

NOAA Data Report ERL AOML-13

CURRENT VELOCITY AND HYDROGRAPHIC OBSERVATIONS IN THE SOUTHWESTERN NORTH
ATLANTIC OCEAN: SUBTROPICAL ATLANTIC CLIMATE STUDIES (STACS), 1988

Anne Marie Wilburn

Elizabeth Johns

Mark Bushnell

Atlantic Oceanographic and Meteorological Laboratory
Miami, Florida
June 1989



**UNITED STATES
DEPARTMENT OF COMMERCE**

**Robert A. Mosbacher
Secretary**

**NATIONAL OCEANIC AND
ATMOSPHERIC ADMINISTRATION**

**William E. Evans
Under Secretary for Oceans
and Atmosphere/Administrator**

**Environmental Research
Laboratories**

**Joseph O. Fletcher
Director**

007493

QC
802
.46
A5
no-13
c.1

NOTICE

Mention of a commercial company or product does not constitute an endorsement by NOAA Environmental Research Laboratories. Use for publicity or advertising purposes of information from this publication concerning proprietary products or the tests of such products is not authorized.

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION.....	1
II. DATA COLLECTION AND ANALYSIS.....	1
A. Pegasus Current Profiler.....	1
1. Editing.....	8
2. Calibration.....	8
3. Velocity Computation.....	10
B. CTD Data.....	10
1. System Description.....	10
2. Calibration.....	10
C. XBT Data.....	13
III. REFERENCES.....	14
IV. ACKNOWLEDGMENTS.....	15
Appendix A: Pegasus Data.....	16
Appendix B: CTD Data.....	24
Appendix C: XBT Data.....	72

I. INTRODUCTION

The primary objectives of the STACS program are to increase our understanding of the dynamics of the North Atlantic circulation and the role of ocean circulation in global climate, to develop the capability to monitor the climatically important processes, and to provide data needed in the development of the coupled ocean-atmosphere general circulation models to be used for global climate prediction. In particular, the mechanisms by which the ocean transports heat to balance the net radiation deficit at northerly latitudes are being studied.

The initial objectives of STACS (Molinari et al., 1985) were directed at the Florida Current, a flow which makes significant contribution to heat flux. After an intensive two-year observing program, we have the capability to monitor Florida Current transport without extensive ship-board observations. Data collected during this period are listed in Williams et al. (1983), Leaman and Vertes (1983), Vertes and Leaman (1984), and Ratnaswamy et al. (1985). STACS efforts during 1984-86 were directed toward studying the relationship of western boundary currents along the Antillean Archipelago and in the Caribbean Sea to the dynamics of the North Atlantic subtropical gyre and on meridional heat flux, while continuing the monitoring effort in the Florida Current at 27°N. Data collected during these cruises are given in Wilburn et al. (1987a,b). STACS efforts during 1987 continued the observational studies of western boundary currents, extending the study area southward to northern Brazil (4°N) (Figure 1) in order to examine the contribution of cross-equatorial boundary currents to the North Atlantic mass and heat fluxes (Wilburn et al., 1988).

During the period covered by this report, 1988, STACS observational efforts were concentrated on the region between Barbados (13°N) and northern Brazil (4°N), with the emphasis on examining the mean and variability of cross-equatorial fluxes of mass and heat within the western boundary current systems. In addition, the monitoring effort along the transect east of Abaco, the Bahamas (26.5°N) continued. Figures 2-4 show station locations for the March, July, and September 1988 cruises respectively. XBT data were generally collected along the entire cruise track, with CTD-0₂ and Pegasus stations taken where indicated.

II. DATA COLLECTION AND ANALYSIS

Data from STACS cruises conducted on the NOAA Ships WHITING and MT. MITCHELL during three cruises—March, July, and September 1988—are contained in this report. Table 1 shows the type of data collected on each cruise. Techniques used to reduce the Pegasus, CTD, and XBT data to final form are described below.

A. Pegasus Current Profiler

The Pegasus instrument is an acoustically-tracked, free-falling profiler of horizontal current components (Spain et al., 1981). A schematic of the Pegasus system is shown in Figure 5. The Pegasus instrument used by AOML consists of a hollow cylindrical metal tube with the electronics package sealed within. A flotation collar attached to the exterior of the cylinder provides the instrument buoyancy. Pegasus houses a transducer/receiver, a thermistor and a pressure sensor. When the Pegasus is in the water, its transducer interrogates two fixed transponders on the ocean bottom at a

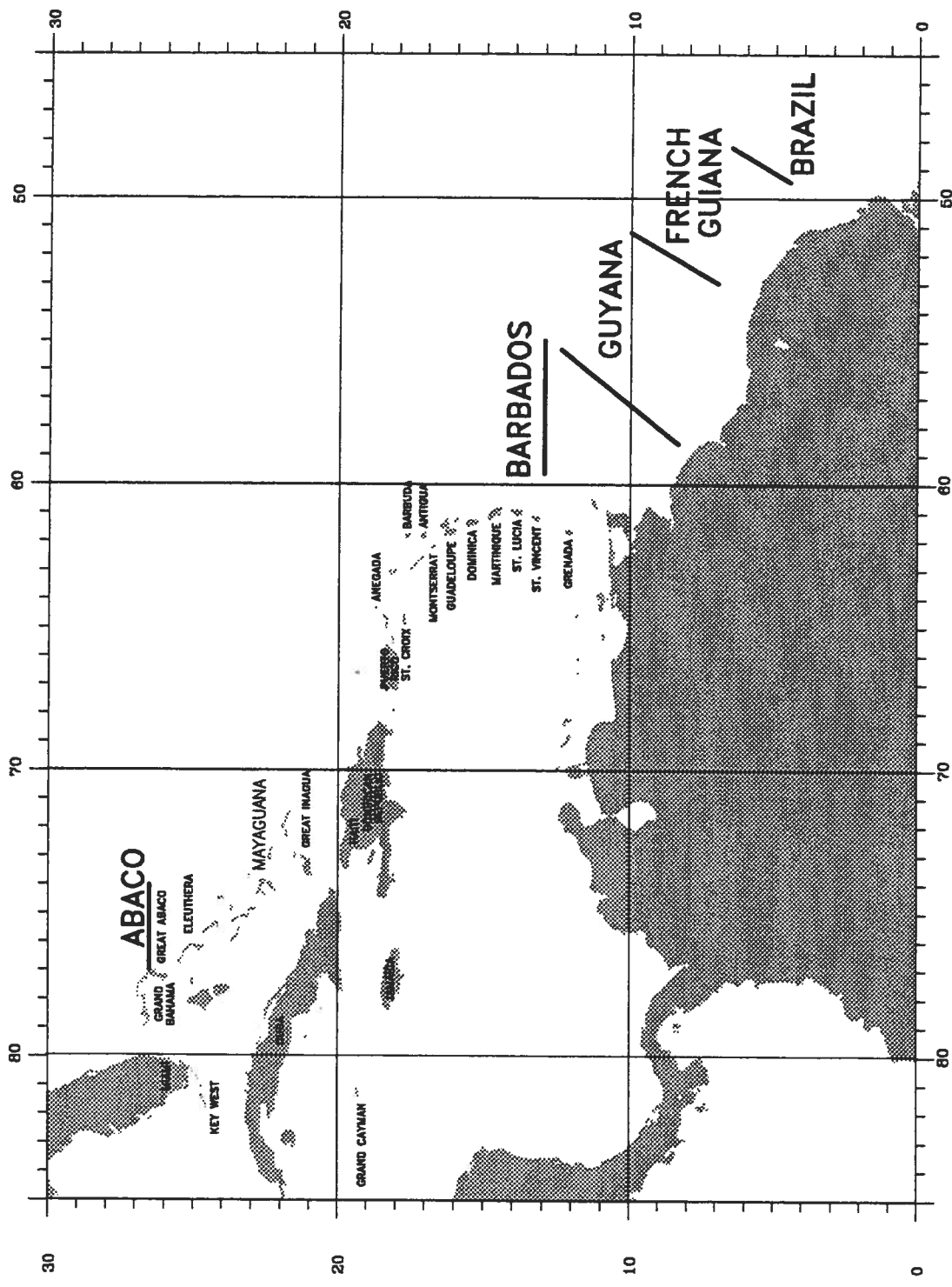


Figure 1: Map of the STACS study area.

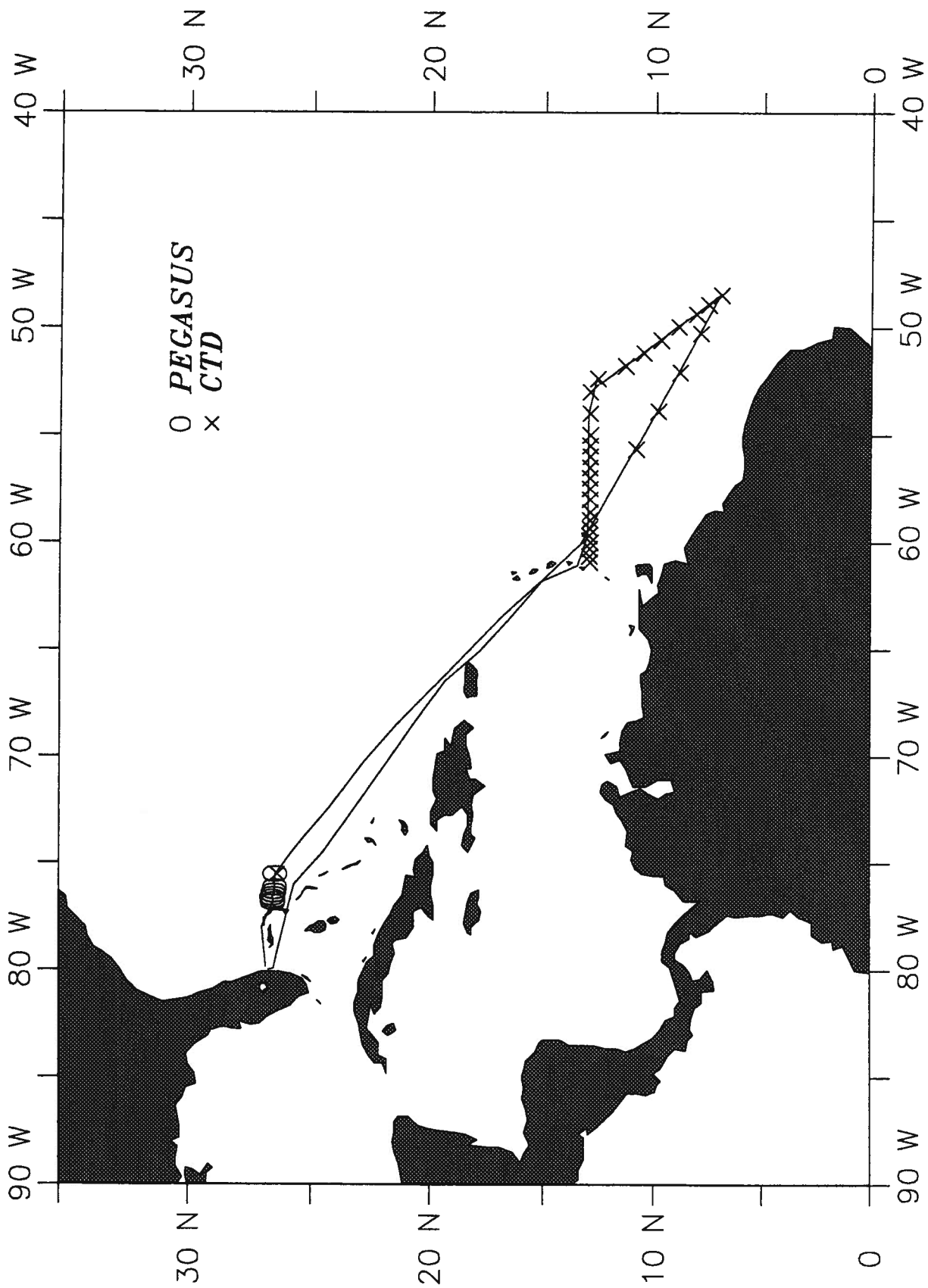


FIGURE 2. STACS Cruise Track for March 1988 showing CTD & Pegasus sampling stations.

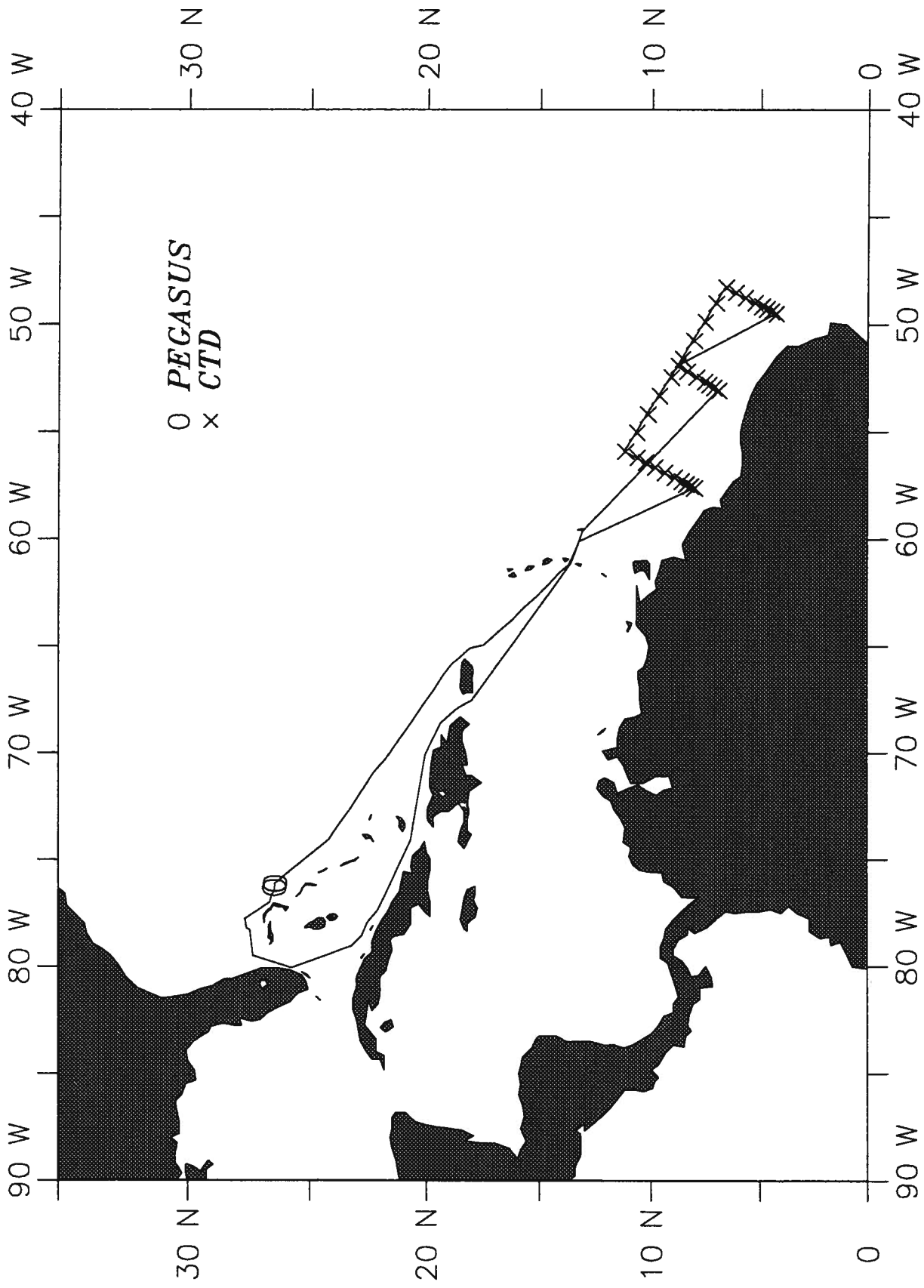


FIGURE 3. STACS Cruise Track for June 1988 showing CTD & Pegasus sampling stations.

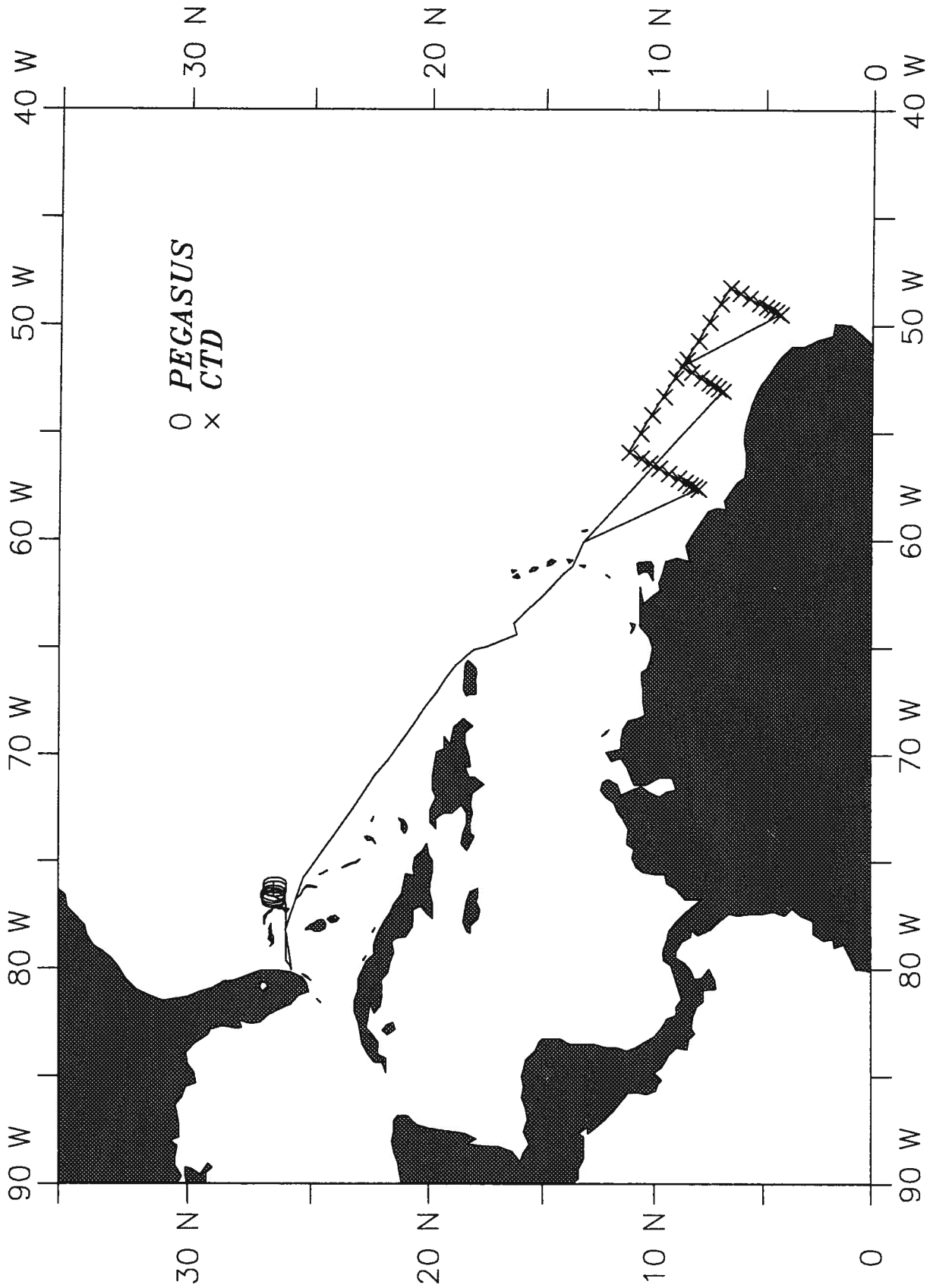


FIGURE 4. STACS Cruise Track for SEPTEMBER 1988 showing CTD & Pegasus sampling stations.

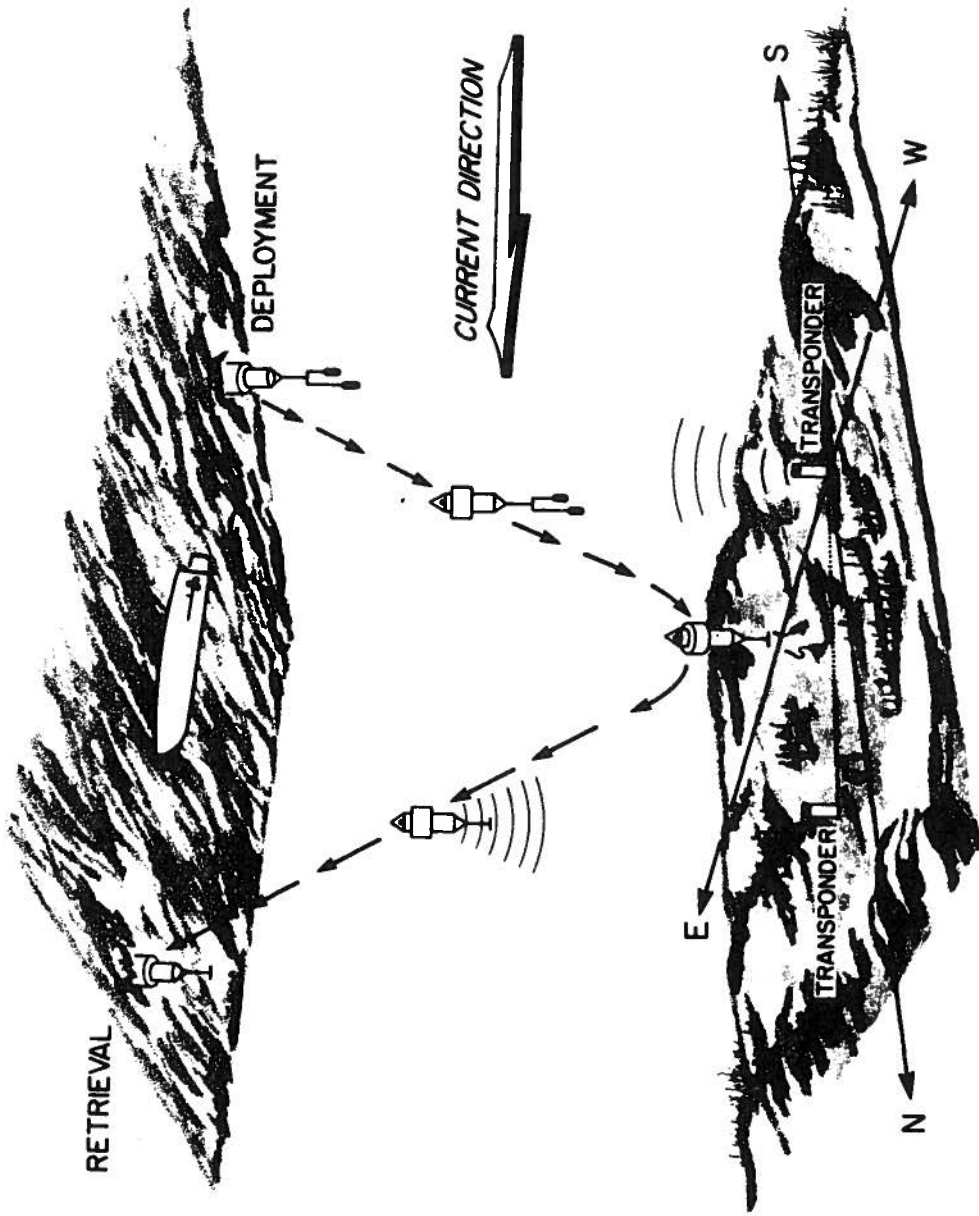


Figure 5: Schematic of the Pegasus current profiler.

Table 1. Types of Data Collected by Cruise.

Cruise	Vessel	Dates	Pegasus	CTD	XBT
February 1988 (WH-88-01-STACS)	WHITING	2/16-3/27/88	6	30	61
June 1988 (WH-88-02-STACS)	WHITING	6/16-7/25/88	2	33	43
September 1988 (MI-88-01-STACS)	MT. MITCHELL	9/12-10/9/88	6	29	149

frequency of 10 KHz at an interval of eight or sixteen seconds. Each transponder responds at a different frequency. The Pegasus internally records the acoustic travel times from the transponders, along with temperature and pressure. Transponder frequency pairs are alternated between stations in order to avoid interference from adjacent stations.

The instrument is weighted at the beginning of the drop and falls at a rate between 20-50 cm/sec. This rate may be adjusted by adding or removing weights. External weights are released by a bottom trip mechanism when the weights touch the ocean floor or by a pressure release when the Pegasus reaches a predetermined depth. The instrument ascends at approximately the same rate as it descends.

Each Pegasus station is defined by a unique geometry (see Table 2). A mean sound velocity profile for each station is used to convert the acoustic travel times from the transponders to the instrument into ranges in meters. The baseline becomes the base of a triangle which is projected onto the bottom. The X and Y coordinates of the instrument at each pressure can then be determined.

Following a Pegasus cast the contents of the instrument's solid state memory are transferred to a Hewlett Packard 85 computer for conversion to decimal values and storage on flexible diskettes. The conversion of raw data to a velocity profile is done on an HP-86 in three steps: editing, calibration and velocity computations. Following is a brief description of each step.

1. Editing

Two files are created for each Pegasus cast: an ASCII character header file on magnetic tape containing cast information and a multi-record data file on magnetic disk. Each record contains decimal values of the original Pegasus memory address, corresponding pressure and temperature sensor output counts and two travel times significant to 10^{-4} second. HP-86 BASIC programs allow graphic display and printed listings of the data for preliminary evaluation of data quality.

Errors can be introduced into the raw data due to instrument hardware errors and into the travel times by acoustic propagation irregularities such as the detection of reflected instead of direct path signals. Erroneous points are hand edited from the record and replaced by points estimated by a low order polynomial fit.

2. Calibration

Prior to each research cruise the Pegasus pressure sensor is calibrated to produce second order polynomial fits of pressure counts versus pressure in decibars (db). Standard deviations from the fits over the working range of the sensors are generally on the order of 1 db. After the raw data has been edited the pressure counts are converted to decibars. Pressure is further smoothed with a five point running mean. Cast limits (surface/bottom/surface) are recorded in the header file and the data are split into downcast and upcast files containing two travel times and pressure (db).

Table 2. Summary of Pegasus Station Geometry off Abaco Island.

Station	Transponder Parameters			Depth (m)	Baseline Length (m)
	Latitude (N)	Longitude (W)	Frequency (KHz)		
15	26°30.83'	76°19.01'	12.0	4810	4296
	26°31.74'	76°21.55'	13.0		
16	26°32.86'	76°29.98'	13.0	4825	4410
	26°32.86'	76°32.65'	11.5		
17	26°35.48'	76°39.30'	12.5	4050	3937
	26°33.72'	76°39.31	12.0		
18	26°32.56'	76°45.29'	13.0	3600	3570
	26°30.53'	76°44.88'	11.5		
19	26°33.07'	76°51.16'	12.0	800	1311
	26°32.22'	76°50.92'	11.5		
34	26°29.90'	76°07.22'	12.5	4810	4197
	26°29.71'	76°09.61'	12.0		
35	26°29.31'	75°32.34'	12.0	4610	4038
	26°29.44'	75°29.94'	12.5		
36	26°30.20'	74°32.97'	12.0	4460	1665
	26°30.12'	74°30.31'	12.5		

3. Velocity Calculation

Given the transponder depths, baseline length, pressure and the travel times, the Pegasus position can be determined. Each station has an associated sound velocity profile used to calculate harmonic mean velocity and thus convert acoustic travel times to distance for input into the position equations. The resulting profiles of X and Y position (in unrotated baseline coordinates) versus depth are smoothed with a seven point convolution. The resulting U and V velocity components are then rotated into a true geographic coordinate system. Each cast produces two profiles: one represents the downcast portion and the other the upcast. Only one profile from each cast is chosen based on a subjective comparison of the up and down profiles and these data for each cruise are presented by increasing cast numbers in Appendix A. The positions represent deployment locations rather than the transponder positions listed in Table 1.

B. CTD Data

1. System Description

The Neil Brown Instrument Mark III CTD system used in STACS includes pressure, temperature, salinity and oxygen sensors. The oxygen data will be described in a future report.

The instrument scans at a rate of 30 scans per second. The descent rate is approximately 30 meters per minute to a depth of 200 meters then increases to 60 meters per minute for the remainder of the cast. CTD values are averaged in one decibar increments. Appendix B contains graphic representations of CTD profiles arranged by cruise and cast number. CTD values are listed at selected depths.

2. Calibration

Laboratory calibrations are used for the CTD pressure and temperature sensors. Reversing thermometer data are in agreement with the CTD temperatures to within $\pm .01^{\circ}\text{C}$. CTD pressures are assumed to be accurate to within ± 6.5 db. Bottle salinities are collected using a rosette sampler lowered with the CTD, with the final values determined using a Guildline Autosol unit. The bottle salinities are used for calibration of the raw CTD data using the methodology described below.

- a. The bottle salinities are edited for obvious bad values, i.e., outliers, by examination of the residual differences between bottle and CTD salinities over the entire water column and by means of graphical comparisons with previous regional STACS and TTO (Williams, 1986 a&b) temperature/salinity relationships in the deep water.
- b. The uncalibrated CTD salinity vs. pressure profiles are examined for conductivity sensor changes and/or drift by examination of the time history of the residual differences between the edited bottle values and the CTD salinities, and divided into calibration subgroups if necessary. An iterative least squares regression is run on the residual (bottle salinity minus CTD salinity) vs. pressure data sets for each subgroup, and linear or polynomial fits are obtained over appropriate portions of the water column.

- c. The uncalibrated CTD salinity profiles are corrected using the results of the regressions, and the TS correlation is again compared with the historical data set as a final quality check. The calibrated CTD salinity and temperature data are despiked, and a final data set subsampled to 2 db spacing is produced.

Discussions of the bottle salinity quality and CTD performance for the individual cruises, and tabulations of the respective calibration corrections, follow.

March 1988:

Due to limitations associated with the winch system onboard the R/V WHITING, most of the CTD casts taken during the March 1988 cruise were limited to 3000 m depth. The bottle salinity data were also not up to satisfactory quality standards during this cruise due to problems with deck and laboratory facilities and as a result the first 7 out of 30 casts did not produce usable bottle salinities. Casts 8 through 30 had usable salinities, but with fairly high scatter, requiring 20% of the values to be discarded during the iterative least-squares analysis of the bottle-CTD residual values.

After discarding these values, the remaining 80% of the data showed a consistent correction (where dS is added to the uncalibrated CTD salinity values) of $dS = -.001 \pm .003$ ppt, with no significant depth dependence, as shown in Figure 6a. (In other words, the raw CTD data were nearly correct without any calibration.) A $-.001$ ppt correction was applied uniformly to casts 1 through 30, and comparisons with the historical regional TS correlation produced satisfactory results.

July 1988:

The maximum depth of the CTD casts taken during the July 1988 cruise was 2600 m, due again to limitations associated with the winch system. The bottle salinity data were better during July 1988 than March 1988, with 92 to 96% of the values used for the least squares fit to the CTD values over the first 20 of the total of 33 CTD casts. However, the CTD performance was not as good as during the March 1988 cruise, exhibiting a $-.005$ ppt linear drift over time from the tenth cast to the end of the cruise. In addition, the first 20 casts showed a depth dependence in the upper 500 to 1000 m which required the use of a linear fit in the upper portion of the water column, and a constant correction in the deeper water. The changeover depth (1000 to 1500 m) was selected such that the two calibration fits agreed to within $.001$ ppt. An example of the analysis is shown in Figure 6b. The various subgroup corrections are tabulated below, with the percentage of the bottle values used in the analysis. Comparisons with the historical regional TS correlation in the deep water confirmed that the final calibrated data were satisfactory despite the CTD drift problem.

<u>Casts</u>	<u>Calibration Correction</u>
1-10	< 1000 m: $dS = .003 \text{ ppt} + 4.36e^{-6} * \text{pressure}$ > 1000 m: $dS = .007 \pm .002 \text{ ppt}$ (92%)
11-15	< 1500 m: $dS = .002 \text{ ppt} + 2.16e^{-6} * \text{pressure}$ > 1500 m: $dS = .005 \pm .002 \text{ ppt}$ (94%)

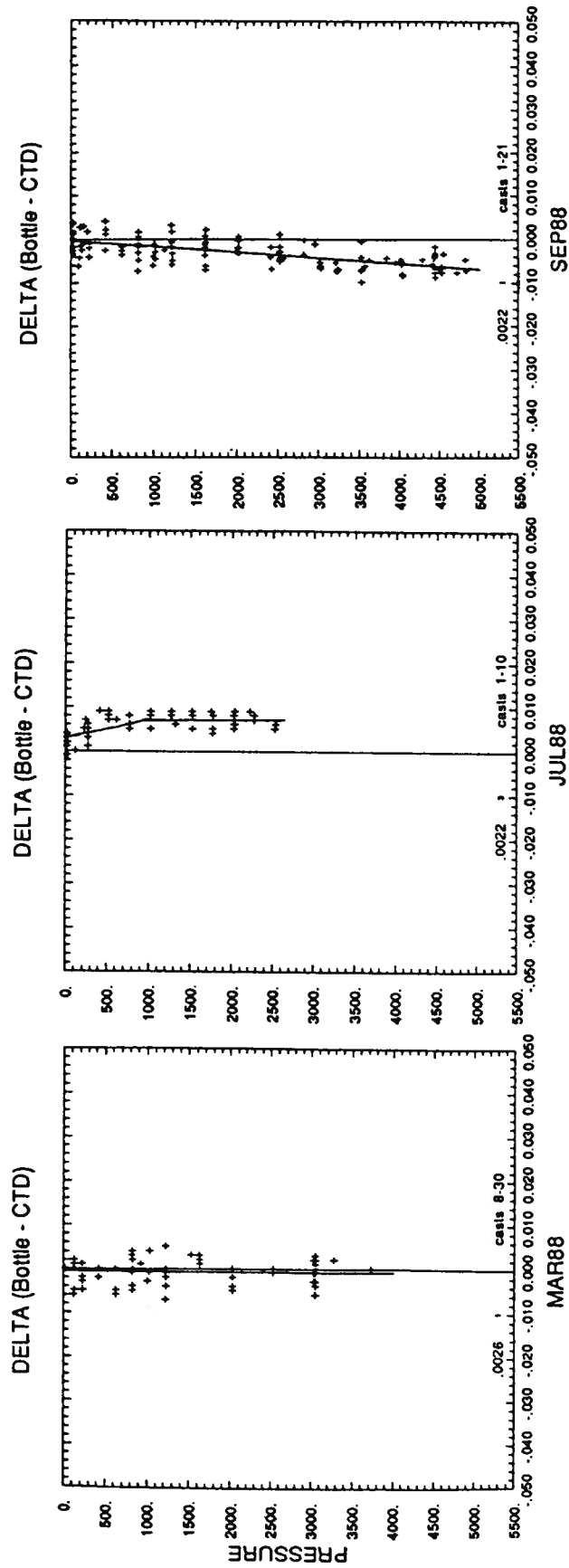


Figure 6. Calibration regression analysis for the March (4a), July (4b), and September (4c) 1988 cruises. Bottle salinity minus uncalibrated CTD salinity values in ppt are shown as +'s vs. pressure in db, and the various linear fits which were used for the calibration are shown as the solid curves. Standard deviation values are indicated at the lower left of each panel.

<u>Casts</u>	<u>Calibration Correction</u>
16-20	< 1000 m: $dS = .002 \text{ ppt} + 2.16e^{-6} * \text{pressure}$ > 1000 m: $dS = .004 \pm .002 \text{ ppt} (96\%)$
21-26	> 0 m: $dS = .003 \pm .003 \text{ ppt} (80\%)$
27-33	> 0 m: $dS = .002 \pm .002 \text{ ppt} (65\%)$

September 1988:

The bottle salinity data quality and CTD performance were both improved during most of this cruise over the two previous 1988 cruises, with one simple linear calibration fit used for the first 21 out of 29 casts. During the last 8 casts of the cruise the Autosal malfunctioned, and the bottle salinity data were not usable. However, these 8 casts were taken east of Abaco, the Bahamas, and extended to the bottom (> 5000 m) where the historical TS relationship is very predictable. Therefore, the historical values were used in the deep water, with the same linear slope as casts 1-21 applied. The difference between the two calibrations is only $-.003 \text{ ppt}$, but this is significant in the deep water. The calibration fits are tabulated below, with the percentage of the bottle values used in the computation, and the analysis from casts 1-21 is shown in Figure 6c. Comparison with the historical regional TS correlation confirmed that the calibration was satisfactory.

<u>Casts</u>	<u>Calibration Correction</u>
1-21	$dS = -.000 \text{ ppt} - 1.35e^{-6} * \text{pressure} \pm .002 \text{ ppt} (94\%)$
22-29	$dS = -.003 \text{ ppt} - 1.35e^{-6} * \text{pressure} (\text{historical TS})$

C. XBT Data

T-4, T-5, T-6 and T-7 expendable bathythermograph (XBT) probes were used during all of the cruises covered in this data report. Appendix C presents XBT data by cruises and cast number.

III. REFERENCES

- Leaman, K. D. and P. S. Vertes, 1983. The Subtropical Atlantic Climate Study (STACS), 1982. Summary of RSMAS Pegasus observations in the Florida Straits. Technical Report UM RSMAS No. 83012, 154 pp.
- Mantyla, A. W., 1986. Standard seawater comparisons updated. J. Phys. Oceanogr., 17, 543-548.
- Molinari, R. L., W. D. Wilson and K. D. Leaman, 1985. Volume and heat transports of the Florida Current: April 1982 through August 1983. Science, 227, 295-297.
- Ratnaswamy, M. J., D. Wilson and R. L. Molinari, 1985: Current velocity and hydrographic observations in the Straits of Florida: Subtropical Atlantic Climate Study (STACS), 1983 and 1984. NOAA Data Report ERL AOML-5.
- Spain, P. F., D. L. Dorson and H. T. Rossby, 1981. Pegasus: A simple acoustically-tracked velocity profiler. Deep-Sea Res., 28A, 1553-1567.
- Vertes, P. S. and K. D. Leaman, 1984. The Subtropical Atlantic Climate Study (STACS), 1983. Summary of RSMAS Pegasus observations in the Florida Straits. Technical Report UM RSMAS No. 84002, 172 pp.
- Wilburn, A. M., E. Johns, and M. Bushnell, 1987a. Current velocity and hydrographic observations in the Straits of Florida, the Caribbean Sea and offshore of the Antillean Archipelago: Subtropical Atlantic Climate Studies (STACS), 1984 and 1985. NOAA Data Report ERL AOML-8, 194 p.
- Wilburn, A. M., E. Johns, and M. Bushnell, 1987b. Current velocity and hydrographic observations in the Straits of Florida, the Caribbean Sea and offshore of the Antillean Archipelago: Subtropical Atlantic Climate Studies (STACS), 1986. NOAA Data Report ERL AOML-10, 247 p.
- Wilburn, A. M., E. Johns, and M. Bushnell, 1988. Current velocity and hydrographic observations in the southwestern North Atlantic Ocean: Subtropical Atlantic Climate Studies (STACS), 1987. NOAA Data Report ERL AOML-12, 86 p.
- Williams, E. J., E. Marmolejo, D. Wilson and R. L. Molinari, 1983. Current velocity profiles in the Straits of Florida from the Pegasus current profiler: Subtropical Atlantic Climate Study (STACS), 1982. NOAA Technical Memorandum ERL AOML-55, 181 pp.
- Williams, R. T., 1986. Transient Tracers in the Ocean, North Atlantic Study. Shipboard Physical and Chemical Data Report. Physical and Chemical Oceanographic Data Facility, Scripps Institution of Oceanography. Univ. of California, San Diego. SIO Reference No. 86-15, 714 pp.
- Williams, R. T., 1986. Transient Tracers in the Ocean, Tropical Atlantic Study. Shipboard Physical and Chemical Data Report. Physical and Chemical Oceanographic Data Facility, Scripps Institution of Oceanography. Univ. of California, San Diego. SIO Reference No. 86-16, 300 pp.

IV. ACKNOWLEDGMENTS

The extensive efforts of the officers and crew of the NOAA Ships WHITING and MT. MITCHELL are gratefully acknowledged. Contributions by scientific and technical personnel Bob Molinari, Doug Anderson, Bob Roddy, Warren Krug, and Dave Bitterman of NOAA/AOML and Leslie Rosenfeld of the University of Miami (RSMAS) are greatly appreciated.

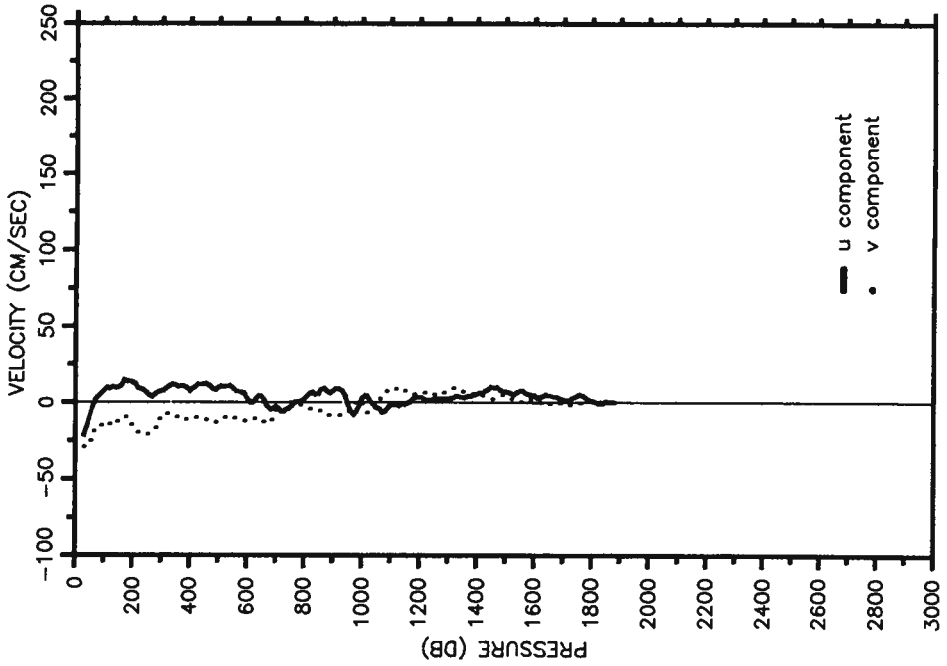
APPENDIX A: PEGASUS DATA

Casts are presented by cruise and increasing cast number. The cruise number and vessel, Pegasus cast and station number, Julian day and time, and position are shown at the top of each plot. "U" represents the east component of velocity. "V" represents the north component. Casts where there are no data values given for the U and V components indicate that the transponders signals were not being received by the Pegasus instrument at the given depth.

WHI-STACS30-88 PEGASUS 1 STN 35
 R/V WHITING JDAY 81 TIME 0417Z
 Latitude 26.453 N Longitude 075.534 W

Prs U V

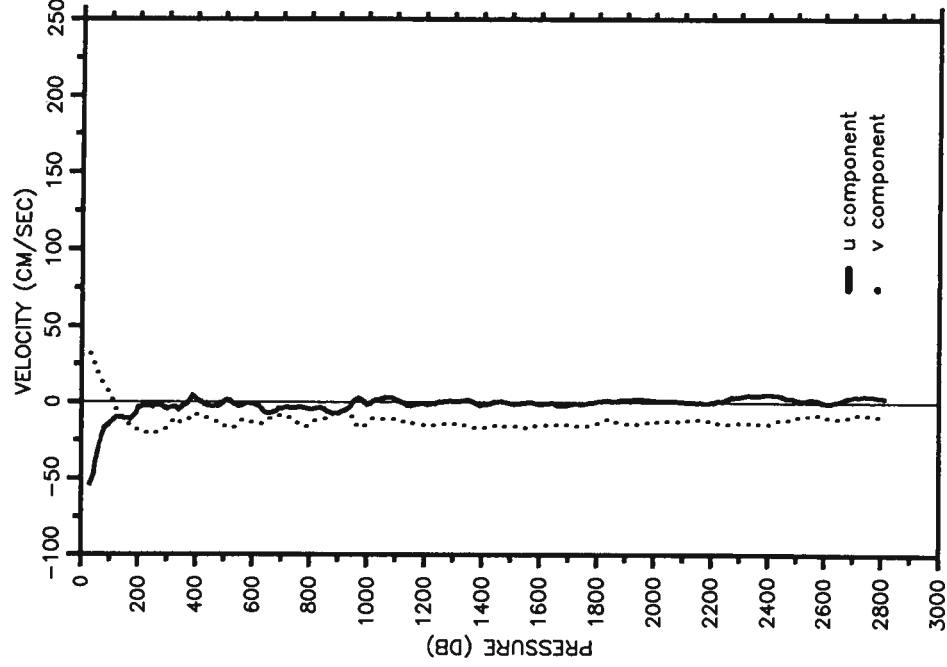
30	-21.3	-29.1
40	-14.4	-29.0
50	-8.3	-26.1
60	-2.8	-21.6
70	2.0	-15.7
80	4.1	-15.0
90	6.5	-14.9
100	8.2	-13.2
110	9.5	-13.0
120	9.3	-14.7
130	10.1	-15.5
140	9.7	-13.4
150	10.1	-11.3
160	11.2	-9.8
170	14.5	-9.1
180	14.0	-10.0
190	13.9	-12.8
200	13.4	-15.9
250	6.2	-20.9
300	7.8	-8.9
350	11.4	-8.9
400	7.8	-10.2
450	12.4	-11.3
500	9.8	-12.0
550	9.5	-9.4
600	3.0	-11.9
650	3.9	-11.6
700	-2.7	-5.1
750	-3.3	0.2
800	2.3	-2.8
850	6.1	-4.8
900	7.6	-8.1
950	-0.1	-8.4
1000	2.6	-0.5
1500	7.0	4.5
1880	0.1	0.7



WHI-STACS30-88 PEGASUS 2 STN 34
 R/V WHITING JDAY 81 TIME 1723Z
 Latitude 26.468 N Longitude 076.146 W

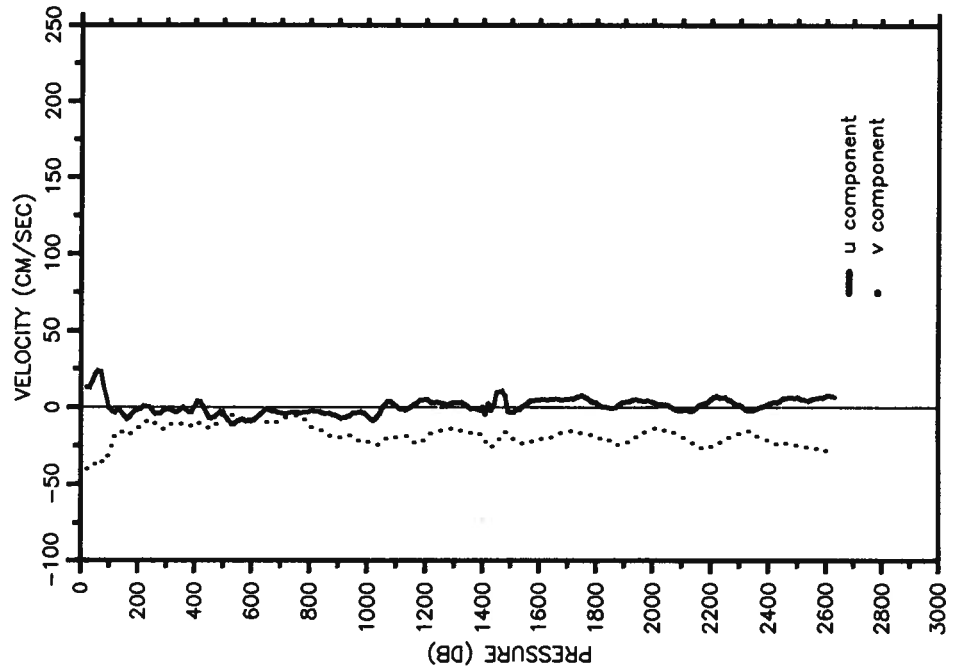
Prs U V

30	-53.5	31.8
40	-47.7	27.9
50	-38.1	21.7
60	-30.3	16.6
70	-22.0	13.1
80	-17.1	10.2
90	-15.3	7.4
100	-14.3	4.2
110	-11.7	-0.5
120	-10.2	-6.3
130	-9.8	-8.0
140	-10.3	-9.9
150	-10.7	-12.5
160	-10.8	-14.6
170	-11.1	-15.5
180	-9.3	-17.3
190	-7.4	-17.6
200	-3.7	-18.7
250	-2.8	-19.3
300	-4.1	-16.0
350	-3.4	-13.4
400	2.5	-8.2
450	-2.4	-11.9
500	0.4	-15.8
550	-2.3	-12.8
600	-1.0	-13.9
650	-6.9	-12.2
700	-4.0	-8.9
750	-3.5	-13.2
800	-4.5	-15.0
850	-4.6	-10.9
900	-7.0	-5.6
950	0.0	-11.7
1000	-1.0	-13.2
1500	-0.9	-15.6
2000	1.2	-12.6
2500	1.9	-9.6
2810	3.1	-10.2



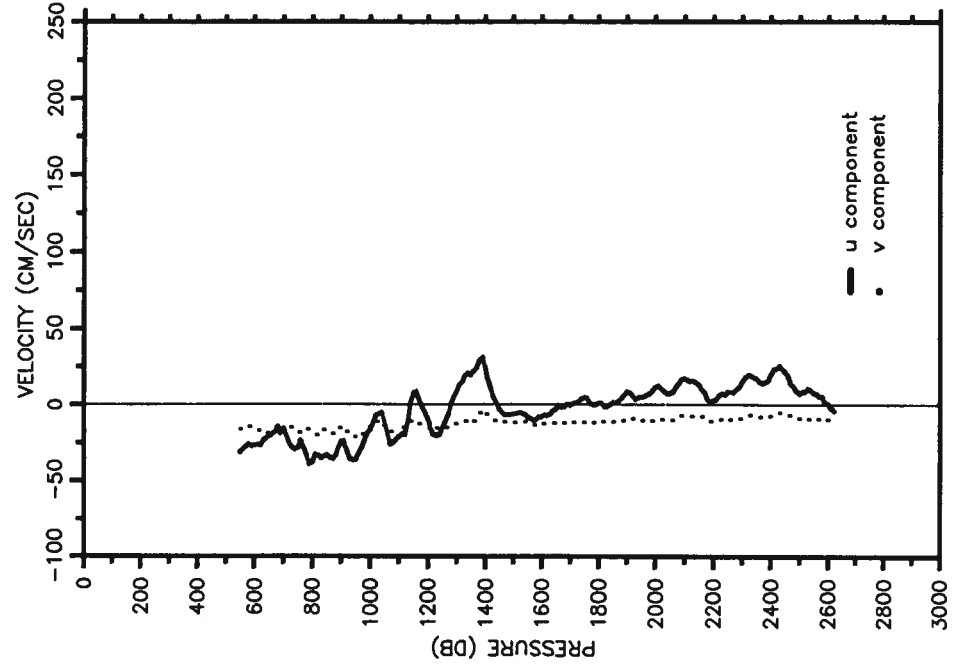
WHI-STACS30-88 PEGASUS 3 STN 15
 R/V WHITING JDAY 82 TIME 0519Z
 Latitude 26.496 N Longitude 076.344 W

Prs U V



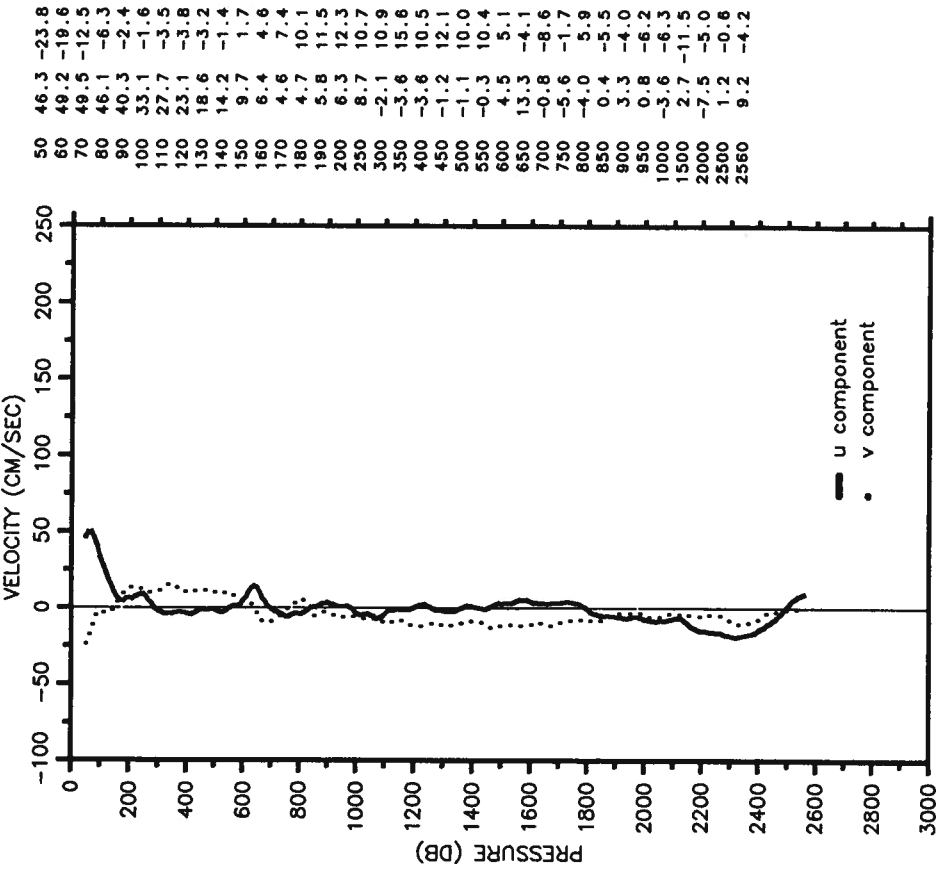
WHI-STACS30-88 PEGASUS 4 STN 16
 R/V WHITING JDAY 82 TIME 1102Z
 Latitude 26.532 N Longitude 076.492 W

Prs U V



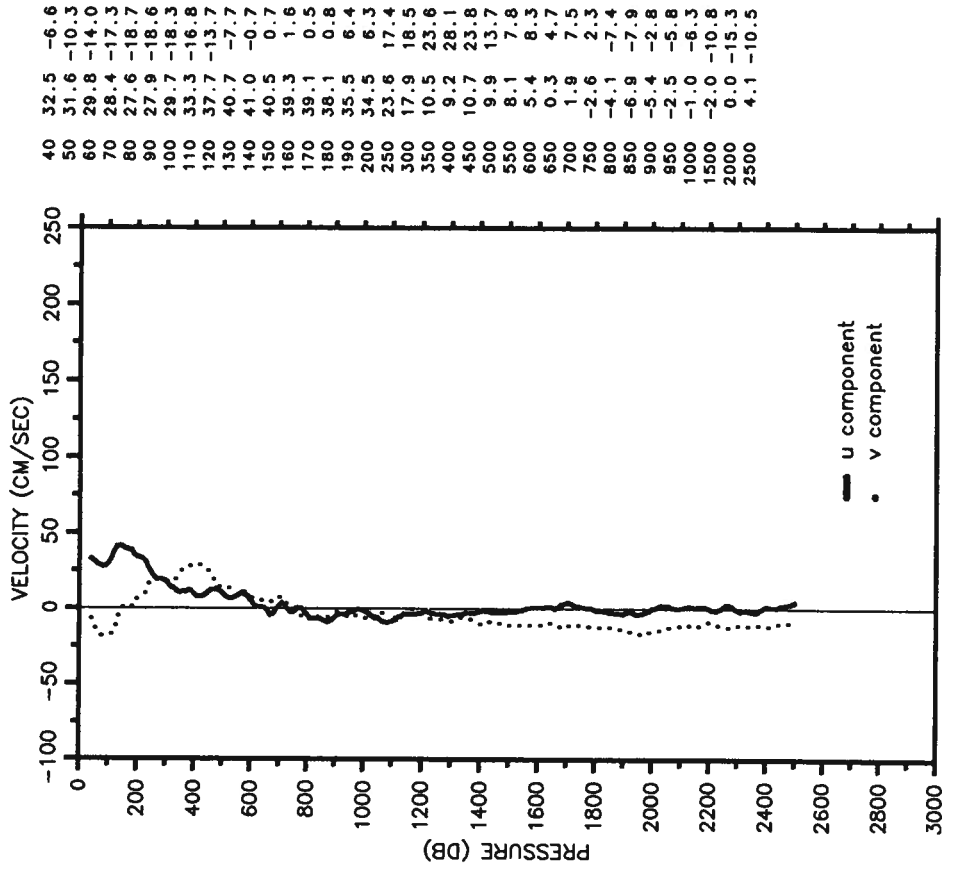
WHI-STACS30-88 PEGASUS 5 STN 17
 R/V WHITING JDAY 82 TIME 1626Z
 Latitude 26.573 N Longitude 076.624 W

Prs U V

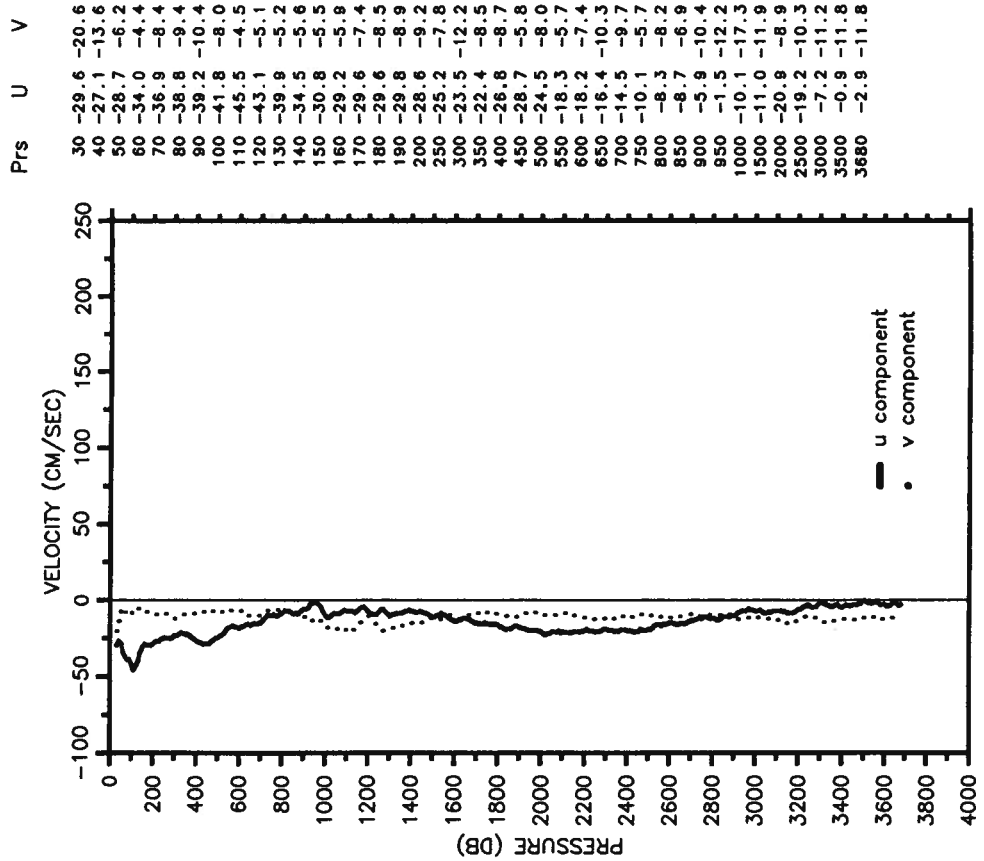


WHI-STACS30-88 PEGASUS 6 STN 18
 R/V WHITING JDAY 82 TIME 2138Z
 Latitude 26.530 N Longitude 076.736 W

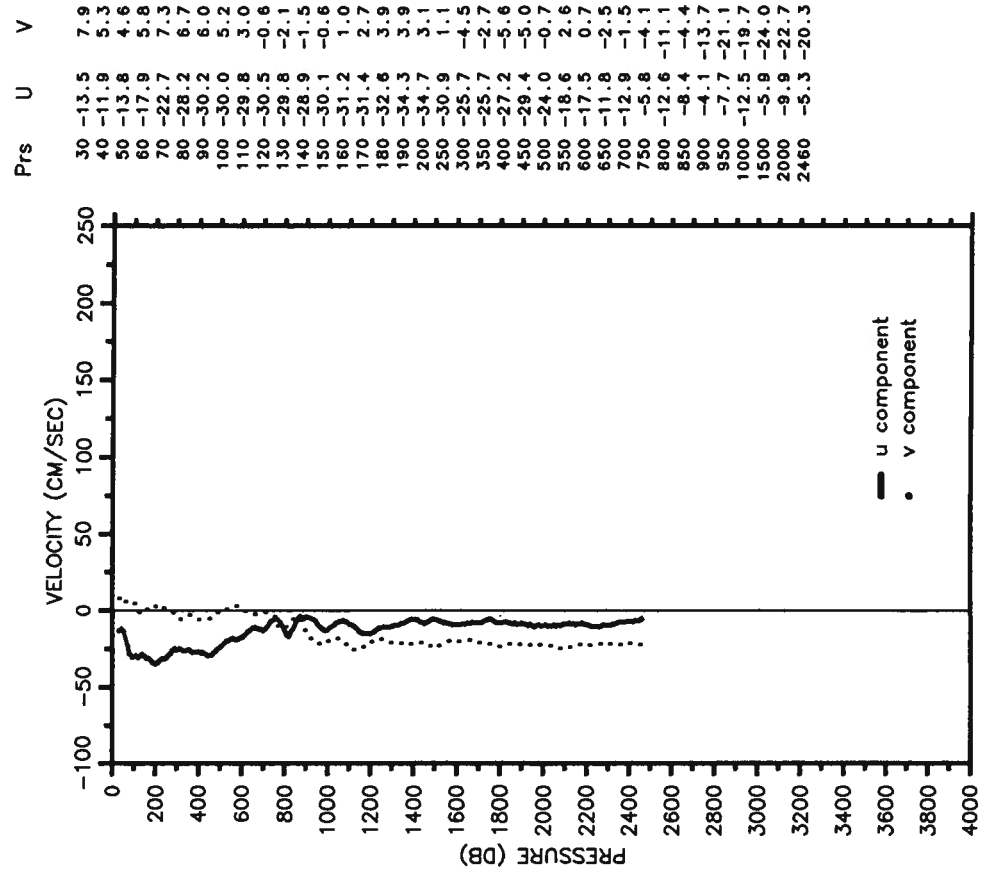
Prs U V



WHI-STACS31-88 PEGASUS 1 STN 34
 R/V WHITING JDAY 171 TIME 0437Z
 Latitude 26.447 N Longitude 076.134 W

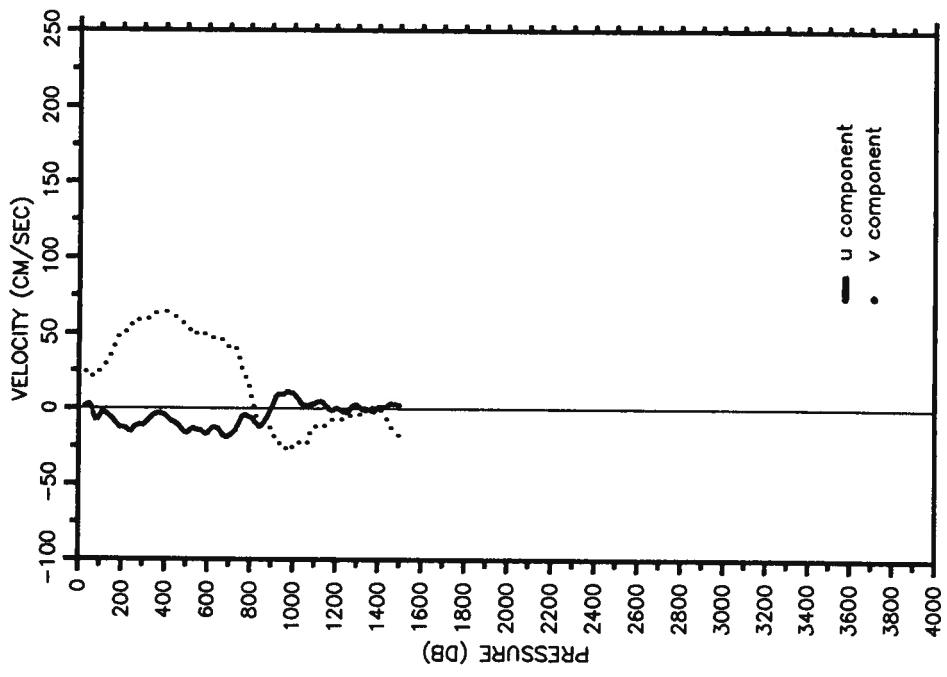


WHI-STACS31-88 PEGASUS 2 STN 15
 R/V WHITING JDAY 172 TIME 0426Z
 Latitude 26.477 N Longitude 076.322 W



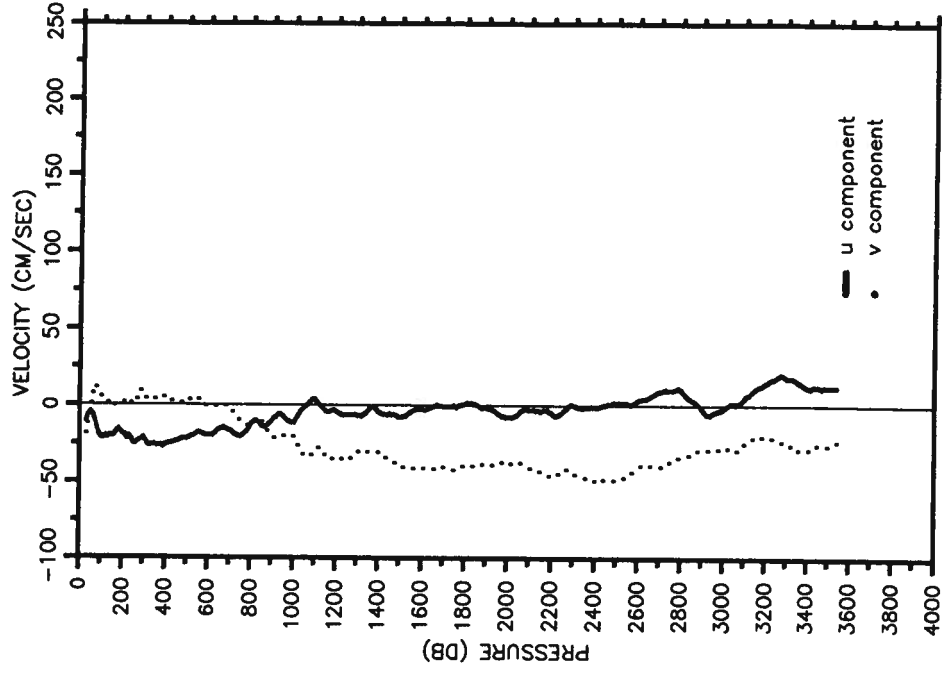
MIT-STACS32-88 PEGASUS 11 STN 19
 R/V MT MITCHELL JDAY 279 TIME 0355Z
 Latitude 26.529 N Longitude 076.806 W

Prs U V

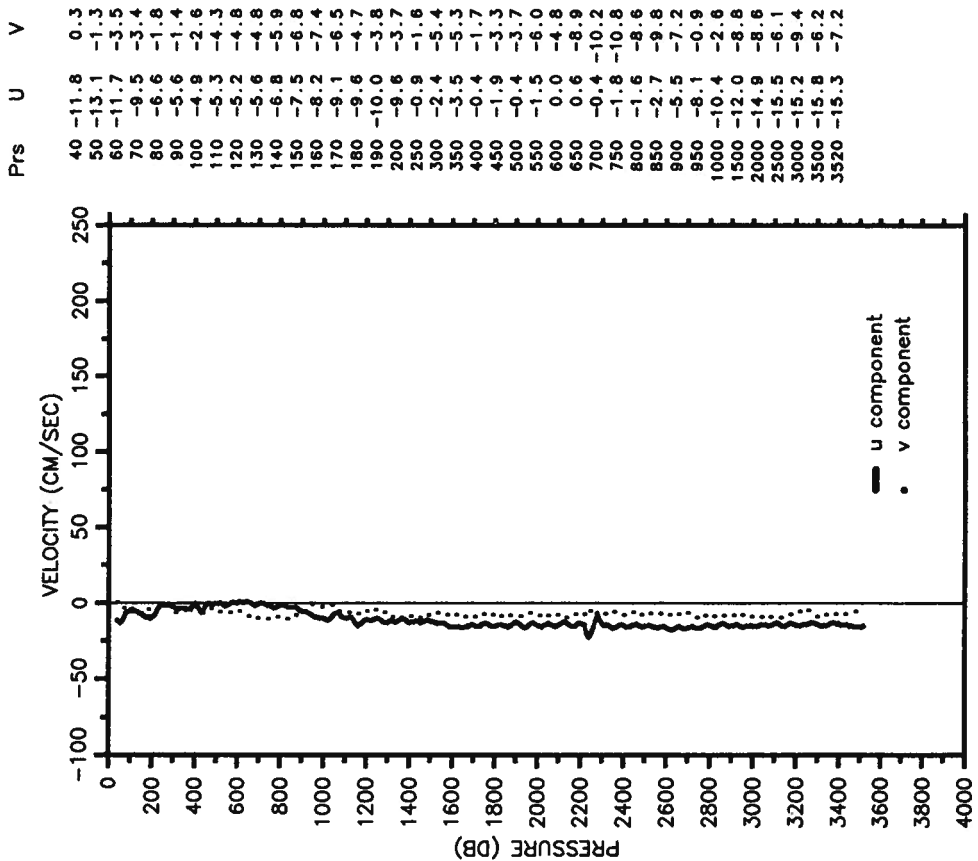


MIT-STACS32-88 PEGASUS 12 STN 16
 R/V MT MITCHELL JDAY 280 TIME 0503Z
 Latitude 26.501 N Longitude 076.505 W

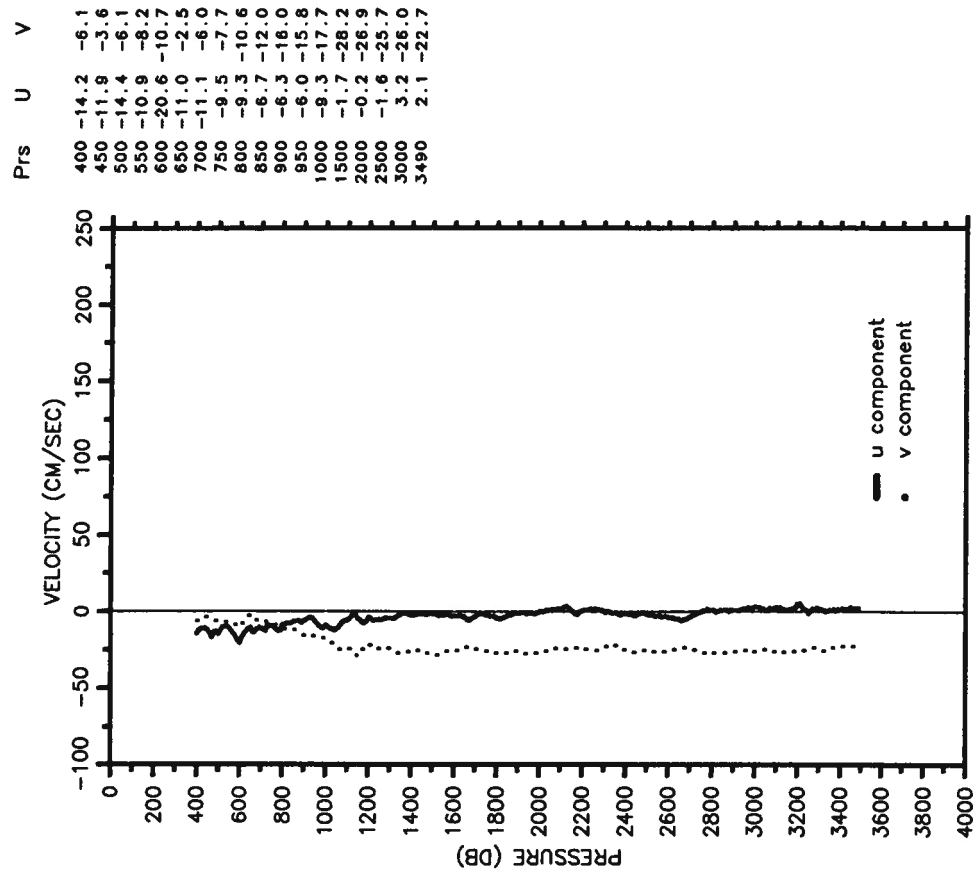
Prs U V



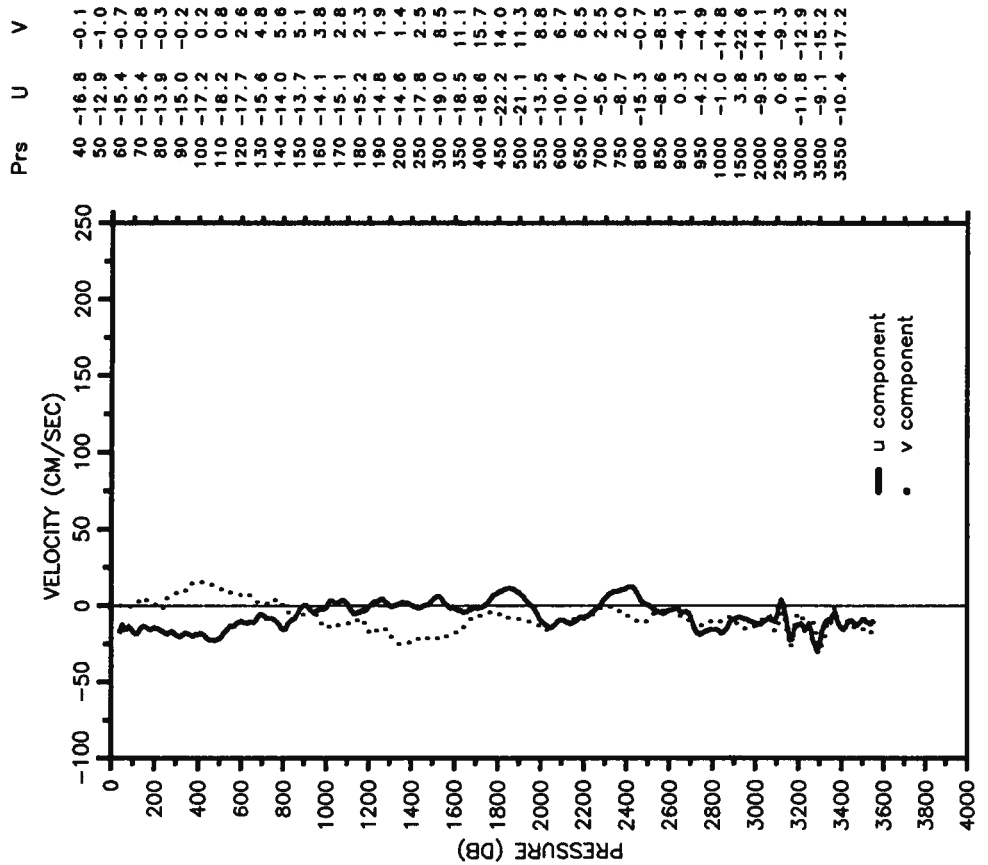
MIT-STACS32-88 PEGASUS 13 STN 34
 R/V MT MITCHELL JDAY 280 TIME 1947Z
 Latitude 26.461 N Longitude 076.115 W



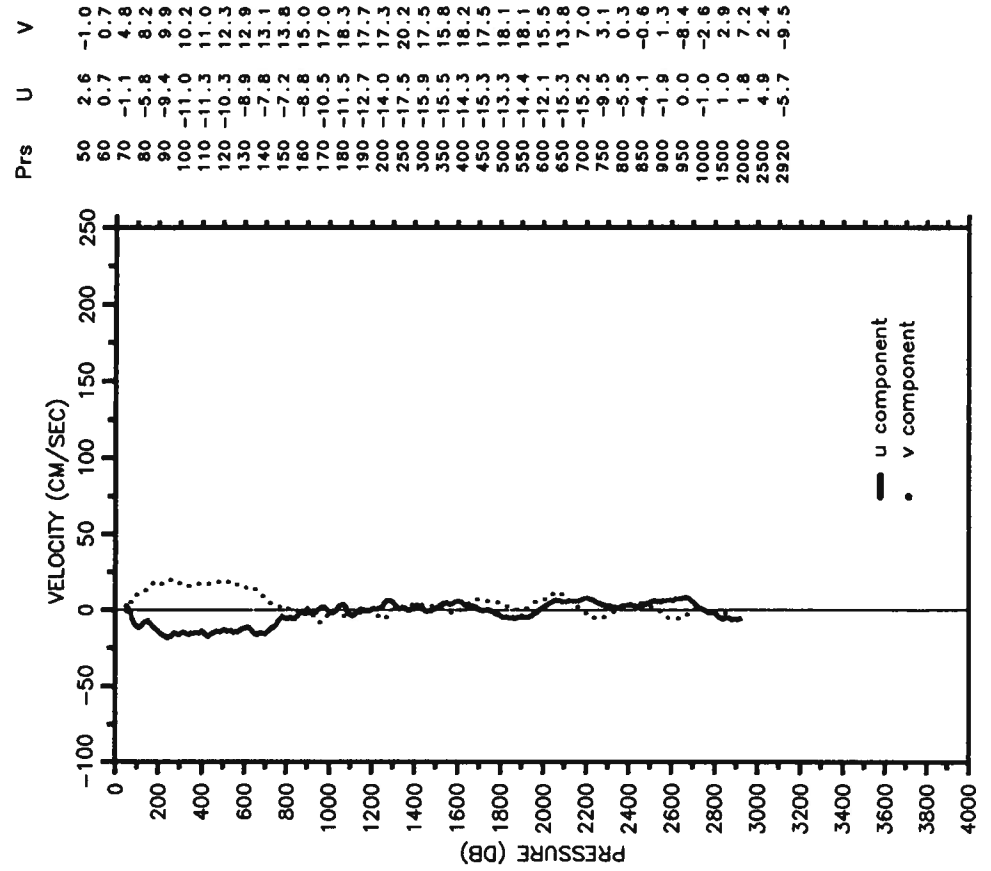
MIT-STACS32-88 PEGASUS 14 STN 15
 R/V MT MITCHELL JDAY 281 TIME 0111Z
 Latitude 26.465 N Longitude 076.293 W



MIT-STACS32-88 PEGASUS 15 STN 17
 R/V MT MITCHELL JDAY 281 TIME 0903Z
 Latitude 26.563 N Longitude 076.606 W



MIT-STACS32-88 PEGASUS 16 STN 18
 R/V MT MITCHELL JDAY 281 TIME 2220Z
 Latitude 26.510 N Longitude 076.713 W

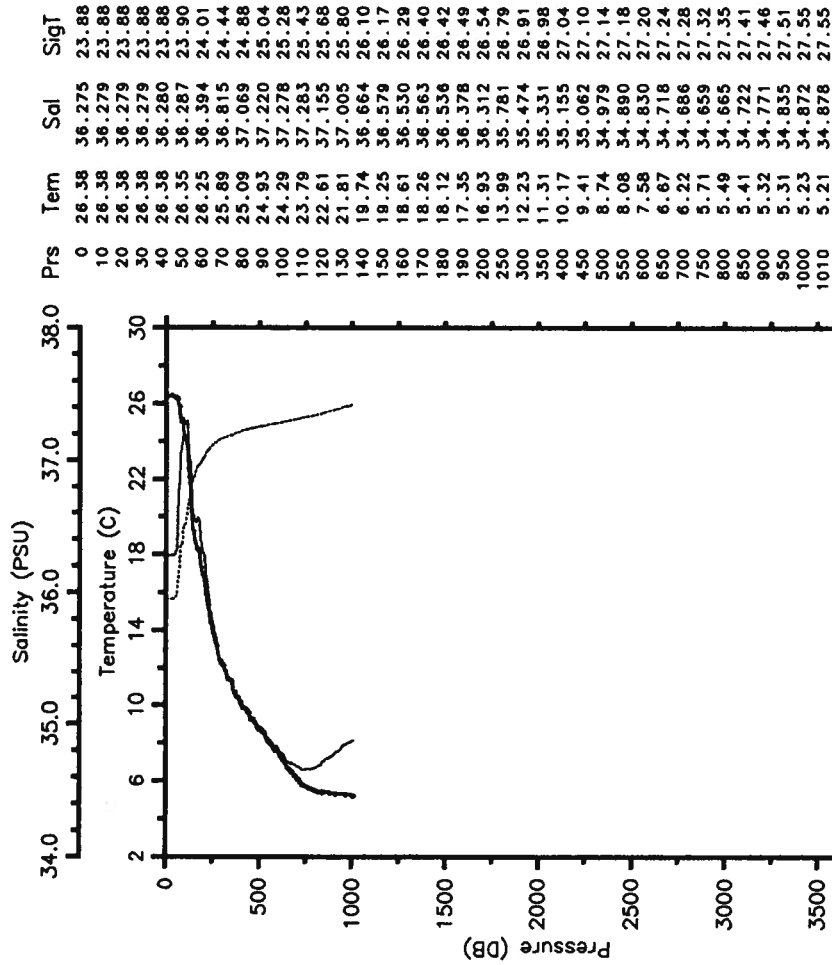


APPENDIX B: CTD DATA

Casts are presented by cruise and increasing cast number. Julian day and time, cruise number and vessel, and position are given at the top of each plot. Temperature, salinity and sigma-t profiles are shown for each cast.

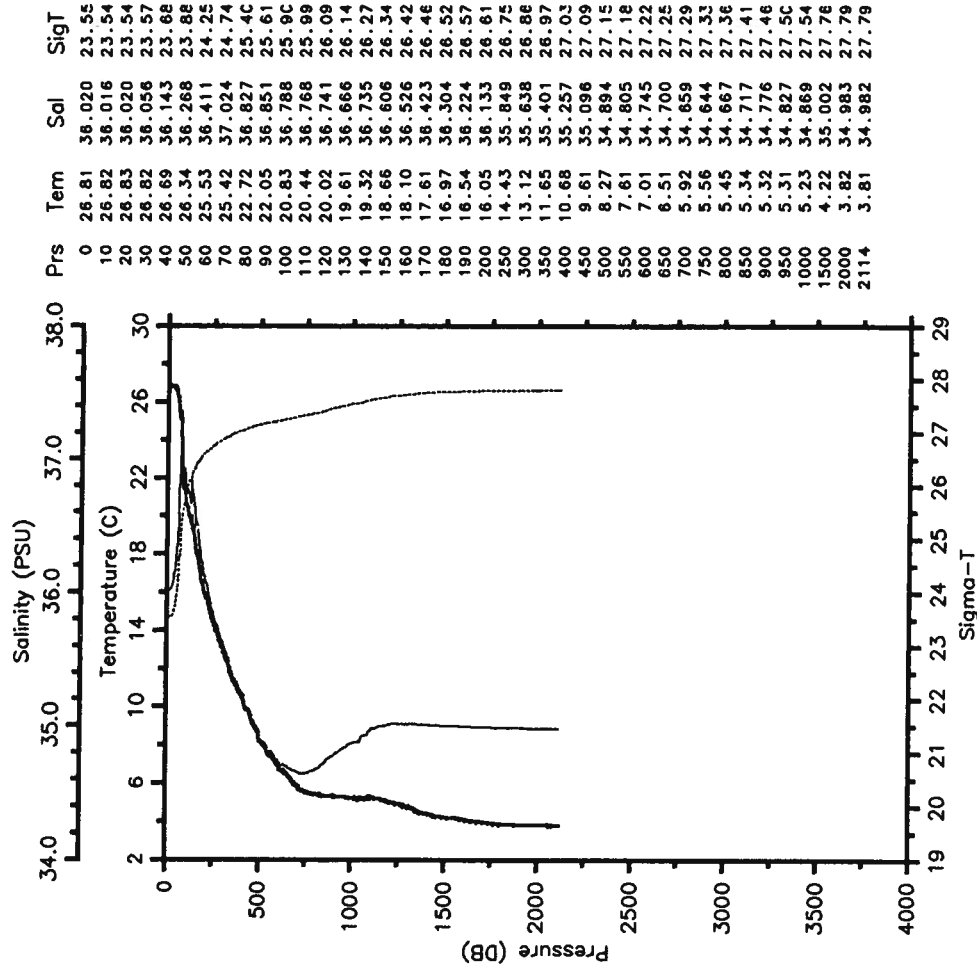
WHI-STACS30-88 CTD 1 WHITING
 Date 03 04 88 Latitude 12.986 N
 Time 1855 Z Longitude 60.931 W

— Tem — Sal
 SigT



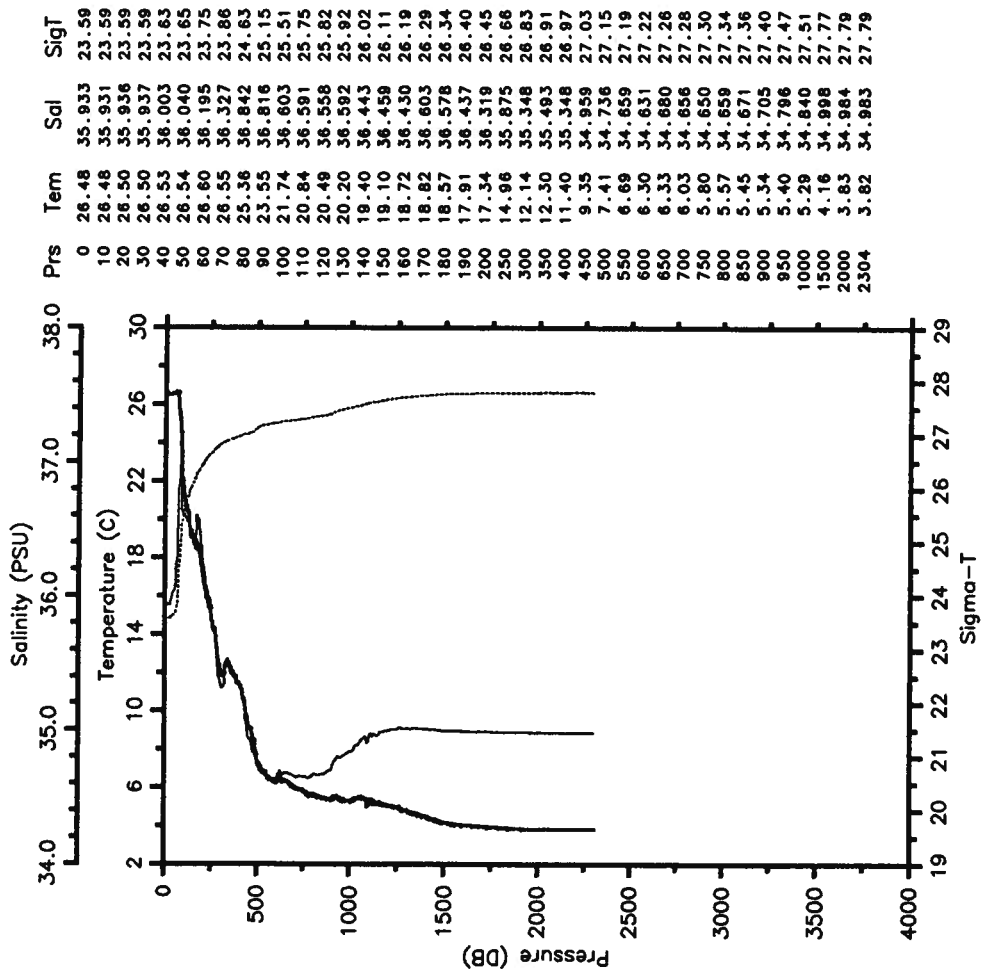
WHI-STACS30-88 CTD 2 WHITING
 Date 03 04 88 Latitude 13.020 N
 Time 2230 Z Longitude 60.647 W

— Tem — Sal
 SigT



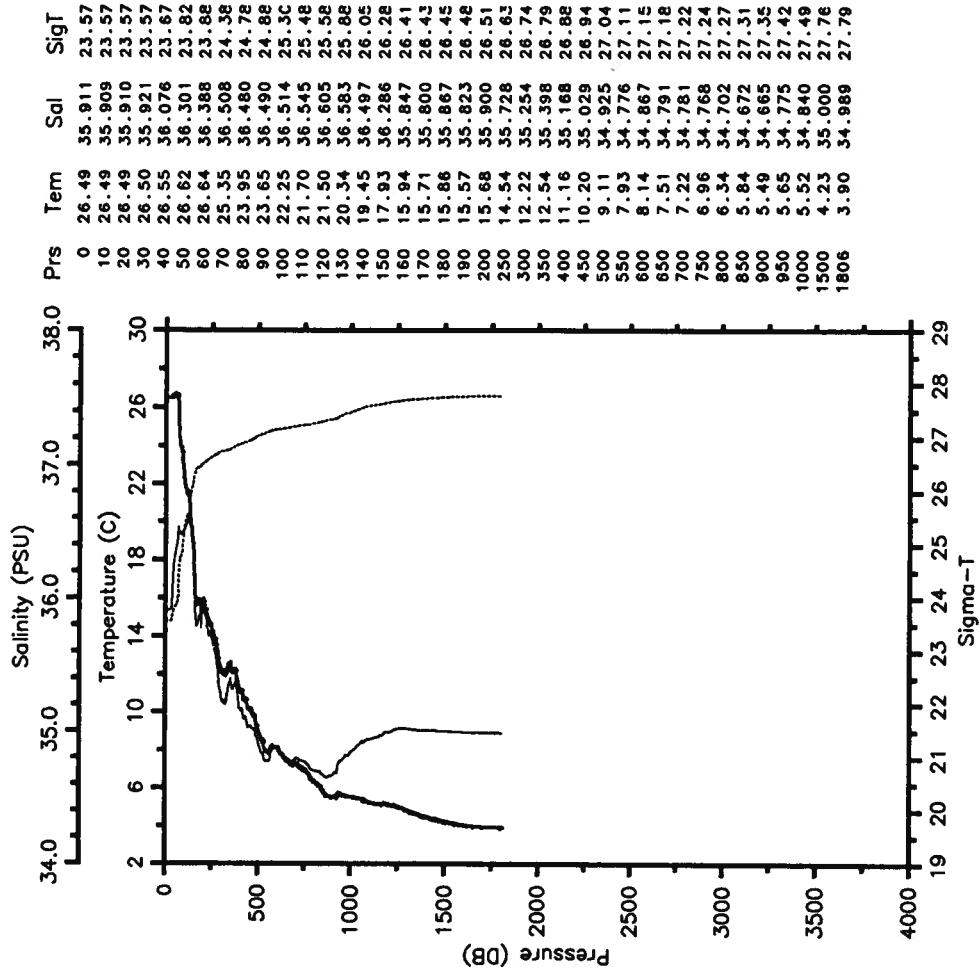
WHI-STACS30-88 CTD 3 WHITING
 Date 03 05 88 Latitude 13.012 N
 Time 0305 Z Longitude 60.303 W

— Tem — Sal
 SigT



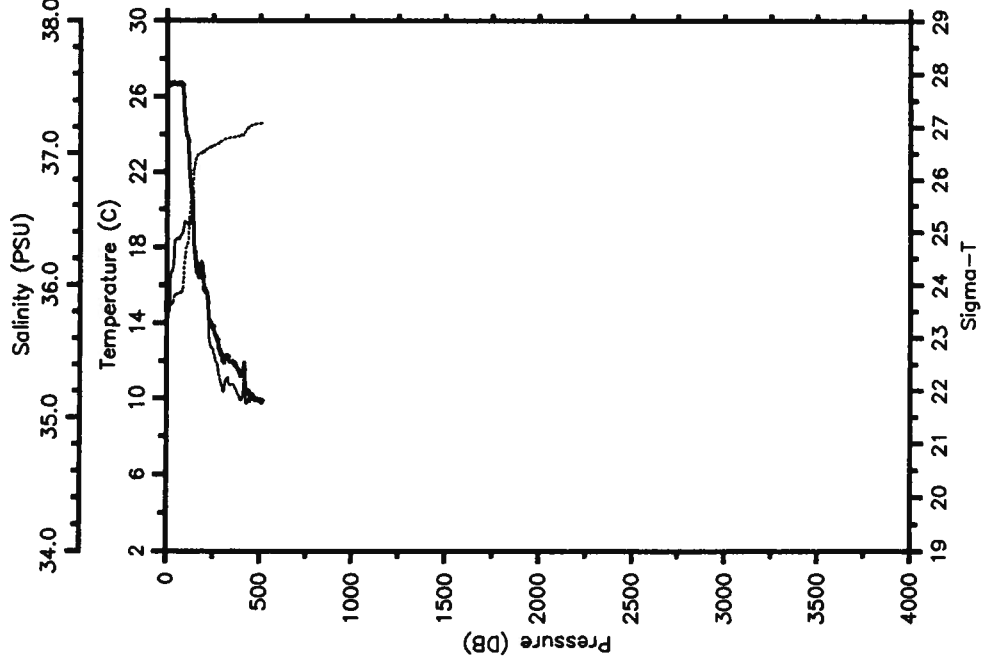
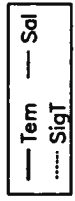
WHI-STACS30-88 CTD 4 WHITING
 Date 03 05 88 Latitude 12.979 N
 Time 0735 Z Longitude 60.001 W

— Tem — Sal
 SigT



WHI-STACS30-88 CTD 5 WHITING

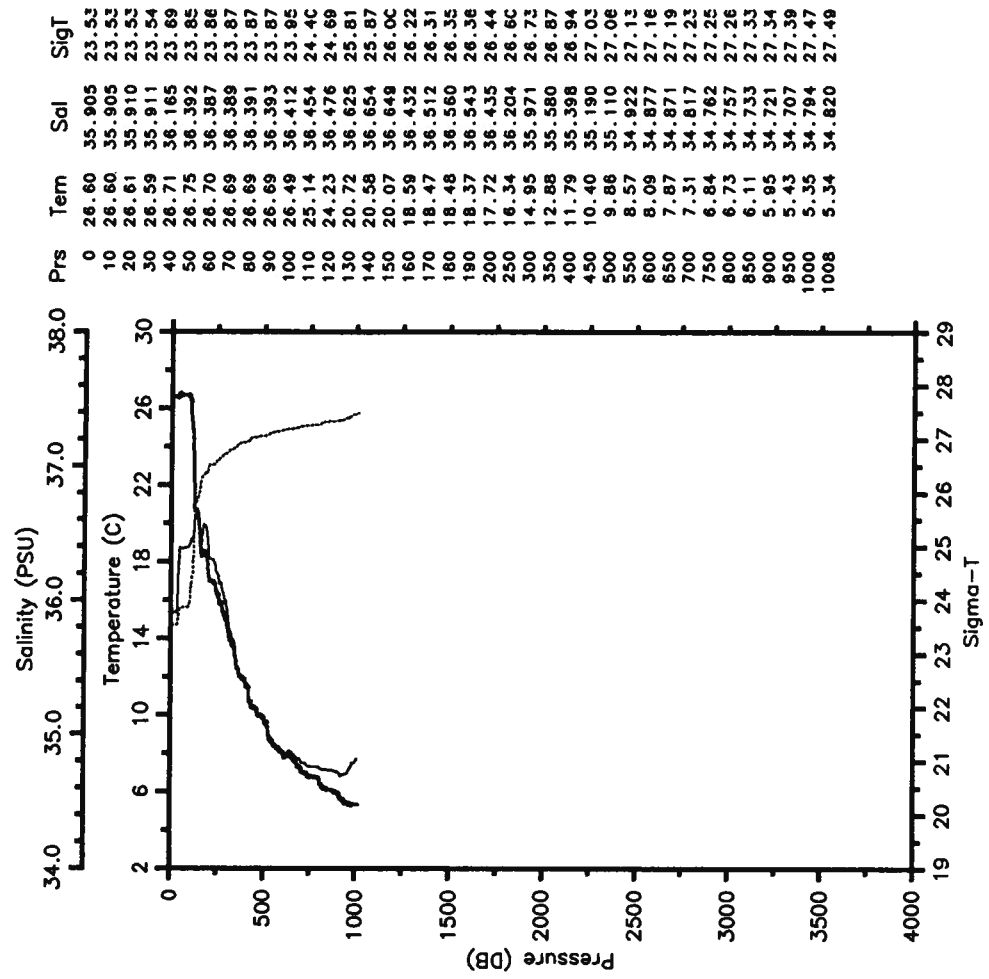
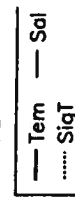
Date 03 05 88 Latitude 13.028 N
 Time 1050 Z Longitude 59.684 W



Prs	Tem	Sal	SigT
0	26.58	35.792	23.45
10	26.57	35.804	23.46
20	26.70	36.087	23.63
30	26.68	36.104	23.66
40	26.69	36.283	23.79
50	26.68	36.347	23.84
60	26.68	36.355	23.84
70	26.67	36.363	23.85
80	26.65	36.387	23.88
90	26.08	36.430	24.09
100	24.39	36.471	24.64
110	23.87	36.469	24.79
120	22.47	36.469	25.20
130	20.92	36.514	25.67
140	19.68	36.422	25.93
150	17.52	36.200	26.31
160	16.66	36.118	26.45
170	16.57	36.116	26.47
180	16.54	36.131	26.49
190	16.60	36.172	26.51
200	15.83	35.977	26.54
250	13.78	35.515	26.63
300	12.05	35.208	26.74
350	11.94	35.249	26.80
400	11.21	35.129	26.84
450	10.18	35.135	27.03
500	9.91	35.122	27.06
510	9.83	35.121	27.08

WHI-STACS30-88 CTD 6 WHITING

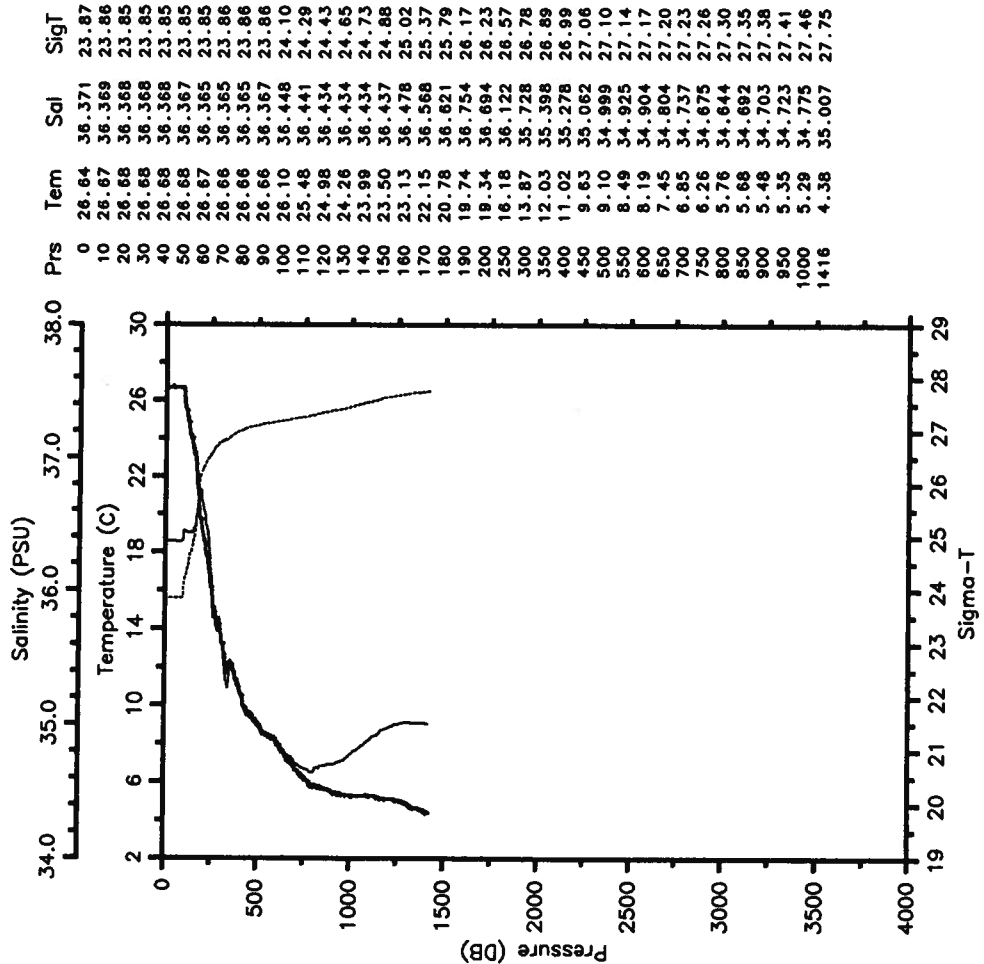
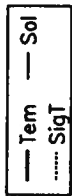
Date 03 05 88 Latitude 13.008 N
 Time 1327 Z Longitude 59.355 W



Prs	Tem	Sal	SigT
0	26.60	35.905	23.53
10	26.60	35.905	23.53
20	26.61	35.910	23.53
30	26.59	35.911	23.54
40	26.71	36.165	23.69
50	26.75	36.392	23.85
60	26.70	36.387	23.88
70	26.69	36.389	23.87
80	26.69	36.391	23.87
90	26.69	36.393	23.87
100	26.49	36.412	23.85
110	25.14	36.454	24.46
120	24.23	36.476	24.69
130	20.72	36.625	25.81
140	20.58	36.654	25.87
150	20.07	36.648	26.06
160	18.59	36.432	26.22
170	18.47	36.512	26.31
180	18.48	36.560	26.35
190	18.37	36.543	26.36
200	17.72	36.435	26.44
250	16.34	36.204	26.60
300	14.95	35.971	26.72
350	12.88	35.580	26.87
400	11.79	35.398	26.94
450	10.40	35.190	27.02
500	9.86	35.110	27.08
550	8.57	34.922	27.12
600	8.09	34.877	27.16
650	7.87	34.871	27.19
700	7.31	34.817	27.23
750	6.84	34.762	27.25
800	6.73	34.757	27.26
850	6.11	34.733	27.33
900	5.95	34.721	27.34
950	5.43	34.707	27.39
1000	5.35	34.794	27.47
1008	5.34	34.820	27.49

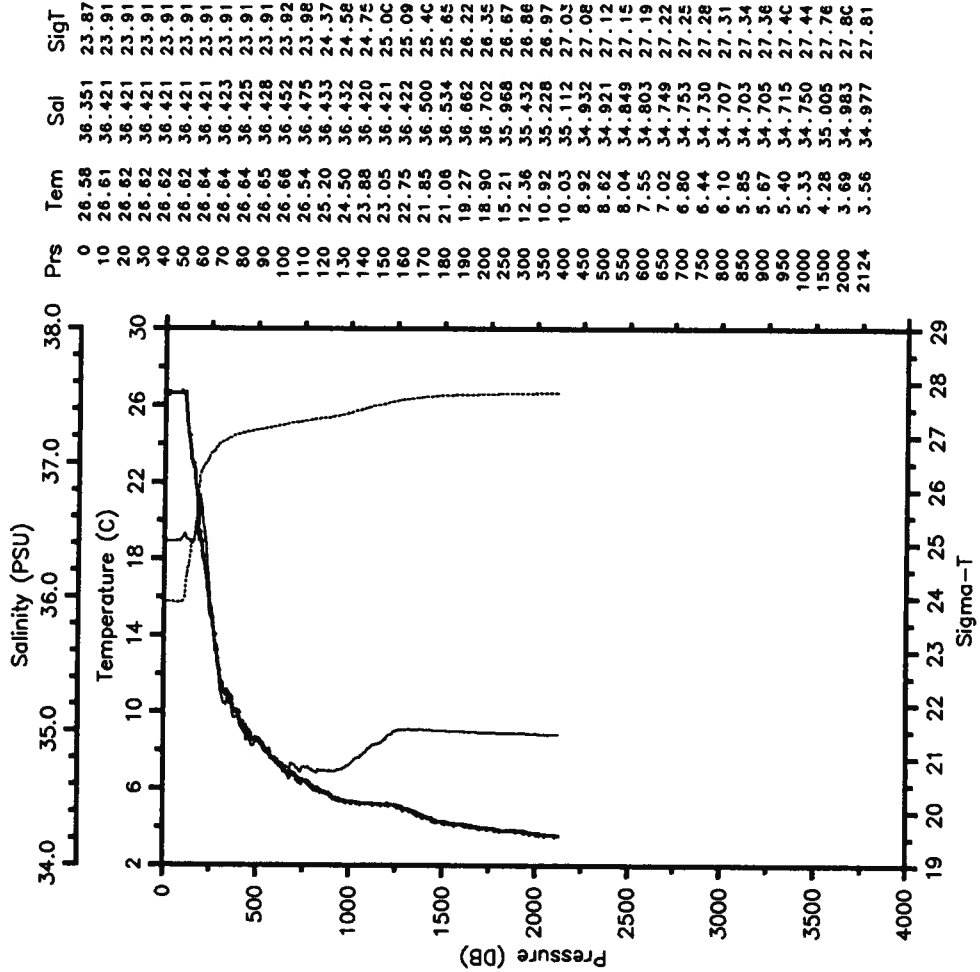
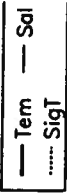
WHI-STACS30-88 CTD 7 WHITING

Date 03 05 88 Latitude 12.998 N
Time 1656 Z Longitude 58.968 W



WHI-STACS30-88 CTD 8 WHITING

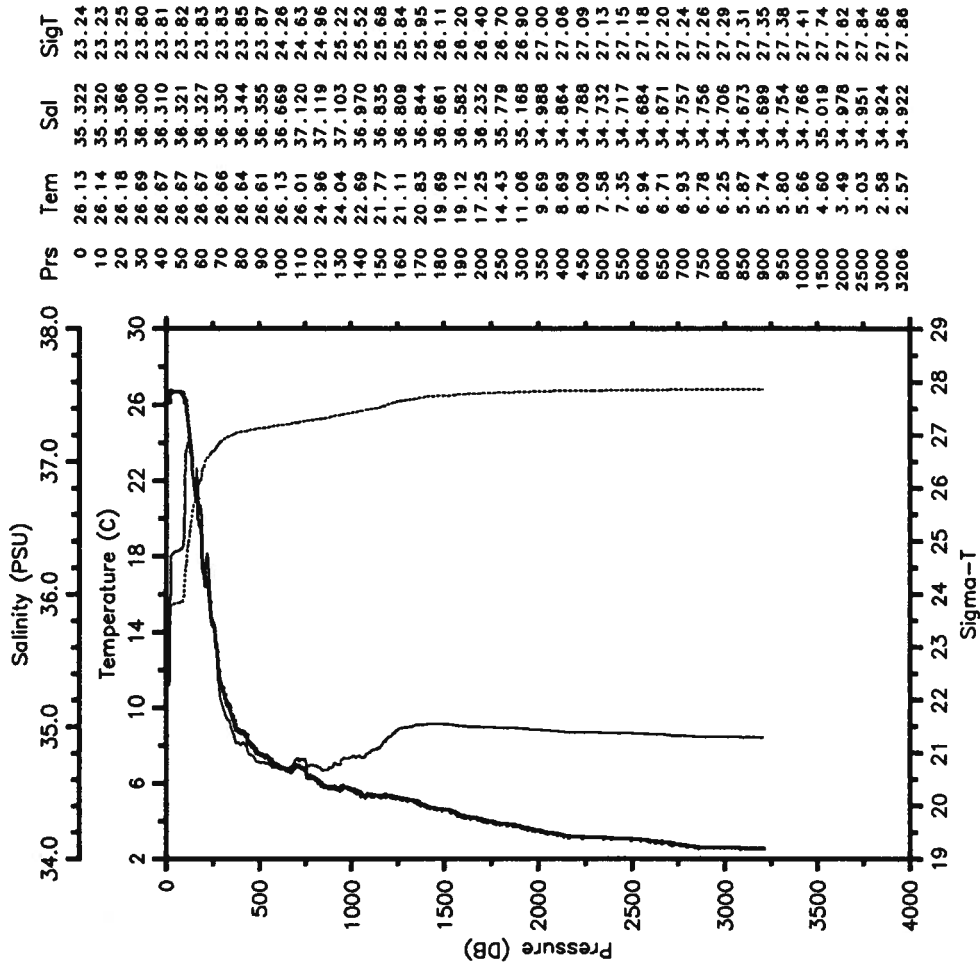
Date 03 05 88 Latitude 12.992 N
Time 2055 Z Longitude 58.588 W



WHI-STACS30-88 CTD 9 WHITING

Date 03 06 88 Latitude 12.996 N
 Time 0242 Z Longitude 57.997 W

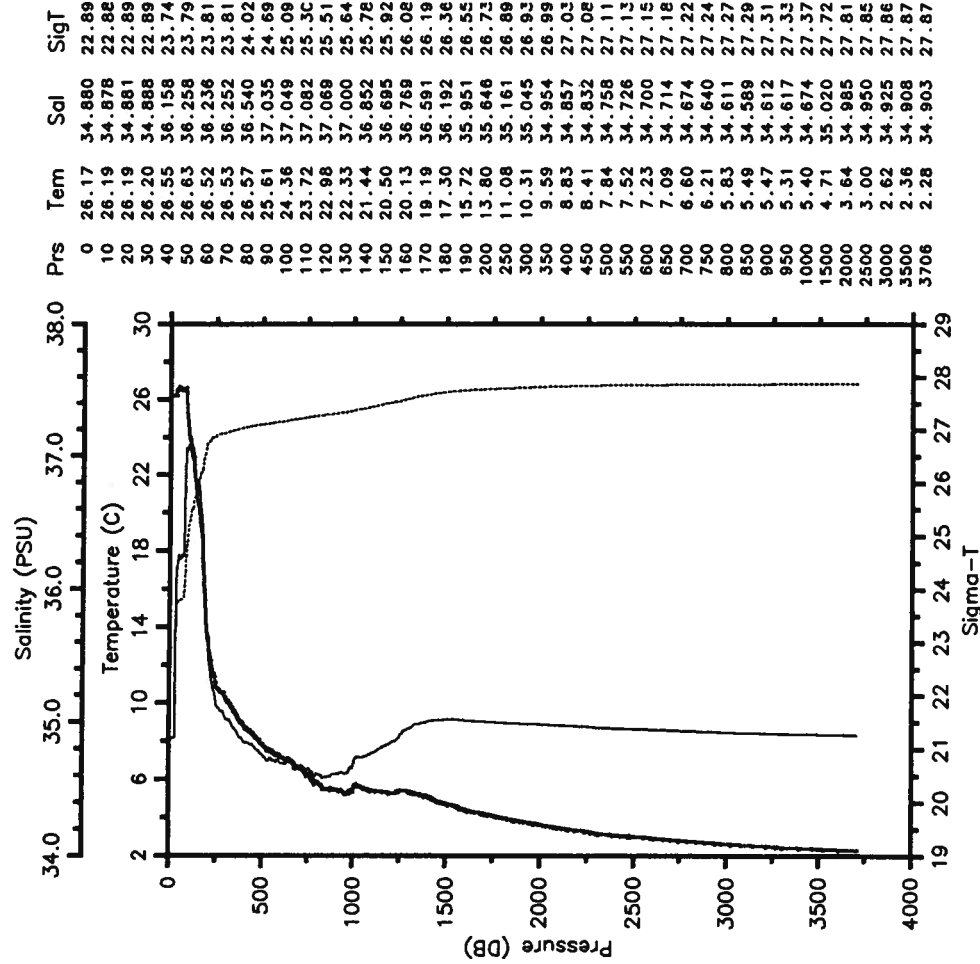
— Tem — Sal
 SigT



WHI-STACS30-88 CTD 10 WHITING

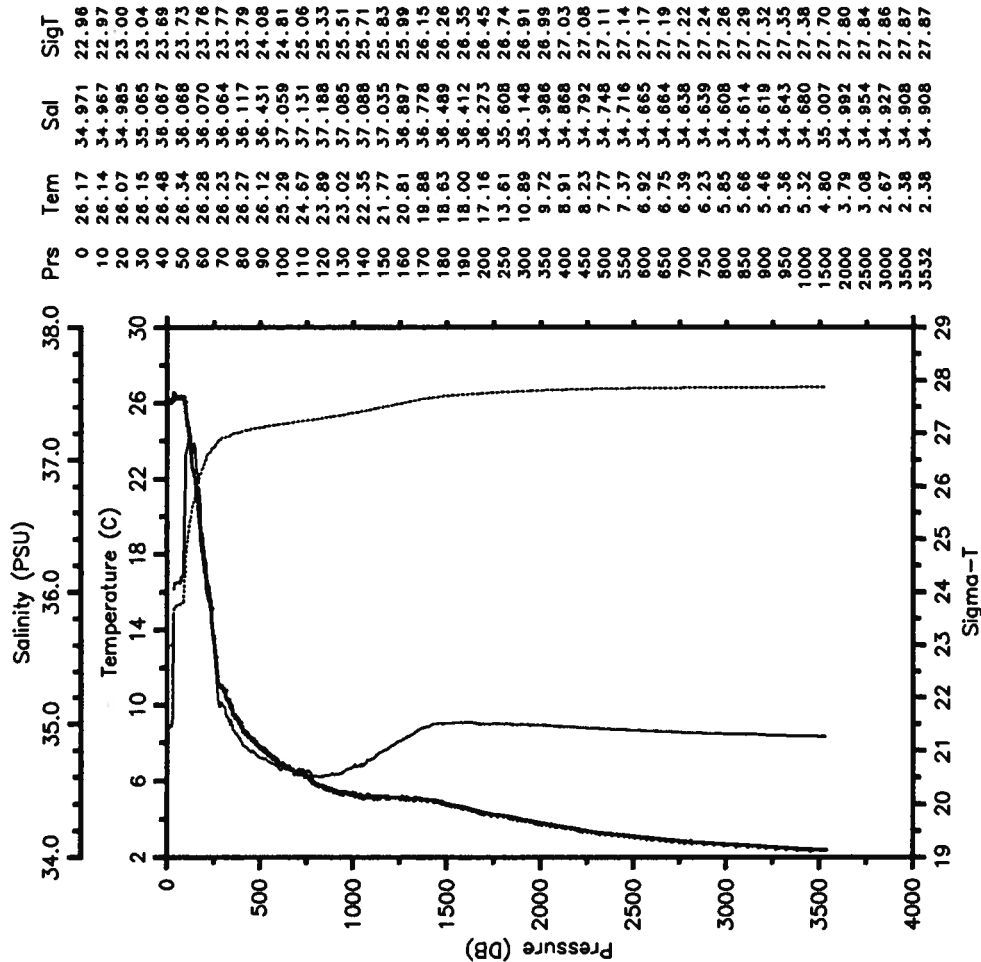
Date 03 06 88 Latitude 12.997 N
 Time 0750 Z Longitude 57.501 W

— Tem — Sal
 SigT



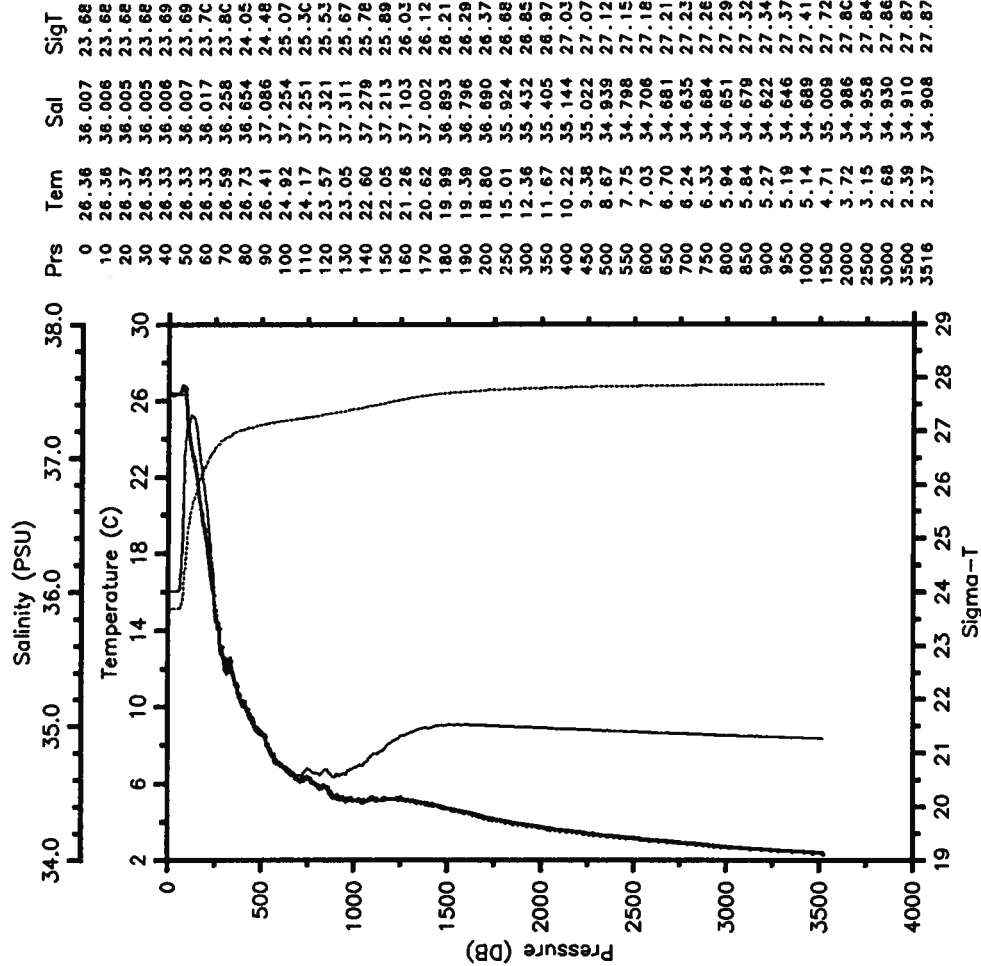
WHI-STACS30-88 CTD 11 WHITING
 Date 03 06 88 Latitude 13.008 N
 Time 1327 Z Longitude 57.007 W

— Tem — Sal
 SigT



WHI-STACS30-88 CTD 12 WHITING
 Date 03 06 88 Latitude 13.011 N
 Time 1815 Z Longitude 56.514 W

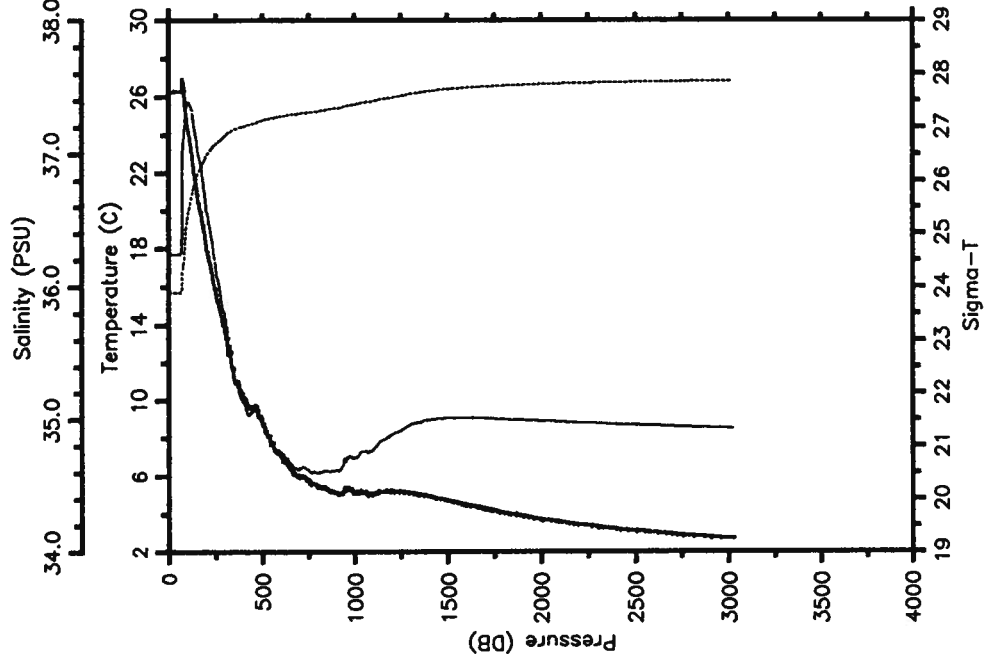
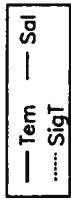
— Tem — Sal
 SigT



WHI-STACS30-88 CTD 13 WHITING

Date 03 06 88 Latitude 12.986 N

Time 2322 Z Longitude 55.995 W

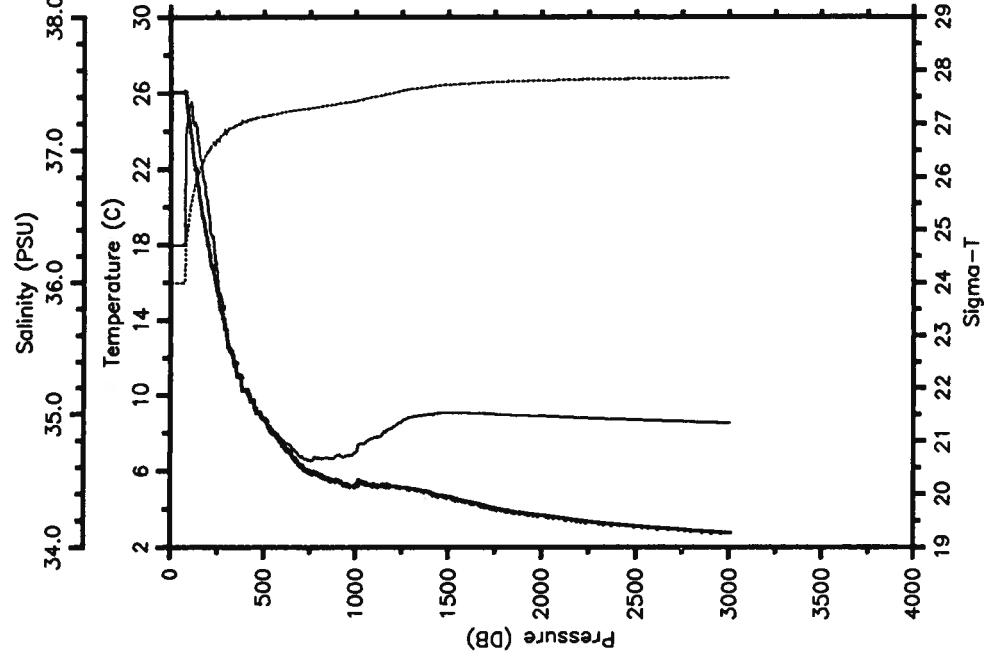
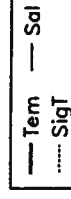


Prs	Tem	Sal	SigT
0	26.23	36.244	23.90
10	26.23	36.244	23.90
20	26.25	36.243	23.90
30	26.25	36.243	23.90
40	26.25	36.243	23.90
50	26.25	36.244	23.90
60	26.26	36.247	23.90
70	26.28	36.265	23.90
80	26.55	37.118	24.48
90	25.30	37.301	24.99
100	24.46	37.376	25.30
110	23.90	37.378	25.48
120	23.19	37.350	25.66
130	22.46	37.269	25.81
140	21.69	37.173	25.96
150	20.92	37.064	26.09
160	20.40	36.988	26.17
170	19.99	36.928	26.24
180	19.33	36.815	26.32
190	18.73	36.700	26.39
200	18.01	36.577	26.48
250	15.82	36.166	26.69
300	13.77	35.779	26.84
350	11.06	35.270	26.97
400	10.19	35.125	27.02
450	9.58	35.062	27.07
500	8.83	34.980	27.13
550	7.77	34.833	27.18
600	7.12	34.753	27.21
650	6.41	34.673	27.24
700	5.95	34.620	27.26
750	5.77	34.621	27.28
800	5.50	34.599	27.30
850	5.32	34.616	27.33
900	5.14	34.620	27.36
950	5.25	34.683	27.39
1000	5.16	34.708	27.43
1500	4.71	35.010	27.72
2000	3.73	34.988	27.80
2500	3.11	34.956	27.84
3000	2.72	34.932	27.86
3022	2.71	34.932	27.86

WHI-STACS30-88 CTD 14 WHITING

Date 03 07 88 Latitude 12.999 N

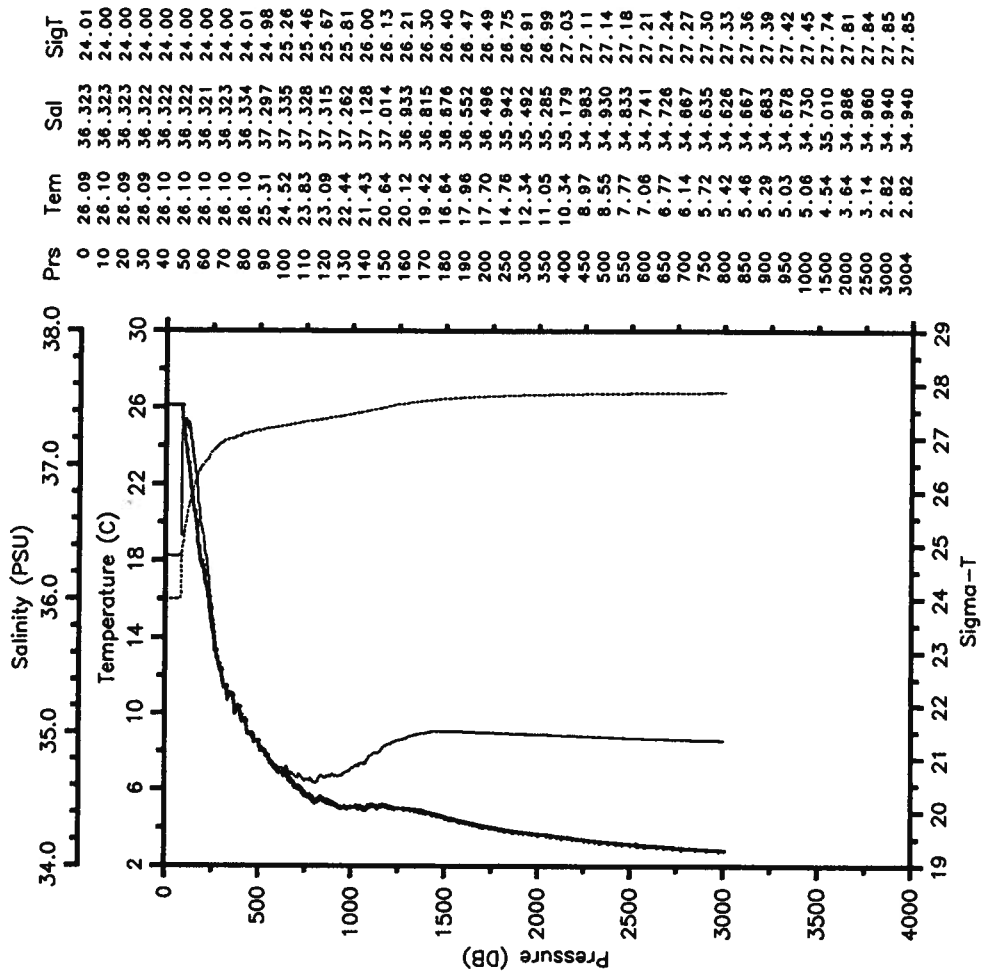
Time 0355 Z Longitude 55.499 W



Prs	Tem	Sal	SigT
0	26.04	36.284	23.99
10	26.04	36.283	23.99
20	26.04	36.284	23.99
30	26.04	36.284	23.99
40	26.04	36.284	23.99
50	26.05	36.283	23.99
60	26.05	36.283	23.99
70	26.05	36.289	23.99
80	25.96	37.104	24.64
90	25.18	37.235	24.98
100	24.50	37.333	25.26
110	23.66	37.357	25.53
120	22.72	37.226	25.71
130	22.02	37.196	25.82
140	21.58	37.147	25.97
150	20.87	37.043	26.09
160	20.15	36.920	26.19
170	19.50	36.830	26.29
180	19.05	36.762	26.36
190	18.44	36.658	26.42
200	18.00	36.584	26.47
250	15.53	36.087	26.69
300	13.19	35.651	26.86
350	11.71	35.402	26.96
400	10.32	35.176	27.04
450	9.39	35.048	27.09
500	8.77	34.975	27.14
550	8.00	34.873	27.17
600	7.38	34.808	27.21
650	6.91	34.758	27.24
700	6.27	34.677	27.26
750	5.94	34.653	27.29
800	5.83	34.672	27.31
850	5.61	34.673	27.34
900	5.49	34.681	27.37
950	5.28	34.688	27.39
1000	5.20	34.707	27.42
1500	4.64	35.013	27.73
2000	3.66	34.987	27.81
2500	3.09	34.958	27.84
3000	2.74	34.934	27.86
3002	2.74	34.934	27.86

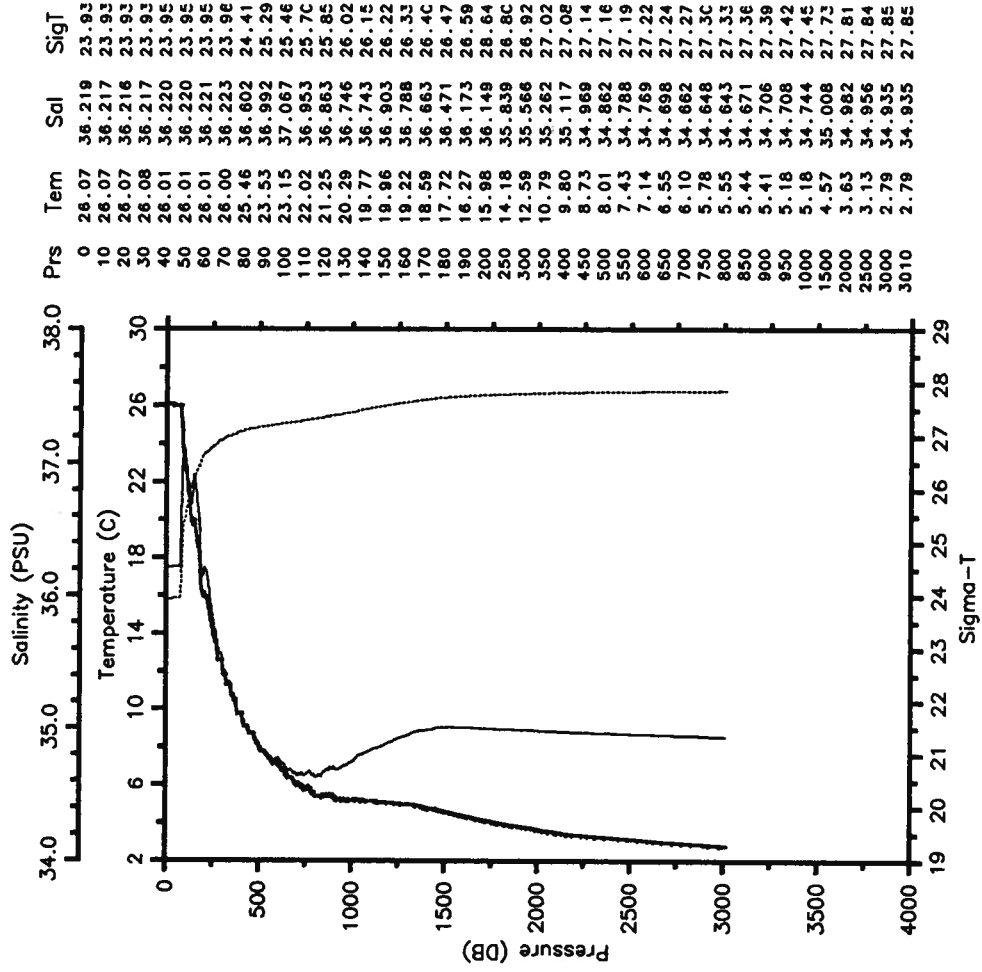
WHI-STACS30-88 CTD 15 WHITING
 Date 03 07 88 Latitude 13.000 N
 Time 0852 Z Longitude 55.002 W

— Tem — Sal
 SigT



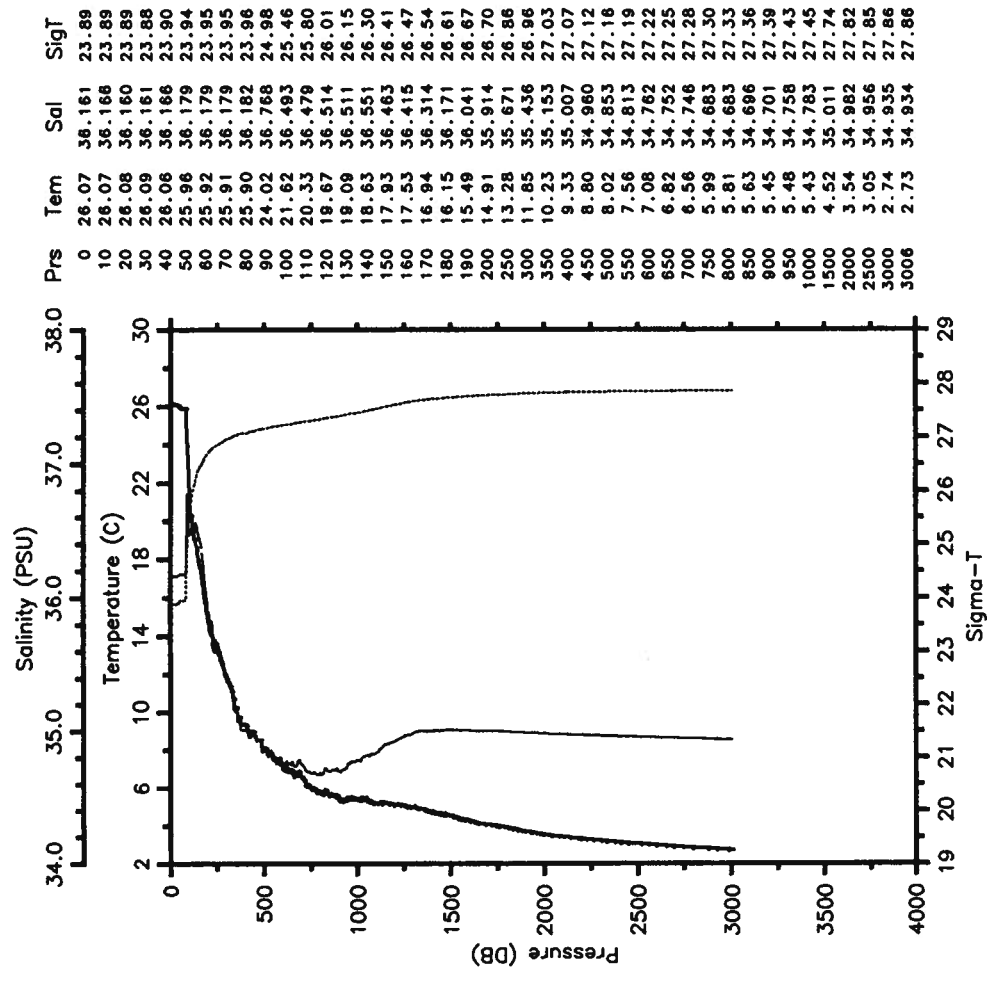
WHI-STACS30-88 CTD 16 WHITING
 Date 03 07 88 Latitude 13.006 N
 Time 1627 Z Longitude 53.992 W

— Tem — Sal
 SigT



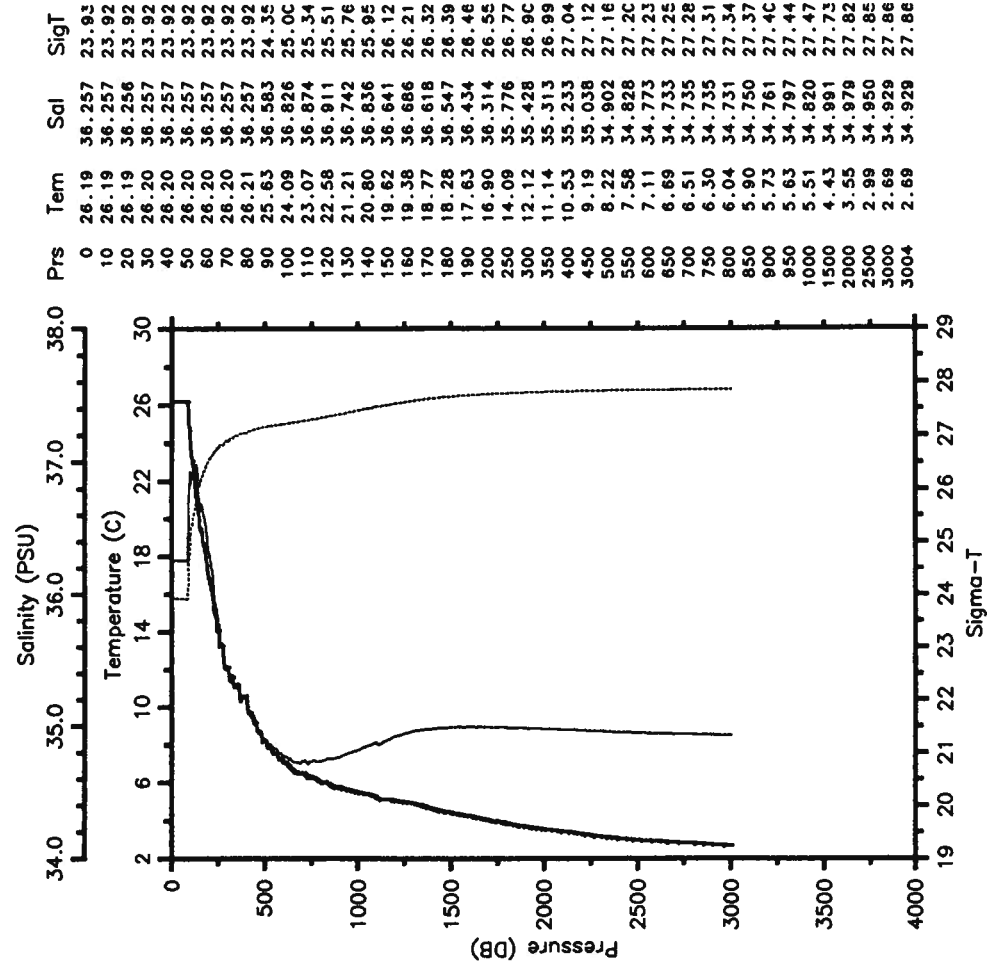
WHI-STACS30-88 CTD 17 WHITING
 Date 03 07 88 Latitude 13.007 N
 Time 2358 Z Longitude 52.996 W

— Tem — Sal
 SigT



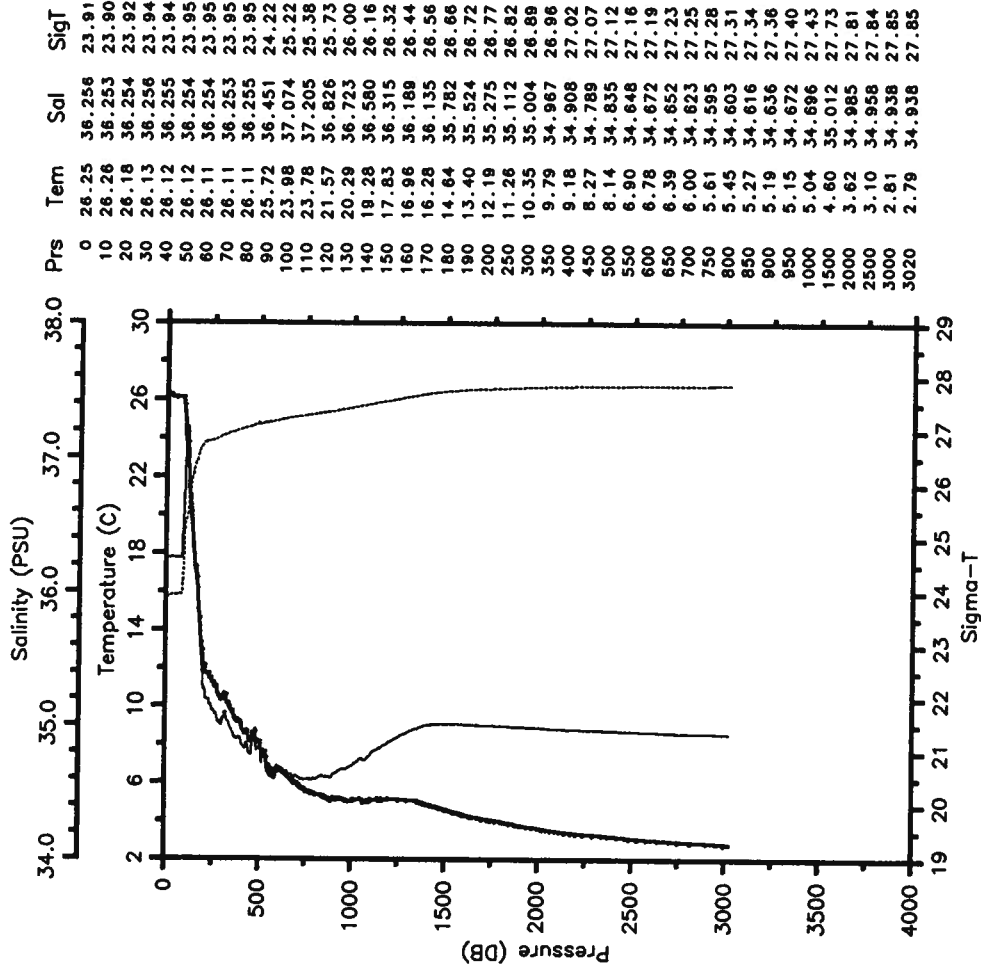
WHI-STACS30-88 CTD 18 WHITING
 Date 03 08 88 Latitude 12.667 N
 Time 0715 Z Longitude 52.375 W

— Tem — Sal
 SigT



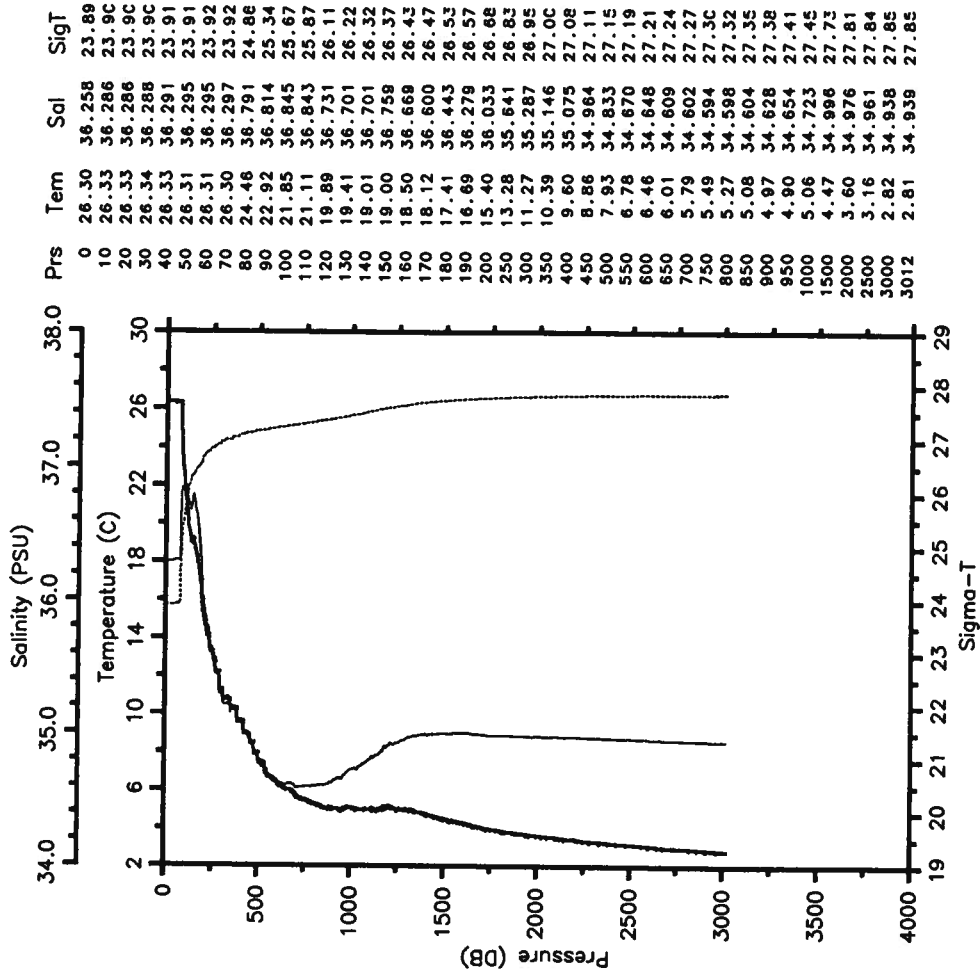
WHI-STACS30-88 CTD 19 WHITING
 Date 03 08 88 Latitude 11.410 N
 Time 1527 Z Longitude 51.787 W

— Tem — Sal
 SigT



WHI-STACS30-88 CTD 20 WHITING
 Date 03 08 88 Latitude 10.571 N
 Time 2310 Z Longitude 51.190 W

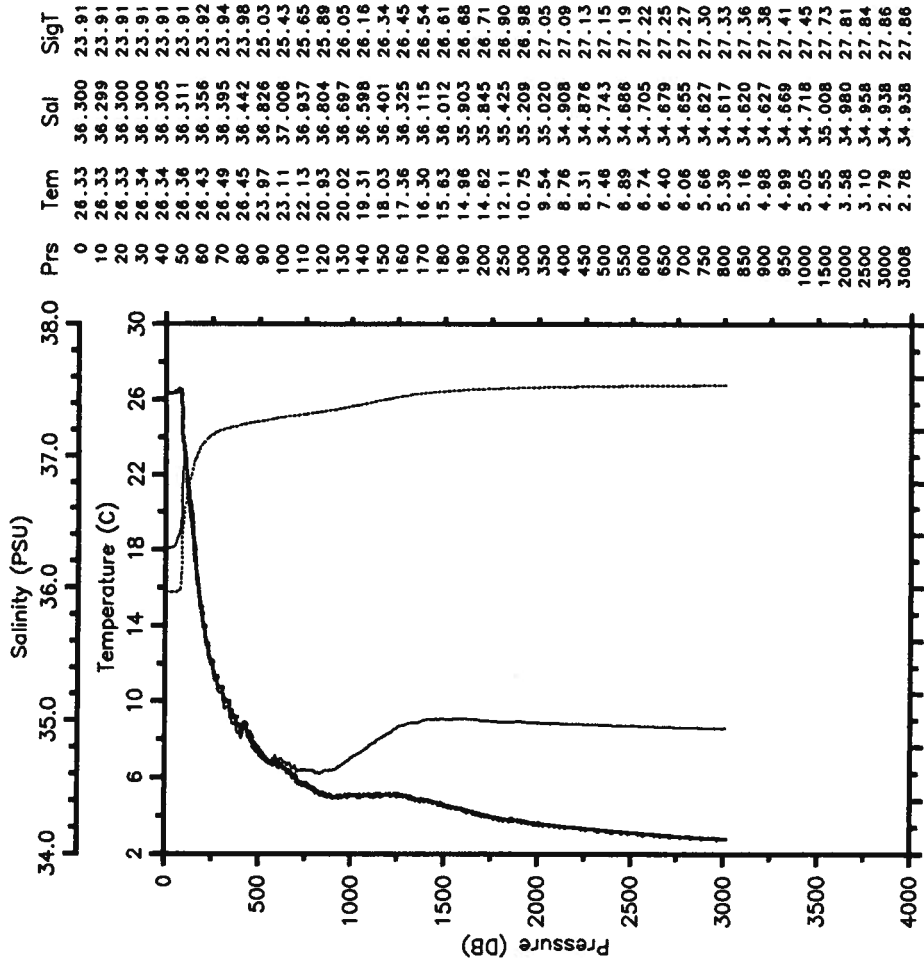
— Tem — Sal
 SigT



WHI-STACS30-88 CTD 21 WHITING

Date 03 09 88 Latitude 9.783 N
Time 0645 Z Longitude 50.583 W

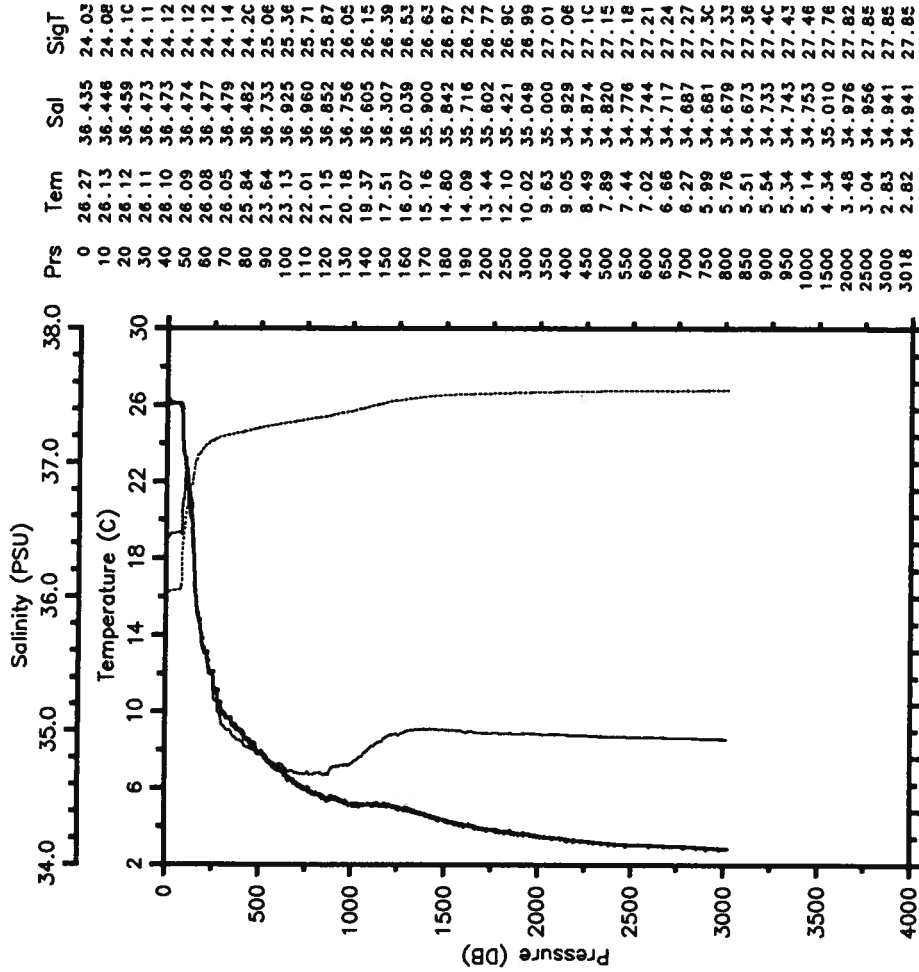
— Tem — Sal
..... SigT



WHI-STACS30-88 CTD 22 WHITING

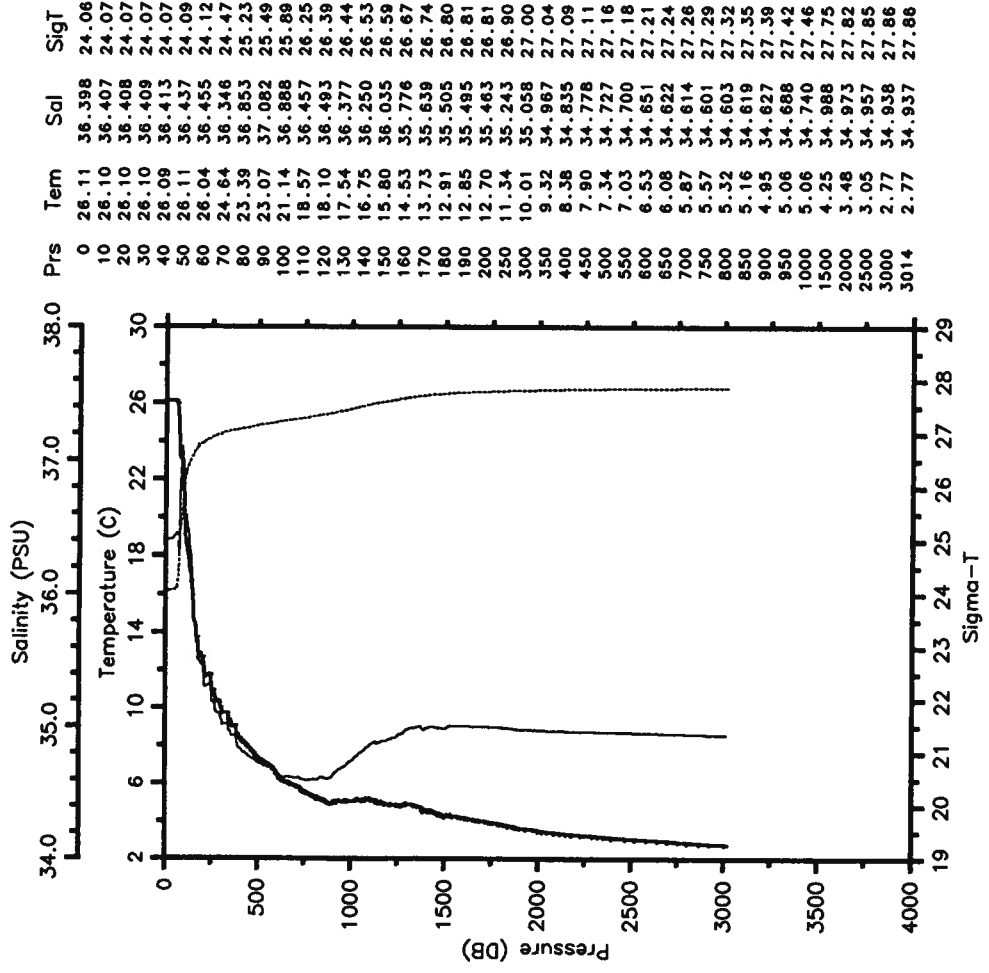
Date 03 09 88 Latitude 8.964 N
Time 1420 Z Longitude 49.959 W

— Tem — Sal
..... SigT



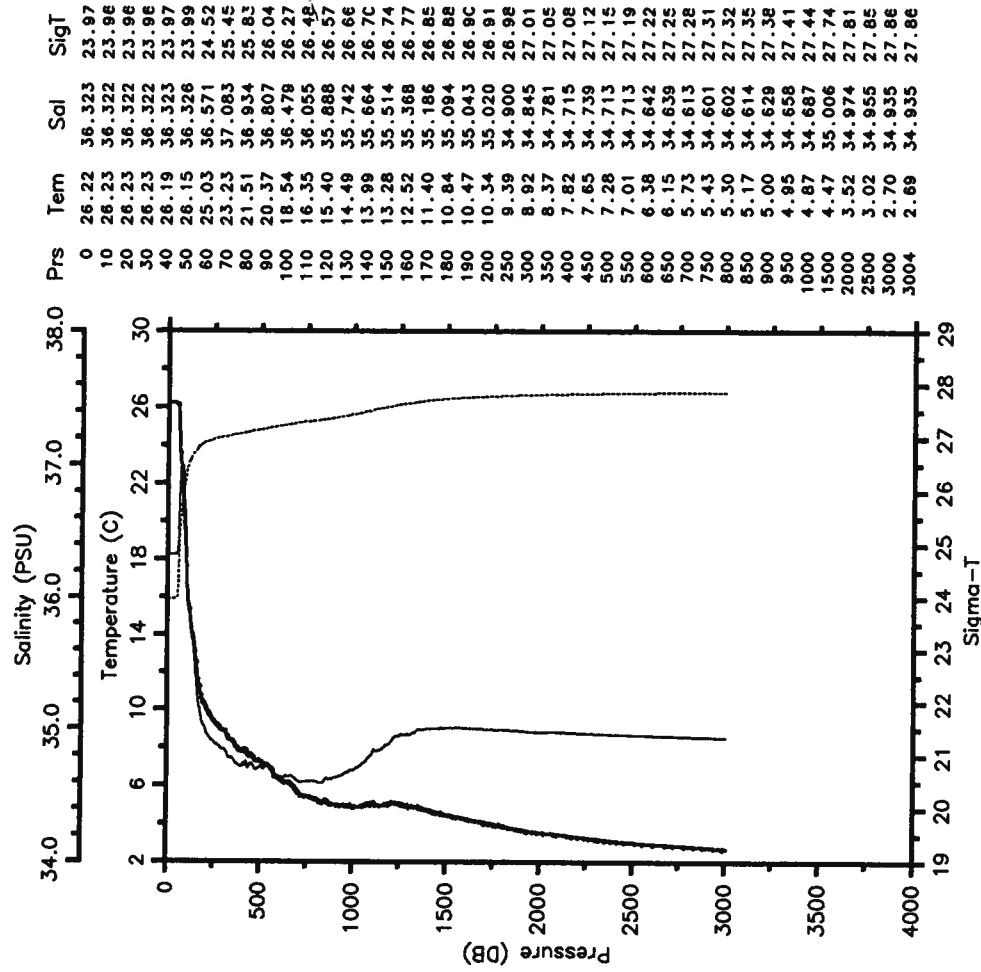
WHI-STACS30-88 CTD 23 WHITING
 Date 03 09 88 Latitude 8.147 N
 Time 2127 Z Longitude 49.380 W

— Tem — Sal
 SigT



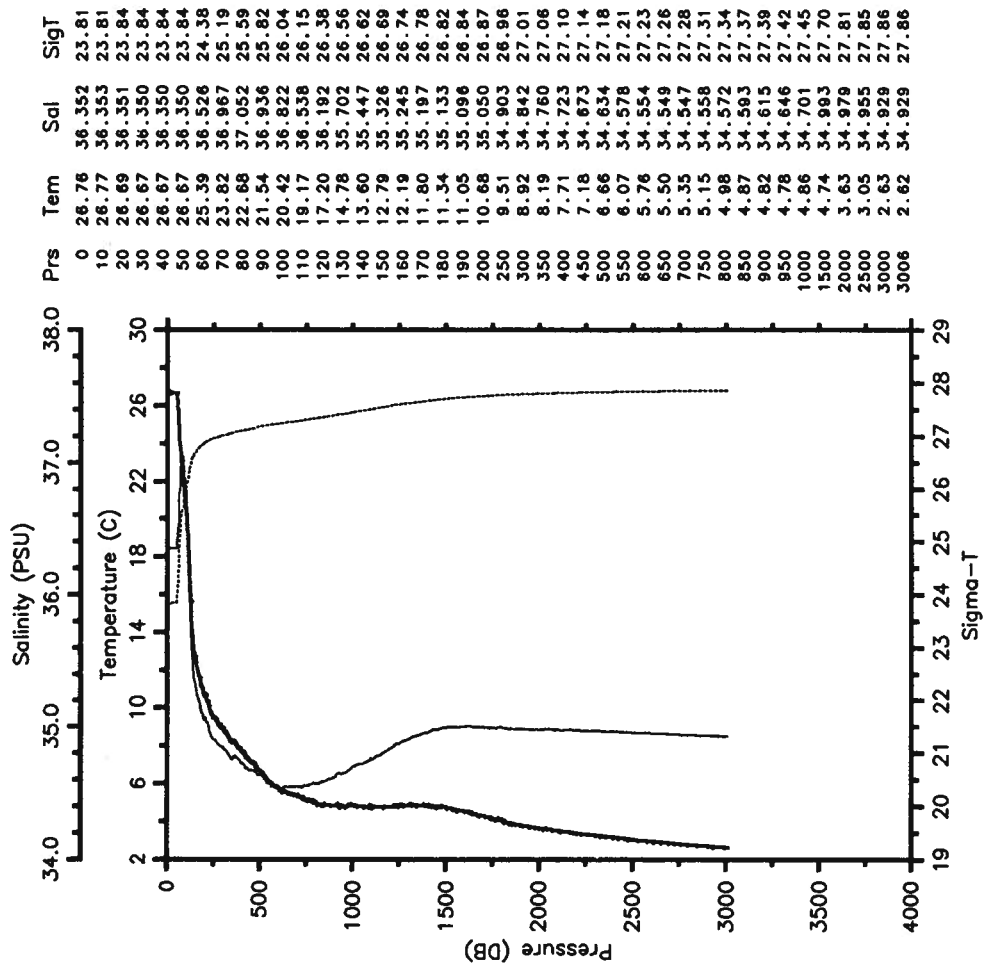
WHI-STACS30-88 CTD 24 WHITING
 Date 03 10 88 Latitude 7.595 N
 Time 0346 Z Longitude 48.936 W

— Tem — Sal
 SigT



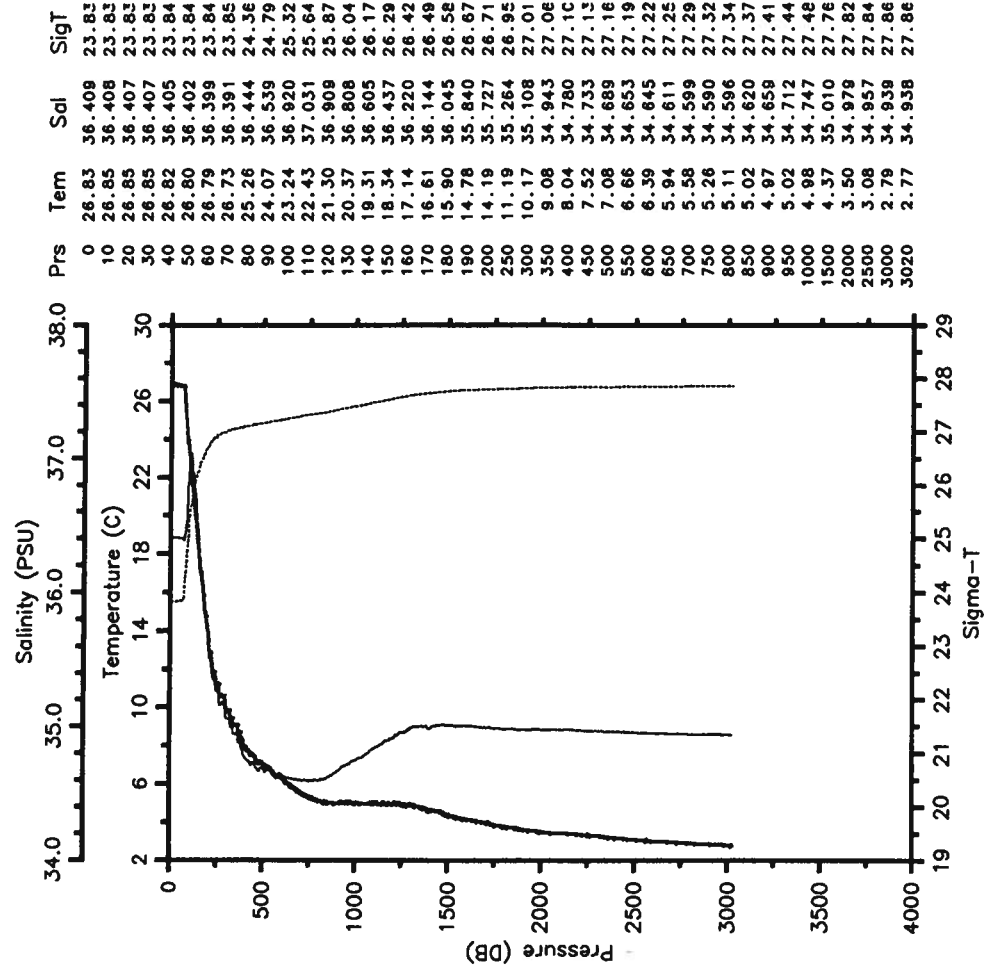
WHI-STACS30-88 CTD 25 WHITING
 Date 03 10 88 Latitude 7.001 N
 Time 0945 Z Longitude 48.485 W

— Tem — Sal
 SigT



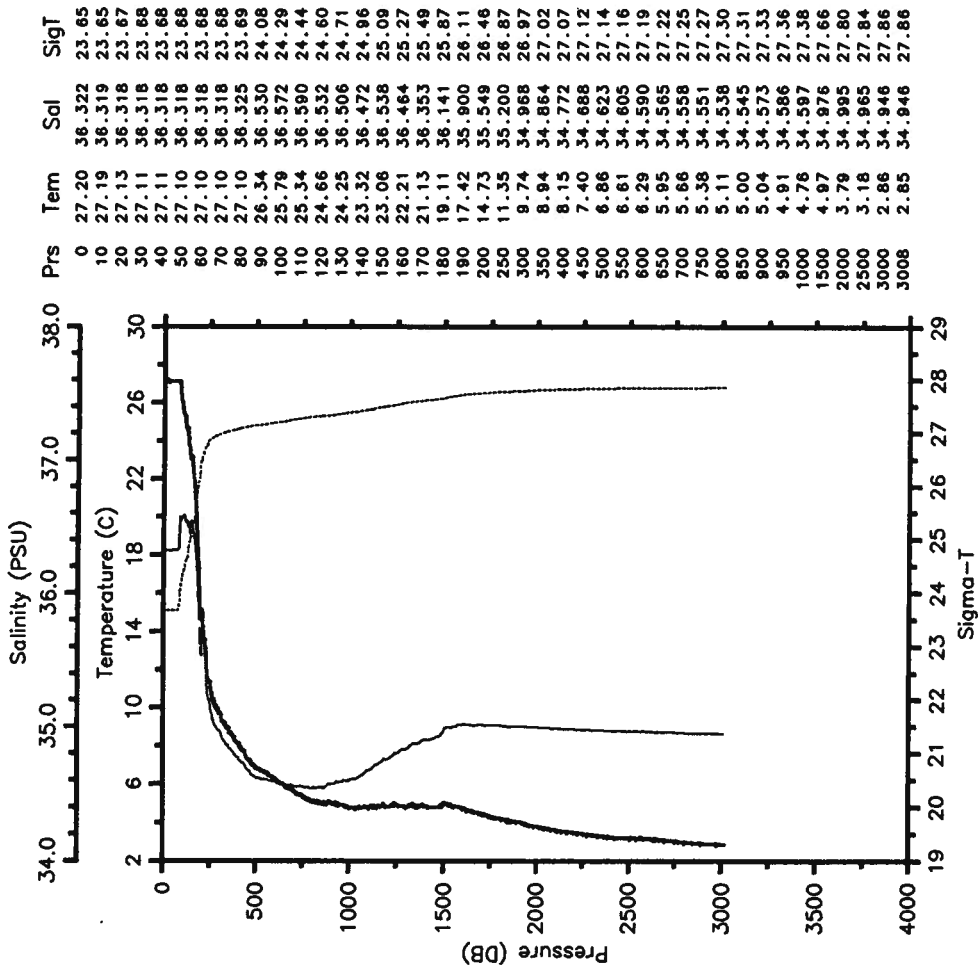
WHI-STACS30-88 CTD 26 WHITING
 Date 03 10 88 Latitude 7.953 N
 Time 2158 Z Longitude 50.259 W

— Tem — Sal
 SigT



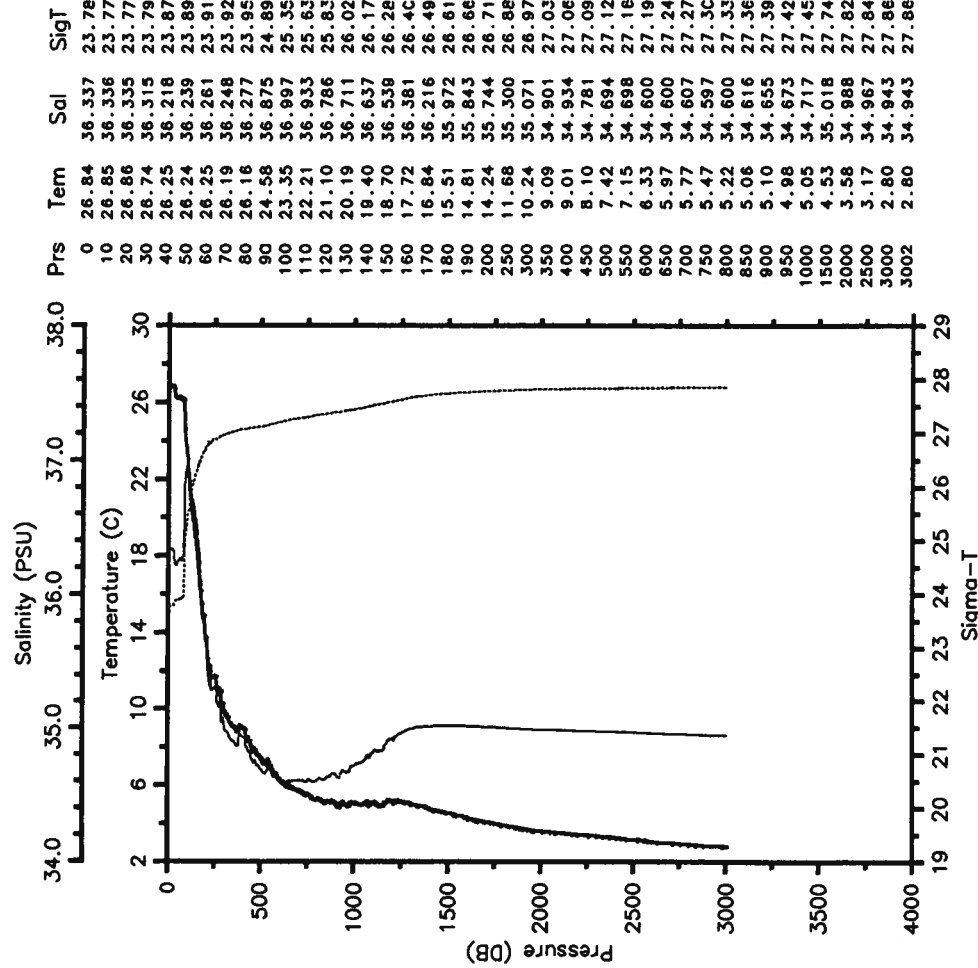
WHI-STACS30-88 CTD 27 WHITING
 Date 03 11 88 Latitude 8.903 N
 Time 1107 Z Longitude 52.086 W

— Tem — Sal
 SigT



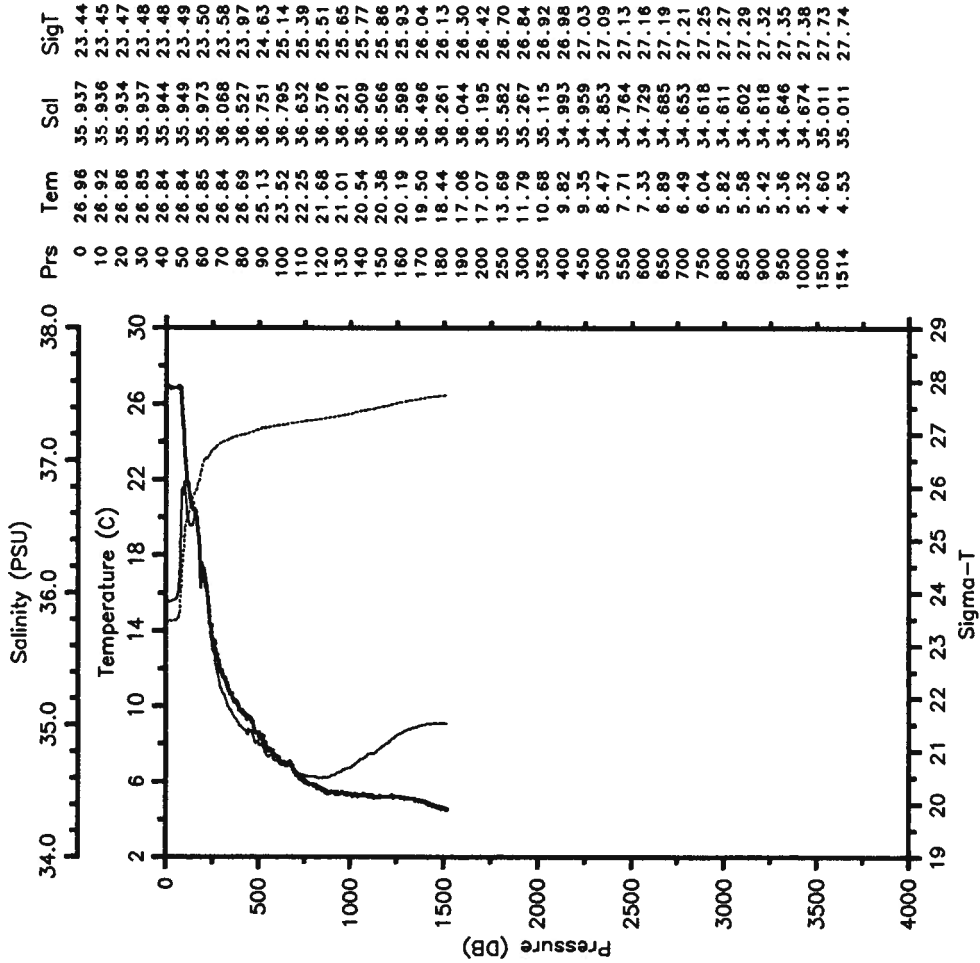
WHI-STACS30-88 CTD 28 WHITING
 Date 03 11 88 Latitude 9.890 N
 Time 2338 Z Longitude 53.887 W

— Tem — Sal
 SigT



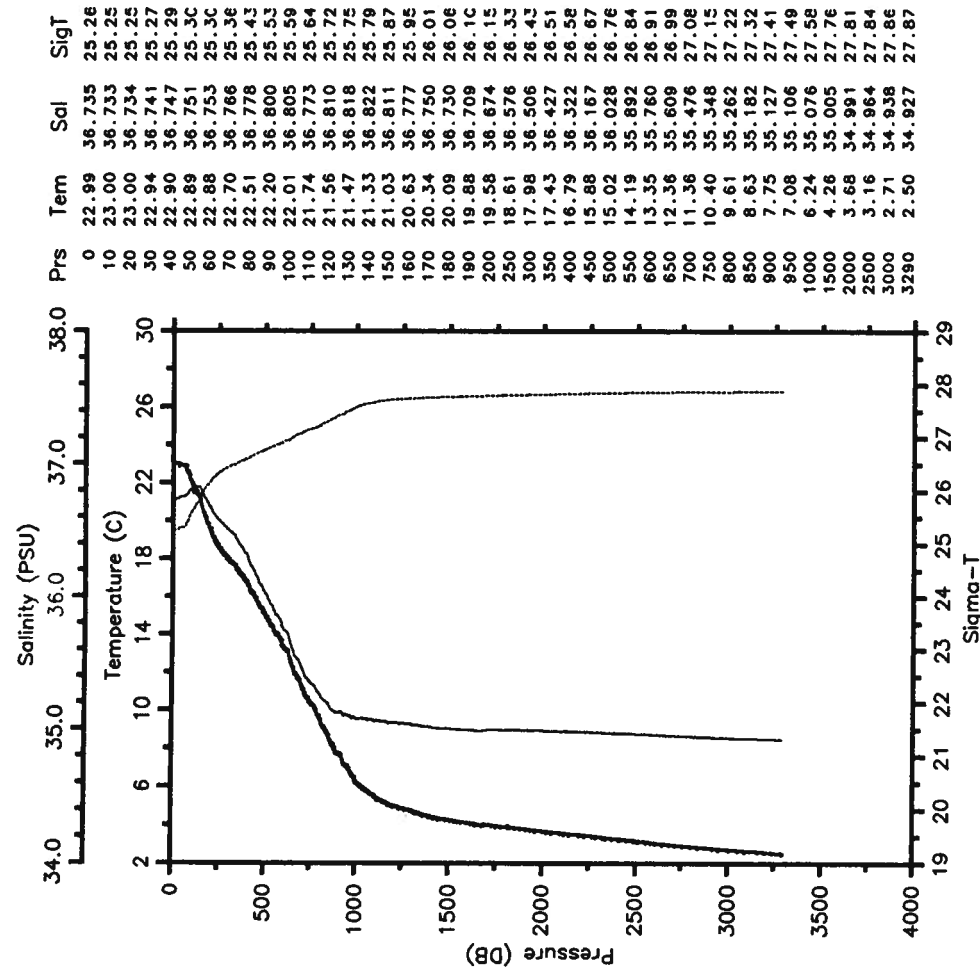
WHI-STACS30-88 CTD 29 WHITING
 Date 03 12 88 Latitude 10.898 N
 Time 1158 Z Longitude 55.656 W

— Tem — Sal
 SigT



WHI-STACS30-88 CTD 30 WHITING
 Date 03 20 88 Latitude 26.452 N
 Time 2328 Z Longitude 75.528 W

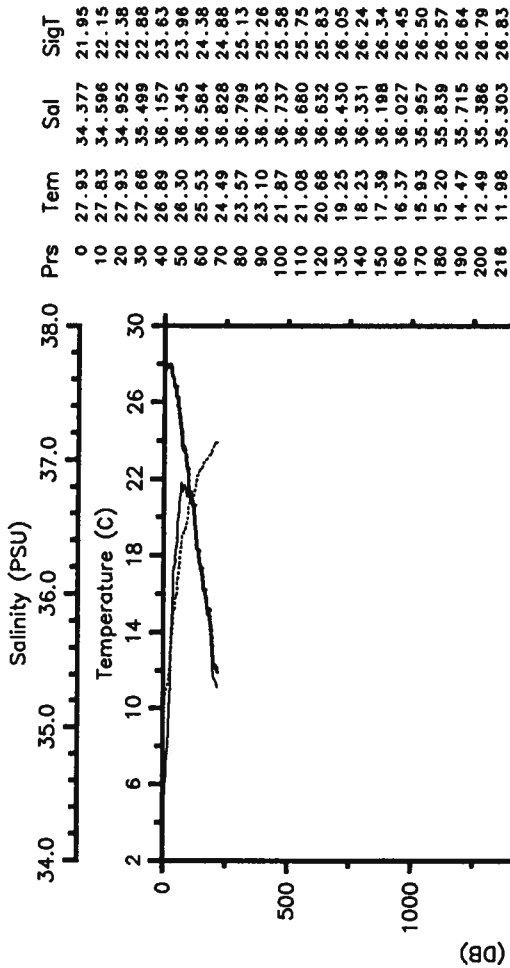
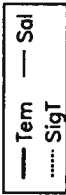
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 1 WHITING

Date 07 06 88 Latitude 8.104 N

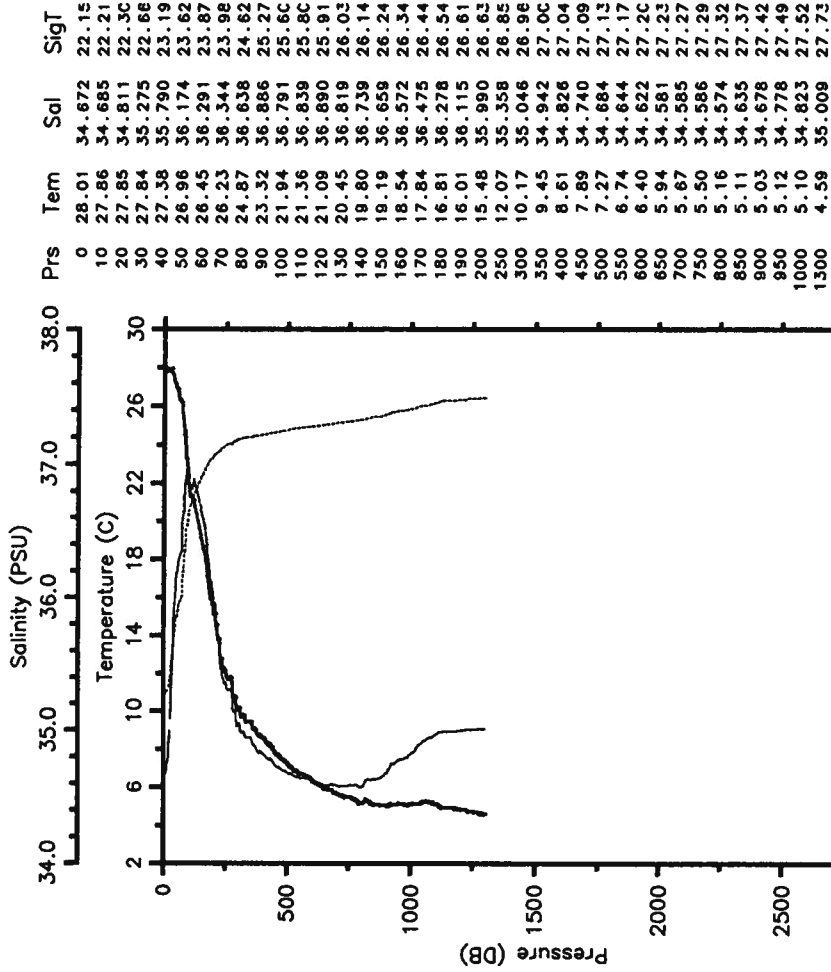
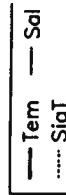
Time 1946 Z Longitude 57.630 W



WHI-STACS31-88 CTD 2 WHITING

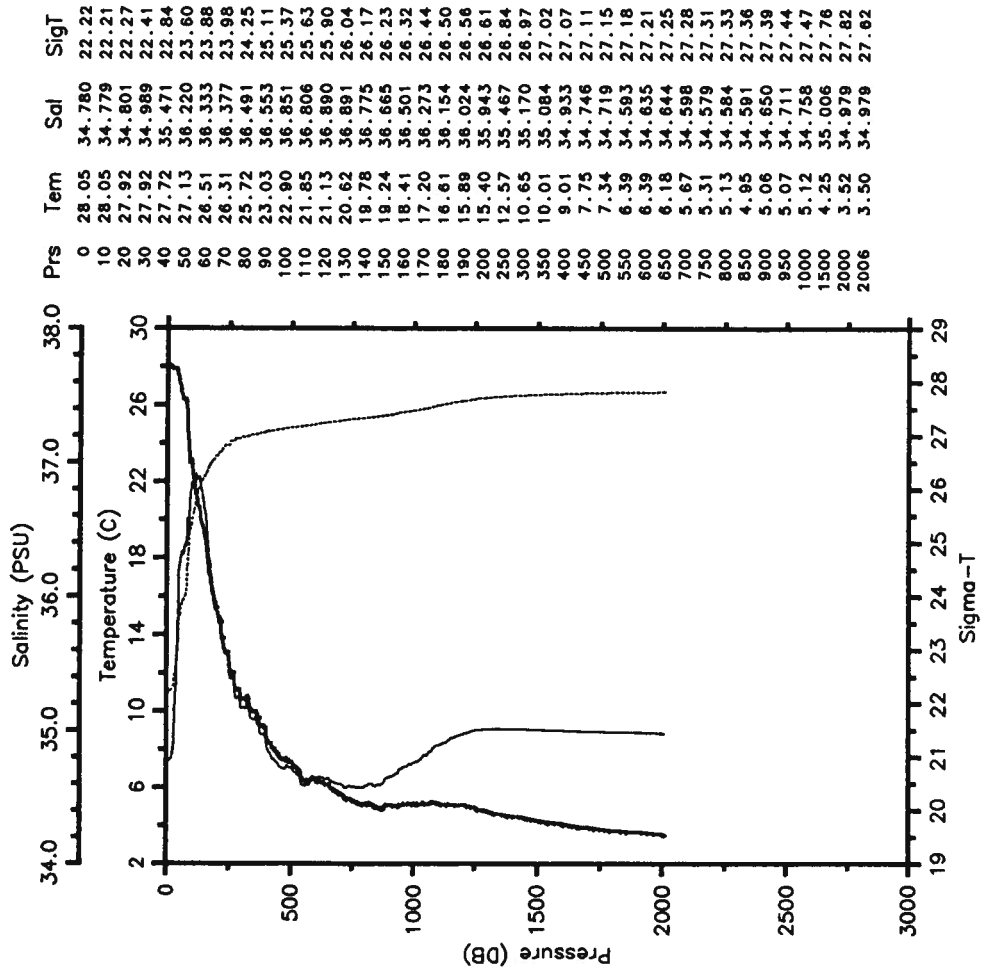
Date 07 06 88 Latitude 8.286 N

Time 2120 Z Longitude 57.528 W



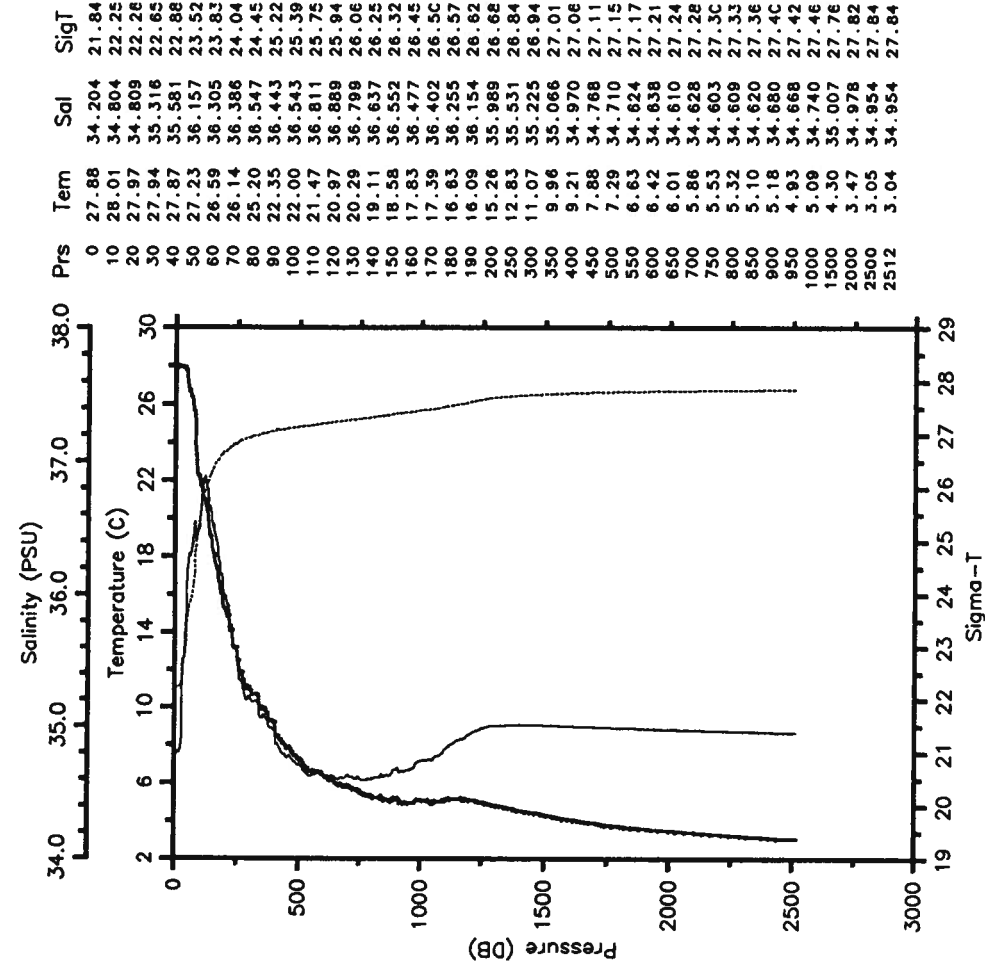
WHI-STACS31-88 CTD 3 WHITING
 Date 07 06 88 Latitude 8.503 N
 Time 2339 Z Longitude 57.417 W

— Tem — Sal
 SigT



WHI-STACS31-88 CTD 4 WHITING
 Date 07 07 88 Latitude 8.717 N
 Time 0225 Z Longitude 57.289 W

— Tem — Sal
 SigT

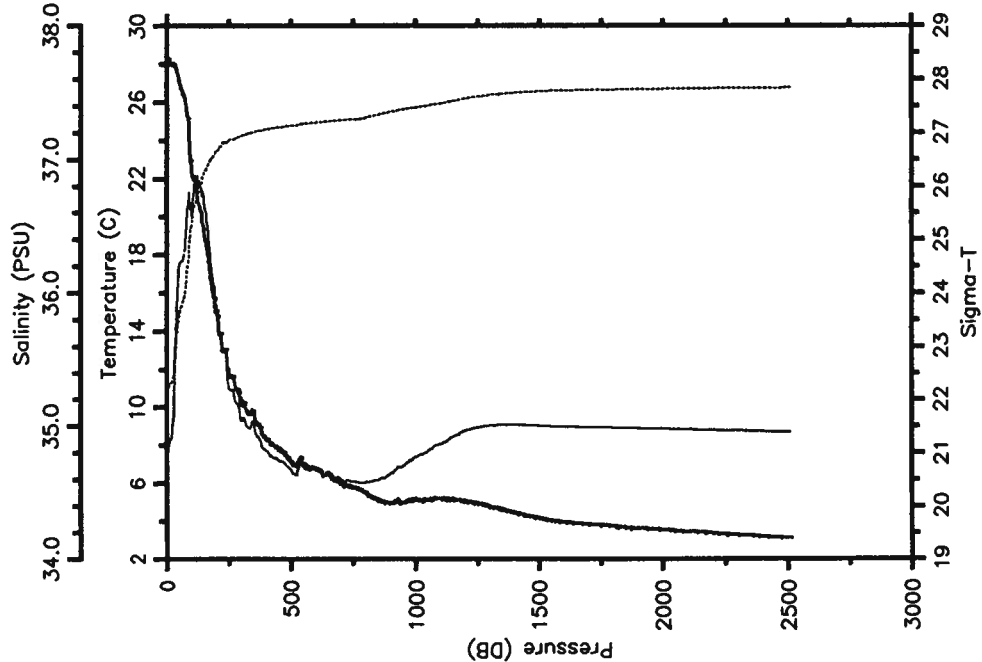


WHI-STACS31-88 CTD 5 WHITING

Date 07 07 88 Latitude 9.021 N

Time 0554 Z Longitude 57.121 W

— Tem — Sal
..... SigT

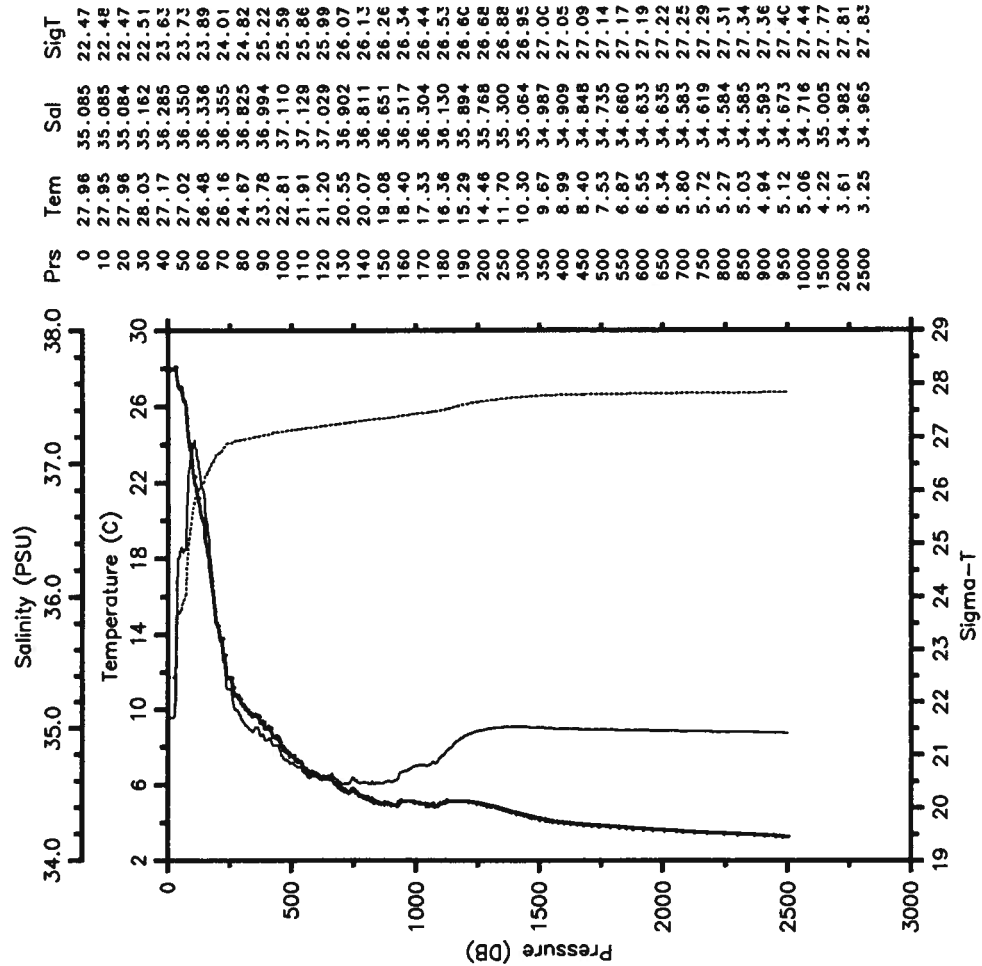


WHI-STACS31-88 CTD 6 WHITING

Date 07 07 88 Latitude 9.456 N

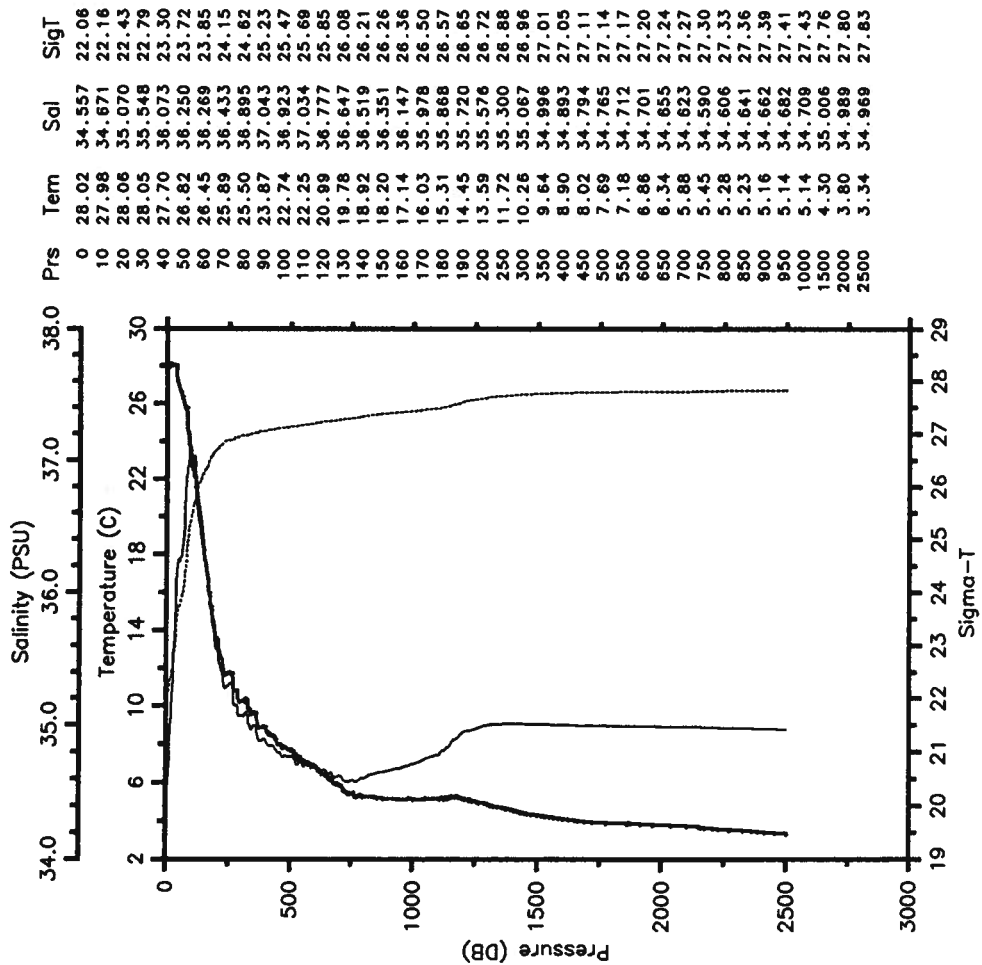
Time 0955 Z Longitude 56.894 W

— Tem — Sal
..... SigT



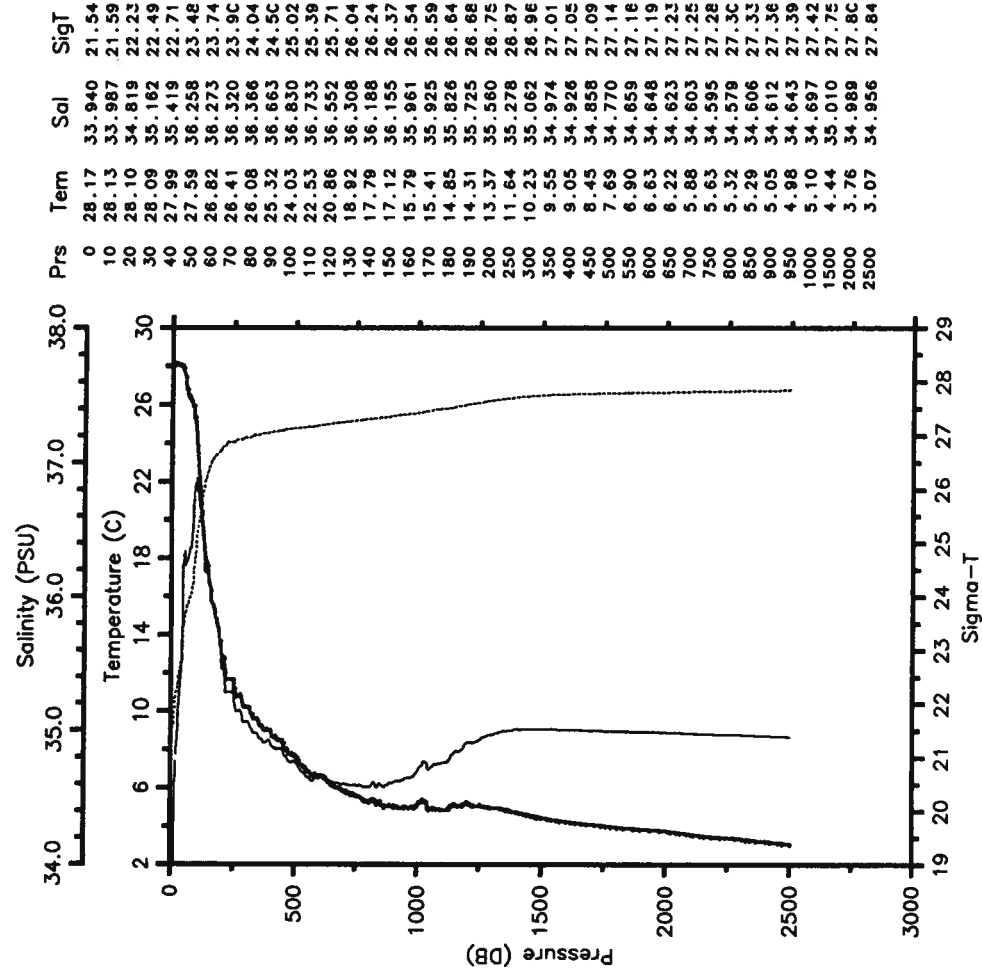
WHI-STACS31-88 CTD 7 WHITING
 Date 07 07 88 Latitude 9.904 N
 Time 1427 Z Longitude 56.663 W

— Tem — Sal
 SigT



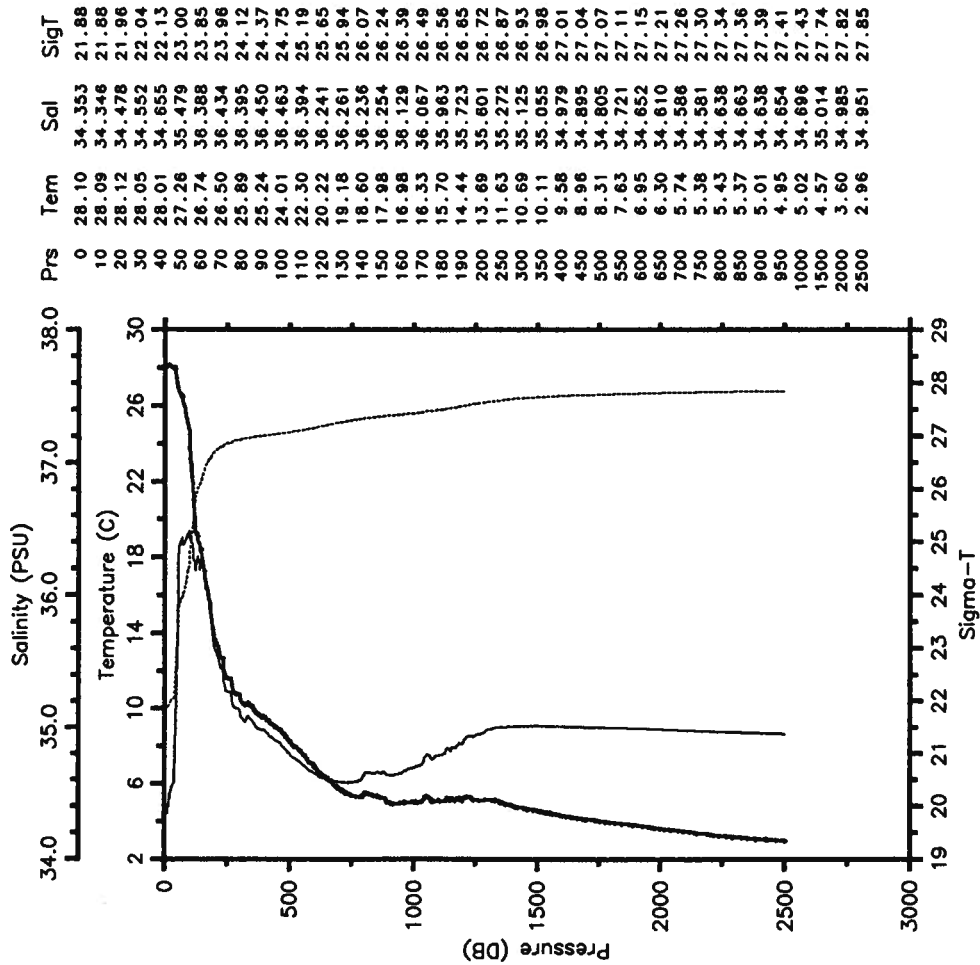
WHI-STACS31-88 CTD 8 WHITING
 Date 07 07 88 Latitude 10.345 N
 Time 1832 Z Longitude 56.419 W

— Tem — Sal
 SigT



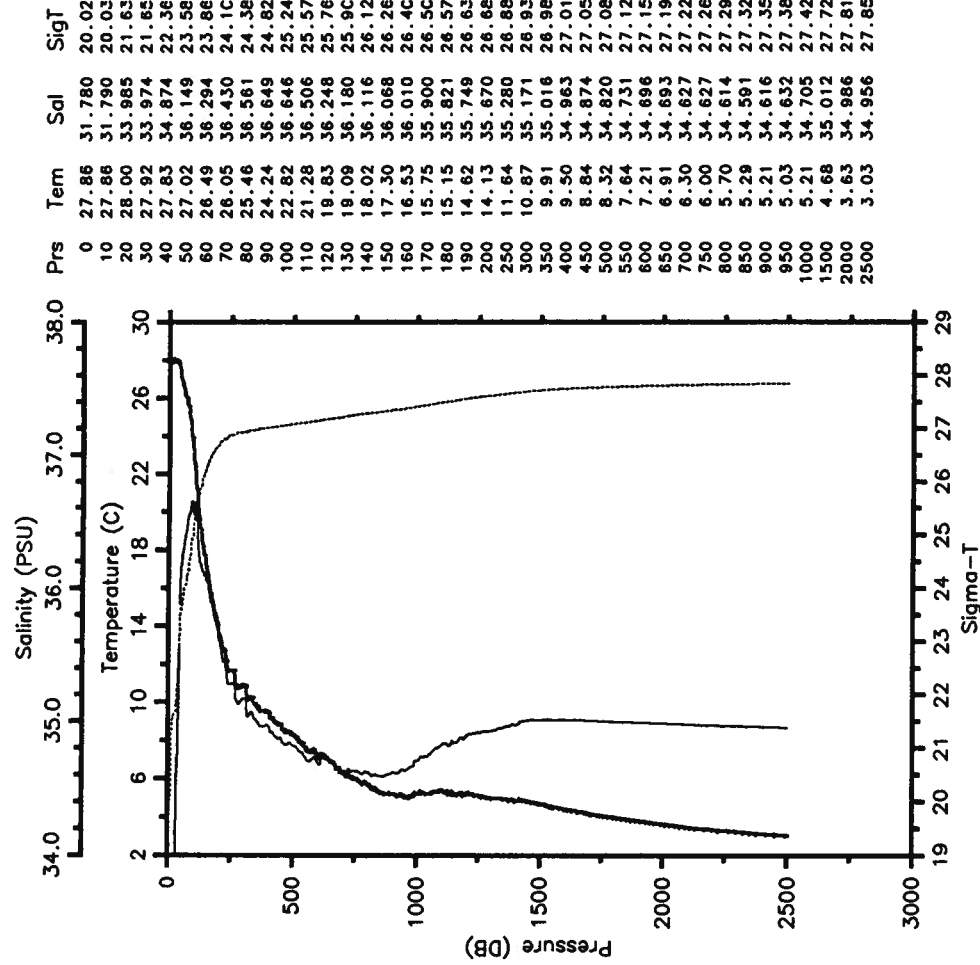
WHI-STACS31-88 CTD 9 WHITING
 Date 07 07 88 Latitude 10.770 N
 Time 2326 Z Longitude 56.164 W

— Tem — Sal
 SigT

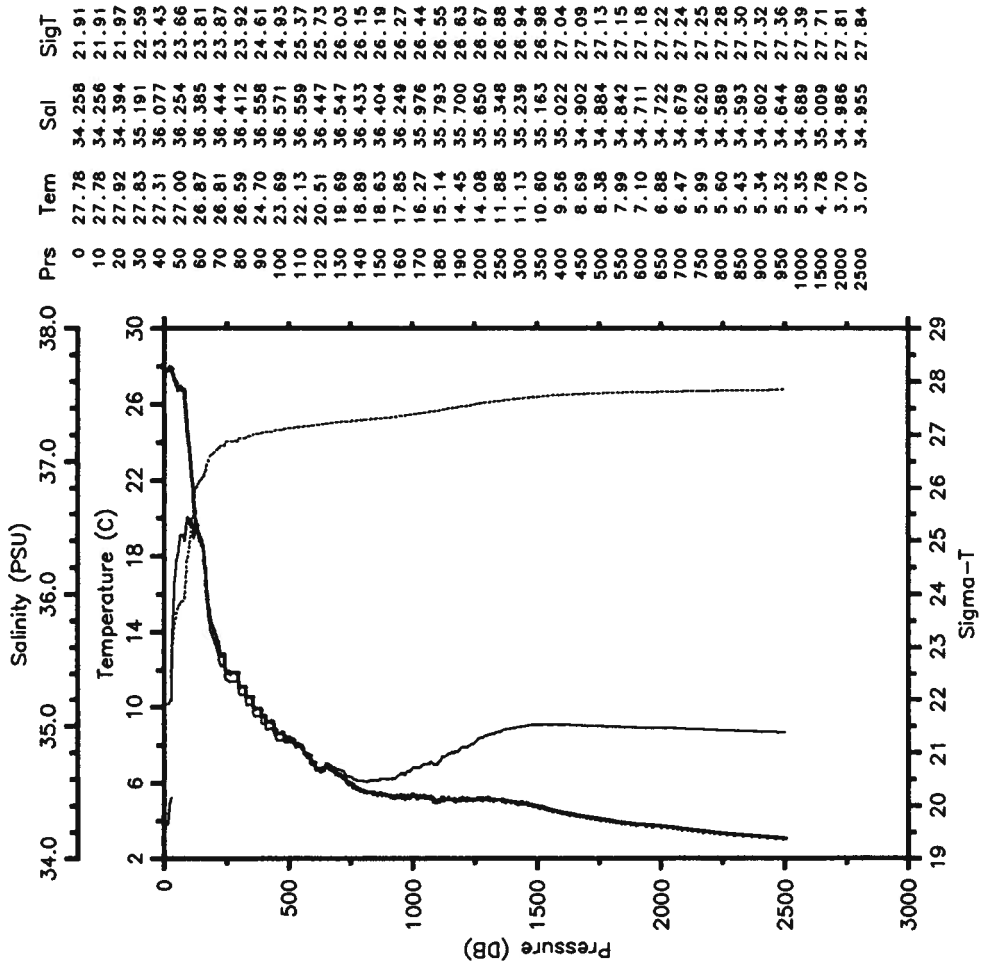


WHI-STACS31-88 CTD 10 WHITING
 Date 07 08 88 Latitude 11.258 N
 Time 0430 Z Longitude 55.927 W

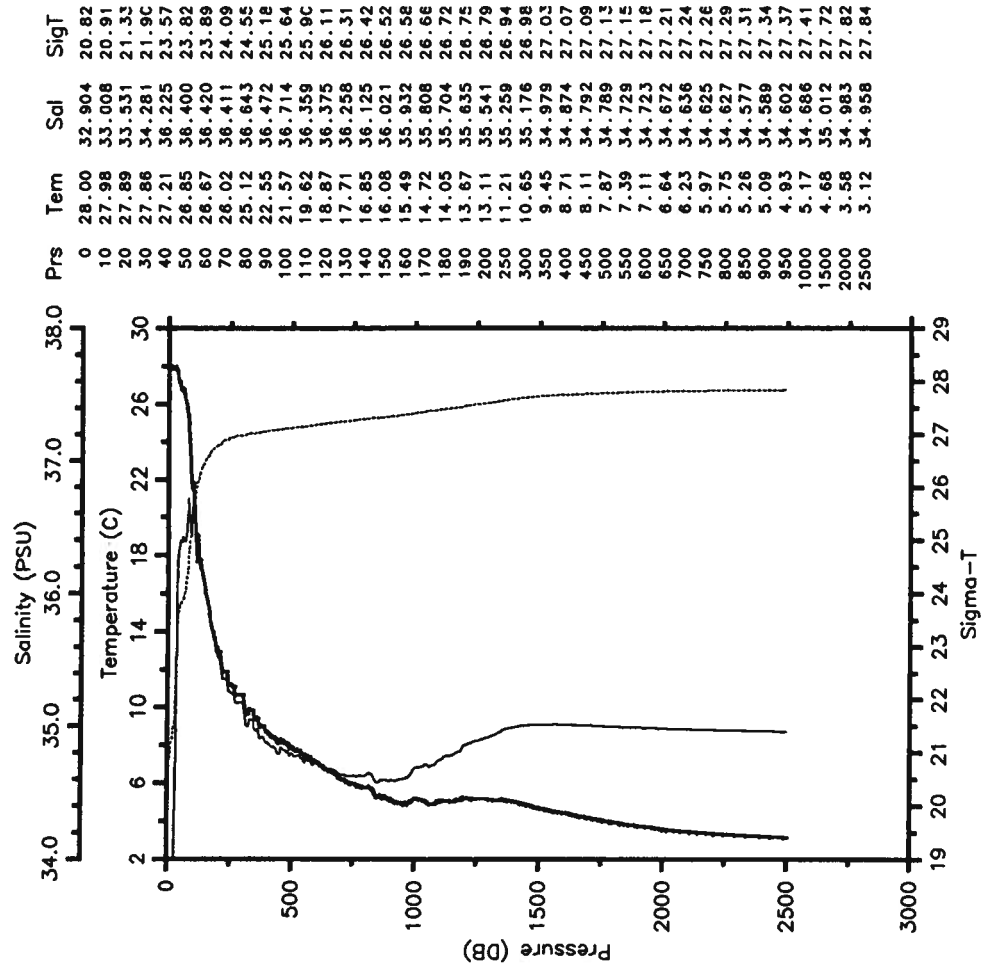
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 11 WHITING
 Date 07 08 88 Latitude 10.744 N
 Time 1131 Z Longitude 55.066 W



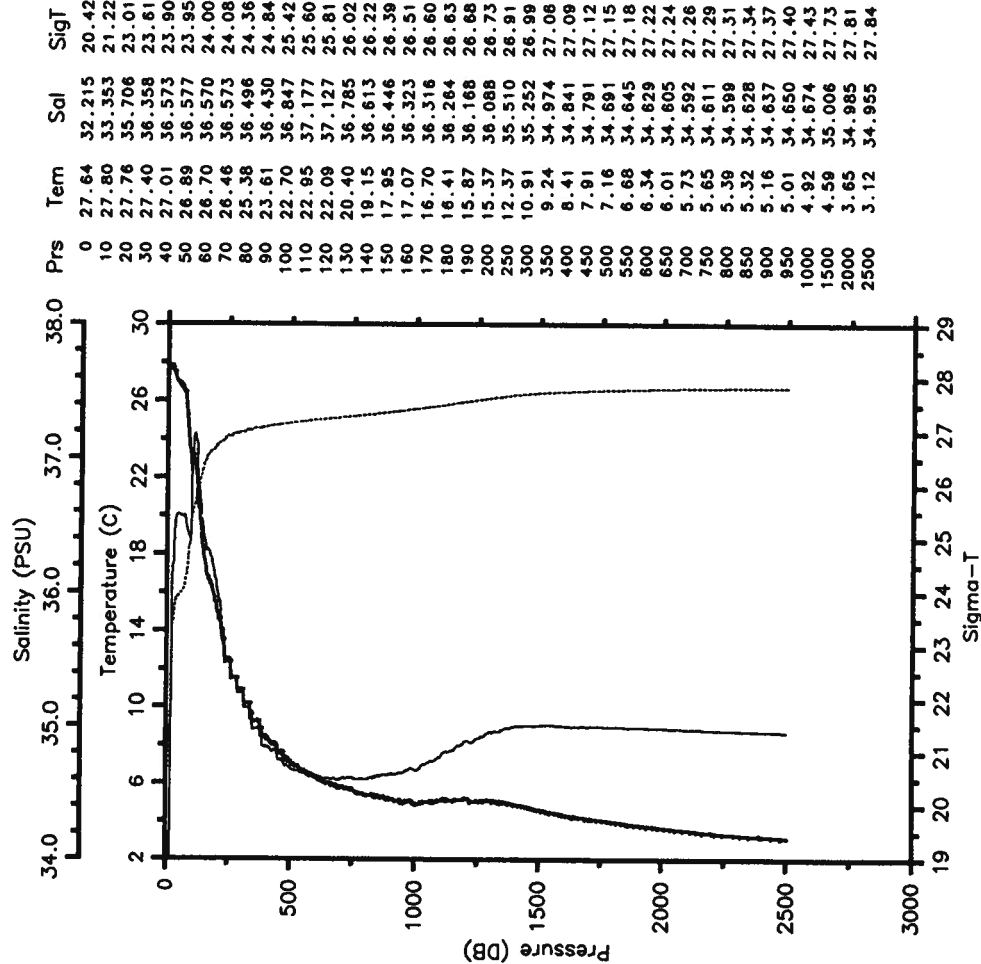
WHI-STACS31-88 CTD 12 WHITING
 Date 07 08 88 Latitude 10.218 N
 Time 2116 Z Longitude 54.174 W



WHI-STACS31-88 CTD 13 WHITING

Date 07 09 88 Latitude 9.710 N
Time 0421 Z Longitude 53.310 W

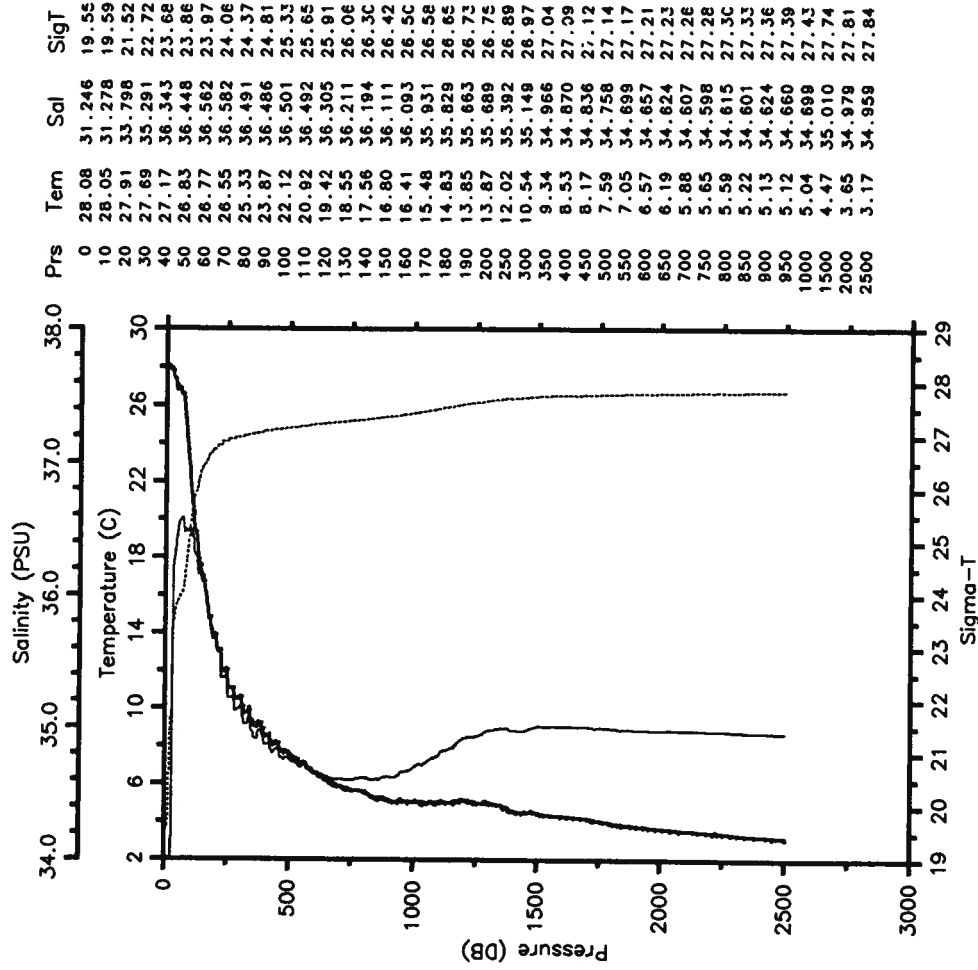
— Tem — Sal
..... SigT



WHI-STACS31-88 CTD 14 WHITING

Date 07 09 88 Latitude 9.205 N
Time 1110 Z Longitude 52.425 W

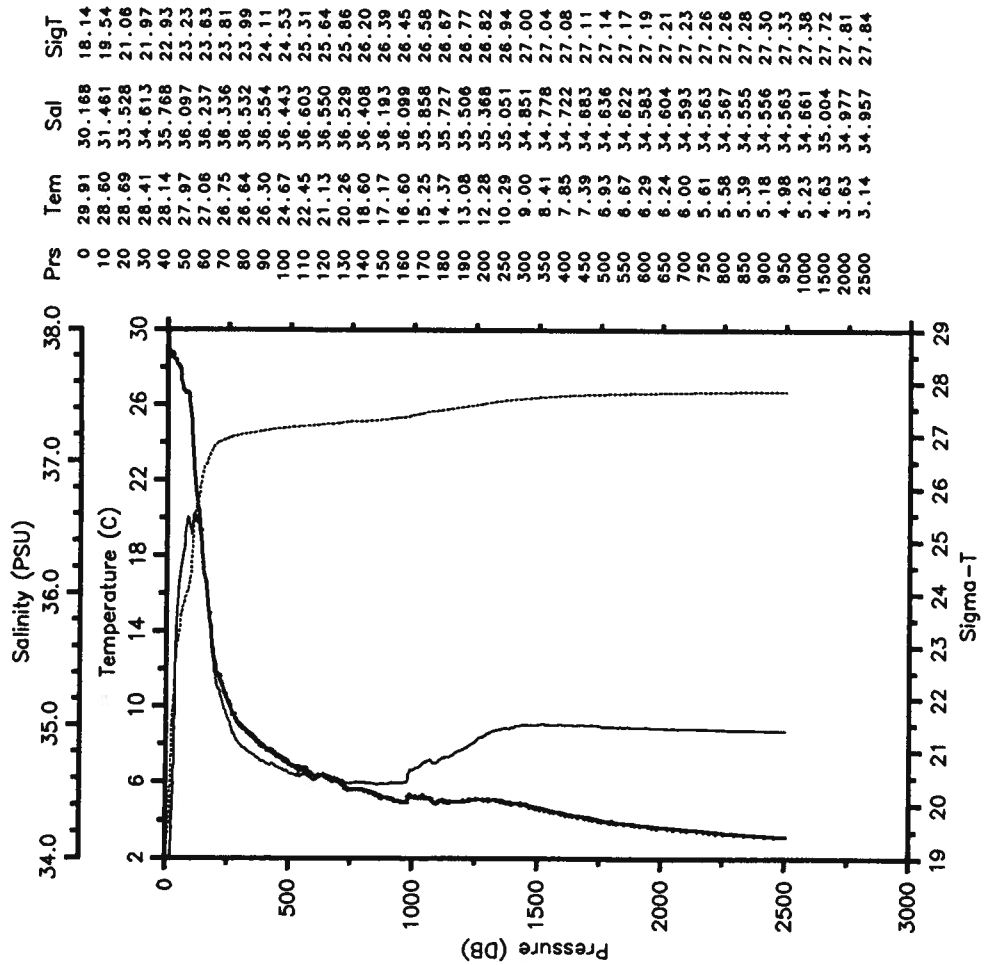
— Tem — Sal
..... SigT



WHI-STACS31-88 CTD 15 WHITING

Date 07 09 88 Latitude 8.657 N
 Time 1752 Z Longitude 51.587 W

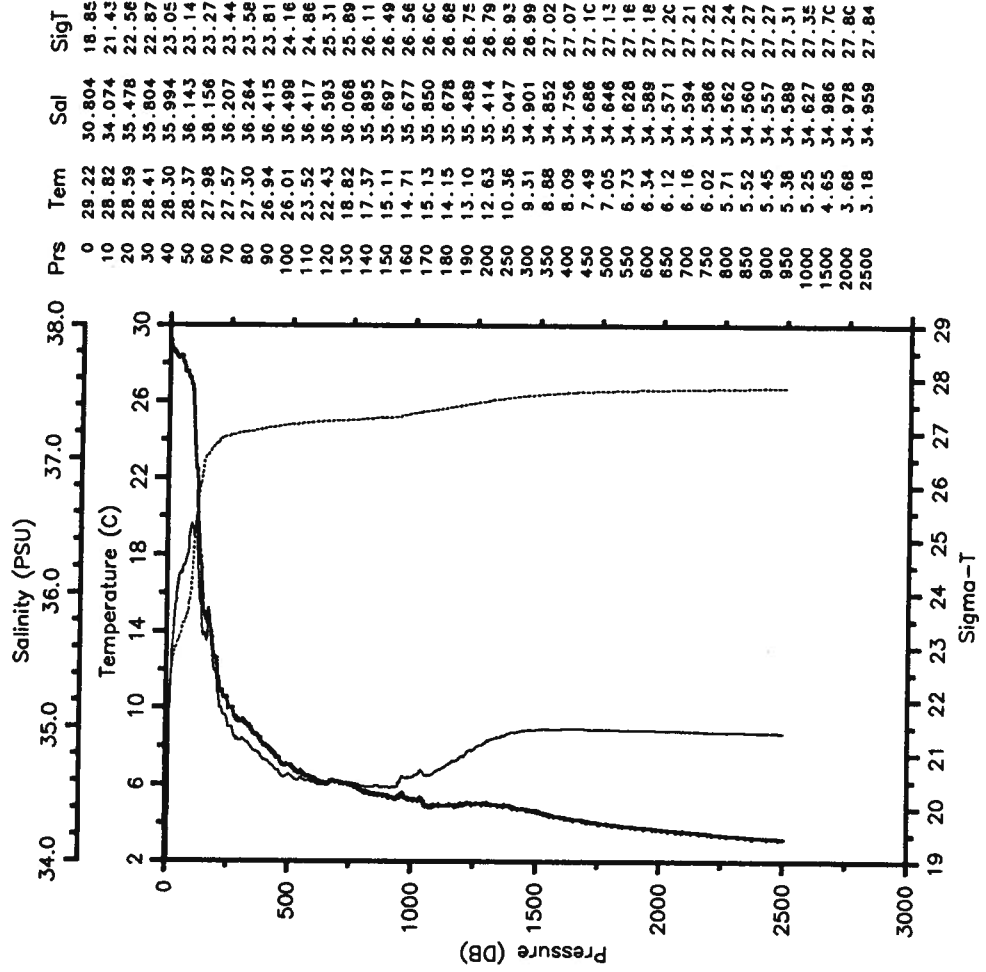
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 16 WHITING

Date 07 10 88 Latitude 8.113 N
 Time 0015 Z Longitude 50.709 W

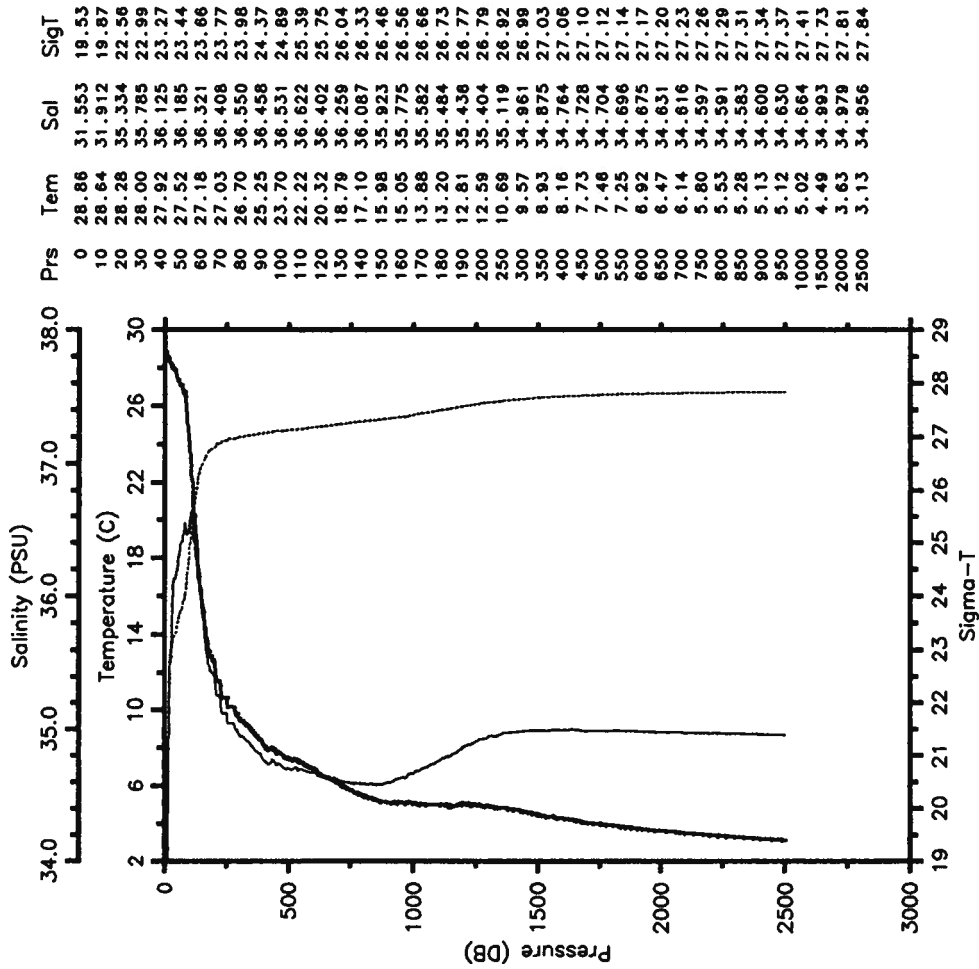
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 17 WHITING

Date 07 10 88 Latitude 7.609 N
 Time 0627 Z Longitude 49.884 W

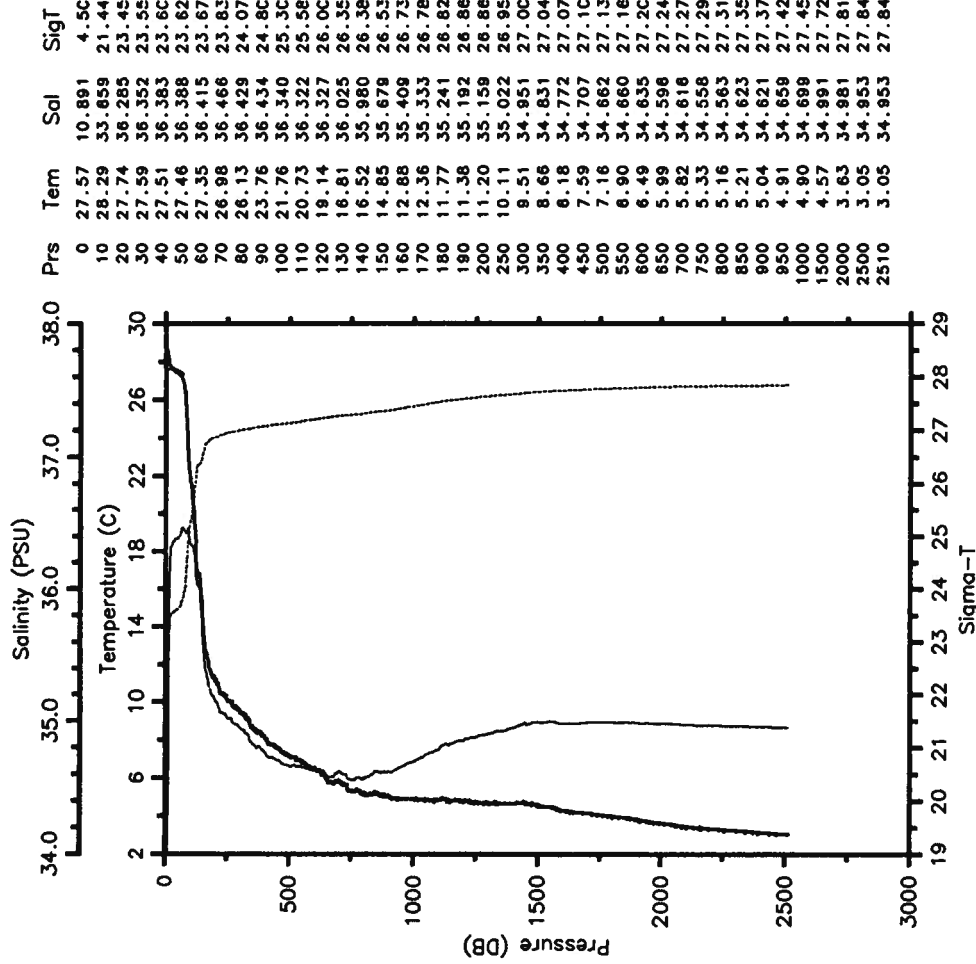
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 18 WHITING

Date 07 10 88 Latitude 7.091 N
 Time 1250 Z Longitude 49.030 W

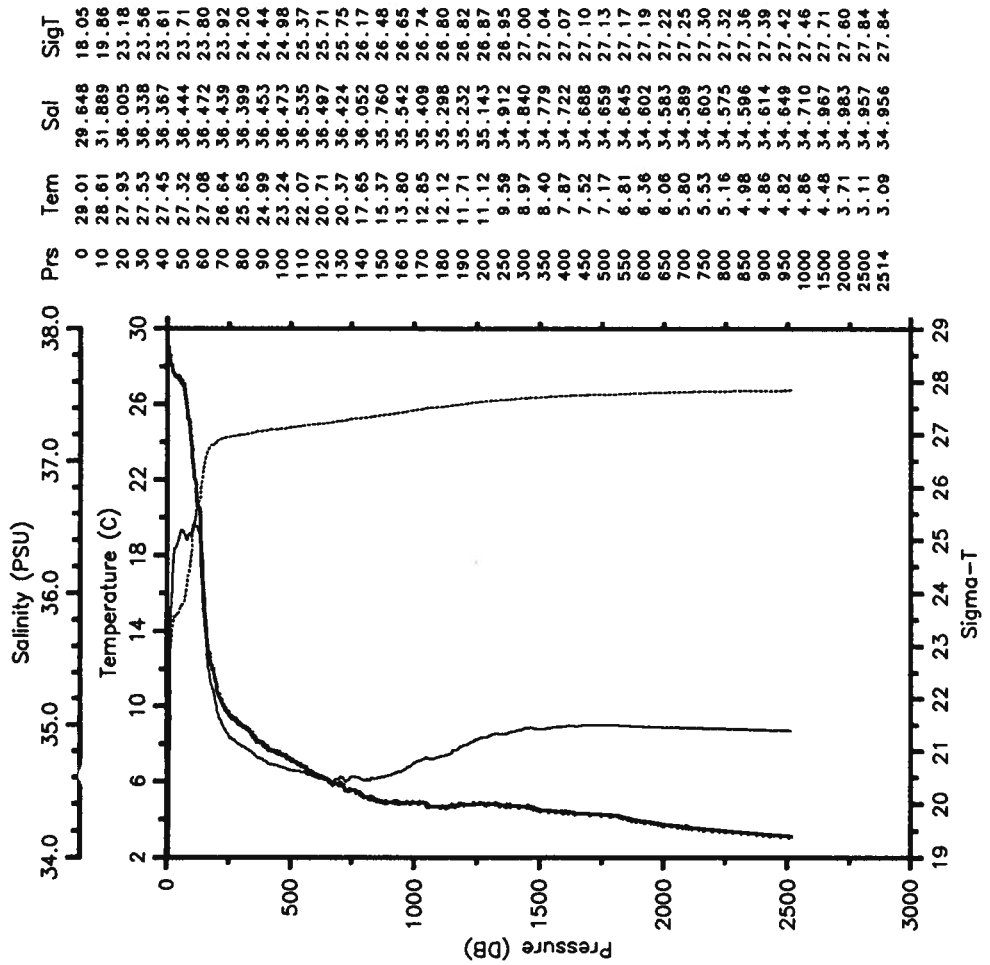
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 19 WHITING

Date 07 10 88 Latitude 6.672 N
 Time 1857 Z Longitude 48.274 W

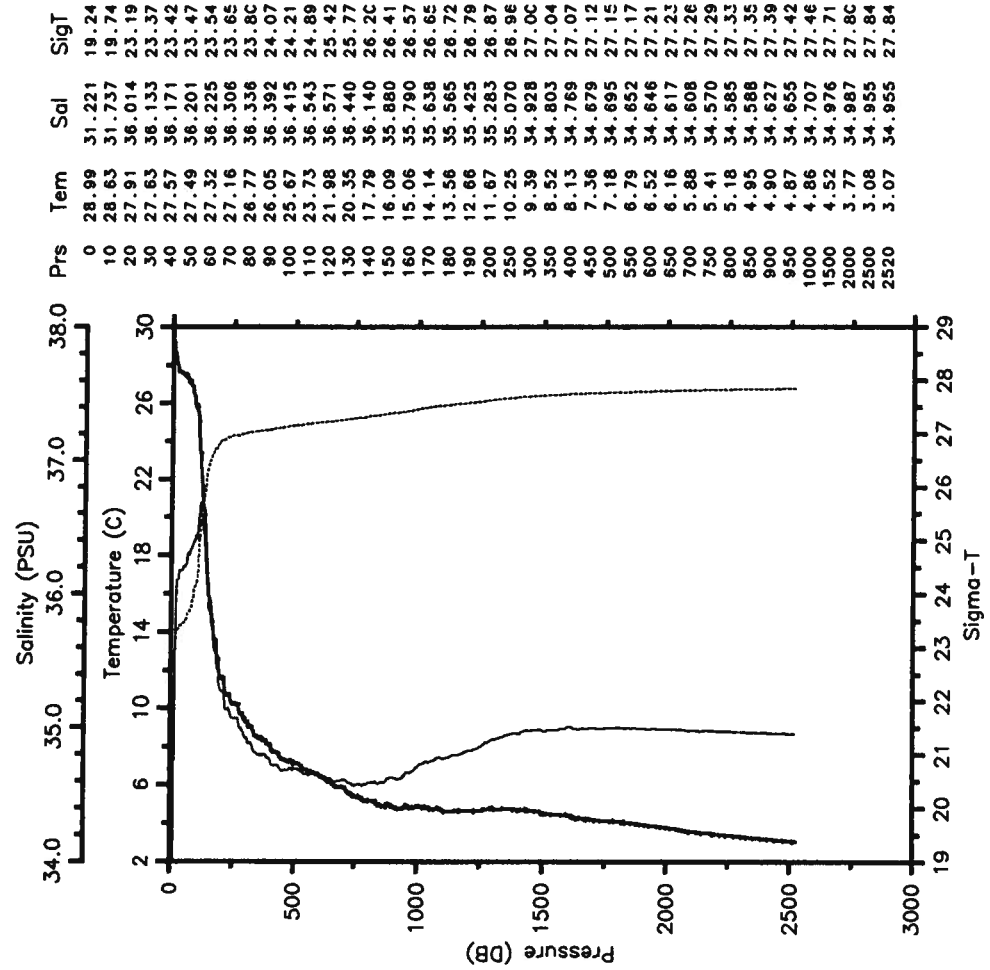
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 20 WHITING

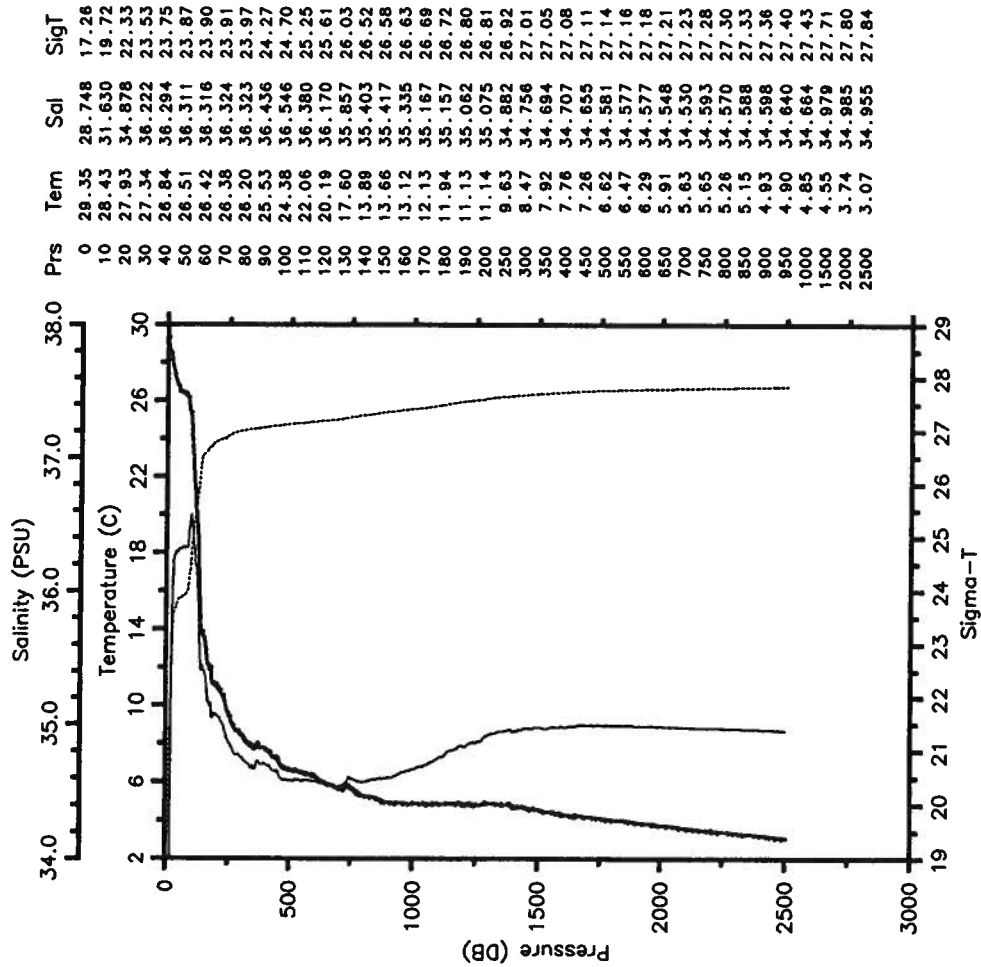
Date 07 10 88 Latitude 6.219 N
 Time 2343 Z Longitude 48.512 W

— Tem — Sal
 SigT



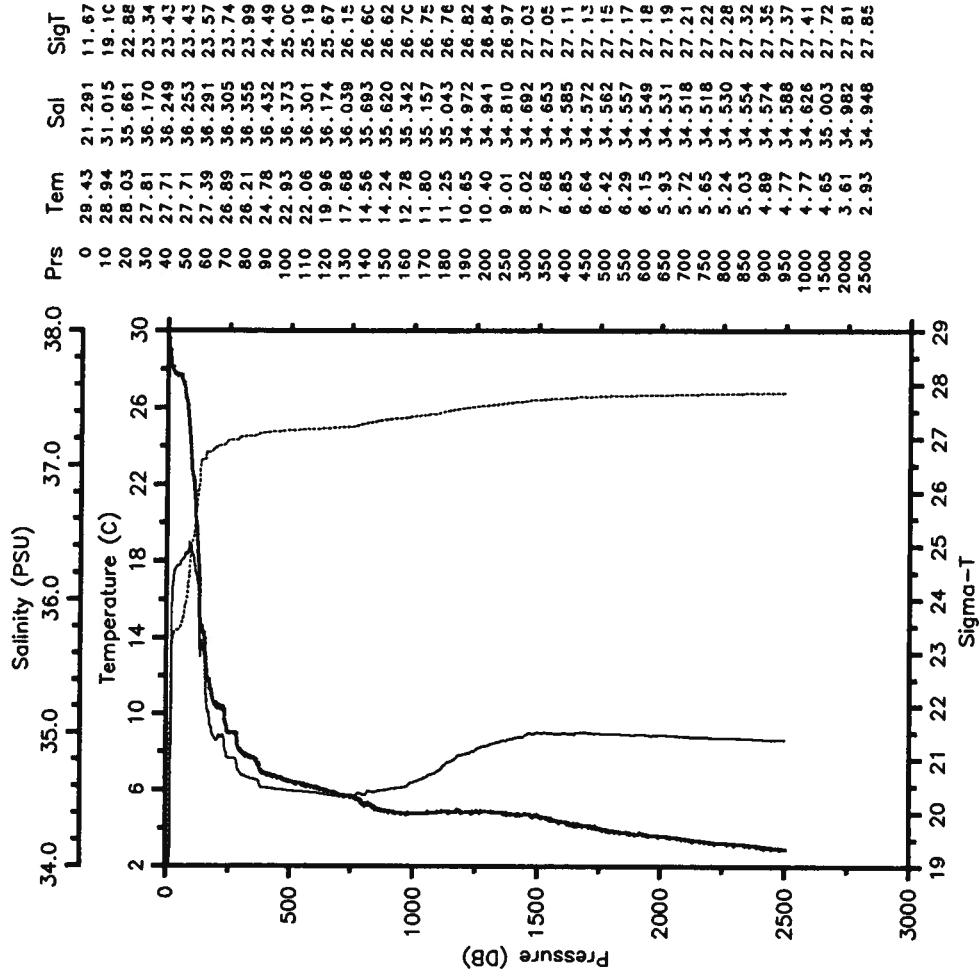
WHI-STACS31-88 CTD 21 WHITING
 Date 07 11 88 Latitude 5.782 N
 Time 0423 Z Longitude 48.746 W

— Tem — Sal
 SigT



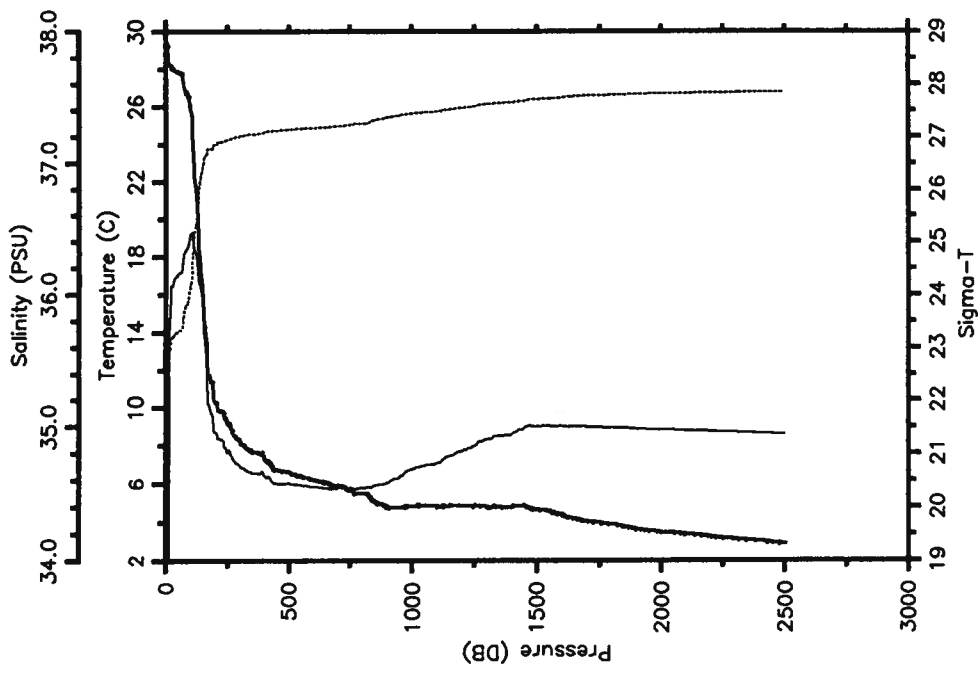
WHI-STACS31-88 CTD 22 WHITING
 Date 07 11 88 Latitude 5.338 N
 Time 0840 Z Longitude 48.984 W

— Tem — Sal
 SigT



WHI-STACS31-88 CTD 23 WHITING
 Date 07 11 88 Latitude 5.113 N
 Time 1205 Z Longitude 49.147 W

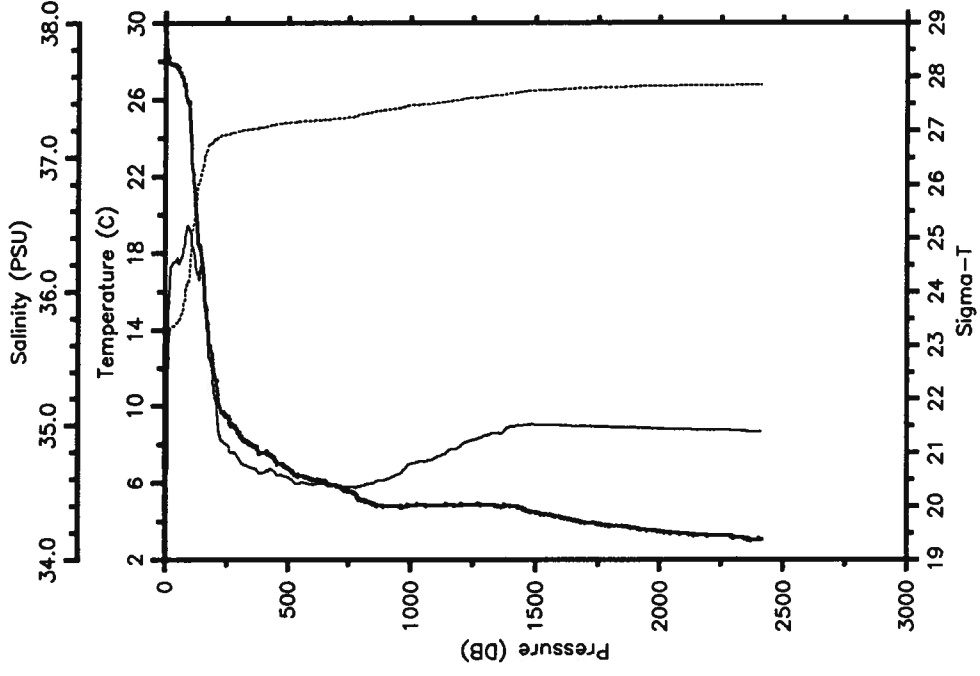
— Tem — Sal
 SigT



Prs	Tem	Sal	SigT
0	28.00	36.270	23.54
10	28.53	36.440	23.77
20	28.11	36.033	23.86
30	28.03	36.071	24.14
40	27.81	36.136	24.71
50	27.85	36.158	25.27
60	27.82	36.168	25.62
70	27.43	36.270	26.19
80	26.85	36.332	26.42
90	26.64	36.361	26.63
100	26.00	36.458	26.77
110	24.11	36.445	26.77
120	21.84	36.327	26.86
130	20.18	36.182	26.95
140	17.54	36.055	27.01
150	16.33	35.979	27.05
160	14.22	35.637	27.08
170	11.77	35.171	27.12
180	11.57	35.125	27.14
190	11.32	35.062	27.15
200	10.31	34.954	27.17
250	9.15	34.812	27.18
300	8.23	34.704	27.21
350	7.69	34.654	27.23
400	7.32	34.627	27.25
450	6.73	34.576	27.25
500	6.61	34.576	27.32
550	6.39	34.560	27.37
600	6.21	34.548	27.41
650	6.08	34.539	27.44
700	5.89	34.542	27.44
750	5.67	34.543	27.44
800	5.51	34.542	27.44
850	5.07	34.560	27.44
900	4.78	34.579	27.44
950	4.76	34.627	27.44
1000	4.84	34.680	27.44
1500	4.66	35.002	27.72
2000	3.47	34.877	27.82
2500	2.89	34.944	27.85

WHI-STACS31-88 CTD 24 WHITING
 Date 07 11 88 Latitude 4.792 N
 Time 1627 Z Longitude 49.217 W

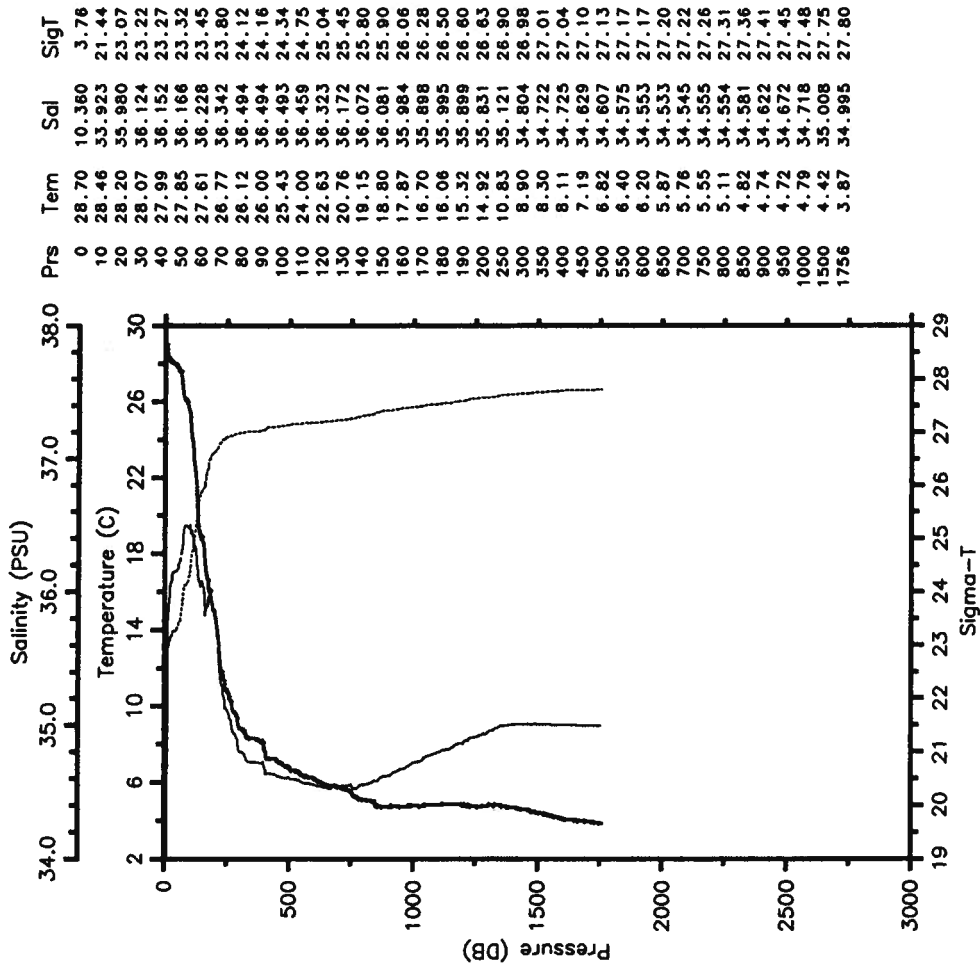
— Tem — Sal
 SigT



Prs	Tem	Sal	SigT
0	29.51	36.282	23.65
10	28.33	36.330	23.90
20	27.91	36.166	24.17
30	27.86	36.217	24.38
40	27.81	36.225	24.44
50	27.69	36.251	24.53
60	27.37	36.236	24.53
70	27.12	36.282	24.65
80	26.56	36.376	24.90
90	25.96	36.491	25.17
100	25.22	36.455	25.38
110	22.48	36.340	25.38
120	21.47	36.275	25.34
130	19.46	36.129	25.77
140	18.36	36.113	26.04
150	17.62	36.167	26.26
160	15.88	35.906	26.52
170	14.52	35.718	26.63
180	13.21	35.496	26.74
190	12.80	35.434	26.77
200	11.84	35.223	26.83
250	9.49	34.856	26.93
300	8.63	34.758	26.99
350	8.00	34.685	27.03
400	7.57	34.650	27.06
450	7.16	34.647	27.12
500	6.79	34.614	27.14
550	6.37	34.571	27.17
600	6.19	34.560	27.18
650	6.12	34.569	27.20
700	5.84	34.555	27.22
750	5.58	34.542	27.24
800	5.14	34.550	27.30
850	4.92	34.571	27.34
900	4.80	34.596	27.38
950	4.79	34.638	27.41
1000	4.84	34.716	27.47
1500	4.48	35.008	27.74
2000	3.48	34.977	27.82
2412	3.04	34.955	27.85

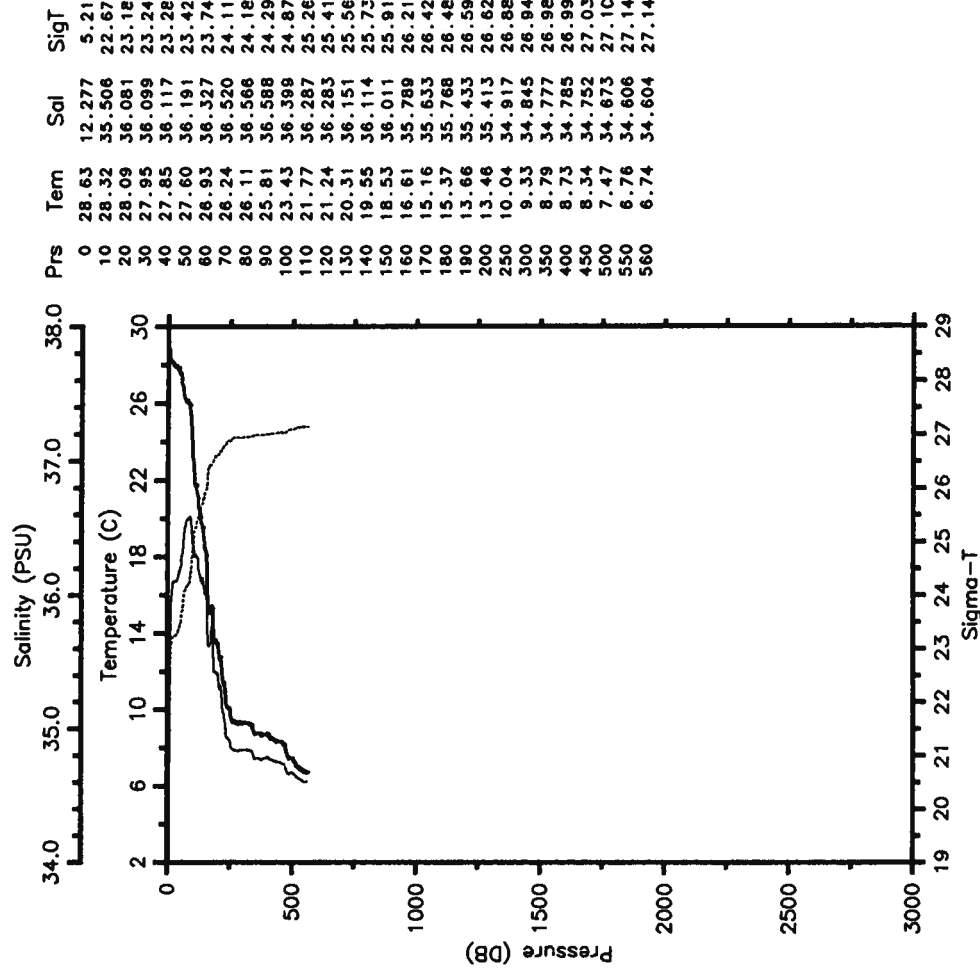
WHI-STACS31-88 CTD 25 WHITING
 Date 07 11 88 Latitude 4.558 N
 Time 1936 Z Longitude 49.387 W

— Tem — Sal
 SigT



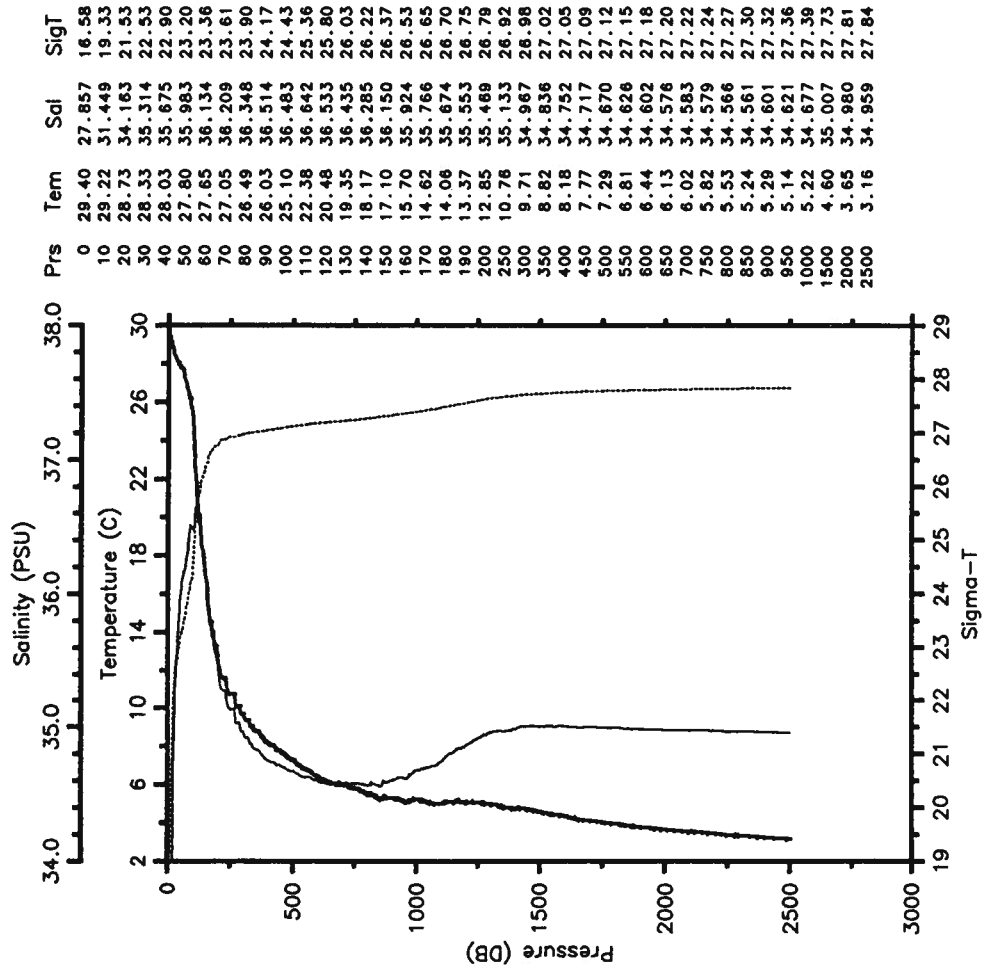
WHI-STACS31-88 CTD 26 WHITING
 Date 07 11 88 Latitude 4.249 N
 Time 2246 Z Longitude 49.588 W

— Tem — Sal
 SigT



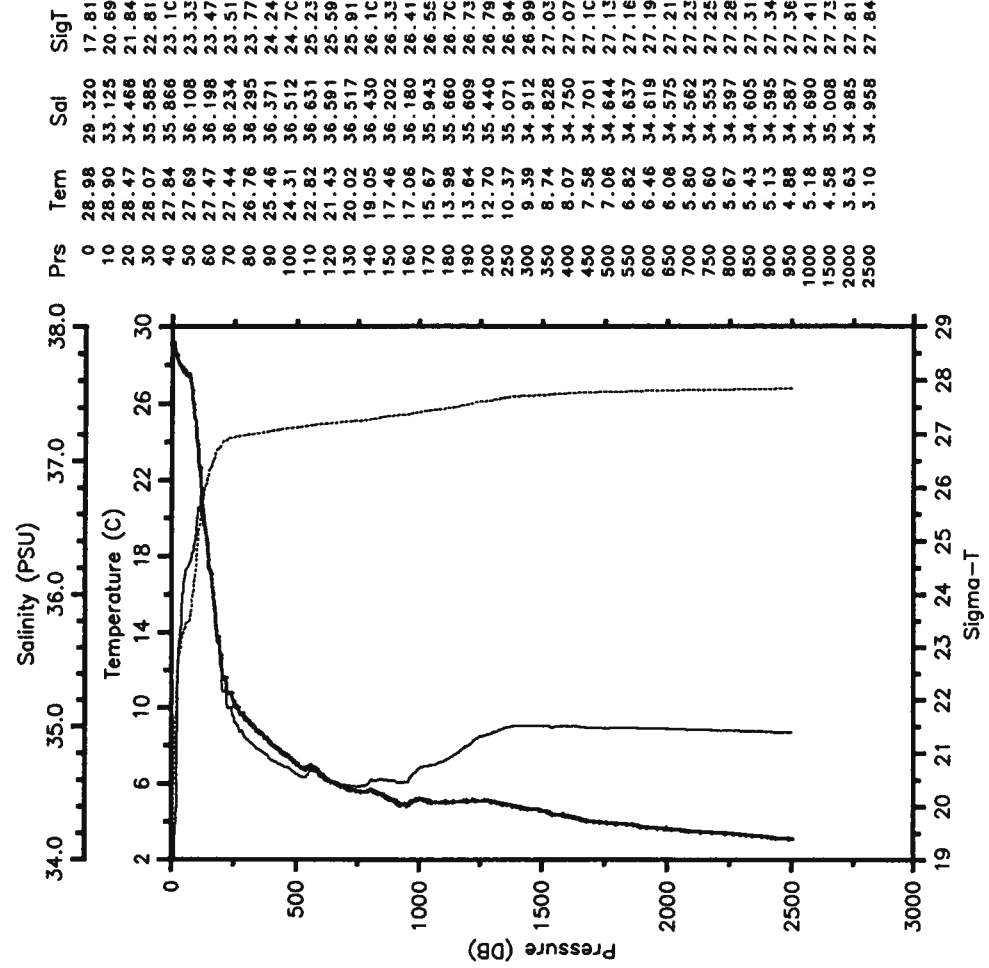
WHI-STACS31-88 CTD 27 WHITING
 Date 07 13 88 Latitude 8.861 N
 Time 0127 Z Longitude 51.907 W

— Tem — Sal
 SigT



WHI-STACS31-88 CTD 28 WHITING
 Date 07 13 88 Latitude 8.446 N
 Time 0627 Z Longitude 52.172 W

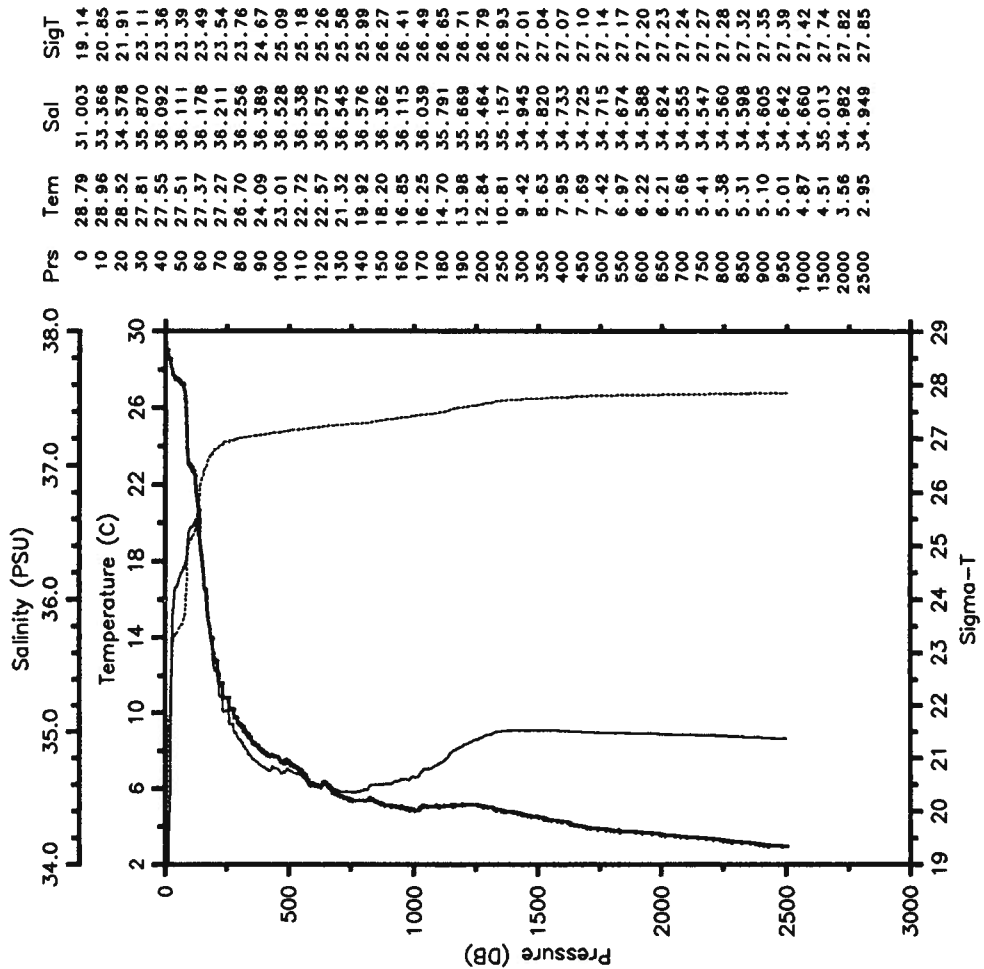
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 29 WHITING

Date 07 13 88 Latitude 8.032 N
 Time 1130 Z Longitude 52.436 W

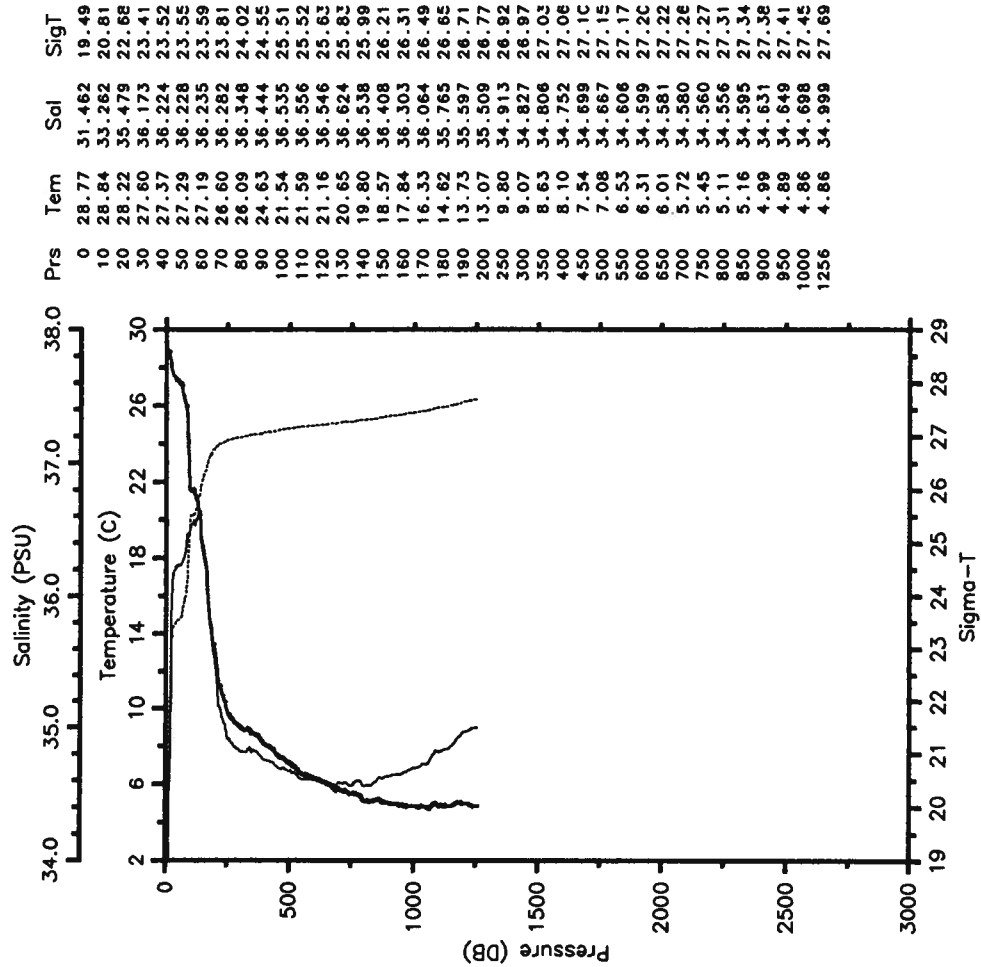
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 30 WHITING

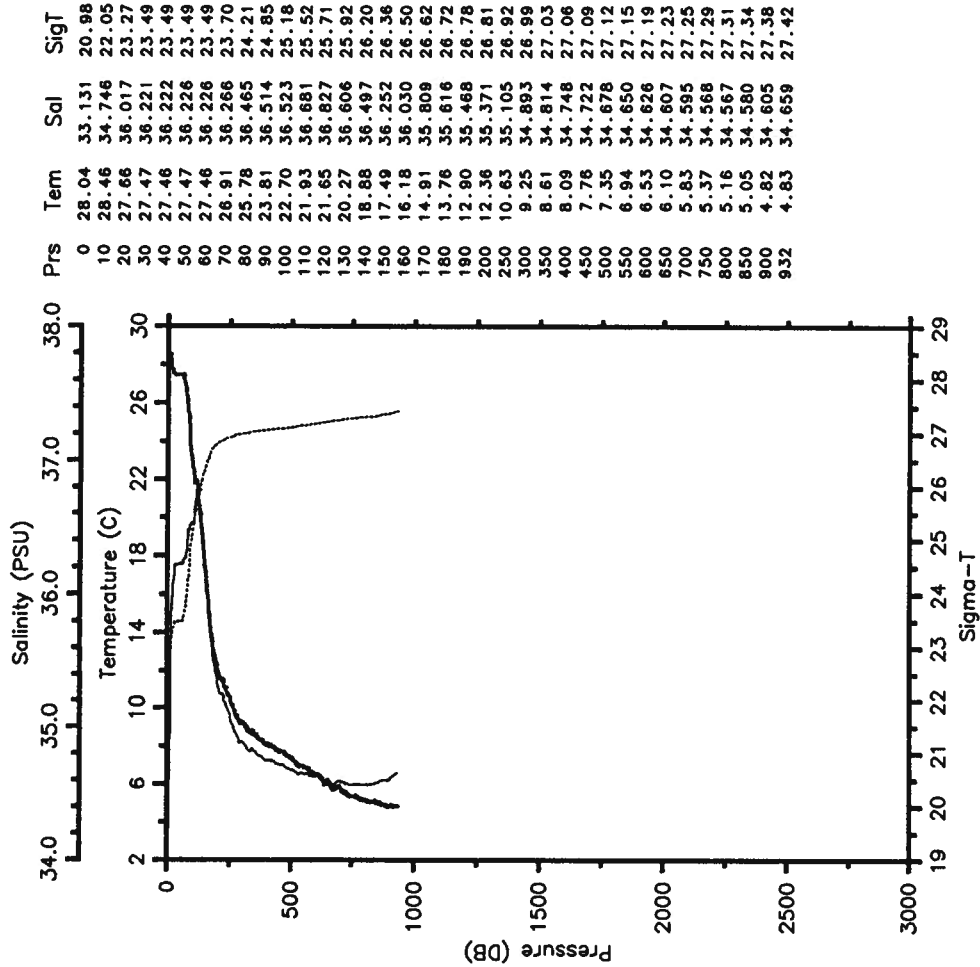
Date 07 14 88 Latitude 7.662 N
 Time 0136 Z Longitude 52.666 W

— Tem — Sal
 SigT



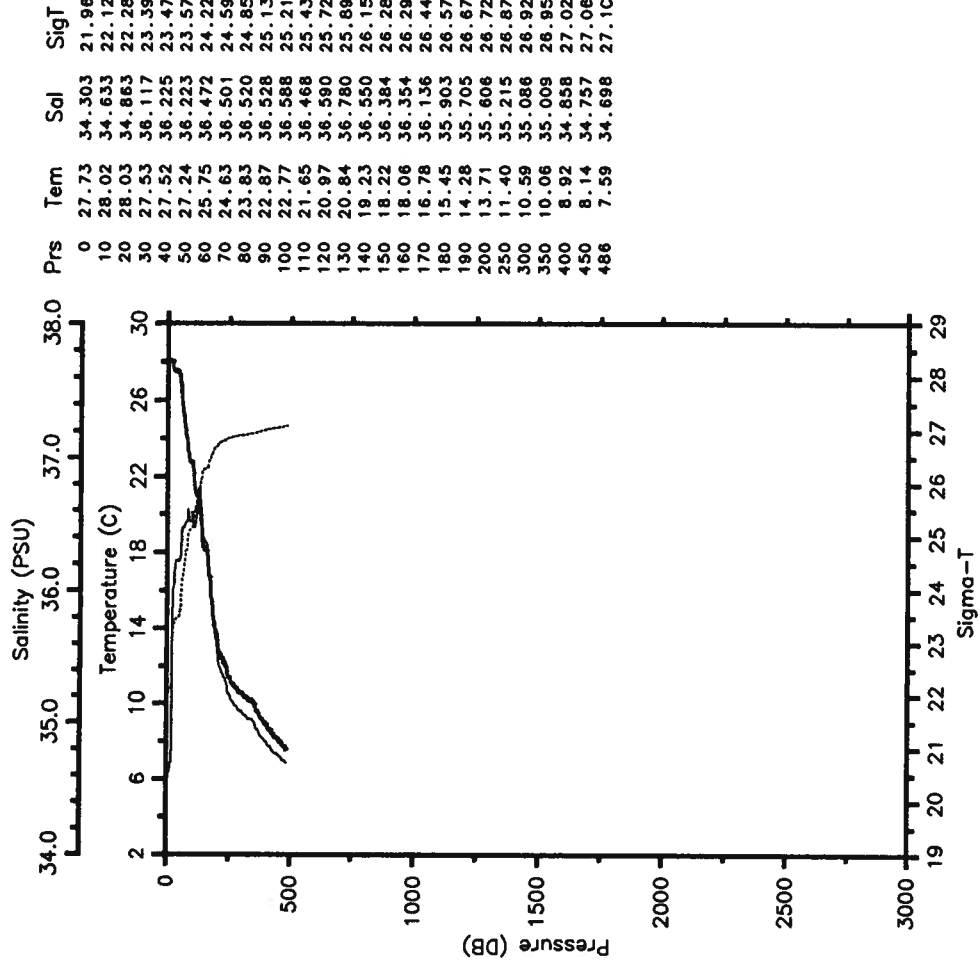
WHI-STACS31-88 CTD 31 WHITING
 Date 07 14 88 Latitude 7.438 N
 Time 0444 Z Longitude 52.793 W

— Tem — Sal
 SigT



WHI-STACS31-88 CTD 32 WHITING
 Date 07 14 88 Latitude 7.231 N
 Time 0712 Z Longitude 52.937 W

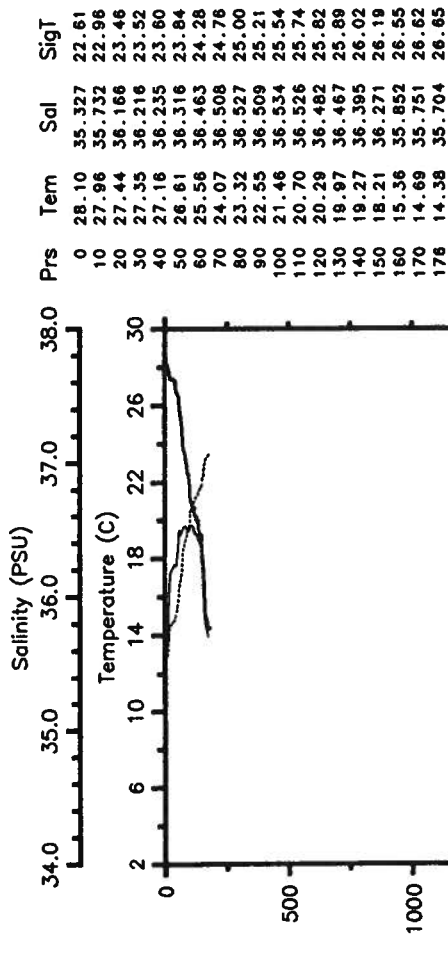
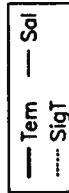
— Tem — Sal
 SigT



WHI-STACS31-88 CTD 33 WHITING

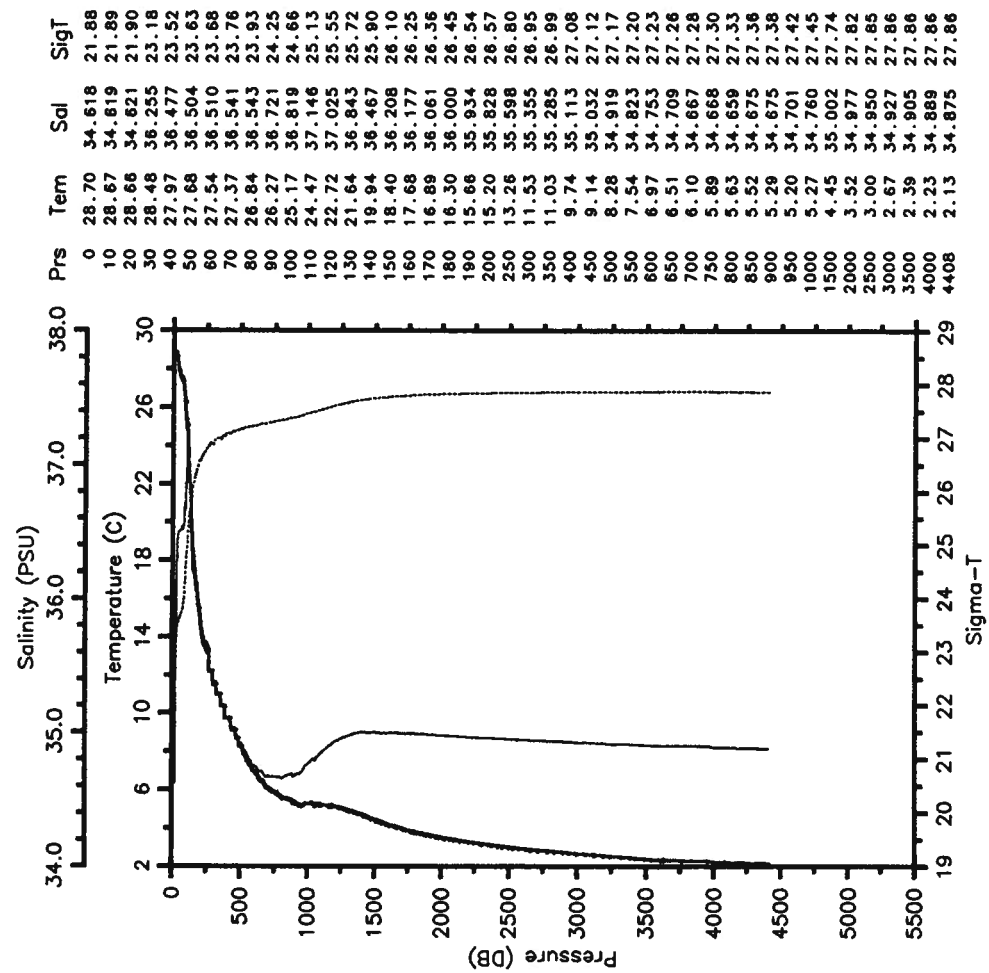
Date 07 14 88 Latitude 7.008 N

Time 0903 Z Longitude 53.055 W



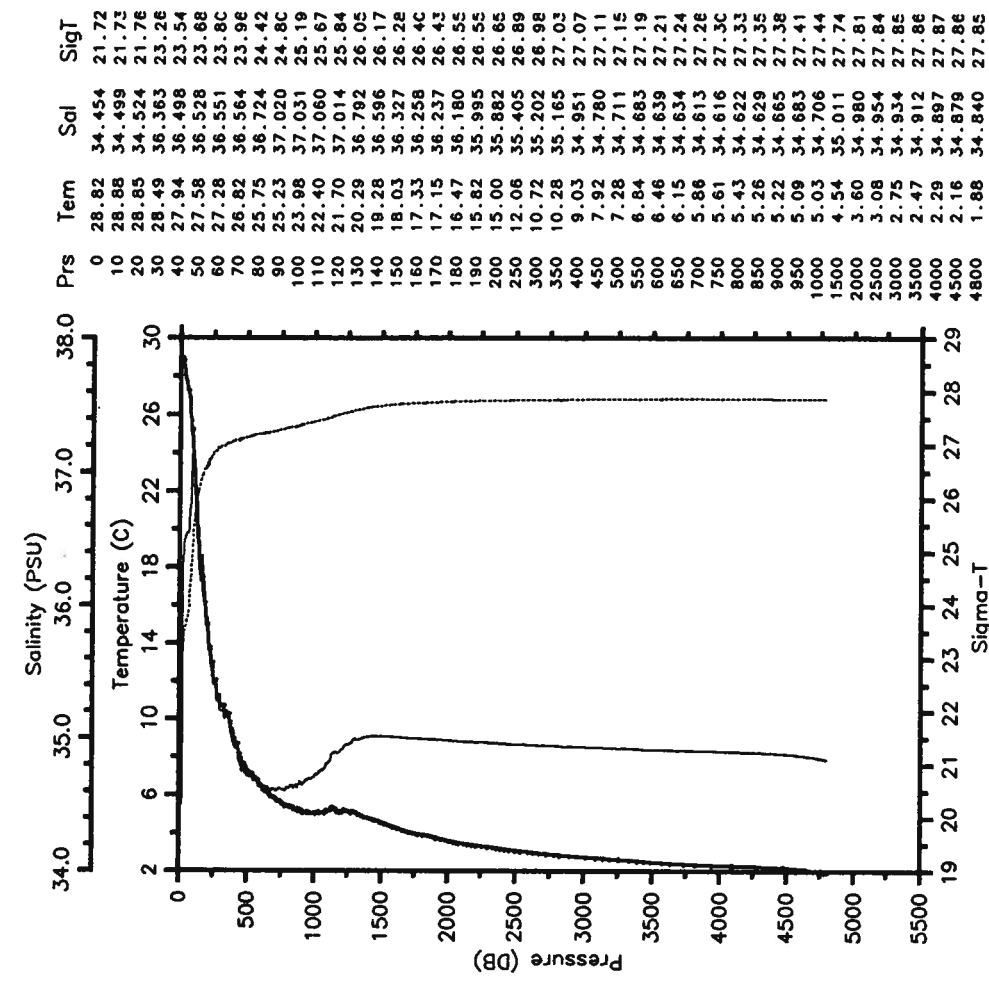
MIT-STACS32-88 CTD 1 MT MITCHELL
 Date 09 13 88 Latitude 12.200 N
 Time 1254 Z Longitude 55.447 W

— Tem — Sal
 SigT



MIT-STACS32-88 CTD 2 MT MITCHELL
 Date 09 13 88 Latitude 11.547 N
 Time 2235 Z Longitude 54.270 W

— Tem — Sal
 SigT

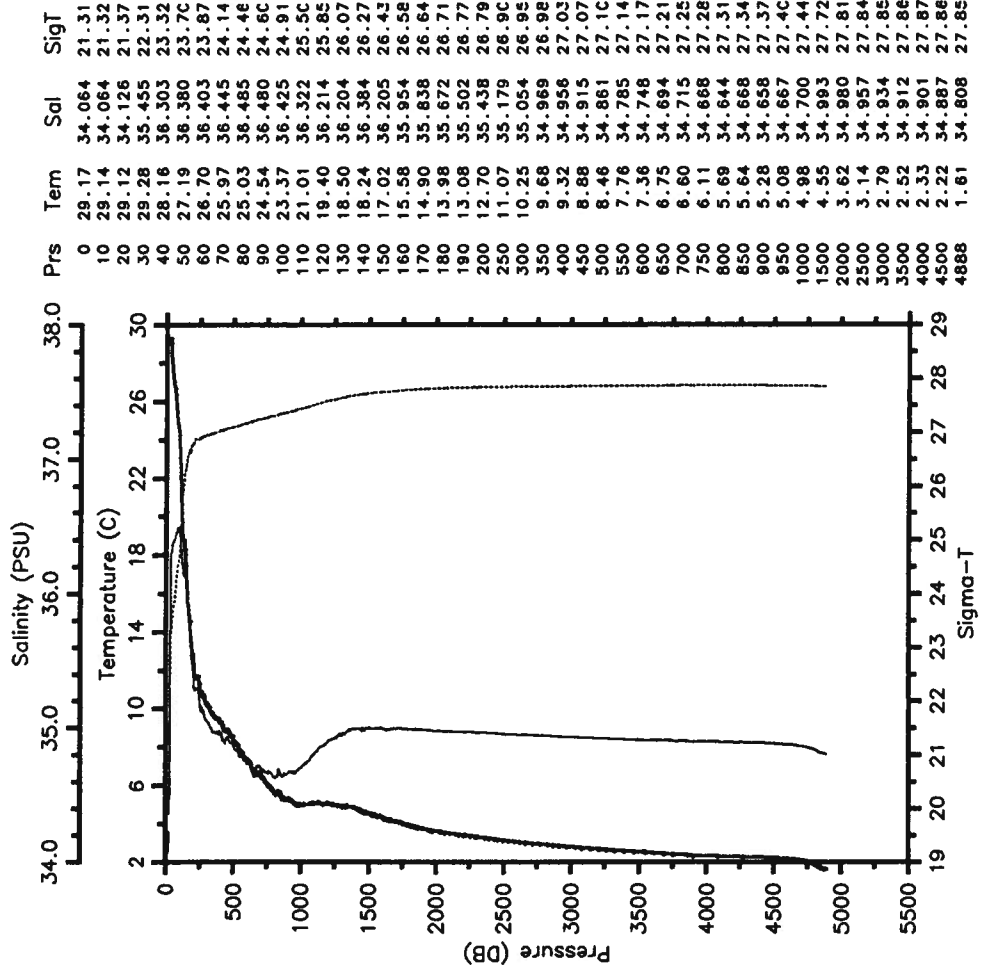
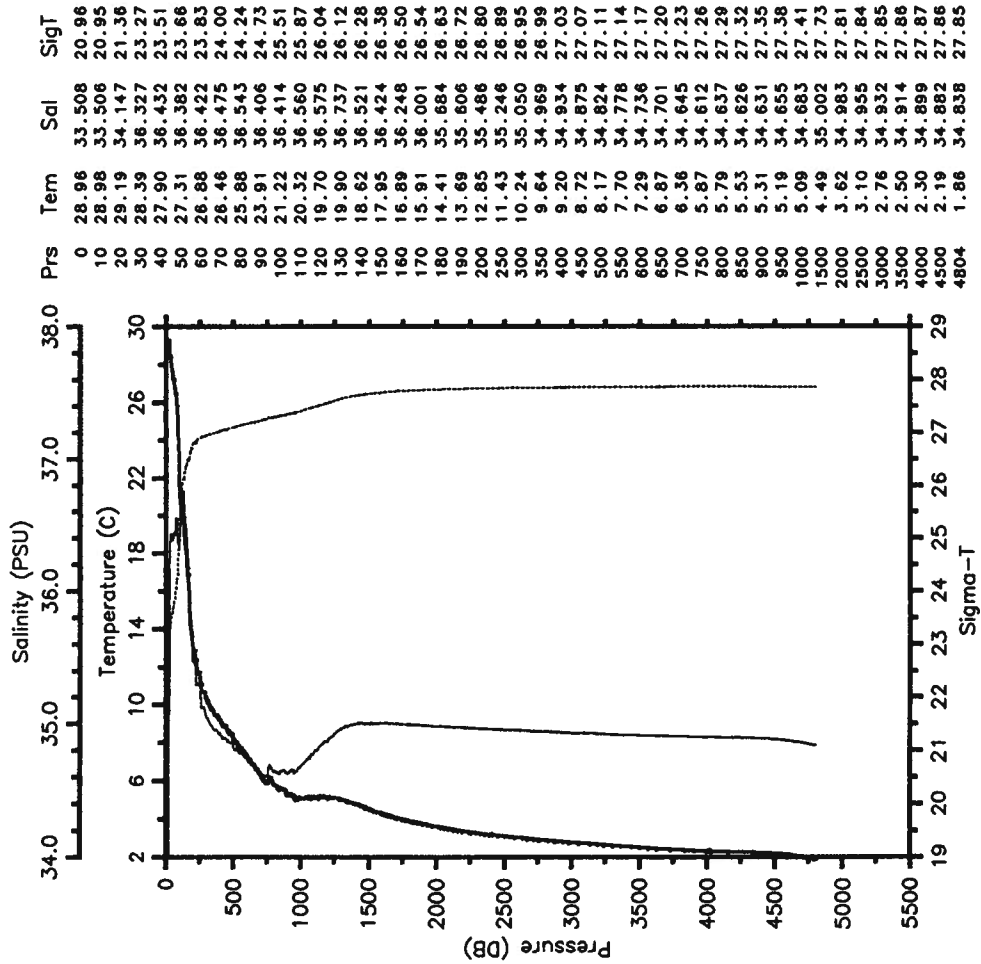


MIT-STACS32-88 CTD 3 MT MITCHELL
 Date 09 14 88 Latitude 10.813 N
 Time 1034 Z Longitude 52.812 W

MIT-STACS32-88 CTD 4 MT MITCHELL
 Date 09 14 88 Latitude 9.990 N
 Time 2240 Z Longitude 51.232 W

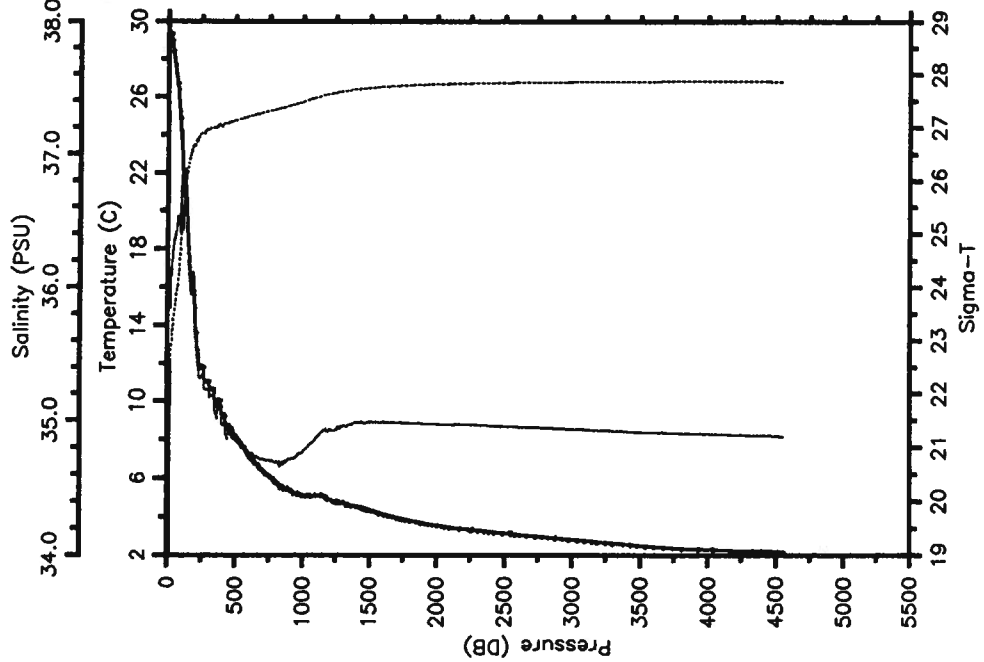
— Tem — Sal
 SigT

— Tem — Sal
 SigT



MIT-STACS32-88 CTD 5 MT MITCHELL
 Date 09 15 88 Latitude 9.263 N
 Time 0807 Z Longitude 49.978 W

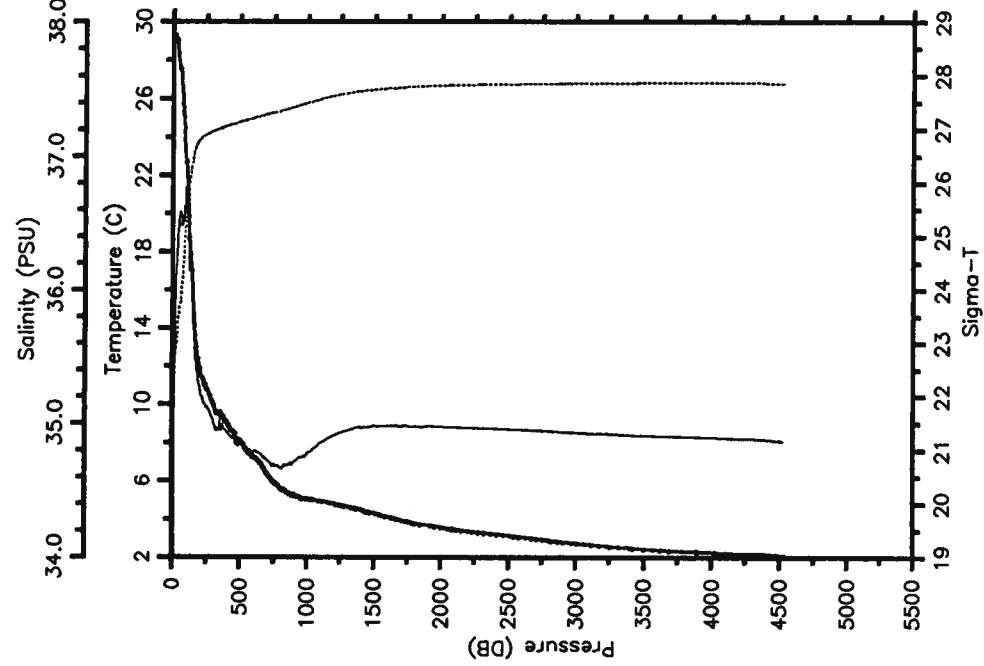
— Tem — Sal
 SigT



Prs	Tem	Sal	SigT
0	28.66	32.404	20.23
10	28.93	32.398	20.14
20	29.35	34.789	21.79
30	28.98	36.164	22.95
40	28.30	36.277	23.28
50	27.70	36.369	23.52
60	27.00	36.391	23.77
70	26.67	36.532	23.98
80	25.80	36.500	24.23
90	24.84	36.554	24.57
100	24.13	36.831	24.99
110	21.68	36.426	25.39
120	20.93	36.509	25.66
130	20.93	36.887	25.95
140	19.92	36.693	26.08
150	18.31	36.403	26.27
160	17.29	36.260	26.41
170	16.19	36.054	26.51
180	15.68	36.013	26.60
190	15.77	36.105	26.65
200	15.00	35.904	26.67
250	11.77	35.324	26.89
300	11.04	35.227	26.94
350	10.00	35.055	27.00
400	9.20	34.962	27.06
450	8.71	34.910	27.09
500	8.21	34.857	27.13
550	7.64	34.793	27.16
600	7.19	34.763	27.21
650	6.73	34.723	27.24
700	6.41	34.714	27.27
750	6.14	34.699	27.30
800	5.78	34.687	27.33
850	5.56	34.682	27.36
900	5.39	34.713	27.40
950	5.20	34.739	27.44
1000	5.11	34.765	27.48
1500	4.34	34.986	27.74
2000	3.55	34.971	27.81
2500	3.14	34.956	27.84
3000	2.79	34.934	27.85
3500	2.50	34.912	27.86
4000	2.29	34.899	27.87
4500	2.18	34.881	27.87
4554	2.15	34.877	27.86

MIT-STACS32-88 CTD 6 MT MITCHELL
 Date 09 15 88 Latitude 8.675 N
 Time 1642 Z Longitude 48.810 W

— Tem — Sal
 SigT



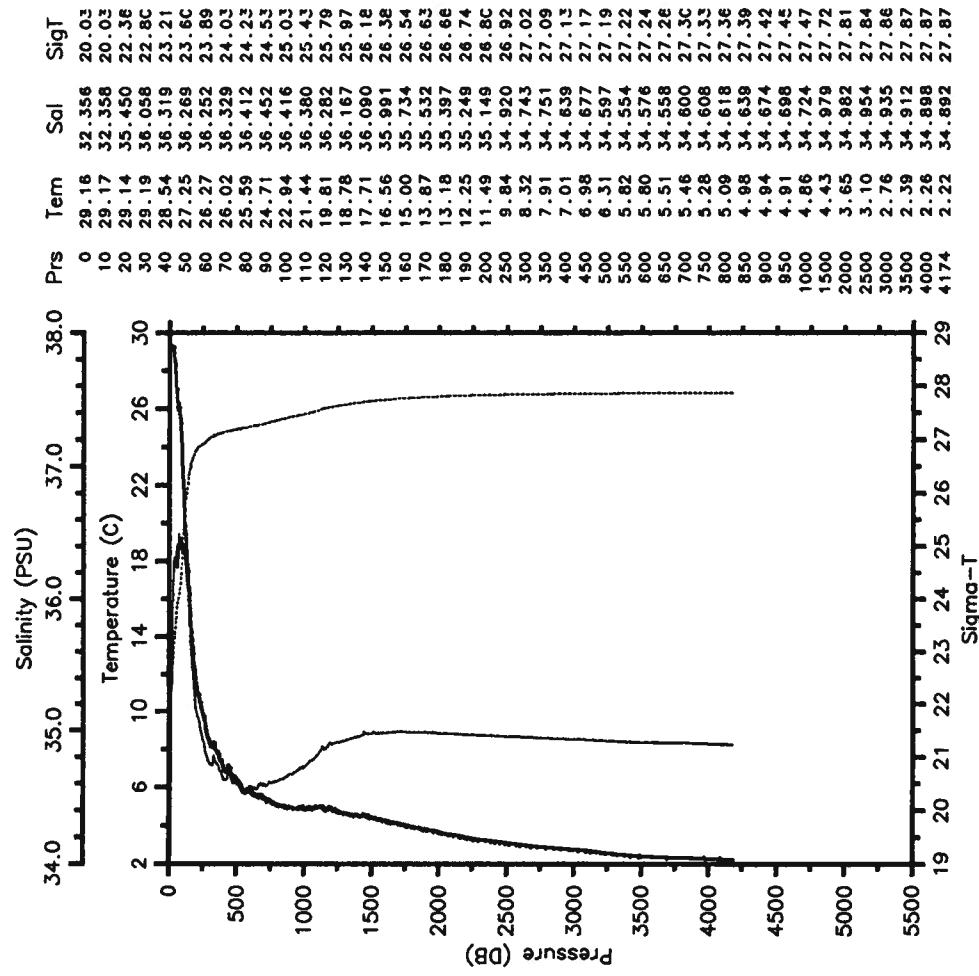
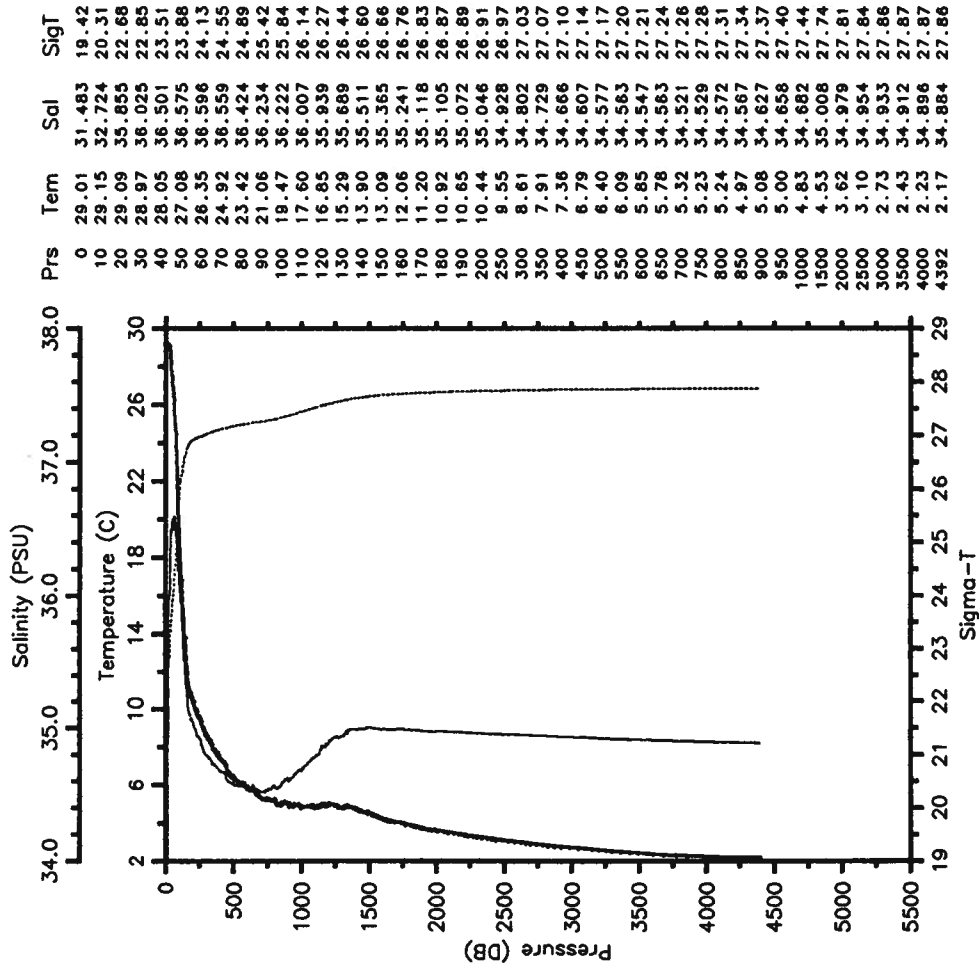
Prs	Tem	Sal	SigT
0	29.33	32.958	20.42
10	29.33	32.958	20.42
20	29.05	35.904	22.73
30	29.07	36.181	22.93
40	28.21	36.402	23.38
50	27.63	36.535	23.67
60	27.37	36.589	23.78
70	26.23	36.504	24.10
80	25.11	36.528	24.46
90	23.51	36.633	25.02
100	22.73	36.757	25.35
110	21.74	36.609	25.52
120	19.67	36.215	25.78
130	18.06	36.159	26.15
140	17.21	36.113	26.32
150	15.74	35.782	26.41
160	14.37	35.640	26.60
170	13.25	35.473	26.71
180	12.73	35.385	26.75
190	12.21	35.316	26.79
200	11.93	35.275	26.82
250	10.80	35.114	26.90
300	10.06	35.023	26.98
350	9.54	35.024	27.05
400	9.07	34.940	27.08
450	8.61	34.895	27.10
500	8.14	34.870	27.15
550	7.61	34.803	27.18
600	7.24	34.792	27.22
650	6.95	34.773	27.25
700	6.40	34.727	27.29
750	5.91	34.688	27.32
800	5.60	34.670	27.34
850	5.40	34.683	27.38
900	5.25	34.709	27.42
950	5.14	34.740	27.45
1000	5.05	34.779	27.49
1500	4.32	34.982	27.74
2000	3.58	34.978	27.81
2500	3.14	34.957	27.84
3000	2.74	34.931	27.85
3500	2.44	34.911	27.86
4000	2.25	34.896	27.87
4500	2.09	34.871	27.86
4524	2.09	34.869	27.86

MIT-STACS32-88 CTD 7 MT MITCHELL
 Date 09 16 88 Latitude 8.007 N
 Time 0225 Z Longitude 47.540 W

MIT-STACS32-88 CTD 8 MT MITCHELL
 Date 09 16 88 Latitude 7.283 N
 Time 0916 Z Longitude 47.912 W

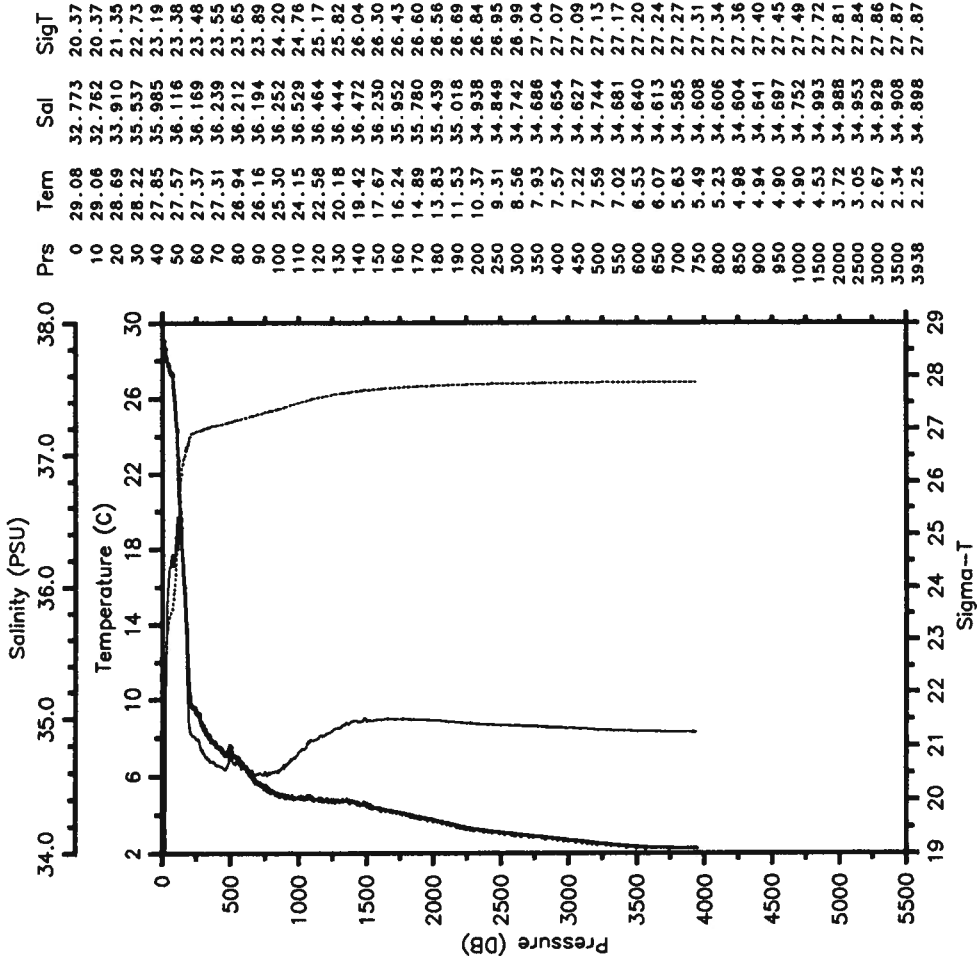
— Term — Sal
 SigT

— Term — Sal
 SigT



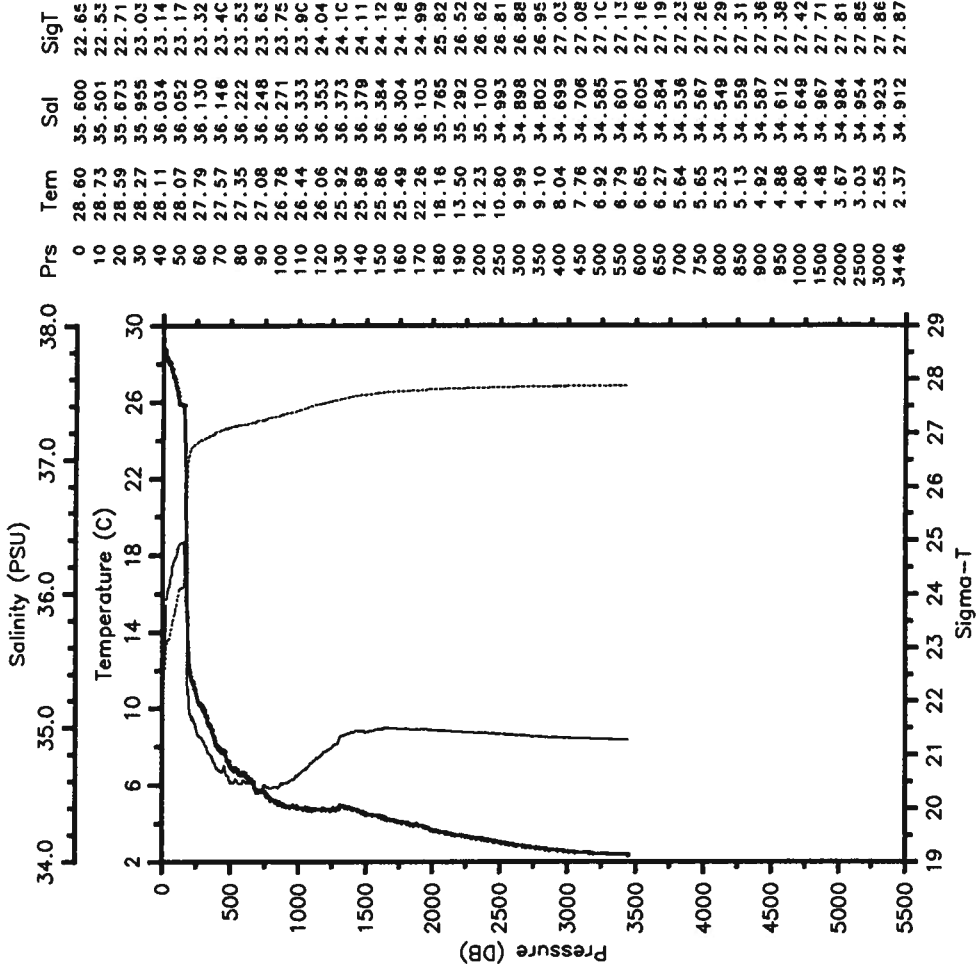
MIT-STACS32-88 CTD 9 MT MITCHELL
 Date 09 16 88 Latitude 6.597 N
 Time 1515 Z Longitude 48.280 W

— Tem — Sal
SigT



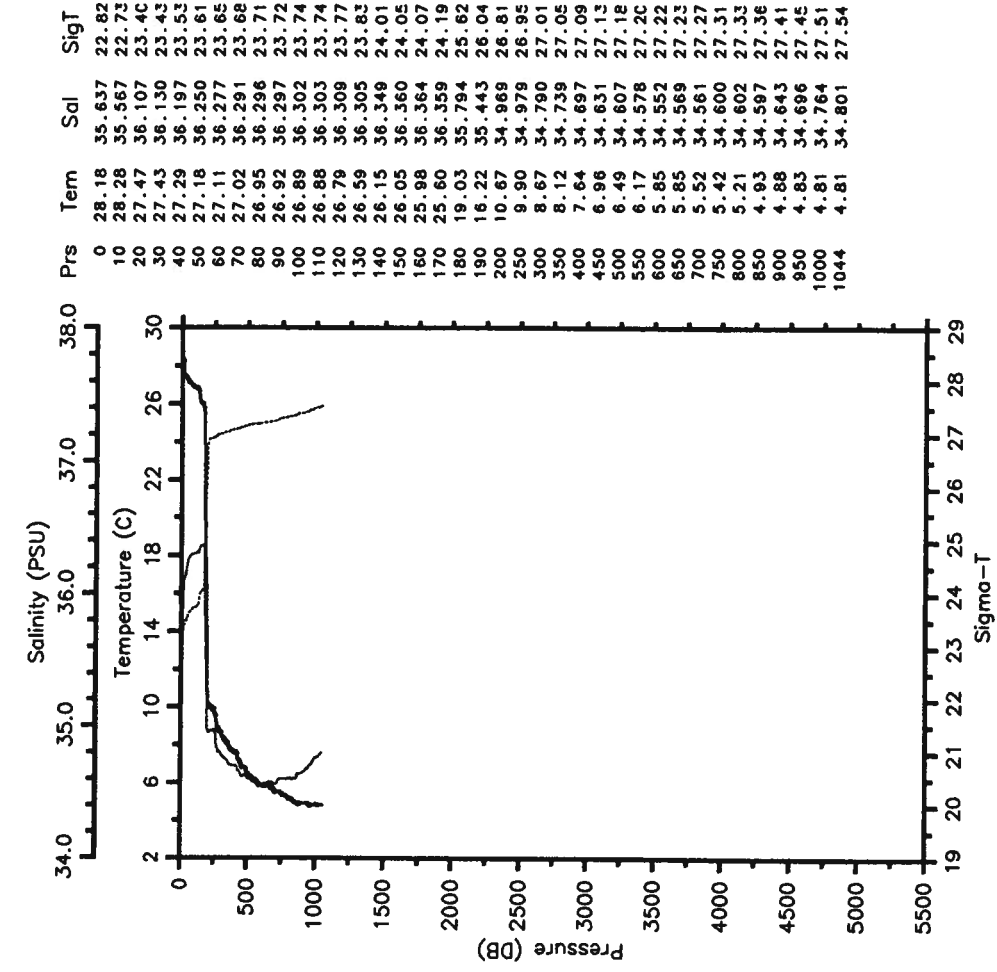
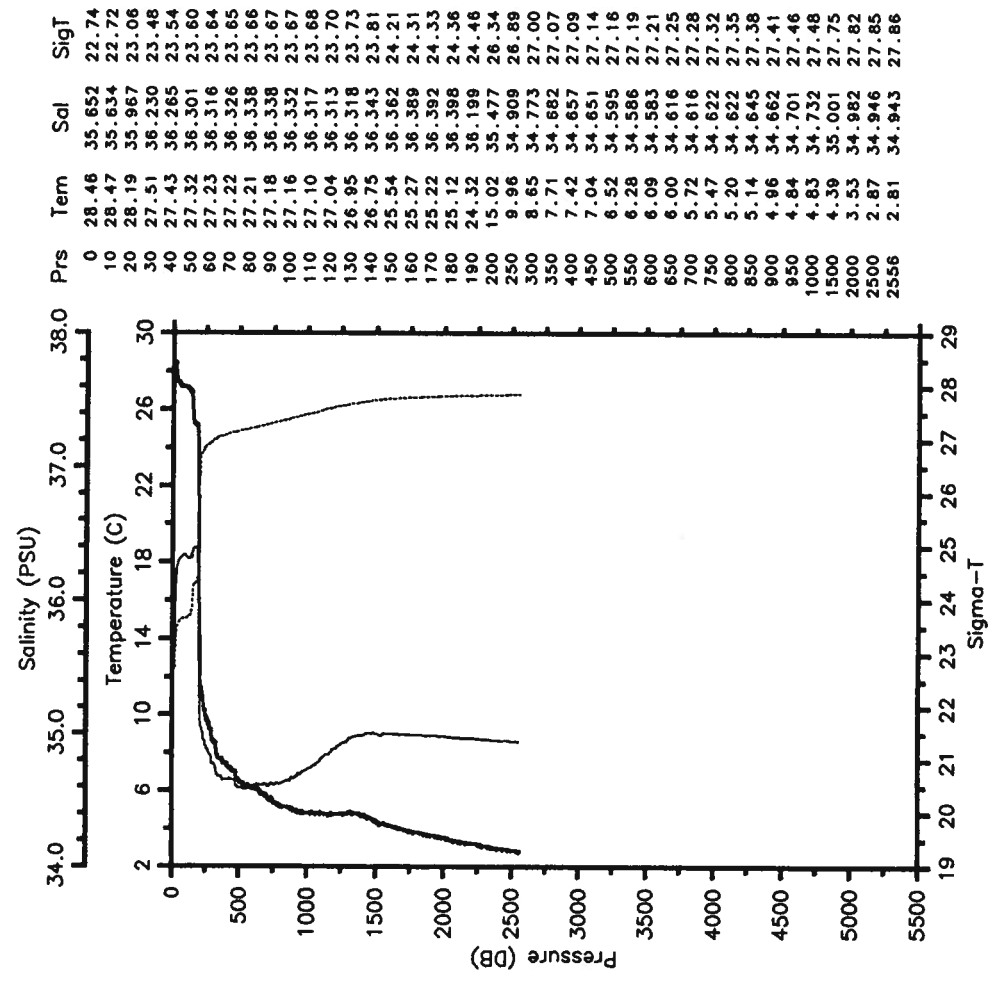
MIT-STACS32-88 CTD 10 MT MITCHELL
 Date 09 16 88 Latitude 5.715 N
 Time 1819 Z Longitude 48.767 W

— Tem — Sal
SigT



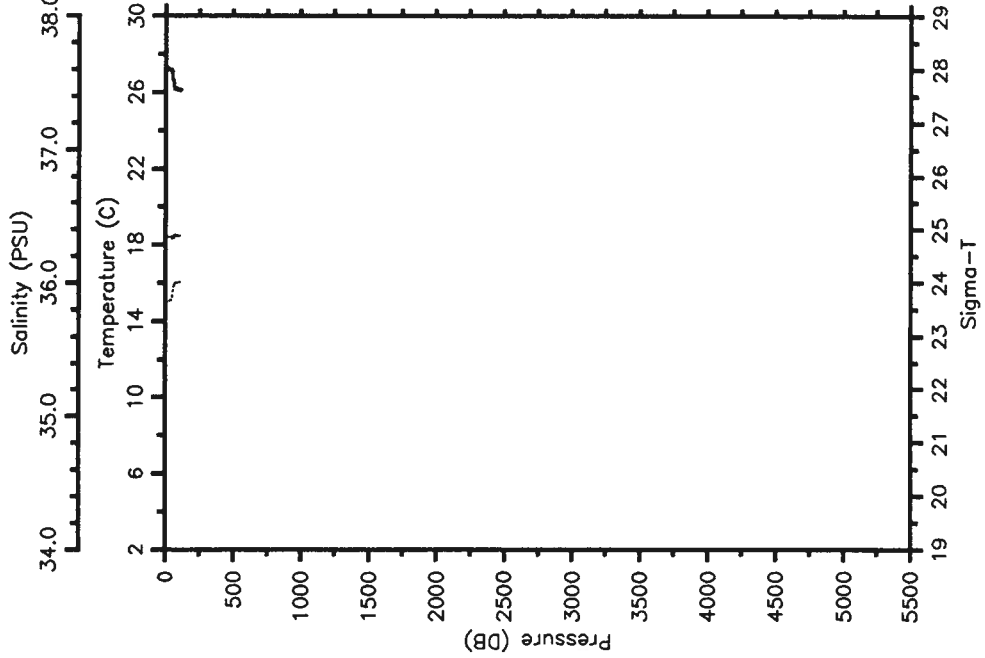
MIT-STACS32-88 CTD 11 MT MITCHELL
 Date 09 17 88 Latitude 4.878 N
 Time 0518 Z Longitude 49.312 W

MIT-STACS32-88 CTD 12 MT MITCHELL
 Date 09 17 88 Latitude 4.405 N
 Time 1018 Z Longitude 49.580 W



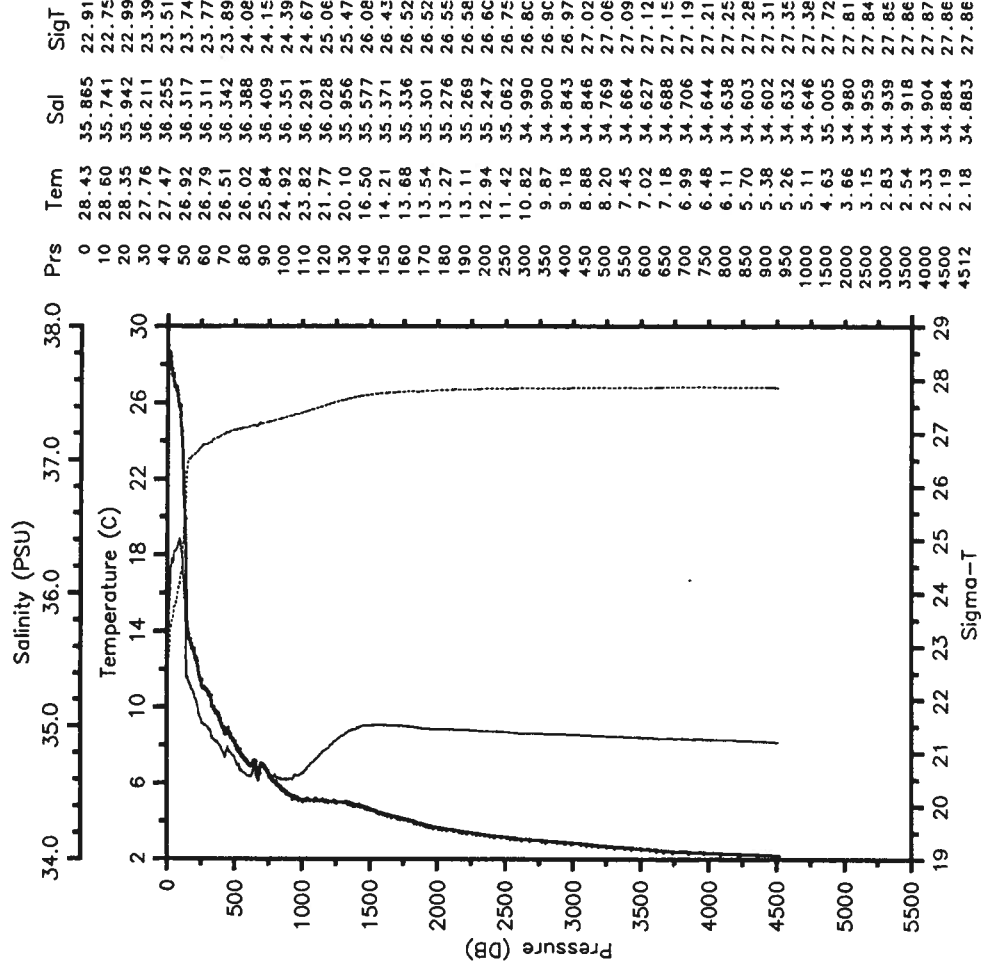
MIT-STACS32-88 CTD 13 MT MITCHELL
 Date 09 17 88 Latitude 4.164 N
 Time 1339 Z Longitude 49.695 W

— Tem — Sal
 SigT



MIT-STACS32-88 CTD 14 MT MITCHELL
 Date 09 18 88 Latitude 9.112 N
 Time 1140 Z Longitude 51.713 W

— Tem — Sal
 SigT

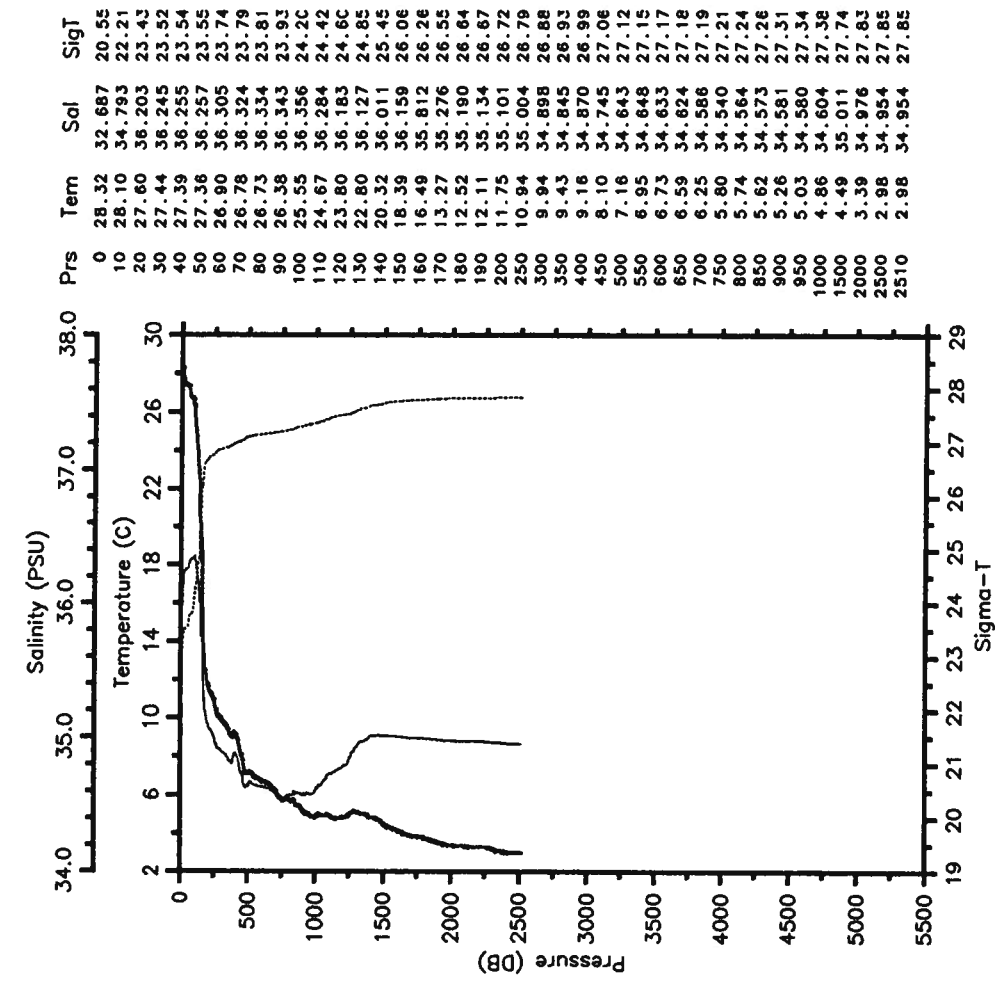
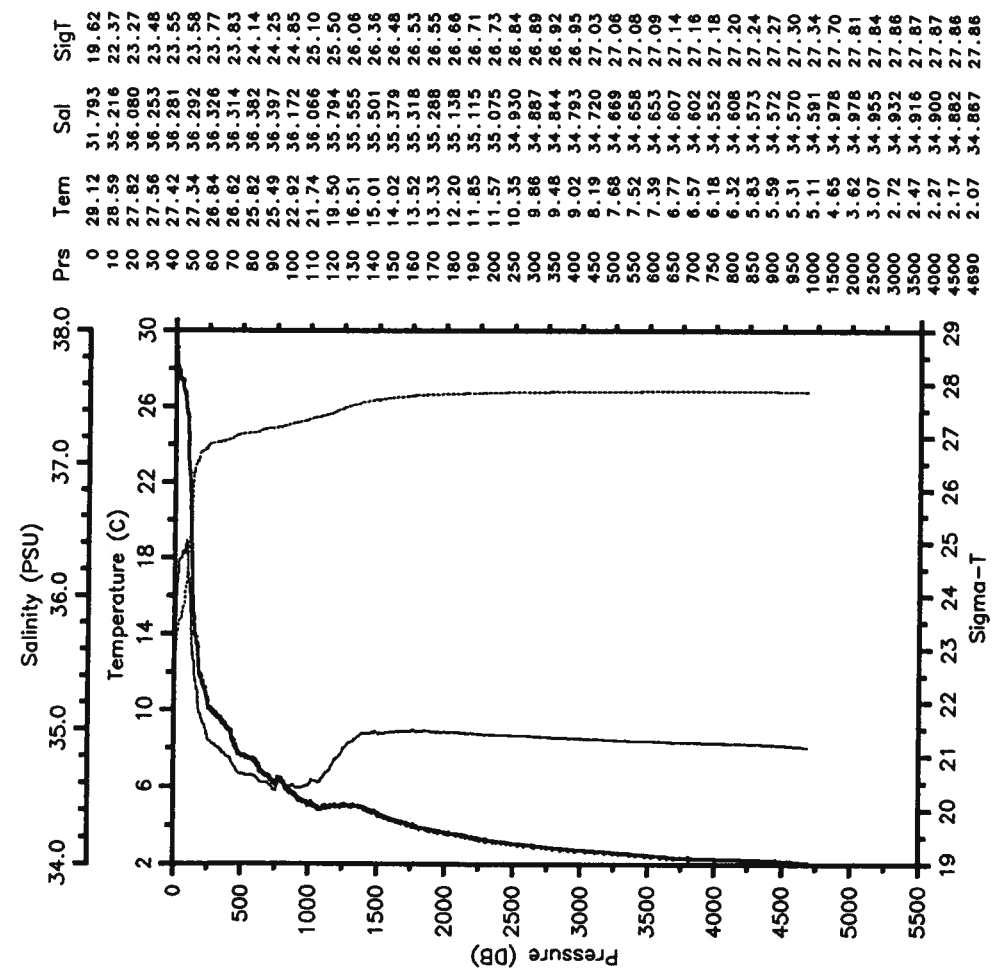


MIT-STACS32-88 CTD 15 MT MITCHELL
 Date 09 18 88 Latitude 8.568 N
 Time 2227 Z Longitude 52.175 W

MIT-STACS32-88 CTD 16 MT MITCHELL
 Date 09 20 88 Latitude 8.007 N
 Time 0250 Z Longitude 52.515 W

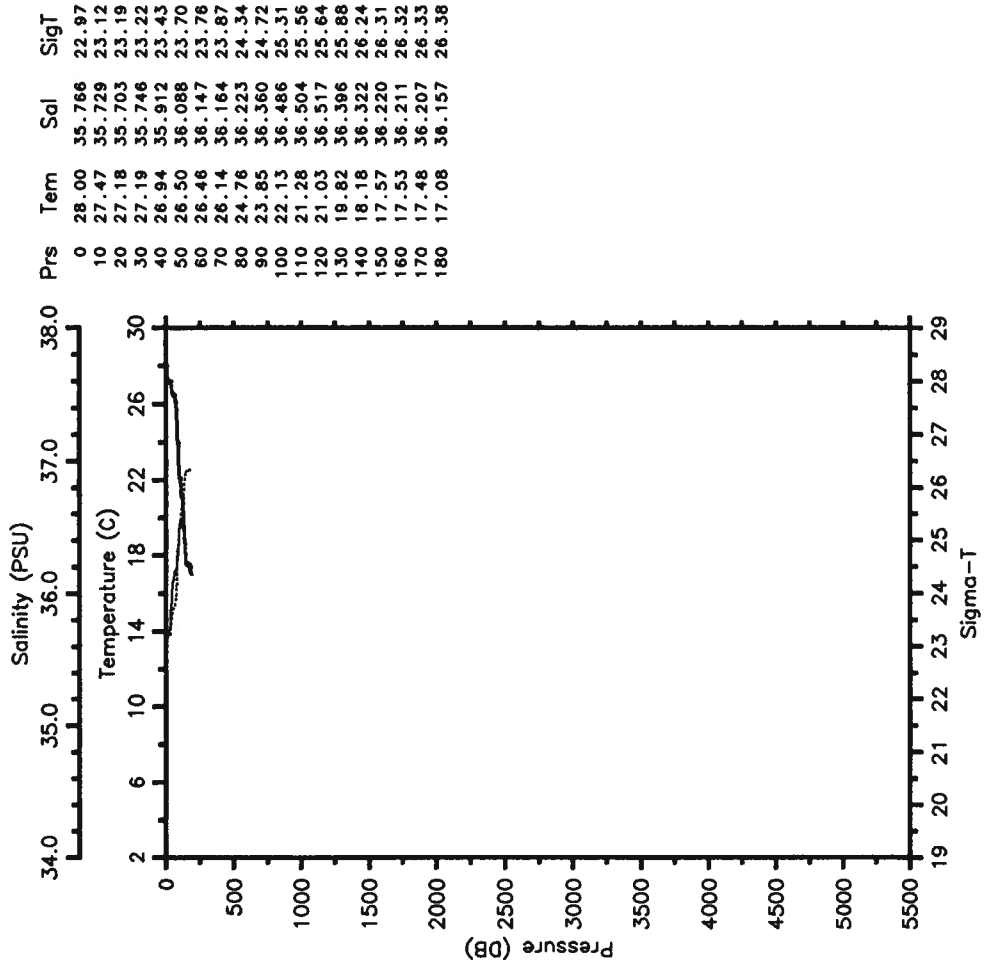
— Tem — Sal
 SigT

— Tem — Sal
 SigT



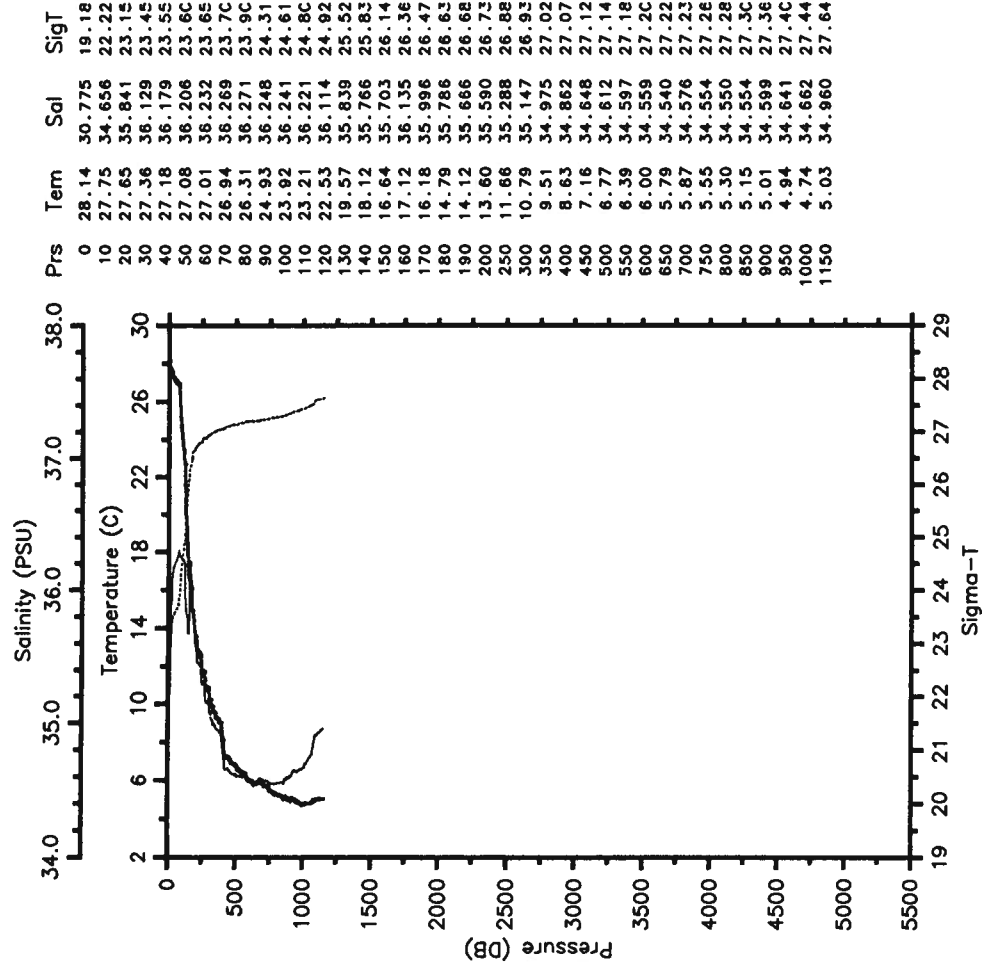
MIT-STACS32-88 CTD 17 MT MITCHELL
 Date 09 20 88 Latitude 7.002 N
 Time 2224 Z Longitude 53.083 W

— Tem — Sal
 SigT



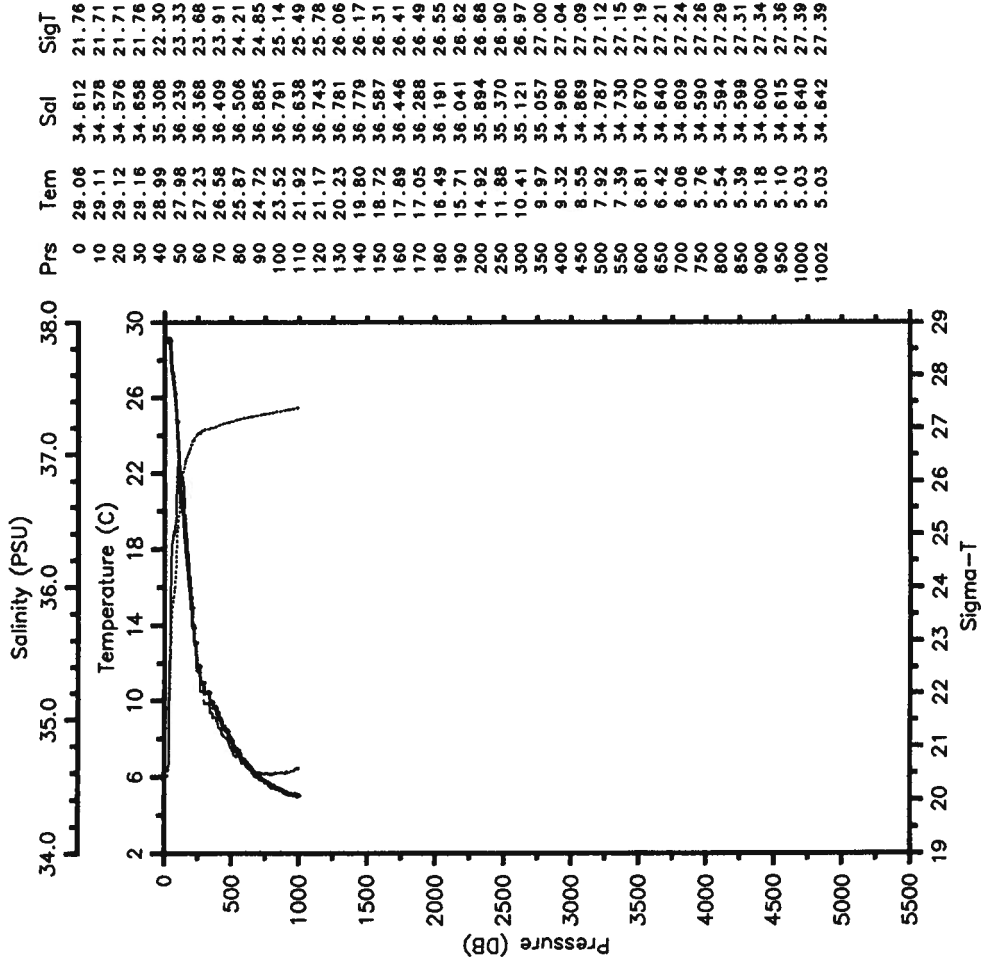
MIT-STACS32-88 CTD 18 MT MITCHELL
 Date 09 21 88 Latitude 7.625 N
 Time 0547 Z Longitude 52.775 W

— Tem — Sal
 SigT



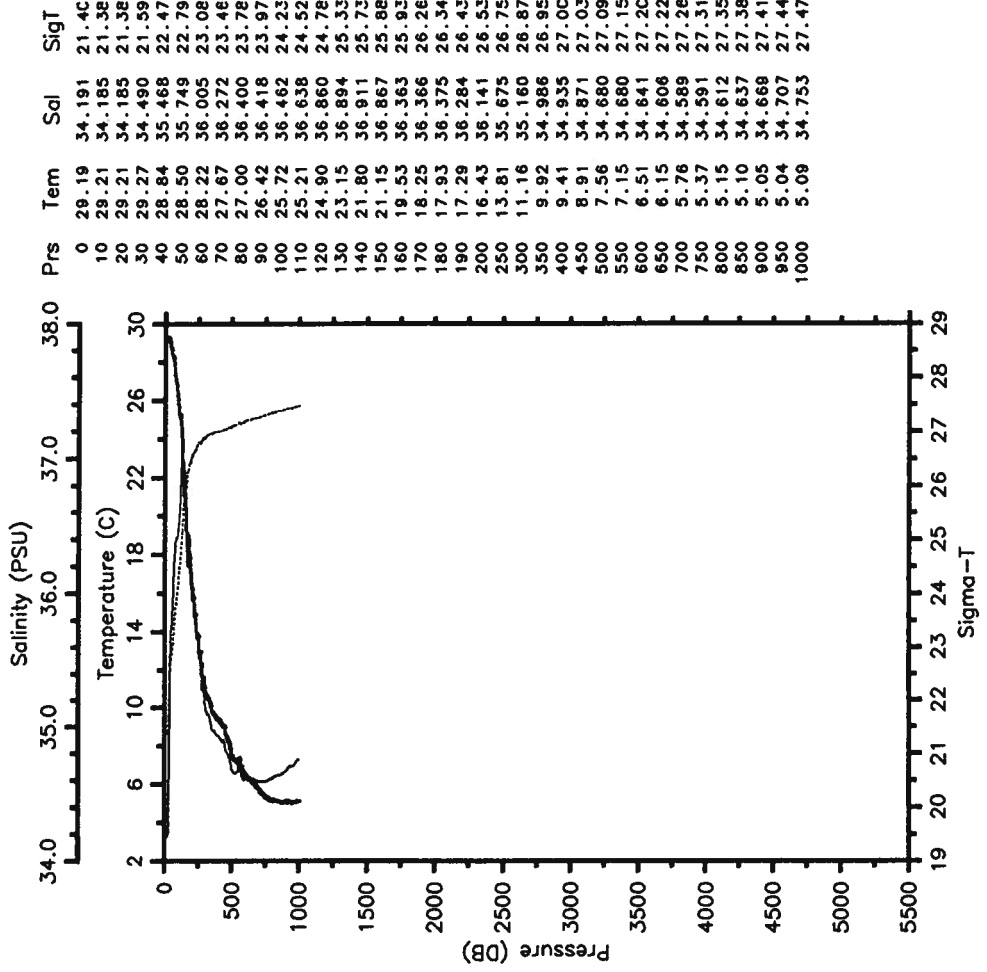
MIT-STACS32-88 CTD 19 MT MITCHELL
 Date 09 23 88 Latitude 10.383 N
 Time 0419 Z Longitude 56.385 W

— Tem — Sal
 SigT



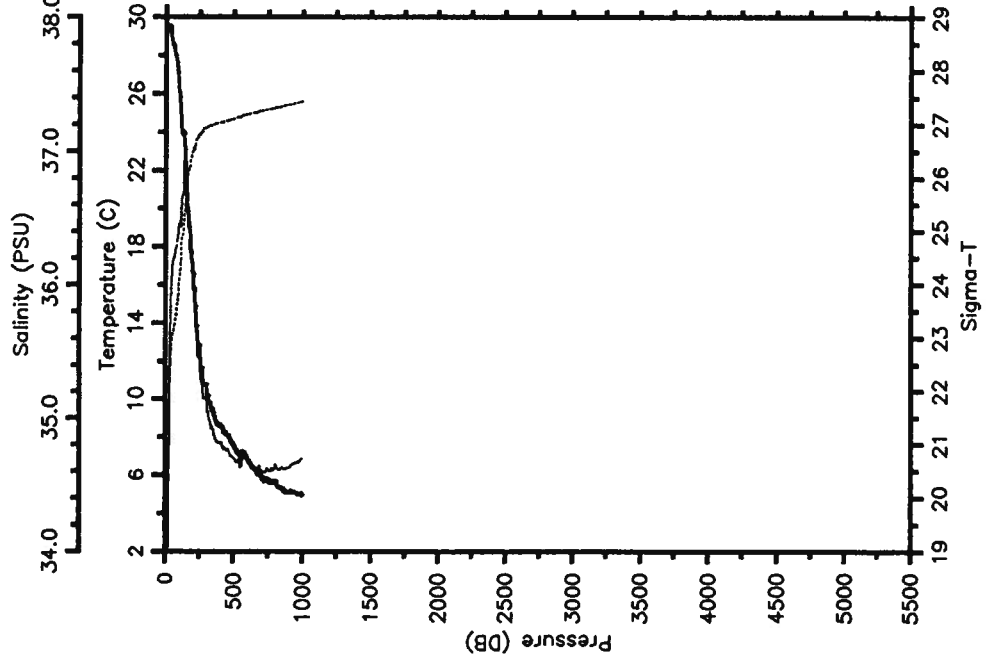
MIT-STACS32-88 CTD 20 MT MITCHELL
 Date 09 23 88 Latitude 9.455 N
 Time 1100 Z Longitude 56.852 W

— Tem — Sal
 SigT



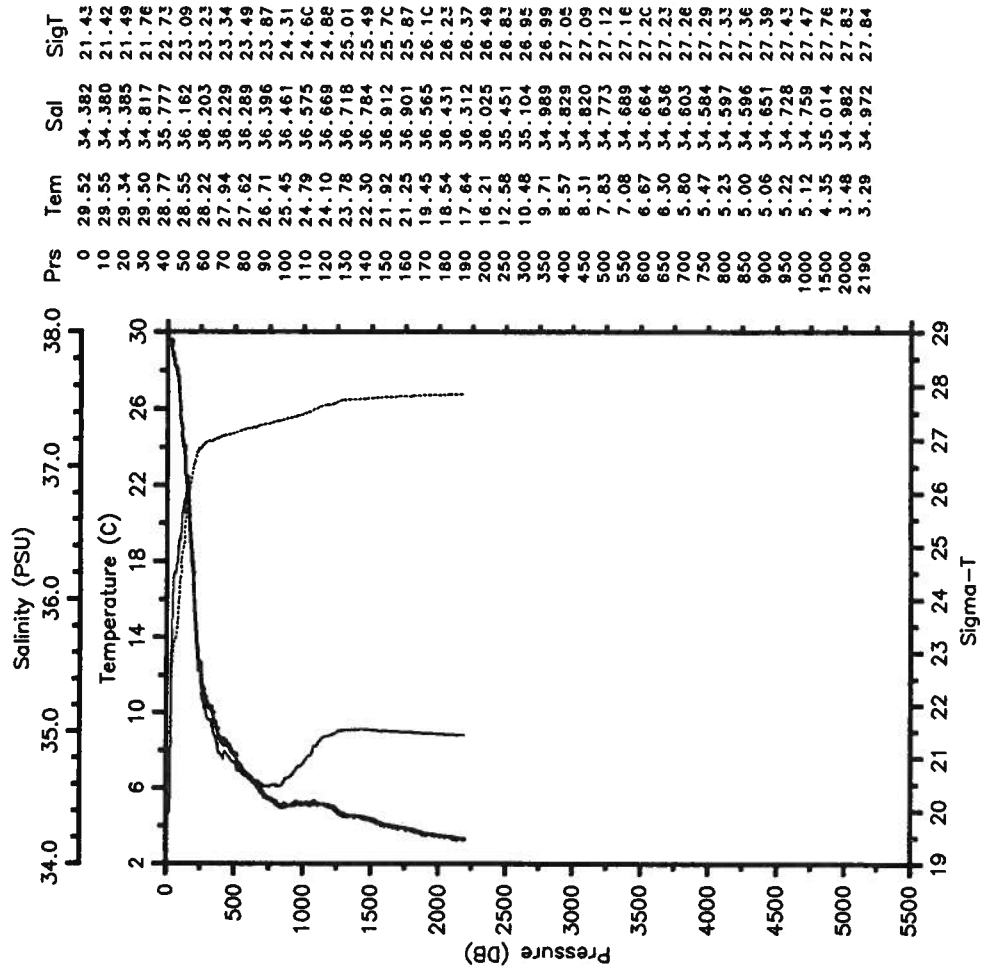
MIT-STACS32-88 CTD 21 MT MITCHELL
 Date 09.23.88 Latitude 9.022 N
 Time 1522 Z Longitude 57.178 W

— Tem — Sal
 SigT



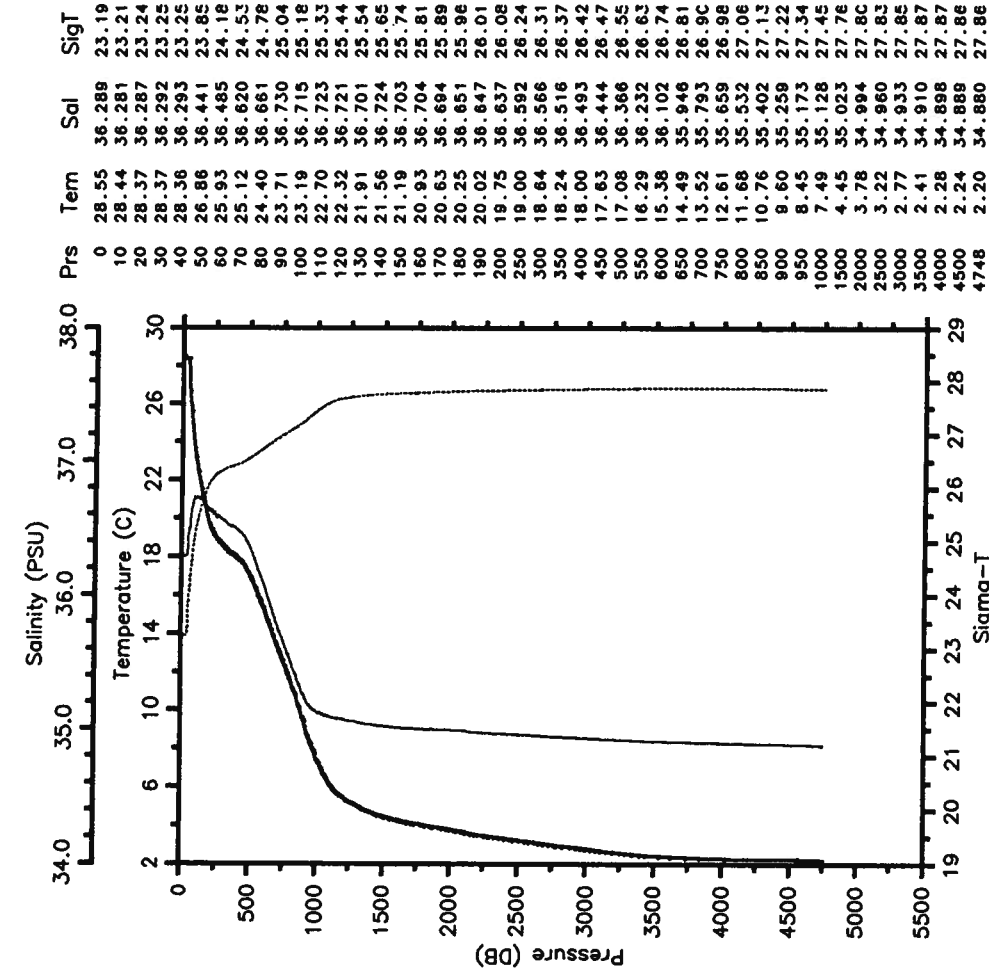
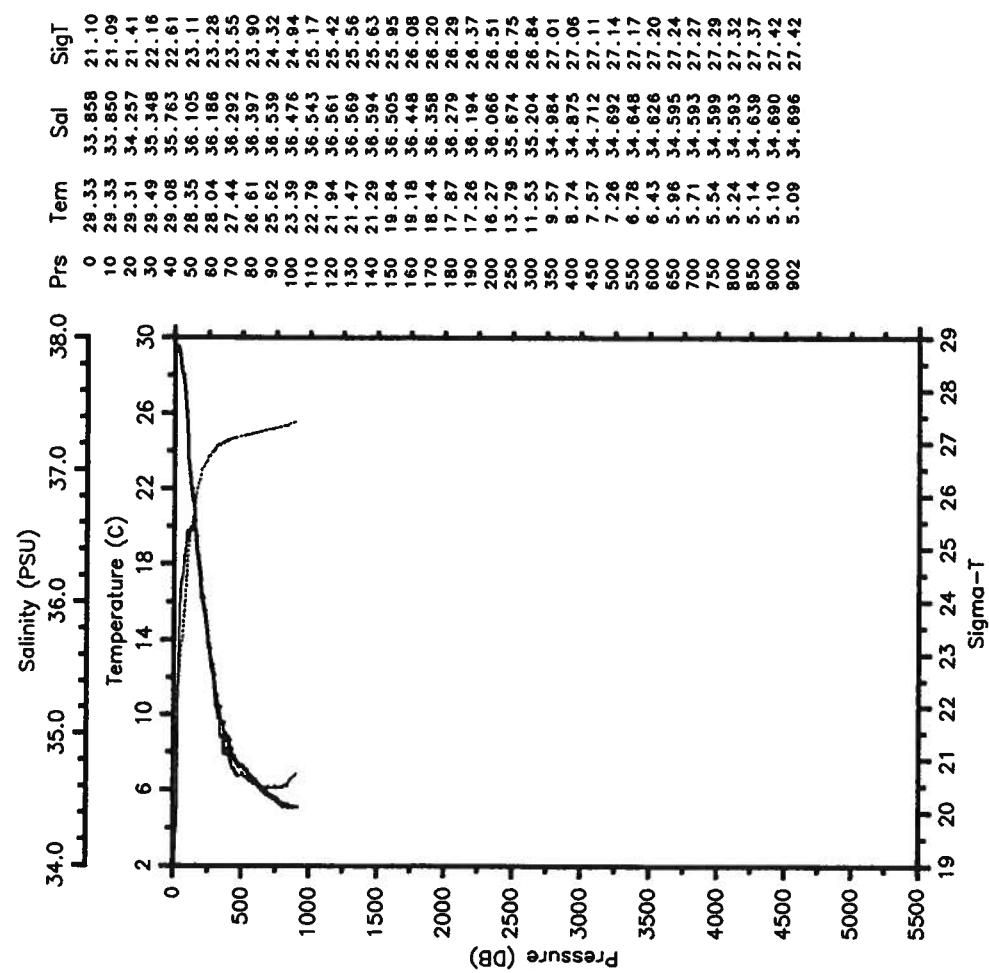
MIT-STACS32-88 CTD 22 MT MITCHELL
 Date 09.23.88 Latitude 8.548 N
 Time 1922 Z Longitude 57.467 W

— Tem — Sal
 SigT



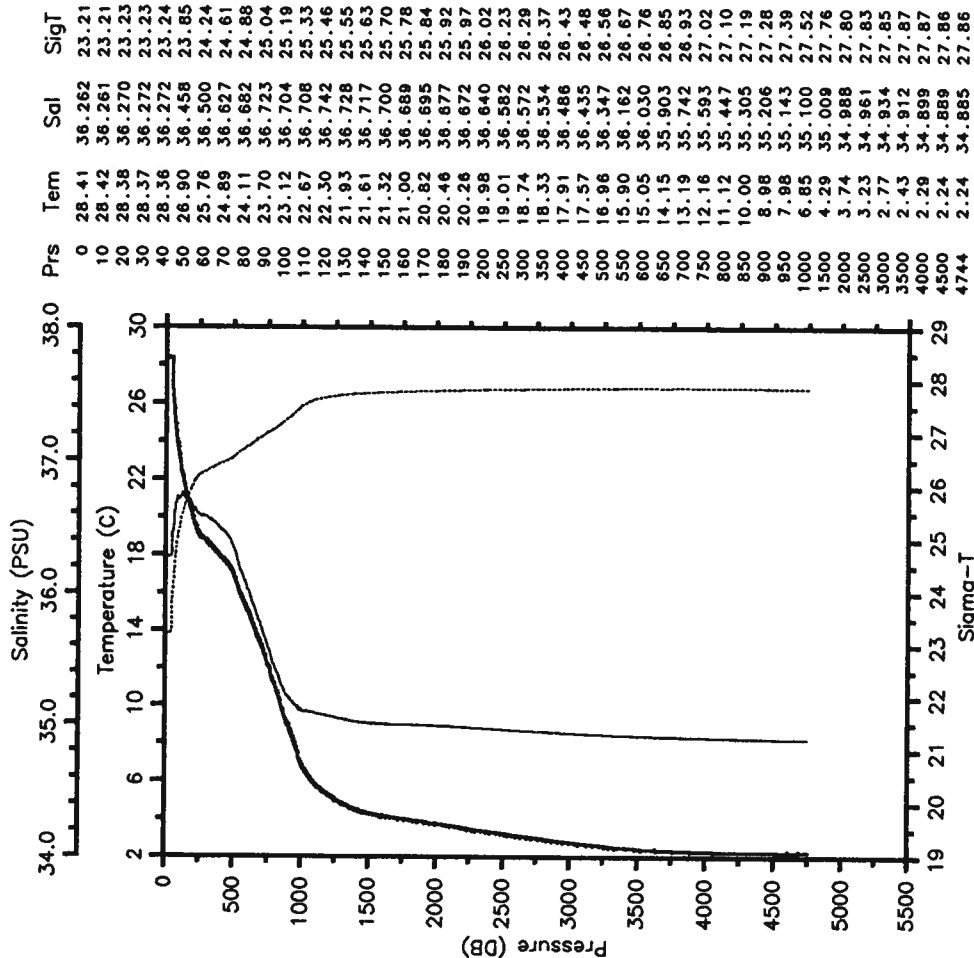
MIT-STACS32-88 CTD 23 MT MITCHELL
 Date 09 23 88 Latitude 8.217 N
 Time 2309 Z Longitude 57.608 W

MIT-STACS32-88 CTD 24 MT MITCHELL
 Date 10 06 88 Latitude 26.465 N
 Time 2041 Z Longitude 76.158 W



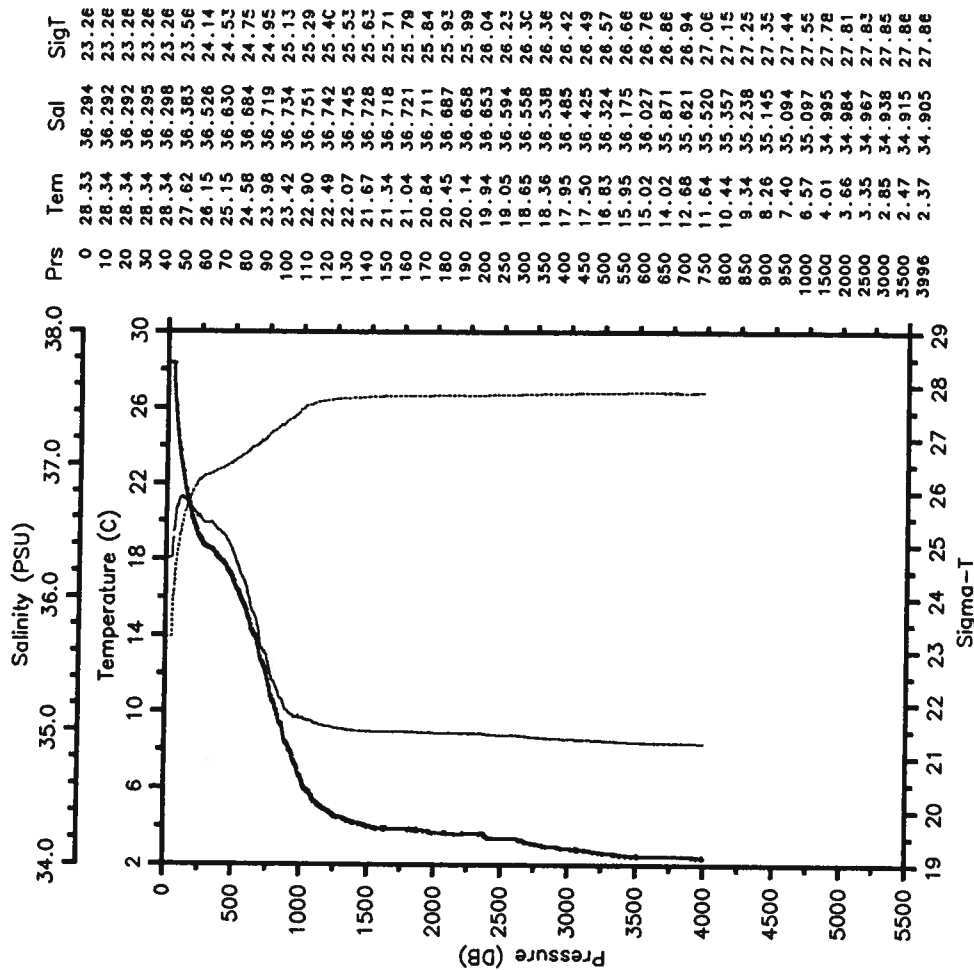
MIT-STACS32-88 CTD 25 MT MITCHELL
 Date 10 07 88 Latitude 26.470 N
 Time 0118 Z Longitude 76.345 W

— Tem — Sal
 SigT



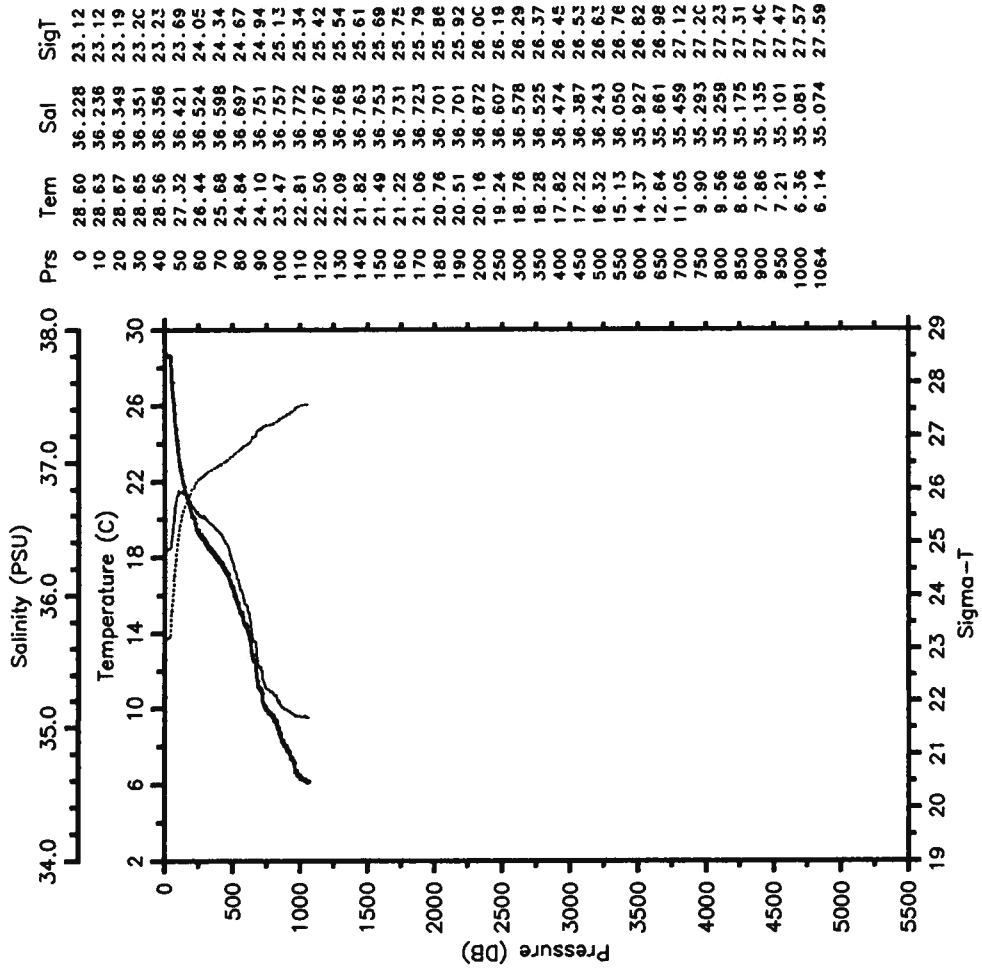
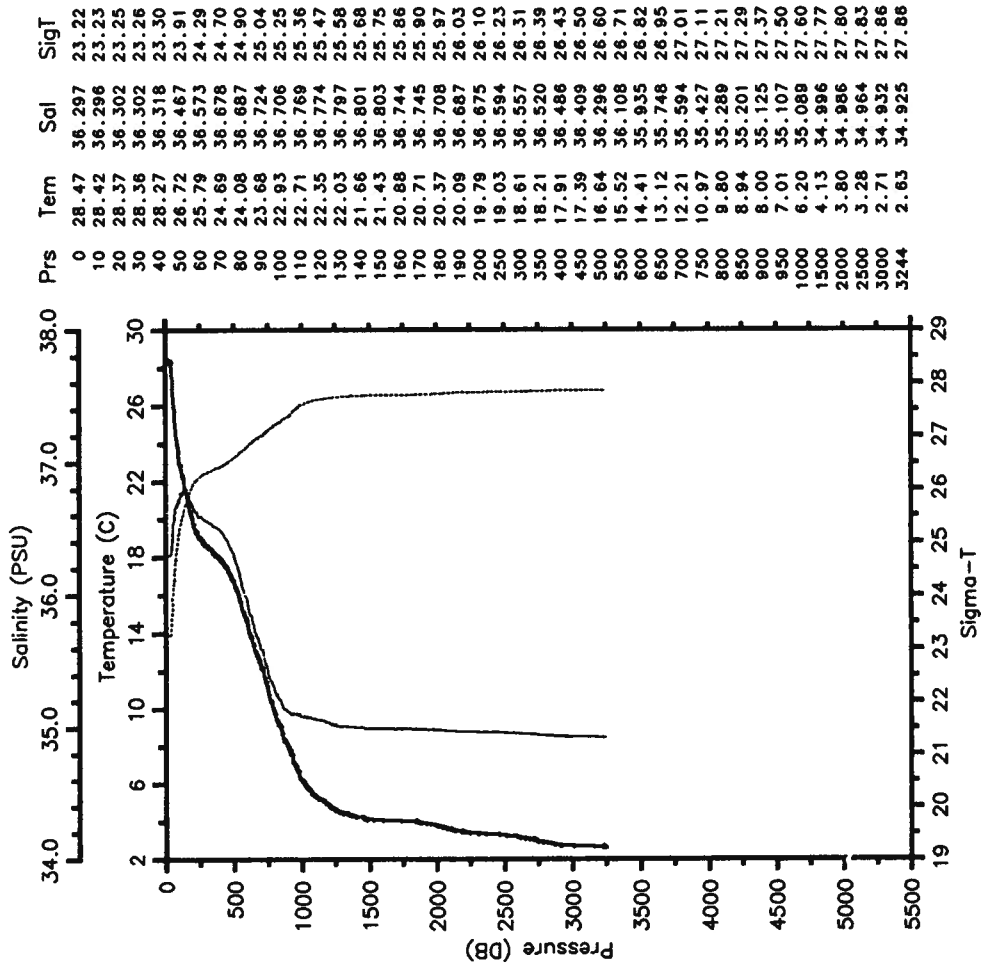
MIT-STACS32-88 CTD 26 MT MITCHELL
 Date 10 07 88 Latitude 26.568 N
 Time 0910 Z Longitude 76.647 W

— Tem — Sal
 SigT



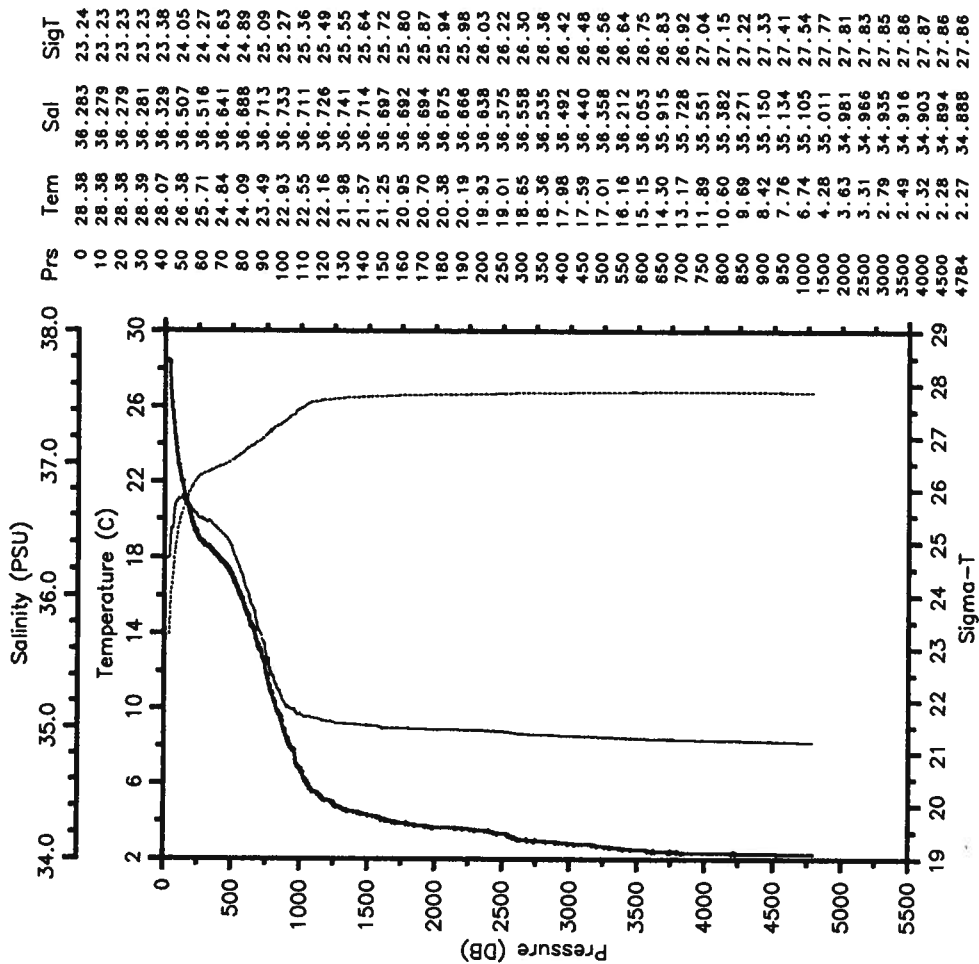
MIT-STACS32-88 CTD 27 MT MITCHELL
 Date 10 07 88 Latitude 26.528 N
 Time 2225 Z Longitude 76.733 W

MIT-STACS32-88 CTD 28 MT MITCHELL
 Date 10 08 88 Latitude 26.542 N
 Time 0205 Z Longitude 76.845 W



MIT-STACS32-88 CTD 29 MT MITCHELL
 Date 10 08 88 Latitude 26.498 N
 Time 0441 Z Longitude 76.525 W

— Tem — Sal
 SigT



APPENDIX C: XBT DATA

Casts are presented by cruise and increasing cast number. Isotherm depths in meters are listed at temperatures ranging from 30 to 6 degrees Centigrade.

ISOTHERM DEPTHS (M)

R/V WHITING		WHI-STACS30-88					
XBT NO.	1	2	3	4	5	6	7
YEAR	88	88	88	88	88	88	88
MONTH	2	2	2	2	2	2	2
DAY (GMT)	19	20	25	25	26	26	27
TIME (GMT)	1624	1450	0814	2044	0846	2025	0855
LAT (N)	29.43	26.23	26.17	24.50	23.23	21.93	20.68
LON (W)	79.99	79.95	77.09	74.50	72.49	70.47	68.50
SURF T (C)	24.5	23.4	23.3	25.5	24.4	25.9	25.5
28							
27							
26							
25				24		123	128
24	62			62	73	146	153
23	71	27	39	107	123	167	188
22	91	59	119	134	183	181	221
21	112	78	193	167	207	207	238
20	121	87	207	195	235	239	261
19	128	94	234	243	278	284	289
18	137	102	328	328	364	362	325
17	147	108	404	400	447	438	379
16	168	113	478	461	507	479	408
15	189	121	518	510	559	524	461
14	207	126	556	561	609	578	516
13	233	132	619	597	654	628	572
12	250	136	655	648	698	679	625
11	269	142	704	688	740	728	658
10	298	160	736	735	782	768	721
9	348		804	797	836	835	773
8			861	877	894	899	841
7			939	959	960		923
6			1020	1053	1051		1074

ISOTHERM DEPTHS (M)

R/V WHITING		WHI-STACS30-88					
XBT NO.	8	9	10	11	12	13	14
YEAR	88	88	88	88	88	88	88
MONTH	2	2	2	2	3	3	3
DAY (GMT)	27	28	28	29	4	5	5
TIME (GMT)	2036	0843	2044	0839	2049	0811	2203
LAT (N)	19.34	17.83	16.39	15.07	13.49	13.01	13.00
LON (W)	66.50	65.10	63.42	61.81	61.09	60.31	58.01
SURF T (C)	25.6	26.0	26.7	26.8	26.5	26.5	26.6
28							
27							
26		71	88	90	53	75	99
25	99	105	100	104	71	81	116
24	137	128	116	127	82	88	133
23	151	153	132	139	118	91	153
22	187	192	159	168	136	95	162
21	211	210	174	186	141	107	169
20	230	231	195	206	153	125	176
19	251	254	214	212	159	146	192
18	303	277	227	229	179	184	209
17	366	314	262	254	196	197	224
16	408	368	287	293	234	212	236
15	444	401	309	316	254	237	241
14	474	437	350	333	290	253	283
13	515	475	383	357	306	262	300
12	556	506	427	394	325	285	314
11	617	542	452	410	369	396	372
10	667	587	503	469	405	412	404
9		664	558	494			
8		725	615	550			
7		827	740	604			
6		972	870				

ISOTHERM DEPTHS (M)

R/V WHITING		WHI-STACS30-88					
XBT NO.	15	16	17	18	19	20	21
YEAR	88	88	88	88	88	88	88
MONTH	3	3	3	3	3	3	3
DAY (GMT)	6	7	7	7	8	8	8
TIME (GMT)	0820	0819	1750	1936	0309	0858	1035
LAT (N)	12.99	13.00	13.00	13.00	13.01	12.74	12.48
LON (W)	57.99	55.58	54.65	54.32	53.31	52.78	52.59
SURF T (C)	26.1	26.0	26.1	26.2	25.8	26.2	26.2
28							
27							
26	108	85	84	83		87	93
25	117	96	91	95	70	93	100
24	127	107	107	107	74	96	111
23	135	119	117	115	77	104	118
22	141	132	133	124	82	111	126
21	158	144	142	130	91	116	131
20	164	156	154	137	111	124	142
19	178	172	169	158	126	144	154
18	181	192	186	172	134	161	176
17	190	208	202	196	147	180	187
16	215	223	216	211	167	206	203
15	225	240	237	228	183	225	238
14	247	282	256	249	206	247	258
13	259	304	277	275	235	264	283
12	269	336	295	291	269	298	304
11	287	364	333	328	301	342	346
10	323		370	360	348	373	379
9	348		416	412	399		
8							
7							
6							

ISOTHERM DEPTHS (M)

R/V WHITING		WHI-STACS30-88					
XBT NO.	22	23	24	25	26	27	28
YEAR	88	88	88	88	88	88	88
MONTH	3	3	3	3	3	3	3
DAY (GMT)	8	8	9	9	9	9	9
TIME (GMT)	1640	1827	0011	0206	0756	0935	1524
LAT (N)	11.93	11.68	11.13	10.89	10.33	10.05	9.52
LON (W)	52.18	51.98	51.58	51.44	51.00	50.78	50.38
SURF T (C)	26.2	26.5	26.2	26.2	26.5	26.5	26.4
28							
27							
26	88	83	76	77	81	87	81
25	94	88	80	80	84	89	84
24	99	97	84	84	89	91	89
23	109	106	89	89	104	98	95
22	114	113	97	97	110	107	101
21	121	125	113	106	117	114	110
20	131	133	117	127	126	123	120
19	139	138	127	139	134	134	132
18	147	148	134	152	144	146	144
17	173	165	141	164	156	153	161
16	194	179	148	176	166	168	174
15	213	197	155	186	177	178	182
14	242	208	165	195	190	183	191
13	270	251	183	220	221	200	200
12	286	279	211	234	245	217	218
11	310	311	235	278	287	240	279
10	373	360	288	300	320	288	334
9	402	388	379	344	339	339	383
8				417		390	
7							
6							

ISOTHERM DEPTHS (M)

	R/V WHITING				WHI-STAC30-88			
XBT NO.	29	30	31	32	33	34	35	
YEAR	88	88	88	88	88	88	88	
MONTH	3	3	3	3	3	3	3	
DAY (GMT)	9	9	10	10	10	10	10	
TIME (GMT)	1715	2234	0026	0651	1230	2003	2329	
LAT (N)	9.23	8.70	8.43	7.87	7.28	7.32	7.64	
LOX (W)	50.16	49.77	49.57	49.15	48.72	49.10	49.70	
SURF T (C)	26.3	26.4	26.3	26.3	26.6	26.8	26.4	
28								
27								
26	78	77	76	72	56	48	68	
25	85	80	80	75	59	52	79	
24	92	84	88	78	64	58	83	
23	100	89	98	86	70	61	87	
22	108	93	101	91	74	78	92	
21	119	107	103	103	78	84	97	
20	127	112	116	106	83	91	102	
19	135	118	132	113	88	100	114	
18	144	127	141	119	93	104	119	
17	154	135	151	131	98	110	124	
16	163	144	160	138	106	114	134	
15	176	154	169	144	116	123	148	
14	190	164	178	151	122	132	158	
13	208	170	204	167	128	142	185	
12	218	187	228	191	138	154	195	
11	268	219	251	211	151	167	216	
10	311	279	277	256	190	203	254	
9	389		356	302	277	260	298	
8				391	359	365	335	
7								
6								

ISOTHERM DEPTHS (M)

	R/V WHITING				WHI-STAC30-88			
XBT NO.	36	37	38	39	40	41	42	
YEAR	88	88	88	88	88	88	88	
MONTH	3	3	3	3	3	3	3	
DAY (GMT)	11	11	11	12	12	12	12	
TIME (GMT)	0845	1227	2053	0051	0936	1427	1815	
LAT (N)	8.27	8.59	9.23	9.57	10.22	10.64	10.93	
LOX (W)	50.91	51.50	52.68	53.28	54.47	55.26	55.74	
SURF T (C)	27.2	27.3	27.5	27.4	26.6	26.7	27.2	
28								
27	104	56	77	88			18	
26	107	71	89	92	84	82	88	
25	110	83	100	97	89	88	94	
24	113	93	109	100	94	94	104	
23	117	107	124	111	99	98	110	
22	122	115	141	118	109	112	115	
21	140	125	152	137	117	125	126	
20	143	135	160	146	126	143	158	
19	148	144	166	158	137	152	167	
18	161	147	169	171	148	161	173	
17	170	158	171	188	161	167	193	
16	176	166	175	197	170	178	205	
15	185	176	179	207	183	203	218	
14	195	182	206	221	199	215	232	
13	207	207	230	243	216	228	254	
12	215	222	240	269	240	252	279	
11	241	238	260	290	257	296	325	
10	283	289	309		283	360	378	
9	351	331	363		372			
8	404							
7								
6								

ISOTHERM DEPTHS (M)

	R/V WHITING				WHI-STAC30-88			
XBT NO.	43	44	45	46	47	48	49	
YEAR	88	88	88	88	88	88	88	
MONTH	3	3	3	3	3	3	3	
DAY (GMT)	16	17	17	18	19	19	20	
TIME (GMT)	1654	0439	1631	1629	0430	1628	0436	
LAT (N)	13.37	15.05	16.78	19.87	21.38	22.81	24.21	
LOX (W)	60.10	61.76	63.40	66.80	68.50	70.29	72.35	
SURF T (C)	27.0	26.6	27.3	25.5	25.4	25.5	24.0	
28								
27				5				
26	88	69	81					
25	92	97	101	112	55	94		
24	100	102	122	126	98	144	15	
23	104	111	151	150	124	151	64	
22	128	130	172	175	149	175	92	
21	142	153	187	204	166	199	123	
20	148	167	204	233	197	222	149	
19	158	187	226	260	220	260	193	
18	167	212	249	313	303	341	293	
17	180	233	280	367	381	415	370	
16	185	267	299	409	432		424	
15	191	282	318					
14	199	312	341					
13	237	329	368					
12	271	365	403					
11	385	408						
10	429	433						
9								
8								
7								
6								

ISOTHERM DEPTHS (M)

	R/V WHITING				WHI-STAC30-88			
XBT NO.	50	51	52	53	54	55	56	
YEAR	88	88	88	88	88	88	88	
MONTH	3	3	3	3	3	3	3	
DAY (GMT)	20	21	21	21	22	22	23	
TIME (GMT)	1629	0429	1541	2102	1431	1931	0054	
LAT (N)	25.53	26.45	26.49	26.47	26.51	26.57	26.53	
LOX (W)	74.15	75.53	75.93	76.15	76.49	76.63	76.74	
SURF T (C)	23.2	22.9	23.1	23.5	23.0	23.5	23.2	
28								
27								
26								
25								
24								
23	80		64	14	16	68	88	
22	112	98	108	46	105	88	151	
21	141	146	146	90	154	158	184	
20	163	178	185	131	183	179	210	
19	225		233	257	220	218	242	
18	321		343	394	367	337	334	
17	390		422	477	471	432	426	
16			519	507	517	495	487	
15			560	560	568	538	525	
14			606	606	612	584	572	
13			650	642	653	619	621	
12			701	699	699	668	655	
11			748	742	750	719	709	
10			796	794	787	772	773	
9			855	844	825	817	834	
8			917	900	885	872	871	
7			991	975	950	921	922	
6			1090	1060	1029	1012	1010	

ISOTHERM DEPTHS (m)

R/V WHITING

WHI-STACS30-88

XBT NO.	57	58
YEAR	88	88
MONTH	3	3
DAY (GMT)	23	24
TIME (GMT)	0331	0428
LAT (N)	26.55	27.32
LCN (W)	76.84	77.60
SURF T (C)	23.1	23.2
28		
27		
26		
25		
24		
23	94	14
22	134	25
21	163	144
20	189	184
19	226	225
18	316	351
17	395	446
16		
15		
14		
13		
12		
11		
10		
9		
8		
7		
6		

ISOTHERM DEPTHS (M)

	R/V WHITING		WHI-STACS31-88				
XBT NO.	1	2	3	4	5	6	7
YEAR	88	88	88	88	88	88	88
MONTH	7	7	7	7	7	7	7
DAY (GMT)	1	5	6	6	6	8	8
TIME (GMT)	0545	2241	0351	0928	1423	0853	1840
LAT (N)	15.05	11.75	10.87	9.54	9.00	10.98	10.45
LOX (W)	62.58	58.08	58.70	55.79	57.93	55.48	54.63
SURF T (C)	28.2	27.8	27.9	25.0	27.9	27.9	27.8
29							
28	44						
27	63	29	44		34	43	41
26	82	62	74		67	75	68
25	102	109	87	48	76	86	83
24	115	121	90	83	86	91	86
23	131	125	109	86	92	98	91
22	146	132	119	90	100	107	97
21	159	143	123	107	111	116	101
20	170	152	130	113	121	120	110
19	181	161	153	125	126	126	121
18	201	193	163	134	130	132	127
17	233	217	170	142	158	138	138
16	264	227	189	154	172	147	154
15	291	231	206	167	179	172	169
14	325	244	217	181	189	195	190
13	359	263	225	200	207	202	196
12	398	292	246	226	228	236	220
11	430	329	295	272	252	279	270
10		359	349	335	292	325	307
9		410	411		354	399	351
8					424		427
7							

ISOTHERM DEPTHS (M)

	R/V WHITING		WHI-STACS31-88					
XBT NO.	8	9	10	11	12	13	14	
YEAR	88	88	88	88	88	88	88	
MONTH	7	7	7	7	7	7	7	
DAY (GMT)	9	9	9	9	10	10	10	
TIME (GMT)	0139	0821	1511	2143	0403	1016	1615	
LAT (N)	9.95	9.48	8.95	8.38	7.83	7.32	6.92	
LOX (W)	53.78	52.88	52.05	51.17	50.30	49.47	48.73	
SURF T (C)	27.5	27.5	27.8	29.0	28.8	28.6	27.9	
29				2				
28				37	30	18		
27	21	35	34	79	71	41	69	
26	74	64	81	88	85	72	75	
25	82	79	87	93	91	88	85	
24	87	91	93	103	98	96	91	
23	94	94	99	113	101	99	95	
22	104	101	107	115	104	104	102	
21	114	108	111	118	110	111	112	
20	121	115	121	123	114	116	117	
19	127	130	147	127	120	120	121	
18	142	141	154	131	130	124	124	
17	163	153	160	137	144	131	126	
16	177	163	165	141	156	134	131	
15	182	177	175	150	160	139	137	
14	192	186	188	159	170	146	141	
13	204	202	209	180	189	160	153	
12	216	232	231	193	203	182	170	
11	242	258	257	212	227	202	182	
10	261	280	321	249	245	264	192	
9	308	308	372	287	319	313	283	
8	412	402		370	407	414	377	
7				442				

ISOTHERM DEPTHS (M)

	R/V WHITING		WHI-STACS31-88				
XBT NO.	15	16	17	18	19	20	21
YEAR	88	88	88	88	88	88	88
MONTH	7	7	7	7	7	7	7
DAY (GMT)	12	12	12	12	12	12	12
TIME (GMT)	0203	0419	0648	0915	1142	1404	1646
LAT (N)	4.78	5.20	5.67	6.12	6.55	6.95	7.42
LOX (W)	49.77	49.97	50.20	50.42	50.65	50.88	51.15
SURF T (C)	28.9	29.2	29.4	29.4	29.2	28.9	29.2
29		3	13	13	8		5
28	15	34	55	54	60	51	71
27	60	61	84	89	100	84	93
26	81	76	94	103	112	99	104
25	90	85	102	114	115	105	114
24	104	100	108	118	116	106	119
23	110	108	113	122	119	108	123
22	116	113	119	125	123	109	126
21	125	119	124	128	127	111	128
20	141	130	128	134	130	114	130
19	146	138	134	138	135	117	132
18	155	143	137	142	143	119	134
17	165	150	141	149	150	121	135
16	171	156	152	162	155	124	136
15	176	162	164	175	159	129	140
14	179	166	170	186	164	132	146
13	182	175	179	197	168	147	152
12	189	187	190	212	186	166	173
11	205	210	210	248	251	189	195
10	239	223	228	273	321	276	229
9	264	243	259	334	386	368	307
8	306	266	298	412			444
7	369	352	380				

ISOTHERM DEPTHS (M)

	R/V WHITING		WHI-STACS31-88				
XBT NO.	22	23	24	25	26	27	28
YEAR	88	88	88	88	88	88	88
MONTH	7	7	7	7	7	7	7
DAY (GMT)	12	12	13	13	15	15	15
TIME (GMT)	1915	2149	0553	1456	0022	0354	0752
LAT (N)	7.85	8.28	8.48	7.80	7.97	8.50	9.03
LOX (W)	51.35	51.55	52.14	52.60	54.17	54.68	55.27
SURF T (C)	29.6	29.8	27.0	28.7	26.0	26.0	28.2
29	6	8					
28	52	43		17			6
27	84	75	10	59			52
26	93	87	77	72	24	22	74
25	104	93	91	78	83	77	84
24	110	96	97	84	93	84	93
23	112	103	106	86	96	92	101
22	114	111	110	108	98	105	113
21	117	125	118	121	100	112	125
20	123	138	126	127	103	122	136
19	132	146	134	134	107	128	141
18	136	152	141	141	116	133	148
17	139	161	151	149	125	143	156
16	141	169	160	160	133	152	165
15	145	178	166	167	144	164	174
14	154	185	172	177	154	174	193
13	164	200	185	183	166	196	211
12	189	208	197	190	184	208	240
11	232	220	217	219	224	240	274
10	281	233	255	239	239	271	292
9	317	255	301	258	286	316	314
8	399	302	392	400	350	383	391
7		459	489	507	451	484	504

ISOTHERM DEPTHS (m)

	R/V WHITING		WHI-STACS31-88		
XBT NO.	29	30	31	32	33
YEAR	88	88	88	88	88
MONTH	7	7	7	7	7
DAY (GMT)	15	15	15	16	16
TIME (GMT)	1119	1509	1850	0249	0942
LAT (N)	9.53	10.07	10.60	11.62	12.60
LON (W)	55.79	56.35	56.93	58.05	59.15
SURF T (C)	26.0	26.0	28.3	28.3	26.0
29					
28			11	9	
27			37	43	
26	34	28	61	78	32
25	86	90	80	91	97
24	97	104	87	100	106
23	111	114	93	106	112
22	121	134	101	114	122
21	131	138	108	124	138
20	146	153	113	134	150
19	158	168	119	140	159
18	169	178	128	143	168
17	175	188	142	157	188
16	182	194	156	176	201
15	191	199	162	203	220
14	196	209	171	220	239
13	204	224	180	232	254
12	213	239	209	241	273
11	253	268	229	256	305
10	328	326	265	387	370
9	382	412	331	425	420
8	431	459	475	505	505
7	488	549	608	621	608

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		1	2	3	4	5	6	7
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	12	12	12	12	12	12	12	12
TIME (GMT)	1621	1659	1755	1855	2002	2101	2200	
LAT (N)	12.92	12.88	12.86	12.81	12.78	12.75	12.72	
LON (W)	59.25	59.10	58.92	58.73	58.53	58.35	58.15	
SURF T (C)	28.5	28.5	28.7	28.5	28.3	28.0	28.5	
28	39	38	43	40	43	45	40	
27	68	63	77	70	60	61	65	
26	83	83	94	82	82	79	79	
25	97	98	113	103	96	89	95	
24	118	106	123	111	111	100	99	
23	128	123	134	126	121	107	106	
22	142	137	148	143	137	123	135	
21	155	150	162	164	157	135	145	
20	174	172	180	183	169	152	158	
19	202	192	205	198	186	175	175	
18	223	209	217	207	197	189	188	
17	239	237	235	231	214	198	206	
16	259	257	265	259	232	218	220	
15	271	281	289	275	257	229	235	
14	283	298	323	298	277	249	251	
13	310	331	346	316	295	266	273	
12	345	356	375	352	316	297	298	
11	374	389	413	377	350	327	324	
10	397	412	437	413	387	368	378	
9				439	438	420		
8								
7								
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		8	9	10	11	12	13	14
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	13	13	13	13	13	13	13	13
TIME (GMT)	0000	0058	0152	0253	0355	0457	0552	
LAT (N)	12.65	12.61	12.58	12.55	12.52	12.48	12.45	
LON (W)	57.78	57.58	57.40	57.20	56.98	56.77	56.59	
SURF T (C)	28.6	28.5	28.7	28.7	28.8	28.7	28.5	
28	48	42	45	42	41	41	38	
27	62	53	65	66	60	58	55	
26	76	71	81	81	81	75	75	
25	91	86	97	102	99	91	93	
24	97	96	101	108	109	103	102	
23	101	107	109	114	115	107	107	
22	136	119	117	121	131	119	117	
21	144	130	124	127	135	124	129	
20	149	137	134	134	140	129	133	
19	158	145	146	155	148	135	136	
18	176	151	159	171	171	163	141	
17	194	159	181	184	188	174	160	
16	215	198	202	200	211	183	183	
15	232	219	221	232	233	203	194	
14	245	232	238	251	256	235	223	
13	264	250	273	268	281	266	254	
12	283	282	285	315	317	303	270	
11	330	327	357	362	375	355	317	
10	368	371	408	413	424	401	390	
9								
8								
7								
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		15	16	17	18	19	20	21
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	13	13	13	13	13	13	13	14
TIME (GMT)	0655	0803	0900	1000	1056	1940	0625	
LAT (N)	12.39	12.35	12.31	12.27	12.24	11.85	11.17	
LON (W)	56.35	56.12	55.92	55.73	55.53	54.82	53.55	
SURF T (C)	27.9	28.2	28.5	28.4	28.7	28.9	28.5	
28	33	32	35	36	39	37	44	
27	43	44	57	68	68	64	55	
26	70	69	78	79	84	81	63	
25	84	84	96	96	105	94	74	
24	98	101	105	100	113	99	89	
23	108	112	111	103	118	106	94	
22	119	123	117	106	122	111	101	
21	124	134	130	114	126	115	113	
20	128	145	139	123	141	132	122	
19	140	152	152	130	153	137	130	
18	150	161	163	144	163	147	135	
17	159	170	174	173	167	158	142	
16	177	176	192	189	179	182	149	
15	203	187	205	202	189	203	158	
14	213	208	212	218	207	226	167	
13	239	229	249	243	256	249	183	
12	263	268	276	257	292	279	204	
11	293	326	300	321	343	327	230	
10	332	354	329	389	387	365	302	
9		417	409			424	378	
8								
7								
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		22	23	24	25	26	27	28
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	14	15	15	15	16	16	16	16
TIME (GMT)	1834	0455	1328	2303	0727	1329	2007	
LAT (N)	10.50	9.67	8.99	8.30	7.64	6.95	6.18	
LON (W)	52.13	50.62	49.42	48.17	47.69	48.09	48.65	
SURF T (C)	29.4	28.5	28.8	29.2	29.1	28.9	29.1	
28	40	48	48	44	47	36	67	
27	53	65	64	54	60	59	89	
26	64	80	81	66	67	78	103	
25	74	93	99	71	72	88	138	
24	82	99	104	77	77	95	146	
23	88	106	107	84	85	102	149	
22	92	115	110	92	90	111	156	
21	100	123	128	97	100	119	160	
20	104	140	135	102	106	124	161	
19	112	144	141	109	116	134	162	
18	130	149	148	117	125	140	163	
17	140	157	156	123	130	150	165	
16	150	172	166	128	136	157	168	
15	160	183	178	133	144	163	170	
14	173	195	188	143	153	169	173	
13	187	206	197	150	171	178	176	
12	204	223	217	163	189	191	188	
11	250	249	239	190	199	218	218	
10	325	320	297	230	220	257	262	
9	415	372	391	282	250	338	298	
8				422	299	399	371	
7					350			
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88			
XBT NO.		29	30	31	32	33	34	35	
YEAR	88	88	88	88	88	88	88	88	
MONTH	9	9	9	9	9	9	9	9	
DAY (GMT)	17	17	17	17	17	17	17	17	
TIME (GMT)	0258	0851	1241	1456	1601	1700	1800		
LAT (N)	5.26	4.66	4.30	4.35	4.58	4.81	5.08		
LOX (W)	49.02	49.39	49.66	49.76	49.82	49.92	50.10		
SURF T (C)	28.7	28.4	27.1	27.2	28.8	28.9	28.9		
28	33	20			14	19	15		
27	79	89	22	16	79	74	75		
26	155	152	152	162	158	145	155		
25	161	182	158	166	165	169	164		
24	166	186	159	167	168	171	167		
23	174	187	160	168	170	171	169		
22	176	188	161	170	172	172	171		
21	178	189	162	171	174	173	173		
20	179	190	162	172	175	174	174		
19	180	191	163	173	176	176	176		
18	182	192	164	173	177	178	177		
17	183	193	165	174	177	181	178		
16	184	193	166	175	178	182	180		
15	185	194	167	176	179	183	182		
14	187	195	168	176	179	184	185		
13	194	196	170	177	180	185	187		
12	202	198	172	179	181	187	190		
11	237	206	182	184	183	203	217		
10	287	220	217	205	236	239	242		
9	328	301	264	268	310	301	315		
8	398	375	355	322	366	359	351		
7		412		435	405	433			
6									

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88			
XBT NO.		43	44	45	46	47	48	49	
YEAR	88	88	88	88	88	88	88	88	
MONTH	9	9	9	9	9	9	9	9	
DAY (GMT)	18	18	18	18	18	18	18	18	
TIME (GMT)	0202	0258	0359	0457	0600	0655	0759		
LAT (N)	7.00	7.22	7.47	7.70	7.93	8.14	8.37		
LOX (W)	50.88	50.96	51.06	51.13	51.22	51.32	51.43		
SURF T (C)	28.7	28.8	28.8	28.4	28.5	28.5	28.1		
28	16	14	14	12	12	14	10		
27	133	117	111	89	78	76	32		
26	155	145	141	137	124	117	102		
25	165	158	149	146	137	136	130		
24	170	161	166	160	150	146	137		
23	174	174	173	168	160	149	141		
22	181	179	179	177	164	154	146		
21	189	187	183	185	170	159	149		
20	197	193	187	188	172	162	151		
19	201	198	205	199	174	165	151		
18	204	215	208	204	176	168	152		
17	206	219	215	210	179	169	154		
16	224	223	225	220	183	172	156		
15	229	233	236	225	187	181	164		
14	237	246	251	237	194	190	170		
13	249	264	268	244	215	205	186		
12	253	286	274	302	241	242	215		
11	269	305	300	330	295	298	281		
10	311	334	348	383	339	353	334		
9	342	375	418	435					
8	399	417							
7									
6									

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88			
XBT NO.		36	37	38	39	40	41	42	
YEAR	88	88	88	88	88	88	88	88	
MONTH	9	9	9	9	9	9	9	9	
DAY (GMT)	17	17	17	17	17	17	17	17	
TIME (GMT)	1855	1959	2058	2203	2301	2357	0056		
LAT (N)	5.30	5.56	5.81	6.04	6.28	6.51	6.75		
LOX (W)	50.18	50.24	50.31	50.48	50.60	50.68	50.71		
SURF T (C)	28.8	28.8	28.7	28.6	28.7	28.9	28.8		
28	17	13	15	14	17	17	18		
27	87	111	106	84	115	127	117		
26	132	140	151	146	148	156	144		
25	172	171	186	176	166	173	164		
24	173	173	192	191	177	181	168		
23	174	174	193	196	184	184	175		
22	175	175	194	197	188	188	185		
21	176	177	194	198	191	190	190		
20	177	178	195	199	193	192	199		
19	178	179	196	200	194	209	207		
18	179	180	196	200	198	215	210		
17	179	181	197	201	215	220	218		
16	180	183	197	202	220	227	223		
15	182	186	198	204	229	236	227		
14	184	188	199	218	235	245	236		
13	188	191	201	224	238	256	248		
12	207	201	223	231	246	264	255		
11	215	220	237	255	263	274	271		
10	229	244	263	275	294	297	302		
9	297	311	315	298	332	322	344		
8	373	389	368	345	370	361	383		
7				415	427	428	419		
6									

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88			
XBT NO.		50	51	52	53	54	55	56	
YEAR	88	88	88	88	88	88	88	88	
MONTH	9	9	9	9	9	9	9	9	
DAY (GMT)	18	18	18	18	18	18	18	18	
TIME (GMT)	0902	1000	1058	1702	1914	1900	0030		
LAT (N)	8.57	8.78	8.95	8.90	8.61	8.68	8.20		
LOX (W)	51.58	51.64	51.78	51.83	52.06	52.05	52.35		
SURF T (C)	28.1	28.1	28.5	28.5	29.5	28.6	28.6		
28	15	29	23	12	17	10	10		
27	69	66	46	45	60	53	60		
26	109	93	81	71	80	75	91		
25	129	106	96	87	92	91	109		
24	131	109	105	90	95	96	118		
23	133	112	110	93	99	101	122		
22	138	117	114	97	105	107	125		
21	140	125	118	103	113	113	128		
20	143	130	121	109	118	117	135		
19	146	133	129	112	122	122	138		
18	149	135	133	116	126	124	142		
17	151	139	136	118	128	126	145		
16	154	143	138	120	130	128	146		
15	159	147	141	127	137	137	149		
14	168	156	153	136	147	145	151		
13	191	188	181	163	169	180	164		
12	217	218	220	184	183	196	184		
11	285	277	255	223	222	242	244		
10	336	344	324	293	280	300	288		
9	448	434	400	395	413	409	395		
8									
7									
6									

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		57	58	59	60	61	62	63
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	20	20	21	21	21	21	21	21
TIME (GMT)	0523	1230	0758	0909	1000	1055	2001	
LAT (N)	8.01	7.78	7.58	7.43	7.35	7.24	7.02	
LON (W)	52.52	52.65	52.83	52.90	53.01	53.03	53.09	
SURF T (C)	28.2	27.8	28.1	27.8	27.6	27.7	28.3	
28		7		7				4
27		55	45	67	64	20	26	20
26		94	93	72	80	72	70	65
25		101	99	77	83	80	78	69
24		111	106	81	92	89	93	73
23		121	113	89	98	95	96	75
22		128	118	105	104	100	109	81
21		131	121	111	109	112	122	90
20		137	125	115	115	127	129	106
19		140	129	120	121	138	139	140
18		153	133	128	126	149	149	152
17		156	147	131	131	159	159	159
16		158	151	134	138	174	165	171
15		161	157	173	176	182	173	184
14		166	165	194	196	195	188	
13		171	175	204	206	208	205	
12		186	218	219	211	223	218	
11		238	257	249	220	251	245	
10		289	299	293	237	273	287	
9		379	388		256	355	362	
8		426	437			420	417	
7								
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		64	65	66	67	68	69	70
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	21	22	22	22	22	22	22	22
TIME (GMT)	2306	0004	0103	0150	0255	0357	0452	
LAT (N)	7.09	7.23	7.35	7.46	7.60	7.72	7.81	
LON (W)	53.10	53.22	53.32	53.41	53.56	53.69	53.80	
SURF T (C)	27.9	27.8	27.5	27.9	28.1	28.1	28.3	
28		4				12	19	17
27		16	21	42	48	50	52	68
26		59	57	61	64	62	59	78
25		66	71	72	70	70	64	86
24		80	73	76	79	75	78	92
23		89	77	92	89	87	85	97
22		108	91	97	101	93	94	104
21		126	96	117	110	108	107	110
20		138	111	125	128	121	125	115
19		149	123	142	135	130	131	123
18		168	140	147	154	135	139	133
17		175	169	164	162	143	151	141
16		181	184	193	168	154	163	152
15		192	197	202	190	175	181	164
14		214	213	215	200	185	191	176
13		228	224	222	211	195	211	189
12		238	258	234	225	207	225	201
11			282	254	263	240	247	217
10				300	308	285	260	242
9						331	348	283
8							396	283
7								377
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		71	72	73	74	75	76	77
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	22	22	22	22	22	22	22	22
TIME (GMT)	0554	0657	0801	0903	1000	1100	1200	
LAT (N)	7.93	8.05	8.18	8.30	8.38	8.49	8.64	
LON (W)	53.93	54.06	54.19	54.31	54.44	54.54	54.65	
SURF T (C)	28.4	28.4	29.1	29.0	29.1	29.3	29.2	
28		16	34	41	28	37	31	29
27		61	66	63	53	52	50	49
26		73	76	74	69	61	63	60
25		83	88	78	74	69	68	67
24		90	92	84	78	74	72	77
23		96	100	89	86	86	82	82
22		105	109	92	97	91	87	87
21		111	116	100	110	95	95	90
20		120	121	112	119	107	99	94
19		139	127	128	125	113	110	99
18		147	135	144	141	121	117	103
17		152	147	153	146	132	125	105
16		159	155	164	159	139	136	108
15		168	174	173	168	148	147	114
14		177	187	183	180	154	154	118
13		188	203	198	202	164	163	127
12		210	216	219	222	177	214	142
11		237	248	250	293	210	314	195
10		278	315	314	337	304		263
9		307	363	365	413	377		369
8		398		410		475		492
7				496				
6								

ISOTHERM DEPTHS (M)

		R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.		78	79	80	81	82	83	84
YEAR	88	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9	9
DAY (GMT)	22	22	22	22	22	22	22	22
TIME (GMT)	1258	1403	1501	1555	1651	1753	1852	
LAT (N)	8.73	8.86	8.98	9.08	9.18	9.29	9.38	
LON (W)	54.74	54.85	54.96	55.06	55.17	55.28	55.41	
SURF T (C)	29.2	29.2	29.5	29.3	29.3	29.4	29.7	
28		33	31	31	30	32	33	35
27		48	48	56	48	51	53	57
26		61	62	66	67	69	71	74
25		69	74	73	75	79	79	78
24		75	78	82	87	91	86	87
23		80	82	87	90	97	96	96
22		82	85	90	93	102	102	106
21		84	91	94	97	105	111	117
20		94	99	102	104	108	122	124
19		102	111	110	111	119	136	139
18		107	114	115	136	140	148	148
17		109	117	119	147	160	158	157
16		112	120	134	153	165	176	167
15		116	122	138	160	181	190	180
14		119	126	141	176	195	205	191
13		124	138	158	185	216	230	209
12		141	159	185	199	253	245	237
11		200	221	224	233	283	292	267
10		279	298	317	366	334	341	309
9		384	386	378	403	377	391	370
8			483		444	427	436	417
7					476		473	
6					575		554	

ISOTHERM DEPTHS (M)

	R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.	85	86	87	88	89	90	91
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	22	22	22	22	23	23	23
TIME (GMT)	1958	2058	2158	2259	0001	0100	0202
LAT (N)	9.51	9.63	9.74	9.85	9.95	10.06	10.16
LON (W)	55.54	55.65	55.74	55.85	55.95	56.06	56.17
SURF T (C)	29.3	29.4	29.2	29.1	29.3	29.2	29.3
28	33	39	44	36	43	43	42
27	52	59	63	51	55	55	57
26	73	77	82	66	68	71	68
25	78	86	90	77	77	79	78
24	84	92	94	86	84	87	85
23	93	103	97	91	94	94	91
22	104	108	111	99	105	111	105
21	117	123	114	118	116	119	116
20	126	129	130	128	121	126	128
19	133	137	138	137	134	133	136
18	144	147	143	149	145	142	144
17	149	159	151	159	152	155	156
16	160	175	161	167	162	163	162
15	175	194	180	177	173	172	170
14	192	209	194	191	186	185	182
13	208	232	210	204	194	208	198
12	219	242	226	222	210	218	219
11	238	257	250	245	249	276	276
10	259	286	261	290	309	313	306
9	324	317	281	339	367	368	351
8	367	349	336	396	429		433
7	439	403	408		520		526
6	571		494		636		671

ISOTHERM DEPTHS (M)

	R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.	99	100	101	102	103	104	105
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	24	23	23	23	23	23	23
TIME (GMT)	0255	0100	0202	0259	0848	1346	1740
LAT (N)	8.67	10.06	10.16	10.26	9.79	9.24	8.84
LON (W)	57.81	56.06	56.17	56.27	56.64	56.99	57.26
SURF T (C)	29.5	29.2	29.3	29.2	29.2	29.4	29.7
28	67	43	42	44	58	67	70
27	81	55	57	58	79	87	86
26	89	71	68	71	93	94	107
25	95	79	78	81	103	108	119
24	104	87	85	86	113	129	130
23	112	94	91	91	121	138	162
22	133	111	105	106	125	147	167
21	157	119	116	114	145	152	173
20	171	126	128	124	155	159	184
19	179	133	136	137	167	168	193
18	187	142	144	146	175	175	204
17	192	155	156	153	183	194	212
16	199	163	162	163	194	202	225
15	212	172	170	173	211	211	238
14	228	185	182	179	219	222	249
13	248	208	198	195	255	233	264
12	264	218	219	209	261	248	283
11	299	276	276	267	294	304	326
10	335	313	306	305	330	343	367
9	376	368	351	375	383	396	427
8			433				
7			526				
6			662				

ISOTHERM DEPTHS (M)

	R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.	92	93	94	95	96	97	98
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	23	23	23	23	23	24	24
TIME (GMT)	0259	0848	1346	1740	2142	0105	0203
LAT (N)	10.26	9.79	9.24	8.84	8.40	8.36	8.49
LON (W)	56.27	56.64	56.99	57.26	57.53	57.68	57.75
SURF T (C)	29.2	29.2	29.4	29.7	29.5	29.3	29.0
28	44	58	67	70	57	64	51
27	58	79	87	96	73	81	75
26	71	93	94	107	82	88	81
25	81	103	108	119	96	99	92
24	86	113	129	130	100	103	99
23	91	121	138	162	110	111	108
22	106	125	147	167	126	127	122
21	114	145	152	173	147	147	137
20	124	155	159	184	156	153	157
19	137	167	168	193	163	173	163
18	146	175	175	204	169	183	169
17	153	183	194	212	179	207	181
16	163	194	202	225	190	216	193
15	173	211	211	238	212	223	201
14	179	219	222	249	227	238	215
13	195	255	233	264	242	255	242
12	209	261	248	283	258	276	253
11	267	294	304	326	282	324	269
10	305	330	343	367	313	363	311
9	375		396		359		357
8							414
7							504
6							628

ISOTHERM DEPTHS (M)

	R/V MT MITCHELL				MIT-STACS32-88		
XBT NO.	106	107	108	109	110	111	112
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	23	24	24	24	24	24	24
TIME (GMT)	2142	0105	0203	0255	1353	1459	1557
LAT (N)	8.40	8.36	8.49	8.67	10.49	10.66	10.81
LON (W)	57.53	57.68	57.75	57.81	58.57	58.62	58.70
SURF T (C)	29.5	29.3	29.0	29.5	29.4	29.5	29.6
28	57	64	51	67	62	63	56
27	73	81	75	81	70	76	73
26	82	88	81	89	79	80	81
25	96	99	92	95	87	83	87
24	100	103	99	104	91	89	94
23	110	111	108	112	95	109	98
22	126	127	122	133	102	114	101
21	147	147	137	157	120	129	115
20	156	153	157	171	134	136	131
19	163	173	163	179	142	145	141
18	169	183	169	187	150	157	154
17	179	207	181	192	159	166	167
16	190	216	193	199	175	180	175
15	212	223	201	212	194	195	191
14	227	238	215	228	210	202	210
13	242	255	242	248	238	214	228
12	258	276	253	264	255	246	247
11	282	324	269	299	289	292	284
10	313	363	311	335	331	331	313
9	359		357	376	392	386	343
8			414		477		412
7			504		557		504
6			629				667

ISOTHERM DEPTHS (M)

R/V MT MITCHELL		MIT-STACS32-88					
XBT NO.	113	114	115	116	117	118	119
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	24	24	24	24	24	24	24
TIME (GMT)	1653	1757	1859	1959	2102	2201	2301
LAT (N)	10.97	11.12	11.25	11.41	11.58	11.73	11.88
LOX (W)	58.76	58.86	58.95	59.02	59.10	59.16	59.23
SURF T (C)	29.4	29.9	29.6	30.2	29.6	29.4	29.2
28	50	38	33	43	35	39	39
27	63	67	49	69	64	73	65
26	82	79	64	80	78	90	87
25	88	86	75	89	84	111	98
24	97	105	99	110	105	119	129
23	108	114	107	119	115	132	139
22	116	119	119	134	137	138	145
21	121	130	134	139	151	156	153
20	129	139	144	150	163	168	159
19	137	147	151	161	167	183	168
18	148	166	167	169	183	193	186
17	166	177	179	189	207	207	209
16	178	183	198	212	221	221	229
15	195	190	215	228	240	232	254
14	213	209	236	246	252	258	271
13	226	235	259	262	278	275	291
12	243	258	296	273	297	296	315
11	294	272	321	305	345	320	343
10	326	303	377	353	412	374	391
9	356	353	416	396		471	440
8	411	404		443		549	
7		480		539		601	
6		672		645		648	

ISOTHERM DEPTHS (M)

R/V MT MITCHELL		MIT-STACS32-88					
XBT NO.	120	121	122	123	124	125	126
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	25	25	25	25	25	25	25
TIME (GMT)	0001	0103	0201	0301	0354	0450	0550
LAT (N)	12.01	12.15	12.26	12.41	12.52	12.59	12.68
LOX (W)	59.28	59.33	59.37	59.43	59.47	59.50	59.53
SURF T (C)	29.3	29.2	28.9	28.9	28.8	29.1	29.1
28	36	39	32	46	36	43	51
27	66	60	53	62	54	60	62
26	79	75	74	80	75	76	76
25	94	93	100	93	93	97	95
24	113	108	115	112	106	109	104
23	122	118	124	121	117	125	115
22	136	131	137	131	131	143	143
21	144	143	146	145	138	156	144
20	152	160	153	152	154	174	156
19	166	174	160	163	171	189	173
18	183	183	173	190	185	196	185
17	200	197	197	199	203	214	199
16	219	208	212	217	218	231	214
15	234	226	227	231	229	248	240
14	247	245	250	244	244	270	262
13	265	272	265	259	259	283	278
12	282	294	283	275	282	290	294
11	332	315	313	315	308	342	319
10	389	386	365	360	338	370	373
9	443	413	417	390	420	417	417
8	525	495	495	462	488	488	488
7	574	594	594	570	581	581	581
6	668	709	709	689	689	689	689

ISOTHERM DEPTHS (M)

R/V MT MITCHELL		MIT-STACS32-88					
XBT NO.	127	128	129	130	131	132	133
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	9	9
DAY (GMT)	25	25	26	26	26	27	27
TIME (GMT)	0656	0803	0004	0434	1156	0001	1200
LAT (N)	12.77	12.86	13.31	13.73	15.03	17.05	18.75
LOX (W)	59.57	59.61	60.36	61.18	62.44	64.42	66.21
SURF T (C)	28.8	28.5	29.6	29.3	29.0	29.3	28.5
28	49	55	46	47	51	58	49
27	68	69	57	64	63	70	57
26	79	82	69	88	81	77	73
25	88	92	83	113	95	92	107
24	100	97	97	125	107	108	122
23	109	111	111	134	113	130	147
22	120	127	146	150	144	144	162
21	131	140	150	156	159	158	175
20	147	157	174	173	172	177	197
19	158	174	190	186	198	199	228
18	184	182	205	197	214	227	269
17	197	206	220	208	231	241	303
16	208	229	244	224	250	266	342
15	227	261	273	249	276	290	400
14	238	281	302	284	310	325	446
13	247	292	330	308	350	358	
12	261	309	357	335	375	384	
11	297	319	387	365	426	438	
10	335	337	421	429			
9	415	410					
8							
7							
6							

ISOTHERM DEPTHS (M)

R/V MT MITCHELL		MIT-STACS32-88					
XBT NO.	134	135	136	137	138	139	140
YEAR	88	88	88	88	88	88	88
MONTH	9	9	9	9	9	10	10
DAY (GMT)	28	28	29	29	29	4	4
TIME (GMT)	0001	1200	0000	0008	1201	0000	1200
LAT (N)	19.63	20.31	23.54	21.04	21.95	27.02	27.47
LOX (W)	68.98	71.79	79.26	74.57	77.19	79.68	78.92
SURF T (C)	28.8	28.1	29.0	29.1	28.8	28.7	28.6
28	26	7	45	19	46	56	79
27	38	33	73	30	58	75	86
26	58	48	96	46	66	83	95
25	74	67	120	65	101	98	104
24	95	93	141	104	115	109	113
23	141	113	156	141	147	121	128
22	162	129	178	162	172	133	156
21	177	160	202	179	199	143	180
20	197	200	234	204	224	166	205
19	226	222	267	243	254	194	248
18	275	274	310	319	307	210	
17	333	338	347	364	361	228	
16	391	390	389	399	409	256	
15	436	427	437			283	
14						311	
13						348	
12						366	
11						391	
10						417	
9							
8							
7							
6							

ISOTHERM DEPTHS (M)

R/V MT MITCHELL

MIT-STACS32-88

XBT NO.	141	142	143	144	145	146	147
YEAR	88	88	88	88	88	88	88
MONTH	10	10	10	10	10	10	10
DAY (GMT)	5	5	6	6	7	8	9
TIME (GMT)	0007	0929	0001	0800	0002	0000	0009
LAT (N)	26.55	26.52	26.50	26.49	26.46	26.53	25.78
LON (W)	76.84	76.76	76.45	76.53	76.15	76.74	77.23
SURF T (C)	28.7	28.7	28.5	28.4	28.5	28.4	28.6
28	61	58	49	49	46	43	59
27	65	62	52	53	49	49	68
26	71	67	59	61	60	56	75
25	75	82	68	72	71	66	94
24	104	101	83	90	82	80	101
23	131	121	105	106	98	97	130
22	154	139	138	128	123	127	148
21	180	163	162	156	149	153	170
20	219	195	190	207	177	190	193
19	274	275	253	255	236	249	262
18	387	386	402	374	375	372	346
17							408
16							
15							
14							
13							
12							
11							
10							
9							
8							
7							
6							

