

**OCEANOGRAPHIC OBSERVATIONS
AT OCEAN STATION P**

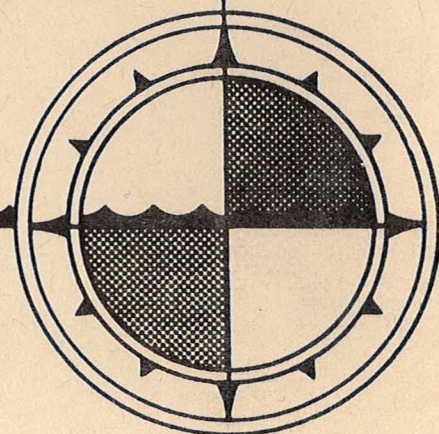
17 October - 7 December 1977

Volume 86

by

Seakem Oceanography Ltd.

**INSTITUTE OF OCEAN SCIENCES, PATRICIA BAY
Sidney, B.C.**



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ABSTRACT

Physical, chemical and biological oceanographic observations are made from the weathership at Ocean Weather Station Papa, and between Esquimalt and Station Papa, on a routine continuing basis. Physical oceanography data only are shown, including surface observations and profiles obtained with bottle casts and conductivity-temperature-pressure instruments.

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INTRODUCTION

Canadian operation of Ocean Weather Station P (Latitude $50^{\circ}00'N$, Longitude $145^{\circ}00'W$) was inaugurated in December, 1950. The station is occupied primarily to make meteorological observations of the surface and upper air and to provide an air-sea rescue service. The station is manned by two vessels operated by the Marine Services Branch of the Ministry of Transport. They are the CCGS Vancouver and the CCGS Quadra. Each ship remains on station for a period of six weeks, and is then relieved by the alternate ship, thus maintaining a continuous watch.

Bathythermograph observations have been made at Station P since July 1952. A program of more extensive oceanographic observations commenced in August 1956. This was extended in April 1959, by the addition of a series of oceanographic stations along the route to and from Station P and Swiftsure Bank. These stations are known as Line P stations. The number of stations on Line P has been increased twice and now consists of twelve stations (Fig. 1). Bathythermograph observations and surface salinity sample collections, in addition to being made on Line P oceanographic stations, are also made at odd meridians at $40'$, i.e. $139^{\circ}40'W$, $141^{\circ}40'W$, etc. These stations are known as Line P BT stations. Data observed prior to 1968 have been indexed by Collins et al (1969).

The present record includes hydrographic, continuously sampled STD and surface salinity and temperature data collected from the CCGS Quadra during the period 17 October to 7 December, 1977.

All physical oceanographic data have been stored by the Canadian Oceanographic Data Centre (CODC), 615 Booth Street, Ottawa, Ontario, Canada. Requests for these data should be directed to CODC.

Biological and productivity data are published in the Manuscript Report series of the Fisheries Research Board of Canada (FRB), Pacific Biological Station, Nanaimo, British Columbia, Canada. Requests for these data should be directed to FRB.

Marine geochemical data are for the Ocean Chemistry Group, Ocean and Aquatic Sciences, Environment Canada, Institute of Ocean Sciences, P.O. Box 6000, Sidney, B.C. V8L 4B2.

PROGRAM OF OBSERVATION FROM CCGS QUADRA, 17 OCTOBER - 7 DECEMBER 1977 (P-77-8)
(CODC Ref. No. 15-77-008)

Oceanographic observations were made by Mr. T. Juhasz of Seakem Oceanography Ltd., Victoria, B.C.

En Route to Station P

Line P Stations 1, 2 and 6 were occupied and an STD made to 1500 m or near bottom. Rough weather cancelled hydrocasts and all other STD's.

Samples for salinity, nitrate, nutrient, alkalinity, and total CO₂ were collected from the seawater loop at all whole stations (except for Station 4), with salinity also collected at all half stations (except for Station 12½). Surface bucket salinity samples were collected at Stations 1, 2, and 6. Surface bucket temperatures were taken at Stations 1, 2, and 6.

Station 4 samples were missed because the bridge failed to notify the oceanographer.

The surface temperature recorder, thermosalinograph, PCO₂ system and the EDO depth sounder were run continuously.

A tarball tow was completed at Station 2.

Mechanical BT's or XBT's were taken at all whole and half stations except for Stations 2, 4, 11½, 12, and 12½. These stations were missed due to unsafe conditions on the aft deck.

On Station P

The oceanographic program was carried out as follows:

Physical Oceanography

- 1) 2 profiles of salinity, temperature and oxygen were obtained from hydrographic casts to 4200 metres.
- 2) 10 STD profiles to 300 metres and 9 to 1500 metres were obtained.
- 3) BT's or XBT's were taken every three hours to coincide with meteorological observations, encoded and transmitted according to the IGOSS format.
- 4) Salinity samples were collected daily at 0000 hrs GMT from the seawater loop. A bucket sample was also collected on 11 occasions.
- 5) 18 extra STD's were taken as part of the MILE program. They are not included in this report. MILE is the Mixed Layer Experiment program.

Marine Geochemistry

- 1) Nutrient and salinity samples were collected daily at 0000 hrs GMT from the seawater loop. A 24 hour nutrient series was completed with a sample taken every hour. 2 profiles to 500 m for nutrients and 1 for tritium were obtained. 1 surface bucket sample and 1 rainwater sample were also collected for tritium.
- 2) Alkalinity and total CO₂ samples were taken every 3 to 5 days from the seawater loop. 2 profiles to 500 m were taken for each.
- 3) Air CO₂ samples were taken in quadruplicate at weekly intervals on Sundays with extra samples taken on Thursdays.
- 4) 5 surface tarball tows were completed.
- 5) 3 seawater C-14 samples were collected from the seawater loop, as well as samples at 0, 100 and 200 metres using the hydro-bios sampler. 5 seawater C-13 and 3 air C-13 samples were collected.
- 6) PCO₂ carboys were filled approximately every 3 days when the loop system was operational.
- 7) A profile to 500 m for particulate organic carbon was obtained.
- 8) 5 samples for hydrocarbons were obtained.
- 9) 3 samples for Pb²¹⁰ were obtained.

Biological Oceanography

Samples were obtained as follows:

- 1) 11 - 150 metre vertical plankton hauls.
2 - 1200 metre vertical plankton hauls.
5 - subsurface plankton hauls.
- 2) 5 chlorophyll a samples from the seawater loop and 2 profiles to 75 metres were obtained.
- 3) 2 profiles to 200 metres for each of plant pigment and nitrates were obtained, as well as 5 surface samples for pigments and 6 for nitrates.
- 4) 5 Secchi disc readings were taken at local noon.

An emergency run was made to Victoria on October 26 for refuelling and relief of sick crew members. Salinity samples were collected every three hours from the seawater loop. The surface temperature recorder, thermosalinograph and PCO₂ system were run continuously. The inbound route was south of Line P. Outbound, the recorders were all run continuously, with salinity samples taken at all whole stations. The ship returned to Station P on November 3.

En Route from Station P

Line P Stations 12 and 6 were occupied and an STD profile made to 1500 m or near bottom. Rough weather cancelled hydrocasts and all other STD's.

Samples for salinity, nitrate, nutrient, alkalinity and total CO₂ were collected from the seawater loop at all whole stations. Salinity samples were also collected at all half stations. Surface bucket temperatures were taken at Stations 12 and 9 to 1.

The surface temperature recorder ran continuously. The thermosalinograph ran continuously until 1840 hrs GMT, December 7, when the seawater loop was shut down. The PCO₂ system ran continuously until Station 3 when the final calibration was made.

Tarball tows were completed at Stations 12 and 6.

Mechanical BT's were taken at Stations 12 and 6 with XBT's taken at all whole and half stations.

Observations for Other Agencies

- 1) Marine mammal observations were made by the ship's officers for Mr. I. McAskie, Fisheries Research Board of Canada, Pacific Biological Station, Nanaimo, B.C., Canada.
- 2) Bird observations were made by the ship's officers for Dr. M. Myres, University of Alberta, Calgary, Alberta, Canada and Mr. J. Guiguet, Curator of Birds and Mammals, Provincial Museum, Department of Provincial Secretary and Travel Industry, Victoria, British Columbia, Canada.
- 3) Air CO₂ samples were taken weekly in duplicate for Scripps Institution of Oceanography, La Jolla, California, U.S.A.

Data were processed for publication by Ms. M. Sainsbury of Seakem Oceanography Ltd., Victoria, B.C.

OBSERVATIONAL PROCEDURES

Observations for salinity, oxygen and temperature from all hydrographic casts, including the surface, were obtained with Niskin water sample bottles equipped with either Richter and Wiese and/or Yoshino Keiki Co. reversing thermometers. Two protected thermometers were used on all bottles and one unprotected thermometer was used on each bottle at depths of 300 m or greater. The accuracy of protected reversing thermometers is believed to be $\pm 0.02^{\circ}\text{C}$.

The daily surface water temperatures were measured from a bucket sample using a deck thermometer of $\pm 0.1^{\circ}\text{C}$ accuracy. The daily surface salinity samples were obtained from the seawater loop. When the seawater loop was not operational these samples were obtained with a bucket, and are indicated with a 'b' in this data record.

Salinity determinations were made aboard ship with either an Autolab Model 601 Mark III inductive salinometer or a Hytech Model 6220 lab salinometer. Accuracy using duplicated determinations is estimated to be $\pm 0.003^{\circ}/\text{oo}$.

Depth determinations were made using the "depth difference" method described in the U. S. N. Hydrographic Office Publication No. 607 (1955). Depth estimates have an approximate accuracy of ± 5 m for depths less than 1000 m, and $\pm 0.5\%$ of depth for depths greater than 1000 m.

The dissolved oxygen analyses were done in the shipboard laboratory by a modified Winkler method (Carpenter, 1955).

Line P engine intake continuous temperature on both ships was recorded by a Honeywell Electronik 15 Recorder. The temperature probe is at a depth of approximately 3 metres below the sea surface and the instrument accuracy is believed to be $\pm 0.1^{\circ}\text{C}$.

Each ship is equipped with a Plessey Model 6600-T thermosalinograph which is used, on Line P, for continuous recording of surface temperatures and salinities from the ship's seawater loop. The temperature probe is mounted at the seawater loop intake (approximately 3 metres below the surface) and the salinity probe and recorder are situated in the dry lab. The accuracy of this instrument is believed to be $\pm 0.1^{\circ}\text{C}$ for temperature and $\pm 0.1^{\circ}/\text{oo}$ for salinity.

STD profiles were taken with a Plessey Model 9006 STD system.

COMPUTATIONS

All hydrographic data were processed with the aid of an IBM 370 computer and a UNIVAC 1100 computer. Reversing thermometer temperature corrections, thermometric depth calculations and accepted depth from the "depth difference" method were computed. Extraneous thermometric depths caused by thermometer malfunctions were automatically edited and replaced. A Calcomp 565 Offline Plotter was used to plot temperature-salinity, and temperature-oxygen diagrams, as well as plots of temperature, salinity, and dissolved oxygen vs $\log_{10}$ depth. These plots were used to check the data for errors.

Missing hydrographic data were obtained using a weighted parabolas interpolation method (Reiniger and Ross, 1968). These data are indicated with an asterisk in this data record.

Data values which we suspect but which we have included in this data record are indicated with a plus. These data have been removed from punch card and magnetic tape records.

Analog records from the salinity-temperature-pressure instrument have been machine digitized, then replotted using the Calcomp plotter.

Digitization was continued until original and computer plotted traces were coincident. Temperature and salinity values were listed at standard pressures; computed from the entire array of digitized data.

The headings for the data listings are explained as follows:

PRESS	is pressure (decibars)
TEMP	is temperature (degrees Celsius)
SAL	is salinity (parts per thousand)
DEPTH	is reported in metres
SIGMA-T	is specific gravity anomaly
SVA	is specific volume anomaly
THETA	is potential temperature (degrees Celsius)
SVA (THETA)	is potential specific volume anomaly
DELTA D	is geopotential anomaly (J/kg)
POT EN	is potential energy in units of 10^8 ergs/cm ²
OXY	is the concentration of dissolved oxygen expressed in millilitres per litre
SOUND	is the velocity of sound in m/sec

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- Carpenter, J.H., 1965. The Chesapeake Bay Institute technique for the Winkler dissolved oxygen method. *Limnol. and Oceanogr.* 10: 141-143.
- Collins, C.A., R.L. Tripe, D.A. Healey and J. Joergensen, 1969. The time distribution of serial oceanographic data from the Ocean Station P programme. *Fish. Res. Bd. Can. Tech. Rept. No. 106.*
- MacNeill, M., 1977. A study of anomalous salinity and oxygen values in the deep water at Ocean Station P from 1960-1976 (unpublished manuscript) *Pacific Marine Science Report* 77-9.
- Reiniger, R.F. and C.K. Ross, 1968. A method of interpolation with application to oceanographic data. *Deep Sea Res.* 15: 185-193.
- U.S.N. Hydrographic Office, 1955. *Instruction Manual of Oceanographic Observations*, Publ. No. 607.

LOG OF HYDROGRAPHIC AND STD OBSERVATIONS

CONSEC. #	POSITION	DATE (GMT)	TIME (GMT)	STD (m)	HYDROCAST (m)	COMMENTS
001	125°33'W	21/10/77	2300	80		Salinity sensor S/N 3028
002	126°00'W	22/10/77	0035	90		
003	130°40'W	22/10/77	1610	1,500		
004	P	02/11/77	2030	1,500		
005	P	03/11/77	1710	1,500		S (over 37)
006I	P	03/11/77	1740		4,200	T, S, O ₂ Alkalinity
007	P	04/11/77	1710	1,500		
006II	P	04/11/77	1745		600	T, S, O ₂ Alk., Tot. CO ₂
008	P	05/11/77	1710	300		
009	P	05/11/77	1730		500	T, S, Nutrients, Tritium
010	P	07/11/77	1710	300		1st MILE pattern
011	P	07/11/77	1730		200	Pigments, nitrates
012	E3	07/11/77	1925	300		Slipring
013	E4	07/11/77	2045	300		problems
014	C1	07/11/77	2225	300		*Change STD
015	W4	08/11/77	0030	300		probe salinity
016	W3	08/11/77	0315	300		sensor S/N 3040
017	P	08/11/77	0520	300		
018	P	08/11/77	1710	1,500		
019I	P	08/11/77	1810		3,000	T, S, alkalinity
020	P	09/11/77	1710	300		
021	P	09/11/77	1730		75	Chlorophyll a
022	P	11/11/77	1710	1,500		
023I	P	11/11/77	1830		0	
023II	P	11/11/77	2000		25	Particulate
023III	P	11/11/77	2130		50	organic carbon
023IV	P	11/11/77	2230		100	T, S
023V	P	11/11/77	2300		250	
023VI	P	11/11/77	2330		500	
024	P	16/11/77	1700	300		2nd MILE pattern
025	E3	16/11/77	1930	300		
026	E4	16/11/77	2100	300		
027	C1	16/11/77	2215	300		
028	W4	17/11/77	0030	300		
029	W3	17/11/77	0200	300		
030	P	17/11/77	0420	300		
031	P	17/11/77	1710	1,500		
019II	P	17/11/77	1930		3,000	T, S, alkalinity

CONSEC. #	POSITION	DATE (GMT)	TIME (GMT)	STD (m)	HYDROCAST (m)	COMMENTS
032	P	22/11/77	1705			Failed Nutrients, T, S Nitrates, pigments
033	P	22/11/77	1800		500	
034	P	22/11/77	1845		200	
035	P	24/11/77	0030	300		
036	P	25/11/77	0030	300		Chlorophyll a
037	P	27/11/77	0030	1,500		
038	P	27/11/77	0130		75	
039	P	27/11/77	1710	1,500		
040I	P	27/11/77	1740		600	T, S, O ₂ alkalinity
040II	P	27/11/77	2030		4,200	T, S, O ₂ alkalinity
041	P	30/11/77	0030	300		
042	P	30/11/77	1710	300		
043	E3	30/11/77	1915	300		
044	E4	30/11/77	2030	300		
045	C1	30/11/77	2210	300		
046	W4	01/12/77	0010	300		
047	W3	01/12/77	0145	300		
048	P	01/12/77	0245	300		
049	P	01/12/77	1700	300		
050	P	02/12/77	1710	1,500		
051	P	03/12/77	1710	aborted		
052	P	03/12/77	1720	300		
053	142°40'W	05/12/77	0240	1,500		
054	130°40'W	06/12/77	1350	1,500		
055		aborted				

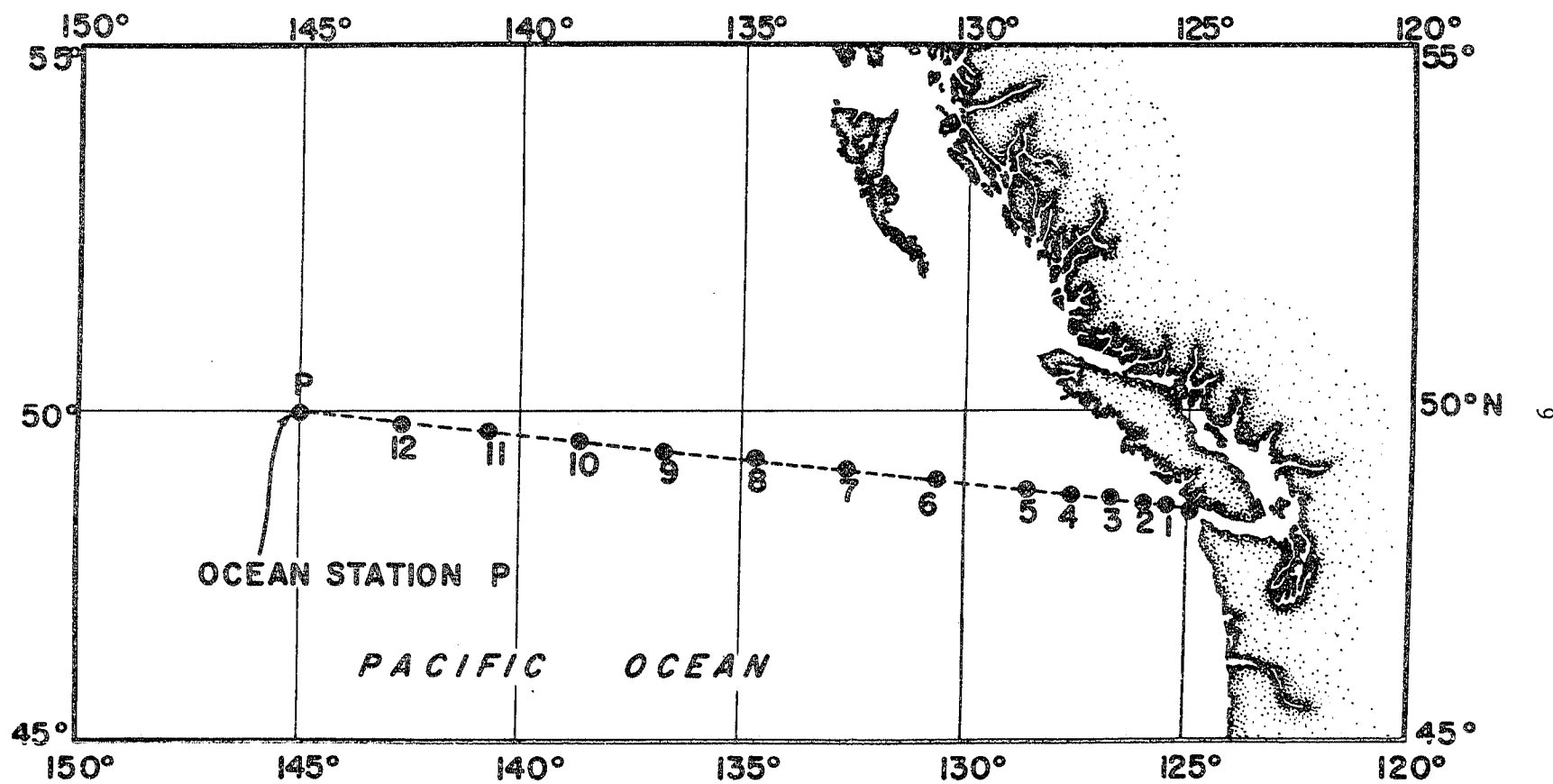


Fig. 1 Chart showing Line P station positions.

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Oceanographic Data Obtained on Cruise P-77-8

(CODC Reference No. 15-77-008)

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Results of Hydrographic Observations

(P-77-8)

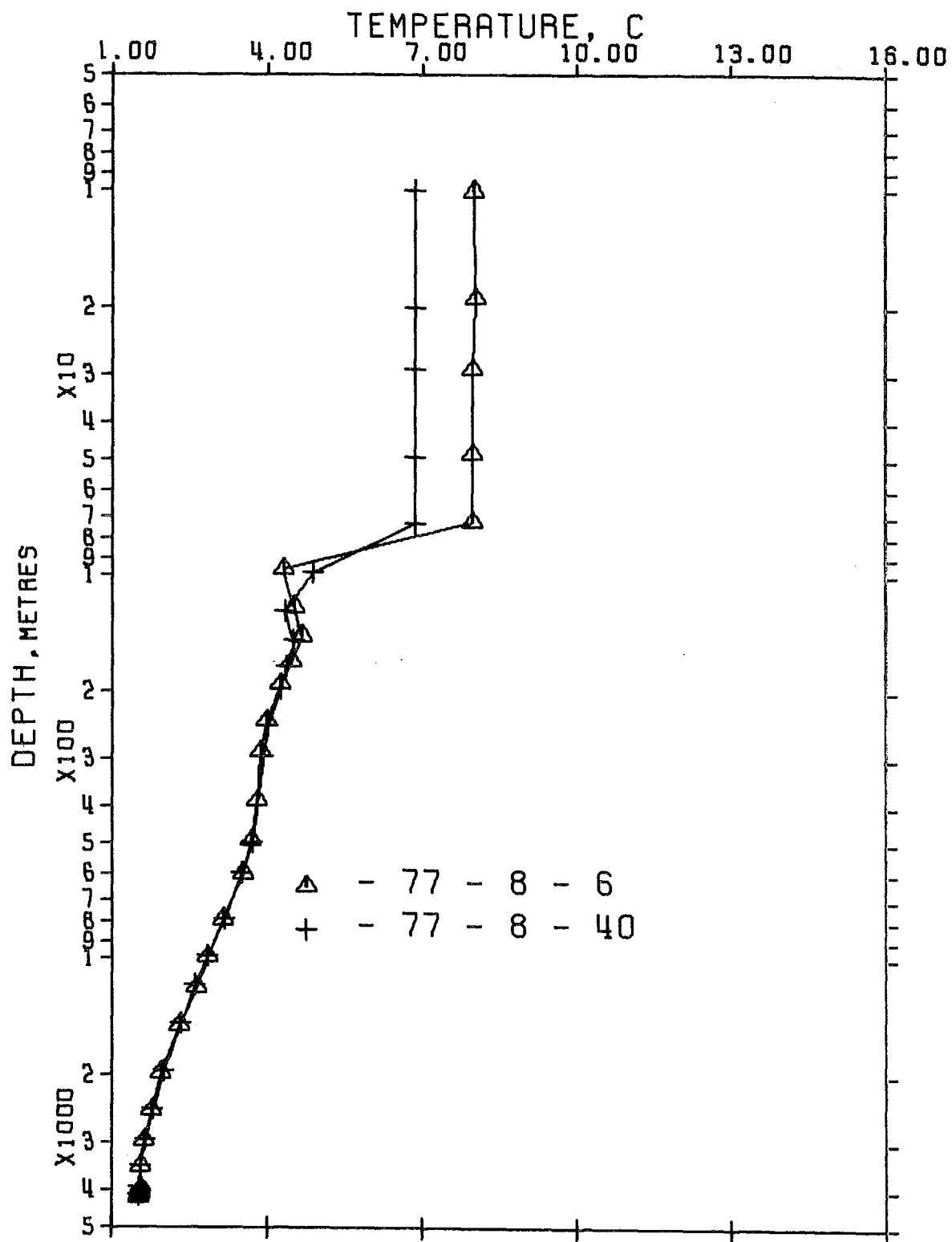


Figure 2. Composite plot of temperature vs $\log_{10}$ depth for Station P. P-77-8.

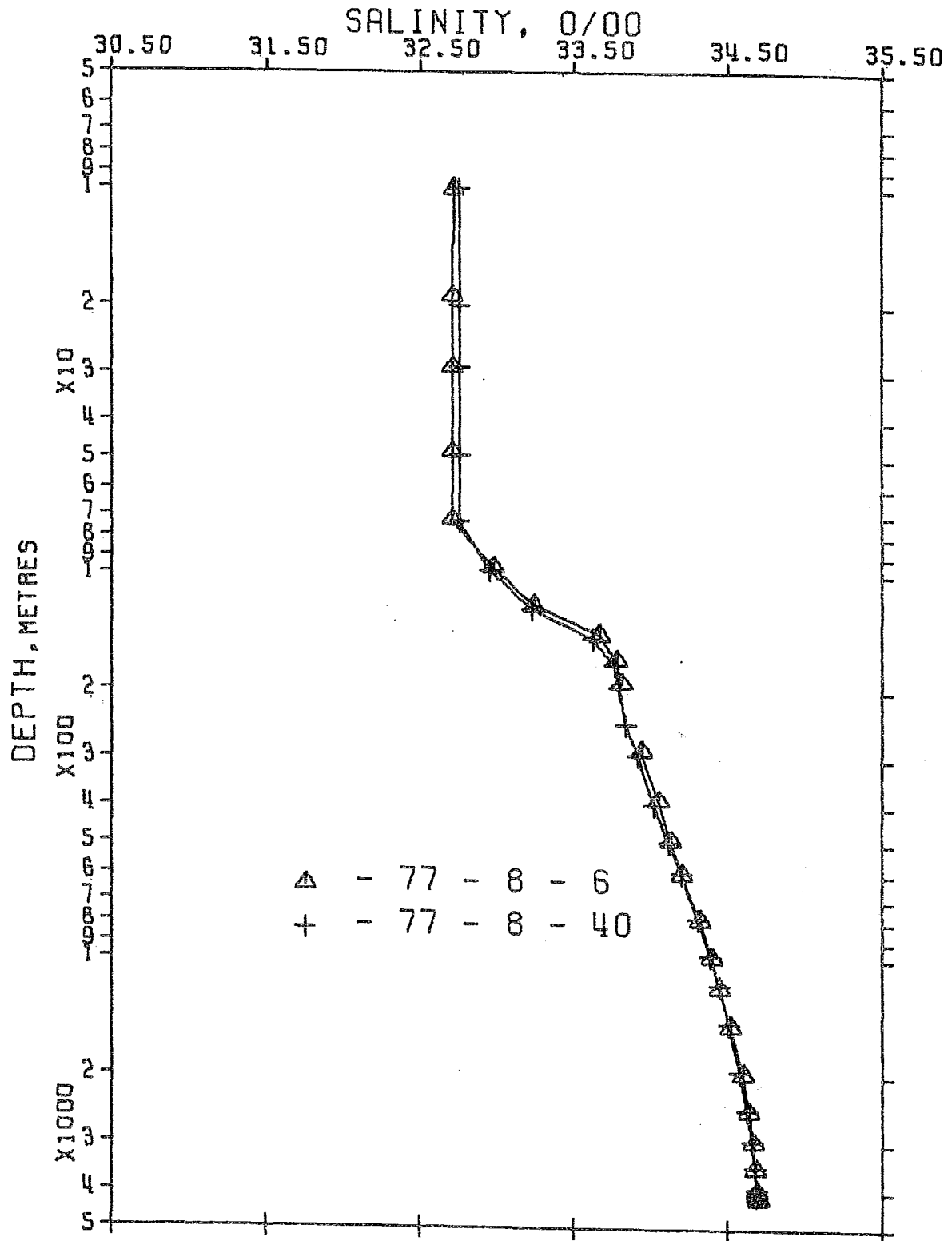


Figure 3. Composite plot of salinity vs $\log_{10}$ depth for Station P. P-77-8.

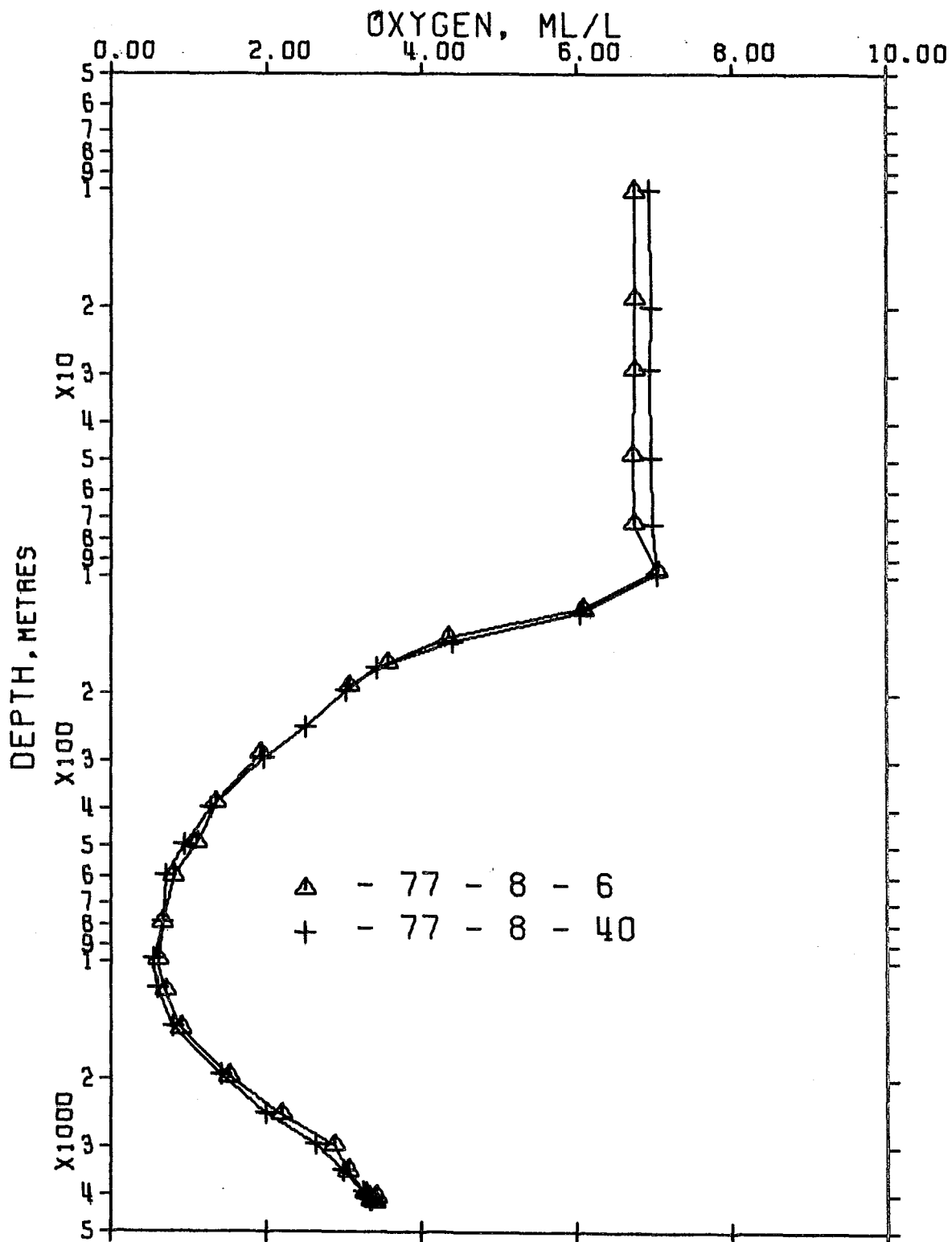
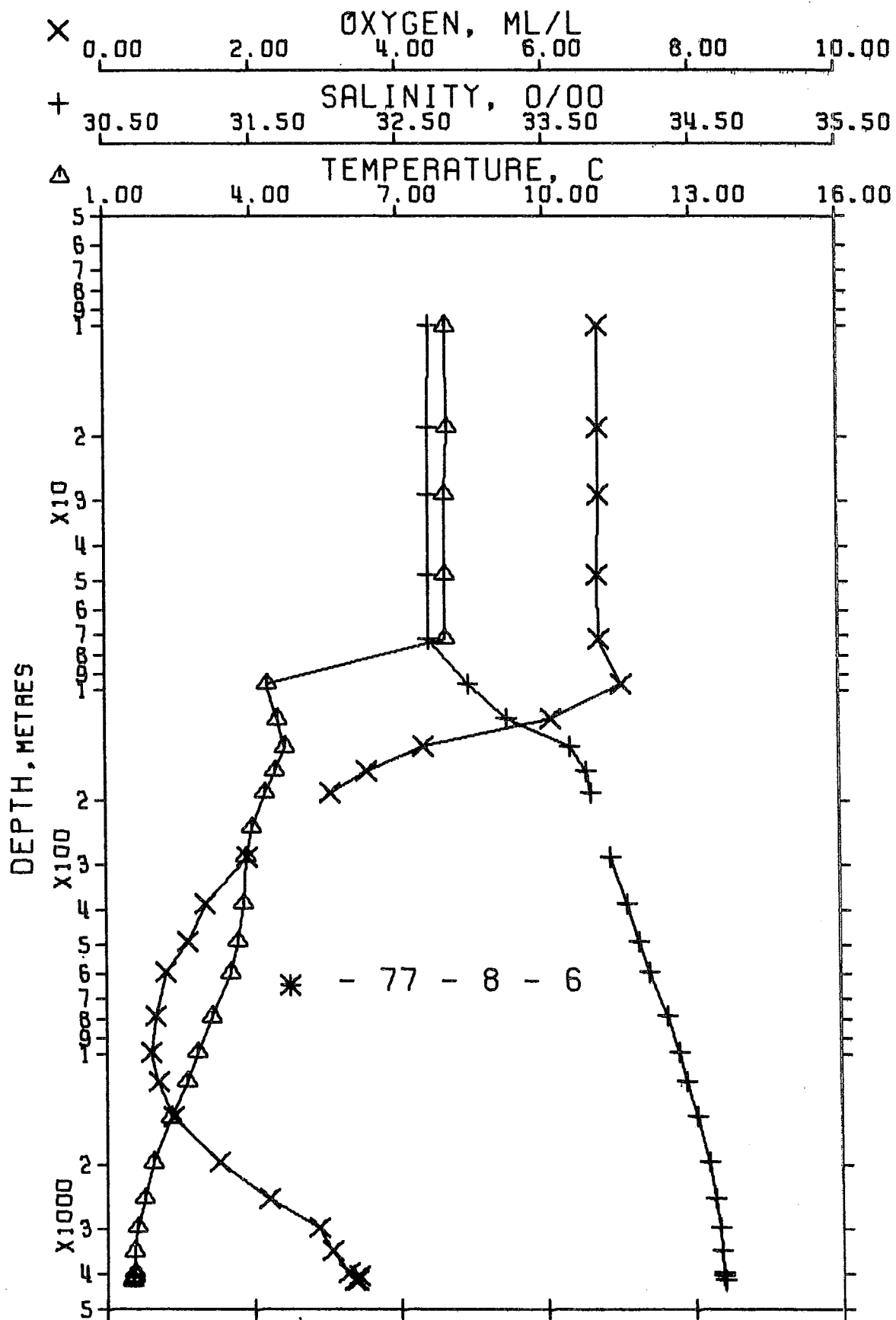


Figure 4. Composite plot of oxygen vs $\log_{10}$ depth for Station P. P-77-8.

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OFFSHORE OCEANOGRAPHY GROUP
REFERENCE NO. 77- 8- 6
POSITION 50- 0 N, 145- 0 W
HYDROGRAPHIC CAST DATA

DATE 4/11/77 GMT 18.4

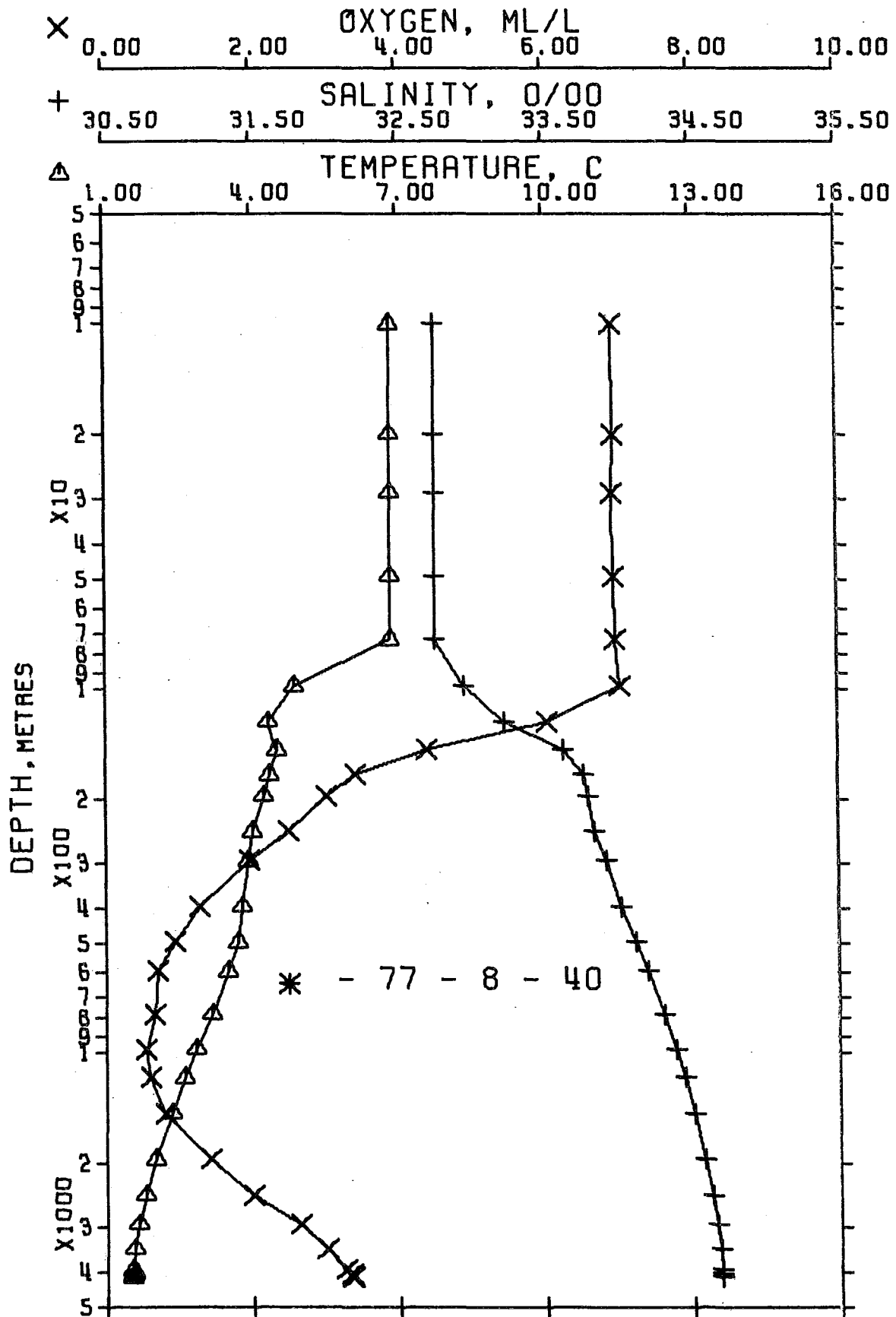
STATION P

OBSERVED DATA

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	THETA	SVA (THETA)	DELTA U	POT. EN	OXY	SOUND
0	7.98	32.717	0	25.509	248.2	7.98	248.2	.00	.00	6.77	1480.
10	8.00	32.722	10	25.510	248.3	8.00	248.1	.25	.01	6.74	1480.
19	8.01	32.713	19	25.502	249.2	8.01	248.9	.48	.05	6.75	1480.
29	7.96	32.708	29	25.505	249.1	7.96	248.6	.73	.11	6.73	1480.
48	7.97	32.712	48	25.507	249.2	7.97	248.4	1.20	.30	6.72	1481.
72	7.96	32.715	72	25.511	249.2	7.95	248.0	1.82	.68	6.73	1481.
97	4.30	32.979	96	26.174	185.8	4.29	185.0	2.35	1.13	7.05	1467.
121	4.50	33.237	120	26.357	168.7	4.49	167.6	2.78	1.61	6.08	1469.
144	4.65	33.671	143	26.685	138.0	4.64	136.5	3.13	2.08	4.35	1470.
168	4.40	33.783	167	26.794	127.8	4.45	126.1	3.45	2.59	3.56	1470.
192	4.24	33.811	191	26.839	123.6	4.23	121.8	3.76	3.15	3.05	1469.
241	3.96	33.880 *	239	26.923	116.0	3.94	113.8	4.33	4.43	2.43*	1469.
269	3.85	33.936	287	26.979	111.0	3.83	108.5	4.88	5.91	1.92	1470.
389	3.80	34.047	386	27.072	103.0	3.77	99.6	5.95	9.60	1.34	1471.
493	3.60	34.129	489	27.151	96.3	3.63	92.1	6.99	14.25	1.09	1472.
603	3.51	34.201	598	27.223	90.1	3.47	85.2	8.01	19.98	.80	1474.
793	3.13	34.316	786	27.350	78.9	3.08	73.0	9.61	31.35	.66	1475.
996	2.84	34.397	986	27.441	71.1	2.77	64.3	11.13	45.13	.60	1477.
1197	2.61	34.453	1185	27.506	65.6	2.53	58.1	12.50	60.48	.70	1480.
1500	2.30	34.519	1484	27.564	58.8	2.20	50.5	14.38	86.23	.90	1484.
2006	1.94	34.598	1981	27.676	50.9	1.80	41.6	17.15	135.72	1.52	1491.
2511	1.74	34.642	2477	27.727	47.0	1.56	36.5	19.60	192.18	2.19	1498.
3017	1.61	34.670	2973	27.759	44.8	1.39	33.2	21.92	257.41	2.88	1506.
3524	1.54	34.683	3469	27.775	44.3	1.27	31.4	24.17	332.49	3.05	1515.
4033	1.54	34.686	3965	27.777	45.4	1.21	30.9	26.44	420.04	3.28	1523.
4134	1.53	34.693	4064	27.783	45.0	1.19	30.2	26.90	439.17	3.43*	1525.
4226	1.51	34.697	4153	27.788	44.6	1.16	29.7	27.31	456.63	3.35	1527.
4236	1.51	34.697	4163	27.788	44.7	1.16	29.7	27.36	458.61	3.39	1527.

INTERPOLATED TO STANDARD PRESSURE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	THETA	SVA (THETA)	DELTA U	POT. EN	OXY	SOUND
0	7.98	32.717	0	25.509	248.2	7.98	248.2	.00	.00	6.77	1480.
10	8.00	32.722	10	25.510	248.3	8.00	248.1	.25	.01	6.74	1480.
20	8.00	32.712	20	25.502	249.2	8.00	248.9	.50	.05	6.74	1480.
30	7.96	32.708	30	25.505	249.1	7.96	248.6	.75	.11	6.73	1480.
50	7.97	32.712	50	25.507	249.2	7.96	248.4	1.24	.32	6.72	1481.
75	7.52	32.747	75	25.598	240.9	7.51	239.7	1.88	.73	6.77	1479.
100	4.33	33.019	99	26.202	183.2	4.32	182.3	2.41	1.19	6.90	1467.
125	4.53	33.322	124	26.421	162.7	4.52	161.5	2.85	1.69	5.74	1469.
150	4.60	33.701	149	26.714	135.3	4.59	133.7	3.21	2.21	4.14	1470.
175	4.39	33.791	174	26.807	126.5	4.38	124.8	3.54	2.74	3.41	1470.
200	4.19	33.823	199	26.854	122.3	4.18	120.4	3.85	3.34	2.95	1469.
225	4.04	33.859	223	26.898	118.3	4.03	116.2	4.15	3.99	2.62	1469.
250	3.94	33.891	248	26.934	115.0	3.92	112.7	4.44	4.69	2.32	1469.
300	3.84	33.950	298	26.990	110.0	3.82	107.4	5.00	6.27	1.85	1470.
400	3.78	34.057	397	27.081	102.2	3.76	98.7	6.06	10.05	1.31	1471.
500	3.65	34.134	496	27.156	95.8	3.61	91.6	7.05	14.59	1.07	1472.
600	3.51	34.199	595	27.221	90.3	3.47	85.4	7.98	19.80	.81	1474.
700	3.30	34.263	694	27.292	84.0	3.26	76.6	8.86	25.58	.73	1474.
800	3.12	34.319	793	27.353	78.6	3.06	72.7	9.67	31.78	.66	1475.
900	2.97	34.361	892	27.401	74.5	2.91	68.2	10.43	38.41	.63	1476.
1000	2.83	34.398	990	27.442	70.9	2.77	64.2	11.16	45.44	.60	1477.
1200	2.61	34.454	1188	27.506	65.5	2.53	58.0	12.52	60.70	.70	1480.
1500	2.30	34.519	1484	27.564	58.8	2.20	50.5	14.38	86.23	.90	1484.
2000	1.94	34.597	1970	27.676	51.0	1.81	41.7	17.12	135.15	1.51	1491.
2500	1.74	34.641	2467	27.726	47.1	1.57	36.6	19.55	190.90	2.18	1498.
3000	1.61	34.669	2956	27.758	44.9	1.39	33.3	21.84	255.08	2.86	1506.
3500	1.54	34.682	3445	27.774	44.3	1.27	31.5	24.06	328.64	3.05	1514.
4000	1.54	34.686	3933	27.777	45.3	1.22	30.9	26.29	413.95	3.27	1523.
4100	1.53	34.691	4031	27.781	45.2	1.20	30.4	26.75	432.67	3.38	1525.
4200	1.52	34.696	4120	27.787	44.8	1.17	29.8	27.20	451.68	3.38	1526.



OFFSHORE OCEANOGRAPHY GROUP
 REFERENCE NO. 77- 8- 40
 POSITION 50- 0 N, 145- 0 W
 HYDROGRAPHIC CAST DATA

DATE 27/11/77

GMT 18.5

STATION P

OBSERVED DATA

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	THETA	SVA (THETA)	DELTA D	POT. EN	OXY	SOUND
0	6.87	32.756	0	25.694	230.6	6.87	230.6	.00	.00	6.87	1476.
10	6.86	32.761	10	25.699	230.3	6.86	230.1	.23	.01	6.95	1476.
20	6.84	32.761	20	25.702	230.2	6.84	229.9	.46	.05	6.97	1476.
29	6.84	32.758	29	25.700	230.5	6.84	230.1	.67	.10	6.95	1476.
49	6.84	32.761	49	25.702	230.5	6.84	229.8	1.14	.29	6.97	1476.
73	6.86	32.760	73	25.699	231.2	6.85	230.1	1.71	.64	6.97	1477.
99	4.88	32.960	98	26.097	193.3	4.87	192.3	2.24	1.11	7.03	1469.
124	4.34	33.233	123	26.371	167.4	4.33	166.3	2.69	1.62	6.04	1468.
148	4.52	33.626	147	26.663	140.0	4.51	138.5	3.06	2.14	4.39	1470.
173	4.37	33.771	172	26.794	127.8	4.36	126.1	3.40	2.69	3.42	1470.
198	4.23	33.805	197	26.836	124.0	4.22	122.1	3.72	3.29	3.02	1469.
249	4.00	33.843	247	26.890	119.2	3.98	117.0	4.33	4.68	2.50	1469.
299	3.92	33.921	297	26.960	113.0	3.90	110.3	4.91	6.31	1.97	1470.
400	3.80	34.025	397	27.054	104.8	3.77	101.3	6.01	10.22	1.28	1471.
501	3.69	34.125	497	27.145	96.9	3.65	92.6	7.03	14.90	.93	1473.
602	3.50	34.204	597	27.226	89.8	3.46	84.9	7.97	20.20	.70	1474.
791	3.16	34.310	784	27.342	79.6	3.11	73.7	9.57	31.51	.66	1475.
987	2.84	34.391	977	27.436	71.4	2.77	64.8	11.04	44.82	.54	1477.
1184	2.59	34.446	1172	27.502	65.8	2.51	58.5	12.39	59.77	.61	1480.
1482	2.32	34.509	1466	27.575	59.6	2.22	51.4	14.26	85.08	.81	1483.
1986	1.98	34.583	1962	27.661	52.4	1.84	43.0	17.08	134.87	1.41	1490.
2493	1.77	34.630	2460	27.715	48.2	1.59	37.7	19.62	192.80	2.01	1498.
3001	1.63	34.663	2957	27.752	45.5	1.41	33.9	21.98	258.96	2.65	1506.
3506	1.53	34.679	3451	27.772	44.4	1.26	31.7	24.26	334.38	3.00	1514.
4005	1.51	34.686	3936	27.779	44.9	1.19	30.7	26.47	419.30	3.26	1523.
4104	1.53	34.689	4034	27.780	45.2	1.19	30.5	26.92	437.63	3.34	1525.
4192	1.52	34.688	4126	27.780	45.3	1.17	30.5	27.32	454.54	3.34	1526.
4201	1.52	34.688	4129	27.780	45.4	1.17	30.5	27.36	456.33	3.36	1526.

INTERPOLATED TO STANDARD PRESSURE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	THETA	SVA (THETA)	DELTA D	POT. EN	OXY	SOUND
0	6.87	32.756	0	25.694	230.6	6.87	230.6	.00	.00	6.87	1476.
10	6.86	32.761	10	25.699	230.3	6.86	230.1	.23	.01	6.95	1476.
20	6.84	32.761	20	25.702	230.2	6.84	229.9	.46	.05	6.97	1476.
30	6.84	32.758	30	25.700	230.5	6.84	230.1	.69	.11	6.95	1476.
50	6.84	32.761	50	25.702	230.6	6.84	229.8	1.15	.29	6.97	1476.
75	6.72	32.774	75	25.728	228.4	6.71	227.4	1.74	.67	6.98	1476.
100	4.85	32.976	99	26.114	191.7	4.84	190.7	2.27	1.14	6.97	1469.
125	4.35	33.254	124	26.386	165.9	4.34	164.8	2.71	1.65	5.95	1468.
150	4.51	33.638	149	26.674	139.0	4.50	137.5	3.09	2.18	4.31	1470.
175	4.36	33.774	174	26.797	127.5	4.35	125.8	3.42	2.73	3.39	1470.
200	4.22	33.806	199	26.838	123.8	4.21	121.9	3.74	3.33	3.00	1469.
225	4.10	33.826	223	26.866	121.3	4.09	119.3	4.04	3.99	2.73	1469.
250	4.00	33.845	248	26.891	119.1	3.98	118.8	4.34	4.72	2.49	1469.
300	3.92	33.922	298	26.960	112.9	3.90	110.2	4.92	6.34	1.96	1470.
400	3.80	34.025	397	27.054	104.8	3.77	101.3	6.01	10.22	1.28	1471.
500	3.69	34.124	496	27.144	97.0	3.66	92.7	7.02	14.84	.94	1473.
600	3.50	34.202	595	27.224	89.9	3.46	85.0	7.95	20.08	.70	1473.
700	3.31	34.262	694	27.290	84.2	3.26	78.7	8.82	25.83	.68	1474.
800	3.14	34.314	793	27.347	79.2	3.09	73.3	9.64	32.07	.65	1475.
900	2.97	34.357	892	27.397	74.8	2.91	68.5	10.41	38.74	.59	1476.
1000	2.62	34.395	990	27.441	71.0	2.75	64.3	11.14	45.79	.54	1477.
1200	2.57	34.450	1188	27.506	65.4	2.49	58.1	12.50	61.04	.62	1480.
1500	2.31	34.512	1484	27.578	59.3	2.20	51.1	14.36	86.68	.83	1484.
2000	1.97	34.584	1976	27.663	52.3	1.84	42.8	17.15	136.34	1.43	1491.
2500	1.77	34.630	2467	27.716	48.2	1.59	37.6	19.65	193.62	2.02	1498.
3000	1.63	34.663	2956	27.752	45.5	1.41	33.9	21.98	258.88	2.65	1506.
3500	1.53	34.679	3445	27.772	44.4	1.26	31.7	24.23	333.45	2.99	1514.
4000	1.51	34.686	3933	27.779	44.9	1.19	30.7	26.45	418.38	3.25	1523.
4100	1.53	34.689	4031	27.780	45.2	1.19	30.5	26.90	436.95	3.34	1525.
4200	1.52	34.688	4128	27.780	45.4	1.17	30.5	27.35	456.12	3.36	1526.

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Results of STD Observations

(P-77-8)

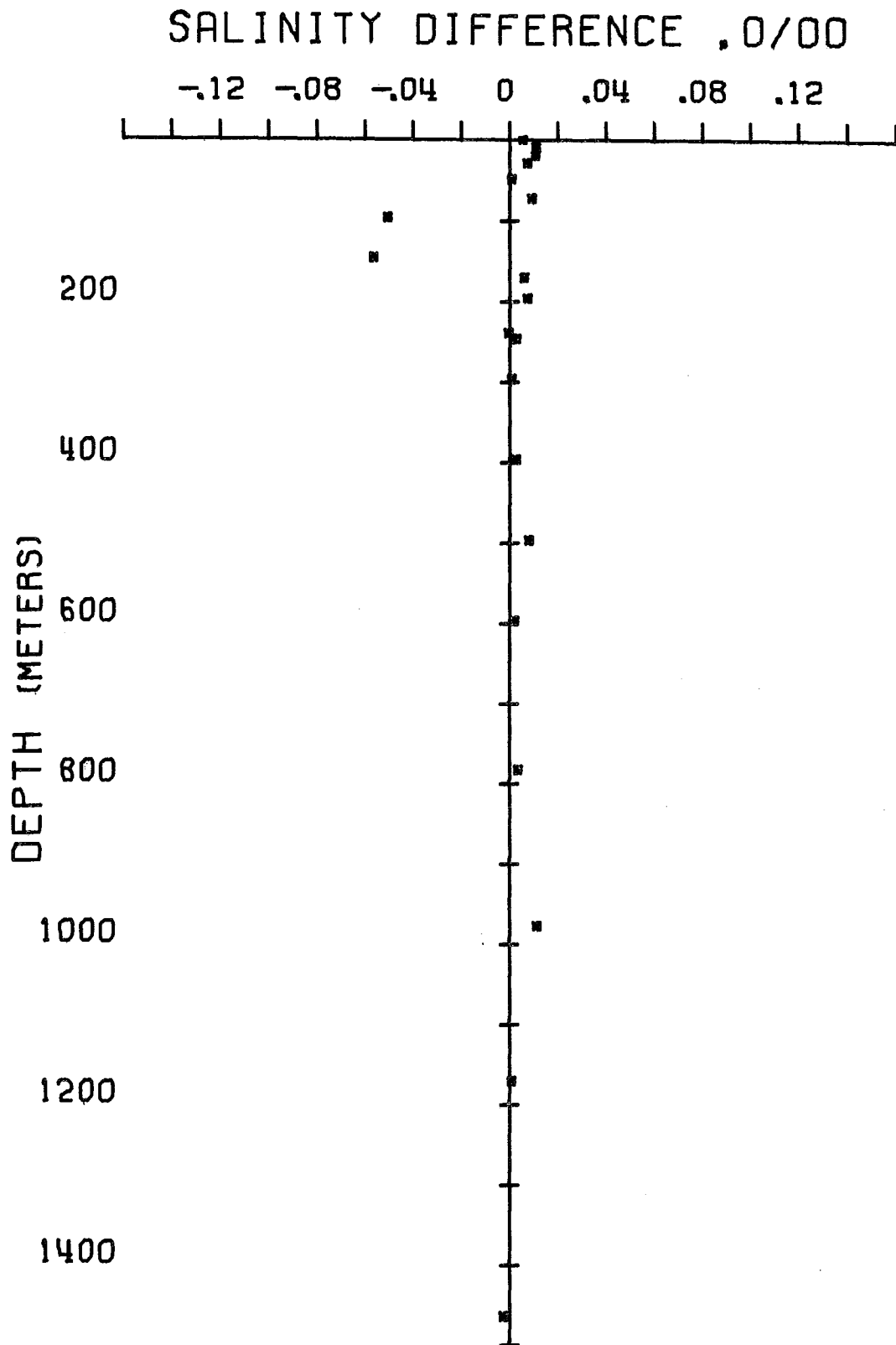


Figure 5. Salinity difference between hydrodata and STD. P-77-8. No correction applied to STD plots.

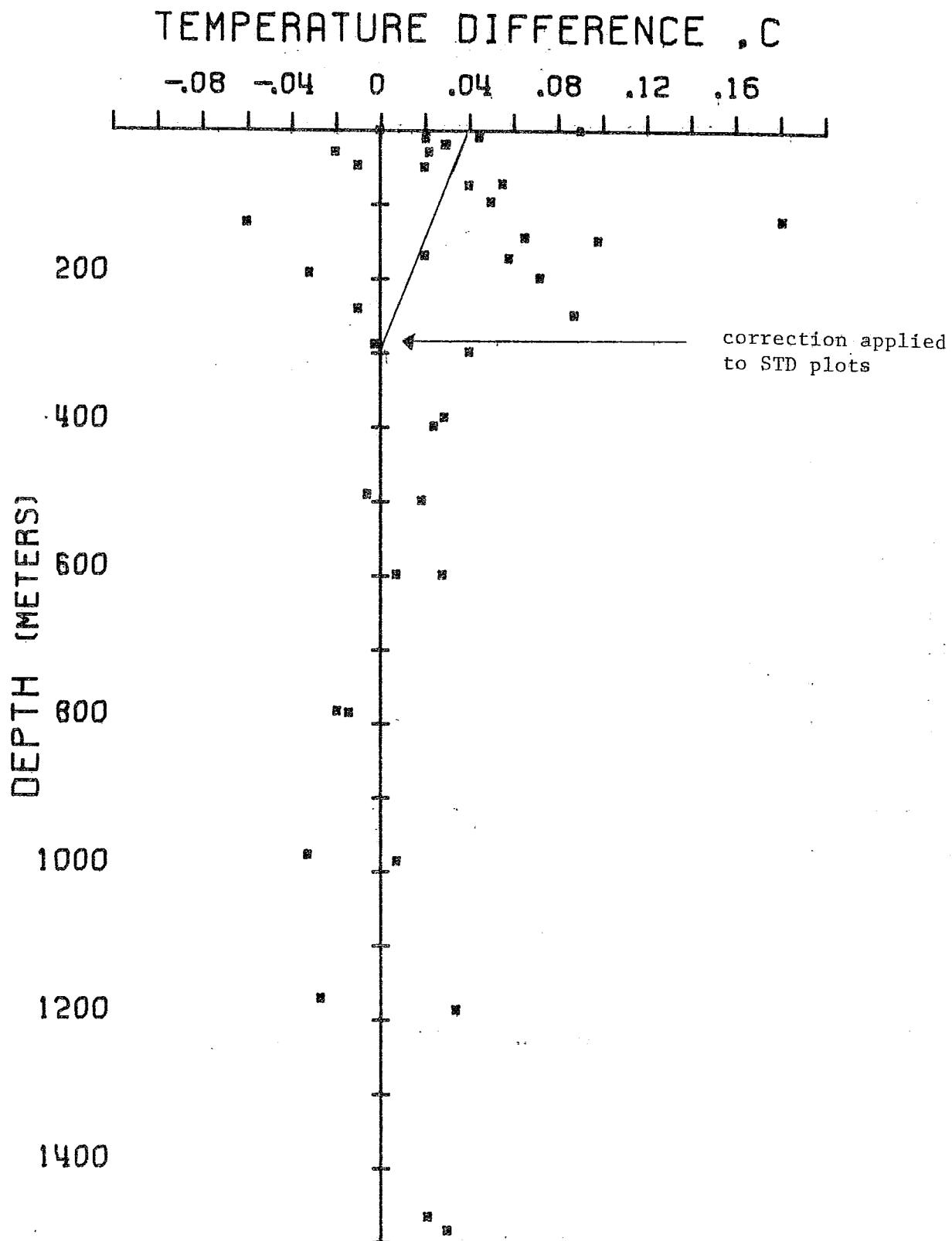
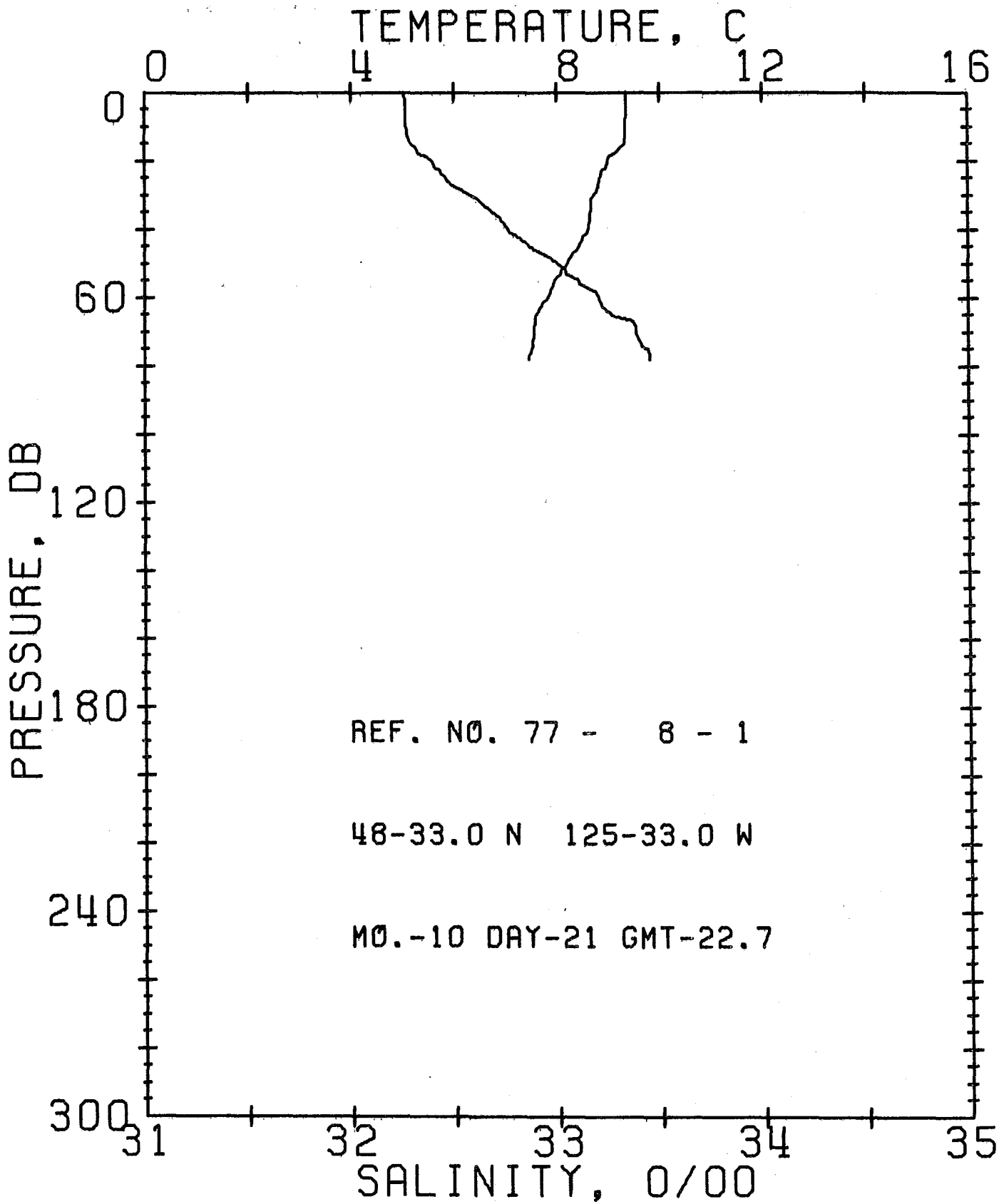


Figure 6. Temperature difference between hydrodata and STD. P-77-8.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 1

DATE 21/10/77

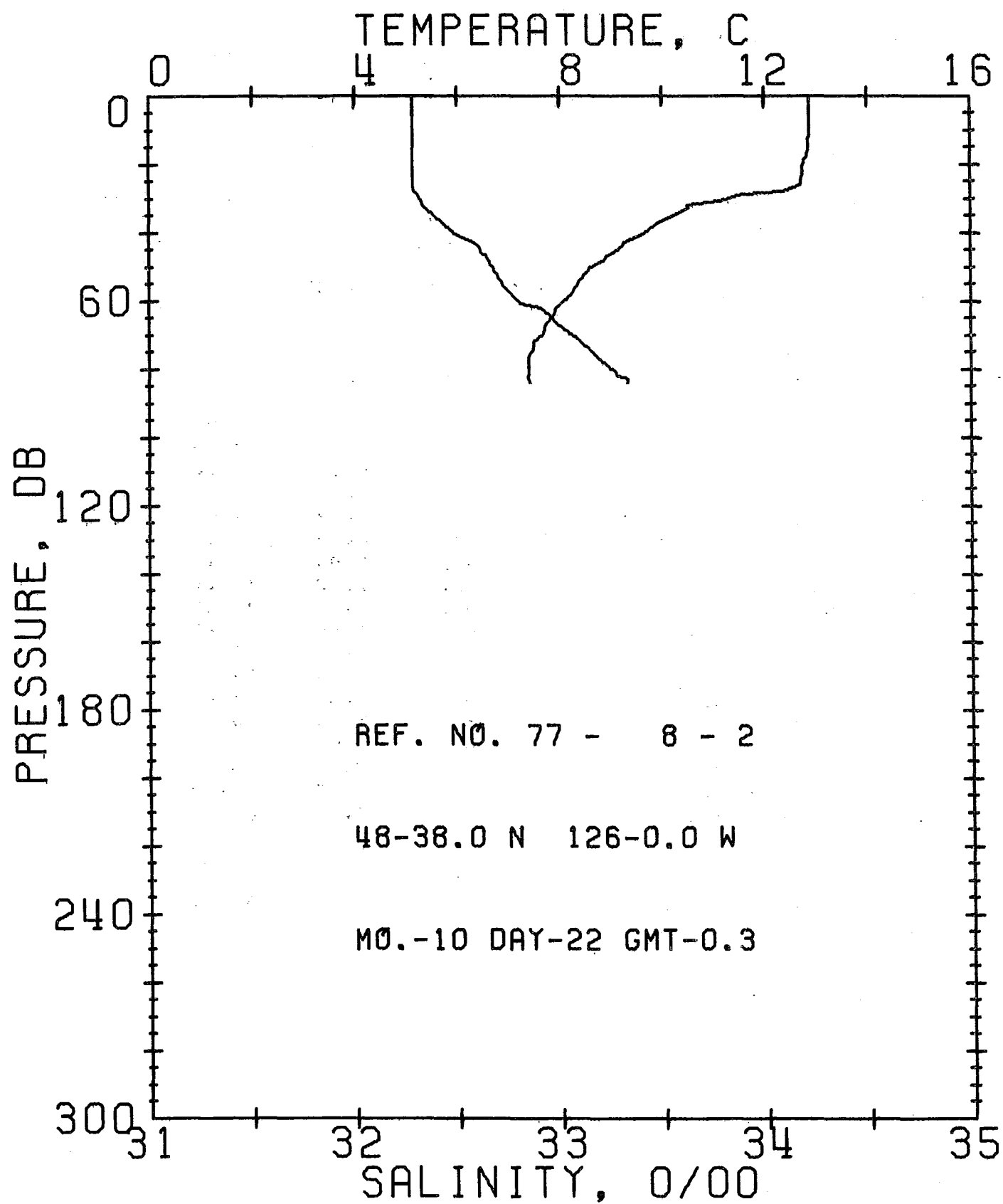
STATION 1

POSITION 48-33.0N, 125-33.0W GMT 22.7

RESULTS OF STP CAST 45 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. FN	SOUND
0	9.35	32.25	0	24.94	302.7	0.0	0.0	1484.
10	9.34	32.26	10	24.95	302.0	0.30	0.02	1485.
20	8.99	32.39	20	25.10	287.4	0.60	0.06	1484.
30	8.72	32.57	30	25.29	270.0	0.88	0.13	1483.
50	8.19	33.00	50	25.70	231.1	1.38	0.34	1482.
75	7.49	33.44	75	26.15	189.0	1.90	0.66	1480.

DEPTH	TEMP	SAL	DEPTH	TEMP	SAL
0.	9.35	32.25	47.	8.33	32.92
4.	9.35	32.26	48.	8.27	32.96
6.	9.35	32.26	50.	8.19	33.00
9.	9.34	32.26	51.	8.15	33.02
13.	9.33	32.27	52.	8.09	33.04
15.	9.33	32.29	53.	8.08	33.04
16.	9.26	32.31	55.	7.95	33.10
18.	9.12	32.33	56.	7.93	33.11
19.	9.01	32.37	58.	7.86	33.18
20.	8.99	32.39	60.	7.80	33.20
22.	8.95	32.41	61.	7.77	33.20
23.	8.87	32.43	63.	7.66	33.22
24.	8.85	32.44	65.	7.58	33.27
27.	8.81	32.48	67.	7.56	33.37
29.	8.78	32.54	69.	7.55	33.38
31.	8.67	32.61	71.	7.54	33.38
33.	8.66	32.64	73.	7.53	33.40
36.	8.64	32.71	74.	7.51	33.41
37.	8.63	32.72	75.	7.49	33.44
41.	8.58	32.77	76.	7.47	33.44
42.	8.50	32.80	77.	7.45	33.45
43.	8.47	32.82	78.	7.44	33.45
46.	8.36	32.89			



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 2

DATE 22/10/77

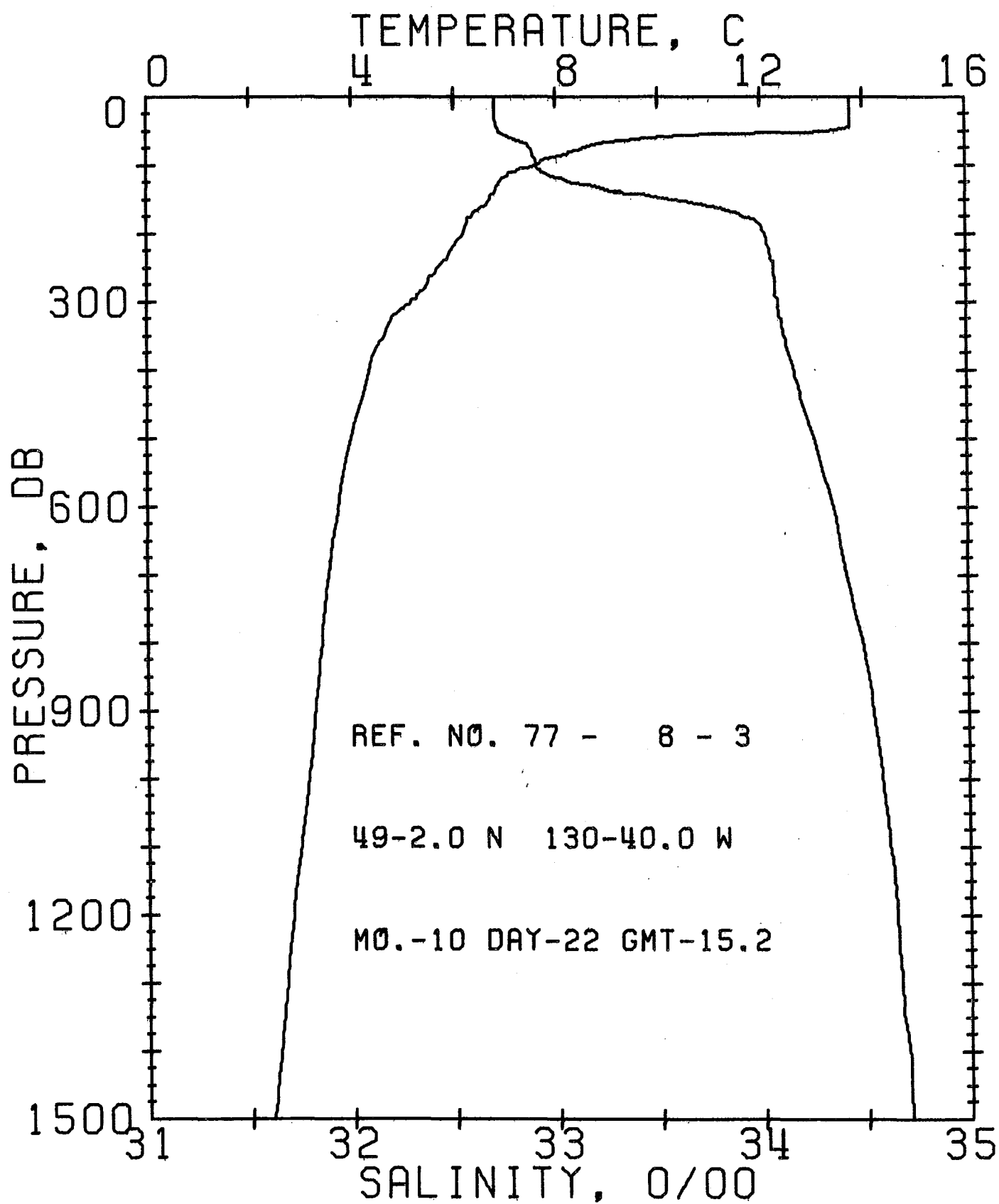
STATION 2

POSITION 48-38.0N, 126- 0.0W GMT 0.3

RESULTS OF STD CAST 48 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	12.87	32.28	0	24.34	359.8	0.0	0.0	1497.
10	12.87	32.28	10	24.34	360.2	0.36	0.02	1497.
20	12.76	32.28	20	24.36	358.5	0.72	0.07	1497.
30	11.37	32.31	30	24.64	331.7	1.07	0.16	1492.
50	8.60	32.67	50	25.38	261.4	1.66	0.40	1483.
75	7.44	33.16	75	25.93	209.2	2.25	0.77	1480.

DEPTH	TEMP	SAL	DEPTH	TEMP	SAL
0.	12.87	32.28	54.	8.41	32.71
8.	12.87	32.28	56.	8.31	32.73
9.	12.87	32.28	58.	8.23	32.76
16.	12.86	32.28	61.	8.02	32.81
18.	12.83	32.28	62.	7.96	32.91
19.	12.77	32.28	63.	7.91	32.92
22.	12.75	32.28	64.	7.89	32.95
26.	12.71	32.28	67.	7.74	32.99
27.	12.58	32.28	70.	7.69	33.06
28.	12.36	32.29	71.	7.61	33.08
29.	11.60	32.30	72.	7.50	33.10
31.	11.14	32.32	74.	7.50	33.14
32.	10.48	32.33	75.	7.44	33.16
33.	10.53	32.34	77.	7.38	33.19
37.	9.97	32.42	79.	7.38	33.23
40.	9.68	32.48	81.	7.39	33.27
41.	9.59	32.50	82.	7.38	33.28
43.	9.29	32.58	83.	7.36	33.33
44.	9.23	32.60	85.	7.43	33.33
46.	9.07	32.62			
47.	8.94	32.64			
48.	8.87	32.65			
50.	8.60	32.67			
52.	8.51	32.69			



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REFERENCE NO. 77- 8- 3

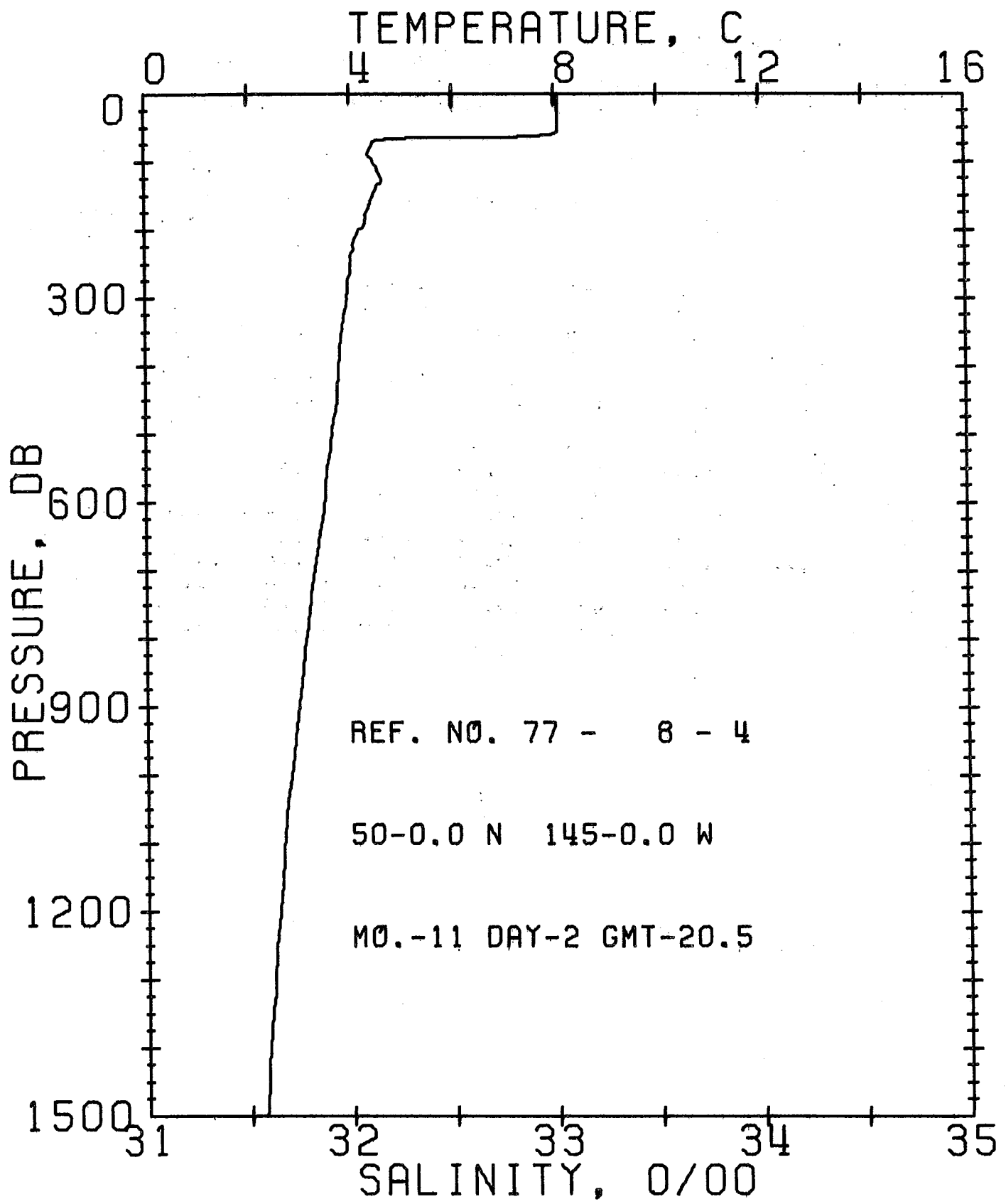
DATE 22/10/77

STATION 6

POSITION 49- 2.0N, 130-40.0W GMT 15.2

RESULTS OF STP CAST 171 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	13.77	32.70	0	24.48	346.0	0.0	0.0	1501.
10	13.77	32.70	10	24.48	346.5	0.35	0.02	1501.
20	13.77	32.70	20	24.48	346.7	0.69	0.07	1501.
30	13.77	32.70	30	24.48	347.0	1.04	0.16	1501.
50	13.31	32.72	50	24.59	337.1	1.73	0.44	1500.
75	8.53	32.87	75	25.55	245.9	2.42	0.87	1483.
100	7.60	32.91	99	25.72	230.4	3.01	1.40	1480.
125	6.88	33.08	124	25.95	208.5	3.56	2.03	1478.
150	6.70	33.56	149	26.35	170.7	4.04	2.70	1478.
175	6.32	33.93	174	26.69	138.6	4.42	3.33	1478.
200	6.17	34.02	199	26.78	130.6	4.75	3.96	1478.
225	5.92	34.04	223	26.83	126.1	5.07	4.66	1477.
250	5.66	34.06	248	26.88	121.8	5.38	5.41	1477.
300	5.15	34.08	298	26.95	114.7	5.97	7.07	1475.
400	4.33	34.16	397	27.11	100.6	7.04	10.86	1474.
500	3.97	34.25	496	27.22	90.4	8.00	15.24	1474.
600	3.71	34.34	595	27.32	81.6	8.86	20.05	1475.
800	3.38	34.48	793	27.46	69.4	10.36	30.76	1477.
1000	3.12	34.58	990	27.56	60.8	11.66	42.61	1479.
1200	2.79	34.64	1188	27.64	53.9	12.80	55.35	1481.
1500	2.41	34.71	1484	27.73	46.0	14.29	75.87	1484.



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REFERENCE NO. 77- 8- 4

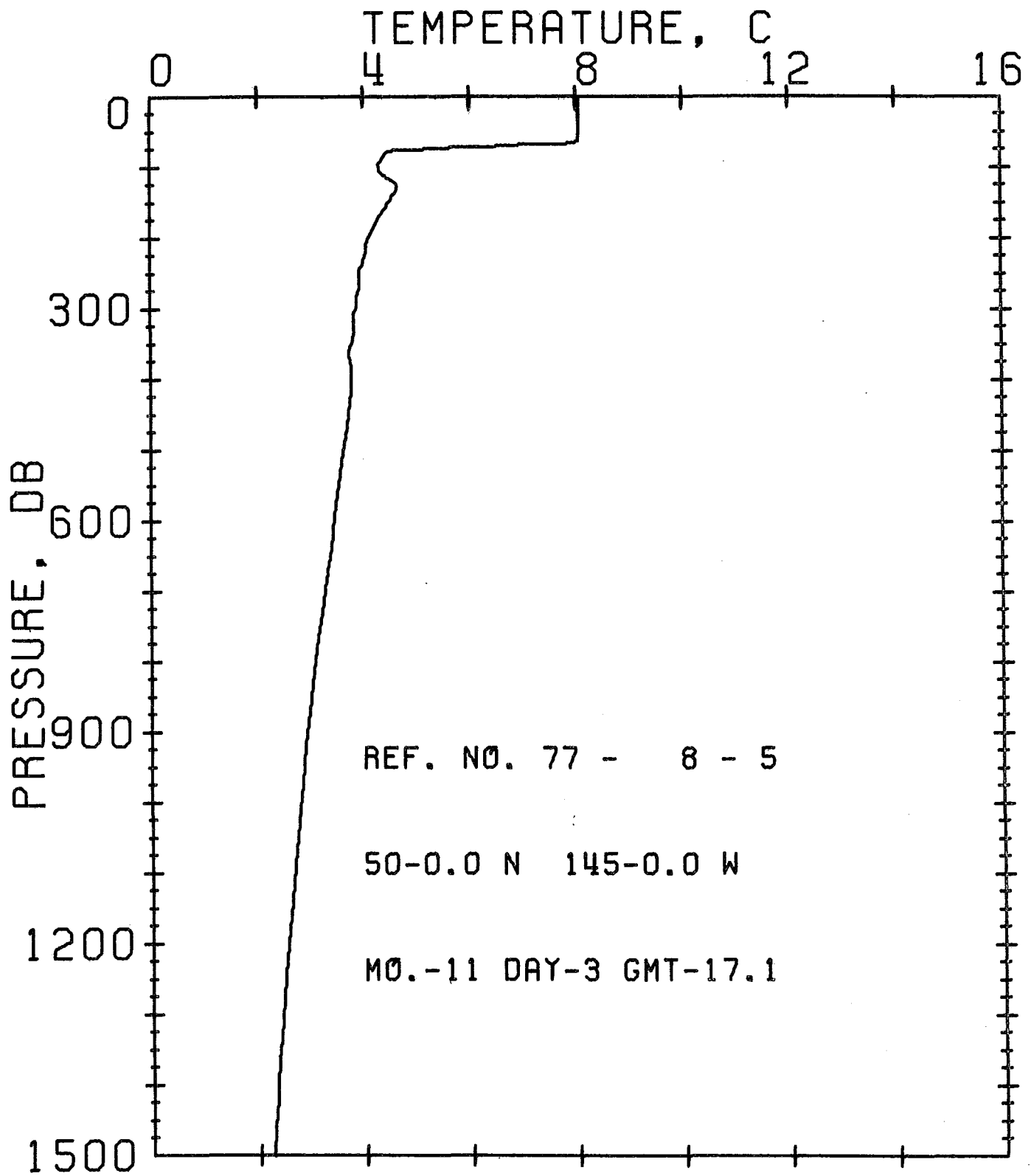
DATE 2/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 20.5

RESULTS OF STD CAST 141 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	8.09							
10	8.09							
20	8.09							
30	8.09							
50	8.08							
75	4.44							
100	4.47							
125	4.63							
150	4.44							
175	4.31							
200	4.16							
225	4.06							
250	3.99							
300	3.93							
400	3.77							
500	3.63							
600	3.47							
800	3.11							
1000	2.80							
1200	2.55							
1500	2.27							



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REFERENCE NO. 77- 8- 5

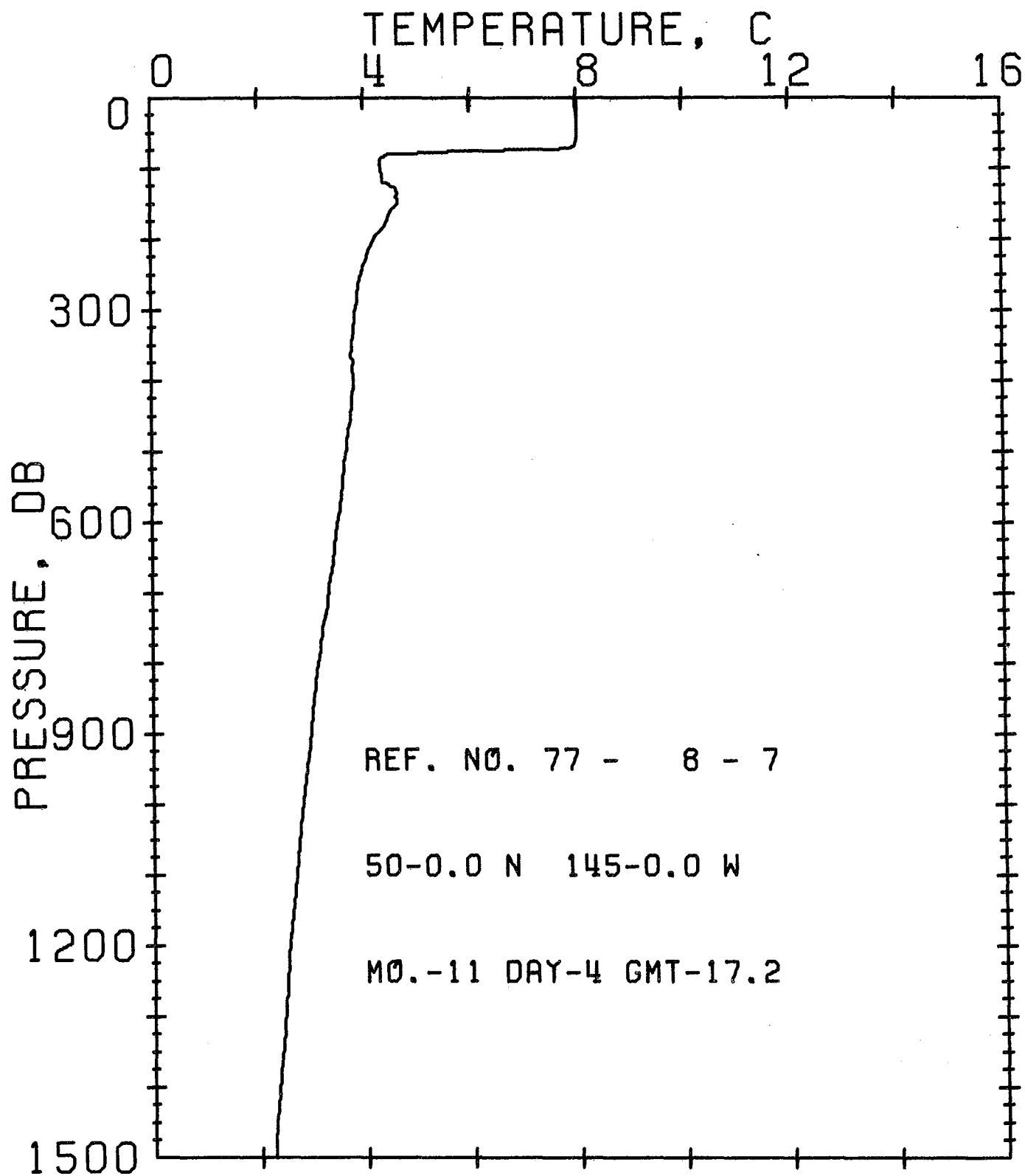
DATE 3/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.1

RESULTS OF STP CAST 108 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	8.06							
10	8.05							
20	8.05							
30	8.05							
50	8.05							
75	4.91							
100	4.28							
125	4.61							
150	4.49							
175	4.29							
200	4.11							
225	4.03							
250	3.92							
300	3.87							
400	3.76							
500	3.61							
600	3.44							
800	3.07							
1000	2.79							
1200	2.54							
1500	2.25							



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REFERENCE NO. 77- 8- 7

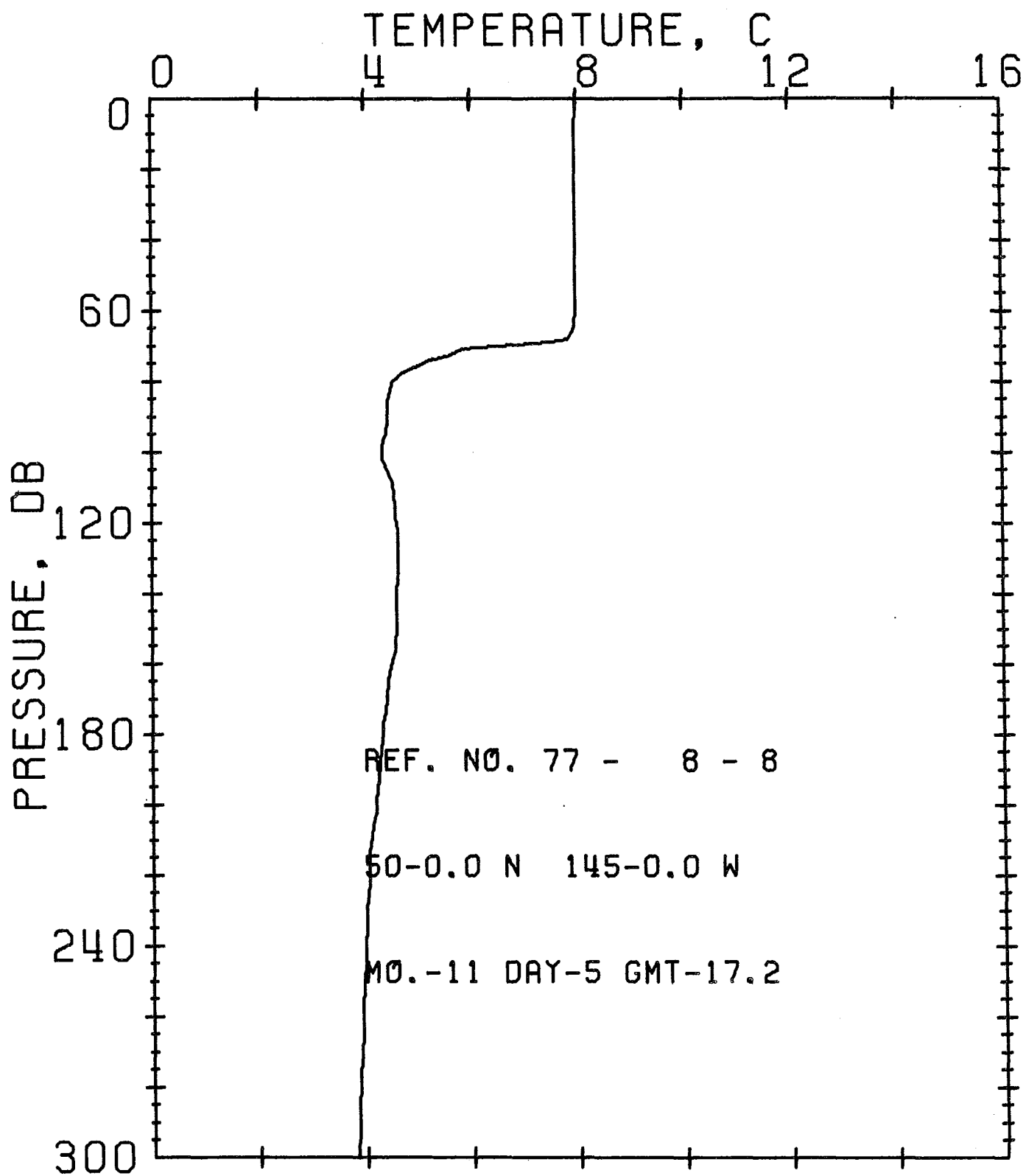
DATE 4/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 114 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	8.02							
10	8.02							
20	8.02							
30	8.02							
50	8.02							
75	6.94							
100	4.33							
125	4.53							
150	4.63							
175	4.44							
200	4.20							
225	4.04							
250	3.95							
300	3.85							
400	3.78							
500	3.65							
600	3.48							
800	3.11							
1000	2.80							
1200	2.54							
1500	2.24							



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REFERENCE NO. 77- 8- 8

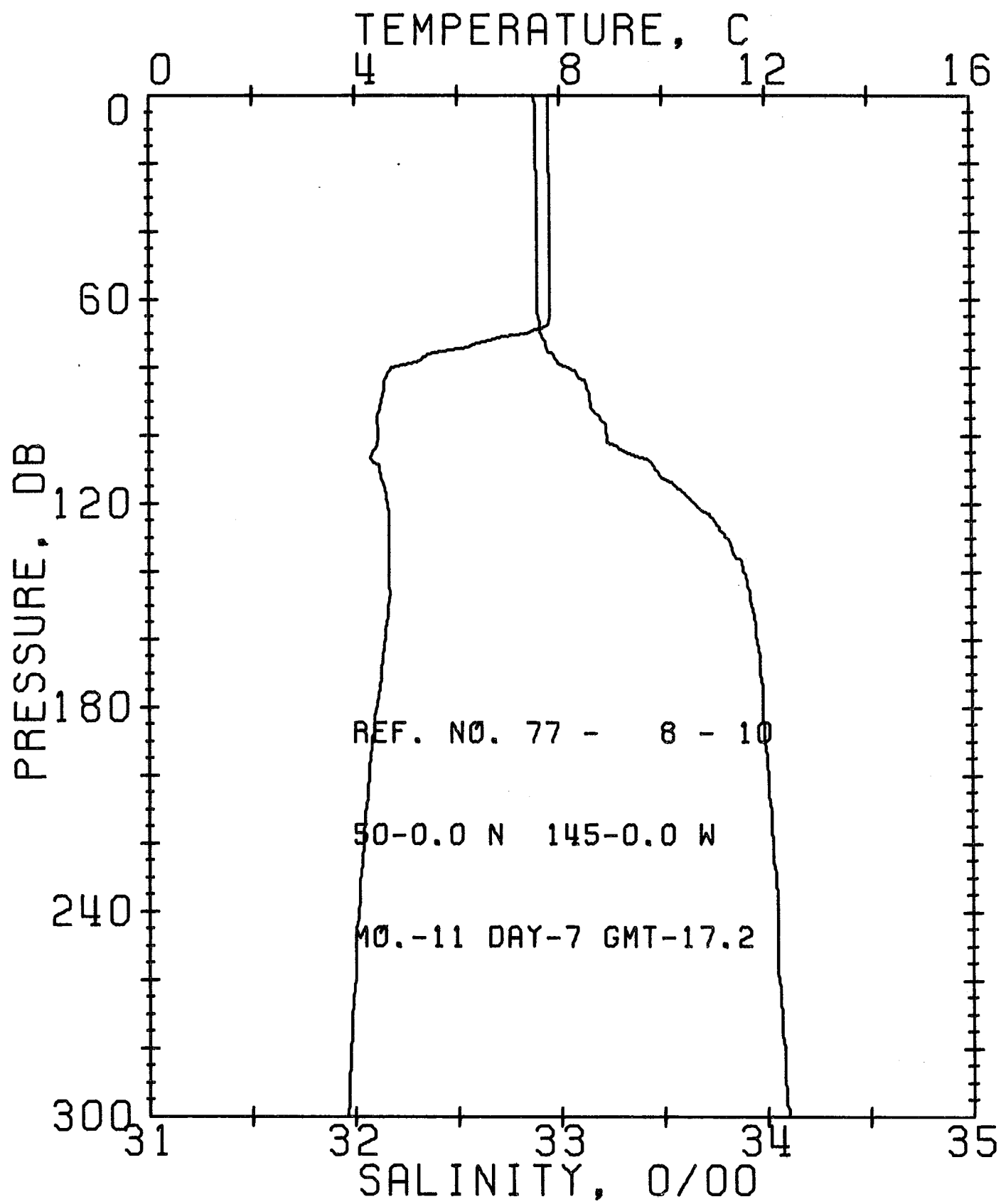
DATE 5/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 73 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	7.99							---
10	7.98							
20	7.98							
30	7.98							
50	7.98							
75	5.08							
100	4.33							
125	4.62							---
150	4.59							
175	4.36							
200	4.19							
225	4.03							
250	3.95							
300	3.82							



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 10

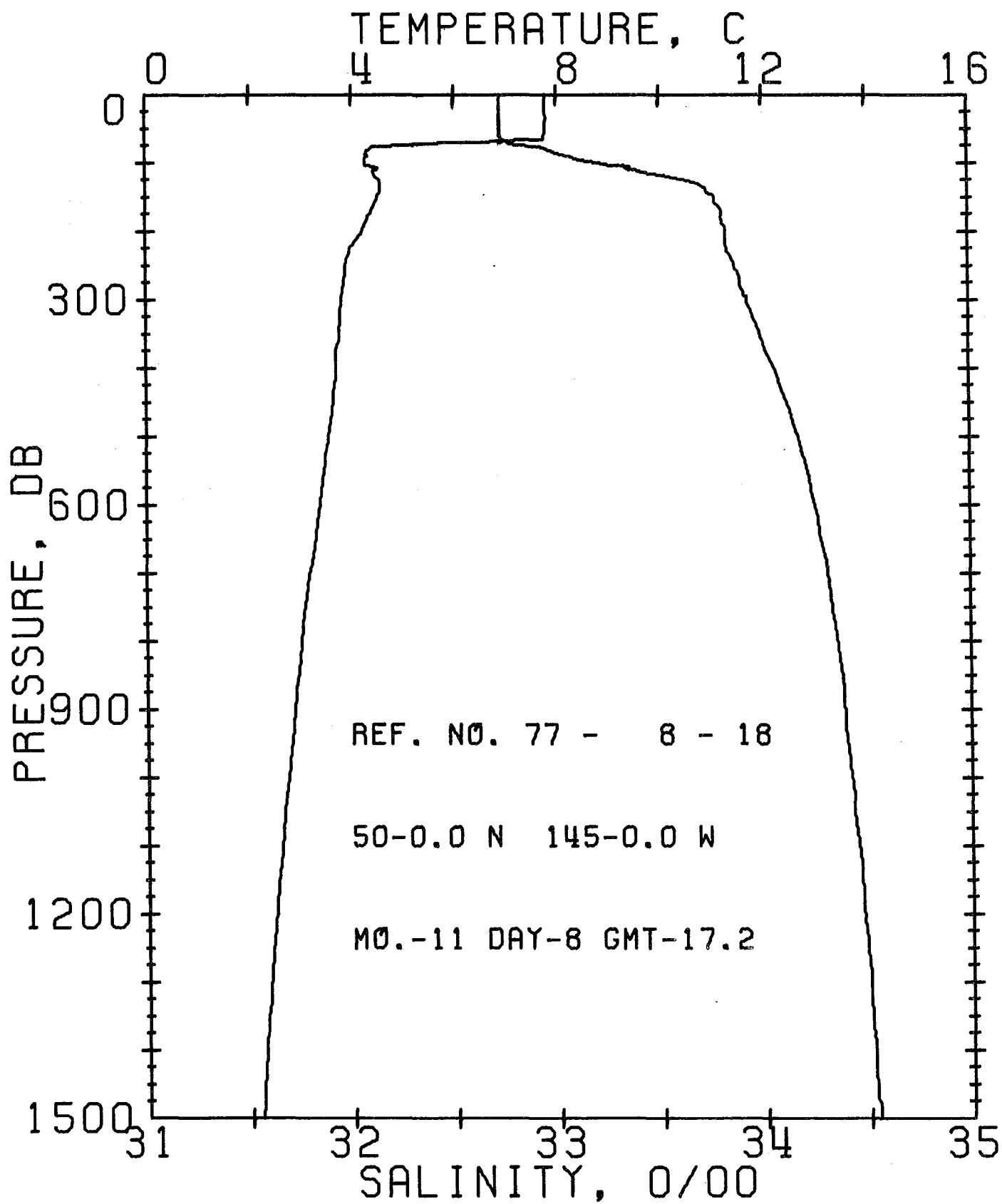
DATE 7/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 112 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	7.79	32.87	0	25.66	234.2	0.0	0.0	1479.
10	7.79	32.88	10	25.67	233.8	0.23	0.01	1480.
20	7.79	32.88	20	25.67	233.7	0.47	0.05	1480.
30	7.80	32.89	30	25.67	233.6	0.70	0.11	1480.
50	7.80	32.89	50	25.67	233.8	1.17	0.30	1480.
75	5.67	32.94	75	25.99	203.5	1.74	0.66	1472.
100	4.45	33.22	99	26.35	169.1	2.19	1.06	1468.
125	4.66	33.74	124	26.74	132.5	2.56	1.49	1470.
150	4.65	33.93	149	26.89	118.7	2.87	1.92	1471.
175	4.47	33.98	174	26.95	113.3	3.16	2.40	1470.
200	4.26	34.01	199	26.99	109.3	3.44	2.93	1470.
225	4.13	34.03	223	27.03	106.4	3.71	3.52	1470.
250	4.01	34.05	248	27.06	103.8	3.97	4.15	1470.
300	3.85	34.10	298	27.11	98.9	4.48	5.57	1470.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 18

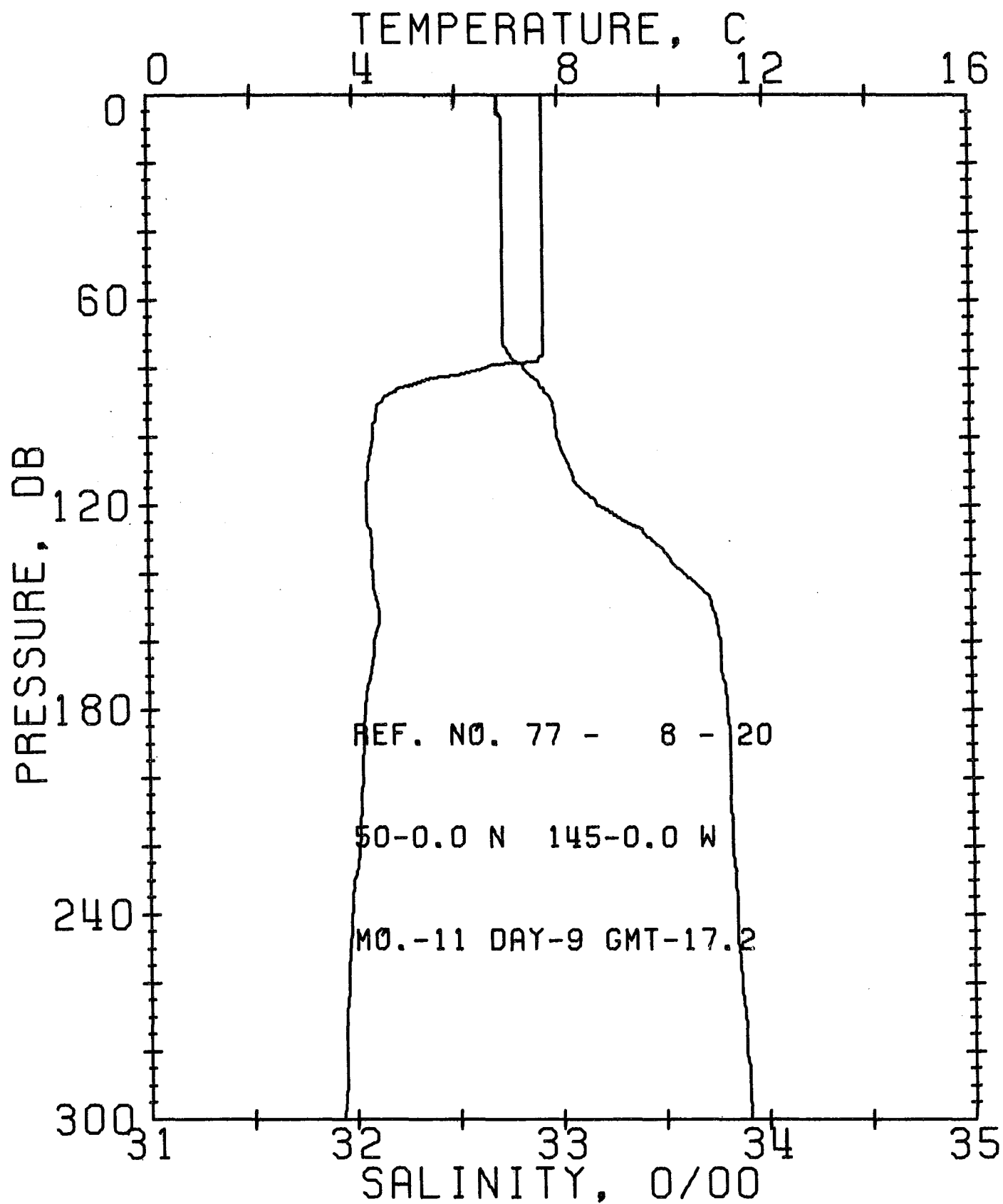
DATE 8/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 187 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	7.79	32.72	0	25.54	245.4	0.0	0.0	1479.
10	7.79	32.72	10	25.54	245.7	0.25	0.01	1479.
20	7.79	32.72	20	25.54	245.9	0.49	0.05	1479.
30	7.80	32.72	30	25.54	246.1	0.74	0.11	1480.
50	7.79	32.72	50	25.54	246.3	1.23	0.31	1480.
75	4.65	32.88	75	26.06	196.8	1.82	0.69	1468.
100	4.26	33.18	99	26.34	170.5	2.28	1.10	1467.
125	4.54	33.62	124	26.66	140.2	2.67	1.54	1469.
150	4.50	33.77	149	26.78	129.4	3.00	2.01	1470.
175	4.35	33.80	174	26.82	125.4	3.32	2.53	1470.
200	4.20	33.82	199	26.85	122.6	3.63	3.13	1469.
225	3.97	33.83	223	26.88	120.1	3.94	3.79	1469.
250	3.88	33.86	248	26.92	116.8	4.23	4.50	1469.
300	3.79	33.92	298	26.97	111.8	4.80	6.10	1469.
400	3.67	34.05	397	27.09	101.5	5.87	9.91	1471.
500	3.53	34.16	496	27.19	92.4	6.84	14.35	1472.
600	3.36	34.24	595	27.27	85.5	7.73	19.31	1473.
800	2.99	34.35	793	27.39	75.0	9.32	30.65	1475.
1000	2.72	34.42	990	27.47	68.2	10.75	43.75	1477.
1200	2.46	34.47	1188	27.54	62.5	12.06	58.35	1479.
1500	2.19	34.54	1483	27.61	56.1	13.83	82.66	1483.



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REFERENCE NO. 77- 8- 20

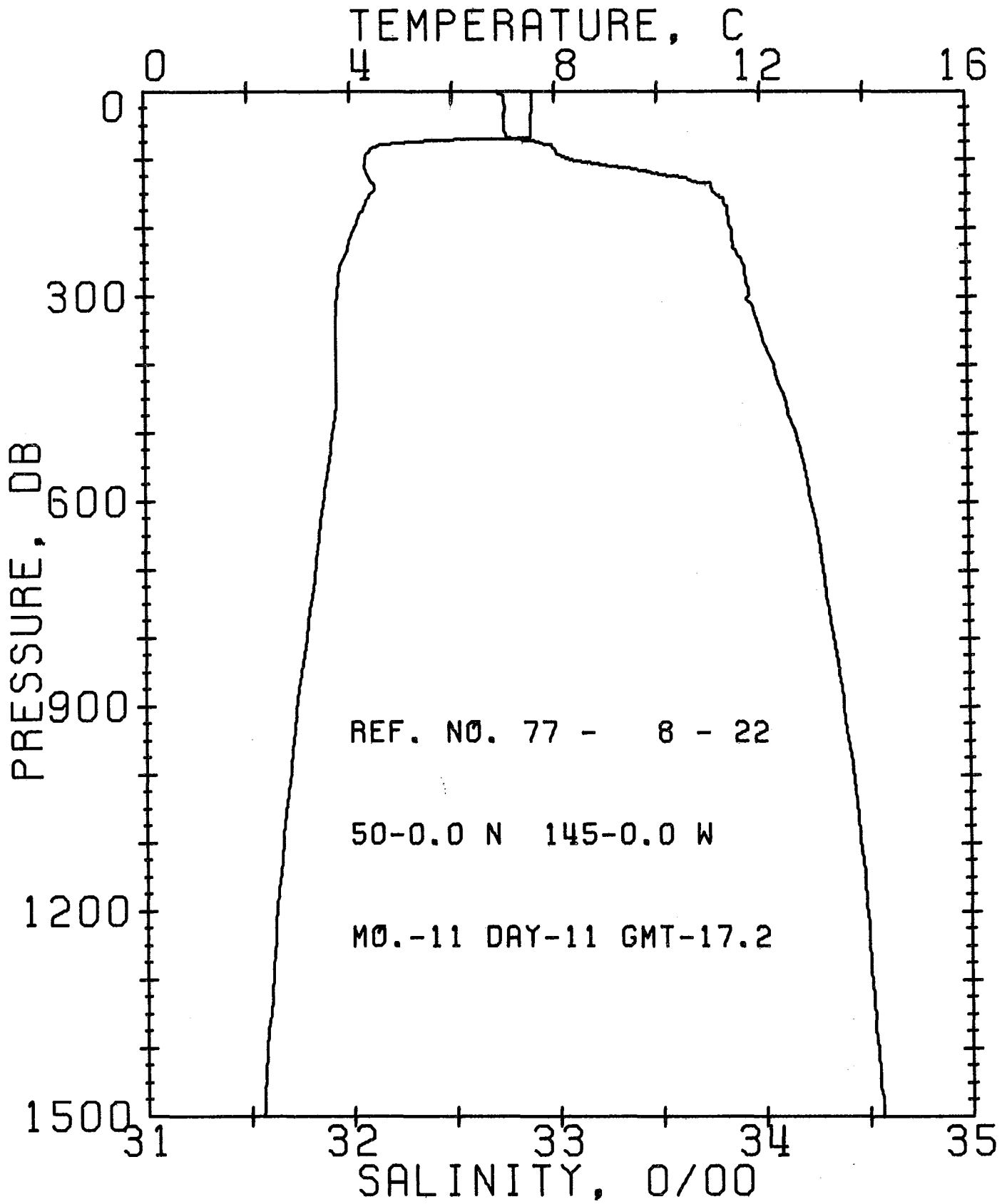
DATE 9/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 98 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	7.72	32.71	0	25.54	245.2	0.0	0.0	1479.
10	7.72	32.73	10	25.56	244.0	0.24	0.01	1479.
20	7.71	32.73	20	25.56	244.0	0.49	0.05	1479.
30	7.71	32.73	30	25.56	244.2	0.73	0.11	1479.
50	7.71	32.73	50	25.56	244.5	1.22	0.31	1480.
75	7.70	32.75	75	25.58	243.2	1.83	0.70	1480.
100	4.36	32.99	99	26.18	185.7	2.34	1.15	1467.
125	4.26	33.33	124	26.46	159.4	2.78	1.65	1468.
150	4.46	33.74	149	26.76	131.1	3.14	2.15	1470.
175	4.23	33.80	174	26.84	124.0	3.46	2.68	1469.
200	4.12	33.82	199	26.86	121.9	3.76	3.26	1469.
225	4.02	33.83	223	26.88	119.9	4.07	3.92	1469.
250	3.87	33.85	248	26.91	117.2	4.36	4.64	1469.
300	3.74	33.91	298	26.97	112.1	4.93	6.24	1469.



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REFERENCE NO. 77- 8- 22

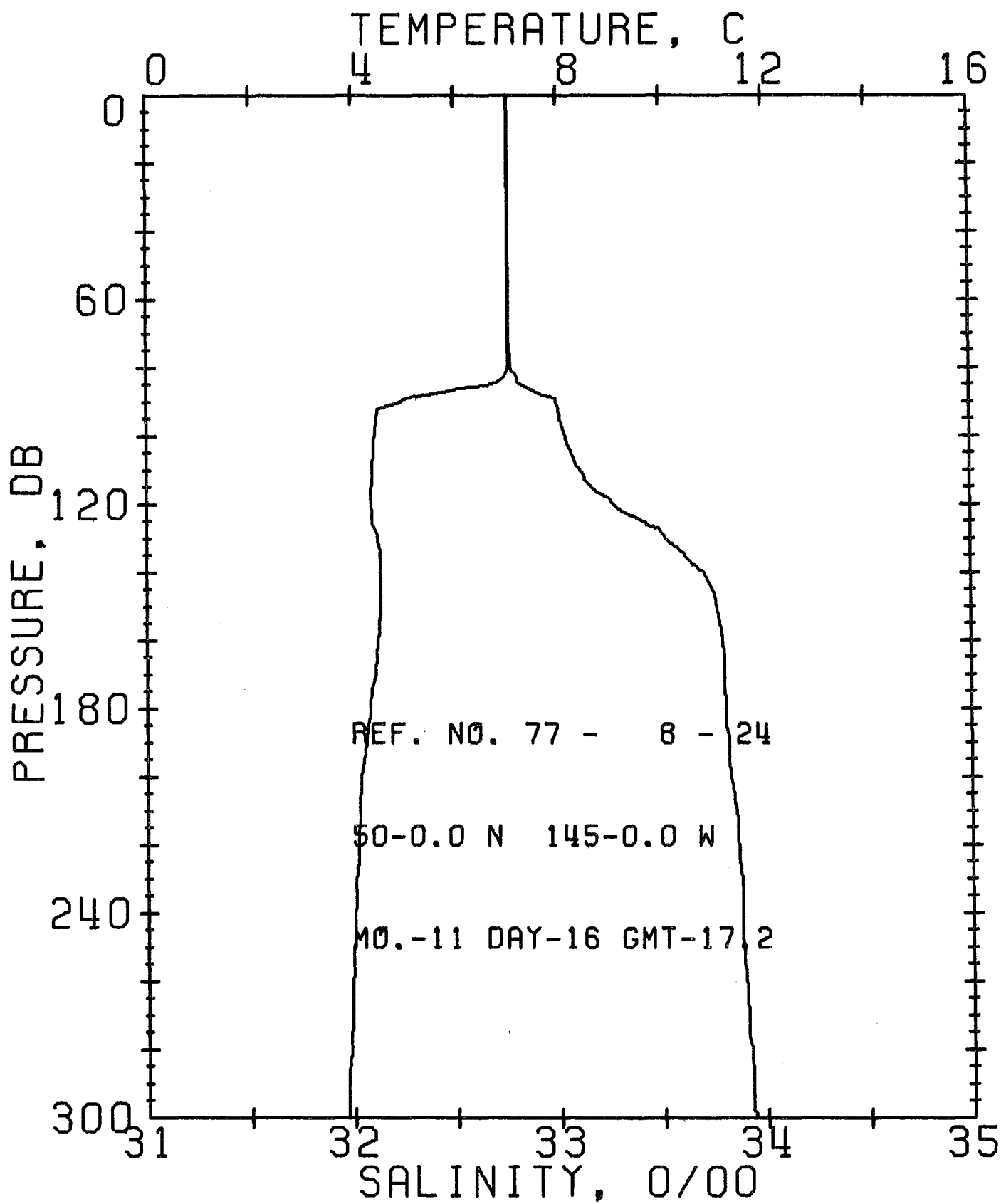
DATE 11/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 157 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	7.56	32.72	0	25.57	242.3	0.0	0.0	1478.
10	7.56	32.75	10	25.60	240.4	0.24	0.01	1478.
20	7.56	32.75	20	25.60	240.2	0.48	0.05	1479.
30	7.56	32.76	30	25.60	240.1	0.72	0.11	1479.
50	7.55	32.75	50	25.60	240.9	1.20	0.31	1479.
75	5.07	32.93	75	26.06	197.2	1.79	0.68	1470.
100	4.30	33.08	99	26.26	178.4	2.25	1.09	1467.
125	4.37	33.60	124	26.66	139.9	2.65	1.55	1469.
150	4.41	33.78	149	26.80	127.2	2.98	2.01	1469.
175	4.24	33.84	174	26.86	121.3	3.29	2.52	1469.
200	4.08	33.85	199	26.89	118.9	3.59	3.09	1469.
225	3.96	33.87	223	26.92	116.7	3.88	3.73	1469.
250	3.81	33.91	248	26.96	112.4	4.17	4.42	1469.
300	3.73	33.94	298	27.00	109.7	4.73	5.98	1469.
400	3.70	34.06	397	27.09	101.3	5.78	9.74	1471.
500	3.64	34.16	496	27.18	93.6	6.76	14.22	1472.
600	3.45	34.24	595	27.26	86.9	7.66	19.24	1473.
800	3.11	34.34	793	27.37	76.9	9.29	30.86	1475.
1000	2.79	34.43	990	27.48	68.0	10.73	44.06	1477.
1200	2.51	34.49	1188	27.55	61.6	12.02	58.52	1480.
1500	2.22	34.56	1483	27.63	54.9	13.77	82.49	1483.



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REFERENCE NO. 77- 8- 24

DATE 16/11/77

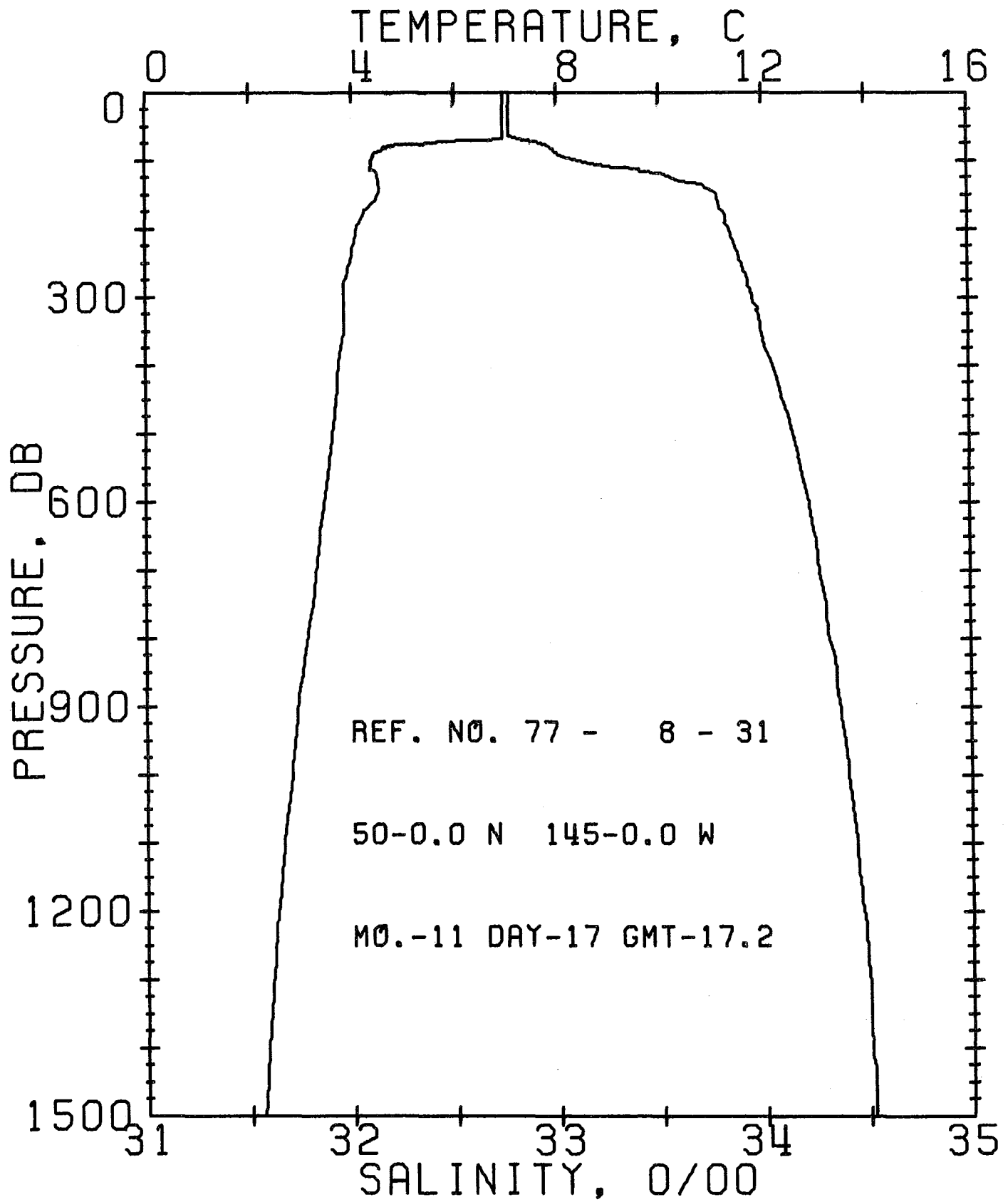
STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST

85 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	7.04	32.75	0	25.67	233.2	0.0	0.0	1476.
10	7.05	32.76	10	25.67	232.9	0.23	0.01	1475.
20	7.05	32.76	20	25.67	233.1	0.47	0.05	1477.
30	7.05	32.76	30	25.67	233.2	0.70	0.11	1477.
50	7.05	32.76	50	25.67	233.5	1.17	0.30	1477.
75	7.04	32.76	75	25.68	233.5	1.75	0.67	1478.
100	4.41	33.03	99	26.20	183.3	2.27	1.13	1468.
125	4.38	33.42	124	26.52	153.9	2.70	1.62	1468.
150	4.54	33.76	149	26.77	130.0	3.05	2.11	1470.
175	4.35	33.80	174	26.82	125.3	3.37	2.54	1470.
200	4.14	33.83	199	26.87	121.3	3.68	3.23	1469.
225	4.06	33.87	223	26.91	117.6	3.97	3.87	1469.
250	3.99	33.89	248	26.93	116.0	4.27	4.58	1469.
300	3.85	33.94	298	26.98	110.9	4.83	6.17	1470.



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REFERENCE NO. 77- 8- 31

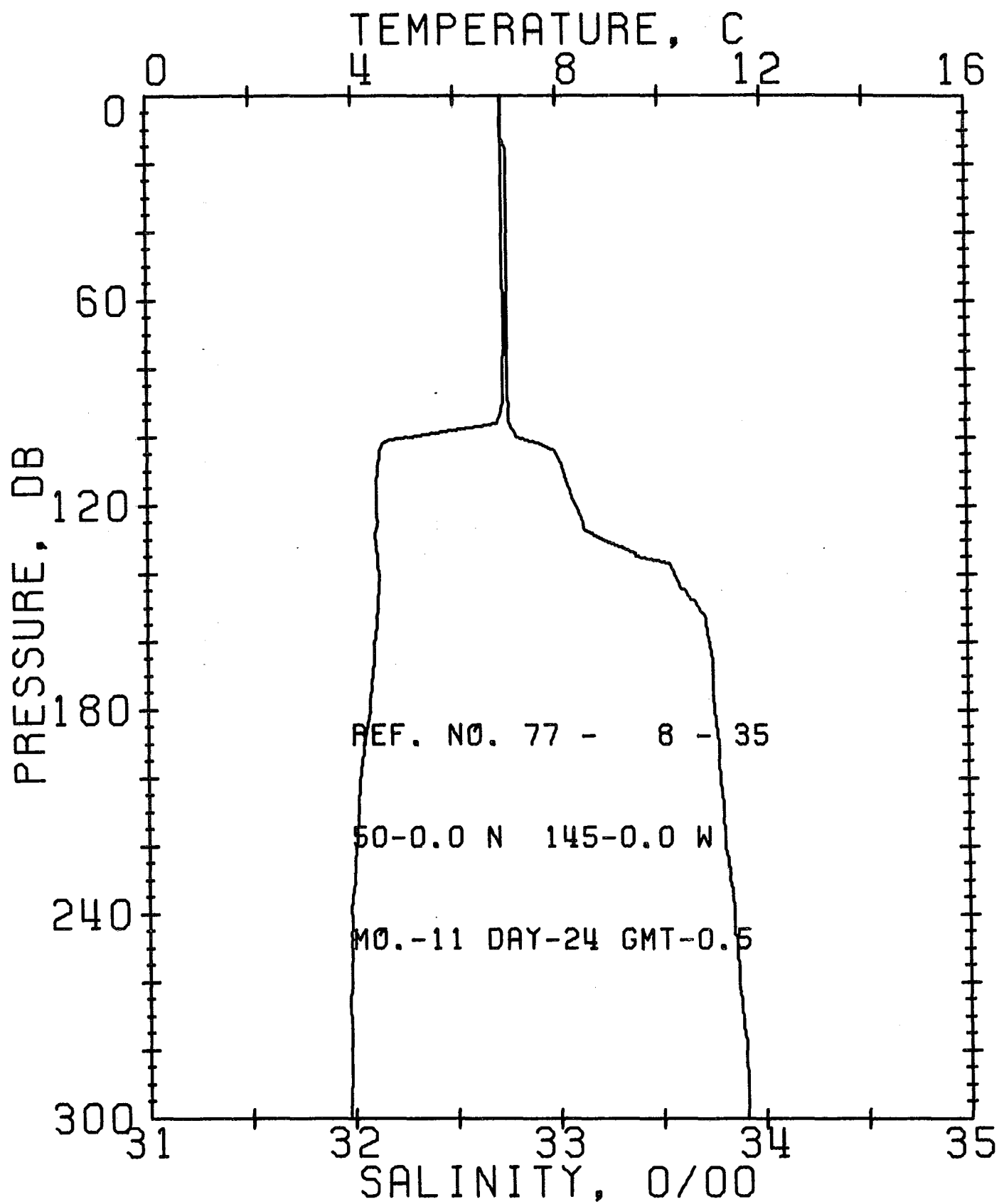
DATE 17/11/77

STATION P

POSITION 50- 0.0N, 145- 0.3W GMT 17.2

RESULTS OF STP CAST 172 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.96	32.77	0	25.69	230.7	0.0	0.0	1476.
10	6.97	32.77	10	25.69	231.2	0.23	0.01	1476.
20	6.97	32.77	20	25.69	231.3	0.46	0.05	1476.
30	6.97	32.77	30	25.69	231.5	0.69	0.11	1476.
50	6.96	32.77	50	25.69	231.6	1.16	0.29	1477.
75	5.28	32.94	75	26.04	199.1	1.72	0.65	1471.
100	4.37	33.10	99	26.26	177.7	2.19	1.07	1468.
125	4.52	33.56	124	26.61	144.9	2.59	1.53	1469.
150	4.50	33.78	149	26.79	128.7	2.93	2.00	1470.
175	4.24	33.80	174	26.84	124.0	3.24	2.52	1469.
200	4.03	33.84	199	26.88	120.1	3.55	3.10	1469.
225	4.01	33.87	223	26.91	117.4	3.85	3.75	1469.
250	3.95	33.90	248	26.94	114.6	4.14	4.45	1469.
300	3.85	33.95	298	26.99	110.2	4.70	6.02	1470.
400	3.73	34.05	397	27.08	102.3	5.76	9.32	1471.
500	3.61	34.14	496	27.17	94.8	6.75	14.34	1472.
600	3.44	34.22	595	27.25	88.2	7.67	19.46	1473.
800	3.11	34.31	793	27.35	78.9	9.33	31.33	1475.
1000	2.79	34.40	990	27.45	70.4	10.81	44.86	1477.
1200	2.51	34.47	1188	27.53	63.6	12.14	59.79	1479.
1500	2.25	34.52	1483	27.59	58.2	13.95	84.61	1483.



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REFERENCE NO. 77- 8- 35

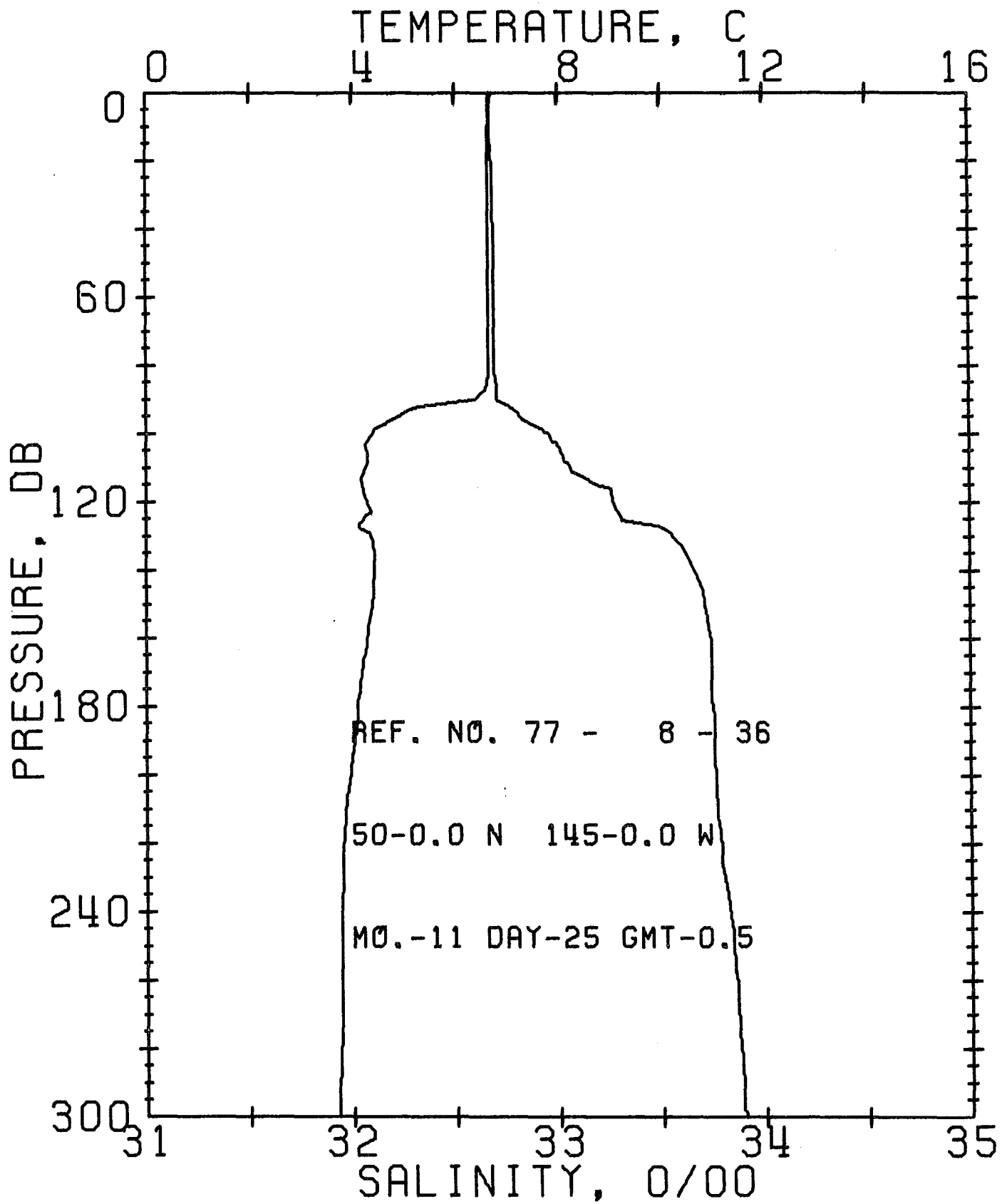
DATE 24/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 0.5

RESULTS OF STP CAST 94 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.94	32.73	0	25.67	233.5	0.0	0.0	1476.
10	6.94	32.73	10	25.67	233.8	0.23	0.01	1476.
20	6.94	32.75	20	25.68	232.4	0.47	0.05	1476.
30	6.94	32.75	30	25.68	232.5	0.70	0.11	1476.
50	6.94	32.75	50	25.68	232.8	1.16	0.30	1477.
75	6.95	32.75	75	25.68	233.2	1.75	0.67	1477.
100	5.09	32.80	99	25.95	207.7	2.32	1.18	1470.
125	4.47	33.12	124	26.27	177.3	2.78	1.71	1468.
150	4.47	33.69	149	26.72	134.8	3.17	2.24	1470.
175	4.34	33.75	174	26.78	129.1	3.49	2.78	1469.
200	4.12	33.79	199	26.84	124.2	3.81	3.39	1469.
225	4.01	33.82	223	26.87	120.7	4.12	4.05	1469.
250	3.93	33.86	248	26.91	117.3	4.41	4.77	1469.
300	3.90	33.91	298	26.95	113.6	4.99	6.38	1470.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 36

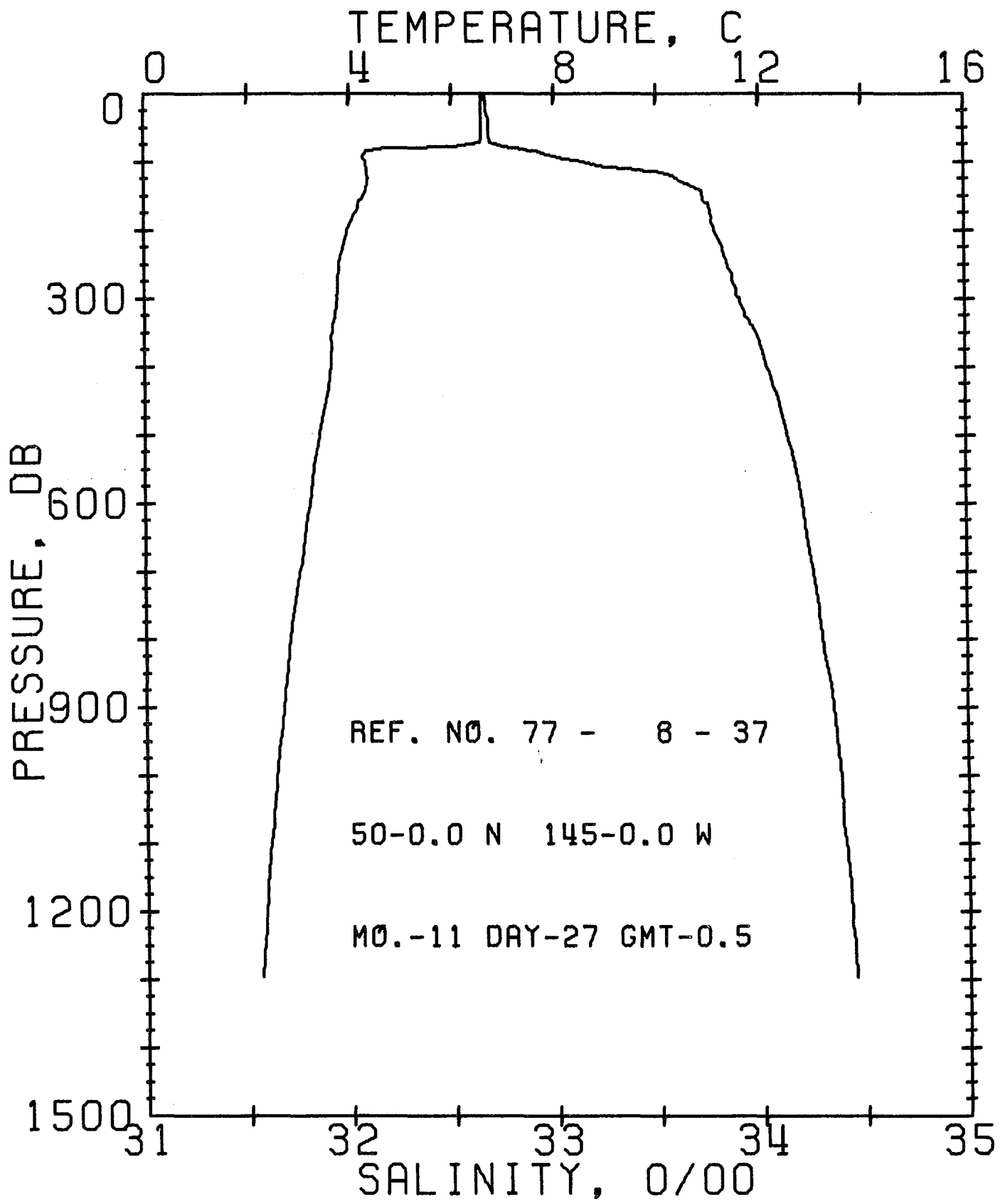
DATE 25/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 0.5

RESULTS OF STP CAST 90 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.66	32.68	0	25.66	233.7	0.0	0.0	1475.
10	6.65	32.67	10	25.66	234.6	0.23	0.01	1475.
20	6.65	32.68	20	25.66	234.2	0.47	0.05	1475.
30	6.65	32.68	30	25.66	234.2	0.70	0.11	1475.
50	6.65	32.69	50	25.67	233.6	1.17	0.30	1475.
75	6.64	32.69	75	25.67	233.8	1.75	0.67	1476.
100	4.36	32.95	99	26.15	188.8	2.31	1.16	1467.
125	4.18	33.31	124	26.45	160.1	2.75	1.66	1467.
150	4.36	33.71	149	26.75	132.2	3.09	2.15	1469.
175	4.13	33.74	174	26.80	127.8	3.42	2.68	1469.
200	3.93	33.76	199	26.83	124.5	3.73	3.28	1468.
225	3.79	33.79	223	26.87	121.0	4.04	3.95	1468.
250	3.77	33.84	248	26.91	117.1	4.34	4.67	1468.
300	3.70	33.90	298	26.97	112.4	4.91	6.28	1469.



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REFERENCE NO. 77- 8- 37

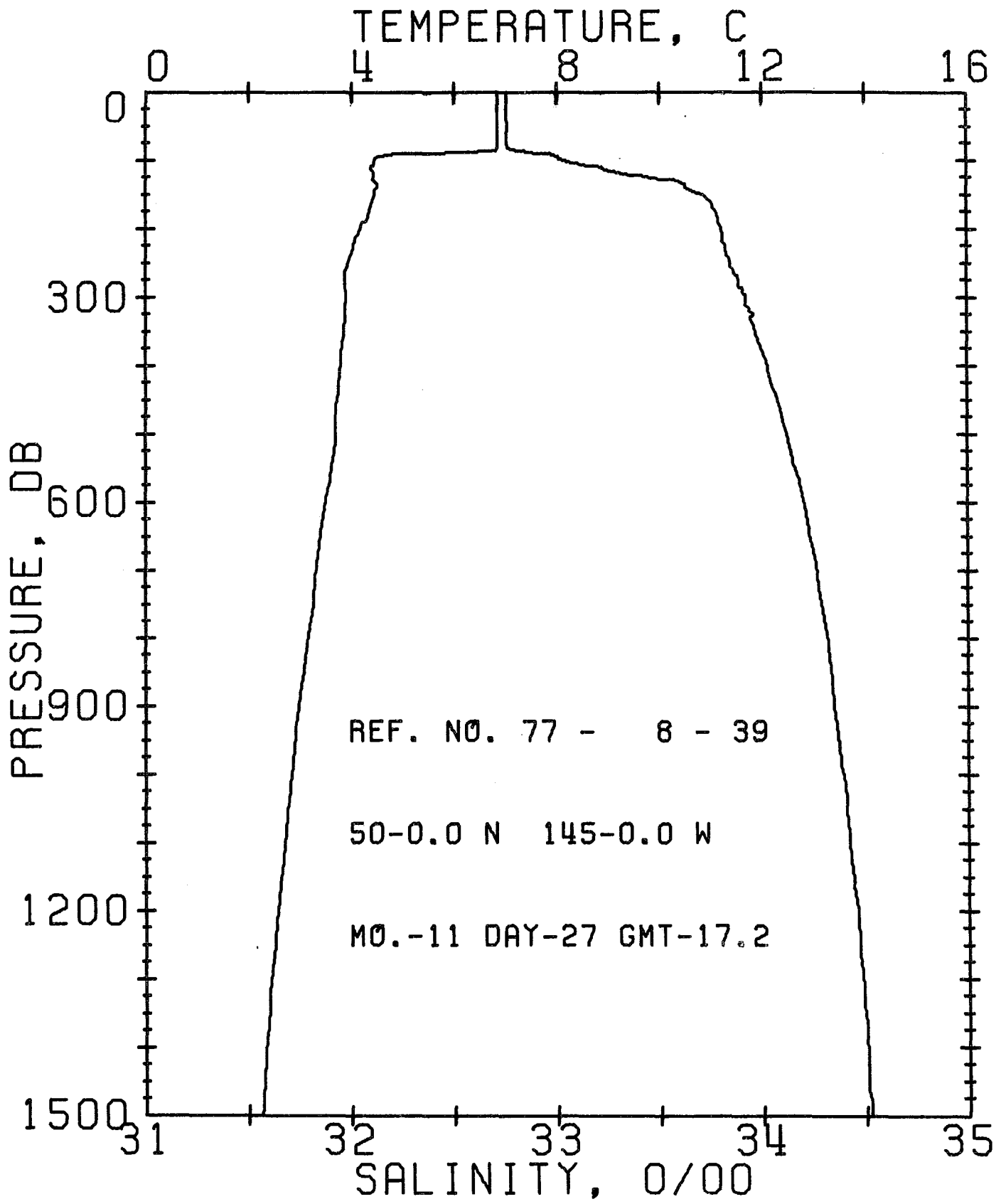
DATE 27/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 0.5

RESULTS OF STP CAST 135 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.59	32.66	0	25.66	234.3	0.0	0.0	1474.
10	6.58	32.66	10	25.66	234.5	0.23	0.01	1474.
20	6.58	32.67	20	25.67	233.8	0.47	0.05	1475.
30	6.58	32.67	30	25.67	233.8	0.70	0.11	1475.
50	6.58	32.68	50	25.67	233.5	1.17	0.30	1475.
75	6.34	32.72	75	25.74	227.9	1.75	0.67	1475.
100	4.31	33.12	99	26.29	175.2	2.24	1.10	1467.
125	4.35	33.60	124	26.66	139.9	2.63	1.54	1468.
150	4.26	33.72	149	26.77	130.2	2.96	2.01	1469.
175	4.09	33.76	174	26.82	125.9	3.28	2.54	1468.
200	3.95	33.78	199	26.85	123.1	3.59	3.14	1468.
225	3.86	33.82	223	26.89	119.6	3.90	3.79	1468.
250	3.80	33.84	248	26.91	117.5	4.19	4.51	1469.
300	3.75	33.90	298	26.96	112.9	4.77	6.12	1469.
400	3.62	34.03	397	27.08	102.2	5.84	9.93	1470.
500	3.39	34.13	496	27.18	93.6	6.81	14.40	1471.
600	3.19	34.20	595	27.25	87.0	7.71	19.43	1472.
800	2.80	34.29	793	27.36	77.1	9.35	31.08	1474.
1000	2.53	34.38	990	27.46	69.2	10.81	44.41	1476.
1200	2.30	34.43	1188	27.51	64.1	12.14	59.33	1478.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 39

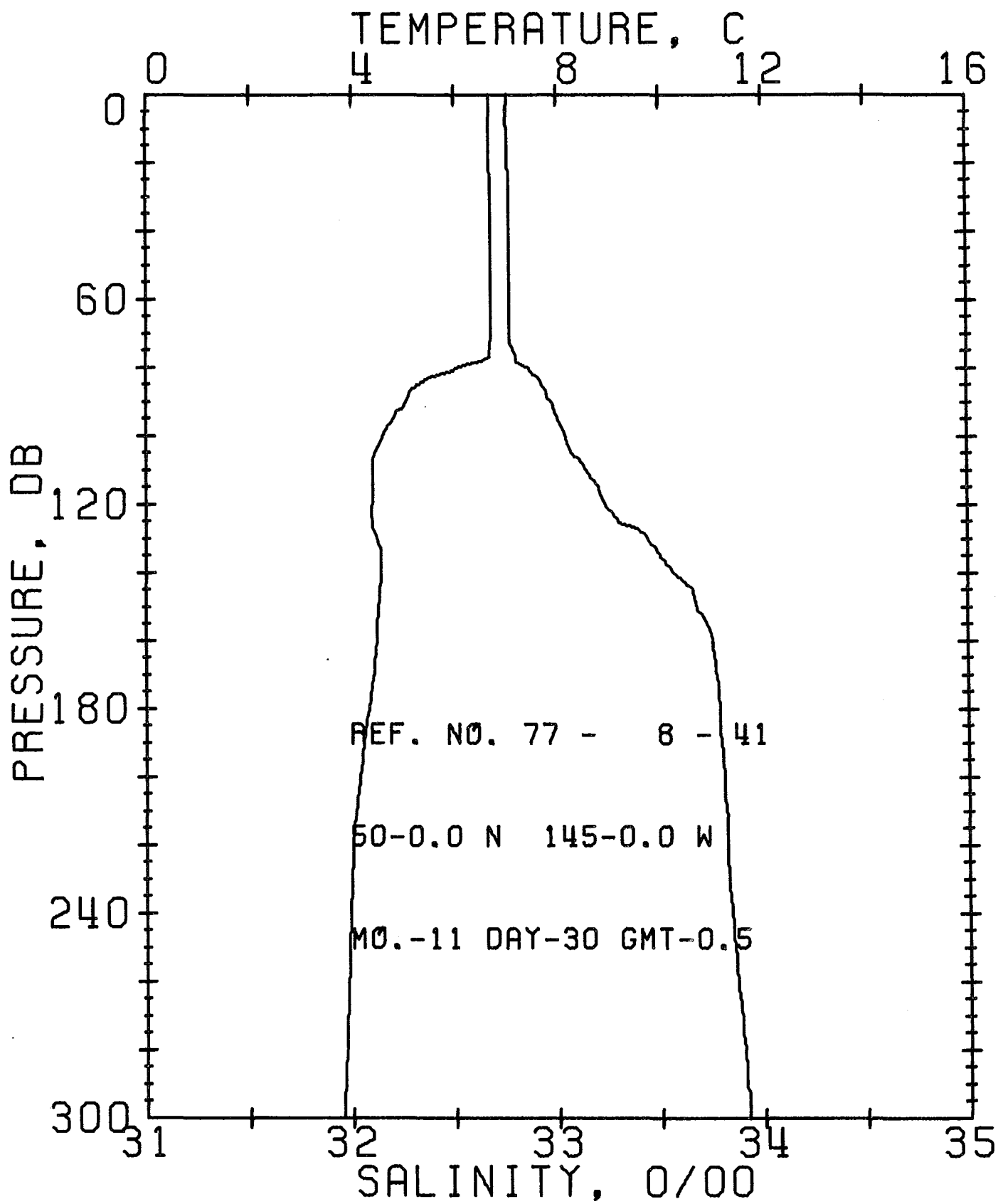
DATE 27/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 159 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.82	32.75	0	25.70	230.4	0.0	0.0	1475.
10	6.86	32.75	10	25.69	231.2	0.23	0.01	1476.
20	6.85	32.75	20	25.69	231.3	0.46	0.05	1476.
30	6.86	32.75	30	25.69	231.5	0.69	0.11	1476.
50	6.86	32.76	50	25.70	231.1	1.16	0.29	1476.
75	6.86	32.75	75	25.69	232.1	1.74	0.66	1477.
100	4.45	33.03	99	26.20	183.7	2.27	1.13	1468.
125	4.41	33.44	124	26.53	152.5	2.69	1.62	1469.
150	4.44	33.70	149	26.74	133.4	3.04	2.11	1469.
175	4.33	33.77	174	26.80	127.4	3.36	2.64	1469.
200	4.16	33.80	199	26.84	123.8	3.68	3.24	1469.
225	4.02	33.82	223	26.87	121.0	3.98	3.91	1469.
250	3.92	33.85	248	26.90	118.3	4.28	4.63	1469.
300	3.89	33.92	298	26.96	112.8	4.86	6.25	1470.
400	3.77	34.02	397	27.06	104.5	5.95	10.13	1471.
500	3.67	34.12	496	27.14	97.1	6.96	14.75	1472.
600	3.49	34.20	596	27.23	89.7	7.90	19.99	1473.
800	3.14	34.32	793	27.35	79.1	9.58	31.99	1475.
1000	2.83	34.39	990	27.44	71.6	11.09	45.78	1477.
1200	2.56	34.46	1188	27.52	64.6	12.45	61.03	1480.
1500	2.25	34.52	1483	27.59	58.2	14.28	86.18	1483.



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REFERENCE NO. 77- 8- 41

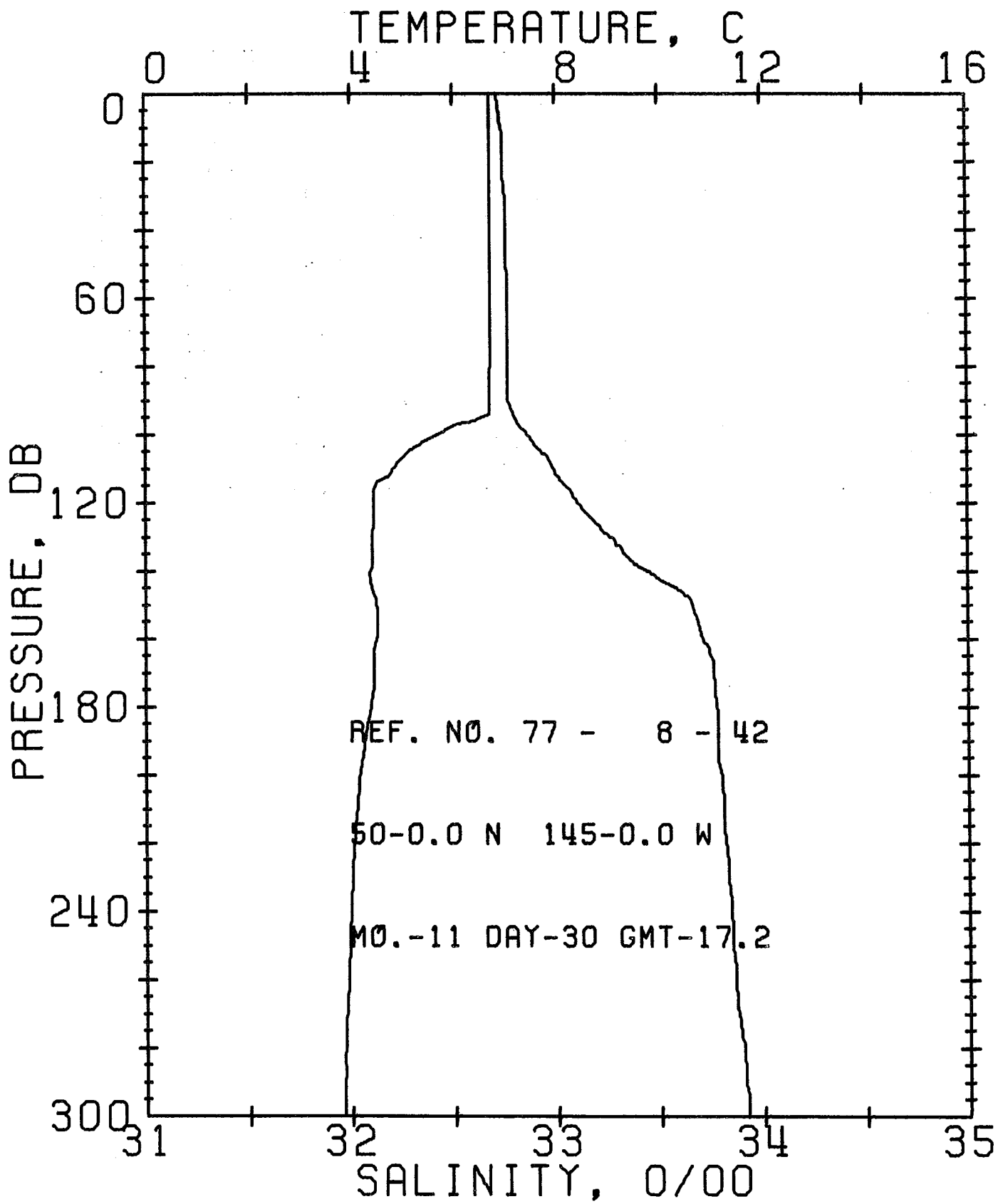
DATE 30/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 0.5

RESULTS OF STP CAST 96 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.70	32.76	0	25.72	228.2	0.0	0.0	1475.
10	6.70	32.76	10	25.72	228.8	0.23	0.01	1475.
20	6.70	32.76	20	25.72	228.5	0.46	0.05	1475.
30	6.71	32.77	30	25.73	228.2	0.69	0.10	1475.
50	6.71	32.77	50	25.73	228.4	1.14	0.29	1475.
75	6.69	32.78	75	25.74	227.4	1.71	0.65	1476.
100	4.59	33.04	99	26.19	184.4	2.22	1.10	1468.
125	4.40	33.30	124	26.42	163.1	2.65	1.60	1468.
150	4.51	33.68	149	26.70	136.3	3.02	2.11	1470.
175	4.35	33.78	174	26.81	127.0	3.34	2.65	1470.
200	4.14	33.81	199	26.85	122.8	3.66	3.25	1469.
225	3.99	33.82	223	26.88	120.6	3.96	3.90	1469.
250	3.92	33.85	248	26.91	117.7	4.26	4.62	1469.
300	3.81	33.92	298	26.97	112.0	4.83	6.23	1469.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 42

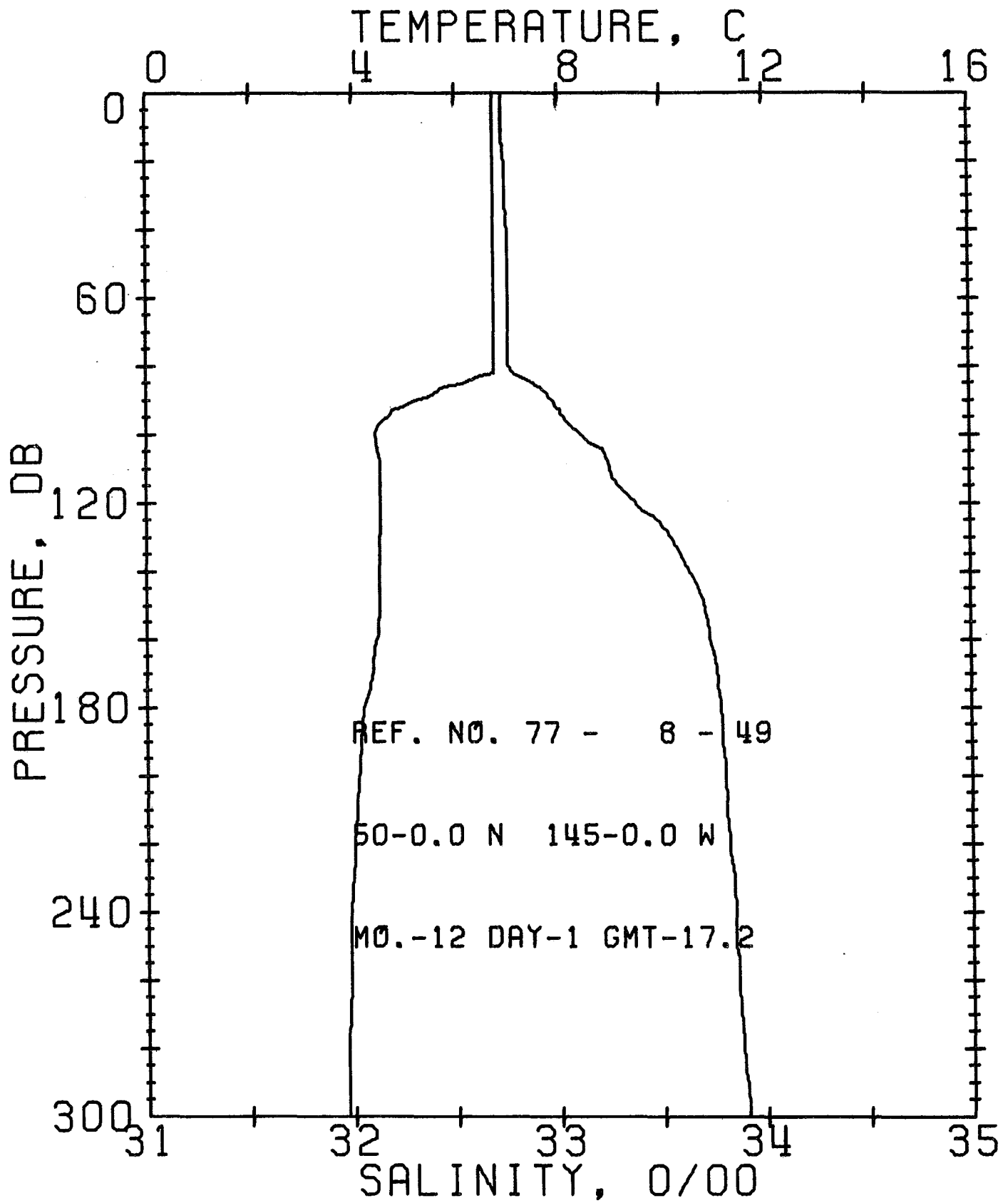
DATE 30/11/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 94 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.73	32.71	0	25.68	232.3	0.0	0.0	1475.
10	6.72	32.73	10	25.70	230.7	0.23	0.01	1475.
20	6.72	32.74	20	25.70	230.4	0.46	0.05	1475.
30	6.72	32.75	30	25.71	230.0	0.69	0.11	1475.
50	6.72	32.75	50	25.71	229.8	1.15	0.29	1476.
75	6.71	32.76	75	25.72	229.5	1.73	0.66	1476.
100	5.70	32.85	99	25.92	210.5	2.29	1.16	1473.
125	4.42	33.18	124	26.32	172.6	2.76	1.70	1468.
150	4.49	33.66	149	26.69	137.3	3.15	2.24	1470.
175	4.41	33.77	174	26.79	128.4	3.48	2.79	1470.
200	4.15	33.80	199	26.84	123.9	3.80	3.39	1469.
225	4.02	33.83	223	26.88	120.6	4.10	4.06	1469.
250	3.94	33.85	248	26.90	118.2	4.40	4.78	1469.
300	3.83	33.92	298	26.97	112.2	4.98	6.39	1470.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 49

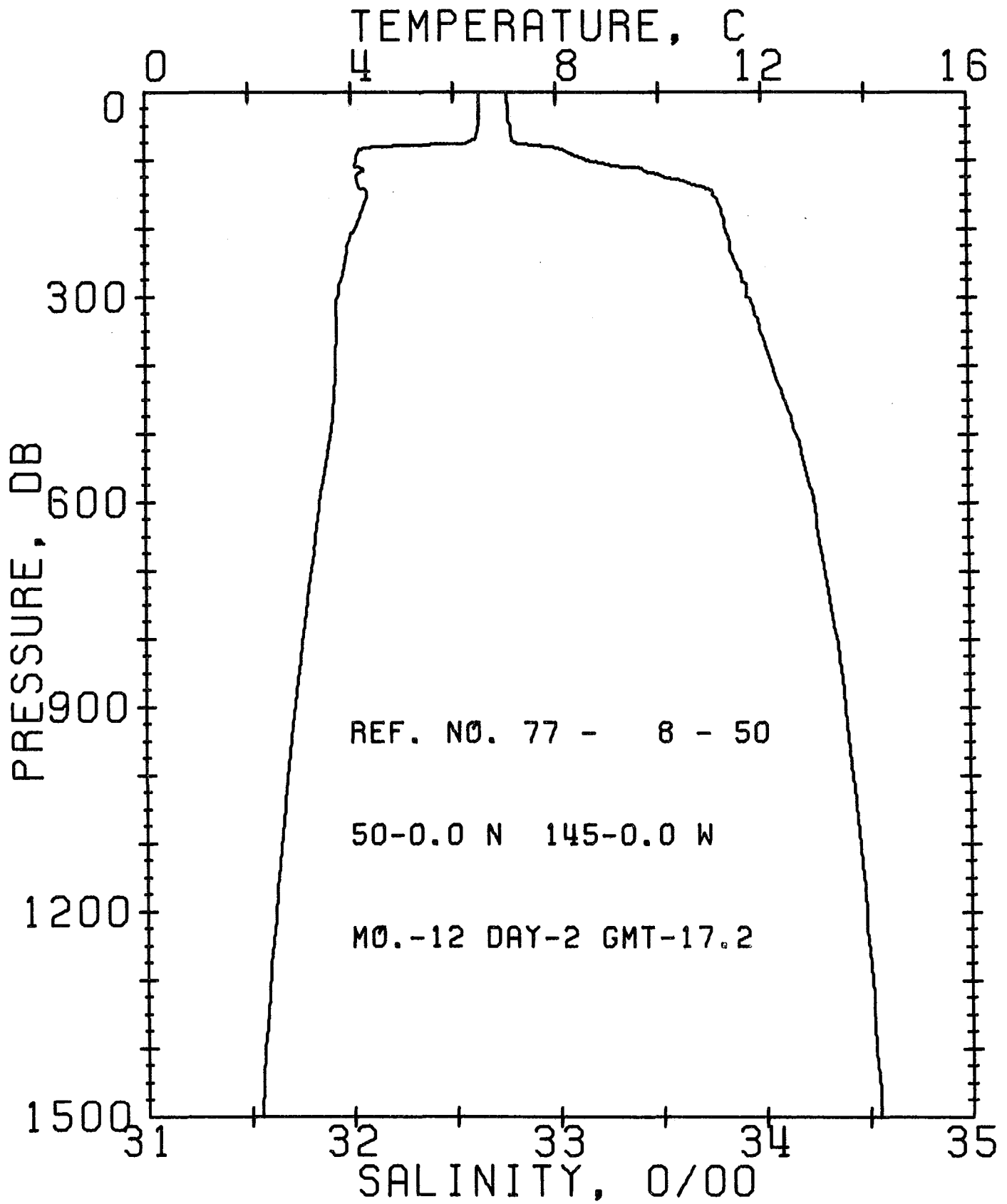
DATE 1/12/77

STATION p

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 84 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.74	32.73	0	25.69	230.9	0.0	0.0	1475.
10	6.74	32.73	10	25.69	231.3	0.23	0.01	1475.
20	6.75	32.74	20	25.70	230.9	0.46	0.05	1475.
30	6.75	32.74	30	25.70	230.9	0.69	0.11	1476.
50	6.75	32.75	50	25.71	230.4	1.15	0.29	1476.
75	6.75	32.75	75	25.71	230.8	1.73	0.66	1476.
100	4.43	33.11	99	26.26	177.7	2.25	1.12	1468.
125	4.54	33.47	124	26.54	151.4	2.66	1.59	1469.
150	4.51	33.70	149	26.73	134.2	3.01	2.09	1470.
175	4.29	33.77	174	26.80	127.0	3.34	2.63	1469.
200	4.09	33.80	199	26.85	123.0	3.65	3.22	1469.
225	3.99	33.83	223	26.88	120.3	3.96	3.88	1469.
250	3.92	33.85	248	26.91	118.0	4.25	4.60	1469.
300	3.89	33.91	298	26.96	113.5	4.83	6.22	1470.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 50

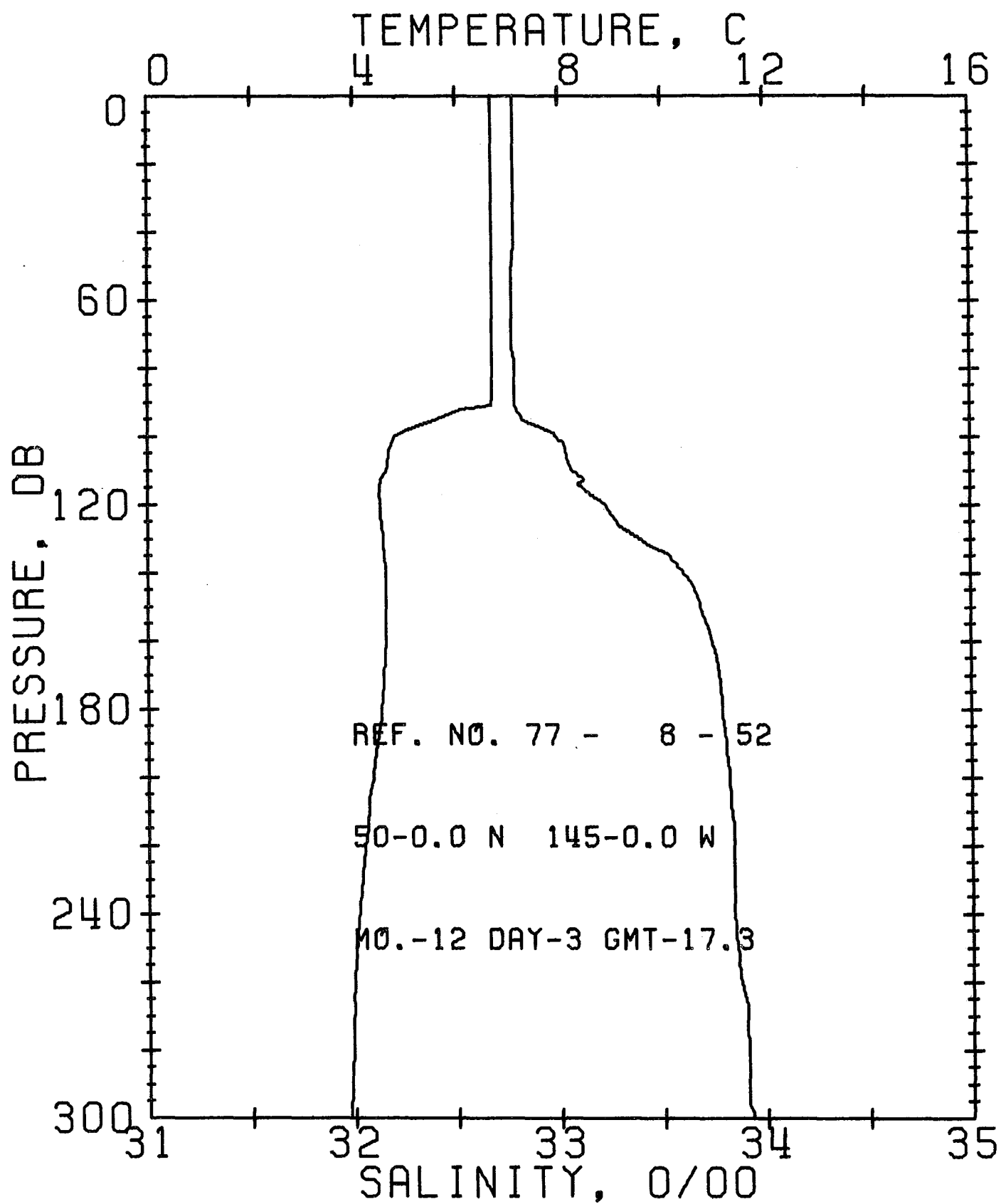
DATE 2/12/77

STATION P

POSITION 50- 0.0N, 145- 0.0W GMT 17.2

RESULTS OF STP CAST 157 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.50	32.76	0	25.75	225.7	0.0	0.0	1474.
10	6.50	32.76	10	25.75	226.0	0.23	0.01	1474.
20	6.51	32.77	20	25.75	225.5	0.45	0.05	1475.
30	6.51	32.77	30	25.75	225.6	0.68	0.10	1475.
50	6.48	32.78	50	25.76	225.1	1.13	0.29	1475.
75	6.24	32.82	75	25.83	219.2	1.69	0.64	1474.
100	4.10	33.14	99	26.33	171.6	2.15	1.05	1466.
125	4.12	33.54	124	26.64	142.2	2.54	1.50	1467.
150	4.33	33.77	149	26.80	127.3	2.87	1.96	1469.
175	4.20	33.81	174	26.84	123.4	3.18	2.48	1469.
200	4.07	33.82	199	26.87	121.2	3.49	3.06	1469.
225	3.93	33.85	223	26.90	117.8	3.78	3.71	1469.
250	3.87	33.87	248	26.93	116.0	4.08	4.42	1469.
300	3.73	33.93	298	26.99	110.5	4.64	5.99	1469.
400	3.68	34.04	397	27.08	102.1	5.70	9.76	1471.
500	3.58	34.16	496	27.19	92.9	6.67	14.23	1472.
600	3.37	34.25	595	27.28	85.1	7.56	19.21	1473.
800	3.03	34.36	793	27.39	74.9	9.17	30.64	1475.
1000	2.73	34.43	990	27.48	67.8	10.59	43.67	1477.
1200	2.48	34.49	1188	27.55	61.6	11.89	58.13	1479.
1500	2.18	34.55	1483	27.62	55.2	13.63	82.04	1483.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 52

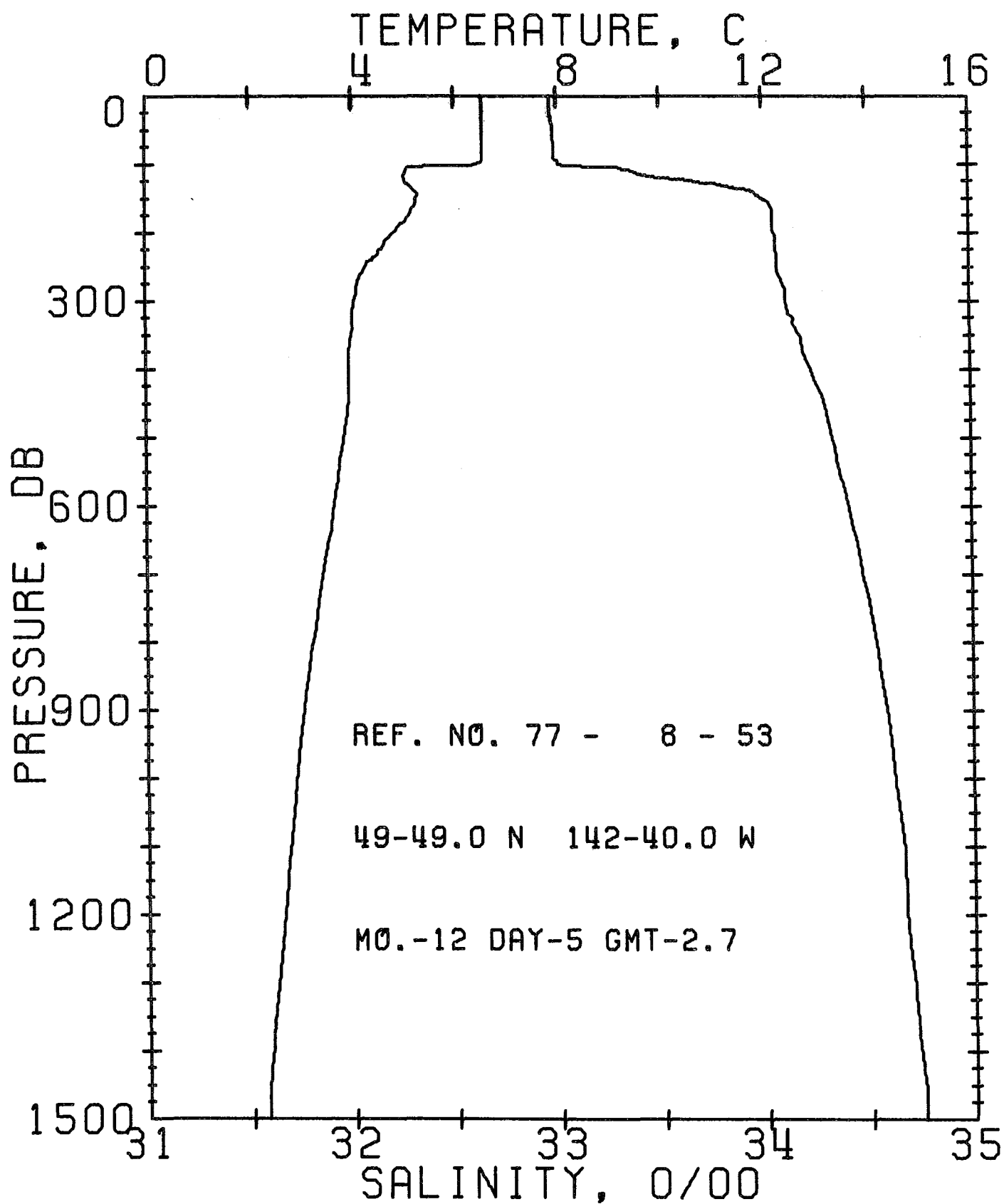
DATE 3/12/77

STATION p

POSITION 50- 0.0N, 145- 0.0W GMT 17.3

RESULTS OF STP CAST 79 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.68	32.78	0	25.74	226.4	0.0	0.0	1475.
10	6.68	32.78	10	25.74	226.7	0.23	0.01	1475.
20	6.68	32.78	20	25.74	226.9	0.45	0.05	1475.
30	6.68	32.78	30	25.74	227.0	0.68	0.10	1475.
50	6.68	32.77	50	25.73	227.8	1.13	0.29	1476.
75	6.69	32.77	75	25.73	228.3	1.71	0.65	1476.
100	4.78	32.98	99	26.12	190.9	2.26	1.14	1469.
125	4.53	33.28	124	26.39	166.2	2.70	1.65	1469.
150	4.62	33.68	149	26.70	137.1	3.07	2.17	1470.
175	4.55	33.78	174	26.79	128.9	3.40	2.72	1470.
200	4.34	33.82	199	26.84	124.1	3.72	3.32	1470.
225	4.17	33.84	223	26.87	121.0	4.03	3.98	1470.
250	4.00	33.86	248	26.90	118.4	4.33	4.71	1469.
300	3.90	33.93	298	26.97	112.2	4.90	6.32	1470.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 53

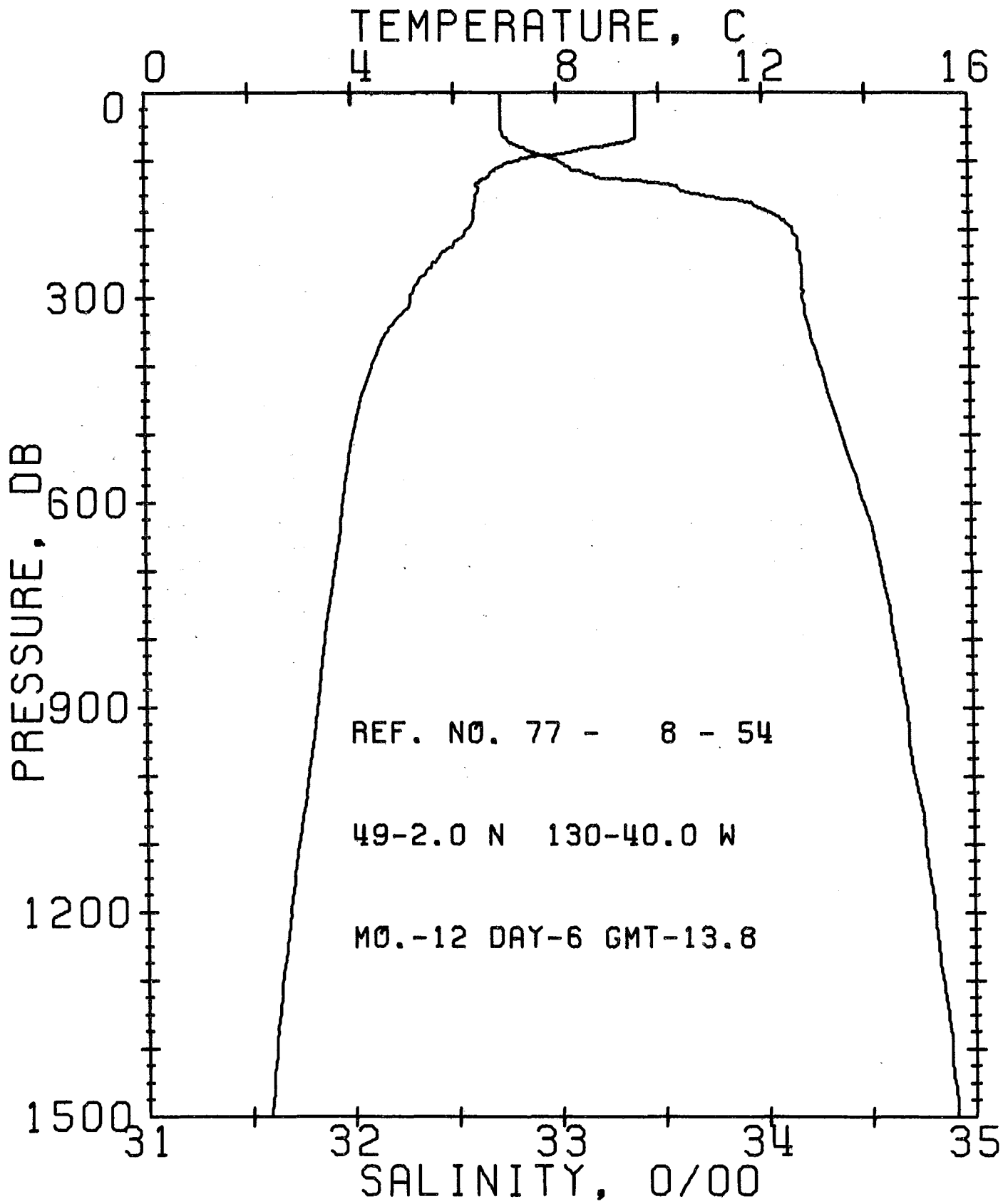
DATE 5/12/77

STATION 12

POSITION 49-49.0N, 142-40.0W GMI 2.7

RESULTS OF STP CAST 138 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. EN	SOUND
0	6.53	32.97	0	25.91	210.4	0.0	0.0	1475.
10	6.55	32.97	10	25.90	211.0	0.21	0.01	1475.
20	6.56	32.97	20	25.90	211.2	0.42	0.04	1475.
30	6.56	32.97	30	25.91	211.1	0.63	0.10	1475.
50	6.56	32.98	50	25.91	210.9	1.06	0.27	1475.
75	6.56	32.99	75	25.92	210.5	1.58	0.50	1476.
100	6.45	33.01	99	25.95	207.9	2.11	1.07	1476.
125	5.06	33.65	124	26.63	143.6	2.52	1.55	1472.
150	5.26	33.99	149	26.87	120.6	2.85	2.00	1473.
175	5.10	34.05	174	26.94	114.9	3.14	2.48	1473.
200	4.79	34.05	199	26.97	111.6	3.42	3.02	1472.
225	4.54	34.06	223	27.01	108.5	3.70	3.62	1472.
250	4.24	34.07	248	27.05	104.8	3.96	4.26	1471.
300	4.02	34.11	298	27.10	100.0	4.47	5.69	1471.
400	3.92	34.23	397	27.20	91.1	5.43	9.10	1472.
500	3.83	34.33	496	27.29	83.3	6.30	13.08	1473.
600	3.61	34.40	595	27.38	76.1	7.10	17.55	1474.
800	3.20	34.53	793	27.52	63.7	8.49	27.44	1475.
1000	2.85	34.62	990	27.62	54.7	9.67	38.20	1478.
1200	2.60	34.67	1188	27.68	49.4	10.70	49.75	1480.
1500	2.28	34.75	1483	27.77	41.6	12.05	68.24	1484.



OFFSHORE OCEANOGRAPHY GROUP

REFERENCE NO. 77- 8- 54

DATE 5/12/77

STATION 6

POSITION 49- 2.0N, 130-40.0W GMT 13.8

RESULTS OF STP CAST 158 POINTS TAKEN FROM ANALOG TRACE

PRESS	TEMP	SAL	DEPTH	SIGMA T	SVA	DELTA D	POT. FN	SOUND
0	9.54	32.73	0	25.28	270.0	0.0	0.0	1485.
10	9.54	32.73	10	25.28	270.4	0.27	0.01	1486.
20	9.54	32.73	20	25.28	270.6	0.54	0.06	1486.
30	9.54	32.73	30	25.28	270.8	0.81	0.12	1486.
50	9.55	32.73	50	25.28	271.2	1.35	0.35	1487.
75	9.16	32.79	75	25.39	261.3	2.03	0.77	1486.
100	7.25	33.01	99	25.84	218.2	2.63	1.31	1479.
125	6.63	33.21	124	26.09	195.2	3.15	1.90	1477.
150	6.42	33.71	149	26.50	156.2	3.57	2.49	1478.
175	6.38	34.04	174	26.77	131.0	3.92	3.07	1478.
200	6.26	34.14	199	26.86	122.5	4.24	3.66	1478.
225	5.96	34.17	223	26.93	116.9	4.54	4.32	1477.
250	5.57	34.18	248	26.98	111.5	4.82	5.01	1476.
300	5.14	34.19	298	27.04	106.4	5.35	6.53	1475.
400	4.37	34.27	397	27.19	92.5	5.35	10.07	1474.
500	4.01	34.38	496	27.31	81.5	7.23	14.04	1474.
600	3.80	34.48	595	27.42	72.8	3.00	18.36	1475.
800	3.43	34.62	793	27.57	59.6	0.31	27.67	1477.
1000	3.11	34.71	990	27.67	50.6	10.41	37.72	1479.
1200	2.75	34.81	1188	27.78	41.1	11.32	47.90	1481.
1500	2.34	34.91	1483	27.90	30.5	12.38	62.44	1484.

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Surface Salinity and Temperature Observations

(P-77-8)

SURFACE SALINITY AND TEMPERATURE OBSERVATIONS
CRUISE REFERENCE NUMBER 77- 8

DATE/TIME				SALINITY	TEMP	LONGITUDE
YR	MO	DY	GMT	0/00	C	WEST
77	10	21	1645	31.480		123-30
77	10	21	1815	32.143		124- 0
77	10	21	1950	32.164		124-30
77	10	21	2110	32.374		125- 0
77	10	21	2240	32.211	9.2	125-33
77	10	22	20	32.109	12.8	126- 0
77	10	22	230	32.154	13.7	126-40
77	10	22	815	32.089	12.8	128-40
77	10	22	1140	32.483	13.9	129-40
77	10	22	1510	32.513	13.8	130-40
77	10	22	1925	32.184	13.6	131-40
77	10	22	2220	32.374	13.3	132-40
77	10	23	120	32.328	13.3	133-40
77	10	23	410	32.252	12.9	134-40
77	10	23	715	32.329	12.7	135-40
77	10	23	1010	32.492	12.7	136-40
77	10	23	1330	32.534	12.2	137-40
77	10	23	1710	32.580	11.8	138-40
77	10	23	2010	32.577	11.3	139-40
77	10	23	2315	32.611	10.9	140-40
77	10	24	245	32.657		141-40
77	10	24	600	32.661		142-40
77	10	25	0	32.699		ON STATION
77	10	26	0	32.696	9.0	ON STATION
77	10	26	0	32.723	8.9	ON STATION
77	10	26	250	32.737		ON STATION
77	10	26	515	32.764		144-16
77	10	26	810	32.724		143-13
77	10	26	1450	32.665	10.0	140-26
77	10	26	1750	32.633	9.7	139-15
77	10	26	2100	32.588	11.0	138- 9
77	10	28	0	32.544	11.0	137- 3
77	10	28	300	32.535	11.5	135-51
77	10	28	545	32.350	11.5	134-50
77	10	28	845	32.376	11.5	133-37
77	10	28	1350	32.279	12.3	131-49
77	10	28	1705	32.531	12.7	131-10
77	10	28	1955	32.528		129-30
77	10	28	2300	32.194	12.2	128-28
77	10	29	145	32.168	11.7	127-21
77	10	29	445	32.145	12.2	126-16
77	10	29	800	32.122	11.8	125-14
77	10	29	2045	31.992		123-30
77	10	30	225	32.196		125-33

SURFACE SALINITY AND TEMPERATURE OBSERVATIONS
 CRUISE REFERENCE NUMBER 77- 8

DATE/TIME				SALINITY	TEMP	LONGITUDE
YR	MO	DAY	GMT	0/00	C	WEST
77	10	30	400	32.175		126- 0
77	10	30	530	32.234		126-40
77	10	30	1035	32.164		127-40
77	10	30	1820	32.297		128-40
77	10	31	210	32.486		130-40
77	10	31	930	32.430		132-40
77	10	31	1550	32.335		134-40
77	10	31	2230	32.516		136-40
77	11	1	435	32.618		138-40
77	11	1	1145	32.613		140-40
77	11	1	2305	32.688		142-40
77	11	3	0	32.718	8.0	ON STATION
77	11	4	0	32.712	7.9	ON STATION
77	11	5	0	32.714	8.0	ON STATION
77	11	6	0	32.727	7.8	ON STATION
77	11	7	0	32.724	7.9	ON STATION
77	11	8	0	32.708	7.8	ON STATION
77	11	9	0	32.726	7.7	ON STATION
77	11	10	0	32.722	7.6	ON STATION
77	11	11	0	32.755	7.3	ON STATION
77	11	12	0	32.725	7.6	ON STATION
77	11	13	0	32.727	7.7	ON STATION
77	11	14	0	32.728		ON STATION
77	11	15	0	32.741	7.2	ON STATION
77	11	16	0	32.734	7.3	ON STATION
77	11	17	0	32.760	7.3	ON STATION
77	11	18	0	32.766	7.0	ON STATION
77	11	19	0	32.759	7.0	ON STATION
77	11	20	0	32.763	7.0	ON STATION
77	11	21	0	32.769	6.8	ON STATION
77	11	22	0	32.777	7.0	ON STATION
77	11	23	0	32.762	6.9	ON STATION
77	11	24	0	32.754	6.9	ON STATION
77	11	26	0	32.766	6.9	ON STATION
77	11	26	0	32.761	7.0	ON STATION
77	11	27	0	32.761	7.0	ON STATION
77	11	28	0	32.750	6.9	ON STATION
77	11	29	0	32.749	6.8	ON STATION
77	11	30	0	32.754	6.7	ON STATION
77	12	1	0	32.730	6.8	ON STATION
77	12	2	0	32.748	6.7	ON STATION
77	12	3	0	32.748	6.6	ON STATION
77	12	4	0	32.762	6.4	ON STATION
77	12	4	2300	32.740		143-40

SURFACE SALINITY AND TEMPERATURE OBSERVATIONS
CRUISE REFERENCE NUMBER 77- 8

DATE/TIME				SALINITY	TEMP	LONGITUDE
YR	MO	DAY	GMT	0/00	C	WEST
77	12	5	240	32.764	6.6	142-40
77	12	5	710	32.679		141-40
77	12	5	1015	32.640		140-40
77	12	5	1300	32.658	7.7	139-40
77	12	5	1705	32.587		138-40
77	12	5	2100	32.547	8.7	137-40
77	12	5	2340	32.354	8.4	136-40
77	12	6	215	32.381	8.3	135-40
77	12	6	500	32.477	8.3	134-40
77	12	6	745	32.482	8.6	133-40
77	12	6	1010	32.455	9.3	132-40
77	12	6	1245	32.393	8.8	131-40
77	12	6	1350	32.468	9.7	130-40
77	12	6	2015	32.459	9.4	129-40
77	12	6	2355	32.374	9.7	128-40
77	12	7	145	32.362	9.8	127-40
77	12	7	415	32.292	9.3	126-40
77	12	7	610	32.234	9.5	126- 0
77	12	7	720	31.047	9.7	125-33
77	12	7	850	31.860		125- 0
77	12	7	1025	29.572		124-30
77	12	7	1245	30.681		124- 0

b DENOTES SALINITY SAMPLE TAKEN FROM A
BUCKET. ALL OTHER SAMPLES TAKEN FROM
THE SEAWATER LOOP

List of Omissions from Data

Hydrographic Data:

Consec. #	Depth (m)	Temp.	Sal.	O ₂	Notes			Comments
					1.	2.	3.	
6	239		*					No sample
	239			*				No sample
	4064			*	*			

Notes (MacNeill, 1977):

1. The data is suspect because of a reversal of gradient by $>.01$ ‰ (salinity) or $>.08$ ml/l (oxygen).
2. The data is deleted because of very irregular data values (usually a mis-tripping or leaking bottle if both oxygen and salinity are irregular).
3. The data is deleted because duplicate samples at a depth were not within $.01$ ‰ (salinity) or $.08$ ml/l (oxygen).

STD Data:

Consecutive Number	Comments
4, 5 and 7	Salinity omitted; off scale

Note: Consecutive numbers 12-17, 25-30 and 43-48 are part of the MILE program and not included in this report.