Ocean Chemistry Data Report: Alice Arm, Observatory Inlet; Part 3, September - October 1982

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1984

Canadian Data Report of Hydrography and Ocean Sciences No. 17 (Part 3)

Fisheries and Oceans Pêches et Océans

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Canadian Data Report Of Hydrography and Ocean Sciences

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Les établissements des Sciences et Levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports depuis décembre 1981. Vous trouverez dans l'index des publications du volume 38 du *Journal canadien des sciences halieutiques et aquatiques*, la liste de ces publications ainsi que le dernier numéro paru dans chaque catégorie. La nouvelle série a commencé avec la publication du Rapport n° 1 en janvier 1982.

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OCEAN CHEMISTRY DATA REPORT : ALICE ARM, OBSERVATORY INLET; PART 3, SEPTEMBER - OCTOBER 1982

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Cat. No. Fs 97-16/17 ISSN 0711-6721

Correct citation for this publication:

Macdonald, R.W., M.C. O'Brien, D.M. Macdonald. 1984. Ocean Chemistry Data Report : Alice Arm, Observatory Inlet; Part 3, September - October 1982. Can. Data Rep. Hydrogr. Ocean Sci: 17(part 3 of 3), 110pp.

CONTENTS

ABSTRACT

Macdonald, R.W., M.C. O'Brien, D.M. Macdonald, 1984. Ocean Chemistry Data Report: Alice Arm, Observatory Inlet; Part 3, September-October 1982. Can. Data Rep. Hydrogr. Ocean Sci. 17 (Part 3), 110 pp.

The preliminary data from a cruise (OC-82-IS-003, Sept/Oct 1982) to Alice Arm, B.C., are reported here. Included are measurements of salinity, temperature, % transmittance, oxygen, chlorophyll a, silicate, nitrate, phosphate, particulates (filtration and Coulter Counter) and amounts of material caught in sediment traps.

Key words: Alice Arm, Data, Oceanographic

RESUME

Macdonald, R.W., M.C. O'Brien, D.M. Macdonald, 1984. Ocean Chemistry Data Report: Alice Arm, Observatory Inlet; Part 3, September-October 1982. Can. Data Rep. Hydrogr. Ocean Sci. 17 (Part 3), 110 pp.

Les données préliminaires obtenues lors d'une expedition (OC-82-IS-003, sept. -oct. 1982) au bras Alice (C.-B.) sont présentées. Celles-ci comprennent des mesures de la salinité, de la température et du pourcentage de transmission et des dosages d'oxygène, chlorophylle a, silicate, nitrate, phosphate, matières particulaires (filtration et numération Coulter) et de matériaux recueillis dans des pièges à sédiments.

Mots clés: Bras Alice, données, océanographie

ACKNOWLEDGEMENTS

We thank D. Paton and M. Paryniuk for assisting in sample collection and processing during the cruise. We are indebted to the Officers and Crew of C.S.S. Vector for their complete cooperation and assistance. The manuscript was prepared by C. Priestley, and some of the figures by P. Frank.

INTRODUCTION

As part of an investigation of the transport and fate of mine tailings disposed in a coastal fjord, Ocean Chemistry conducted two cruises to Alice Arm, Hastings Arm and Observatory Inlet. During these cruises the water column and sediments were sampled, and sediment traps were deployed and recovered in Alice Arm. During another two cruises organized by Coastal Zone Oceanography, we deployed and recovered sediment traps in Alice Arm. Additionally, nutrient samples were collected during two other Coastal Zone Oceanography cruises. The background and preliminary data from these cruises are reported in three parts as follows:

Part 1. December 1981, CZO Alice Arm Cruise 02 (nutrients)
January 1982, CZO Alice Arm Cruise 03 (nutrients)
June 1982, CZO Alice Arm Cruise 05 (nutrients, sediment traps)
January 1983, CZO Alice Arm Cruise 08 (sediment traps)

Part 2. March 1982, Ocean Chemistry Cruise OC-82-IS-001 (nutrients, particulates, trace metals, sediment traps)

Part 3. September-October 1982, Ocean Chemistry Cruise OC-82-IS-003 (nutrients, particulates, sediment traps, sediment cores)

Reported here in Part 3 are the sampling methods and preliminary data from the September-October 1982 cruise. We do not report results for all determinations which have been or will be performed on the material caught in sediment traps or from coring. Rather this data report is intended to be a source document for the interpretation of the more specialized data as they become available. To that end we include detailed information on sampling locations and times, sampling technique and analytical methods for the data presented here. Furthermore, we list the results of such water column measurements as salinity, temperature, dissolved oxygen, nutrients (reactive silicate, orthophosphate and nitrate plus nitrite), particulate concentration and size distribution, and the mass of material caught in the sediment traps.

SAMPLING STATIONS

We have used the same sampling stations and terminology as used by Coastal Zone Oceanography. To avoid conflict, we placed our sediment traps near but not exactly at four of the regular stations in Alice Arm; ST-1 (AA-1), ST-2 (AA-2), ST-3 (AA-3), ST-4 (AA-4). Stations are shown in Figure 1(a) with exact coordinates listed in the tables. For the CTD-%T casts we have used the same grid and terminology as used by Environmental Protection Service. Figure 1(b) shows the sampling grid. The arrangement of sediment traps in longitudinal section is shown in Figure 2.

SAMPLING METHODS

Sea Water

Samples for particulates were collected in 5 L PVC Niskin bottles in which the neoprene rubber closure spring was replaced with a teflon coated stainless steel spring. Bottles were lowered on a standard hydrowire. Once tripped and recovered, the bottles were subsampled as follows.

Using plastic gloves, two small aliquots were drawn into an acid cleaned 5 L carboy to rinse it. With the aid of a large acid cleaned polyethylene funnel, the remaining contents of the 5 L Niskin bottles were drained into the 5 L carboy by opening the bottom cap and allowing the sea water to pour out. The contents of the carboy were then subsampled (with gentle mixing to keep particles suspended) as soon as possible in the ship's lab for particulates (filtration and Coulter Counter), chlorophyll a, microscopic examination and salinity.

Samples for oxygen, nutrients, salinity and temperature were taken during a second cast with 1.7 L PVC Niskin bottles armed with paired reversing thermometers. The same set of depths was used for both casts. Samples were taken as follows:

1. Oxygen samples were drawn first into 125 mL calibrated oxygen bottles which were pickled immediately and sealed (Ocean Chemistry Methods, 1976).

2. Salinity samples were drawn into 260 mL glass bottles.

3. Nutrient samples were drawn into 2 glass and 2 plastic screw-cap test-tubes (~15 mL) after 3 rinses. Nutrient samples were immediately transferred to a chest freezer where they were frozen in an upright position and later transferred to zip-lok bags which were stored inside a dark green plastic bag.

4. Temperature was measured with paired reversing thermometers read twice to the nearest 0.01C°.

Subsampling of 5 L Carboy

The exact methods of subsampling and sample handlings are identical to those described in Part 2. Salinity samples were drawn as described above. Comparison of salinity measurements made on the 5 L carboy and those determined from the 1.7 L Niskins (generally collected one half to two hours apart) showed that for the deep water the pooled standard deviation was $s_p = \pm 0.01$ (n = 17). The variance increased monotonically as depth decreased; at 100 and 75 m $s_p = \pm 0.03$ (n = 14), at 25-50 m $s_p = \pm 0.05$ (n = 16) and at 5 m $s_p = \pm 0.13$ (n = 8). We believe this can be explained as follows. In the deep water, where gradients and temporal variation in salinity are low we obtain variation inherent in the method (i.e. ± 0.01). As one approaches the surface, vertical and horizontal water motions cause salinity changes within a time period of hours and therefore cause the observed increase in variance.

Sediments

Sediments were collected with a Benthos gravity corer (118 kg). The corer was used without the barrel, the plastic tube (inside diameter 6.8 cm) being connected directly to the fin/weight assembly with a plastic adapter and stainless steel hose clamps. A one-way valve (Benthos) was attached to the top of the tube to help hold the core during recovery. We did not find it necessary to use a core cutter or catcher and were able to obtain a less disturbed core without these. The corer was allowed to hit bottom at a descent rate of 0.5 ms^{-1}. Cores were capped immediately, labelled and wrapped in Al foil. They were stored upright on deck until returned to the shore laboratory where they were kept in a dark cooler (4°C) in the upright position. Cores were extruded and cut using a specially designed extruder (Kemp et al, 1971), and the core sections were stored frozen in Whirl-Pak bags, until analyses.

Sediment Traps

The design and characteristics, and method of deployment are fully described in Part 1. Here we note only the aspects which are pertinent to this cruise.

As before, the sediment traps were placed in paired configuration, one of each pair (a side) being poisoned with sodium azide. Both sides contained a dense solution (5% NaCl) in the sample cup. Concentration of azide and methods of handling are given in Part 1.

Subsampling of Sediment Traps

After recovery, the traps were closed with their plastic lids and stored in wooden boxes on the deck. The trap contents were allowed to settle overnight before subsampling. Subsampling was carried out in the ship's laboratory (Oct. 4-6) inside specially constructed enclosures (using plastic sheeting) which were ventilated with filtered air. Trap contents were handled by personnel wearing one piece plastic lab overalls, hair caps and plastic gloves. Trap contents were first transferred to 1 L acid cleaned polybottles using some of the clear water from above the cup for rinses. The polybottles were placed in a dark cooler at 4°C until they could be completely subsampled. The contents of the polybottles were subjected to a scheme similar to that described in detail in Part 1. After determining total volume and sieving the contents of the polybottle through a 333 μm sieve;

1. a sample was taken for chlorophyll *a* (see Part 1)

2. a sample was taken for microscopy (see Part 1)

3. material from the a side (poisoned with NaN_3) for all depths from Station ST-1, ST-2, and ST-4 (except 150 m) and from both a and b sides from all depths at ST-3 was passed through a 64 μm sieve. The 64-333 μm material was washed off the sieve with pH 8 Mill-Q water, and approximately

one fifth (by volume) was decanted for POC, PON determination, filtered through a GF/C filter which was rinsed, folded, wrapped in Al foil and stored frozen. The remaining material was filtered through an acid cleaned, pre-weighed, 0.4 μm, 47 mm nuclepore filter. This was stored frozen in a petri-slide and returned to the lab for dry weight and metal determinations.

The less than 64 μm portion was subsampled for POC, PON by filtering approximately 80 mL of the sample. The remaining sample was divided into polyethylene graduated cylinders, and filtered through pre-weighed, acid cleaned 0.4 μm 47 mm nuclepore filters. These were rinsed with 3 x 10 mL of pH 8 Milli-Q water plus several small rinses around the outer edge of the filter after the castle was removed. The filters were stored frozen in petri-slides and returned to the lab for analyses.

4. For the other trap (side b, unpoisoned, ST-1, ST-2, ST-4 (except 150 m)) the contents of the polybottles were not further sieved but subsampled directly for POC, PON and metals. About 25 mL were used for the POC, PON determination and the remaining sample was divided into graduated cylinders and filtered as described in 3 above.

5. The material from the traps at Station 4, 150 m was sieved through 500 μm, 333 μm, 202 μm and 64 μm acid cleaned nitex screens. The procedures for obtaining POC, PON and metal samples for each of the various size fractions were the same as described above. The chlorophyll *a* and microscopic samples were taken from the less than 333 um fraction.

Figure 3a, b shows schematically the splitting process for the sediment trap materials for this cruise.

During this cruise, many of the traps contained gelatinous material which hindered the sieving process, particularly through the 333 μm screen. As a result some material less than 333 um was tied up in the gelatinous slime which stuck to the sieve. To correct this problem, the greater than 333 um material was resieved in the lab and the total weights corrected for this material (Table 6(b)).

ANALYTICAL METHODS

Analytical methods have been previously described (Parts 1 and 2) and only a very simple account is given here.

Oxygen

Oxygen was determined as described in Part 2. Accuracy and precision were not evaluated during the cruise, except that calibration replication and blank determinations were within the documented limits (Carpenter, 1965).

Salinity

Salinities were determined as described in Part 2. Instrumental precision was determined as pooled variance ($s^2_p = \frac{1}{2n} \Sigma\Delta 2$) of 120 duplicate conductivity determinations and is reported in Table 1. Comparison between deep water samples (greater than 100 m) obtained independently within one half to two hours of each other gave a pooled standard deviation of ± 0.01 (n = 17).

Particulates, Dry Weight

Filters were dried and weighed as described in Part 2. For this cruise we found blanks to be $\bar{B} \pm s$ (n) = 0.44 ± 0.028 mg (8). This corresponds to a detection limit (d.l. = 3 s_B) of 0.08 mg and a quantification limit (q.l. = 10 s_B) of 0.28 mg. Sample volumes filtered were normally about 2 L, and thus d.l. = 0.04 mg L^{-1}, q.l. = 0.14 mg L^{-1}. If we assume variance of the sample to be approximately equal to variance of the blank, the overall standard deviation of a blank corrected sample is approximately $\sqrt{2}\ s_B$ = 0.04 mg or 0.02 mg L^{-1}. For the concentration of particulates found during this cruise, this corresponds to a percent coefficient of variation $\leq$ 6%. This estimate appears reasonable when compared to a detailed study we conducted to examine precision of the method (Macdonald et al, 1983).

To examine accuracy of the filtration technique, we prepared some standard solutions in the laboratory as follows. About 20 L of Saanich Inlet water was filtered (0.4 μm) and three suspensions prepared; 2.2 mg L^{-1}, 6.1 mg L^{-1} and 24.4 mg L^{-1}. The suspensions were made from Alice Arm surficial sediment which had been washed of salt, freeze dried, sieved through a 64 μm screen and weighed to the nearest 0.1 mg. Each suspension was made up in a 4.5 L container which was stirred during subsampling. Subsamples were taken from a bottom spigot. A container with filtered sea water was used for blank determinations. Filtration, filter rinsing and drying were carried out as previously described. Five independent determinations were run with the following results. Coefficients of variation were all less than 5%. Recovery of materials in suspension was 93.5 ± 1.5% for the three suspensions. A determination of particle size distribution showed that about 26% was less than 0.45 μm. Therefore it is likely that some material passed the filter. However, it is equally obvious that the filters captured material with a nominal size less than the filter pore size. While the method does give reasonable precision, absolute accuracy cannot be defined and suspended matter is operationally defined by what does not pass the 0.4 μm filter under the filtration conditions. From the above it appears that capture of particulate is almost quantitative.

Chlorophyll a

Samples were determined with a Turner Design Fluorometer by the fluorometric method described by Strickland and Parsons (1972). Detection limits and precision achievable are reported in the reference but have not been evaluated for the data reported here.

Coulter Counter (particle size distribution and volume)

Samples were analyzed with the TA II Coulter Counter with a 200 μm aperture tube as described in Part 2. Calibration was carried out with 9.69 um polystyrene beads and 27.3 μm Lycopodium pollen. Based on the pooled variance of deep water samples (n = 24) we estimate the coefficient of variation for samples with the lowest particle counts to be less than 10%. Agreement between replicates which were run from time to time was always better than this.

Nutrients

Nutrients were run as described in Part 1. Precision was evaluated using blind replicates (see Part 1). The pooled estimate of standard deviation is reported in Table 1, and replicates are shown in the data tables.

Sediment Trap Materials (dry weight)

Methods of dry weight determination are fully described in Part 1. Estimated error based on this data set is reported in Table 1.

CTD %T

Data were obtained with a Plessey 1400 CTD coupled with a Seatech transmissometer.

We compared the data obtained from this instrument with those obtained during the subsequent bottlecast. We found that the variance of the difference between the two determinations decreased with depth. Below about 75 m, the variance remained constant and we have used these data to determine the bias of the instrument relative to salinities determined back at the laboratory. Where $\Delta = (\text{Salinity}_{CTD} - \text{Salinity}_{laboratory})$ we found $\Delta \pm s\ (n) = 0.055 \pm 0.027\ (25)$. Given that the standard deviation of the laboratory determination is about 0.01, the variance of the CTD for salinity may be estimated as:

$$s^2_{CTD} + s^2_{laboratory} = s^2_{total}$$

where s^2_{total} can be estimated from the variance of the calculated Δ. Therefore the instrumental error works out to about ± 0.025. Similarly for temperature, the CTD reads slightly low relative to the reversing thermometers; $\Delta \pm s\ (n) = -0.051 \pm 0.029\ (36)$. We estimate the standard deviation for the temperature channel to be ± 0.027 C^o.

The transmissometer made by Seatech, had a 25 cm pathlength with an LED light source (660 mm). Instrumental parameters are given in the manual and have been evaluated in the field (Bartz et al, 1978). For a well collimated monochromatic light in a scattering or absorbing medium, the light lost in transit is given by

$$\frac{\%T}{100} = e^{-cr}$$

where %T is percent transmittance, r is the pathlength (0.25 m) and c is the attenuation coefficient (m^{-1}). For our instrument

$$c = 4\ \ln\ \frac{100}{T}$$

An important result of this equation is that the accuracy is best near the region cr = 1. The instrument is pre-calibrated at the factory by setting attenuation of distilled filtered water at 91.3%. During use the calibration is checked by measuring the reading in air prior to each cast. We found a reading of 1410-1411 H_z (94.5-95.0 %T) could always be obtained with adequate window cleaning. The manufacturers suggest that the greatest sensitivity can be achieved in clear water where changes of 0.1 mg L^{-1} can be detected. In Turbid water (0.5 %T) approximately 4 mg L^{-1} changes can be detected. We calibrated the instrument in the field by obtaining samples of water (1.7 L Niskin) in the water column where gradients in particulate concentration were not too great. We found the following:

$$y - y_b\ \ (\text{mg } L^{-1}) = a + m\ (c - c_w)$$

where y_b = 0.40 mg L^{-1} is the background particulate concentration, and c_w = 0.72 (1433 H_z) the background reading for clear water. For the 15 data points, m = 5.22 ± 0.52 (95% confidence), a = -1.11 ± 0.93, and R = 0.986. This calibration is different than that obtained by Baker (1982) for a similar transmissometer but this should not be surprising since it was obtained over a much larger range of particulate concentrations and for different material. Fig. 4 shows the calibration curve for this cruise.

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Strickland, J.D.H. and T.R. Parsons, 1972. A practical handbook of sea water analysis, Bulletin 167, Fisheries Research Board of Canada, Ottawa, 310 pp.

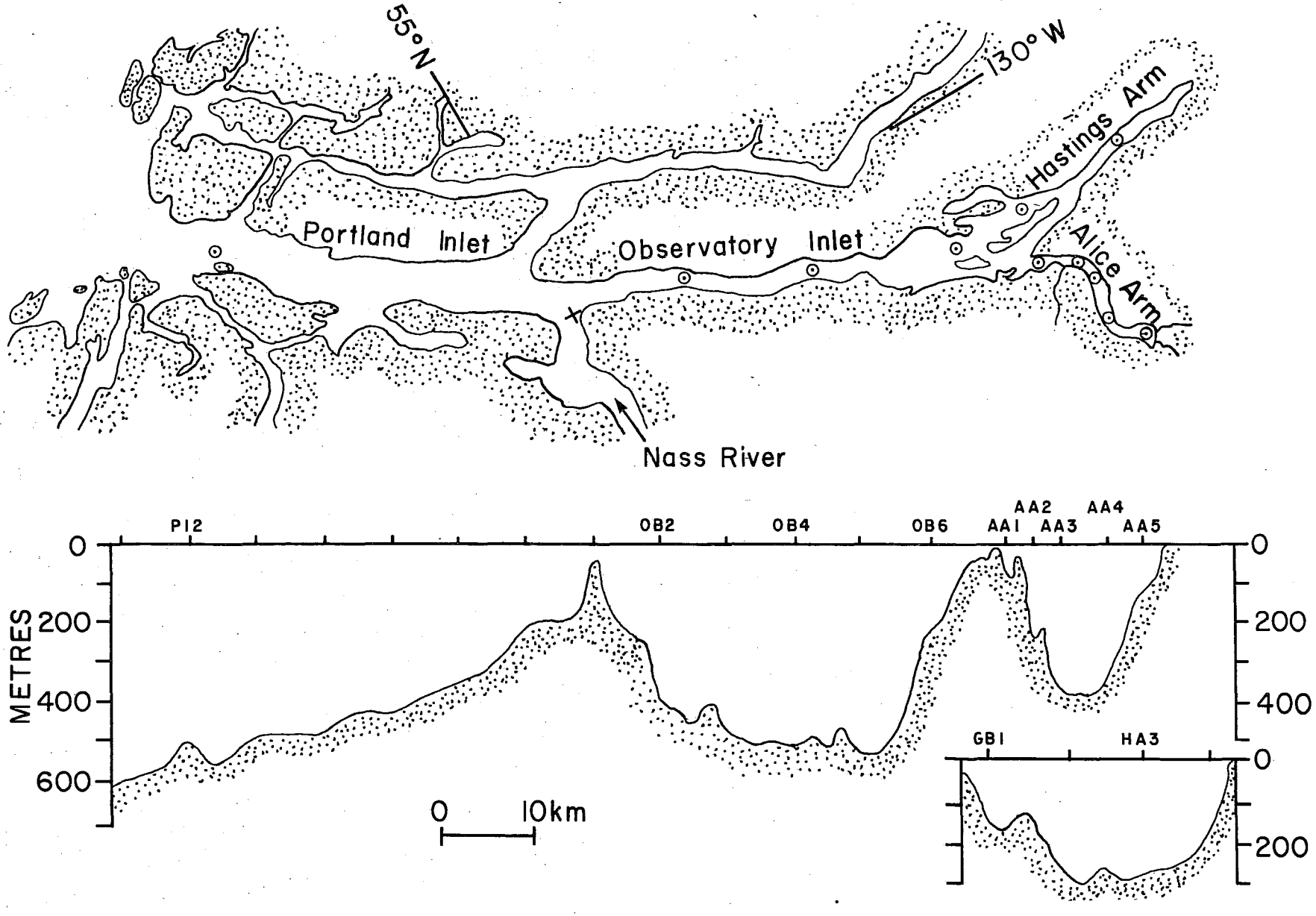


Fig. 1. Station locations

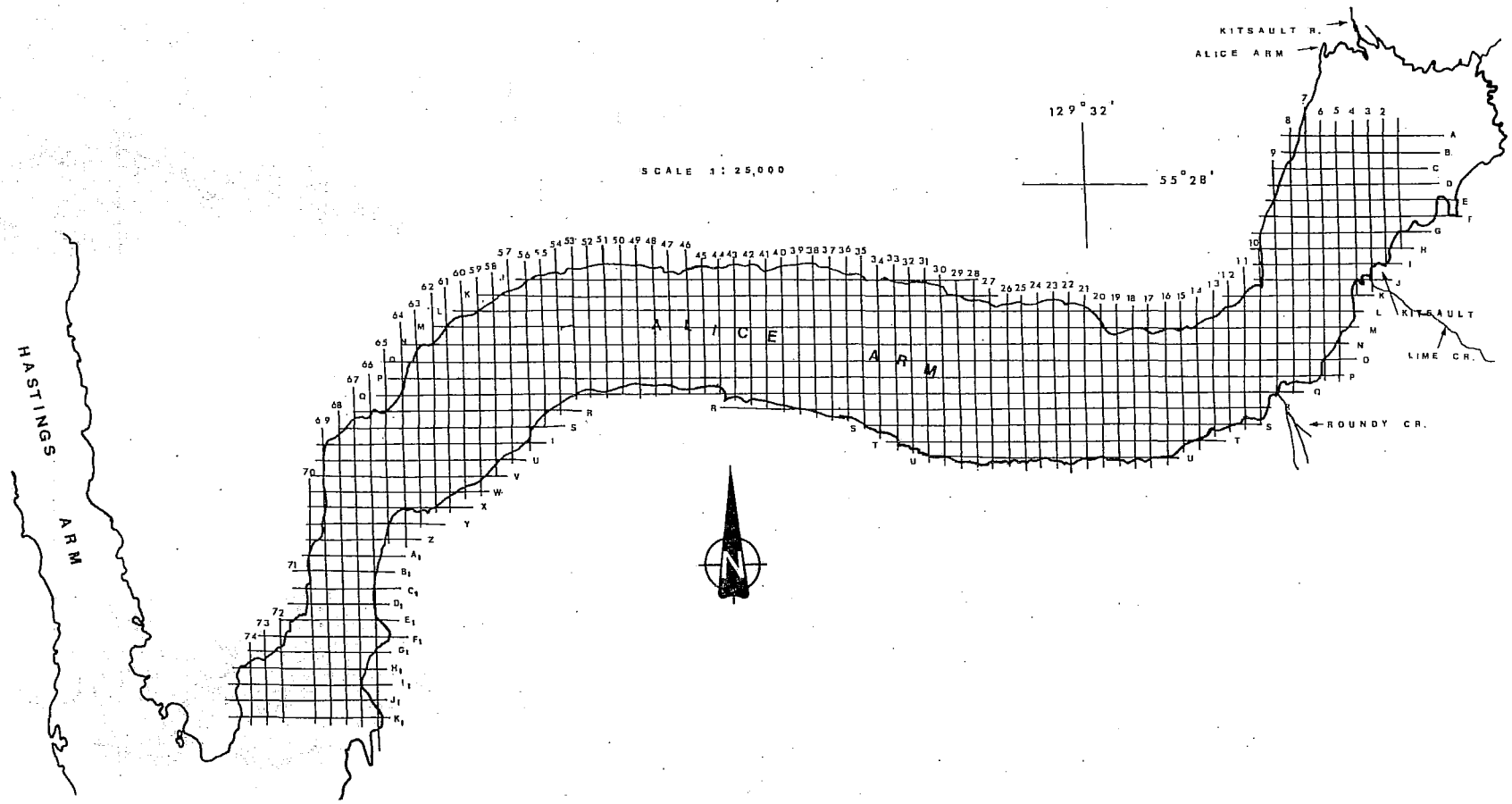


Fig. 1(b). Sampling grid used for CTD%T profiles

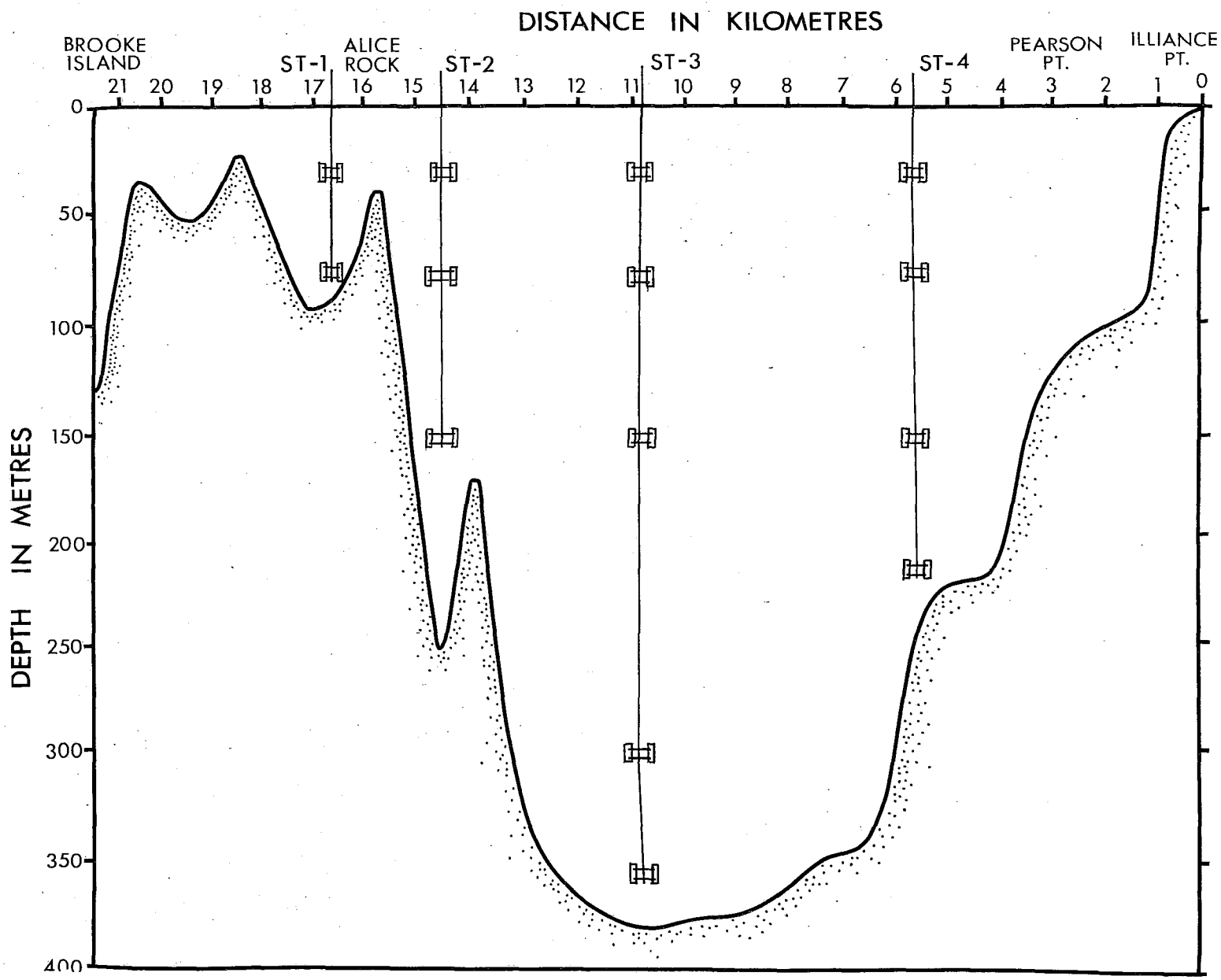
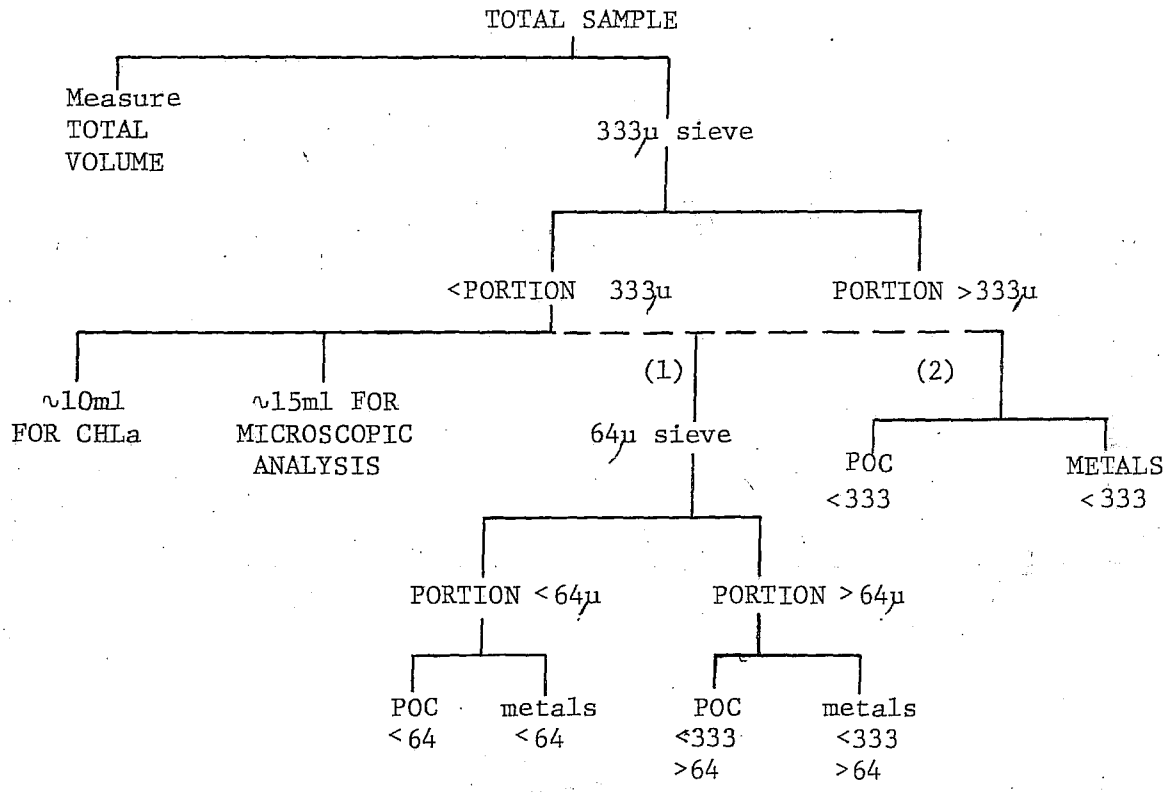


Fig. 2. Sediment trap deployment locations



(1)	ST-1	ST-2	ST-3	ST-4
	4a, 5a	6a, 7a, 8a, 9a	ALL TRAPS - a and b	15a, 17a, 18a

(2)	ST-1	ST-2	ST-3	ST-4
	4b, 5b	6b, 7b, 8b, 9b	NONE	15b, 17b, 18b

Fig. 3(a). Sediment Trap Material : Subsampling (all traps except 16a, 16b), Alice Arm.

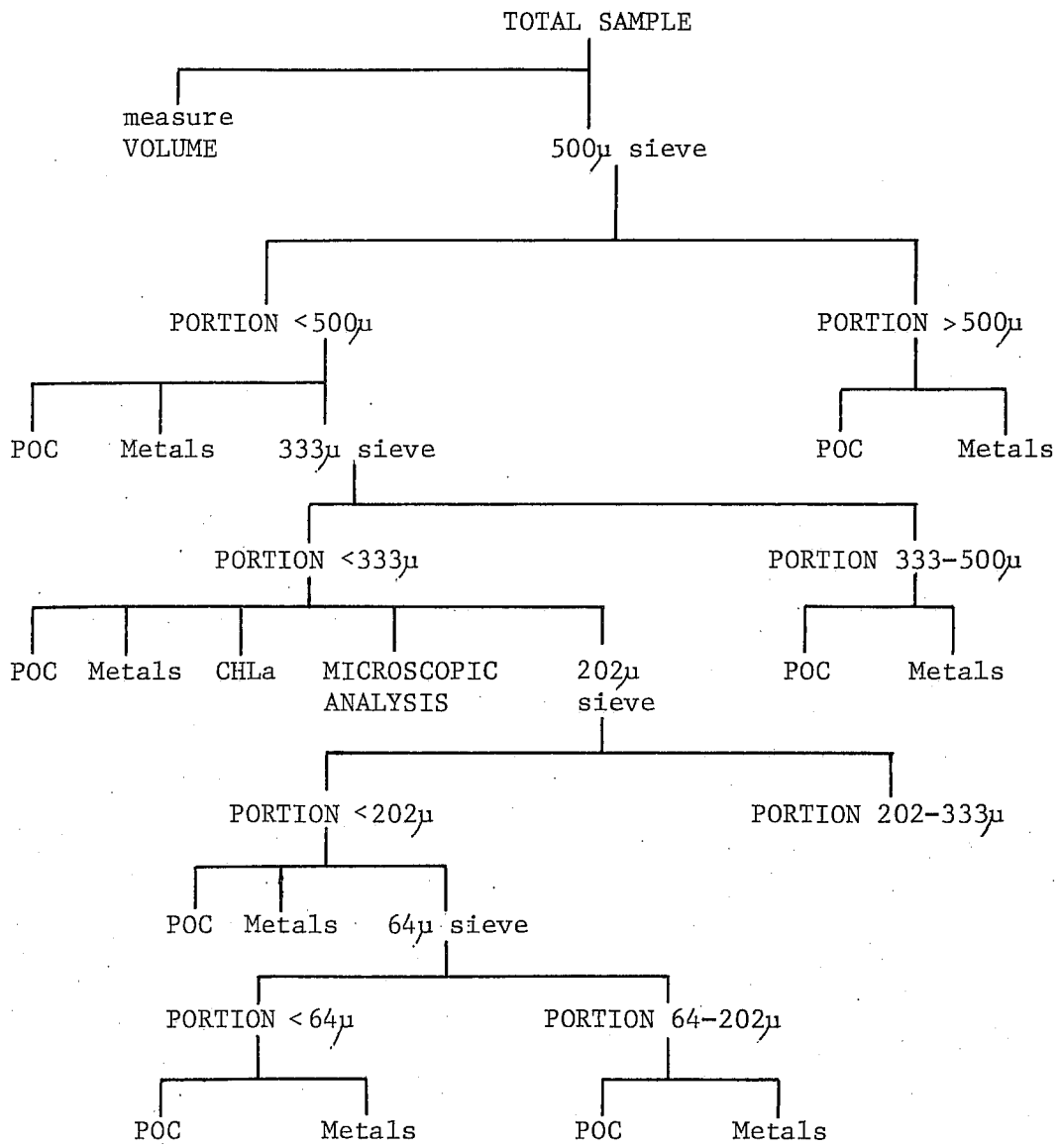


Fig. 3(b). Sediment Trap Material : Subsampling for traps 16a and 16b, Station 4 (150m), Alice Arm

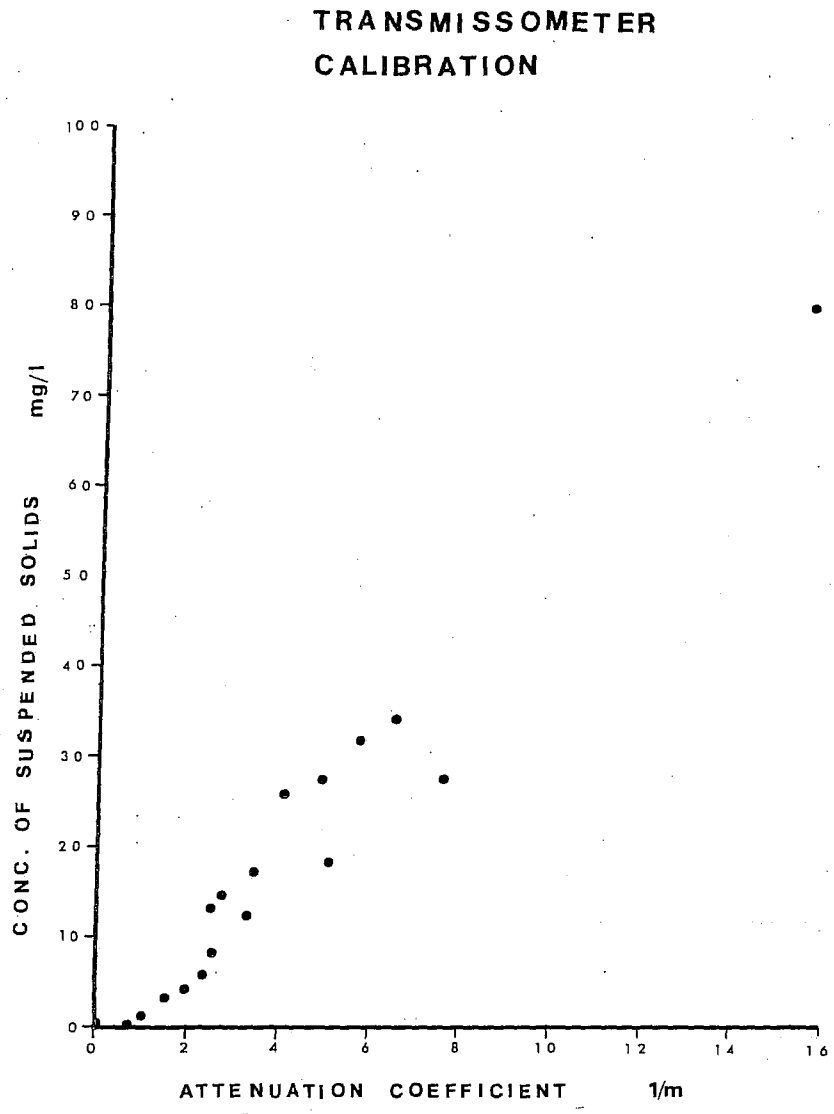


Fig. 4. Calibration data for the transmissometer

Appendix 1.

Data Tables.

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TABLE 1. ESTIMATES OF PRECISION, ACCURACY AND DETECTION LIMIT

Measurement	Precision (1s)	Accuracy (1s)	Detection limit
Salinity (CTD)	$\leq \pm 0.03$ (25)	$+0.055^{o}/oo$ bias (see text)	
Temperature (CTD)	$\leq \pm 0.03C^{o}$	$-0.05C^{o}$ bias (see text)	
Pressure (CTD)	±0.05% FSP	±0.25 FSP	(FSP = 500db)
Turbidity (CTD)	Slope 4.6%	Relative to particulates	$\sim 0.10 mgL^{-1}$
Salinity (Guildline) Autosal	$\pm 0.0003^{o}/oo$[1] Instrumental ≤ 0.01[2]	±0.01	
Temperature (Thermometer)	$\pm 0.01C^{o}$	$\pm 0.02C^{o}$	
Oxygen	±0.2 mmol m^{-3}	±0.4 mmol m^{-3}	0.16 mmol m^{-3}
Chlorophyll a	<8% (depends on concentration)[3]	Not established[3]	0.07 μgL^{-1}
Coulter Counter ppmV	$\leq$10% (n=31)	0.4% (coincidence)[4]	10^{3} total count[4]
Particulates (mgL^{-1})	$\pm 0.02 mgL^{-1}$ C.V. 6%	See text	$\leq 0.04 mgL^{-1}$ (2L volume)
Silicate	±4% (n=15)	±4%	~ 0.1 mmol m^{-3}
Nitrate	±1.4% (n=15)	±1.4%	~ 0.05 mmol m^{-3}
Phosphate	±2% (n=15)	±2%	~ 0.03 mmol m^{-3}
Sediment trap dry weight			
Within traps	±16%	$<\pm 3\%$	$\leq$0.2mg
Between traps	±5%	Not established	

1. Based on replicate conductivity measurements (n=120)
2. Based on duplicate water samples (n=17)
3. Strickland and Parsons (1972)
4. Sheldon and Parsons (1967)

TABLE 2. STATION LOCATIONS FOR WATER SAMPLING

STATION	DATE	TIME (Z+8)	LOCATION LATITUDE N	LONGITUDE W	SAMPLES TAKEN
AA-1	27/09/82	1030	55° 24.75'	129° 40.75'	O,S,T, Nut, Chla, Part, C.C., Micro, CTD%T
AA-2	27/09/82	0812	55° 26.00'	129° 40.05'	O,S,T, Nut, Chla, Part, C.C., Micro, CTD%T
AA-3	26/09/82	1633	55° 27.15'	129° 37.05'	O,S,T, Nut, Chla, Part, C.C., Micro, CTD%T
AA-4	26/09/82	1028	55° 26.69'	129° 32.00'	O,S,T, Nut, Chla, Part, C.C., Micro.
AA-5	26/09/82	0818	55° 27.90'	129° 29.25'	O,S,T, Nut, Chla, Part, C.C., Micro, CTD%T
HA-3	27/09/82	1610	55° 32.50'	129° 47.10'	O,S,T, Nut, Part, C.C., Micro, CTD%T
GB-1	28/09/82	0807	55° 25.40'	129° 29.25'	O,S,T, Nut, Chla, Part, C.C., Micro, CTD%T
OB-6	28/09/82	1027	55° 21.30'	129° 45.70'	O,S,T, Nut, Chla, CTD%T
OB-4	28/09/82	1403	55° 13.90'	129° 51.10'	O,S,T, Nut, Part, C.C., Micro, CTD%T
OB-2	28/09/82	1808	55° 6.70'	129° 57.30'	O,S,T, Nut.
PI-2	28/09/82	2125	54° 43.80'	130° 24.30'	O,S,T, Nut.

TABLE 3. ALICE ARM CHEMICAL DATA (SEPTEMBER, 1982, OC-82-IS-003)

STATION AA-1 27/09/82 1030 (Z+8) Particulates DEPTH 86m
1045 CTD %T
1103 Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY X10^{3}	SIGMA T *	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	10.45	23.79	18.20	317	4.79	0.59	13.6	3.4	1.27	1.73
25	7.54	29.41	22.98	203	0.39	1.98	40.1	22.6	0.52	0.47
50	7.33	30.24	23.66	178	0.40	2.19	46.1	25.2	0.70	0.43
75	7.26	30.46	23.84	186	0.30	2.24(2.27)	44.7(37.3)	24.1(24.4)	0.66	0.43

STATION AA-2 27/09/82 0812 (Z+8) Particulates DEPTH 258m
0820 CTD %T
0907 Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY X10^{3}	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	10.41	23.65	18.10	305	3.81	0.70	17.1	5.4	1.02	1.35
25	7.80	28.75	22.43	207	0.52	1.87	37.0	26.7	0.48	0.38
50	7.20	29.92	23.43	193	0.34	2.07	35.8	26.4	0.58	0.37
75	6.92	30.27	23.74	194	0.24	2.09	40.7	23.7	0.69	0.42
100	6.23	30.65	24.12	216	0.08	1.95	38.6	24.1	0.77	0.34
150	5.66	31.04	24.50	230		1.93(1.90)	40.4(41.4)	24.3(24.6)	0.66	0.40

* Sigma t has been calculated according to Knudsen's formula (see Fofonoff, N.P., 1962, in The Sea V.1, M.N. Hill ed., eqn 24, p 9) and is unitless.

$$\sigma_{t_{Knudsen}} = \left(\frac{\rho\ (s,t,o)}{\rho_{max}} - 1 \right) \times 1000 \text{ where } \rho_{max} = 0.999975 \text{ g cm}^{-3}$$

TABLE 3 (CONTINUED)

STATION AA-3 26/09/82 1633 (Z+8) Particulates DEPTH 386m
1800 CTD %T
1849 Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY $X10^{3}$	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	9.77	24.33	18.72	262	0.94	1.14(1.10)	25.5(26.5)	12.2(12.3)	0.77	1.00
25	7.52	29.16	22.79	203	0.24	1.95	37.2	21.9	0.63	0.44
50	7.06	29.90	23.43	200	0.12	2.06	36.5	21.7	0.58	0.30
75	6.82	30.18	23.68	202	0.08	2.04	39.4	23.3	0.53	0.34
100	6.50	30.51	23.98	209	0.08	2.03	35.9	22.4	0.66	0.33
150	5.67	31.04	24.49	231		1.95(1.92)	40.8(36.9)	24.7(25.0)	0.63	0.37
200	5.51	31.15	24.60	229		2.05	44.4	25.8	0.69	0.40
250	5.48	31.17	24.62	230		1.93	43.7	25.1	0.62	0.45
300	5.50	31.19	24.63	223		1.73(1.72)	43.4(45.5)	25.5(25.6)	1.66	0.44

TABLE 3 (CONTINUED)

STATION AA-4 26/09/82 1000 (Z+8) CTD %T DEPTH 278m
1028 Particulates
1307 Bottlecast

DEPTH m	TEMP. °C	SALINITY X10^3	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	10.10	23.66	18.15	266	1.22	1.07	24.6	10.4	1.29	1.29
25	7.53	29.06	22.71	203	0.12	1.87	37.8	22.0	0.71	0.31
50	7.05	29.90	23.43	202	0.10	1.99(2.02)	39.3(41.0)	23.5(23.4)	0.61	0.26
75	6.80	30.20	23.70	204	0.06	2.03	41.5	23.7	0.67	0.33
100	6.33	30.53	24.01	213	0.06	1.99	37.8	22.7	2.12	0.39
150	5.65	31.04	24.50	231		1.95	40.7	24.4	1.59	0.31
200	5.51	31.15	24.60	231		1.93	43.1	25.0	3.03	0.97
250	5.49	31.17	24.62	226		1.93	43.9	25.3	15.23	2.90

STATION AA-5 26/09/82 0818 (Z+8) Particulates DEPTH 104m
0840 Bottlecast
0930 CTD %T

DEPTH m	TEMP. °C	SALINITY X10^3	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	8.88	26.06	20.19	224	0.52	1.50	30.0	17.0	>0.80*	0.48
25	7.25	29.38	23.00	204	0.10	1.98	35.7	22.0	0.72	0.32
50	6.92	29.91	23.46	208	0.05	1.98	36.7	22.6	1.09	0.46
75	6.73	30.16	23.68	209	0.07	2.00(2.02)	37.9(37.3)	22.6(22.8)	1.08	0.38

* Leak during filtration

TABLE 3 (CONTINUED)

STATION HA-3 27/09/82 1610 (Z+8) Particulates DEPTH 282m
1620 CTD %T
1713 Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY $X10^{3}$	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	10.71	22.39	17.08	334		0.55	13.8	2.7	1.13	2.86
25	6.86	30.44	23.88	227		1.81	28.5	19.9	0.51	0.16
50	6.35	31.61	24.86	179		2.49	46.7	27.7	0.43	0.21
75	6.59	31.98	25.12	157		2.54	53.4	28.1	0.44	-
100	6.63	32.03	25.16	155		2.58	53.6	28.2	0.50	0.21
150	6.64	32.08	25.19	151		2.69	53.3	28.1	0.54	0.28
200	6.61	32.11	25.22	152		2.63	54.8	28.1	0.55	0.42
250	6.61	32.12	25.23	150		2.60(2.66)	51.3(42.8)	27.4(26.5)	0.45	0.35

STATION GB-1 28/09/82 0807 (Z+8) Particulates DEPTH 115m
0813 CTD %T
0854 Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY $X10^{3}$	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	10.55	24.08	18.41	312	5.00	0.55	12.4	3.2	1.12	1.77
25	7.39	30.44	23.81	168	0.30	2.27(2.25)	43.8(45.0)	24.9(25.1)	0.42	0.23
50	6.79	31.78	24.94	148	0.27	2.55	52.2	27.7	1.01	0.28
75	6.54	32.36	25.43	140	0.17	2.73	57.6	29.7	0.59	0.24
100	6.51	32.53	25.56	126	0.20	3.00	60.3	29.7	1.07	0.55(0.57)

TABLE 3 (CONTINUED)

STATION OB-6 28/09/82 0956 CTD %T DEPTH 242m
1027 (Z+8) Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY $X10^{3}$	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	9.85	24.06	18.50	302	6.75	0.85	20.8	7.3		
25	7.25	30.97	24.24	161	0.94	2.36(2.33)	46.9(46.9)	26.2(26.1)		
50	6.75	31.87	25.01	149	0.36	2.57	52.5	27.6		
75	6.49	32.52	25.56	143	0.17	2.64	59.9	31.0		
100	6.46	32.64	25.66	140	0.15	2.66	56.7	29.8		
150	6.43	32.77	25.76	136		2.76(2.64)	56.7(56.2)	30.8(29.4)		
200	6.41	32.78	25.77	136		2.66	60.8	32.2		

TABLE 3 (CONTINUED)

STATION OB-4 28/09/82 1303 (Z+8) Bottlecast DEPTH 503m
1320 CTD %T
1403 Particulates

DEPTH m	TEMP. ^{o}C	SALINITY $X10^{3}$	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	9.75	24.46	18.82	304		0.89	20.3	7.5	0.86	1.17
25	7.59	30.63	23.93	168		2.29	44.2	24.8	0.78	0.51
50	7.03	31.69	24.84	155		2.44	50.1	27.4	0.61	0.29
75	6.63	32.19	25.28	148		2.58	52.8	28.5	0.39	0.17
100	6.49	32.58	25.61	146		2.62	55.2	28.9	0.40	0.26
150	6.40	32.74	25.74	139		2.64(2.55)	55.7(55.9)	29.7(29.9)	0.35	0.52(0.54)
200	6.39	32.78	25.78	137		2.70	54.7	29.6	0.38	0.19
250	6.42	32.79	25.78	136		2.63	38.4	21.5	0.52	0.23
300	6.42	32.80	25.79	136		2.62	55.8	30.3	0.50	0.23
400	6.42	32.83	25.81	132		2.68(2.84)	57.0(57.1)	30.6(29.5)	0.64	0.25
500	6.42	32.83	25.81	132		2.72	53.6	28.1	1.21	0.28

TABLE 3 (CONTINUED)

STATION OB-2 28/09/82 1718 CTD %T DEPTH 430m
1808 Bottlecast

DEPTH m	TEMP. ^{o}C	SALINITY $X10^{3}$	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	9.58	24.96	19.24	296		1.00	28.7	9.1		
25	7.87	31.38	24.48	162		2.24	43.2	24.8		
50	6.98	32.15	25.53	145		2.60	53.5	28.5		
75	6.56	32.59	25.60	146		2.58	54.3	29.1		
100	6.44	32.69	25.70	140		2.61	55.0	29.8		
150	6.45	32.76	25.74	132		2.68(2.62)	56.2(56.2)	30.3(30.2)		
200	6.41	32.78	25.77	133		2.67	56.5	30.5		
250	6.41	32.80	25.79	134		2.74	52.1	28.6		
300	6.44	32.81	25.79	131		2.75	49.9	27.1		
400	6.44	32.83	25.81	128		2.78	56.0	30.4		

TABLE 3 (CONTINUED)

STATION RI-2 28/09/82 2055 CTD %T DEPTH 540m
2125 (Z+8) Bottlecast

DEPTH m	TEMP. °C	SALINITY X10^3	SIGMA T	OXYGEN mmol m^{-3}	CHLa mg m^{-3}	PHOSPHATE mmol m^{-3}	SILICATE mmol m^{-3}	NITRATE mmol m^{-3}	SUSP. mgL^{-1}	PART. mLL^{-1}
5	8.86	29.61	22.96	204		1.83	34.4	19.1		
25	8.98	31.63	24.51	182		2.00	37.1	20.9		
50	8.38	32.18	25.03	156		2.25	45.7	24.4		
75	6.65	32.49	25.51	139		2.54(2.55)	51.1(48.1)	29.1(29.4)		
100	6.28	33.09	26.03	122		2.78	56.5	32.2		
150	6.19	33.29	26.20	114		2.81	59.2	32.6		
200	6.16	33.33	26.24	112		2.83	57.5	32.7		
250	6.13	33.35	26.26	112		2.84	59.0	32.7		
300	6.15	33.37	26.27	111		2.84	60.2	32.7		
400	6.16	33.38	26.28	110		2.86	61.4	33.1		
500	6.14	33.40	26.30	110		2.89	58.7	32.0		

TABLE 4. SUMMARY OF COULTER COUNTER DATA

COUNTS PER CHANNEL

	DEP	VOL	COULTER COUNTER CHANNEL #												
STN	M	ML	3	4	5	6	7	8	9	10	11	12	13	14	15
AA1	5	15.75	25543	17739	11151	3199	1516	1402	1195	430	243	115	22	25	12
AA1	25	14.49	25220	10434	3479	1058	725	350	129	71	38	14	6	2	2
AA1	50	15.63	13881	6871	3965	2063	996	569	234	80	18	20	2	0	1
AA1	75	15.63	13506	6879	4077	2145	884	527	218	94	19	22	3	1	1
AA2	5	16.00	51699	19827	9083	5498	2619	1216	582	279	169	58	14	9	6
AA2	25	15.63	12316	6131	3578	1663	780	593	173	80	31	22	1	0	0
AA2	50	15.75	12798	6260	3538	1788	755	327	137	64	20	25	3	4	0
AA2	75	15.87	21920	11194	4386	2058	801	366	156	39	18	28	3	0	0
AA2	100	15.87	21166	9297	3295	1431	598	242	108	35	21	22	2	1	0
AA2	150	15.87	11718	5943	3249	1693	966	435	195	63	24	19	13	3	0
AA3	5	15.87	48495	26562	9767	4942	2512	796	277	136	64	39	6	2	2
AA3	25	15.75	14327	7155	4143	2210	1070	488	195	105	36	21	2	1	0
AA3	50	16.00	10294	4860	2643	1334	535	202	96	33	8	6	21	4	0
AA3	75	16.00	12089	5649	2956	1534	763	406	160	58	17	9	10	2	0
AA3	100	16.00	12488	6019	3160	1506	741	394	180	60	26	15	5	0	0
AA3	150	15.87	9685	5087	2824	1548	801	451	189	62	23	23	7	2	1
AA3	200	15.87	11320	5966	3222	1705	892	467	163	73	42	24	6	1	1
AA3	250	15.87	12788	6517	3472	1833	971	477	215	109	44	25	12	1	0
AA3	300	16.00	30992	13263	5605	2158	898	329	108	41	14	12	3	1	0
AA4	5	15.75	24300	13925	6739	2507	1324	907	423	221	159	64	10	35	17
AA4	25	15.75	12045	5890	3047	1394	657	332	130	51	17	18	1	0	1
AA4	50	15.87	11016	5289	2574	1287	568	295	118	48	16	9	2	1	0
AA4	75	15.75	11064	5374	2836	1401	675	389	139	59	32	16	4	1	1
AA4	100	15.75	29969	11491	4470	1579	602	253	91	31	21	13	4	2	0
AA4	150	15.75	17115	7731	3471	1482	724	302	114	45	11	5	2	2	0
AA4	200	15.75	38518	18331	9154	4448	2291	1133	554	200	70	22	7	3	0
AA4	250	15.75	129862	65197	34056	16504	7827	3307	1280	435	134	33	10	0	1
AA5	5	15.87	15456	8265	3898	1828	890	477	198	107	53	20	2	6	1
AA5	25	15.75	13154	6344	3217	1509	575	281	96	43	21	27	3	1	1
AA5	50	15.63	14929	7555	3698	1737	834	462	202	50	30	15	16	6	0
AA5	75	15.75	17201	7844	3567	1618	768	389	154	59	22	29	2	0	0

TABLE 4. SUMMARY OF COULTER COUNTER DATA

COUNTS PER CHANNEL

STN	DEP M	VOL ML	COULTER COUNTER CHANNEL # 3	4	5	6	7	8	9	10	11	12	13	14	15
HA3	5	15.63	9169	24703	98954	41343	5389	529	179	66	21	9	3	5	3
HA3	25	15.63	8381	3446	1557	740	458	211	77	29	9	1	1	0	0
HA3	50	15.63	8476	3711	1825	874	435	219	106	58	12	5	1	2	0
HA3	100	15.75	10890	5118	2379	982	396	162	47	38	11	5	3	1	0
HA3	150	15.75	9910	5193	2450	1200	538	224	110	42	21	11	5	3	1
HA3	200	15.75	15199	8667	3821	2014	850	445	208	75	28	17	6	2	0
HA3	250	15.63	19408	9179	3323	1673	717	302	105	56	22	13	2	1	0
GR1	5	15.75	41062	21174	7480	2768	1381	1072	836	303	219	83	35	39	22
GR1	25	15.75	6704	3326	2023	1038	564	309	102	34	12	16	1	1	1
GR1	50	15.75	8674	3866	2229	1188	549	280	115	49	14	11	12	1	1
GR1	75	15.75	15478	6375	2994	1152	429	162	76	39	9	11	1	0	0
GR1	100	15.75	41147	21429	6933	2560	767	246	78	34	10	35	0	0	0
GR1	100	15.75	37378	20818	7257	3203	963	234	80	33	9	34	0	2	0
OB4	5	15.63	32041	15294	9131	4946	2792	1455	503	108	83	54	13	11	6
OB4	25	15.87	19709	10181	4454	2391	1129	499	217	94	39	19	1	5	1
OB4	50	15.63	11327	5303	2902	1335	675	356	153	40	17	10	2	1	0
OB4	75	15.63	7530	3209	1682	805	373	150	104	29	11	6	1	1	0
OB4	75	15.63	7530	3209	1682	805	373	150	104	29	11	6	1	1	0
OB4	100	15.87	11852	4863	1945	920	373	158	89	27	12	24	2	1	3
OB4	150	15.87	22351	14457	3517	2382	2333	1190	95	18	7	9	0	0	0
OB4	150	15.75	21244	13787	3268	2184	1996	1153	275	25	7	13	1	2	0
OB4	200	15.75	8550	4002	2005	1067	498	254	95	23	15	3	0	0	0
OB4	250	15.75	6993	3634	2077	1105	536	243	85	31	18	6	9	1	0
OB4	300	15.75	8081	4217	2373	1176	612	256	91	48	17	5	0	0	1
OB4	400	15.75	11735	6158	3189	1493	648	224	83	44	11	4	2	0	0
OB4	500	15.75	19074	8843	3766	1519	503	187	64	29	13	4	2	0	0
L9	0	15.50	142135	84533	51010	27145	13756	6139	2635	880	318	81	12	1	0
M11	0	15.63	98934	56076	33618	18826	9876	4108	1456	480	150	62	10	0	0
N10	0	15.63	696731	633001	23850	75083	42071	21547	10961	4958	2249	945	222	20	1
013	0	15.63	160259	97298	57869	32065	17929	9141	4387	1783	529	135	21	6	0
N14	0	15.63	98643	49872	25614	11894	5279	2085	772	268	66	36	7	0	0

TABLE 4. SUMMARY OF COULTER COUNTER DATA

COUNTS PER CHANNEL

	DEP	VOL		COULTER COUNTER CHANNEL #											
STN	M	ML	3	4	5	6	7	8	9	10	11	12	13	14	15
P12	0	15.63	121937	72540	45683	26552	14999	7308	3100	1003	269	70	27	4	5
Q16	0	15.50	113715	61702	35155	18678	1920	4674	1940	653	164	35	6	2	0
P19	0	15.63	72217	36733	19830	10025	4839	1799	569	104	39	9	2	0	0
P16	0	15.63	75810	39690	22115	11626	6154	2849	1237	431	113	17	2	0	0
Q19	0	15.50	49661	21598	9693	4120	1735	580	170	52	10	4	2	0	0
R19	0	15.63	30492	13842	5632	2229	949	329	96	23	10	5	0	0	0
019	0	15.50	16283	8369	4021	2038	1030	467	181	53	26	13	4	1	0

TABLE 5. SEDIMENT TRAP STATIONS

STATION	LAT. °N	LONG. °W	TRAP DEPTH (METERS)	DEPLOYED 24/09/82 TIME	RECOVERED 01/10/82	DEPLOYMENT INTERVAL (DAYS)
ST-1 (109m)	55°24.54'	129°41.12'	30	1527	0809	6.70
			67	1522	0812	6.70
ST-2 (259m)	55°26.00'	129°40.10'	30	1613	0835	6.68
			70	1610	0837	6.69
			150	1608	0839	6.69
			226	1605	0841	6.69
ST-3 (378m)	55°27.16'	129°36.75'	30	1700	0911	6.68
			70	1655	0908	6.68
			150	1652	0905	6.68
			300	1648	0903	6.67
			353	1645	0901	6.67
ST-4 (234m)	55°26.72'	129°31.62	30	1735	0948	6.68
			70	1740	0946	6.67
			150	1743	0944	6.67
			208	1746	0942	6.66

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANALY. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-1	30	6.70	a	550	<333	15	10				
					64-333			22	86	0.1576	0.36
					<64			22	238	0.1021	0.43
									224	0.0941	0.42
			b	660	<333	15	10	18.5	256	0.1780	0.70
									256	0.1884	0.74
	67	6.70	a	720	<333	15	9.3				
					64-333			19	65	0.1855	0.33
					<64			38	282	0.1883	0.67
									286	0.1787	0.63
			b	640	<333	15	9.3	25	197	0.2406	1.22
									190	0.2342	1.23
									185	0.2330	1.26

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA (CONTINUED) SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANAL. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-2	30	6.68	a	670	<333	15	10.2				
					64-333			14	58	0.1784	0.33
					<64			16	307	1.2416	4.04
									272	1.1508	4.23
			b	590	<333	15	9.2	26	271	1.4172	5.23
									264	1.3660	5.17
	70	6.69	a	560	<333	15	8.4				
					64-333			16	80	0.3049	0.73
					<64			25	237	1.1764	4.96
									244	1.2116	4.97
			b	620	<333	15	-	24	280	1.6682	5.96
									278	1.6376	5.89
	150	6.69	a	720	<333	15	9.6				
					64-333			15	59	0.4238	0.77
					<64			21	278	1.0371	3.73
									278	0.9437	3.39
			b	615	<333	15	7.9	17	260	1.4649	5.63
									260	1.4792	5.69

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA (CONTINUED) SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANAL. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-2	226	6.69	a	622	<333	15	10.2				
					64-333			24	44	0.3088	0.77
					<64			18	260	1.4857	5.71
									262	1.4952	5.71
			b	640	<333	15	8.5	20	278	1.7971	6.46
									272	1.7699	6.51
ST-3	30	6.68	a	520	<333	15	7.4				
					64-333			19	56	0.0372	0.096
					<64			55	213	0.0569	0.267
									212	0.0535	0.252
			b	710	<333	15	9.6				
					64-333			14	61	0.0287	0.050
					<64			115	275	0.0551	0.200
									276	0.0381	0.138

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA (CONTINUED) SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANAL. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-3	70	6.68	a	540	<333	15	9.2				
					64-333			18	70	0.0558	0.13
					<64			32	235	0.1007	0.429
									220	0.0942	0.428
			b	460	<333	15	10				
					64-333			14	63	0.0478	0.13
					<64			44	195	0.0899	0.461
									197	0.0920	0.467
	150	6.68	a	465	<333	15	9.0				
					64-333			15.5	57	0.0749	0.21
					<64			29	208	0.1671	0.803
									183	0.1415	0.773
			b	540	<333	15	8.8				
					64-333			14	67	0.0635	0.14
					<64			20	240	0.1858	0.774
									245	0.1913	0.781

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA (CONTINUED) SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANAL. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-3	300	6.67	a	545	<333	15	9.6				
					64-333			18	65	0.1117	0.26
					<64			25	254	0.466	1.83
									234	0.424	1.81
			b	560	<333	15	8.8				
					64-333			19	63	0.0979	0.23
					<64			21	244	0.4601	1.89
									240	0.4535	1.89
	353	6.67	a	530	<333	15	9.0				
					64-333			16	59	0.2220	0.53
					<64			26	236	1.5027	6.37
									235	1.5280	6.50
			b	560	<333	15	8.5				
					64-333			18	64	0.1933	0.44
					<64			24	244	1.5794	6.47
									242	1.5826	6.54

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA (CONTINUED) SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANAL. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-4	30	6.68	a	615	<333	15	9.5				
					64-333			13	57	0.0452	0.09
					<64			28	263	0.0952	0.362
									275	0.1002	0.364
			b	480	<333	15	8.2	34	208	0.1222	0.588
									201	0.1189	0.592
	70	6.67	a	455	<333	15	8.2				
					64-333			18	68	0.0310	0.086
					<64			34	181	0.1138	0.629
									195	0.1266	0.649
			b	430	<333	15	8.5	28	234	0.2222	0.950
									229	0.2189	0.956
	150	6.67	a	690	>500			21	30	0.0016	0.052
					333-500			27	44	0.0022	0.049
					<333	15	3.6				
					202-333			32	43	0.0065	0.15
					64-202			44	46	0.034	0.74
					<64			25	194	3.768	19.4
									197	3.928	19.9
									228	4.366	19.1

TABLE 6(a). SEDIMENT TRAP SUBSAMPLING DATA (CONTINUED) SEPTEMBER/OCTOBER 1982

SIDE a - CONTAINED SODIUM AZIDE
SIDE b - NO SODIUM AZIDE

STN.	DEPTH (m)	TIME (DAYS)	SIDE OF TRAP	TOTAL VOLUME (mL)	SIZE FRACTION (μm)	VOLUME FOR MICRO-SCOPE ANAL. (mL)	VOLUME FOR CHLa ANALY. (mL)	VOLUME FOR POC,N ANALYSIS (mL)	SUBSAMPLES FOR METAL ANALYSIS AND DRY WEIGHT DETERMINATION		
									VOL. (mL)	WEIGHT OF SEDIMENT (mg)	CONC. (gL^{-1})
ST-4			b	600	>500			35	56	0.0039	0.070
					333-500			38	44	0.0036	0.082
					<333	15	-				
					202-333			20	27	0.0017	0.062
					64-202			21	35	0.036	1.01
					<64			22	208	4.494	21.6
									166	3.562	21.4
									169	3.589	21.2
	208	6.66	a	790	<333	15	8.6				
					64-333			43	68	1.480	3.06
					<64			34	242	13.945	57.6
									240	13.999	58.3
									245	14.216	58.0
			b	605	<333	15	6.5	25	260	21.405	82.3
									270	22.134	81.9

TABLE 6(b). CORRECTIONS TO TOTAL TRAP WEIGHTS FROM RESIEVING >333 PORTION, SEPTEMBER/OCTOBER 1982

SIDE a - PRESERVATIVES
SIDE b - NO PRESERVATIVES

WEIGHT OF TOTAL UNCORRECTED SOLID IS AVERAGE VALUE CALCULATED FROM ALIQUOTS

STN.	DEPTH (m)	SIDE OF TRAP	WT. OF TOTAL SOLIDS UNCORR. >64 (g)	WT. OF CORR. FOR SOLIDS >64 (g)	WT. OF CORR. SOLIDS >64 (g)	WT. OF TOTAL SOLIDS UNCORR. <64 (g)	WT. OF CORR. FOR SOLIDS <64 (g)	WT. OF CORR. SOLIDS <64 (g)	WT. OF TOTAL SOLIDS UNCORR. <333 (g)	WT. OF CORR. FOR SOLIDS <333 (g)	WT. OF CORR. SOLIDS <333 (g)	SEDIMENT TRAPPING RATE USING CORR. VALUES $gm^{-2} day^{-1}$
ST-1	30	a	0.198	0.0489	0.247	0.234	0.0222	0.256	0.432	0.0711	0.503	5.82
		b	-	0.0368	-	-	0.0373	-	0.475	0.0741	0.549	6.35
	67	a	0.238	0.0436	0.282	0.468	0.0429	0.511	0.706	0.0865	0.793	9.18
		b	-	0.0357	-	-	0.0320	-	0.791	0.0677	0.859	9.94
ST-2	30	a	0.221	0.0891	0.310	2.771	0.1726	2.944	2.992	0.2617	3.254	37.7
		b	-	-	-	-	-	-	3.068	0.1584	3.226	37.4
	70	a	0.409	0.1498	0.559	2.781	0.2328	3.014	3.190	0.3826	3.573	41.4
		b	-	-	-	-	-	-	3.674	0.2046	3.674	42.5
	150	a	0.554	0.1032	0.657	2.563	0.1476	2.711	3.117	0.2508	3.368	39.0
		b	-	-	-	-	-	-	3.481	0.1489	3.630	42.0
	226	a	0.479	0.1156	0.595	3.552	0.2495	3.802	4.031	0.3651	4.396	50.9
		b	-	-	-	-	-	-	4.150	0.4691	4.619	53.5
ST-3	30	a	0.050	0.00565	0.056	0.135	0.01269	0.148	0.185	0.01834	0.203	2.36
		b	0.036	0.00556	0.042	0.121	0.00843	0.129	0.157	0.01399	0.171	1.98
	70	a	0.070	0.00575	0.076	0.232	0.01166	0.244	0.302	0.01741	0.319	3.70
		b	0.060	-	-	0.214	-	-	0.274	0.01475	0.289	3.35

TABLE 6(b). CORRECTIONS TO TOTAL TRAP WEIGHTS FROM RESIEVING >333 PORTION, SEPTEMBER/OCTOBER 1982 (CONTINUED)

SIDE a - PRESERVATIVES
SIDE b - NO PRESERVATIVES

WEIGHT OF TOTAL UNCORRECTED SOLID IS AVERAGE VALUE CALCULATED FROM ALIQUOTS

STN.	DEPTH (m)	SIDE OF TRAP	WT. OF TOTAL SOLIDS UNCORR. >64 (g)	WT. OF CORR. FOR SOLIDS >64 (g)	WT. OF CORR. SOLIDS >64 (g)	WT. OF TOTAL SOLIDS UNCORR. <64 (g)	WT. OF CORR. FOR SOLIDS <64 (g)	WT. OF CORR. SOLIDS <64 (g)	WT. OF TOTAL SOLIDS UNCORR. <333 (g)	WT. OF CORR. FOR SOLIDS <333 (g)	WT. OF CORR. SOLIDS <333 (g)	SEDIMENT TRAPPING RATE USING CORR. VALUES $gm^{-2}day^{-1}$
ST-3	150	a	0.098	0.01326	0.111	0.365	0.02033	0.385	0.463	0.03359	0.497	5.77
		b	0.076	-	-	0.418	-	-	0.494	0.02475	0.519	6.02
	300	a	0.142	0.0093	0.151	0.992	0.0210	1.013	1.134	0.0303	1.164	13.5
		b	0.129	-	-	1.058	-	-	1.187	0.01759	1.205	14.0
	353	a	0.281	0.0221	0.303	3.411	0.0592	3.470	3.692	0.0813	3.773	43.8
		b	0.246	-	-	3.642	-	-	3.888	0.0331	3.921	45.5
ST-4	30	a	0.055	-	-	0.221	-	-	0.276	-	-	3.20
		b	-	-	-	-	-	-	0.283	-	-	3.28
	70	a	0.039	-	-	0.292	-	-	0.331	-	-	3.85
		b	-	-	-	-	-	-	0.507	-	-	5.89
	150	a	13.46	-	-	-	-	-	-	-	-	156.4
		b	12.85	-	-	-	-	-	-	-	-	149.3
	208	a	2.417	0.05566	-	45.814	0.21599	-	48.231	0.26665	48.498	564.5
		b	-	-	-	-	-	-	49.704	0.02569	49.730	578.8

TABLE 6(c). AMOUNTS CAUGHT IN SEDIMENT TRAPS, SEPTEMBER/OCTOBER, 1982

STATION	DEPTH	TOTAL SEDIMENTATION $gm^{-2}day^{-1}$ DRY WEIGHT ($\bar{X} \pm s$ (n)) a) Sodium Azide	b) No Preservative	AVERAGE TOTAL SEDIMENTATION $gm^{-2}day^{-1}$ a and b Sides $\bar{X} \pm s$
ST-1	30	5.82 ± 0.04(2)[1]	6.35 ± 0.22(2)	6.09 ± 0.38
	67	9.18 ± 0.24(2)[1]	9.94 ± 0.16(2)	9.56 ± 0.17
ST-2	30	37.76 ± 1.04(2)[1]	37.44 ± 0.29(2)	37.60 ± 0.23
	70	41.40 ± 0.05(2)[1]	42.57 ± 0.36(2)	41.99 ± 0.83
	150	39.03 ± 2.01(2)[1]	42.06 ± 0.30(2)	40.55 ± 2.14
	226	50.94 ± 0.00(2)[1]	53.52 ± 0.26(2)	52.23 ± 1.82
ST-3	30	2.36 ± 0.09(2)[1]	1.98 ± 0.35(2)[1]	2.17 ± 0.27
	70	3.70 ± 0.00(2)[1]	3.35 ± 0.04(2)[1]	3.53 ± 0.25
	150	5.77 ± 0.11(2)[1]	6.02 ± 0.04(2)[1]	5.80 ± 0.32
	300	13.53 ± 0.09(2)[1]	14.00 ± 0.00(2)[1]	13.77 ± 0.33
	353	43.85 ± 0.57(2)[1]	45.57 ± 0.32(2)[1]	44.71
ST-4	30	3.20 ± 0.00(2)	3.28 ± 0.00(2)	3.24 ± 0.06
	70	3.85 ± 0.08(2)	5.89 ± 0.04(2)	4.87 ± 1.44
	150	156.4 ± 3.2 (3)[1,2]	149.3 ± 1.4 (3)[1,2]	152.9 ± 5.0 [2]
	208	569.6 ± 3.3 (3)[1]	578.8 ± 1.7 (2)	574.2 ± 6.5

1. s represents deviation for <64μm portion only. The other within trap standard deviations are calculated from the <333μm fractions.

2. Sedimentation rate represents <64μm portion only.

TABLE 7. SEDIMENT CORING LOCATIONS

DATE	LOCATION	DEPTH m	#	CORE LENGTH mm	COMMENTS
29/9/82	One cable E of ST-3	389	1	1300	Yellow near bottom
"	"	403	2	1230	
"	One cable S of ST-2	277	3	1230	
"	"	270	4	860	
"	HA-2	317	5	700	Lowered core twice
"	"	320	6	1030	Good surface
"	OB-5	556	7	1380	Grey mud
"	"	597	8	1910	
"	GB-1	119	9	600	
"	"	118	10	600	
30/9/82	One cable W of ST-4	271	11	1300	Top 630mm grey tailings shading to an intermediate color and dark at the bottom
"	"	271	12	960	0-260mm dark, 260-600mm greenish, 600-960mm grey tailings

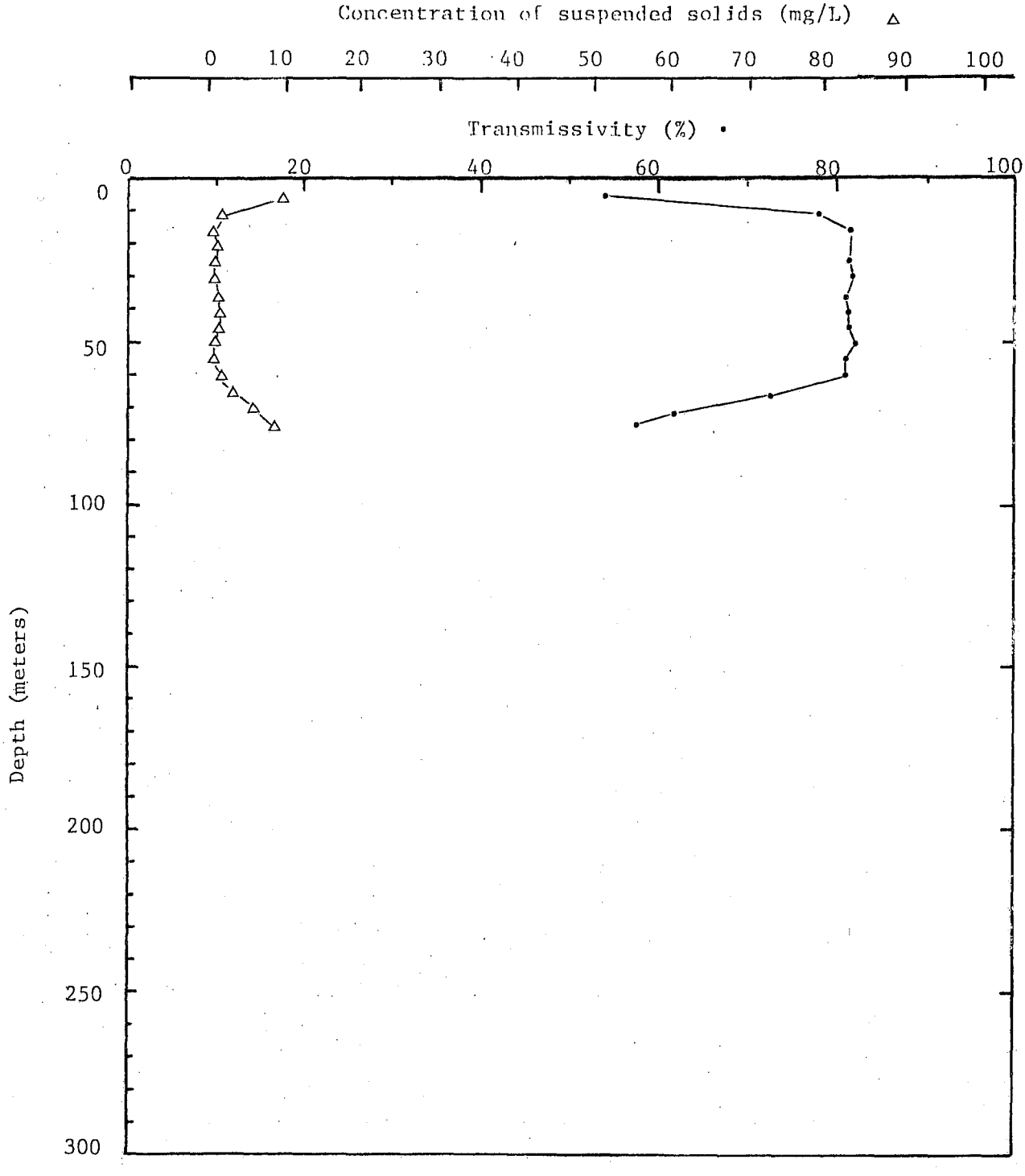
TABLE 8. STATIONS AT WHICH A TRANSMISSOMETER PROFILE WAS TAKEN (READINGS RECORDED BY HAND AT 5m INTERVALS)

STATION	DATE	TIME (Z+8)	DEPTH m	Calibration READING Hz	Calibration $\%T^{1}$	Calibration mgL^{-1} measured
N-7	25/9/82	1017	80			
M-8	"	1020	109			
L-9	"	1050	153			
N-10	"	1112	150			
M-11	"	1129	179			
P-12	"	1157	165			
O-13	"	1225	168			
N-14	"	1250	164			
R-16	"	1328	~256	1465	67.5	3.19
Q-16	"	1413	246			
P-16	"	1457	240	1561	19.5	34.01
O-16	"	1526	110	1478	61.00	4.41
1 Cable W of ST-4	"	1600	237			
M-11	"	~2000	168			

1 $\%T = \frac{1600 - Hz}{200} \times 100$

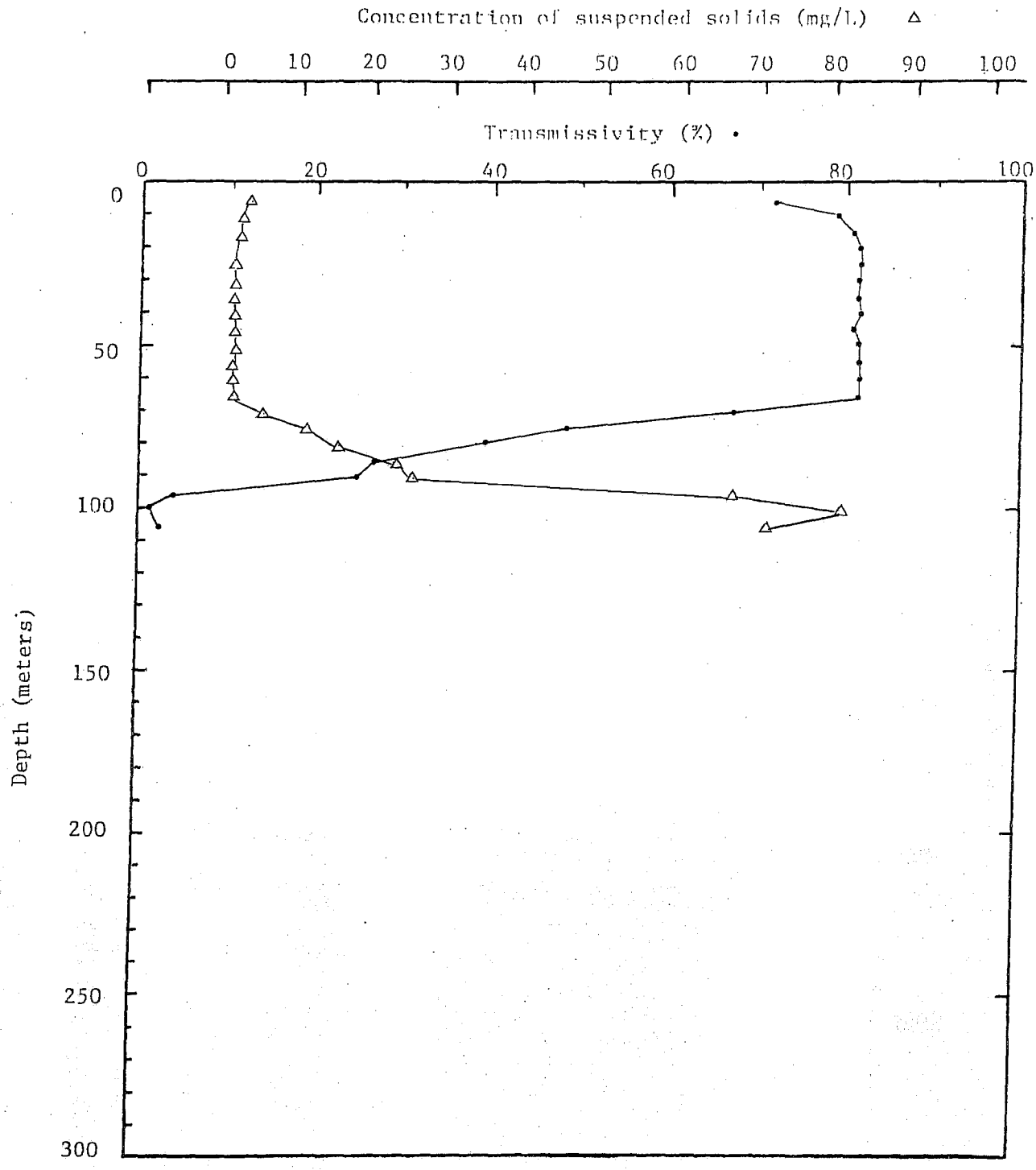
Survey Area : ALICE ARM
Station : N-7

Date : 25/09/82
Time : 1017-1025 PST



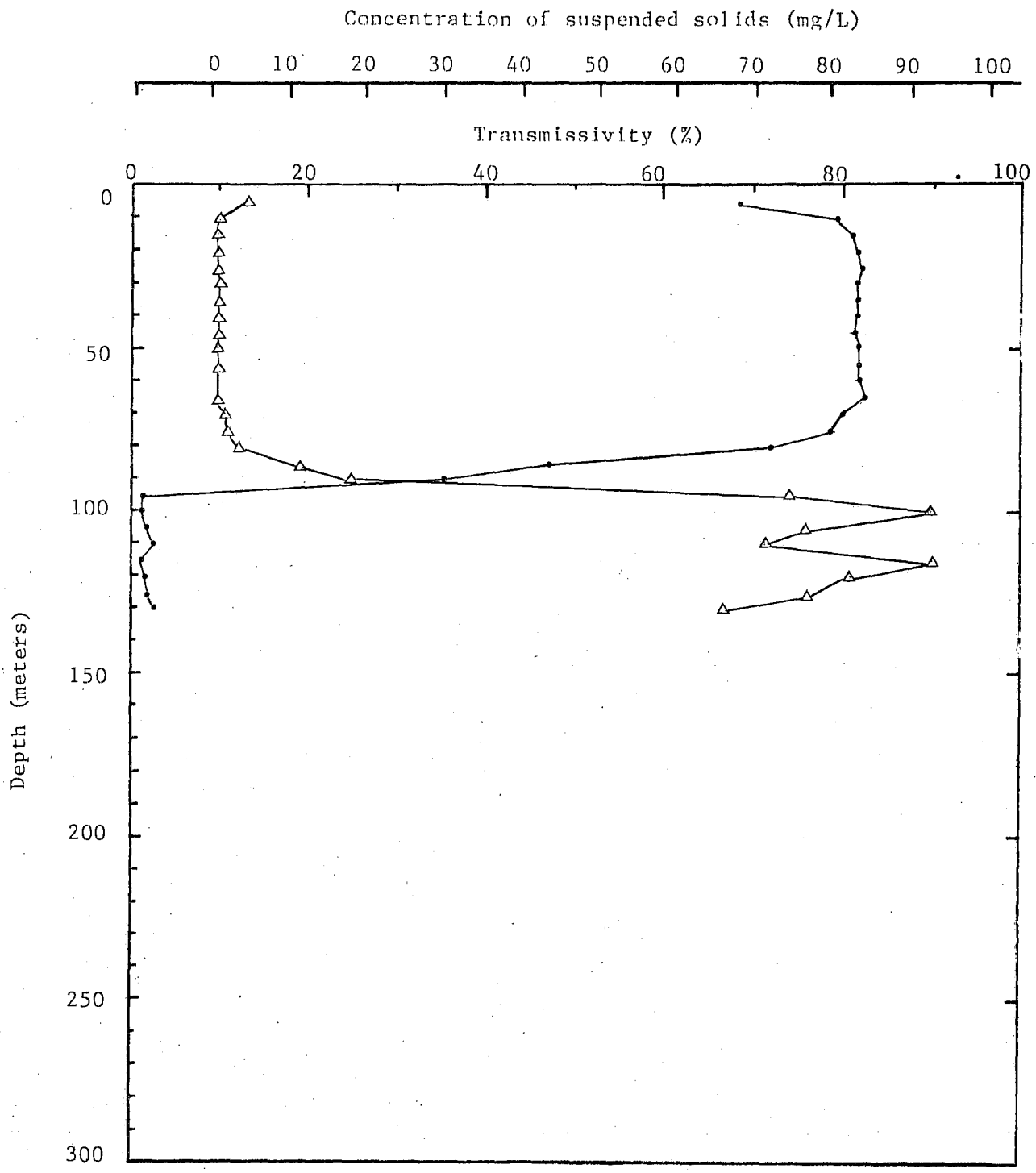
Survey Area : ALICE ARM
Station : M-8

Date : 25/09/82
Time : 1037 PST



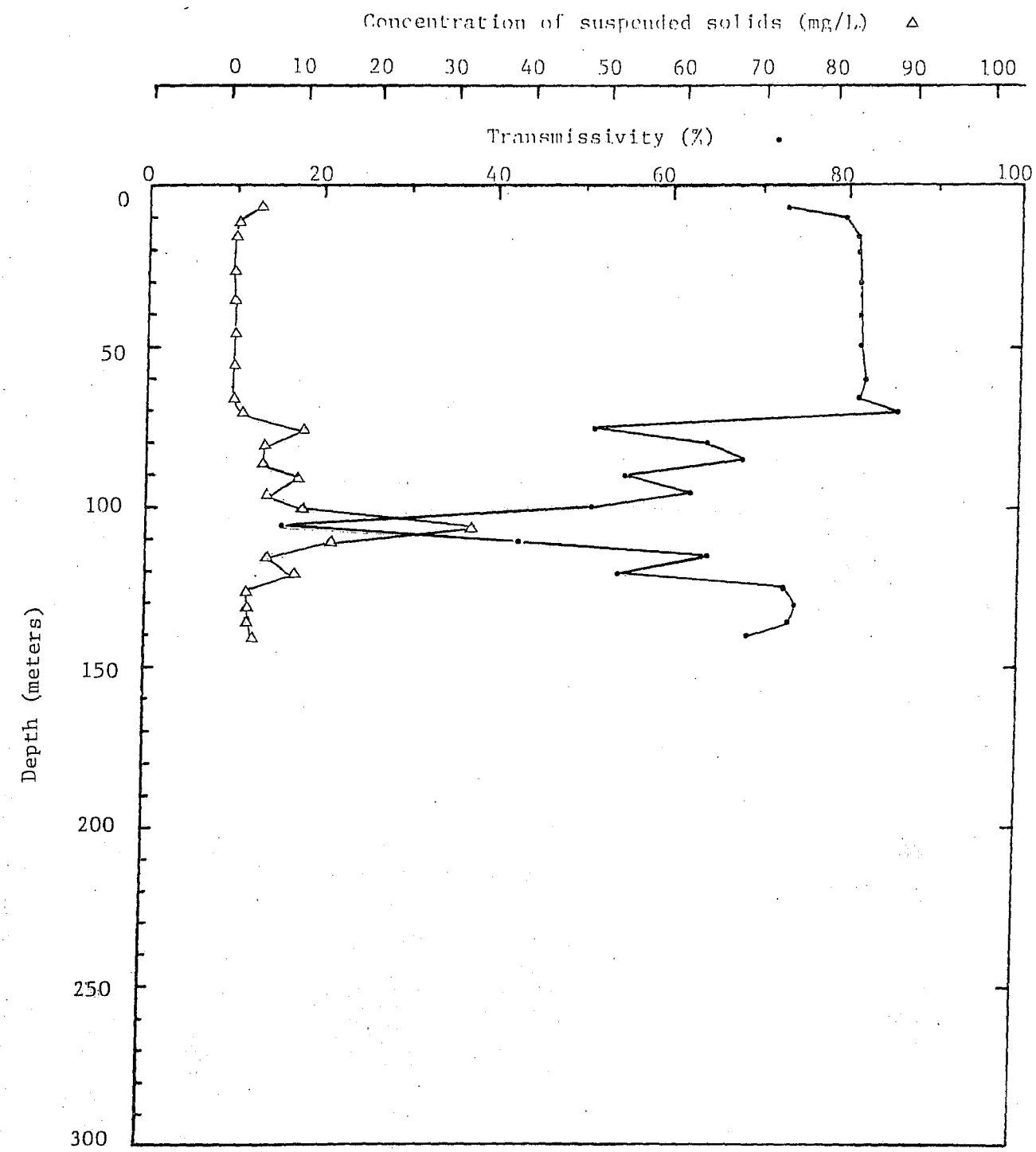
Survey Area : ALICE ARM
Station : L-9 (153-140m)

Date : 25/09/82
Time : (1112-1125) PST



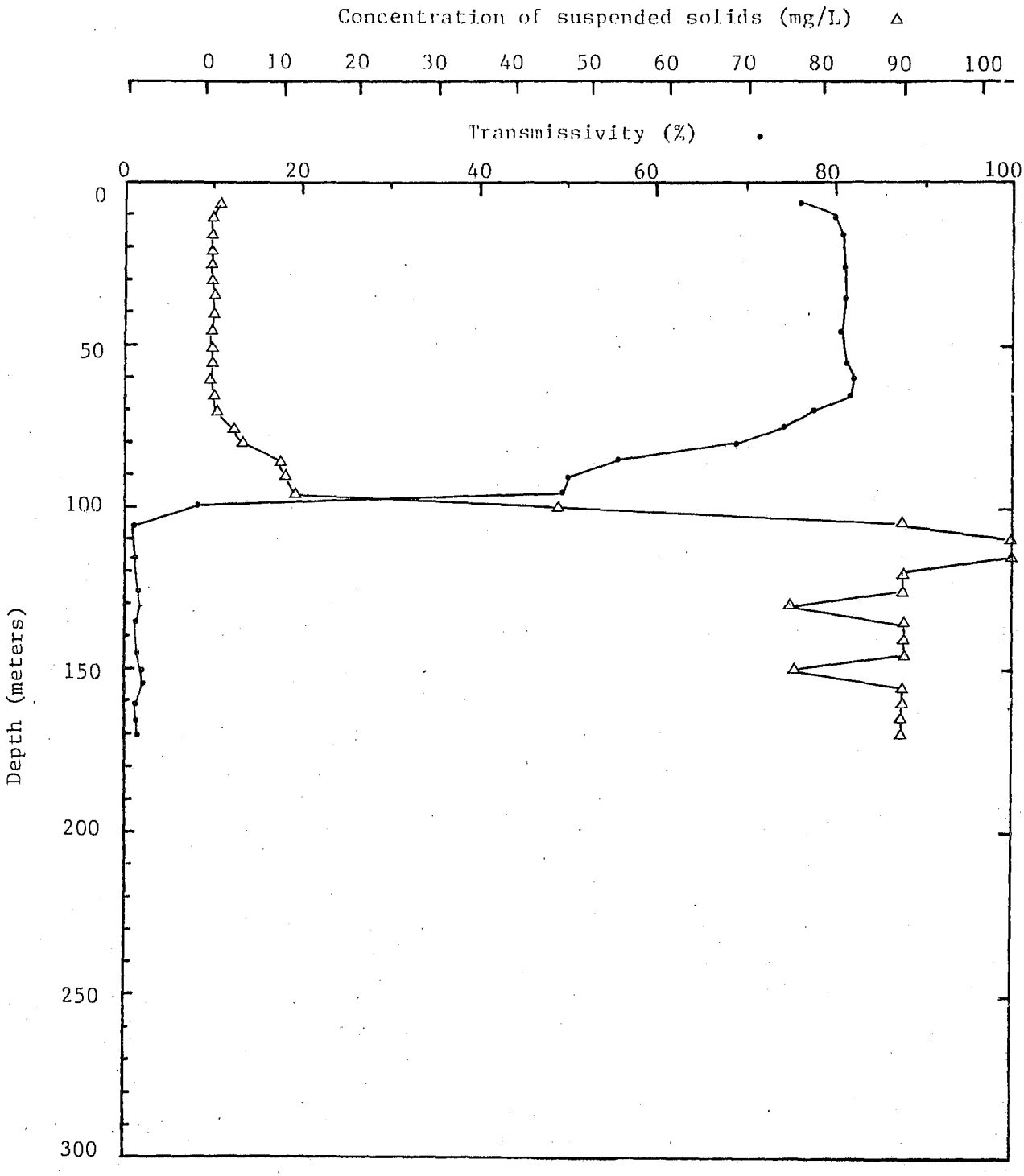
Survey Area : ALICE ARM
Station : N-10 BOTTOM DEPTH (150m)

Date : 25/09/82
Time : 1112-1125



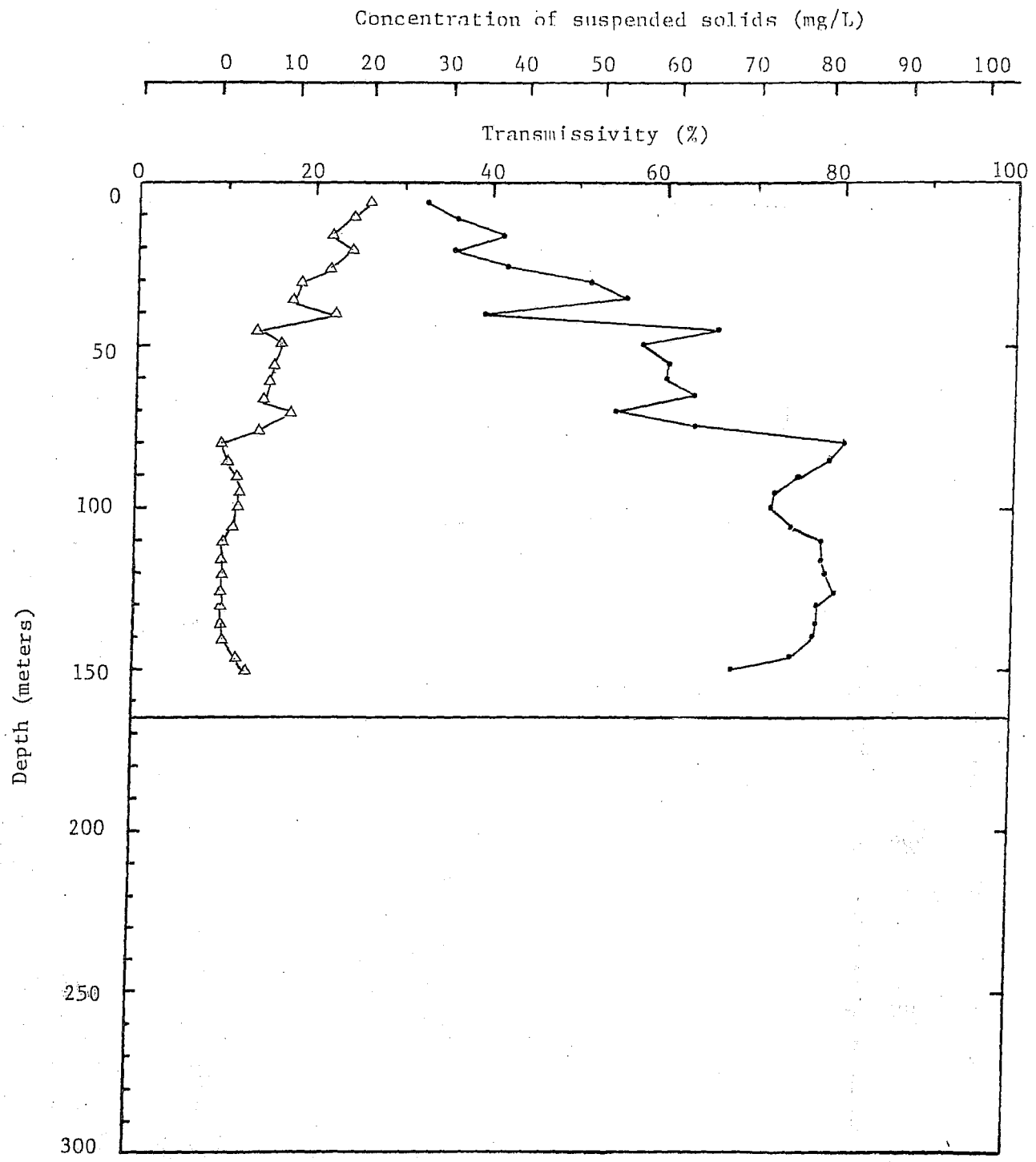
Survey Area : ALICE ARM
Station : M-11 (179m)

Date : 25/09/82
Time : 1129-1142



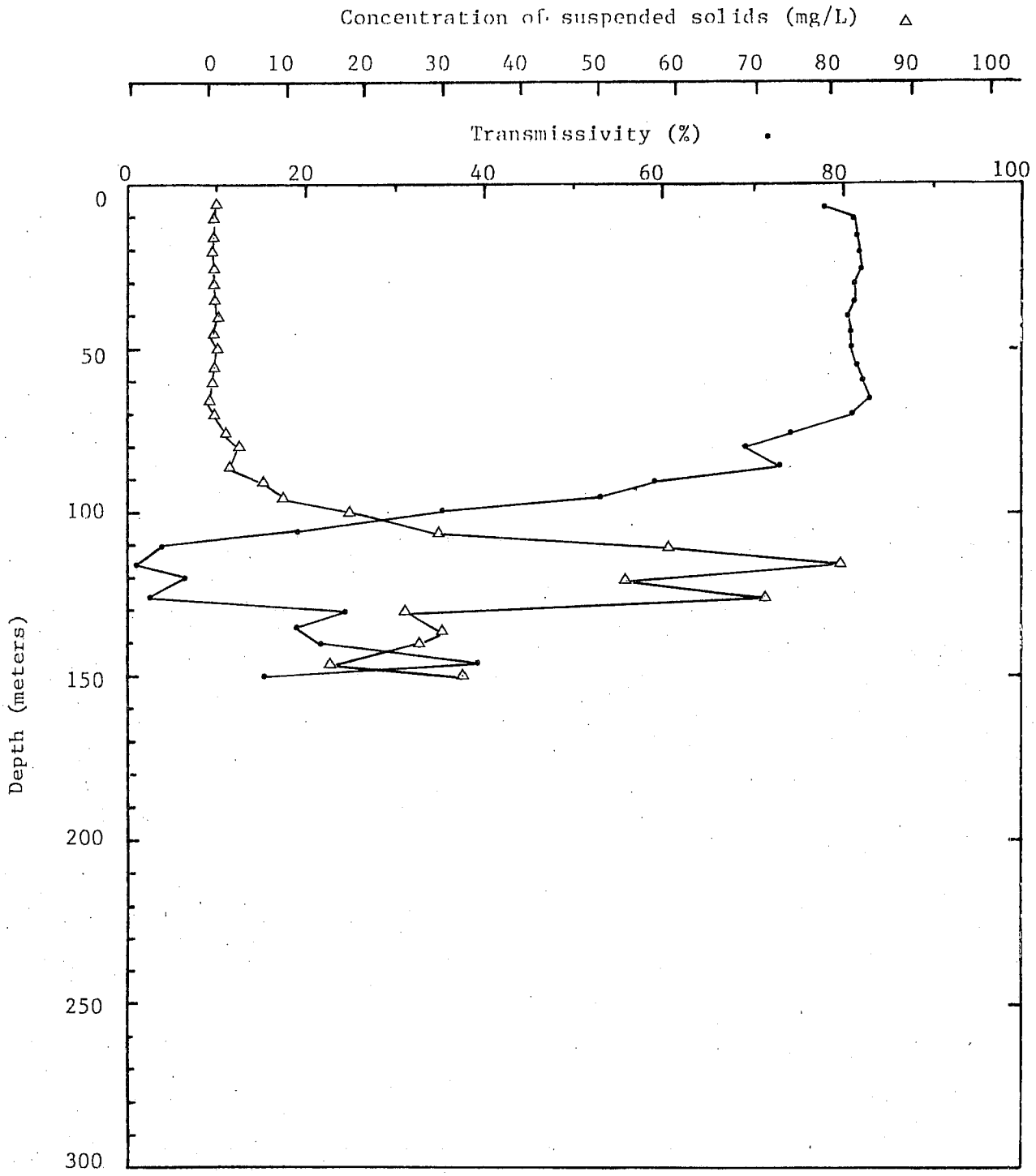
Survey Area : ALICE ARM
Station : P12 (165m)

Date : 25/09/82
Time : 1157-1208



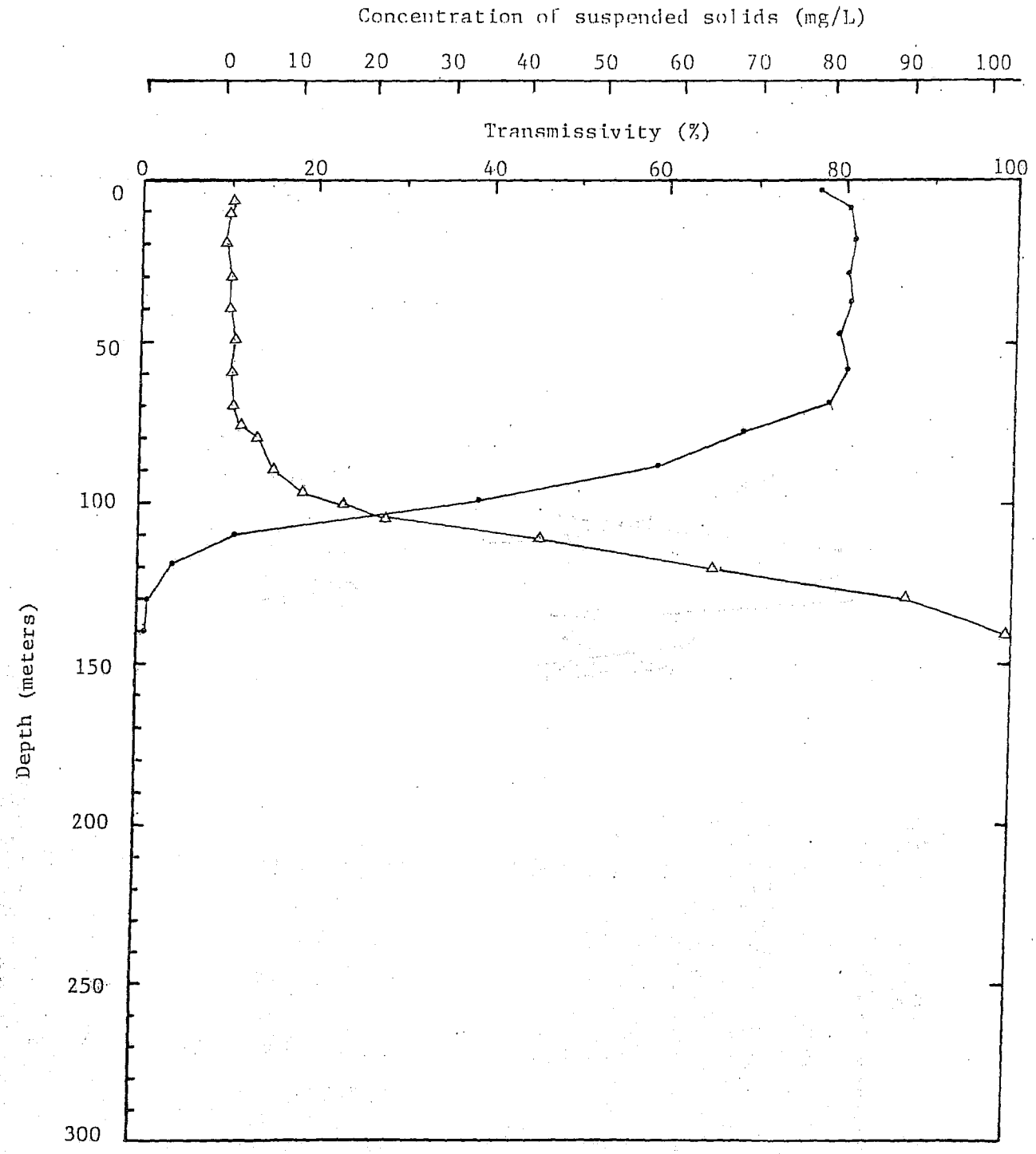
Survey Area : ALICE ARM
Station : 0-13 (Bottom 175-155-168)

Date : 25/09/82
Time : 1225-1234



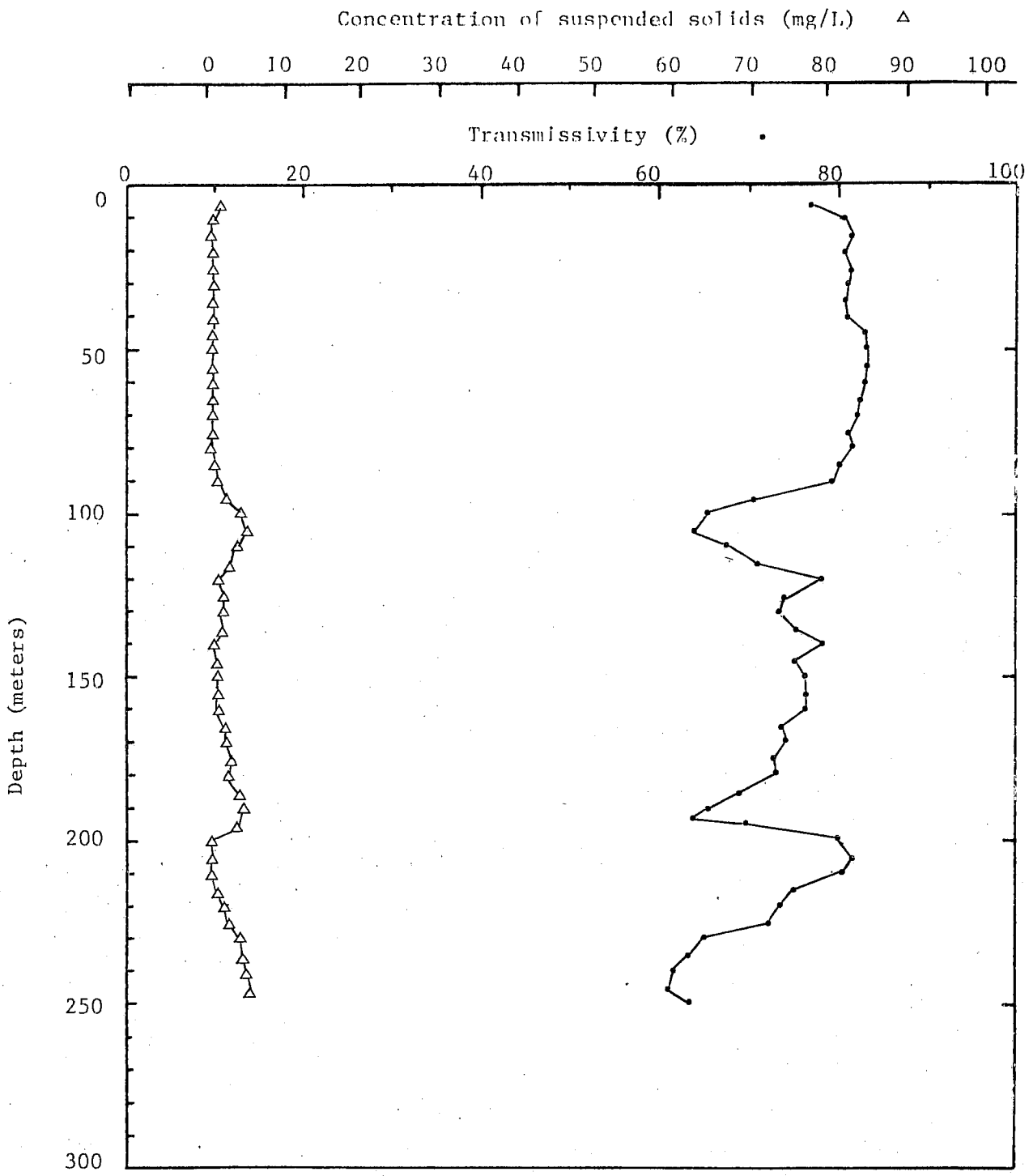
Survey Area : ALICE ARM
Station : N-14 (120-164m)

Date : 25/09/82
Time : 1250-1259 PST



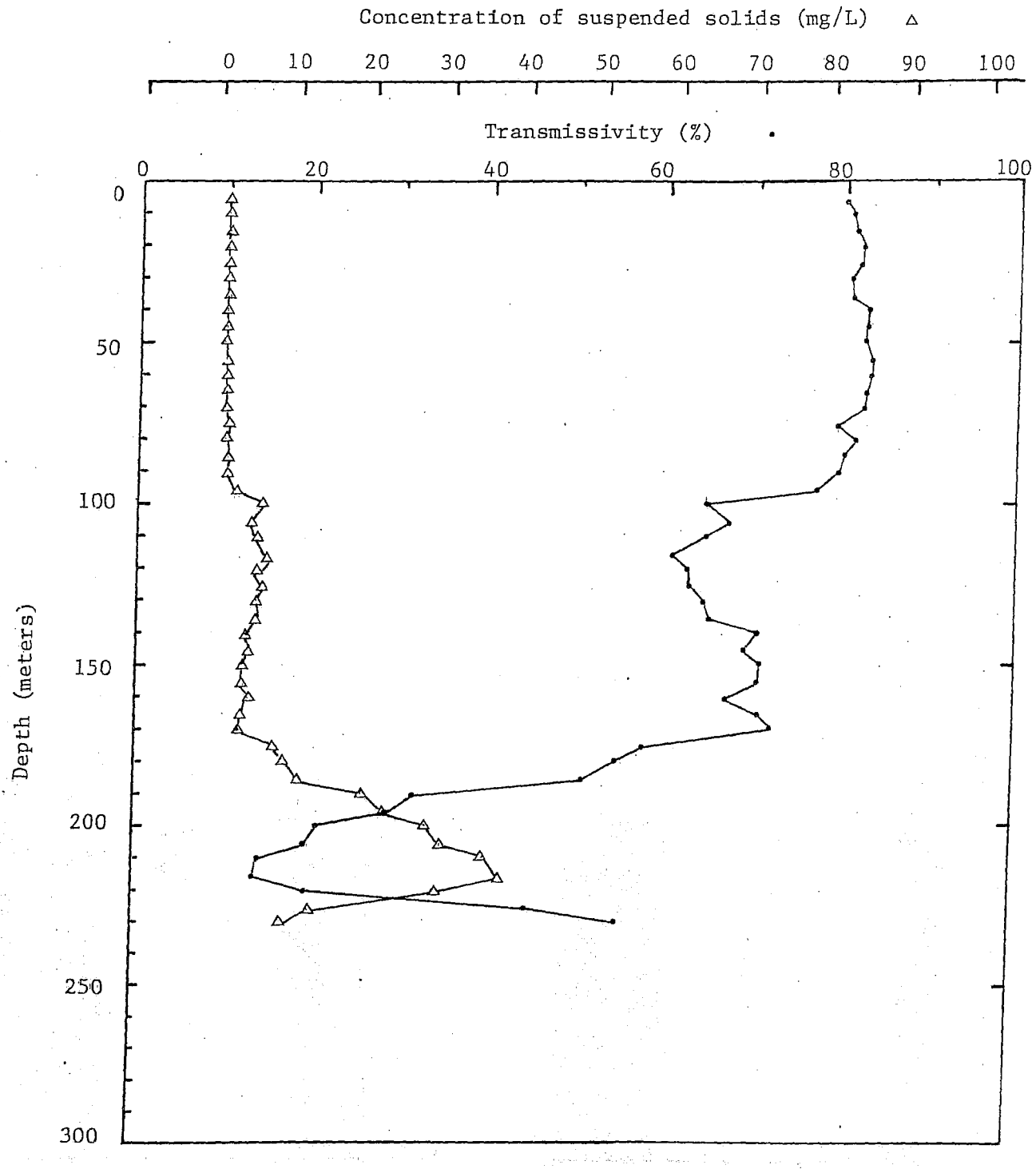
Survey Area : ALICE ARM
Station : R-16

Date : 25/09/82
Time : 1328-1343



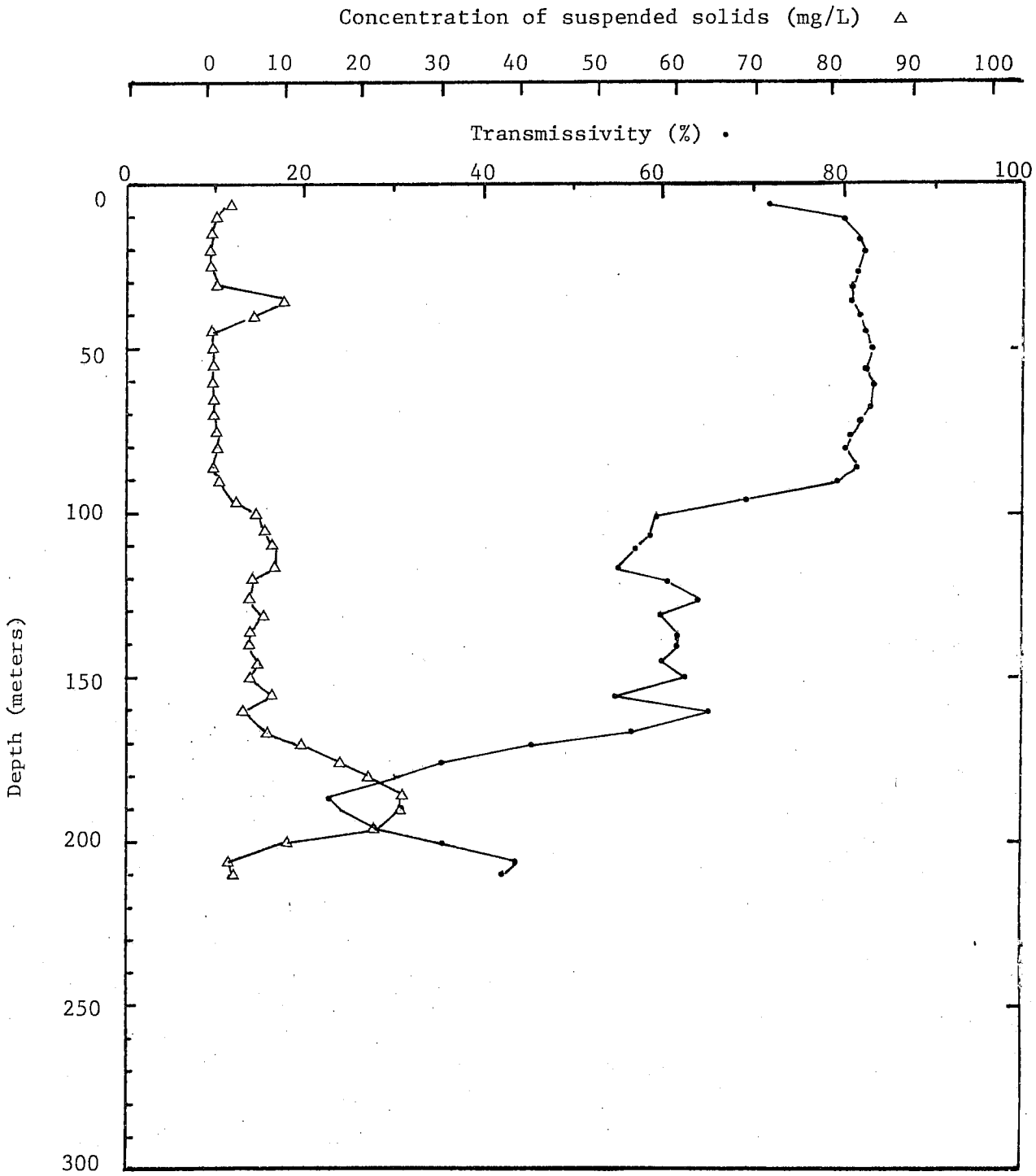
Survey Area : ALICE ARM
Station : Q16 (246m)

Date : 25/09/82
Time : 1413-1425



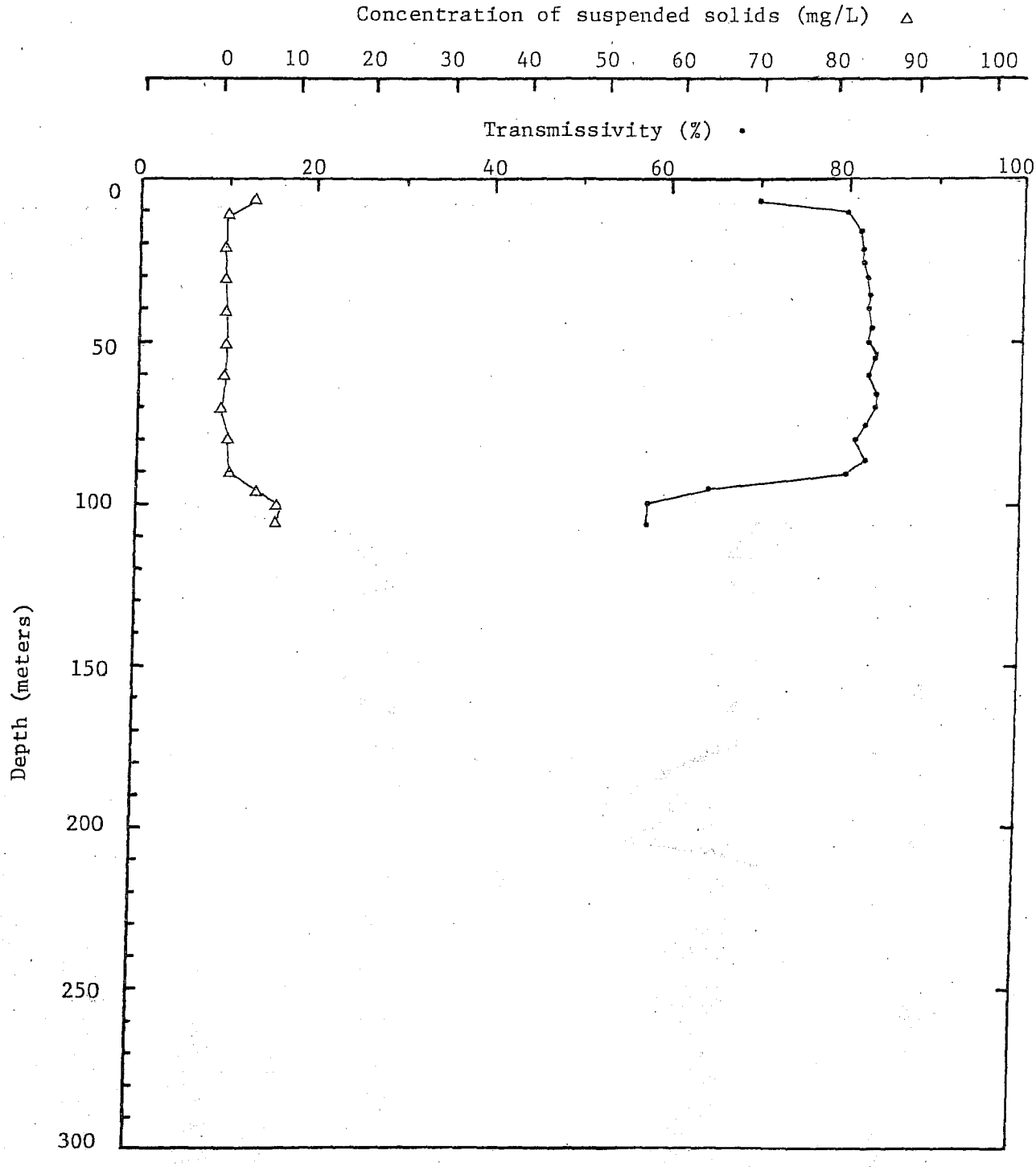
Survey Area : ALICE ARM
Station : P-16 (187-240m)

Date : 25/09/82
Time : 1457-1510



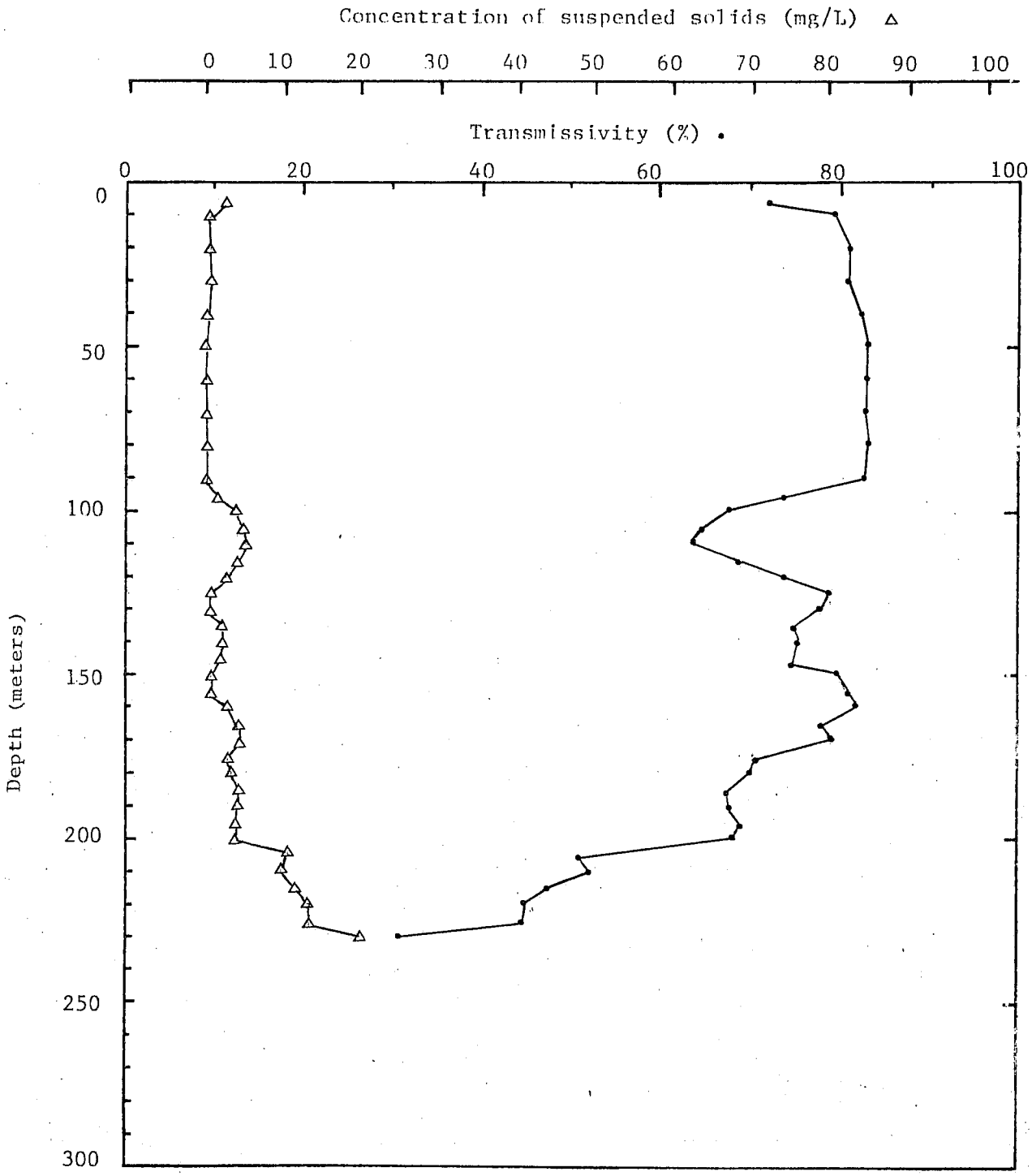
Survey Area : ALICE ARM
Station : 0-16 (110m)

Date : 25/09/82
Time : 1526-1532



Survey Area : ALICE ARM
Station : ONE CABLE W OF ST-4 (247-237m)

Date : 25/09/82
Time : (1600-1615)



Survey Area : ALICE ARM
Station : M-11 (168m)

Date : 26/09/82
Time : (2000-2017)

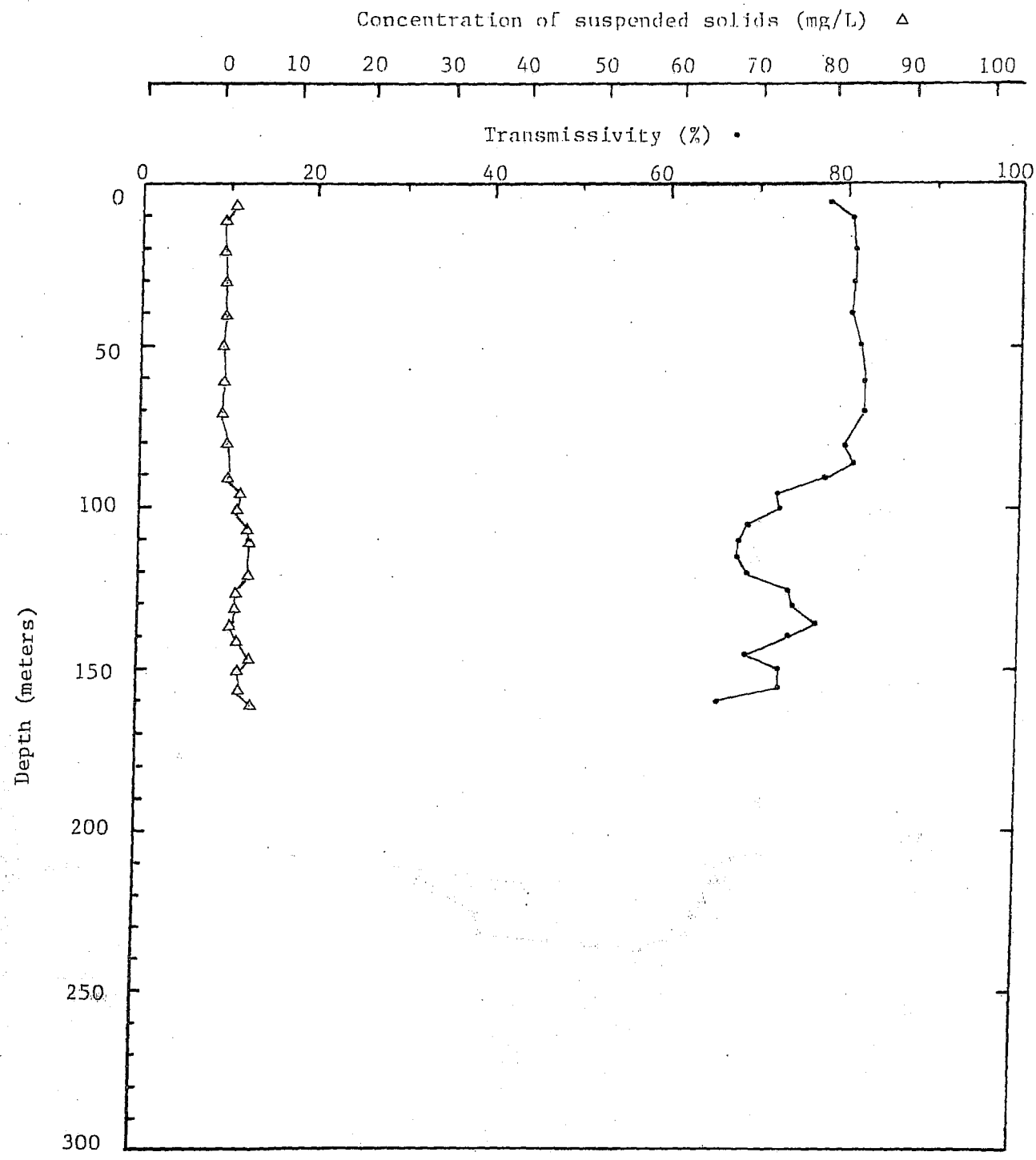


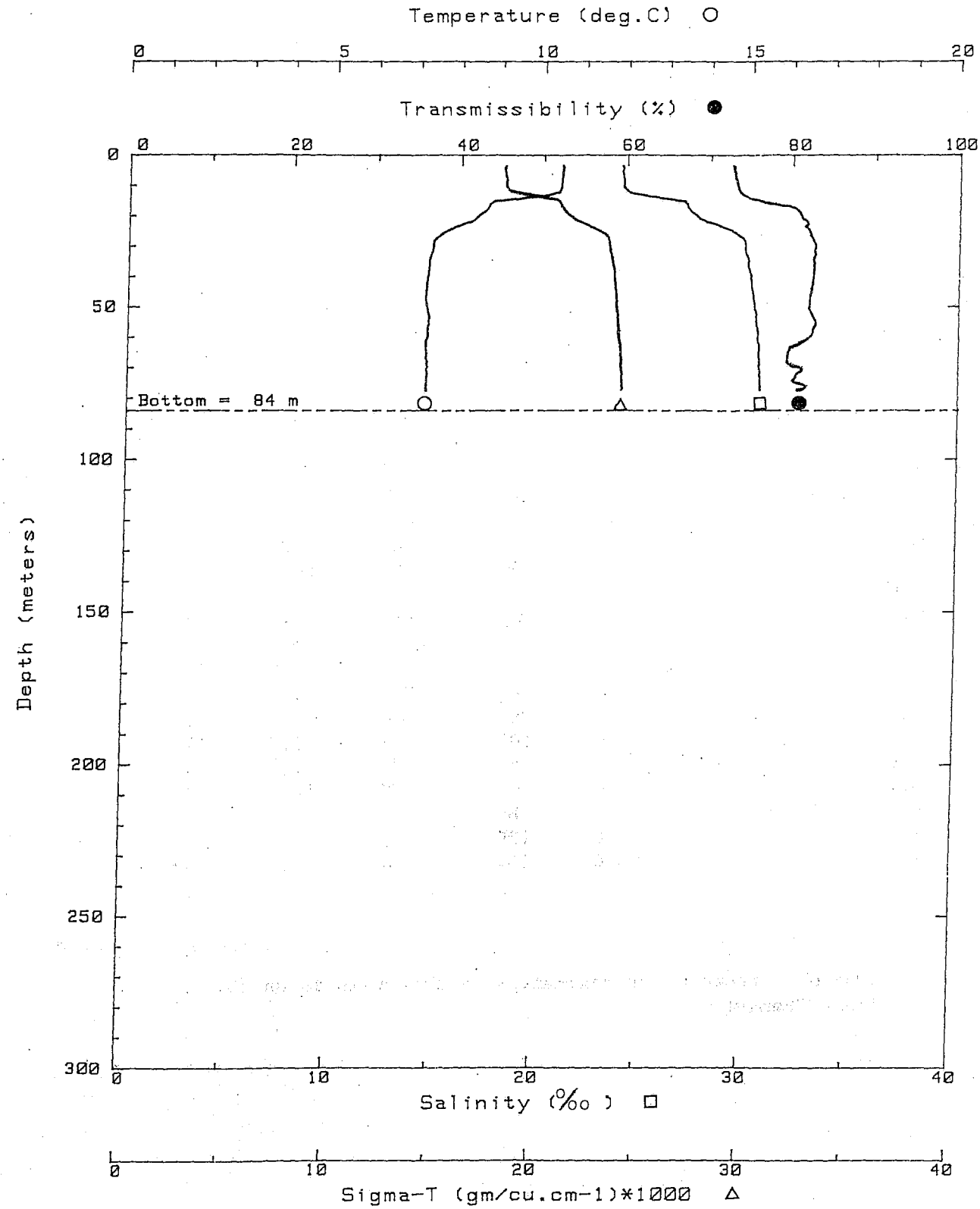
TABLE 9. STATIONS AT WHICH CTD %T PROFILES WERE RUN [1]

STATION	DATE	TIME (Z+8)	DEPTH m	CALIBRATION READING Hz	%T	Partic. Conc. mgL^{-1}
AA-1	27/09/82	1045	84			
AA-2	"	0820	205			
AA-3	26/09/82	1800	386			
AA-4	"	1000	278			
AA-5	"	0930	102			
HA-3	27/09/82	1620	293			
HA-5	"	1851	97			
GB-1	28/09/82	0813	113			
OB-6	"	0956	241			
OB-4	"	1320	525			
OB-2	"	1718	428			
PI-2	"	2055	540			
S-19	30/09/82	1040	247			
R-19	"	1100	267	1446	77.0	1.25
Q-19	"	1115	260	1465	67.5	3.78
P-19	"	1130	241	1495	52.5	8.41
O-19	"	1150	141	1433	83.5	0.53
R-16	"	1235	245	1465	67.5	3.19
Q-16	"	1255	250	1500	50.0	14.63
Q-16	"	1340	237			
P-16	"	1400	187	1561	19.5	34.01
				1490	55.0	6.83
O-16	"	1425	110	1478	61.00	4.41
P-12	"	1450	180	1512	44.0	12.44
O-13	"	1550	187	1570	15.0	27.67
N-14	"	1615	104	1516	42.0	10.74
N-10	"	1645	152	1596	2.0	79.76
M-11	"	1710	175	1492	54.0	13.43
N-7	"	1755	86			
M-8	"	1810	120			
L-9	"	1820	154	1544	28.0	18.35

[1] Complete record at approximately 1m intervals is on file at Ocean Chemistry

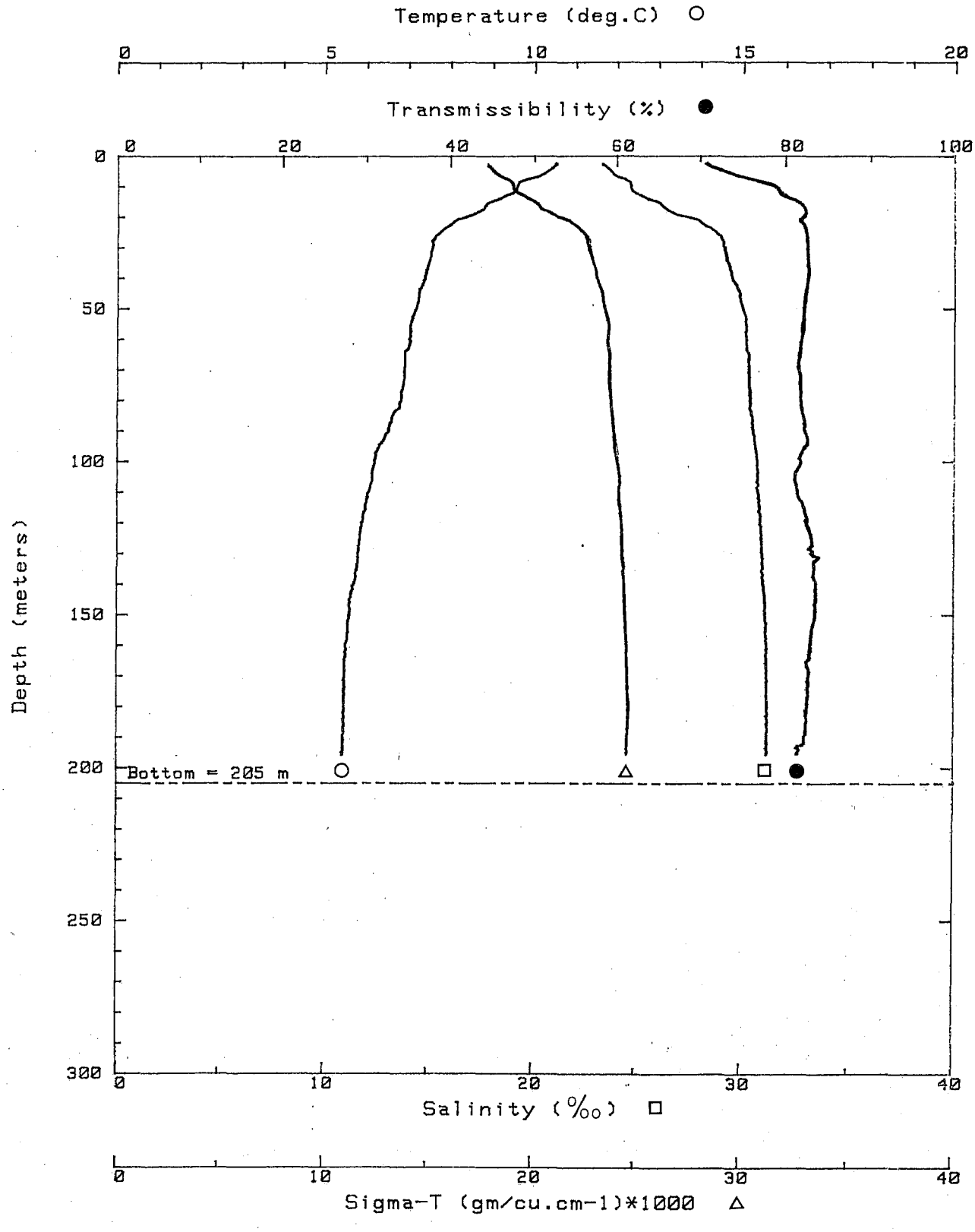
Survey Area : ALICE ARM
Station : AA1

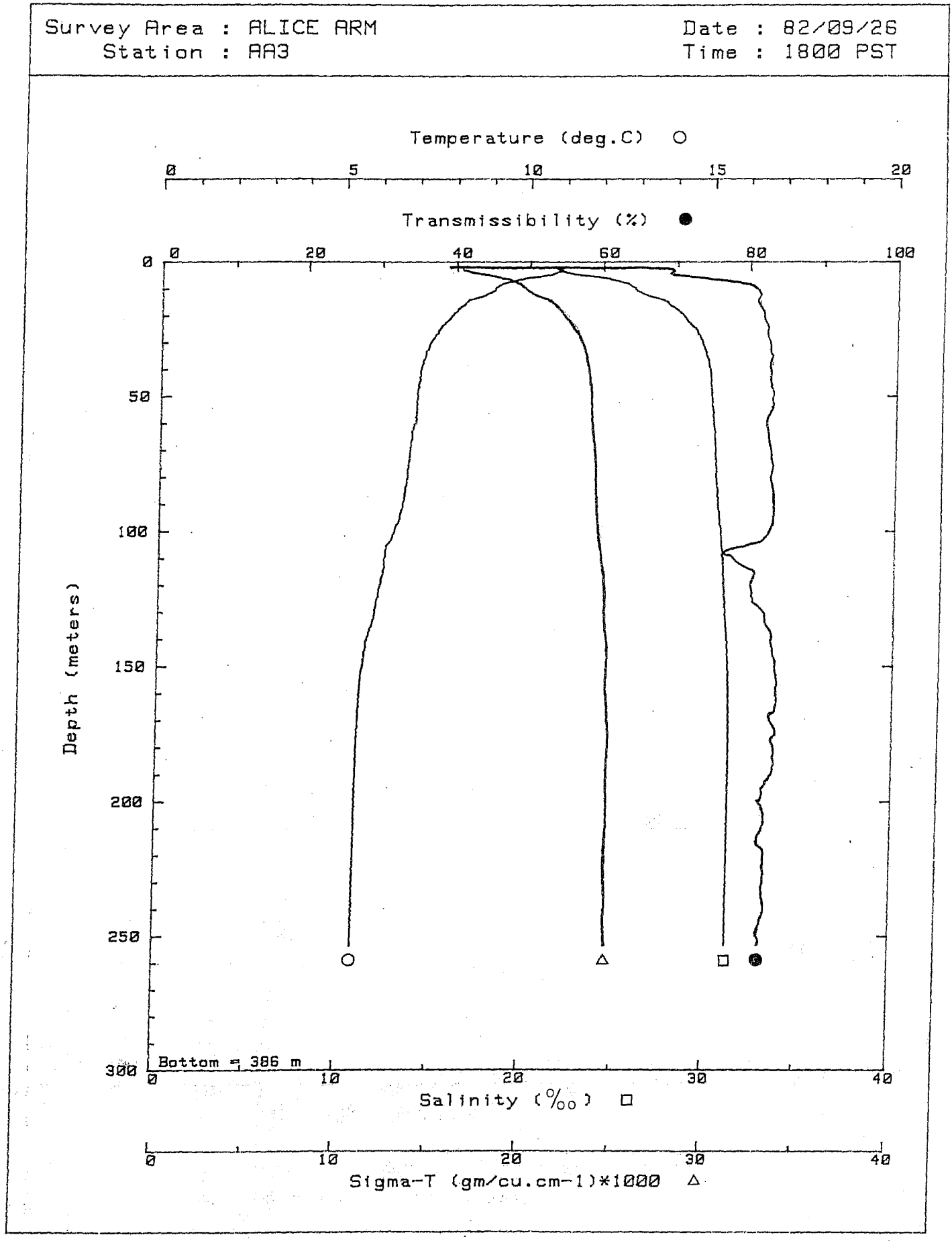
Date : 82/09/27
Time : 1045 PST



Survey Area : ALICE ARM
Station : AA2

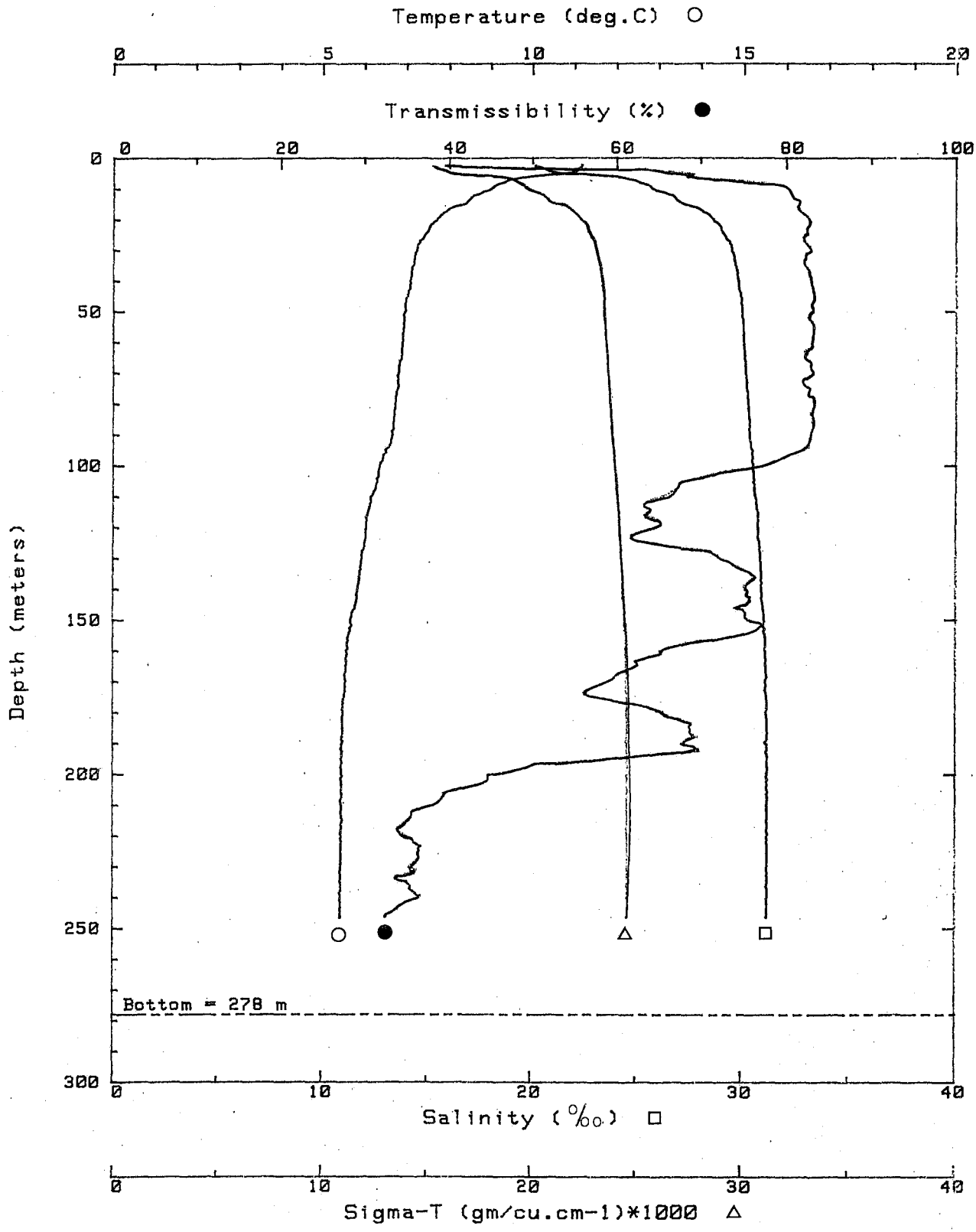
Date : 82/09/27
Time : 0820 PST




Survey Area : ALICE ARM
Station : AA3
Date : 82/09/26
Time : 1800 PST
Temperature (deg.C) ○
0 5 10 15 20
Transmissibility (%) ●
0 20 40 60 80 100
Depth (meters)
0 50 100 150 200 250 300
Bottom = 386 m
Salinity (‰) □
0 10 20 30 40
Sigma-T (gm/cu.cm-1)*1000 △
0 10 20 30 40

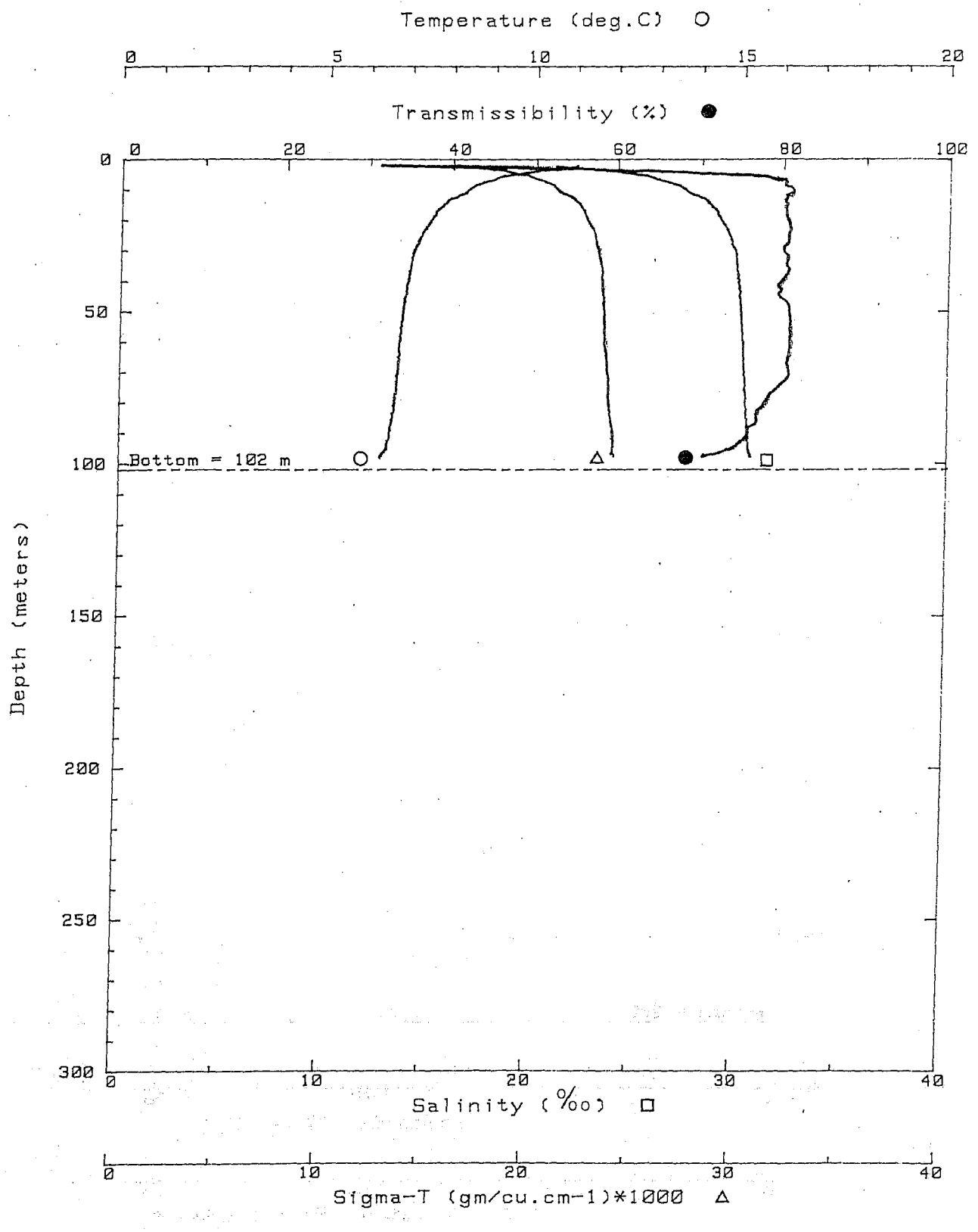
Survey Area : ALICE ARM
Station : AA-4

Date : 82/09/26
Time : 1002 PST



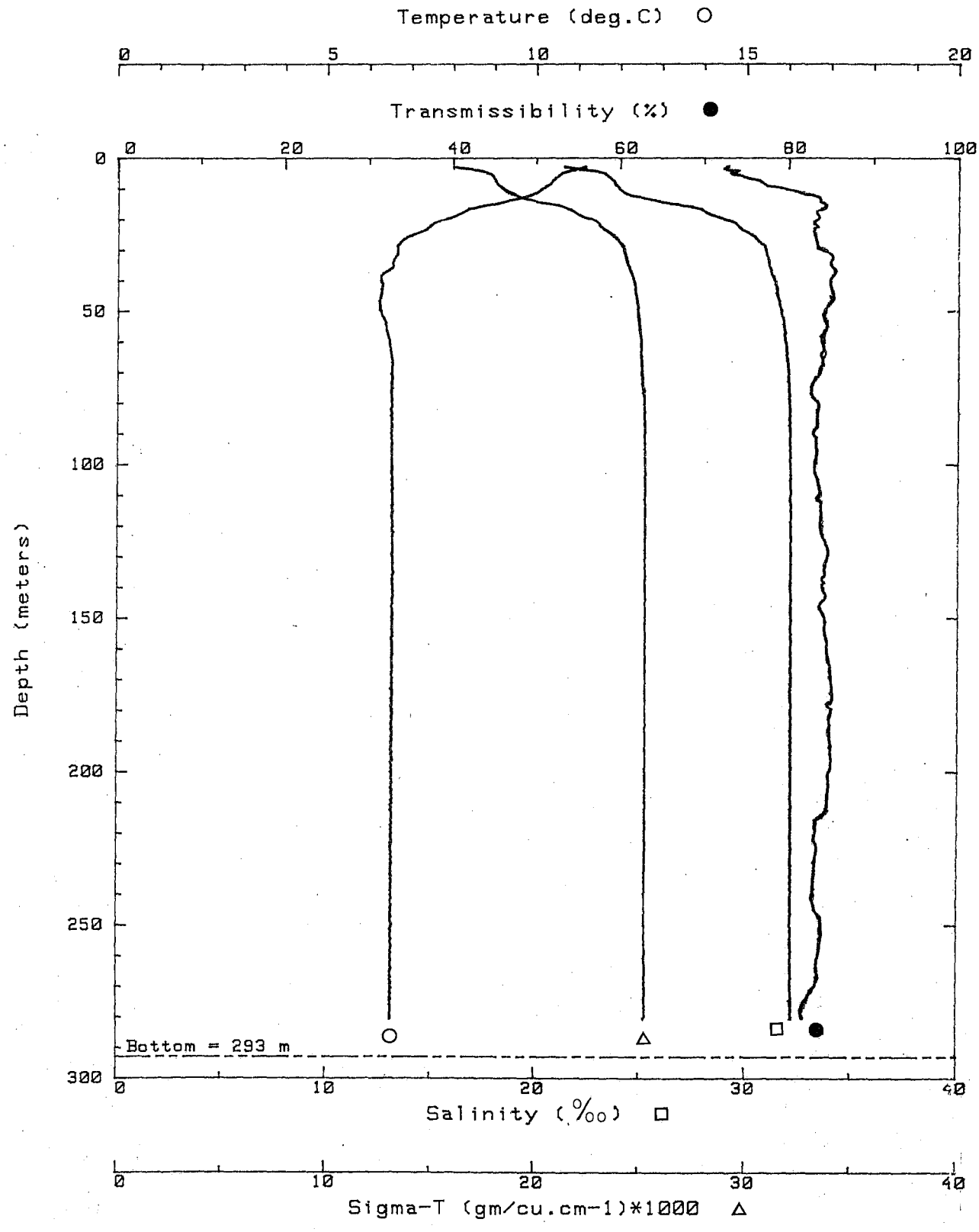
Survey Area : ALICE ARM
Station : AA-5

Date : 82/09/26
Time : 0930 PST



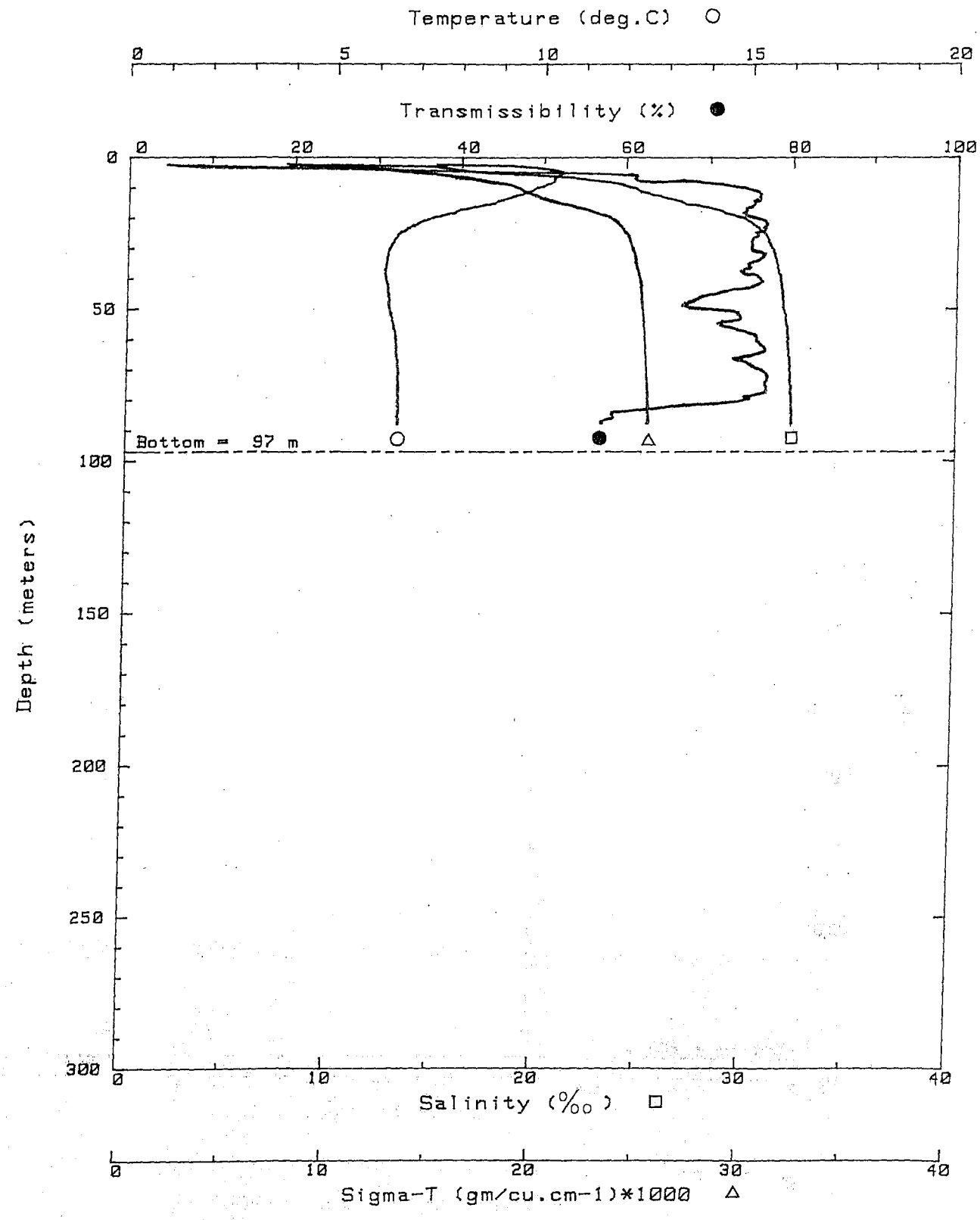
Survey Area : ALICE ARM
Station : HA3

Date : 82/09/27
Time : 1620 PST



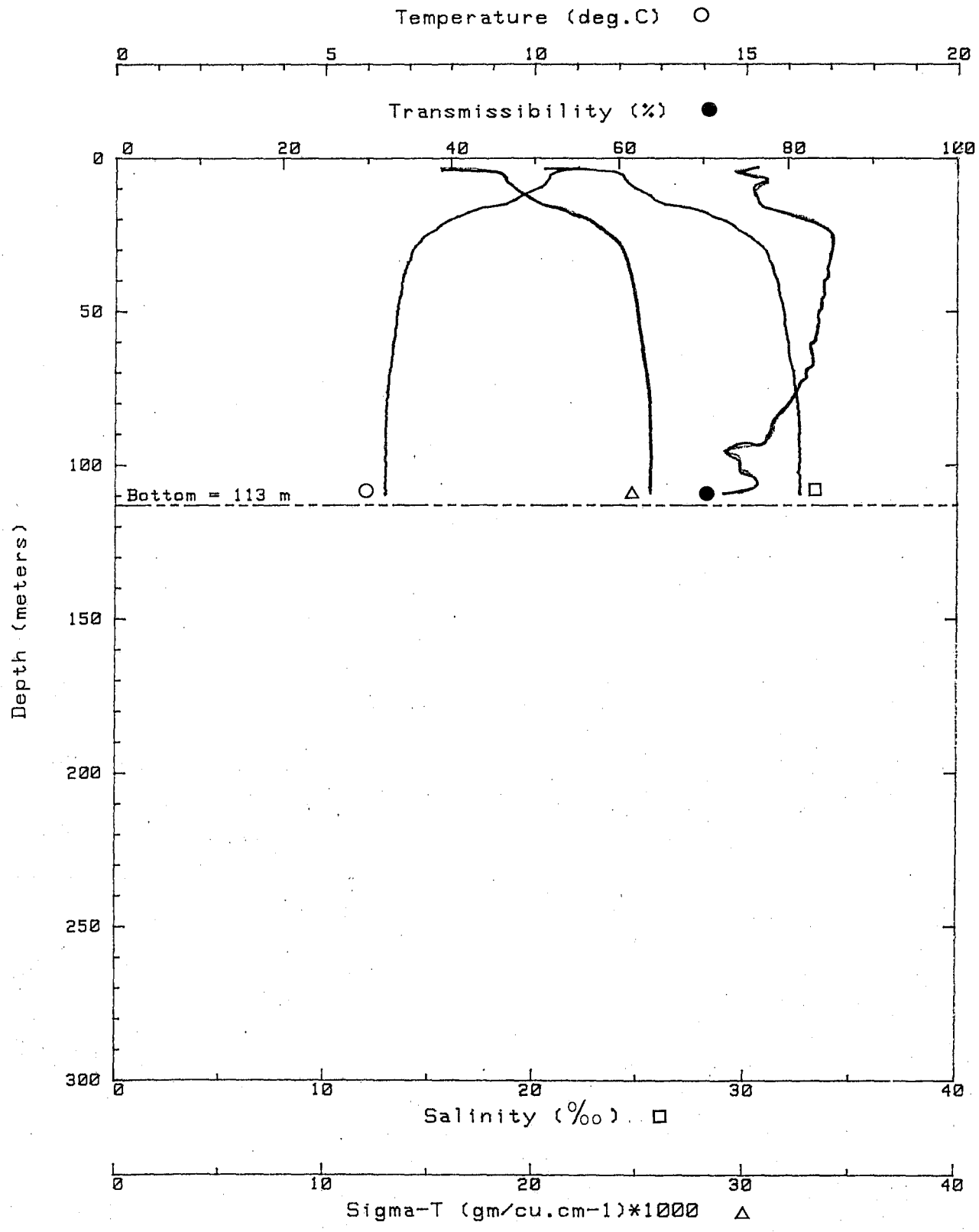
Survey Area : ALICE ARM
Station : HA5

Date : 82/09/27
Time : ? PST



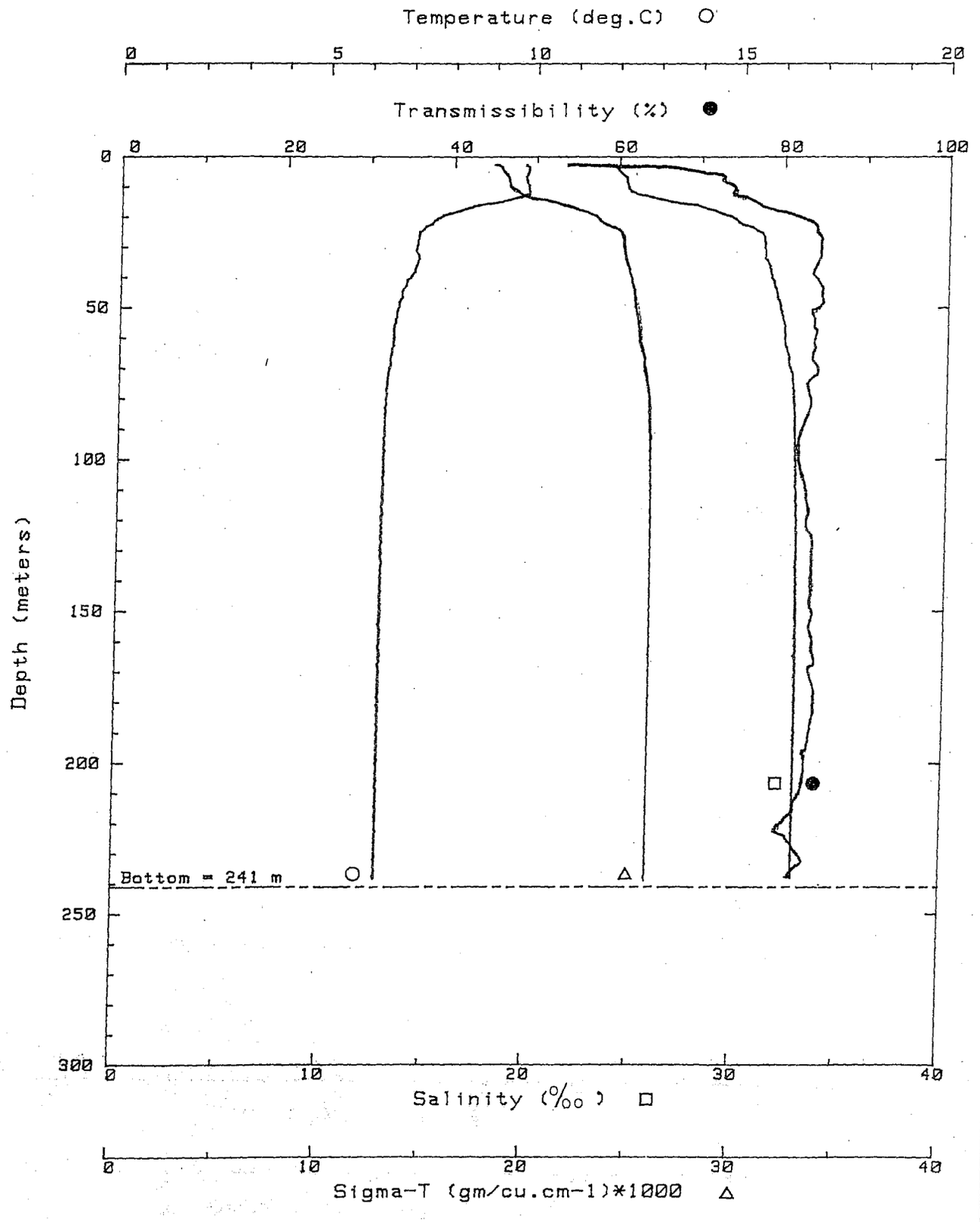
Survey Area : ALICE ARM
Station : GR-1

Date : 82/09/28
Time : 0813 PST



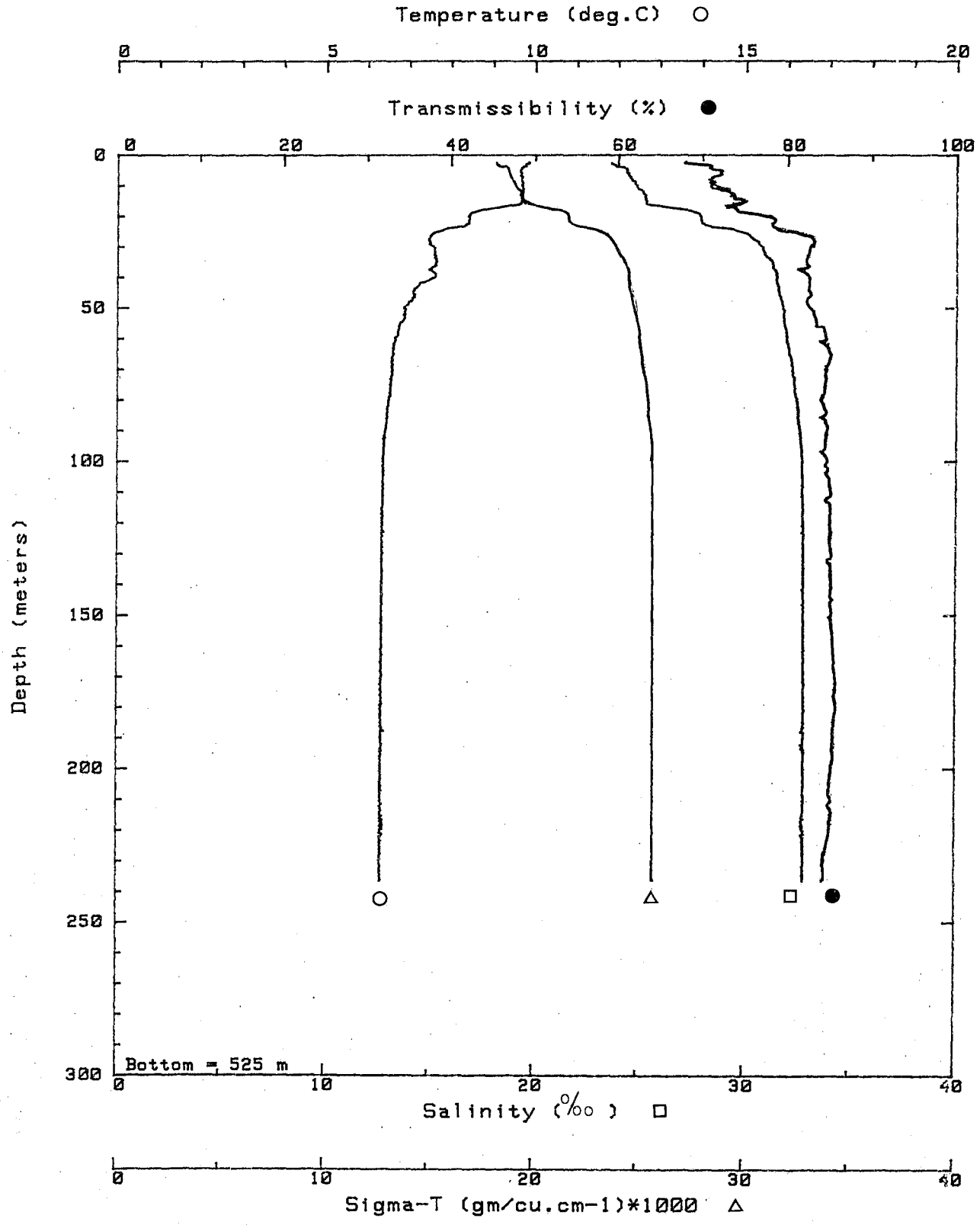
Survey Area : ALICE ARM
Station : OB-6

Date : 82/09/28
Time : 0956 PST



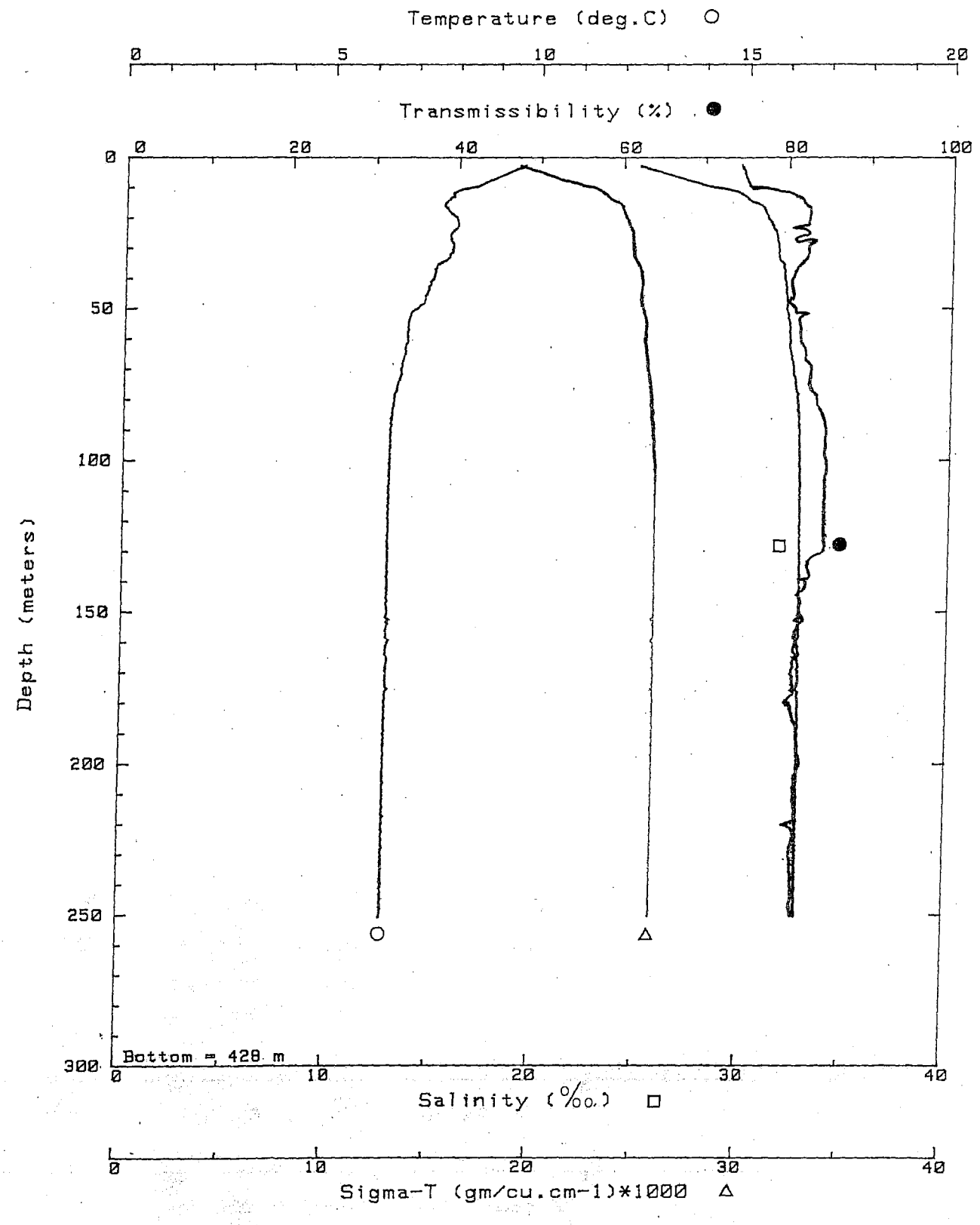
Survey Area : ALICE ARM
Station : OB-4

Date : 82/09/28
Time : 1320 PST



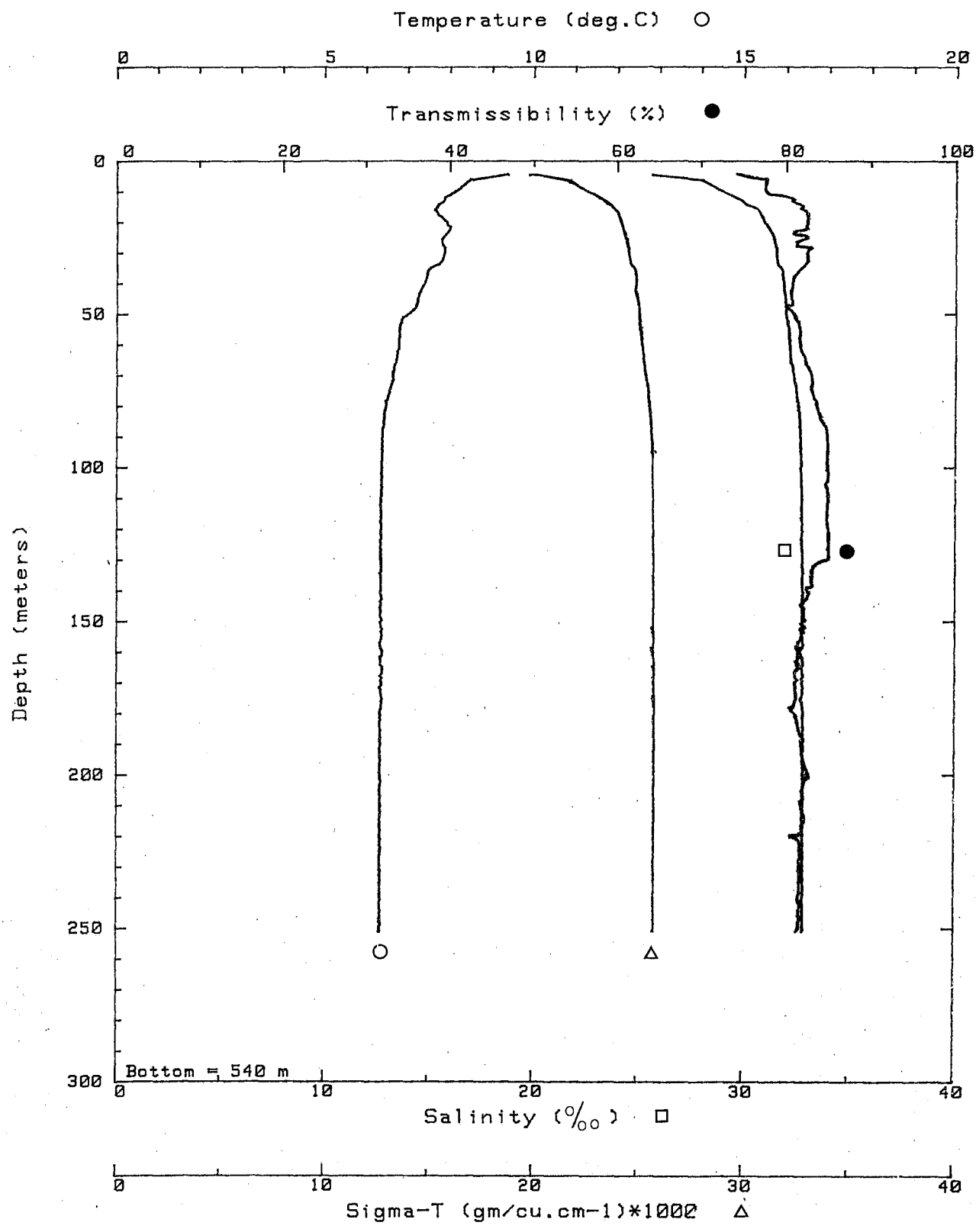
Survey Area : ALICE ARM
Station : OB-2

Date : 82/09/28
Time : 1718 PST



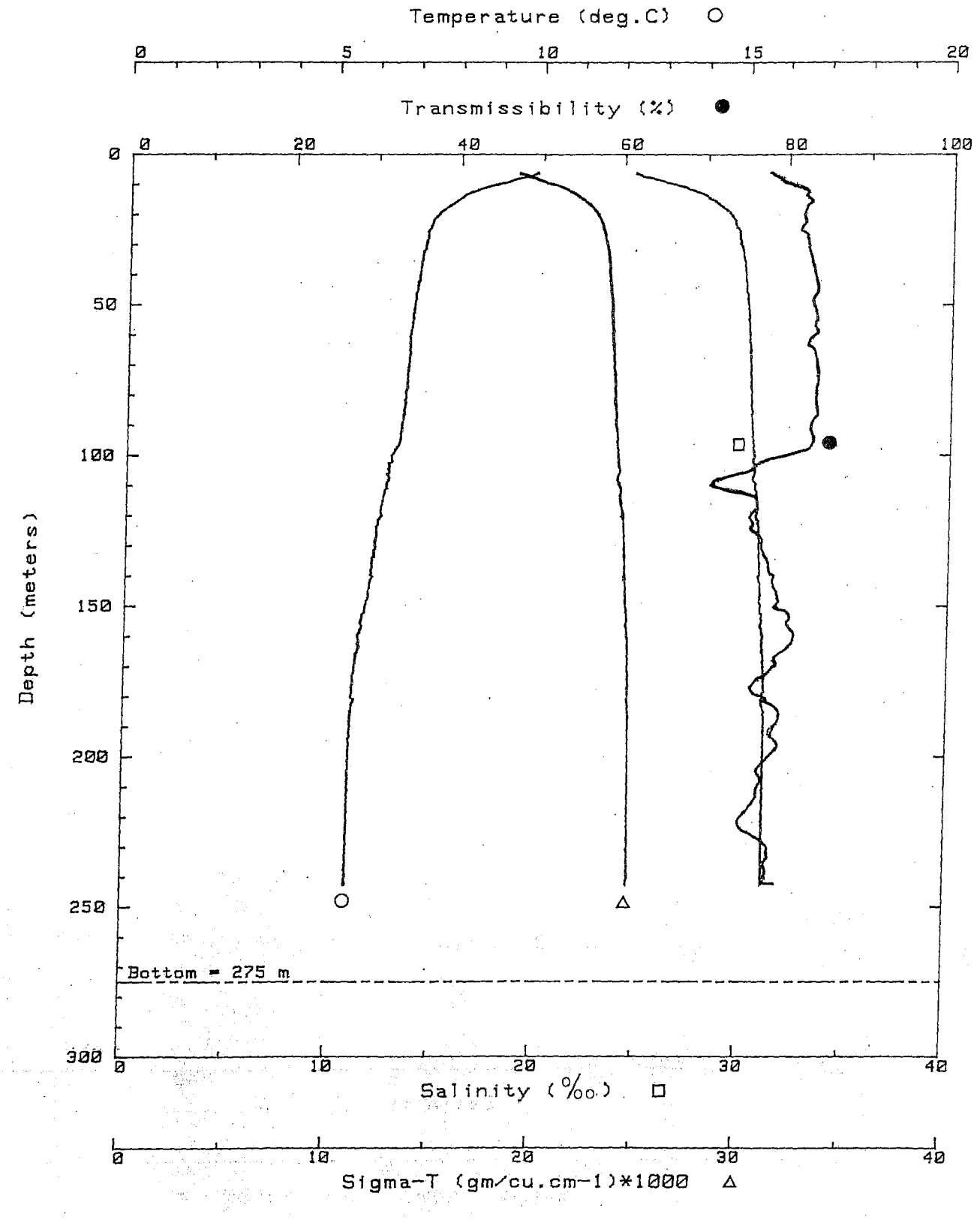
Survey Area : ALICE ARM
Station : PI-2

Date : 82/09/28
Time : 2055 PST



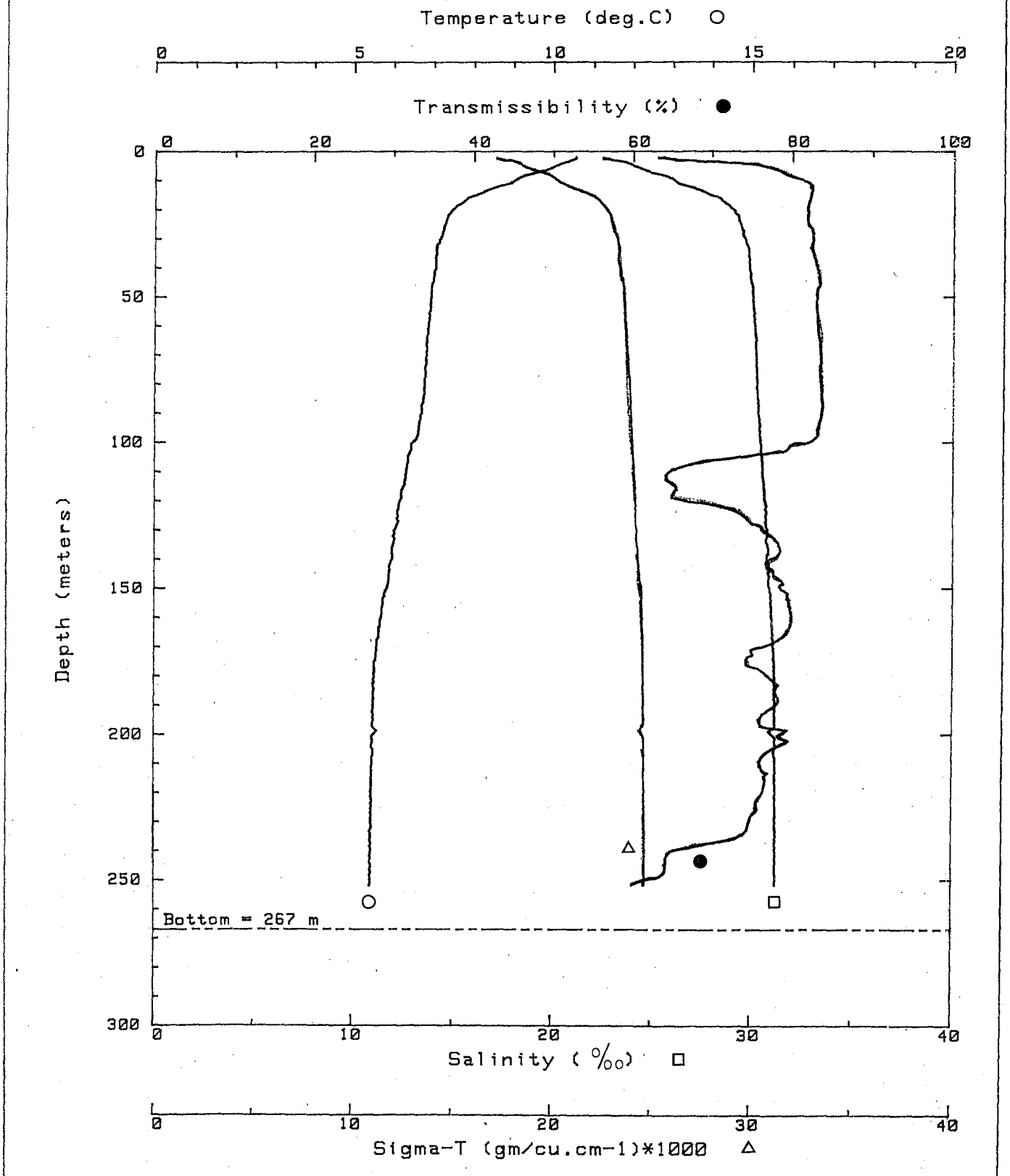
Survey Area : ALICE ARM
Station : S-19

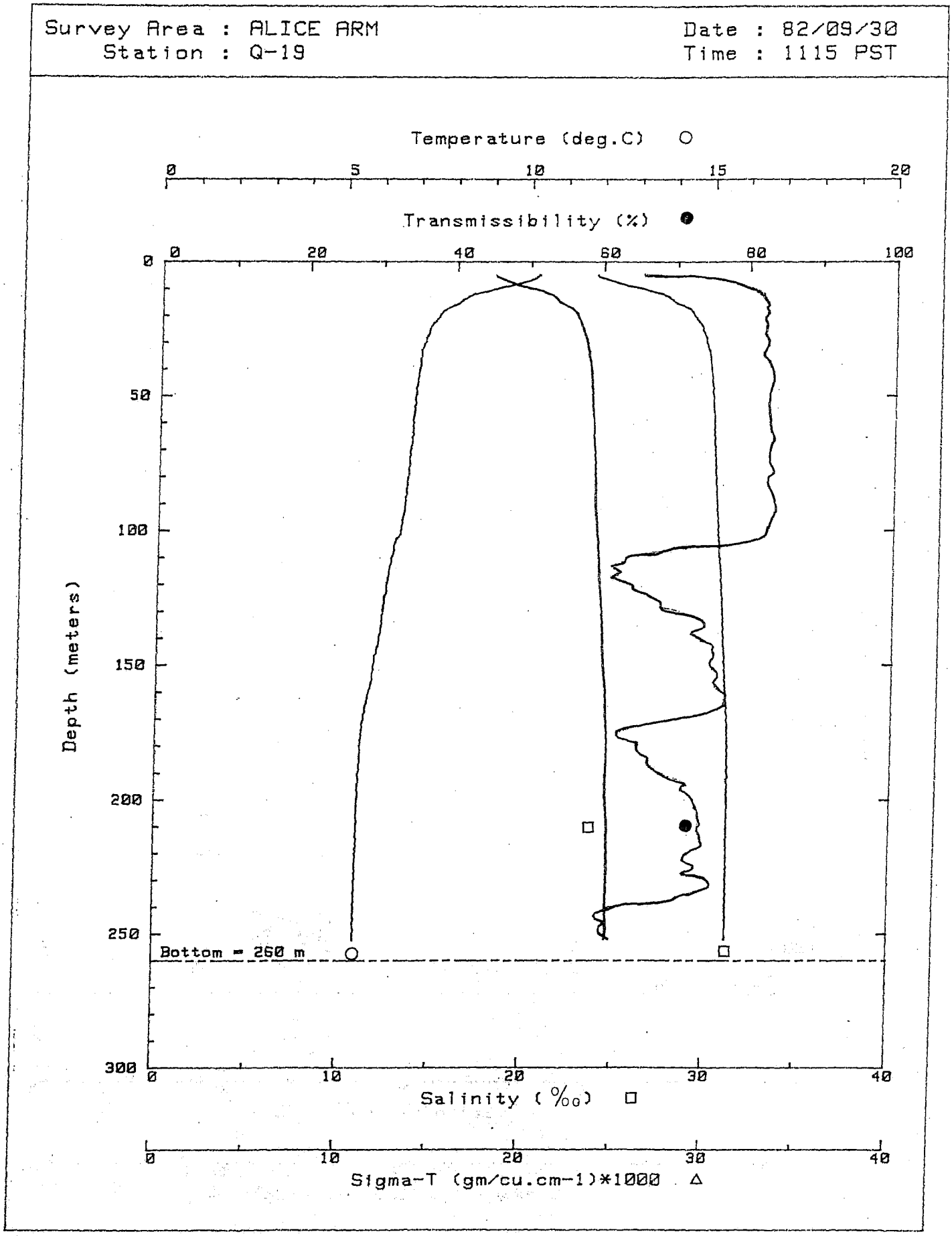
Date : 82/09/30
Time : 1040 PST



Survey Area : ALICE ARM
Station : R-19

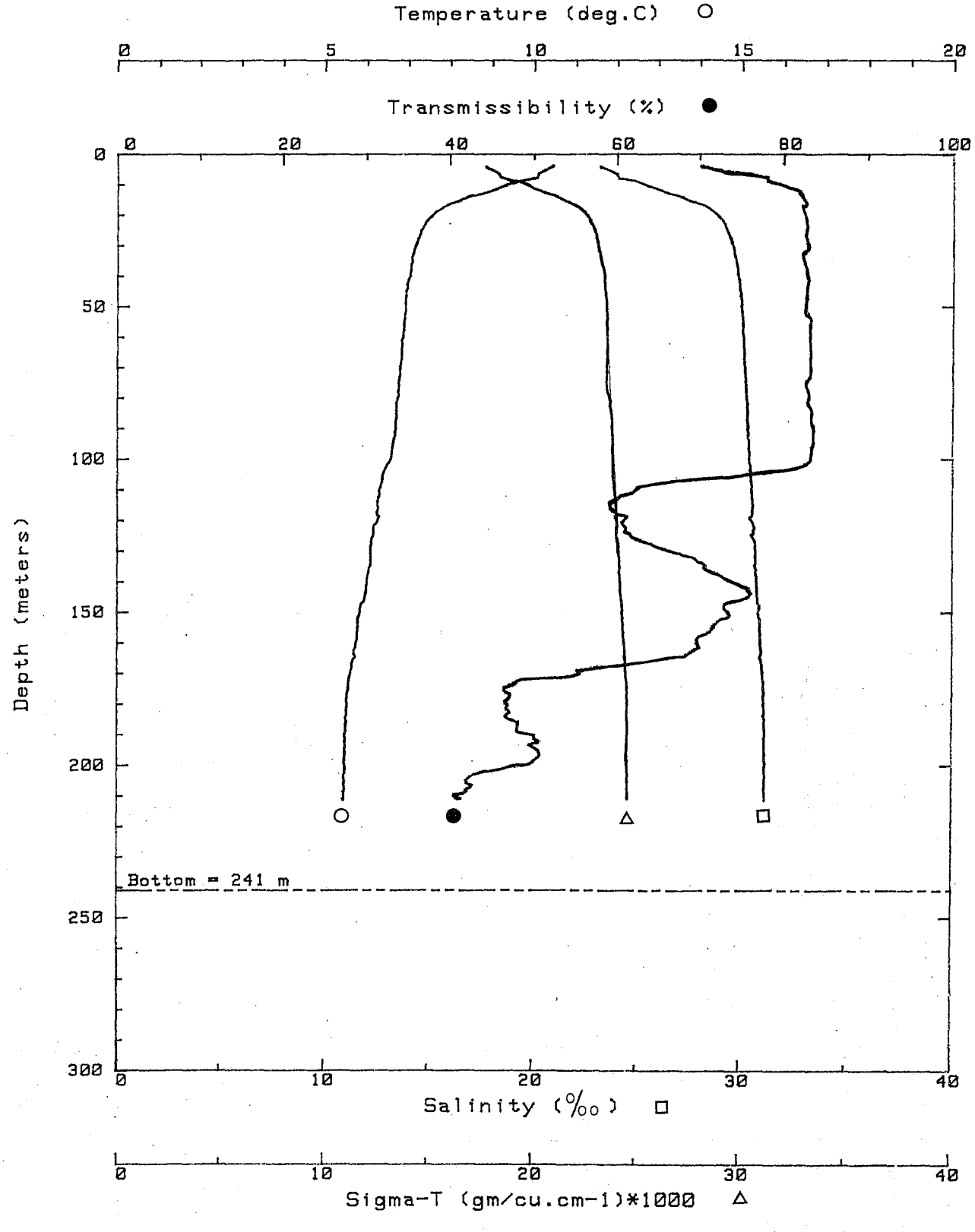
Date : 82/09/30
Time : 1100 PST




Survey Area : ALICE ARM
Station : Q-19
Date : 82/09/30
Time : 1115 PST
Temperature (deg.C) ○
0 5 10 15 20
Transmissibility (%) ●
0 20 40 60 80 100
Depth (meters)
0 50 100 150 200 250 300
Bottom = 260 m
Salinity (‰) □
0 10 20 30 40
Sigma-T (gm/cu.cm-1)*1000 △
0 10 20 30 40

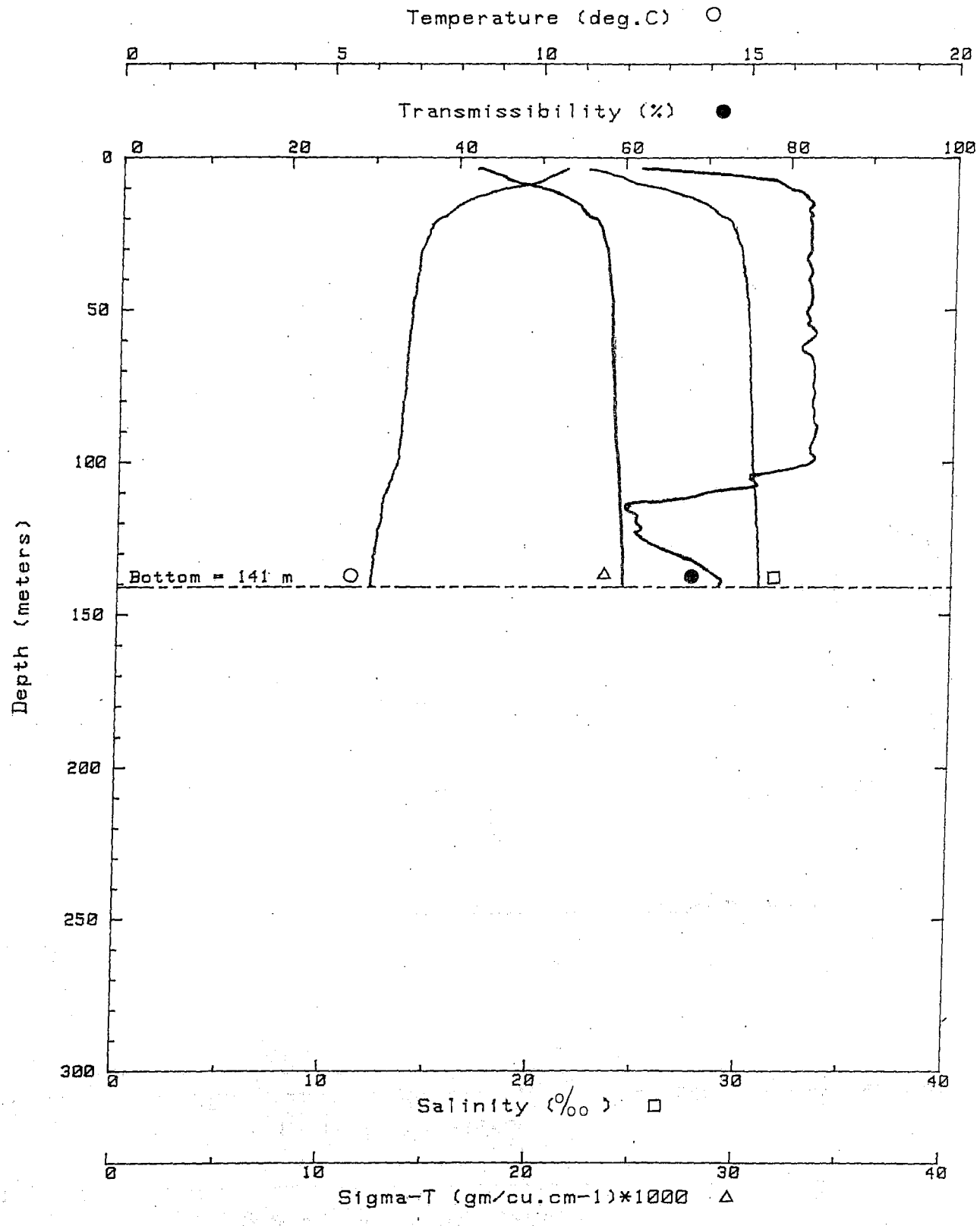
Survey Area : ALICE ARM
Station : P-19

Date : 82/09/30
Time : 1130 PST



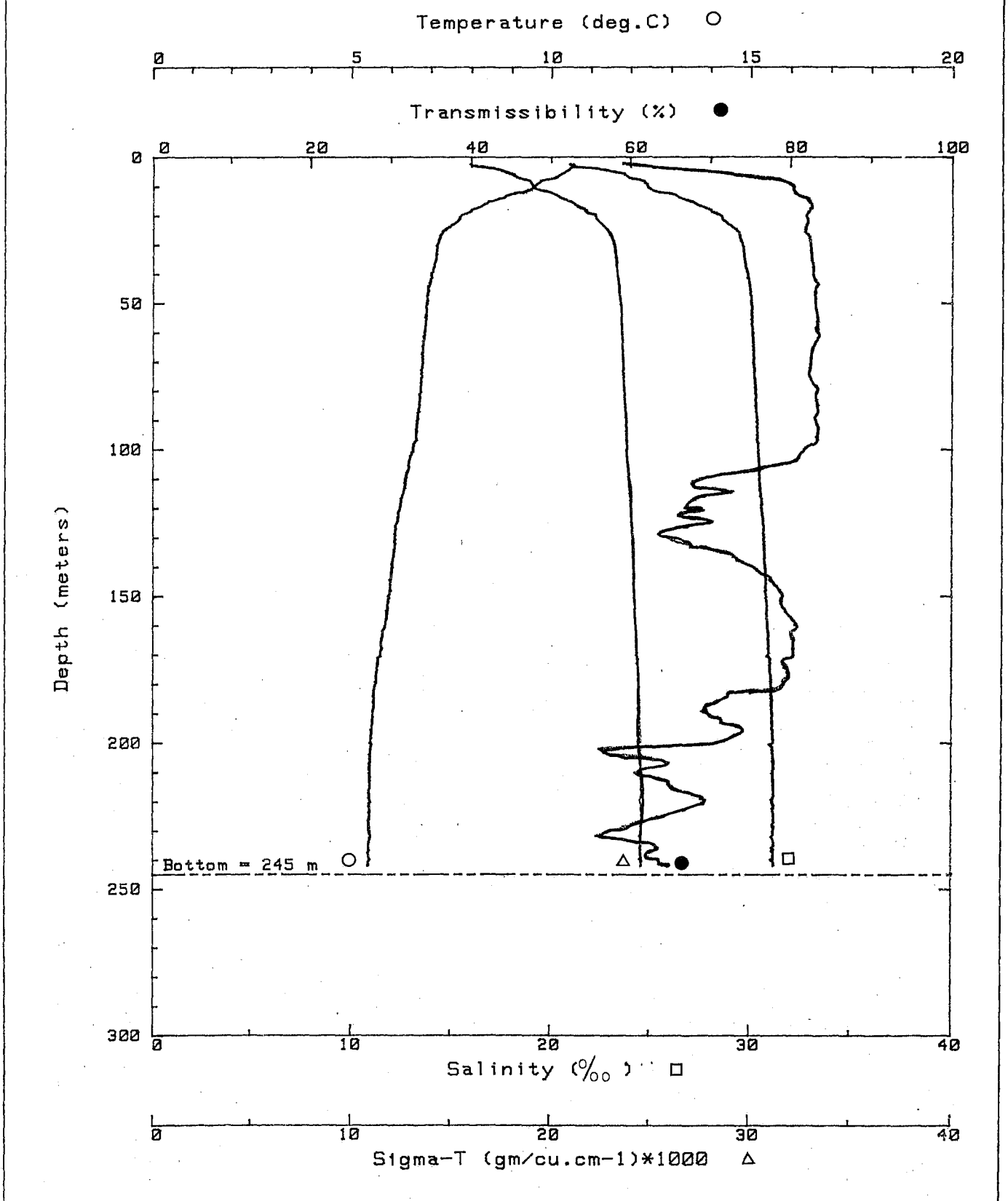
Survey Area : ALICE ARM
Station : O-19

Date : 82/09/30
Time : 1150 PST



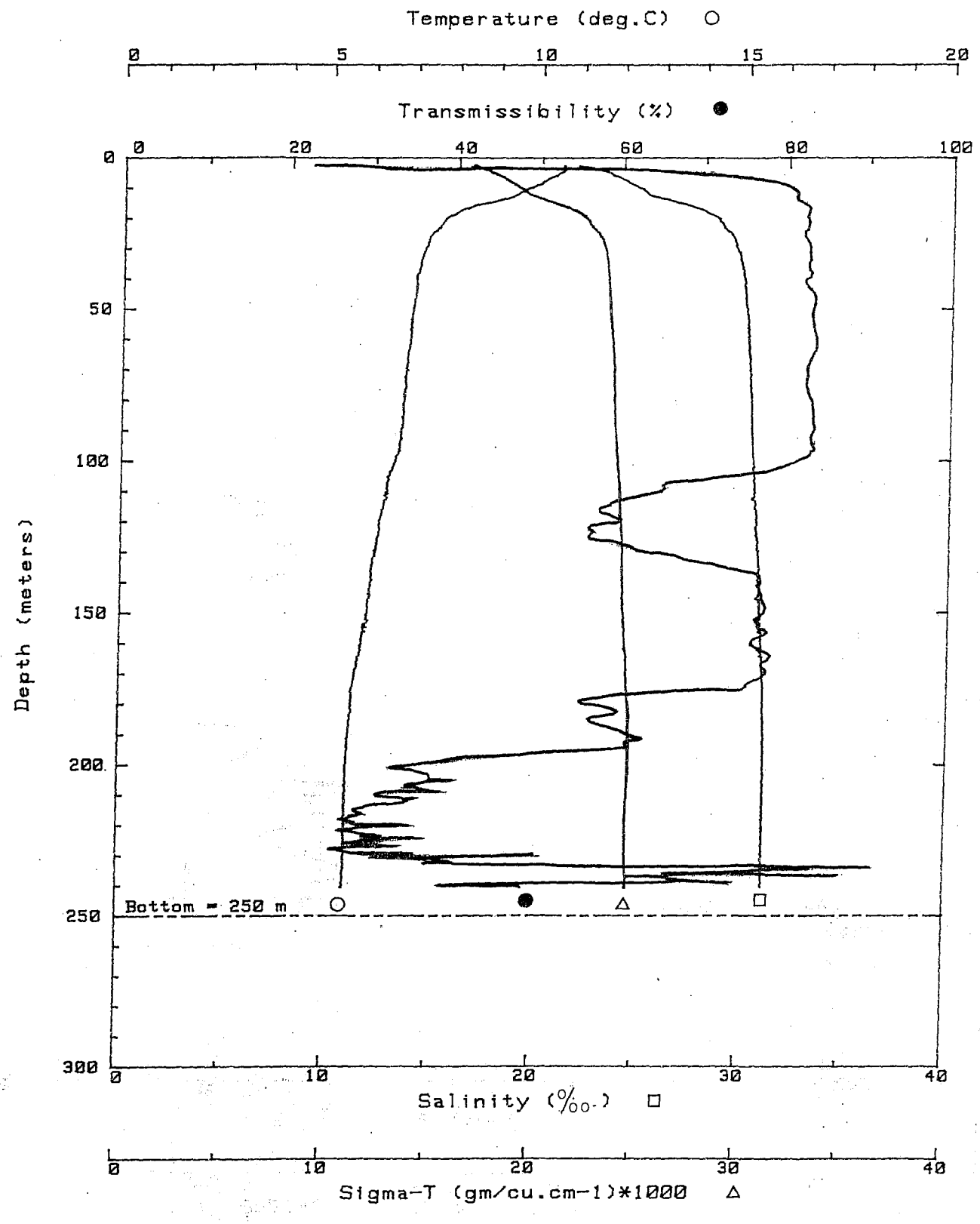
Survey Area : ALICE ARM
Station : R-16

Date : 82/09/30
Time : 1235 PST



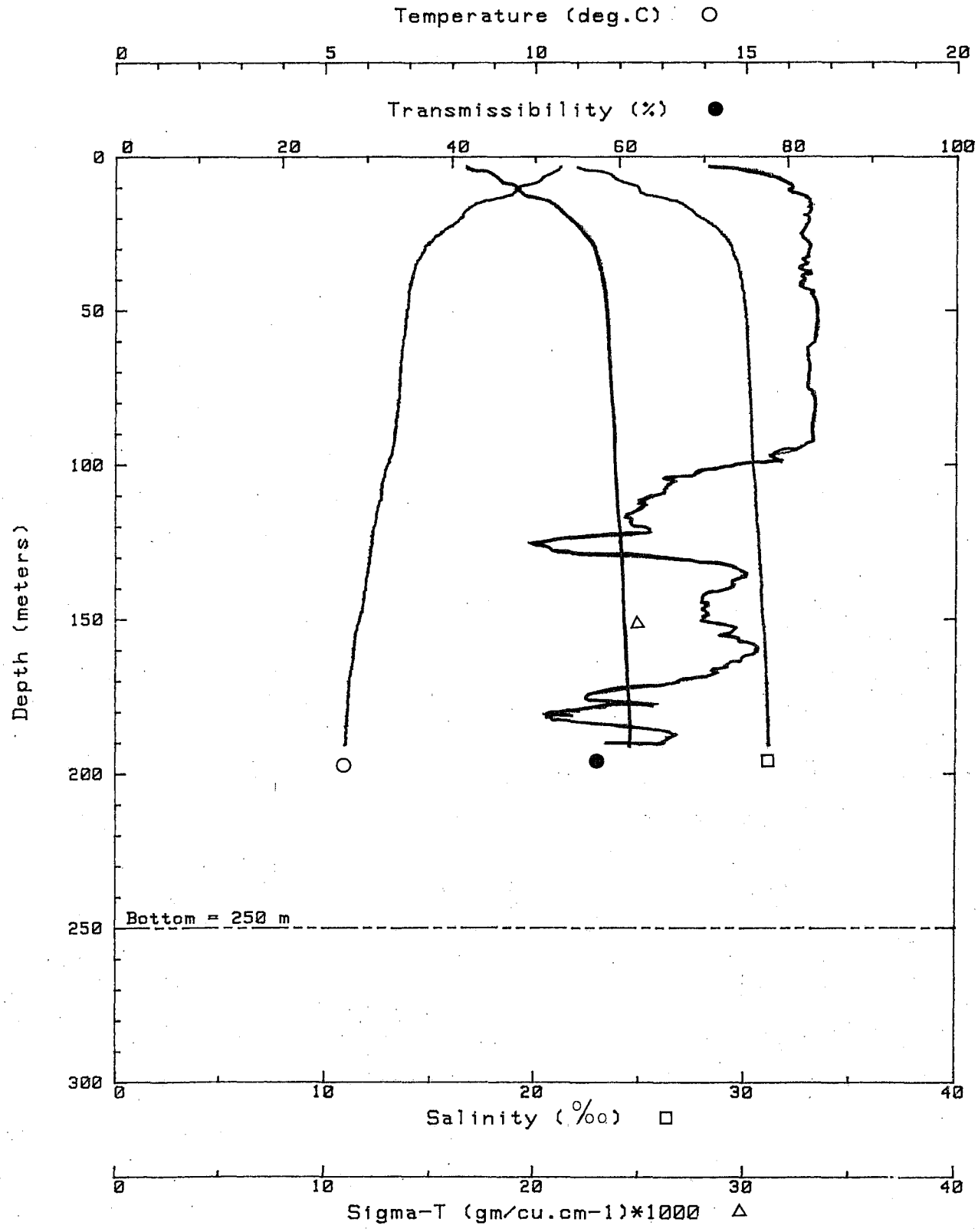
Survey Area : ALICE ARM
Station : Q-16

Date : 82/09/30
Time : 1255 PST



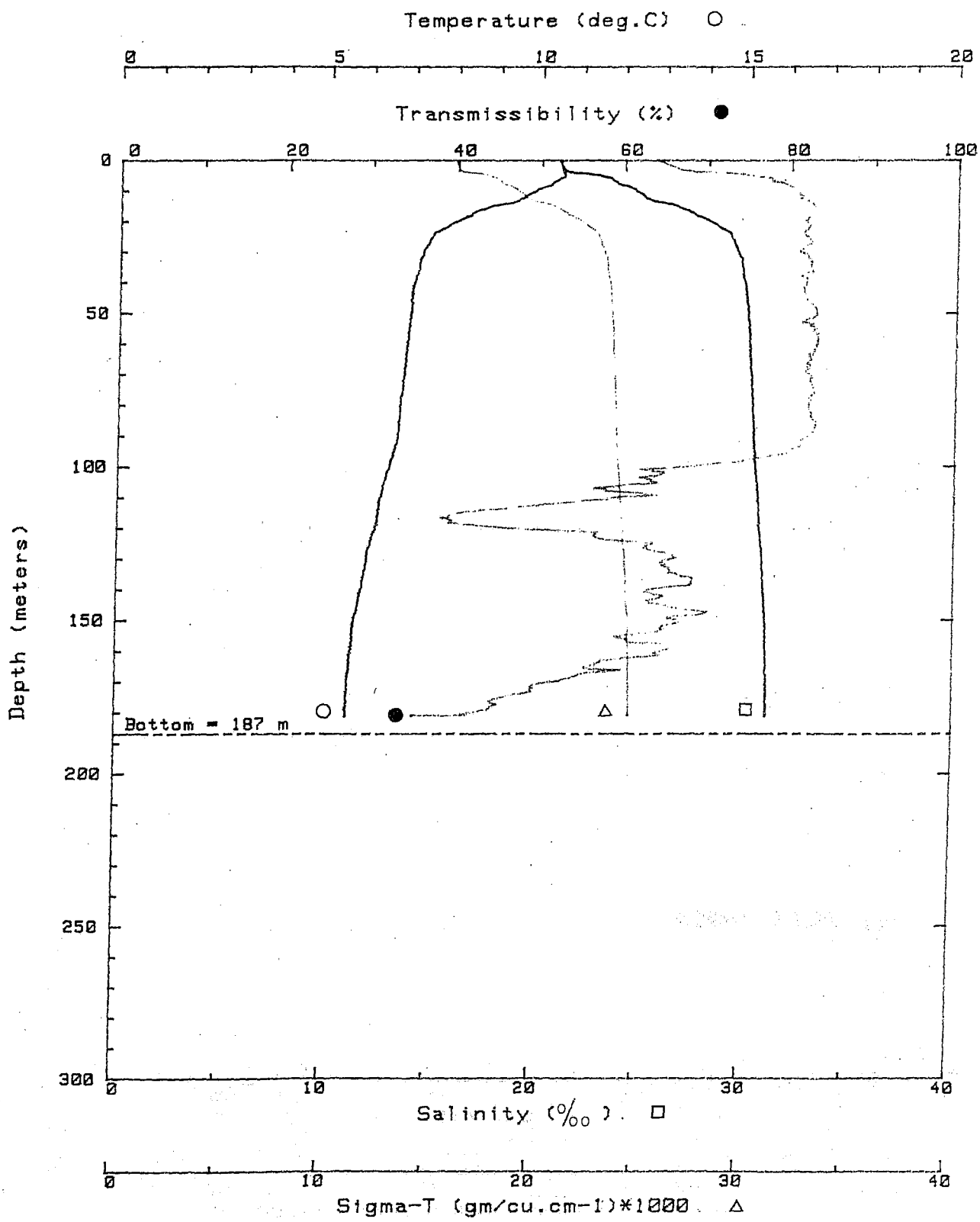
Survey Area : ALICE ARM
Station : Q-16

Date : 82/09/30
Time : 1340 PST



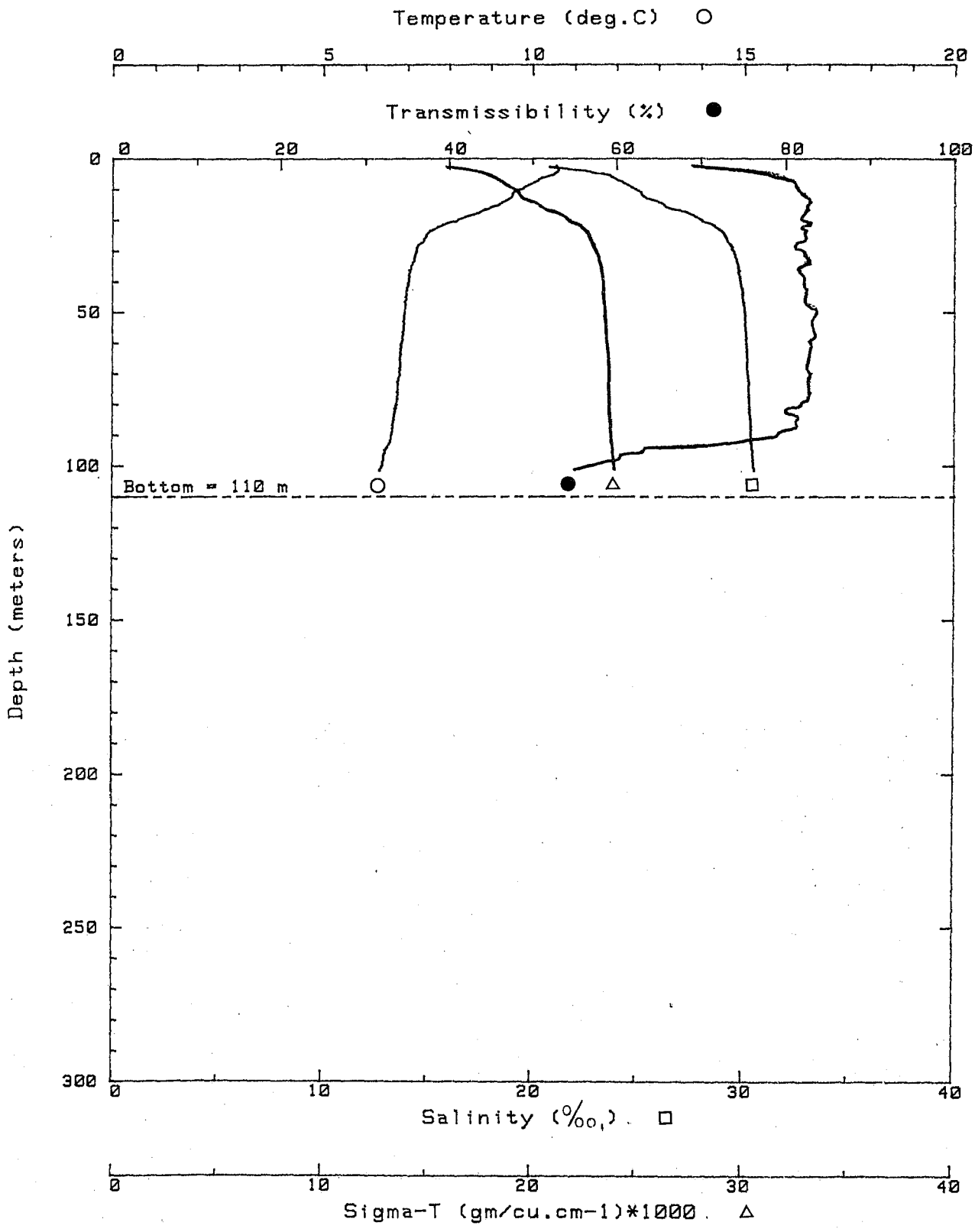
Survey Area : ALICE ARM
Station : P-16

Date : 82/09/30
Time : 1400 PST



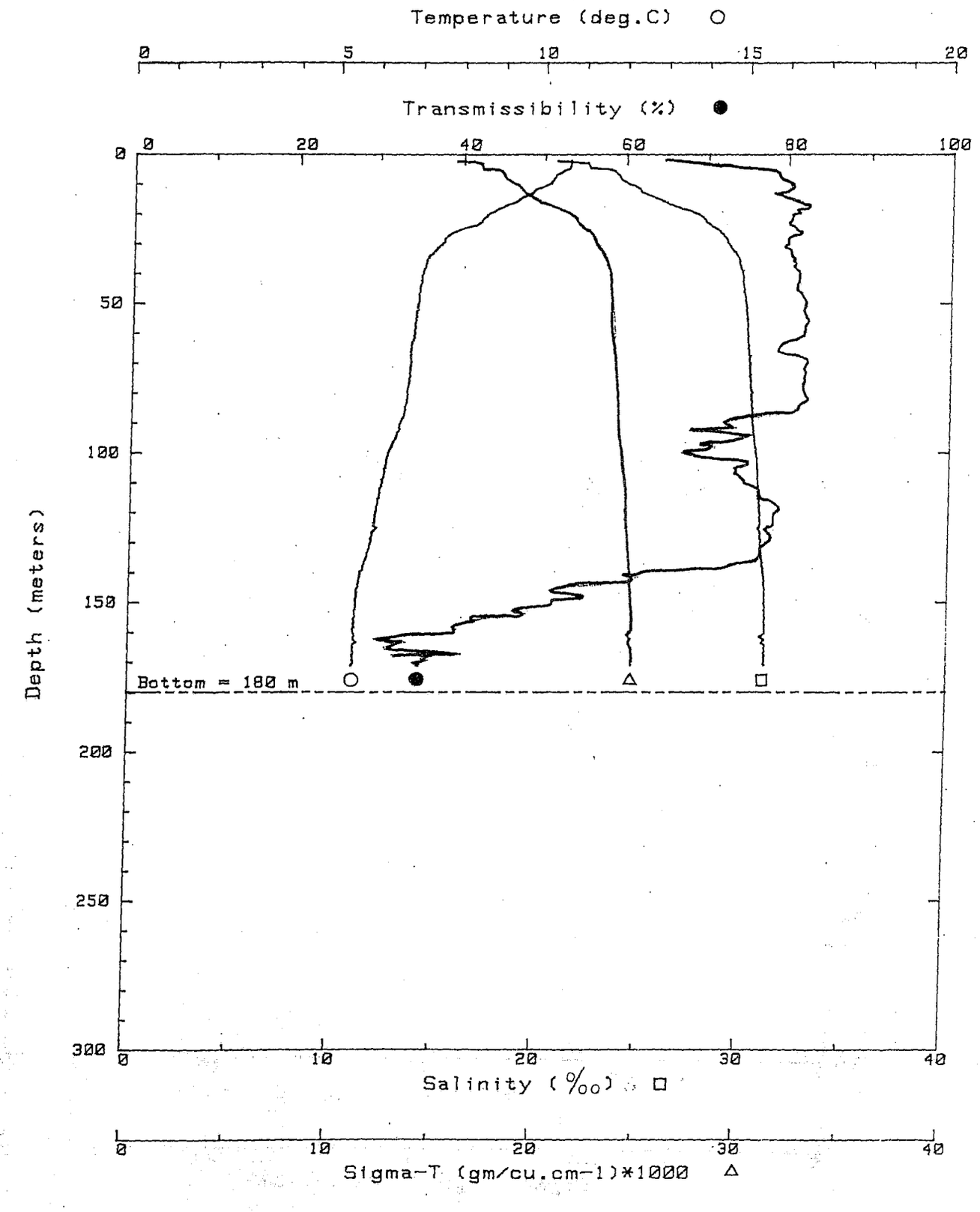
Survey Area : ALICE ARM
Station : O-16

Date : 82/09/30
Time : 1425 PST



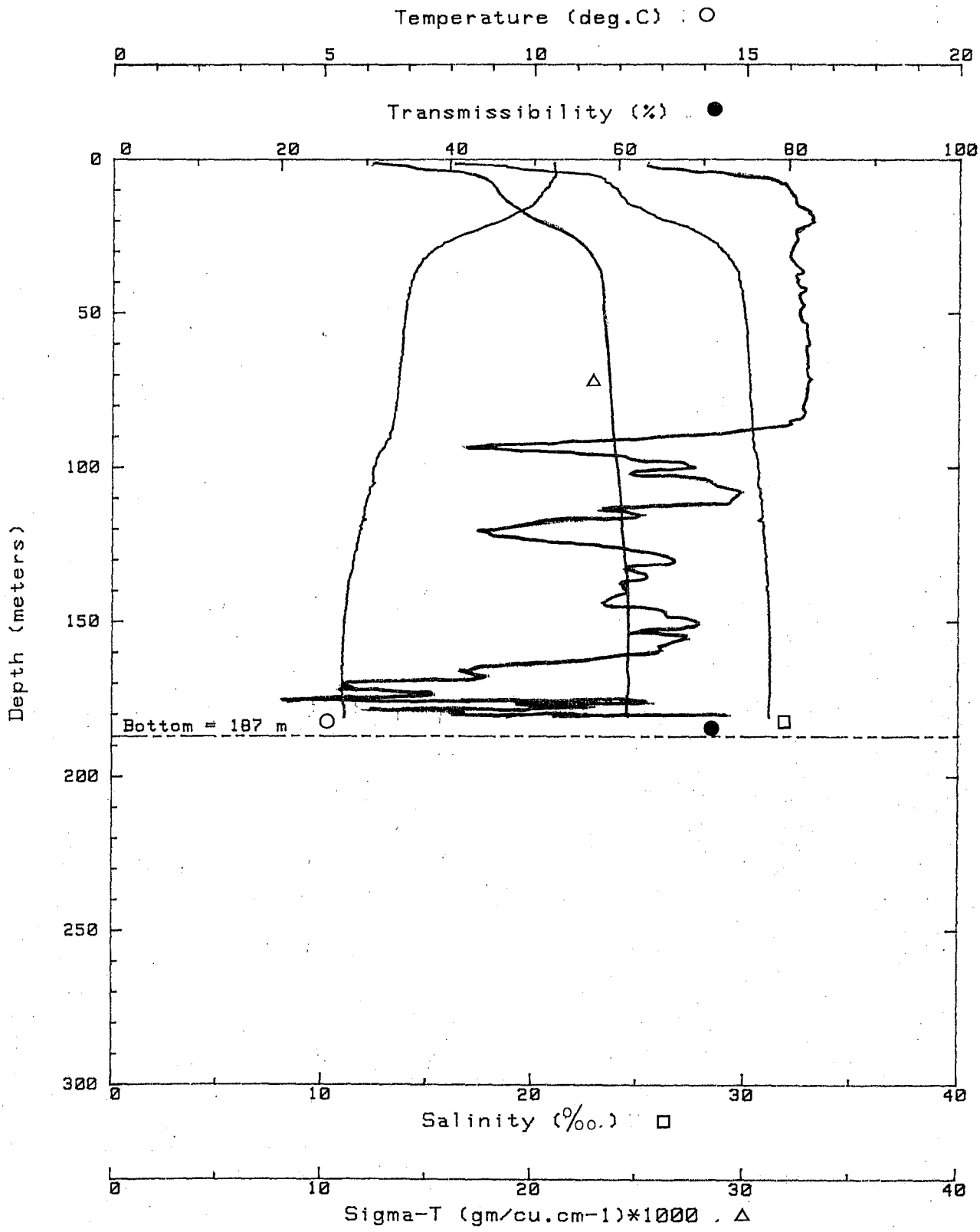
Survey Area : ALICE ARM
Station : P-12

Date : 82/09/30
Time : 1450 PST



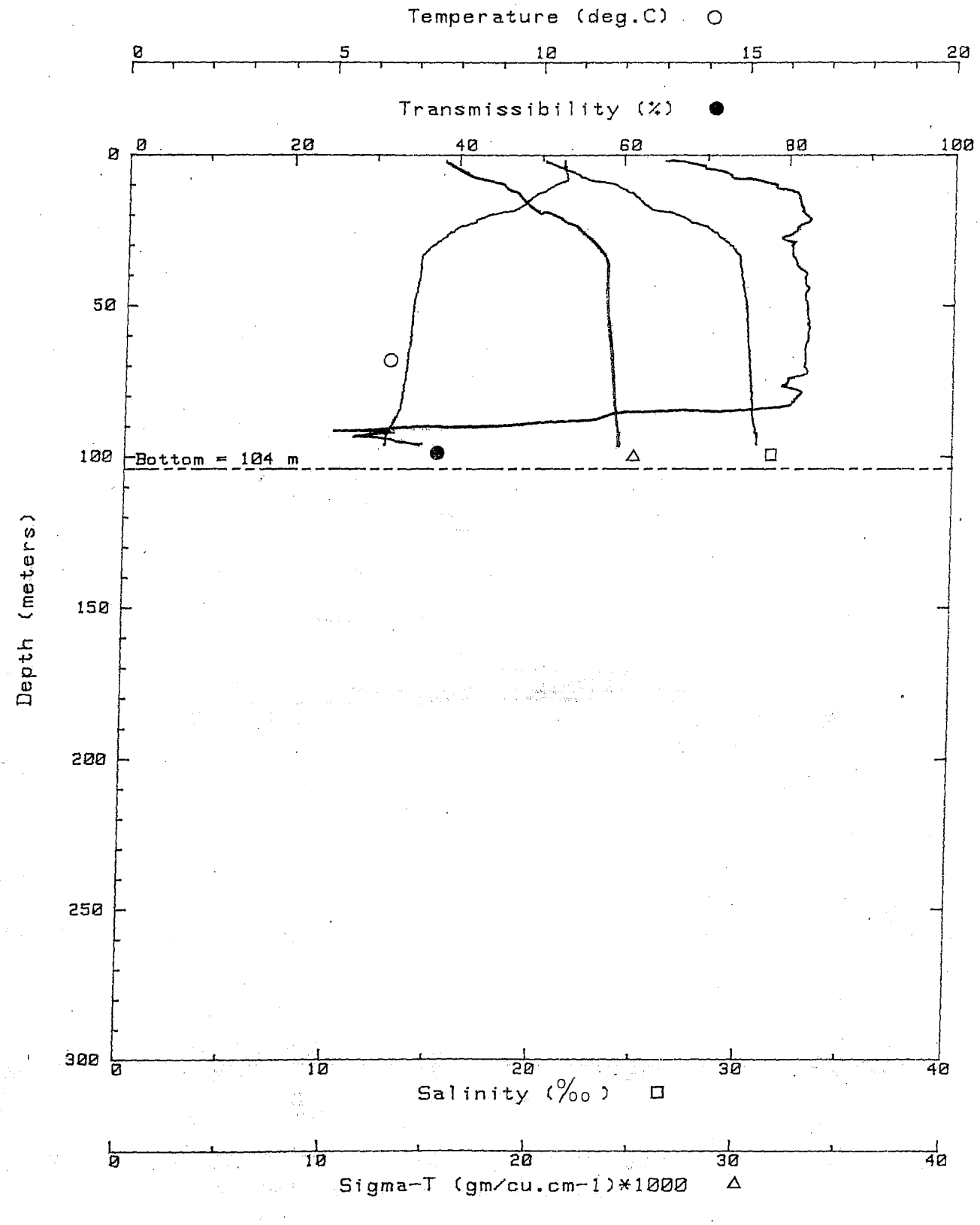
Survey Area : ALICE ARM
Station : O-13

Date : 82/09/30
Time : 1550 PST



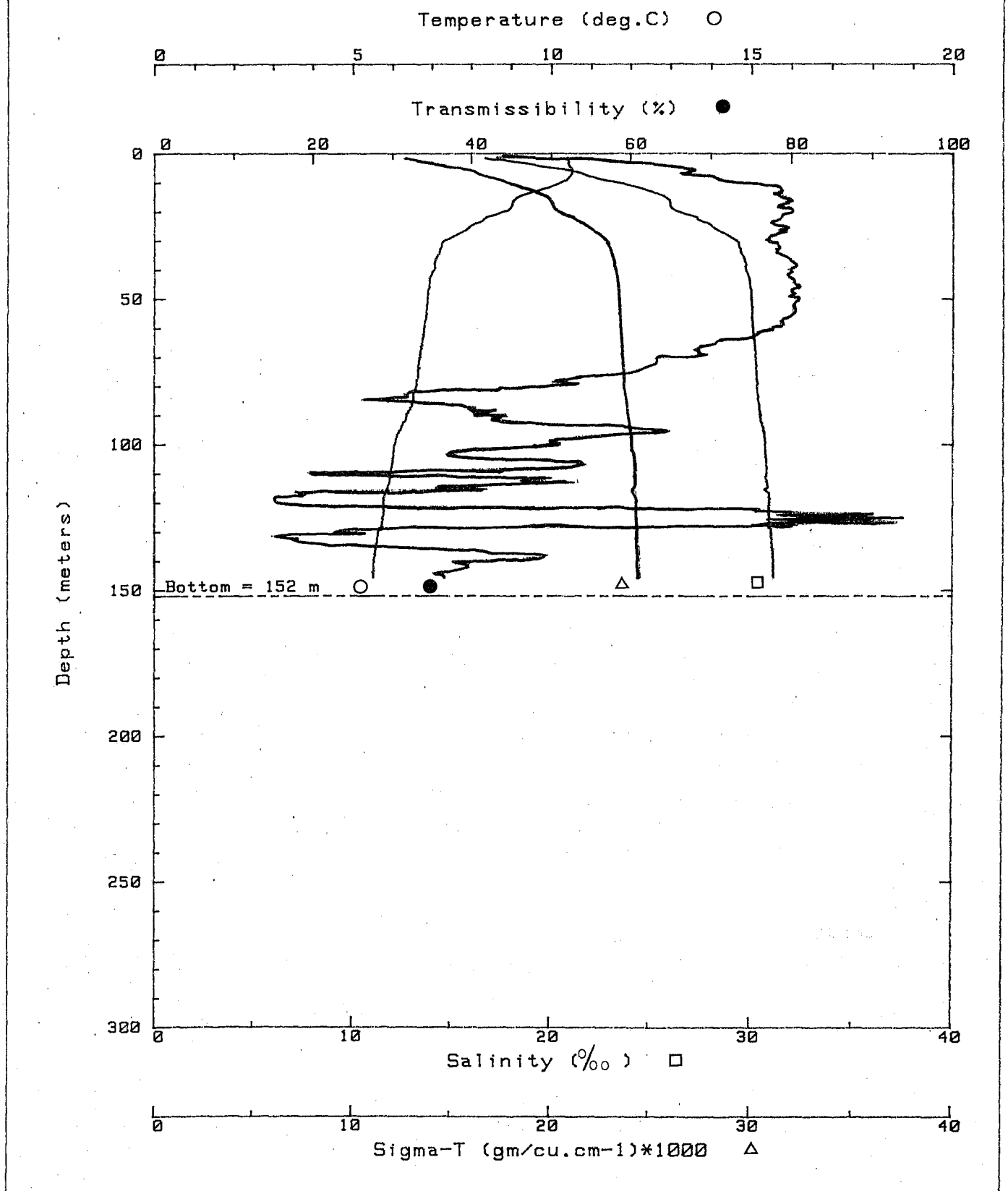
Survey Area : ALICE ARM
Station : N-14

Date : 82/09/30
Time : 1615 PST



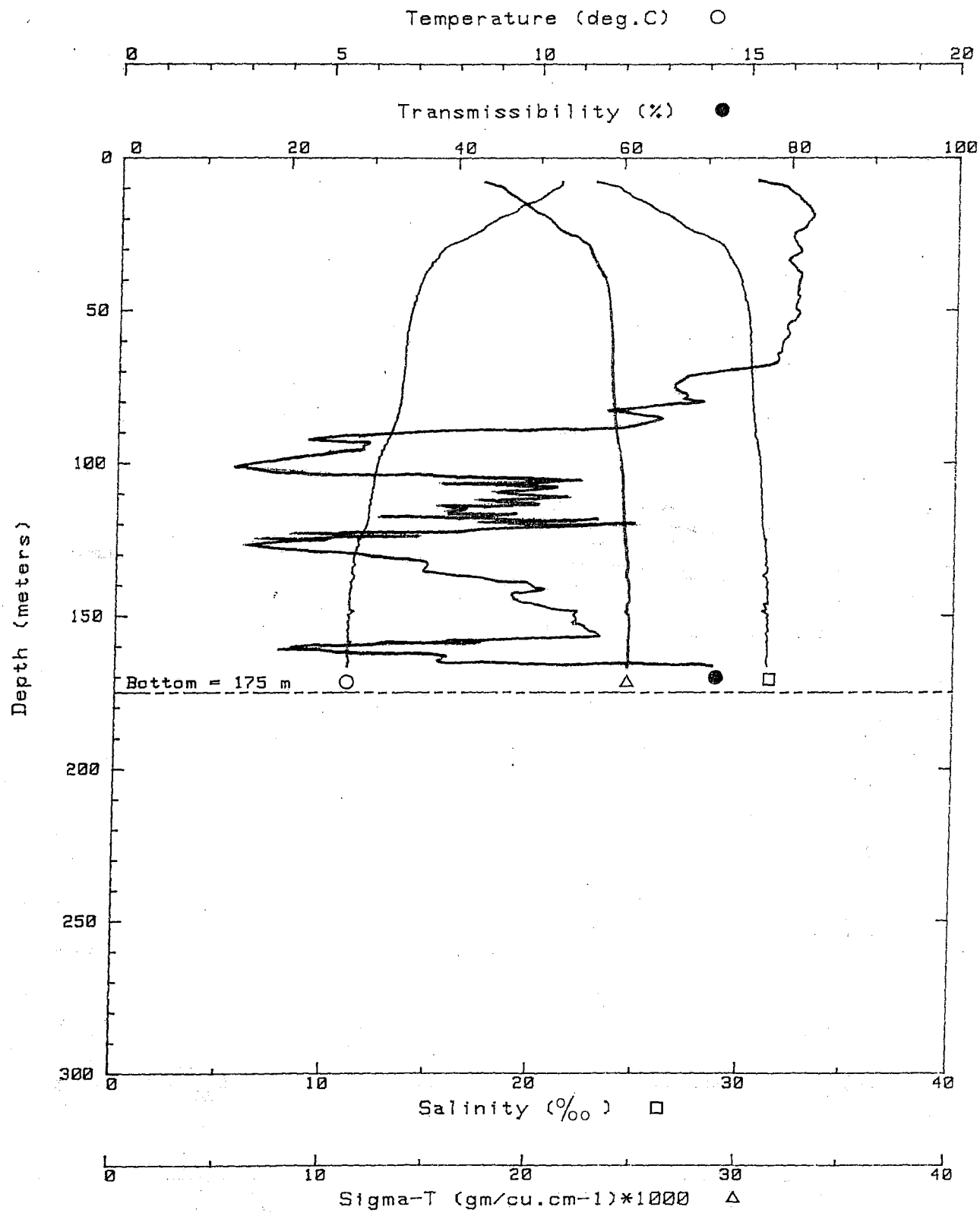
Survey Area : ALICE ARM
Station : N-10

Date : 82/09/30
Time : 1645 PST



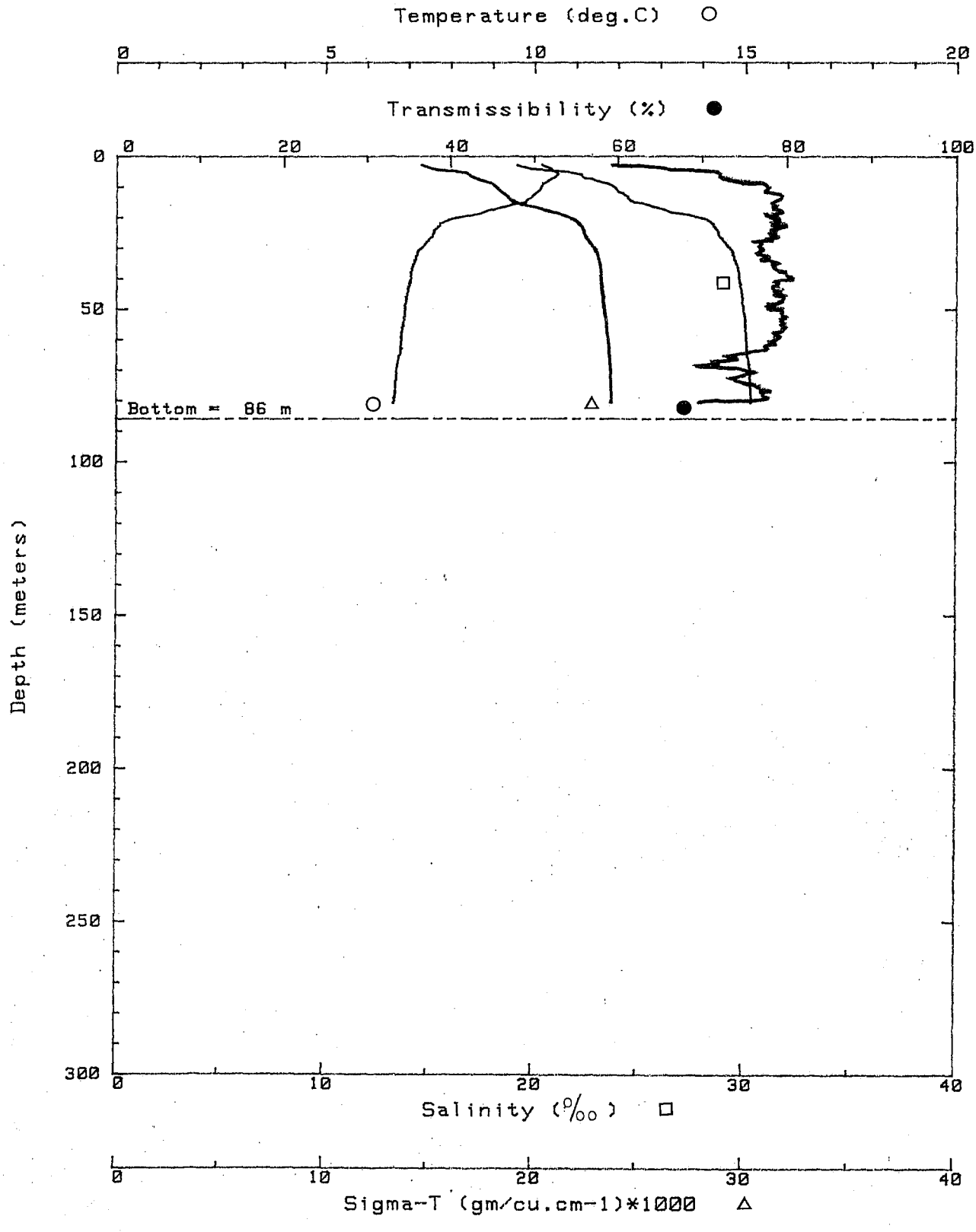
Survey Area : ALICE ARM
Station : M-11

Date : 82/09/30
Time : 1710 PST



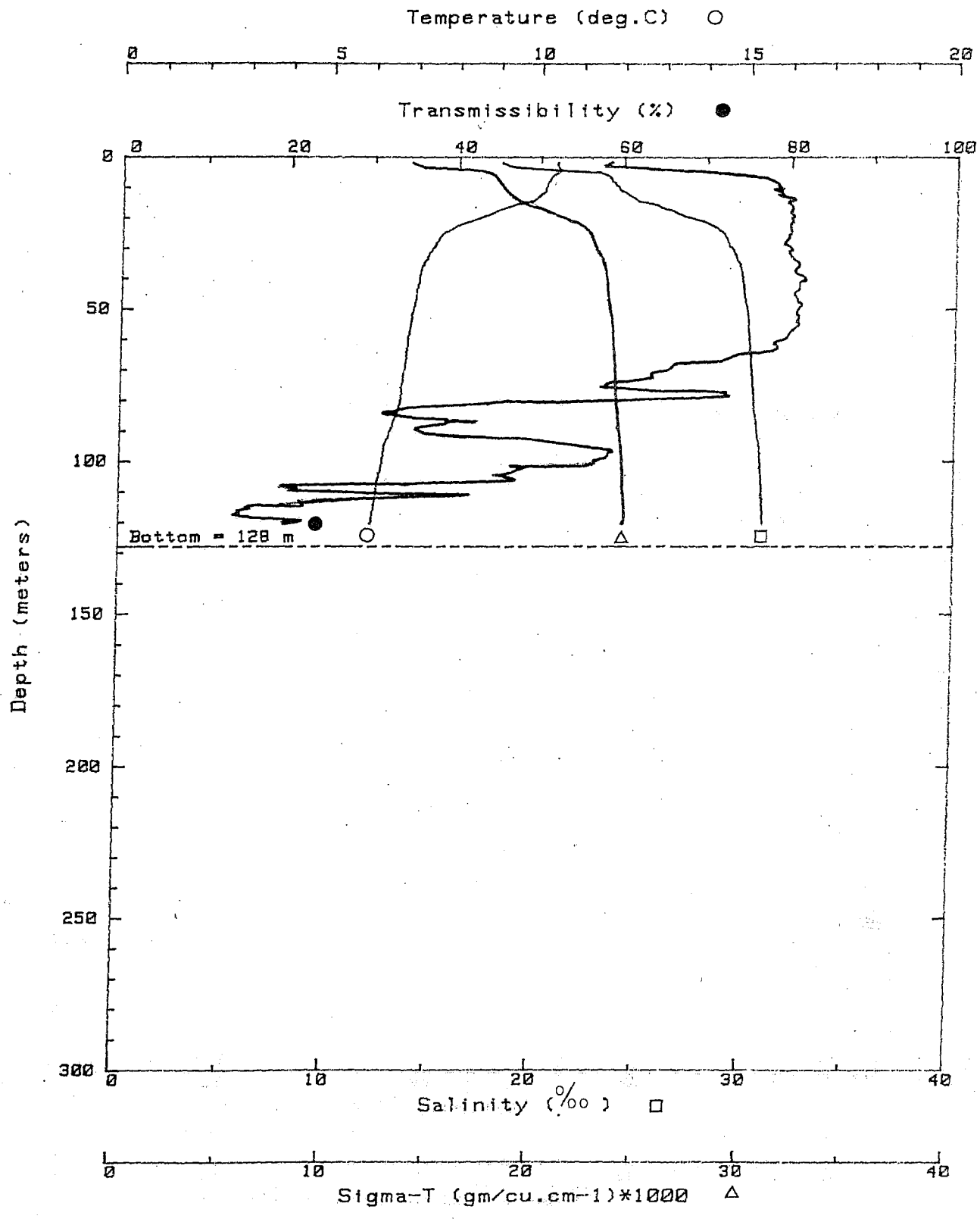
Survey Area : ALICE ARM
Station : N-7

Date : 82/09/30
Time : 1755 PST



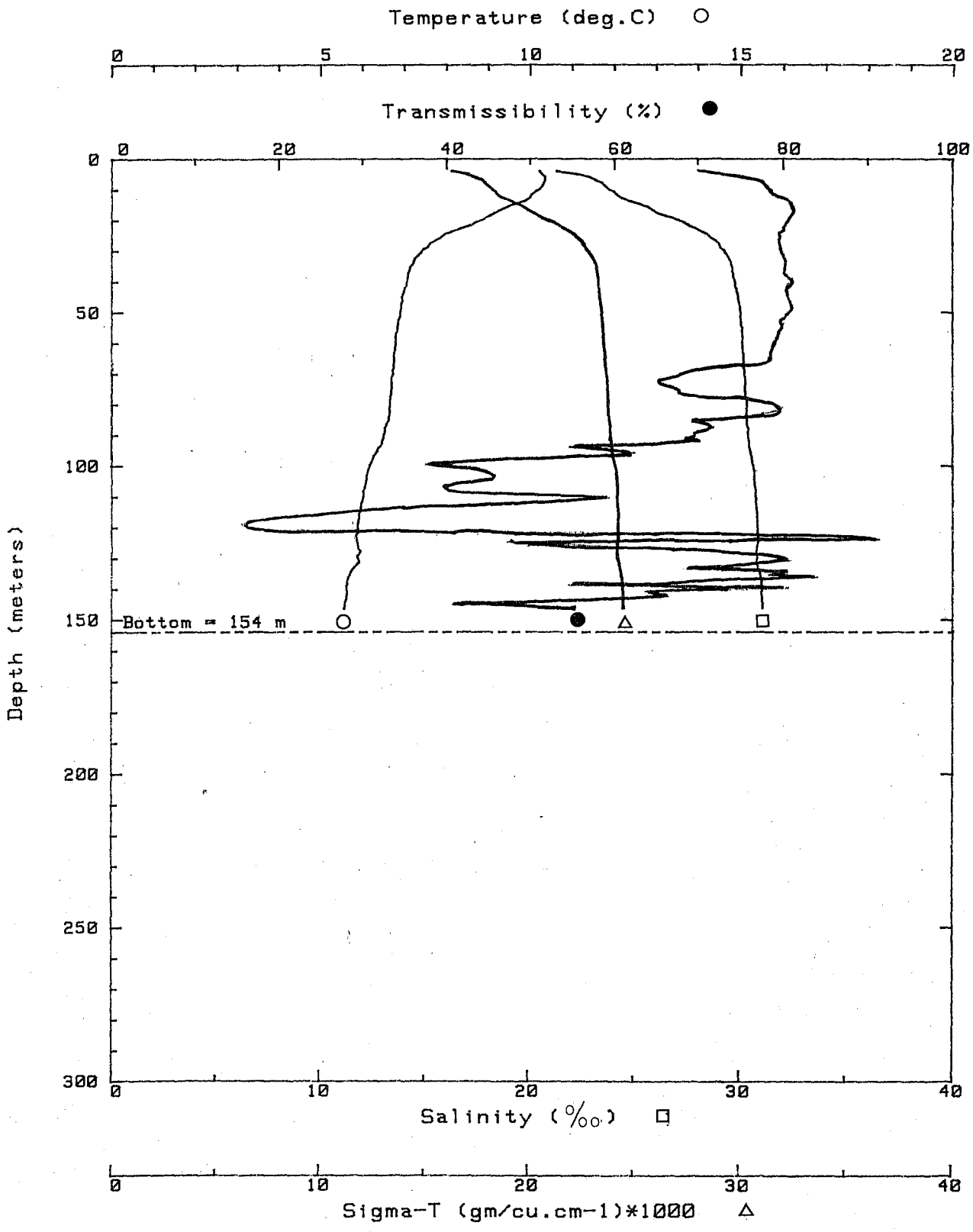
Survey Area : ALICE ARM
Station : M-8

Date : 82/09/30
Time : 1810 PST



Survey Area : ALICE ARM
Station : L-9

Date : 82/09/30
Time : 1820 PST



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Appendix 2.

Longitudinal sections

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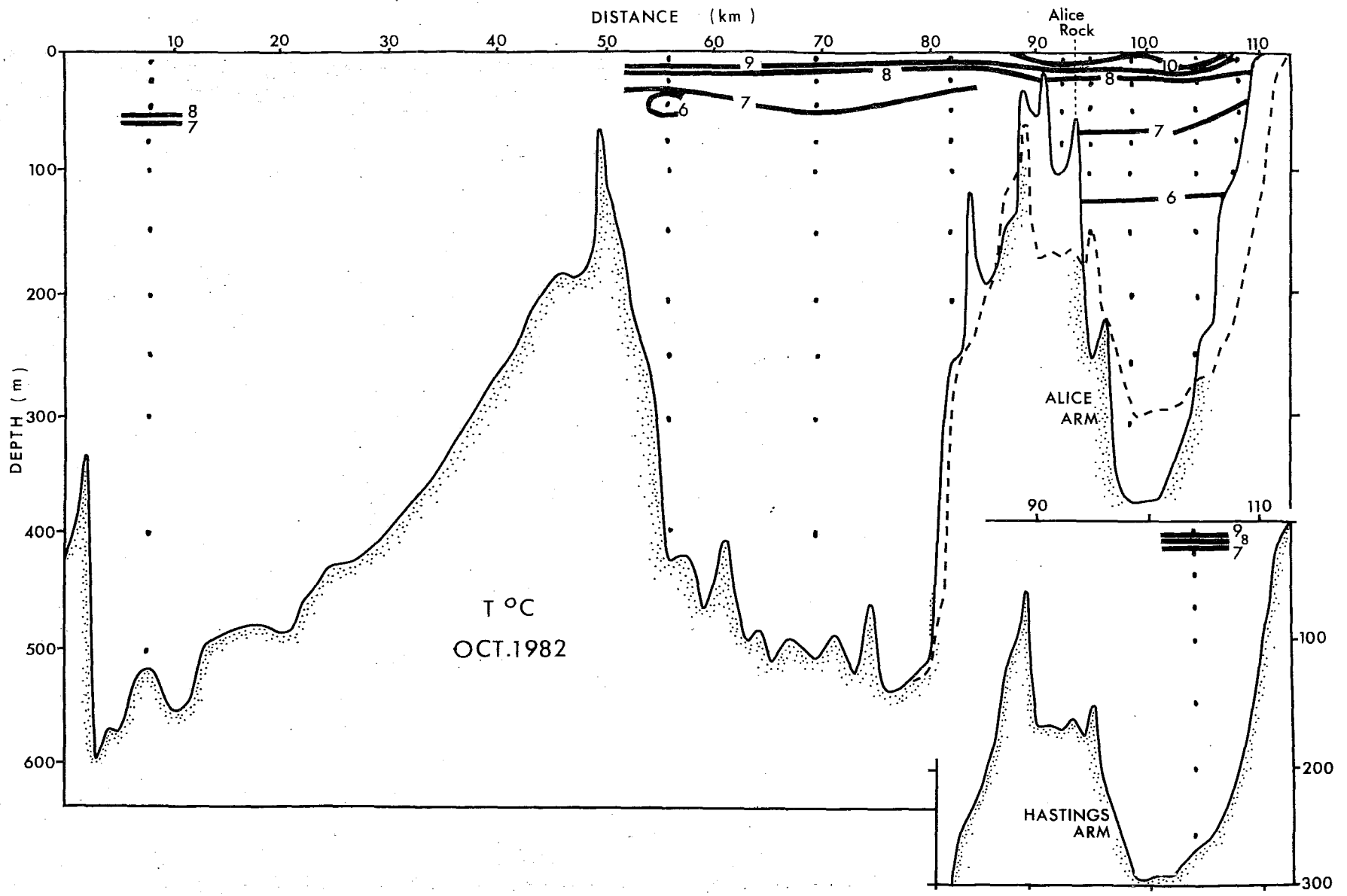
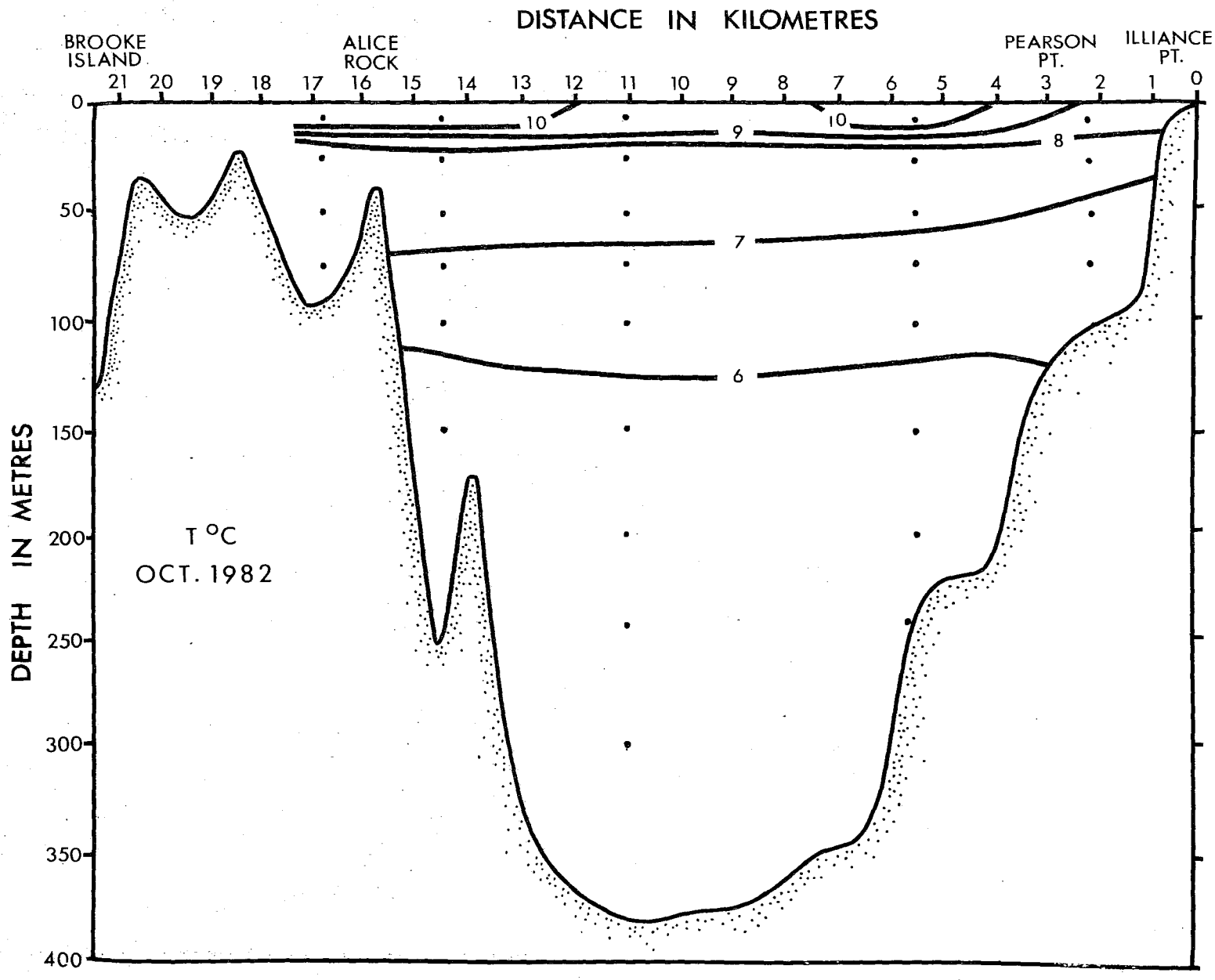
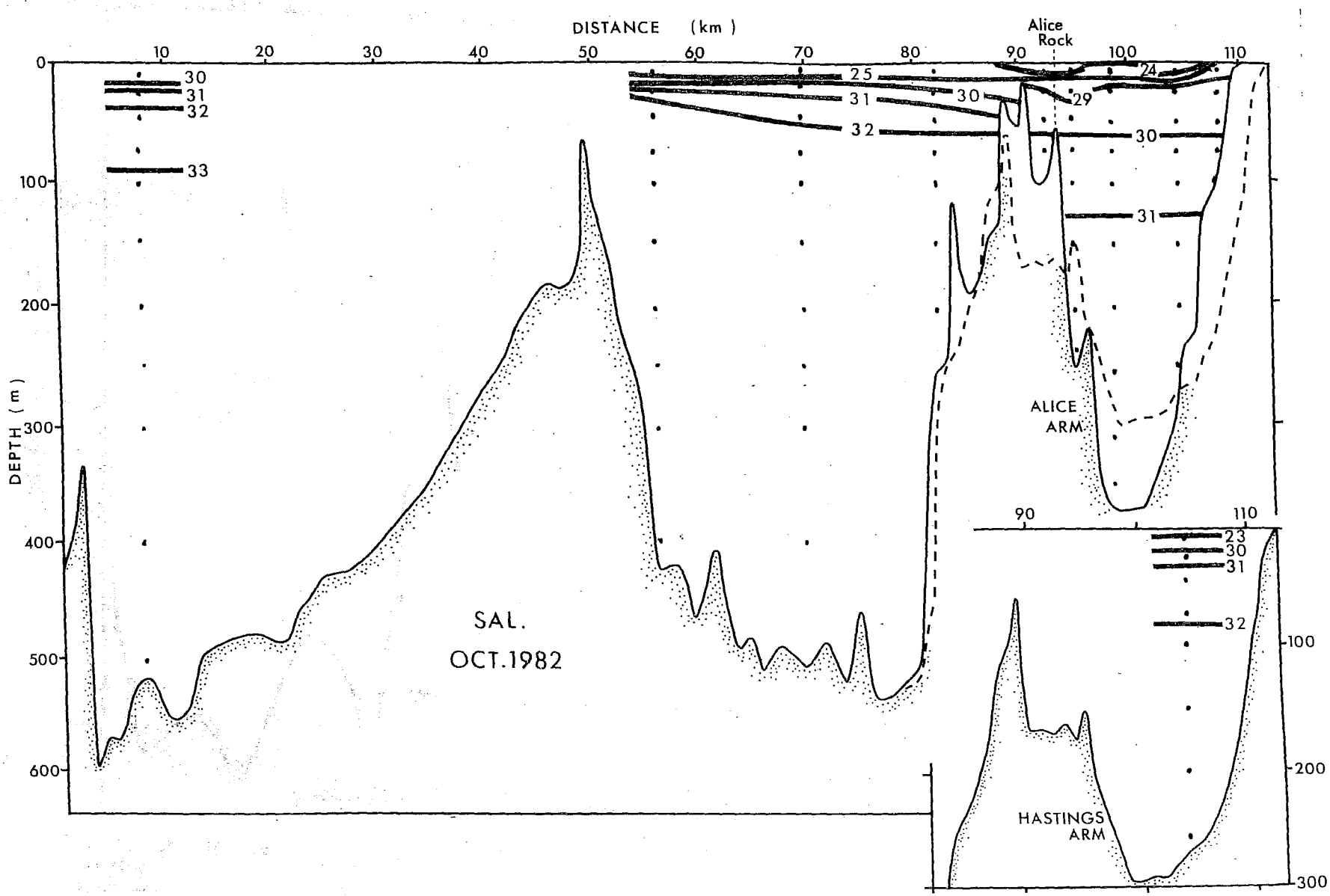
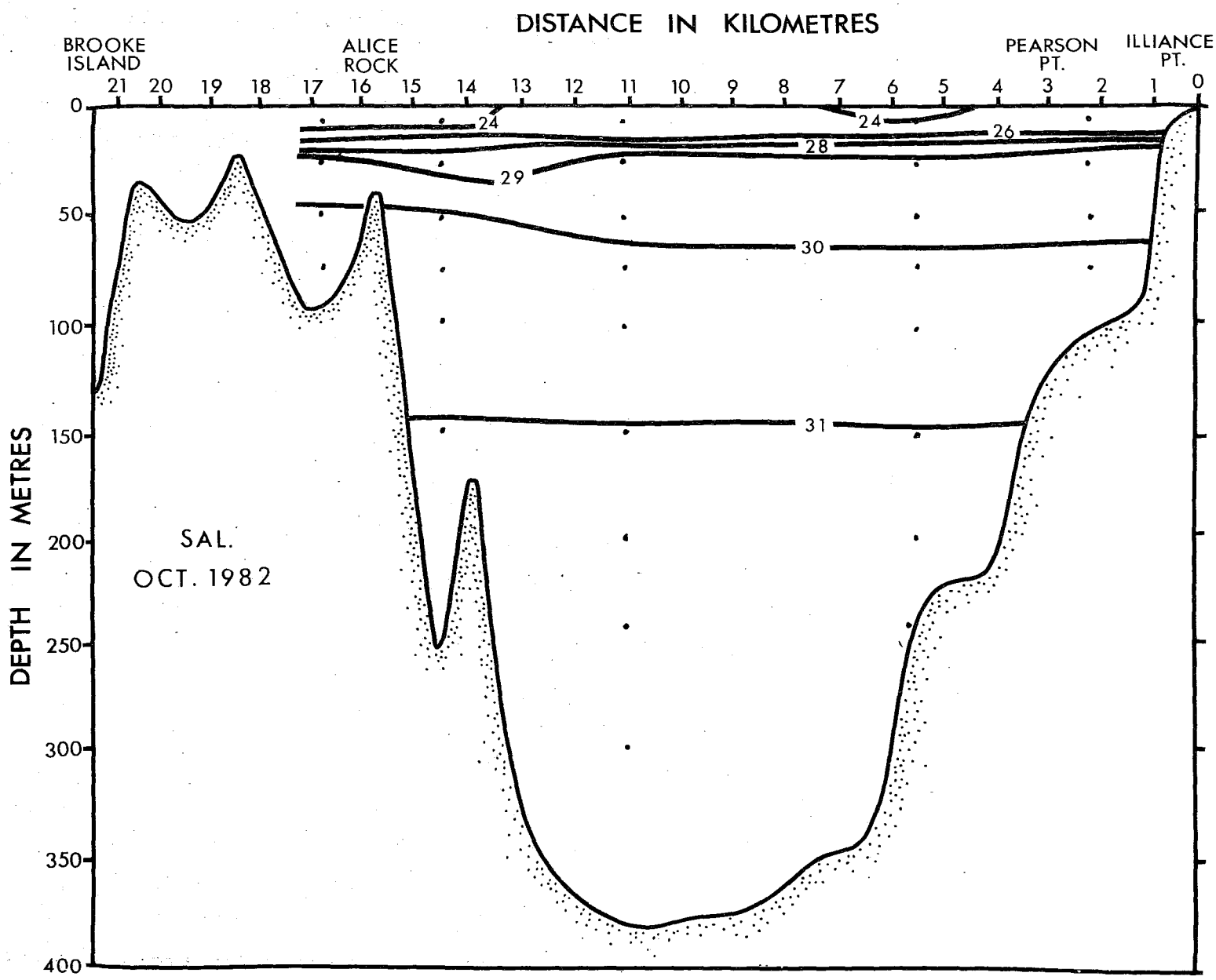
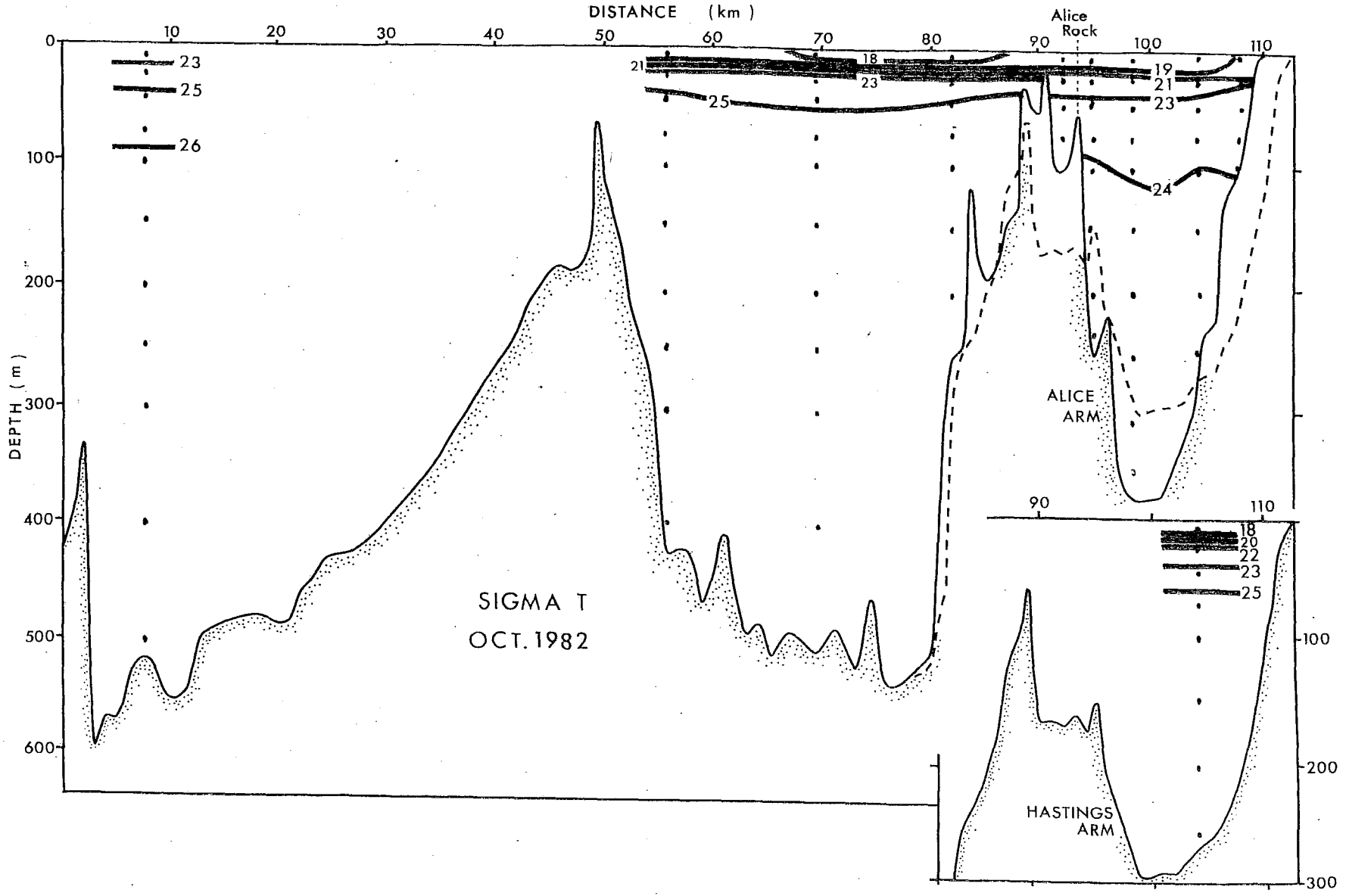
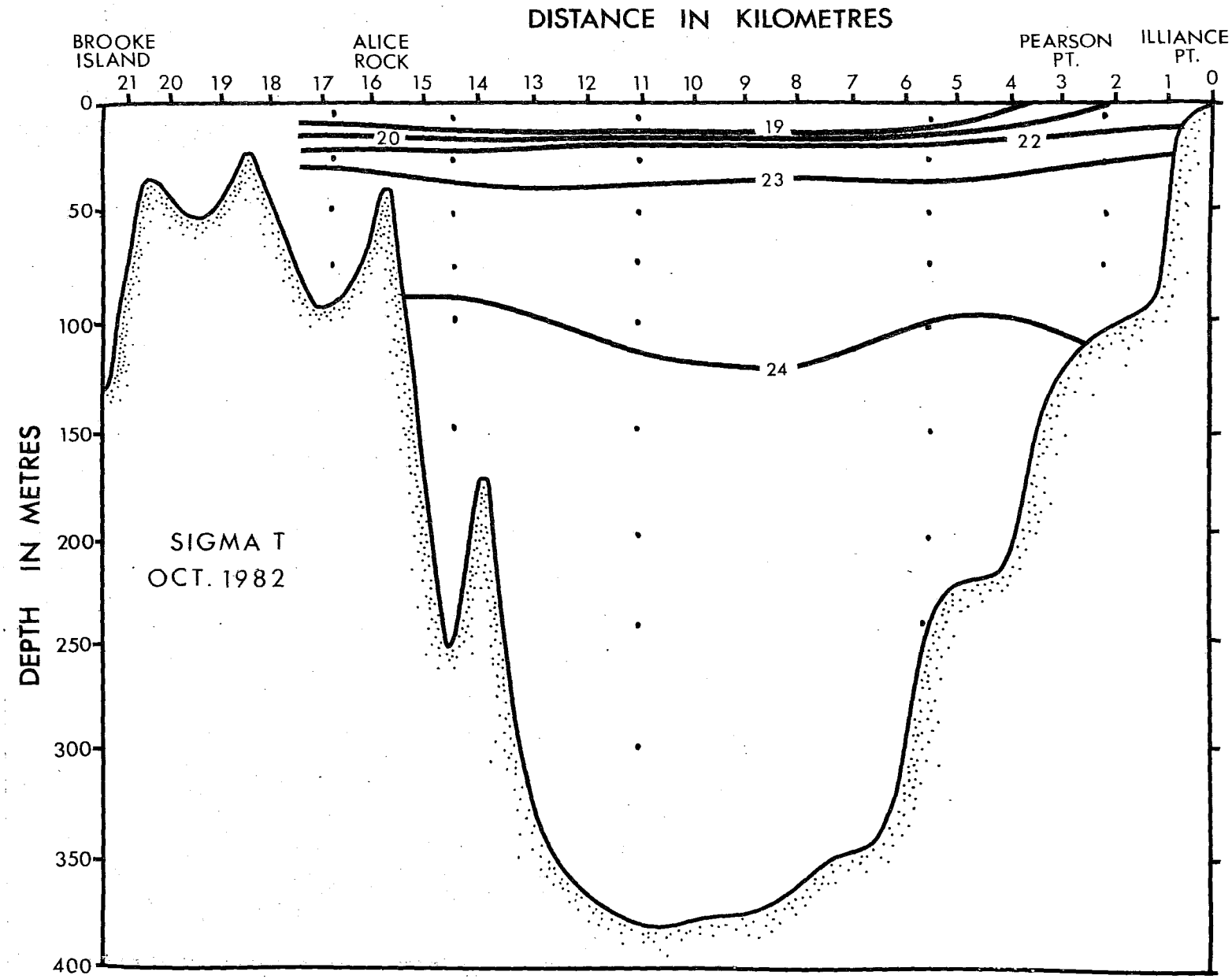

DISTANCE (km)
Alice Rock
DEPTH (m)
T °C
OCT.1982
ALICE ARM
HASTINGS ARM

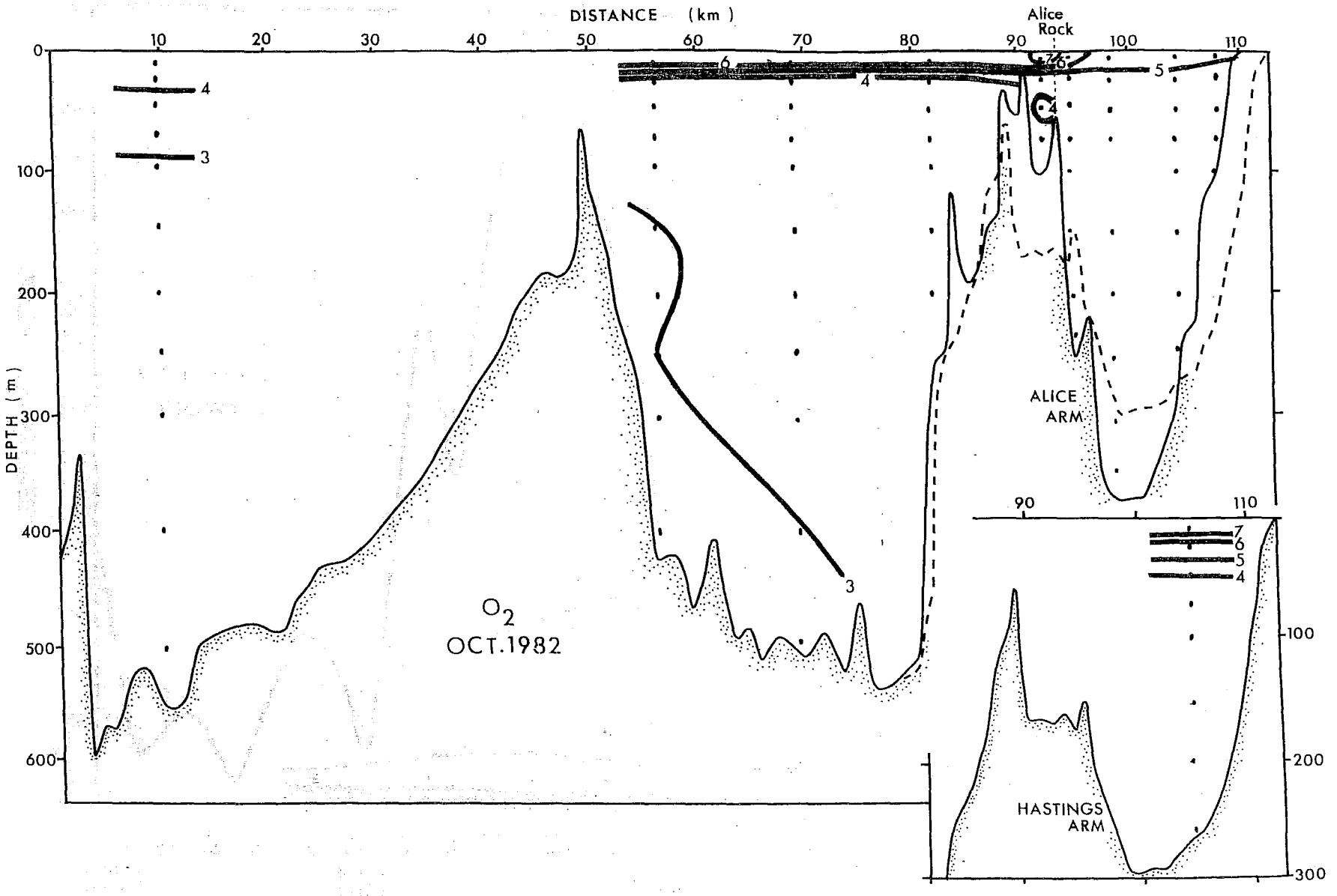

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0
50
100
150
200
250
300
350
400
DEPTH IN METRES
10
9
10
8
7
6
T °C
OCT. 1982

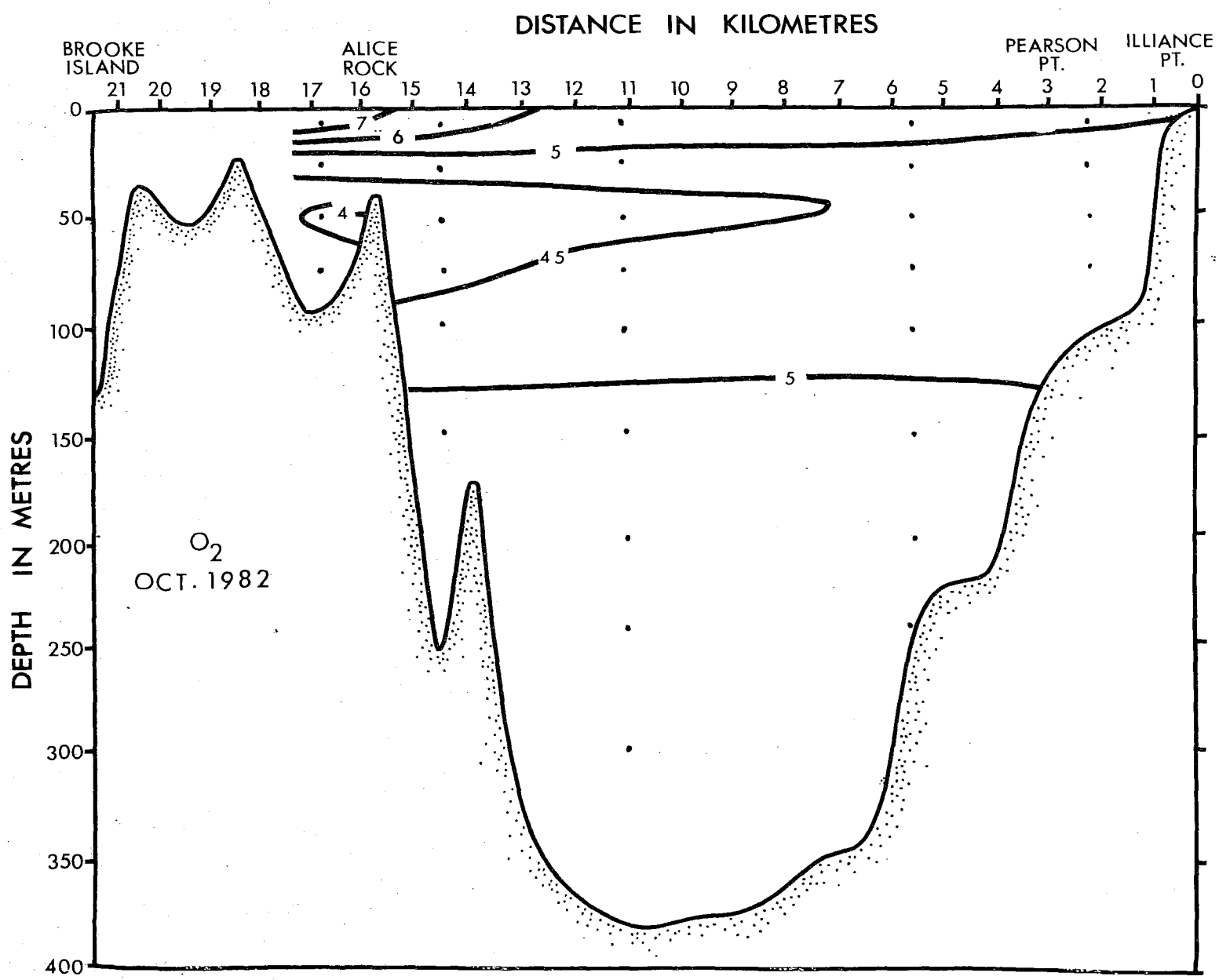

DISTANCE (km)
10
20
30
40
50
60
70
80
90
100
110
Alice Rock
0
100
200
300
400
500
600
DEPTH (m)
30
31
32
33
25
30
31
32
24
29
30
31
ALICE ARM
90
110
23
30
31
32
100
200
300
HASTINGS ARM
SAL.
OCT.1982

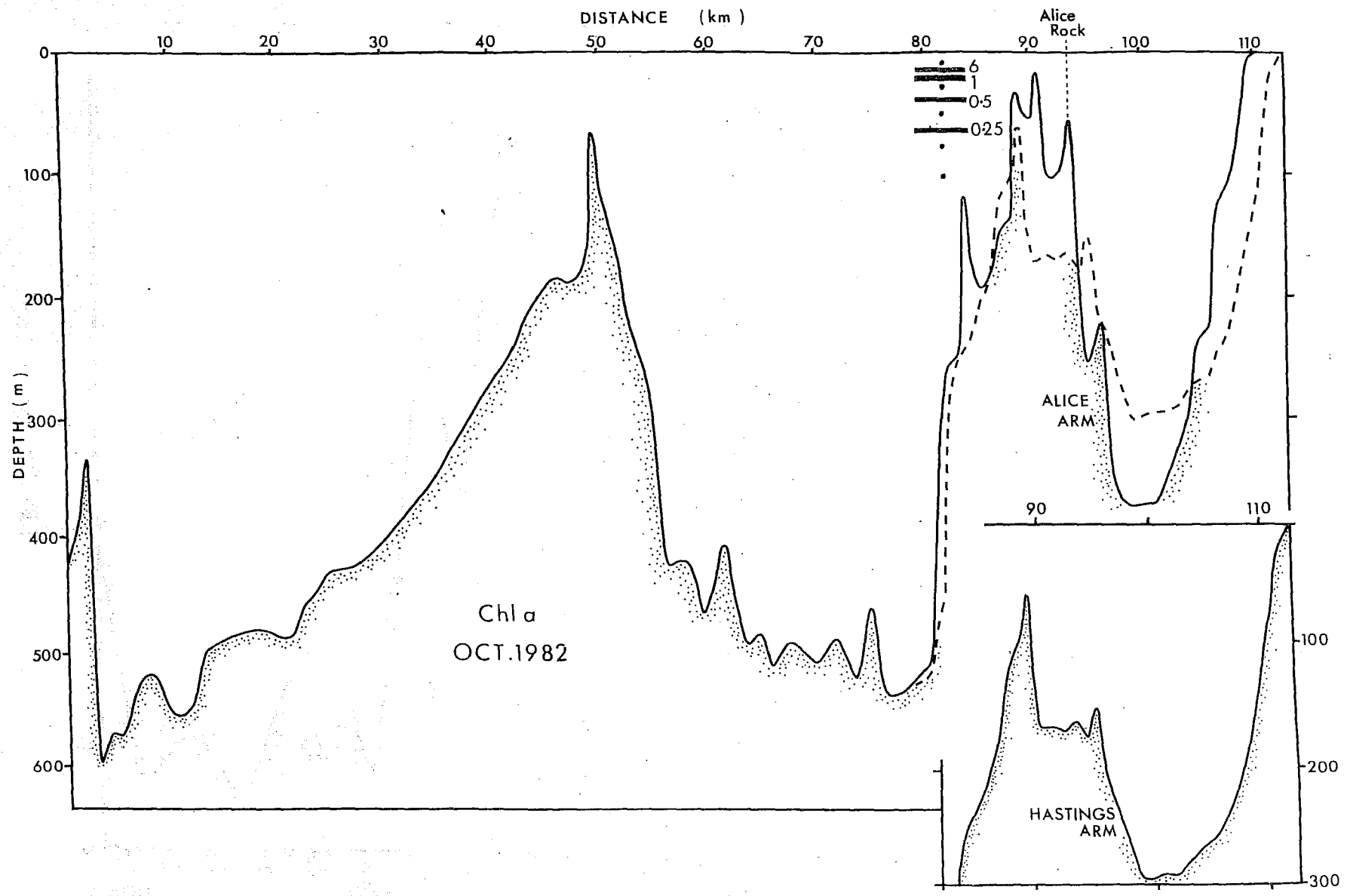

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
24
24
26
28
29
30
31
SAL.
OCT. 1982
DEPTH IN METRES
0
50
100
150
200
250
300
350
400

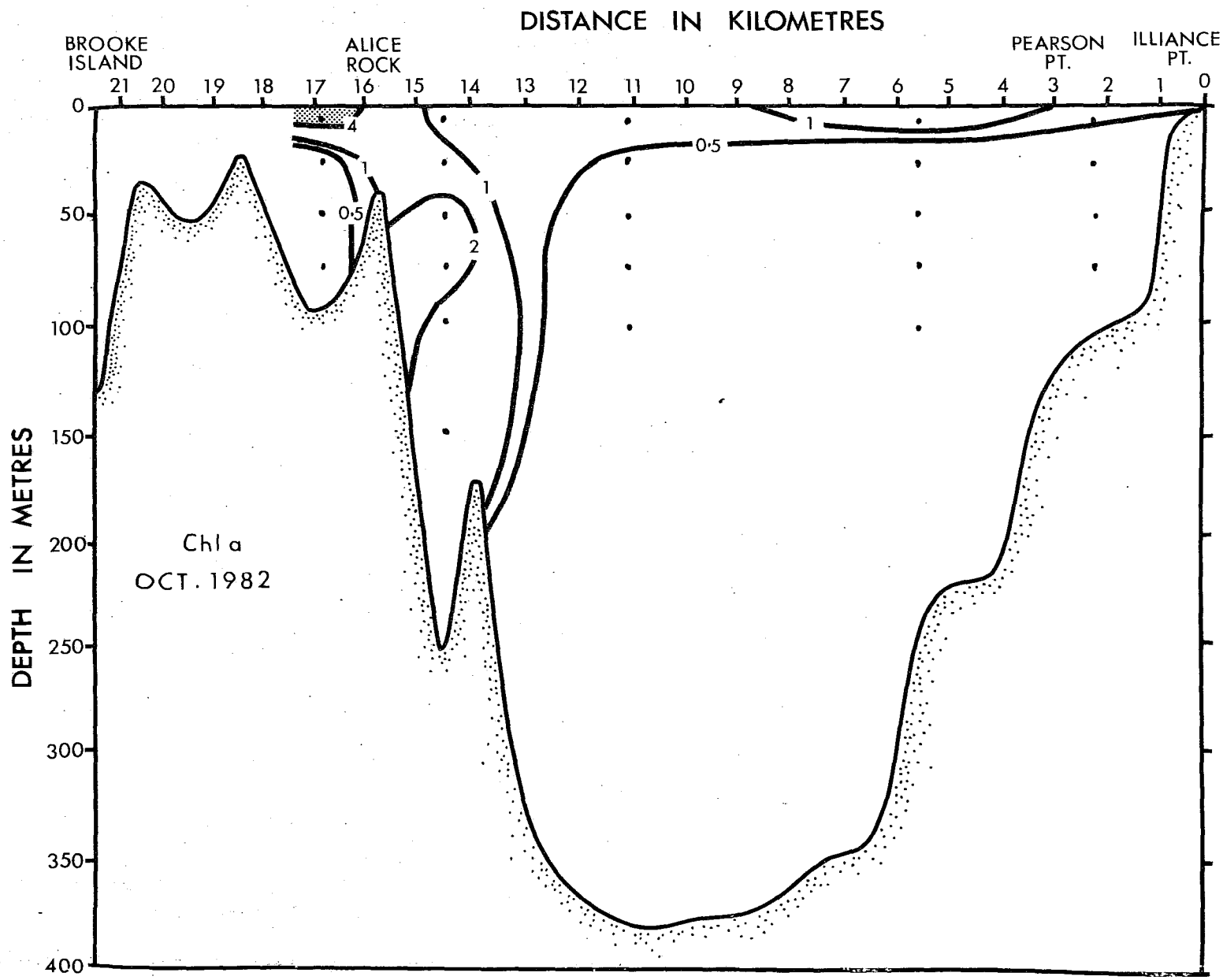

DISTANCE (km)
10
20
30
40
50
60
70
80
90
100
110
Alice Rock
0
100
200
300
400
500
600
DEPTH (m)
23
25
26
21
18
23
25
19
21
23
24
SIGMA T
OCT. 1982
ALICE ARM
90
110
18
20
22
23
25
100
200
300
HASTINGS ARM

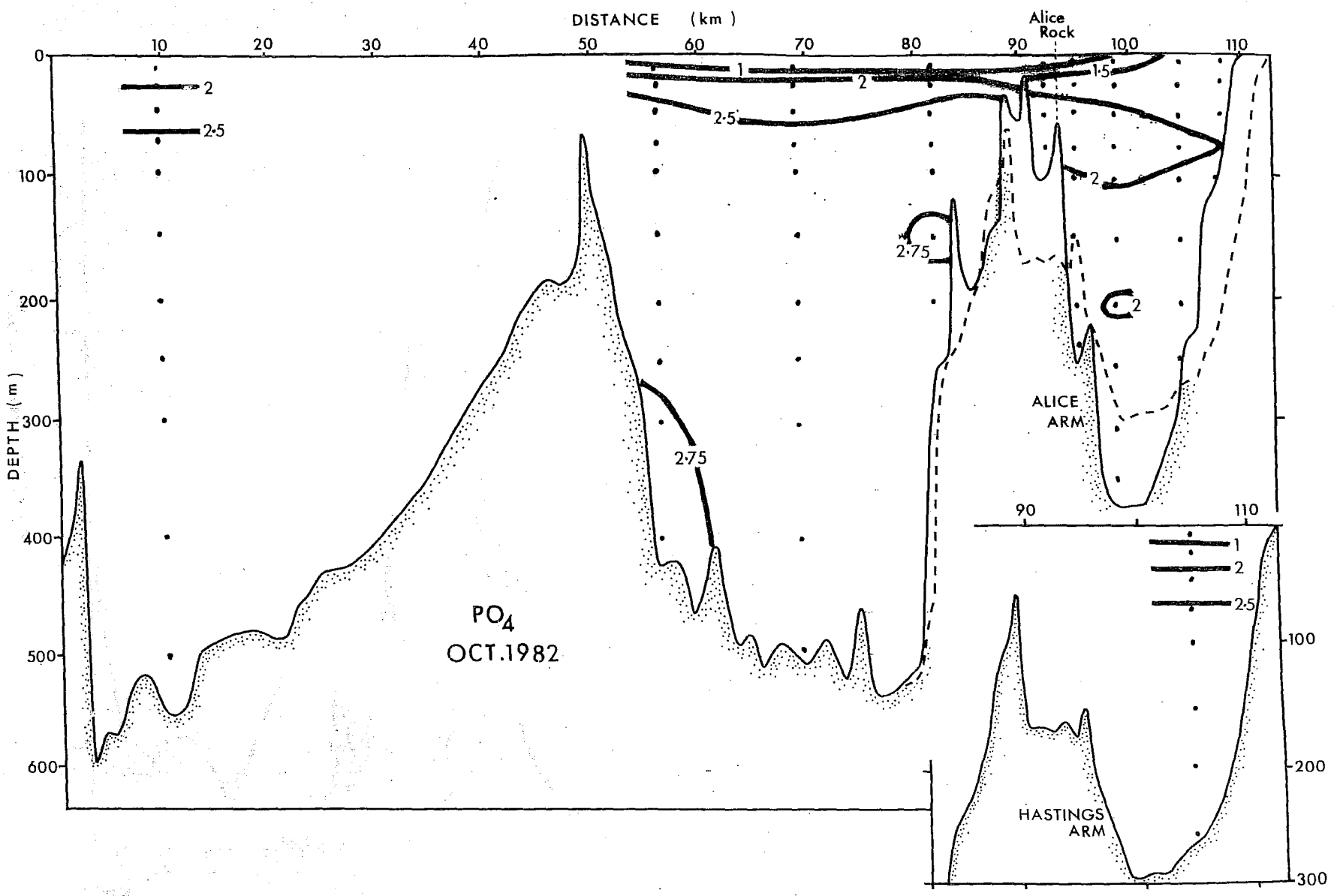

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0
50
100
150
200
250
300
350
400
DEPTH IN METRES
19
20
22
23
24
SIGMA T
OCT. 1982

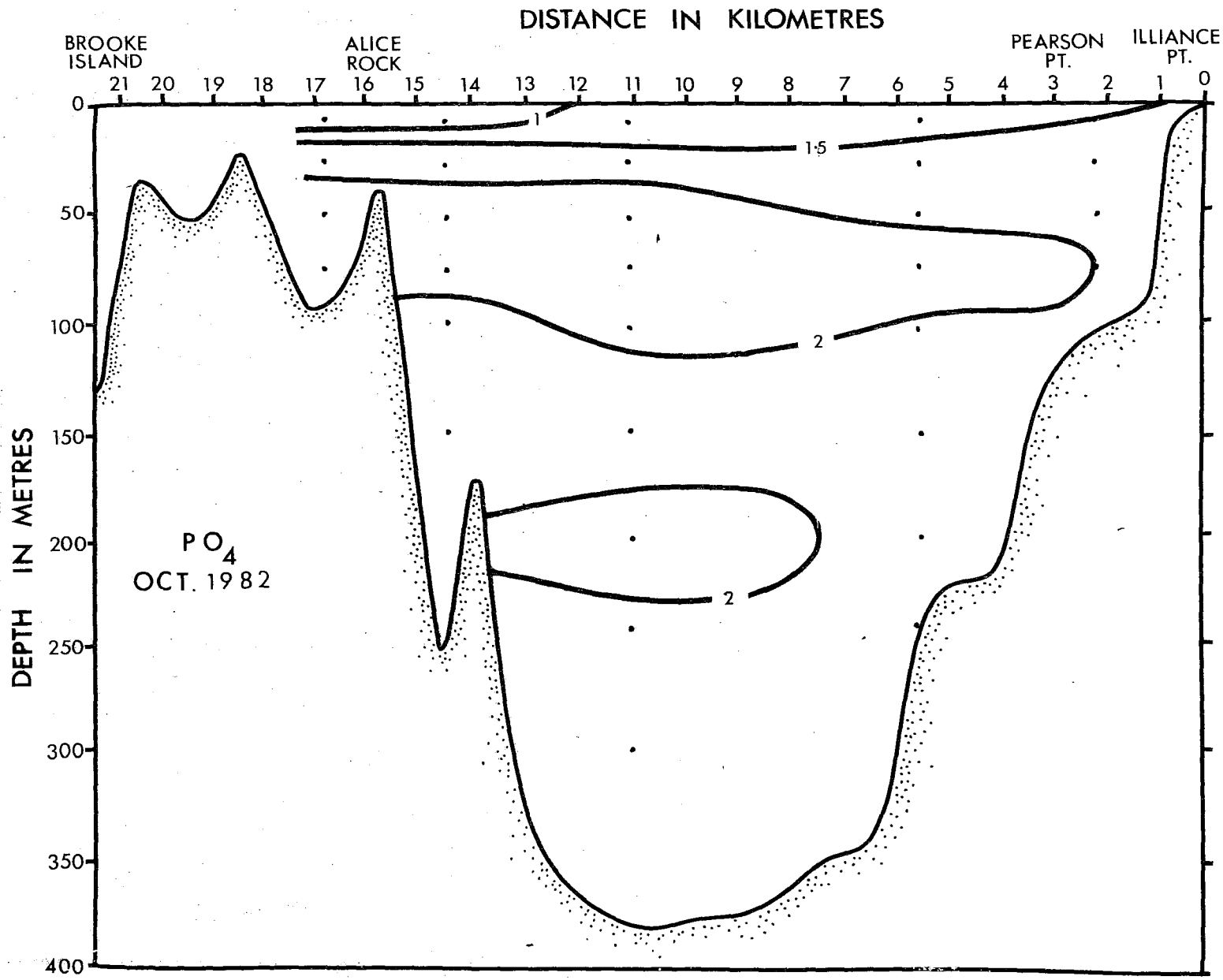

DISTANCE (km)
10
20
30
40
50
60
70
80
90
100
110
Alice Rock
0
100
200
300
400
500
600
DEPTH (m)
4
3
6
4
7
6
5
4
3
O_2
OCT.1982
ALICE ARM
90
110
7
6
5
4
100
200
300
HASTINGS ARM

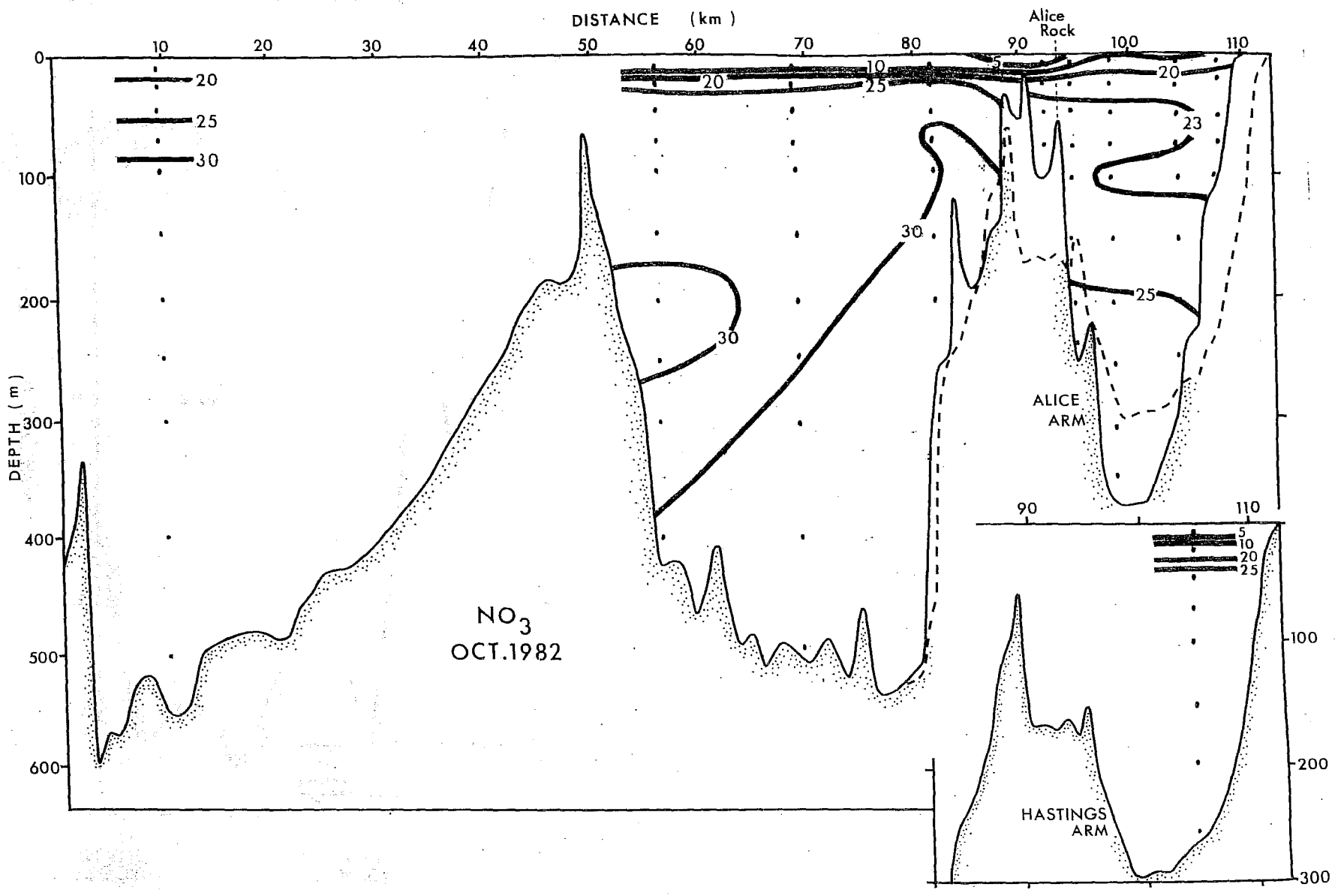

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
DEPTH IN METRES
0
50
100
150
200
250
300
350
400
7
6
5
4
4 5
5
O_2
OCT. 1982

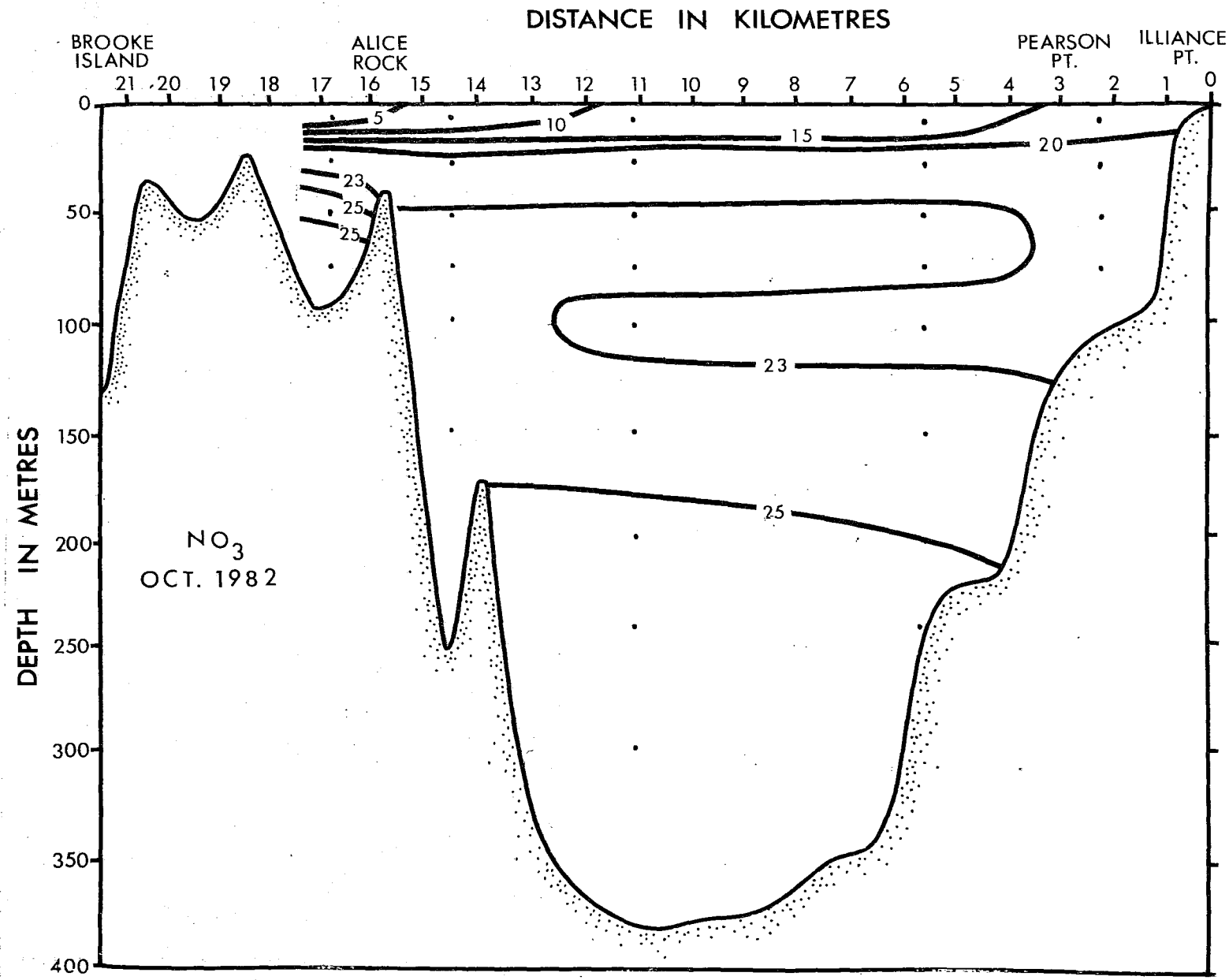

DISTANCE (km)
0
10
20
30
40
50
60
70
80
90
100
110
Alice Rock
6
1
0·5
0·25
DEPTH (m)
100
200
300
400
500
600
Chl a
OCT.1982
ALICE ARM
90
110
100
200
300
HASTINGS ARM

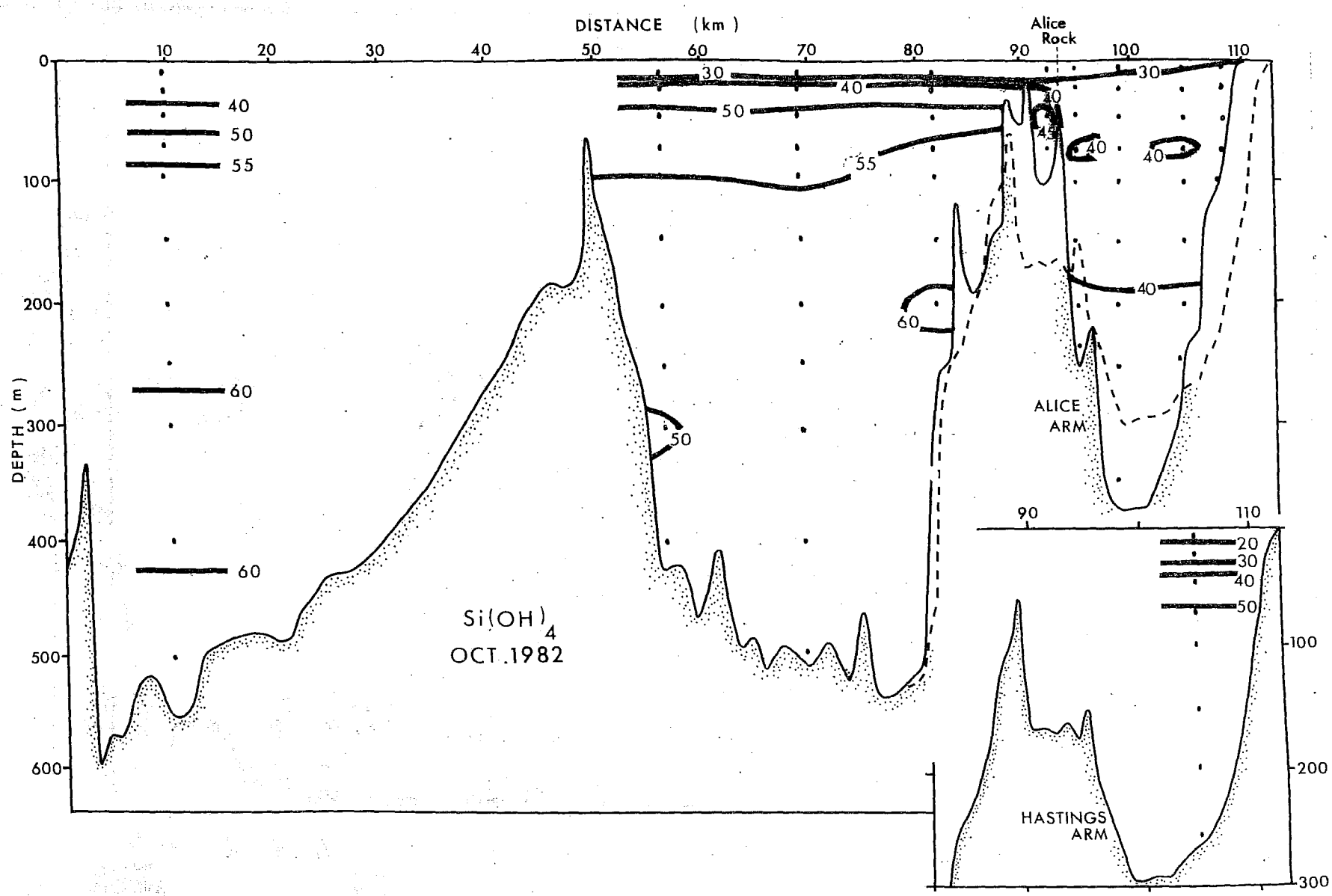

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
DEPTH IN METRES
0 50 100 150 200 250 300 350 400
4
1
0·5
1
2
1
0·5
Chl a
OCT. 1982

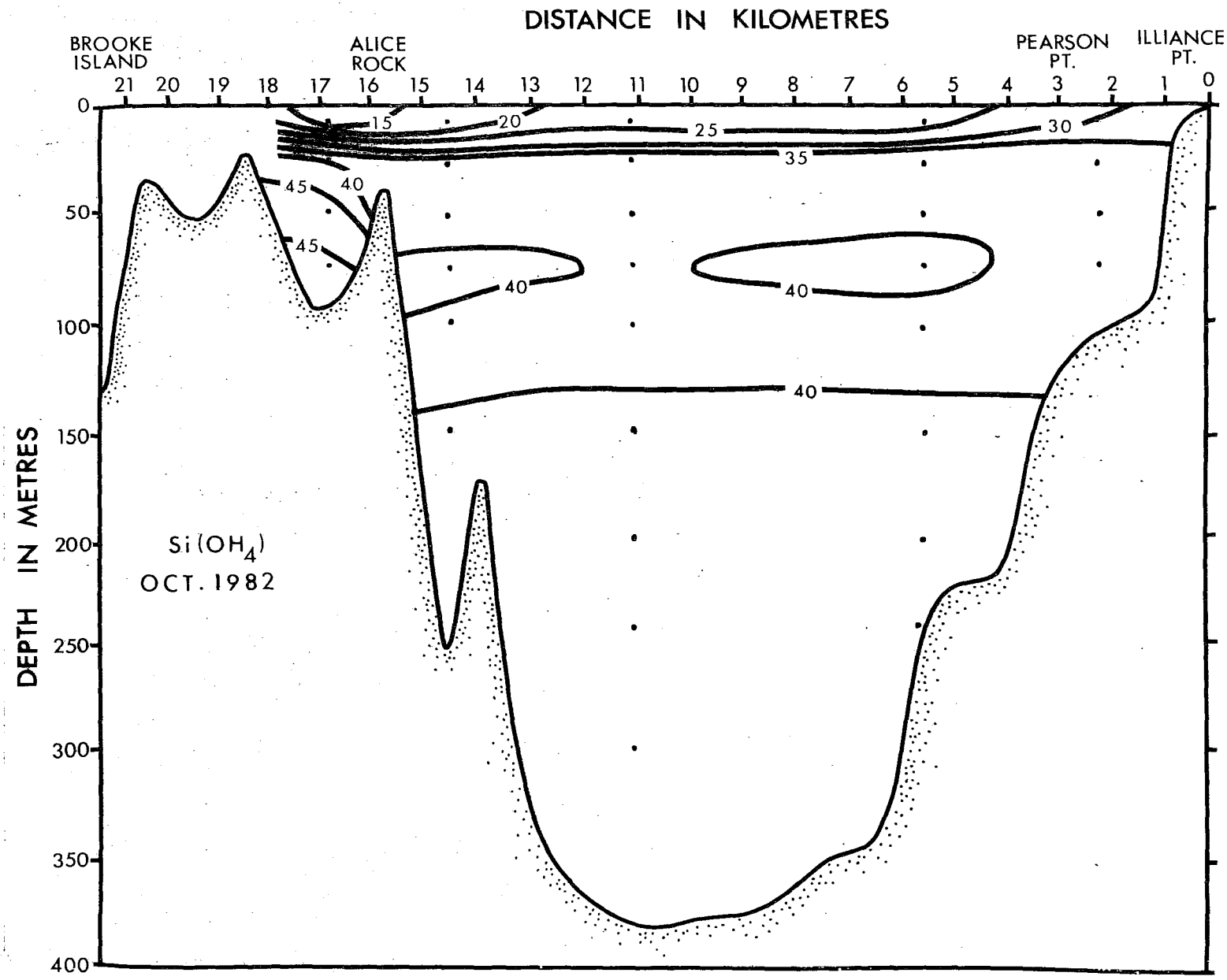

DISTANCE (km)
Alice Rock
DEPTH (m)
PO4
OCT.1982
ALICE ARM
HASTINGS ARM

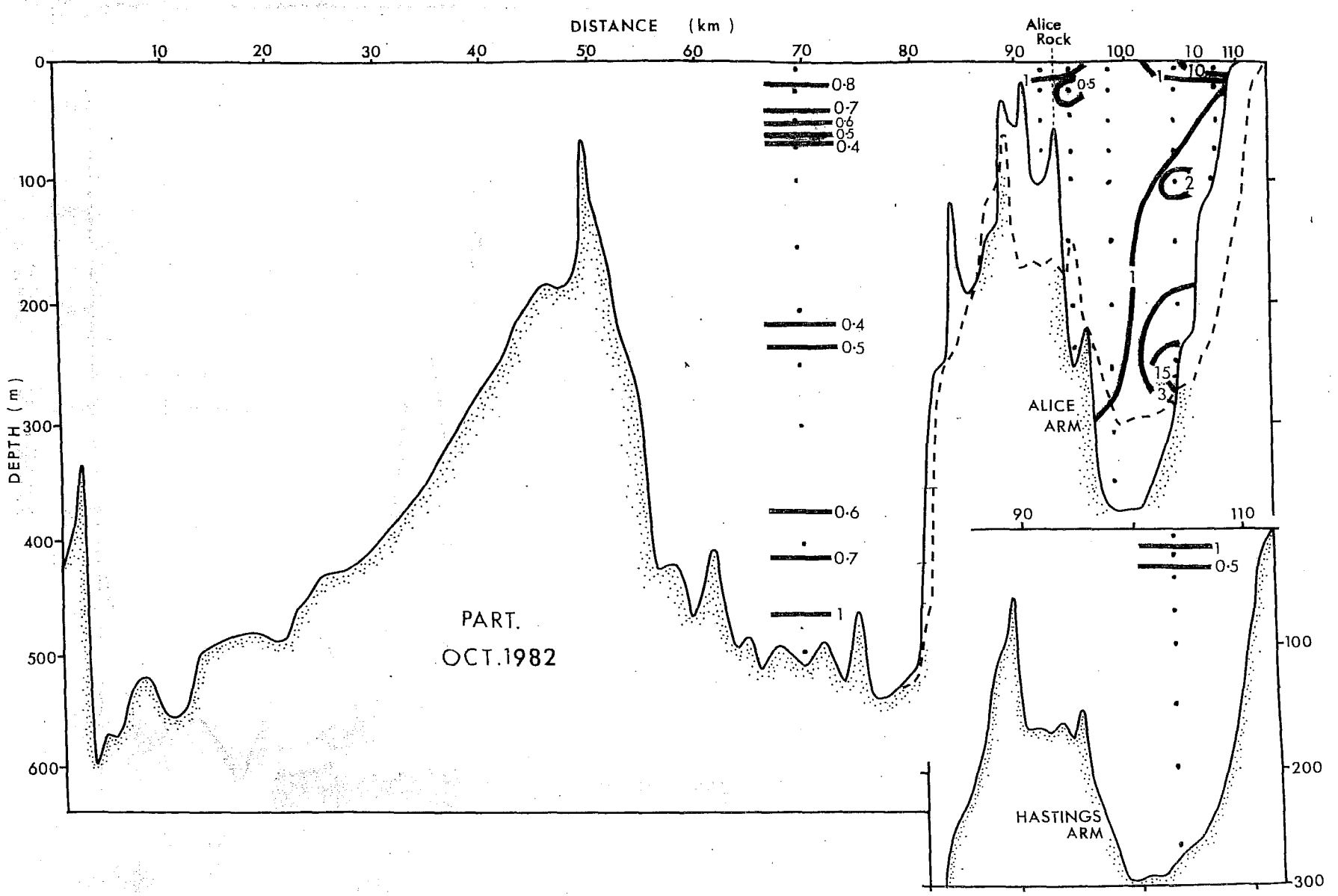

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
DEPTH IN METRES
0
50
100
150
200
250
300
350
400
1
1·5
2
2
PO_4
OCT. 1982

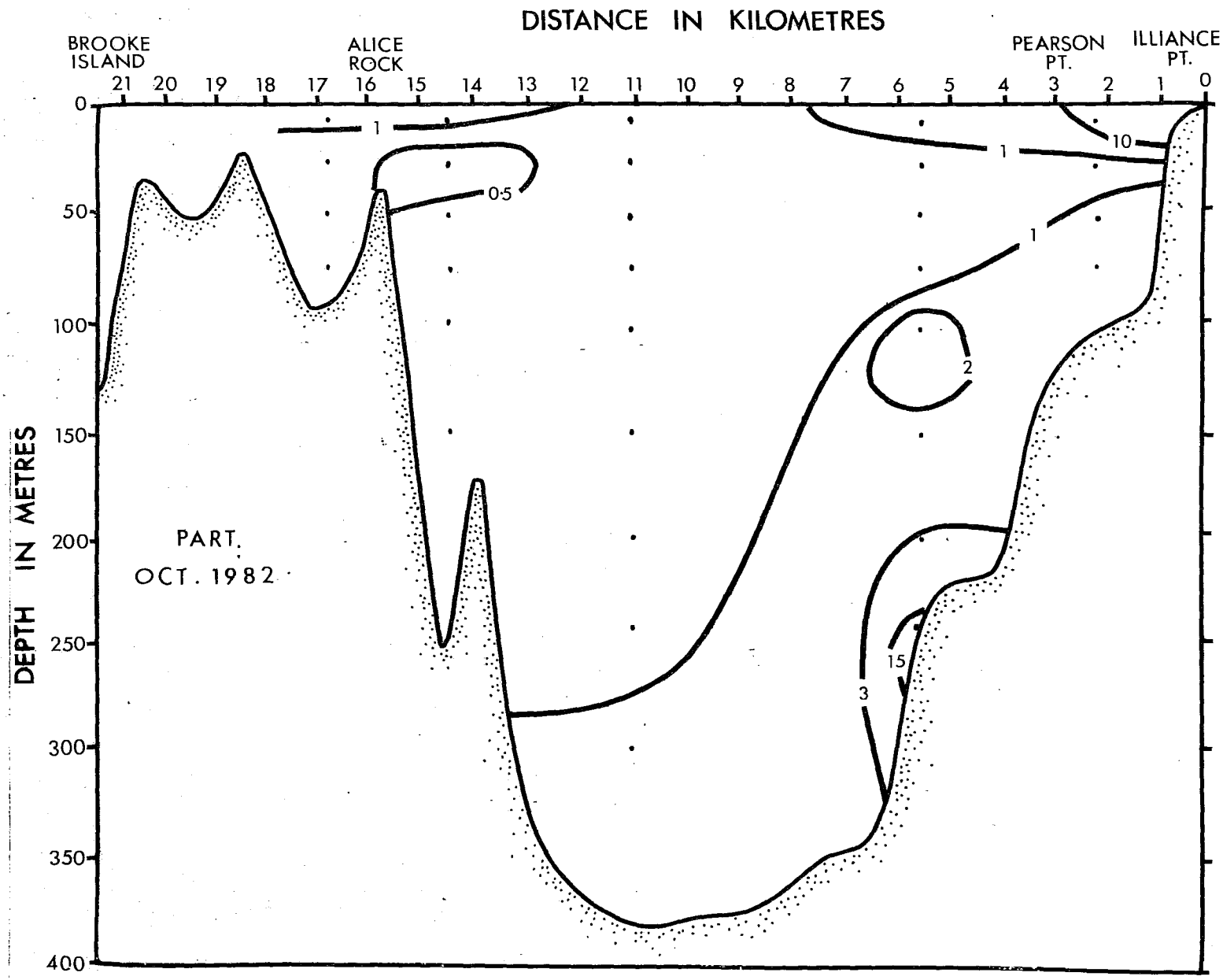

DISTANCE (km)
Alice Rock
DEPTH (m)
NO3
OCT.1982
ALICE ARM
HASTINGS ARM

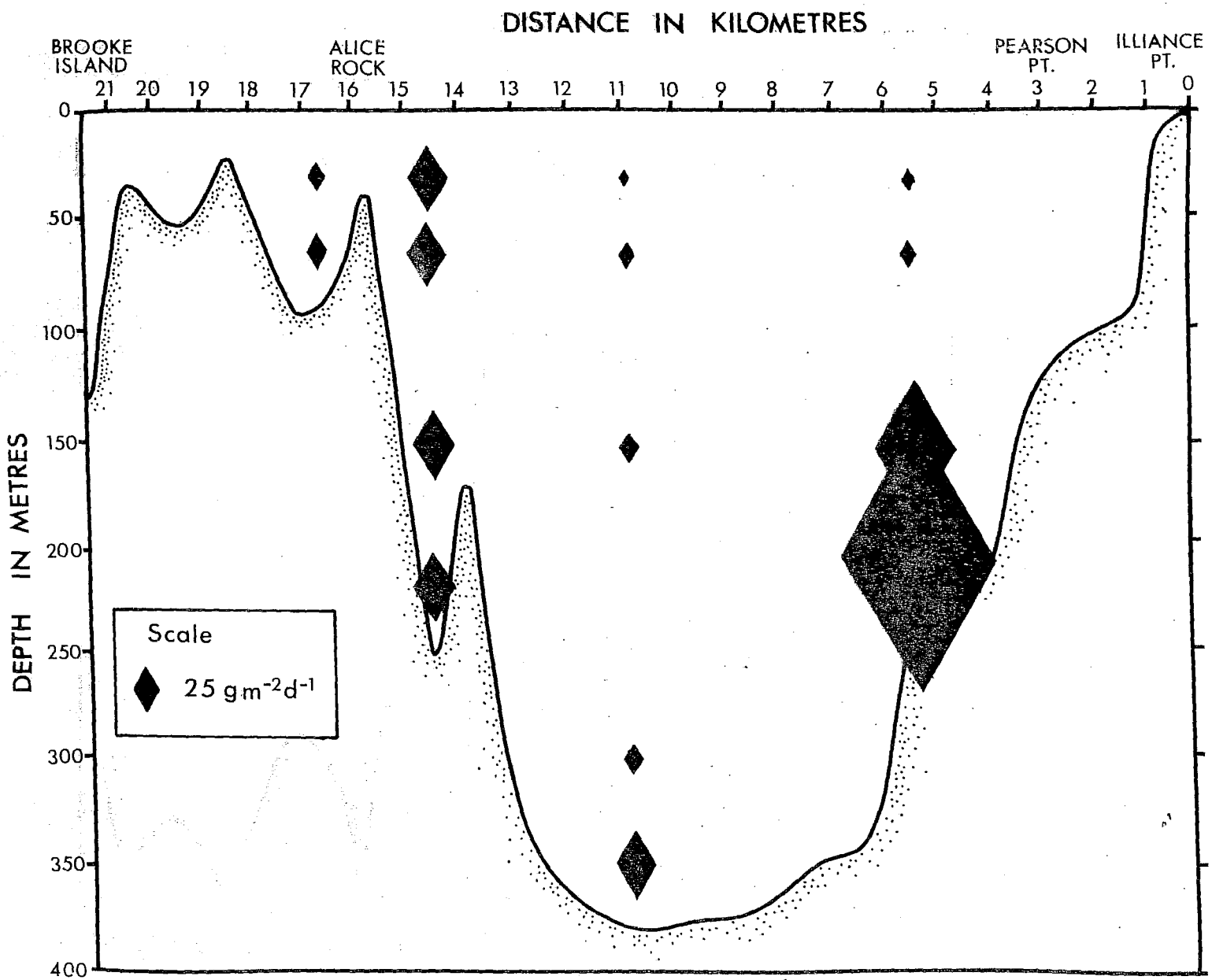

DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0
50
100
150
200
250
300
350
400
DEPTH IN METRES
5
10
15
20
23
25
25
23
25
NO_3
OCT. 1982


DISTANCE (km)
Alice Rock
DEPTH (m)
Si(OH)4
OCT.1982
ALICE ARM
HASTINGS ARM


DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
0
50
100
150
200
250
300
350
400
DEPTH IN METRES
15
20
25
30
35
45
40
45
40
40
40
Si(OH4)
OCT. 1982


DISTANCE (km)
10
20
30
40
50
60
70
80
90
Alice Rock
100
10
110
0
100
200
300
400
500
600
DEPTH (m)
0·8
0·7
0·6
0·5
0·4
0·4
0·5
0·6
0·7
1
PART.
OCT.1982
1
0·5
1
10
2
1
15
3
ALICE ARM
90
110
1
0·5
100
200
300
HASTINGS ARM


DISTANCE IN KILOMETRES
BROOKE ISLAND
ALICE ROCK
PEARSON PT.
ILLIANCE PT.
21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
DEPTH IN METRES
0 50 100 150 200 250 300 350 400
1
0·5
1
10
1
2
15
3
PART.
OCT. 1982



SEDIMENTATION in ALICE ARM SEPT. '82