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A Technical Memorandum NOS OES 001

106-MILE DUMPSITE PHYSICAL OCEANOGRAPHY PROJECT: HYDROGRAPHIC DATA REPORT OF THE DELAWARE II 91-09 CRUISE

Rockville, Maryland
May 1992



noaa National Oceanic And Atmospheric Administration

U.S. DEPARTMENT OF COMMERCE
National Ocean Service



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National Ocean Service
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Frank Aikman, III
and
Malcolm B. Empie

Rockville, Maryland
May 1991

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1. INSTRUMENTATION, DATA COLLECTION AND PROCESSING

1.1. INTRODUCTION

The second NOAA Midwater Fish and Oceanography Study was conducted from 5 to 16 August, 1991, on the R/V DELAWARE II, Cruise 91-09, as part of the joint National Oceanographic and Atmospheric Administration/Environmental Protection Agency/U. S. Coast Guard 106-Mile Dumpsite Project (Battle, 1990). The first study of this nature was performed a year earlier, in August 1990 (DELAWARE II, Cruise 90-08), and the hydrographic results from that cruise were reported by Aikman and Empie, 1991. The objectives of the second study were quite similar to those of the first. These objectives were (1) to collect samples of midwater fish (principally myctophidae and sternoptychidae) and their prey; (2) to collect conductivity, temperature, and transmissometer verses depth (CTD/TR) and expendable bathythermograph (XBT) profiles in a limited area of the Middle Atlantic Bight (MAB), concentrating sampling to the southwest of the Dumpsite; and (3) to deploy four satellite-tracked drifters in a line extending across the shelf break, from the midshelf seaward to the Dumpsite.

Samples from the midwater fish collection are being analyzed by NOAA's National Marine Fisheries Service (NMFS) for contaminant levels that could possibly derive from the sewage sludge being dumped at the 106-Mile Dumpsite. The purpose of the hydrographic sampling is to provide water mass identification at all stations where midwater fish trawls were taken, to acquire a three-dimensional description of the water mass structure across the area of the survey, and to identify surface and subsurface water mass structure at the drifter deployment sites.

This report presents the hydrographic data from Cruise 91-09, including the CTD/TR data from 66 stations and temperature profiles from 43 XBT stations (Figure 1 and Tables 1 and 2). The remainder of Section 1 describes the instruments and methods used for data collection and the techniques employed for data processing. Section 2 provides a brief description of the hydrographic structure observed to assist those interested in interpreting biological and chemical results in terms of the physical structure. Appendix A follows with both graphical and tabular presentation of the CTD/TR profile data, and this is followed by graphical presentation of the XBT profile data in Appendix B.

1.2. CONTINUOUS PROFILES

A Sea-Bird Electronics, Inc., (SBE) 9-01b CTD was used as the primary profiling instrument, fitted with a Sea Tech, Inc., 25 cm transmissometer, in addition to the standard sensors. This CTD was fitted with a TC duct assembly and a 3,000 rpm pump. The TC duct improves both the resolution and accuracy of salinity (and density) data by simultaneously channeling the same water past both the temperature and conductivity sensors at the same flow rate. The manufacturer's specifications of the CTD/TR are given in Table 3. A more thorough description of the SBE CTD system can be found in Pederson (1984).

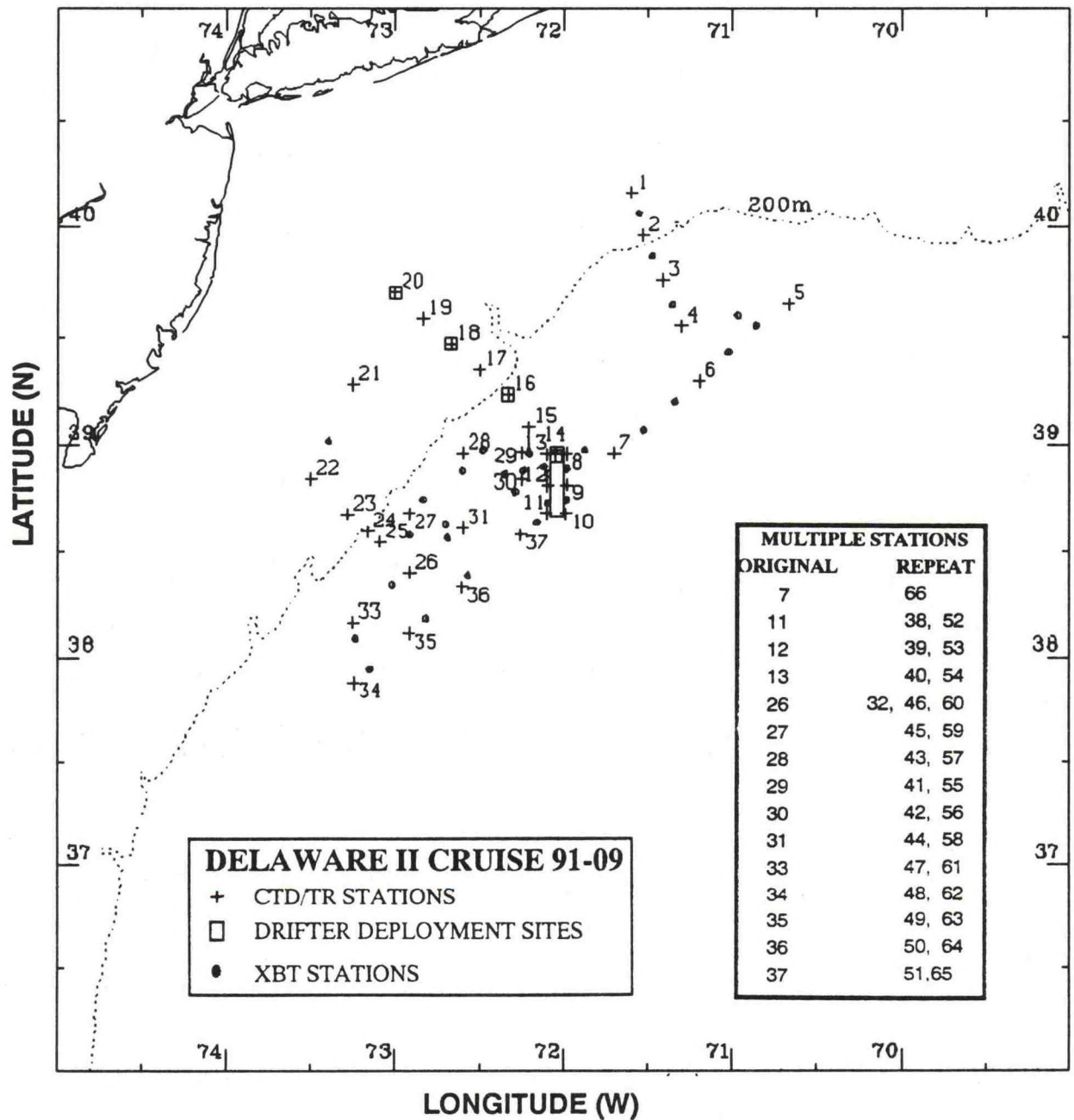


Figure 1. Station map of the DELAWARE II, Cruise 91-09 of 5-16 August, 1991. CTD/TR stations are numbered and marked by pluses, XBT profile sites by circles, and drifter deployment sites by squares. Only the original 37 CTD/TR stations are numbered on the map and repeat locations are as indicated. The 200 m isobath is shown and the 106-Mile Dumpsite is indicated by the rectangle in the center of the figure.

TABLE 1: CTD/TR STATION LOG (DE91-09)

CTD#	LATITUDE (N)	LONGITUDE (W)	DATE	TIME (UT)	DEPTH (M)	CTD DEPTH (M)	SALT #
01	40°09.9'	71°35.8'	91/08/06	0514	86	80	M01
02	39°57.9'	71°31.6'	91/08/06	0650	121	118	M06
03	39°45.5'	71°24.6'	91/08/06	0823	1277	500	M03
04	39°32.9'	71°18.0'	91/08/06	1018	2196	500	M04
05	39°38.9'	70°40.1'	91/08/06	1403	2287	500	none
06	39°18.0'	71°11.7'	91/08/06	2112	2416	500	M05
07	38°58.0'	71°42.0'	91/08/07	0230	2443	500	M07
08	38°57.9'	71°58.9'	91/08/07	0619	2250	300	M08
09	38°49.2'	71°58.8'	91/08/07	0738	2560	300	M10
10	38°41.0'	71°59.1'	91/08/07	0856	2653	300	M09
11	38°41.1'	72°06.2'	91/08/07	0953	2269	500	M11
12	38°49.0'	72°05.8'	91/08/07	1344	2342	500	M12
13	38°57.8'	72°05.9'	91/08/07	1734	2379	500	M13
14	38°57.7'	72°02.9'	91/08/07	2210	2379	500	M14
15	39°05.2'	72°12.4'	91/08/08	0006	1647	500	M15
16	39°14.0'	72°19.9'	91/08/08	0150	428	424	M16
17	39°21.0'	72°30.1'	91/08/08	0329	134	132	M17
18	39°28.1'	72°40.1'	91/08/08	0446	87	82	M18
19	39°35.0'	72°50.2'	91/08/08	0603	64	61	M19
20	39°42.1'	73°00.0'	91/08/08	0715	56	51	none
21	39°17.0'	73°15.0'	91/08/08	1031	60	59	M21
22	38°51.0'	73°30.0'	91/08/08	1325	60	58	M22
23	38°40.9'	73°17.0'	91/08/08	1454	90	86	M23
24	38°35.9'	73°09.9'	91/08/08	1545	789	500	M24
25	38°32.9'	73°05.4'	91/08/08	1655	1520	500	M25
26	38°24.0'	72°55.0'	91/08/08	1837	2445	500	M26
27	38°41.0'	72°55.1'	91/08/08	2100	1465	500	M27
28	38°58.1'	72°36.0'	91/08/09	0106	1397	500	M28
29	38°58.2'	72°14.9'	91/08/09	0435	2150	500	M29
30	38°51.0'	72°14.7'	91/08/09	0726	2470	500	M30
31	38°37.0'	72°36.0'	91/08/09	1142	2408	500	M31
32	38°24.0'	72°55.0'	91/08/09	1605	2380	500	M32
33	38°10.0'	73°15.0'	91/08/09	2047	2064	500	M33
34	37°52.9'	73°14.9'	91/08/10	1416	2178	500	M02
35	38°06.9'	72°55.1'	91/08/10	1857	2645	500	M35
36	38°20.0'	72°36.2'	91/08/10	2321	2858	500	M36
37	38°35.0'	72°15.3'	91/08/11	0349	2269	500	M37
38	38°40.9'	72°06.0'	91/08/11	0805	2610	500	M38
39	38°48.9'	72°05.8'	91/08/11	1115	2304	500	M39
40	38°58.0'	72°05.9'	91/08/11	1449	2397	500	M40
41	38°58.0'	72°15.0'	91/08/11	1738	2150	500	RR01
42	38°50.9'	72°15.1'	91/08/11	2029	2470	500	RR02
43	38°57.9'	72°36.0'	91/08/12	0026	1259	500	RR03
44	38°37.0'	72°36.0'	91/08/12	0427	2408	500	RR04
45	38°41.0'	72°55.0'	91/08/12	0750	2064	500	RR05
46	38°24.0'	72°55.1'	91/08/12	1139	2335	500	RR06
47	38°10.0'	73°15.1'	91/08/12	1545	2064	500	RR07
48	37°53.0'	73°15.0'	91/08/12	1923	2178	500	RR08
49	38°07.1'	72°55.2'	91/08/12	2341	2603	500	RR09
50	38°20.0'	72°36.1'	91/08/13	0346	2858	500	RR10
51	38°35.0'	72°15.0'	91/08/13	0815	2269	500	RR11
52	38°40.9'	72°06.0'	91/08/13	1128	2637	500	RR12
53	38°49.0'	72°05.9'	91/08/13	1434	2342	500	RR13
54	38°58.0'	72°06.0'	91/08/13	1735	2379	500	RR14
55	38°57.9'	72°15.0'	91/08/13	2028	2150	500	RR15
56	38°50.9'	72°14.9'	91/08/13	2304	2448	500	RR16
57	38°57.9'	72°36.1'	91/08/14	0302	1239	500	RR17
58	38°37.0'	72°36.0'	91/08/14	0704	2408	500	RR18
59	38°40.9'	72°55.0'	91/08/14	1045	1477	500	RR19
60	38°24.1'	72°55.1'	91/08/14	1435	2373	500	RR20
61	38°10.0'	73°15.0'	91/08/14	1845	2064	500	RR21
62	37°52.8'	73°15.0'	91/08/14	2227	2178	500	RR22
63	38°07.0'	72°55.0'	91/08/15	0219	2646	500	RR23
64	38°20.0'	72°36.1'	91/08/15	0621	2858	500	RR24
65	38°34.5'	72°13.9'	91/08/15	1133	2269	500	RR25
66	38°58.0'	71°42.0'	91/08/15	1636	2443	500	RR26

TABLE 2: XBT LOG (DE 91-09)

<u>XBT#</u>	<u>LATITUDE (N)</u>	<u>LONGITUDE (W)</u>	<u>DATE</u>	<u>TIME (UT)</u>	<u>XBT Type</u>	<u>Depth (m)</u>
1	40°04.1'	71°33.2'	91/8/06	0612	T10	90
2	39°52.2'	71°28.6'	91/8/06	0745	T6	476
4	39°38.8'	71°21.3'	91/8/06	0945	T6	1877
5	39°35.7'	70°58.2'	91/8/06	1232	T6	2320
6	39°33.0'	70°51.6'	91/8/06	1759	T6	2379
7	39°25.8'	71°01.4'	91/8/06	1910	T6	2452
8	39°12.2'	71°20.4'	91/8/07	0012	T6	2635
9	39°04.5'	71°31.6'	91/8/07	0129	T6	2470
10	38°59.1'	71°52.4'	91/8/07	0551	T6	2415
11	38°53.8'	71°58.9'	91/8/07	0710	T6	2470
12	38°45.0'	71°39.0'	91/8/07	0832	T6	2702
13	39°01.5'	73°23.8'	91/8/08	1219	T10	58
14	38°45.2'	72°50.2'	91/8/08	2327	T6	1465
15	38°58.9'	72°28.7'	91/8/09	0324	T6	1800
16	38°53.4'	72°14.4'	91/8/09	0702	T6	2278
17	38°47.2'	72°17.4'	91/8/09	0945	T6	2536
18	38°34.1'	72°41.4'	91/8/09	1418	T6	2430
19	38°20.6'	73°01.3'	91/8/09	1858	T6	2400
20	38°05.5'	73°14.2'	91/8/09	2333	T6	2000
21	37°56.8'	73°09.1'	91/8/10	1704	T6	2178
22	38°11.1'	72°49.2'	91/8/10	2148	T6	2180
23	38°23.3'	72°34.2'	91/8/11	0142	T6	2700
24	38°38.5'	72°09.6'	91/8/11	0738	T6	2269
25	38°44.2'	72°05.5'	91/8/11	1035	T6	2270
26	38°52.3'	72°05.6'	91/8/11	1335	T6	2400
27	38°52.3'	72°21.1'	91/8/11	2254	T6	2380
28	38°53.3'	72°36.1'	91/8/12	0240	T6	1500
29	38°38.0'	72°42.1'	91/8/12	0642	T6	2200
30	38°35.0'	72°55.0'	91/8/12	1022	T6	2000
31	38°20.1'	73°00.6'	91/8/12	1404	T6	2400
32	38°04.3'	73°15.5'	91/8/12	1803	T6	2200
33	37°56.1'	73°11.1'	91/8/12	2159	T6	2340
34	38°10.3'	72°51.8'	91/8/13	0203	T6	2710
35	38°22.9'	72°32.7'	91/8/13	0607	T6	2800
36	38°54.4'	72°07.1'	91/8/13	1655	T6	2600
37	38°58.0'	72°12.3'	91/8/13	1957	T6	2200
38	38°51.7'	72°19.3'	91/8/14	0126	T6	2500
39	38°37.6'	72°43.0'	91/8/14	0938	T6	2300
40	38°34.9'	72°54.4'	91/8/14	1317	T6	2210
41	38°20.8'	73°00.1'	91/8/14	1655	T6	2350
44	38°23.3'	72°31.7'	91/8/15	0848	T6	2730
45	38°37.9'	72°08.5'	91/8/15	1333	T6	2342
46	39°00.9'	71°35.1'	91/8/15	1934	T6	2600

TABLE 3: SBE 9-01b SPECIFICATIONS*

SENSOR	RANGE	ACCURACY	RESOLUTION
SBE 3-01/F THERMOMETER	-5 to +35 °C	0.004 °C	0.0003 °C
SBE 4-01/0 CONDUCTIVITY METER	0 to 7 S/m	0.0003 S/m	0.00004 S/m
PAROSCIENTIFIC DIGIQUARTZ MODEL 4xK PRESSURE SENSOR	0 to 2068 dbar	1.03 dbar	0.08 dbar
SEA TECH, Inc. TRANSMISSOMETER (25 cm)	0 to 100%	0.5 %	0.1 %

* As specified by the manufacturer (Sea-Bird Electronics, Inc.)

The data acquisition was accomplished using a SEARAM memory module, which plugs into the SBE 9 underwater unit in lieu of a connection via conductive wire to a deck unit. SEARAM obtains power from 12 nicad batteries and decodes and stores the serial data stream in CMOS memory. Because of memory storage constraints, the data stream, which was obtained at a scan rate of 24 Hz, was averaged internally over 12 scans and recorded at a rate of 2 samples per second. When the CTD/TR was recovered, the memory contents were read via an RS-232 link to an IBM-XT compatible computer. We used SBE's SEASOFT software package for retrieval, processing, display, and archival of data.

A SBE 19 (SEACAT Profiler) was attached to the wire above the CTD/TR cage and deployed simultaneously throughout the cruise. It was needed twice as a backup (on stations 1 and 28) when the distilled water-filled tygon tubing that was put on the conductivity cell of the SBE 9 between stations was inadvertently left on during the profile. The SEACAT profiler lacks a TC duct, which resulted in a noisier salinity profile than that obtained from the SBE 9. However, SBE 9 and SBE 19 comparisons were done on stations 2, 27, and 29, and the temperature and salinity values from both instruments are indistinguishable, so we have confidence in the correctness of the salinity data for stations 1 and 28.

The general routine, when arriving on station, was to first do a CTD/TR profile at a nominal lowering rate of 60 m/min. This was followed by a double oblique plankton tow to a maximum depth of 200 m, during which a neuston net was towed at the surface for the duration of the plankton tow. Sampling of fish from midwater followed with an Isaacs-Kidd midwater fish trawl. The CTD/TR

profiles nominally extend to 500 m depth, or to a few meters above bottom at shallower stations. Three exceptions are stations 8, 9, and 10, where the profiles extend to 300 m in water over 500 m deep. No net tows were conducted during the three CTD/TR transects across the shelf break (stations 1-4 and stations 14-23), nor on stations 8-10.

1.3. WATER SAMPLE COLLECTION AND ANALYSIS

A 1.7 liter Niskin bottle was attached above the CTD/TR and tripped by messenger at the bottom of each cast. A water sample was drawn and saved for later analysis for salinity (on a Guildline Model 8400 Autosol) at the National Marine Fisheries Service Laboratory in Narragansett, RI. Table 4 presents a comparison of CTD and bottle salinities for each station throughout the cruise.

1.4. CALIBRATION

As in 1990, we relied strictly on pre-cruise laboratory calibrations of the temperature and conductivity sensors by the NOAA Northwest Regional Calibration Center. This was done in July, 1991, immediately before the cruise. The Sea Tech Transmissometer was also calibrated immediately before the cruise. Because of this, there is a mean difference of approximately 1.5 % in light transmission between last year's cruise (DELAWARE II, Cruise 90-08) and this year's values for transmissivity. Consequently, Cruise 90-08 transmissivity, as reported in last year's Hydrographic Data Report (Aikman and Empie, 1991), is 1.5 % low. This occurs because the calibration coefficients for transmissivity entered into SEASOFT at the factory in 1990 were slightly low (i.e., default values were entered rather than actual calibration values). Thus, the transmissivity values for Cruise 90-08 have a built in offset of -1.5 %. The stated accuracy of the transmissometer sensor is 0.5 % (Table 3) and the transmissivity is used primarily as a relative parameter, so this poses no particular problem in the 106-Mile Dumpsite analyses.

Logistical constraints prohibited any Rosette bottle sampling for *in situ* calibration. In fact, in coastal regions such as this, where both large property gradients and large time-dependent changes exist, the application of such *in situ* techniques is difficult. The single salinity sample collected at the bottom of each cast was intended to monitor the behavior of the conductivity sensor over the course of the cruise and detect any abrupt changes in CTD conductivity. The salinity samples were preserved and processed immediately post-cruise. As in 1990, the bottle salinities are consistently high relative to the CTD salinity, but the differences in 1991 are on average half what they were in 1990 (Table 4). This is most likely because the 1990 bottle salinity samples were stored for two months before being run, thus increasing the likelihood of evaporation resulting in higher bottle values.

The conductivity cell behaved quite well throughout the 1991 cruise, with a mean CTD-Bottle salinity difference of -0.02347 psu. There is a slight decreasing trend to these differences throughout the cruise, also noted in the small plot at the bottom of Table 4. A linear regression fit to the differences indicates that the CTD salinities were 0.02 psu lower at the end of the cruise, relative to the beginning. No corrections were applied to the CTD data.

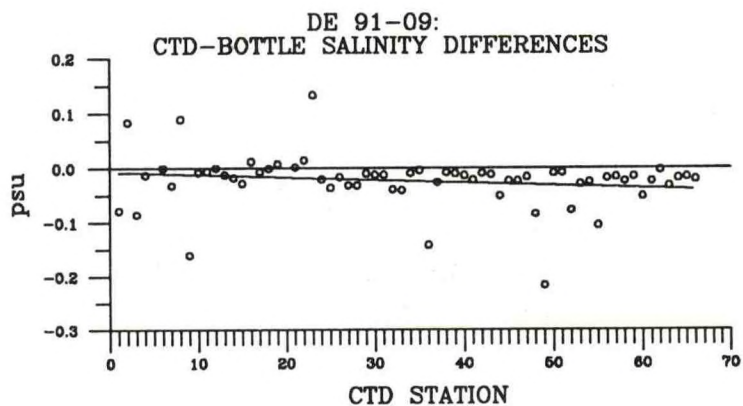
1.5. EXPENDABLE BATHYTHERMOGRAPH (XBT) DATA

XBT profiles were taken routinely at the end of each midwater fish tow and on occasion between pairs of CTD/TR stations. A total of 46 XBT probes were deployed, of which 3 failed. Thus, a total

TABLE 4: CTD, BOTTLE, AND DIFFERENCE (CTD BOTTLE) SALINITIES

<u>STA</u>	<u>CTD</u>	<u>BOTTLE</u>	<u>DIFF.</u>	<u>STA</u>	<u>CTD</u>	<u>BOTTLE</u>	<u>DIFF.</u>
1	33.6571	33.735	-0.0779 *	48	35.0146	35.099	-0.0844 *
2	35.2157	35.132	0.0837 *	49	35.0100	35.226	-0.2160 *
3	35.0165	35.102	-0.0855	50	35.0586	35.067	-0.0084
4	35.0262	35.039	-0.0128	51	35.0493	35.057	-0.0077
6	35.0463	35.046	0.0003	52	35.0189	35.096	-0.0771 *
7	35.0201	35.052	-0.0319	53	35.0333	35.062	-0.0287
8	35.3992	35.310	0.0892	54	35.0163	35.041	-0.0247
9	35.5573	35.718	-0.1607 *	55	35.0329	35.138	-0.1051 *
10	35.7655	35.773	-0.0075	56	35.0174	35.035	-0.0176
11	35.0798	35.086	-0.0062	57	35.0114	35.027	-0.0156
12	35.0608	35.060	0.0008	58	35.0543	35.078	-0.0237
13	35.0349	35.047	-0.0121	59	35.0243	35.039	-0.0147
14	35.0315	35.049	-0.0175	60	35.0807	35.132	-0.0513 *
15	35.0196	35.047	-0.0274	61	35.0329	35.056	-0.0231
16	35.0324	35.020	0.0124	62	35.0169	35.020	-0.0031
17	35.3493	35.356	-0.0067	63	35.0090	35.041	-0.0320
18	32.8559	32.857	-0.0011	64	35.0733	35.091	-0.0177
19	32.8830	32.875	0.0080	65	35.0492	35.065	-0.0158
21	32.7747	32.773	0.0017	66	35.0458	35.066	-0.0202
22	32.8961	32.881	0.0151				
23	34.6791	34.546	0.1331 *	Overall			
24	35.0177	35.038	-0.0203	Mean			-0.02347
25	35.0282	35.064	-0.0358	Standard deviation			0.048653
26	35.0329	35.049	-0.0161				
27	35.0306	35.062	-0.0314	Corrected			
28	35.0086	35.040	-0.0314	Mean			-0.01487
29	35.0375	35.047	-0.0095	Standard deviation			0.012192
30	35.0578	35.070	-0.0122				
31	35.0489	35.061	-0.0121				
32	35.0295	35.068	-0.0385				
33	35.0268	35.067	-0.0402				
34	35.0688	35.078	-0.0092				
35	35.0171	35.021	-0.0039				
36	35.0482	35.190	-0.1418 *				
37	35.0838	35.109	-0.0252				
38	35.0188	35.027	-0.0082				
39	35.0403	35.050	-0.0097				
40	35.0147	35.028	-0.0133				
41	35.0116	35.033	-0.0214				
42	35.0288	35.038	-0.0092				
43	35.0236	35.035	-0.0114				
44	35.0608	35.111	-0.0502 *				
45	35.0231	35.046	-0.0229				
46	35.0420	35.065	-0.0230				
47	35.0314	35.047	-0.0156				

* Differences greater than one standard deviation (0.048653) were removed to calculate the corrected mean and standard deviation



of 43 XBT temperature profiles are presented in this report. In general, Sippican T6's were used (460 m), except for the two shallowest XBT stations, where Sippican T10's were used (250 m).

1.6. SENSOR TIME CONSTANT MATCHING

There is an inherent mismatch of time constants for the temperature and conductivity sensors in the SBE 9-01b, as in all high performance CTD profilers. This can result in the familiar "salinity spiking" which can occur at sharp vertical gradients in T and S. Even with the TC duct assembly, which eliminates variable flushing rates of the conductivity cell and thus assures a constant time lag in conductivity, some digital alignment of these two sensors may be necessary. Following the August 1990 survey (Cruise 90-08) a diagnostic test was run, in which a number of CTD/TR profiles with sharp temperature steps over a 10 decibar (dbar) interval were chosen and sampled and recorded at 24 Hz. The conductivity was then incrementally advanced and lagged at 0.04 second steps and the salinity traces were compared. This procedure did not improve the salinity trace, and it was decided that the default alignment resulted in minimal salinity spiking. As in 1990, we observed no significant salinity spiking throughout this year's cruise (91-09), and have thus relied on the default alignment of these two sensors.

1.7. DECIMATION

The raw downcast files were averaged to produce a 1 dbar pressure series, and a SBE pressure filter (which excludes any scans where the pressure signal is not increasing by at least 0.25 dbar/sec) was applied. The derived variables (i.e. salinity, density) were computed from the decimated values of temperature, conductivity, and pressure, and at this point the data were converted to ASCII engineering units.

1.8. DATA EDITING

Final editing of the CTD/TR data was performed by hand. Outlying points were identified graphically and corrected by interpolation between surrounding good data points from above and below.

2. HYDROGRAPHIC STRUCTURE IN AUGUST 1991

2.1. INTRODUCTION

In a fashion similar to that used in the August 1990 DELAWARE II 90-08 Cruise Report (Aikman and Empie, 1991), we briefly describe the hydrography and water mass structure observed during August 1991. This description is intended as a resource for the chemists and biologists wishing to interpret their results from the analysis of midwater fish in terms of the hydrographic structure, rather than an exhaustive description of the 3-dimensional hydrographic structure.

As stated in last year's report, the 106-Mile Dumpsite is covered most of the time by slope water; however, it is not infrequently affected by generally cooler and fresher shelf water or generally warmer and saltier warm core rings of Gulf Stream origin. Bisagni (1985) estimates the proportions to be 67 %, 19 % and 12 %, respectively, for slope, shelf and warm core ring water. During August 1991 we encountered both shelf water (surface) and warm core ring water (subsurface) in the vicinity of the Dumpsite.

2.2. SURFACE WATER

Seasonal heating of the surface waters during the summer diminishes the surface temperature signature of the shelf-slope (shelf break) front, the thermohaline feature that separates normally cooler and fresher shelf waters from warmer and saltier slope waters. A clear surface temperature expression of the shelf-slope front is absent from our survey field in August 1991 (Figure 2a). Salinity is a better surface indicator of the front in summer, and historically the 34 psu isohaline is used to identify the front. The surface salinity field (Figure 2b) indicates that the shelf-slope frontal system curves across the 106-Mile Dumpsite area, from the southwest to the northeast (much as it did in August 1990), covering the 106-Mile Dumpsite, in part, by shelf water. Figures 2c and 2d show the density and transmissivity at 1 m for the same area defined by our survey. Note that a surface salinity and density maximum is centered at station 30 just on the southwestern edge of the Dumpsite. As we will see below, this is most likely the surface expression of a clockwise rotating warm core ring that has been capped by the seasonal thermocline; thus it lacks any definitive sea surface temperature (SST) signature in the satellite SST imagery. However, the patterns of surface temperature and salinity evident in Figures 2a and 2b (and thus the density in Figure 2c) are consistent with the clockwise circulation associated with a warm core ring centered to the southwest of the 106-Mile Dumpsite.

2.3. CROSS-SHORE STRUCTURE

Three cross-shore transects (Figure 3) were made to define the shelf-slope frontal structure and describe the thermohaline transition from the outer continental shelf to the continental slope. For each of the three transects we present potential temperature ($^{\circ}\text{C}$), salinity (psu), sigma theta (kg/m^3), and transmissivity (%) sections as a function of pressure (dbar) and distance (km) offshore from the most shoreward station of each transect and group potential temperature ($^{\circ}\text{C}$) vs salinity (psu) diagrams (Figures 4, 5, and 6). Each transect reveals the dominant feature of the summer stratification, the seasonal thermocline. This feature of sharp vertical temperature gradients encompasses the upper forty meters of the water column and extends horizontally from the shelf seaward across the shelf

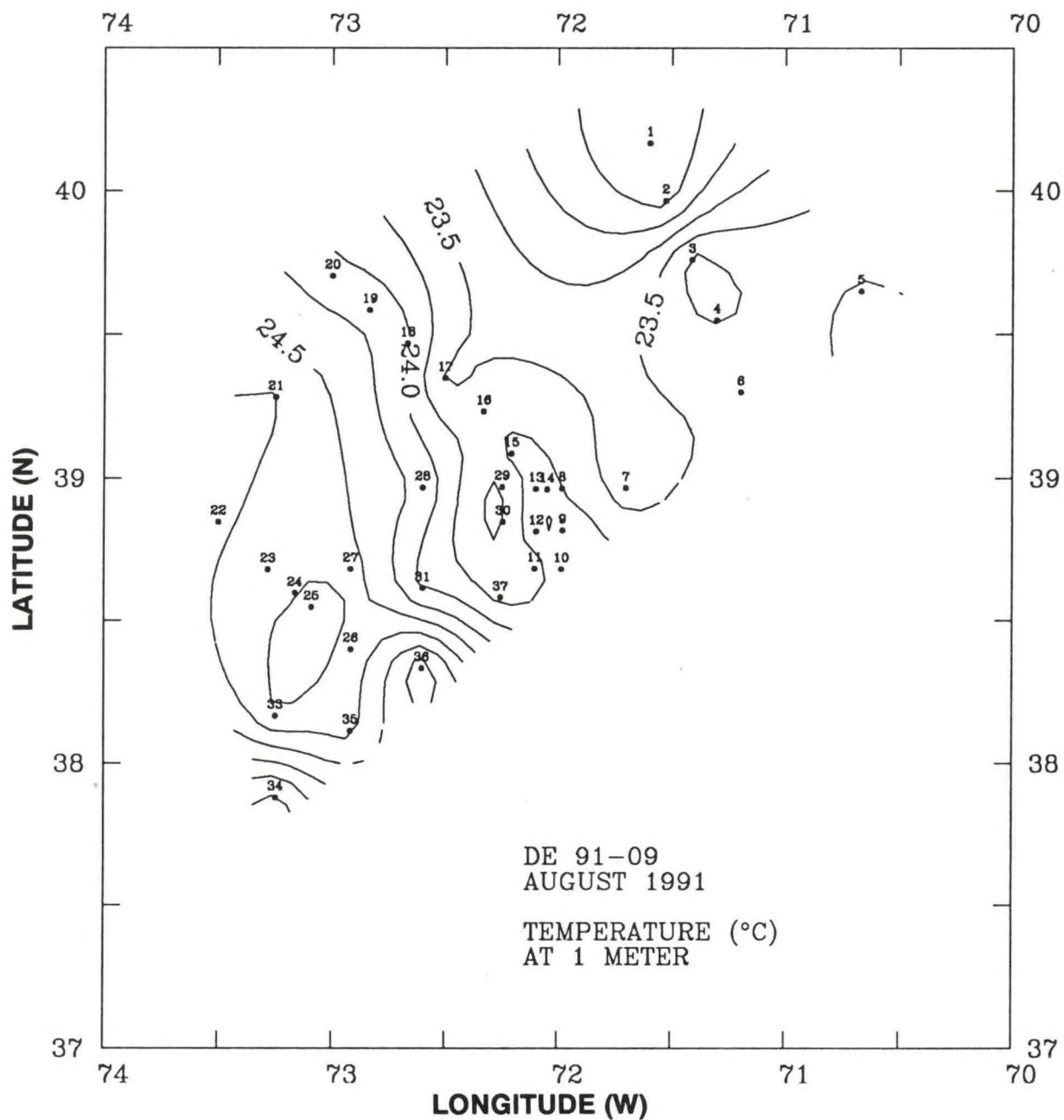


Figure 2a. Map of the temperature (°C) at 1 m derived from the first 37 CTD/TR stations. The station locations are indicated and the contour interval is 0.25°C.

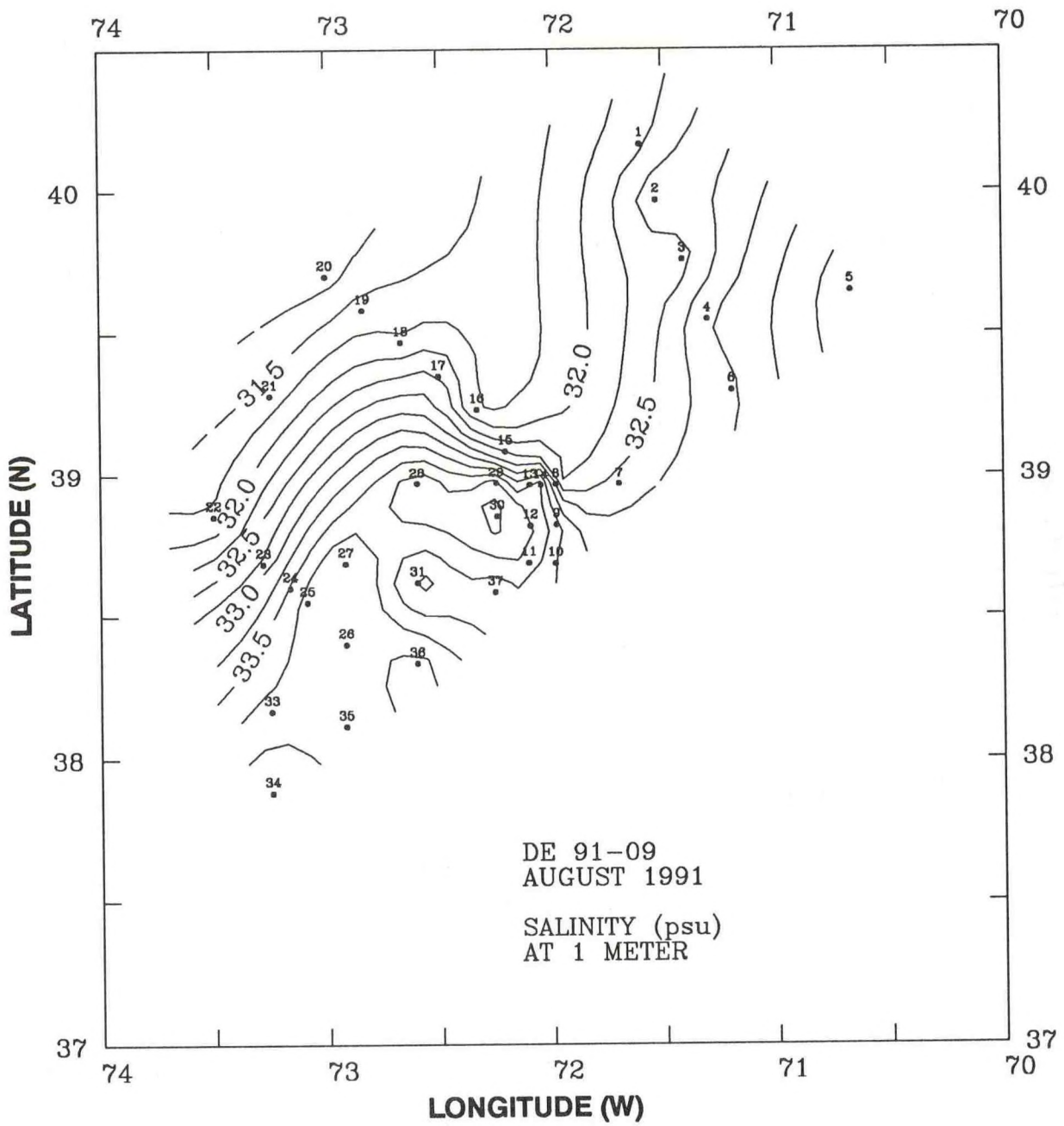


Figure 2b. As in Figure 2a, but for salinity (psu) with a contour interval of 0.25 psu.

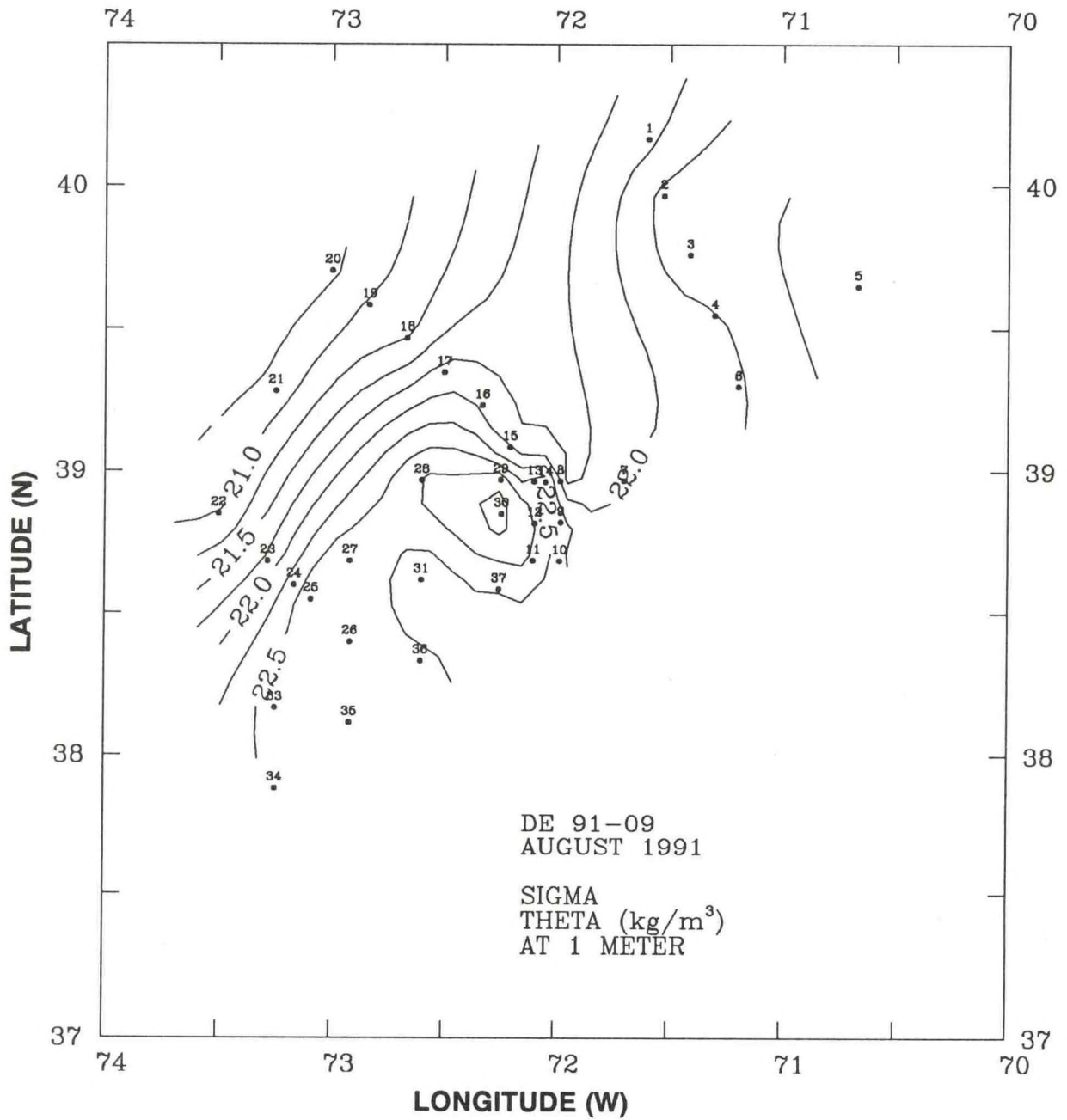


Figure 2c. As in Figure 2a, but for density (sigma theta [kg/m^3]) with a contour interval of 0.25 kg/m^3 .

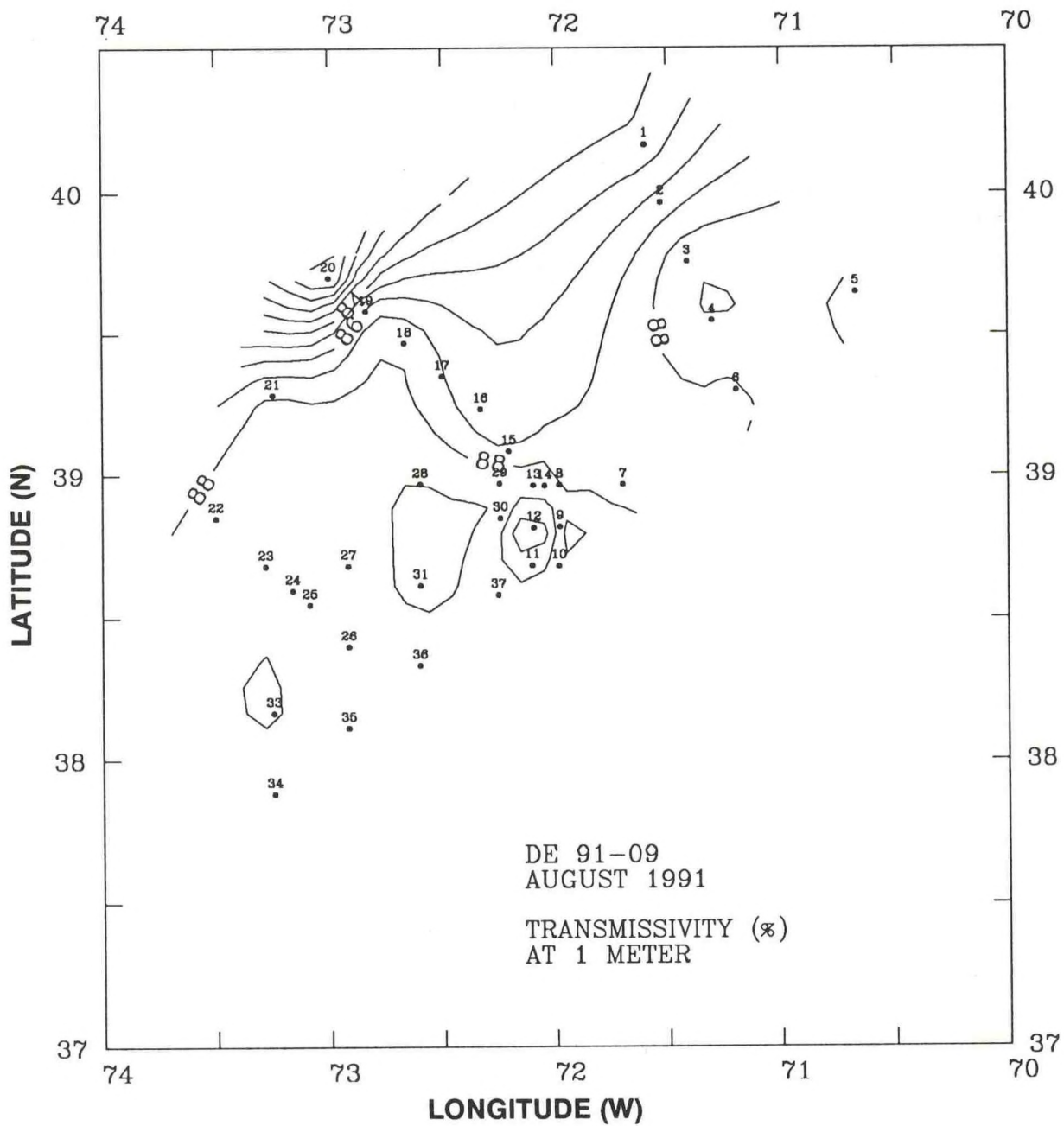


Figure 2d. As in Figure 2a, but for transmissivity (%) with a contour interval of 1 %.

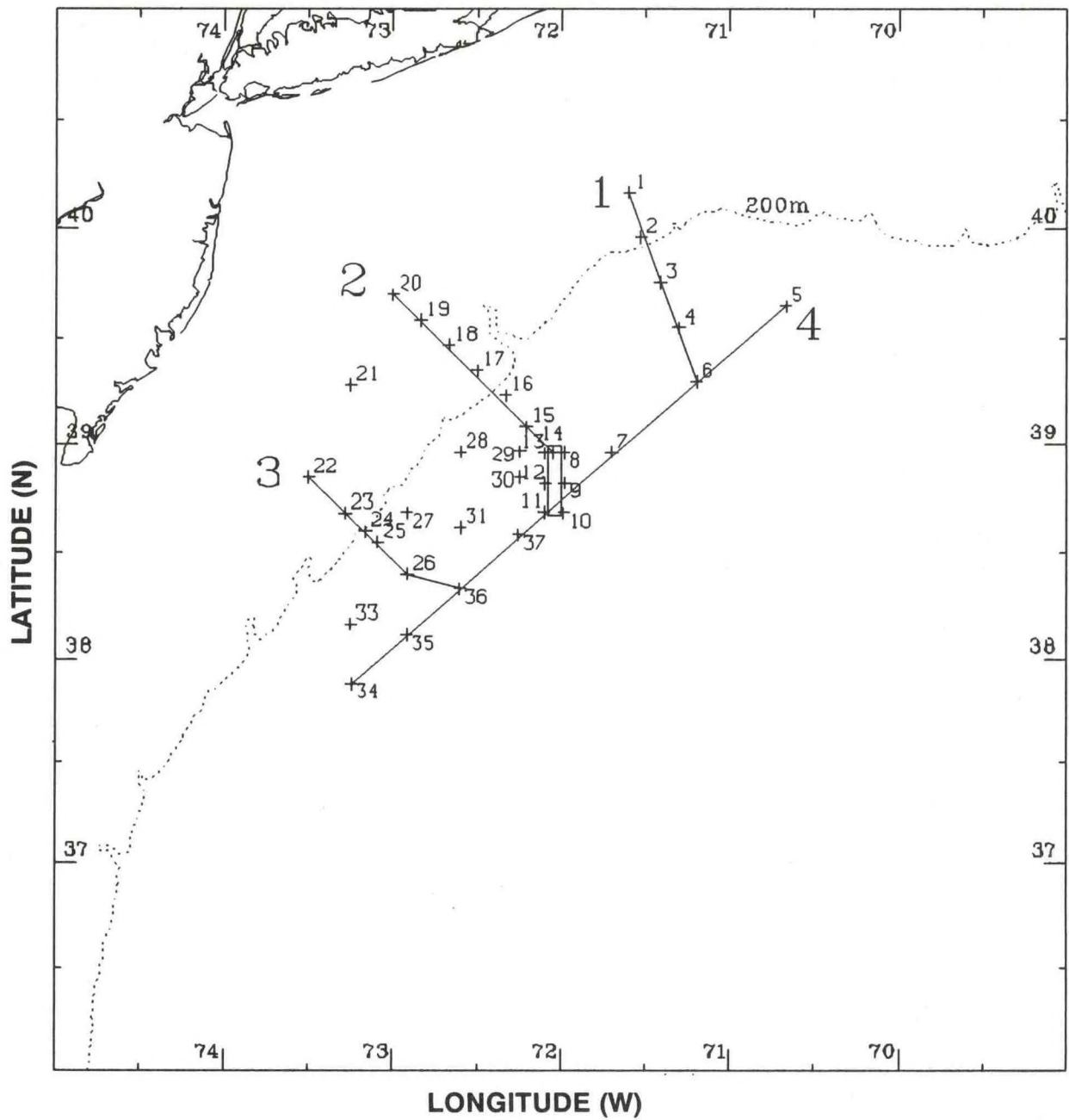


Figure 3. Four transects constructed from the CTD/TR data of the DELAWARE II 91-09 Cruise.

break and slope. Over the shelf the thermocline caps the remnant cooler near-bottom water of winter, the cold pool. The "nose", or seaward extent, of the cold pool (as defined by water less than 12°C) extends out over the shelf break to varying degrees, depending on which transect we consider. The shelf-slope front is best defined in the salinity field during the summer, because its temperature expression is overwhelmed by the seasonal thermocline in the upper 40 m. As mentioned above, the 34 psu isohaline is typically used to define this front, the separation of shelf and slope water.

Seaward of the shelf-slope frontal region, below the seasonal thermocline, and at the maximum depth to which the seasonal influence of the atmosphere can penetrate, a relative salinity maximum is observed at approximately 150 m. This voluminous feature of the slope water stratification was first referred to as the "upper slope water thermostat" by Wright and Parker (1976), and the "main salinity maximum" by Gordon et al. (1976). As described by Aikman (1984), a freshened modification of the Iselin (1936) North Atlantic Central Water (NACW) is found below the "main salinity maximum" over the slope, extending from approximately 200 m to greater than 500 m depth.

The most northern transect, Transect 1 (Figures 4a,b,c,d,e), reveals that the cold pool (delimited by the 12°C isotherm) does not extend much seaward of the shelf break (Figure 4a). The surface expression of the front (34 psu isohaline) apparently extends seaward of station 6 (Figure 4b), and thus is not represented in this transect. This is most likely the result of offshore flow engendered by the clockwise circulation of the warm core ring centered further to the southwest. A transmissivity minimum (particle maximum) occurs at about 50 m depth across this transect (Figure 4d), and throughout the field of this survey. This is typical of the summer stratification, wherein a particle maximum occurs at the base of the seasonal pycnocline.

The main thermohaline features of the stratification are readily discernable in the group potential temperature (°C) vs salinity (psu) diagrams presented for each transect. For Transect 1 (Figure 4e) the prominent features of the stratification are indicated on the figure. The freshest and warmest water is found at the surface of all stations across the transect. The temperature drops quickly as we descend through the seasonal thermocline, with each station generally increasing in salinity as we proceed offshore. The relative temperature minimum over the bottom on the shelf, and at the base of the thermocline across the shelf break, is the cold pool. The transition region across the shelf break, from the near-bottom cold pool on the shelf to the main salinity maximum (main S-max) over the slope indicates the portion of the shelf-slope frontal region below the seasonal thermocline. Below the main S-max over the continental slope the tight grouping of points that become cooler and fresher with depth is the freshened NACW, discussed above.

Transect 2 (Figures 5a,b,c,d,e) shows the cold pool extending offshore almost to the Dumpsite (just seaward of station 15; Figure 5a), and the shelf-slope front intersecting the surface at the Dumpsite near station 14 (Figure 5b). At station 14 the isotherms below 150 m depth dip down, which, as we will see below, indicates that we are on the edge of a warm core ring. Further suggestion of the warm core ring is evident in the slightly elevated salinity of the main S-max at station 14 (Figure 5e).

In Transect 3 (Figures 6a,b,c,d,e) the cold pool extends seaward of the shelf break to between stations 25 and 26, and the surface expression of the front (34 psu isohaline) is apparent between stations 24 and 25. The most seaward station (#36) reveals the probable influence of the warm core ring in

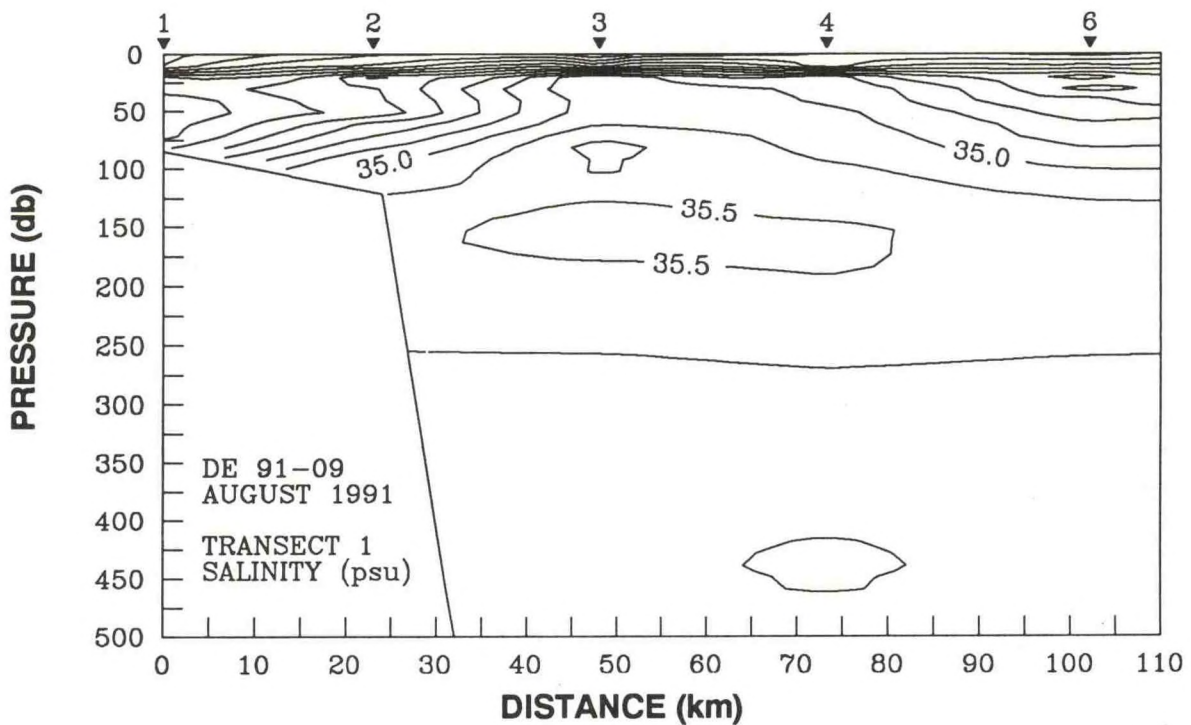
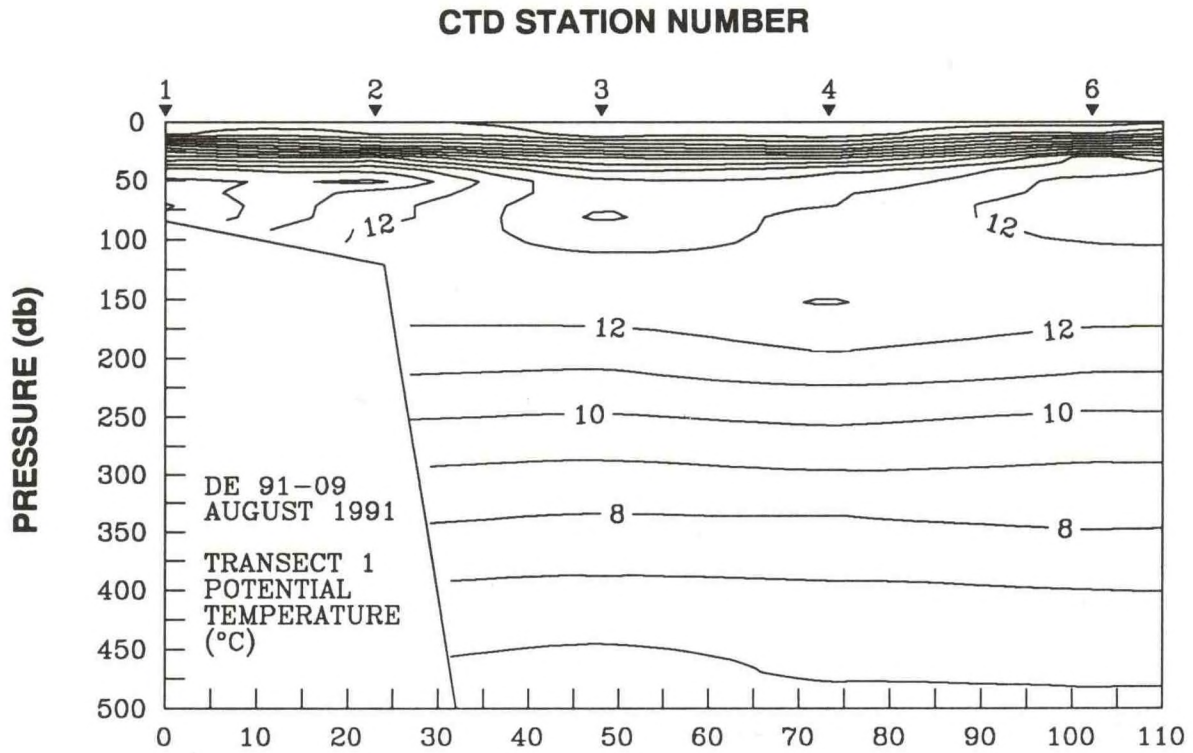


Figure 4a and b. Transect 1 (a) Potential temperature ($^{\circ}\text{C}$), contour interval of 1°C , and (b) salinity (psu), contour interval of 0.25 psu, as a function of distance (km) offshore from the most shoreward station and pressure (dbar).

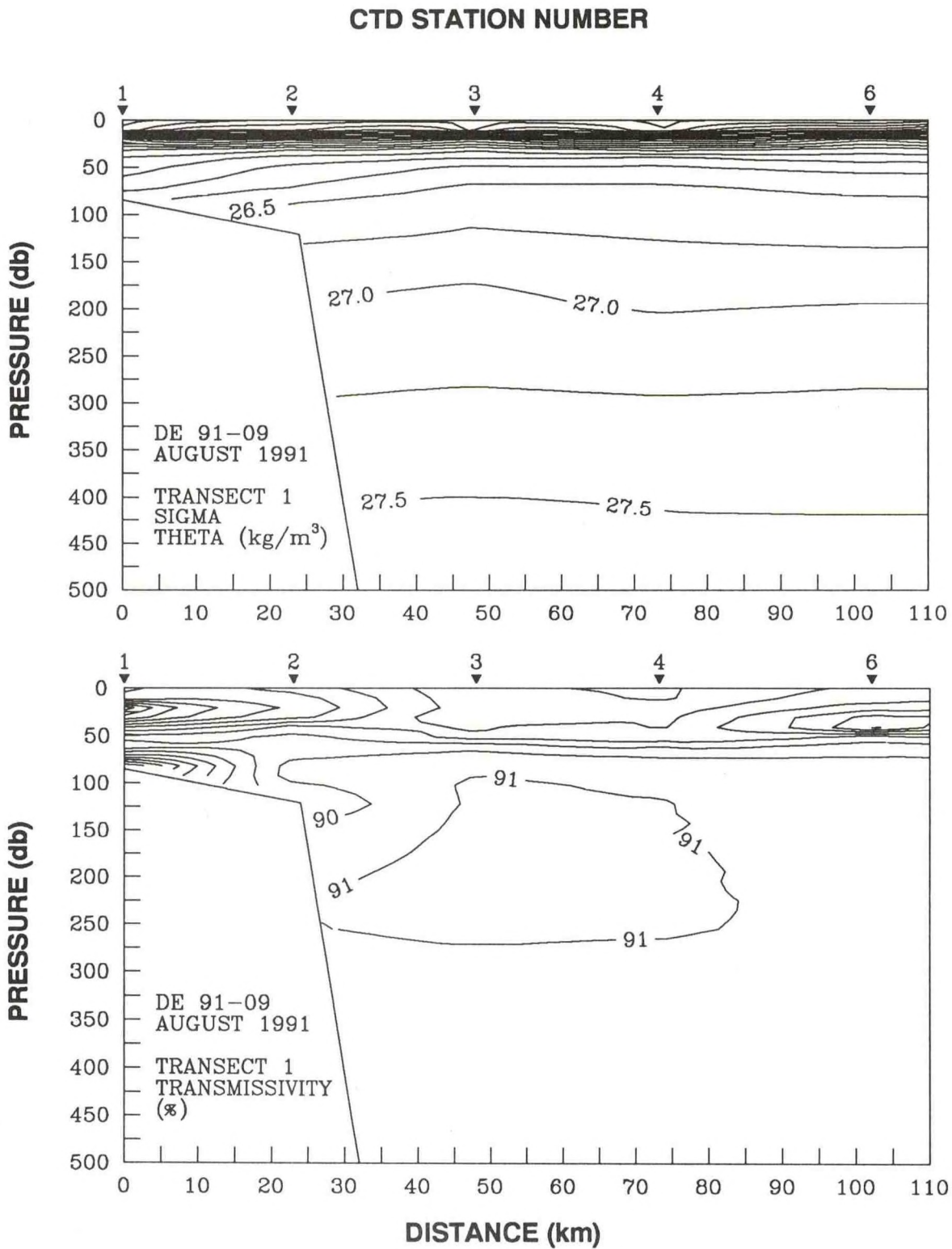


Figure 4c and d. Transect 1 (c) density (sigma theta [kg/m^3], contour interval of $0.25 \text{ kg}/\text{m}^3$, and (d) transmissivity (%), contour interval of 1%, as a function of distance (km) offshore from the most shoreward station and pressure (dbar).

DE 91-09 TRANSECT 1

STATION	1	2	3	4	6
SYMBOL	o	+	*	□	x

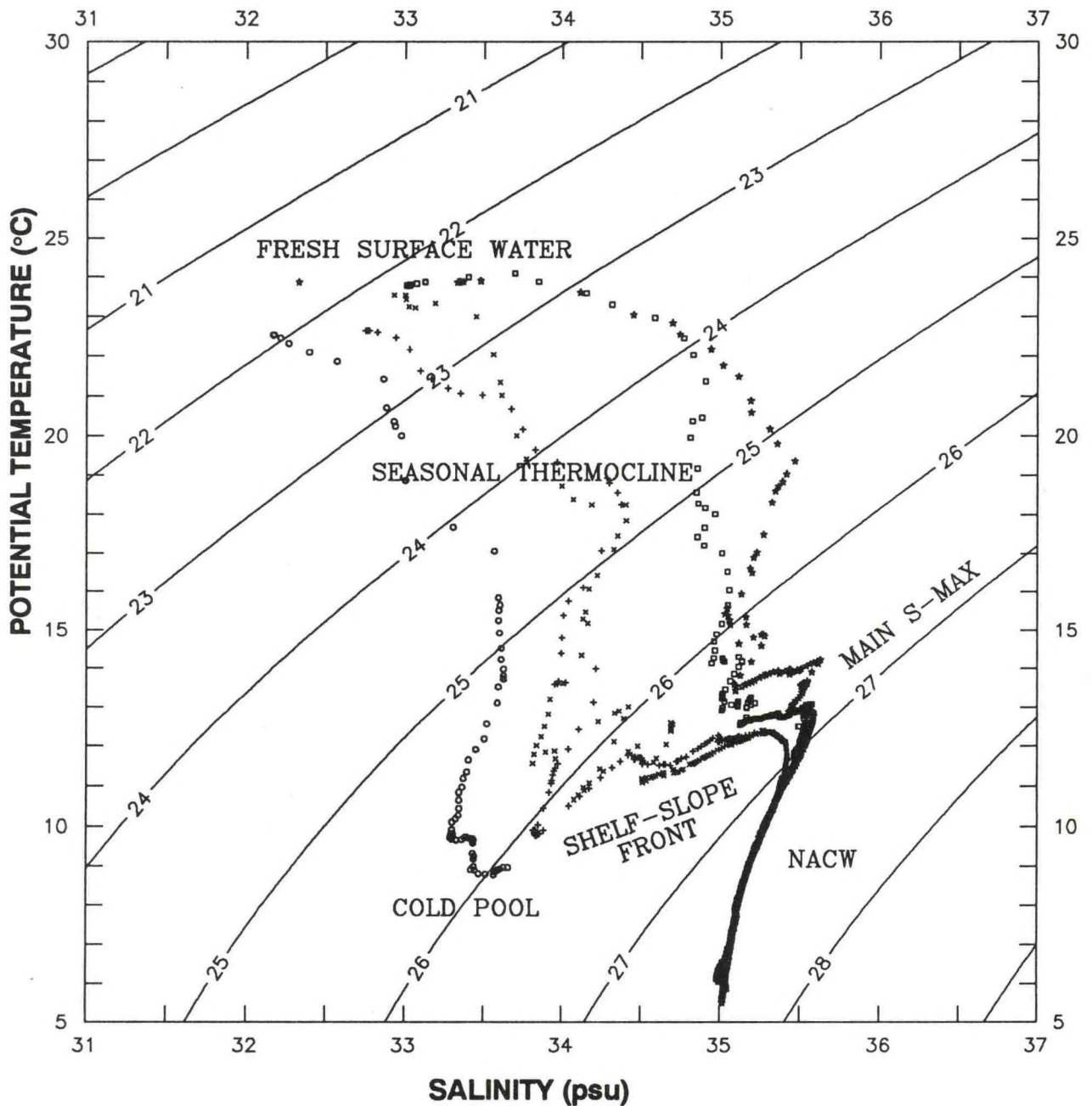


Figure 4e. Potential temperature (°C) vs. salinity (psu) diagram for transect 1. Lines of constant sigma theta (kg/m^3) are overlain. Particular features of the thermohaline stratification discussed in the text are indicated.

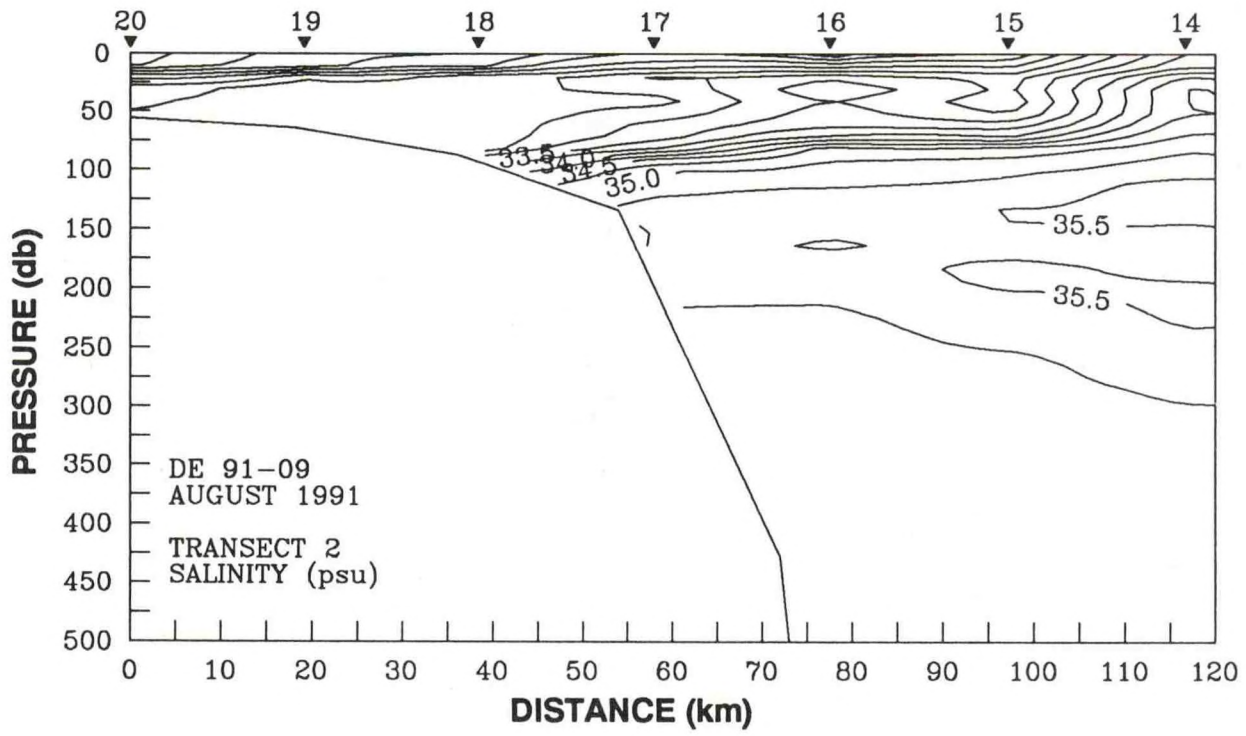
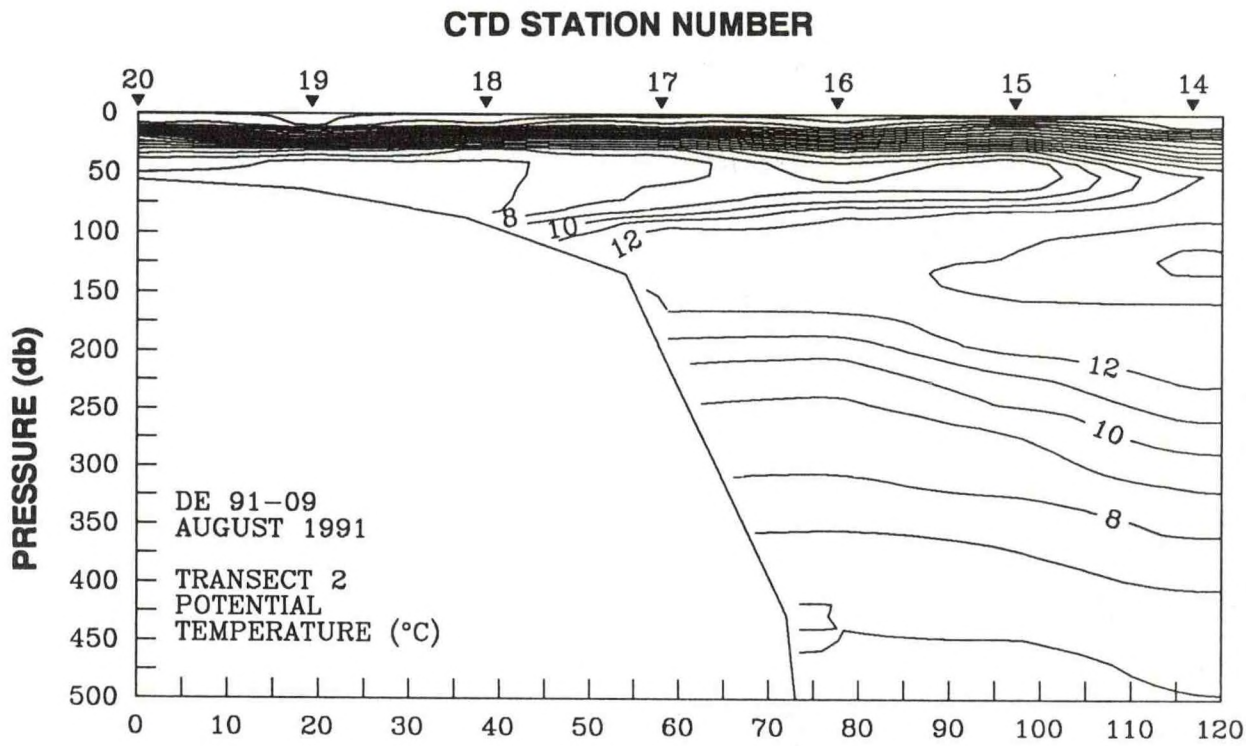


Figure 5a and b. As in Figure 4a and b, but for Transect 2.

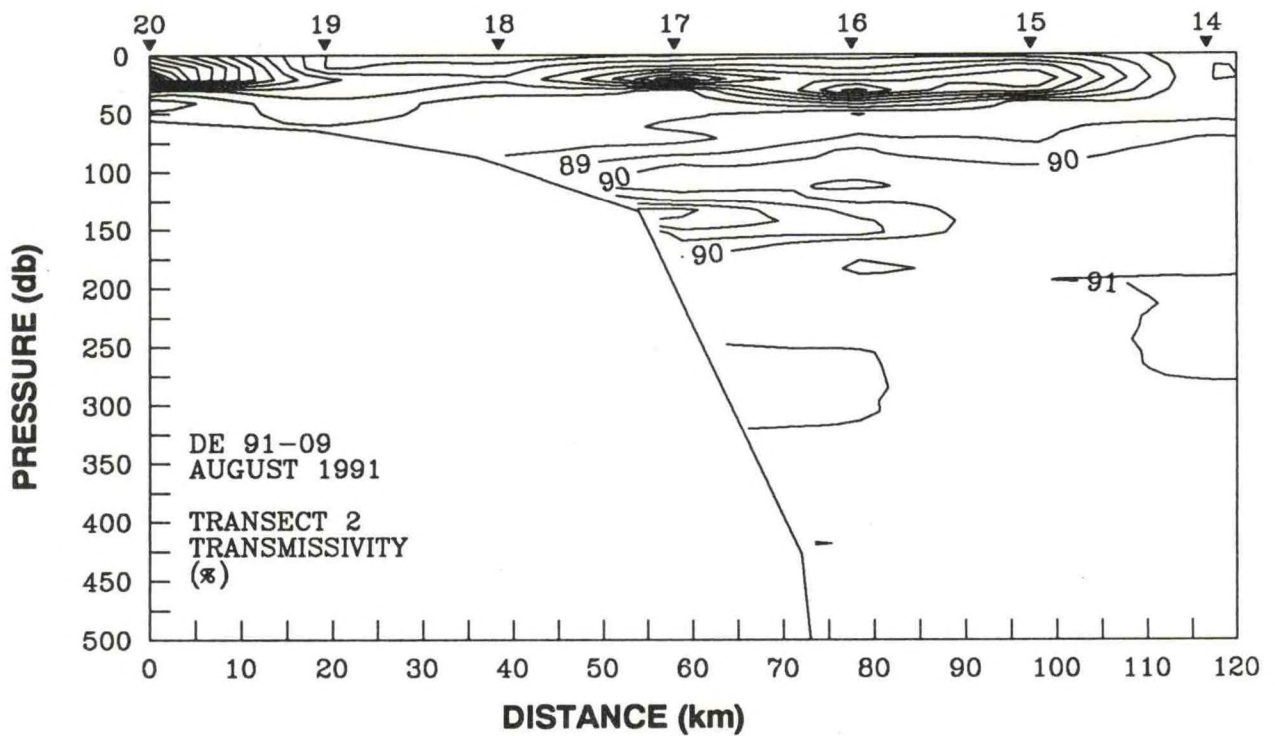
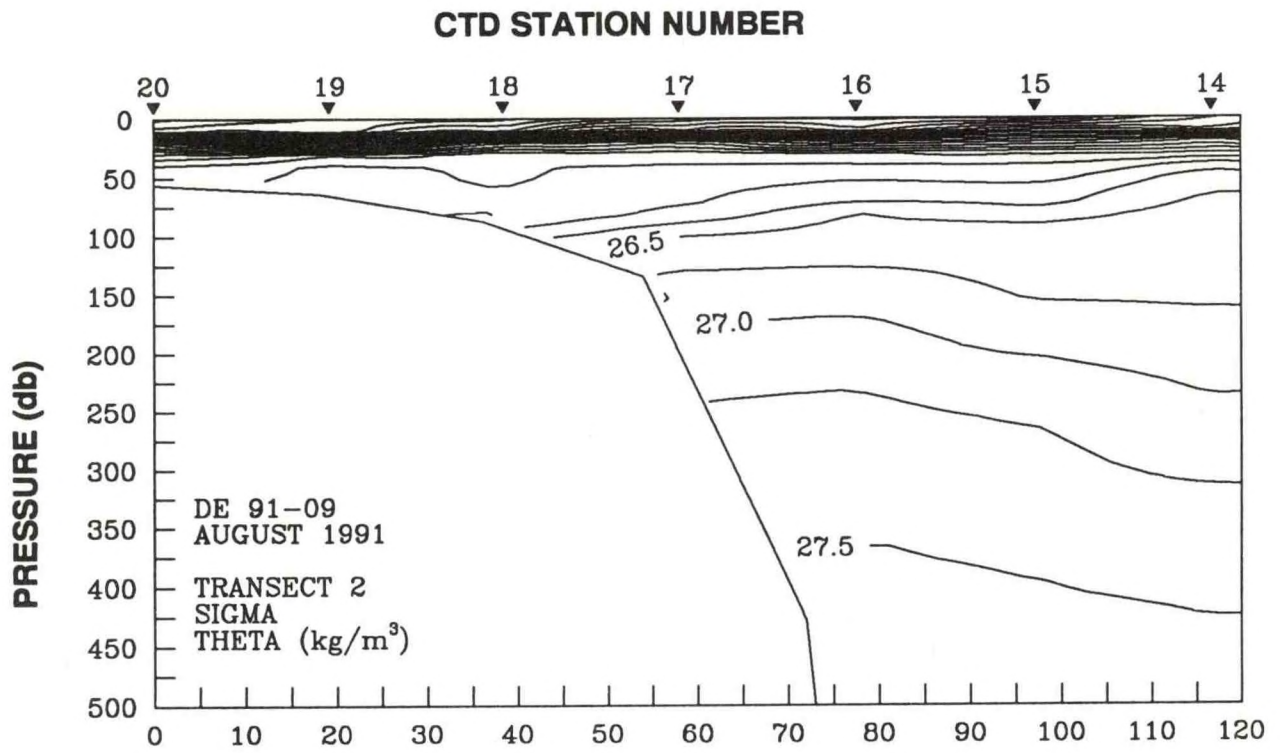


Figure 5c and d. As in Figure 4c and d, but for Transect 2.

DE 91-09 TRANSECT 2

STATION	14	15	16	17	18	19	20
SYMBOL	o	+	*	□	x	◇	●

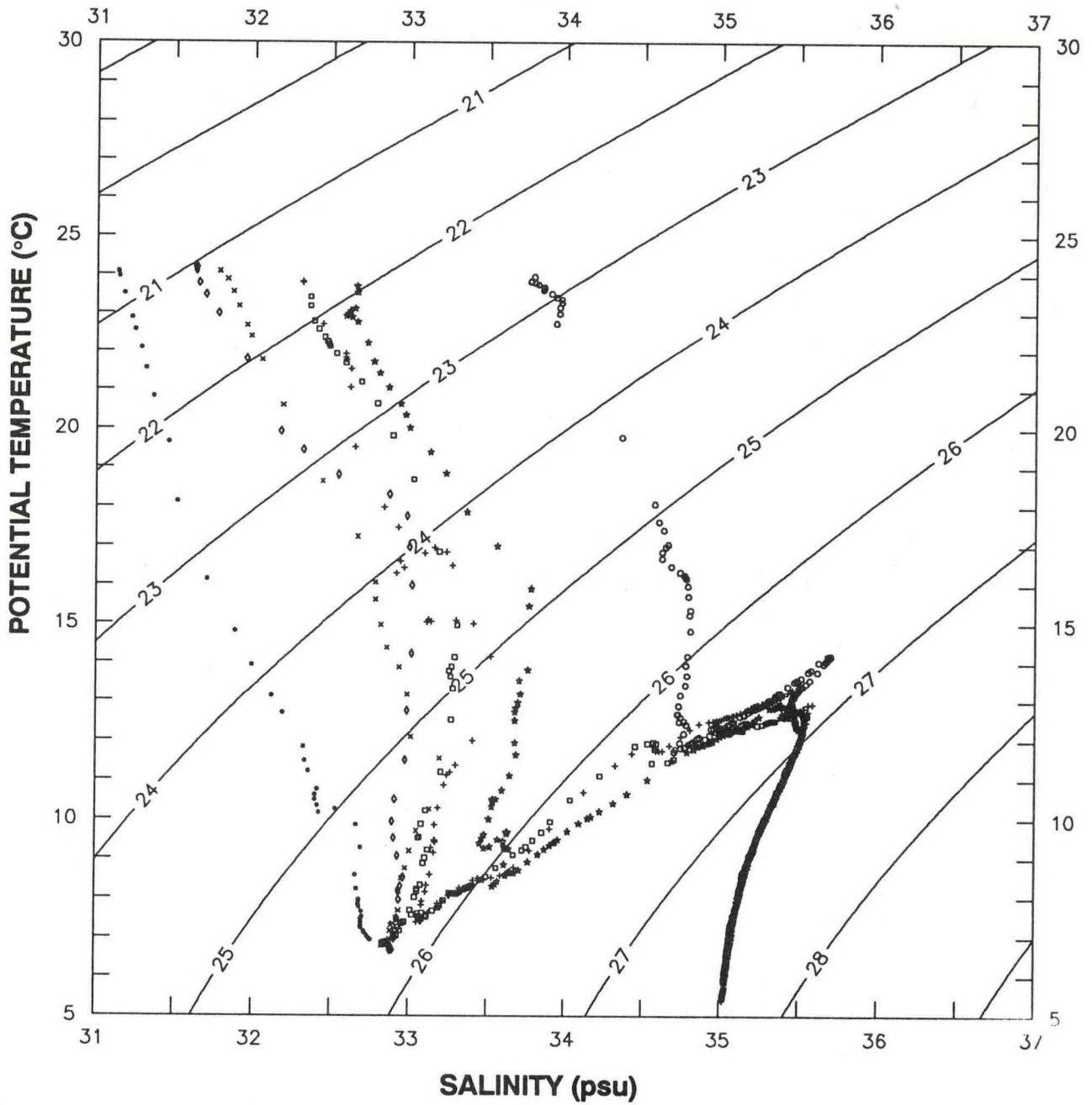


Figure 5e. As in Figure 4e, but for transect 2.

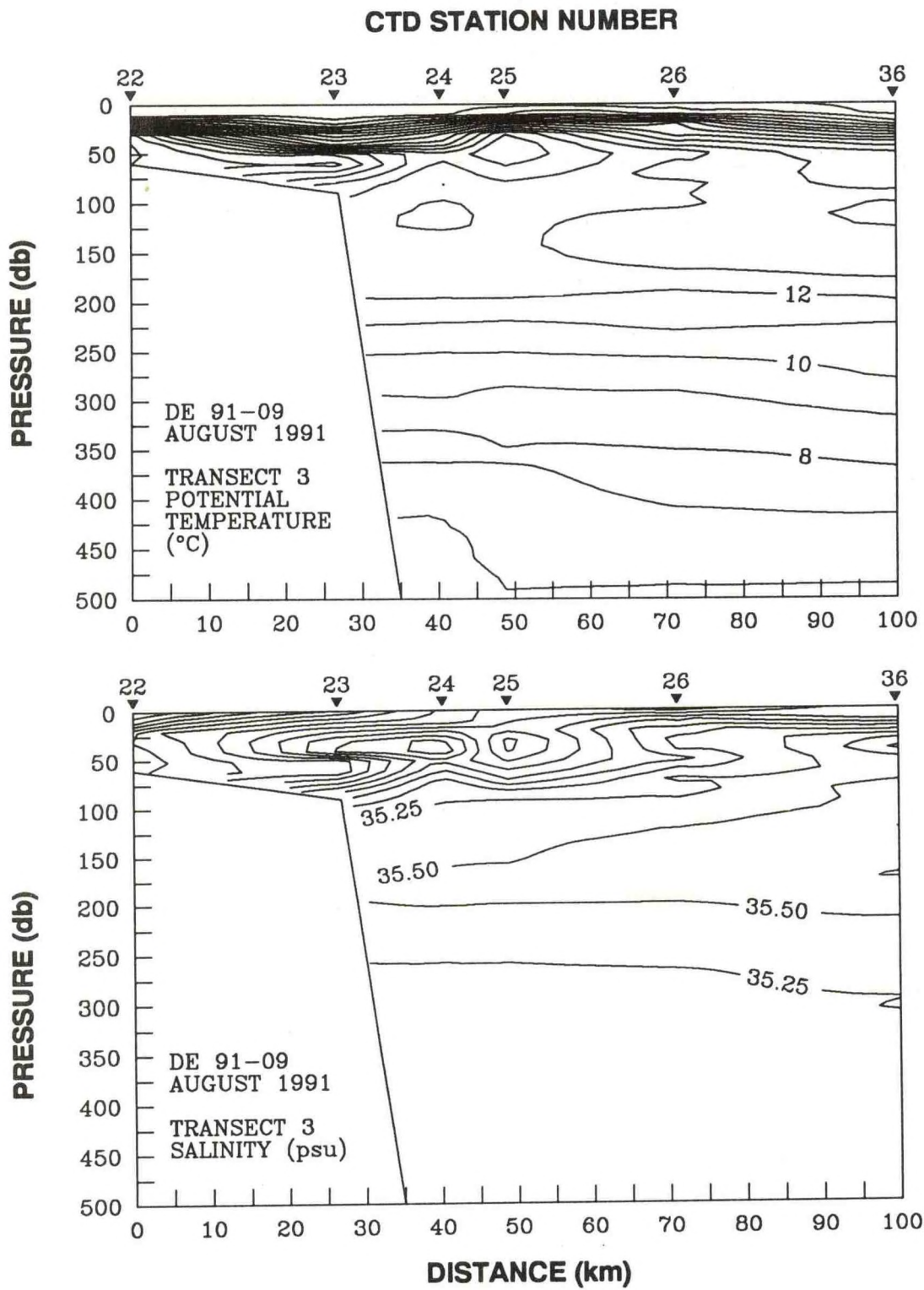
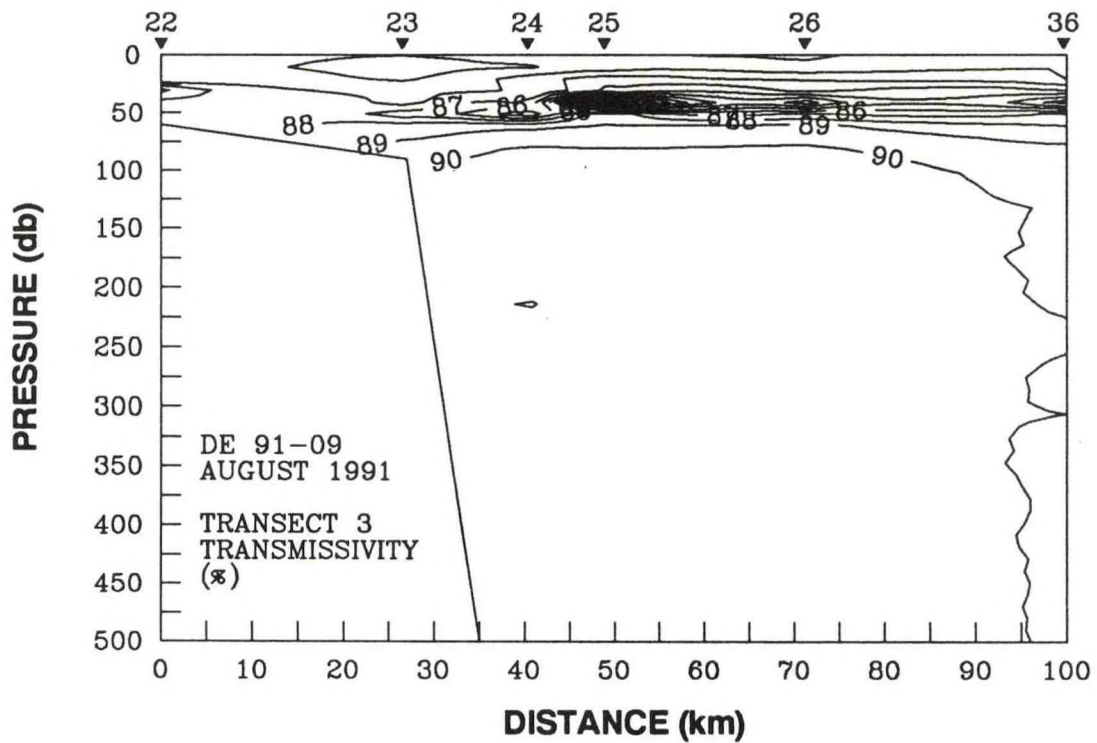
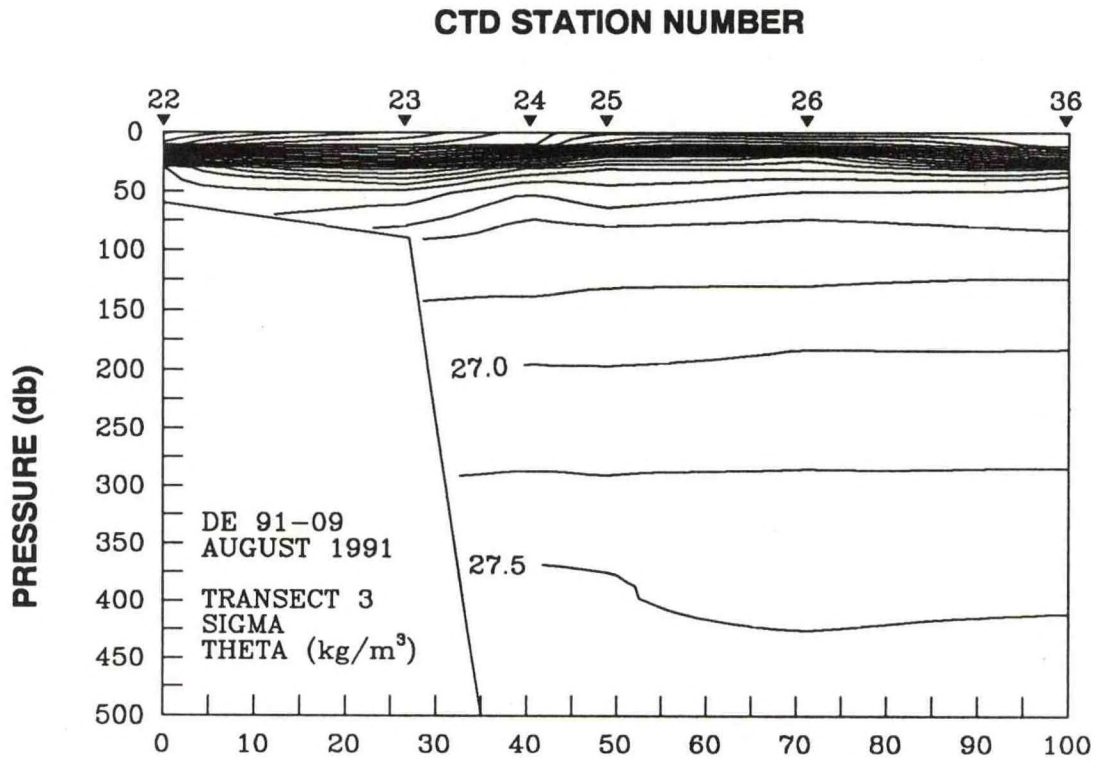


Figure 6a and b. As in Figure 4a and b, but for Transect 3.



DE 91-09 TRANSECT 2

STATION	22	23	24	25	26	36
SYMBOL	o	+	*	□	x	◇

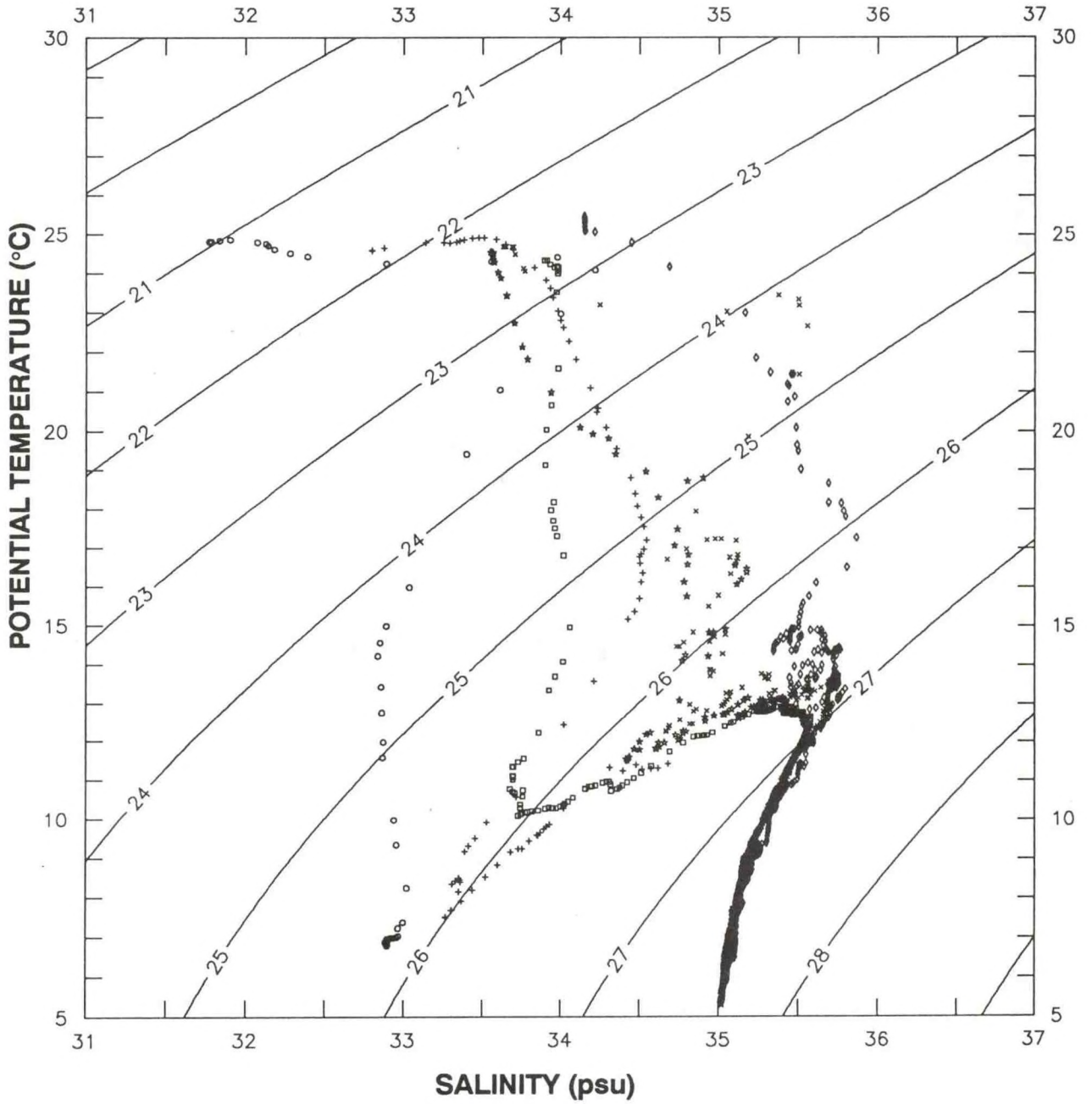


Figure 6e. As in Figure 4e, but for transect 3.

slightly elevated salinities both of the main S-max and the water above this in the seasonal thermocline (Figure 6e).

2.4. SUB-SURFACE STRUCTURE

A warm core ring was encountered, centered just to the southwest of the 106-Mile Dumpsite. It extended laterally from the western and southern edges of the Dumpsite (stations 10-14) shoreward and southward to include stations 29-31, 27, 26, and 36. It is best represented by Transect 4 (Figure 3), the alongshore transect defined by stations 5-7,9,11, and 37-34, on the seaward edge of this survey (Figures 7a,b,c, and d). The core of the warm core ring is a pycnoclad of water extending from 30 to 250 m with salinity exceeding 36 psu and temperature greater than 15°C. The vertical distortion of isothermal surfaces indicates that we can not resolve the vertical extent of this ring (below 500 m). In the alongshore dimension it is well delimited between stations 7 and 36 (a distance of just over 100 km), and the standard measure of ring size (the dimension of the 15°C isotherm at 200 m) gives a 45 km cross section.

A drifter (drogued at 10 m) that was deployed at station 14 in the northern part of the 106-Mile Dumpsite was transported to the southeast at a mean speed of 0.45 m/s for the first week after deployment. This is consistent with the anticyclonic (clockwise) motion and near-surface velocities associated with warm core rings and with the sloping density surfaces observed in this vertical transect (Figure 7c). The SST imagery that was examined concomitant with the drifter trajectory, and with the course of this cruise, lacked any definitive surface temperature signature of this warm core ring, but the imagery does suggest that this warm core ring is entraining surface shelf water seaward around its northeastern perimeter. This is consistent with both the drifter track and the hydrographic data.

The analysis of accumulated SST imagery for this region in the months leading up to this cruise led us to expect the possibility of encountering this ring during this survey. This ring formed from a northward meander of the Gulf Stream the previous autumn (1990) at about 40° N, 65°W and then moved to the southwest through the region, crossing the Dumpsite in late June, 1991. By the time of our survey the ring had undergone a winter of cooling, followed by the summer warming of the surface layer and capping of the ring by the seasonal thermocline. Any surface temperature signature of the ring had been impossible to discern since June 1991, so that it was difficult to anticipate its position before this August 1991 cruise.

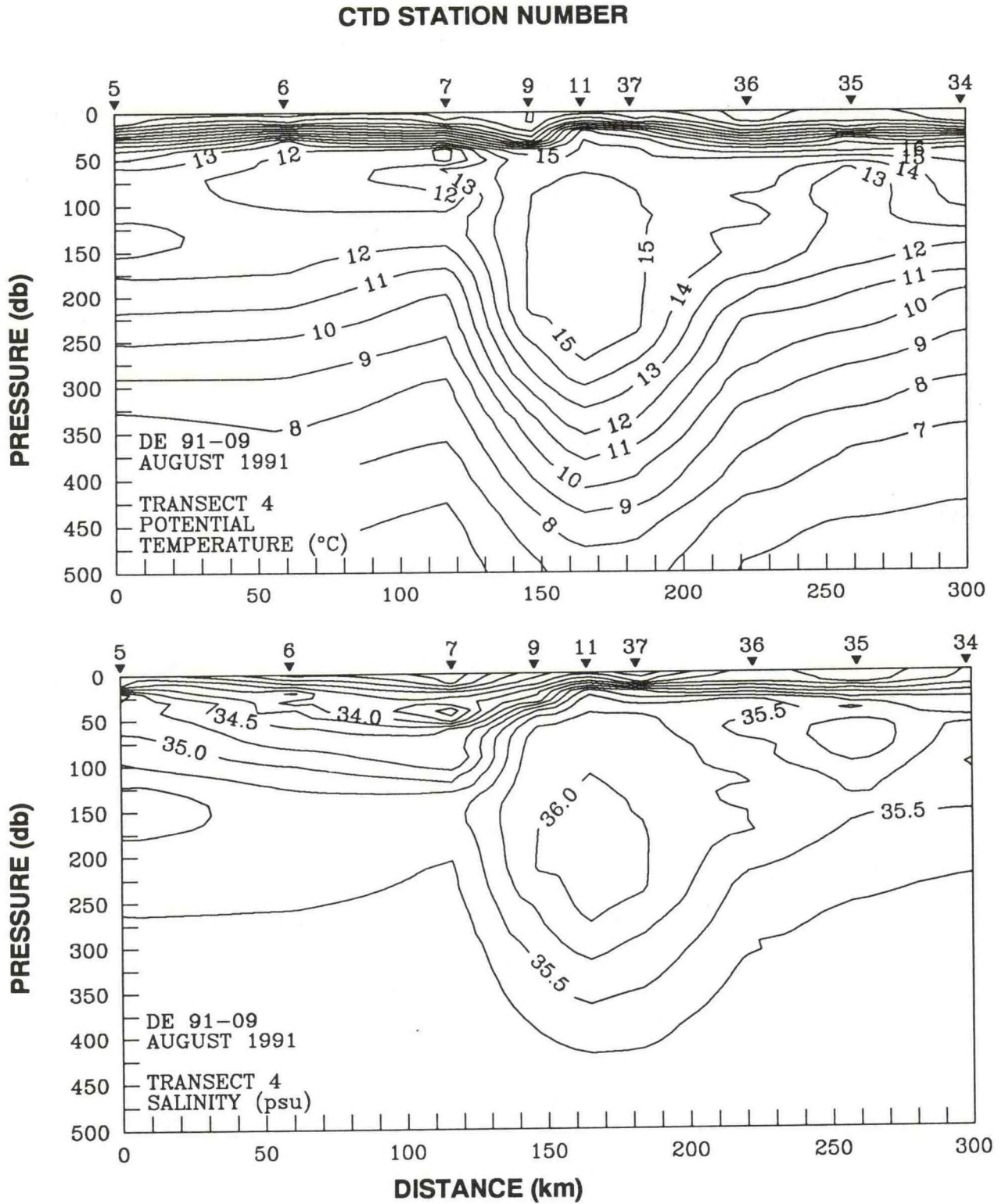


Figure 7a and b. Transect 4 (a) Potential temperature (°C), contour interval of 1°C, and (b) salinity (psu), contour interval of 0.25 psu, as a function of distance (km) northeastward from station 5 and pressure (dbar).

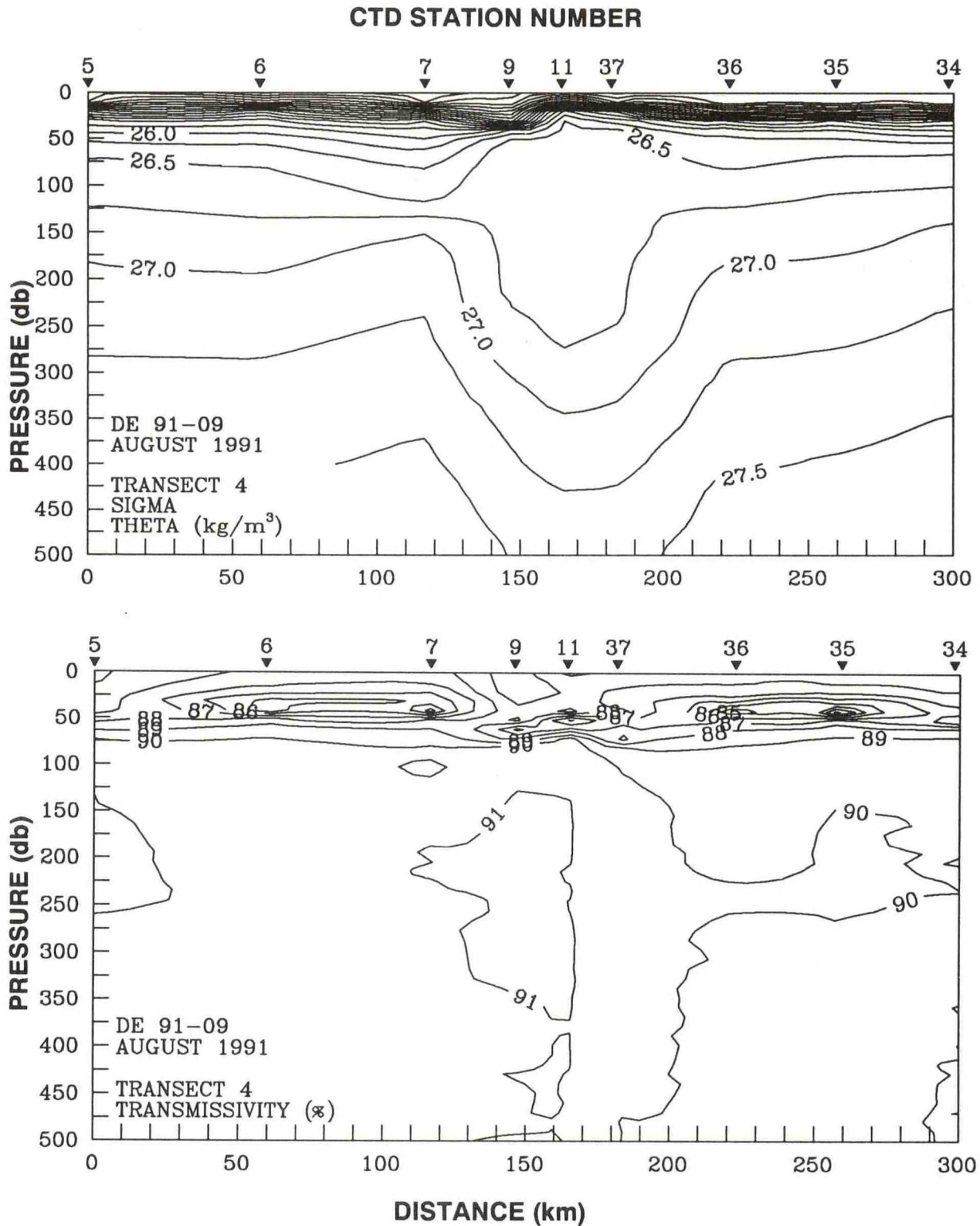


Figure 7c and d. Transect 4 (c) density (sigma theta [kg/m³], contour interval of 0.25 kg/m³, and (d) transmissivity (%), contour interval of 1%, as a function of distance (km) northeastward from station 5 and pressure (dbar).

ACKNOWLEDGEMENTS

We are very grateful to the congenial and competent Captain and crew of the R/V DELAWARE II, and particularly to James Manning (NMFS) for his cheerful and capable assistance.

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APPENDICES

CTD/TR DATA

APPENDIX A contains listings and plots, on facing pages, of the CTD/TR data from each of the 66 original and repeat stations depicted in Figure 8. The data for each station consists of:

Header information which contains:

Line 1: SHIP: R/V DELAWARE II
 CRUISE: 91-09
 STATION: CTD/TR station number
 DATE: year/month/day
 TIME: Universal Time (GMT)
 DEPTH: water depth (in meters)

Line 2: POSITION: latitude (N), longitude (W)
 WIND: speed (in knots); direction (degrees true)
 AIR TEMP: degrees Centigrade (°C)

Followed by a standard level listing (at 10 dbar intervals from 1 to 100 dbar and at 25 dbar intervals below 100 dbar) of the CTD/TR data with columns identified as:

PR	pressure in decibars (dbar)
TE	in situ temperature (°C)
PT	potential temperature (°C)
SA	salinity (psu)
SO	potential density anomaly (sigma theta [kg/m ³]), using 0 dbar as a reference level (Bryden, 1973 and UNESCO, 1983)
TR	transmissivity (% transmission)

A plot showing potential temperature vs. salinity, with overlain sigma theta surfaces; and profiles of potential temperature (5 to 30 °C), salinity (31 to 37 psu), sigma theta (20 to 28 kg/m³), and transmissivity (70 to 100%) versus pressure (dbar). These profiles are plotted at three different pressure scales (0 to 100; 0 to 300; or 0 to 500 dbar), depending on the CTD/TR lowering depth. The decimated data is used here. For transmissivity and sigma theta a point is plotted every dbar, while potential temperature (solid) and salinity (dashed) profiles are plotted as lines.

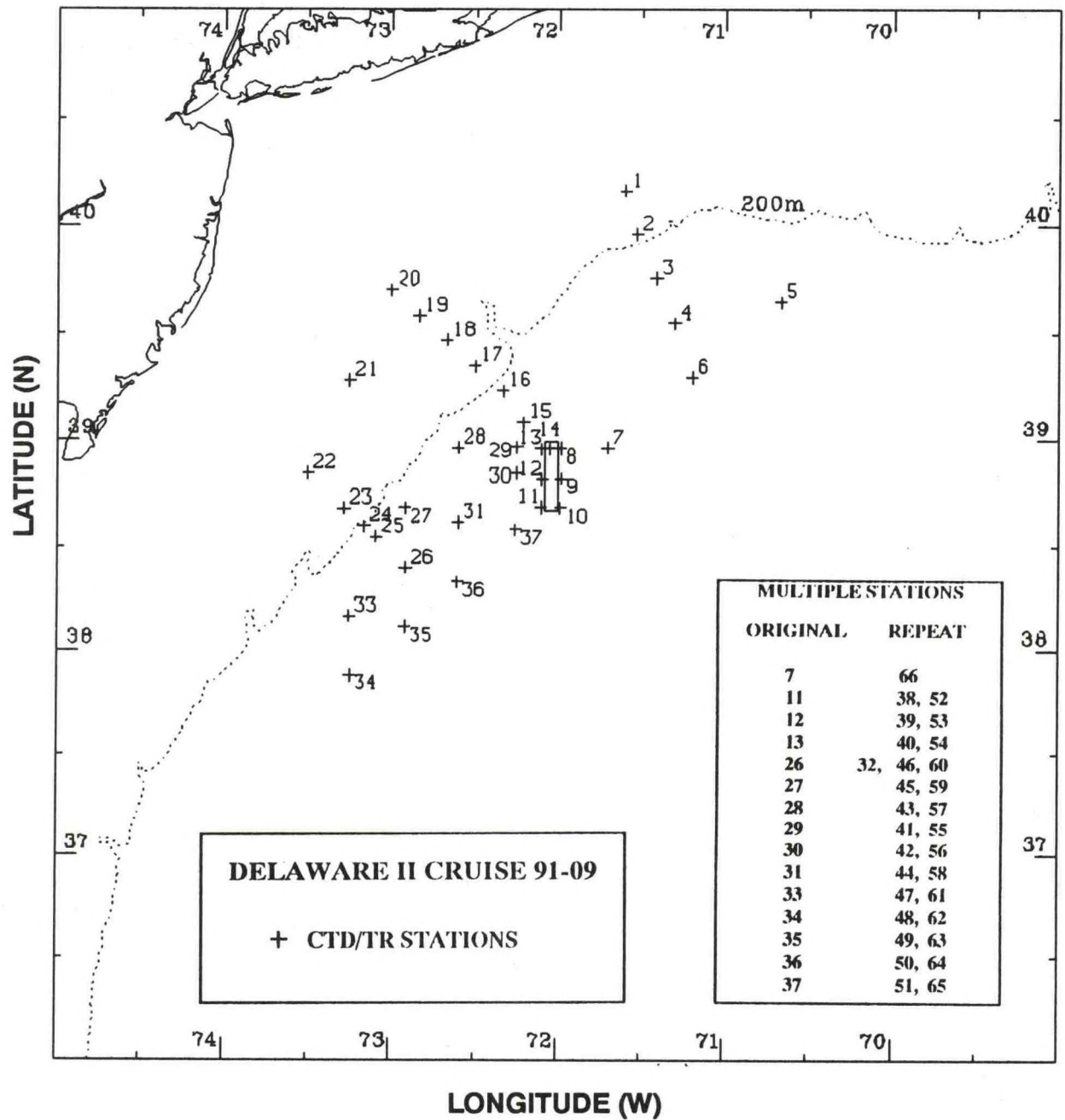
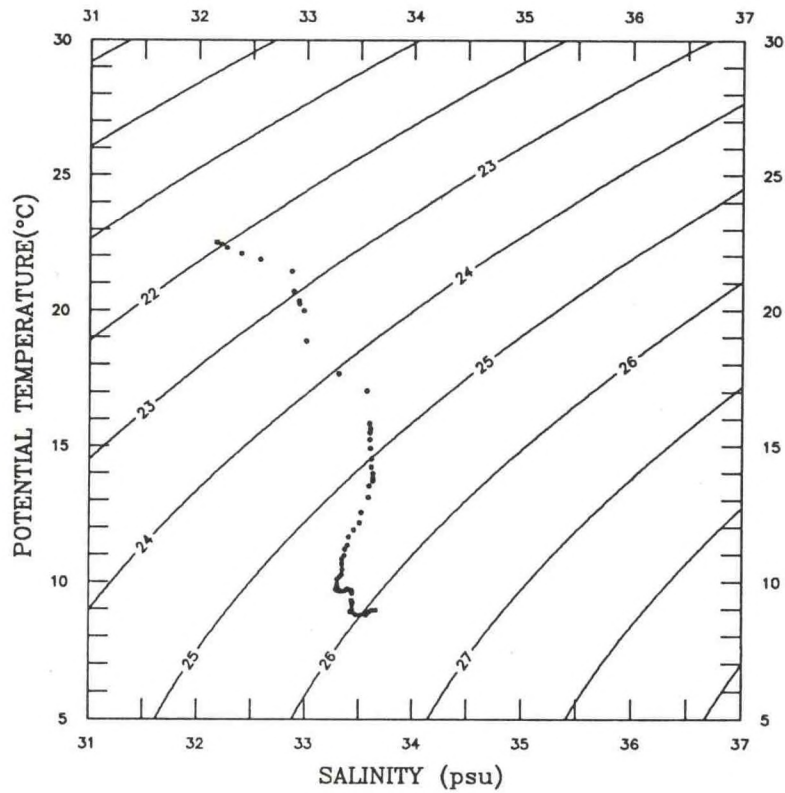


Figure 8. Station map of the CTD/TR station locations. Only the original 37 CTD/TR stations are numbered on the map and repeat locations are as indicated.

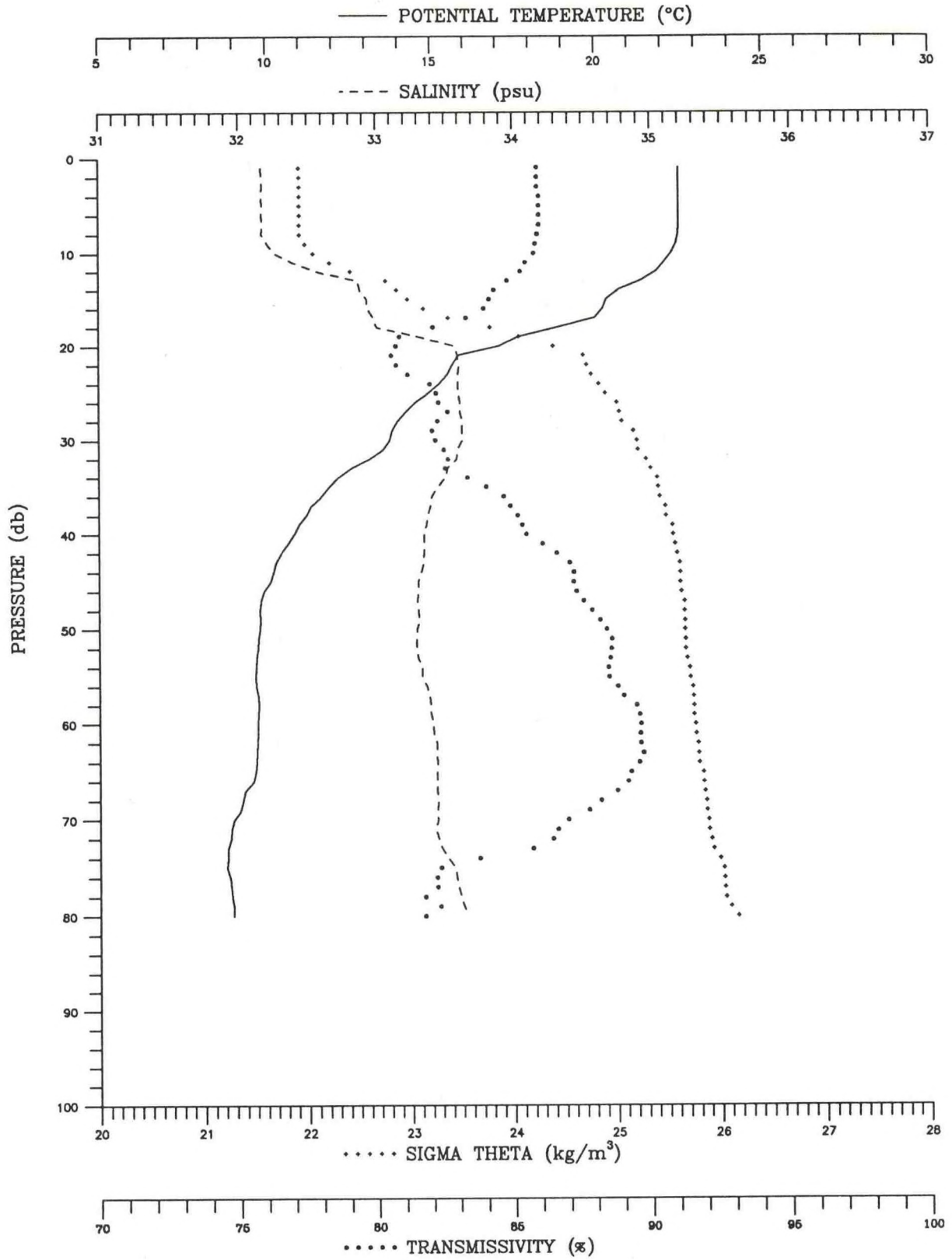
CTD/TR DATA

R/V DELAWARE II 91-09 Station: 01 Date: 91/08/06 GMT: 0514 Depth: 86 m
 Position: 40 09.86N 71 35.84W Wind: 20 kts Dir: 060 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	22.5199	22.5205	32.1665	21.9231	84.30
10	22.3064	22.3044	32.2640	22.0574	85.77
20	17.0651	17.0619	33.5690	24.3892	80.72
30	13.7326	13.7284	33.6282	25.1993	82.15
40	10.8522	10.8474	33.3454	25.5447	85.47
50	9.8072	9.8016	33.2942	25.6575	88.38
60	9.7249	9.7182	33.4069	25.7554	89.62
70	8.9992	8.9919	33.4399	25.8745	86.96
80	8.9800	8.9721	33.6571	26.1578	81.73

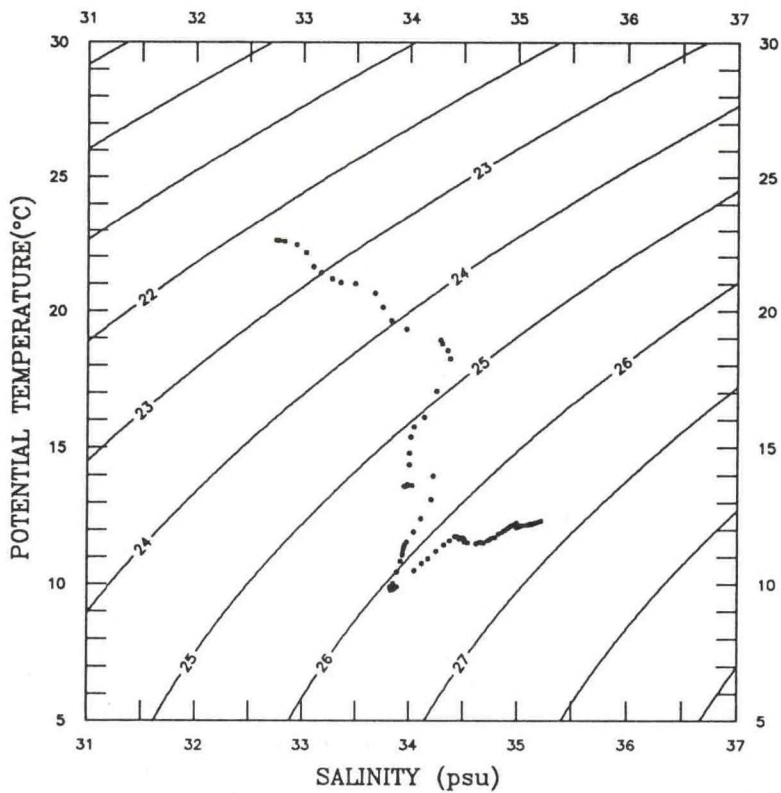


STATION 1

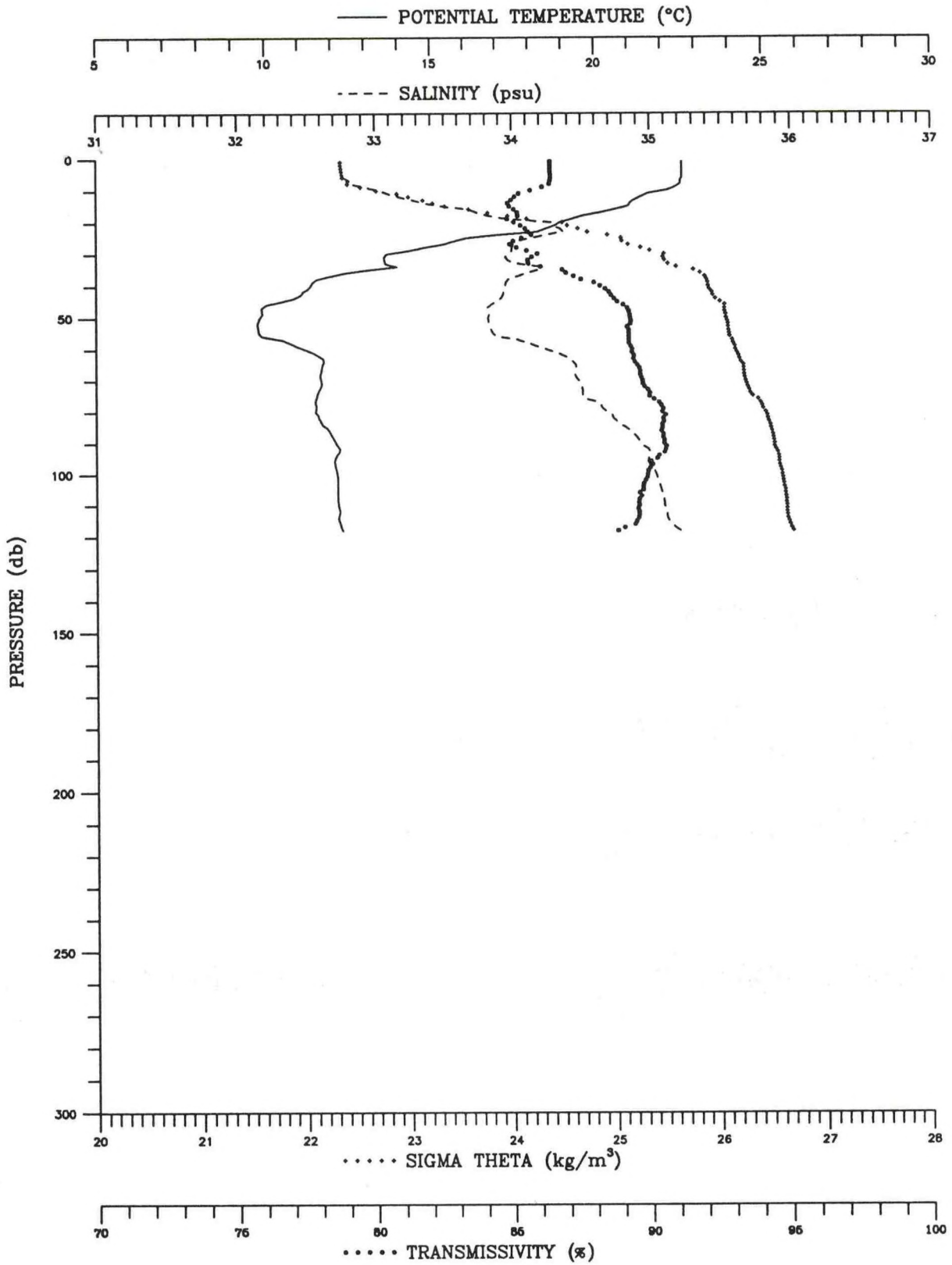


R/V DELAWARE II 91-09 Station: 02 Date: 91/08/06 GMT: 0650 Depth: 121 m
 Position: 39 57.94N 71 31.57W Wind: 15 kts Dir: 000 deg. Air Temp: ? C

PR	TE	PT	SA	SO	TR
1	22.6254	22.6259	32.7501	22.3349	86.39
10	22.1648	22.1628	33.0297	22.6777	85.67
20	18.9478	18.9442	34.2839	24.4893	85.07
30	13.6728	13.6686	33.9791	25.4681	85.92
40	11.3853	11.3804	33.9496	25.8891	88.19
50	9.8510	9.8454	33.8258	26.0615	89.28
60	11.2258	11.2185	34.2455	26.1490	89.35
70	11.7185	11.7096	34.4820	26.2422	89.73
80	11.5332	11.5231	34.6856	26.4352	90.43
90	12.1524	12.1407	34.9358	26.5128	90.50
100	12.1907	12.1776	35.0407	26.5871	89.91
118	12.3610	12.3453	35.2157	26.6905	88.83

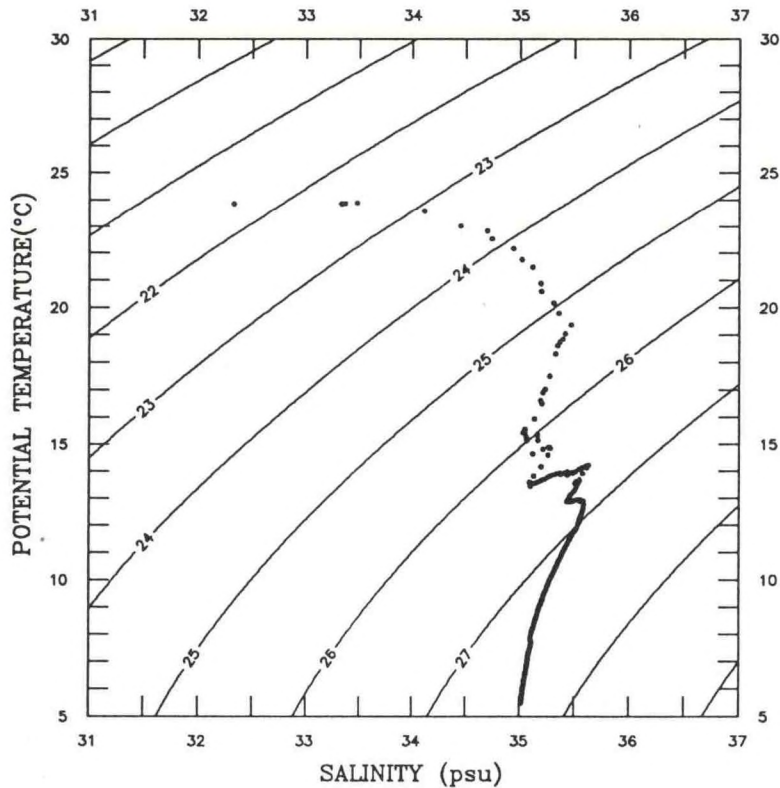


STATION 2

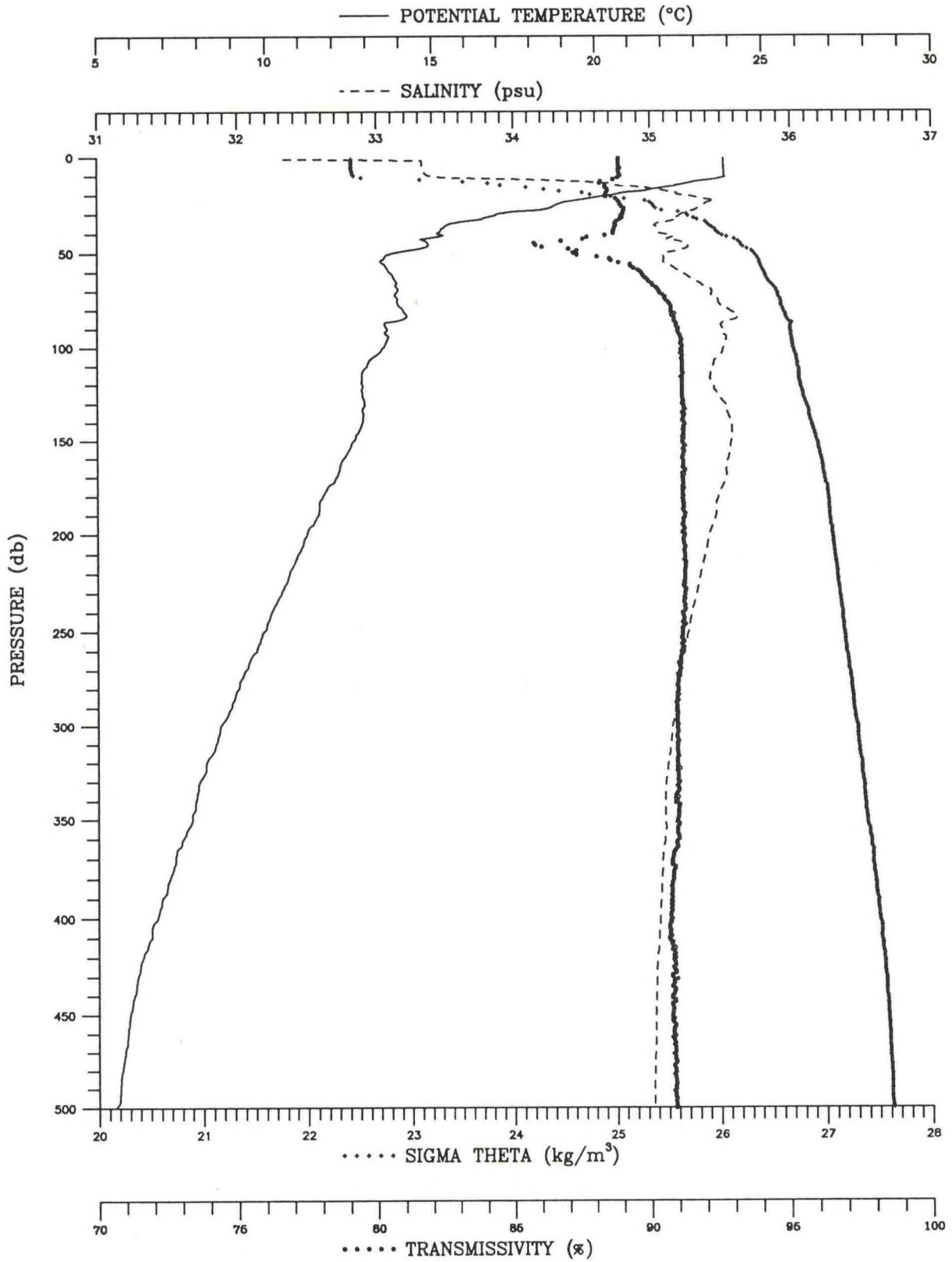


R/V DELAWARE II 91-09 Station: 03 Date: 91/08/06 GMT: 0823 Depth: 1277m
 Position: 39 45.50N 71 24.61W Wind: 15 kts Dir: 350 deg. Air Temp: 22.0C

PR	TE	PT	SA	SO	TR
1	23.8664	23.8657	32.3307	22.4193	88.85
10	23.8819	23.8799	33.3683	22.4435	88.90
20	20.6023	20.5985	35.1929	24.7508	88.38
30	17.0407	17.0358	35.2291	25.6826	89.01
40	15.1615	15.1554	35.0630	25.9871	88.65
50	13.8371	13.8299	35.1253	26.3204	87.18
60	13.7179	13.7093	35.2160	26.4157	89.65
70	13.9778	13.9677	35.4425	26.5367	90.30
80	14.1375	14.1259	35.5642	26.5973	90.74
90	13.6502	13.6373	35.5193	26.6653	91.00
100	13.5548	13.5406	35.5261	26.6907	91.13
125	12.9175	12.9003	35.4798	26.7855	91.13
150	12.6555	12.6351	35.5794	26.9157	91.14
175	11.8962	11.8734	35.5140	27.0133	91.14
200	11.2603	11.2352	35.4223	27.0619	91.23
225	10.6315	10.6043	35.3459	27.1168	91.23
250	9.9578	9.9287	35.2681	27.1741	91.13
275	9.2794	9.2487	35.2040	27.2379	90.97
300	8.6774	8.6452	35.1523	27.2944	90.94
325	8.2239	8.1902	35.1161	27.3365	90.96
350	7.8374	7.8020	35.1012	27.3833	90.94
375	7.2778	7.2414	35.0782	27.4467	90.84
400	6.7990	6.7615	35.0601	27.4994	90.73
425	6.2811	6.2429	35.0369	27.5506	90.78
450	5.9789	5.9395	35.0284	27.5832	90.74
475	5.7828	5.7418	35.0219	27.6030	90.89
500	5.5497	5.5073	35.0165	27.6278	90.87

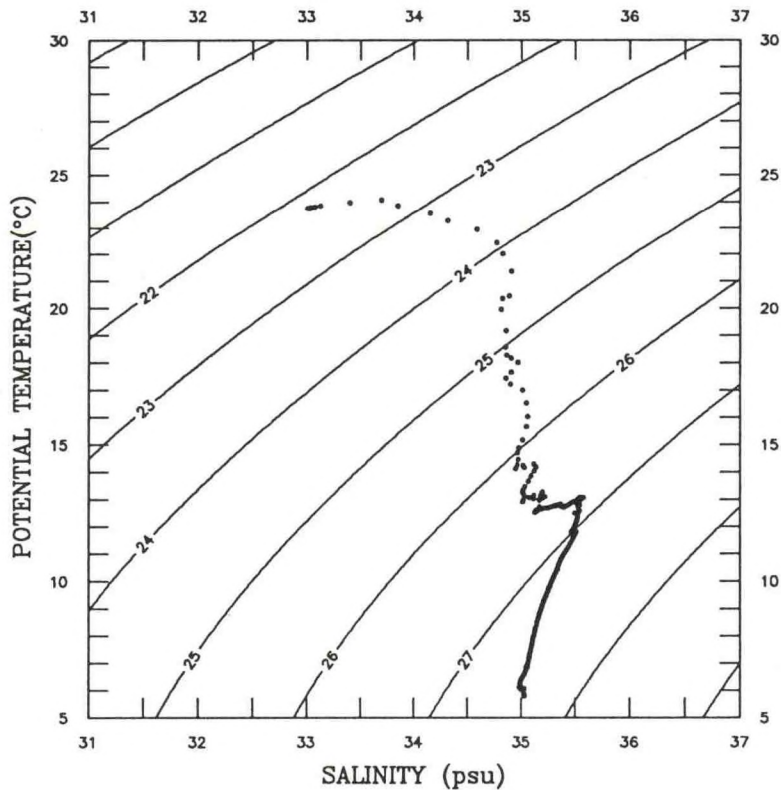


STATION 3

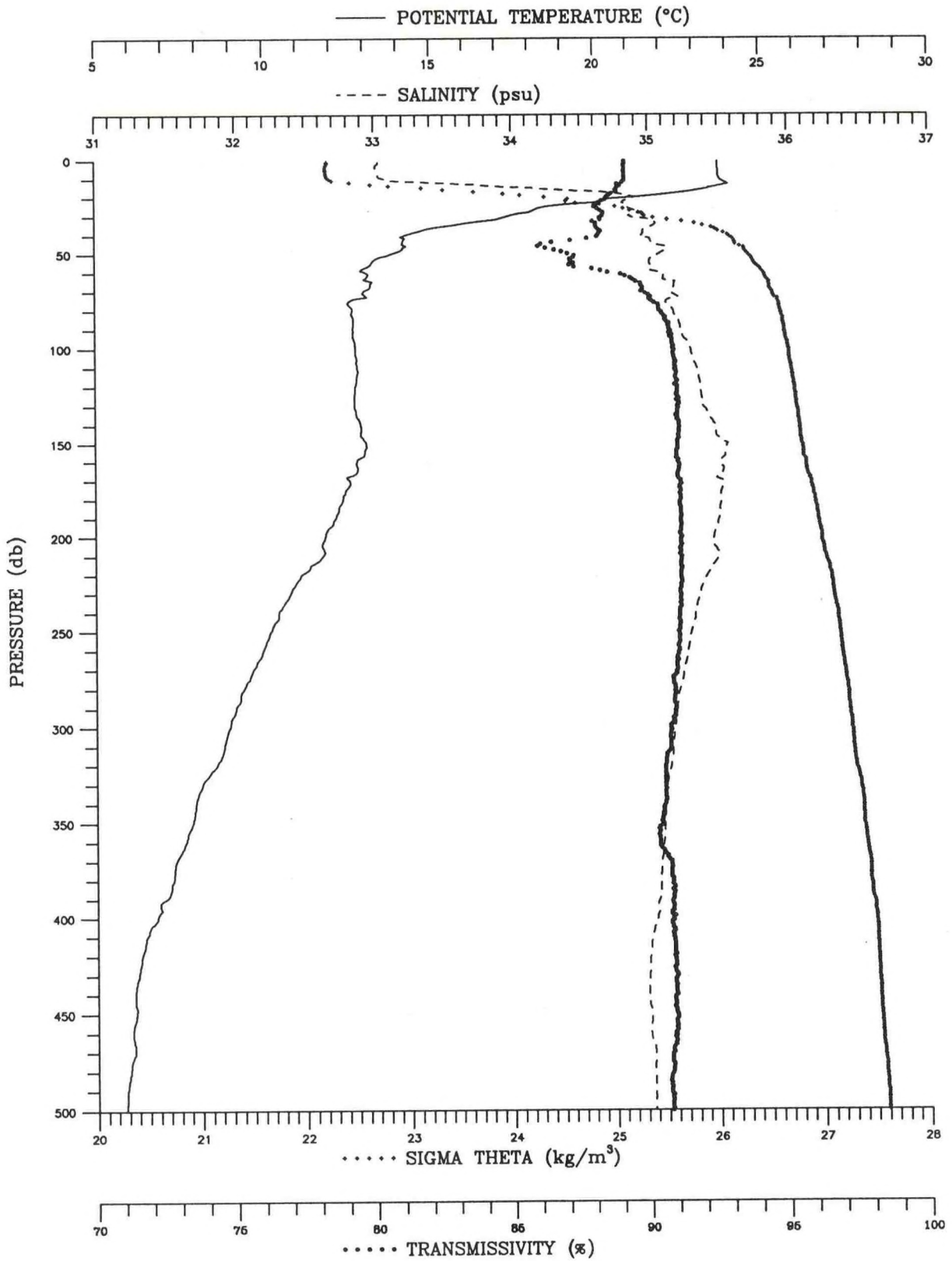


R/V DELAWARE II 91-09 Station: 04 Date: 91/08/06 GMT: 1018 Depth: 2196m
 Position: 39 32.88N 71 18.01W Wind: 14 kts Dir: 350 deg. Air Temp: 22.0C

PR	TE	PT	SA	SO	TR
1	23.7680	23.7676	33.0293	22.2199	89.14
10	23.8247	23.8226	33.0721	22.2362	89.14
20	21.3646	21.3608	34.9052	24.3247	88.48
30	17.4376	17.4325	34.8550	25.3004	88.32
40	14.2774	14.2716	34.9591	26.0987	88.17
50	13.8645	13.8574	35.0879	26.2857	87.04
60	13.0777	13.0695	35.0698	26.4336	88.51
70	13.0139	13.0043	35.1636	26.5194	89.74
80	12.6883	12.6775	35.1792	26.5968	90.39
90	12.6958	12.6837	35.2310	26.6358	90.74
100	12.7834	12.7698	35.3021	26.6738	90.86
125	12.7542	12.7372	35.3846	26.7443	91.04
150	13.0998	13.0789	35.5740	26.8021	91.04
175	12.4860	12.4625	35.5246	26.9073	91.14
200	11.8673	11.8412	35.4670	26.9829	91.18
225	10.9713	10.9434	35.3847	27.0860	91.13
250	10.2117	10.1821	35.3009	27.1560	91.04
275	9.5968	9.5655	35.2373	27.2114	90.84
300	9.0027	8.9698	35.1793	27.2638	90.74
325	8.3653	8.3312	35.1340	27.3290	90.58
350	7.8946	7.8590	35.1036	27.3767	90.45
375	7.3448	7.3082	35.0739	27.4338	90.74
400	6.8293	6.7918	35.0452	27.4836	90.79
425	6.3146	6.2764	34.9888	27.5082	90.89
450	6.1939	6.1537	34.9968	27.5306	90.93
475	6.0444	6.0024	35.0228	27.5706	90.74
500	5.8936	5.8499	35.0262	27.5928	90.74

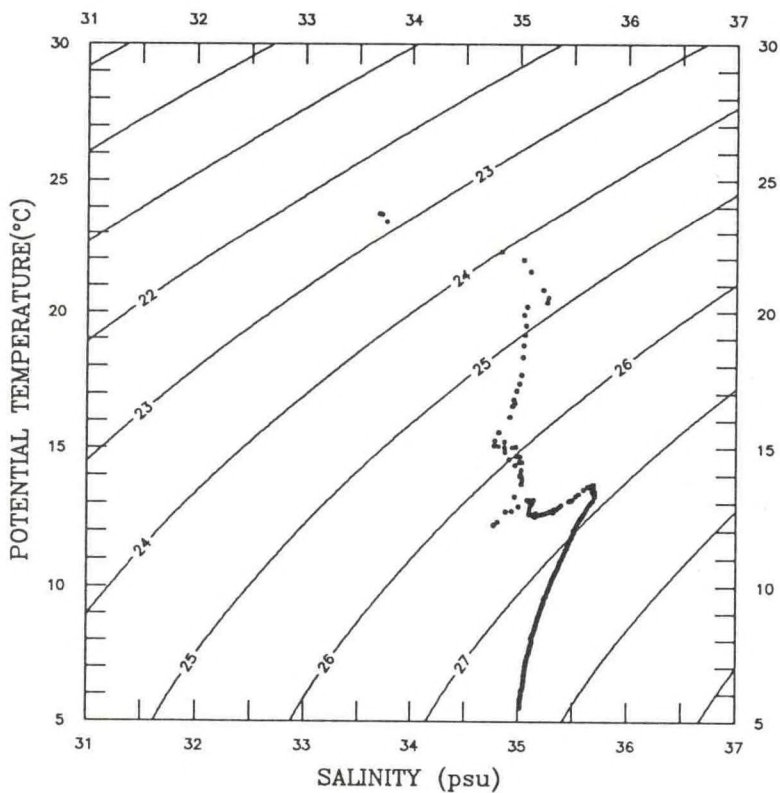


STATION 4

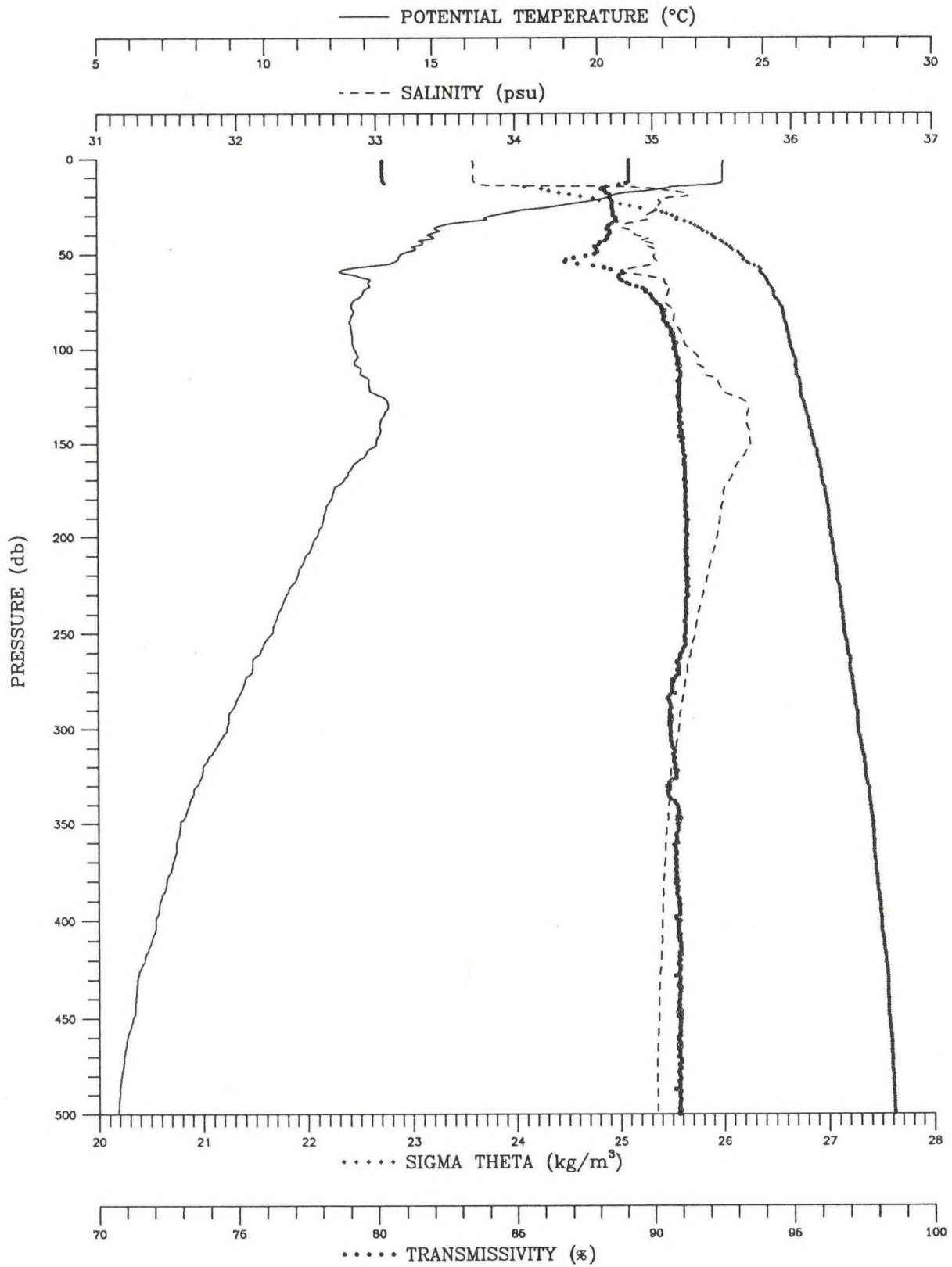


R/V DELAWARE II 91-09 Station: 05 Date: 91/08/06 GMT: 1403 Depth: 2287m
 Position: 39 38.86N 70 40.05W Wind: 12 kts Dir: 330 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	23.7777	23.7774	33.6939	22.7199	89.14
10	23.7699	23.7678	33.6971	22.7251	89.14
20	20.3799	20.3761	35.2542	24.6332	88.45
30	16.8118	16.8069	34.9489	25.5219	88.55
40	14.8618	14.8558	34.8695	25.9037	88.40
50	14.0685	14.0613	35.0168	26.1725	87.87
60	12.3385	12.3306	34.7990	26.3699	88.91
70	12.9378	12.9282	35.1109	26.4939	89.74
80	12.6567	12.6460	35.1529	26.5827	90.43
90	12.6004	12.5883	35.1917	26.6242	90.65
100	12.6893	12.6758	35.2677	26.6658	90.74
125	13.5203	13.5026	35.5964	26.7530	90.88
150	13.3315	13.3104	35.7004	26.8731	91.07
175	12.0731	12.0500	35.5084	26.9751	91.16
200	11.5667	11.5411	35.4565	27.0315	91.19
225	10.8102	10.7826	35.3701	27.1037	91.20
250	10.2184	10.1888	35.2993	27.1535	91.13
275	9.4030	9.3721	35.2229	27.2324	90.70
300	8.8726	8.8400	35.1762	27.2823	90.58
325	8.1105	8.0770	35.1190	27.3560	90.79
350	7.4997	7.4652	35.0900	27.4239	90.83
375	7.1993	7.1631	35.0692	27.4507	90.78
400	6.7552	6.7179	35.0535	27.5002	90.91
425	6.2718	6.2336	35.0373	27.5521	90.90
450	6.0633	6.0235	35.0277	27.5718	90.95
475	5.7696	5.7286	35.0136	27.5981	90.89
500	5.6227	5.5800	35.0181	27.6201	90.87

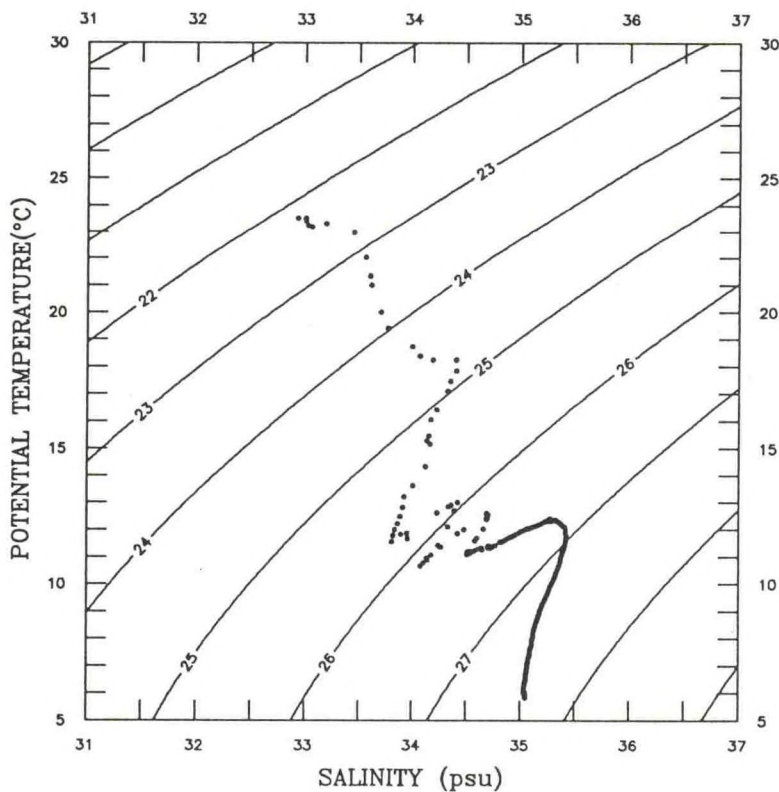


STATION 5

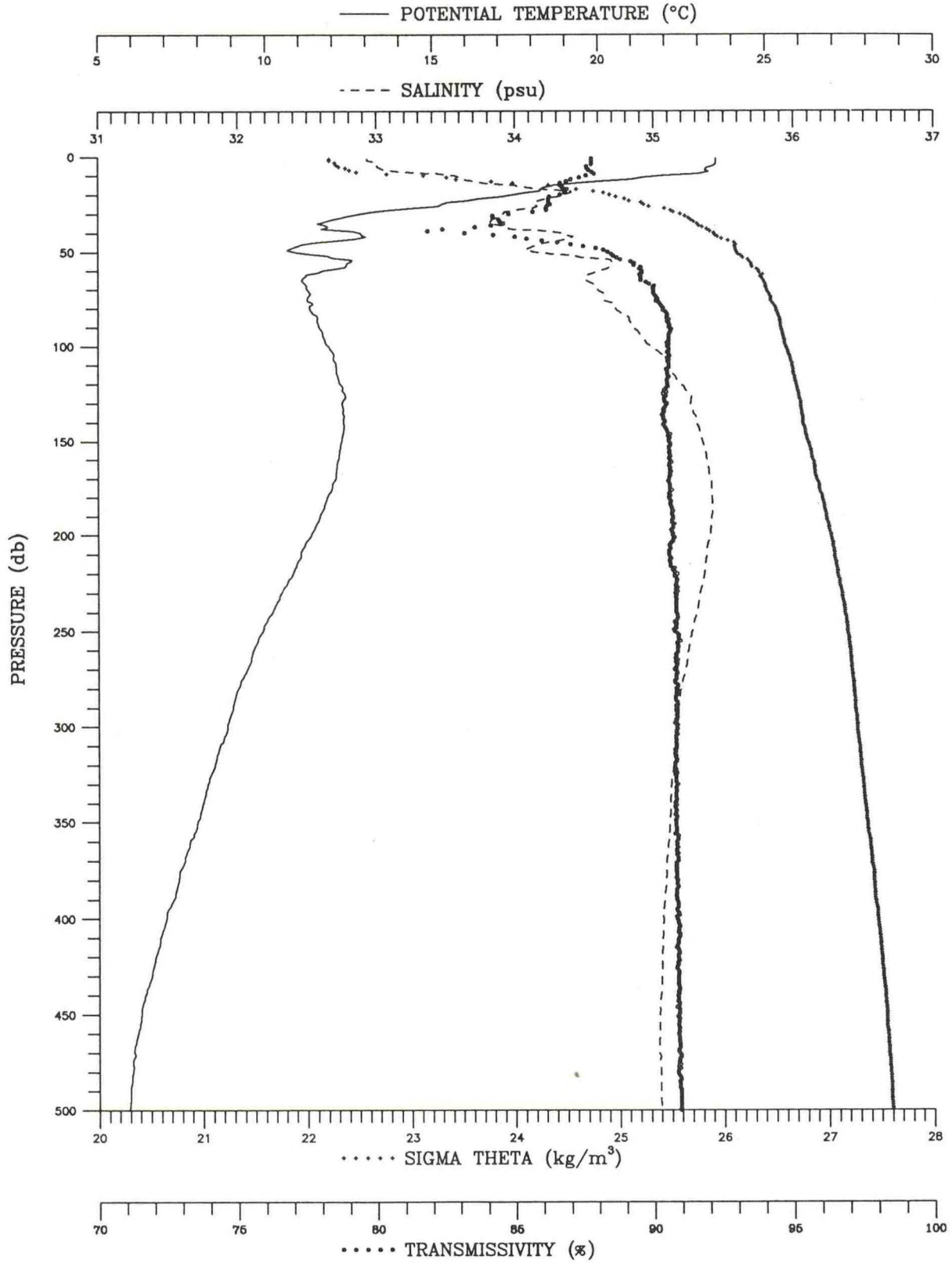


R/V DELAWARE II 91-09 Station: 06 Date: 91/08/06 GMT: 2011 Depth: 2416m
 Position: 39 18.00N 71 10.00W Wind: 10 kts Dir: 350 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	23.5305	23.5300	32.9309	22.2145	87.75
10	22.0264	22.0244	33.5604	23.1189	87.56
20	17.4617	17.4584	34.3520	24.9085	86.62
30	12.8191	12.8151	33.9124	25.5875	84.77
40	12.8545	12.8491	34.3331	25.9068	83.19
50	10.9026	10.8966	34.1411	26.1256	88.34
60	11.7051	11.6975	34.5971	26.3339	89.58
70	11.2756	11.2669	34.5937	26.4110	90.00
80	11.3512	11.3413	34.7273	26.5013	90.34
90	11.6288	11.6174	34.8533	26.5481	90.54
100	11.9105	11.8976	34.9845	26.5972	90.48
125	12.3995	12.3828	35.2615	26.7187	90.34
150	12.2968	12.2769	35.3512	26.8090	90.54
175	12.0139	11.9910	35.4141	26.9132	90.57
200	11.3922	11.3669	35.4036	27.0230	90.67
225	10.6885	10.6611	35.3470	27.1075	90.80
250	9.9417	9.9126	35.2728	27.1805	90.73
275	9.3259	9.2952	35.2081	27.2335	90.79
300	8.8788	8.8462	35.1659	27.2732	90.81
325	8.3910	8.3568	35.1278	27.3202	90.74
350	7.9906	7.9548	35.1094	27.3670	90.78
375	7.4682	7.4313	35.0854	27.4251	90.77
400	7.0613	7.0231	35.0628	27.4654	90.81
425	6.6828	6.6433	35.0519	27.5090	90.81
450	6.3121	6.2715	35.0363	27.5464	90.86
475	6.0548	6.0128	35.0345	27.5786	90.86
500	5.9533	5.9093	35.0463	27.6012	90.94

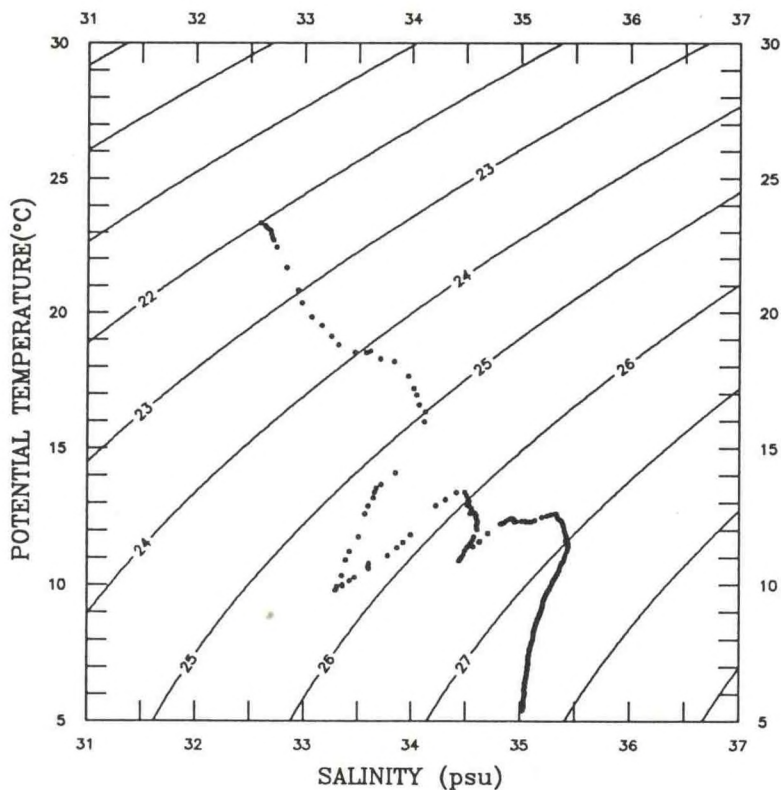


STATION 6

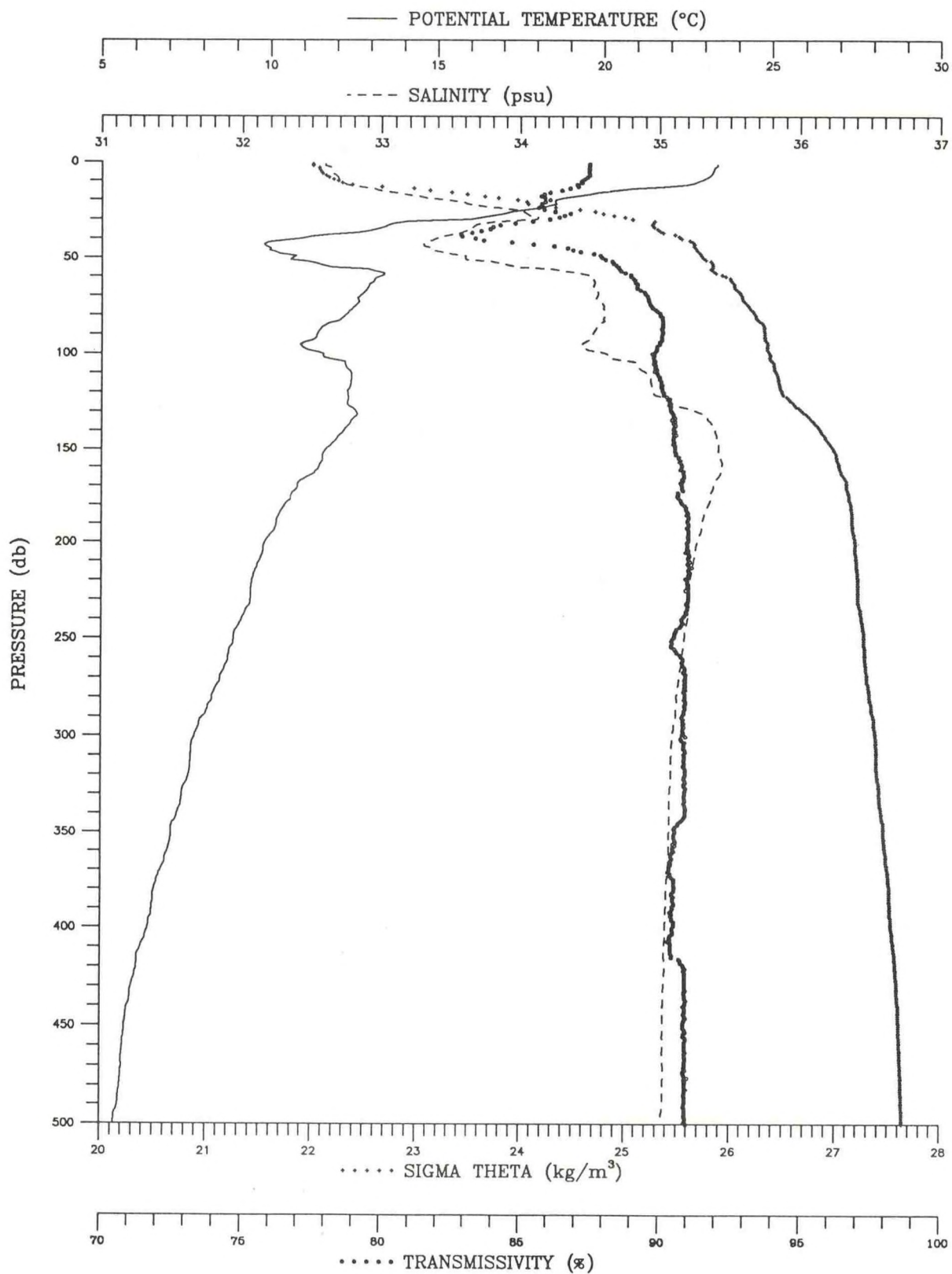


R/V DELAWARE II 91-09 Station: 07 Date: 91/08/07 GMT: 0230 Depth: 2443m
 Position: 38 57.96N 71 41.96W Wind: 6 kts Dir: 360 deg. Air Temp: 22.1C

PR	TE	PT	SA	SO	TR
1	23.3634	23.3630	32.5953	22.0087	87.47
10	22.8093	22.8073	32.7021	22.2482	87.18
20	18.5427	18.5392	33.4715	23.9699	86.05
30	15.9934	15.9887	34.1160	25.0711	86.04
40	10.9295	10.9248	33.3878	25.5340	83.36
50	10.6801	10.6742	33.5976	25.7416	87.91
60	13.2912	13.2829	34.5057	25.9536	88.95
70	12.7012	12.6918	34.5509	26.1067	89.55
80	12.2581	12.2476	34.6071	26.2370	90.01
90	11.4173	11.4061	34.5173	26.3260	90.08
100	11.6023	11.5897	34.6210	26.3727	89.73
125	12.3324	12.3158	35.0815	26.5920	90.37
150	11.6697	11.6504	35.4163	26.9797	90.54
175	10.6266	10.6055	35.3572	27.1254	90.63
200	9.8637	9.8406	35.2637	27.1856	90.97
225	9.4532	9.4279	35.2133	27.2156	90.94
250	8.9513	8.9240	35.1786	27.2706	90.47
275	8.4184	8.3895	35.1313	27.3179	90.90
300	7.8030	7.7728	35.0963	27.3838	90.95
325	7.5121	7.4801	35.0841	27.4171	90.88
350	7.1268	7.0933	35.0728	27.4634	90.57
375	6.7080	6.6732	35.0569	27.5090	90.54
400	6.4474	6.4110	35.0465	27.5360	90.49
425	6.0579	6.0204	35.0424	27.5838	90.94
450	5.7716	5.7328	35.0305	27.6109	90.89
475	5.6570	5.6164	35.0343	27.6284	90.93
500	5.4495	5.4075	35.0201	27.6428	90.99

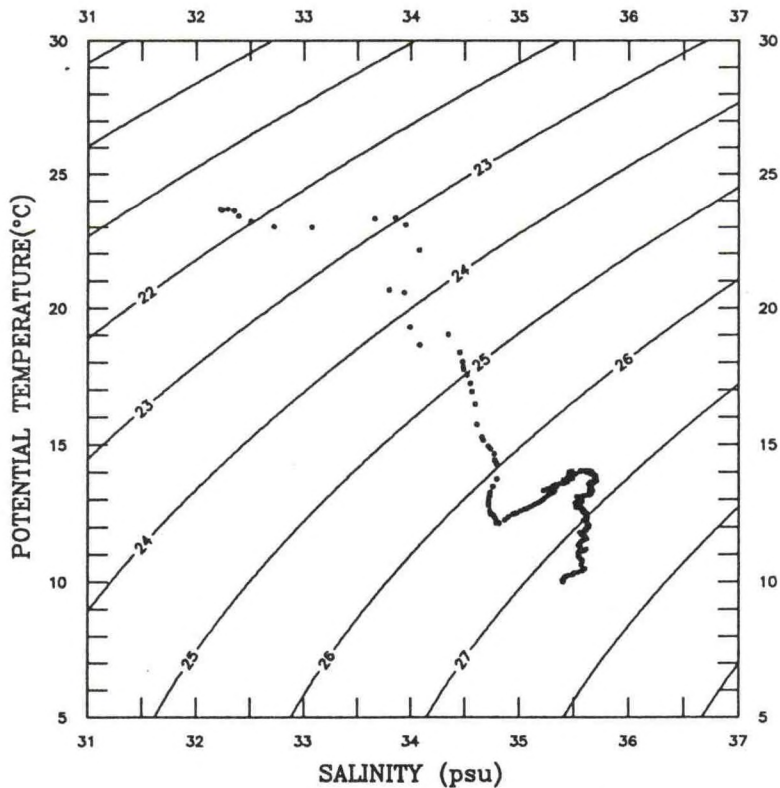


STATION 7

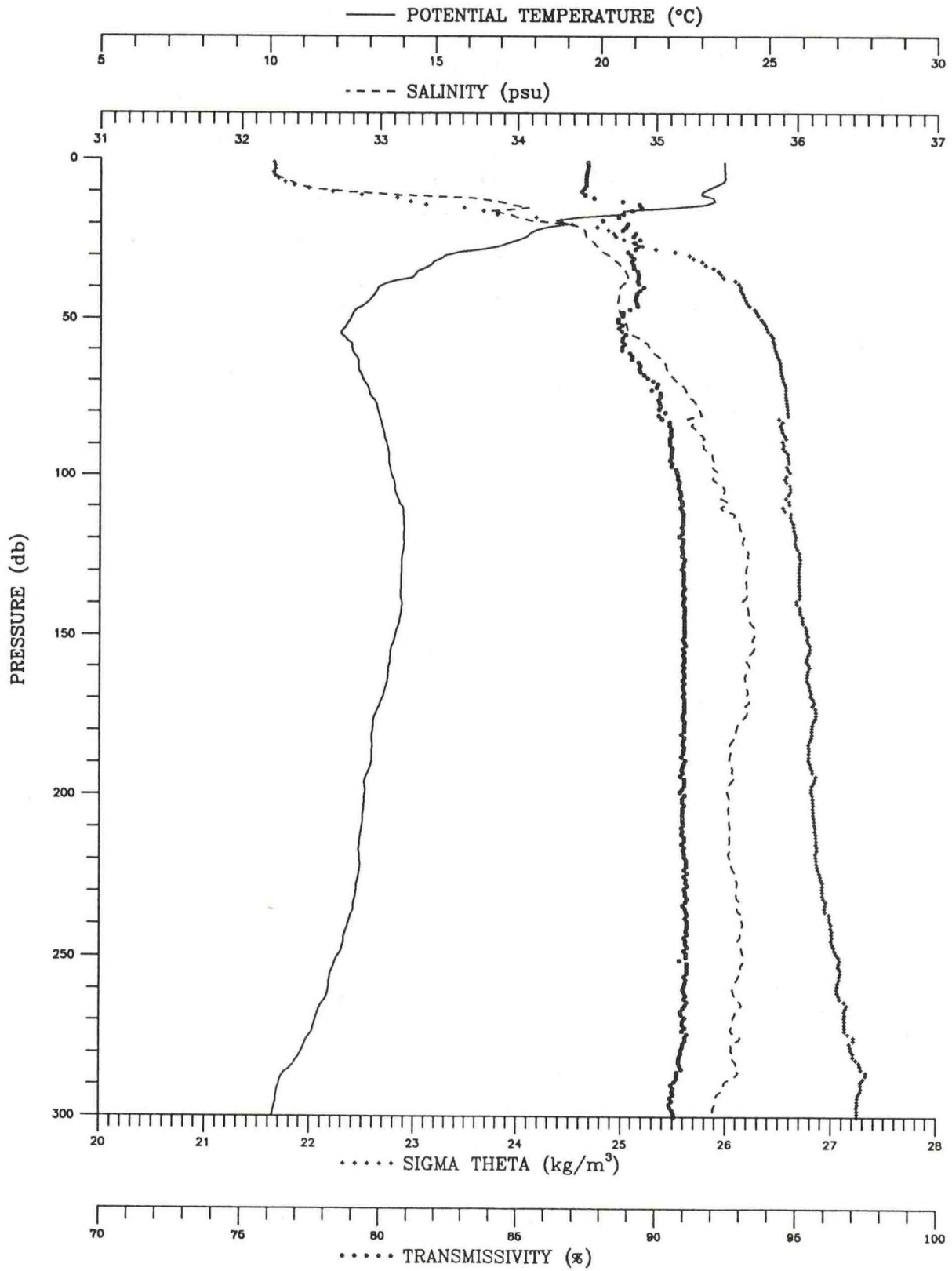


R/V DELAWARE II 91-09 Station: 08 Date: 91/08/07 GMT: 0619 Depth: 2250m
 Position: 38 57.90N 71 58.90W Wind: 6 kts Dir: 000 deg. Air Temp: 22.5C

PR	TE	PT	SA	SO	TR
1	23.6814	23.6817	32.2367	21.6403	87.52
10	23.0292	23.0272	32.7247	22.2028	87.29
20	19.0310	19.0275	34.3455	24.5151	88.96
30	15.3005	15.2959	34.6564	25.6424	89.07
40	13.2723	13.2667	34.7326	26.1325	89.53
50	12.4421	12.4354	34.7658	26.3237	88.61
60	12.5020	12.4940	34.9557	26.4596	88.75
70	12.8497	12.8401	35.1420	26.5356	89.87
80	13.2917	13.2806	35.3141	26.5800	90.31
90	13.5455	13.5328	35.3350	26.5444	90.49
100	13.7010	13.6868	35.4101	26.5706	90.77
125	14.0296	14.0114	35.6538	26.6909	90.94
150	13.8126	13.7910	35.7036	26.7758	91.04
175	13.2056	13.1811	35.6446	26.8564	90.98
200	12.9111	12.8836	35.5201	26.8201	91.05
225	12.7323	12.7016	35.5757	26.8996	91.03
250	12.1043	12.0712	35.6394	27.0728	91.10
275	11.2426	11.2079	35.6112	27.2140	91.07
300	10.1429	10.1074	35.3998	27.2462	90.67
303	10.0440	10.0084	35.3992	27.2628	90.43

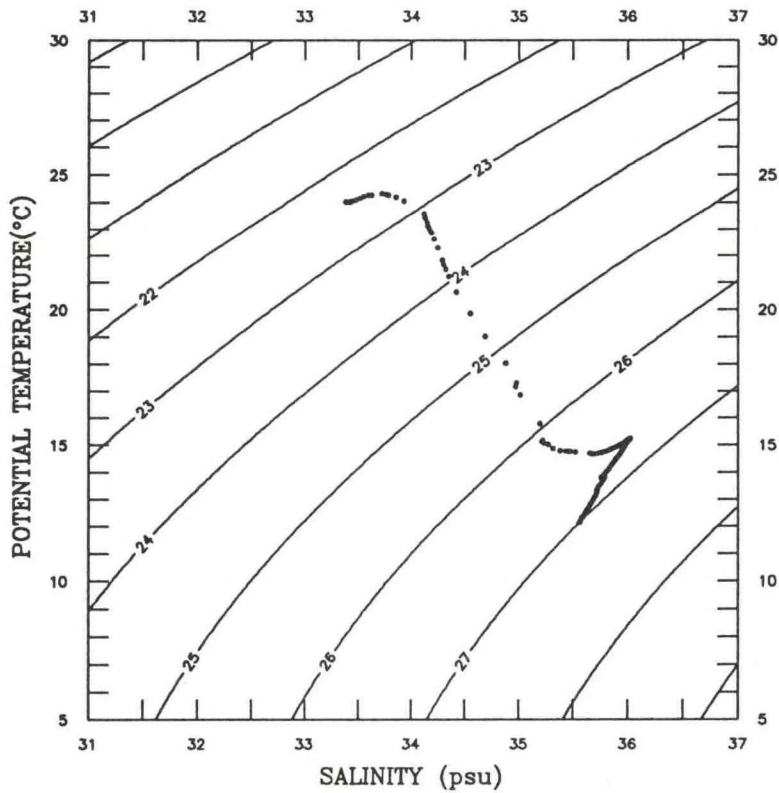


STATION 8

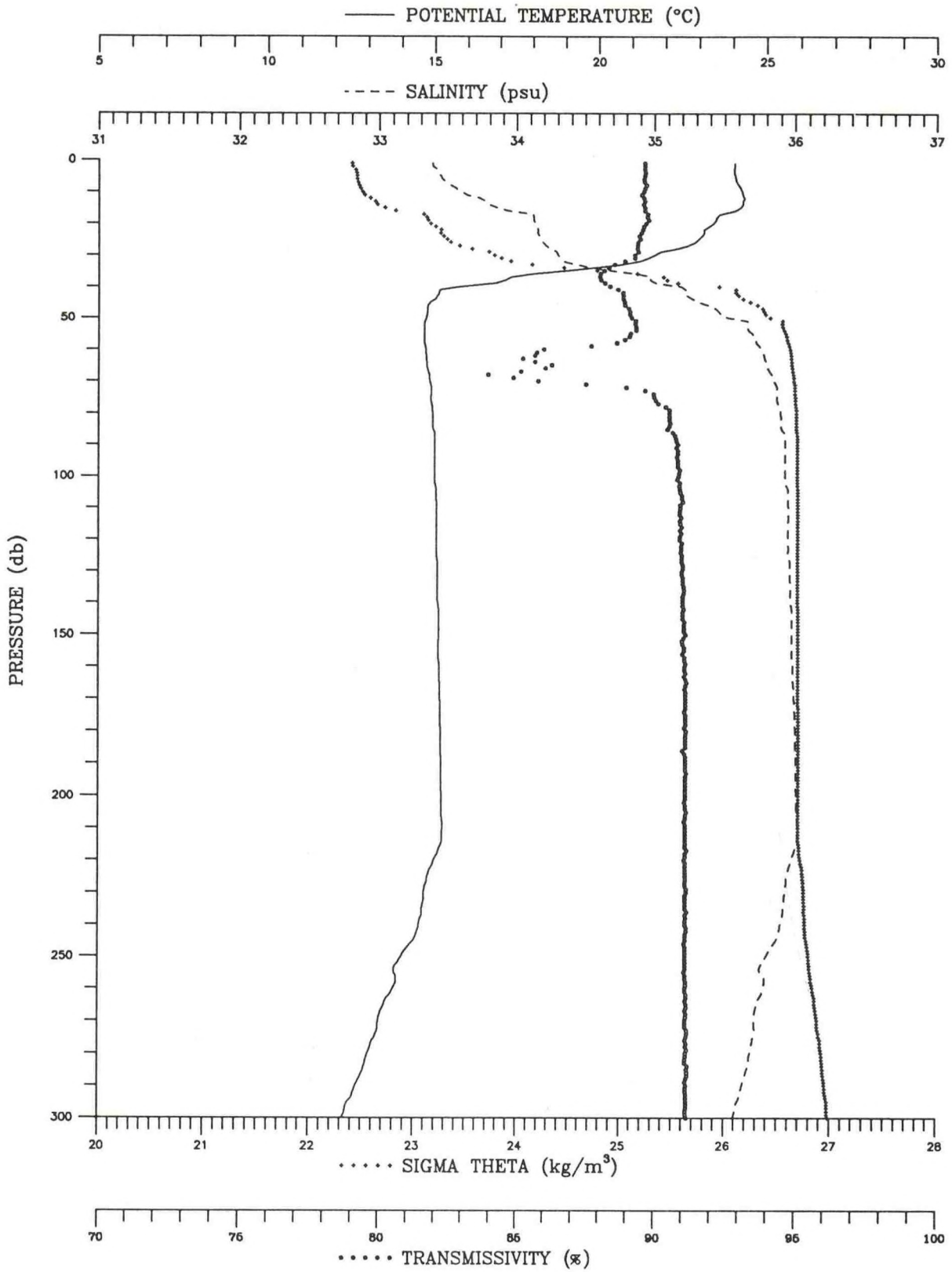


R/V DELAWARE II 91-09 Station: 09 Date: 91/08/07 GMT: 0738 Depth: 2560m
 Position: 38 49.20N 71 58.80W Wind: 6 kts Dir: 010 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	24.0355	24.0347	33.3831	22.4030	89.64
10	24.2647	24.2626	33.5949	22.5021	89.61
20	23.4117	23.4076	34.1308	23.1585	89.69
30	21.6713	21.6655	34.2998	23.7802	89.29
40	15.7933	15.7870	35.1939	25.9460	88.39
50	14.7520	14.7445	35.5226	26.4319	89.17
60	14.7382	14.7292	35.7640	26.6216	86.00
70	14.8705	14.8599	35.8483	26.6580	85.79
80	14.9525	14.9403	35.8973	26.6780	90.54
90	15.0206	15.0069	35.9296	26.6883	90.84
100	15.0212	15.0060	35.9299	26.6887	90.87
125	15.0825	15.0634	35.9532	26.6940	91.00
150	15.1593	15.1362	35.9803	26.6987	91.14
175	15.2199	15.1930	36.0016	26.7024	91.13
200	15.2597	15.2288	36.0137	26.7038	91.13
225	14.8453	14.8112	35.9480	26.7456	91.13
250	14.0703	14.0337	35.8040	26.8023	91.13
275	13.2653	13.2266	35.7129	26.9000	91.18
300	12.2770	12.2368	35.5699	26.9866	91.18
302	12.1784	12.1382	35.5573	26.9960	91.14

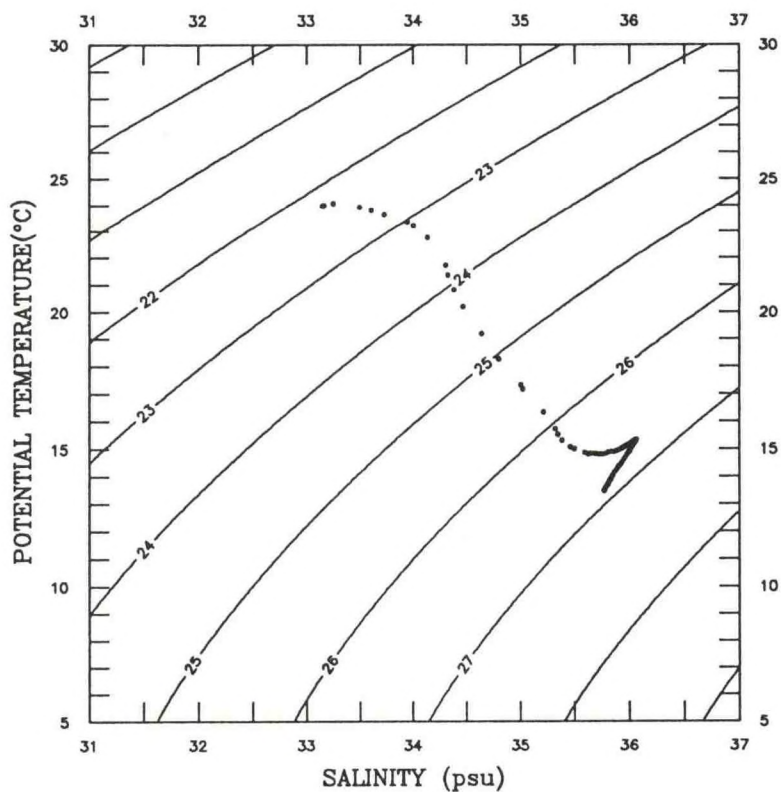


STATION 9

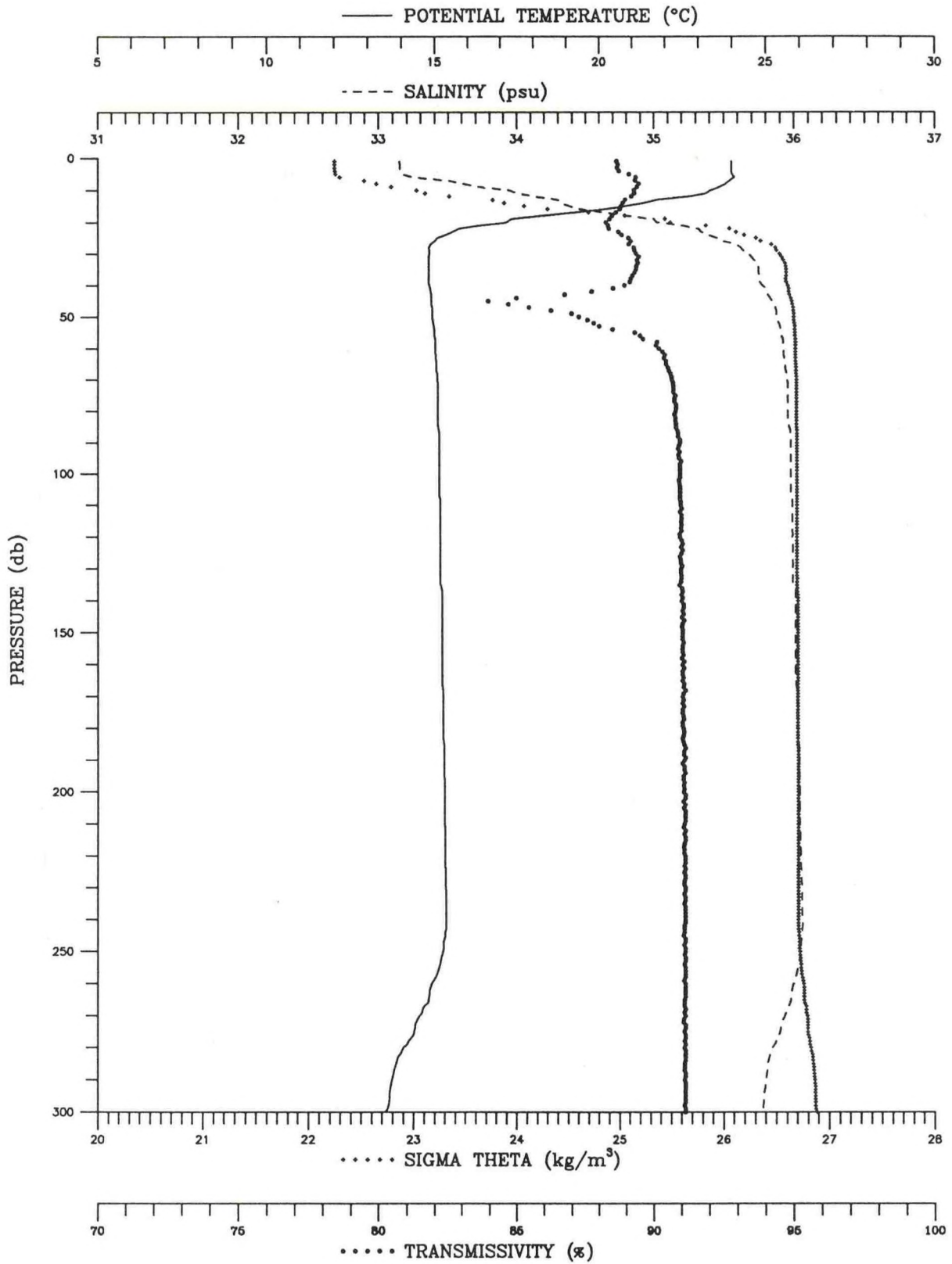


R/V DELAWARE II 91-09 Station: 10 Date: 91/08/07 GMT: 0856 Depth: 2653m
 Position: 38 41.00N 71 59.10W Wind: 6 kts Dir: 020 deg. Air Temp: 22.0C

PR	TE	PT	SA	SO	TR
1	23.9859	23.9858	33.1481	22.2449	88.63
10	23.3659	23.3638	33.9423	23.0284	89.27
20	17.1703	17.1670	35.0185	25.4896	88.24
30	14.8450	14.8405	35.6791	26.5316	89.34
40	14.8498	14.8438	35.7761	26.6058	88.92
50	14.9446	14.9370	35.8770	26.6631	87.25
60	15.0301	15.0210	35.9240	26.6808	90.17
70	15.0965	15.0858	35.9529	26.6887	90.64
80	15.1065	15.0943	35.9564	26.6896	90.78
90	15.1540	15.1403	35.9759	26.6943	90.94
100	15.1558	15.1405	35.9761	26.6945	90.94
125	15.1966	15.1774	35.9905	26.6974	90.99
150	15.2511	15.2280	36.0119	26.7025	91.04
175	15.2956	15.2685	36.0260	26.7044	91.04
200	15.3389	15.3079	36.0411	26.7072	91.08
225	15.3714	15.3364	36.0522	26.7093	91.10
250	15.2959	15.2571	36.0460	26.7223	91.13
275	14.4336	14.3926	35.8989	26.7988	91.10
300	13.5827	13.5397	35.7716	26.8810	91.13
301	13.5247	13.4817	35.7655	26.8883	91.13

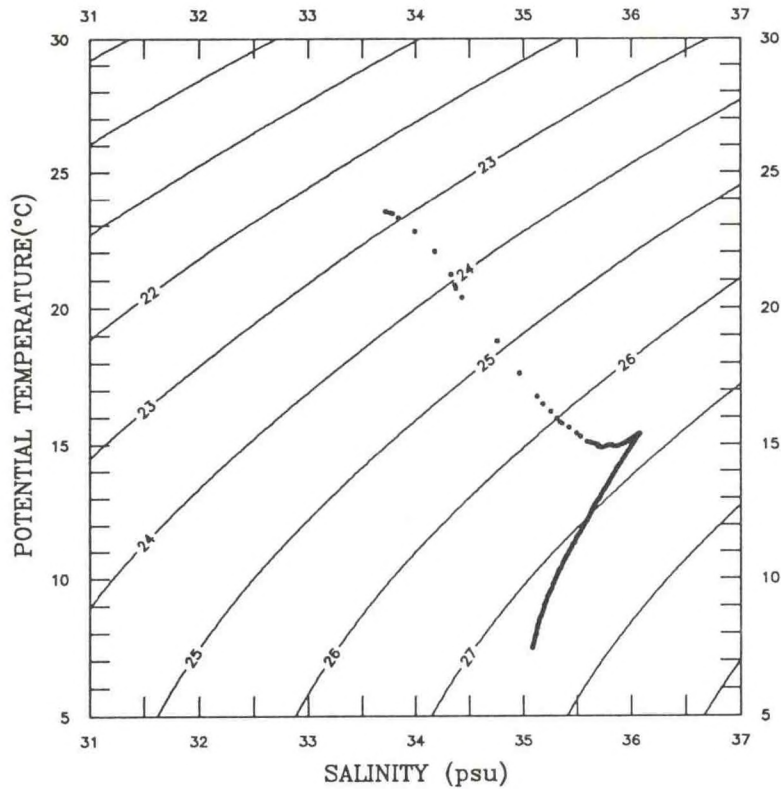


STATION 10

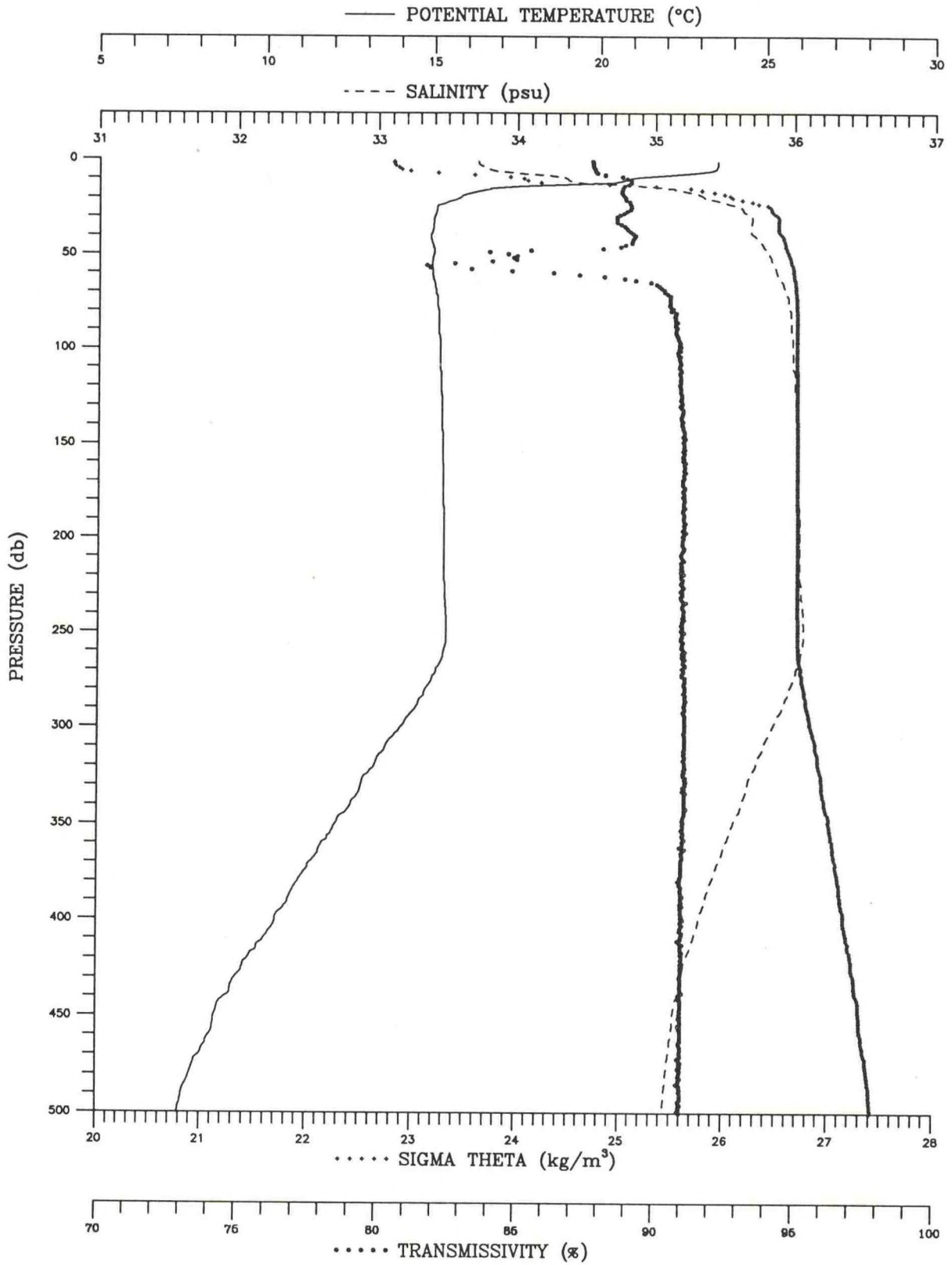


R/V DELAWARE II 91-09 Station: 11 Date: 91/08/07 GMT: 0953 Depth: 2269m
 Position: 38 41.09N 72 06.16W Wind: 6 kts Dir: 040 deg. Air Temp: 22.5C

PR	TE	PT	SA	SO	TR
1	23.5281	23.5280	33.7156	22.8092	87.70
10	20.8302	20.8283	34.3583	24.0532	88.95
20	15.7867	15.7836	35.3530	26.0696	88.90
30	14.9893	14.9847	35.6912	26.5093	88.59
40	14.8915	14.8854	35.7144	26.5490	89.27
50	14.9899	14.9824	35.8177	26.6074	84.66
60	14.9557	14.9466	35.8722	26.6573	86.30
70	15.0703	15.0597	35.9376	26.6828	90.34
80	15.1560	15.1437	35.9741	26.6922	90.58
90	15.1576	15.1438	35.9753	26.6931	90.77
100	15.1954	15.1801	35.9903	26.6966	90.87
125	15.2629	15.2436	36.0147	26.7012	90.98
150	15.3013	15.2781	36.0273	26.7032	91.07
175	15.3222	15.2951	36.0334	26.7041	91.03
200	15.3559	15.3249	36.0451	26.7065	91.07
225	15.3926	15.3576	36.0571	26.7083	91.04
250	15.4343	15.3953	36.0734	26.7124	91.11
275	15.0037	14.9616	36.0006	26.7531	91.13
300	14.0772	14.0332	35.8545	26.8415	91.13
325	13.0130	12.9678	35.6994	26.9421	91.10
350	12.1607	12.1141	35.5765	27.0156	91.07
375	11.2403	11.1928	35.4474	27.0893	91.04
400	10.3884	10.3402	35.3336	27.1539	91.11
425	9.4087	9.3605	35.2244	27.2354	91.03
450	8.6021	8.5537	35.1513	27.3080	91.04
475	7.9662	7.9173	35.1073	27.3709	91.00
500	7.5142	7.4644	35.0798	27.4159	91.00

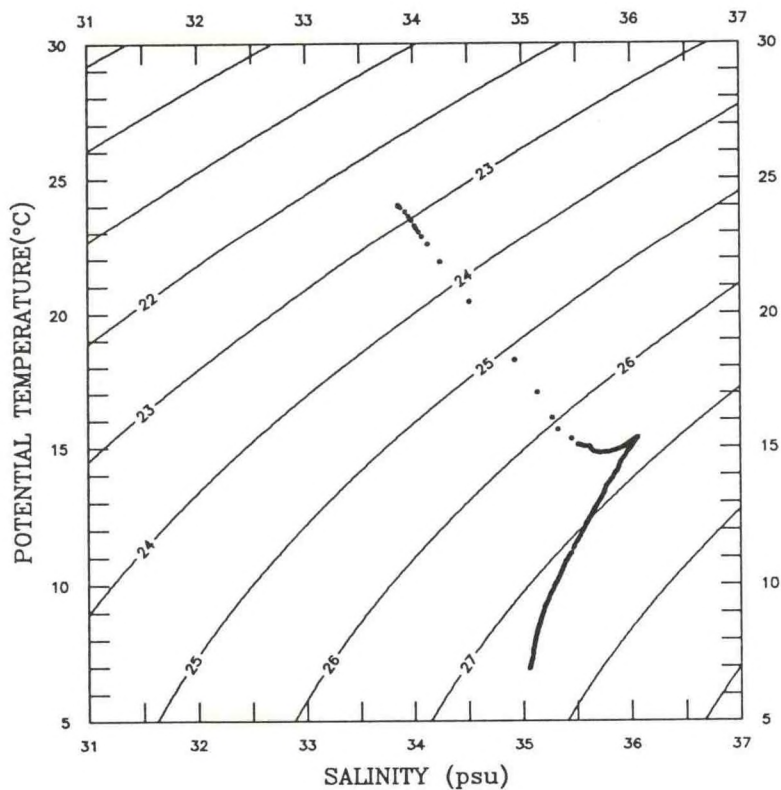


STATION 11

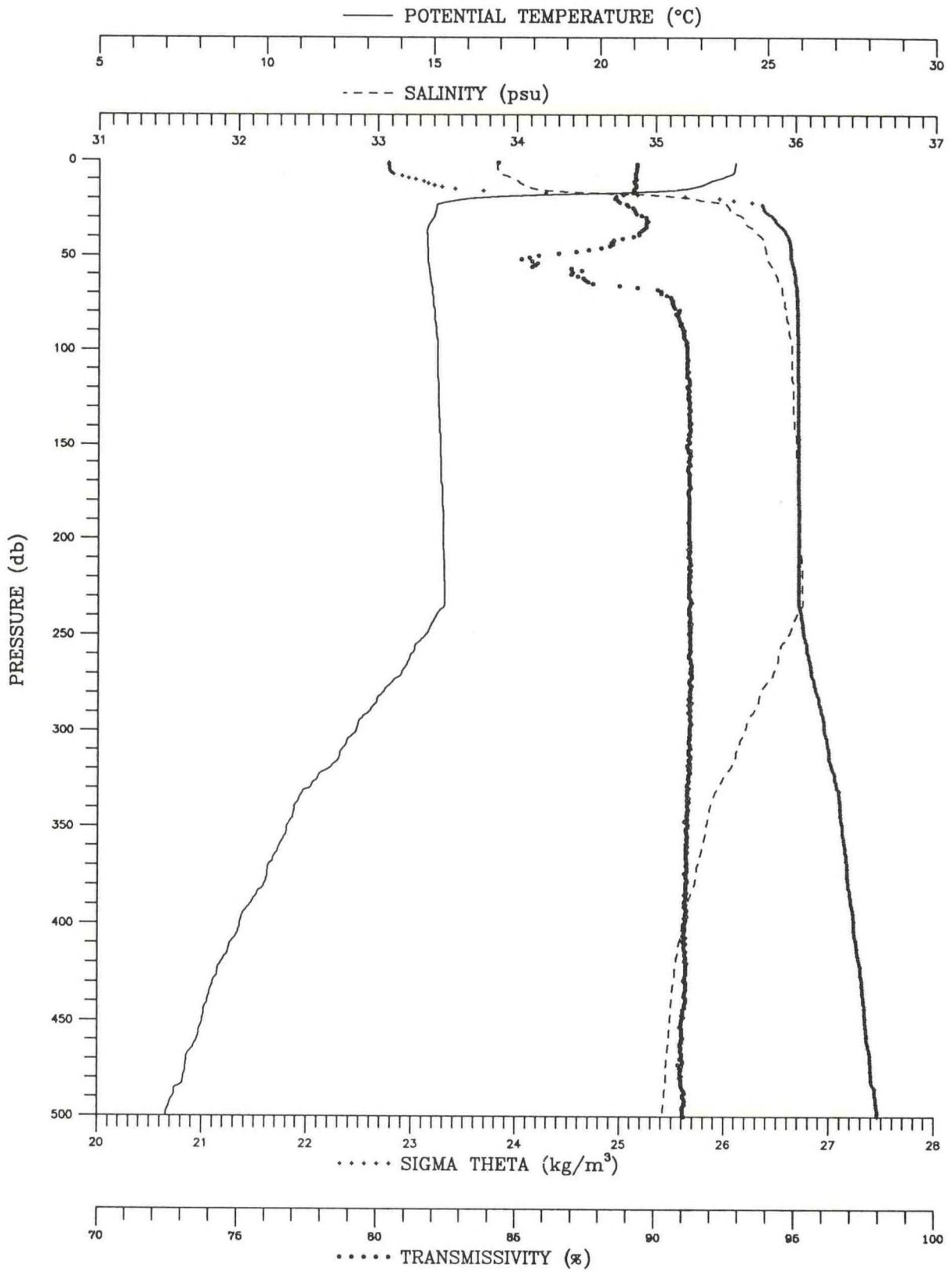


R/V DELAWARE II 91-09 Station: 12 Date: 91/08/07 GMT: 1344 Depth: 2342m
 Position: 38 48.98N 72 05.83W Wind: 3 kts Dir: 030 deg. Air Temp: ? C

PR	TE	PT	SA	SO	TR
1	24.0378	24.0374	33.8582	22.7679	84.32
10	23.4853	23.4833	33.9787	23.0213	89.30
20	16.0922	16.0890	35.2702	25.9358	88.52
30	15.0131	15.0085	35.6243	26.4524	89.64
40	14.8217	14.8157	35.7554	26.5960	89.19
50	14.8304	14.8229	35.7927	26.6232	85.78
60	14.9014	14.8924	35.8608	26.6605	86.96
70	14.9770	14.9663	35.9056	26.6787	90.19
80	15.0452	15.0330	35.9375	26.6886	90.83
90	15.0906	15.0769	35.9539	26.6915	91.04
100	15.1482	15.1329	35.9759	26.6960	91.13
125	15.1818	15.1626	35.9878	26.6986	91.17
150	15.2421	15.2190	36.0095	26.7027	91.13
175	15.3012	15.2742	36.0296	26.7059	91.19
200	15.3390	15.3080	36.0425	26.7083	91.23
225	15.3874	15.3524	36.0590	26.7110	91.23
250	14.8264	14.7884	35.9578	26.7582	91.27
275	13.7963	13.7565	35.7999	26.8576	91.26
300	12.7635	12.7223	35.6506	26.9536	91.27
325	11.6003	11.5583	35.4905	27.0548	91.21
350	10.6894	10.6466	35.3709	27.1287	91.20
375	10.1085	10.0641	35.3000	27.1757	91.14
400	9.2999	9.2549	35.2026	27.2357	91.10
425	8.6301	8.5844	35.1478	27.3004	91.13
450	8.1900	8.1430	35.1140	27.3421	90.99
475	7.6887	7.6408	35.0871	27.3960	90.93
500	7.0931	7.0448	35.0608	27.4607	91.07

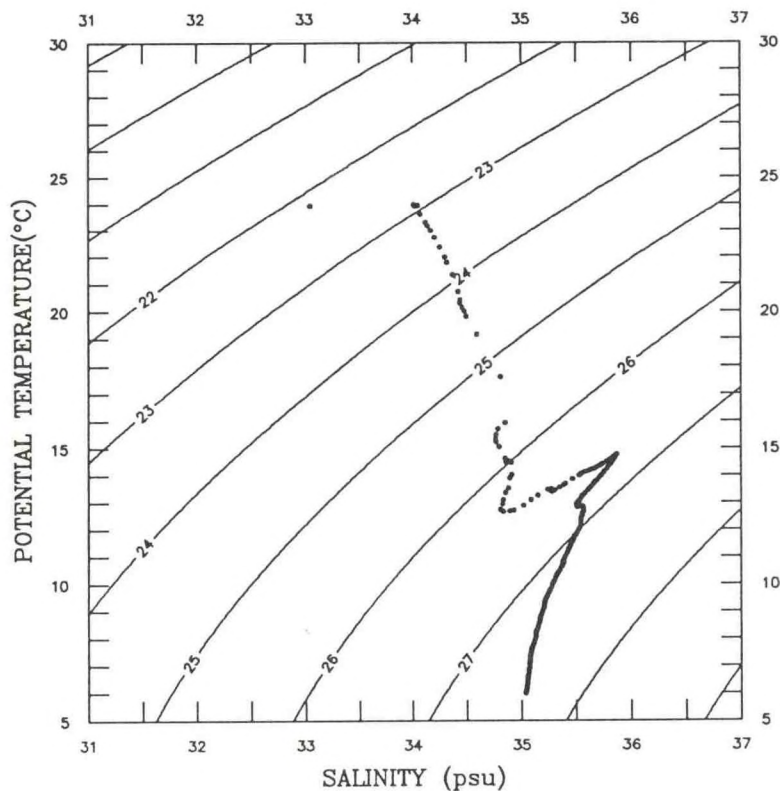


STATION 12

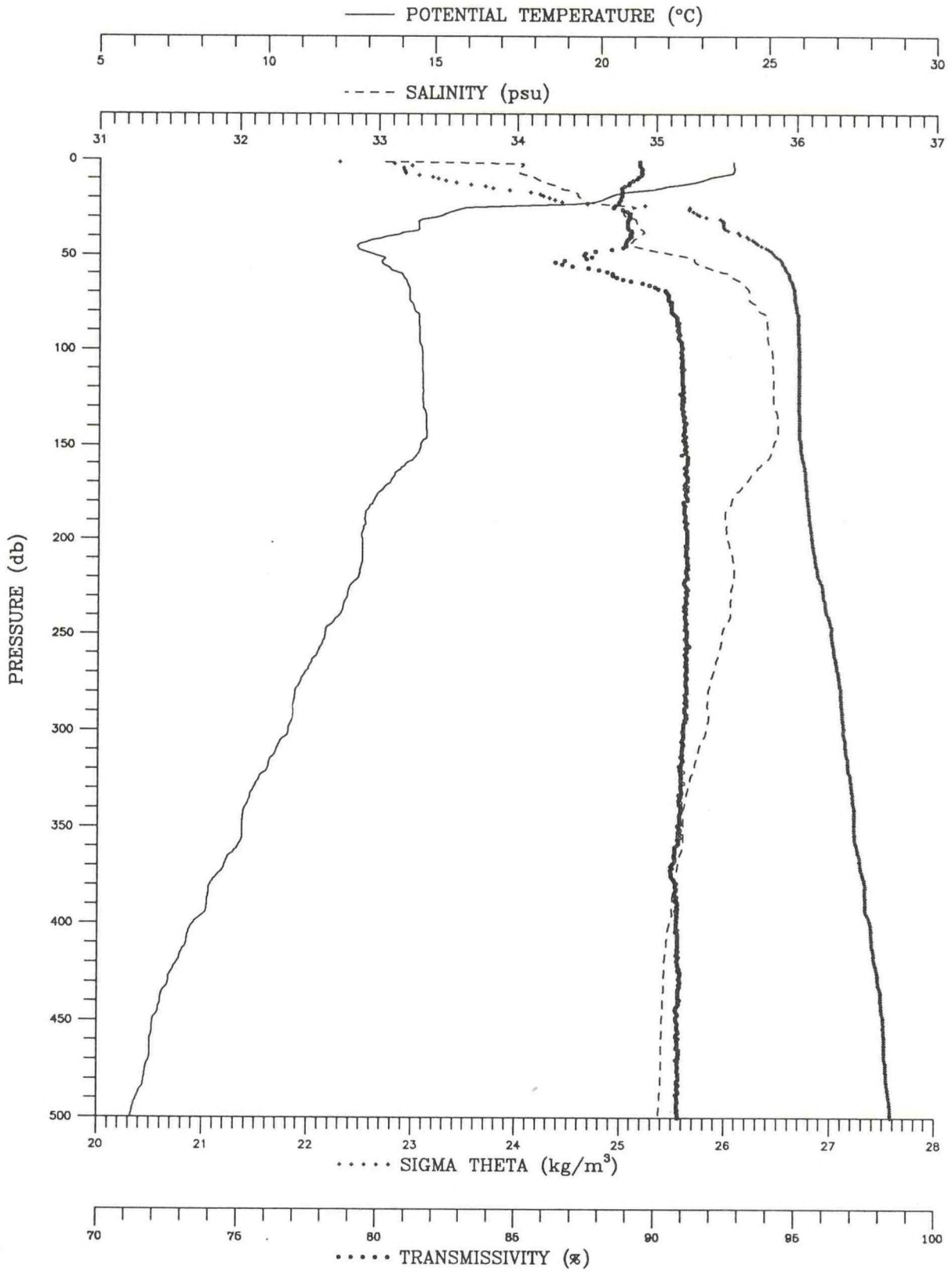


R/V DELAWARE II 91-09 Station: 13 Date: 91/08/07 GMT: 1734 Depth: 2379m
 Position: 38 57.80N 72 05.90W Wind: 0 kts Dir: 000 deg. Air Temp: 25.0C

PR	TE	PT	SA	SO	TR
1	23.9540	23.9504	33.0431	22.2851	89.39
10	23.1732	23.1712	34.1361	23.2309	89.29
20	20.1618	20.1581	34.4531	24.3043	88.71
30	15.0544	15.0499	34.7955	25.8042	89.05
40	13.5505	13.5448	34.8785	26.1885	89.09
50	13.2768	13.2699	35.1476	26.4533	87.39
60	14.0222	14.0136	35.5232	26.5894	88.41
70	14.2658	14.2555	35.6598	26.6436	90.37
80	14.4497	14.4378	35.7387	26.6653	90.54
90	14.5665	14.5531	35.7932	26.6825	90.76
100	14.6485	14.6335	35.8235	26.6884	90.91
125	14.6838	14.6651	35.8348	26.6903	91.00
150	14.6153	14.5928	35.8359	26.7068	91.10
175	13.3733	13.3486	35.5767	26.7695	91.08
200	12.8974	12.8699	35.5144	26.8184	91.13
225	12.5074	12.4770	35.5453	26.9205	91.13
250	11.7959	11.7634	35.4785	27.0067	91.13
275	11.0459	11.0116	35.3966	27.0829	91.10
300	10.6855	10.6489	35.3648	27.1236	90.99
325	9.8157	9.7781	35.2541	27.1888	90.94
350	9.3355	9.2962	35.2047	27.2306	90.87
375	8.5948	8.5547	35.1548	27.3106	90.61
400	7.8895	7.8487	35.1096	27.3829	90.79
425	7.2269	7.1857	35.0734	27.4508	90.94
450	6.6997	6.6577	35.0573	27.5113	90.81
475	6.4860	6.4424	35.0518	27.5360	90.84
500	6.0561	6.0118	35.0349	27.5790	90.86

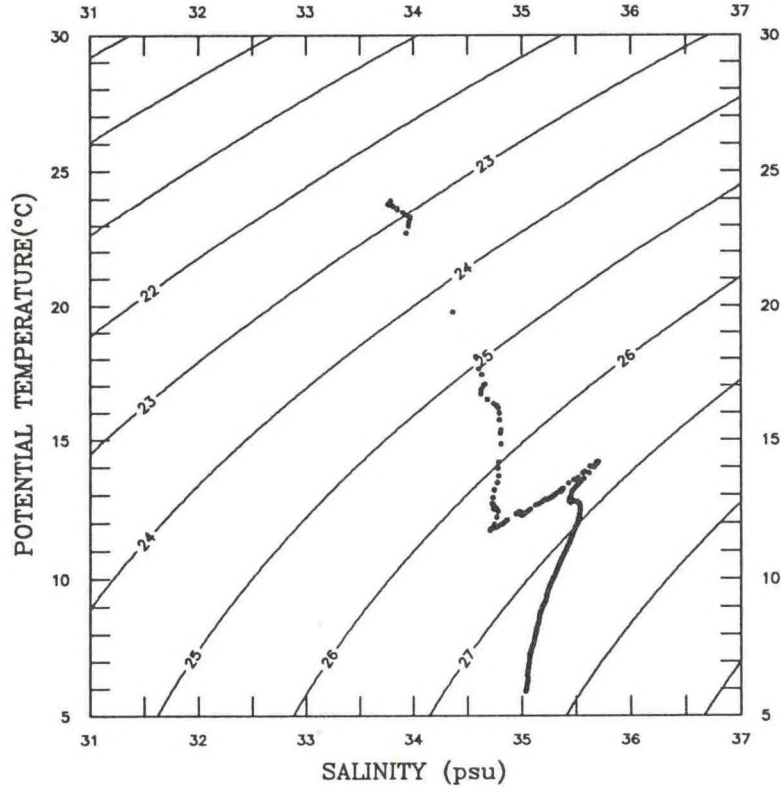


STATION 13

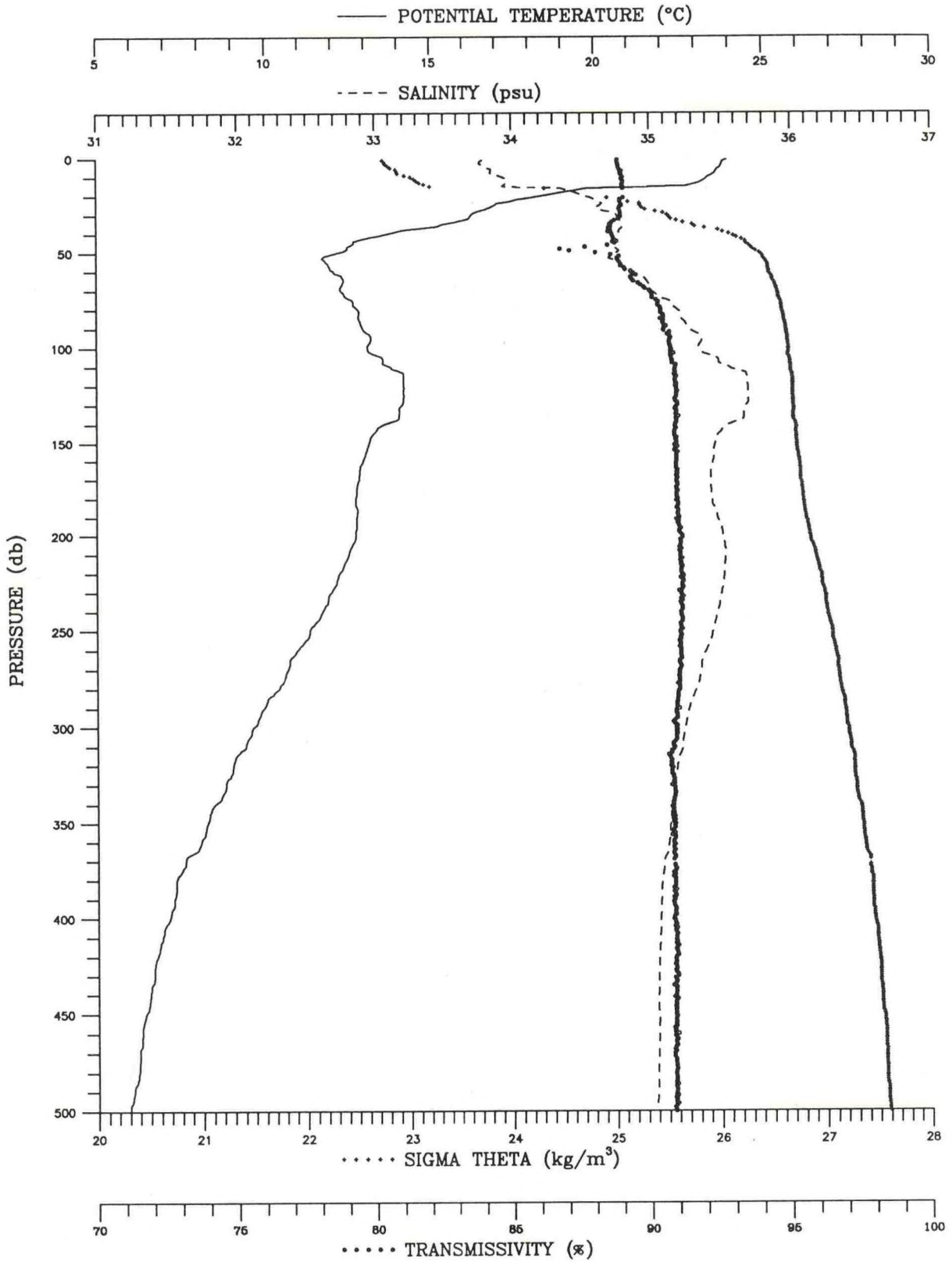


R/V DELAWARE II 91-09 Station: 14 Date: 91/08/07 GMT: 2210 Depth: 2379m
 Position: 38 57.71N 72 02.92W Wind: 4 kts Dir: 245 deg. Air Temp: 25.0C

PR	TE	PT	SA	SO	TR
1	23.9404	23.9456	33.7888	22.7424	88.85
10	23.4071	23.4051	33.9346	23.0106	89.04
20	18.4275	18.4241	34.5296	24.8032	89.05
30	16.2805	16.2757	34.7634	25.5032	88.95
40	13.6897	13.6840	34.7819	26.0851	88.63
50	12.1996	12.1930	34.7651	26.3701	88.04
60	12.0838	12.0760	34.8507	26.4592	89.32
70	12.3084	12.2992	35.0102	26.5399	89.99
80	12.8133	12.8025	35.1963	26.5853	90.40
90	12.9687	12.9563	35.2868	26.6246	90.51
100	13.1125	13.0987	35.3487	26.6439	90.74
125	14.2197	14.2014	35.7008	26.6868	90.94
150	13.1606	13.1398	35.4631	26.7241	90.94
175	12.7916	12.7677	35.4342	26.7767	90.94
200	12.7619	12.7346	35.5174	26.8478	91.14
225	12.1792	12.1494	35.5181	26.9634	91.13
250	11.3752	11.3435	35.4411	27.0565	91.06
275	10.5992	10.5658	35.3466	27.1242	91.04
300	9.6541	9.6198	35.2428	27.2067	90.90
325	8.9879	8.9522	35.1806	27.2677	90.79
350	8.2959	8.2593	35.1364	27.3420	90.86
375	7.5441	7.5069	35.0861	27.4147	90.85
400	7.1726	7.1340	35.0658	27.4521	90.79
425	6.7219	6.6823	35.0515	27.5034	90.87
450	6.4549	6.4138	35.0513	27.5394	90.84
475	6.2665	6.2237	35.0445	27.5592	90.85
500	5.9798	5.9358	35.0315	27.5860	90.84

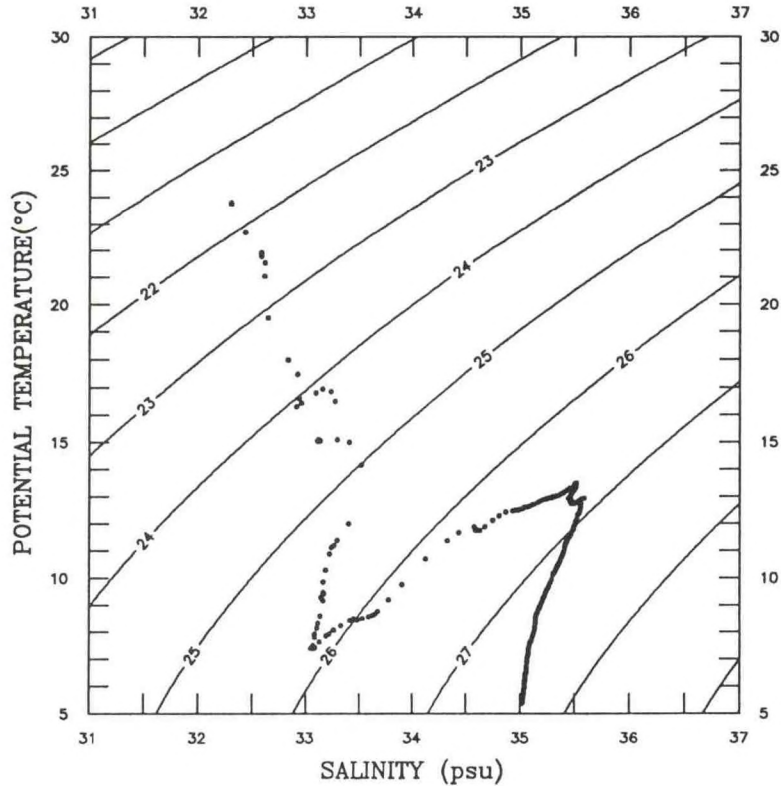


STATION 14

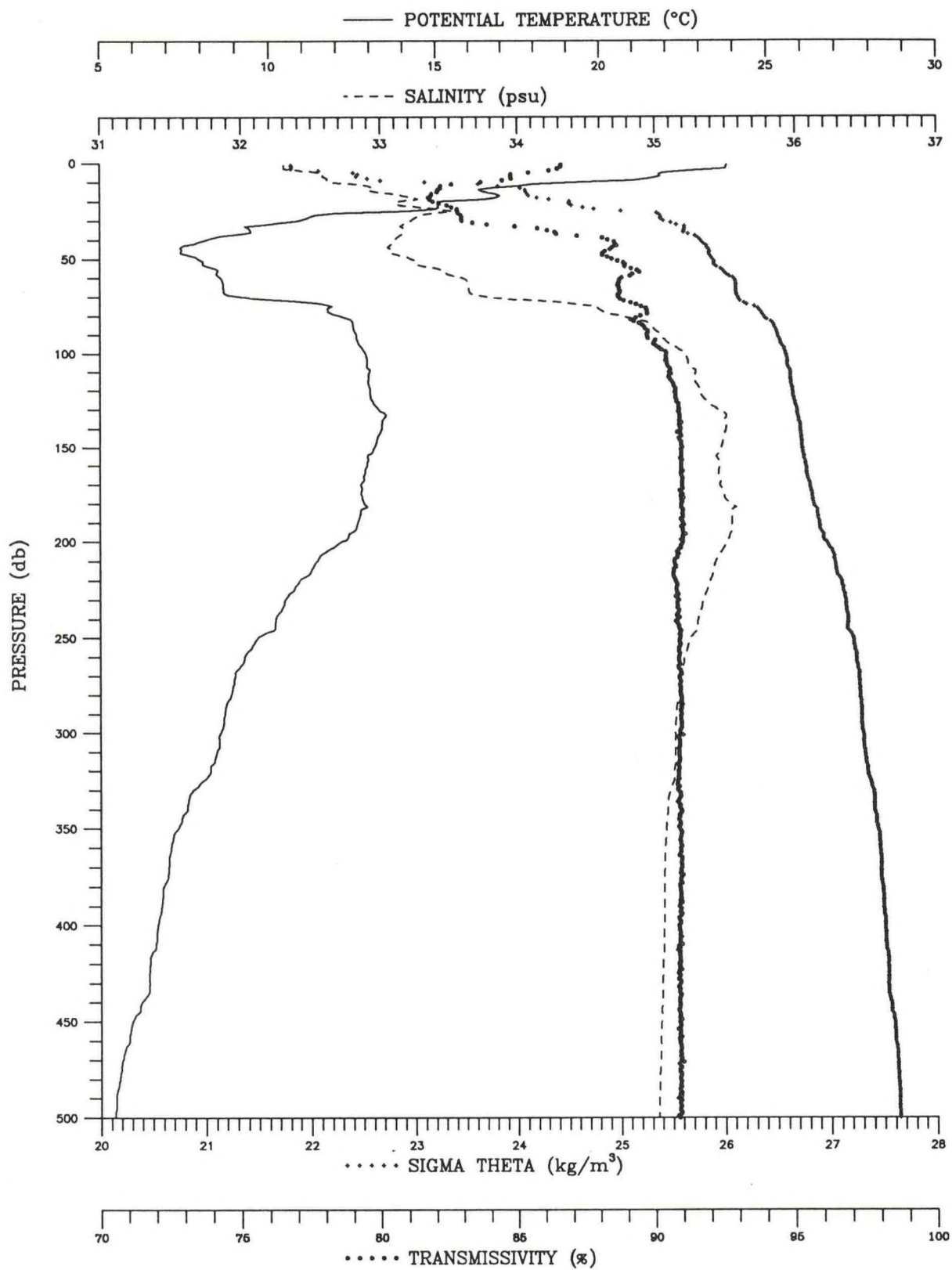


R/V DELAWARE II 91-09 Station: 15 Date: 91/08/08 GMT: 0006 Depth: 1647m
 Position: 39 05.21N 72 12.40W Wind: 6 kts Dir: 240 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	23.8122	23.8122	32.3068	21.8111	86.60
10	19.5185	19.5167	32.6484	23.0943	83.66
20	15.0533	15.0503	33.1105	24.5066	81.90
30	10.8901	10.8865	33.2236	25.4130	82.96
40	8.1554	8.1515	33.1074	25.7657	88.29
50	7.9377	7.9329	33.2209	25.8868	88.44
60	8.5855	8.5793	33.5896	26.0795	88.80
70	9.2172	9.2097	33.7767	26.1269	88.69
80	12.1295	12.1190	34.7453	26.3690	89.48
90	12.6228	12.6107	35.0370	26.4998	89.70
100	12.8959	12.8822	35.2100	26.5800	90.41
125	13.0908	13.0735	35.3603	26.6579	90.77
150	13.1732	13.1523	35.4755	26.7312	90.98
175	12.7765	12.7526	35.4905	26.8234	90.99
200	12.1778	12.1513	35.5153	26.9609	91.00
225	10.7478	10.7204	35.3715	27.1160	90.77
250	9.6770	9.6484	35.2519	27.2090	90.89
275	8.9577	8.9277	35.1769	27.2687	90.89
300	8.5931	8.5611	35.1422	27.2997	90.88
325	8.0787	8.0453	35.1288	27.3686	90.80
350	7.3421	7.3080	35.0754	27.4349	90.86
375	7.0395	7.0037	35.0611	27.4667	90.93
400	6.7414	6.7041	35.0584	27.5059	90.83
425	6.4908	6.4519	35.0480	27.5318	90.80
450	5.9824	5.9429	35.0375	27.5899	90.84
475	5.6444	5.6038	35.0261	27.6235	90.84
500	5.4590	5.4169	35.0196	27.6413	90.84

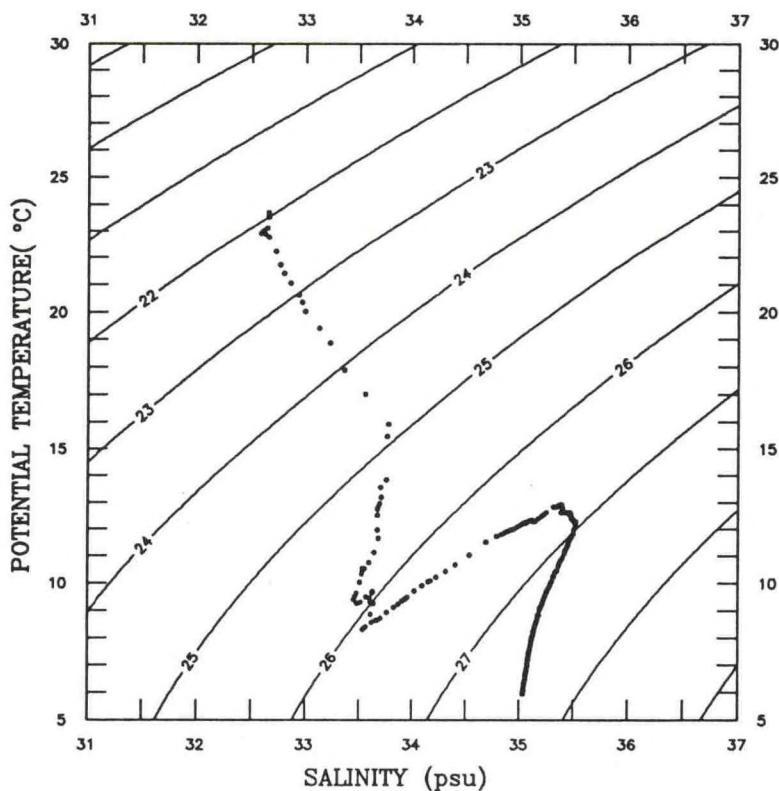


STATION 15

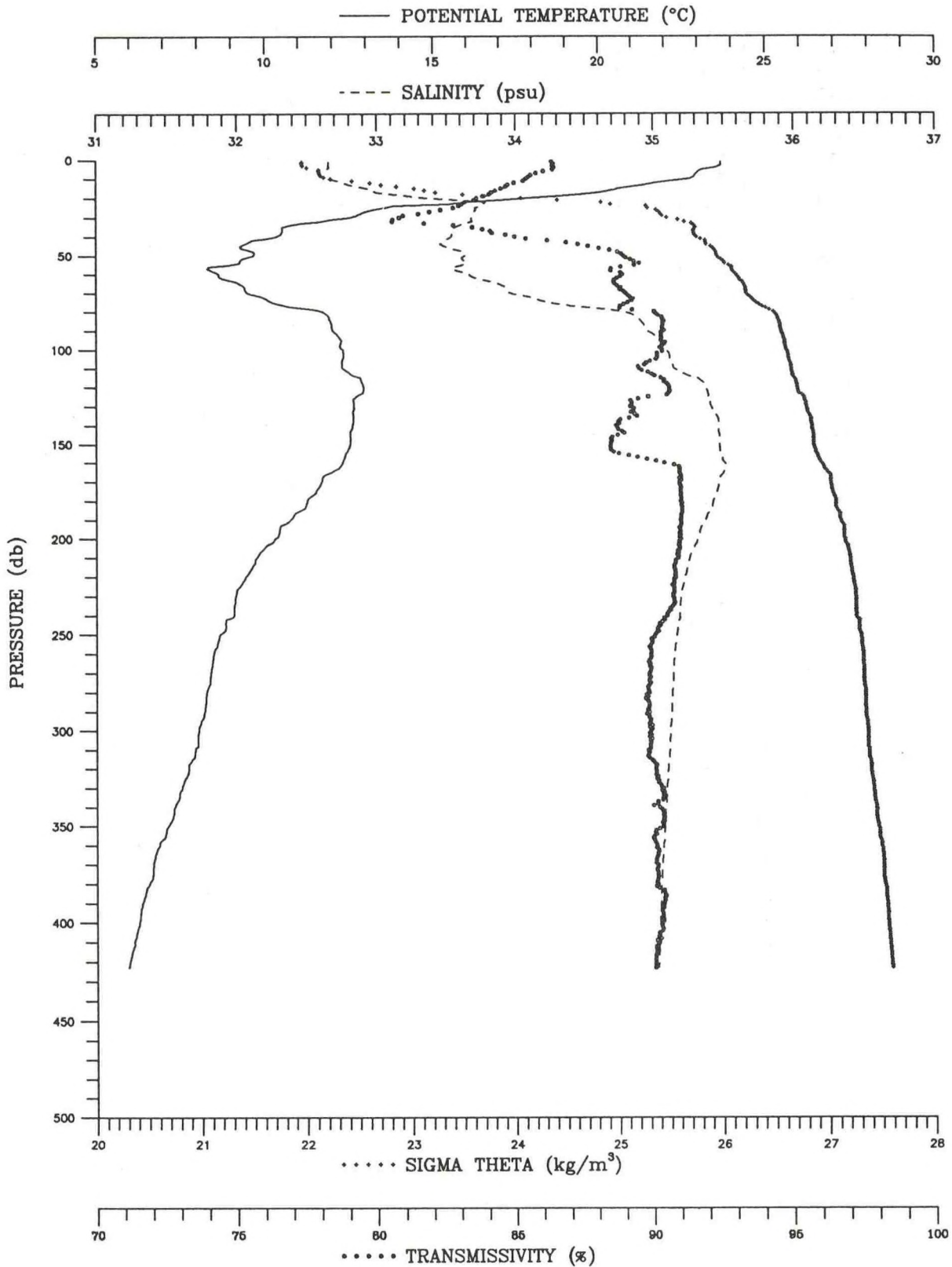


R/V DELAWARE II 91-09 Station: 16 Date: 91/08/08 GMT: 0150 Depth: 428 m
 Position: 39 14.03N 72 19.92W Wind: 10 kts Dir: 240 deg. Air Temp: 23.0C

PR	TE	PT	SA	S0	TR
1	23.6979	23.6973	32.6546	21.9571	86.31
10	22.7662	22.7642	32.6587	22.2275	85.37
20	17.8857	17.8823	33.3637	24.0489	83.58
30	12.5238	12.5198	33.6767	25.4626	80.79
40	10.3437	10.3391	33.5305	25.7474	84.96
50	9.6611	9.6556	33.6297	25.9397	88.91
60	8.6528	8.6466	33.6593	26.1238	88.88
70	9.5040	9.4963	33.9568	26.2215	88.99
80	11.7428	11.7325	34.7862	26.4743	90.03
90	12.0320	12.0203	34.9505	26.5474	90.39
100	12.3350	12.3217	35.0900	26.5975	90.31
125	12.7112	12.6942	35.3939	26.7600	89.81
150	12.5510	12.5308	35.4773	26.8571	88.45
175	11.5502	11.5279	35.4559	27.0335	90.97
200	10.3189	10.2951	35.3215	27.1524	90.99
225	9.2652	9.2402	35.2101	27.2441	90.73
250	8.6845	8.6577	35.1664	27.3035	90.04
275	8.3947	8.3658	35.1386	27.3273	89.88
300	8.0596	8.0289	35.1186	27.3630	89.88
325	7.6604	7.6280	35.1003	27.4082	90.10
350	7.1672	7.1335	35.0774	27.4613	90.34
375	6.6990	6.6642	35.0576	27.5107	90.14
400	6.3001	6.2641	35.0424	27.5521	90.29
423	5.9848	5.9477	35.0324	27.5853	90.04

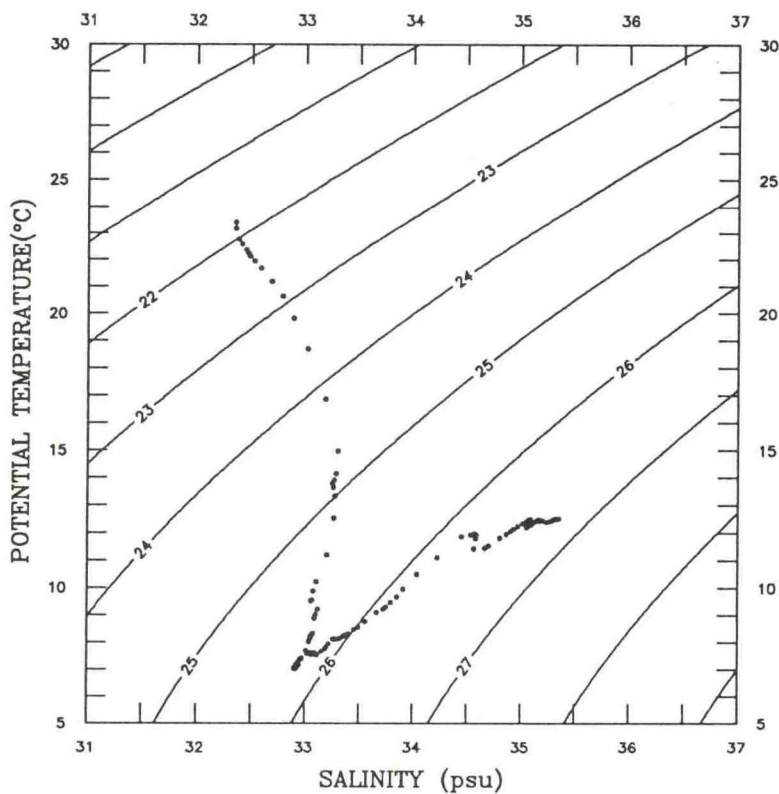


STATION 16

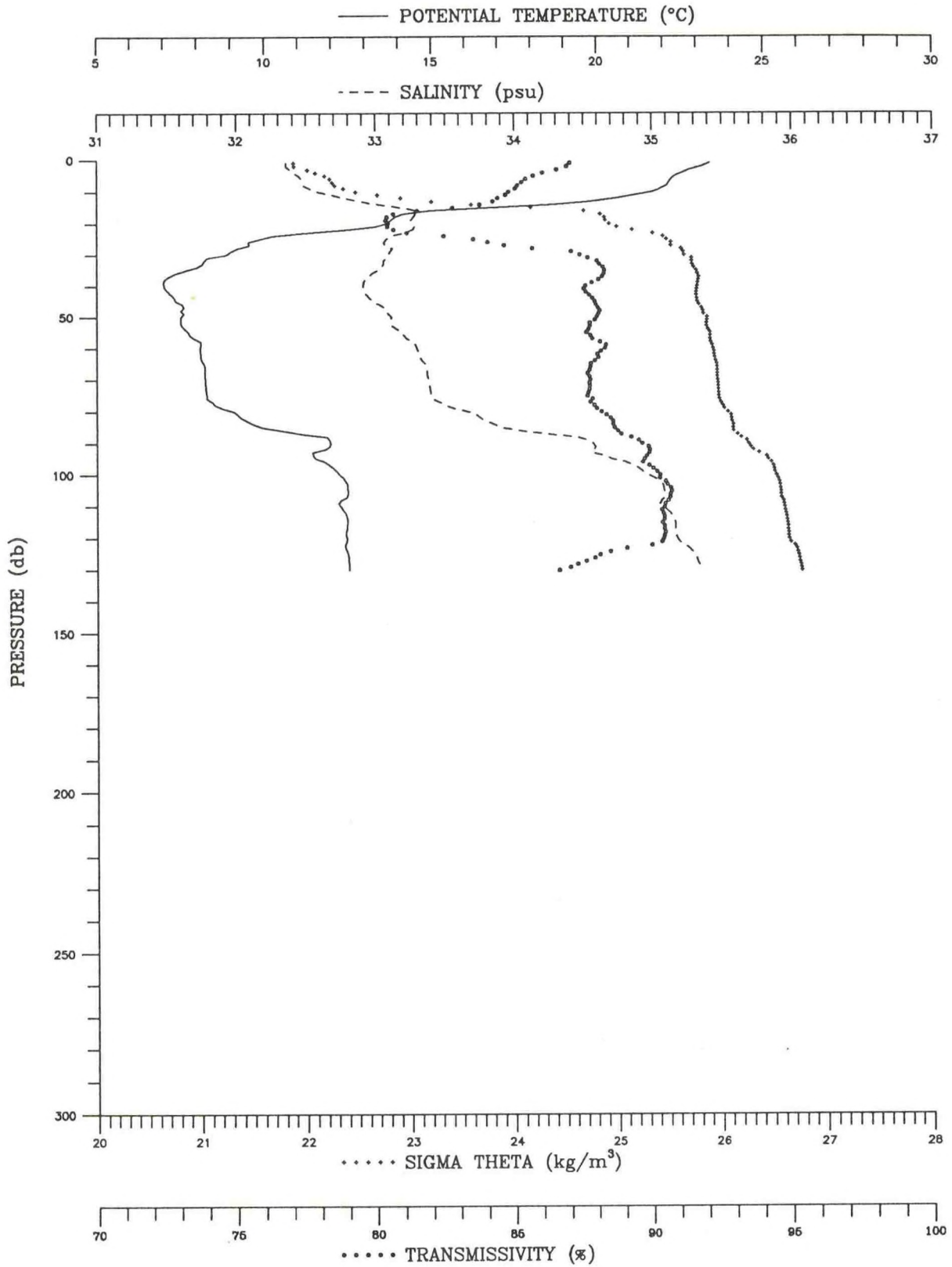


R/V DELAWARE II 91-09 Station: 17 Date: 91/08/08 GMT: 0329 Depth: 134 m
 Position: 39 20.97N 72 30.13W Wind: 12 kts Dir: 240 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	23.4296	23.4078	32.3550	21.8772	87.02
10	21.6759	21.6740	32.5862	22.4761	84.80
20	13.6459	13.6431	33.2623	24.9185	80.45
30	8.8860	8.8829	33.0927	25.6434	87.37
40	7.0345	7.0310	32.9090	25.7679	87.58
50	7.5304	7.5257	33.1150	25.8618	87.99
60	8.1205	8.1146	33.2952	25.9185	88.29
70	8.2686	8.2616	33.3795	25.9628	87.75
80	9.1114	9.1028	33.6711	26.0617	88.16
90	11.9861	11.9744	34.5688	26.2596	89.63
100	12.2567	12.2435	34.9716	26.5208	90.28
125	12.5081	12.4913	35.3061	26.7321	88.09
130	12.5362	12.5187	35.3493	26.7602	86.61

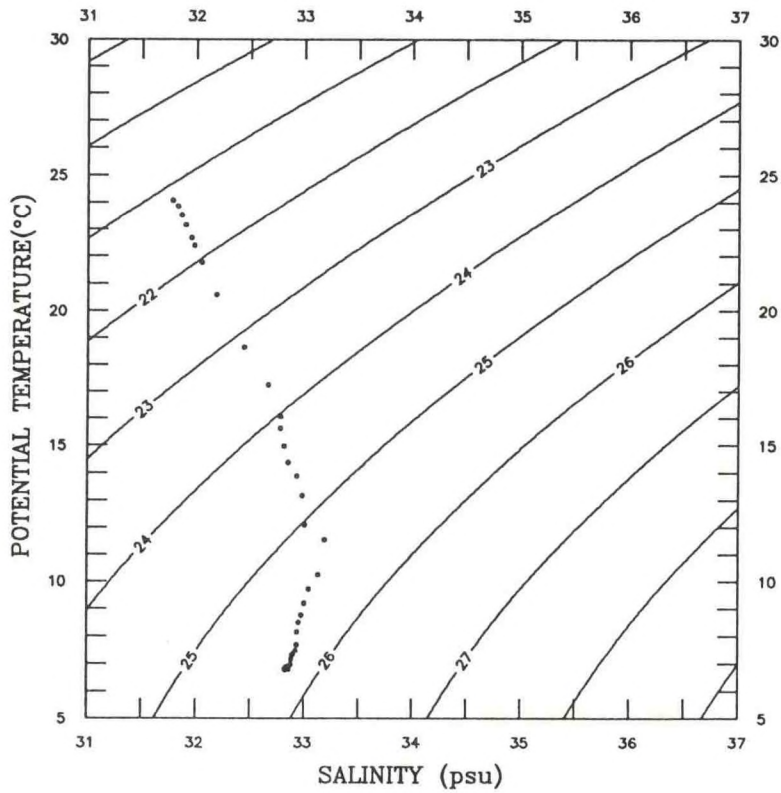


STATION 17

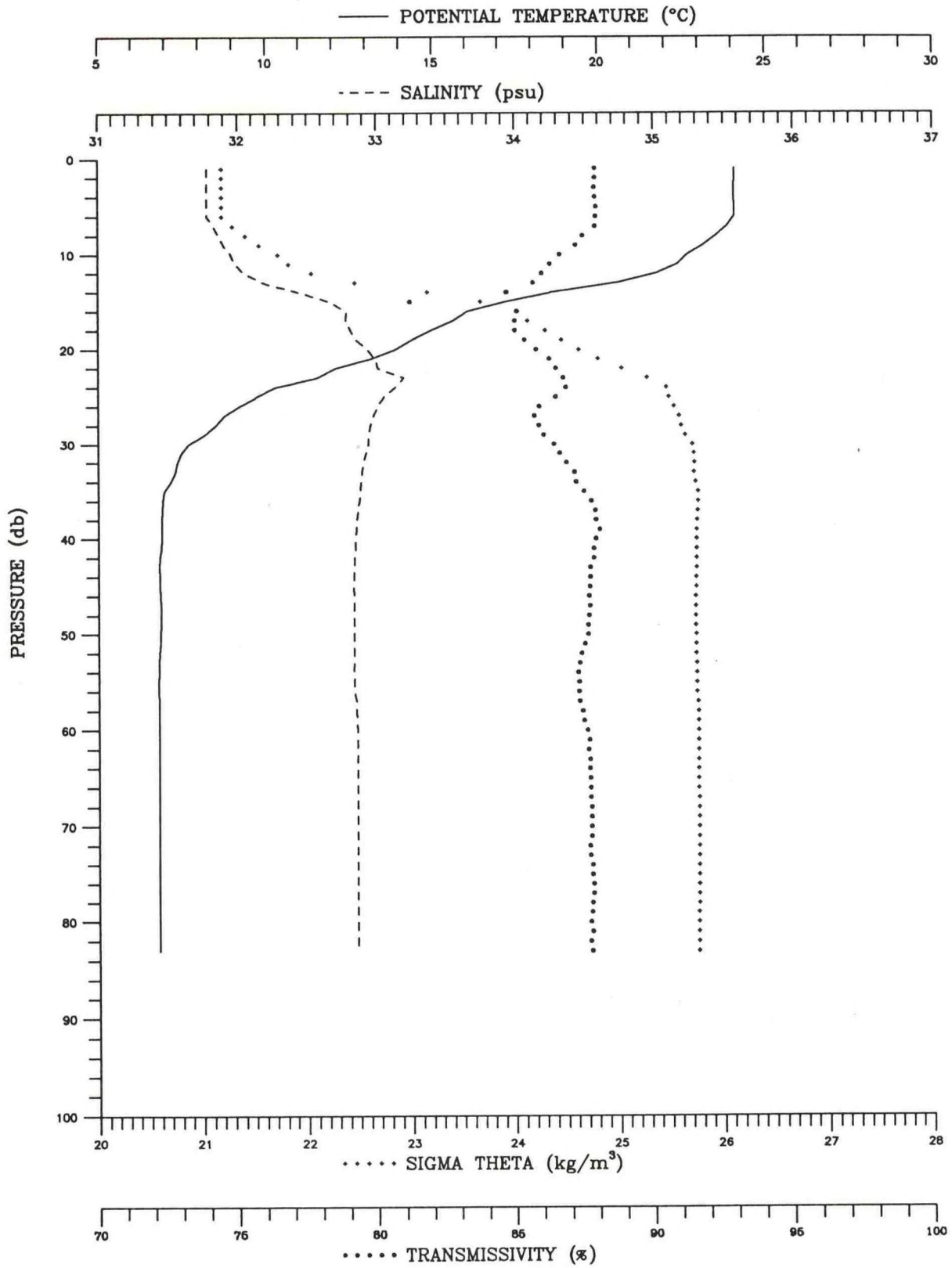


R/V DELAWARE II 91-09 Station: 18 Date: 91/08/08 GMT: 0445 Depth: 87 m
 Position: 39 28.08N 72 40.12W Wind: 14 kts Dir: 250 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	24.0833	24.0830	31.7809	21.1835	87.89
10	22.6742	22.6722	31.9538	21.7193	86.62
20	13.8915	13.8887	32.9350	24.6151	85.77
30	7.6975	7.6947	32.9390	25.6996	86.40
40	6.9011	6.8976	32.8476	25.7375	87.90
50	6.8623	6.8579	32.8343	25.7322	87.62
60	6.8187	6.8134	32.8549	25.7544	87.58
70	6.8122	6.8061	32.8576	25.7574	87.72
80	6.8131	6.8061	32.8560	25.7562	87.69
83	6.8161	6.8088	32.8559	25.7557	87.73

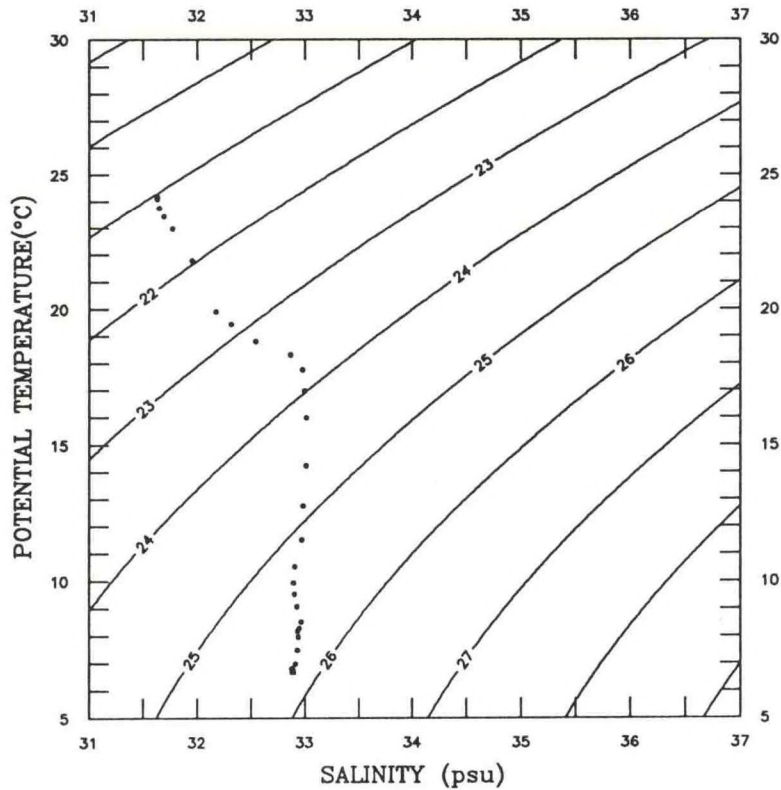


STATION 18

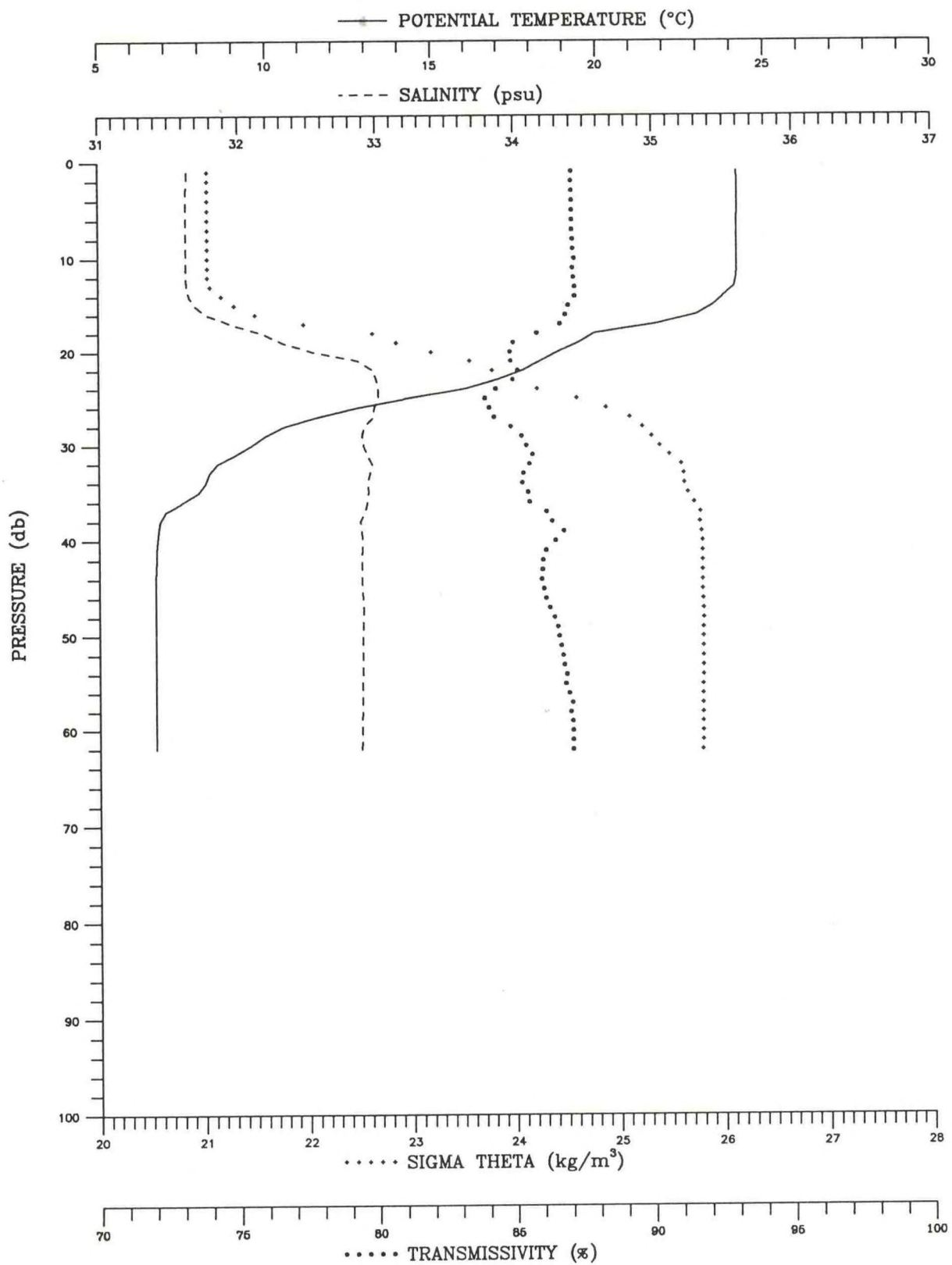


R/V DELAWARE II 91-09 Station: 19 Date: 91/08/08 GMT: 0603 Depth: 64 m
 Position: 39 34.99N 72 50.23W Wind: 13 kts Dir: 250 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	24.1826	24.1829	31.6364	21.0448	87.09
10	24.1810	24.1790	31.6301	21.0418	87.18
20	18.8236	18.8201	32.5435	23.1908	84.84
30	9.5367	9.5335	32.9048	25.3933	85.42
40	6.7427	6.7392	32.8932	25.7943	86.46
50	6.6850	6.6806	32.8945	25.8030	86.58
60	6.6868	6.6816	32.8849	25.7953	87.06
62	6.6872	6.6818	32.8830	25.7938	87.06

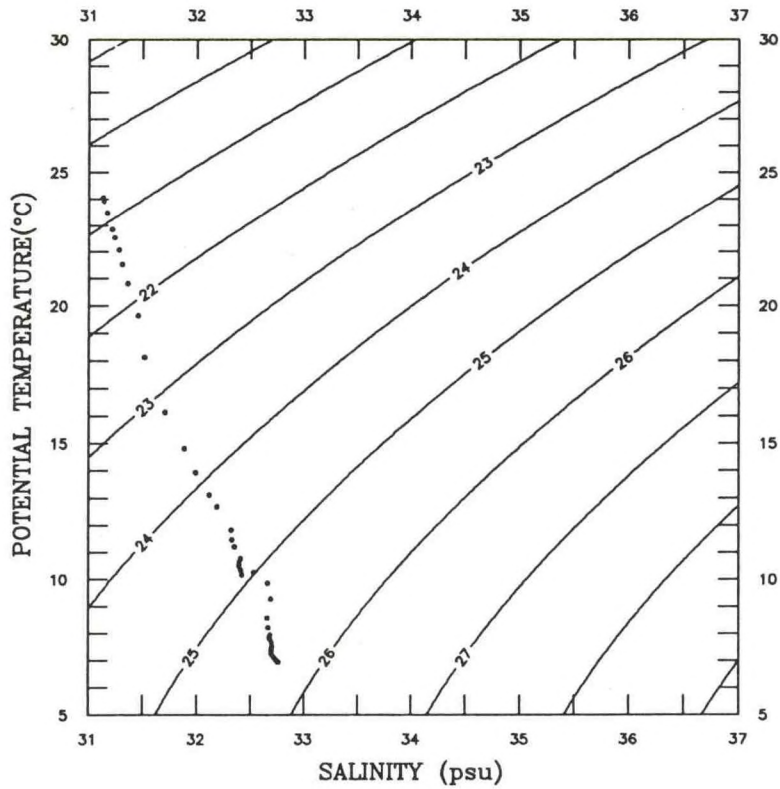


STATION 19

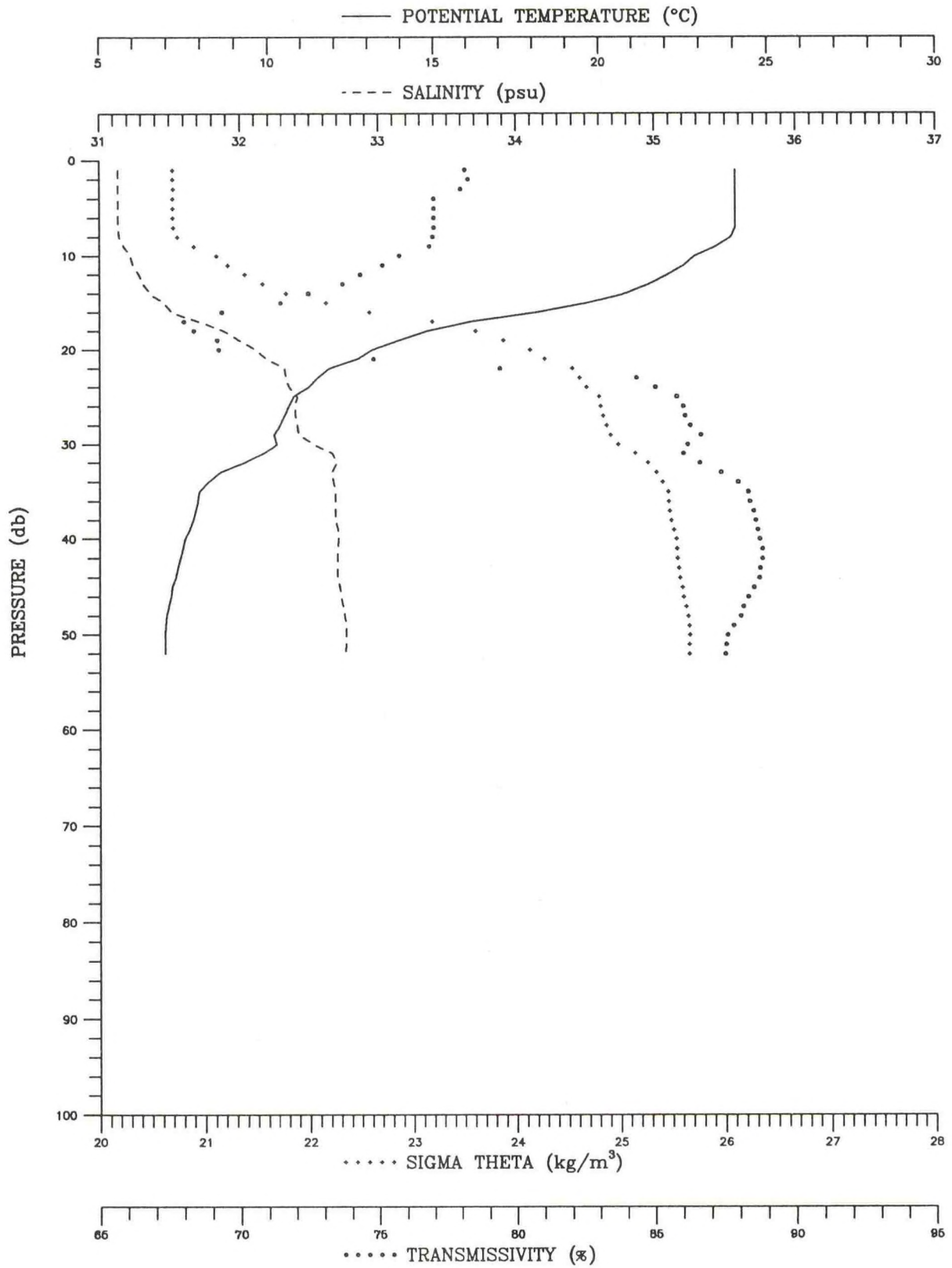


R/V DELAWARE II 91-09 Station: 20 Date: 91/08/08 GMT: 0715 Depth: 56 m
 Position: 39 42.10N 73 00.00W Wind: 13 kts Dir: 260 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	24.0594	24.0593	31.1338	20.7015	78.15
10	22.8646	22.8626	31.2232	21.1125	75.75
20	13.1350	13.1323	32.1179	24.1357	69.25
30	10.2680	10.2646	32.5304	24.9802	86.18
40	7.5366	7.5329	32.7056	25.5390	88.72
50	6.9519	6.9475	32.7622	25.6636	87.58
52	6.9501	6.9455	32.7582	25.6607	87.50

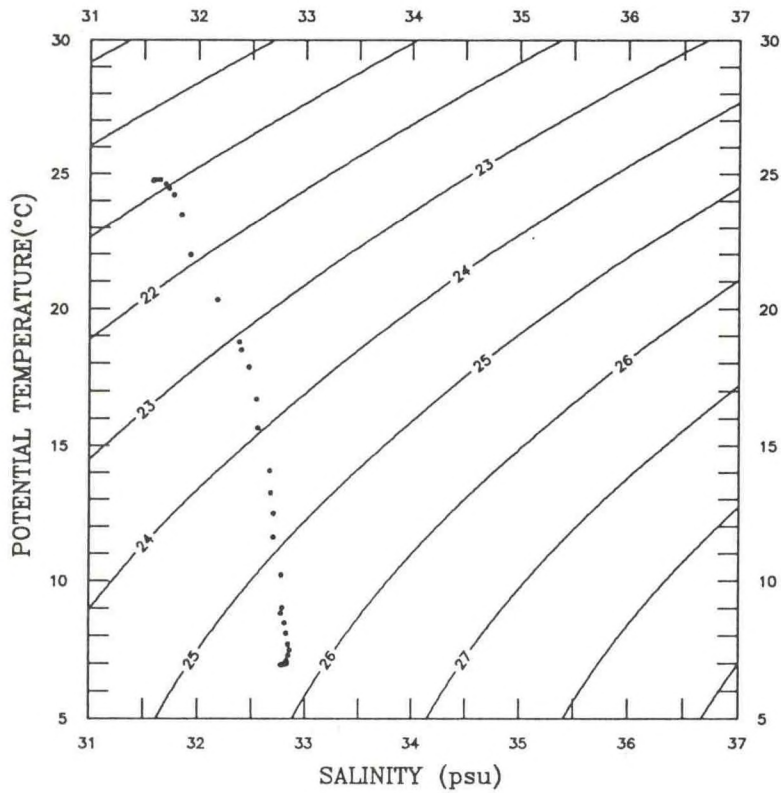


STATION 20

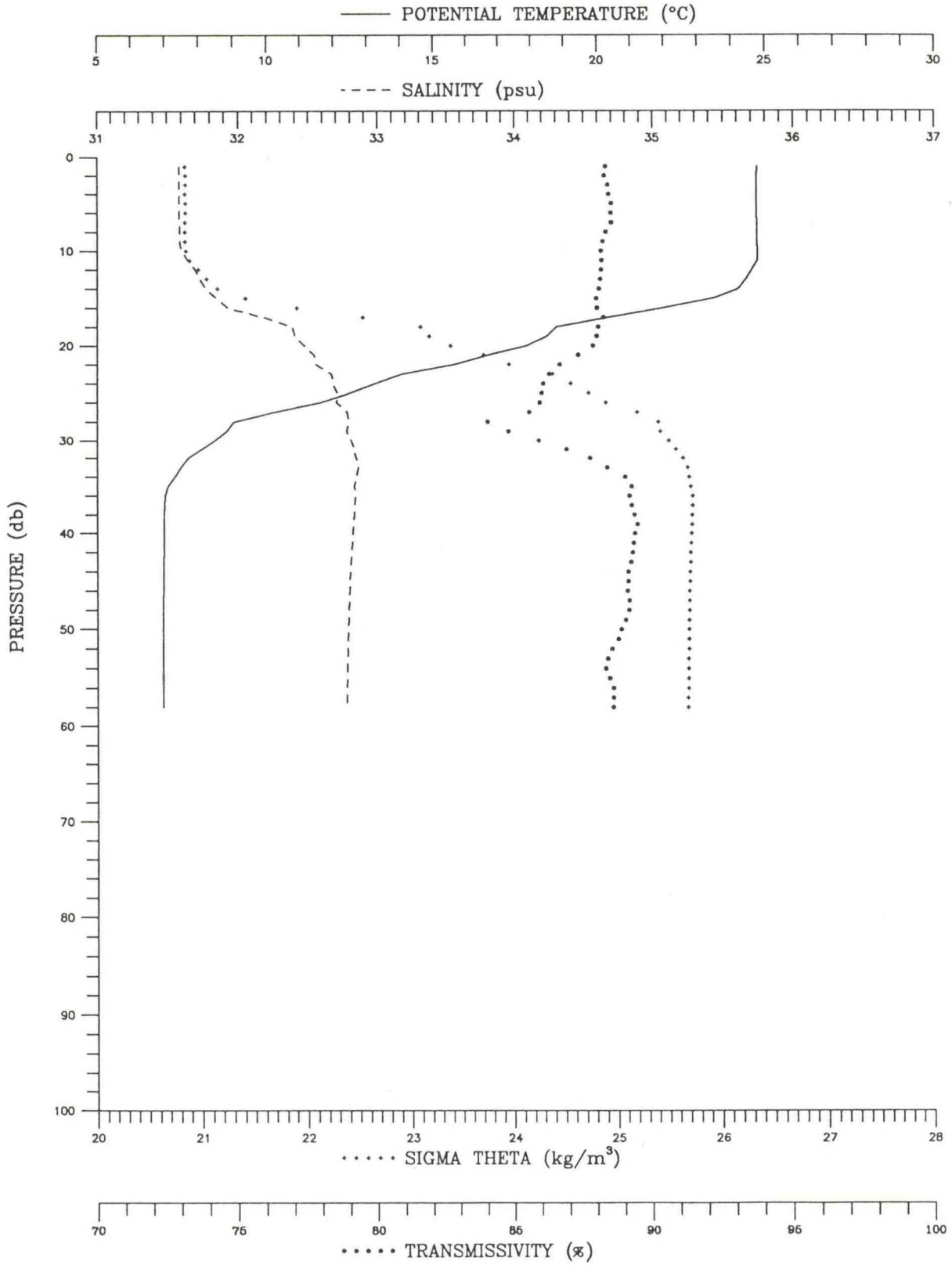


R/V DELAWARE II 91-09 Station: 21 Date: 91/08/08 GMT: 1031 Depth: 60 m
 Position: 39 16.96N 73 15.05W Wind: 10 kts Dir: 310 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	24.7644	24.7656	31.5856	20.8366	88.30
10	24.7828	24.7807	31.6030	20.8437	88.13
20	17.8718	17.8685	32.4735	23.3710	87.84
30	8.4761	8.4731	32.8102	25.4849	85.89
40	6.9895	6.9859	32.8200	25.7039	89.35
50	6.9679	6.9634	32.7867	25.6807	88.86
58	6.9666	6.9614	32.7747	25.6715	88.57

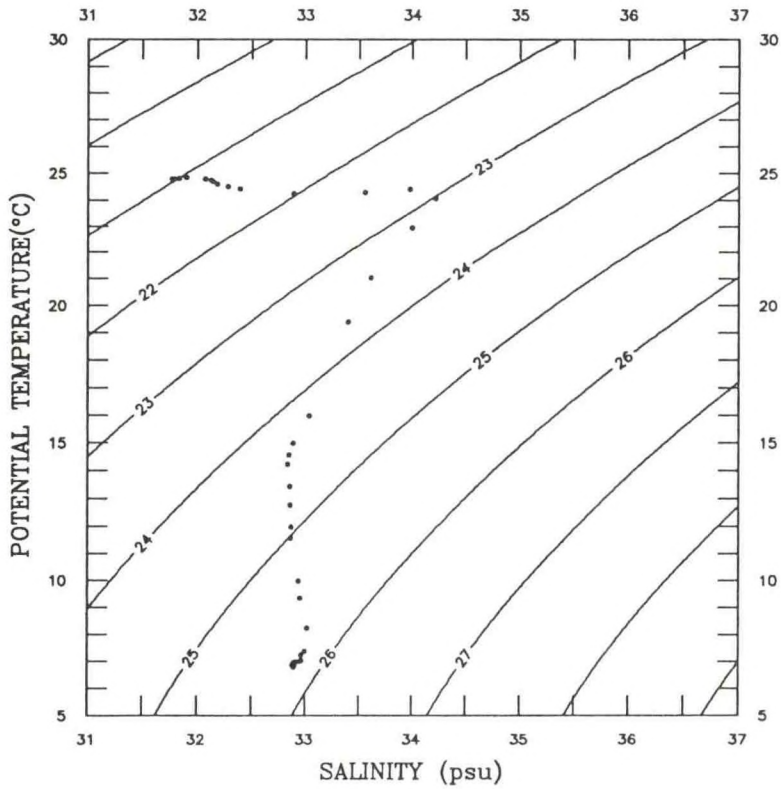


STATION 21

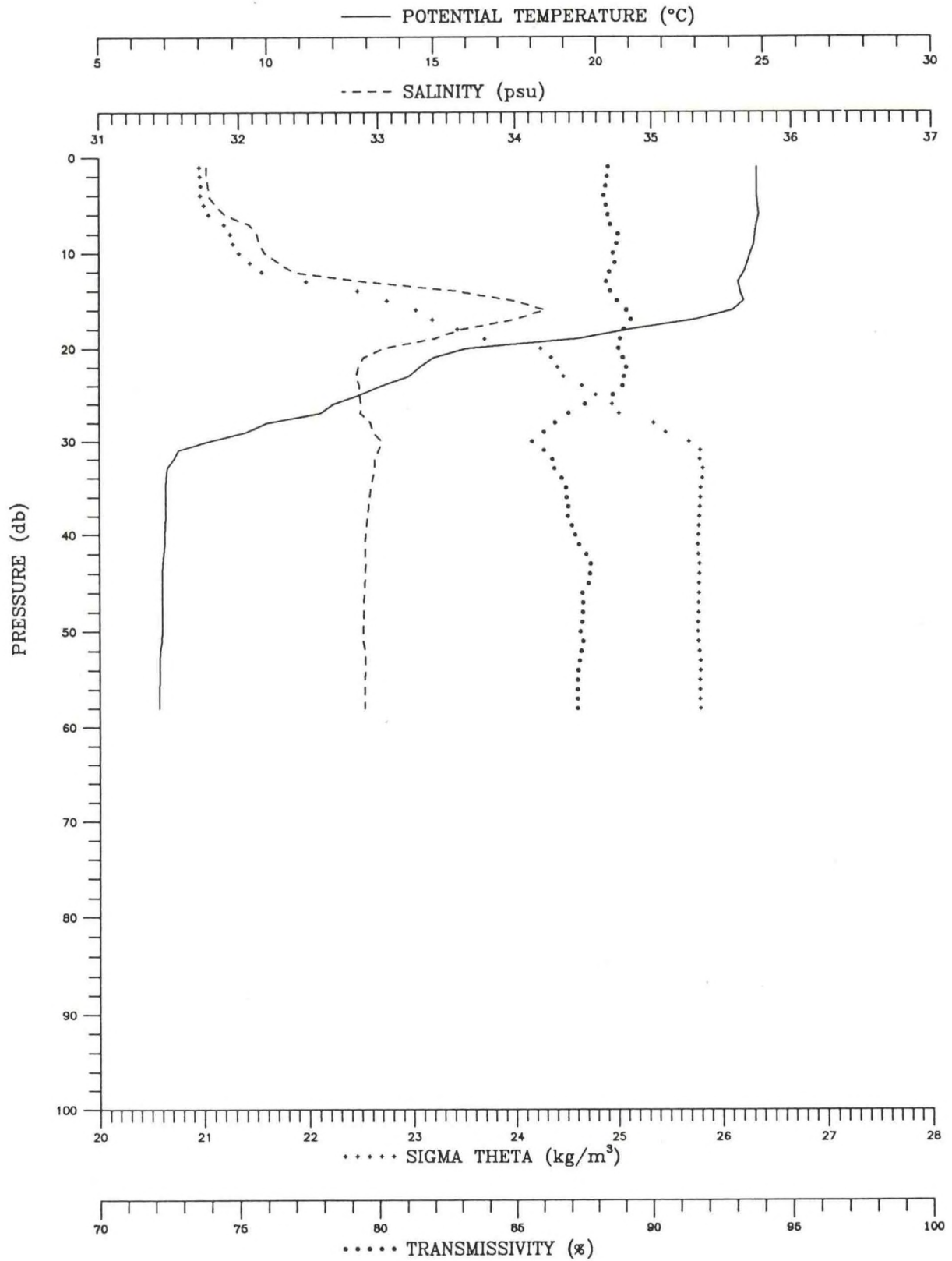


R/V DELAWARE II 91-09 Station: 22 Date: 91/08/08 GMT: 1325 Depth: 60 m
 Position: 38 50.97N 73 30.05W Wind: 8 kts Dir: 310 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	24.7961	24.7978	31.7717	20.9608	88.42
10	24.6083	24.6062	32.1835	21.3338	88.59
20	15.9913	15.9882	33.0377	24.2429	88.78
30	8.2524	8.2495	33.0212	25.6840	85.60
40	6.9684	6.9649	32.9038	25.7727	87.17
50	6.8808	6.8764	32.8855	25.7701	87.36
58	6.7939	6.7888	32.8961	25.7901	87.25

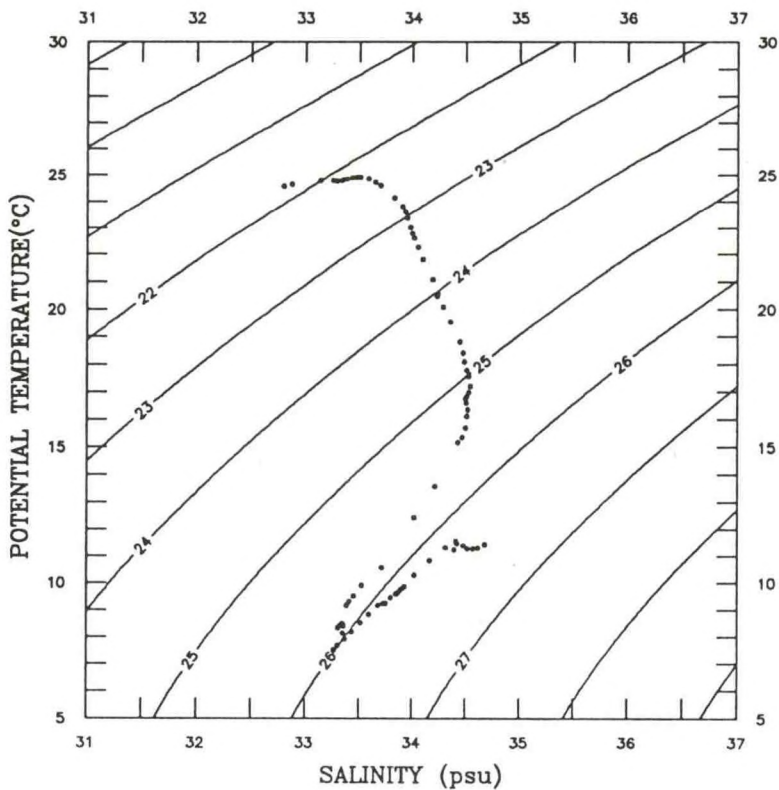


STATION 22

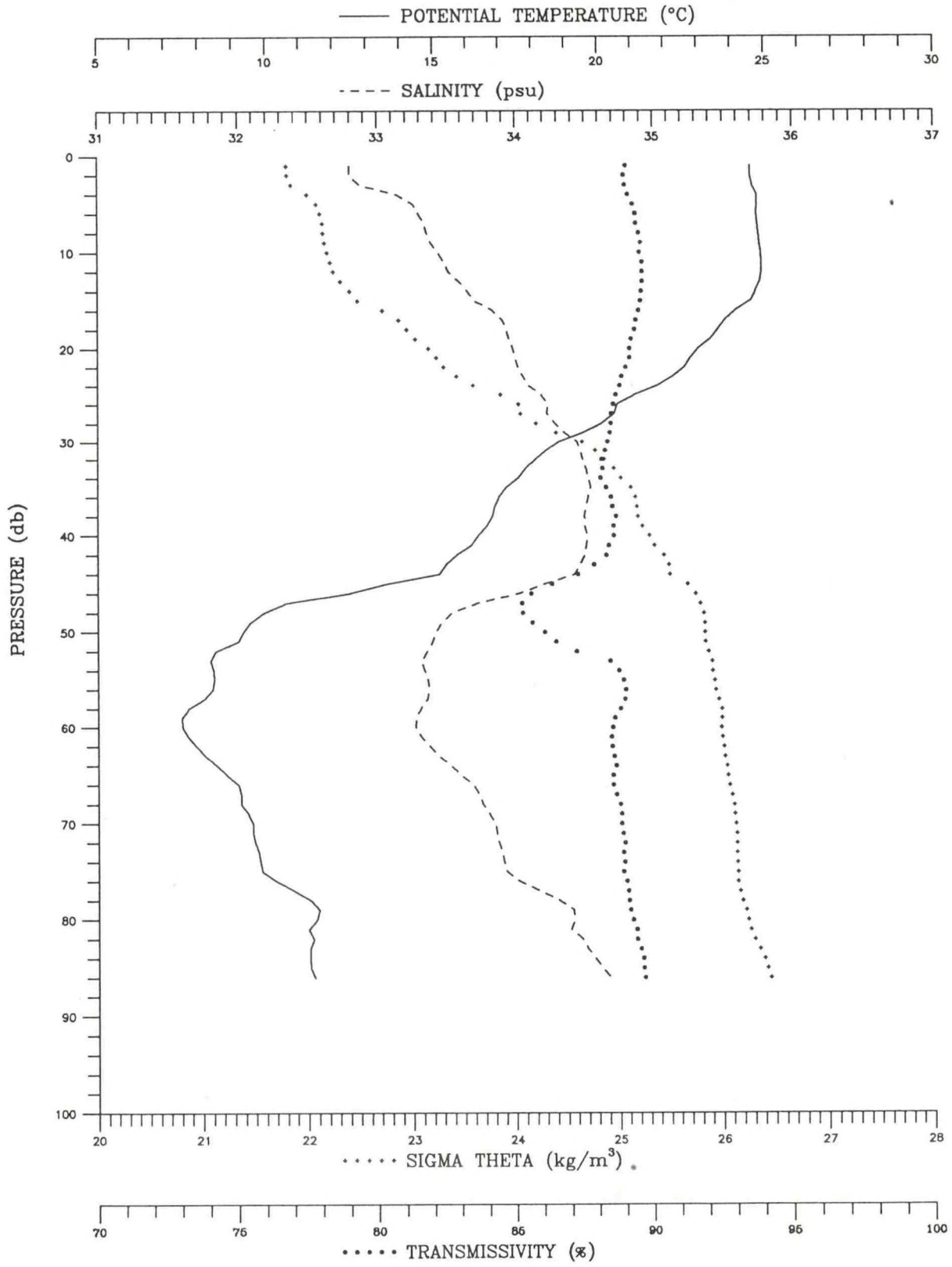


R/V DELAWARE II 91-09 Station: 23 Date: 91/08/08 GMT: 1454 Depth: 90 m
 Position: 38 40.92N 73 17.02W Wind: 4 kts Dir: 260 deg. Air Temp: 24.8C

PR	TE	PT	SA	SO	TR
1	24.5864	24.5824	32.8000	21.8005	89.02
10	24.9033	24.9011	33.4351	22.1907	89.51
20	23.0350	23.0310	33.9797	23.1527	89.14
30	18.8210	18.8157	34.4443	24.6441	88.33
40	16.3710	16.3647	34.5188	25.2947	88.55
50	9.3250	9.3197	33.4146	25.8262	86.04
60	7.5266	7.5209	33.2685	25.9832	88.50
70	9.6060	9.5982	33.8478	26.1196	88.81
80	11.4952	11.4852	34.4187	26.2347	89.22
86	11.4372	11.4264	34.6791	26.4481	89.65

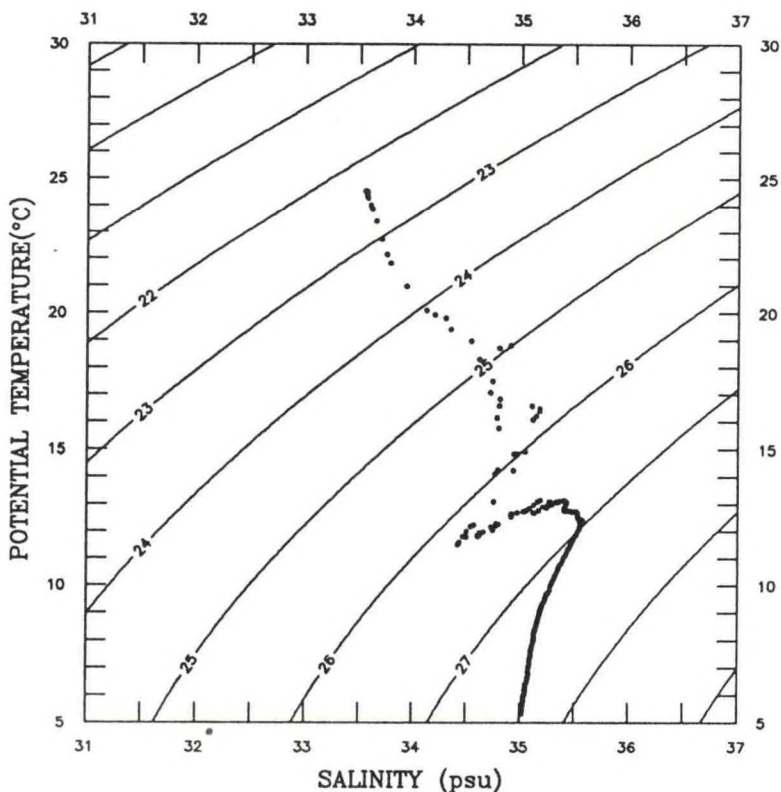


STATION 23

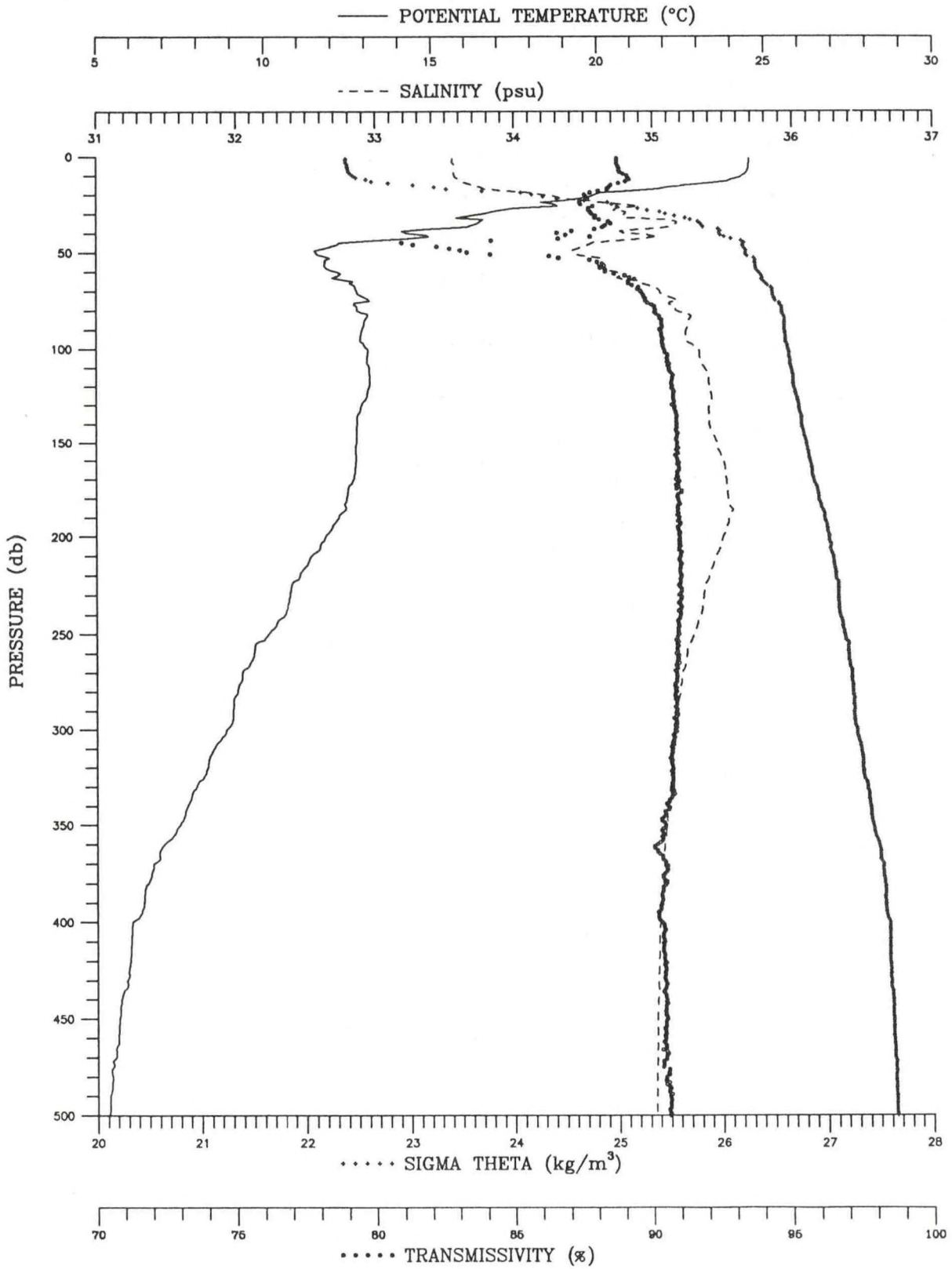


R/V DELAWARE II 91-09 Station: 24 Date: 91/08/08 GMT: 1545 Depth: 789 m
 Position: 38 35.95N 73 09.93W Wind: 4 kts Dir: 260 deg. Air Temp: 25.0C

PR	TE	PT	SA	SO	TR
1	24.5503	24.5502	33.5560	22.3828	88.70
10	24.3660	24.3639	33.5695	22.4530	89.07
20	19.9377	19.9341	34.2017	24.1715	87.53
30	16.5980	16.5931	34.8021	25.4592	87.80
40	14.2685	14.2626	34.7889	25.9692	86.55
50	11.5725	11.5662	34.4270	26.2261	83.30
60	12.1868	12.1790	34.7258	26.3423	88.28
70	12.7976	12.7881	35.0535	26.4774	89.56
80	12.7840	12.7731	35.1667	26.5681	90.11
90	12.9428	12.9304	35.2427	26.5956	90.24
100	13.1133	13.0995	35.3257	26.6259	90.40
125	13.1048	13.0875	35.4246	26.7049	90.74
150	12.7842	12.7638	35.4624	26.7993	90.88
175	12.5314	12.5078	35.5327	26.9047	90.84
200	11.8559	11.8299	35.5056	27.0151	90.96
225	10.8567	10.8290	35.3771	27.1008	90.93
250	10.1487	10.1192	35.2929	27.1607	90.94
275	9.3185	9.2878	35.2052	27.2324	90.84
300	8.8951	8.8625	35.1740	27.2769	90.78
325	8.2255	8.1918	35.1273	27.3451	90.70
350	7.5205	7.4859	35.0980	27.4271	90.44
375	6.6646	6.6299	35.0681	27.5237	90.40
400	6.0874	6.0521	35.0486	27.5847	90.29
425	5.9764	5.9392	35.0349	27.5883	90.44
450	5.6985	5.6600	35.0253	27.6159	90.49
475	5.4985	5.4585	35.0223	27.6384	90.31
500	5.3720	5.3303	35.0177	27.6503	90.59

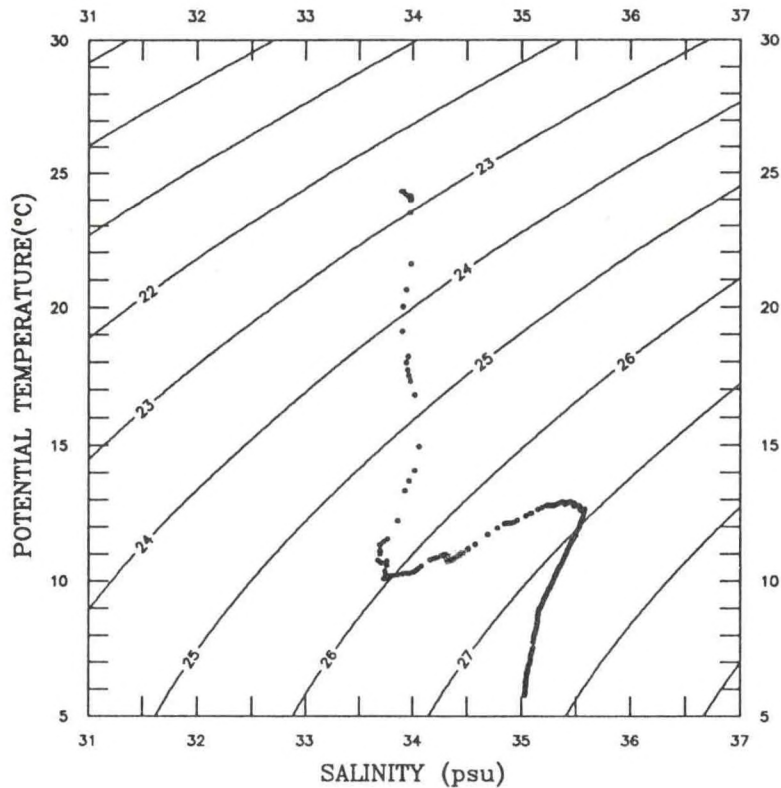


STATION 24

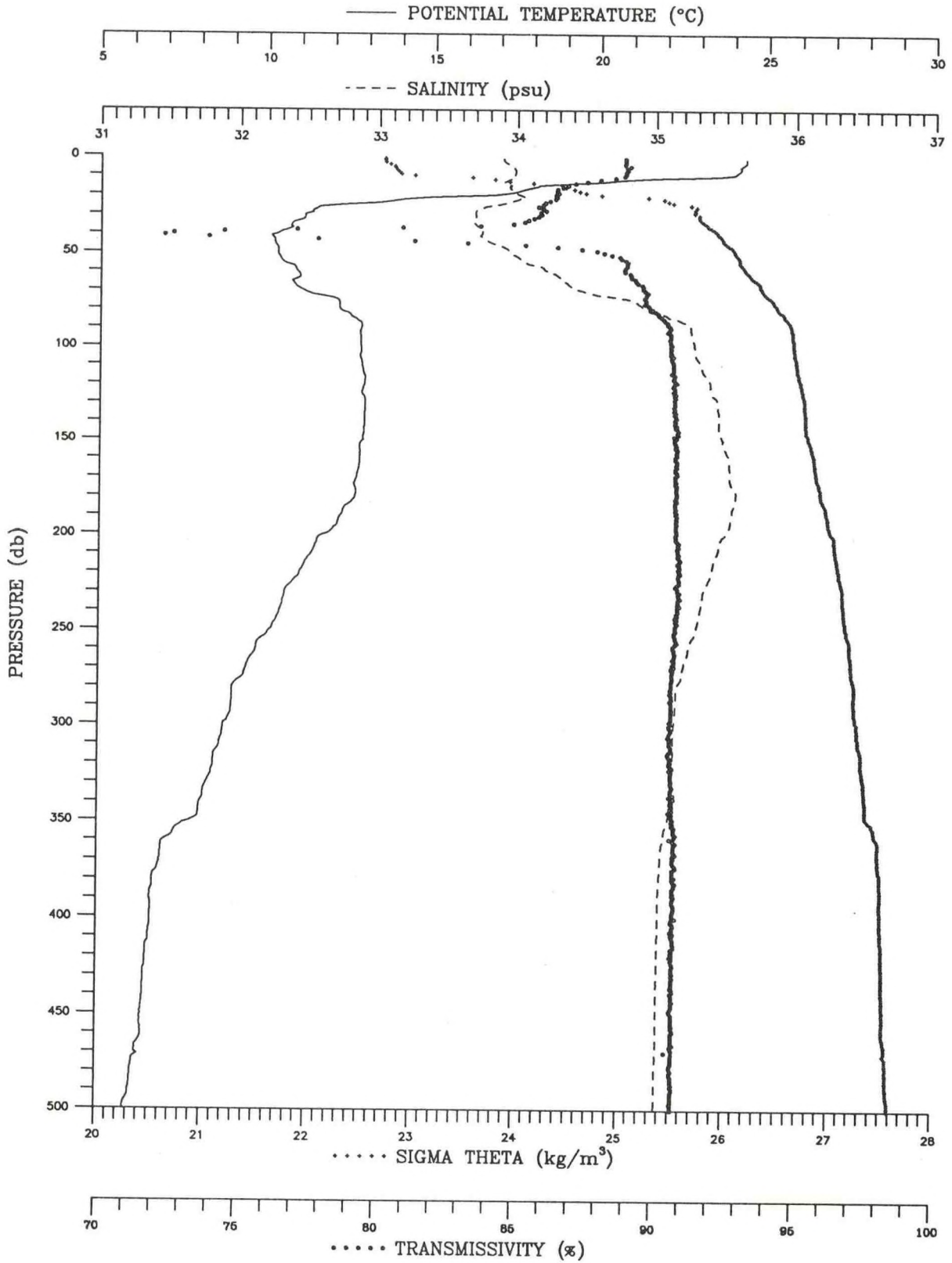


R/V DELAWARE II 91-09 Station: 25 Date: 91/08/08 GMT: 1655 Depth: 1520m
 Position: 38 32.90N 73 05.40W Wind: 6 kts Dir: 260 deg. Air Temp: 25.2C

PR	TE	PT	SA	SO	TR
1	24.3305	24.3303	33.8958	22.7167	88.88
10	23.5248	23.5227	33.9727	23.0053	88.84
20	16.8184	16.8152	34.0165	24.8038	86.37
30	11.1181	11.1144	33.6959	25.7400	85.86
40	10.3026	10.2980	33.7433	25.9204	72.61
50	10.2952	10.2895	33.9536	26.0859	88.12
60	10.8837	10.8764	34.2210	26.1915	88.88
70	11.0714	11.0628	34.4636	26.3469	89.61
80	12.1853	12.1748	34.9241	26.4971	89.88
90	12.8270	12.8148	35.2505	26.6248	90.54
100	12.8166	12.8030	35.2770	26.6477	90.54
125	12.8597	12.8426	35.3993	26.7346	90.73
150	12.9084	12.8878	35.4866	26.7933	90.70
175	12.6758	12.6521	35.5602	26.8975	90.77
200	11.7165	11.6907	35.4970	27.0348	90.75
225	10.8040	10.7764	35.3792	27.1120	90.90
250	10.1361	10.1067	35.2990	27.1675	90.79
275	9.3279	9.2971	35.1985	27.2256	90.69
300	8.7814	8.7490	35.1466	27.2735	90.58
325	8.4252	8.3909	35.1406	27.3250	90.64
350	7.8106	7.7752	35.1065	27.3914	90.69
375	6.8360	6.8008	35.0567	27.4914	90.73
400	6.6500	6.6130	35.0460	27.5085	90.84
425	6.5155	6.4765	35.0416	27.5234	90.77
450	6.4103	6.3693	35.0373	27.5342	90.74
475	6.1457	6.1034	35.0354	27.5676	90.74
500	5.8932	5.8495	35.0282	27.5944	90.74

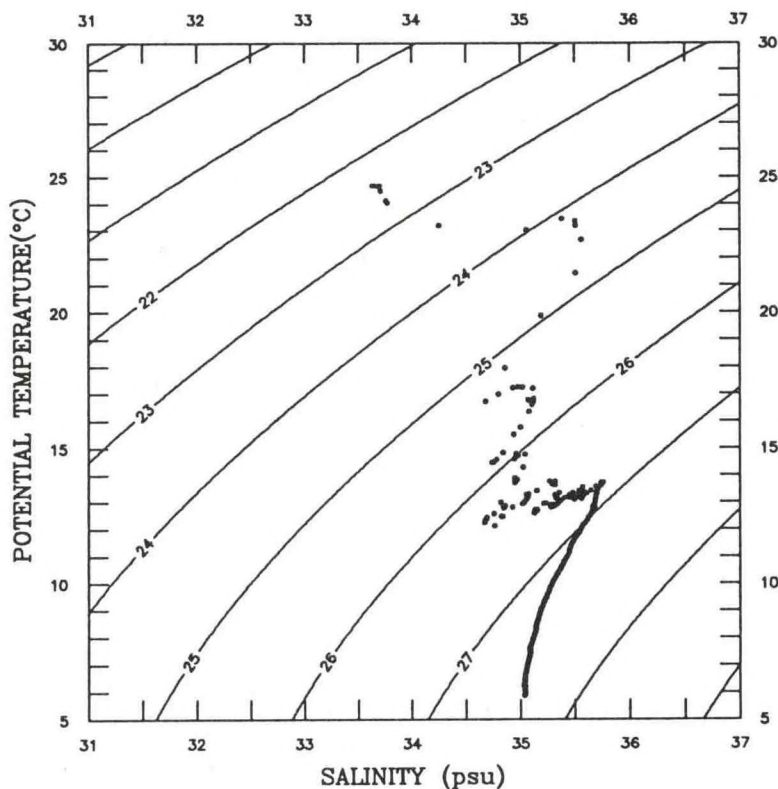


STATION 25

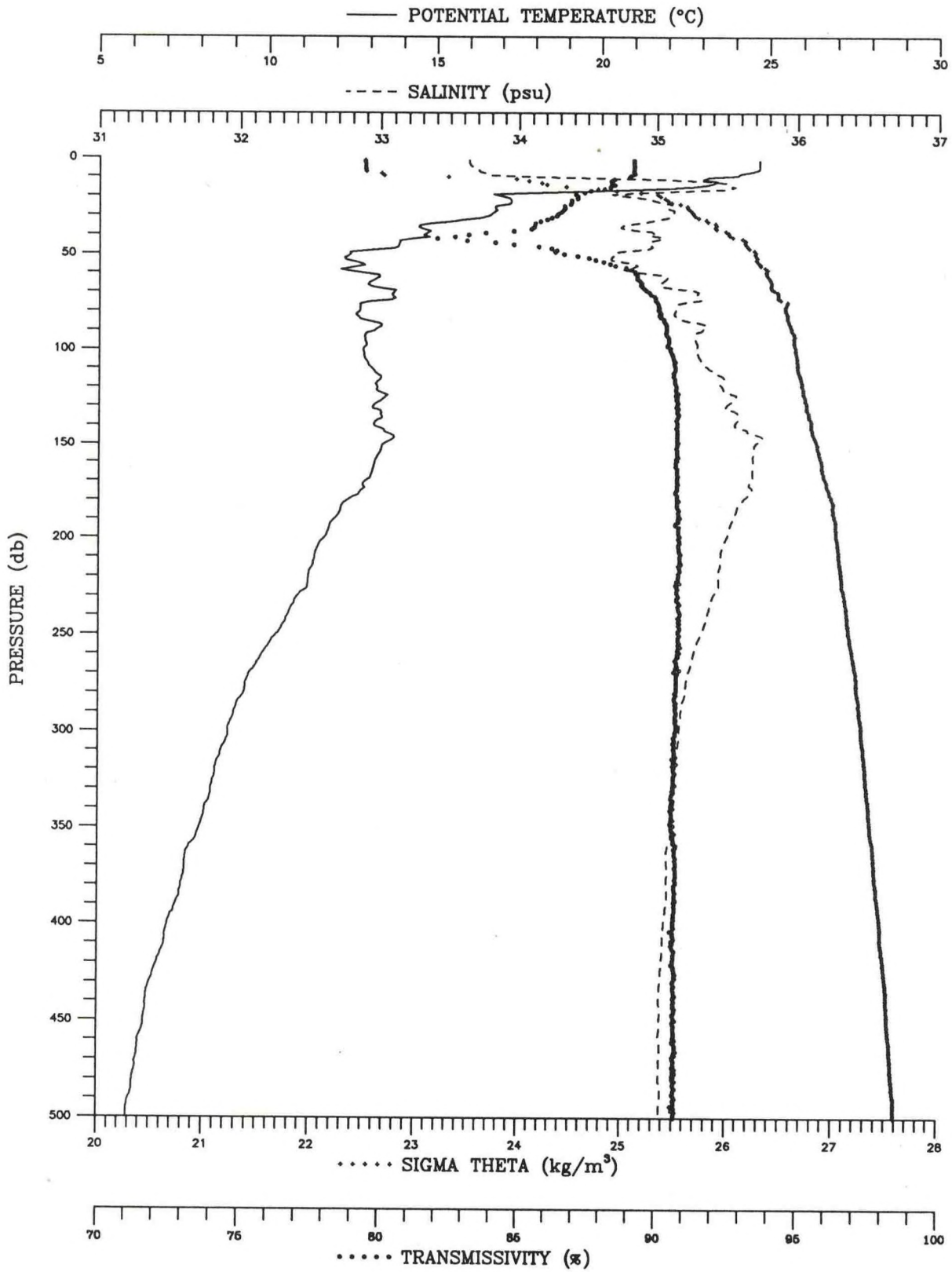


R/V DELAWARE II 91-09 Station: 26 Date: 91/08/08 GMT: 1837 Depth: 2445m
 Position: 38 24.00N 72 55.00W Wind: 8 kts Dir: 260 deg. Air Temp: 25.5C

PR	TE	PT	SA	SO	TR
1	24.6878	24.6876	33.6330	22.5124	89.15
10	23.1926	23.1906	34.2465	23.3092	88.99
20	16.9926	16.9893	34.7962	25.3613	87.12
30	16.6009	16.5960	35.1020	25.6889	86.36
40	14.6001	14.5942	34.9417	26.0162	83.15
50	12.4407	12.4340	34.6888	26.2643	86.63
60	12.8281	12.8200	34.9231	26.3699	89.21
70	13.7345	13.7245	35.2966	26.4749	89.72
80	12.7043	12.6935	35.1286	26.5544	90.10
90	13.1610	13.1486	35.3181	26.6100	90.34
100	12.8242	12.8106	35.2756	26.6451	90.47
125	13.4789	13.4612	35.5577	26.7316	90.74
150	13.4128	13.3916	35.6965	26.8534	90.74
175	12.7566	12.7327	35.6676	26.9647	90.69
200	11.6932	11.6674	35.4974	27.0395	90.79
225	11.2114	11.1831	35.4462	27.0901	90.74
250	10.2820	10.2523	35.3184	27.1574	90.84
275	9.3794	9.3485	35.2164	27.2312	90.74
300	8.8845	8.8519	35.1695	27.2751	90.71
325	8.4542	8.4199	35.1399	27.3199	90.64
350	8.0601	8.0241	35.1170	27.3624	90.57
375	7.5973	7.5600	35.0852	27.4063	90.74
400	7.1361	7.0976	35.0624	27.4546	90.67
425	6.7149	6.6753	35.0429	27.4976	90.70
450	6.4350	6.3940	35.0361	27.5301	90.74
475	6.1814	6.1389	35.0362	27.5636	90.74
500	5.9336	5.8898	35.0329	27.5930	90.70

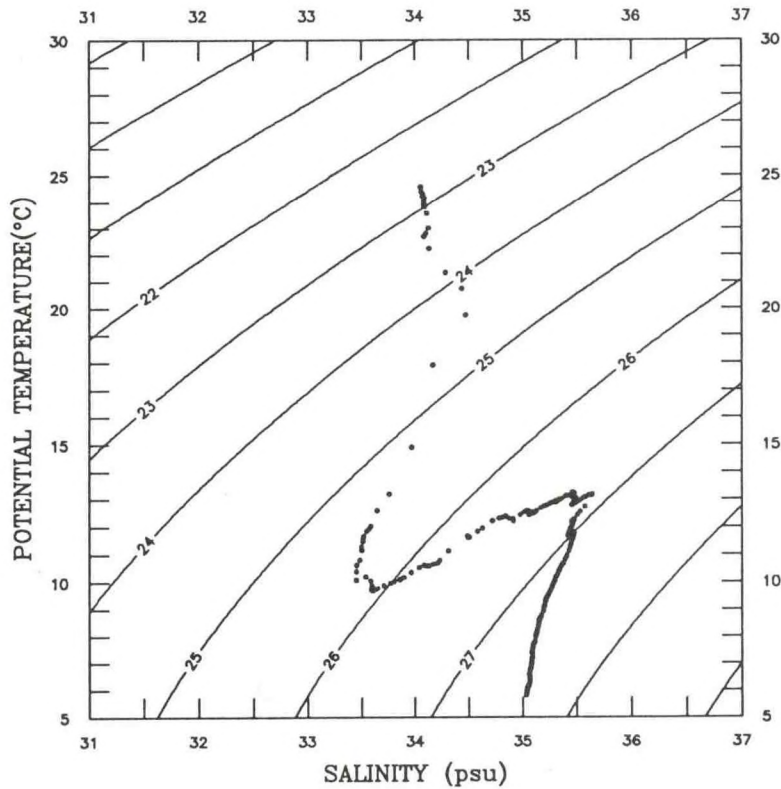


STATION 26

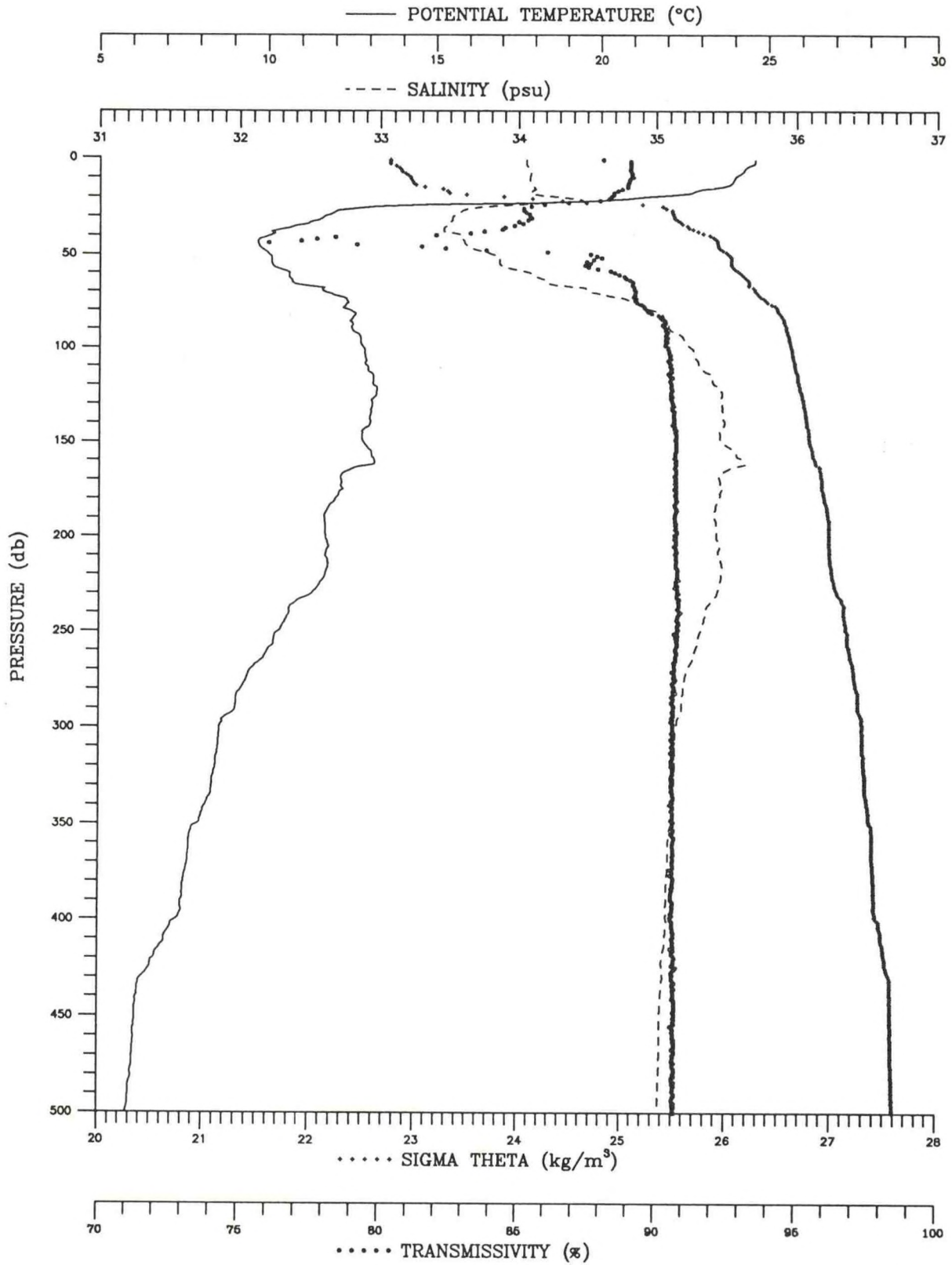


R/V DELAWARE II 91-09 Station: 27 Date: 91/08/08 GMT: 2100 Depth: 1465m
 Position: 38 40.98N 72 55.10W Wind: 8 kts Dir: 295 deg. Air Temp: 25.0C

PR	TE	PT	SA	SO	TR
1	24.5915	24.5914	34.0515	22.7549	88.07
10	23.9946	23.9925	34.0791	22.9482	89.15
20	21.3510	21.3471	34.2792	23.8520	88.35
30	11.6781	11.6744	33.5191	25.5003	85.40
40	10.0577	10.0532	33.5847	25.8383	81.99
50	10.0319	10.0262	33.8041	26.0141	87.60
60	10.6345	10.6274	34.0796	26.1254	88.49
70	11.6297	11.6209	34.5019	26.2742	89.25
80	12.4490	12.4384	34.9737	26.4844	89.67
90	12.5064	12.4944	35.0981	26.5701	90.34
100	12.8600	12.8464	35.2487	26.6171	90.43
125	13.2301	13.2127	35.4728	26.7168	90.54
150	12.8552	12.8346	35.4706	26.7915	90.74
175	12.2743	12.2510	35.4772	26.9119	90.68
200	11.7513	11.7254	35.4357	26.9806	90.74
225	11.5730	11.5441	35.4562	27.0307	90.74
250	10.3507	10.3208	35.3229	27.1489	90.79
275	9.4206	9.3896	35.2123	27.2211	90.74
300	8.6465	8.6144	35.1514	27.2986	90.64
325	8.4456	8.4112	35.1420	27.3229	90.61
350	8.0117	7.9758	35.1180	27.3705	90.64
375	7.6507	7.6132	35.0927	27.4044	90.64
400	7.3991	7.3598	35.0870	27.4367	90.59
425	6.5894	6.5502	35.0597	27.5278	90.80
450	6.1686	6.1285	35.0443	27.5714	90.74
475	6.0974	6.0553	35.0395	27.5770	90.69
500	5.8896	5.8459	35.0306	27.5968	90.73

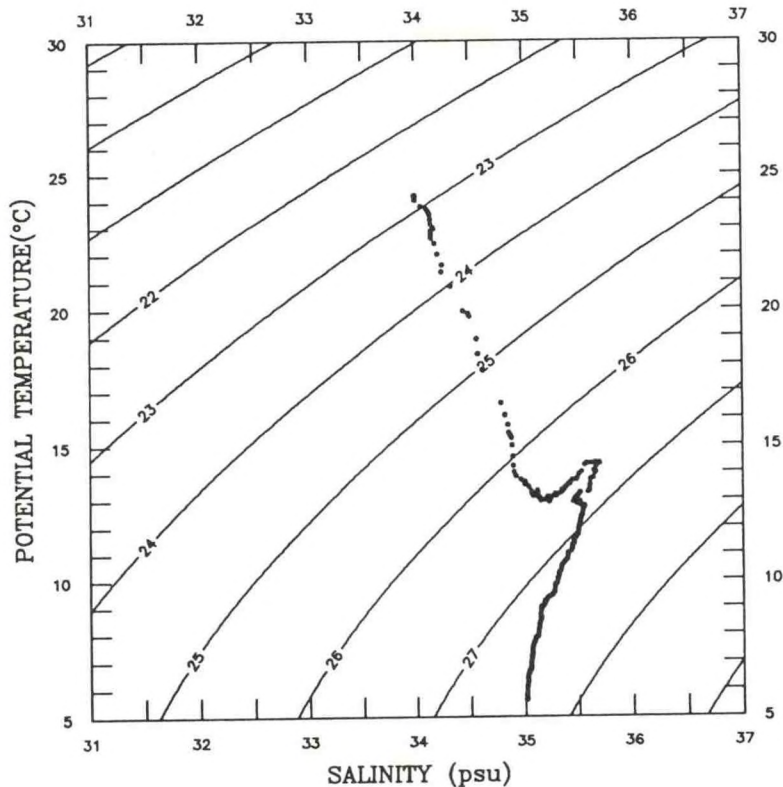


STATION 27

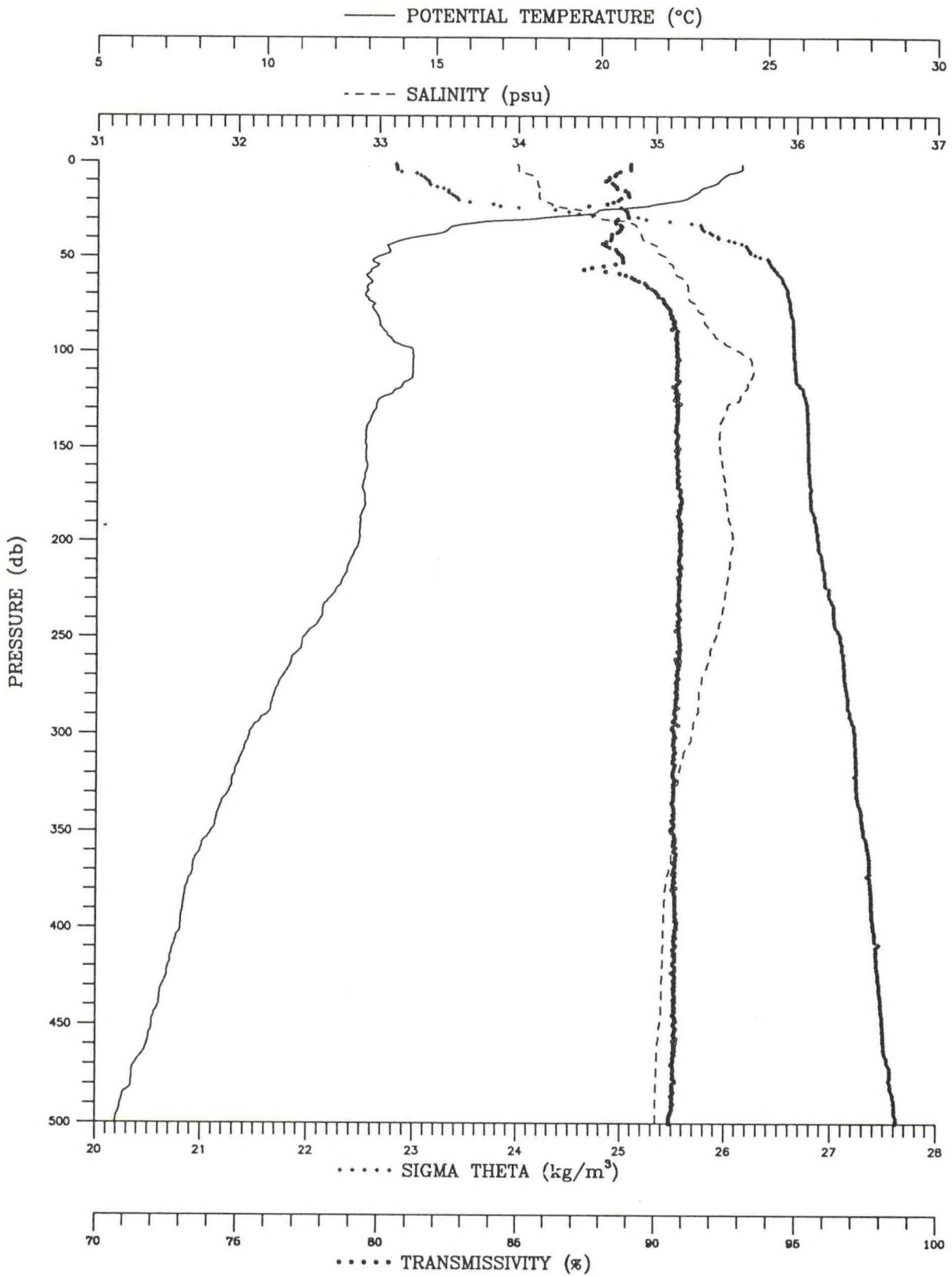


R/V DELAWARE II 91-09 Station: 28 Date: 91/08/09 GMT: 0106 Depth: 1397m
 Position: 38 58.11N 72 36.02W Wind: 6 kts Dir: 270 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	24.2103	24.2110	33.9922	22.8179	89.05
10	23.5314	23.5294	34.1358	23.1269	88.14
20	22.4060	22.4020	34.1788	23.4143	88.60
30	17.7946	17.7895	34.6170	25.2312	88.58
40	14.2584	14.2526	34.8952	25.9222	88.35
50	13.2934	13.2865	35.0649	26.3158	88.75
60	12.9599	12.9517	35.1455	26.5005	88.87
70	12.9185	12.9090	35.2264	26.5805	90.04
80	13.2564	13.2452	35.3387	26.6118	90.51
90	13.5594	13.5467	35.4034	26.6355	90.74
100	14.3450	14.3303	35.6064	26.6406	90.76
125	13.3451	13.3275	35.6001	26.7536	90.67
150	12.9812	12.9605	35.4596	26.7806	90.85
175	12.9337	12.9096	35.5047	26.8029	90.87
200	12.7708	12.7435	35.5567	26.8765	90.88
225	12.1044	12.0747	35.5080	26.9790	90.84
250	11.1606	11.1293	35.4300	27.0874	90.87
275	10.3964	10.3634	35.3308	27.1400	90.77
300	9.5701	9.5360	35.2646	27.2278	90.70
325	9.0585	9.0227	35.1656	27.2436	90.67
350	8.4437	8.4067	35.1346	27.3089	90.61
375	7.7844	7.7465	35.0885	27.3743	90.69
400	7.5514	7.5117	35.0665	27.4065	90.79
425	7.1498	7.1088	35.0565	27.4515	90.74
450	6.7236	6.6816	35.0388	27.4920	90.69
475	6.1387	6.0963	35.0164	27.5634	90.67
500	5.6550	5.6122	35.0086	27.6215	90.54

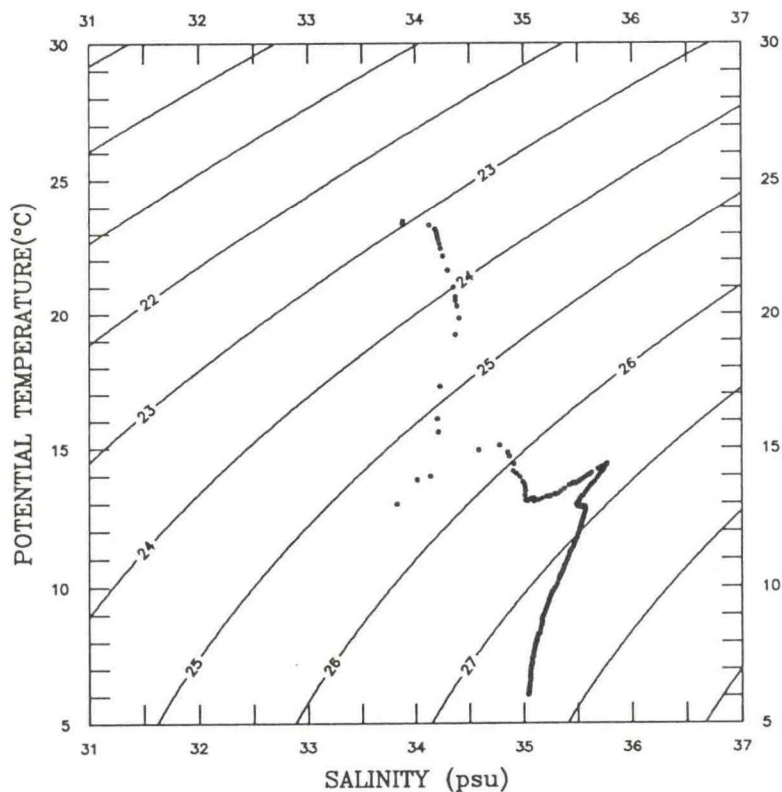


STATION 28

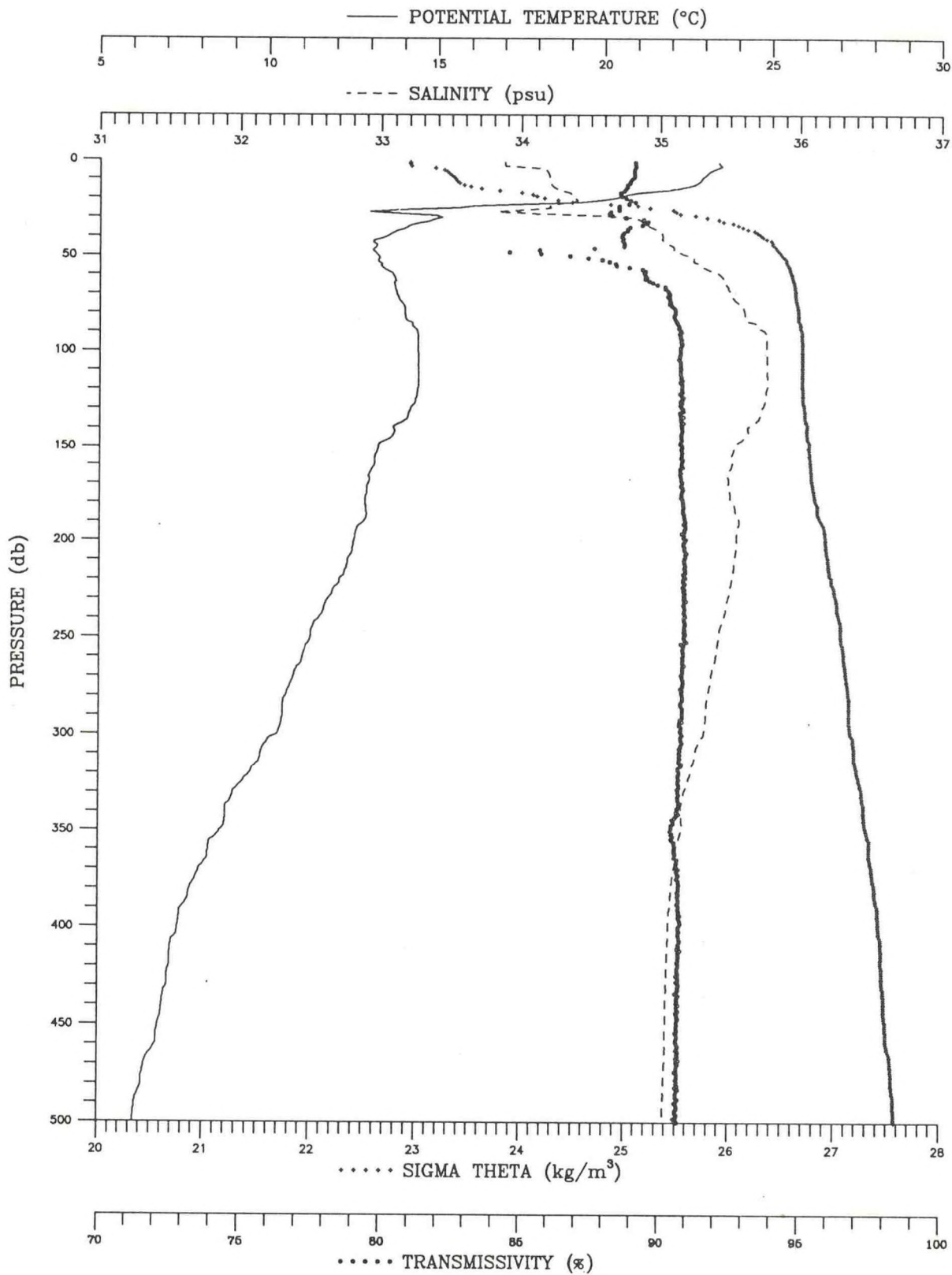


R/V DELAWARE II 91-09 Station: 29 Date: 91/08/09 GMT: 0435 Depth: 2150m
 Position: 38 58.20N 72 14.90W Wind: 5 kts Dir: 260 deg. Air Temp: 23.5C

PR	TE	PT	SA	SO	TR
1	23.4010	23.4033	33.8765	22.9342	89.08
10	22.8840	22.8820	34.2022	23.3640	88.95
20	20.2933	20.2896	34.3820	24.2152	88.75
30	15.1177	15.1131	34.7790	25.7775	88.74
40	13.4685	13.4629	35.0160	26.3119	88.61
50	13.2587	13.2518	35.2058	26.5020	86.74
60	13.6859	13.6773	35.4305	26.5884	89.45
70	13.7980	13.7880	35.5035	26.6217	90.34
80	14.0396	14.0280	35.6042	26.6491	90.54
90	14.4187	14.4054	35.7538	26.6840	90.77
100	14.4386	14.4238	35.7647	26.6885	90.74
125	14.3661	14.3476	35.7516	26.6947	90.81
150	13.2740	13.2530	35.5328	26.7550	90.81
175	12.9324	12.9084	35.5052	26.8036	90.79
200	12.5606	12.5336	35.5512	26.9139	90.92
225	11.9681	11.9386	35.5053	26.9941	90.91
250	11.2981	11.2665	35.4262	27.0592	90.89
275	10.6681	10.6346	35.3628	27.1245	90.84
300	10.3069	10.2711	35.3215	27.1565	90.84
325	9.2715	9.2351	35.2055	27.2412	90.70
350	8.6501	8.6126	35.1626	27.3076	90.44
375	7.9299	7.8916	35.1012	27.3700	90.67
400	7.4256	7.3862	35.0760	27.4243	90.74
425	7.1251	7.0842	35.0623	27.4564	90.66
450	6.8578	6.8153	35.0550	27.4880	90.70
475	6.3777	6.3345	35.0486	27.5478	90.70
500	6.1062	6.0617	35.0375	27.5747	90.71

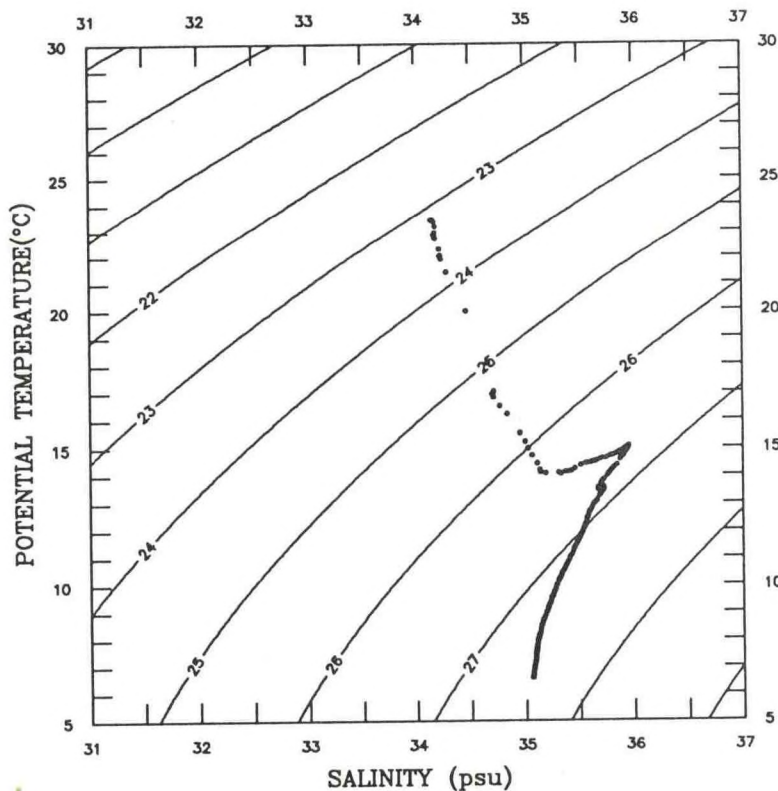


STATION 29

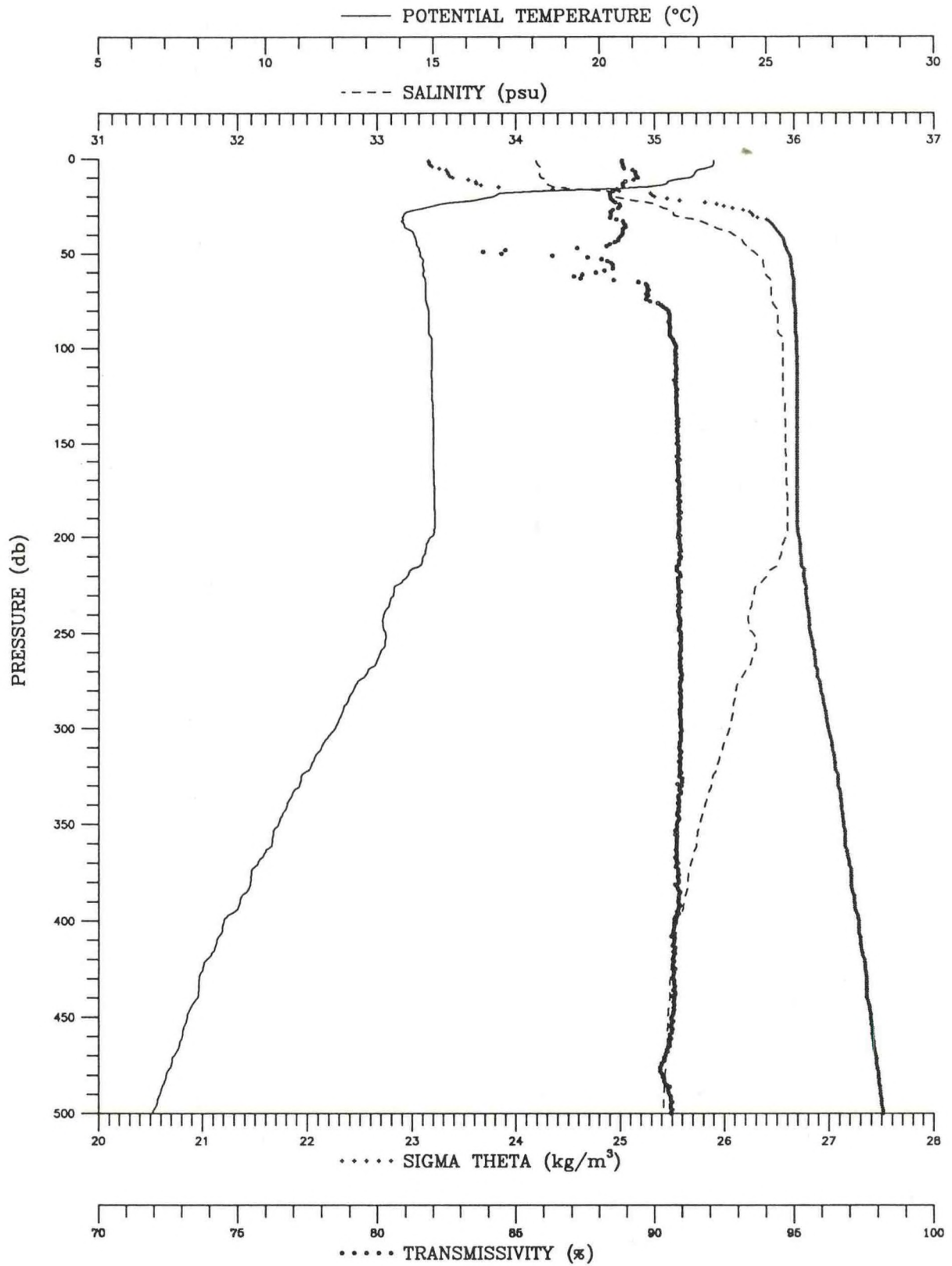


R/V DELAWARE II 91-09 Station: 30 Date: 91/08/09 GMT: 0726 Depth: 2470m
 Position: 38 51.00N 72 14.70W Wind: 3 kts Dir: 200 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	23.4300	23.4298	34.1446	23.1599	88.82
10	22.7320	22.7300	34.1812	23.3915	89.39
20	16.8340	16.8307	34.7118	25.3341	88.40
30	14.1155	14.1111	35.1409	26.2733	88.42
40	14.4404	14.4345	35.5658	26.5325	88.82
50	14.6188	14.6114	35.7246	26.6168	84.47
60	14.7190	14.7100	35.7967	26.6510	87.87
70	14.7818	14.7713	35.8350	26.6671	89.74
80	14.8857	14.8736	35.8823	26.6812	90.50
90	14.8883	14.8747	35.8837	26.6821	90.54
100	14.9702	14.9550	35.9188	26.6914	90.77
125	14.9748	14.9558	35.9196	26.6919	90.79
150	15.0307	15.0078	35.9385	26.6950	90.79
175	15.0688	15.0420	35.9500	26.6962	90.87
200	14.9428	14.9124	35.9367	26.7146	90.83
225	13.8728	13.8402	35.7253	26.7823	90.84
250	13.6097	13.5739	35.7043	26.8217	90.94
275	12.7712	12.7335	35.5981	26.9106	90.93
300	12.0978	12.0580	35.5345	26.9938	90.96
325	11.1155	11.0747	35.4162	27.0866	90.89
350	10.4231	10.3809	35.3261	27.1409	90.80
375	9.6277	9.5846	35.2440	27.2135	90.84
400	8.8069	8.7634	35.1625	27.2837	90.74
425	8.1796	8.1353	35.1168	27.3455	90.74
450	7.7106	7.6652	35.0937	27.3976	90.60
475	7.2343	7.1880	35.0799	27.4556	90.24
500	6.6678	6.6212	35.0578	27.5167	90.60

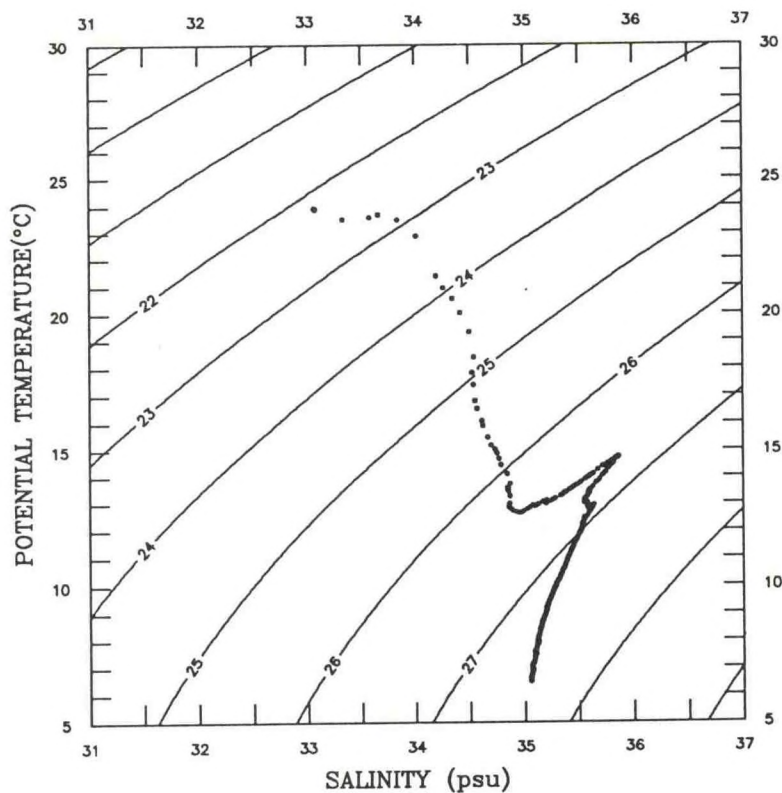


STATION 30

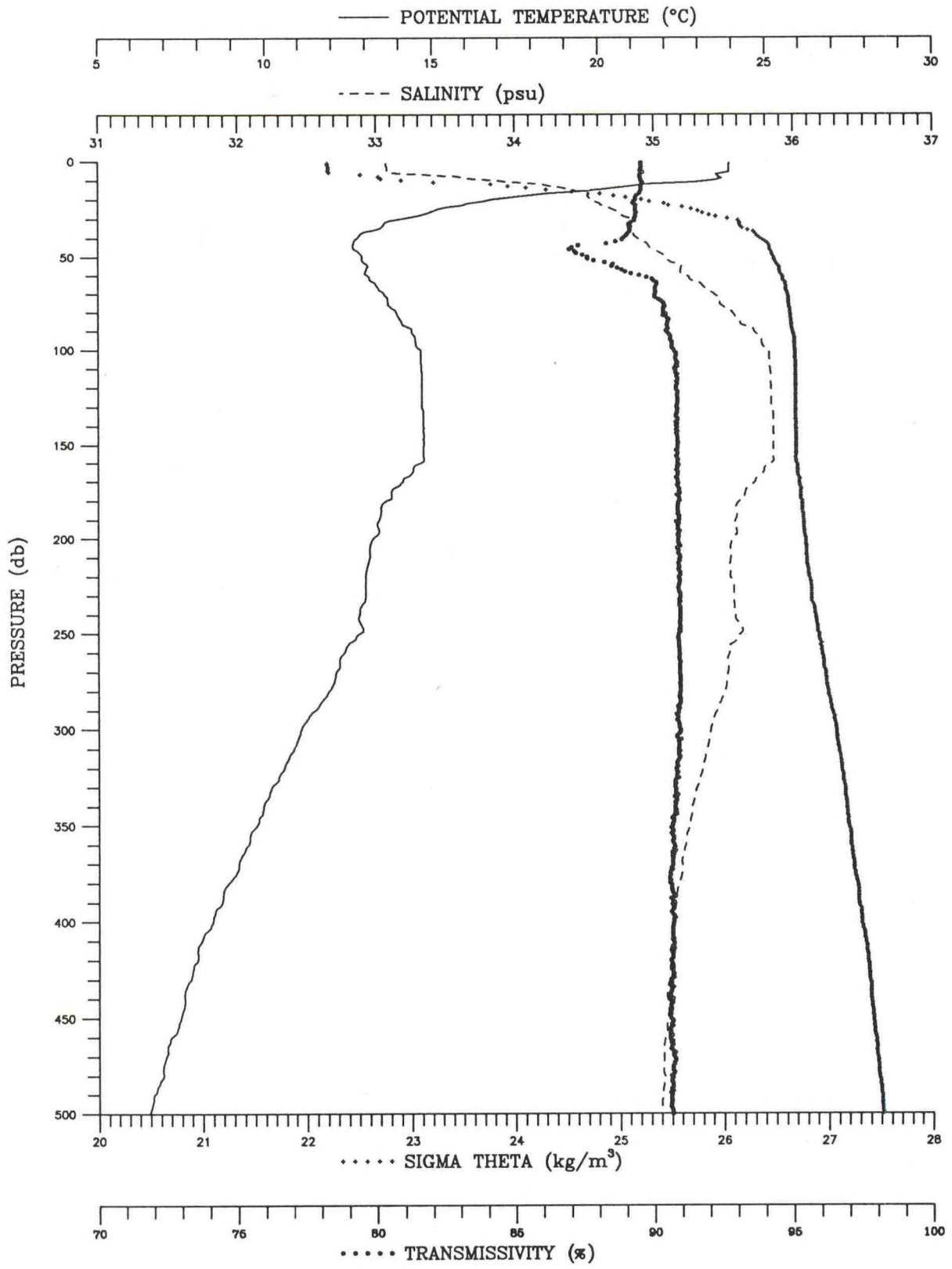


R/V DELAWARE II 91-09 Station: 31 Date: 91/08/09 GMT: 1142 Depth: 2408m
 Position: 38 37.01N 72 35.97W Wind: 8 kts Dir: 165 deg. Air Temp: 23.5C

PR	TE	PT	SA	SO	TR
1	23.9298	23.9296	33.0696	22.2030	89.54
10	23.5084	23.5063	33.8378	22.9079	89.54
20	16.8087	16.8054	34.5476	25.2140	89.34
30	14.1142	14.1099	34.8393	26.0404	89.30
40	12.7829	12.7775	34.8782	26.3436	88.91
50	12.9218	12.9150	35.0896	26.4800	87.60
60	13.0737	13.0654	35.2312	26.5595	89.47
70	13.5714	13.5615	35.4313	26.6130	90.04
80	13.9420	13.9305	35.5643	26.6388	90.34
90	14.3989	14.3857	35.7202	26.6623	90.43
100	14.6707	14.6557	35.8240	26.6839	90.71
125	14.7101	14.6913	35.8414	26.6896	90.84
150	14.7665	14.7439	35.8593	26.6919	90.84
175	13.8101	13.7849	35.6566	26.7407	90.89
200	13.2674	13.2393	35.5677	26.7849	90.87
225	13.0349	13.0037	35.5739	26.8375	90.88
250	12.8766	12.8421	35.6257	26.9103	90.89
275	12.1051	12.0687	35.5212	26.9814	90.94
300	11.1149	11.0773	35.4048	27.0773	90.94
325	10.4305	10.3913	35.3283	27.1408	90.86
350	9.7777	9.7372	35.2513	27.1935	90.64
375	9.1515	9.1097	35.1944	27.2531	90.56
400	8.4551	8.4127	35.1351	27.3172	90.69
425	7.8677	7.8244	35.1075	27.3849	90.64
450	7.5004	7.4557	35.0907	27.4258	90.57
475	6.9834	6.9380	35.0617	27.4764	90.65
500	6.5767	6.5304	35.0489	27.5220	90.64

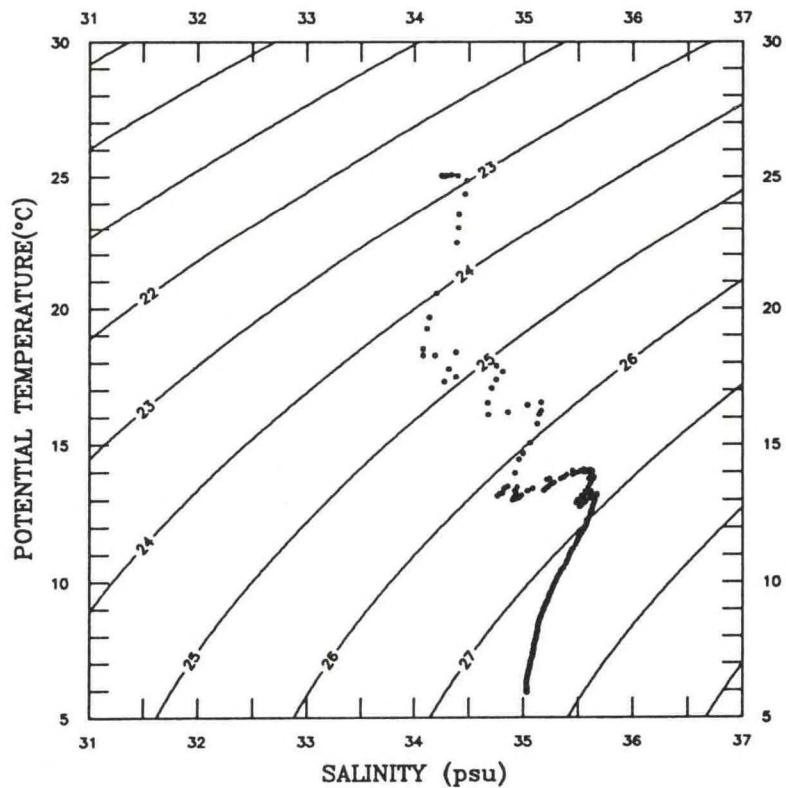


STATION 31

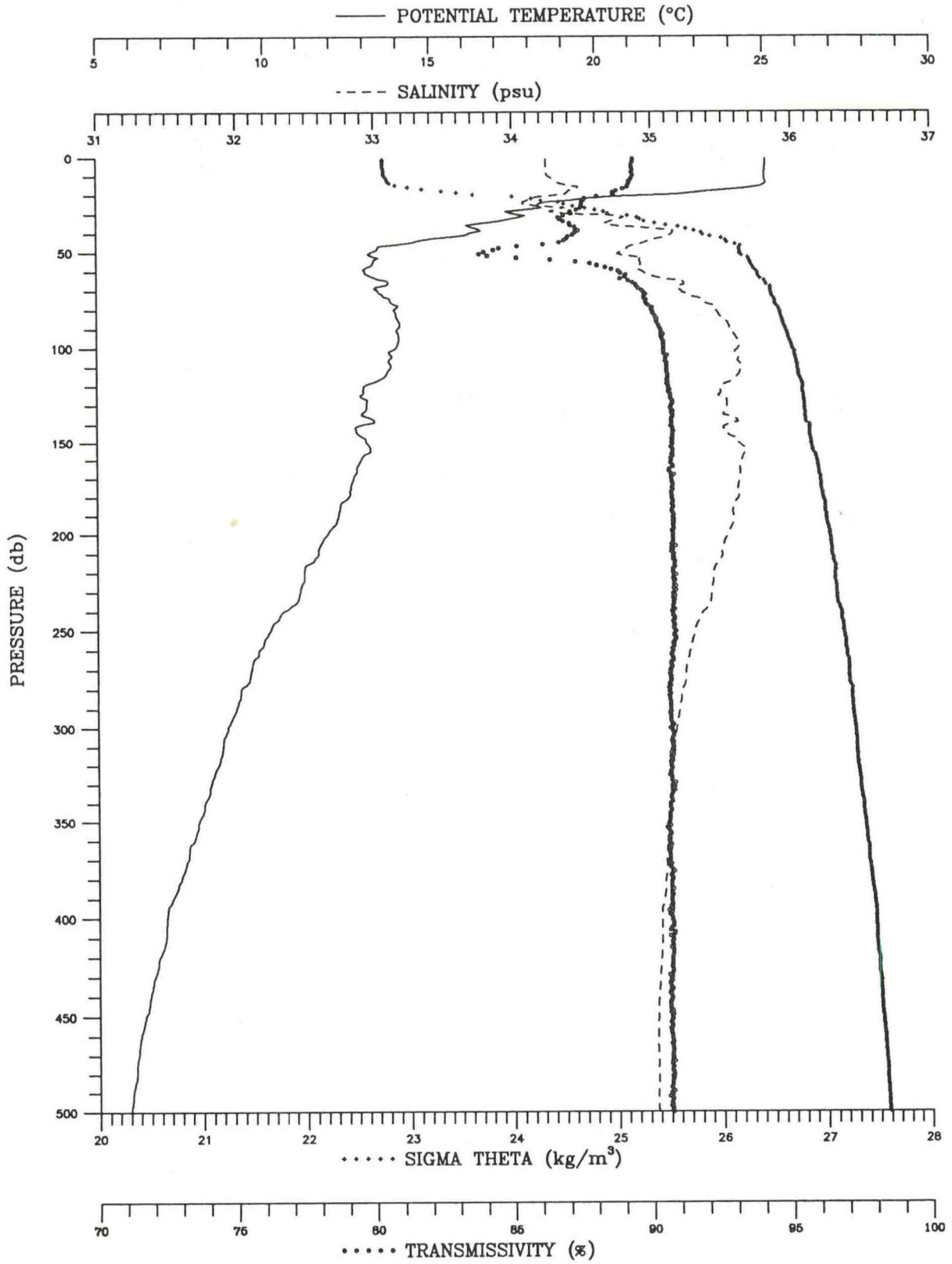


R/V DELAWARE II 91-09 Station: 32 Date: 91/08/09 GMT: 1605 Depth: 2380m
 Position: 38 24.00N 72 55.00W Wind: 16 kts Dir: 160 deg. Air Temp: 25.5C

PR	TE	PT	SA	SO	TR
1	25.0696	25.0695	34.2457	22.7522	89.35
10	25.0427	25.0406	34.2528	22.7662	89.35
20	22.4610	22.4570	34.3822	23.6215	88.65
30	17.5024	17.4974	34.3796	24.9202	87.12
40	16.2472	16.2408	35.1564	25.8134	87.26
50	13.2426	13.2357	34.7795	26.1751	83.97
60	13.0616	13.0533	34.9326	26.3306	88.81
70	13.4555	13.4457	35.2139	26.4686	89.66
80	13.9304	13.9188	35.4483	26.5515	90.00
90	14.0382	14.0252	35.5540	26.6108	90.30
100	13.9882	13.9737	35.6222	26.6745	90.44
125	12.9182	12.9010	35.4762	26.7826	90.67
150	13.1009	13.0801	35.6124	26.8519	90.70
175	12.6322	12.6084	35.6143	26.9481	90.71
200	11.9219	11.8958	35.5428	27.0314	90.74
225	11.1956	11.1674	35.4357	27.0848	90.77
250	10.2056	10.1760	35.3047	27.1600	90.84
275	9.5698	9.5385	35.2345	27.2138	90.67
300	8.9190	8.8863	35.1693	27.2694	90.62
325	8.5006	8.4661	35.1352	27.3090	90.60
350	8.0430	8.0070	35.1148	27.3633	90.57
375	7.6159	7.5785	35.0946	27.4110	90.68
400	7.0809	7.0426	35.0603	27.4606	90.67
425	6.8025	6.7626	35.0489	27.4904	90.64
450	6.4292	6.3882	35.0309	27.5267	90.64
475	6.1582	6.1158	35.0293	27.5611	90.64
500	5.9873	5.9433	35.0295	27.5835	90.67

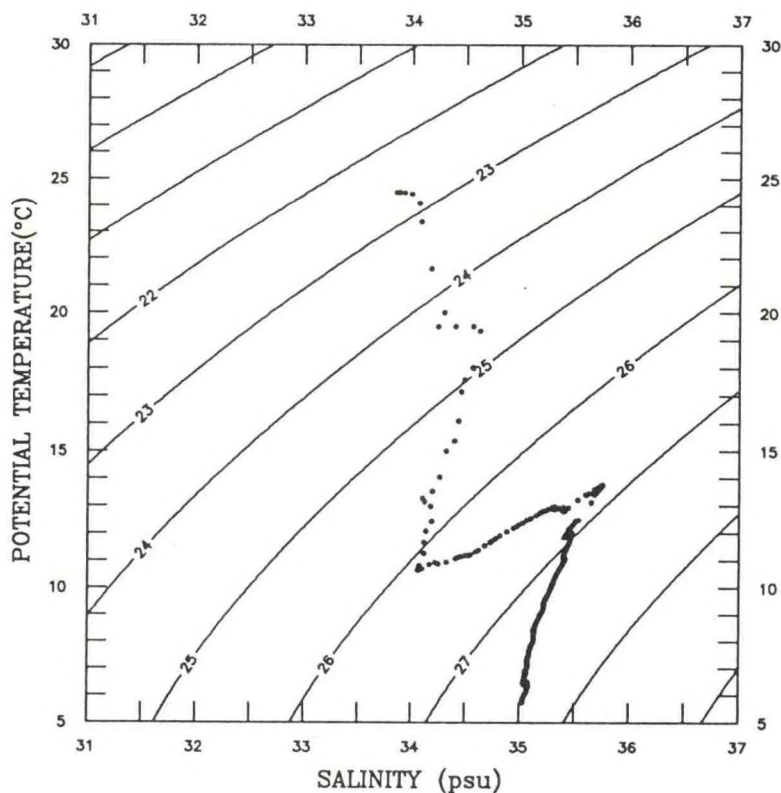


STATION 32

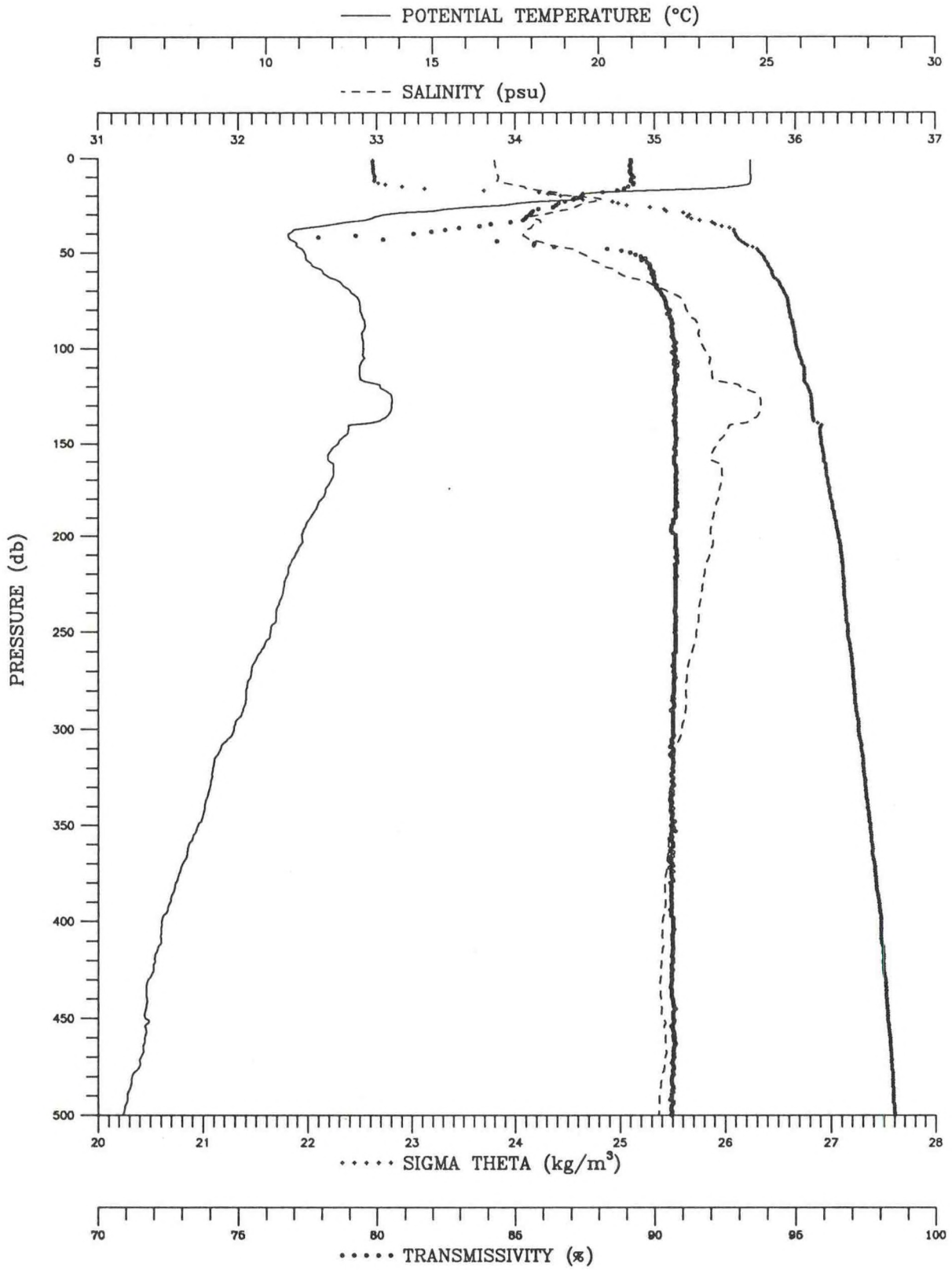


R/V DELAWARE II 91-09 Station: 33 Date: 91/08/09 GMT: 2047 Depth: 2064m
 Position: 38 10.00N 73 15.00W Wind: 20 kts Dir: 180 deg. Air Temp: 25.8C

PR	TE	PT	SA	SO	TR
1	24.4965	24.4962	33.8510	22.6265	89.14
10	24.5062	24.5041	33.8800	22.6459	89.25
20	19.5056	19.5020	34.4006	24.4355	87.36
30	13.5360	13.5318	34.1921	25.6602	85.51
40	10.6620	10.6572	34.0549	26.1009	81.31
50	11.1659	11.1598	34.4622	26.3282	89.12
60	11.7058	11.6982	34.7375	26.4429	89.95
70	12.5461	12.5367	35.0867	26.5528	90.18
80	12.8380	12.8271	35.2275	26.6045	90.53
90	12.9577	12.9453	35.3183	26.6512	90.63
100	12.9429	12.9292	35.3529	26.6813	90.74
125	13.7880	13.7701	35.7460	26.8130	90.74
150	12.1736	12.1538	35.4458	26.9064	90.74
175	11.8037	11.7810	35.4574	26.9869	90.77
200	11.1000	11.0751	35.4001	27.0740	90.74
225	10.5675	10.5403	35.3395	27.1232	90.74
250	10.1538	10.1244	35.2951	27.1615	90.71
275	9.4760	9.4449	35.2225	27.2199	90.69
300	9.0598	9.0268	35.1894	27.2626	90.64
325	8.4196	8.3853	35.1349	27.3214	90.64
350	8.0062	7.9703	35.1209	27.3737	90.57
375	7.4485	7.4116	35.0801	27.4238	90.57
400	6.9422	6.9043	35.0553	27.4759	90.64
425	6.6956	6.6561	35.0421	27.4996	90.63
450	6.4487	6.4077	35.0505	27.5396	90.64
475	6.2761	6.2332	35.0683	27.5767	90.67
500	5.7934	5.7500	35.0268	27.6058	90.60

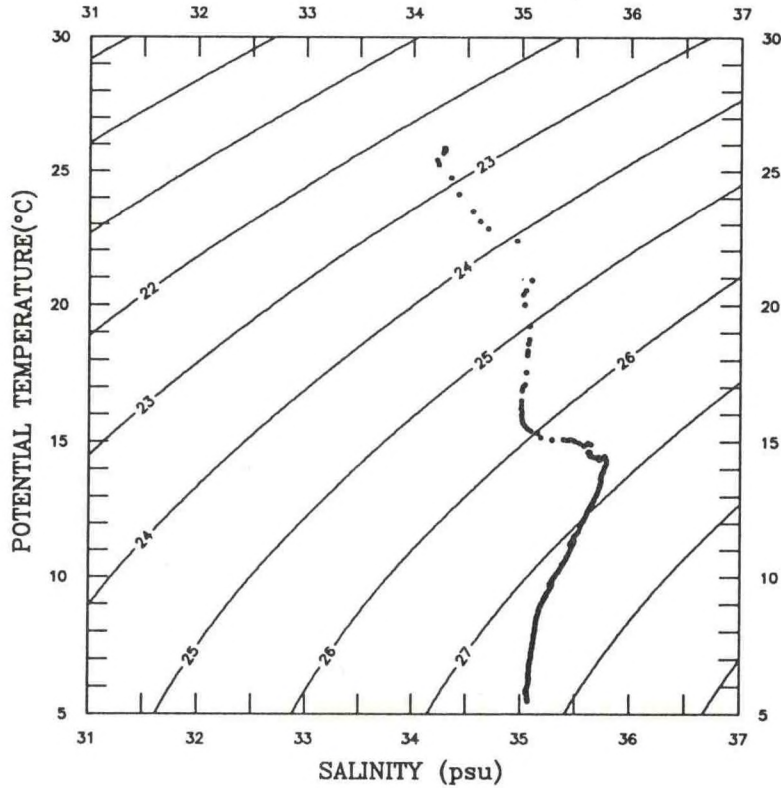


STATION 33

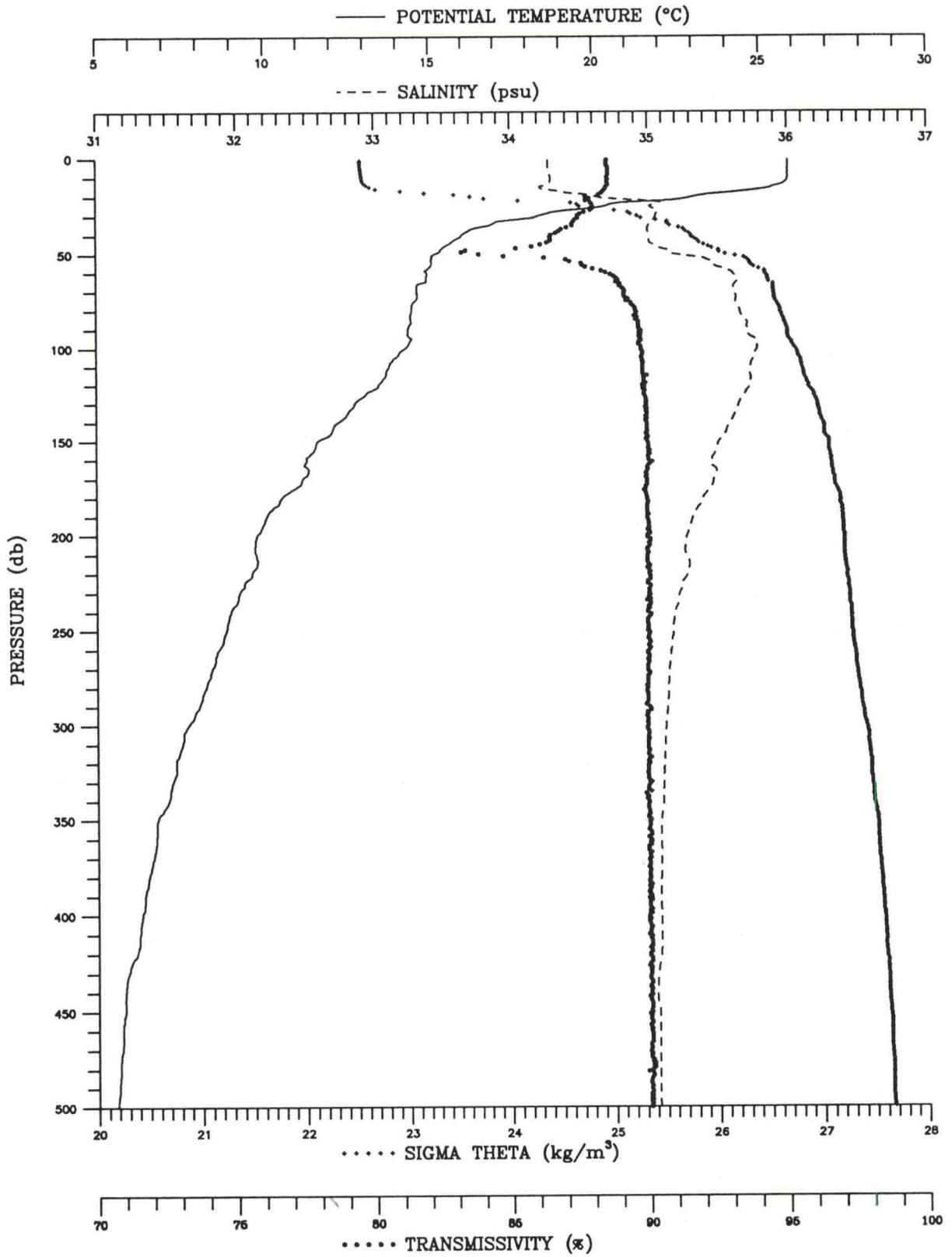


R/V DELAWARE II 91-09 Station: 34 Date: 91/08/10 GMT: 0121 Depth: 2178m
 Position: 37 53.00N 73 14.91W Wind: 20 kts Dir: 170 deg. Air Temp: 26.0C

PR	TE	PT	SA	SO	TR
1	25.8603	25.8599	34.2793	22.5346	88.51
10	25.8628	25.8606	34.2960	22.5474	88.51
20	23.1258	23.1217	34.6182	23.6106	87.73
30	18.3540	18.3488	35.0585	25.2315	87.44
40	16.0198	16.0135	35.0030	25.7477	86.48
50	15.1680	15.1603	35.1799	26.0761	83.85
60	14.9414	14.9323	35.6050	26.4543	88.45
70	14.6443	14.6339	35.6245	26.5347	89.14
80	14.4803	14.4685	35.6598	26.5978	89.54
90	14.3684	14.3551	35.7155	26.6653	89.67
100	14.2905	14.2758	35.7829	26.7344	89.74
125	13.0825	13.0652	35.6915	26.9162	89.84
150	11.6356	11.6163	35.5076	27.0571	89.94
175	10.9508	10.9292	35.4445	27.1352	89.89
200	9.7970	9.7740	35.2752	27.2059	89.94
225	9.4192	9.3939	35.2382	27.2408	89.94
250	8.8750	8.8479	35.1720	27.2777	89.94
275	8.3764	8.3476	35.1418	27.3326	89.94
300	7.7539	7.7238	35.1198	27.4095	89.94
325	7.3770	7.3453	35.1024	27.4509	89.92
350	6.8252	6.7925	35.0802	27.5110	90.03
375	6.6332	6.5986	35.0799	27.5372	89.94
400	6.3594	6.3232	35.0769	27.5716	89.95
425	6.0334	5.9959	35.0622	27.6026	89.98
450	5.8464	5.8074	35.0631	27.6273	90.04
475	5.7024	5.6616	35.0658	27.6478	90.08
500	5.6070	5.5643	35.0688	27.6622	90.01

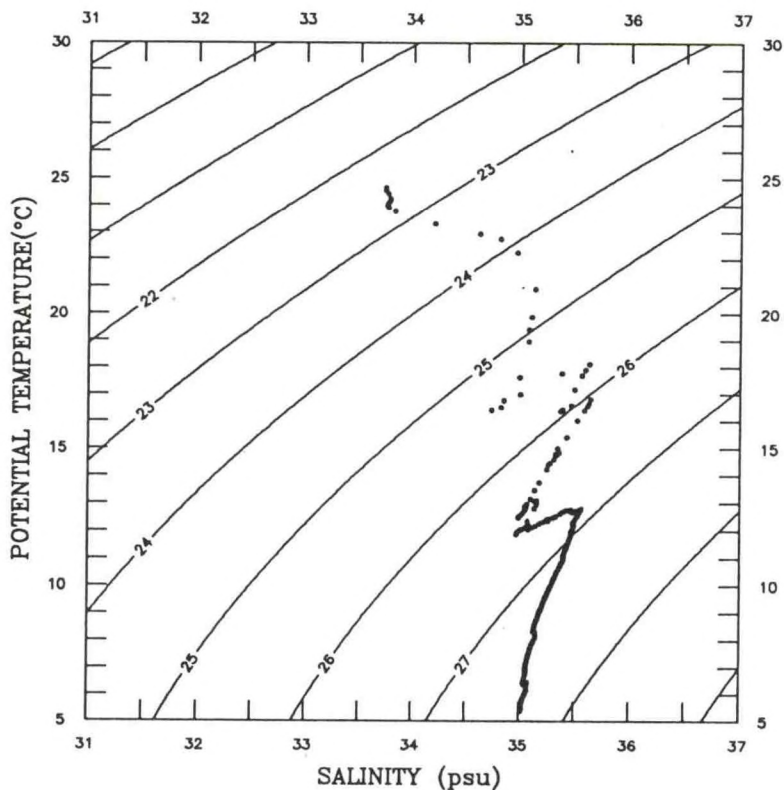


STATION 34

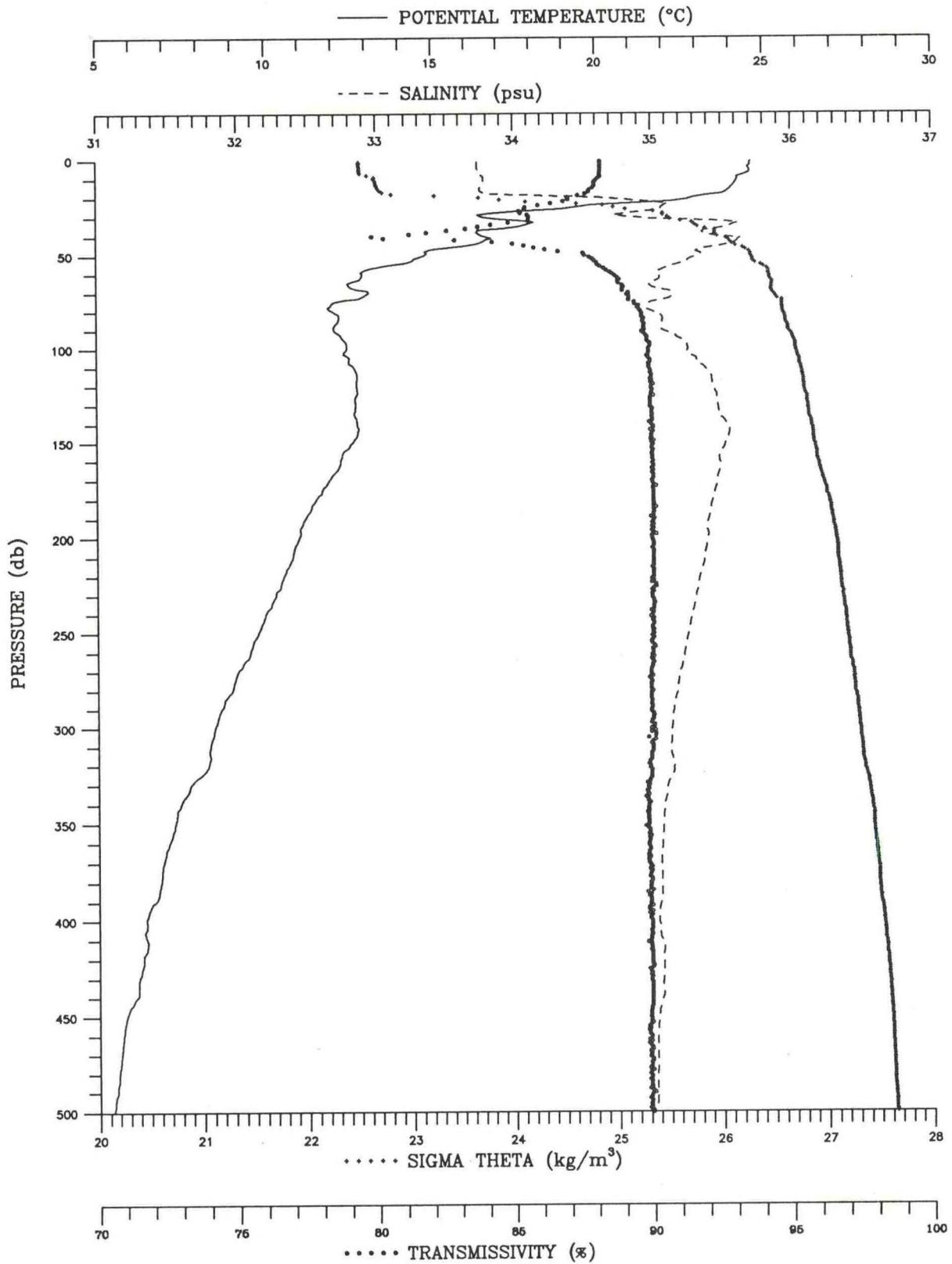


R/V DELAWARE II 91-09 Station: 35 Date: 91/08/10 GMT: 1857 Depth: 2645m
 Position: 38 06.95N 72 55.13W Wind: 8 kts Dir: 300 deg. Air Temp: 26.0C

PR	TE	PT	SA	SO	TR
1	24.6486	24.6533	33.7377	22.5051	88.17
10	24.2620	24.2599	33.7800	22.6429	88.08
20	22.9333	22.9292	34.6178	23.6656	86.99
30	16.5245	16.5197	34.8183	25.4887	85.57
40	16.5973	16.5909	35.4655	25.9694	79.85
50	14.7813	14.7738	35.3390	26.2838	87.59
60	12.9237	12.9155	35.0539	26.4522	88.60
70	13.1220	13.1123	35.1513	26.4882	89.17
80	12.0471	12.0366	35.0076	26.5885	89.61
90	12.0731	12.0613	35.0765	26.6374	89.74
100	12.4621	12.4487	35.2628	26.7068	89.89
125	12.7350	12.7180	35.4694	26.8138	90.05
150	12.6335	12.6132	35.5324	26.8836	89.98
175	11.7277	11.7051	35.4539	26.9986	90.04
200	11.0286	11.0038	35.4020	27.0885	89.99
225	10.4572	10.4302	35.3296	27.1349	90.14
250	9.7923	9.7635	35.2558	27.1925	90.04
275	9.0894	9.0591	35.1854	27.2542	89.97
300	8.5011	8.4693	35.1352	27.3085	89.93
325	8.1022	8.0687	35.1401	27.3739	89.94
350	7.3306	7.2965	35.0718	27.4338	89.84
375	6.9360	6.9006	35.0617	27.4815	89.90
400	6.4677	6.4313	35.0381	27.5267	89.94
425	6.3207	6.2824	35.0718	27.5730	89.84
450	5.8599	5.8208	35.0333	27.6021	89.87
475	5.6743	5.6336	35.0228	27.6172	89.90
500	5.4583	5.4162	35.0171	27.6394	89.94

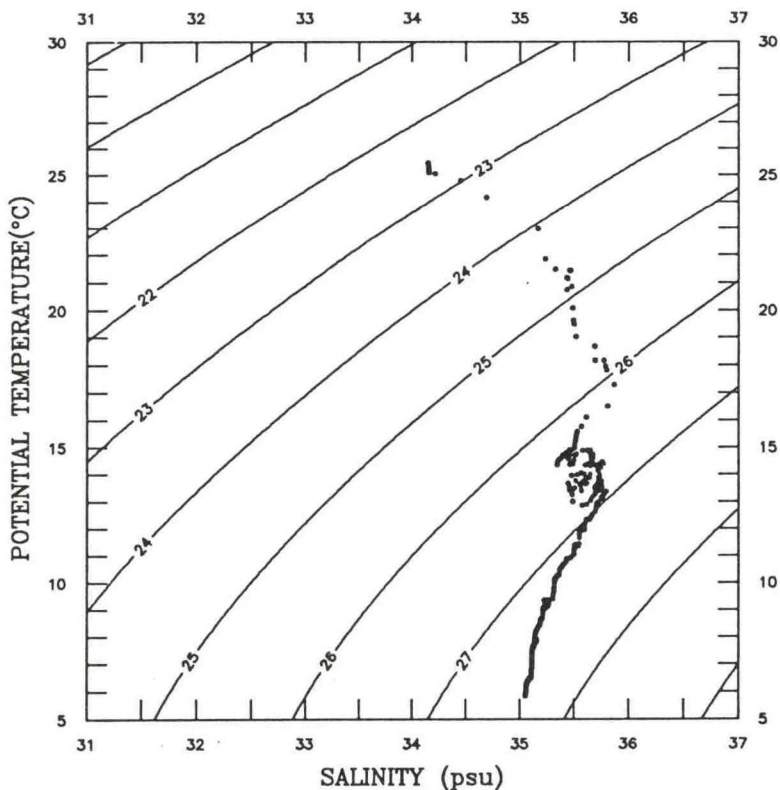


STATION 35

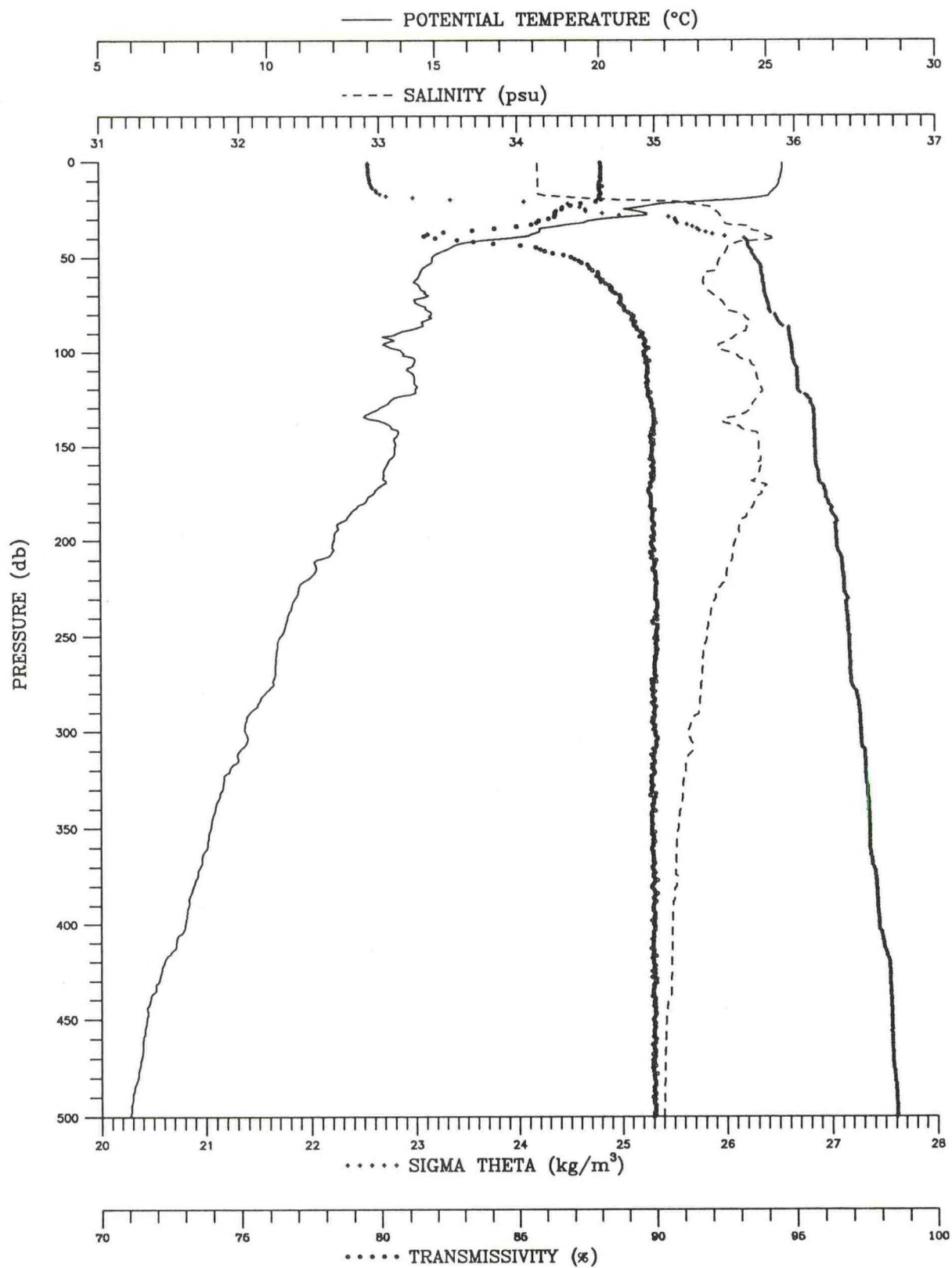


R/V DELAWARE II 91-09 Station: 36 Date: 91/08/10 GMT: 2321 Depth: 2858m
 Position: 38 20.02N 72 36.18W Wind: 7 kts Dir: 310 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	25.4638	25.4636	34.1470	22.5570	88.02
10	25.3762	25.3741	34.1496	22.5776	88.05
20	24.1801	24.1759	34.6868	23.3541	88.06
30	20.0993	20.0938	35.4855	25.5318	86.15
40	17.2944	17.2877	35.8656	26.1875	82.02
50	14.9272	14.9196	35.4752	26.2870	86.95
60	14.5204	14.5116	35.3470	26.3587	87.89
70	14.8137	14.8032	35.4239	26.3829	88.73
80	14.9030	14.8909	35.6194	26.4745	89.14
90	13.8868	13.8738	35.6060	26.6116	89.56
100	14.0083	13.9938	35.5267	26.6363	89.58
125	13.7700	13.7520	35.7213	26.7825	89.79
150	13.7932	13.7716	35.7360	26.8510	89.88
175	13.1798	13.1553	35.7632	26.9515	89.76
200	11.9749	11.9487	35.5689	27.0511	89.92
225	10.9218	10.8940	35.4327	27.1234	89.99
250	10.3830	10.3531	35.3634	27.1699	90.03
275	10.1719	10.1394	35.3205	27.1887	89.85
300	9.3321	9.2985	35.2292	27.2779	89.97
325	8.6980	8.6631	35.1937	27.3262	89.84
350	8.3109	8.2742	35.1571	27.3580	89.84
375	7.9167	7.8784	35.1554	27.4177	89.88
400	7.5596	7.5198	35.1138	27.4476	89.89
425	6.8460	6.8059	35.1075	27.5477	89.83
450	6.4054	6.3644	35.0674	27.5638	89.87
475	6.1889	6.1464	35.0560	27.5775	89.83
500	5.9123	5.8685	35.0482	27.6117	89.88

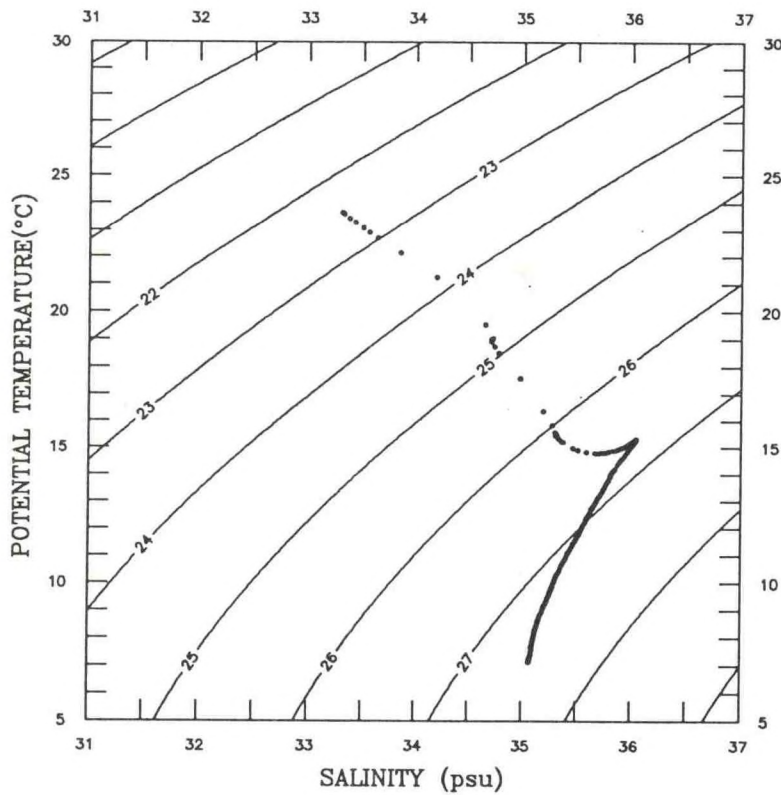


STATION 36

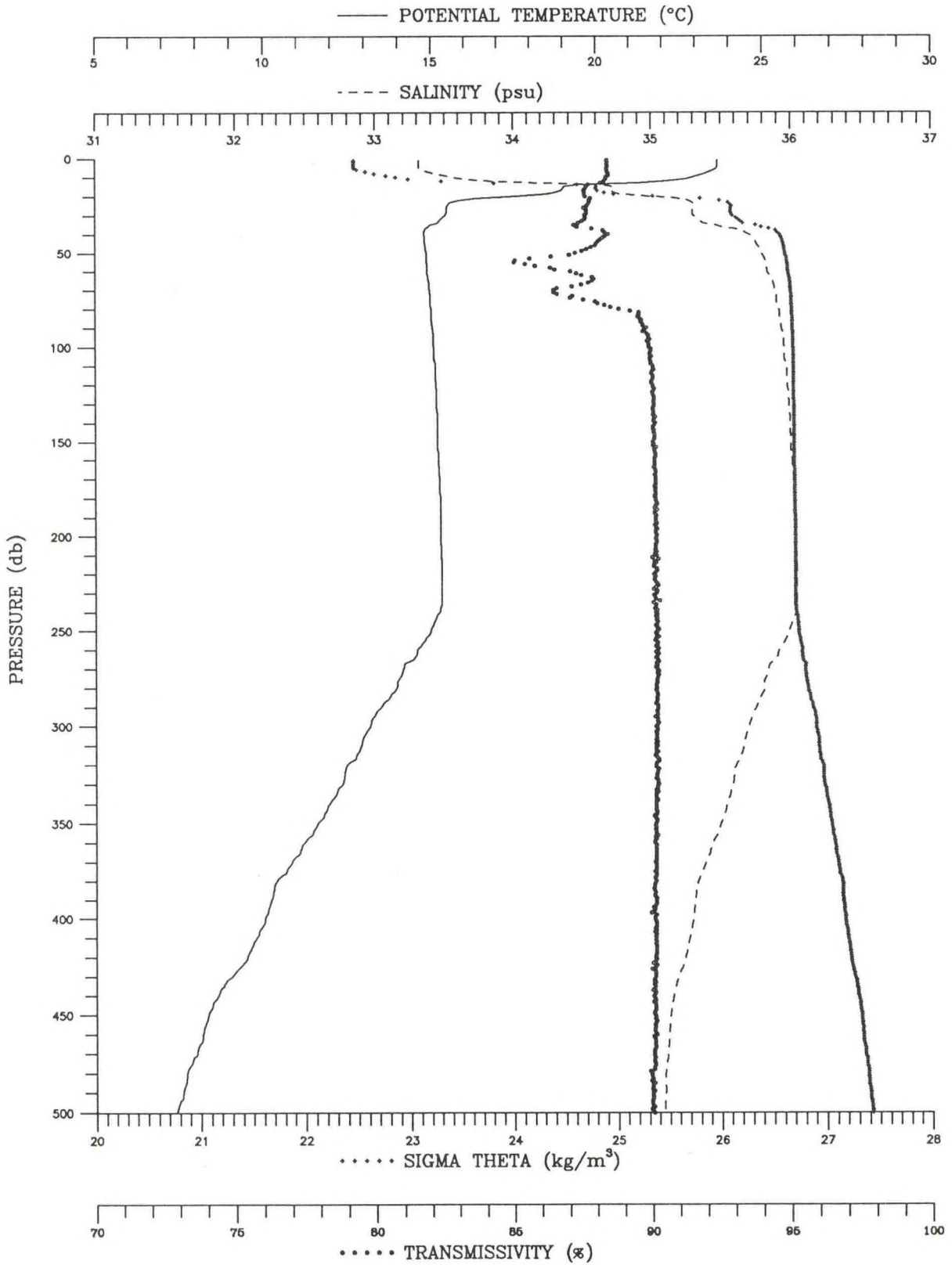


R/V DELAWARE II 91-09 Station: 37 Date: 91/08/11 GMT: 0349 Depth: 2269m
 Position: 38 35.00N 72 15.28W Wind: 6 kts Dir: 270 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	23.6652	23.6650	33.3125	22.4639	88.40
10	22.9432	22.9412	33.5621	22.8619	88.36
20	17.5969	17.5936	34.9745	25.3532	87.60
30	15.4401	15.4355	35.3045	26.1108	87.59
40	14.8018	14.7958	35.7046	26.5612	88.43
50	14.8770	14.8694	35.7954	26.6150	87.24
60	14.8951	14.8860	35.8375	26.6439	87.07
70	14.9647	14.9540	35.8888	26.6685	86.46
80	15.0162	15.0040	35.9183	26.6802	88.81
90	15.0553	15.0416	35.9368	26.6861	89.81
100	15.0942	15.0789	35.9538	26.6910	89.90
125	15.1807	15.1615	35.9857	26.6972	90.04
150	15.2144	15.1913	35.9972	26.6994	90.04
175	15.2748	15.2478	36.0184	26.7032	90.14
200	15.3186	15.2876	36.0347	26.7068	90.17
225	15.3413	15.3064	36.0413	26.7077	90.20
250	15.0117	14.9734	35.9860	26.7392	90.19
275	14.0618	14.0216	35.8128	26.8117	90.19
300	13.1994	13.1573	35.6987	26.9032	90.14
325	12.4393	12.3954	35.5908	26.9718	90.16
350	11.6450	11.5997	35.4939	27.0496	90.12
375	10.6966	10.6506	35.3627	27.1216	90.09
400	10.0750	10.0277	35.2923	27.1759	90.09
425	9.3259	9.2780	35.2178	27.2439	90.11
450	8.3807	8.3330	35.1281	27.3240	90.09
475	7.9084	7.8597	35.1009	27.3745	90.08
500	7.4644	7.4147	35.0838	27.4263	90.04

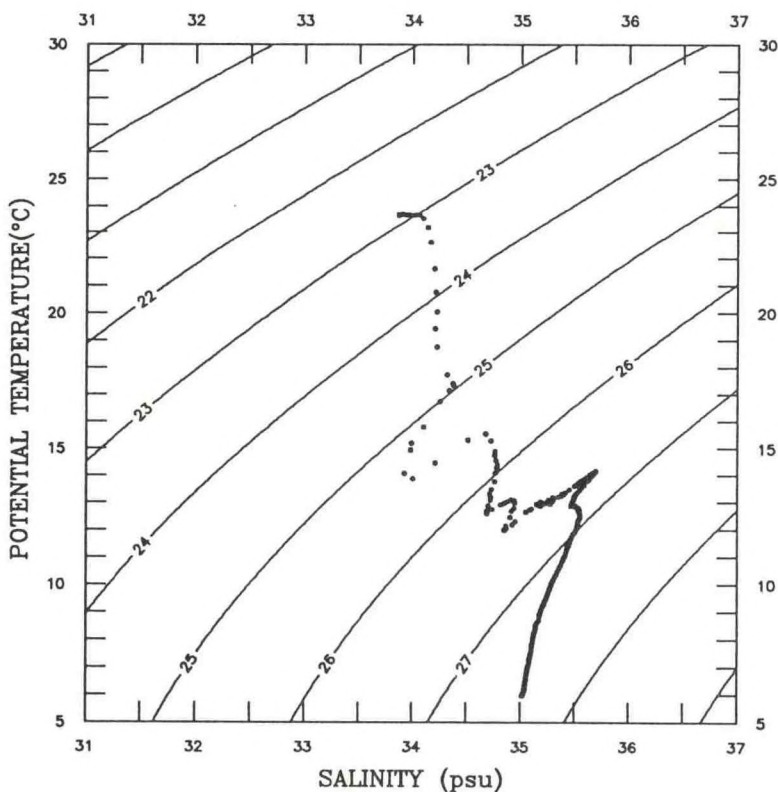


STATION 37

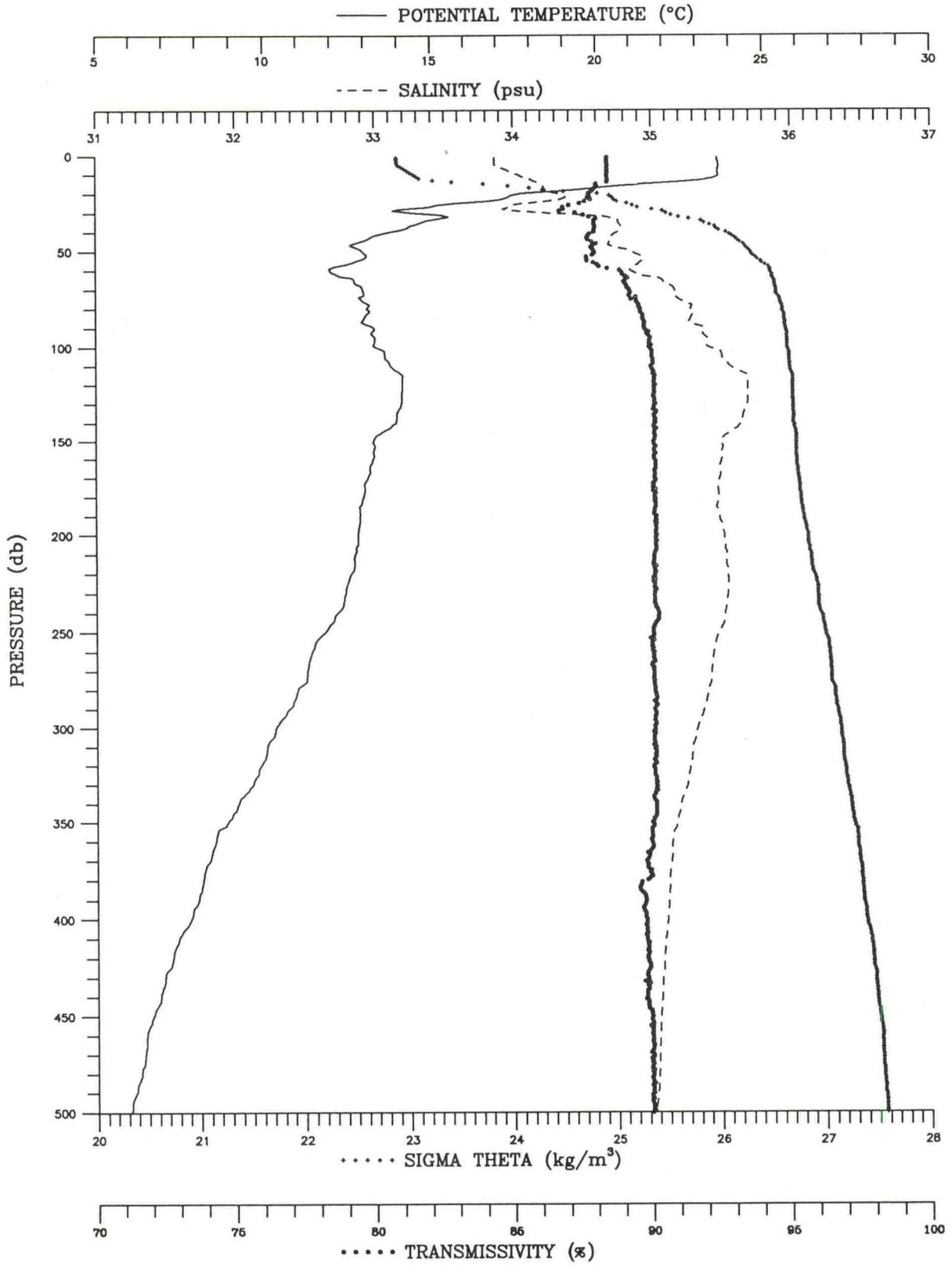


R/V DELAWARE II 91-09 Station: 38 Date: 91/08/11 GMT: 0805 Depth: 2610m
 Position: 38 40.90N 72 06.00W Wind: 8 kts Dir: 275 deg. Air Temp: 23.0C

PR	TE	PT	SA	SG	TR
1	23.6556	23.6552	33.8686	22.8784	88.40
10	23.6765	23.6744	34.0276	23.0350	88.39
20	17.7472	17.7438	34.3195	24.8149	87.72
30	14.4618	14.4574	34.2085	25.4792	87.24
40	13.7854	13.7797	34.7592	26.0477	87.92
50	12.9854	12.9786	34.8480	26.2801	87.91
60	12.0081	12.0003	34.8461	26.4700	88.85
70	12.9964	12.9868	35.1696	26.5276	89.20
80	13.1094	13.0983	35.2815	26.5918	89.60
90	13.3376	13.3250	35.3824	26.6239	89.74
100	13.3909	13.3768	35.4131	26.6370	89.91
125	14.1644	14.1461	35.6916	26.6915	90.07
150	13.3128	13.2918	35.5033	26.7243	90.07
175	13.0562	13.0320	35.4778	26.7574	90.04
200	12.8469	12.8194	35.5228	26.8350	90.18
225	12.5394	12.5090	35.5528	26.9200	90.11
250	11.8642	11.8316	35.4835	26.9976	90.04
275	11.3256	11.2907	35.4256	27.0542	90.08
300	10.3896	10.3536	35.3249	27.1447	90.10
325	9.8573	9.8195	35.2654	27.1905	90.09
350	8.9693	8.9309	35.1775	27.2687	89.99
375	8.2789	8.2397	35.1271	27.3376	89.94
400	7.8602	7.8196	35.1065	27.3848	89.78
425	7.2309	7.1897	35.0791	27.4548	89.89
450	6.7215	6.6795	35.0540	27.5058	89.97
475	6.4497	6.4063	35.0433	27.5341	90.00
500	6.0302	5.9859	35.0188	27.5696	89.97

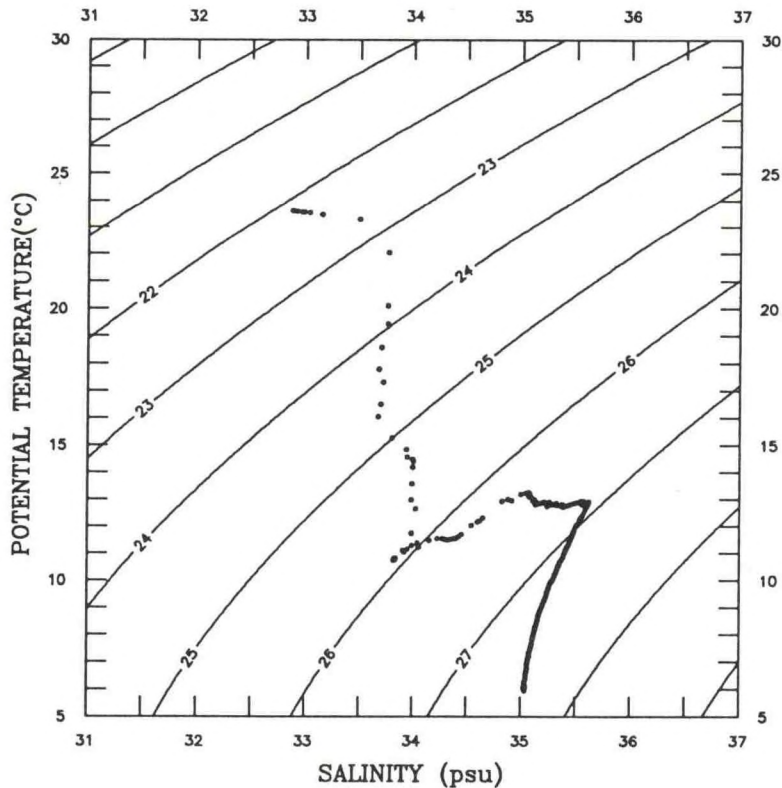


STATION 38

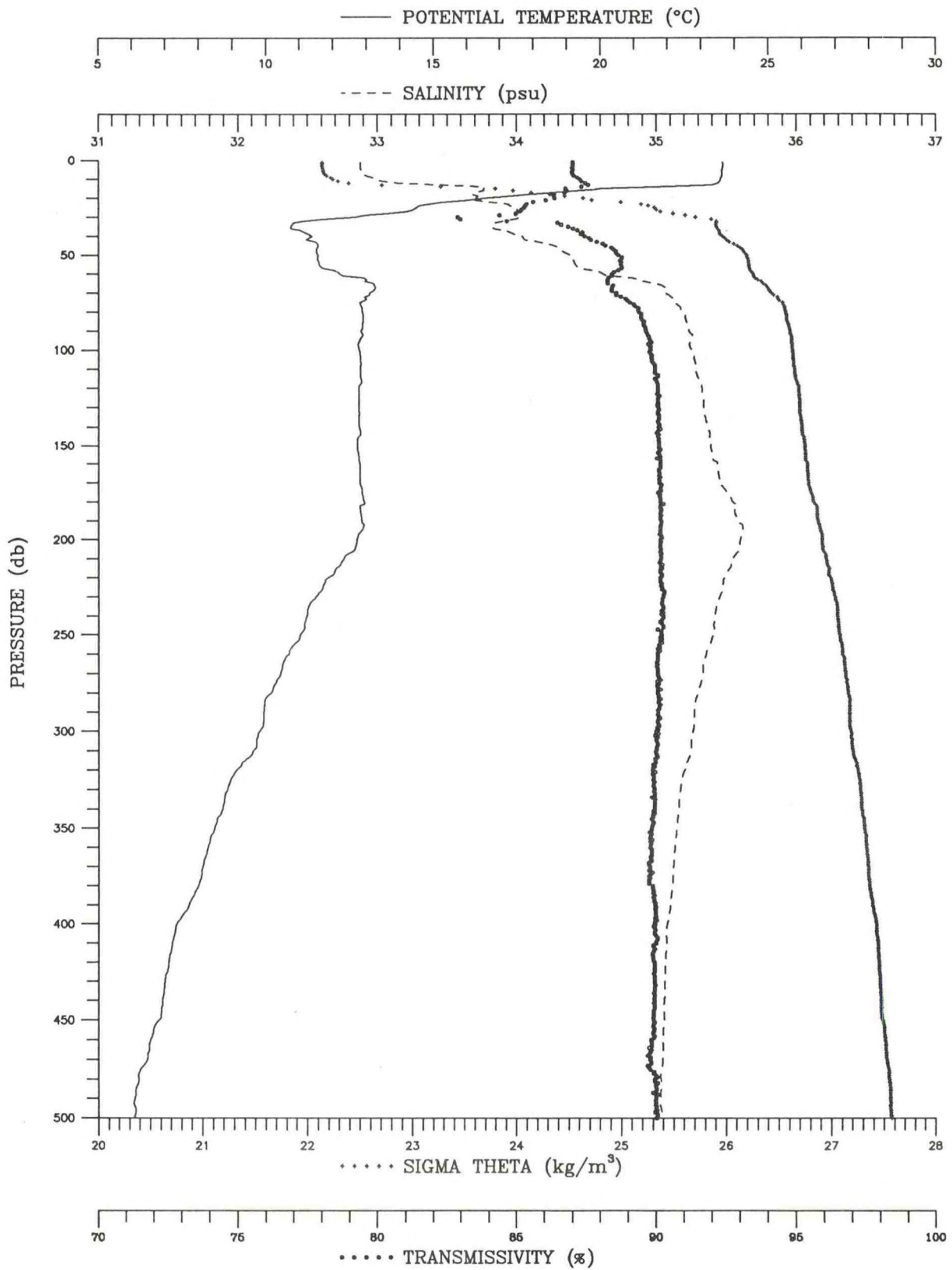


R/V DELAWARE II 91-09 Station: 39 Date: 91/08/11 GMT: 1115 Depth: 2304m
 Position: 38 48.90N 72 05.82W Wind: 8 kts Dir: 265 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	23.6303	23.6305	32.8765	22.1408	87.00
10	23.5802	23.5781	32.9849	22.2413	87.26
20	16.5092	16.5060	33.6987	24.6320	86.36
30	12.6661	12.6622	34.0248	25.7048	82.87
40	11.3903	11.3853	34.0423	25.9603	87.42
50	11.5728	11.5665	34.3858	26.1940	88.62
60	12.2132	12.2054	34.6178	26.2534	88.40
70	13.1130	13.1034	35.0684	26.4257	88.56
80	12.9013	12.8904	35.1906	26.5632	89.37
90	12.8509	12.8386	35.2311	26.6050	89.62
100	12.8083	12.7947	35.2512	26.6294	89.79
125	12.7976	12.7806	35.3334	26.6959	90.05
150	12.7534	12.7330	35.3872	26.7471	90.09
175	12.9007	12.8766	35.5023	26.8077	90.05
200	12.7522	12.7249	35.5989	26.9129	90.14
225	11.7313	11.7022	35.4709	27.0124	90.21
250	11.0660	11.0348	35.4012	27.0822	90.19
275	10.3162	10.2834	35.3154	27.1496	90.09
300	9.8471	9.8123	35.2601	27.1877	89.99
325	8.9870	8.9514	35.1828	27.2696	89.89
350	8.5090	8.4718	35.1469	27.3173	89.84
375	8.1223	8.0835	35.1201	27.3559	89.74
400	7.3842	7.3450	35.0778	27.4316	89.96
425	7.1132	7.0723	35.0630	27.4586	89.94
450	6.8680	6.8255	35.0589	27.4897	89.91
475	6.3047	6.2618	35.0354	27.5469	89.78
500	6.1304	6.0858	35.0403	27.5737	90.01

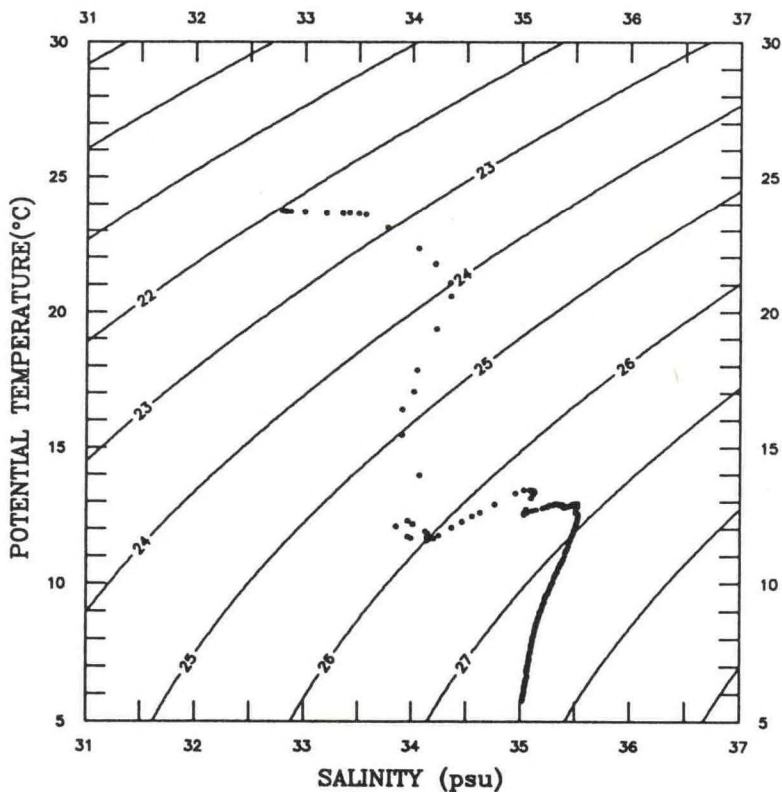


STATION 39

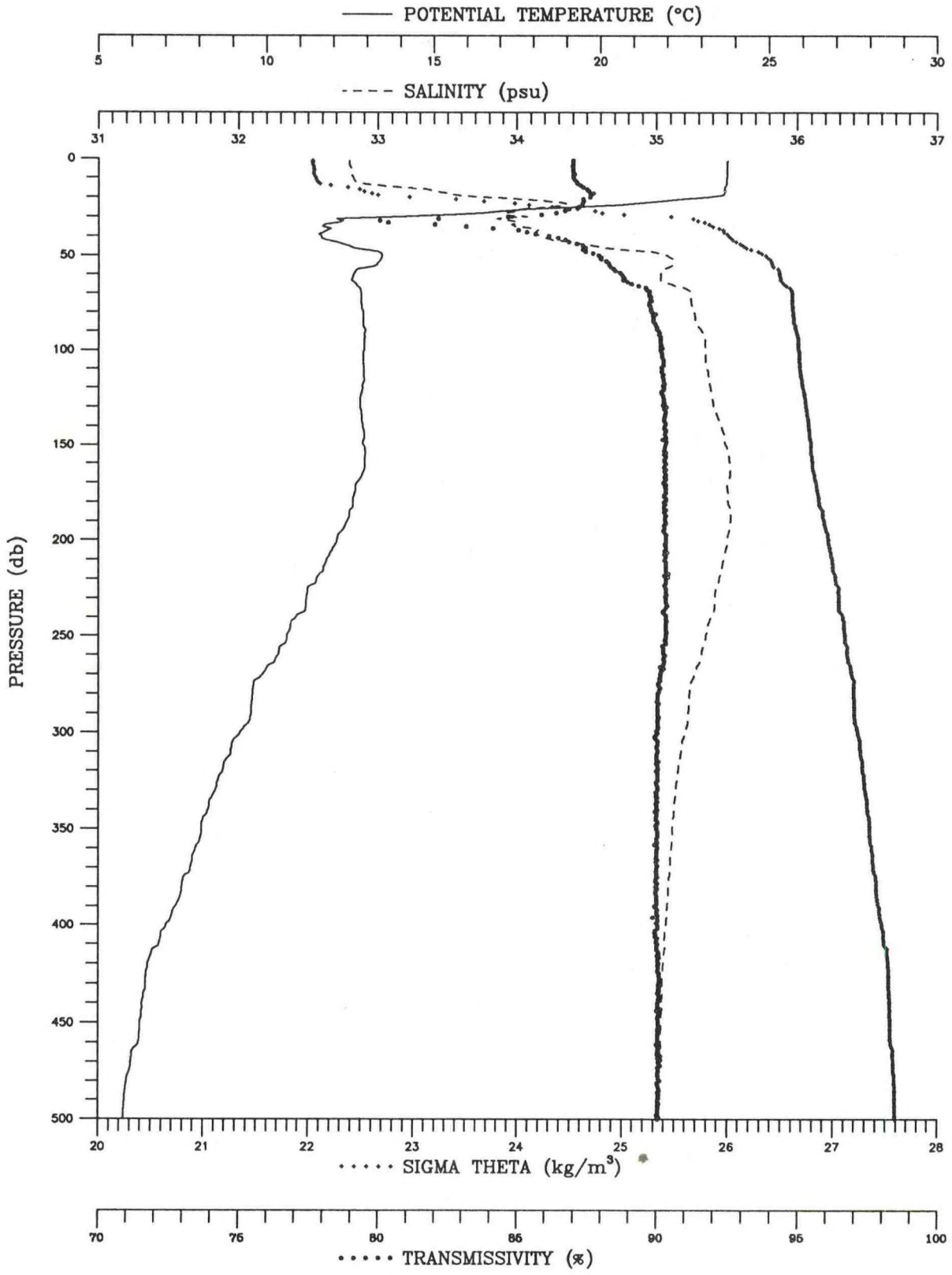


R/V DELAWARE II 91-09 Station: 40 Date: 91/08/11 GMT: 1449 Depth: 2397m
 Position: 38 58.00N 72 05.92W Wind: 15 kts Dir: 310 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	23.7656	23.7651	32.7929	22.0427	87.01
10	23.7409	23.7389	32.8236	22.0726	87.02
20	23.1427	23.1386	33.7713	22.9638	87.61
30	13.9864	13.9821	34.0697	25.4725	84.68
40	11.6512	11.6462	34.1735	26.0141	86.14
50	13.4493	13.4423	35.0797	26.3654	87.92
60	12.6003	12.5922	35.0264	26.4952	88.75
70	12.8296	12.8201	35.2394	26.6152	89.74
80	12.8911	12.8801	35.2686	26.6257	89.84
90	12.9578	12.9455	35.3233	26.6550	90.07
100	12.9358	12.9221	35.3479	26.6789	90.14
125	12.8193	12.8023	35.3926	26.7375	90.24
150	12.9268	12.9062	35.4943	26.7955	90.32
175	12.6564	12.6326	35.5065	26.8596	90.34
200	12.1286	12.1022	35.5021	26.9601	90.34
225	11.2645	11.2362	35.4219	27.0614	90.34
250	10.6383	10.6079	35.3514	27.1204	90.34
275	9.6545	9.6230	35.2432	27.2064	90.06
300	9.2461	9.2127	35.2032	27.2431	90.04
325	8.6013	8.5666	35.1469	27.3025	90.04
350	8.1199	8.0838	35.1151	27.3520	90.01
375	7.5800	7.5427	35.0913	27.4136	90.04
400	7.0513	7.0130	35.0673	27.4703	90.04
425	6.4640	6.4252	35.0446	27.5326	90.10
450	6.2794	6.2388	35.0345	27.5492	90.06
475	5.9684	5.9267	35.0224	27.5800	90.07
500	5.8086	5.7653	35.0147	27.5944	90.04

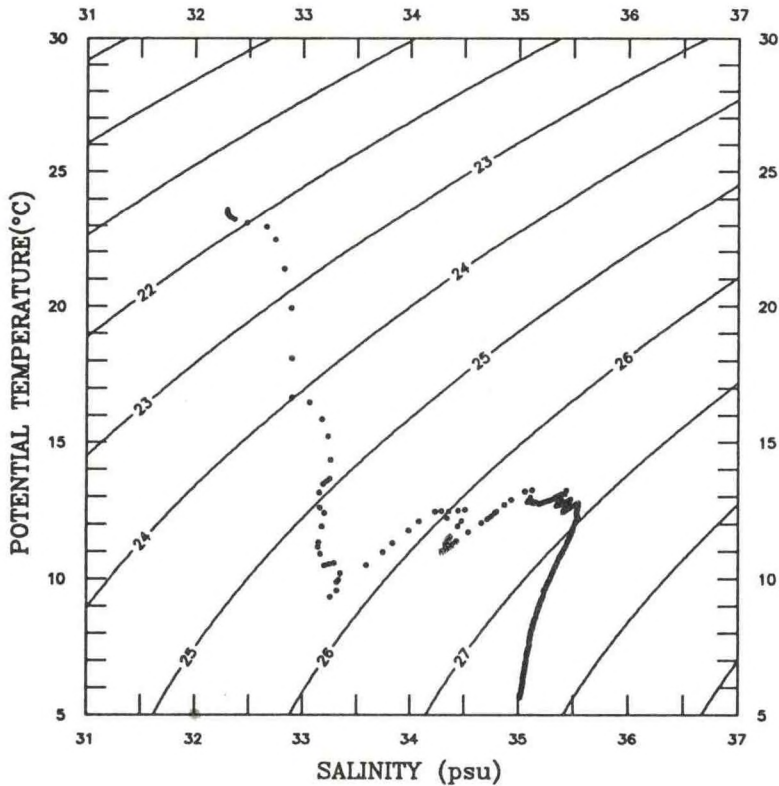


STATION 40

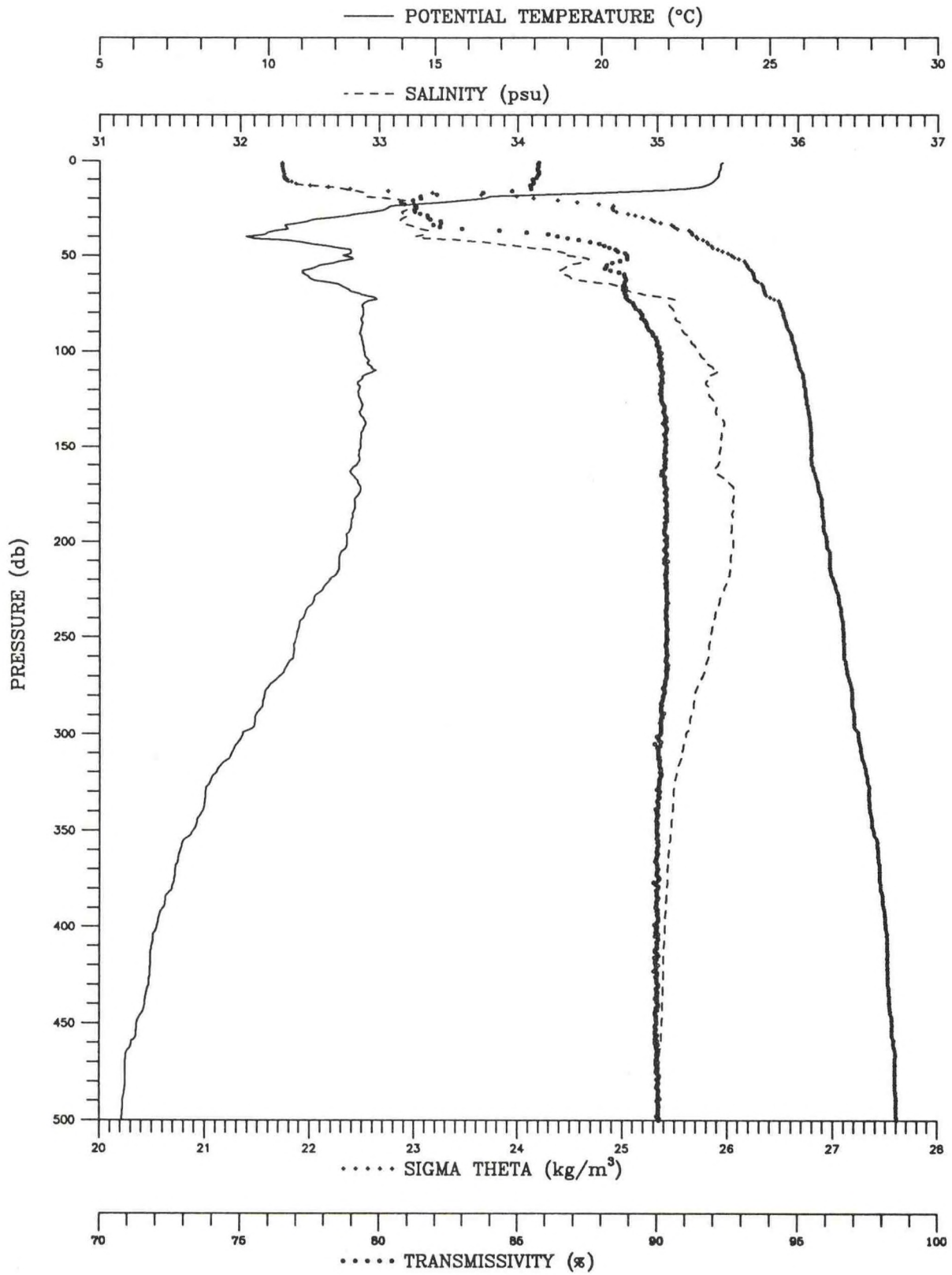


R/V DELAWARE II 91-09 Station: 41 Date: 91/08/11 GMT: 1738 Depth: 2150m
 Position: 38 58.00N 72 15.00W Wind: 14 kts Dir: 280 deg. Air Temp: 24.2C

PR	TE	PT	SA	SO	TR
1	23.6069	23.5963	32.2988	21.7318	85.75
10	23.3974	23.3953	32.3104	21.7837	85.52
20	16.4891	16.4859	33.0646	24.1496	81.48
30	11.9293	11.9255	33.1808	25.1908	81.73
40	9.3440	9.3397	33.2574	25.7002	86.42
50	12.2365	12.2300	34.3408	26.0336	88.90
60	11.1038	11.0964	34.3339	26.2399	88.80
70	12.7198	12.7103	34.8690	26.3498	88.82
80	12.8546	12.8437	35.1270	26.5233	89.39
90	12.7608	12.7486	35.1828	26.5855	89.78
100	12.8915	12.8778	35.2881	26.6414	90.04
125	12.7857	12.7686	35.3961	26.7469	90.14
150	12.7781	12.7576	35.4513	26.7919	90.29
175	12.7221	12.6983	35.5470	26.8780	90.32
200	12.3822	12.3554	35.5400	26.9403	90.34
225	11.6633	11.6343	35.4762	27.0294	90.34
250	10.8856	10.8548	35.3823	27.1002	90.34
275	10.0580	10.0257	35.2882	27.1731	90.26
300	9.2750	9.2415	35.2077	27.2420	90.11
325	8.3179	8.2839	35.1292	27.3325	90.09
350	7.8119	7.7765	35.1026	27.3882	89.99
375	7.2608	7.2244	35.0753	27.4468	90.09
400	6.7366	6.6994	35.0572	27.5056	90.02
425	6.5424	6.5034	35.0454	27.5228	90.01
450	6.1558	6.1158	35.0349	27.5656	89.99
475	5.8204	5.7793	35.0161	27.5937	89.97
500	5.7080	5.6650	35.0116	27.6044	90.06

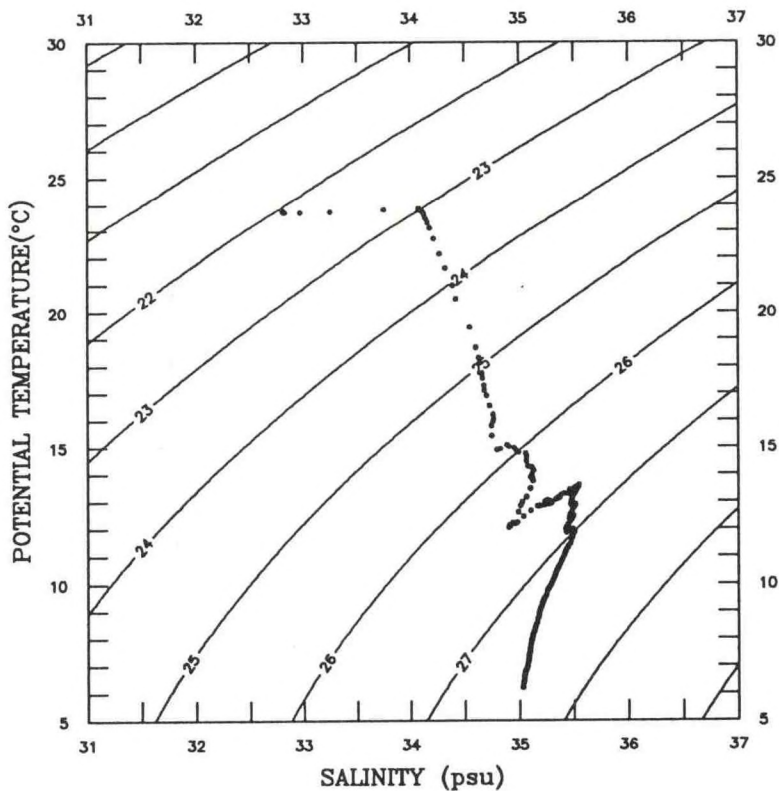


STATION 41

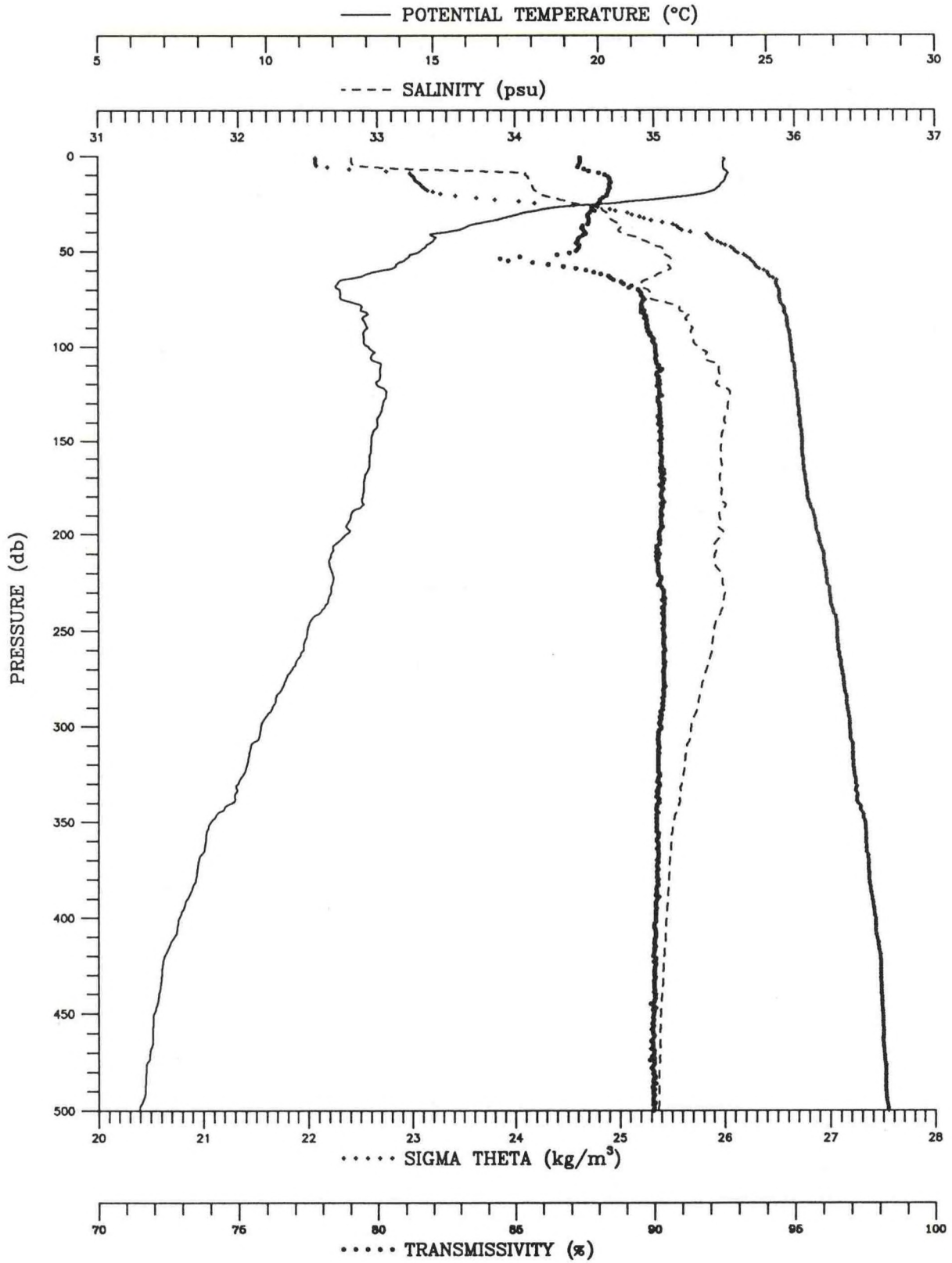


R/V DELAWARE II 91-09 Station: 42 Date: 91/08/11 GMT: 2029 Depth: 2470m
 Position: 38 50.95N 72 15.06W Wind: 14 kts Dir: 280 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	23.7315	23.7214	32.8128	22.0691	87.33
10	23.8323	23.8302	34.0723	22.9908	88.23
20	23.1134	23.1093	34.1744	23.2777	88.31
30	17.7406	17.7355	34.6595	25.0771	87.69
40	15.4430	15.4369	34.7476	25.6815	87.49
50	14.6285	14.6211	35.0631	26.1041	87.19
60	13.4872	13.4788	35.0980	26.3721	87.55
70	12.2116	12.2024	34.9594	26.5193	89.43
80	12.8401	12.8292	35.1803	26.5675	89.54
90	13.0457	13.0333	35.2782	26.6024	89.74
100	13.0819	13.0680	35.3254	26.6320	90.04
125	13.6036	13.5858	35.5422	26.6938	90.19
150	13.1639	13.1430	35.4792	26.7359	90.20
175	12.9419	12.9178	35.4779	26.7805	90.27
200	12.4117	12.3848	35.4828	26.8901	90.17
225	12.0087	11.9791	35.4885	26.9733	90.19
250	11.2498	11.2183	35.4240	27.0663	90.33
275	10.6082	10.5748	35.3491	27.1246	90.34
300	9.8639	9.8291	35.2632	27.1872	90.24
325	9.3498	9.3133	35.2072	27.2298	90.20
350	8.3939	8.3570	35.1372	27.3275	90.07
375	7.9862	7.9478	35.1068	27.3659	90.14
400	7.4475	7.4081	35.0863	27.4292	90.04
425	6.9559	6.9155	35.0637	27.4810	90.04
450	6.6996	6.6577	35.0452	27.5018	89.98
475	6.5052	6.4616	35.0373	27.5220	89.99
500	6.2612	6.2161	35.0288	27.5477	89.94

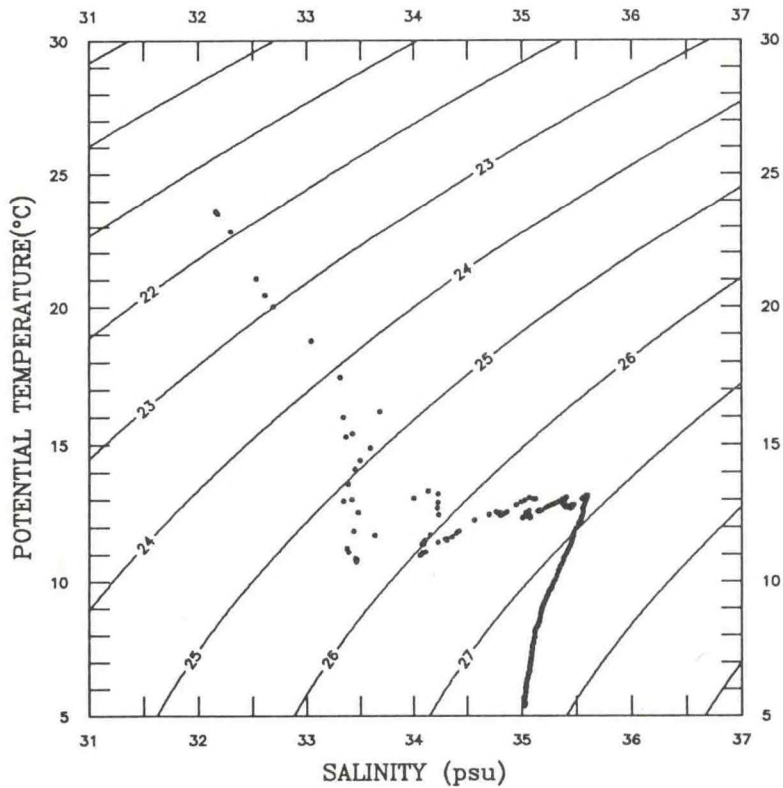


STATION 42

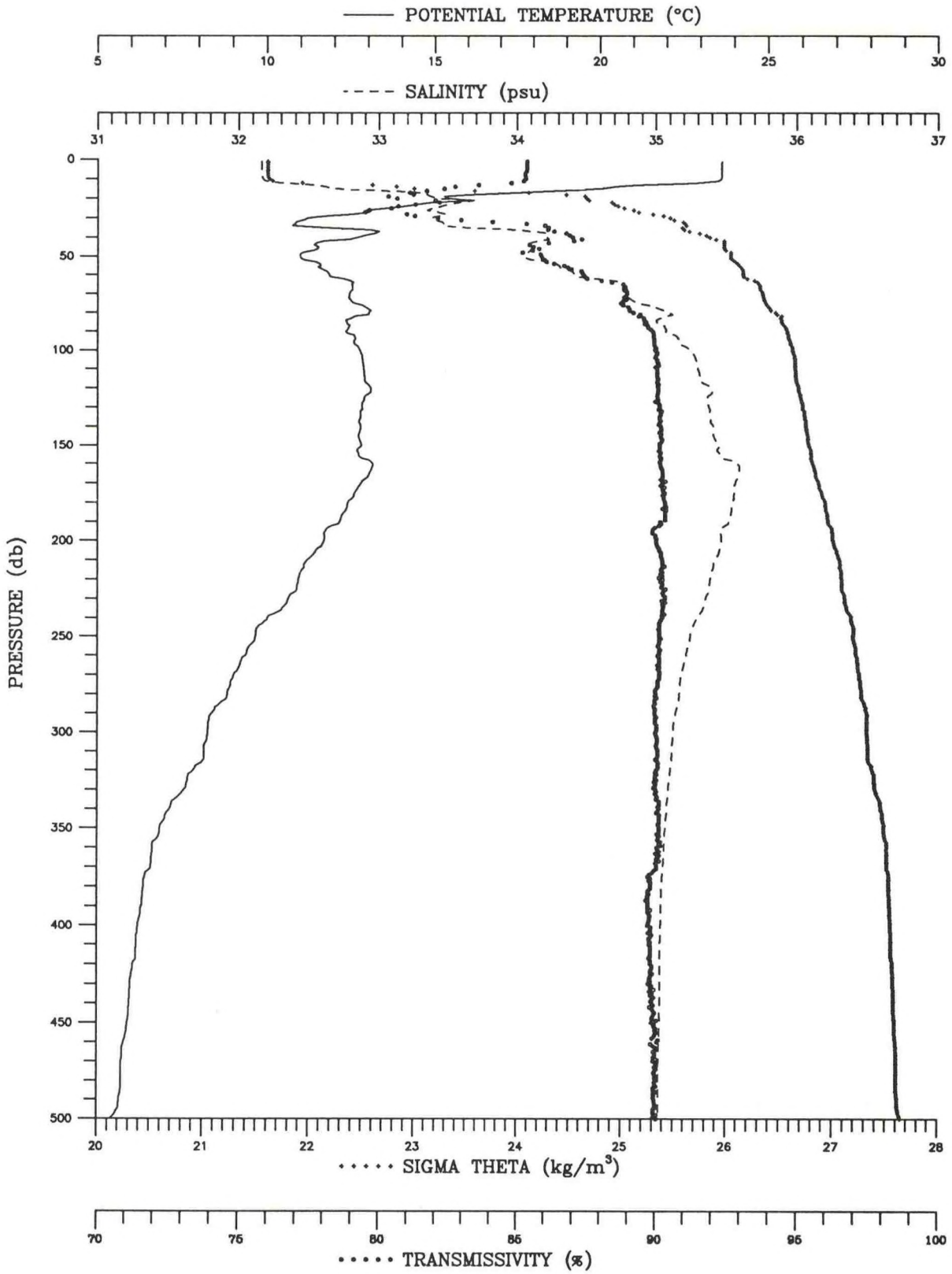


R/V DELAWARE II 91-09 Station: 43 Date: 91/08/12 GMT: 0026 Depth: 1259m
 Position: 38 57.87N 72 35.96W Wind: 14 kts Dir: 275 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	23.6257	23.6260	32.1612	21.6056	85.36
10	23.5957	23.5936	32.1704	21.6206	85.31
20	15.4183	15.4153	33.4266	24.6690	80.63
30	11.2379	11.2342	33.3744	25.4684	82.09
40	12.7014	12.6960	34.2157	25.8460	87.00
50	10.9954	10.9893	34.0579	26.0443	85.88
60	11.8570	11.8493	34.4144	26.1633	87.40
70	12.4517	12.4425	34.7979	26.3472	88.95
80	13.0361	13.0252	35.1022	26.4677	89.19
90	12.3563	12.3443	35.0683	26.5762	89.88
100	12.7765	12.7629	35.2406	26.6274	89.97
125	12.9100	12.8929	35.3704	26.7022	90.06
150	12.8357	12.8152	35.4521	26.7811	90.14
175	12.6254	12.6016	35.5576	26.9054	90.33
200	11.7302	11.7044	35.4682	27.0099	90.02
225	10.9169	10.8891	35.3798	27.0921	90.36
250	9.7036	9.6749	35.2489	27.2021	90.14
275	8.9676	8.9375	35.1772	27.2674	90.09
300	8.3077	8.2764	35.1282	27.3329	90.00
325	7.7160	7.6834	35.0974	27.3978	90.04
350	6.9047	6.8717	35.0708	27.4927	90.14
375	6.4616	6.4275	35.0504	27.5368	89.74
400	6.2618	6.2260	35.0399	27.5552	89.74
425	6.0773	6.0398	35.0348	27.5753	89.91
450	5.9498	5.9104	35.0336	27.5910	89.87
475	5.7759	5.7349	35.0254	27.6066	90.00
500	5.4622	5.4201	35.0236	27.6441	90.04

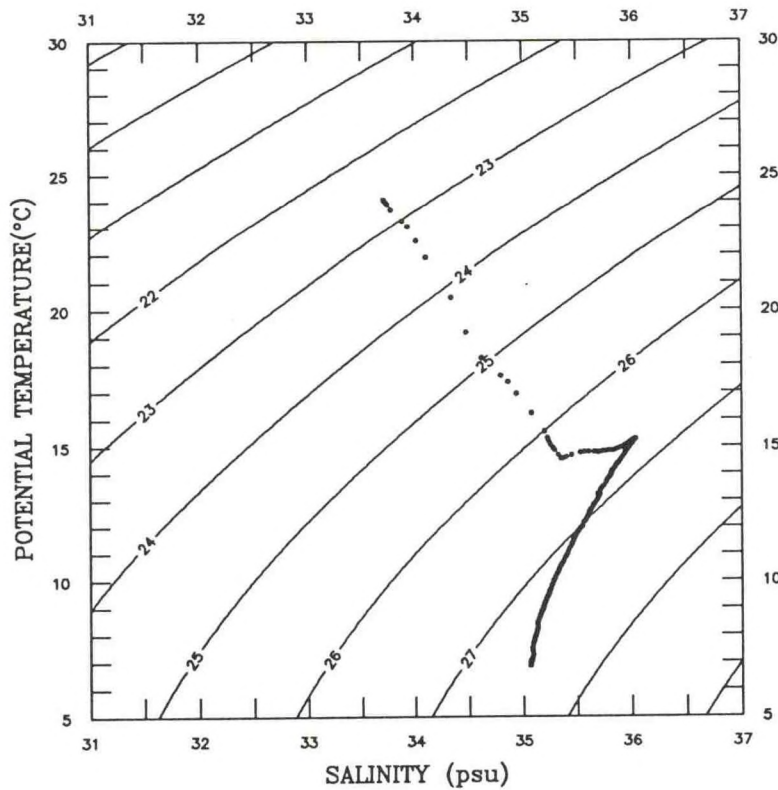


STATION 43

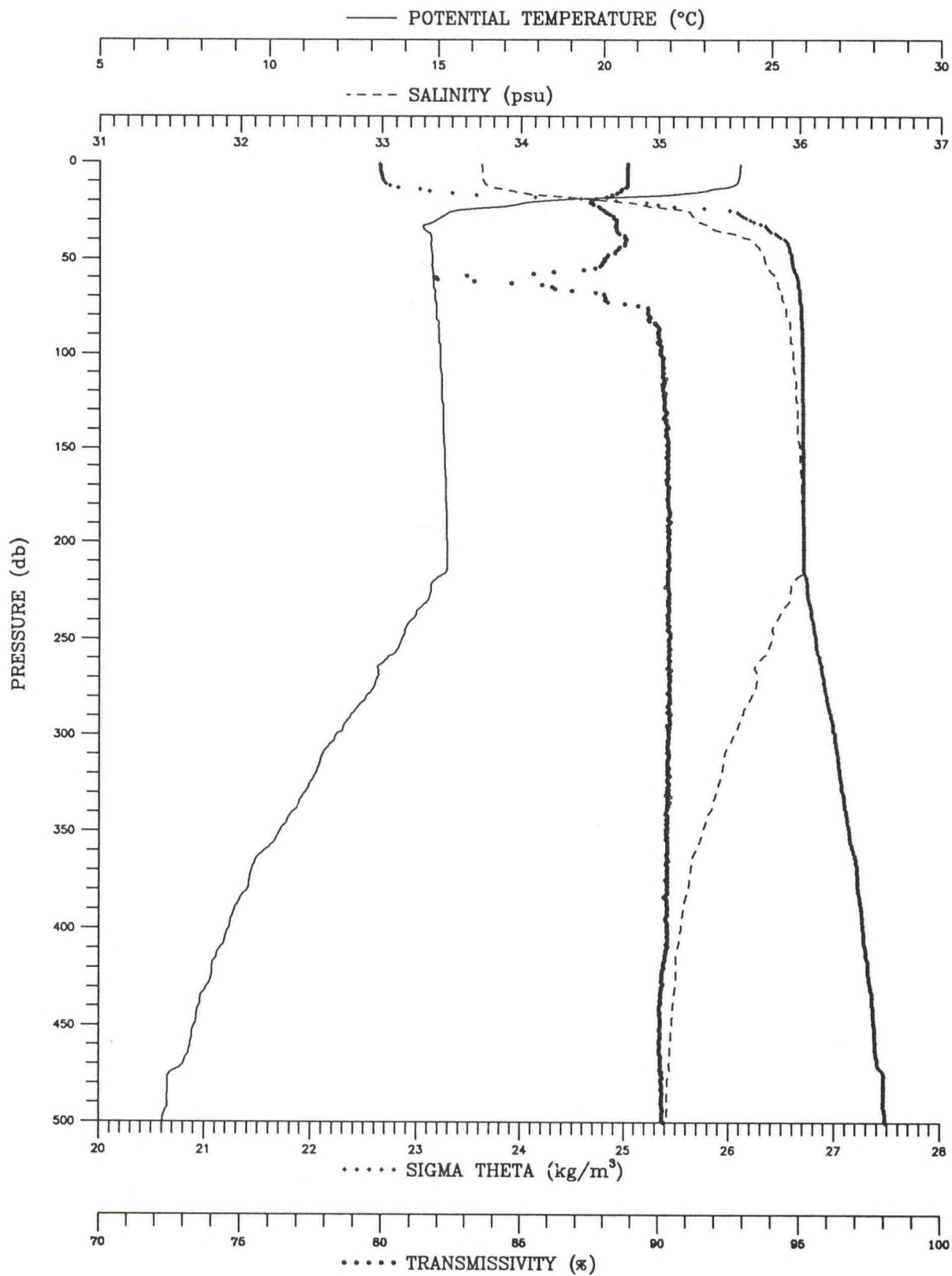


R/V DELAWARE II 91-09 Station: 44 Date: 91/08/12 GMT: 0427 Depth: 2408m
 Position: 38 36.98N 72 35.96W Wind: 12 kts Dir: 290 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	24.0712	24.0713	33.7149	22.6461	88.86
10	23.9946	23.9925	33.7281	22.6827	88.85
20	18.2573	18.2539	34.6144	24.9149	87.56
30	14.9514	14.9468	35.2741	26.1958	88.45
40	14.8018	14.7958	35.6506	26.5195	88.81
50	14.8238	14.8163	35.7471	26.5894	88.01
60	14.8527	14.8437	35.8245	26.6431	81.92
70	14.9169	14.9063	35.8732	26.6670	88.02
80	14.9620	14.9498	35.8998	26.6779	89.64
90	15.0324	15.0187	35.9321	26.6876	89.99
100	15.0803	15.0650	35.9525	26.6931	90.04
125	15.1507	15.1315	35.9764	26.6967	90.21
150	15.2237	15.2006	36.0026	26.7015	90.34
175	15.2589	15.2319	36.0145	26.7036	90.34
200	15.3029	15.2720	36.0303	26.7069	90.36
225	14.8284	14.7943	35.9388	26.7423	90.36
250	13.9649	13.9285	35.8056	26.8258	90.37
275	13.1356	13.0971	35.6939	26.9116	90.41
300	12.0256	11.9860	35.5374	27.0099	90.37
325	11.2557	11.2146	35.4302	27.0718	90.39
350	10.3708	10.3288	35.3206	27.1457	90.34
375	9.4892	9.4466	35.2253	27.2219	90.27
400	8.8818	8.8381	35.1651	27.2738	90.34
425	8.3685	8.3236	35.1305	27.3274	90.14
450	7.8722	7.8263	35.0993	27.3782	90.09
475	7.1457	7.0997	35.0774	27.4661	90.10
500	6.9356	6.8879	35.0608	27.4826	90.20

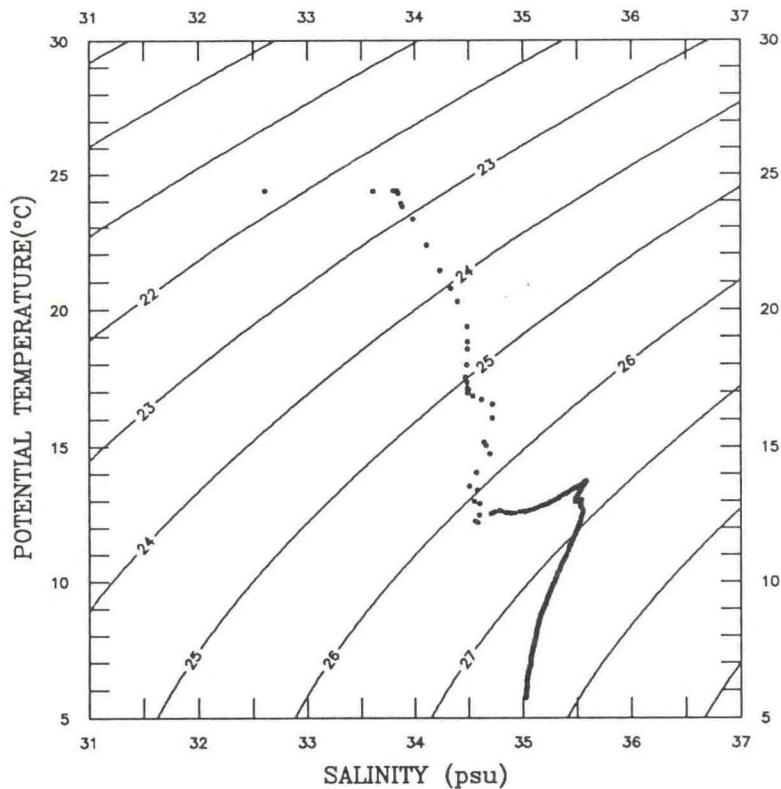


STATION 44

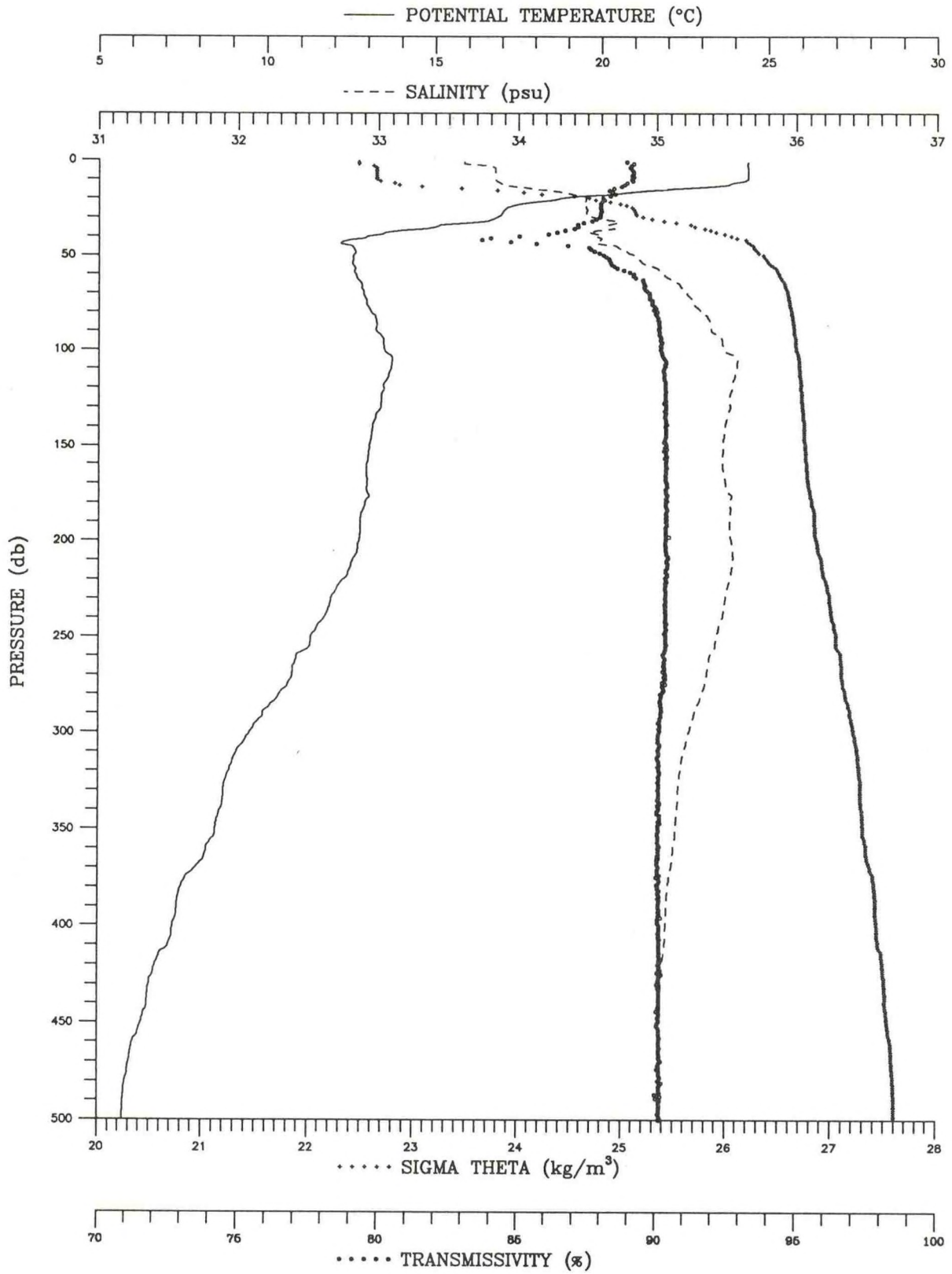


R/V DELAWARE II 91-09 Station: 45 Date: 91/08/12 GMT: 0750 Depth: 2064m
 Position: 38 41.00N 72 55.00W Wind: 14 kts Dir: 280 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	24.3877	24.3881	33.6082	22.4470	88.90
10	24.3892	24.3871	33.8318	22.6443	89.08
20	18.8135	18.8100	34.4868	24.6783	88.04
30	16.8563	16.8515	34.5362	25.1943	87.93
40	13.0028	12.9973	34.5486	26.0441	85.02
50	12.5892	12.5826	34.8352	26.3487	88.06
60	12.6560	12.6480	35.0489	26.5016	89.16
70	12.8987	12.8892	35.2171	26.5840	89.73
80	13.1266	13.1155	35.3249	26.6220	90.01
90	13.2705	13.2579	35.3903	26.6437	90.09
100	13.5253	13.5111	35.4845	26.6646	90.14
125	13.4333	13.4157	35.5266	26.7168	90.31
150	13.0798	13.0591	35.4768	26.7511	90.36
175	13.0235	12.9993	35.5202	26.7968	90.34
200	12.7842	12.7569	35.5378	26.8592	90.34
225	12.1204	12.0907	35.5085	26.9673	90.31
250	11.3778	11.3460	35.4302	27.0475	90.34
275	10.6737	10.6401	35.3503	27.1138	90.34
300	9.5581	9.5240	35.2351	27.2167	90.11
325	8.8354	8.8002	35.1655	27.2802	90.11
350	8.5554	8.5181	35.1421	27.3064	90.09
375	7.6779	7.6404	35.0968	27.4037	90.03
400	7.3114	7.2724	35.0741	27.4390	90.14
425	6.7096	6.6700	35.0473	27.5018	90.23
450	6.3669	6.3261	35.0344	27.5377	90.09
475	5.9533	5.9116	35.0264	27.5851	90.14
500	5.7929	5.7495	35.0231	27.6030	90.14

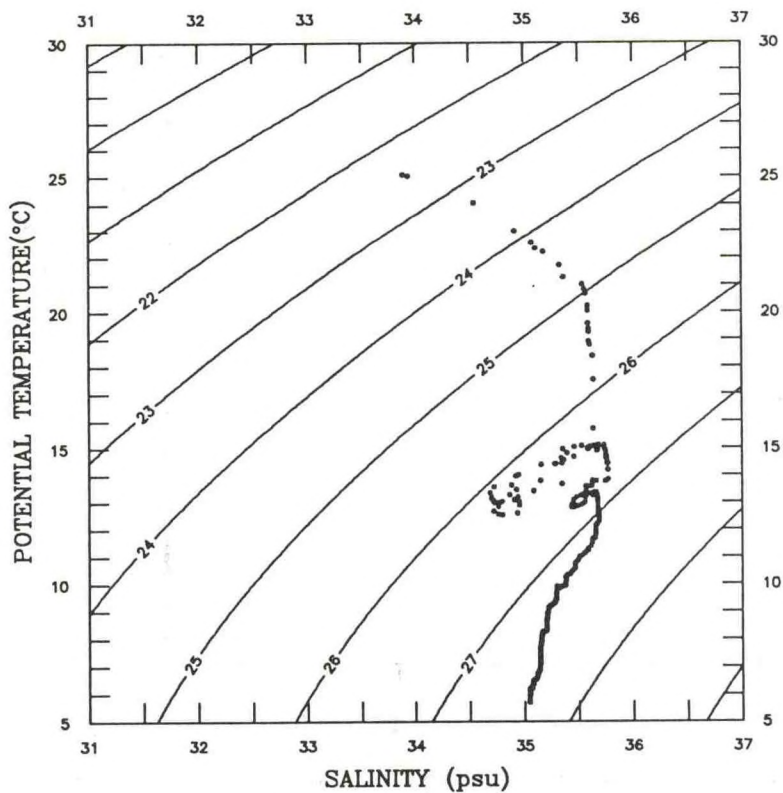


STATION 45

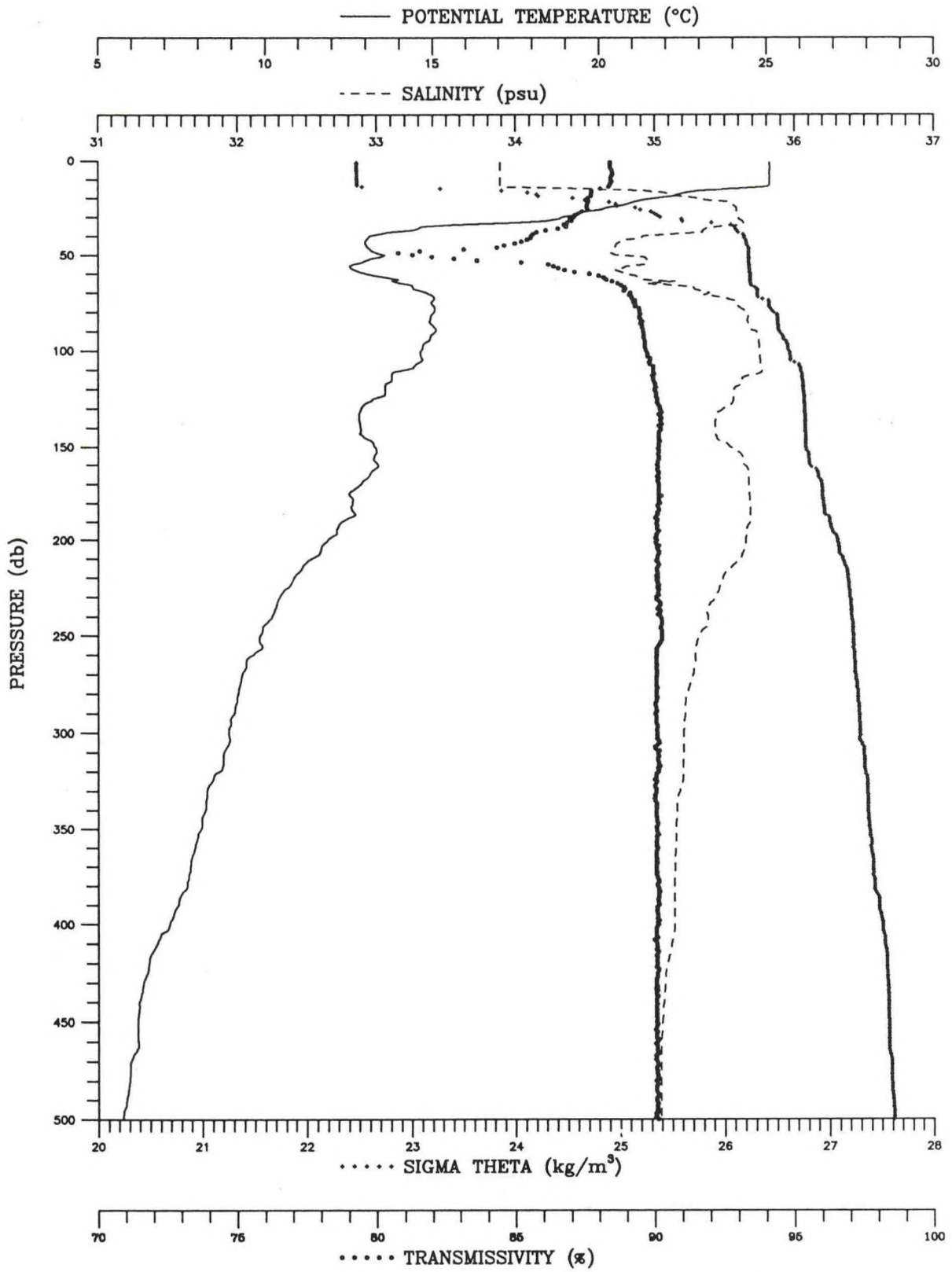


R/V DELAWARE II 91-09 Station: 46 Date: 91/08/12 GMT: 1139 Depth: 2335m
 Position: 38 23.99N 72 55.10W Wind: 14 kts Dir: 290 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	25.0840	25.0833	33.8881	22.4744	88.39
10	25.0914	25.0892	33.8903	22.4776	88.41
20	21.7281	21.7242	35.3254	24.5436	87.58
30	18.9182	18.9129	35.5949	25.3839	87.09
40	13.1150	13.1095	34.9116	26.1831	85.56
50	13.5727	13.5657	34.7212	26.2308	81.28
60	13.0195	13.0113	34.7764	26.2420	87.65
70	14.8239	14.8134	35.3905	26.3119	89.11
80	15.0669	15.0547	35.6584	26.4685	89.44
90	15.1101	15.0963	35.7303	26.5201	89.58
100	14.6726	14.6577	35.7491	26.6126	89.68
125	13.2290	13.2116	35.5621	26.7593	90.09
150	13.3022	13.2812	35.5359	26.7740	90.14
175	12.5314	12.5077	35.6758	26.9338	90.14
200	11.9182	11.8920	35.6515	27.0780	90.07
225	10.7236	10.6961	35.4609	27.1853	90.08
250	9.8765	9.8475	35.3223	27.2267	90.24
275	9.2798	9.2491	35.2503	27.2617	90.04
300	8.9466	8.9138	35.2070	27.2929	90.09
325	8.4423	8.4079	35.2005	27.3625	90.07
350	8.1145	8.0783	35.1517	27.3851	90.07
375	7.7468	7.7091	35.1420	27.4229	90.08
400	7.1733	7.1347	35.1402	27.5100	90.13
425	6.5118	6.4728	35.0770	27.5524	90.09
450	6.2252	6.1849	35.0516	27.5668	90.04
475	5.9970	5.9551	35.0430	27.5930	90.08
500	5.7804	5.7371	35.0420	27.6161	90.11

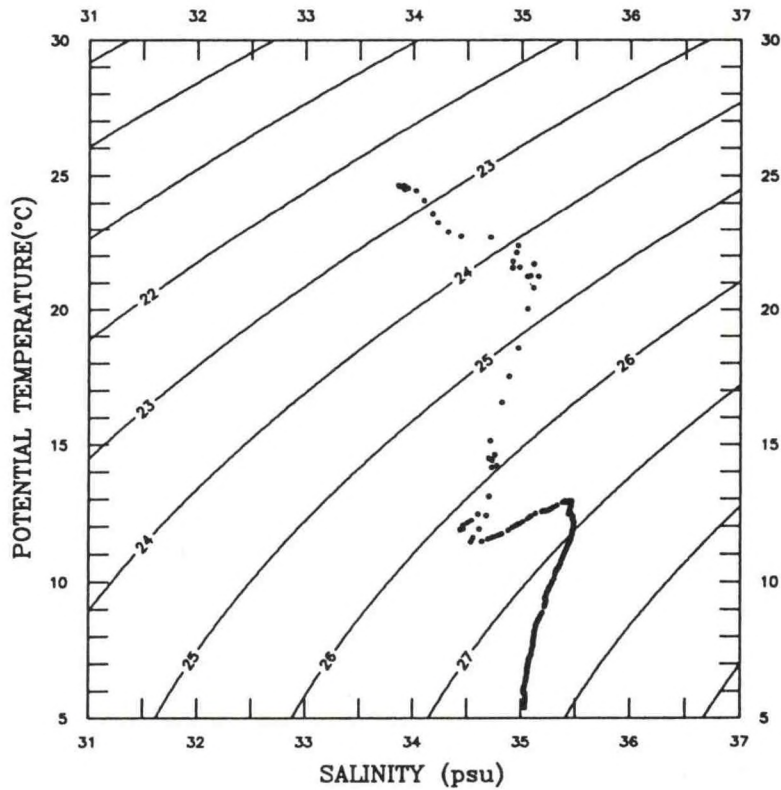


STATION 46

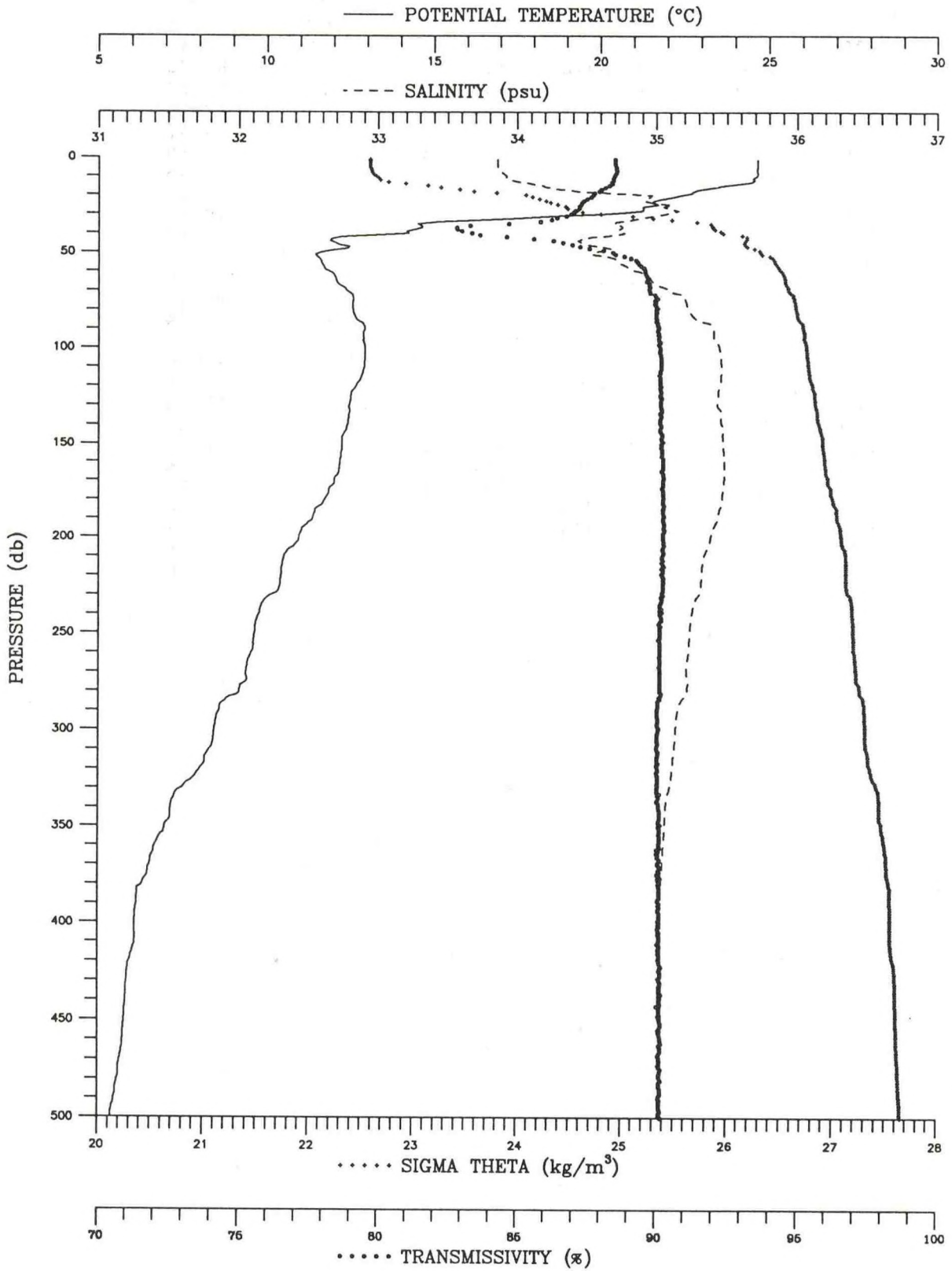


R/V DELAWARE II 91-09 Station: 47 Date: 91/08/12 GMT: 1545 Depth: 2064m
 Position: 38 10.03N 73 15.06W Wind: 8 kts Dir: 330 deg. Air Temp: 25.5C

PR	TE	PT	SA	SO	TR
1	24.6477	24.6476	33.8570	22.5845	88.51
10	24.6197	24.6176	33.9239	22.6452	88.48
20	22.4012	22.3972	34.9651	24.0809	87.72
30	20.0296	20.0240	35.0545	24.7981	86.93
40	14.2441	14.2382	34.7704	25.9601	83.36
50	11.6150	11.6086	34.5544	26.3172	88.43
60	11.8792	11.8714	34.8766	26.5183	89.59
70	12.3989	12.3896	35.0894	26.5838	89.75
80	12.5896	12.5788	35.2298	26.6556	89.99
90	12.9404	12.9280	35.4035	26.7208	90.07
100	12.9490	12.9353	35.4476	26.7535	90.14
125	12.5265	12.5097	35.4380	26.8307	90.14
150	12.2712	12.2513	35.4713	26.9073	90.18
175	11.8808	11.8581	35.4718	26.9834	90.24
200	10.9775	10.9528	35.3853	27.0848	90.24
225	10.4186	10.3917	35.3192	27.1336	90.24
250	9.6732	9.6446	35.2400	27.2003	90.14
275	9.4113	9.3803	35.2283	27.2352	90.14
300	8.4853	8.4535	35.1400	27.3147	90.08
325	7.8578	7.8249	35.1124	27.3887	90.07
350	7.0287	6.9954	35.0636	27.4699	90.10
375	6.5229	6.4887	35.0465	27.5257	90.06
400	6.1434	6.1080	35.0245	27.5584	90.14
425	5.9367	5.8996	35.0416	27.5986	90.14
450	5.8254	5.7864	35.0409	27.6124	90.16
475	5.6715	5.6309	35.0368	27.6286	90.19
500	5.4389	5.3970	35.0314	27.6531	90.18

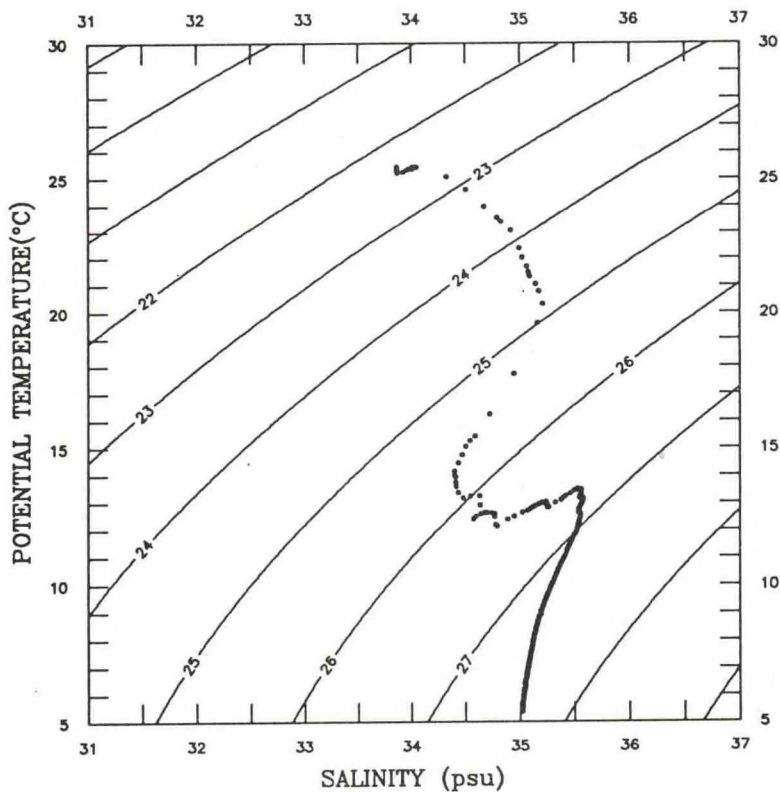


STATION 47

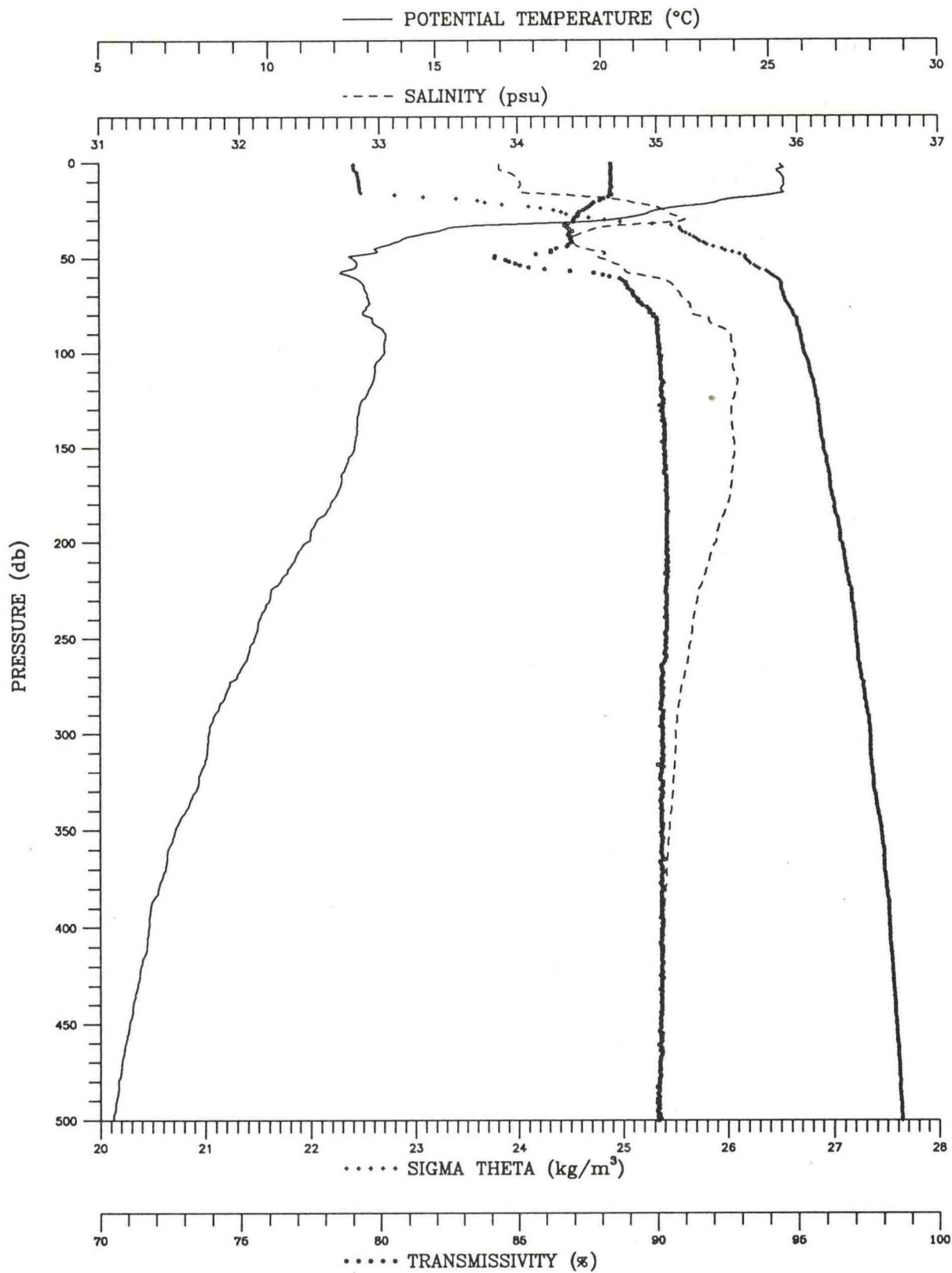


R/V DELAWARE II 91-09 Station: 48 Date: 91/08/12 GMT: 1923 Depth: 2178m
 Position: 37 52.96N 73 14.97W Wind: 4 kts Dir: 295 deg. Air Temp: 26.0C

PR	TE	PT	SA	SO	TR
1	25.3281	25.3292	33.8635	22.4149	88.34
10	25.4263	25.4241	34.0118	22.4673	88.35
20	23.5672	23.5631	34.7879	23.6110	87.95
30	20.3364	20.3308	35.2050	24.8316	87.01
40	14.0090	14.0033	34.3952	25.7197	86.89
50	12.5071	12.5005	34.5919	26.1761	84.16
60	12.5107	12.5027	34.9455	26.4500	88.30
70	12.9669	12.9573	35.1738	26.5368	89.18
80	12.8550	12.8441	35.2587	26.6253	89.89
90	13.5132	13.5004	35.5207	26.6948	90.01
100	13.4977	13.4836	35.5586	26.7277	90.08
125	12.8229	12.8058	35.5419	26.8526	90.24
150	12.5874	12.5671	35.5512	26.9073	90.24
175	12.0549	12.0319	35.5199	26.9875	90.34
200	11.1680	11.1430	35.4191	27.0764	90.37
225	10.0946	10.0682	35.2939	27.1703	90.29
250	9.6028	9.5744	35.2402	27.2122	90.33
275	8.8717	8.8419	35.1708	27.2777	90.14
300	8.2613	8.2301	35.1301	27.3415	90.19
325	7.9685	7.9354	35.1128	27.3725	90.20
350	7.2792	7.2453	35.0824	27.4494	90.16
375	6.8891	6.8538	35.0629	27.4889	90.16
400	6.4966	6.4600	35.0434	27.5270	90.17
425	6.2195	6.1815	35.0341	27.5564	90.09
450	5.9185	5.8793	35.0258	27.5887	90.09
475	5.6651	5.6245	35.0200	27.6161	90.04
500	5.4299	5.3880	35.0146	27.6409	90.01

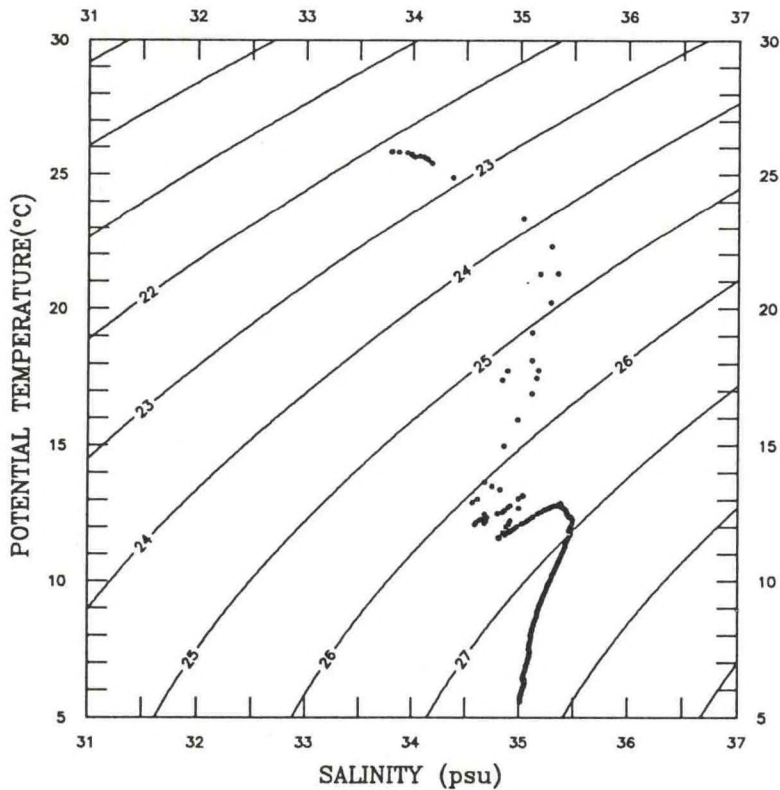


STATION 48

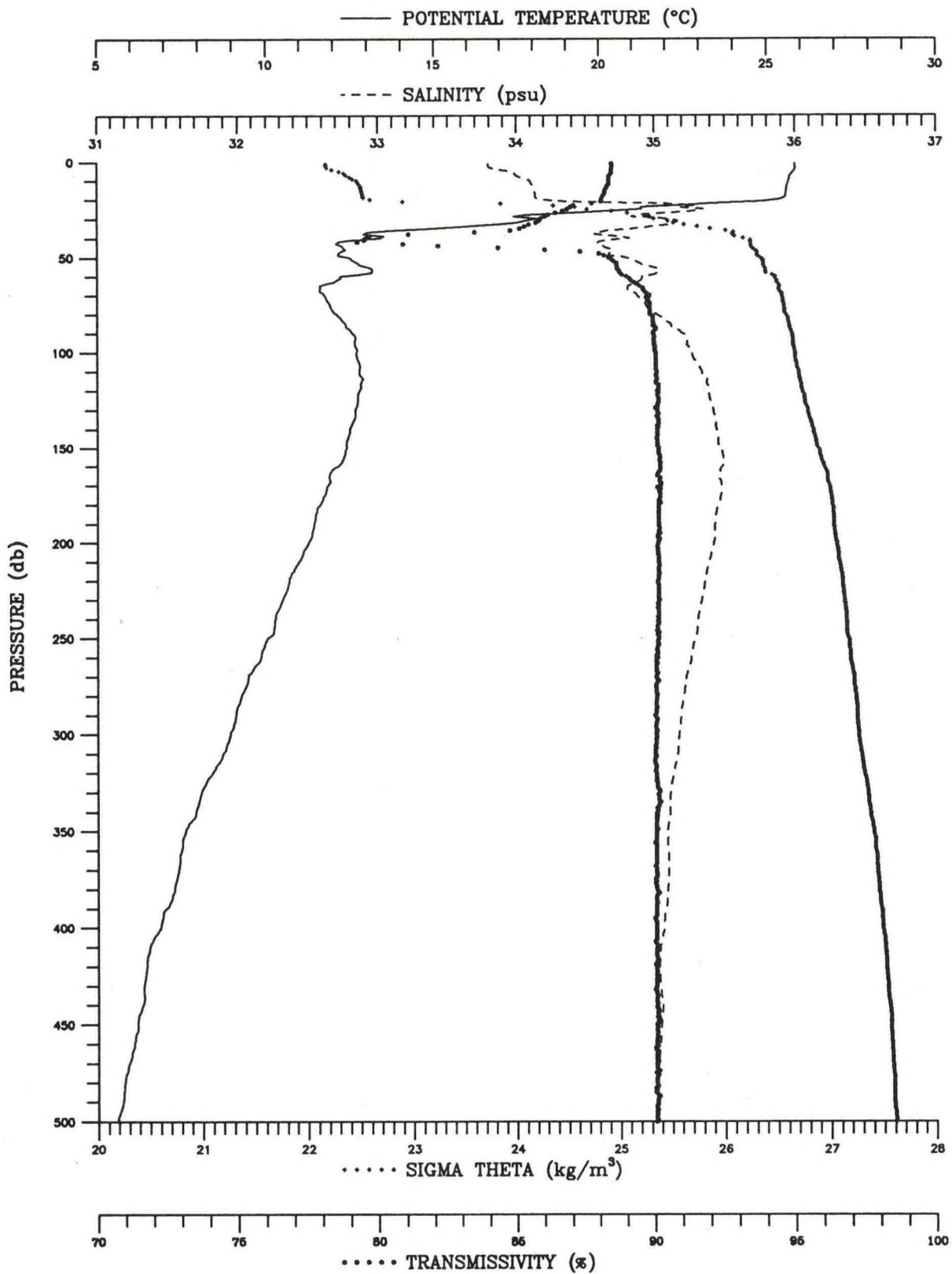


R/V DELAWARE II 91-09 Station: 49 Date: 91/08/12 GMT: 2341 Depth: 2603m
 Position: 38 07.06N 72 55.18W Wind: 6 kts Dir: 305 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	25.8358	25.8312	33.7940	22.1710	88.45
10	25.6466	25.6444	34.0981	22.4649	88.35
20	25.4227	25.4183	34.1737	22.5914	88.08
30	18.1363	18.1311	35.1098	25.3246	85.87
40	13.3956	13.3900	34.8189	26.1742	79.55
50	12.5133	12.5066	34.7969	26.3340	88.33
60	12.2167	12.2089	34.9095	26.4792	88.98
70	11.7562	11.7472	34.8746	26.5402	89.81
80	12.1309	12.1204	35.0181	26.5807	89.84
90	12.5792	12.5672	35.1992	26.6342	89.94
100	12.7067	12.6931	35.2697	26.6639	90.04
125	12.7424	12.7254	35.3984	26.7574	90.14
150	12.4216	12.4015	35.4750	26.8808	90.14
175	11.7702	11.7475	35.4732	27.0056	90.19
200	11.2888	11.2636	35.4218	27.0563	90.12
225	10.6327	10.6054	35.3496	27.1195	90.14
250	10.0704	10.0410	35.2886	27.1708	90.14
275	9.4247	9.3937	35.2172	27.2244	90.03
300	8.9728	8.9400	35.1737	27.2643	90.04
325	8.2448	8.2110	35.1209	27.3372	90.09
350	7.6505	7.6156	35.0906	27.4024	90.04
375	7.3784	7.3417	35.0961	27.4465	90.01
400	6.9067	6.8689	35.0631	27.4870	90.04
425	6.4555	6.4167	35.0360	27.5269	90.04
450	6.2299	6.1895	35.0443	27.5634	90.04
475	5.8918	5.8504	35.0197	27.5876	90.02
500	5.6326	5.5899	35.0100	27.6125	90.04

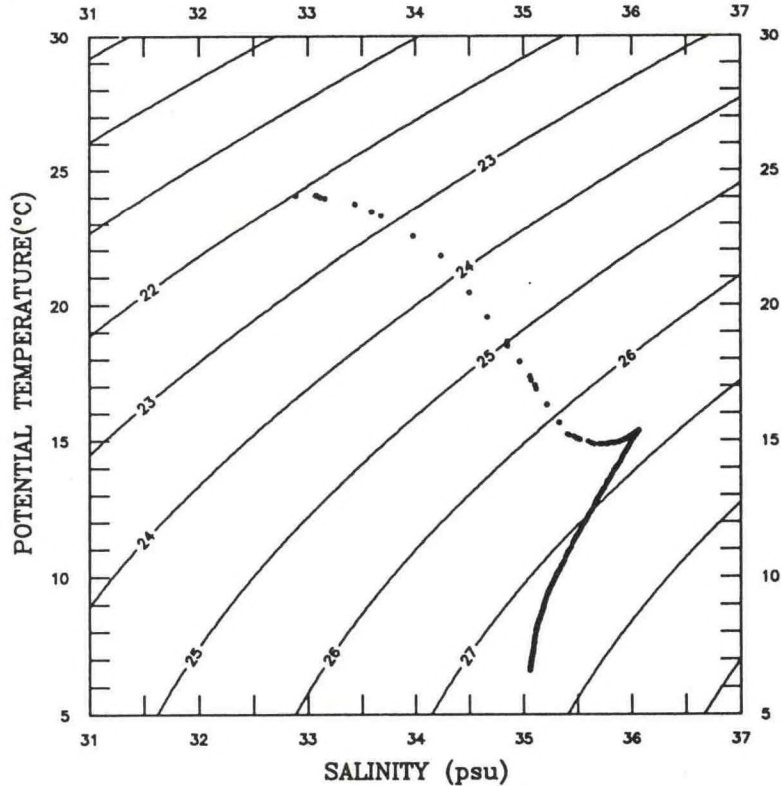


STATION 49

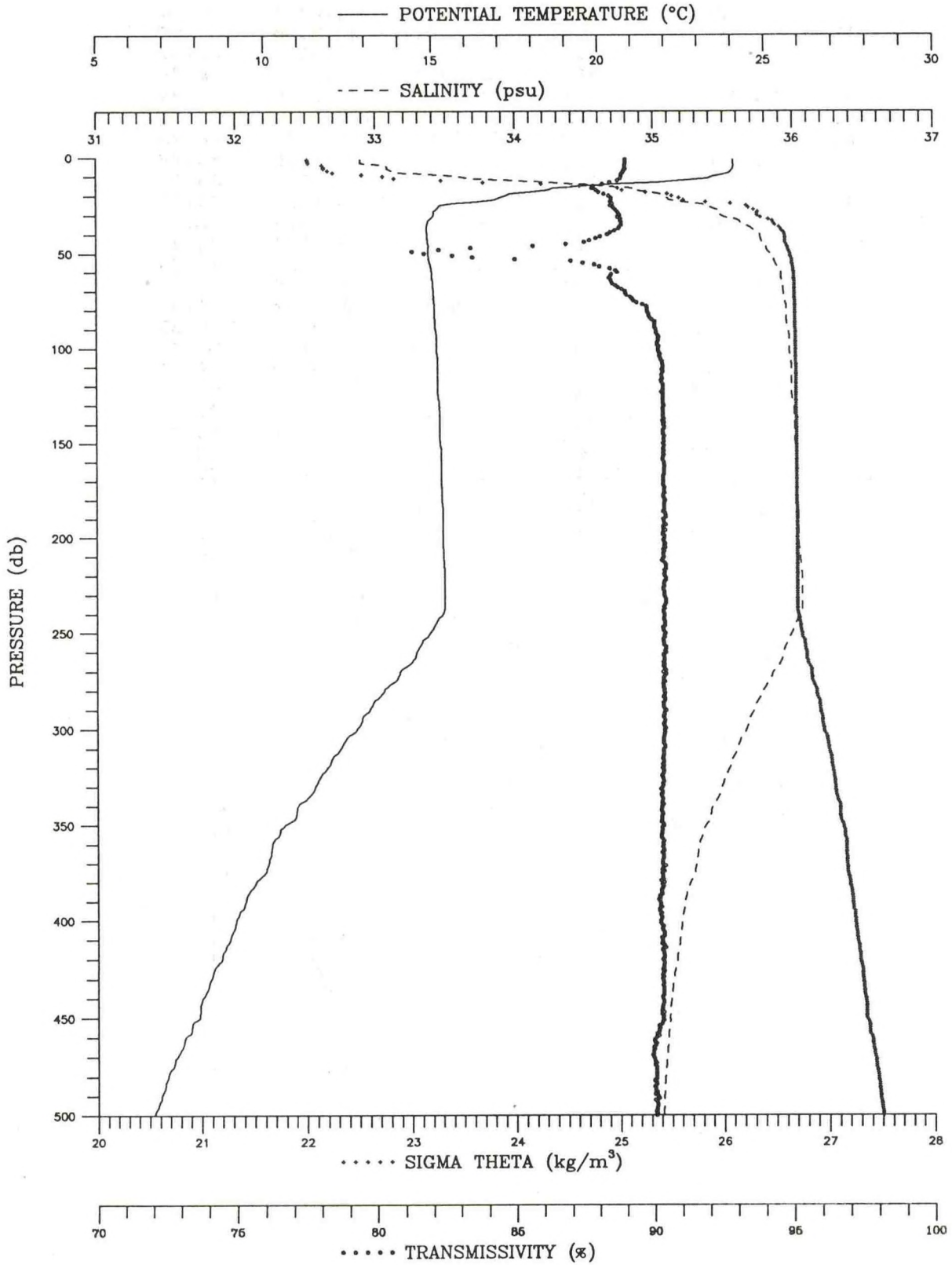


R/V DELAWARE II 91-09 Station: 50 Date: 91/08/13 GMT: 0346 Depth: 2858m
 Position: 38 20.00N 72 36.12W Wind: 5 kts Dir: 260 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	24.0687	24.0688	32.8913	22.0210	89.00
10	23.4599	23.4578	33.5906	22.7348	88.84
20	17.2169	17.2136	35.0668	25.5155	88.39
30	15.0700	15.0654	35.4860	26.3331	88.79
40	14.8725	14.8665	35.7681	26.5946	88.34
50	14.9110	14.9034	35.8435	26.6447	81.73
60	15.0220	15.0129	35.9195	26.6791	88.70
70	15.0569	15.0462	35.9360	26.6845	88.98
80	15.0937	15.0814	35.9538	26.6904	89.77
90	15.1311	15.1173	35.9666	26.6923	90.09
100	15.1570	15.1417	35.9776	26.6953	90.17
125	15.2069	15.1877	35.9942	26.6979	90.34
150	15.2723	15.2491	36.0178	26.7024	90.34
175	15.3173	15.2902	36.0327	26.7046	90.37
200	15.3480	15.3170	36.0438	26.7072	90.37
225	15.3984	15.3634	36.0626	26.7112	90.37
250	14.9638	14.9256	35.9869	26.7505	90.41
275	13.9225	13.8825	35.8281	26.8530	90.39
300	12.7690	12.7278	35.6589	26.9589	90.37
325	11.6875	11.6453	35.5102	27.0537	90.30
350	10.6269	10.5842	35.3716	27.1404	90.34
375	10.0408	9.9966	35.2904	27.1799	90.27
400	9.1900	9.1454	35.1975	27.2497	90.21
425	8.5399	8.4944	35.1463	27.3133	90.28
450	8.1077	8.0610	35.1095	27.3510	90.29
475	7.3273	7.2807	35.0799	27.4424	90.04
500	6.7500	6.7031	35.0586	27.5062	90.04

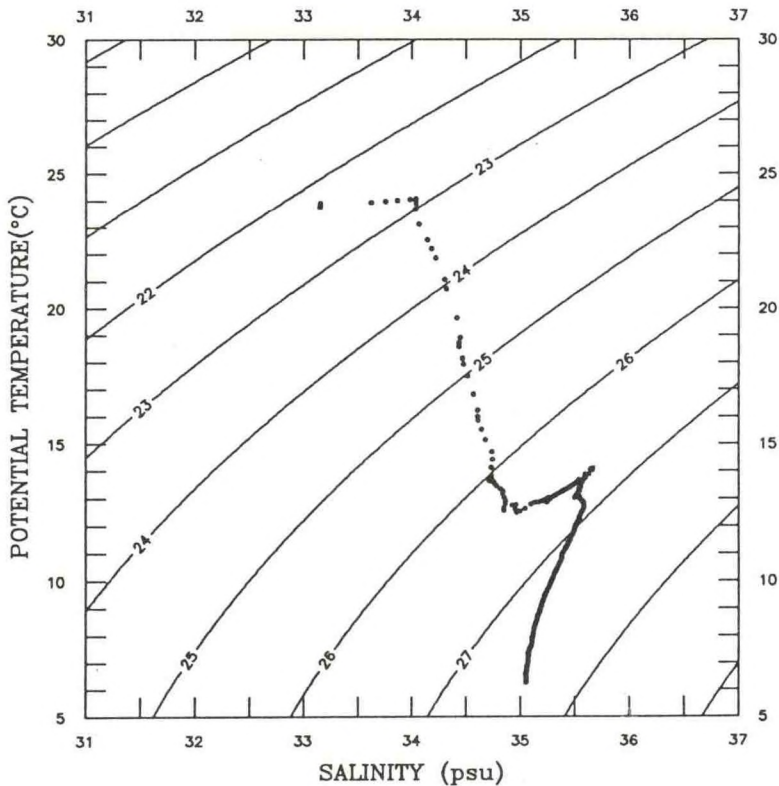


STATION 50

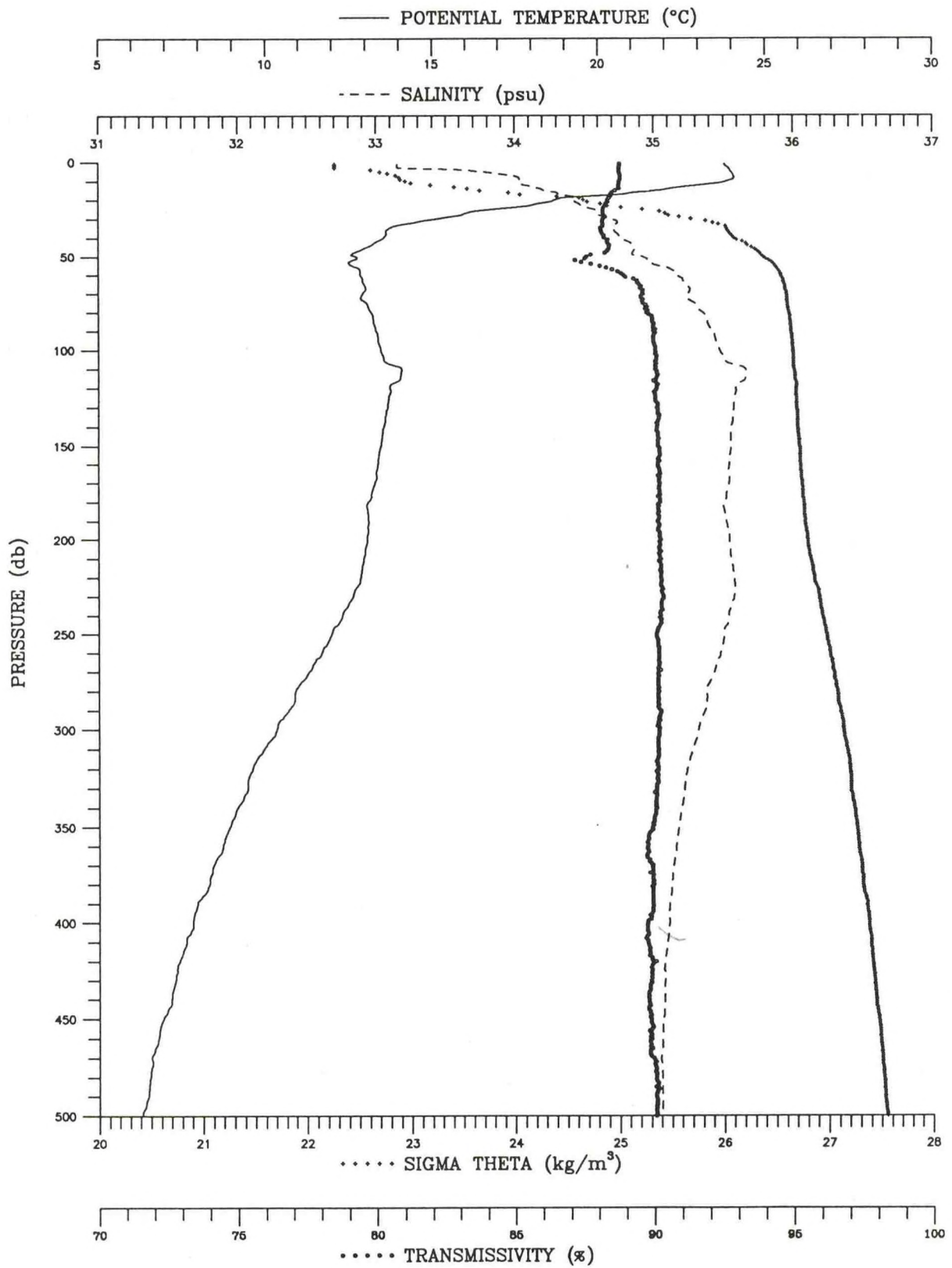


R/V DELAWARE II 91-09 Station: 51 Date: 91/08/13 GMT: 0815 Depth: 2269m
 Position: 38 35.00N 72 15.00W Wind: 5 kts Dir: 280 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	23.7838	23.7810	33.1512	22.2709	88.77
10	23.8924	23.8903	34.0363	22.9459	88.76
20	18.7268	18.7233	34.4327	24.6588	88.33
30	15.1463	15.1417	34.6764	25.6921	88.18
40	13.5509	13.5453	34.7612	26.0977	88.22
50	12.7655	12.7588	34.9187	26.3787	87.58
60	12.8565	12.8483	35.1604	26.5483	88.91
70	12.9263	12.9167	35.2498	26.6039	89.61
80	13.1981	13.1869	35.3501	26.6270	89.74
90	13.3371	13.3245	35.4128	26.6475	89.98
100	13.4753	13.4612	35.4720	26.6652	90.04
125	13.7199	13.7021	35.5787	26.6978	90.04
150	13.4886	13.4674	35.5534	26.7270	90.14
175	13.2060	13.1816	35.5197	26.7595	90.19
200	13.0787	13.0509	35.5427	26.8038	90.24
225	12.7611	12.7303	35.5794	26.8968	90.29
250	12.0209	11.9880	35.5036	26.9833	90.08
275	11.1190	11.0846	35.3978	27.0705	90.14
300	10.3549	10.3190	35.3175	27.1450	90.18
325	9.5054	9.4685	35.2228	27.2163	90.10
350	8.9576	8.9192	35.1769	27.2701	89.92
375	8.3936	8.3540	35.1310	27.3231	89.95
400	7.8629	7.8222	35.1057	27.3838	89.75
425	7.3855	7.3437	35.0727	27.4277	89.91
450	6.9645	6.9216	35.0614	27.4784	89.87
475	6.6131	6.5690	35.0516	27.5189	90.04
500	6.3506	6.3052	35.0493	27.5522	90.04

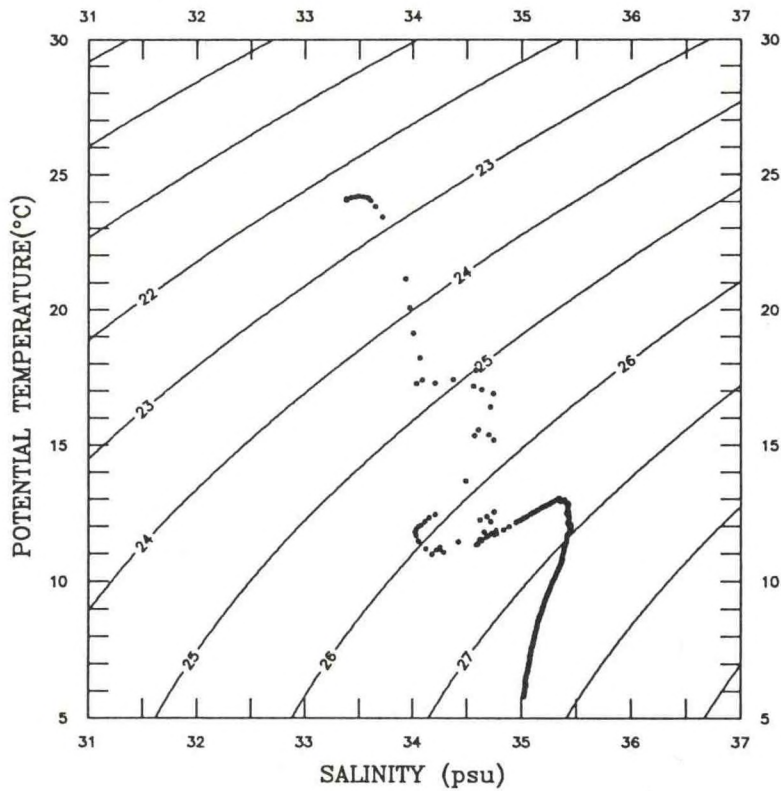


STATION 51

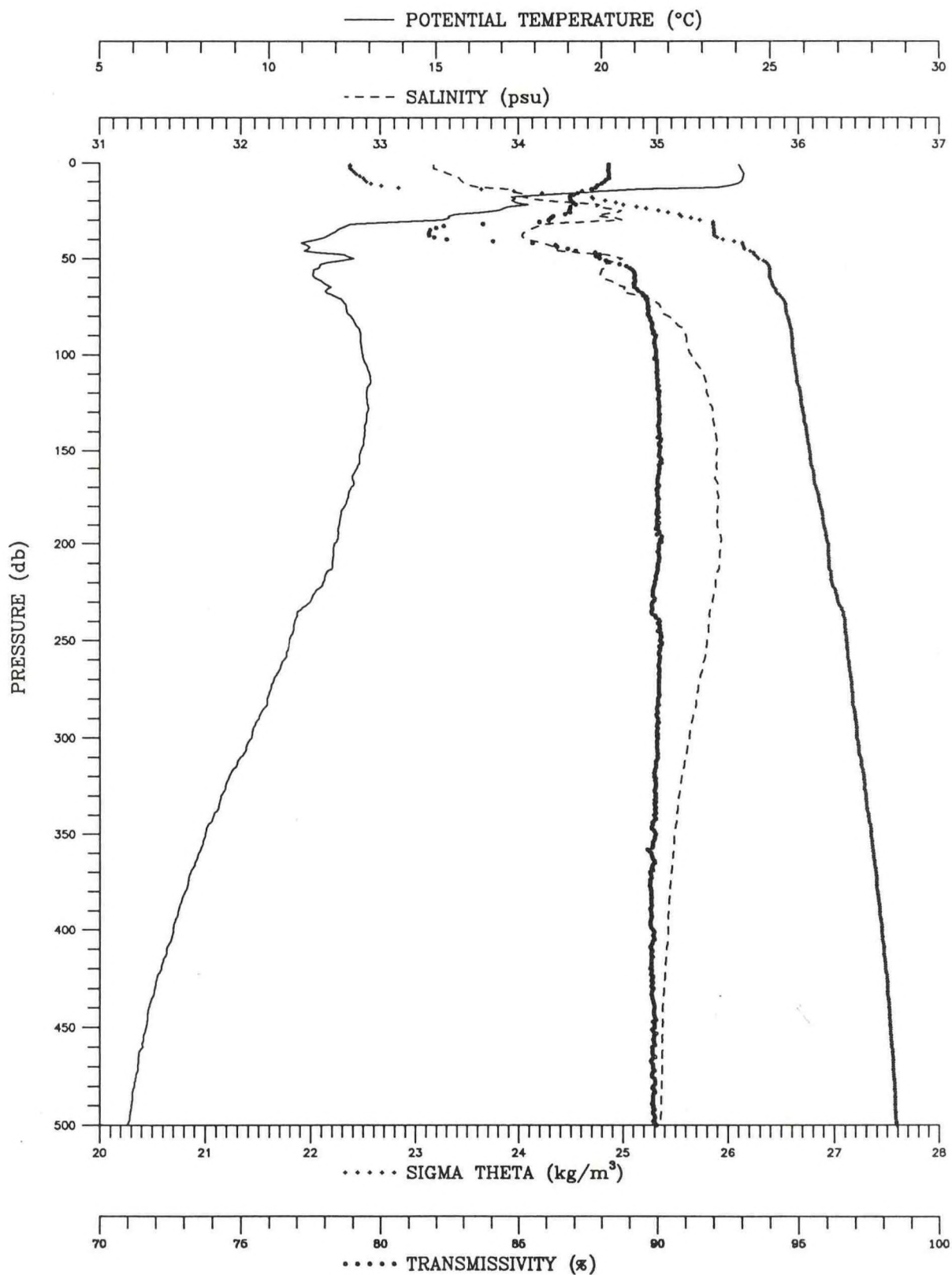


R/V DELAWARE II 91-09 Station: 52 Date: 91/08/13 GMT: 1128 Depth: 2637m
 Position: 38 40.90N 72 05.99W Wind: 3 kts Dir: 165 deg. Air Temp: 23.0C

PR	TE	PT	SA	SO	TR
1	24.0667	24.0706	33.3824	22.3776	88.25
10	24.1561	24.1540	33.5895	22.5303	88.09
20	17.3027	17.2994	34.2038	24.8330	86.91
30	15.1990	15.1945	34.7443	25.7328	86.09
40	11.4649	11.4599	34.0511	25.9535	82.38
50	12.5387	12.5320	34.7467	26.2900	87.92
60	11.3750	11.3675	34.5966	26.3958	89.15
70	12.0056	11.9965	34.8829	26.4993	89.59
80	12.4559	12.4453	35.0773	26.5635	89.69
90	12.7472	12.7350	35.2024	26.6034	89.94
100	12.8189	12.8053	35.2421	26.6202	89.94
125	12.9512	12.9340	35.3655	26.6900	90.04
150	12.7630	12.7425	35.4219	26.7721	90.07
175	12.3884	12.3650	35.4332	26.8554	90.01
200	11.9914	11.9652	35.4488	26.9451	90.04
225	11.4166	11.3880	35.4011	27.0171	89.84
250	10.6479	10.6175	35.3517	27.1190	90.09
275	10.0866	10.0543	35.2879	27.1680	90.04
300	9.5275	9.4934	35.2278	27.2161	90.01
325	8.7589	8.7238	35.1614	27.2892	89.94
350	8.1652	8.1289	35.1212	27.3499	89.94
375	7.6706	7.6331	35.0937	27.4023	89.74
400	7.2235	7.1848	35.0738	27.4513	89.83
425	6.7397	6.7001	35.0513	27.5008	89.81
450	6.4262	6.3852	35.0363	27.5314	89.89
475	6.1213	6.0790	35.0290	27.5657	89.79
500	5.8675	5.8239	35.0189	27.5903	89.94

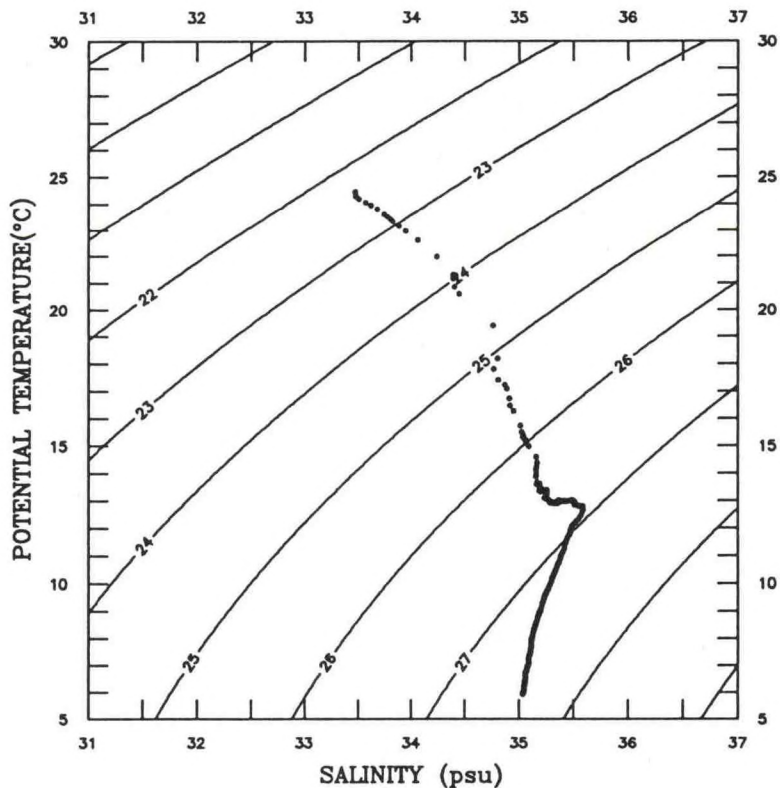


STATION 52

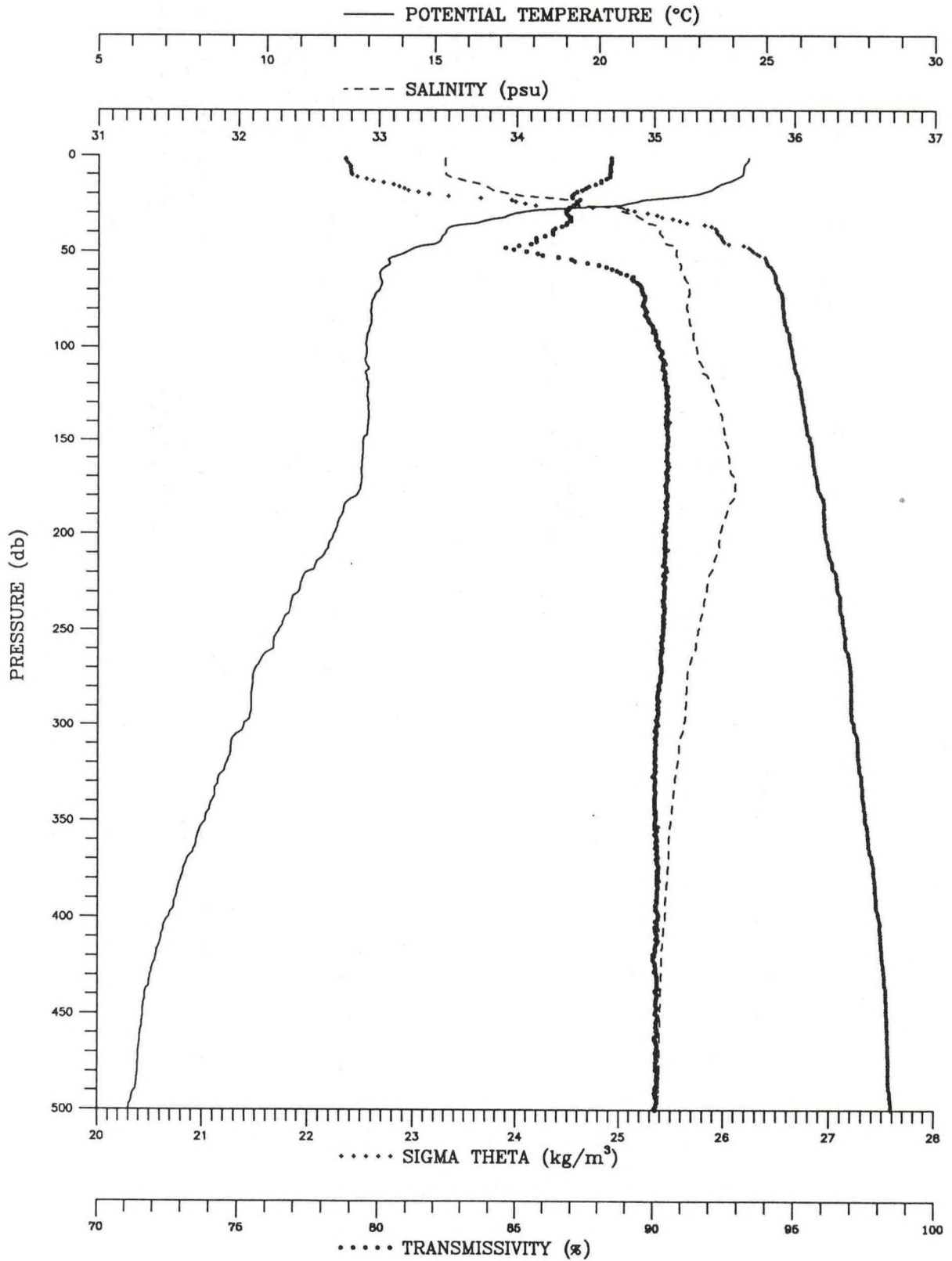


R/V DELAWARE II 91-09 Station: 53 Date: 91/08/13 GMT: 1434 Depth: 2342m
 Position: 38 49.04N 72 05.94W Wind: 8 kts Dir: 200 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	24.4732	24.4695	33.4736	22.3490	88.43
10	24.2963	24.2941	33.4791	22.4053	88.38
20	22.9944	22.9904	33.9470	23.1395	87.05
30	17.4314	17.4264	34.8071	25.2650	86.79
40	15.3256	15.3195	35.0343	25.9285	86.29
50	14.1702	14.1629	35.1537	26.2722	85.34
60	13.3818	13.3735	35.1825	26.4591	88.62
70	13.3298	13.3201	35.2516	26.5235	89.54
80	13.0982	13.0872	35.2357	26.5586	89.67
90	13.0525	13.0401	35.2655	26.5912	89.94
100	12.9706	12.9569	35.3036	26.6375	90.14
125	12.9954	12.9782	35.4271	26.7289	90.44
150	12.8757	12.8551	35.5036	26.8130	90.51
175	12.8106	12.7866	35.5791	26.8852	90.44
200	12.0227	11.9965	35.4748	26.9593	90.44
225	11.0550	11.0270	35.3850	27.0710	90.34
250	10.3955	10.3656	35.3202	27.1390	90.34
275	9.6455	9.6141	35.2412	27.2063	90.24
300	9.3849	9.3511	35.2173	27.2314	90.17
325	8.7596	8.7245	35.1671	27.2935	90.06
350	8.2514	8.2148	35.1265	27.3410	90.06
375	7.6014	7.5641	35.1046	27.4210	90.18
400	7.1549	7.1164	35.0870	27.4714	90.17
425	6.6910	6.6515	35.0589	27.5134	90.07
450	6.4093	6.3683	35.0501	27.5445	90.07
475	6.2675	6.2247	35.0466	27.5607	90.09
500	5.9831	5.9391	35.0333	27.5871	90.07

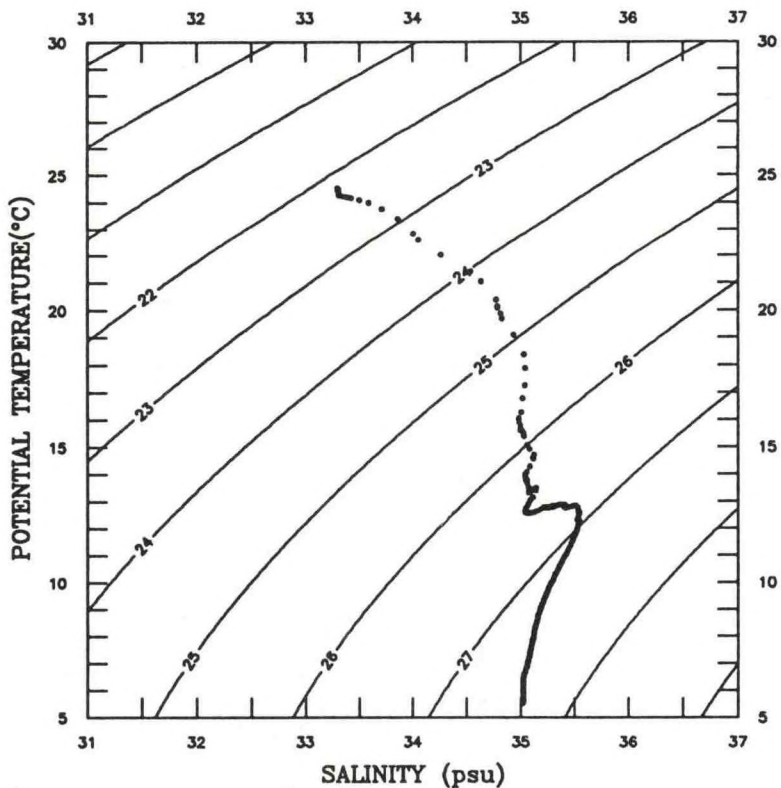


STATION 53

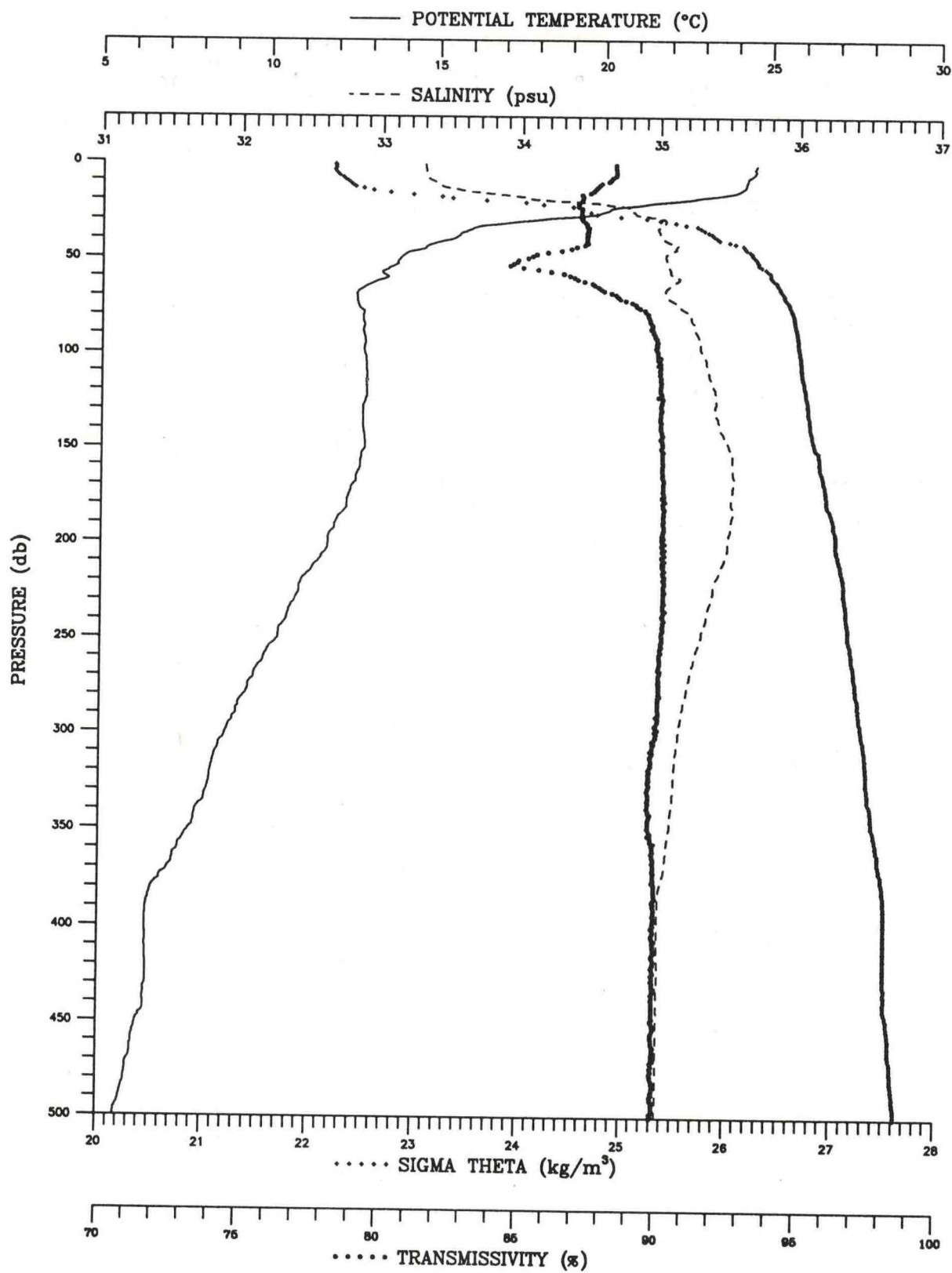


R/V DELAWARE II 91-09 Station: 54 Date: 91/08/13 GMT: 1735 Depth: 2379m
 Position: 38 58.00N 72 06.00W Wind: 11 kts Dir: 220 deg. Air Temp: 25.5C

PR	TE	PT	SA	SO	TR
1	24.5335	24.5312	33.2980	22.2140	88.36
10	24.2377	24.2356	33.3575	22.3307	88.10
20	22.0332	22.0293	34.2609	23.6496	87.12
30	17.9041	17.8990	35.0393	25.3281	87.16
40	15.4254	15.4192	35.0279	25.9014	87.33
50	13.8573	13.8501	35.0417	26.2515	85.21
60	13.5204	13.5119	35.1407	26.3983	86.88
70	12.5904	12.5810	35.0576	26.5216	88.47
80	12.7783	12.7674	35.2237	26.6135	89.58
90	12.8120	12.7997	35.2741	26.6461	89.84
100	12.8238	12.8101	35.3079	26.6702	89.94
125	12.8578	12.8407	35.4097	26.7431	90.11
150	12.8644	12.8438	35.5074	26.8182	90.09
175	12.3859	12.3624	35.5278	26.9294	90.21
200	11.7969	11.7710	35.5021	27.0236	90.24
225	10.9496	10.9218	35.3971	27.0996	90.26
250	10.3345	10.3047	35.3161	27.1464	90.17
275	9.4576	9.4265	35.2190	27.2203	90.07
300	8.7995	8.7671	35.1599	27.2811	90.01
325	8.3363	8.3023	35.1296	27.3300	89.71
350	7.7390	7.7039	35.1006	27.3973	89.76
375	6.8850	6.8497	35.0509	27.4800	89.94
400	6.4841	6.4476	35.0205	27.5106	89.89
425	6.5106	6.4717	35.0237	27.5099	89.91
450	6.2331	6.1927	35.0193	27.5432	89.94
475	5.9367	5.8951	35.0216	27.5834	89.92
500	5.5834	5.5409	35.0163	27.6235	89.91

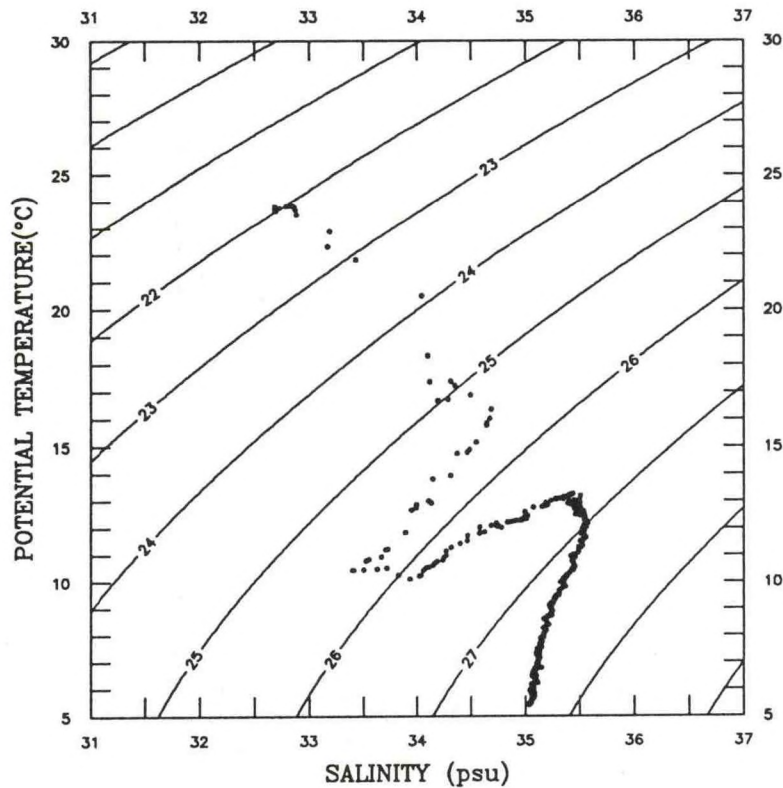


STATION 54

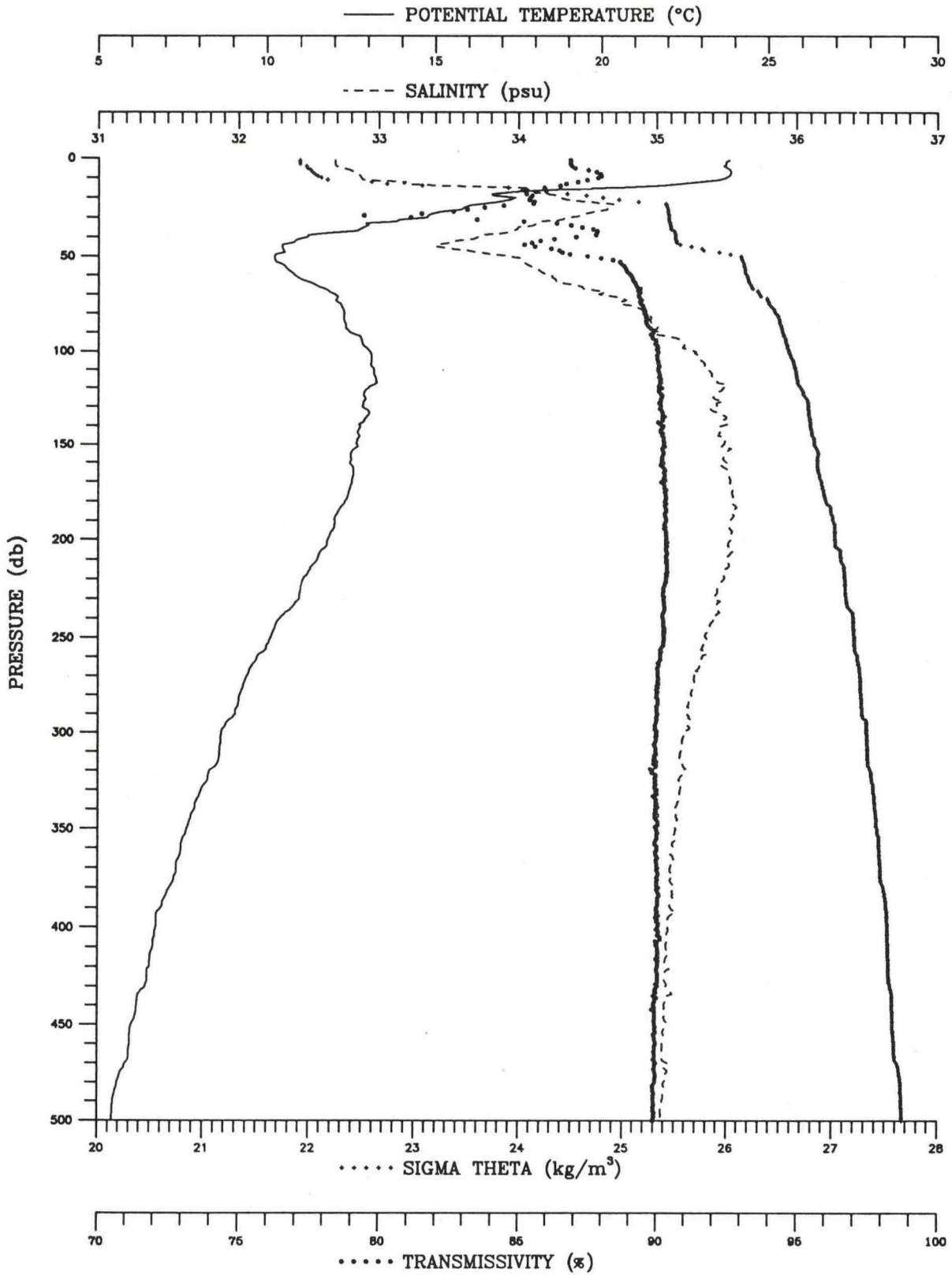


R/V DELAWARE II 91-09 Station: 55 Date: 91/08/13 GMT: 2028 Depth: 2150m
 Position: 38 57.90N 72 14.99W Wind: 4 kts Dir: 250 deg. Air Temp: 26.0C

PR	TE	PT	SA	SO	TR
1	23.8331	23.8334	32.6841	21.9136	86.86
10	23.7290	23.7269	32.8725	22.1131	87.85
20	17.3885	17.3852	34.3056	24.8073	85.41
30	14.8585	14.7549	34.3658	25.4477	81.11
40	11.3099	11.2052	33.7069	25.5099	87.06
50	10.2189	10.1132	33.9325	26.1357	87.47
60	10.8206	10.8134	34.2356	26.1941	89.05
70	12.0320	12.0229	34.5780	26.3175	89.34
80	12.2975	12.2870	34.9132	26.4670	89.54
90	12.4675	12.4556	35.0187	26.5360	89.87
100	13.0719	13.0581	35.2808	26.5924	90.05
125	12.9417	12.9245	35.4007	26.7513	90.17
150	12.6864	12.6661	35.4746	26.8363	90.24
175	12.4520	12.4285	35.5363	26.9231	90.29
200	11.8341	11.8081	35.5305	27.0316	90.34
225	11.0292	11.0012	35.4350	27.1287	90.24
250	10.1325	10.1030	35.3570	27.2135	90.27
275	9.3459	9.3150	35.2567	27.2732	90.01
300	8.7108	8.6786	35.1990	27.3328	89.99
325	8.2949	8.2609	35.1597	27.3800	89.97
350	7.6939	7.6589	35.1402	27.4341	89.99
375	7.3153	7.2787	35.1043	27.4639	90.01
400	6.7876	6.7502	35.0810	27.5275	90.04
425	6.5285	6.4895	35.0560	27.5410	90.04
450	6.0549	6.0151	35.0731	27.5788	89.94
475	5.7266	5.6857	35.0745	27.6416	89.95
500	5.4741	5.4320	35.0329	27.6660	89.88

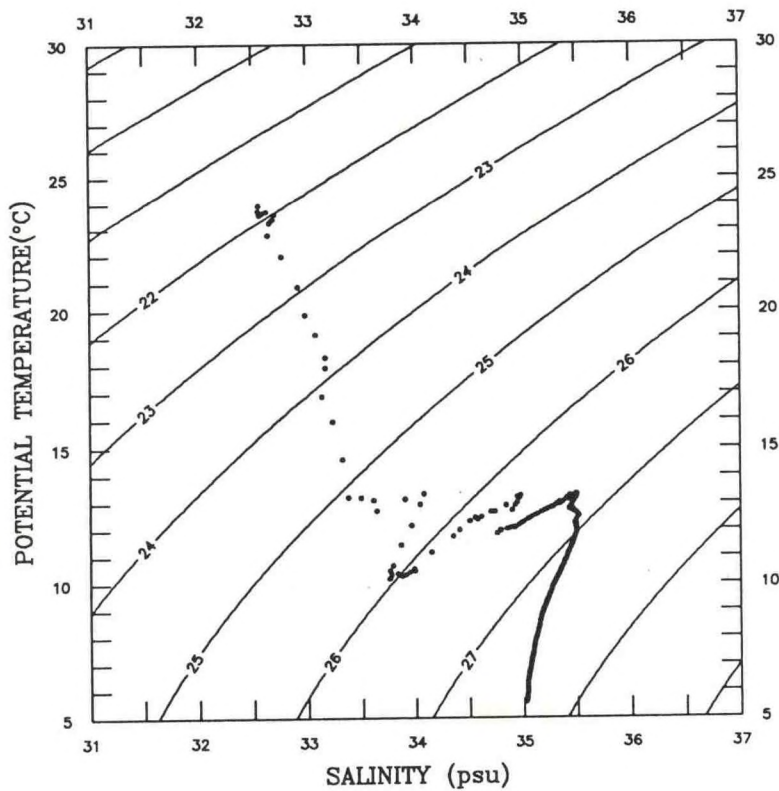


STATION 55

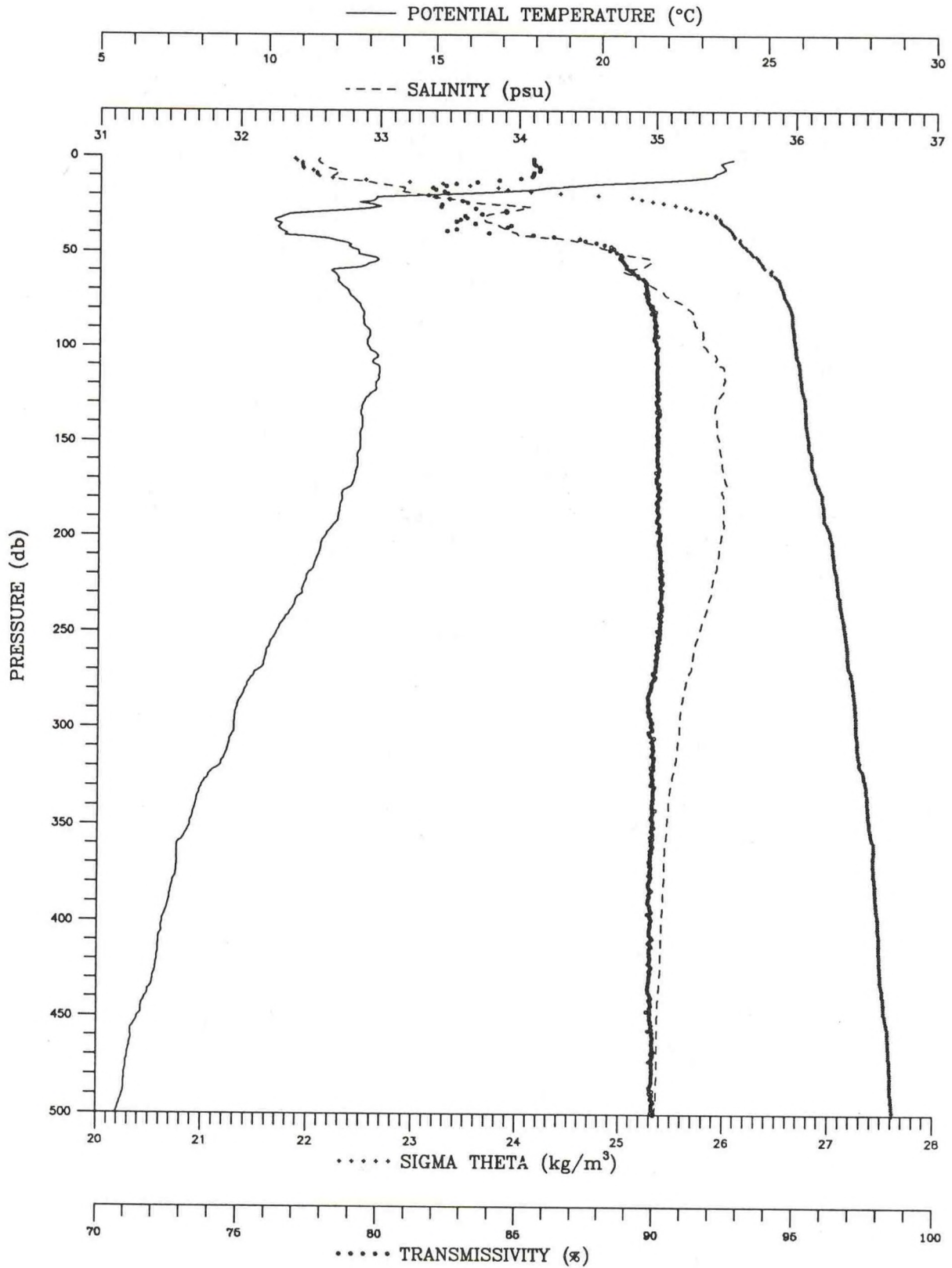


R/V DELAWARE II 91-09 Station: 56 Date: 91/08/13 GMT: 2304 Depth: 2448m
 Position: 38 50.89N 72 14.87W Wind: 5 kts Dir: 245 deg. Air Temp: 26.0C

PR	TE	PT	SA	SO	TR
1	23.9642	23.9562	32.5638	21.8537	85.51
10	23.2788	23.2768	32.6604	22.0827	85.46
20	14.6156	14.6127	33.3255	24.7645	81.71
30	10.6684	10.6649	33.7880	25.8918	83.65
40	10.5590	10.5543	33.9843	26.0639	83.91
50	12.6944	12.6877	34.7188	26.2378	88.54
60	11.8859	11.8782	34.7568	26.4239	89.14
70	12.3920	12.3828	35.0389	26.5459	89.68
80	12.8118	12.8010	35.2410	26.6202	89.89
90	12.9814	12.9691	35.3149	26.6438	89.97
100	13.0253	13.0116	35.3585	26.6691	90.08
125	13.0741	13.0568	35.4669	26.7439	90.05
150	12.7787	12.7583	35.4581	26.7971	90.11
175	12.3881	12.3647	35.4929	26.9019	90.18
200	11.7641	11.7382	35.4776	27.0107	90.17
225	11.1484	11.1202	35.4128	27.0757	90.24
250	10.3258	10.2960	35.3203	27.1513	90.22
275	9.5423	9.5111	35.2350	27.2187	89.95
300	9.0824	9.0493	35.1840	27.2547	89.94
325	8.3241	8.2901	35.1341	27.3354	89.94
350	7.7952	7.7599	35.0982	27.3872	89.94
375	7.3936	7.3568	35.0785	27.4304	89.90
400	6.9926	6.9546	35.0621	27.4744	89.91
425	6.8005	6.7607	35.0525	27.4935	89.91
450	6.2750	6.2345	35.0320	27.5478	89.91
475	5.9352	5.8936	35.0305	27.5906	89.97
500	5.6342	5.5915	35.0174	27.6181	90.03

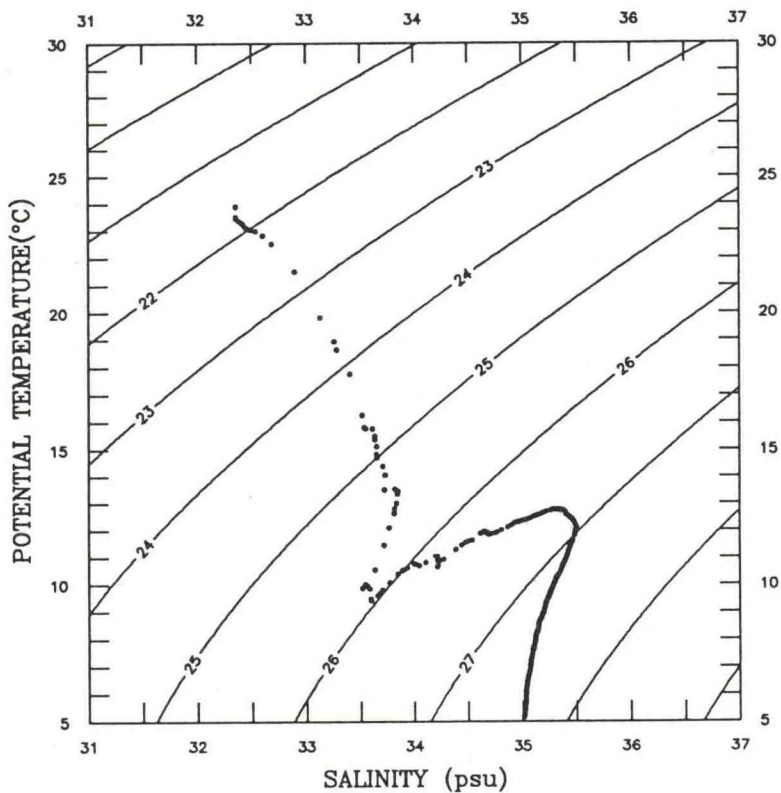


STATION 56

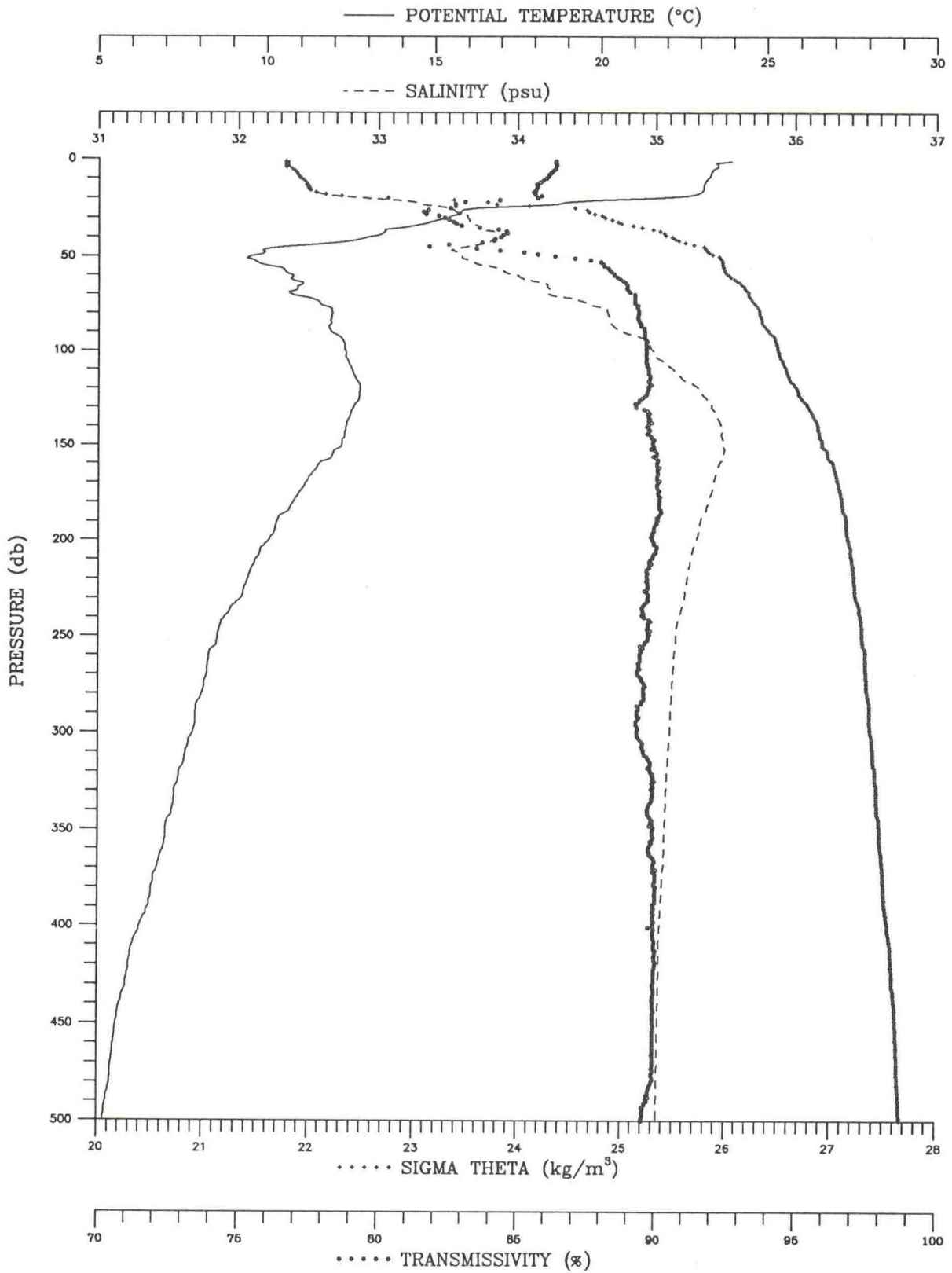


R/V DELAWARE II 91-09 Station: 57 Date: 91/08/14 GMT: 0302 Depth: 1239m
 Position: 38 57.90N 72 36.09W Wind: 5 kts Dir: 240 deg. Air Temp: 24.0C

PR	TE	PT	SA	SO	TR
1	23.8295	23.9115	32.3571	21.7812	86.37
10	23.2167	23.2147	32.4298	21.9259	86.01
20	21.5245	21.5206	32.8945	22.7522	85.71
30	15.3828	15.3783	33.6356	24.8381	82.34
40	13.0159	13.0105	33.8335	25.4878	84.37
50	9.4984	9.4930	33.5947	25.9390	86.33
60	10.7823	10.7752	33.9981	26.0359	88.48
70	10.7021	10.6937	34.2169	26.2207	89.22
80	11.9723	11.9619	34.6499	26.3250	89.37
90	11.9440	11.9324	34.7656	26.4204	89.59
100	12.3630	12.3498	34.9806	26.5071	89.64
125	12.7705	12.7535	35.3658	26.7264	89.51
150	12.2555	12.2356	35.4869	26.9224	89.91
175	10.9800	10.9584	35.4013	27.0962	90.09
200	10.0994	10.0759	35.2939	27.1689	89.89
225	9.3575	9.3323	35.2163	27.2337	89.70
250	8.5913	8.5648	35.1470	27.3029	89.74
275	8.1987	8.1703	35.1219	27.3442	89.61
300	7.8671	7.8368	35.1077	27.3832	89.34
325	7.4283	7.3965	35.0831	27.4283	89.97
350	7.0684	7.0350	35.0695	27.4690	89.92
375	6.7080	6.6732	35.0531	27.5059	90.01
400	6.3102	6.2742	35.0370	27.5466	89.94
425	5.9268	5.8898	35.0298	27.5906	89.97
450	5.5988	5.5606	35.0238	27.6270	89.94
475	5.4364	5.3966	35.0176	27.6422	89.94
500	5.2219	5.1808	35.0114	27.6632	89.54

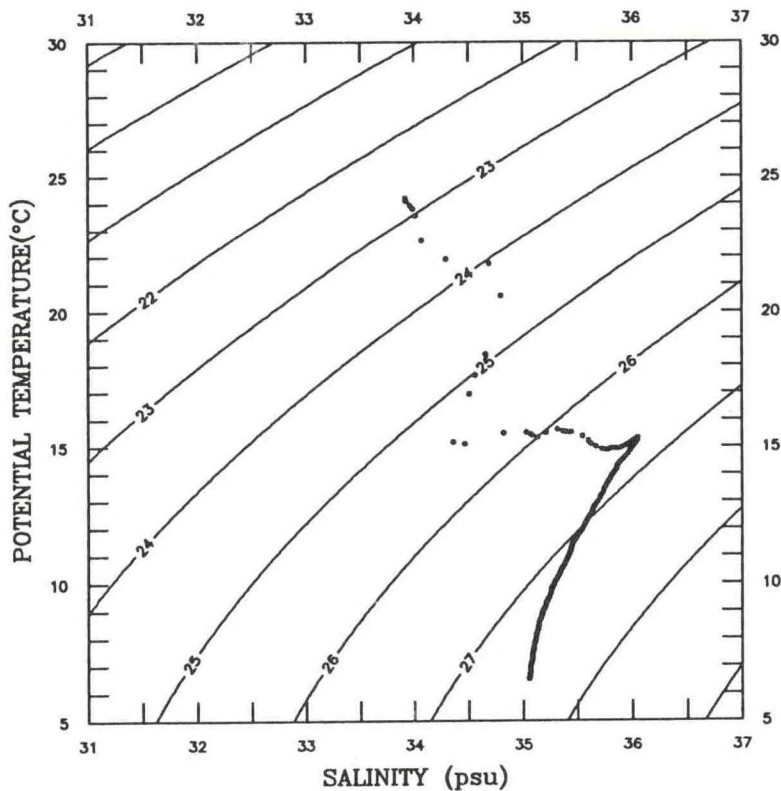


STATION 57

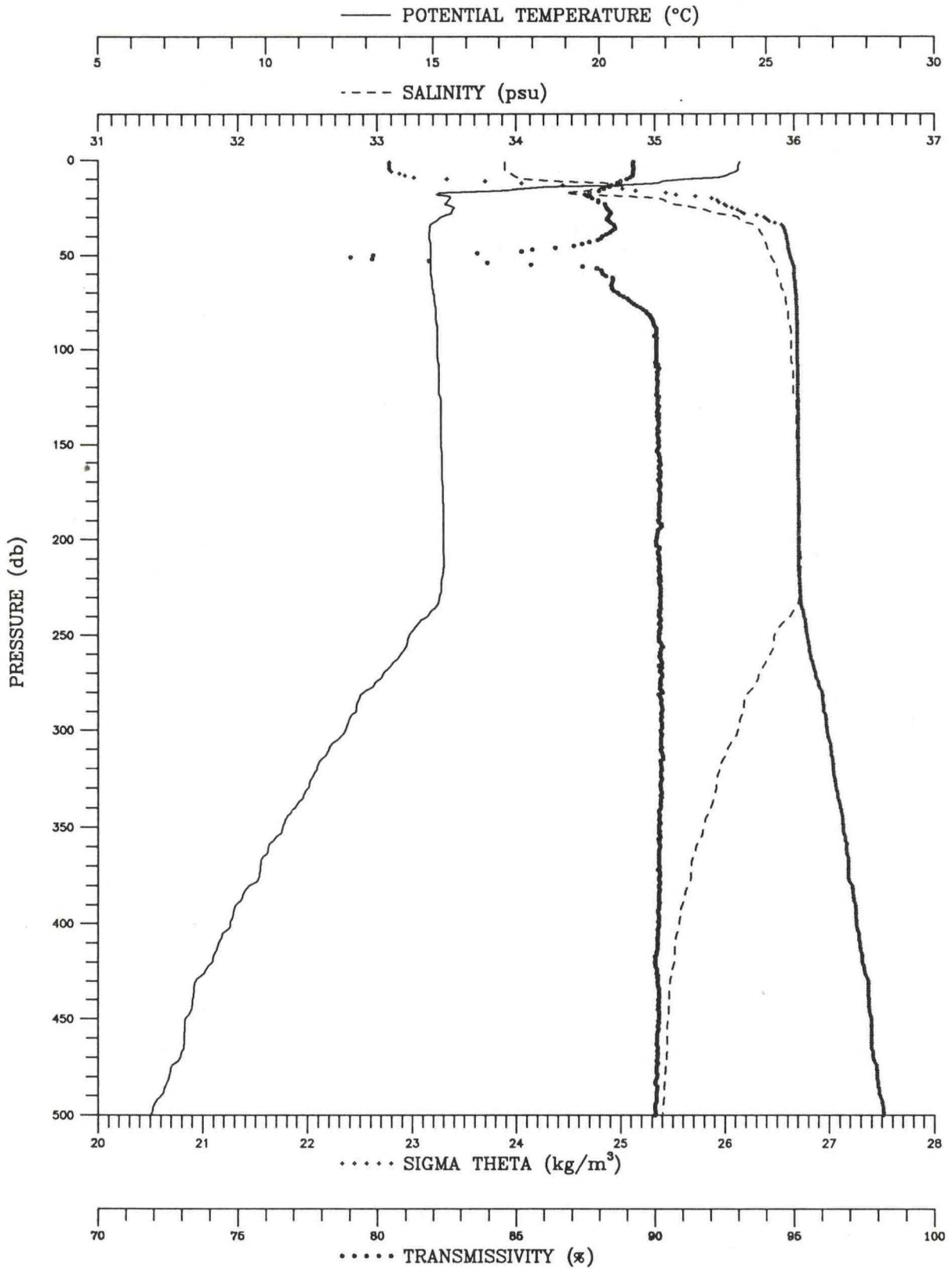


R/V DELAWARE II 91-09 Station: 58 Date: 91/08/14 GMT: 0704 Depth: 2408m
 Position: 38 37.01N 72 35.99W Wind: 7 kts Dir: 260 deg. Air Temp: 25.0C

PR	TE	PT	SA	SO	TR
1	24.2029	24.2033	33.9170	22.7781	89.22
10	22.6261	22.6241	34.0657	23.3340	88.98
20	15.5272	15.5241	35.0258	25.8762	87.73
30	15.2343	15.2297	35.5954	26.3810	88.31
40	14.8966	14.8906	35.7717	26.5921	88.10
50	14.9406	14.9330	35.8299	26.6277	79.85
60	14.9463	14.9372	35.8762	26.6625	88.12
70	15.0266	15.0159	35.9246	26.6824	88.65
80	15.0999	15.0877	35.9570	26.6915	89.68
90	15.1465	15.1327	35.9753	26.6956	90.04
100	15.1483	15.1330	35.9759	26.6960	90.04
125	15.2335	15.2143	36.0060	26.7010	90.14
150	15.2524	15.2293	36.0134	26.7034	90.13
175	15.3198	15.2928	36.0374	26.7077	90.16
200	15.3385	15.3075	36.0432	26.7089	90.04
225	15.2901	15.2552	36.0439	26.7211	90.21
250	14.3161	14.2791	35.8557	26.7899	90.14
275	13.2891	13.2503	35.7195	26.9003	90.17
300	12.4115	12.3711	35.5930	26.9783	90.20
325	11.4244	11.3829	35.4450	27.0522	90.24
350	10.5529	10.5104	35.3479	27.1350	90.14
375	9.8493	9.8057	35.2562	27.1857	90.17
400	8.9870	8.9430	35.1725	27.2629	90.14
425	8.2274	8.1830	35.1206	27.3412	90.06
450	7.6483	7.6031	35.0910	27.4046	90.14
475	7.2299	7.1836	35.0755	27.4528	90.04
500	6.6284	6.5819	35.0543	27.5192	89.99

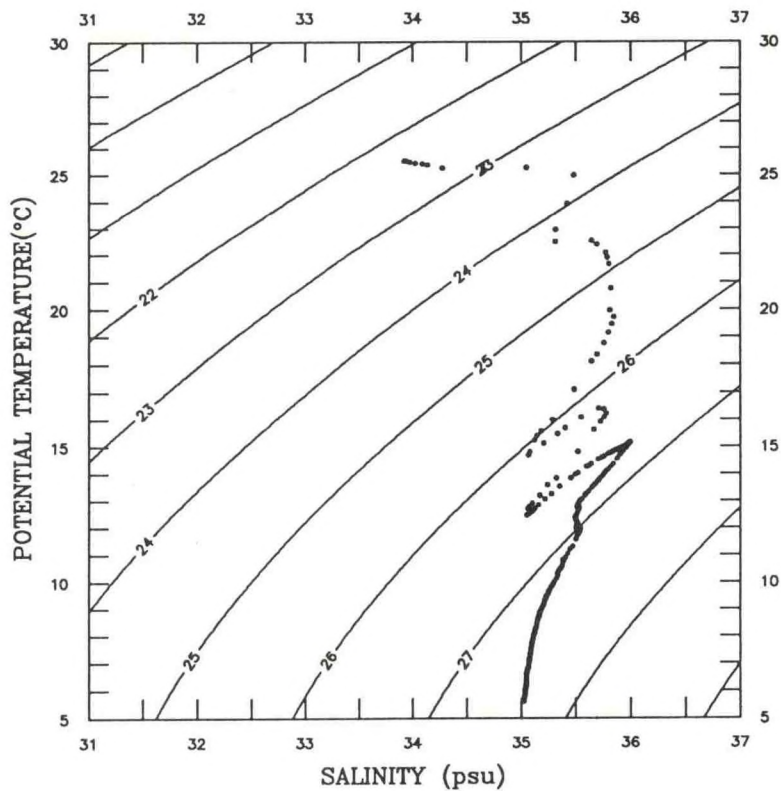


STATION 58

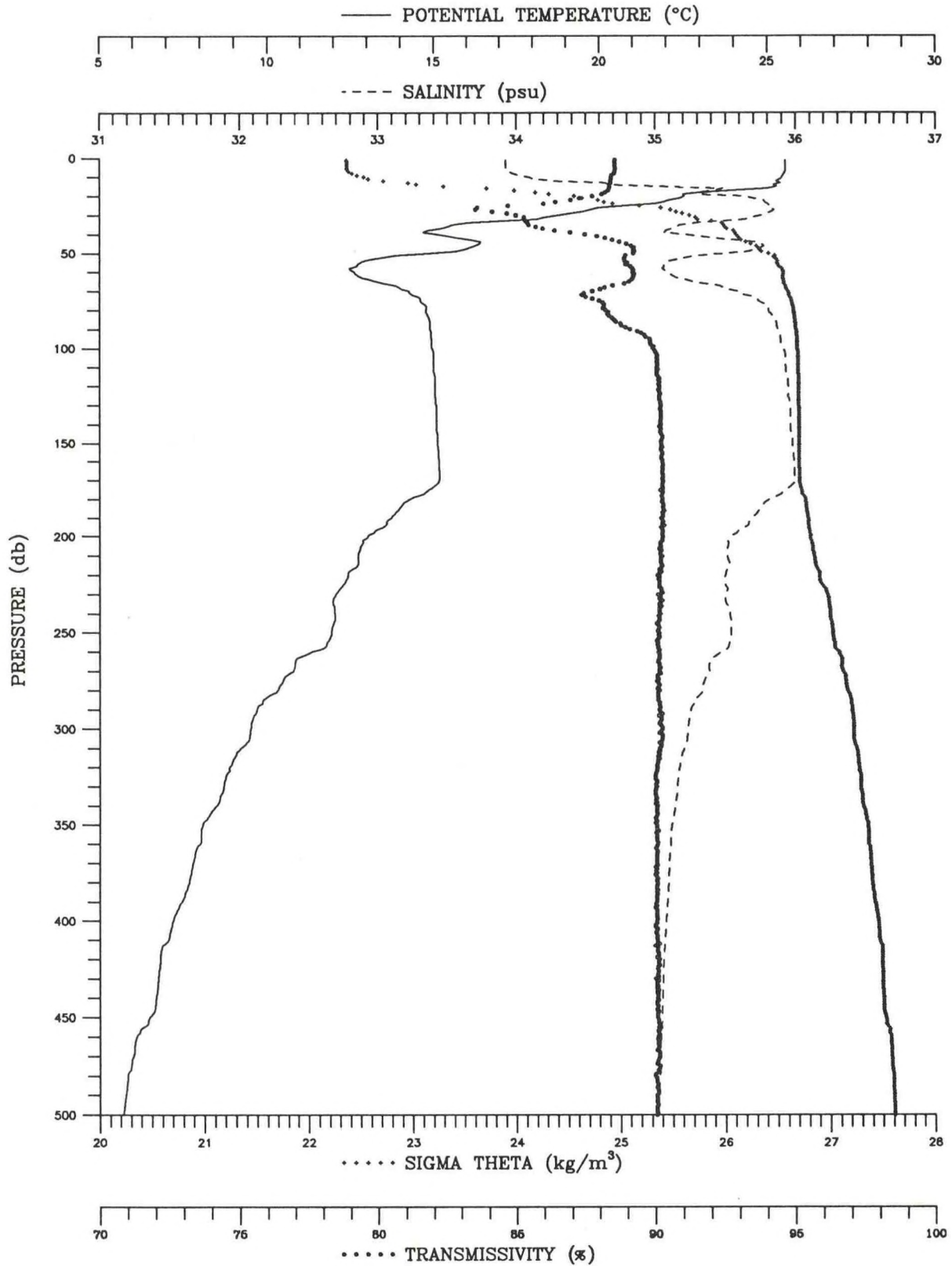


R/V DELAWARE II 91-09 Station: 59 Date: 91/08/14 GMT: 1045 Depth: 1477m
 Position: 38 40.93N 72 54.98W Wind: 9 kts Dir: 255 deg. Air Temp: 24.5C

PR	TE	PT	SA	SO	TR
1	25.5208	25.5205	33.9200	22.3600	88.55
10	25.4198	25.4176	34.0873	22.5263	88.42
20	22.5311	22.5271	35.6401	24.5565	87.73
30	18.7794	18.7741	35.7542	25.6566	84.97
40	15.1394	15.1333	35.2024	26.0995	87.47
50	14.8286	14.8211	35.5144	26.4088	89.21
60	12.6172	12.6092	35.0989	26.5481	89.19
70	14.2754	14.2651	35.5950	26.5915	87.74
80	14.7767	14.7647	35.8077	26.6475	88.21
90	14.9055	14.8919	35.8738	26.6706	89.09
100	14.9651	14.9499	35.9036	26.6808	89.91
125	15.0538	15.0347	35.9465	26.6951	90.14
150	15.1422	15.1192	35.9763	26.6994	90.21
175	14.8702	14.8436	35.9303	26.7248	90.18
200	13.0531	13.0253	35.5400	26.8069	90.27
225	12.3127	12.2827	35.4976	26.9216	90.14
250	11.9656	11.9328	35.5362	27.0192	90.13
275	10.4788	10.4457	35.3448	27.1441	90.04
300	9.5263	9.4922	35.2298	27.2178	90.24
325	8.7840	8.7488	35.1606	27.2846	89.99
350	8.0977	8.0616	35.1160	27.3560	90.04
375	7.7667	7.7289	35.0946	27.3889	90.04
400	7.2243	7.1855	35.0736	27.4510	90.04
425	6.8144	6.7744	35.0553	27.4939	90.07
450	6.5358	6.4944	35.0477	27.5258	90.07
475	5.9868	5.9450	35.0306	27.5842	90.15
500	5.7438	5.7007	35.0243	27.6100	90.04

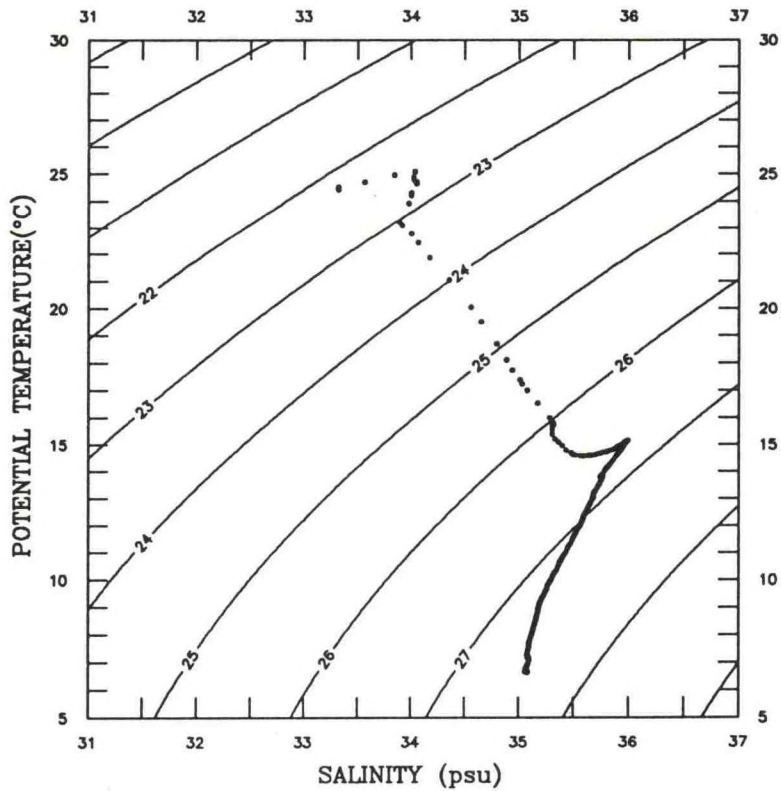


STATION 59

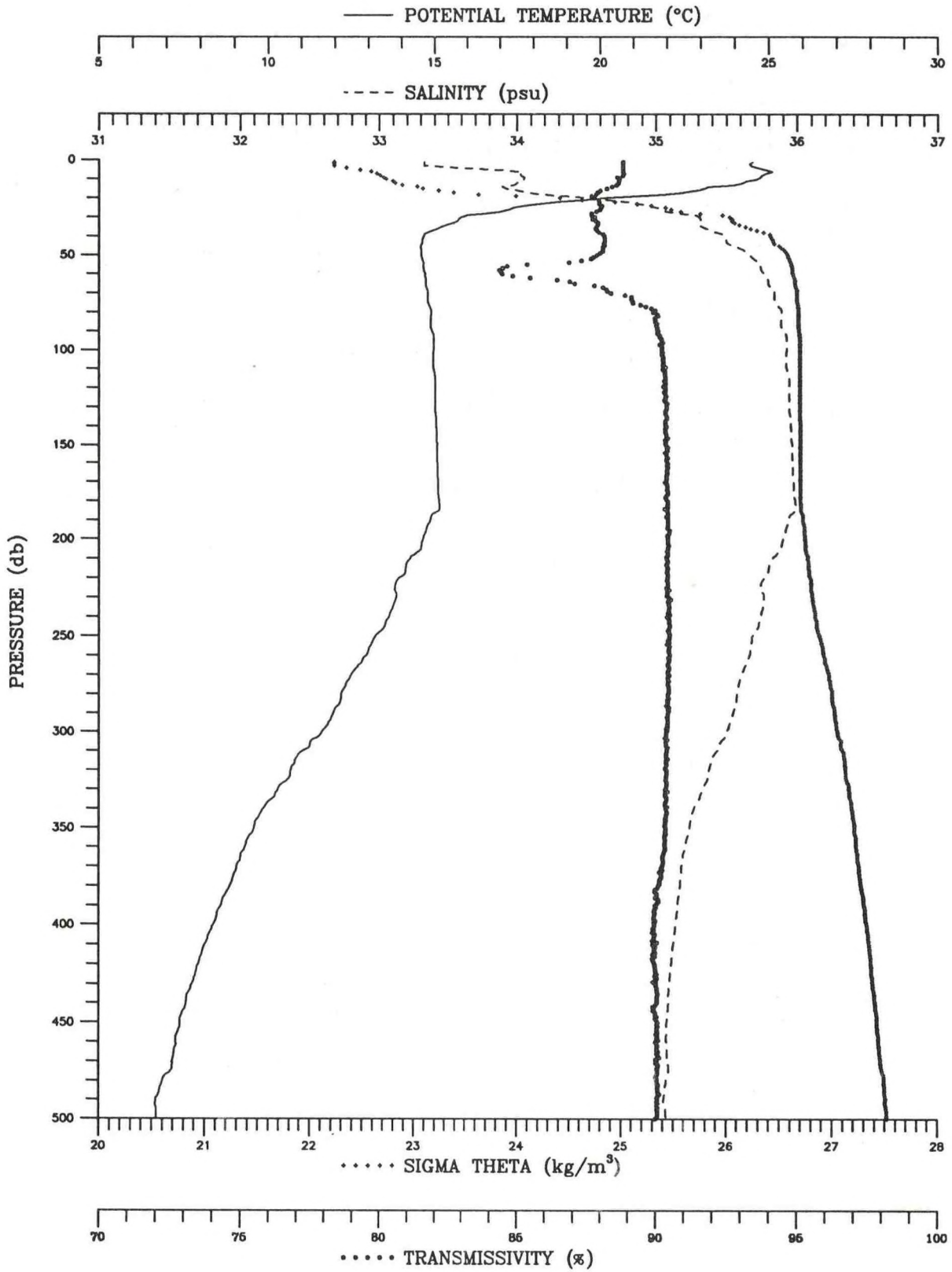


R/V DELAWARE II 91-09 Station: 60 Date: 91/08/14 GMT: 1435 Depth: 2373m
 Position: 38 24.11N 72 55.09W Wind: 5 kts Dir: 270 deg. Air Temp: 25.7C

PR	TE	PT	SA	SO	TR
1	24.5267	24.5259	33.3239	22.2313	88.82
10	24.6487	24.6466	34.0490	22.7310	88.68
20	20.0554	20.0518	34.5565	24.4116	87.76
30	15.8252	15.8204	35.3128	26.0302	87.80
40	14.6719	14.6660	35.4807	26.4167	88.14
50	14.6059	14.5984	35.6681	26.5760	87.88
60	14.7252	14.7162	35.7674	26.6270	84.47
70	14.8002	14.7896	35.8400	26.6670	88.38
80	14.9056	14.8934	35.8889	26.6820	89.90
90	14.9490	14.9354	35.9057	26.6856	90.08
100	14.9860	14.9708	35.9250	26.6927	90.21
125	15.0435	15.0244	35.9453	26.6965	90.34
150	15.1077	15.0847	35.9653	26.6985	90.38
175	15.1452	15.1183	35.9771	26.7002	90.44
200	14.6852	14.6551	35.9016	26.7440	90.44
225	13.8349	13.8024	35.7405	26.8020	90.38
250	13.2477	13.2126	35.6842	26.8806	90.49
275	12.3615	12.3246	35.5890	26.9843	90.44
300	11.6427	11.6039	35.5018	27.0550	90.37
325	10.6243	10.5847	35.3653	27.1354	90.36
350	9.6244	9.5843	35.2418	27.2119	90.36
375	9.0096	8.9683	35.1795	27.2643	90.21
400	8.4287	8.3864	35.1449	27.3290	89.96
425	7.9036	7.8602	35.1032	27.3762	90.04
450	7.4422	7.3978	35.0800	27.4257	90.08
475	7.1685	7.1224	35.0936	27.4757	90.07
500	6.7343	6.6874	35.0807	27.5258	89.98

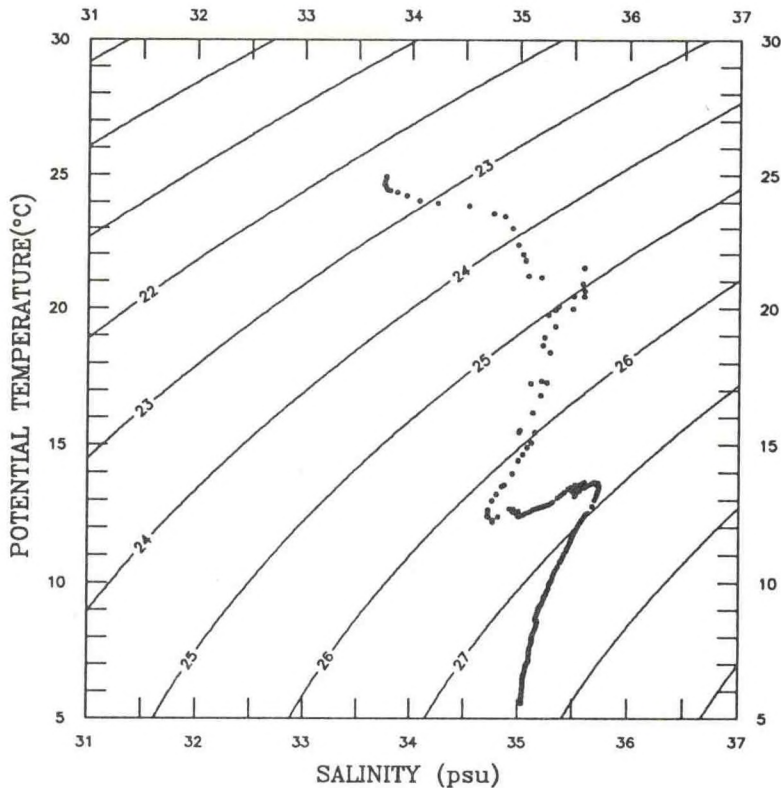


STATION 60

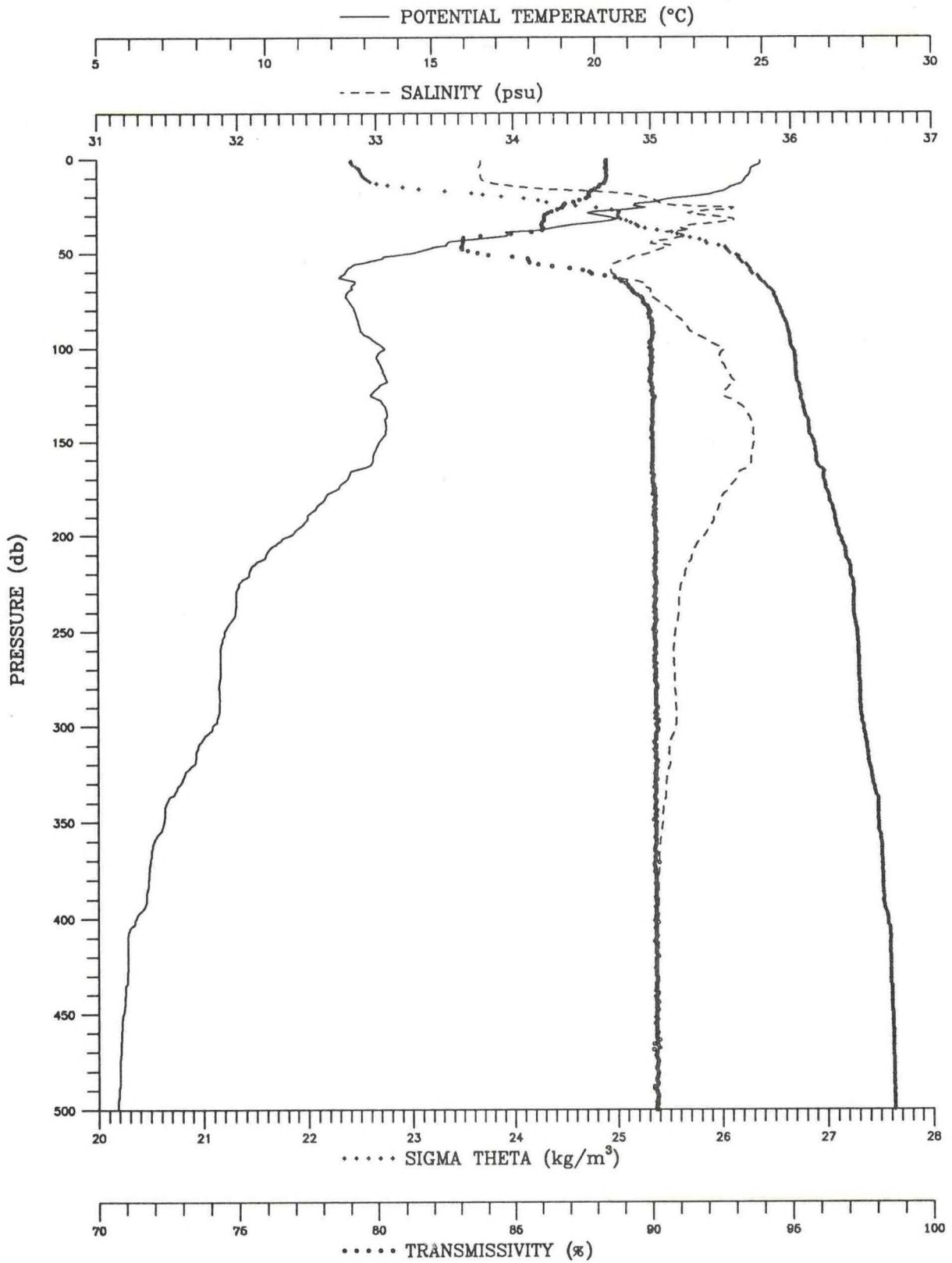


R/V DELAWARE II 91-09 Station: 61 Date: 91/08/14 GMT: 1845 Depth: 2064m
 Position: 38 10.00N 73 15.02W Wind: 5 kts Dir: 220 deg. Air Temp: 26.7C

PR	TE	PT	SA	SO	TR
1	24.9212	24.9226	33.7590	22.4201	88.39
10	24.5178	24.5156	33.7625	22.5536	88.39
20	23.0047	23.0006	34.9304	23.8822	87.78
30	20.0929	20.0874	35.3622	25.0162	86.15
40	17.3606	17.3539	35.2066	25.5890	84.91
50	14.4433	14.4359	34.9941	26.0907	83.68
60	12.4105	12.4026	34.7136	26.2897	87.78
70	12.5058	12.4964	34.9970	26.4912	89.34
80	12.6755	12.6647	35.1416	26.5702	89.94
90	12.8503	12.8380	35.2701	26.6354	90.04
100	13.5789	13.5647	35.5188	26.6800	89.94
125	13.1679	13.1506	35.5123	26.7601	90.04
150	13.4279	13.4068	35.7337	26.8791	90.04
175	12.1990	12.1759	35.5622	26.9925	90.13
200	10.7805	10.7560	35.3823	27.1180	90.14
225	9.2142	9.1893	35.2110	27.2531	90.17
250	8.7949	8.7680	35.1671	27.2866	90.14
275	8.6584	8.6290	35.1642	27.3062	90.11
300	8.4301	8.3985	35.1666	27.3442	90.17
325	7.6079	7.5757	35.1050	27.4196	90.10
350	6.9865	6.9533	35.0730	27.4832	90.15
375	6.5613	6.5269	35.0483	27.5219	90.12
400	6.1623	6.1268	35.0430	27.5705	90.14
425	5.9134	5.8764	35.0344	27.5959	90.14
450	5.7727	5.7339	35.0357	27.6149	90.14
475	5.6862	5.6455	35.0340	27.6246	90.19
500	5.6253	5.5826	35.0329	27.6315	90.14

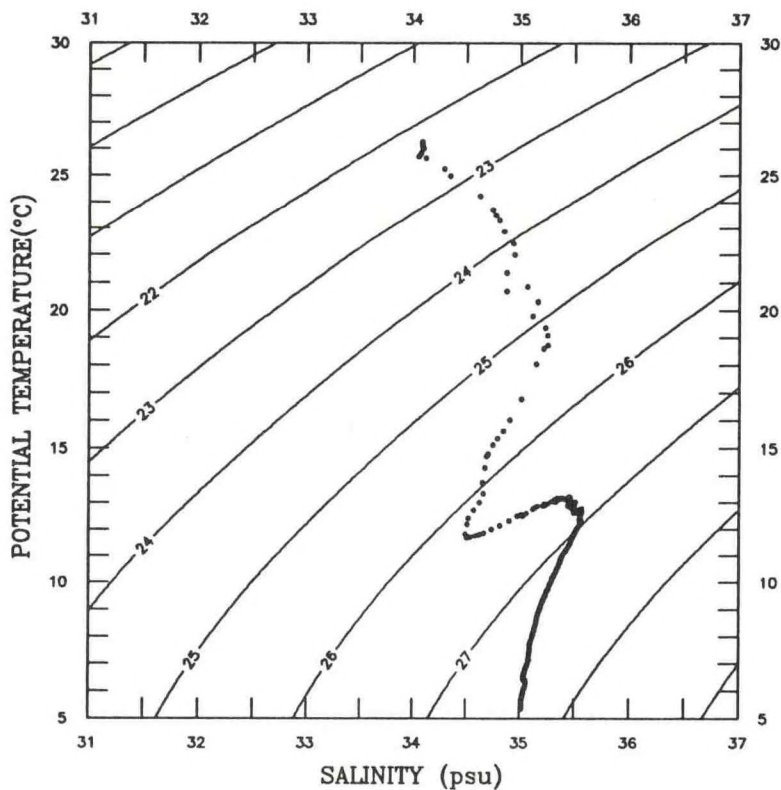


STATION 61

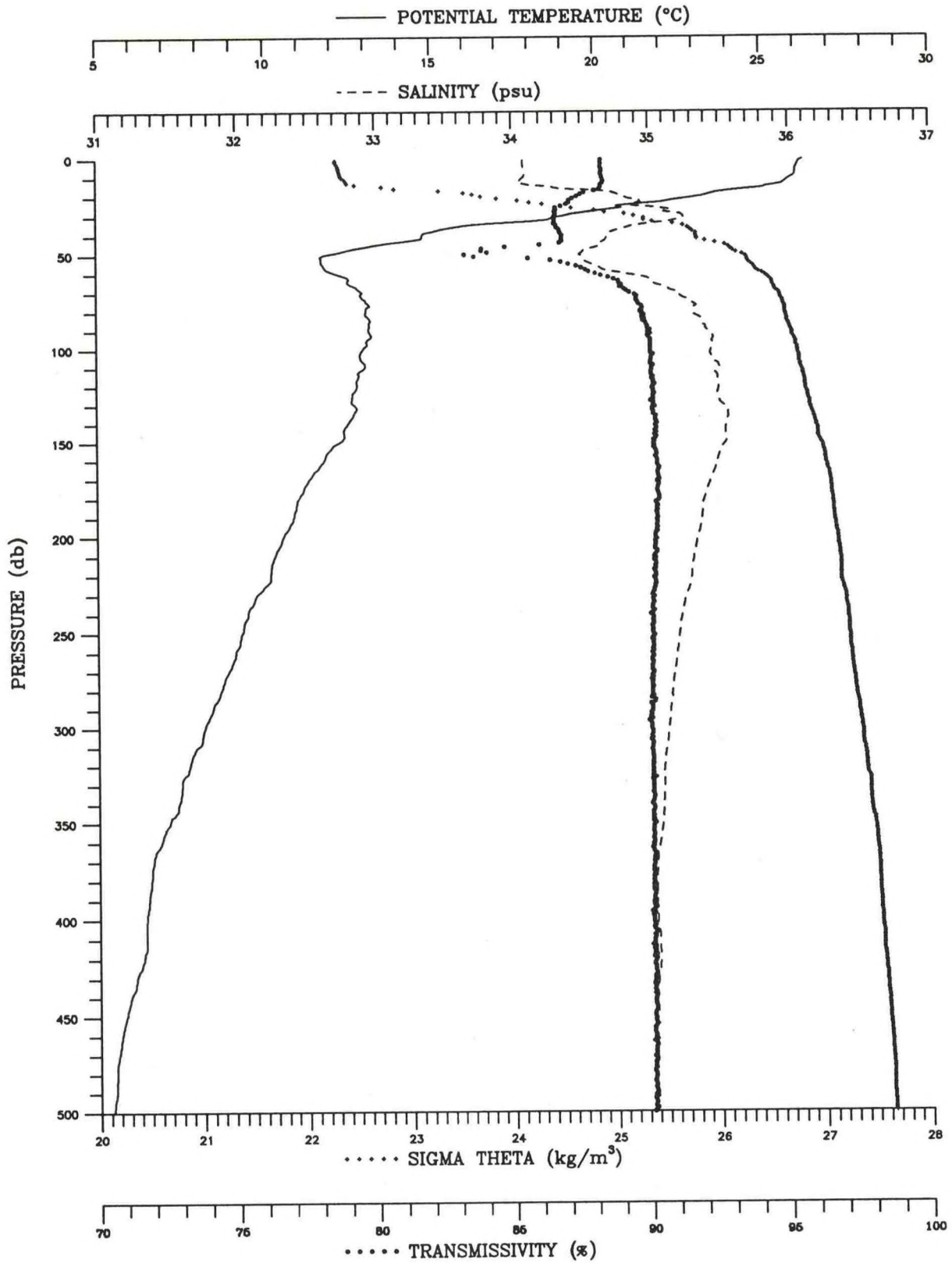


R/V DELAWARE II 91-09 Station: 62 Date: 91/08/14 GMT: 2227 Depth: 2178m
 Position: 37 52.85N 73 14.96W Wind: 6 kts Dir: 220 deg. Air Temp: 26.0C

PR	TE	PT	SA	SO	TR
1	26.2688	26.2618	34.0817	22.2900	88.26
10	25.9942	25.9920	34.0879	22.3498	88.30
20	23.3140	23.3099	34.8036	23.6966	87.36
30	19.0942	19.0888	35.2509	25.1914	86.56
40	14.7581	14.7522	34.6919	25.7892	86.82
50	11.8311	11.8247	34.4914	26.2277	83.25
60	12.1491	12.1413	34.8125	26.4170	88.04
70	12.9600	12.9504	35.2178	26.5723	89.29
80	13.0597	13.0487	35.3211	26.6326	89.68
90	13.1417	13.1293	35.4166	26.6902	90.03
100	12.9783	12.9646	35.4467	26.7469	90.04
125	12.6585	12.6416	35.4905	26.8454	90.14
150	12.2648	12.2448	35.5522	26.9713	90.17
175	11.1913	11.1694	35.4156	27.0688	90.27
200	10.5671	10.5430	35.3444	27.1265	90.19
225	10.0315	10.0052	35.2874	27.1760	90.17
250	9.3279	9.3000	35.2090	27.2333	90.09
275	8.7942	8.7645	35.1616	27.2828	90.07
300	8.2026	8.1715	35.1276	27.3485	90.01
325	7.5949	7.5627	35.0945	27.4133	90.04
350	7.1553	7.1217	35.0799	27.4650	90.14
375	6.6116	6.5771	35.0375	27.5067	90.04
400	6.4452	6.4088	35.0381	27.5296	90.04
425	6.2653	6.2271	35.0534	27.5657	90.11
450	5.8217	5.7828	35.0224	27.5982	90.07
475	5.5370	5.4968	35.0180	27.6303	90.09
500	5.4221	5.3802	35.0169	27.6436	90.04

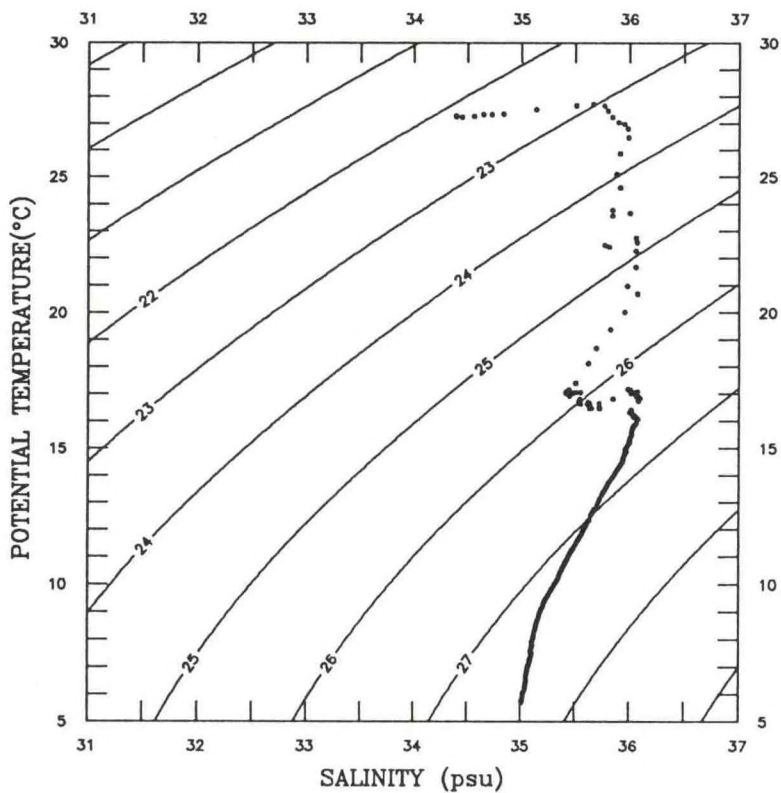


STATION 62

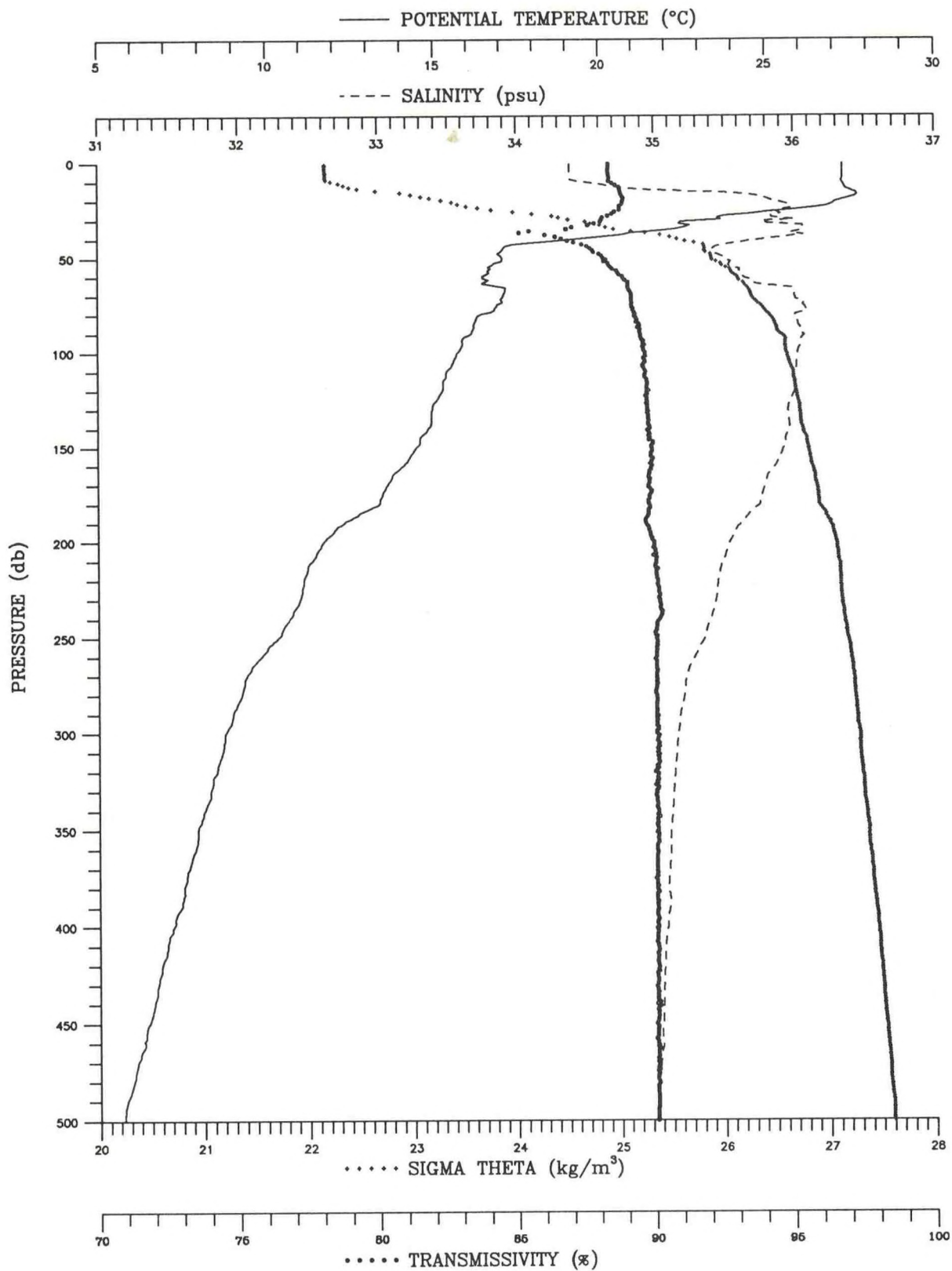


R/V DELAWARE II 91-09 Station: 63 Date: 91/08/15 GMT: 0219 Depth: 2646m
 Position: 38 06.99N 72 54.95W Wind: 12 kts Dir: 210 deg. Air Temp: 26.2C

PR	TE	PT	SA	SO*	TR
1	27.2930	27.2927	34.3880	22.1643	88.35
10	27.2501	27.2478	34.4475	22.2246	88.35
20	27.2544	27.2497	35.8407	23.2730	88.88
30	23.6777	23.6715	36.0050	24.5015	88.10
40	19.3945	19.3873	35.8258	25.5538	86.63
50	17.0748	17.0665	35.5022	25.8849	88.13
60	16.4804	16.4707	35.6330	26.1264	88.85
70	17.1094	17.0977	36.0052	26.2636	89.18
80	16.4385	16.4256	36.0145	26.4303	89.31
90	16.1616	16.1471	36.0626	26.5322	89.48
100	15.7548	15.7391	36.0270	26.5987	89.67
125	15.1083	15.0892	35.9801	26.7089	89.71
150	14.4954	14.4730	35.9319	26.8069	89.88
175	13.4885	13.4637	35.7736	26.8983	89.84
200	11.7211	11.6953	35.5410	27.0682	89.98
225	11.0965	11.0684	35.4471	27.1118	90.14
250	10.3499	10.3200	35.3563	27.1752	90.04
275	9.3545	9.3237	35.2157	27.2347	90.04
300	8.7971	8.7646	35.1630	27.2839	90.04
325	8.4251	8.3908	35.1348	27.3204	90.04
350	7.9869	7.9511	35.1082	27.3665	90.09
375	7.6461	7.6086	35.0936	27.4058	90.00
400	7.2629	7.2240	35.0852	27.4547	90.09
425	6.8469	6.8068	35.0580	27.4916	90.04
450	6.5112	6.4699	35.0493	27.5303	90.01
475	6.1054	6.0632	35.0248	27.5645	90.03
500	5.7782	5.7350	35.0090	27.5936	90.04

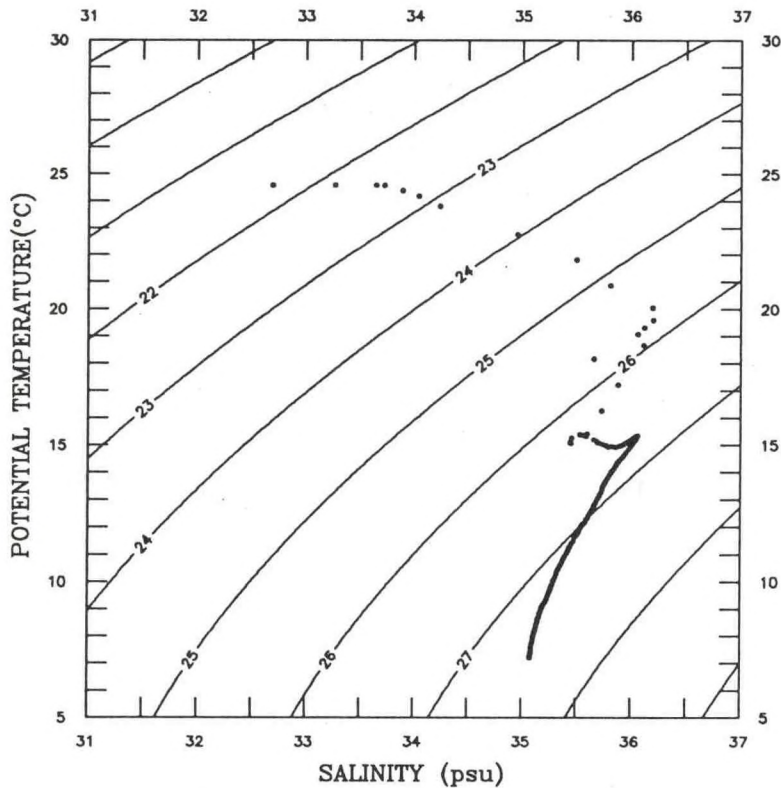


STATION 63

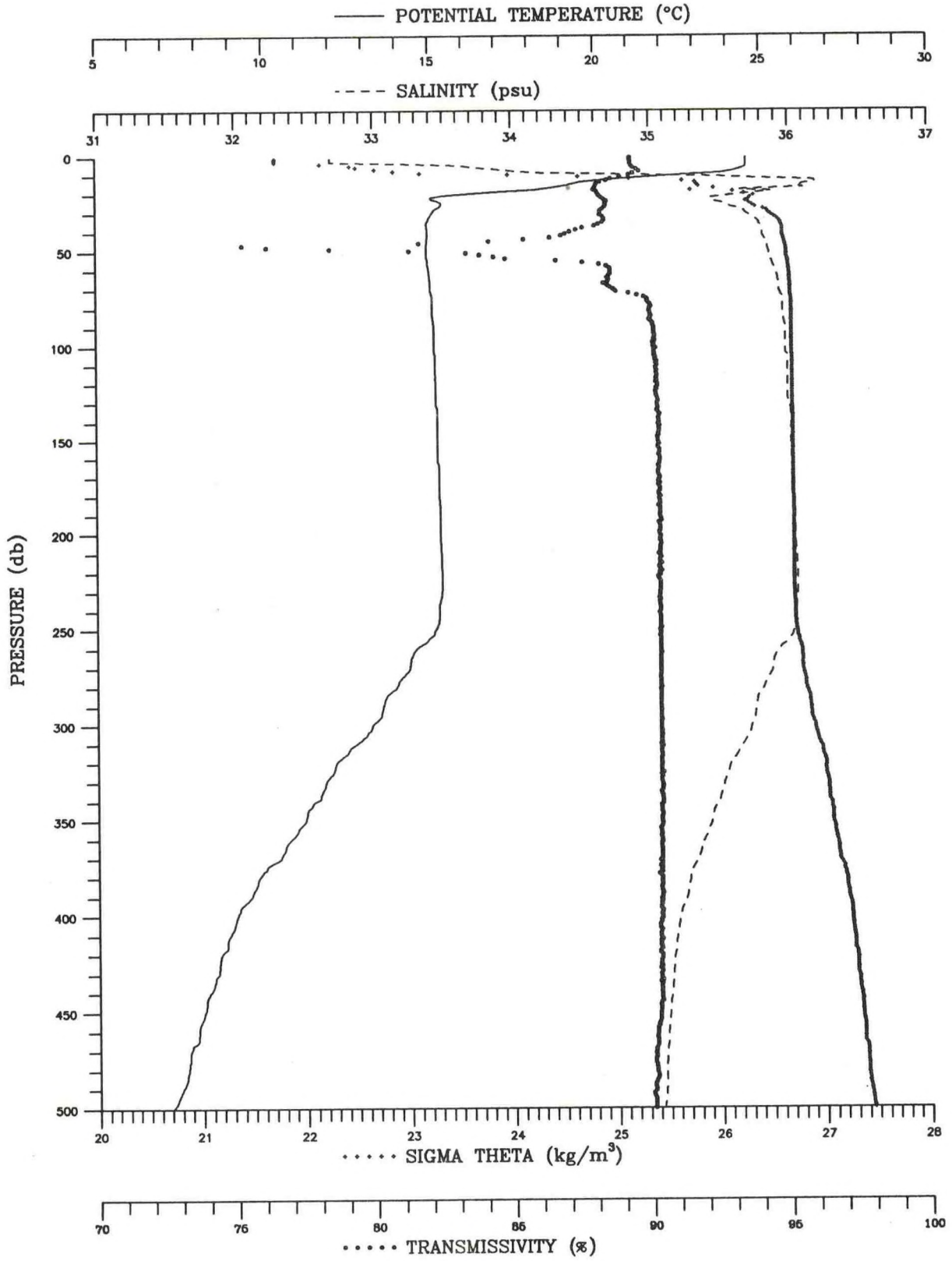


R/V DELAWARE II 91-09 Station: 64 Date: 91/08/15 GMT: 0621 Depth: 2858m
 Position: 38 20.02N 72 36.06W Wind: 8 kts Dir: 210 deg. Air Temp: 25.5C

PR	TE	PT	SA	SO	TR
1	24.5853	24.5848	32.6908	21.7200	89.31
10	22.7650	22.7630	34.9518	23.9664	89.26
20	16.2768	16.2736	35.7301	26.2471	88.13
30	15.1148	15.1102	35.6923	26.4823	88.22
40	14.9596	14.9535	35.8168	26.6131	87.11
50	14.9431	14.9355	35.8630	26.6527	81.29
60	15.0047	14.9956	35.9081	26.6742	88.57
70	15.0518	15.0411	35.9331	26.6834	88.69
80	15.1061	15.0939	35.9593	26.6919	89.99
90	15.1511	15.1373	35.9767	26.6956	90.14
100	15.1552	15.1399	35.9778	26.6959	90.11
125	15.2001	15.1809	35.9933	26.6987	90.21
150	15.2599	15.2368	36.0155	26.7033	90.27
175	15.3039	15.2768	36.0303	26.7058	90.31
200	15.3416	15.3106	36.0431	26.7081	90.31
225	15.3857	15.3507	36.0588	26.7112	90.34
250	15.1995	15.1609	36.0310	26.7323	90.30
275	14.1679	14.1274	35.8430	26.8125	90.31
300	13.2838	13.2415	35.7220	26.9040	90.34
325	12.0896	12.0465	35.5472	27.0059	90.41
350	11.2676	11.2233	35.4293	27.0695	90.34
375	10.0851	10.0408	35.2897	27.1717	90.34
400	9.1940	9.1493	35.1978	27.2493	90.34
425	8.6600	8.6142	35.1477	27.2956	90.27
450	8.2046	8.1576	35.1183	27.3433	90.25
475	7.7614	7.7132	35.0915	27.3888	90.04
500	7.2568	7.2079	35.0733	27.4475	90.04

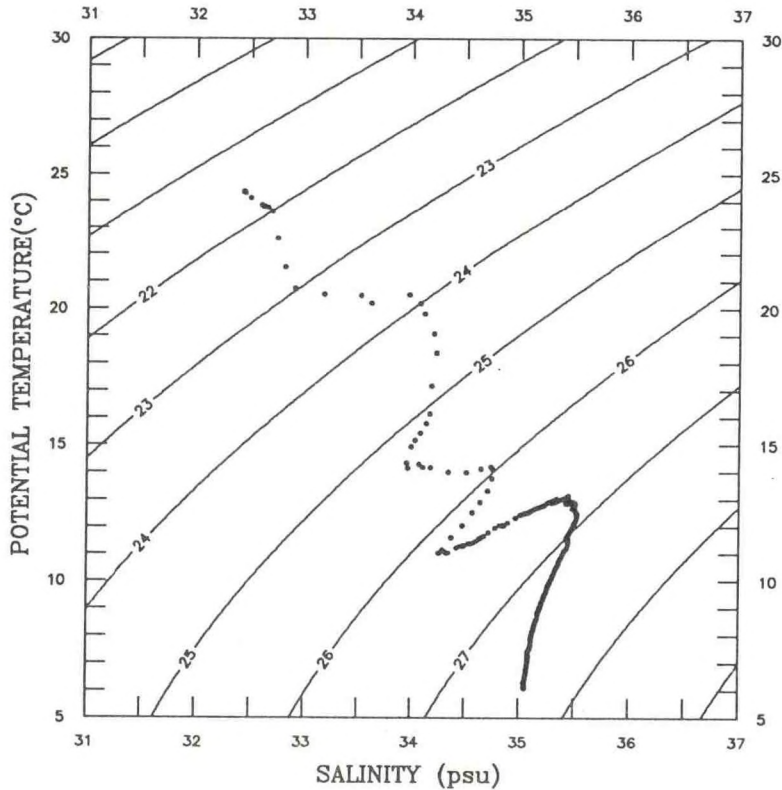


STATION 64

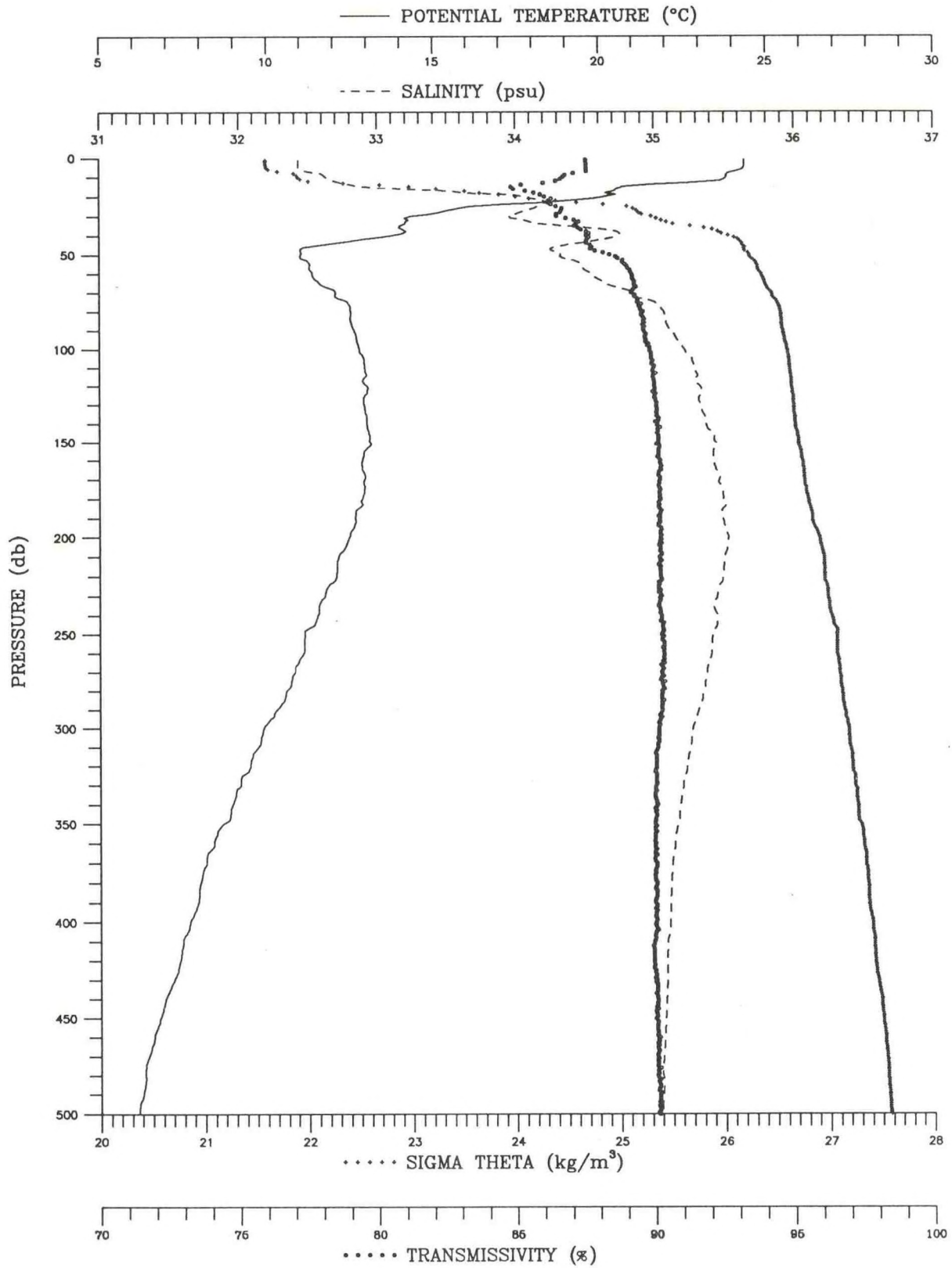


R/V DELAWARE II 91-09 Station: 65 Date: 91/08/15 GMT: 1035 Depth: 2269m
 Position: 38 34.99N 72 14.78W Wind: 10 kts Dir: 215 deg. Air Temp: 25.0C

PR	TE	PT	SA	SO	TR
1	24.3614	24.3525	32.4328	21.5930	87.53
10	23.8254	23.8234	32.6295	21.9012	86.71
20	20.2076	20.2039	34.0738	24.0030	86.05
30	14.3438	14.3394	33.9553	25.3093	86.49
40	13.7823	13.7767	34.7450	26.0374	87.55
50	11.0378	11.0317	34.3262	26.2455	88.39
60	11.3990	11.3915	34.5504	26.3545	89.19
70	12.0879	12.0788	34.8447	26.4539	89.18
80	12.5509	12.5402	35.0707	26.5397	89.60
90	12.6490	12.6369	35.1229	26.5612	89.61
100	12.8036	12.7900	35.2161	26.6031	89.84
125	12.9560	12.9389	35.3269	26.6592	90.01
150	13.1394	13.1186	35.4366	26.7079	90.14
175	12.9551	12.9310	35.4845	26.7829	90.21
200	12.5072	12.4803	35.5284	26.9067	90.21
225	11.8728	11.8435	35.4621	26.9787	90.14
250	11.1680	11.1366	35.4130	27.0728	90.24
275	10.7538	10.7201	35.3607	27.1076	90.35
300	9.9281	9.8931	35.2706	27.1821	90.14
325	9.2742	9.2379	35.2098	27.2442	90.04
350	8.7141	8.6763	35.1676	27.3015	90.00
375	8.0890	8.0503	35.1178	27.3592	90.02
400	7.7033	7.6631	35.1039	27.4059	90.01
425	7.3416	7.3000	35.0819	27.4412	90.00
450	6.7997	6.7574	35.0691	27.5071	89.99
475	6.3750	6.3318	35.0468	27.5467	90.04
500	6.1767	6.1319	35.0492	27.5748	90.12

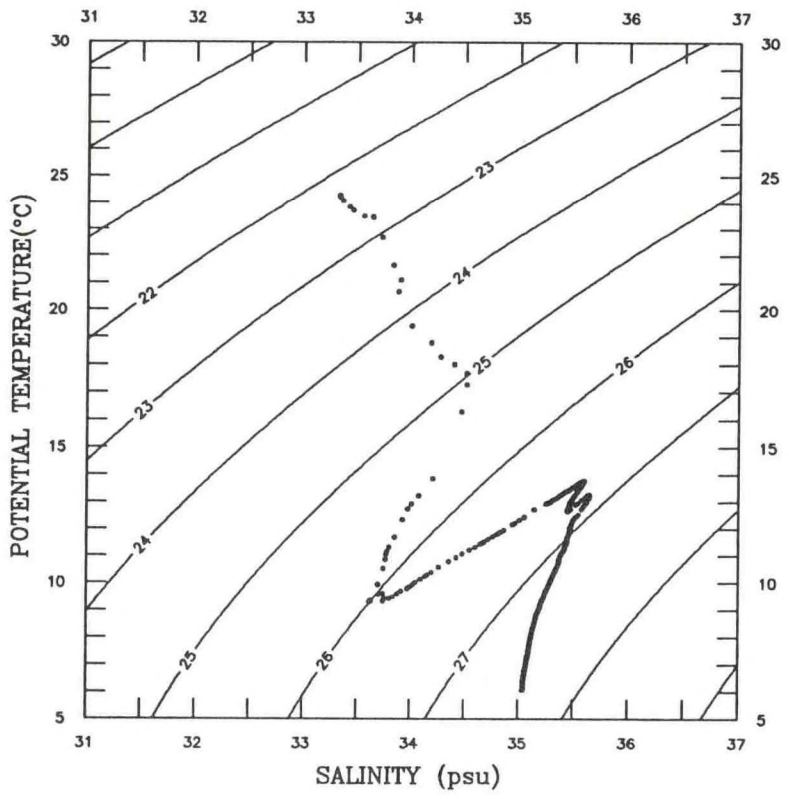


STATION 65

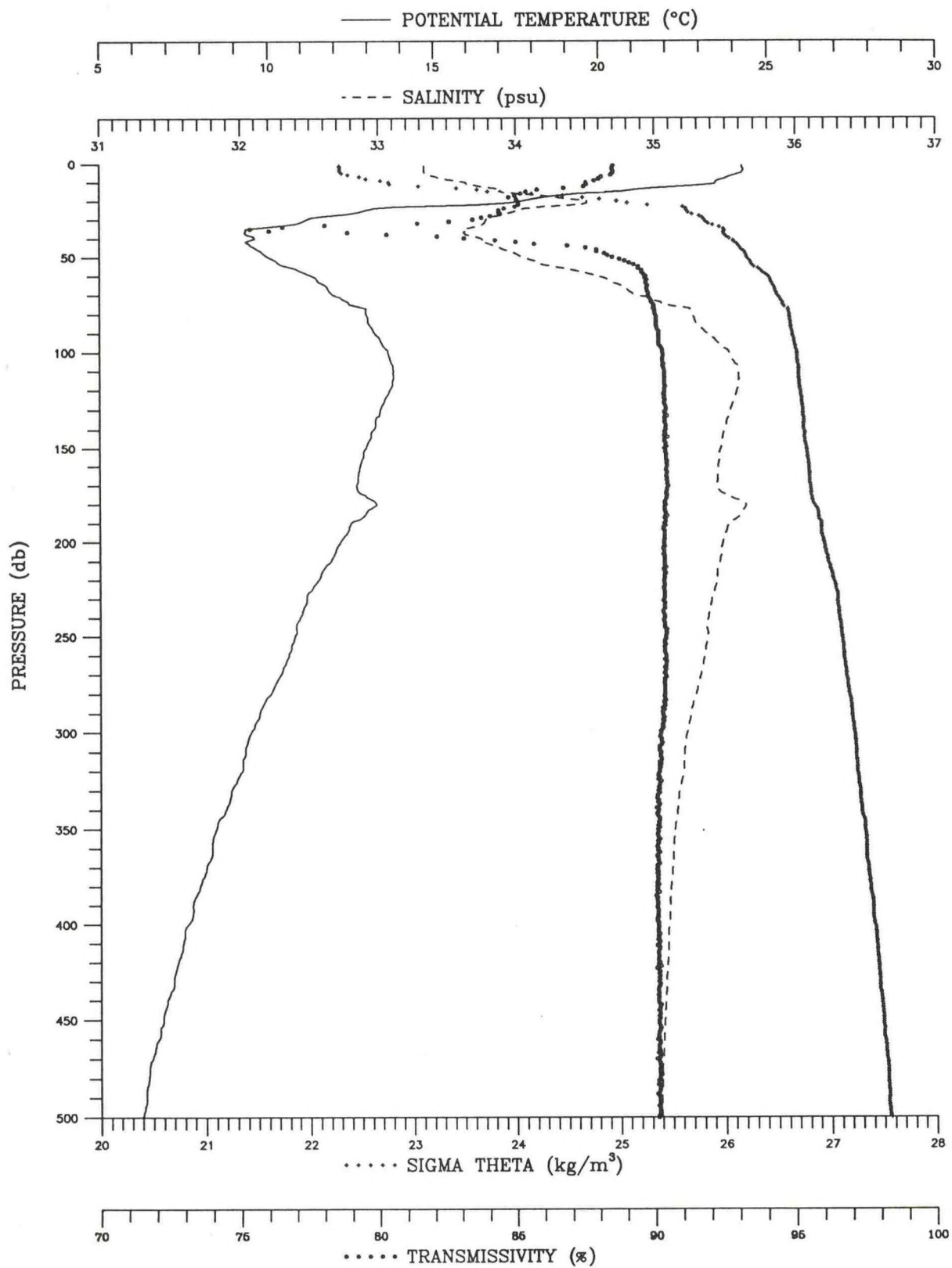


R/V DELAWARE II 91-09 Station: 66 Date: 91/08/15 GMT: 1636 Depth: 2443m
 Position: 38 58.00N 71 42.00W Wind: 14 kts Dir: 210 deg. Air Temp: 27.0C

PR	TE	PT	SA	SO	TR
1	24.2604	24.2599	33.3308	22.2929	88.51
10	23.4835	23.4814	33.6377	22.7636	87.53
20	17.7106	17.7072	34.5142	24.9726	85.06
30	11.1579	11.1543	33.7825	25.8002	83.43
40	9.6171	9.6127	33.7462	26.0378	83.12
50	10.0203	10.0146	34.0466	26.2054	88.48
60	11.3368	11.3294	34.5965	26.4018	89.68
70	11.9718	11.9628	34.8643	26.4914	89.77
80	12.9713	12.9604	35.2623	26.6048	90.02
90	13.2342	13.2217	35.3693	26.6348	90.14
100	13.6318	13.6176	35.5295	26.6774	90.27
125	13.5237	13.5060	35.5595	26.7237	90.36
150	12.9608	12.9401	35.4678	26.7682	90.33
175	12.9369	12.9128	35.5181	26.8127	90.44
200	12.1941	12.1676	35.4811	26.9311	90.33
225	11.3421	11.3136	35.4223	27.0474	90.33
250	10.8060	10.7753	35.3687	27.1039	90.37
275	10.2126	10.1800	35.3036	27.1585	90.34
300	9.4904	9.4564	35.2248	27.2199	90.19
325	9.0663	9.0305	35.1860	27.2593	90.19
350	8.4612	8.4241	35.1383	27.3180	90.07
375	8.1014	8.0626	35.1171	27.3567	90.06
400	7.6377	7.5977	35.0964	27.4097	90.09
425	7.2603	7.2189	35.0790	27.4505	90.14
450	6.8919	6.8493	35.0618	27.4887	90.10
475	6.4897	6.4460	35.0467	27.5315	90.14
500	6.2622	6.2171	35.0458	27.5610	90.09



STATION 66



XBT DATA

APPENDIX B contains plots of the temperature profiles from each of the 43 original and repeat stations depicted in Figure 9. Each temperature profile is plotted as a function of depth (meters) at a scale of 0 to 500 m for the T6's (nominally 450 m) and 0 to 300m for the T10's (nominally 250 m - XBT #'s 1 and 13).

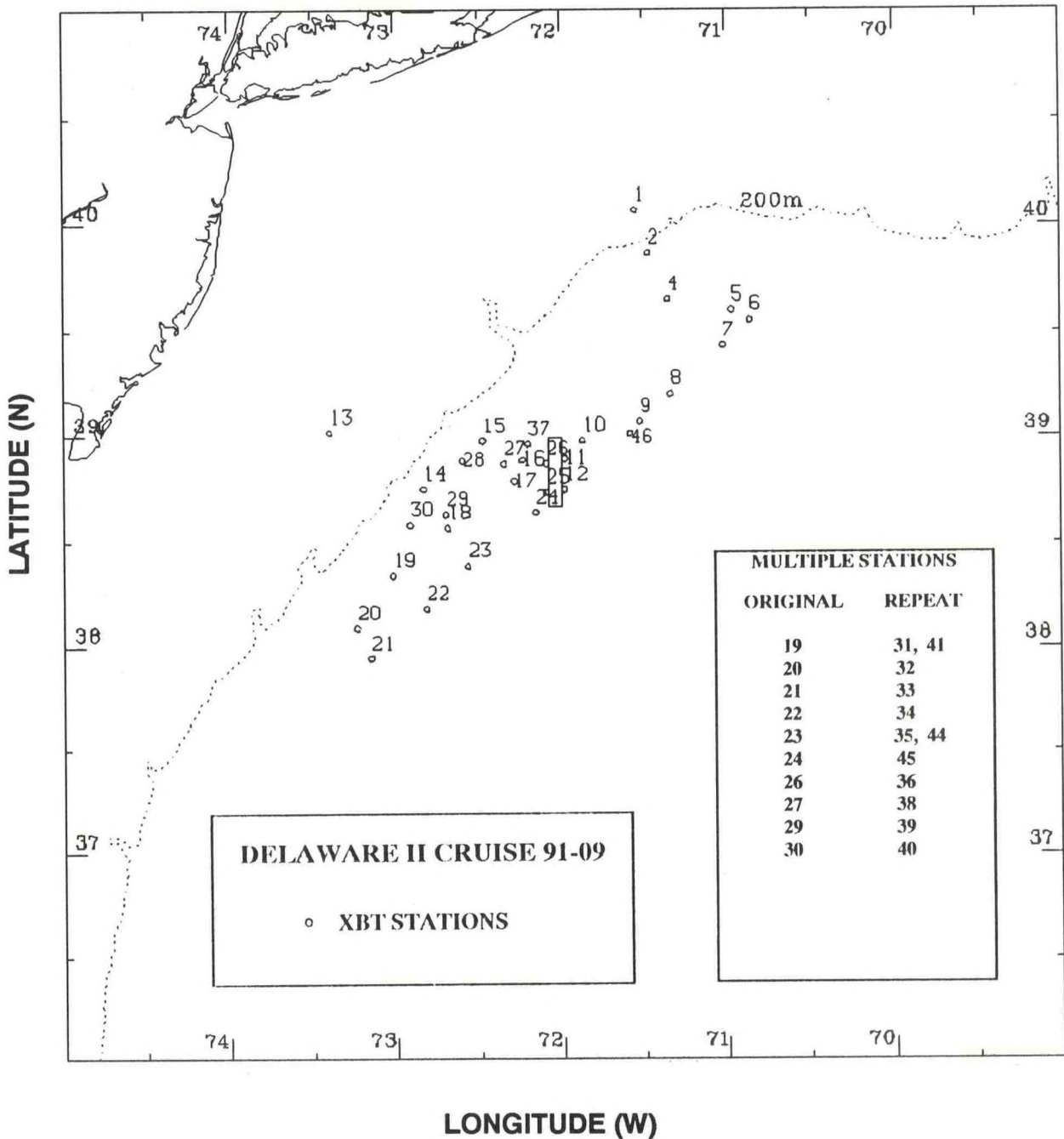
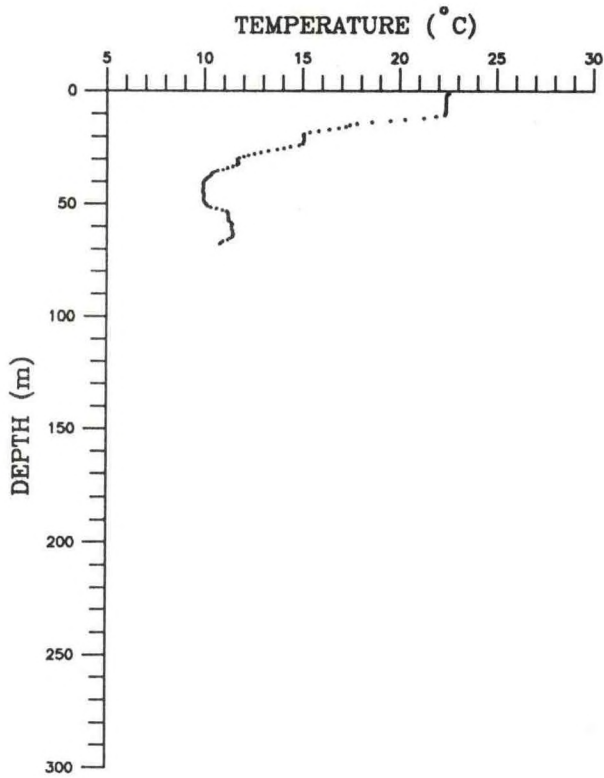
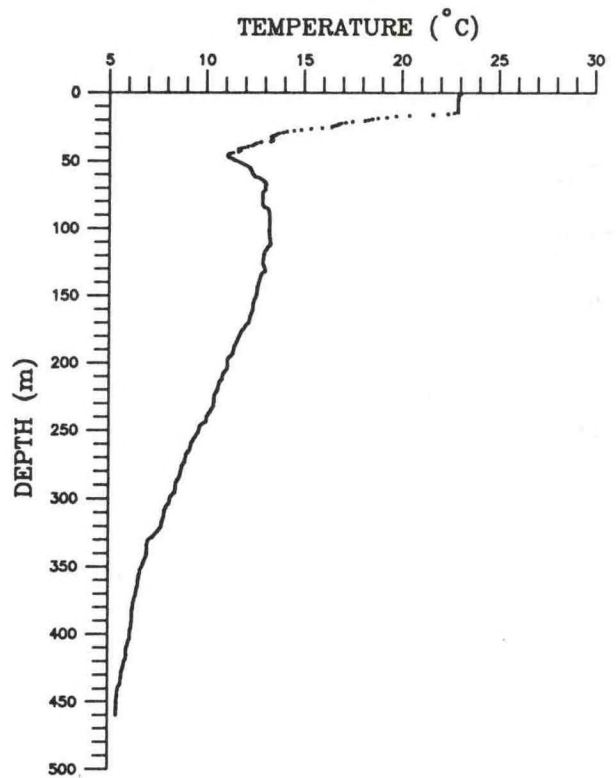


Figure 9. Station map of the XBT profile locations. Locations of repeat profiles are as indicated

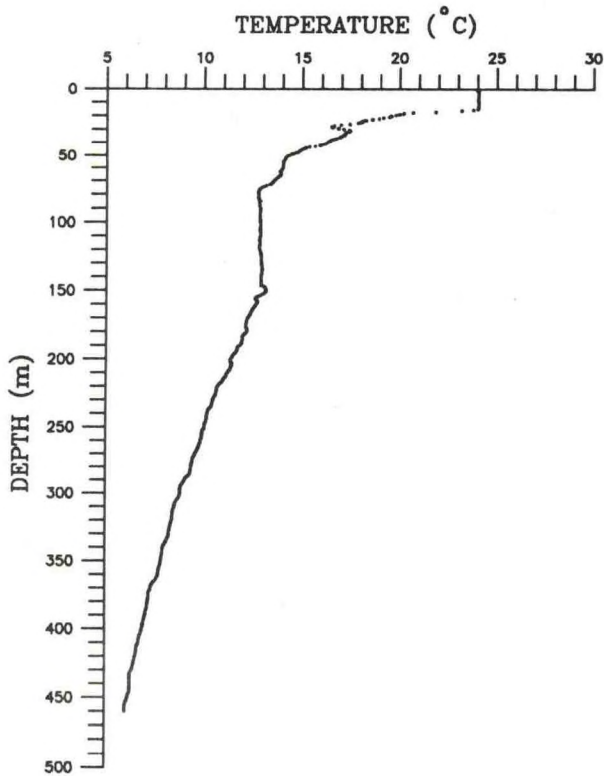
XBT 1



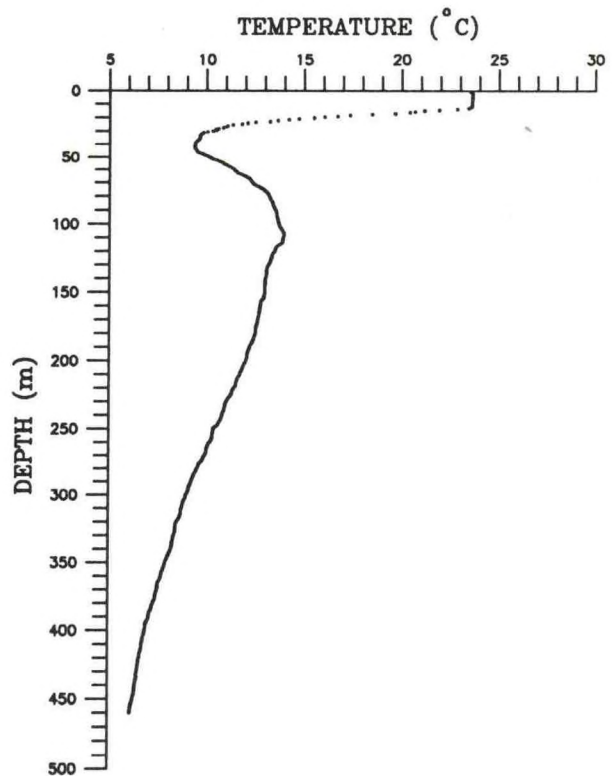
XBT 2



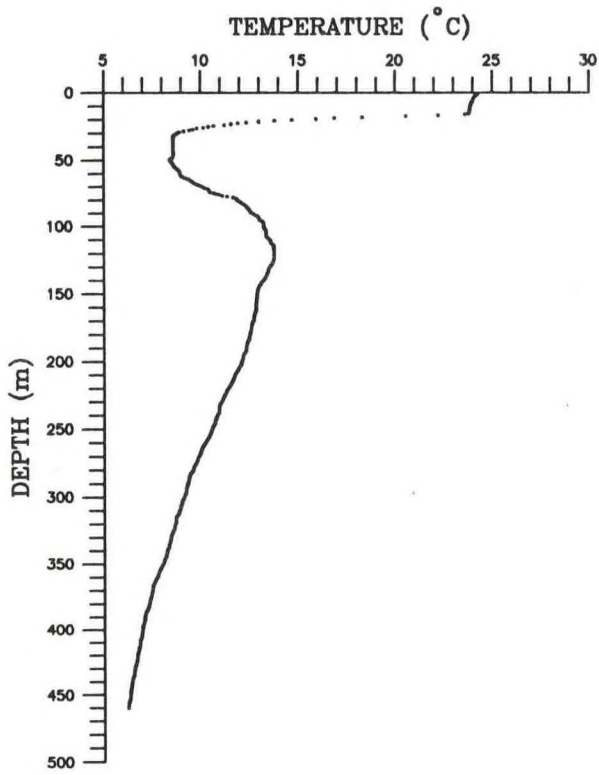
XBT 4



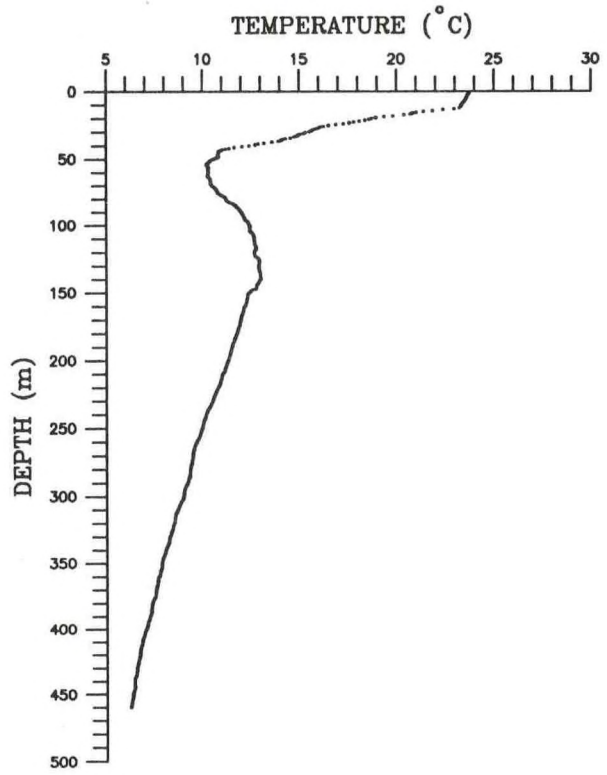
XBT 5



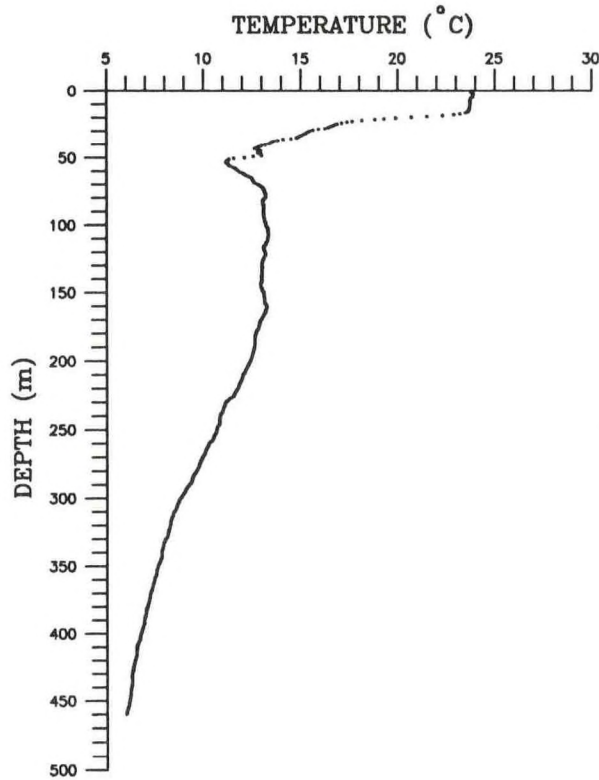
XBT 6



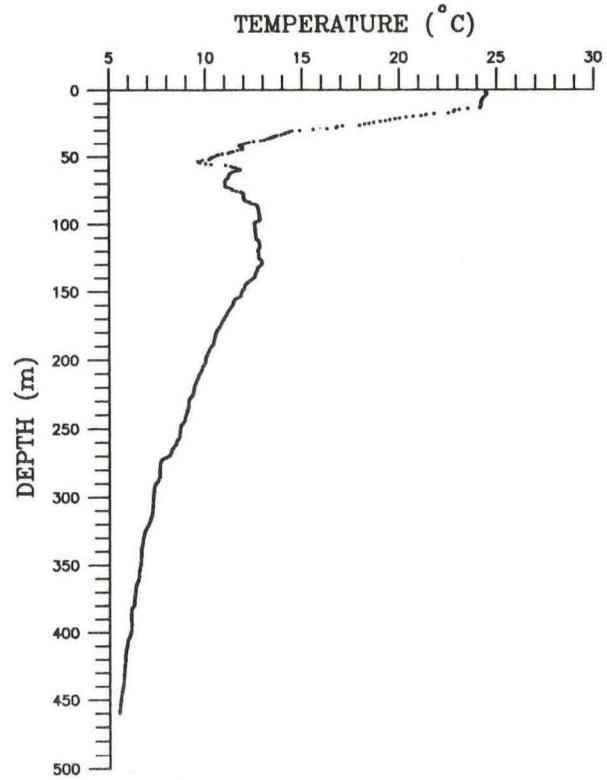
XBT 7



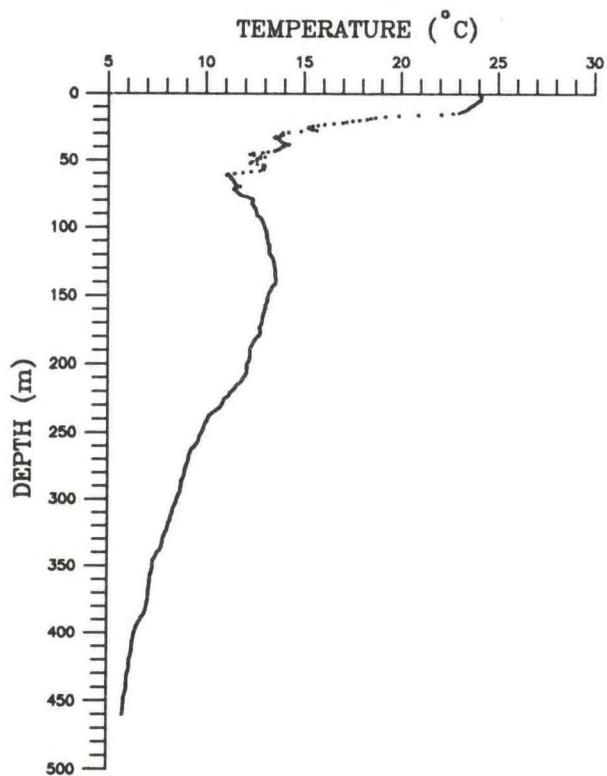
XBT 8



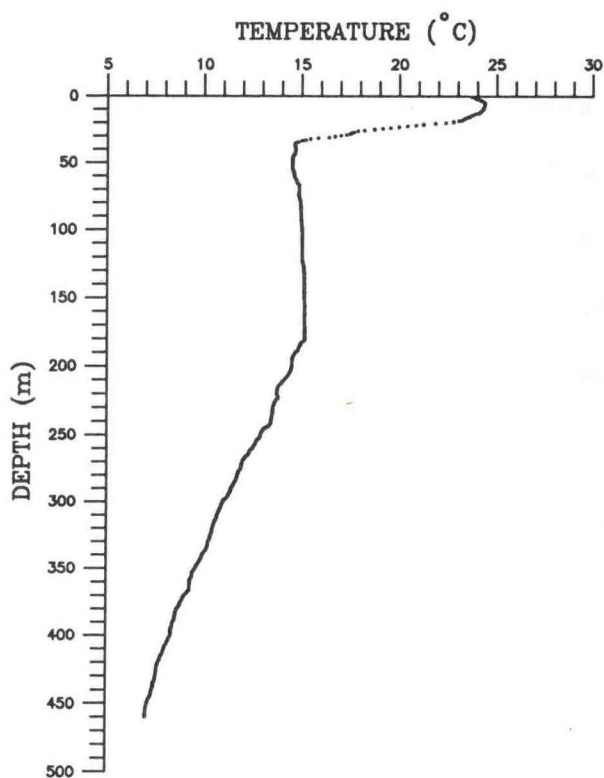
XBT 9



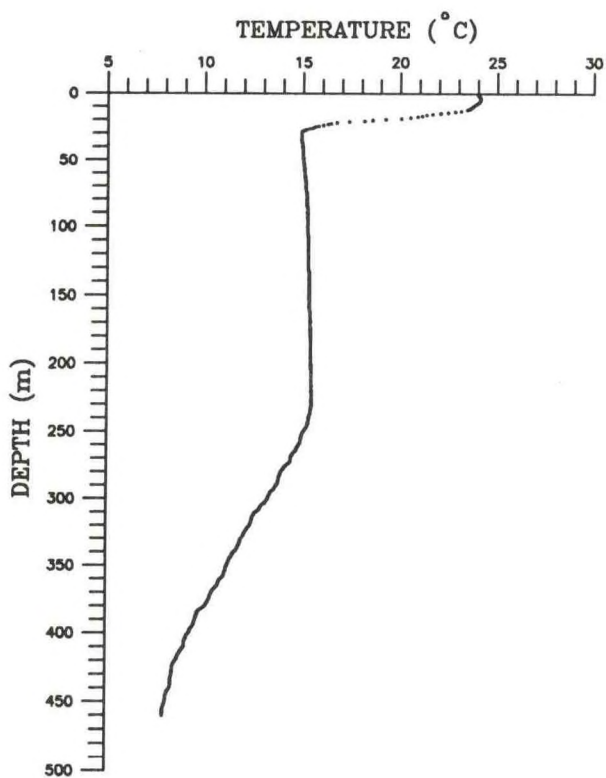
XBT 10



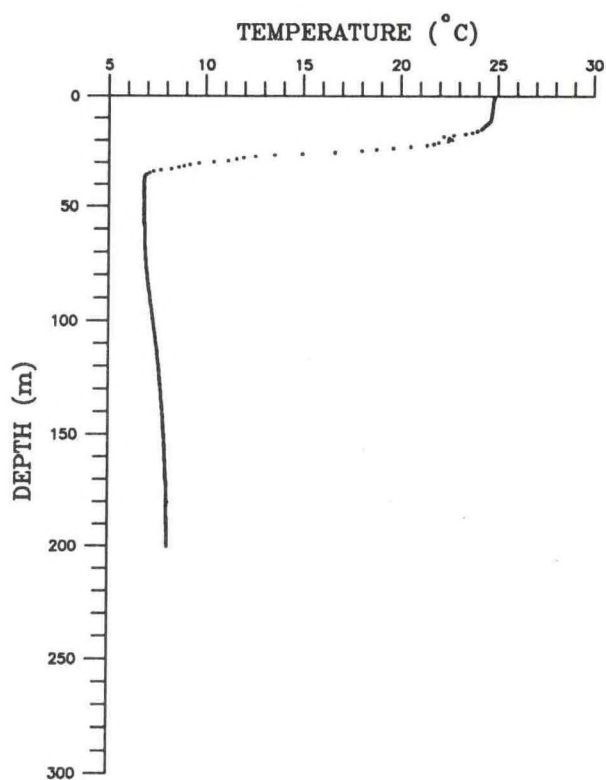
XBT 11



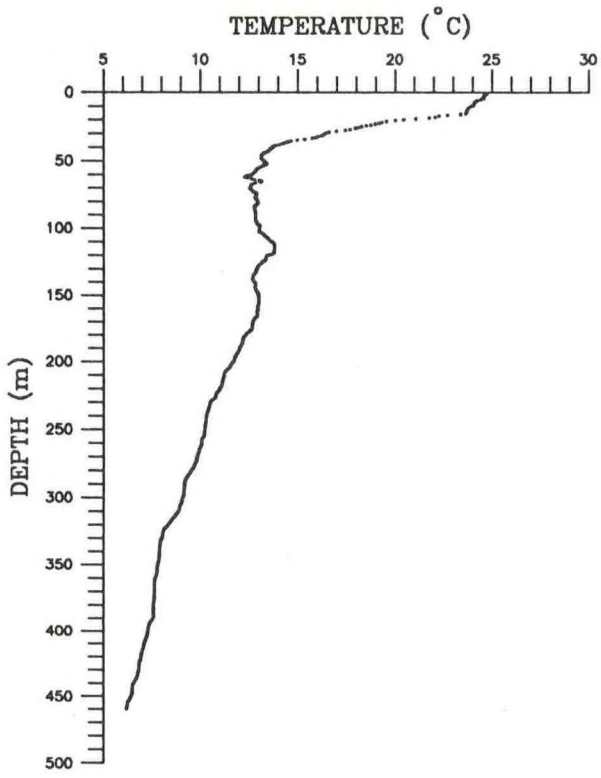
XBT 12



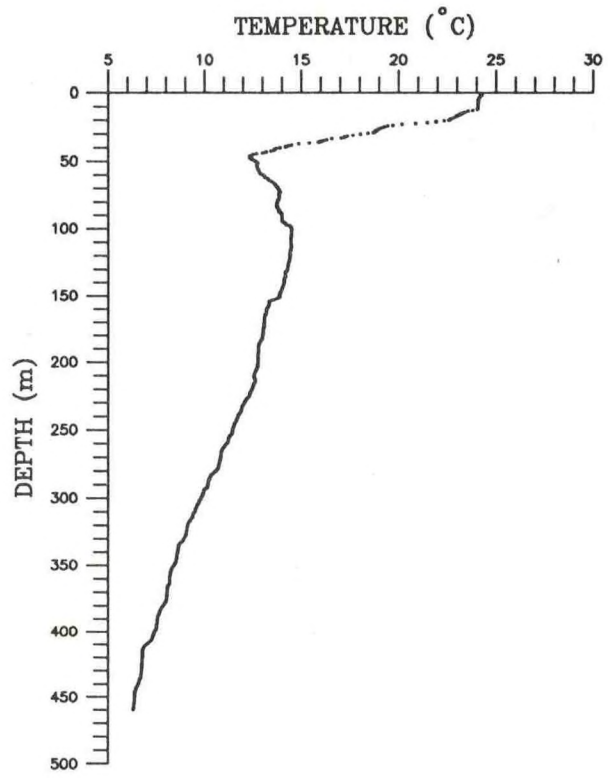
XBT 13



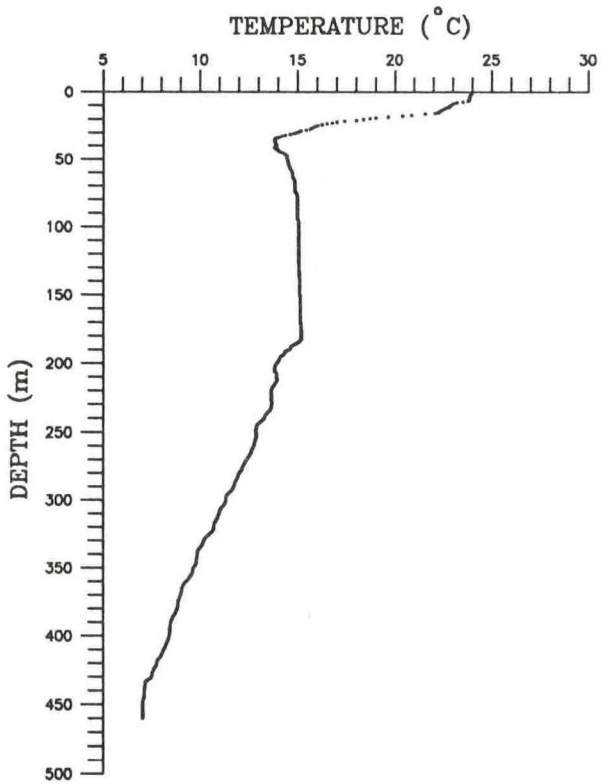
XBT 14



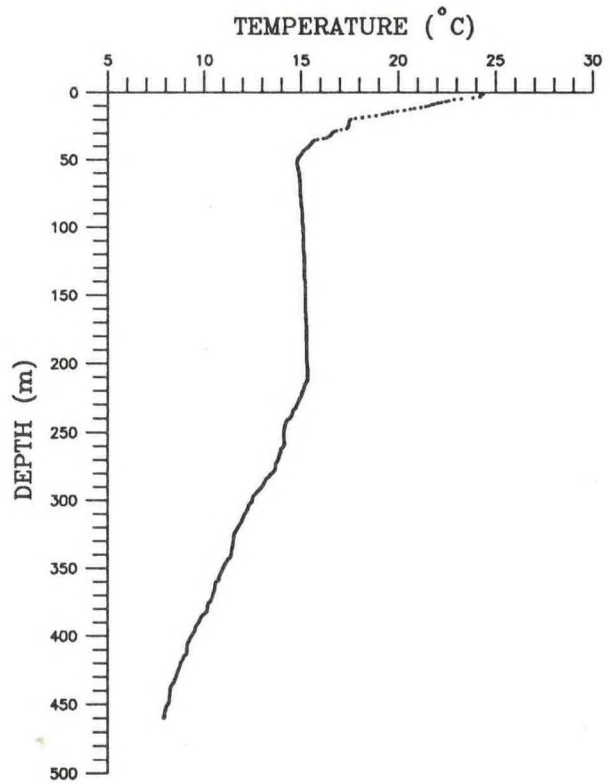
XBT 15



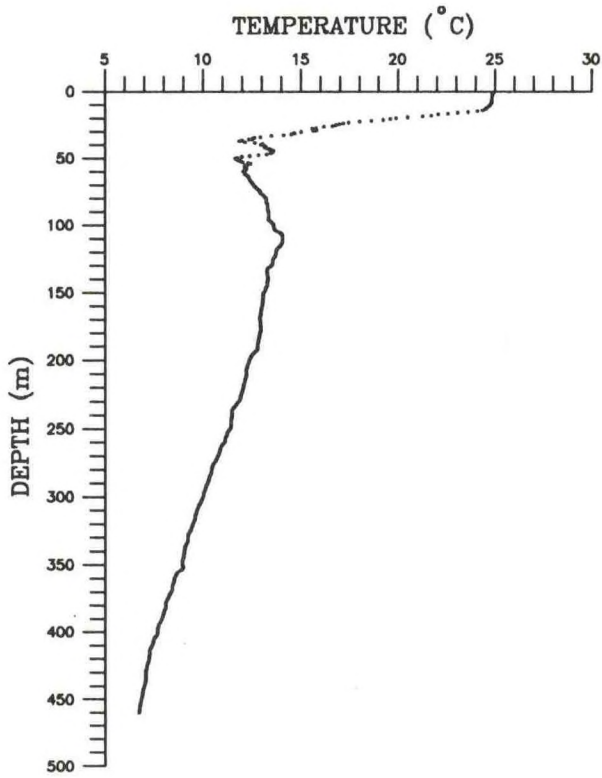
XBT 16



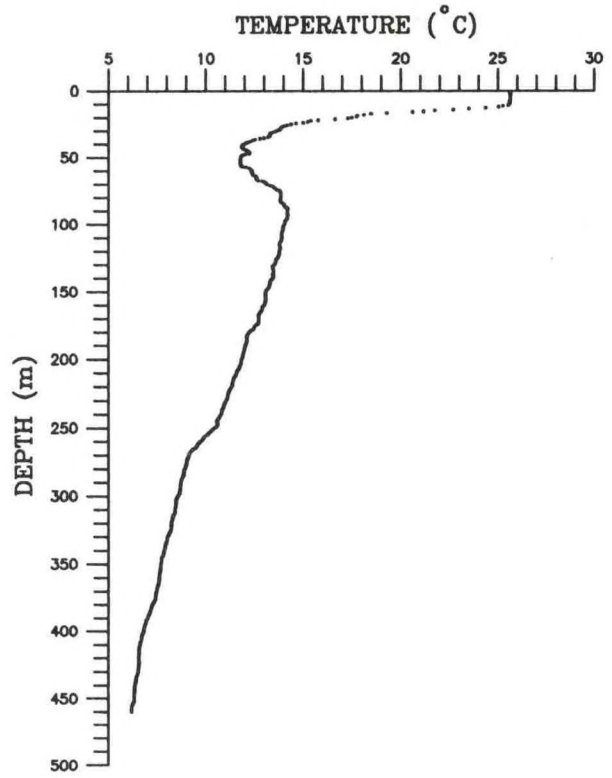
XBT 17



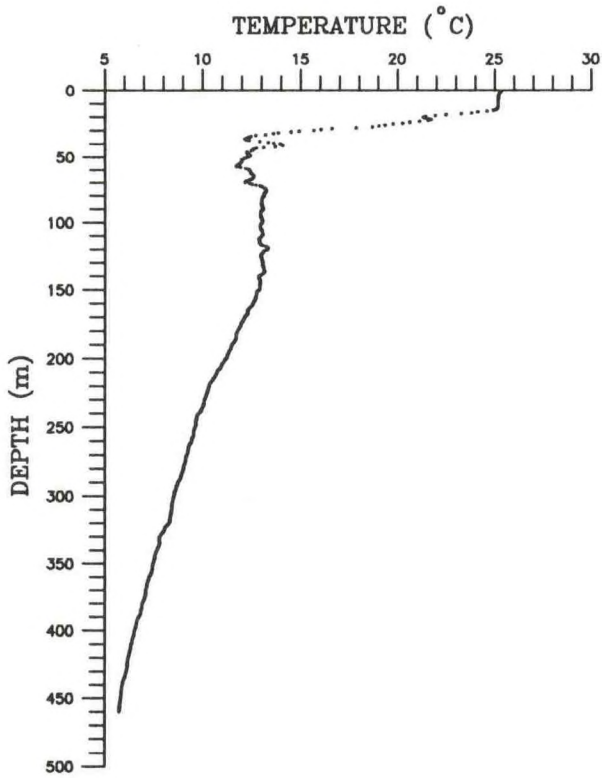
XBT 18



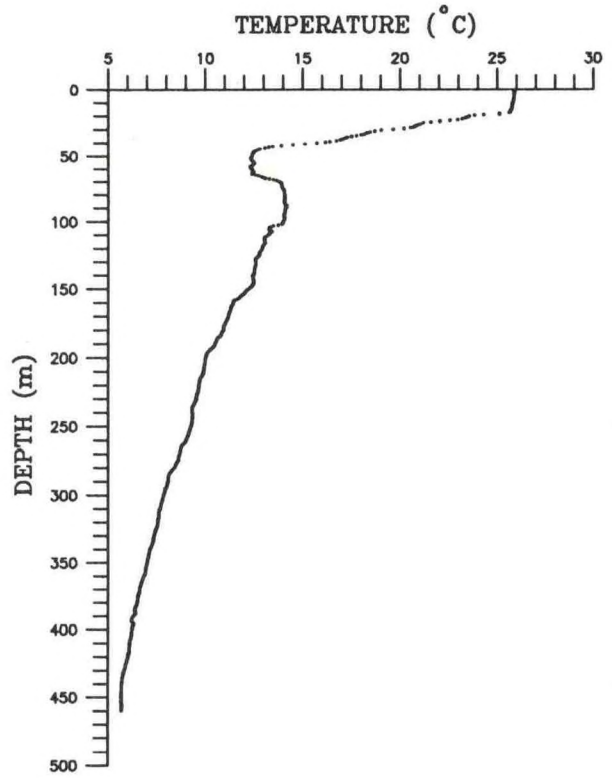
XBT 19



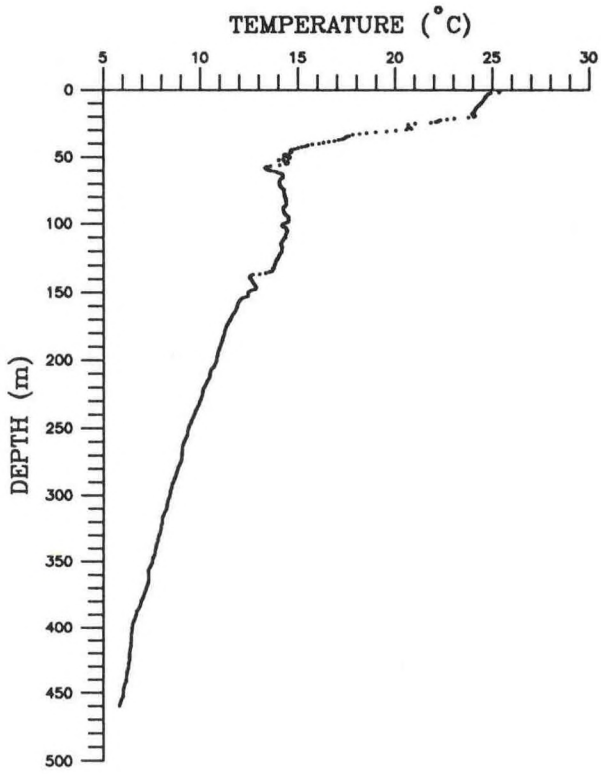
XBT 20



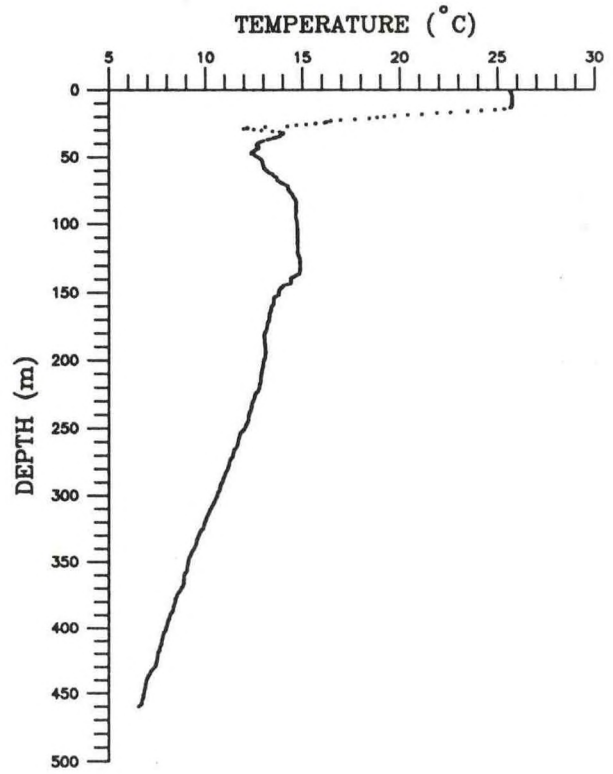
XBT 21



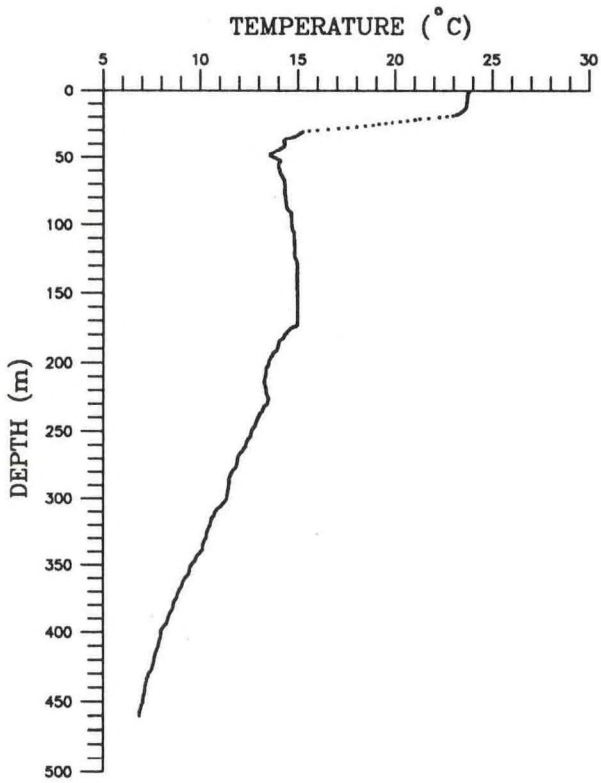
XBT 22



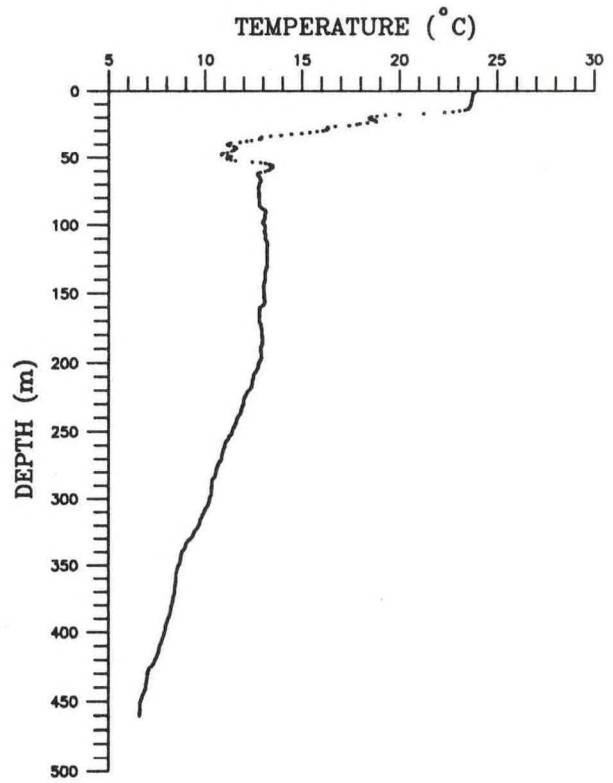
XBT 23



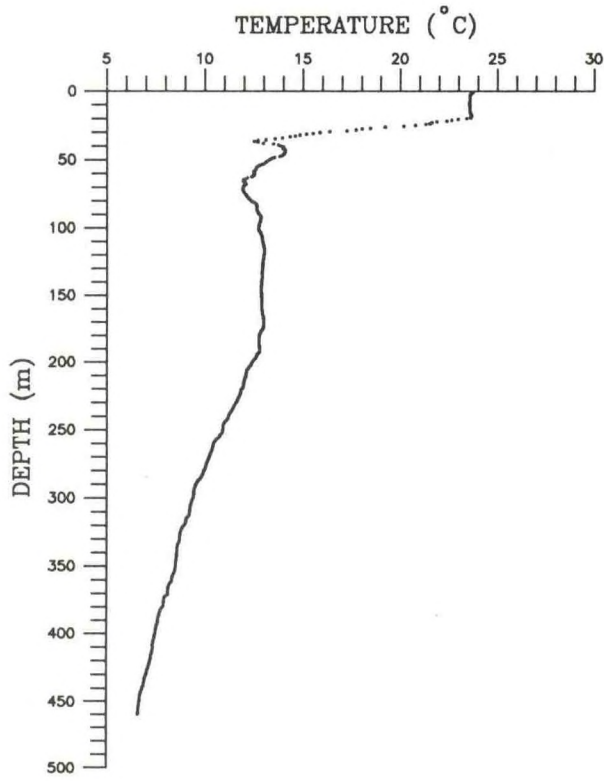
XBT 24



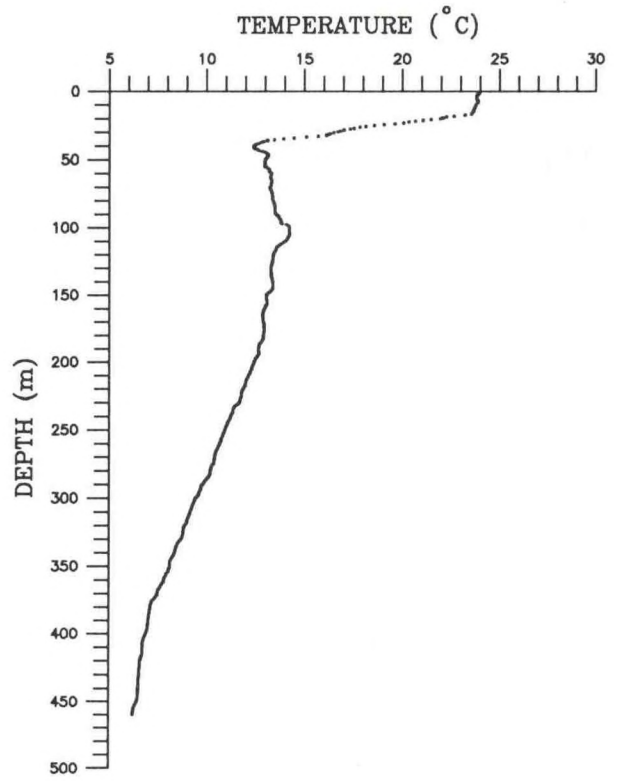
XBT 25



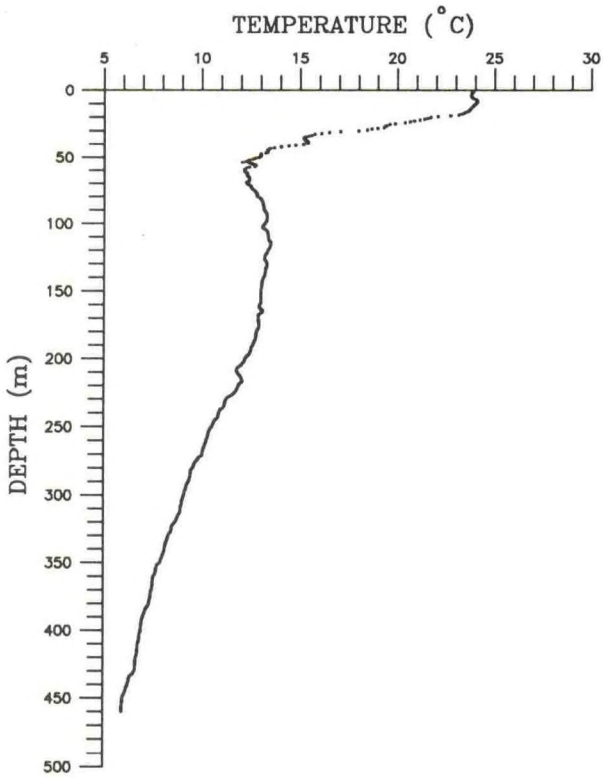
XBT 26



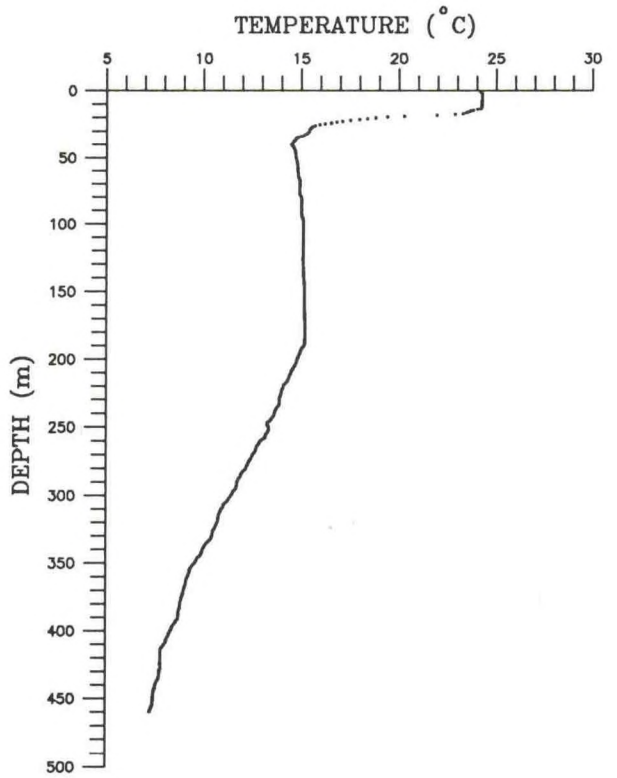
XBT 27



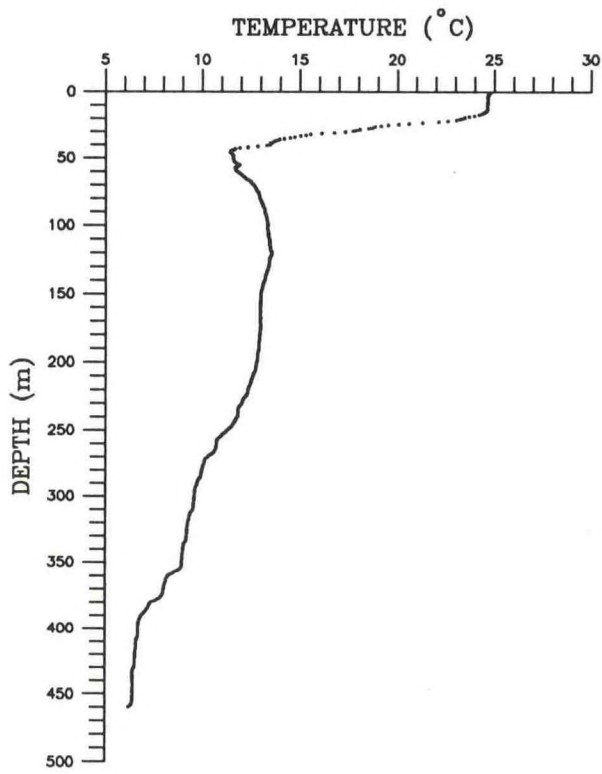
XBT 28



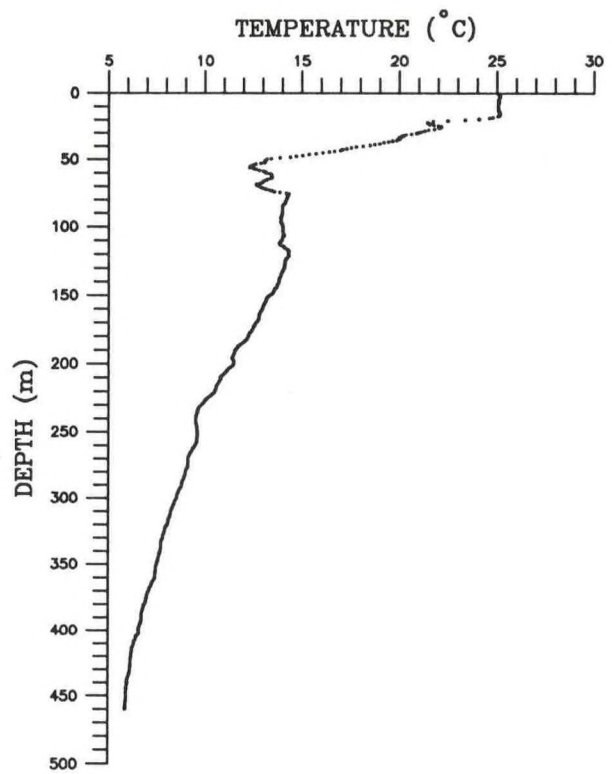
XBT 29



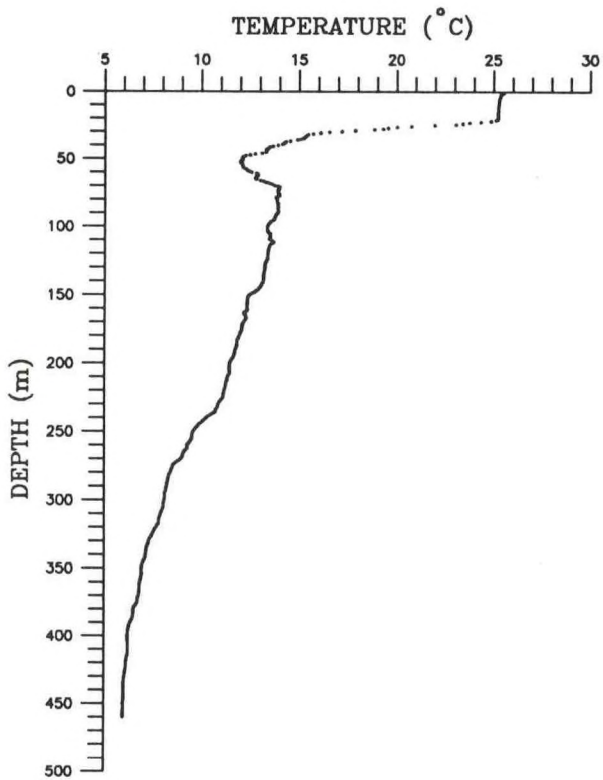
XBT 30



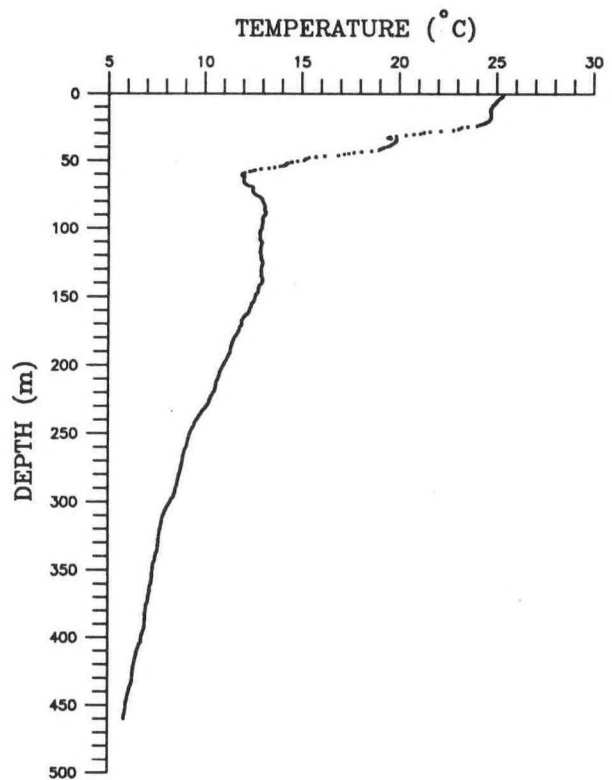
XBT 31



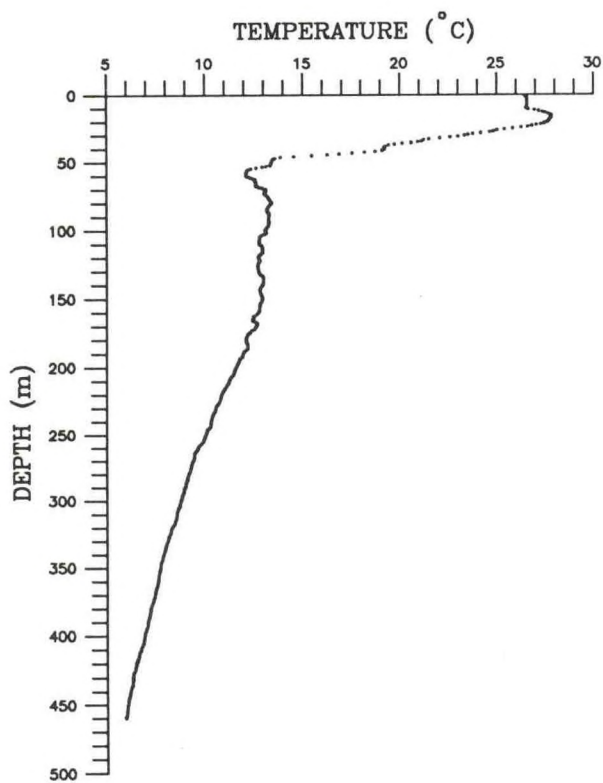
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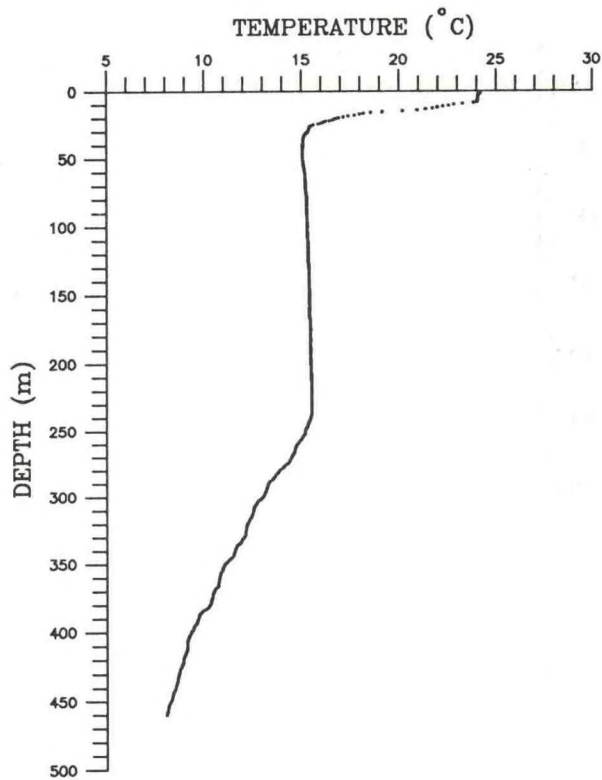
XBT 33



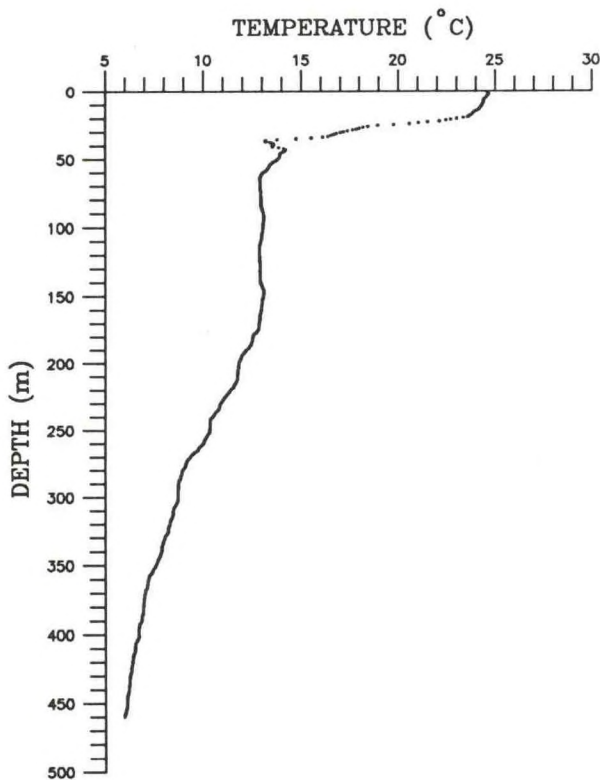
XBT 34



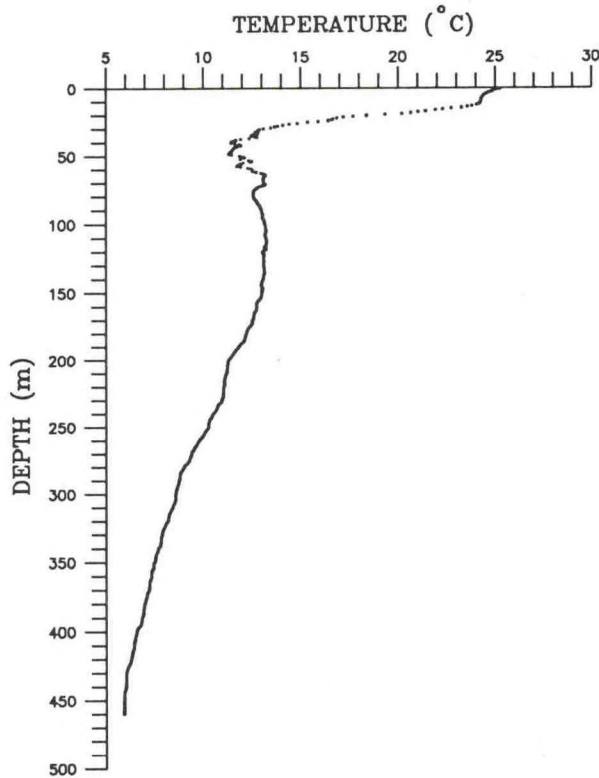
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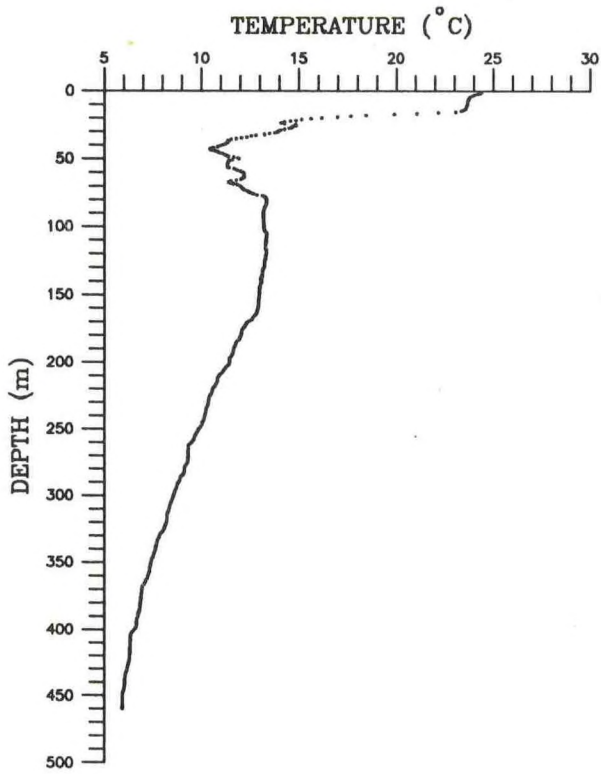
XBT 36



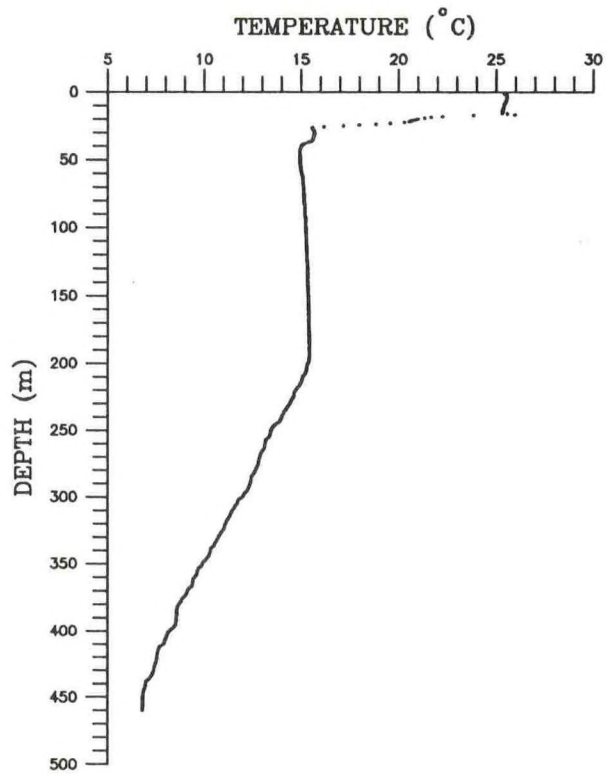
XBT 37



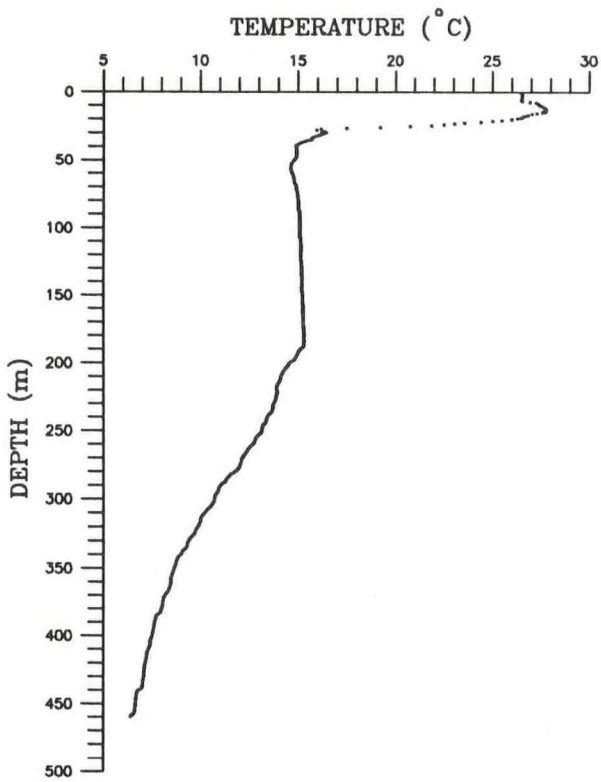
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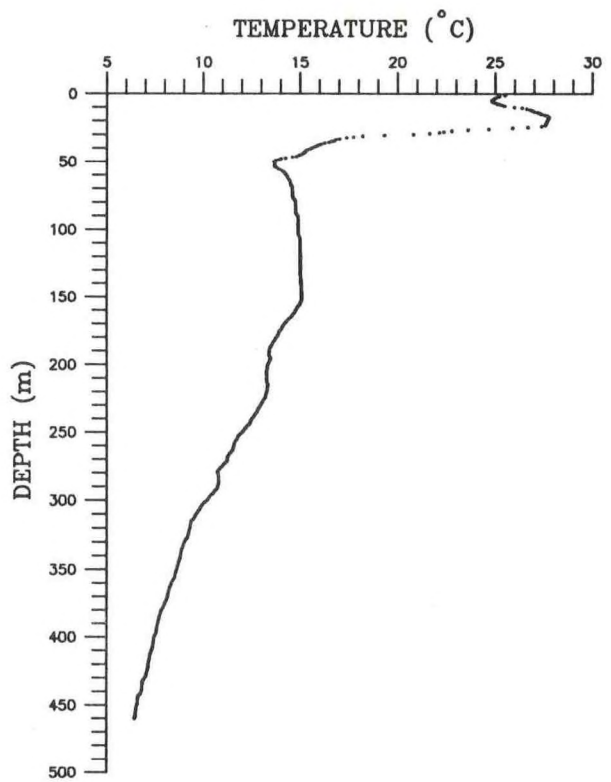
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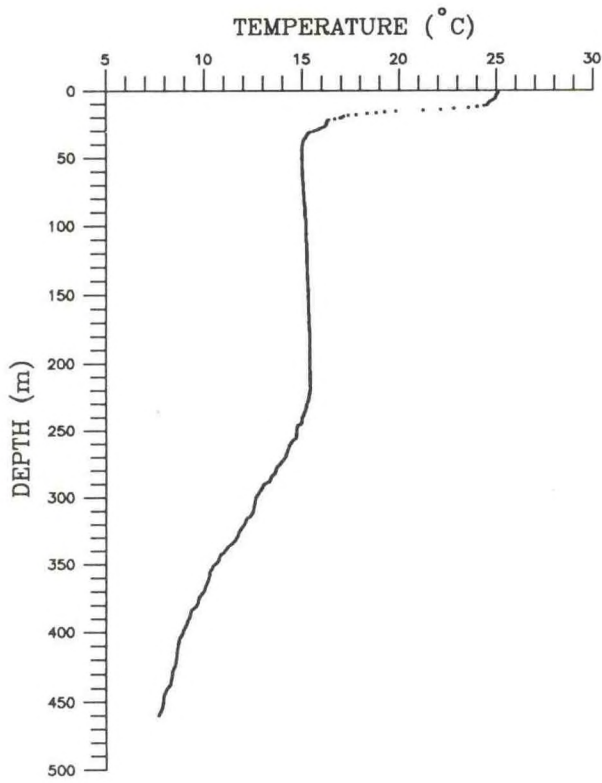
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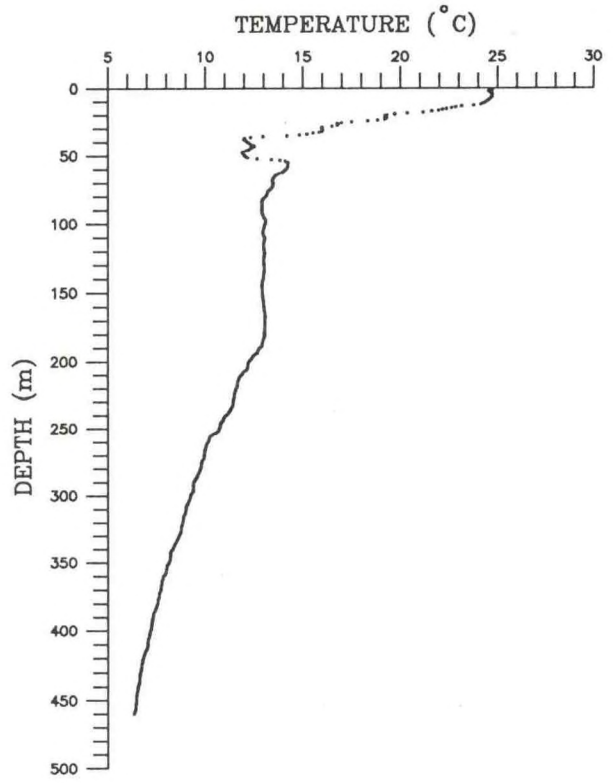
XBT 41



XBT 44



XBT 45



XBT 46

