

Technical Report Series
Number 79-1

HYDROGRAPHIC OBSERVATIONS
IN THE GEORGIA BIGHT
(DECEMBER 1976)

by
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Georgia Marine Science Center
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January 1979

The Technical Report Series of the Georgia Marine Science Center is issued by the Georgia Sea Grant Program and the Marine Extension Service of the University of Georgia on Skidaway Island (P. O. Box 13687, Savannah, Georgia 31406). It was established to provide dissemination of technical information and progress reports resulting from marine studies and investigations mainly by staff and faculty of the University System of Georgia. In addition, it is intended for the presentation of techniques and methods, reduced data and general information of interest to industry, local, regional, and state governments and the public. Information contained in these reports is in the public domain. If this prepublication copy is cited, it should be cited as an unpublished manuscript.

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Acknowledgements

The authors thank Drs. J. O. Blanton and D. W. Menzel for critically reading the manuscript.

The following people participated in the cruise and their help was appreciated: D. Gregory, R. Findley, O. Guest, L. Quad, D. Huntley, A. Brinko, N. Chalker, P. Thompson, and M. Kelley. We would also like to thank the Captain and crew of the R/V ISELIN for their efforts. Dan McIntosh and Cindy Miller are thanked for graphics and typing, respectively.

Funding for this research and report is provided by the Department of Energy, under contract EY-76-S-09-0889 to L. P. Atkinson, and contract EY-76-S-05-5163 to T. N. Lee.

This report is published as a part of the Georgia Marine Science Center's Technical Report series issued by the Georgia Sea Grant Program under NOAA Office of Sea Grant #04-7-158-44126.

Abstract

During a cruise in the Georgia Bight in December 1976 two onshore-offshore hydrographic sections were repeated three times over a four-day period. Temperature, salinity, dissolved oxygen, and nutrient (NO_3 , PO_4 , and SiO_2) data were collected.

The shelf waters were vertically well mixed with horizontal gradients typical of winter conditions. A Gulf Stream meander was observed near the shelf break with upwelling velocities as high as $2.8 \times 10^{-2} \text{ cm sec}^{-1}$ and an along stream propagation of 31 cm/sec (26.8 km/day).

Introduction

This report contains chemical and physical data obtained during Georgia Bight cruise CI-12-76 (9-15 December 1976) aboard the R/V COLUMBUS ISELIN. The investigation was part of a larger multi-institutional Department of Energy program to understand event scale, physical, chemical, and biological processes of the South Atlantic Bight, the continental shelf region from Cape Hatteras to Cape Canaveral. The study reported here is concentrated in the Georgia Bight near Savannah, Georgia. Specifically, the objective was to collect physical and chemical data such that 3-dimensional, quasi-synoptic measurements of the interactions of shelf and Gulf Stream waters could be made. In addition, the hydrographic data were used to compare with moored instruments deployed by the University of Miami (Dr. Tom Lee). The hydrographic data sets are available from the National Oceanographic Data Center (NODC).

Methods

Two onshore-offshore hydrographic sections were repeated three times (Figure 1) between 10 and 14 December. Between stations a thermosalinograph was operated to obtain a detailed map of surface temperatures and salinities.

A typical hydrographic section consisted of alternate CTD (conductivity/temperature/depth) Rosette casts and XBT (expendable bathythermograph) casts at approximately 10 kilometer intervals. The Brunswick section (14-15 December) consisted exclusively of XBT stations 10 kilometers apart.

At CTD stations, a General Oceanics Model 1015 Mark 5 Rosette multi-bottle array with 1.7 liter Niskin Bottles and a Plessey Model 9400 CTD sensor system were used for water sampling. Niskin sampling depths were determined from the temperature structure obtained from the CTD. Samples were taken near the surface, just above or below the thermocline, at the bottom, and occasionally at other depths. Samples were analyzed for salinity, nitrate, phosphate, silicate, and dissolved oxygen.

Chemical and Physical Procedures

Salinity samples were analyzed conductometrically using a Plessey Model 6230N salinometer. Values obtained were used to calibrate the Plessey Model 9400 CTD system. A separate section of this report details the CTD calibration procedure. Temperature was determined with deep sea reversing thermometers, XBT's, and the CTD system.

Dissolved oxygen analyses were performed within 24 hours of collection using a modified Winkler procedure (Strickland and Parsons, 1965).

Nutrient samples were immediately frozen in polyethylene bottles and stored in the dark until thawed and analyzed ashore. Colorimetric

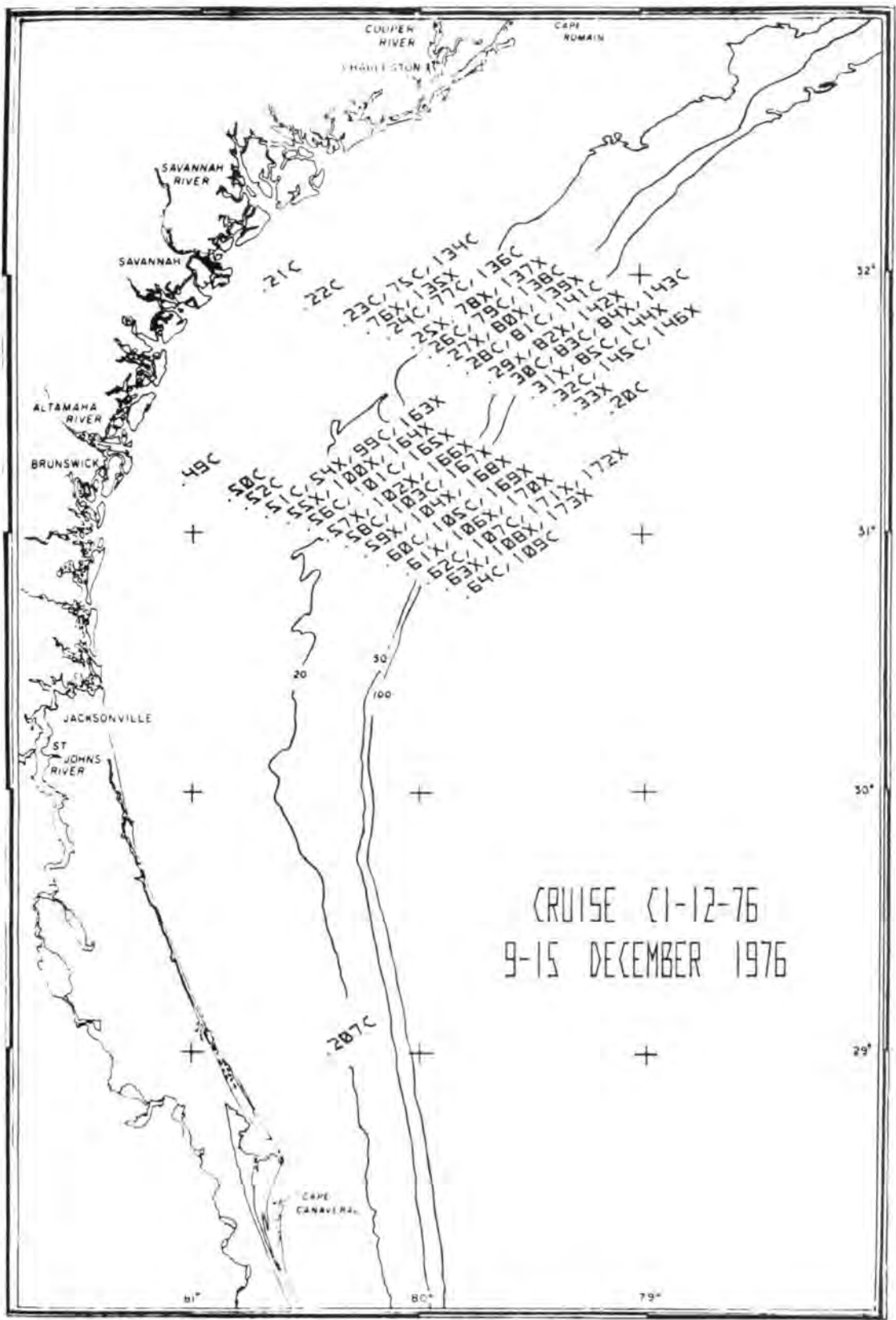


Figure 1. Location of Stations on Cruise CI-12-76.

determinations of nutrient concentrations were made utilizing a Bausch and Lomb Spectronic 88 spectrophotometer with a sample sipper. Silicate was determined by the method of Mullin and Riley (1955) as modified by Strickland and Parsons (1965), phosphate by the method of Murphy and Riley (1962), and nitrate by the cadmium column reduction technique as modified by Gardner, et al. (1976).

XBT Data Acquisition and Processing

A Sippican Model LM3A handheld launcher and an MK2A-1 recorder were used for XBT casts. The temperature/depth plots were manually digitized and these data were placed in NODC format and merged with processed CTD data. Depths at which temperature is a whole or half degree are reported as are depths at which a significant mixed layer begins or ends.

CTD Data Acquisition

The CTD unit consists of a Plessey Model 9400 CTD sensor system with a Model 8400 digital data logger and Kennedy Model 1600 incremental magnetic tape recorder for data acquisition and storage. A redundant 'YYY' plot was made of all casts using a Hewlett-Packard Model 7046 X-Y-Y recorder which was calibrated with a precision 10VDC source.

Digitized data were collected as the CTD sensor unit was lowered at 15m/min on a two conductor cable. All three parameters (C, T, and D) were sampled once each 229 milliseconds or every 6 cm at the 15m/min lowering rate. For primary calibration of temperature and salinity, a Niskin bottle equipped with paired protected deep sea reversing thermometers was tripped after a four minute equilibration period at the maximum sample depth in mixed layers. Other water samples were collected during ascent at depths selected after examination of the downcast temperature structure. The average time for stations less than 100 meters in depth was 25 minutes; for those greater than 100 meters, average time was 48 minutes, with a maximum of 65 minutes at station 20C.

CTD Data Processing

CTD plots were logged and stored with their respective station sheets. All data recorded on magnetic tape were extracted and processed according to the flow scheme shown in Table 1. Computation and data manipulation were performed on a CDC Cyber 70/74 computer. All CTD data were acquired and processed according to the methods described by Chandler, et al. (1978).

CTD Calibration

The CTD system was calibrated only against bottle samples in mixed layers to insure that the sensors and the bottles were sampling

Table 1. CTD/Data Flow. Shipboard Acquisition to NODC Submission.

Data Source/Disposition	Program	Data File
Tape from Data Logger	MAGREAD (Converts binary coded data to decimal)	BIRANG
	CTDUNIT (Converts decimal units to engineering units)	LAG
	LAGFILT (Course filters and temperature lag)	LATCH
	DLATCH (Removes decreasing and repeated depths)	CTDATA
	CTDAVE5 (One meter average data less than 100 meters and 5 meter average data after 100 meters)	AVE
	Primary Calibration from Bottle Casts	BROENK (Calculates salinity and sigma-t)	SGSA
NODCFO (Converts to NODC format)		NODC + HEAD
NUTMERG (Merges NODC data with headers and chemical data)		FINAL (CTD)
STAMERG (Merges CTD and XBT data)		
Submission to NODC		CI012
	CEMLIST (Calculates specific volume anomaly, oxygen utilization, etc.)	TECHNICAL REPORT

the same water. However, since a mixed layer was not always observed, comparisons could not be made at every station. The resulting mean offset, + 0.020‰ (Figure 2) was applied to all stations at which the maximum sampling depth was less than 50m. At depths greater than 50m, it was found that the effects of pressure could not be neglected. For these stations a regression analysis was performed (Figure 3) and an expression ($S = S_0 + 0.023 - 1.57 \times 10^{-4}D$ where S is the corrected salinity, S_0 is the calculated salinity without a calibration offset and D is the depth of the sample) was obtained. This expression was applied to generate corrected salinities at all CTD stations at which the maximum depth was greater than 50m.

After the entire data set was treated with the derived offset equation, + 0.10‰ was added to the salinities from casts 49C, 64C, and 99C. It is thought that powering up operations may be the cause of these higher offsets as 2 of the 3 problem casts (49C and 99C) were at the beginning of sections. The calibration data used to generate both the original offset and the subsequent expression for the depth effect are listed in Table 2. (Station numbers are discontinuous since thermosalinograph stations were established at intervals between hydrographic sections). Calibration data for stations 49C, 64C, and 99C were rejected in establishing the original offset equations.

No depth offset was necessary, and no temperature offset was applied since the CTD temperature sensor agreed with protected reversing thermometers within the range of accuracy ($\pm 0.02^\circ\text{C}$).

CTD Error Analysis

The Plessey Model 9400 CTD system has the following rated accuracy, resolution, and time constants (Table 3).

Table 3. Specifications for Plessey Model 9400 CTD System.

	Conductivity	Temperature	Depth
Accuracy	± 0.03 mmho/cm	$\pm 0.02^\circ\text{C}$	± 1.5 m
Resolution	0.0001 mmho/cm	0.0001 $^\circ\text{C}$	0.0012 m
Time Constant	0.1 sec	0.35 sec	0.1 sec

Since salinity is not measured directly, it must be calculated from the above parameters, resulting in the composite errors of the C, T, and D sensors and the salinity equation.

By varying "real" C, T, and D by the rated sensor accuracies in the salinity equation (Tables 4 and 5), the maximum error

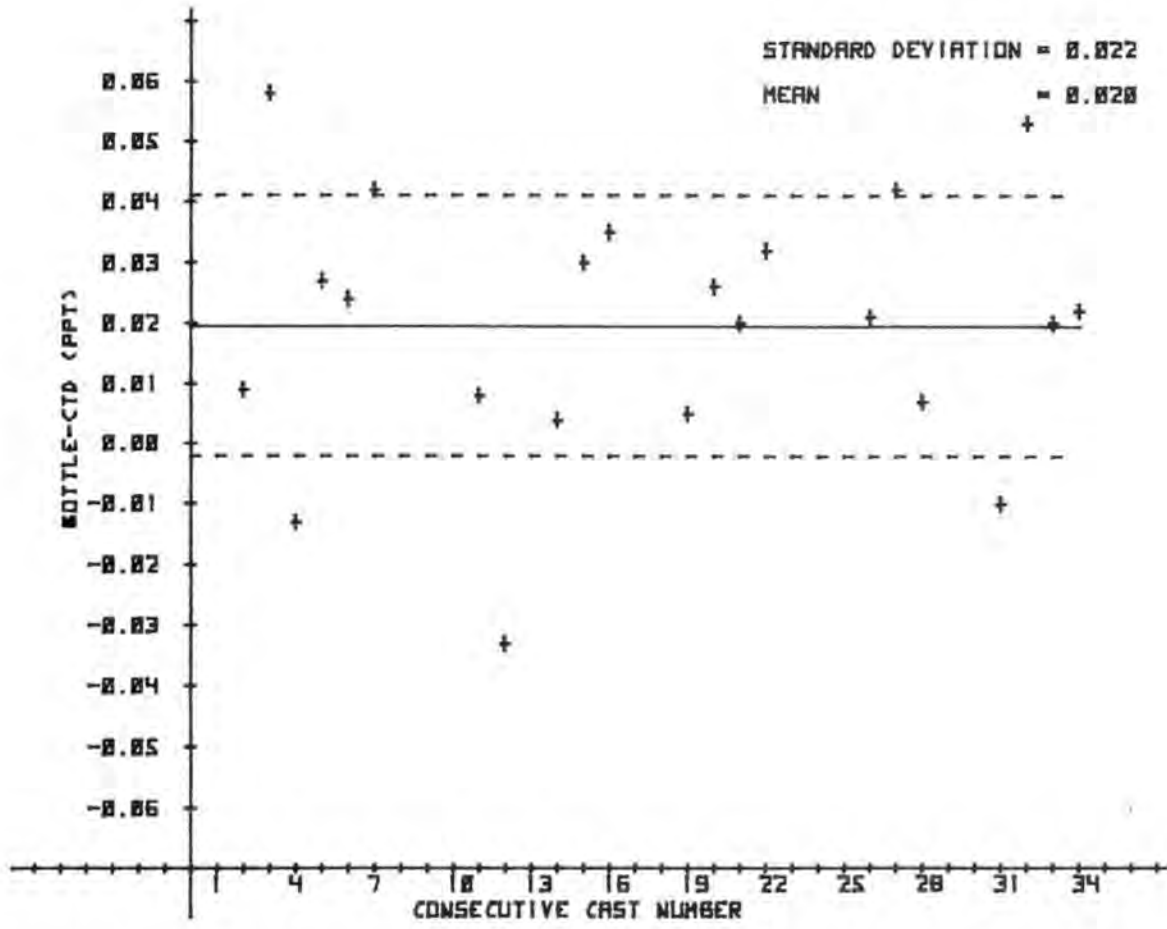


Figure 2. Mean offset for salinities at stations at which the maximum sampling depth was less than 50m (— mean offset;----standard deviation).

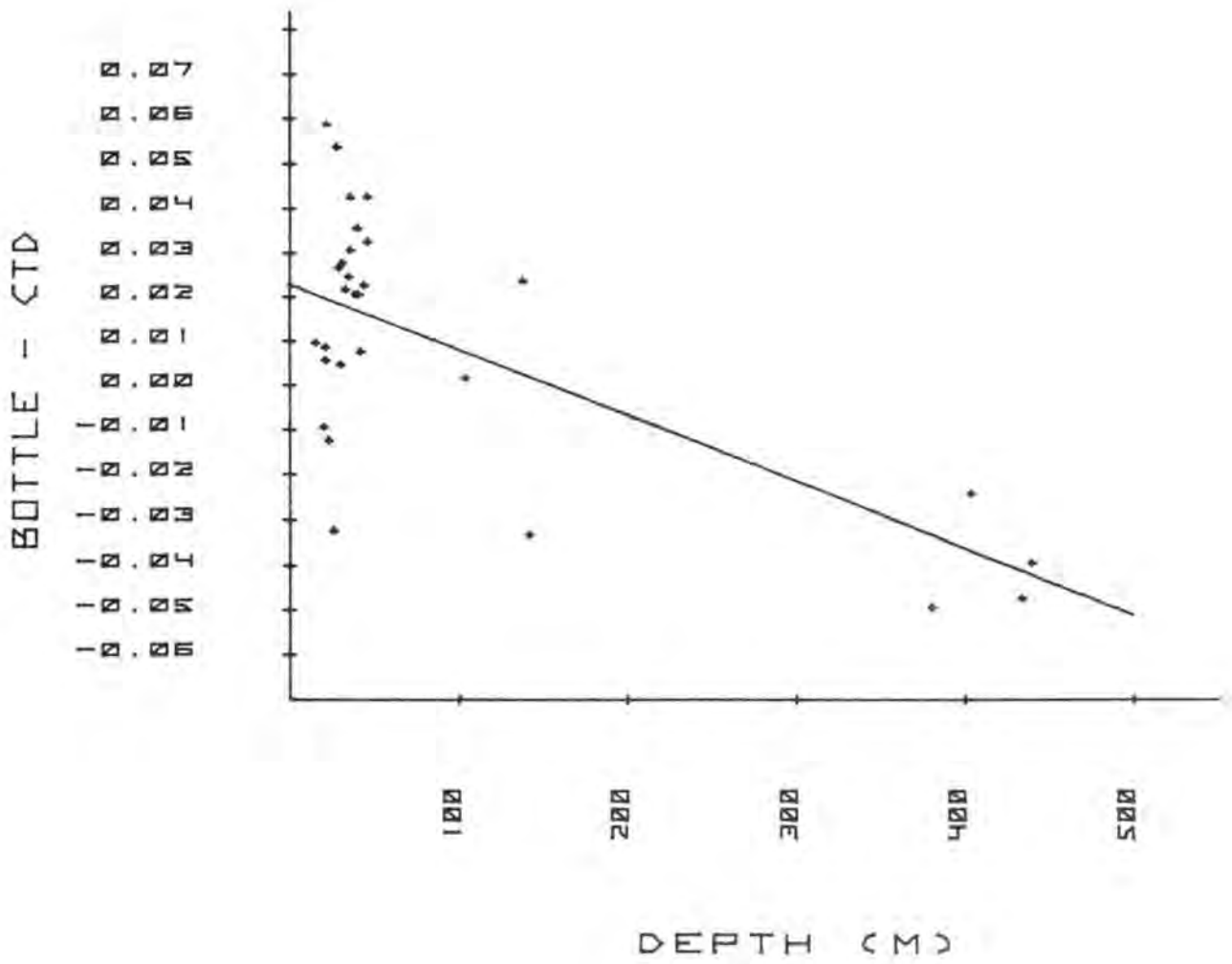


Figure 3. Regression analysis of salinity offset versus depth of sample.

Table 2. Cruise CI-12-76 Salinity Calibration Data.

Consecutive Cast No.	Station No.	Depth (m)	Bottle ‰	CTD ‰	Difference Bottle-CTD(‰)
1	20C	402	35.163	35.188	- .025
2	21C	13	33.878	33.869	+ .009
3	22C	20	35.020	34.962	+ .058
4	23C	21	35.894	35.907	- .013
5	24C	29	36.103	36.076	+ .027
6	26C	38	36.094	36.070	+ .024
7	28C	44	36.129	36.087	+ .042
8	30C	136	36.162	36.139	+ .023
9	32C	438	34.969	35.012	- .043
11	50C	19	35.585	35.577	+ .008
12	51C	24	35.878	35.911	- .033
14	56C	28	36.066	36.062	+ .004
15	58C	34	36.109	36.079	+ .030
16	60C	38	36.100	36.065	+ .035
19	75C	19	35.672	35.667	+ .005
20	77C	27	36.081	36.055	+ .026
21	79C	39	36.107	36.087	+ .020
22	81C	44	36.146	36.114	+ .032
23	83C	140	36.123	36.157	- .034
24	85C	379	34.997	35.047	- .050
26	101C	31	36.048	36.027	+ .021
27	103C	34	36.098	36.056	+ .042
28	105C	40	36.076	36.069	+ .007
30	109C	432	34.995	35.043	- .048
31	134C	18	35.675	35.685	- .010
32	136C	26	36.099	36.046	+ .053
33	138C	37	36.096	36.076	+ .020
34	141C	42	36.115	36.093	+ .022
35	143C	102	36.096	36.097	- .001

Table 4. Broenkow's Salinity Equations.

$$\begin{aligned}
 R_Z &= 1 + .01\{(1.551 - .0453T + 59 \times 10^{-5}T^2) \\
 &\quad + \frac{1}{4}(35-S)(.043 - .0017T + 23 \times 10^{-6}T^2)\}(1.037 \times 10^{-3}Z \\
 &\quad - 32 \times 10^{-9}Z^2\} \\
 A_T &= (676547 + 20131.5T + 99.89T^2 - .1943T^3 - .00672T^4) 10^{-6} \\
 R_T &= \frac{C(S,T,Z)}{R_Z A_T 42.896} \\
 \Delta_{15} &= R_T(R_T-1)(T-15) \{96.7 - 72R_T + 37.3R_T^2 \\
 &\quad - (.63 + .21R_T^2)(T-15)\}10^{-5} \\
 R_{15} &= R_T + \Delta_{15} \\
 S^0/00 &= .08996 + 28.2972R_{15} + 12.80832R_{15}^2 - 10.67869R_{15}^3 \\
 &\quad + 5.98624R_{15}^4 - 1.32311R_{15}^5
 \end{aligned}$$

where: R = conductivity ratio

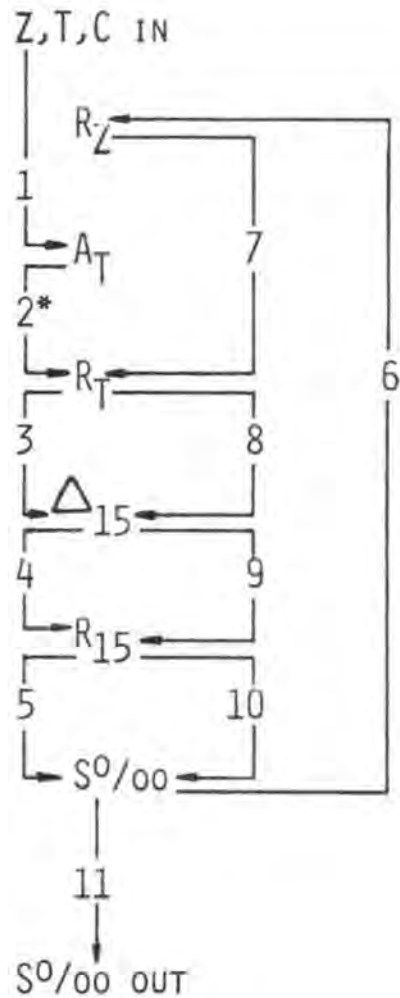
Z = depth (meters)

T = temperature ($^{\circ}$ C)

C = measured conductivity (mmhos/cm)

S = salinity ($^{\circ}$ /00)

Table 5. Flow Using Broenkow's Salinity Equations.



*without the R_Z term

R_Z = pressure effect on conductivity

A_T = temperature effect

R_T = $R(S, t, p)$ conductivity ratio

Δ_{15} = t_{15} correction (International Oceanographic Tables, 1966)

R_{15} = $R(S, 15^\circ\text{C}, 0)$

attributable to each sensor can be determined. The composite maximum error is approximately $\pm 0.06^{\circ}/\text{oo}$ for "real" data sets. However, the standard deviation of all mixed layer samples taken for salinity calibration purposes implies greater accuracy, namely $\pm 0.02^{\circ}/\text{oo}$ after offset for this data set. We believe this value is a more realistic measure of the quality of the data set.

Meteorological Conditions

Wind data from Savannah, Georgia are presented in Figure 4. These data are derived from the monthly summary for December 1976 (U.S. Department of Commerce, December 1976) and are plotted in GMT at three-hour intervals.

Winds were generally northeasterly from 9-15 December with a southerly interruption on 11 and 12 December. The strongest winds were observed on 13 December averaging 9.0 knots.

Air temperature at the Savannah station ranged from 9°C to 22°C during the cruise period. Additional meteorological data, collected by the ship's personnel, are presented with the data.

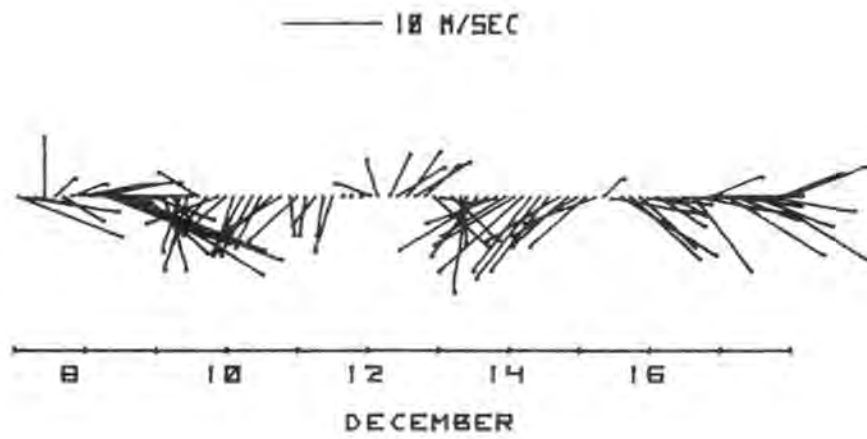


Figure 4. Wind speed and direction recorded at Savannah Airport.

Results and Discussion

The results of the synoptic mapping are shown in Figures 5-16 in both horizontal and vertical planes.

Surface Temperature Distributions

Included with the three surface temperature maps is the map obtained by the Coast Guard Airborne Radiation Thermometer flight on 9 December 1976 (Figure 5). Surface temperature over the time period increased towards the offshore with isotherms paralleling the coast. The Stream was, as determined by the 21-24°C isotherm, meandering with the maximum offshore position in the southern part of the area on 10-11 December, and, with time, migrating north until the 14th when the offshore meander was apparently north of the observation area. The ART flight data indicates that on 9 December the Stream was relatively far to the west. The strongest thermal gradients were observed on 12-13 December when the Stream was advancing again to the west.

Subsurface Distributions

Gulf Stream meandering has been related to upwelling at the shelf break with easterly movements of the stream related to lower temperatures at the shelf break (Atkinson, 1977). Thus the observed offshore meander should coincide with observed upwelling. The vertical sections (Figures 6-16) clearly show upwelling and downwelling associated with the meander. Following is a description of each section:

Savannah Section, 10-11 December 1976. (Figures 6-7) The shelf water was well mixed vertically with horizontal gradients. Offshore, upwelling can be seen in the isotherms positions as well as the distribution of nitrate and phosphate. Upwelling in this region is typical when the Gulf Stream is offshore of the shelf break.

Savannah Section, 12 December 1976. (Figures 8-9) The shelf waters were well mixed with horizontal gradients and once again upwelling can be seen in the temperature, nitrate and oxygen data. Elevated nutrient concentration at the shelf break indicate that upwelling reach the surface. The Gulf Stream was closer to shore than on 10-11 December.

Savannah Section, 14 December 1976. (Figures 10-11) The shelf waters were unstratified with high nitrate and phosphate waters at the shelf break indicative of recent upwelling. The Gulf Stream was further onshore (24°C isotherm).

Brunswick Section, 11-12 December 1976. (Figures 12-13) Typical winter conditions persisted on the shelf. The isotherms indicate some upwelling, but as the Savannah section on these dates, this feature is weak. Nitrate, phosphate, and silicate plots also indicate upwelling.

Brunswick Section, 13 December 1976. (Figures 14-15) Typical winter conditions persisted over the shelf. The Gulf Stream moved onshore a distance of approximately 12 km and downwelling occurred along the slope to a depth of ca. 175 m.

Brunswick Section, 14-15 December 1976. (Figure 16) There was little change from the profile made on 13 December. The Gulf Stream moved offshore (compare with 24°C isotherm for 13 December; Figure 14) and some upwelling was present as shown by the positions of the 20°C and 21°C isotherms. No salinity or nutrient data are available.

Onshore/Offshore Motions

The onshore-offshore velocities were determined from the distance the 21°C and 24°C isotherms moved during the three observation periods. The isotherm positions are summarized in Figure 17 and the calculations are as follows:

Table 6. Onshore/offshore velocities off Savannah and Brunswick (+ offshore, - onshore).

		21°C			24°C		
Grid		1	2	3	1	2	3
Savannah	Distance (km)	-15	+11		+4	-17	
	Elapsed Time (h)	40	42		39	29	
	Velocity(cm sec ⁻¹)	-10.4	+7.3		+2.8	-16.3	
Brunswick	Distance (km)	+3	+3		-6	+7	
	Elapsed Time (h)	33	42		33	44	
	Velocity(cm sec ⁻¹)	+2.5	+2.0		-5.0	+4.4	

The 24°C isotherm appears to be a better indicator of the meander motion. Onshore velocities were first observed off Brunswick between the first two grids and then off Savannah between the second and third grids.

Vertical Motions

Vertical motions were determined from the variation in the minimum depth of the 19°C isotherm. The calculation and results are given in Table 7.

Table 7. Vertical velocities off Savannah and Brunswick (+ down).

Savannah	Grid	1	2	3
	Station	30C	83C	143C
	Time (d/h)	11/0.3	12/16.1	14/9.8
	Depth(19°C)(m)	170	130	150
	Δ time (h)		39.8	41.7
	Δ depth (m)		-40	+20
	\bar{w} (cm sec ⁻¹)		-2.8×10^{-2}	$+1.3 \times 10^{-2}$
Brunswick	Station	62C	107C	171X
	Time (d/h)	12/0.6	13/9.3	15/4.2
	Depth(19°C)(m)	130	152	126
	Δ time (h)		32.7	42.9
	Δ depth (m)		+22	-16
	\bar{w} (cm sec ⁻¹)		$+1.9 \times 10^{-2}$	-1.0×10^{-2}

These velocities are typical of upwelling situations. Interestingly, the upwelling occurred first off Savannah leading the offshore motion.

Propagation Rate

The rate at which the meander moves downstream can be estimated from the surface isotherm positions. The amplitude of the meander was ca. 15 km and typical onshore/offshore velocities were 10 cm sec⁻¹ thus the period is 3.4 days. The observed length is 93 km so the phase speed would be 31 cm sec⁻¹ (0.6 knot). This rate is similar to the 39 cm sec⁻¹ observed by Legeckis (1975).

T-S Relationship

The T-S plot for all data is in Figure 18. The group of points at ca. 20°C/34‰ are from Station 207 which is considerably south of the existing hydrogrid (see Figure 1).

Figures 19-23 are T-S plots for each individual section. They show the transition from shelf to Gulf Stream water in each of the onshore-offshore sections. At some deep stations (i.e., 54-62) mixing of shelf waters with Gulf Stream water is apparently active.

Nitrate-Phosphate-Silicate-Temperature Relationships

Various relationships between nitrate, phosphate, silicate and temperature are useful to assess the quality of the data and to elucidate some of the chemical, biological, and physical processes.

For deeper waters the ratio of nitrate to phosphate is typically 16:1 and is derived from the decomposition of organic matter. All nitrate and phosphate data for this cruise appear in Figure 24 with a line representing the 16:1 N:P ratio. At low nutrient concentrations, an excess of phosphate over nitrate is observed. Stations with excess phosphate are generally in shallow areas where any free nitrogen is released more quickly than nitrate, leading to an apparent excess of phosphate.

Temperature-nutrient plots (Figures 25-27) show the inverse relationship between temperature and nutrient concentration. The scatter at low concentrations represents samples taken over the shelf with temperature decreasing towards shore.

A plot of silicate versus salinity is presented in Figure 28. Higher salinity and silicate concentrations are representative of Gulf Stream waters. Other values correspond to shelf waters.

Oxygen-Density Correlation

Figure 29 plots oxygen versus sigma-t. The curve is typical of normal Sargasso Sea water. Points above the curve are from surface Gulf Stream and shelf waters. Points below the curve with a sigma-t of 25 to 26 are a Caribbean component of the Gulf Stream (Richards and Redfield, 1955).

Summary

In summary, the following observations were made:

1. The shelf waters were well mixed with horizontal stratification, typical of winter conditions.
2. A meander was observed at the shelf break and passed through the area of this study.
3. The vertically induced component of velocity (upwelling) associated with this meander was as high as $2.8 \times 10^{-2} \text{ cm sec}^{-1}$.
4. The meander moved northward at a rate of 31 cm sec^{-1} , a velocity comparable to the 39 cm sec^{-1} reported by Legeckis (1975).

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FIGURES
(5 - 29)

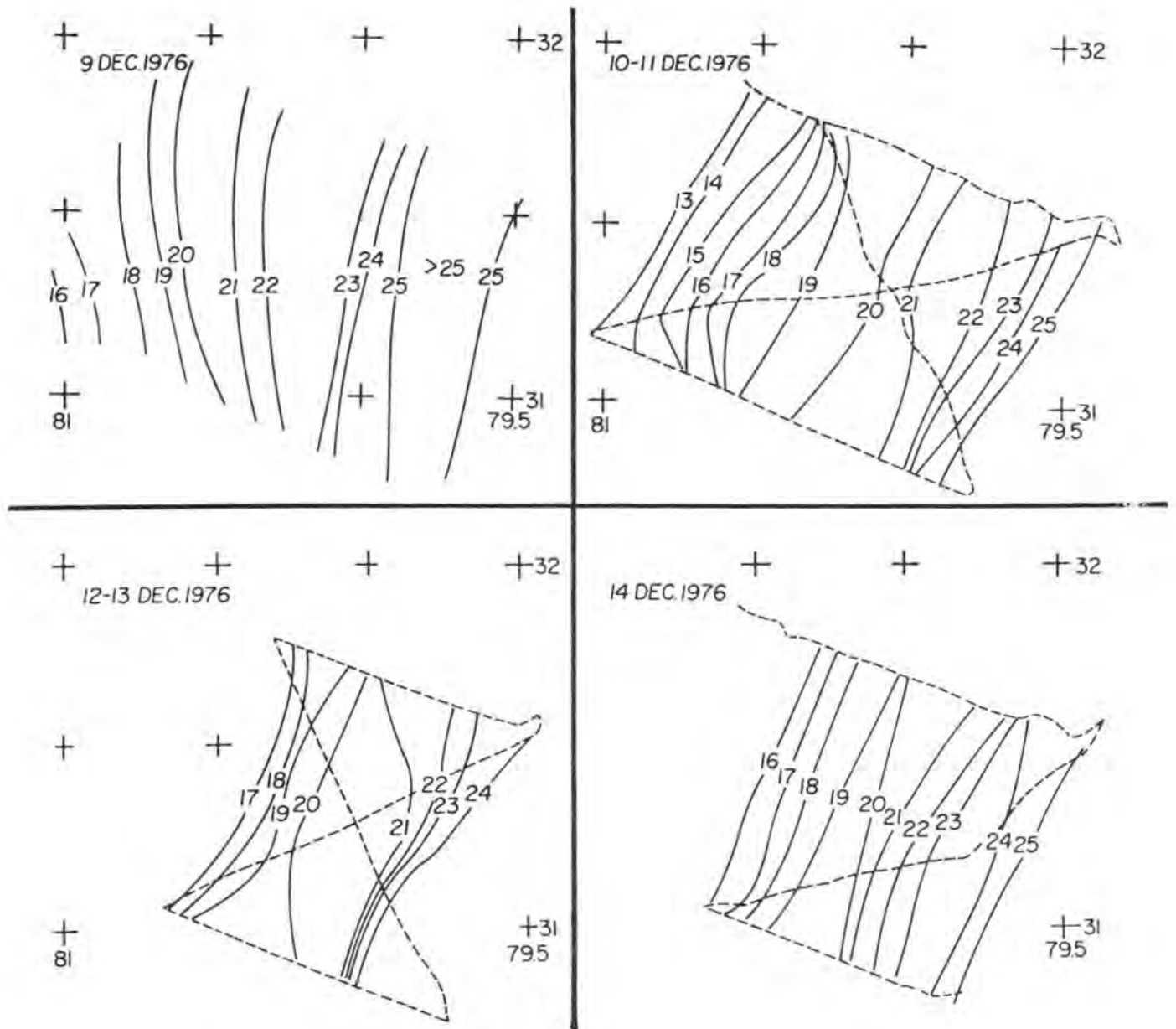


Figure 5. Surface temperature distribution. The 9 December data are from a Coast Guard Airborn Radiation Thermometer flight. Dashed line is cruise track.

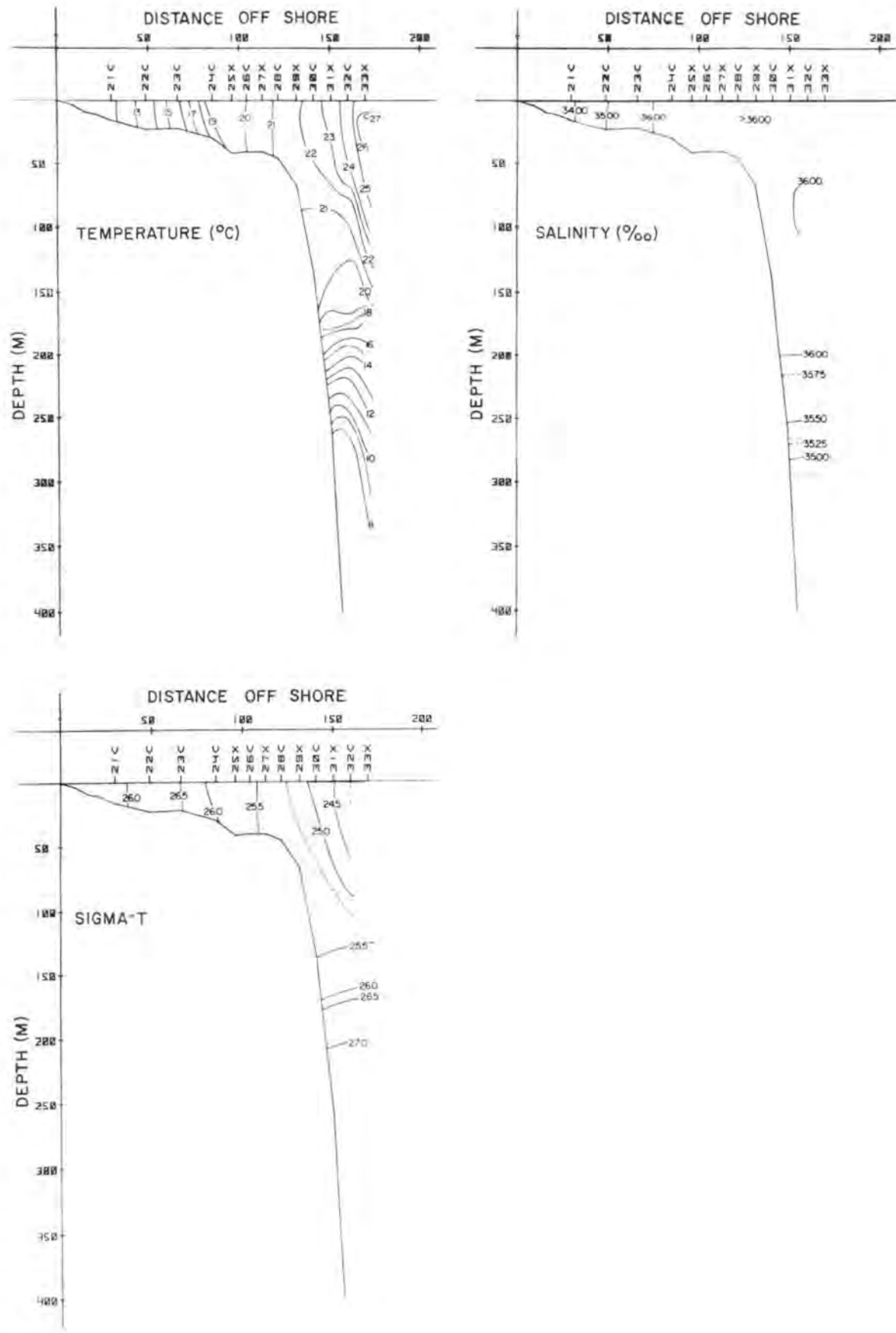


Figure 6. Savannah section temperature, salinity and sigma-t, 10-11 December.

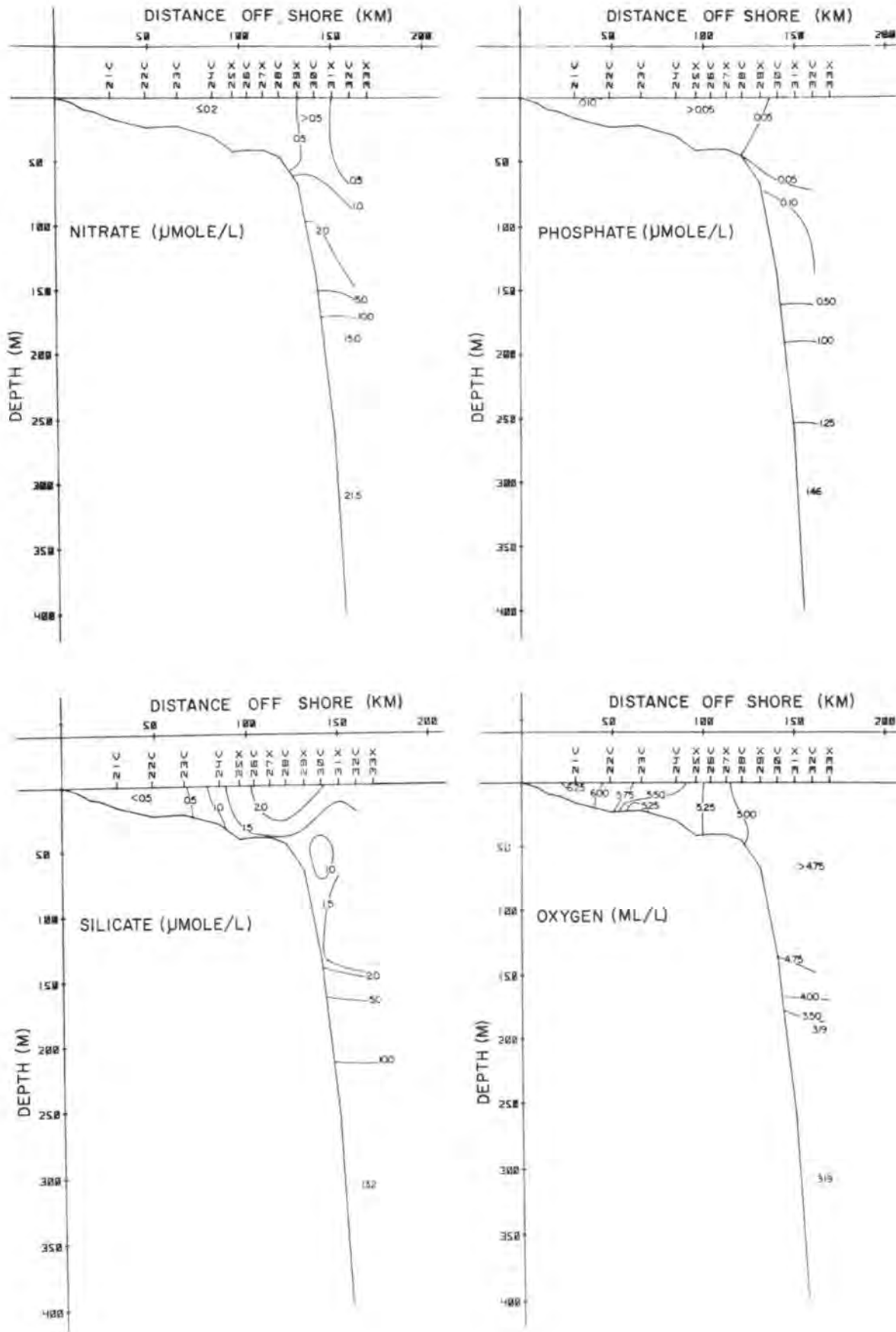


Figure 7. Savannah section nitrate, phosphate, silicate and dissolved oxygen, 10-11 December.

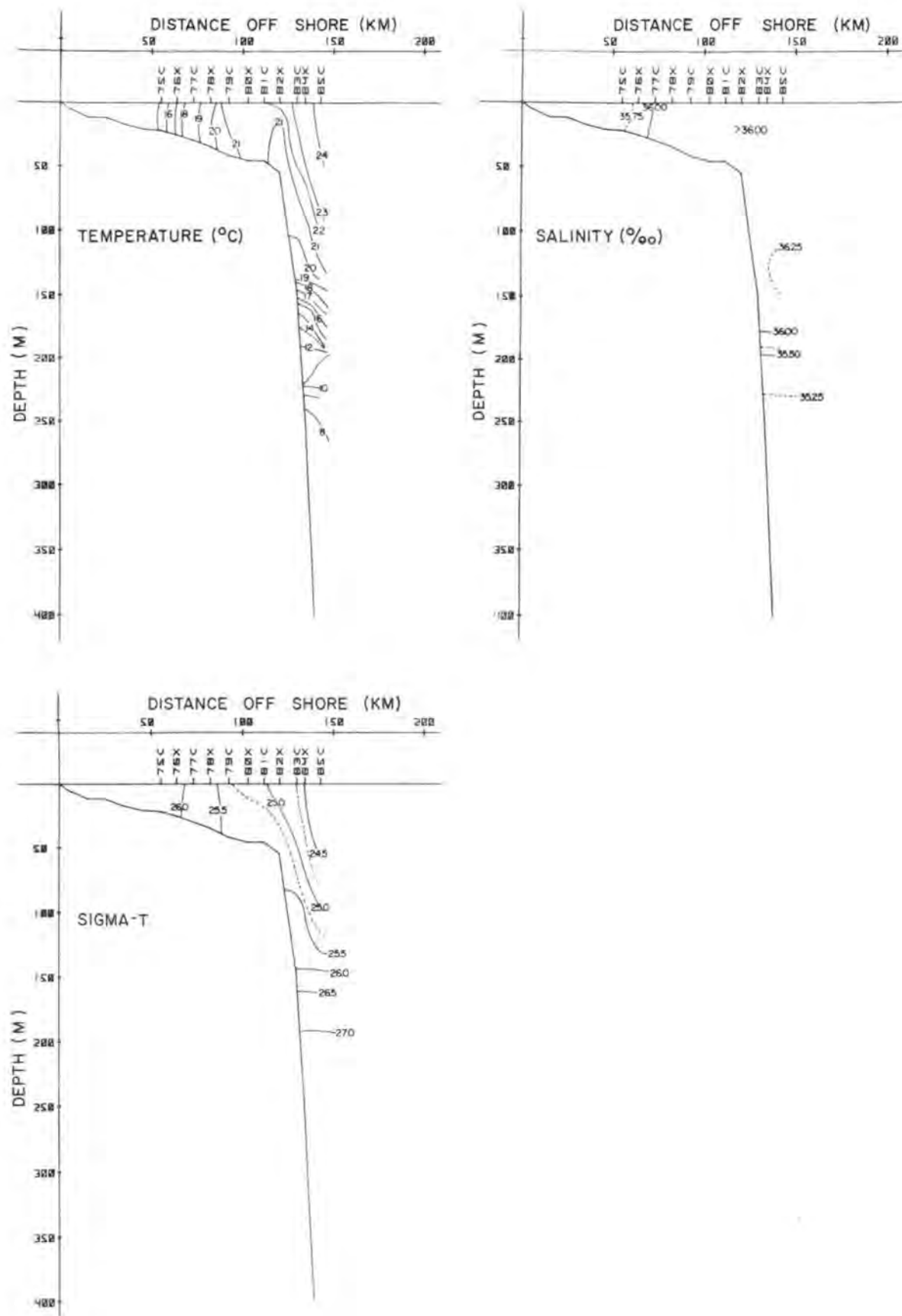


Figure 8. Savannah section temperature, salinity, and sigma-t, 12 December.

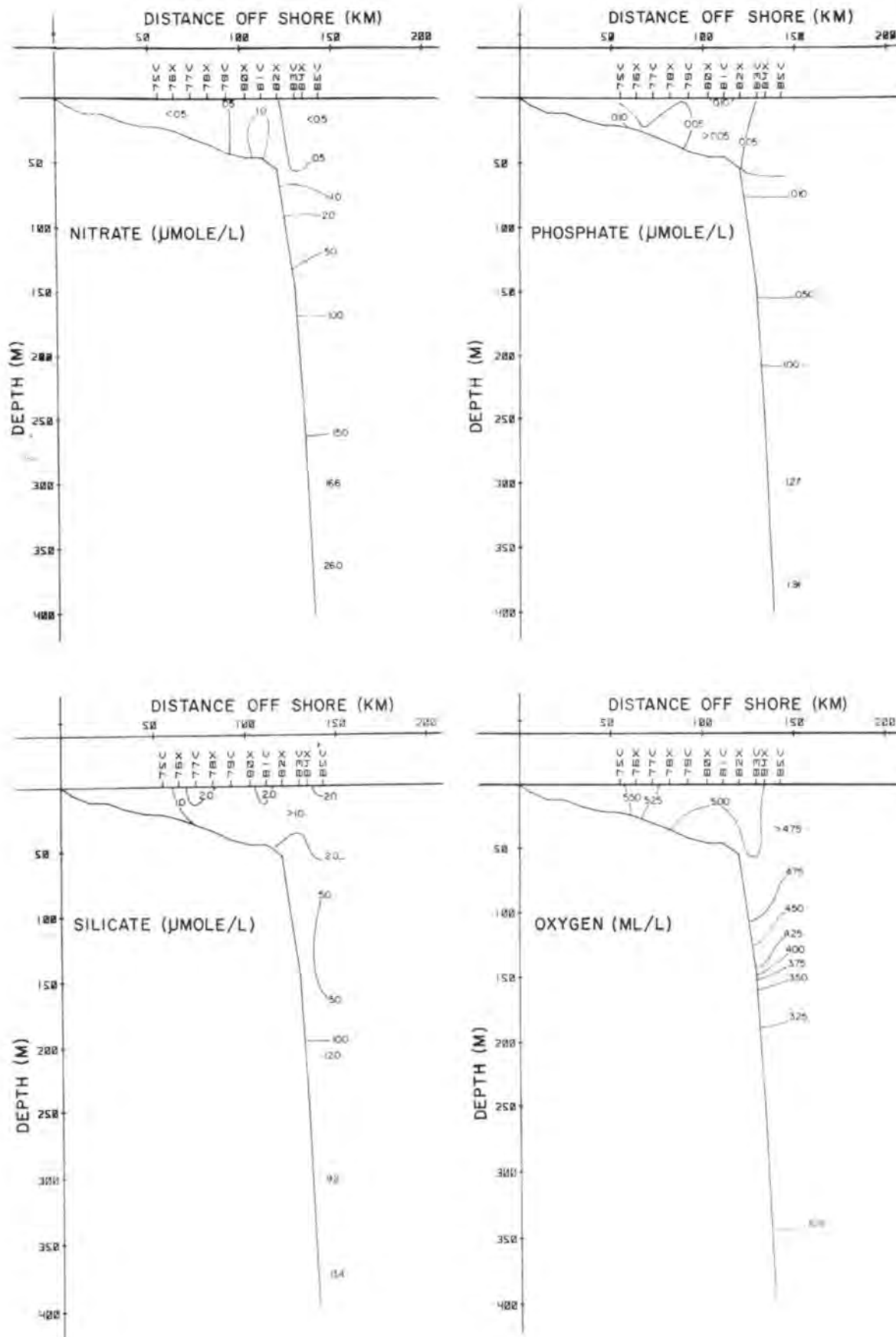


Figure 9. Savannah section nitrate, phosphate, silicate and dissolved oxygen, 12 December.

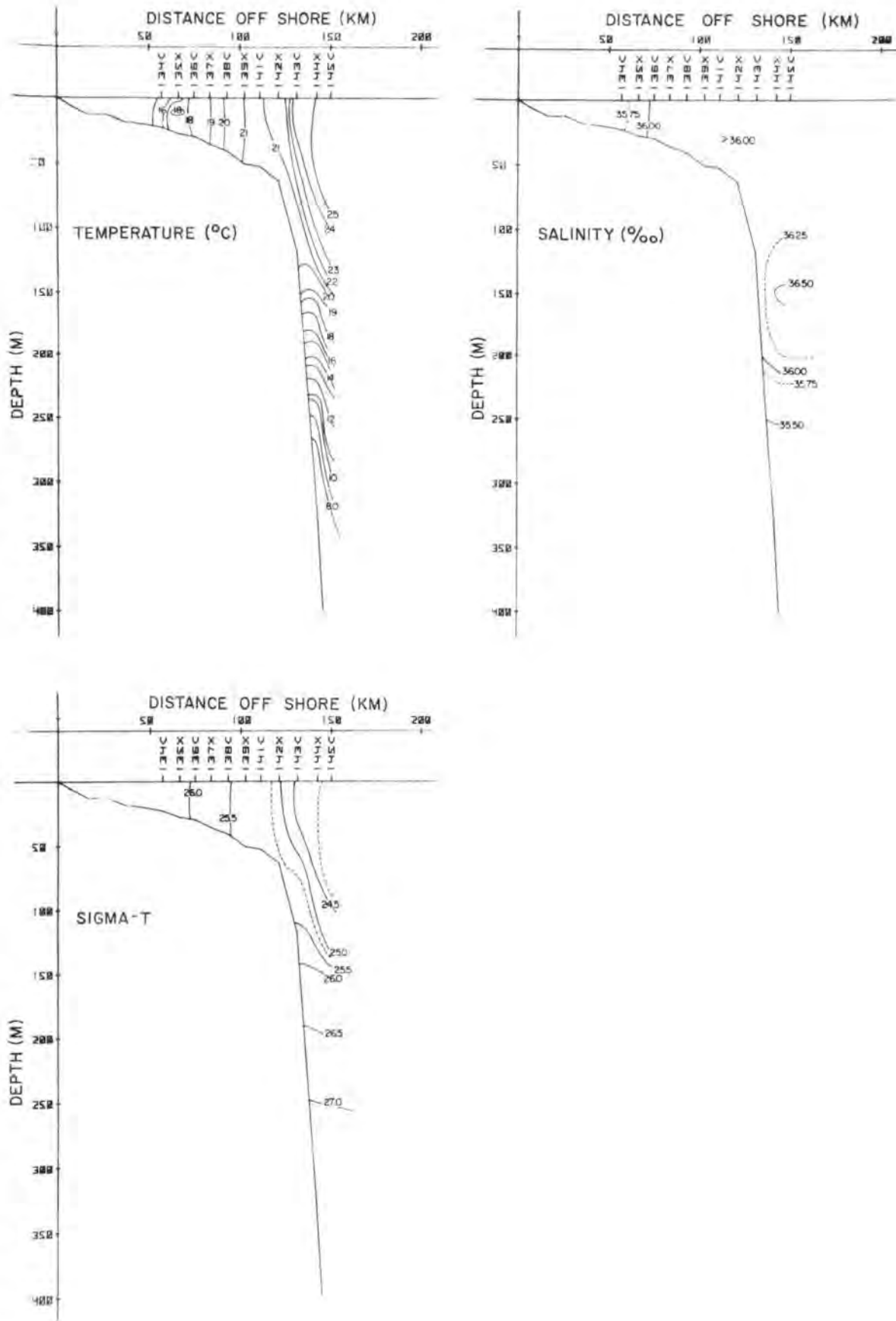


Figure 10. Savannah section temperature, salinity and sigma-t, 14 December.

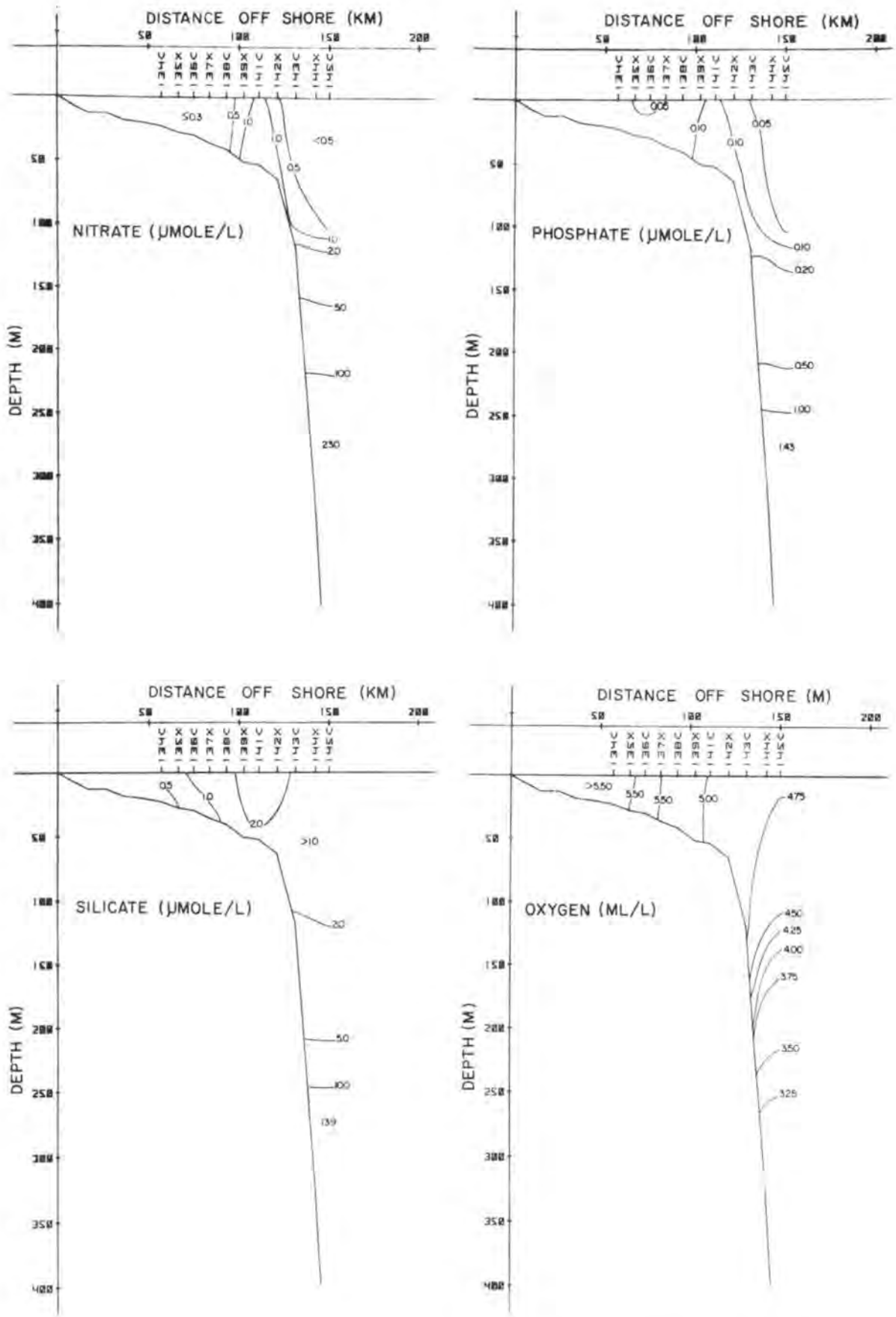


Figure 11. Savannah section nitrate, phosphate, silicate and dissolved oxygen, 14 December.

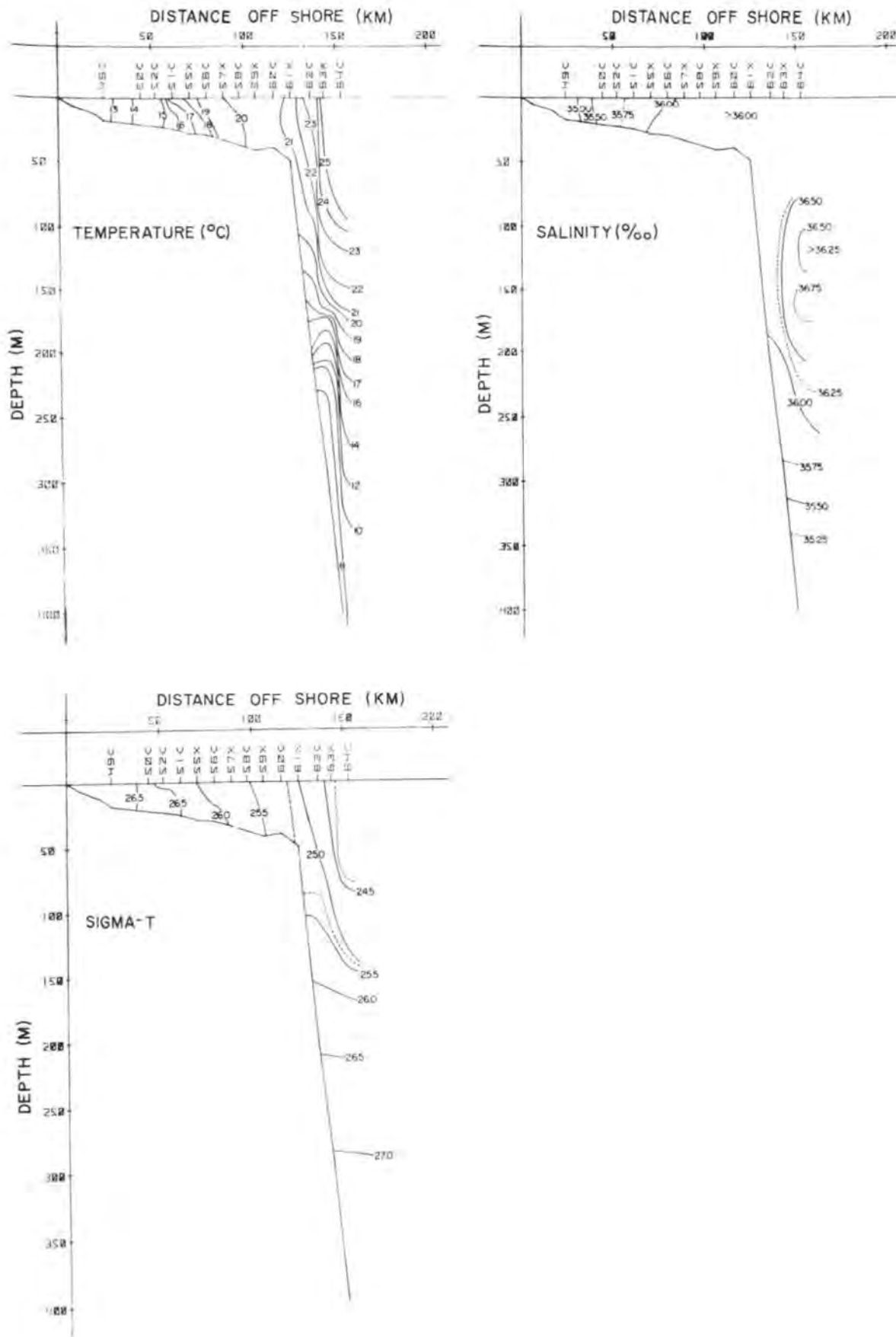


Figure 12. Brunswick section temperature, salinity and sigma-t, 11-12 December.

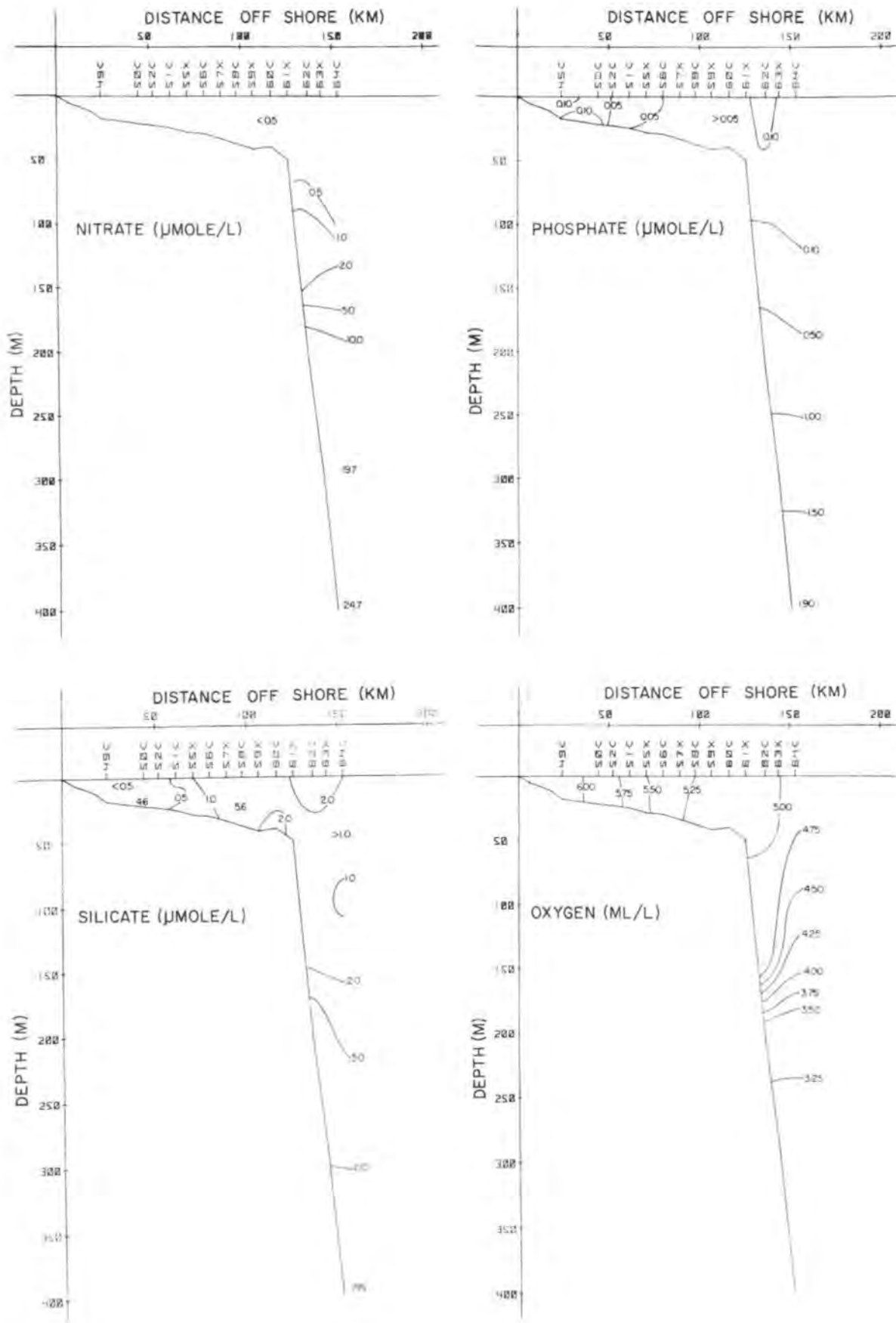


Figure 13. Brunswick section nitrate, phosphate, silicate and dissolved oxygen, 11-12 December.

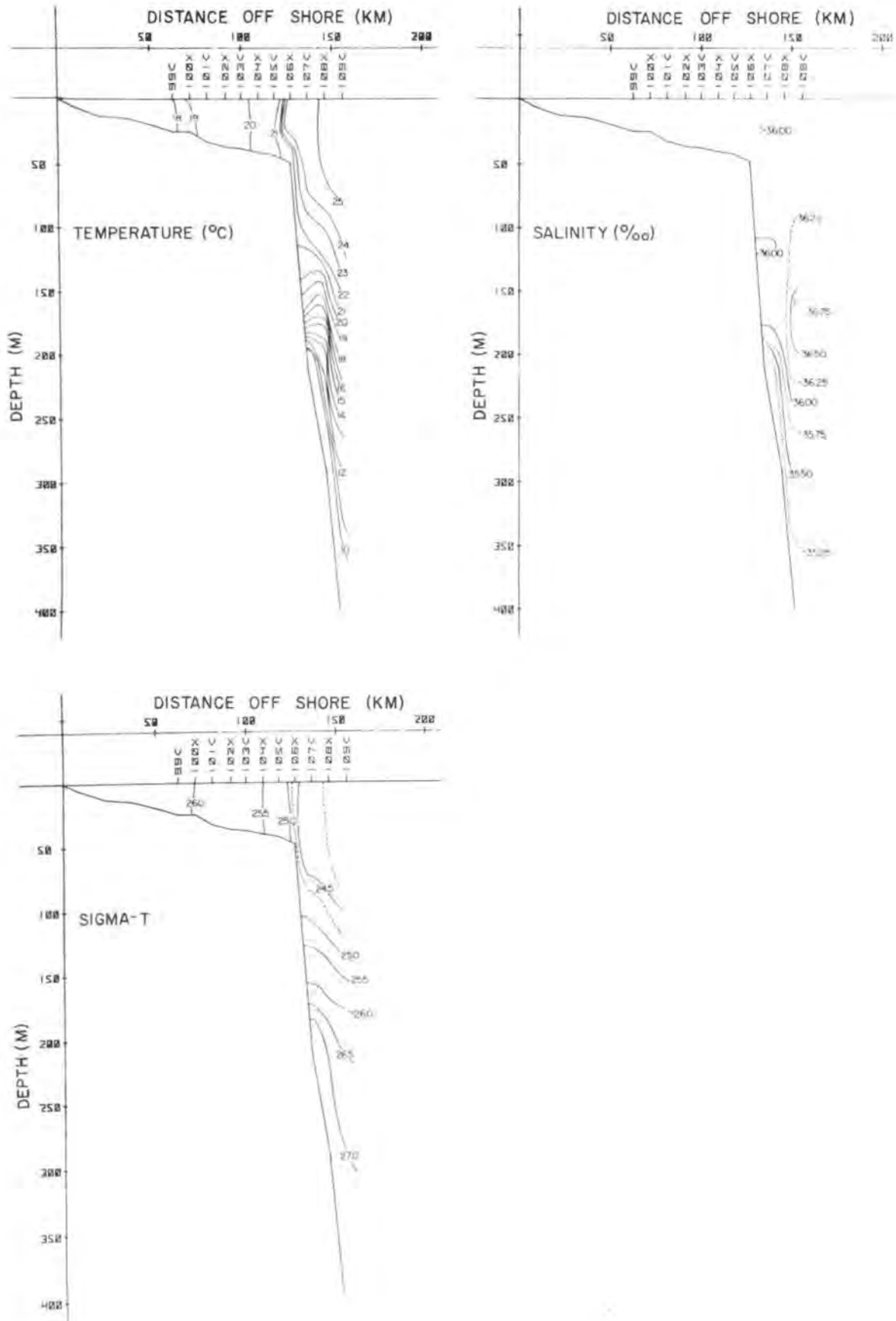


Figure 14. Brunswick section salinity and sigma-t, 13 December.

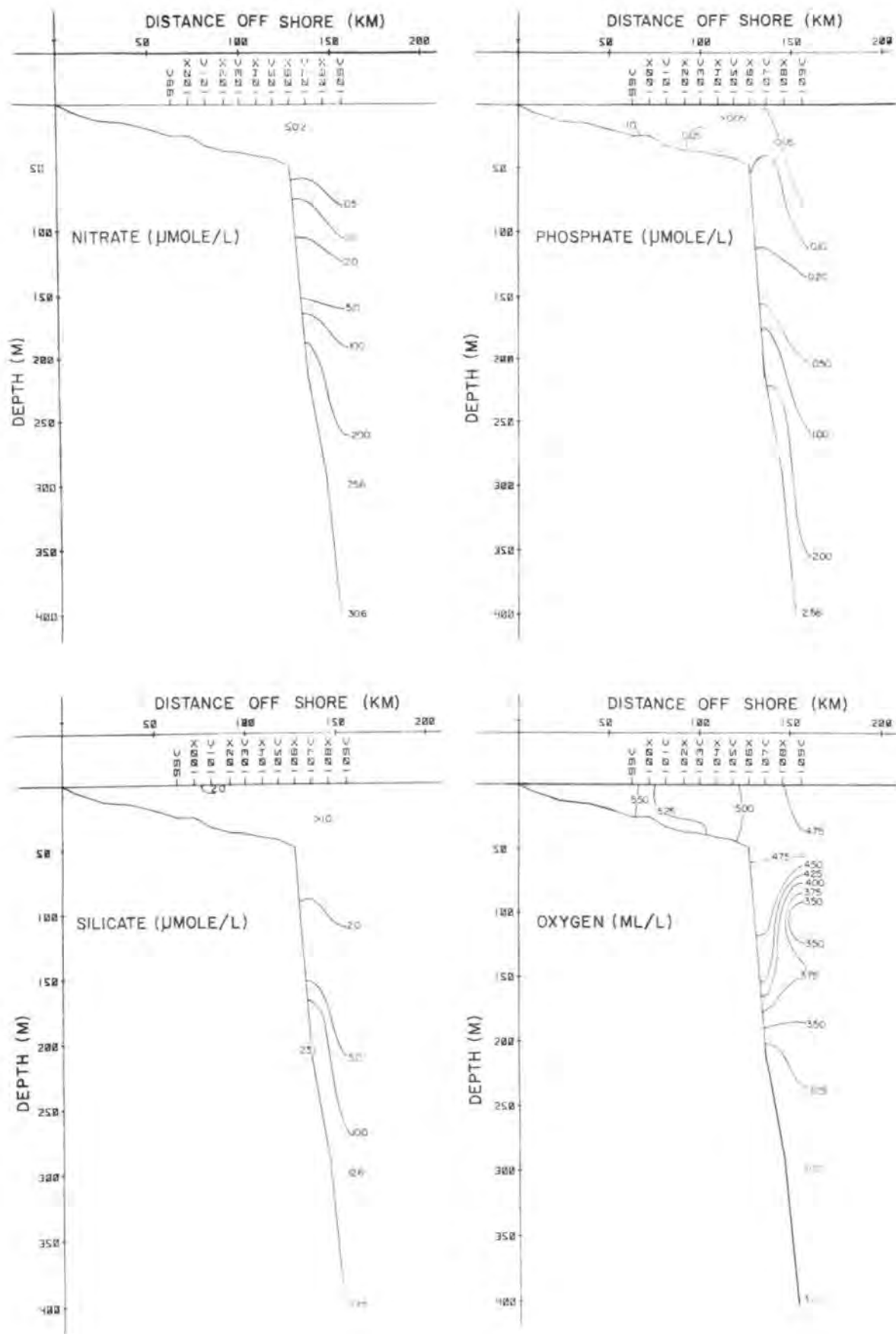


Figure 15. Brunswick section nitrate, phosphate, silicate and dissolved oxygen, 13 December.

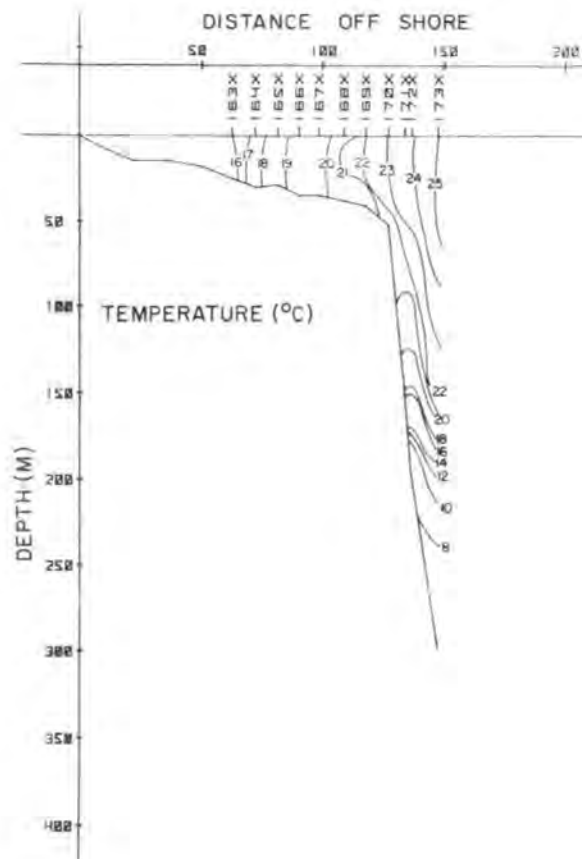


Figure 16. Brunswick section temperature, 14-15 December.

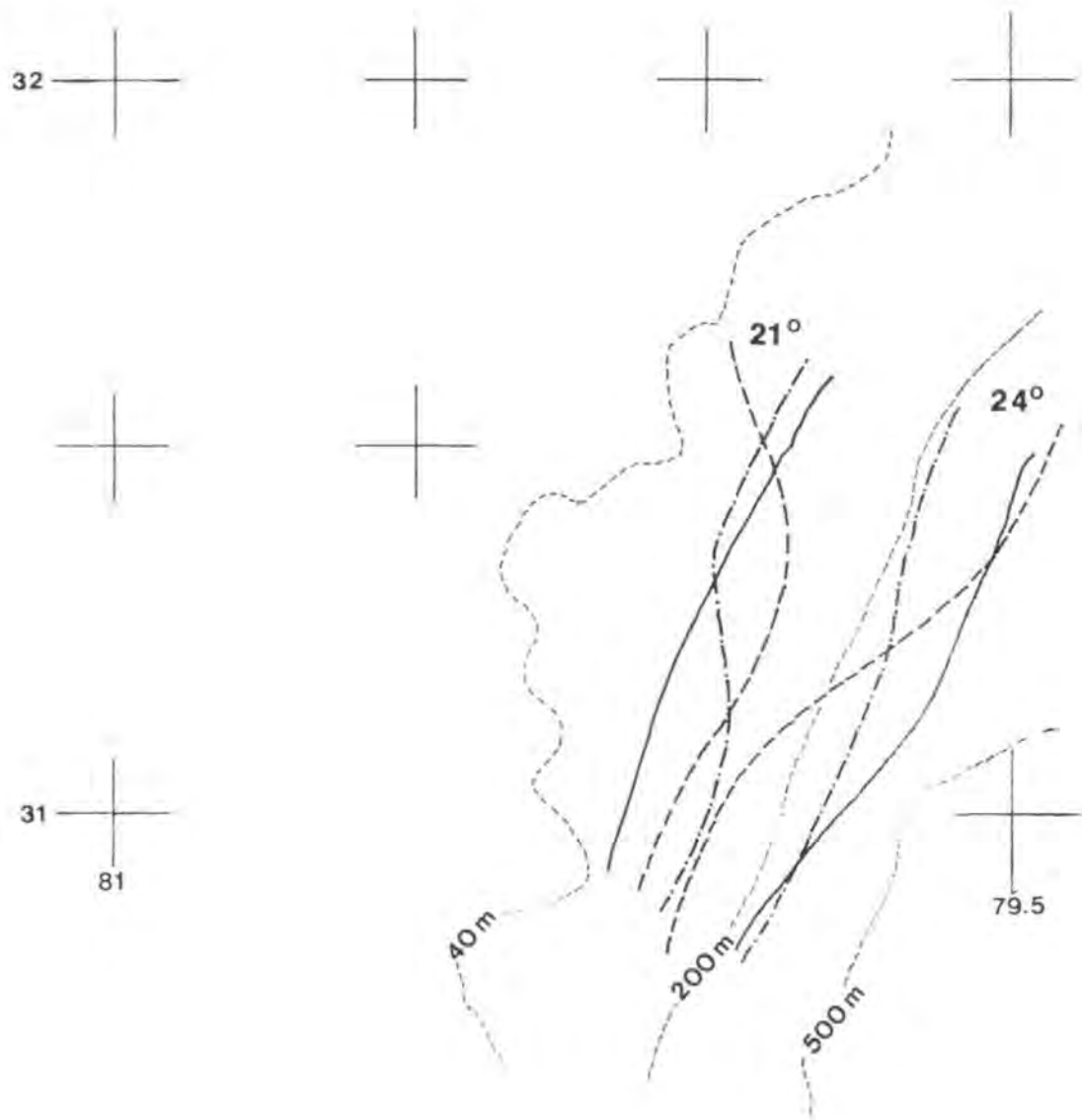


Figure 17. Time series of the 21⁰C and 24⁰C isotherms (———10-12 December, -----12-13 December, -·-·-·-14-15 December).

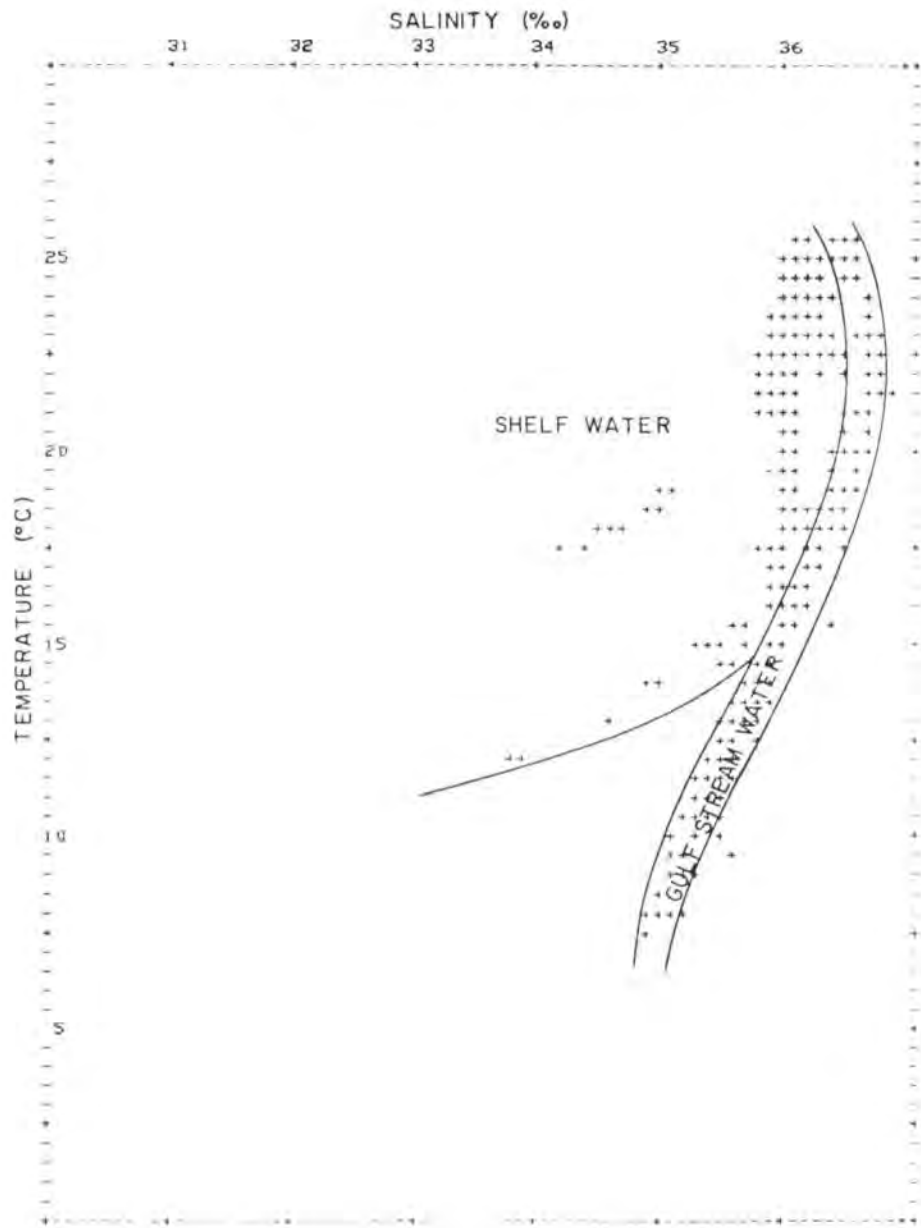


Figure 18. Temperature-salinity diagram, Cruise CI-12-76, December 1976.

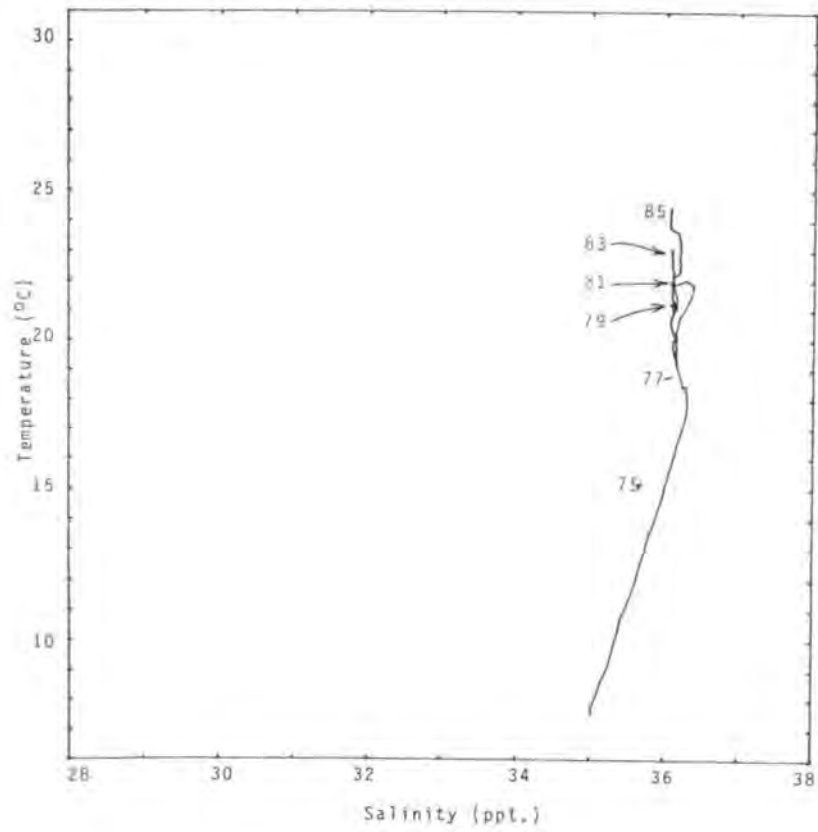


Figure 21. Savannah Section, 12 December.

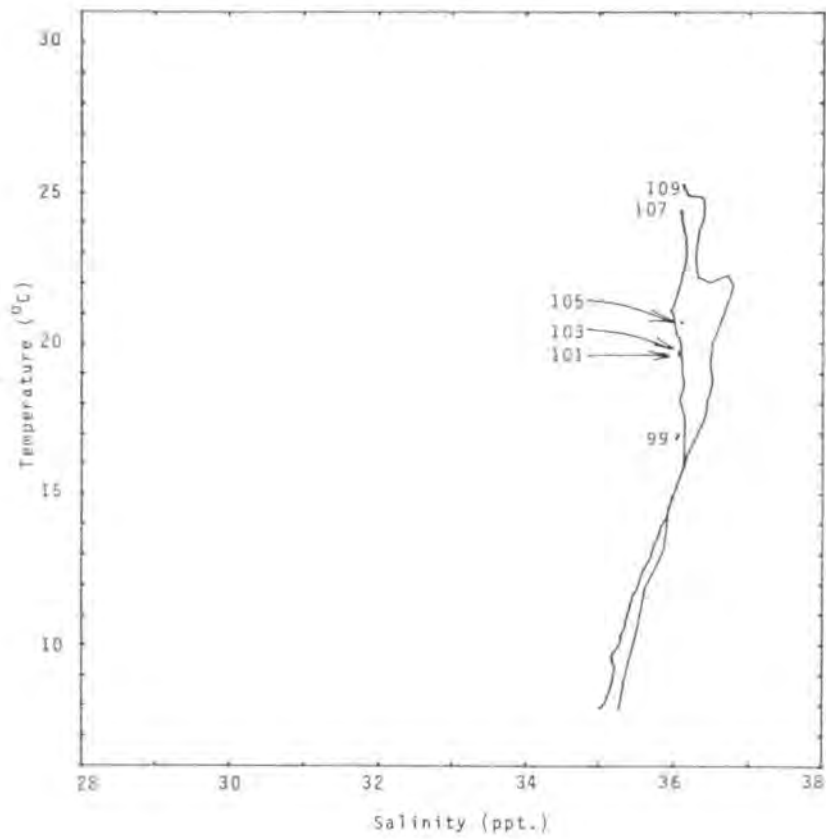


Figure 22, Brunswick Section, 13 December.

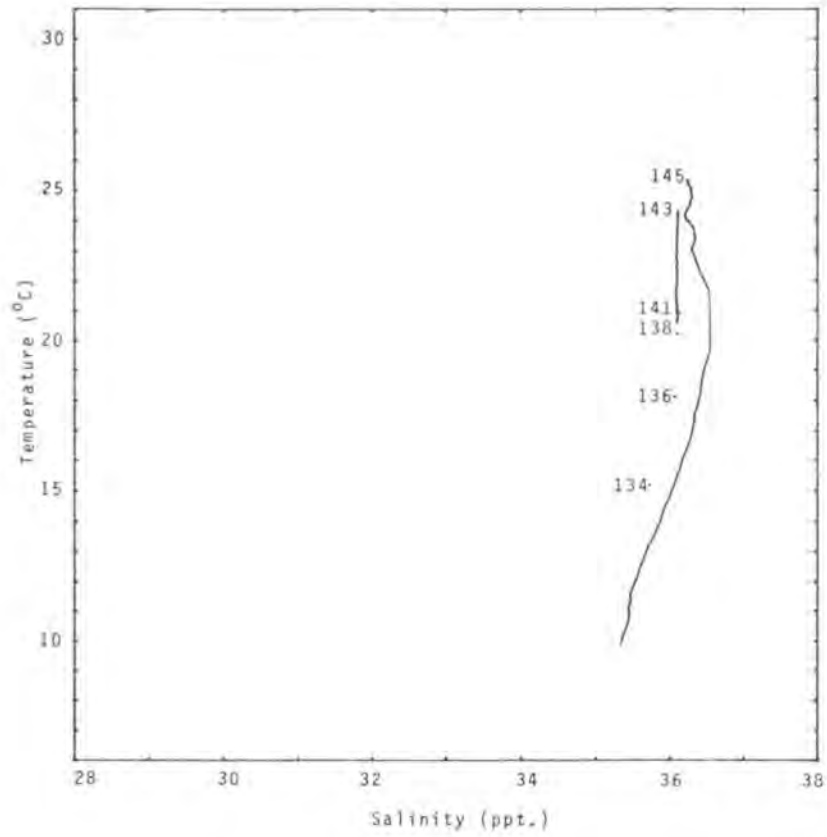


Figure 23. Savannah Section, 14 December.

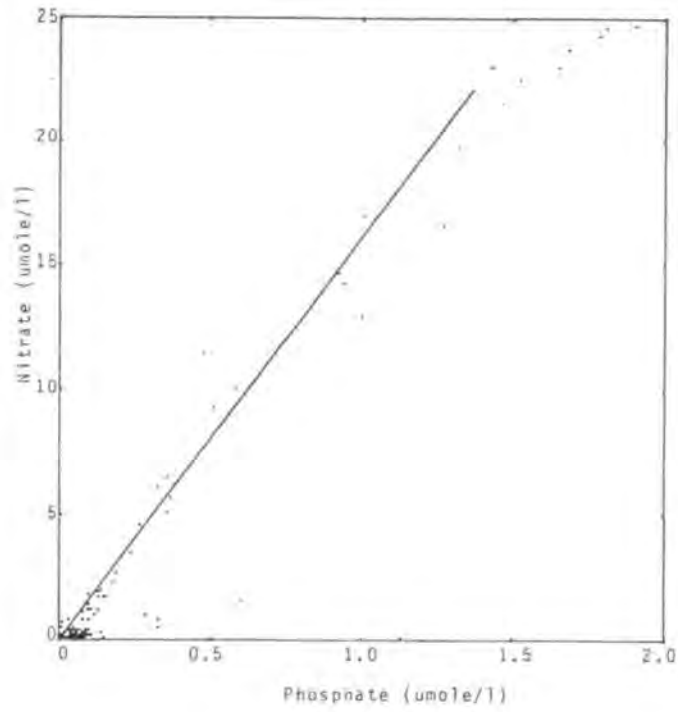


Figure 24. Nitrate vs. phosphate with line representing the 16:1 (N:P) ratio.

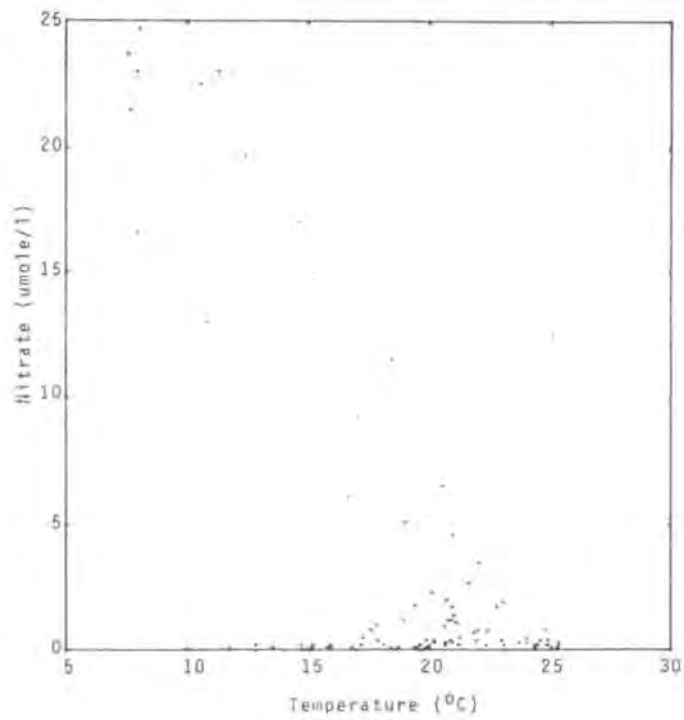


Figure 25. Nitrate vs. temperature.

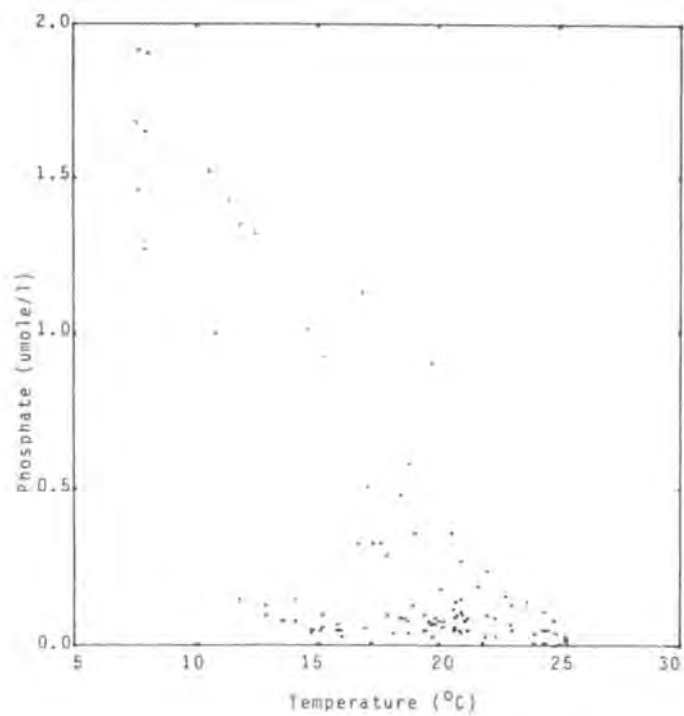


Figure 26. Phosphate vs. temperature.

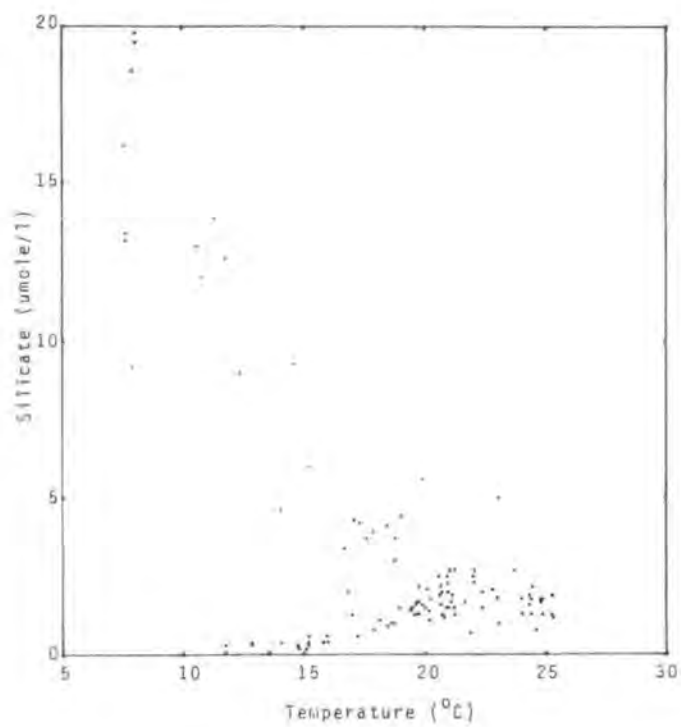


Figure 27. Silicate vs. temperature.

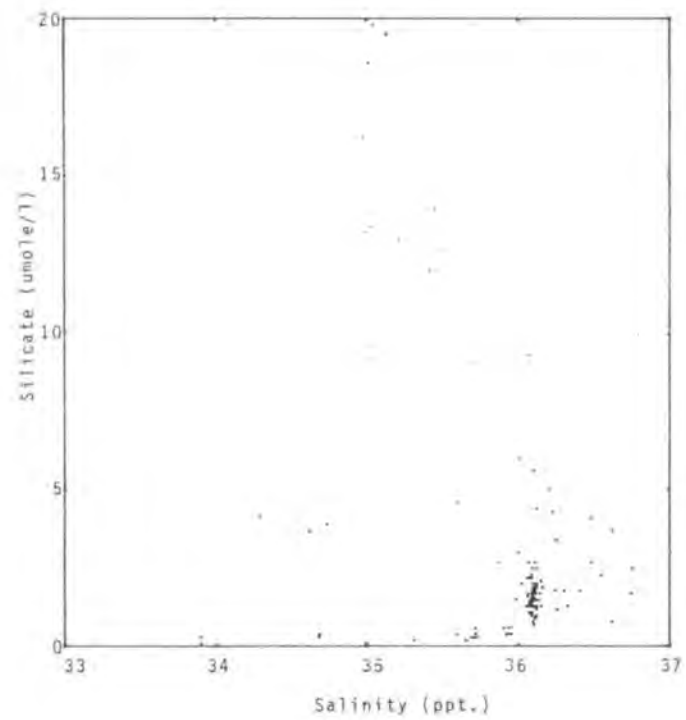


Figure 28. Silicate vs. salinity.

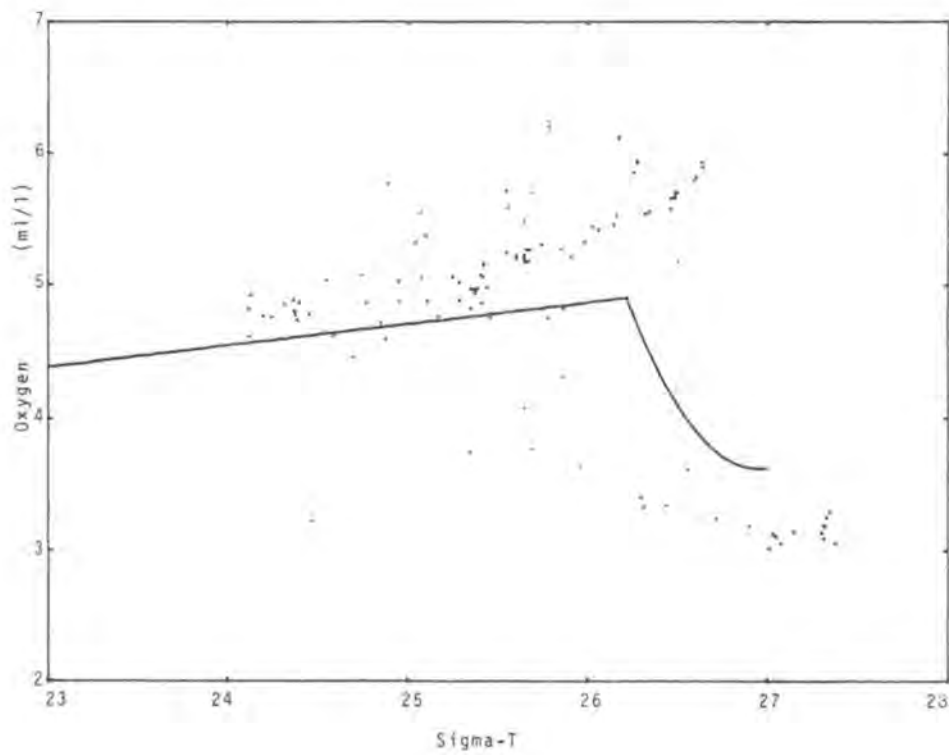


Figure 29. Oxygen versus sigma-t with line representing normal Sargasso Sea water.

DATA

Table 8. STATION SUMMARY FOR ISELIN CRUISE CI-12

CRUISE	STATION	LATITUDE	LONGITUDE	YR	MN	DY	HOURL	DEPTH	CONSEC
							GMT			M	NUMBER
012	020C	31 28.1N	79 7.0W	76	12	9	4.0	500	20
012	021C	31 56.4N	80 41.0W	76	12	10	14.7	16	21
012	022C	31 52.0N	80 30.1W	76	12	10	15.7	23	22
012	023C	31 48.2N	80 20.0W	76	12	10	17.3	22	23
012	024C	31 45.2N	80 8.4W	76	12	10	18.7	30	24
012	025X	31 43.0N	80 2.0W	76	12	10	20.0	42	25
012	026C	31 40.9N	79 57.5W	76	12	10	20.5	41	26
012	027X	31 39.0N	79 52.3W	76	12	10	21.2	41	27
012	028C	31 37.1N	79 47.5W	76	12	10	22.0	46	28
012	029X	31 35.0N	79 41.6W	76	12	10	23.5	67	29
012	030C	31 33.5N	79 36.0W	76	12	11	.3	136	30
012	031X	31 31.6N	79 30.3W	76	12	11	1.6	259	31
012	032C	31 29.8N	79 24.6W	76	12	11	2.5	510	32
012	033X	31 27.8N	79 19.1W	76	12	11	6.0	480	33
012	049C	31 11.5N	81 2.3W	76	12	11	14.0	18	49
012	050C	31 7.9N	80 50.5W	76	12	11	15.3	22	50
012	051C	31 4.0N	80 40.6W	76	12	11	16.8	25	51
012	052C	31 6.0N	80 46.0W	76	12	11	17.8	23	52
012	054X	31 4.5N	80 42.0W	76	12	11	19.1	25	54
012	055X	31 2.6N	80 35.0W	76	12	11	19.6	29	55
012	056C	31 1.0N	80 29.5W	76	12	11	20.2	30	56
012	057X	30 58.5N	80 24.3W	76	12	11	21.0	34	57
012	058C	30 57.0N	80 19.5W	76	12	11	21.6	38	58
012	059X	30 54.9N	80 14.5W	76	12	11	22.4	42	59
012	060C	30 52.7N	80 8.8W	76	12	11	23.0	40	60
012	061X	30 50.7N	80 3.5W	76	12	12	0.0	50	61
012	062C	30 49.0N	79 57.0W	76	12	12	.6	206	62
012	063X	30 47.2N	79 52.9W	76	12	12	2.6	291	63
012	064C	30 45.4N	79 47.4W	76	12	12	3.2	429	64
012	075C	31 48.2N	80 19.0W	76	12	12	9.9	22	75
012	076X	31 46.5N	80 13.8W	76	12	12	11.0	25	76
012	077C	31 45.0N	80 8.2W	76	12	12	11.5	30	77
012	078X	31 43.0N	80 2.8W	76	12	12	12.4	35	78
012	079C	31 41.1N	79 56.9W	76	12	12	13.2	42	79
012	080X	31 39.1N	79 50.6W	76	12	12	14.2	46	80
012	081C	31 37.5N	79 45.4W	76	12	12	14.8	46	81
012	082X	31 35.8N	79 40.3W	76	12	12	15.6	55	82
012	083C	31 34.1N	79 34.6W	76	12	12	16.1	146	83
012	084X	31 33.0N	79 32.1W	76	12	12	17.0	247	84
012	085C	31 32.0N	79 26.8W	76	12	12	17.5	507	85
012	099C	31 4.1N	80 40.8W	76	12	13	3.7	25	99

Table 8. ISELIN CRUISE CI-12

[CONTINUED]

CRUISE	STATION	LATITUDE		LONGITUDE		YR	MN	DAY	HOUR GMT	DEPTH M	CONSEC NUMBER
012	100X	31	2.0N	80	35.3W	76	12	13	4.6	25	100
012	101C	31	0.0N	80	30.0W	76	12	13	5.2	33	101
012	102X	30	58.0N	80	24.0W	76	12	13	6.0	37	102
012	103C	30	56.0N	80	19.2W	76	12	13	6.6	38	103
012	104X	30	54.4N	80	13.5W	76	12	13	7.5	41	104
012	105C	30	52.5N	80	8.5W	76	12	13	8.0	43	105
012	106X	30	50.5N	80	3.4W	76	12	13	8.8	49	106
012	107C	30	48.7N	79	58.0W	76	12	13	9.3	214	107
012	108X	30	46.6N	79	52.5W	76	12	13	10.7	292	108
012	109C	30	44.5N	79	46.6W	76	12	13	11.3	443	109
012	134C	31	48.2N	80	19.0W	76	12	14	1.6	23	134
012	135X	31	46.4N	80	13.5W	76	12	14	2.7	28	135
012	136C	31	44.9N	80	8.4W	76	12	14	3.7	30	136
012	137X	31	43.0N	80	3.4W	76	12	14	4.9	36	137
012	138C	31	41.4N	79	57.8W	76	12	14	5.9	41	138
012	139X	31	39.6N	79	52.0W	76	12	14	7.1	51	139
012	141C	31	38.0N	79	47.0W	76	12	14	8.1	53	141
012	142X	31	36.0N	79	41.0W	76	12	14	9.0	64	142
012	143C	31	34.0N	79	35.0W	76	12	14	9.8	118	143
012	144X	31	32.5N	79	28.2W	76	12	14	11.5	330	144
012	145C	31	30.5N	79	24.0W	76	12	14	12.2	520	145
012	146X	31	30.3N	79	23.8W	76	12	14	14.2	485	146
012	163X	31	4.5N	80	40.5W	76	12	14	22.2	25	163
012	164X	31	2.5N	80	35.0W	76	12	14	23.0	30	164
012	165X	31	.5N	80	29.6W	76	12	14	23.6	29	165
012	166X	30	58.5N	80	24.5W	76	12	15	.3	35	166
012	167X	30	57.2N	80	19.6W	76	12	15	.9	35	167
012	168X	30	54.6N	80	13.9W	76	12	15	1.7	38	168
012	169X	30	52.9N	80	8.6W	76	12	15	2.6	41	169
012	170X	30	51.0N	80	3.1W	76	12	15	3.4	52	170
012	171X	30	50.0N	79	59.0W	76	12	15	4.2	147	171
012	172X	30	49.2N	79	57.4W	76	12	15	4.6	198	172
012	173X	30	49.5N	79	50.5W	76	12	15	5.6	300	173
012	207C	28	59.3N	80	24.6W	76	12	15	21.3	26	207

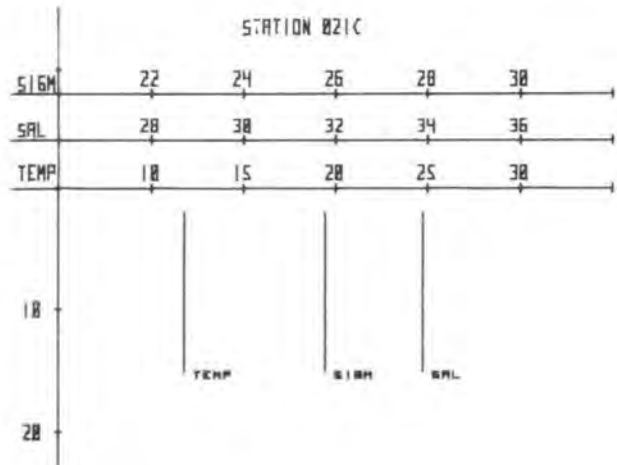
HYDROGRAPHIC DATA

Vertical profiles of salinity, temperature, sigma-t, DO, and nutrients

The symbols used in the following listings are defined as follows:

- Header Data: Times are GMT (EST + 5)
Latitude and Longitude are from Loran C
- Weather Data: These data are taken from the ship's log.
- Wind speed (knots)
 - Wind direction (degrees)
 - Air temperature ($^{\circ}\text{C}$)
 - Weather (WMO code 4501)
 - Barometric pressure (mb)
 - Sea State (WMO code 3700)
 - Wave direction (degrees)
 - Cloud type (not given)
 - Cloud amount (not given)
 - Visibility code (not given)
- Observations:
- Z = Depth in meters
 - T = Temperature in $^{\circ}\text{C}$
 - S = Salinity in ‰
 - D = Density in sigma-t units
 - SVA = Specific volume anomaly $\times 10^5$
 - O_2 = Dissolved oxygen in ml/liter
 - O_2^- = Oxygen saturation in ml/liter
 - AOU = Apparent oxygen utilization in ml/liter
 - PO_4 = Phosphate concentration in $\mu\text{mole/liter}$
 - NO_3 = Nitrate concentration in $\mu\text{mole/liter}$
 - Si = Silicate concentration in $\mu\text{mole/liter}$

140.0	21.09	36.81	25.85	220	.	.	.	.	.	.
145.0	20.67	36.75	25.92	214	.	.	.	.	.	.
149.0	20.54	36.75	25.96	211	3.65	5.06	1.41	0.36	06.5	02.5
156.0	19.76	36.62	26.07	206	.	.	.	.	.	.
160.0	18.80	36.44	26.18	190	.	.	.	.	.	.
165.0	18.14	36.35	26.28	180	.	.	.	.	.	.
170.0	17.62	36.30	26.37	170	.	.	.	.	.	.
175.0	16.97	36.23	26.47	162	.	.	.	.	.	.
180.0	16.47	36.17	26.55	155	.	.	.	.	.	.
185.0	15.88	36.11	26.64	146	.	.	.	.	.	.
190.0	15.50	36.06	26.69	141	.	.	.	.	.	.
195.0	15.18	36.01	26.72	139	3.25	5.63	2.38	0.92	14.7	06.0
200.0	14.91	35.98	26.76	135	.	.	.	.	.	.
205.0	14.62	35.92	26.77	134	.	.	.	.	.	.
210.0	14.48	35.90	26.79	132	.	.	.	.	.	.
215.0	14.42	35.89	26.79	132	.	.	.	.	.	.
220.0	14.17	35.85	26.82	130	.	.	.	.	.	.
225.0	14.07	35.82	26.82	130	.	.	.	.	.	.
230.0	14.00	35.81	26.82	130	.	.	.	.	.	.
235.0	13.62	35.75	26.86	127	.	.	.	.	.	.
240.0	13.41	35.72	26.88	125	.	.	.	.	.	.
245.0	13.13	35.68	26.90	122	.	.	.	.	.	.
250.0	12.49	35.67	27.02	111	.	.	.	.	.	.
255.0	12.18	35.56	27.00	113	.	.	.	.	.	.
260.0	12.01	35.51	26.99	113	.	.	.	.	.	.
265.0	11.99	35.51	27.00	113	.	.	.	.	.	.
271.0	11.73	35.49	27.03	110	.	.	.	.	.	.
276.0	11.44	35.51	27.10	103	.	.	.	.	.	.
281.0	10.99	35.42	27.12	102	.	.	.	.	.	.
286.0	10.76	35.39	27.13	100	.	.	.	.	.	.
290.0	10.70	35.34	27.11	103	.	.	.	.	.	.
295.0	10.69	35.32	27.09	104	.	.	.	.	.	.
300.0	10.63	35.32	27.10	103	.	.	.	.	.	.
305.0	10.30	35.35	27.19	96	.	.	.	.	.	.
311.0	10.50	35.20	27.03	110	3.13	6.24	3.11	1.52	22.5	13.0
315.0	10.44	35.30	27.12	102	.	.	.	.	.	.
321.0	9.60	35.35	27.31	84	.	.	.	.	.	.
326.0	9.43	35.16	27.19	95	.	.	.	.	.	.
331.0	9.46	35.15	27.17	97	.	.	.	.	.	.
335.0	9.43	35.17	27.19	95	.	.	.	.	.	.
340.0	9.41	35.16	27.19	95	.	.	.	.	.	.
346.0	9.41	35.16	27.19	95	.	.	.	.	.	.
350.0	9.42	35.15	27.18	96	.	.	.	.	.	.
355.0	9.42	35.15	27.18	97	.	.	.	.	.	.
360.0	9.42	35.15	27.18	97	.	.	.	.	.	.
366.0	9.41	35.16	27.19	96	.	.	.	.	.	.
370.0	9.41	35.16	27.19	96	.	.	.	.	.	.
376.0	9.41	35.16	27.19	96	.	.	.	.	.	.
380.0	9.41	35.16	27.19	96	.	.	.	.	.	.
385.0	9.41	35.15	27.18	97	.	.	.	.	.	.
390.0	9.41	35.15	27.18	97	.	.	.	.	.	.
395.0	9.38	35.16	27.19	96	.	.	.	.	.	.
421.0					3.14			1.78	24.3	16.8



1011N CRUISE CI-12 STA 021C 10' AFT TO 14.0' HWT (UNCL) STA 01

LAT 31 56.4N LONG 80 41.0W DEPTH = 16M DIST LAST STA = 153.4KM

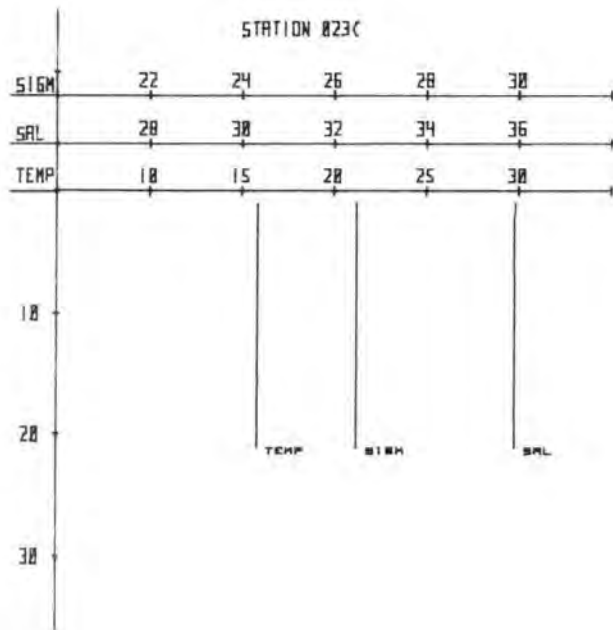
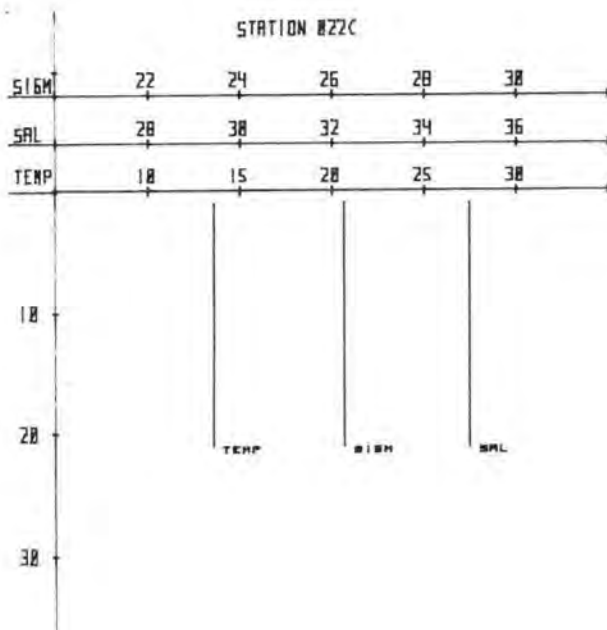
WEATHER DATA

WIND SPEED = 18 KTS
 WIND DIRECTION = 030
 AIR TEMP = 10.00
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1032.9 MB

SEA STATE
 WAVE DIRECTION
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	W2	W3	W4	W5	W6
2.0	11.78	33.89	25.78	222	6.25	6.15	6.15	6.15	6.15
3.0	11.78	33.90	25.79	221	.	.	.	.	.
4.0	11.78	33.90	25.79	221	.	.	.	.	.
5.0	11.78	33.90	25.79	221	.	.	.	.	.
6.0	11.78	33.90	25.79	221	.	.	.	.	.
7.0	11.78	33.90	25.79	221	.	.	.	.	.
8.0	11.78	33.90	25.79	221	.	.	.	.	.
9.0	11.78	33.90	25.79	221	.	.	.	.	.
10.0	11.78	33.90	25.79	221	.	.	.	.	.
11.0	11.78	33.90	25.79	221	.	.	.	.	.
12.0	11.78	33.90	25.79	221	.	.	.	.	.
13.0	11.78	33.90	25.79	221	6.21	6.15	6.15	6.15	6.15
14.0	11.78	33.90	25.79	221	.	.	.	.	.
15.0	11.78	33.90	25.79	221	.	.	.	.	.



ISELIN CRUISE CI-12 STA 022C (10-15) 0175 GMT 0408Z 81A 20
 LAT 31 52.0N LONG 80 30.1W DEPTH = 31 DIST LAST STA = 19.0KM

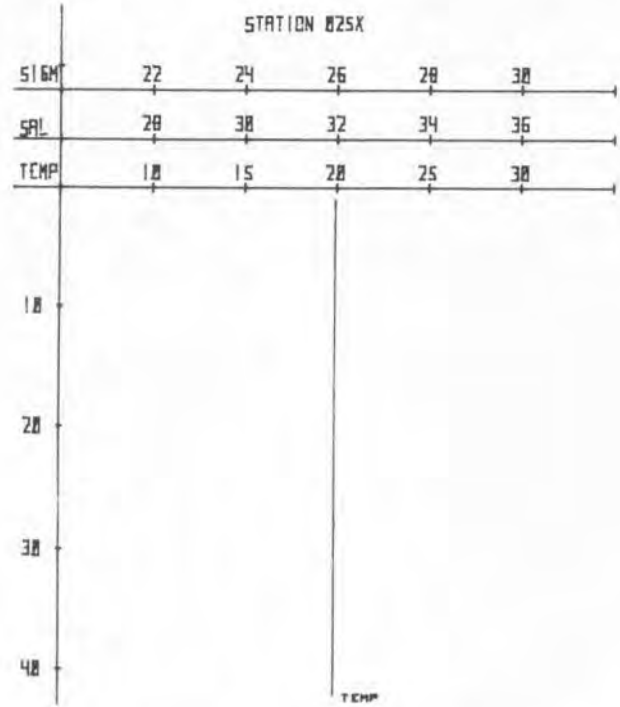
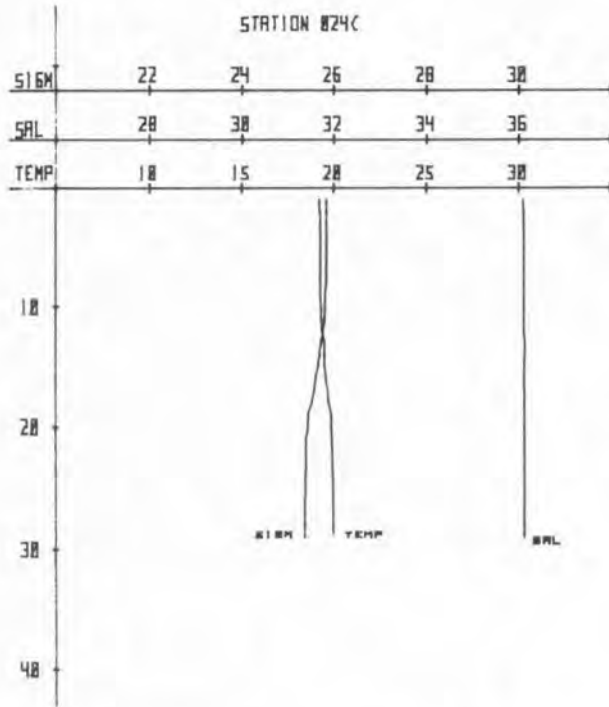
WEATHER DATA
 WIND SPEED = 18 KTS SEA STATE = 3
 WIND DIRECTION = 030 WAVE DIRECTION =
 AIR TEMP = 11.1C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1032.9 mb VISIBILITY CODE =

OBSERVATION										
Z	T	S	D	SVA	W	W2	AOU	FD4	WV	SI
1.0	13.57	34.99	26.28	175	5.95	5.65	-1.10	0.08	00.1	00.1
2.0	13.57	34.99	26.28	175	-	-	-	-	-	-
3.0	13.57	34.99	26.28	175	-	-	-	-	-	-
4.0	13.57	34.99	26.28	175	-	-	-	-	-	-
5.0	13.57	34.99	26.28	175	-	-	-	-	-	-
6.0	13.57	34.99	26.28	175	-	-	-	-	-	-
7.0	13.57	34.99	26.28	175	-	-	-	-	-	-
8.0	13.57	34.99	26.28	175	-	-	-	-	-	-
9.0	13.57	34.99	26.28	175	-	-	-	-	-	-
10.0	13.57	34.99	26.28	175	-	-	-	-	-	-
11.0	13.57	34.99	26.28	175	-	-	-	-	-	-
12.0	13.57	34.98	26.27	176	-	-	-	-	-	-
13.0	13.56	34.99	26.28	175	-	-	-	-	-	-
14.0	13.56	34.99	26.28	175	-	-	-	-	-	-
15.0	13.56	34.99	26.28	175	-	-	-	-	-	-
16.0	13.54	34.99	26.29	174	-	-	-	-	-	-
17.0	13.54	34.99	26.29	174	-	-	-	-	-	-
18.0	13.54	34.99	26.29	174	-	-	-	-	-	-
19.0	13.54	34.99	26.29	174	-	-	-	-	-	-
20.0	13.54	34.99	26.29	175	5.93	5.86	-1.07	0.08	00.1	00.1
21.0	13.54	35.00	26.29	174	-	-	-	-	-	-

ISELIN CRUISE CI-12 STA 023C (10-15) 0175 GMT 0408Z 81A 23
 LAT 31 48.2N LONG 80 20.0W DEPTH = 22m DIST LAST STA = 17.40M

WEATHER DATA
 WIND SPEED = 18 KTS SEA STATE = 3
 WIND DIRECTION = 030 WAVE DIRECTION =
 AIR TEMP = 13.9C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1032.1 mb VISIBILITY CODE =

OBSERVATION										
Z	T	S	D	SVA	W	W2	AOU	FD4	WV	SI
1.0	15.82	35.92	26.50	154	5.71	5.56	-1.15	0.07	00.1	00.4
2.0	15.81	35.91	26.50	153	-	-	-	-	-	-
3.0	15.81	35.92	26.51	153	-	-	-	-	-	-
4.0	15.81	35.92	26.51	153	-	-	-	-	-	-
5.0	15.81	35.91	26.50	154	-	-	-	-	-	-
6.0	15.80	35.92	26.51	153	-	-	-	-	-	-
7.0	15.78	35.92	26.51	152	-	-	-	-	-	-
8.0	15.80	35.92	26.51	151	-	-	-	-	-	-
9.0	15.78	35.92	26.51	151	-	-	-	-	-	-
10.0	15.80	35.92	26.51	151	-	-	-	-	-	-
11.0	15.80	35.92	26.51	151	-	-	-	-	-	-
12.0	15.80	35.92	26.51	151	-	-	-	-	-	-
13.0	15.80	35.92	26.51	151	-	-	-	-	-	-
14.0	15.80	35.92	26.51	153	-	-	-	-	-	-
15.0	15.80	35.92	26.51	151	-	-	-	-	-	-
16.0	15.80	35.92	26.51	153	-	-	-	-	-	-
17.0	15.80	35.92	26.51	153	-	-	-	-	-	-
18.0	15.80	35.92	26.51	153	-	-	-	-	-	-
19.0	15.80	35.93	26.52	153	-	-	-	-	-	-
20.0	15.80	35.93	26.52	153	-	-	-	-	-	-
21.0	15.81	35.93	26.51	153	5.19	5.56	-1.37	0.05	00.1	00.4



ISELIN CRUISE CI-12 STA 024C 10/ XII/76 20.0 GRT CONSEC STA 024
 LAT 31 45.2N LONG 80 08.4W DEPTH = 10M DIST LAST STA = 19.1KM

WEATHER DATA

WIND SPEED = 14 KTS
 WIND DIRECTION = 110
 AIR TEMP = 18.2C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1031.0 MB
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

ISELIN CRUISE CI-12 STA 025X 10/ XII/76 20.0 GRT CONSEC STA 025
 LAT 31 43.0N LONG 80 2.0W DEPTH = 42M DIST LAST STA = 10.7KM

WEATHER DATA

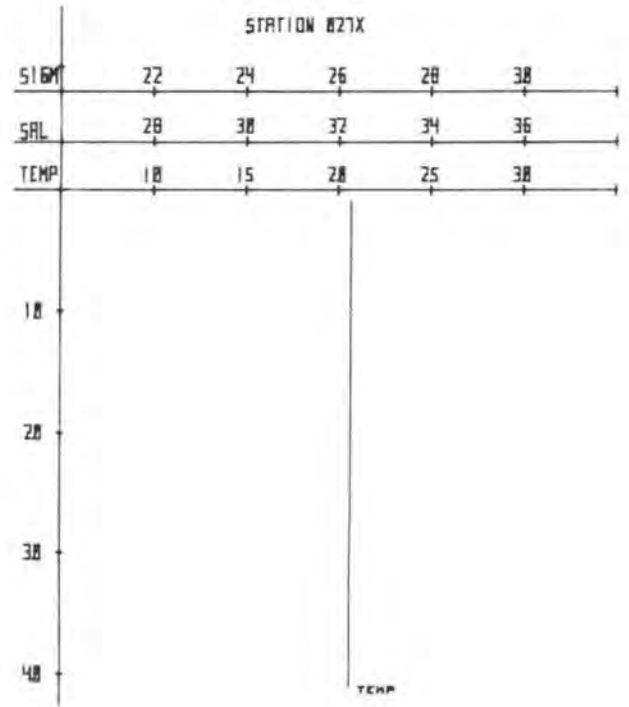
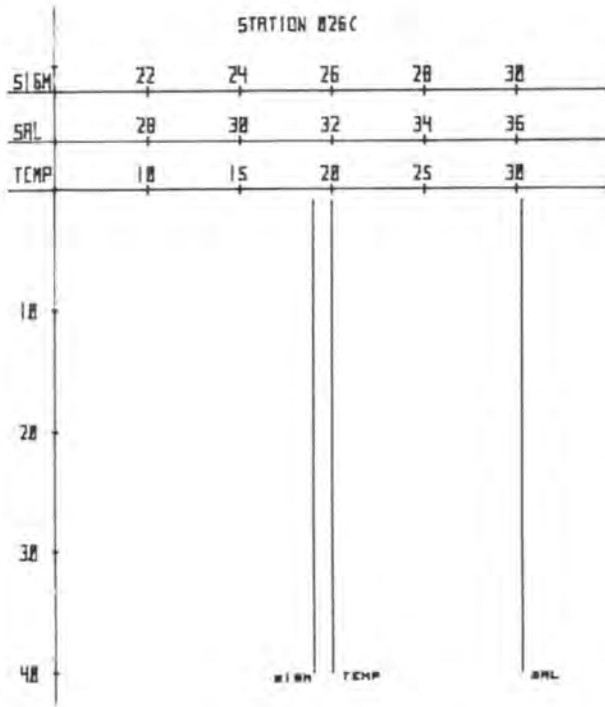
WIND SPEED = 12 KTS
 WIND DIRECTION = 120
 AIR TEMP = 18.3C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1030.0 MB
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	02	02	ADU	P04	NO3	SI
1.0	19.58	36.08	25.70	229	5.70	5.17	-1.53	0.08	00.0	01.3
2.0	19.58	36.11	25.73	227	*	*	*	*	*	*
3.0	19.58	36.10	25.72	228	*	*	*	*	*	*
4.0	19.56	36.11	25.73	227	*	*	*	*	*	*
5.0	19.56	36.10	25.72	227	*	*	*	*	*	*
6.0	19.56	36.11	25.73	227	*	*	*	*	*	*
7.0	19.54	36.10	25.73	227	*	*	*	*	*	*
8.0	19.54	36.10	25.73	227	*	*	*	*	*	*
9.0	19.50	36.10	25.74	226	*	*	*	*	*	*
10.0	19.49	36.11	25.75	225	*	*	*	*	*	*
11.0	19.48	36.11	25.75	225	*	*	*	*	*	*
12.0	19.40	36.11	25.77	223	*	*	*	*	*	*
13.0	19.28	36.14	25.83	218	*	*	*	*	*	*
14.0	19.21	36.12	25.83	218	*	*	*	*	*	*
15.0	19.14	36.11	25.84	217	*	*	*	*	*	*
16.0	19.02	36.10	25.86	215	*	*	*	*	*	*
17.0	18.92	36.13	25.91	210	*	*	*	*	*	*
18.0	18.80	36.13	25.94	207	*	*	*	*	*	*
19.0	18.60	36.12	25.99	203	5.33	5.26	-1.07	0.09	00.0	01.0
20.0	18.56	36.12	26.00	202	*	*	*	*	*	*
21.0	18.49	36.12	26.01	200	*	*	*	*	*	*
22.0	18.46	36.12	26.02	200	*	*	*	*	*	*
23.0	18.47	36.11	26.01	201	*	*	*	*	*	*
24.0	18.42	36.11	26.02	200	*	*	*	*	*	*
25.0	18.42	36.11	26.02	200	*	*	*	*	*	*
26.0	18.40	36.11	26.03	199	*	*	*	*	*	*
27.0	18.40	36.11	26.03	199	*	*	*	*	*	*
28.0	18.40	36.11	26.03	199	*	*	*	*	*	*
29.0	18.40	36.11	26.03	199	5.44	5.28	-1.16	0.09	00.1	00.9

OBSERVATIONS

Z	T	S	D	SVA	02	02	ADU	P04	NO3	SI
1.0	19.90	*	*	*	*	*	*	*	*	*
42.0	19.90	*	*	*	*	*	*	*	*	*



ISELIN CRUISE C1-12 STA 026C 14 JUL 76 20.5 GMT CONSEC STA 26
 LAT 31 40.9N LONG 79 57.5W DEPTH = 41M DIST LAST STA = 8.1KM

ISELIN CRUISE C1-12 STA 027X 14 JUL 76 21.2 GMT CONSEC STA 27
 LAT 31 39.0N LONG 79 52.5W DEPTH = 41M DIST LAST STA = 8.0KM

WEATHER DATA
 WIND SPEED = 12 KTS
 WIND DIRECTION = 130
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1030.0 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 14 KTS
 WIND DIRECTION = 130
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1030.0 MB

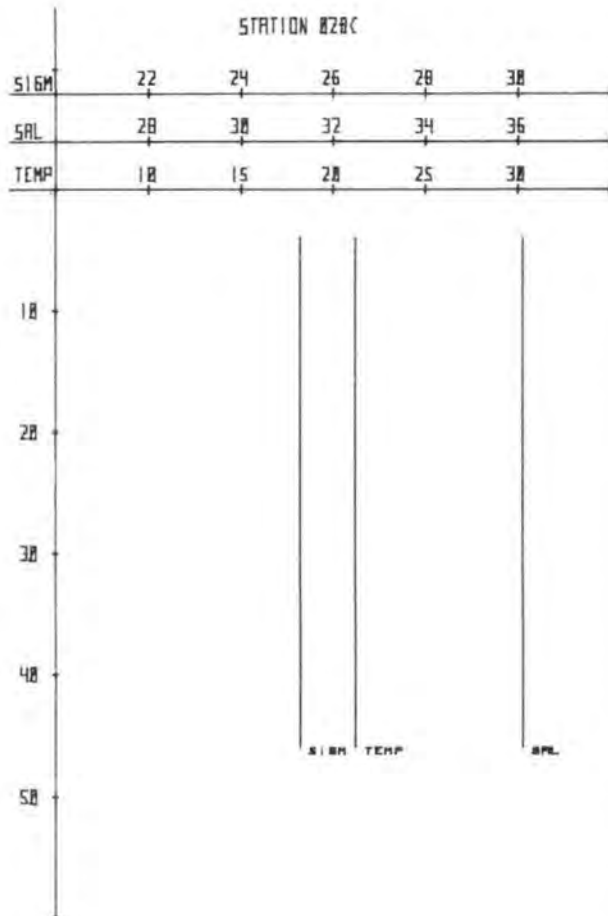
SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SWA	U2	U2	ABU	FD4	HD3	SI
1.0	19.99	36.10	25.61	238	5.23	5.13	-1.10	*	*	*
2.0	19.99	36.10	25.61	238	*	*	*	*	*	*
3.0	20.00	36.10	25.61	238	*	*	*	*	*	*
4.0	20.00	36.10	25.61	238	*	*	*	*	*	*
5.0	20.00	36.09	25.60	239	*	*	*	*	*	*
6.0	20.00	36.10	25.61	239	*	*	*	*	*	*
7.0	20.00	36.10	25.61	239	*	*	*	*	*	*
8.0	20.00	36.10	25.61	239	*	*	*	*	*	*
9.0	20.00	36.10	25.61	239	*	*	*	*	*	*
10.0	20.00	36.10	25.61	239	*	*	*	*	*	*
11.0	20.00	36.10	25.61	239	*	*	*	*	*	*
12.0	20.00	36.10	25.61	239	*	*	*	*	*	*
13.0	20.00	36.10	25.61	239	*	*	*	*	*	*
14.0	20.00	36.10	25.61	239	*	*	*	*	*	*
15.0	20.00	36.10	25.61	239	*	*	*	*	*	*
16.0	20.00	36.10	25.61	239	*	*	*	*	*	*
17.0	20.00	36.10	25.61	239	*	*	*	*	*	*
18.0	20.00	36.10	25.61	239	*	*	*	*	*	*
19.0	20.00	36.10	25.61	239	*	*	*	*	*	*
20.0	20.00	36.10	25.61	239	*	*	*	*	*	*
21.0	20.00	36.10	25.61	239	*	*	*	*	*	*
22.0	20.00	36.10	25.61	239	*	*	*	*	*	*
23.0	20.00	36.10	25.61	239	*	*	*	*	*	*
24.0	20.00	36.10	25.61	239	*	*	*	*	*	*
25.0	20.00	36.10	25.61	239	*	*	*	*	*	*
26.0	20.00	36.10	25.61	239	*	*	*	*	*	*
27.0	20.00	36.10	25.61	239	*	*	*	*	*	*
28.0	20.00	36.10	25.61	239	*	*	*	*	*	*
29.0	20.00	36.10	25.61	239	*	*	*	*	*	*
30.0	20.00	36.10	25.61	239	*	*	*	*	*	*
31.0	20.00	36.10	25.61	239	*	*	*	*	*	*
32.0	20.00	36.09	25.60	240	*	*	*	*	*	*
33.0	20.00	36.09	25.60	240	*	*	*	*	*	*
34.0	20.00	36.09	25.60	240	*	*	*	*	*	*
35.0	20.00	36.09	25.60	240	*	*	*	*	*	*
36.0	20.00	36.09	25.60	240	*	*	*	*	*	*
37.0	20.00	36.09	25.60	240	*	*	*	*	*	*
38.0	20.00	36.09	25.60	240	5.20	5.13	-1.07	0.08	00.0	01.5
39.0	20.00	36.09	25.60	240	*	*	*	*	*	*
40.0	20.00	36.10	25.61	240	*	*	*	*	*	*

OBSERVATIONS

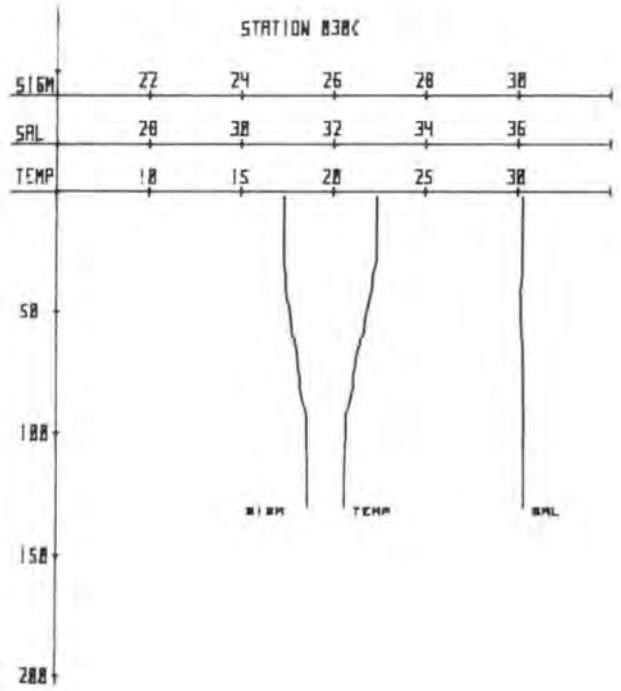
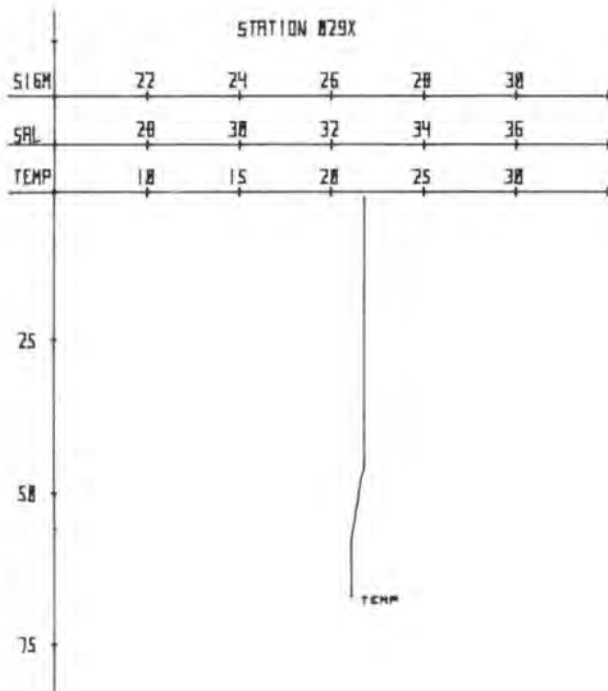
Z	T	S	D	SWA	U2	U2	ABU	FD4	HD3	SI
1.0	20.70	*	*	*	*	*	*	*	*	*
15.0	20.70	*	*	*	*	*	*	*	*	*
30.0	20.60	*	*	*	*	*	*	*	*	*
41.0	20.60	*	*	*	*	*	*	*	*	*



ISELTH CRUISE 03-12 STA 020C TO 040C ON 03/12/02
 LAT 31 37.1N LONG 99 47.5W DEPTH 10M DIST EAST STA 1 6.00M

WEATHER DATA
 WIND SPEED = 14 KTS SEA STATE
 WIND DIRECTION = 130 WAVE DIRECTION =
 AIR TEMP = 20.6C CLOUD TYPE
 WEATHER CODE = * CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1029.0 MB VISIBILITY CODE =

Z	T	S	U	SVA	U ₀	U ₁₀	W00	P04	W03	SI
4.0	21.20	36.11	25.29	269	4.00	0.00	0.13	0.09	000	00.0
5.0	21.20	36.11	25.29	269	.	.	.	.	.	.
6.0	21.20	36.11	25.29	269	.	.	.	.	.	.
7.0	21.20	36.11	25.29	269	.	.	.	.	.	.
8.0	21.20	36.11	25.29	269	.	.	.	.	.	.
9.0	21.20	36.12	25.30	268	.	.	.	.	.	.
10.0	21.20	36.11	25.29	269	.	.	.	.	.	.
11.0	21.20	36.11	25.29	269	.	.	.	.	.	.
12.0	21.20	36.11	25.29	269	.	.	.	.	.	.
13.0	21.20	36.11	25.29	269	.	.	.	.	.	.
14.0	21.20	36.11	25.29	269	.	.	.	.	.	.
15.0	21.20	36.11	25.29	269	.	.	.	.	.	.
16.0	21.20	36.11	25.29	269	.	.	.	.	.	.
17.0	21.20	36.11	25.29	269	.	.	.	.	.	.
18.0	21.20	36.12	25.30	268	.	.	.	.	.	.
19.0	21.20	36.12	25.30	268	.	.	.	.	.	.
20.0	21.20	36.12	25.30	268	.	.	.	.	.	.
21.0	21.20	36.11	25.29	269	.	.	.	.	.	.
22.0	21.20	36.12	25.30	269	.	.	.	.	.	.
23.0	21.20	36.12	25.30	269	.	.	.	.	.	.
24.0	21.20	36.12	25.30	269	.	.	.	.	.	.
25.0	21.20	36.11	25.29	269	.	.	.	.	.	.
26.0	21.20	36.11	25.29	269	.	.	.	.	.	.
27.0	21.20	36.11	25.29	269	.	.	.	.	.	.
28.0	21.20	36.12	25.30	269	.	.	.	.	.	.
29.0	21.20	36.12	25.30	269	.	.	.	.	.	.
30.0	21.20	36.12	25.30	269	.	.	.	.	.	.
31.0	21.20	36.12	25.30	269	.	.	.	.	.	.
32.0	21.20	36.11	25.29	270	.	.	.	.	.	.
33.0	21.20	36.11	25.29	270	.	.	.	.	.	.
34.0	21.20	36.11	25.29	270	.	.	.	.	.	.
35.0	21.20	36.11	25.29	270	.	.	.	.	.	.
36.0	21.20	36.11	25.29	270	.	.	.	.	.	.
37.0	21.20	36.11	25.29	270	.	.	.	.	.	.
38.0	21.20	36.11	25.29	270	.	.	.	.	.	.
39.0	21.20	36.11	25.29	270	.	.	.	.	.	.
40.0	21.20	36.11	25.29	270	.	.	.	.	.	.
41.0	21.20	36.11	25.29	270	.	.	.	.	.	.
42.0	21.20	36.11	25.29	270	.	.	.	.	.	.
43.0	21.20	36.11	25.29	270	.	.	.	.	.	.
44.0	21.20	36.11	25.29	270	5.00	0.00	0.00	0.00	000	01.5
45.0	21.20	36.11	25.29	270	.	.	.	.	.	.
46.0	21.20	36.11	25.29	270	.	.	.	.	.	.



ISLEHM CRUISE 01-10 STA 029X (W 411/6 23.5 GMT CONSEC STA 29
 LAT 31 35.0N LONG 79 41.6W DEPTH 67M DIST LAST STA - 10.1KM

WEATHER DATA
 WIND SPEED = 15 KTS SEA STATE =
 WIND DIRECTION = 120 WAVE DIRECTION =
 AIR TEMP = 20.00 CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1029.0 MB VISIBILITY CODE =

Z	T	S	D	SVA	Q2	Q2	ROU	FO4	FO3	SI
1.0	21.80	.	.	.	.	.	.	.	.	.
45.0	21.80	.	.	.	.	.	.	.	.	.
49.5	21.50	.	.	.	.	.	.	.	.	.
58.0	21.10	.	.	.	.	.	.	.	.	.
67.0	21.10	.	.	.	.	.	.	.	.	.

ISLEHM CRUISE 01-10 STA 030C (W 411/6 23.5 GMT CONSEC STA 30
 LAT 31 33.5N LONG 79 36.0W DEPTH 130M DIST LAST STA - 9.1KM

WEATHER DATA
 WIND SPEED = 14 KTS SEA STATE =
 WIND DIRECTION = 120 WAVE DIRECTION =
 AIR TEMP = 20.40 CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1028.8 MB VISIBILITY CODE =

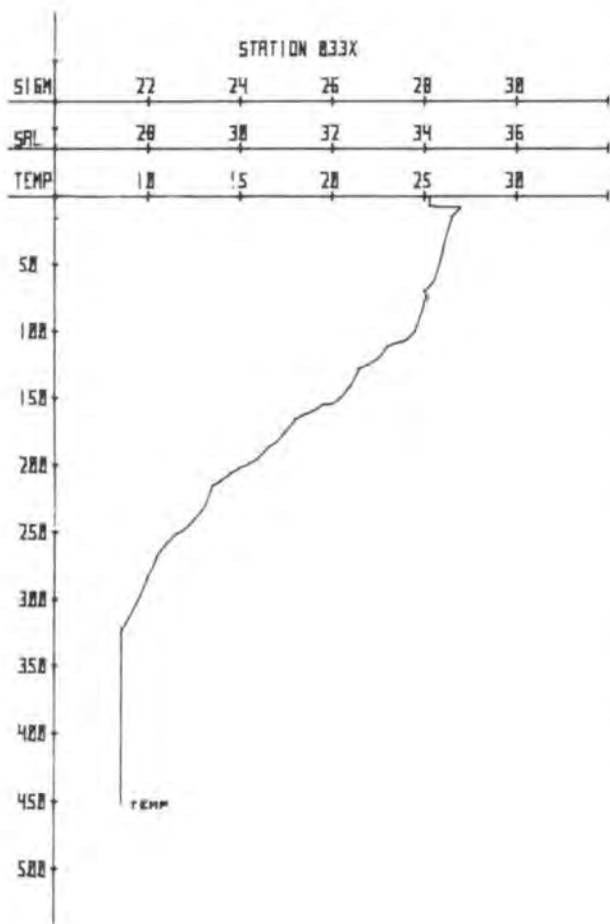
Z	T	S	D	SVA	Q2	Q2	ROU	FO4	FO3	SI
2.0	22.36	36.10	24.96	300	4.88	4.92	.04	0.01	0.00	0.00
3.0	22.36	36.10	24.96	300	.	.	.	.	.	.
4.0	22.36	36.10	24.96	300	.	.	.	.	.	.
5.0	22.36	36.10	24.96	300	.	.	.	.	.	.
6.0	22.36	36.10	24.96	300	.	.	.	.	.	.
7.0	22.37	36.10	24.96	301	.	.	.	.	.	.
8.0	22.37	36.10	24.96	301	.	.	.	.	.	.
9.0	22.37	36.10	24.96	301	.	.	.	.	.	.
10.0	22.37	36.10	24.96	301	.	.	.	.	.	.
11.0	22.37	36.10	24.96	301	.	.	.	.	.	.
12.0	22.37	36.10	24.96	301	.	.	.	.	.	.
13.0	22.37	36.10	24.96	301	.	.	.	.	.	.
14.0	22.37	36.10	24.96	301	.	.	.	.	.	.
15.0	22.37	36.10	24.96	301	.	.	.	.	.	.
16.0	22.37	36.10	24.96	301	.	.	.	.	.	.
17.0	22.37	36.10	24.96	301	.	.	.	.	.	.
18.0	22.37	36.10	24.96	301	.	.	.	.	.	.
19.0	22.37	36.10	24.96	301	.	.	.	.	.	.
20.0	22.37	36.10	24.96	301	.	.	.	.	.	.



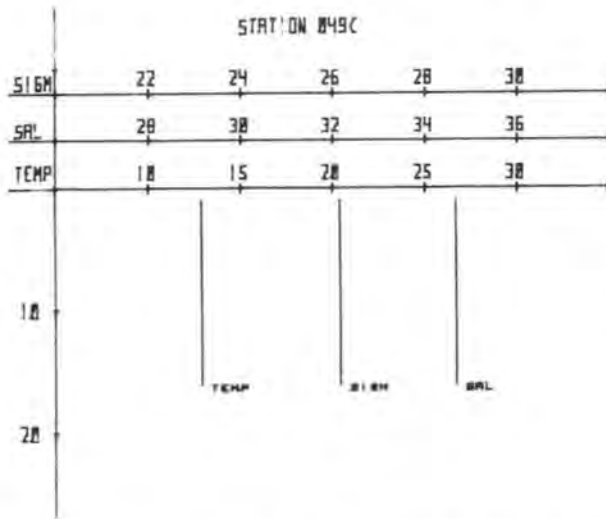
95.0	21.16	35.90	25.14	266	.	.	.	.	.	.
96.0	21.13	35.88	25.14	287	.	.	.	.	.	.
97.0	21.04	35.89	25.12	284	.	.	.	.	.	.
98.0	21.00	35.89	25.18	283	.	.	.	.	.	.
99.0	21.00	35.88	25.14	263	4.77	5.04	.27	0.10	01.4	02.7
100.0	21.02	35.91	25.19	282	.	.	.	.	.	.
101.0	21.10	35.92	25.18	283	.	.	.	.	.	.
105.0	21.09	35.97	25.22	260	.	.	.	.	.	.
110.0	21.02	36.06	25.30	271	.	.	.	.	.	.
115.0	20.92	36.10	25.36	266	.	.	.	.	.	.
120.0	20.61	36.11	25.45	258	.	.	.	.	.	.
125.0	20.41	36.09	25.49	254	.	.	.	.	.	.
130.0	20.36	36.10	25.51	252	.	.	.	.	.	.
135.0	20.08	36.10	25.59	245	.	.	.	.	.	.
140.0	19.62	36.10	25.71	234	.	.	.	.	.	.
144.0	19.41	36.13	25.79	227	4.76	5.18	.42	0.10	01.8	01.5
150.0	19.23	36.10	25.81	224	.	.	.	.	.	.
156.0	19.24	36.10	25.81	225	.	.	.	.	.	.
162.0	19.20	36.11	25.83	223	.	.	.	.	.	.
168.0	18.97	36.17	25.93	214	.	.	.	.	.	.
177.0	17.11	36.52	26.66	144	.	.	.	.	.	.
184.0	15.99	36.17	26.66	145	.	.	.	.	.	.
185.0	15.89	36.20	26.70	140	.	.	.	.	.	.
186.0	15.44	36.46	27.01	111	.	.	.	.	.	.
190.0	15.18	36.07	26.77	134	.	.	.	.	.	.
195.0	14.50	36.05	26.90	122	3.19	5.71	2.52	1.01	12.0	09.3
200.0	13.96	35.97	26.95	116	.	.	.	.	.	.
206.0	13.48	35.91	27.01	111	.	.	.	.	.	.
211.0	12.88	35.81	27.05	107	.	.	.	.	.	.
215.0	12.42	35.83	27.16	97	.	.	.	.	.	.
220.0	11.88	35.67	27.14	98	.	.	.	.	.	.
225.0	11.81	35.63	27.13	100	.	.	.	.	.	.
230.0	11.31	35.66	27.24	89	.	.	.	.	.	.
236.0	10.98	35.59	27.25	88	.	.	.	.	.	.
240.0	10.63	35.60	27.32	81	.	.	.	.	.	.
245.0	10.31	35.52	27.32	82	.	.	.	.	.	.
251.0	9.76	35.51	27.40	74	.	.	.	.	.	.
255.0	9.30	35.63	27.57	57	.	.	.	.	.	.
273.0	7.72	35.13	27.43	76	.	.	.	.	.	.
274.0	7.84	35.05	27.35	78	.	.	.	.	.	.
276.0	7.80	35.07	27.37	76	.	.	.	.	.	.
278.0	7.71	35.09	27.46	73	.	.	.	.	.	.
280.0	7.74	35.01	27.33	79	.	.	.	.	.	.
286.0	7.67	35.02	27.35	78	.	.	.	.	.	.
291.0	7.70	34.99	27.33	80	.	.	.	.	.	.
295.0	7.69	34.99	27.33	80	.	.	.	.	.	.
301.0	7.67	34.99	27.33	80	.	.	.	.	.	.
306.0	7.66	34.99	27.33	80	.	.	.	.	.	.
310.0	7.67	34.98	27.32	81	3.19	6.65	3.46	1.46	21.5	13.2
316.0	7.66	34.98	27.32	81	.	.	.	.	.	.
319.0	7.66	34.98	27.32	81	.	.	.	.	.	.
326.0	7.63	34.98	27.33	81	.	.	.	.	.	.
331.0	7.62	34.98	27.33	81	.	.	.	.	.	.
336.0	7.60	35.00	27.35	79	.	.	.	.	.	.
341.0	7.60	34.98	27.33	81	.	.	.	.	.	.
346.0	7.57	34.99	27.34	80	.	.	.	.	.	.
351.0	7.57	34.96	27.32	82	.	.	.	.	.	.
356.0	7.57	34.97	27.33	81	.	.	.	.	.	.
360.0	7.57	34.97	27.33	81	.	.	.	.	.	.
365.0	7.57	34.97	27.33	81	.	.	.	.	.	.
371.0	7.57	34.97	27.33	81	.	.	.	.	.	.
376.0	7.57	34.97	27.33	82	.	.	.	.	.	.
380.0	7.53	35.00	27.36	79	.	.	.	.	.	.
386.0	7.56	34.98	27.34	81	.	.	.	.	.	.
390.0	7.53	34.98	27.34	80	.	.	.	.	.	.
396.0	7.53	34.98	27.34	81	.	.	.	.	.	.
400.0	7.53	34.98	27.34	81	.	.	.	.	.	.
405.0	7.50	34.98	27.35	80	.	.	.	.	.	.
411.0	7.53	34.98	27.34	81	.	.	.	.	.	.
419.0	7.52	34.97	27.34	82	.	.	.	.	.	.
422.0	7.52	34.97	27.34	82	.	.	.	.	.	.
431.0	7.53	34.96	27.33	83	.	.	.	.	.	.
434.0	7.52	34.97	27.34	82	.	.	.	.	.	.
437.0	7.52	34.97	27.34	82	3.26	6.68	3.42	1.68	23.7	16.2
444.0	7.52	34.98	27.34	81	.	.	.	.	.	.
446.0	7.50	34.98	27.35	81	.	.	.	.	.	.
451.0	7.50	34.98	27.35	81	.	.	.	.	.	.
456.0	7.50	34.98	27.35	81	.	.	.	.	.	.
462.0	7.52	34.97	27.34	82	.	.	.	.	.	.
467.0	7.52	34.98	27.34	82	.	.	.	.	.	.

ISELIN CRUISE CI-12 STA 033X 11 111-76 81.0 GMT CONSEC STA 33
 LAT 31 27.8N LONG 79 19.1W PL100 -480M DIST LAST STA = 9.5KM

WEATHER DATA
 WIND SPEED = 18 KTS SEA STATE =
 WIND DIRECTION = 140 WAVE DIRECTION =
 AIR TEMP = . C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1026.5 MB VISIBILITY CODE =



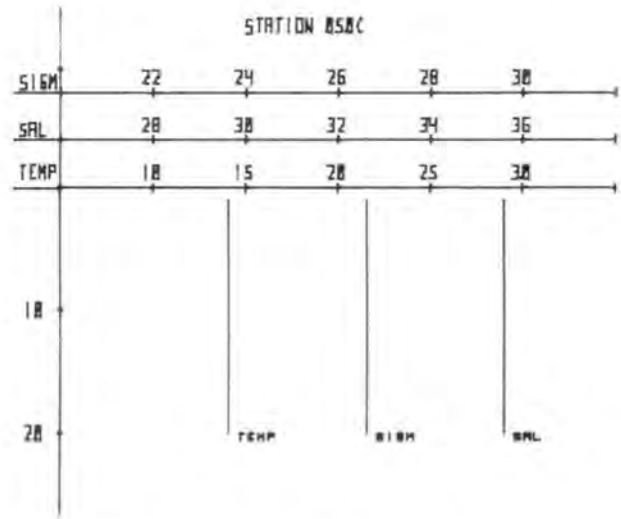
Z	T	S	U	SVA	Q2	Q2	RUU	FO4	RO3	SI
1.0	25.30	*	*	*	*	*	*	*	*	*
7.0	25.30	*	*	*	*	*	*	*	*	*
7.5	25.50	*	*	*	*	*	*	*	*	*
8.0	27.00	*	*	*	*	*	*	*	*	*
15.0	26.50	*	*	*	*	*	*	*	*	*
40.0	26.00	*	*	*	*	*	*	*	*	*
63.0	25.50	*	*	*	*	*	*	*	*	*
70.0	25.00	*	*	*	*	*	*	*	*	*
75.0	25.20	*	*	*	*	*	*	*	*	*
78.0	25.00	*	*	*	*	*	*	*	*	*
100.0	24.50	*	*	*	*	*	*	*	*	*
107.0	24.00	*	*	*	*	*	*	*	*	*
109.0	23.50	*	*	*	*	*	*	*	*	*
111.5	23.00	*	*	*	*	*	*	*	*	*
120.0	22.50	*	*	*	*	*	*	*	*	*
125.0	22.00	*	*	*	*	*	*	*	*	*
128.0	21.50	*	*	*	*	*	*	*	*	*
141.0	21.00	*	*	*	*	*	*	*	*	*
150.0	20.50	*	*	*	*	*	*	*	*	*
153.0	20.00	*	*	*	*	*	*	*	*	*
155.5	19.50	*	*	*	*	*	*	*	*	*
160.0	19.00	*	*	*	*	*	*	*	*	*
163.0	18.50	*	*	*	*	*	*	*	*	*
167.0	18.00	*	*	*	*	*	*	*	*	*
175.0	17.50	*	*	*	*	*	*	*	*	*
183.0	17.00	*	*	*	*	*	*	*	*	*
188.0	16.50	*	*	*	*	*	*	*	*	*
195.0	16.00	*	*	*	*	*	*	*	*	*
199.0	15.50	*	*	*	*	*	*	*	*	*
202.0	15.00	*	*	*	*	*	*	*	*	*
206.0	14.50	*	*	*	*	*	*	*	*	*
212.0	14.00	*	*	*	*	*	*	*	*	*
216.0	13.50	*	*	*	*	*	*	*	*	*
233.0	13.00	*	*	*	*	*	*	*	*	*
241.0	12.50	*	*	*	*	*	*	*	*	*
246.0	12.00	*	*	*	*	*	*	*	*	*
252.0	11.50	*	*	*	*	*	*	*	*	*
259.0	11.00	*	*	*	*	*	*	*	*	*
268.0	10.50	*	*	*	*	*	*	*	*	*
283.0	10.00	*	*	*	*	*	*	*	*	*
300.0	9.50	*	*	*	*	*	*	*	*	*
314.0	9.00	*	*	*	*	*	*	*	*	*
322.0	8.60	*	*	*	*	*	*	*	*	*
450.0	8.60	*	*	*	*	*	*	*	*	*



ISELIN CRUISE CI-12 STA 049C 11/11/76 14.0 GR CONSEC STA 49
 LAT 31 11.5N LONG 81 2.5W DEPTH = 18M DIST LAST STA = 100.0KM

WEATHER DATA
 WIND SPEED = 07 KTS SEA STATE =
 WIND DIRECTION = 360 WAVE DIRECTION =
 AIR TEMP = 15.0C CLOUD LIFE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1025.6 MB VISIBILITY CODE =

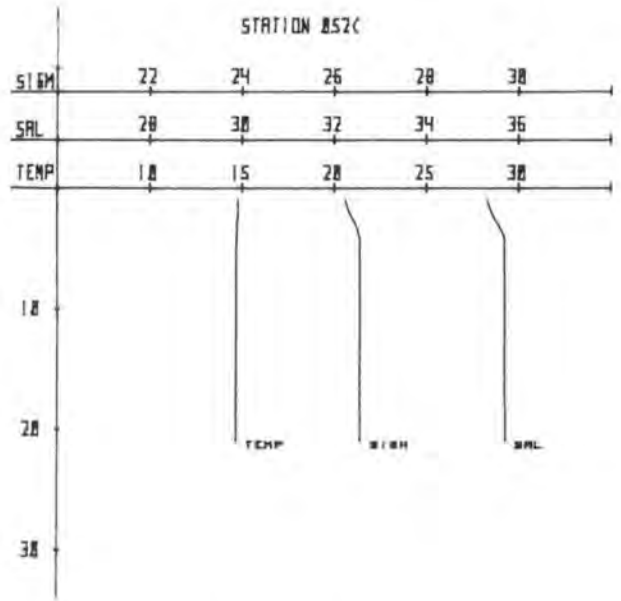
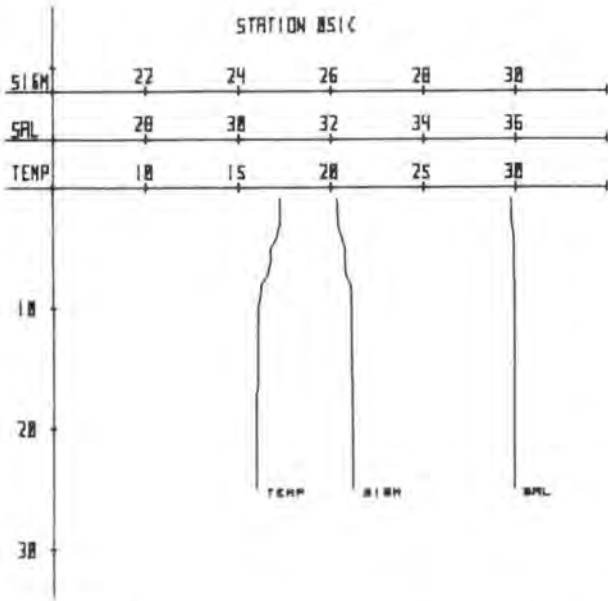
OBSERVATIONS										
Z	T	S	D	SVA	02	03	04	05	06	07
1.0	12.87	34.67	26.17	185	6.13	5.95	-0.18	0.13	00.0	00.4
2.0	12.87	34.67	26.17	185	.	.	.	.	.	.
3.0	12.87	34.67	26.17	185	.	.	.	.	.	.
4.0	12.86	34.68	26.18	184	.	.	.	.	.	.
5.0	12.86	34.68	26.18	184	.	.	.	.	.	.
6.0	12.87	34.67	26.17	185	.	.	.	.	.	.
7.0	12.86	34.68	26.18	184	.	.	.	.	.	.
8.0	12.86	34.68	26.18	184	.	.	.	.	.	.
9.0	12.86	34.68	26.18	184	.	.	.	.	.	.
10.0	12.86	34.68	26.18	184	.	.	.	.	.	.
11.0	12.86	34.68	26.18	184	.	.	.	.	.	.
12.0	12.87	34.67	26.17	185	.	.	.	.	.	.
13.0	12.87	34.67	26.17	185	6.12	5.95	-0.17	0.10	00.0	00.3
14.0	12.87	34.68	26.18	184	.	.	.	.	.	.
15.0	12.87	34.68	26.18	184	.	.	.	.	.	.
16.0	12.87	34.68	26.18	184	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 050C 11/11/76 15.1 GR CONSEC STA 50
 LAT 31 7.9N LONG 80 50.5W DEPTH = 18M DIST LAST STA = 20.2KM

WEATHER DATA
 WIND SPEED = 05 KTS SEA STATE =
 WIND DIRECTION = 020 WAVE DIRECTION =
 AIR TEMP = 15.0C CLOUD LIFE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1025.9 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	02	03	04	05	06	07
1.0	14.06	35.59	26.64	140	.	.	.	.	.	.
2.0	14.06	35.59	26.64	140	5.94	5.77	-0.17	0.08	00.0	00.4
3.0	14.06	35.59	26.64	140	.	.	.	.	.	.
4.0	14.06	35.58	26.63	141	.	.	.	.	.	.
5.0	14.06	35.58	26.63	141	.	.	.	.	.	.
6.0	14.07	35.58	26.63	141	.	.	.	.	.	.
7.0	14.06	35.60	26.65	140	.	.	.	.	.	.
8.0	14.06	35.60	26.65	140	.	.	.	.	.	.
9.0	14.06	35.60	26.65	140	.	.	.	.	.	.
10.0	14.06	35.60	26.65	140	.	.	.	.	.	.
11.0	14.06	35.60	26.65	140	.	.	.	.	.	.
12.0	14.06	35.60	26.65	140	.	.	.	.	.	.
13.0	14.07	35.60	26.65	140	.	.	.	.	.	.
14.0	14.07	35.60	26.65	140	.	.	.	.	.	.
15.0	14.07	35.60	26.65	140	.	.	.	.	.	.
16.0	14.07	35.60	26.65	140	.	.	.	.	.	.
17.0	14.07	35.60	26.65	140	.	.	.	.	.	.
18.0	14.07	35.61	26.65	140	.	.	.	.	.	.
19.0	14.07	35.60	26.65	140	5.90	5.77	-0.18	0.10	00.0	00.8
20.0	14.07	35.61	26.65	140	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 051C 111° 41' 17.5" W 16.8° NMT SURFALL STA 51
 LAT 31 4.0N LONG 80 40.6W DEPTH = 25M DIST LAST STA = 17.3KM

ISELIN CRUISE CI-12 STA 052C 111° 41' 17.5" W 17.0° NMT CONSET STA 52
 LAT 31 4.0N LONG 80 40.0W DEPTH = 25M DIST LAST STA = 19.3KM

WEATHER DATA
 WIND SPEED = 08 KTS
 WIND DIRECTION = 260
 AIR TEMP = 16.7C
 WEATHER CODE = *
 BAROMETRIC PRESSURE = 1024.5 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 05 KTS
 WIND DIRECTION = VARIABLE
 AIR TEMP = 16.7C
 WEATHER CODE = *
 BAROMETRIC PRESSURE = 1024.5 MB

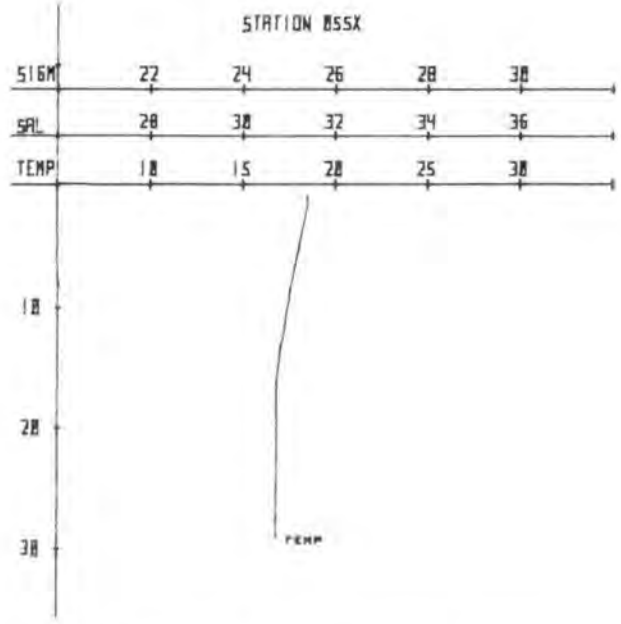
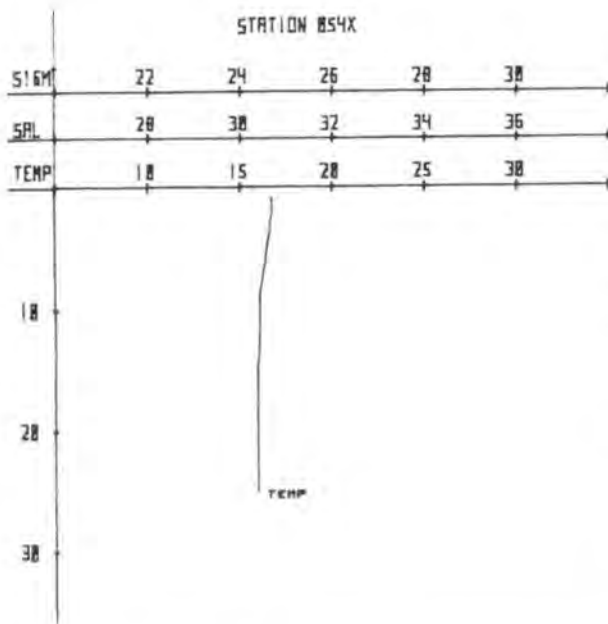
SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	02	02	ADU	PO4	NO3	SI
1.0	17.24	35.89	26.15	187	.	.	.	.	.	.
2.0	17.22	35.91	26.17	185	5.54	5.41	-1.13	0.01	00.2	00.6
3.0	17.20	35.93	26.19	183	.	.	.	.	.	.
4.0	17.02	35.97	26.26	176	.	.	.	.	.	.
5.0	16.73	35.98	26.34	169	.	.	.	.	.	.
6.0	16.70	35.96	26.33	170	.	.	.	.	.	.
7.0	16.56	35.93	26.34	169	.	.	.	.	.	.
8.0	16.22	35.97	26.45	159	.	.	.	.	.	.
9.0	16.12	35.97	26.47	156	.	.	.	.	.	.
10.0	16.02	35.96	26.49	155	.	.	.	.	.	.
11.0	16.00	35.95	26.49	155	.	.	.	.	.	.
12.0	16.00	35.95	26.49	155	.	.	.	.	.	.
13.0	16.00	35.95	26.49	155	5.67	5.54	-1.13	0.03	00.1	00.4
14.0	15.98	35.96	26.50	154	.	.	.	.	.	.
15.0	15.98	35.94	26.48	156	.	.	.	.	.	.
16.0	15.96	35.95	26.50	155	.	.	.	.	.	.
17.0	15.93	35.94	26.50	155	.	.	.	.	.	.
18.0	15.93	35.94	26.50	155	.	.	.	.	.	.
19.0	15.93	35.95	26.50	154	.	.	.	.	.	.
20.0	15.93	35.94	26.50	155	.	.	.	.	.	.
21.0	15.93	35.95	26.50	154	.	.	.	.	.	.
22.0	15.93	35.94	26.50	155	.	.	.	.	.	.
23.0	15.93	35.94	26.50	155	.	.	.	.	.	.
24.0	15.93	35.94	26.50	155	5.66	5.55	-1.11	0.05	00.2	00.6
25.0	15.93	35.94	26.50	155	.	.	.	.	.	.

OBSERVATIONS

Z	T	S	D	SVA	02	02	ADU	PO4	NO3	SI
1.0	14.80	35.31	26.26	176	5.86	5.66	-1.18	0.05	00.0	00.2
2.0	14.76	35.42	26.36	167	.	.	.	.	.	.
3.0	14.70	35.59	26.50	154	.	.	.	.	.	.
4.0	14.68	35.71	26.60	144	.	.	.	.	.	.
5.0	14.68	35.72	26.61	144	.	.	.	.	.	.
6.0	14.69	35.71	26.60	145	5.80	5.60	-1.19	0.05	00.0	00.1
7.0	14.68	35.72	26.61	144	.	.	.	.	.	.
8.0	14.68	35.72	26.61	144	.	.	.	.	.	.
9.0	14.68	35.72	26.61	144	.	.	.	.	.	.
10.0	14.68	35.72	26.61	144	.	.	.	.	.	.
11.0	14.68	35.72	26.61	144	.	.	.	.	.	.
12.0	14.69	35.72	26.60	144	.	.	.	.	.	.
13.0	14.70	35.72	26.60	144	.	.	.	.	.	.
14.0	14.70	35.72	26.60	144	.	.	.	.	.	.
15.0	14.69	35.73	26.61	143	.	.	.	.	.	.
16.0	14.69	35.72	26.60	144	.	.	.	.	.	.
17.0	14.69	35.72	26.60	144	.	.	.	.	.	.
18.0	14.70	35.73	26.61	144	.	.	.	.	.	.
19.0	14.70	35.73	26.61	144	.	.	.	.	.	.
20.0	14.70	35.73	26.61	144	5.83	5.67	-1.14	0.04	00.2	00.3
21.0	14.70	35.73	26.61	144	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 054X 11/11/76 19.8 GMT CONSEC SW 65
 LAT 31 4.5N LONG 00 42.0W DEPTH - 20M DIST LAST STA = 0.9KM

ISELIN CRUISE CI-12 STA 055X 11/11/76 19.8 GMT CONSEC SW 65
 LAT 31 2.6N LONG 00 35.0W DEPTH - 20M DIST LAST STA = 11.7KM

WEATHER DATA
 WIND SPEED = 02 KTS SEA STATE =
 WIND DIRECTION = VARIABLE WAVE DIRECTION =
 AIR TEMP = 16.7C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1024.5 MB VISIBILITY CODE =

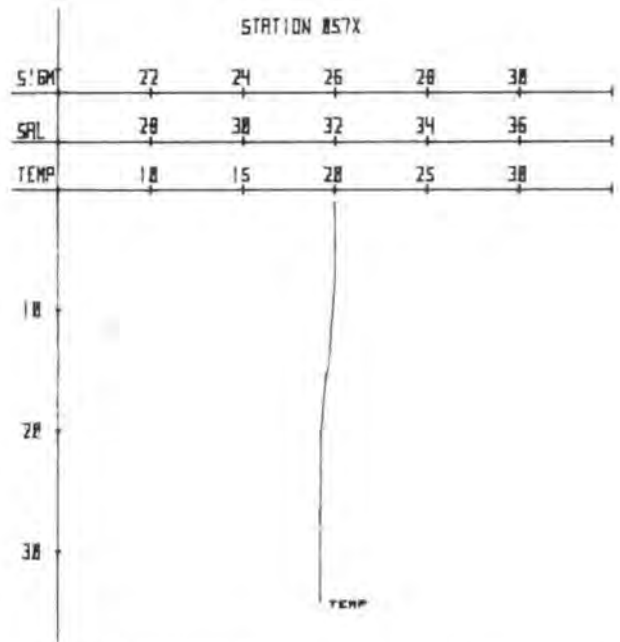
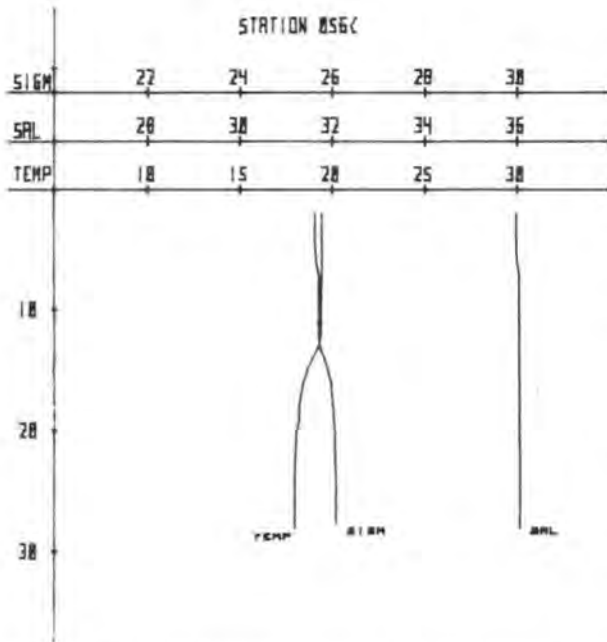
WEATHER DATA
 WIND SPEED = 02 KTS SEA STATE =
 WIND DIRECTION = VARIABLE WAVE DIRECTION =
 AIR TEMP = 16.7C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1024.5 MB VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	Q2	Q2	ADU	FO4	NO3	SI
1.0	16.70	*	*	*	*	*	*	*	*	*
4.0	16.50	*	*	*	*	*	*	*	*	*
9.0	16.00	*	*	*	*	*	*	*	*	*
15.0	15.90	*	*	*	*	*	*	*	*	*
25.0	15.90	*	*	*	*	*	*	*	*	*

OBSERVATIONS

Z	T	S	D	SVA	Q2	Q2	ADU	FO4	NO3	SI
1.0	18.50	*	*	*	*	*	*	*	*	*
5.0	18.00	*	*	*	*	*	*	*	*	*
8.5	17.50	*	*	*	*	*	*	*	*	*
13.0	17.00	*	*	*	*	*	*	*	*	*
16.0	16.80	*	*	*	*	*	*	*	*	*
29.0	16.80	*	*	*	*	*	*	*	*	*



ISELIN CRUISE 01-12 STA 056C (1) 11/76 21.0 GMT CONSEL STA 56
 LAT 31 1.0N LONG 80 29.5W DEPTH = 34M DIST LAST STA = 9.2KM

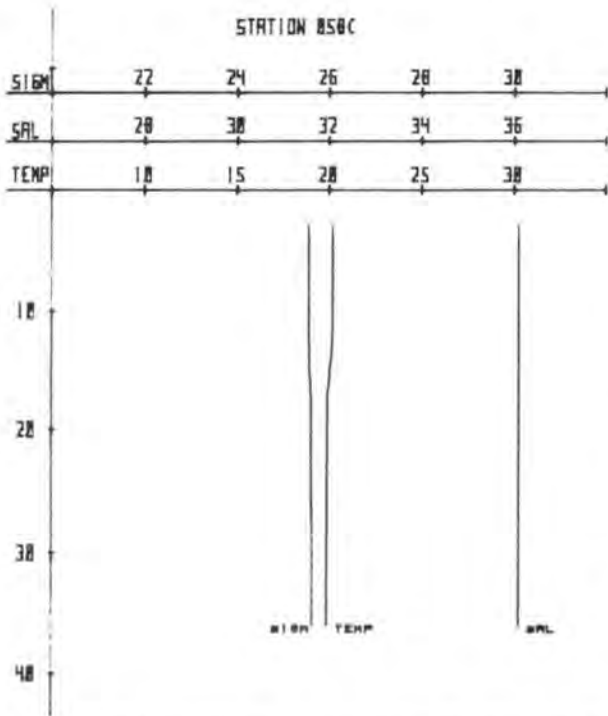
ISELIN CRUISE 01-12 STA 057X (1) 11/76 21.0 GMT CONSEL STA 57
 LAT 30 58.5N LONG 80 24.5W DEPTH = 34M DIST LAST STA = 9.2KM

WEATHER DATA
 WIND SPEED = 02 KTS
 WIND DIRECTION = VARIABLE
 AIR TEMP = 17.8C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1023.5 mb
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 02 KTS
 WIND DIRECTION = VARIABLE
 AIR TEMP = 17.8C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1023.5 mb
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS											
Z	T	S	D	SVA	U2	U3	ADU	P04	NU3	SI	
2.0	19.48	35.98	25.65	234	5.48	5.18	-1.30	0.05	00.1	01.0	
3.0	19.48	35.98	25.65	234							
4.0	19.48	35.98	25.65	234							
5.0	19.47	36.01	25.68	232							
6.0	19.44	36.04	25.71	229							
7.0	19.38	36.07	25.75	225							
8.0	19.38	36.07	25.75	225							
9.0	19.38	36.07	25.75	225	5.31	5.19	-1.12	0.05	00.1	01.4	
10.0	19.38	36.07	25.75	225							
11.0	19.37	36.07	25.75	225							
12.0	19.33	36.07	25.76	224							
13.0	19.22	36.06	25.78	222							
14.0	18.91	36.08	25.88	213							
15.0	18.62	36.07	25.94	207							
16.0	18.39	36.09	26.02	200							
17.0	18.26	36.08	26.04	198							
18.0	18.16	36.08	26.07	195							
19.0	18.12	36.08	26.08	194							
20.0	18.01	36.09	26.11	191							
21.0	17.98	36.09	26.12	190							
22.0	17.94	36.09	26.13	190							
23.0	17.91	36.09	26.14	189							
24.0	17.90	36.09	26.14	189							
25.0	17.90	36.09	26.14	189							
26.0	17.90	36.09	26.14	189							
27.0	17.89	36.09	26.14	189							
28.0	17.89	36.10	26.15	188	5.46	5.34	-1.12	0.10	00.4	00.0	

OBSERVATIONS											
Z	T	S	D	SVA	U2	U3	ADU	P04	NU3	SI	
1.0	20.00										
9.0	19.90										
15.0	19.60										
15.5	19.50										
20.0	19.20										
34.0	19.20										

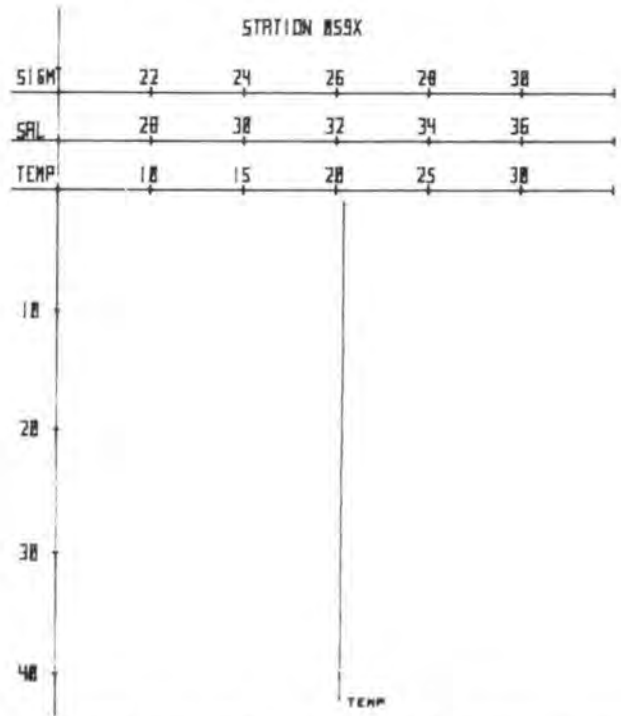


ISELIN CRUISE CI-12 STA 858C 11/78 22.4 DAT UNSEC STA 5V
 LAT 30 37.0N LONG 80 19.5W DEPTH = 30M DIST LAST STA = 8.4KM

WEATHER DATA
 WIND SPEED = 02 KTS SEA STATE =
 WIND DIRECTION = VARIABLE WAVE DIRECTION =
 AIR TEMP = 18.9C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1023.0 MB VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	Q2	Q2	ADU	P04	N03	SI
3.0	20.16	36.09	25.56	243	5.25	5.11	-.14	0.06	00.4	01.4
4.0	20.16	36.09	25.56	243						
5.0	20.16	36.09	25.56	243						
6.0	20.16	36.09	25.56	243						
7.0	20.16	36.09	25.56	243						
8.0	20.16	36.09	25.56	243						
9.0	20.16	36.09	25.56	243						
10.0	20.16	36.09	25.56	243						
11.0	20.13	36.10	25.57	242						
12.0	20.11	36.10	25.58	242						
13.0	20.09	36.11	25.59	240						
14.0	20.08	36.11	25.59	240						
15.0	20.01	36.10	25.61	239						
16.0	19.96	36.11	25.63	237						
17.0	19.90	36.11	25.64	236						
18.0	19.90	36.11	25.64	236						
19.0	19.90	36.11	25.64	236						
20.0	19.89	36.11	25.65	236						
21.0	19.89	36.11	25.65	236						
22.0	19.89	36.11	25.65	236						
23.0	19.87	36.11	25.65	235						
24.0	19.87	36.11	25.65	235	5.23	5.14	-.09	0.09	00.4	05.8
25.0	19.87	36.10	25.64	236						
26.0	19.86	36.11	25.65	235						
27.0	19.86	36.11	25.65	235						
28.0	19.86	36.11	25.65	235						
29.0	19.84	36.11	25.66	235						
30.0	19.84	36.11	25.66	235						
31.0	19.84	36.11	25.66	235						
32.0	19.84	36.10	25.65	235						
33.0	19.84	36.10	25.65	235						
34.0	19.84	36.10	25.65	236	5.21	5.14	-.07	0.07	00.1	01.0
35.0	19.84	36.10	25.65	236						
36.0	19.84	36.10	25.65	236						

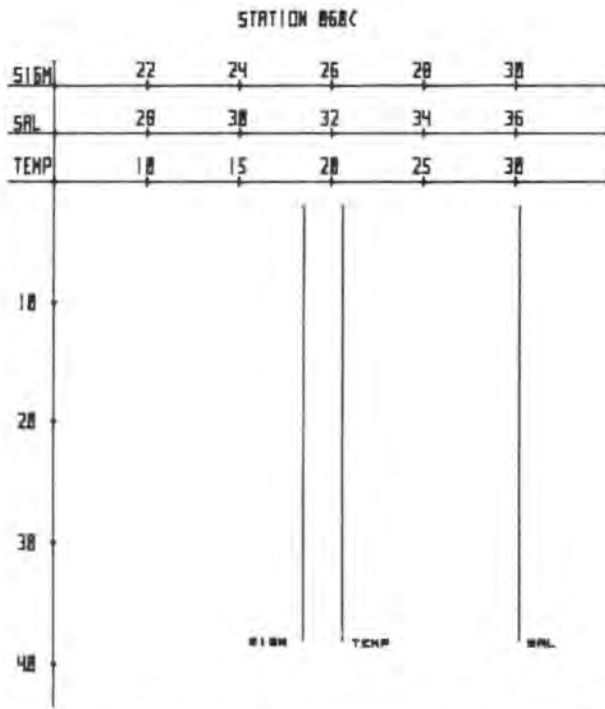


ISELIN CRUISE CI-12 STA 859K 11/78 22.4 DAT UNSEC STA 5V
 LAT 30 54.9N LONG 80 14.5W DEPTH = 40M DIST LAST STA = 8.4KM

WEATHER DATA
 WIND SPEED = 02 KTS SEA STATE =
 WIND DIRECTION = VARIABLE WAVE DIRECTION =
 AIR TEMP = 18.9C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1023.0 MB VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	Q2	Q2	ADU	P04	N03	SI
1.0	20.40									
42.0	20.30									



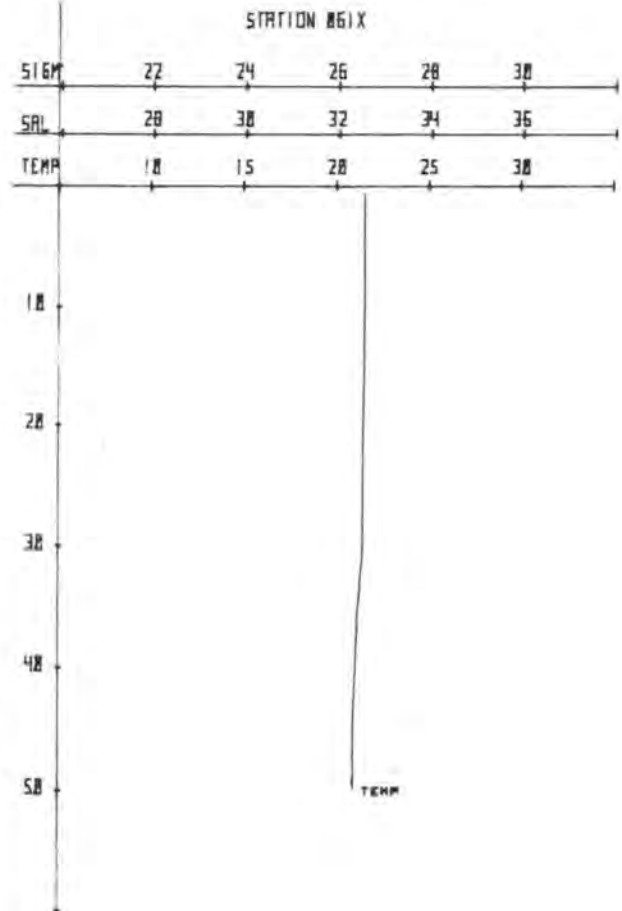
ISELIN CRUISE CI-12 STA 060C 11/ X11/76 33.0 GMT CONSEC STA 60
 LAT 30 52.7N LONG 80 8.8W DEPTH = 40M DIST LAST STA = 9.9KM

WEATHER DATA
 WIND SPEED = 02 KTS
 WIND DIRECTION = VARIABLE
 AIR TEMP = 18.9C
 WEATHER CODE = *
 BAROMETRIC PRESSURE = 1023.0 MB

SEA STATE = -
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	U2	U2'	AUO	P04	NOI	SI
2.0	20.64	36.09	25.43	255	5.15	5.07	-1.08	0.05	00.3	01.6
3.0	20.64	36.09	25.43	255	*	*	*	*	*	*
4.0	20.64	36.09	25.43	255	*	*	*	*	*	*
5.0	20.66	36.09	25.42	256	*	*	*	*	*	*
6.0	20.66	36.09	25.42	256	*	*	*	*	*	*
7.0	20.67	36.08	25.41	257	*	*	*	*	*	*
8.0	20.67	36.09	25.42	256	*	*	*	*	*	*
9.0	20.67	36.09	25.42	256	*	*	*	*	*	*
10.0	20.66	36.09	25.42	256	*	*	*	*	*	*
11.0	20.66	36.09	25.42	256	*	*	*	*	*	*
12.0	20.66	36.09	25.42	256	*	*	*	*	*	*
13.0	20.66	36.09	25.42	256	*	*	*	*	*	*
14.0	20.66	36.09	25.42	256	*	*	*	*	*	*
15.0	20.66	36.09	25.42	256	*	*	*	*	*	*
16.0	20.66	36.09	25.42	256	*	*	*	*	*	*
17.0	20.66	36.10	25.43	256	*	*	*	*	*	*
18.0	20.66	36.09	25.42	256	*	*	*	*	*	*
19.0	20.66	36.10	25.43	256	*	*	*	*	*	*
20.0	20.66	36.10	25.43	256	*	*	*	*	*	*
21.0	20.66	36.10	25.43	256	*	*	*	*	*	*
22.0	20.66	36.10	25.43	256	*	*	*	*	*	*
23.0	20.66	36.10	25.43	256	*	*	*	*	*	*
24.0	20.66	36.10	25.43	256	*	*	*	*	*	*
25.0	20.66	36.10	25.43	256	*	*	*	*	*	*
26.0	20.66	36.10	25.43	256	*	*	*	*	*	*
27.0	20.66	36.10	25.43	256	*	*	*	*	*	*
28.0	20.66	36.10	25.43	256	*	*	*	*	*	*
29.0	20.66	36.10	25.43	256	*	*	*	*	*	*
30.0	20.66	36.10	25.43	256	*	*	*	*	*	*
31.0	20.66	36.10	25.43	256	*	*	*	*	*	*
32.0	20.66	36.09	25.42	257	*	*	*	*	*	*
33.0	20.66	36.09	25.42	257	*	*	*	*	*	*
34.0	20.66	36.09	25.42	257	*	*	*	*	*	*
35.0	20.66	36.09	25.42	257	*	*	*	*	*	*
36.0	20.66	36.09	25.42	257	*	*	*	*	*	*
37.0	20.66	36.09	25.42	257	*	*	*	*	*	*
38.0	20.66	36.09	25.42	257	5.17	5.07	-1.10	0.06	00.3	03.0



ISELIN CRUISE CI-12 STA 061X 12/ X11/76 0.0 GMT CONSEC STA 61
 LAT 30 50.7N LONG 80 3.5W DEPTH = 50M DIST LAST STA = 9.2KM

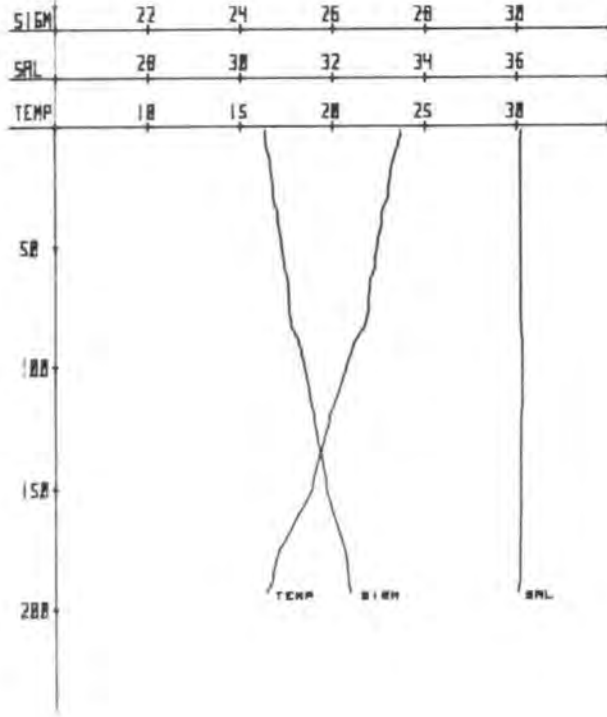
WEATHER DATA
 WIND SPEED = 02 KTS
 WIND DIRECTION = VARIABLE
 AIR TEMP = 18.9C
 WEATHER CODE = *
 BAROMETRIC PRESSURE = 1022.6 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	U2	U2'	AUO	P04	NOI	SI
1.0	21.40	*	*	*	*	*	*	*	*	*
30.5	21.10	*	*	*	*	*	*	*	*	*
37.0	21.00	*	*	*	*	*	*	*	*	*
45.0	20.80	*	*	*	*	*	*	*	*	*
50.0	20.80	*	*	*	*	*	*	*	*	*

STATION 062C



ISLLIN CRUISE CI-12, STA 062C 121 44 18 30 001 CONDIT STA 02

LAT 30 49.0W LONG 79 57.0W DEPTH 200M DIST LAST STA = 10.8M

WEATHER DATA

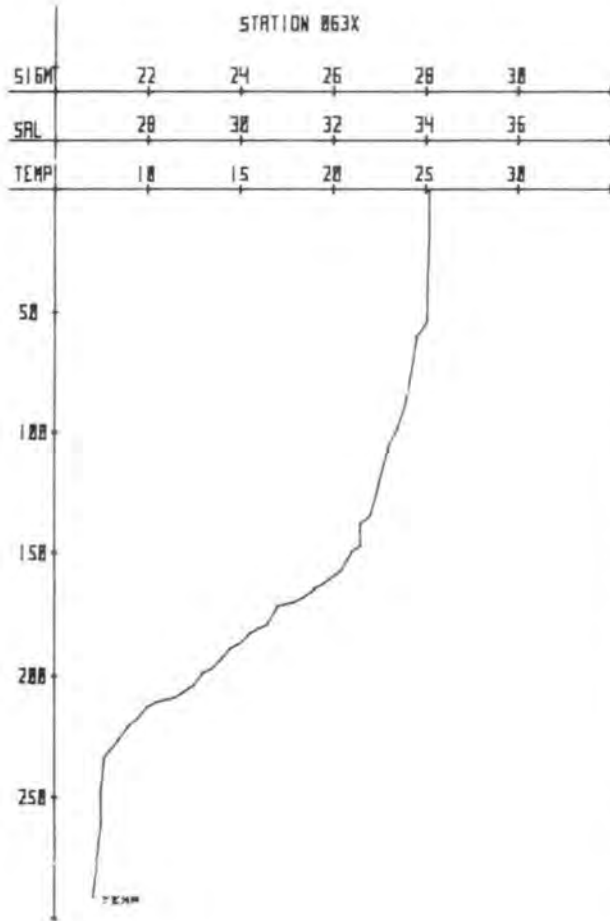
WIND SPEED = 11 KTS
 WIND DIRECTION = 170
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1022.6 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	F	S	D	SVA	Q2	Q2	Q04	FO4	N03	S1
2.0	23.66	36.07	24.56	338						
3.0	23.66	36.06	24.55	339	5.94	4.81	-1.23	0.14	00.3	02.7
4.0	23.63	36.07	24.57	337						
5.0	23.60	36.06	24.57	337						
6.0	23.54	36.05	24.58	336						
7.0	23.52	36.06	24.59	335						
8.0	23.50	36.06	24.60	335						
9.0	23.47	36.06	24.61	334						
10.0	23.42	36.06	24.62	332						
11.0	23.38	36.07	24.64	331						
12.0	23.33	36.07	24.66	329						
13.0	23.29	36.08	24.66	329						
14.0	23.27	36.07	24.67	328						
15.0	23.20	36.07	24.70	326						
16.0	23.18	36.06	24.69	326						
17.0	23.16	36.06	24.70	325						
18.0	23.13	36.07	24.72	324						
19.0	23.12	36.06	24.71	324						
20.0	23.10	36.07	24.72	323						
21.0	23.08	36.06	24.72	323						
22.0	23.10	36.06	24.72	324						
23.0	23.03	36.06	24.74	322						
24.0	23.01	36.06	24.74	312						
25.0	23.00	36.06	24.75	321						
26.0	23.00	36.07	24.75	321						
27.0	23.00	36.06	24.75	321						
28.0	23.00	36.07	24.75	321						
29.0	23.00	36.07	24.75	321						
30.0	22.94	36.07	24.77	319						
31.0	22.88	36.07	24.79	318						
32.0	22.80	36.06	24.80	316						
33.0	22.77	36.06	24.81	315						

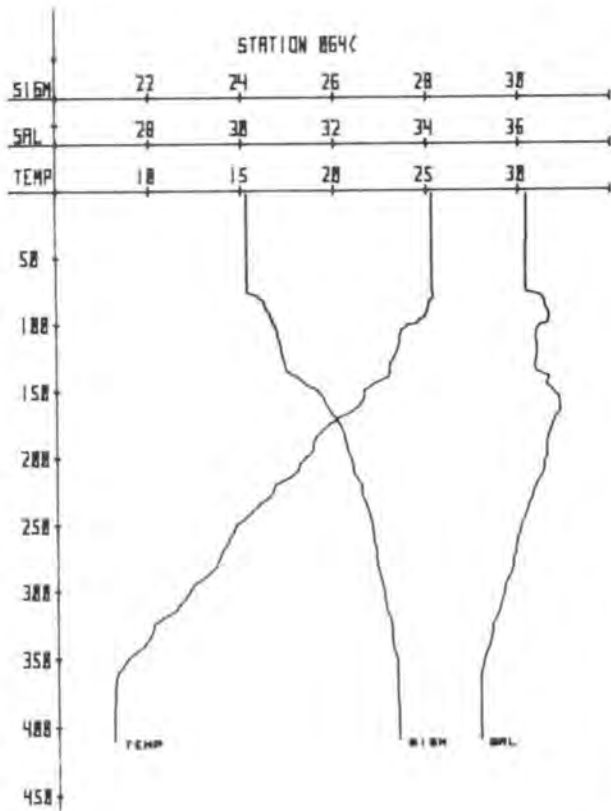
34.0	22.70	36.07	24.84	313						
35.0	22.68	36.07	24.85	312						
36.0	22.63	36.07	24.86	311						
37.0	22.63	36.07	24.86	311						
38.0	22.62	36.07	24.86	311						
39.0	22.62	36.07	24.86	311						
40.0	22.61	36.07	24.87	311						
41.0	22.59	36.07	24.87	310						
42.0	22.56	36.07	24.88	309						
43.0	22.52	36.08	24.90	307						
44.0	22.50	36.08	24.90	307						
45.0	22.49	36.07	24.90	307						
46.0	22.42	36.08	24.93	305						
47.0	22.40	36.08	24.93	304						
48.0	22.40	36.07	24.93	305						
49.0	22.39	36.08	24.94	304						
50.0	22.38	36.08	24.94	304						
51.0	22.34	36.08	24.95	303	5.03	4.92	-1.11	0.09	00.2	01.5
52.0	22.30	36.08	24.96	302						
53.0	22.29	36.08	24.96	302						
54.0	22.27	36.08	24.97	301						
55.0	22.24	36.08	24.97	301						
56.0	22.24	36.08	24.98	300						
57.0	22.23	36.09	24.99	299						
58.0	22.22	36.09	24.99	299						
59.0	22.20	36.09	25.00	299						
60.0	22.18	36.09	25.00	298						
61.0	22.13	36.09	25.02	297						
62.0	22.06	36.10	25.04	294						
63.0	22.00	36.09	25.05	293						
64.0	21.99	36.10	25.06	292						
65.0	21.98	36.09	25.06	293						
66.0	21.96	36.10	25.07	292						
67.0	21.96	36.09	25.07	293						
68.0	21.96	36.09	25.07	293						
69.0	21.96	36.09	25.07	293						
70.0	21.91	36.10	25.09	291						
71.0	21.90	36.10	25.09	290						
72.0	21.90	36.10	25.09	290						
73.0	21.89	36.09	25.08	291						
74.0	21.88	36.10	25.10	290						
75.0	21.88	36.10	25.10	290						
76.0	21.88	36.09	25.09	291						
77.0	21.88	36.10	25.10	290						
78.0	21.88	36.09	25.09	291						
79.0	21.83	36.11	25.12	288						
80.0	21.82	36.10	25.11	289						
81.0	21.79	36.10	25.12	288						
82.0	21.78	36.10	25.12	288						
83.0	21.73	36.11	25.14	286						
84.0	21.70	36.11	25.15	285						
85.0	21.62	36.11	25.18	283						
86.0	21.52	36.11	25.20	280						
87.0	21.44	36.11	25.23	278						
88.0	21.36	36.13	25.26	274						
89.0	21.26	36.13	25.29	272						
90.0	21.20	36.12	25.30	271						
91.0	21.11	36.12	25.32	269						
92.0	21.08	36.12	25.33	268						
93.0	21.04	36.13	25.35	266						
94.0	21.00	36.13	25.36	265						
95.0	20.98	36.13	25.37	265						
96.0	20.91	36.12	25.36	264						
97.0	20.86	36.12	25.39	262						
98.0	20.80	36.12	25.41	261						
99.0	20.78	36.12	25.41	260	4.87	5.06	.19	0.10	01.2	01.2
100.0	20.76	36.11	25.41	261						
101.0	20.70	36.12	25.44	258						
104.0	20.56	36.12	25.47	255						
110.0	20.32	36.11	25.53	250						
115.0	20.09	36.09	25.58	245						
120.0	19.80	36.06	25.63	241						
125.0	19.70	36.06	25.66	238						
130.0	19.50	36.06	25.71	233						
135.0	19.30	36.07	25.77	228						
140.0	19.10	36.08	25.83	222						
145.0	18.94	36.08	25.87	219	4.83	5.23	.40	0.13	01.2	01.5
151.0	18.80	36.08	25.91	215						
156.0	18.50	36.08	25.98	206						
160.0	18.18	36.05	26.04	203						
165.0	17.80	36.04	26.13	195						
170.0	17.46	36.04	26.21	187						
175.0	17.08	36.02	26.29	180						
180.0	16.88	36.02	26.33	175						
185.0	16.72	36.01	26.36	173						
190.0	16.62	36.00	26.38	171						
193.0	16.37	35.98	26.42	167						
197.0					3.48			0.94	14.3	07.8



ISELIN CRUISE CI-12 STA 063X 12/ XIII/76 2.6 GMT CONSLC STA 63
 LAT 30 47.2N LONG 79 52.9W DEPTH 291M DIST LAST STA - 7.3KM

WEATHER DATA
 WIND SPEED = 12 KTS SEA STATE =
 WIND DIRECTION = 150 WAVE DIRECTION =
 AIR TEMP = 21.1C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1021.9 mb VISIBILITY CODE =

		OBSERVATIONS									
Z	T	S	D	SVA	U2	U2	WU	P04	NUS	SI	
1.0	25.20	*	*	*	*	*	*	*	*	*	
54.0	25.00	*	*	*	*	*	*	*	*	*	
60.0	24.50	*	*	*	*	*	*	*	*	*	
65.0	24.00	*	*	*	*	*	*	*	*	*	
98.0	23.50	*	*	*	*	*	*	*	*	*	
106.0	23.00	*	*	*	*	*	*	*	*	*	
121.0	22.50	*	*	*	*	*	*	*	*	*	
135.0	22.00	*	*	*	*	*	*	*	*	*	
138.0	21.50	*	*	*	*	*	*	*	*	*	
147.0	21.50	*	*	*	*	*	*	*	*	*	
150.0	21.00	*	*	*	*	*	*	*	*	*	
157.0	20.50	*	*	*	*	*	*	*	*	*	
160.0	20.00	*	*	*	*	*	*	*	*	*	
163.0	19.50	*	*	*	*	*	*	*	*	*	
165.0	19.00	*	*	*	*	*	*	*	*	*	
168.0	18.50	*	*	*	*	*	*	*	*	*	
170.0	18.00	*	*	*	*	*	*	*	*	*	
171.0	17.50	*	*	*	*	*	*	*	*	*	
172.0	17.00	*	*	*	*	*	*	*	*	*	
179.0	16.50	*	*	*	*	*	*	*	*	*	
181.0	16.00	*	*	*	*	*	*	*	*	*	
183.0	15.50	*	*	*	*	*	*	*	*	*	
187.0	15.00	*	*	*	*	*	*	*	*	*	
189.0	14.50	*	*	*	*	*	*	*	*	*	
193.0	14.00	*	*	*	*	*	*	*	*	*	
197.0	13.50	*	*	*	*	*	*	*	*	*	
199.0	13.00	*	*	*	*	*	*	*	*	*	
204.0	12.50	*	*	*	*	*	*	*	*	*	
207.0	12.00	*	*	*	*	*	*	*	*	*	
209.0	11.50	*	*	*	*	*	*	*	*	*	
210.0	11.00	*	*	*	*	*	*	*	*	*	
211.0	10.50	*	*	*	*	*	*	*	*	*	
213.0	10.00	*	*	*	*	*	*	*	*	*	
218.0	9.50	*	*	*	*	*	*	*	*	*	
221.0	9.00	*	*	*	*	*	*	*	*	*	
226.0	8.50	*	*	*	*	*	*	*	*	*	
231.0	8.00	*	*	*	*	*	*	*	*	*	
234.0	7.70	*	*	*	*	*	*	*	*	*	
247.0	7.50	*	*	*	*	*	*	*	*	*	
240.0	7.50	*	*	*	*	*	*	*	*	*	
291.0	7.10	*	*	*	*	*	*	*	*	*	



ISELIN CRUISE CI-12 STA 064C 12° 41' 7" S 79° 47' 0" W DIST LAST STA = 9.4KM

LAT 30 45.4W LONG 79 47.4W DEPTH = 429M DIST LAST STA = 9.4KM

WEATHER DATA

WIND SPEED = 13 KTS
 WIND DIRECTION = 170
 AIR TEMP = 21.7C
 WEATHER CODE = *
 BAROMETRIC PRESSURE = 1021.3 MB

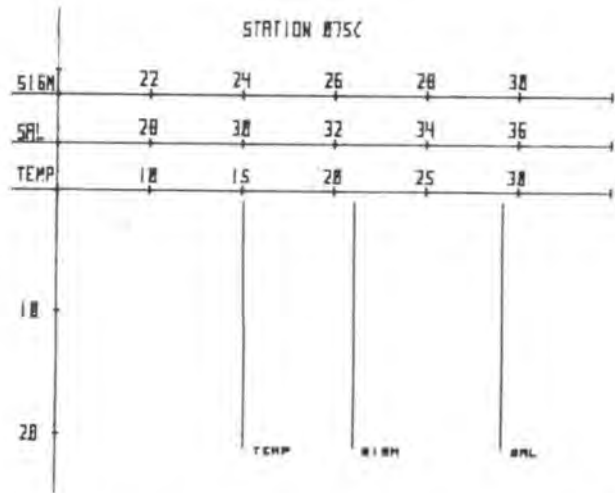
SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS

Z	T	S	σ	SVA	Q2	Q2	AOU	PO4	NO3	SI
3.0	25.29	36.16	24.14	379	4.93	4.67	-0.26	0.01	00.2	01.9
4.0	25.29	36.16	24.14	379						
5.0	25.30	36.15	24.13	380						
6.0	25.30	36.16	24.13	379						
7.0	25.30	36.16	24.13	379						
8.0	25.30	36.16	24.13	379						
9.0	25.30	36.16	24.13	379						
10.0	25.30	36.16	24.13	379						
11.0	25.30	36.16	24.13	379						
12.0	25.30	36.16	24.13	379						
13.0	25.30	36.16	24.13	379						
14.0	25.30	36.16	24.13	379						
15.0	25.30	36.16	24.13	379						
16.0	25.30	36.16	24.13	379						
17.0	25.30	36.16	24.13	379						
18.0	25.30	36.16	24.13	379						
19.0	25.30	36.16	24.13	379						
20.0	25.30	36.16	24.13	379						
21.0	25.30	36.16	24.13	380						
22.0	25.30	36.16	24.13	380						
23.0	25.30	36.16	24.13	380						
24.0	25.30	36.16	24.13	380						
25.0	25.30	36.16	24.13	380						
26.0	25.29	36.16	24.14	379						
27.0	25.30	36.16	24.13	380						
28.0	25.30	36.16	24.13	380						
29.0	25.30	36.16	24.13	380						
30.0	25.30	36.16	24.13	380						
31.0	25.30	36.16	24.13	380						
32.0	25.30	36.15	24.13	381						
33.0	25.30	36.15	24.13	381						

34.0	25.30	36.15	24.13	381						
35.0	25.30	36.15	24.13	381						
36.0	25.30	36.15	24.13	381						
37.0	25.30	36.15	24.13	381						
38.0	25.30	36.15	24.13	381						
39.0	25.30	36.15	24.13	381						
40.0	25.30	36.14	24.12	382						
41.0	25.30	36.15	24.13	381						
42.0	25.30	36.15	24.13	381						
43.0	25.30	36.15	24.13	381						
44.0	25.30	36.15	24.13	381						
45.0	25.30	36.15	24.13	381						
46.0	25.30	36.15	24.13	381						
47.0	25.30	36.15	24.13	381						
48.0	25.30	36.15	24.13	381						
49.0	25.30	36.15	24.13	381						
50.0	25.30	36.15	24.13	381						
51.0	25.30	36.15	24.13	381						
52.0	25.30	36.15	24.13	382						
53.0	25.30	36.15	24.13	382						
54.0	25.30	36.15	24.13	382						
55.0	25.30	36.15	24.13	382						
56.0	25.30	36.15	24.13	382						
57.0	25.30	36.15	24.13	382						
58.0	25.30	36.15	24.13	382						
59.0	25.30	36.15	24.13	382						
60.0	25.30	36.15	24.13	382						
61.0	25.30	36.16	24.13	381						
62.0	25.30	36.16	24.13	381						
63.0	25.30	36.15	24.13	382						
64.0	25.30	36.16	24.13	381						
65.0	25.30	36.16	24.13	381						
66.0	25.30	36.16	24.13	381						
67.0	25.30	36.16	24.13	381						
68.0	25.30	36.16	24.13	381						
69.0	25.32	36.16	24.13	382						
70.0	25.32	36.16	24.13	382						
71.0	25.32	36.16	24.13	382						
72.0	25.32	36.16	24.13	382						
73.0	25.32	36.16	24.13	382						
74.0	25.32	36.17	24.14	382						
75.0	25.34	36.17	24.13	382						
76.0	25.33	36.19	24.15	381						
77.0	25.38	36.24	24.18	377						
78.0	25.41	36.41	24.29	367						
79.0	25.40	36.50	24.36	360						
80.0	25.32	36.53	24.41	356						
81.0	25.29	36.54	24.42	354						
82.0	25.24	36.56	24.45	352						
83.0	25.20	36.56	24.47	350						
84.0	25.12	36.58	24.51	347						
85.0	25.11	36.58	24.51	346						
86.0	25.10	36.59	24.52	345						
87.0	25.09	36.59	24.52	345						
88.0	25.04	36.60	24.55	343						
89.0	25.04	36.60	24.55	343						
90.0	25.02	36.63	24.57	340						
91.0	25.01	36.63	24.58	340						
92.0	24.99	36.65	24.60	338						
93.0	24.91	36.67	24.64	334						
94.0	24.90	36.66	24.63	335						
95.0	24.87	36.67	24.65	333						
96.0	24.82	36.67	24.67	332						
97.0	24.61	36.63	24.70	329						
98.0	24.56	36.61	24.70	329	4.46	4.72	0.26	0.05	00.4	00.8
99.0	24.54	36.61	24.71	328						
100.0	24.46	36.60	24.72	327						
101.0	24.00	36.46	24.75	324						
105.0	23.62	36.36	24.79	320						
110.0	23.49	36.34	24.81	318						
115.0	23.48	36.39	24.86	315						
120.0	23.36	36.37	24.88	313						
125.0	23.20	36.35	24.91	310						
130.0	22.99	36.33	24.95	306						
136.0	23.00	36.40	25.00	301						
140.0	22.92	36.65	25.22	281						
145.0	22.14	36.58	25.39	265						
150.0	21.62	36.74	25.65	240	4.08	4.96	0.88	0.19	02.7	07.7
155.0	21.58	36.88	25.77	229						
160.0	21.39	36.91	25.85	222						
165.0	21.01	36.88	25.93	214						
170.0	20.24	36.77	26.05	202						
175.0	19.76	36.72	26.14	194						
180.0	19.37	36.66	26.20	189						
185.0	19.00	36.61	26.26	183						
190.0	18.82	36.59	26.29	180						
195.0	18.77	36.61	26.32	178	3.34	5.23	1.89	0.58	10.1	03.7
200.0	18.48	36.59	26.38	172						

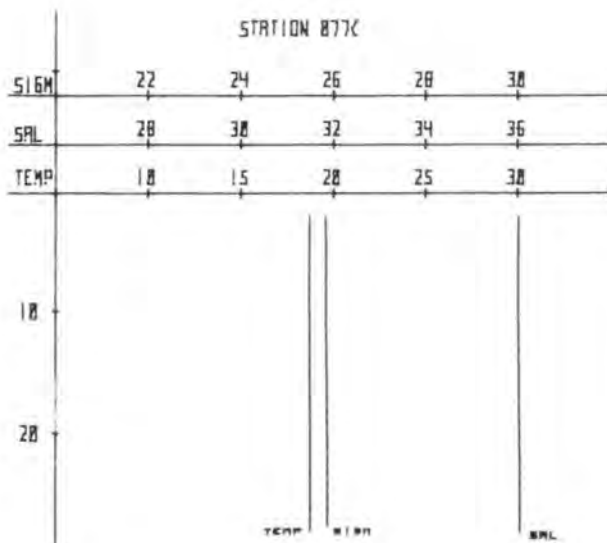
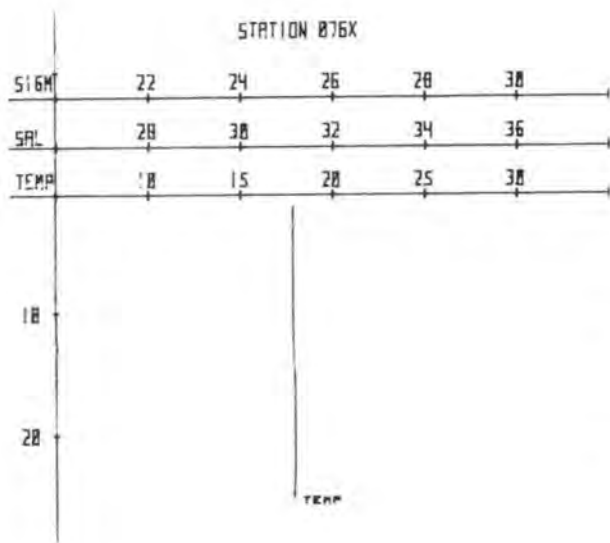
205.0	18.10	36.52	26.42	169	.	.	.	.	.	.
210.0	17.98	36.51	26.44	167	.	.	.	.	.	.
215.0	17.54	36.45	26.50	161	.	.	.	.	.	.
220.0	16.80	36.36	26.61	150	.	.	.	.	.	.
225.0	16.66	36.31	26.61	151	.	.	.	.	.	.
230.0	16.41	36.27	26.64	148	.	.	.	.	.	.
235.0	15.88	36.20	26.71	142	.	.	.	.	.	.
240.0	15.50	36.16	26.76	136	.	.	.	.	.	.
245.0	15.19	36.11	26.79	133	.	.	.	.	.	.
250.0	14.69	36.03	26.84	129	.	.	.	.	.	.
255.0	14.49	36.00	26.86	127	.	.	.	.	.	.
260.0	14.26	35.95	26.87	126	.	.	.	.	.	.
265.0	14.11	35.93	26.89	124	.	.	.	.	.	.
270.0	13.87	35.90	26.92	122	.	.	.	.	.	.
275.0	13.74	35.87	26.92	121	.	.	.	.	.	.
280.0	13.56	35.85	26.95	119	.	.	.	.	.	.
285.0	13.31	35.82	26.97	117	.	.	.	.	.	.
290.0	12.90	35.76	27.01	113	.	.	.	.	.	.
295.0	12.39	35.68	27.05	109	3.11	5.97	2.66	1.32	19.7	09.0
300.0	12.14	35.64	27.08	106	.	.	.	.	.	.
305.0	11.93	35.63	27.10	104	.	.	.	.	.	.
310.0	11.57	35.59	27.14	101	.	.	.	.	.	.
315.0	11.33	35.55	27.15	99	.	.	.	.	.	.
320.0	10.70	35.48	27.22	93	.	.	.	.	.	.
325.0	10.19	35.40	27.24	90	.	.	.	.	.	.
330.0	10.11	35.38	27.24	91	.	.	.	.	.	.
335.0	9.94	35.36	27.26	89	.	.	.	.	.	.
340.0	9.69	35.34	27.28	87	.	.	.	.	.	.
346.0	9.18	35.24	27.31	84	.	.	.	.	.	.
350.0	8.76	35.22	27.34	81	.	.	.	.	.	.
355.0	8.49	35.18	27.35	80	.	.	.	.	.	.
360.0	8.24	35.14	27.36	79	.	.	.	.	.	.
365.0	8.10	35.12	27.37	78	.	.	.	.	.	.
370.0	8.07	35.12	27.37	78	.	.	.	.	.	.
375.0	8.07	35.12	27.37	78	.	.	.	.	.	.
380.0	8.09	35.12	27.37	78	.	.	.	.	.	.
385.0	8.02	35.12	27.38	77	.	.	.	.	.	.
390.0	8.02	35.11	27.37	78	.	.	.	.	.	.
395.0	8.02	35.12	27.38	77	.	.	.	.	.	.
400.0	8.02	35.12	27.38	78	3.06	8.60	3.04	1.90	24.7	19.5
405.0	8.02	35.11	27.37	78	.	.	.	.	.	.
410.0	8.04	35.11	27.37	79	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 075C 12/ 11/76 9.9 DMT CONSEC STA 75
LAT 31 48.2N LONG 80 19.0W DEPTH = 22M DIST LAST STA = 126.7KM

WEATHER DATA
WIND SPEED = 13 KTS SEA STATE =
WIND DIRECTION = 230 WAVE DIRECTION =
AIR TEMP = 17.2C CLOUD TYPE =
WEATHER CODE = CLOUD AMOUNT =
BAROMETRIC PRESSURE = 1018.3 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	02	02'	00U	PO4	NO3	SI
1.0	15.11	35.66	26.47	157	5.58	5.65	.07	0.05	00.0	00.0
2.0	15.11	35.66	26.47	157	.	.	.	.	.	.
3.0	15.12	35.66	26.46	157	.	.	.	.	.	.
4.0	15.12	35.66	26.46	157	.	.	.	.	.	.
5.0	15.12	35.66	26.46	157	.	.	.	.	.	.
6.0	15.12	35.66	26.46	157	.	.	.	.	.	.
7.0	15.12	35.66	26.46	157	.	.	.	.	.	.
8.0	15.12	35.66	26.46	157	.	.	.	.	.	.
9.0	15.12	35.66	26.46	157	.	.	.	.	.	.
10.0	15.13	35.66	26.46	158	.	.	.	.	.	.
11.0	15.18	35.67	26.46	158	.	.	.	.	.	.
12.0	15.18	35.67	26.46	158	.	.	.	.	.	.
13.0	15.18	35.68	26.47	157	.	.	.	.	.	.
14.0	15.18	35.68	26.47	157	.	.	.	.	.	.
15.0	15.20	35.68	26.46	158	.	.	.	.	.	.
16.0	15.19	35.69	26.47	157	.	.	.	.	.	.
17.0	15.20	35.69	26.47	157	.	.	.	.	.	.
18.0	15.22	35.69	26.46	158	.	.	.	.	.	.
19.0	15.22	35.69	26.46	158	5.66	5.64	-.02	0.10	00.2	00.3
20.0	15.22	35.70	26.47	157	.	.	.	.	.	.
21.0	15.22	35.69	26.46	158	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 076X 12/ 111.70 11.0 UMT CONSEC STA 76
 LAT 31 46.5N LONG 80 13.8W DEPTH = 25M DIST LAST STA = 0.8KM

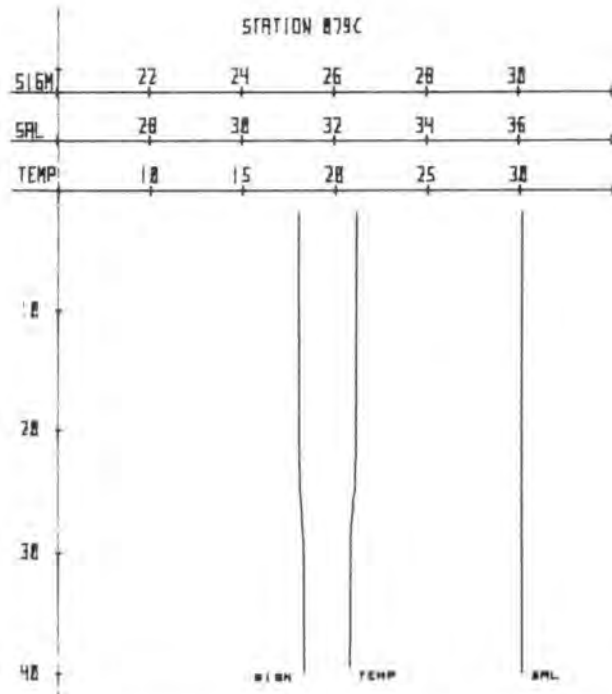
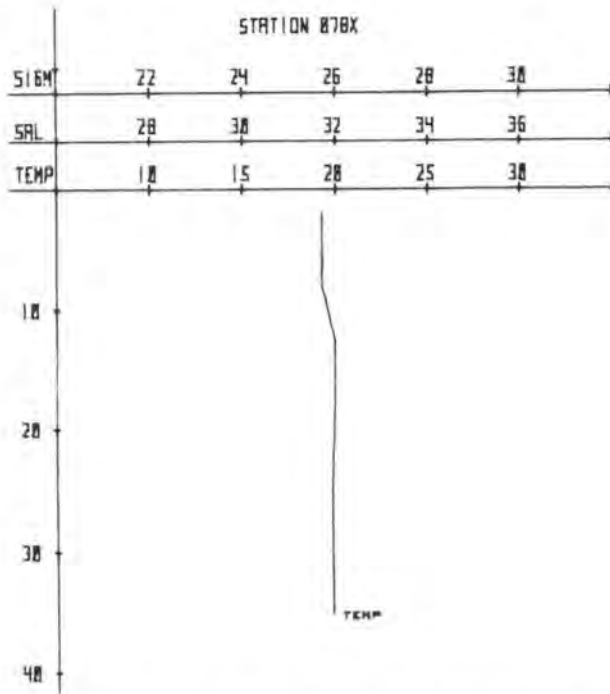
WEATHER DATA
 WIND SPEED = 13 KTS SEA STATE =
 WIND DIRECTION = 230 WAVE DIRECTION =
 AIR TEMP = 17.2C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1018.3 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	02	02	000	004	003	01
1.0	17.80	*	*	*	*	*	*	*	*	*
10.0	17.80	*	*	*	*	*	*	*	*	*
15.0	17.90	*	*	*	*	*	*	*	*	*
25.0	17.80	*	*	*	*	*	*	*	*	*

ISELIN CRUISE CI-12 STA 077C 12/ 111.70 11.5 UMT CONSEC STA 77
 LAT 31 45.0N LONG 80 8.2W DEPTH = 17M DIST LAST STA = 9.3KM

WEATHER DATA
 WIND SPEED = 11 KTS SEA STATE =
 WIND DIRECTION = 230 WAVE DIRECTION =
 AIR TEMP = 17.8C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1018.3 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	02	02	000	004	003	01
2.0	18.74	36.00	25.86	214	5.28	5.25	1.03	0.08	00.1	01.0
3.0	18.74	36.00	25.86	215	*	*	*	*	*	*
4.0	18.73	36.01	25.87	214	*	*	*	*	*	*
5.0	18.73	36.00	25.86	214	*	*	*	*	*	*
6.0	18.74	36.00	25.86	215	*	*	*	*	*	*
7.0	18.74	36.00	25.86	215	*	*	*	*	*	*
8.0	18.74	36.00	25.86	215	*	*	*	*	*	*
9.0	18.74	36.01	25.87	214	*	*	*	*	*	*
10.0	18.76	36.01	25.86	215	*	*	*	*	*	*
11.0	18.76	36.03	25.88	213	*	*	*	*	*	*
12.0	18.76	36.04	25.89	212	*	*	*	*	*	*
13.0	18.76	36.04	25.89	212	*	*	*	*	*	*
14.0	18.78	36.04	25.88	213	*	*	*	*	*	*
15.0	18.78	36.06	25.90	212	*	*	*	*	*	*
16.0	18.79	36.06	25.89	212	*	*	*	*	*	*
17.0	18.79	36.07	25.90	211	*	*	*	*	*	*
18.0	18.80	36.07	25.90	211	*	*	*	*	*	*
19.0	18.80	36.07	25.90	211	*	*	*	*	*	*
20.0	18.80	36.08	25.91	211	*	*	*	*	*	*
21.0	18.80	36.08	25.91	211	*	*	*	*	*	*
22.0	18.80	36.09	25.91	210	*	*	*	*	*	*
23.0	18.80	36.09	25.91	210	*	*	*	*	*	*
24.0	18.80	36.09	25.91	210	*	*	*	*	*	*
25.0	18.80	36.09	25.91	210	*	*	*	*	*	*
26.0	18.80	36.09	25.91	210	*	*	*	*	*	*
27.0	18.80	36.09	25.91	210	5.22	5.25	1.03	0.04	00.1	01.0
28.0	18.80	36.09	25.91	210	*	*	*	*	*	*



ISELIN CRUISE CI-12 STA 078X 12/ 11/76 12.4 DAT CONSLO STA 78
 LAT 31 43.0N LONG 80 2.8W DEPTH = 35M DIST LAST STA = 9.3KM

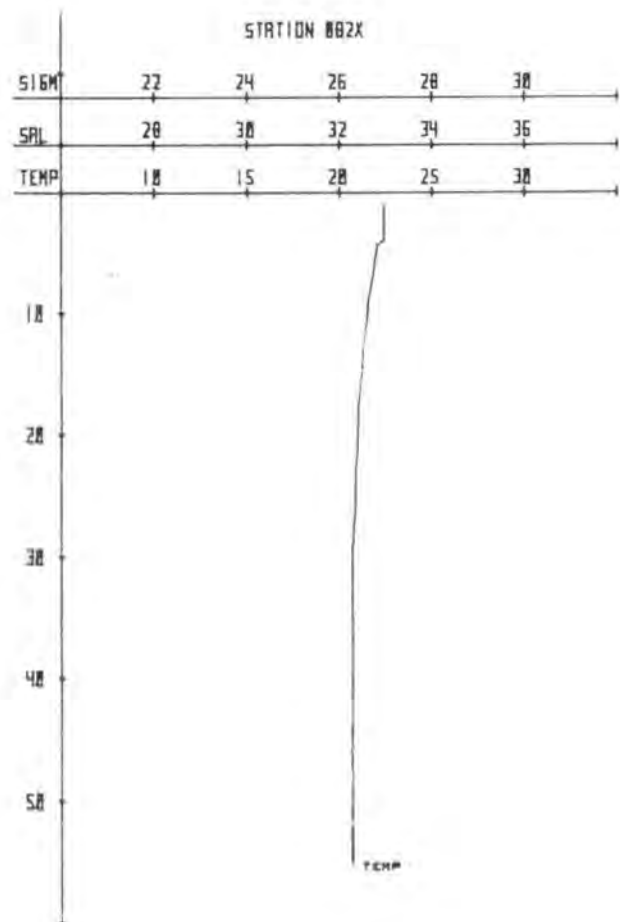
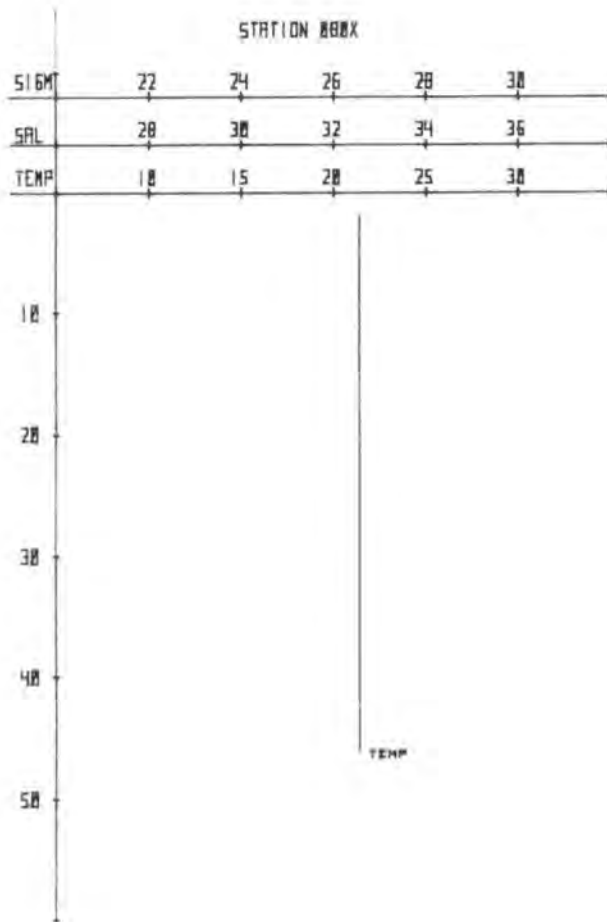
ISELIN CRUISE CI-12 STA 079C 12/ 11/76 13.2 DAT CONSLO STA 79
 LAT 31 41.1N LONG 79 56.9W DEPTH = 42M DIST LAST STA = 9.9KM

WEATHER DATA
 WIND SPEED = 11 KTS SEA STATE = 1
 WIND DIRECTION = 230 WAVE DIRECTION =
 AIR TEMP = 17.8C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1018.3 MB VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 16 KTS SEA STATE = 1
 WIND DIRECTION = 230 WAVE DIRECTION =
 AIR TEMP = 18.9C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1018.9 MB VISIBILITY CODE =

OBSERVATIONS											
Z	T	S	D	SVA	O2	O2	AQU	PO4	NO3	SI	
2.0	19.30	.	.	.	.	.	.	.	.	.	.
8.0	19.30	.	.	.	.	.	.	.	.	.	.
9.0	19.30	.	.	.	.	.	.	.	.	.	.
12.5	20.00	.	.	.	.	.	.	.	.	.	.
25.0	19.80	.	.	.	.	.	.	.	.	.	.
35.0	19.80	.	.	.	.	.	.	.	.	.	.

OBSERVATIONS											
Z	T	S	D	SVA	O2	O2	AQU	PO4	NO3	SI	
2.0	21.22	36.07	25.26	272	5.07	5.02	-1.05	0.05	00.5	01.3	
3.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
4.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
5.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
6.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
7.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
8.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
9.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
10.0	21.21	36.07	25.26	272	.	.	.	.	.	.	.
11.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
12.0	21.21	36.08	25.27	271	.	.	.	.	.	.	.
13.0	21.21	36.08	25.27	271	.	.	.	.	.	.	.
14.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
15.0	21.22	36.07	25.26	272	.	.	.	.	.	.	.
16.0	21.21	36.08	25.27	271	.	.	.	.	.	.	.
17.0	21.21	36.07	25.26	272	.	.	.	.	.	.	.
18.0	21.21	36.07	25.26	272	.	.	.	.	.	.	.
19.0	21.20	36.08	25.27	271	.	.	.	.	.	.	.
20.0	21.20	36.08	25.27	271	.	.	.	.	.	.	.
21.0	21.20	36.08	25.27	271	.	.	.	.	.	.	.
22.0	21.18	36.09	25.28	270	.	.	.	.	.	.	.
23.0	21.16	36.10	25.30	269	.	.	.	.	.	.	.
24.0	21.13	36.10	25.30	268	.	.	.	.	.	.	.
25.0	21.12	36.09	25.30	269	.	.	.	.	.	.	.
26.0	21.03	36.11	25.34	265	.	.	.	.	.	.	.
27.0	21.00	36.11	25.35	264	.	.	.	.	.	.	.
28.0	20.94	36.11	25.36	263	4.97	5.04	.07	0.04	00.1	01.5	
29.0	20.91	36.11	25.37	262	.	.	.	.	.	.	.
30.0	20.90	36.11	25.37	262	.	.	.	.	.	.	.
31.0	20.90	36.10	25.37	262	.	.	.	.	.	.	.
32.0	20.89	36.10	25.37	262	.	.	.	.	.	.	.
33.0	20.88	36.10	25.37	262	.	.	.	.	.	.	.
34.0	20.88	36.10	25.37	262	.	.	.	.	.	.	.
35.0	20.88	36.10	25.37	262	.	.	.	.	.	.	.
36.0	20.87	36.10	25.37	262	.	.	.	.	.	.	.
37.0	20.87	36.10	25.37	262	.	.	.	.	.	.	.
38.0	20.84	36.10	25.38	261	.	.	.	.	.	.	.
39.0	20.83	36.10	25.39	261	4.97	5.05	.08	0.05	00.4	01.5	
40.0	20.83	36.10	25.39	261	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 080X 12/ XII/76 14.2 GMT CONSEC STA 80
 LAT 31 39.1N LONG 79 50.6W DEPTH = 46M DIST LAST STA = 10.6KM

WEATHER DATA
 WIND SPEED = 17 KTS SEA STATE =
 WIND DIRECTION = 230 WAVE DIRECTION =
 AIR TEMP = 20.0C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1019.8 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
2.0	21.40	.	.	.	.	.	.	.	.	.
46.0	21.40	.	.	.	.	.	.	.	.	.

ISELIN CRUISE CI-12 STA 082X 12/ XII/76 15.6 GMT CONSEC STA 82
 LAT 31 35.8N LONG 79 40.3W DEPTH = 55M DIST LAST STA = 8.6KM

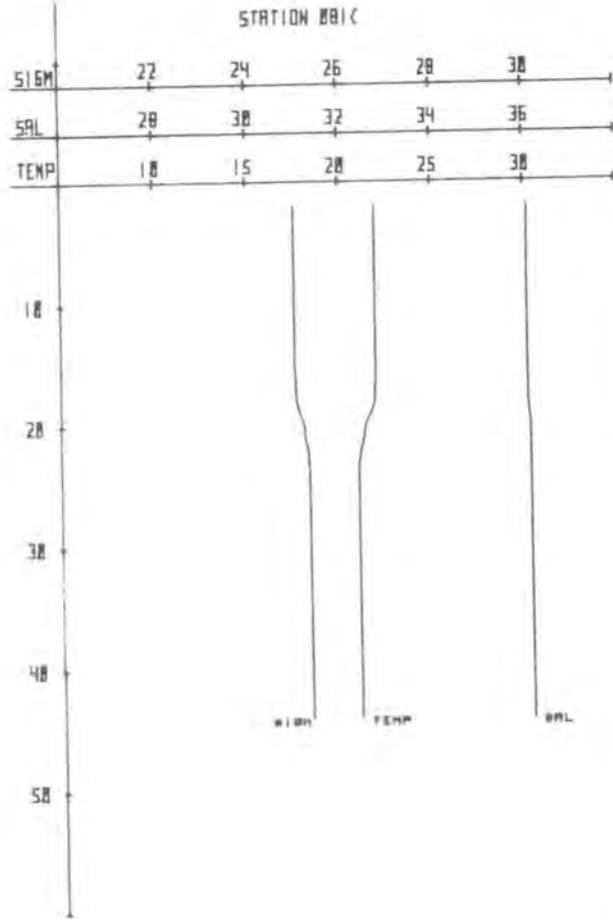
WEATHER DATA
 WIND SPEED = 18 KTS SEA STATE =
 WIND DIRECTION = 240 WAVE DIRECTION =
 AIR TEMP = 20.0C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1019.8 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
1.0	22.40	.	.	.	.	.	.	.	.	.
4.0	22.40	.	.	.	.	.	.	.	.	.
4.5	22.00	.	.	.	.	.	.	.	.	.
9.5	21.50	.	.	.	.	.	.	.	.	.
17.5	21.00	.	.	.	.	.	.	.	.	.
29.0	20.70	.	.	.	.	.	.	.	.	.
55.0	20.70	.	.	.	.	.	.	.	.	.

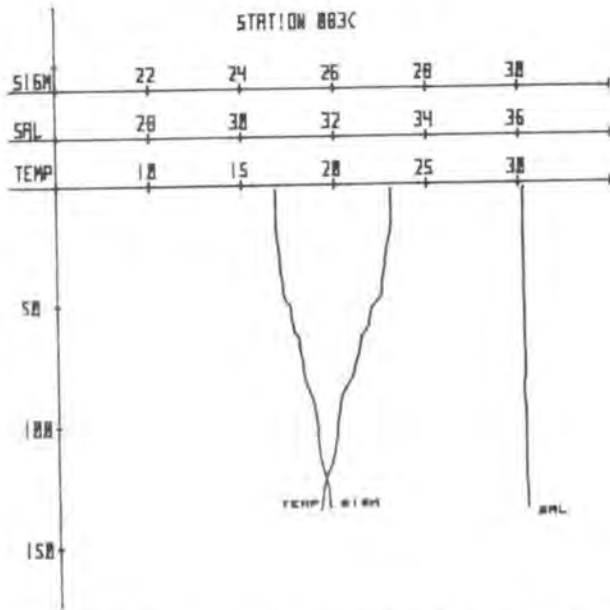
ISELIN CRUISE CI-12 STA 081C 12/ XII/76 14.8 DAT CONSEC STA 81
 LAT 31 37.5N LONG 79 45.4W DEPTH = 40M DIST LAST STA = 8.7NM

WEATHER DATA
 WIND SPEED = 18 KTS
 WIND DIRECTION = 240
 AIR TEMP = 20.0C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1019.8 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =



OBSERVATIONS										
Z	T	S	D	SVA	O2	O2	AQU	PO4	NO3	SI
2.0	21.99	36.08	25.05	292	5.32	4.95	-1.37	0.10	00.8	02.3
3.0	21.99	36.08	25.05	292						
4.0	21.99	36.07	25.04	292						
5.0	21.99	36.07	25.04	292						
6.0	21.99	36.08	25.05	292						
7.0	21.99	36.08	25.05	292						
8.0	21.99	36.07	25.04	293						
9.0	21.99	36.08	25.05	292						
10.0	21.99	36.07	25.04	293						
11.0	21.98	36.08	25.05	292						
12.0	21.98	36.08	25.05	292						
13.0	21.97	36.08	25.05	291						
14.0	21.97	36.08	25.05	291						
15.0	21.96	36.08	25.04	291						
16.0	21.92	36.09	25.08	290						
17.0	21.90	36.09	25.08	289						
18.0	21.87	36.10	25.10	288						
19.0	21.66	36.13	25.18	280						
20.0	21.39	36.16	25.28	271						
21.0	21.30	36.14	25.29	270						
22.0	21.12	36.16	25.35	264	4.83	5.02	.19	0.08	01.0	01.9
23.0	21.04	36.14	25.36	263						
24.0	21.03	36.15	25.37	262						
25.0	21.03	36.15	25.37	262						
26.0	21.03	36.15	25.37	262						
27.0	21.03	36.15	25.37	262						
28.0	21.03	36.15	25.37	262						
29.0	21.03	36.15	25.37	262						
30.0	21.03	36.15	25.37	262						
31.0	21.03	36.15	25.37	262						
32.0	21.03	36.14	25.36	263						
33.0	21.03	36.14	25.36	263						
34.0	21.03	36.13	25.35	264						
35.0	21.03	36.14	25.36	263						
36.0	21.03	36.14	25.36	263						
37.0	21.03	36.14	25.36	263						
38.0	21.03	36.14	25.36	263						
39.0	21.03	36.14	25.36	263						
40.0	21.03	36.14	25.36	263						
41.0	21.03	36.13	25.35	264						
42.0	21.03	36.13	25.35	264						
43.0	21.03	36.14	25.36	263						
44.0	21.03	36.14	25.36	263	4.97	5.03	.06	0.08	01.1	01.7



ISELTH CRUISE CI-12 STA 083C 12/ XII/76 16.1 GMT CONSEC STA 83

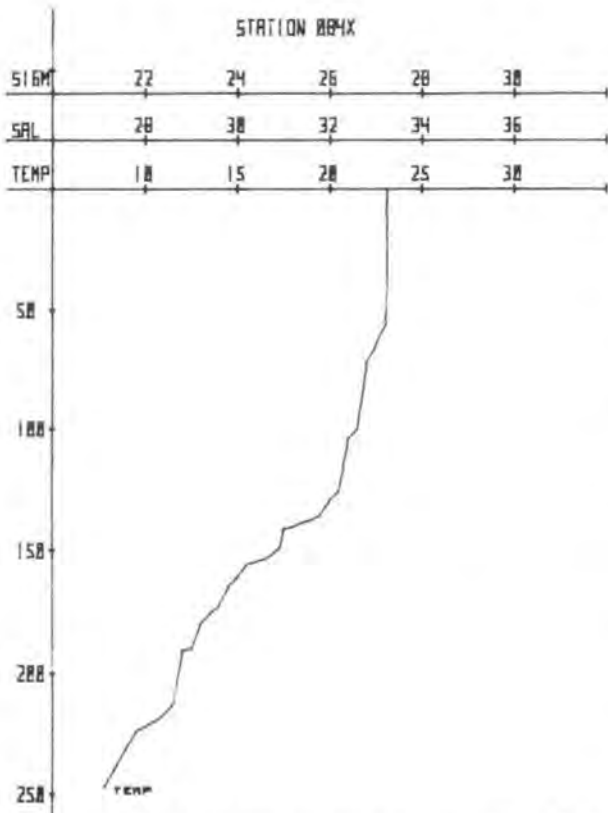
LAT 31 34.1N LONG 79 34.6W DEPTH = 146M DIST LAST STA = 9.5KM

WEATHER DATA

WIND SPEED = 18 KTS SEA STATE =
 WIND DIRECTION = 250 WAVE DIRECTION =
 AIR TEMP = 20.0C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1019.5 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
2.0	23.04	36.08	24.75	320	5.08	4.86	-0.22	0.05	00.2	01.0
3.0	23.04	36.07	24.74	321						
4.0	23.04	36.07	24.74	321						
5.0	23.06	36.07	24.74	322						
6.0	23.04	36.08	24.75	320						
7.0	23.06	36.07	24.74	322						
8.0	23.06	36.07	24.74	322						
9.0	23.04	36.07	24.74	321						
10.0	23.04	36.07	24.74	321						
11.0	23.03	36.07	24.74	321						
12.0	23.03	36.07	24.74	321						
13.0	23.04	36.07	24.74	321						
14.0	23.04	36.07	24.74	321						
15.0	23.02	36.07	24.75	321						
16.0	23.01	36.07	24.75	321						
17.0	23.01	36.07	24.75	321						
18.0	23.00	36.07	24.75	320						
19.0	23.00	36.07	24.75	320						
20.0	22.98	36.08	24.77	319						
21.0	22.96	36.08	24.77	319						
22.0	22.91	36.08	24.79	317						
23.0	22.89	36.08	24.79	317						
24.0	22.88	36.09	24.80	316						
25.0	22.83	36.09	24.82	315						
26.0	22.79	36.09	24.83	313						
27.0	22.76	36.09	24.84	313						
28.0	22.76	36.09	24.84	313						
29.0	22.74	36.09	24.84	312						
30.0	22.73	36.09	24.85	312						
31.0	22.71	36.09	24.85	311						
32.0	22.70	36.09	24.85	311						
33.0	22.70	36.08	24.85	312						
34.0	22.70	36.08	24.85	312						
35.0	22.67	36.09	24.86	311						
36.0	22.64	36.09	24.87	310						
37.0	22.62	36.08	24.87	310						
38.0	22.60	36.09	24.88	309						
39.0	22.54	36.09	24.90	307						
40.0	22.50	36.09	24.91	306						

41.0	22.50	36.09	24.91	306						
42.0	22.49	36.09	24.92	306						
43.0	22.49	36.09	24.92	306						
44.0	22.48	36.09	24.92	306						
45.0	22.48	36.09	24.92	306						
46.0	22.46	36.09	24.92	305						
47.0	22.41	36.09	24.94	304						
48.0	22.34	36.11	24.97	301						
49.0	22.20	36.09	25.00	298						
50.0	22.08	36.11	25.05	294						
51.0	22.00	36.11	25.07	292						
52.0	21.94	36.10	25.08	291	5.05	4.95	-0.10	0.03	00.4	02.5
53.0	21.91	36.09	25.08	291						
54.0	21.89	36.10	25.09	289						
55.0	21.87	36.11	25.11	288						
56.0	21.84	36.10	25.11	288						
57.0	21.84	36.09	25.10	289						
58.0	21.80	36.10	25.12	287						
59.0	21.79	36.09	25.11	288						
60.0	21.76	36.09	25.12	287						
61.0	21.71	36.09	25.14	286						
62.0	21.63	36.08	25.15	284						
63.0	21.54	36.08	25.18	282						
64.0	21.40	36.10	25.23	277						
65.0	21.37	36.10	25.24	276						
66.0	21.33	36.10	25.25	275						
67.0	21.30	36.10	25.26	274						
68.0	21.30	36.10	25.26	274						
69.0	21.30	36.10	25.26	274						
70.0	21.27	36.12	25.28	272						
71.0	21.24	36.13	25.30	271						
72.0	21.21	36.12	25.30	271						
73.0	21.16	36.12	25.31	269						
74.0	21.10	36.12	25.33	268						
75.0	21.08	36.11	25.32	268						
76.0	21.04	36.11	25.34	267						
77.0	21.00	36.10	25.34	267						
78.0	20.99	36.10	25.34	267						
79.0	20.92	36.09	25.35	266						
80.0	20.90	36.09	25.36	265						
81.0	20.88	36.09	25.36	265						
82.0	20.80	36.07	25.37	264						
83.0	20.72	36.08	25.40	261						
84.0	20.62	36.06	25.41	260						
85.0	20.53	36.08	25.45	256						
86.0	20.47	36.08	25.47	255						
87.0	20.41	36.08	25.48	253						
88.0	20.34	36.09	25.51	251						
89.0	20.30	36.10	25.53	249						
90.0	20.27	36.09	25.53	249						
91.0	20.23	36.11	25.55	247						
92.0	20.22	36.12	25.57	246						
93.0	20.20	36.14	25.59	244						
94.0	20.20	36.14	25.59	244						
95.0	20.18	36.15	25.60	243						
96.0	20.17	36.14	25.59	243						
97.0	20.13	36.14	25.60	242						
98.0	20.10	36.15	25.62	241						
99.0	20.08	36.15	25.63	240	4.82	5.12	-0.30	0.18	02.3	02.1
100.0	20.04	36.14	25.63	240						
101.0	20.02	36.15	25.64	239						
105.0	20.00	36.14	25.64	239						
110.0	19.92	36.15	25.67	237						
115.0	19.74	36.15	25.71	233						
120.0	19.52	36.15	25.77	227						
125.0	19.30	36.16	25.84	221						
130.0	19.22	36.16	25.86	219						
135.0	19.11	36.16	25.89	217						
140.0					4.26			0.37	05.7	02.9

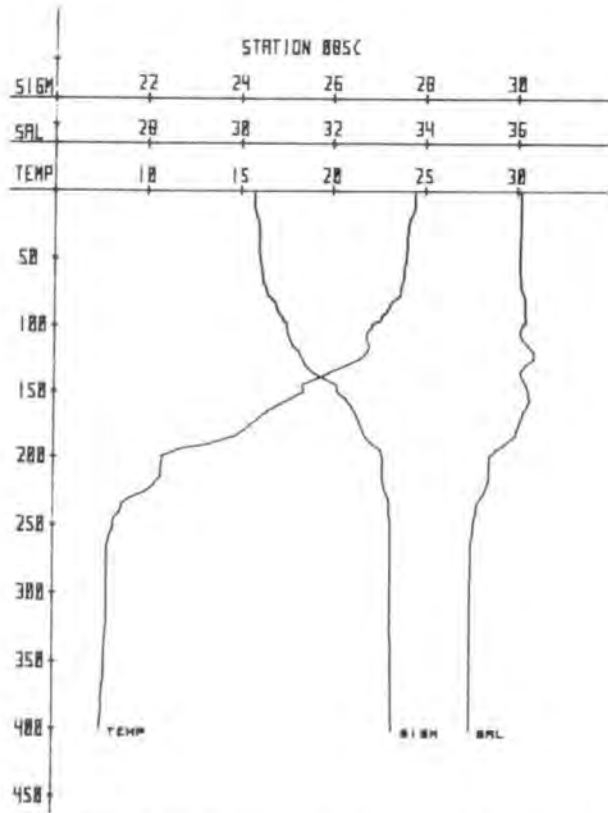


ISELIN CRUISE CI-12 STA 084X 12/ 411/76 17.0 GMT CONSEC STA 04
LAT 31 33.0N LONG 79 32.1W DEPTH =247M DIST LAST STA = 4.4KM

WEATHER DATA
WIND SPEED = 18 KTS
WIND DIRECTION = 240
AIR TEMP = 20.0C
WEATHER CODE =
BAROMETRIC PRESSURE = 1019.5 MB

SEA STATE =
WAVE DIRECTION =
CLOUD TYPE =
CLOUD AMOUNT =
VISIBILITY CODE =

OBSERVATIONS											
Z	T	S	D	SVA	O2	O2'	ADU	PO4	NO3	SI	
1.0	23.10	.	.	.	.	.	.	.	.	.	.
56.0	23.00	.	.	.	.	.	.	.	.	.	.
65.0	22.50	.	.	.	.	.	.	.	.	.	.
72.0	22.00	.	.	.	.	.	.	.	.	.	.
100.0	21.50	.	.	.	.	.	.	.	.	.	.
105.0	21.00	.	.	.	.	.	.	.	.	.	.
126.0	20.50	.	.	.	.	.	.	.	.	.	.
130.0	20.00	.	.	.	.	.	.	.	.	.	.
136.0	19.50	.	.	.	.	.	.	.	.	.	.
138.0	19.00	.	.	.	.	.	.	.	.	.	.
139.0	18.50	.	.	.	.	.	.	.	.	.	.
141.0	18.00	.	.	.	.	.	.	.	.	.	.
142.0	17.50	.	.	.	.	.	.	.	.	.	.
149.0	17.30	.	.	.	.	.	.	.	.	.	.
151.0	17.00	.	.	.	.	.	.	.	.	.	.
154.0	16.50	.	.	.	.	.	.	.	.	.	.
155.0	16.00	.	.	.	.	.	.	.	.	.	.
156.0	15.50	.	.	.	.	.	.	.	.	.	.
161.0	15.00	.	.	.	.	.	.	.	.	.	.
165.0	14.50	.	.	.	.	.	.	.	.	.	.
173.0	14.00	.	.	.	.	.	.	.	.	.	.
176.0	13.50	.	.	.	.	.	.	.	.	.	.
180.0	13.00	.	.	.	.	.	.	.	.	.	.
190.0	12.50	.	.	.	.	.	.	.	.	.	.
191.0	12.00	.	.	.	.	.	.	.	.	.	.
212.0	11.50	.	.	.	.	.	.	.	.	.	.
217.0	11.00	.	.	.	.	.	.	.	.	.	.
220.0	10.50	.	.	.	.	.	.	.	.	.	.
222.0	10.00	.	.	.	.	.	.	.	.	.	.
224.0	9.50	.	.	.	.	.	.	.	.	.	.
230.0	9.00	.	.	.	.	.	.	.	.	.	.
237.0	8.50	.	.	.	.	.	.	.	.	.	.
244.0	8.00	.	.	.	.	.	.	.	.	.	.
247.0	7.80	.	.	.	.	.	.	.	.	.	.



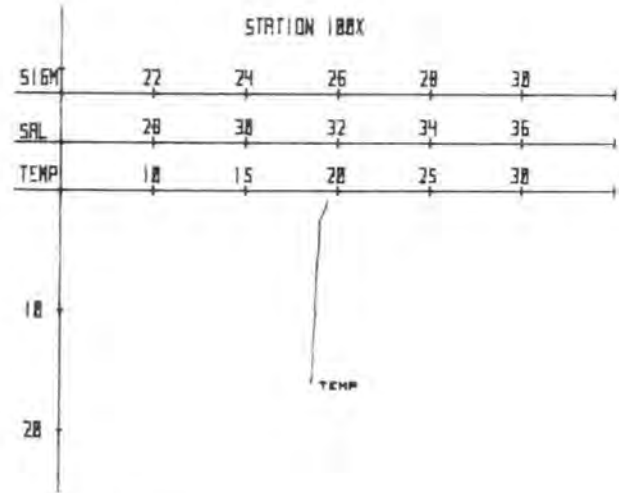
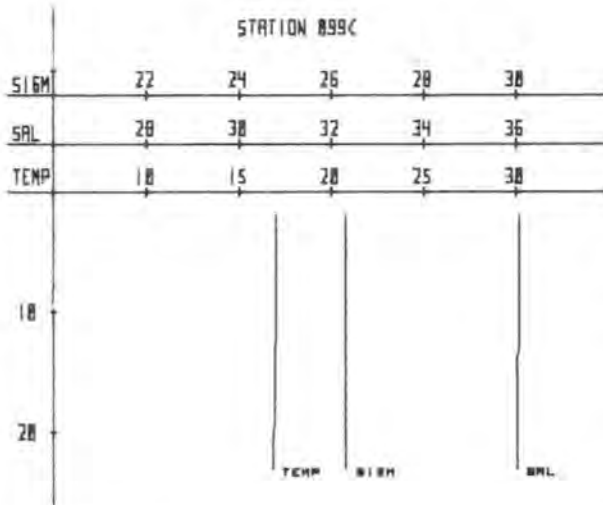
ISELIN CRUISE CI-12 STA 085C 12/ 411/76 17.5 GMT CONSEC STA 05
LAT 31 32.0N LONG 79 26.8W DEPTH =507M DIST LAST STA = 6.0KM

WEATHER DATA
WIND SPEED = 18 KTS
WIND DIRECTION = 240
AIR TEMP = 20.0C
WEATHER CODE =
BAROMETRIC PRESSURE = 1018.0 MB

SEA STATE =
WAVE DIRECTION =
CLOUD TYPE =
CLOUD AMOUNT =
VISIBILITY CODE =

OBSERVATIONS											
Z	T	S	D	SVA	O2	O2'	ADU	PO4	NO3	SI	
2.0	24.44	36.06	24.32	361	4.86	4.74	-1.2	0.01	00.2	02.2	.
3.0	24.44	36.06	24.32	361	.	.	.	.	.	.	.
4.0	24.46	36.06	24.31	362	.	.	.	.	.	.	.
5.0	24.46	36.06	24.31	362	.	.	.	.	.	.	.
6.0	24.47	36.06	24.31	362	.	.	.	.	.	.	.
7.0	24.46	36.06	24.31	362	.	.	.	.	.	.	.
8.0	24.46	36.06	24.31	362	.	.	.	.	.	.	.
9.0	24.46	36.05	24.31	363	.	.	.	.	.	.	.
10.0	24.46	36.06	24.31	362	.	.	.	.	.	.	.
11.0	24.46	36.06	24.31	362	.	.	.	.	.	.	.
12.0	24.41	36.06	24.33	361	.	.	.	.	.	.	.
13.0	24.41	36.06	24.33	361	.	.	.	.	.	.	.
14.0	24.36	36.06	24.34	359	.	.	.	.	.	.	.
15.0	24.38	36.05	24.33	361	.	.	.	.	.	.	.
16.0	24.32	36.06	24.36	358	.	.	.	.	.	.	.
17.0	24.28	36.05	24.36	358	.	.	.	.	.	.	.
18.0	24.23	36.06	24.38	356	.	.	.	.	.	.	.
19.0	24.21	36.05	24.38	356	.	.	.	.	.	.	.
20.0	24.17	36.06	24.40	354	.	.	.	.	.	.	.
21.0	24.11	36.06	24.42	352	.	.	.	.	.	.	.
22.0	24.10	36.06	24.42	352	.	.	.	.	.	.	.
23.0	24.09	36.06	24.43	352	.	.	.	.	.	.	.
24.0	24.08	36.06	24.43	352	.	.	.	.	.	.	.
25.0	24.06	36.06	24.43	351	.	.	.	.	.	.	.
26.0	24.04	36.06	24.44	351	.	.	.	.	.	.	.
27.0	24.03	36.06	24.44	350	.	.	.	.	.	.	.
28.0	24.03	36.06	24.44	350	.	.	.	.	.	.	.
29.0	24.03	36.05	24.44	351	.	.	.	.	.	.	.
30.0	24.01	36.06	24.45	350	.	.	.	.	.	.	.
31.0	24.01	36.06	24.45	350	.	.	.	.	.	.	.
32.0	24.01	36.05	24.44	351	.	.	.	.	.	.	.
33.0	24.01	36.05	24.44	351	.	.	.	.	.	.	.
34.0	24.01	36.04	24.43	351	.	.	.	.	.	.	.
35.0	24.00	36.05	24.44	350	.	.	.	.	.	.	.





ISELIN CRUISE CI-12 STA 099C 13/ XII/76 3.7 GMT CONSEC STA 99
 LAT 31 4.1N LONG 80 40.8W DEPTH = 25M DIST LAST STA = 128.1KM

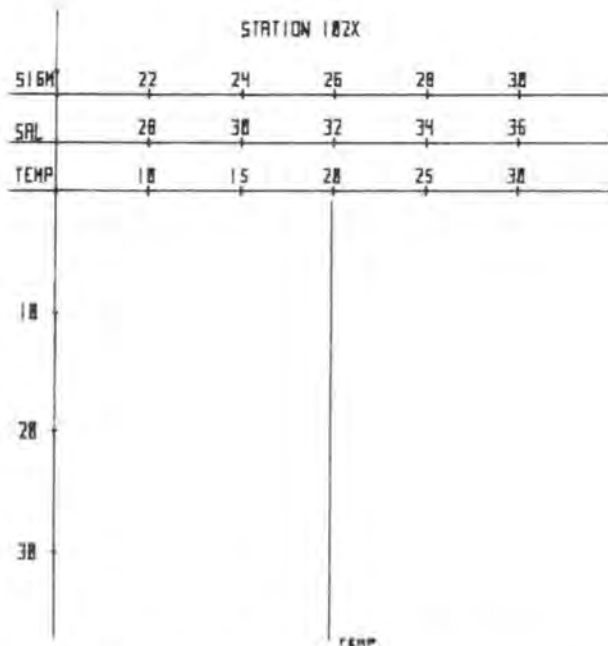
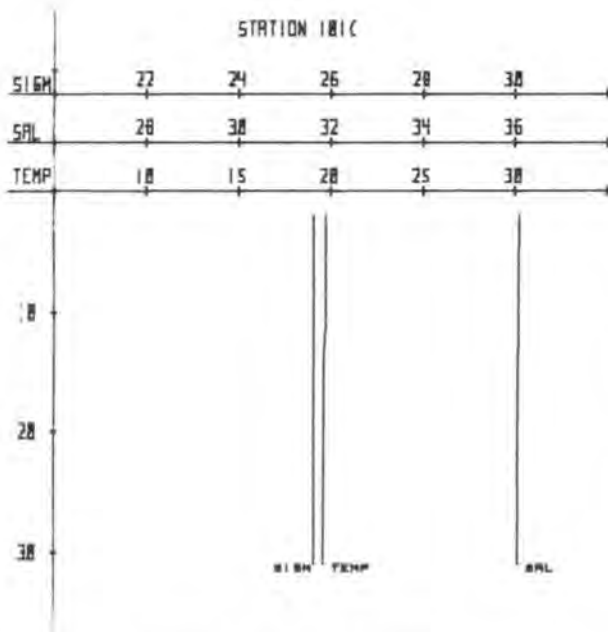
ISELIN CRUISE CI-12 STA 100X 13/ XII/76 4.6 GMT CONSEC STA 100
 LAT 31 2.0N LONG 80 35.3W DEPTH = 25M DIST LAST STA = 9.6KM

WEATHER DATA
 WIND SPEED = 16 KTS SEA STATE =
 WIND DIRECTION = 200 WAVE DIRECTION =
 AIR TEMP = 18.3C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1016.0 MB VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 13 KTS SEA STATE =
 WIND DIRECTION = 210 WAVE DIRECTION =
 AIR TEMP = 17.8C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1016.3 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	02	02'	ADU	P04	W03	SI
2.0	17.00	36.05	26.33	170	5.54	5.43	-0.11	0.06	00.0	01.3
3.0	17.00	36.05	26.33	170	.	.	.	.	.	.
4.0	16.99	36.05	26.33	170	.	.	.	.	.	.
5.0	17.00	36.04	26.32	171	.	.	.	.	.	.
6.0	17.00	36.04	26.32	171	.	.	.	.	.	.
7.0	17.00	36.05	26.33	170	.	.	.	.	.	.
8.0	17.00	36.05	26.33	170	.	.	.	.	.	.
9.0	17.00	36.05	26.33	170	.	.	.	.	.	.
10.0	16.98	36.04	26.33	171	.	.	.	.	.	.
11.0	16.97	36.05	26.34	170	.	.	.	.	.	.
12.0	16.94	36.04	26.33	170	.	.	.	.	.	.
13.0	16.90	36.04	26.34	169	.	.	.	.	.	.
14.0	16.90	36.01	26.32	171	.	.	.	.	.	.
15.0	16.90	36.03	26.34	170	.	.	.	.	.	.
16.0	16.90	36.04	26.34	169	.	.	.	.	.	.
17.0	16.88	36.04	26.35	168	.	.	.	.	.	.
18.0	16.88	36.04	26.35	169	.	.	.	.	.	.
19.0	16.87	36.04	26.35	168	.	.	.	.	.	.
20.0	16.84	36.03	26.35	168	.	.	.	.	.	.
21.0	16.80	36.03	26.36	168	.	.	.	.	.	.
22.0	16.82	36.02	26.35	169	5.56	5.45	-0.11	1.13	00.1	02.0
23.0	16.80	36.03	26.36	168	.	.	.	.	.	.

OBSERVATIONS										
Z	T	S	D	SVA	02	02'	ADU	P04	W03	SI
1.0	19.40	.	.	.	.	.	.	.	.	.
2.5	19.00	.	.	.	.	.	.	.	.	.
16.0	18.60	.	.	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 101C 13/ 111/76 5.2 GMT CONSEC STA 101
 LAT 31 0.0N LONG 80 30.0W DEPTH = 33M DIST LAST STA = 9.2KM

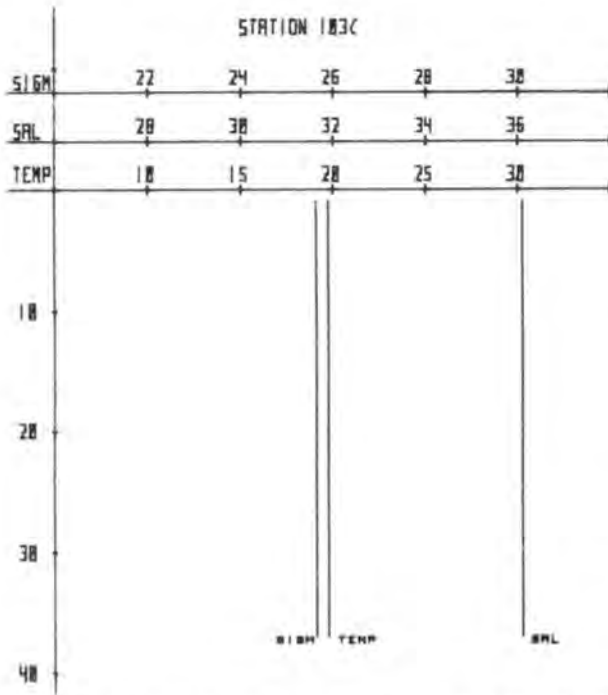
ISELIN CRUISE CI-12 STA 102X 13/ 111/76 6.0 GMT CONSEC STA 102
 LAT 30 58.0N LONG 80 24.0W DEPTH = 37M DIST LAST STA = 10.2KM

WEATHER DATA
 WIND SPEED = 11 KTS
 WIND DIRECTION = 220
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.5 MB
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 12 KTS
 WIND DIRECTION = 220
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.5 MB
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	P04	N03	SI
2.0	19.73	36.07	25.66	234	5.19	5.16	-.03	0.90	00.0	02.2
3.0	19.73	36.07	25.66	234	.	.	.	.	.	.
4.0	19.72	36.07	25.66	234	.	.	.	.	.	.
5.0	19.73	36.06	25.65	235	.	.	.	.	.	.
6.0	19.73	36.06	25.65	235	.	.	.	.	.	.
7.0	19.72	36.07	25.66	234	.	.	.	.	.	.
8.0	19.72	36.06	25.65	234	.	.	.	.	.	.
9.0	19.72	36.06	25.65	234	.	.	.	.	.	.
10.0	19.72	36.06	25.65	235	.	.	.	.	.	.
11.0	19.70	36.07	25.66	233	.	.	.	.	.	.
12.0	19.66	36.07	25.68	232	.	.	.	.	.	.
13.0	19.63	36.05	25.67	233	.	.	.	.	.	.
14.0	19.62	36.06	25.68	232	.	.	.	.	.	.
15.0	19.62	36.06	25.68	232	5.19	5.17	-.02	0.07	00.2	01.7
16.0	19.63	36.06	25.68	232	.	.	.	.	.	.
17.0	19.62	36.06	25.68	232	.	.	.	.	.	.
18.0	19.62	36.06	25.68	232	.	.	.	.	.	.
19.0	19.62	36.06	25.68	232	.	.	.	.	.	.
20.0	19.62	36.06	25.68	232	.	.	.	.	.	.
21.0	19.62	36.06	25.68	232	.	.	.	.	.	.
22.0	19.60	36.06	25.68	232	.	.	.	.	.	.
23.0	19.60	36.06	25.68	232	.	.	.	.	.	.
24.0	19.60	36.06	25.68	232	.	.	.	.	.	.
25.0	19.59	36.06	25.69	232	.	.	.	.	.	.
26.0	19.59	36.06	25.69	232	.	.	.	.	.	.
27.0	19.59	36.06	25.69	232	.	.	.	.	.	.
28.0	19.59	36.06	25.69	232	.	.	.	.	.	.
29.0	19.58	36.06	25.69	232	.	.	.	.	.	.
30.0	19.59	36.05	25.68	233	.	.	.	.	.	.
31.0	19.58	36.06	25.69	232	5.27	5.17	-.10	0.08	00.2	01.6

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	P04	N03	SI
1.0	19.90	.	.	.	.	.	.	.	.	.
37.0	19.90	.	.	.	.	.	.	.	.	.

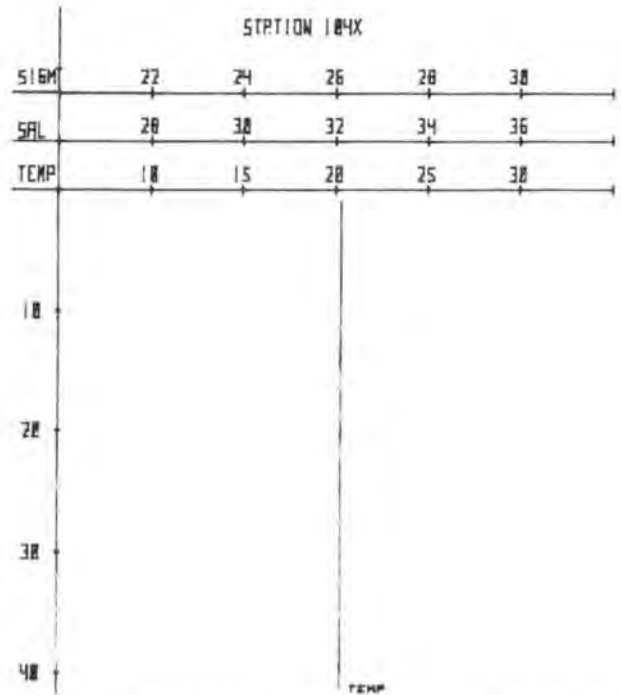


ISELIN CRUISE CI-12 STA 103C 13/ XII/76 6.6 GMT CONSEC STA 103
 LAT 30 56.0N LONG 80 19.2W DEPTH = 38M DIST LAST STA = 8.5KM

WEATHER DATA
 WIND SPEED = 10 KTS
 WIND DIRECTION = 210
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.5 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
1.0	19.76	36.09	25.66	233	5.18	5.15	-.03	0.07	00.0	01.7
2.0	19.76	36.08	25.66	234	.	.	.	.	.	.
3.0	19.76	36.08	25.66	234	.	.	.	.	.	.
4.0	19.76	36.09	25.66	233	.	.	.	.	.	.
5.0	19.76	36.09	25.66	233	.	.	.	.	.	.
6.0	19.76	36.09	25.66	233	.	.	.	.	.	.
7.0	19.76	36.09	25.66	233	.	.	.	.	.	.
8.0	19.76	36.09	25.66	233	.	.	.	.	.	.
9.0	19.76	36.09	25.66	233	.	.	.	.	.	.
10.0	19.76	36.09	25.66	233	.	.	.	.	.	.
11.0	19.76	36.09	25.66	233	.	.	.	.	.	.
12.0	19.76	36.09	25.66	233	.	.	.	.	.	.
13.0	19.76	36.09	25.66	233	.	.	.	.	.	.
14.0	19.76	36.09	25.66	233	.	.	.	.	.	.
15.0	19.76	36.09	25.66	234	.	.	.	.	.	.
16.0	19.76	36.09	25.66	234	.	.	.	.	.	.
17.0	19.76	36.09	25.66	234	.	.	.	.	.	.
18.0	19.76	36.09	25.66	234	.	.	.	.	.	.
19.0	19.76	36.09	25.66	234	.	.	.	.	.	.
20.0	19.76	36.09	25.66	234	.	.	.	.	.	.
21.0	19.76	36.09	25.66	234	.	.	.	.	.	.
22.0	19.76	36.09	25.66	234	.	.	.	.	.	.
23.0	19.76	36.09	25.66	234	.	.	.	.	.	.
24.0	19.76	36.09	25.66	234	.	.	.	.	.	.
25.0	19.76	36.09	25.66	234	.	.	.	.	.	.
26.0	19.76	36.09	25.66	234	.	.	.	.	.	.
27.0	19.76	36.09	25.66	234	.	.	.	.	.	.
28.0	19.76	36.09	25.66	234	.	.	.	.	.	.
29.0	19.76	36.09	25.66	234	.	.	.	.	.	.
30.0	19.76	36.09	25.66	234	.	.	.	.	.	.
31.0	19.76	36.09	25.66	234	.	.	.	.	.	.
32.0	19.76	36.08	25.66	235	.	.	.	.	.	.
33.0	19.76	36.08	25.66	235	.	.	.	.	.	.
34.0	19.76	36.08	25.66	235	5.27	5.15	-.12	0.03	00.0	01.3
35.0	19.76	36.08	25.66	235	.	.	.	.	.	.
36.0	19.76	36.08	25.66	235	.	.	.	.	.	.
37.0	19.76	36.08	25.66	235	.	.	.	.	.	.

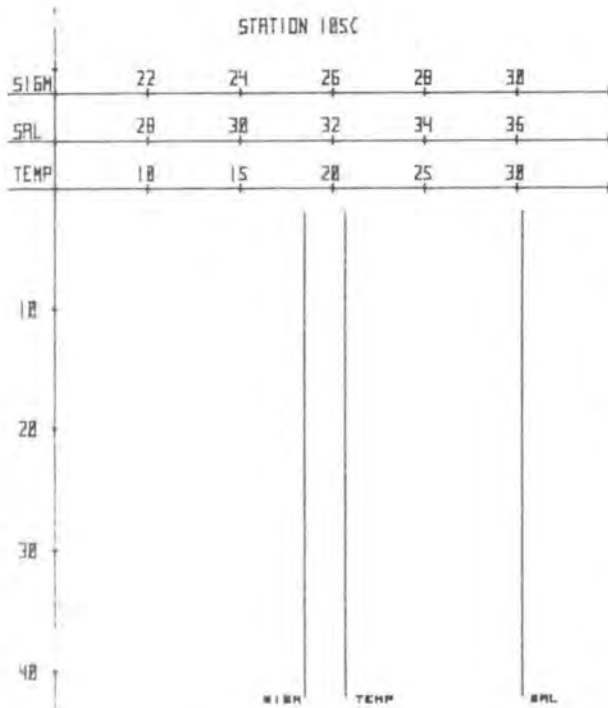


ISELIN CRUISE CI-12 STA 104X 13/ XII/76 7.5 GMT CONSEC STA 104
 LAT 30 54.4N LONG 80 13.5W DEPTH = 41M DIST LAST STA = 9.5KM

WEATHER DATA
 WIND SPEED = KTS
 WIND DIRECTION =
 AIR TEMP = 17.2C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.3 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

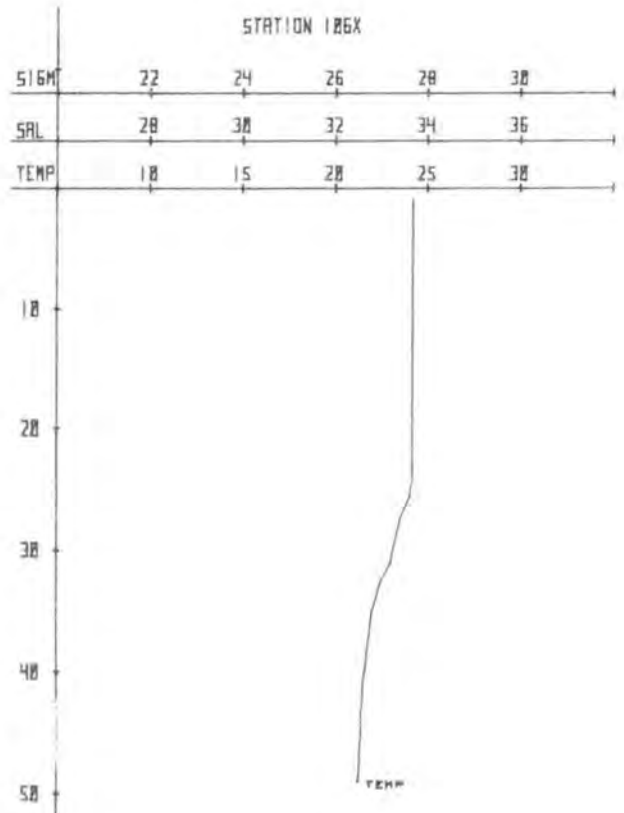
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
1.0	20.30	.	.	.	.	.	.	.	.	.
41.0	20.30	.	.	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 1050 1A 41176 0.0 GMT CONSID STA 105
 LAT 30 52.5W LONG 80 08.5W DEPTH = 43M DIST LAST STA = 0.7KM

WEATHER DATA
 WIND SPEED = 14 KTS SEA STATE =
 WIND DIRECTION = 350 WAVE DIRECTION =
 AIR TEMP = 17.2C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1016.2 MB VISIBILITY CODE =

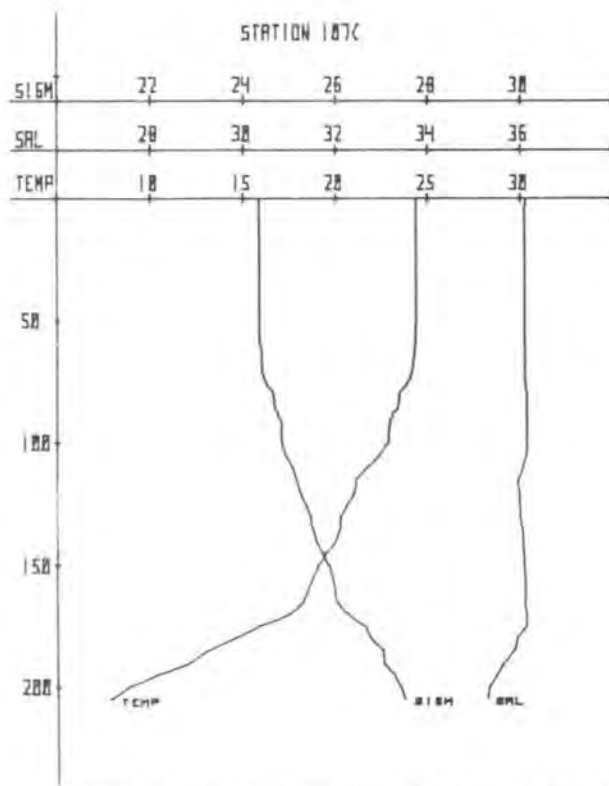
OBSERVATIONS										
Z	T	S	D	SVA	DZ	-DZ	ABU	POA	NO3	SI
2.0	20.60	36.10	25.43	256	5.07	5.07	-1.0V	0.0Y	00.3	02.0
3.0	20.70	36.10	25.42	256						
4.0	20.70	36.10	25.42	256						
5.0	20.70	36.10	25.42	256						
6.0	20.70	36.10	25.42	256						
7.0	20.70	36.11	25.43	256						
8.0	20.70	36.10	25.42	256						
9.0	20.70	36.10	25.42	256						
10.0	20.71	36.10	25.42	257						
11.0	20.70	36.10	25.42	257						
12.0	20.70	36.10	25.42	257						
13.0	20.71	36.10	25.42	257						
14.0	20.71	36.10	25.42	257						
15.0	20.71	36.10	25.42	257						
16.0	20.70	36.10	25.42	257						
17.0	20.70	36.10	25.42	257						
18.0	20.70	36.10	25.42	257						
19.0	20.71	36.10	25.42	257						
20.0	20.71	36.10	25.42	257						
21.0	20.71	36.10	25.42	257						
22.0	20.70	36.10	25.42	257						
23.0	20.70	36.11	25.43	256						
24.0	20.70	36.11	25.43	256						
25.0	20.70	36.10	25.42	257						
26.0	20.70	36.10	25.42	257						
27.0	20.70	36.11	25.43	256						
28.0	20.70	36.11	25.43	256						
29.0	20.71	36.10	25.42	257						
30.0	20.72	36.10	25.42	258						
31.0	20.71	36.10	25.42	258						
32.0	20.71	36.09	25.41	258						
33.0	20.71	36.09	25.41	258						
34.0	20.71	36.09	25.41	258						
35.0	20.71	36.10	25.42	258						
36.0	20.70	36.09	25.41	259						
37.0	20.72	36.09	25.41	259						
38.0	20.72	36.09	25.41	259						
39.0	20.72	36.09	25.41	259						
40.0	20.72	36.09	25.41	259	5.08	5.08	-1.02	0.06	00.3	01.3
41.0	20.72	36.10	25.42	258						
42.0	20.73	36.09	25.41	259						



ISELIN CRUISE CI-12 STA 105X 1A 41176 0.0 GMT CONSID STA 105
 LAT 30 50.5W LONG 80 08.4W DEPTH = 49M DIST LAST STA = 0.7KM

WEATHER DATA
 WIND SPEED = 18 KTS SEA STATE =
 WIND DIRECTION = 350 WAVE DIRECTION =
 AIR TEMP = 17.8C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1016.2 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	DZ	-DZ	ABU	POA	NO3	SI
1.0	24.20									
23.5	24.20									
25.5	24.00									
27.5	23.50									
31.0	23.00									
32.5	22.50									
35.0	22.00									
41.0	21.50									
49.0	21.20									



156114 CRUISE CI-12 STA 107C 13/ XII/76 9.3 DAT CONSEC STA 107

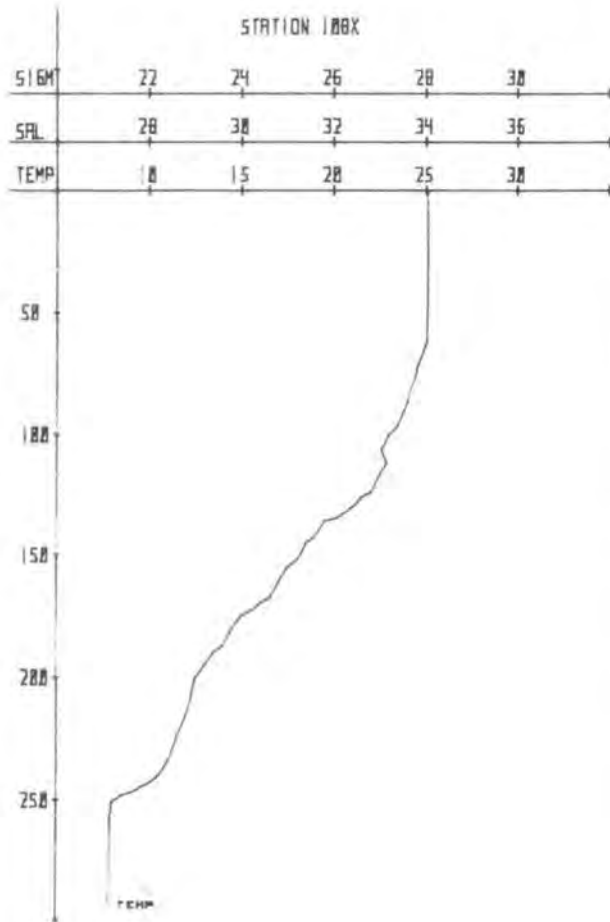
LAT 30 48.7N LONG 79 58.0W DEPTH 214M DIST LAST STA = 9.2KM

WEATHER DATA

WIND SPEED = 22 KTS SEA STATE =
 WIND DIRECTION = 360 WAVE DIRECTION =
 AIR TEMP = 18.9C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1015.5 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	Q2	Q2'	A00	PD4	NO3	SI
1.0	24.38	36.10	24.37	356	4.89	4.74	-1.15	0.05	00.2	01.8
2.0	24.38	36.10	24.37	356						
3.0	24.38	36.09	24.36	357						
4.0	24.38	36.09	24.36	357						
5.0	24.38	36.09	24.36	357						
6.0	24.38	36.09	24.36	357						
7.0	24.38	36.09	24.36	357						
8.0	24.38	36.10	24.37	357						
9.0	24.38	36.09	24.36	357						
10.0	24.38	36.09	24.36	357						
11.0	24.38	36.10	24.37	357						
12.0	24.38	36.10	24.37	357						
13.0	24.38	36.10	24.37	357						
14.0	24.38	36.09	24.36	358						
15.0	24.38	36.10	24.37	357						
16.0	24.38	36.09	24.36	358						
17.0	24.38	36.09	24.36	358						
18.0	24.38	36.09	24.36	358						
19.0	24.38	36.09	24.36	358						
20.0	24.38	36.09	24.36	358						
21.0	24.38	36.09	24.36	358						
22.0	24.38	36.09	24.36	358						
23.0	24.38	36.09	24.36	358						
24.0	24.38	36.09	24.36	358						
25.0	24.38	36.09	24.36	358						
26.0	24.38	36.10	24.37	357						
27.0	24.38	36.09	24.36	358						
28.0	24.38	36.10	24.37	357						
29.0	24.38	36.10	24.37	357						
30.0	24.38	36.10	24.37	358						
31.0	24.38	36.10	24.37	358						
32.0	24.37	36.09	24.36	358						
33.0	24.38	36.08	24.35	359						
34.0	24.38	36.09	24.36	358						
35.0	24.38	36.08	24.35	359						

36.0	24.37	36.08	24.36	359						
37.0	24.36	36.09	24.37	358						
38.0	24.37	36.08	24.36	359						
39.0	24.37	36.09	24.36	358						
40.0	24.37	36.09	24.36	358						
41.0	24.36	36.09	24.37	358						
42.0	24.34	36.09	24.37	358						
43.0	24.33	36.09	24.38	357						
44.0	24.33	36.09	24.38	357						
45.0	24.32	36.09	24.38	357						
46.0	24.32	36.09	24.38	357						
47.0	24.32	36.09	24.38	357						
48.0	24.32	36.09	24.38	357						
49.0	24.32	36.09	24.38	357	4.78	4.75	-0.03	0.11	00.2	01.6
50.0	24.30	36.09	24.39	357						
51.0	24.30	36.09	24.39	357						
52.0	24.30	36.09	24.39	357						
53.0	24.30	36.09	24.39	357						
54.0	24.30	36.09	24.39	357						
55.0	24.30	36.09	24.39	357						
56.0	24.30	36.09	24.39	357						
57.0	24.27	36.10	24.40	355						
58.0	24.27	36.10	24.40	355						
59.0	24.27	36.10	24.40	356						
60.0	24.26	36.10	24.40	355						
61.0	24.22	36.10	24.42	354						
62.0	24.20	36.11	24.43	353						
63.0	24.20	36.10	24.42	354						
64.0	24.17	36.10	24.43	353						
65.0	24.17	36.10	24.43	353						
66.0	24.16	36.10	24.43	353						
67.0	24.14	36.10	24.44	352						
68.0	24.13	36.10	24.44	352						
69.0	24.11	36.10	24.45	351						
70.0	24.10	36.11	24.46	350						
71.0	24.09	36.10	24.46	351						
72.0	24.06	36.11	24.47	349						
73.0	24.01	36.11	24.49	348						
74.0	24.00	36.11	24.49	348						
75.0	23.90	36.12	24.53	344						
76.0	23.82	36.13	24.56	341						
77.0	23.76	36.13	24.58	340						
78.0	23.66	36.14	24.61	336						
79.0	23.50	36.16	24.68	330						
80.0	23.44	36.16	24.69	329						
81.0	23.40	36.16	24.70	327						
82.0	23.38	36.15	24.70	328						
83.0	23.36	36.16	24.72	326						
84.0	23.36	36.16	24.72	326						
85.0	23.34	36.16	24.72	326						
86.0	23.28	36.16	24.74	324						
87.0	23.26	36.16	24.75	324						
88.0	23.09	36.16	24.80	319						
89.0	23.08	36.16	24.80	319						
90.0	23.01	36.17	24.83	316						
91.0	22.90	36.17	24.86	313						
92.0	22.90	36.16	24.85	314						
93.0	22.89	36.15	24.85	315						
94.0	22.86	36.16	24.86	313						
95.0	22.86	36.16	24.86	313						
96.0	22.80	36.15	24.87	312						
97.0	22.80	36.15	24.87	312						
98.0	22.79	36.15	24.87	312						
99.0	22.80	36.15	24.87	312						
100.0	22.78	36.15	24.88	312	4.60	4.88	.28	0.16	01.7	02.1
101.0	22.68	36.14	24.90	310						
105.0	22.37	36.10	24.96	304						
110.0	21.70	36.03	25.09	292						
115.0	21.11	35.94	25.19	283						
120.0	20.97	35.99	25.26	276						
125.0	20.63	36.01	25.37	265						
130.0	20.27	36.03	25.48	255						
135.0	20.20	36.07	25.53	250						
140.0	19.96	36.09	25.61	243						
145.0	19.49	36.10	25.74	231						
150.0	19.02	36.11	25.87	219	4.32	5.22	.90	0.36	05.1	04.4
155.0	18.72	36.13	25.96	210						
160.0	18.46	36.11	26.01	205						
165.0	18.20	36.07	26.05	202						
170.0	17.52	36.14	26.27	181						
175.0	15.90	36.12	26.64	146						
180.0	14.57	35.91	26.78	133						
185.0	13.13	35.84	27.03	109						
191.0	11.91	35.60	27.08	103						
195.0	10.43	35.48	27.26	86						
200.0	8.83	35.31	27.40	72						
205.0	7.89	35.25	27.50	62						
208.0					3.11			1.80	24.6	26.1

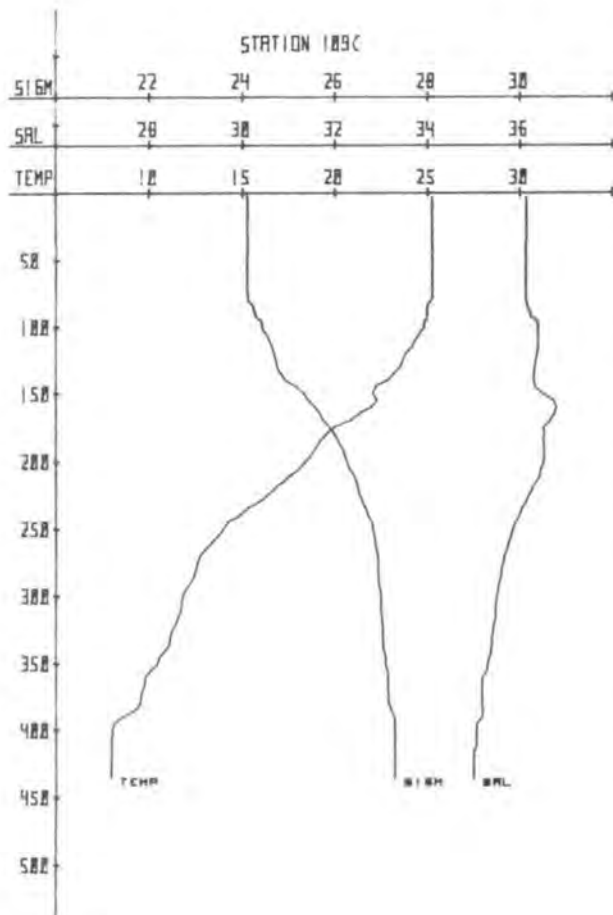


ISELIN CRUISE C1-12 STA 100X 13/ XII/76 10.7 UMT CONSEC STA 100
 LAT 30 46.6N LONG 79 52.5W DEPTH 292M DIST LAST STA = 9.6NM

WEATHER DATA
 WIND SPEED = 22 KTS
 WIND DIRECTION = 360
 AIR TEMP = 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.5 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY LOGS =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	F04	NO3	SI
1.0	25.10	*	*	*	*	*	*	*	*	*
2.0	25.00	*	*	*	*	*	*	*	*	*
4.0	24.50	*	*	*	*	*	*	*	*	*
6.0	24.00	*	*	*	*	*	*	*	*	*
8.0	23.50	*	*	*	*	*	*	*	*	*
10.0	23.00	*	*	*	*	*	*	*	*	*
12.0	22.60	*	*	*	*	*	*	*	*	*
14.0	22.90	*	*	*	*	*	*	*	*	*
16.0	22.50	*	*	*	*	*	*	*	*	*
18.0	22.00	*	*	*	*	*	*	*	*	*
20.0	21.50	*	*	*	*	*	*	*	*	*
22.0	21.00	*	*	*	*	*	*	*	*	*
24.0	20.50	*	*	*	*	*	*	*	*	*
26.0	20.00	*	*	*	*	*	*	*	*	*
28.0	19.50	*	*	*	*	*	*	*	*	*
30.0	19.00	*	*	*	*	*	*	*	*	*
32.0	18.50	*	*	*	*	*	*	*	*	*
34.0	18.00	*	*	*	*	*	*	*	*	*
36.0	17.50	*	*	*	*	*	*	*	*	*
38.0	17.00	*	*	*	*	*	*	*	*	*
40.0	16.50	*	*	*	*	*	*	*	*	*
42.0	16.00	*	*	*	*	*	*	*	*	*
44.0	15.50	*	*	*	*	*	*	*	*	*
46.0	15.00	*	*	*	*	*	*	*	*	*
48.0	14.50	*	*	*	*	*	*	*	*	*
50.0	14.00	*	*	*	*	*	*	*	*	*
52.0	13.50	*	*	*	*	*	*	*	*	*
54.0	13.00	*	*	*	*	*	*	*	*	*
56.0	12.50	*	*	*	*	*	*	*	*	*
58.0	12.00	*	*	*	*	*	*	*	*	*
60.0	11.50	*	*	*	*	*	*	*	*	*
62.0	11.00	*	*	*	*	*	*	*	*	*
64.0	10.50	*	*	*	*	*	*	*	*	*
66.0	10.00	*	*	*	*	*	*	*	*	*
68.0	9.50	*	*	*	*	*	*	*	*	*
70.0	9.00	*	*	*	*	*	*	*	*	*
72.0	8.50	*	*	*	*	*	*	*	*	*
74.0	8.00	*	*	*	*	*	*	*	*	*
76.0	7.90	*	*	*	*	*	*	*	*	*
78.0	7.80	*	*	*	*	*	*	*	*	*



ISLLIN CRUISE CI-12 STA 10YE 13/ X11776 11.3 DAT CONSID STA 109
 LAT 30 44.5N LONG 79 46.6W DEPTH = 443M DIST LAST STA = 10.2KM

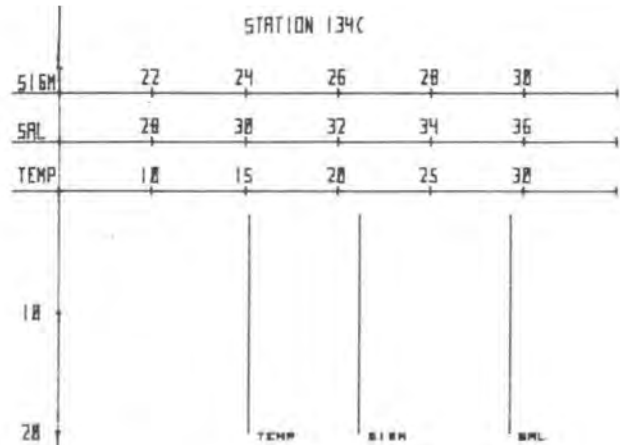
WEATHER DATA
 WIND SPEED * 21 KTS
 WIND DIRECTION * 360
 AIR TEMP * 18.9C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.5 MB

SEA STATE
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AUU	PO4	NO3	SI
3.0	25.23	36.12	24.13	380	4.82	4.88	.06	0.02	00.1	01.3
4.0	25.23	36.13	24.13	379						
5.0	25.23	36.13	24.13	379						
6.0	25.23	36.12	24.13	380						
7.0	25.23	36.12	24.13	380						
8.0	25.23	36.12	24.13	380						
9.0	25.23	36.13	24.13	379						
10.0	25.24	36.12	24.12	380						
11.0	25.24	36.12	24.12	380						
12.0	25.24	36.12	24.12	380						
13.0	25.24	36.12	24.12	380						
14.0	25.24	36.12	24.12	380						
15.0	25.24	36.12	24.12	380						
16.0	25.24	36.12	24.12	380						
17.0	25.24	36.12	24.12	380						
18.0	25.24	36.12	24.12	381						
19.0	25.24	36.12	24.12	381						
20.0	25.23	36.12	24.13	380						
21.0	25.24	36.12	24.12	381						
22.0	25.24	36.12	24.12	381						
23.0	25.23	36.12	24.13	380						
24.0	25.23	36.12	24.13	380						
25.0	25.23	36.13	24.13	380						
26.0	25.24	36.12	24.12	381						
27.0	25.24	36.12	24.12	381						

28.0	25.24	36.12	24.12	381						
29.0	25.24	36.12	24.12	381						
30.0	25.23	36.13	24.13	380						
31.0	25.24	36.12	24.12	381						
32.0	25.24	36.11	24.11	382						
33.0	25.24	36.11	24.11	382						
34.0	25.23	36.12	24.13	381						
35.0	25.23	36.12	24.13	381						
36.0	25.24	36.11	24.11	382						
37.0	25.24	36.11	24.11	382						
38.0	25.24	36.11	24.11	382						
39.0	25.24	36.11	24.11	382						
40.0	25.24	36.12	24.12	381						
41.0	25.24	36.12	24.12	381						
42.0	25.24	36.12	24.12	382						
43.0	25.24	36.12	24.12	382						
44.0	25.24	36.11	24.11	382						
45.0	25.24	36.12	24.12	382						
46.0	25.24	36.12	24.12	382						
47.0	25.24	36.12	24.12	382						
48.0	25.26	36.11	24.11	383						
49.0	25.26	36.11	24.11	383						
50.0	25.26	36.11	24.11	383						
51.0	25.26	36.12	24.12	382	4.82	4.87	.15	0.03	00.1	01.9
52.0	25.26	36.12	24.12	383						
53.0	25.26	36.12	24.12	383						
54.0	25.26	36.12	24.12	383						
55.0	25.26	36.12	24.12	383						
56.0	25.26	36.12	24.12	383						
57.0	25.26	36.12	24.12	383						
58.0	25.26	36.12	24.12	383						
59.0	25.26	36.12	24.12	383						
60.0	25.24	36.12	24.12	382						
61.0	25.24	36.12	24.12	382						
62.0	25.24	36.12	24.12	382						
63.0	25.24	36.12	24.12	382						
64.0	25.24	36.12	24.12	382						
65.0	25.24	36.12	24.12	382						
66.0	25.24	36.12	24.12	382						
67.0	25.24	36.12	24.12	383						
68.0	25.26	36.11	24.11	384						
69.0	25.26	36.12	24.12	383						
70.0	25.24	36.12	24.12	383						
71.0	25.26	36.12	24.12	383						
72.0	25.26	36.12	24.12	383						
73.0	25.26	36.12	24.12	383						
74.0	25.26	36.12	24.12	383						
75.0	25.26	36.12	24.12	381						
76.0	25.26	36.12	24.12	383						
77.0	25.20	36.14	24.15	380						
78.0	25.17	36.13	24.15	380						
79.0	25.17	36.13	24.15	380						
80.0	25.16	36.13	24.15	380						
81.0	25.10	36.14	24.18	378						
82.0	25.04	36.16	24.21	374						
83.0	25.00	36.17	24.23	373						
84.0	24.94	36.18	24.26	370						
85.0	24.90	36.19	24.28	368						
86.0	24.90	36.19	24.28	368						
87.0	24.90	36.19	24.28	368						
88.0	24.89	36.20	24.29	367						
89.0	24.87	36.23	24.32	365						
90.0	24.87	36.23	24.32	365						
91.0	24.87	36.23	24.32	365						
92.0	24.86	36.24	24.33	364						
93.0	24.86	36.25	24.34	363						
94.0	24.87	36.28	24.36	361						
95.0	24.86	36.36	24.42	355						
96.0	24.80	36.36	24.44	354						
97.0	24.79	36.38	24.46	352						
98.0	24.78	36.39	24.47	351						
99.0	24.78	36.39	24.47	351						
100.0	24.78	36.40	24.47	350	3.23	4.70	1.47	0.08	00.8	01.8
101.0	24.77	36.40	24.48	350						
104.0	24.59	36.40	24.53	345						
110.0	24.29	36.39	24.61	337						
115.0	24.13	36.39	24.66	333						
120.0	23.79	36.33	24.72	328						
125.0	23.61	36.31	24.76	324						
130.0	23.48	36.30	24.79	322						
135.0	23.16	36.28	24.87	314						
140.0	22.87	36.29	24.96	306						
145.0	22.20	36.32	25.17	285						
150.0	22.02	36.48	25.34	269	3.75	4.93	1.18	0.24	03.5	02.7
155.0	22.26	36.71	25.45	259						
160.0	21.97	36.79	25.59	244						
165.0	21.38	36.72	25.71	235						

170.0	20.89	36.64	25.78	228	.	.	.	.	.	.
175.0	20.02	36.50	25.91	216	.	.	.	.	.	.
180.0	19.54	36.48	26.02	208	.	.	.	.	.	.
185.0	19.20	36.48	26.11	197	.	.	.	.	.	.
190.0	18.96	36.51	26.19	190	.	.	.	.	.	.
195.0	18.74	36.51	26.25	184	.	.	.	.	.	.
200.0	18.44	36.48	26.30	179	3.41	5.27	1.86	0.48	11.5	04.1
205.0	18.10	36.43	26.35	175	.	.	.	.	.	.
210.0	17.68	36.41	26.44	167	.	.	.	.	.	.
215.0	17.24	36.34	26.49	162	.	.	.	.	.	.
220.0	16.76	36.25	26.54	157	.	.	.	.	.	.
225.0	16.36	36.17	26.57	154	.	.	.	.	.	.
230.0	15.94	36.12	26.63	149	.	.	.	.	.	.
235.0	15.32	36.02	26.70	142	.	.	.	.	.	.
240.0	14.90	35.96	26.74	138	.	.	.	.	.	.
245.0	14.20	35.88	26.83	129	.	.	.	.	.	.
250.0	13.98	35.82	26.83	129	.	.	.	.	.	.
255.0	13.72	35.79	26.87	126	.	.	.	.	.	.
260.0	13.37	35.73	26.89	124	.	.	.	.	.	.
265.0	13.02	35.69	26.93	120	.	.	.	.	.	.
270.0	12.70	35.63	26.95	118	.	.	.	.	.	.
275.0	12.58	35.60	26.95	118	.	.	.	.	.	.
280.0	12.50	35.57	26.94	119	.	.	.	.	.	.
285.0	12.38	35.56	26.96	117	.	.	.	.	.	.
290.0	12.19	35.53	26.97	116	.	.	.	.	.	.
295.0	11.93	35.50	27.00	114	.	.	.	.	.	.
300.0	11.76	35.47	27.01	113	3.02	6.06	3.04	1.35	25.6	12.6
305.0	11.69	35.45	27.01	113	.	.	.	.	.	.
310.0	11.64	35.43	27.00	114	.	.	.	.	.	.
315.0	11.50	35.44	27.04	111	.	.	.	.	.	.
320.0	11.39	35.41	27.03	111	.	.	.	.	.	.
325.0	11.20	35.40	27.06	108	.	.	.	.	.	.
330.0	11.08	35.37	27.06	108	.	.	.	.	.	.
336.0	11.00	35.36	27.07	108	.	.	.	.	.	.
340.0	10.81	35.34	27.09	106	.	.	.	.	.	.
345.0	10.54	35.32	27.12	103	.	.	.	.	.	.
351.0	10.37	35.28	27.12	103	.	.	.	.	.	.
355.0	10.04	35.26	27.16	99	.	.	.	.	.	.
360.0	9.76	35.17	27.14	101	.	.	.	.	.	.
365.0	9.68	35.18	27.16	99	.	.	.	.	.	.
371.0	9.57	35.18	27.18	97	.	.	.	.	.	.
375.0	9.51	35.18	27.19	96	.	.	.	.	.	.
380.0	9.44	35.18	27.20	95	.	.	.	.	.	.
384.0	9.28	35.21	27.25	90	.	.	.	.	.	.
390.0	8.62	35.15	27.31	84	.	.	.	.	.	.
395.0	8.06	35.05	27.32	83	.	.	.	.	.	.
400.0	7.98	35.03	27.31	84	3.14	6.60	3.50	2.58	30.6	19.8
405.0	7.93	35.02	27.31	84	.	.	.	.	.	.
410.0	7.93	35.02	27.31	84	.	.	.	.	.	.
415.0	7.93	35.00	27.30	85	.	.	.	.	.	.
420.0	7.93	35.00	27.30	85	.	.	.	.	.	.
425.0	7.90	35.01	27.31	84	.	.	.	.	.	.
431.0	7.90	35.00	27.30	85	3.18	6.62	3.48	1.65	23.0	18.6
436.0	7.90	35.00	27.30	85	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 134C 147 411/76 1.6 GMT CONSIL STA 134

LAT 31 48.2N LONG 80 19.0W DEPTH = 21M DIST LAST STA = 128.7KM

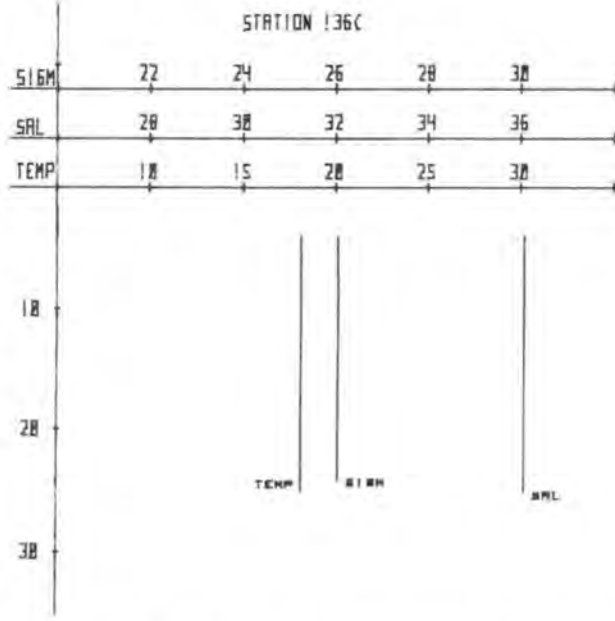
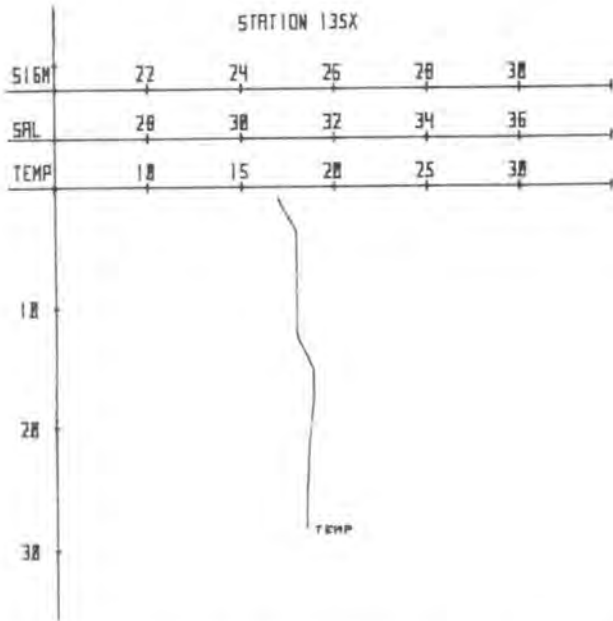
WEATHER DATA

WIND SPEED = 25 KTS
 WIND DIRECTION = 040
 AIR TEMP = 11.7C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1025.9 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY LOGS =

OBSERVATIONS

Z	T	S	D	SVA	02	02	ADU	PD4	W03	SI
2.0	15.22	35.72	26.49	155	5.69	5.63	-1.00	0.06	00.1	00.6
3.0	15.22	35.73	26.49	154	.	.	.	.	.	.
4.0	15.22	35.73	26.49	154	.	.	.	.	.	.
5.0	15.22	35.72	26.49	155	.	.	.	.	.	.
6.0	15.22	35.72	26.49	155	.	.	.	.	.	.
7.0	15.20	35.73	26.50	154	.	.	.	.	.	.
8.0	15.20	35.72	26.49	155	.	.	.	.	.	.
9.0	15.20	35.72	26.49	155	.	.	.	.	.	.
10.0	15.20	35.72	26.49	155	.	.	.	.	.	.
11.0	15.20	35.72	26.49	155	.	.	.	.	.	.
12.0	15.20	35.72	26.49	155	.	.	.	.	.	.
13.0	15.20	35.72	26.49	155	.	.	.	.	.	.
14.0	15.19	35.73	26.50	154	.	.	.	.	.	.
15.0	15.20	35.73	26.50	154	.	.	.	.	.	.
16.0	15.20	35.72	26.49	155	.	.	.	.	.	.
17.0	15.19	35.72	26.49	155	.	.	.	.	.	.
18.0	15.19	35.72	26.49	155	5.71	5.64	-1.07	0.06	00.2	00.4
19.0	15.19	35.71	26.49	156	.	.	.	.	.	.
20.0	15.19	35.72	26.49	155	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 135X 14/ XII/76 2.7 GMT CONSEC STA 135
 LAT 31 46.4N LONG 80 13.5W DEPTH = 20M DIST LAST STA = 9.3KM

ISELIN CRUISE CI-12 STA 136C 14/ XII/76 3.7 GMT CONSEC STA 136
 LAT 31 44.9N LONG 80 8.4W DEPTH = 30M DIST LAST STA = 8.5KM

WEATHER DATA
 WIND SPEED = 29 KTS
 WIND DIRECTION = 040
 AIR TEMP = 12.2C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1025.8 MB

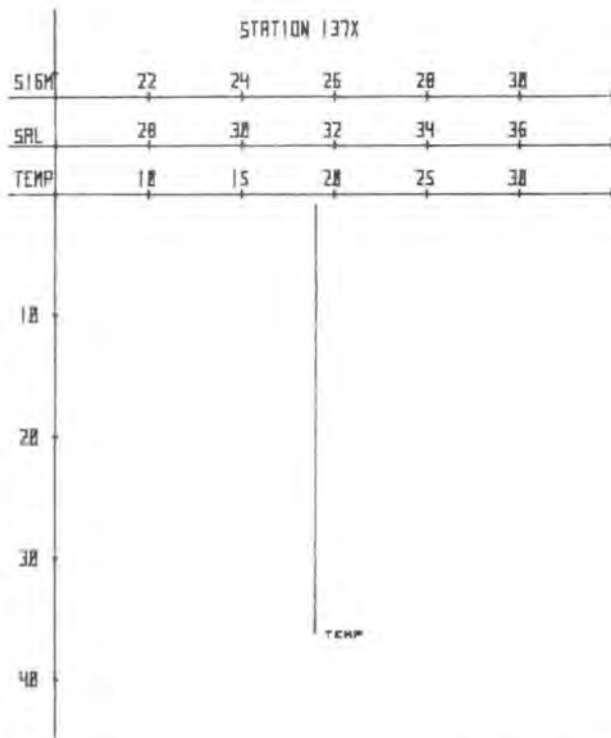
SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

WEATHER DATA
 WIND SPEED = 29 KTS
 WIND DIRECTION = 040
 AIR TEMP = 12.2C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1025.8 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

Z	T	S	D	OBSERVATIONS							
				SVA	D2	D2'	A00	P04	N03	SI	
1.0	17.00	.	.	.	.	.	.	.	.	.	.
2.5	17.50	.	.	.	.	.	.	.	.	.	.
3.5	17.90	.	.	.	.	.	.	.	.	.	.
12.0	17.90	.	.	.	.	.	.	.	.	.	.
12.5	18.00	.	.	.	.	.	.	.	.	.	.
14.0	18.50	.	.	.	.	.	.	.	.	.	.
15.0	18.80	.	.	.	.	.	.	.	.	.	.
22.0	18.50	.	.	.	.	.	.	.	.	.	.
28.0	18.30	.	.	.	.	.	.	.	.	.	.

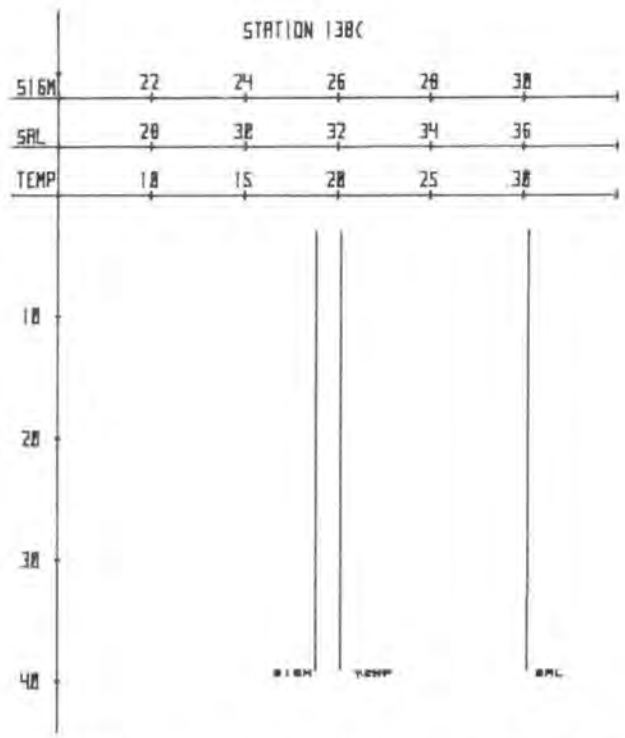
Z	T	S	D	SVA	D2	D2'	A00	P04	N03	SI	OBSERVATIONS			
											D2	D2'	A00	P04	N03	SI
4.0	18.13	36.07	26.07	195	5.42	5.31	.11	0.04	00.2	01.1	.	.	.	.
5.0	18.14	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
6.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
7.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
8.0	18.14	36.07	26.06	195	.	.	.	.	.	.	.	.	.	.
9.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
10.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
11.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
12.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
13.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
14.0	18.13	36.08	26.07	194	.	.	.	.	.	.	.	.	.	.
15.0	18.13	36.08	26.07	195	.	.	.	.	.	.	.	.	.	.
16.0	18.14	36.07	26.06	196	.	.	.	.	.	.	.	.	.	.
17.0	18.14	36.07	26.06	196	.	.	.	.	.	.	.	.	.	.
18.0	18.14	36.07	26.06	196	.	.	.	.	.	.	.	.	.	.
19.0	18.14	36.07	26.06	196	.	.	.	.	.	.	.	.	.	.
20.0	18.14	36.07	26.06	196	.	.	.	.	.	.	.	.	.	.
21.0	18.13	36.08	26.07	195	.	.	.	.	.	.	.	.	.	.
22.0	18.13	36.07	26.07	195	.	.	.	.	.	.	.	.	.	.
23.0	18.13	36.07	26.07	196	.	.	.	.	.	.	.	.	.	.
24.0	18.13	36.08	26.07	195	.	.	.	.	.	.	.	.	.	.
25.0	18.14	36.07	26.06	196	.	.	.	.	.	.	.	.	.	.
28.0					5.33	.	.	0.07	00.1	00.6	.	.	.	.



ISELIN CRUISE C1-12 STA 137X 14/ XI176 4.9 GRT CONSEC STA 137
 LAT 31 43.0W LONG 80 3.4W DEPTH = 36M DIST LAST STA = 8.6KM

WEATHER DATA
 WIND SPEED = 30 KTS SEA STATE =
 WIND DIRECTION = 040 WAVE DIRECTION =
 AIR TEMP = 14.4C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1025.5 MB VISIBILITY CODE =

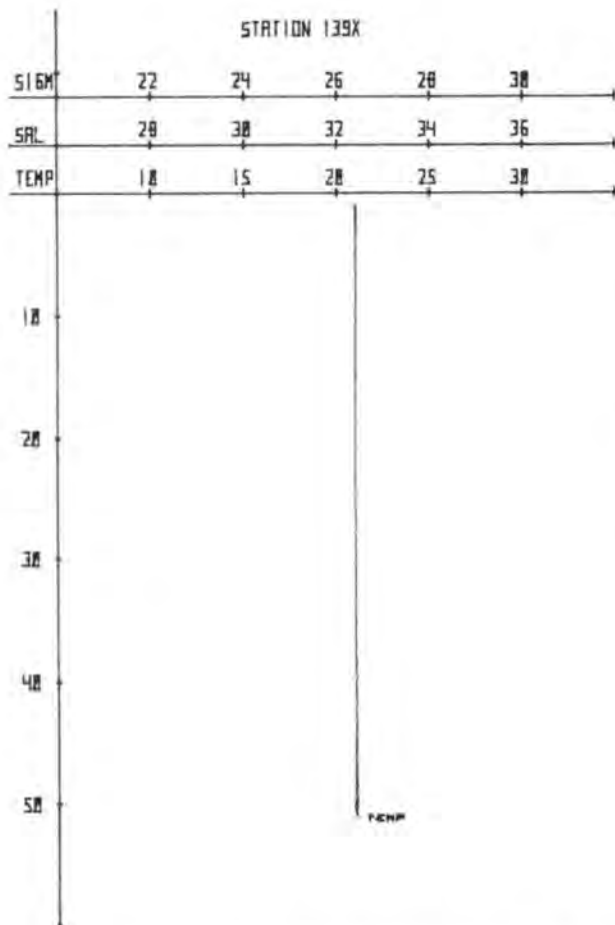
OBSERVATIONS										
Z	T	S	D	SVA	D2	D2"	ADU	P04	NO3	SI
1.0	19.00	*	*	*	*	*	*	*	*	*
36.0	19.00	*	*	*	*	*	*	*	*	*



ISELIN CRUISE C1-12 STA 138C 14/ XI176 5.9 GRT CONSEC STA 138
 LAT 31 41.4N LONG 79 57.6W DEPTH = 41M DIST LAST STA = 9.3KM

WEATHER DATA
 WIND SPEED = 30 KTS SEA STATE =
 WIND DIRECTION = 040 WAVE DIRECTION =
 AIR TEMP = 15.6C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1025.2 MB VISIBILITY CODE =

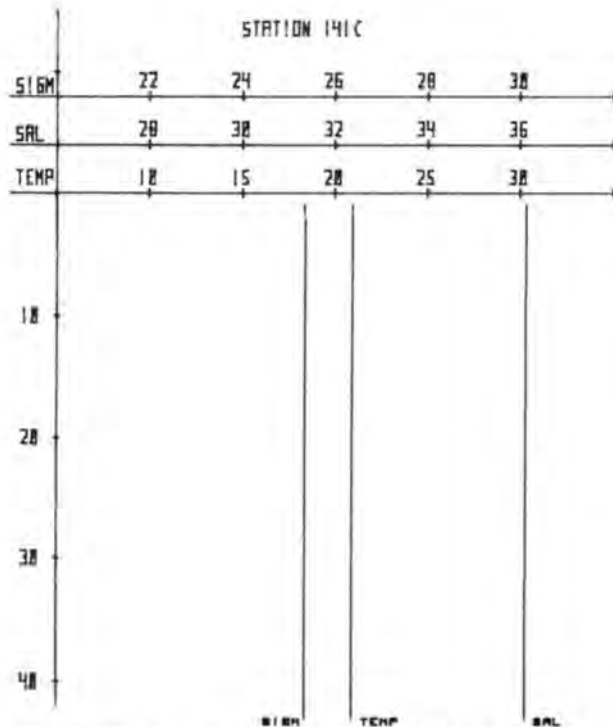
OBSERVATIONS										
Z	T	S	D	SVA	D2	D2"	ADU	P04	NO3	SI
3.0	20.20	36.11	25.56	243	5.59	5.11	-1.48	0.08	00.3	01.8
4.0	20.20	36.11	25.56	243	*	*	*	*	*	*
5.0	20.20	36.11	25.56	243	*	*	*	*	*	*
6.0	20.20	36.10	25.56	244	*	*	*	*	*	*
7.0	20.20	36.10	25.56	244	*	*	*	*	*	*
8.0	20.20	36.10	25.56	244	*	*	*	*	*	*
9.0	20.20	36.11	25.56	243	*	*	*	*	*	*
10.0	20.20	36.11	25.56	243	*	*	*	*	*	*
11.0	20.20	36.11	25.56	243	*	*	*	*	*	*
12.0	20.20	36.11	25.56	243	*	*	*	*	*	*
13.0	20.20	36.11	25.56	243	*	*	*	*	*	*
14.0	20.20	36.11	25.56	243	*	*	*	*	*	*
15.0	20.20	36.11	25.56	243	*	*	*	*	*	*
16.0	20.21	36.10	25.55	244	*	*	*	*	*	*
17.0	20.20	36.11	25.56	243	*	*	*	*	*	*
18.0	20.21	36.10	25.55	244	*	*	*	*	*	*
19.0	20.21	36.10	25.55	244	*	*	*	*	*	*
20.0	20.21	36.10	25.55	244	*	*	*	*	*	*
21.0	20.21	36.10	25.55	244	*	*	*	*	*	*
22.0	20.21	36.10	25.55	244	*	*	*	*	*	*
23.0	20.21	36.10	25.55	244	*	*	*	*	*	*
24.0	20.21	36.10	25.55	244	*	*	*	*	*	*
25.0	20.21	36.11	25.56	244	*	*	*	*	*	*
26.0	20.21	36.10	25.55	245	*	*	*	*	*	*
27.0	20.21	36.10	25.55	245	*	*	*	*	*	*
28.0	20.21	36.10	25.55	245	*	*	*	*	*	*
29.0	20.21	36.10	25.55	245	*	*	*	*	*	*
30.0	20.21	36.10	25.55	245	*	*	*	*	*	*
31.0	20.21	36.11	25.56	244	*	*	*	*	*	*
32.0	20.21	36.10	25.55	245	*	*	*	*	*	*
33.0	20.21	36.09	25.55	246	*	*	*	*	*	*
34.0	20.21	36.09	25.55	246	*	*	*	*	*	*
35.0	20.21	36.09	25.55	246	*	*	*	*	*	*
36.0	20.21	36.09	25.55	246	*	*	*	*	*	*
37.0	20.21	36.09	25.55	246	5.72	5.11	-1.61	0.06	00.3	01.1
38.0	20.20	36.10	25.56	245	*	*	*	*	*	*
39.0	20.20	36.10	25.56	245	*	*	*	*	*	*



ISELIN CRUISE CI-12 STA 139X 14/ XII/76 7.1 GMT CONSEC STA 139
 LAT 31 39.6N LONG 79 52.0W DEPTH = 51M DIST LAST STA = 9.7KM

WEATHER DATA
 WIND SPEED = 30 KTS SEA STATE =
 WIND DIRECTION = 040 WAVE DIRECTION =
 AIR TEMP = 15.6C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1025.2 MB VISIBILITY CODE =

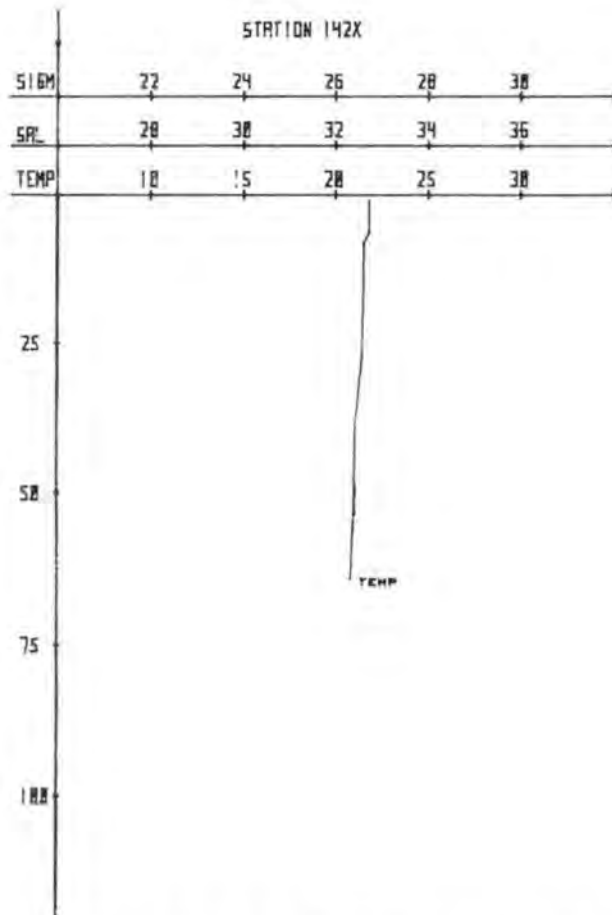
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	P04	N03	SI
1.0	21.00	*	*	*	*	*	*	*	*	*
51.0	21.00	*	*	*	*	*	*	*	*	*



ISELIN CRUISE CI-12 STA 141C 14/ XII/76 8.1 GMT CONSEC STA 141
 LAT 31 38.0N LONG 79 47.0W DEPTH = 51M DIST LAST STA = 8.4KM

WEATHER DATA
 WIND SPEED = 22 KTS SEA STATE =
 WIND DIRECTION = 040 WAVE DIRECTION =
 AIR TEMP = 16.1C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1025.0 MB VISIBILITY CODE =

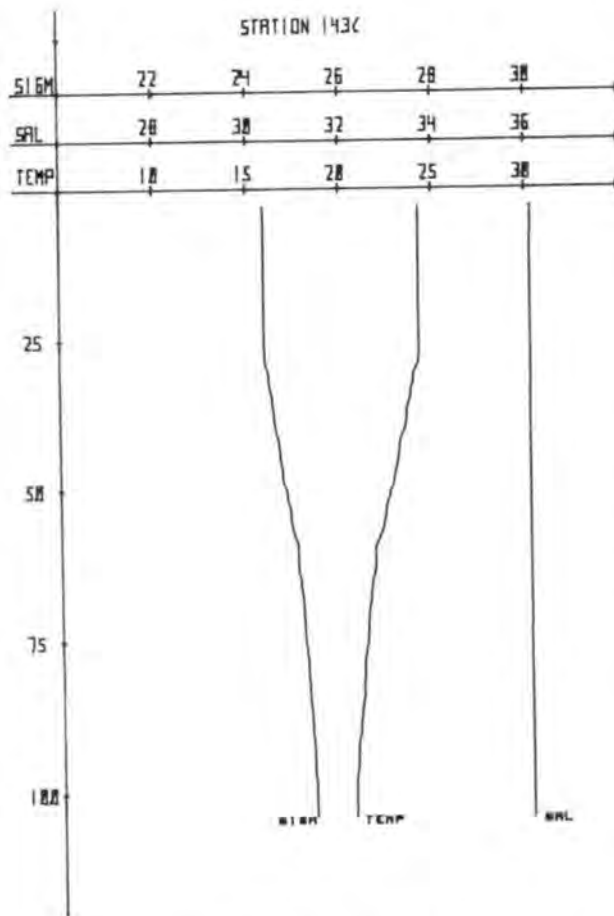
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	P04	N03	SI
1.0	20.94	36.12	25.37	261	*	*	*	*	*	*
2.0	20.92	36.13	25.38	260	4.98	5.04	.06	0.11	01.2	02.5
3.0	20.94	36.12	25.37	261	*	*	*	*	*	*
4.0	20.94	36.12	25.37	261	*	*	*	*	*	*
5.0	20.94	36.12	25.37	261	*	*	*	*	*	*
6.0	20.94	36.12	25.37	261	*	*	*	*	*	*
7.0	20.92	36.13	25.38	260	*	*	*	*	*	*
8.0	20.96	36.11	25.36	262	*	*	*	*	*	*
9.0	20.94	36.12	25.37	261	*	*	*	*	*	*
10.0	20.94	36.12	25.37	261	*	*	*	*	*	*
11.0	20.94	36.12	25.37	261	*	*	*	*	*	*
12.0	20.94	36.13	25.38	261	*	*	*	*	*	*
13.0	20.94	36.13	25.38	261	*	*	*	*	*	*
14.0	20.96	36.12	25.37	262	*	*	*	*	*	*
15.0	20.96	36.12	25.37	262	*	*	*	*	*	*
16.0	20.96	36.12	25.37	262	*	*	*	*	*	*
17.0	20.96	36.12	25.37	262	*	*	*	*	*	*
18.0	20.94	36.13	25.38	261	*	*	*	*	*	*
19.0	20.94	36.12	25.37	262	*	*	*	*	*	*
20.0	20.94	36.12	25.37	262	*	*	*	*	*	*
21.0	20.94	36.13	25.38	261	*	*	*	*	*	*
22.0	20.94	36.12	25.37	262	*	*	*	*	*	*
23.0	20.94	36.13	25.38	261	*	*	*	*	*	*
24.0	20.96	36.12	25.37	262	*	*	*	*	*	*
25.0	20.94	36.13	25.38	261	*	*	*	*	*	*
26.0	20.94	36.12	25.37	262	*	*	*	*	*	*
27.0	20.94	36.13	25.38	261	*	*	*	*	*	*
28.0	20.94	36.12	25.37	262	*	*	*	*	*	*
35.0	20.94	36.11	25.36	263	*	*	*	*	*	*
36.0	20.94	36.11	25.36	263	*	*	*	*	*	*
37.0	20.94	36.12	25.37	262	*	*	*	*	*	*
38.0	20.94	36.12	25.37	262	*	*	*	*	*	*
39.0	20.94	36.12	25.37	262	*	*	*	*	*	*
40.0	20.94	36.12	25.37	262	*	*	*	*	*	*
41.0	20.94	36.12	25.37	262	*	*	*	*	*	*
42.0	20.94	36.12	25.37	262	4.94	5.04	.10	0.15	01.7	02.0
43.0	20.94	36.12	25.37	263	*	*	*	*	*	*



ISELIN CRUISE CI-12 STA 142X 14/ XII/76 9.0 DAT CONSEC STA 142
 LAT 31 36.0N LONG 79 41.0W DEPTH = 64M DIST LAST STA = 10.2NM

WEATHER DATA
 WIND SPEED * 23 KTS SEA STATE =
 WIND DIRECTION * 040 WAVE DIRECTION *
 AIR TEMP * 16.1C CLOUD TYPE =
 WEATHER CODE * CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1024.6 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	PG4	NO3	SI
1.0	21.80	*	*	*	*	*	*	*	*	*
5.0	21.80	*	*	*	*	*	*	*	*	*
9.0	21.50	*	*	*	*	*	*	*	*	*
13.0	21.50	*	*	*	*	*	*	*	*	*
27.0	21.40	*	*	*	*	*	*	*	*	*
40.0	21.00	*	*	*	*	*	*	*	*	*
56.0	20.90	*	*	*	*	*	*	*	*	*
64.0	20.80	*	*	*	*	*	*	*	*	*

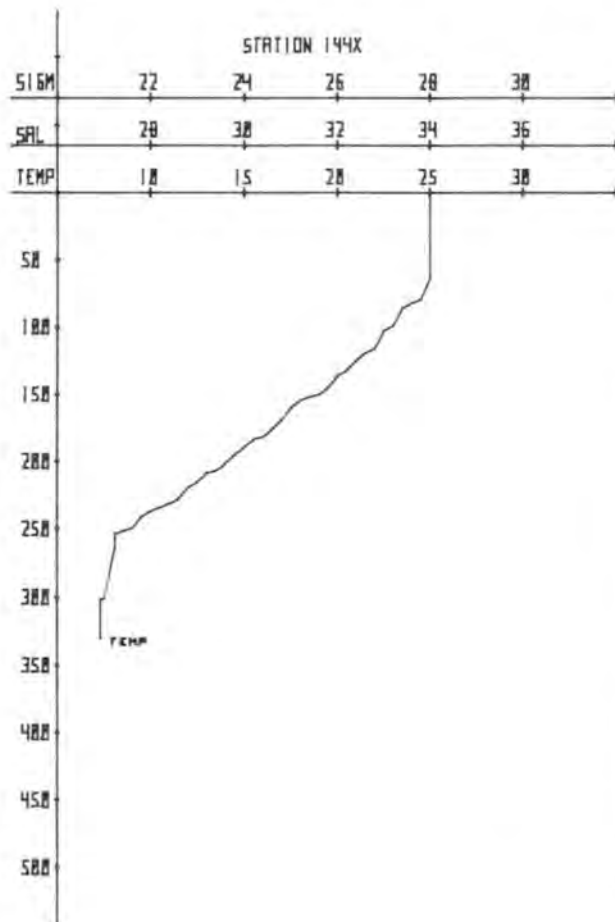


ISELIN CRUISE CI-12 STA 143C 14/ XII/76 Y.8 WMT LONGSD STA 143
 LAT 31 34.0W LONG 79 35.0W DEPTH = 110M DIST LAST STA = 10.2KM

WEATHER DATA
 WIND SPEED * 25 KTS SEA STATE *
 WIND DIRECTION * 060 WAVE DIRECTION *
 AIR TEMP * 17.2C CLOUD TYPE *
 WEATHER CODE * CLOUD AMOUNT *
 BAROMETRIC PRESSURE * 1024.0 MM VISIBILITY CODE *

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	P04	W03	SI
3.0	24.30	36.11	24.40	353	4.87	4.75	-0.12	0.05	00.1	01.9
4.0	24.30	36.11	24.40	353						
5.0	24.30	36.11	24.40	354						
6.0	24.30	36.11	24.40	354						
7.0	24.32	36.11	24.39	354						
8.0	24.32	36.10	24.39	355						
9.0	24.30	36.11	24.40	354						
10.0	24.32	36.11	24.39	354						
11.0	24.30	36.11	24.40	354						
12.0	24.30	36.11	24.40	354						
13.0	24.32	36.11	24.39	354						
14.0	24.33	36.10	24.38	355						
15.0	24.33	36.11	24.39	355						
16.0	24.33	36.11	24.39	355						
17.0	24.33	36.11	24.39	355						
18.0	24.33	36.11	24.39	355						
19.0	24.33	36.11	24.39	355						
20.0	24.33	36.11	24.39	355						
21.0	24.33	36.11	24.39	355						
22.0	24.33	36.11	24.39	355						
23.0	24.32	36.11	24.39	355						
24.0	24.32	36.11	24.39	355						
25.0	24.30	36.10	24.39	355						
26.0	24.28	36.11	24.41	354						
27.0	24.22	36.10	24.42	353						

28.0	24.20	36.11	24.43	352						
29.0	24.17	36.10	24.43	351						
30.0	24.03	36.10	24.47	346						
31.0	23.91	36.11	24.52	343						
32.0	23.86	36.10	24.52	343						
33.0	23.80	36.09	24.53	342						
34.0	23.74	36.10	24.56	339						
35.0	23.68	36.11	24.58	337						
36.0	23.60	36.09	24.59	336						
37.0	23.53	36.09	24.61	334						
38.0	23.50	36.09	24.62	334						
39.0	23.46	36.09	24.63	333						
40.0	23.40	36.09	24.65	331						
41.0	23.30	36.08	24.67	329						
42.0	23.20	36.10	24.72	325						
43.0	23.16	36.09	24.72	324						
44.0	23.10	36.09	24.74	323						
45.0	23.06	36.09	24.75	322						
46.0	22.99	36.09	24.77	320	4.87	4.86	-0.01	0.02	00.4	01.8
47.0	22.92	36.10	24.80	317						
48.0	22.86	36.08	24.80	317						
49.0	22.79	36.09	24.83	314						
50.0	22.66	36.10	24.87	310						
51.0	22.59	36.11	24.90	308						
52.0	22.50	36.08	24.90	307						
53.0	22.40	36.10	24.95	303						
54.0	22.36	36.10	24.96	302						
55.0	22.30	36.09	24.97	301						
56.0	22.26	36.09	24.98	300						
57.0	22.16	36.10	25.02	297						
58.0	22.02	36.09	25.05	294						
59.0	21.88	36.10	25.10	289						
60.0	21.82	36.08	25.10	289						
61.0	21.80	36.08	25.10	289						
62.0	21.80	36.08	25.10	289						
63.0	21.79	36.08	25.11	289						
64.0	21.71	36.08	25.13	286						
65.0	21.62	36.09	25.16	283						
66.0	21.60	36.08	25.16	284						
67.0	21.54	36.09	25.18	281						
68.0	21.50	36.09	25.19	280						
69.0	21.46	36.09	25.20	279						
70.0	21.42	36.09	25.22	278						
71.0	21.39	36.08	25.22	278						
72.0	21.36	36.09	25.23	277						
73.0	21.33	36.08	25.23	277						
74.0	21.30	36.09	25.25	275						
75.0	21.28	36.09	25.25	275						
76.0	21.23	36.09	25.27	273						
77.0	21.20	36.09	25.28	273						
78.0	21.11	36.10	25.31	270						
79.0	21.10	36.09	25.30	270						
80.0	21.08	36.09	25.31	270						
81.0	21.06	36.09	25.32	269						
82.0	21.02	36.10	25.33	267						
83.0	21.01	36.09	25.33	268						
84.0	21.00	36.09	25.33	268						
85.0	20.99	36.10	25.34	267						
86.0	20.97	36.10	25.35	266						
87.0	20.92	36.10	25.36	265						
88.0	20.90	36.10	25.37	265						
89.0	20.88	36.10	25.37	264						
90.0	20.87	36.10	25.37	264						
91.0	20.79	36.11	25.40	261						
92.0	20.76	36.11	25.41	260						
93.0	20.73	36.11	25.42	260						
94.0	20.72	36.10	25.42	260						
95.0	20.70	36.11	25.43	259						
96.0	20.68	36.09	25.42	260						
97.0	20.62	36.10	25.44	258						
98.0	20.62	36.10	25.44	258						
99.0	20.62	36.09	25.43	258						
100.0	20.62	36.10	25.44	258						
101.0	20.62	36.10	25.44	258	4.99	5.07	-0.07	0.12	01.0	01.9
104.0	20.58	36.10	25.45	257						



ISELIN CRUISE 01-12 STA 144X 14/ XII/75 11.5 HRT CONSEC STA 144

LAT 31 32.5W LONG 79 28.2W DEPTH = 330M DIST LAST STA = 11.1KM

WEATHER DATA
 WIND SPEED = KTS
 WIND DIRECTION =
 AIR TEMP = . C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1024.0 mb

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2	AOU	PO4	NO3	SI
1.0	25.00	*	*	*	*	*	*	*	*	*
62.0	25.00	*	*	*	*	*	*	*	*	*
79.0	24.50	*	*	*	*	*	*	*	*	*
82.5	24.00	*	*	*	*	*	*	*	*	*
86.0	23.50	*	*	*	*	*	*	*	*	*
98.5	23.00	*	*	*	*	*	*	*	*	*
103.0	22.50	*	*	*	*	*	*	*	*	*
116.0	22.00	*	*	*	*	*	*	*	*	*
120.0	21.50	*	*	*	*	*	*	*	*	*
125.0	21.00	*	*	*	*	*	*	*	*	*
132.0	20.50	*	*	*	*	*	*	*	*	*
136.5	20.00	*	*	*	*	*	*	*	*	*
145.0	19.50	*	*	*	*	*	*	*	*	*
150.5	19.00	*	*	*	*	*	*	*	*	*
152.0	18.50	*	*	*	*	*	*	*	*	*
155.0	18.00	*	*	*	*	*	*	*	*	*
160.0	17.50	*	*	*	*	*	*	*	*	*
169.0	17.00	*	*	*	*	*	*	*	*	*
176.0	16.50	*	*	*	*	*	*	*	*	*
182.0	16.00	*	*	*	*	*	*	*	*	*
184.0	15.50	*	*	*	*	*	*	*	*	*
190.0	15.00	*	*	*	*	*	*	*	*	*
195.5	14.50	*	*	*	*	*	*	*	*	*
202.0	14.00	*	*	*	*	*	*	*	*	*
207.0	13.50	*	*	*	*	*	*	*	*	*
209.5	13.00	*	*	*	*	*	*	*	*	*
216.0	12.50	*	*	*	*	*	*	*	*	*
218.0	12.50	*	*	*	*	*	*	*	*	*
220.0	12.00	*	*	*	*	*	*	*	*	*
228.0	11.50	*	*	*	*	*	*	*	*	*
232.0	11.00	*	*	*	*	*	*	*	*	*
235.0	10.50	*	*	*	*	*	*	*	*	*
237.5	10.00	*	*	*	*	*	*	*	*	*
242.0	9.50	*	*	*	*	*	*	*	*	*
249.5	9.00	*	*	*	*	*	*	*	*	*
252.0	8.50	*	*	*	*	*	*	*	*	*
254.0	8.10	*	*	*	*	*	*	*	*	*
265.0	8.10	*	*	*	*	*	*	*	*	*
266.5	8.00	*	*	*	*	*	*	*	*	*
300.0	7.50	*	*	*	*	*	*	*	*	*
302.0	7.30	*	*	*	*	*	*	*	*	*
330.0	7.30	*	*	*	*	*	*	*	*	*

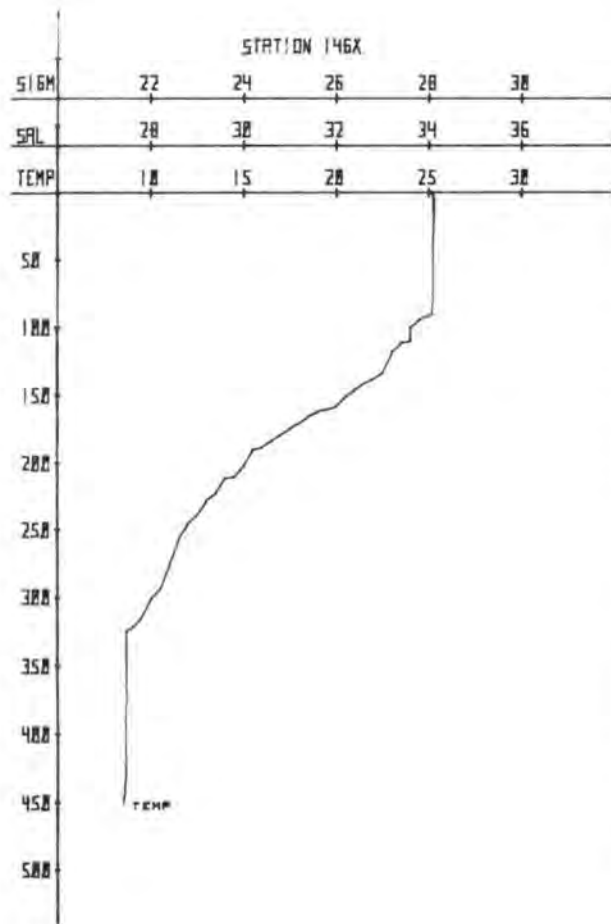
141.0	22.24	36.42	25.23	280	.	.	.	.	.	.
145.0	21.73	36.53	25.46	258	.	.	.	.	.	.
150.0	20.92	36.54	25.70	236	3.78	5.03	1.25	0.27	04.4	02.3
155.0	19.74	36.55	26.01	205	.	.	.	.	.	.
160.0	19.16	36.47	26.11	196	.	.	.	.	.	.
165.0	19.06	36.46	26.13	195	.	.	.	.	.	.
170.0	18.88	36.44	26.16	192	.	.	.	.	.	.
175.0	18.71	36.42	26.19	189	.	.	.	.	.	.
181.0	18.32	36.40	26.27	182	.	.	.	.	.	.
185.0	18.12	36.38	26.31	178	.	.	.	.	.	.
190.0	17.60	36.32	26.39	171	.	.	.	.	.	.
195.0	17.36	36.31	26.44	166	.	.	.	.	.	.
200.0	16.67	36.25	26.56	155	3.62	5.46	1.84	0.33	06.1	03.4
205.0	16.17	36.17	26.62	149	.	.	.	.	.	.
210.0	15.64	36.10	26.68	143	.	.	.	.	.	.
216.0	14.57	35.93	26.79	132	.	.	.	.	.	.
220.0	13.90	35.83	26.86	126	.	.	.	.	.	.
225.0	13.28	35.71	26.90	122	.	.	.	.	.	.
230.0	12.90	35.65	26.93	119	.	.	.	.	.	.
236.0	12.77	35.63	26.94	119	.	.	.	.	.	.
240.0	12.62	35.60	26.94	118	.	.	.	.	.	.
245.0	12.44	35.57	26.96	117	.	.	.	.	.	.
250.0	12.10	35.53	26.99	113	.	.	.	.	.	.
254.0	11.78	35.47	27.01	112	.	.	.	.	.	.
261.0	11.68	35.47	27.03	110	.	.	.	.	.	.
266.0	11.61	35.45	27.02	111	.	.	.	.	.	.
271.0	11.31	35.48	27.10	103	.	.	.	.	.	.
275.0	11.27	35.44	27.08	105	3.06	6.13	3.07	1.43	23.0	13.9
279.0	11.02	35.45	27.13	100	.	.	.	.	.	.
285.0	10.70	35.43	27.18	96	.	.	.	.	.	.
290.0	10.20	35.35	27.20	94	.	.	.	.	.	.
295.0	9.93	35.32	27.23	91	.	.	.	.	.	.

ISELIN CRUISE CI-12 STA 146X 14/ XII/76 14.2 GMT CONSEC STA 146

LAT 31 30.3N LONG 79 23.8W DEPTH = 485M DIST LAST STA = .5KM

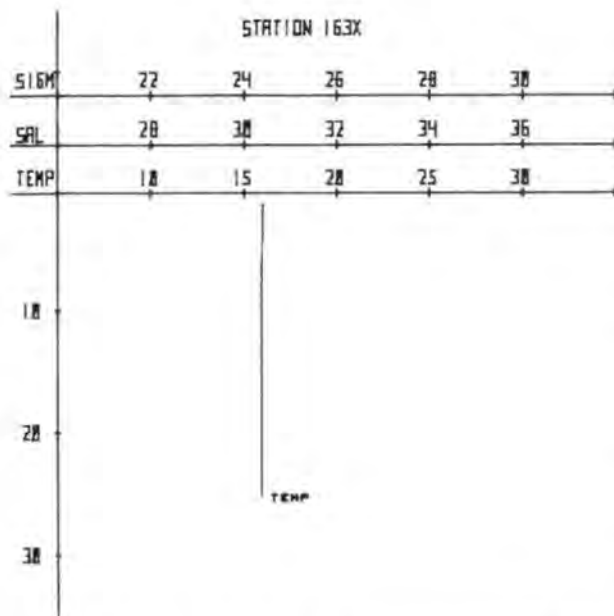
WEATHER DATA

WIND SPEED = 25 KTS. SEA STATE =
WIND DIRECTION = 090 WAVE DIRECTION =
AIR TEMP = 18.3C CLOUD TYPE =
WEATHER CODE = CLOUD AMOUNT =
BAROMETRIC PRESSURE = 1025.9 MB VISIBILITY CODE =



OBSERVATIONS

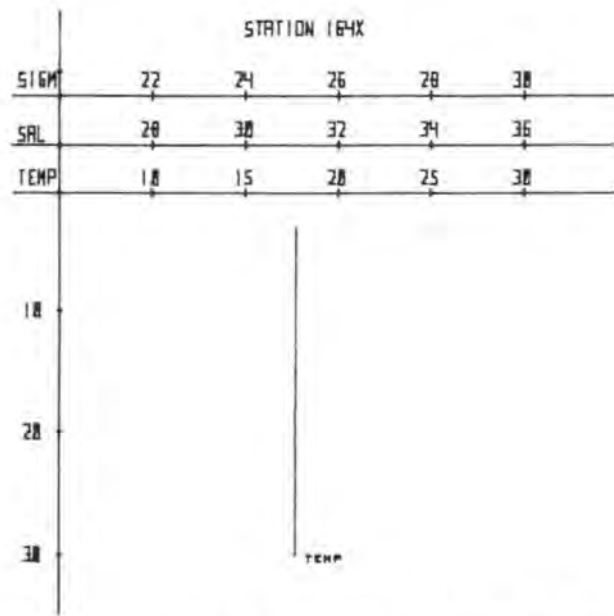
Z	T	S	D	SVA	D2	D2'	AOU	PO4	NO3	SI
1.0	25.20	.	.	.	.	.	.	.	.	.
90.0	25.10	.	.	.	.	.	.	.	.	.
92.0	25.00	.	.	.	.	.	.	.	.	.
95.0	24.50	.	.	.	.	.	.	.	.	.
101.0	24.00	.	.	.	.	.	.	.	.	.
111.0	24.00	.	.	.	.	.	.	.	.	.
113.0	23.50	.	.	.	.	.	.	.	.	.
119.0	23.00	.	.	.	.	.	.	.	.	.
134.0	22.50	.	.	.	.	.	.	.	.	.
139.0	22.00	.	.	.	.	.	.	.	.	.
142.0	21.50	.	.	.	.	.	.	.	.	.
147.0	21.00	.	.	.	.	.	.	.	.	.
152.0	20.50	.	.	.	.	.	.	.	.	.
159.0	20.00	.	.	.	.	.	.	.	.	.
161.0	19.50	.	.	.	.	.	.	.	.	.
163.0	19.00	.	.	.	.	.	.	.	.	.
166.0	18.50	.	.	.	.	.	.	.	.	.
171.0	18.00	.	.	.	.	.	.	.	.	.
175.0	17.50	.	.	.	.	.	.	.	.	.
180.0	17.00	.	.	.	.	.	.	.	.	.
184.0	16.50	.	.	.	.	.	.	.	.	.
189.0	16.00	.	.	.	.	.	.	.	.	.
191.0	15.50	.	.	.	.	.	.	.	.	.
203.0	15.00	.	.	.	.	.	.	.	.	.
211.0	14.50	.	.	.	.	.	.	.	.	.
212.0	14.00	.	.	.	.	.	.	.	.	.
223.0	13.50	.	.	.	.	.	.	.	.	.
229.0	13.00	.	.	.	.	.	.	.	.	.
239.3	12.50	.	.	.	.	.	.	.	.	.
246.0	12.00	.	.	.	.	.	.	.	.	.
257.0	11.50	.	.	.	.	.	.	.	.	.
276.0	11.00	.	.	.	.	.	.	.	.	.
294.0	10.50	.	.	.	.	.	.	.	.	.
301.0	10.00	.	.	.	.	.	.	.	.	.
315.0	9.50	.	.	.	.	.	.	.	.	.
322.5	9.00	.	.	.	.	.	.	.	.	.
325.0	8.70	.	.	.	.	.	.	.	.	.
340.0	8.70	.	.	.	.	.	.	.	.	.
450.0	8.50	.	.	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 163X 14/ K11/76 23.2 GMT CONSEC STA 163
 LAT 31 4.5N LONG 80 40.5W DEPTH = 25M DIST LAST STA = 130.5KM

WEATHER DATA
 WIND SPEED = 22 KTS SEA STATE =
 WIND DIRECTION = 090 WAVE DIRECTION =
 AIR TEMP = 18.3C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1020.5 MB VISIBILITY CODE =

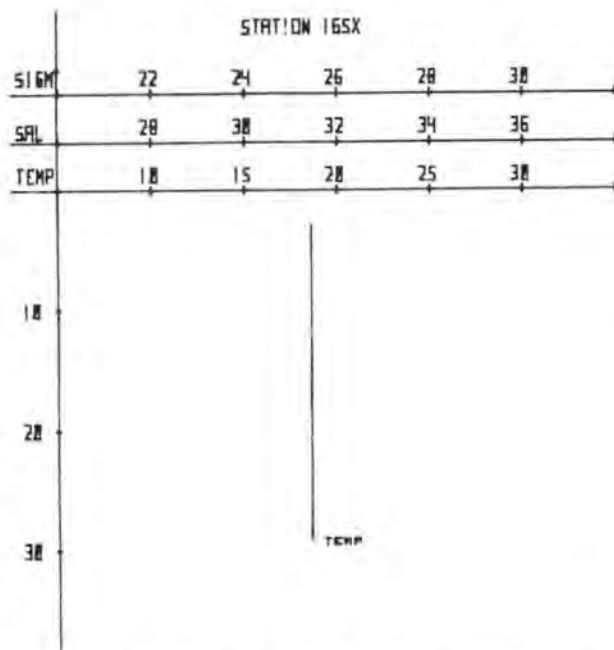
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	P04	N03	S1
1.0	16.00	.	.	.	.	.	.	.	.	.
4.0	15.90	.	.	.	.	.	.	.	.	.
25.0	15.90	.	.	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 164X 14/ K11/76 23.0 GMT CONSEC STA 164
 LAT 31 2.5N LONG 80 35.0W DEPTH = 30M DIST LAST STA = 9.5KM

WEATHER DATA
 WIND SPEED = 24 KTS SEA STATE =
 WIND DIRECTION = 090 WAVE DIRECTION =
 AIR TEMP = 18.3C CLOUD TYPE =
 WEATHER CODE = CLOUD AMOUNT =
 BAROMETRIC PRESSURE = 1020.1 MB VISIBILITY CODE =

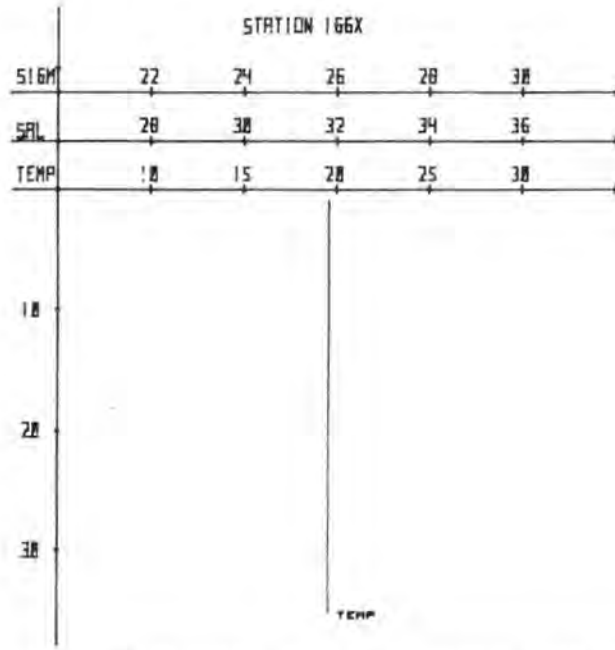
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	P04	N03	S1
3.0	17.70	.	.	.	.	.	.	.	.	.
30.0	17.70	.	.	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 165X 14/ XII/76 23.8 DAT CONSEC STA 165
 LAT 31 .5N LONG 80 29.6W DEPTH = 29M DIST LAST STA = 9.3KM

WEATHER DATA
 WIND SPEED = 29 KTS
 WIND DIRECTION = 090
 AIR TEMP = 16.7C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1019.8 MB
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

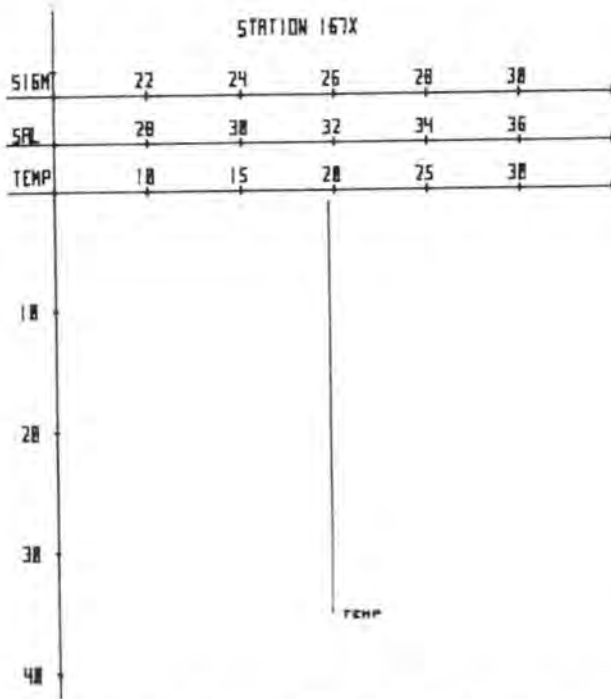
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
3.0	18.60	.	.	.	.	.	.	.	.	.
29.0	18.70	.	.	.	.	.	.	.	.	.



ISELIN CRUISE CI-12 STA 166X 15/ XII/76 .3 DAT CONSEC STA 166
 LAT 30 58.5N LONG 80 24.5W DEPTH = 35M DIST LAST STA = 8.9KM

WEATHER DATA
 WIND SPEED = 33 KTS
 WIND DIRECTION = 100
 AIR TEMP = 16.7C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1019.8 MB
 SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
1.0	19.60	.	.	.	.	.	.	.	.	.
35.0	19.60	.	.	.	.	.	.	.	.	.



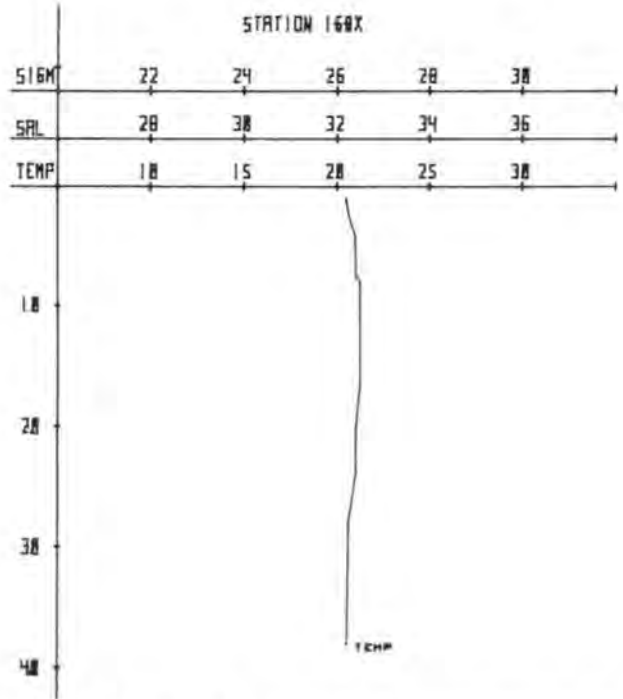
ISELIM CRUISE C1-12 STA 167X 15/ XII/76 .9 GMT CONSEC STA 167
 LAT 30 57.2N LONG 80 19.6W DEPTH = 35M DIST LAST STA = 8.2KM

WEATHER DATA

WIND SPEED = 32 KTS	SEA STATE =
WIND DIRECTION = 100	WAVE DIRECTION =
AIR TEMP = 17.8C	CLOUD TYPE =
WEATHER CODE =	CLOUD AMOUNT =
BAROMETRIC PRESSURE = 1019.5 MB	VISIBILITY CODE =

OBSERVATIONS

Z	T	S	D	SVA	O2	O2'	AOU	P04	N03	SI
1.0	19.70	.	.	.	.	.	.	.	.	.
35.0	19.70	.	.	.	.	.	.	.	.	.



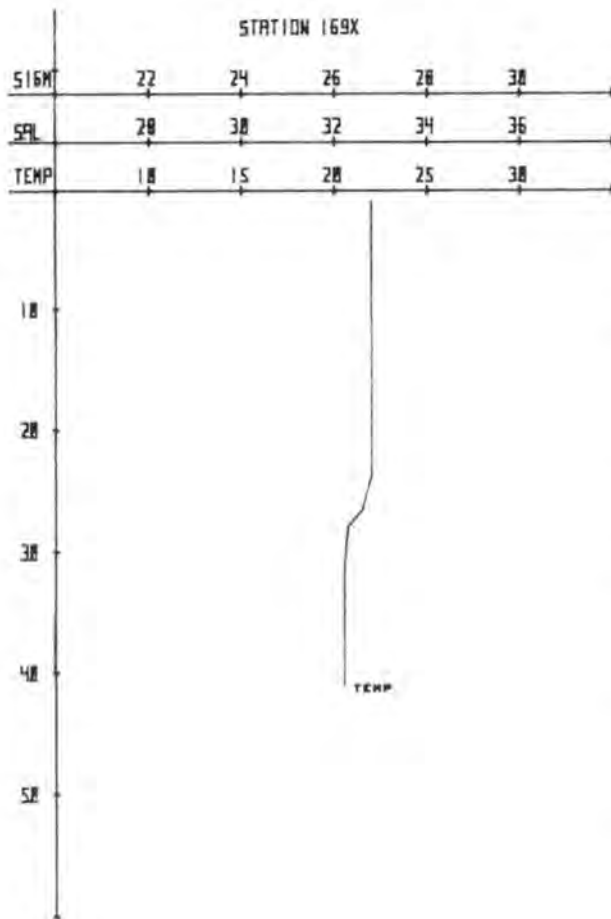
ISELIM CRUISE C1-12 STA 168X 15/ XII/76 1.7 GMT CONSEC STA 168
 LAT 30 54.6N LONG 80 13.9W DEPTH = 30M DIST LAST STA = 10.1KM

WEATHER DATA

WIND SPEED = 31 KTS	SEA STATE =
WIND DIRECTION = 110	WAVE DIRECTION =
AIR TEMP = 18.9C	CLOUD TYPE =
WEATHER CODE =	CLOUD AMOUNT =
BAROMETRIC PRESSURE = 1018.9 MB	VISIBILITY CODE =

OBSERVATIONS

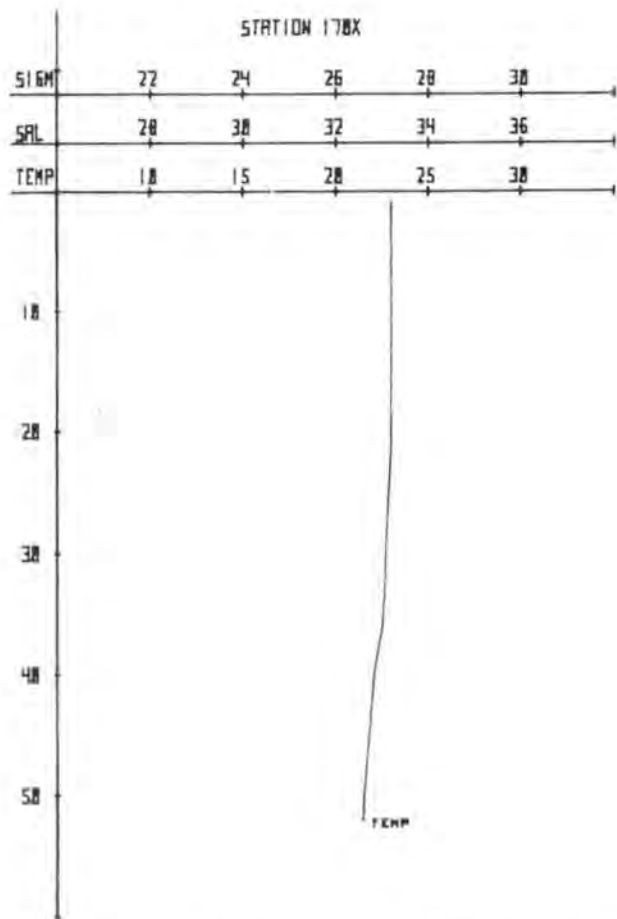
Z	T	S	D	SVA	O2	O2'	AOU	P04	N03	SI
1.0	20.50	.	.	.	.	.	.	.	.	.
4.0	21.00	.	.	.	.	.	.	.	.	.
7.5	21.10	.	.	.	.	.	.	.	.	.
8.0	21.30	.	.	.	.	.	.	.	.	.
17.0	21.20	.	.	.	.	.	.	.	.	.
20.0	21.00	.	.	.	.	.	.	.	.	.
23.5	21.00	.	.	.	.	.	.	.	.	.
28.0	20.60	.	.	.	.	.	.	.	.	.
38.0	20.50	.	.	.	.	.	.	.	.	.



ISELIN CRUISE C1-12 STA 169X 15/ XII/76 2.6 GMT CONSEC STA 169
 LAT 30 52.9N LONG 80 08.6W DEPTH = 41M DIST LAST STA = 9.0KM

WEATHER DATA		SEA STATE =
WIND SPEED = 31 KTS	WIND DIRECTION = 110	WAVE DIRECTION =
AIR TEMP = 18.9C	WEATHER CODE =	CLOUD TYPE =
BAROMETRIC PRESSURE = 1018.9 MB		CLOUD AMOUNT =
		VISIBILITY CODE =

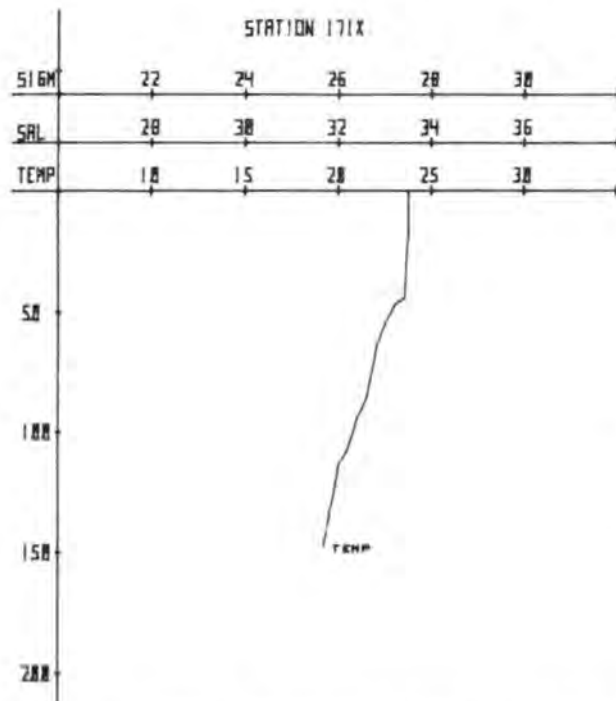
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
1.0	22.00	x	x	x	x	x	x	x	x	x
23.5	22.00	x	x	x	x	x	x	x	x	x
26.5	21.50	x	x	x	x	x	x	x	x	x
27.5	21.00	x	x	x	x	x	x	x	x	x
28.0	20.70	x	x	x	x	x	x	x	x	x
31.0	20.50	x	x	x	x	x	x	x	x	x
41.0	20.50	x	x	x	x	x	x	x	x	x



ISELIN CRUISE C1-12 STA 170X 15/ XII/76 3.4 GMT CONSEC STA 170
 LAT 30 51.0N LONG 80 3.1W DEPTH = 52M DIST LAST STA = 9.4KM

WEATHER DATA		SEA STATE =
WIND SPEED = 33 KTS	WIND DIRECTION = 110	WAVE DIRECTION =
AIR TEMP = 20.9C	WEATHER CODE =	CLOUD TYPE =
BAROMETRIC PRESSURE = 1018.4 MB		CLOUD AMOUNT =
		VISIBILITY CODE =

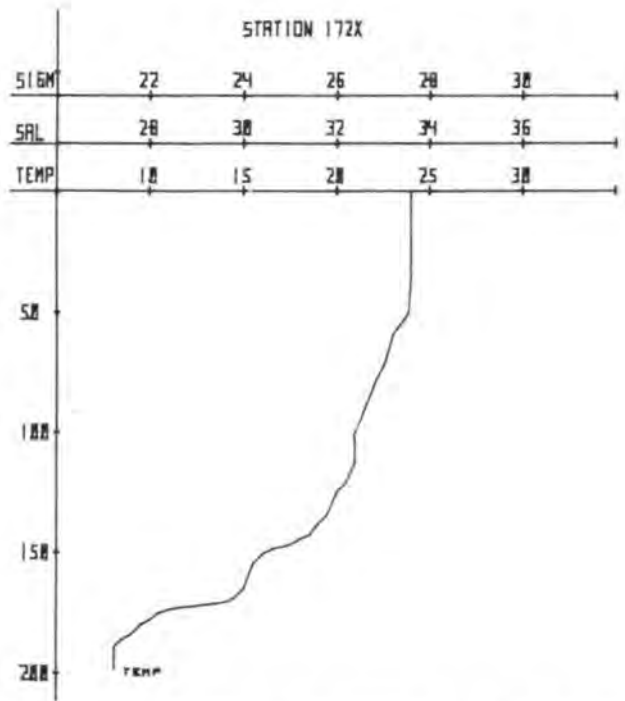
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	AOU	PO4	NO3	SI
1.0	23.00	x	x	x	x	x	x	x	x	x
19.0	23.00	x	x	x	x	x	x	x	x	x
35.5	22.50	x	x	x	x	x	x	x	x	x
40.5	22.00	x	x	x	x	x	x	x	x	x
50.0	21.50	x	x	x	x	x	x	x	x	x
52.0	21.40	x	x	x	x	x	x	x	x	x



ISELIN CRUISE C1-12 STA 171X 15/ XII/76 4.2 GMT CONSEC STA 171
 LAT 30 50.0N LONG 79 59.0W DEPTH = 147M DIST LAST STA = 6.8KM

WEATHER DATA
 WIND SPEED * 31 KTS SEA STATE =
 WIND DIRECTION * 110 WAVE DIRECTION =
 AIR TEMP * 20.0C CLOUD TYPE =
 WEATHER CODE * CLOUD AMOUNT =
 BAROMETRIC PRESSURE * 1018.1 MB VISIBILITY CODE =

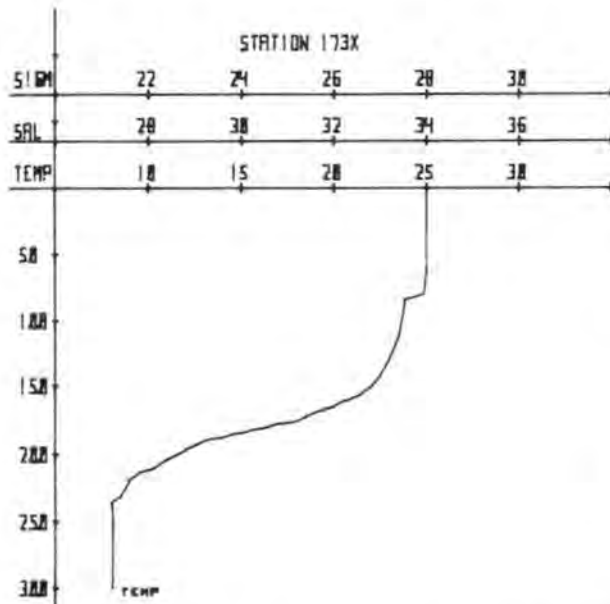
OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	PO4	NO3	SI
1.0	23.80	*	*	*	*	*	*	*	*	*
44.0	23.50	*	*	*	*	*	*	*	*	*
47.0	23.00	*	*	*	*	*	*	*	*	*
54.0	22.50	*	*	*	*	*	*	*	*	*
64.0	22.00	*	*	*	*	*	*	*	*	*
85.0	21.50	*	*	*	*	*	*	*	*	*
94.0	21.00	*	*	*	*	*	*	*	*	*
107.0	20.50	*	*	*	*	*	*	*	*	*
114.0	20.00	*	*	*	*	*	*	*	*	*
134.0	19.50	*	*	*	*	*	*	*	*	*
147.0	19.20	*	*	*	*	*	*	*	*	*



ISELIN CRUISE C1-12 STA 172X 15/ XII/76 4.6 GMT CONSEC STA 172
 LAT 30 49.2N LONG 79 57.4W DEPTH = 198M DIST LAST STA = 2.9KM

WEATHER DATA
 WIND SPEED * 31 KTS SEA STATE =
 WIND DIRECTION * 110 WAVE DIRECTION =
 AIR TEMP * 20.0C CLOUD TYPE =
 WEATHER CODE * CLOUD AMOUNT =
 BAROMETRIC PRESSURE * 1018.1 MB VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2'	ADU	PO4	NO3	SI
1.0	24.00	*	*	*	*	*	*	*	*	*
25.0	24.00	*	*	*	*	*	*	*	*	*
50.0	23.80	*	*	*	*	*	*	*	*	*
54.0	23.50	*	*	*	*	*	*	*	*	*
59.0	23.00	*	*	*	*	*	*	*	*	*
72.0	22.50	*	*	*	*	*	*	*	*	*
80.0	22.00	*	*	*	*	*	*	*	*	*
90.0	21.50	*	*	*	*	*	*	*	*	*
100.0	21.00	*	*	*	*	*	*	*	*	*
101.0	20.90	*	*	*	*	*	*	*	*	*
103.0	21.00	*	*	*	*	*	*	*	*	*
111.5	21.00	*	*	*	*	*	*	*	*	*
121.0	20.50	*	*	*	*	*	*	*	*	*
125.0	20.00	*	*	*	*	*	*	*	*	*
134.0	19.50	*	*	*	*	*	*	*	*	*
138.0	19.00	*	*	*	*	*	*	*	*	*
143.0	18.50	*	*	*	*	*	*	*	*	*
145.0	18.00	*	*	*	*	*	*	*	*	*
147.0	17.50	*	*	*	*	*	*	*	*	*
148.0	17.00	*	*	*	*	*	*	*	*	*
149.0	16.50	*	*	*	*	*	*	*	*	*
151.0	16.00	*	*	*	*	*	*	*	*	*
155.0	15.50	*	*	*	*	*	*	*	*	*
165.0	15.00	*	*	*	*	*	*	*	*	*
169.0	14.50	*	*	*	*	*	*	*	*	*
171.0	14.00	*	*	*	*	*	*	*	*	*
171.5	13.50	*	*	*	*	*	*	*	*	*
172.0	13.00	*	*	*	*	*	*	*	*	*
172.5	12.50	*	*	*	*	*	*	*	*	*
173.0	11.50	*	*	*	*	*	*	*	*	*
174.0	11.00	*	*	*	*	*	*	*	*	*
175.0	10.50	*	*	*	*	*	*	*	*	*
178.0	10.00	*	*	*	*	*	*	*	*	*
180.0	9.50	*	*	*	*	*	*	*	*	*
184.0	9.00	*	*	*	*	*	*	*	*	*
186.0	8.50	*	*	*	*	*	*	*	*	*
189.0	8.10	*	*	*	*	*	*	*	*	*
198.0	8.10	*	*	*	*	*	*	*	*	*

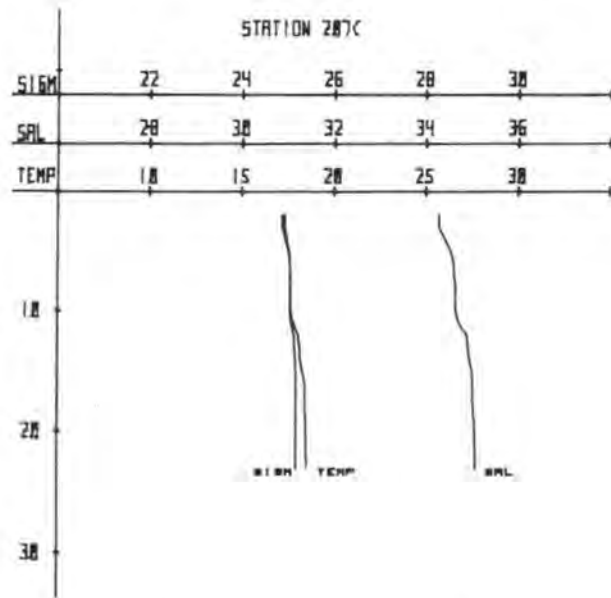


ISELIN CRUISE CI-12 STA 173X 15/ XII/76 5.8 GRT CONSEC STA 173
 LAT 30 49.5N LONG 79 50.5W DEPTH = 300M DIST LAST STA = 11.0KM

WEATHER DATA
 WIND SPEED = 31 KTS
 WIND DIRECTION = 110
 AIR TEMP = 20.0C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1016.9 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2	ADU	PO4	NO3	SI
1.0	25.00	*	*	*	*	*	*	*	*	*
60.0	25.00	*	*	*	*	*	*	*	*	*
80.0	24.80	*	*	*	*	*	*	*	*	*
82.0	24.50	*	*	*	*	*	*	*	*	*
84.0	24.00	*	*	*	*	*	*	*	*	*
85.0	23.80	*	*	*	*	*	*	*	*	*
111.0	23.50	*	*	*	*	*	*	*	*	*
129.0	23.00	*	*	*	*	*	*	*	*	*
143.0	22.50	*	*	*	*	*	*	*	*	*
151.0	22.00	*	*	*	*	*	*	*	*	*
156.0	21.50	*	*	*	*	*	*	*	*	*
160.0	21.00	*	*	*	*	*	*	*	*	*
162.0	20.50	*	*	*	*	*	*	*	*	*
164.0	20.00	*	*	*	*	*	*	*	*	*
168.0	19.50	*	*	*	*	*	*	*	*	*
170.0	19.00	*	*	*	*	*	*	*	*	*
173.0	18.50	*	*	*	*	*	*	*	*	*
174.0	18.00	*	*	*	*	*	*	*	*	*
177.0	17.50	*	*	*	*	*	*	*	*	*
178.0	17.00	*	*	*	*	*	*	*	*	*
180.0	16.50	*	*	*	*	*	*	*	*	*
182.0	16.00	*	*	*	*	*	*	*	*	*
183.0	15.50	*	*	*	*	*	*	*	*	*
185.0	15.00	*	*	*	*	*	*	*	*	*
186.0	14.50	*	*	*	*	*	*	*	*	*
188.0	14.00	*	*	*	*	*	*	*	*	*
189.0	13.50	*	*	*	*	*	*	*	*	*
191.0	13.00	*	*	*	*	*	*	*	*	*
194.0	12.50	*	*	*	*	*	*	*	*	*
197.0	12.00	*	*	*	*	*	*	*	*	*
201.0	11.50	*	*	*	*	*	*	*	*	*
204.0	11.00	*	*	*	*	*	*	*	*	*
209.0	10.50	*	*	*	*	*	*	*	*	*
212.0	10.00	*	*	*	*	*	*	*	*	*
214.0	9.50	*	*	*	*	*	*	*	*	*
219.0	9.00	*	*	*	*	*	*	*	*	*
231.0	8.50	*	*	*	*	*	*	*	*	*
236.0	8.00	*	*	*	*	*	*	*	*	*
249.0	8.10	*	*	*	*	*	*	*	*	*
300.0	8.00	*	*	*	*	*	*	*	*	*



ISELIN CRUISE CI-12 STA 207C 15/ XII/76 21.3 GRT CONSEC STA 207
 LAT 28 59.3N LONG 80 24.6W DEPTH = 26M DIST LAST STA = 211.5KM

WEATHER DATA
 WIND SPEED = 00 KTS
 WIND DIRECTION = VARIABLE
 AIR TEMP = 18.3C
 WEATHER CODE =
 BAROMETRIC PRESSURE = 1012.6 MB

SEA STATE =
 WAVE DIRECTION =
 CLOUD TYPE =
 CLOUD AMOUNT =
 VISIBILITY CODE =

OBSERVATIONS										
Z	T	S	D	SVA	O2	O2	ADU	PO4	NO3	SI
2.0	17.33	34.28	24.89	306	5.77	5.45	-0.32	0.33	00.5	04.2
3.0	17.37	34.29	24.89	307	*	*	*	*	*	*
4.0	17.46	34.42	24.97	299	*	*	*	*	*	*
5.0	17.58	34.55	25.04	292	*	*	*	*	*	*
6.0	17.63	34.61	25.07	289	5.55	5.41	-0.14	0.33	00.8	03.7
7.0	17.70	34.64	25.08	289	*	*	*	*	*	*
8.0	17.72	34.66	25.09	288	*	*	*	*	*	*
9.0	17.72	34.66	25.09	288	*	*	*	*	*	*
10.0	17.73	34.66	25.09	288	*	*	*	*	*	*
11.0	17.87	34.73	25.11	286	5.38	5.38	0.00	0.29	01.0	03.9
12.0	18.12	34.90	25.18	280	*	*	*	*	*	*
13.0	18.21	34.94	25.18	279	*	*	*	*	*	*
14.0	18.24	34.97	25.20	278	*	*	*	*	*	*
15.0	18.33	35.02	25.21	276	*	*	*	*	*	*
16.0	18.46	35.05	25.21	277	*	*	*	*	*	*
17.0	18.49	35.06	25.21	277	*	*	*	*	*	*
18.0	18.50	35.07	25.21	277	*	*	*	*	*	*
19.0	18.54	35.08	25.21	277	*	*	*	*	*	*
20.0	18.56	35.09	25.21	277	*	*	*	*	*	*
21.0	18.58	35.09	25.21	277	*	*	*	*	*	*
22.0	18.62	35.11	25.21	277	*	*	*	*	*	*
23.0	18.66	35.12	25.21	277	*	*	*	*	*	*
24.0					4.42	*	*	0.60	01.0	04.1

