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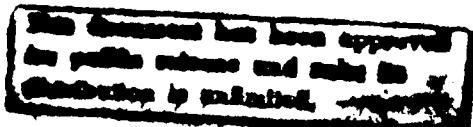
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HYDROGRAPHIC DATA FROM THE PILOT STUDY OF THE  
COASTAL TRANSITION ZONE (CTZ) PROGRAM  
15 - 28 JUNE 1987

by

Paul F. Jessen  
Steven R. Ramp  
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April 1989



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Hydrographic Data from the  
Coastal Transition Zone (CTZ) Program

15 - 28 June, 1987

by

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## INTRODUCTION

The data included in this report were collected as part of the Office of Naval Research (ONR) Coastal Transition Zone project during June 15-28, 1987. The study area encompassed the region from just north of Pt. Arena, California south to about  $37^{\circ} 40.00'$  N. from the coast to approximately 120 nm offshore. The purpose of this cruise was to create a quasi-synoptic 3-dimensional map of the hydrographic structure and velocity fields in a cold filament off the coast of California. Prior to the cruise satellite imagery of the sea-surface temperature along the northern coast of California was studied to find a suitable cold filament for mapping during the cruise. A strong feature was clearly seen in the NOAA-9 AVHRR image for June 11, 1987 whose source waters appeared to be located just north of Pt. Arena. This feature was chosen for study. The feature was tracked during the cruise using satellite AVHRR sea-surface temperature imagery and surface gradients of temperature and salinity from continuous underway sensors (discussed in the next section). The imagery was sent to the ship in near real time via weather fax by cooperating investigators at the Scripps Institution of Oceanography. A total of 120 CTD casts to a maximum of 500 m depth and 30 XBT drops to a maximum depth 750 m were made.

The cruise was divided into three parts: Part I (CTD stations 1 - 54 and XBT drop 426) ended when the first filament could no longer be followed non-ambiguously; part II (CTD stations 55 - 78 and XBT drops 479 - 493) was ended by inclement weather; and part III (CTD stations 79 - 115) ended when the available cruise time expired.

The R/V POINT SUR departed from Moss Landing, California on the morning of June 15, 1987 and arrived on station 1 at 0900 UT of June 16 (Fig. 1) to begin hydrographic mapping of the filament. Following the completion of CTD station

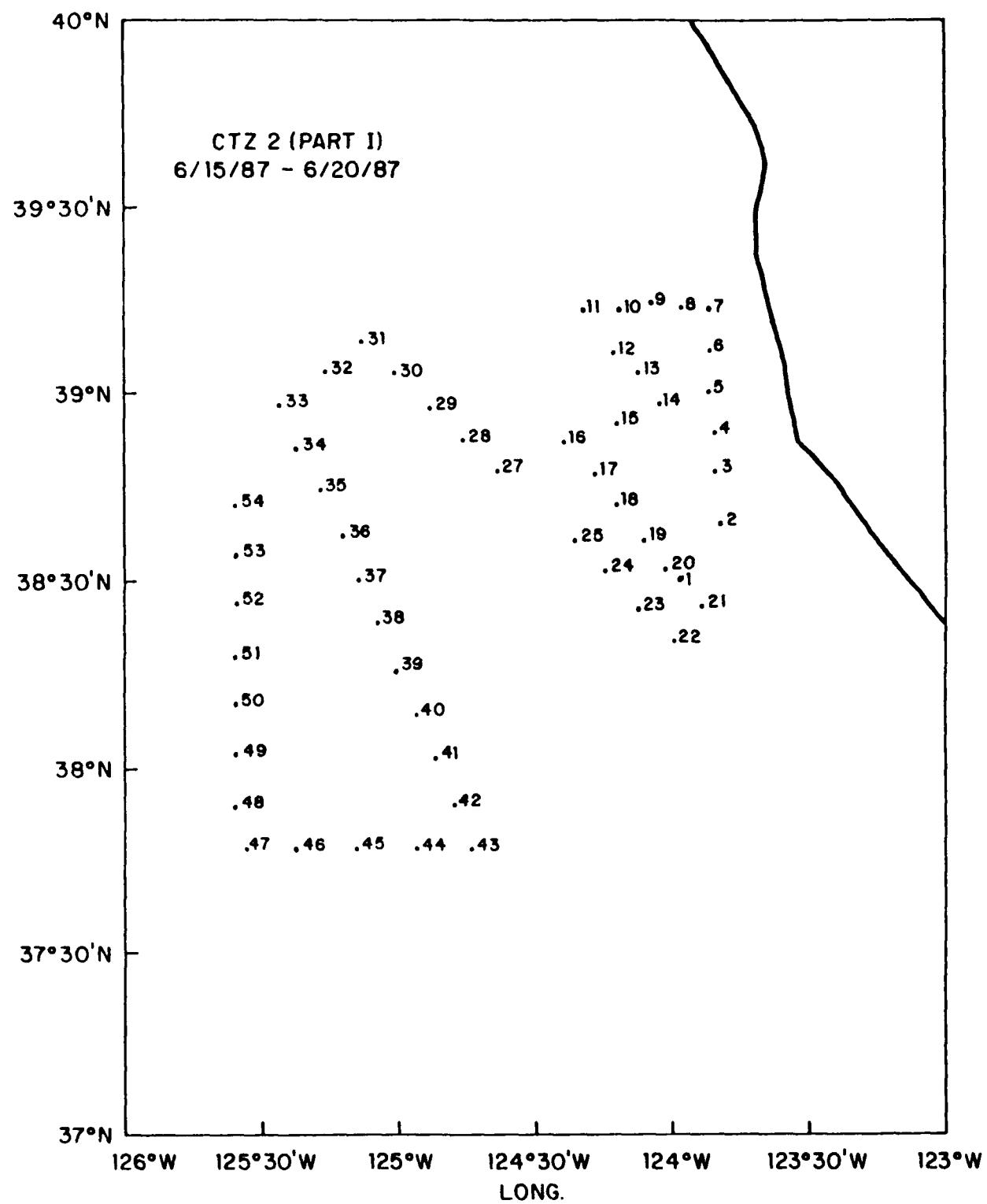


Figure 1. CTD station numbers and locations for part I of the Coastal Transition Zone (CTZ2) filament study during June 15-20, 1987 aboard the R/V POINT SUR.

1 the ship proceeded inshore slightly and a section of CTD casts was made heading to the north (stations 2-7, Fig. 1), west (stations 8-11, Fig. 1), and then back south in a zigzag fashion (stations 12-21, Fig. 1) through the "root" of the filament.

Following the completion of CTD station 21 on June 17 at 1515 UT the ship steamed to  $38^{\circ} 34.27' N$ ,  $124^{\circ} 03.53' W$ . (near station 19, Fig. 1) and deployed a group of 9 satellite tracked drifters within the filament. Eight of these drifters were expendable and one, to be recovered, was instrumented with an MER optical sensor, a Codispoti Nutrient Sampler, and a thermistor chain with an Aanderaa recorder. The drifter deployment required about 8 hours whereupon hydrographic operations resumed with a CTD cast at station 22 (Fig 1) at 0130 UT on June 18.

A section of CTD casts was then started across the filament at stations 23-25 (Fig. 1). Due to increasing seas an XBT drop (station 426, Fig. 2) was made following station 25 rather than a CTD cast. Weather then improved slightly and CTD casts were resumed at stations 27-31 (Fig. 1) completing station 31 at 1855 UT on June 18. The ship then proceeded slightly further offshore completing a CTD cast at station 32 (Fig. 1) before beginning another section of CTDs south through the filament (stations 33-43, Fig. 1). The last cast of this section (station 43) was completed at 1225 UT on June 19. The ship next turned directly west and hydrographic work continued with CTD casts at stations 44-47 (Fig. 1) completing station 47 at about 1915 UT on June 19.

Another cut was made north through the filament with CTD casts made at stations 48-54 (Fig. 1) completing the last of these at 0700 UT on June 20. During this final cut through the filament gradients of surface salinity and temperature from the continuous underway sensors were becoming very weak

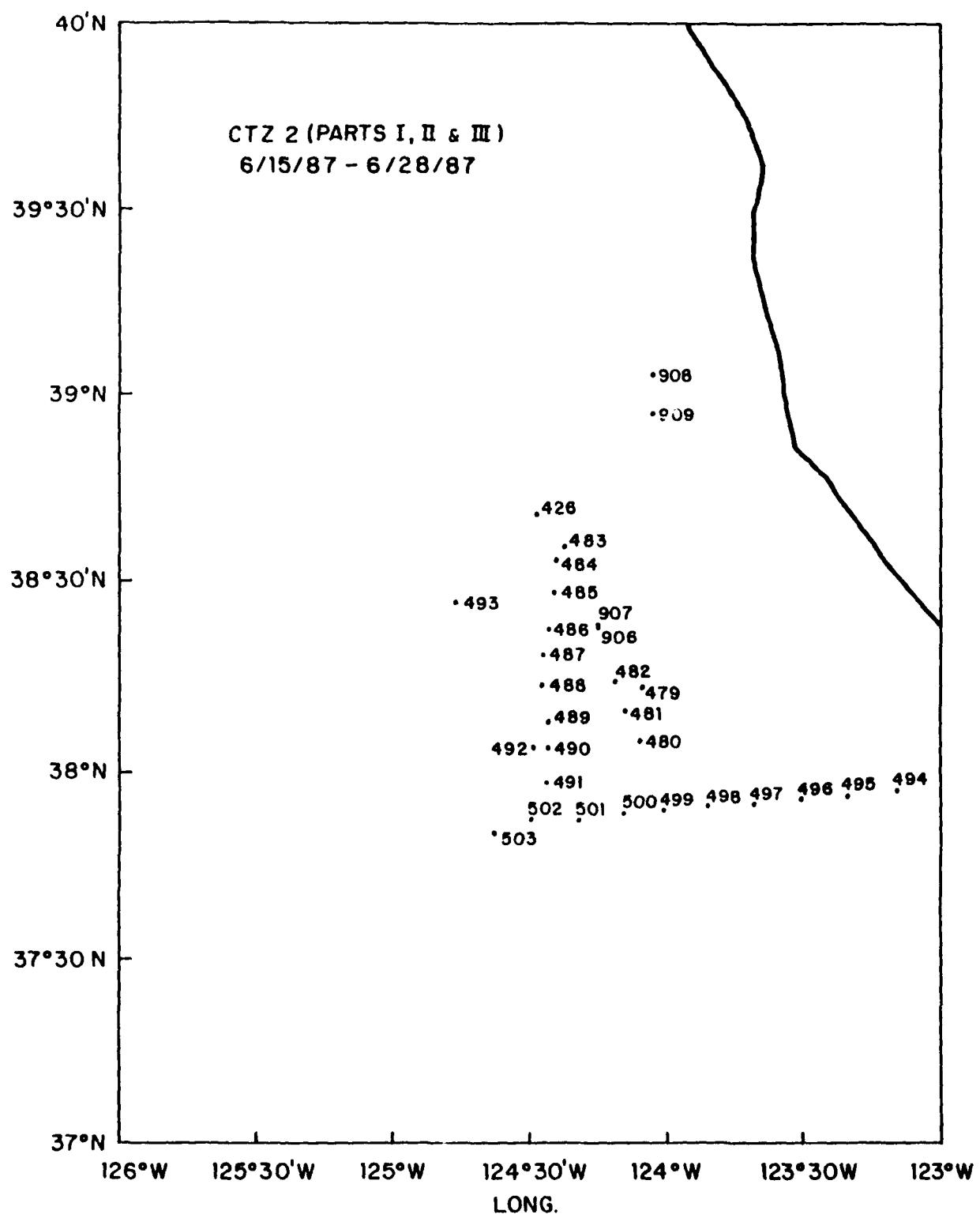


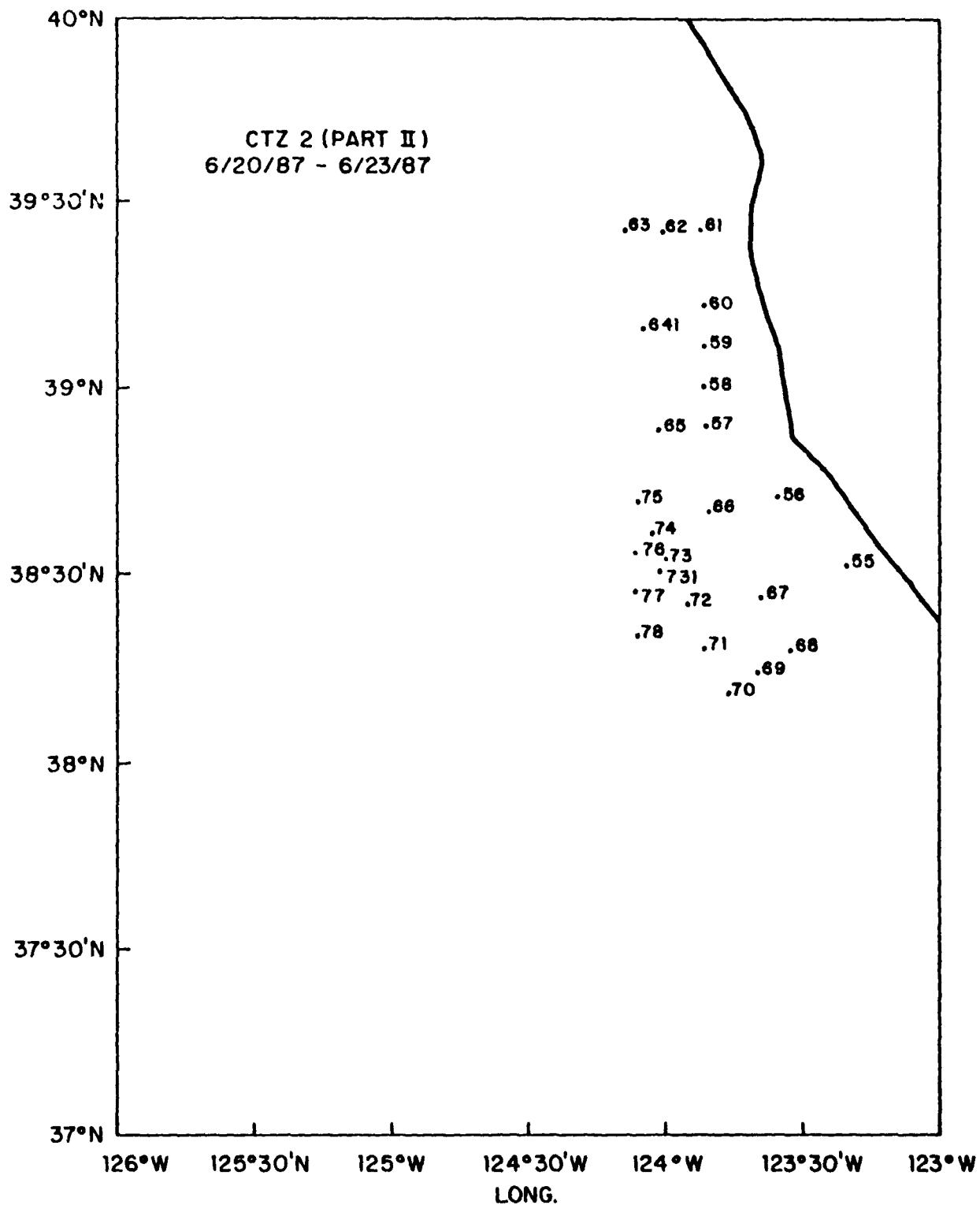
Figure 2. XBT station numbers and locations for all parts of the Coastal Transition Zone (CTZ2) filament study during June 15-28, 1987 aboard the R/V POINT SUR.

leading us to conclude that it would be difficult to track the filament much farther. It was decided that the ship would steam to the source waters near Point Arena and search for a new filament to track.

This search began with a CTD cast at station 55 (Fig. 3) at 1750 UT on June 20. Following this station the ship steamed north along the coast completing CTD casts at stations 56-61 (Fig. 3) by 0415 UT on June 21. The ship then proceeded offshore about 12 nautical miles completing stations 62 and 63 (Fig. 3) before turning back south at 0640 on June 21. The ships course again paralleled the coast and CTD casts were made at stations 641 and 65-68 (Fig. 3) by 1555 on June 21.

By this time a new filament had been found and was tracked as before using the underway sensors and the real time AVHRR SST imagery to follow the filament. The ship headed further offshore completing CTD casts at stations 69 and 70 (Fig. 3) before turning north-northwest back across the filament at 1845 UT on June 21. Stations 70-73, 731, 74, and 75 of this section were finished by 0225 UT on June 22. The ship then turned south and completed CTD casts at stations 76-78 (Fig. 3). Following the CTD cast at station 78 (0710 UT of June 22) the weather became too bad to safely launch and recover the CTD.

As the ship steamed south, the filament mapping continued with XBT drops at stations 479 and 480 (Fig. 2). The ship turned north to cross the filament again at 0850 UT on June 20. Adverse weather conditions continued to prevent CTD operations, so mapping continued intermittently with XBT drops at stations 481-483 (Fig. 2). A more complete section of XBT drops were made after the ship turned south (downwind) following the XBT drop at station 483 at 1550 UT on June 22. XBT drops were made at stations 484-491 completing station 491 at 0130 UT on June 23.



**Figure 3.** CTD station numbers and locations for part II of the Coastal Transition Zone (CTZ2) filament study during June 20-23, 1987 aboard the R/V POINT SUR.

The ship began to steam north again in an attempt to continue mapping the filament, but after two more XBT drops (stations 492 & 493, Fig. 2) weather conditions deteriorated to the point that operations were halted and the ship steamed for shelter in Drake's Bay. The ship arrived in Drake's Bay at about 0200 UT on June 24 and remained until 0700 UT on June 25 when weather forecasts predicted workable conditions offshore.

After leaving Drake's Bay the first priority was to recover the instrumented drifter deployed at the beginning of the cruise. The latest satellite position of the drifter was relayed to the ship from the Scripps Institution of Oceanography and an estimated position of the drifter was made using the satellite position and dead reckoning. During the steam to the estimated drifter position a section of XBT's was made (stations 494-503, Fig. 2). The drifter was recovered without incident on June 25 at 1935 UT at  $37^{\circ} 43.19' N$ ,  $124^{\circ} 36.31' W$ .

With no clear imagery to guide the vessel, some of the transects made prior to the bad weather were repeated. A CTD cast was made near the drifter recovery position (station 79, Fig. 4) after which the ship steamed north completing CTD casts at stations 80-82, 825, 826, and 83-87 (Fig. 4) by 1215 UT on June 26. The CTD stations of this section were approximately co-located with XBT drops 484-491 made during part II (see Fig. 2). A southerly section was completed next with CTD casts made at stations 88-90, 905, 91-93, and 935 (Fig. 4). This transect was co-located with XBT drops 480-483 of part II (see Fig. 2). Following the completion of station 935 at 2310 UT on June 26 the ship turned north to begin the next CTD section. This section included stations 941 and 95-98 (Fig. 4) and was completed by 0550 UT on June 27. These transects were co-located with stations 75-78 described earlier.

Three more expendable surface drifters were to be deployed before the end

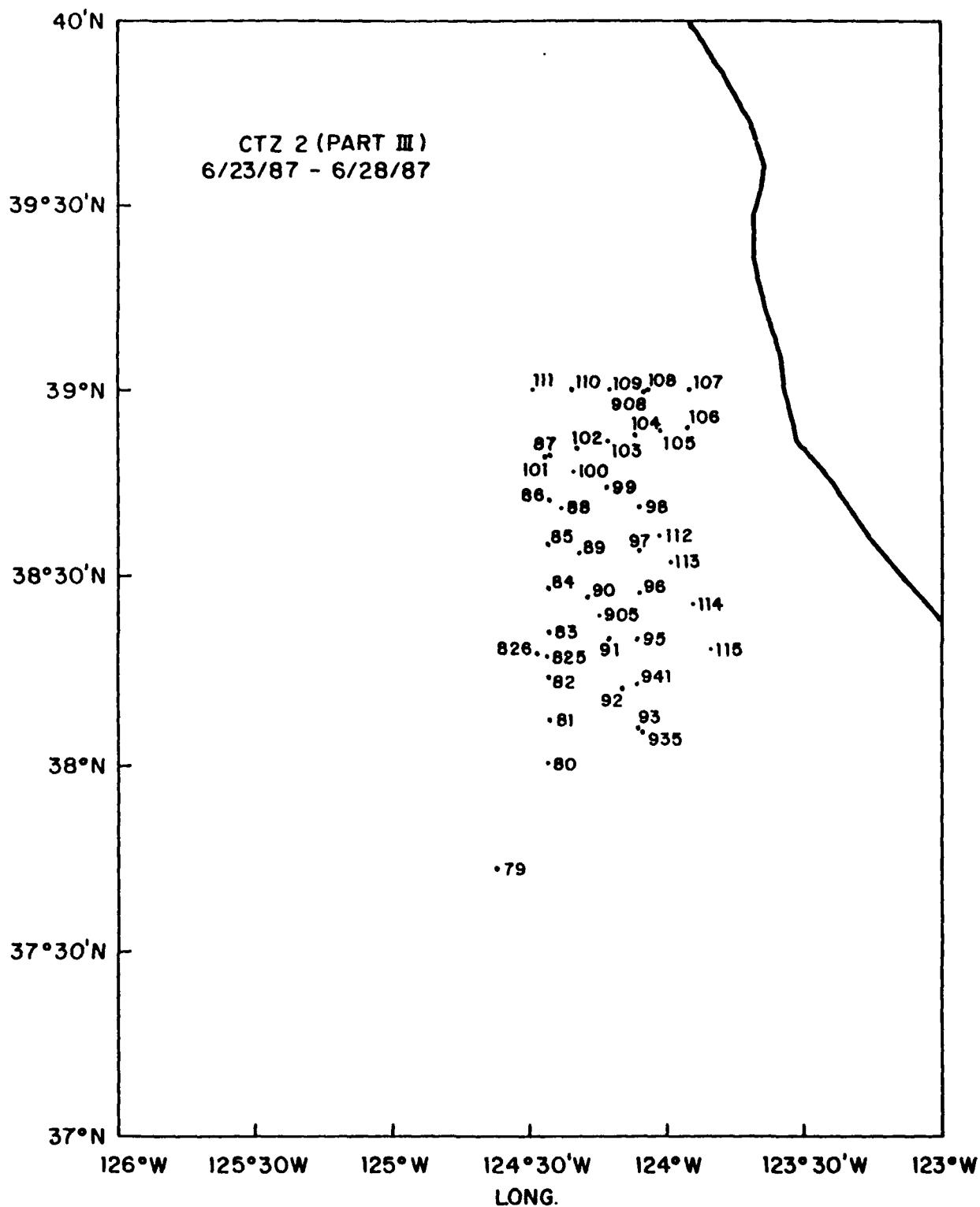


Figure 4. CTD station numbers and locations for part III of the Coastal Transition Zone (CTZ2) filament study during June 23-28, 1987 aboard the R/V POINT SUR.

of the cruise and CTD casts were made at stations 99-108, 908, 110, and 111 (Fig. 4) to help decide where to deploy the drifters. Station 111 was completed at 2040 UT on June 27 after which the drifters were deployed. XBT drops were made at the same time as the last two drifter deployments (stations 908 and 909, Fig. 2).

As the ship steamed back towards Moss Landing a final section of CTD casts was made (stations 112-115, Fig. 4) between 0200 UT and 0545 UT on June 28. These stations were in approximately the same position as stations 71-74 of part II (see Fig. 3). The ship docked back at Moss Landing at 2200 UT on June 28. A listing of all CTD and XBT stations occupied during the cruise is shown in Table 1.

The personnel on this cruise were; Dr. Steven R. Ramp, Naval Postgraduate School (NPS), Dr. Ken Brink, Woods Hole Oceanographic Institution (WHOI), Dr. Curt Davis, Jet Propulsion Laboratory (JPL), Dr. Dave Kadko, Oregon State University (OSU), Mr. Paul Jessen (NPS), Mr. Jim Stockel (NPS), LCDR Bill Fasciano (NPS), Mr. Dick Limeburner (WHOI), Mr. Dick Kovar (OSU), and Ms. Sharon Lindsay, San Jose State University (SJSU).

#### **DATA ACQUISITION AND CALIBRATION**

Hydrographic data was acquired using a Neil Brown Mark III-B CTD and Sippican T-4 XBTs. A General Oceanics rosette sampler was attached to the CTD and was equipped with twelve 5 liter Niskin bottles for *in situ* water sampling. The CTD sampling rate was 32 Hz, but the acquisition software employed a pressure latch filter which limited each cast to a uniform series of 4308 data points. On the 500 m casts this resulted in the acquisition of 8 or 9 data points per meter of water. CTD data was acquired only on the downcast with a winch speed of approximately 30 m/min to 150 m then 60 m/min to 500 m. The data were acquired using an HP200 computer and stored on 3.5

Table 1. List of stations occupied during the Coastal Transition Zone (CTZ2) filament study, showing date, time, type, location, and weather.

Date	Time (UT)	Stn No.	Type	Latitude	Longitude	Wind Dir	Wind Spd(m/s)	Air (°C)	Dew pt. (°C)
June 16	0845	1	CTD	38 30.1	123 59.3	323	11.4	12.09	7.44
	1057	2	CTD	38 38.8	123 49.2	336	12.7	11.70	7.31
	1249	3	CTD	38 47.3	123 50.6	323	8.7	10.90	6.98
	1408	4	CTD	38 53.4	123 50.7	357	9.0	12.00	7.33
	1538	5	CTD	39 0.2	123 51.4	013	10.0	12.43	7.02
	1644	6	CTD	39 6.7	123 51.8	342	8.8	12.35	6.46
	1810	7	CTD	39 13.4	123 51.9	322	10.4	12.68	7.54
	1903	8	CTD	39 13.5	123 57.9	314	10.2	12.38	7.44
	2009	9	CTD	39 14.3	124 4.4	324	12.5	12.98	7.34
	2111	10	CTD	39 13.3	124 11.4	001	11.9	13.57	7.11
	2217	11	CTD	39 13.2	124 19.0	356	11.4	13.40	7.45
June 17	0032	12	CTD	39 6.4	124 12.4	316	13.3	13.25	7.09
	0140	13	CTD	39 3.2	124 7.4	319	12.4	13.80	6.93
	0330	14	CTD	38 58.2	124 2.4	315	15.5	13.32	7.10
	0520	15	CTD	38 54.9	124 11.9	323	14.9	13.55	7.68
	0743	16	CTD	38 51.8	124 23.2	320	16.5	12.73	7.52
	0916	17	CTD	38 46.8	124 17.0	329	13.7	12.90	7.71
	1032	18	CTD	38 41.9	124 11.9	325	13.1	13.27	7.51
	1156	19	CTD	38 36.3	124 6.2	317	12.5	12.49	7.60
	1315	20	CTD	38 31.8	124 1.2	324	13.1	11.96	7.37
	1446	21	CTD	38 25.9	123 53.3	317	10.8	12.18	7.63
June 18	0126	22	CTD	38 20.4	123 59.3	321	14.2	13.99	8.27
	0302	23	CTD	38 25.4	124 7.3	310	12.0	13.44	8.36
	0521	24	CTD	38 31.4	124 14.3	317	15.3	13.76	8.24
	0725	25	CTD	38 36.2	124 21.2	332	13.7	13.74	8.32
	1002	426	XBT	38 43.1	124 31.2	336	12.2	13.66	8.61
	1113	27	CTD	38 47.3	124 38.0	336	11.5	12.73	8.70
	1246	28	CTD	38 52.4	124 45.9	327	12.7	12.91	8.54
	1418	29	CTD	38 57.4	124 52.7	344	14.2	13.60	8.13
	1605	30	CTD	39 3.1	125 0.8	338	11.6	14.20	8.32
	1818	31	CTD	39 8.3	125 7.6	352	11.8	14.40	9.28
	2014	32	CTD	39 3.5	125 15.9	008	12.5	14.48	8.82
June 19	2140	33	CTD	38 58.0	125 25.8	002	9.1	14.44	8.69
	2256	34	CTD	38 50.9	125 22.0	355	10.4	14.17	9.37
	0018	35	CTD	38 44.4	125 16.7	334	11.3	14.65	9.27
	0143	36	CTD	38 37.0	125 11.9	339	9.8	13.76	9.43
	0300	37	CTD	38 30.0	125 8.3	330	9.8	12.96	9.84
	0422	38	CTD	38 23.4	125 4.1	334	10.2	12.71	9.88
	0553	39	CTD	38 15.8	125 0.1	323	8.9	12.40	9.63
	0736	40	CTD	38 8.5	124 56.0	322	9.5	12.52	9.67
	0858	41	CTD	38 1.6	124 51.9	322	9.4	12.67	9.65
	1027	42	CTD	37 54.1	124 47.7	333	11.0	12.71	9.73
	1203	43	CTD	37 46.9	124 44.1	328	10.3	12.73	9.57
	1336	44	CTD	37 47.0	124 56.0	344	9.8	13.03	9.47
	1515	45	CTD	37 47.0	125 9.0	346	8.8	13.42	9.17
	1657	46	CTD	37 47.0	125 22.0	012	7.6	13.33	8.73
	1844	47	CTD	37 47.1	125 33.0	353	7.6	13.77	8.36
	2009	48	CTD	37 53.7	125 35.7	005	5.6	13.68	8.12

Table 1. (continued)

Date	Time (UT)	Stn No.	Type	Latitude	Longitude	Wind Dir	Spd(m/s)	Air (°C)	Dew pt. (°C)
JUNE 20	2143	49	CTD	38 2.6	125 35.2	320	8.3	13.50	8.36
	2317	50	CTD	38 10.5	125 35.4	299	7.8	13.66	8.04
	0044	51	CTD	38 18.4	125 35.1	310	7.8	12.74	8.83
	0319	52	CTD	38 26.5	125 35.1	304	5.5	12.53	10.04
	0440	53	CTD	38 34.0	125 35.2	295	5.8	12.61	8.28
	0613	54	CTD	38 41.9	125 35.2	318	3.7	12.80	10.20
	1752	55	CTD	38 31.3	123 20.7	174	9.1	10.85	7.83
	2015	56	CTD	38 42.3	123 35.7	359	5.4	12.26	8.85
	2314	57	CTD	38 53.7	123 51.1	004	0.2	13.98	10.47
JUNE 21	0016	58	CTD	39 0.2	123 51.5	193	1.2	13.89	10.83
	0110	59	CTD	39 6.8	123 51.8	144	2.5	13.25	10.76
	0220	60	CTD	39 13.2	123 51.8	145	3.8	13.35	11.74
	0356	61	CTD	39 25.4	123 52.3	178	4.7	13.09	10.83
	0457	62	CTD	39 25.3	124 0.7	162	2.7	12.28	10.56
	0609	63	CTD	38 25.3	124 9.2	163	5.5	12.49	10.37
	0831	641	CTD	39 9.6	124 4.9	308	4.2	12.35	11.20
	1021	65	CTD	38 53.3	124 1.1	345	4.6	12.55	10.71
	1216	66	CTD	38 39.8	123 50.7	311	7.3	11.47	10.14
	1424	67	CTD	38 26.3	123 39.3	352	7.6	11.95	10.62
	1553	68	CTD	38 18.2	123 32.4	353	8.6	12.65	9.47
	1657	69	CTD	38 14.7	123 39.4	349	9.9	13.65	9.42
	1802	70	CTD	38 11.4	123 46.4	333	10.0	13.42	8.78
	1937	71	CTD	38 18.3	123 51.4	335	11.1	14.83	9.46
	2101	72	CTD	38 25.3	123 55.2	334	11.5	14.82	9.05
	2222	73	CTD	38 32.2	124 0.0	308	13.9	14.68	9.01
	2325	731	CTD	38 30.4	124 1.1	318	14.3	14.15	8.48
JUNE 22	0046	74	CTD	38 36.3	124 2.9	318	14.6	14.64	8.70
	0225	75	CTD	38 41.5	124 6.1	328	14.1	14.74	8.84
	0336	76	CTD	38 33.7	124 6.7	324	15.0	14.39	8.44
	0516	77	CTD	38 27.2	124 6.4	327	13.0	14.23	8.44
	0632	78	CTD	38 20.3	124 6.2	320	15.5	14.03	8.04
	0754	479	XBT	38 13.3	124 5.6	333	16.0	12.93	8.24
	0850	480	XBT	38 5.2	124 6.1	326	16.4	14.01	8.13
	0957	481	XBT	38 9.9	124 9.1	327	13.8	14.41	8.09
	1051	482	XBT	38 14.5	124 11.4	335	15.1	14.18	8.15
	1549	483	XBT	38 35.7	124 22.1	336	17.0	14.92	8.02
	1909	484	XBT	38 33.6	124 24.0	338	14.1	14.34	8.37
	2002	485	XBT	38 28.2	124 24.7	335	14.1	14.37	6.14
	2100	486	XBT	38 22.6	124 26.0	324	13.0	14.33	8.83
	2145	487	XBT	38 18.5	124 26.9	334	12.3	14.13	8.88
	2238	488	XBT	38 13.8	124 26.8	333	12.9	14.78	8.78
	2341	489	XBT	38 8.1	124 26.0	331	14.1	15.09	8.96
JUNE 23	0030	490	XBT	38 3.8	124 26.1	320	15.4	15.23	8.98
	0133	491	XBT	37 58.5	124 26.3	333	14.1	15.05	9.13
	0323	492	XBT	38 3.9	124 28.9	-	-	-	-
	1444	493	XBT	38 57.1	124 46.6	331	14.5	14.85	9.49
JUNE 25	0832	494	XBT	37 57.1	123 9.7	217	2.3	10.25	8.89
	0927	495	XBT	37 56.2	123 20.8	254	2.7	10.45	8.95
	1014	496	XBT	37 55.8	123 30.6	300	2.7	10.59	9.28

Table 1. (continued)

Date	Time (UT)	Stn No.	Type	Latitude	Longitude	Wind Dir	Spd(m/s)	Air (°C)	Dew pt. (°C)
	1104	497	XBT	37 55.2	123 40.6	325	4.4	11.46	9.51
	1153	498	XBT	37 54.7	123 50.9	318	6.2	11.28	9.47
	1242	499	XBT	37 54.0	124 1.0	330	5.3	11.67	9.70
	1326	500	XBT	37 53.4	124 9.6	334	7.4	12.62	10.25
	1416	501	XBT	37 52.5	124 19.6	343	6.9	12.28	10.16
	1509	502	XBT	37 52.3	124 29.6	332	9.8	13.05	10.09
	1603	503	XBT	37 50.3	124 38.2	351	8.6	12.55	10.24
	1739	79	CTD	37 43.3	124 37.0	019	6.7	12.54	10.22
	2325	80	CTD	38 0.5	124 25.8	323	5.5	12.12	9.50
JUNE 26	0034	81	CTD	38 7.4	124 26.0	327	5.2	11.83	9.88
	0155	82	CTD	38 14.4	124 25.9	339	4.5	11.23	9.99
	0343	825	CTD	38 17.6	124 26.5	332	1.0	10.52	9.36
	0440	826	CTD	38 18.0	124 28.1	315	4.9	10.58	9.16
	0545	83	CTD	38 21.4	124 26.0	008	1.1	10.04	9.09
	0817	84	CTD	38 28.3	124 26.0	101	1.1	9.75	8.79
	0934	85	CTD	38 35.4	124 26.0	266	1.9	9.45	8.78
	1046	86	CTD	38 42.4	124 25.8	178	0.3	9.45	8.60
	1159	87	CTD	38 49.5	124 25.7	094	2.5	9.60	9.04
	1311	88	CTD	38 41.2	124 22.8	058	2.2	9.60	8.61
	1420	89	CTD	38 34.1	124 19.5	113	2.2	9.56	8.70
	1542	90	CTD	38 26.8	124 17.2	161	1.3	10.25	9.42
	1716	905	CTD	38 23.9	124 15.1	128	0.6	10.53	9.30
	1821	906	XBT	38 23.1	124 15.4	242	4.4	10.75	9.00
	1826	907	XBT	38 22.9	124 14.8	242	4.4	10.75	9.00
	1845	91	CTD	38 20.2	124 12.6	142	1.7	13.40	9.52
	2056	92	CTD	38 12.4	124 9.4	132	2.2	12.03	8.55
	2225	93	CTD	38 6.2	124 6.1	184	3.4	12.00	9.58
	2308	935	CTD	38 5.8	124 5.3	235	2.5	12.21	9.79
JUNE 27	0053	941	CTD	38 13.4	124 6.5	273	1.7	12.15	9.99
	0216	95	CTD	38 13.2	124 6.5	081	0.7	11.58	10.43
	0323	96	CTD	38 27.4	124 6.3	221	1.0	11.21	9.33
	0433	97	CTD	38 34.4	124 6.3	149	0.9	10.84	9.03
	0548	98	CTD	38 41.4	124 6.3	325	0.2	10.65	-
	0715	99	CTD	38 44.5	124 13.1	066	1.3	10.50	10.14
	0825	100	CTD	38 46.9	124 20.3	234	2.2	10.95	10.29
	0928	101	CTD	38 49.4	124 26.2	301	2.1	10.93	10.69
	1025	102	CTD	38 50.5	124 20.0	247	1.3	10.88	10.18
	1150	103	CTD	38 51.7	124 13.4	164	2.8	10.69	10.59
	1250	104	CTD	38 52.6	124 7.5	136	4.5	10.23	9.42
	1358	105	CTD	38 53.3	124 1.8	173	6.1	10.14	9.36
	1456	106	CTD	38 54.0	123 55.8	213	4.9	10.40	9.41
	1555	107	CTD	39 0.4	123 55.4	198	5.7	10.76	9.82
	1700	108	CTD	39 0.2	124 4.6	202	6.2	10.68	9.50
	1715	908	CTD	39 0.1	124 4.4	173	6.4	10.63	8.55
	1806	109	CTD	39 0.2	124 12.6	171	4.9	10.85	9.66
	1913	110	CTD	39 0.1	124 21.0	152	3.7	11.13	8.66
	2015	111	CTD	39 0.1	124 29.2	162	5.0	11.47	10.00
	2307	908	XBT	39 3.2	124 3.3	268	2.9	12.18	9.14
	2352	909	XBT	38 57.0	124 2.9	277	3.6	12.02	9.39

Table 1. (continued)

Date	Time (UT)	Stn No.	Type	Latitude	Longitude	Wind Dir	Spd(m/s)	Air (°C)	Dew pt. (°C)
JUNE 28	0202	112	CTD	38 36.6	124 2.1	061	1.4	11.86	10.53
	0304	113	CTD	38 32.4	123 59.2	023	1.4	11.90	10.45
	0427	114	CTD	38 25.7	123 54.5	316	2.2	11.96	10.28
	0541	115	CTD	38 18.7	123 50.7	350	3.3	12.13	10.00

inch diskettes. Upon return to shore the data were transferred to 9 track tape and then processed on an IBM 3033 mainframe computer.

In addition to the CTD and XBT data, an underway data acquisition loop recorded 30 second averages of sea surface temperature and salinity, sea surface skin temperature, wind speed and direction, air temperature, dew point temperature, and visible and infrared radiation. The sensors used to acquire this data included Seabird temperature and conductivity sensors for the sea surface temperature and salinity, a Rosemount 100 ohm platinum resistance thermistor for the sea surface skin temperature, an R. M. Young anemometer for the wind speed and direction, a General Eastern dewpoint sensor for the air and dewpoint temperatures, and Epply pyrometers for the visible and infrared radiation. The underway data was acquired on an HP9816 computer and recorded on 3.5 inch diskettes. Like the CTD data, the underway data were transferred to 9 track tape upon return and processed on the IBM mainframe.

The temperature, conductivity, and pressure sensors on the CTD and the temperature and conductivity sensors of the underway sampling system were calibrated shortly after the cruise. The pressure calibration was carried out using a Chandler Engineering dead weight tester as a standard. At 10 equally spaced pressures from 50 to 500 db, indicated pressures from the standard and the CTD sensor were recorded. The differences between recorded values were within the stated accuracy of the sensor (+/- 1.6 db) therefore no pressure correction was applied.

The temperature calibration was done using a Seabird temperature sensor as a standard. This standard sensor is recalibrated by the manufacturer approximately every six months. A temperature bath of 70 - 80 liters of fresh water in an insulated tub was used to compare the standard and sample sensors at 1 °C increments from 0 - 20 °C. 30 data points were collected at each

temperature and then averaged to yield a single value for each sensor. A regression analysis was run on the 21 data points revealing a linear difference between the standard sensor and all of the sample sensors. The coefficients for the correction to the CTD temperature sensor were 1.00020 (slope) and +0.02361 (intercept). The best fit for the Seabird temperature sensor used in the underway sea surface temperature was linear with a slope of 1.0027 and an intercept of +0.0087. The relationship between the resistance of the Rosemount thermistor used for measuring sea surface skin temperature and the reference sensor was also linear with a slope of 2.568 and an intercept of -256.865.

The conductivity calibration was carried out using a Guildline Model 8400 Autosal as a standard. A constant conductivity bath was used to compare the standard and sample sensor conductivities at five different conductivity levels. 10 samples were taken at each conductivity level and averaged to yield a single value for each sensor at each conductivity level. Regression analysis was run comparing the sample cell conductivities (CTD and underway) with the standard sensor conductivities (Autosal). A linear correction was found for the CTD sensor with coefficients of 1.001487 (slope) and -0.034173 (intercept). The best fit for the Seabird conductivity sensor used in the underway system was a linear correction with coefficients of 1.0027 (slope) and +0.0087 (intercept).

A total of 42 water samples were taken at 7 CTD stations for post cruise calibration. The CTD pressure, conductivity and temperature were noted as each sample was taken. These numbers, after applying the calibration coefficients, were used to calculate salinity and the results compared with the water sample salinities calculated using the Guildline Model 8400 Autosal in the laboratory. In order to avoid erroneous comparisons due to ship roll in areas

of high vertical salinity gradients, samples were eliminated from consideration if the salinity within 2 meters of the nominal sample depth changed more than 0.01 PSU. The number of comparable points was reduced to 32 by this constraint. The differences between Autosal calculated salinities and those from the CTD are listed in Table 2. The mean difference was +0.005 with a range of -0.077 to +0.025. No further adjustments were made to the CTD conductivities based on water bottle sample comparisons.

#### DATA PROCESSING

After the raw CTD data was transferred to the IBM 3033 mainframe computer at the Naval Postgraduate School, the described temperature and conductivity corrections were applied to produce profiles of corrected pressure, temperature, and conductivity. Salinity was calculated from these corrected values according to the algorithm of Lewis and Perkin (1981). Severe spiking due to system malfunctions was eliminated from the salinity signal with a search for vertical salinity gradients greater than 1.0 PSU/m. Points that were determined to be bad were replaced using linear interpolation. Time lag spikes were eliminated by discarding salinity data in regions where the vertical temperature gradient exceeded 0.2 °C/m and replacing the discarded data with linearly interpolated values. Finally the data were averaged within 1 m intervals and visually examined for any remaining outliers missed during processing. If found, these points were replaced with linearly interpolated values.

The density anomaly ( $\gamma$ ) at atmospheric pressure was calculated using the corrected values of temperature and salinity and the appropriate algorithms found in Volume 4 of the International Oceanographic Tables (UNESCO, 1987). Surface plots of temperature, salinity, and dynamic height relative to 500 db. were contoured subjectively by hand.

Table 2. Differences between salinities calculated using the corrected CTD pressure, temperature, and conductivity readings and those of the water samples at the same depth measured by the Guildline Autosal.

STA	Z	CTD SAL	SAMPLE SAL	DIFFERENCE
2	484	34.206	34.208	-0.002
	350	34.180	34.180	0.000
	201	34.100	34.177	-0.077
	4	33.031	33.005	+0.025
16	432	34.159	34.148	+0.011
	372	34.067	34.063	+0.004
	226	34.095	34.087	+0.008
	10	32.877	32.859	+0.018
29	489	34.176	34.169	+0.007
	448	34.127	34.126	+0.001
	399	34.097	34.094	+0.003
	348	34.092	34.090	+0.002
	299	34.094	34.086	+0.008
	8	32.820	32.812	+0.008
	533	34.174	34.169	+0.005
	448	34.132	34.113	+0.019
49	398	34.081	34.071	+0.010
	347	34.061	34.055	+0.006
	300	34.024	34.013	+0.011
	23	32.861	32.849	+0.013
	475	34.180	34.180	0.000
	397	34.149	34.146	+0.003
71	299	34.081	34.076	+0.005
	200	34.027	34.028	-0.001
	511	34.220	34.211	+0.009
	450	34.131	34.123	+0.008
81	399	34.093	34.079	+0.014
	198	33.974	33.955	+0.019
	449	34.202	34.197	+0.005
	301	34.148	34.139	+0.009
112	179	33.998	33.990	+0.008
	69	33.568	33.556	+0.012

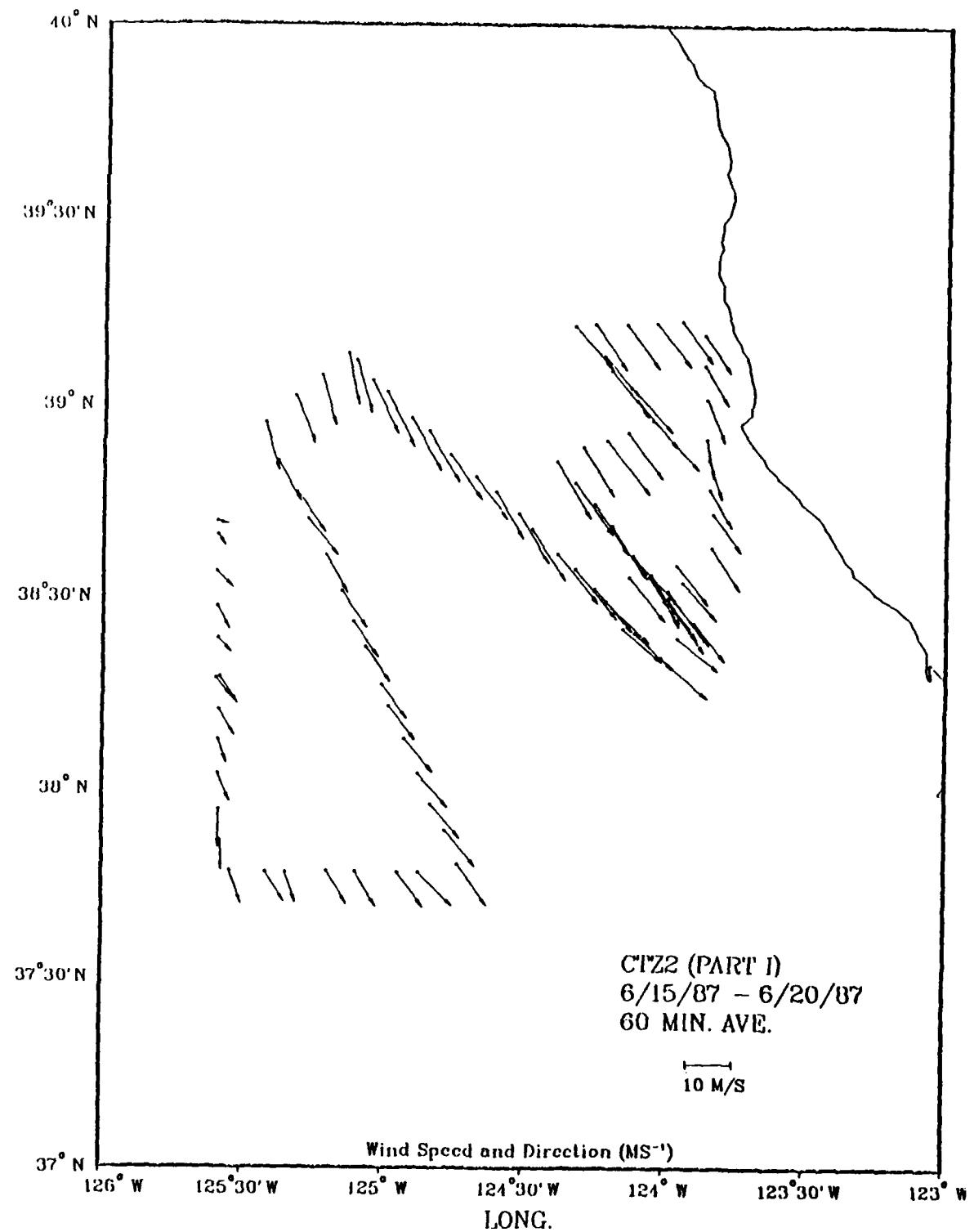
## DATA PRESENTATION

The CTD station positions and numbers for each part of the cruise are shown in Figs. 1, 3, and 4 respectively. The XBT station numbers and positions for all parts of the cruise are shown in Fig. 2. Maps of hourly averaged wind vectors during each part of the cruise are presented in Figs. 5-7.

Hydrographic data are presented in the form of horizontal maps, vertical sections, and vertical profiles. Maps of surface temperature (T), salinity (S), and dynamic height relative to 500 db ( $\Delta D_0/500$ ) for each part of the cruise are presented in Fig. 8-16. Vertical sections of temperature, salinity, and the density anomaly at atmospheric pressure ( $\gamma$ ) from the CTD data are shown in Figs. 17-35. Sections from part I are shown in Figs. 17-24, those from part II in Figs. 25-28, and those from part III in Figs. 29-35. Figs. 36 and 37 are vertical sections of temperature from the XBT drops made during parts of the cruise. Selected data from each CTD cast is presented along with a vertical profile of temperature, salinity, and density anomaly at atmospheric pressure in Fig. 38. Fig. 39 presents the XBT data in the same form. In these two figures an asterisk next to a point in the data listing indicates that the point is an interpolated value.

## ACKNOWLEDGEMENTS

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**Figure 5.** Hourly averages of wind speed and direction measured at 10 m height from the R/V POINT SUR during part I of cruise CT22.

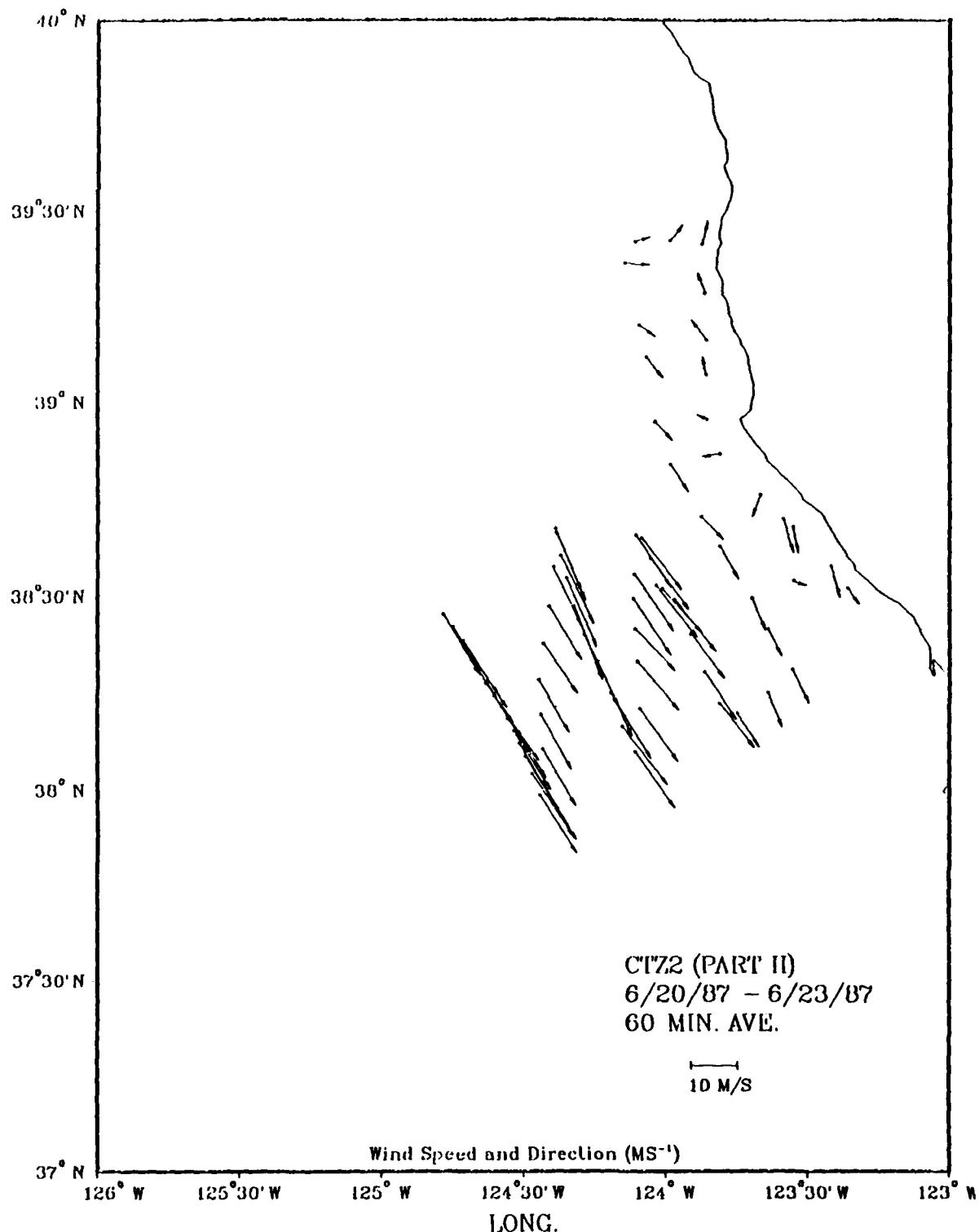
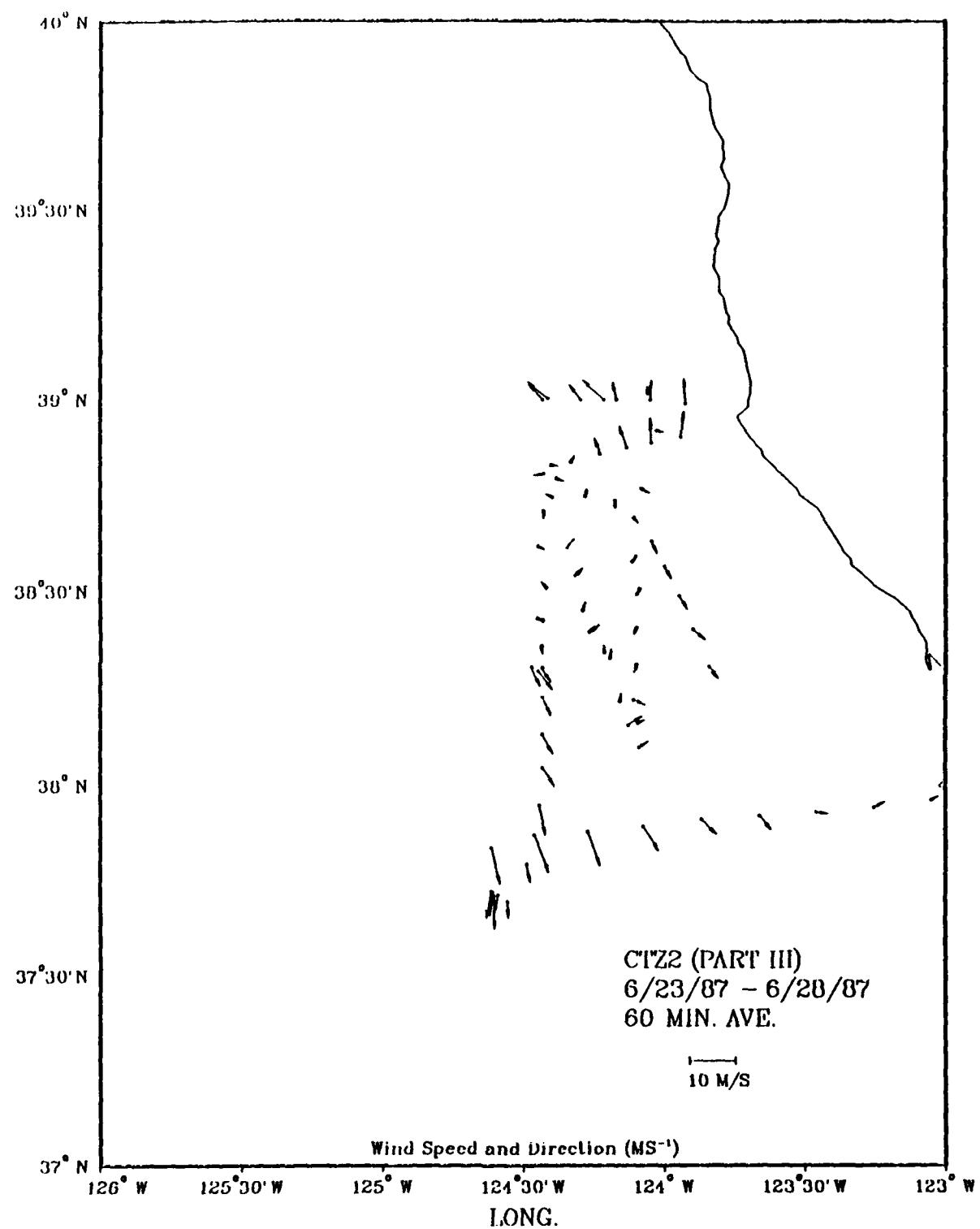


Figure 6. Hourly averages of wind speed and direction measured at 10 m height from the R/V POINT SUR during part II of cruise CT22.



**Figure 7.** Hourly averages of wind speed and direction measured at 10 m height from the R/V POINT SUR during part III of cruise CTZ2.

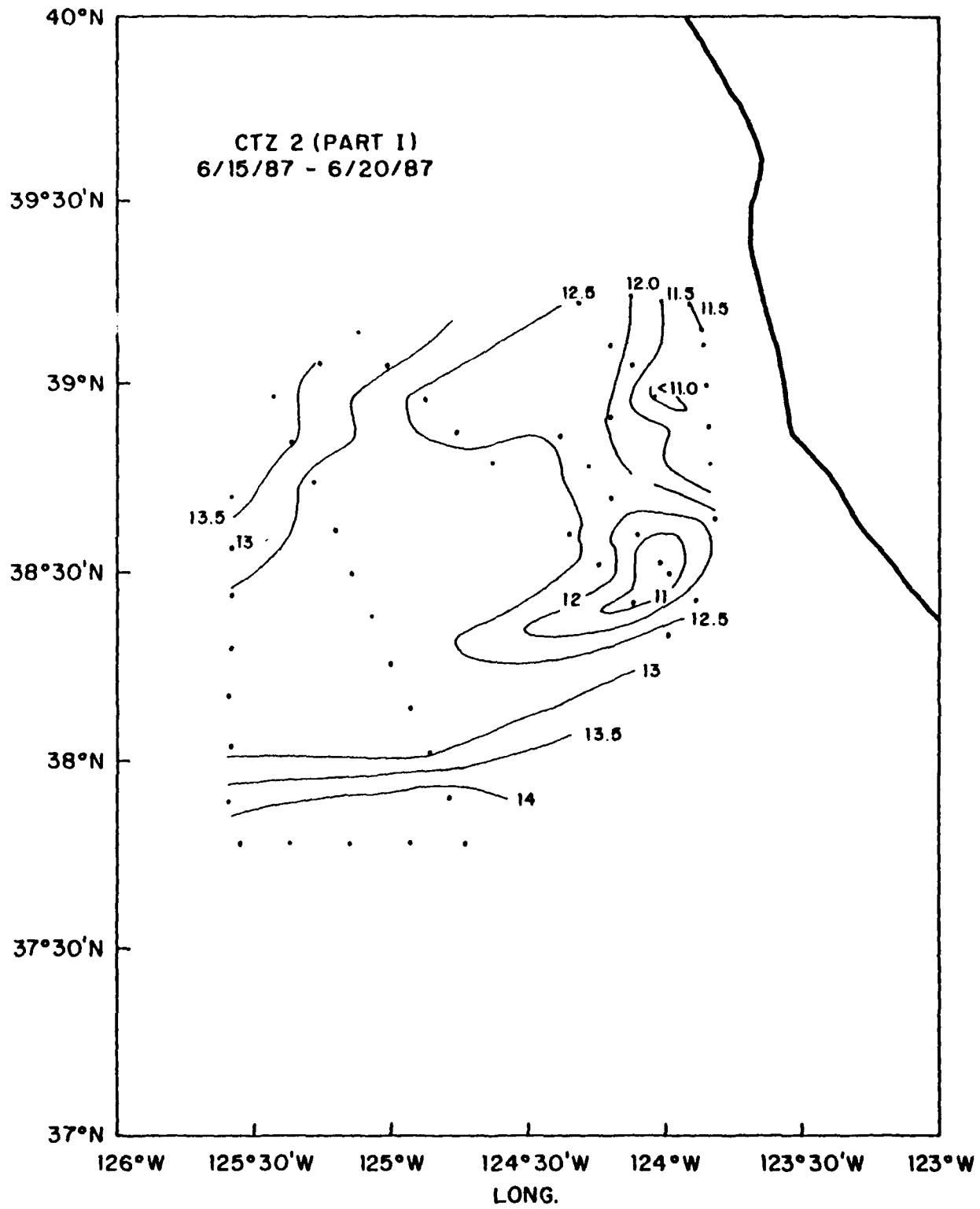


Figure 8. Map of surface temperature during part I of cruise CTZ2, June 15-20, 1987.

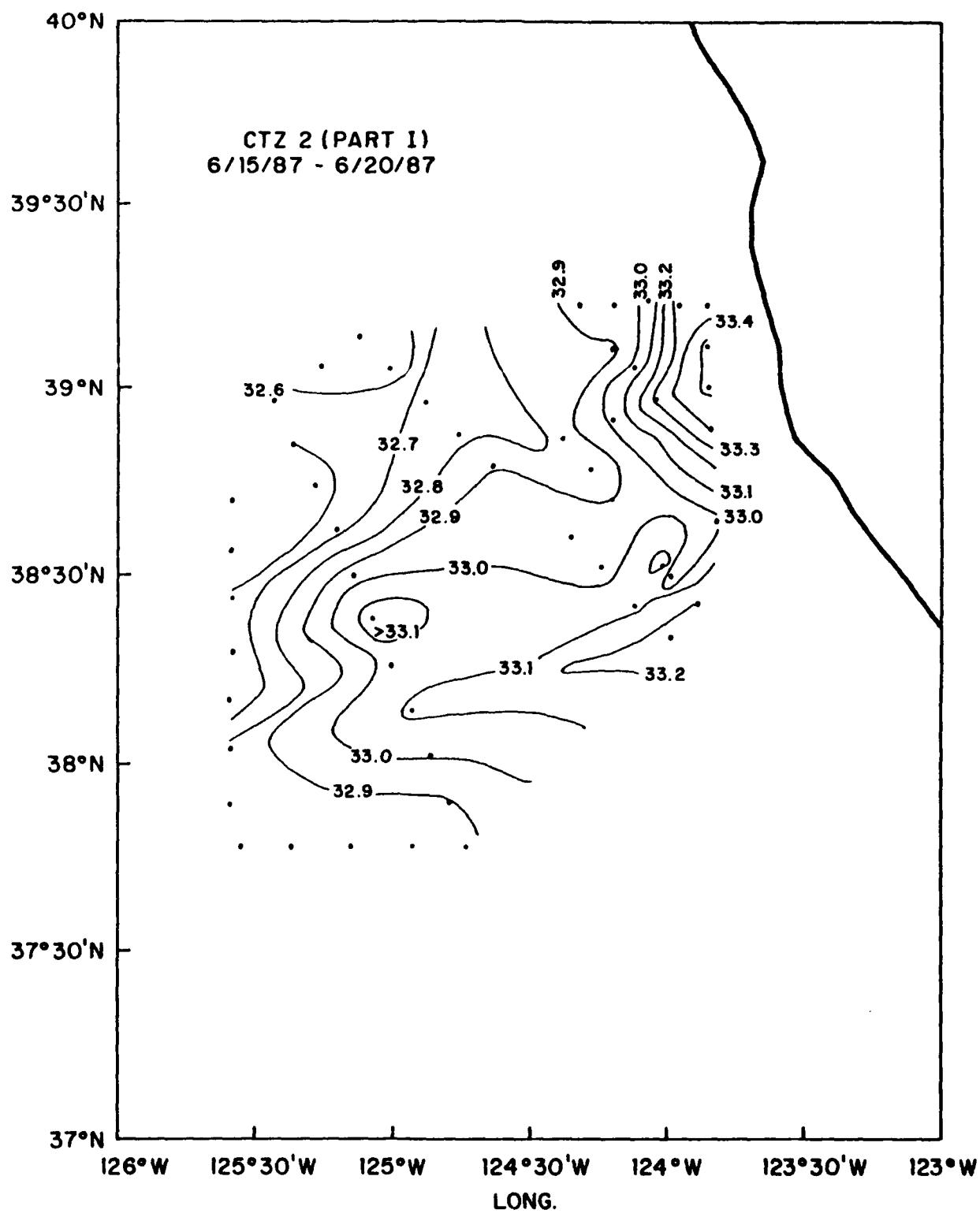


Figure 9. Map of surface salinity during part I of cruise CTZ2, June 15-20, 1987.

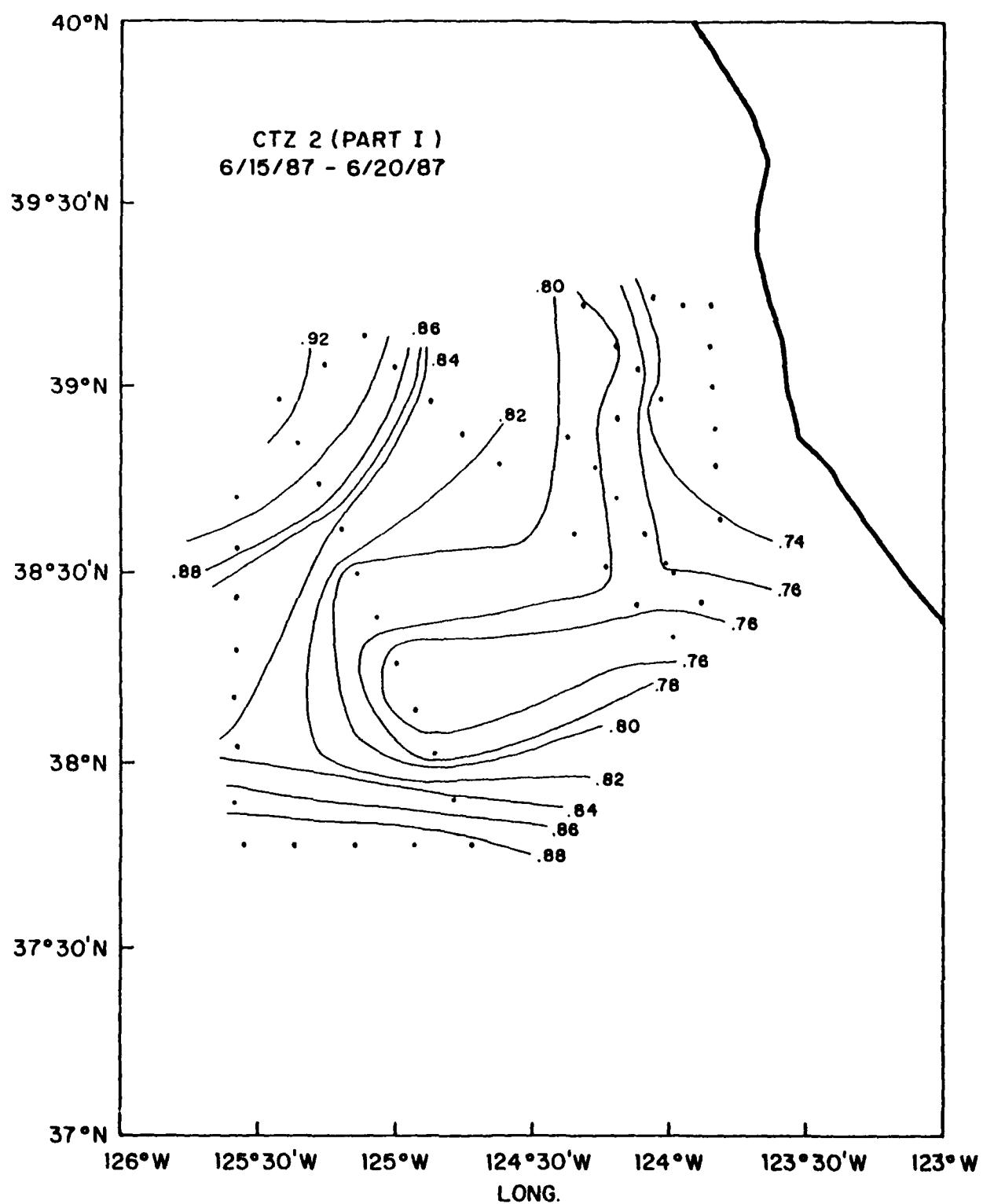


Figure 10. Map of the dynamic height (dyn. m) at the sea surface relative to 500 db during part I of cruise CTZ2, June 15-20, 1987.

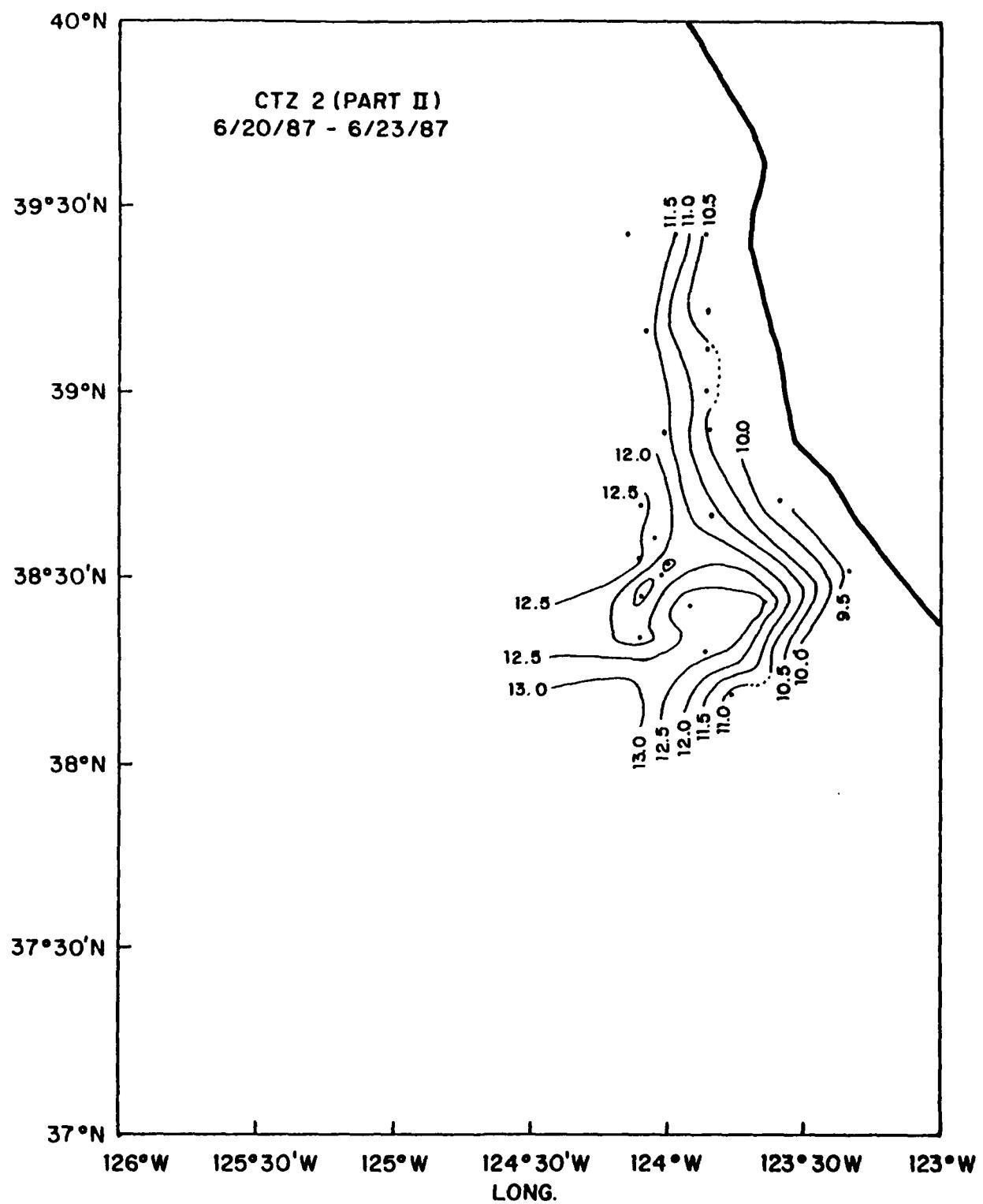


Figure 11. Map of surface temperature during part II of cruise CTZ2, June 20-23, 1987.

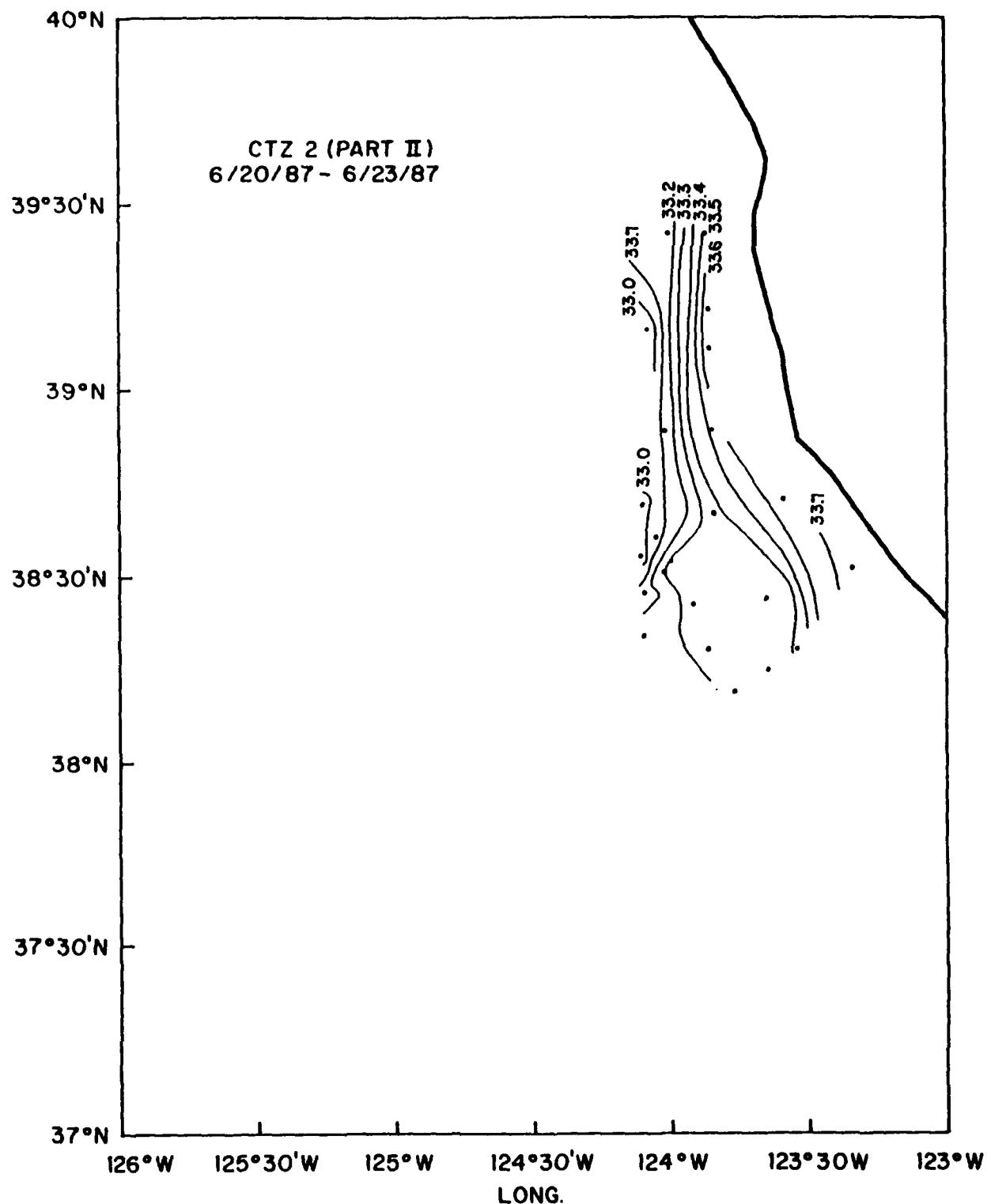


Figure 12. Map of surface salinity during part II of cruise CTZ2, June 20-23, 1987.

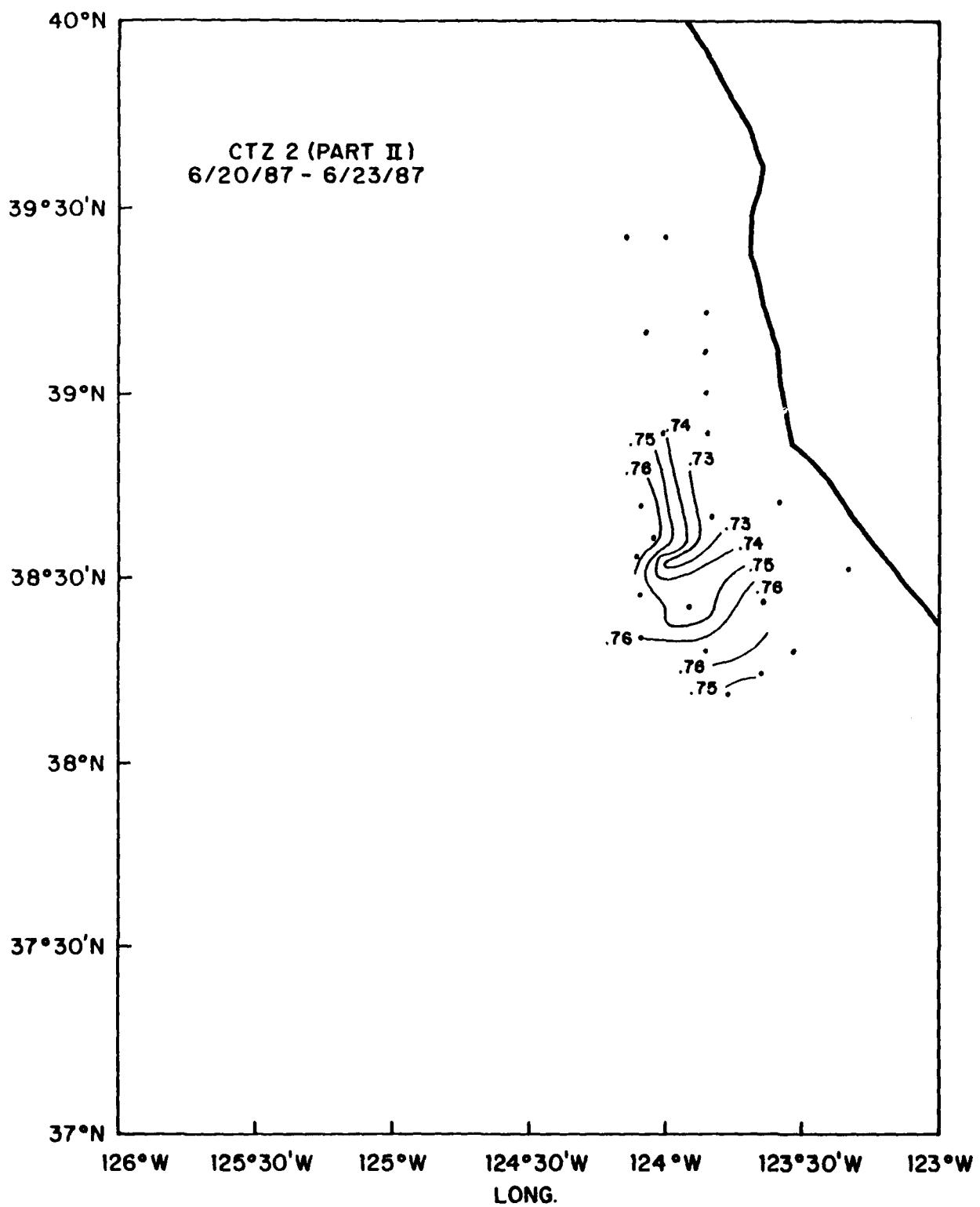


Figure 13. Map of the dynamic height (dyn. m) at the sea surface relative to 500 db during part II of cruise CTZ2, June 20-23, 1987.

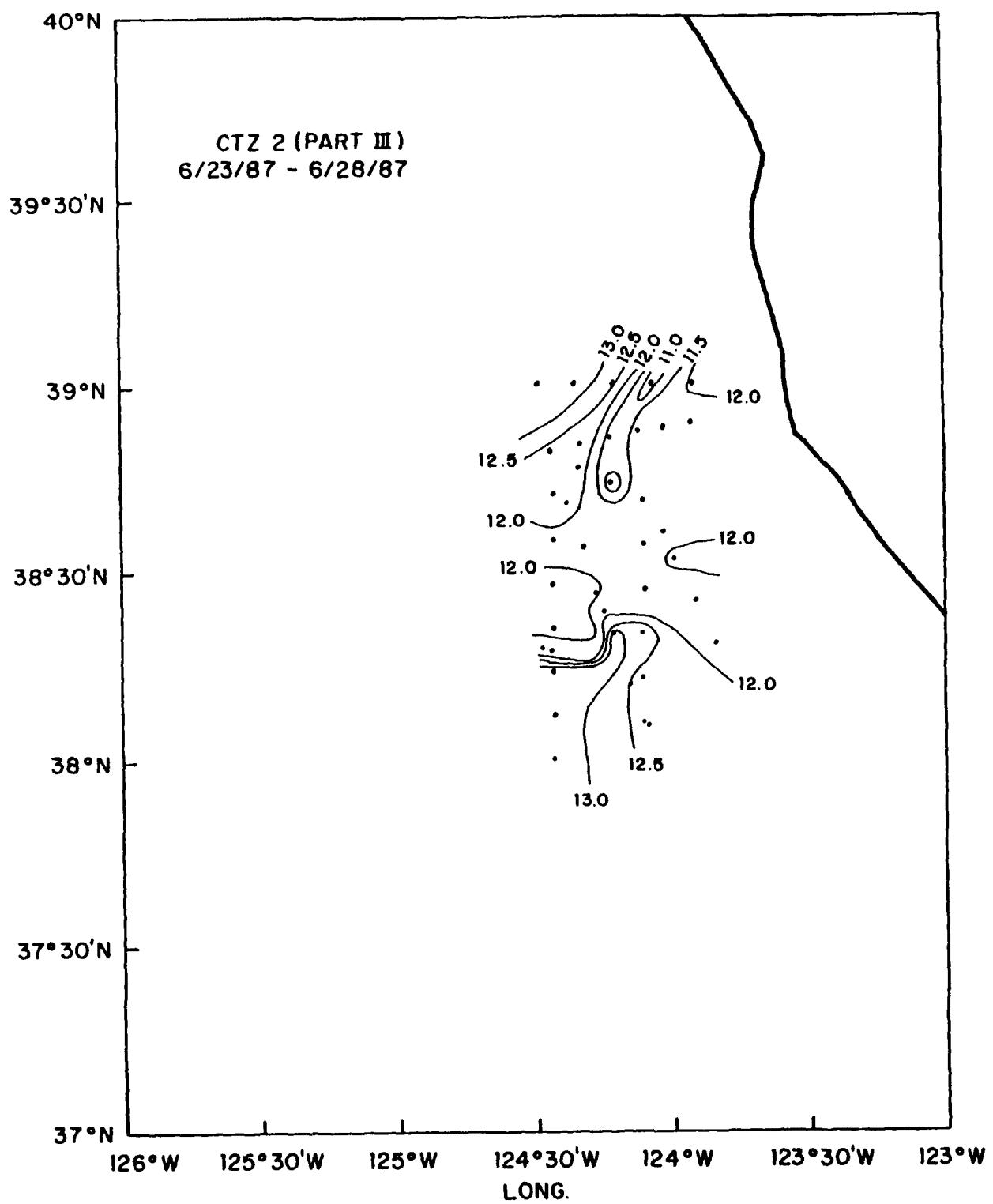


Figure 14. Map of surface temperature during part III of cruise CTZ2, June 23-28, 1987.

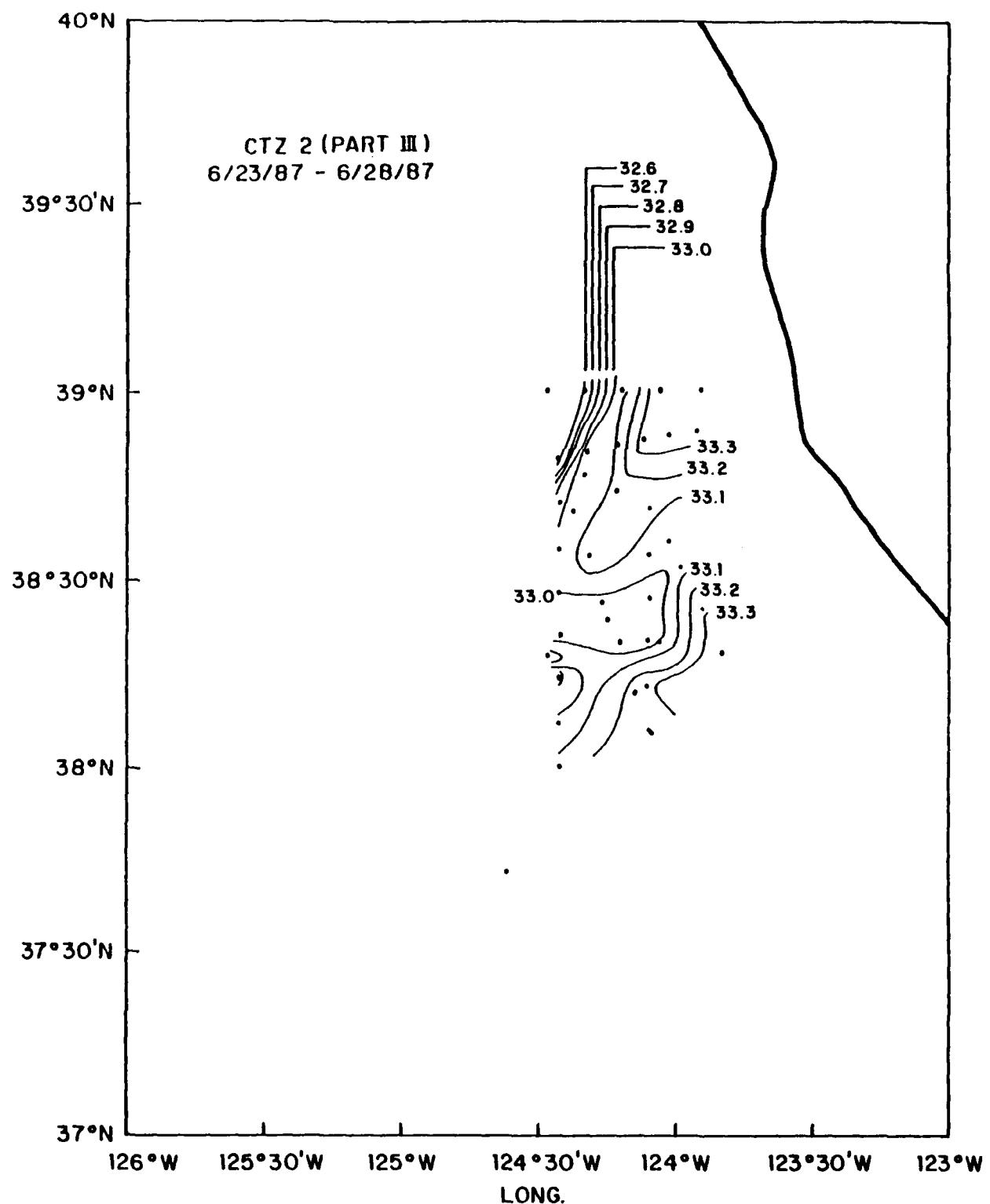


Figure 15. Map of surface salinity during part III of cruise CT22, June 23-28, 1987.

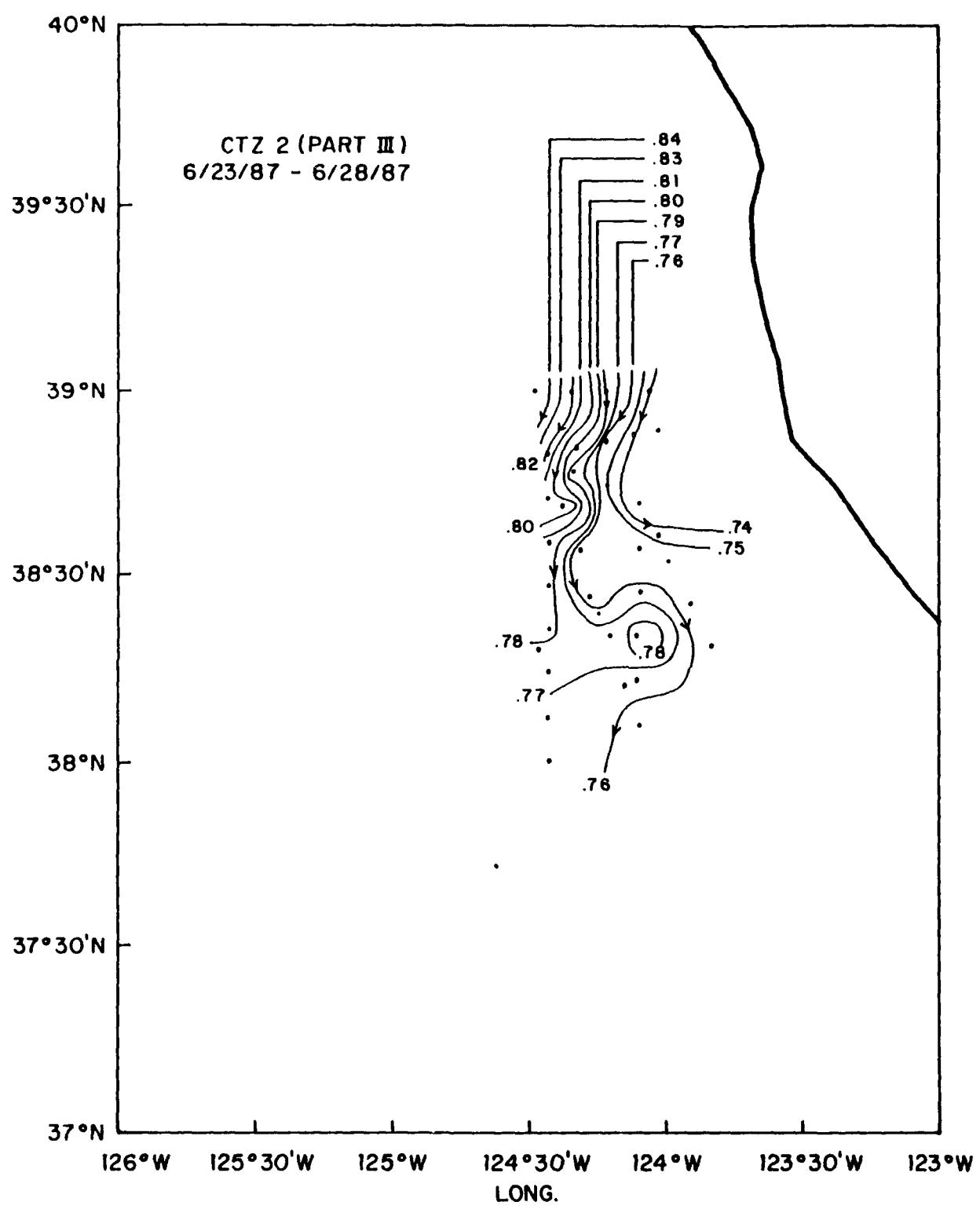


Figure 16. Map of the dynamic height (dyn. m) at the sea surface relative to 500 db during part III of cruise CTZ2, June 23-28, 1987.

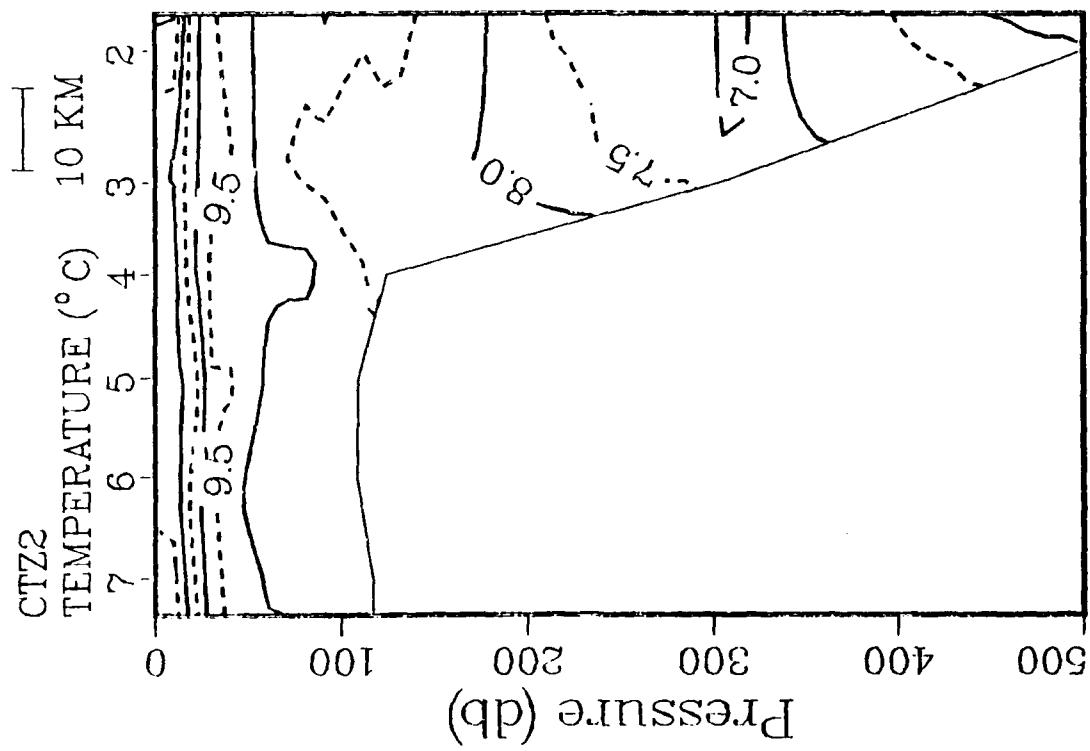


Figure 17. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 2-7 of part I.

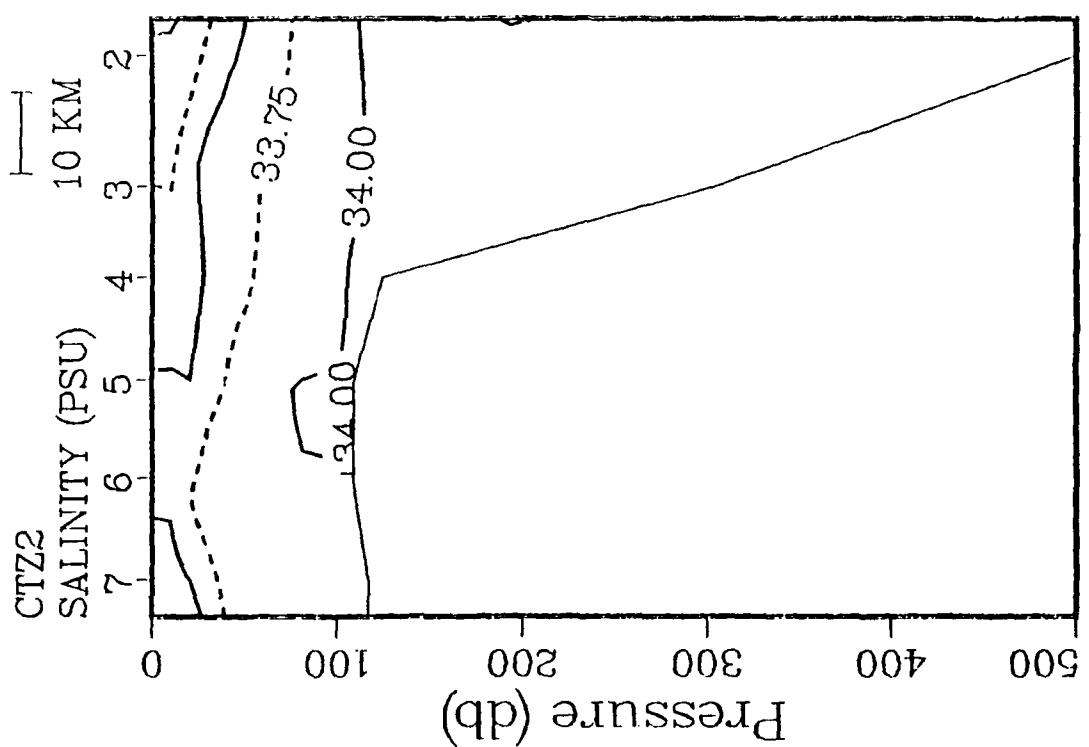


Figure 17b.

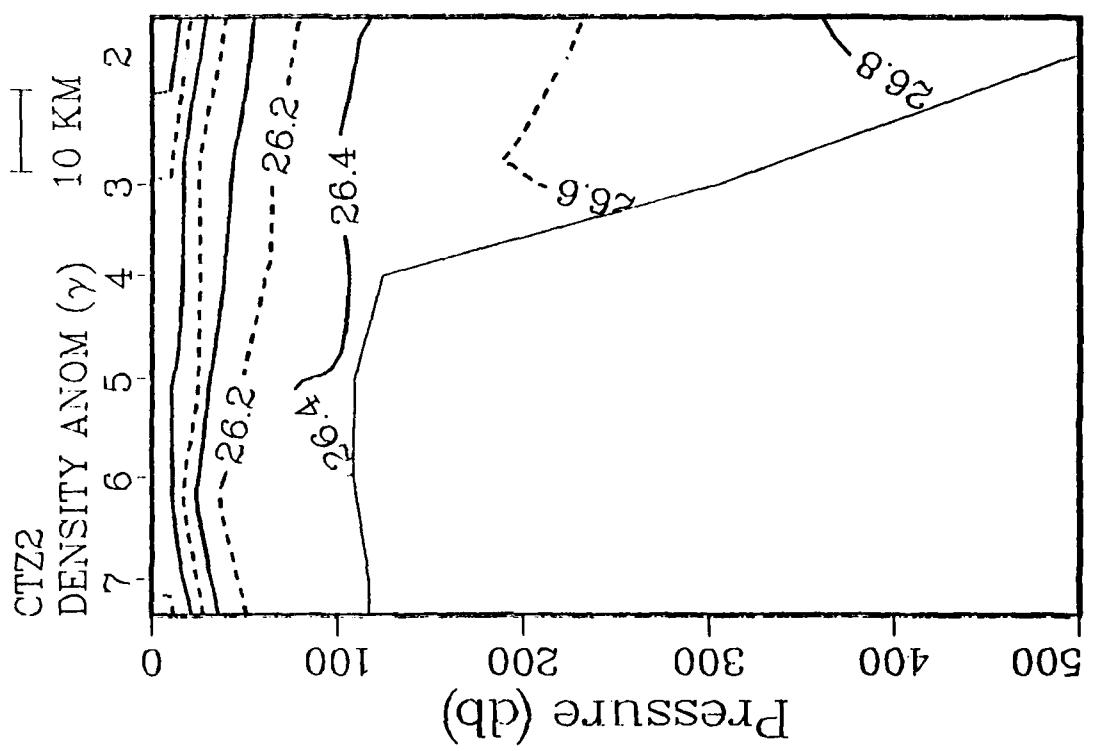


Figure 17c.

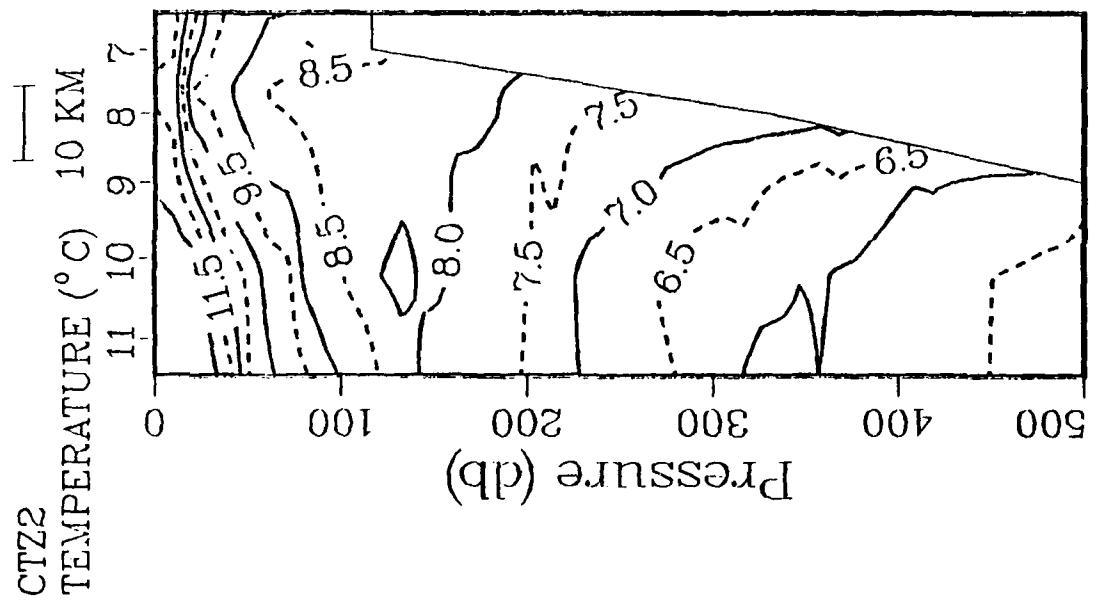


Figure 18. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 7-11 of Part I.

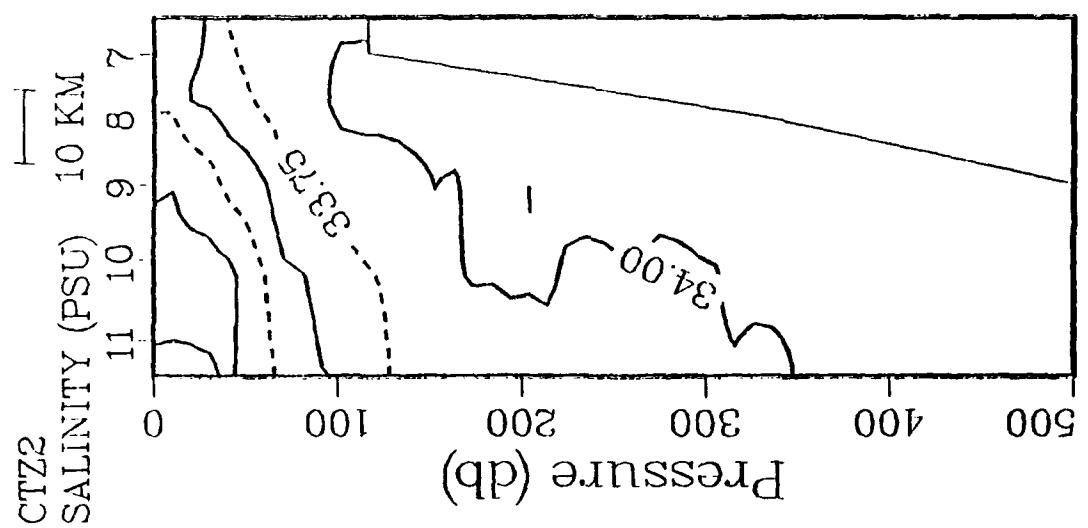


Figure 18b.

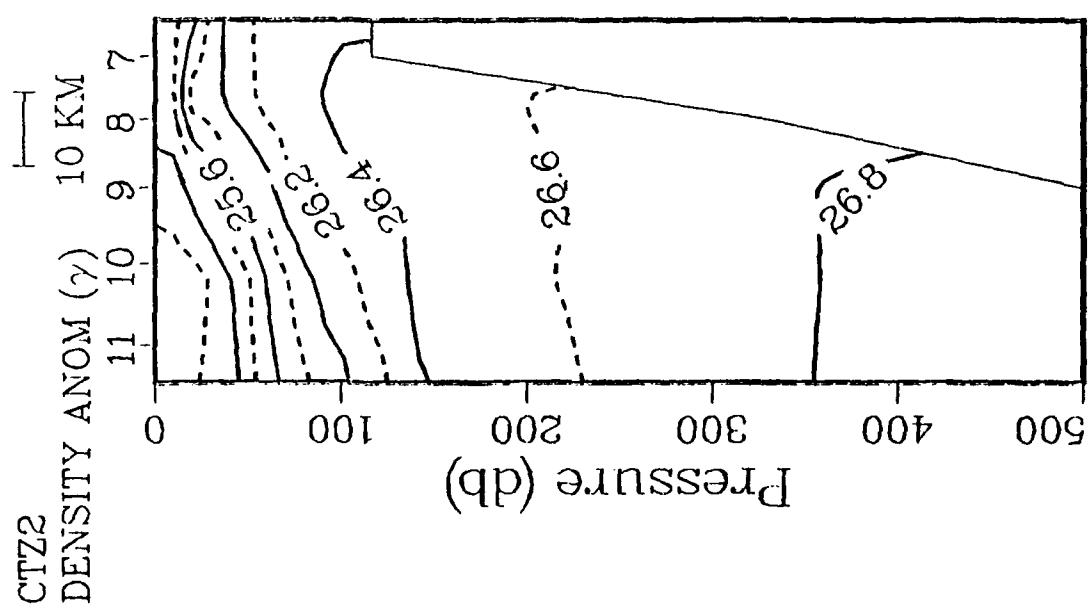


Figure 18c.

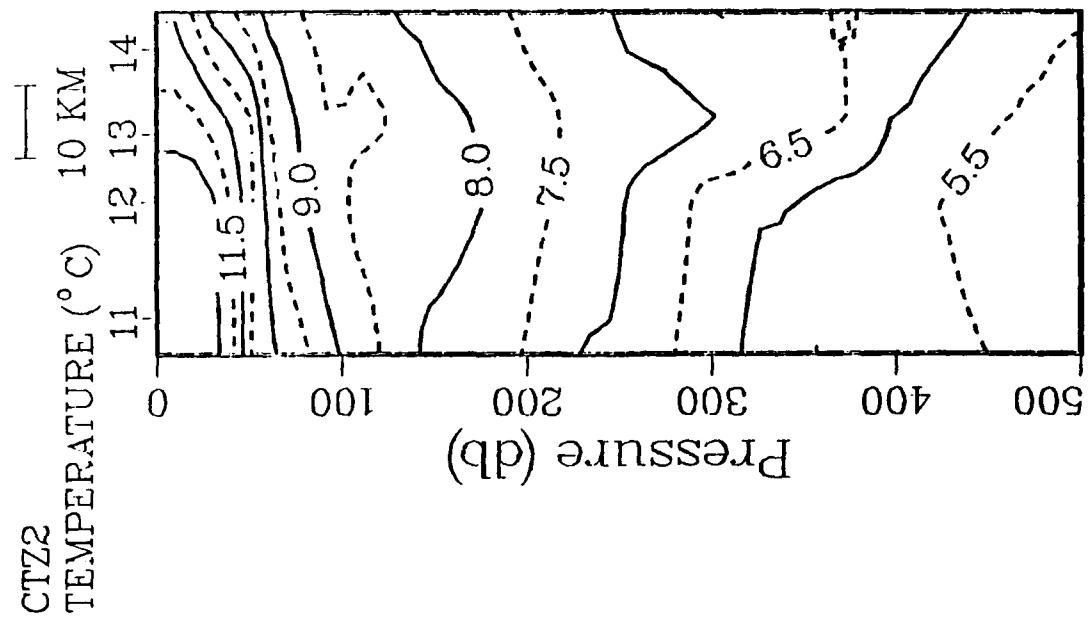


Figure 19. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 11-14 of part I.

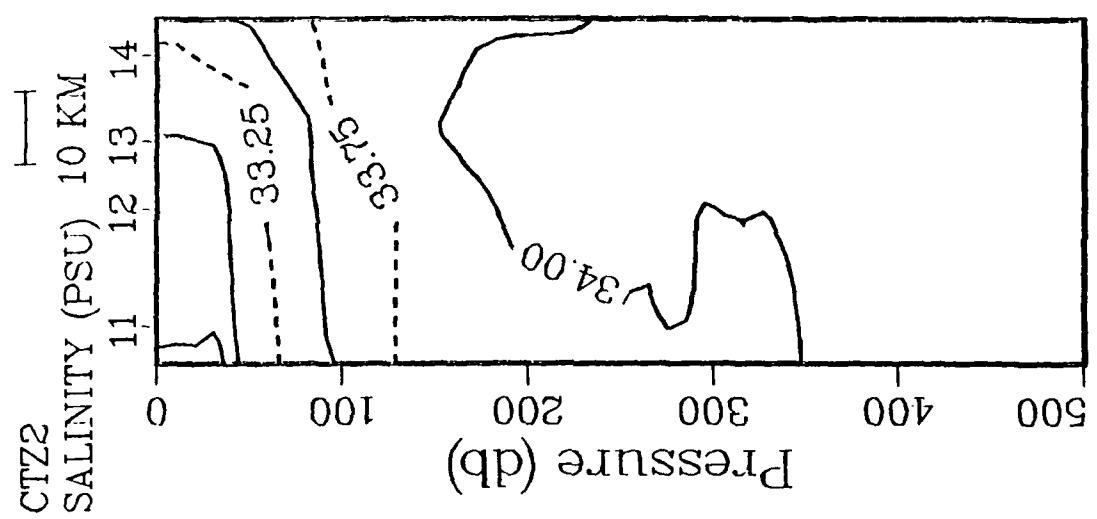


Figure 19b.

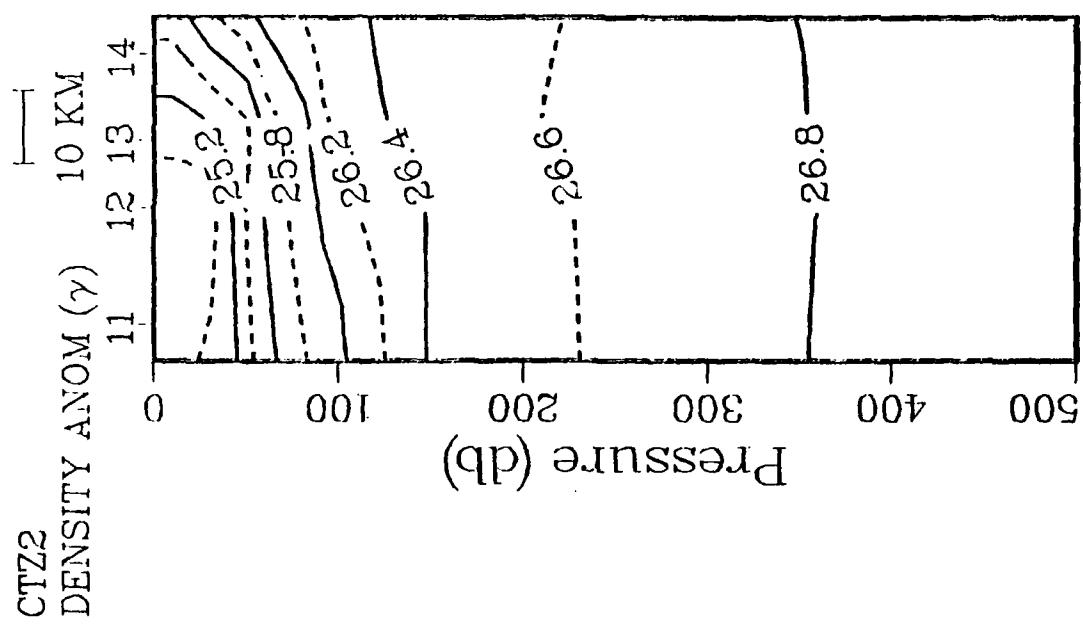


Figure 19c.

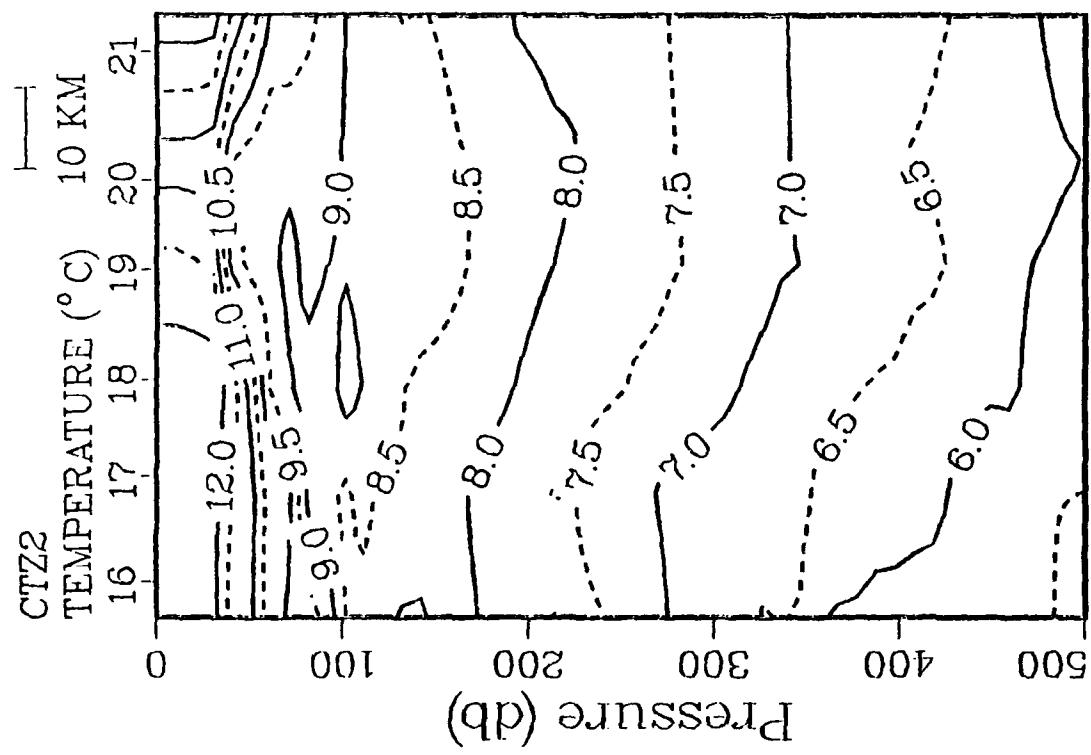


Figure 20. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 16-21 of part I.

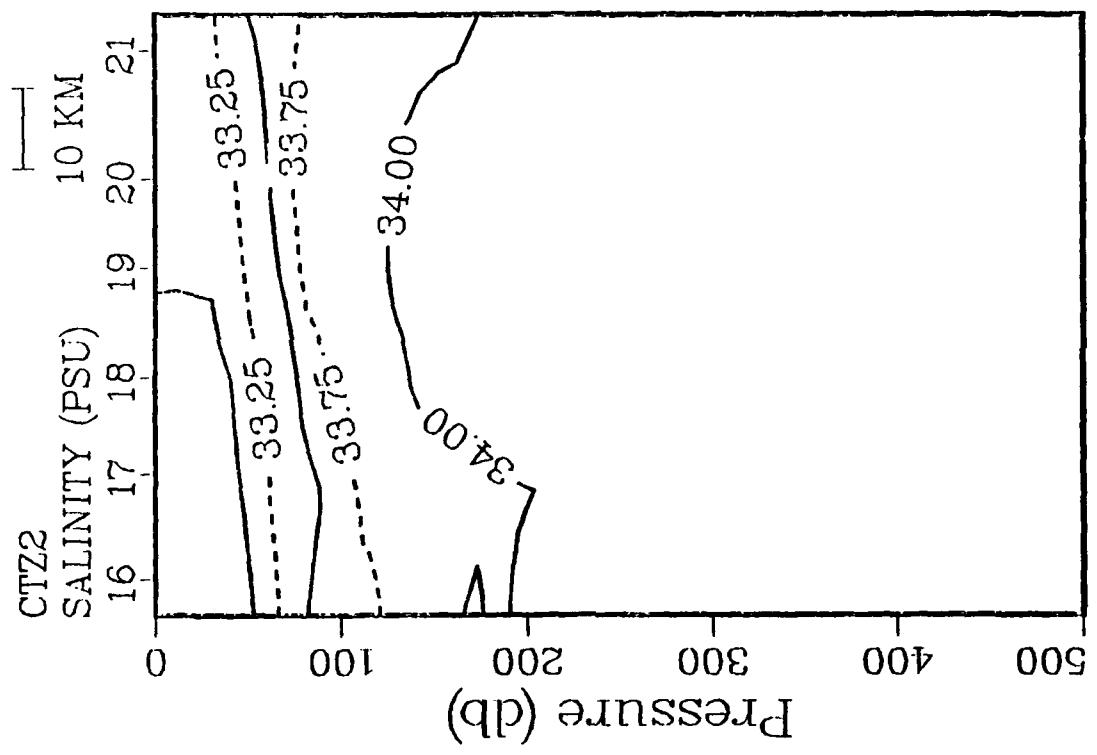


Figure 20b.

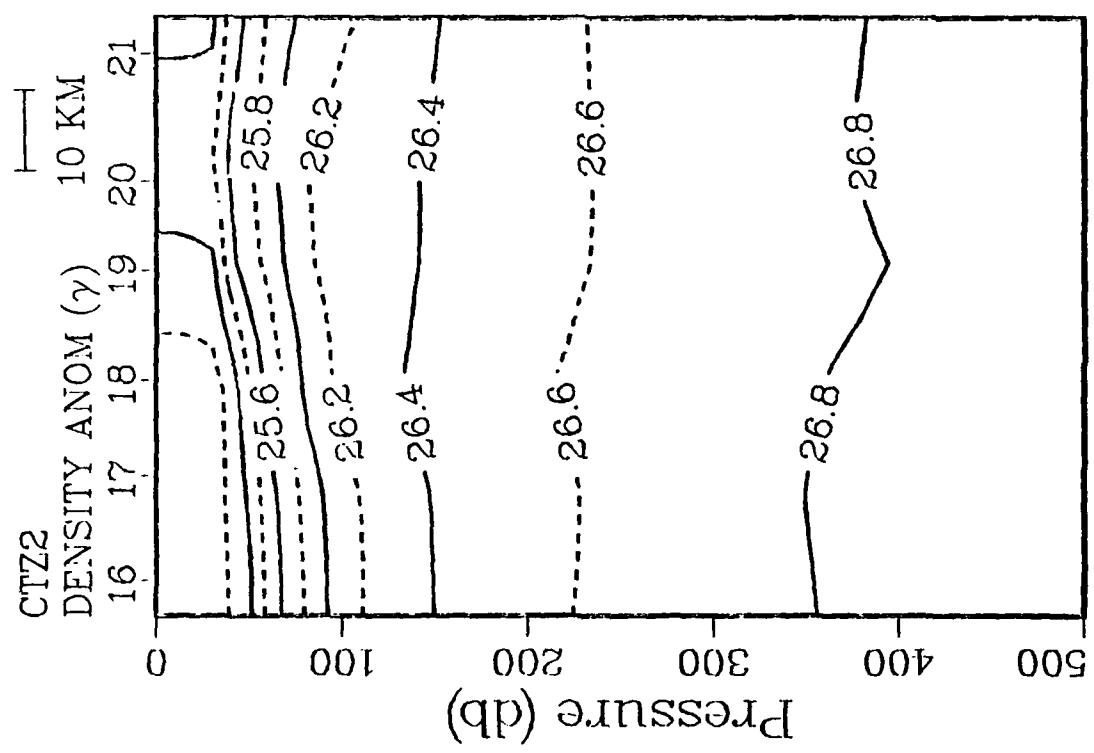


Figure 20c.

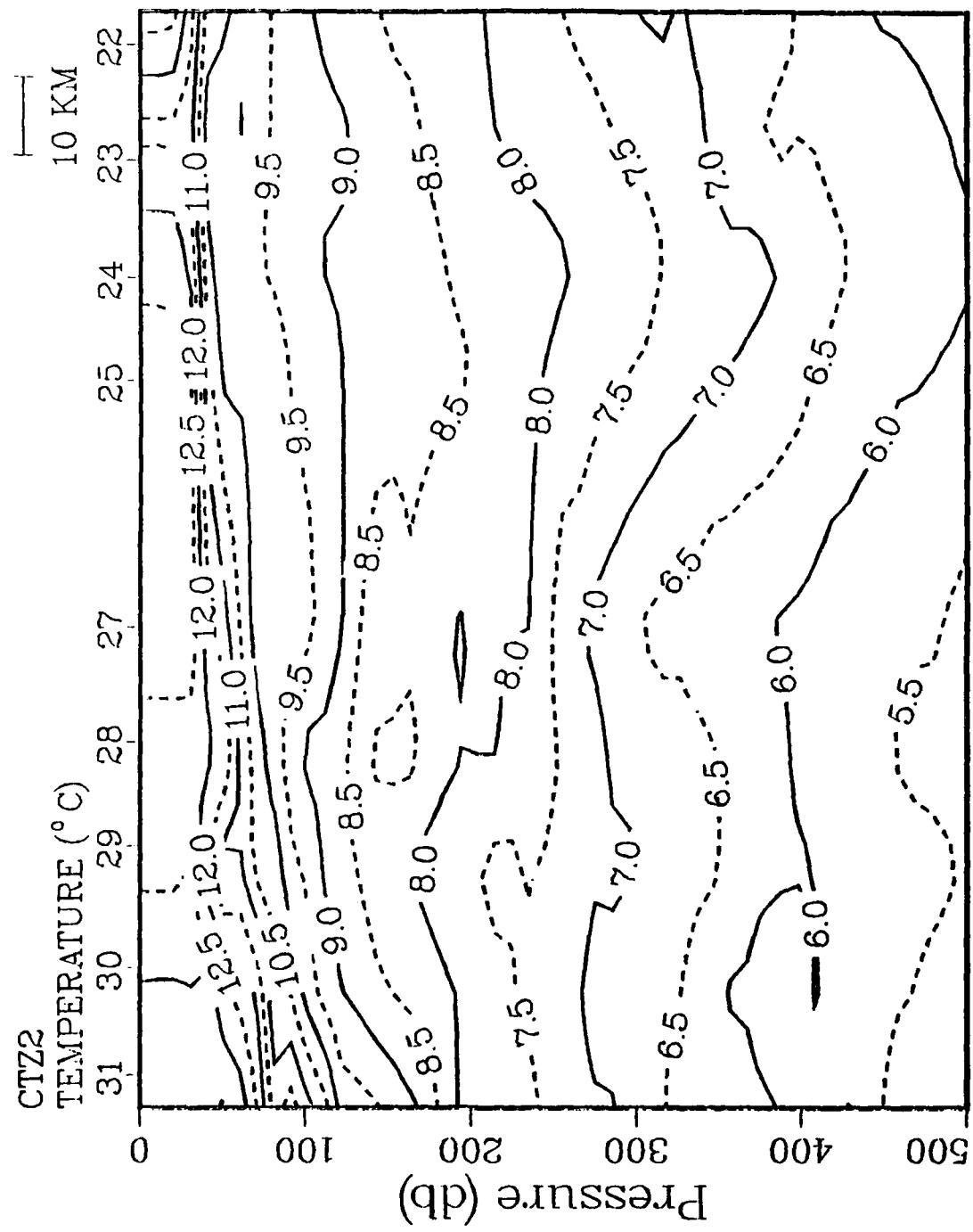


Figure 21. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 22-25 and 27-31 of part I.

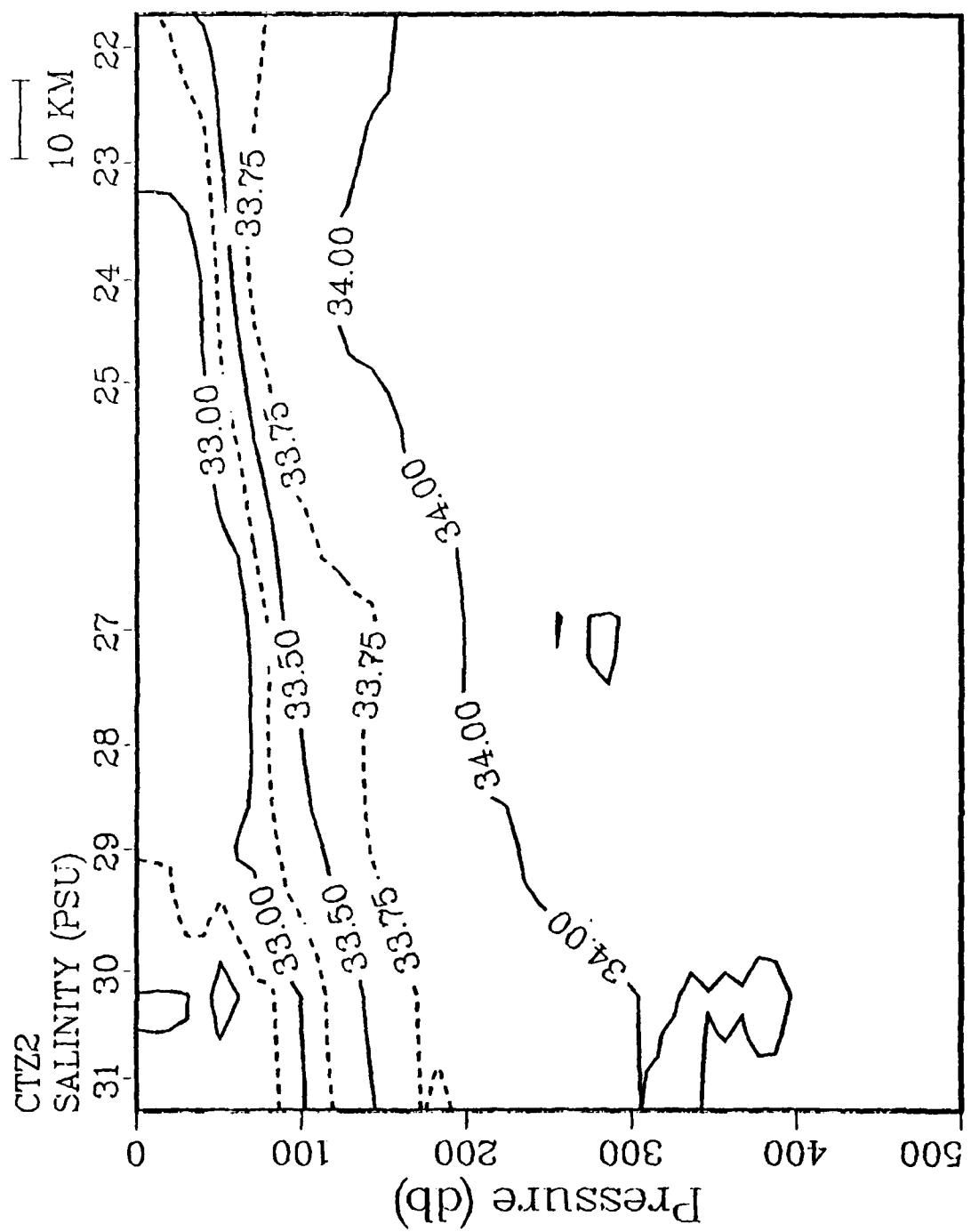


Figure 21b.

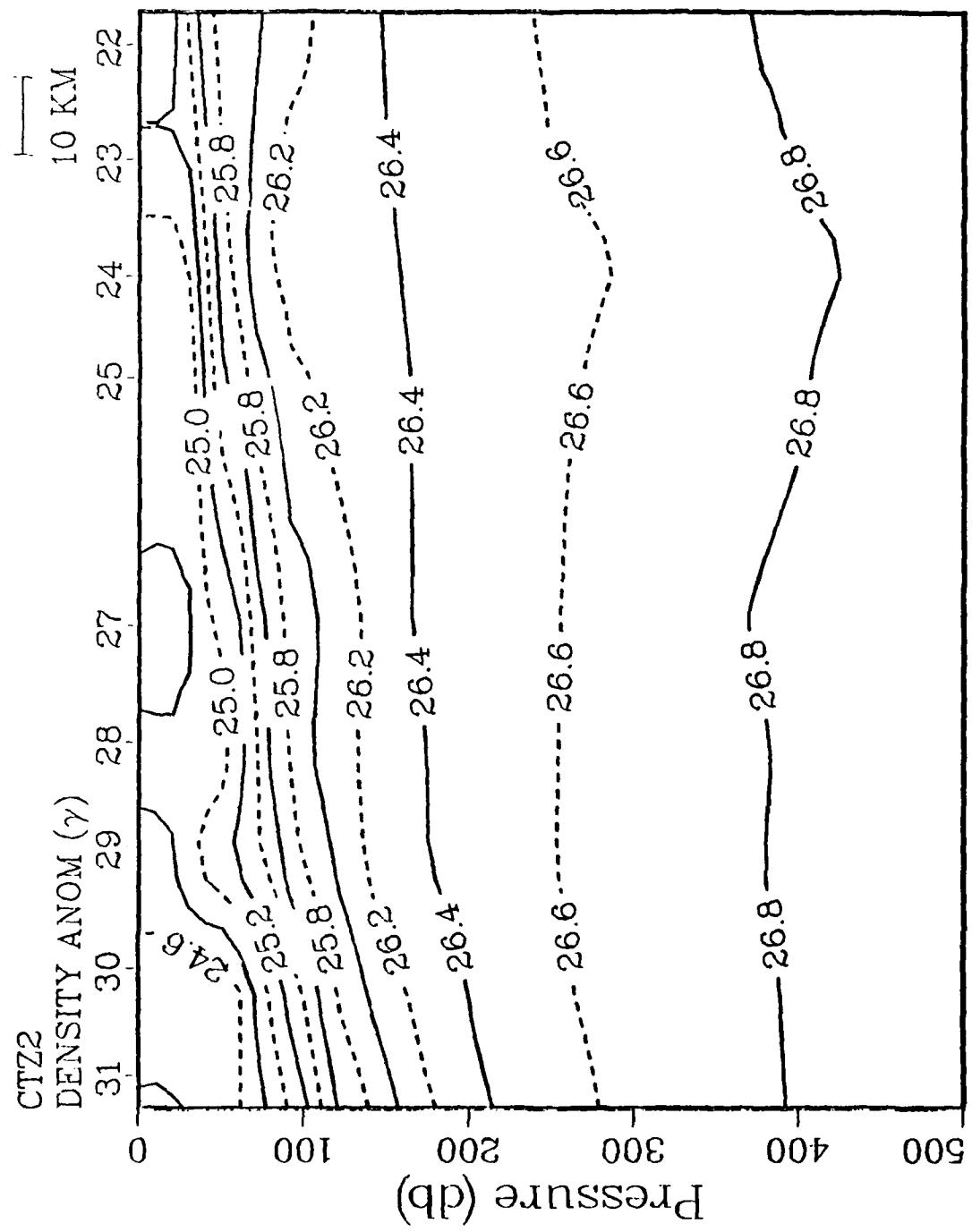


Figure 21c.

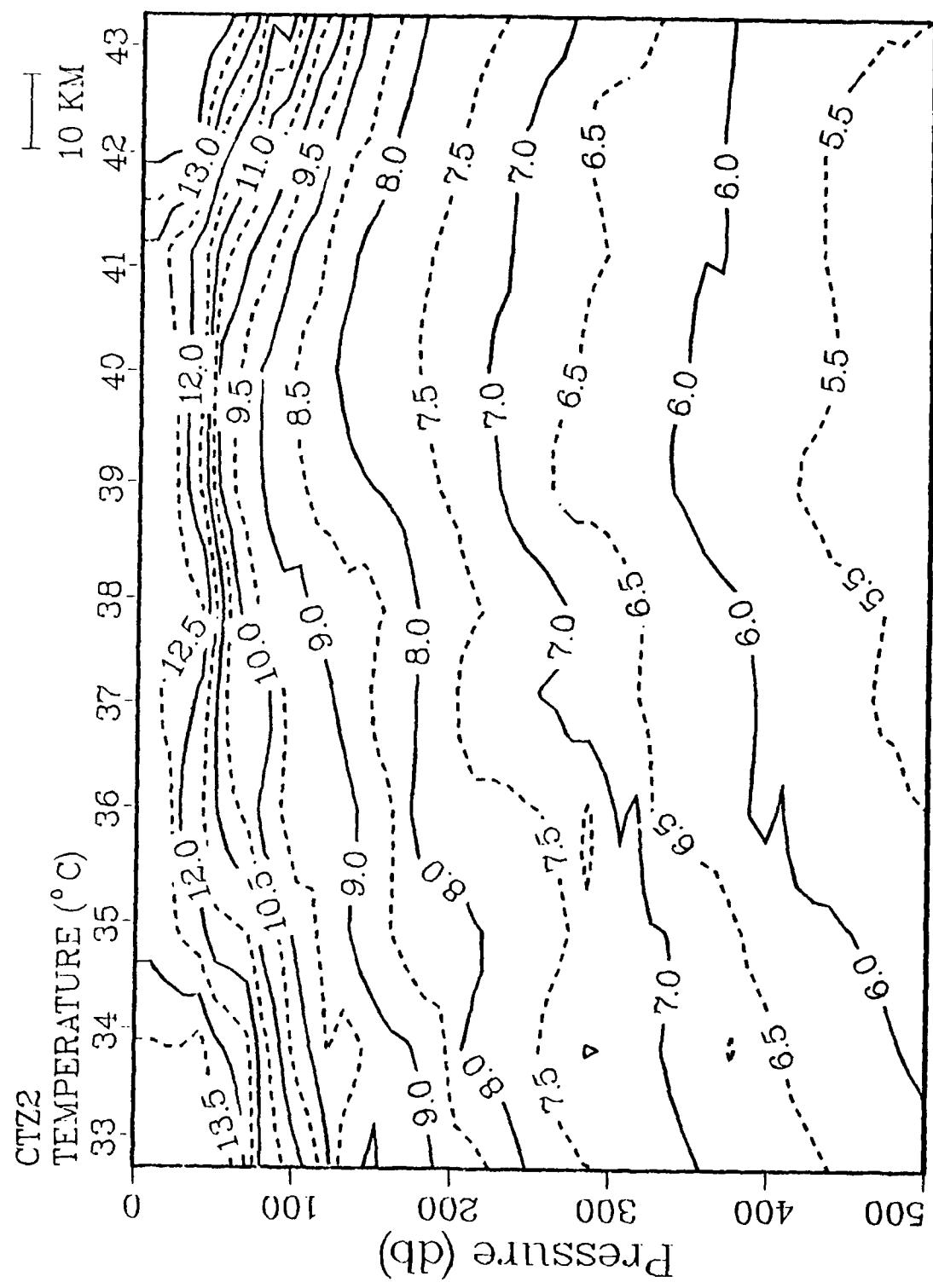


Figure 22. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 33-43 of part I.

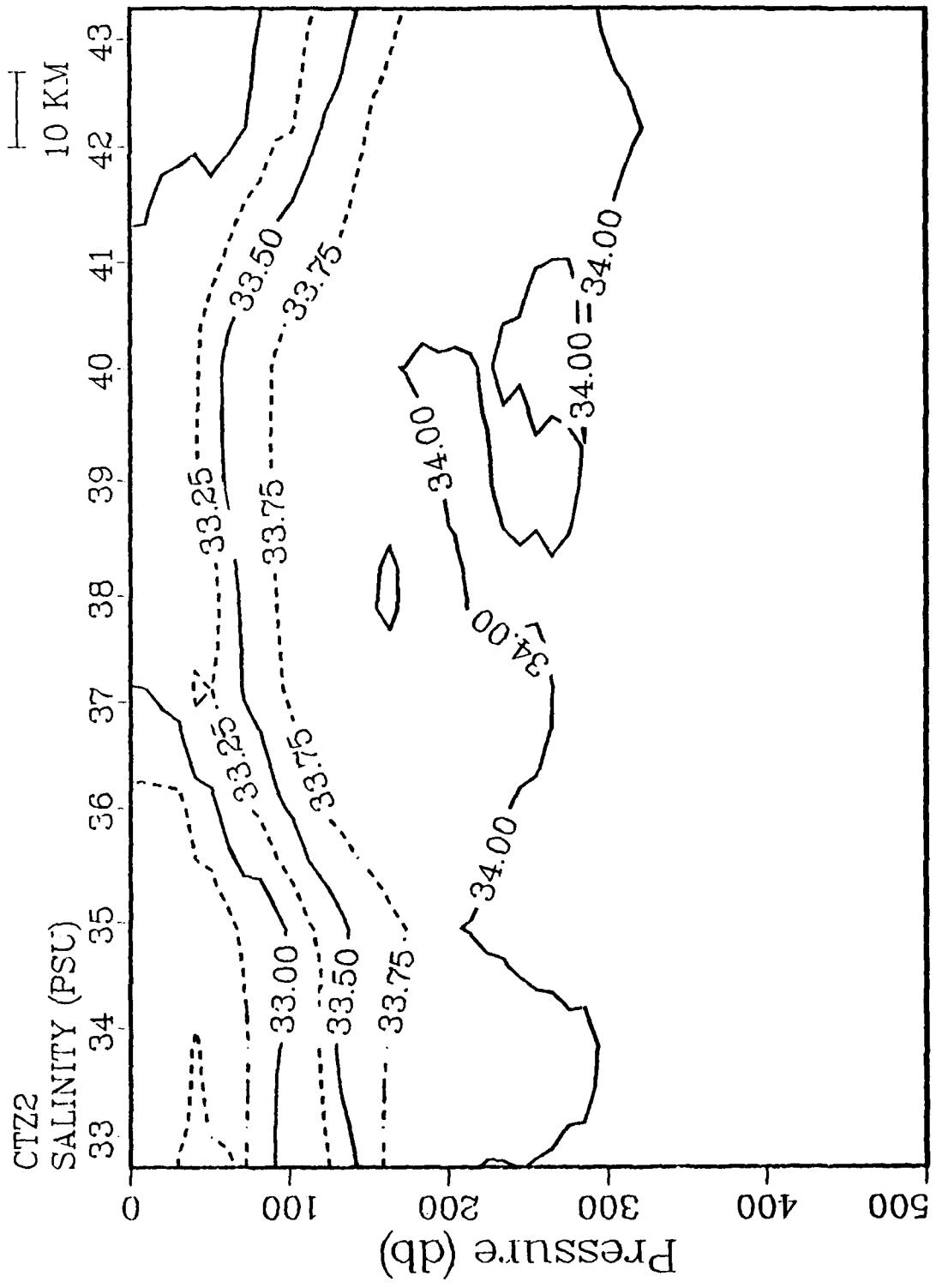


Figure 22b.

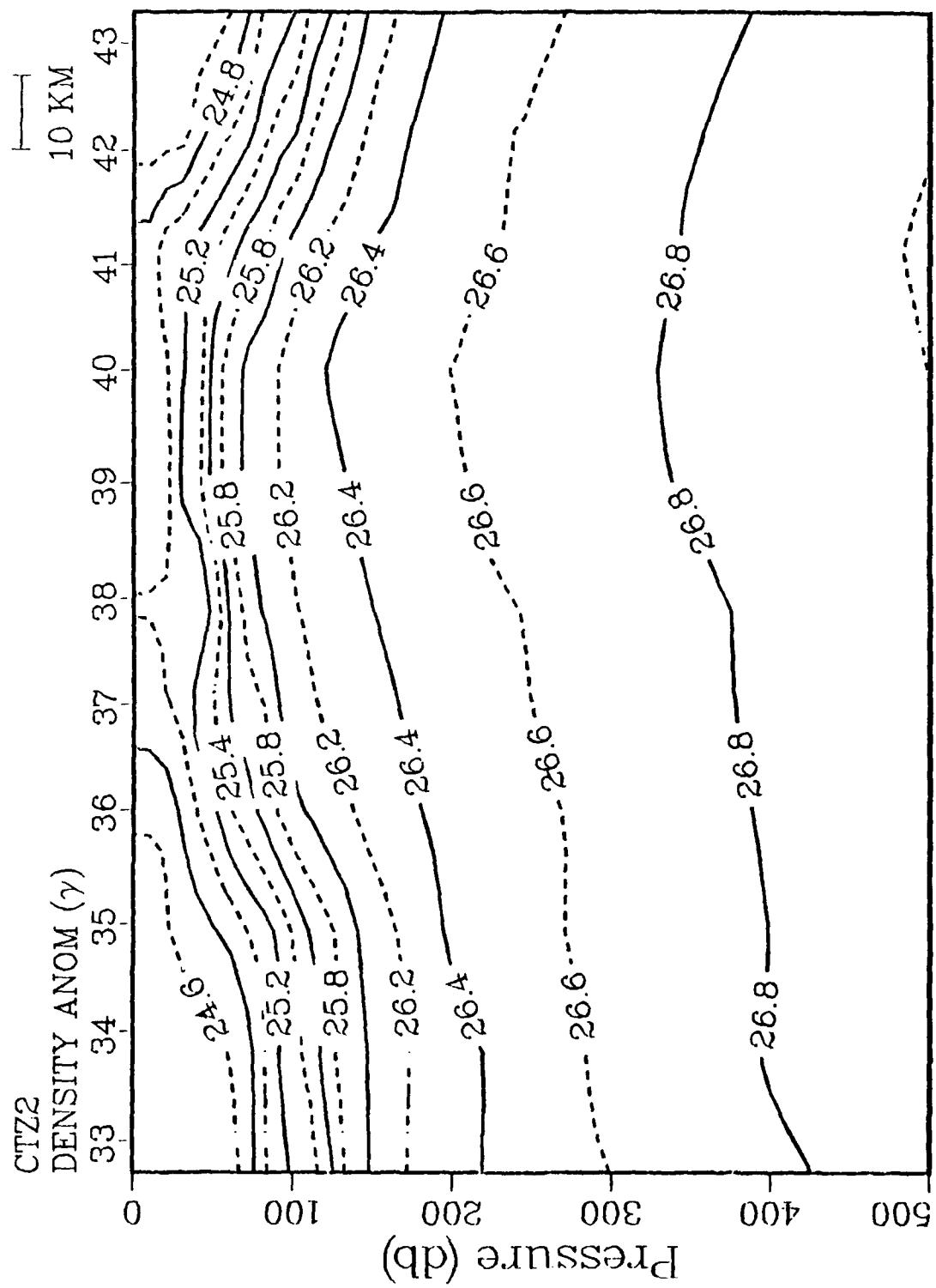


Figure 22c.

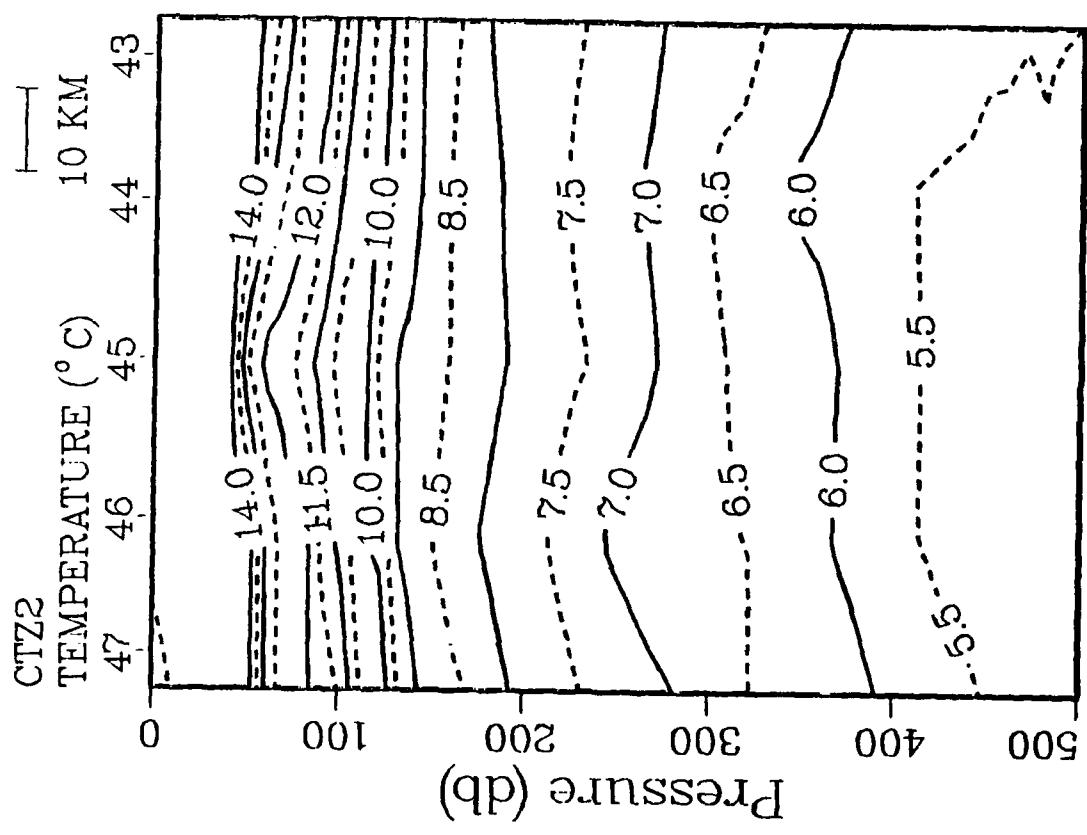


Figure 23. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 43-47 of part I.

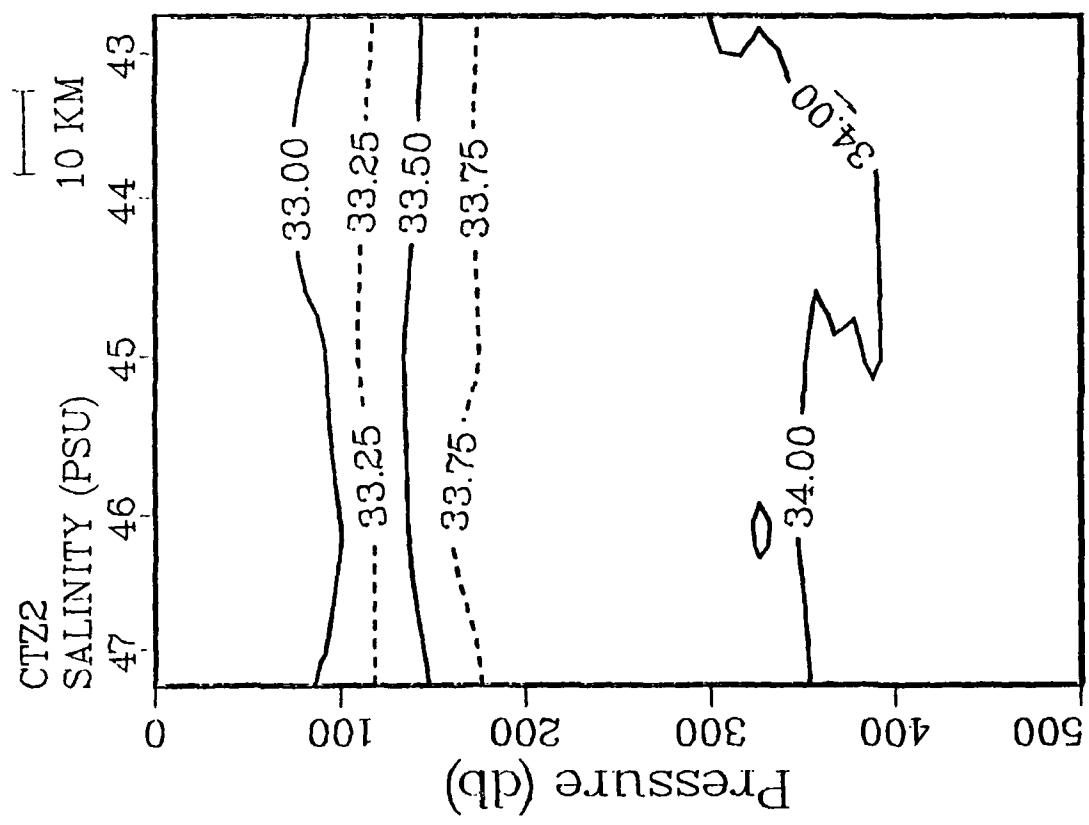


Figure 23b.

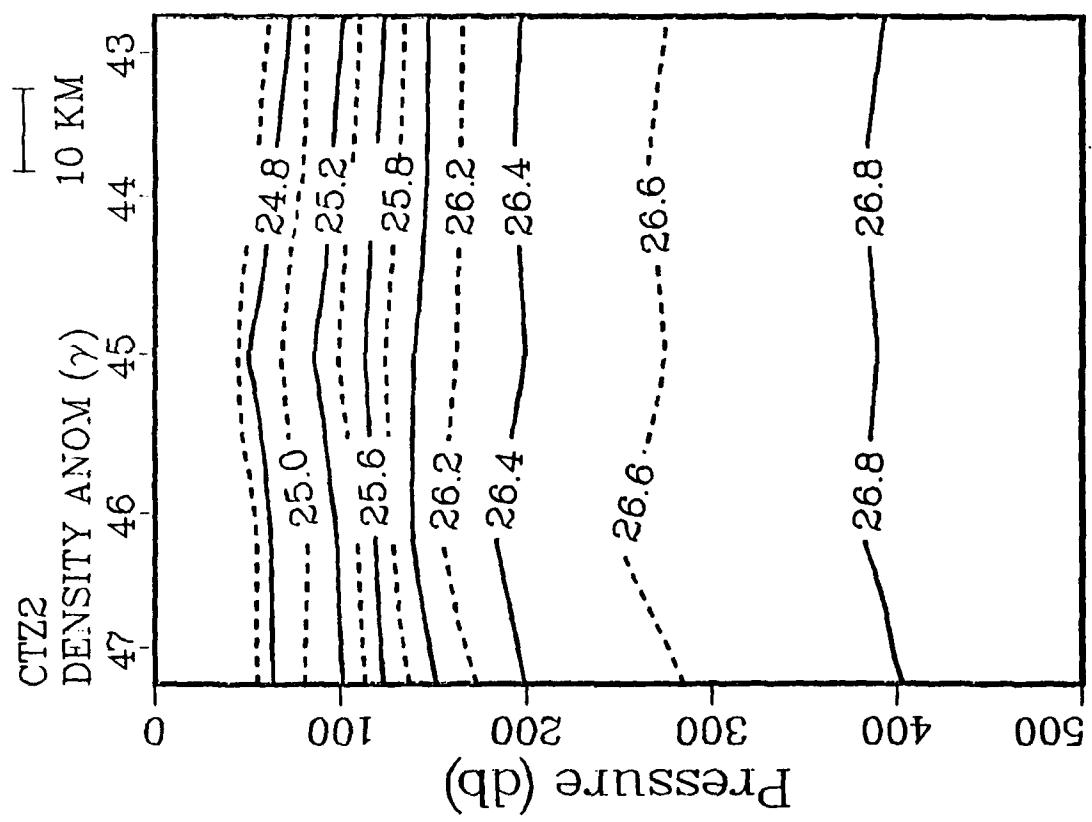


Figure 23c.

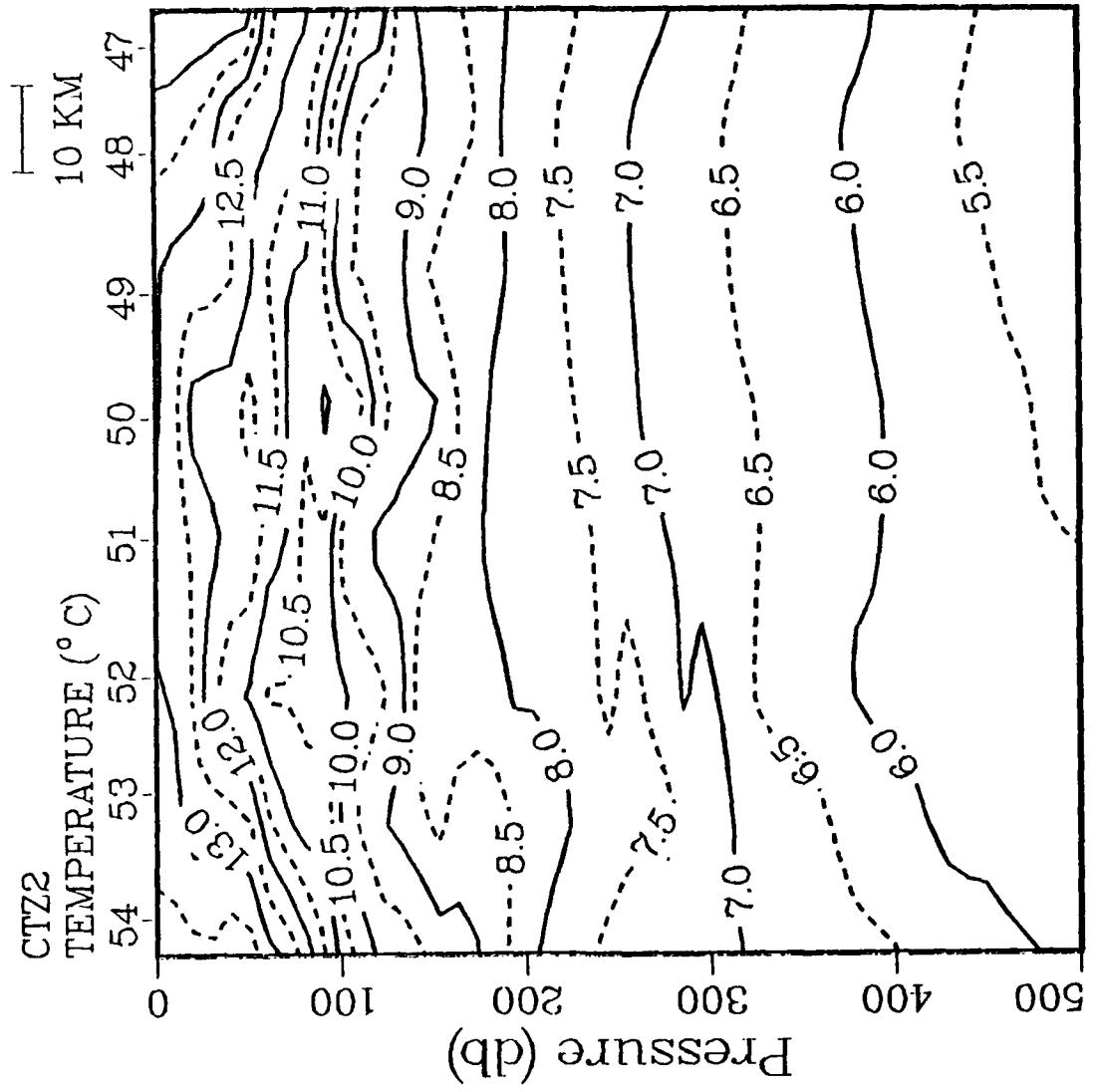


Figure 24. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 47-54 of part I.

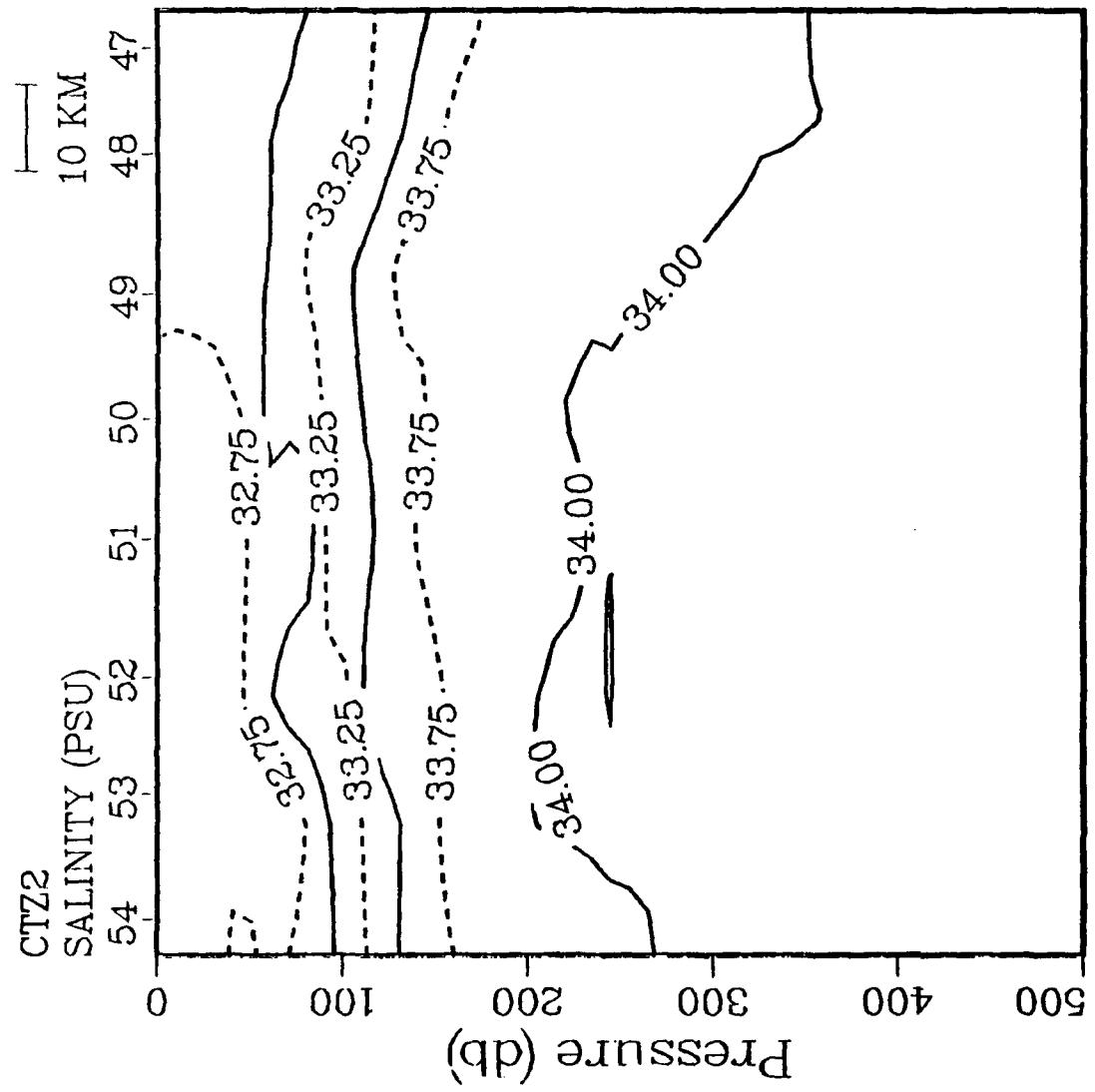


Figure 24b.

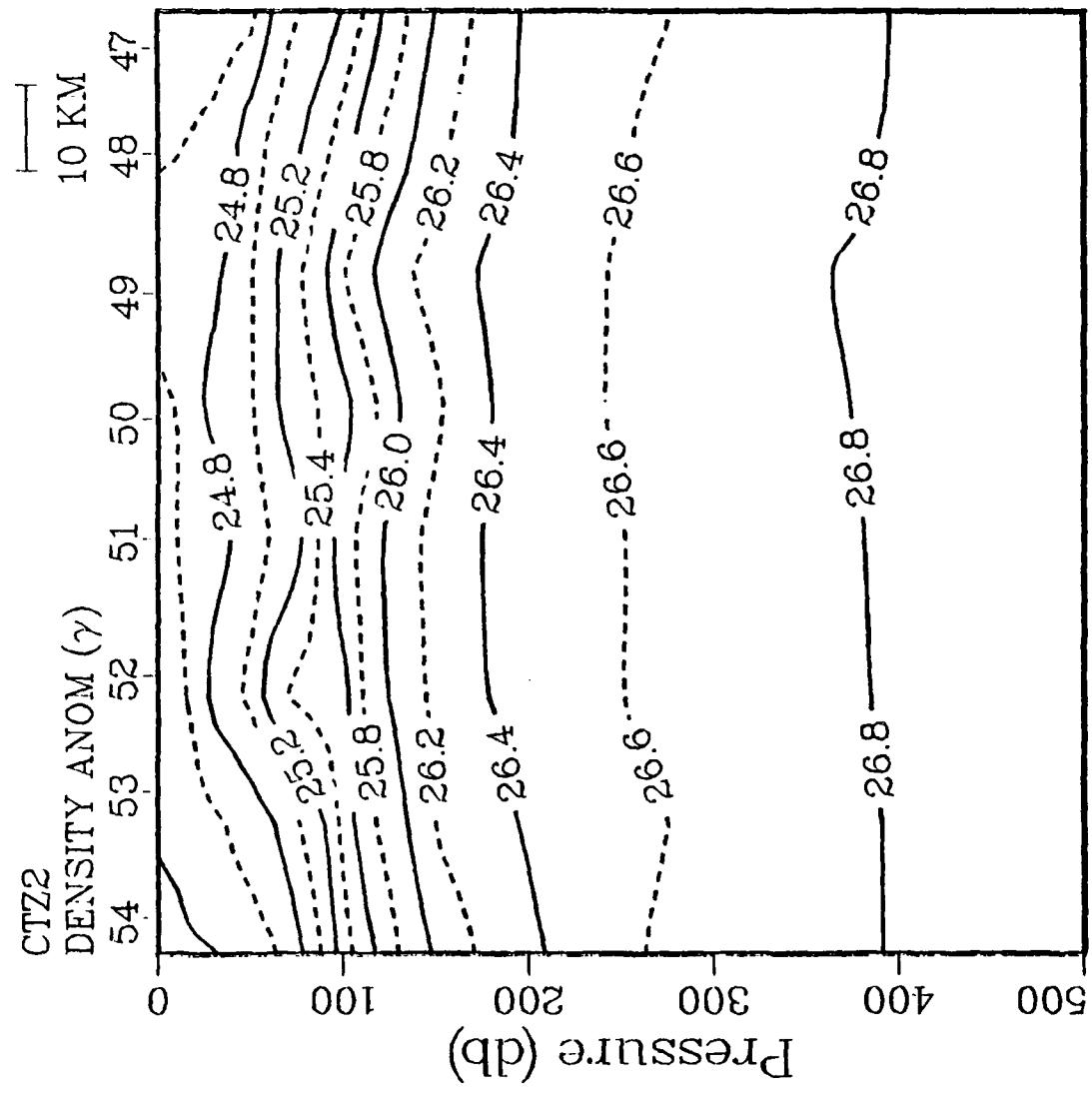


Figure 24c.

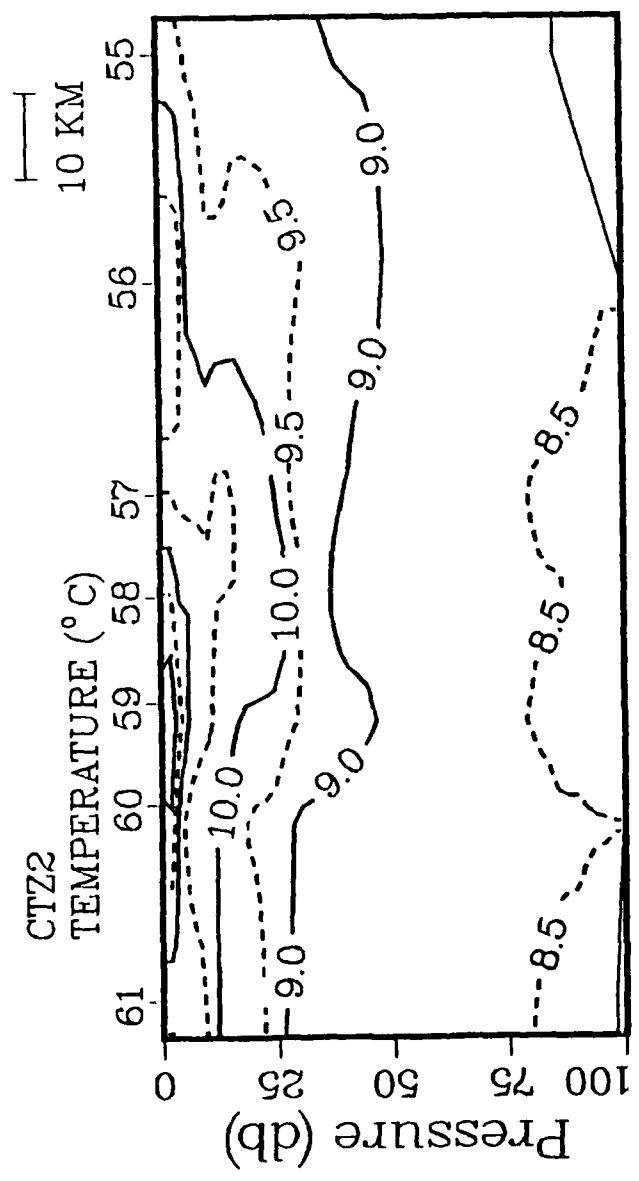


Figure 25. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 55-61 of part II.

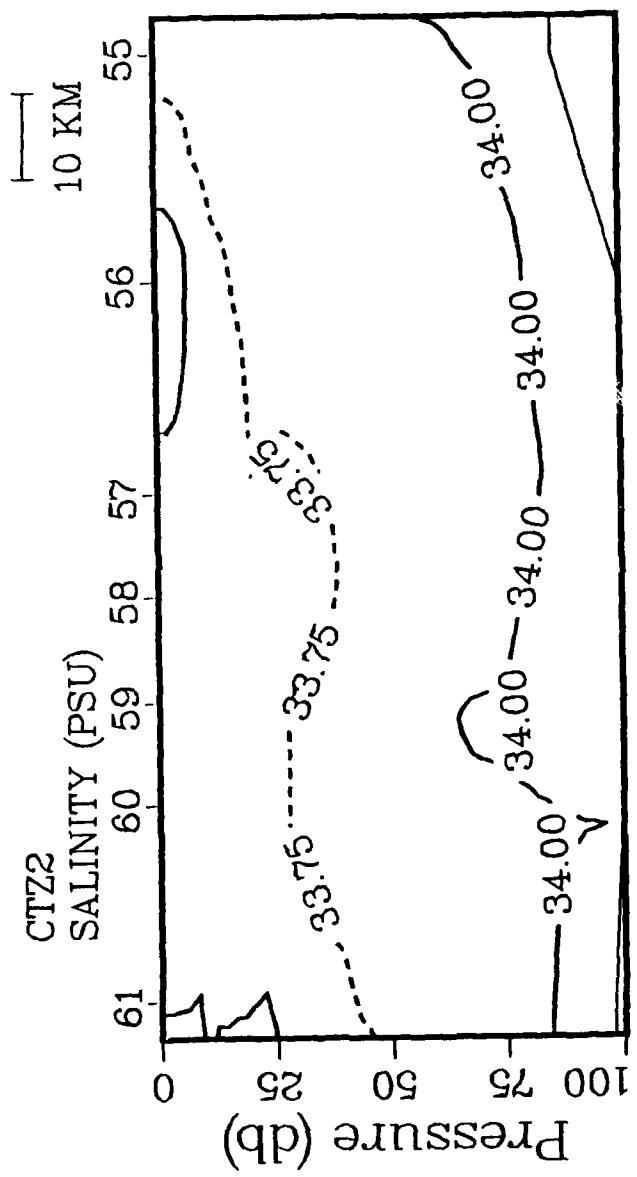


Figure 25b.

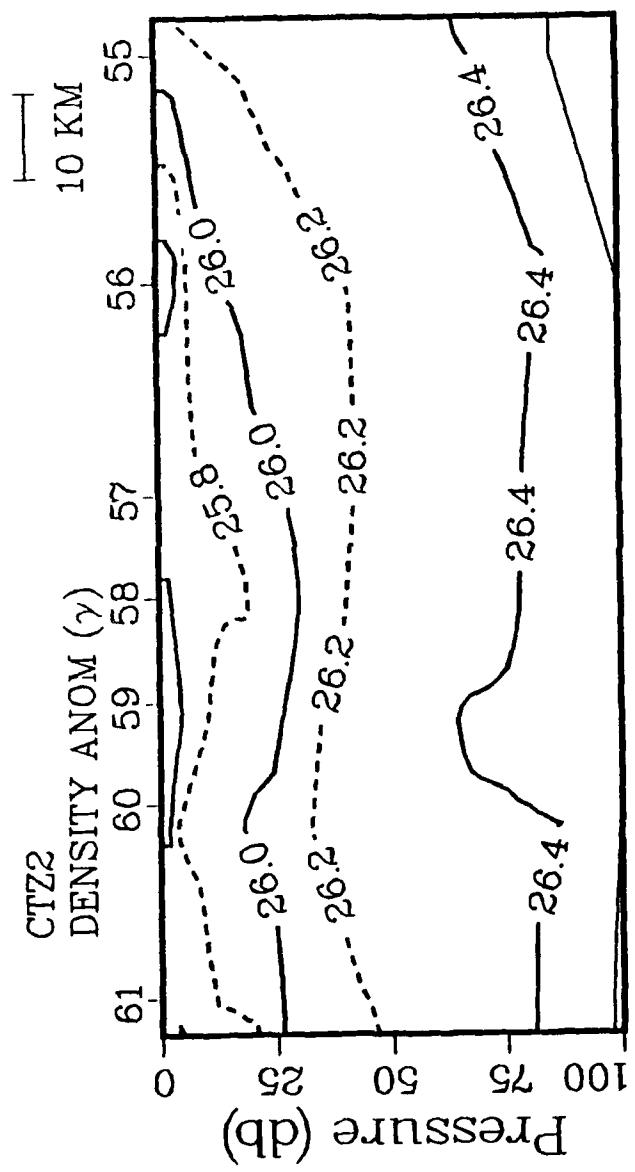


Figure 25c.

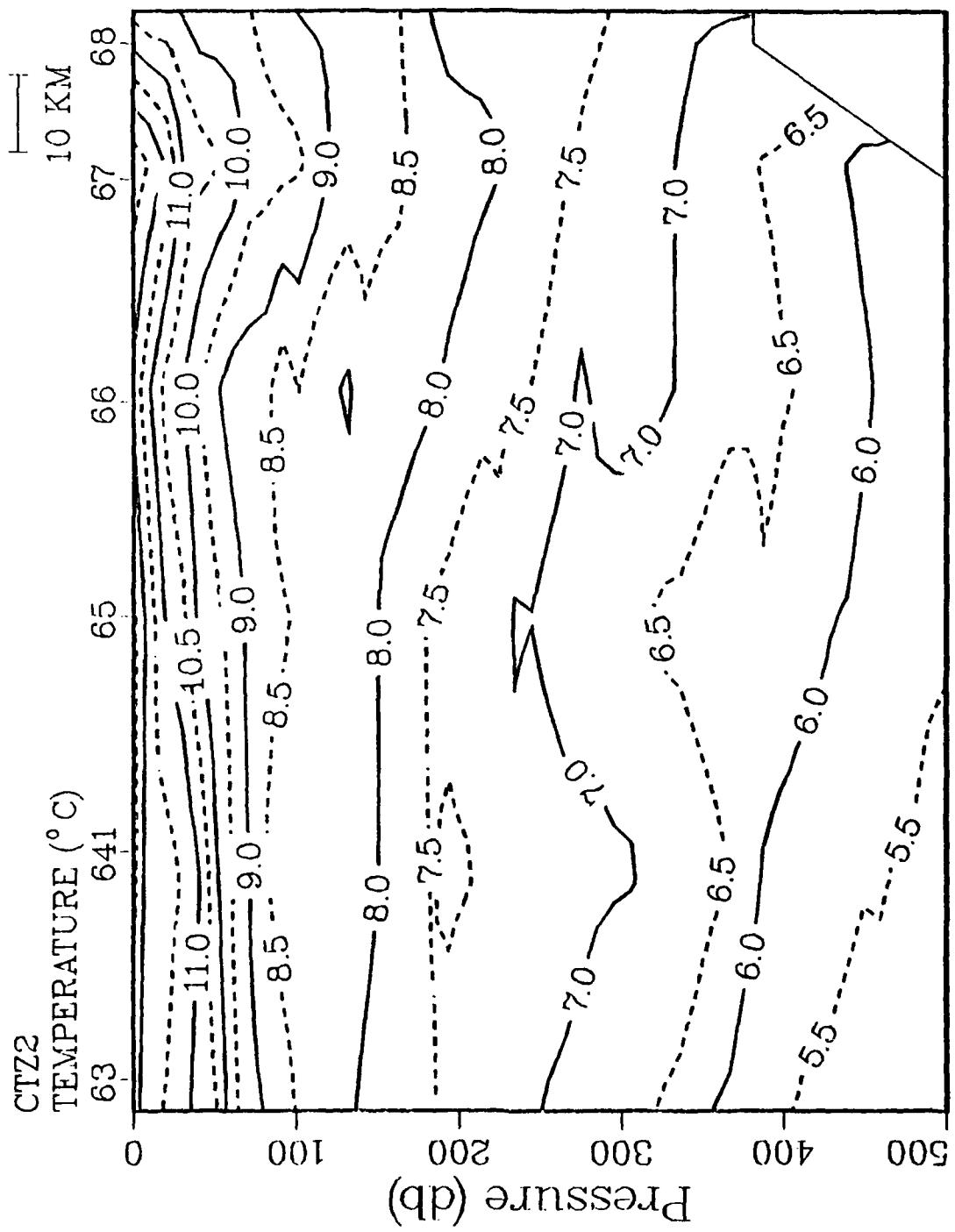


Figure 26. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 63, 641, and 65-68 of part II.

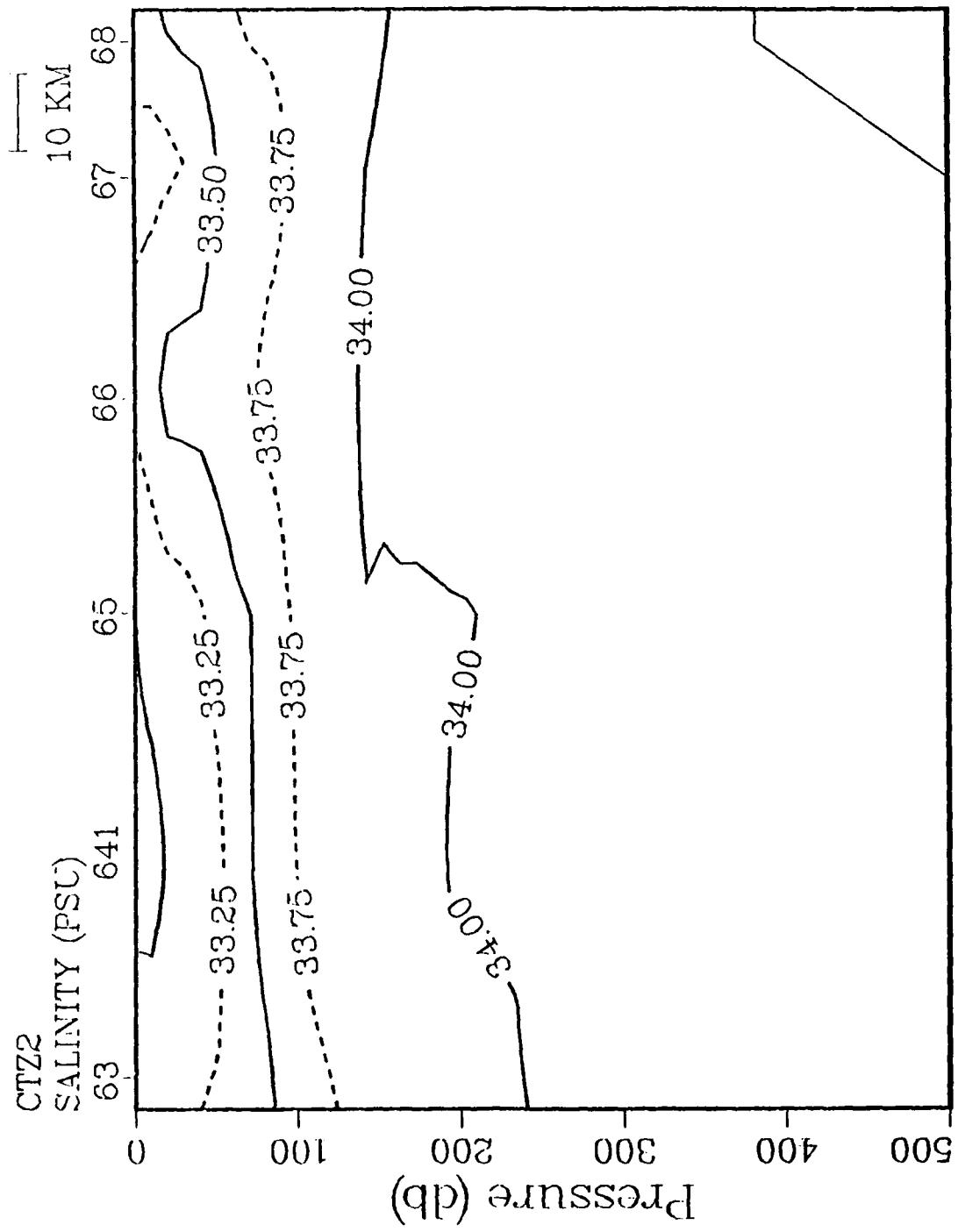


Figure 26b.

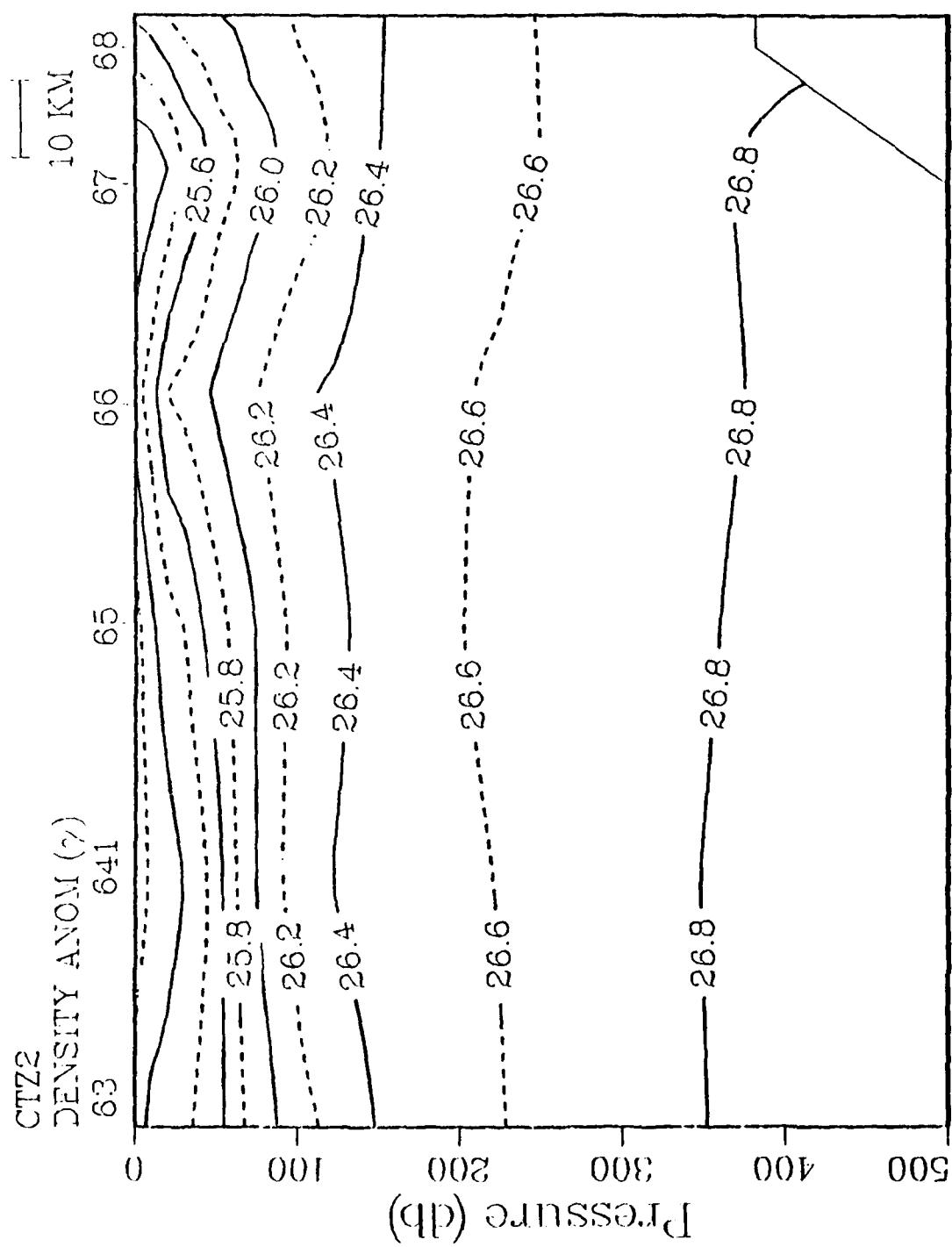


Figure 26c.

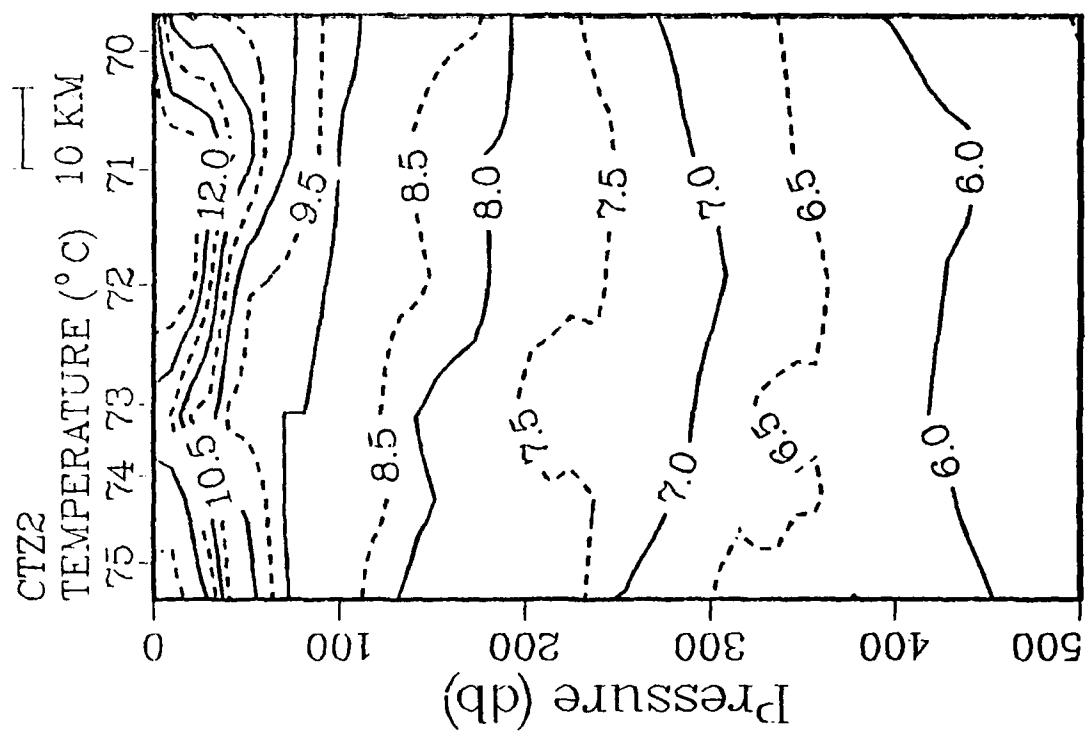


Figure 27. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 70-75 of part II.

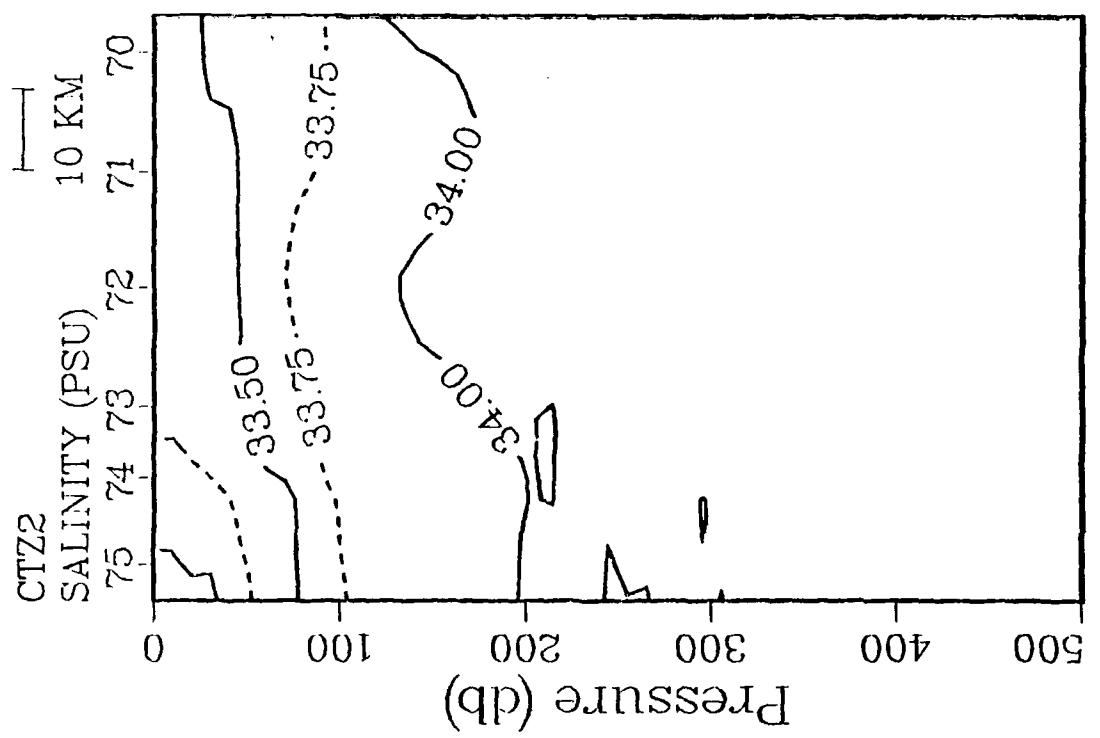


Figure 27b.

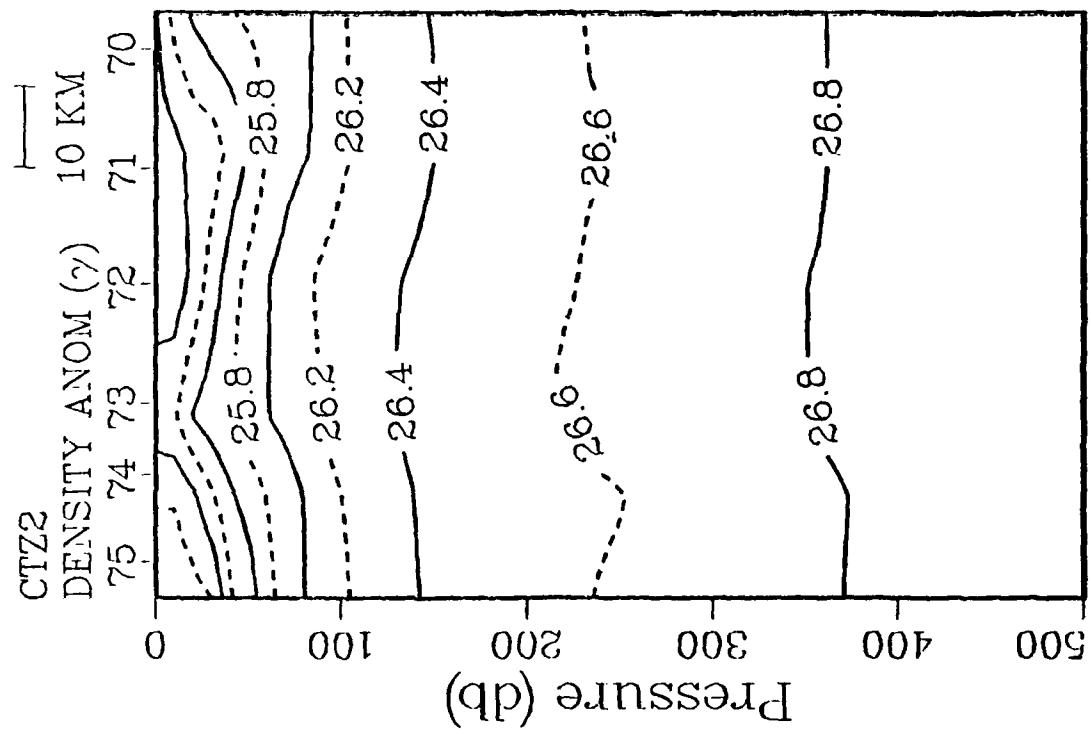


Figure 27c.

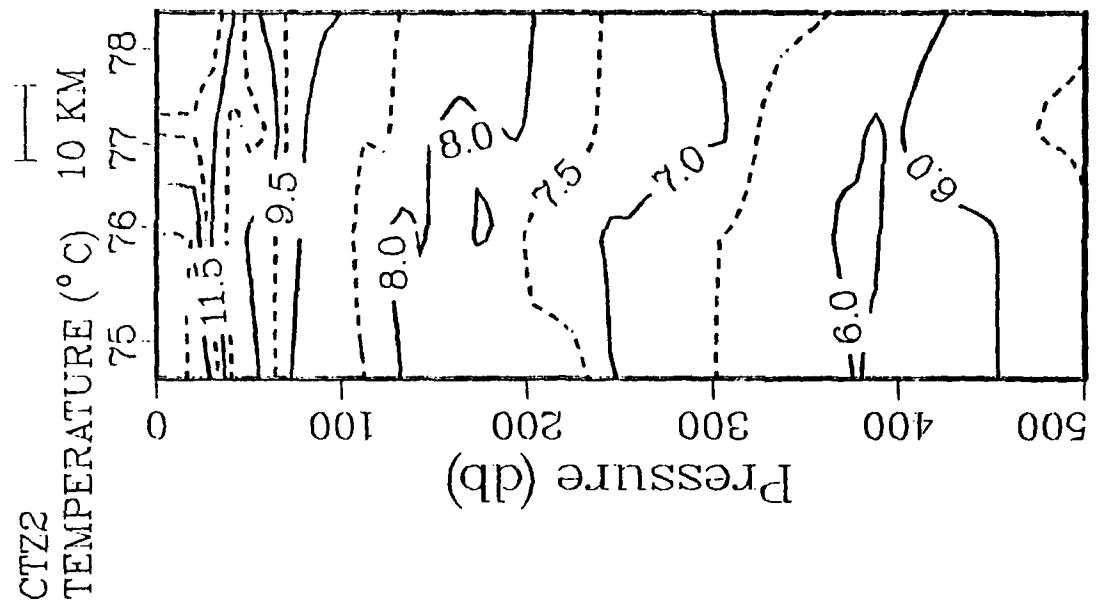


Figure 28. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 75-78 of part II.

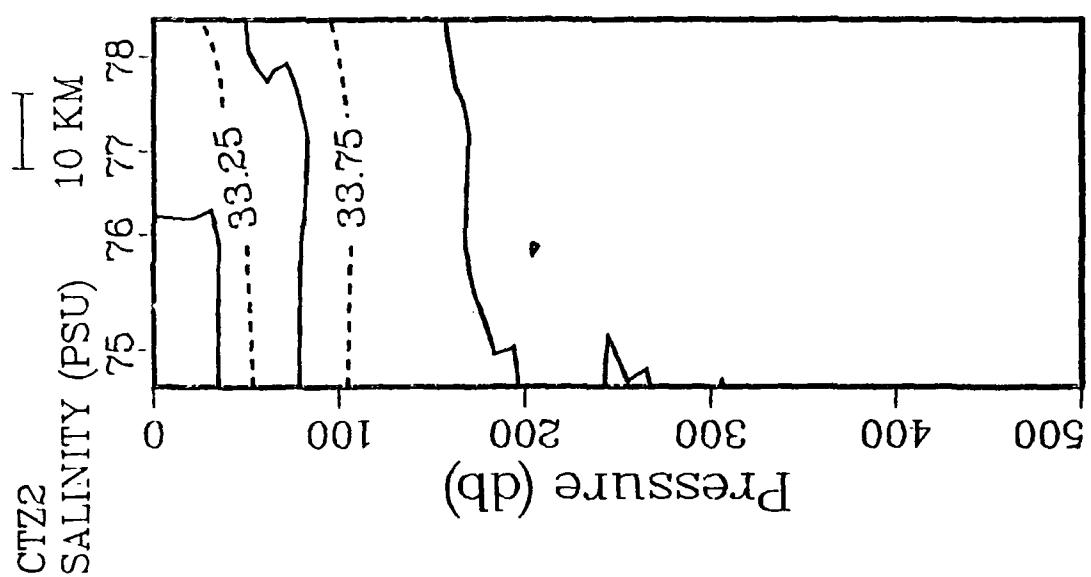


Figure 28b.

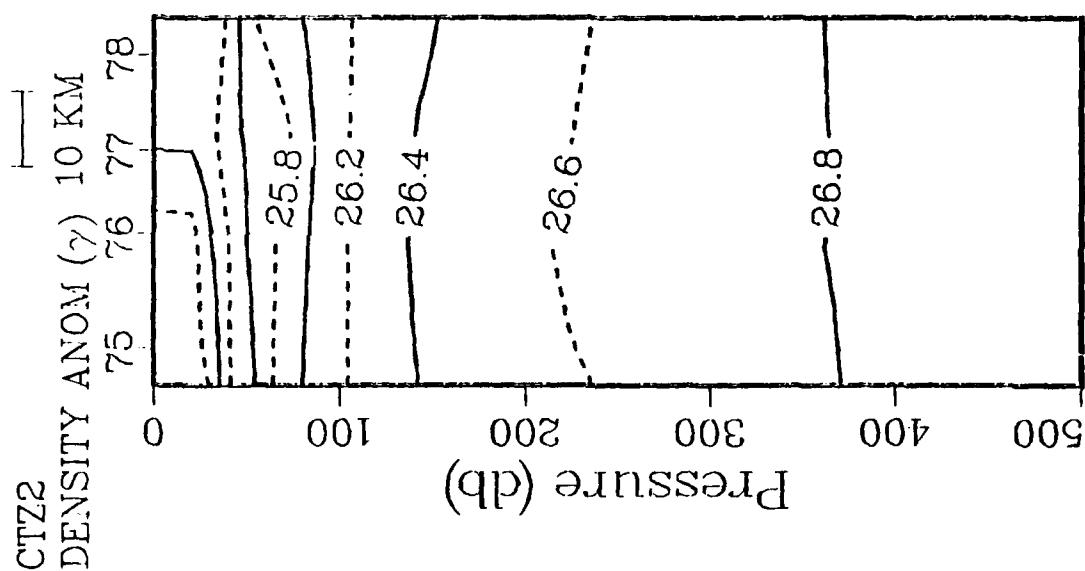


Figure 28c.

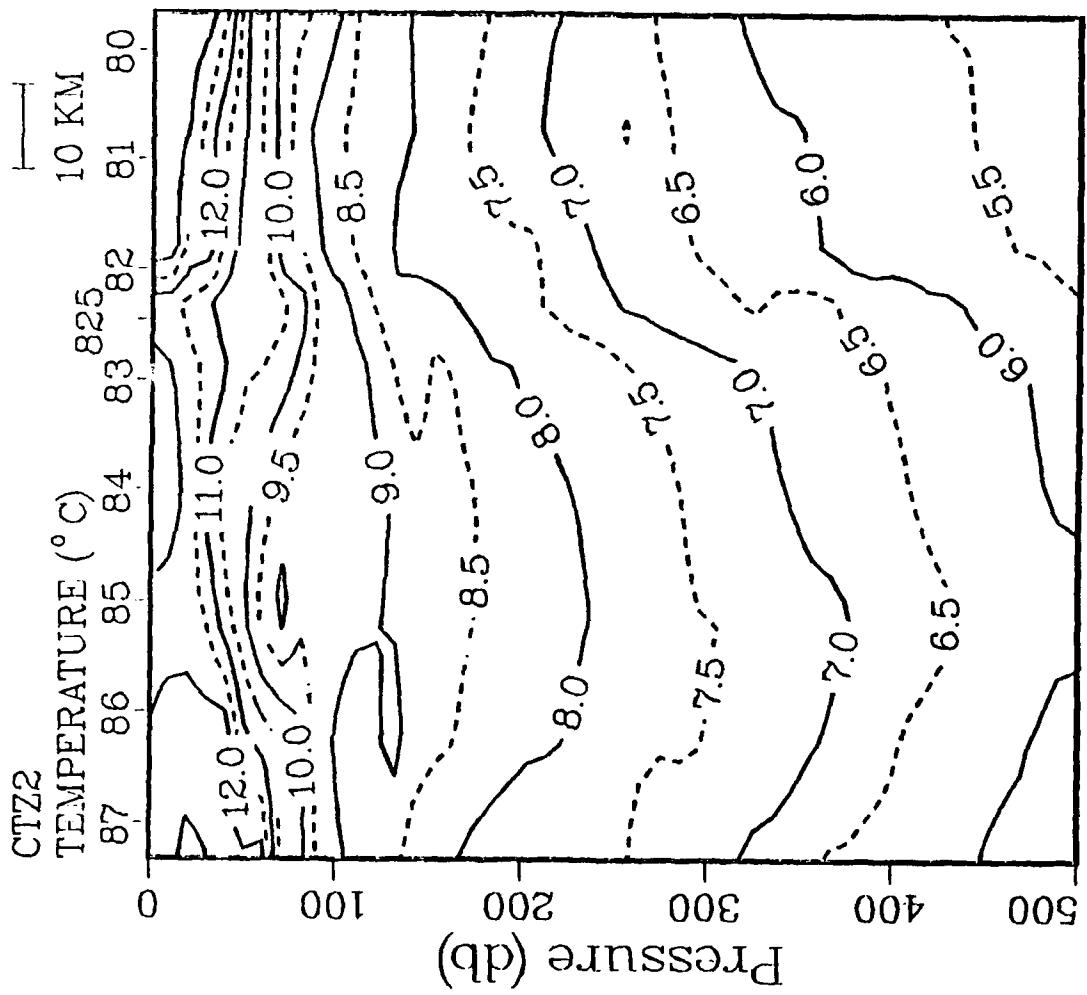


Figure 29. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 80-82, 825, and 83-87 of part III.

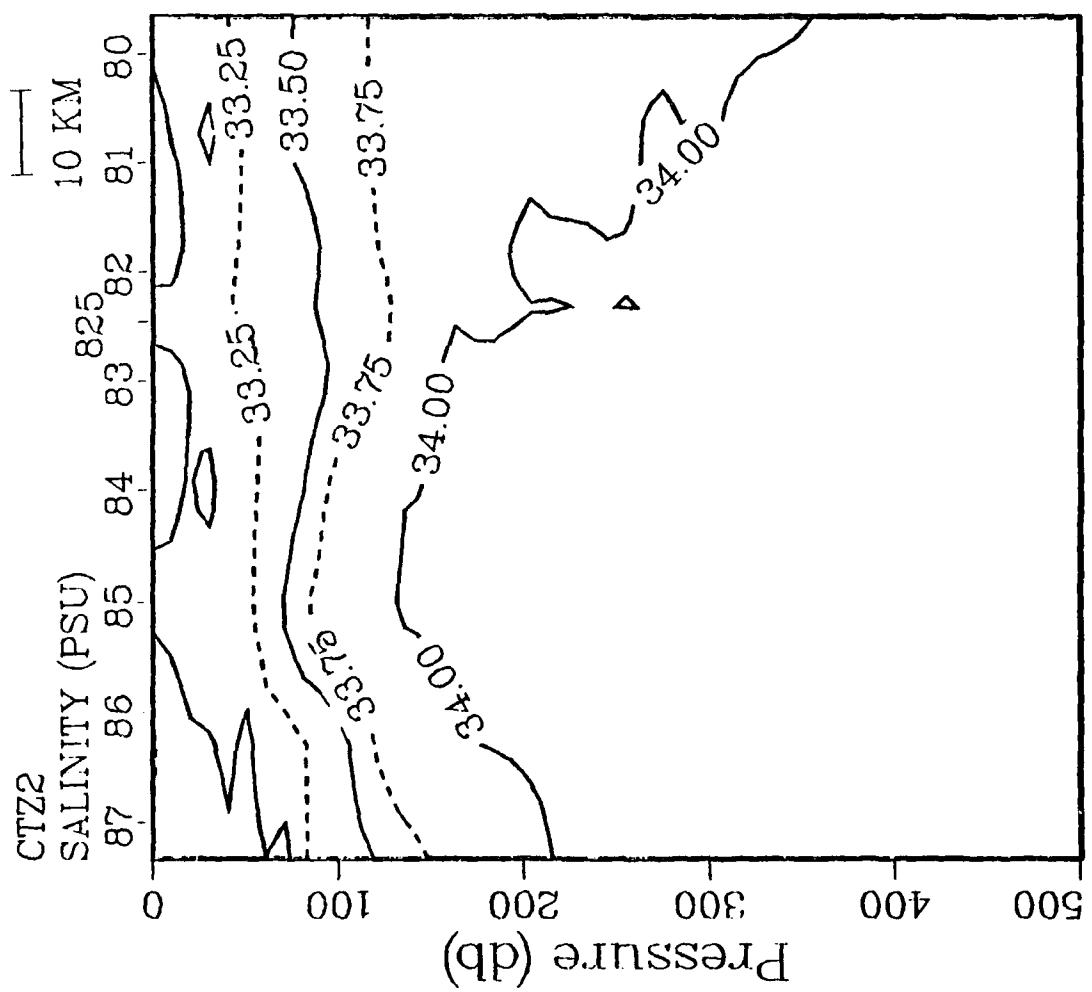


Figure 29b.

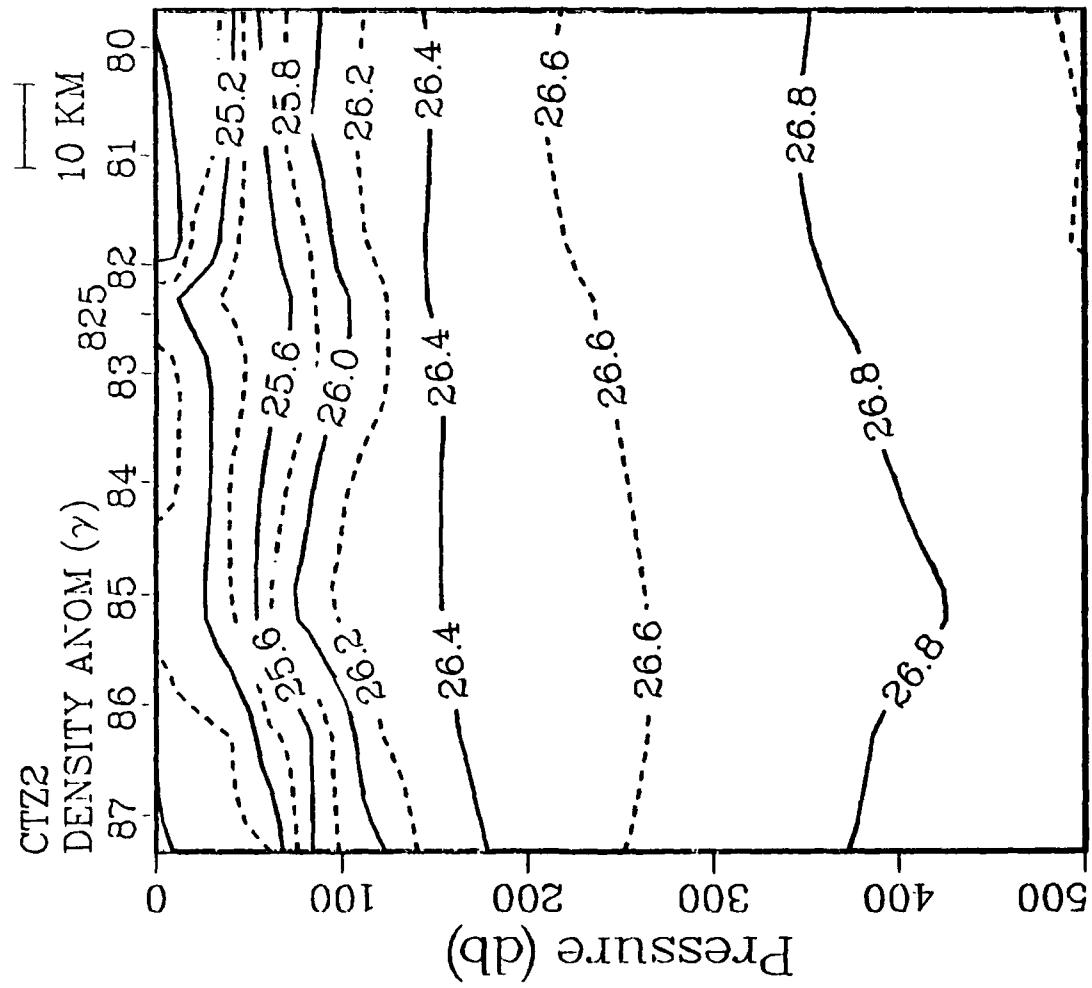


Figure 29c.

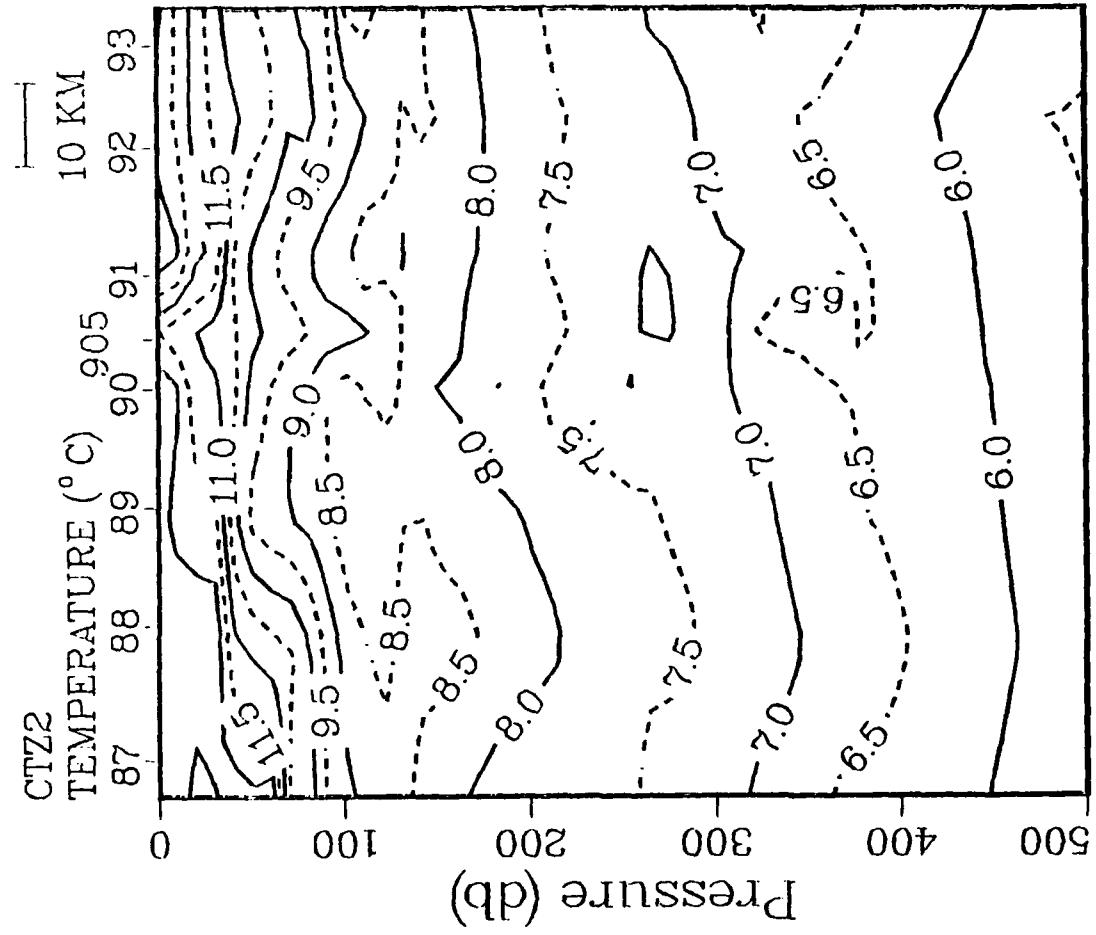


Figure 30. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 87-90, 905, and 91-93 of part III.

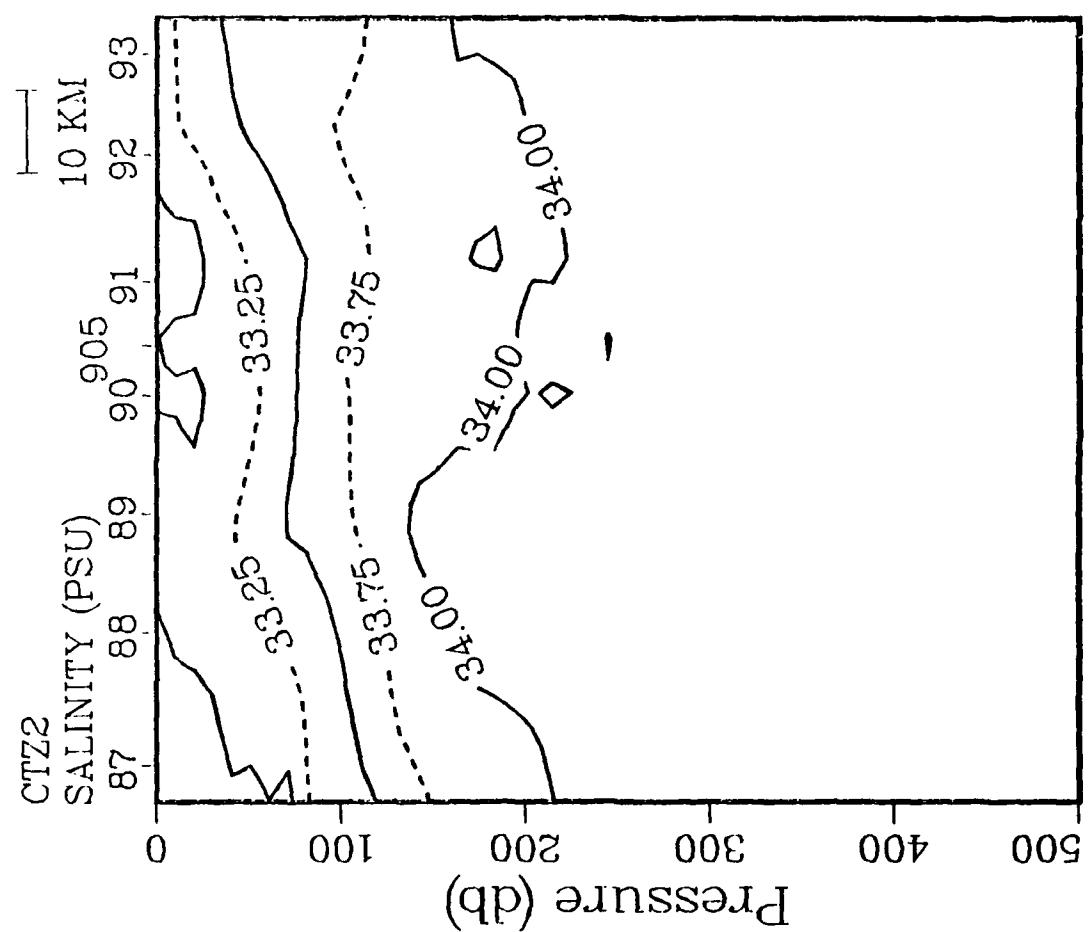


Figure 30b.

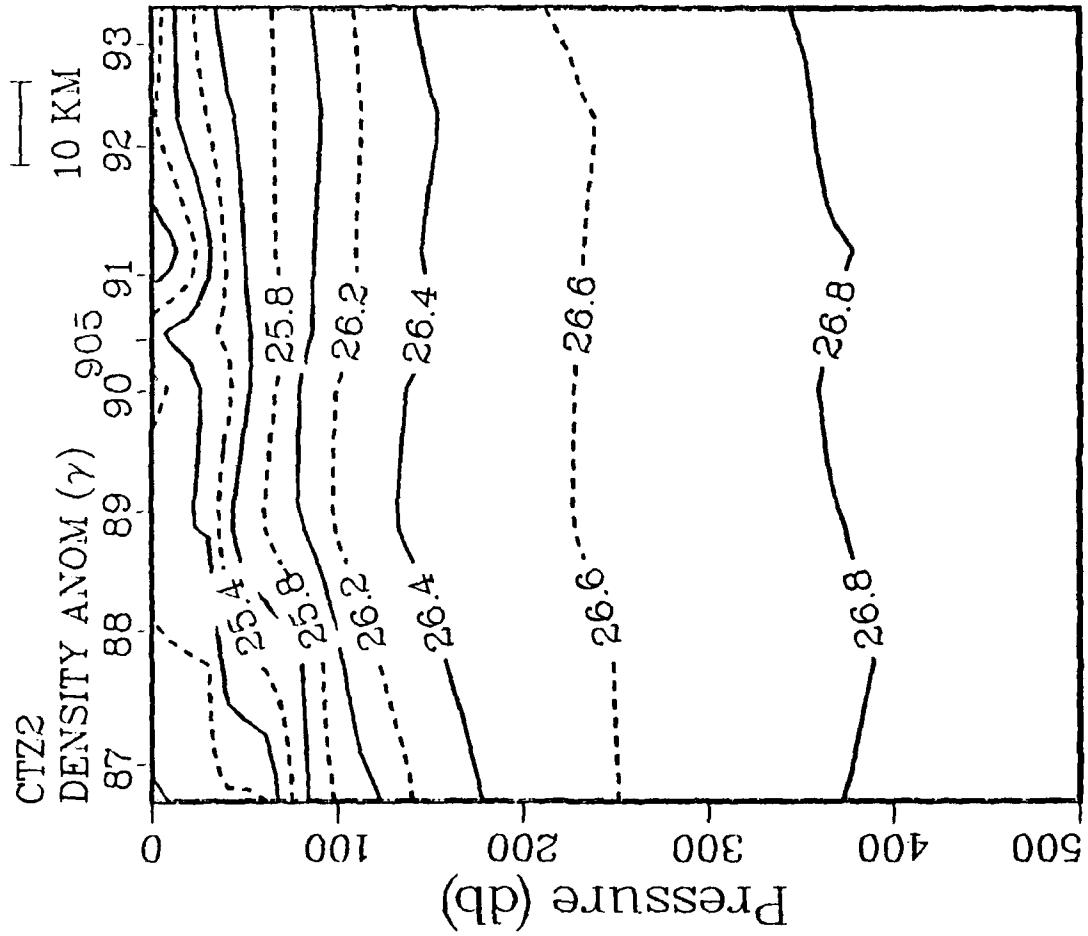


Figure 30c.

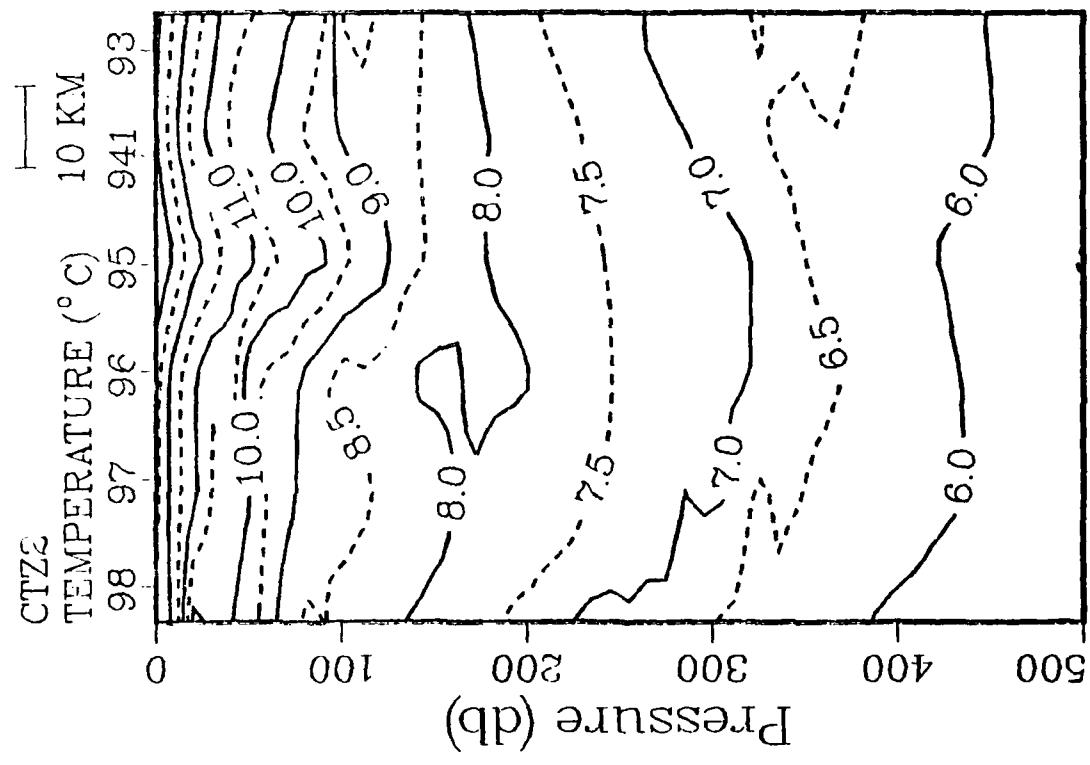


Figure 31. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 93, 941, and 95-98 of part III.

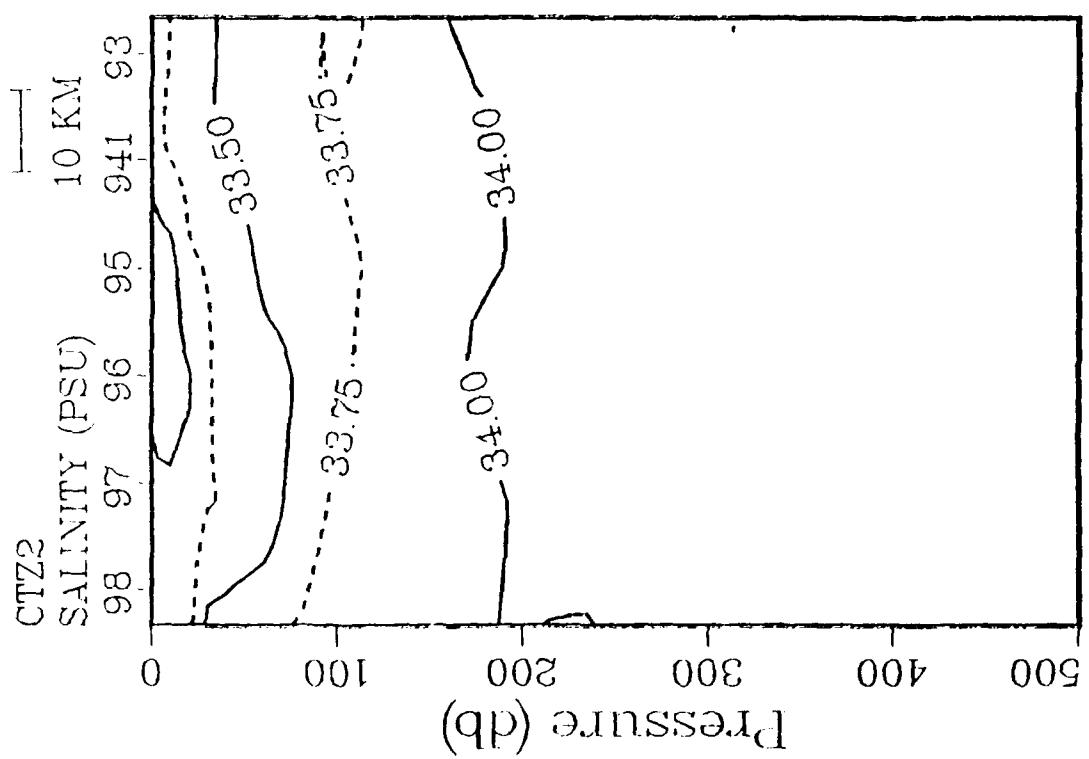


Figure 31b.

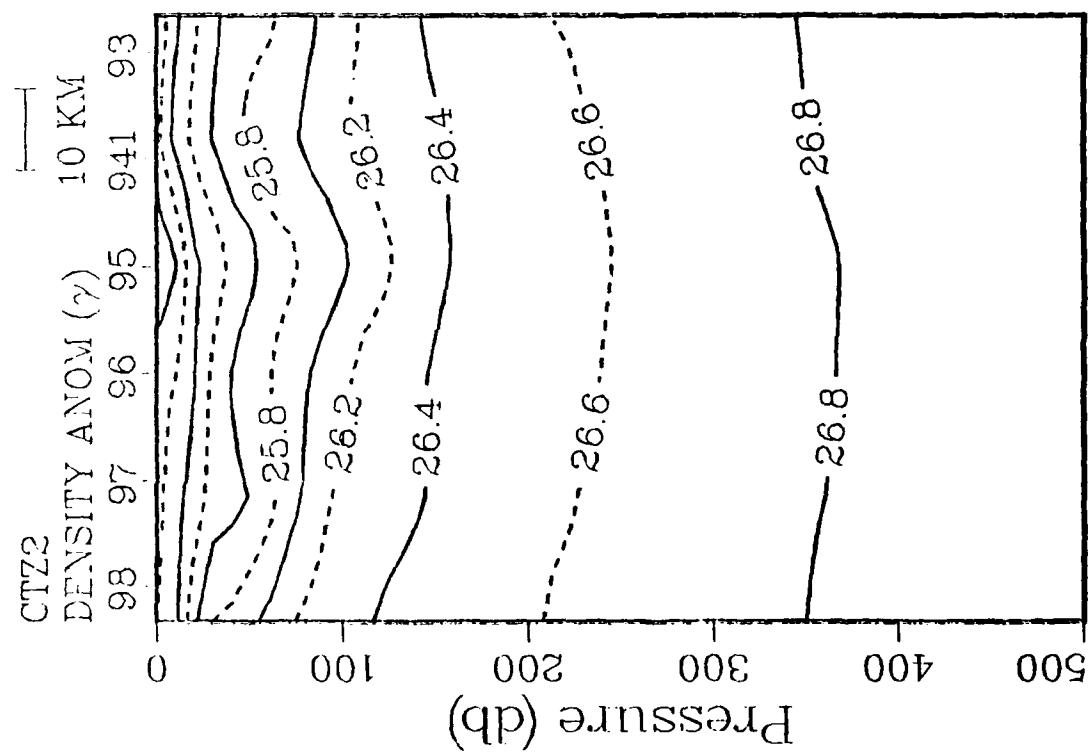


Figure 31c.

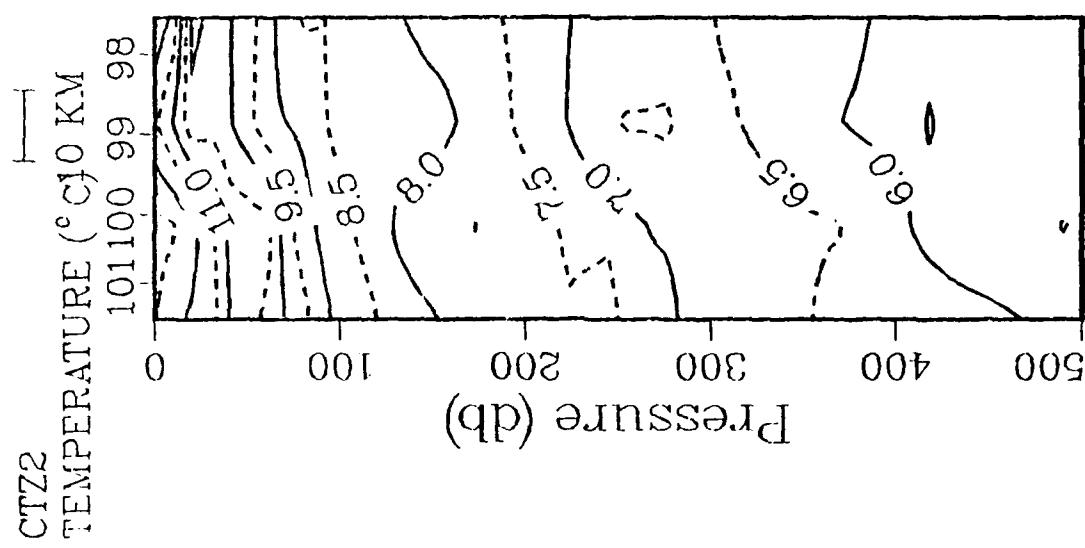


Figure 32. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 98-101 of part III.

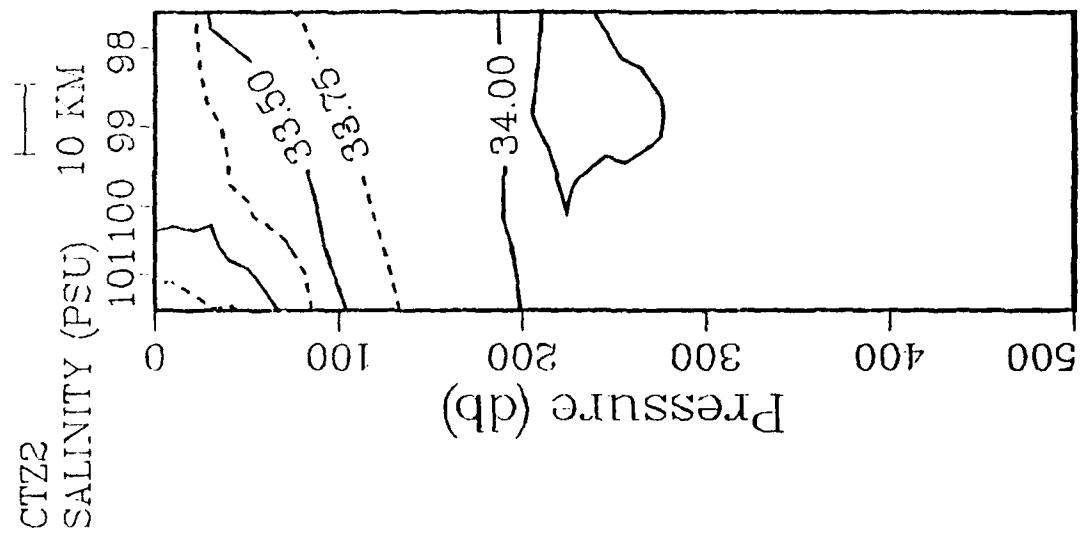


Figure 32b.

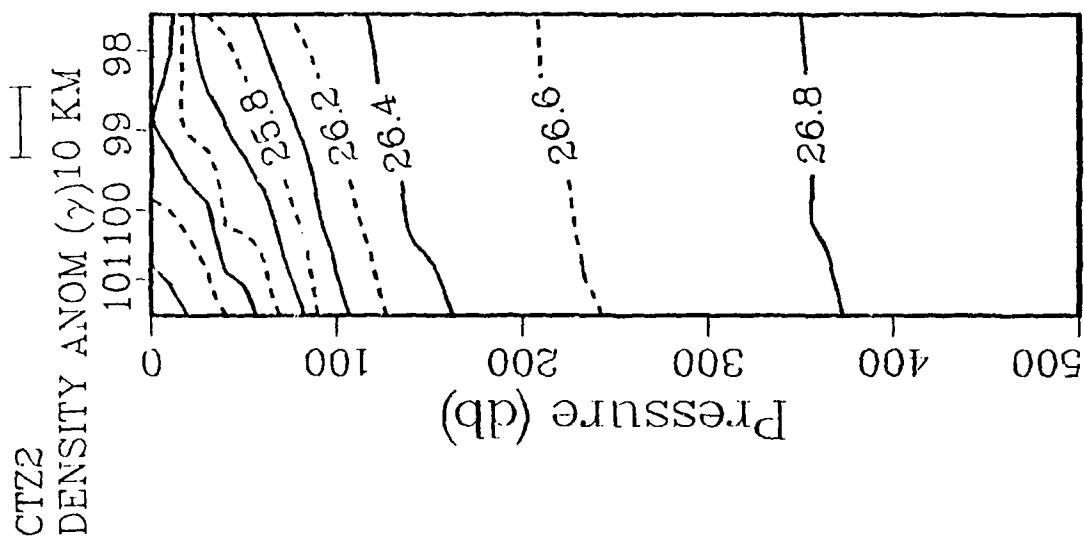


Figure 32c.

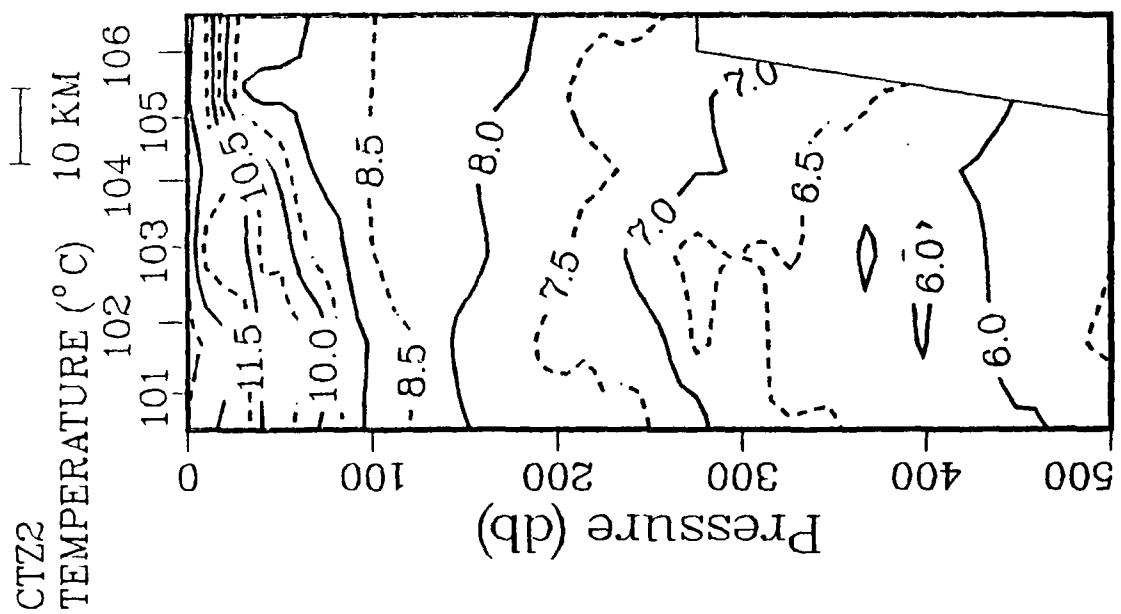
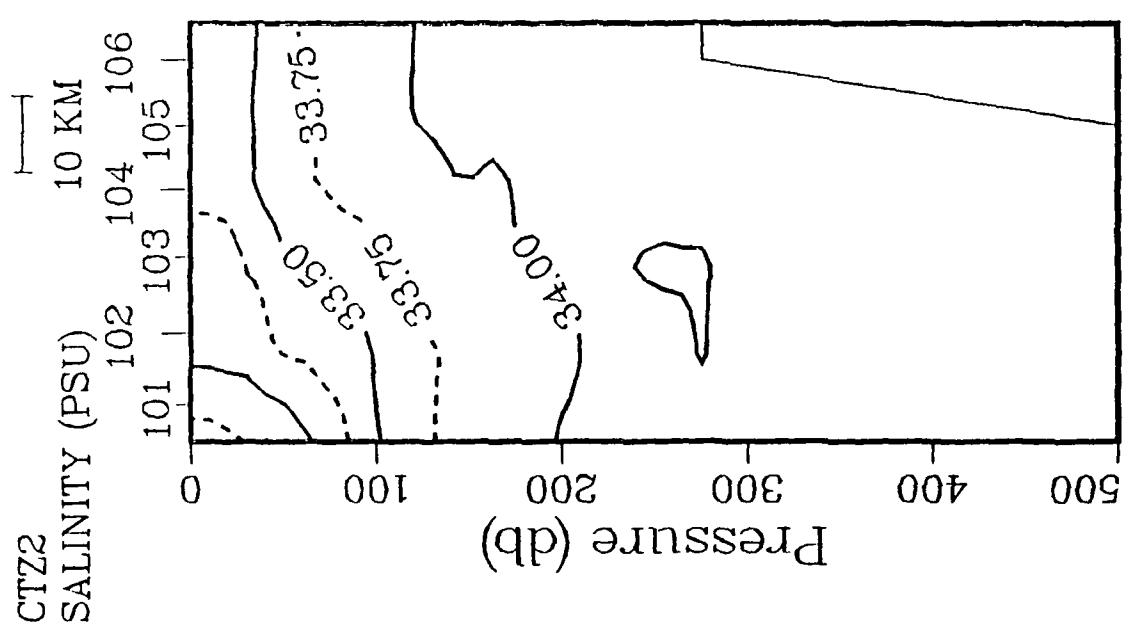


Figure 33. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 101-106 of part III.

Figure 33b.



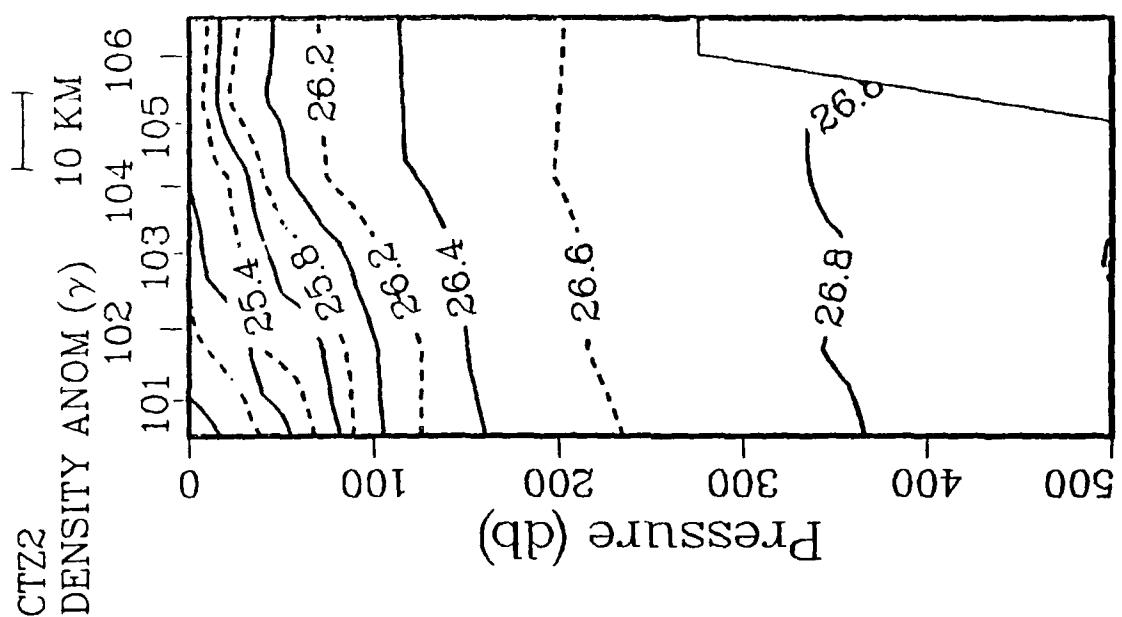


Figure 33c.

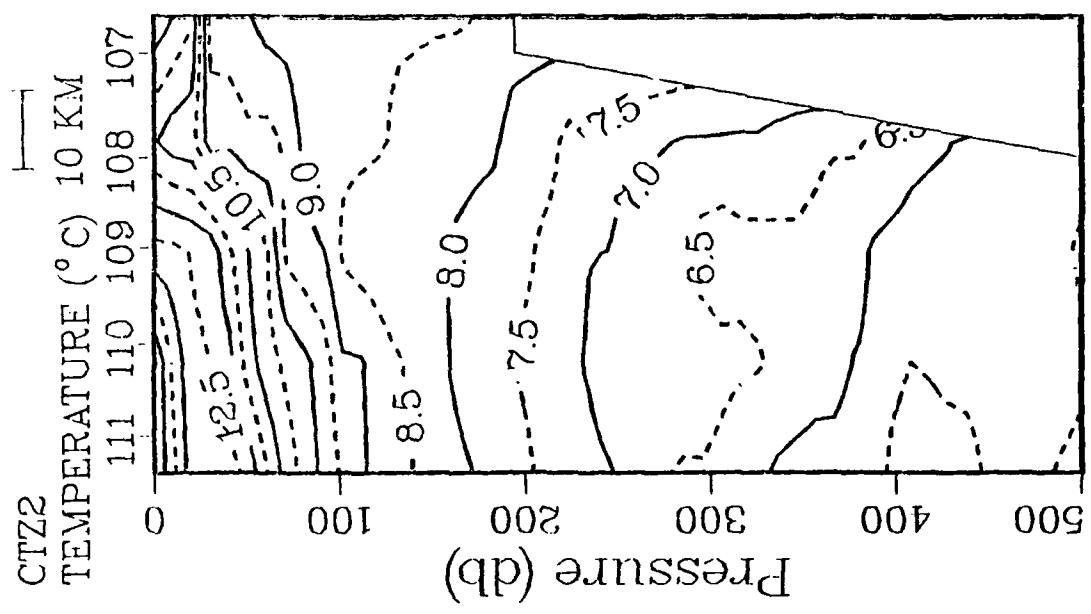
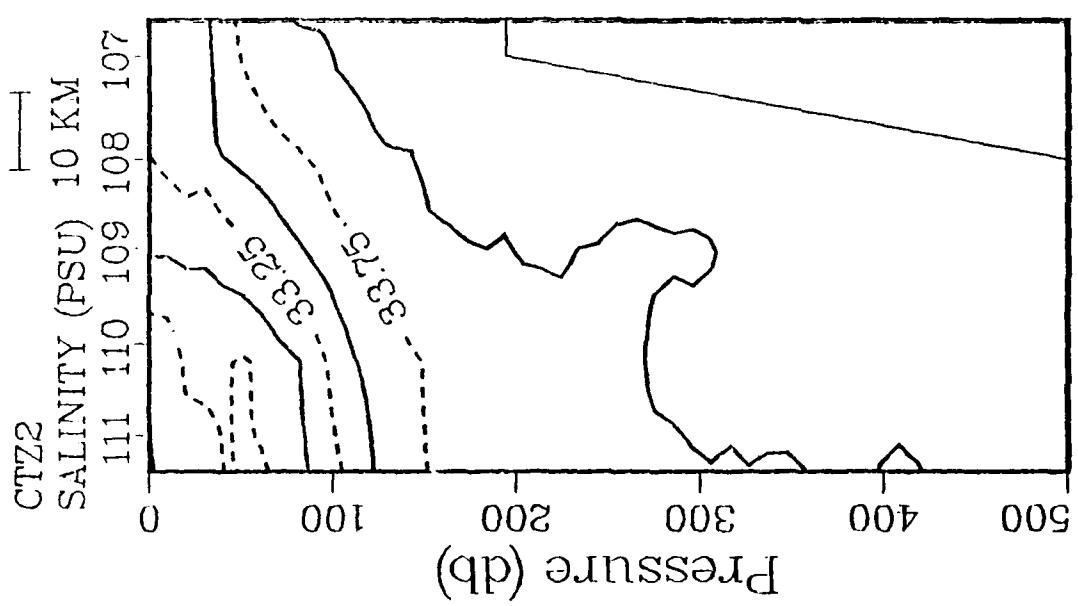


Figure 34. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 107-111 of part III.

Figure 34b.



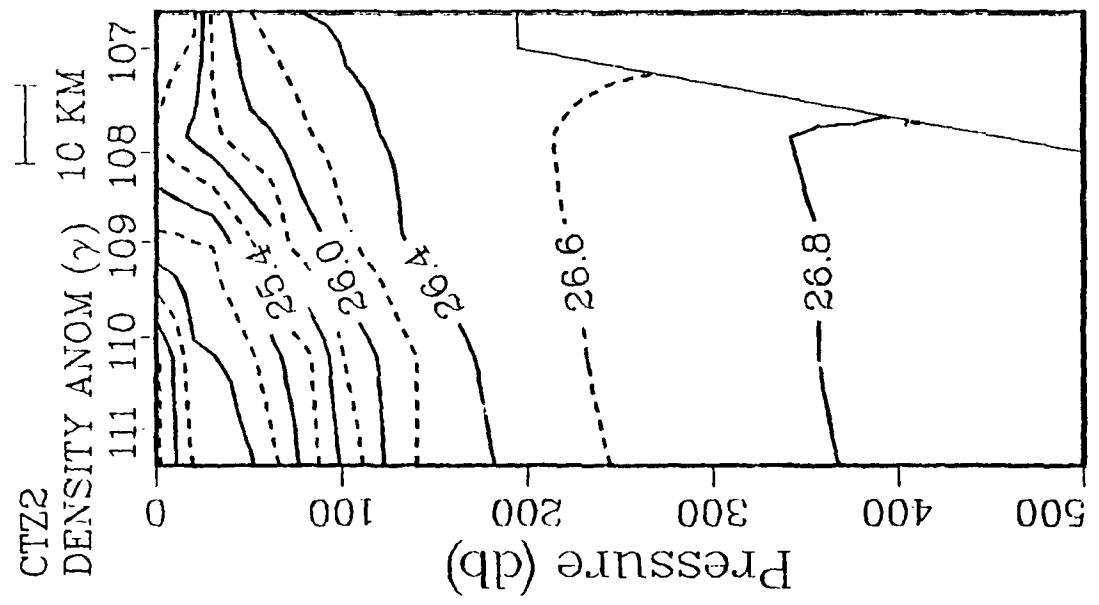


Figure 34c.

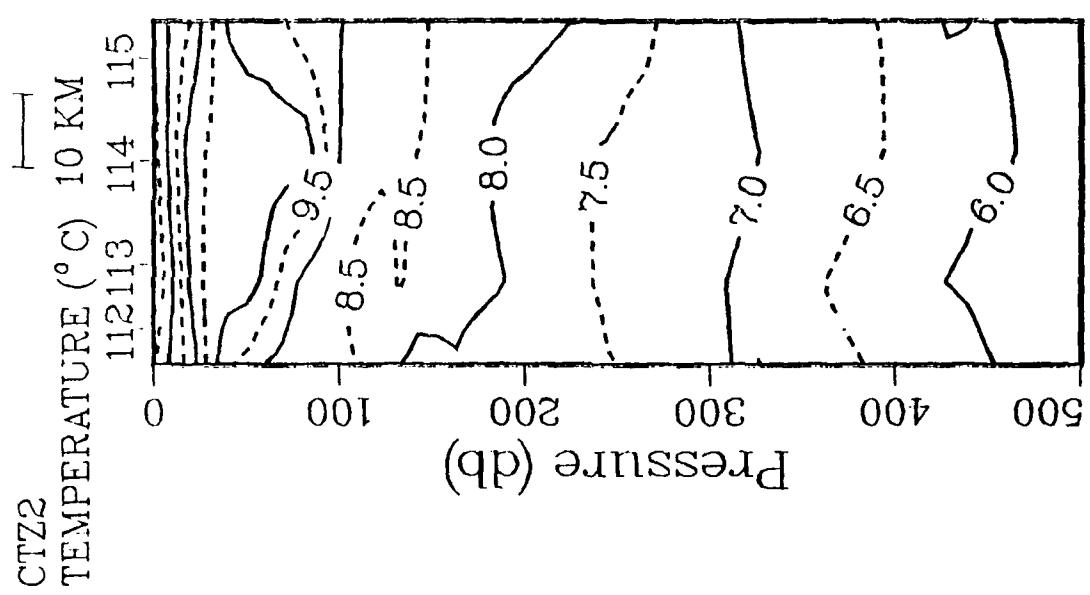


Figure 35. Vertical sections of a) temperature, b) salinity, and c) density anomaly from CTD stations 112-115 of part III.

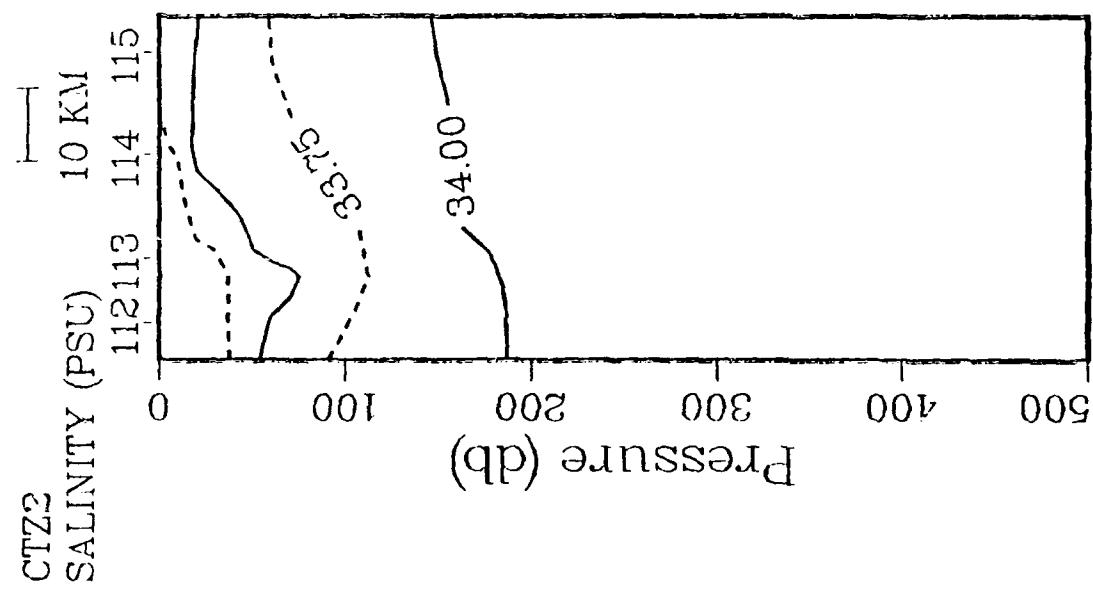


Figure 35b.

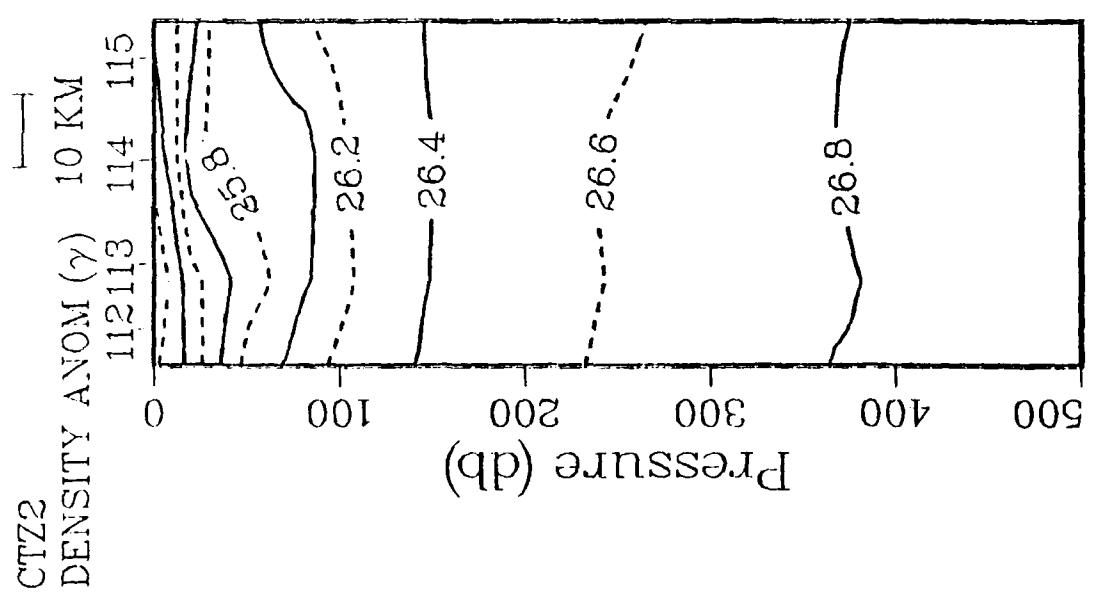


Figure 35c.

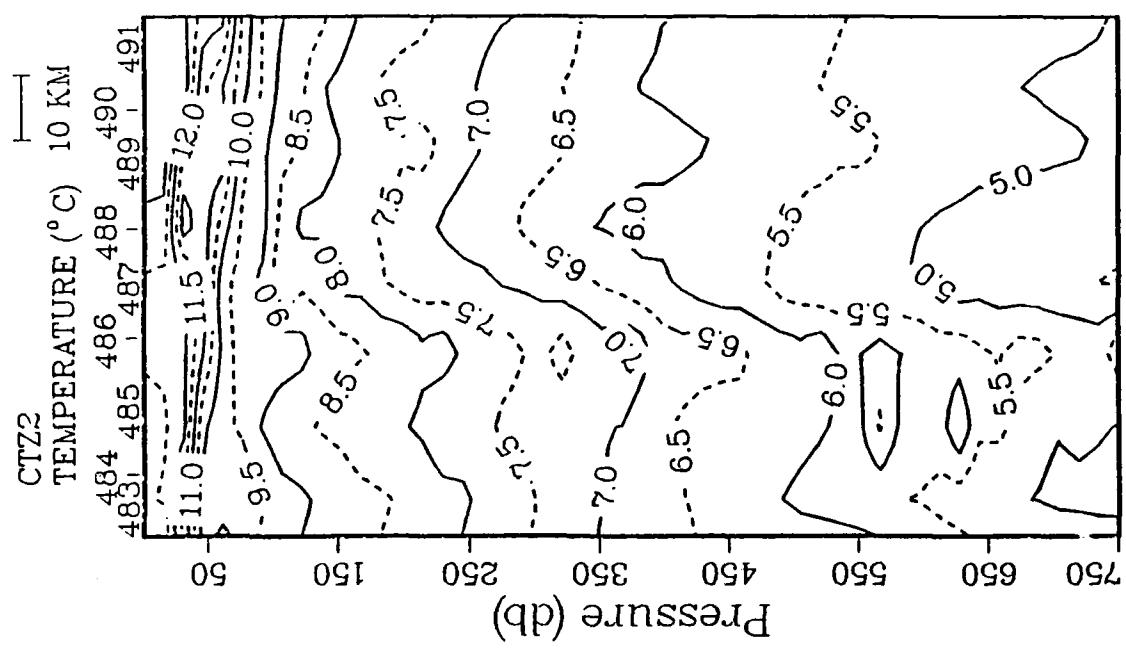


Figure 36. Vertical section of temperature for XBT stations 483-491 of cruise CTZ2.

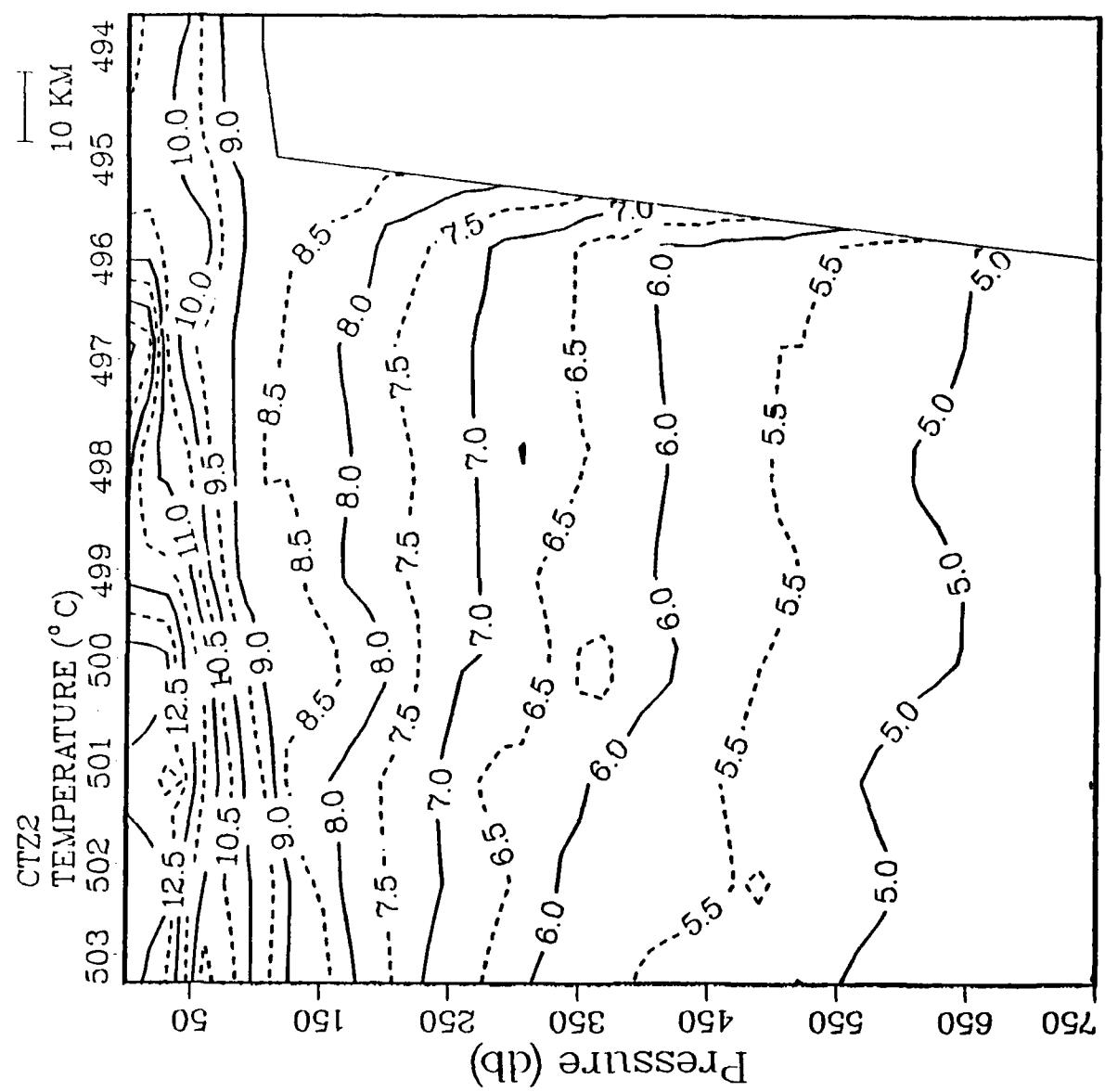
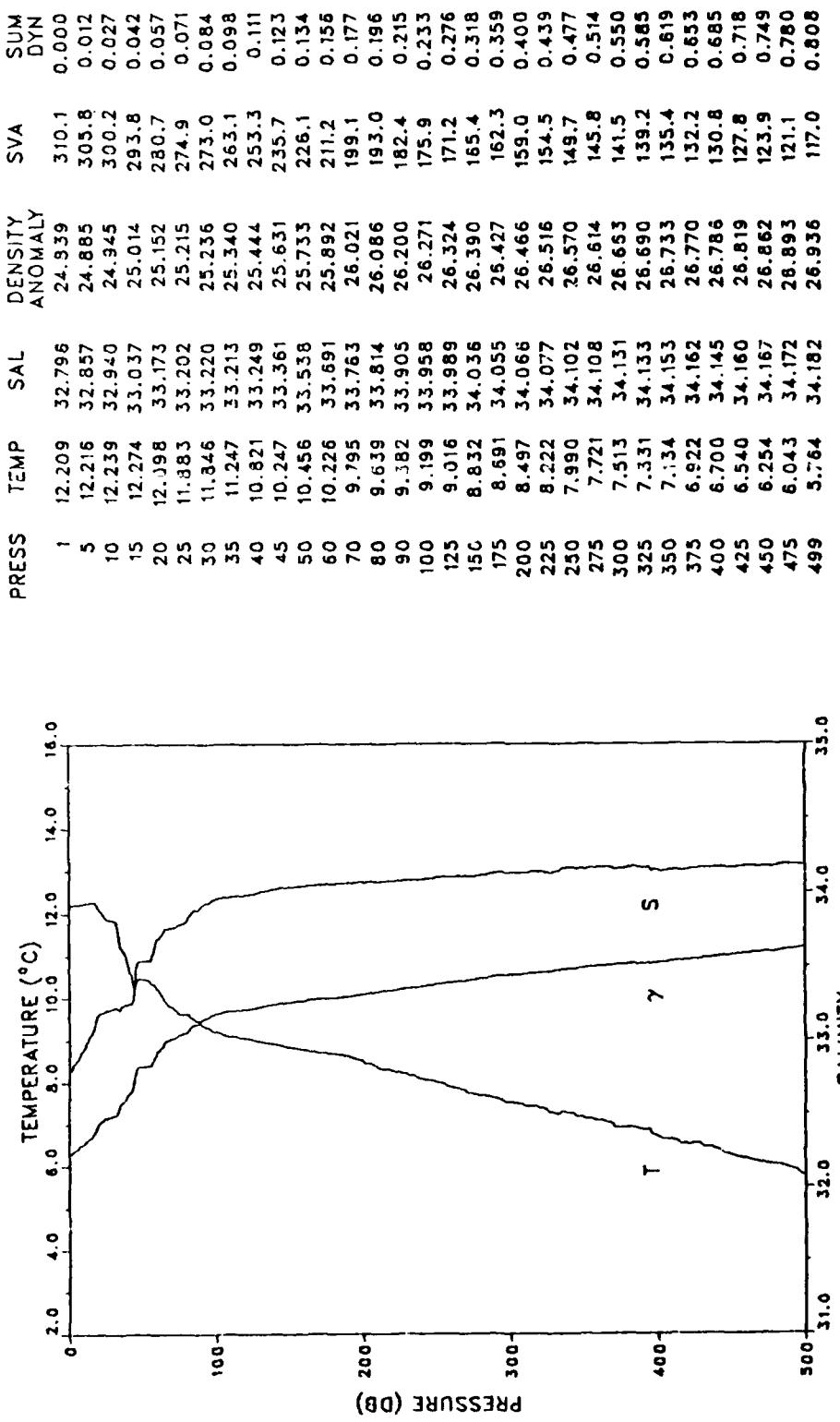


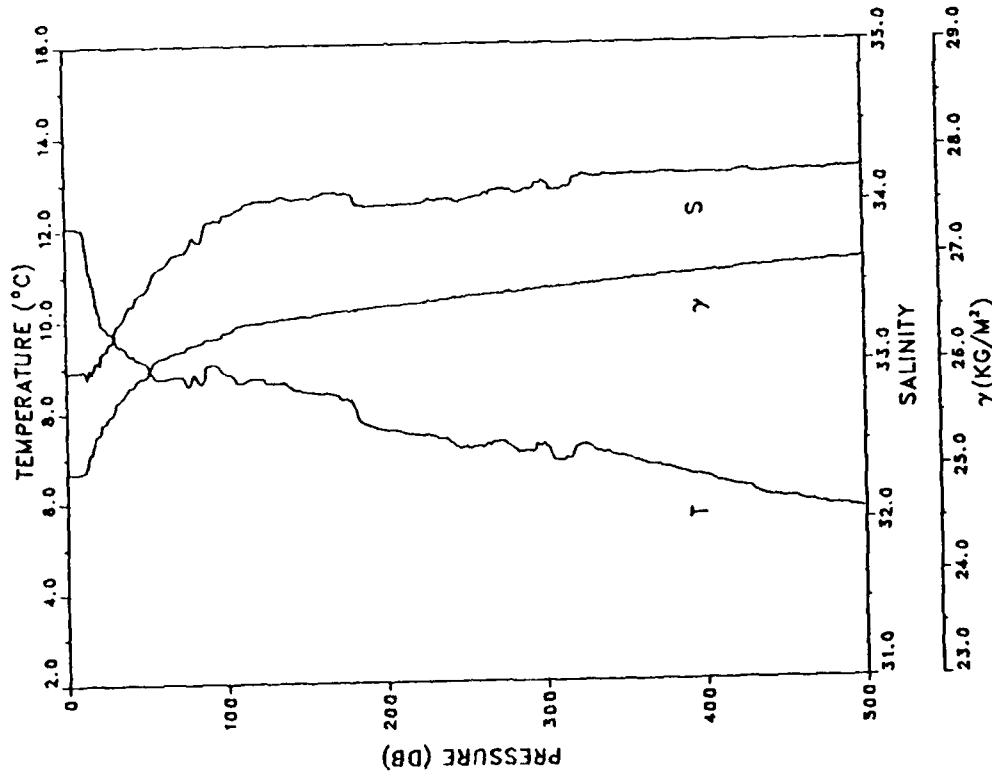
Figure 37. Vertical section of temperature for XBT stations 494-503 of cruise CTZ2.

Figure 38. Listing of temperature, salinity, density anomaly, specific volume anomaly, and dynamic height at selected pressures and profiles of temperature (T), salinity (PSU), and density anomaly ( $\gamma$ ) for all CTD stations of cruise CTZ2.



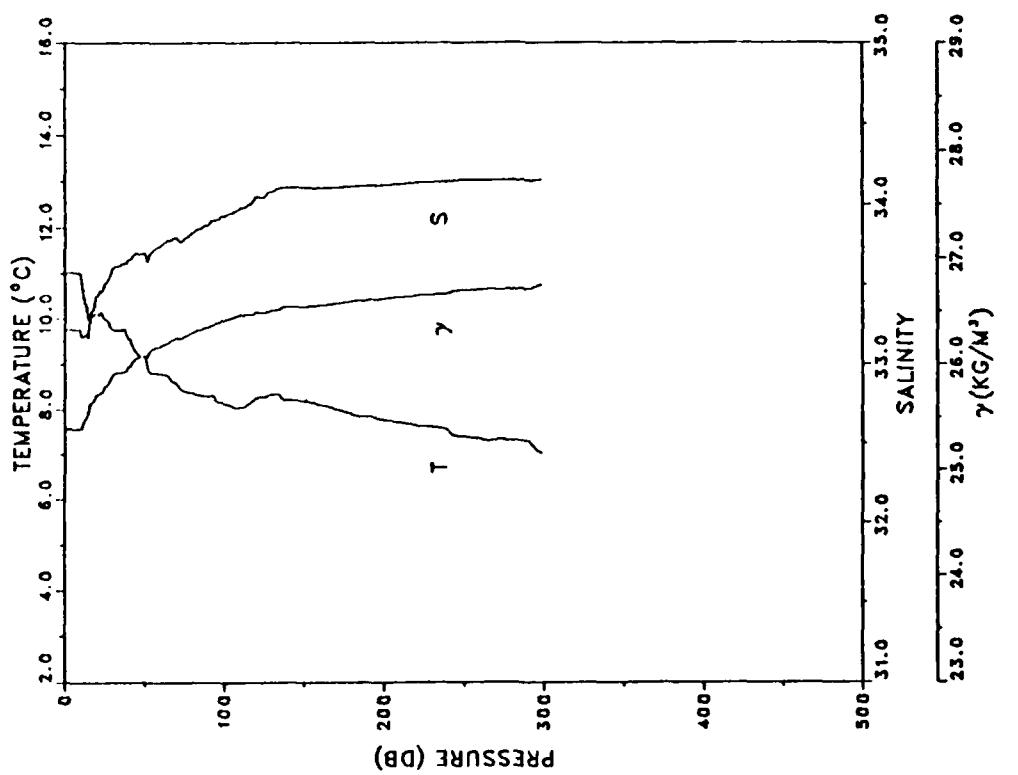
STATION: 1 LAT: 38 30.1 N LON: 123 59.2 W  
DATE: 6/16/87 TIME: 0800Z

PRESS	TEMP	SAL	DENSITY	SVA	SUM DYN
			ANOMALY		
1	12.080	32.975	25.002	294.6	0.000
5	12.083	32.980	25.005	294.4	0.012
10	12.042	32.980	25.013	293.7	0.026
15	11.084	32.988	25.195	276.6	0.041
20	10.288	33.032	25.367	260.2	0.054
25	9.865	33.110	25.499	247.8	0.067
30	9.648	33.195	25.601	238.1	0.079
35	9.435	33.287	25.708	228.1	0.091
40	9.255	33.383	25.812	218.3	0.102
45	9.158	33.446	25.877	212.2	0.113
50	9.091	33.484	25.917	208.5	0.123
50	8.743	33.626	26.083	192.9	0.143
70	8.783	33.707	26.140	187.6	0.162
80	8.845	33.813	26.213	180.9	0.181
90	9.032	33.905	26.256	177.0	0.199
100	8.846	33.951	26.321	171.0	0.216
125	8.639	34.029	26.415	162.5	0.258
150	8.422	34.046	26.461	158.5	0.298
175	8.251	34.075	26.510	154.3	0.337
200	7.557	33.999	26.552	150.4	0.375
225	7.443	34.018	26.584	147.8	0.412
250	7.179	34.029	26.629	143.7	0.449
275	7.274	34.089	26.663	140.9	0.484
300	7.210	34.135	26.708	137.0	0.519
325	7.216	34.179	26.742	134.2	0.553
350	6.903	34.172	26.780	130.8	0.586
375	6.674	34.183	26.820	127.2	0.618
400	6.473	34.181	26.845	125.1	0.650
425	6.236	34.195	26.887	121.2	0.681
450	5.984	34.187	26.912	118.9	0.711
475	5.844	34.189	26.931	117.2	0.740
499	5.732	34.207	26.960	114.8	0.768



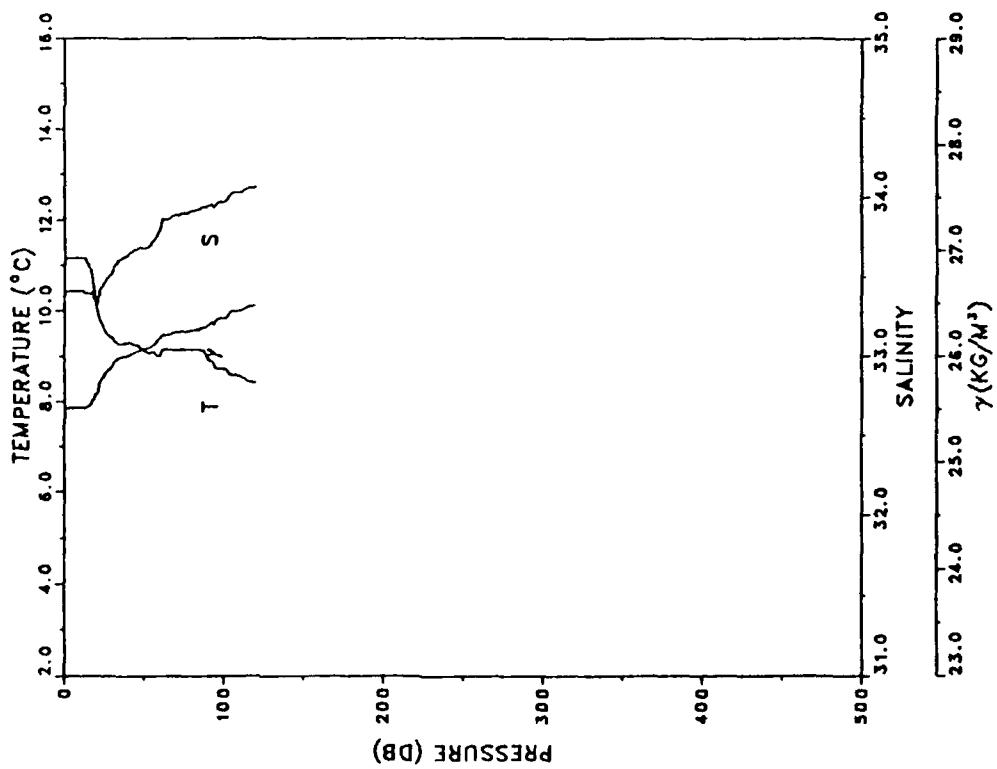
STATION: 2 LAT: 38 38.7 N LON: 123 49.2 W  
DATE: 6/16/87 TIME: 1100Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.017	33.219	25.386	258.0	0.000
5	11.015	33.218	25.386	258.2	0.010
10	10.983	33.212	25.387	258.2	0.023
15	9.984	33.166	25.523	245.3	0.036
20	10.114	33.432	25.709	227.7	0.048
25	9.995	33.510	25.790	220.2	0.059
30	9.769	33.597	25.895	210.2	0.070
35	9.754	33.619	25.915	208.4	0.080
40	9.565	33.657	25.376	202.7	0.090
45	9.263	33.697	26.056	195.2	0.100
50	9.175	33.697	26.070	193.9	0.110
60	8.787	33.740	26.165	185.1	0.129
70	8.558	33.795	26.244	177.8	0.147
80	8.362	33.827	26.299	172.7	0.165
90	8.283	33.877	26.350	168.0	0.182
100	8.123	33.930	26.416	161.9	0.198
125	8.274	34.047	26.485	155.8	0.238
150	8.191	34.106	26.543	150.7	0.276
175	7.950	34.110	26.583	147.3	0.313
200	7.766	34.120	26.617	144.3	0.350
225	7.619	34.136	26.651	141.5	0.386
250	7.390	34.148	26.693	137.8	0.421
275	7.327	34.151	26.705	137.1	0.455
299	7.030	34.153	26.748	133.2	0.487



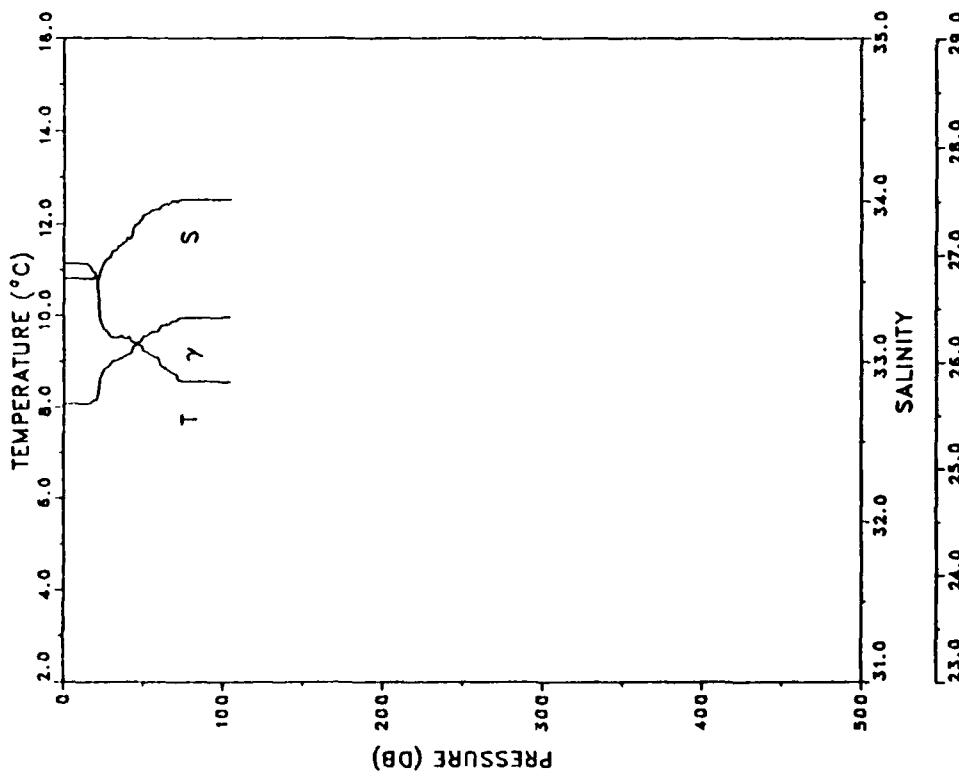
STATION: 3 LAT: 38 47.3 N LON: 123 50.5 W  
DATE: 6/16/87 TIME: 1248Z

PRESS	TEMP	SAL	DENSITY	SVA	SUM DYN
			ANOMALY		
1	11.157	33.405	25.506	246.7	0.000
5	11.158	33.409	25.509	246.5	0.010
10	11.158	33.409	25.509	246.6	0.022
15	11.025	33.396	25.523	245.4	0.034
20	10.207	33.367	25.642	234.1	0.046
25	9.574	33.457	25.818	217.4	0.058
30	9.402	33.524	25.899	209.9	0.068
35	9.268	33.613	25.390	201.3	0.079
40	9.298	33.634	26.001	200.3	0.089
45	9.242	33.671	26.039	196.8	0.099
50	9.106	33.680	26.068	194.1	0.108
60	8.999	33.794	26.174	184.2	0.127
70	9.132	33.887	26.226	179.5	0.146
80	9.148	33.913	26.244	178.0	0.163
90	8.977	33.943	26.294	173.4	0.181
100	8.708	33.968	26.356	167.7	0.198
120	8.405	34.060	26.475	156.7	0.231

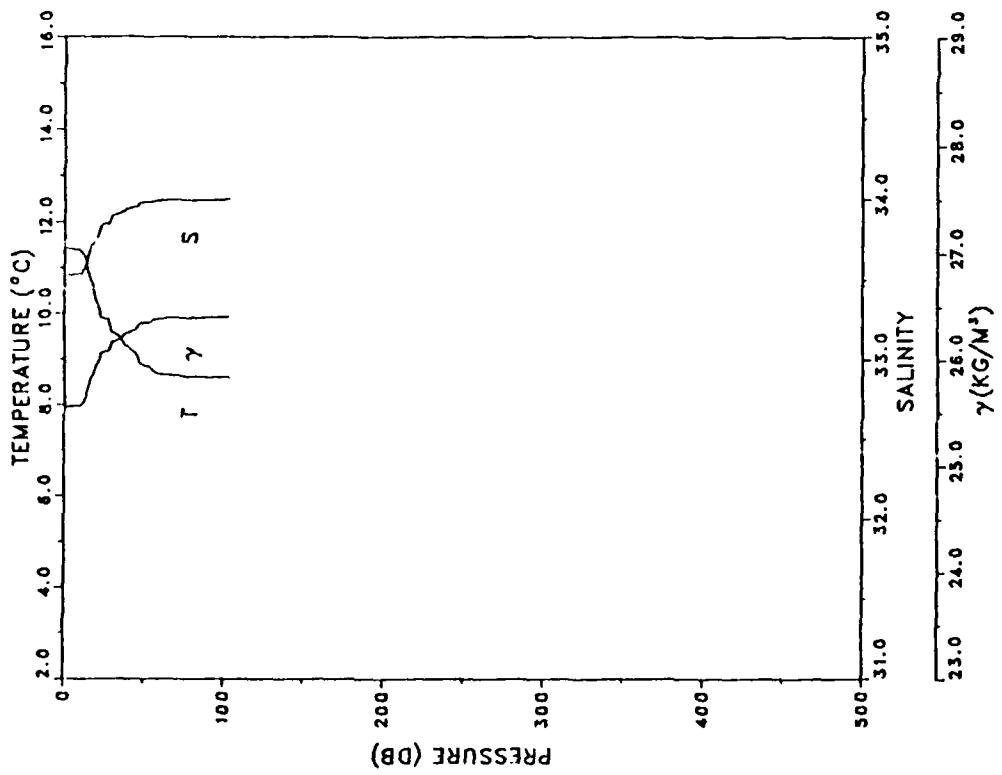


STATION: 4 LAT: 38 53.3 N LON: 123 50.6 W  
DATE: 6/16/87 TIME: 1406Z

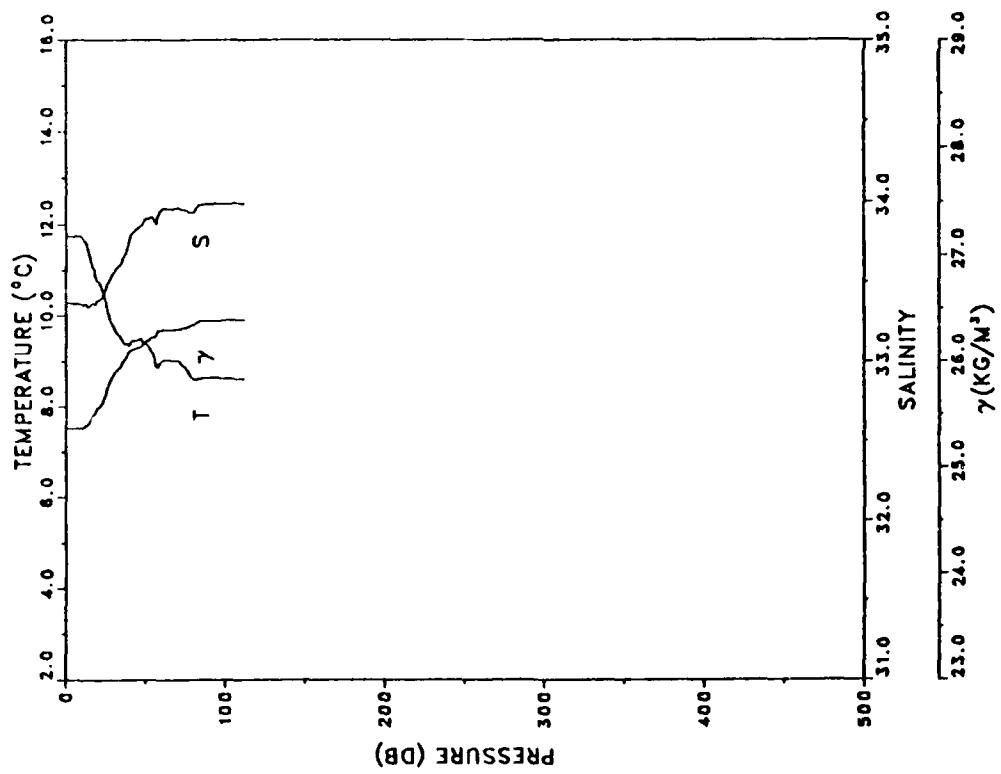
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.137	33.519	25.598	237.9	0.000
5	11.134	33.519	25.599	237.9	0.010
10	11.130	33.519	25.600	238.0	0.021
15	11.127	33.519	25.600	238.0	0.033
20	10.939	33.517	25.632	235.1	0.045
25	9.727	33.608	25.911	208.6	0.056
30	9.524	33.661	25.986	201.6	0.066
35	9.549	33.718	26.026	197.9	0.076
40	9.495	33.753	26.062	194.5	0.086
45	9.412	33.849	26.151	186.4	0.096
50	9.224	33.910	26.229	178.9	0.105
60	9.029	33.943	26.286	173.6	0.123
70	8.736	34.002	26.378	165.0	0.139
80	8.561	34.008	26.410	162.1	0.156
90	8.561	34.009	26.411	162.2	0.172
100	8.553	34.009	26.412	162.3	0.188
105	8.551	34.009	26.413	162.4	0.196



PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.425	33.523	25.549	242.6	0.000
5	11.407	33.524	25.553	242.3	0.010
10	11.370	33.531	25.565	241.2	0.022
15	10.940	33.541	25.728	225.8	0.033
20	10.314	33.744	25.918	207.9	0.044
25	9.890	33.844	26.068	193.7	0.054
30	9.572	33.896	26.162	184.9	0.064
35	9.474	33.912	26.190	182.3	0.073
40	9.263	33.936	26.243	177.3	0.082
45	9.114	33.949	26.277	174.2	0.091
50	8.858	33.978	26.341	168.3	0.099
60	8.662	33.990	26.381	164.6	0.116
70	8.641	33.992	26.385	164.3	0.132
80	8.616	33.994	26.391	164.0	0.149
90	8.606	33.994	26.392	164.0	0.165
100	8.602	33.995	26.394	164.1	0.182
104	8.595	33.997	26.396	163.9	0.188

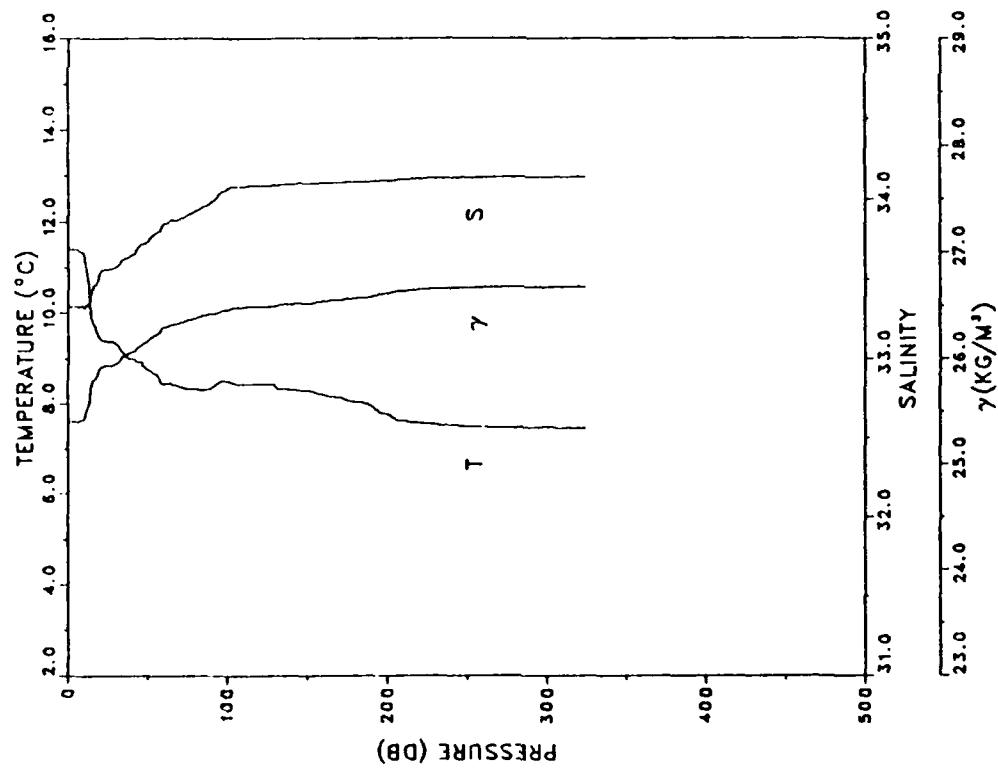


PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.738	33.364	25.358	259.8	0.000
5	11.746	33.363	25.366	260.1	0.010
10	11.742	33.359	25.363	260.4	0.023
15	11.347	33.347	25.427	254.5	0.036
20	10.769	33.380	25.555	242.4	0.049
25	10.326	33.443	25.681	230.5	0.061
30	9.754	33.552	25.863	213.3	0.072
35	9.492	33.616	25.956	204.5	0.082
40	9.342	33.749	26.084	192.4	0.092
45	9.468	33.833	26.129	188.3	0.102
50	9.373	33.888	26.188	182.8	0.111
60	8.969	33.938	26.292	173.1	0.129
70	9.010	33.959	26.302	172.3	0.146
80	8.590	33.931	26.345	168.3	0.163
90	8.627	33.984	26.381	165.1	0.180
100	8.613	33.985	26.384	165.0	0.196
112	8.591	33.986	26.388	164.8	0.216

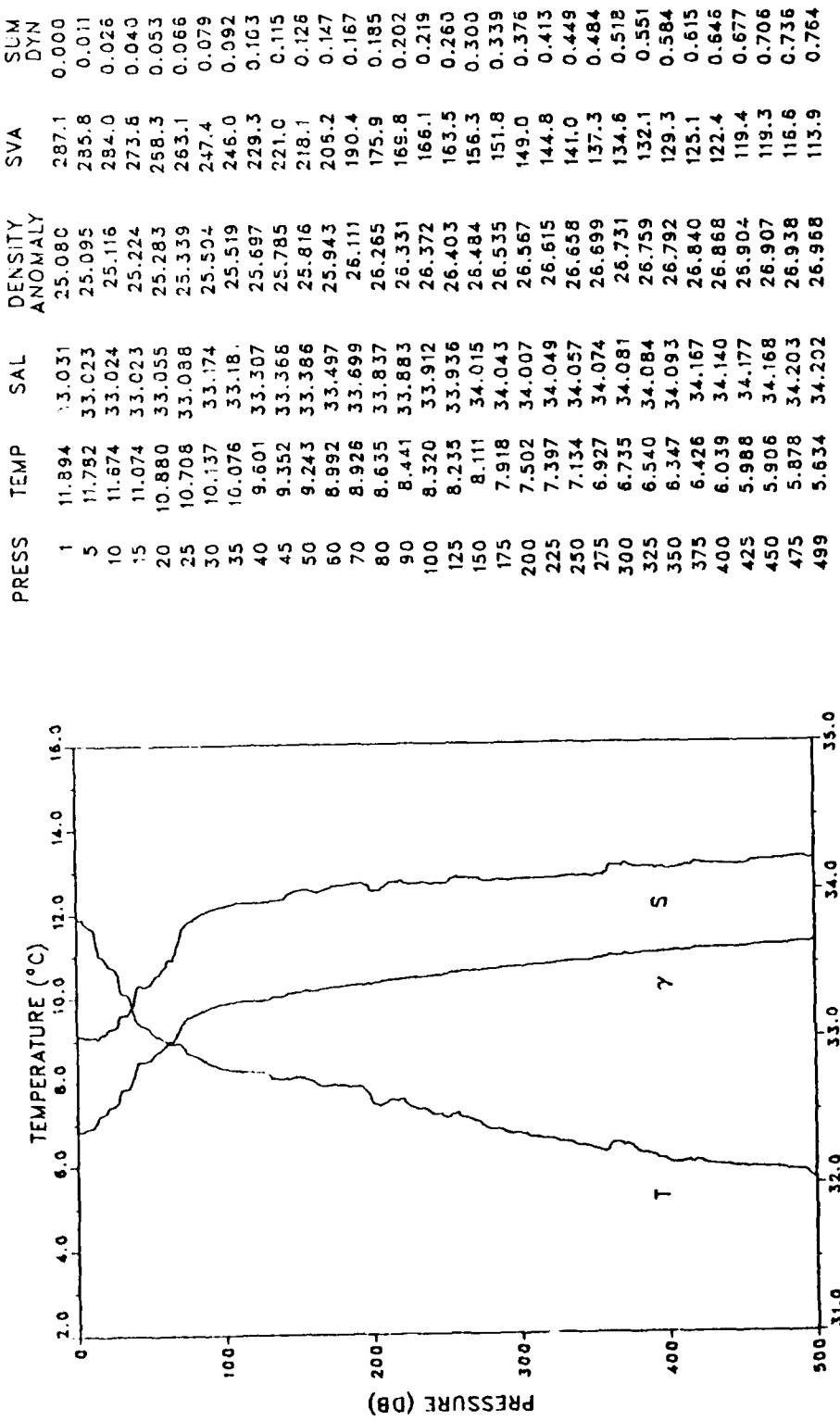


STATION: 7 LAT: 39 13.3 N LON: 123 51.8 W  
DATE: 6/16/87 TIME: 1811Z

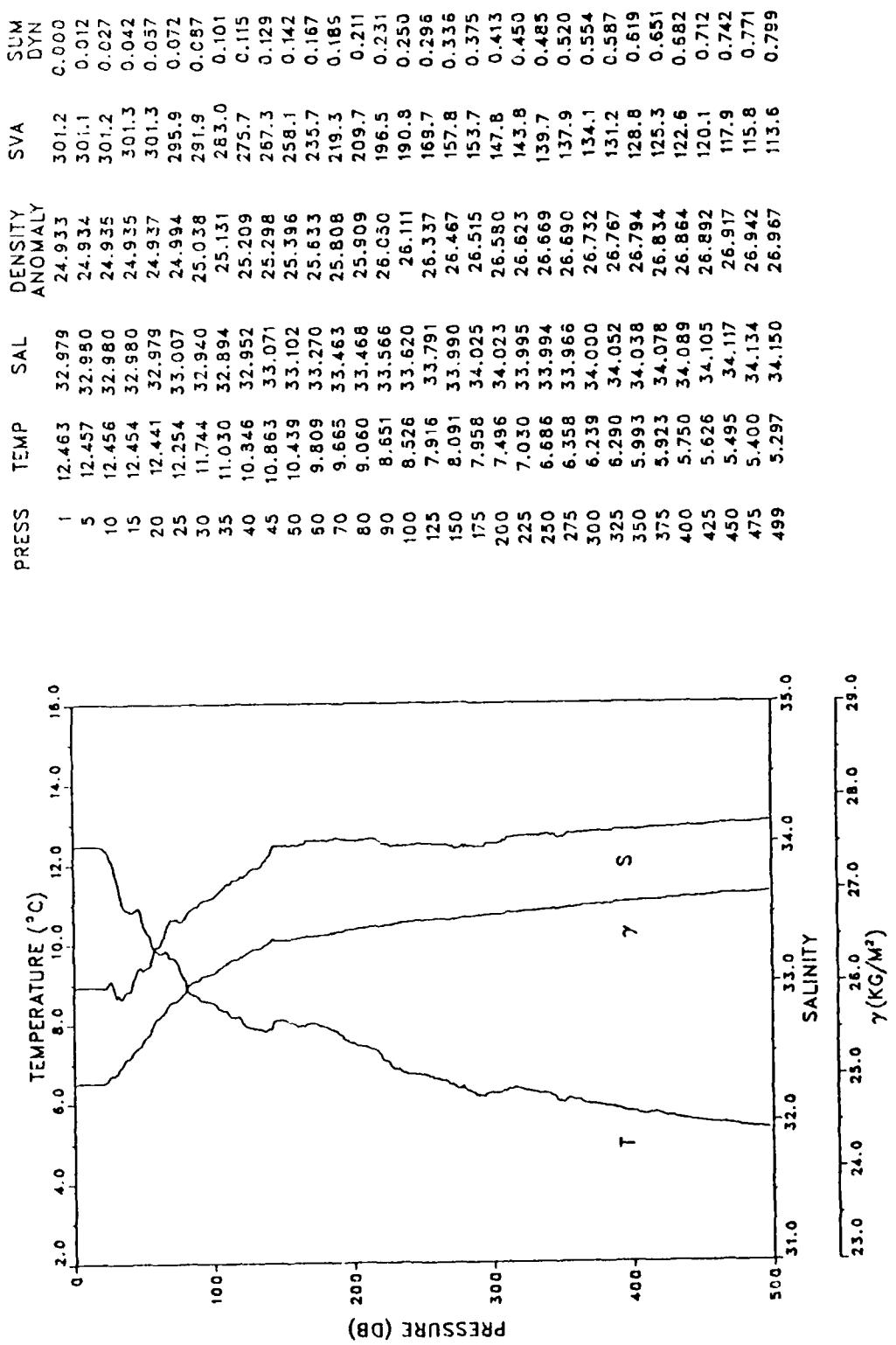
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUV DYN
1	11.393	33.328	25.403	255.4	0.000
5	11.396	33.327	25.402	255.6	0.010
10	11.322	33.328	25.416	255.4	0.023
15	9.879	33.406	25.728	225.8	0.035
20	9.434	33.543	25.908	208.8	0.046
25	9.378	33.562	25.932	206.6	0.056
30	9.322	33.577	25.953	204.7	0.067
35	9.105	33.623	26.024	198.1	0.077
40	8.985	33.649	26.063	194.4	0.087
45	8.925	33.703	26.115	189.6	0.096
50	8.730	33.733	26.169	184.6	0.105
60	8.430	33.840	26.299	172.4	0.123
70	8.374	33.872	26.332	169.3	0.140
80	8.326	33.924	26.380	165.0	0.157
90	8.338	33.978	26.421	161.3	0.173
100	8.494	34.060	26.461	157.6	0.189
125	8.425	34.082	26.439	155.4	0.228
150	8.287	34.096	26.521	152.8	0.267
175	8.071	34.105	26.561	149.4	0.305
200	7.767	34.113	26.612	144.9	0.342
225	7.548	34.128	26.655	141.1	0.377
250	7.486	34.133	26.668	140.2	0.413
275	7.460	34.137	26.675	140.0	0.448
300	7.478	34.135	26.671	140.8	0.483
324	7.444	34.137	26.677	140.5	0.516

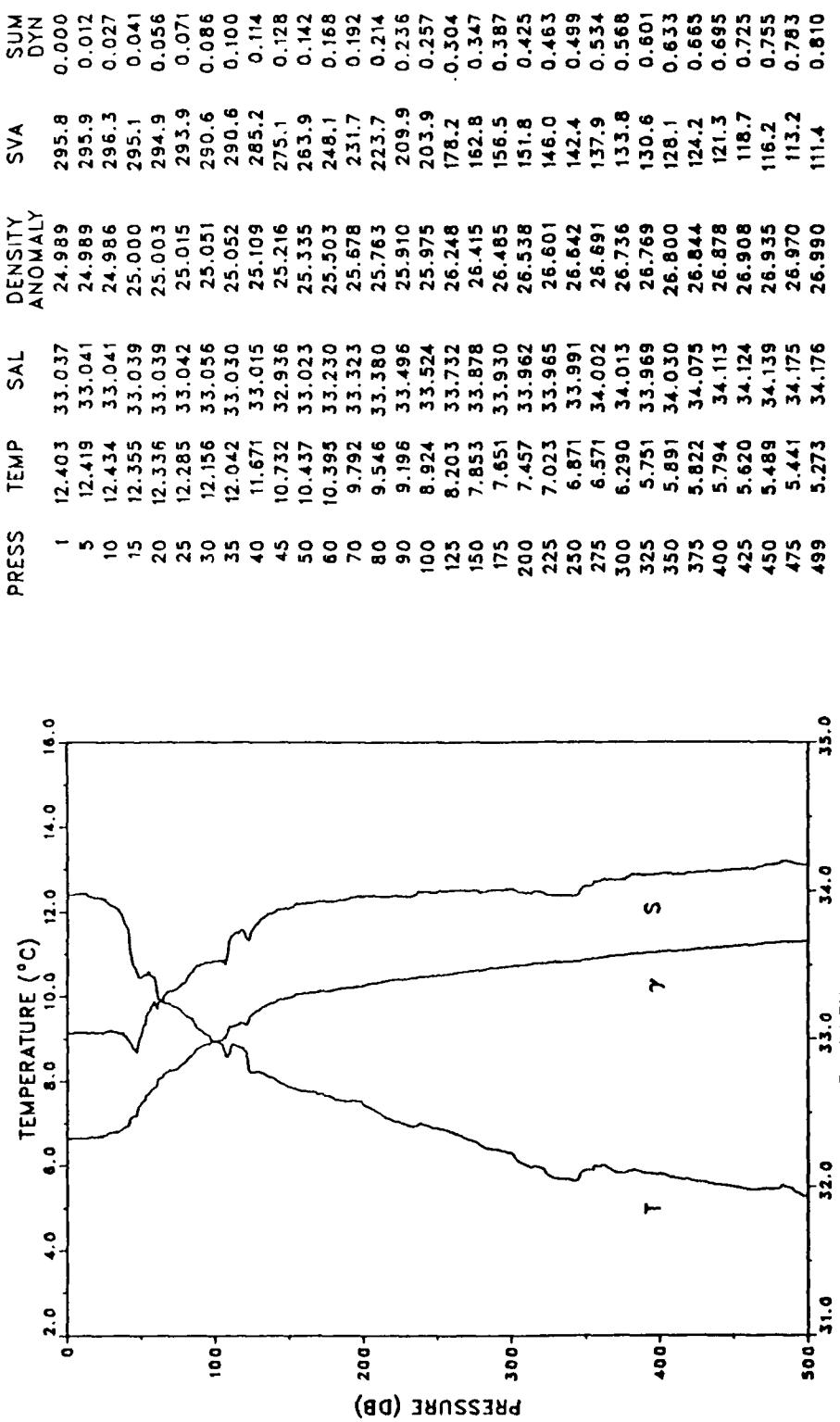


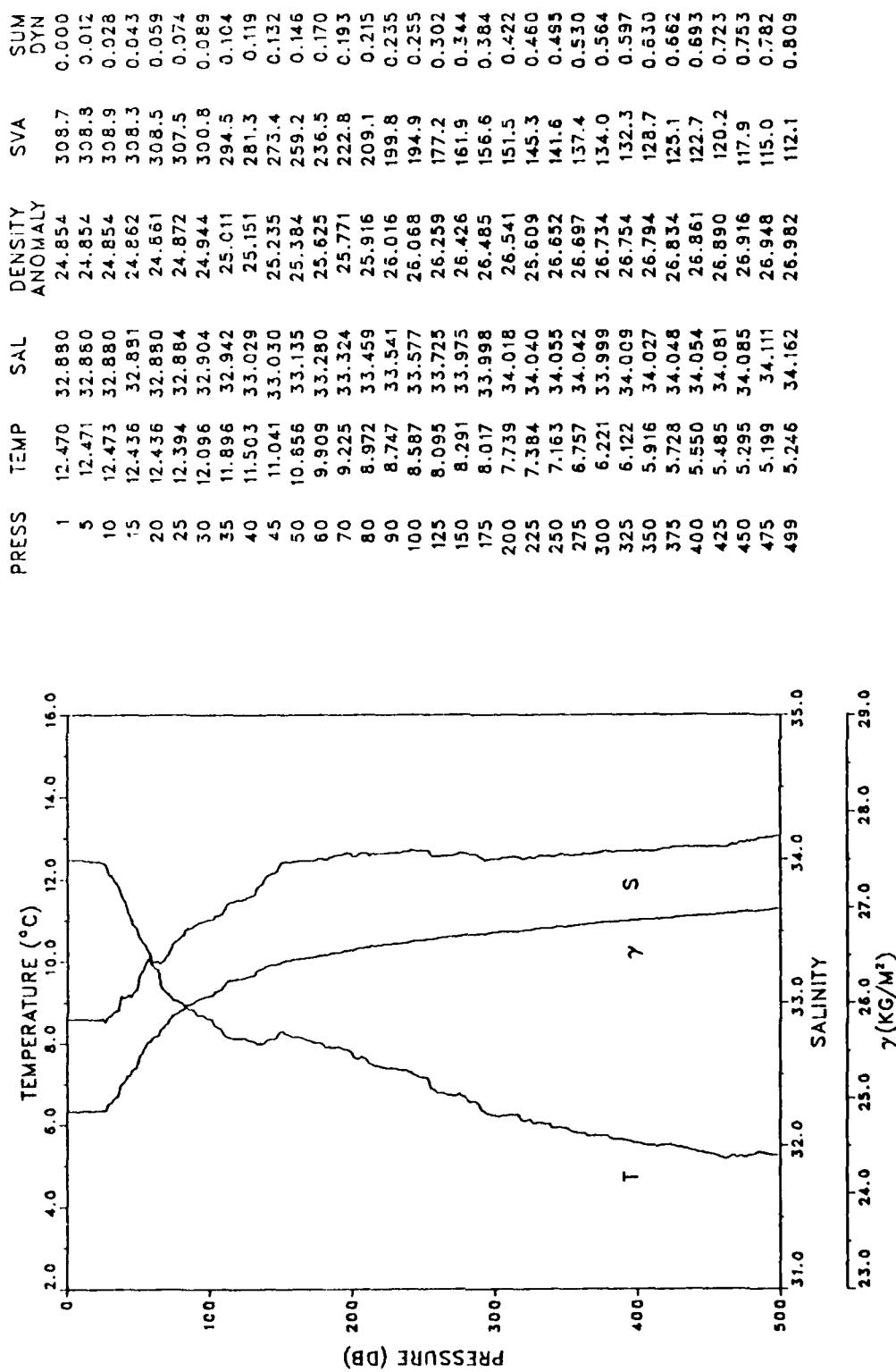
STATION: 8 LAT: 39 13.4 N LON: 123 57.8 W  
DATE: 6/16/87 TIME: 1906Z



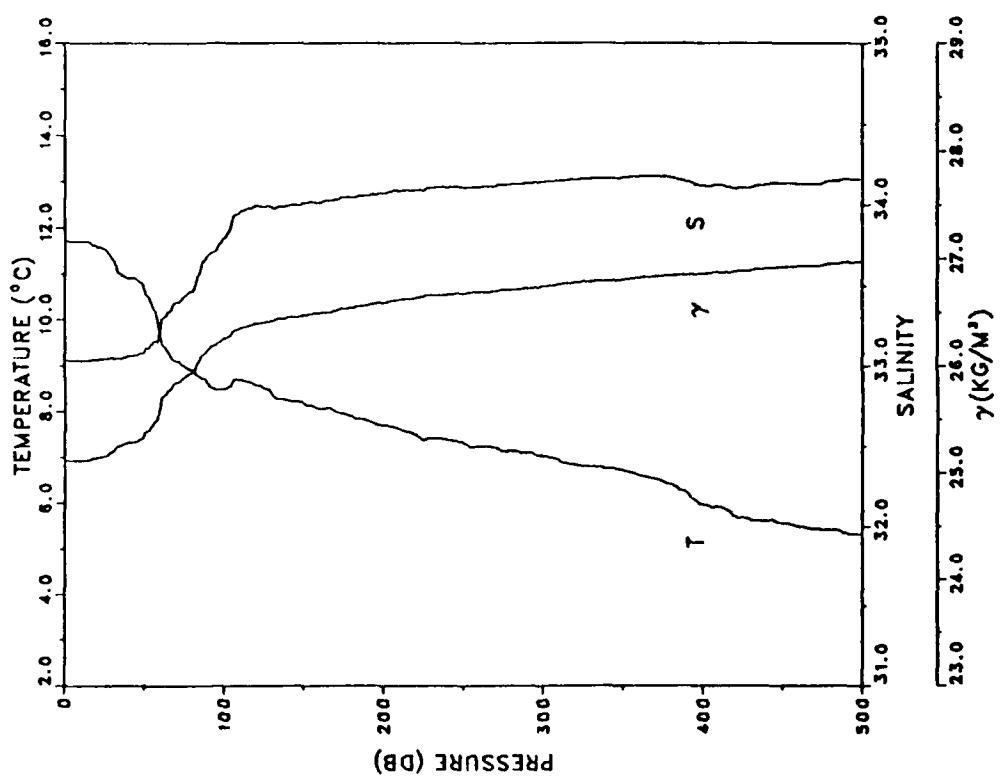
STATION: 9 LAT: 39 14.2 N LON: 124 4.3 W  
 DATE: 6/16/87 TIME: 2000Z



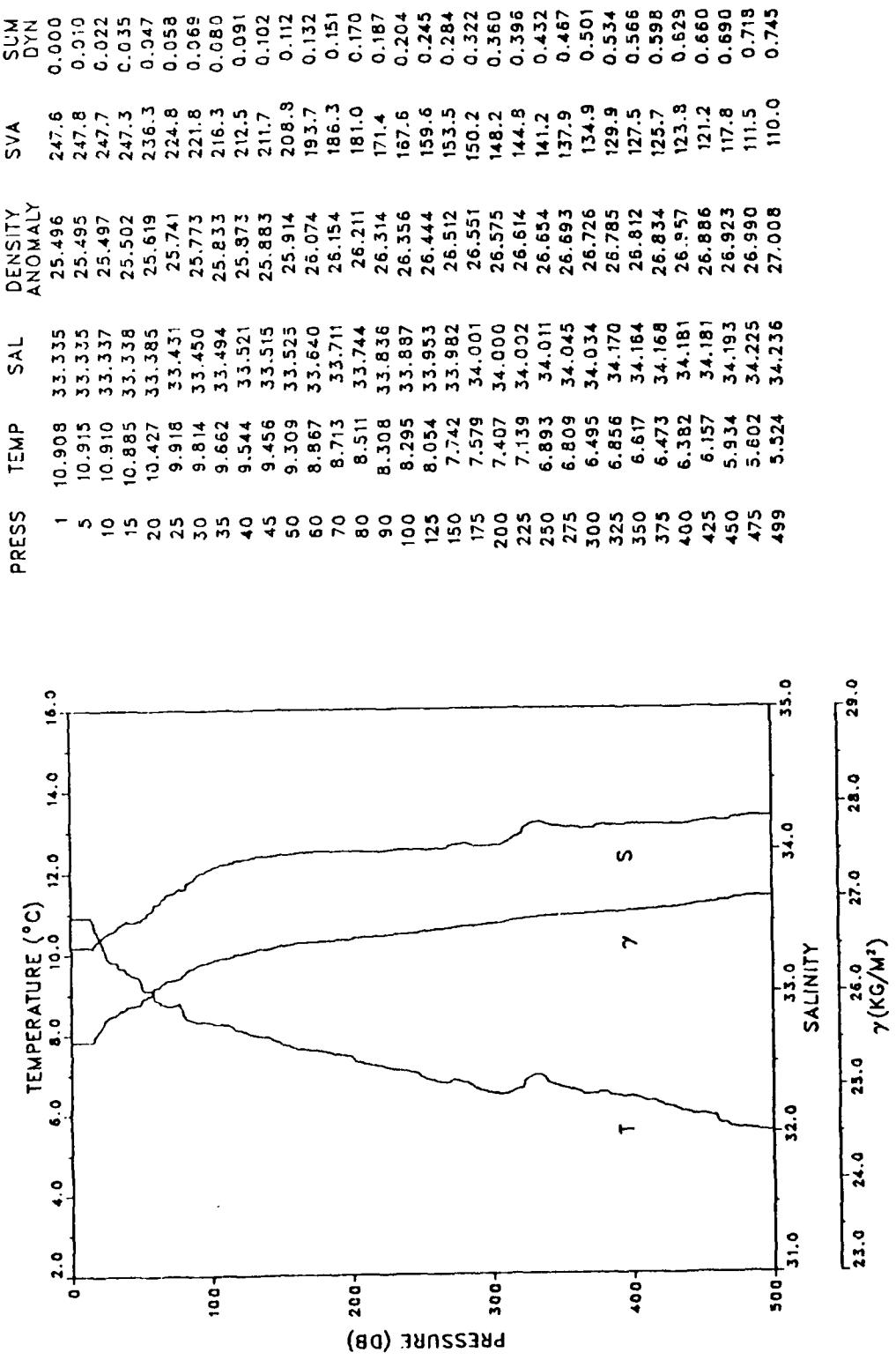




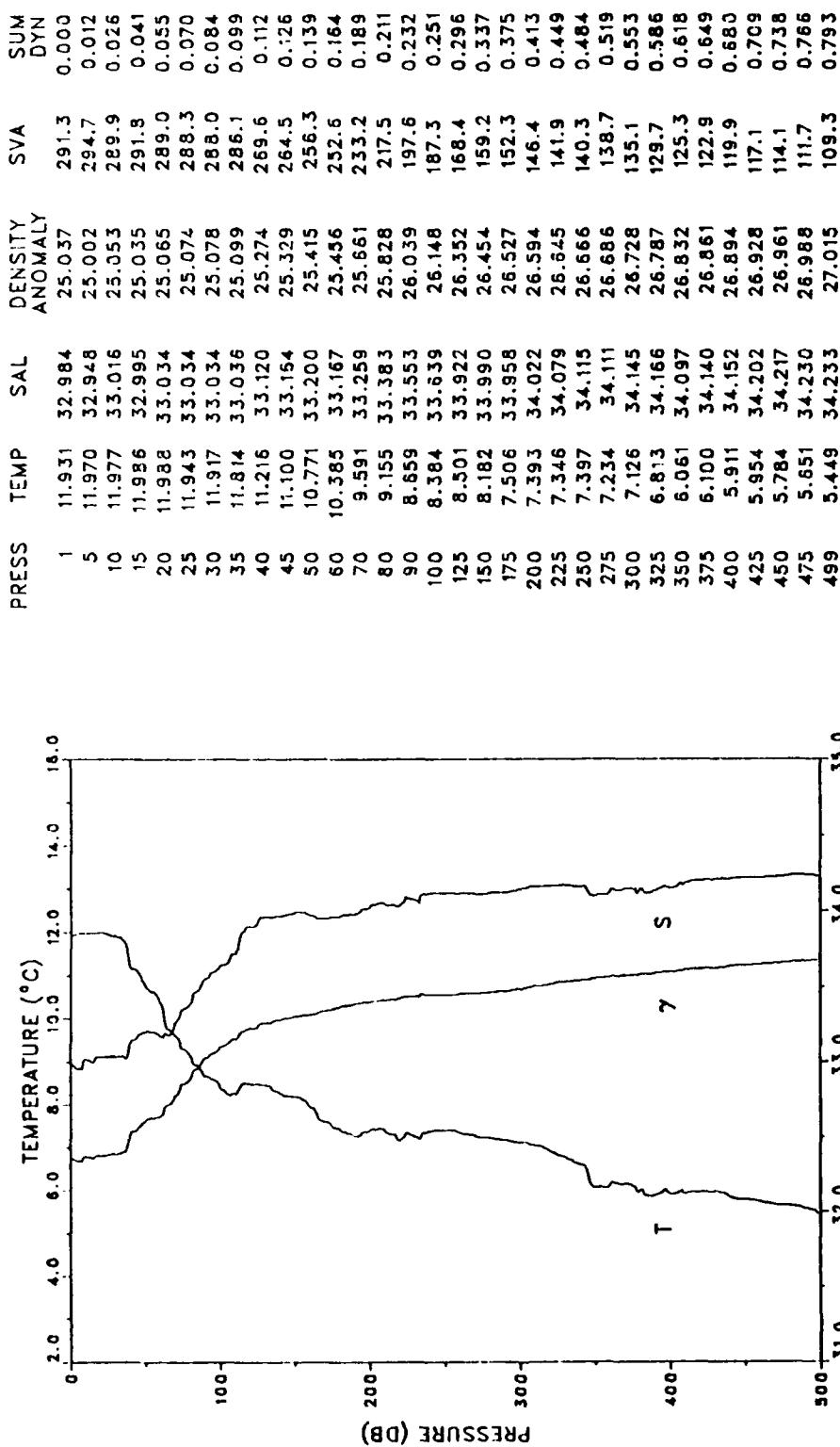
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
2	11.711	33.031	25.114	283.9	0.000
5	11.709	33.030	25.114	284.0	0.009
10	11.707	33.030	25.114	284.1	0.023
15	11.690	33.032	25.119	283.8	0.037
20	11.593	33.039	25.142	281.7	0.051
25	11.526	33.040	25.155	280.5	0.065
30	11.312	33.051	25.203	276.1	0.079
35	10.996	33.043	25.253	271.4	0.093
40	10.906	33.063	25.284	268.5	0.106
45	10.896	33.067	25.289	268.2	0.120
50	10.646	33.092	25.353	262.2	0.133
60	9.665	33.224	25.621	236.8	0.158
70	9.099	33.394	25.845	215.6	0.180
80	8.908	33.463	25.929	207.8	0.202
90	8.597	33.690	26.155	186.5	0.221
100	8.490	33.794	26.253	177.4	0.240
125	8.503	33.989	26.404	163.5	0.282
150	8.162	34.011	26.473	157.3	0.322
175	7.946	34.047	26.534	151.9	0.361
200	7.712	34.073	26.588	147.1	0.398
225	7.375	34.086	26.647	141.8	0.434
250	7.311	34.106	26.671	139.8	0.470
275	7.135	34.125	26.711	136.3	0.504
300	7.018	34.142	26.741	133.9	0.538
325	6.815	34.159	26.782	130.2	0.571
350	6.715	34.169	26.803	128.5	0.603
375	6.479	34.177	26.841	125.1	0.635
400	5.969	34.120	26.861	123.0	0.666
425	5.693	34.108	26.886	120.8	0.696
450	5.563	34.133	26.922	117.6	0.726
475	5.425	34.136	26.941	115.9	0.755
499	5.326	34.160	26.971	113.2	0.783



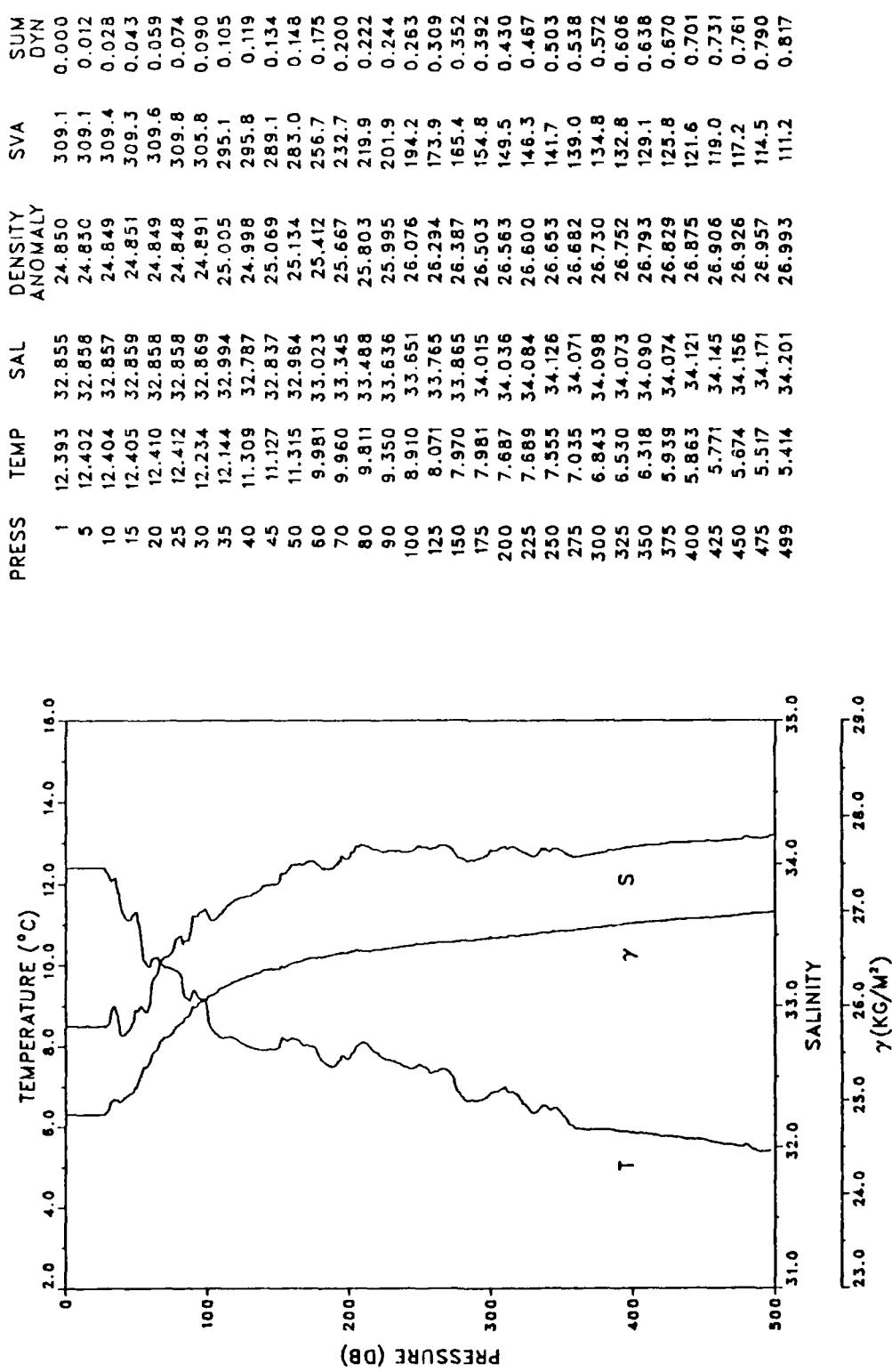
STATION: 13 LAT: 39 3.1 N LON: 124 7.3 W  
DATE: 6/17/87 TIME: 0141Z

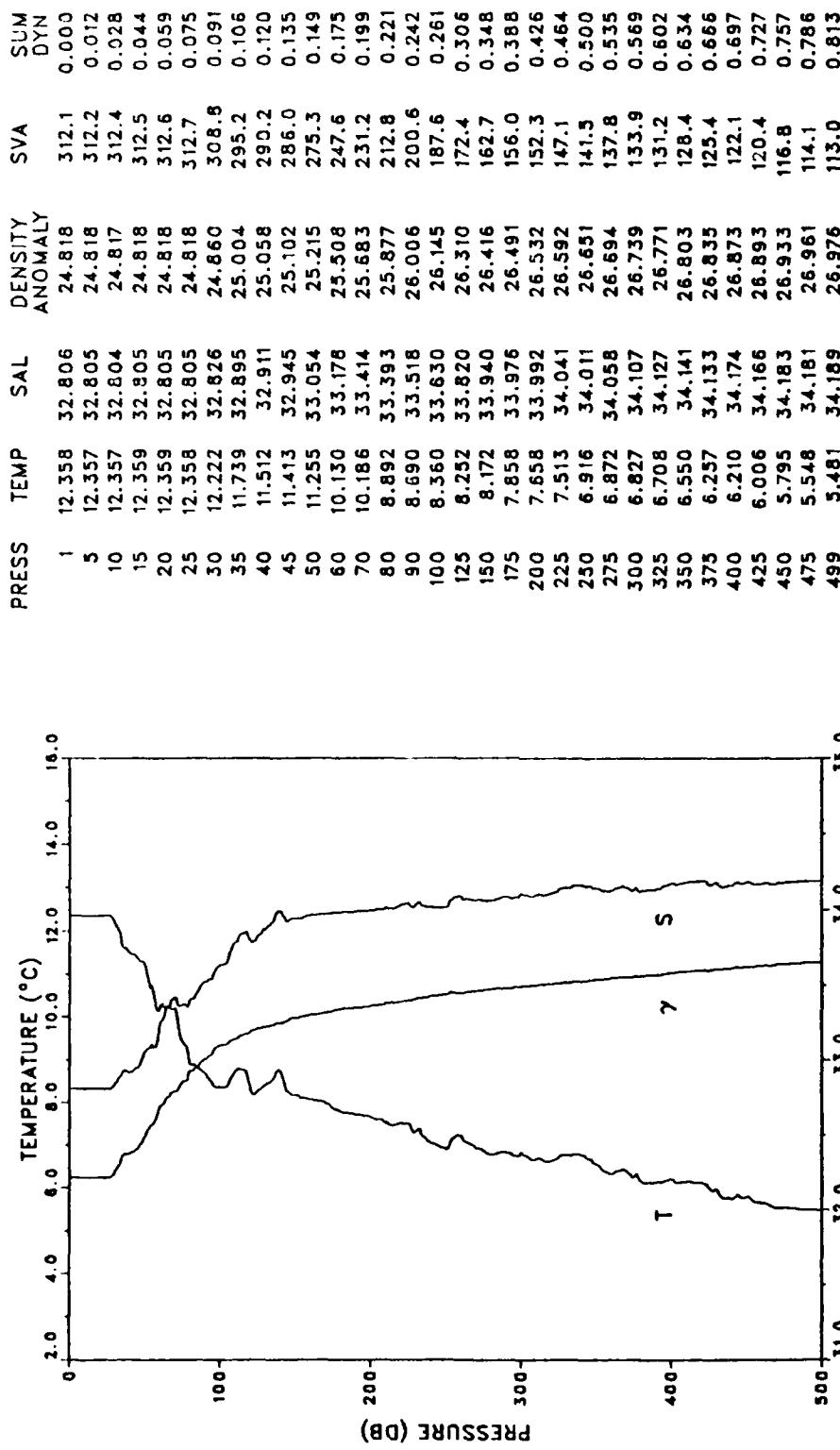


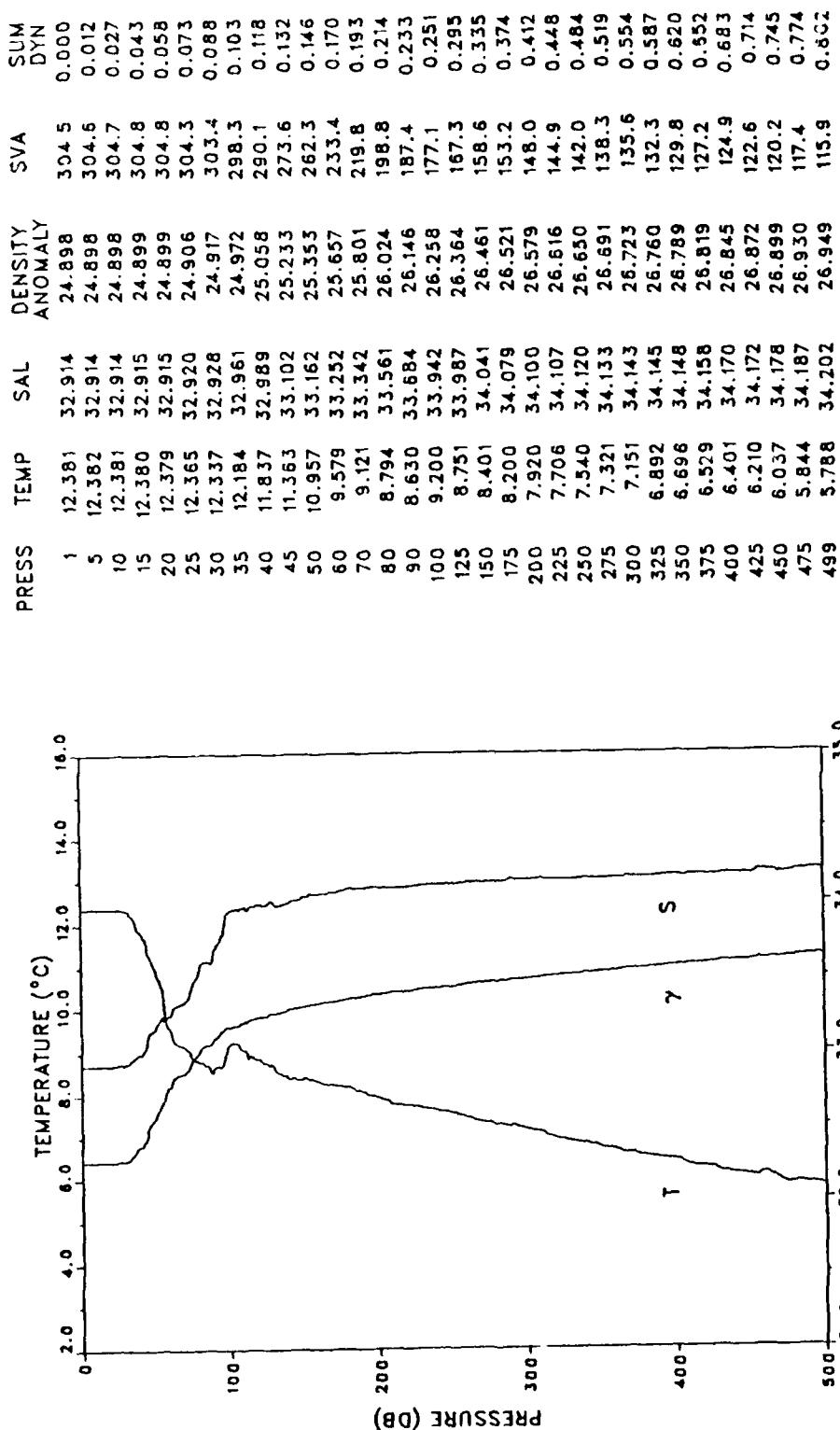
STATION: 14 LAT: 38 58.1 N LON: 124 2.3 W  
DATE: 6/17/87 TIME: 0300Z



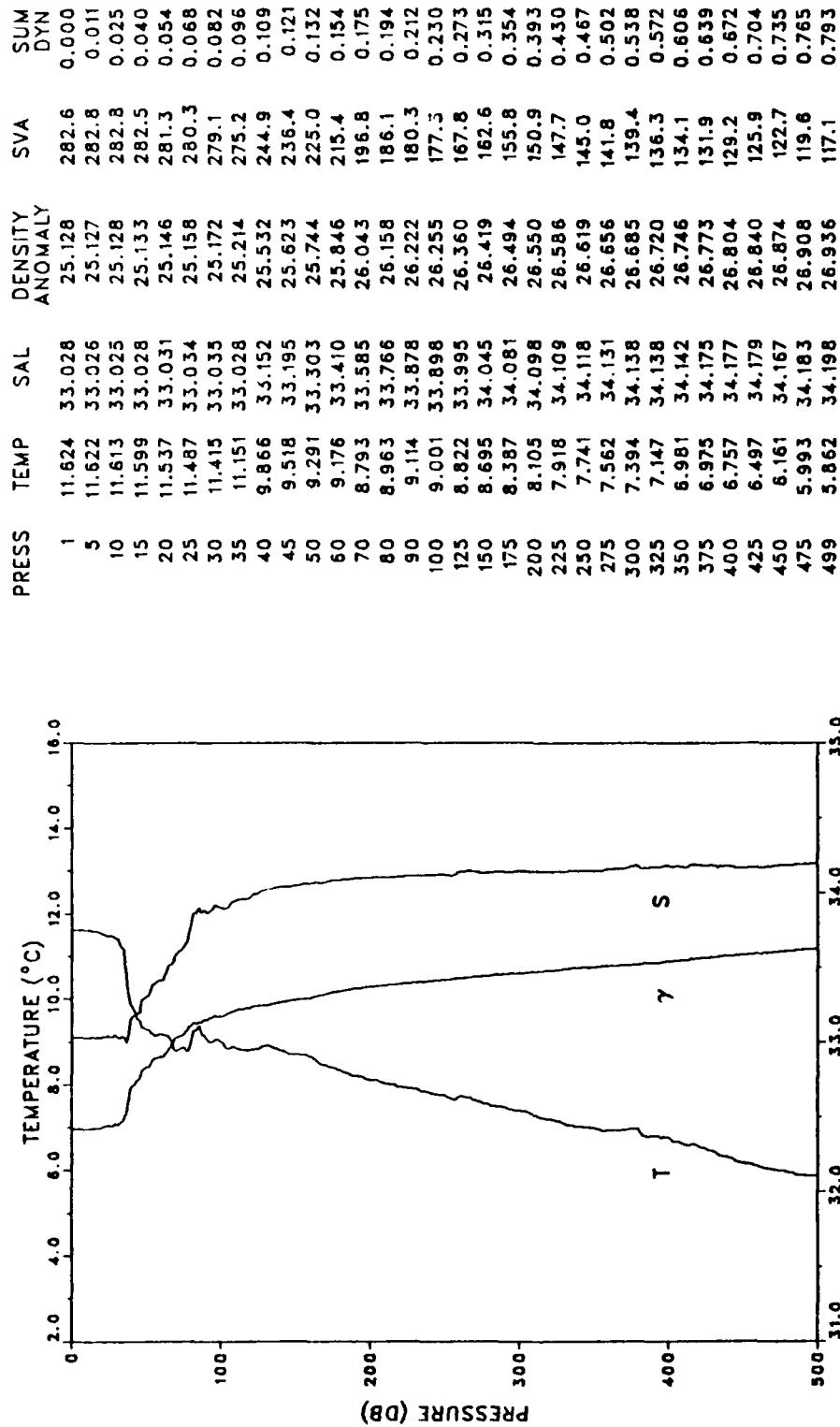
STATION: 15 LAT: 38 54.9 N LON: 124 11.9 W  
DATE: 6/17/87 TIME: 0530Z

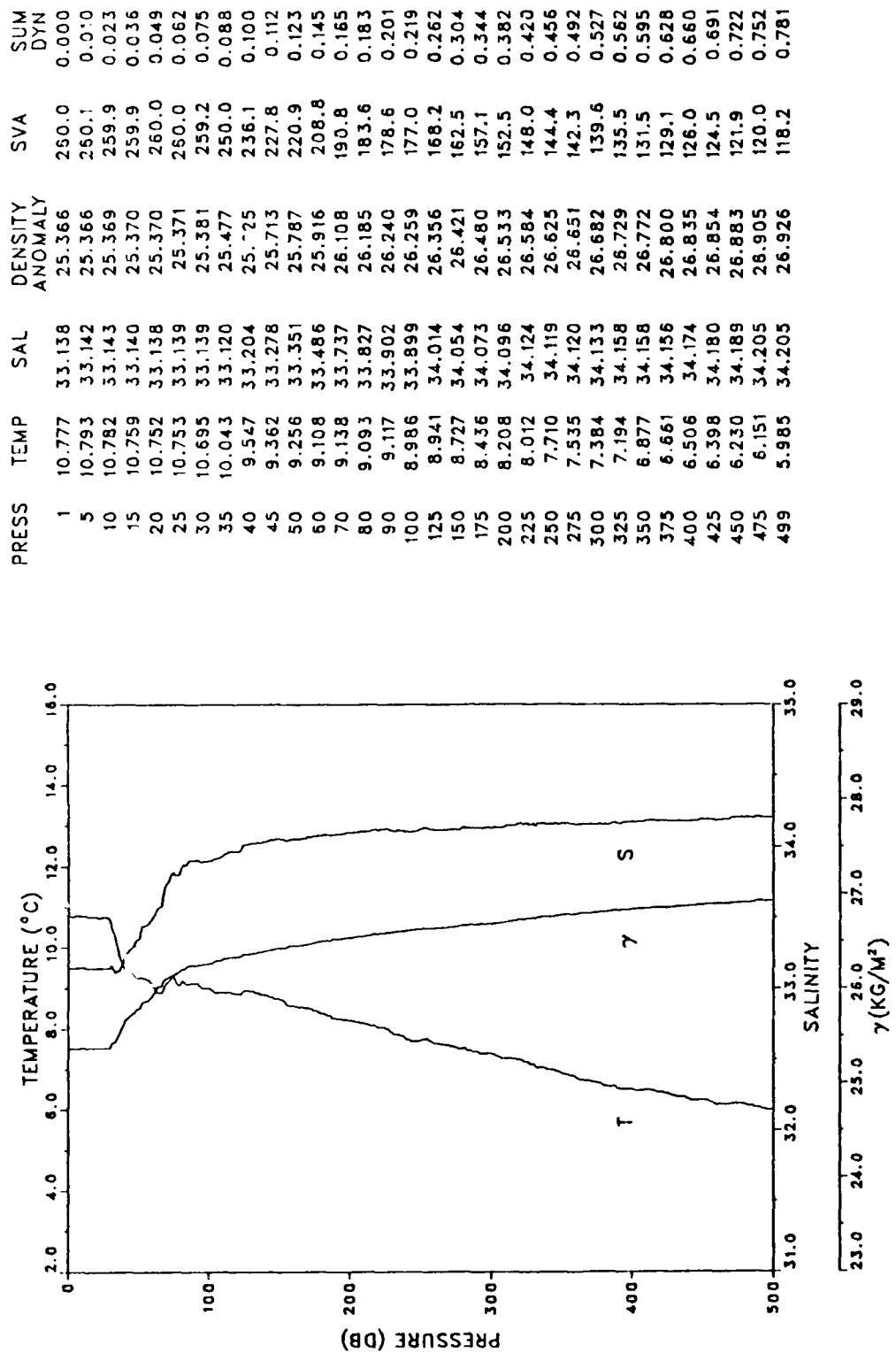




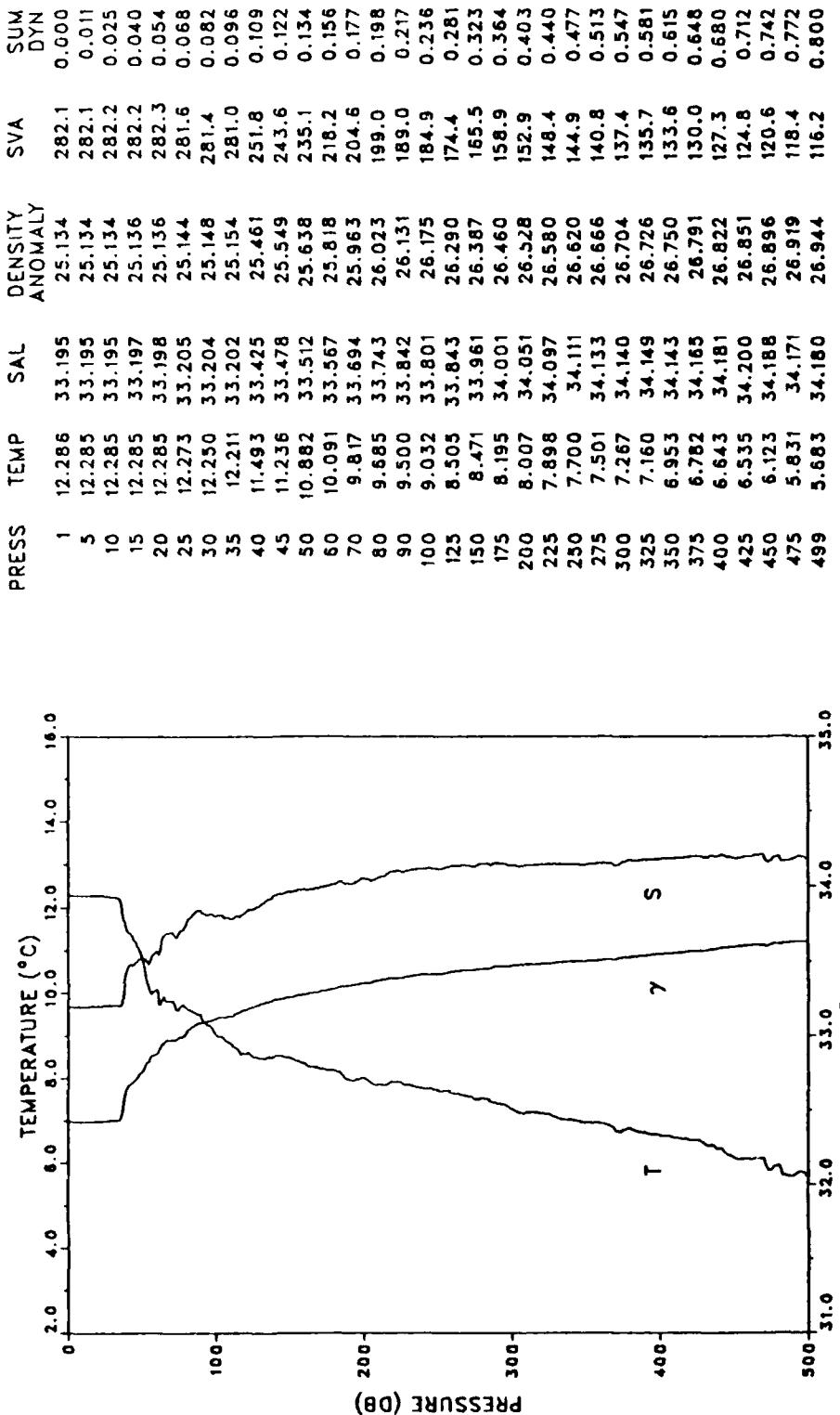


STATION:18 LAT: 38 41.9 N LON: 124 11.8 W  
DATE: 6/17/87 TIME: 1000Z

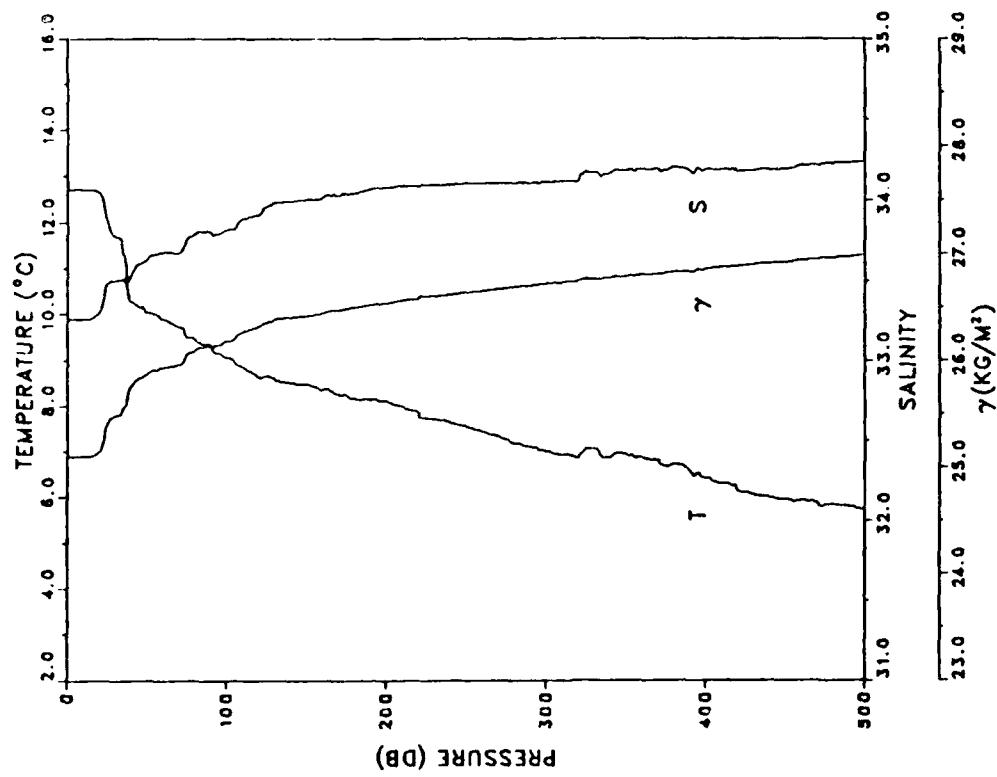




STATION: 20 LAT: 38 31.7 N LON: 124 1.2 W  
 DATE: 6/17/87 TIME: 1300Z

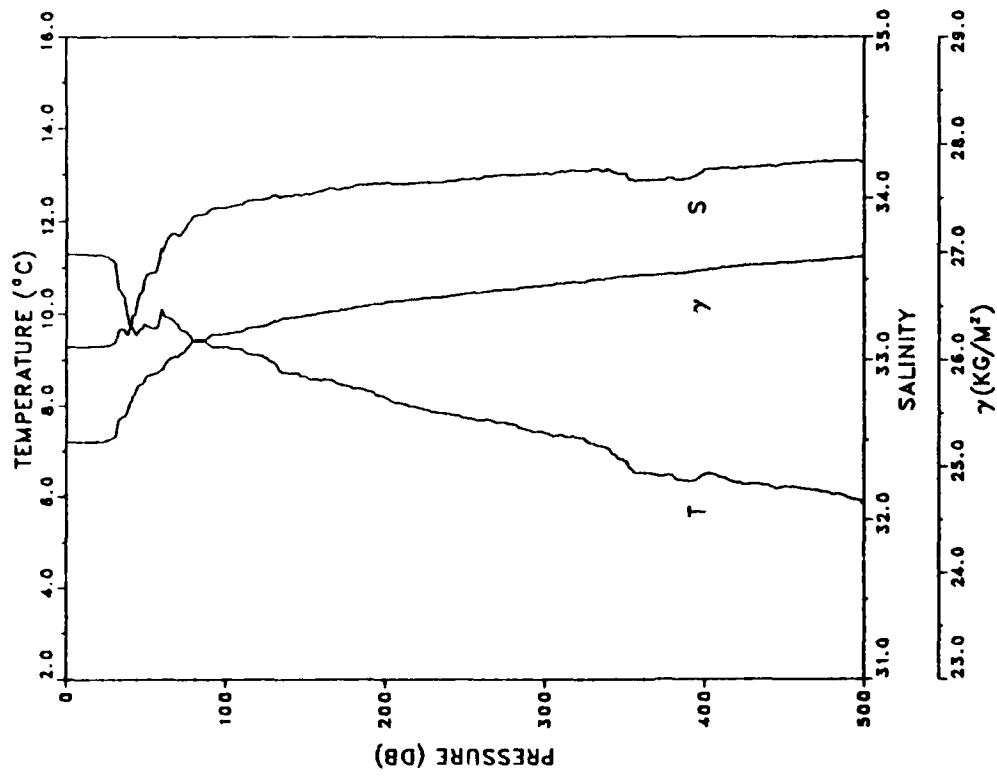


PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.724	33.259	25.099	285.4	0.000
5	12.725	33.257	25.097	285.6	0.011
10	12.721	33.260	25.100	285.5	0.026
15	12.721	33.261	25.101	285.5	0.040
20	12.647	33.503	25.148	281.2	0.054
25	12.050	33.477	25.397	257.5	0.068
30	11.699	33.500	25.481	249.7	0.080
35	11.342	33.508	25.553	243.0	0.093
40	10.275	33.533	25.760	223.3	0.104
45	10.153	33.600	25.833	216.4	0.115
50	10.055	33.628	25.872	212.9	0.126
60	9.897	33.673	25.933	207.2	0.147
70	9.734	33.672	25.960	204.9	0.168
80	9.477	33.786	26.091	192.6	0.187
90	9.337	33.803	26.127	189.3	0.207
100	9.058	33.813	26.180	184.4	0.225
125	8.662	33.959	26.356	168.1	0.269
150	8.472	34.002	26.419	162.5	0.311
175	8.236	34.039	26.484	156.7	0.351
200	8.107	34.076	26.532	152.5	0.389
225	7.731	34.090	26.599	146.5	0.427
250	7.545	34.100	26.634	143.5	0.463
275	7.260	34.102	26.676	139.8	0.498
300	7.004	34.106	26.714	136.3	0.533
325	7.065	34.173	26.759	132.6	0.566
350	6.928	34.178	26.781	130.7	0.599
375	6.870	34.180	26.818	127.4	0.632
400	6.418	34.187	26.857	123.9	0.663
425	6.104	34.178	26.890	120.8	0.694
450	5.951	34.191	26.920	118.2	0.723
475	5.835	34.224	26.960	114.5	0.752
499	5.735	34.233	26.980	112.9	0.780

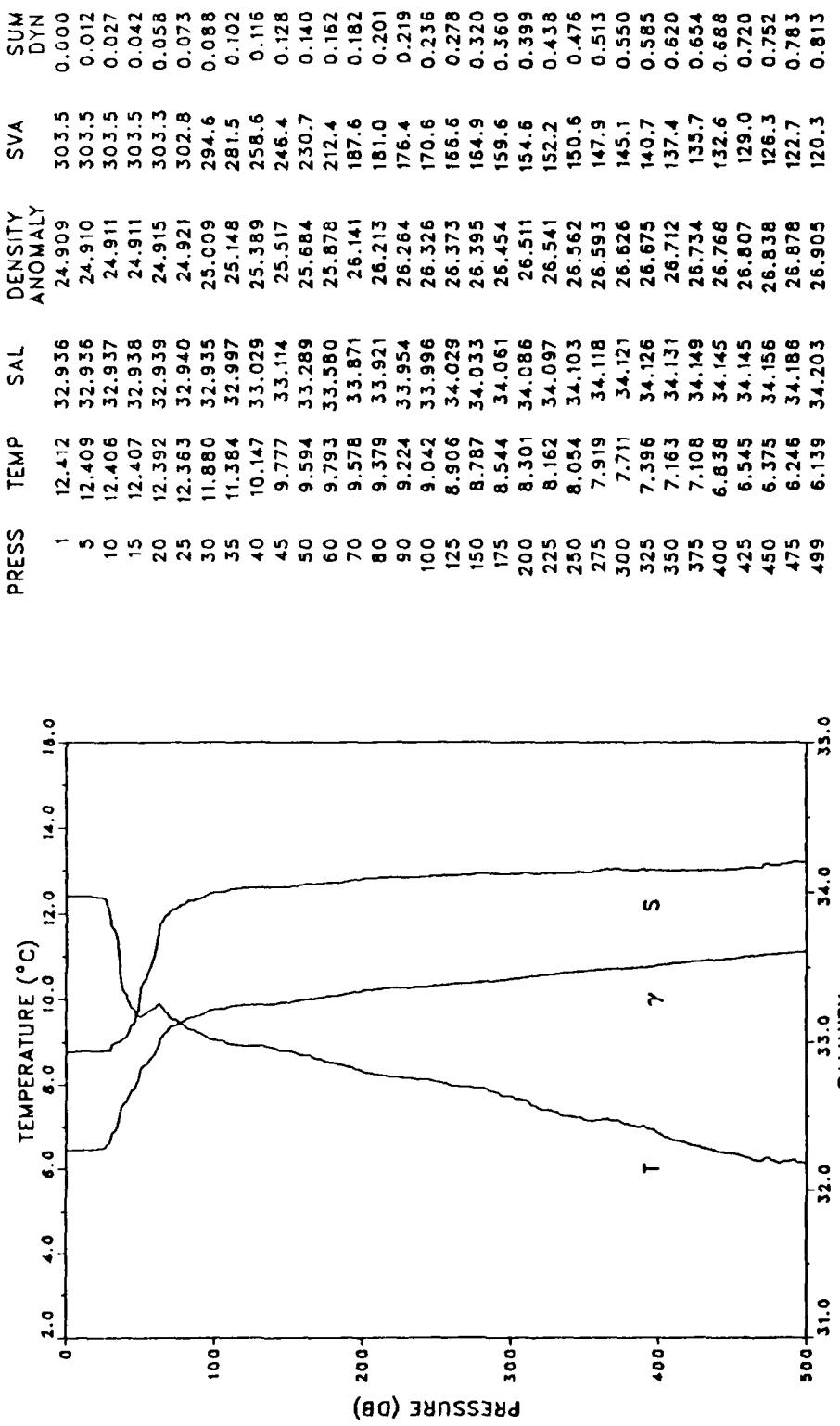


STATION: 22 LAT: 38 20.3 N LON: 123 59.2 W  
DATE: 6/18/87 TIME: 0100Z

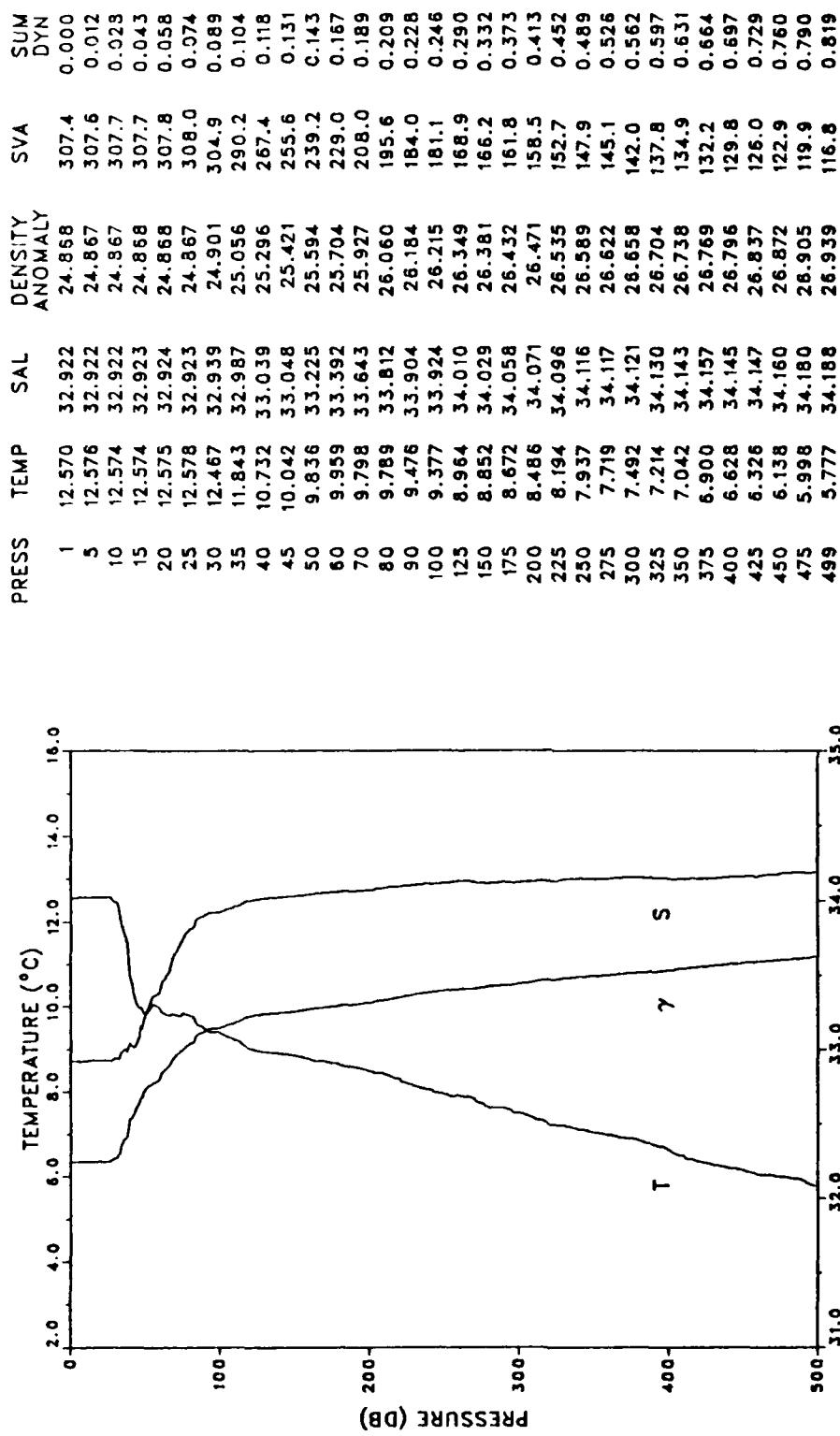
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.286	33.082	25.231	272.8	0.000
5	11.285	33.082	25.232	272.8	0.011
10	11.294	33.082	25.230	273.1	0.025
15	11.281	33.085	25.235	272.8	0.038
20	11.278	33.085	25.235	272.8	0.052
25	11.248	33.090	25.245	272.0	0.065
30	11.142	33.104	25.274	269.3	0.079
35	10.453	33.193	25.465	251.3	0.092
40	9.748	33.195	25.585	239.9	0.104
45	9.582	33.355	25.737	225.5	0.116
50	9.753	33.515	25.834	216.4	0.127
60	10.098	33.687	25.911	209.4	0.148
70	9.761	33.770	26.032	198.0	0.169
80	9.412	33.891	26.184	183.8	0.188
90	9.322	33.925	26.225	180.0	0.206
100	9.281	33.940	26.243	178.5	0.224
125	9.050	33.993	26.322	171.4	0.268
150	8.639	34.027	26.413	163.1	0.309
175	8.439	34.060	26.470	158.2	0.350
200	8.166	34.094	26.538	152.0	0.388
225	7.910	34.095	26.577	148.7	0.426
250	7.734	34.117	26.620	144.9	0.463
275	7.631	34.144	26.656	141.9	0.498
300	7.405	34.155	26.697	138.2	0.533
325	7.265	34.170	26.728	135.6	0.568
350	6.782	34.146	26.776	131.1	0.601
375	6.447	34.108	26.790	129.8	0.634
400	6.496	34.174	26.836	125.9	0.666
425	6.262	34.186	26.876	122.2	0.697
450	6.209	34.209	26.901	120.2	0.727
475	6.111	34.226	26.927	117.9	0.757
499	5.851	34.217	26.953	113.5	0.785



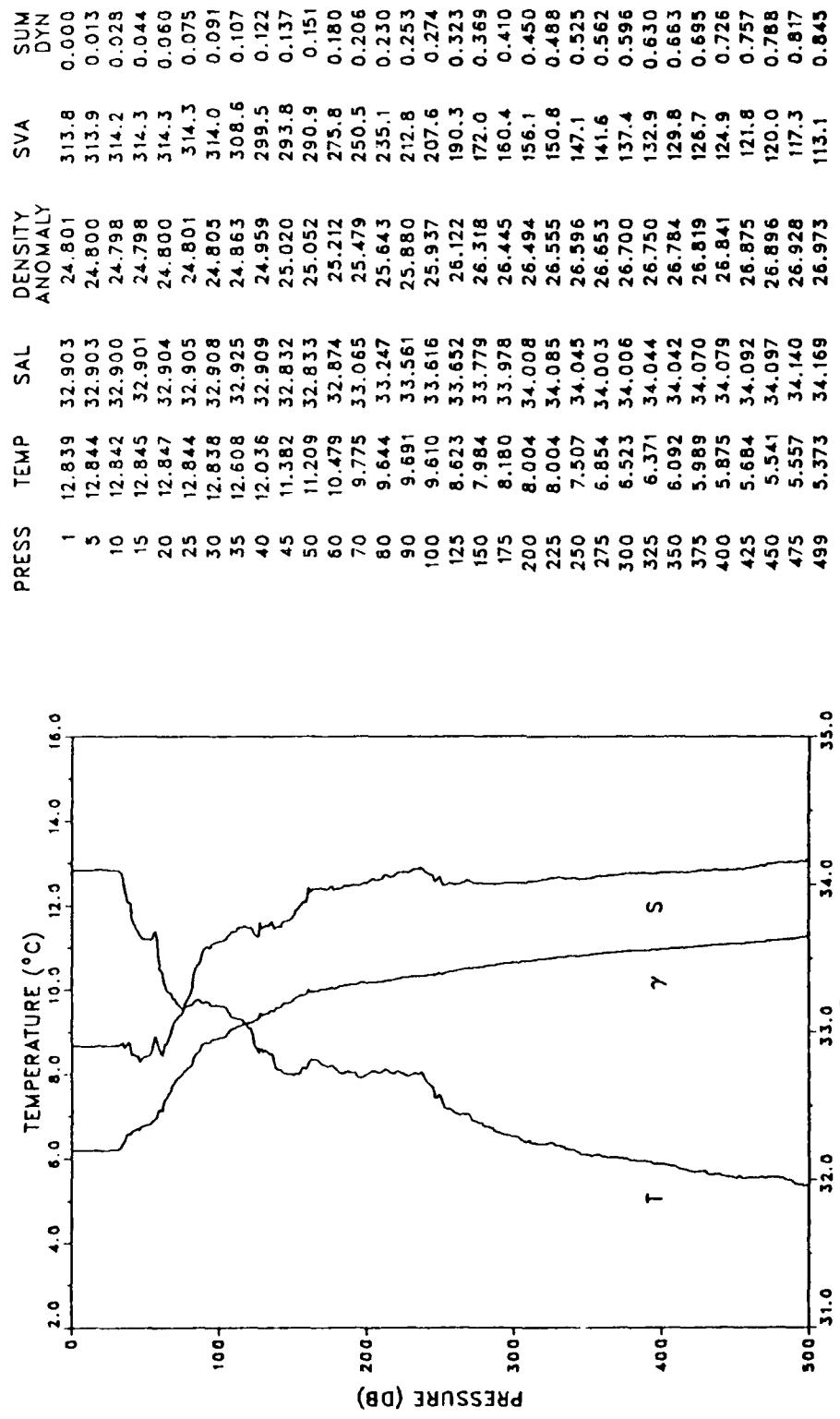
STATION: 23 LAT: 38 25.4 N LON: 124 7.3 W  
DATE: 6/18/87 TIME: 0300Z



STATION: 24 LAT: 38 31.3 N LON: 124 14.3 W  
DATE: 6/18/87 TIME: 0500Z

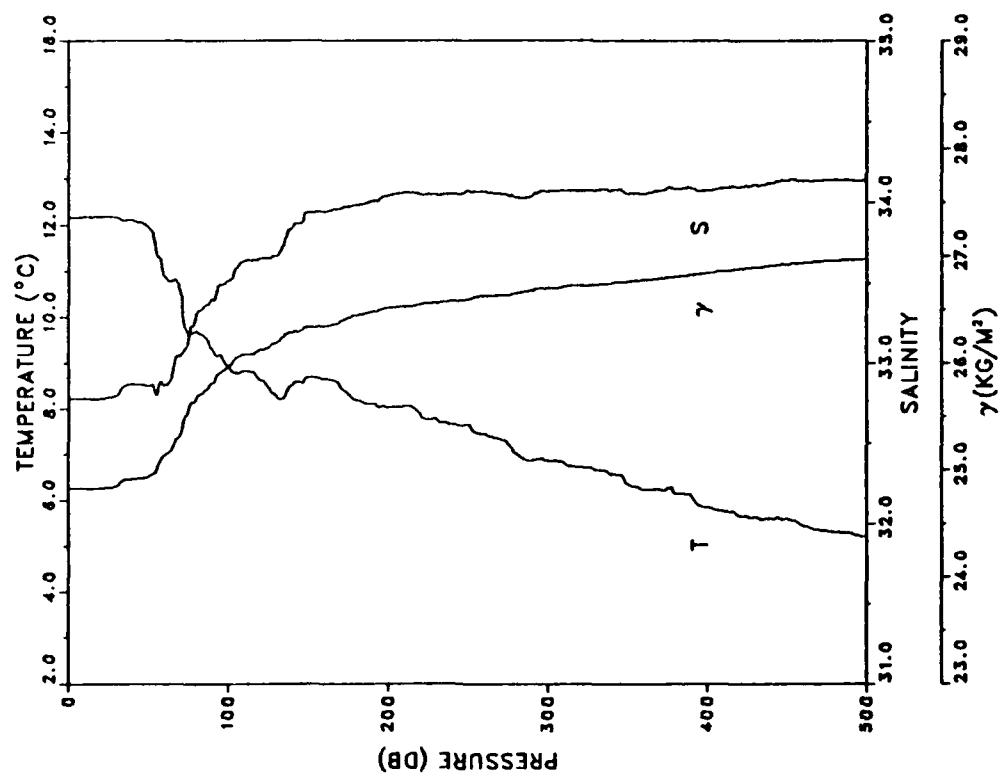


STATION: 25 LAT: 38 36.1 N LON: 124 21.2 W  
DATE: 6/18/87 TIME: 0700Z



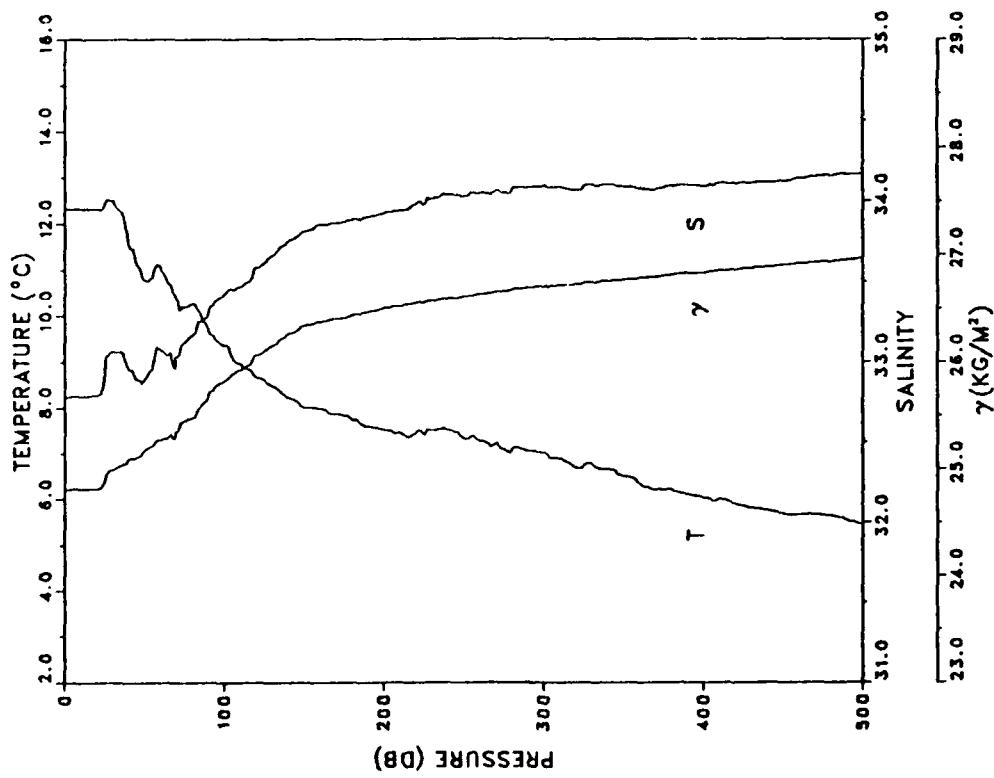
STATION: 27 LAT: 38 47.3 N LON: 124 38.0 W  
DATE: 6/18/87 TIME: 1100Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM. DYN.
1	12.174	32.776	24.830	311.0	0.000
5	12.175	32.775	24.829	311.2	0.012
10	12.177	32.775	24.829	311.3	0.028
15	12.176	32.773	24.827	311.5	0.044
20	12.177	32.775	24.829	311.5	0.059
25	12.180	32.785	24.836	311.0	0.075
30	12.172	32.797	24.847	310.0	0.090
35	12.091	32.855	24.907	304.4	0.106
40	12.108	32.866	24.912	304.0	0.121
45	12.059	32.866	24.922	303.2	0.136
50	11.953	32.856	24.934	302.2	0.151
60	10.897	32.858	25.126	284.0	0.180
70	10.622	33.039	25.315	266.2	0.208
80	9.696	33.278	25.658	233.7	0.233
90	9.325	33.398	25.812	219.2	0.256
100	8.899	33.513	25.970	204.3	0.277
125	8.458	33.651	26.146	187.9	0.326
150	8.689	33.933	26.332	170.9	0.371
175	8.310	33.972	26.420	162.8	0.412
200	8.022	34.039	26.516	154.0	0.452
225	7.763	34.046	26.560	150.2	0.490
250	7.644	34.067	26.593	147.4	0.527
275	7.216	34.035	26.629	144.1	0.564
300	6.860	34.064	26.701	137.5	0.599
325	6.714	34.073	26.727	135.2	0.633
350	6.348	34.051	26.759	132.4	0.666
375	6.256	34.087	26.799	128.9	0.699
400	5.850	34.074	26.840	124.9	0.731
425	5.645	34.099	26.885	120.8	0.761
450	5.587	34.133	26.919	117.9	0.791
475	5.328	34.137	26.953	114.7	0.820
499	5.206	34.134	26.965	113.7	0.848

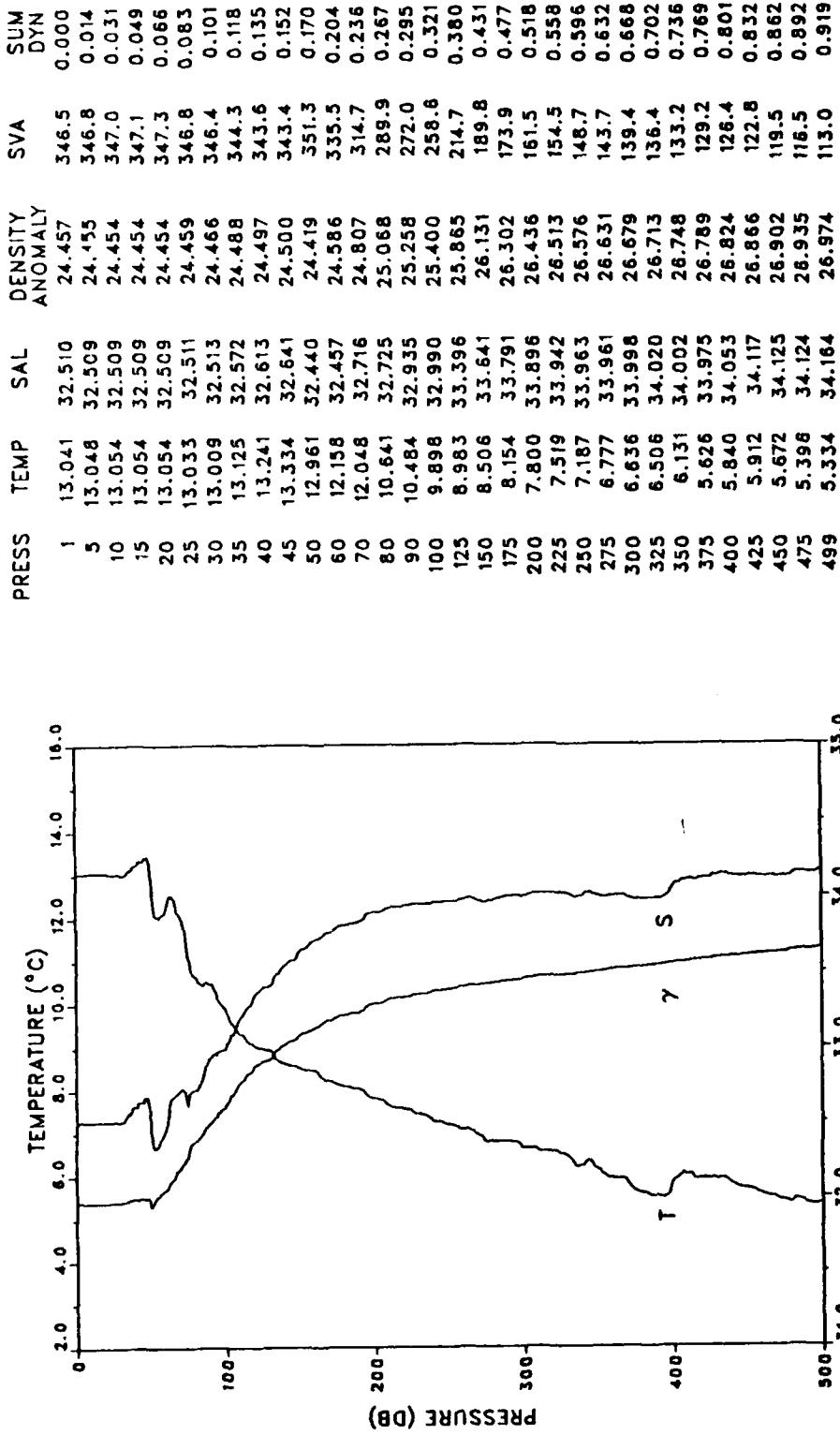


STATION: 28 LAT: 38 52.3 N LON: 124 45.9 W  
DATE: 6/18/87 TIME: 1200Z

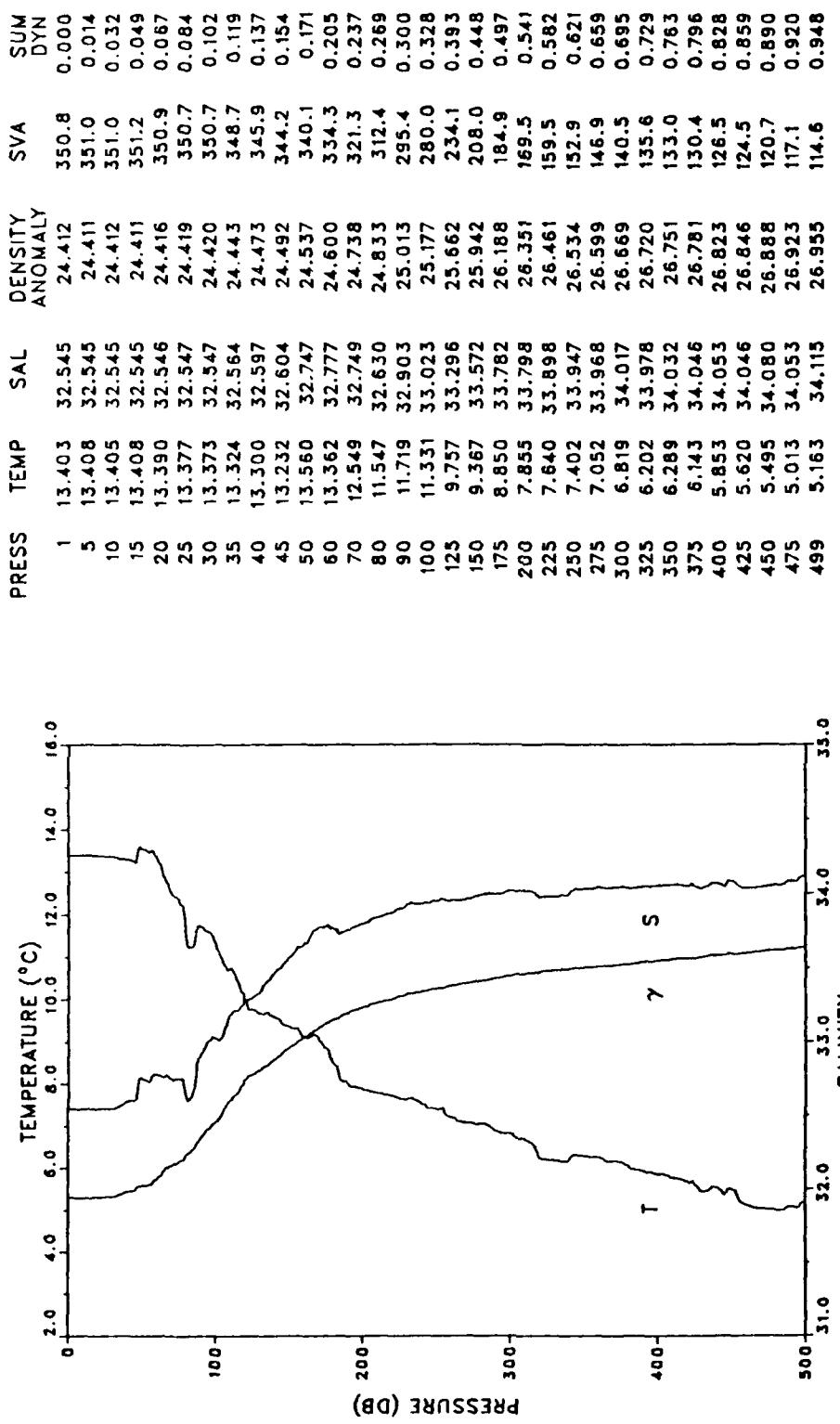
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.319	32.784	24.809	313.0	0.000
5	12.319	32.787	24.811	312.9	0.013
10	12.320	32.786	24.810	313.1	0.023
15	12.321	32.788	24.812	313.1	0.044
20	12.320	32.791	24.814	312.9	0.059
25	12.415	32.916	24.893	305.5	0.075
30	12.507	33.069	24.994	296.1	0.090
35	12.273	33.063	25.034	292.3	0.105
40	11.549	32.955	25.085	287.5	0.119
45	11.152	32.891	25.107	285.5	0.134
50	10.777	32.890	25.172	279.4	0.148
60	11.064	33.081	25.270	270.3	0.175
70	10.418	33.034	25.347	263.2	0.202
80	10.266	33.170	25.479	250.8	0.227
90	9.727	33.289	25.662	233.5	0.252
100	9.361	33.423	25.826	218.0	0.274
125	8.592	33.612	26.095	192.8	0.326
150	8.002	33.809	26.338	170.0	0.371
175	7.834	33.865	26.407	163.9	0.413
200	7.512	33.925	26.501	155.3	0.453
225	7.400	33.976	26.557	150.3	0.491
250	7.318	34.027	26.608	145.8	0.528
275	7.084	34.050	26.659	141.2	0.564
300	7.003	34.084	26.697	138.0	0.599
325	6.727	34.091	26.740	134.1	0.633
350	6.506	34.086	26.765	131.9	0.666
375	6.200	34.084	26.804	128.4	0.698
400	6.033	34.090	26.830	126.1	0.730
425	5.857	34.114	26.871	122.4	0.761
450	5.675	34.122	26.899	119.8	0.791
475	5.652	34.157	26.930	117.2	0.821
499	5.433	34.170	26.967	113.8	0.849



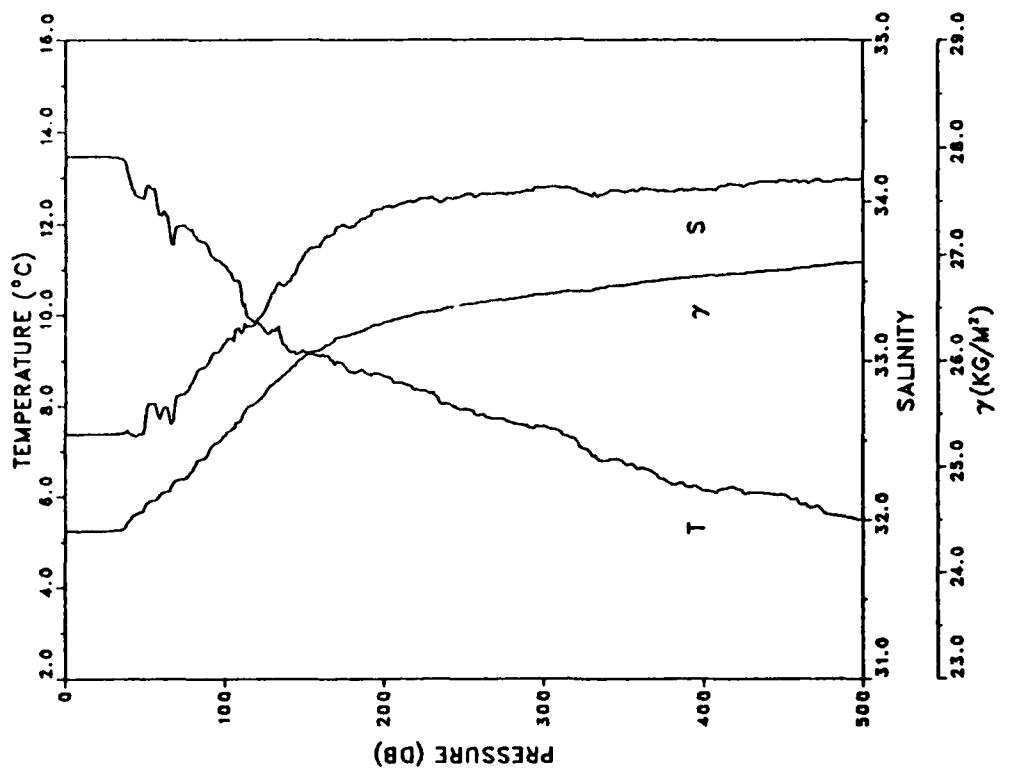
STATION: 29 LAT: 38 57.4 N LON: 124 52.7 W  
DATE: 6/18/87 TIME: 1400Z



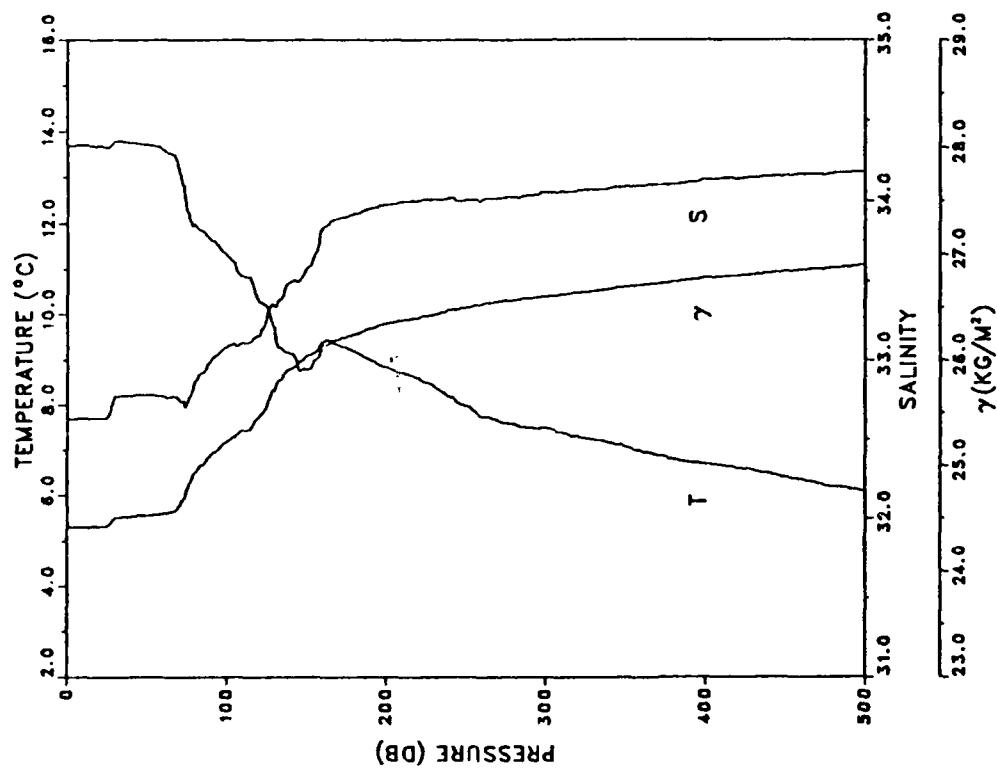
STATION: 30 LAT: 39 3.0 N LON: 125 0.7 W  
DATE: 6/18/87 TIME: 1600Z



PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUN DYN
1	13.470	32.535	24.391	352.8	0.000
5	13.470	32.535	24.391	352.9	0.014
10	13.475	32.535	24.390	353.1	0.032
15	13.476	32.535	24.390	353.2	0.049
20	13.474	32.535	24.390	353.3	0.067
25	13.475	32.536	24.391	353.4	0.085
30	13.482	32.538	24.397	352.9	0.102
35	13.428	32.540	24.403	352.4	0.120
40	13.078	32.549	24.480	345.2	0.137
45	12.590	32.527	24.558	337.9	0.155
50	12.643	32.621	24.620	332.1	0.171
60	12.188	32.658	24.736	321.2	0.204
70	11.948	32.775	24.872	308.5	0.235
80	11.825	32.864	24.964	300.0	0.266
90	11.482	32.987	25.122	285.1	0.295
100	11.081	33.112	25.292	269.1	0.323
125	9.686	33.305	25.681	232.3	0.386
150	9.193	33.666	26.043	198.3	0.439
175	8.899	33.849	26.233	180.7	0.487
200	8.655	33.962	26.360	169.1	0.530
225	8.335	34.019	26.453	160.5	0.572
250	7.929	34.033	26.525	154.0	0.611
275	7.705	34.043	26.566	150.4	0.649
300	7.543	34.082	26.620	145.6	0.686
325	7.077	34.052	26.662	141.7	0.722
350	6.755	34.057	26.709	137.3	0.757
375	6.392	34.066	26.763	132.2	0.791
400	6.137	34.068	26.799	129.1	0.823
425	6.088	34.088	26.821	127.3	0.855
450	6.048	34.130	26.859	123.9	0.887
475	5.689	34.120	26.896	120.4	0.917
499	5.486	34.138	26.935	116.8	0.946

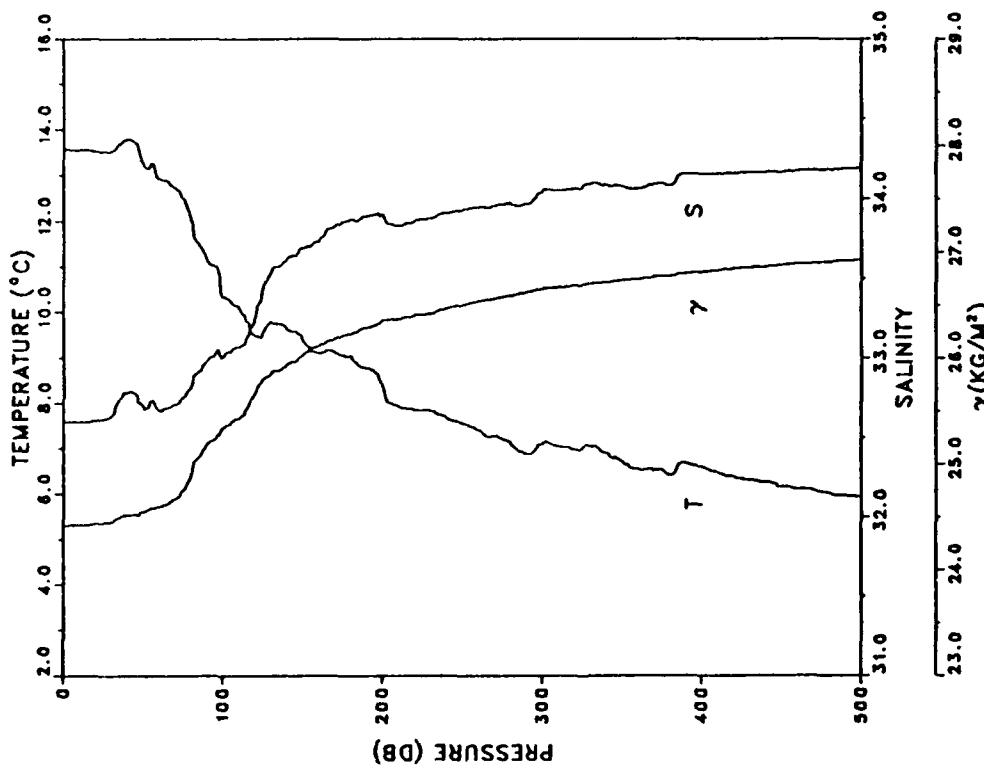


PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	13.702	32.626	24.415	350.5	0.000
6	13.702	32.626	24.415	350.7	0.018
10	13.715	32.628	24.414	350.9	0.032
15	13.690	32.629	24.419	350.4	0.049
20	13.686	32.629	24.420	350.5	0.067
25	13.663	32.633	24.428	349.9	0.084
30	13.800	32.767	24.504	342.8	0.101
35	13.788	32.771	24.509	342.4	0.119
40	13.762	32.773	24.516	341.8	0.136
45	13.738	32.777	24.524	341.2	0.153
50	13.724	32.776	24.526	341.1	0.170
60	13.614	32.767	24.542	339.9	0.204
70	13.234	32.754	24.608	333.8	0.238
80	11.977	32.858	24.931	303.1	0.269
90	11.659	32.988	25.091	288.1	0.299
100	11.308	33.078	25.224	275.5	0.327
125	10.197	33.251	25.554	244.6	0.392
150	8.775	33.578	26.040	198.5	0.448
175	9.264	33.902	26.216	182.4	0.495
200	8.831	33.973	26.341	170.9	0.539
225	8.503	34.009	26.420	163.8	0.581
250	7.973	34.003	26.495	156.8	0.621
275	7.600	34.021	26.564	150.5	0.660
300	7.497	34.051	26.602	147.3	0.697
325	7.268	34.065	26.645	143.4	0.733
350	7.069	34.085	26.689	139.5	0.769
375	6.866	34.099	26.727	136.1	0.803
400	6.694	34.130	26.775	131.8	0.837
425	6.586	34.142	26.799	129.8	0.869
450	6.397	34.156	26.835	126.6	0.901
475	6.220	34.161	26.862	124.2	0.933
499	6.094	34.182	26.895	121.3	0.962

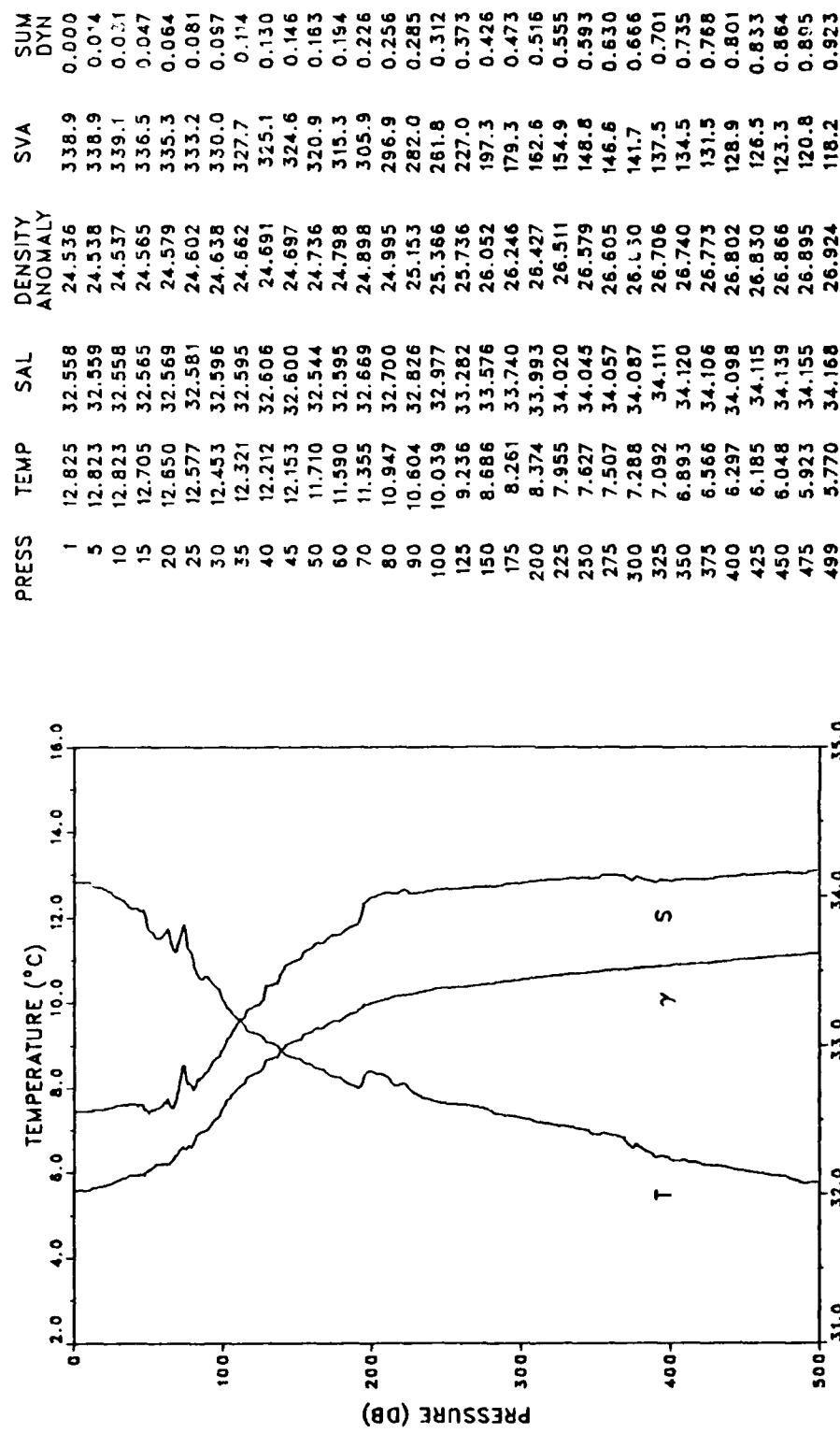


STATION: 33 LAT: 38 57.9 N LON: 125 25.8 W  
DATE: 6/18/87 TIME: 2100Z

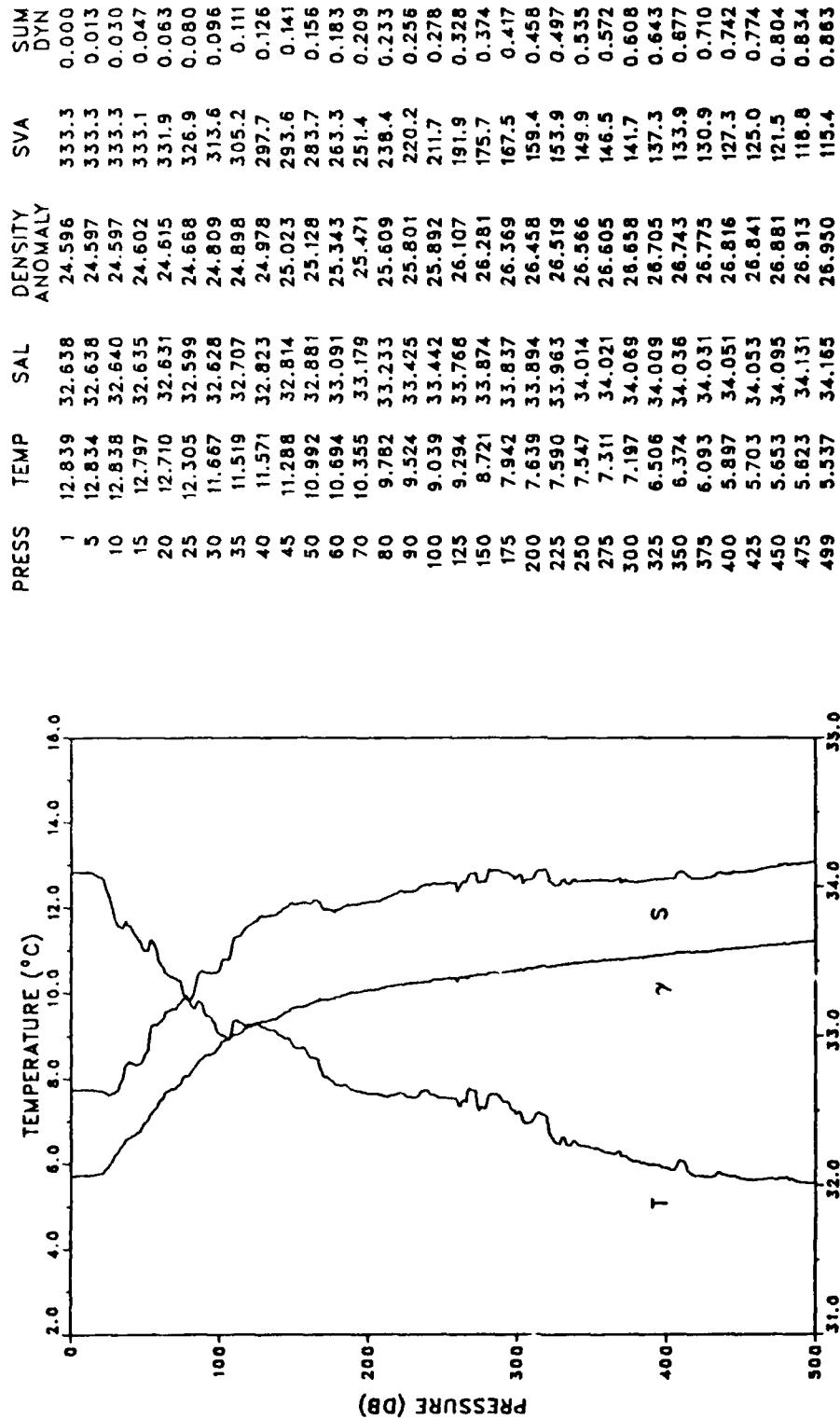
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	13.568	32.596	24.419	350.2	0.000
5	13.559	32.597	24.421	350.0	0.014
10	13.564	32.597	24.420	350.2	0.032
15	13.565	32.597	24.420	350.4	0.049
20	13.530	32.608	24.436	349.0	0.067
25	13.526	32.612	24.439	348.8	0.084
30	13.534	32.630	24.452	347.7	0.101
35	13.693	32.731	24.498	343.5	0.119
40	13.794	32.784	24.518	341.7	0.136
45	13.714	32.771	24.524	341.2	0.153
50	13.297	32.697	24.551	338.7	0.170
60	12.940	32.670	24.401	334.2	0.203
70	12.727	32.705	24.669	327.9	0.237
80	12.068	32.814	24.879	308.0	0.268
90	11.155	32.978	25.174	280.1	0.298
100	10.325	33.007	25.342	264.2	0.325
125	9.542	33.427	25.800	221.0	0.386
150	9.383	33.684	26.027	200.0	0.438
175	9.055	33.855	26.213	182.7	0.486
200	8.377	33.902	26.355	169.4	0.530
225	7.839	33.869	26.409	164.4	0.572
250	7.558	33.931	26.499	156.2	0.612
275	7.213	33.962	26.572	149.5	0.650
300	7.088	34.040	26.651	142.4	0.687
325	6.991	34.067	26.685	139.4	0.722
350	6.704	34.075	26.730	135.3	0.756
375	6.519	34.095	26.771	131.7	0.790
400	6.599	34.157	26.809	128.5	0.822
425	6.339	34.163	26.848	125.0	0.854
450	6.154	34.166	26.874	122.6	0.885
475	6.047	34.181	26.900	120.5	0.915
499	5.931	34.191	26.922	118.5	0.944



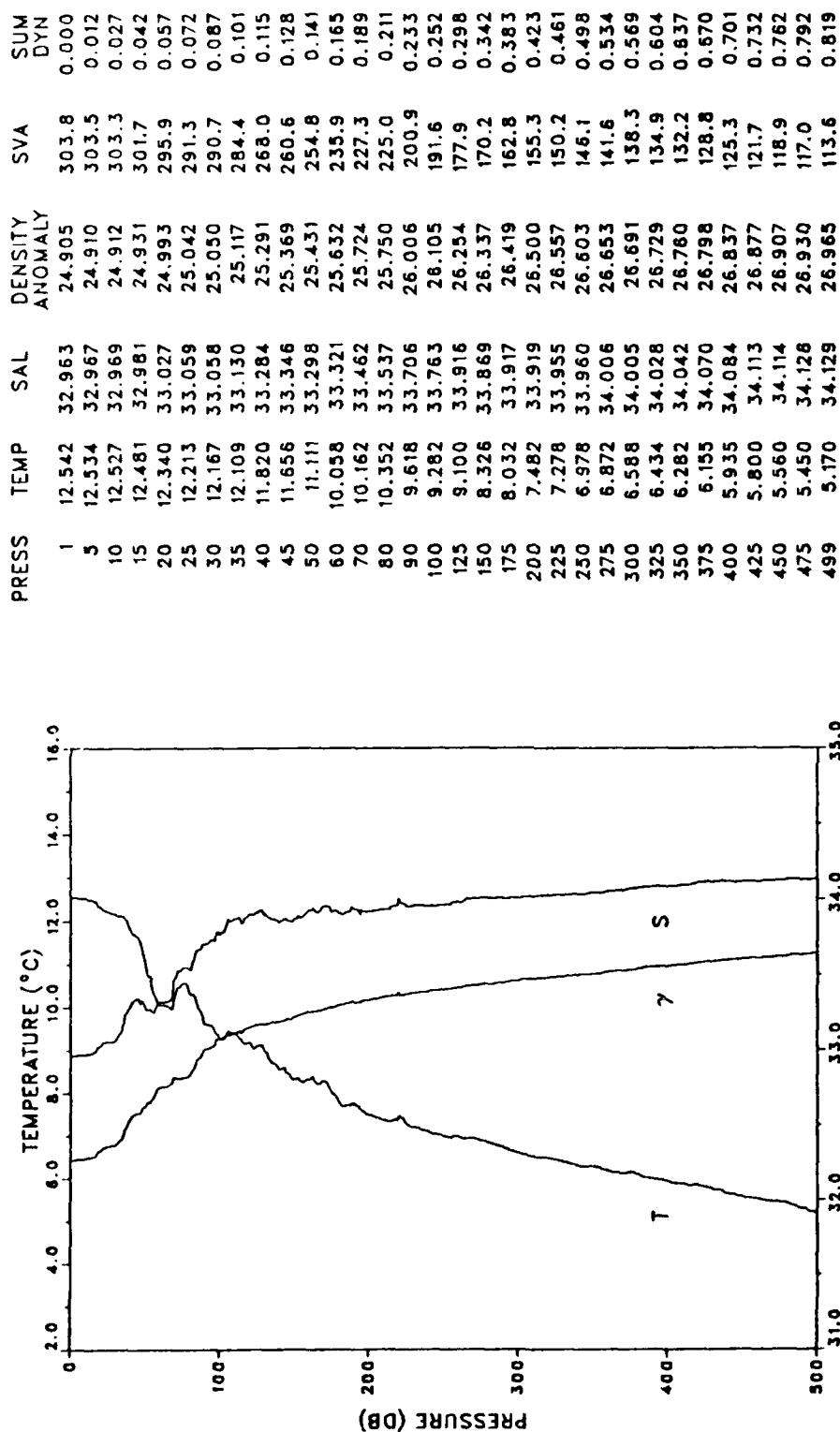
STATION: 34 LAT: 38 50.8 N LON: 125 21.9 W  
DATE: 6/18/87 TIME: 2300Z

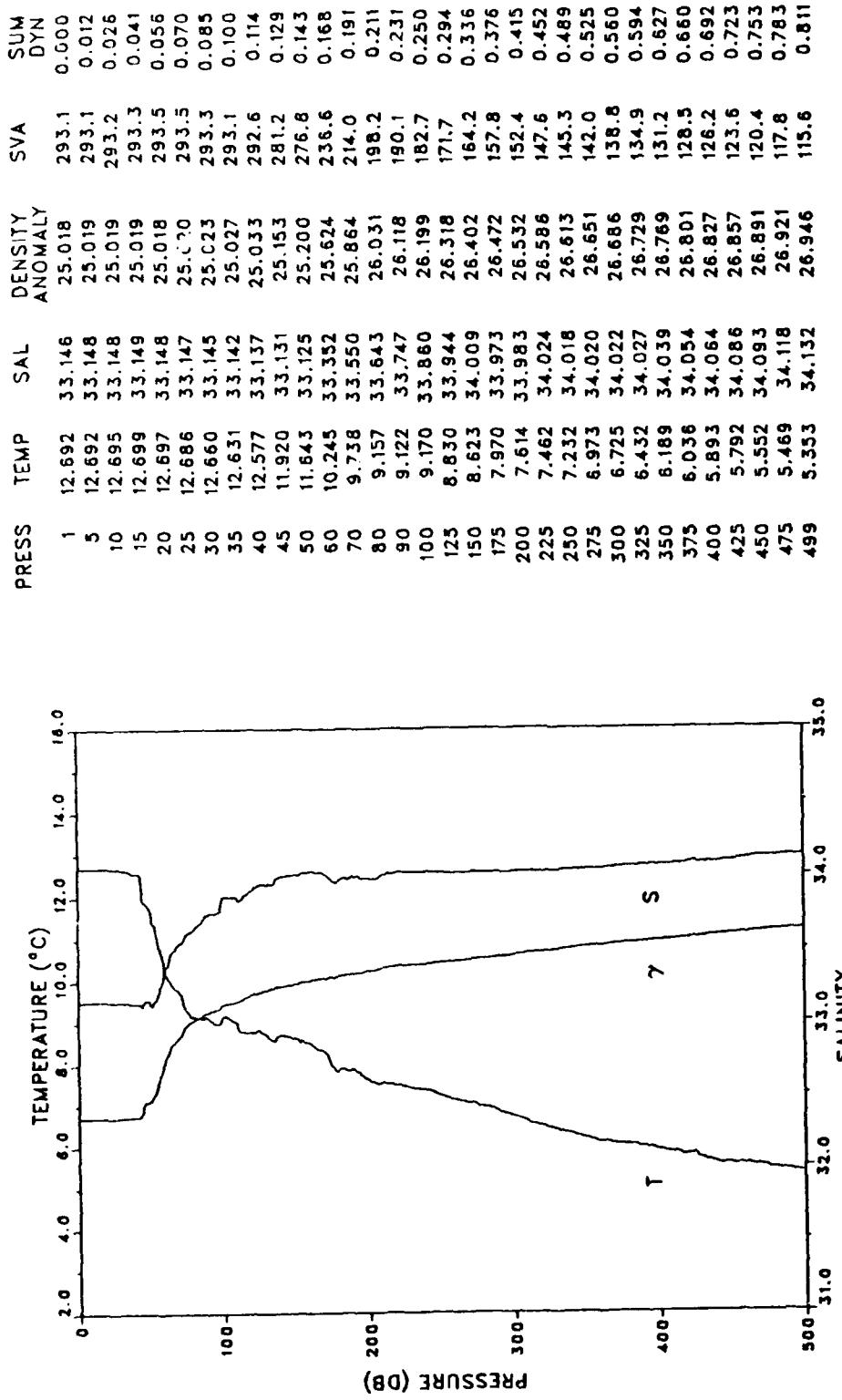


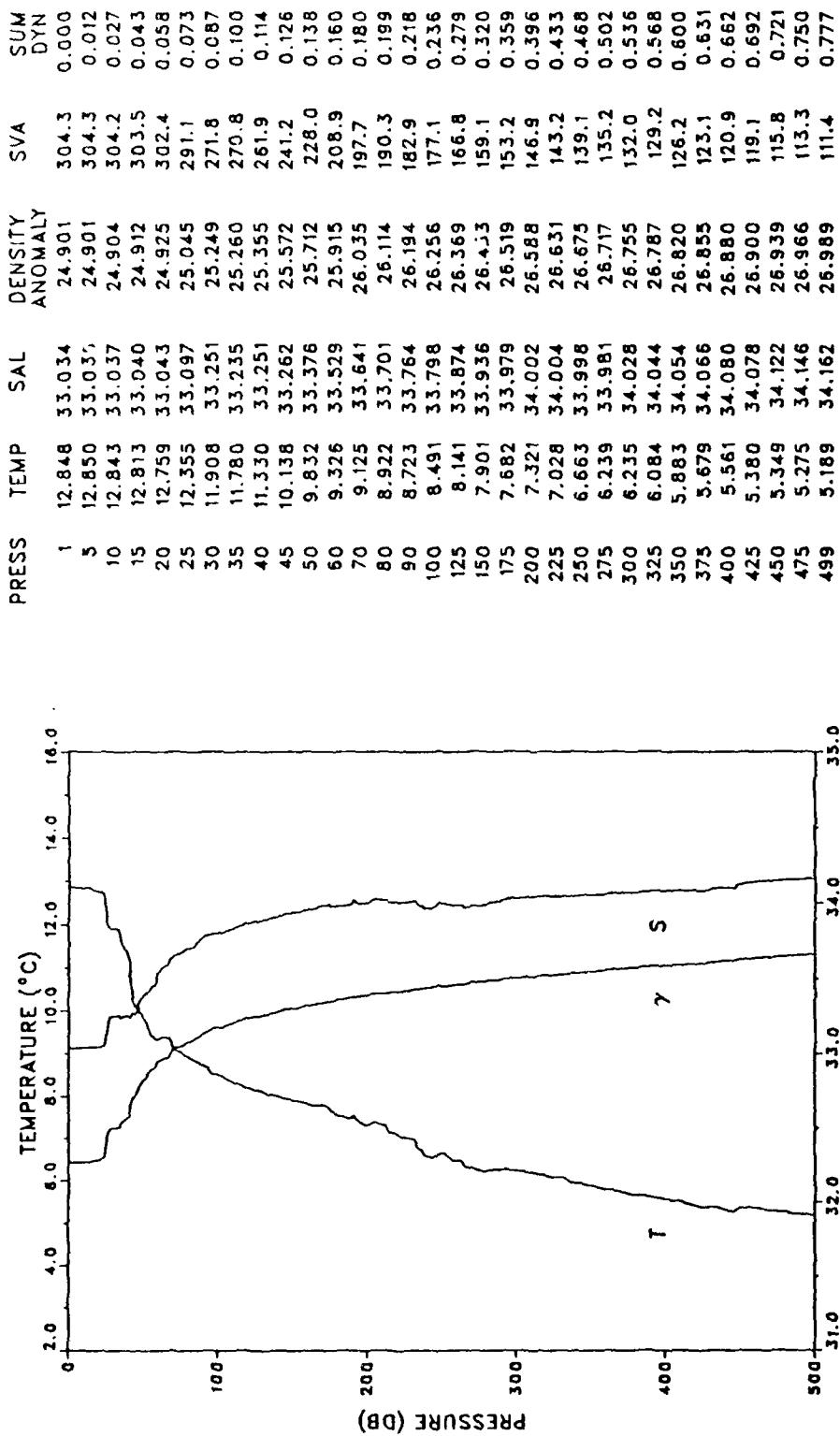
STATION: 35 LAT: 38 44.3 N LON: 125 16.6 W  
DATE: 6/19/87 TIME: 0000Z

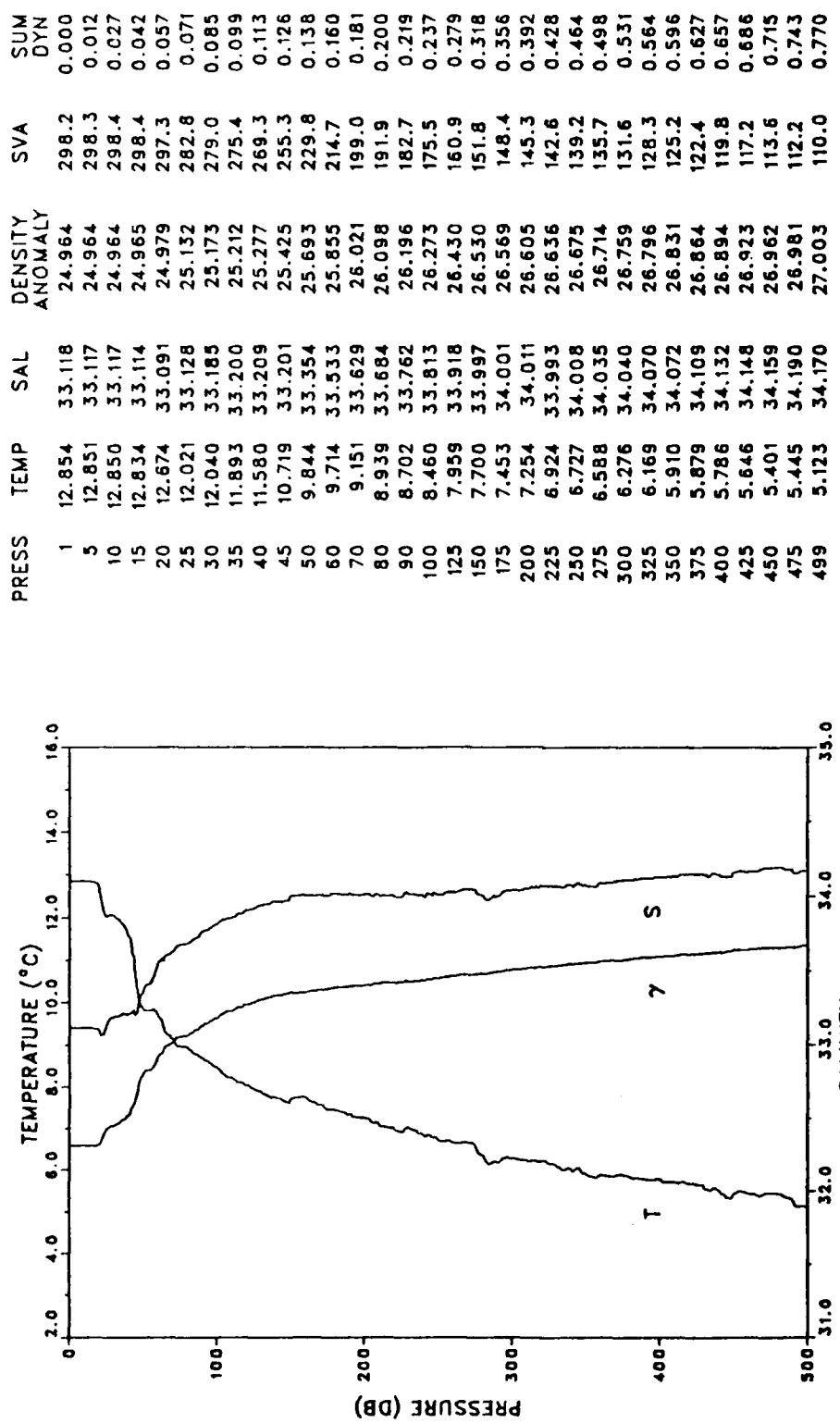


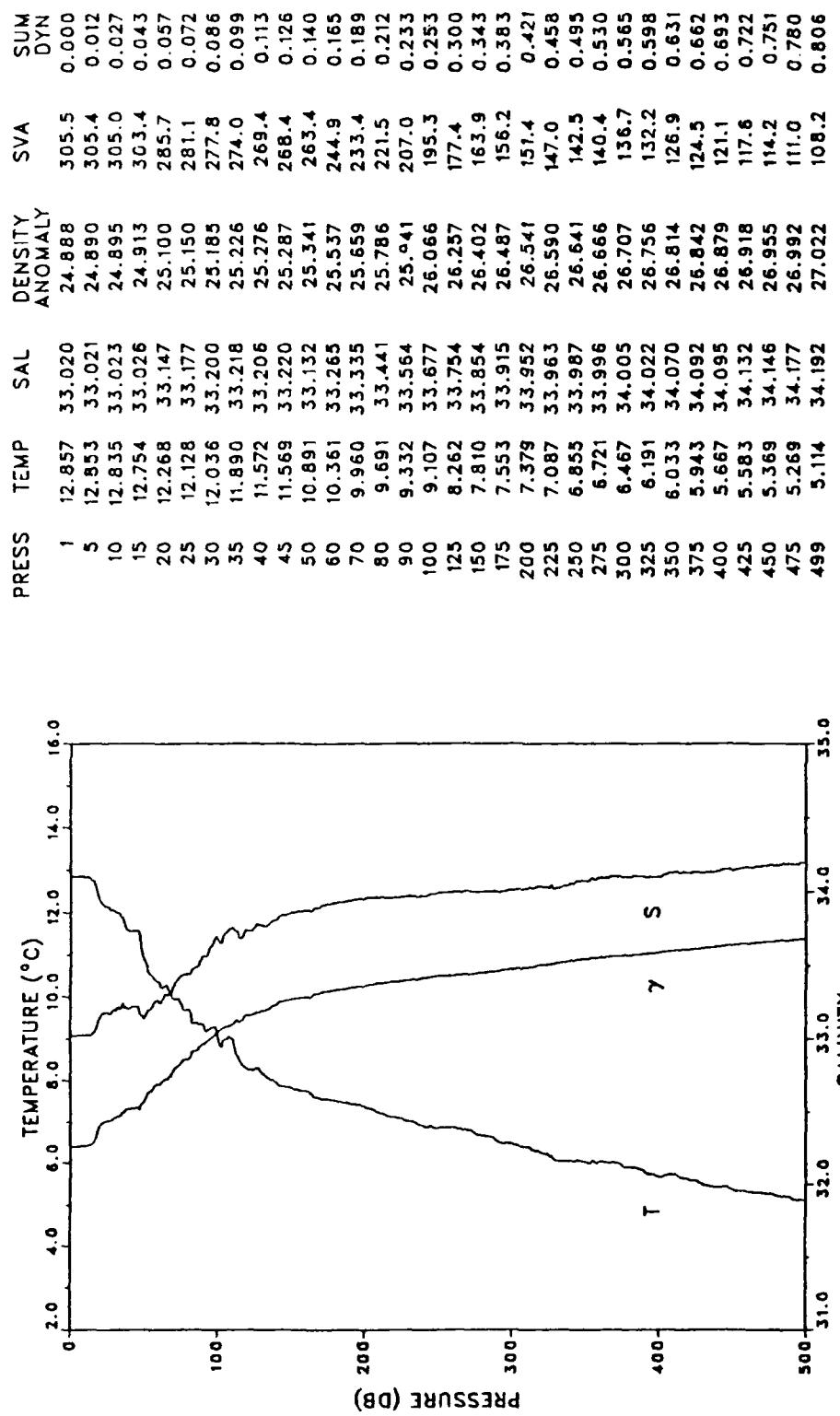
STATION: 36 LAT: 38 37.0 N LON: 125 11.9 W  
DATE: 6/19/87 TIME: 0100Z





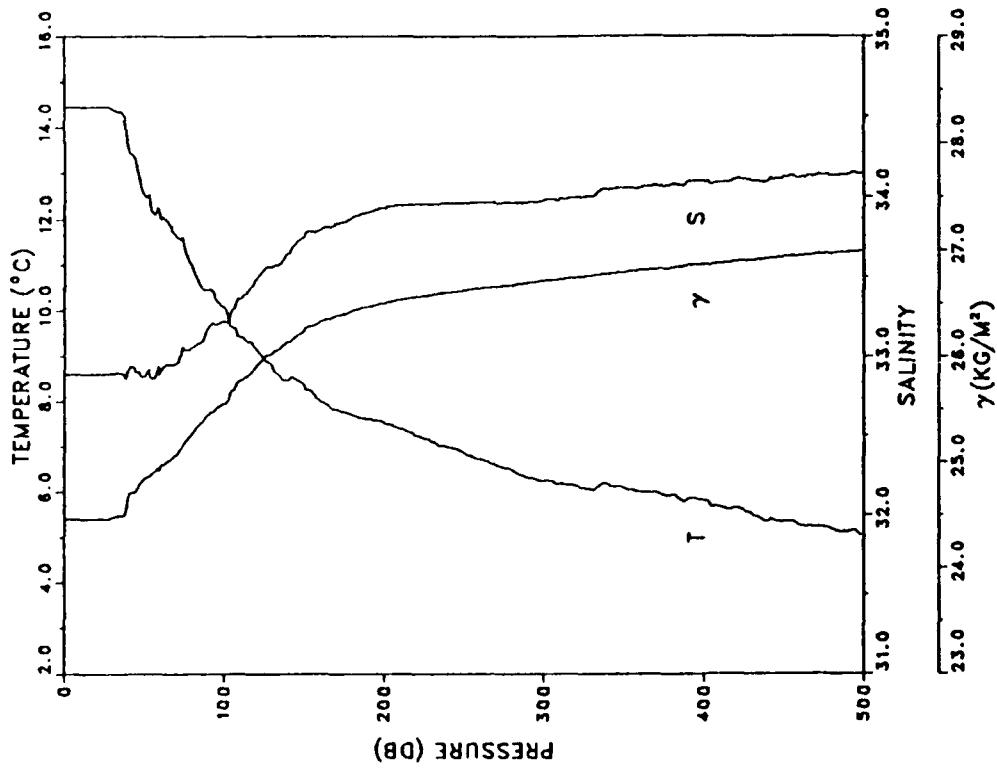




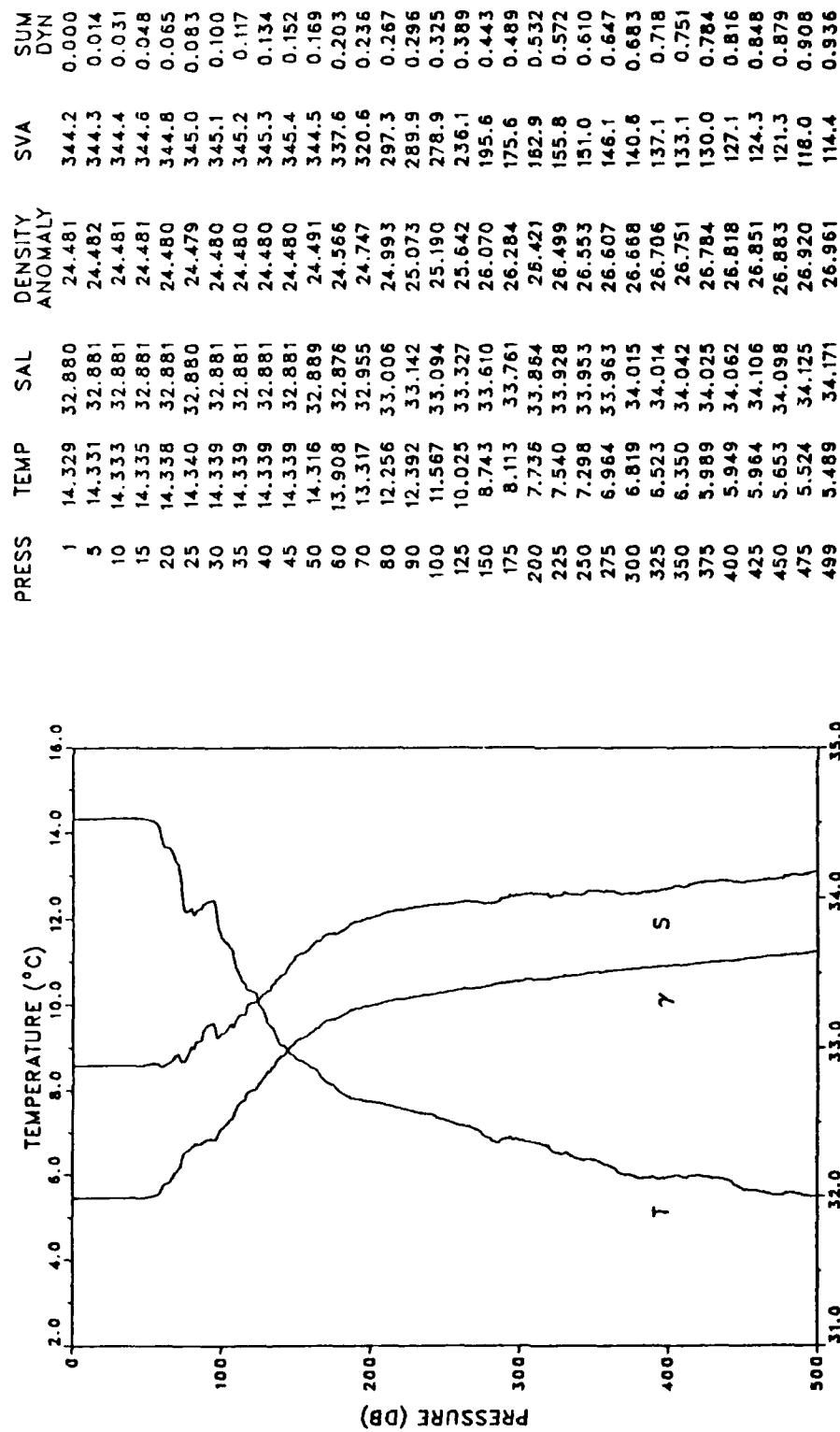


STATION: 41 LAT: 38 1.5 N LON: 124 51.8 W  
DATE: 6/19/87 TIME: 0900Z

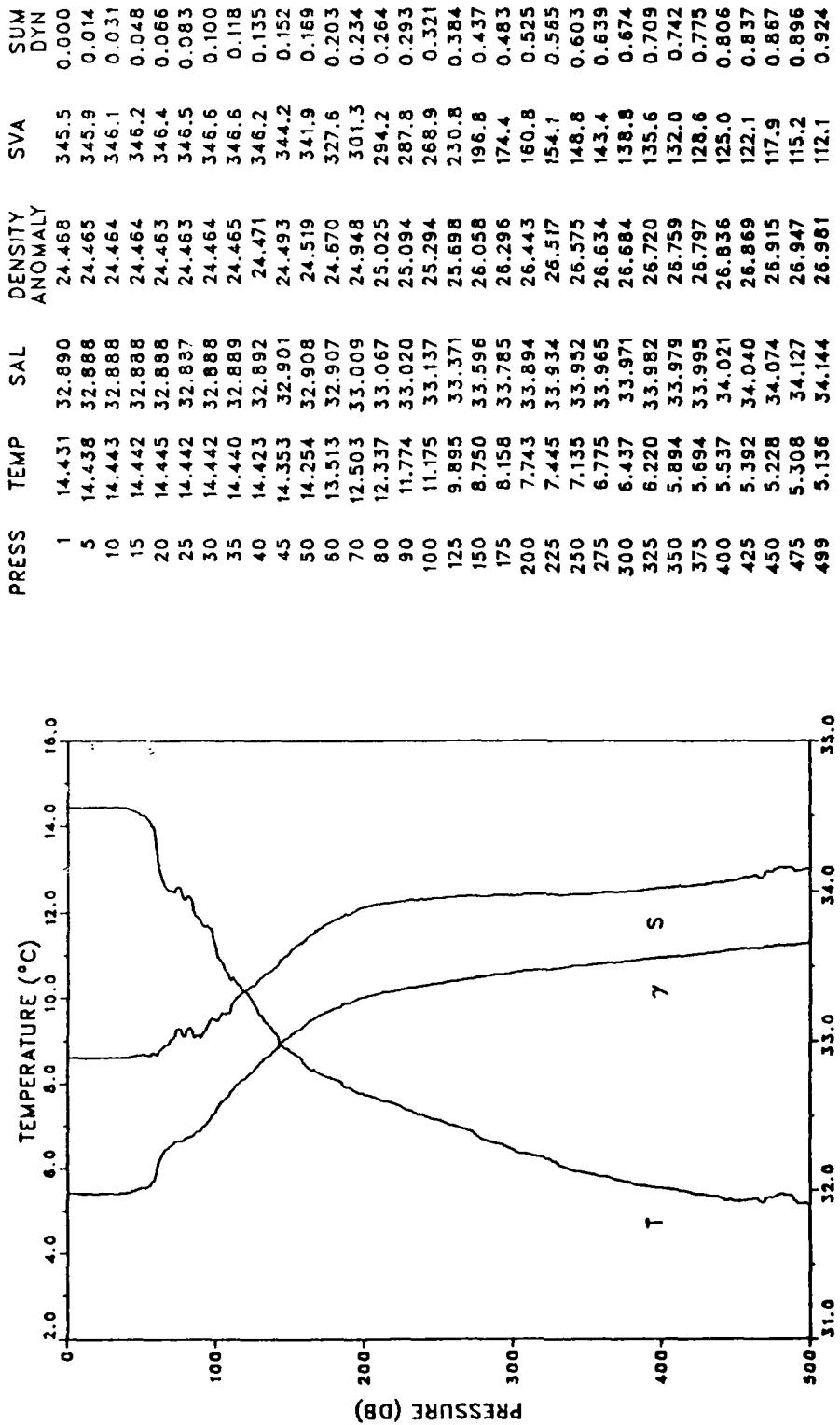
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	14.444	32.885	24.461	346.1	0.000
5	14.444	32.885	24.461	346.2	0.014
10	14.450	32.883	24.458	346.6	0.031
15	14.447	32.883	24.459	346.7	0.049
20	14.448	32.883	24.459	346.8	0.066
25	14.451	32.883	24.458	347.0	0.083
30	14.398	32.887	24.472	345.8	0.101
35	14.343	32.892	24.488	344.4	0.118
40	13.619	32.895	24.639	330.1	0.135
45	13.293	32.899	24.708	323.6	0.151
50	12.536	32.871	24.835	311.6	0.167
60	12.156	32.879	24.913	304.4	0.198
70	11.668	32.953	25.062	290.4	0.227
80	10.993	33.057	25.264	271.3	0.255
90	10.474	33.172	25.445	254.3	0.282
100	10.078	33.217	25.547	244.7	0.307
125	8.955	33.541	25.983	203.5	0.363
150	8.367	33.748	26.236	179.8	0.411
175	7.770	33.843	26.399	164.6	0.454
200	7.524	33.927	26.501	155.3	0.494
225	7.180	33.956	26.572	148.8	0.532
250	6.844	33.960	26.621	144.3	0.568
275	6.538	33.963	26.664	140.4	0.604
300	6.252	33.976	26.712	136.1	0.638
325	6.085	33.999	26.751	132.6	0.672
350	6.088	34.051	26.792	129.0	0.705
375	5.933	34.059	26.718	126.8	0.737
400	5.802	34.093	26.861	122.9	0.768
425	5.595	34.106	26.896	119.7	0.798
450	5.363	34.124	26.939	115.8	0.828
475	5.223	34.135	26.964	113.5	0.856
499	5.053	34.143	26.990	111.2	0.883



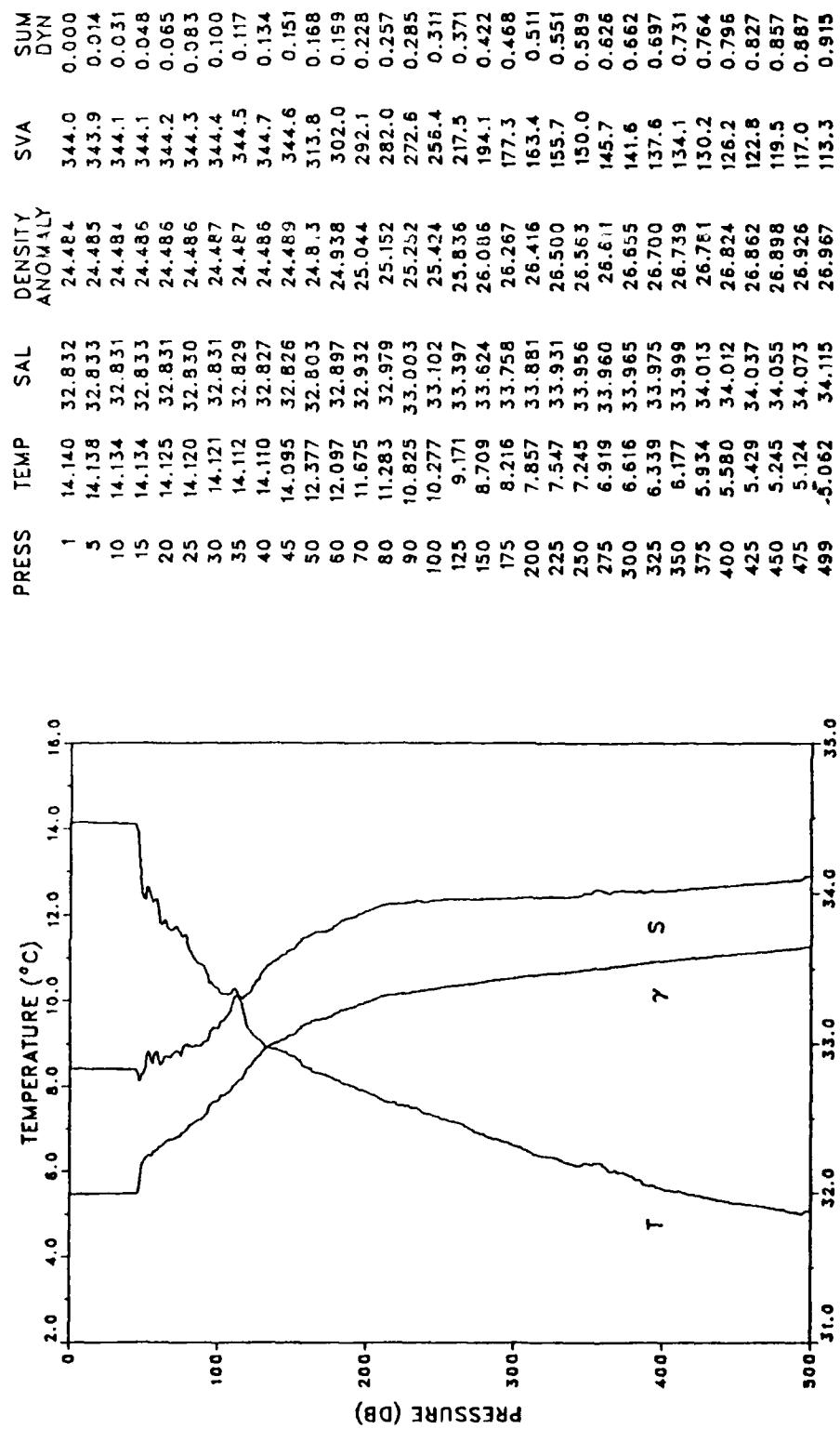
STATION: 42 LAT: 37 54.0 N LON: 124 47.6 W  
DATE: 6/19/87 TIME: 1000Z



STATION: 43 LAT: 37 46.8 N LON: 124 44.1 W  
DATE: 6/19/87 TIME: 1200Z

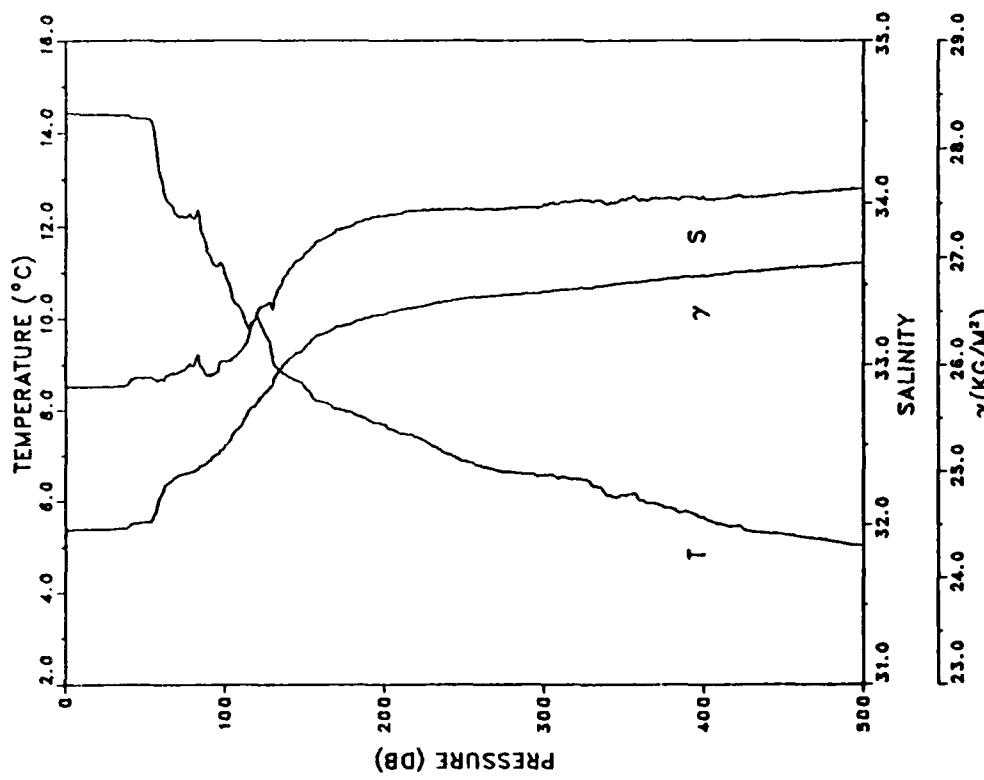


STATION: 44 LAT: 37 46.9 N LON: 124 56.0 W  
 DATE: 5/19/87 TIME: 1300Z

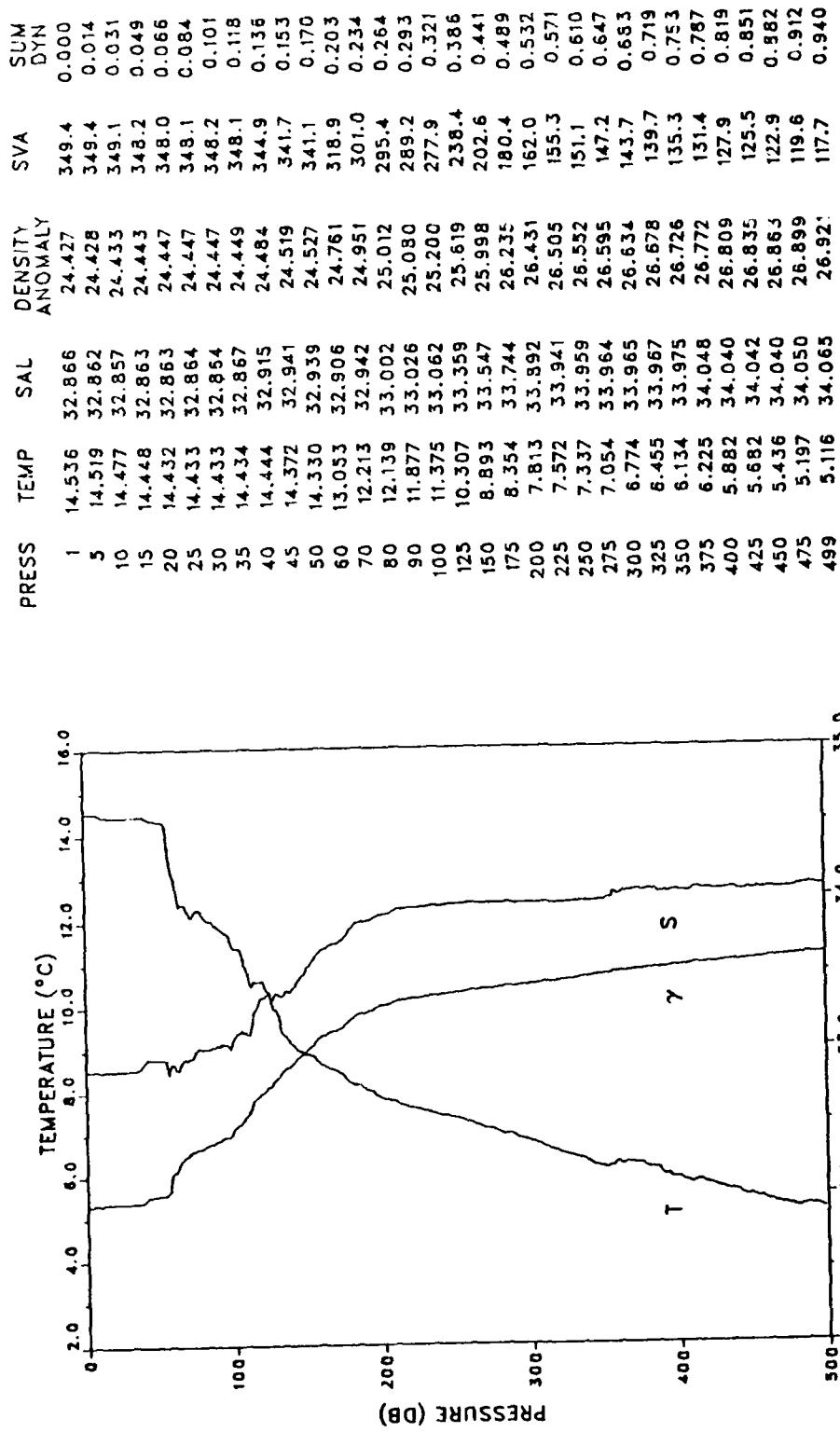


STATION: 45 LAT: 37 46.9 N LON: 123 9.0 W  
DATE: 6/19/87 TIME: 1500Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	14.430	32.861	24.446	347.6	0.000
5	14.410	32.862	24.451	347.2	0.014
10	14.404	32.862	24.452	347.2	0.031
15	14.400	32.862	24.453	347.3	0.049
20	14.395	32.863	24.454	347.2	0.066
25	14.392	32.864	24.456	347.2	0.083
30	14.388	32.863	24.456	347.4	0.101
35	14.385	32.864	24.457	347.3	0.118
40	14.356	32.882	24.477	345.6	0.135
45	14.317	32.918	24.513	342.3	0.153
50	14.306	32.921	24.518	342.0	0.170
60	13.056	32.908	24.762	318.8	0.203
70	12.253	32.944	24.945	301.5	0.234
80	12.161	32.992	25.000	296.6	0.264
90	11.403	32.937	25.098	287.4	0.293
100	10.991	33.021	25.237	274.3	0.321
125	9.668	33.372	25.736	227.1	0.384
150	8.508	33.687	26.167	186.4	0.435
175	7.984	33.849	26.373	167.2	0.480
200	7.683	33.920	26.472	158.0	0.520
225	7.329	33.957	26.552	150.7	0.559
250	6.875	33.962	26.618	144.6	0.596
275	6.645	33.963	26.650	141.8	0.631
300	6.581	33.987	26.677	139.5	0.667
325	6.485	34.019	26.715	136.2	0.701
350	6.138	34.019	26.760	132.1	0.735
375	5.877	34.026	26.799	128.6	0.767
400	5.663	34.031	26.829	125.8	0.799
425	5.384	34.034	26.865	122.5	0.830
450	5.278	34.054	26.893	120.0	0.860
475	5.166	34.071	26.920	117.6	0.890
499	5.031	34.087	26.948	115.1	0.918

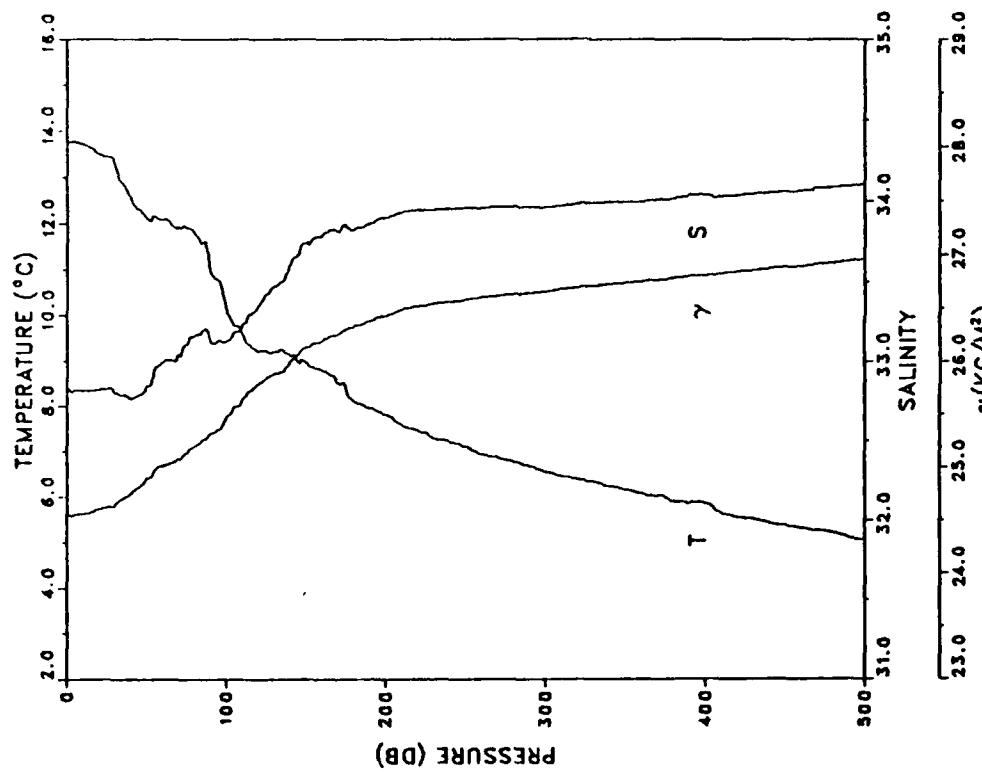


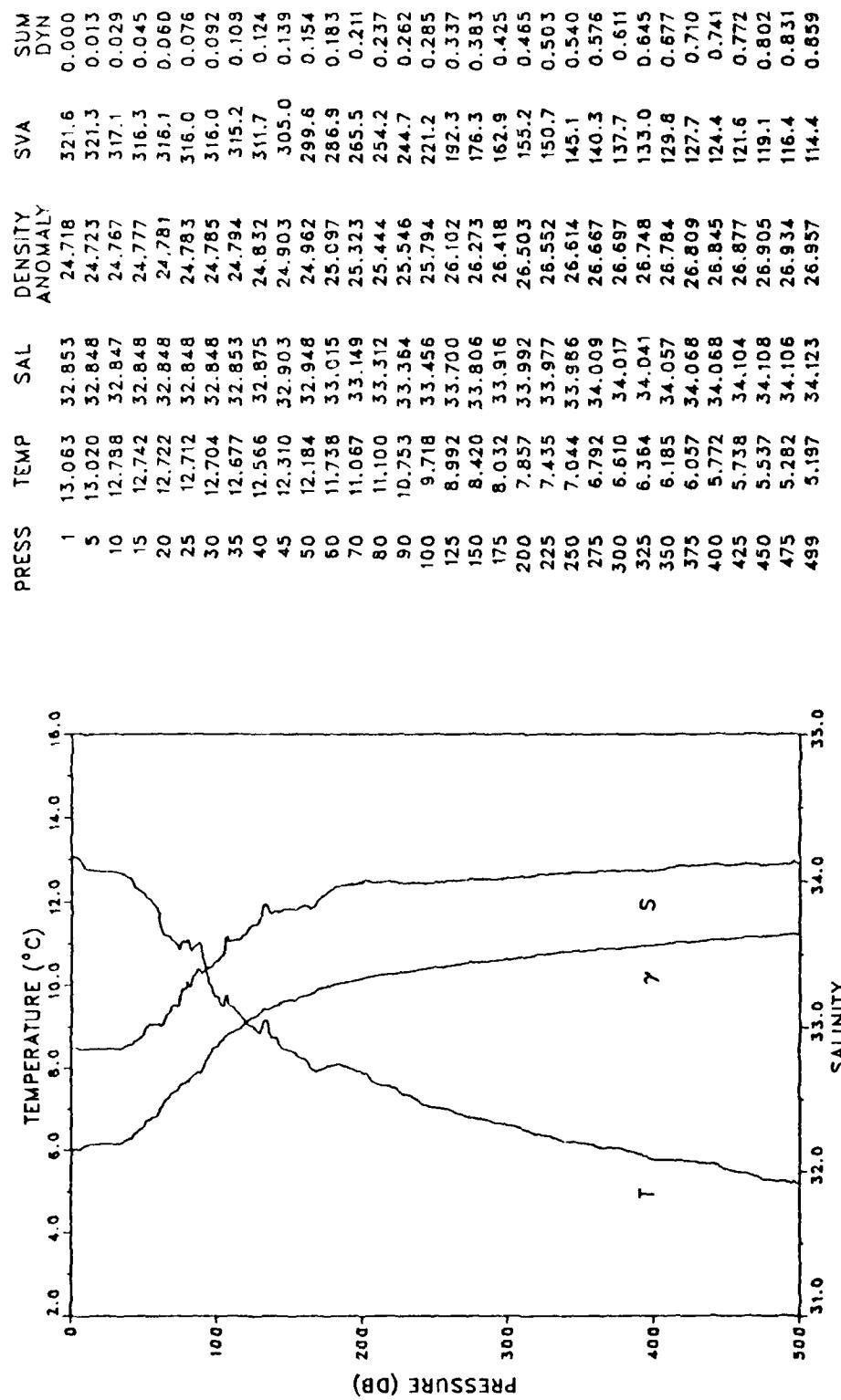
STATION: 46 LAT: 37 46.9 N LON: 125 22.0 W  
DATE: 6/19/87 TIME: 1700Z



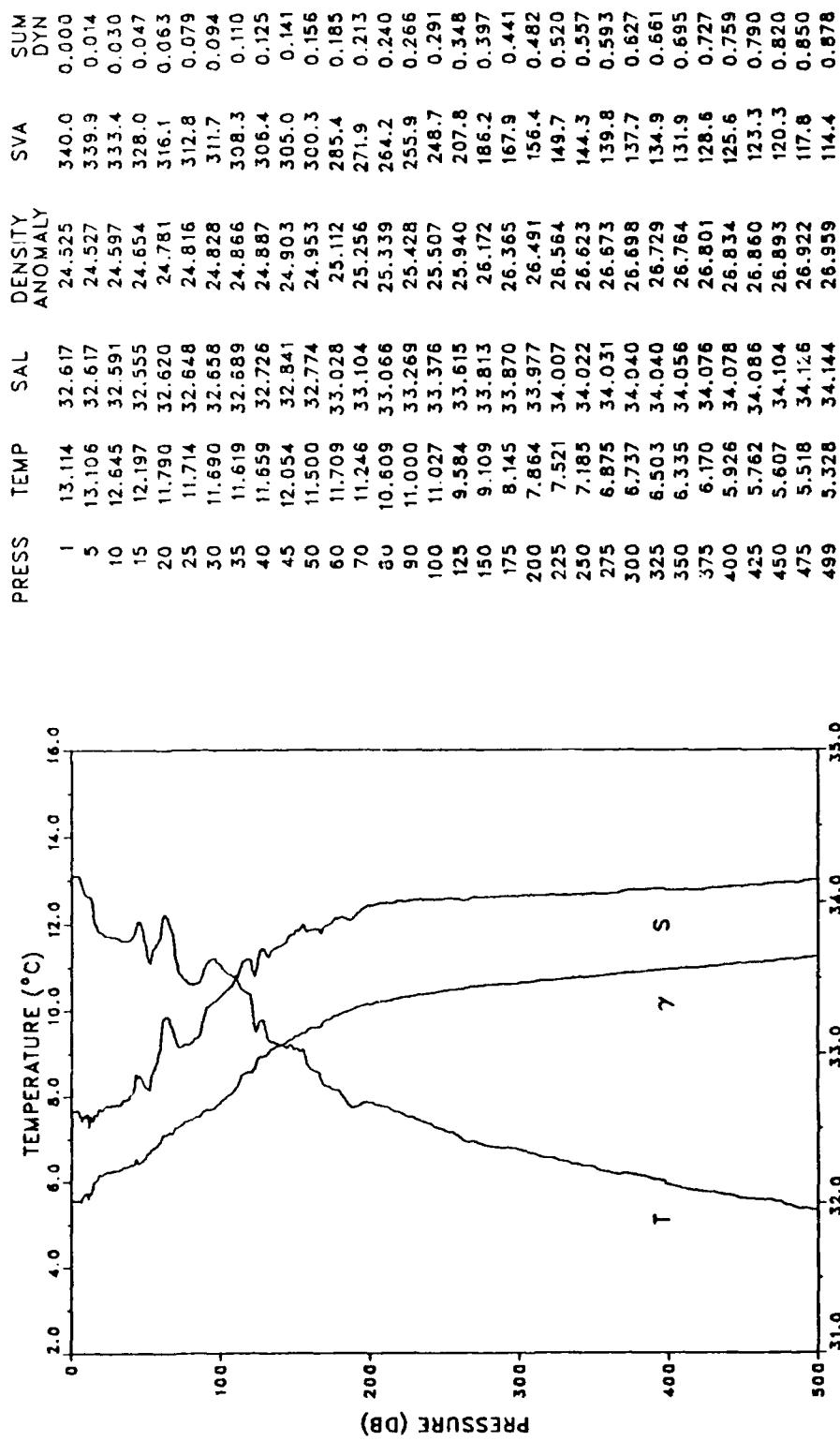
STATION: 47 LAT: 37 47.0 N LON: 125 33.0 W  
DATE: 6/19/87 TIME: 1800Z

PRESS	TEMP	SAL	DENSITY	SVA	SUM DYN
			ANOMALY		
1	13.764	32.815	24.548	337.8	0.000
5	13.773	32.815	24.546	338.1	0.014
10	13.721	32.811	24.554	337.5	0.030
15	13.647	32.812	24.570	336.1	0.047
20	13.507	32.818	24.603	333.1	0.064
25	13.446	32.823	24.619	331.7	0.081
30	13.249	32.792	24.634	330.3	0.097
35	12.864	32.781	24.702	324.0	0.114
40	12.574	32.766	24.746	319.9	0.130
45	12.301	32.780	24.809	314.0	0.145
50	12.111	32.840	24.892	306.2	0.161
60	12.089	32.992	25.014	294.8	0.191
70	11.909	33.035	25.081	288.6	0.220
80	11.789	33.159	25.199	277.6	0.248
90	11.011	33.134	25.321	266.1	0.276
100	10.136	33.25	25.466	252.4	0.302
125	9.227	33.419	25.845	216.7	0.360
150	8.976	33.738	26.134	189.7	0.411
175	8.443	33.848	26.303	173.9	0.456
200	7.823	33.894	26.431	162.0	0.498
225	7.425	33.943	26.527	153.1	0.538
250	7.116	33.961	26.585	147.9	0.575
275	6.825	33.963	26.626	144.2	0.612
300	6.565	33.962	26.660	141.2	0.648
325	6.369	33.985	26.704	137.2	0.682
350	6.164	33.994	26.737	134.3	0.716
375	5.998	34.009	26.770	131.3	0.750
400	5.866	34.037	26.809	127.9	0.782
425	5.548	34.042	26.851	123.9	0.813
450	5.394	34.057	26.883	121.0	0.844
475	5.255	34.081	26.917	117.9	0.874
499	5.071	34.104	26.957	114.3	0.902

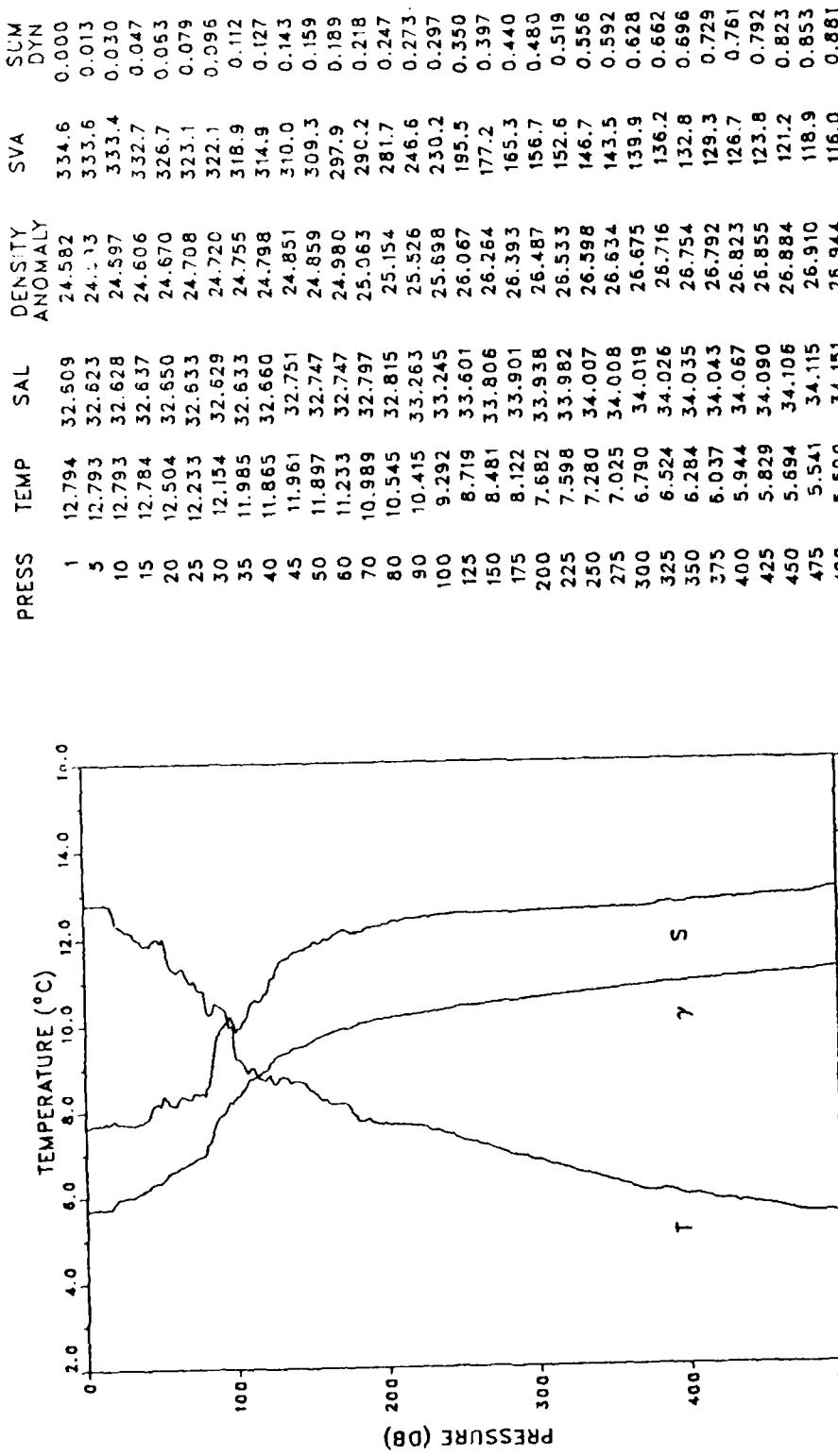




STATION: 49 LAT: 38 2.5 N LON: 125 35.1 W  
 DATE: 6/19/87 TIME: 2100Z

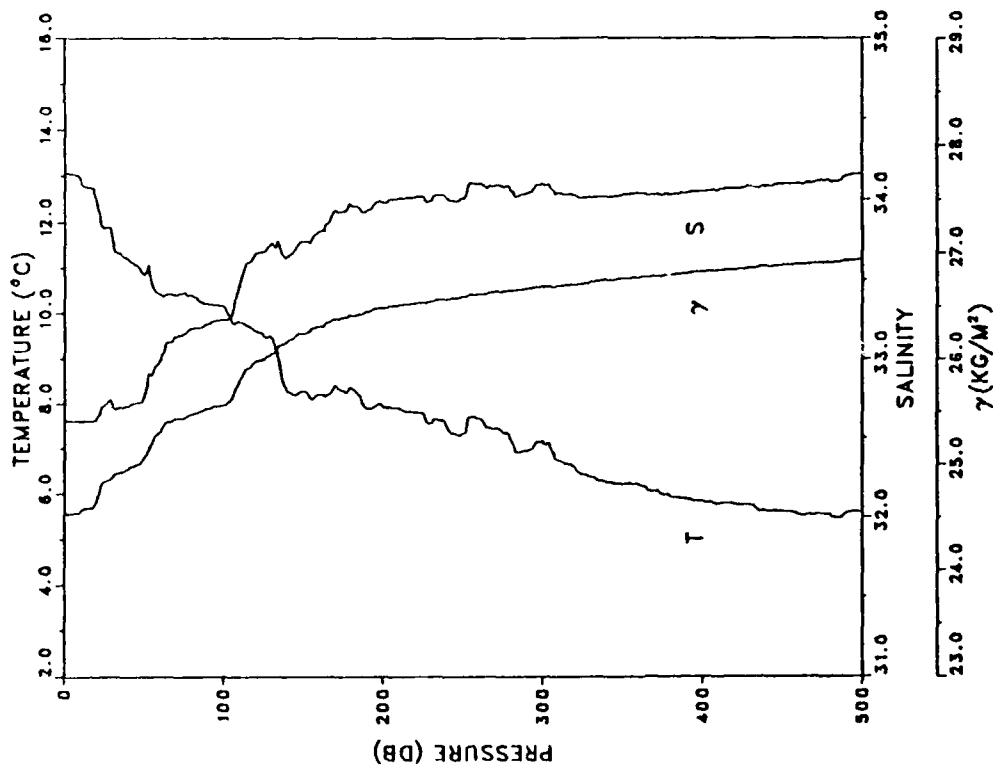


STATION: 50 LAT: 38 10.4 N LON: 125 35.3 W  
DATE: 6/19/87 TIME: 2300Z

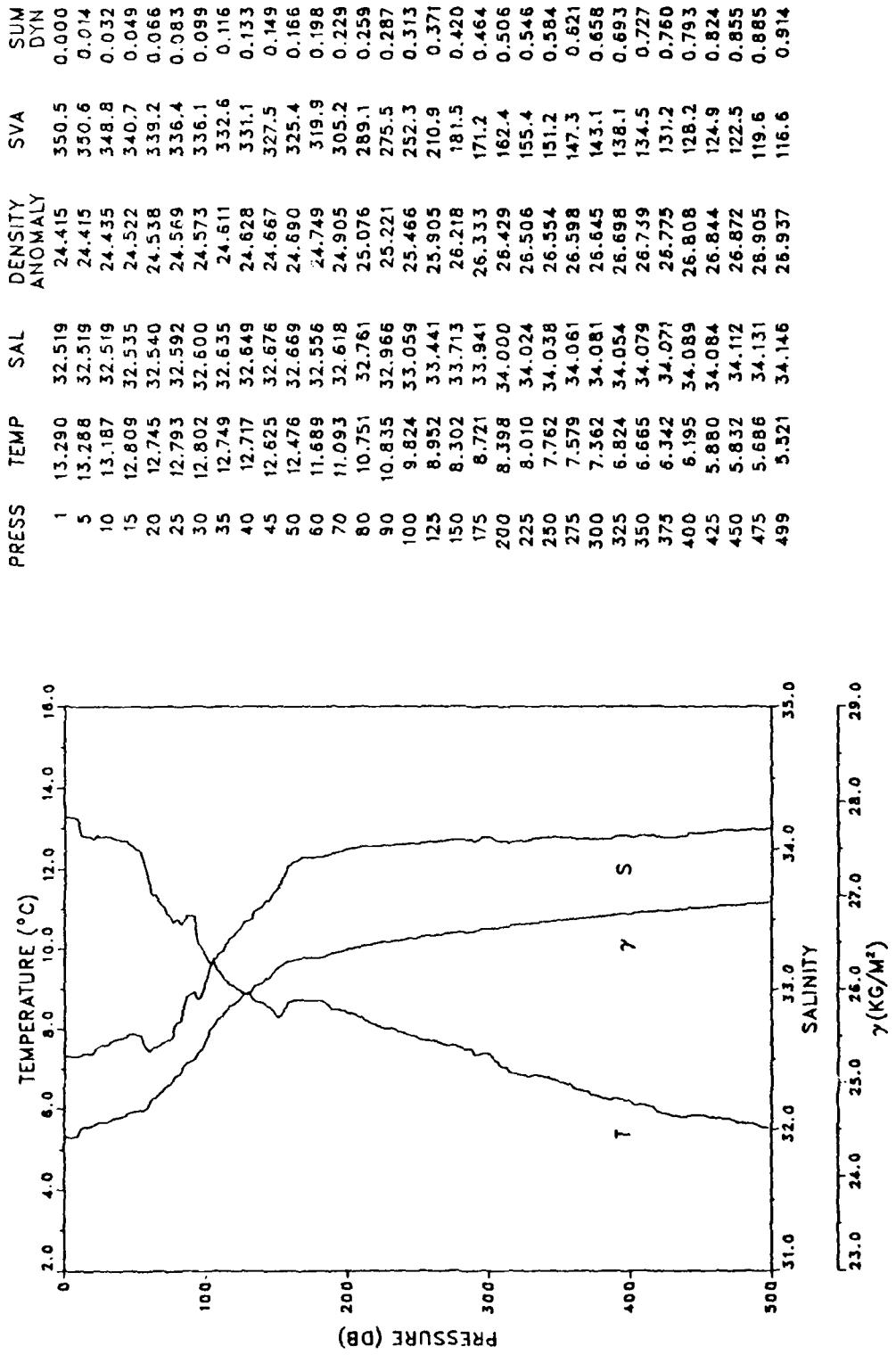


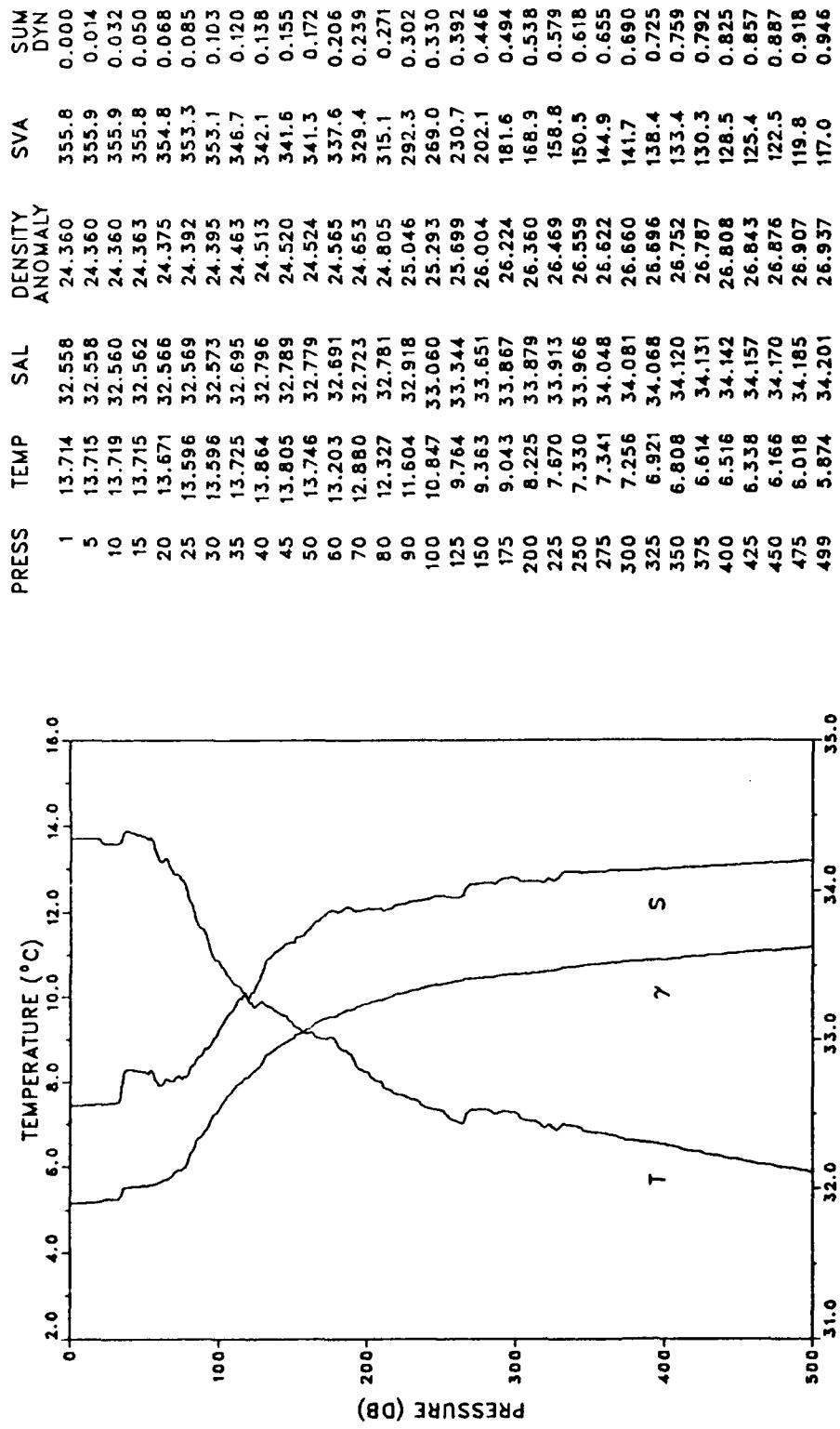
STATION: 51 LAT: 38 17.9 N LON: 125 35.1 W  
DATE: 6/20/87 TIME: 0100Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	13.053	32.607	24.530	339.6	0.000
5	13.053	32.608	24.531	339.5	0.014
10	12.965	32.605	24.545	338.3	0.031
15	12.766	32.605	24.584	334.7	0.047
20	12.501	32.610	24.639	329.6	0.064
25	11.888	32.711	24.833	311.2	0.080
30	11.659	32.707	24.872	307.6	0.095
35	11.320	32.688	24.919	303.2	0.111
40	11.200	32.696	24.947	300.7	0.126
45	11.074	32.721	24.989	296.8	0.141
50	10.857	32.764	25.060	290.0	0.155
60	10.442	32.981	25.301	267.3	0.183
70	10.423	33.141	25.429	255.3	0.209
80	10.398	33.194	25.475	251.2	0.235
90	10.231	33.223	25.526	246.5	0.260
100	10.164	33.250	25.558	243.6	0.284
125	9.515	33.674	25.997	202.3	0.340
150	8.277	33.738	26.242	179.3	0.388
175	8.283	33.930	26.391	165.5	0.431
200	7.918	33.977	26.483	157.1	0.471
225	7.784	34.018	26.535	152.6	0.510
250	7.347	34.010	26.591	147.4	0.547
275	7.357	34.075	26.641	143.1	0.584
300	7.167	34.096	26.684	139.3	0.619
325	6.439	34.009	26.713	136.4	0.653
350	6.215	34.026	26.756	132.5	0.687
375	5.998	34.028	26.785	129.9	0.720
400	5.836	34.049	26.822	126.6	0.752
425	5.765	34.072	26.849	124.3	0.783
450	5.621	34.094	26.884	121.2	0.814
475	5.563	34.114	26.907	119.3	0.844
499	5.609	34.157	26.935	116.9	0.872



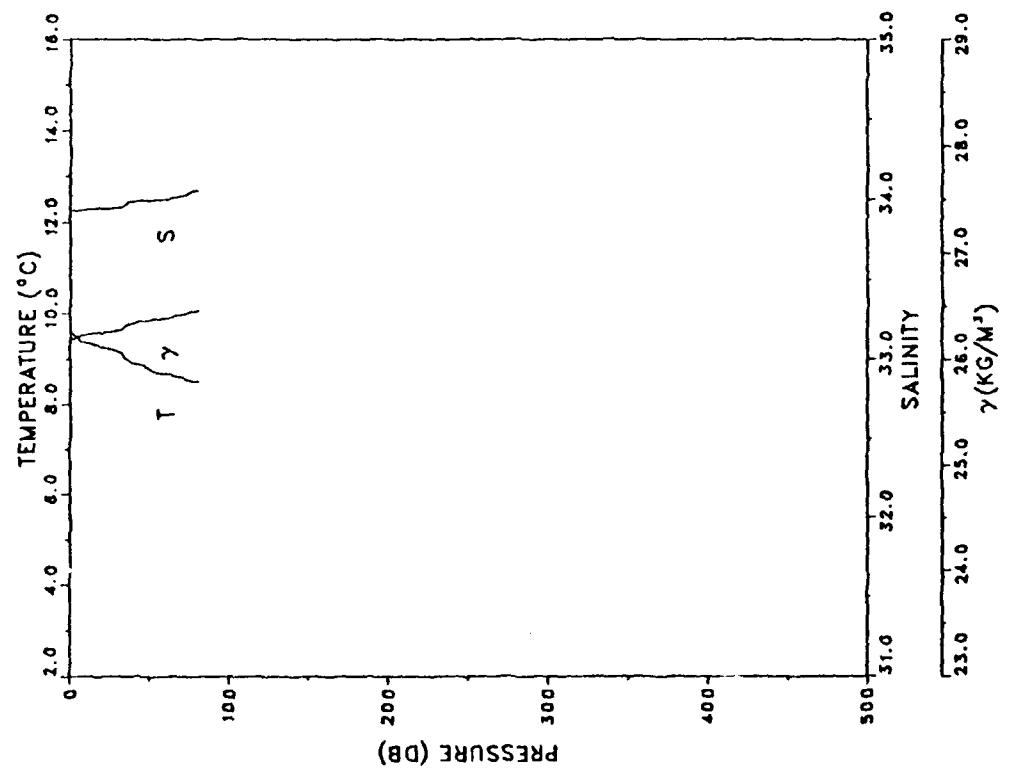
STATION: 52 LAT: 38 26.5 N LON: 125 35.1 W  
DATE: 6/20/87 TIME: 0300Z

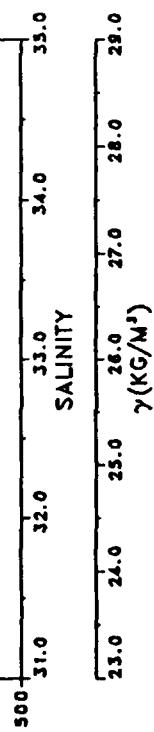
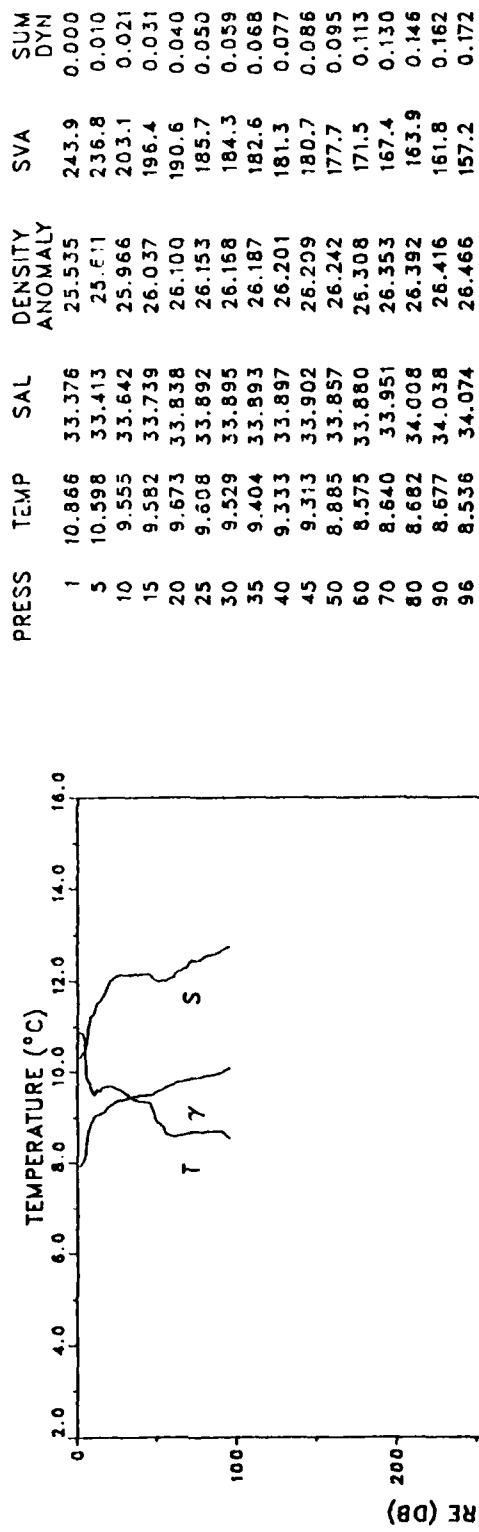




STATION: 54 LAT: 38 41.9 N LON: 125 35.1 W  
DATE: 6/20/87 TIME: 0600Z

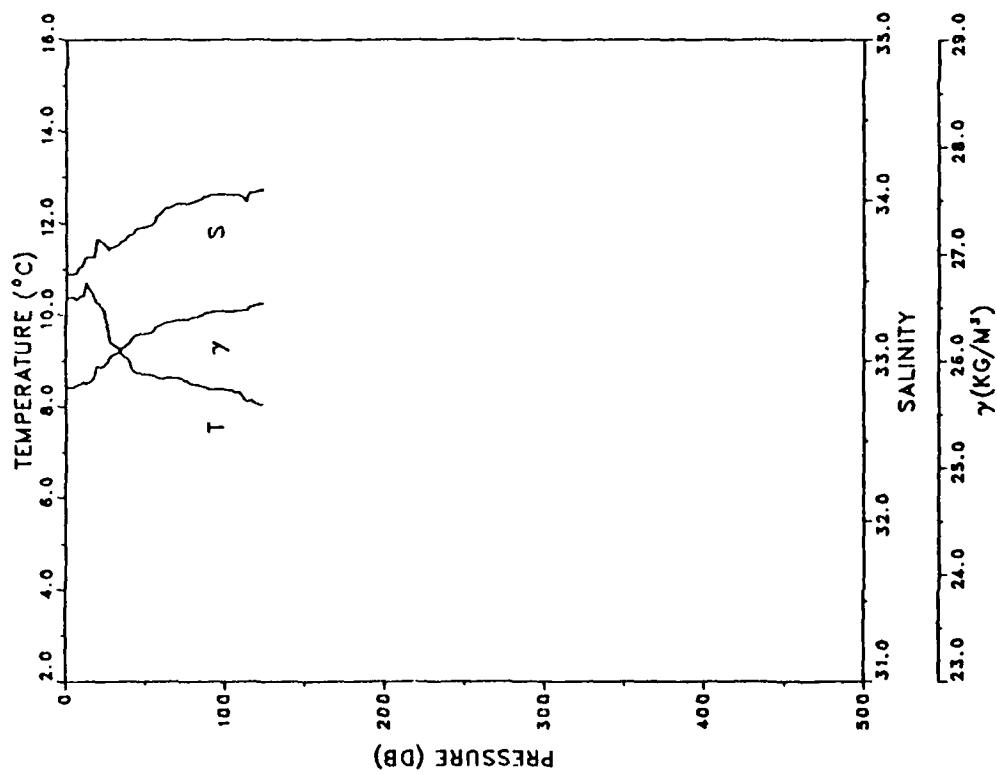
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
2	9.561	33.924	26.185	182.1	0.000
5	9.458	33.931	26.208	180.1	0.005
10	9.350	33.936	26.229	178.1	0.014
15	9.310	33.939	25.238	177.4	0.023
20	9.259	33.944	26.250	176.3	0.032
25	9.219	33.946	26.258	175.6	0.041
30	9.161	33.948	26.269	174.7	0.050
35	9.000	33.970	26.312	170.7	0.058
40	8.902	33.988	26.341	168.0	0.067
45	8.853	33.991	26.352	167.1	0.075
50	8.775	33.994	26.366	165.8	0.083
60	8.681	34.004	26.389	163.9	0.100
70	8.588	34.018	26.414	161.6	0.116
80	8.505	34.057	26.457	157.7	0.132
81	8.505	34.058	26.458	157.6	0.134





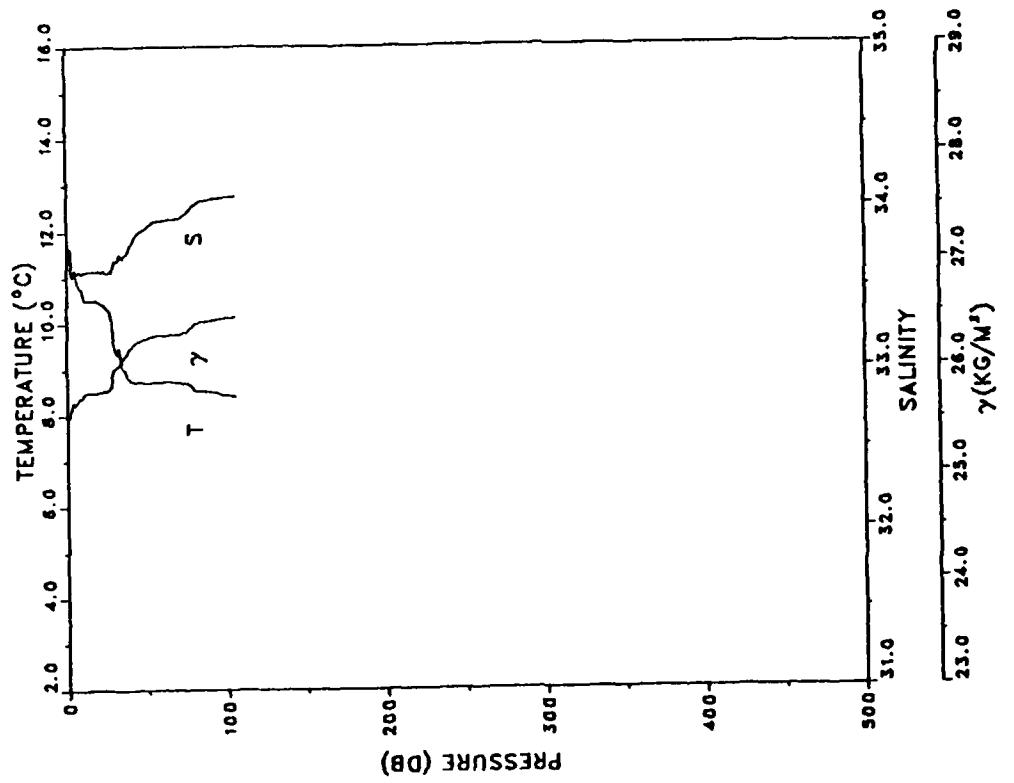
STATION: 56 LAT: 38 42.2 N LON: 123 35.6 W  
DATE: 6/20/87 TIME: 2018Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	10.386	33.542	25.748	223.6	0.000
5	10.386	33.542	25.748	223.7	0.009
10	10.411	33.589	25.781	220.7	0.020
15	10.556	33.644	25.798	219.2	0.031
20	10.249	33.753	25.936	206.1	0.042
25	9.922	33.716	25.963	203.7	0.052
30	9.351	33.711	26.053	195.2	0.062
35	9.164	33.742	26.107	190.1	0.072
40	9.014	33.780	26.161	185.1	0.081
45	8.721	33.820	26.238	177.9	0.090
50	8.697	33.833	26.252	176.6	0.099
60	8.606	33.919	26.334	169.1	0.116
70	8.614	33.973	26.375	165.4	0.133
80	8.485	33.988	26.406	162.5	0.149
90	8.380	34.028	26.454	158.2	0.165
100	8.365	34.034	26.461	157.7	0.181
124	8.027	34.060	26.532	151.3	0.218

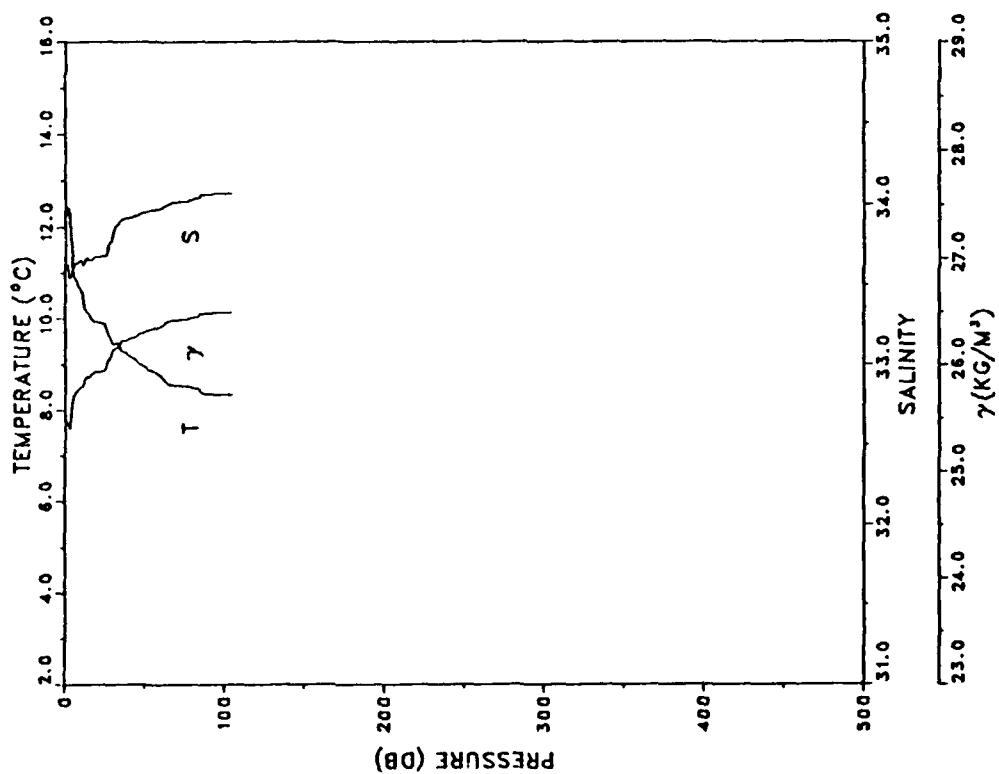


STATION: 57 LAT: 38 53.7 N LON: 123 51.0 W  
DATE: 6/20/87 TIME: 2311Z

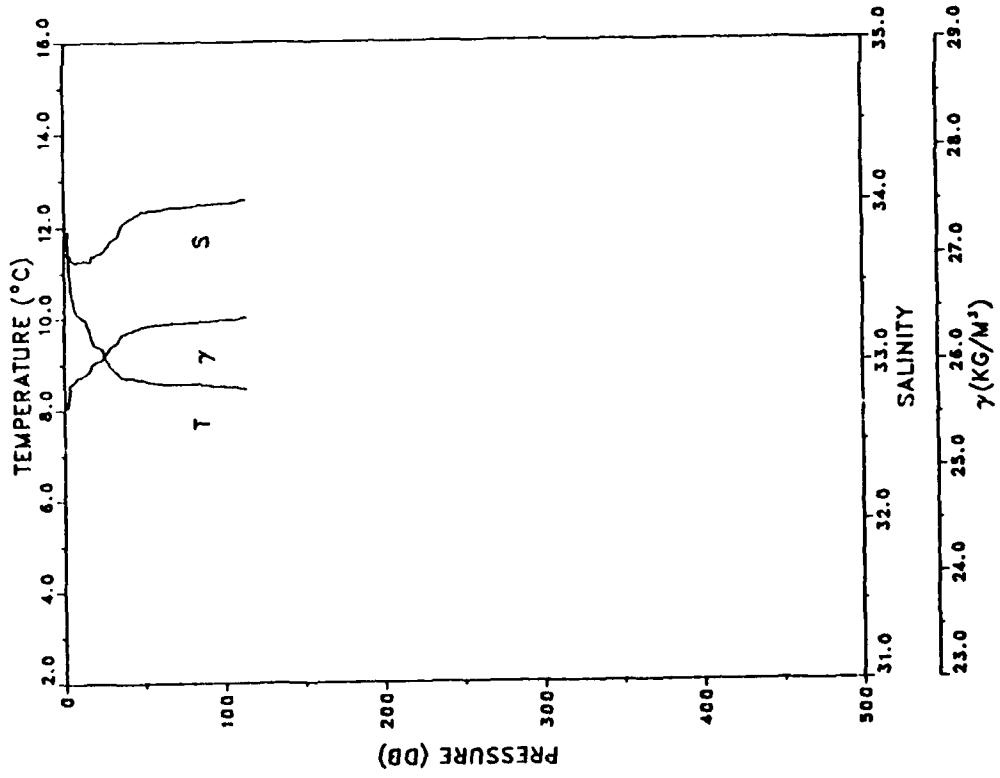
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.627	33.581	25.557	241.8	0.000
5	11.166	33.616	25.669	231.3	0.009
10	10.640	33.597	25.747	223.9	0.021
15	10.505	33.611	25.781	220.8	0.032
20	10.468	33.614	25.790	220.0	0.043
25	10.353	33.603	25.802	219.1	0.054
30	9.489	33.681	26.007	199.6	0.064
35	9.037	33.691	26.088	192.0	0.074
40	8.749	33.779	26.202	181.2	0.084
45	8.729	33.850	26.260	175.8	0.092
50	8.700	33.885	26.292	172.8	0.101
60	8.727	33.926	26.320	170.3	0.118
70	8.716	33.938	26.331	169.5	0.135
80	8.538	34.025	26.427	160.5	0.152
90	8.500	34.055	26.457	157.9	0.168
100	8.427	34.071	26.480	155.8	0.183
106	8.400	34.076	26.488	155.2	0.193



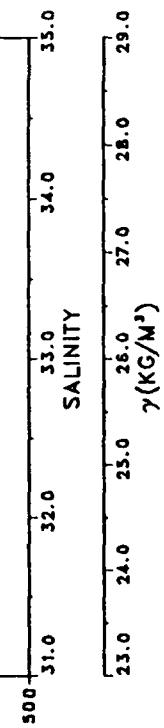
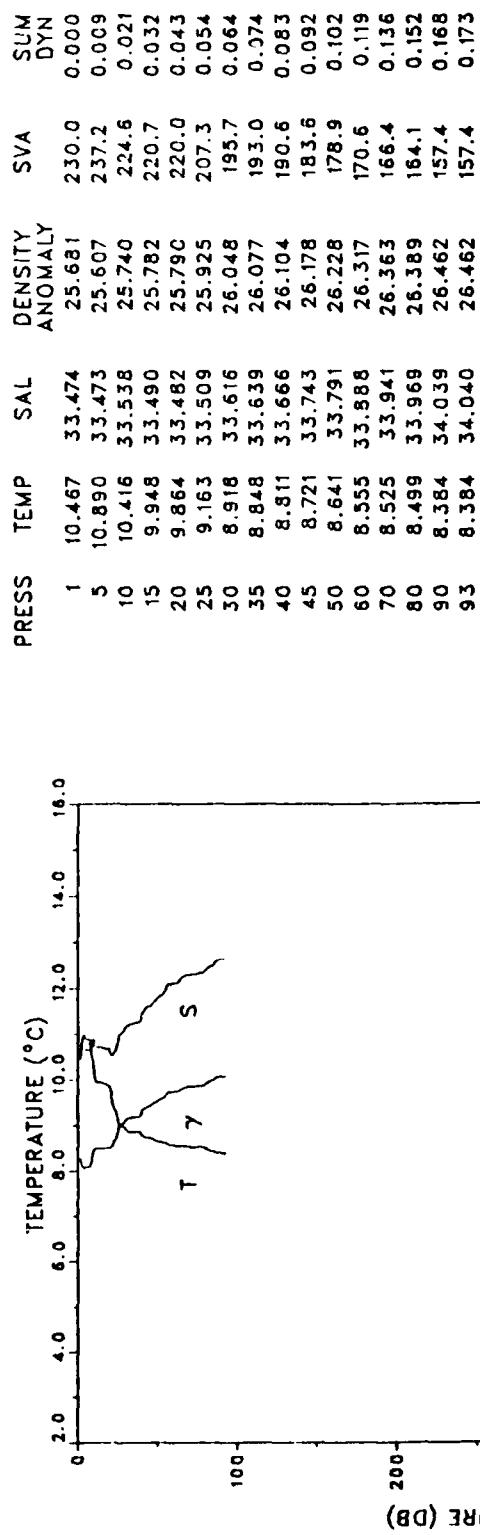
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.247	33.615	25.467	250.4	0.000
5	11.147	33.585	25.648	233.3	0.010
10	10.643	33.657	25.793	219.5	0.021
15	10.130	33.649	25.875	211.8	0.032
20	9.934	33.676	25.930	206.8	0.042
25	9.879	33.673	25.936	206.2	0.053
30	9.442	33.815	26.120	188.9	0.062
35	9.334	33.901	26.204	180.9	0.072
40	9.191	33.913	26.237	177.9	0.081
45	9.082	33.927	26.265	175.3	0.089
50	8.940	33.951	26.307	171.5	0.098
60	8.756	33.976	26.355	167.1	0.115
70	8.542	34.015	26.419	161.2	0.132
80	8.486	34.032	26.441	159.3	0.148
90	8.353	34.063	26.485	155.2	0.163
100	8.340	34.067	26.490	154.9	0.179
104	8.338	34.066	26.490	155.0	0.185



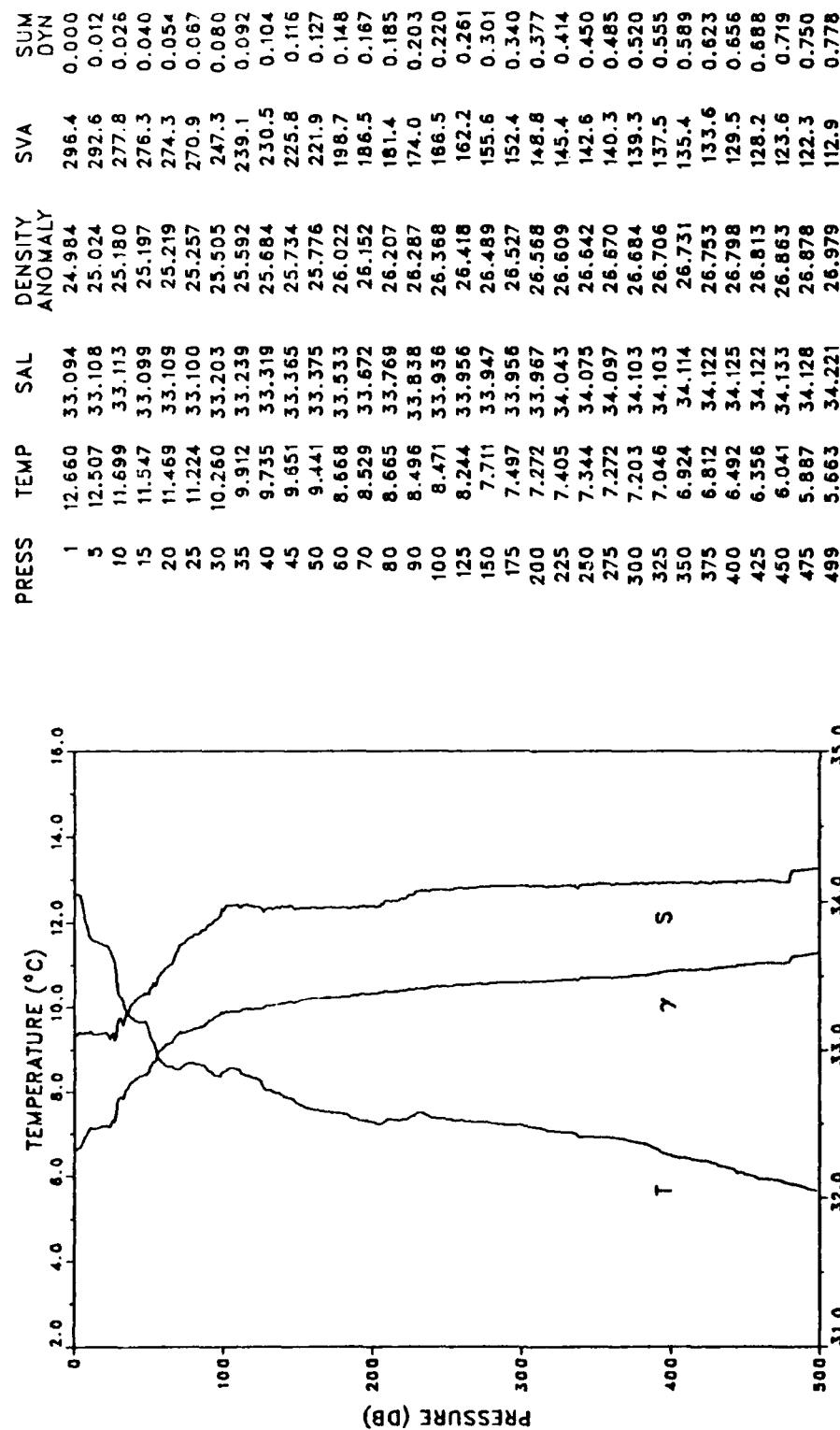
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.916	33.695	25.592	238.5	0.000
5	10.457	33.653	25.823	216.7	0.009
10	10.055	33.646	25.886	210.7	0.020
15	9.837	33.647	25.923	207.3	0.030
20	9.403	33.686	26.025	197.7	0.040
25	9.249	33.712	26.070	193.5	0.050
30	8.916	33.777	26.174	183.7	0.060
35	8.768	33.840	26.247	176.9	0.069
40	8.711	33.903	26.305	171.5	0.077
45	8.684	33.933	26.332	168.9	0.086
50	8.647	33.951	26.352	167.1	0.094
60	8.578	33.962	26.372	165.5	0.111
70	8.557	33.979	26.388	164.1	0.127
80	8.558	33.985	26.393	163.8	0.144
90	8.552	33.996	26.402	163.1	0.160
100	8.504	34.001	26.414	162.2	0.176
114	8.451	34.024	26.440	159.9	0.199



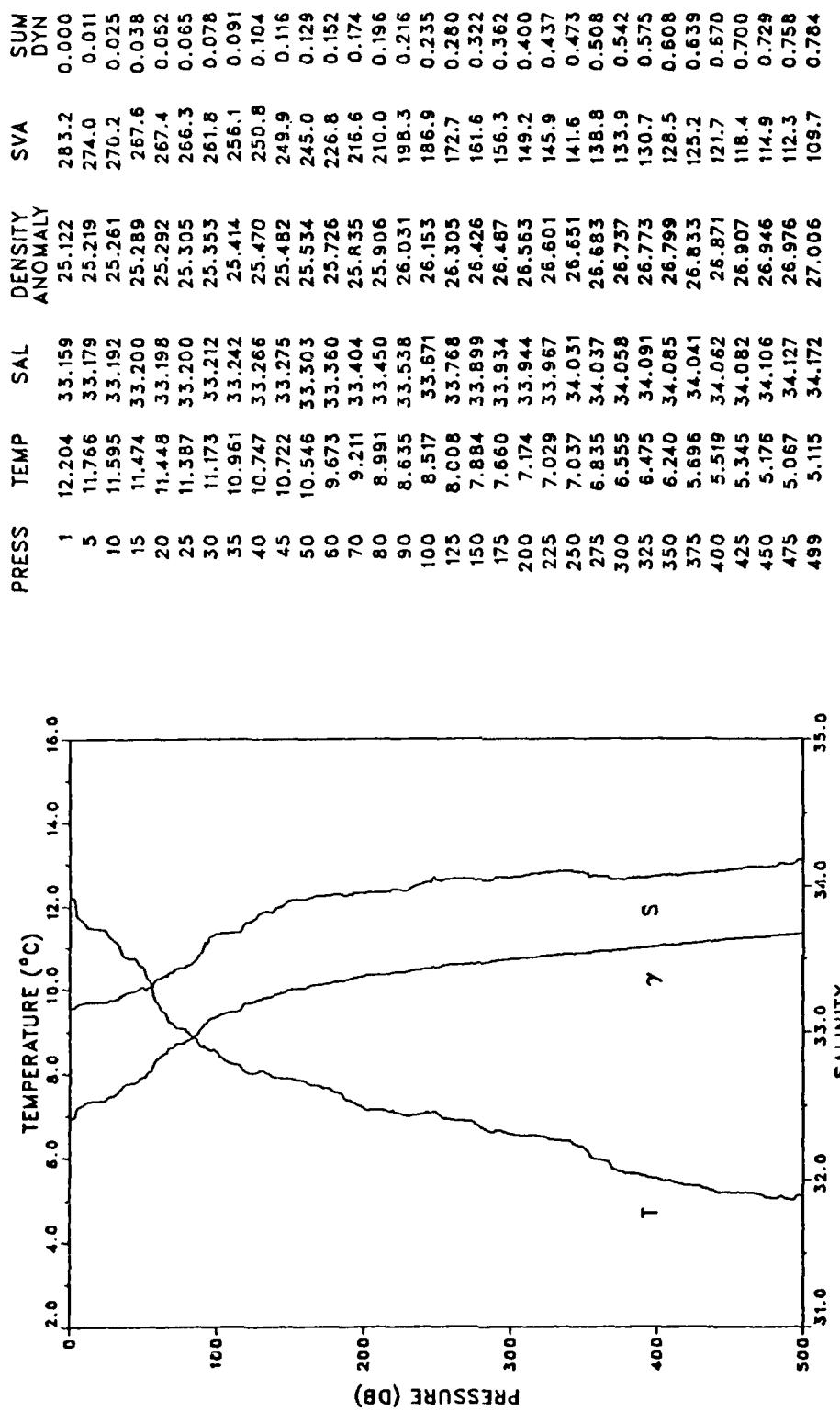
STATION: 60 LAT: 39 13.1 N LON: 123 51.7 W  
DATE: 6/21/87 TIME: 0218Z

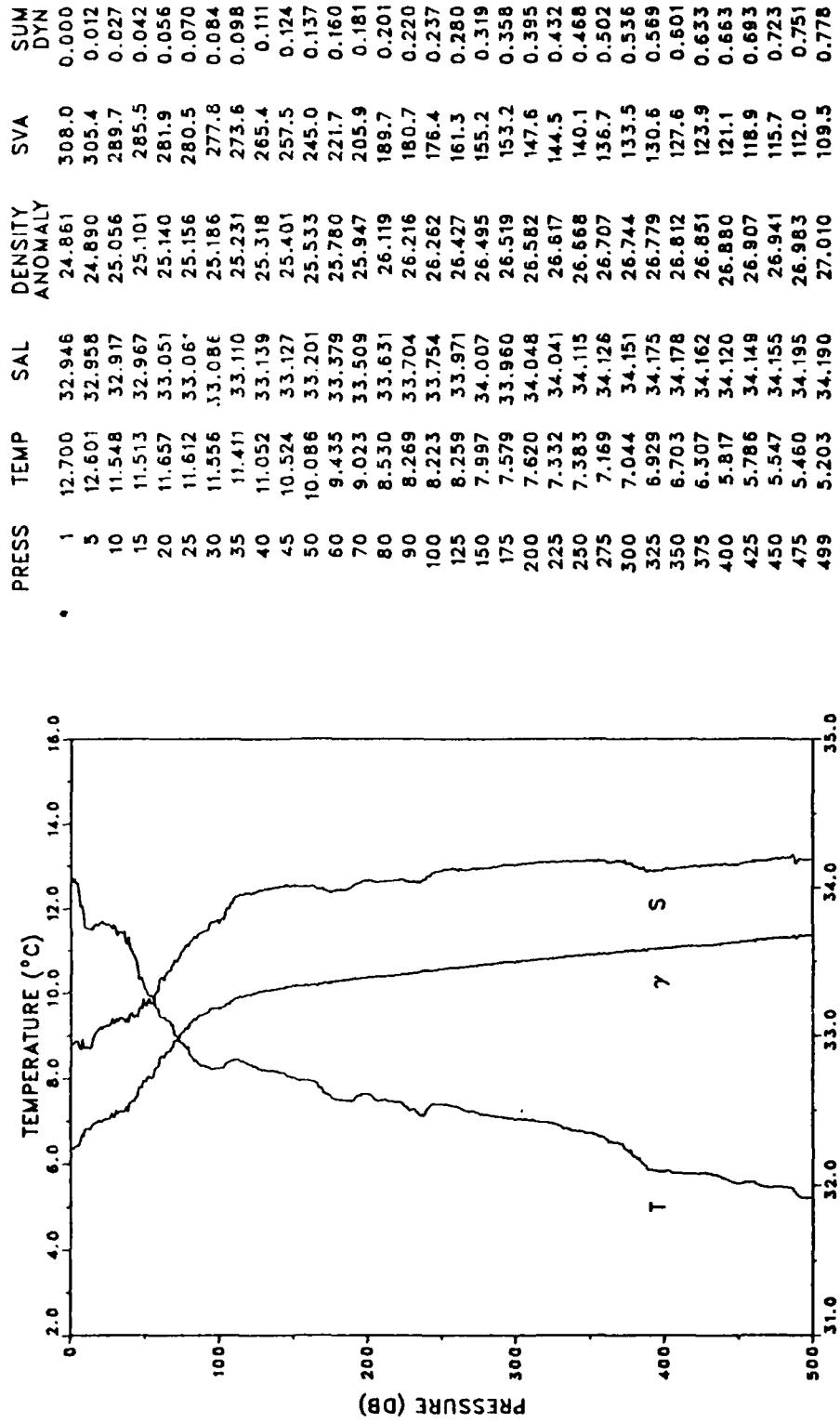


STATION: 61 LAT: 39 25.4 N LON: 123 52.2 W  
DATE: 6/21/87 TIME: 0353Z

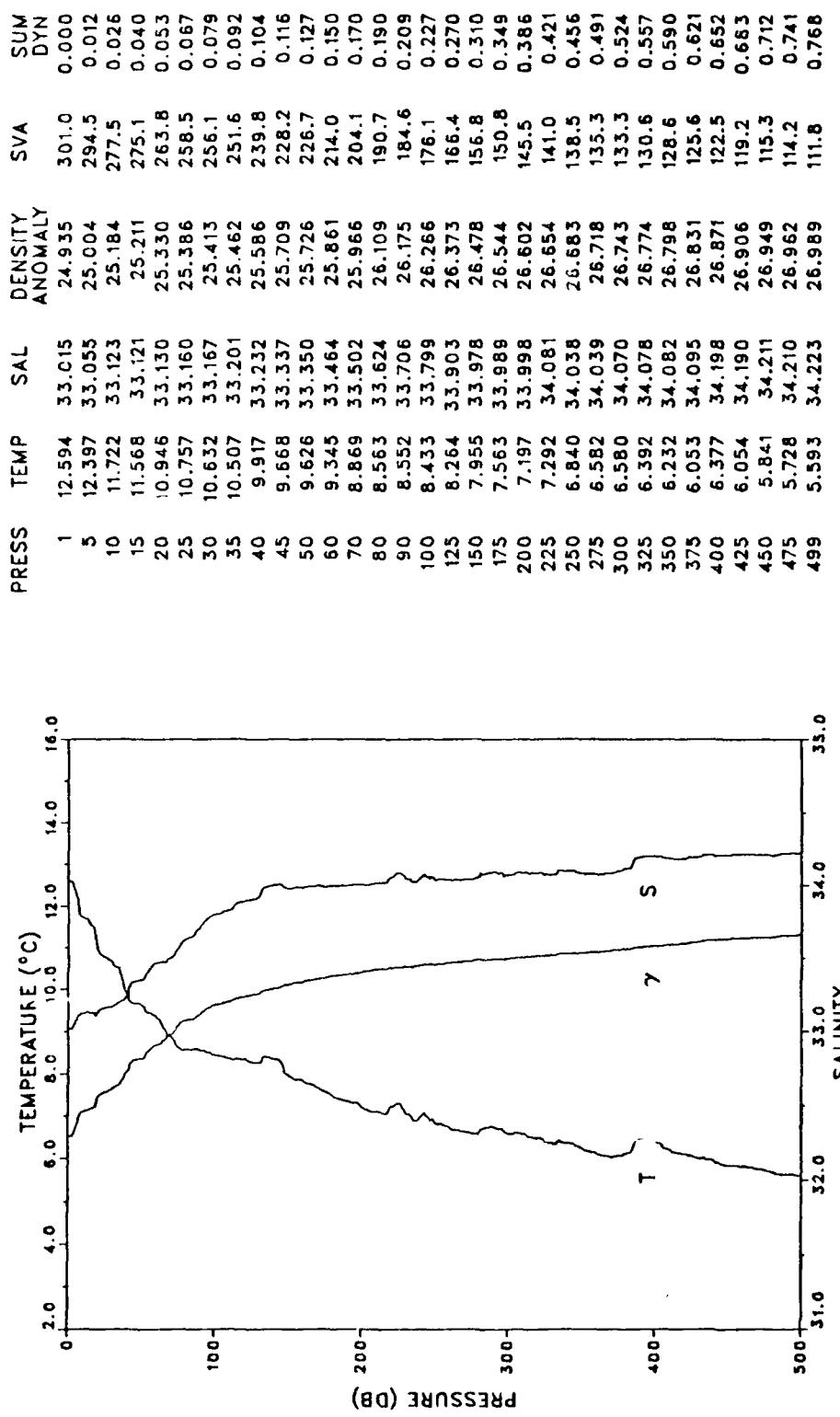


STATION: 62 LAT: 39 25.3 N LON: 124 0.6 W  
DATE: 6/21/87 TIME: 0500Z



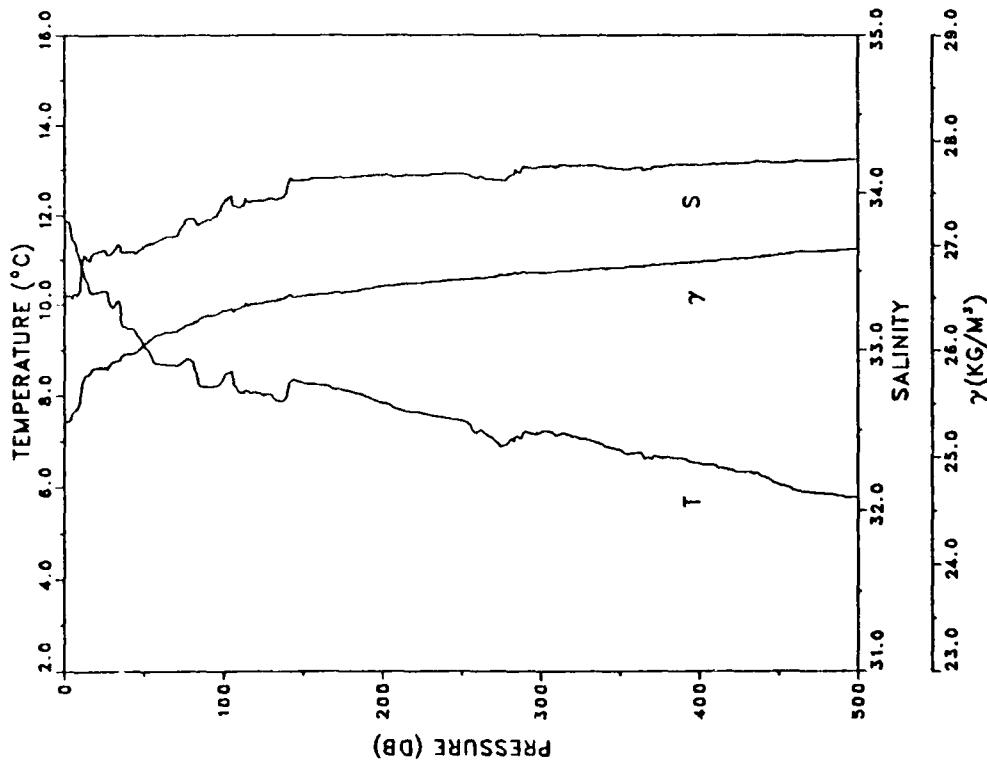


STATION: 641 LAT: 39 9.6 N LON: 124 4.9 W  
DATE: 6/21/87 TIME: 0841Z

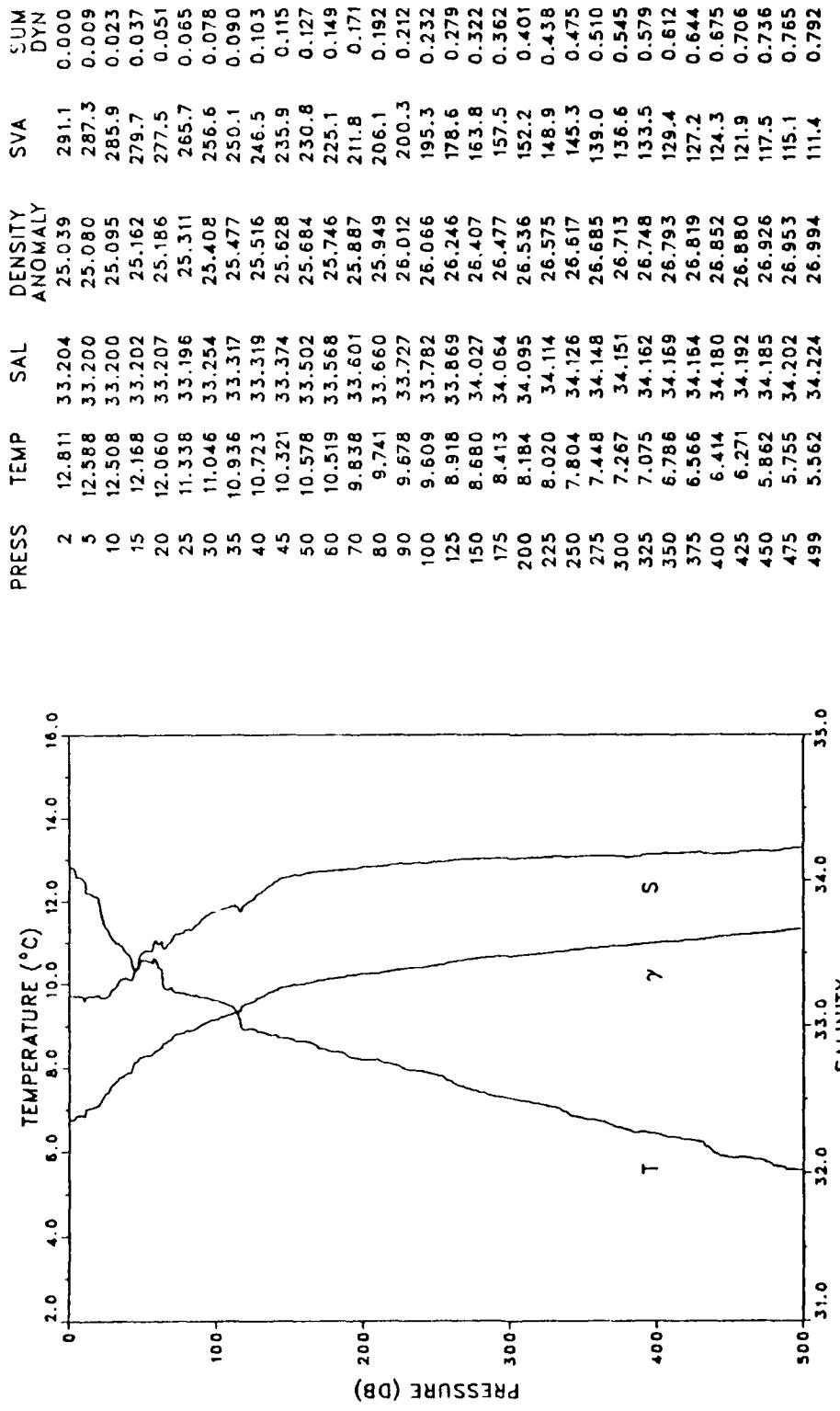


STATION: 65 LAT: 38 53.3 N LON: 124 1.1 W  
DATE: 6/21/87 TIME: 1000Z

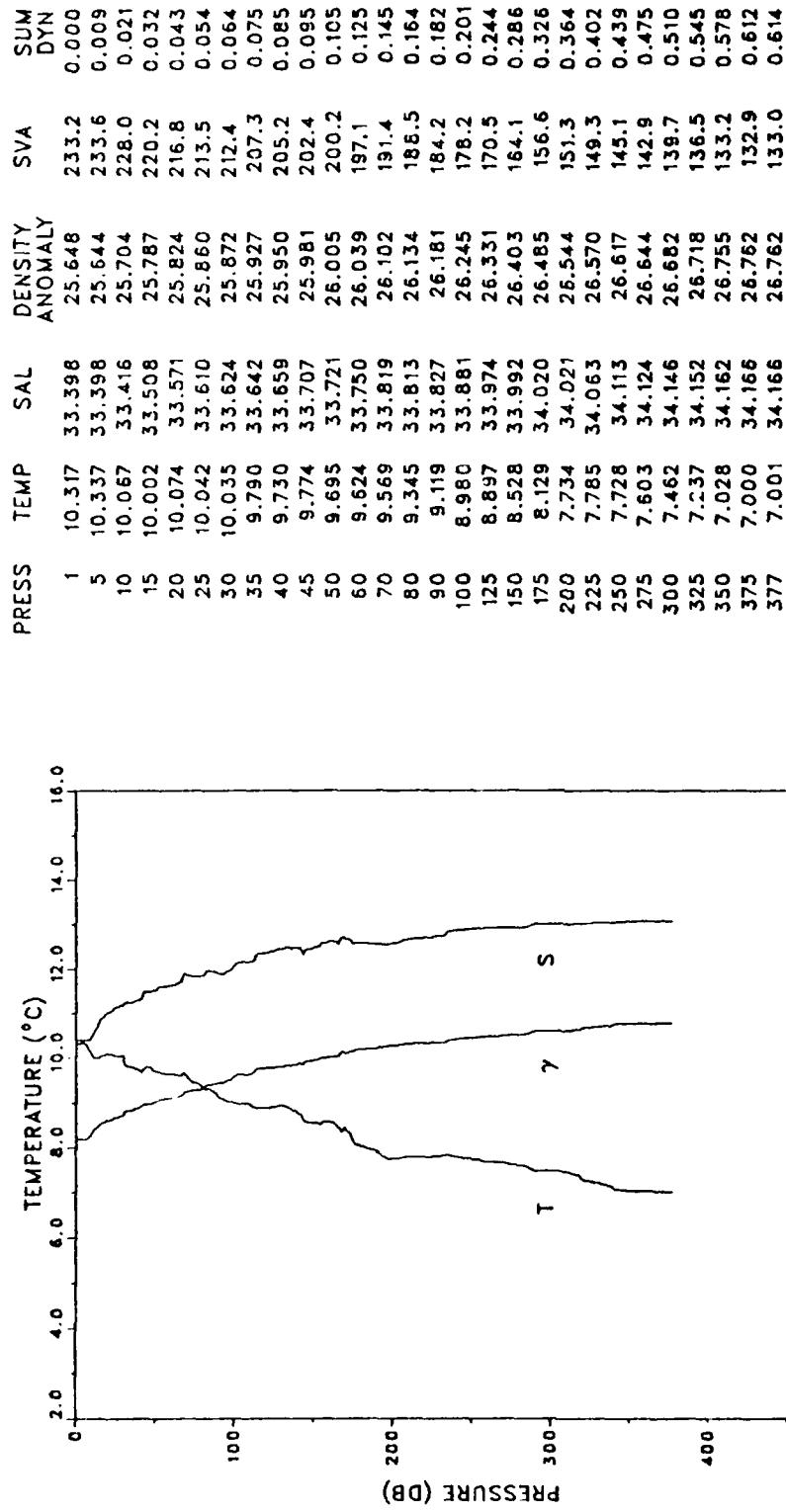
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.861	33.340	25.327	263.7	0.000
5	11.454	33.328	25.392	257.6	0.010
10	11.032	33.381	25.510	246.5	0.023
15	10.480	33.569	25.753	223.5	0.035
20	10.266	33.617	25.827	216.5	0.046
25	10.305	33.630	25.831	216.3	0.057
30	9.928	33.616	25.884	211.3	0.067
35	10.014	33.654	25.899	210.0	0.078
40	9.481	33.621	25.962	204.1	0.088
45	9.397	33.613	25.969	203.5	0.098
50	9.101	33.658	26.052	195.7	0.108
60	8.688	33.697	26.147	186.8	0.127
70	8.655	33.722	26.172	184.6	0.146
80	8.742	33.834	26.246	177.8	0.164
90	8.179	33.826	26.326	170.3	0.182
100	8.386	33.935	26.380	165.4	0.198
125	8.003	33.949	26.448	159.2	0.239
150	8.264	34.077	26.510	153.9	0.278
175	8.126	34.095	26.545	151.0	0.316
200	7.822	34.112	26.603	145.7	0.353
225	7.602	34.108	26.632	143.3	0.389
250	7.449	34.121	26.664	140.6	0.425
275	6.891	34.078	26.708	136.5	0.459
300	7.211	34.172	26.737	134.3	0.493
325	7.059	34.174	26.760	132.4	0.527
350	6.803	34.153	26.779	130.8	0.560
375	6.641	34.163	26.808	128.3	0.592
400	6.511	34.176	26.836	125.9	0.624
425	6.334	34.189	26.869	123.0	0.655
450	6.063	34.193	26.907	119.4	0.685
475	5.877	34.205	26.940	116.5	0.715
499	5.783	34.215	26.960	114.8	0.742

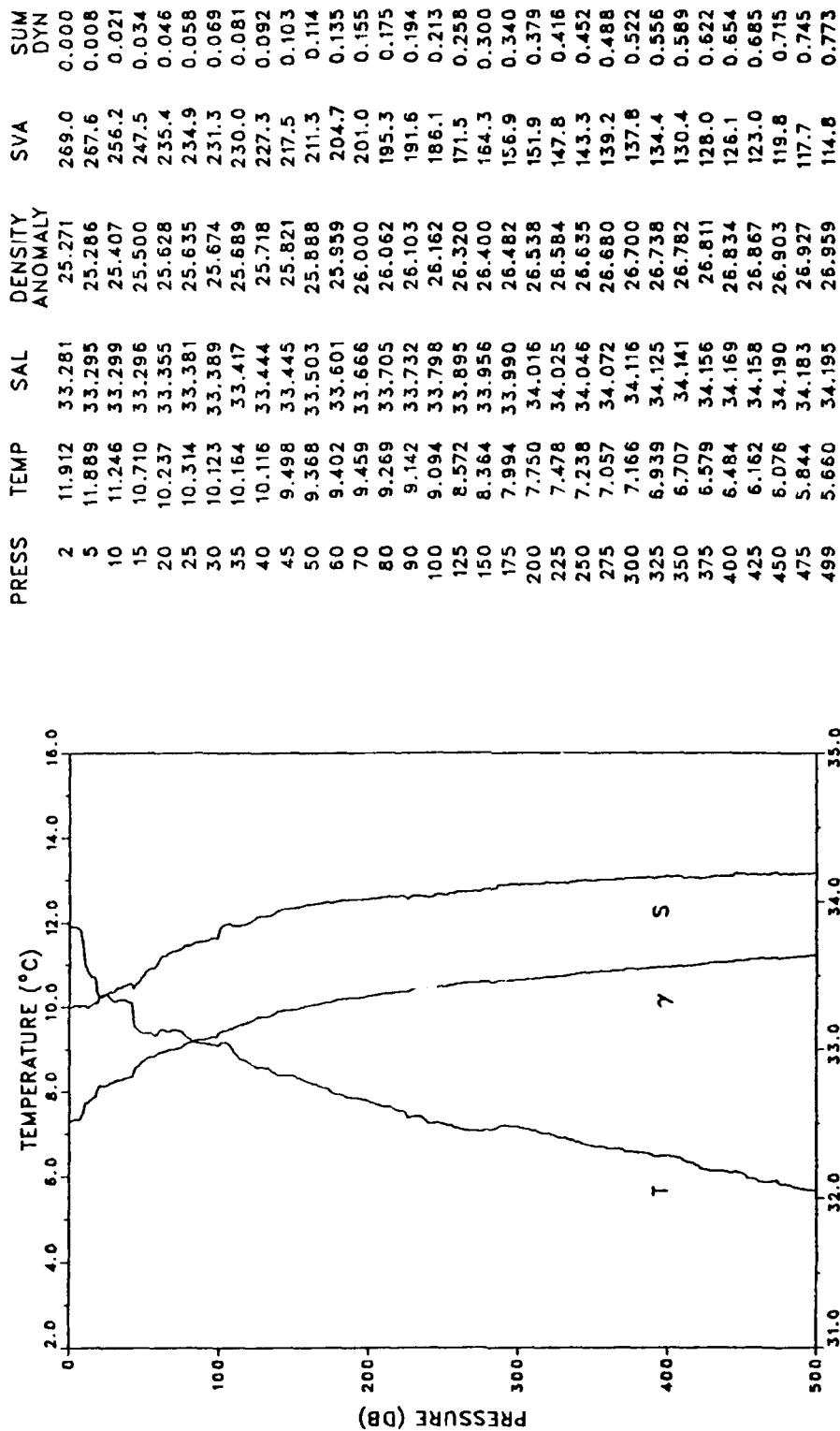


STATION: 66 LAT: 38 39.8 N LON: 123 50.7 W  
DATE: 6/21/87 TIME: 1218Z



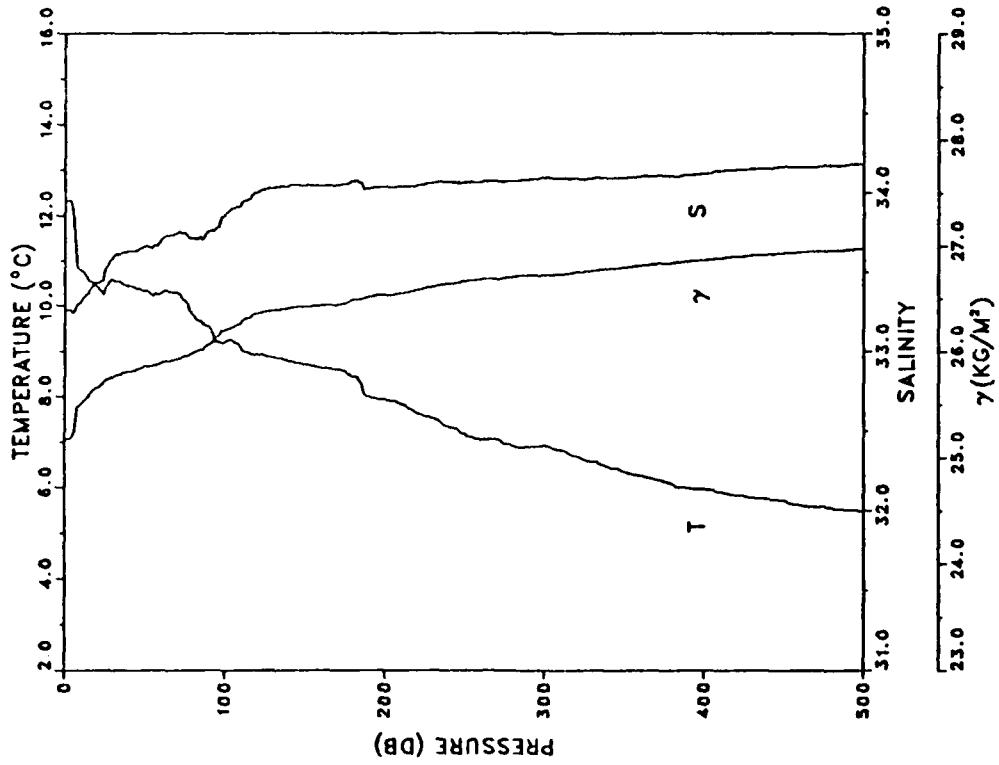
STATION: 67 LAT: 38 26.2 N LON: 123 39.2 W  
DATE: 6/21/87 TIME: 1400Z



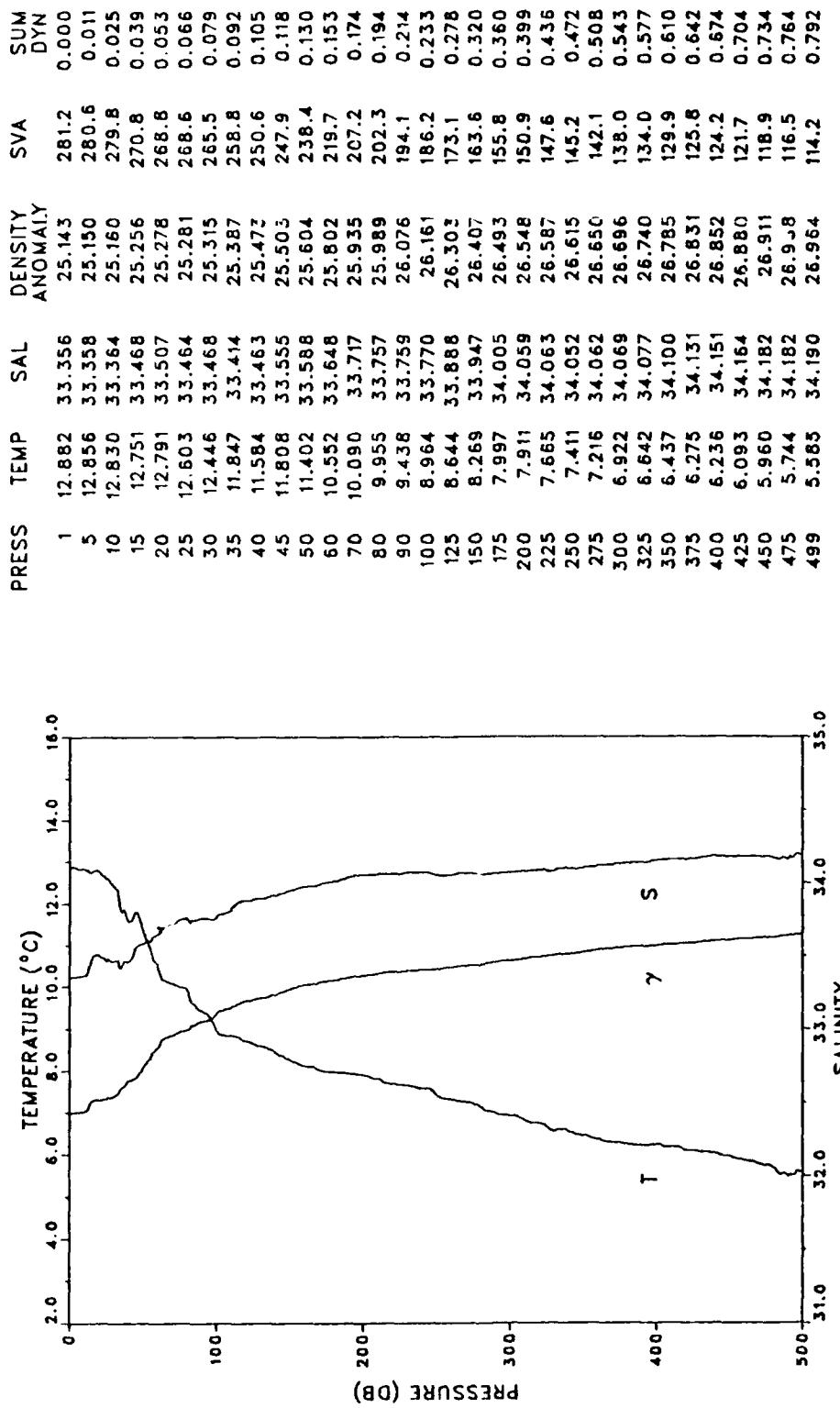


STATION: 69 LAT: 38 14.7 N LON: 123 39.3 W  
DATE: 6/21/87 TIME: 1700Z

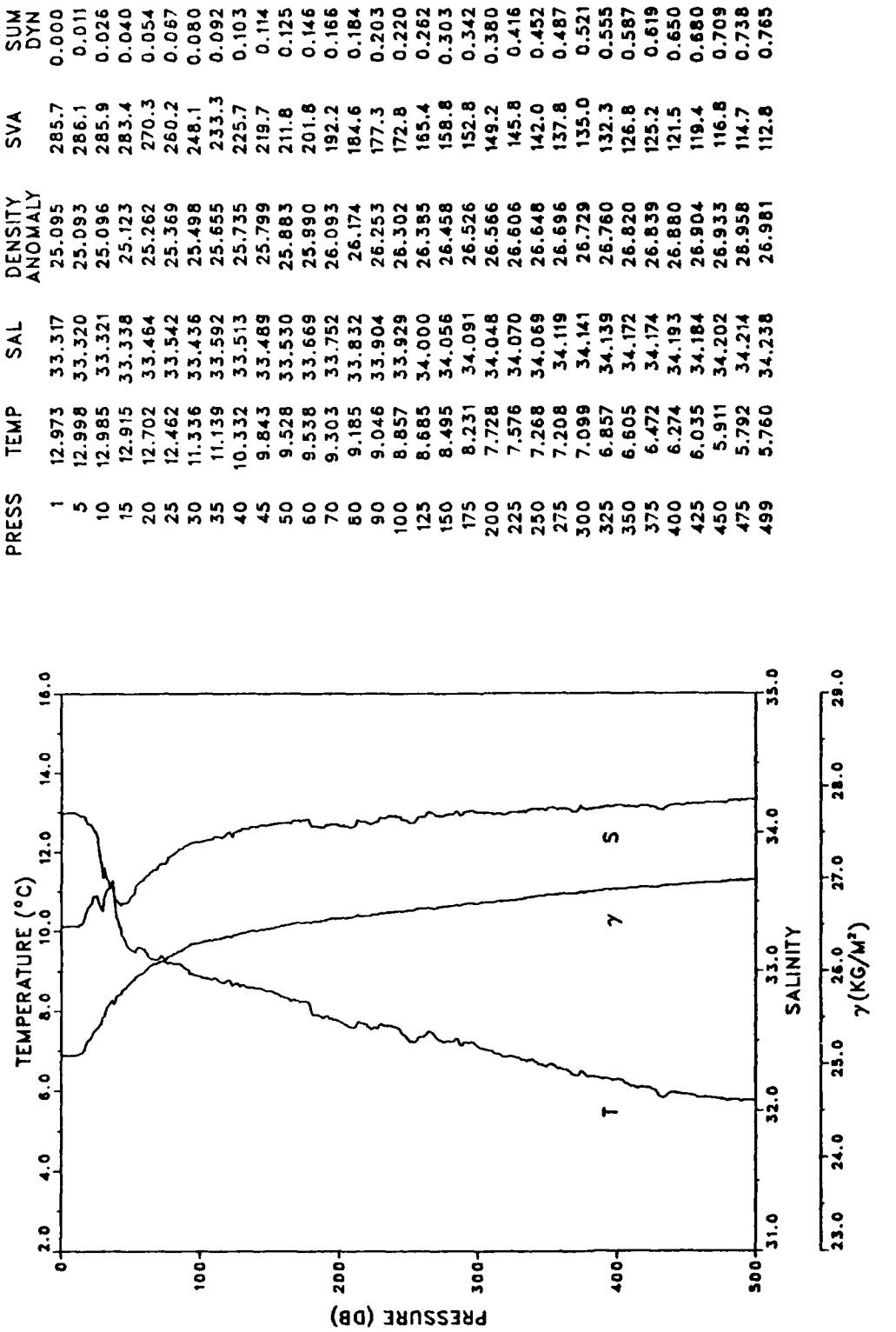
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.323	33.257	25.175	278.2	0.000
5	12.153	33.240	25.194	276.4	0.011
10	10.800	33.308	25.494	248.0	0.024
15	10.595	33.359	25.569	240.9	0.036
20	10.430	33.429	25.653	233.1	0.048
25	10.357	33.501	25.721	226.7	0.060
30	10.586	33.593	25.753	223.7	0.071
35	10.537	33.617	25.781	221.3	0.082
40	10.441	33.629	25.807	218.9	0.093
45	10.371	33.636	25.824	217.3	0.104
50	10.329	33.666	25.855	214.5	0.115
60	10.279	33.693	25.884	211.9	0.136
70	10.289	33.743	25.922	208.6	0.157
80	9.784	33.711	25.982	203.0	0.178
90	9.537	33.756	26.058	195.9	0.198
100	9.192	33.857	26.193	183.2	0.217
125	8.889	34.022	26.370	166.8	0.260
150	8.700	34.044	26.417	162.8	0.302
175	8.552	34.051	26.445	160.5	0.342
200	7.923	34.031	26.524	153.2	0.381
225	7.558	34.054	26.596	146.7	0.419
250	7.169	34.063	26.638	141.0	0.455
275	6.950	34.070	26.693	137.9	0.490
300	6.911	34.093	26.717	136.0	0.524
325	6.600	34.084	26.751	132.9	0.557
350	6.348	34.092	26.791	129.3	0.590
375	6.134	34.104	26.828	126.0	0.622
400	5.965	34.117	26.859	123.2	0.653
425	5.817	34.144	26.899	119.6	0.684
450	5.709	34.164	26.928	117.1	0.713
475	5.576	34.170	26.949	115.3	0.742
499	5.470	34.178	26.969	113.6	0.770

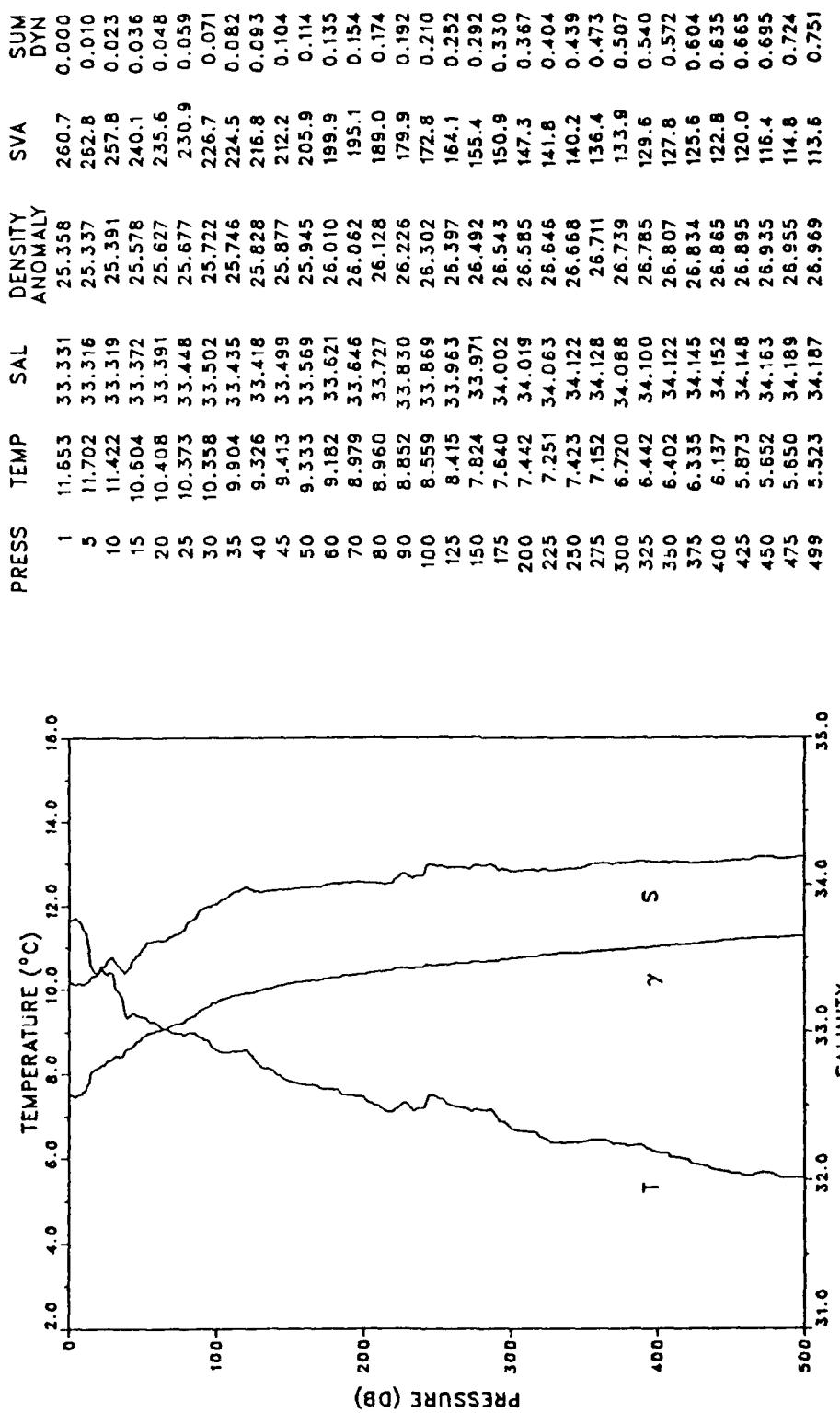


STATION: 70 LAT: 38 11.3 N LON: 123 46.3 W  
DATE: 6/21/87 TIME: 1800Z

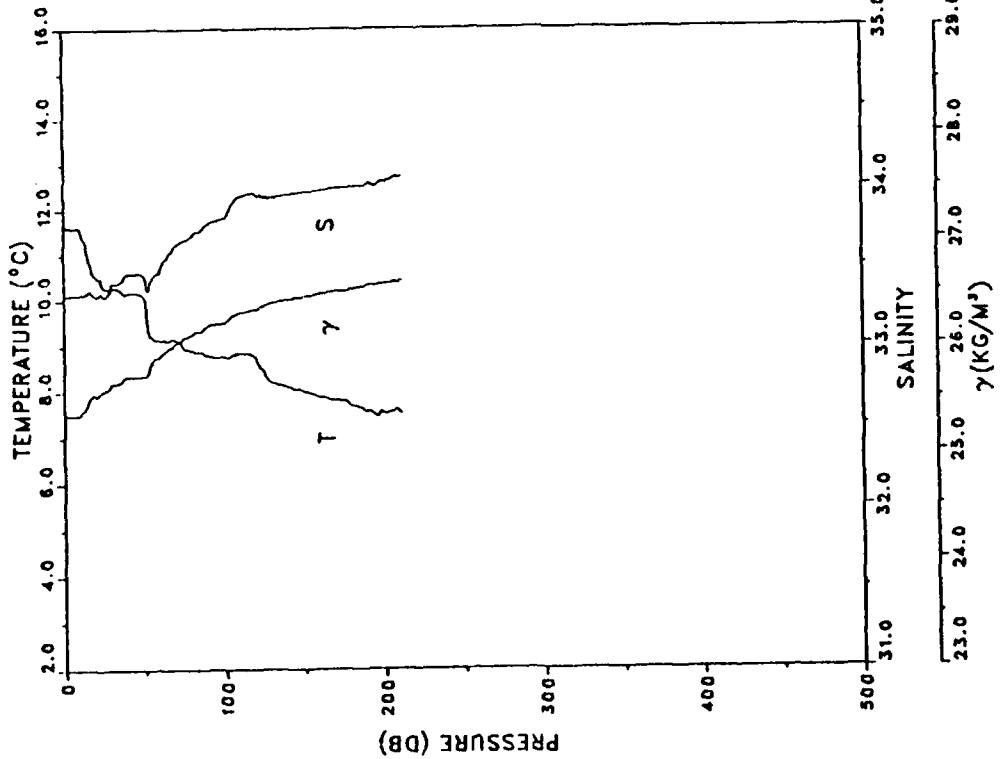


STATION: 71 LAT: 38 18.2 N LON: 123 51.4 W  
DATE: 6/21/87 TIME: 1900Z

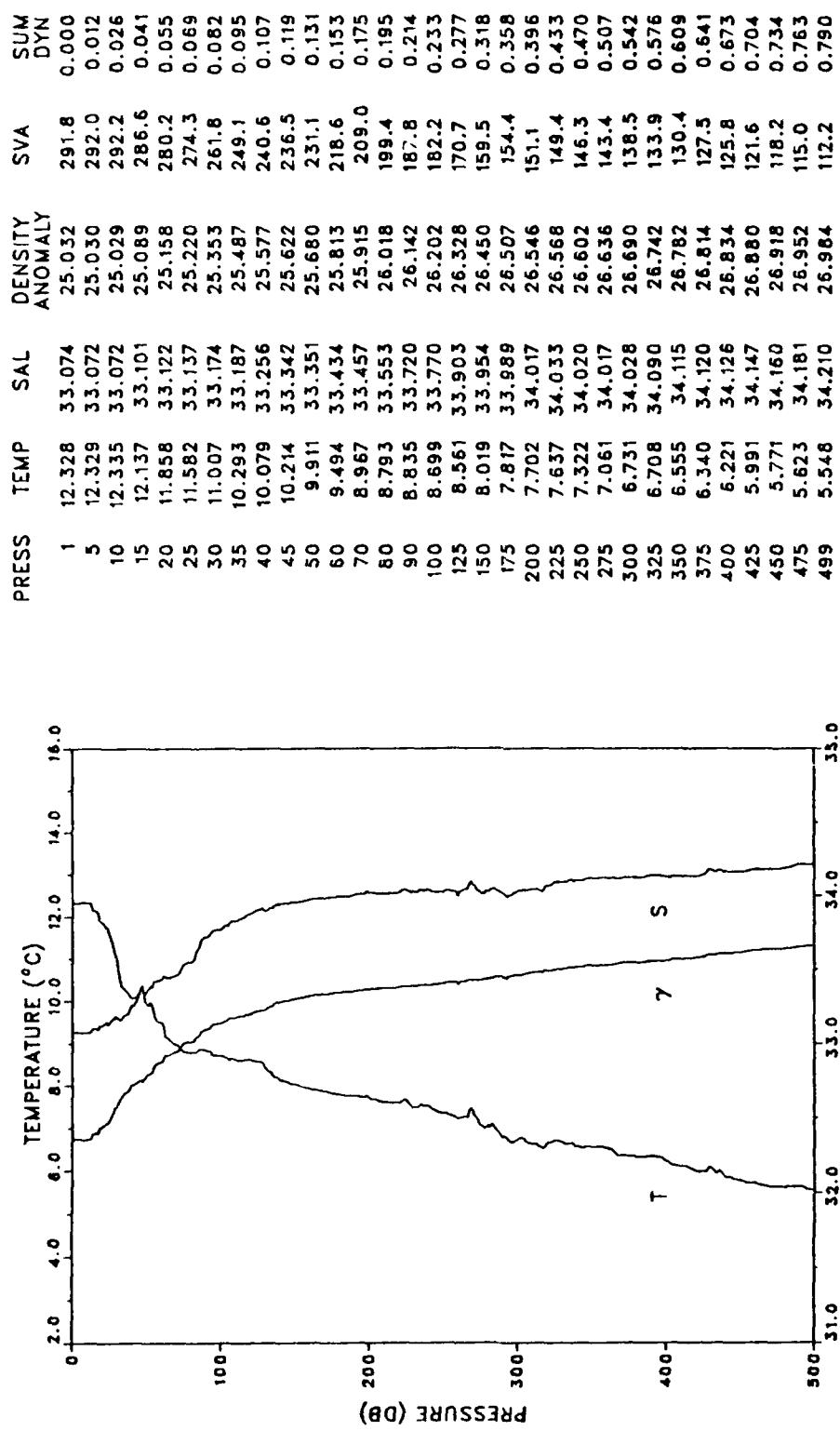




PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.811	33.319	25.357	260.9	0.000
5	11.603	33.322	25.360	260.6	0.010
10	11.594	33.322	25.362	260.6	0.023
15	11.093	33.334	25.462	251.1	0.036
20	10.549	33.315	25.543	243.5	0.049
25	10.273	33.311	25.587	239.4	0.061
30	10.286	33.396	25.652	233.4	0.073
35	10.255	33.404	25.663	232.4	0.084
40	10.173	33.456	25.718	227.3	0.096
45	10.168	33.458	25.720	227.2	0.107
50	10.084	33.444	25.723	227.0	0.118
60	9.125	33.466	25.898	210.5	0.140
70	9.129	33.635	26.029	198.2	0.161
80	8.904	33.691	26.109	190.8	0.180
90	8.789	33.767	26.186	183.6	0.199
100	8.779	33.806	26.218	180.8	0.217
125	8.409	33.936	26.377	166.0	0.260
150	8.002	33.967	26.463	158.3	0.301
175	7.791	33.992	26.513	153.8	0.340
200	7.517	34.030	26.583	147.5	0.378
211	7.525	34.060	26.605	145.6	0.394

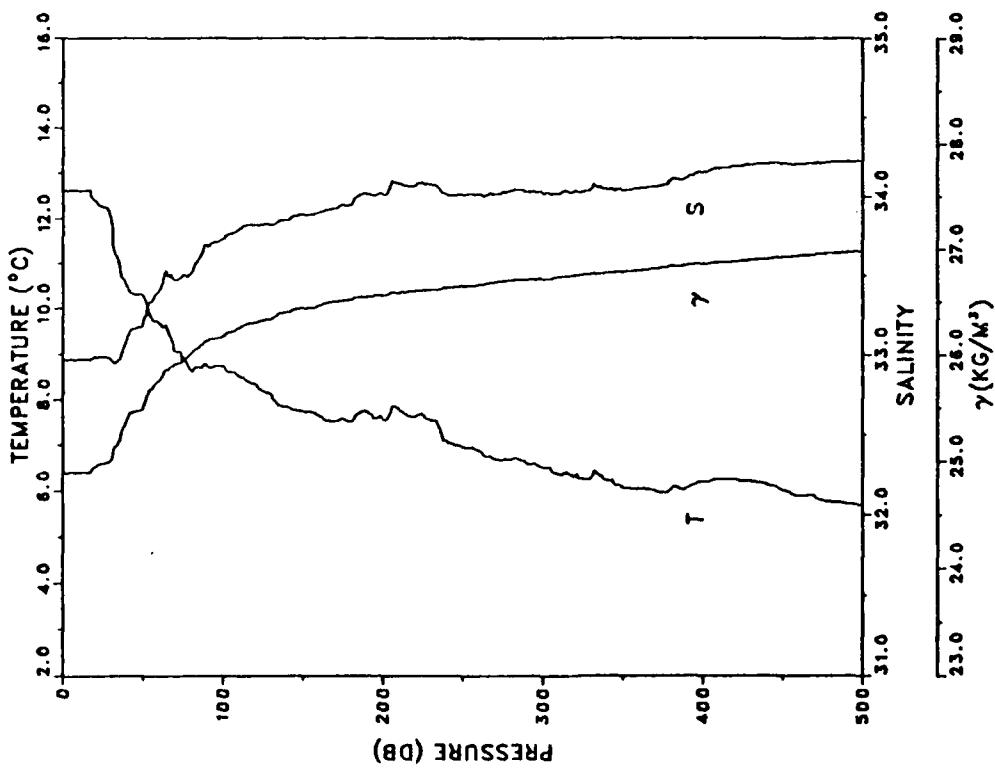


STATION: 731 LAT: 38 30.4 N LON: 124 1.1 W  
DATE: 6/21/87 TIME: 2323Z

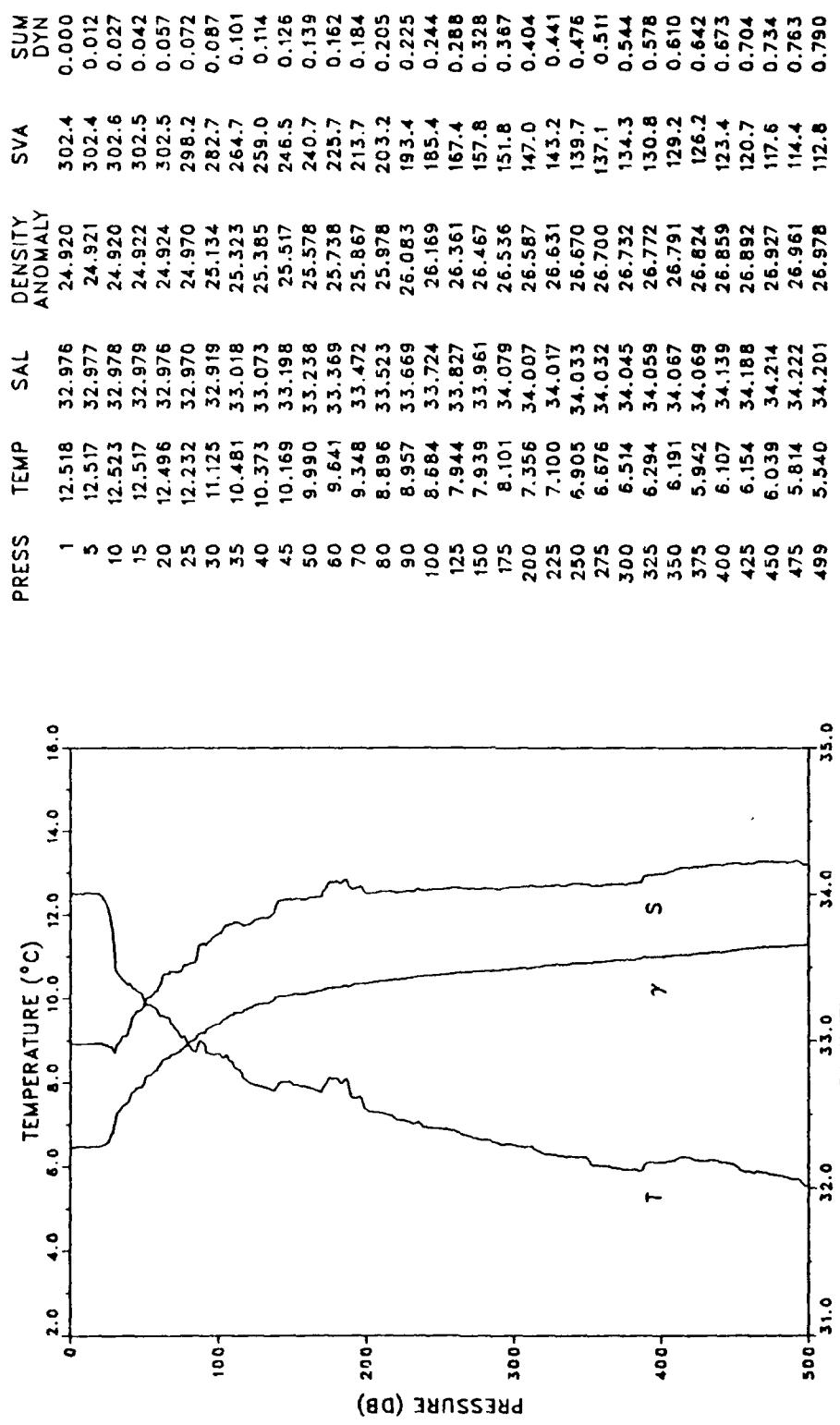


STATION: 74 LAT: 38 36.3 N LON: 124 2.9 W  
 DATE: 6/22/87 TIME: 0100Z

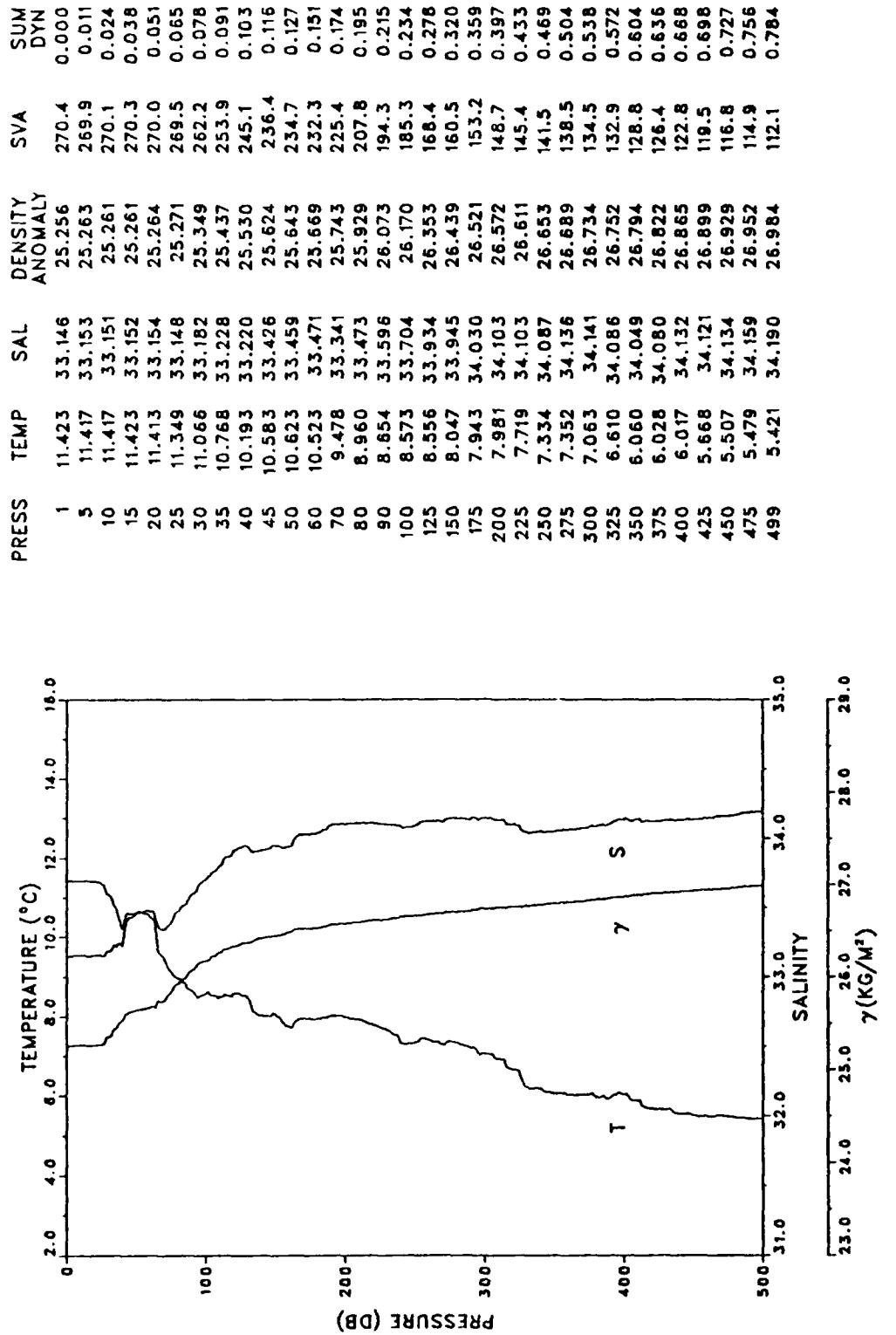
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.620	32.962	24.889	305.4	0.000
5	12.624	32.966	24.891	305.2	0.012
10	12.618	32.967	24.893	305.2	0.027
15	12.626	32.967	24.892	305.4	0.043
20	12.415	32.985	24.946	300.3	0.058
25	12.261	32.984	24.975	297.7	0.073
30	12.031	32.970	25.007	294.7	0.088
35	11.091	32.963	25.174	279.0	0.102
40	10.534	33.079	25.362	261.1	0.115
45	10.320	33.161	25.462	251.7	0.128
50	10.295	33.180	25.482	250.0	0.141
60	9.713	33.395	25.747	224.9	0.165
70	9.081	33.470	25.908	209.7	0.186
80	8.652	33.505	26.002	200.9	0.207
90	8.765	33.591	26.130	188.9	0.226
100	8.728	33.725	26.163	186.0	0.245
125	8.188	33.820	26.319	171.4	0.290
150	7.744	33.882	26.434	160.9	0.331
175	7.582	33.944	26.506	154.4	0.371
200	7.572	34.006	26.556	150.1	0.409
225	7.658	34.085	26.606	145.8	0.446
250	6.963	34.008	26.643	142.3	0.482
275	6.700	34.027	26.693	137.8	0.517
300	6.514	34.019	26.711	136.3	0.551
325	6.268	34.028	26.751	132.7	0.585
350	6.075	34.034	26.780	130.1	0.618
375	5.976	34.067	26.819	126.8	0.650
400	6.216	34.152	26.855	123.8	0.681
425	6.224	34.192	26.886	121.3	0.712
450	6.024	34.208	26.924	117.8	0.742
475	5.808	34.211	26.953	115.1	0.771
499	5.704	34.223	26.976	113.2	0.798

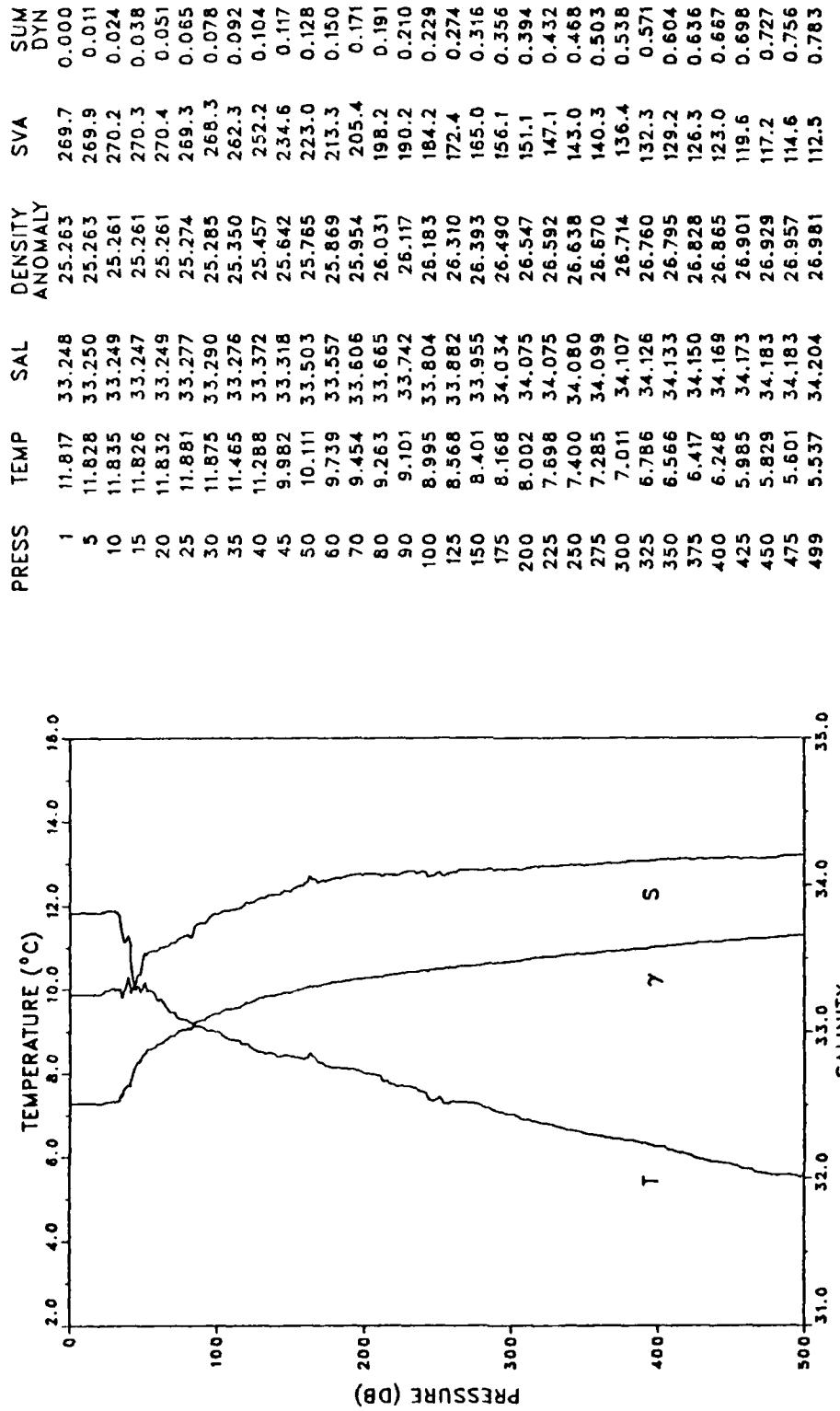


STATION: 75 LAT: 38 41.4 N LON: 124 6.1 W  
DATE: 6/22/87 TIME: 0223Z

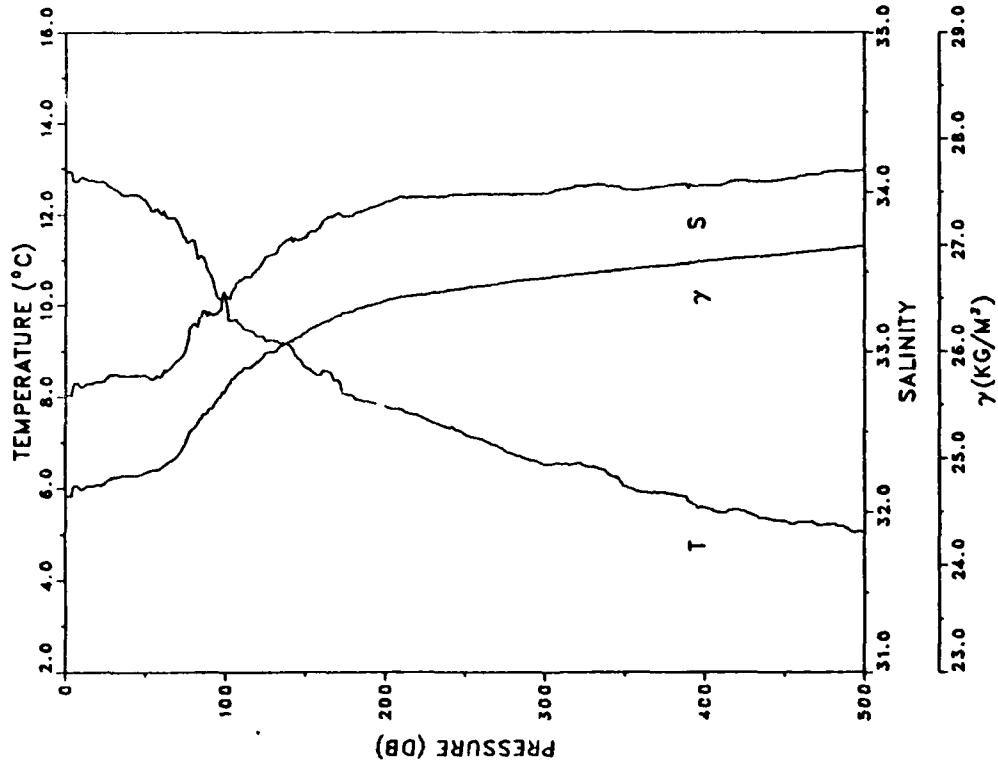


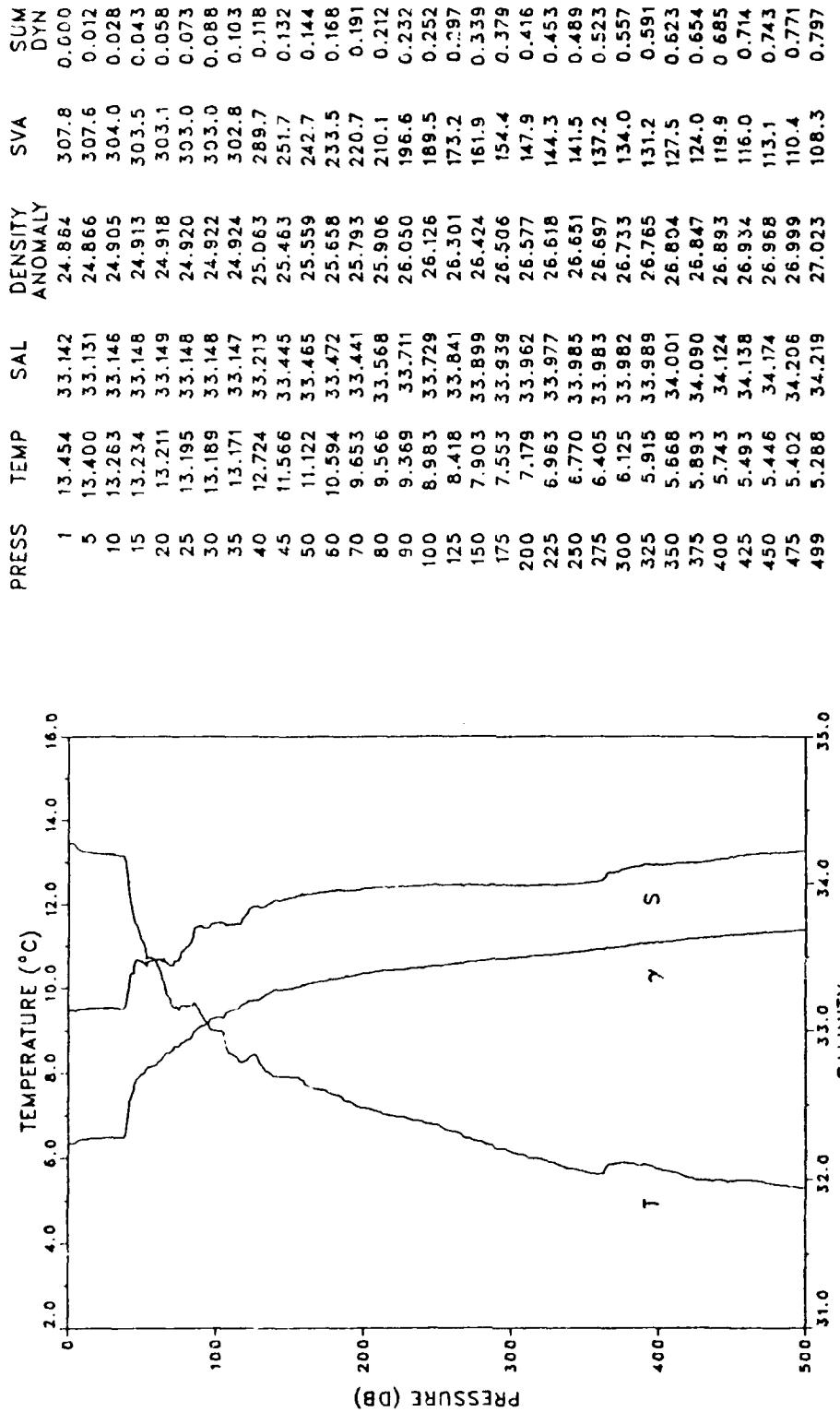
STATION: 76 LAT: 38 33.2 N LON: 124 6.7 W  
DATE: 6/22/87 TIME: 0400Z



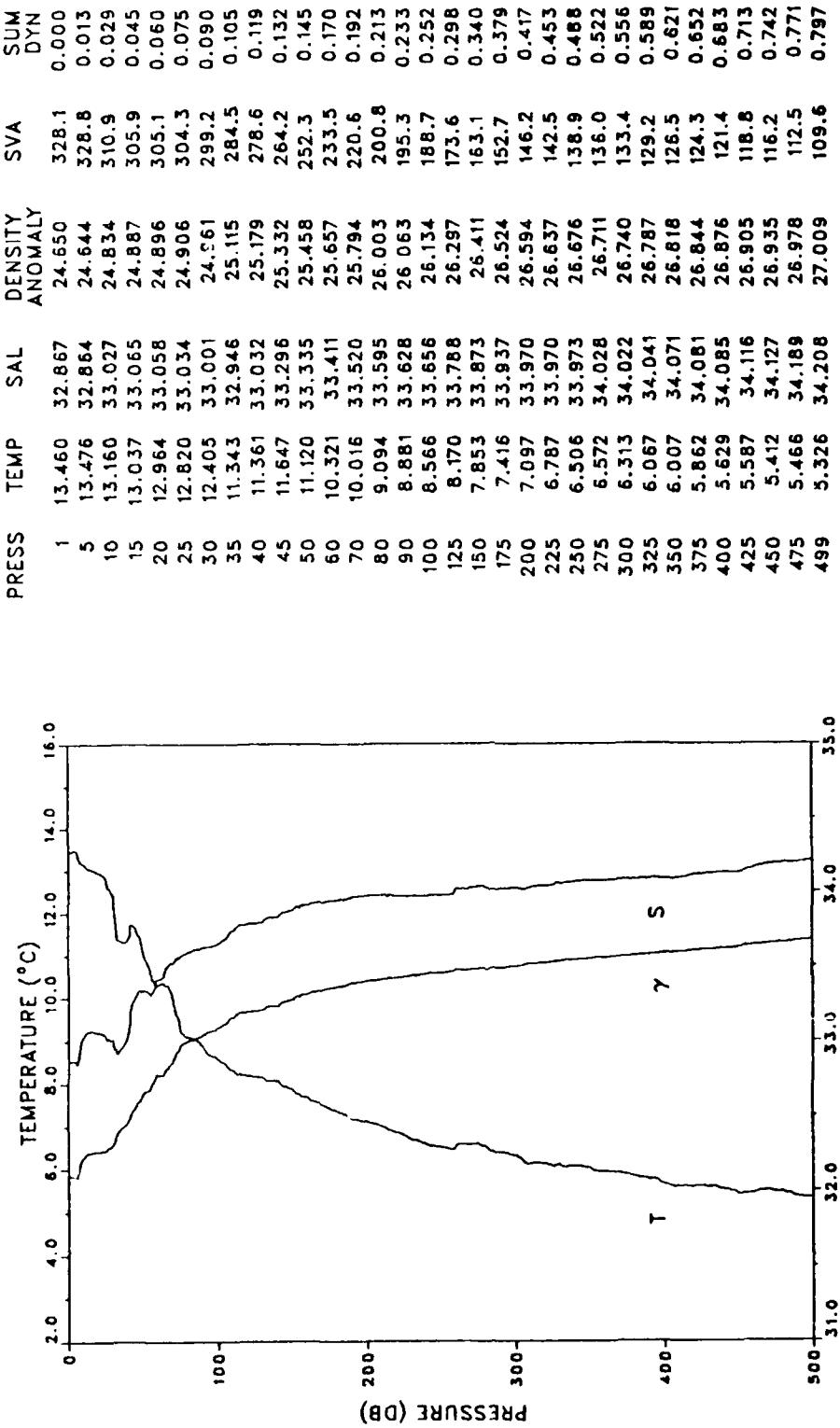


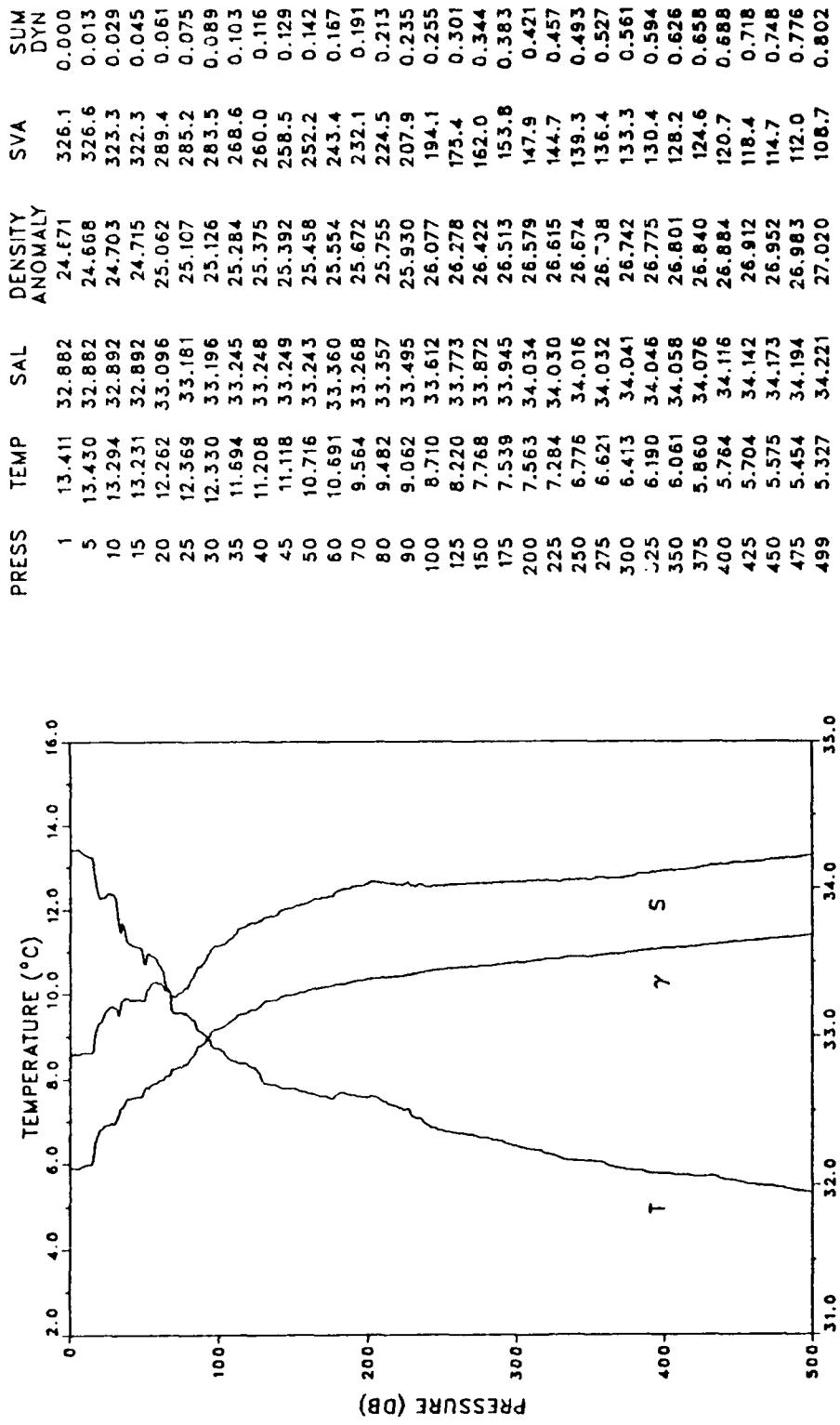
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.935	32.725	24.644	328.7	0.000
5	12.733	32.784	24.729	320.7	0.013
10	12.811	32.771	24.704	323.2	0.029
15	12.745	32.798	24.738	320.1	0.045
20	12.724	32.807	24.749	319.1	0.061
25	12.683	32.823	24.769	317.3	0.077
30	12.560	32.857	24.819	312.7	0.093
35	12.445	32.847	24.834	311.4	0.108
40	12.435	32.846	24.835	311.4	0.124
45	12.424	32.847	24.838	311.3	0.140
50	12.304	32.851	24.864	308.9	0.155
60	12.021	32.842	24.910	304.7	0.186
70	11.876	32.937	25.011	295.3	0.216
80	11.428	33.169	25.273	270.5	0.244
90	10.721	33.243	25.457	253.1	0.270
100	10.165	33.352	25.638	236.1	0.295
125	9.218	33.592	25.981	203.6	0.350
150	8.636	33.711	26.166	16.6.5	0.398
175	8.050	33.844	26.359	168.5	0.443
200	7.777	33.933	26.469	158.4	0.484
225	7.500	33.959	26.529	153.0	0.523
250	7.171	33.979	26.591	147.3	0.560
275	6.818	33.982	26.642	142.7	0.596
300	6.519	33.987	26.686	138.7	0.632
325	6.482	34.031	26.725	135.3	0.666
350	6.036	34.008	26.764	131.6	0.699
375	5.897	34.031	26.800	128.4	0.732
400	5.578	34.037	26.844	124.3	0.763
425	5.517	34.070	26.877	121.4	0.794
450	5.286	34.077	26.910	118.3	0.824
475	5.221	34.122	26.954	114.5	0.853
499	5.050	34.134	26.983	111.8	0.880



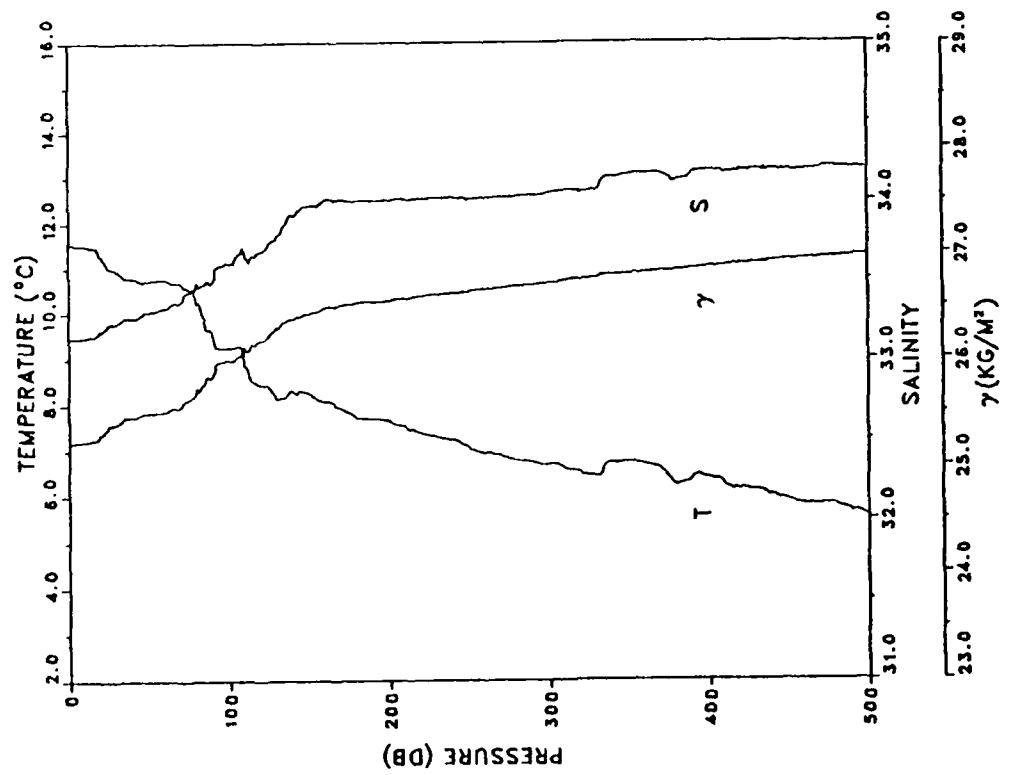


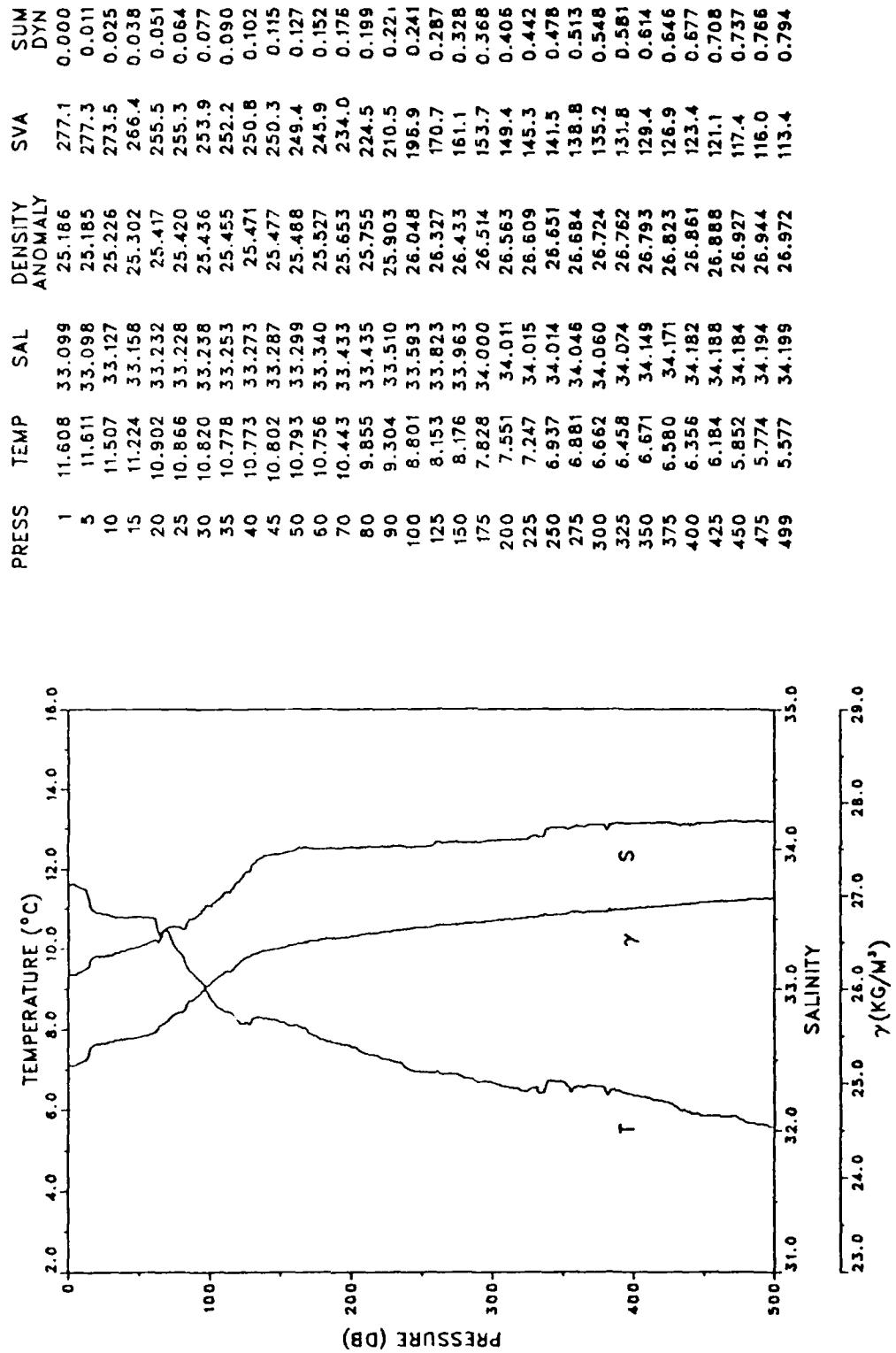
STATION: 80 LAT: 38 0.4 N LON: 124 25.8 W  
 DATE: 6/25/87 TIME: 2300Z





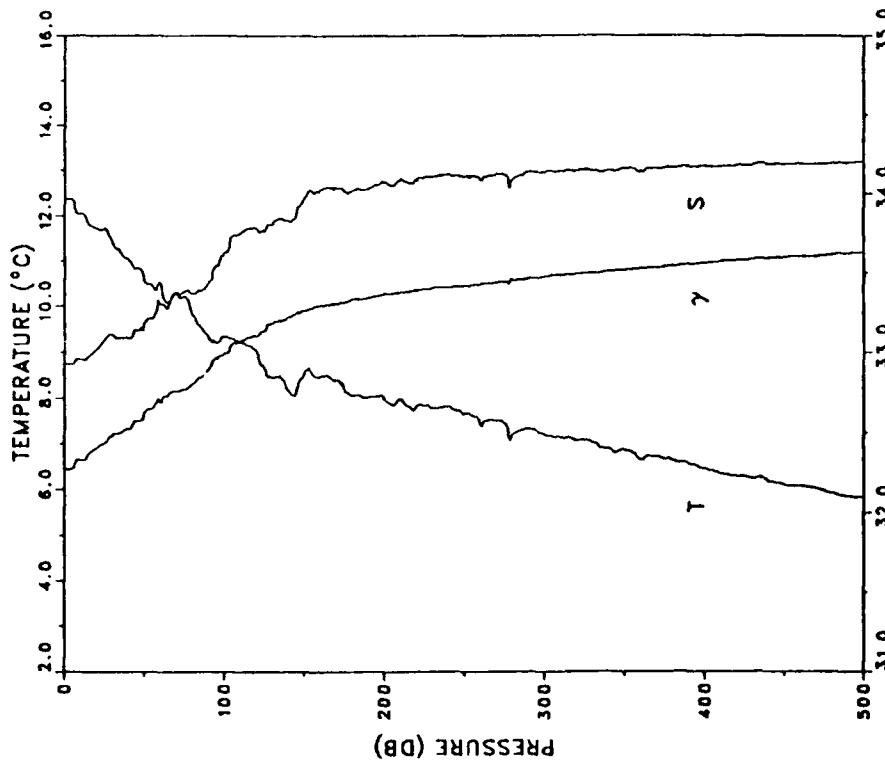
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	11.546	33.128	25.220	273.9	0.000
5	11.521	33.128	25.225	273.5	0.011
10	11.516	33.135	25.231	273.0	0.025
15	11.483	33.142	25.242	272.0	0.038
20	11.287	33.181	25.308	265.9	0.052
25	11.012	33.224	25.391	258.1	0.065
30	10.947	33.231	25.408	256.6	0.078
35	10.801	33.262	25.458	251.9	0.090
40	10.781	33.259	25.459	251.9	0.103
45	10.701	33.275	25.486	249.5	0.115
50	10.731	33.298	25.498	248.4	0.128
60	10.756	33.320	25.511	247.4	0.153
70	10.697	33.360	25.552	243.7	0.177
80	10.208	33.483	25.733	226.7	0.201
90	9.587	33.487	25.839	216.6	0.223
100	9.242	33.601	25.985	203.0	0.244
125	8.378	33.720	26.212	181.6	0.292
150	8.246	33.968	26.427	161.7	0.335
175	7.826	33.997	26.512	153.9	0.374
200	7.650	33.998	26.538	151.8	0.413
225	7.311	34.013	26.598	146.3	0.450
250	7.021	34.010	26.636	143.0	0.486
275	6.805	34.020	26.673	139.7	0.521
300	6.686	34.044	26.708	136.7	0.556
325	6.439	34.056	26.751	132.9	0.590
350	6.735	34.157	26.791	129.6	0.622
375	6.394	34.138	26.821	126.9	0.655
400	6.376	34.178	26.855	124.0	0.686
425	6.134	34.181	26.889	120.9	0.716
450	5.882	34.185	26.924	117.7	0.746
475	5.826	34.208	26.949	115.6	0.775
499	5.559	34.195	26.971	113.5	0.803

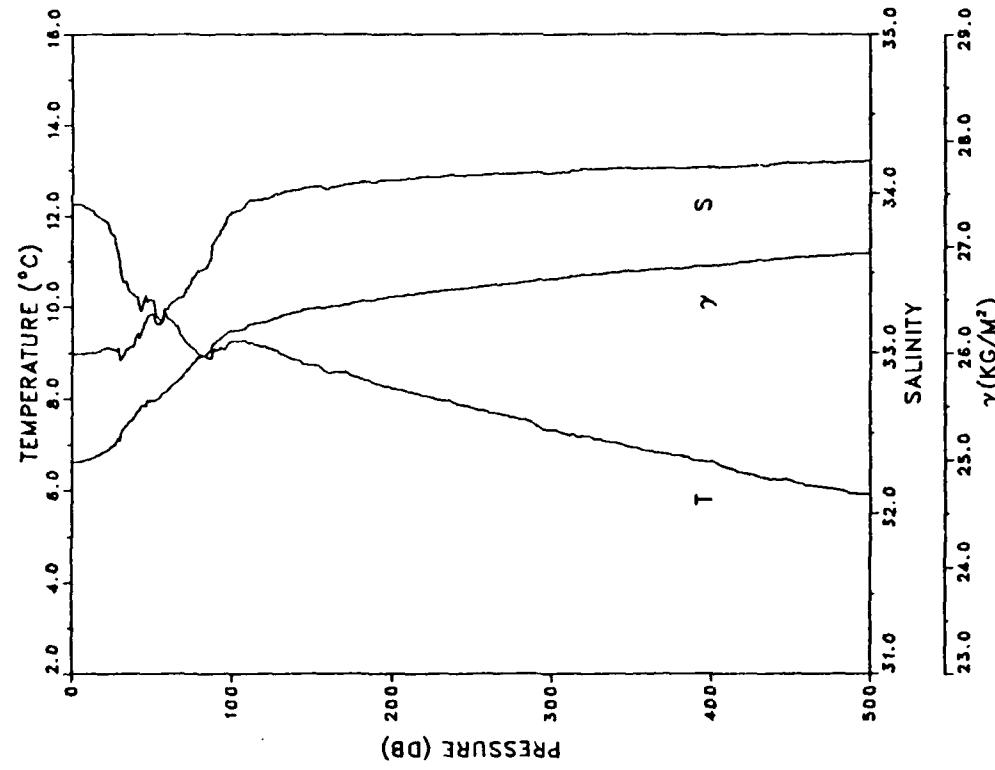




STATION: 826 LAT: 38 18.0 N LON: 124 28.0 W  
DATE: 6/26/87 TIME: 0441Z

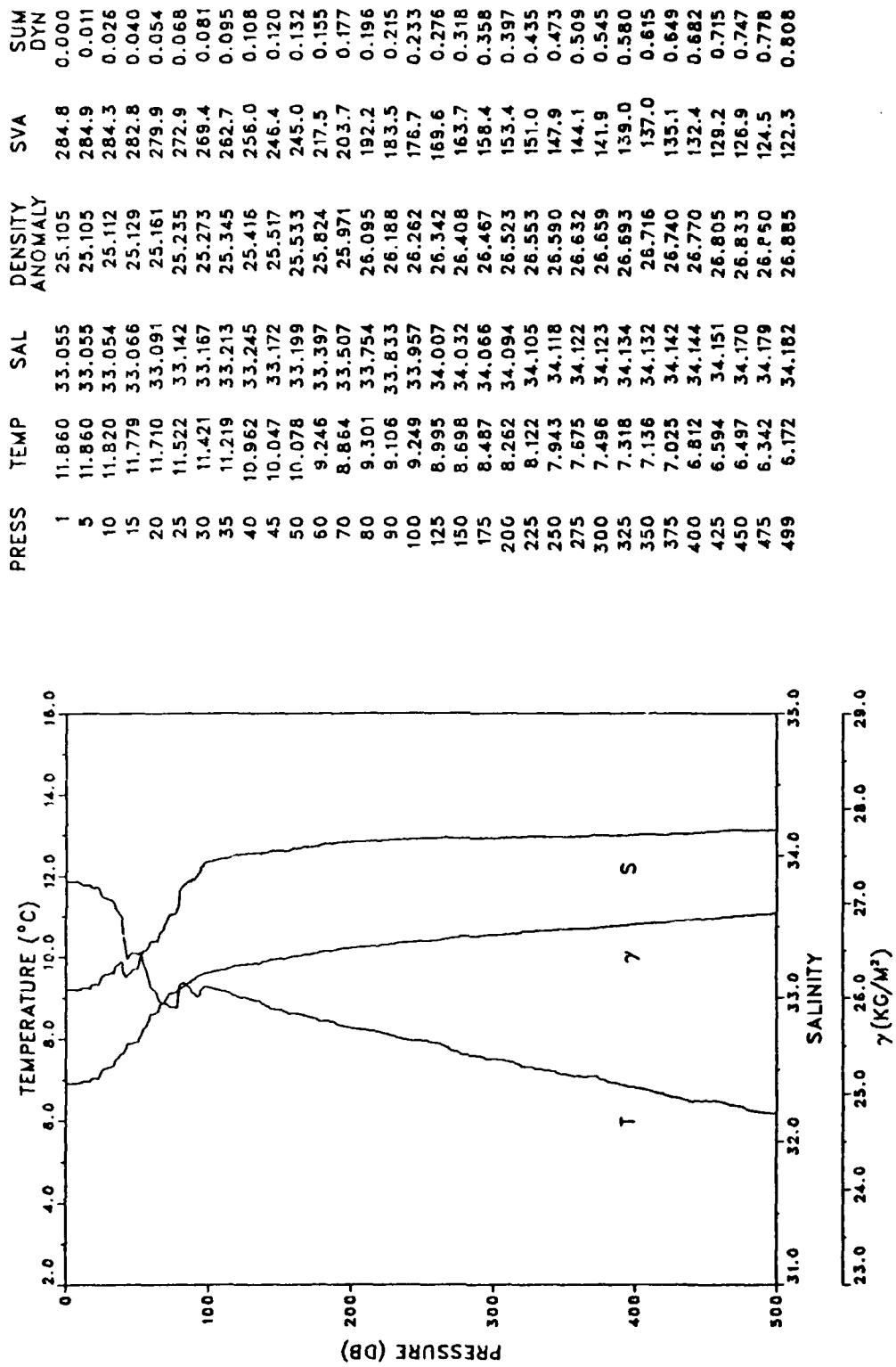
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
2	12.378	32.924	24.906	303.7	0.000
5	12.357	32.926	24.912	303.3	0.009
10	12.046	32.954	24.992	295.7	0.024
15	11.854	32.969	25.040	291.3	0.039
20	11.714	33.017	25.103	285.4	0.053
25	11.712	33.078	25.151	281.0	0.067
30	11.453	33.106	25.220	274.5	0.081
35	11.207	33.088	25.250	271.7	0.095
40	11.034	33.087	25.280	268.9	0.108
45	10.837	33.137	25.354	262.0	0.122
50	10.574	33.183	25.436	254.3	0.135
60	10.545	33.304	25.535	245.1	0.160
70	10.283	33.376	25.636	235.6	0.184
80	9.826	33.365	25.705	229.3	0.207
90	9.349	33.423	25.828	217.7	0.229
100	9.333	33.624	25.988	202.7	0.250
125	8.671	33.757	26.197	183.2	0.298
150	8.515	33.973	26.390	165.3	0.342
175	8.202	34.007	26.464	158.6	0.382
200	7.968	34.071	26.549	150.9	0.421
225	7.834	34.103	26.594	147.0	0.458
250	7.664	34.106	26.621	144.7	0.495
275	7.438	34.115	26.661	141.3	0.531
300	7.193	34.131	26.708	137.1	0.565
325	7.076	34.148	26.737	134.6	0.599
350	6.858	34.153	26.771	131.6	0.633
375	6.656	34.157	26.801	128.9	0.665
400	6.448	34.168	26.838	125.7	0.697
425	6.275	34.176	26.867	123.1	0.728
450	6.093	34.183	26.895	120.6	0.759
475	5.973	34.184	26.911	119.3	0.789
499	5.832	34.197	26.939	116.8	0.817



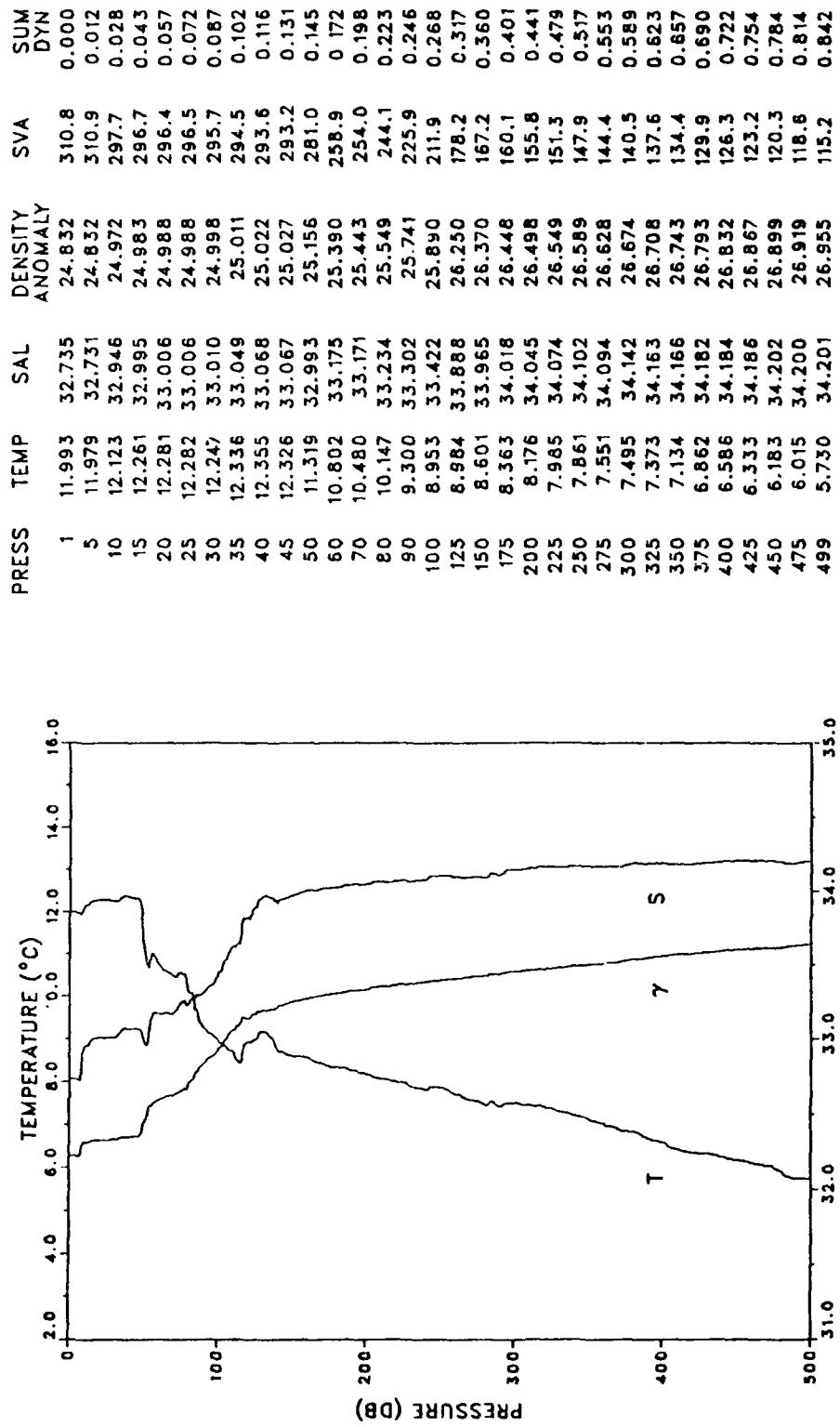


STATION: 84 LAT: 38 28.2 N LON: 124 25.9 W  
DATE: 6/26/87 TIME: 0800Z

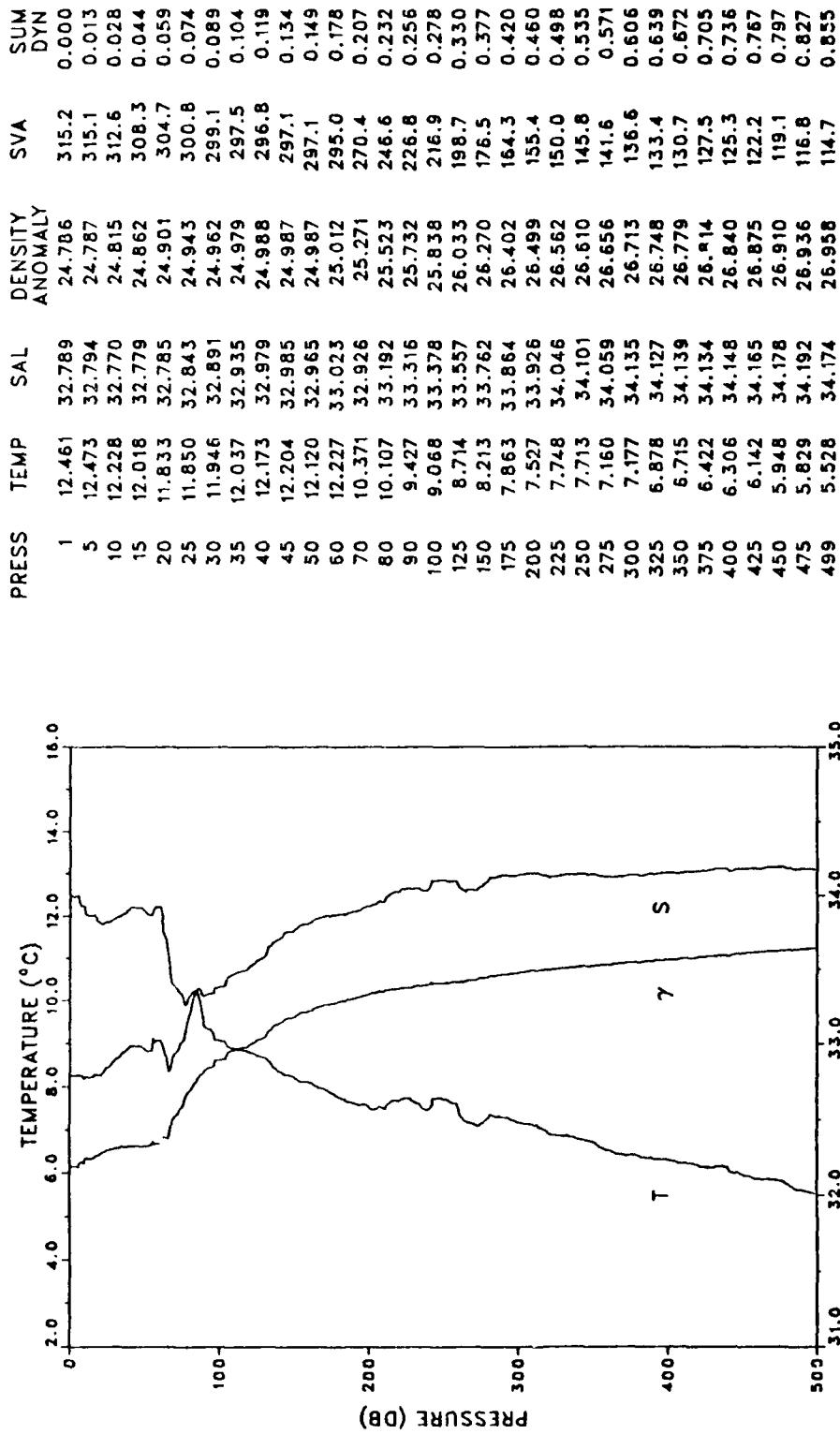
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.256	32.991	24.981	296.6	0.000
5	12.251	32.991	24.982	296.6	0.012
10	12.164	32.998	25.004	294.6	0.027
15	12.014	33.000	25.034	291.9	0.041
20	11.901	33.026	25.075	288.1	0.056
25	11.590	33.020	25.128	283.1	0.070
30	11.007	32.956	25.183	277.9	0.084
35	10.467	33.019	25.327	264.4	0.098
40	10.220	33.091	25.425	255.1	0.111
45	10.148	33.189	25.514	246.8	0.123
50	10.151	33.241	25.554	243.1	0.135
60	9.734	33.269	25.645	234.6	0.159
70	9.310	33.348	25.776	222.3	0.182
80	8.955	33.514	25.962	204.7	0.204
90	9.051	33.712	26.102	191.7	0.223
100	9.243	33.879	26.202	182.4	0.242
125	9.054	33.977	26.309	172.7	0.286
150	8.714	34.040	26.412	163.3	0.328
175	8.481	34.060	26.463	158.8	0.369
200	8.211	34.081	26.521	153.7	0.408
225	8.006	34.101	26.567	149.6	0.446
250	7.789	34.110	26.606	146.2	0.483
275	7.585	34.123	26.646	142.8	0.519
300	7.306	34.124	26.686	139.2	0.554
325	7.144	34.149	26.729	135.4	0.588
350	6.939	34.153	26.760	132.7	0.622
375	6.771	34.155	26.784	130.6	0.655
400	6.617	34.159	26.808	128.6	0.687
425	6.352	34.174	26.855	124.3	0.719
450	6.214	34.190	26.885	121.6	0.750
475	6.044	34.192	26.909	119.6	0.780
499	5.910	34.203	26.934	117.3	0.808



STATION: 85 LAT: 38 35.3 N LON: 124 25.9 W  
DATE: 6/26/87 TIME: 0900Z

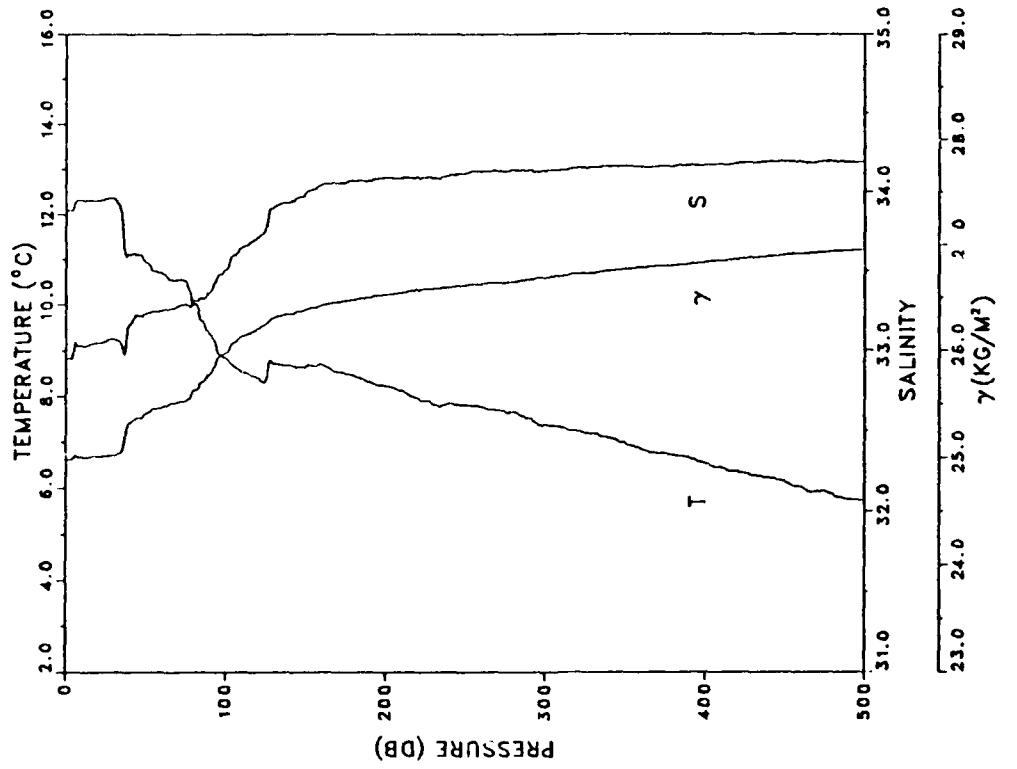


STATION: 86 LAT: 38 42.4 N LON: 124 25.8 W  
DATE: 6/26/87 TIME: 10:00Z

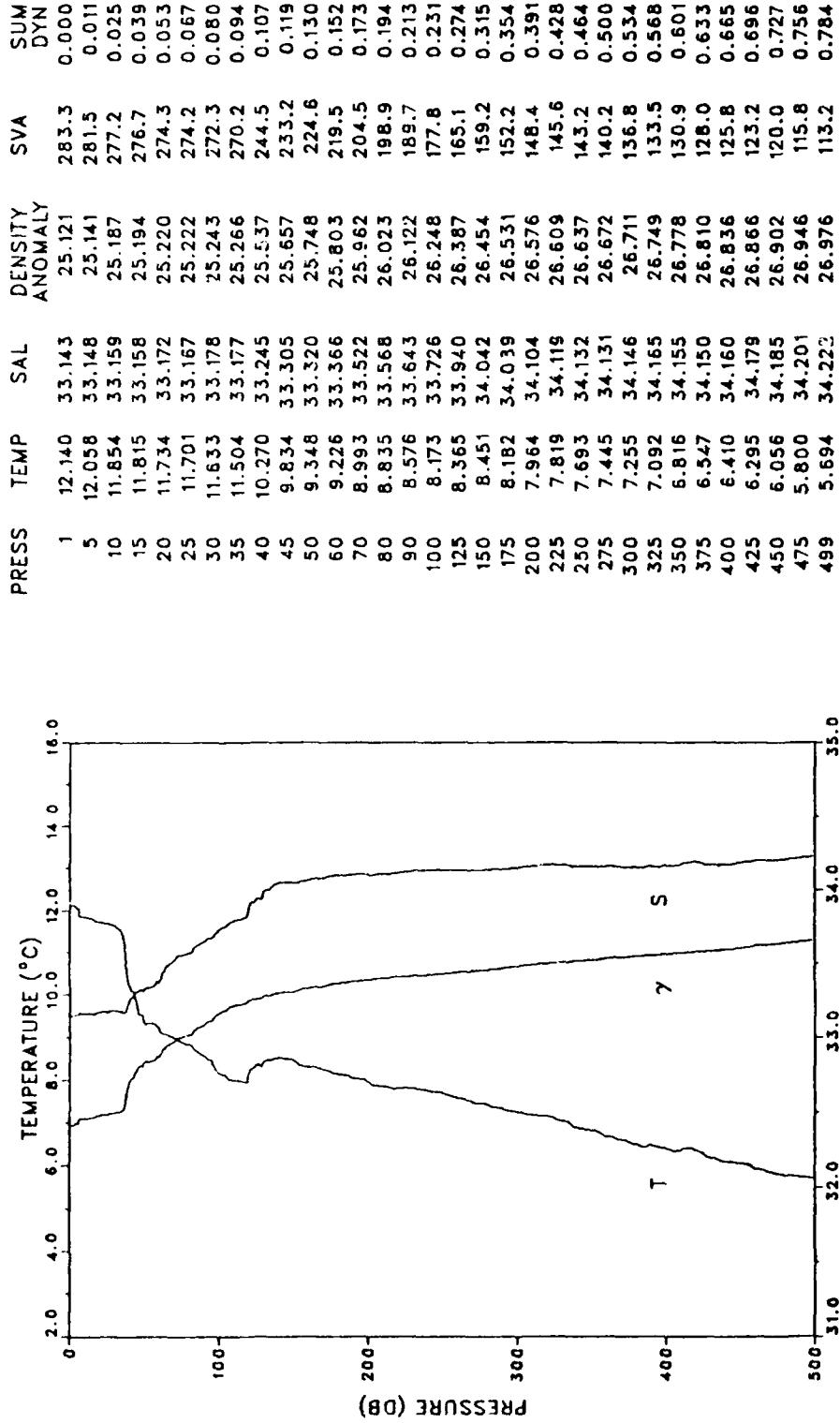


STATION: 87 LAT: 38 49.5 N LON: 124 25.7 W  
DATE: 6/26/87 TIME: 1200Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.086	32.950	24.982	296.5	0.000
5	12.136	32.988	25.002	294.7	0.012
10	12.299	33.028	25.002	294.8	0.027
15	12.316	33.038	25.006	294.5	0.041
20	12.306	33.045	25.014	293.9	0.056
25	12.341	33.059	25.018	293.6	0.071
30	12.351	33.071	25.025	293.1	0.085
35	12.047	33.028	25.049	290.9	0.100
40	11.105	33.161	25.325	264.7	0.114
45	11.107	33.217	25.369	260.7	0.127
50	10.936	33.229	25.408	257.0	0.140
60	10.701	33.246	25.463	252.0	0.165
70	10.558	33.279	25.514	247.3	0.190
80	10.014	33.310	25.630	236.4	0.215
90	9.389	33.362	25.774	222.8	0.237
100	8.821	33.506	25.977	203.7	0.259
125	8.337	33.759	26.249	178.1	0.307
150	8.634	33.995	26.389	165.4	0.349
175	8.475	34.062	26.466	158.5	0.390
200	8.225	34.091	26.527	153.1	0.429
225	7.890	34.092	26.577	148.6	0.467
250	7.799	34.120	26.613	145.6	0.503
275	7.662	34.128	26.639	143.5	0.540
300	7.380	34.135	26.685	139.4	0.575
325	7.188	34.152	26.725	135.8	0.609
350	6.970	34.160	26.761	132.6	0.643
375	6.740	34.160	26.793	129.8	0.676
400	6.527	34.169	26.828	126.7	0.708
425	6.325	34.186	26.868	123.1	0.739
450	6.149	34.191	26.895	120.7	0.769
475	5.934	34.192	26.923	118.2	0.799
499	5.730	34.189	26.946	116.1	0.827

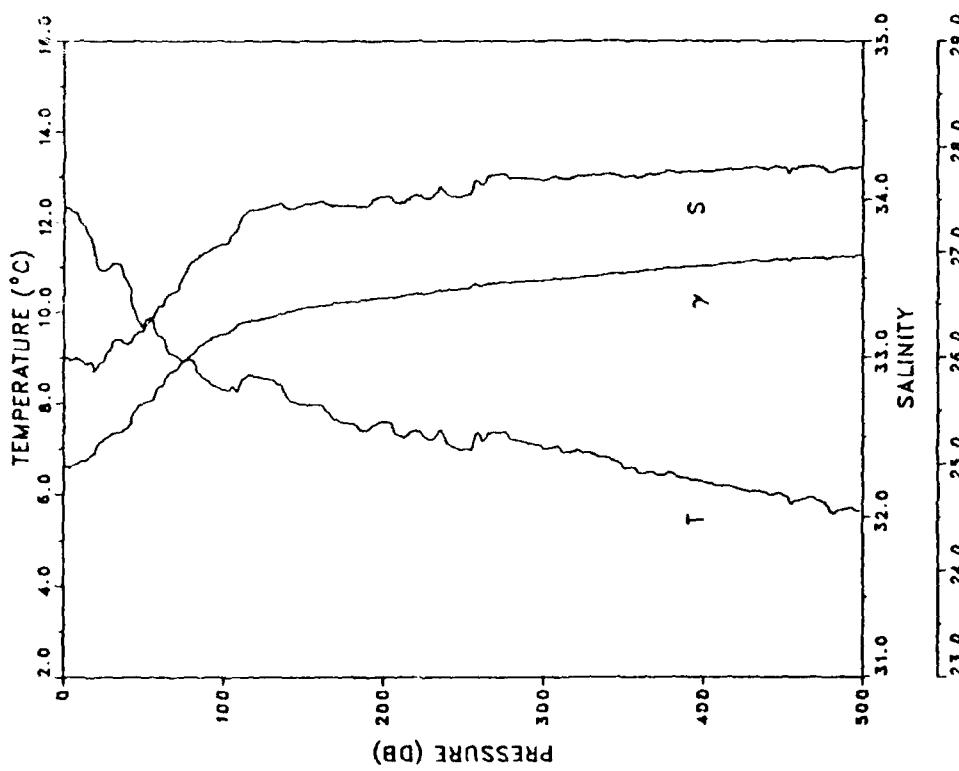


STATION: 88 LAT: 38 41.1 N LON: 124 22.8 W  
DATE: 6/26/87 TIME: 1300Z

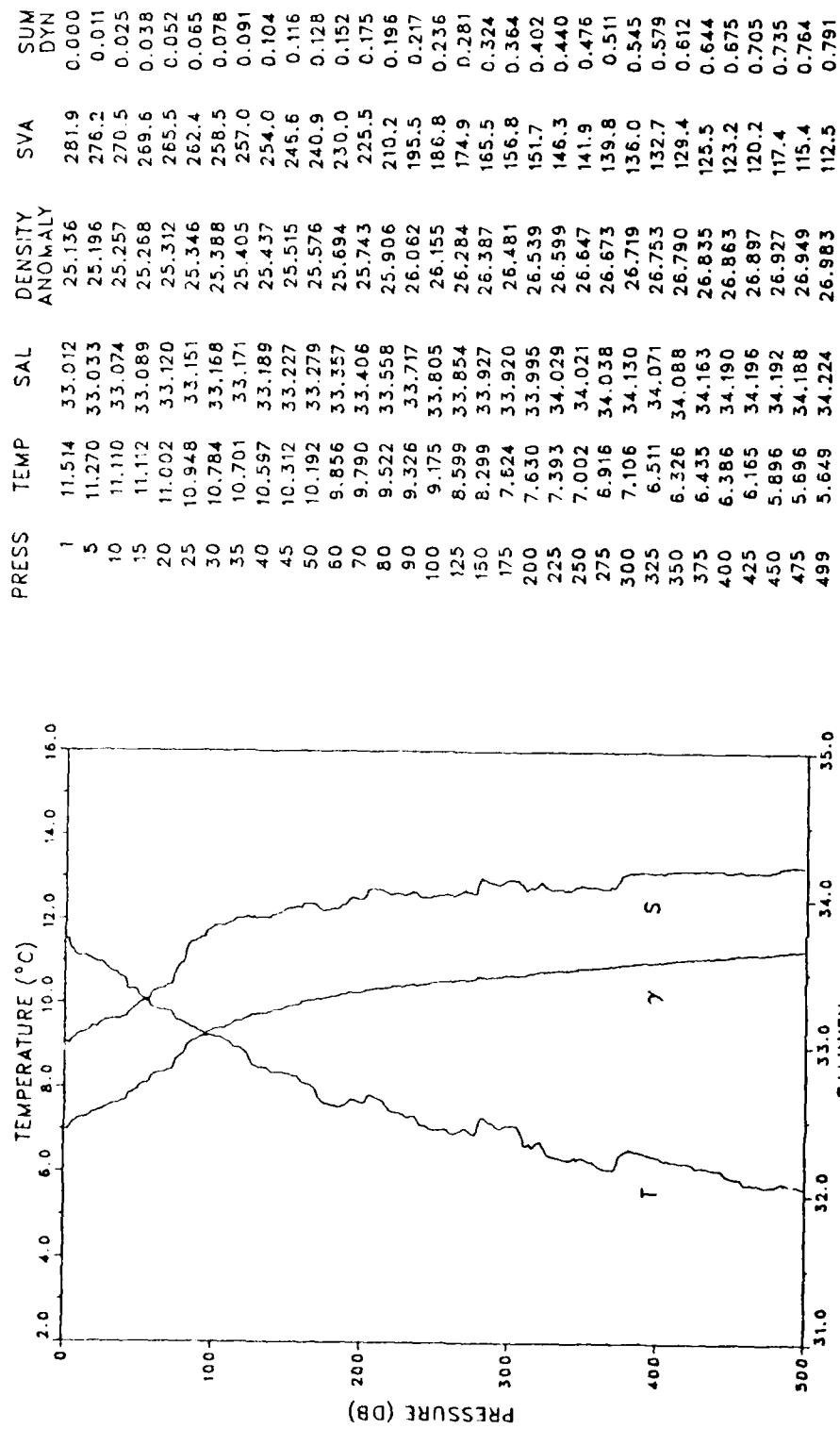


STATION: 89 LAT: 38 34.1 N LON: 124 19.4 W  
DATE: 6/26/87 TIME: 14:00Z

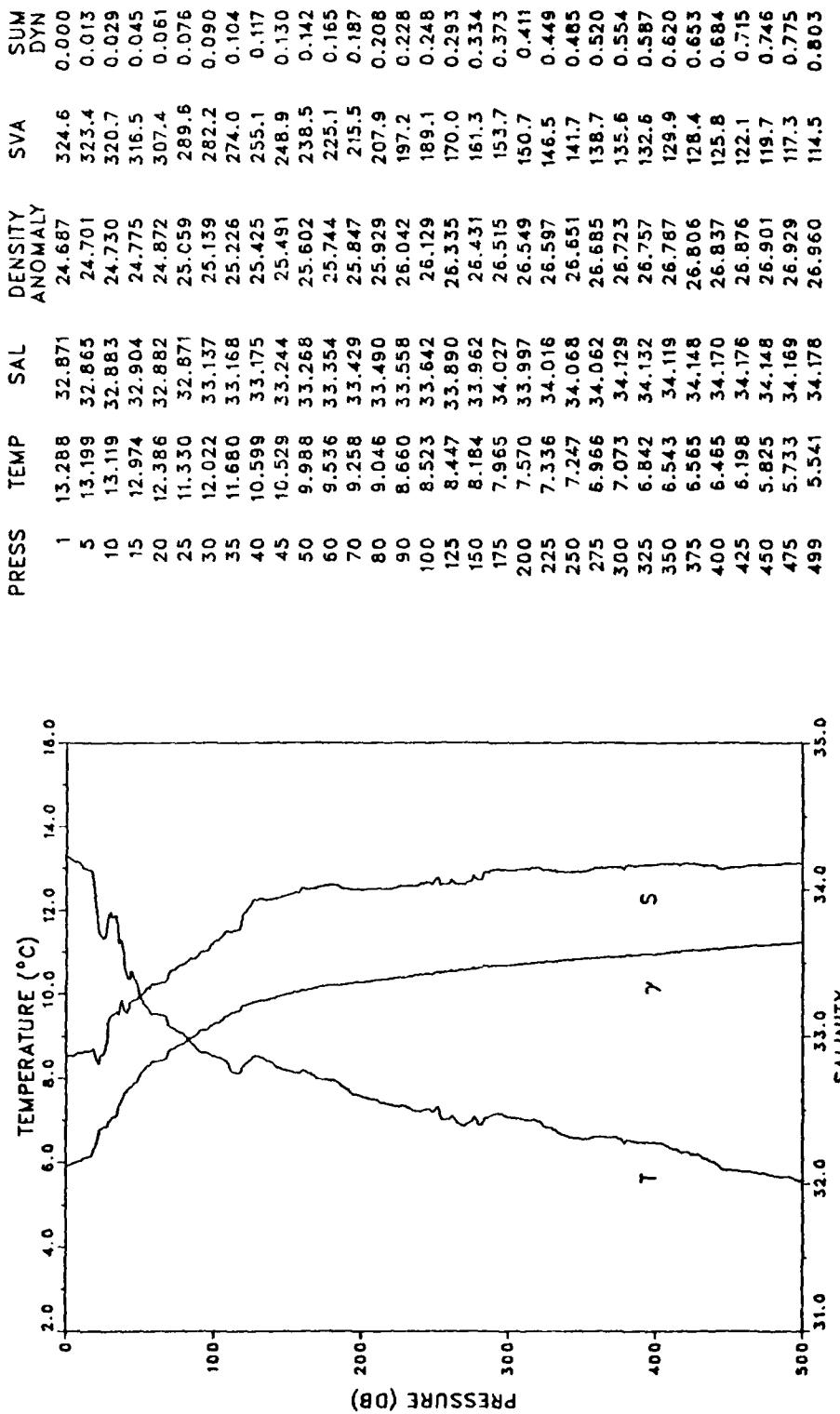
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA DYN
1	12.325	32.999	24.974	297.2 0.000
5	12.230	32.987	24.983	296.5 0.012
10	12.067	32.994	25.019	293.2 0.027
15	11.765	32.955	25.045	290.8 0.041
20	11.300	32.909	25.094	286.2 0.056
25	10.917	32.980	25.218	274.6 0.070
30	11.052	33.088	25.278	268.9 0.083
35	11.073	33.111	25.292	267.7 0.097
40	10.684	33.083	25.339	263.3 0.110
45	10.041	33.143	25.496	248.5 0.123
50	9.719	33.169	25.569	244.5 0.135
60	9.472	33.324	25.731	226.4 0.158
70	9.025	33.422	25.879	212.4 0.180
80	8.947	33.604	26.034	197.9 0.201
90	8.491	33.671	26.157	186.3 0.220
100	8.299	33.714	26.220	180.5 0.238
125	8.540	33.944	26.363	167.4 0.282
150	7.980	33.968	26.467	157.9 0.323
175	7.555	33.960	26.522	152.9 0.361
200	7.591	34.020	26.564	149.3 0.399
225	7.274	34.009	26.600	146.1 0.436
250	6.990	34.028	26.655	141.2 0.472
275	7.346	34.160	26.709	136.7 0.507
300	6.991	34.123	26.729	134.9 0.541
325	6.908	34.147	26.760	132.4 0.574
350	6.581	34.139	26.797	128.9 0.607
375	6.420	34.166	26.840	125.1 0.639
400	6.268	34.178	26.869	122.6 0.669
425	6.091	34.194	26.904	119.4 0.700
450	5.952	34.197	26.924	117.7 0.729
475	5.823	34.207	26.948	115.6 0.759
499	5.655	34.206	26.968	113.9 0.786



STATION: 90 LAT: 38 26.8 N LON: 124 17.1 W  
DATE: 6/26/87 TIME: 1500Z

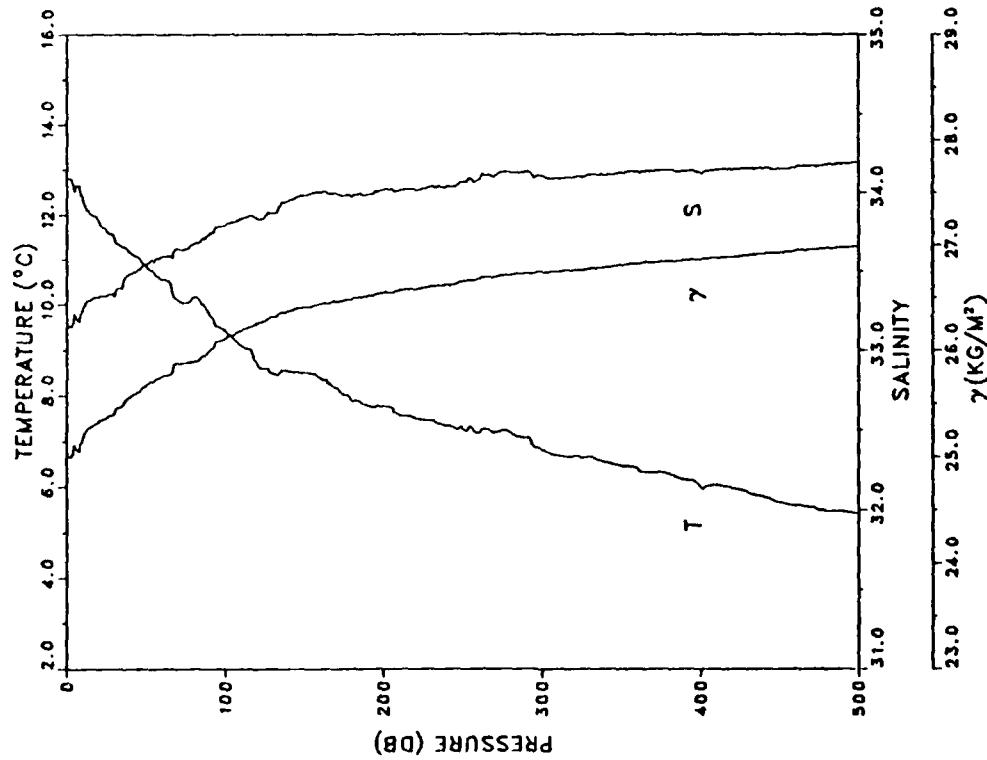


STATION: 905 LAT: 38 23.9 N LON: 124 15.1 W  
DATE: 6/26/87 TIME: 1700Z

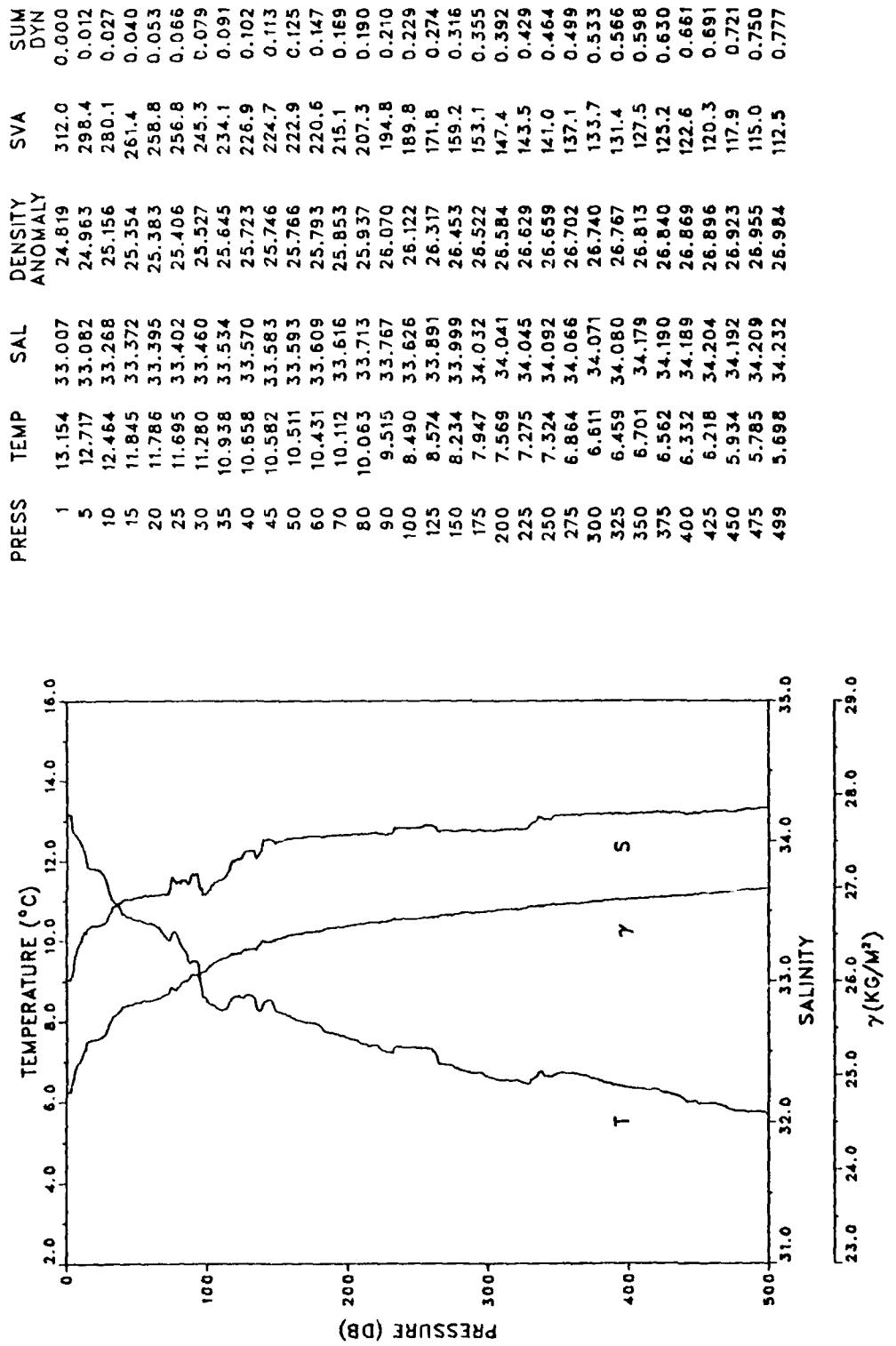


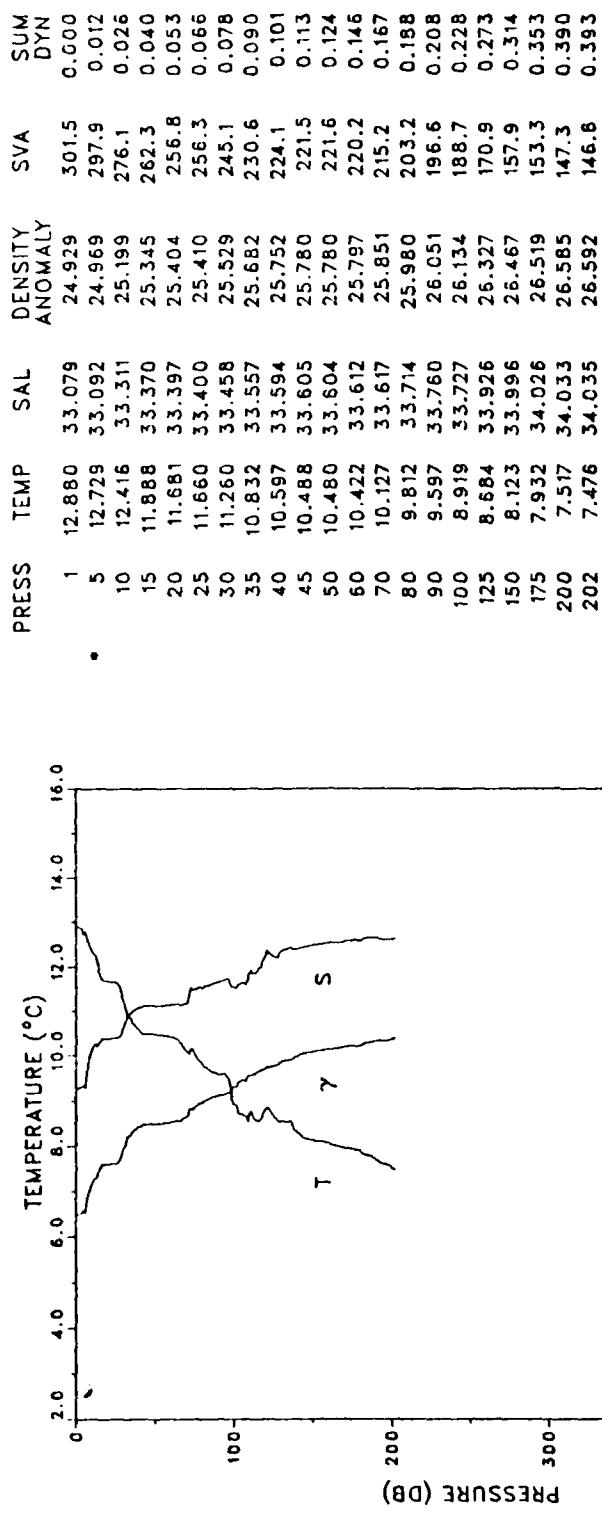
STATION: 91 LAT: 38 20.2 N LON: 124 12.6 W  
DATE: 6/26/87 TIME: 1800Z

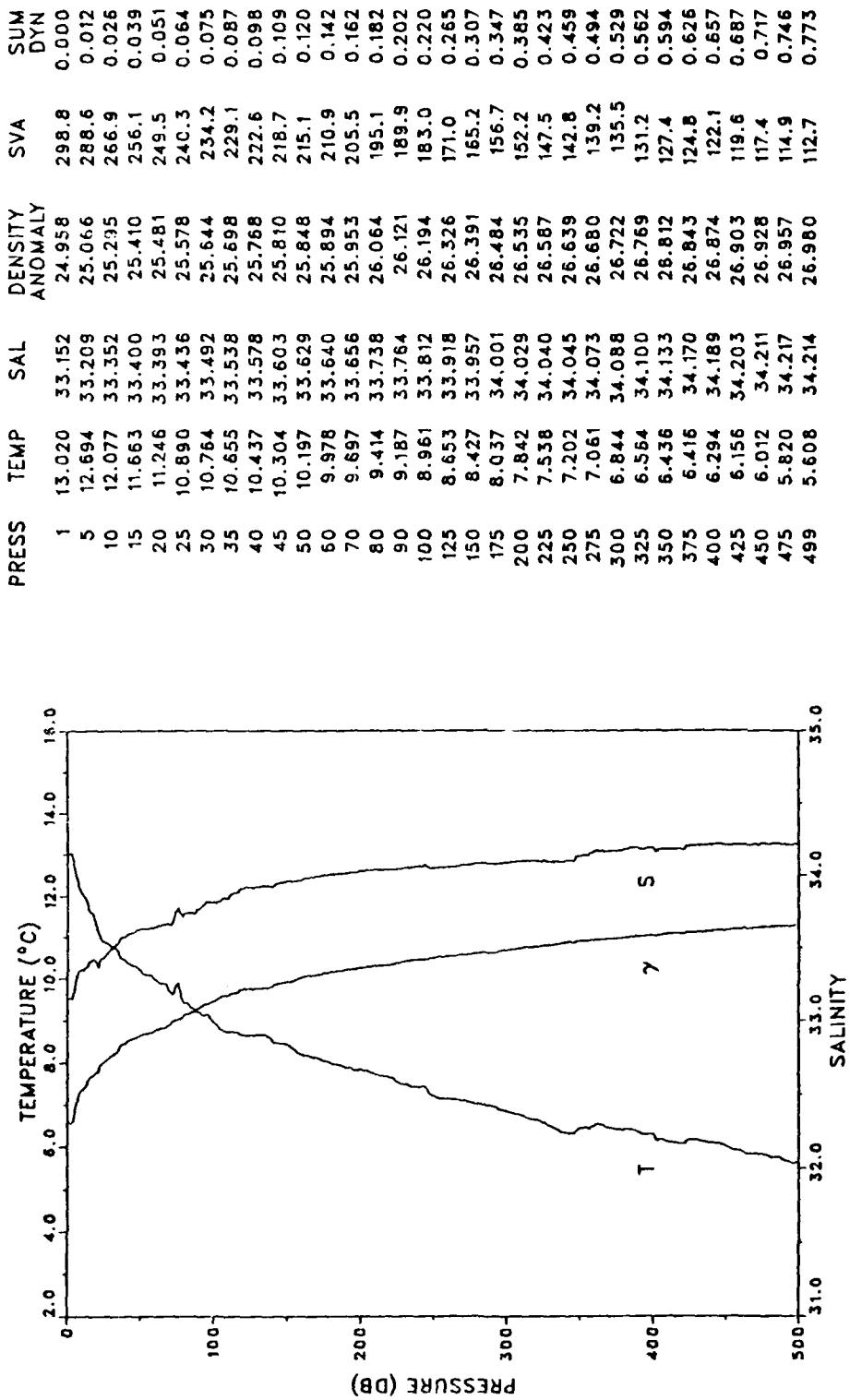
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.797	33.143	24.995	295.3	0.000
5	12.509	33.228	25.117	283.8	0.012
10	12.433	33.247	25.146	281.1	0.026
15	12.019	33.314	25.227	268.8	0.039
20	11.870	33.327	25.315	265.3	0.053
25	11.666	33.342	25.364	260.7	0.066
30	11.498	33.356	25.390	258.3	0.079
35	11.271	33.384	25.469	250.9	0.092
40	11.175	33.483	25.563	242.0	0.104
45	11.054	33.508	25.605	238.2	0.116
50	10.842	33.536	25.664	232.7	0.128
60	10.556	33.591	25.757	224.0	0.151
70	10.090	33.636	25.872	213.2	0.172
80	10.154	33.675	25.892	211.6	0.194
90	9.801	33.728	25.992	202.2	0.214
100	9.408	33.790	26.106	191.6	0.234
125	8.606	33.846	26.276	175.6	0.280
150	8.494	33.981	26.399	164.4	0.322
175	8.012	33.979	26.470	157.9	0.363
200	7.765	34.019	26.538	151.8	0.401
225	7.470	34.021	26.582	147.9	0.439
250	7.244	34.064	26.648	142.0	0.475
275	7.224	34.127	26.700	137.4	0.510
301	6.808	34.097	26.734	134.4	0.545
325	6.636	34.097	26.737	132.4	0.577
350	6.458	34.119	26.798	128.8	0.610
375	6.323	34.141	26.833	125.7	0.642
400	5.983	34.117	26.857	123.4	0.673
425	5.939	34.150	26.889	120.7	0.704
450	5.660	34.149	26.923	117.6	0.733
475	5.496	34.172	26.961	114.1	0.762
499	5.418	34.191	26.985	112.0	0.789

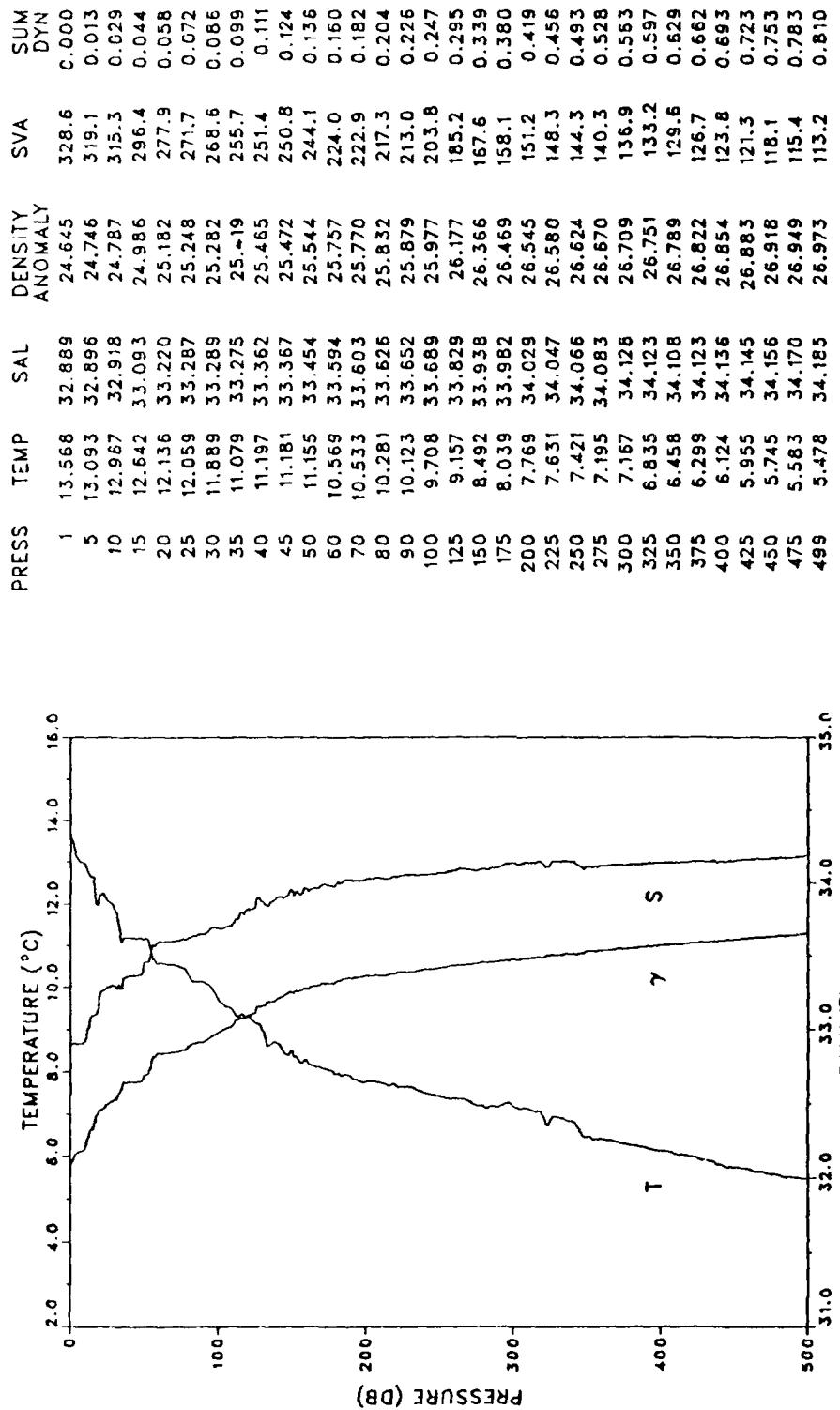


STATION: 92 LAT: 38 12.3 N LON: 124 9.3 W  
DATE: 6/26/87 TIME: 2100Z

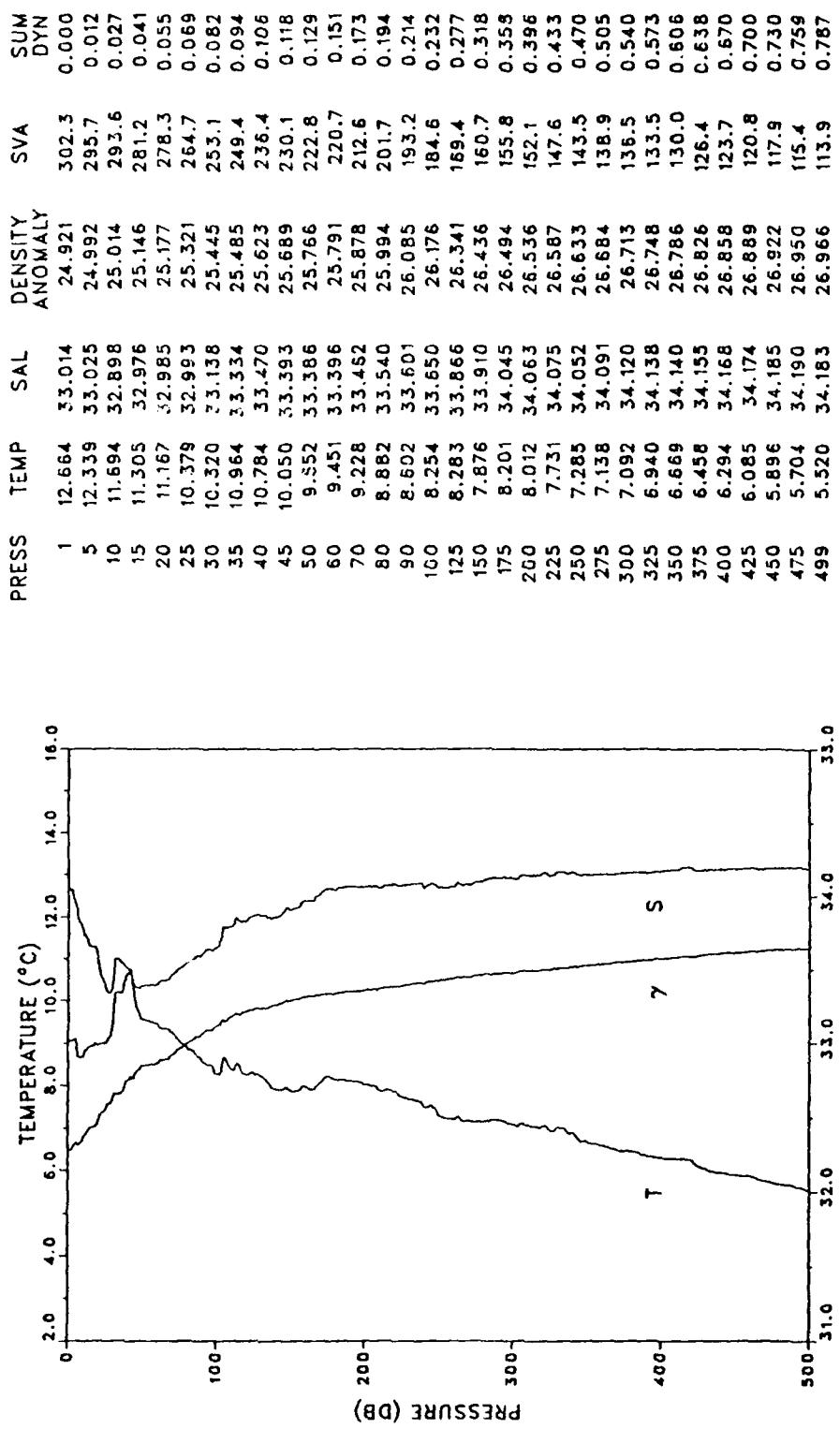




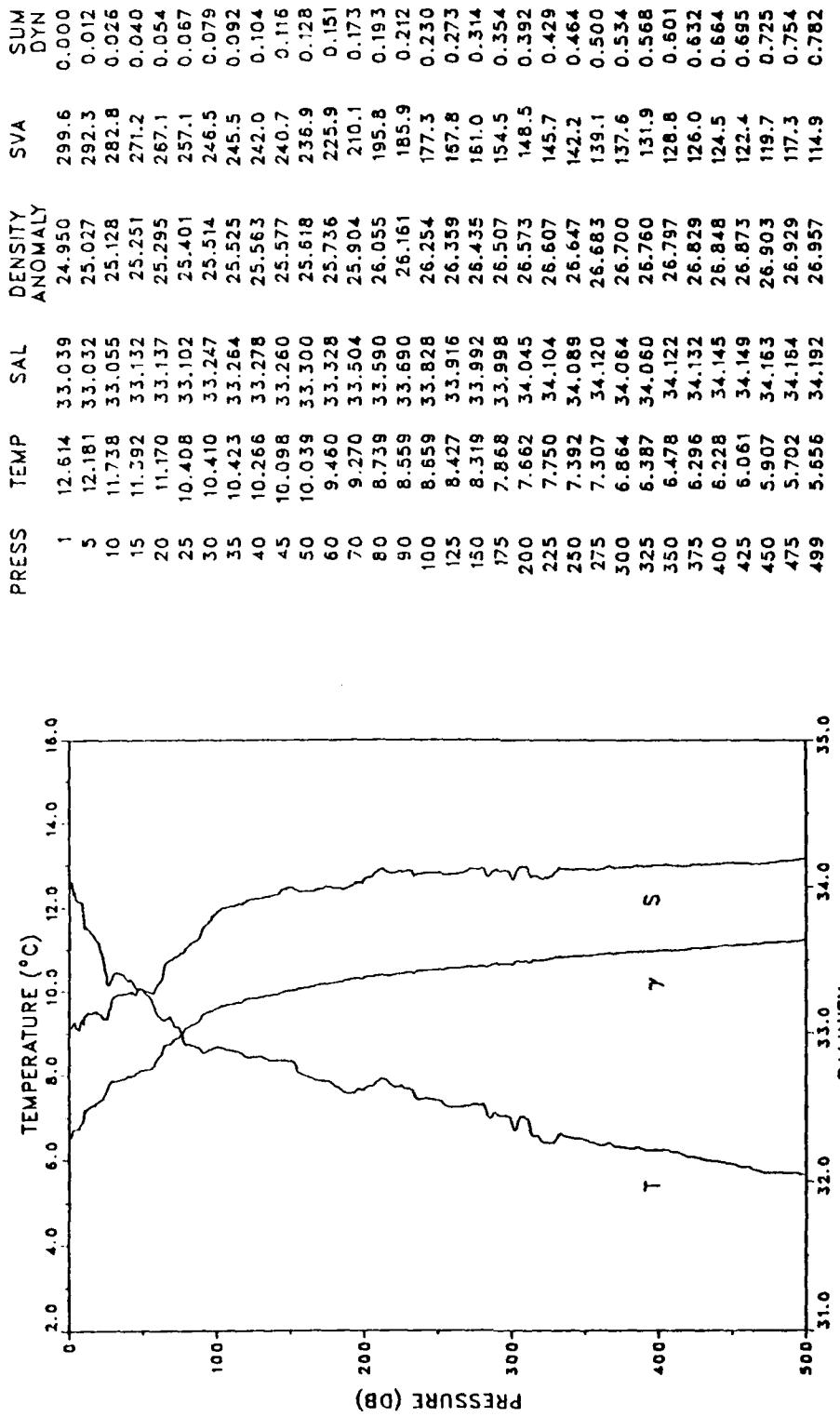




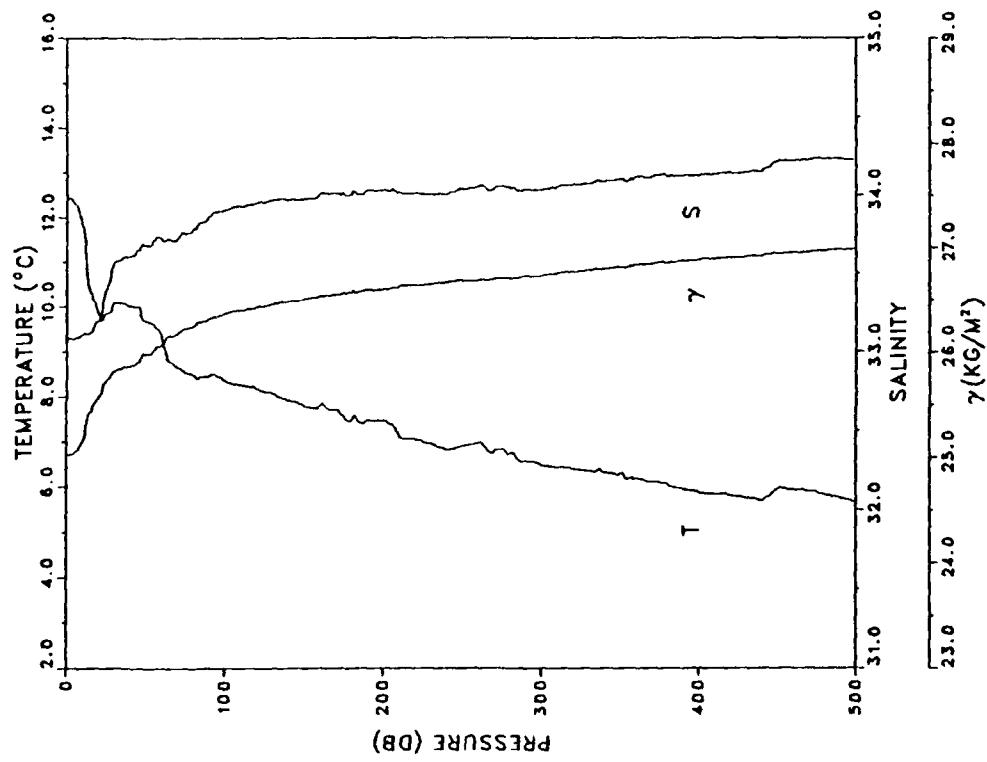
STATION: 95 LAT: 38 20.4 N LON: 124 6.4 W  
 DATE: 6/27/87 TIME: 0200Z

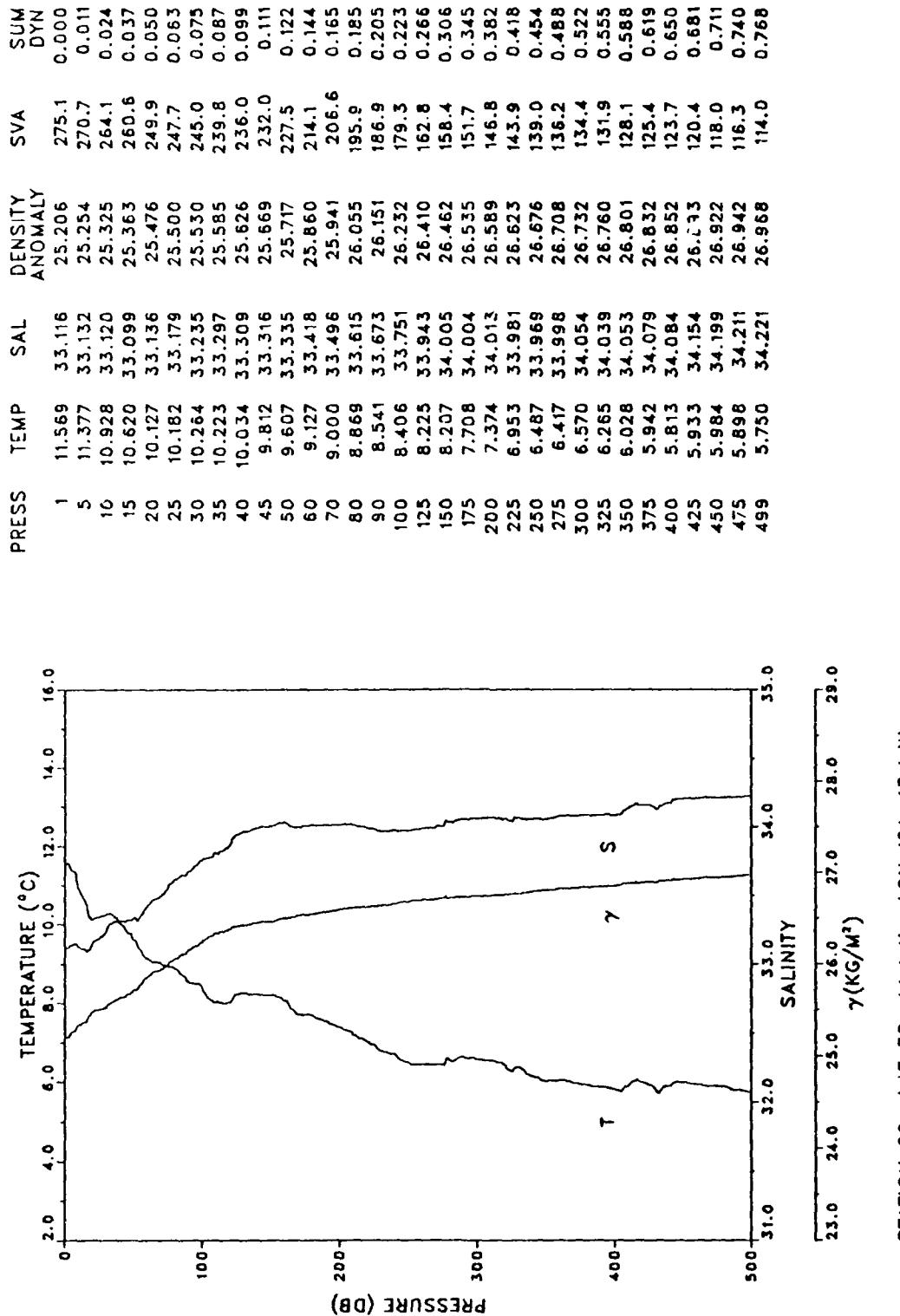


STATION: 96 LAT: 38 27.4 N LON: 124 6.2 W  
DATE: 6/27/87 TIME: 0300Z

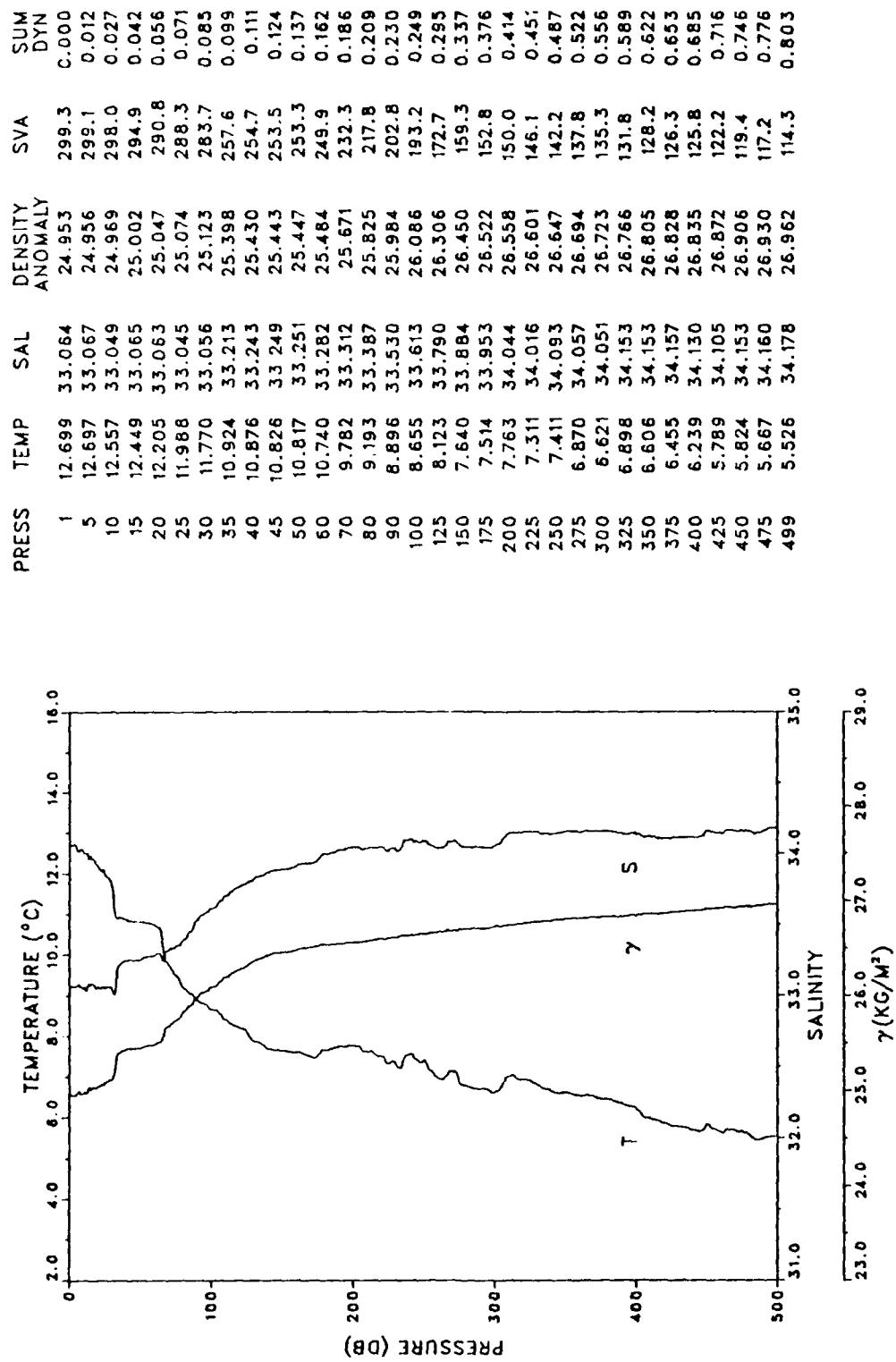


PRESS	TEMP	SAL	DENSITY	SVA	SUM DYN
			ANOMALY		
1	12.421	33.080	25.019	293.0	0.000
5	12.318	33.077	25.036	291.4	0.012
10	11.877	33.107	25.143	281.4	0.026
15	10.371	33.119	25.421	255.0	0.039
20	9.891	33.190	25.557	242.1	0.052
25	9.647	33.389	25.720	226.8	0.064
30	10.085	33.562	25.815	217.8	0.075
35	10.076	33.587	25.836	215.9	0.086
40	10.014	33.605	25.861	213.7	0.096
45	10.001	33.651	25.899	210.2	0.107
50	9.660	33.676	25.975	203.0	0.117
60	9.371	33.726	26.061	195.0	0.137
70	8.649	33.715	26.167	185.0	0.156
80	8.481	33.775	26.240	178.3	0.174
90	8.457	33.866	26.315	171.3	0.192
100	8.334	33.906	26.365	166.8	0.209
125	8.093	33.952	26.437	160.3	0.250
150	7.791	33.973	26.498	154.8	0.289
175	7.585	34.006	26.554	149.9	0.327
200	7.464	34.032	26.592	146.7	0.364
225	6.979	34.006	26.639	142.3	0.400
250	6.893	34.031	26.670	139.7	0.435
275	6.816	34.054	26.699	137.3	0.470
300	6.474	34.032	26.727	134.8	0.504
325	6.368	34.070	26.771	130.9	0.537
350	6.292	34.101	26.805	127.9	0.570
375	6.099	34.127	26.850	123.9	0.601
400	5.865	34.123	26.877	121.5	0.632
425	5.791	34.142	26.901	119.5	0.662
450	5.945	34.216	26.940	116.2	0.691
475	5.880	34.234	26.963	114.4	0.720
499	5.669	34.229	26.985	112.3	0.747

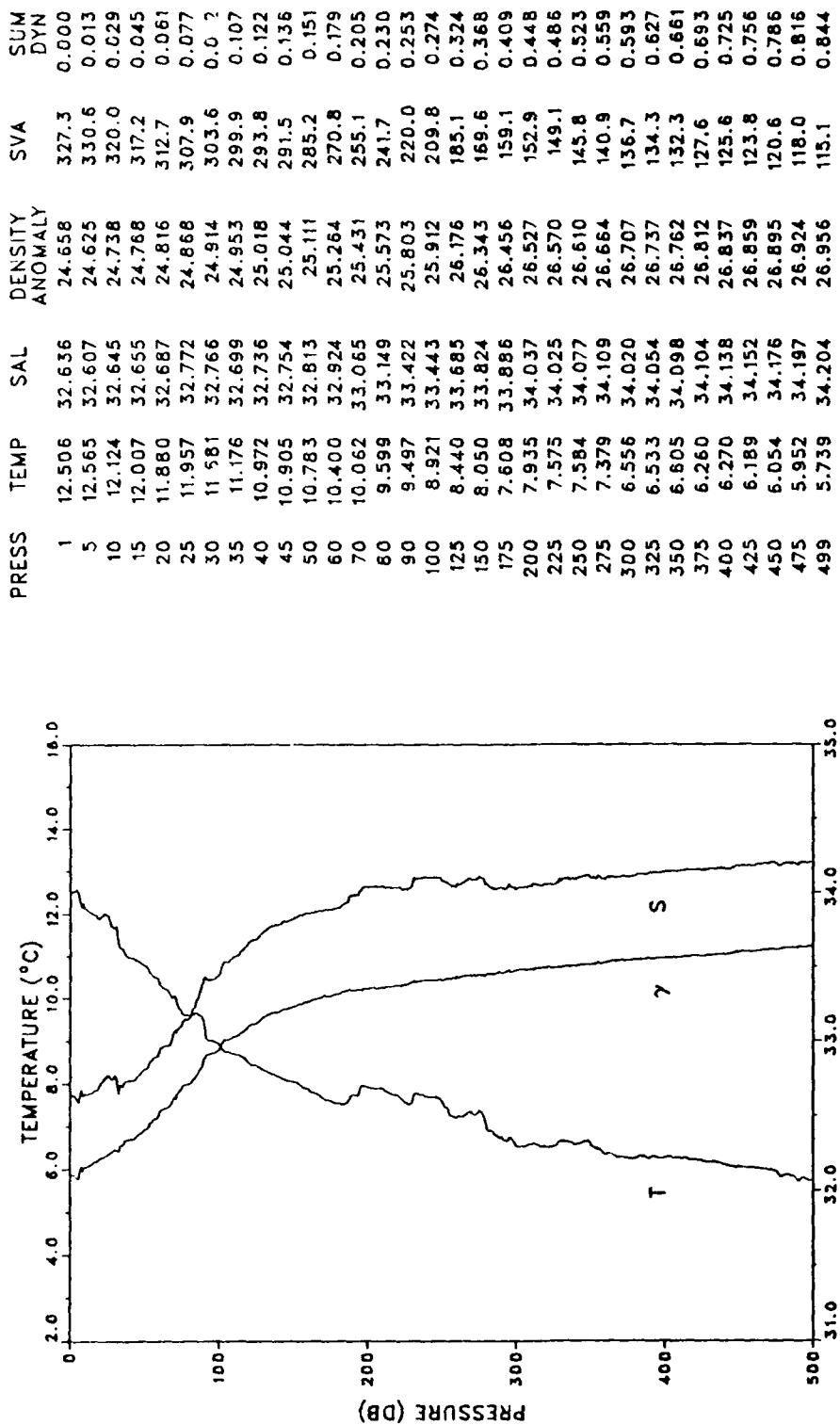




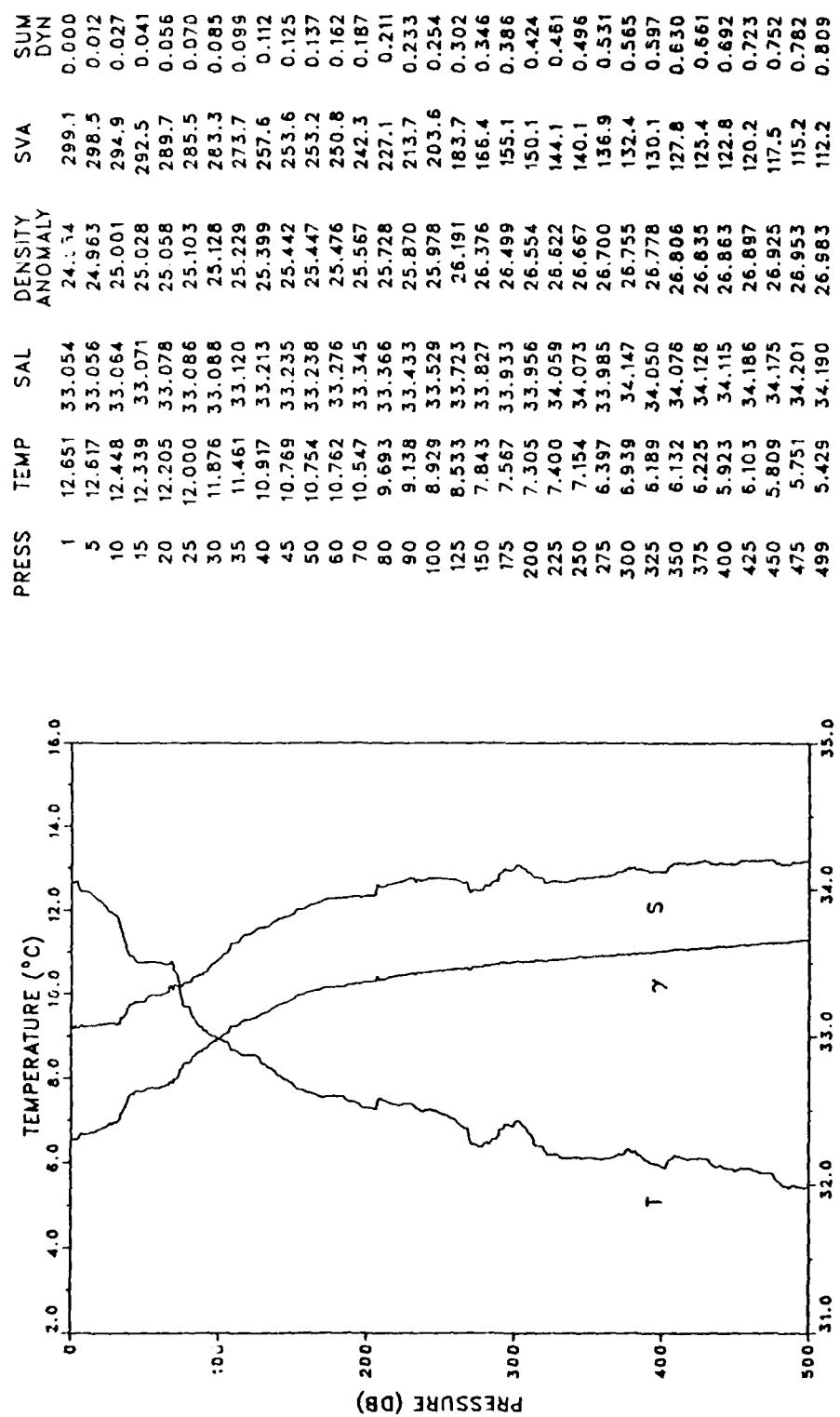
STATION: 99 LAT: 38 44.4 N LON: 124 13.1 W  
DATE: 6/27/87 TIME: 0700Z



STATION: 100 LAT: 38 46.8 N LON: 124 20.3 W  
DATE: 6/27/87 TIME: 0800Z

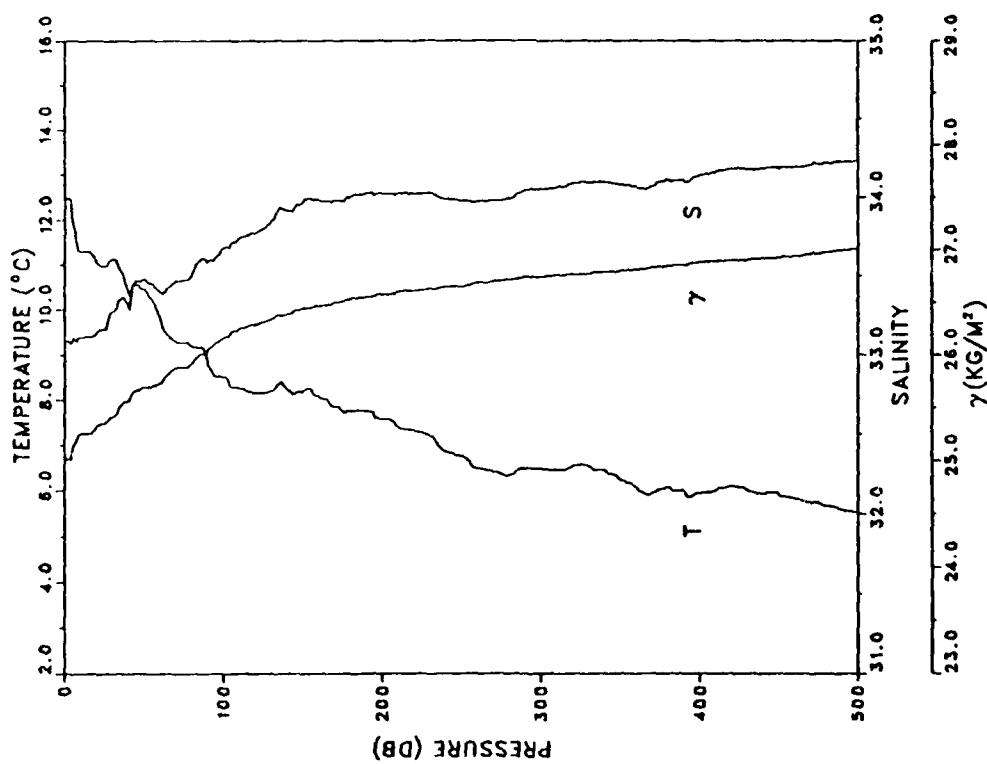


STATION: 101 LAT: 38 49.4 N LON: 124 26.2 W  
DATE: 6/27/87 TIME: 0900Z

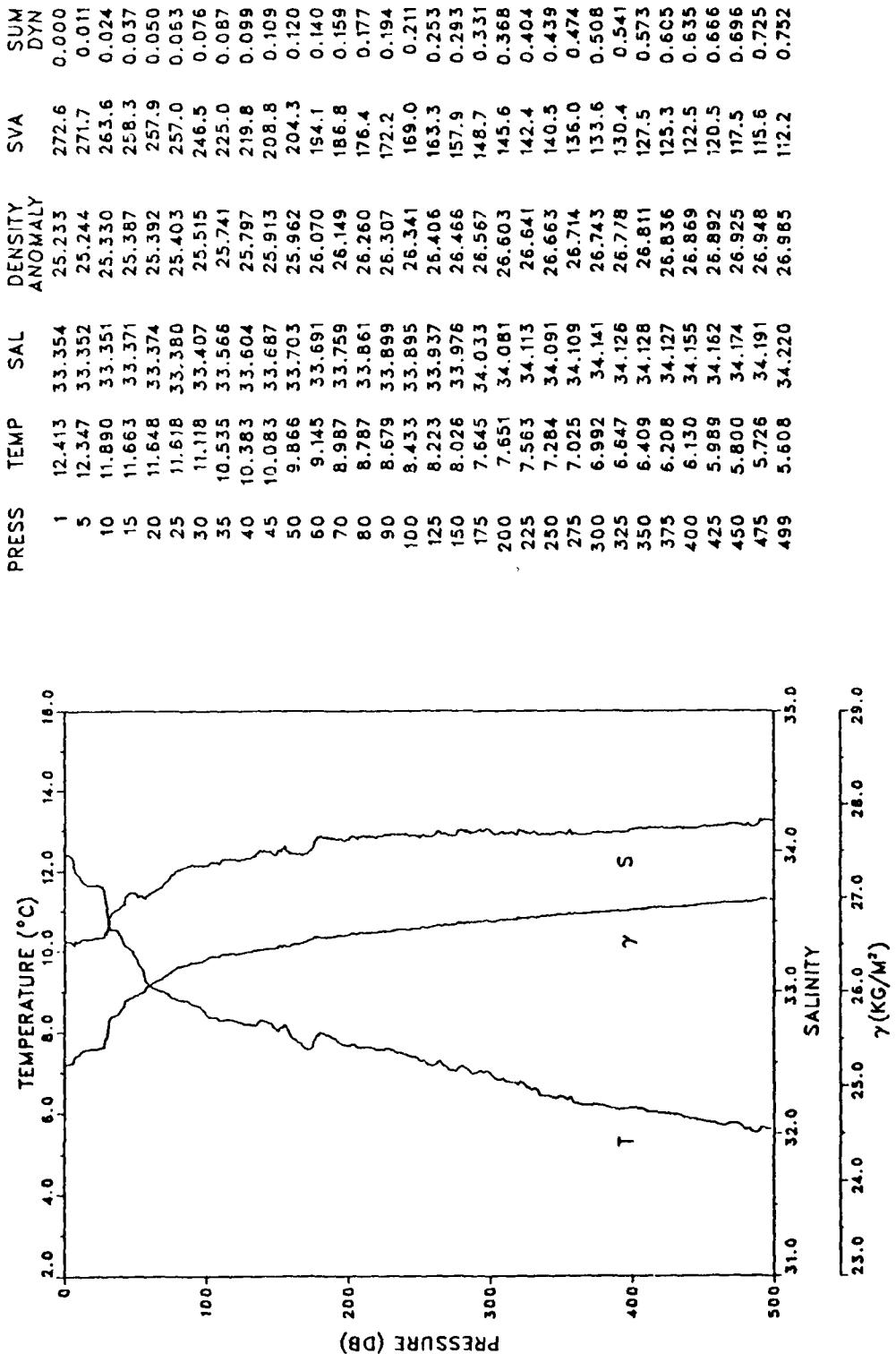


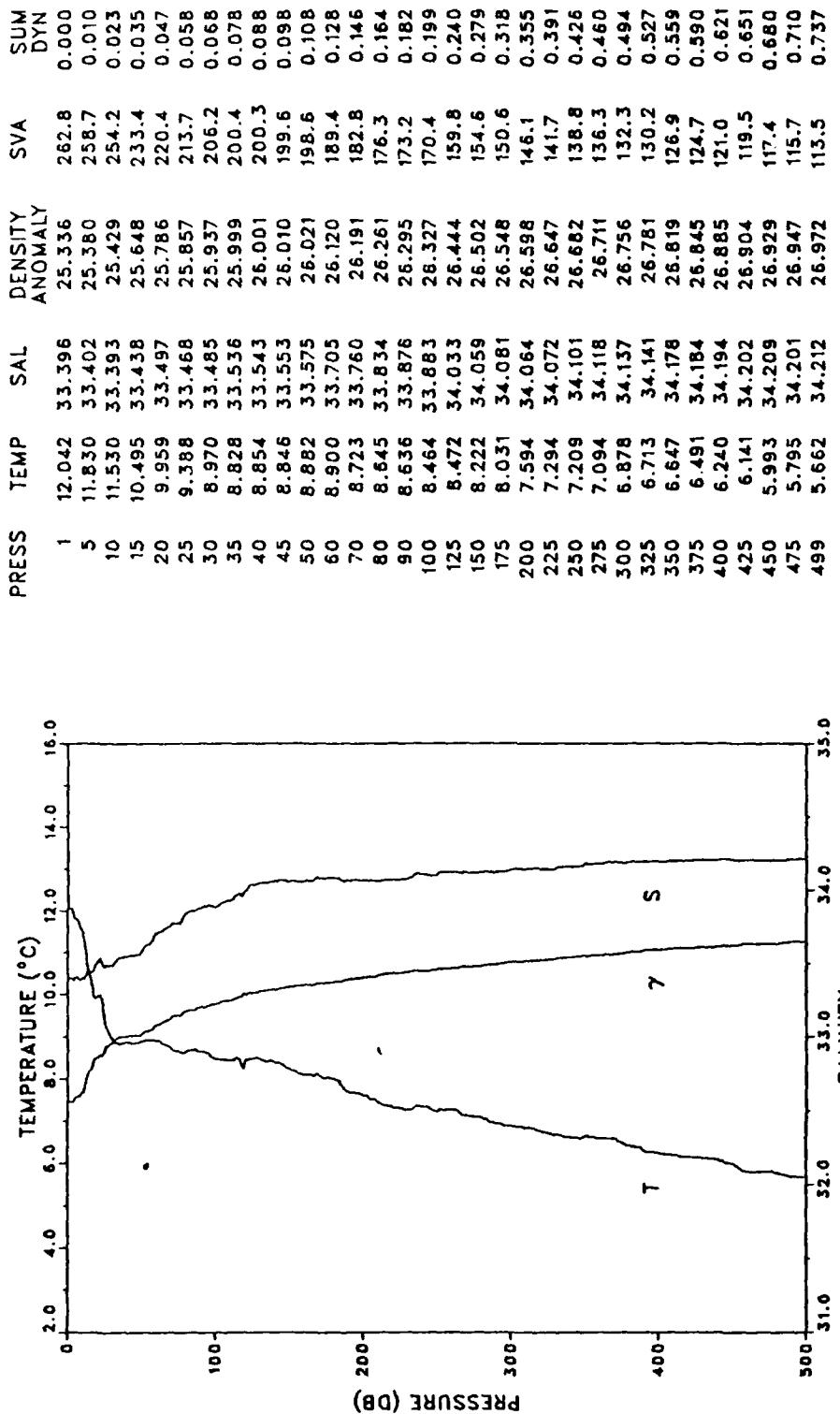
STATION: 102 LAT: 38 50.4 N LON: 124 19.9 W  
 DATE: 6/27/87 TIME: 1000Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.479	33.096	25.012	293.6	0.000
5	12.025	33.078	25.092	285.1	0.012
10	11.295	33.112	25.253	270.9	0.026
15	11.290	33.115	25.256	270.7	0.039
20	11.090	33.129	25.303	266.3	0.052
25	10.970	33.162	25.350	262.0	0.066
30	11.122	33.272	25.409	256.5	0.079
35	10.904	33.351	25.509	247.1	0.091
40	10.471	33.326	25.565	241.8	0.103
45	10.553	33.468	25.662	232.8	0.115
50	10.444	33.476	25.687	230.5	0.127
60	9.871	33.407	25.730	226.5	0.150
70	9.282	33.464	25.771	213.2	0.172
80	9.181	33.503	25.918	209.0	0.193
90	8.872	33.587	26.032	198.2	0.213
100	8.492	33.674	26.159	186.3	0.232
125	8.146	33.802	26.312	172.2	0.277
150	8.167	33.968	26.439	160.6	0.319
175	7.744	33.974	26.506	154.5	0.358
200	7.568	34.024	26.570	148.7	0.396
225	7.273	34.025	26.613	144.9	0.433
250	6.763	33.980	26.648	141.8	0.469
275	6.346	33.977	26.700	136.9	0.503
300	6.479	34.051	26.741	133.4	0.537
325	6.571	34.096	26.765	131.6	0.570
350	6.233	34.080	26.796	128.7	0.603
375	6.039	34.098	26.835	125.2	0.635
400	5.944	34.138	26.879	121.4	0.666
425	6.077	34.184	26.898	120.0	0.696
450	5.908	34.179	26.916	118.5	0.726
475	5.738	34.215	26.965	114.0	0.755
499	5.519	34.234	27.007	110.1	0.781



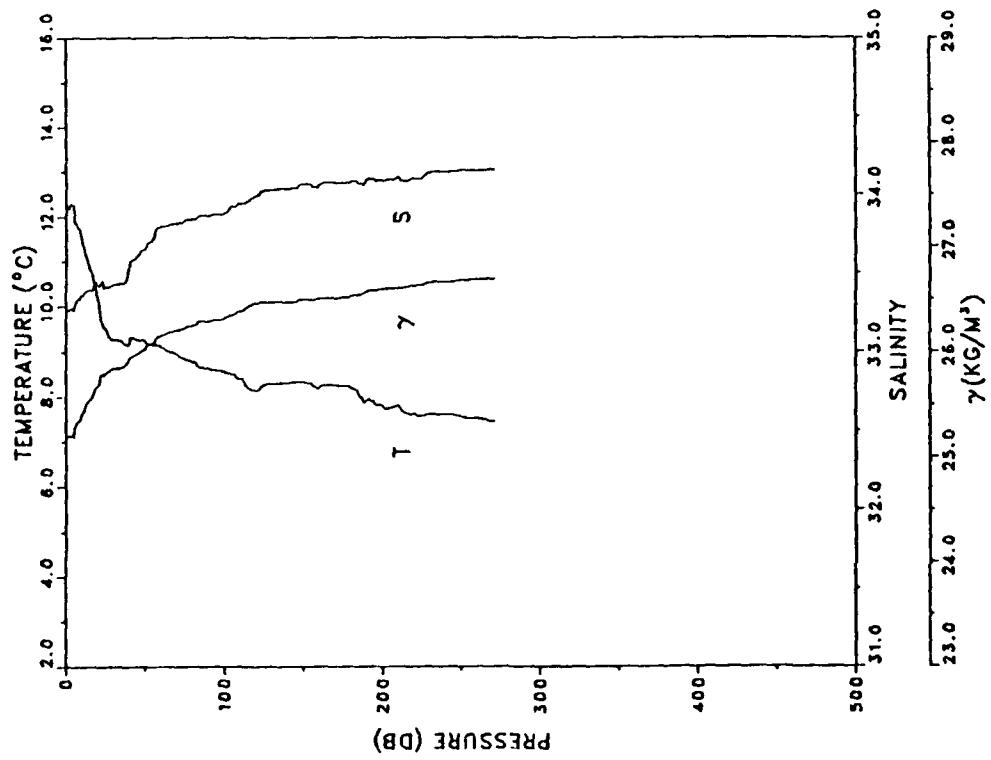
STATION: 103 LAT: 38 51.6 N LON: 124 13.3 W  
DATE: 6/27/87 TIME: 1200Z





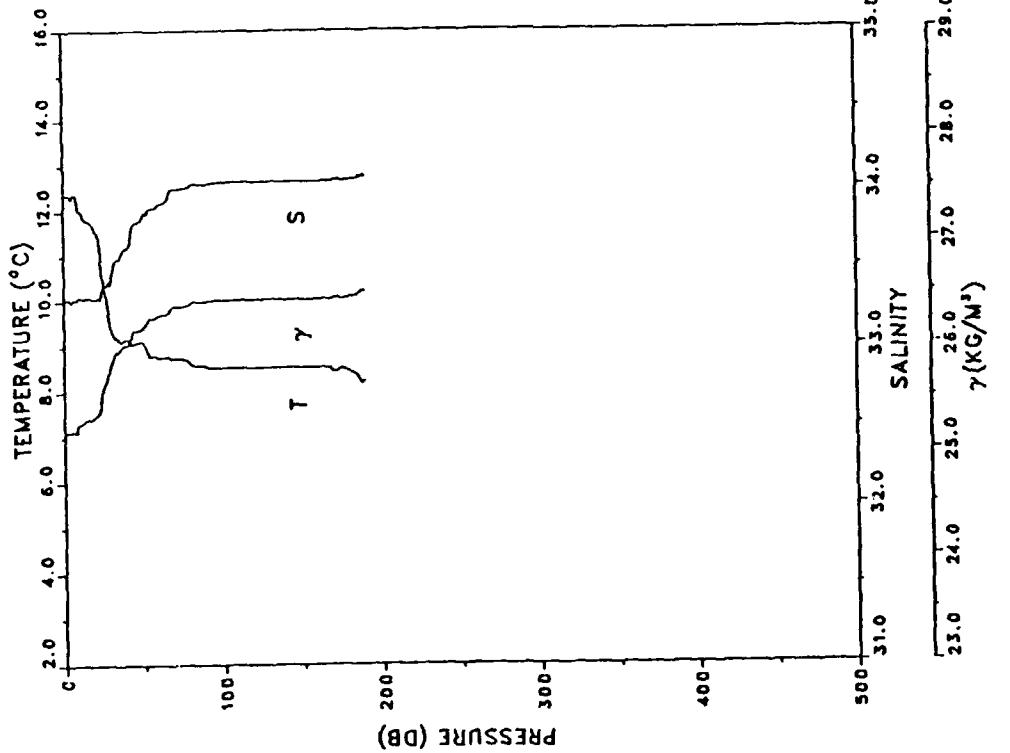
STATION: 105 LAT: 38 53.2 N LON: 124 1.7 W  
DATE: 6/27/87 TIME: 1400Z

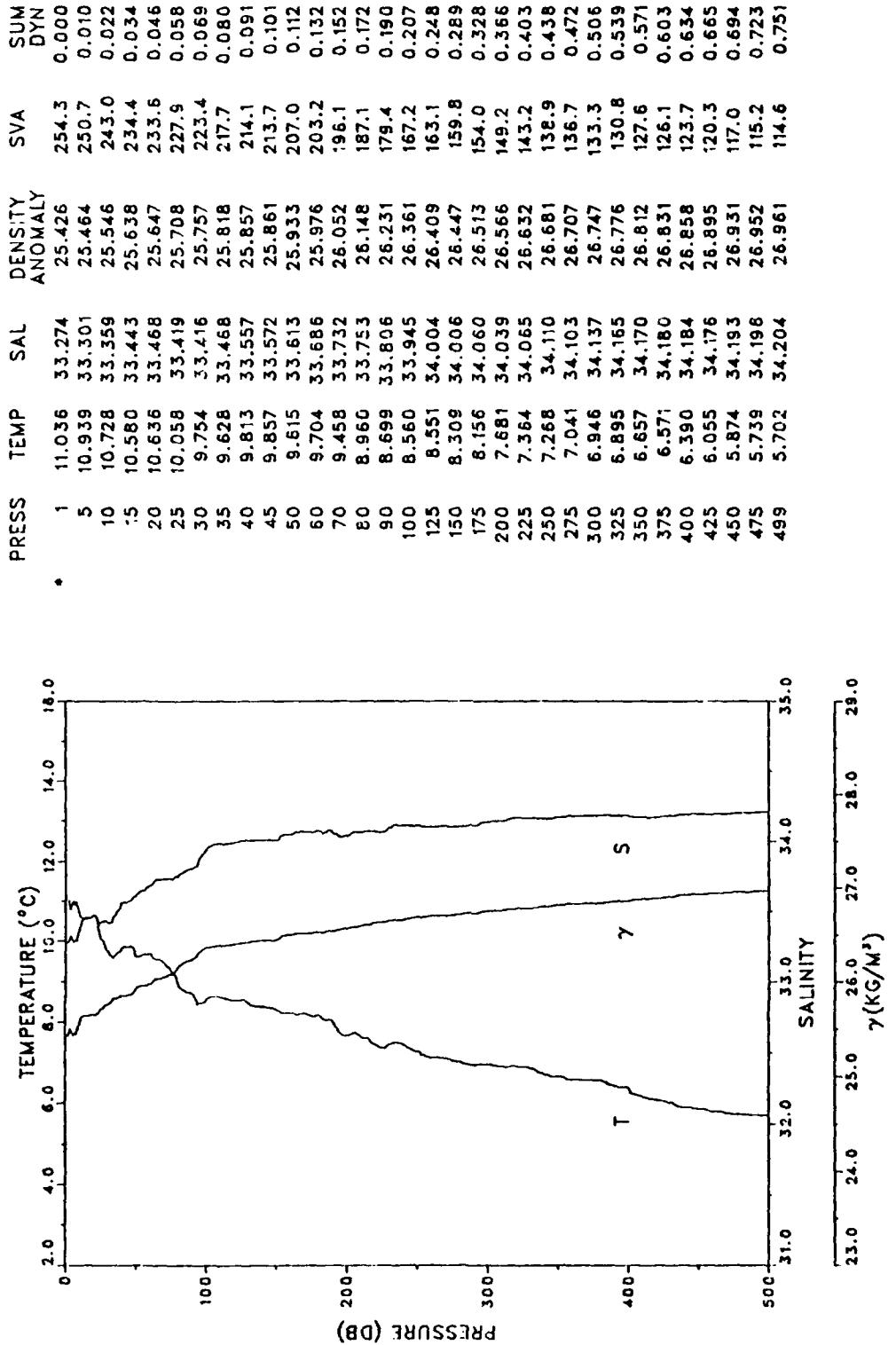
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.227	33.262	25.197	276.1	0.000
5	12.249	33.260	25.191	276.7	0.011
10	11.534	33.354	25.398	257.1	0.024
15	10.889	33.390	25.542	243.5	0.037
20	10.291	33.427	25.675	231.0	0.049
25	9.517	33.416	25.795	219.6	0.060
30	9.270	33.425	25.842	215.2	0.071
35	9.243	33.431	25.851	214.4	0.082
40	9.166	33.516	25.930	207.1	0.092
45	9.261	33.600	25.981	202.4	0.102
50	9.235	33.647	26.022	198.6	0.112
60	9.115	33.791	26.153	186.2	0.132
70	8.943	33.809	26.195	182.5	0.150
80	8.776	33.838	26.244	178.0	0.168
90	8.626	33.863	26.287	174.1	0.186
100	8.527	33.875	26.311	171.9	0.203
125	8.273	34.028	26.470	157.2	0.244
150	8.317	34.060	26.488	155.9	0.283
175	8.242	34.072	26.509	154.4	0.322
200	7.787	34.082	26.584	147.5	0.360
225	7.566	34.099	26.630	143.5	0.396
250	7.545	34.149	26.672	139.9	0.432
271	7.442	34.153	26.690	138.5	0.461



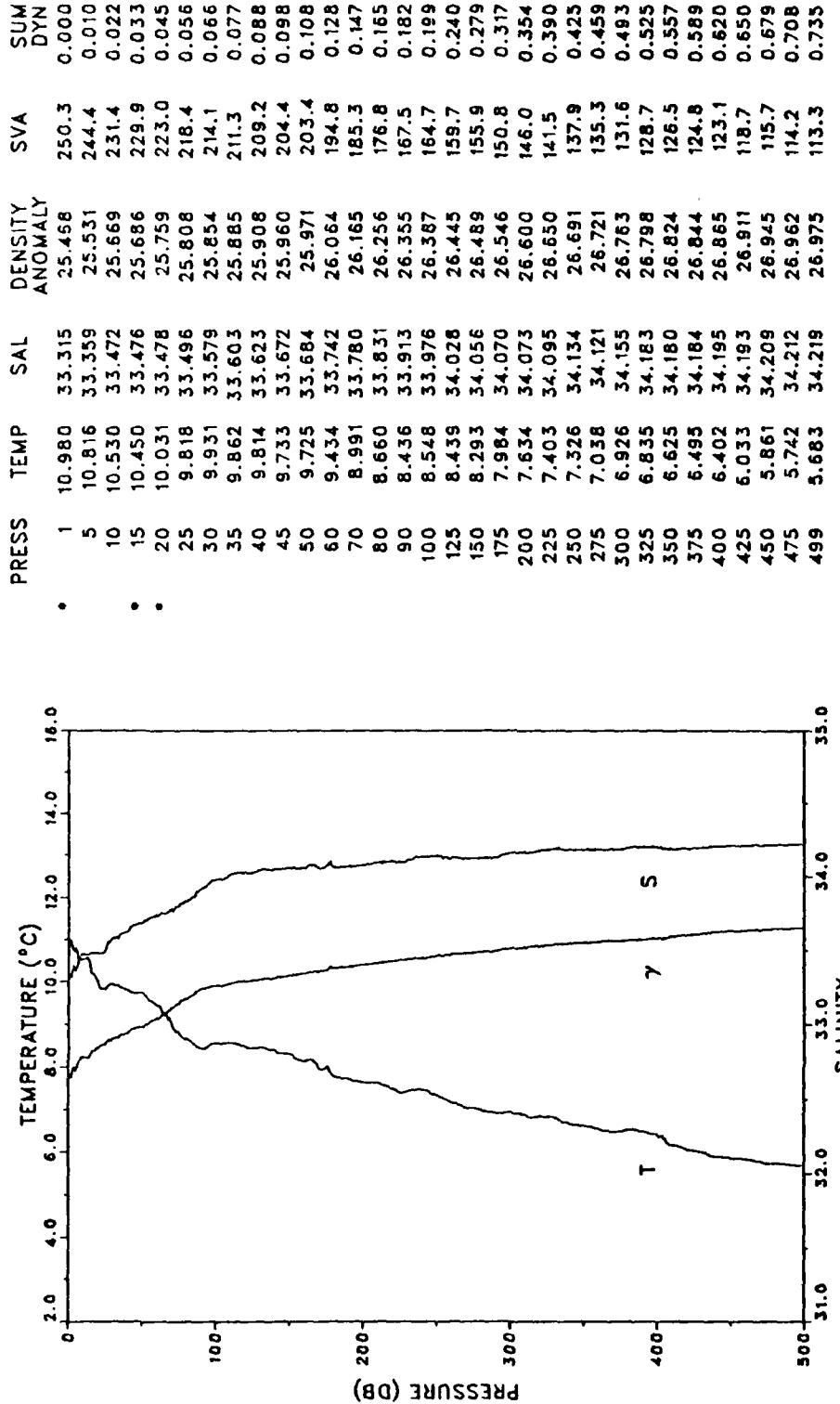
STATION: 106 LAT: 38 53.9 N LON: 123 55.7 W  
DATE: 6/27/87 TIME: 1453Z

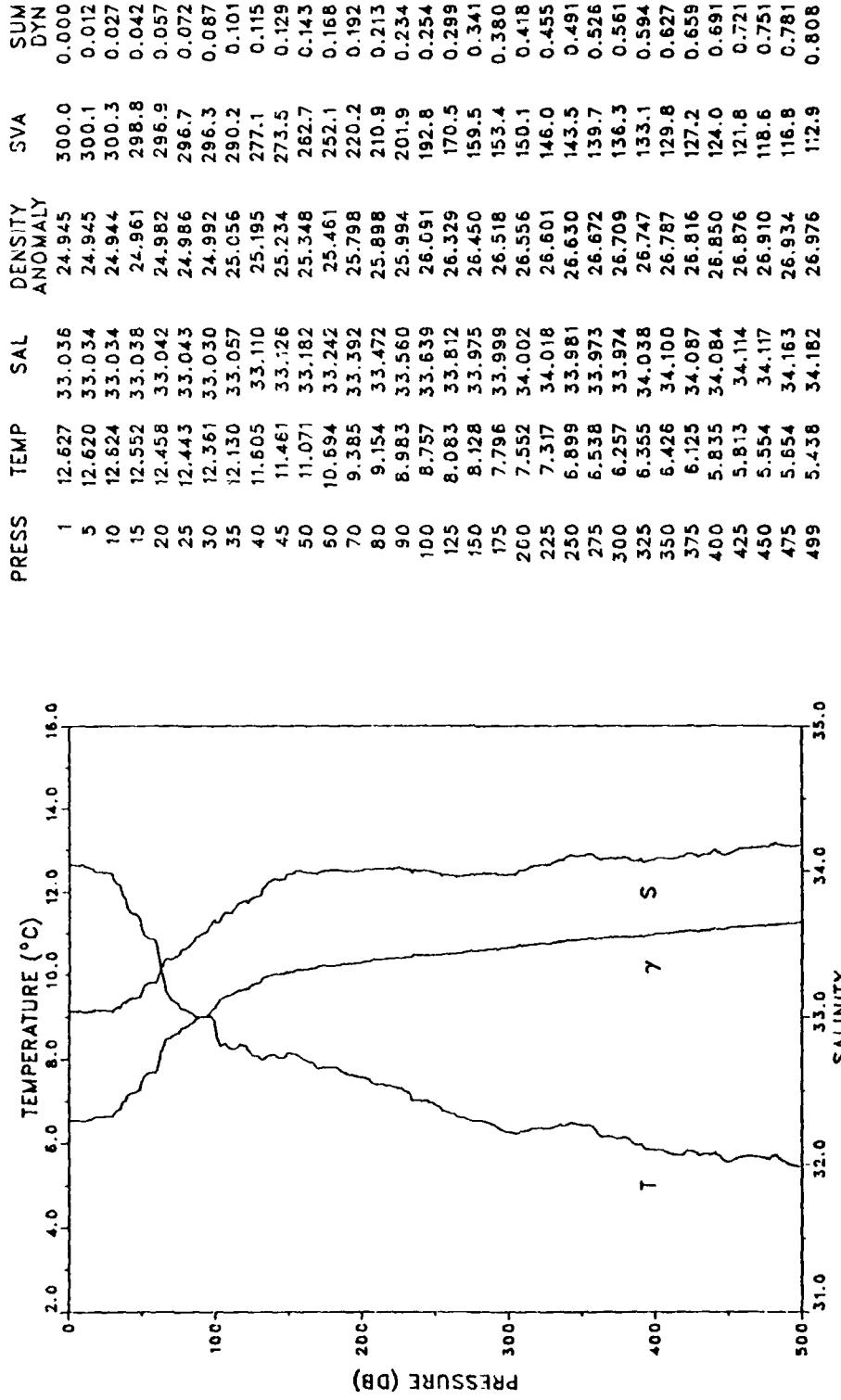
PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.371	33.303	25.201	275.6	0.000
5	12.290	33.280	25.199	276.0	0.011
10	12.019	33.310	25.274	269.0	0.025
15	11.787	33.307	25.315	265.2	0.038
20	11.592	33.307	25.351	261.8	0.051
25	10.364	33.377	25.623	236.0	0.064
30	9.353	33.450	25.849	214.6	0.075
35	9.145	33.557	25.966	203.6	0.085
40	9.158	33.622	26.014	199.1	0.095
45	9.078	33.781	26.152	186.1	0.105
50	9.091	33.826	26.185	183.1	0.114
60	8.757	33.904	26.298	172.4	0.132
70	8.738	34.000	26.377	165.2	0.149
80	8.597	34.022	26.416	161.6	0.165
90	8.553	34.028	26.427	160.7	0.181
100	8.530	34.036	26.437	160.0	0.197
125	8.531	34.044	26.443	159.8	0.237
150	8.534	34.044	26.443	160.3	0.277
175	8.520	34.045	26.446	160.5	0.318
190	8.226	34.071	26.512	154.4	0.341



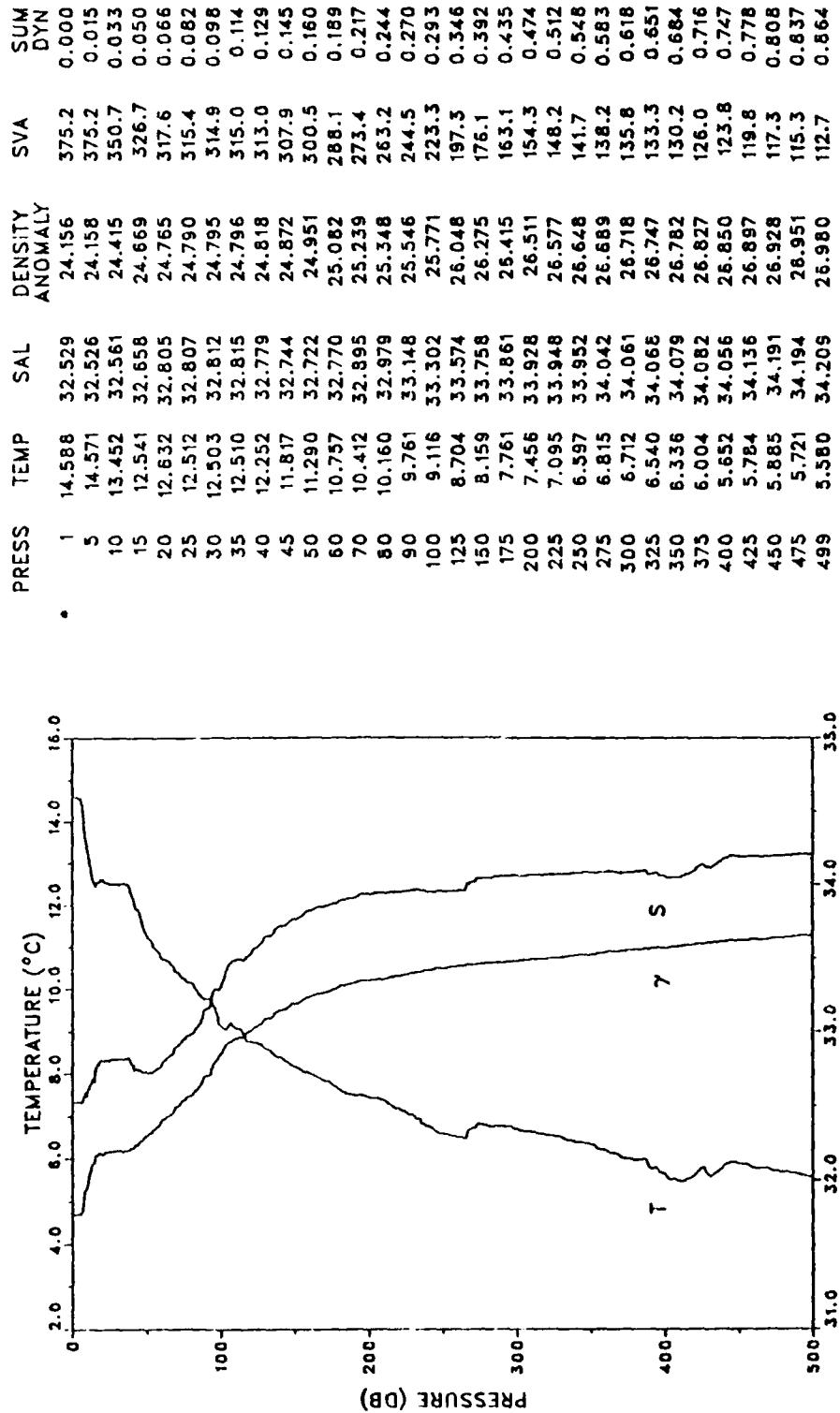


STATION: 108 LAT: 39 0.2 N LON: 124 4.6 W  
DATE: 6/27/87 TIME: 1711Z

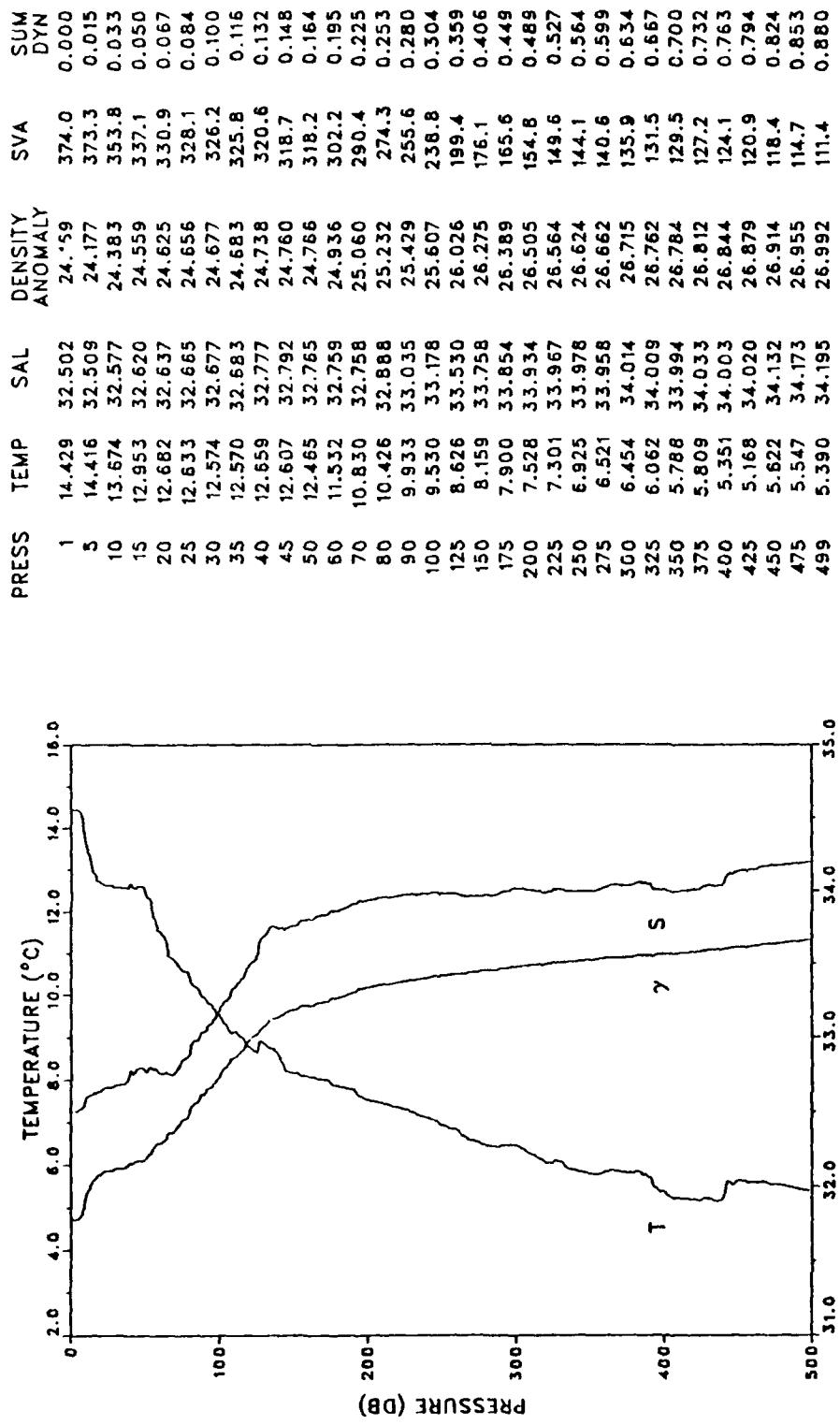


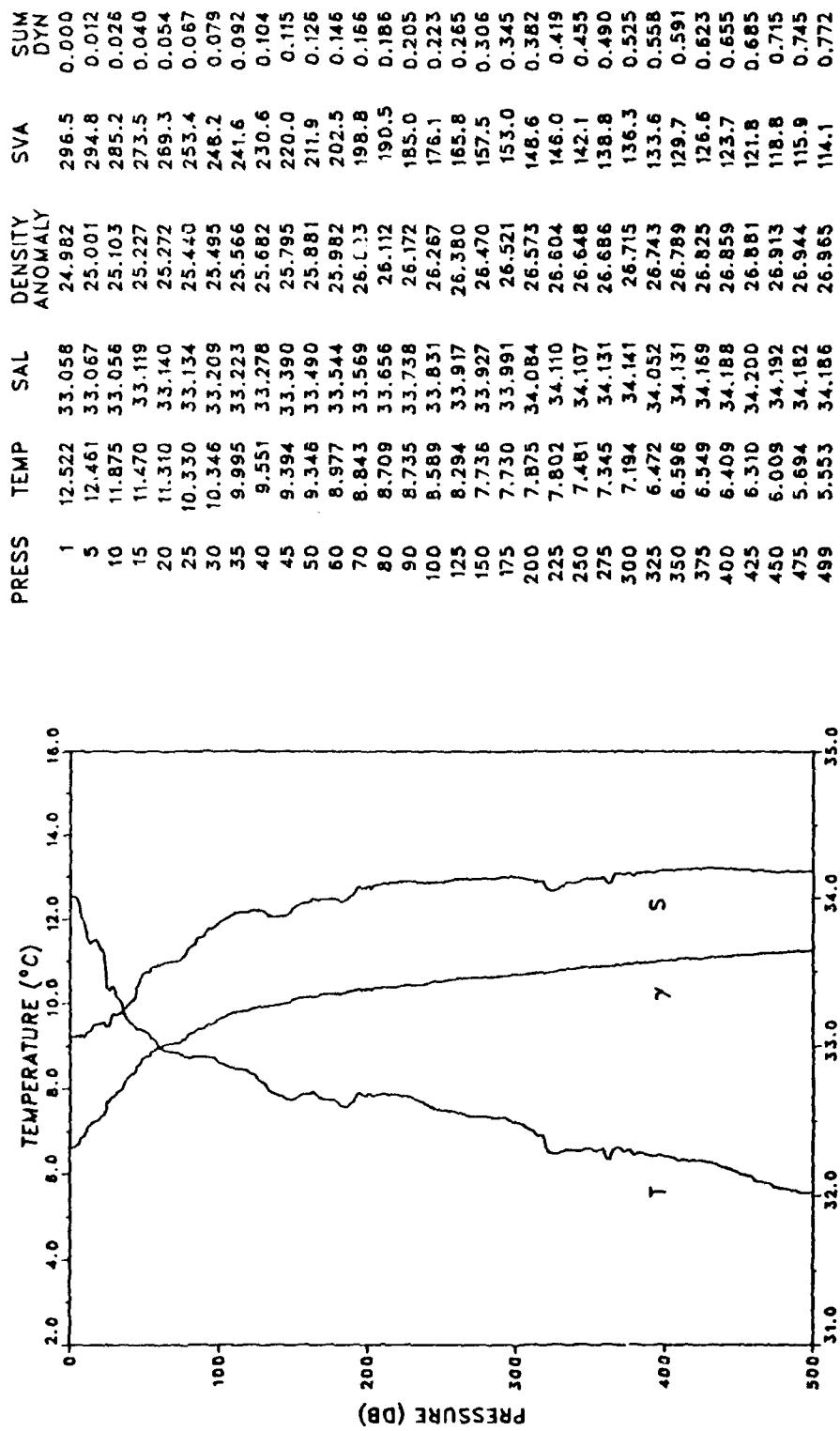


STATION: 109 LAT: 39 0.2 N LON: 124 12.6 W  
DATE: 6/27/87 TIME: 1818Z

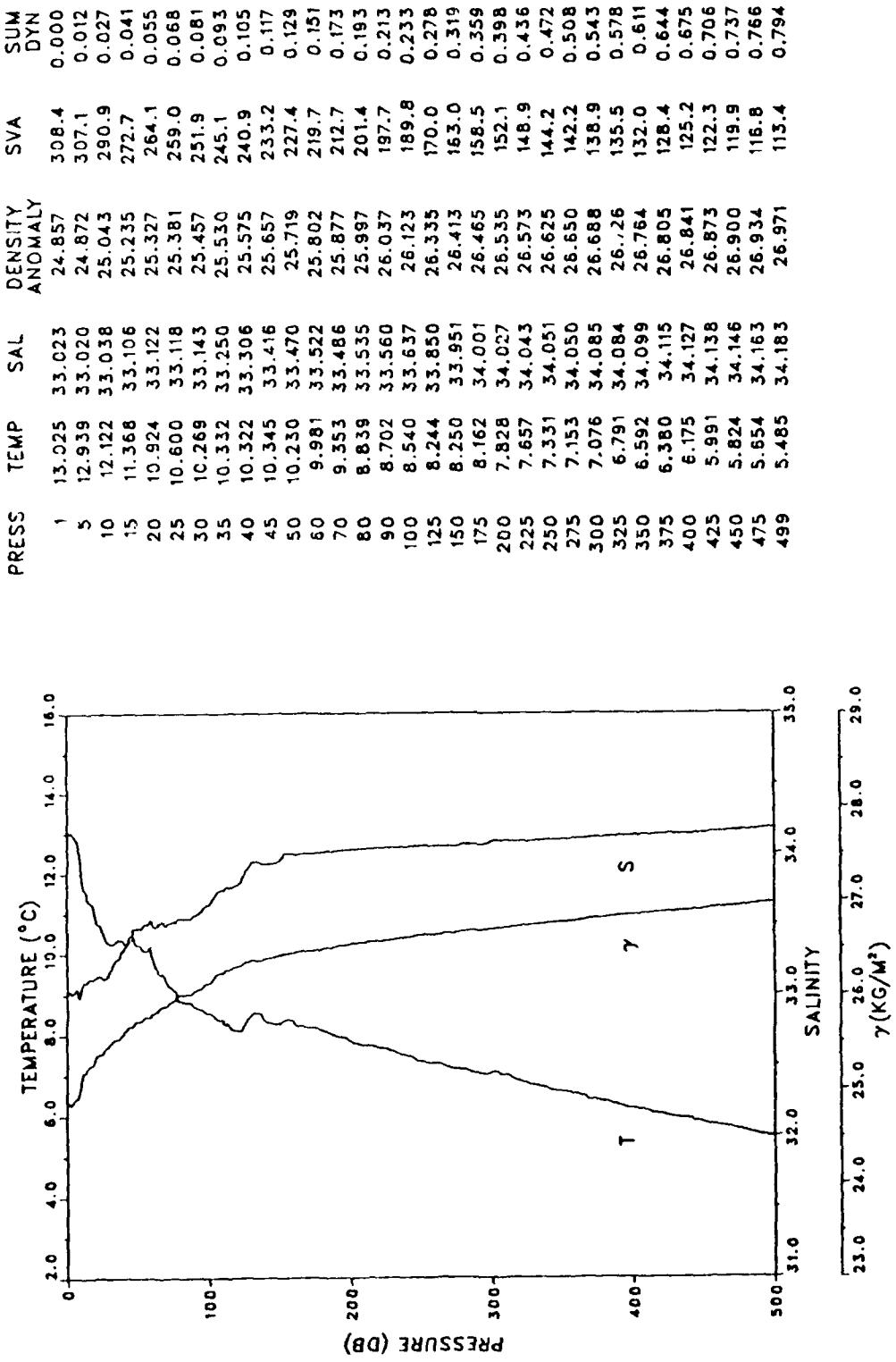


STATION: 110 LAT: 39 0.1 N LON: 124 21.1 W  
 DATE: 6/27/87 TIME: 1923Z



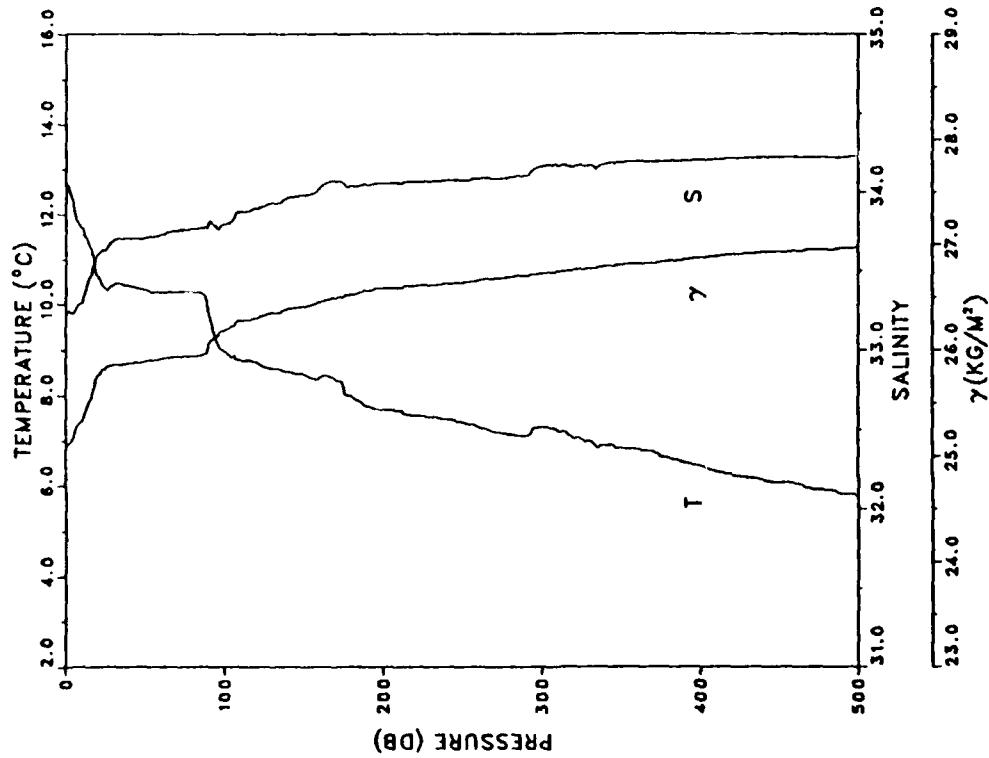


STATION: 112 LAT: 38 36.5 N LON: 124 2.1 W  
DATE: 6/28/87 TIME: 0200Z

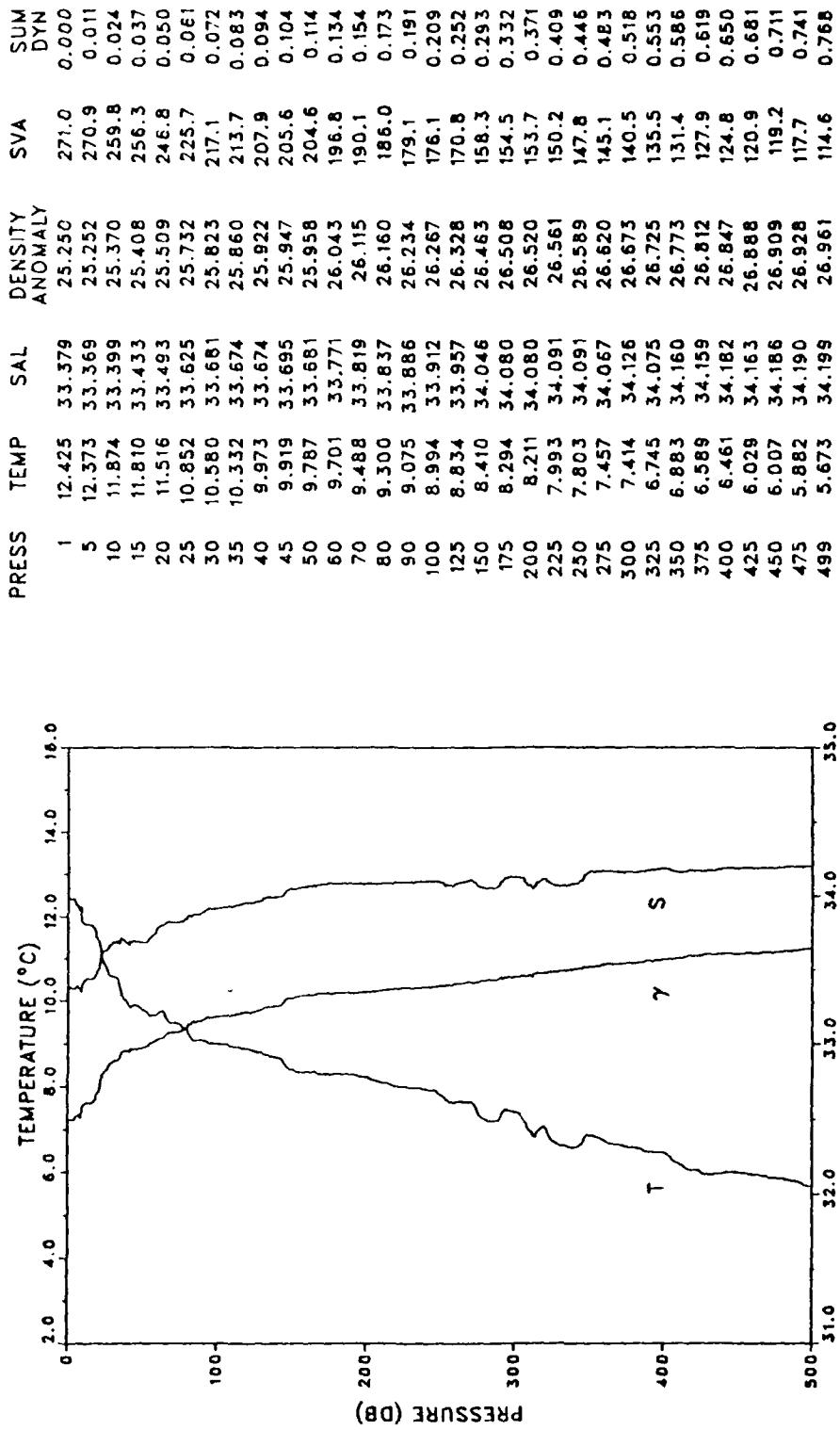


STATION: 113 LAT: 38 32.3 N LON: 123 59.2 W  
DATE: 6/28/87 TIME: 0300Z

PRESS	TEMP	SAL	DENSITY ANOMALY	SVA	SUM DYN
1	12.658	33.239	25.096	285.6	0.000
5	12.255	33.228	25.165	279.2	0.011
10	11.692	33.293	25.321	264.4	0.025
15	11.311	33.451	25.514	246.2	0.038
20	10.598	33.604	25.760	222.9	0.049
25	10.324	33.625	25.824	217.0	0.060
30	10.421	33.688	25.856	214.0	0.071
35	10.450	33.699	25.860	213.7	0.082
40	10.405	33.704	25.871	212.7	0.093
45	10.354	33.702	25.879	212.1	0.103
50	10.307	33.705	25.889	211.3	0.114
60	10.267	33.727	25.913	209.2	0.135
70	10.268	33.750	25.931	207.7	0.156
80	10.268	33.761	25.939	207.1	0.176
90	9.798	33.795	26.045	197.2	0.197
100	8.947	33.792	26.181	184.3	0.216
125	8.620	33.909	26.324	171.2	0.260
150	8.447	33.974	26.401	164.2	0.302
175	8.148	34.050	26.506	154.6	0.342
200	7.672	34.051	26.577	148.1	0.380
225	7.533	34.062	26.605	145.8	0.416
250	7.394	34.070	26.631	143.6	0.453
275	7.154	34.084	26.676	139.7	0.488
300	7.292	34.162	26.778	136.1	0.522
325	7.024	34.163	26.756	132.7	0.556
350	6.830	34.186	26.801	128.8	0.589
375	6.647	34.190	26.829	126.4	0.621
400	6.442	34.200	26.864	123.2	0.652
425	6.210	34.212	26.903	119.6	0.682
450	6.083	34.216	26.923	118.0	0.712
475	5.917	34.221	26.948	115.8	0.741
499	5.791	34.223	26.965	114.3	0.769

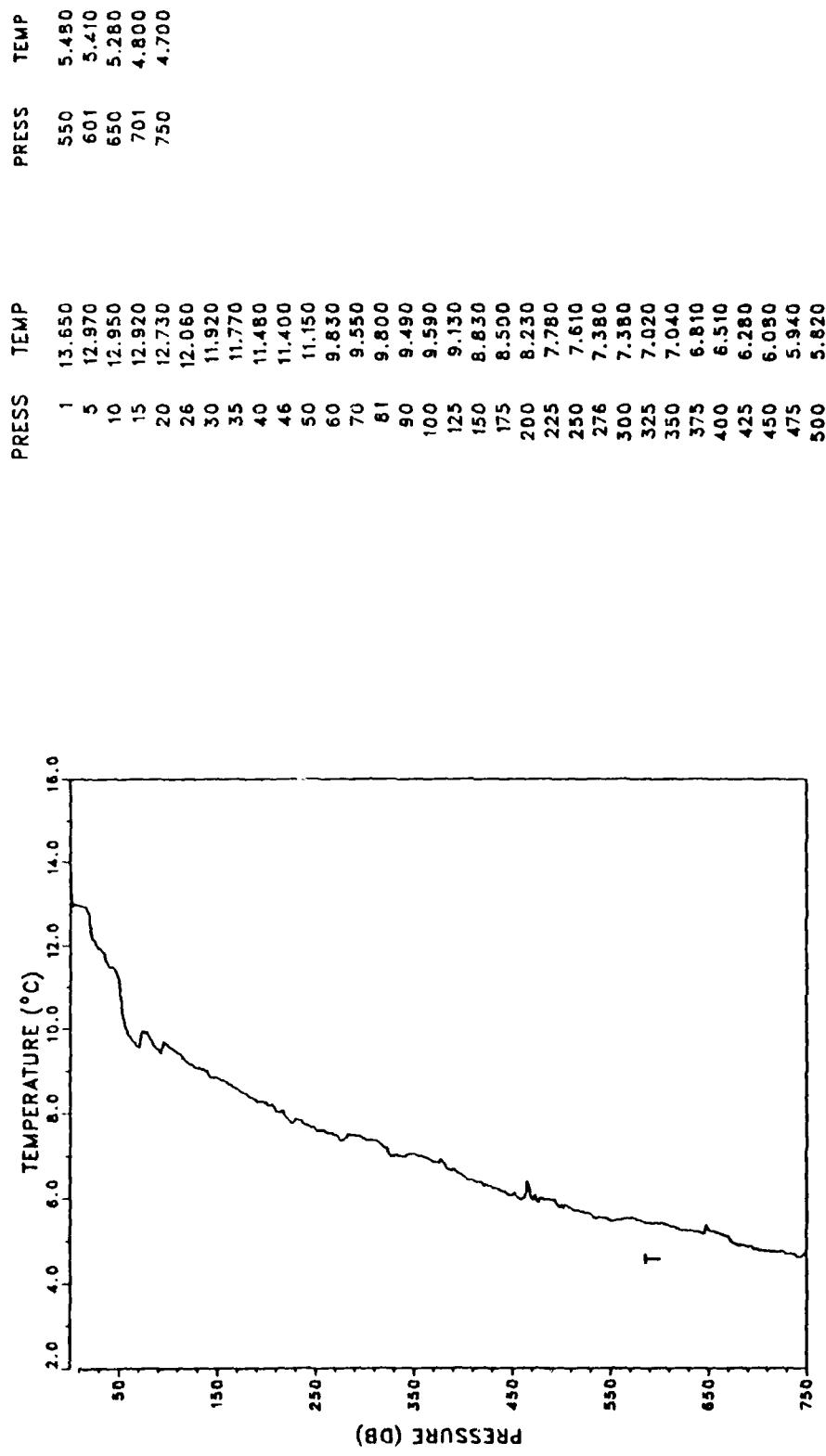


STATION: 114 LAT: 38 25.6 N LON: 123 54.4 W  
DATE: 6/28/87 TIME: 0400Z

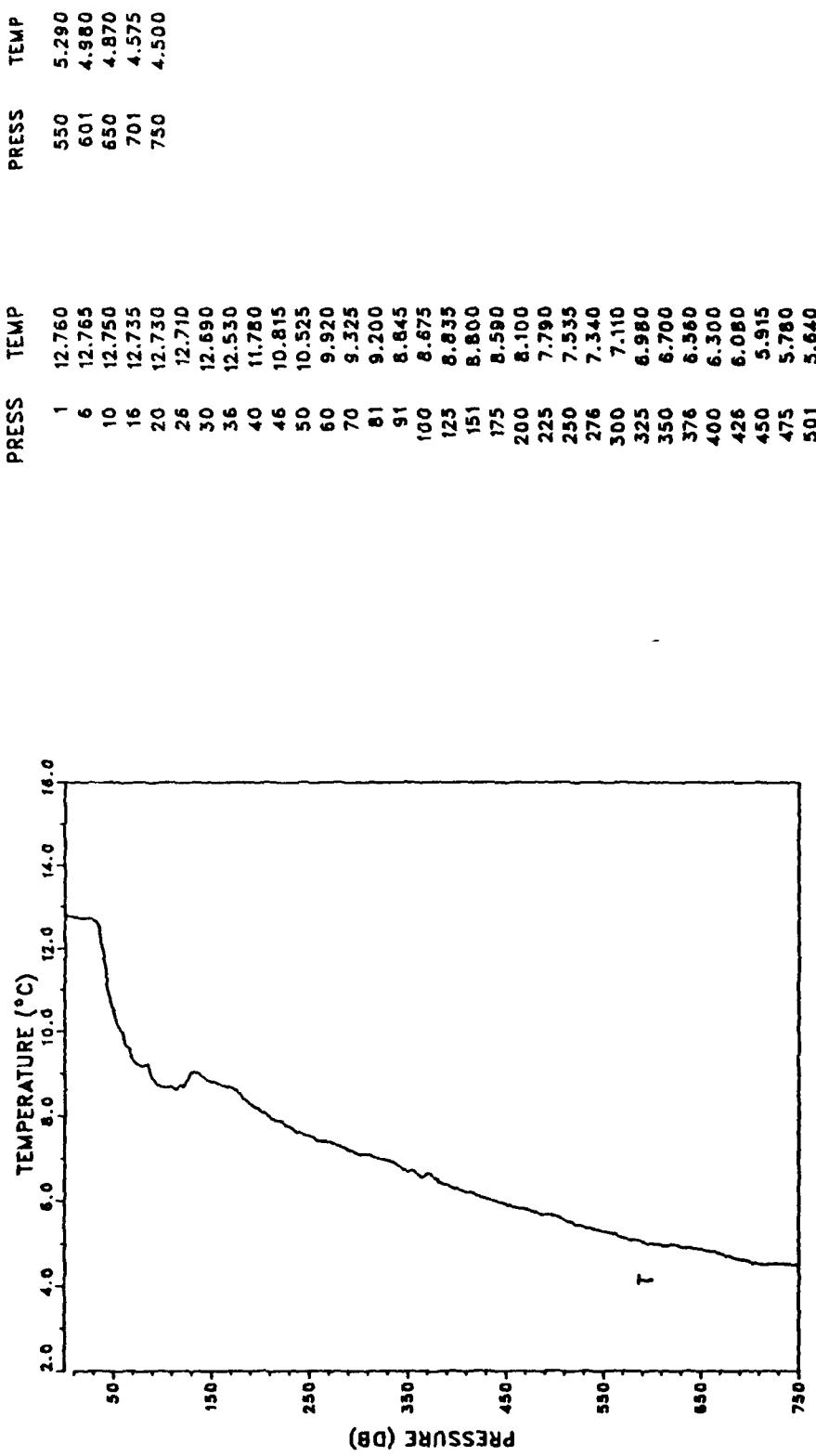


STATION: 115 LAT: 38 18.6 N LON: 123 50.6 W  
DATE: 6/28/87 TIME: 0500Z

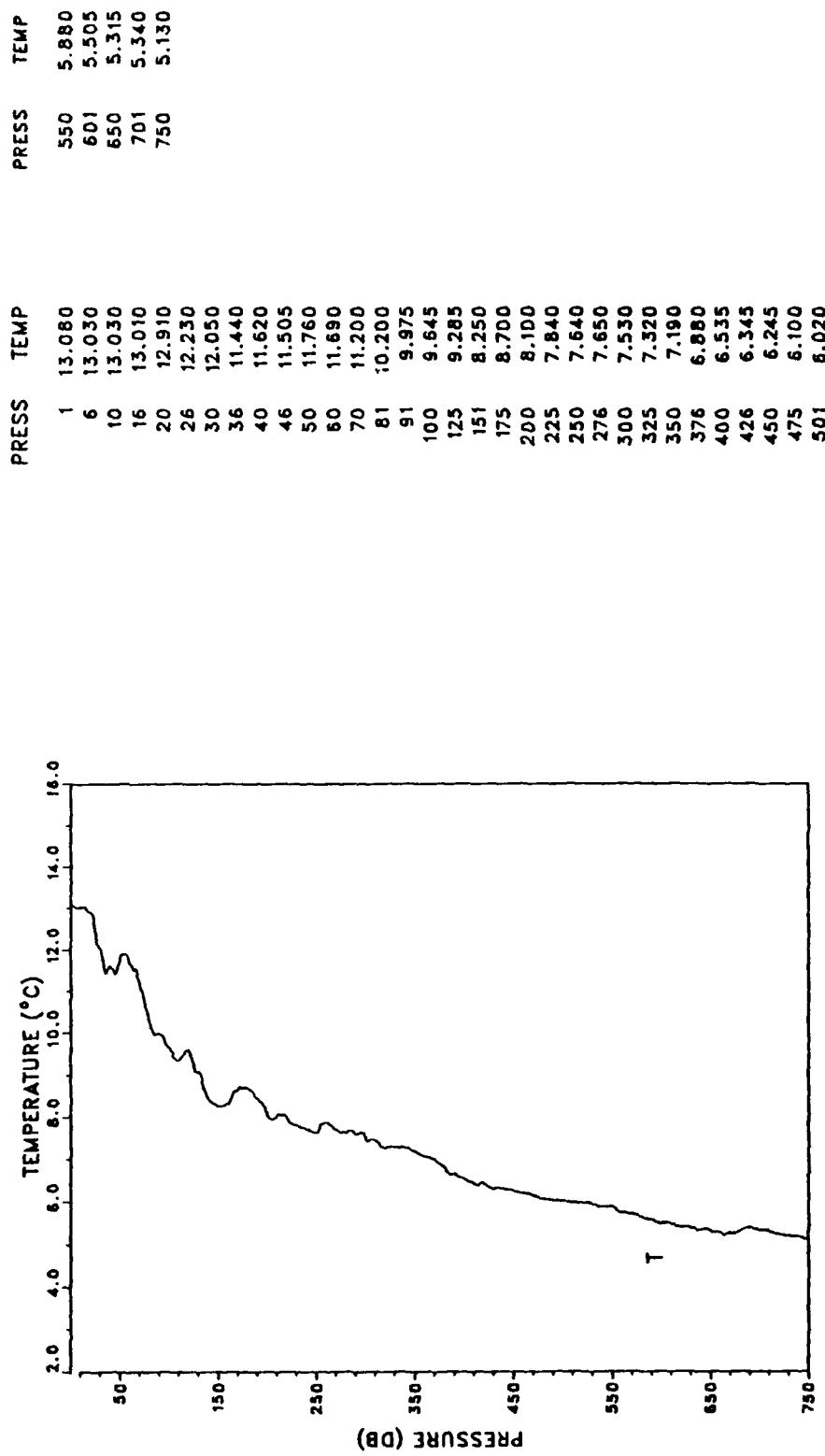
Figure 39. Listing of temperature at selected pressures and profiles of temperature (T) for all XBT stations of cruise CTZ2.



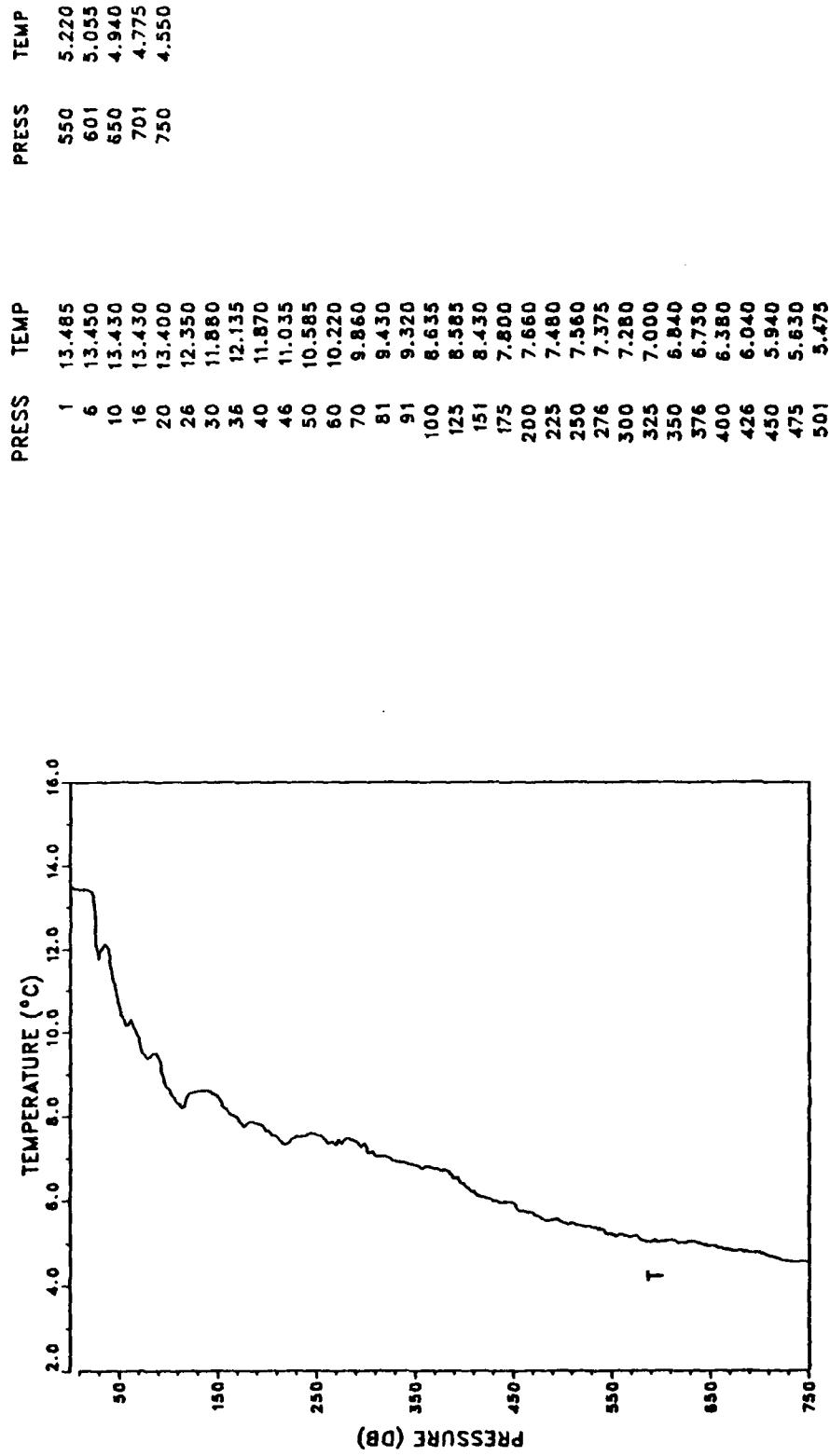
STATION: 426 LAT: 38 43.1 N LON: 124 31.2 W  
DATE: 6/18/87 TIME: 10000Z

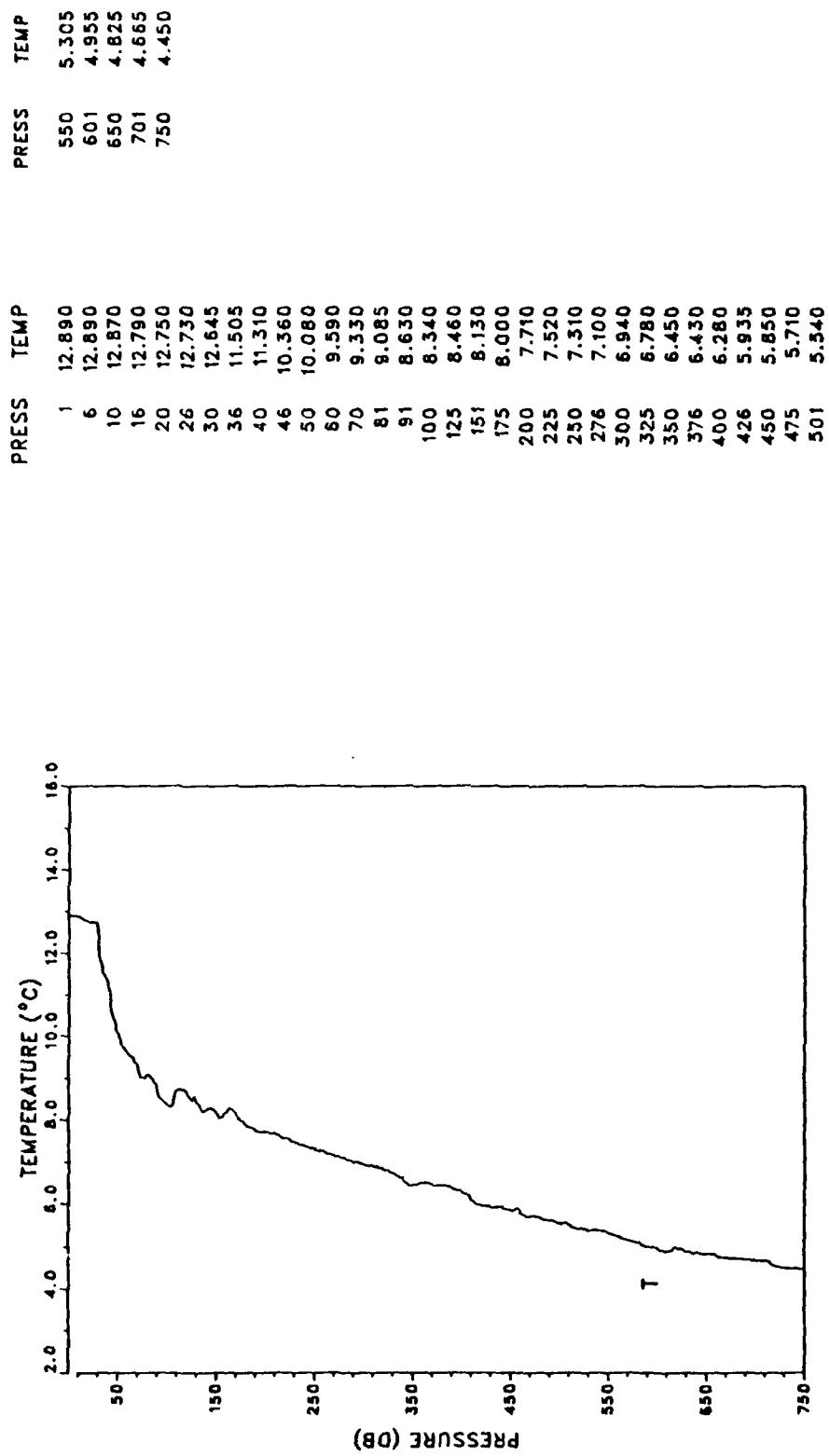


STATION: 479 LAT: 38 13.3 N LON: 124 5.6 W  
DATE: 6/22/87 TIME: 0753Z

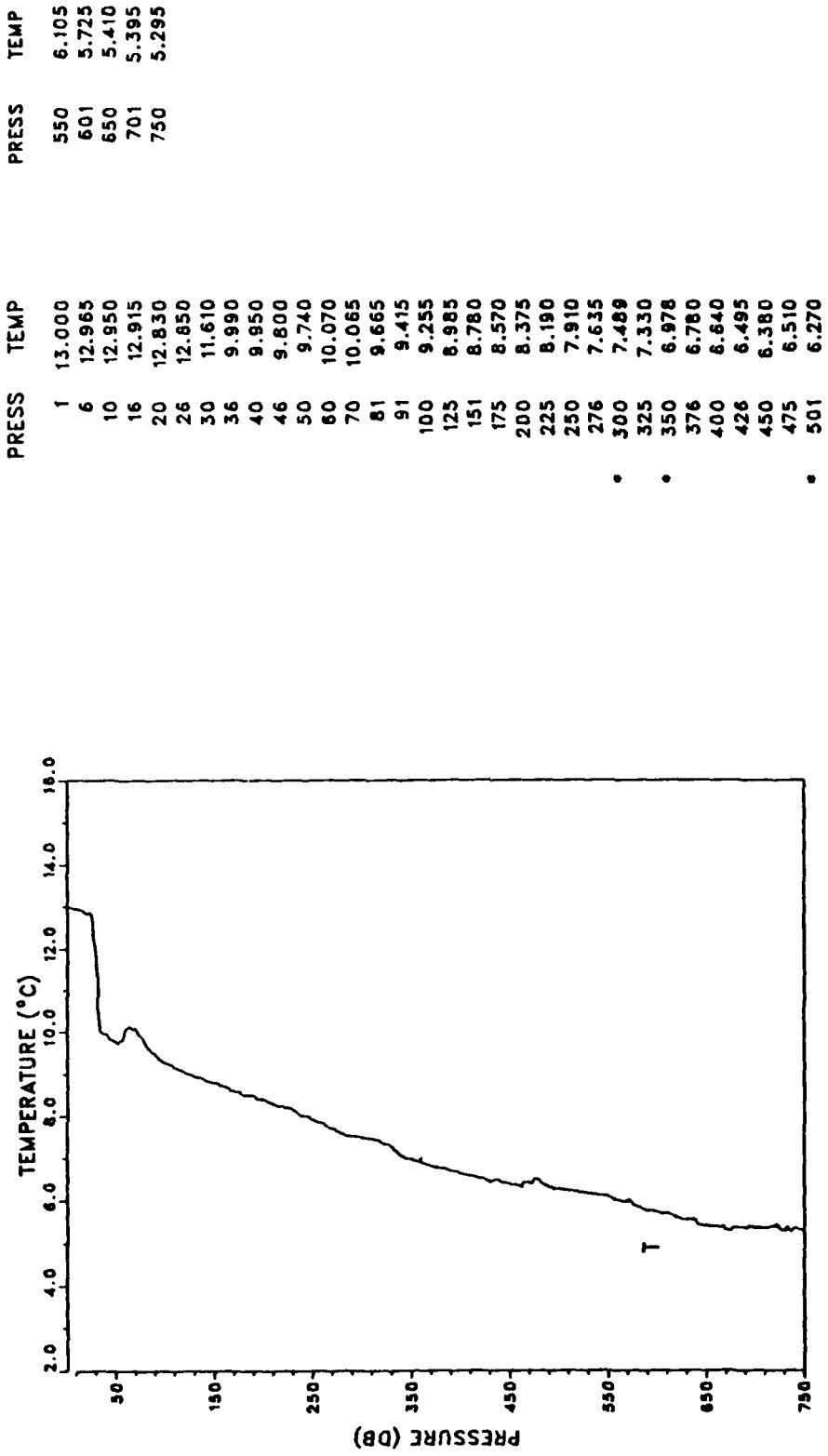


STATION: 480 LAT: 38 5.2 N LON: 124 6.1 W  
DATE: 6/22/87 TIME: 0853Z

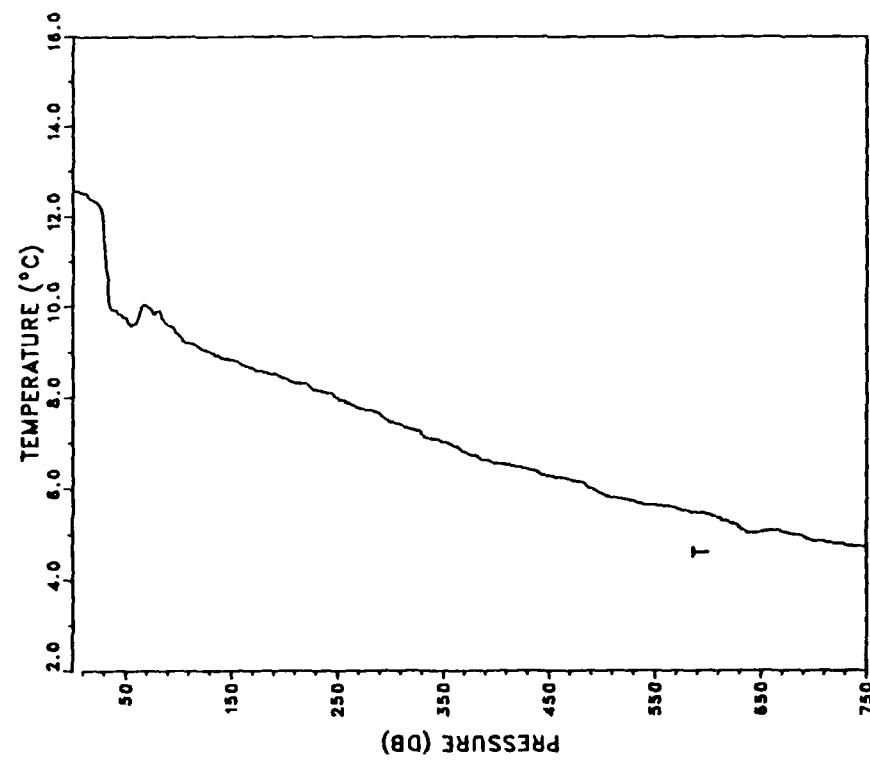


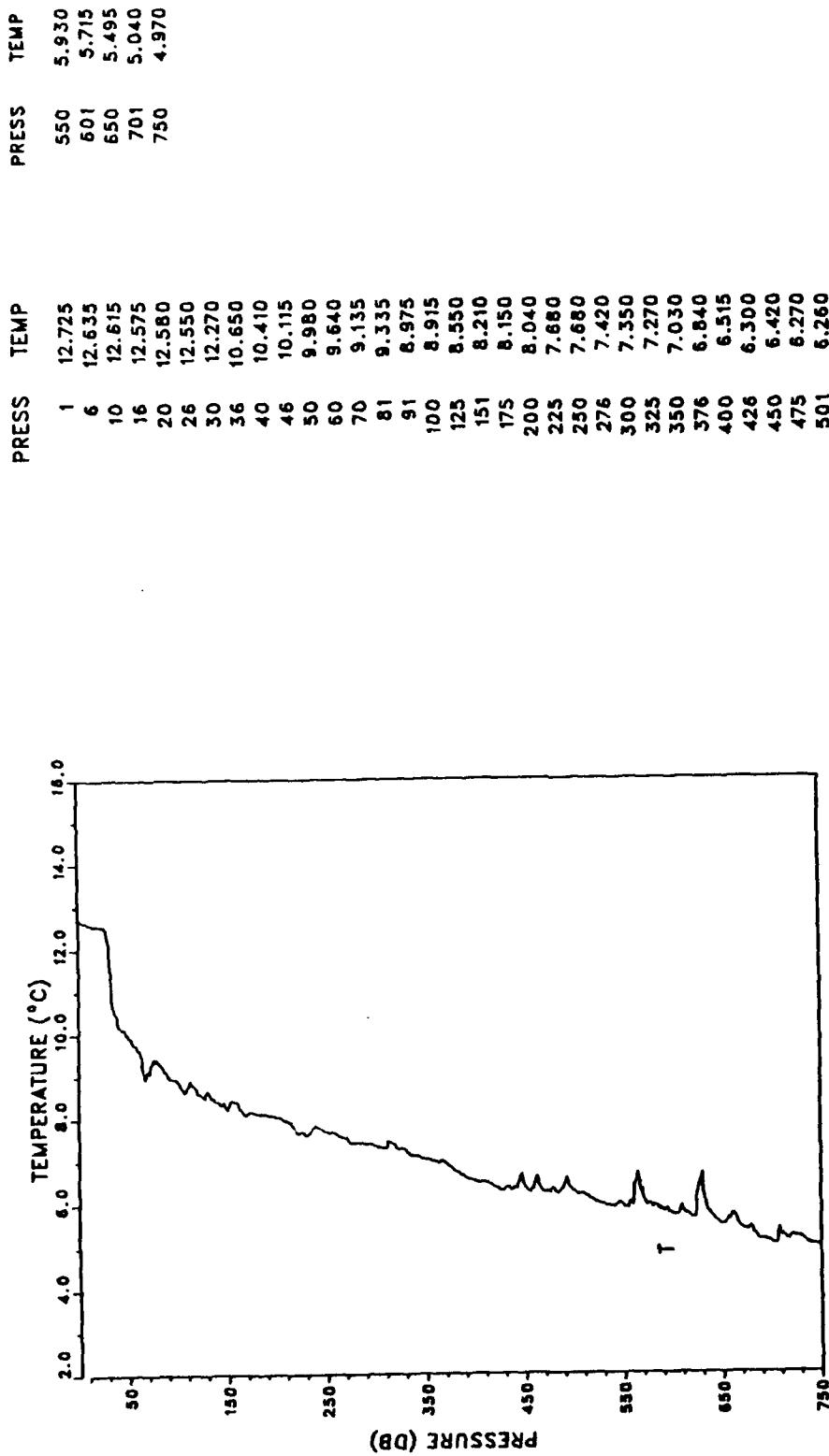


STATION: 482 LAT: 38 14.5 N LON: 124 11.4 W  
 DATE: 6/22/87 TIME: 1053Z

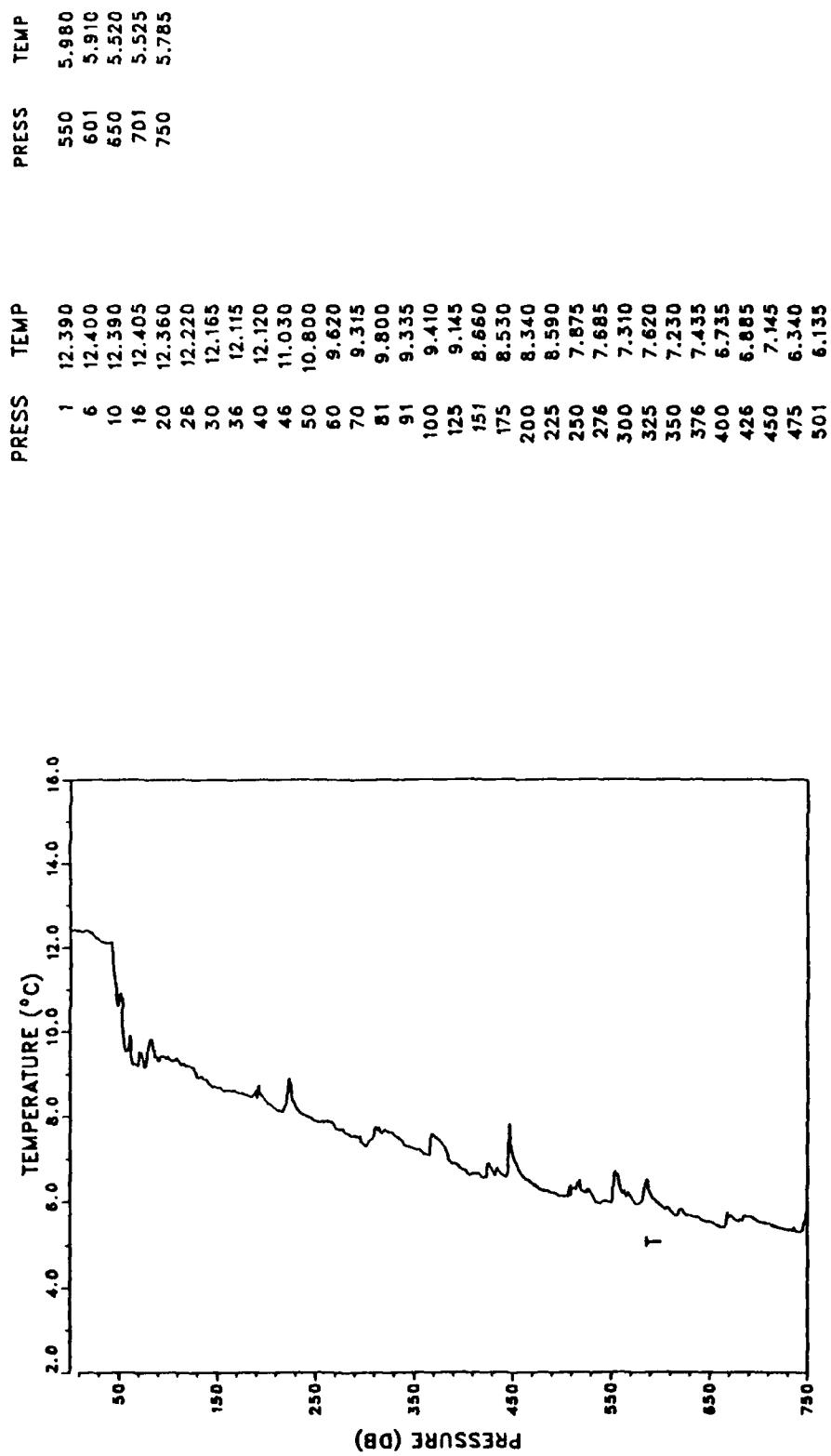


STATION: 484 LAT: 38 33.6 N LON: 124 24.0 W  
DATE: 6/22/87 TIME: 1911Z

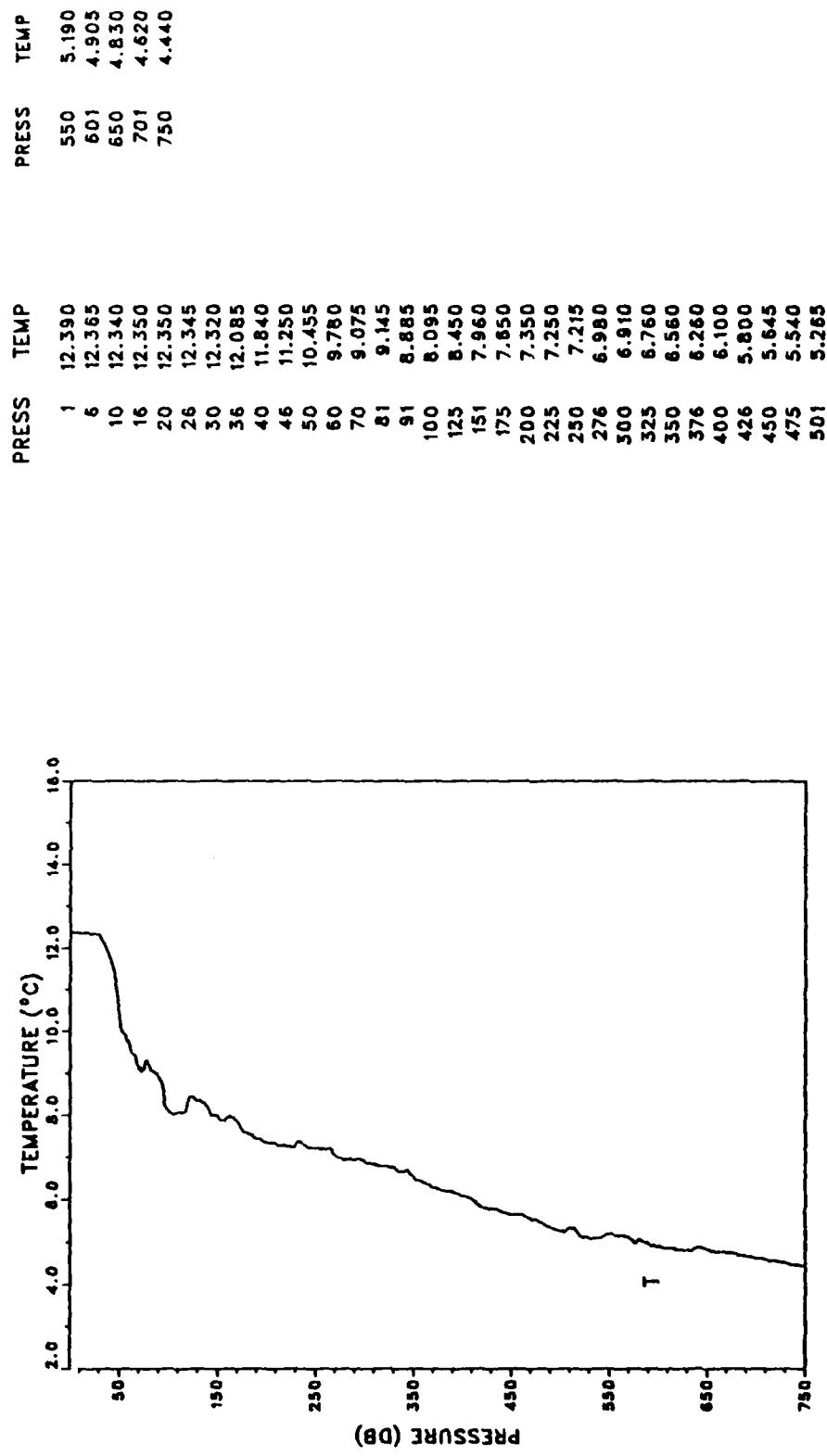


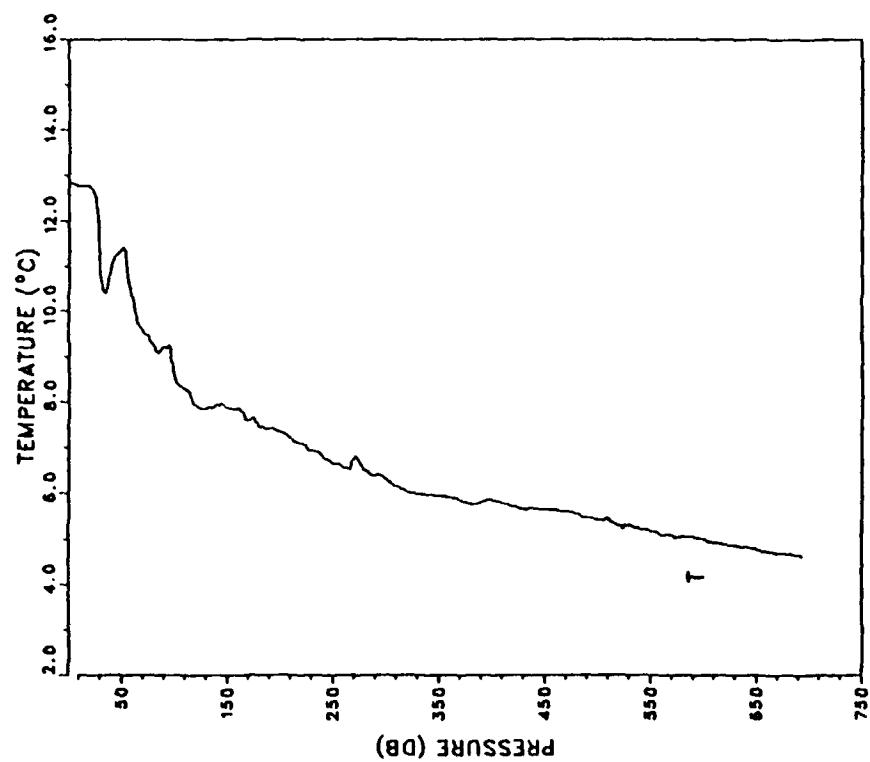


STATION: 485 LAT: 38 28.2 N LON: 124 24.7 W  
 DATE: 6/22/87 TIME: 2006Z



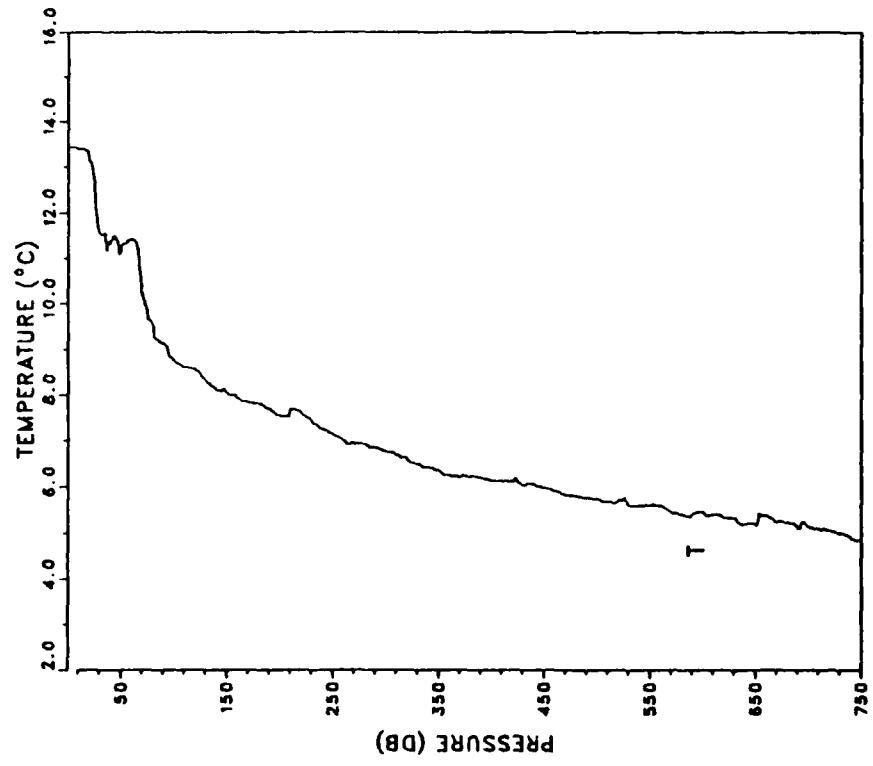
STATION: 486 LAT: 38 22.6 N LON: 124 25.9 W  
 DATE: 6/22/87 TIME: 2100Z





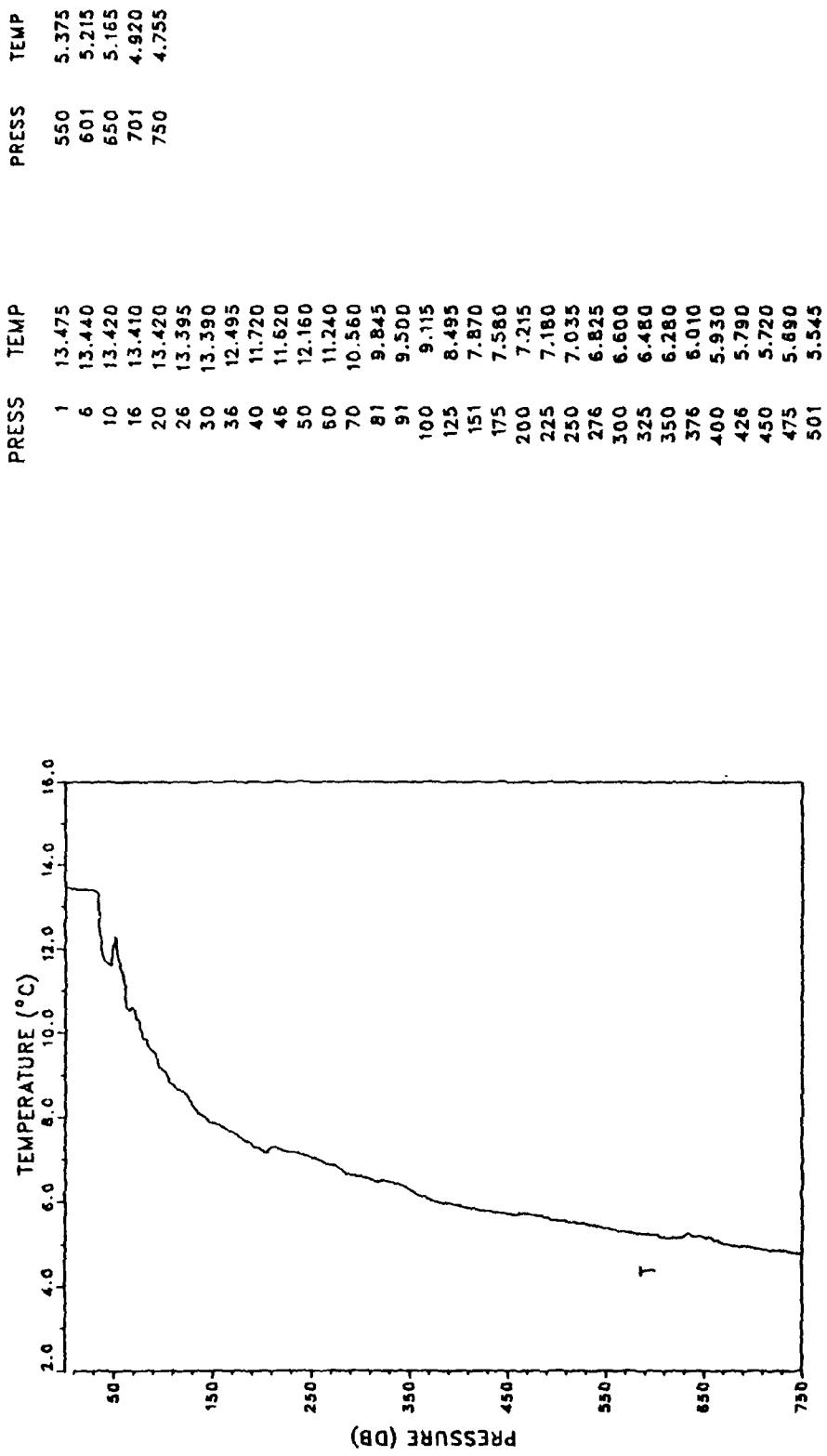
PRESS	TEMP	PRESS	TEMP
1	12.840	550	5.175
6	12.800	601	4.995
10	12.765	650	4.775
16	12.760	694	4.625
20	12.730	•	
26	12.505	•	
30	10.790	•	
36	10.450	•	
40	10.970	•	
46	11.295	•	
50	11.380	•	
60	10.350	•	
70	9.575	•	
81	9.185	•	
91	9.185	•	
100	8.520	•	
125	7.855	•	
151	7.860	•	
175	7.610	•	
200	7.335	•	
225	6.990	•	
250	6.650	•	
276	6.665	•	
300	6.310	•	
325	6.000	•	
350	5.951	•	
376	5.795	•	
400	5.860	•	
426	5.670	•	
450	5.644	•	
475	5.600	•	
501	5.430	•	

STATION: 488 LAT: 38 13.8 N LON: 124 26.8 W  
DATE: 6/22/87 TIME: 2241Z

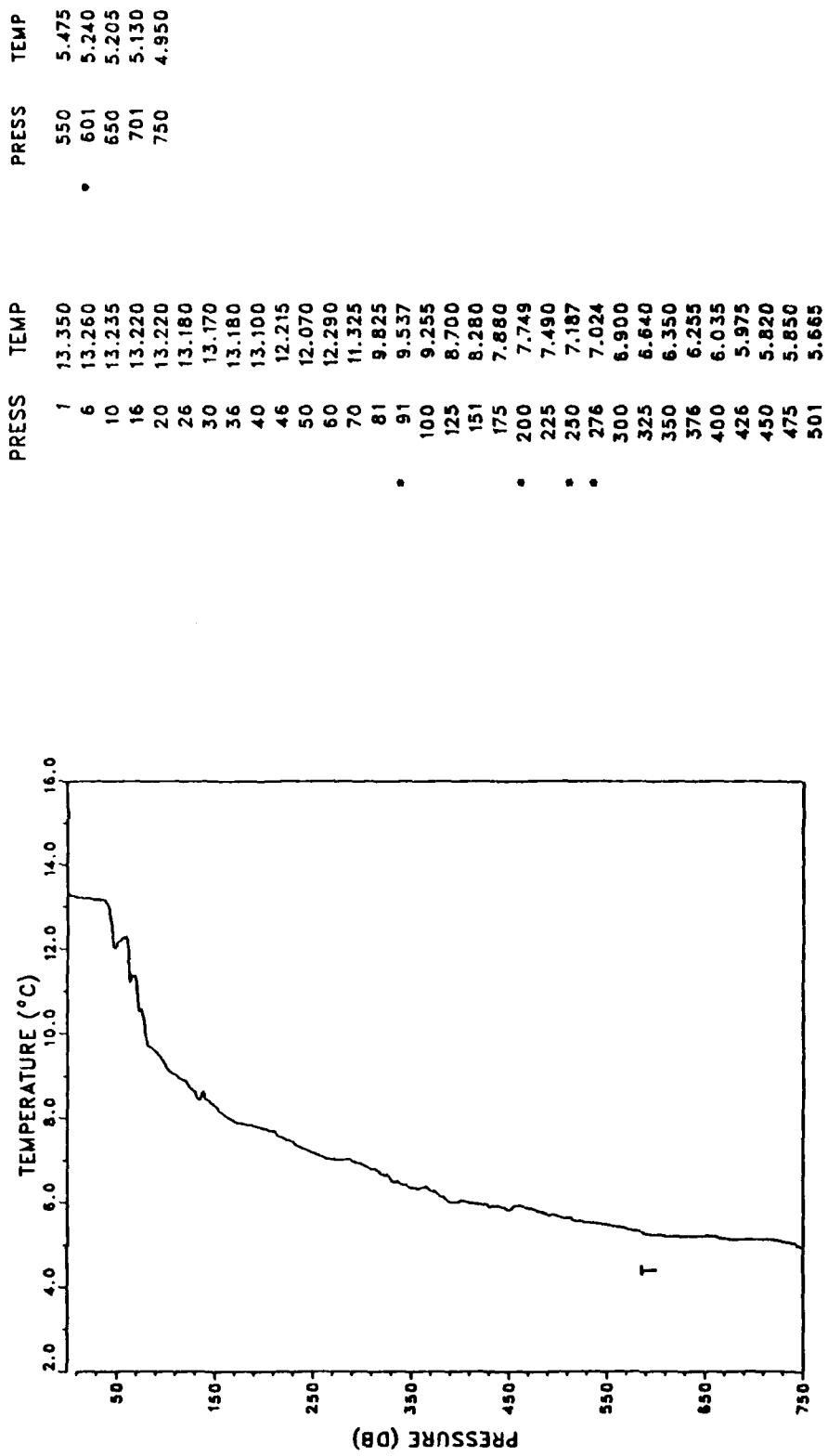


PRESS	TEMP	PRESS	TEMP
1	13.440	550	5.600
6	13.435	601	5.455
10	13.415	650	5.180
16	13.400	701	5.140
20	13.260	750	4.845
26	12.420		
30	11.545		
36	11.520		
40	11.310		
46	11.395		
50	11.130		
60	11.410		
70	10.265		
81	9.505		
91	9.105		
100	8.755		
125	8.465		
151	8.020		
175	7.810		
200	7.545		
225	7.500		
250	7.140		
276	6.935		
300	6.770		
325	6.520		
350	6.370		
376	6.230		
400	6.145		
426	6.095		
450	5.970		
475	5.810		
501	5.740		

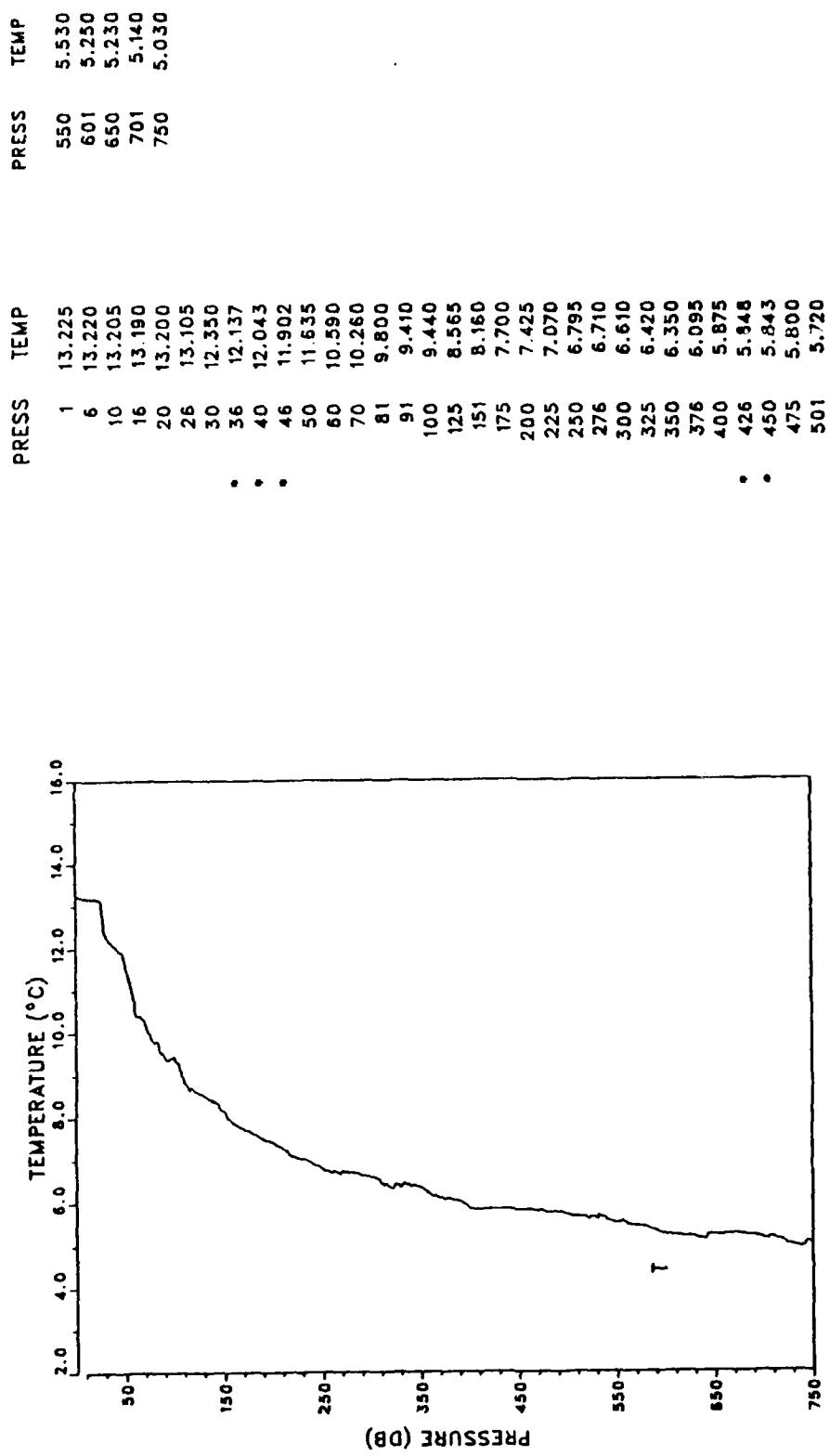
STATION: 489 LAT: 38 8.1 N LON: 124 26.0 W  
 DATE: 6/22/87 TIME: 2341Z



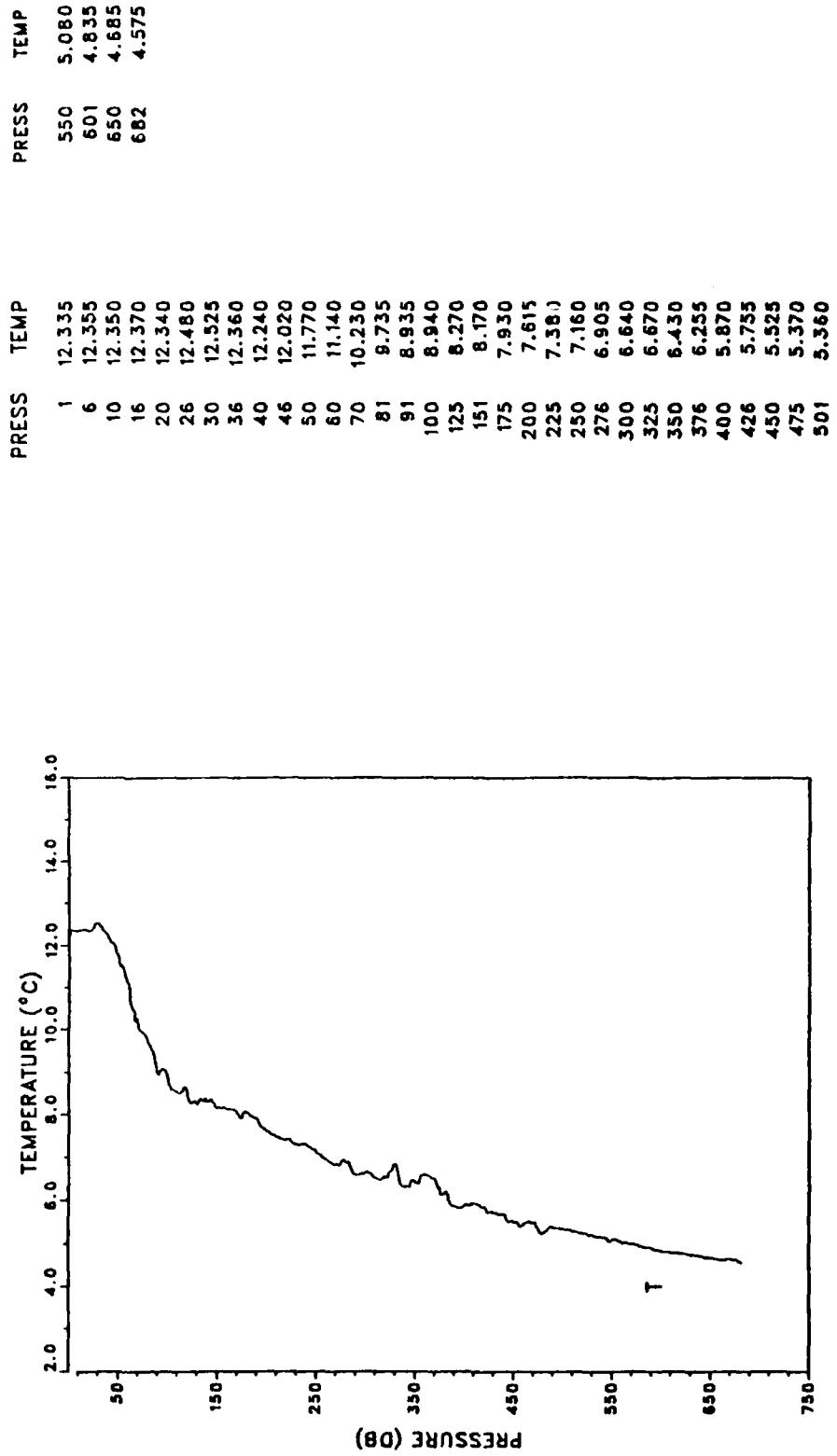
STATION: 490 LAT: 38 3.8 N LON: 124 26.1 W  
 DATE: 6/23/87 TIME: 0030Z



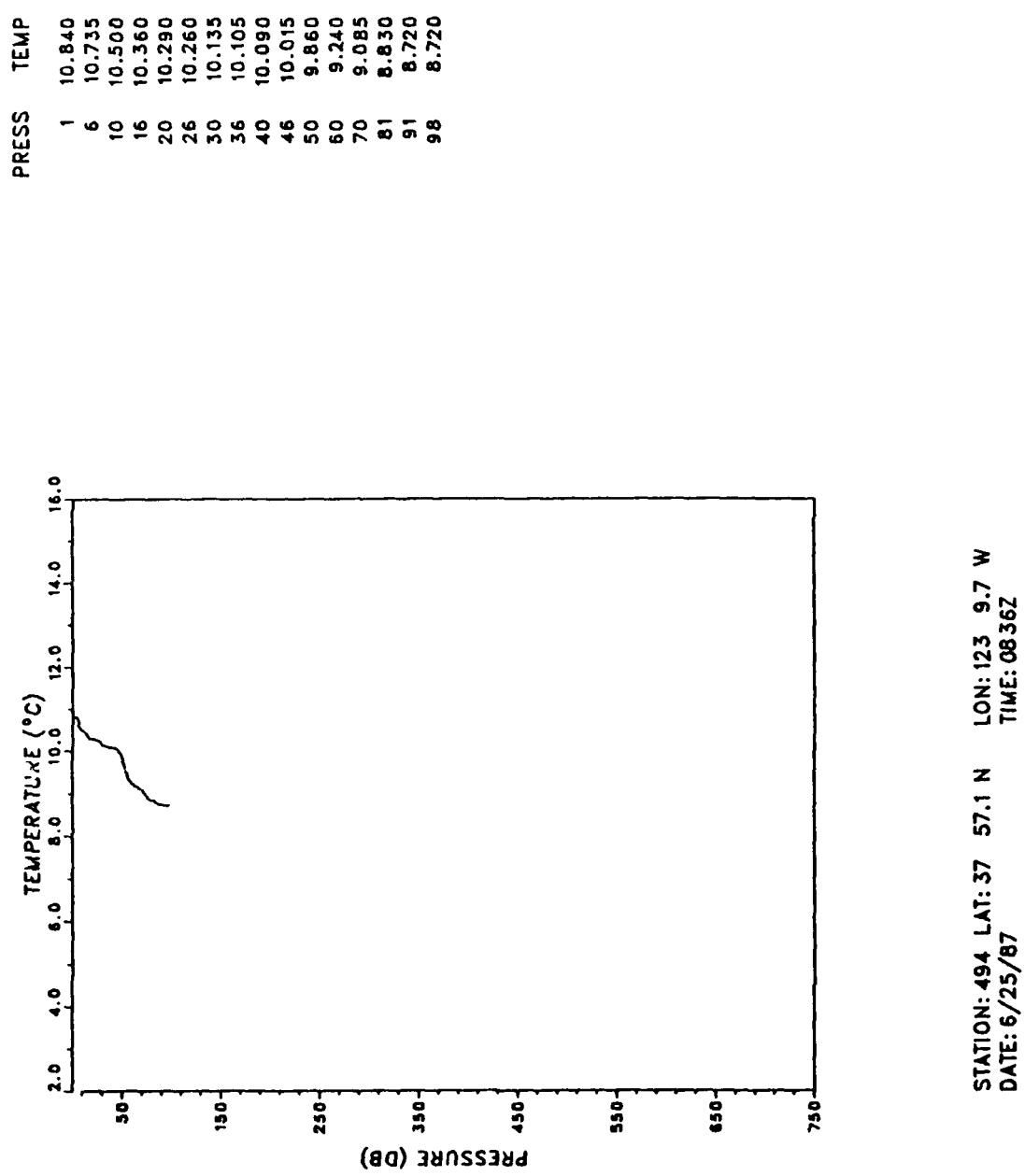
STATION: 491 LAT: 37 58.5 N LON: 124 26.3 W  
 DATE: 6/23/87 TIME: 0136Z



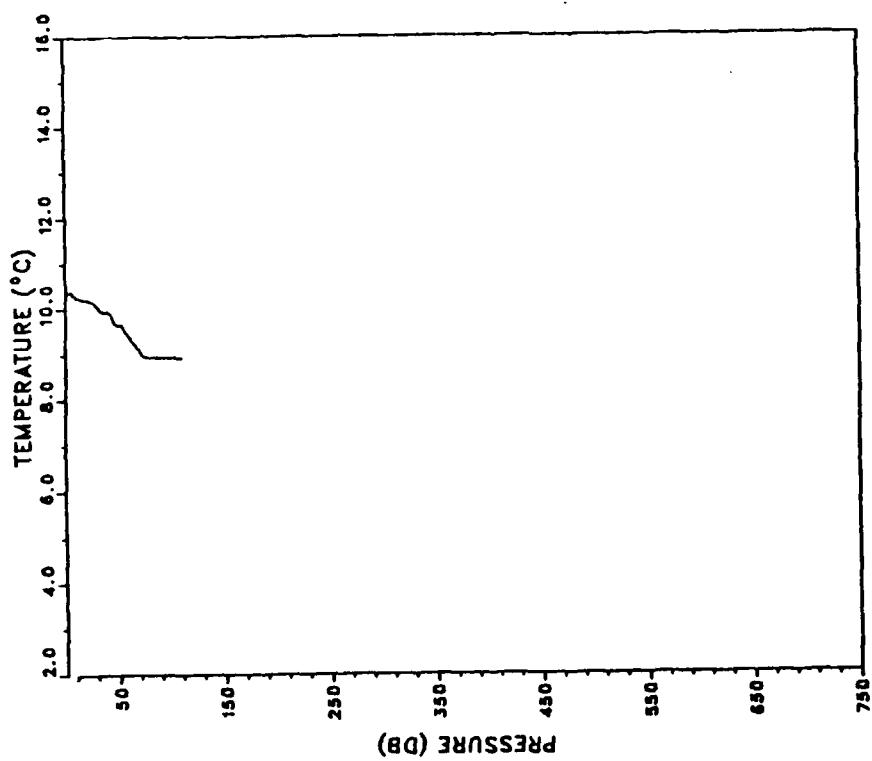
STATION: 492 LAT: 38 3.9 N LON: 124 28.9 W  
 DATE: 6/23/87 TIME: 0323Z



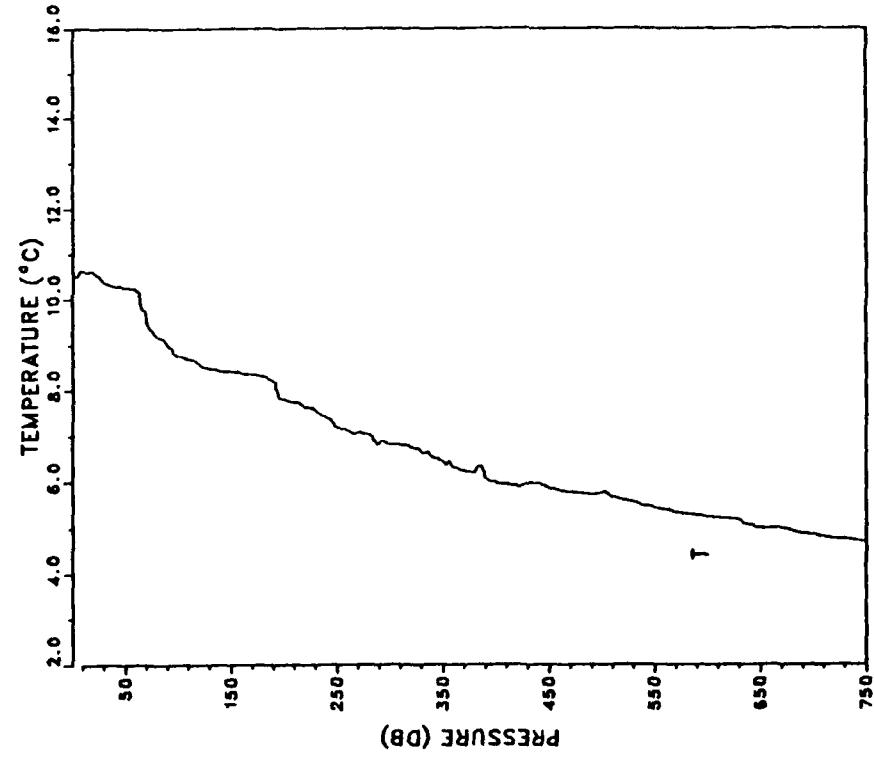
STATION: 493 LAT: 38 26.8 N LON: 124 46.6 W  
 DATE: 6/23/87 TIME: 1446Z



PRESS	TEMP
1	10.415
6	10.375
10	10.270
16	10.235
20	10.210
26	10.165
30	10.075
36	9.955
40	9.930
46	9.675
50	9.560
60	9.390
70	9.105
81	8.955
91	8.945
100	8.940
110	8.930

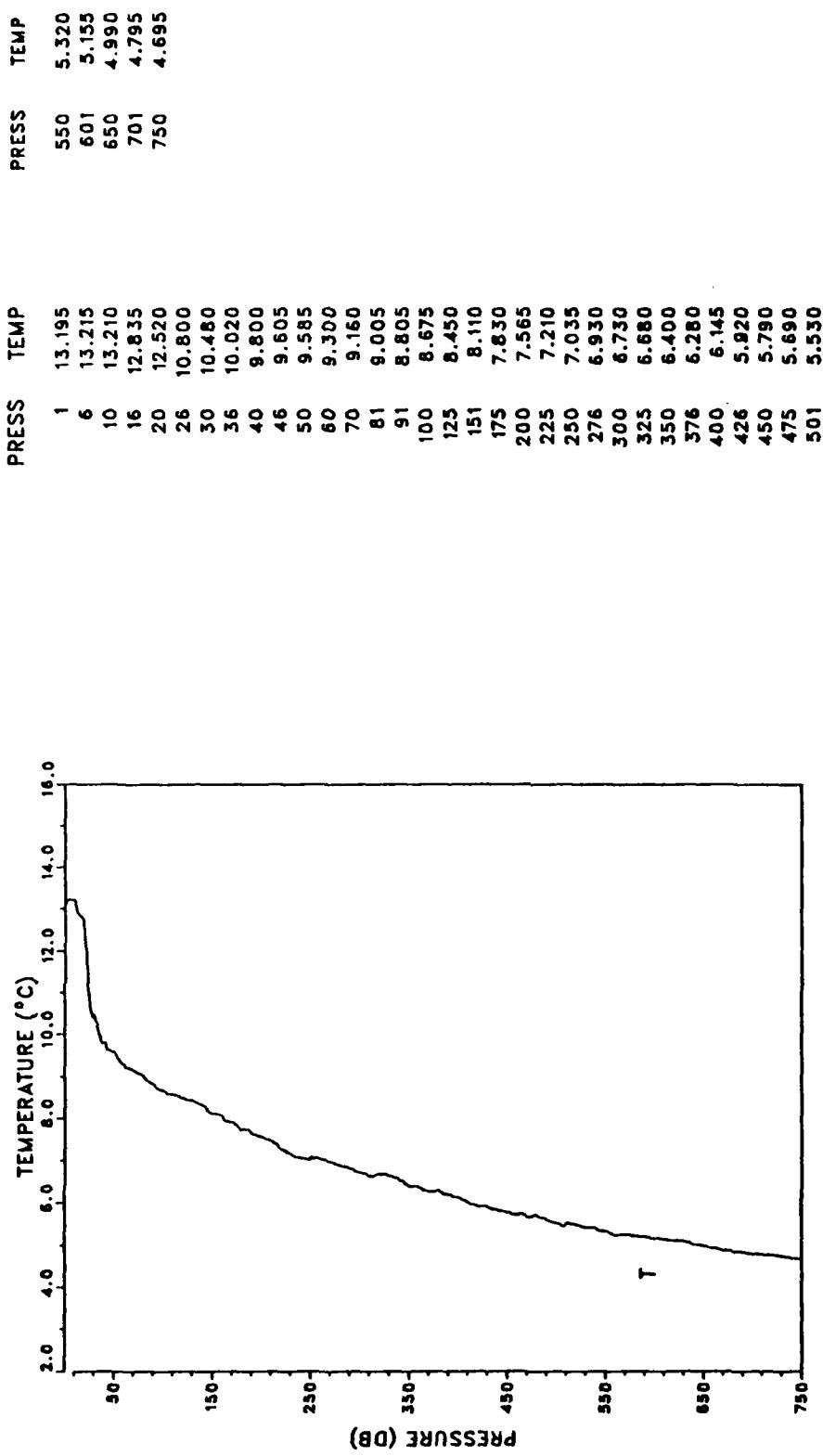


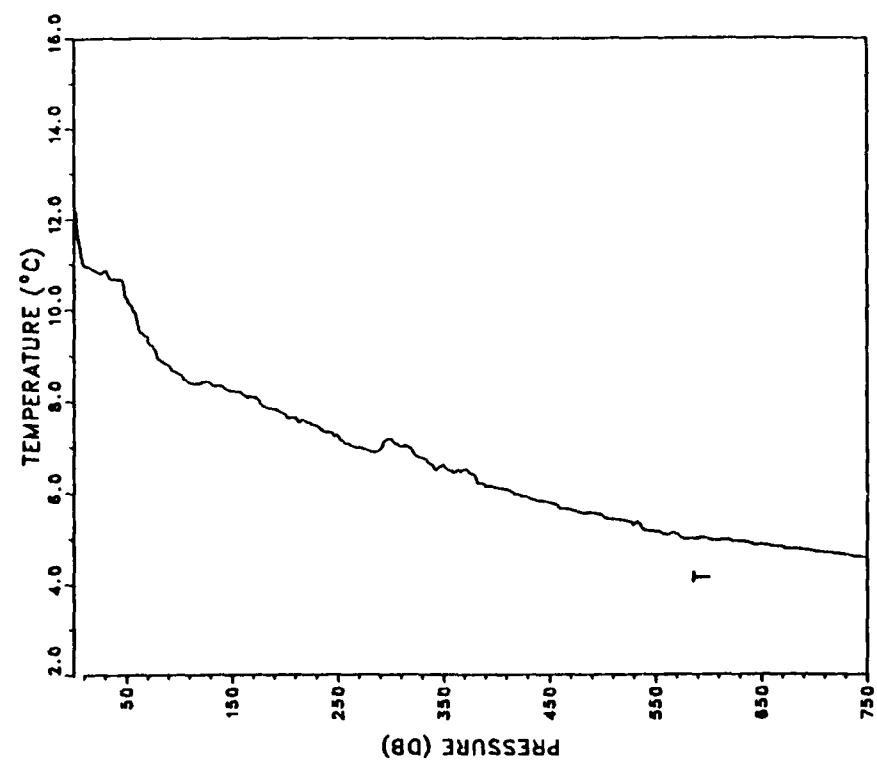
STATION: 495 LAT: 37 56.1 N LON: 123 20.8 W  
 DATE: 6/25/87 TIME: 0930Z



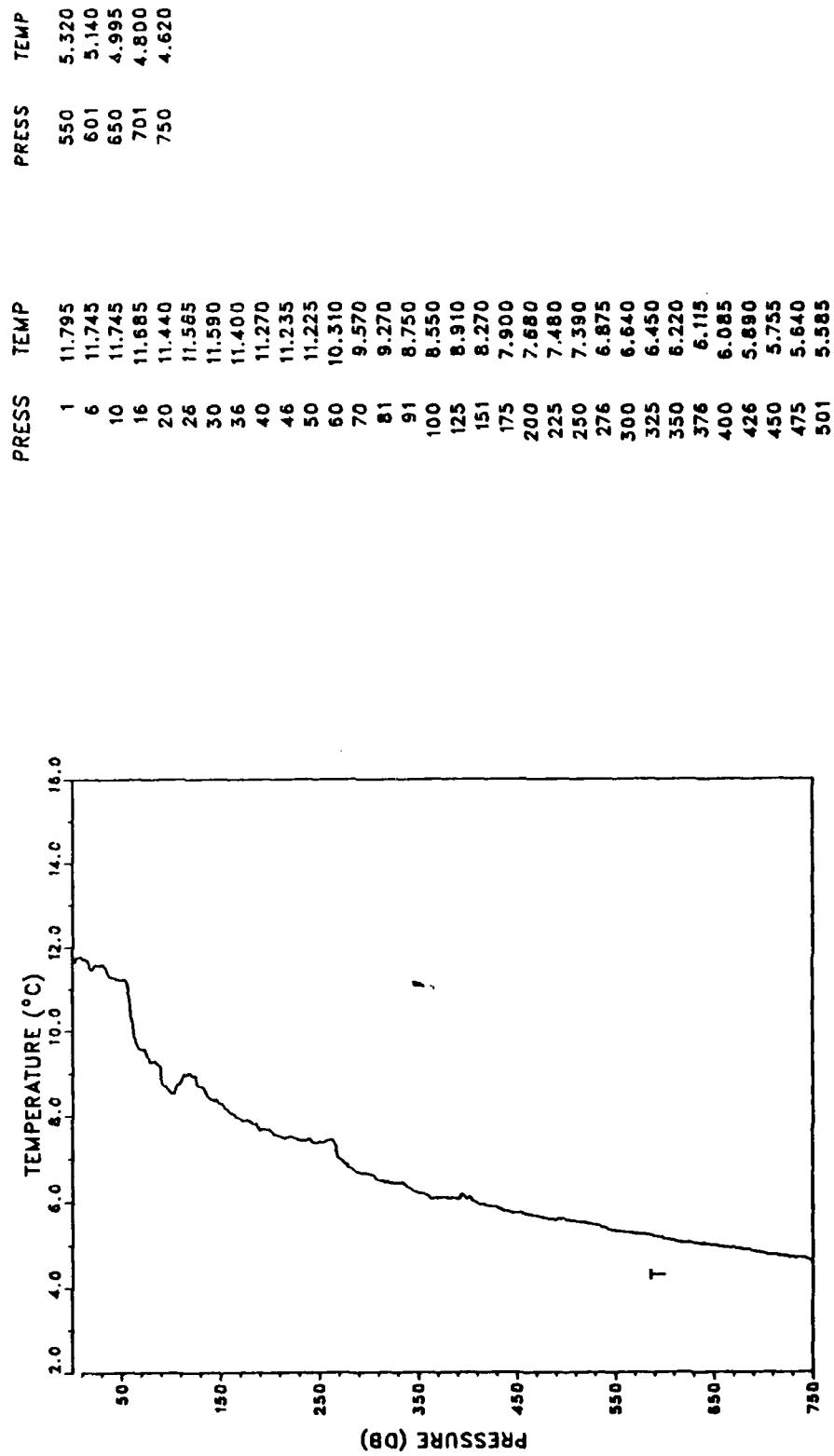
STATION: 496 LAT: 37 55.7 N LON: 123 30.6 W  
 DATE: 6/25/87 TIME: 1018Z

STATION: 497 LAT: 37 55.2 N LON: 123 40.6 W  
DATE: 6/25/87 TIME: 1106Z

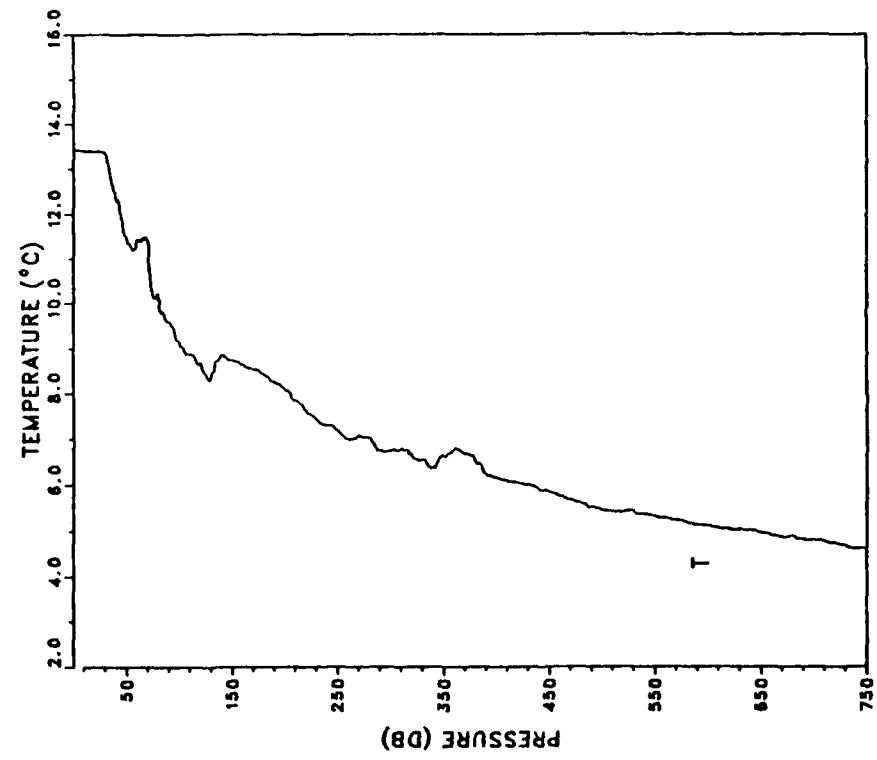


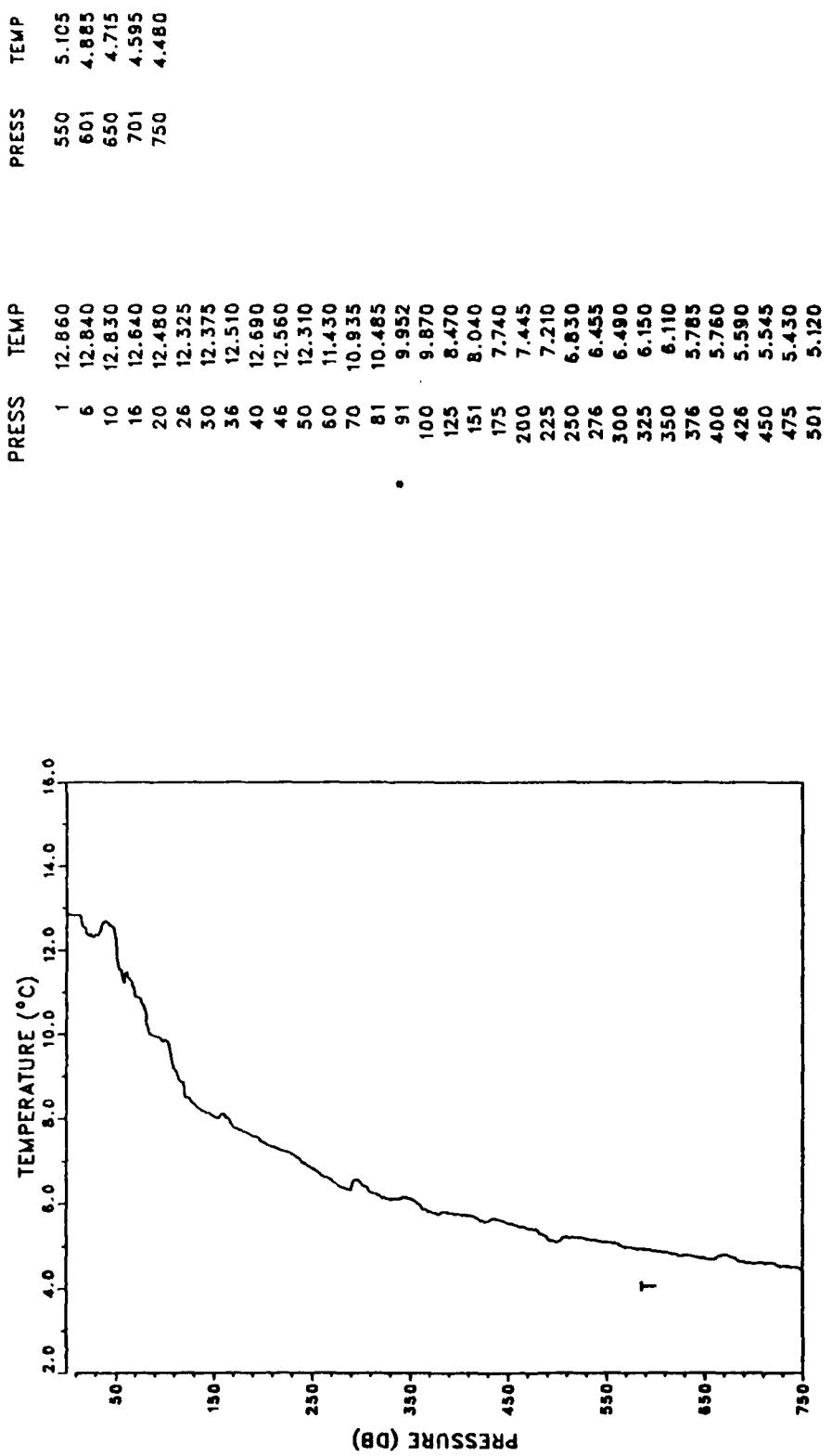


STATION: 498 LAT: 37 54.7 N LON: 123 50.9 W  
DATE: 6/25/87 TIME: 1153Z

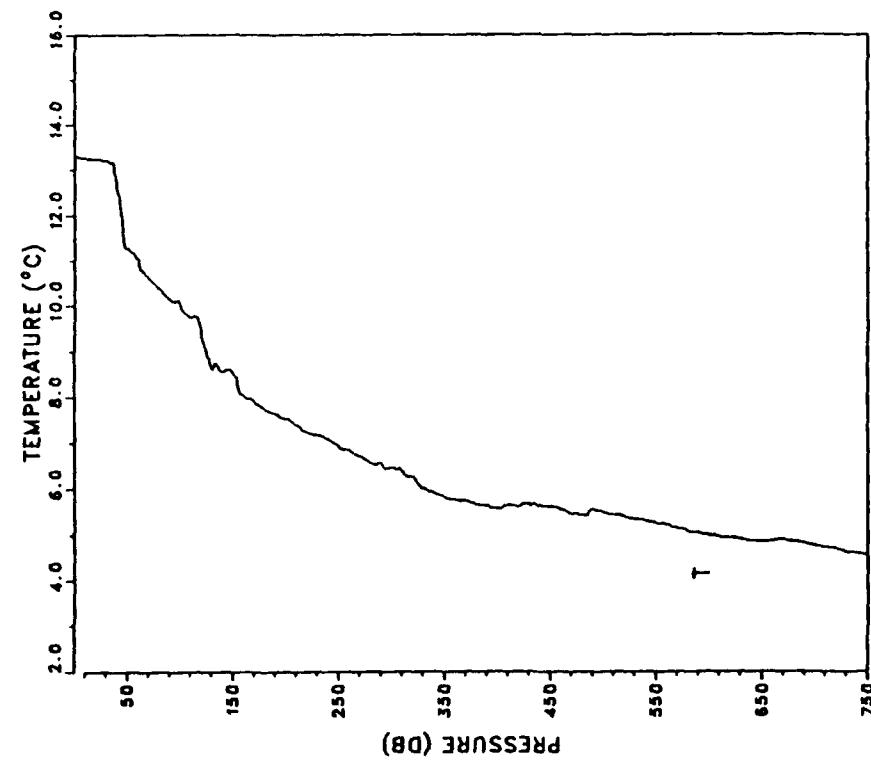


STATION: 499 LAT: 37 54.0 N LON: 124 1.0 W  
DATE: 6/25/87 TIME: 1241Z





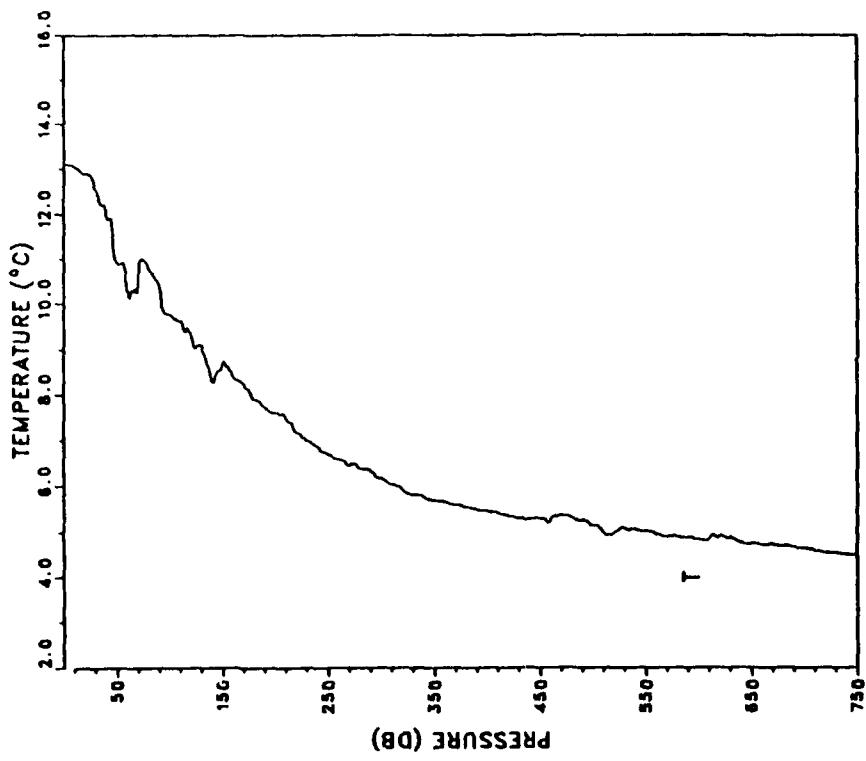
STATION: 501 LAT: 37 52.5 N LON: 124 19.6 W  
 DATE: 6/25/87 TIME: 1418Z



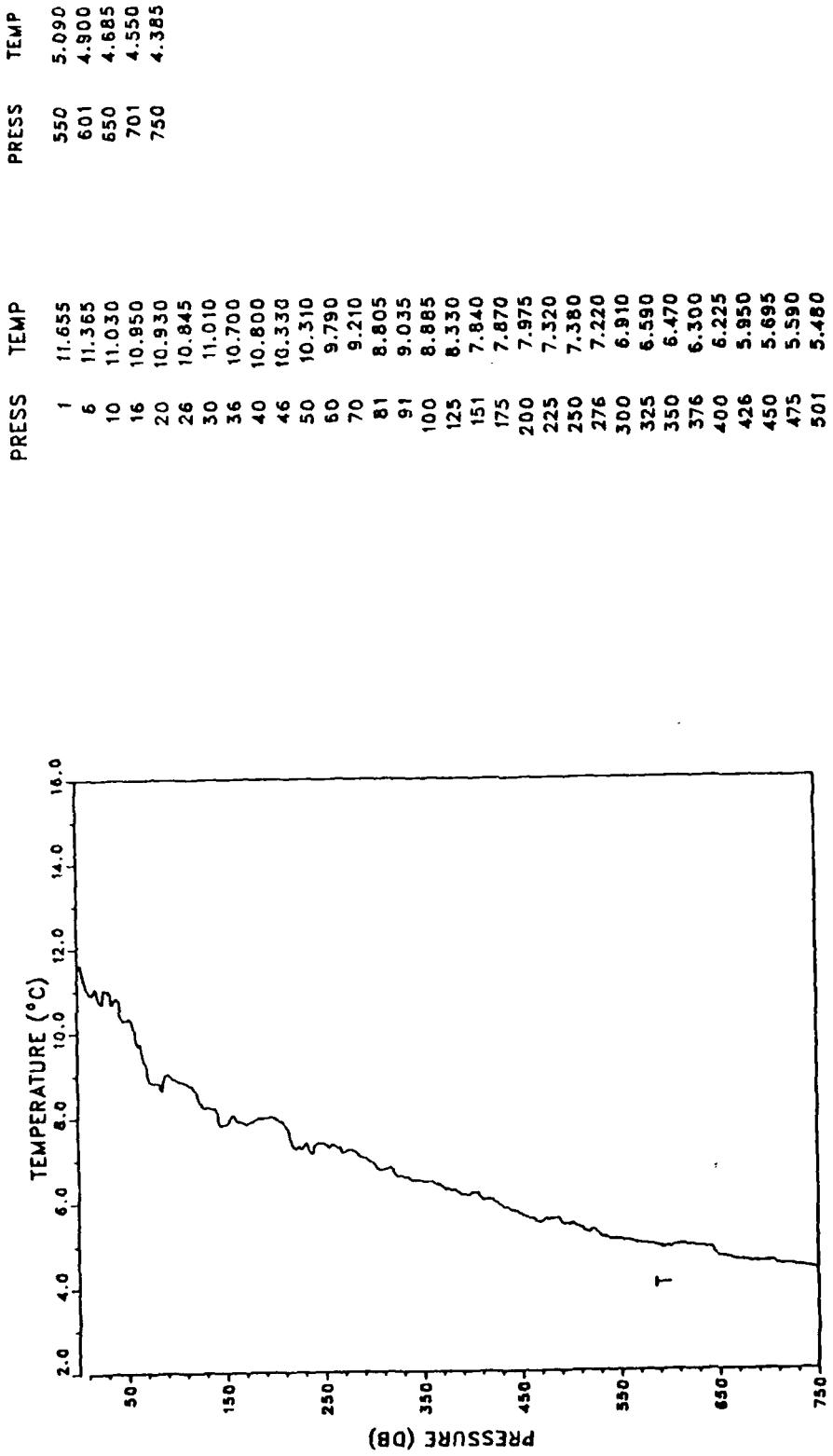
PRESS	TEMP	PRESS	TEMP
1	13.305	550	5.260
6	13.280	601	4.985
10	13.260	650	4.855
16	13.255	701	4.775
20	13.250	750	4.570
26	13.215		
30	13.215		
36	13.155		
40	12.750		
46	11.545		
50	11.280		
60	11.050		
70	10.628		
81	10.364		
91	10.124		
100	10.065		
125	8.995		
151	8.500		
175	7.810		
200	7.530		
225	7.200		
250	6.930		
276	6.645		
300	6.470		
325	6.130		
350	5.820		
376	5.695		
400	5.580		
426	5.665		
450	5.625		
475	5.480		
501	5.500		

STATION: 502 LAT: 37 52.3 N LON: 124 29.6 W  
 DATE: 6/25/87 TIME: 1511Z

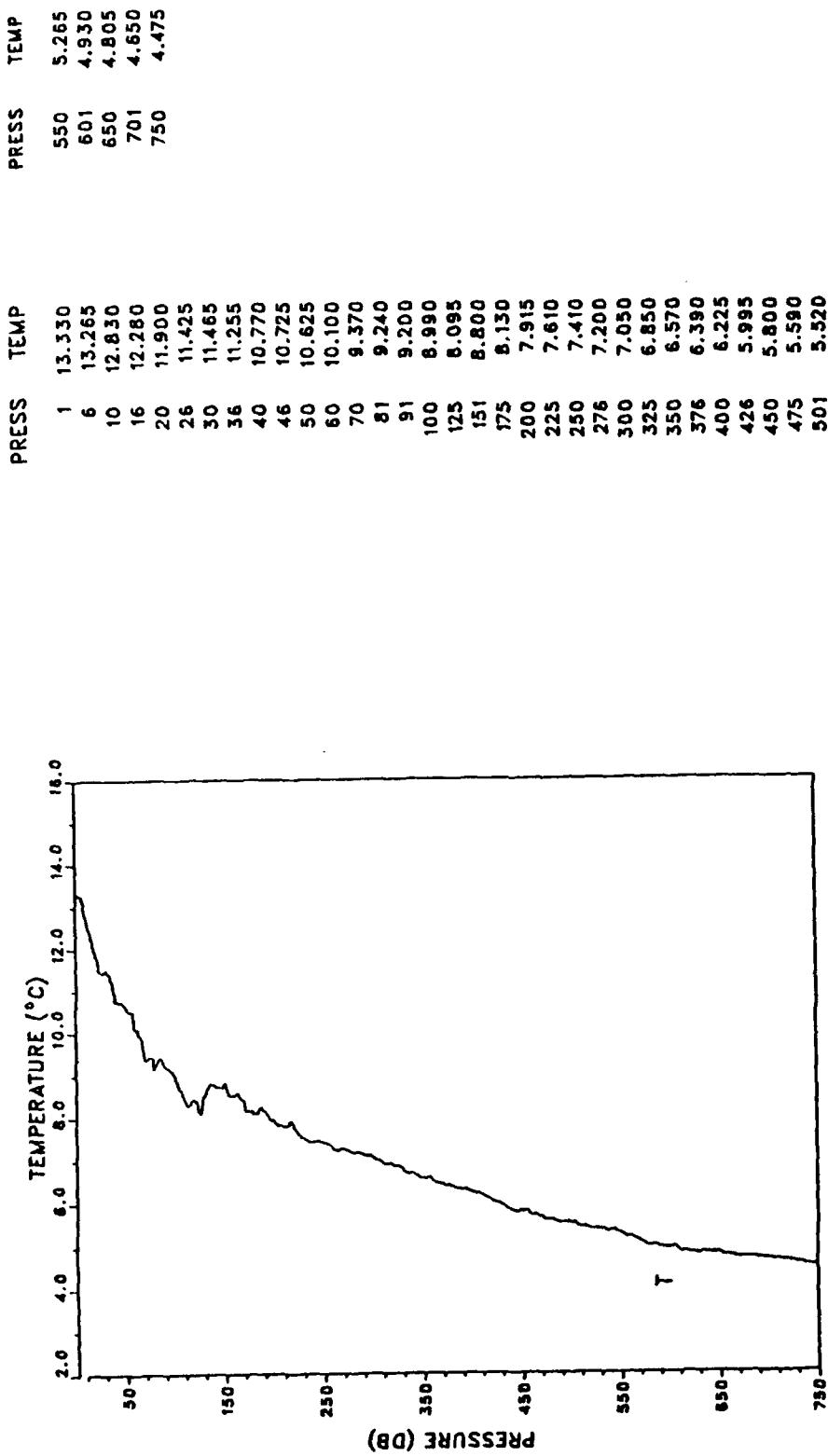
PRESS	TEMP	PRESS	TEMP
1	13.125	550	5.005
6	13.100	601	4.830
10	13.065	650	4.755
16	12.965	701	4.635
20	12.910	750	4.490
26	12.840		
30	12.555		
36	12.215		
40	12.120		
46	11.495		
50	10.925		
60	10.320		
70	10.370		
81	10.745		
91	10.300		
100	9.785		
125	9.055		
151	8.710		
175	8.110		
200	7.595		
225	7.120		
250	6.710		
276	6.505		
300	6.190		
325	5.850		
350	5.710		
376	5.585		
400	5.465		
426	5.315		
450	5.310		
475	5.350		
501	5.140		



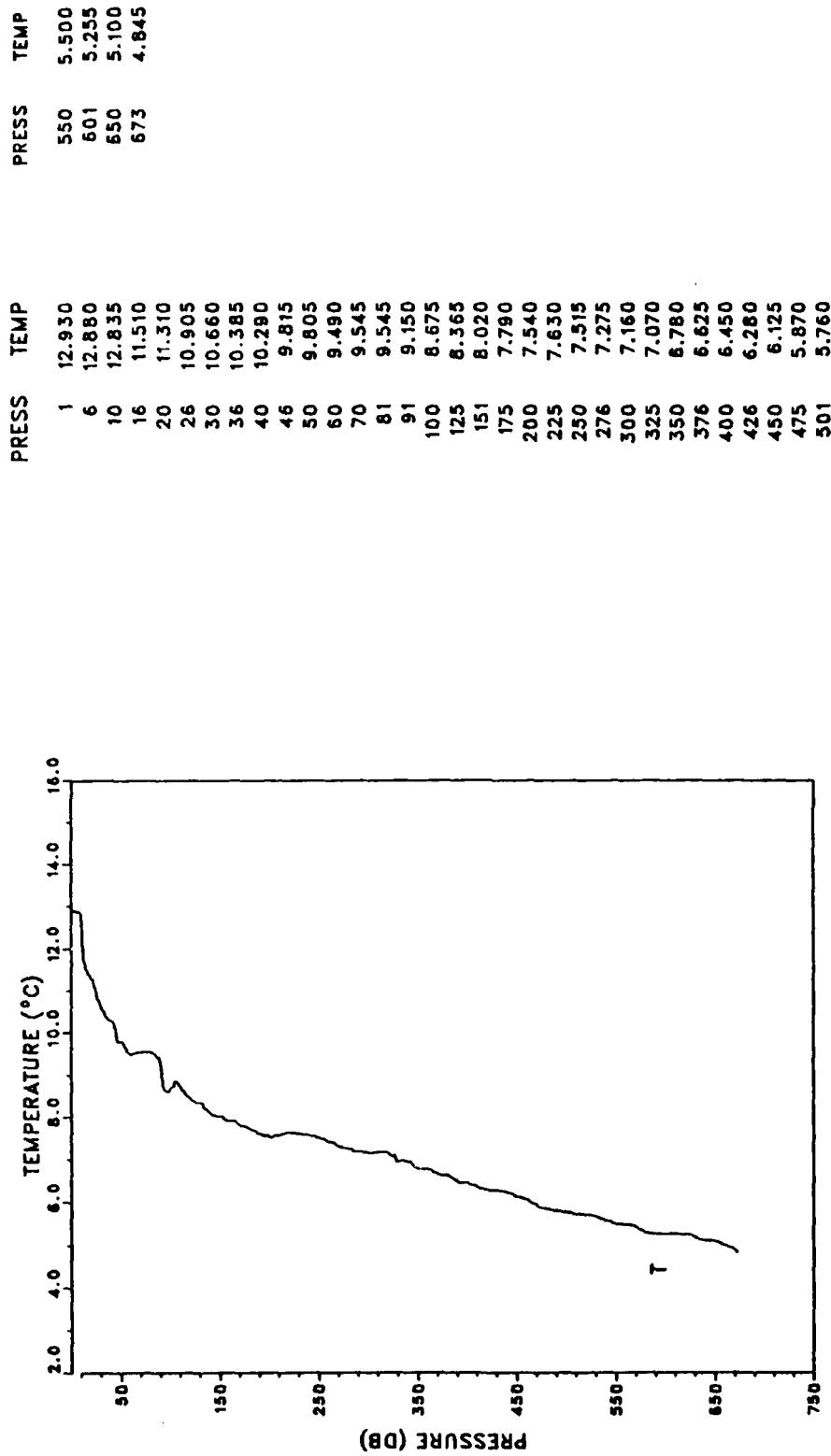
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DATE: 6/25/87 TIME: 1606Z



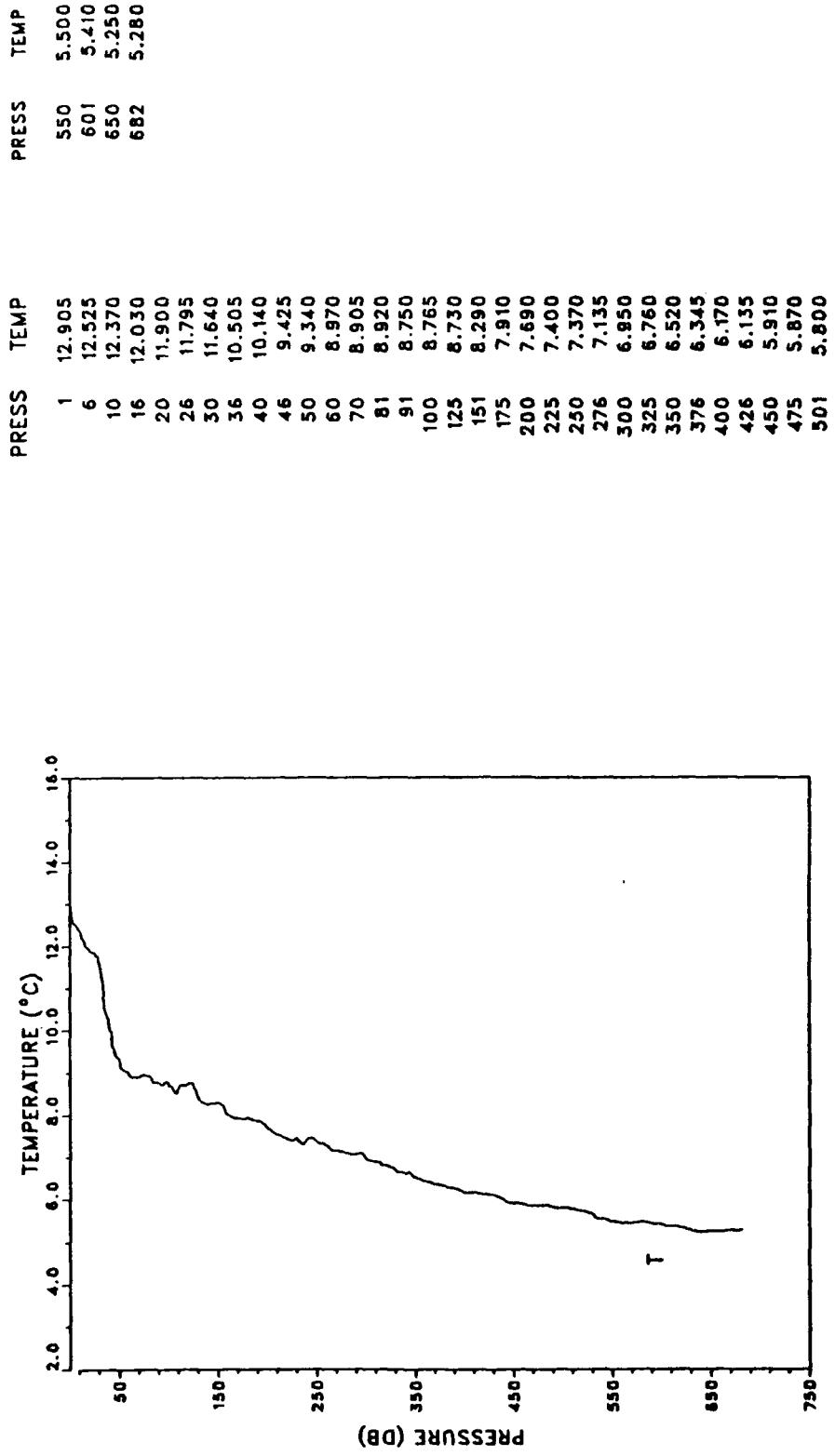
STATION: 906 LAT: 38 23.1 N LON: 124 15.4 W  
DATE: 6/26/87 TIME: 1823Z



STATION: 907 LAT: 38 22.9 N LON: 124 14.8 W  
 DATE: 6/26/87 TIME: 1830Z



STATION: 908 LAT: 39 3.1 N LON: 124 3.3 W  
DATE: 6/27/87 TIME: 2306Z



STATION: 909 LAT: 38 57.0 N LON: 124 2.9 W  
 DATE: 6/27/87 TIME: 23532

#### REFERENCES

- Lewis, E. L. and R. G. Perkin, 1981. The Practical Salinity Scale 1978: conversion of existing data. *Deep Sea Res.*, 28A, 307-328.
- UNESCO, 1987. International Oceanographic Tables, Vol. 4, National Institute of Oceanography of Great Britain; and UNESCO, Paris.

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