98	5.68	25.34	264.3	-.06	.52	6.6	1.0	.17
45	13.47	18.78	33.93	6.10	25.49	250.3	-.38	.49	7.1	.9	.13
67	11.07	18.77	33.91	6.43	25.93	207.8	-.41	.60	9.4	.8	.17
90	10.49	18.75	33.87	6.18	26.01	200.7	-.08	.73	11.4	1.2	.25
135	9.69	18.77	33.91	5.82	26.17	185.1	.39	.82	16.1	2.0	.26
295	6.74	18.93	34.20	5.42	26.84	121.4	1.22	1.51	26.0	9.9	.03
394	5.95	18.95	34.23	4.68	26.98	108.9	2.09	1.35	26.1	10.4	.01
471	5.54	18.93	34.20	5.71	27.00	106.8	1.13	1.35	25.4	11.6	.01
645	4.87	18.92	34.18	5.51	27.06	100.7	1.44	1.45	27.5	15.4	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	14.50	18.82	34.00	25.33	265.4	265.5	0	1.009	296.9	
10	14.47	18.82	33.99	25.33	265.1	265.5	.027	.982	286.9	
20	14.41	18.81	33.99	25.34	264.5	265.2	.053	.956	277.3	
30	14.19	18.80	33.97	25.37	261.5	262.4	.079	.929	267.8	
50	13.02	18.77	33.92	25.57	242.4	243.8	.130	.879	249.7	
75	10.85	18.76	33.90	25.96	205.1	207.0	.186	.822	228.5	
100	10.28	18.75	33.88	26.05	196.7	199.0	.237	.771	208.6	
150	9.29	18.79	33.94	26.26	176.5	179.7	.332	.677	172.4	
200	8.21	18.84	34.04	26.51	153.1	157.0	.416	.593	140.6	
250	7.37	18.89	34.13	26.70	134.9	139.3	.490	.519	112.9	
300	6.69	18.93	34.20	26.85	120.7	125.5	.556	.452	88.6	
400	5.92	18.95	34.23	26.98	108.8	114.5	.616	.332	49.3	
500	5.41	18.93	34.19	27.01	105.7	112.2	.790	.219	21.8	
600	5.02	18.92	34.18	27.05	102.1	109.4	.900	.108	5.4	
700	4.70	18.92	34.18	27.08	99.1	107.1	1.009	0	0	

H 106

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 107		DEC 7, 1963		0830-0920		38° 45.5'S		086° 24.2'W		23	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	13.80	18.84	34.04	6.07	25.50	248.8	-.39	.62	6.2	.7	.16
25	13.72	18.90	34.14	6.07	25.60	239.2	-.38	.46	6.0	.7	.12
49	13.39	18.91	34.16	6.13	25.69	231.5	-.41	.47	5.8	.7	.10
73	11.33	18.85	34.05	6.41	26.00	201.6	-.43	.62	8.1	.5	.18
98	10.91	18.83	34.02	6.14	26.05	197.1	-.10	.64	9.4	.6	.27
147	10.33	18.83	34.02	6.19	26.05	197.1	-.10	.64	9.4	.6	.27
190	9.72	18.86	34.07	5.35	26.30	173.5	.85	.91	15.8	1.3	.07
289	7.16	18.97	34.27	5.78	26.84	121.5	.79	1.42	22.8	5.6	.01
387	6.11	19.00	34.33	5.52	27.03	104.1	1.22	1.36	24.2	8.4	.03
573	5.27	18.99	34.31	5.74	27.12	95.7	1.14	1.43	25.6	11.2	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	13.80	18.84	34.04	25.50	248.8	248.9	0	.884	220.8	
10	13.78	18.85	34.06	25.53	246.4	246.8	.025	.859	212.1	
20	13.75	18.88	34.11	25.57	242.4	243.1	.049	.835	203.6	
30	13.68	18.90	34.15	25.62	237.9	238.9	.073	.811	195.4	
50	13.33	18.91	34.16	25.69	230.5	232.0	.120	.764	179.6	
75	11.29	18.85	34.05	26.00	201.2	203.1	.175	.709	161.2	
100	10.88	18.83	34.02	26.05	196.4	198.8	.225	.659	144.1	
150	10.28	18.86	34.08	26.21	182.0	185.4	.321	.563	113.5	
200	9.41	18.87	34.09	26.36	167.2	171.5	.410	.474	87.6	
250	8.05	18.93	34.19	26.65	139.5	144.2	.489	.395	65.9	
300	7.03	18.97	34.28	26.87	119.3	124.3	.556	.328	47.9	
400	6.04	19.00	34.32	27.03	103.4	109.2	.673	.211	20.9	
500	5.56	18.99	34.31	27.08	98.6	105.3	.780	.104	5.2	
600	5.17	18.99	34.30	27.13	94.7	102.1	.884	0	0	

H 107

STATION		DATE		TIME		LATITUDE		LONGITUDE		D		
H 108		DEC 7, 1963		2000-2055		39° 36.5'S		088° 22.0'W				
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)	
0	14.30	18.87	34.09	6.06	25.44	254.7	-4.4	.58	7.4	.8	.19	
25	13.36	18.86	34.07	6.18	25.62	237.5	-4.5	.58	7.8	.5	.16	
50	11.94	18.83	34.02	6.50	25.86	215.1	-5.9	.53	8.1	.7	.19	
75	10.57	18.83	34.02	6.50	26.11	191.4	-4.1	.63	10.3	.6	.19	
100	10.24	18.81	33.98	6.33	26.14	188.6	-2.0	.79	11.4	.7	.24	
150	9.92	18.82	34.00	6.19	26.21	182.1	-0.1	.76	12.6	.8	.22	
200	8.99	18.87	34.09	5.89	26.43	160.9	.41	1.02	18.1	1.9	.03	
299	999.00	18.95	34.23	5.33	999.00	999.0	999.00	1.44	24.6	6.6	.01	
399	6.04	19.01	34.34	5.65	27.05	101.9	1.10	-	-	-	-	
584	5.25	19.00	34.33	5.84	27.13	94.1	1.04	1.50	26.1	11.4	.01	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	14.30	18.87	34.09	25.44	254.7	254.9	0	.875	219.9	
10	14.06	18.87	34.08	25.48	250.4	250.8	.025	.850	211.3	
20	13.67	18.86	34.08	25.56	243.3	243.9	.050	.825	202.9	
30	13.12	18.85	34.06	25.66	233.6	234.6	.074	.801	194.7	
50	11.94	18.83	34.02	25.86	215.1	216.5	.119	.756	179.2	
75	10.57	18.83	34.02	26.11	191.4	193.2	.170	.705	160.9	
100	10.24	18.81	33.98	26.14	188.6	190.9	.218	.657	143.9	
150	9.92	18.82	34.00	26.20	182.1	185.5	.312	.563	113.4	
200	8.99	18.87	34.09	26.43	160.9	165.0	.400	.475	87.4	
250	8.04	18.91	34.16	26.63	141.9	146.5	.478	.397	65.6	
300	7.26	18.94	34.22	26.79	126.3	131.4	.547	.328	47.5	
400	6.03	19.01	34.34	27.05	101.9	107.7	.667	.208	20.7	
500	5.57	19.00	34.33	27.10	97.3	104.0	.773	.103	5.1	
600	5.19	19.00	34.32	27.14	93.5	101.0	.875	0	0	

H 108

STATION		DATE		TIME		LATITUDE		LONGITUDE		D		
H 109		DEC 8, 1963		0606-0657		40° 32.8'S		089° 43.8'W		25		
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)	
0	12.90	18.84	34.04	6.21	25.69	231.4	-4.2	.86	12.0	2.1	.38	
25	12.41	18.83	34.02	6.25	25.77	223.6	-4.0	.76	10.6	1.1	.18	
50	11.84	18.83	34.02	6.33	25.88	213.3	-4.1	.76	10.6	.8	.18	
75	10.28	18.81	33.98	6.36	26.13	189.2	-2.3	.71	10.2	.8	.22	
100	9.85	18.82	34.00	6.22	26.22	181.0	-0.3	.94	13.6	.9	.33	
150	8.89	18.90	34.14	5.71	26.49	155.4	.61	1.02	16.0	2.3	.06	
198	7.58	18.93	34.20	5.66	26.73	132.6	.85	1.31	22.5	4.0	.02	
298	6.29	18.98	34.29	5.59	26.98	109.0	1.12	1.60	25.5	7.5	.02	
394	5.84	18.96	34.25	5.81	27.00	106.3	.98	1.56	25.1	8.8	.02	
583	5.18	18.97	34.27	5.87	27.10	97.4	1.03	1.49	26.8	11.3	.01	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	12.90	18.84	34.04	25.68	231.4	231.5	0	.820	211.2	
10	12.78	18.84	34.03	25.71	229.5	229.9	.023	.797	203.1	
20	12.57	18.83	34.02	25.74	226.2	226.9	.046	.774	195.3	
30	12.32	18.83	34.02	25.78	222.0	222.9	.068	.752	187.7	
50	11.84	18.83	34.02	25.88	213.3	214.7	.112	.708	173.1	
75	10.28	18.81	33.98	26.13	189.2	191.0	.163	.657	156.0	
100	9.85	18.82	34.00	26.22	181.0	183.2	.210	.611	140.1	
150	8.89	18.90	34.14	26.49	155.4	158.5	.295	.525	111.7	
200	7.55	18.93	34.20	26.73	132.0	135.6	.369	.452	87.3	
250	6.84	18.96	34.25	26.87	119.1	123.2	.433	.387	66.4	
300	6.28	18.98	34.29	26.97	109.0	113.5	.492	.328	48.5	
400	5.81	18.96	34.25	27.01	105.9	111.5	.605	.215	21.3	
500	5.44	18.97	34.26	27.06	100.9	107.4	.714	.106	5.3	
600	5.13	18.97	34.27	27.10	96.7	104.1	.820	0	0	

H 109

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 110		DEC. 8, 1963	2000-2045	39° 28.0'S	090° 35.5'W							
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
0	13.90	18.83	34.02	5.97	25.47	252.0	-.30	.61	9.0	1.0	.24	
24	13.46	18.85	34.05	6.00	25.59	240.8	-.28	.57	8.5	.8	.15	
49	13.23	18.83	34.02	5.99	25.61	239.0	-.24	.68	8.5	.7	.15	
73	10.80	18.83	34.02	6.39	26.07	195.2	-.33	.74	9.4	.7	.20	
97	10.23	18.84	34.04	6.00	26.18	184.4	-.13	.93	12.5	.9	.30	
146	8.56	18.91	34.16	5.44	26.55	149.1	-.92	.92	12.9	.9	.30	
216	7.06	18.94	34.22	5.38	26.81	124.2	1.21	1.52	23.7	5.3	.02	
316	6.30	19.01	34.34	5.23	27.02	105.1	1.48	1.72	26.1	7.5	.02	
410	5.87	19.01	34.34	5.60	27.07	99.9	1.18	1.64	26.1	9.4	.02	
598	5.13	19.01	34.34	5.78	27.16	91.4	1.12	1.72	27.7	12.8	.02	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	13.90	18.83	34.02	25.47	252.0	252.2	0	.814	204.0	
10	13.78	18.83	34.03	25.50	249.1	249.5	.025	.789	196.0	
20	13.59	18.84	34.04	25.55	244.0	244.7	.050	.764	188.2	
30	13.41	18.85	34.05	25.59	240.4	241.3	.074	.740	180.7	
50	13.16	18.83	34.02	25.62	237.7	239.2	.122	.692	166.4	
75	10.75	18.83	34.02	26.08	194.2	196.1	.177	.637	149.8	
100	10.11	18.84	34.04	26.21	181.8	184.1	.224	.590	134.4	
150	8.46	18.91	34.16	26.57	147.4	150.4	.308	.506	107.0	
200	7.35	18.93	34.20	26.76	129.1	132.6	.378	.435	83.5	
250	6.77	18.97	34.26	26.89	116.9	120.9	.442	.372	63.3	
300	6.40	19.00	34.32	26.99	107.7	112.3	.500	.314	46.2	
400	5.91	19.01	34.34	27.07	100.4	106.1	.609	.204	20.3	
500	5.48	19.01	34.34	27.12	95.4	102.0	.713	.100	5.0	
600	5.12	19.01	34.34	27.16	91.3	98.7	.814	0	0	

H 110

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 111		DEC 9, 1963	0833-0933	37° 53.0'S	092° 08.5'W	17						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
0	14.80	18.88	34.11	5.79	25.35	263.6	-.23	.52	5.0	.9	.22	
25	14.67	18.91	34.16	5.82	25.42	257.0	-.24	.71	5.3	.5	.11	
50	14.29	18.90	34.14	5.82	25.48	250.6	-.20	.38	4.4	.5	.10	
75	12.37	18.87	34.09	6.08	25.83	217.6	-.23	.42	5.4	.5	.15	
100	11.59	18.86	34.07	5.90	25.97	204.9	.05	.63	8.0	.6	.27	
150	10.18	18.83	34.02	5.95	26.18	184.9	.19	.67	11.7	.9	.32	
224	8.31	18.95	34.23	5.26	26.65	140.1	1.14	1.32	20.7	3.5	.02	
324	6.66	19.00	34.33	5.09	26.95	111.0	1.56	1.60	25.5	7.5	.02	
419	6.18	18.99	34.31	5.34	27.00	106.3	1.39	1.63	25.9	8.8	.02	
604	5.39	18.97	34.27	5.46	27.07	99.7	1.40	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	14.80	18.88	34.11	25.35	263.6	263.7	0	.903	224.5	
10	14.77	18.89	34.12	25.36	261.9	262.3	.026	.876	215.6	
20	14.71	18.90	34.14	25.39	259.2	259.9	.052	.850	207.0	
30	14.62	18.91	34.16	25.43	255.9	256.9	.078	.824	198.6	
50	14.29	18.90	34.14	25.48	250.6	252.1	.129	.773	182.6	
75	12.37	18.87	34.09	25.83	217.6	219.6	.188	.714	164.0	
100	11.59	18.86	34.07	25.96	204.9	207.4	.242	.661	146.8	
150	10.18	18.83	34.02	26.17	184.9	188.4	.340	.562	116.3	
200	8.84	18.91	34.17	26.51	152.8	156.9	.427	.476	90.3	
250	7.82	18.96	34.26	26.74	131.5	136.0	.500	.403	68.3	
300	7.00	18.99	34.30	26.89	117.1	122.0	.565	.338	49.8	
400	6.27	18.99	34.31	26.99	107.2	113.2	.682	.220	21.9	
500	5.80	18.98	34.29	27.04	103.1	110.1	.794	.109	5.4	
600	5.40	18.97	34.27	27.07	99.8	107.6	.903	0	0	

H 111

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 112		DEC 10, 1963	0830-0945	36° 02.1'S	093° 45.9'W	18						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)	
0	15.50	18.98	34.29	5.64	25.33	265.0	-.16	.44	3.6	.6	.18	
25	15.49	18.98	34.29	5.72	25.33	264.8	-.24	.32	3.2	.4	.06	
50	15.31	18.98	34.29	5.70	25.37	261.0	-.20	.32	3.0	.5	.06	
75	13.17	18.93	34.20	6.27	25.76	224.6	-.52	.43	4.0	.5	.09	
100	12.45	18.88	34.11	6.21	25.83	217.7	-.37	.53	5.7	.5	.14	
150	11.18	18.88	34.11	5.77	26.07	195.0	.23	.64	9.8	.7	.41	
225	9.74	18.93	34.20	5.32	26.39	164.5	.87	.87	10.3	1.6	.07	
324	7.28	18.98	34.29	5.18	26.84	121.8	1.37	1.49	23.6	5.3	.02	
398	6.49	19.00	34.33	5.35	26.98	108.8	1.33	1.60	24.7	7.4	.02	
583	5.56	19.03	34.38	5.64	27.14	93.5	1.19	1.52	25.9	10.5	.02	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	15.50	18.98	34.29	25.33	265.0	265.1	0	-.945	231.4	
10	15.50	18.98	34.29	25.33	265.0	265.4	.027	-.919	222.0	
20	15.49	18.98	34.29	25.33	264.9	265.6	-.053	-.892	213.0	
30	15.47	18.98	34.29	25.34	264.4	265.4	.080	-.866	204.2	
50	15.31	18.98	34.29	25.37	261.0	262.6	-.132	-.813	187.4	
75	13.17	18.93	34.20	25.76	224.6	226.8	-.194	-.752	167.8	
100	12.45	18.88	34.11	25.83	217.7	220.4	-.249	-.696	149.7	
150	11.18	18.88	34.11	26.07	195.0	198.7	-.354	-.591	117.6	
200	10.16	18.91	34.17	26.30	173.4	177.9	-.448	-.497	90.4	
250	9.03	18.94	34.22	26.52	152.2	157.3	-.532	-.413	67.6	
300	7.80	18.97	34.26	26.74	130.8	136.2	-.606	-.340	48.8	
400	6.48	19.00	34.33	26.98	108.6	114.8	-.731	-.214	21.1	
500	5.93	19.02	34.36	27.07	99.7	106.8	-.842	-.104	5.2	
600	5.49	19.03	34.38	27.15	92.4	100.3	-.945	0	0	

H 112

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 113		DEC 10, 1963	2010-2052	35° 19.0'S	094° 35.3'W							
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)	
0	16.70	19.09	34.49	5.55	25.21	276.6	-.20	.25	1.2	.5	.09	
25	16.53	19.12	34.54	5.56	25.29	268.9	-.20	.20	.6	.3	.03	
50	15.99	19.11	34.52	5.69	25.40	258.4	-.27	.19	.7	.3	.03	
75	14.77	19.20	34.69	5.76	25.80	220.7	-.21	.15	.6	.3	.05	
100	14.54	19.15	34.60	5.73	25.78	222.6	-.16	.20	1.1	.4	.11	
150	13.35	19.05	34.42	5.56	25.89	212.2	.16	.31	3.3	.4	.24	
225	10.68	19.05	34.42	4.96	26.40	163.9	1.09	.83	14.3	1.7	.03	
323	7.83	19.00	34.33	4.96	26.79	126.6	1.51	1.24	21.9	4.8	.05	
427	6.46	19.02	34.36	5.14	27.01	105.7	1.54	1.52	26.1	8.0	.02	
609	5.58	18.98	34.29	5.58	27.06	100.5	1.25	1.48	-0	10.8	.04	

H 113

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.70	19.09	34.49	25.21	276.6	276.7	0	-.974	239.6	
10	16.66	19.10	34.50	25.23	274.7	275.1	.028	-.946	230.0	
20	16.59	19.11	34.52	25.26	271.5	272.2	-.055	-.919	220.7	
30	16.46	19.12	34.54	25.31	267.3	268.4	-.082	-.892	211.6	
50	15.99	19.11	34.52	25.40	258.4	260.1	-.135	-.839	194.3	
75	14.77	19.20	34.69	25.80	220.7	223.0	-.195	-.778	174.1	
100	14.54	19.15	34.60	25.78	222.6	225.6	-.251	-.722	155.3	
150	13.35	19.05	34.41	25.89	212.2	216.4	-.362	-.612	122.0	
200	11.46	19.04	34.41	26.25	177.9	182.9	-.462	-.512	93.9	
250	9.85	19.03	34.38	26.51	153.0	158.5	-.547	-.427	70.4	
300	8.41	19.00	34.33	26.71	134.2	140.0	-.622	-.352	50.9	
400	6.78	19.01	34.35	26.96	110.6	117.0	-.750	-.224	22.2	
500	6.07	19.00	34.33	27.03	103.4	110.7	-.864	-.110	5.5	
600	5.62	18.98	34.29	27.06	100.8	108.8	-.974	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 114		DEC 11, 1963		0558-0640		34° 17.5S		094° 32.6W		30	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub>	NO <sub>2</sub>
0	16.80	19.11	34.52	5.25	25.21	276.2	.09	.48	1.5	.6	.09
25	16.78	19.12	34.54	5.51	25.23	274.5	-.17	.21	.9	.3	.02
50	16.42	19.14	34.58	5.60	25.35	263.8	-.23	.19	.6	.4	.02
75	14.13	19.03	34.38	6.01	25.70	230.2	-.38	.23	1.4	.4	.05
100	14.08	19.09	34.49	5.75	25.79	221.2	-.12	.26	1.7	.4	.10
149	12.87	19.01	34.34	5.55	25.93	208.3	.23	.40	5.1	.5	.27
193	11.38	18.98	34.29	5.39	26.17	185.2	.58	.60	10.7	.7	.18
293	8.59	19.01	34.34	5.19	26.69	136.2	1.16	1.05	19.7	3.0	.01
394	7.03	18.99	34.31	4.60	27.00	100.2	1.99	1.12	0	0	0
581	5.67	18.99	34.31	5.84	27.07	100.2	.97	1.30	26.7	10.2	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	16.80	19.11	34.52	25.21	276.2	276.3	0	.992	245.7	
10	16.80	19.11	34.53	25.22	275.8	276.2	.028	.964	235.9	
20	16.79	19.12	34.54	25.23	275.0	275.8	.055	.937	226.4	
30	16.74	19.12	34.55	25.25	273.1	274.2	.083	.909	217.2	
50	16.42	19.14	34.58	25.34	263.8	265.5	.137	.855	199.5	
75	14.13	19.03	34.38	25.70	230.2	232.4	.199	.793	178.9	
100	14.08	19.09	34.49	25.79	221.2	224.2	.256	.736	159.8	
150	12.83	19.01	34.34	25.93	207.7	211.8	.365	.627	125.8	
200	11.14	18.98	34.29	26.22	181.0	185.9	.464	.527	96.9	
250	9.65	18.99	34.31	26.49	154.8	160.3	.551	.441	72.7	
300	8.47	19.01	34.33	26.70	134.9	140.8	.626	.366	52.6	
400	6.98	18.96	34.26	26.86	119.8	126.4	.760	.232	22.7	
500	6.20	18.98	34.28	26.98	108.1	115.5	.881	.111	5.5	
600	5.56	18.99	34.31	27.08	98.5	106.5	.992	0	0	

H 114

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 115		DEC 11, 1963		2210-2254		33° 13.6S		094° 52.7W		30	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub>	NO <sub>2</sub>
0	17.20	19.23	34.74	5.39	25.29	269.5	-.10	.27	1.0	.5	.06
24	17.44	19.23	34.74	5.46	25.23	274.9	-.20	.19	.3	.3	.01
48	16.81	19.22	34.72	5.56	25.36	262.0	-.23	.18	.2	.3	.01
72	15.79	19.22	34.72	5.72	25.60	239.6	-.29	.16	.2	.3	0
96	15.40	19.19	34.67	5.65	25.65	235.2	-.17	.18	.4	.3	.03
144	14.95	19.18	34.65	5.42	25.73	227.1	.11	.22	.4	.4	.13
208	12.65	19.04	34.40	4.82	26.01	200.2	.98	.57	9.8	1.1	.02
313	8.77	18.95	34.23	4.92	26.58	146.9	1.41	1.27	19.6	3.3	.01
403	6.86	18.93	34.20	4.81	26.83	123.0	1.81	1.58	25.4	8.0	.01
579	5.79	18.95	34.23	5.36	27.00	107.0	1.43	1.75	27.1	10.3	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	17.20	19.23	34.74	25.28	269.5	269.6	0	1.054	263.1	
10	17.38	19.23	34.74	25.24	273.5	274.0	.027	1.027	252.7	
20	17.43	19.23	34.74	25.23	274.6	275.4	.055	1.000	242.6	
30	17.33	19.23	34.74	25.25	272.6	273.7	.082	.972	232.7	
50	16.74	19.22	34.72	25.38	260.4	262.1	.136	.919	213.8	
75	15.73	19.22	34.71	25.61	239.0	241.4	.199	.856	191.7	
100	15.39	19.19	34.67	25.65	234.4	237.5	.258	.796	171.0	
150	14.69	19.16	34.62	25.76	224.1	228.6	.375	.679	134.1	
200	12.90	19.05	34.42	25.98	203.1	208.5	.484	.570	102.9	
250	10.90	18.99	34.30	26.27	176.2	182.2	.582	.472	76.8	
300	9.17	18.95	34.24	26.52	152.4	158.6	.667	.387	55.4	
400	6.92	18.93	34.20	26.82	123.7	130.2	.812	.243	23.9	
500	6.22	18.94	34.22	26.93	113.5	120.9	.937	.117	5.9	
600	5.68	18.95	34.24	27.01	105.5	113.6	1.054	0	0	

H 115



STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 116		DEC 12, 1963	0600-0654	31° 59.0'S	094° 52.7'W	31					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	AOU (ml/L)	PO <sub>4</sub> —	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	18.10	19.28	34.83	5.38	25.14	283.7	-18	.29	.8	.6	.03
25	17.94	19.27	34.81	5.37	25.16	281.3	-16	.17	.3	.4	.01
50	17.09	19.29	34.85	5.54	25.40	259.1	-24	.16	.2	.4	0
74	16.50	19.29	34.85	5.58	25.53	245.9	-23	.17	.3	.3	0
99	15.61	19.23	34.74	5.67	25.65	234.4	-22	.17	.2	.3	.01
149	14.79	19.16	34.61	5.46	25.74	226.4	.09	.22	2.6	.5	.23
208	12.46	19.01	34.34	5.09	26.01	200.6	.74	.78	0	0	0
308	9.52	18.98	34.29	4.55	26.50	154.4	1.67	1.08	18.8	3.7	.01
404	7.03	18.96	34.25	4.53	26.85	121.1	2.06	1.37	26.1	8.6	.01
590	5.61	18.91	34.16	5.40	26.96	110.3	1.43	1.46	26.2	11.0	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	18.10	19.28	34.83	25.14	283.7	283.8	0	1.068	266.7	
10	18.06	19.28	34.83	25.14	283.1	283.5	.028	1.040	256.1	
20	17.99	19.27	34.82	25.15	282.1	282.9	.057	1.012	245.9	
30	17.83	19.27	34.81	25.19	278.6	279.7	.085	.983	235.9	
50	17.09	19.29	34.85	25.39	259.1	260.8	.139	.929	216.8	
75	16.47	19.29	34.84	25.54	245.5	247.9	.202	.866	194.3	
100	15.60	19.23	34.74	25.65	234.2	237.4	.263	.805	173.4	
150	14.76	19.16	34.61	25.74	226.0	230.5	.380	.688	136.1	
200	12.76	19.03	34.37	25.97	203.9	209.3	.490	.578	104.5	
250	11.08	18.99	34.30	26.24	179.0	185.0	.589	.480	78.0	
300	9.72	18.98	34.29	26.46	157.5	164.0	.676	.392	56.2	
400	7.12	18.96	34.25	26.83	122.4	129.0	.822	.246	24.3	
500	6.23	18.93	34.20	26.91	115.1	122.4	.948	.120	6.0	
600	5.55	18.91	34.16	26.97	109.9	117.8	1.068	0	0	

H 116

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 117		DEC 12, 1963	1400-1450	30° 28.7'S	094° 48.0'W	32					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	AOU (ml/L)	PO <sub>4</sub> —	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	18.70	19.33	34.92	5.33	25.06	291.4	-19	.22	.6	.5	.02
25	18.37	19.31	34.88	5.35	25.11	286.1	-18	.22	.2	.3	.01
50	17.27	19.32	34.90	5.45	25.39	259.2	-17	.21	.2	.3	.01
75	16.56	19.24	34.76	5.62	25.45	253.8	-27	.21	.2	.4	.01
100	15.59	19.22	34.72	5.69	25.65	235.3	-24	.23	1.3	.3	.05
149	14.85	19.18	34.65	5.40	25.75	225.0	.14	.22	1.7	.4	.17
197	13.87	19.10	34.51	5.27	25.65	215.7	.38	.33	4.6	.5	.29
297	10.33	19.00	34.33	4.56	26.39	164.7	1.55	1.10	17.3	3.1	.01
393	7.94	19.02	34.36	3.11	26.80	125.5	3.34	1.84	30.0	14.4	.01
578	5.76	18.96	34.25	5.29	27.01	105.3	1.51	1.41	27.0	10.7	.01

H 117

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	18.70	19.33	34.92	25.06	291.4	291.5	0	1.083	268.7	
10	18.62	19.32	34.91	25.07	290.1	290.5	.029	1.054	258.0	
20	18.48	19.32	34.90	25.09	287.9	288.7	.058	1.025	247.6	
30	18.20	19.31	34.88	25.15	282.1	283.2	.087	.997	237.5	
50	17.27	19.32	34.90	25.39	259.2	261.0	.141	.942	218.1	
75	16.56	19.24	34.76	25.45	253.8	256.3	.206	.878	195.3	
100	15.59	19.22	34.72	25.64	235.3	238.4	.268	.816	174.2	
150	14.83	19.18	34.65	25.75	224.8	229.3	.385	.699	136.3	
200	13.74	19.07	34.50	25.87	213.9	219.5	.497	.587	104.2	
250	11.82	19.03	34.38	26.16	186.1	192.5	.600	.484	77.4	
300	10.24	19.00	34.32	26.40	163.3	170.1	.690	.393	55.5	
400	7.84	19.02	34.35	26.81	124.5	131.8	.841	.242	23.7	
500	6.58	18.98	34.28	26.93	112.9	120.6	.967	.116	5.8	
600	5.55	18.96	34.25	27.03	103.4	111.3	1.083	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 118		DEC 12, 1963		2015-2100		29° 55.8'S		094° 58.5'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub>	NO <sub>2</sub>
0	19.50	19.50	35.23	5.20	25.08	288.6	-1.15	.19	.5	.5	.02
25	19.42	19.53	35.28	5.23	25.15	282.7	-1.17	.18	.2	.3	.01
50	18.56	19.53	35.28	5.34	25.37	261.8	-2.20	.12	.3	.4	.01
75	17.79	19.54	35.30	5.42	25.57	242.3	-2.21	.13	.1	.4	.01
100	17.54	19.49	35.21	5.39	25.56	243.1	-1.15	.21	.2	.3	0
150	16.89	19.44	35.12	5.26	25.65	234.8	.05	.17	.6	.3	.13
200	16.33	19.35	34.96	5.22	25.66	234.2	.15	.19	1.2	.3	.34
297	12.17	19.13	34.56	4.65	26.23	179.4	1.21	.65	11.9	.7	.01
393	8.38	19.01	34.34	4.18	26.72	133.1	2.20	1.38	28.9	7.5	.01
578	5.88	18.97	34.27	5.01	27.01	105.4	1.77	1.42	28.8	11.2	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	19.50	19.50	35.23	25.08	288.6	288.7	0	1.131	282.5	
10	19.48	19.51	35.24	25.10	287.1	287.6	.029	1.102	271.3	
20	19.45	19.52	35.26	25.12	284.7	285.5	.057	1.074	260.5	
30	19.32	19.53	35.28	25.17	279.9	281.1	.086	1.045	249.9	
50	18.56	19.53	35.28	25.37	261.8	263.6	.140	.991	229.5	
75	17.79	19.54	35.30	25.57	242.3	244.9	.204	.927	205.5	
100	17.54	19.49	35.21	25.56	243.1	246.5	.265	.866	183.1	
150	16.89	19.44	35.12	25.65	234.8	239.8	.387	.744	142.8	
200	16.33	19.35	34.96	25.66	234.2	240.6	.507	.624	108.6	
250	14.14	19.22	34.72	25.95	205.9	213.1	.620	.511	80.2	
300	12.03	19.12	34.55	26.25	177.7	185.4	.720	.411	57.2	
400	8.27	19.01	34.34	26.73	131.8	139.4	.882	.249	24.2	
500	6.32	18.98	34.29	26.90	115.8	123.8	1.014	.117	5.9	
600	5.64	18.97	34.27	27.04	102.7	110.8	1.131	0	0	

H 118

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 119		DEC 13, 1963		0625-0710		29° 55.2'S		094° 29.8'W		38	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub>	NO <sub>2</sub>
0	19.30	19.43	35.10	5.25	25.04	292.8	-1.17	.23	1.3	.6	.05
25	19.10	19.41	35.07	5.37	25.06	290.6	-2.27	.15	0	.3	.01
50	18.39	19.42	35.08	5.36	25.26	272.2	-2.20	.17	0	.4	.01
75	17.05	19.32	34.90	5.54	25.45	254.2	-2.24	.15	0	.3	.01
100	16.81	19.31	34.88	5.54	25.49	250.1	-2.22	.18	.3	.6	.03
150	16.46	19.34	34.94	5.29	25.61	238.4	.07	.17	.5	.4	.14
199	16.38	19.34	34.94	5.28	25.63	236.6	.08	.18	.9	.4	.31
293	12.31	19.01	34.34	4.75	26.04	197.9	1.10	.88	12.0	1.8	.02
392	8.59	18.98	34.29	3.87	26.65	140.2	2.48	1.31	22.7	8.1	.02
585	5.92	18.94	34.22	5.18	26.97	109.9	1.59	1.41	27.4	10.6	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	19.30	19.43	35.10	25.04	292.8	293.0	0	1.176	295.7	
10	19.25	19.42	35.09	25.04	292.3	292.7	.029	1.147	284.1	
20	19.17	19.42	35.08	25.05	291.3	292.1	.059	1.117	272.8	
30	19.01	19.41	35.06	25.09	288.3	289.5	.088	1.088	261.8	
50	18.39	19.42	35.08	25.26	272.2	274.0	.144	1.032	240.6	
75	17.05	19.32	34.90	25.44	254.2	256.8	.210	.965	215.6	
100	16.81	19.31	34.88	25.49	250.1	253.4	.274	.902	192.3	
150	16.46	19.34	34.94	25.61	238.4	243.2	.398	.778	150.3	
200	16.33	19.33	34.93	25.64	236.1	242.5	.520	.656	114.5	
250	13.98	19.13	34.56	25.87	213.8	220.9	.636	.540	84.6	
300	12.01	19.00	34.33	26.09	193.2	200.8	.741	.435	60.2	
400	8.46	18.98	34.28	26.66	138.7	146.4	.915	.261	25.4	
500	6.97	18.95	34.23	26.84	121.8	129.9	1.053	.123	6.2	
600	5.75	18.94	34.22	26.98	108.0	116.2	1.176	0	0	

H 119

STATION		DATE		TIME		LATITUDE		LONGITUDE		D		
H 120		DEC 13, 1963		2210-2304		28° 37.0S		094° 55.7W				
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —	
0	20.20	19.56	35.34	5.14	24.98	298.2	-1.15	.22	1.7	.6	.07	
25	20.05	19.53	35.28	5.16	24.98	298.4	-1.16	.17	0	.3	.01	
50	19.52	19.54	35.30	5.29	25.13	283.9	-2.24	.19	0	.3	.01	
75	18.34	19.47	35.17	5.38	25.34	264.4	-2.22	.17	0	.3	.01	
100	17.60	19.41	35.07	5.34	25.44	255.0	-1.10	.15	0	.3	.02	
150	17.06	19.38	35.01	5.22	25.53	246.6	.07	.17	.4	.4	.11	
200	15.78	19.26	34.79	4.92	25.66	234.1	.51	.32	3.3	.6	.13	
293	10.81	18.96	34.25	4.29	26.25	178.1	1.75	1.09	17.5	3.8	.01	
391	8.31	18.98	34.29	3.06	26.69	136.1	3.33	1.75	29.0	13.6	.01	
574	5.84	18.97	34.27	4.73	27.02	104.9	2.05	1.64	29.0	13.2	.01	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	20.20	19.56	35.34	24.98	298.2	298.4	0	1.155	284.1	
10	20.16	19.55	35.32	24.98	298.3	298.5	.030	1.125	272.7	
20	20.10	19.54	35.30	24.98	298.4	299.2	.060	1.095	261.6	
30	19.98	19.53	35.29	25.00	298.3	297.5	.090	1.066	250.8	
50	19.52	19.54	35.30	25.13	283.9	285.7	.148	1.007	230.0	
75	18.34	19.47	35.17	25.34	264.4	267.1	.217	.938	205.7	
100	17.60	19.41	35.06	25.44	255.0	258.4	.283	.872	183.1	
150	17.06	19.38	35.01	25.53	246.6	251.5	.410	.745	142.7	
200	15.78	19.26	34.79	25.66	234.1	240.3	.533	.622	108.5	
250	13.09	19.08	34.46	25.98	203.8	210.6	.646	.509	80.2	
300	10.61	18.96	34.25	26.28	174.6	181.6	.744	.411	57.2	
400	8.16	18.98	34.28	26.71	134.3	141.7	.906	.250	24.1	
500	6.73	18.97	34.27	26.90	116.1	124.0	1.038	.117	5.8	
600	5.55	18.97	34.27	27.06	101.3	109.3	1.155	0	0	

H 120

STATION		DATE		TIME		LATITUDE		LONGITUDE		D		
H 121		DEC 14, 1963		0600-0645		27° 16.2S		094° 55.5W		34		
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —	
0	20.60	19.57	35.35	5.09	24.89	307.1	-1.14	.20	.3	.5	.01	
25	20.13	19.56	35.34	5.15	25.00	296.5	-1.16	.18	0	.3	.01	
49	19.48	19.56	35.34	999.00	25.17	280.3	999.00	.17	0	.3	0	
74	18.59	19.49	35.21	5.32	25.30	267.8	-1.18	.18	0	.3	0	
99	17.73	19.41	35.07	5.37	25.41	258.0	-1.15	.0	.0	.0	.0	
148	16.85	19.36	34.97	5.29	25.55	244.5	.02	.20	.9	.5	.09	
208	13.73	19.09	34.49	4.74	25.87	214.3	.93	.53	8.3	1.2	.02	
298	9.81	18.99	34.31	3.27	26.46	157.6	2.91	1.33	23.7	10.1	0	
398	7.64	18.96	34.25	3.27	26.76	129.3	3.23	1.55	23.6	10.2	0	
580	5.67	18.93	34.20	4.92	26.98	103.3	1.90	1.75	30.8	14.1	0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	20.60	19.57	35.35	24.89	307.1	307.2	0	1.121	274.8	
10	20.48	19.57	35.35	24.92	304.4	304.9	.031	1.090	263.7	
20	20.29	19.56	35.34	24.96	300.0	300.9	.061	1.060	252.9	
30	20.03	19.56	35.33	25.03	294.0	295.1	.091	1.030	242.5	
50	19.45	19.56	35.33	25.18	279.8	281.7	.148	.973	222.5	
75	18.56	19.49	35.20	25.31	267.4	270.1	.217	.904	199.0	
100	17.71	19.41	35.06	25.41	257.8	261.2	.284	.837	177.2	
150	16.76	19.35	34.96	25.56	243.6	248.4	.411	.710	136.6	
200	14.12	19.12	34.54	25.83	218.1	223.9	.529	.592	106.0	
250	11.73	19.02	34.37	26.17	185.3	191.6	.633	.488	79.0	
300	9.76	18.99	34.30	26.47	157.0	163.5	.722	.399	56.8	
400	7.61	18.96	34.25	26.76	129.1	136.1	.872	.249	24.4	
500	6.45	18.94	34.21	26.89	116.6	124.2	1.002	.119	6.0	
600	5.49	18.93	34.20	27.00	106.4	114.3	1.121	0	0	

H 121

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 122		DEC 14, 1963	1200-1246	26° 13.6'S	094° 53.2'W	38					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at. / L) —			
0	21.50	19.65	35.50	5.07	24.75	320.0	-2.0	.21	.4	.5	.02
25	20.79	19.63	35.46	4.79	24.92	304.1	.14	.23	0	.3	0
50	19.75	19.53	35.28	5.44	25.19	278.5	-3.7	.15	0	.4	0
74	18.48	19.51	35.25	5.32	25.36	262.5	-1.7	.14	0	.3	0
99	17.95	19.47	35.21	5.28	25.46	252.6	-0.8	.23	0	.3	0
148	16.77	19.35	34.97	5.42	25.57	242.7	-1.0	.27	1.2	.5	.19
231	14.61	19.20	34.69	4.91	25.83	217.4	.65	.42	5.1	.8	.05
328	9.41	18.93	34.29	4.16	26.52	152.6	2.07	1.20	19.8	5.9	0
418	7.77	19.03	34.38	2.17	26.84	122.0	4.30	1.96	32.2	18.9	0
601	5.51	18.96	34.25	5.16	27.04	102.4	1.68	2.05	32.2	17.2	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	21.50	19.65	35.50	24.75	320.0	320.1	0	1.136	277.0	
10	21.32	19.64	35.49	24.80	316.0	316.5	.032	1.104	265.8	
20	21.03	19.64	35.47	24.86	309.4	310.3	.063	1.073	254.9	
30	20.54	19.61	35.43	24.97	299.8	301.0	.094	1.042	244.3	
50	19.25	19.53	35.28	25.19	278.5	280.4	.152	.984	224.1	
75	18.46	19.51	35.24	25.36	262.1	264.7	.220	.916	200.3	
100	17.92	19.49	35.20	25.46	252.4	255.8	.285	.851	178.2	
150	16.70	19.35	34.96	25.57	241.9	246.8	.411	.725	138.8	
200	15.31	19.25	34.77	25.75	225.6	231.7	.530	.605	105.6	
250	13.44	19.13	34.57	25.99	202.8	209.8	.641	.495	78.1	
300	10.73	19.02	34.36	26.34	169.1	176.2	.737	.398	55.7	
400	8.08	19.07	34.36	26.78	127.6	135.0	.893	.243	23.7	
500	6.67	18.97	34.31	26.94	112.4	120.2	1.020	.115	5.8	
600	5.52	18.96	34.25	27.04	102.5	110.4	1.136	0	0	

H 122

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 123		DEC 14, 1963	1800-1845	25° 16.0'S	094° 49.0'W						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at. / L) —			
0	21.80	19.68	35.55	4.97	24.71	324.0	-1.2	.28	.3	.6	.03
25	21.07	19.64	35.48	5.08	24.86	310.1	-1.7	.21	0	.3	.03
50	20.00	19.61	35.43	5.23	25.11	286.7	-2.3	.20	0	.3	.02
74	19.47	19.59	35.39	5.19	25.22	276.1	-1.4	.18	0	.3	.02
99	19.12	19.56	35.34	5.31	25.27	271.4	-2.3	.22	0	.3	.02
148	18.37	19.53	35.28	999.00b)	25.41	257.3	999.00	.16	.1	.3	.03
235	16.74	19.38	35.01	5.17	25.60	239.4	.15	.23	1.7	.4	.20
328	11.07	18.98	34.29	3.67	26.24	179.0	2.34	1.24	19.2	6.6	.01
415	8.43	19.01	34.34	2.09	26.71	133.8	4.28	2.23	31.6	19.1	.01
598	5.87	18.99	34.31	3.63	27.04	102.6	3.15	1.81	34.4	21.2	.01

H 123

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	21.80	19.68	35.55	24.71	324.0	324.2	0	1.224	300.6	
10	21.62	19.67	35.53	24.75	320.5	321.0	.032	1.192	288.5	
20	21.31	19.65	35.50	24.81	314.7	315.6	.064	1.160	276.8	
30	20.91	19.63	35.47	24.89	306.6	307.9	.095	1.129	265.3	
50	20.00	19.61	35.43	25.10	286.7	288.6	.155	1.070	243.3	
75	19.46	19.57	35.39	25.22	275.9	278.6	.226	.999	217.5	
100	18.11	19.56	35.33	25.27	271.2	274.7	.295	.930	193.4	
150	16.34	19.53	35.28	25.42	256.9	262.1	.429	.795	150.3	
200	14.47	19.45	35.13	25.52	247.1	253.7	.558	.666	113.7	
250	12.94	19.31	34.89	25.69	230.5	238.3	.681	.543	83.5	
300	12.69	19.07	34.46	26.05	196.6	204.6	.792	.433	59.1	
400	8.84	19.00	34.33	26.64	140.9	148.9	.969	.256	24.6	
500	7.12	18.97	34.31	26.88	117.9	126.2	1.106	.118	5.9	
600	5.85	18.97	34.31	27.04	102.3	110.6	1.224	0	0	



STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 126		DEC 16, 1963		0600-0642		22° 11.6'S		095° 04.8'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	21.20	19.71	35.61	4.99	24.92	304.3	-1.10	.22	.5	.7	.03
49	20.41	19.63	35.46	5.14	25.02	294.4	-1.17	.22	.1	.4	.03
73	19.42	19.60	35.41	5.05	25.24	273.5	.01	.22	0	.5	0
98	18.99	19.59	35.39	5.07	25.34	264.3	.02	.23	0	.6	0
147	17.76	19.54	35.30	5.37	25.58	241.6	-1.16	.18	.4	.6	.03
216	14.87	19.23	34.74	4.70	25.82	218.8	.83	.51	7.3	1.2	.03
305	9.93	19.10	34.51	2.49	26.60	144.8	3.66	1.56	26.4	14.6	0
396	8.64	19.16	34.61	1.01	26.89	116.8	5.32	2.19	35.6	26.4	0
570	5.80	19.08	34.47	3.16	27.18	89.6	3.62	1.88	35.6	26.6	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.20	19.71	35.61	24.92	304.3	304.4	0	1.089	255.7	
10	21.11	19.70	35.59	24.93	303.2	303.7	.030	1.059	245.0	
20	21.00	19.69	35.57	24.95	301.8	302.6	.061	1.028	234.5	
30	20.85	19.67	35.54	24.96	300.0	301.2	.091	.998	224.4	
50	20.38	19.63	35.46	25.03	293.8	295.7	.151	.938	205.0	
75	19.39	19.60	35.41	25.25	272.9	275.6	.222	.867	182.5	
100	18.95	19.59	35.39	25.35	263.6	267.1	.290	.799	161.7	
150	17.66	19.53	35.28	25.59	240.8	245.8	.418	.671	124.9	
200	15.68	19.32	34.89	25.76	224.7	230.9	.537	.552	94.4	
250	13.05	19.16	34.62	26.10	191.7	198.5	.645	.444	69.5	
300	10.19	19.10	34.51	26.56	148.7	155.5	.733	.356	49.5	
400	8.56	19.16	34.61	26.90	116.1	123.9	.873	.216	20.9	
500	6.82	19.10	34.51	27.08	99.4	107.4	.988	.100	5.0	
600	5.40	19.07	34.46	27.22	85.8	93.6	1.089	0	0	

H 126

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 127		DEC 16, 1963		1700-1238		21° 15.8'S		095° 01.9'W		30	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	21.90	19.87	35.90	4.97	24.94	301.9	-1.14	.27	.3	.6	.03
50	21.49	19.87	35.90	4.93	25.06	291.0	-1.07	.26	0	.4	.01
75	21.10	19.81	35.79	4.96	25.08	288.7	-1.06	.23	0	.3	0
100	20.76	19.81	35.79	5.17	25.18	279.9	-1.04	.24	0	.4	0
149	18.85	19.61	35.43	5.16	25.40	258.3	-1.05	.21	.2	.3	.03
200	17.18	19.43	35.10	4.88	25.57	242.7	.40	.26	2.0	.4	.16
293	10.96	19.08	34.47	3.46	26.39	164.6	2.55	1.32	20.4	7.8	.01
389	8.46	19.10	34.51	1.82	26.84	122.2	4.54	2.12	33.6	21.4	0
572	5.76	19.06	34.43	3.40	27.16	91.8	3.39	2.22	35.8	24.4	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.90	19.87	35.89	24.94	301.9	302.0	0	1.137	267.6	
10	21.85	19.87	35.89	24.96	300.7	301.2	.030	1.107	256.4	
20	21.80	19.87	35.89	24.97	299.2	300.1	.060	1.077	245.5	
30	21.72	19.87	35.89	24.99	297.3	298.5	.090	1.047	234.8	
50	21.49	19.87	35.89	25.06	291.0	293.0	.149	.988	214.5	
75	21.10	19.81	35.79	25.08	288.7	291.5	.222	.915	190.7	
100	20.76	19.81	35.79	25.18	279.9	283.6	.294	.843	168.7	
150	18.82	19.61	35.42	25.40	258.0	263.3	.431	.706	130.0	
200	17.18	19.43	35.10	25.57	242.7	249.3	.559	.578	97.9	
250	13.82	19.21	34.70	26.01	200.5	207.6	.673	.464	71.9	
300	10.75	19.08	34.47	26.43	161.1	168.1	.767	.370	51.0	
400	8.26	19.09	34.50	26.86	120.0	127.6	.915	.222	21.4	
500	6.70	19.07	34.45	27.04	102.4	110.3	1.034	.103	5.2	
600	5.43	19.06	34.43	27.20	88.1	95.9	1.137	0	0	

H 127

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 128		DEC 16, 1963		1800-1838		20° 18.6'S		094° 57.8'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	21.80	19.84	35.84	4.96	24.93	303.2	-1.2	.34	.2	.6	0
47	21.35	19.84	35.84	5.04	25.06	291.3	-1.17	.34	0	.5	.01
70	21.03	19.83	35.82	4.98	25.13	284.2	-1.08	.32	0	.4	0
94	20.12	19.68	35.55	5.00	25.17	280.5	-1.01	.35	0	.7	.01
141	19.57	19.73	35.64	4.90	25.38	260.2	.13	.42	1.3	.7	.27
225	15.32	19.27	34.81	4.49	25.78	223.0	.99	.49	7.1	1.2	.02
318	10.62	19.16	34.61	1.25	26.56	148.2	4.80	2.29	28.2	22.0	0
413	8.64	19.13	34.56	1.13	26.85	120.9	5.20	2.46	34.9	25.4	.01
601	5.96	19.08	34.47	2.51	27.16	91.5	4.24	2.21	39.1	31.8	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)
0	21.80	19.84	35.84	24.93	303.2	303.3	0	1.141	271.4
10	21.75	19.84	35.84	24.95	301.8	302.2	.030	1.111	260.2
20	21.68	19.84	35.84	24.96	300.0	300.8	.060	1.080	249.2
30	21.59	19.84	35.84	24.99	297.6	298.8	.090	1.051	238.6
50	21.32	19.84	35.84	25.06	290.5	292.5	.150	.991	218.2
75	20.88	19.81	35.78	25.14	283.5	286.3	.222	.919	194.3
100	20.06	19.68	35.56	25.19	278.5	282.1	.293	.848	172.2
150	19.21	19.69	35.57	25.42	256.7	262.0	.429	.712	133.2
200	16.53	19.39	35.03	25.66	233.6	240.0	.554	.586	100.7
250	13.89	19.22	34.72	26.01	200.2	207.3	.666	.475	74.2
300	11.41	19.17	34.63	26.43	160.8	168.2	.760	.381	57.8
400	8.88	19.13	34.56	26.81	124.2	132.2	.910	.231	22.3
500	7.27	19.10	34.50	27.01	105.9	114.4	1.034	.107	5.4
600	5.97	19.08	34.47	27.16	91.6	100.2	1.141	0	0

H 128

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 129		DEC 17, 1963		0602-0658		19° 43.0'S		095° 17.0'W		20	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	21.80	19.89	35.93	4.89	25.00	296.6	-0.06	.34	.5	.6	.06
50	21.33	19.77	35.71	4.96	24.97	299.9	-0.08	.35	0	.4	.01
74	20.93	19.87	35.90	4.93	25.21	276.4	-0.02	.34	.4	.4	.02
99	21.10	19.86	35.88	4.82	25.15	282.1	.07	.36	.7	.5	.08
148	19.64	19.80	35.77	4.95	25.46	252.8	.07	.35	.6	.4	.19
197	17.59	19.72	35.62	4.01	25.87	214.1	1.21	.83	10.6	2.0	.05
294	11.15	19.53	35.28	1.80	26.99	108.0	4.16	1.73	25.2	16.2	.01
387	9.66	19.16	34.61	.47	26.73	132.5	5.71	2.75	36.5	29.1	0
570	6.46	19.19	34.67	1.77	27.25	82.8	4.89	2.27	40.8	34.4	0

H 129

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)
0	21.80	19.89	35.93	25.00	296.6	296.8	0	1.059	245.5
10	21.75	19.86	35.88	24.98	298.6	299.1	.030	1.029	235.1
20	21.68	19.85	35.85	24.97	299.2	300.0	.060	.999	225.0
30	21.60	19.83	35.82	24.97	299.5	300.7	.090	.969	215.1
50	21.33	19.77	35.71	24.96	299.9	301.8	.150	.909	196.3
75	20.94	19.87	35.89	25.21	276.7	279.5	.223	.836	174.5
100	21.08	19.86	35.88	25.16	281.7	285.4	.293	.765	154.5
150	19.58	19.80	35.76	25.47	251.5	256.8	.429	.630	119.6
200	17.43	19.71	35.61	25.90	211.3	217.7	.548	.511	91.1
250	14.05	19.58	35.37	26.48	155.7	162.9	.643	.416	67.9
300	11.04	19.50	35.23	26.97	109.8	117.0	.713	.346	48.9
400	9.39	19.16	34.61	26.77	128.3	136.7	.840	.219	20.6
500	7.54	19.17	34.63	27.07	99.6	108.4	.962	.097	4.6
600	6.04	19.20	34.69	27.32	76.3	84.9	1.059	0	0

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 130		DEC 17, 1963	2210-2249	18° 45.8'S	095° 00.3'W		OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
								(μg at./L)				
0	21.50	19.82	35.81	5.02	24.99	297.8	-1.16	.34	.4	.8	.05	
49	21.28	19.88	35.91	5.01	25.13	284.2	-1.13	.30	0	.6	0	
74	21.17	19.83	35.82	4.96	25.09	287.9	-1.07	.30	.2	.5	.01	
99	20.56	19.78	35.73	4.84	25.19	278.6	.10	.44	1.4	1.1	.08	
148	19.98	19.77	35.71	4.90	25.33	265.2	.10	.37	1.0	.7	.23	
200	17.10	19.45	35.14	4.44	25.61	238.3	.84	.53	5.9	1.1	.04	
297	11.26	19.18	34.65	1.93	26.47	156.5	4.04	1.90	24.8	15.2	0	
393	9.02	19.17	34.63	.59	26.85	121.2	5.68	2.27	37.8	28.9	0	
572	6.63	19.17	34.63	1.34	27.20	87.7	5.30	2.52	41.8	39.0	0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.50	19.82	35.80	24.99	297.8	298.0	0	1.124	263.6	
10	21.48	19.83	35.82	25.00	296.3	296.8	.030	1.094	252.5	
20	21.44	19.84	35.83	25.02	294.3	295.2	.059	1.065	241.7	
30	21.40	19.85	35.85	25.05	291.8	293.1	.089	1.035	231.2	
50	21.28	19.88	35.91	25.13	284.4	286.3	.147	.977	211.1	
75	21.15	19.83	35.82	25.09	267.6	290.4	.219	.905	187.6	
100	20.55	19.78	35.73	25.19	278.4	282.1	.290	.834	165.9	
150	19.90	19.76	35.70	25.34	264.4	269.8	.428	.696	127.6	
200	17.10	19.45	35.14	25.61	238.3	244.8	.557	.567	96.1	
250	14.08	19.28	34.83	26.06	196.0	203.2	.669	.455	70.5	
300	11.18	19.18	34.65	26.49	155.2	162.5	.760	.364	50.1	
400	8.91	19.17	34.63	26.86	119.6	127.7	.906	.218	21.0	
500	7.49	19.16	34.62	27.07	99.7	108.4	1.024	.100	5.0	
600	6.33	19.17	34.64	27.24	83.4	92.4	1.124	0	0	

H 130

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 131		DEC 18, 1963	0600-0640	17° 29.2'S	095° 00.3'W	25	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
								(μg at./L)				
0	21.70	19.98	36.09	4.99	25.15	282.3	-1.15	.37	.7	1.1	.03	
50	21.41	19.83	35.82	5.01	25.03	294.2	-1.14	.33	.5	.7	.02	
74	21.12	19.80	35.77	4.93	25.06	290.5	-1.03	.39	.4	.8	.02	
99	20.52	19.76	35.70	4.91	25.17	280.2	.04	.35	.6	.7	.05	
149	19.97	19.74	35.66	4.83	25.29	268.9	.17	.38	1.4	.6	.40	
220	14.60	19.28	34.83	3.44	25.95	206.7	2.12	1.08	15.7	4.5	.02	
315	10.27	19.19	34.67	.82	26.67	138.4	5.28	2.14	31.3	24.6	.01	
411	8.19	19.17	34.63	1.08	26.98	108.9	5.32	2.32	37.0	28.0	.01	
597	6.09	19.13	34.56	1.42	27.21	86.3	5.31	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.70	19.98	36.09	25.15	282.3	282.4	0	1.097	254.9	
10	21.67	19.92	35.98	25.07	289.5	290.0	.029	1.069	244.0	
20	21.63	19.89	35.94	25.05	291.5	292.3	.058	1.040	233.5	
30	21.58	19.87	35.90	25.04	292.7	293.9	.087	1.010	223.2	
50	21.41	19.83	35.82	25.03	294.2	296.1	.146	.951	203.6	
75	21.10	19.80	35.77	25.07	290.2	293.0	.220	.878	180.8	
100	20.51	19.76	35.70	25.17	280.0	283.7	.292	.806	159.7	
150	19.92	19.73	35.65	25.30	268.3	273.6	.431	.666	122.9	
200	16.05	19.39	35.02	25.77	223.5	229.8	.557	.540	92.8	
250	13.06	19.23	34.74	26.20	182.3	189.2	.662	.436	68.4	
300	10.86	19.19	34.68	26.57	147.7	154.8	.748	.350	48.7	
400	8.40	19.17	34.63	26.94	111.9	119.6	.885	.212	20.6	
500	7.09	19.14	34.59	27.10	97.1	105.3	.997	.100	5.0	
600	6.06	19.13	34.56	27.22	86.0	94.7	1.097	0	0	

H 131



STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 132		DEC 18, 1963	1205-1235	16° 29.8'S	095° 03.1'W	20					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	21.80	999.00d	999.00	4.98	999.00	999.0	999.00	.45	.5	.8	.02
49	21.41	999.00	999.00	5.00	999.00	999.0	999.00	.35	.3	.5	.02
73	21.15	999.00	999.00	5.02	999.00	999.0	999.00	.36	.3	.5	.02
98	19.83	999.00	999.00	4.90	999.00	999.0	999.00	.38	.4	.5	.04
147	15.78	999.00	999.00	5.04	999.00	999.0	999.00	.36	2.0	.5	.46
200	14.74	999.00	999.00	3.93	999.00	999.0	999.00	.82	12.0	2.7	.07
295	10.03	999.00	999.00	999.00e	999.00	999.0	999.00	1.42	19.8	13.1	.03
383	8.26	999.00	999.00	.86	999.00	999.0	999.00	2.39	40.0	30.8	.01
575	6.39	999.00	999.00	1.17	999.00	999.0	999.00	2.34	38.1	33.6	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.80									
10	21.76									
20	21.70									
30	21.63									
50	21.40									
75	21.08									
100	19.70									
150	15.71									
200	14.74									
250	12.04									
300	9.92									
400	8.06									
500	7.03									
600	6.19									

H 132

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 133		DEC 18, 1963	1800-1835	15° 30.8'S	095° 03.2'W						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	22.00	19.88	35.91	4.93	24.93	303.3	-.11	.37	.6	.7	.03
50	21.65	19.86	35.88	4.95	25.00	296.6	-.10	.34	.4	.4	.02
75	21.62	19.84	35.93	4.91	25.05	291.9	-.06	.39	.4	.5	.02
100	20.51	999.00	999.00	4.88	999.00	999.0	999.00	.40	.8	1.1	.06
150	19.98	19.70	35.59	4.87	25.23	274.4	.13	.33	.6	.5	.20
200	16.12	19.39	35.03	3.88	25.76	224.3	1.51	.67	11.9	2.4	.02
295	10.63	19.20	34.69	.81	26.62	143.0	5.24	2.12	31.0	23.2	0
385	8.81	19.20	34.69	.68	26.92	114.0	5.62	2.71	38.1	31.8	0
576	6.70	19.14	34.58	.90	27.15	92.6	5.73	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	22.00	19.88	35.91	24.93	303.3	303.4	0	1.108	256.8	
10	21.96	19.88	35.91	24.94	302.5	303.0	.030	1.078	245.9	
20	21.91	19.87	35.90	24.95	301.6	302.5	.061	1.047	235.3	
30	21.85	19.87	35.90	24.96	300.4	301.6	.091	1.017	224.9	
50	21.65	19.86	35.88	25.00	296.6	298.5	.151	.957	205.2	
75	21.62	19.89	35.93	25.05	291.9	294.8	.225	.883	182.2	
100	20.51	19.70	35.59	25.10	287.4	291.0	.298	.810	161.0	
150	19.98	19.70	35.59	25.23	274.4	279.8	.441	.667	124.1	
200	16.12	19.37	35.03	25.76	224.3	230.6	.569	.539	94.0	
250	12.97	19.25	34.79	26.25	177.7	184.5	.672	.436	69.6	
300	10.52	19.20	34.68	26.63	141.2	148.1	.755	.352	49.9	
400	8.61	19.19	34.67	26.94	112.0	119.8	.889	.218	21.3	
500	7.44	19.16	34.61	27.07	100.1	108.8	1.004	.104	5.2	
600	6.49	19.14	34.57	27.17	90.5	99.6	1.108	0	0	

H 133

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 134		DEC 19, 1963		0553-0648		14° 31.0'S		095° 14.0'W		18	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	21.90	19.66	35.88	5.00	24.93	303.2	-.17	.53	1.1	.8	.03
50	21.73	19.85	35.86	4.99	24.97	300.0	-.15	.35	.7	.5	.02
75	21.62	19.85	35.86	4.93	25.00	297.1	-.08	.34	.7	.4	.02
100	20.53	19.76	35.70	4.78	25.17	280.5	.17	.34	1.2	.5	-.0
150	18.90	19.62	35.44	4.62	25.40	258.2	.48	.50	4.4	.8	-.48
199	15.01	19.33	34.92	3.56	25.93	208.5	1.95	.96	14.7	3.6	-.02
297	10.36	19.22	34.72	.54	26.69	135.9	5.54	2.21	33.0	27.4	0
389	8.74	19.19	34.67	.69	26.92	114.3	5.62	2.32	39.1	32.4	.01
575	6.61	19.14	34.58	.87	27.16	91.5	5.77	2.50	44.8	38.2	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.90	19.86	35.88	24.93	303.2	303.3	0	1.080	250.4	
10	21.88	19.86	35.87	24.93	302.9	303.4	.030	1.050	239.8	
20	21.86	19.86	35.87	24.94	302.4	303.3	.061	1.020	229.4	
30	21.83	19.86	35.87	24.94	301.8	303.1	.091	.989	219.4	
50	21.73	19.85	35.86	24.96	300.0	302.0	.151	.929	200.2	
75	21.62	19.85	35.86	24.99	297.1	300.0	.227	.854	177.9	
100	20.53	19.76	35.70	25.17	280.5	284.2	.300	.781	157.5	
150	18.90	19.62	35.44	25.40	258.2	263.5	.437	.644	121.9	
200	14.95	19.33	34.92	25.94	207.6	213.6	.556	.524	92.7	
250	12.36	19.25	34.77	26.36	167.1	173.7	.653	.428	68.9	
300	10.30	19.22	34.72	26.70	135.1	141.9	.732	.349	49.5	
400	8.59	19.18	34.66	26.94	112.7	120.5	.863	.217	21.2	
500	7.37	19.15	34.60	27.07	99.6	108.2	.977	.103	5.2	
600	6.38	19.14	34.57	27.19	89.0	98.0	1.080	0	0	

H 134

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 135		DEC 19, 1963		2010-2055		13° 45.0'S		094° 59.3'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	21.70	19.72	35.62	5.00	24.80	316.2	-.15	.67	6.0	1.2	-.06
49	21.42	19.70	35.59	4.99	24.85	311.4	-.11	.54	6.2	.8	-.14
73	20.85	19.69	35.57	4.92	24.99	297.9	.00	.63	5.7	1.2	-.15
97	20.82	19.74	35.66	4.89	25.06	290.5	.03	.59	2.1	1.1	-.20
146	16.68	19.47	35.17	4.05	25.74	226.2	1.27	.81	10.9	1.9	-.54
225	12.12	19.28	34.83	.26	26.45	158.6	5.59	2.32	28.1	25.1	-.02
312	10.57	19.22	34.72	.38	26.66	139.4	5.68	2.27	35.1	30.7	0
405	9.04	19.20	34.69	.61	26.89	117.5	5.66	2.33	38.3	35.0	.02
571	7.24	19.18	34.65	.86	27.13	94.3	5.68	2.46	43.8	34.0	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.70	19.72	35.62	24.79	316.2	316.3	0	1.066	250.2	
10	21.67	19.72	35.62	24.80	315.6	316.1	.032	1.034	239.7	
20	21.63	19.71	35.61	24.81	314.9	315.8	.063	1.003	229.6	
30	21.58	19.71	35.61	24.82	314.1	315.3	.095	.971	219.7	
50	21.40	19.70	35.59	24.85	311.0	313.0	.158	.908	200.9	
75	20.85	19.69	35.58	24.99	297.3	300.2	.234	.832	179.1	
100	20.65	19.73	35.64	25.09	287.6	291.3	.308	.758	159.3	
150	16.40	19.45	35.14	25.78	222.0	226.8	.438	.628	124.6	
200	13.36	19.32	34.90	26.26	177.0	182.6	.540	.526	95.7	
250	11.62	19.26	34.79	26.52	152.4	158.6	.625	.441	71.6	
300	10.76	19.23	34.73	26.63	141.7	148.7	.702	.364	51.5	
400	9.11	19.20	34.69	26.87	118.5	126.7	.840	.226	22.0	
500	7.94	19.18	34.66	27.03	103.3	112.4	.959	.107	5.3	
600	6.98	19.18	34.65	27.16	91.0	100.7	1.066	0	0	

H 135

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 136		DEC 20, 1963		0600-0640		12° 24.0'S		095° 00.0'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								(μg at./L)			
0	21.80	19.72	35.62	4.88	24.77	318.8	-.04	.64	7.6	1.8	.13
50	21.62	19.73	35.64	5.03	24.83	312.7	-.17	.68	7.4	1.2	.17
75	21.12	19.75	35.68	4.94	25.00	297.0	-.04	.51	4.2	1.1	.13
100	18.69	19.58	35.37	4.29	25.40	258.4	.83	.66	8.1	1.4	1.31
149	14.71	19.33	34.92	2.30	25.99	202.3	3.24	1.43	21.1	8.2	.03
198	12.04	19.30	34.87	.24	26.50	154.4	5.62	-.0	29.2	24.5	.05
312	10.68	19.29	34.85	.66	26.73	131.9	5.38	2.04	35.9	30.4	.01
386	9.60	19.30	34.87	.50	26.93	112.9	5.68	2.31	38.1	36.0	.01
570	7.40	19.17	34.63	.71	27.09	97.8	5.81	2.32	42.3	43.5	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	21.80	19.72	35.62	24.77	318.8	318.9	0	1.019	240.5	
10	21.78	19.72	35.63	24.77	318.1	318.6	.032	.987	236.5	
20	21.76	19.72	35.63	24.78	317.3	318.2	.064	.955	220.8	
30	21.72	19.72	35.63	24.79	316.2	317.4	.095	.923	211.4	
50	21.62	19.73	35.64	24.83	312.7	314.7	.159	.860	193.6	
75	21.12	19.75	35.68	25.00	297.0	299.9	.236	.783	173.0	
100	18.69	19.58	35.37	25.40	258.4	261.9	.306	.713	154.3	
150	14.65	19.33	34.92	26.00	201.2	205.7	.423	.596	121.6	
200	12.01	19.30	34.87	26.50	153.9	159.1	.514	.505	94.1	
250	11.34	19.29	34.85	26.62	142.9	149.0	.591	.428	76.8	
300	10.80	19.29	34.85	26.71	133.8	140.9	.663	.355	51.2	
400	9.40	19.29	34.84	26.95	111.5	119.9	.794	.225	22.1	
500	8.14	19.21	34.70	27.04	102.9	112.2	.910	.109	5.4	
600	7.11	19.16	34.61	27.11	95.9	105.8	1.019	0	0	

H 136

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 137		DEC 20, 1963		1200-1237		11° 26.7'S		095° 00.7'W		18	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								(μg at./L)			
0	22.40	19.71	35.61	4.95	24.58	336.2	-.15	.65	7.2	1.8	.17
50	21.77	19.71	35.61	4.99	24.76	319.3	-.14	.59	6.7	1.6	.16
75	19.69	19.64	35.48	4.90	25.23	275.0	.13	.66	4.9	1.8	.40
100	19.20	19.62	35.44	4.76	25.33	265.5	.31	.65	5.4	1.5	1.01
149	13.12	19.28	34.83	2.28	26.26	177.3	3.45	2.09	26.8	20.7	.02
199	11.56	19.27	34.81	.33	26.55	149.8	5.59	2.36	33.5	28.2	.01
298	10.48	19.24	34.76	.28	26.70	135.2	5.79	2.37	37.0	34.3	.0
393	9.20	19.20	34.69	.38	26.86	120.0	5.87	2.49	39.7	38.0	.01
580	7.28	19.16	34.61	.33	27.10	97.6	6.21	2.70	46.8	47.6	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	22.40	19.71	35.61	24.58	336.2	336.3	0	1.019	242.7	
10	22.33	19.71	35.61	24.60	334.3	334.8	.034	.985	232.7	
20	22.24	19.71	35.61	24.63	332.0	332.9	.067	.952	223.0	
30	22.13	19.71	35.61	24.66	329.0	330.2	.100	.919	213.6	
50	21.77	19.71	35.61	24.76	319.3	321.3	.165	.853	195.9	
75	19.69	19.64	35.48	25.23	275.0	277.7	.240	.779	175.5	
100	19.20	19.62	35.44	25.33	265.5	269.1	.308	.710	156.9	
150	13.08	19.28	34.83	26.26	176.6	180.8	.421	.598	124.2	
200	11.55	19.27	34.81	26.55	149.6	154.6	.505	.514	96.4	
250	10.95	19.25	34.78	26.63	141.6	147.5	.580	.438	72.6	
300	10.45	19.24	34.76	26.70	134.8	141.7	.653	.366	52.5	
400	9.11	19.20	34.68	26.87	118.9	127.1	.787	.232	22.6	
500	8.01	19.17	34.63	27.00	106.1	115.3	.908	.110	5.5	
600	7.11	19.16	34.61	27.12	95.6	105.5	1.019	0	0	

H 137

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 138		DEC 20, 1963		1800-1835		10° 26.8'S		095° 00.3'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	—	(μg at./L)	—	—
0	22.80	19.32	34.90	4.93	23.94	397.9	-14	.70	7.7	2.3	.10
50	22.30	19.62	35.44	4.97	24.49	345.2	-16	.55	7.6	2.1	.15
75	20.37	19.66	35.32	4.69	25.08	289.5	.28	.56	5.0	1.4	.39
100	18.10	19.53	35.28	3.80	25.48	250.9	1.38	.98	12.1	2.2	1.01
150	13.24	19.28	34.83	.54	26.23	179.6	5.17	-0	-0	-0	-0
200	11.82	19.27	34.81	.42	26.50	154.4	5.47	2.11	32.4	2.7	.02
296	10.81	19.24	34.76	.32	26.64	140.8	5.70	2.29	37.8	34.0	0
388	9.75	19.22	34.72	.30	26.80	125.9	5.87	2.67	38.4	37.5	0
575	7.42	19.14	34.58	.39	27.05	102.1	6.13	2.87	45.7	46.2	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/Z</sub> MAX	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	22.80	19.32	34.90	23.94	397.9	398.0	0	1.067	251.4	
10	22.74	19.35	34.96	24.00	392.0	392.5	.040	1.027	240.9	
20	22.67	19.39	35.04	24.07	384.7	385.6	.078	.988	230.9	
30	22.59	19.45	35.13	24.17	375.3	376.6	.117	.950	221.2	
50	22.30	19.62	35.44	24.49	345.2	347.2	.189	.878	202.9	
75	20.37	19.66	35.32	25.07	289.5	292.3	.269	.798	182.0	
100	18.10	19.53	35.28	25.48	250.9	254.4	.337	.729	162.9	
150	13.24	19.28	34.83	26.23	179.6	183.8	.447	.620	129.1	
200	11.82	19.27	34.81	26.50	154.4	159.6	.533	.534	100.3	
250	11.25	19.25	34.78	26.58	146.7	152.8	.611	.456	75.5	
300	10.76	19.24	34.76	26.65	140.0	147.1	.686	.381	54.6	
400	9.57	19.21	34.71	26.82	124.1	132.6	.825	.241	23.5	
500	8.25	19.16	34.62	26.96	110.6	120.0	.952	.115	5.7	
600	7.17	19.13	34.57	27.07	99.6	109.5	1.067	0	0	

H 138

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 139		DEC 21, 1963		0610-0653		09° 27.7'S		094° 58.3'W		17	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	—	(μg at./L)	—	—
0	23.00	19.58	35.37	4.85	24.24	369.5	-.09	.63	6.9	1.9	.16
50	22.45	19.59	35.39	4.93	24.41	353.2	-.13	.57	7.7	1.9	.17
75	18.01	19.50	35.23	2.92	25.46	252.7	2.27	1.26	18.3	4.9	1.21
100	14.57	19.36	34.97	.48	26.06	195.5	5.08	1.98	30.3	14.3	.42
150	12.74	19.31	34.88	.32	26.37	166.1	5.45	2.24	33.9	25.1	.02
200	12.15	19.31	34.88	.48	26.49	155.1	5.36	2.17	34.9	26.5	.01
297	11.13	19.28	34.83	.34	26.64	140.9	5.64	2.28	36.6	30.9	.01
390	10.02	19.26	34.79	.45	26.81	124.9	5.68	2.41	37.2	34.7	.01
576	7.29	19.15	34.60	.54	27.08	99.0	6.00	2.76	43.9	41.5	0

H 139

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/Z</sub> MAX	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	23.00	19.58	35.37	24.23	369.5	369.6	0	1.020	245.3	
10	22.94	19.58	35.37	24.25	367.7	368.2	.037	.983	235.3	
20	22.86	19.58	35.38	24.28	365.4	366.3	.074	.947	225.6	
30	22.76	19.58	35.38	24.31	362.5	363.8	.110	.910	216.3	
50	22.45	19.59	35.39	24.41	353.2	355.2	.182	.838	198.9	
75	18.01	19.50	35.23	25.46	252.7	255.3	.258	.762	178.9	
100	14.57	19.36	34.97	26.06	195.5	198.5	.315	.705	160.5	
150	12.74	19.31	34.88	26.37	166.1	170.2	.407	.613	127.6	
200	12.15	19.31	34.88	26.49	155.1	160.3	.490	.530	99.0	
250	11.57	19.29	34.85	26.57	147.1	153.4	.568	.452	74.4	
300	11.09	19.28	34.83	26.64	140.3	147.6	.643	.377	53.7	
400	9.84	19.25	34.78	26.82	123.3	132.0	.783	.237	23.0	
500	8.28	19.18	34.66	26.98	108.4	117.9	.908	.112	5.6	
600	7.00	19.14	34.58	27.11	96.3	106.1	1.020	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 140		DEC 21, 1963		2210-2246		09° 00.0'S		094° 08.6'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	23.60	19.42	35.08	4.76	23.84	407.0	-.04	.66	7.5	3.3	.14
49	22.77	19.63	35.46	4.83	24.37	356.7	-.06	.62	7.2	1.7	.16
74	20.47	19.57	35.35	3.87	24.93	303.8	1.09	.98	13.5	3.4	.78
99	15.17	19.45	35.14	1.11	26.06	196.1	4.37	2.04	26.6	11.2	.44
148	13.07	19.36	34.97	.19	26.38	165.7	5.54	2.06	32.7	24.2	.02
223	12.07	19.34	34.94	.68	26.55	149.7	5.17	2.05	33.0	25.6	.02
319	11.05	19.30	34.87	.19	26.68	136.9	5.80	2.29	36.6	32.3	.01
416	9.57	19.22	34.72	.24	26.83	123.1	5.95	2.41	38.3	36.8	.01
595	6.99	19.17	34.63	.69	27.15	92.4	5.69	-.0	45.9	34.1	-.0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	23.60	19.42	35.08	23.84	407.0	407.1	0	1.040	244.6	
10	23.51	19.44	35.13	23.90	401.2	401.7	.040	.999	234.4	
20	23.39	19.47	35.18	23.98	394.1	395.0	.080	.959	224.6	
30	23.23	19.51	35.25	24.07	384.8	386.0	.119	.920	215.7	
50	22.71	19.63	35.46	24.39	355.1	357.1	.194	.846	197.6	
75	20.30	19.57	35.34	24.96	303.7	303.0	.276	.763	177.4	
100	15.12	19.45	35.13	26.06	195.3	198.4	.339	.701	159.1	
150	13.04	19.36	34.97	26.38	165.2	169.3	.431	.609	126.4	
200	12.34	19.34	34.95	26.50	153.9	159.2	.513	.527	96.0	
250	11.74	19.33	34.91	26.57	145.6	151.9	.591	.449	73.6	
300	11.23	19.31	34.88	26.66	139.1	146.4	.665	.374	53.0	
400	9.79	19.23	34.74	26.60	125.1	133.8	.805	.234	22.6	
500	8.24	19.19	34.66	26.99	107.3	116.7	.931	.109	5.5	
600	6.93	19.17	34.63	27.16	91.6	101.3	1.040	0	0	

H 140

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 141		DEC 22, 1963		0600-0637		08° 01.0'S		093° 12.2'W		22	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	23.40	19.41	35.07	4.79	23.89	402.7	-.06	.54	7.3	3.1	.13
49	22.69	19.64	35.48	4.52	24.41	353.2	.26	.60	7.8	1.7	.17
73	21.35	19.62	35.44	4.83	24.76	320.0	.06	.72	7.3	1.6	-.0
97	16.77	19.46	35.16	1.88	25.71	229.5	3.44	1.75	-.0	8.4	-.0
146	13.16	19.35	34.96	.23	26.34	169.2	5.44	1.98	31.9	20.9	.02
218	11.67	19.33	34.92	.77	26.62	142.9	5.14	1.94	34.3	26.7	.01
303	10.82	19.28	34.83	.24	26.70	135.6	5.78	2.24	37.5	35.3	-.0
417	9.56	19.26	34.79	.23	26.88	117.9	5.96	2.39	40.3	36.2	.01
604	7.03	19.23	34.74	.44	27.23	84.8	6.13	2.86	46.4	49.0	-.0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	23.40	19.41	35.06	23.89	402.7	402.8	0	1.031	237.7	
10	23.32	19.44	35.11	23.95	397.1	397.6	.040	.991	227.1	
20	23.22	19.47	35.17	24.02	390.0	390.0	.079	.952	217.4	
30	23.09	19.51	35.25	24.12	380.9	382.1	.118	.913	208.5	
50	22.65	19.64	35.48	24.42	352.1	354.1	.192	.839	191.0	
75	21.06	19.61	35.43	24.82	313.0	316.4	.276	.766	171.1	
100	16.50	19.45	35.13	25.75	225.0	228.3	.344	.688	153.1	
150	13.07	19.35	34.95	26.36	167.4	171.5	.444	.588	121.1	
200	11.96	19.33	34.93	26.56	148.5	153.7	.525	.506	91.0	
250	11.29	19.31	34.88	26.65	139.4	146.0	.600	.431	70.4	
300	10.84	19.28	34.83	26.69	135.8	142.9	.672	.359	50.0	
400	9.74	19.26	34.80	26.86	120.7	128.8	.808	.223	21.1	
500	8.33	19.24	34.76	27.05	101.1	111.2	.924	.103	5.1	
600	7.08	19.23	34.74	27.22	85.4	95.3	1.031	0	0	

H 141

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 142		DEC 22, 1963	1400-1435	07° 05.0'S	092° 13.0'W	25	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —	
0	23.90	19.50	35.23	5.07	23.86	405.0	-1.38	.61	7.3	2.5	.13	
50	22.60	19.81	35.79	4.94	24.66	328.6	-1.17	.65	8.8	2.4	.20	
74	21.62	19.60	35.41	4.29	24.65	329.7	.58	.82	10.5	2.9	.66	
99	16.47	19.67	35.53	1.64	26.07	195.2	3.69	1.65	24.0	8.4	.43	
149	13.25	19.38	35.01	.30	26.37	166.5	5.41	2.15	32.5	21.5	.62	
222	12.07	19.38	35.01	.71	26.60	144.4	5.14	2.12	33.8	25.3	.01	
310	11.21	19.36	34.97	.56	26.74	131.7	5.40	2.23	36.2	30.0	.01	
415	10.03	19.30	34.87	.18	26.86	119.8	5.94	2.37	31.5	33.0	.01	
488	8.65	19.24	34.76	.16	27.00	106.3	6.16	2.41	41.5	39.0	.01	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	23.90	19.50	35.23	23.86	405.0	405.1	0	.914	180.1	
10	23.76	19.54	35.29	23.95	396.5	397.0	.040	.874	171.2	
20	23.58	19.58	35.37	24.06	385.9	386.8	.079	.834	162.6	
30	23.34	19.63	35.46	24.21	372.2	373.5	.117	.796	154.5	
50	22.60	19.81	35.79	24.66	328.6	330.6	.188	.726	139.3	
75	21.47	19.60	35.41	24.70	325.5	328.4	.270	.644	122.2	
100	16.39	19.66	35.52	26.07	194.5	197.8	.336	.578	106.9	
150	13.23	19.38	35.01	26.37	166.2	170.4	.428	.486	80.3	
200	12.38	19.38	35.01	26.54	150.2	155.5	.509	.404	58.0	
250	11.76	19.37	35.00	26.65	139.9	146.2	.585	.329	39.7	
300	11.29	19.36	34.98	26.72	132.9	140.2	.656	.257	25.1	
400	10.18	19.31	34.88	26.84	121.3	130.2	.792	.122	6.1	
500	8.44	19.23	34.74	27.02	104.2	113.8	.914	0	0	

H 142

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 143		DEC 22, 1963	2210-2245	06° 13.0'S	091° 15.0'W		OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —	
0	23.40	19.61	35.43	4.82	24.16	376.6	-1.10	.63	6.8	1.6	.15	
50	22.42	19.61	35.43	4.69	24.44	349.8	.11	.70	9.1	2.1	.28	
75	17.03	19.47	35.17	1.86	25.66	234.1	3.43	1.50	26.7	11.4	1.41	
100	14.88	19.50	35.23	1.07	26.19	183.4	4.44	1.80	28.9	16.9	.18	
150	13.19	19.45	35.14	1.08	26.48	156.1	4.63	2.02	33.4	22.2	.02	
220	12.76	19.36	34.97	.31	26.44	159.8	5.46	2.35	34.6	26.2	.04	
322	11.90	19.37	34.99	.33	26.62	142.6	5.54	2.18	35.5	28.3	.01	
416	10.25	19.29	34.85	.22	26.81	124.7	5.87	2.29	38.3	35.3	.02	
598	7.15	19.19	34.67	.21	27.16	91.8	6.34	2.40	46.2	32.2	-.0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dyn)	
0	23.40	19.61	35.43	24.16	376.6	376.8	0	1.019	247.0	
10	23.29	19.61	35.43	24.19	373.7	374.2	.038	.982	237.0	
20	23.15	19.61	35.42	24.23	369.9	370.8	.075	.945	227.3	
30	22.98	19.61	35.42	24.28	365.1	366.4	.112	.908	218.1	
50	22.42	19.61	35.43	24.44	349.8	351.8	.183	.836	200.7	
75	17.03	19.47	35.17	25.66	234.1	236.6	.257	.762	180.7	
100	14.88	19.50	35.23	26.19	183.4	186.5	.310	.710	162.3	
150	13.19	19.45	35.14	26.48	156.1	160.3	.397	.623	129.0	
200	12.87	19.38	35.01	26.45	158.9	164.3	.478	.542	99.9	
250	12.47	19.36	34.98	26.50	154.1	160.6	.559	.460	74.8	
300	12.06	19.37	34.99	26.59	145.8	153.5	.638	.382	53.7	
400	10.50	19.30	34.87	26.78	127.5	136.6	.783	.237	22.8	
500	8.68	19.23	34.74	26.98	108.0	117.8	.910	.110	5.5	
600	7.12	19.19	34.67	27.16	91.5	101.4	1.019	0	0	

H 143

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 144		DEC 23, 1963	0610-0655	05° 11.5'S	090° 36.3'W	23						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
0	23.40	19.49	35.21	4.85	24.00	392.3	-12	.47	5.4	1.9	.10	
50	21.19	19.45	35.14	4.50	24.57	338.0	.41	.59	8.9	3.2	.21	
75	17.63	19.49	35.21	1.66	25.54	245.2	3.57	1.95	22.3	10.5	-.0	
100	14.14	19.41	35.07	1.37	26.23	180.1	4.23	1.97	27.9	18.2	2.18	
150	13.35	19.36	34.97	.95	26.32	171.1	4.75	1.69	31.0	21.4	.30	
198	13.08	19.36	34.97	.86	26.38	165.9	4.87	1.79	31.9	23.8	-.02	
297	12.36	19.39	35.03	.25	26.56	148.4	5.56	1.85	34.0	26.5	.01	
394	11.03	19.31	34.88	.32	26.70	135.2	5.67	2.31	35.4	33.2	.01	
579	7.30	19.20	34.69	.26	27.15	92.5	6.27	2.80	44.3	47.8	.01	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.40	19.49	35.21	24.00	392.3	392.4	0	1.041	251.6	
10	23.15	19.48	35.20	24.06	386.2	386.7	-.039	1.002	241.4	
20	22.85	19.48	35.19	24.14	378.7	379.6	-.077	.963	231.5	
30	22.45	19.47	35.17	24.24	369.0	370.3	-.115	.926	222.1	
50	21.19	19.45	35.14	24.56	338.0	340.0	-.186	.855	204.3	
75	17.63	19.49	35.21	25.54	245.2	247.8	-.259	.781	183.8	
100	14.14	19.41	35.06	26.22	180.1	183.1	-.313	.728	165.0	
150	13.35	19.36	34.97	26.32	171.1	175.3	-.403	.638	130.8	
200	13.06	19.36	34.98	26.38	165.5	171.0	-.489	.551	101.1	
250	12.67	19.38	35.00	26.48	155.8	162.5	-.573	.468	75.6	
300	12.31	19.39	35.02	26.56	147.9	155.7	-.652	.389	54.2	
400	10.88	19.30	34.87	26.72	133.5	143.0	-.802	.239	22.8	
500	8.72	19.23	34.74	26.98	108.8	118.6	-.932	-.108	5.4	
600	6.95	19.19	34.68	27.19	88.5	98.2	1.041	0	0	

H 144

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 145		DEC 23, 1963	2210-2249	04° 31.1'S	089° 51.7'W							
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
0	23.50	19.50	35.23	4.89	23.98	393.8	-.17	.57	6.8	2.6	-.15	
47	21.30	19.57	35.35	4.72	24.70	325.2	.17	.77	11.0	3.7	-.45	
70	16.68	19.52	35.26	1.77	25.81	219.6	3.55	1.72	25.4	13.2	1.12	
94	14.50	19.41	35.07	.94	26.15	187.4	4.62	2.31	26.1	17.6	-.05	
141	13.55	19.41	35.07	1.34	26.35	168.4	4.33	1.53	28.0	20.3	-.03	
237	12.92	19.40	35.05	.62	26.46	157.6	5.12	1.87	32.4	25.0	-.02	
337	12.10	19.35	34.96	.30	26.55	148.9	5.55	2.04	34.6	28.7	-.01	
428	10.24	19.27	34.81	.16	26.78	127.2	5.94	2.38	36.0	37.2	-.01	
603	7.09	19.19	34.67	.38	27.17	91.0	6.18	2.65	45.3	54.8	-.01	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.50	19.50	35.23	23.98	393.8	393.9	0	1.030	252.9	
10	23.24	19.51	35.24	24.07	385.6	386.1	-.039	.991	242.8	
20	22.91	19.52	35.26	24.17	375.2	376.1	-.077	.953	233.1	
30	22.47	19.53	35.28	24.32	361.6	362.9	-.114	.916	223.8	
50	20.82	19.56	35.34	24.82	313.8	315.7	-.182	.848	206.1	
75	16.17	19.49	35.21	25.89	212.1	214.6	-.248	.781	185.8	
100	14.36	19.41	35.06	26.18	184.5	187.5	-.298	.731	166.9	
150	13.48	19.41	35.06	26.36	167.1	171.4	-.388	.641	132.5	
200	13.13	19.40	35.05	26.42	161.1	166.6	-.473	.557	102.6	
250	12.80	19.39	35.03	26.48	156.2	163.0	-.555	.475	76.8	
300	12.37	19.37	34.99	26.52	151.8	159.6	-.636	.394	55.1	
400	10.77	19.29	34.85	26.72	133.4	142.7	-.787	.243	23.2	
500	8.81	19.27	34.73	26.96	110.8	120.7	-.919	-.111	5.6	
600	7.14	19.19	34.67	27.16	91.5	101.5	1.030	0	0	

H 145

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 146		DEC 24, 1963	0600-0635	03° 29.9'S	088° 57.0'W	20					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L)	NO <sub>3</sub> — (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	23.40	19.29	34.85	4.81	23.72	418.3	-.07	.71	7.2	5.0	.11
50	21.68	19.48	35.19	4.70	24.47	346.9	.17	.74	9.7	3.4	.25
75	18.71	19.49	35.21	2.68	25.27	270.7	2.45	1.18	18.5	8.6	1.53
100	15.26	19.47	35.17	1.10	26.07	195.3	4.37	2.08	29.9	15.3	1.99
150	13.63	19.41	35.07	.92	26.33	170.0	4.74	1.70	30.7	20.1	.03
198	13.26	19.38	35.01	1.25	26.37	166.7	4.46	1.53	29.8	22.0	.02
298	12.37	19.39	35.03	.30	26.56	148.6	5.51	2.48	35.2	27.6	.01
400	10.36	19.31	34.88	.22	26.82	123.9	5.86	2.33	24.2	36.9	.02
566	7.18	19.19	34.67	.93	27.15	92.2	5.62	2.58	43.8	41.4	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.40	19.29	34.85	23.72	418.3	418.4	0	1.047	245.7	
10	23.21	19.31	34.88	23.81	410.4	410.9	.041	1.006	235.4	
20	22.97	19.34	34.93	23.91	400.5	401.4	.082	.965	225.6	
30	22.66	19.37	34.99	24.04	387.7	389.0	.122	.926	216.1	
50	21.68	19.48	35.19	24.47	346.9	348.9	.195	.852	198.4	
75	18.71	19.49	35.21	25.27	270.7	273.3	.273	.774	178.0	
100	15.26	19.47	35.17	26.06	195.3	198.4	.332	.715	159.4	
150	13.63	19.41	35.06	26.33	170.0	174.3	.425	.622	126.0	
200	13.24	19.38	35.01	26.37	166.3	171.8	.512	.535	97.1	
250	12.75	19.38	35.02	26.47	156.4	163.1	.596	.452	72.4	
300	12.32	19.39	35.02	26.56	148.0	155.8	.675	.372	51.8	
400	10.36	19.31	34.88	26.82	123.9	132.9	.820	.228	21.8	
500	8.32	19.22	34.73	27.03	103.5	113.0	.943	.105	5.2	
600	6.65	19.18	34.65	27.21	86.9	96.2	1.047	0	0	

H 146

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 147		DEC 24, 1963	1420-1510	02° 27.5'S	088° 04.0'W	19					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L)	NO <sub>3</sub> — (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	24.00	19.19	34.67	4.60	23.41	448.1	.10	.64	5.3	4.6	.10
50	20.84	19.37	34.99	3.88	24.55	339.4	1.06	1.00	12.2	7.1	.40
75	17.48	19.44	35.12	2.39	25.51	248.3	2.86	1.21	20.3	11.9	.64
100	15.75	19.57	35.35	2.01	26.09	192.6	3.40	1.31	23.5	14.3	.47
150	14.27	19.45	35.14	2.10	26.25	177.5	3.48	1.30	24.2	17.5	.02
188	13.84	19.39	35.03	1.88	26.26	176.8	3.76	1.86	25.8	24.1	.02
304	12.21	19.39	35.03	1.04	26.59	145.6	4.79	2.18	31.5	-0	.01
385	10.46	19.45	35.14	.36	27.00	106.9	5.69	2.28	36.1	36.6	.01
564	999.00	19.25	34.78	.50	999.00	999.0	999.00	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.00	19.19	34.67	23.41	448.1	448.1	0	.990	224.7	
10	22.07	19.29	34.85	24.11	381.8	382.3	.042	.948	215.0	
20	21.55	19.32	34.91	24.29	363.9	364.8	.079	.911	205.7	
30	21.24	19.34	34.95	24.41	353.2	354.4	.115	.875	196.8	
50	20.84	19.37	34.99	24.55	339.4	341.3	.184	.805	180.0	
75	17.48	19.44	35.12	25.51	248.3	250.9	.258	.731	160.7	
100	15.75	19.57	35.35	26.09	192.6	195.8	.314	.676	143.2	
150	14.27	19.45	35.14	26.25	177.5	181.9	.409	.581	111.7	
200	13.63	19.39	35.03	26.30	172.8	178.4	.499	.491	84.9	
250	12.87	19.39	35.02	26.45	158.3	165.0	.585	.405	62.5	
300	12.25	19.39	35.03	26.58	146.5	154.2	.664	.325	44.3	
400	9.98	19.41	35.07	27.03	104.0	112.8	.798	.192	18.4	
500	7.20	19.23	34.74	27.21	87.0	95.4	.902	.088	4.4	
600	4.92	19.13	34.56	27.35	73.1	80.3	.990	0	0	

H 147



STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 148		DEC 24, 1963		2210-2255		01° 35.2'S		087° 17.7'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	24.20	18.85	34.05	4.72	22.89	498.1	-.02	.49	3.1	3.7	.06
47	20.81	19.39	35.03	3.71	24.59	336.0	1.24	1.06	12.9	7.0	.51
70	18.96	19.47	35.17	2.70	25.18	279.3	2.40	1.10	18.4	10.0	1.00
94	17.37	19.45	35.14	2.34	25.55	244.4	2.92	1.48	20.5	12.1	.38
141	14.89	19.59	35.39	2.13	26.31	171.7	3.38	1.64	23.5	16.1	.01
223	14.02	19.42	35.08	1.98	26.27	176.4	3.63	-0	-0	-0	-0
308	12.03	19.33	34.92	.38	26.54	150.3	5.48	2.46	35.4	29.1	.01
401	10.11	19.28	34.83	.35	26.82	123.7	5.76	2.74	39.1	38.0	.01
598	7.45	19.20	34.69	1.44	27.13	94.5	5.07	2.54	40.5	45.0	.01

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.20	18.85	34.05	22.89	498.1	498.2	0	1.102	255.5	
10	23.80	18.91	34.16	23.09	478.8	479.3	.049	1.053	244.7	
20	23.28	18.99	34.31	23.35	454.3	455.1	.096	1.007	234.4	
30	22.61	19.09	34.50	23.68	422.1	423.3	.140	.963	224.6	
50	20.59	19.40	35.05	24.66	329.0	330.9	.215	.887	206.1	
75	18.59	19.46	35.16	25.27	271.2	273.8	.291	.812	184.9	
100	16.99	19.47	35.17	25.66	233.4	236.7	.354	.748	165.4	
150	14.77	19.57	35.35	26.31	172.4	176.9	.458	.644	130.6	
200	14.23	19.46	35.15	26.28	175.3	181.1	.547	.555	100.6	
250	13.32	19.38	35.02	26.36	167.2	174.1	.636	.466	75.1	
300	12.19	19.34	34.93	26.52	152.4	160.1	.720	.383	53.8	
400	10.13	19.28	34.83	26.82	124.0	132.9	.866	.236	22.9	
500	8.64	19.23	34.74	26.99	107.6	117.4	.991	.111	5.5	
600	7.43	19.20	34.68	27.13	94.2	104.5	1.102	0	0	

H 148

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 149		DEC 25, 1963		0600-0637		00° 33.4'S		086° 24.5'W		17	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	24.80	18.60	33.60	4.64	22.37	547.7	.03	.23	1.5	2.5	.06
49	21.00	19.35	34.96	3.99	24.48	346.1	.94	.91	11.5	5.9	.30
73	17.90	19.40	35.05	2.53	25.35	263.3	2.68	1.06	20.1	11.1	.93
97	16.49	19.42	35.08	2.38	25.72	228.5	2.97	1.39	20.5	11.1	.93
146	15.45	19.40	35.05	2.25	25.93	208.6	3.21	1.51	23.8	15.0	.03
200	14.74	19.40	35.05	2.06	26.08	193.7	3.47	1.36	24.8	16.4	.01
300	12.47	19.34	34.94	.71	26.47	157.0	5.09	2.27	33.7	25.9	.01
399	10.56	19.29	34.85	.28	26.76	129.9	5.77	2.09	39.0	35.5	.01
574	6.95	19.21	34.70	.93	27.21	86.4	5.65	2.71	40.2	45.9	.02

H 149

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.80	18.60	33.60	22.37	547.7	547.8	0	1.144	258.0	
10	24.37	18.68	33.75	22.61	524.8	525.3	.054	1.091	246.8	
20	23.83	18.78	33.94	22.91	496.0	496.9	.105	1.040	236.1	
30	23.12	18.92	34.18	23.30	458.8	460.0	.153	.992	226.0	
50	20.89	19.35	34.96	24.51	343.0	344.9	.233	.911	206.9	
75	17.77	19.40	35.05	25.38	260.0	262.6	.309	.835	185.1	
100	16.41	19.42	35.08	25.73	227.1	230.3	.371	.774	165.0	
150	15.39	19.40	35.05	25.94	207.3	211.9	.481	.663	129.1	
200	14.74	19.40	35.05	26.08	193.7	199.6	.584	.560	98.5	
250	13.49	19.36	34.98	26.29	173.5	180.5	.679	.465	72.9	
300	12.47	19.34	34.94	26.47	157.0	164.9	.765	.379	51.8	
400	10.54	19.29	34.85	26.76	129.6	138.8	.917	.227	21.5	
500	8.32	19.23	34.74	27.04	102.9	112.4	1.043	.101	5.1	
600	6.51	19.21	34.70	27.27	81.2	90.4	1.144	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 150		DEC 25, 1963		1420-1510		00° 26.5'N		085° 30.0'W		16	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L)	NO <sub>3</sub> — (μg at./L)	SiO <sub>4</sub> — (μg at./L)	NO <sub>2</sub> — (μg at./L)
0	25.60	18.35	33.15	4.56	21.79	603.5	.07	.21	.5	1.8	.02
48	20.21	19.19	34.67	3.54	24.47	346.9	1.47	.74	12.8	7.4	.36
72	18.51	19.33	34.92	2.87	25.10	286.8	2.29	.99	17.5	10.1	.80
96	16.36	19.36	34.97	2.25	25.66	233.6	3.11	1.47	22.6	13.4	.13
144	14.87	19.37	34.99	1.96	26.01	200.3	3.56	1.22	24.6	16.2	.02
198	14.37	19.36	34.97	2.17	26.11	191.4	3.41	1.63	24.6	16.5	.01
297	12.65	19.30	34.87	1.16	26.38	165.7	4.62	1.59	31.8	23.9	.01
392	10.51	19.24	34.76	.30	26.69	135.7	5.76	2.10	38.4	36.1	.01
575	7.65	19.20	34.69	.74	27.10	97.2	5.74	1.91	30.9	32.0	-.0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)
0	25.60	18.35	33.15	21.79	603.5	603.6	0	1.176	269.2
10	24.89	18.45	33.33	22.14	569.7	570.2	.059	1.117	257.7
20	23.68	18.63	33.66	22.74	511.8	512.7	.113	1.063	246.8
30	22.04	18.89	34.12	23.56	434.2	435.4	.160	1.015	236.4
50	20.04	19.20	34.69	24.53	340.9	342.7	.238	.938	216.9
75	18.21	19.33	34.92	25.18	279.3	281.9	.316	.860	194.4
100	16.21	19.36	34.97	25.70	230.2	233.5	.381	.795	173.7
150	14.81	19.37	34.99	26.02	199.2	203.7	.490	.686	136.7
200	14.33	19.36	34.97	26.11	190.8	196.6	.590	.586	104.9
250	13.38	19.32	34.91	26.26	176.6	183.6	.685	.491	78.0
300	12.57	19.30	34.86	26.39	164.6	172.5	.774	.402	55.7
400	10.36	19.24	34.75	26.71	133.7	142.7	.932	.244	23.4
500	8.69	19.21	34.70	26.95	111.3	121.1	1.064	.112	5.6
600	7.33	19.20	34.68	27.14	93.0	103.1	1.176	0	0

H 150

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 151		DEC 25, 1963		2210-2245		01° 23.1'N		084° 42.0'W		16	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L)	NO <sub>3</sub> — (μg at./L)	SiO <sub>4</sub> — (μg at./L)	NO <sub>2</sub> — (μg at./L)
0	25.20	18.37	33.19	4.65	21.94	589.2	.01	.22	1.3	2.5	.05
44	20.44	19.13	34.56	3.45	24.33	360.5	1.54	.69	12.6	7.1	.27
66	18.14	19.36	34.97	2.32	25.24	274.1	2.87	1.16	20.3	10.5	.52
88	16.62	19.39	35.03	2.15	25.64	235.4	3.19	1.17	22.2	12.9	.47
132	15.44	19.42	35.08	1.97	25.96	205.7	3.49	1.19	23.5	14.9	.02
278	13.04	19.35	34.96	1.29	26.37	166.5	4.44	1.93	36.4	33.3	.01
320	11.19	19.29	34.85	.37	26.64	140.6	5.60	2.08	36.0	33.3	.01
460	8.62	19.23	34.74	.34	26.99	107.2	5.99	2.46	40.8	42.8	.01
630	6.72	19.22	34.72	.91	27.26	82.1	5.71	2.38	38.7	42.0	.04

H 151

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)
0	25.20	18.37	33.19	21.93	589.2	589.3	0	1.117	250.8
10	24.50	18.47	33.37	22.29	555.6	556.1	.057	1.060	239.9
20	23.22	18.67	33.73	22.93	493.9	494.8	.110	1.007	229.5
30	21.76	18.91	34.15	23.66	424.0	425.3	.156	.961	219.7
50	19.72	19.20	34.68	24.61	333.4	335.2	.232	.885	201.2
75	17.47	19.37	35.00	25.42	256.9	259.5	.306	.811	180.0
100	16.25	19.40	35.04	25.74	226.0	229.3	.367	.750	160.5
150	15.03	19.40	35.06	26.03	199.0	203.6	.476	.642	125.7
200	14.10	19.38	35.00	26.19	183.8	189.6	.574	.543	96.1
250	13.38	19.36	34.97	26.31	172.1	179.0	.666	.451	71.2
300	12.04	19.31	34.89	26.52	152.5	160.2	.751	.366	50.8
400	9.61	19.25	34.77	26.86	120.1	128.6	.895	.222	21.4
500	8.12	19.22	34.73	27.06	100.5	109.8	1.014	.103	5.1
600	7.01	19.22	34.72	27.22	86.0	95.8	1.117	0	0

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 152		DEC 26, 1963		0600-0645		02° 22.9N		083° 51.9W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	26.20	18.03	32.57	4.50	21.17	662.9	.10	.22	.5	1.6	.01
50	19.42	19.14	34.58	2.84	24.61	333.8	2.24	1.02	16.5	8.5	.33
75	16.91	19.39	35.03	2.03	25.67	232.9	3.32	1.55	23.1	13.3	.12
100	15.62	19.40	35.05	2.15	25.89	212.2	3.29	1.34	23.2	14.9	.02
150	14.79	19.38	35.01	1.78	26.04	197.4	3.75	1.43	25.6	16.8	.02
220	13.92	19.37	34.99	1.76	26.22	181.0	3.87	1.49	27.0	19.0	.01
316	12.23	19.36	34.97	.55	26.54	150.0	5.28	1.95	34.3	27.3	0
410	9.44	19.23	34.74	.21	26.86	119.7	6.00	2.82	40.0	42.1	0
601	7.16	19.21	34.70	.55	27.18	89.2	6.00	3.00	34.4	52.0	0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.20	18.03	32.57	21.17	662.9	663.0	0	1.135	254.1	
10	25.35	18.15	32.80	21.60	621.7	622.2	.064	1.071	243.1	
20	23.94	18.37	33.19	22.31	553.2	554.0	.123	1.012	232.7	
30	21.92	18.70	33.78	23.33	455.4	456.6	.174	.961	222.8	
50	19.42	19.14	34.58	24.61	333.8	335.6	.253	.882	204.4	
75	16.91	19.39	35.03	25.67	232.9	235.4	.324	.811	183.2	
100	15.62	19.40	35.05	25.89	212.2	215.4	.381	.755	163.6	
150	14.79	19.38	35.01	26.04	197.4	201.9	.485	.650	128.5	
200	14.14	19.37	35.00	26.17	185.1	190.9	.583	.552	98.4	
250	13.32	19.36	34.98	26.33	170.1	177.0	.675	.460	73.1	
300	12.47	19.36	34.97	26.50	154.4	162.3	.760	.375	52.3	
400	9.70	19.24	34.76	26.83	122.6	131.2	.907	.229	22.1	
500	8.26	19.21	34.71	27.03	103.9	113.3	1.029	.106	5.3	
600	7.17	19.21	34.70	27.18	89.4	99.3	1.135	0	0	

H 152

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 153		DEC 26, 1963		1420-1500		03° 42.5N		082° 45.0W		27	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	27.20	18.04	32.59	4.48	20.87	691.7	.05	.25	.6	1.7	.01
50	22.59	18.87	34.09	3.57	23.38	450.9	1.26	-0	-0	-0	-0
74	16.92	19.27	34.81	1.88	25.41	257.9	3.43	1.66	24.5	12.7	.07
99	16.07	19.32	34.90	2.15	25.68	232.5	3.25	1.38	24.6	14.6	.24
149	14.46	19.28	34.83	1.59	25.98	203.8	3.98	1.46	25.0	17.3	.01
243	13.22	19.26	34.79	1.04	26.21	181.9	4.68	1.68	30.4	23.1	.01
339	11.08	19.22	34.72	.26	26.56	148.1	5.73	2.25	36.8	34.4	0
431	8.96	19.17	34.63	.23	26.86	120.3	6.05	2.56	41.3	46.6	.01
614	7.17	19.08	34.47	.56	27.00	106.8	6.00	2.94	43.0	53.0	0

H 153

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.20	18.04	32.59	20.87	691.7	691.8	0	1.249	274.1	
10	26.69	18.13	32.75	21.14	665.0	665.5	.068	1.181	262.0	
20	26.05	18.24	32.95	21.49	631.5	632.4	.133	1.116	250.5	
30	25.22	18.38	33.21	21.94	588.5	589.8	.194	1.055	239.6	
50	22.59	18.87	34.09	23.38	450.9	452.9	.298	.951	219.6	
75	16.88	19.27	34.82	25.42	256.7	259.2	.387	.862	196.9	
100	16.03	19.32	34.90	25.68	231.8	235.0	.449	.800	176.1	
150	14.44	19.28	34.83	25.98	203.5	207.9	.560	.689	138.9	
200	13.71	19.27	34.81	26.11	190.6	196.3	.661	.588	106.9	
250	13.04	19.26	34.79	26.24	179.0	185.8	.756	.493	79.9	
300	11.87	19.23	34.74	26.43	160.5	168.0	.845	.404	57.5	
400	9.62	19.18	34.65	26.76	128.9	137.5	.997	.252	24.7	
500	8.21	19.13	34.56	26.91	114.7	124.0	1.128	.121	6.0	
600	7.29	19.08	34.48	26.99	107.7	117.8	1.249	0	0	

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 154		JAN 4, 1964	1220-1325	05° 37.4'N	081° 50.6'W	15					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	28.20	16.54	29.88	4.66	18.52	917.7	-1.12	-0	-0	-0	-0
48	24.53	18.47	33.37	4.21	22.27	556.9	.49	-0	-0	-0	-0
72	19.10	19.15	34.60	2.47	24.71	324.6	2.64	-0	-0	-0	-0
96	15.74	19.27	34.81	1.29	25.68	231.9	4.15	-0	-0	-0	-0
144	14.52	19.29	34.85	.88	25.98	203.7	4.69	-0	-0	-0	-0
223	13.42	19.30	34.87	.66	26.22	180.4	5.03	-0	-0	-0	-0
304	11.74	19.24	34.76	.29	26.47	157.0	5.61	-0	-0	-0	-0
399	9.67	19.18	34.65	.16	26.75	130.0	6.02	-0	-0	-0	-0
587	7.00	19.14	34.58	.41	27.11	96.5	6.17	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	28.20	16.54	29.88	18.52	917.7	917.8	0	1.339	270.0	
10	27.77	16.76	30.28	18.95	875.7	876.2	.090	1.249	257.0	
20	27.23	17.04	30.79	19.50	822.7	823.6	.175	1.164	244.9	
30	26.53	17.41	31.45	20.22	753.7	755.0	.254	1.085	233.7	
50	24.16	18.52	33.46	22.45	539.6	541.6	.383	.956	213.3	
75	18.62	19.16	34.62	24.84	311.5	314.2	.490	.849	190.7	
100	15.62	19.27	34.81	25.71	229.1	232.2	.559	.849	170.4	
150	14.42	19.29	34.85	26.00	201.5	206.0	.668	.781	134.1	
200	13.69	19.30	34.86	26.16	186.2	191.9	.768	.672	103.0	
250	13.00	19.28	34.82	26.31	171.8	178.5	.860	.479	76.7	
300	11.81	19.24	34.76	26.46	158.0	165.6	.946	.393	54.9	
400	9.65	19.18	34.65	26.76	129.8	138.4	1.098	.241	23.2	
500	8.11	19.15	34.60	26.96	110.4	119.7	1.227	.112	5.6	
600	6.85	19.14	34.58	27.13	94.6	104.2	1.339	0	0	

H 154

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 160		JAN 5, 1964	1220-1308	03° 14.7'N	085° 05.7'W	23					
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.30	18.17	32.83	4.64	21.33	647.6	-0.05	-0	-0	-0	-0
50	23.27	18.56	33.53	4.36	22.77	509.9	.43	-0	-0	-0	-0
74	16.48	19.33	34.92	1.69	25.59	240.2	3.66	-0	-0	-0	-0
99	15.66	19.31	34.88	2.09	25.75	224.9	3.35	-0	-0	-0	-0
149	14.36	19.32	34.90	1.62	26.05	196.5	3.96	-0	-0	-0	-0
200	13.78	19.29	34.85	1.22	26.13	188.8	4.43	-0	-0	-0	-0
295	12.62	19.26	34.79	.54	26.33	170.5	5.25	-0	-0	-0	-0
391	10.22	19.21	34.70	.30	26.70	134.9	5.80	-0	-0	-0	-0
574	7.30	19.16	34.61	.69	27.09	97.8	5.84	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.30	18.17	32.83	21.32	647.6	647.7	0	1.243	271.2	
10	25.96	18.21	32.90	21.48	632.3	632.8	.064	1.179	259.1	
20	25.54	18.26	32.99	21.68	613.2	614.1	.126	1.116	247.6	
30	25.00	18.33	33.12	21.94	588.6	589.9	.187	1.056	236.8	
50	23.27	18.56	33.53	22.76	509.9	511.9	.297	.946	216.8	
75	16.44	19.33	34.92	25.60	239.5	241.9	.391	.852	194.3	
100	15.63	19.31	34.88	25.76	224.2	227.4	.450	.793	173.7	
150	14.35	19.32	34.90	26.05	196.3	200.7	.557	.686	136.8	
200	13.78	19.29	34.85	26.13	188.8	194.5	.655	.587	104.9	
250	13.11	19.27	34.81	26.24	178.3	185.1	.750	.492	78.0	
300	12.48	19.26	34.79	26.35	168.3	176.2	.841	.402	55.6	
400	10.05	19.20	34.69	26.72	132.7	141.5	1.000	.243	23.3	
500	8.35	19.17	34.63	26.95	111.2	120.6	1.131	.112	5.6	
600	6.96	19.16	34.61	27.14	93.6	103.3	1.243	0	0	

H 160

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 166		JAN 6, 1964		1225-1313		00° 26.3'N		087° 31.6'W		20	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	25.80	18.68	33.75	4.60	22.17	566.5	-0.01	-0	-0	-0	-0
48	20.75	19.32	34.90	3.64	24.51	343.6	1.32	-0	-0	-0	-0
71	18.25	19.37	34.99	2.70	25.22	275.4	2.48	-0	-0	-0	-0
95	16.61	19.37	34.99	2.35	25.62	237.8	2.99	-0	-0	-0	-0
143	15.04	19.36	34.97	1.96	25.96	205.2	3.54	-0	-0	-0	-0
221	14.21	19.33	34.92	2.16	26.10	192.1	3.44	-0	-0	-0	-0
317	11.68	19.27	34.81	.38	26.52	151.9	5.53	-0	-0	-0	-0
398	9.47	19.20	34.69	.34	26.82	124.2	5.87	-0	-0	-0	-0
578	6.77	19.16	34.61	.91	27.17	90.8	5.71	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.80	18.68	33.75	22.17	566.5	566.6	0	1.151	258.4	
10	25.21	18.75	33.87	22.44	540.5	541.1	.055	1.096	247.1	
20	24.47	18.83	34.03	22.79	507.8	508.7	.108	1.043	236.4	
30	23.50	18.95	34.24	23.23	465.2	466.4	.157	.995	226.2	
40	22.55	19.32	34.91	24.56	338.0	339.9	.237	.914	207.2	
75	17.94	19.37	34.99	25.30	268.4	271.0	.314	.838	185.3	
100	16.41	19.37	34.99	25.66	233.7	237.0	.377	.774	165.1	
150	14.95	19.36	34.97	25.98	203.8	208.3	.488	.663	129.2	
200	14.40	19.34	34.93	26.07	175.1	201.0	.591	.560	98.6	
250	13.35	19.30	34.87	26.24	178.4	185.3	.687	.464	73.0	
300	12.07	19.28	34.82	26.46	158.1	165.8	.775	.376	52.0	
400	9.43	19.20	34.68	26.82	123.7	132.1	.924	.227	21.8	
500	7.82	19.17	34.63	27.03	103.8	112.8	1.047	.105	5.2	
600	6.50	19.16	34.61	27.20	87.5	96.7	1.151	0	0	

H 166

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 172		JAN 7, 1964		1220-1304		02° 38.8'S		090° 13.2'W		20	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	24.00	19.26	34.79	4.72	23.51	439.0	-0.02	-0	-0	-0	-0
43	20.43	19.40	35.05	3.23	24.70	325.0	1.75	-0	-0	-0	-0
65	17.51	19.46	35.16	2.45	25.53	246.3	2.79	-0	-0	-0	-0
87	15.45	19.39	35.03	2.22	25.91	209.9	3.24	-0	-0	-0	-0
130	14.40	19.34	34.94	2.21	26.07	194.6	3.37	-0	-0	-0	-0
250	12.54	19.26	34.79	.91	26.34	169.0	4.89	-0	-0	-0	-0
345	10.33	19.20	34.69	.32	26.67	138.0	5.77	-0	-0	-0	-0
434	9.30	19.17	34.63	.47	26.80	125.5	5.76	-0	-0	-0	-0
615	6.82	19.16	34.61	.72	27.16	91.5	5.89	-0	-0	-0	-0

H 172

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.00	19.26	34.79	23.51	439.0	439.1	0	1.072	258.0	
10	23.53	19.27	34.82	23.66	424.0	424.5	.043	1.029	247.5	
20	22.92	19.29	34.86	23.87	404.5	405.3	.085	.988	237.4	
30	22.09	19.33	34.91	24.15	377.9	379.2	.124	.948	227.7	
50	19.55	19.41	35.07	24.95	301.2	303.1	.192	.880	209.4	
75	16.50	19.42	35.09	25.72	228.5	231.0	.259	.813	188.3	
100	15.09	19.37	35.00	25.97	204.6	207.7	.314	.759	168.6	
150	13.99	19.32	34.90	26.13	189.0	193.4	.414	.688	133.7	
200	13.18	19.28	34.84	26.25	177.7	183.2	.508	.564	102.6	
250	12.54	19.26	34.79	26.34	169.0	175.6	.598	.474	76.6	
300	11.29	19.22	34.72	26.53	151.5	158.8	.681	.391	52.0	
400	9.67	19.18	34.65	26.75	130.0	138.6	.830	.242	23.4	
500	8.29	19.16	34.61	26.95	111.7	121.1	.960	.112	5.6	
600	7.00	19.16	34.61	27.13	93.9	103.7	1.072	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 178		JAN 8, 1964		1225-1308		05° 11.6'S		093° 23.0'W		17	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	24.10	19.17	34.63	4.87	23.35	453.6	-1.18	-0	-0	-0	-0
44	22.13	19.18	34.65	4.69	23.94	398.1	.16	-0	-0	-0	-0
66	22.42	19.23	34.74	4.87	23.92	399.3	-0.05	-0	-0	-0	-0
88	20.98	19.28	34.83	4.78	24.39	354.8	.16	-0	-0	-0	-0
132	14.87	19.37	34.79	1.20	26.01	200.3	4.32	-0	-0	-0	-0
241	12.26	19.33	34.92	.89	26.50	154.5	4.94	-0	-0	-0	-0
324	10.95	19.26	34.79	.25	26.64	140.5	5.75	-0	-0	-0	-0
403	9.48	19.28	34.83	.15	26.93	113.6	6.05	-0	-0	-0	-0
588	7.07	19.25	34.78	.63	27.25	82.9	5.93	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.10	19.17	34.63	23.35	453.6	453.7	0	1.134	245.0	
10	23.85	19.17	34.63	23.43	446.4	446.9	.045	1.089	233.9	
20	23.52	19.17	34.63	23.52	437.2	438.1	.089	1.045	223.2	
30	23.08	19.17	34.64	23.65	424.9	426.1	.132	1.001	213.0	
50	22.21	19.19	34.68	23.93	398.4	400.4	.215	.919	193.8	
75	21.92	19.25	34.77	24.08	383.8	386.7	.314	.820	172.0	
100	19.53	19.29	34.84	24.78	317.4	321.0	.402	.732	152.6	
150	14.32	19.36	34.97	26.11	190.6	195.0	.531	.603	119.3	
200	13.07	19.34	34.93	26.34	168.7	174.2	.623	.511	91.4	
250	12.10	19.32	34.90	26.51	152.8	159.2	.707	.427	68.0	
300	11.29	19.28	34.82	26.60	144.1	151.4	.784	.350	48.5	
400	9.53	19.28	34.83	26.92	114.6	123.1	.922	.212	20.4	
500	8.12	19.26	34.79	27.11	96.1	105.4	1.036	.098	4.9	
600	6.96	19.25	34.78	27.27	81.3	91.0	1.134	0	0	

H 178

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 184		JAN 9, 1964		1220-1306		07° 44.8'S		096° 52.9'W		15	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	23.70	19.50	35.23	4.90	23.92	399.3	-1.19	-0	-0	-0	-0
50	23.27	19.59	35.39	4.84	24.17	375.6	-1.11	-0	-0	-0	-0
75	21.80	19.58	35.37	3.97	24.58	337.1	.88	-0	-0	-0	-0
100	14.78	19.34	34.94	.77	25.99	202.4	4.76	-0	-0	-0	-0
150	12.79	19.32	34.90	.27	26.38	165.7	5.50	-0	-0	-0	-0
214	12.00	19.27	34.81	.55	26.46	157.7	5.32	-0	-0	-0	-0
313	10.94	19.26	34.79	.18	26.65	140.3	5.82	-0	-0	-0	-0
404	9.70	19.19	34.67	.16	26.76	129.1	6.02	-0	-0	-0	-0
576	6.88	19.15	34.60	.48	27.14	93.6	6.12	-0	-0	-0	-0

H 184

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.70	19.50	35.23	23.92	399.3	399.5	0	1.067	249.0	
10	23.65	19.51	35.25	23.95	396.7	397.2	.040	1.027	238.5	
20	23.59	19.52	35.27	23.98	393.4	394.3	.079	.987	228.4	
30	23.52	19.54	35.30	24.03	389.2	390.5	.119	.948	218.8	
50	23.27	19.59	35.39	24.17	375.6	377.7	.195	.871	200.6	
75	21.80	19.58	35.37	24.57	337.1	340.0	.285	.782	179.9	
100	14.78	19.34	34.94	25.99	202.4	205.5	.353	.714	161.2	
150	12.79	19.32	34.90	26.38	165.7	169.8	.447	.620	127.9	
200	12.15	19.28	34.83	26.44	159.2	164.4	.531	.536	99.0	
250	11.57	19.26	34.80	26.54	150.6	156.8	.611	.456	74.2	
300	11.06	19.26	34.80	26.62	142.3	149.5	.688	.379	53.3	
400	9.75	19.19	34.67	26.76	129.6	138.2	.831	.235	22.6	
500	8.01	19.16	34.61	26.99	107.8	116.9	.959	.108	5.4	
600	6.56	19.15	34.59	27.18	89.5	98.8	1.067	0	0	

EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

STATION	DATE	TIME	LATITUDE	LONGITUDE	D
H 189	JAN 10, 1964	1220-1310	09° 56.8'S	099° 46.7'W	25

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								(μg at./L)			
0	23.20	19.70	35.59	4.97	24.34	359.4	-.24	-0	-0	-0	-0
50	22.78	19.66	35.52	4.91	24.41	353.0	-.14	-0	-0	-0	-0
75	22.18	19.68	35.55	4.76	24.61	334.2	.06	-0	-0	-0	-0
100	20.23	19.63	35.46	4.56	25.07	289.8	.42	-0	-0	-0	-0
150	16.67	19.42	35.08	3.50	25.67	232.5	1.83	-0	-0	-0	-0
188	12.45	19.25	34.78	.43	26.35	168.6	5.38	-0	-0	-0	-0
286	10.60	19.23	34.74	.56	26.66	133.5	5.49	-0	-0	-0	-0
383	9.57	19.20	34.69	.51	26.80	125.7	5.68	-0	-0	-0	-0
566	7.19	19.15	34.60	.95	27.09	97.7	5.60	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.20	19.70	35.59	24.34	359.4	359.5	0	1.104	253.5	
10	23.15	19.70	35.58	24.35	358.7	359.2	.036	1.068	242.6	
20	23.10	19.69	35.57	24.36	357.8	358.7	.072	1.032	232.1	
30	23.02	19.68	35.56	24.37	356.7	357.9	.108	.996	222.0	
50	22.78	19.66	35.52	24.41	353.0	355.1	.179	.925	202.8	
75	22.18	19.68	35.55	24.60	334.2	337.1	.265	.838	180.7	
100	20.23	19.63	35.46	25.07	289.8	293.5	.344	.760	160.8	
150	16.67	19.42	35.08	25.67	232.5	237.4	.477	.627	126.1	
200	12.18	19.25	34.77	26.39	164.2	169.4	.579	.525	97.3	
250	11.19	19.23	34.75	26.56	140.2	154.3	.660	.444	73.1	
300	10.43	19.22	34.73	26.68	136.4	143.3	.734	.370	52.7	
400	9.31	19.19	34.67	26.83	122.6	131.0	.871	.233	27.6	
500	7.95	19.16	34.62	27.00	106.6	115.7	.995	.109	5.5	
600	6.83	19.15	34.59	27.14	93.5	103.1	1.104	0	0	

H 189

STATION	DATE	TIME	LATITUDE	LONGITUDE	D
H 190	JAN 11, 1964	0620-0700	09° 31.9'S	100° 12.4'W	20

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								(μg at./L)			
0	23.00	19.72	35.62	4.91	24.43	351.3	-.16	-0	-0	-0	-0
50	22.87	19.71	35.61	4.95	24.45	349.0	-.19	-0	-0	-0	-0
75	22.73	19.72	35.62	4.78	24.50	343.9	-.01	-0	-0	-0	-0
100	20.21	19.67	35.53	4.34	25.13	284.1	.64	-0	-0	-0	-0
150	14.75	19.33	34.92	2.10	25.98	203.1	3.44	-0	-0	-0	-0
199	11.98	19.27	34.81	.45	26.47	157.3	5.42	-0	-0	-0	-0
296	10.82	19.25	34.78	.62	26.65	139.6	5.40	-0	-0	-0	-0
388	9.74	19.24	34.76	.53	26.83	123.1	5.64	-0	-0	-0	-0
578	7.30	19.17	34.63	.60	27.11	96.5	5.93	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.00	19.72	35.62	24.43	351.3	351.4	0	1.082	250.4	
10	22.99	19.72	35.62	24.43	351.0	351.5	.035	1.047	239.8	
20	22.97	19.72	35.62	24.43	350.7	351.6	.070	1.012	229.5	
30	22.94	19.72	35.62	24.44	350.3	351.5	.105	.977	219.5	
50	22.87	19.71	35.61	24.45	349.0	351.0	.176	.906	200.7	
75	22.73	19.72	35.62	24.50	343.9	346.8	.263	.819	179.1	
100	20.21	19.67	35.53	25.13	284.1	287.8	.342	.740	159.7	
150	14.75	19.33	34.92	25.98	203.1	207.6	.466	.616	125.8	
200	11.97	19.27	34.81	26.47	157.1	162.3	.559	.524	97.3	
250	11.31	19.26	34.79	26.57	147.1	153.3	.637	.445	73.1	
300	10.77	19.25	34.77	26.66	138.8	145.8	.712	.370	52.7	
400	9.55	19.23	34.75	26.85	121.1	129.6	.850	.232	22.6	
500	8.19	19.19	34.67	27.00	106.2	115.5	.973	.110	5.5	
600	7.07	19.17	34.62	27.13	94.0	103.9	1.082	0	0	

H 190

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 195		JAN 12, 1964	0800-0843	6° 48.0'S	100° 24.9'W	21						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —	
0	24.10	999.00	999.00	4.83	999.00	999.0	999.00	-0	-0	-0	-0	
49	23.87	999.00	999.00	4.82	999.00	999.0	999.00	-0	-0	-0	-0	
73	23.65	999.00	999.00	4.74	999.00	999.0	999.00	-0	-0	-0	-0	
97	19.69	999.00	999.00	3.84	999.00	999.0	999.00	-0	-0	-0	-0	
146	13.71	999.00	999.00	2.69	999.00	999.0	999.00	-0	-0	-0	-0	
219	11.73	999.00	999.00	.48	999.00	999.0	999.00	-0	-0	-0	-0	
319	10.71	999.00	999.00	.33	999.00	999.0	999.00	-0	-0	-0	-0	
408	9.55	999.00	999.00	.28	999.00	999.0	999.00	-0	-0	-0	-0	
598	7.24	999.00	999.00	.45	999.00	999.0	999.00	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.10									
10	24.07									
20	24.04									
30	24.00									
50	23.86									
75	23.44									
100	19.25									
150	13.58									
200	12.17									
250	11.37									
300	10.88									
400	9.64									
500	8.32									
600	7.22									

H 195

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 198		JAN 13, 1964	0630-0700	05° 10.4'S	100° 49.8'W	15						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —	
0	24.20	19.31	34.88	4.81	23.52	438.2	-1.13	-0	-0	-0	-0	
50	24.17	19.30	34.87	4.83	23.51	438.6	-1.15	-0	-0	-0	-0	
75	19.28	19.45	35.14	2.96	25.07	289.7	2.12	-0	-0	-0	-0	
100	15.82	19.43	35.10	1.51	25.88	212.6	3.91	-0	-0	-0	-0	
150	13.50	19.36	34.97	1.56	26.29	174.0	4.12	-0	-0	-0	-0	
200	12.93	19.34	34.94	1.57	26.38	165.7	4.18	-0	-0	-0	-0	
296	12.12	19.30	34.87	.33	26.48	155.9	5.52	-0	-0	-0	-0	
392	10.84	19.28	34.83	.22	26.69	135.9	5.80	-0	-0	-0	-0	
573	7.52	19.17	34.63	.30	27.08	99.5	6.20	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.20	19.31	34.88	23.51	438.2	438.3	0	1.127	261.9	
10	24.20	19.31	34.88	23.51	438.4	439.0	.044	1.083	250.8	
20	24.19	19.31	34.88	23.51	438.5	439.4	.088	1.039	240.2	
30	24.19	19.30	34.87	23.51	438.6	439.8	.132	.995	230.0	
50	24.17	19.30	34.87	23.51	438.6	440.7	.220	.907	211.0	
75	19.28	19.45	35.14	25.07	289.7	292.5	.311	.816	189.5	
100	15.82	19.43	35.10	25.88	212.6	215.7	.375	.752	169.9	
150	13.50	19.36	34.97	26.29	174.0	178.3	.473	.654	134.7	
200	12.93	19.34	34.94	26.38	165.7	171.1	.561	.566	104.2	
250	12.47	19.32	34.90	26.44	160.1	166.7	.645	.482	78.0	
300	12.06	19.30	34.86	26.49	154.9	162.6	.728	.399	56.0	
400	10.66	19.27	34.82	26.71	134.0	143.3	.881	.247	23.7	
500	8.71	19.20	34.69	26.94	112.6	122.4	1.013	.114	5.7	
600	7.12	19.16	34.62	27.12	95.1	105.0	1.127	0	0	

H 198



STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 202		JAN 14, 1964	0803-0850	02° 37.5'S	101° 06.2'W	21						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
0	24.30	19.18	34.65	4.53	23.31	457.9	.15	-0	-0	-0	-0	
42	23.79	19.19	34.67	4.46	23.47	442.2	.26	-0	-0	-0	-0	
64	23.29	19.33	34.92	4.17	23.81	410.1	.58	-0	-0	-0	-0	
85	16.25	19.42	35.08	1.81	25.77	223.2	3.56	-0	-0	-0	-0	
127	13.48	19.36	34.97	1.88	26.29	173.7	3.80	-0	-0	-0	-0	
249	12.56	19.31	34.88	1.20	26.41	162.7	4.59	-0	-0	-0	-0	
338	11.49	19.28	34.83	.23	26.57	147.2	5.70	-0	-0	-0	-0	
421	9.19	19.23	34.74	.77	26.90	115.8	5.48	-0	-0	-0	-0	
595	6.99	19.18	34.65	1.06	27.17	91.0	5.52	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/0</sub>	ΔD <sub>Z/Z MAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	24.30	19.18	34.65	23.31	457.9	458.0	0	1.109	250.9	
10	24.23	19.18	34.65	23.33	455.8	456.3	.046	1.063	240.0	
20	24.14	19.18	34.65	23.36	453.0	453.9	.091	1.017	229.6	
30	24.02	19.19	34.66	23.40	449.2	450.5	.136	.972	219.6	
50	23.64	19.23	34.73	23.56	433.4	435.4	.225	.884	201.1	
75	19.59	19.34	34.94	24.84	311.9	314.7	.319	.790	180.2	
100	15.13	19.39	35.03	25.98	203.2	206.3	.384	.775	161.2	
150	13.25	19.35	34.95	26.32	171.0	175.1	.479	.629	127.4	
200	12.86	19.33	34.91	26.37	166.3	171.7	.566	.543	98.1	
250	12.55	19.31	34.88	26.41	162.5	169.1	.651	.457	73.1	
300	11.91	19.29	34.85	26.51	153.3	160.9	.734	.375	52.3	
400	9.73	19.24	34.75	26.83	123.1	131.8	.880	.229	22.1	
500	8.10	19.20	34.69	27.03	103.5	112.7	1.002	.106	5.3	
600	6.94	19.18	34.65	27.17	90.4	100.1	1.109	0	0	

H 202

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 205		JAN 15, 1964	0559-0715	00° 50.4'S	101° 40.5'W							
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
0	24.60	19.10	34.51	4.69	23.11	476.9	-.03	-0	-0	-0	-0	
49	20.39	19.27	34.81	3.37	24.53	341.0	1.62	-0	-0	-0	-0	
73	18.12	19.55	35.32	2.18	25.50	248.7	3.00	-0	-0	-0	-0	
97	14.41	19.42	35.08	1.97	26.18	184.3	3.60	-0	-0	-0	-0	
146	12.98	19.39	35.03	2.18	26.44	160.0	3.56	-0	-0	-0	-0	
209	12.68	19.33	34.92	1.80	26.41	162.3	3.98	-0	-0	-0	-0	
308	11.58	19.29	34.85	.27	26.57	147.5	5.65	-0	-0	-0	-0	
405	8.99	19.21	34.70	.59	26.91	115.4	5.69	-0	-0	-0	-0	
586	6.64	19.16	34.61	1.50	27.18	89.2	5.14	-0	-0	-0	-0	

H 205

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/0</sub>	ΔD <sub>Z/Z MAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	24.60	19.10	34.51	23.11	476.9	477.0	0	1.031	238.7	
10	24.12	19.11	34.53	23.27	461.5	462.0	.047	.984	226.6	
20	23.52	19.13	34.57	23.47	442.1	442.9	.092	.939	219.0	
30	22.74	19.16	34.62	23.74	416.9	418.2	.135	.896	209.8	
50	20.31	19.28	34.83	24.37	337.9	339.8	.211	.820	192.7	
75	17.84	19.54	35.30	25.56	243.7	246.3	.284	.747	173.1	
100	14.30	19.42	35.08	26.20	182.5	185.5	.338	.693	155.1	
150	12.96	19.39	35.02	26.43	160.2	164.3	.426	.605	122.6	
200	12.72	19.34	34.93	26.42	162.0	167.4	.509	.522	94.4	
250	12.17	19.31	34.88	26.48	155.5	161.9	.591	.440	70.4	
300	11.65	19.29	34.85	26.56	148.5	156.0	.670	.361	50.3	
400	9.11	19.21	34.71	26.89	116.9	125.1	.811	.220	21.3	
500	7.65	19.18	34.64	27.06	100.4	109.3	.928	.103	5.1	
600	6.49	19.16	34.61	27.20	87.5	96.6	1.031	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 209		JAN 16, 1964		0800-0900		01° 47.9'N		101° 48.3'W		21	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	25.00	19.05	34.42	4.64	22.92	494.9	-0.01	-0	-0	-0	-0
50	19.40	19.27	34.81	3.24	24.79	316.3	1.84	-0	-0	-0	-0
75	15.25	19.28	34.83	1.74	25.80	220.2	3.75	-0	-0	-0	-0
100	14.39	19.34	34.94	1.77	26.08	194.4	3.81	-0	-0	-0	-0
150	13.44	19.34	34.94	1.71	26.27	175.5	3.98	-0	-0	-0	-0
218	12.82	19.33	34.92	1.60	26.39	164.9	4.16	-0	-0	-0	-0
317	12.01	19.30	34.87	.77	26.50	153.9	5.09	-0	-0	-0	-0
406	8.80	19.19	34.67	.41	26.91	115.2	5.90	-0	-0	-0	-0
600	6.64	19.17	34.63	1.22	27.20	87.8	5.42	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.00	19.05	34.41	22.92	494.9	495.1	0	1.048	243.2	
10	24.38	19.07	34.44	23.13	475.1	475.6	.049	.999	232.9	
20	23.60	19.09	34.48	23.39	450.3	451.2	.095	.953	223.2	
30	22.60	19.12	34.54	23.72	418.4	419.6	.138	.909	213.8	
50	19.40	19.27	34.81	24.79	316.3	318.1	.212	.836	196.4	
75	15.25	19.28	34.83	25.80	220.2	222.5	.280	.768	176.4	
100	14.39	19.34	34.94	26.07	194.4	197.4	.332	.715	157.8	
150	13.44	19.34	34.94	26.27	175.5	179.8	.427	.621	124.4	
200	12.96	19.33	34.92	26.36	167.4	172.8	.515	.533	95.5	
250	12.52	19.32	34.90	26.43	160.9	167.5	.600	.448	71.0	
300	12.13	19.30	34.87	26.48	155.5	163.2	.682	.365	50.7	
400	8.99	19.19	34.68	26.88	117.5	125.6	.827	.221	21.4	
500	7.65	19.17	34.64	27.06	100.6	109.4	.944	.103	5.2	
600	6.64	19.17	34.63	27.20	87.8	97.2	1.048	0	0	

H 209

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 212		JAN 17, 1964		0625-		03° 26.0'N		101° 49.2'W		20	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	26.30	18.93	34.20	4.52	22.36	548.8	.02	-0	-0	-0	-0
50	26.04	18.94	34.22	4.61	22.45	539.8	-.05	-0	-0	-0	-0
74	18.93	19.27	34.81	2.81	24.90	306.0	2.31	-0	-0	-0	-0
99	14.74	19.36	34.97	2.04	26.03	199.0	3.50	-0	-0	-0	-0
149	13.52	19.35	34.96	1.77	26.27	175.8	3.91	-0	-0	-0	-0
222	12.86	19.31	34.88	1.32	26.35	168.3	4.44	-0	-0	-0	-0
322	11.17	19.24	34.76	1.02	26.58	146.9	4.95	-0	-0	-0	-0
413	9.45	19.20	34.69	.62	26.82	123.9	5.59	-0	-0	-0	-0
597	7.25	19.17	34.63	.79	27.11	95.8	5.75	-0	-0	-0	-0

H 212

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.30	18.93	34.20	22.36	548.8	548.9	0	1.180	258.5	
10	26.27	18.93	34.20	22.37	547.8	548.3	.055	1.125	247.0	
20	26.23	18.93	34.20	22.38	546.6	547.5	.110	1.070	236.0	
30	26.19	18.93	34.21	22.40	545.0	546.3	.164	1.016	225.6	
50	26.04	18.94	34.22	22.45	539.8	541.9	.273	.907	206.3	
75	18.78	19.27	34.81	24.95	301.1	303.8	.379	.801	185.0	
100	14.71	19.36	34.97	26.03	198.4	201.4	.442	.738	165.7	
150	13.51	19.35	34.96	26.27	175.6	179.9	.537	.643	131.2	
200	13.03	19.32	34.90	26.33	170.3	175.8	.626	.554	101.3	
250	12.32	19.29	34.84	26.42	161.5	168.0	.712	.468	75.8	
300	11.49	19.25	34.78	26.53	151.0	158.4	.794	.386	54.4	
400	9.67	19.20	34.69	26.79	126.8	135.4	.941	.239	23.2	
500	8.31	19.18	34.65	26.97	109.3	118.8	1.068	.112	5.6	
600	7.22	19.17	34.63	27.12	95.4	105.5	1.180	0	0	

STATION	DATE	TIME	LATITUDE	LONGITUDE	D
H 216	JAN 18, 1964	0800-0852	06° 03.2'N	102° 05.7'W	25

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	27.20	18.84	34.04	4.40	21.95	587.8	.09	-0	-0	-0	-0
49	26.81	19.00	34.33	4.26	22.29	555.1	-.06	-0	-0	-0	-0
73	21.75	19.24	34.76	3.73	24.12	380.1	1.15	-0	-0	-0	-0
97	16.03	19.25	34.78	1.87	25.59	240.8	3.54	-0	-0	-0	-0
146	12.17	19.25	34.78	.97	26.40	163.5	4.88	-0	-0	-0	-0
226	10.71	19.23	34.74	.98	26.64	140.4	5.06	-0	-0	-0	-0
322	9.67	19.21	34.70	.95	26.80	126.0	5.23	-0	-0	-0	-0
410	8.91	19.20	34.69	.50	26.91	115.5	5.79	-0	-0	-0	-0
585	6.77	19.15	34.60	.49	27.15	92.2	6.13	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.20	18.84	34.04	21.95	587.8	587.9	0	1.156	239.9	
10	27.16	18.86	34.07	21.99	584.1	584.6	.059	1.098	226.6	
20	27.10	18.88	34.11	22.04	579.4	580.3	.117	1.040	217.9	
30	27.03	18.91	34.16	22.10	573.4	574.7	.175	.982	207.8	
50	26.69	19.01	34.34	22.34	550.8	553.0	.287	.869	189.3	
75	21.34	19.24	34.75	24.23	369.8	372.6	.403	.753	169.0	
100	15.74	19.25	34.77	25.65	235.1	238.2	.479	.677	151.2	
150	12.08	19.25	34.77	26.42	162.0	166.0	.580	.576	119.8	
200	11.12	19.23	34.75	26.58	146.9	151.7	.660	.497	93.0	
250	10.41	19.22	34.73	26.69	136.3	142.1	.733	.423	70.0	
300	9.88	19.21	34.71	26.76	128.9	135.5	.803	.354	50.6	
400	8.99	19.20	34.69	26.89	116.6	124.7	.933	.224	21.7	
500	7.72	19.17	34.63	27.04	102.5	111.4	1.051	.106	5.3	
600	6.62	19.15	34.59	27.17	90.5	99.8	1.156	0	0	

H 216

STATION	DATE	TIME	LATITUDE	LONGITUDE	D
H 219	JAN 19, 1964	0620-0710	7° 49.4'N	102° 45.4'W	26

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	27.00	999.00	999.00	4.45	999.00	999.0	999.00	-0	-0	-0	-0
49	21.45	999.00	999.00	3.22	999.00	999.0	999.00	-0	-0	-0	-0
73	16.81	999.00	999.00	1.51	999.00	999.0	999.00	-0	-0	-0	-0
98	13.47	999.00	999.00	.60	999.00	999.0	999.00	-0	-0	-0	-0
147	12.57	999.00	999.00	.80	999.00	999.0	999.00	-0	-0	-0	-0
222	11.84	999.00	999.00	1.01	999.00	999.0	999.00	-0	-0	-0	-0
297	10.52	999.00	999.00	.41	999.00	999.0	999.00	-0	-0	-0	-0
389	9.53	999.00	999.00	.18	999.00	999.0	999.00	-0	-0	-0	-0
565	7.05	999.00	999.00	.22	999.00	999.0	999.00	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.00									
10	26.37									
20	25.58									
30	24.55									
50	21.28									
75	16.50									
100	13.43									
150	12.53									
200	12.02									
250	11.30									
300	10.48									
400	9.34									
500	7.86									
600	6.65									

H 219

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 223		JAN 20, 1963		0803-		10° 32.3'N		102° 47.6'W		27	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> —	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	27.40	999.00	999.00	4.47	999.00	999.0	999.00	-0	-0	-0	-0
45	26.74	999.00	999.00	4.52	999.00	999.0	999.00	-0	-0	-0	-0
68	20.69	999.00	999.00	2.63	999.00	999.0	999.00	-0	-0	-0	-0
91	13.93	999.00	999.00	.28	999.00	999.0	999.00	-0	-0	-0	-0
137	12.48	999.00	999.00	.60	999.00	999.0	999.00	-0	-0	-0	-0
216	11.22	999.00	999.00	.58	999.00	999.0	999.00	-0	-0	-0	-0
307	10.39	999.00	999.00	.48	999.00	999.0	999.00	-0	-0	-0	-0
386	9.54	999.00	999.00	.22	999.00	999.0	999.00	-0	-0	-0	-0
556	7.31	999.00	999.00	.33	999.00	999.0	999.00	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)
0	27.40								
10	27.32								
20	27.21								
30	27.07								
50	25.94								
75	18.78								
100	13.60								
150	12.23								
200	11.43								
250	10.88								
300	10.44								
400	9.32								
500	7.96								
600	6.84								

H 223

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 226		JAN 21, 1964		0618-0713		12° 40.0'N		103° 27.8'W		26	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> —	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	27.50	18.28	33.03	4.46	21.10	669.7	.03	-0	-0	-0	-0
49	26.38	18.28	33.03	4.41	21.45	635.7	.16	-0	-0	-0	-0
74	25.81	18.66	33.71	4.13	22.14	569.4	.46	-0	-0	-0	-0
99	19.31	18.73	33.84	1.78	24.08	384.8	3.34	-0	-0	-0	-0
149	13.14	19.04	34.40	.21	25.92	209.5	5.53	-0	-0	-0	-0
200	12.45	19.29	34.85	.33	26.40	163.3	5.48	-0	-0	-0	-0
299	11.04	19.20	34.69	.17	26.54	150.0	5.83	-0	-0	-0	-0
393	9.75	19.12	34.54	.18	26.66	139.3	6.00	-0	-0	-0	-0
576	7.16	19.12 f)	34.54	.22	27.06	101.3	6.34	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)
0	27.50	18.28	33.03	21.09	669.7	669.8	0	1.407	281.5
10	27.37	18.28	33.02	21.13	665.9	666.4	.067	1.340	267.7
20	27.21	18.28	33.02	21.19	661.0	661.9	.133	1.274	254.7
30	27.01	18.28	33.02	21.25	654.7	656.1	.199	1.208	242.2
50	26.36	18.29	33.04	21.47	633.9	636.0	.328	1.079	219.4
75	25.63	18.66	33.72	22.20	563.6	566.7	.479	.929	194.3
100	19.16	18.73	33.85	24.12	380.5	384.0	.598	.810	172.6
150	13.12	19.05	34.41	25.93	208.4	212.6	.747	.661	135.8
200	12.45	19.29	34.85	26.40	163.3	168.6	.842	.565	105.2
250	11.67	19.24	34.75	26.48	155.9	162.2	.925	.483	79.0
300	11.02	19.20	34.68	26.54	149.9	157.1	1.005	.403	56.8
400	9.63	19.12	34.54	26.67	137.5	146.1	1.156	.251	24.1
500	8.12	19.11	34.53	26.91	115.4	124.6	1.291	.116	5.8
600	6.88	19.12	34.55	27.10	97.3	106.9	1.407	0	0

H 226

STATION		DATE	TIME	LATITUDE	LONGITUDE	D
H 230		JAN 22, 1964	0806-0910	14° 58.5'N	103° 49.1'W	35

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)	
0	27.50	999.00	999.00	4.46	999.00	999.0	999.00	-0	-0	-0	-0	
50	27.30	999.00	999.00	4.46	999.00	999.0	999.00	-0	-0	-0	-0	
75	20.02	999.00	999.00	1.59	999.00	999.0	999.00	-0	-0	-0	-0	
100	16.31	999.00	999.00	.21	999.00	999.0	999.00	-0	-0	-0	-0	
150	12.72	999.00	999.00	.12	999.00	999.0	999.00	-0	-0	-0	-0	
198	12.22	999.00	999.00	.13	999.00	999.0	999.00	-0	-0	-0	-0	
297	11.07	999.00	999.00	.20	999.00	999.0	999.00	-0	-0	-0	-0	
390	9.66	999.00	999.00	.16	999.00	999.0	999.00	-0	-0	-0	-0	
574	6.89	999.00	999.00	.17	999.00	999.0	999.00	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.50									
10	27.48									
20	27.45									
30	27.41									
50	27.30									
75	20.02									
100	16.31									
150	12.72									
200	12.19									
250	11.56									
300	11.02									
400	9.48									
500	7.88									
600	6.57									

H 230

STATION		DATE	TIME	LATITUDE	LONGITUDE	D
H 235		JAN 31, 1964	2015-2115	15° 24.0'N	108° 14.5'W	

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)	
0	26.90	18.44	33.31	4.41	21.50	630.6	.12	-0	-0	-0	-0	
49	26.98	18.57	33.55	4.49	21.65	616.1	.03	-0	-0	-0	-0	
73	25.38	18.85	34.05	3.75	22.53	532.0	.87	-0	-0	-0	-0	
97	18.37	19.11	34.52	1.18	24.84	312.4	4.00	-0	-0	-0	-0	
146	13.56	19.22	34.72	.19	26.08	193.7	5.49	-0	-0	-0	-0	
194	12.19	19.24	34.76	.11	26.38	165.1	5.74	-0	-0	-0	-0	
298	10.76	19.20	34.69	.15	26.59	145.2	5.88	-0	-0	-0	-0	
391	9.47	19.16	34.61	.16	26.76	129.5	6.05	-0	-0	-0	-0	
573	6.92	19.12	34.54	.22	27.09	98.2	6.38	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.90	18.44	33.31	21.50	630.6	630.7	0	1.317	265.9	
10	26.95	18.46	33.36	21.52	629.0	629.5	.063	1.254	253.1	
20	26.96	18.48	33.39	21.54	626.9	627.8	.126	1.191	240.8	
30	26.97	18.51	33.43	21.57	624.2	625.6	.189	1.129	229.2	
50	26.93	18.57	33.56	21.67	614.1	616.2	.313	1.004	207.9	
75	24.93	18.86	34.07	22.68	517.9	521.0	.455	.862	184.6	
100	18.01	19.11	34.53	24.93	303.6	307.0	.558	.759	164.3	
150	13.43	19.22	34.72	26.11	191.0	195.3	.684	.633	129.5	
200	12.09	19.24	34.75	26.40	163.7	168.9	.775	.542	100.1	
250	11.35	19.21	34.71	26.51	153.4	159.5	.857	.460	75.1	
300	10.73	19.20	34.68	26.60	144.9	151.9	.935	.382	54.0	
400	9.32	19.16	34.61	26.78	127.6	136.0	1.079	.238	23.0	
500	7.83	19.13	34.56	26.97	109.3	118.3	1.206	.111	5.6	
600	6.61	19.12	34.54	27.13	94.4	103.7	1.317	0	0	

H 235

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 238		FEB 1, 1964		2015-2108		14° 01.5'N		109° 54.8'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.80	18.33	33.12	4.59	21.39	641.9	-0.05	-0	-0	-0	-0
50	26.60	18.33	33.12	4.61	21.45	635.8	-0.05	-0	-0	-0	-0
74	20.08	19.07	34.49	1.33	24.37	356.7	3.70	-0	-0	-0	-0
99	14.94	19.22	34.72	.20	25.79	221.6	5.33	-0	-0	-0	-0
149	12.60	19.25	34.78	.23	26.32	171.4	5.56	-0	-0	-0	-0
200	12.18	19.26	34.79	.21	26.41	162.3	5.63	-0	-0	-0	-0
300	10.89	19.23	34.74	.16	26.61	143.5	5.85	-0	-0	-0	-0
392	9.70	19.17	34.63	.13	26.74	131.8	6.05	-0	-0	-0	-0
581	7.04	19.12	34.54	.22	27.07	99.7	6.36	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.80	18.33	33.12	21.39	641.9	642.0	0	1.249	260.8	
10	26.78	18.33	33.12	21.39	641.2	641.7	.064	1.185	248.6	
20	26.75	18.33	33.12	21.40	640.4	641.3	-.128	1.120	237.1	
30	26.71	18.33	33.12	21.41	639.3	640.6	-.192	1.056	226.2	
50	26.60	18.33	33.12	21.45	635.8	638.0	-.320	.928	206.4	
75	19.84	19.09	34.49	24.43	350.5	353.2	-.444	.805	184.7	
100	14.88	19.22	34.72	25.80	220.4	223.4	-.516	.732	165.5	
150	12.59	19.25	34.78	26.32	171.2	175.2	-.616	.633	131.4	
200	12.18	19.26	34.79	26.41	162.3	167.5	-.702	.547	101.9	
250	11.47	19.24	34.76	26.52	151.9	158.1	-.783	.466	76.6	
300	10.89	19.23	34.74	26.61	143.5	150.6	-.860	.388	55.2	
400	9.56	19.17	34.62	26.75	130.2	138.7	1.005	.244	23.6	
500	8.06	19.13	34.56	26.94	112.0	121.2	1.135	.114	5.7	
600	6.82	19.12	34.54	27.10	97.1	106.7	1.249	0	0	

H 238

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 244		FEB 2, 1964		2015-2107		11° 16.5'N		112° 55.4'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.80	18.31	33.08	4.58	21.36	644.5	-0.04	-0	-0	-0	-0
50	24.12	18.75	33.87	3.18	22.78	508.8	1.54	-0	-0	-0	-0
75	15.21	18.26	32.99	.41	24.40	353.9	5.15	-0	-0	-0	-0
100	13.67	19.28	34.83	.22	26.14	188.0	5.44	-0	-0	-0	-0
150	12.04	19.26	34.79	.29	26.44	159.8	5.57	-0	-0	-0	-0
208	11.39	19.25	34.78	.38	26.55	149.5	5.57	-0	-0	-0	-0
306	10.42	19.22	34.72	.24	26.68	136.9	5.84	-0	-0	-0	-0
398	9.57	19.20	34.69	.17	26.80	125.7	6.02	-0	-0	-0	-0
586	7.13	19.15	34.60	.28	27.10	96.9	6.28	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.80	18.31	33.08	21.36	644.5	644.6	0	1.167	249.0	
10	26.50	18.36	33.16	21.52	629.4	629.9	-.064	1.103	237.6	
20	26.13	18.42	33.27	21.71	610.6	611.5	-.126	1.041	226.9	
30	25.65	18.49	33.41	21.96	586.3	587.6	-.186	.981	216.8	
50	24.12	18.75	33.87	22.77	508.8	510.9	-.296	.872	198.3	
75	15.21	18.26	32.99	24.40	353.9	356.3	-.404	.763	177.8	
100	13.67	19.28	34.83	26.14	188.0	190.9	-.472	.695	159.6	
150	12.04	19.26	34.79	26.44	159.8	163.7	-.561	.606	127.1	
200	11.47	19.25	34.78	26.53	150.7	155.7	-.641	.526	98.8	
250	10.93	19.23	34.75	26.61	143.5	149.4	-.717	.450	74.4	
300	10.47	19.22	34.72	26.67	137.5	144.4	-.791	.377	53.7	
400	9.54	19.20	34.68	26.80	125.4	133.9	-.930	.237	23.0	
500	8.13	19.16	34.62	26.98	108.7	118.0	1.056	.111	5.6	
600	6.98	19.15	34.59	27.12	95.1	104.9	1.167	0	0	

H 244

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 247		FEB 3, 1964		2015-2105		10° 29.0'N		113° 58.6'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —
0	27.10	18.45	33.33	4.57	21.45	635.4	-0.06	-0	-0	-0	-0
49	26.98	18.65	33.69	4.60	21.76	605.7	-0.09	-0	-0	-0	-0
74	15.13	19.20	34.69	.55	25.72	228.2	4.96	-0	-0	-0	-0
99	13.17	19.24	34.76	.24	26.19	183.5	5.49	-0	-0	-0	-0
148	11.99	19.26	34.79	.39	26.45	158.8	5.48	-0	-0	-0	-0
208	11.25	19.25	34.78	.28	26.57	147.0	5.68	-0	-0	-0	-0
313	10.25	19.20	34.69	.25	26.68	136.7	5.85	-0	-0	-0	-0
415	9.18	19.17	34.63	.16	26.82	123.7	6.09	-0	-0	-0	-0
590	6.80	19.16	34.61	.23	27.16	91.2	6.38	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.10	18.45	33.33	21.45	635.4	635.5	0	1.152	244.3	
10	27.09	18.47	33.37	21.49	632.0	632.5	.063	1.089	233.1	
20	27.07	18.50	33.42	21.53	627.8	628.7	.126	1.026	222.6	
30	27.05	18.54	33.49	21.59	622.3	623.6	.189	.963	212.6	
50	26.73	18.66	33.71	21.85	596.9	599.0	.311	.841	194.6	
75	15.04	19.20	34.69	25.74	226.1	228.5	.415	.737	174.8	
100	13.14	19.24	34.76	26.20	182.9	185.7	.467	.686	157.0	
150	11.96	19.26	34.79	26.45	158.4	162.3	.554	.599	124.9	
200	11.34	19.25	34.78	26.56	148.4	153.3	.632	.520	97.0	
250	10.80	19.23	34.73	26.62	142.4	148.3	.708	.444	72.9	
300	10.35	19.20	34.69	26.67	137.8	144.6	.781	.371	52.5	
400	9.32	19.17	34.64	26.80	125.4	133.7	.920	.232	22.3	
500	7.92	19.16	34.61	27.00	106.5	115.6	1.045	.107	5.4	
600	6.69	19.16	34.61	27.18	89.7	99.1	1.152	0	0	

H 247

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 253		FEB 4, 1964		2015-2101		07° 28.9'N		116° 37.0'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L) —	NO <sub>3</sub> — (μg at./L) —	SiO <sub>4</sub> — (μg at./L) —	NO <sub>2</sub> — (μg at./L) —
0	27.10	18.71	33.80	4.62	21.81	601.6	-1.12	-0	-0	-0	-0
50	27.10	18.96	34.25	4.61	22.15	569.1	-1.12	-0	-0	-0	-0
75	20.64	19.20	34.69	4.19	24.37	356.5	.78	-0	-0	-0	-0
100	13.76	19.21	34.70	.62	26.03	199.0	5.04	-0	-0	-0	-0
150	11.93	19.24	34.76	.57	26.43	160.4	5.31	-0	-0	-0	-0
208	11.15	19.23	34.74	.62	26.57	147.9	5.36	-0	-0	-0	-0
308	10.00	19.21	34.70	.48	26.74	131.3	5.65	-0	-0	-0	-0
404	9.01	19.18	34.65	.28	26.86	119.7	6.00	-0	-0	-0	-0
586	6.89	19.15	34.60	.28	27.14	93.7	6.32	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.10	18.71	33.80	21.81	601.6	601.7	0	1.161	243.1	
10	27.10	18.73	33.85	21.84	598.0	598.1	.060	1.101	231.8	
20	27.10	18.77	33.91	21.89	593.5	593.5	.120	1.041	221.1	
30	27.10	18.81	33.99	21.95	587.7	587.7	.179	.982	210.9	
50	27.10	18.96	34.25	22.14	569.1	571.3	.295	.866	192.5	
75	20.64	19.20	34.69	24.37	356.5	359.3	.411	.750	172.3	
100	13.76	19.21	34.70	26.03	199.0	201.9	.481	.680	154.4	
150	11.93	19.24	34.76	26.43	160.4	164.3	.573	.588	122.7	
200	11.24	19.23	34.74	26.55	149.4	154.4	.652	.509	95.2	
250	10.61	19.22	34.72	26.65	140.1	146.0	.727	.434	71.7	
300	10.08	19.21	34.71	26.73	132.4	139.1	.799	.362	51.8	
400	9.05	19.18	34.65	26.86	120.1	128.3	.932	.229	22.2	
500	7.79	19.16	34.61	27.02	104.8	113.8	1.053	.108	5.4	
600	6.76	19.15	34.59	27.15	92.1	101.6	1.161	0	0	

H 253

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 255		FEB 5, 1964		2015-2059		06° 55.0'N		117° 27.4'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.20	19.15	34.60	4.57	22.37	547.5	-1.10	-0	-0	-0	-0
49	26.99	19.16	34.61	4.64	22.45	539.8	-1.16	-0	-0	-0	-0
74	22.34	19.35	34.96	4.27	24.11	381.5	.55	-0	-0	-0	-0
99	15.33	19.28	34.83	1.97	25.79	221.9	3.51	-0	-0	-0	-0
148	12.25	19.36	34.97	.50	26.54	150.3	5.33	-0	-0	-0	-0
197	11.67	19.33	34.92	.78	26.61	143.8	5.12	-0	-0	-0	-0
287	10.37	19.32	34.90	.66	26.83	122.7	5.41	-0	-0	-0	-0
376	9.06	19.27	34.81	.22	26.98	108.4	6.04	-0	-0	-0	-0
556	6.95	19.26	34.79	.36	27.28	79.7	6.22	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.20	19.15	34.60	22.37	547.5	547.6	0	1.082	217.7	
10	27.18	19.15	34.60	22.38	546.7	547.2	.055	1.028	207.1	
20	27.15	19.15	34.60	22.39	545.6	546.5	.109	.973	197.1	
30	27.11	19.15	34.60	22.41	544.1	545.5	.164	.918	187.7	
50	26.89	19.16	34.62	22.49	536.4	538.6	.272	.810	170.4	
75	22.11	19.34	34.95	24.17	376.1	379.0	.387	.695	151.6	
100	15.25	19.28	34.83	25.80	220.1	223.2	.462	.620	135.1	
150	12.22	19.36	34.97	26.54	150.0	154.0	.557	.526	106.5	
200	11.62	19.33	34.92	26.62	142.9	148.0	.632	.450	82.1	
250	10.85	19.32	34.91	26.75	130.4	136.4	.703	.379	61.3	
300	10.16	19.31	34.89	26.85	120.4	127.1	.769	.313	44.0	
400	8.73	19.27	34.80	27.03	103.9	111.8	.889	.194	18.7	
500	7.52	19.26	34.79	27.20	87.5	96.2	.993	.090	4.5	
600	6.54	19.26	34.80	27.34	74.1	83.4	1.082	0	0	

H 255

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 261		FEB 6, 1964		2010-2052		04° 17.0'N		120° 00.5'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.00	19.28	34.83	4.57	22.61	524.5	-0.09	-0	-0	-0	-0
50	26.92	19.27	34.81	4.56	22.62	523.4	-0.08	-0	-0	-0	-0
75	26.95	19.28	34.83	4.58	22.63	523.0	-0.10	-0	-0	-0	-0
100	25.69	19.43	35.10	4.07	23.23	465.7	.49	-0	-0	-0	-0
150	13.20	19.25	34.78	2.17	26.20	182.8	3.55	-0	-0	-0	-0
204	10.90	19.28	34.83	1.85	26.68	137.0	4.16	-0	-0	-0	-0
302	9.46	19.29	34.85	1.45	26.94	112.0	4.75	-0	-0	-0	-0
392	8.77	19.28	34.83	.83	27.04	102.7	5.47	-0	-0	-0	-0
585	6.85	19.24	34.76	.72	27.27	81.1	5.88	-0	-0	-0	-0

H 261

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.00	19.28	34.83	22.61	524.5	524.7	0	1.208	231.6	
10	26.99	19.28	34.83	22.61	524.4	524.9	.052	1.156	219.7	
20	26.98	19.28	34.83	22.61	524.3	525.2	.105	1.103	208.4	
30	26.97	19.28	34.82	22.62	524.1	525.4	.158	1.051	197.7	
50	26.92	19.27	34.81	22.62	523.4	525.5	.263	.946	177.7	
75	26.95	19.28	34.83	22.63	523.0	526.2	.394	.814	155.7	
100	25.69	19.43	35.10	23.23	465.7	469.8	.519	.690	136.9	
150	13.20	19.25	34.78	26.20	182.8	187.0	.683	.526	106.5	
200	11.05	19.28	34.82	26.65	139.9	144.8	.766	.443	82.3	
250	10.15	19.28	34.84	26.82	124.0	129.7	.834	.374	61.9	
300	9.48	19.29	34.85	26.94	112.4	118.8	.896	.312	44.7	
400	8.67	19.28	34.83	27.05	101.6	109.5	1.011	.198	19.3	
500	7.60	19.25	34.78	27.18	89.6	98.4	1.115	.094	4.7	
600	6.73	19.24	34.75	27.28	79.7	89.2	1.208	0	0	



STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 264		FEB 7, 1964	2010-2102	03° 29.2'N	121° 03.5'W						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.80	19.23	34.74	4.59	22.61	524.9	- .10	-0	-0	-0	-0
50	26.83	19.22	34.72	4.60	22.58	527.2	- .11	-0	-0	-0	-0
74	26.76	19.24	34.76	4.43	22.63	522.4	- .07	-0	-0	-0	-0
99	23.10	19.39	35.03	3.63	23.95	397.0	1.13	-0	-0	-0	-0
149	13.97	19.34	34.94	1.58	26.16	186.0	4.05	-0	-0	-0	-0
224	12.97	999.00	999.00	1.45	999.00	999.0	999.00	-0	-0	-0	-0
318	11.24	19.26	34.79	.62	26.59	145.5	5.34	-0	-0	-0	-0
405	9.40	19.18	34.65	1.12	26.80	125.7	5.10	-0	-0	-0	-0
587	6.43	19.21	34.70	1.50	27.28	79.8	5.17	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.80	19.23	34.74	22.61	524.9	525.1	0	1.279	259.8	
10	26.82	19.22	34.73	22.59	526.3	526.8	.053	1.226	247.3	
20	26.82	19.22	34.73	22.59	526.7	527.6	.105	1.174	235.3	
30	26.83	19.22	34.72	22.59	526.9	528.2	.158	1.121	223.8	
50	26.83	19.22	34.72	22.58	527.2	529.3	.264	1.015	202.4	
75	26.68	19.24	34.76	22.66	393.7	397.6	.395	.884	178.7	
100	22.97	19.39	35.02	23.98	195.7	199.0	.510	.769	158.0	
150	13.95	19.34	34.94	26.17	185.6	190.0	.657	.622	123.3	
200	13.25	19.35	34.96	26.33	170.3	175.8	.749	.530	94.5	
250	12.43	19.32	34.91	26.45	158.4	164.9	.834	.445	70.1	
300	11.53	19.27	34.82	26.56	148.6	156.1	.914	.365	49.9	
400	9.49	19.18	34.66	26.79	126.8	135.2	1.060	.219	20.7	
500	7.71	19.19	34.67	27.07	99.6	108.5	1.182	.097	4.9	
600	6.25	19.21	34.71	27.31	77.0	85.9	1.279	0	0	

H 264

STATION		DATE	TIME	LATITUDE	LONGITUDE	D					
H 270		FEB 8, 1964	2013-2055	00° 27.2'N	123° 59.5'W						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	25.60	19.28	34.83	4.63	23.05	482.6	- .05	-0	-0	-0	-0
48	24.93	19.29	34.85	4.54	23.27	461.7	.08	-0	-0	-0	-0
71	23.76	19.35	34.96	4.16	23.70	420.6	.55	-0	-0	-0	-0
95	17.99	19.34	34.94	2.26	25.25	273.2	2.94	-0	-0	-0	-0
143	12.98	19.31	34.88	1.85	26.33	170.6	3.89	-0	-0	-0	-0
200	12.53	19.31	34.88	2.12	26.42	162.1	3.68	-0	-0	-0	-0
298	11.58	19.28	34.83	.73	26.56	148.8	5.19	-0	-0	-0	-0
392	9.39	19.21	34.70	.49	26.84	121.6	5.73	-0	-0	-0	-0
578	6.95	19.17	34.63	1.37	27.16	91.6	5.22	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.60	19.28	34.83	23.05	482.6	482.7	0	1.152	250.4	
10	25.52	19.28	34.83	23.07	480.1	480.6	.048	1.104	239.1	
20	25.42	19.28	34.83	23.11	477.1	478.0	.096	1.056	228.3	
30	25.30	19.28	34.84	23.15	473.1	474.4	.144	1.008	218.0	
50	24.86	19.29	34.85	23.29	459.2	461.3	.237	.915	198.8	
75	23.02	19.34	34.94	23.91	400.9	403.9	.345	.807	177.3	
100	17.36	19.33	34.92	25.38	260.4	263.8	.429	.723	158.1	
150	12.92	19.31	34.88	26.34	169.4	173.5	.538	.614	124.7	
200	12.53	19.31	34.88	26.41	162.1	167.5	.623	.529	96.1	
250	12.00	19.29	34.85	26.49	154.7	161.1	.706	.446	71.8	
300	11.53	19.28	34.83	26.56	148.2	155.6	.785	.367	51.4	
400	9.26	19.21	34.70	26.86	120.0	128.3	.927	.225	21.8	
500	7.86	19.18	34.65	27.04	102.9	112.0	1.047	.105	5.3	
600	6.72	19.17	34.63	27.19	89.0	98.4	1.152	0	0	

H 270

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 272		FEB 9, 1964		2010-2057		00° 03.8'N		124° 46.0'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	25.30	19.36	34.97	4.56	23.25	463.4	.03	-0	-0	-0	-0
49	24.70	19.35	34.96	4.47	23.42	447.3	.17	-0	-0	-0	-0
74	24.19	19.36	34.97	4.32	23.59	431.4	.36	-0	-0	-0	-0
98	21.82	19.33	34.92	3.30	24.23	370.2	1.56	-0	-0	-0	-0
147	13.39	19.29	34.85	2.67	26.21	181.7	3.03	-0	-0	-0	-0
206	12.65	19.29	34.85	2.22	26.36	167.0	3.56	-0	-0	-0	-0
300	11.38	19.26	34.79	.79	26.56	148.0	5.16	-0	-0	-0	-0
396	9.51	19.20	34.69	.55	26.81	124.8	5.65	-0	-0	-0	-0
583	7.13	19.17	34.63	1.18	27.13	94.7	5.38	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z</sub> /O (dyn m)	ΔD <sub>Z</sub> /Z MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.30	19.36	34.97	23.25	463.4	463.5	0	1.207	261.1	
10	25.23	19.36	34.97	23.27	461.5	462.0	.046	1.161	249.2	
20	25.15	19.36	34.97	23.29	459.2	460.1	.092	1.115	237.9	
30	25.04	19.36	34.97	23.32	456.3	457.6	.138	1.069	226.9	
50	24.68	19.35	34.96	23.42	446.8	448.8	.229	.979	206.5	
75	24.12	19.36	34.97	23.60	429.6	432.7	.339	.868	183.4	
100	21.56	19.32	34.91	24.29	364.3	368.1	.439	.768	162.9	
150	13.35	19.29	34.85	26.22	180.3	184.5	.577	.630	128.0	
200	12.71	19.29	34.85	26.35	168.3	173.7	.667	.541	98.7	
250	12.00	19.27	34.82	26.47	157.2	163.6	.751	.456	73.8	
300	11.38	19.26	34.79	26.56	148.0	155.3	.831	.377	53.0	
400	9.45	19.20	34.68	26.82	124.0	132.4	.975	.233	22.5	
500	8.08	19.18	34.64	27.00	106.4	115.6	1.099	.109	5.4	
600	6.95	19.17	34.63	27.15	91.9	101.7	1.207	0	0	

H 272

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 278		FEB 10, 1964		2015-2100		02° 56.8'N		127° 38.2'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	25.80	19.45	35.14	4.79	23.22	466.4	-.24	-0	-0	-0	-0
48	25.59	19.44	35.12	4.72	23.27	461.5	-.15	-0	-0	-0	-0
72	25.54	19.42	35.08	4.75	23.26	462.6	-.18	-0	-0	-0	-0
96	23.61	19.64	35.48	4.30	24.14	378.6	.40	-0	-0	-0	-0
144	13.24	19.44	35.12	.90	26.45	158.4	4.80	-0	-0	-0	-0
202	12.71	19.33	34.92	1.01	26.41	162.9	4.76	-0	-0	-0	-0
286	11.78	19.30	34.87	.36	26.55	149.7	5.53	-0	-0	-0	-0
376	10.06	19.25	34.78	.28	26.79	126.9	5.84	-0	-0	-0	-0
550	7.11	19.16	34.61	1.17	27.12	95.3	5.39	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z</sub> /O (dyn m)	ΔD <sub>Z</sub> /Z MAX (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.80	19.45	35.14	23.22	466.4	466.5	0	1.196	255.1	
10	25.78	19.45	35.13	23.22	465.8	466.3	.047	1.150	243.4	
20	25.74	19.45	35.13	23.23	465.1	466.0	.093	1.103	232.1	
30	25.70	19.45	35.13	23.24	464.1	465.5	.140	1.056	221.3	
50	25.59	19.44	35.12	23.27	461.6	463.7	.233	.963	201.1	
75	25.40	19.43	35.11	23.32	456.8	459.9	.348	.848	178.5	
100	23.01	19.62	35.44	24.28	364.7	368.6	.452	.744	158.6	
150	13.18	19.43	35.09	26.45	158.9	163.1	.585	.611	124.7	
200	12.73	19.33	34.93	26.41	162.7	168.1	.667	.529	96.2	
250	12.14	19.31	34.89	26.49	154.8	161.3	.750	.446	71.8	
300	11.48	19.29	34.85	26.59	145.8	153.2	.828	.368	51.5	
400	9.58	19.23	34.74	26.84	121.8	130.3	.970	.226	21.8	
500	7.85	19.18	34.64	27.04	103.2	112.2	1.091	.105	5.2	
600	6.43	19.15	34.59	27.20	88.0	97.1	1.196	0	0	

H 278

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 281		FEB 11, 1964		2010-2053		04° 00.3'S		128° 53.5'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	25.90	19.44	35.12	4.66	23.18	470.6	-1.11	-0	-0	-0	-0
48	25.82	19.44	35.12	4.67	23.20	468.3	-1.12	-0	-0	-0	-0
72	25.93	19.55	35.32	4.67	23.32	457.2	-1.13	-0	-0	-0	-0
96	25.61	19.55	35.32	4.59	23.47	447.8	-1.03	-0	-0	-0	-0
144	14.57	19.39	35.03	1.54	26.11	191.5	4.01	-0	-0	-0	-0
209	12.86	19.35	34.96	.68	26.41	163.0	5.08	-0	-0	-0	-0
306	11.89	19.33	34.92	.34	26.57	147.7	5.54	-0	-0	-0	-0
419	9.91	19.26	34.79	.59	26.83	123.2	5.55	-0	-0	-0	-0
576	7.32	19.19	34.67	1.00	27.13	94.1	5.53	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.90	19.44	35.12	23.17	470.6	470.8	0	1.256	266.8	
10	25.85	19.43	35.10	23.18	470.4	470.9	.047	1.209	254.5	
20	25.84	19.43	35.10	23.18	470.0	470.9	.094	1.162	242.6	
30	25.83	19.43	35.10	23.19	469.6	470.9	.141	1.115	231.2	
50	25.83	19.45	35.13	23.21	467.7	469.8	.235	1.021	209.9	
75	25.90	19.55	35.32	23.32	456.3	459.4	.351	.905	185.8	
100	25.05	19.53	35.27	23.55	434.5	438.6	.464	.793	164.6	
150	14.38	19.38	35.02	26.14	188.4	192.8	.622	.635	128.9	
200	13.06	19.35	34.96	26.37	166.4	171.9	.713	.544	99.4	
250	12.40	19.34	34.94	26.48	155.9	162.4	.796	.460	74.3	
300	11.94	19.33	34.92	26.56	148.5	156.2	.876	.381	53.3	
400	10.20	19.27	34.81	26.79	126.8	135.8	1.022	.235	22.6	
500	8.47	19.21	34.71	27.00	107.0	116.6	1.148	.108	5.4	
600	6.99	19.18	34.66	27.17	90.3	100.1	1.256	0	0	

H 281

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 286		FEB 12, 1964		1600-1644		06° 33.3'S		131° 13.5'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.80	19.65	35.50	4.55	23.18	470.4	-0.08	-0	-0	-0	-0
50	26.57	19.62	35.44	4.52	23.21	467.3	-0.03	-0	-0	-0	-0
75	26.62	19.63	35.46	4.61	23.21	467.6	-1.13	-0	-0	-0	-0
100	25.69	19.65	35.50	4.55	23.53	437.1	-0.00	-0	-0	-0	-0
150	22.95	19.90	35.95	4.17	24.69	326.4	.57	-0	-0	-0	-0
208	14.37	19.35	34.96	1.09	26.09	192.7	4.49	-0	-0	-0	-0
301	11.46	19.28	34.83	.53	26.58	146.7	5.40	-0	-0	-0	-0
336	9.90	19.22	34.72	.33	26.77	128.3	5.82	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.80	19.65	35.50	23.18	470.4	470.5	0	.978	116.2	
10	26.77	19.65	35.49	23.18	470.1	470.6	.047	.931	106.7	
20	26.74	19.64	35.48	23.18	469.7	470.6	.094	.884	97.6	
30	26.70	19.64	35.47	23.19	469.1	470.4	.141	.837	89.0	
50	26.57	19.62	35.44	23.21	467.3	469.5	.235	.743	75.2	
75	26.62	19.63	35.46	23.21	467.6	470.7	.353	.626	56.1	
100	25.69	19.65	35.50	23.53	437.1	441.2	.467	.512	41.9	
150	22.95	19.90	35.95	24.69	326.4	332.2	.660	.318	21.1	
200	15.49	19.39	35.04	25.91	210.2	216.3	.797	.181	8.7	
250	12.92	19.31	34.88	26.33	169.8	176.6	.895	.083	2.1	
300	11.49	19.28	34.83	26.57	147.1	154.5	.978	0	0	

H 286

STATION		DATE	TIME	LATITUDE	LONGITUDE	D	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
H 288		FEB 13, 1964	2010-2111	07° 16.6'S	132° 10.3'W							
0	26.90	19.77	35.71	4.55	23.31	457.9	-0.09	-0	-0	-0	-0	
50	26.70	19.77	35.71	4.56	23.37	451.8	-0.09	-0	-0	-0	-0	
75	26.73	19.72	35.62	4.60	23.30	459.2	-0.13	-0	-0	-0	-0	
100	26.73	19.72	35.62	4.61	23.30	459.2	-0.14	-0	-0	-0	-0	
150	23.13	19.85	35.86	4.21	24.57	337.9	.52	-0	-0	-0	-0	
208	17.56	19.53	35.28	3.26	25.61	238.3	1.97	-0	-0	-0	-0	
304	10.65	19.25	34.78	.88	26.68	136.7	5.16	-0	-0	-0	-0	
383	9.29	999.00g	999.00	999.00h	999.00	999.00	999.00	-0	-0	-0	-0	
560	6.91	19.21	34.70	1.56	27.22	85.9	5.03	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/Z</sub> MAX	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	26.90	19.77	35.71	23.31	457.9	458.0	0	1.354	275.0	
10	26.88	19.79	35.76	23.35	454.2	454.7	.046	1.308	261.7	
20	26.85	19.79	35.76	23.36	453.2	454.1	.091	1.263	248.8	
30	26.81	19.79	35.75	23.36	452.6	453.9	.136	1.217	236.4	
50	26.70	19.77	35.71	23.37	451.8	453.9	.227	1.127	213.0	
75	26.73	19.72	35.62	23.29	459.2	462.4	.342	1.012	186.2	
100	26.73	19.72	35.62	23.29	459.2	463.4	.458	.896	162.4	
150	23.13	19.85	35.86	24.57	337.9	343.7	.659	.695	122.6	
200	18.29	19.56	35.34	25.48	251.3	258.1	.810	.544	91.6	
250	14.21	19.35	34.96	26.13	189.1	196.3	.923	.430	67.3	
300	10.89	19.25	34.78	26.64	140.3	147.4	1.009	.345	47.9	
400	9.02	19.22	34.73	26.92	113.9	122.0	1.144	.210	20.2	
500	7.62	19.21	34.71	27.12	95.4	104.2	1.257	.097	4.8	
600	6.48	19.21	34.71	27.28	80.2	89.3	1.354	0	0	

H 288

STATION		DATE	TIME	LATITUDE	LONGITUDE	D	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
H 294		FEB 14, 1964	1910-1957	10° 03.1'S	134° 55.0'W							
0	27.40	19.77	35.71	4.47	23.15	473.2	-0.05	-0	-0	-0	-0	
48	27.38	19.77	35.71	4.49	23.15	472.6	-0.07	-0	-0	-0	-0	
71	27.43	19.79	35.75	4.50	23.17	471.6	-0.08	-0	-0	-0	-0	
95	27.22	19.95	36.04	4.44	23.45	444.3	-0.01	-0	-0	-0	-0	
143	23.89	19.99	36.11	4.23	24.54	340.9	.43	-0	-0	-0	-0	
202	20.85	19.77	35.71	3.93	25.10	287.4	.99	-0	-0	-0	-0	
301	12.72	19.27	34.81	2.03	26.32	171.0	3.75	-0	-0	-0	-0	
394	9.38	19.16	34.61	1.72	26.77	128.1	4.50	-0	-0	-0	-0	
576	7.16	19.21	34.70	1.68	27.18	89.2	4.87	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/Z</sub> MAX	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	27.40	19.77	35.71	23.15	473.2	473.3	0	1.449	302.7	
10	27.39	19.77	35.71	23.15	473.2	473.7	.047	1.402	288.4	
20	27.38	19.77	35.71	23.15	473.1	474.0	.095	1.354	274.6	
30	27.38	19.77	35.71	23.15	473.0	474.3	.142	1.307	261.3	
50	27.39	19.77	35.72	23.15	472.6	474.7	.237	1.212	236.1	
75	27.40	19.80	35.77	23.19	469.0	472.1	.355	1.094	207.3	
100	27.01	19.95	36.05	23.52	437.5	441.7	.470	.979	181.4	
150	23.60	19.97	36.08	24.59	335.4	341.3	.665	.784	137.3	
200	20.98	19.78	35.73	25.07	289.5	296.8	.825	.624	102.1	
250	16.94	19.48	35.18	25.69	231.2	239.3	.959	.490	74.3	
300	12.80	19.27	34.82	26.31	172.1	180.1	1.064	.385	52.4	
400	9.29	19.16	34.62	26.79	126.6	134.9	1.221	.228	21.8	
500	7.99	19.19	34.66	27.03	103.7	112.9	1.345	.104	5.2	
600	6.92	19.22	34.72	27.23	85.1	94.7	1.449	0	0	

H 294

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 296		FEB 15, 1964		2010-2122		09° 20.2'S		135° 36.5'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	27.70	19.79	35.75	4.57	23.08	479.9	-0.17	-0	-0	-0	-0
49	27.46	19.77	35.71	4.67	23.13	475.1	-0.25	-0	-0	-0	-0
73	27.46	999.00	999.00	4.55	999.00	999.0	999.00	-0	-0	-0	-0
97	27.28	19.79	35.75	4.51	23.21	466.9	-0.08	-0	-0	-0	-0
146	22.89	19.79	35.75	4.05	24.55	339.1	.70	-0	-0	-0	-0
200	18.82	19.63	35.66	3.75	25.44	255.0	1.36	-0	-0	-0	-0
329	13.99	19.21	34.70	1.04	25.98	203.6	4.59	-0	-0	-0	-0
414	9.27	19.25	34.78	1.38	26.92	114.4	4.85	-0	-0	-0	-0
585	7.33	999.00	999.00	1.25	999.00	999.0	999.00	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn m)		
0	27.70	23.49	42.44	28.13	0	.1	0				
10	27.67	23.07	41.67	27.55	54.0	54.5	.003				
20	27.64	22.54	40.71	26.84	121.8	122.8	.012				
30	27.59	21.85	39.47	25.91	209.6	210.9	.028				
50	27.46	19.77	35.72	23.13	474.9	477.1	.097				
75	27.45	19.80	35.77	23.17	470.7	473.8	.216				
100	27.12	19.82	35.80	23.30	458.6	462.8	.333				
150	22.54	19.77	35.72	24.63	331.9	337.6	.533				
200	18.82	19.63	35.66	25.44	255.0	261.9	.683				
250	16.66	19.42	35.09	25.68	231.9	239.9	.808				
300	14.89	19.28	34.82	25.88	213.1	222.0	.924				
400	9.98	19.23	34.75	26.78	127.7	136.5	1.103				
500	8.21										
600	7.19										

H 296

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 299		FEB 16, 1964		0830-0935		07° 49.6'S		136° 42.4'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> (μg at./L)	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub> (μg at./L)	NO <sub>2</sub> (μg at./L)
0	27.30	19.74 i)	35.66	4.47	23.14	474.0	-0.04	-0	-0	-0	-0
50	27.32	999.00	999.00	4.69	999.00	999.0	999.00	-0	-0	-0	-0
75	27.33	19.74	35.66	4.66	23.13	475.0	-0.23	-0	-0	-0	-0
100	27.38	19.73	35.64	4.61	23.10	477.8	-0.18	-0	-0	-0	-0
149	23.99	19.91	35.97	4.19	24.40	354.2	.47	-0	-0	-0	-0
208	19.36	999.00	999.00	3.88	999.00	999.0	999.00	-0	-0	-0	-0
299	10.69	19.23	34.74	1.30	26.65	140.1	4.74	-0	-0	-0	-0
391	8.88	19.18	34.65	1.43	26.88	117.8	4.86	-0	-0	-0	-0
590	6.63	19.19 j)	34.67	2.18	27.23	85.0	4.46	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dyn m)		
0	27.30	19.74	35.66	23.14	474.0	474.2	0	1.425	287.9		
10	27.31	19.74	35.66	23.13	474.6	475.1	.047	1.378	273.9		
20	27.32	19.74	35.66	23.13	474.7	475.6	.095	1.330	260.4		
30	27.32	19.74	35.66	23.13	474.8	476.1	.143	1.283	247.3		
50	27.32	19.74	35.66	23.13	474.9	477.0	.238	1.187	222.6		
75	27.33	19.74	35.66	23.13	475.0	478.1	.357	1.068	194.4		
100	27.38	19.73	35.64	23.10	477.8	482.0	.477	.948	169.2		
150	23.93	19.90	35.96	24.41	353.0	358.9	.688	.738	127.1		
200	20.12	19.60	35.41	25.06	291.0	298.1	.852	.574	94.3		
250	15.41	19.34	34.94	25.85	215.7	223.3	.987	.443	68.9		
300	10.67	19.23	34.74	26.65	139.8	146.8	1.075	.351	49.0		
400	8.76	19.18	34.65	26.90	115.4	123.9	1.210	.215	20.8		
500	7.54	19.18	34.65	27.09	96.2	106.4	1.324	.100	5.0		
600	6.54	19.19	34.67	27.24	82.2	92.0	1.424	0	0		

H 299

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 302		FEB 16, 1964	2026-2105	06° 20.3'S	137° 49.2'W		OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
0	27.40	19.69	35.57	4.56	23.04	483.6	-0.13	-0	-0	-0	-0	
50	27.16	19.67	35.53	4.47	23.09	478.8	-0.03	-0	-0	-0	-0	
75	27.18	19.68	35.55	4.50	23.10	478.1	-0.06	-0	-0	-0	-0	
100	27.23	19.68	35.55	4.48	23.08	479.7	-0.04	-0	-0	-0	-0	
150	23.03	19.95	36.04	3.97	24.73	322.1	.76	-0	-0	-0	-0	
200	17.93	19.57	35.35	3.30	25.58	241.7	1.90	-0	-0	-0	-0	
289	11.38	19.27	34.81	.66	26.58	146.6	5.29	-0	-0	-0	-0	
382	10.09	19.23	34.74	.93	26.75	130.1	5.19	-0	-0	-0	-0	
555	7.31	19.16	34.61	1.30	27.09	98.0	5.23	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/ZMAX</sub>	Q <sub>Z</sub>
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)
0	27.40	19.69	35.57	23.04	483.6	483.7	0	1.402	289.2
10	27.37	19.69	35.57	23.04	483.1	483.6	.048	1.354	275.5
20	27.34	19.68	35.56	23.05	482.4	483.3	.097	1.305	262.2
30	27.30	19.68	35.55	23.06	481.6	482.9	.145	1.257	249.3
50	27.16	19.67	35.53	23.09	478.8	481.0	.241	1.161	225.2
75	27.18	19.68	35.55	23.10	478.1	481.3	.362	1.040	197.7
100	27.23	19.68	35.55	23.08	479.7	483.9	.482	.920	173.1
150	23.03	19.95	36.04	24.73	322.1	327.9	.685	.717	132.2
200	17.93	19.57	35.35	25.58	241.7	248.4	.829	.573	100.0
250	13.96	19.35	34.96	26.18	184.1	191.2	.939	.463	74.1
300	11.21	19.26	34.80	26.60	144.4	151.7	1.025	.377	53.1
400	9.75	19.22	34.72	26.79	126.1	134.8	1.168	.234	22.5
500	8.09	19.17	34.64	27.00	106.9	116.2	1.294	.108	5.4
600	6.73	19.15	34.60	27.16	91.3	100.7	1.402	0	0

H 302

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 305		FEB 17, 1964	0835-0905	04° 48.5'S	139° 00.0'W	23	OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS					
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/L)	(ml/L)	— (μg at./L) —				
0	26.50	19.54	35.30	4.58	23.12	475.6	-0.08	-0	-0	-0	-0	
50	26.35	19.51	35.25	4.57	23.13	475.0	-0.06	-0	-0	-0	-0	
75	26.34	19.51	35.25	4.58	23.13	474.7	-0.07	-0	-0	-0	-0	
100	26.24	19.56	35.34	4.52	23.23	465.2	-0.01	-0	-0	-0	-0	
149	19.57	19.69	35.57	3.58	25.33	265.5	1.46	-0	-0	-0	-0	
202	13.10	19.32	34.90	.54	26.32	171.6	5.19	-0	-0	-0	-0	
298	11.55	19.27	34.81	1.43	26.55	149.6	4.49	-0	-0	-0	-0	
388	9.88	19.22	34.72	.71	26.78	128.0	5.44	-0	-0	-0	-0	
571	7.52	19.17	34.63	1.13	27.08	99.5	5.37	-0	-0	-0	-0	

H 305

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/ZMAX</sub>	Q <sub>Z</sub>
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)
0	26.50	19.54	35.30	23.12	475.6	475.7	0	1.324	277.8
10	26.48	19.54	35.29	23.12	475.5	476.1	.048	1.277	264.8
20	26.46	19.53	35.29	23.12	475.5	476.4	.095	1.229	252.2
30	26.44	19.53	35.28	23.13	475.3	476.7	.143	1.181	240.2
50	26.35	19.51	35.25	23.13	475.0	477.1	.238	1.086	217.5
75	26.34	19.51	35.25	23.13	474.7	477.8	.358	.967	191.8
100	26.24	19.56	35.34	23.23	465.2	469.3	.476	.848	169.2
150	19.43	19.68	35.55	25.35	263.4	268.7	.661	.664	131.4
200	13.31	19.33	34.92	26.28	174.7	180.2	.773	.552	101.0
250	12.25	19.29	34.85	26.44	159.6	166.1	.859	.465	75.6
300	11.51	19.27	34.81	26.55	149.1	156.5	.940	.384	54.3
400	9.69	19.21	34.71	26.80	125.8	134.4	1.085	.239	23.2
500	8.33	19.18	34.65	26.97	109.3	118.8	1.212	.112	5.6
600	7.22	19.17	34.63	27.11	95.8	105.9	1.324	0	0

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 307		FEB 17, 1964	2025-2106	03° 09.7'S	140° 12.0'W							
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/T)	(ml/L)	— (μg at./L) —				
0	27.00	19.65	35.50	4.52	23.11	476.5	-0.06	-0	-0	-0	-0	
49	26.75	19.64	35.48	4.56	23.18	470.2	-0.09	-0	-0	-0	-0	
73	26.65	19.64	35.48	4.54	23.21	467.2	-0.06	-0	-0	-0	-0	
97	25.21	19.57	35.35	4.42	23.57	433.4	.17	-0	-0	-0	-0	
146	13.52	19.37	34.99	.75	26.30	173.1	4.93	-0	-0	-0	-0	
202	12.72	19.34	34.94	.55	26.42	161.7	5.22	-0	-0	-0	-0	
290	11.87	19.30	34.87	.66	26.53	151.4	5.22	-0	-0	-0	-0	
378	9.90	19.23	34.74	.43	26.79	127.0	5.72	-0	-0	-0	-0	
549	7.12	19.17	34.63	1.30	27.13	94.1	5.26	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/ZMAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	27.00	19.65	35.50	23.11	476.5	476.6	0	1.233	258.7	
10	26.97	19.65	35.50	23.12	475.8	476.3	.048	1.185	246.6	
20	26.94	19.65	35.49	23.13	474.9	475.8	.095	1.138	235.0	
30	26.89	19.65	35.49	23.14	473.7	475.1	.143	1.090	223.8	
50	26.75	19.64	35.48	23.18	470.1	472.2	.238	.996	203.0	
75	26.58	19.64	35.47	23.23	465.4	468.5	.355	.878	179.6	
100	24.75	19.55	35.31	23.67	423.0	427.0	.467	.766	159.0	
150	13.45	19.37	34.99	26.31	172.2	176.4	.618	.615	124.5	
200	12.74	19.34	34.94	26.41	162.1	167.5	.704	.529	95.9	
250	12.22	19.32	34.89	26.48	155.6	162.1	.786	.447	71.5	
300	11.62	19.29	34.85	26.56	148.2	155.7	.866	.367	51.1	
400	9.48	19.22	34.72	26.84	122.0	130.5	1.009	.224	21.5	
500	7.82	19.18	34.65	27.04	102.3	111.3	1.130	.103	5.2	
600	6.46	19.16	34.62	27.21	86.2	95.4	1.233	0	0	

H 307

STATION		DATE	TIME	LATITUDE	LONGITUDE	D						
H 310		FEB 18, 1964	0825-0904	01° 32.1'S	141° 22.1'W	25						
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS												
Z	T	Cl	S	O <sub>2</sub>	σ <sub>T</sub>	δ <sub>T</sub>	AOU	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>	
(m)	(°C)	(‰)	(‰)	(ml/L)	(gm/L)	(cl/T)	(ml/L)	— (μg at./L) —				
0	26.40	19.46	35.16	4.57	23.05	483.0	-0.06	-0	-0	-0	-0	
50	26.21	19.47	35.17	4.63	23.12	476.0	-0.11	-0	-0	-0	-0	
75	25.50	19.49	35.21	4.46	23.37	452.3	.11	-0	-0	-0	-0	
100	21.08	19.66	35.52	3.49	24.88	307.7	1.42	-0	-0	-0	-0	
149	13.00	19.33	34.92	1.14	26.35	168.4	4.60	-0	-0	-0	-0	
204	12.27	19.31	34.88	.69	26.47	157.3	5.14	-0	-0	-0	-0	
282	11.30	19.28	34.83	.88	26.61	143.9	5.08	-0	-0	-0	-0	
375	9.55	19.21	34.70	.97	26.82	124.1	5.23	-0	-0	-0	-0	
556	6.85	19.18	34.65	1.37	27.18	89.2	5.23	-0	-0	-0	-0	

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z	T	Cl	S	σ <sub>T</sub>	δ <sub>T</sub>	δ	ΔD <sub>Z/O</sub>	ΔD <sub>Z/ZMAX</sub>	Q <sub>Z</sub>	
(m)	(°C)	(‰)	(‰)	(gm/L)	(cl/T)	(cl/T)	(dyn m)	(dyn m)	(m-dynm)	
0	26.40	19.46	35.15	23.05	483.0	483.1	0	1.166	245.3	
10	26.38	19.46	35.16	23.05	482.2	482.7	.048	1.118	233.8	
20	26.35	19.46	35.16	23.06	481.2	482.2	.097	1.070	222.9	
30	26.32	19.46	35.16	23.08	480.0	481.3	.145	1.021	212.5	
50	26.21	19.47	35.17	23.12	476.0	478.1	.241	.925	193.0	
75	25.50	19.49	35.21	23.37	452.3	455.4	.357	.809	171.3	
100	21.08	19.66	35.52	24.88	307.7	311.5	.453	.713	152.3	
150	12.98	19.33	34.92	26.35	168.1	172.3	.574	.592	119.7	
200	12.32	19.31	34.89	26.46	158.0	163.3	.658	.508	92.2	
250	11.66	19.29	34.85	26.55	148.9	155.2	.738	.428	68.8	
300	10.92	19.26	34.80	26.65	139.6	146.7	.813	.353	49.2	
400	9.11	19.20	34.69	26.88	118.4	126.6	.950	.216	20.8	
500	7.58	19.18	34.65	27.08	98.6	107.4	1.067	.099	5.0	
600	6.33	19.18	34.65	27.25	82.4	91.4	1.166	0	0	

H 310

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 313		FEB 18, 1964		2025-2107		00° 06.8'N		142° 34.6'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.30	19.47	35.17	4.17	23.09	478.7	.35	-0	-0	-0	-0
48	25.76	19.50	35.23	4.11	23.30	458.7	.44	-0	-0	-0	-0
71	25.39	19.60	35.41	3.88	23.55	434.8	.69	-0	-0	-0	-0
95	22.32	19.64	35.48	3.09	24.51	343.2	1.72	-0	-0	-0	-0
143	14.99	19.48	35.19	2.84	26.14	188.3	2.66	-0	-0	-0	-0
225	12.33	19.40	35.05	1.94	26.58	146.5	3.88	-0	-0	-0	-0
247	11.91	19.40	35.05	2.06	26.66	138.8	3.81	-0	-0	-0	-0
270	11.17	19.35	34.96	.89	26.73	132.3	5.08	-0	-0	-0	-0
491	7.75	19.24	34.76	1.00	27.14	93.3	5.46	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)
0	26.30	19.47	35.17	23.09	478.7	478.8	0	1.037	180.8
10	26.24	19.47	35.18	23.11	476.4	476.9	.048	.989	170.7
20	26.16	19.48	35.19	23.15	473.4	474.3	.095	.942	161.0
30	26.05	19.48	35.20	23.19	469.6	470.9	.143	.894	151.9
50	25.73	19.51	35.24	23.32	457.1	459.3	.236	.801	134.9
75	25.05	19.61	35.42	23.66	424.1	427.2	.346	.691	116.3
100	21.71	19.62	35.44	24.65	329.5	333.3	.441	.596	100.2
150	14.71	19.47	35.17	26.18	183.9	188.4	.572	.465	73.7
200	13.02	19.42	35.08	26.46	157.4	162.8	.660	.377	52.6
250	11.81	19.39	35.03	26.67	137.9	144.3	.736	.301	35.7
300	10.57	19.32	34.91	26.80	125.4	132.4	.806	.231	22.4
400	8.92	19.27	34.81	27.00	106.7	114.7	.929	.108	5.4
500	7.65	19.24	34.75	27.15	92.1	100.9	1.037	0	0

H 313

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 316		FEB 19, 1964		0825-0904		01° 41.8'N		143° 48.0'W		24	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.70	19.40	35.05	4.15	22.87	499.8	.34	-0	-0	-0	-0
50	26.38	19.40	35.05	4.16	22.97	490.2	.35	-0	-0	-0	-0
75	26.31	19.43	35.10	4.09	23.03	484.2	.43	-0	-0	-0	-0
100	25.84	19.42	35.08	4.10	23.17	471.5	.45	-0	-0	-0	-0
150	13.12	19.32	34.90	1.39	26.31	172.0	4.34	-0	-0	-0	-0
208	11.97	19.28	34.83	.85	26.48	155.8	5.02	-0	-0	-0	-0
304	11.18	19.26	34.79	.95	26.60	144.5	5.02	-0	-0	-0	-0
387	9.62	19.25	34.78	.78	26.86	119.9	5.40	-0	-0	-0	-0
522	6.99	19.17	34.63	1.01	27.15	92.4	5.57	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)
0	26.70	19.40	35.05	22.87	499.8	500.0	0	1.150	199.1
10	26.66	19.40	35.05	22.88	498.8	499.3	.050	1.100	187.8
20	26.62	19.40	35.05	22.89	497.4	498.3	.100	1.050	177.1
30	26.56	19.40	35.05	22.91	495.7	497.0	.150	1.000	166.8
50	26.38	19.40	35.05	22.97	490.2	492.3	.249	.901	147.8
75	26.31	19.43	35.10	23.03	484.2	487.3	.371	.779	126.8
100	25.84	19.42	35.08	23.17	471.5	475.6	.491	.658	108.8
150	13.12	19.32	34.90	26.31	172.0	176.1	.654	.496	80.0
200	12.11	19.28	34.84	26.46	157.8	163.0	.739	.411	57.3
250	11.59	19.27	34.81	26.54	150.3	156.6	.819	.331	38.8
300	11.21	19.26	34.79	26.60	144.9	152.1	.896	.254	24.2
400	9.33	19.24	34.76	26.89	116.8	125.2	1.035	.115	5.8
500	7.37	19.18	34.65	27.11	96.3	104.9	1.150	0	0

H 316



EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

209

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 319		FEB 19, 1964		2025-2104		03° 22.8'N		144° 58.2'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.30	19.32	34.90	4.38	22.57	528.5	.07	-0	-0	-0	-0
50	27.11	19.31	34.88	4.44	22.62	524.0	.03	-0	-0	-0	-0
75	27.12	19.31	34.88	4.16	22.61	524.3	.31	-0	-0	-0	-0
100	26.49	19.39	35.03	3.70	22.92	494.8	.81	-0	-0	-0	-0
150	15.34	19.21	34.70	2.23	25.69	231.3	3.25	-0	-0	-0	-0
214	11.01	19.18	34.65	2.32	26.52	152.2	3.68	-0	-0	-0	-0
274	10.45	19.21	34.70	1.63	26.66	138.7	4.44	-0	-0	-0	-0
398	9.09	19.18	34.65	1.40	26.85	120.9	4.86	-0	-0	-0	-0
570	6.71	19.14	34.58	1.20	27.15	92.8	5.43	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)
0	27.30	19.32	34.90	22.57	528.5	528.7	0	1.323	263.9
10	27.28	19.32	34.90	22.57	528.0	528.6	.053	1.270	251.0
20	27.25	19.32	34.90	22.58	527.4	528.3	.106	1.217	238.5
30	27.22	19.32	34.89	22.59	526.6	527.9	.159	1.164	226.6
50	27.11	19.31	34.88	22.62	524.0	526.2	.264	1.059	204.4
75	27.12	19.31	34.88	22.61	524.3	527.5	.396	.927	179.6
100	26.49	19.39	35.03	22.92	494.8	498.9	.524	.799	158.0
150	15.34	19.21	34.70	25.69	231.3	235.9	.708	.615	127.6
200	11.84	19.18	34.64	26.36	167.2	172.4	.810	.513	94.4
250	10.66	19.20	34.68	26.61	143.7	149.6	.890	.433	70.8
300	10.12	19.20	34.69	26.71	134.4	141.1	.963	.360	51.0
400	9.06	19.18	34.65	26.85	120.6	128.7	1.098	.225	21.7
500	7.58	19.15	34.59	27.04	103.0	111.8	1.218	.105	5.2
600	6.37	19.14	34.57	27.19	88.7	97.7	1.323	0	0

H 319

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 322		FEB 20, 1964		0825-0904		05° 02.1'N		145° 59.0'W		23	
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub> (μg at./L)	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.30	19.41	35.07	4.13	22.69	516.9	.32	-0	-0	-0	-0
49	27.14	19.34	34.94	4.17	22.65	521.0	.29	-0	-0	-0	-0
74	27.19	19.33	34.92	4.14	22.62	523.9	.32	-0	-0	-0	-0
99	27.17	19.33	34.92	4.04	22.63	523.3	.42	-0	-0	-0	-0
148	18.29	19.23	34.74	2.84	25.02	294.7	2.34	-0	-0	-0	-0
208	10.62	19.17	34.63	1.38	26.58	146.9	4.67	-0	-0	-0	-0
307	9.36	19.18	34.65	1.38	26.81	125.1	4.85	-0	-0	-0	-0
408	8.53	19.18	34.65	1.14	26.94	112.5	5.21	-0	-0	-0	-0
586	6.86	19.12	34.54	.70	27.10	97.4	5.91	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS									
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z</sub> MAX (dyn m)	Q <sub>Z</sub> (m-dynm)
0	27.30	19.41	35.06	22.69	516.9	517.0	0	1.344	265.7
10	27.28	19.39	35.02	22.66	519.4	519.9	.052	1.292	252.5
20	27.26	19.38	35.00	22.66	520.1	521.0	.104	1.240	239.9
30	27.23	19.36	34.98	22.65	520.5	521.9	.156	1.188	227.7
50	27.14	19.34	34.94	22.65	521.2	523.3	.261	1.083	205.0
75	27.19	19.33	34.92	22.62	523.8	527.0	.392	.952	179.6
100	27.07	19.33	34.91	22.65	520.8	525.0	.523	.820	157.5
150	17.99	19.22	34.72	25.08	288.9	294.0	.728	.616	121.6
200	11.50	19.16	34.61	26.40	163.9	168.9	.844	.500	93.7
250	10.02	19.17	34.64	26.68	136.6	142.2	.922	.427	70.6
300	9.43	19.18	34.65	26.79	126.4	132.8	.990	.353	51.2
400	8.59	19.18	34.65	26.93	113.4	121.2	1.117	.226	22.2
500	7.59	19.14	34.58	27.03	104.0	112.8	1.234	.109	5.5
600	6.75	19.12	34.54	27.11	96.4	105.9	1.344	0	0

H 322

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 325		FEB 20, 1964		2025-2114		06° 43.0'N		146° 49.2'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	27.50	19.26	34.79	4.20	22.42	542.5	.24	-0	-0	-0	-0
83	21.77	19.25	34.78	3.71	24.13	379.3	1.16	-0	-0	-0	-0
104	16.31	19.18	34.65	2.79	25.43	256.1	2.59	-0	-0	-0	-0
124	13.50	19.15	34.60	1.65	26.00	201.8	4.04	-0	-0	-0	-0
166	11.20	19.21	34.70	2.64	26.53	151.5	3.33	-0	-0	-0	-0
229	10.89	19.21	34.70	.41	26.58	146.1	5.60	-0	-0	-0	-0
247	10.14	19.22	34.72	.58	26.73	132.2	5.53	-0	-0	-0	-0
379	8.79	19.19 k	34.67	.85	26.91	115.1	5.46	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	27.50	19.26	34.79	22.42	542.5	542.6	0	.914	128.1	
10	27.13	19.25	34.78	22.53	532.0	532.6	.054	.860	119.2	
20	26.72	19.25	34.77	22.66	520.1	521.1	.106	.808	110.9	
30	26.24	19.24	34.76	22.80	506.5	507.8	.158	.756	103.0	
50	25.03	19.23	34.74	23.16	472.2	474.3	.256	.658	88.9	
75	22.78	19.24	34.75	23.83	408.0	411.0	.367	.547	73.8	
100	17.32	19.18	34.65	25.19	278.9	282.2	.453	.461	61.2	
150	12.00	19.18	34.66	26.34	169.0	172.9	.567	.347	41.0	
200	11.02	19.21	34.70	26.56	148.4	153.2	.649	.266	25.7	
250	10.10	19.22	34.72	26.73	131.8	137.4	.721	.193	14.3	
300	9.53	19.20	34.69	26.81	124.4	130.9	.788	.126	6.3	
400	8.62	19.19	34.66	26.93	112.9	120.7	.914	0	0	

H 325

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 331		FEB 21, 1964		2025-2104		09° 40.5'N		148° 58.0'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
0	26.20	19.06	34.43	4.34	22.57	529.0	.20	-0	-0	-0	-0
50	26.12	19.04	34.40	4.28	22.56	529.2	.27	-0	-0	-0	-0
75	14.06	19.12	34.54	1.41	25.84	216.9	4.22	-0	-0	-0	-0
100	12.10	19.20	34.69	.38	26.35	168.8	5.48	-0	-0	-0	-0
150	11.18	19.23	34.74	.30	26.56	148.5	5.67	-0	-0	-0	-0
225	10.75	19.19	34.67	.32	26.58	146.4	5.71	-0	-0	-0	-0
292	9.85	19.19	34.67	.51	26.74	131.5	5.65	-0	-0	-0	-0
386	9.11	19.19	34.67	.42	26.86	119.9	5.84	-0	-0	-0	-0
576	7.03	19.13	34.56	.36	27.09	98.3	6.22	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	26.20	19.06	34.43	22.56	529.0	529.1	0	1.072	237.3	
10	26.19	19.06	34.43	22.56	529.1	529.6	.053	1.019	226.8	
20	26.18	19.05	34.42	22.56	529.1	530.0	.106	.966	216.9	
30	26.17	19.05	34.42	22.56	529.1	530.5	.159	.913	207.5	
50	26.12	19.04	34.40	22.56	529.2	531.3	.265	.807	190.3	
75	14.06	19.12	34.54	25.84	216.9	219.1	.359	.713	171.3	
100	12.10	19.20	34.69	26.34	168.8	171.5	.408	.664	154.1	
150	11.18	19.23	34.74	26.56	148.5	152.2	.489	.583	122.9	
200	10.88	19.20	34.69	26.57	147.0	151.8	.565	.507	95.6	
250	10.39	19.19	34.67	26.64	140.4	146.1	.639	.433	72.1	
300	9.78	19.19	34.67	26.75	130.4	137.0	.710	.362	52.2	
400	8.92	19.18	34.66	26.88	118.0	126.1	.841	.231	22.6	
500	7.77	19.15	34.59	27.01	105.9	114.9	.962	.110	5.5	
600	6.82	19.13	34.55	27.11	96.1	105.6	1.072	0	0	

H 331

STATION		DATE	TIME	LATITUDE	LONGITUDE	D
H 334		FEB 22, 1964	0825-0906	11° 14.5'N	149° 59.8'W	

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	25.60	18.93	34.20	4.30	22.57	528.1	.30	-0	-0	-0	-0
49	24.52	19.02	34.36	4.44	23.02	485.0	.23	-0	-0	-0	-0
74	19.51	19.13	34.56	4.18	24.57	337.3	.90	-0	-0	-0	-0
99	14.36	19.03	34.38	2.26	25.65	234.8	3.34	-0	-0	-0	-0
148	11.98	19.22	34.72	.20	26.40	164.0	5.67	-0	-0	-0	-0
221	10.95	19.23	34.74	.40	26.60	144.5	5.60	-0	-0	-0	-0
307	10.10	19.21	34.70	.35	26.72	132.9	5.77	-0	-0	-0	-0
416	9.24	19.19	34.67	.30	26.84	121.9	5.94	-0	-0	-0	-0
601	7.44	19.14	34.58	.36	27.04	102.4	6.15	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	25.60	18.93	34.20	22.57	528.1	528.2	0	1.137	251.3	
10	25.48	18.94	34.22	22.62	523.2	523.7	.053	1.085	240.2	
20	25.32	18.95	34.24	22.69	517.0	517.9	.105	1.033	229.6	
30	25.12	18.97	34.27	22.77	509.1	510.4	.156	.981	219.6	
50	24.40	19.02	34.36	23.06	481.4	483.4	.255	.882	200.9	
75	19.33	19.12	34.55	24.61	333.6	336.3	.358	.779	180.2	
100	14.30	19.03	34.39	25.67	233.0	236.0	.429	.708	161.6	
150	11.95	19.22	34.72	26.40	163.3	167.2	.530	.607	128.7	
200	11.21	19.23	34.73	26.55	149.3	154.2	.611	.527	100.4	
250	10.63	19.22	34.72	26.65	140.1	146.0	.686	.452	75.9	
300	10.16	19.21	34.71	26.71	133.7	140.5	.757	.380	55.1	
400	9.35	19.19	34.67	26.82	123.3	131.7	.893	.244	23.9	
500	8.34	19.16	34.62	26.94	112.2	121.6	1.020	.117	5.9	
600	7.45	19.14	34.58	27.04	102.5	112.8	1.137	0	0	

H 334

STATION		DATE	TIME	LATITUDE	LONGITUDE	D
H 337		FEB 22, 1964	2025-2105	12° 50.0'N	151° 01.1'W	

OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub>	NO <sub>3</sub>	SiO <sub>4</sub>	NO <sub>2</sub>
								— (μg at./L) —			
0	24.70	19.11	34.52	4.48	23.09	478.5	.17	-0	-0	-0	-0
49	24.54	19.07	34.45	4.46	23.09	479.1	.21	-0	-0	-0	-0
73	24.51	19.16	34.61	4.37	23.22	466.5	.29	-0	-0	-0	-0
98	19.85	19.35	34.96	4.26	24.79	316.9	.77	-0	-0	-0	-0
147	13.76	19.42	35.08	3.12	26.32	171.2	2.52	-0	-0	-0	-0
218	11.22	19.04	34.40	.67	26.29	174.4	5.31	-0	-0	-0	-0
321	10.04	19.11	34.52	.24	26.59	145.3	5.90	-0	-0	-0	-0
417	8.80	19.10	34.51	.21	26.78	127.3	6.10	-0	-0	-0	-0
587	6.85	19.07	34.45	.46	27.03	104.0	6.15	-0	-0	-0	-0

H 337

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/O</sub> (dyn m)	ΔD <sub>Z/ZMAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.70	19.11	34.52	23.09	478.5	478.6	0	1.231	270.2	
10	24.68	19.10	34.51	23.09	478.9	479.4	.048	1.183	258.2	
20	24.66	19.10	34.50	23.09	479.0	479.9	.096	1.135	246.6	
30	24.63	19.09	34.49	23.09	479.0	480.3	.144	1.087	235.5	
50	24.54	19.07	34.46	23.09	478.7	480.8	.240	.991	214.7	
75	24.29	19.17	34.64	23.30	458.5	461.6	.358	.873	191.4	
100	19.55	19.35	34.95	24.86	309.7	313.3	.455	.776	170.7	
150	13.63	19.40	35.05	26.32	171.4	175.7	.577	.654	135.0	
200	11.78	19.12	34.54	26.29	173.7	178.8	.665	.566	104.5	
250	10.80	19.06	34.44	26.39	164.1	170.0	.753	.478	78.4	
300	10.25	19.10	34.50	26.54	150.4	157.2	.834	.397	56.5	
400	9.00	19.10	34.51	26.75	130.1	138.2	.982	.249	24.2	
500	7.76	19.08	34.47	26.91	114.9	123.8	1.113	.118	5.9	
600	6.73	19.07	34.45	27.04	102.5	111.9	1.231	0	0	

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 340		FEB 23, 1964		0800-0902		14° 23.2'N		152° 06.6'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L)	NO <sub>3</sub> —	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	24.50	18.97	34.27	4.41	22.96	491.0	.26	-0	-0	-0	-0
48	24.34	18.98	34.29	4.42	23.02	485.1	.27	-0	-0	-0	-0
72	23.56	19.29	34.85	4.53	23.68	422.8	.20	-0	-0	-0	-0
96	21.65	19.40	35.05	4.51	24.37	356.6	.36	-0	-0	-0	-0
144	17.26	19.24	34.76	4.01	25.29	269.5	1.27	-0	-0	-0	-0
216	11.35	19.03	34.38	1.64	26.25	178.0	4.33	-0	-0	-0	-0
318	9.28	19.12	34.54	.63	26.73	131.9	5.61	-0	-0	-0	-0
422	8.31	19.15	34.60	.45	26.93	113.3	5.93	-0	-0	-0	-0
600	6.55	19.11	34.52	.61	27.13	94.8	5.05	-0	-0	-0	-0

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	24.50	18.97	34.27	22.96	491.0	491.1	0	1.257	263.8	
10	24.48	18.97	34.27	22.97	490.3	490.8	.049	1.208	251.5	
20	24.46	18.97	34.28	22.98	489.4	490.3	.098	1.159	239.6	
30	24.43	18.97	34.28	22.99	488.3	489.6	.147	1.110	228.3	
50	24.30	18.99	34.31	23.05	482.2	484.2	.245	1.013	207.0	
75	23.39	19.30	34.87	23.74	416.3	419.3	.357	.900	183.1	
100	21.35	19.39	35.03	24.44	350.1	353.9	.454	.803	161.9	
150	16.67	19.21	34.70	25.38	260.3	265.2	.609	.648	125.6	
200	12.47	19.05	34.42	26.06	195.4	200.7	.725	.532	96.1	
250	10.57	19.06	34.43	26.43	160.6	166.4	.817	.440	71.8	
300	9.59	19.10	34.51	26.66	138.9	145.3	.895	.362	51.7	
400	8.49	19.14	34.58	26.89	116.8	124.6	1.030	.227	22.2	
500	7.46	19.13	34.55	27.02	104.4	113.0	1.149	.108	5.4	
600	6.55	19.11	34.52	27.12	94.8	104.0	1.257	0	0	

H 340

STATION		DATE		TIME		LATITUDE		LONGITUDE		D	
H 343		FEB 23, 1964		2025-		15° 56.8'N		153° 13.1'W			
OBSERVED AND COMPUTED VALUES AT OBSERVED DEPTHS											
Z (m)	T (°C)	Cl (‰)	S (‰)	O <sub>2</sub> (ml/L)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/L)	AOU (ml/L)	PO <sub>4</sub> — (μg at./L)	NO <sub>3</sub> —	SiO <sub>4</sub> —	NO <sub>2</sub> —
0	23.70	18.91	34.16	4.48	23.12	476.2	.26	-0	-0	-0	-0
49	23.57	18.89	34.13	4.53	23.13	475.2	.22	-0	-0	-0	-0
73	23.41	18.92	34.18	4.46	23.22	466.8	.30	-0	-0	-0	-0
98	22.94	19.17	34.63	4.54	23.69	421.3	.24	-0	-0	-0	-0
147	20.21	19.02	34.36	4.18	24.24	369.1	.84	-0	-0	-0	-0
210	14.18	19.12	34.54	3.91	25.81	219.3	1.71	-0	-0	-0	-0
303	10.49	19.19	34.67	.98	26.63	142.0	5.09	-0	-0	-0	-0
395	8.82	19.15	34.60	.58	26.85	120.9	5.73	-0	-0	-0	-0
584	6.56	19.10	34.51	.53	27.11	96.2	6.13	-0	-0	-0	-0

H 343

INTERPOLATED AND COMPUTED VALUES AT STANDARD DEPTHS										
Z (m)	T (°C)	Cl (‰)	S (‰)	σ <sub>T</sub> (gm/L)	δ <sub>T</sub> (cl/T)	δ (cl/T)	ΔD <sub>Z/0</sub> (dyn m)	ΔD <sub>Z/Z MAX</sub> (dyn m)	Q <sub>Z</sub> (m-dynm)	
0	23.70	18.91	34.16	23.12	476.2	476.3	0	1.384	286.2	
10	23.69	18.91	34.16	23.12	476.1	476.6	.048	1.337	272.6	
20	23.67	18.90	34.15	23.12	475.9	476.8	.095	1.289	259.5	
30	23.64	18.90	34.15	23.12	475.7	477.0	.143	1.241	246.8	
50	23.57	18.89	34.13	23.13	475.0	477.0	.238	1.146	223.0	
75	23.38	18.93	34.20	23.24	464.6	467.6	.356	1.028	195.8	
100	22.87	19.17	34.63	23.71	419.7	423.5	.468	.916	171.5	
150	19.98	19.02	34.36	24.30	363.3	368.7	.666	.718	130.6	
200	15.09	19.09	34.49	25.58	241.8	247.8	.820	.564	98.6	
250	12.43	19.14	34.58	26.20	182.5	189.1	.929	.455	73.1	
300	10.59	19.19	34.66	26.60	144.1	151.1	1.014	.370	52.5	
400	8.75	19.15	34.59	26.86	120.1	128.0	1.154	.230	22.4	
500	7.46	19.11	34.53	27.01	106.0	114.6	1.275	.109	5.5	
600	6.40	19.10	34.50	27.13	94.5	103.6	1.384	0	0	

## APPENDIX B—APENDICE B

## SURFACE OBSERVATIONS—OBSERVACIONES DE LA SUPERFICIE

## Explanation of table headings

## Explicación de los títulos de las tablas

Time	Local times of start and finish of observations Hora local del comienzo y de la terminación de las observaciones
Lat	Latitude—Latitud
Long	Longitude—Longitud
Sea T (C)	Sea-surface temperature, degrees Celsius Temperatura de la superficie del mar, centígrados
Cl (‰)	Surface chlorinity, grams per kilogram Clorinidad de la superficie, gramos por kilogramo
S (‰)	Surface salinity, grams per kilogram Salinidad de la superficie, gramos por kilogramo
O <sub>2</sub> (ml/L)	Surface dissolved-oxygen concentration, milliliters per liter Concentración de oxígeno disuelto en la superficie, mililitros por litro
Air T (C)	Air temperature, degrees Celsius Temperatura del aire, centígrados
Baro (mb)	Barometric pressure (units and tens only; 1017 = 17), millibars Presión barométrica (unidades y décimos solamente; 1017 = 17), milibarras
Clouds	
<i>Type</i>	Predominant type of cloud cover <sup>1</sup> Tipo predominante de la cubierta de nubes <sup>1</sup>
<i>Amount</i>	Amount of sky covered by clouds, tenths Porción del cielo cubierto por nubes, décimos
Weather	Weather at time of observation <sup>2</sup> Tiempo en la hora de la observación <sup>2</sup>
Wind	
<i>Dir</i>	Wind direction, tens of degrees true (NNW ≈ 340° = 34) Dirección del viento, décimos de grados verdaderos (NNW ≈ 340° = 34)
<i>Force</i>	Wind force, Beaufort scale Fuerza del viento, escala de Beaufort
Sea	
<i>Waves</i>	Wave height, Beaufort scale Altura de las ondas, escala de Beaufort
<i>Swell</i>	Height of swell, Beaufort scale Altura del oleaje, escala de Beaufort

## Explanation of notes

## Explicación de las notas

a) Questionable value 20.88‰—Valor cuestionable de 20.88‰

<sup>1</sup>Coded according to U.S. Navy Hydrographic Office (1960). Symbols appearing in data are: 1 = Cirrus; 4 = Altocumulus; 5 = Altostratus; 6 = Stratocumulus; 7 = Nimbostratus; 8 = Cumulus, Fractocumulus; 9 = Cumulonimbus; 0 = Stratus, Fractostratus.

<sup>1</sup>En código del U.S. Navy Hydrographic Office (1960). Los símbolos que aparecen en los datos son: 1 = Cirrus; 4 = Altocúmulo; 5 = Altostrato; 6 = Stratocúmulo; 7 = Nimbostrato; 8 = Cúmulo, Fractocúmulo; 9 = Cúmulo nimbo; 0 = Strato, Fractostrato.

<sup>2</sup>Coded according to U.S. Navy Hydrographic Office (1960). Symbols appearing in data are: 00 = Blue sky whether clear or hazy atmosphere; 01 = Fair, few or scattered clouds, also mainly cloudy; 02 = Broken clouds; 03 = Overcast sky; 18 = Squalls; 51 = Drizzle or fine rain; 61 = Rain.

<sup>2</sup>En código del U.S. Navy Hydrographic Office (1960). Los símbolos que aparecen en los datos son: 00 = Cielo azul, sea claro o atmósfera brumosa; 01 = Claro, pocas nubes o esparcidas, también principalmente nublado; 02 = Nubes interrumpidas; 03 = Cielo nublado; 18 = Chubascos; 51 = Llovizna o lluvia liviana; 61 = Lluvia.

STATION	DATE	TIME	LAT	LONG	SURFACE		OBSERVATIONS											
					SEA T (°C)	CI (‰)	S (‰)	O <sub>2</sub> (ml/L)	AIR T (°C)	BARO (mb)	CLOUDS TYPE AMOUNT	WEATHER	DIR	WIND FORCE	SEA WAVES SWELL			
H 001	OCT	6,1963	1220-1320	10-14.1N	172-50.0E	29.1	18.90	34.14	4.92	29.5	08	8,5	7	01	14	1	1	1
H 002	OCT	6,1963	2020-2035	9-12.0N	173-33.8E	29.2				27.5	08	8,5	0	01	27	3	3	1
H 003	OCT	7,1963	0358-0406	8-02.8N	174-23.8E	28.8	18.77	33.91		26.6	08		0	01	07	2	1	1
H 004	OCT	7,1963	1200-1318	6-49.0N	175-15.0E	30.1	18.73	33.84	4.47	31.0	09	8,5	3	00	02	1	1	1
H 005	OCT	7,1963	2015-2028	5-42.3N	176-06.2E	29.2	18.68	33.75	4.33	29.9	09	8,5	4	01	09	1	1	1
H 006	OCT	8,1963	0400-0410	4-29.2N	176-57.0E	29.5	18.73	33.84	4.47	27.0	08		0	01	02	2	1	1
H 007	OCT	8,1963	1200-1310	3-09.5N	177-48.0E	30.7	19.26	34.79	4.43	23.9	08	8,5	3	00	32	1	1	1
H 008	OCT	8,1963	2015-2025	2-01.1N	178-22.5E	29.6	19.37	34.99	4.31	28.3	08	2,8	4	01	18	2	1	1
H 009	OCT	9,1963	0358-0409	0-53.5N	178-56.3E	29.2	19.37	34.99	4.46	28.0	07		2	03	32	1	1	1
H 010	OCT	9,1963	1200-1300	0-18.0S	179-47.0E	29.3	19.44	35.12	4.47	29.0	08	8,5	3	01	11	2	1	1
H 011	OCT	8,1963	2015-2032	1-15.4S	179-36.0W	29.0	19.57	35.35	4.58	28.0	08	8,5	6	01	09	3	3	1
H 012	OCT	9,1963	0400-0409	2-10.0S	178-56.0W	29.0	19.55	35.12	4.54	28.3	07	8,5	3	01	11	4	3	1
H 013	OCT	9,1963	1230-1310	3-18.8S	178-14.0W	29.6	19.56	35.34	4.65	29.5	09	8,5	7	01	09	4	3	1
H 014	OCT	9,1963	2020-2030	4-18.3S	177-09.7W	29.4	19.66	35.52	4.48	28.3	08		7	01	11	4	3	1
H 015	OCT	10,1963	0400-0409	5-28.3S	176-48.0W	29.3	19.67	35.53	4.45	27.9	08	8,5	8	01	11	3	3	1
H 016	OCT	10,1963	1230-1315	6-49.7S	176-05.0W	29.6	19.66	35.52	4.56	31.0	09	8,5	3	01	07	3	2	1
H 017	OCT	10,1963	2020-2029	7-59.0S	175-26.3W	29.3	19.67	35.53	4.44	30.0	10	5,2	7	01	09	2	2	1
H 018	OCT	11,1963	0400-0410	9-07.8S	174-38.6W	28.7	19.66	35.52	4.43	27.0	09	8	2	00	07	2	2	1
H 019	OCT	11,1963	1220-1345	10-23.7S	173-49.7W	29.1	19.66	35.52	4.47	29.6	11	5,0	2	00	09	2	1	1
H 020	OCT	11,1963	2015-2025	11-29.2S	173-07.0W	28.8	19.82	35.81	4.41	28.0	11	8,1	7	00	09	2	2	1
H 021	OCT	12,1963	0400-0410	12-36.3S	172-14.8W	28.2	19.82	35.81	4.46	27.0	11	5,8	2	00	07	2	2	1
H 022	OCT	12,1963	1225-1310	13-42.2S	171-13.4W	28.9	19.81	35.79	4.38	29.9	12	5,8	2	00	11	2	1	1
H 023	OCT	12,1963	1840-1850	14-20.9S	170-35.2W	28.0				26.8	12	8,5	2	00	11	1	1	1
H 024	OCT	17,1963	2020-2030	14-37.0S	169-37.6W	27.9	19.84	35.84	4.27	27.3	10	8	2	00	11	4	3	1
H 025	OCT	18,1963	0400-0410	15-02.2S	168-15.4W	27.8	19.89	35.93	4.36	26.5	07	8,0		01	07	3	3	2
H 026	OCT	18,1963	1220-1300	15-20.3S	166-45.8W	27.8	19.96	36.06	4.47	29.5	09			01	07	3	2	
H 027	OCT	18,1963	2020	15-28.7S	165-24.3W	27.6	19.94	36.02	4.50	27.5	10			00	07	4	3	
H 028	OCT	19,1963	0400-0410	15-34.0S	164-11.9W	27.7	19.95	36.04	4.49	26.4	09			01	07	3	3	
H 029	OCT	19,1963	1225-1300	15-51.0S	167-43.5W	27.6	19.97	36.08	4.54	26.8	11			01	04	4	2	
H 030	OCT	19,1963	2020	16-00.9S	161-26.7W	27.3	19.90	36.06	4.54	27.3	11			18	04	4	3	
H 031	OCT	20,1963	0400	16-18.2S	160-04.0W	27.2	0)		4.57	26.7	10			18	04	4	3	
H 032	OCT	20,1963	1220-1300	16-33.0S	158-36.5W	27.1	19.96	36.06	4.58	27.9	12			18	02	4	2	
H 033	OCT	20,1963	2020	16-42.7S	157-13.0W	27.5	20.07	36.26	4.56	26.6	11			18	02	2	1	
H 034	OCT	21,1963	0400	16-51.2S	155-49.2W	27.2	20.08	36.27	4.53	24.1	09			18	20	4	3	
H 035	OCT	21,1963	1220-1310	17-07.0S	154-17.0W	27.0	20.08	36.27	4.55	25.9	10			18	32	4	4	
H 036	OCT	21,1963	2020	17-13.6S	153-01.2W	26.9	20.11	36.33	4.55	22.8	11			51	22	3	3	
H 037	OCT	22,1963	0400	17-21.5S	151-34.1W	26.4	20.06	36.27	4.60	24.3	09			16	5			
H 038	OCT	22,1963	1220-1305	17-20.3S	150-04.0W	27.4	20.14	36.38	4.53	26.9	10			18	11	2	2	
H 039	OCT	28,1963	2010-2025	18-15.0S	148-14.0W	26.0	20.09	36.29	4.60	24.0	14			18	16	5	4	
H 040	OCT	29,1963	0400-0410	18-55.0S	147-15.0W	25.9	20.17	36.44	4.72	24.0	13			18	14	5	5	
H 041	OCT	29,1963	1200-1300	19-40.2S	146-04.1W	25.4	20.07	36.26	4.67	25.5	14			18	14	5	5	
H 042	OCT	29,1963	2010	20-10.0S	145-03.7W	25.3	20.11	36.33	4.64	22.3	16			14	0	5		
H 043	OCT	30,1963	0400	20-59.0S	143-59.0W	24.1	19.85	35.86	4.90	24.2	14			18	14	6	4	
H 044	OCT	30,1963	1200	21-43.8S	142-46.2W	23.7	19.83	35.82	4.79	22.5	16			16	11	4		
H 045	OCT	30,1963	2010	22-28.8S	141-33.2W	24.4	19.95	36.04	4.91	22.0	18				09	4		
H 046	OCT	31,1963	0400	23-09.0S	140-25.0W	24.0	19.91	35.97	4.77	21.3	15			18	04	6	4	
H 047	OCT	31,1963	1200-1300	23-53.8S	139-09.4W	23.4	19.83	35.82	4.84	22.8	19			18	07	3	3	
H 048	OCT	31,1963	2010	24-32.8S	138-02.7W	22.4	19.70	35.59	4.89	21.1	20			18	07	4	4	
H 049	NOV	1,1963	0600-0650	24-55.7S	137-03.2W	21.6	19.67	35.53	5.06	20.8	20			18	07	4	4	
H 050	NOV	1,1963	2000	25-35.0S	136-19.0W	22.5	19.73	35.64	4.88	21.0	21			18	09	5	4	
H 051	NOV	2,1963	0400	26-16.0S	135-07.6W	21.7	19.68	35.55	4.96	19.8	19			61	09	4	4	
H 052	NOV	2,1963	1200-1250	26-59.1S	133-55.8W	20.7	19.67	35.53	5.08	19.0	21			61	09	5	4	
H 053	NOV	2,1963	2010	27-31.1S	132-00.0W	20.8	19.62	35.44	5.08	19.2	22			18	09	5	4	
H 054	NOV	3,1963	0600-0650	28-21.7S	132-03.3W	19.8	19.67	35.53	5.26	18.8	20			18	09	4	4	
H 055	NOV	3,1963	2010	29-01.2S	131-04.1W	18.6	19.54	35.30	5.28	18.3	18			01	11	5	4	
H 056	NOV	4,1963	0400	29-37.0S	129-53.5W	19.2	19.53	35.28	5.25	17.7	15				14	3		
H 057	NOV	4,1963	1200-1250	30-29.0S	128-31.0W	19.4	19.55	35.32	5.27	18.0	15			01	18	3	3	

EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

STATION	DATE	TIME	LAT	LONG	SURFACE OBSERVATIONS													
					SEA T (°C)	CI (%)	S (‰)	O <sub>2</sub> (ml/L)	AIR T (°C)	BARO (mb)	CLOUDS TYPE AMOUNT	WEATHER	WIND DIR	FORCE	SEA WAVES SWELL			
H 058	NOV	4,1963	2010	31-01.6S	127-14.9W	19.2	19.60	35.41	5.32	17.3	15		01	20	2	3		
H 059	NOV	5,1963	0600-0710	30-57.5S	126-51.5W	19.0	19.57	35.35	5.28	17.0	15		01	22	4	4		
H 060	NOV	5,1963	2010	31-14.0S	127-12.0W	17.3	19.46	35.16	5.48	15.0	21		01	18	6	6		
H 061	NOV	6,1963	0400	31-40.0S	127-00.5W	17.8	19.47	35.17	5.51	17.0	22		18	20	5	5		
H 062	NOV	6,1963	1200-1250	32-25.1S	126-09.0W	18.1	19.52	35.26	5.43	15.6	25		01	20	3	3		
H 063	NOV	6,1963	2010	32-37.9S	125-00.9W	16.7	19.37	34.99	5.44	15.0	25		01	20	5	5		
H 064	NOV	7,1963	0605-0650	32-46.7S	123-19.8W	16.9	19.37	34.99	5.63	14.3	27		01	18	5	3		
H 065	NOV	7,1963	2010	33-22.0S	122-43.6W	17.1	19.39	35.03	5.56	14.5	32		01	11	4	4		
H 066	NOV	8,1963	0400	34-02.0S	121-21.3W	16.6	19.38	35.01	5.61	13.9	32		18	14	2	2		
H 067	NOV	8,1963	1200-1250	34-46.0S	119-52.0W	16.6	19.37	34.99	5.60	15.0	32		01	16	3	2		
H 068	NOV	8,1963	2010	35-22.2S	118-33.4W	16.2			5.69	13.0	32		51	16	3	2		
H 069	NOV	9,1963	0605-0720	35-45.8S	116-46.8W	15.2	19.19	34.67	5.80	13.5	32		18	16	2	2		
H 070	NOV	9,1963	2010	36-37.0S	116-02.0W	15.0	19.24	34.76	5.77	13.0	32		03	14	2	2		
H 071	NOV	10,1963	0610-0650	37-02.4S	114-40.6W	14.6	19.06	34.43	5.83	12.0	31		01	11	2	2		
H 072	NOV	10,1963	2010	37-26.0S	114-20.0W	16.6	19.06	34.43	5.74	13.0	30		03	0	0	0		
H 073	NOV	11,1963	0400	38-12.0S	112-58.0W	14.2			5.97	12.3	28		03	36	2	1		
H 074	NOV	11,1963	1200	39-13.3S	111-22.9W	14.4	19.03	34.38	5.95				01	29	2			
H 075	NOV	11,1963	2010	39-55.2S	109-54.5W	14.0	18.89	34.13	5.99	12.5	26		03	27	2	2		
H 076	NOV	12,1963	0555-0630	40-07.4S	109-22.2W	13.8	18.94	34.22	5.94	11.0	24		51	18	4	3		
H 077	NOV	12,1963	2010	39-49.8S	108-38.7W	13.6	18.91	34.16	6.09	11.3	27		01	16	4	3		
H 078	NOV	13,1963	0600-0650	39-10.2S	106-43.0W	13.0	18.91	34.16	6.13	10.6	28		01	16	3	3		
H 079	NOV	13,1963	2000	39-18.2S	105-43.8W	13.3	18.89	34.13	6.02	11.0	31		00	18	3	2		
H 080	NOV	14,1963	0400	39-01.0S	103-57.2W	13.6	18.90	34.14	5.90	10.6	31		01	18	2	1		
H 081	NOV	14,1963	1200	38-42.4S	102-06.4W	13.5	18.90	34.14	6.13	11.8	34		01	18	2	2		
H 082	NOV	14,1963	2000-2010	38-32.3S	101-20.7W	14.4	18.92	34.18	5.94	10.5	34		03	0	1			
H 083	NOV	15,1963	0615-0700	38-12.9S	101-02.8W	13.7	18.90	34.14	6.04	11.3	35		03	0	1			
H 084	NOV	15,1963	2010	37-36.6S	101-07.0W	14.3	18.90	34.14	5.99	12.1	36		01	0	0	0		
H 085	NOV	16,1963	0400-0410	36-10.0S	101-07.0W	15.1	18.96	34.25	5.76	13.7	34		03	09	2	1		
H 086	NOV	16,1963	1200-1238	34-44.3S	101-00.9W	16.1	19.02	34.36	5.80	15.0	35		01	07	2			
H 087	NOV	16,1963	2000-2010	34-43.2S	101-02.2W	15.5				15.0	35		01	07	2	2		
H 088	NOV	17,1963	0545	34-38.3S	101-32.6W	15.4	19.05	34.42	5.77	14.6	32		01	07	2	2		
H 089	NOV	17,1963	2010	34-39.8S	99-53.8W	15.9	19.10	34.51	5.79	15.0	32		00	02	4	4		
H 090	NOV	18,1963	0400-0410	34-21.8S	98-17.0W	15.6	19.09	34.49	5.74	14.4	31		01	18	3	2		
H 091	NOV	18,1963	1200	34-05.3S	96-27.2W	16.2	18.98	34.29	5.89	15.3	32		01	34	2	2		
H 092	NOV	18,1963	2010	33-47.5S	94-51.2W	17.2	19.19	34.67	5.35	15.0	32		00	0	1			
H 093	NOV	19,1963	0610	33-59.2S	94-08.0W	15.8	18.95	34.23	5.66	14.5	31		00	36	1	1		
H 094	NOV	19,1963	2000	33-27.5S	92-48.2W		19.18	34.65	5.38	15.0	30		00	29	1	1		
H 095	NOV	20,1963	0830-0909	32-59.2S	90-19.1W	16.7	19.03	34.38	5.50	18.8	29		01	0				
H 096	NOV	20,1963	2015-2100	32-22.9S	87-50.8W	17.1	19.18	34.65	5.45	15.0	26		01	32	1	1		
H 097	NOV	21,1963	0600-0640	32-22.3S	86-40.0W	16.5	19.05	34.42	5.53	16.7	22		01	27	3	1		
H 098	NOV	21,1963	2015-2100	32-16.0S	85-43.8W	16.8	19.13	34.56	5.42	15.5	20		00	25	3	3		
H 099	NOV	22,1963	0830-0915	32-43.1S	83-18.8W	16.5	19.07	34.45	5.48	16.8	20		01	22	2	2		
H 100	NOV	22,1963	2010-2055	33-08.5S	81-03.0W	16.3	18.83	34.02	5.55	15.2	20		01	27	2	2		
H 101	NOV	23,1963	0830-0900	33-14.2S	78-28.2W	15.8	18.88	34.11	5.62	15.0	20		00	25	2	1		
H 102	NOV	23,1963	2010-2100	33-17.5S	75-55.0W	16.6	18.77	33.91	5.49	15.4	18		01	20	2	2		
H 103	DEC	5,1963	0830-0934	37-05.8S	77-55.2W	15.4	18.80	33.96	6.02	17.0	21	0	8	03	18	4	3	2
H 104	DEC	5,1963	2010-2140	37-22.8S	80-09.9W	15.0	18.85	34.05	6.01	14.5	18	4,5	3	00	29	5	4	3
H 105	DEC	6,1963	0840-0935	37-49.1S	82-14.7W	15.1	18.90	34.14	5.96	14.4	16	4,5	3	00	26	4	4	3
H 106	DEC	6,1963	2000-2050	38-06.2S	84-13.2W	14.5	18.82	34.00	5.99	12.2	20	4,5	8	01	18	5	4	3
H 107	DEC	7,1963	0835-0920	38-45.5S	84-24.2W	13.8	18.84	34.04	6.07	11.8	26	4,5	6	01	16	6	3	4
H 108	DEC	7,1963	2000-2055	39-36.5S	88-22.0W	14.3	18.87	34.09	6.06	11.0	27	5,4	5	02	20	1	1	3
H 109	DEC	8,1963	0606-0657	40-32.8S	89-43.8W	12.9	18.84	34.04	6.21	11.0	26	6,0	10	03	32	1	1	2
H 110	DEC	8,1963	2000-2045	39-28.0S	90-35.5W	13.9	18.83	34.02	5.97	12.0	22	6,0	10	03	34	3	3	2
H 111	DEC	9,1963	0833-0933	37-53.0S	92-08.5W	14.8	18.88	34.11	5.79	15.4	14	6,0	10	03	36	6	5	2
H 112	DEC	10,1963	0830-0945	36-02.1S	93-45.9W	15.5	18.98	34.29	5.64	15.0	20	0,6	10	03	20	7	7	3
H 113	DEC	10,1963	2010-2052	35-19.0S	94-35.3W	16.7	19.09	34.49	5.55	15.0	24	0,6	10	03	20	4	4	3
H 114	DEC	11,1963	0558-0640	34-17.5S	94-32.6W	16.8	19.11	34.52	5.25	15.0	26	6,0	10	03	20	4	2	2

## FORSBERGH and BROENKOW

STATION	DATE	TIME	LAT	LONG	SURFACE OBSERVATIONS												
					SEA T (°C)	CI (%)	S (‰)	O <sub>2</sub> (ml/L)	AIR T (°C)	BARO (mb)	CLOUDS TYPE AMOUNTS WEATHER	WIND DIR FORCE	SEA WAVES SWELL				
H 115	DEC 11,1963	2210-2254	33-13.6S	94-52.7W	17.2	19.23	34.74	5.39	16.1	25	6,0 10	03	25	3	2	2	
H 116	DEC 12,1963	0600-0654	31-59.0S	94-52.7W	18.1	19.28	34.83	5.38	16.5	24	6,0 10	03	25	3	2	2	
H 117	DEC 12,1963	1400-1450	30-28.7S	94-48.0W	18.7	19.33	34.92	5.33	19.0	23	6,0 08	01	0	1	1	1	
H 118	DEC 12,1963	2015-2100	29-55.8S	94-58.5W	19.5	19.50	35.23	5.20	17.1	22	0,6 06	01	18	2	1	2	
H 119	DEC 13,1963	0625-0710	29-55.2S	94-29.8W	19.3	19.43	35.10	5.25	18.0	20	6,0 07	01	22	2	1	1	
H 120	DEC 13,1963	2210-2304	28-37.0S	94-55.7W	20.2	19.56	35.34	5.14	18.0	20	5,4 02	00	27	2	1	1	
H 121	DEC 14,1963	0600-0645	27-16.2S	94-55.5W	20.6	19.57	35.35	5.09	18.5	20	5,0 07	01	0	1	1	1	
H 122	DEC 14,1963	1200-1246	26-13.6S	94-53.2W	21.5	19.65	35.50	5.07	22.9	20	5 03	01	04	2	1	1	
H 123	DEC 14,1963	1800-1845	25-16.0S	94-49.0W	21.8	19.68	35.55	4.97	20.1	17	5,0 01	00	02	3	1	1	
H 124	DEC 15,1963	0620-0706	24-36.5S	95-13.1W	21.2	19.61	35.43	5.01	19.2	18	6,0 09	01	09	2	1	1	
H 125	DEC 15,1963	2210-2250	23-30.2S	95-02.3W	21.3	19.60	35.41	4.96	20.1	20	4,5 02	00	11	2	1	1	
H 126	DEC 16,1963	0600-0642	22-11.6S	95-04.8W	21.2	19.71	35.61	4.99	21.0	19	0,6 08	01	11	4	3	1	
H 127	DEC 16,1963	1200-1238	21-15.8S	95-01.9W	21.9	19.87	35.90	4.97	21.3	20	8 05	01	11	5	4	2	
H 128	DEC 16,1963	1800-1838	20-18.6S	94-59.8W	21.8	19.84	35.84	4.96	20.7	18	8,0 08	01	11	5	4	2	
H 129	DEC 17,1963	0602-0658	19-43.0S	95-17.0W	21.8	19.89	35.93	4.89	20.5	19	6,0 10	03	09	5	4	2	
H 130	DEC 17,1963	2210-2249	18-45.8S	95-00.3W	21.5	19.82	35.81	5.02	20.9	19	0,6 10	03	11	6	5	2	
H 131	DEC 18,1963	0600-0640	17-29.2S	95-00.3W	21.7	19.98	36.09	4.99	20.5	17	0 10	03	11	5	4	2	
H 132	DEC 18,1963	1205-1235	16-29.8S	95-03.1W	21.8	19.81	35.79	4.98	23.2	18	0 10	03	09	5	4	2	
H 133	DEC 18,1963	1800-1835	15-30.8S	95-03.2W	22.0	19.88	35.91	4.93	20.5	15	0 10	03	11	5	4	1	
H 134	DEC 19,1963	0553-0648	14-31.0S	95-14.0W	21.9	19.86	35.88	5.00	20.5	16	0 10	03	11	5	4	2	
H 135	DEC 19,1963	2010-2055	13-45.0S	94-59.3W	21.7	19.72	35.62	5.00	20.5	16	0,6 10	03	11	4	3	2	
H 136	DEC 20,1963	0600-0640	12-24.0S	95-00.0W	21.8	19.72	35.62	4.88	20.2	13	0,8 08	01	09	4	3	2	
H 137	DEC 20,1963	1200-1237	11-26.7S	95-00.7W	22.4	19.71	35.61	4.95	22.0	14	0,8 06	01	11	4	3	1	
H 138	DEC 20,1963	1800-1835	10-26.8S	95-00.3W	22.8	19.32	34.90	4.93	19.8	12	0 08	01	14	4	3	1	
H 139	DEC 21,1963	0610-0653	9-29.7S	94-58.3W	23.0	19.58	35.37	4.85	21.0	13	6,0 09	01	14	2	2	1	
H 140	DEC 21,1963	2210-2246	9-00.0S	94-08.6W	23.6	19.42	35.08	4.76	22.0	14	0,6 06	01	14	5	4	1	
H 141	DEC 22,1963	0600-0637	8-01.0S	93-12.2W	23.4	19.41	35.07	4.79	22.0	14	5,0 10	03	07	3	2	1	
H 142	DEC 22,1963	1400-1435	7-05.0S	92-13.0W	23.9	19.50	35.23	5.07	25.3	11	5,0 09	01	11	4	2	1	
H 143	DEC 22,1963	2210-2245	6-13.0S	91-15.0W	23.4	19.61	35.43	4.82	22.6	14	5,6 10	03	11	5	4	1	
H 144	DEC 23,1963	0610-0655	5-11.5S	90-36.3W	23.4	19.49	35.21	4.85	21.7	14	0,7 10	03	14	5	4	1	
H 145	DEC 23,1963	2210-2249	4-31.1S	89-51.7W	23.5	19.50	35.23	4.89	22.0	14	4,6 08	01	14	4	3	1	
H 146	DEC 24,1963	0600-0635	3-29.9S	88-57.0W	23.4	19.29	34.85	4.81	23.0	14	0,6 10	03	14	4	3	1	
H 147	DEC 24,1963	1420-1510	2-27.5S	88-04.0W	24.0	19.19	34.67	4.60	25.3	12	8,0 07	01	18	4	3	1	
H 148	DEC 24,1963	2210-2255	1-35.2S	87-17.7W	24.2	18.85	34.05	4.72	23.0	15	4,5 07	01	18	3	3	1	
H 149	DEC 25,1963	0600-0637	0-33.4S	86-24.5W	24.8	18.60	33.60	4.64	23.5	12	5,4 10	03	18	5	4	1	
H 150	DEC 25,1963	1420-1510	0-26.5N	85-30.0W	25.6	18.35	33.15	4.56	24.0	12	0 10	03	18	5	4	2	
H 151	DEC 25,1963	2210-2245	1-23.1N	84-42.0W	25.2	18.37	33.19	4.65	23.7	13	5,0 10	03	18	4	3	2	
H 152	DEC 26,1963	0600-0645	2-22.9N	83-51.9W	26.2	18.03	32.57	4.50	24.5	10			61	20	4	1	
H 153	DEC 26,1963	1420-1500	3-42.5N	82-45.0W	27.2	18.04	32.59	4.48	27.4	09	8 03	01	70	3	3	1	
H 154	JAN 4,1964	1220-1325	5-37.4N	81-50.6W	28.2	16.54	29.88	4.66	28.9	10	0 01	00	34	2	2	1	
H 155	JAN 4,1964	1600-1610	5-14.0N	82-14.2W	27.5	16.32	29.49	4.63	29.8	07	0,8 06	01	32	2	2	1	
H 156	JAN 4,1964	2010-2023	4-47.5N	82-41.8W	27.8	16.29	29.43	4.80	26.6	09	0 04	01	16	4	3	2	
H 157	JAN 5,1964	0000-0015	4-18.9N	83-11.4W	27.3	16.35	29.54	4.56	27.4	10	7,0 10	03	16	3	3	2	
H 158	JAN 5,1964	0400-0415	3-50.3N	83-41.2W	26.8	17.28	31.22	4.56	25.2	08	7,0 10	03	20	4	3	2	
H 159	JAN 5,1964	0800-0815	3-23.1N	84-10.2W	26.4	18.08	32.66	4.54	25.0	10	5 04	01	20	4	3	2	
H 160	JAN 5,1964	1220-1308	3-14.7N	85-05.7W	26.3	18.17	32.83	4.64	26.0	10	5 10	03	18	4	3	2	
H 161	JAN 5,1964	1600-1610	2-57.0N	85-21.2W	26.6	18.26	33.03	4.61	27.0	08	8,0 09	01	18	4	3	2	
H 162	JAN 5,1964	2010-2016	2-26.9N	85-46.6W	26.5	18.24	32.95	4.61	26.5	10	0,5 09	03	20	4	3	2	
H 163	JAN 6,1964	0000-0008	1-55.0N	86-13.5W	26.3	18.35	33.15	4.56	24.0	11	5,0 05	01	18	3	3	2	
H 164	JAN 6,1964	0400-0410	1-23.0N	86-40.0W	25.8	18.54	33.49	4.62	24.0	09			10	03	18	3	3
H 165	JAN 6,1964	0800-0810	0-51.2N	87-07.7W	25.8	18.59	33.58	4.58	24.4	11	5,0 10	03	18	3	3	2	
H 166	JAN 6,1964	1225-1313	0-26.3N	87-31.6W	25.8	18.68	33.75	4.60	26.7	10	8 07	01	18	3	3	2	
H 167	JAN 6,1964	1600-1610	0-01.5N	87-52.0W	25.4	18.71	33.80	4.67	26.5	07	8,5 01	00	18	4	3	2	
H 168	JAN 6,1964	2010-2018	0-25.5S	88-28.9W	24.4	18.81	33.98	4.76	23.5	08	5 07	00	18	4	3	2	
H 169	JAN 7,1964	0000-0011	1-07.6S	88-50.0W	23.6	19.17	34.63	4.73	23.3	10	5 04	01	18	4	3	2	
H 170	JAN 7,1964	0400-0410	1-34.0S	89-10.3W	23.6	19.19	34.67	4.71	23.0	09	5,0 10	03	18	4	3	2	
H 171	JAN 7,1964	0800-0807	2-07.2S	89-41.5W	23.6	19.21	34.70	4.68	23.0	11	5,0 10	03	18	4	3	2	



EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

STATION	DATE	TIME	SURFACE		OBSERVATIONS							CLOUDS TYPE AMOUNT	WEATHER	WIND DIR	SEA FORCE WAVES SWELL	
			LAT	LONG	SEA T (°C)	CI (‰)	S (‰)	O <sub>2</sub> (ml/L)	AIR T (°C)	BARO (mb)						
H 172	JAN 7,1964	1220-1304	2-38.85	90-13.2W	24.0	19.26	34.79	4.72	23.9	10	5,0 05	01	18	3	2	1
H 173	JAN 7,1964	1600-1608	2-59.05	90-39.0W	24.0	19.28	34.83	4.82	23.5	07	4,0 08	01	18	3	2	1
H 174	JAN 7,1964	2010-2017	3-25.15	91-15.5W	23.8	19.27	34.81	4.80	23.6	08	5 03	00	18	4	3	1
H 175	JAN 8,1964	0000-0012	3-52.85	91-47.9W	23.7	19.26	34.79		23.0	10	5 05	01	16	4	3	2
H 176	JAN 8,1964	0400-0410	4-18.25	92-19.2W	23.8	19.30	34.87	4.81	23.0	08	5,0 10	03	14	4	3	2
H 177	JAN 8,1964	0800-0807	4-44.25	92-50.2W	23.8	19.34	34.94	4.86	23.1	12	0,5 10	03	14	4	3	2
H 178	JAN 8,1964	1225-1308	5-11.65	93-23.0W	24.1	19.17	34.63	4.87	23.5	10	0 10	03	14	4	3	2
H 179	JAN 8,1964	1600-1608	5-34.55	94-00.0W	23.8	19.28	34.83	4.88	25.0	08	0 10	03	14	4	3	2
H 180	JAN 8,1964	2010-2018	6-01.15	94-32.1W	23.8	19.39	35.03	4.81	23.4	11	5,0 10	03	14	4	3	2
H 181	JAN 9,1964	0000-0008	6-23.75	95-04.9W	23.8	19.32	34.90	4.82	22.9	12	5,0 09	03	16	5	4	3
H 182	JAN 9,1964	0400-0408	6-55.55	95-37.5W	23.6	19.32	34.90	4.83	22.6	10	0,5 10	03	14	5	4	3
H 183	JAN 9,1964	0800-0807	7-22.05	96-09.2W	23.8	19.39	35.03	4.85	23.6	14	0,5 10	03	14	5	4	2
H 184	JAN 9,1964	1220-1306	7-44.85	96-52.9W	23.7	19.50	35.23	4.90	23.7	14	5 07	01	14	5	4	2
H 185	JAN 9,1964	1600-1608	8-05.25	97-19.0W	23.6	19.60	35.41	4.84	25.4	11	5,0 04	01	11	5	4	2
H 186	JAN 9,1964	2010-2018	8-31.95	97-54.2W	23.3	19.65	35.50	4.85	22.6	13	5 02	00	14	4	3	2
H 187	JAN 10,1964	0400-0410	9-00.55	98-29.0W	22.9	19.63	35.46	4.87	21.3	12	0 04	01	14	4	3	2
H 188	JAN 10,1964	0800-0807	9-26.95	98-49.9W	22.9	19.68	35.55	4.89	22.5	14	5 05	01	14	5	4	2
H 189	JAN 10,1964	1220-1310	9-56.85	99-46.7W	23.2	19.70	35.59	4.97	23.5	14	5 02	00	14	4	3	2
H 190	JAN 11,1964	0620-0700	9-31.95	100-12.4W	23.0	19.72	35.62	4.91	22.0	12	5,0 10	03	10	4	3	2
H 191	JAN 11,1964	1600-1608	9-35.55	100-02.0W	23.4	19.71	35.61	4.89	22.8	11	0 09	01	11	3	3	2
H 192	JAN 11,1964	2010-2020	8-53.05	100-07.2W	23.4	19.67	35.53	4.88	21.5	12	4,5 01	00	11	3	3	2
H 193	JAN 12,1964	0000-0007	8-13.05	100-13.0W	23.5	19.57	35.35	4.90	22.1	14	5,0 05	01	11	4	3	2
H 194	JAN 12,1964	0400-0408	7-30.55	100-19.0W	23.8	19.51	35.25	4.81	22.6	12	0 09	01	16	4	3	2
H 195	JAN 12,1964	0800-0843	6-48.05	100-24.9W	24.1	19.31	34.88	4.83	23.0	14	0,5 10	03	11	4	3	2
H 196	JAN 12,1964	1240-1300	6-09.45	100-29.4W	24.1	19.31	34.88	4.84	24.9	13	0,5 10	03	11	4	3	2
H 197	JAN 12,1964	1600-1609	5-38.05	100-31.0W	24.2	19.30	34.87	4.83	24.0	10	0 10	03	14	4	3	2
H 198	JAN 13,1964	0630-0700	5-10.45	100-49.8W	24.2	19.31	34.88	4.81	23.0	12	5,0 10	03	14	5	4	2
H 199	JAN 13,1964	2002-2033	4-41.25	100-48.8W	24.4	19.28	34.83	4.73	23.5	12	5,0 10	03	11	4	4	2
H 200	JAN 14,1964	0000-0013	4-00.65	100-54.3W	24.1	19.31	34.88	4.68	22.5	13	0 10	03	11	4	4	2
H 201	JAN 14,1964	0400-0407	3-20.05	101-00.0W	23.9	19.31	34.88	4.58	23.8	10	0 10	03	11	5	4	2
H 202	JAN 14,1964	0803-0850	2-37.55	101-06.2W	24.3	19.18	34.65	4.53	24.3	12	5,0 10	03	10	4	3	2
H 203	JAN 14,1964	1220-1240	2-02.35	101-17.7W	24.4	19.16	34.61	4.44	24.5	12	5,0 07	01	14	3	3	2
H 204	JAN 14,1964	1600-1609	1-25.55	101-23.0W	24.6	19.15	34.60	4.44	24.5	09	5,8 05	01	14	4	3	2
H 205	JAN 15,1964	0559-0715	0-50.45	101-40.5W	24.6	19.10	34.51	4.69	23.8	10	5,0 10	03	14	3	2	1
H 206	JAN 15,1964	2010-2020	0-16.85	101-48.3W	24.8	19.05	34.42	4.66	24.0	10	5,8 06	01	14	3	3	1
H 207	JAN 16,1964	0000-0008	0-23.1N	101-48.3W	24.9	19.03	34.38	4.56	23.5	10	0,5 05	01	14	4	3	1
H 208	JAN 16,1964	0400-0410	1-05.4N	101-48.2W	24.9	18.95	34.23	4.73	23.6	10	0 09	01	14	4	3	1
H 209	JAN 16,1964	0800-0900	1-47.9N	101-48.3W	25.0	19.05	34.42	4.64	24.8	12	5,0 06	01	14	4	3	1
H 210	JAN 16,1964	1200-1235	2-25.8N	102-10.8W	25.5	19.07	34.45	4.75	26.0	11	5,0 05	01	16	4	3	2
H 211	JAN 16,1964	1600-1610	2-52.5N	101-47.0W	26.1	18.95	34.23	4.57	25.5	08	5,0 08	01	16	4	3	2
H 212	JAN 17,1964	0625	3-26.0N	101-49.2W	26.3	18.93	34.20	4.52		10	5,0 09	01	18	4	3	2
H 213	JAN 17,1964	2000-2015	4-01.7N	102-05.7W	26.5	18.90	34.14	4.50	24.2	12	5,4 06	01	18	2	2	1
H 214	JAN 18,1964	0000-0010	4-41.4N	102-05.7W	26.5	18.87	34.09		24.4	12	0 10	03	16	2	2	1
H 215	JAN 18,1964	0400-0410	5-22.0N	102-05.7W	27.0	18.94	34.22	4.56	24.9	10	0 09	01	20	3	2	1
H 216	JAN 18,1964	0800-0852	6-03.2N	102-05.7W	27.2	18.84	34.04	4.40	22.5	12	7,0 08	01	20	3	3	2
H 217	JAN 18,1964	1225-1235	6-36.6N	102-05.7W	26.9	18.81	33.98	4.53	25.5	12	0 10	03	11	5	3	2
H 218	JAN 18,1964	1600-1609	7-17.0N	102-00.5W	27.2	18.84	34.04	4.61	25.8	09	5,8 06	01	07	4	4	2
H 219	JAN 19,1964	0620-0710	7-49.4N	102-45.4W	27.0			4.45	26.4	12	8,0 05	01	07	5	4	2
H 220	JAN 19,1964	2002-2022	8-33.3N	102-27.2W	27.0	18.55	33.51	4.55	25.2	12	8 03	01	04	5	4	2
H 221	JAN 20,1964	0002-0013	9-21.3N	102-27.6W	26.9	18.68	33.75	4.51	25.8	12	5,0 03	00	07	5	4	3
H 222	JAN 20,1964	0400-0416	9-53.7N	102-39.0W	26.2	18.59	33.58	4.65	25.5	11	8 02	01	07	4	3	2
H 223	JAN 20,1964	0803	10-32.3N	102-47.6W	27.4			4.47	26.9	13	8 03	01	04	4	2	1
H 224	JAN 20,1964	1200-1230	11-01.9N	102-53.4W	27.7	18.75	33.87	4.62	28.0	12	5,8 04	00	07	3	2	1
H 225	JAN 20,1964	1600-1605	11-40.8N	102-57.9W	27.7	18.65	33.69	4.47	27.0	10	5,8 04	01	02	3	2	1
H 226	JAN 21,1964	0618-0713	12-40.0N	103-27.8W	27.5	18.28	33.03	4.46	26.3	13	5,8 05	01	02	3	2	1
H 227	JAN 21,1964	2001-2021	13-00.9N	103-32.4W	26.9	18.50	33.42	4.52	26.5	11	5,8 02	01	04	4	2	1
H 228	JAN 22,1964	0000-0009	13-28.7N	103-37.8W	27.3	18.65	33.69	4.42	26.2	12	5,8 04	01	04	3	3	1

STATION	DATE	TIME	LAT	LONG	SURFACE				OBSERVATIONS								
					SEA T (°C)	CI (‰)	S (‰)	O <sub>2</sub> (ml/L)	AIR T (°C)	BARO (mb)	CLOUDS TYPE AMOUNT	WEATHER	WIND DIR	WIND FORCE	SEA WAVES	SEA SWELL	
H 229	JAN 22,1964	0400-0412	14-08.0N	103-45.0W	27.5	18.75	33.87	4.46	26.0	12	8	02	01	34	3	2	1
H 230	JAN 22,1964	0806-0910	14-58.5N	103-49.1W	27.5			4.46	26.5	14	8	04	01	32	3	2	1
H 231	JAN 22,1964	1200-1210	15-30.2N	103-55.3W	27.7	18.67	33.73		26.0	15	5.8	03	00	32	2	1	1
H 232	JAN 31,1964	0800-0815	16-49.9N	106-46.9W	26.2	18.65	33.69	4.52	25.3	13	5.0	07	01	36	3	3	2
H 233	JAN 31,1964	1225-1235	16-17.7N	107-20.7W	26.8	18.55	33.51	4.50	26.8	14	0.5	09	03	36	4	3	2
H 234	JAN 31,1964	1600-1611	15-52.3N	107-49.0W	27.2	18.65	33.69	4.52	25.8	12	0.5	10	03	36	4	3	2
H 235	JAN 31,1964	2015-2115	15-24.0N	108-19.5W	26.9	18.44	33.31	4.41	25.3	14	0.8	10	03	36	4	3	2
H 236	FEB 1,1964	0000-0012	15-01.3N	108-46.4W	26.7	18.50	33.42	4.60	25.6	13	0	10	03	04	5	4	3
H 237	FEB 1,1964	0625-0637	14-30.0N	109-44.6W	26.8	18.45	33.33	4.56	26.0	12	0	10	51	04	5	4	3
H 238	FEB 1,1964	2015-2108	14-01.5N	109-54.8W	26.8	18.33	33.12	4.59	26.0	13	0	10	03	04	3	3	2
H 239	FEB 2,1964	0000-0009	13-37.0N	110-22.9W	26.6	18.40	33.24	4.59	26.1	12	4.5	04	01	04	4	3	2
H 240	FEB 2,1964	0400-0410	13-08.8N	110-54.3W	26.5	18.32	33.10	4.55	25.5	10	5.8	05	01	04	4	3	2
H 241	FEB 2,1964	0800-0811	12-37.9N	111-25.8W	26.8	18.38	33.21	4.62	26.9	13	5.8	07	01	07	4	3	2
H 242	FEB 2,1964	1220-1231	12-13.4N	111-57.7W	27.1	18.48	33.39	4.43	29.4	12	8.5	05	01	09	4	3	2
H 243	FEB 2,1964	1600-1610	11-45.0N	112-23.5W	27.0	18.34	33.21	4.55	27.4	10	8.5	03	01	09	4	3	3
H 244	FEB 2,1964	2015-2107	11-16.5N	112-55.9W	26.8	18.31	33.08	4.58	26.5	12	8.7	10	18	22	5	3	2
H 245	FEB 2,1964	2305-2312	11-01.4N	113-08.6W	26.8	18.35	33.15	4.59	25.5	12	8.7	04	01	04	3	3	2
H 246	FEB 3,1964	0625-0635	11-20.9N	113-16.0W	26.9	18.37	33.19	4.54	26.0	10	8.0	07	01	09	4	3	2
H 247	FEB 3,1964	2015-2105	10-29.0N	113-58.6W	27.1	18.45	33.33	4.57	26.5	11	0.8	05	01	07	4	4	2
H 248	FEB 4,1964	0000-0014	10-04.0N	114-23.0W	27.0	18.52	33.46	4.54	26.5	10	8.0	07	01	09	5	4	3
H 249	FEB 4,1964	0400-0409	9-36.0N	114-51.0W	27.0	18.68	33.75	4.59	26.3	09	1.5	08	01	09	5	4	4
H 250	FEB 4,1964	0800-0809	9-06.1N	115-20.8W	27.0	18.66	33.71	4.63	26.5	11	5.8	08	01	09	5	4	3
H 251	FEB 4,1964	1220-1230	8-40.6N	115-58.2W	27.2	18.70	33.78	4.61	29.3	10	5.8	07	01	09	5	4	3
H 252	FEB 4,1964	1600-1609	8-07.8N	116-17.0W	27.1	18.66	33.71	4.63	27.1	08	6.0	09	01	09	5	4	3
H 253	FEB 4,1964	2015-2101	7-28.9N	116-37.0W	27.1	18.71	33.80	4.62	27.0	10	4.5	07	01	07	4	4	3
H 254	FEB 5,1964	0627-0635	7-40.6N	117-10.2W	26.9	18.91	34.16	4.47	26.0	09	8.4	06	01	07	4	3	2
H 255	FEB 5,1964	2015-2059	6-55.0N	117-27.4W	27.2	19.15	34.60	4.57	24.4	09	0.5	05	01	09	4	3	2
H 256	FEB 6,1964	0000-0005	6-30.7N	117-53.9W	26.9	19.13	34.56	4.64	26.2	10	5.0	04	01	07	3	3	2
H 257	FEB 6,1964	0400-0410	6-04.0N	118-23.0W	26.8	18.99	34.31	4.58	24.5	07	0	10	03	11	3	2	2
H 258	FEB 6,1964	0800-0810	5-36.0N	118-52.7W	26.7	18.87	34.09	4.61	24.5	10	5.8	09	51	18	4	2	3
H 259	FEB 6,1964	1220-1230	5-15.7N	119-13.2W	27.0	19.02	34.36	4.59	25.6	09	0.7	10	03	16	3	3	2
H 260	FEB 6,1964	1600-1610	4-51.6N	119-37.5W	27.1	19.15	34.60	4.63	26.1	06	5.0	08	01	18	4	3	2
H 261	FEB 6,1964	2010-2052	4-17.0N	120-00.5W	27.0	19.28	34.83	4.57	26.0	08	0	10	01	16	5	4	2
H 262	FEB 7,1964	0000-0010	3-51.3N	120-22.2W	26.8	19.18	34.65	4.57	25.0	09	0	09	03	14	6	5	3
H 263	FEB 7,1964	0625-0635	4-28.5N	120-28.2W	26.8	19.20	34.69	4.59	25.4	08	0.7	08	01	16	4	3	2
H 264	FEB 7,1964	2010-2102	3-29.7N	121-03.5W	26.8	19.23	34.74	4.59	26.0	09	8.0	08	01	16	5	4	2
H 265	FEB 8,1964	0000-0008	3-04.5N	121-26.1W	26.8	19.19	34.67	4.58	26.5	09	0.5	01	14	5	4	4	
H 266	FEB 8,1964	0400-0409	2-34.0N	121-53.7W	26.2	19.08	34.47	4.76	25.0	08	8.0	07	01	16	4	3	3
H 267	FEB 8,1964	0800-0810	2-04.1N	122-04.2W	25.9	19.19	34.67	4.72	25.0	10	5.0	07	01	11	5	4	3
H 268	FEB 8,1964	1220-1230	1-37.7N	123-11.0W	26.1	19.17	34.63	4.76	27.5	09	5.0	07	01	14	5	4	3
H 269	FEB 8,1964	1600-1609	1-05.8N	123-39.5W	25.8	19.18	34.65	4.71	26.0	08	8.0	07	01	14	5	4	2
H 270	FEB 8,1964	2013-2055	0-27.0N	123-59.5W	25.6	19.28	34.83	4.63	24.8	10	5.8	05	01	11	5	4	2
H 271	FEB 9,1964	0630-0640	0-49.3N	124-23.8W	25.5	19.24	34.76	4.66	24.0	11	6.8	01	00	11	4	3	2
H 272	FEB 9,1964	2010-2057	0-03.8N	124-46.0W	25.3	19.36	34.97	4.56	24.9	10	8.6	03	01	11	3	3	3
H 273	FEB 10,1964	0000-0014	0-23.0S	125-09.0W	24.9	19.38	35.01	4.58	24.5	12	5	02	00	11	4	3	2
H 274	FEB 10,1964	0400-0407	0-54.0S	125-34.5W	25.0	19.40	35.05	4.55	24.3	09	5	01	00	11	5	2	2
H 275	FEB 10,1964	0800-0805	1-19.8S	126-10.9W	25.4	19.45	35.14	4.67	25.0	11	8	01	00	09	5	2	2
H 276	FEB 10,1964	1225-1235	1-49.8S	126-49.5W	25.8	19.46	35.16	4.66	27.6	09	5.8	05	01	11	5	4	2
H 277	FEB 10,1964	1600-1610	2-19.0S	127-10.0W	25.8	19.40	35.05	4.72	25.8	06	8	04	01	11	5	4	3
H 278	FEB 10,1964	2025-2100	2-56.8S	127-38.2W	25.8	19.45	35.14	4.79	25.3	09	8	03	01	11	5	4	3
H 279	FEB 10,1964	2305-2314	3-14.5S	127-52.0W	25.8	19.50	35.23	4.75	24.8	11	8.5	04	01	11	5	4	4
H 280	FEB 11,1964	0556-0628	4-34.0S	128-22.7W	25.8	19.44	35.12	4.65	24.3	10	0.7	10	03	07	3	2	1
H 281	FEB 11,1964	2010-2053	4-00.3S	128-53.5W	25.9	19.44	35.12	4.66	25.8	10	4	06	01	11	5	4	2
H 282	FEB 12,1964	0000-0012	4-25.5S	129-20.0W	25.9	19.43	35.10	4.65	25.4	13	4	01	01	09	5	4	3
H 283	FEB 12,1964	0400-0410	4-55.0S	129-49.5W	25.9	19.41	35.07	4.74	25.0	10	0.5	01	01	09	5	4	3
H 284	FEB 12,1964	0800-0810	5-35.0S	130-19.9W	26.0	19.44	35.12	4.78	26.0	12	8	01	01	09	5	4	3
H 285	FEB 12,1964	1200-1235	6-08.2S	130-49.4W	26.5	19.52	35.26	4.64	26.7	10	8	01	00	09	5	4	3

## EASTERN PACIFIC OCEANOGRAPHIC OBSERVATIONS

219

STATION	DATE	TIME	LAT	SURFACE		OBSERVATIONS											
				LONG	SEA T	CI	S	O <sub>2</sub>	AIR T	BARO	CLOUDS	WEATHER	WIND	FORCE	WAVES	SEA SWELL	
					(°C)	(‰)	(‰)	(ml/L)	(°C)	(mb)	TYPE	AMOUNT		DIR			
H 286	FEB 12, 1964	1600-1644	6-33.45	131-13.5W	26.8	19.65	35.50	4.55	26.6	08	8,0	06	01	09	6	5	3
H 287	FEB 13, 1964	0556-0627	6-22.05	131-42.3W	26.6			4.48	26.0	10	8,5	05	01	11	6	5	4
H 288	FEB 13, 1964	2010-2111	7-16.65	132-10.3W	26.9	19.77	35.71	4.55	26.2	10	8,	01	00	11	5	4	3
H 289	FEB 14, 1964	0000-0015	7-38.65	132-34.4W	26.7	19.74	35.66	4.63	26.1	10	8	01	00	11	5	4	3
H 291	FEB 14, 1964	0800-0809	8-38.55	133-39.1W	27.0	19.77	35.71	4.46	26.8	11	8,0	06	01	09	4	4	3
H 292	FEB 14, 1964	1220-1230	9-09.85	134-10.3W	27.4	19.80	35.77	4.47	29.8	10	8	01	00	09	5	4	3
H 293	FEB 14, 1964	1600-1611	9-35.05	134-39.0W	27.5	19.81	35.79	4.59	27.0	08	8,6	05	01	09	5	4	3
H 294	FEB 14, 1964	1910-1957	10-03.15	134-55.0W	27.4	19.77	35.71	4.47	26.5	10	8,5	02	00	09	5	4	3
H 295	FEB 15, 1964	0620-0628	9-49.85	135-36.5W	27.5	19.78	35.73	4.52	26.0	09	8	06	01	09	4	4	2
H 296	FEB 15, 1964	2010-2122	9-20.25	135-36.5W	27.7	19.79	35.75	4.57	26.4	09	8	03	01	09	4	3	2
H 297	FEB 16, 1964	0000-0016	8-55.45	135-55.9W	27.2	19.75	35.68	4.40	26.2	09	8	02	00	09	4	3	2
H 298	FEB 16, 1964	0400-0409	8-23.05	136-16.0W	27.3	19.75	35.66	4.62	25.7	08	5,8	03	01	09	4	3	2
H 299	FEB 16, 1964	0820-0935	7-49.65	136-42.4W	27.3			4.47	27.7	10	8	01	01	09	4	3	2
H 300	FEB 16, 1964	1200-1212	7-27.55	136-58.7W	27.5	19.76	35.70	4.63	27.6	08	8	03	01	09	4	3	2
H 301	FEB 16, 1964	1600-1610	6-54.85	137-22.6W	27.8	19.77	35.71	4.68	27.0	06	8	03	01	09	4	3	2
H 302	FEB 16, 1964	2026-2105	6-20.35	137-49.2W	27.4	19.69	35.57	4.56	25.4	09	0,8	06	01	09	3	3	2
H 303	FEB 17, 1964	0000-0015	5-54.45	138-07.4W	27.1	19.76	35.70	4.45	26.5	08	0	06	00	09	4	3	2
H 304	FEB 17, 1964	0400-0409	5-21.55	138-30.5W	26.9	19.66	35.52	4.51	25.9	07	8	02	00	09	4	3	2
H 305	FEB 17, 1964	0825-0905	4-48.55	139-00.0W	26.5	19.54	35.30	4.58	27.0	10	8,0	04	01	09	4	3	2
H 306	FEB 17, 1964	1600-1613	3-47.05	139-47.5W	27.0	19.61	35.43	4.48	27.0	06	8	04	01	09	4	3	2
H 307	FEB 17, 1964	2025-2106	3-09.75	140-12.0W	27.0	19.65	35.50	4.52	26.9	09	8	04	01	09	4	3	2
H 308	FEB 18, 1964	0000-0013	2-44.05	140-30.0W	26.7	19.59	35.39	4.55	26.0	08	8	01	00	09	4	3	2
H 309	FEB 18, 1964	0400-0410	2-11.05	140-53.7W	26.4	19.55	35.32	4.58	25.4	07	0	03	01	09	4	3	2
H 310	FEB 18, 1964	0825-0904	1-32.15	141-22.1W	26.4	19.46	35.16	4.57	27.0	07	0,8	04	01	09	5	4	3
H 311	FEB 18, 1964	1200-1210	1-03.85	141-41.0W	26.4	19.45	35.14	4.65	29.0	08	8	03	01	09	5	4	3
H 312	FEB 18, 1964	1600-1616	0-30.05	142-07.0W	26.3	19.42	35.08	4.50	26.0	06	8	04	01	09	4	3	2
H 313	FEB 18, 1964	2025-2107	0-06.8N	142-34.6W	26.3	19.47	35.17	4.17	25.6	09	8,0	04	01	09	4	3	2
H 314	FEB 19, 1964	0000-0015	0-33.8N	142-53.7W	26.2	19.35	34.96	4.13	26.3	09	8	01	00	09	4	3	2
H 315	FEB 19, 1964	0400-0408	1-06.5N	143-17.0W	26.0	19.35	34.96	4.20	25.0	08	8	02	01	09	4	3	2
H 316	FEB 19, 1964	0825-0904	1-41.8N	143-48.0W	26.7	19.40	35.05	4.15	25.8	10	8	04	01	09	4	3	2
H 317	FEB 19, 1964	1200-1208	2-10.2N	144-13.4W	27.0	19.29	34.85	4.23	27.0	09	8,9	04	01	09	4	3	2
H 318	FEB 19, 1964	1600-1609	2-44.0N	144-34.8W	27.4	19.38	35.01	4.15	26.3	06	8,1	04	01	09	4	3	2
H 319	FEB 19, 1964	2025-2104	3-22.8N	144-58.2W	27.3	19.32	34.90	4.38	25.0	09	8	03	01	07	3	2	2
H 320	FEB 20, 1964	0000-0012	3-49.0N	145-17.0W	27.0	19.31	34.88	4.16	25.3	09	8	01	00	07	3	2	2
H 321	FEB 20, 1964	0400-0410	4-22.0N	145-40.0W	27.1	19.30	34.87	4.20	25.9	09	8,5	02	00	07	3	2	2
H 322	FEB 20, 1964	0825-0904	5-02.1N	145-59.0W	27.3	19.41	35.07	4.13	25.6	10	0,8	10	03	11	3	2	2
H 323	FEB 20, 1964	1200-1211	5-33.0N	146-12.0W	27.3	19.31	34.88	4.18	25.5	10	8,9	08	01	09	4	3	2
H 324	FEB 20, 1964	1600-1608	6-07.0N	146-33.0W	27.8	19.33	34.92	4.18	26.4	07	8,9	08	01	07	4	3	2
H 325	FEB 20, 1964	2025-2114	6-43.0N	146-49.2W	27.5	19.26	34.79	4.20	25.5	10	8,9	09	03	09	5	4	2
H 326	FEB 21, 1964	0000-0012	7-07.5N	147-07.2W	26.9	19.19	34.67	4.19	25.0	10	8	04	01	09	6	4	3
H 327	FEB 21, 1964	0400-0408	7-40.0N	147-28.0W	27.0	19.23	34.74	4.17	25.5	09	8	01	00	09	5	5	3
H 328	FEB 21, 1964	0825-0903	8-11.1N	147-48.2W	27.0	19.22	34.72	4.16	25.9	11	8,0	07	01	07	6	5	3
H 329	FEB 21, 1964	1200-1212	8-34.5N	148-04.1W	26.9	19.16	34.61	4.23	26.8	11	5,8	04	01	07	6	5	4
H 330	FEB 21, 1964	1600-1609	9-05.5N	148-30.8W	26.9	19.19	34.67	4.26	25.9	09	5,8	04	01	07	6	5	4
H 331	FEB 21, 1964	2025-2104	9-40.5N	148-58.0W	26.2	19.06	34.43	4.34	25.7	11	5,8	06	01	07	6	5	4
H 332	FEB 22, 1964	0000-0020	10-07.1N	149-16.0W	25.8	18.96	34.25	4.30	25.4	12	9,0	07	01	07	6	5	3
H 333	FEB 22, 1964	0400-0409	10-36.8N	149-36.3W	25.3	18.90	34.14	4.30	24.9	10	8,0	03	01	07	6	5	4
H 334	FEB 22, 1964	0825-0906	11-14.5N	149-59.8W	25.6	18.93	34.20	4.30	25.0	13	8,0	10	03	07	7	6	4
H 335	FEB 22, 1964	1200-1211	11-44.5N	150-16.8W	25.3	18.92	34.18	4.37	25.0	13	8,0	08	01	07	7	6	4
H 336	FEB 22, 1964	1600-1609	12-17.0N	150-38.5W	24.7	18.93	34.20	4.41	24.0	11	8,9	06	01	07	7	6	4
H 337	FEB 22, 1964	2025-2105	12-50.0N	151-01.1W	24.7	19.11	34.52	4.48	24.0	13	0,8	07	01	07	6	5	4
H 338	FEB 23, 1964	0000-0011	13-14.7N	151-15.6W	24.6	18.94	34.22	4.38	24.0	14	5,0	09	03	07	7	5	4
H 339	FEB 23, 1964	0400-0410	13-47.0N	151-33.8W	24.6	18.96	34.25	4.37	23.5	13	0	07	01	07	7	6	4
H 340	FEB 23, 1964	0800-0902	14-23.2N	152-06.6W	24.5	18.97	34.27	4.41	24.0	16	5,0	04	01	07	6	5	4
H 341	FEB 23, 1964	1200-1212	14-50.7N	152-21.3W	24.2	19.06	34.43	4.47	24.0	16	8,0	05	01	07	6	5	4
H 342	FEB 23, 1964	1600-1609	15-23.9N	152-40.0W	23.8	19.11	34.52	4.49	23.9	14	5,8	06	01	07	6	5	4
H 343	FEB 23, 1964	2025	15-56.8N	153-13.1W	23.7	18.91	34.16	4.48	23.5	17	8	01	01	07	6	5	4
H 344	FEB 24, 1964	0800-0825	17-26.6N	154-21.2W	24.1				22.5	18	0,8	01	00	07	6	5	4

## APPENDIX C—APENDICE C

## BIOLOGICAL OBSERVATIONS—OBSERVACIONES BIOLÓGICAS

## Explanation of table headings

## Explicación de los títulos de las tablas

H 023-00	Biological observations at hydrographic or surface stations Observaciones biológicas en las estaciones hidrográficas o en la superficie
H 023-01	Biological observations between stations (between H 023-00 and H 024-00)
H 023-02	Observaciones biológicas entre las estaciones (entre H 023-00 y H 024-00)
P —31	Biological observations at productivity stations only Observaciones biológicas en las estaciones de productividad solamente
Time	Local time of biological observations Hora local de las observaciones biológicas
Lat	Latitude—Latitud
Long	Longitude—Longitud
Chlorophyll <i>a, b, c</i> (mg/m <sup>3</sup> )	Chlorophyll <i>a, b</i> and <i>c</i> concentrations, milligrams per cubic meter of surface water Concentraciones de clorofila <i>a, b</i> y <i>c</i> , miligramos por metro cúbico de agua de la superficie
Carot, CP (mSPU)	Carotene concentration assuming that the phytoplankton is predominantly Chrysophyta or Pyrrophyta, milli-Specific Plant Units Concentraciones de caroteno, si se asume que el fitoplancton consiste predominantemente en Crysofita o Pyrrofitas, mili-Unidades Específicas de Plantas
Carbon Fixation (mg/m <sup>3</sup> day)	Carbon fixation, milligrams of carbon per cubic meter of surface water per day Fijación del carbono, miligramos por metro cúbico de agua de la superficie por día
Dk	Fixation in the dark Fijación en la oscuridad
Lt	Fixation under natural light, corrected for dark fixation Fijación bajo la luz natural, corregida para la fijación en la oscuridad
L-t	Mean of duplicate values of light fixation Media de los valores duplicados de la fijación de luz
Zooplankton (ml)	Zooplankton volume, milliliters per net tow Volumen de zooplancton, mililitros por arrastre
S-S	Surface net, small organisms (<5 cm in length) Red de superficie, organismos pequeños (<5 cm de longitud)
S-L	Surface net, large organisms (>5 cm in length) Red de superficie, organismos grandes (>5 cm de longitud)
20-S	20-meter net, small organisms (<5 cm in length) Red de 20 metros, organismos pequeños (<5 cm de longitud)
20-L	20-meter net, large organisms (>5 cm in length) Red de 20 metros, organismos grandes (>5 cm de longitud)

## Explanation of notes

## Explicación de las notas

- Questionable value .042 mg/m<sup>3</sup>—Valor cuestionable de .042 mg/m<sup>3</sup>
- Questionable value .143 mg/m<sup>3</sup>—Valor cuestionable de .143 mg/m<sup>3</sup>
- Questionable value —.138 mg/m<sup>3</sup>—Valor cuestionable de —.138 mg/m<sup>3</sup>
- Questionable value .031 mg/m<sup>3</sup>—Valor cuestionable de .031 mg/m<sup>3</sup>
- Questionable value .117 mg/m<sup>3</sup>—Valor cuestionable de .117 mg/m<sup>3</sup>
- Questionable value —.037 mg/m<sup>3</sup>—Valor cuestionable de —.037 mg/m<sup>3</sup>



STATION	DATE	TIME	BIOLOGICAL OBSERVATIONS																
			LAT	LONG.	CHLOROPHYLL			CAROT	CARBON FIXATION			ZOOPLANKTON							
					a	b	c	CP	Dk	Lt	Lt	Lt	S-S	S-L	20-S	20-L			
					(mg/m <sup>3</sup> )			(mSPU)	(mg/m <sup>3</sup> -day)										
H 041-02	OCT 29, 1963	1800	20-40S	145-22W	.029	.009	.014	.011											
H 042-00	OCT 29, 1963	2000	20-18S	145-04W	.020	.003	.017	.011							9	0			
H 042-01	OCT 29, 1963	2400	20-38S	144-32W	.031	.014	.017	.013											
H 043-01	OCT 30, 1963	0530	21-05S	143-46W	.025	.011	.029	.014	2.2	1.6		1.6							
H 043-02	OCT 30, 1963	0900	21-26S	143-14W	.028	.004	.025	.013											
H 044-00	OCT 30, 1963	1200	21-44S	142-46W	.026	.009	.014	.012	.9	2.3		2.3							
H 044-01	OCT 30, 1963	1500	22-00S	142-20W	.019	.003	.016	.009											
H 044-02	OCT 30, 1963	1800	22-17S	141-53W	.023	.001	.015	.012											
H 045-00	OCT 30, 1963	2000	22-29S	141-33W	.020	.007	.028	.010							5	0			
H 045-01	OCT 30, 1963	2400	22-49S	141-01W	.020	.009	.010	.011											
H 046-01	OCT 31, 1963	0530	23-18S	140-11W	.020	.007	.028	.011	2.2	1.5		1.5							
H 046-02	OCT 31, 1963	0930	23-39S	139-33W	.019	.008	.020	.008											
H 047-00	OCT 31, 1963	1200	23-54S	139-09W	.019	.003	.016	.012	1.8	1.8		1.8							
H 047-01	OCT 31, 1963	1500	24-07S	138-47W	.019	.008	.020	.009											
H 047-02	OCT 31, 1963	1800	24-22S	138-21W	.019	.002	.025	.010											
H 048-00	OCT 31, 1963	2000	24-33S	138-03W	.016	.002	.012	.007							4	0			
H 048-01	OCT 31, 1963	2400	24-52S	137-30W	.018	.014	.032	.011											
H 048-02	NOV 01, 1963	0515	25-04S	136-57W	.020	.004	.008	.010	2.3	1.9		1.9							
H 049-01	NOV 01, 1963	1200	25-01S	137-00W	.031	.017	.024	.020	3.1	.7		.7							
H 049-02	NOV 01, 1963	1815	25-24S	136-37W	.022	.011	.027	.012											
H 050-00	NOV 01, 1963	2000	25-35S	136-19W	.020	.007	.028	.011							5	0			
H 050-01	NOV 01, 1963	2400	25-55S	135-47W	.026	.006	.028	.015											
H 051-01	NOV 02, 1963	0600	26-26S	134-52W	.022	.007	.018	.014	1.3	1.7		1.7							
H 051-02	NOV 02, 1963	0900	26-42S	134-26W	.028	.004	.025	.014											
H 052-00	NOV 02, 1963	1200	26-59S	133-56W	.024	.012	.030	.016	.8	2.0		2.0							
H 052-01	NOV 02, 1963	1500	27-15S	133-35W	.032	.018	.039	.019											
H 052-02	NOV 02, 1963	1815	27-25S	133-14W	.029	.007	.021	.013											
H 053-00	NOV 02, 1963	2000	27-31S	133-00W	.022	.008	.020	.012							10	0			
H 053-01	NOV 02, 1963	2400	27-44S	132-38W	.027	.013	.034	.016											
H 053-02	NOV 03, 1963	0515	28-10S	132-08W	.020	.008	.019	.010	1.3	1.3	1.6	1.5							
H 054-01	NOV 03, 1963	1200	28-29S	132-02W	.030	.013	.047	.019	1.7	.9	4.3	2.6							
H 054-02	NOV 03, 1963	1815	28-50S	131-24W	.030	.012	.065	.031											
H 055-00	NOV 03, 1963	2000	29-01S	131-04W	.028	.001	.027	.014							16	0			
H 055-01	NOV 03, 1963	2400	29-18S	130-32W	.031	.011	.033	.015											
H 056-01	NOV 04, 1963	0530	29-45S	129-39W	.028	.019	.040	.023	1.6	1.5	1.5	1.5							
H 056-02	NOV 04, 1963	0900	30-07S	129-04W	.022	.013	.008	.009											
H 057-00	NOV 04, 1963	1200	30-29S	128-31W	.013	.005	.000	.005	.5	1.0	1.0	1.0							
H 057-01	NOV 04, 1963	1500	30-39S	128-04W	.015	.006	.010	.007											
H 057-02	NOV 04, 1963	1815	30-53S	127-35W	.024	.008	.010	.003											
H 058-00	NOV 04, 1963	2000	31-02S	127-15W	.018	.008	.006	.009							10	0			
H 058-01	NOV 05, 1963	0515	30-57S	127-04W	.022	.008	.022	.011	1.7	1.8	1.4	1.6							
H 059-01	NOV 05, 1963	1200	30-58S	127-02W	.023	.013	.032	.023	1.2	.6	.3	.5							
H 060-00	NOV 05, 1963	2000	31-14S	127-12W	.022	.008	.030	.014							2	0			
H 060-01	NOV 05, 1963	2400	31-27S	127-06W	.023	.009	.044	.017											
H 061-01	NOV 06, 1963	0515	31-47S	126-58W	.024	.006	.037	.013	1.0	.3	.9	.6							
H 062-00	NOV 06, 1963	1200	32-25S	126-09W	.019	.004	.028	.009	.8	.2	.3	.3							
H 062-01	NOV 06, 1963	1500	32-30S	125-49W	.016	.008	.016	.009											
H 062-02	NOV 06, 1963	1830	32-35S	125-17W	.022	.008	.029	.012											
H 063-00	NOV 06, 1963	2000	32-38S	125-01W	.022	.006	.048	.013							5	2			
H 063-01	NOV 06, 1963	2400	32-41S	124-08W	.023	.014	.046	.013											
H 063-02	NOV 07, 1963	0515	32-47S	123-20W	.015	.006	.010	.008	.9	.4	.3	.3							
H 064-01	NOV 07, 1963	1215	32-51S	123-27W	.024	.004	.022	.019	.9	.1	.2	.2							
H 064-02	NOV 07, 1963	1830	33-10S	122-30W	.027	.014	.037	.000											
H 065-00	NOV 07, 1963	2000	33-22S	122-44W	.020	.006	.015	.011							5	1			



STATION	DATE	TIME	LAT.	LONG.	BIOLOGICAL				OBSERVATIONS				ZOOPLANKTON			
					CHLOROPHYLL			CAROT	CARBON FIXATION			ZOOPLANKTON				
					a	b	c	CP	Dk	Lt	Lt	Lt	S-S	S-L	20-S	20-L
(mg/m <sup>3</sup> )			(mSPU)	(mg/m <sup>3</sup> -day)												
H 092-00	NOV 18, 1963	2000	33-48S	094-51W	.031	.010	.029	.014						163	2	
H 093-01	NOV 19, 1963	1145	33-52S	094-02W	.038	d)	e)	f)	.6	3.2	4.0	3.6				
H 093-02	NOV 19, 1963	1830	33-33S	093-14W	.035	.003	.024	.015								
H 094-00	NOV 19, 1963	2000	33-28S	092-48W	.022	.008	.029	.011						85	3	
H 094-01	NOV 19, 1963	2400	33-18S	092-08W	.029	.012	.021	.010								
H 094-02	NOV 20, 1963	0500	33-06S	091-03W	.031	.028	.074	.014	1.2	3.2	3.4	3.3				
H 095-00	NOV 20, 1963	0830	32-59S	090-19W	.040	.016	.026	.018								
H 095-01	NOV 20, 1963	1145	32-46S	089-38W	.044	.011	.037	.015	1.7	5.6	5.8	5.7				
H 095-02	NOV 20, 1963	1500	32-40S	089-00W	.046	.007	.030	.020								
H 095-03	NOV 20, 1963	1830	32-28S	088-12W	.034	.015	.031	.018								
H 096-00	NOV 20, 1963	2015	32-23S	087-51W	.066	.016	.051	.027								
H 097-01	NOV 21, 1963	1145	32-13S	086-45W	.055	.014	.051	.022	1.3	4.1	4.0	4.0				
H 097-02	NOV 21, 1963	1830	32-15S	085-49W	.051	.019	.050	.024								
H 098-00	NOV 21, 1963	2000	32-16S	085-44W	.079	.027	.071	.032						70	5	
H 098-01	NOV 21, 1963	2400	32-22S	085-08W	.057	.017	.048	.026								
H 098-02	NOV 22, 1963	0500	32-35S	084-00W					1.0	9.4	8.5	8.9				
H 099-00	NOV 22, 1963	0830	32-43S	083-19W	.098	.032	.083	.041								
H 099-01	NOV 22, 1963	1145	32-48S	082-49W	.112	.029	.093	.042	.9	4.2	3.1	3.7				
H 099-02	NOV 22, 1963	1500	32-57S	082-36W	.055	.012	.045	.022								
H 099-03	NOV 22, 1963	1830	33-05S	081-21W	.106	.032	.077	.060								
H 100-00	NOV 22, 1963	2000	33-08S	081-03W										3	0	
H 101-00	NOV 23, 1963	0830	33-14S	078-28W	.176	.048	.091	.069								
H 101-01	NOV 23, 1963	1145	33-17S	077-58W	.158	.039	.120	.068	2.7	7.3	7.5	7.4				
H 101-02	NOV 23, 1963	1500	33-17S	077-06W	.104	.034	.069	.041								
H 102-00	NOV 23, 1963	2000	33-18S	075-55W	.143	.035	.091	.060						82	2	
H 102-01	NOV 24, 1963	0500	33-17S	074-42W	.158	.044	.099	.060	2.4	15.9	14.2	15.1				
H 102-02	NOV 24, 1963	0830	33-14S	073-25W	.761	.187	.378	.215								
H 102-03	NOV 24, 1963	1145	33-14S	073-04W	.250	.056	.142	.079	4.1	4.1	4.0	4.1				
H 102-04	NOV 24, 1963	1500	33-09S	072-17W	.156	.045	.107	.056								
H 102-05	NOV 24, 1963	1830	32-55S	071-48W	.473	.128	.308	.132								
H 102-06	DEC 02, 1963	1500	32-58S	071-40W	.678	.207	.383	.219								
H 102-07	DEC 02, 1963	1600	33-21S	071-44W	5.079	5.955	13.488	1.024								
H 102-08	DEC 02, 1963	1700	33-04S	071-50W	3.897	.898	2.832	.713								
H 102-09	DEC 02, 1963	1815	33-07S	071-59W	.197	.059	.134	.073								
H 102-10	DEC 02, 1963	1900	33-10S	072-10W	.205	.066	.132	.082								
H 102-11	DEC 02, 1963	2010	33-12S	072-18W	.145	.046	.102	.060								
H 102-12	DEC 02, 1963	2000	33-13S	072-25W	.144	.028	.092	.059								
H 102-13	DEC 02, 1963	2100	33-15S	072-35W	.395	.126	.242	.129								
H 102-14	DEC 02, 1963	2400	33-17S	072-48W	.478	.172	.298	.156								
H 102-15	DEC 03, 1963	0445	33-33S	073-03W	.568	.140	.299	.159								
H 102-16	DEC 03, 1963	0830	33-43S	073-13W	.234	.060	.116	.083								
H 102-17	DEC 03, 1963	1130	33-54S	073-27W	.527	.157	.301	.154	1.7	3.1	2.6	2.8				
H 102-18	DEC 03, 1963	1845	34-10S	073-54W	.267	.073	.147	.103								
H 102-19	DEC 03, 1963	2400	34-24S	074-13W	.232	.051	.126	.088								
H 102-20	DEC 04, 1963	0445	34-42S	074-31W	.236	.067	.134	.090	1.2	9.7	9.1	9.4				
H 102-21	DEC 04, 1963	0830	34-55S	074-44W	.313	.089	.177	.114								
H 102-22	DEC 04, 1963	1145	35-17S	074-58W	.213	.072	.134	.075	2.5	6.5	5.4	6.0				
H 102-23	DEC 04, 1963	1500	35-34S	075-11W	.292	.107	.177	.106								
H 102-24	DEC 04, 1963	1845	35-53S	075-37W	.193	.049	.117	.077								
H 102-25	DEC 04, 1963	2400	36-25S	076-17W	.224	.055	.132	.086								
H 102-26	DEC 05, 1963	0430	36-46S	077-12W	.499	.074	.300	.203	1.9	23.1	22.6	22.9				
H 103-00	DEC 05, 1963	0830	37-06S	077-55W	.469	.063	.241	.189								
H 103-01	DEC 05, 1963	1145	37-04S	078-26W	.457	.064	.283	.199	2.1	35.0	31.3	33.1				
H 103-02	DEC 05, 1963	1500	37-16S	079-03W	.132	.037	.106	.051								





STATION	DATE	TIME	LAT	LONG.	BIOLOGICAL OBSERVATIONS											
					CHLOROPHYLL			CAROT	CARBON FIXATION				ZOOPLANKTON			
					<i>a</i>	<i>b</i>	<i>c</i>	CP	Dk	Lt	Lt	Lt	S-S	S-L	20-S	20-L
(mg/m <sup>3</sup> )			(mSPU)	(mg/m <sup>3</sup> -day)												
H 128-00	DEC 16, 1963	1830	20-19S	095-00W	.053	.017	.041	.022							35	0
H 128-01	DEC 16, 1963	1927	20-19S	094-60W												
H 129-00	DEC 17, 1963	0600	19-43S	095-17W											10	0
H 129-01	DEC 17, 1963	1145	19-51S	095-09W	.096	.047	.104	.058	2.7	5.4	5.8	5.6				
H 129-02	DEC 17, 1963	1830	19-23S	095-00W	.082	.024	.067	.039								
H 129-03	DEC 17, 1963	2000	18-46S	095-00W	.072	.027	.049	.031								
H 130-00	DEC 17, 1963	2200	18-46S	095-00W											24	10
H 130-01	DEC 18, 1963	0500	17-42S	095-00W	.117	.061	.088	.050	2.5	10.0	10.9	10.4				
H 131-01	DEC 18, 1963	0900	17-05S	095-01W	.116	.056	.085	.047								
H 132-00	DEC 18, 1963	1145	16-30S	095-03W	.094	.047	.074	.039	3.9	4.6	4.3	4.5				
H 132-01	DEC 18, 1963	1545	15-58S	095-03W	.085	.039	.061	.047								
H 133-00	DEC 18, 1963	1815	15-38S	095-00W	.085	.036	.063	.046							33	10
H 133-01	DEC 18, 1963	2000	15-31S	095-03W												
H 134-00	DEC 19, 1963	0550	14-31S	095-14W											8	0
H 134-01	DEC 19, 1963	1145	14-47S	095-06W	.154	.074	.093	.070	3.6	6.6	7.4	7.0				
H 134-02	DEC 19, 1963	1815	14-28S	096-59W	.134	.055	.081	.058								
H 135-00	DEC 19, 1963	2000	13-45S	094-59W											67	15
H 135-01	DEC 19, 1963	2200	13-45S	094-59W	.160	.082	.116	.073								
H 135-02	DEC 20, 1963	0530	12-30S	095-00W	.167	.085	.111	.069	1.8	12.1	12.2	12.2				
H 136-01	DEC 20, 1963	0830	12-04S	095-00W	.207	.089	.137	.083								
H 137-00	DEC 20, 1963	1145	11-27S	095-03W	.187	.079	.100	.086	2.7	11.0	6.4	8.7				
H 137-01	DEC 20, 1963	1500	10-42S	095-00W	.141	.062	.069	.062								
H 138-00	DEC 20, 1963	1815	10-27S	095-00W	.157	.082	.102	.068							20	25
H 138-01	DEC 20, 1963	2000	10-27S	095-00W												
H 139-00	DEC 21, 1963	0555	09-30S	094-58W											33	0
H 139-01	DEC 21, 1963	1145	09-37S	094-57W	.186	.090	.126	.108	6.7	4.9	5.8	5.4				
H 139-02	DEC 21, 1963	1800	09-31S	094-38W	.160	.065	.106	.073								
H 140-00	DEC 21, 1963	2200	09-00S	094-09W	.109	.047	.071	.054							65	5
H 140-01	DEC 22, 1963	0530	08-05S	093-16W	.109	.052	.059	.047	2.8	9.6	11.7	10.7				
H 141-01	DEC 22, 1963	0830	07-46S	092-59W	.138	.077	.093	.057								
H 141-02	DEC 22, 1963	1145	07-21S	092-30W	.112	.056	.071	.044	2.3	10.1	10.9	10.5				
H 142-00	DEC 22, 1963	1430	07-05S	092-13W	.093	.030	.054	.041								
H 142-01	DEC 22, 1963	1800	06-45S	092-00W	.109	.047	.080	.051								
H 143-00	DEC 22, 1963	2200	06-13S	091-15W	.170	.070	.097	.079							68	2
H 144-00	DEC 23, 1963	0600	05-12S	090-36W											25	0
H 144-01	DEC 23, 1963	1145	05-13S	090-40W	.130	.068	.086	.057	5.6	6.7	5.8	6.3			137	0
H 144-02	DEC 23, 1963	1800	05-00S	090-36W	.210	.107	.141	.088								
H 145-00	DEC 23, 1963	2200	04-31S	089-52W	.184	.088	.123	.085							63	0
H 146-01	DEC 24, 1963	0830	03-14S	088-40W	.270	.125	.124	.128								
H 146-02	DEC 24, 1963	1145	02-44S	088-20W	.257	.116	.121	.119	5.0	28.8	30.9	29.9				
H 147-00	DEC 24, 1963	1400	02-28S	088-04W	.233	.100	.110	.117							32	0
H 147-01	DEC 24, 1963	1510	02-28S	088-04W											287	25
H 148-00	DEC 24, 1963	2200	01-35S	087-18W	.296	.128	.185	.138							207	2
H 149-00	DEC 25, 1963	0545	00-33S	086-24W	.277	.076	.180	.119	2.6	53.1	40.6	46.8				
H 149-01	DEC 25, 1963	1145	00-08S	085-45W	.298	.098	.178	.121	3.5	44.2	30.9	37.6				
H 150-00	DEC 25, 1963	1400	00-26N	085-30W											26	0
H 150-01	DEC 25, 1963	1800	00-51N	085-40W	.222	.060	.140	.105								
H 151-00	DEC 25, 1963	2200	01-23N	084-42W	.324	.094	.274	.157							66	18
H 152-00	DEC 26, 1963	0600	02-23N	083-52W	.133	.027	.067	.060	2.9	12.3	11.5	11.9				
H 152-01	DEC 26, 1963	1145	03-21N	083-04W	.087	.032	.055	.034								
H 153-00	DEC 26, 1963	1400	03-42N	082-45W											9	34
H 153-01	DEC 26, 1963	1800	04-04N	082-23W	.126	.024	.044	.057							87	0
H 153-02	DEC 27, 1963	0615	05-16N	081-25W	.115	.024	.063	.064	3.3	9.0	12.9	10.9				
H 153-03	DEC 27, 1963	1145	06-08N	080-59W	.083	.027	.041	.049	2.4	9.5		9.5				

STATION	DATE	TIME	LAT	LONG	BIOLOGICAL OBSERVATIONS															
					CHLOROPHYLL			CAROT CP	CARBON FIXATION				ZOOPLANKTON							
					<i>a</i>	<i>b</i>	<i>c</i>		DK	L1	L1	L1	S-S	S-L	20-S	20-L				
(mg/m <sup>3</sup> )			(mSPU)	(mg/m <sup>3</sup> -day)																
H 153-04	DEC 27, 1963	1800	06-53N	080-16W	1.303	.207	.253	.285												
H 153-05	JAN 03, 1964	1800	08-20N	079-38W	.329	.074	.153	.122												
H 153-06	JAN 04, 1964	0005	07-11N	080-05W	.766	.140	.330	.210												
H 153-07	JAN 04, 1964	0620	06-18N	081-01W	1.371	.225	.513	.266	3.4	47.5	47.5	47.5								
H 154-00	JAN 04, 1964	1145	05-37N	081-50W	1.712	.153	.415	.345	5.5	124.7	117.8	121.3	6	0	86	0				
H 155-01	JAN 04, 1964	1815	05-01N	082-28W	.355	.048	.091	.115												
H 156-00	JAN 04, 1964	2000	04-48N	082-42W	.974	.071	.187	.214					15	6						
H 157-00	JAN 05, 1964	0015	04-19N	083-11W	.668	.087	.178	.143												
H 158-01	JAN 05, 1964	0600	03-37N	083-55W	.419	.063	.119	.102	3.6	26.3	24.2	25.3								
H 160-00	JAN 05, 1964	1145	03-16N	085-04W	.164	.056	.082	.066	2.6	13.8	15.3	14.6	3	0	86	0				
H 161-01	JAN 05, 1964	1815	02-42N	085-33W	.110	.030	.046	.048												
H 162-00	JAN 05, 1964	2000	02-27N	085-47W	.107	.034	.049	.061					86	6						
H 163-00	JAN 06, 1964	0005	01-55N	086-14W	.103	.036	.057	.052												
H 164-01	JAN 06, 1964	0605	01-08N	086-54W	.154	.037	.084	.062	1.3	19.7	17.8	18.8								
H 165-00	JAN 06, 1964	0800	00-51N	087-07W	.218	.055	.119	.091												
H 165-01	JAN 06, 1964	1005	00-40N	087-18W	.213	.056	.121	.091												
H 166-00	JAN 06, 1964	1135	00-26N	087-32W	.227	.061	.097	.096	2.0	21.3	23.1	22.2	9	0	77	0				
H 166-01	JAN 06, 1964	1500	00-11N	087-49W	.235	.054	.098	.095												
H 167-01	JAN 06, 1964	1818	00-13S	088-17W	.249	.081	.129	.108												
H 168-00	JAN 06, 1964	2000	00-26S	088-29W	.211	.086	.109	.090					192	30						
H 169-00	JAN 07, 1964	0005	01-03S	088-50W	.181	.078	.116	.093												
H 170-01	JAN 07, 1964	0550	01-52S	089-23W	.162	.060	.091	.071	.9	20.6	20.4	20.5								
H 171-00	JAN 07, 1964	0800	02-07S	089-42W	.179	.072	.101	.074												
H 172-00	JAN 07, 1964	1145	02-39S	090-13W	.202	.090	.102	.080	2.0	28.8	26.9	27.9	7	17	124	0				
H 173-00	JAN 07, 1964	1600	02-59S	090-39W	.204	.090	.089	.091												
H 173-01	JAN 07, 1964	1800	03-14S	090-01W	.152	.069	.080	.065												
H 174-00	JAN 07, 1964	2000	03-25S	091-16W	.142	.068	.087	.063					107	15						
H 175-00	JAN 08, 1964	0005	03-53S	091-44W	.153	.084	.088	.062												
H 176-01	JAN 08, 1964	0600	04-31S	089-34W	.196	.093	.146	.083	5.0	16.3	17.2	16.8								
H 177-00	JAN 08, 1964	0800	04-44S	092-50W	.197	.083	.110	.070												
H 178-00	JAN 08, 1964	1145	05-12S	093-23W	.179	.081	.094	.075	3.3	17.7	16.3	17.0	12	0	109	0				
H 179-00	JAN 08, 1964	1600	05-34S	094-00W	.170	.070	.077	.070												
H 179-01	JAN 08, 1964	1815	05-45S	094-12W	.195	.088	.119	.076												
H 179-02	JAN 08, 1964	1830	05-45S	094-12W	.193	.081	.116	.072												
H 180-00	JAN 08, 1964	2000	06-01S	094-37W	.165	.076	.118	.063					82	5						
H 181-00	JAN 09, 1964	0005	06-24S	095-05W	.165	.078	.095	.059					216	401	90	545				
H 183-00	JAN 09, 1964	0800	07-22S	096-09W	.254	.111	.165	.097												
H 184-00	JAN 09, 1964	1145	07-45S	096-53W	.453	.188	.343	.190	1.0	26.4	17.7	22.1	8	0	34	0				
H 185-00	JAN 09, 1964	1600	08-05S	097-19W	.251	.086	.144	.117												
H 185-01	JAN 09, 1964	1820	08-22S	097-42W	.176	.084	.114	.074												
H 186-00	JAN 09, 1964	2000	08-32S	097-54W	.143	.060	.094	.063					45	14						
H 187-01	JAN 10, 1964	0530	09-09S	098-53W	.141	.080	.100	.060	.6	9.0	9.0	9.0								
H 188-00	JAN 10, 1964	0800	09-27S	098-50W	.153	.089	.073	.058												
H 189-00	JAN 10, 1964	1200	09-57S	099-47W	.086	.045	.029	.028	1.2	6.1	5.3	5.7	3	0	40	0				
H 189-00	JAN 10, 1964	1930	09-55S	099-51W	.095	.047	.053	.040					12	0						
H 190-00	JAN 11, 1964	0600	09-32S	100-12W									20	0	50	0				
H 190-01	JAN 11, 1964	1145	09-38S	100-05W	.095	.047	.053	.040	1.0	8.3	8.3	8.3								
H 191-01	JAN 11, 1964	1810	09-09S	100-05W	.289	.106	.251	.142												
H 192-00	JAN 11, 1964	2000	08-53S	100-07W	.183	.087	.139	.088					22	54						
H 193-00	JAN 12, 1964	0005	08-13S	100-13W	.190	.079	.151	.098												
H 194-01	JAN 12, 1964	0555	07-10S	100-22W	.179	.110	.123	.083	.8	24.9	24.3	24.6								
H 195-00	JAN 12, 1964	0800	06-48S	100-25W	.208	.129	.118	.084												
H 195-01	JAN 12, 1964	1145	06-09S	100-25W	.183	.091	.093	.077	1.0	23.8	24.9	24.3								
H 196-00	JAN 12, 1964	1230	06-09S	100-29W									22	0	62	0				









BIOLOGICAL OBSERVATIONS																			
STATION	DATE	TIME	LAT.	LONG.	CHLOROPHYLL			CAROT	CARBON FIXATION				ZOOPLANKTON						
					<i>a</i>	<i>b</i>	<i>c</i>	CP	Dk	Lt	Lt	Lt	S-S	S-L	20-S	20-L			
					(mg/m <sup>3</sup> )			(mSPU)	(mg/m <sup>3</sup> -day)										
H 342-01	FEB 23, 1964	1810	15-42N	153-02W	.080	.023	.041	.030											
H 343-00	FEB 23, 1964	2000	15-57N	153-13W	.059	.021	.026	.026							95	0	78	0	
H 343-01	FEB 24, 1964	0005	16-21N	153-31W	.032	.010	.000	.018											
H 343-02	FEB 24, 1964	0310	16-53N	153-56W	.041	.013	.024	.019											
H 343-03	FEB 24, 1964	0625	17-12N	154-11W	.050	.024	.030	.022	2.0	4.2	4.9	4.6							
H 344-00	FEB 24, 1964	0800	17-27N	154-21W	.068	.024	.038	.027						4	0				
H 344-01	FEB 24, 1964	1215	17-58N	154-46W	.053	.016	.024	.022	1.9	2.1	1.6	1.8							
H 345-00	FEB 24, 1964	1810	18-44N	155-30W	.054	.022	.039	.026											
P 001-00	MAR 02, 1964	0545	21-26N	161-56W	.042	.034	.049	.048											
P 002-00	MAR 02, 1964	1000	21-33N	162-41W	.035	.029	.047	.032											
P 003-00	MAR 02, 1964	1150	21-34N	163-02W	.039	.043	.054	.031	2.9	.3		.3							
P 004-00	MAR 02, 1964	1500	21-37N	163-42W	.028	.034	.027	.027											
P 005-00	MAR 02, 1964	1750	21-40N	164-12W	.046	.010	.034	.029											
P 006-00	MAR 02, 1964	2200	21-45N	165-07W	.037	.006	.033	.022											
P 007-00	MAR 02, 1964	2220	21-46N	165-08W	.041	.016	.032	.024											
P 008-00	MAR 03, 1964	0200	21-50N	165-49W	.052	.019	.086	.022											
P 009-00	MAR 03, 1964	0540	21-55N	166-33W	.055	.010	.038	.017	1.3	5.6	5.5	5.6							
P 010-00	MAR 03, 1964	0950	22-03N	167-19W	.044	.008	.015	.017											
P 011-00	MAR 03, 1964	1145	22-05N	167-44W	.054	.022	.039	.022	1.0	3.7	3.2	3.5							
P 012-00	MAR 03, 1964	1600	22-10N	168-36W	.048	.018	.026	.021											
P 013-00	MAR 03, 1964	1745	22-12N	168-59W	.046	.007	.026	.020											
P 014-00	MAR 03, 1964	2200	22-21N	169-48W	.034	.008	.022	.016											
P 015-00	MAR 04, 1964	0100	22-24N	170-21W	.041	.016	.032	.021											
P 016-00	MAR 04, 1964	0330	22-28N	170-48W	.039	.014	.025	.019											
P 017-00	MAR 04, 1964	0530	22-32N	171-11W	.051	.002	.004	.015	1.2	4.9	5.2	5.0							
P 018-00	MAR 04, 1964	1000	22-39N	172-01W	.046	.011	.022	.020											
P 019-00	MAR 04, 1964	1140	22-42N	172-19W	.047	.025	.031	.020	1.3	2.7	1.4	2.1							
P 020-00	MAR 04, 1964	1600	22-47N	173-07W	.044	.013	.012	.018											
P 021-00	MAR 04, 1964	1745	22-49N	173-26W	.047	.003	.018	.025											
P 022-00	MAR 04, 1964	2210	22-58N	174-09W	.037	.003	.013	.019											
P 023-00	MAR 05, 1964	0100	23-02N	174-52W	.050	.020	.033	.021											
P 025-00	MAR 05, 1964	0540	23-07N	175-40W	.062	.012	.020	.029	1.1	7.2	6.4	6.8							
P 026-00	MAR 05, 1964	0815	23-12N	176-11W	.058	.011	.014	.022											
P 027-00	MAR 05, 1964	1130	23-09N	176-48W	.057	.017	.030	.025	1.3	9.2	8.9	9.0							
P 028-00	MAR 05, 1964	1530	23-12N	177-30W	.071	.020	.029	.028											
P 029-00	MAR 05, 1964	1740	23-13N	177-37W	.090	.019	.037	.028											
P 030-00	MAR 05, 1964	2230	23-18N	178-48W	.069	.017	.022	.021											
P 031-00	MAR 06, 1964	0230	23-22N	179-39W	.071	.022	.049	.025											
P 032-00	MAR 07, 1964	0530	23-27N	179-40E	.073	.022	.036	.022	1.6	4.5	5.0	4.7							
P 033-00	MAR 07, 1964	0915	23-30N	178-59E	.058	.010	.025	.015											
P 034-00	MAR 07, 1964	1130	23-31N	178-32E	.057	.018	.019	.020	1.1	5.5	4.4	5.0							
P 035-00	MAR 07, 1964	1600	23-36N	177-35E	.046	.015	.019	.018											
P 036-00	MAR 07, 1964	1740	23-38N	177-16E	.042	.011	.000	.011											
P 037-00	MAR 07, 1964	2130	23-42N	176-34E	.043	.011	.005	.018											
P 038-00	MAR 07, 1964	2145	23-42N	176-30E	.044	.004	.019	.014											
P 039-00	MAR 08, 1964	0140	23-45N	175-48E	.039	.015	.014	.014											
P 040-00	MAR 08, 1964	0535	23-52N	174-57E	.064	.023	.020	.021	1.1	4.2	4.2	4.2							
P 041-00	MAR 08, 1964	0930	23-56N	174-15E	.053	.008	.019	.021											
P 042-00	MAR 08, 1964	1120	23-59N	173-58E	.049	.007	.013	.017	1.2	2.0	2.7	2.3							
P 043-00	MAR 08, 1964	1550	24-04N	173-13E	.046	.015	.019	.019											
P 044-00	MAR 08, 1964	1740	24-02N	172-55E	.041	.009	.016	.017											
P 045-00	MAR 08, 1964	2045	24-06N	172-17E	.046	.007	.014	.019											
P 046-00	MAR 09, 1964	0245	24-12N	171-05E	.044	.012	.023	.022											
P 047-00	MAR 09, 1964	0530	24-15N	170-33E	.057	.023	.015	.028	1.0	4.4	4.8	4.6							



STATION	DATE	TIME	LAT.	LONG.	BIOLOGICAL OBSERVATIONS														
					CHLOROPHYLL			CAROT CP	CARBON FIXATION				ZOOPLANKTON						
					<i>a</i>	<i>b</i>	<i>c</i>		Dk	Lt	Lt	Lt	S-S	S-L	20-S	20-L			
(mg/m <sup>3</sup> )			(mSPU)	(mg/m <sup>3</sup> -day)															
P 048-00	MAR 09,1964	0900	24-18N	169-49E	.039	.015	.002	.018											
P 049-00	MAR 09,1964	1145	24-21N	169-23E	.053	.004	.023	.024	1.2	3.3	3.7	3.5							
P 050-00	MAR 09,1964	1500	24-23N	168-46E	.044	.007	.027	.020											
P 051-00	MAR 09,1964	1730	24-29N	168-00E	.041	.012	.036	.028											
P 052-00	MAR 09,1964	2020	24-30N	167-49E	.043	.016	.020	.019											
P 053-00	MAR 10,1964	0145	24-34N	166-15E	.044	.005	.007	.022											
P 054-00	MAR 10,1964	0530	24-38N	166-03E	.042	.006	.008	.018	1.3	3.7	3.4	3.5							
P 055-00	MAR 10,1964	0930	24-43N	165-20E	.035	.010	.000	.017											
P 056-00	MAR 10,1964	1130	24-45N	164-57E	.032	.007	.000	.014	1.2	2.7	1.8	2.2							
P 057-00	MAR 10,1964	1515	24-58N	164-18E	.047	.004	.006	.020											
P 058-00	MAR 10,1964	1750	25-06N	163-52E	.048	.012	.041	.020											
P 059-00	MAR 10,1964	2100	25-16N	163-19E	.044	.012	.023	.018											
P 060-00	MAR 11,1964	0115	25-30N	162-35E	.051	.009	.020	.021											
P 061-00	MAR 11,1964	0530	25-42N	161-56E	.064	.015	.027	.029	.6	4.8	4.7	4.7							
P 062-00	MAR 11,1964	0900	25-54N	161-18E	.053	.015	.009	.022											
P 063-00	MAR 11,1964	1130	26-02N	160-54E	.053	.018	.016	.021	1.2	.6	.6	.6							
P 064-00	MAR 11,1964	1500	26-12N	160-26E	.043	.017	.008	.019											
P 065-00	MAR 11,1964	1745	26-19N	160-02E	.051	.006	.012	.021											
P 066-00	MAR 11,1964	2215	26-33N	159-21E	.051	.005	.024	.026											
P 067-00	MAR 12,1964	0200	26-45N	158-45E	.060	.017	.018	.028											
P 068-00	MAR 12,1964	0530	26-57N	158-08E	.066	.018	.032	.027	1.2	3.4	3.8	3.6							
P 069-00	MAR 12,1964	0600	26-58N	158-04E	.074	.012	.023	.034											
P 070-00	MAR 12,1964	0900	27-08N	157-32E	.067	.014	.026	.028											
P 071-00	MAR 12,1964	1130	27-16N	157-10E	.082	.030	.045	.035	1.4	1.6	1.6	1.6							
P 072-00	MAR 12,1964	1400	27-29N	156-40E	.130	.040	.066	.045											
P 073-00	MAR 12,1964	1745	27-42N	155-58E	.115	.024	.048	.040											
P 074-00	MAR 12,1964	2130	27-56N	155-27E	.304	.068	.154	.096											
P 075-00	MAR 13,1964	0200	28-10N	154-48E	.257	.074	.118	.084											
P 076-00	MAR 13,1964	0530	28-16N	154-21E	.225	.056	.113	.076	1.1	15.2		15.2							
P 077-00	MAR 13,1964	0830	28-28N	153-50E	.227	.061	.140	.082											
P 078-00	MAR 13,1964	1130	28-38N	153-23E	.243	.067	.134	.086	1.3	1.4	1.7	1.6							
P 079-00	MAR 13,1964	1445	28-50N	152-52E	.293	.090	.175	.105											
P 080-00	MAR 13,1964	1745	28-59N	152-23E	.331	.081	.199	.116											
P 081-00	MAR 13,1964	2130	29-10N	151-56E	.318	.091	.189	.111											
P 082-00	MAR 14,1964	0100	29-26N	151-17E	.256	.081	.134	.082											
P 083-00	MAR 14,1964	0530	29-42N	150-32E	.338	.101	.198	.111	1.1	23.7	26.7	25.2							
P 084-00	MAR 14,1964	0845	29-58N	149-56E	.293	.084	.159	.103											
P 085-00	MAR 14,1964	1130	30-13N	149-29E	.513	.145	.282	.170	1.4	27.0	25.1	26.1							
P 086-00	MAR 14,1964	1445	30-28N	148-56E	.347	.146	.186	.101											
P 087-00	MAR 14,1964	1745	30-41N	148-31E	.329	.133	.188	.099											
P 088-00	MAR 14,1964	2330	30-50N	147-52E	.240	.076	.140	.073											
P 089-00	MAR 15,1964	0530	31-07N	147-05E	.274	.091	.167	.082	1.1	21.5	24.2	22.9							
P 090-00	MAR 15,1964	0945	31-22N	146-22E	.249	.079	.152	.078											
P 091-00	MAR 15,1964	1130	31-31N	146-08E	.292	.090	.187	.085	.9	4.0	4.0	4.0							
P 092-00	MAR 15,1964	1530	31-54N	145-32E	.306	.105	.176	.093											
P 093-00	MAR 15,1964	1745	32-07N	145-12E	.310	.115	.175	.089											
P 094-00	MAR 15,1964	2050	32-23N	144-34E	.539	.174	.325	.160											
P 095-00	MAR 16,1964	0100	32-43N	143-52E	1.098	.250	.750	.391											
P 096-00	MAR 16,1964	0515	33-03N	143-13E	.342	.088	.207	.109	1.8	22.5	20.7	21.6							
P 097-00	MAR 16,1964	0845	33-15N	142-37E	.374	.089	.214	.116											
P 098-00	MAR 16,1964	1130	33-26N	142-15E	.235	.072	.157	.066	2.2	7.1		7.1							

## APPENDIX D

COMPUTATION AND INTERPOLATION OF HYDROGRAPHIC STATION DATA<sup>1</sup>

The equations which follow were used in the hydrographic station computations and interpolations. These equations and descriptions of computing methods are intended to serve only as a reference to techniques used in the calculations, and not as a detailed description of the computer program. All symbols not explained here have been explained in Appendix A.

For observed depths (McGil, 1961)

*Chlorinity*

$$Cl = \frac{S - 0.030}{1.8050}$$

*Potential density anomaly*

$$\sigma_T = \Sigma_T + (\sigma_0 + 0.1324) (1 - A_T + B_T [\sigma_0 - 0.1324])$$

where

$$\sigma_0 = -0.069 + 1.4708Cl - 0.001570Cl^2 + 0.0000398Cl^3$$

$$\Sigma_T = \frac{-(T - 3.98)^2(T + 283)}{503.57(T + 67.26)}$$

$$A_T = T(4.7867 - 0.098185T + 0.0010843T^2)10^{-3}$$

$$B_T = T(18.030 - 0.8164T + 0.01667T^2)10^{-6}$$

*Thermosteric anomaly*

$$\delta_T = \left( \frac{1}{1 + 0.001\sigma_T} - 0.972643 \right) 10^5$$

*Apparent oxygen utilization*

$$AOU = O_2' - O_2$$

where the oxygen solubility in ml/L (Truesdale *et al*, 1955) is

$$O_2' = 11.20 (-2464T + 48.21T^2 - 0.4038T^3 + 88506 - 525.6S + 16ST - 0.2338ST^2)10^{-5}$$

**For interpolated depths**

The water column is divided into at most three regions for interpolation. If there is a subsurface maximum of temperature or thermosteric anomaly, then region (1) exists, and extends from the surface to the depth of maximum temperature or thermosteric anomaly. Region (2) is between the depth of maximum temperature (usually the sea surface) and the mid-depth of the maximum observed temperature gradient. Region (3) is below this mid-depth.

The temperature gradient between each observed temperature and the next deepest one at the station is computed. Then the maximum gradient is determined, and for the corresponding depth interval the average depth, temperature, and thermosteric anomaly are found by linear interpolation. Apparent surface values are found by logarithmic extrapolation for either of two cases:

- a) when surface temperature or salinity is missing, or
- b) when maximum values of temperature or thermosteric anomaly are not at the surface.

<sup>1</sup>Prepared by Edward B. Bennett and Christopher T. Psaropoulos, Inter-American Tropical Tuna Commission.

## APPENDICE D (Continued)

The equation used for the extrapolation is

$$\frac{d \ln(F_0 - F + 1)}{dZ} = k$$

which in approximation yields

$$F_0 = \frac{1}{2} (F_1 + F_2) + \frac{(F_1 + F_2)Z_2}{2(Z_2 - Z_1)}$$

where  $F_0$  is the apparent surface temperature or thermosteric anomaly, and  $F_1$  and  $F_2$  are the observed values at  $Z_1$  and  $Z_2$ , the depths nearest the sea surface.

Interpolation at standard depths that fall within regions (1) and (3) is according to the equation of the form

$$F - F_1 = \ln \left( \frac{Z + 1}{Z_1 + 1} \right)^k$$

In region (2) the equation used is

$$F = F_0 + 1 - e^{kz}$$

After temperature and thermosteric anomaly are found, the potential density anomaly is then computed from thermosteric anomaly.

The preceding equation for  $\delta_T$  is solved in terms of  $\sigma_T$  and substituted in the  $\sigma_T$  equation. This is a sixth-degree equation with salinity as the only unknown. The Newton-Raphson iteration method is used to capture the interpolated value of salinity using an initial guess of 35.00‰.

*Specific volume anomaly*

$$\delta = \left( \frac{1 - 10^{-10}P\mu}{1 + 10^{-4}\sigma_T} - 0.972643 [1 - 10^{-10}P\mu_0] \right) 10^3$$

where  $\sigma_T$  is the potential volume anomaly at the standard depth,  $P$  is the pressure which is approximately numerically equal to the depth in meters,  $\mu$  is the coefficient of isothermal compressibility and  $\mu_0$  the coefficient of isothermal compressibility at 0 C. The compressibility correction per decibar is given by the formula

$$\begin{aligned} \mu = & \frac{4886}{1 + 1.83P10^{-3}} - 227 - T(28.33 - 0.551T + 0.004T^2) \\ & + P(105.5 + 9.50T - 0.158T^2)10^{-4} - 1.50P^2T 10^{-6} \\ & + \frac{\sigma_0 - 28}{10} [-147.3 + 2.72T - 0.04T^2 + P(32.4 - 0.87T + 0.02T^2)10^{-1}] \\ & + \left( \frac{\sigma_0 - 28}{10} \right)^2 [4.5 - 0.1T - P(1.8 - 0.06T)10^{-1}] \end{aligned}$$

*Dynamic height*

$$\Delta D_{z/0} = \int_0^{P_z} \delta \, dP \approx \sum_i \Delta Z_i \bar{\delta}_i$$

$$\Delta D_{z, z_{\max}} = \int_{P_{\max}}^{P_z} \delta \, dP$$

*Transport function*

$$Q_z = \int_{Z_{\max}}^Z \Delta D \, dZ \approx \sum_i \Delta Z_i \Delta D_i$$

## APENDICE D

### COMPUTO E INTERPOLACION DE LOS DATOS DE LAS ESTACIONES HIDROGRAFICAS<sup>1</sup>

Se usaron las siguientes ecuaciones en los cálculos e interpolaciones de las estaciones hidrográficas. Estas ecuaciones y descripciones de los métodos de cómputo son solamente con el fin de servir como referencia a las técnicas usadas en los cálculos, y es una descripción detallada del programa del computador. Todos los símbolos que no se explican aquí, fueron explicados en el Apéndice A.

Para las profundidades observadas (McGill, 1961)

*Clorinidad*

$$Cl = \frac{S - 0.030}{1.8050}$$

*Anomalía potencial de densidad*

$$\sigma_T = \Sigma_T + (\sigma_0 + 0.1324) (1 - A_T + B_T [\sigma_0 - 0.1324])$$

donde

$$\sigma_0 = -0.069 + 1.4708Cl - 0.001570Cl^2 + 0.0000398Cl^3$$

$$\Sigma_T = \frac{-(T - 3.98)^2(T + 283)}{503.57(T + 67.26)}$$

$$A_T = T(4.7867 - 0.098185T + 0.0010843T^2)10^{-3}$$

$$B_T = T(18.030 - 0.8164T + 0.01667T^2)10^{-6}$$

*Anomalía termostérica*

$$\delta_T = \left( \frac{1}{1 + 0.001\sigma_T} - 0.972643 \right) 10^5$$

*Utilización aparente de oxígeno*

$$AOU = O_2' - O_2$$

donde la solubilidad de oxígeno en m/L (Tuesdale *et al*, 1955) es

$$O_2' = 11.20 (-2464T + 28.21T^2 - 0.4038T^3 + 88506 - 525.6S + 16ST - 0.2338ST^2)10^{-5}$$

Para las profundidades interpoladas

Para la interpolación, la columna de agua está dividida a lo más en tres regiones. Si existe un máximo de temperatura en la subsuperficie o anomalía termostérica, entonces la región (1) existe, y se extiende de la superficie a la profundidad de la temperatura máxima o a la anomalía termostérica máxima. La Región (2) es entre la profundidad de la temperatura máxima (generalmente la superficie del mar) y la profundidad media del gradiente máximo observado de la temperatura. La Región (3) está debajo de esta profundidad media.

Se computa el gradiente de la temperatura entre cada temperatura observada y la próxima más profunda en la estación. Luego se determina el gradiente máximo, y por medio de la interpolación lineal se encuentra el intervalo de profundidad correspondiente, el promedio de profundidad, la temperatura y la anomalía termostérica. Se hallan los valores aparentes de superficie por la extrapolación logarítmica para cualquiera de los dos casos:

- a) cuando carece de la temperatura o salinidad de la superficie, o
- b) cuando los valores máximos de temperatura o de la anomalía termostérica no están en la superficie.

<sup>1</sup>Preparado por Edward B. Bennett y Christopher T. Psaropulos, Comisión Interamericana del Atún Tropical.

## APENDICE D (Continued)

Se usó la siguiente ecuación para la extrapolación:

$$\frac{d \ln (F_0 - F + 1)}{dZ} = k$$

lo que da en la aproximación

$$F_0 = \frac{1}{2} (F_1 + F_2) + \frac{(F_1 + F_2) Z_2}{2 (Z_2 - Z_1)}$$

donde  $F_0$  es la temperatura aparente de la superficie o la anomalía termostérica, y  $F_1$  y  $F_2$  son los valores observados en  $Z_1$  y  $Z_2$ , las profundidades cerca de la superficie del mar.

La interpolación en las profundidades estándar que caen dentro de las regiones (1) y (3) está de acuerdo con la ecuación de la forma

$$F - F_1 = \ln \left( \frac{Z + 1}{Z_1 + 1} \right)^k$$

En la región (2) se usó la ecuación

$$F = F_0 + 1 - e^{kz}$$

Después de haber hallado la temperatura y anomalía termostérica, se calcula la anomalía de densidad potencial de la anomalía termostérica.

La ecuación precedente para  $\delta_T$  se resuelve como función de  $\sigma_T$  y se substituye en la ecuación  $\sigma_T$ . Esta es una ecuación del sexto grado en la cual solamente la salinidad es desconocida. Se usa el método de iteración de Newton-Raphson para llegar al valor interpolado de salinidad usando una suposición inicial de  $35.00\text{‰}$ .

*Anomalía del volumen específico*

$$\delta = \frac{1 - 10^{-10} P \mu}{1 + 10^{-4} \sigma_T} - 0.972643 [1 - 10^{-10} P \mu_0] 10^5$$

donde  $\sigma_T$  es la anomalía de volumen potencial en la profundidad estándar,  $P$  es la presión que es aproximadamente numéricamente igual a la profundidad en metros,  $\mu$  es el coeficiente de la comprimibilidad isothermal y  $\mu_0$  es el coeficiente de la comprimibilidad isothermal a 0 C. La corrección para la comprimibilidad por decibarra se da en la fórmula

$$\begin{aligned} \mu = & \frac{4886}{1 + 1.83P10^{-5}} - 227 - T(28.33 - 0.551T + 0.004T^2) \\ & + P(105.5 + 9.50T - 0.158T^2) 10^{-4} - 1.50P^2T 10^{-5} + \\ & \frac{\sigma_0 - 28}{10} [-147.3 + 2.72T - 0.04T^2 + P(32.4 - 0.87T + 0.02T^2) 10^{-4}] \\ & + \left( \frac{\sigma_0 - 28}{10} \right)^2 [4.5 - 0.1T - P(1.8 - 0.06T) 10^{-4}] \end{aligned}$$

*Altitud dinámica*

$$\Delta D_{z_0} = \int_0^{P_z} \delta \, dP \approx \sum_i \Delta Z_i \bar{\delta}_i$$

$$\Delta D_{z_{\max}} = \int_{P_{\max}}^{P_z} \delta \, dP$$

*Función de transporte*

$$Q_z = \int_{Z_{\max}}^Z \Delta D \, dZ \approx \sum_i \Delta Z_i \Delta D_i$$