NEARSHORE COASTAL CURRENTS--

CHUKCHI SEA, SUMMER 1981

by

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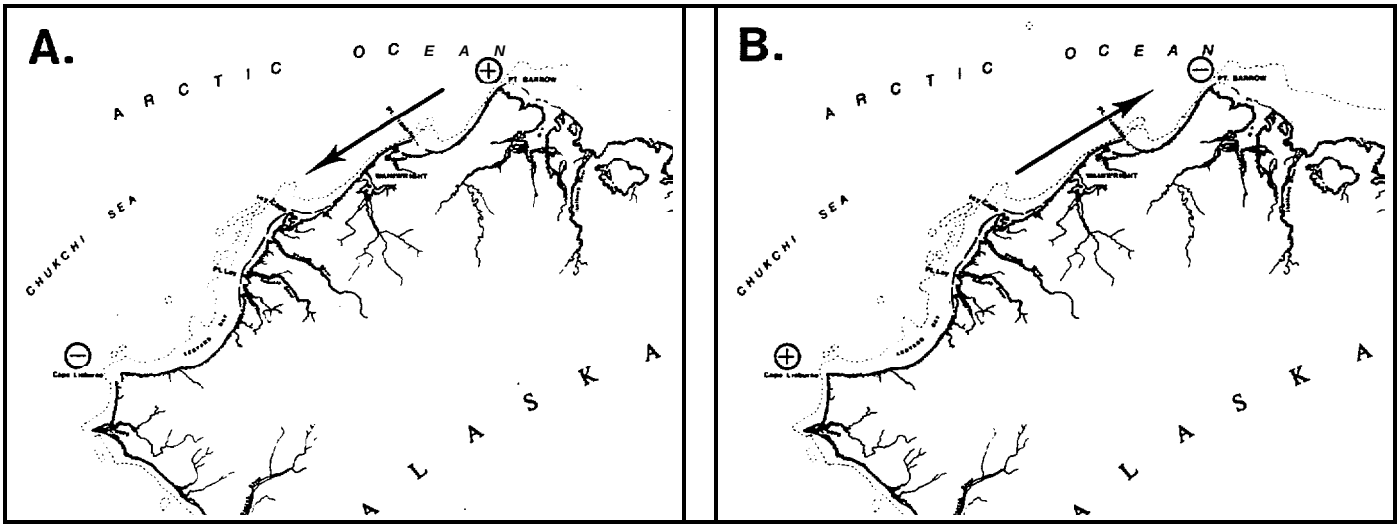
SUMMARY

Nearshore currents measured along the Chukchi Sea coast from Point Barrow to Wainwright during the period 7 August to 7 September 1981 flowed predominantly upcoast. However, downcoast flow was measured between 33 and 47 percent of the time in these records. Speeds were up to 50 cm/sec, except offshore Point Barrow in the vicinity of Barrow Canyon, where speeds up to 100 cm/sec were recorded.

All currents from the different moorings, depths, and from both Wainwright and Point Barrow locations were closely correlated (correlation coefficients of about 0.90). These currents were also strongly correlated with atmospheric pressure differences between Point Barrow and Cape Lisburne (correlation coefficients about -0.81 to -0.85, zero lag). These currents were not as strongly correlated with the respective local winds (correlation coefficients about 0.65 to 0.72).

Hydrographic transects taken perpendicular to the coast at seven locations between Point Barrow and Akunik Pass (south of Icy Cape) were supplemented by continuous records of temperature and salinity from the moored meters off Point Barrow. Highly variable temperature and salinity regimes are indicated by this nearshore data. Pycnoclines at 5-10 meters depth inshore and 10-15 meters depth offshore were found. Cooler, more saline water nearshore may indicate upwelling but was not consistent with upcoast or downcoast flow regimes. Features of sharp temperature/salinity fronts are evident in the time series data.

A group of twelve drogues tracked off Wainwright by a MiniRanger III positioning system drifted downcoast, consistent with measured coastal currents. A diffusivity value of up to 9 x 103 cm^2/sec was indicated from spreading of the twelve drogues about their centroid.



Schematic of Coastal Current Direction vs. Atmospheric Pressure Difference (Pt. Barrow - Cape Lisburne). A: AP Positive. 'B: AP Negative.

INTRODUCTION

The Outer Continental Shelf Environmental Asessment Program (OCSEAP) was established by a basic agreement between the National Oceanic and Atmospheric Administration (NOAA) and the Bureau of Land Management (BLM). Its purpose is to conduct environmental research along the Alaskan shelf areas identified for potential oil and gas development. The present work was conducted by Kinnetic Laboratories, Inc. as Research Unit 531 of OCSEAP. The purpose of RU 531 has been to provide data and numerical modeling results on nearshore currents and on possible pollutant trajectory analyses.

Considerable delay was experienced during this year by RU 531 due to a reassessment of priorities between Beaufort Sea and Chukchi Sea tasks by NOAA (Arctic Project Office, Fairbanks; Alaska Office of the Office of Marine Pollution Assessment, Juneau) and BLM, Anchorage and by the unavailability of the usual NOAA-provided ship, plane, and other logistics.

Kinnetic Laboratories, Inc. (KLI) was not authorized until July 1981 to conduct this 1981 summer program along the Chukchi Sea coast. KLI was requested to supply all logistics, including the 32-foot survey vessel, D.W. HOOD. Notwithstanding the resulting time and material constraints, the data acquired on summer coastal currents along the Chukchi Sea coast are reported herein.

Objectives

Specific objectives of the present study were the following:

1. Obtain measurements of nearshore coastal currents by moored instrumentation along the Chukchi Sea coast from Point Barrow as far south as Cape Lisburne, if possible;

2. Obtain auxiliary water-level measurements, hydrographic section data, and meteorological observations;

3. Collect synoptic wind and barometric pressure data from reporting stations along this coast from Nome to Pt. Barrow;

4. Conduct current-drogue tracking studies as time permits and as a lower priority item;

5. Present and interpret the data obtained. Pay particular attention to episodes of wind and

pressure patterns, and their resulting effects on measured coastal currents. Perform analyses of co-variance, if appropriate;

6. Furnish raw data, in card image format, conforming to NODC/OCSEAP formats, on nine-track digital tape.

Previous Work

Although there are many previous oceanographic studies in the Chukchi Sea, there have been relatively few measurements of nearshore currents along the Chukchi Sea coast. Earlier work in the Chukchi Sea, generally confined to the deeper offshore waters, was reviewed by Coachman in 1963. A later review, including most of the available inshore data, was also given by Coachman et al. in 1975.

A warm current, originating in the Bering Strait flows northeastward approximately 100 km offshore (Coachman et al. 1975; Ingham and Rutland 1972; Fleming and Heggarty 1966; Paquette and Bourke 1974). To the north, the current approaches the coast and flows through Barrow Canyon into the Beaufort Sea (Mountain et al. 1976). South of Icy Cape, there is evidence of an anticyclonic eddy separating the coast and the warm current (Fleming and Heggarty 1966; Ingham and Rutland 1972). Offshore, a pycnocline occurs between ten and fifteen meters depth because of ice melt (Ingham and Rutland 1972), but shoals occur five to ten meters inshore, and are more intense due to freshwater runoff (Wiseman et al. 1974).

Two previous investigations are particularly relevant to the present data. Mountain et al. (1976) obtained 120-day records of currents and temperatures from two moored Aanderaa meters at 96 and 126 meter depths in 150 meters of water offshore in Barrow Canyon. These records showed mean currents of 25 cm/sec toward the northeast (along the axis of the canyon which approximately parallels the shoreline). However, the records were characterized by higher speeds (commonly greater than 50 cm/see) and large variations, including periods of reversed upcanyon motion. A close relationship was shown to exist between the measured currents and the north-south pressure gradient, such that when the pressure rose to the north, the northward flow of water through the canyon decreased.

Wiseman and Rouse (1980) obtained current-drogue tracks, wind measurements, and inshore hydrographic measurements near the Point Lay - Icy Cape area in 1972. They conclude that these data support the thesis of a well-developed baroclinic coastal jet.

Present Study

The present work was meant to supplement the sparse data on Chukchi Sea coastal currents, chiefly the deeper moored data of Mountain et al. (1976) off Barrow, the brief observations of

Wiseman and Rouse (1980) off Pt. Lay, and sporadic ship observations as summarized by Coachman et al. (1975). An objective was to obtain coastal field data prior to anticipated NOAA numerical modeling efforts. Such data will aid numerical modeling efforts by guiding the selection of the appropriate physics for incorporation into coastal models, as well as providing data for hindcast verifications.

The work described herein was carried out between 7 August 1981 and 8 September 1981 in the open-water/floating ice regime of the Chukchi Sea summer season.

MATERIALS AND METHODS

Current Metering

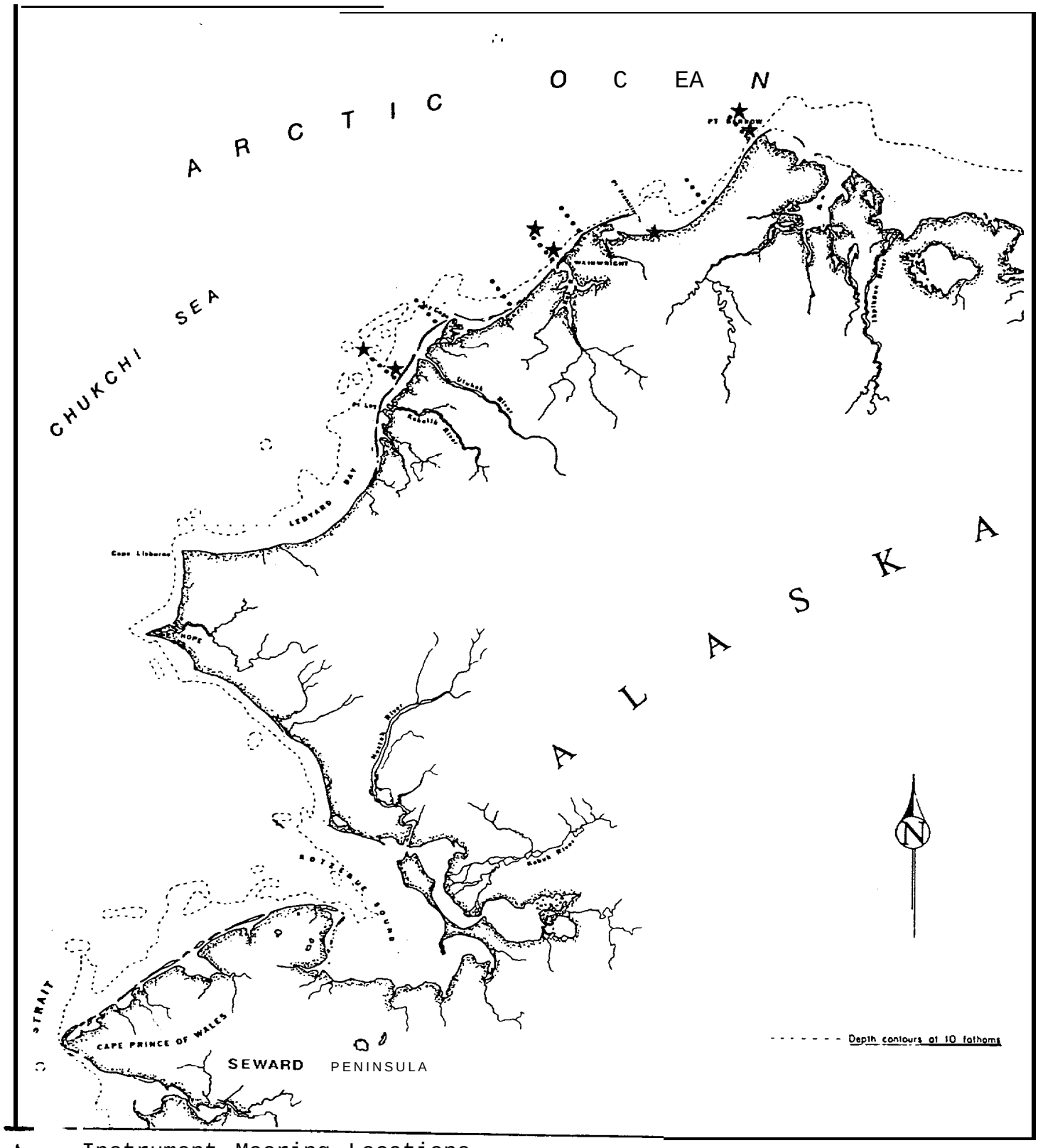
Current data were obtained by deploying and retrieving current meters along the Chukchi Sea coast during the initial and final stages of the study. Stations were located at Barrow, Wainwright, and Akunik Pass (Figure 1). Each location was moored with both an onshore and offshore string of meters. Relative depths of meters are shown in Figure 2.

Meter strings were composed of the two instrument packages and bridles attached with an appropriate length of l/4-inch stainless steel cable, subsurface floats, acoustic pinger, primary anchor (250-300 lbs.), 600-foot tag line, and secondary anchor (40 lbs.), as shown in Figure 3. The instrument packages varied between stations. Both Barrow stations were equipped with Aanderaa model RCM-4 (magnetic recording) current meters, while the Wainwright stations were composed of General oceanic model 2010 (film recording) current meters. The Akunik stations were moored in the inshore area with Aanderaa model RCM-4 meters. The offshore Akunik station was comprised of an Aanderaa model RCM-4 meter at the bottom position and a Marsh-McBirney model ARC-585 (electromagnetic) current meter at the subsurface position. All stations were equipped with collapsible and noncollapsible subsurface floats to and with acoustic pingers (Helle model 2215) providing verification of meter location.

Deployment procedures were carried out after establishing shore transponder sites for the Motorola Miniranger III locating system. After the instrument packages were deployed and their positions recorded, a tag line was stretched between the primary and secondary anchors along a recorded magnetic heading.

Current meter recovery depended on relocating the position of deployment, checking for the presence and actual location of the meter string with the acoustic pinger detector, marking the exact location with a buoy and weighted line and snagging the tag line with a grapnel hook.

Raw current meter data retrieved from the field is processed, analyzed and correlated with meteorological data products by a series of computer programs in the laboratory. The initial production in the process varies between types of meters used (Aanderaa and General Oceanics), but the screenings presentation, production and correlation processes are identical.



★ Instrument Mooring Locations
•••• C/STD Transects

Figure 1. Chukchi Sea Coast Study Sites (August - September 1981)

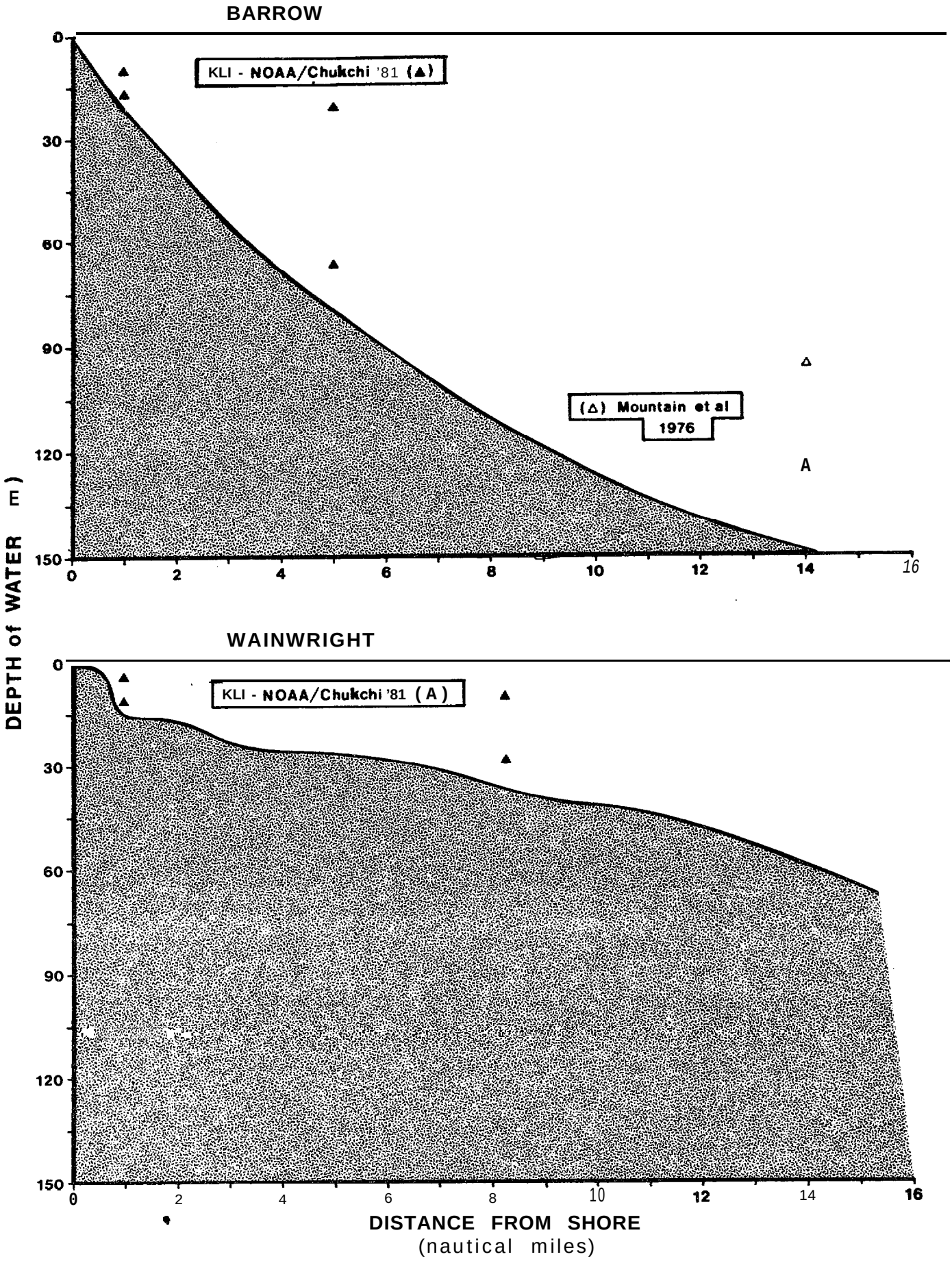


Figure 2. Relative Depths of Meters at Barrow and Wainwright.

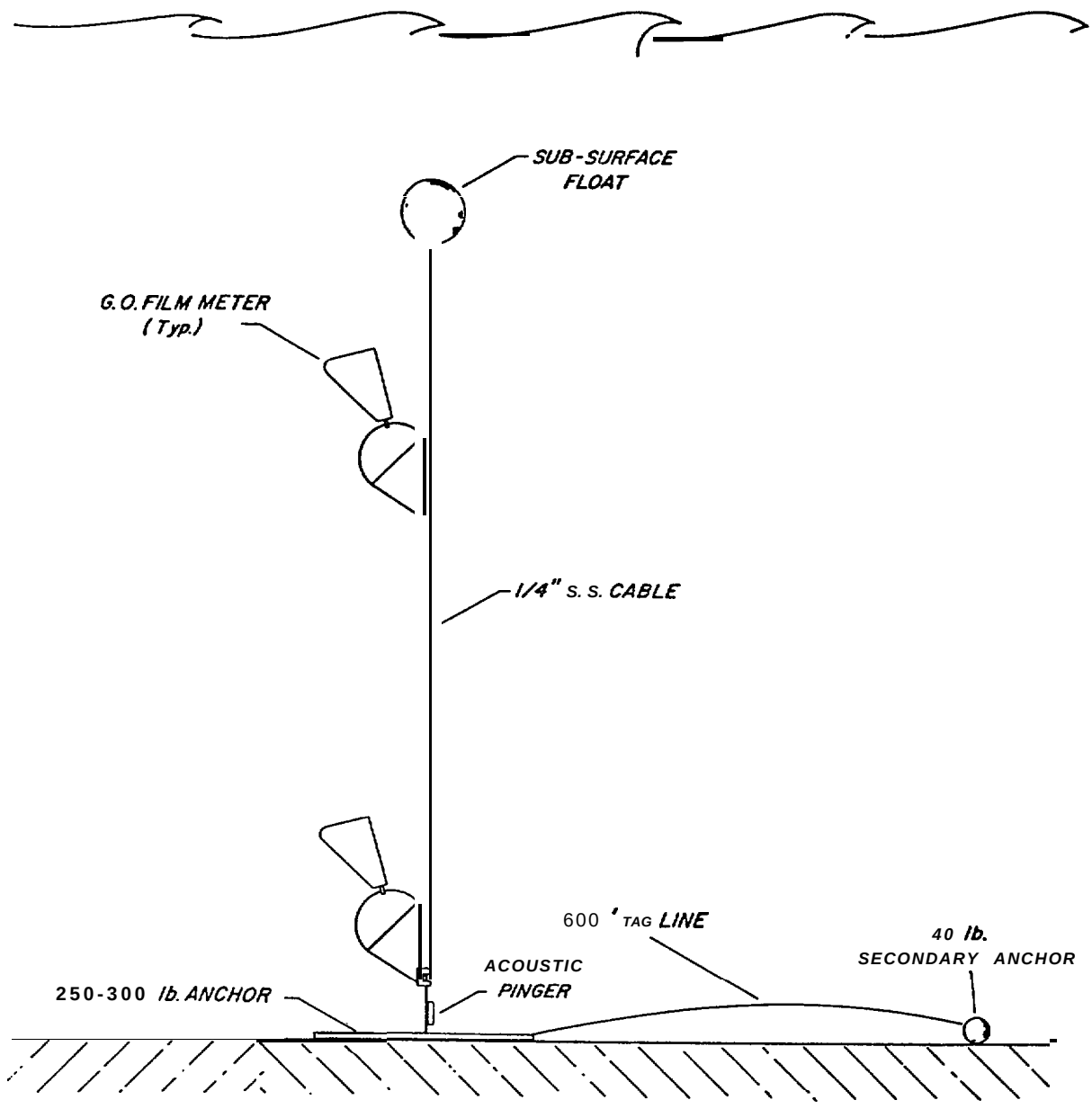


Figure 3. Schematic of Current Meter Flooring, General Oceanic Film Meters (not to scale)

Meteorology

Weather observations of wind speed and direction were taken from the Air Force and NOAA weather service records at weather stations and DEW-line sites at Cape Lisburne, Point Lay, Wainwright and Barrow from August to September 1981.

Atmospheric pressure differences were calculated from values extracted from National Weather Service maps for Nome, Cape Lisburne and Barrow for the month of August 1981. Differences in pressure were correlated with current data to describe forcing functions.

Hydrography

Nearshore density profiles of the water column were acquired with an InterOceans C/STD system model 513D. Data was recorded with a Datel model DPP-7 printer and later screened and analyzed for content. Surface water samples were taken during each transect to check temperature and salinity values.

Stations were located 1.0, 1.5, and 2.0 nautical miles apart along transects surveyed at Barrow, Skull Cliffs, Point Belcher, Wainwright, Pingorarok Pass, Icy Cape, and Akunik Pass (Figures 4 - 6). Cast depths were limited by the length of C/STD cable to 90 meters or less, depending on wire angle and bottom depth.

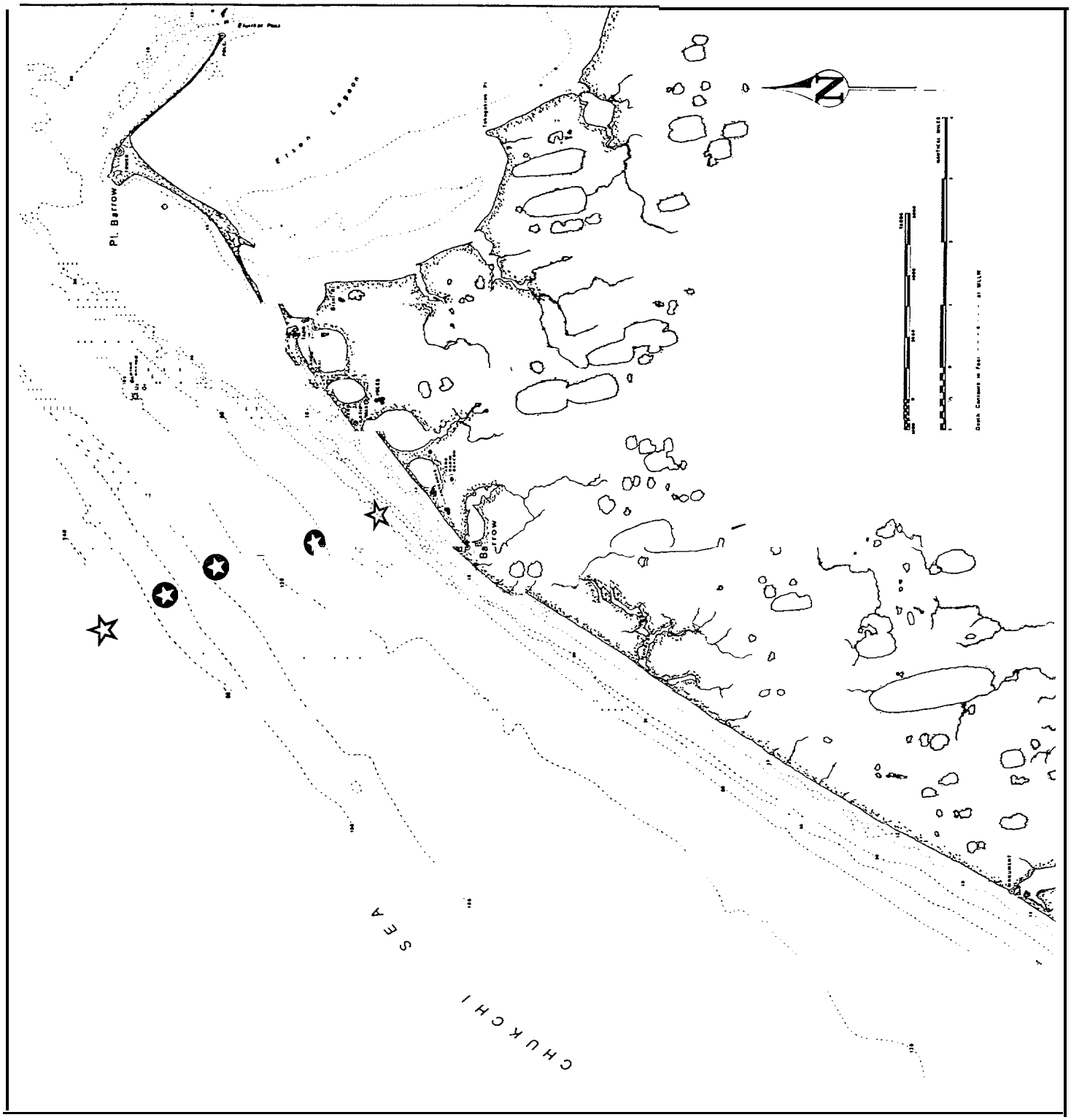
Most of the profiles were taken within a period of a week at depth intervals of one meter. Values were recorded for the parameters of temperature, conductivity, depth, and transparency.

Drogue Studies

Twelve drogues were weighted to present a minimum of float area to the wind. Sails were of the windowshade design, seven square feet in area, and set within a meter of the water surface. Small flags attached to the drogues permitted identification at a distance.

Deployment procedure involved setting all twelve drogues in the form of a cross at 12:00 hours on 20 August 1981 five nautical miles offshore of Wainwright in 72 feet of water. Deployment and drift position were recorded with a Motorola Miniranger III locating system. Positions were taken every hour from the research vessel D.W. HOOD, as were local wind and weather observations for the twelve-hour duration of the experiment.

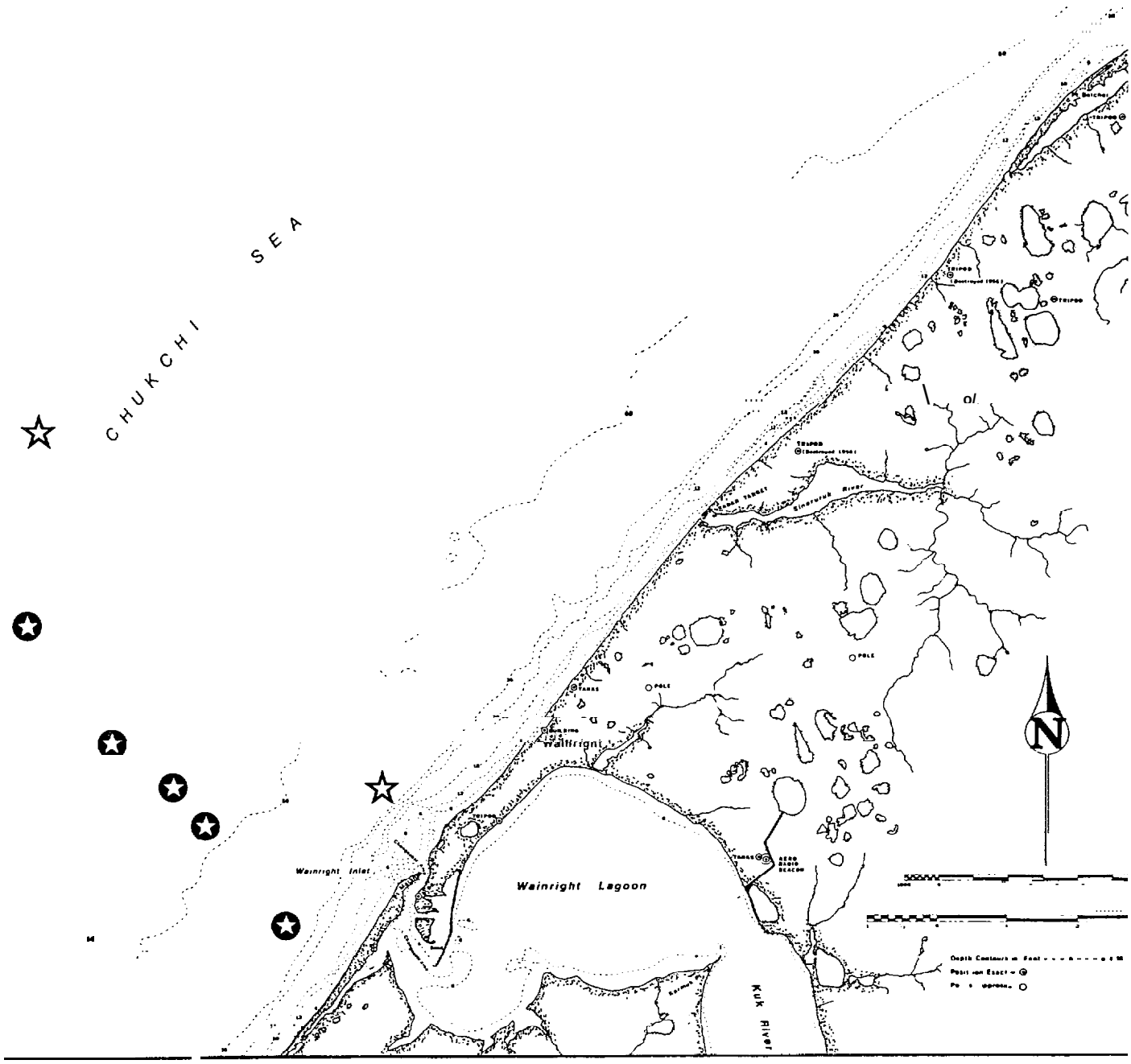
The analyses were carried out using the methods of Okubo et al (8) and Ichiye et al (9). The range-range data recorded from the miniranger system were converted to latitude and



- CTD Cast

= Current Meter & CTD Cast

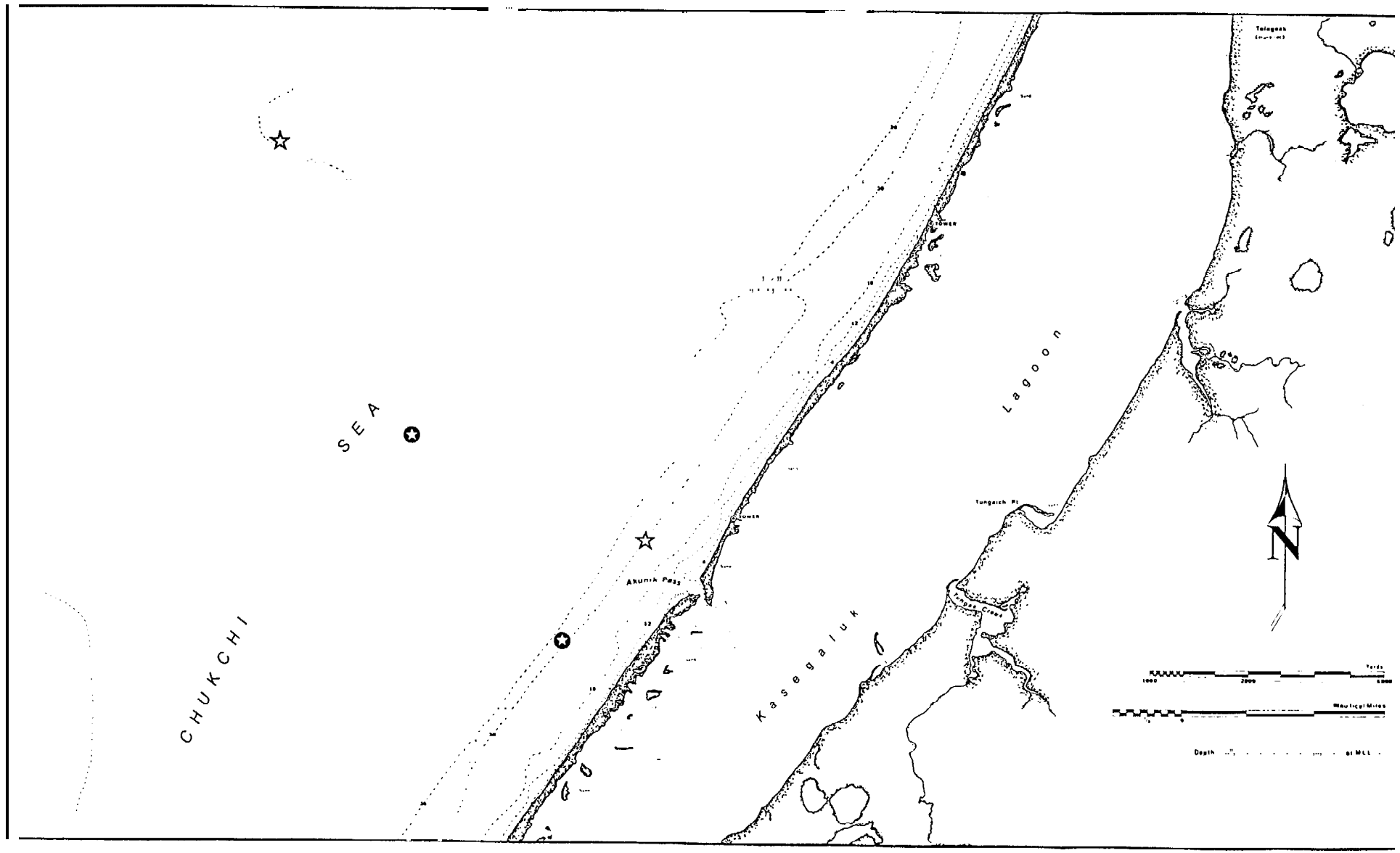
Figure 4. Locations of Current Meter Stations and C/STD Casts off Point Barrow.



- CTD Cast

- Current Meter &CTD Cast

Figure 5. Locations of Current Meter Stations and C/STD Casts off Wainwright.



CTD Cast

☆ - Current Meter & CTD Cast

Figure 6. Locations of Current Meter Stations and C/STD Casts off Akunik Pass.

longitude, and then to localized cartesian coordinates. Variances of σX^2 and σY^2 and covariance σXY were then computed. The lengths and orientations of major and minor axes of ellipses describing the characteristics of the dispersion were then calculated and plotted.

Correlation Methods for Time Series

The current meter records were averaged to one-hour increments, then usually digitally filtered using a 35-hour low-pass (Doodson) filter. After filtering, the principal axis of the remaining drift currents were determined for use in correlation and spectral analyses.

These principal component series from the drift current records were compared with two other time series using methodology of Jenkins and Watts (1968). These other time series were the components of the local wind along the appropriate axis, and the difference in barometric pressure between Point Barrow and Cape Lisburne, both for the intervals of 6 and 18 hours.

First, lagged correlations were calculated for paired series. The extent to which the lags were carried depended on the point at which the cross-correlation function seemed to damp out. This point was usually 250 to 350 hours out, or 40-60 lags for the 6 hour series, and 14-19 lags for the 18-hour series.

Spectral analysis was conducted using a Tukey lag window. Window sizes ranged from 20 to 60 weights for the 6-hour series and 10-18 weights for the 18-hour series. In general, stable results for coherence spectra were obtained only for the smaller window sizes, which did not give a great amount of detail in most of the spectra. Features in the spectra much narrower than the bandwidth of the window size are very likely spurious, resulting from the spectral smoothing calculations.

The features of interest in the wind and current time series data are low frequency events, usually of orders of days to weeks. Because the total record lengths are short (of the order of one month), complete resolution of low frequency features by spectral analysis techniques cannot be expected.

RESULTS

The current, hydrographic, meteorologic, and drogue dispersion data are presented in graphical forms, with additional presentations, including tabular forms contained in the Appendices. In addition, all data have been digitally recorded on nine-track tape in NOAA/OCSEAP format and have been submitted separately.

Current and Water Level Metering

Of the twelve current meters deployed, seven were recovered successfully with long term data records. Current meter stations are summarized in Table 1, which indicates the degree of difficulty experienced in retrieving the meter strings. Of the moorings, the inshore mooring north of Pt. Lay was not given back to us by Pt. Lay villagers who recovered it. The corresponding offshore mooring was lost to unkown causes. Of the records retrieved, three are of 22 day lengths from Wainwright and three are of 31 day lengths from Barrow. The Aanderaa meters at Barrow were installed on 7 August and retrieved on 2 September. The fourth meter from Wainwright (inshore, surface) malfunctioned, giving intermittent data for the time of installation. The fourth meter from Barrow (inshore, surface) was lost due to ice damage, and the water level meter recovered from Peard Bay malfunctioned during the study, eliminating water level data from the report.

Similar patterns of current speed and direction were recorded at all Barrow and Wainwright stations (Figures 7 and 8). Though unalike in detail, the three complete records at Barrow indicate four major current reversals, while the records at Wainwright show three major reversals. Common to both sites are the reversals occurring during the period of 25 - 27 August, during which time currents reversed directions from the northeast to the southwest. Somewhat less common are the double reversals occurring during 19 - 21 and on 22 August when currents switched from northeast to southwest to northeast. The double reversal is more evident in the Wainwright data than in the Barrow data, where it appears as a pause in the currents rather than as a complete reversal. The fourth reversal in the Barrow data occurred at the beginning of the records before the placement of the Wainwright meters.

Overall current velocities were more consistent at the Wainwright station than at the Barrow station. Maximum velocities for the study were noted at the offshore surface station at Barrow where peak current velocities of two knots were recorded on the 8, 19, 20, 25, 26, 28 and 29 of August and during the 3 and 5 of September. The records at the other Barrow

Table 1. Equipment Deployment and Retrieval Log, Chukchi Sea, 1981

Date Deployed	Date Retrieved	Instrument*	Location Latitude	Location Longitude	Meter Depth (feet)	Bottom Depth (feet)	Comments
7 Aug 81	7 Sep 81	Aanderaa CM	71°19'31"N	156°45'19"W	57 (17m)	63 (19m)	[Barrow onshore] Station located by by pinger after moved (by ice?) 2,000 meters.
7 Aug 81	Missing	Aanderaa CM	71°19'31"N	156°45'19"W	37 (11m)	63 (19m)	Top meter barrel missing and damage to mooring. Possibly broken free by iceberg.
7 Aug 81	8 Sep 81	Aanderaa CM	71°23'27"N	156°50'52"W	220 (67m)	270 (82m)	[Barrow offshore] Difficult recovery, rough seas and currents.
7 Aug 81	8 Sep 81	Aanderaa CM	71°23'27"N	156°50'52"W	70 (21m)	270 (82m)	Difficult recovery, rough seas and currents.
9 Aug 81	3 Sep 81	Aanderaa tide gauge	70°48'39"N	158°22'12"W	6 (1.8m)	6 (1.8m)	[Peard Bay] Easily found by Zodiac crew.
11 Aug 81	2 Sep 81	G.O. CM (film)	70°37'36"N	160°08'12"W	43 (13m)	50 (15m)	[Wainwright onshore] Easily recovered.
11 Aug 81	2 Sep 81	G.O. CM (film)	70°37'36"N	160°08'12"W	17 (5.2m)	50 (15m)	Easily recovered.

* Abbreviations: CM = current meter; G.O. = General Oceanics.

Table 1 . (continued)

Date Deployed	Date Retrieved	Instrument	Location Latitude	Location Longitude	Meter Depth (feet)	Bottom Depth (feet)	Comments
11 Aug 81	2 Sep 81	G.O. CM (film)	70°42'46"N	160°22'48"W	97 (24.9m)	120 (36m)	[Wainwright offshore] Snagged meter string w/dragline between Hood & Zodiac drifting in 2 knot current & 2-3 ft. seas. Grapnel hook didn't work on cobble bottom.
11 Aug 81	2 Sep 81	G.O. CM (film)	70°42'46"N	160°22'48"W	32 (9.7m)	120 (36m)	
14 Aug 81	Lost	Aanderaa CM	69°54'33"N	162°52'30"W	27 (8.2m)	30 (9m)	[Akunik Pass onshore] Station missing or floats damaged. No clear pinger signal.
14 Aug 81	Lost	Aanderaa CM	69°54'33"N	162°52'30"W	8 (2.4m)	30 (9m)	Station missing or floats damaged. No clear pinger signal.
14 Aug 81	Lost	Aanderaa CM	70°00'30"N	163°07'42"W	37 (11.2m)	63 (19m)	[Akunik Pass offshore] Mini-Ranger batteries discharged. No pinger signal in area reached by dead reckoning. No pinger signal rec'd by R.V. Oceanographer in correct area. Station assumed missing or pinger and float malfunctioning.
14 Aug 81	Lost	Marsh-McBirney CM	70°00'30"N	163°07'42"W	16 (4.8m)	63 (19m)	

* Abbreviations: CM = current meter; G.O. = General Oceanics.

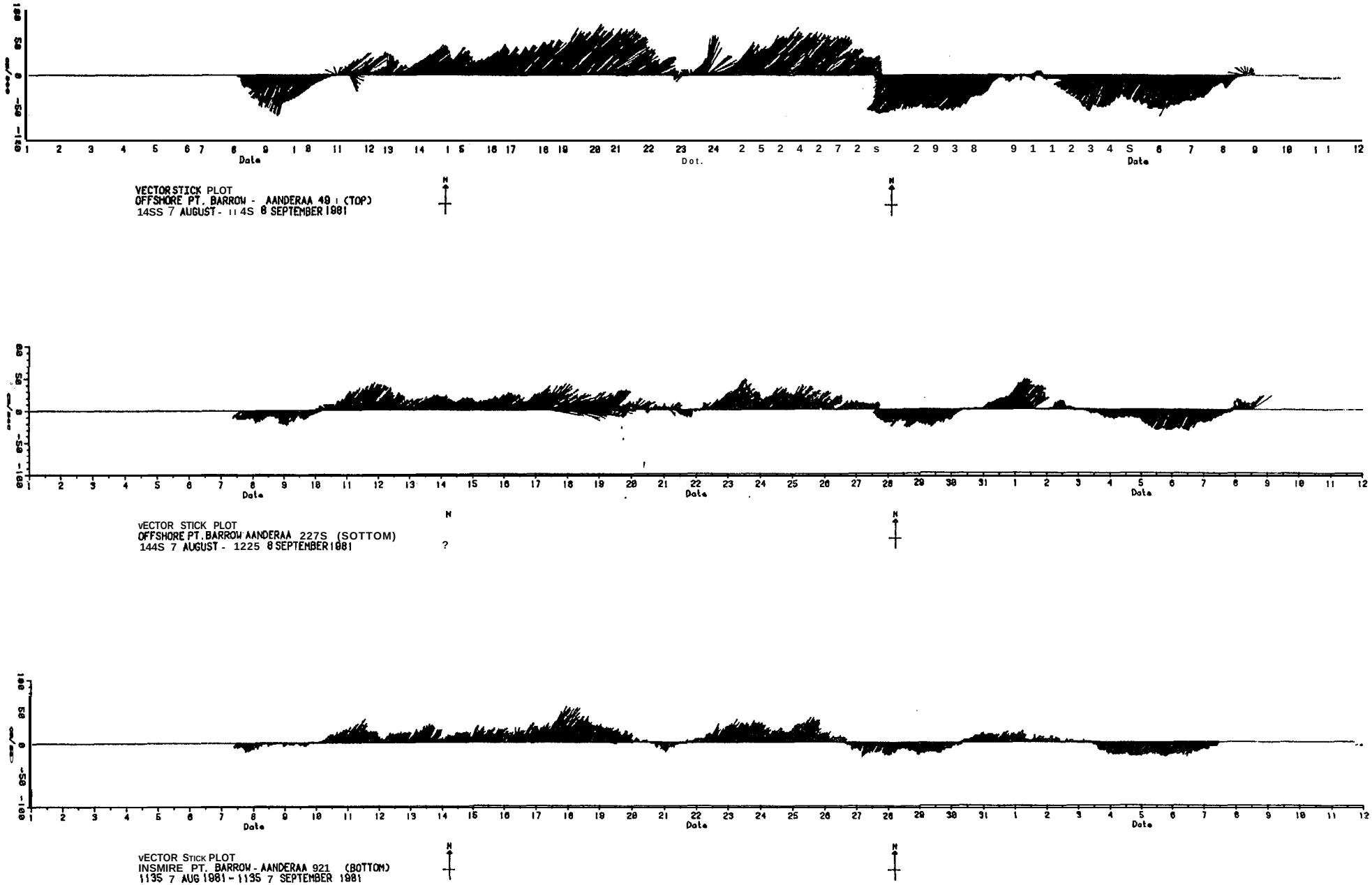


Figure 7. Current Direction and Velocity as a Function of Time at Point Barrow, 7 August to 7 September 1981.

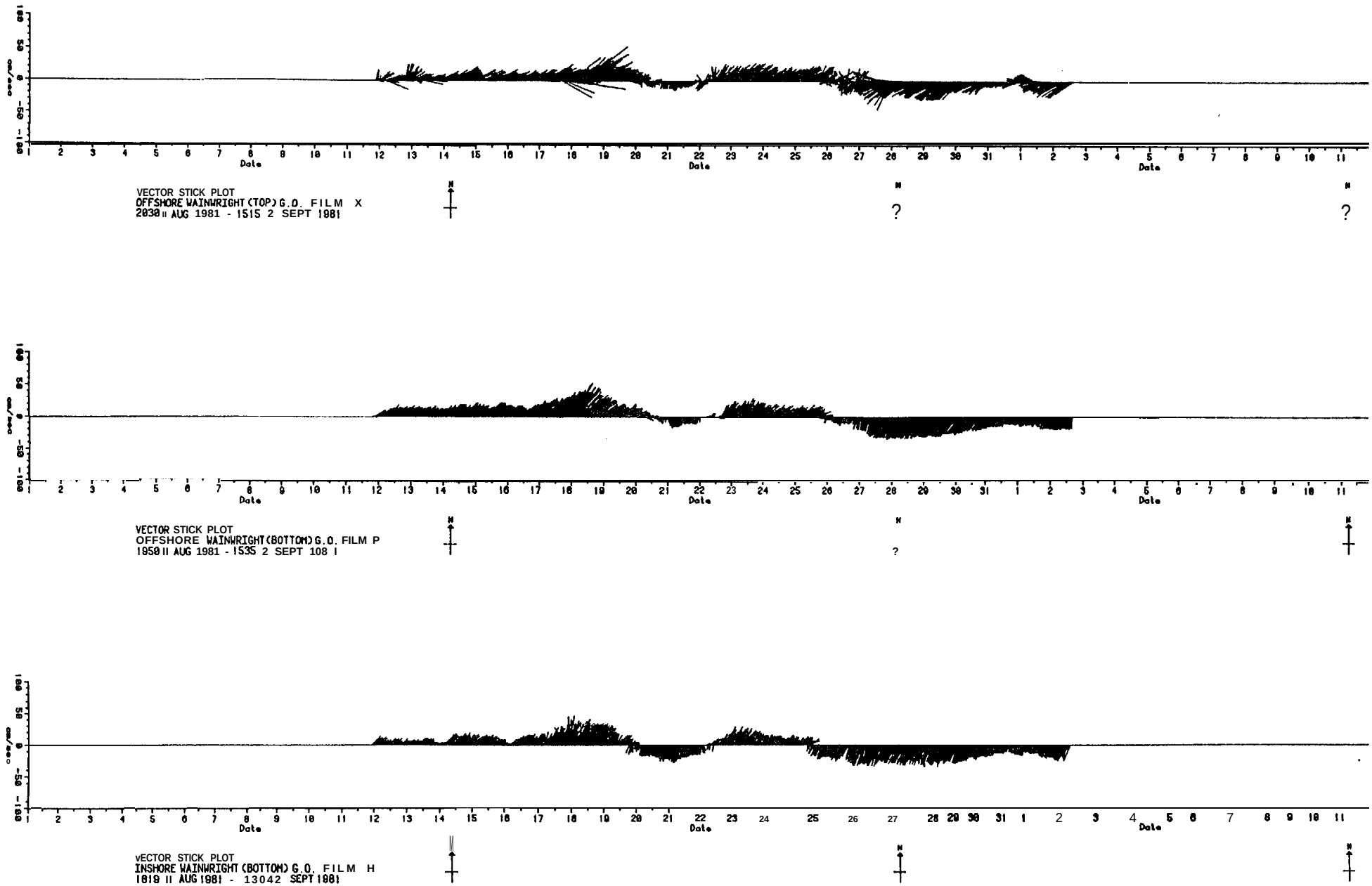


Figure 8. Current Direction and Velocity as a Function of Time at Wainwright, 11 August to 2 September 1981.

station show a similar pattern of current direction, but emphasize a difference in local current velocities. The initial peak in velocity of 8 August is not evident at either bottom " station of offshore or inshore Barrow, while the reversal evident in the records of Barrow during 31 August and 1 and 2 September registers as a cessation of current velocity at Wainwright (Figure 8).

Continuous temperature and salinity records taken at the Barrow current meter stations illustrate differences in water properties at each of the stations. The offshore records at Barrow are most similar to one another. The dominant peak in the temperature record occurs through 17 to 26/27 August, when temperatures change by three degrees (Figure 9). Additional temperature changes of four degrees occurred during the periods of 10 August through 16 August and during 31 August to 5 September only at the offshore surface station at Barrow. The temperature and salinity changes at the inshore bottom station at Barrow are more cyclic and of shorter duration. Major peaks in temperatures occur during 12 - 16 August, 20 - 22 August, and 24 - 28 August at the inshore Barrow station, demonstrating differences in hydrographic properties between nearshore and offshore sites at Barrow.

Meteorological Data

Meteorological data were obtained through a variety of sources. Barometric pressure values were recorded from weather maps provided by NOAA weather service. pressure differences were calculated from values at Barrow, Cape Lisburne and Nome on a 24-hour basis (Figure 10). Positive differences represent higher pressures present at Barrow than at Lisburne or at Barrow than at Nome. Conversely, negative values represent lower atmospheric pressures present at Barrow than at Lisburne or at Barrow than at Nome. Wind data was obtained from the NOAA National Weather Service for Barrow and from the DEW-line station at Wainwright. The frequency of the recorded observations varied with the source of information. Barrow wind data was recorded hourly, while Wainwright wind data was recorded once every three hours (Figure 10).

Though the frequencies of recorded wind observations are different at Barrow and Wainwright, changes in wind direction generally coincide in both areas. Dominant reversals in direction occur during 5, 16, 19, 21 and 23/24 August (Figure 10).

Winds blew predominantly from the north-northeast or from the south-southwest along the coast, coinciding with changes in atmospheric pressure between Barrow and Cape Lisburne and between Barrow and Nome.

The plots of atmospheric pressure differences at Barrow and Lisburne, and Barrow and Nome follow similar gross changes

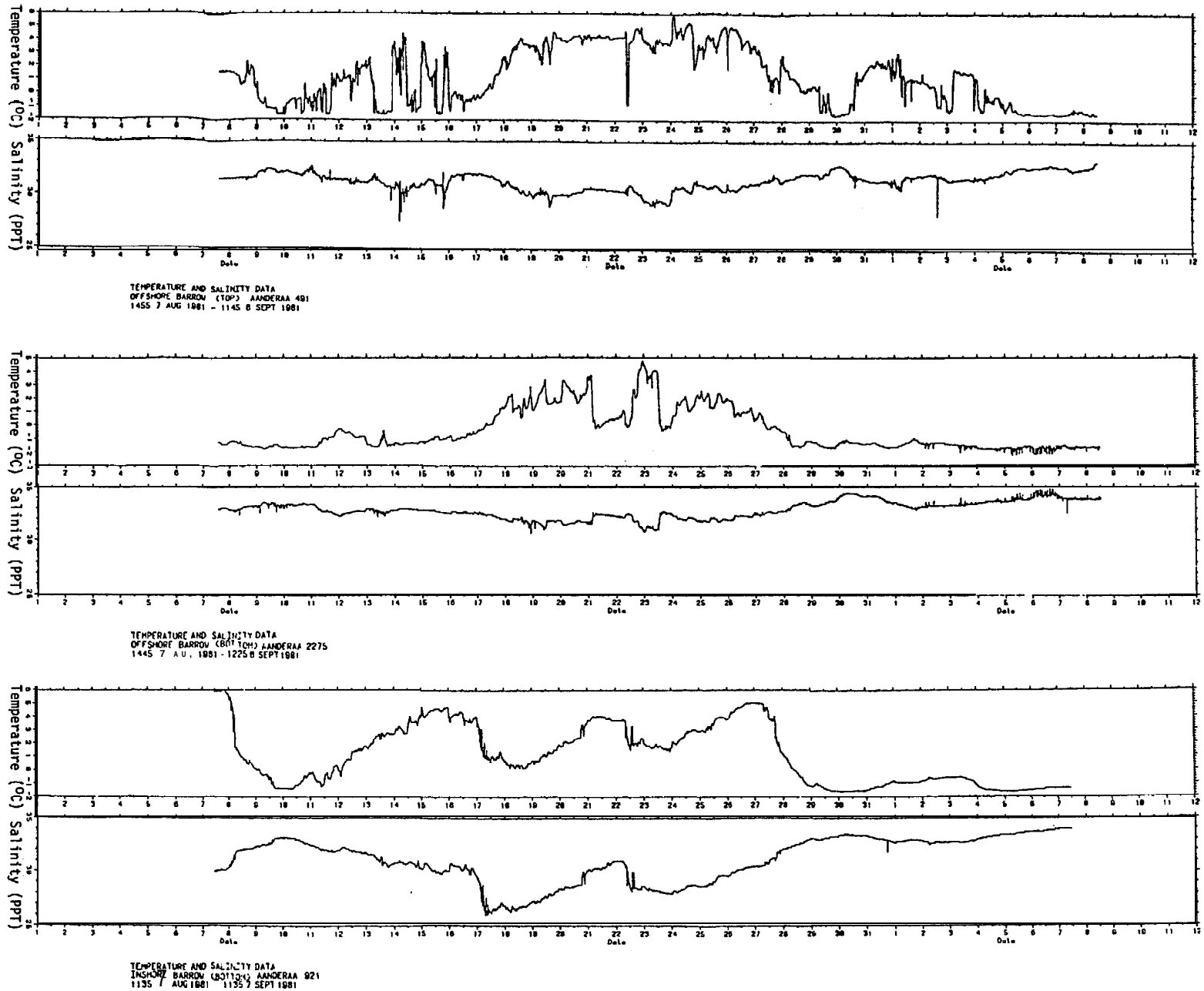


Figure 9. Temperature and Salinity Data Recorded with Aanderaa RMC-4 Current Meters at Point Barrow Stations, 7 August to 8 September 1981.

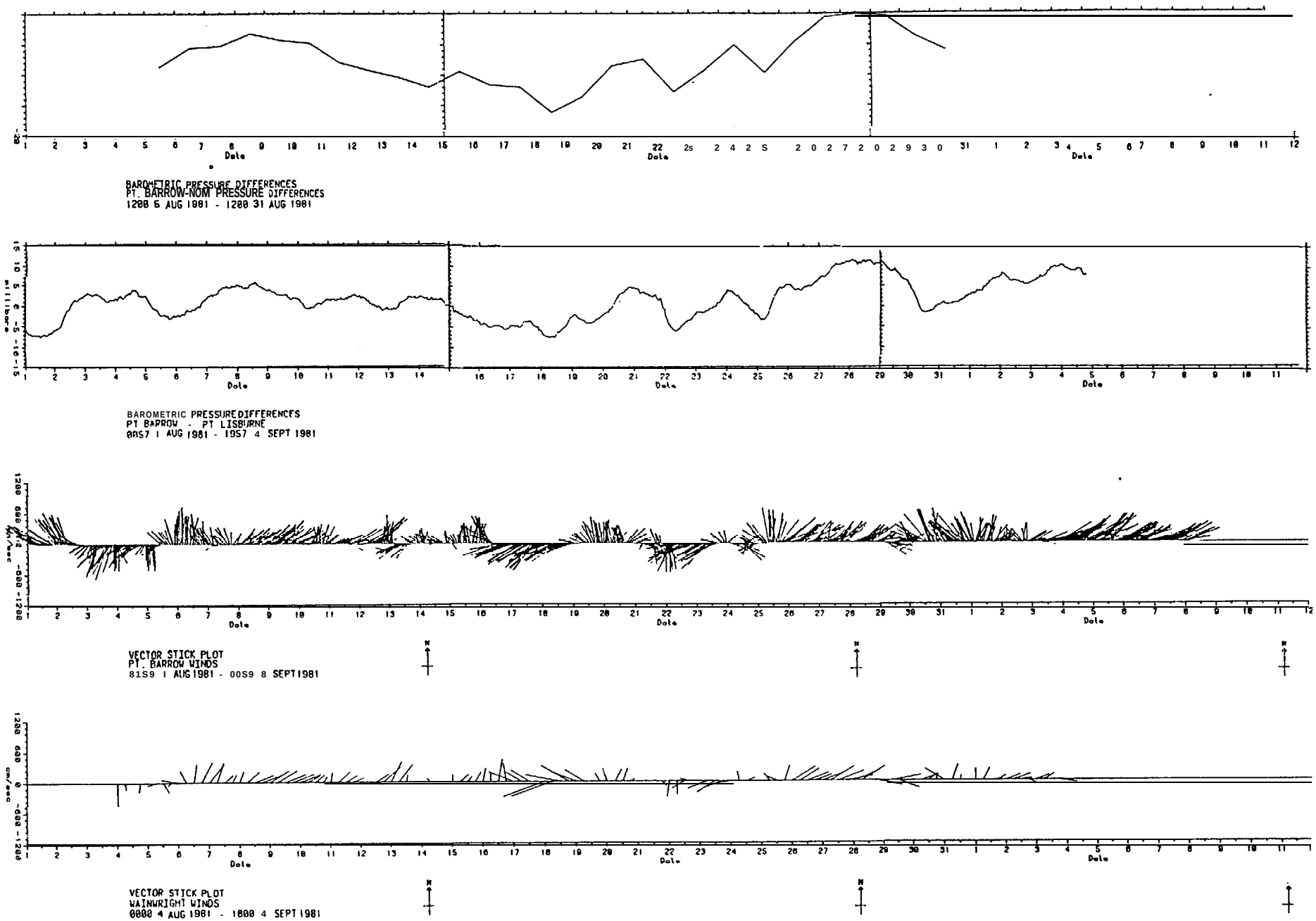


Figure 10. Meteorological Parameters of Atmospheric Pressure Differences (Barrow-Cape Lisburne and Barrow-Nome) and Local Winds (Barrow and Wainwright), 1 August to

through August 1981 (Figure 10). Noticeable divergence in the trend occurs durinq 6 - 10 August, when greater differences were recorded between Barrow and Nome than between Barrow and Lisburne. The divergence occurs-when westward moving high pressure areas create large differences between Nome and Lisburne leaving a series of isobars between the two areas (Figure 11).

Hydrographic Transects

Transects perpendicular to shore were made for hydrographic measurements at seven locations between Pt. Barrow and Akunik Pass as opportunities arose during the cruise and are tabulated in Table 2. These data are presented graphically in Figures 12 through 18 as two-dimensional sections of the water column. Hydrographic profiles of individual stations are graphed in Appendix C along with the tabulated data.

The majority of the profiles taken during the second week in August show colder, more saline, and denser waters intruding from the depths of the offshore regions into the shallows of the nearshore coastal areas (Figures 12 through 18). Though not as evident at the Barrow site near the submarine canyon, the other sites with less bottom relief show varying degrees of upwelling conditions. Acute sigma-t differences are illustrated for Skull Cliffs, Point Belcher and Wainwright, where several isopleths occupy the nearshore areas in increasing values from the offshore direction (Figures 14 and 15). Similar patterns of a gentler degree are evident in the distributions of water densities at Pingorarok Pass, Icy Cape and Akunik Pass transects, where the distributions of sigma-t isopleths are spread over a greater nearshore area than in the three previous cases (Figures 16 - 18).

Patterns in water transparency also are similar between stations. Generally, clearer conditions are associated with offshore surface waters as turbidity is associated with deeper upwelled shelf waters (Figures 12 through 18).

Drogue Dispersion Data

The drogues tended to move parallel to the bathymetry, drifting in concordance with wind speed and direction (Figures 19 and 20 and Table 3). Plots of the trajectories of the centroids of the group of twelve drogues are shown in Figure 19 along with the mean spreading about these centroids. A similar plot of trajectories corrected for wind drag of the surface above the waterline is given in Figure 20. Statistics associated with the spreading of this patch of twelve drogues are tabulated in Table 3.

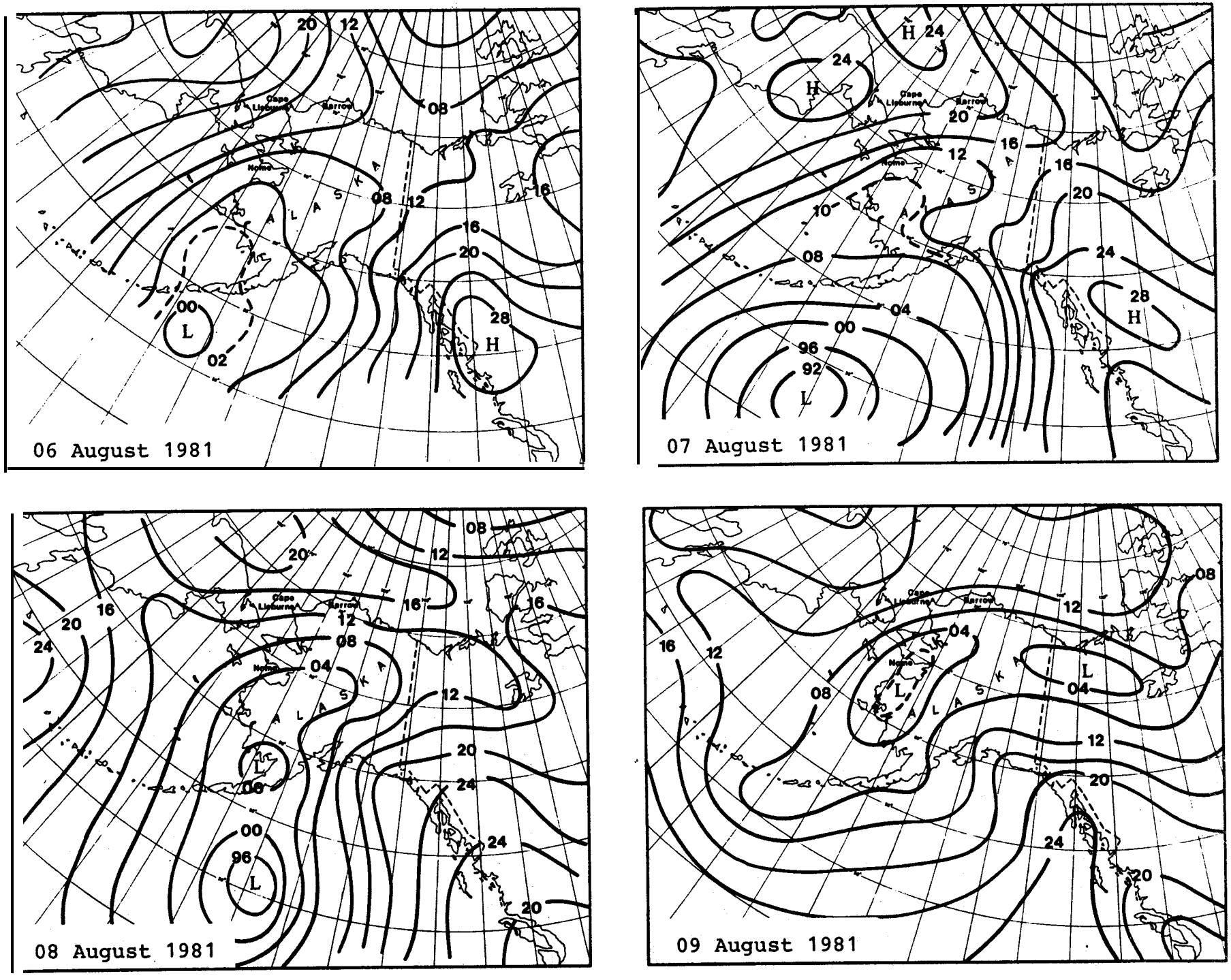


Figure 11. Weather Maps for Chukchi Sea Coast for 6 to 10 August 1981.

Table 2. C/STD TRANSECT LOG

Date	Area	Cast Depths (feet)	Station Distances from Land in Nautical Miles	Weather Observations
7 Aug 81	Barrow	57	1	
		90	2	Wind: 4-6 knots, 300" msg.
		90	3	
		90	4	Air temperature: 37°F
		90	5	
8 Aug 81	Skull Cliffs	35	1	
		54	2	Wind: 10 knots, 020° msg.
		60	3	
		65	4	Air temperature: 44*F
		67	5	
		75	7	
		90	9	
10 Aug 81	Pt. Belcher	65	1	
		90	2	Wind: 5-6 knots, 020° msg.
		90	3	
		90	5	Air temperature: 49°F
		90	7	
		90	9	
13 Aug 81	Pingorarok Pass	24	1	
		37	2	Wind: 0-2 knots, 0° msg.
		47	3	
		55	5	Air temperature: 47°F
		67	7	
		75	9	
14 Aug 81	Akunik Pass	24	1	
		45	3	Wind: 16-20 knots, 300" msg.
		52	5	
		60	7	Air temperature: 44°F
		60	9	
14 Aug 81	Icy Cape	36	1	
		44	2	Wind: 10 knots, 010° msg.
		47	4	
		54	6	Air temperature: 46*F
		70	8	
		87	10	
2 Sep 81	Wainwright	45	1	
		60	2.5	Wind: 10-12 knots, 020° msg.
		70	3.5	
		75	4.5	Air temperature: 45°F
		90	6.5	

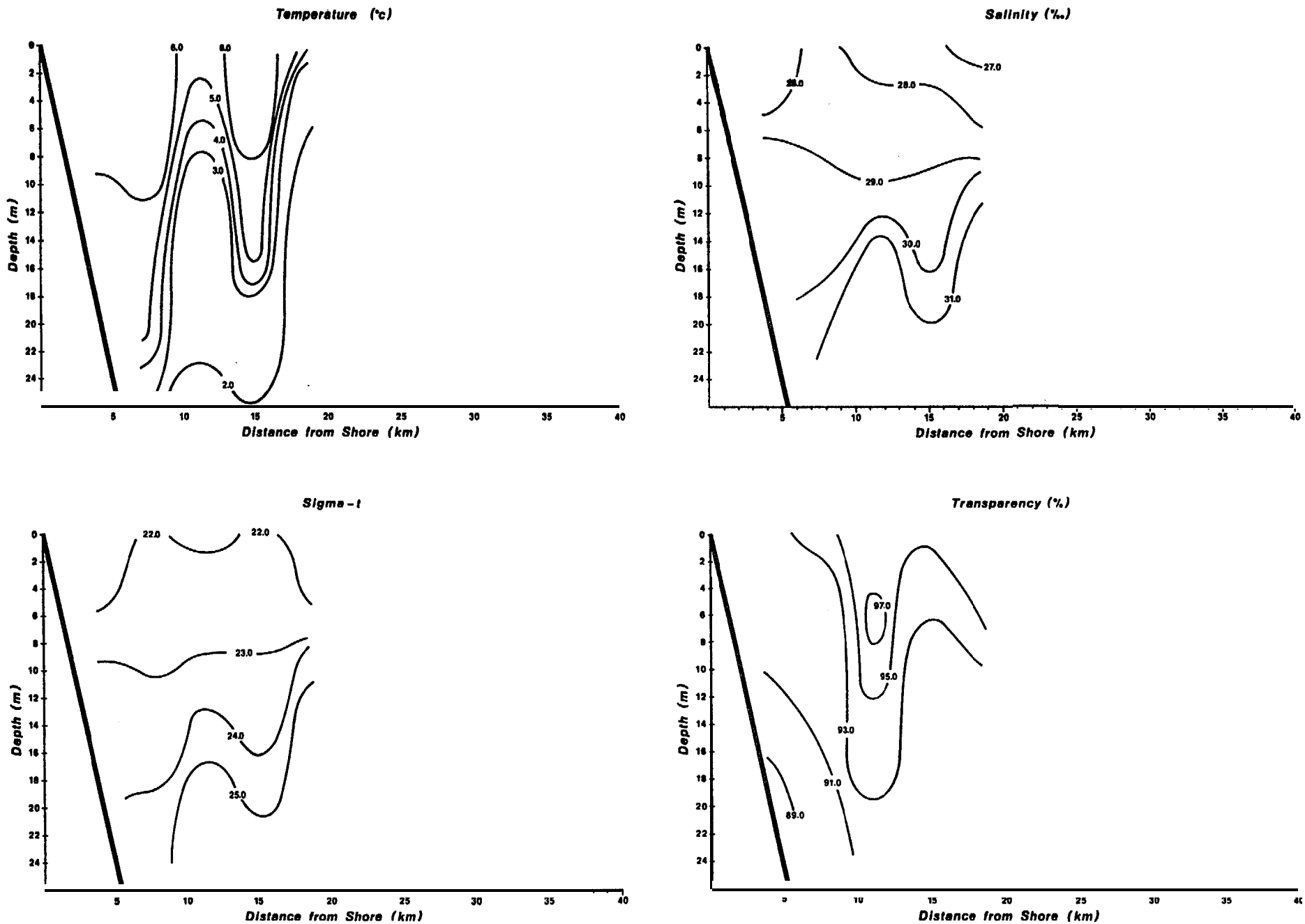


Figure 12. C/STD Transects Taken at Point Barrow on 7 August 1981.

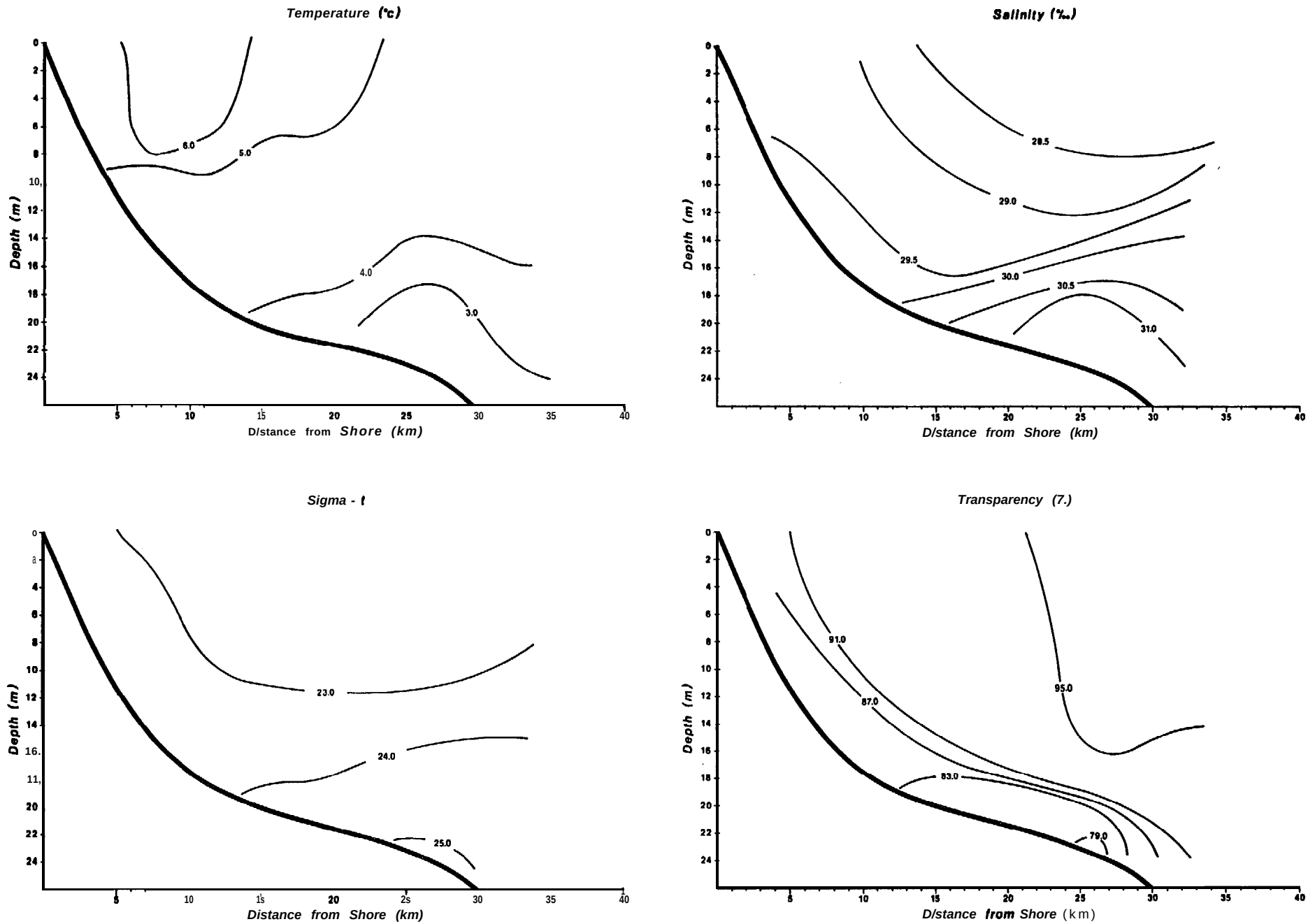


Figure 13. C/STD Transects Taken at Skull Cliffs on 8 August 1981.

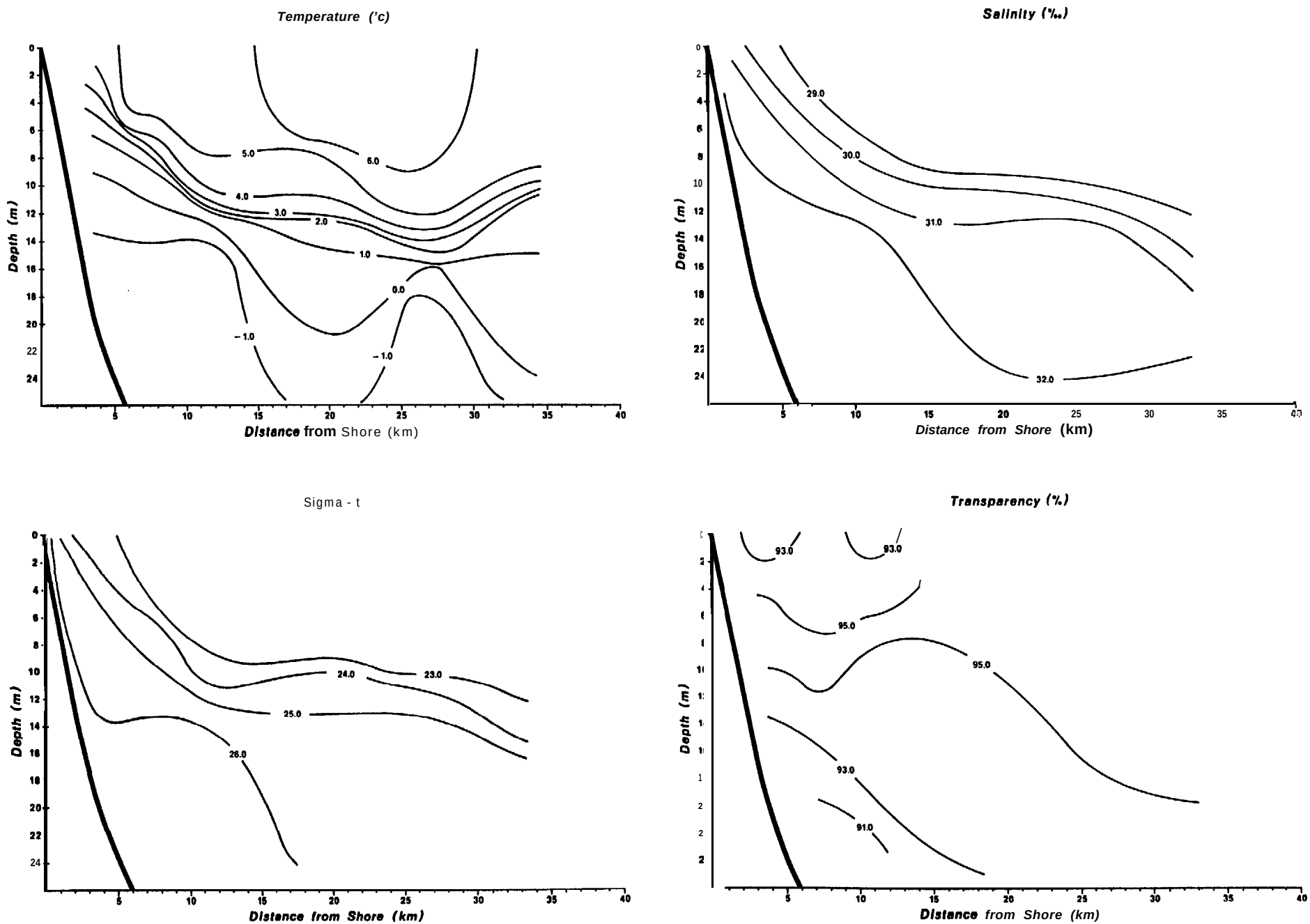


Figure 14. C/STD Transects Taken at Point Belcher on 10 August 1981.

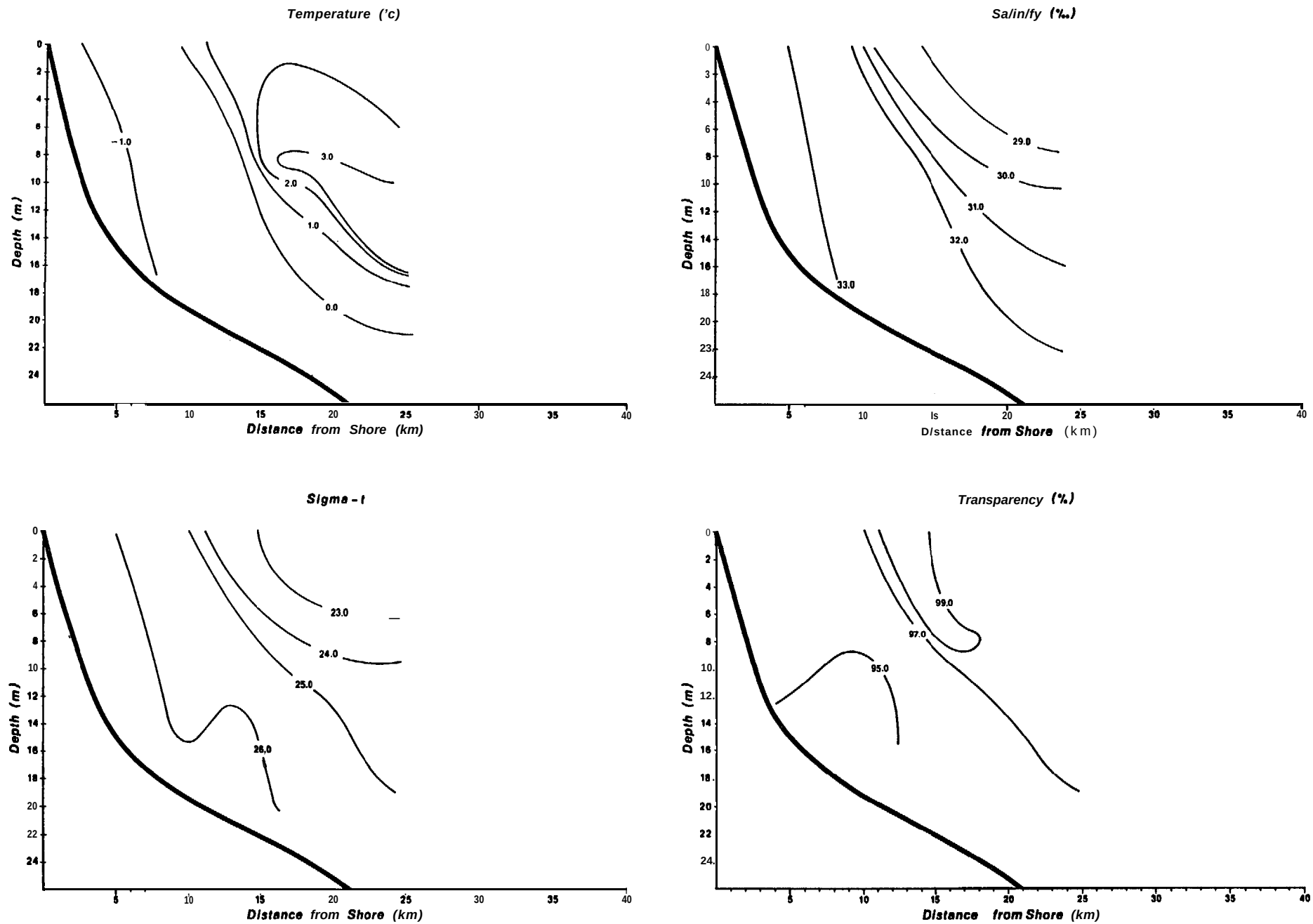


Figure 15. C/STD Transects Taken at Pingorarok Pass on 13 August 1981.

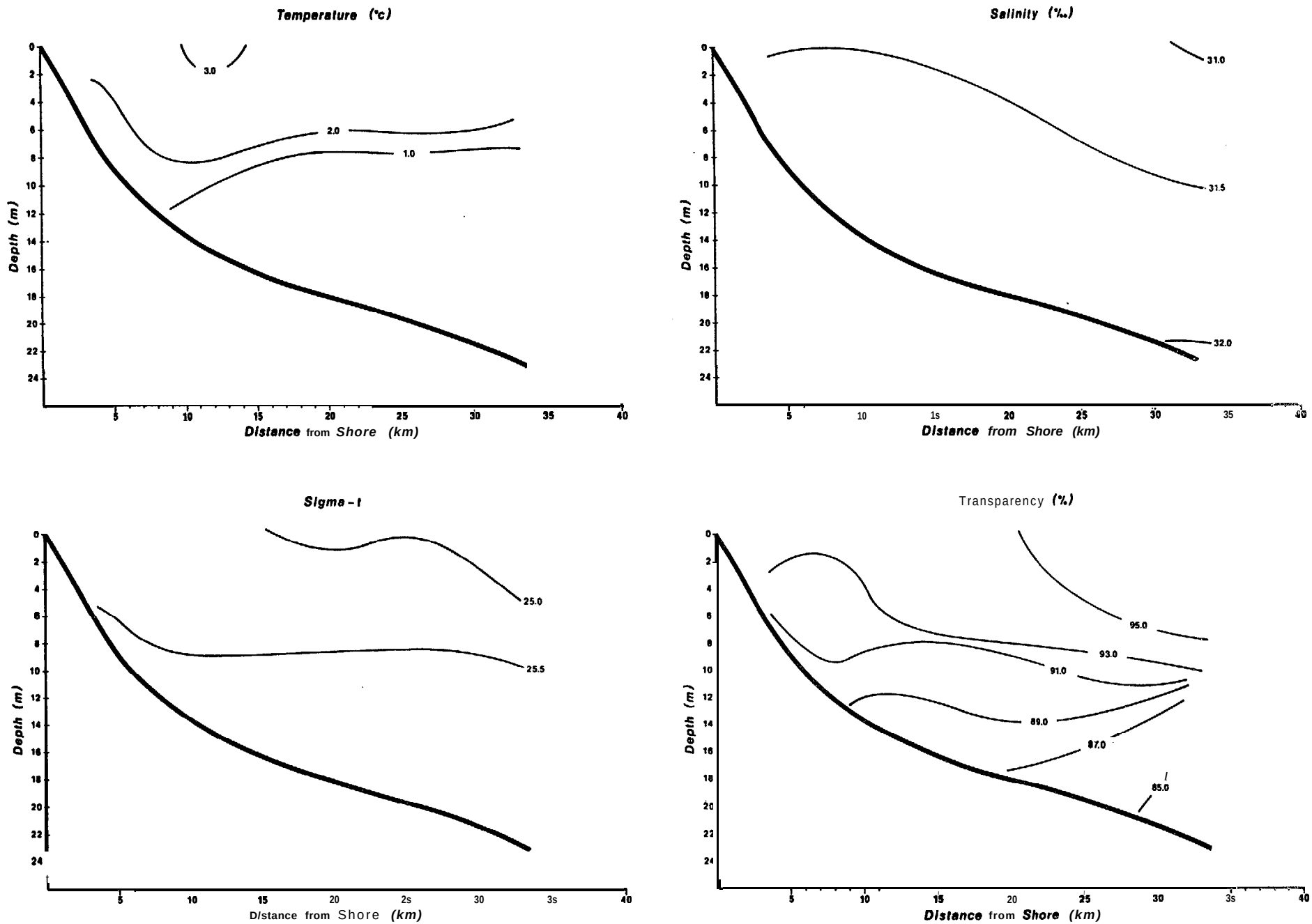


Figure 16. C/STD Transects Taken at Akunik Pass on 14 August 1981.

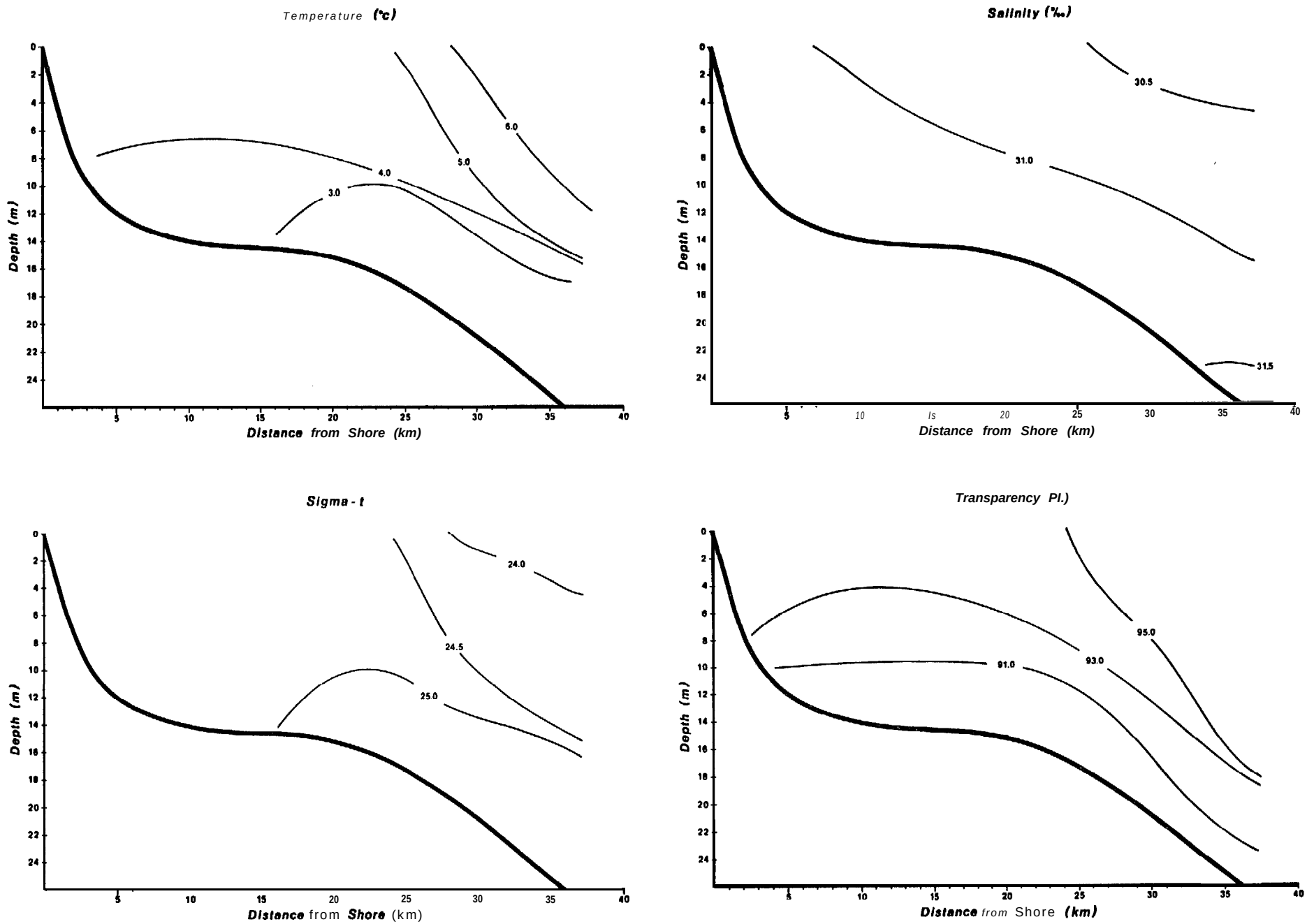


Figure 17. C/STD Transects Taken at Icy Cape on 14 August 1981.

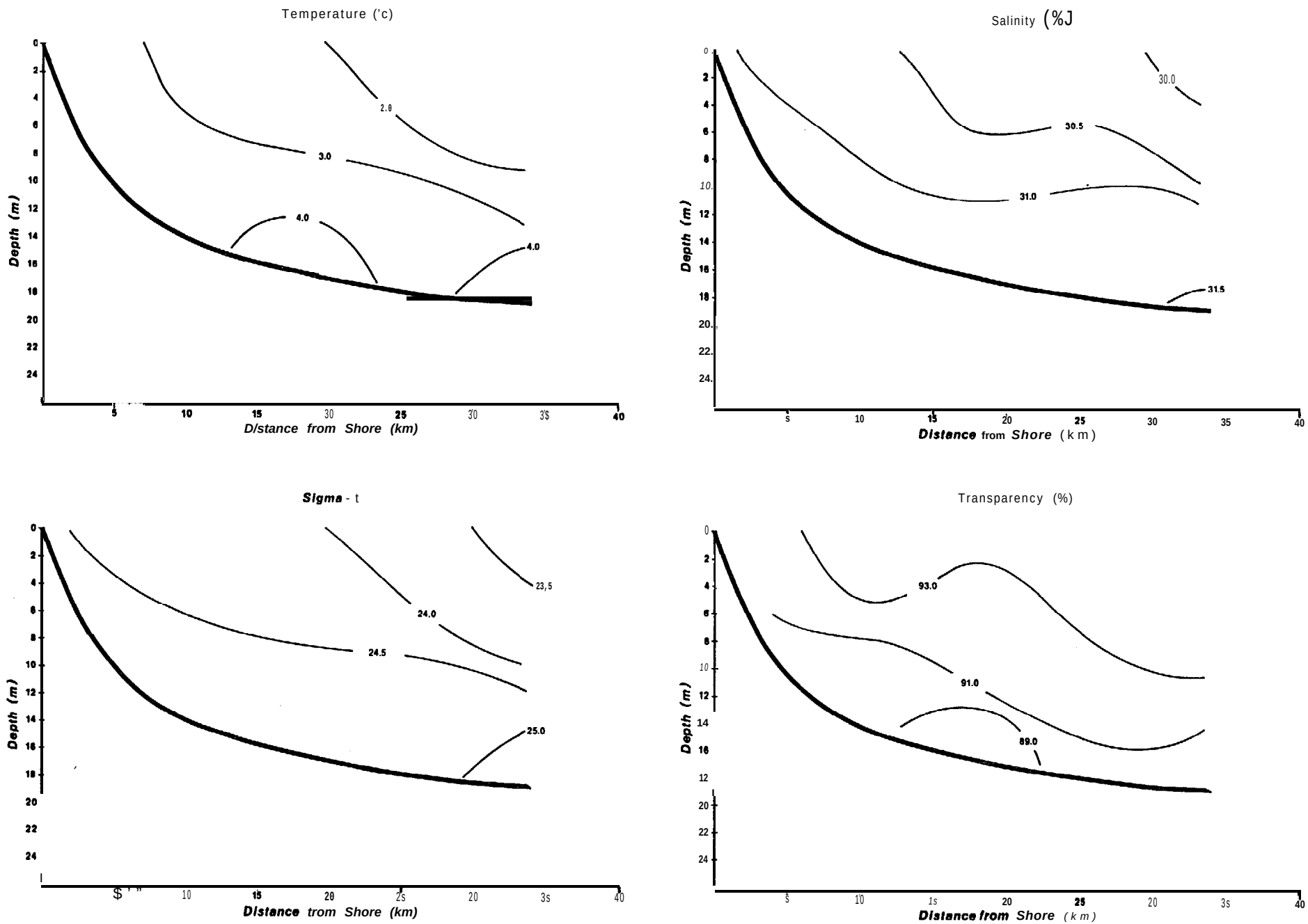


Figure 18. C/STD Transects Taken at Wainwright on 2 September 1981.

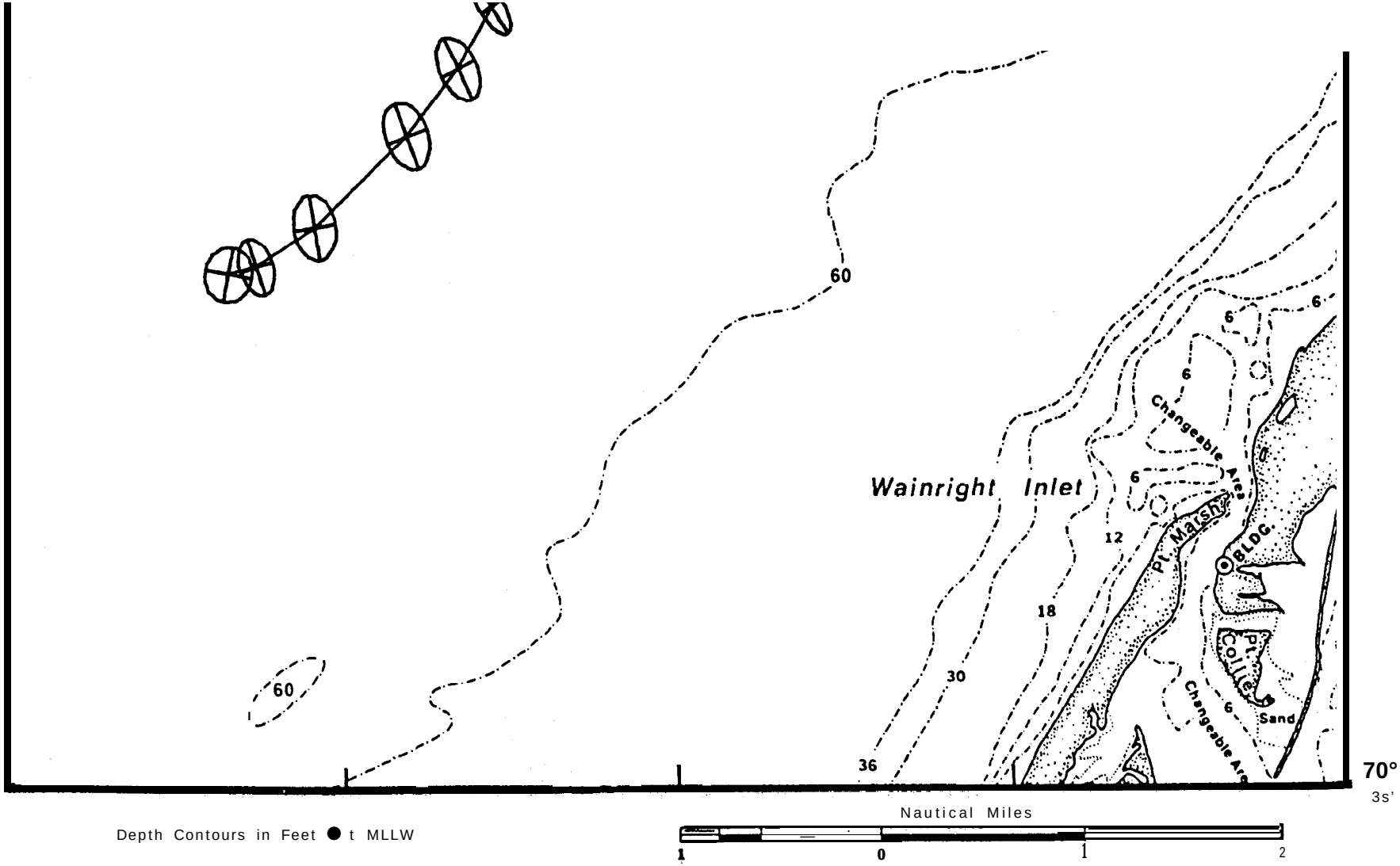


Figure 19. Trajectories of Centroids and Mean Spreading of Twelve Current Drogues, 1200 - 2400 Hours, 20 August 1981.

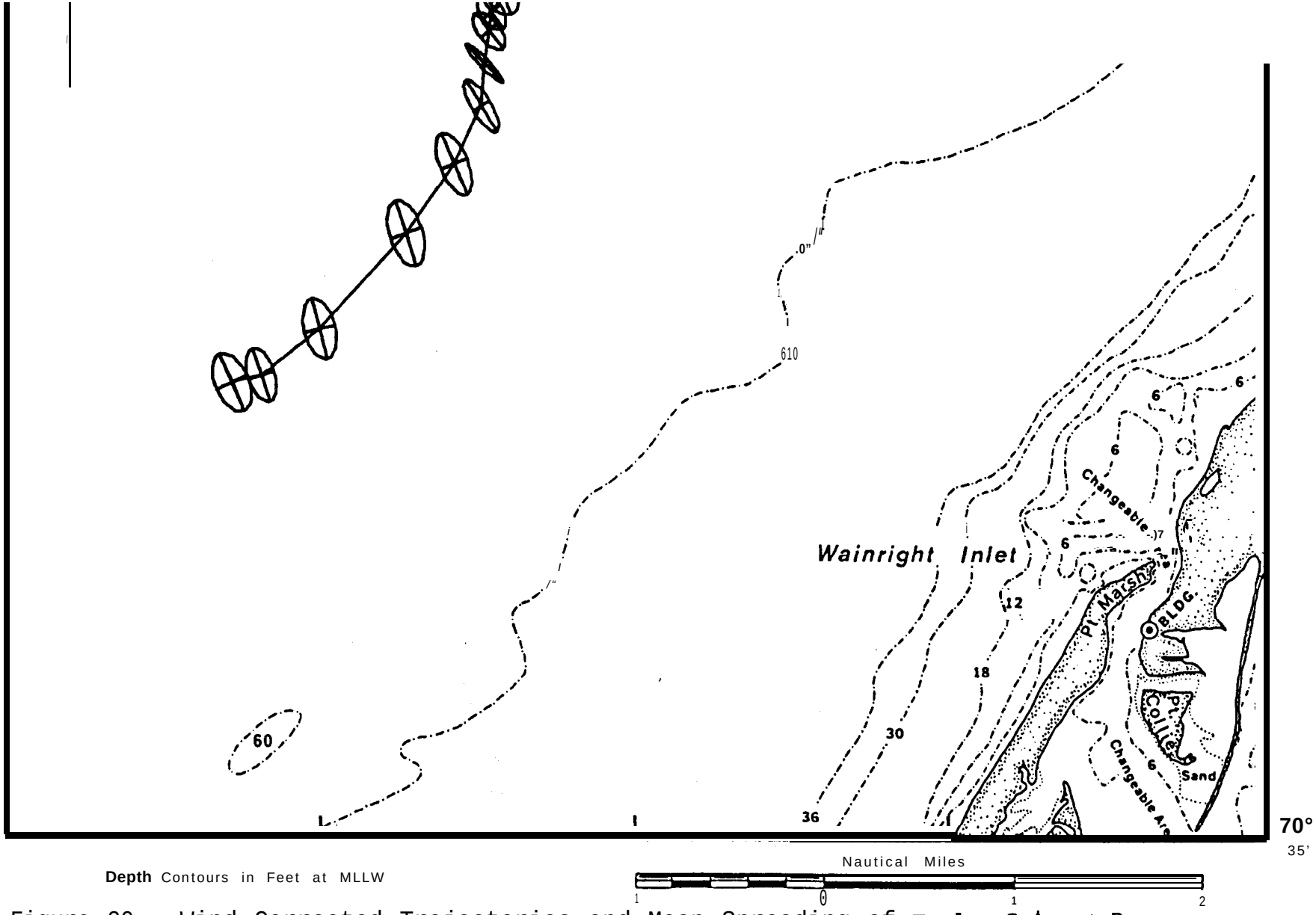


Figure 20. Wind Corrected Trajectories and Mean Spreading of Twelve Current Drogues, 1200 - 2400 Hours, 20 August 1981.

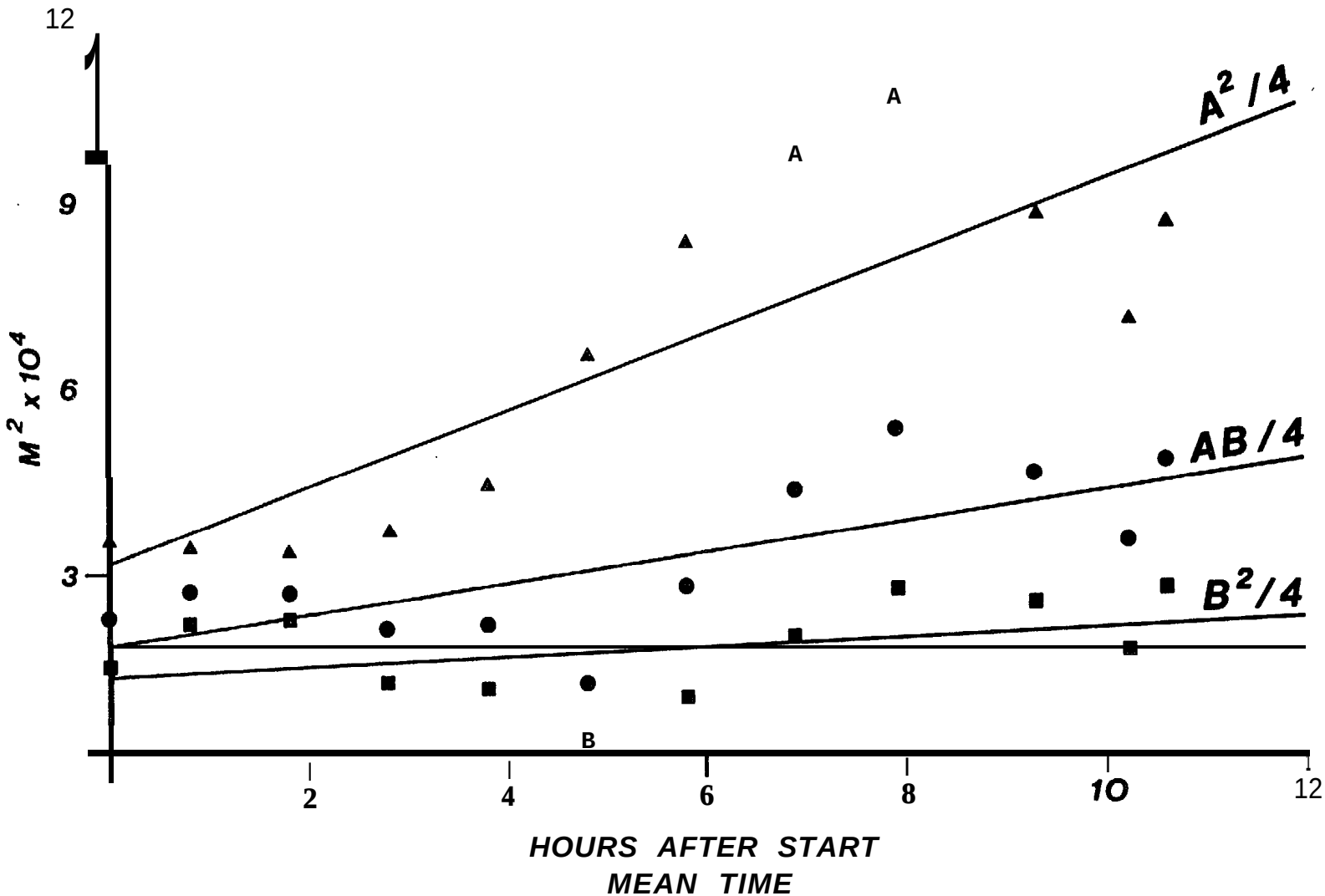


Figure 21. Variances Calculated From The Spreading of Twelve Drogues

Table 3. Dispersion Statistics for Wind-Corrected Drogue Data, Chukchi Sea, 1981.

Time (hours)	Major Axis a (meters)	Minor Axis b (meters)	a2/4 (m2)	b2/4 (m2)	ah/4 (m^2)	Wind Speed (m/s)	Wind Direction 'T
0.0	376	245	35344	15006	23030		
0.8	369	294	34040	21609	27122	2.6	95
1.8	365	295	33306	21756	26919	0.8	90
2.8	384	216	36864	11664	20736	0.0	
3.8	420	206	44100	10609	21630	2.1	65
4.8	510	90	65025	2025	11475	1.0	110
5.8	577	189	83232	8930	27263	2.1	98
6.9	624	276	97344	19044	43056		
7.9	653	323	106602	26082	52730	2.6	150
9.3	592	308	87616	23716	45584		
10.2	531	258	70490	16641	34250		
10.6	586	324	85849	26244	47466	4.6	185
		Correlation:	0.83	0.33	0.70		
		Slope:	0.43	0.05	0.17		

$a^2/4 = 31684 + 1.716t$ (t in seconds)

$b2/4 = 13245 + 0.190t$

$ah/4 = 18606 + 0.677t$

Slopes: $1/2(d/dt)(\sigma x^2) = 8580.6\ cm^2/sec$

$1/2(d/dt)(\sigma y^2) = 948.5\ cm^2/sec$

$1/2(d/dt)(\sigma x \sigma y) = 3386.8\ cm^2/sec$

DISCUSSION

For purposes of visual comparisons the current, wind, and atmospheric pressure difference records are displayed in time series plots to the same scales for the Point Barrow site and for the Wainwright site in Figures 22 and 23. Seven time intervals have been identified for special consideration based upon the oceanographic and meteorologic events contained in these records. The respective depths of these moored meters, and those of Mountain et al. (1976) have been shown schematically in Figure 2.

Coastal Currents

Magnitudes and Directions. The coastal currents, as measured by the moored meters at Barrow, show both northeast and southwest flows, paralleling the local bathymethry, but at different time intervals. The offshore meter at 21m depth showed intervals of northeast currents approaching two knots, while those of the inshore meter at 17m depth showed simultaneous currents also to the northeast, of a reduced magnitude of less than one knot maximums. Meters at Wainwright yielded similar records, also with maximums of less than one knot.

Principal axis analyses and progressive vector diagrams were done in order to determine the directions of the predominant drift currents. The results are summarized in Table 4. Examples of these analyses are shown in Figures 24 and 25 for the Pt. Barrow offshore (top) meter, with the rest contained in Appendix A. Statistical (speed and direction) tables for the current data are also given in Appendix A.

The principal axis directions of the predominant drift currents are compared to the principal directions of the coastline or bathymetry in Table 4. As expected for inshore data, good agreement is indicated. Only the top meter of the offshore Wainwright mooring deviates from the coastline/bathymetry data. The reason for this one deviation, whether real or an artifact, is not clear at present.

Results of statistical analyses of the current records show that reversed flow (southwestern currents) occurred frequently in this August-September time period. Although upcoast flow was predominant, downcoast flow ranged from 33 to 47 percent of the time in the different current records. Table 5 summarizes these frequencies of upcoast and downcoast flow. In contrast, records taken at deeper depths of 96m and 126m in Barrow Canyon in 1976 (Mountain et al. 1976) showed less frequent flow reversals in April through June and practically none in July into August. These more frequent current reversals in our August-September records may reflect more frequent storm activity in the fall.

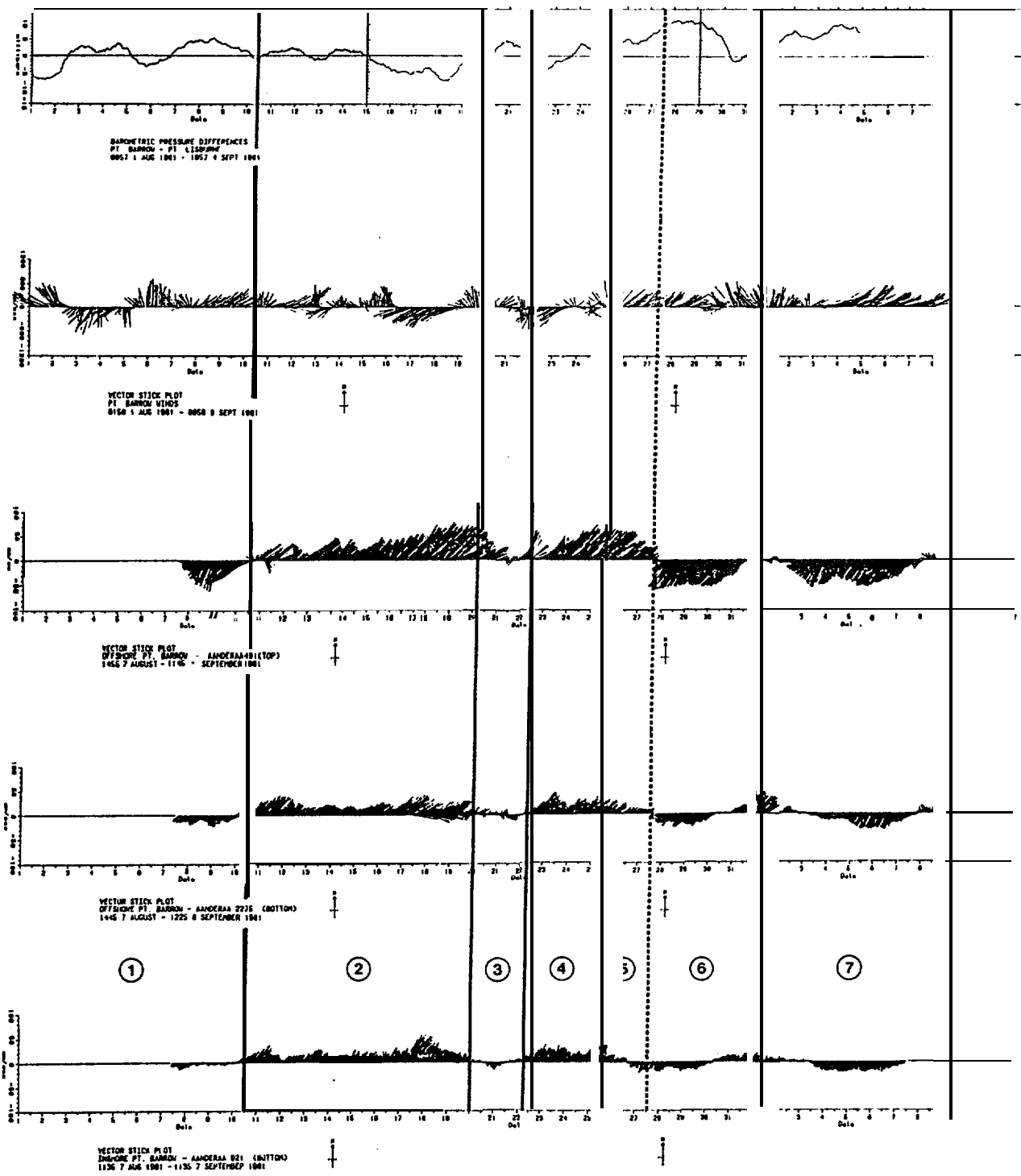


Figure 22 . Seven Physical Events in the Meteorological and Current Meter Data of Pt. Barrow, August-September 1981.

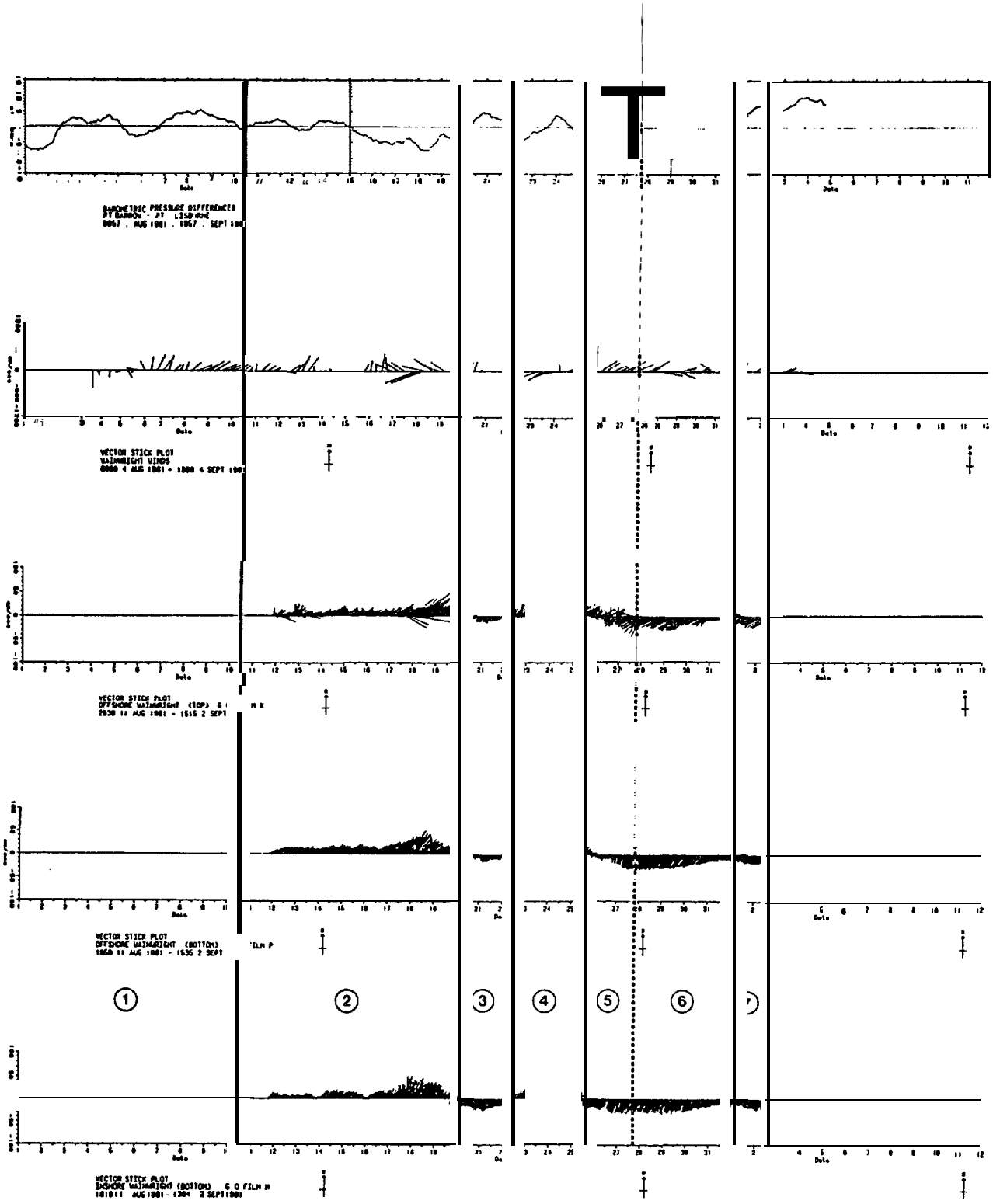


Figure23 . Seven Physical Events in the Meteorological and Current **Meter Dataof** Wainwright, **August-September 1981.**

Table 4. **Summary of Results**. Principal Axis Analysis of Pt. Barrow and Wainwright Moored Current Meters, 7 August - 8 September 1981.

Meter Location	Principal Axis of Current Flow (°T)	Principal Axis Shoreline/Bathymetry (°T)
Barrow		
offshore top	46 - 55	56
offshore bottom	30 - 50	56
inshore bottom	36 - 40	40
Wainwright		
offshore top	68 - 70	40
offshore bottom	40 - 55	40
inshore bottom	33 - 40	40

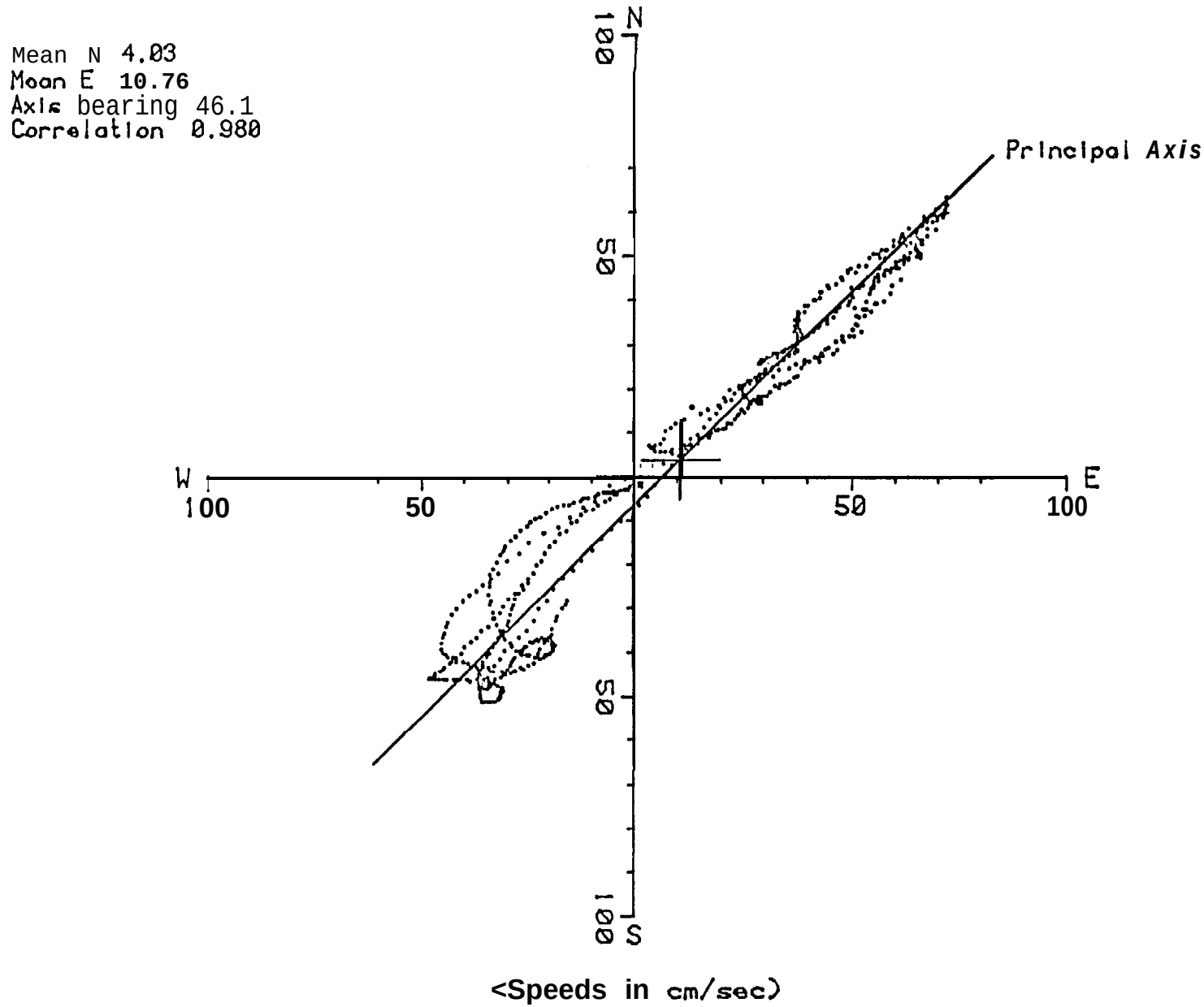


FIGURE 24. POLAR PLOT - SPEED AND DIRECTION DATA
OFFSHORE BARROW(TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981

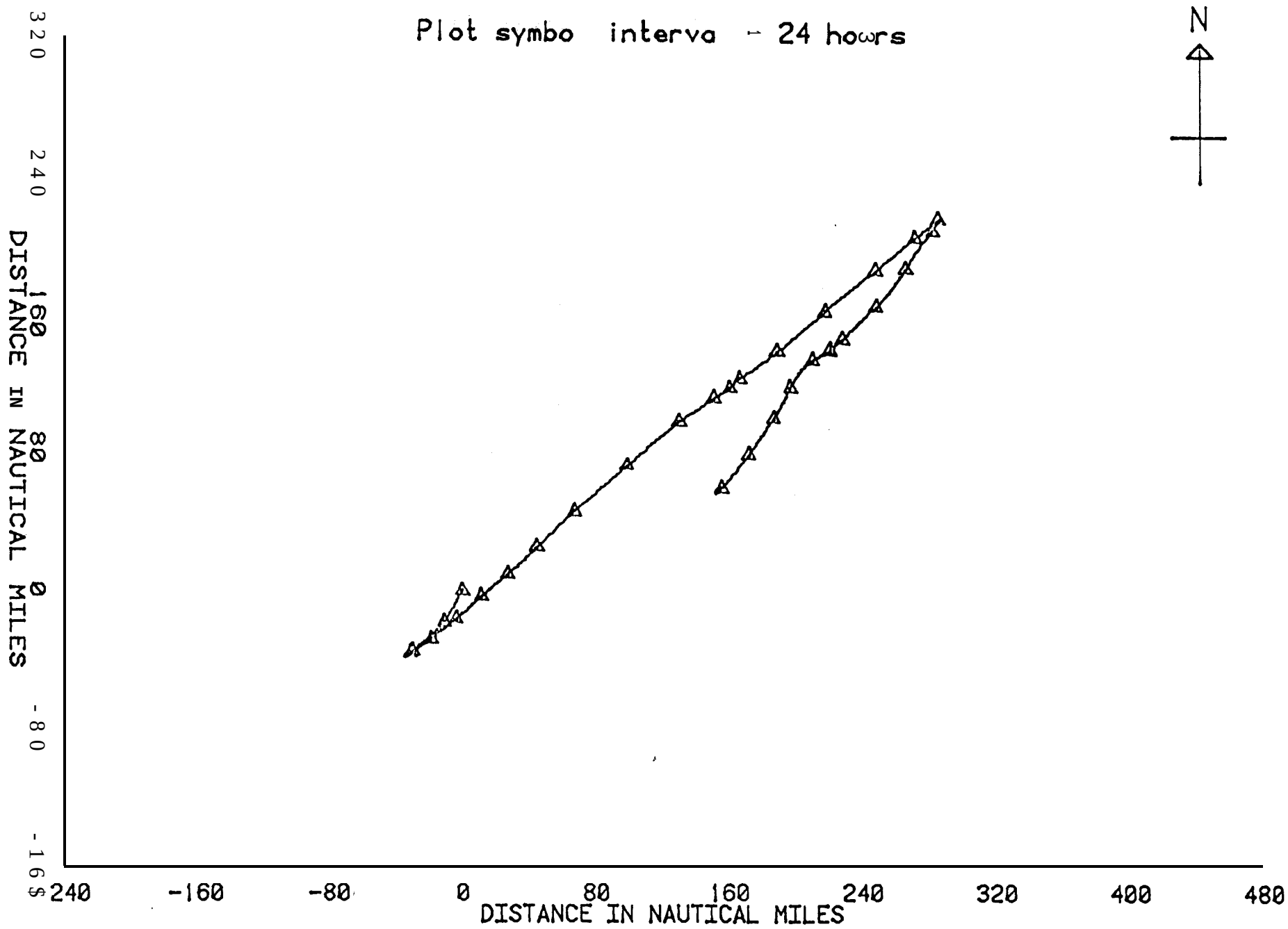


FIGURE 25. PROGRESSIVE VECTOR DIAGRAM
OFFSHORE BARROW (TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981

Table 5. Frequencies of Upcoast and Downcoast Flow in the August-September 1981 Chukchi Sea Current Records.

Meter Location	Percent of Readings	
	Upcoast	Downcoast
Barrow		
offshore top	55.7	44.3
offshore bottom	68.1	31.9
inshore bottom	67.0	33.0
Wainwright		
offshore top	63.3	36.7
offshore bottom	61.4	38.6
inshore bottom	52.7	47.3

Correlations Between Current Records (Depths and Stations). A simple visual comparison of the six current meter records from Wainwright to Pt. Barrow, which are displayed in Figures 22 and 23, clearly show a high degree of coherence between all meters, both between onshore and offshore moorings as well as between the Wainwright and Barrow coastal areas.

Seven time periods are delineated on both the Pt. Barrow and Wainwright records. Before 10 August, flows were downcoast as shown by the Barrow meters (Wainwright moorings were not yet emplaced). On the 10th, all three meters reversed, starting an approximately ten-day period (Period 2) of consistent upcoast flow. Wainwright records also recorded this upcoast flow during Period 2. On the 20th, a pause or reversal occurred, lasting until about the 22nd (period 3). Period 3 seemed to start on the 21st on the Barrow offshore top meter, but otherwise was consistent on all records.

Period 4, starting on 22 August, again was a time of upcoast flow consistent on all records. Period 5, lasting about two and a half days, was a period of changing or reversed flow on all records, except for the two offshore Barrow meters where persistent (though weakening) upcoast flow prevailed.

Both Periods 6 and 7 were times of predominant downcoast flow, separated by a weakening or reversal of flow centered about 1 September.

Thus, as one steps through all records, very close similarities are apparent. These similarities are in directions and magnitudes, and also appear in other features such as times of change and shapes of the current vector plots. The similarities are also very consistent throughout the records.

Statistical correlation analyses were performed from a few selected current records in order to illustrate these similiarities between currents measured at different locations. Results of such a correlation are illustrated in Figure 26 for the inshore Point Barrow and Wainwright longshore current drift components. A correlation coefficient at zero lag of about 0.90 is indicated. This high correlation coefficient, between currents measured by these widely separated stations using different instrument types confirms the similarities observed visually in Figures 22 and 23.

corresponding spectral density plots of a typical raw current record and of the same record filtered by use of a low-pass (Doodson) filter for drift components (Jenkins and Watts 1968) are shown in Figure 27. The lack of tidal components and the high relative power at low frequencies are noted as expected. The cross-correlation of the filtered and unfiltered records is shown in Figure 28 just for illustration.

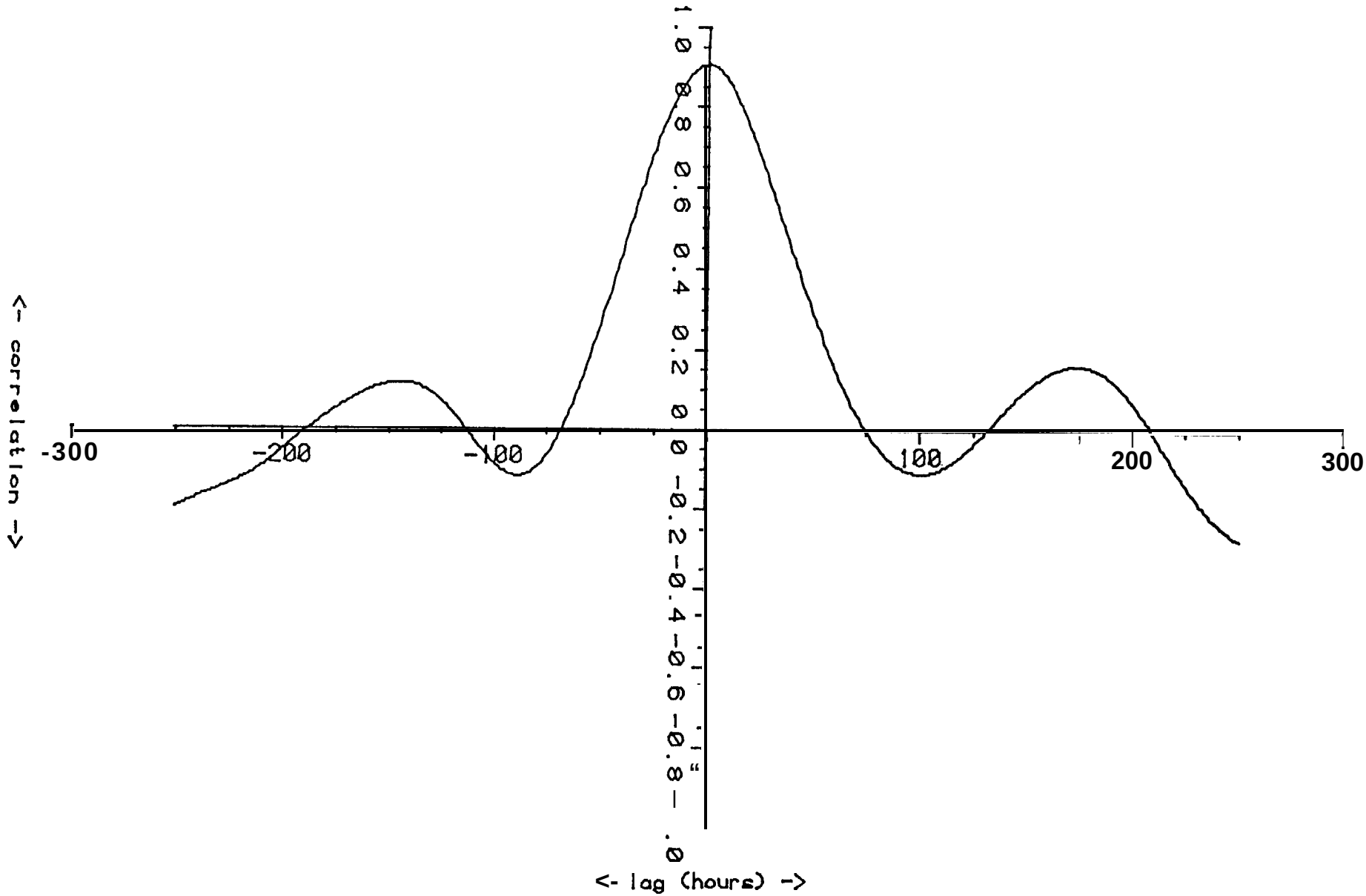


FIGURE 26. CROSS CORRELATIONS
INSHORE BARROW DRIFT CURRENT (35.9 DEGREE COMPONENT) VS.
LAGGED INSHORE WAINWRIGHT DRIFT CURRENT (33.7 DEG. COMP.)
1251 12 AUG 1981 - 1751 1 SEPT 1981

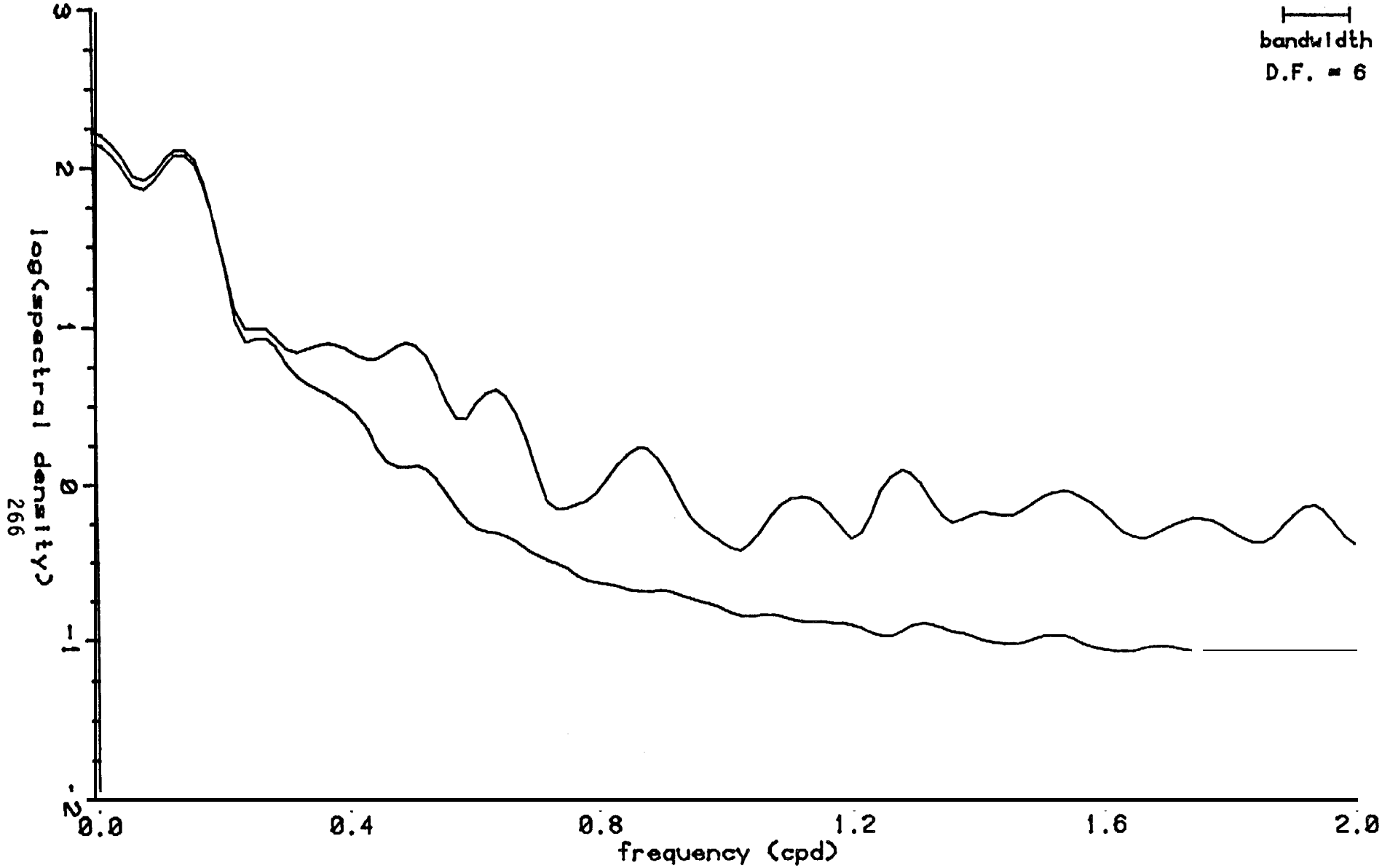


FIGURE 27. SPECTRAL DENSITY
A) INSHORE BARROW (BOTTOM) DRIFT CURRENT - 35.9 DEGREE COMP.
B) INSHORE BARROW (BOTTOM) CURRENT - 35.9 DEGREE COMP.
0703 8 AUG 1981 - 303 6 SEPT '98

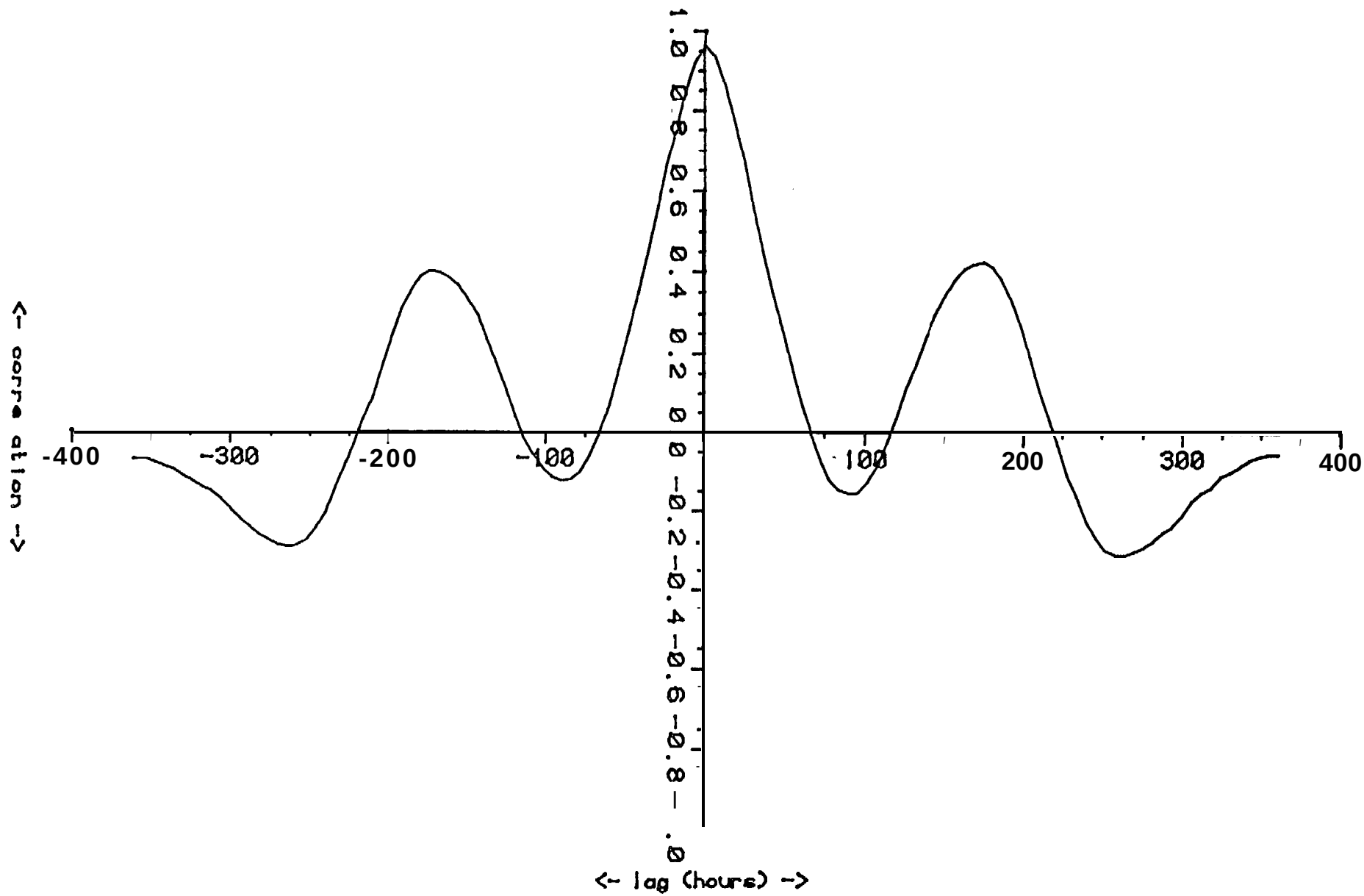


FIGURE 28. CROSS CORRELATIONS
INSHORE BARROW (BOTTOM) DRIFT CURRENT VS. LAGGED INSHORE BARROW (BOTTOM) CURRENT (35.9 DEGREE COMPONENTS>
0703 8AUG 1981 - 1303 6 SEPT 1981

Meteorological Forcing

Of prime interest to later modeling efforts is the relationship of the coastal currents to the meteorological parameters of atmospheric pressure and local winds. Therefore, graphical comparisons of these two meteorological time-series parameters with those of the coastal current records are also included in Figures 22 and 23. In addition, computerized cross-correlations of these time-series spectra have been done to further determine these cause and effect relationships.

Correlations with Pressure Differences. With reference to Figures 22 and 23 (which also display the current and meteorological time series data), a comparison of current data with the pressure data can be made, utilizing the same seven time periods as used above when comparing different current meter data. The pressure data are plotted as the difference between atmospheric pressure at Pt. Barrow and Cape Lisburne where the frequency of recorded data was higher than at Nome. Pt. Barrow - Nome pressure difference plots are very similar (Figure 10).

In going through the seven time periods for both Pt. Barrow and Wainwright areas, high pressure at Pt. Barrow relative to the southern stations is strongly associated with downcoast flow. Conversely, low or negative pressure differences are strongly associated with upcoast flow. By taking each of the seven delineated time periods in turn for comparisons of coastal currents and pressure differences, the reader can visually demonstrate how strong this pressure difference - coastal current linkage shows up in the data.

Cross correlations of these time series current data with pressure difference series (Pt. Barrow - Cape Lisburne) were also carried out. A series of plots of the results are shown in Figures 29 through 35 for the case of the pressure difference and inshore Barrow current data correlations.

The spectral density plots for both the pressure difference and current data again illustrate that the major variations occur in the low frequency end, below 0.8 cpd (cycles per day). The cross-correlations (Figure 31) show a correlation coefficient of about -0.85 at zero lag, again confirming the visual relationship evident between the records in Figures 22 and 23. A high pressure at Barrow relative to Cape Lisburne (or Nome) drives downcoast (southwestern) currents and vice-versa.

'I'he accompanying squared coherence spectra (Figures 32 and 34) show peaks at about 0.45 and 1.3 cpd (53 hours and 18 hours) . Though the former has significant power, it is not clear from these fairly short records if these low frequency peaks are indeed physically real. Corresponding phase spectra are shown in Figures 33 and 35.

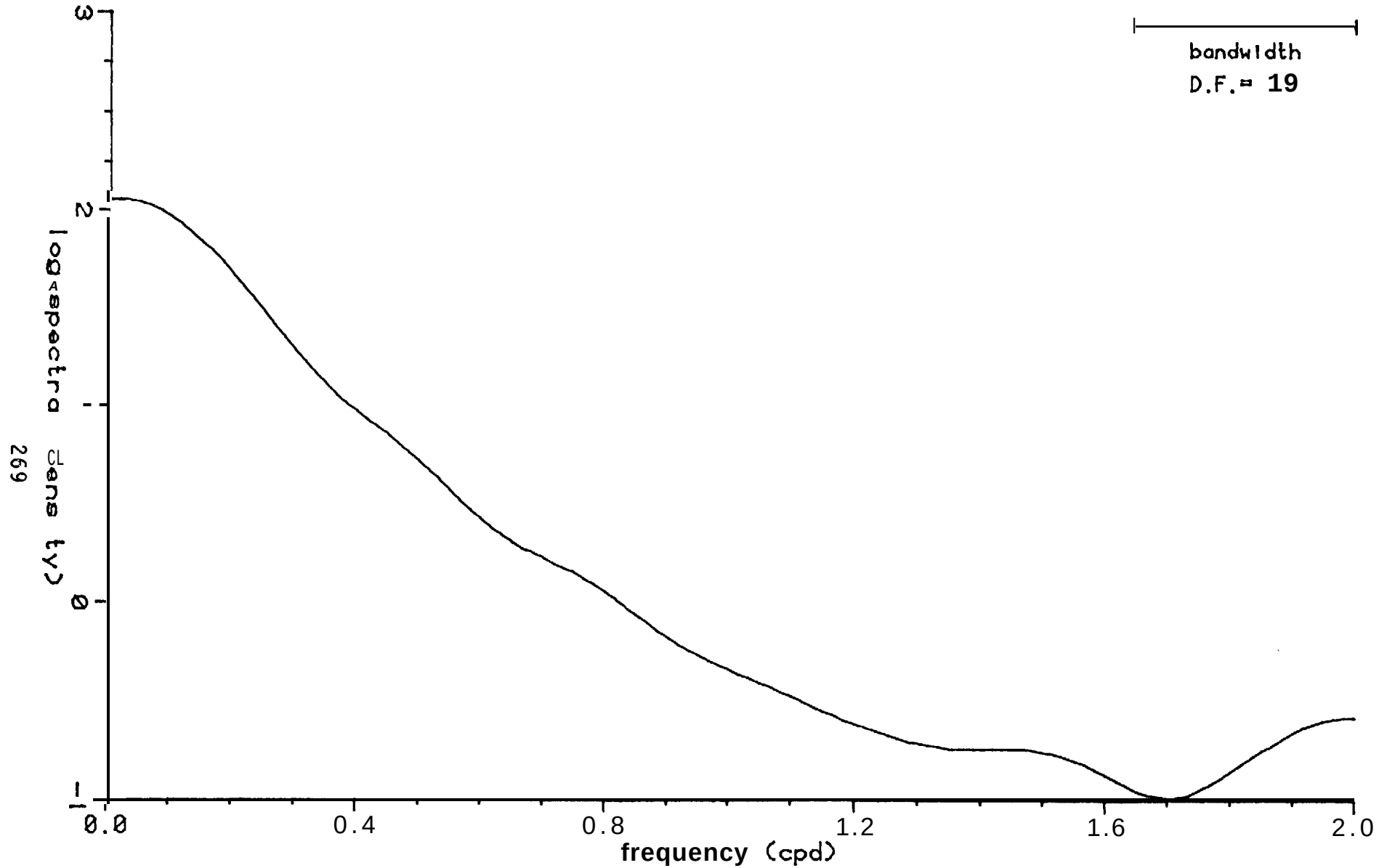


FIGURE 29. SPECTRAL DENSITY
PT. BARROW - CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
0659 8 AUG 1981 - 1859 4 SEPT 1981

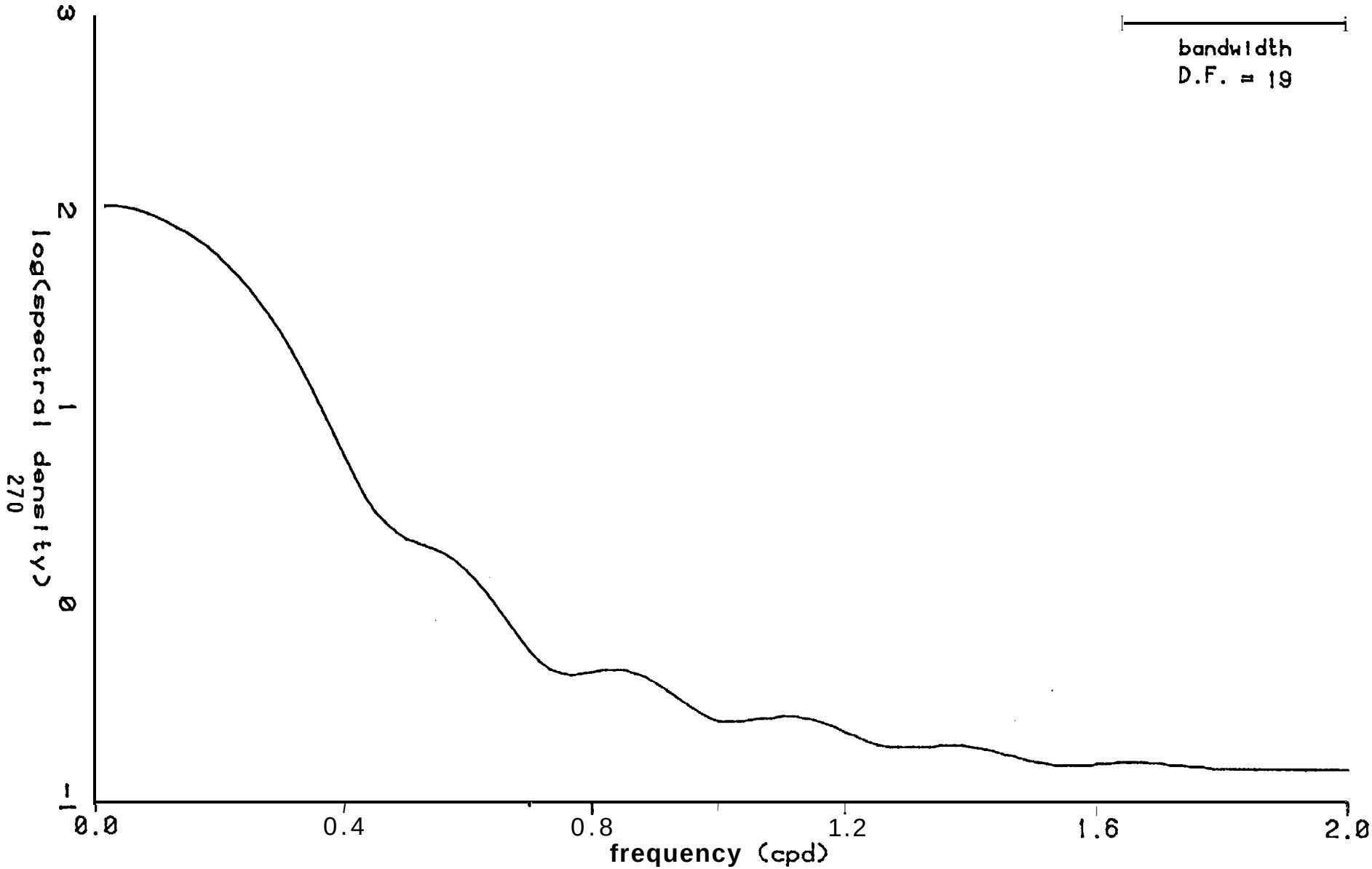


FIGURE 30. SPECTRAL DENSITY
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT>
0659 8 AUG 1981 - 1859 4 SEPT 1981

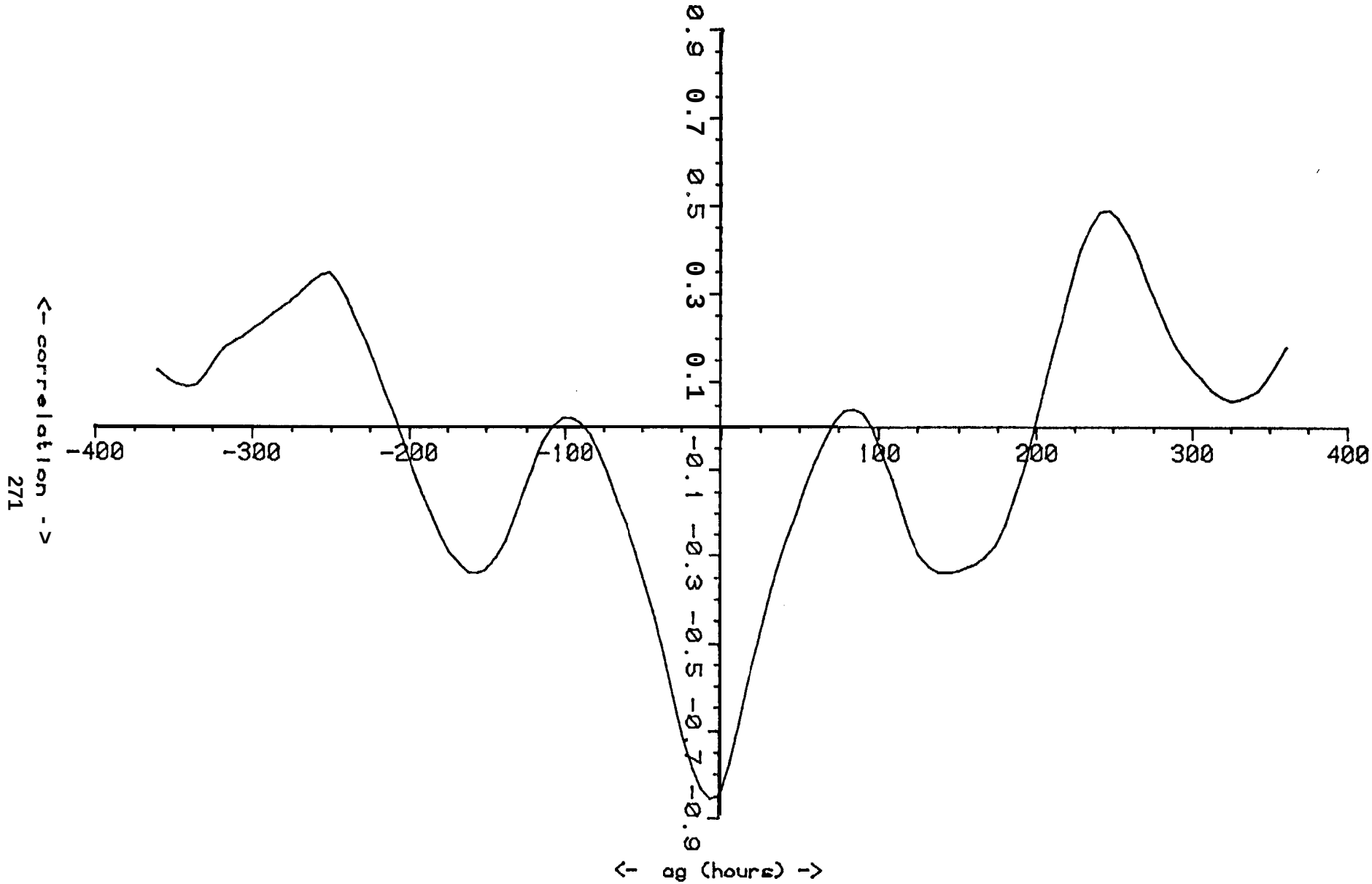


FIGURE 31. CROSS CORRELATIONS
PT = BARROW - CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
VS. LAGGED INSHORE BARROW DRIFT CURRENT 35.9 DEGREE COMP.=
0659 8 AUG 9 - 859 4 SEPT 1981

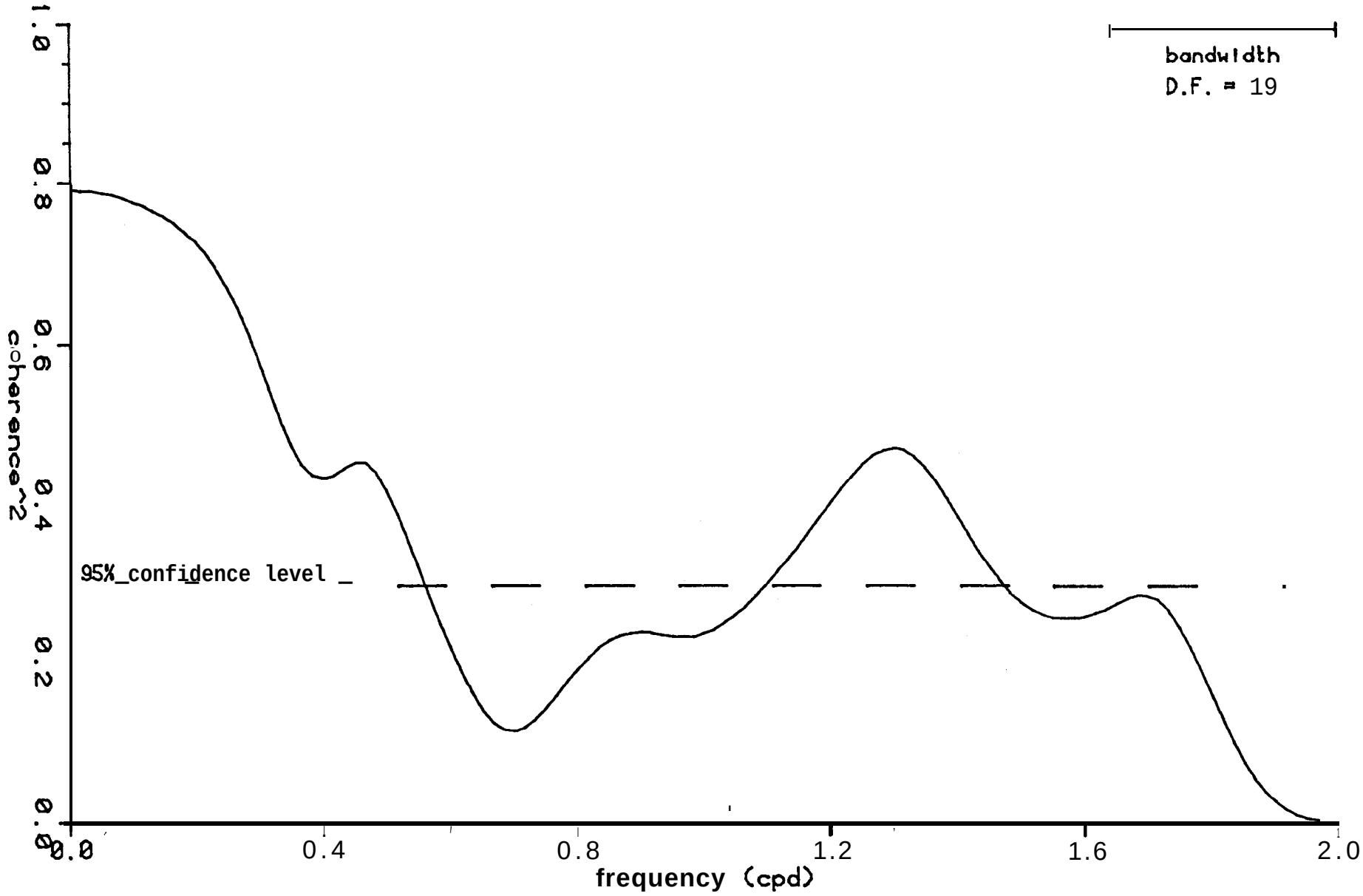


FIGURE 32. SQUARED COHERENCE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8AUG 1981 - 1859 4 SEPT 1981

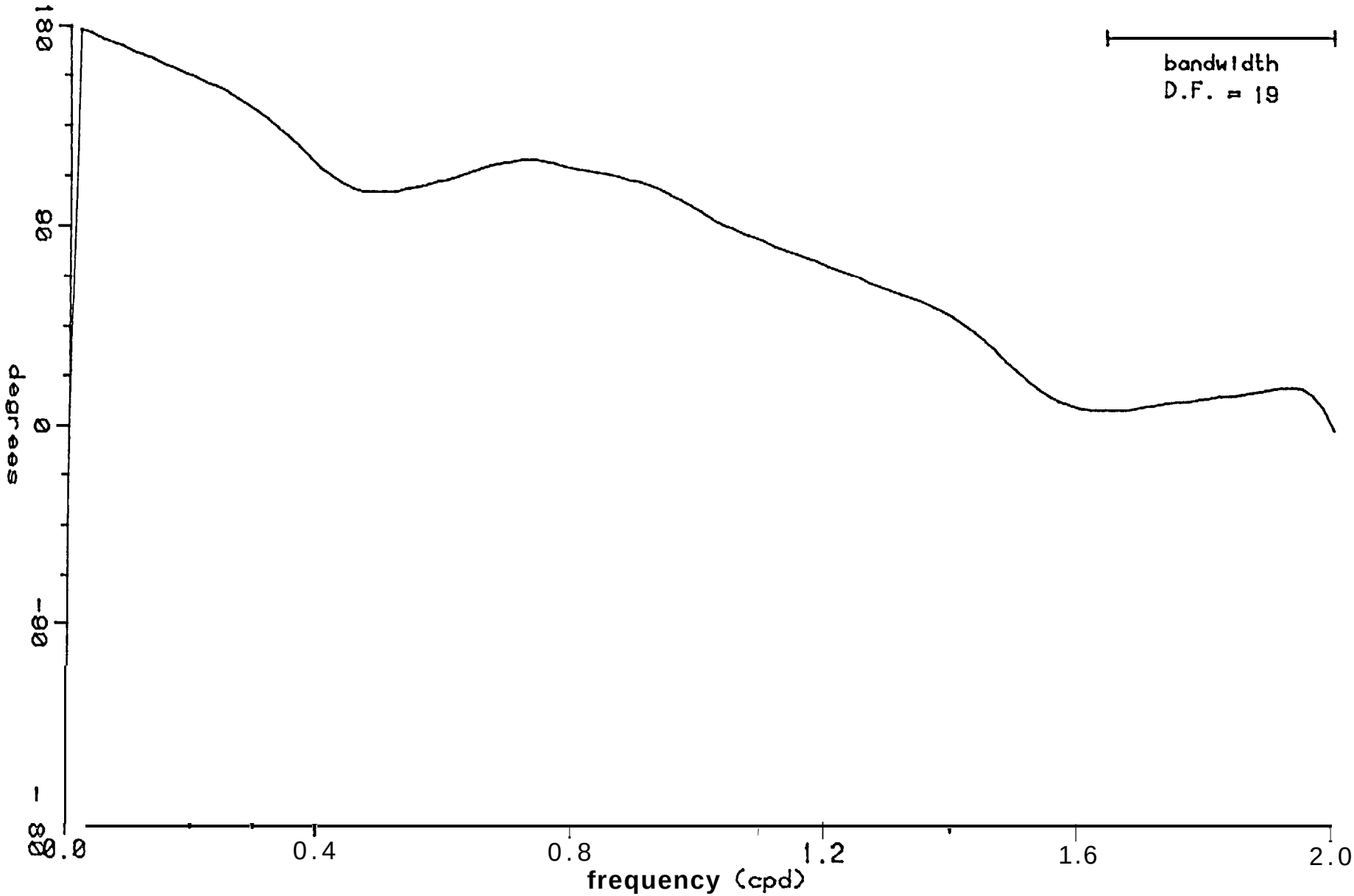


FIGURE 33

PHASE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 1859 4 SEPT 1981

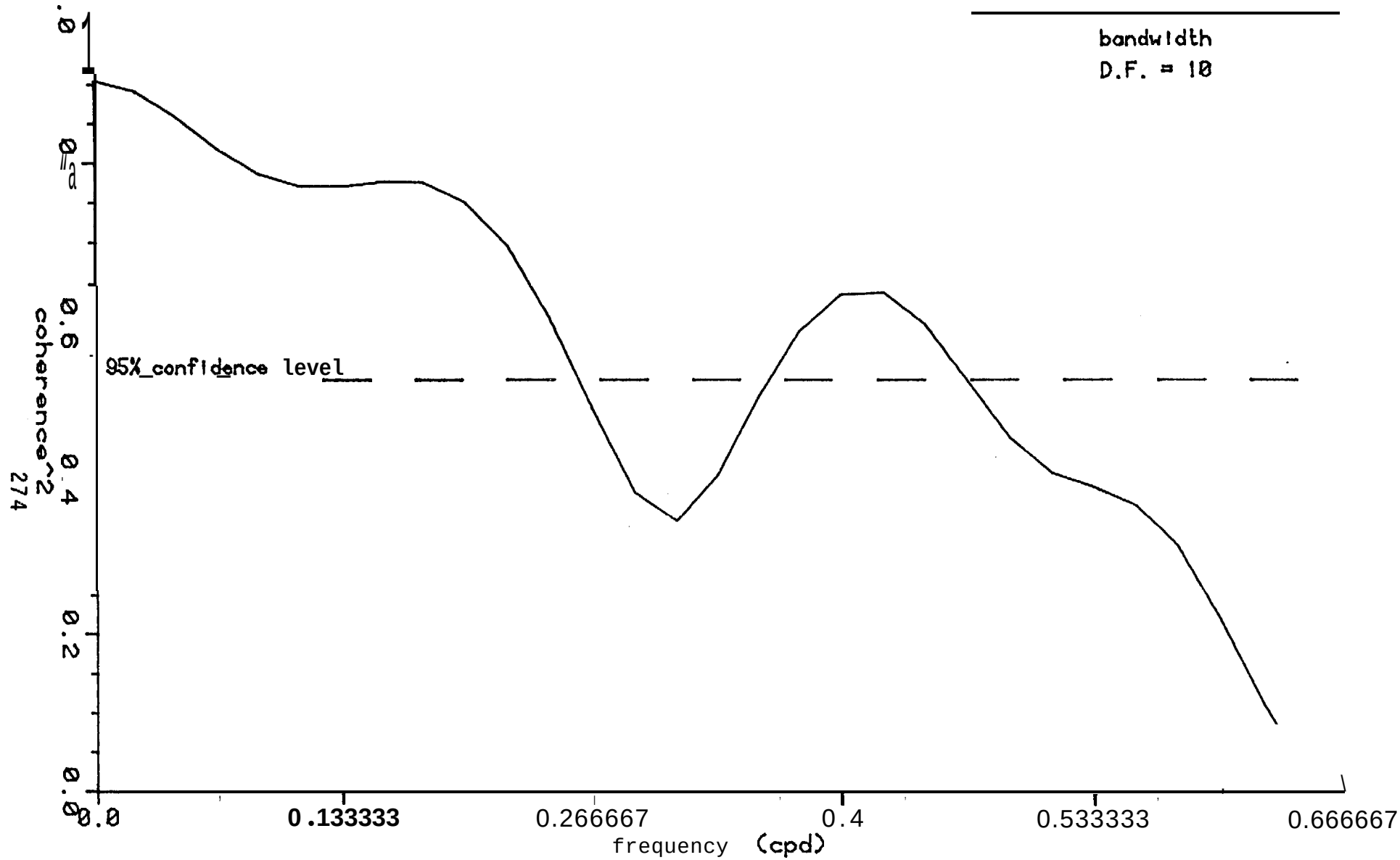


FIGURE 34. **SQUARED COHERENCE SPECTRUM**
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS. INSHORE BARROW (BOTTOM> DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 0659 4 SEPT 1981

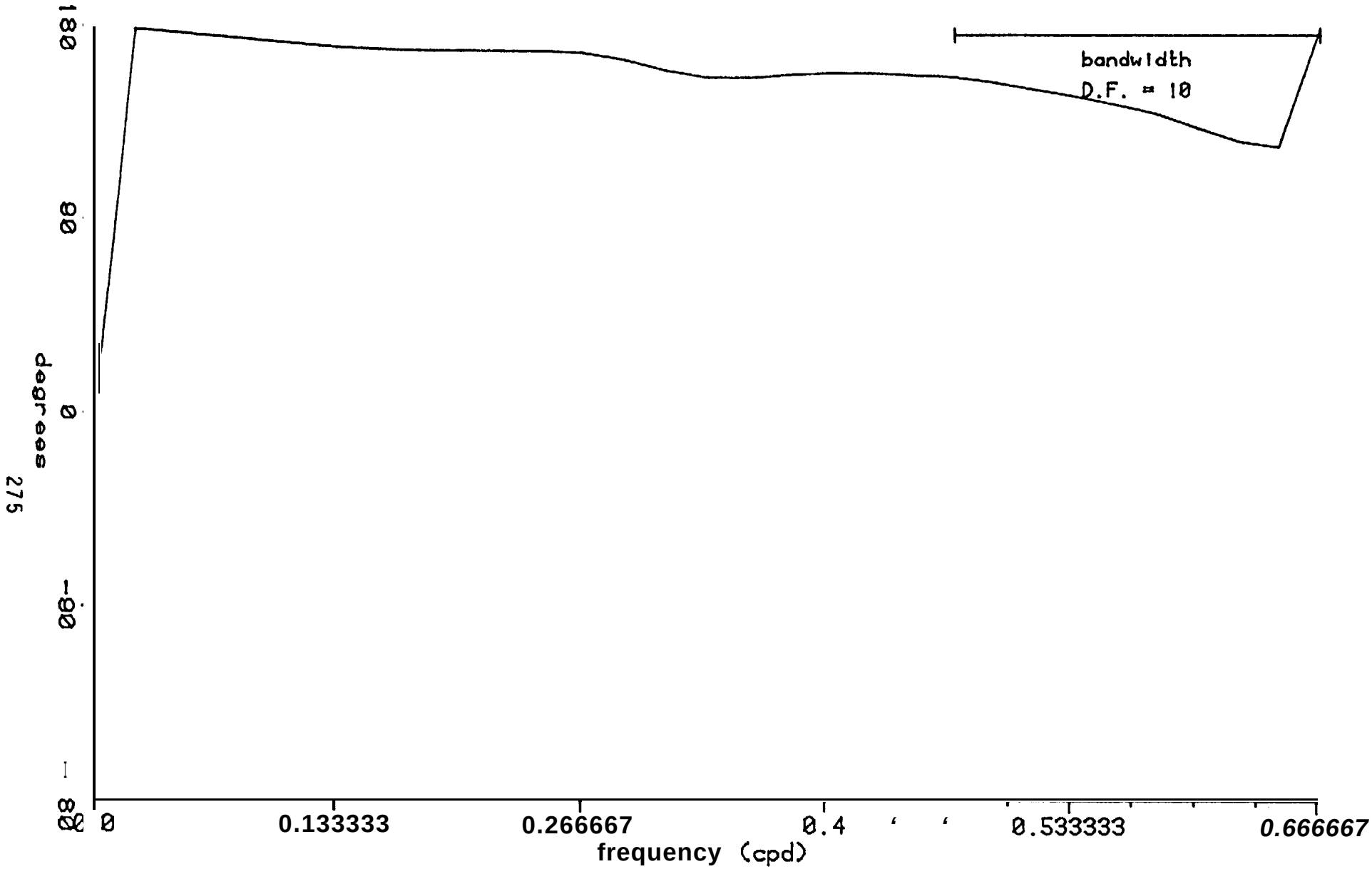


FIGURE 35. PHASE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW <BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 0659 4 SEPT 1981

The cross correlation of the same Barrow - Lisburne pressure difference with the inshore Wainwright current meter is shown in Figure 36, for comparison with Figure 31 for the Barrow case. Again, a high negative correlation coefficient of 0.81 is obtained at zero lag.

Thus we have found a high correlation between coastal currents at all stations, including both the Point Barrow and Wainwright areas. We have also found a high correlation of these currents with Pt. Barrow - Lisburne atmospheric pressure differences. Therefore, the evidence indicates that these shallow, near-coast currents are driven by the same atmospheric pressure forcing function along this stretch of coast. Mountain et al. (1976) found the same atmospheric pressure forcing for the currents measured much deeper in Barrow Canyon as we did for the shallow coastal currents.

Correlations with Local Winds. A similar examination of the wind and current plots of Figures 22 and 23 shows a relationship of northeast winds with southwest (downcoast) currents, but not quite to the same high degree as the pressure difference - current relationship.

Spectral and cross correlations of winds with currents were also done. Results of the Wainwright local wind and the inshore Wainwright drift current data are shown in Figures 37 through 43. The cross correlation results for the local wind and the inshore meter for Point Barrow are illustrated in Figure 44. The correlation coefficients are about 0.65 and 0.72 for the Wainwright and Barrow cases respectively, thus somewhat lower than found above for the pressure difference - current data correlations.

Pressure Difference - Local Wind Correlations. Cross correlations of the Point Barrow - Cape Lisburne pressure differences with the Wainwright and the Point Barrow-local winds are shown in Figures 45 and 46. Correlation coefficients of about 0.52 and 0.56 are obtained. Again, these coefficients are significantly lower than those obtained in the case of the pressure difference - current correlations.

Hydrographic Transects

Data from the hydrographic transects taken during the cruise, perpendicular to the coastline, and extending up to 35 km offshore are shown in two formats. Individual station profiles with depth *are* plotted in Figures C-1 through C-43 profiles with depth are plotted in Figures C-1 through C-42 sigma-t, and transparency were plotted as vertical sections Perpendicular to the coast in Figures 12 through 18 above. Time series of temperature and salinity were also obtained from the moored meters at Point Barrow.

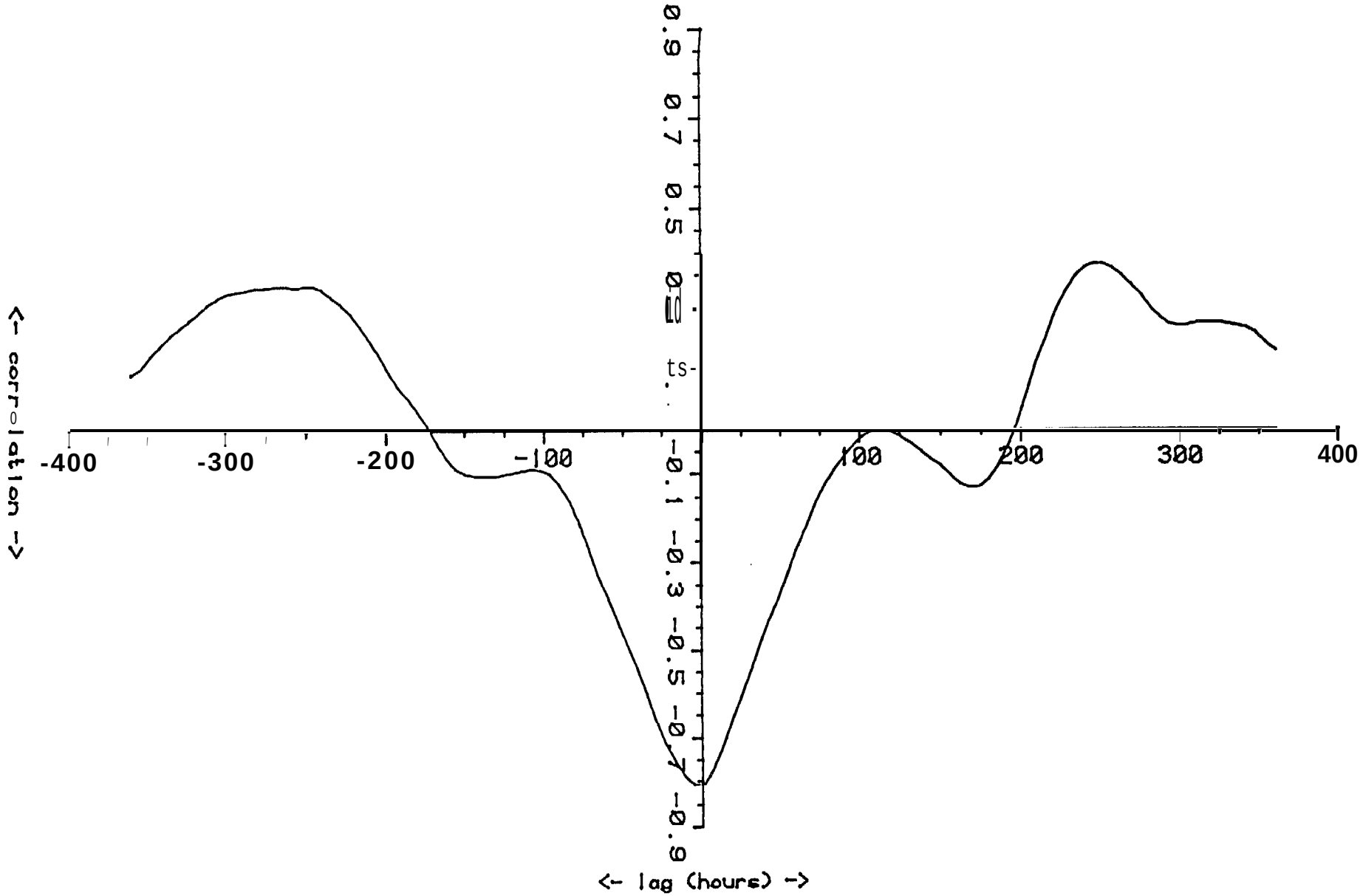


FIGURE 36. CROSS CORRELATIONS
BARROW-LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS. LAGGED INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEG. COMP.)
1350 12 AUG 198! -1350 1 SEPT 1981

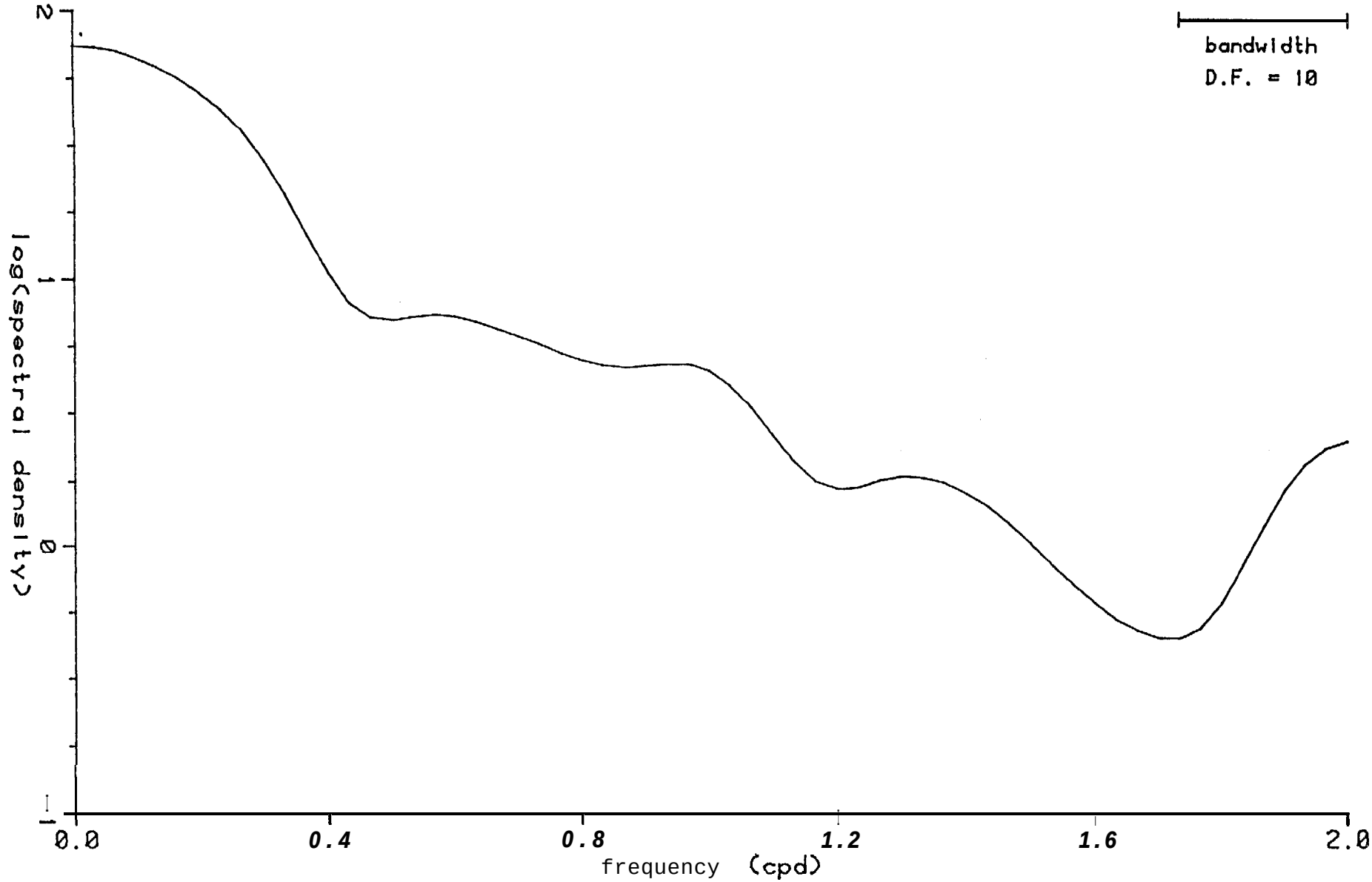


FIGURE 37. SPECTRAL DENSITY
WAINWRIGHT WIND <33.7 DEGREE COMPONENT)
1751 12 AUG 1981 - 1751 1 SEPT 1981

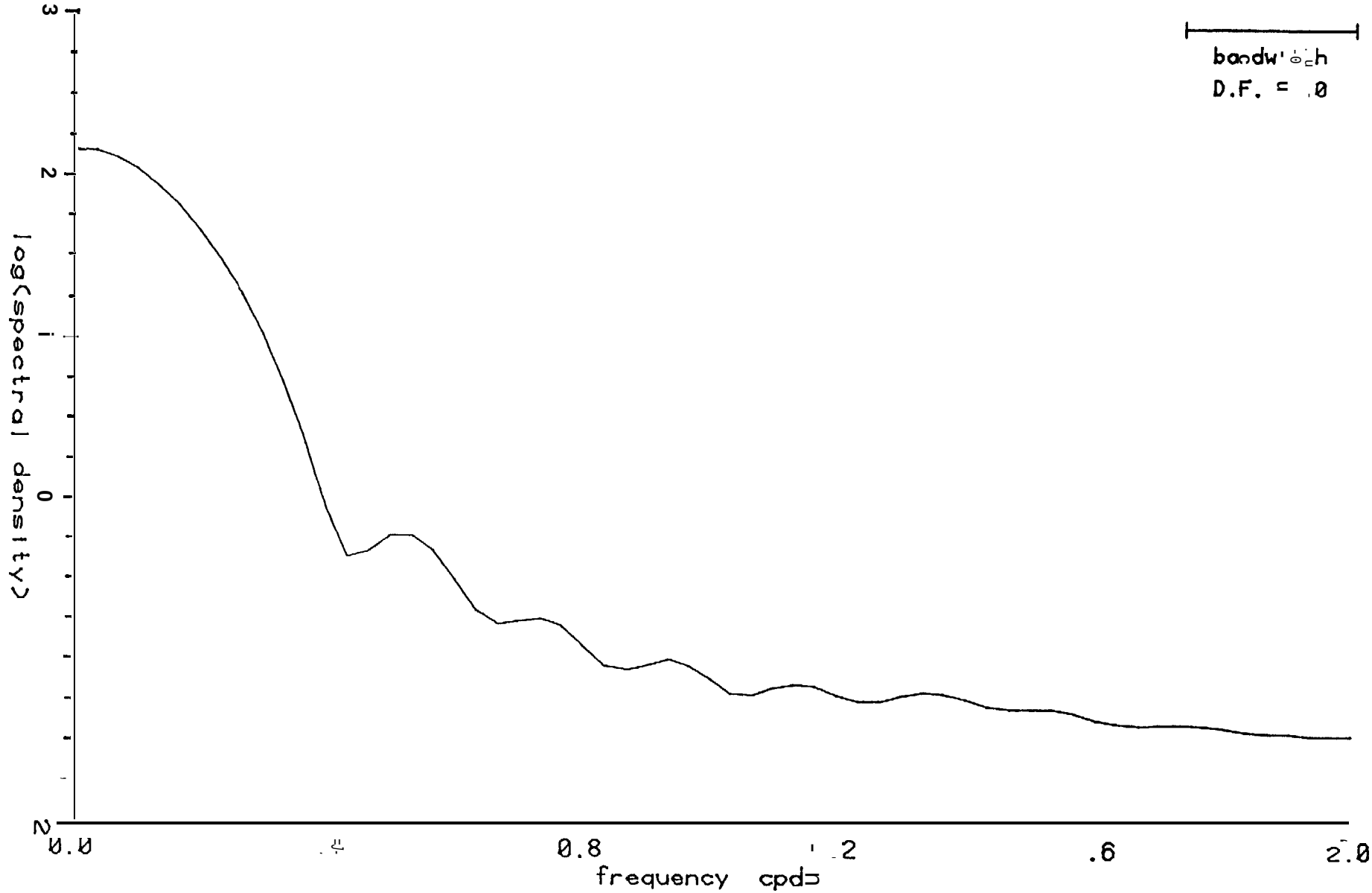


FIGURE 38. SPECTRAL DENSITY
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
(33.7 DEGREE COMPONENT)
751 2 AUG 1981 - 751 1 SEPT 198

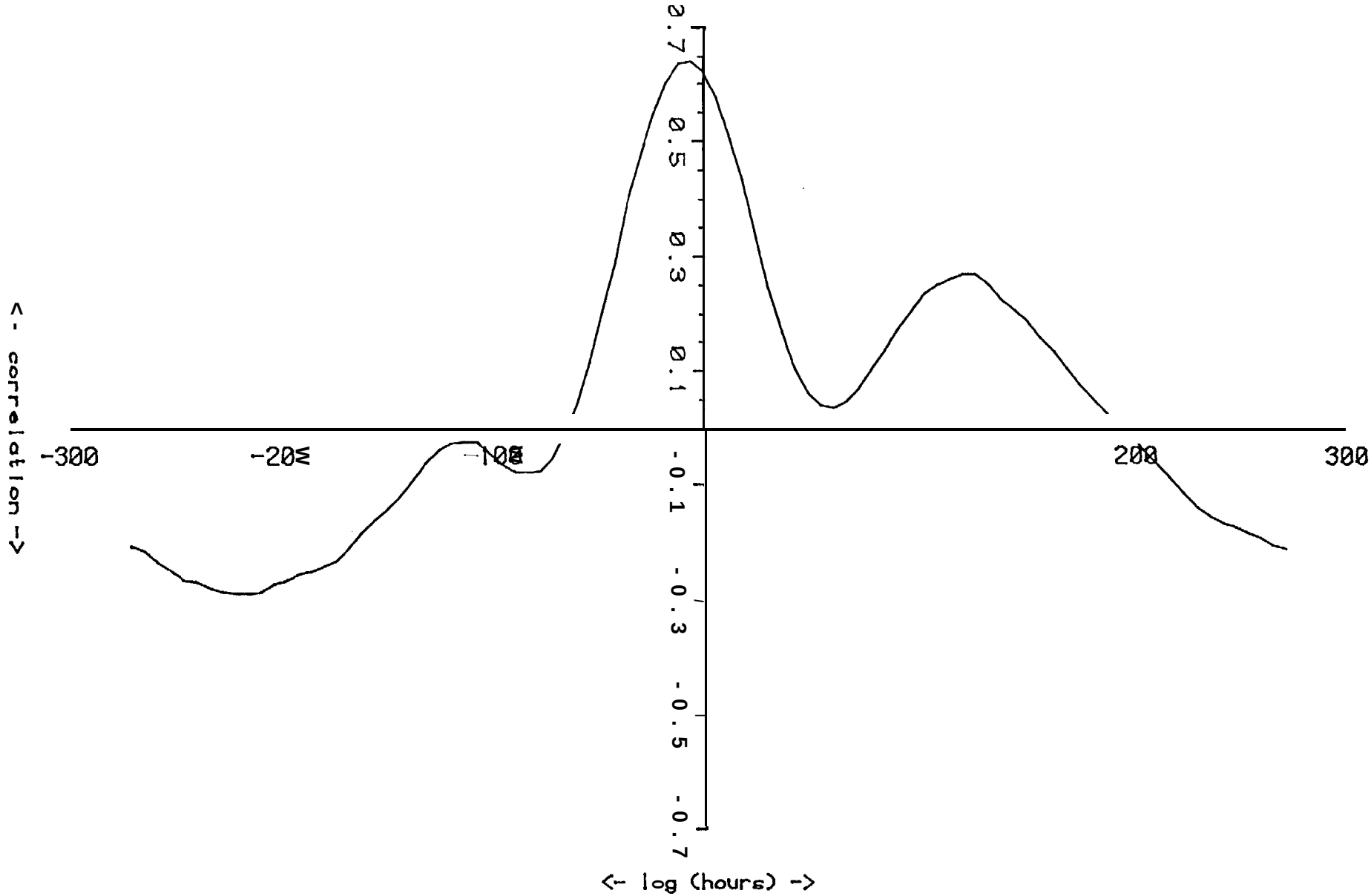


FIGURE 39 CROSS CORRELATIONS
WAINWRIGHT WIND (33.7 DEGREE COMPONENT) VS. LAGGED INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 D.)
1751 12 AUG 19[illegible] - 751 1 SEPT 1981

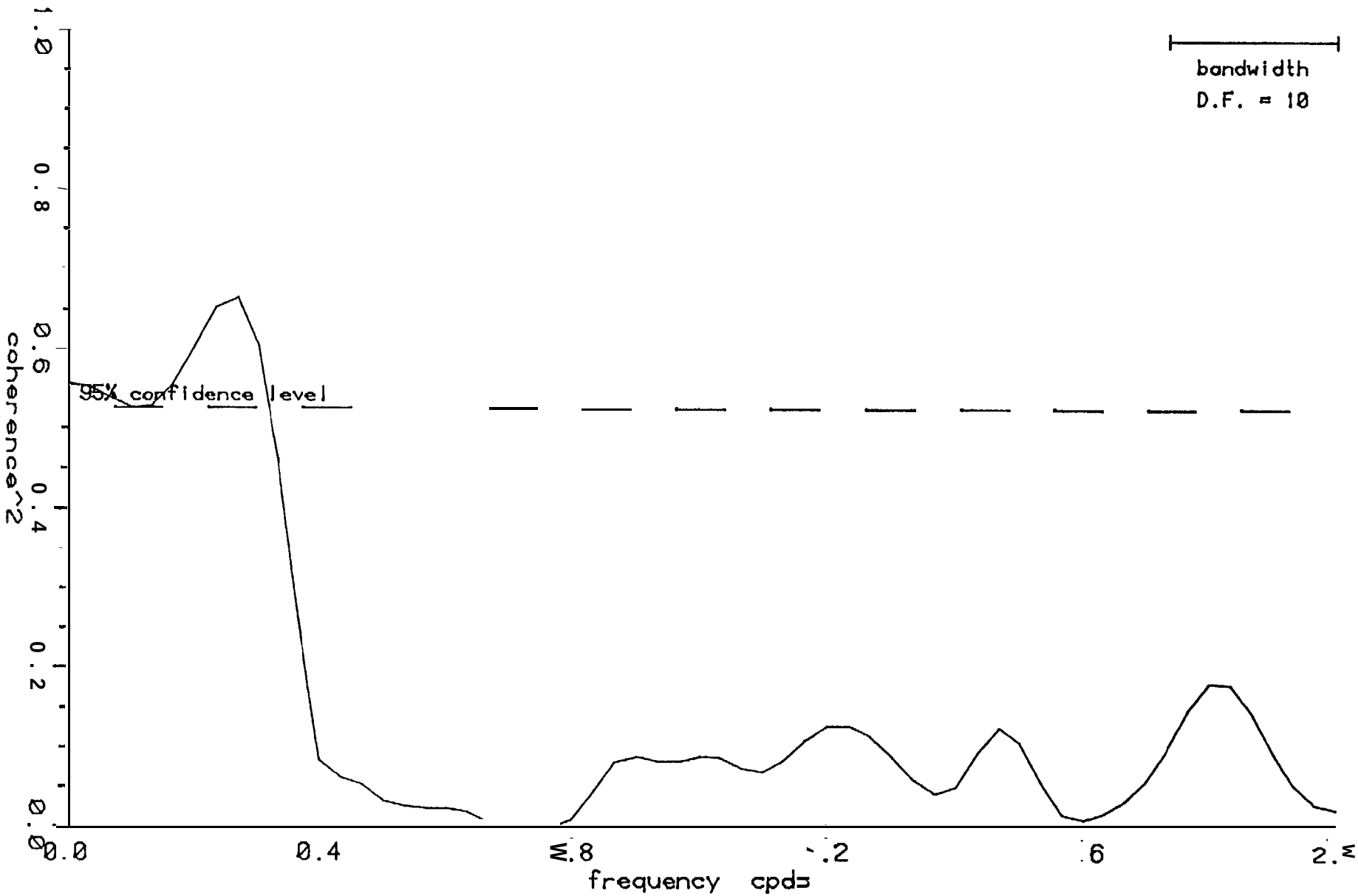


FIGURE 40. SQUARED COHERENCE SPECTRUM
WAINWRIGHT WIND (33.7 DEGREE COMPONENT) VS. INSHORE
WAINWRIGHT BOTTOM) DRIFT CURRENT 33.7 DEGREE COMP.)
1751 2 AUG 981 - 751 SEPT 98

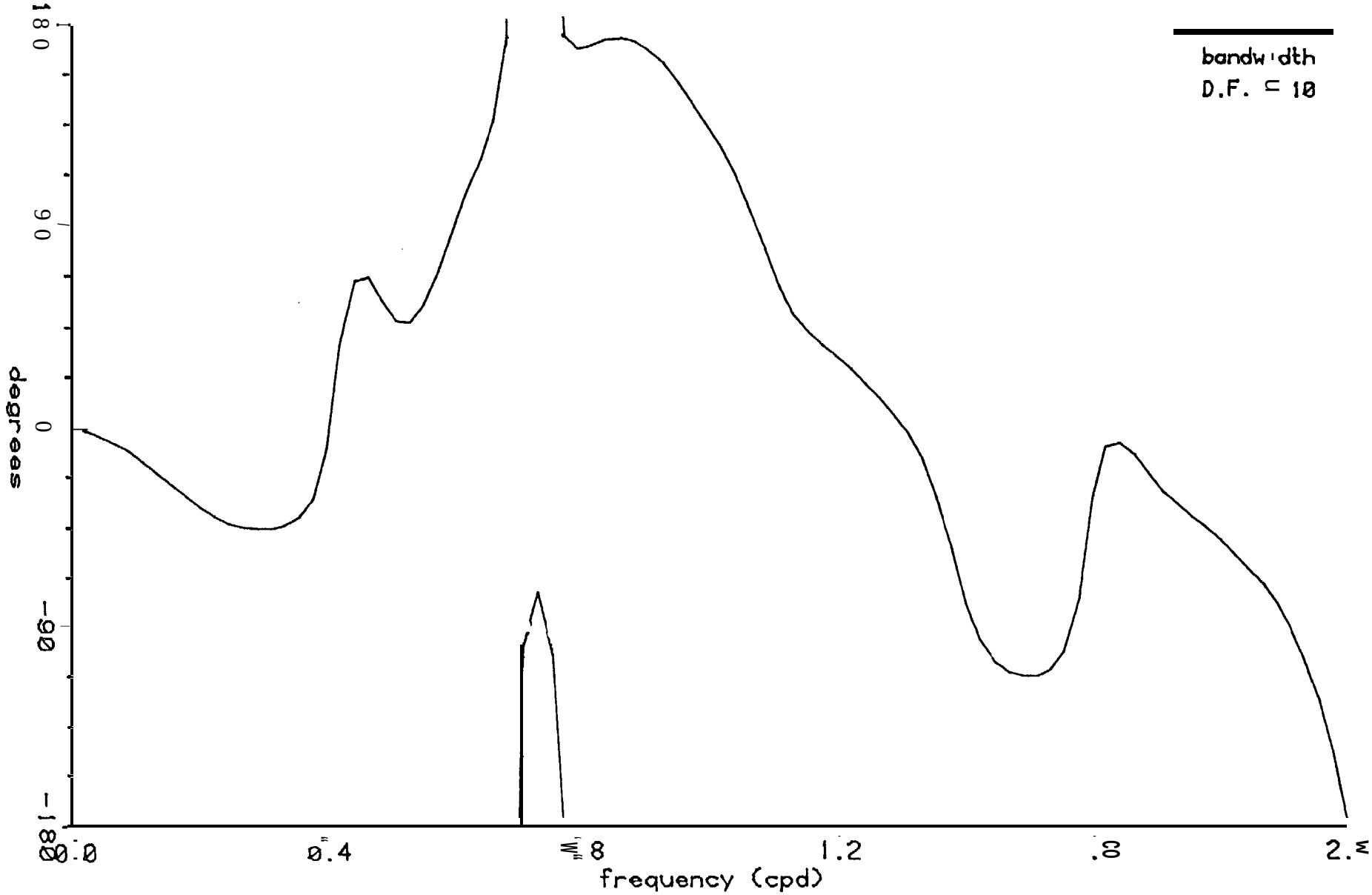


FIGURE 41. PHASE SPECTRUM
WAINWRIGHT WIND (33.7 DEGREE COMPONENT) VS. INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEGREE COMP.)
751 2 AUG 98 - 175 1 SEPT 98

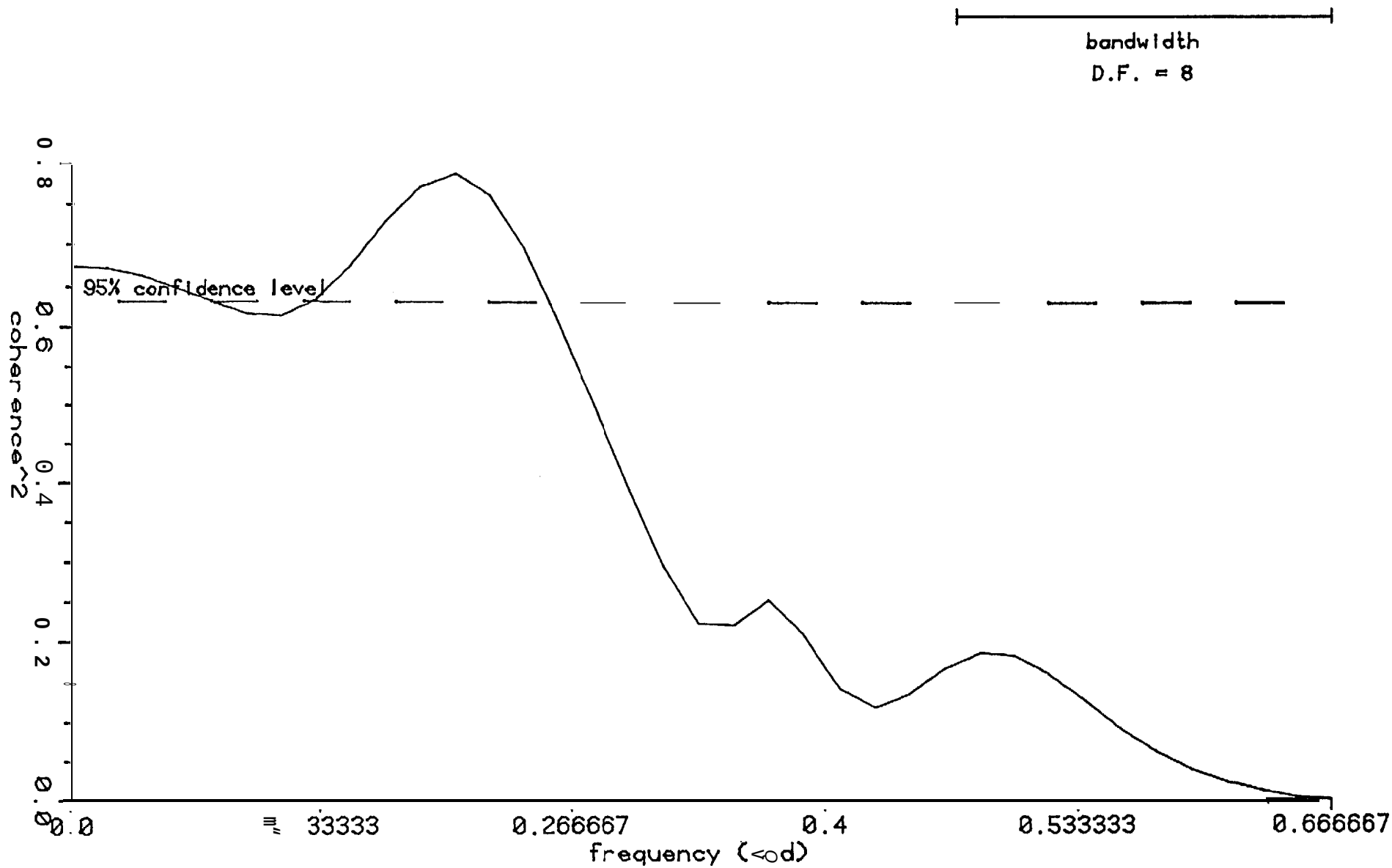


FIGURE 42. SQUARED COHERENCE SPECTRUM
WAINWRIGHT WIND (33.7 DEGREE COMPONENTS VS. INSHORE
WAINWRIGHT BOTTOM) DRIFT CURRENT (33.7 DEGREE COMP.)
751 2 AUG 98 - 1751 SEPT 981

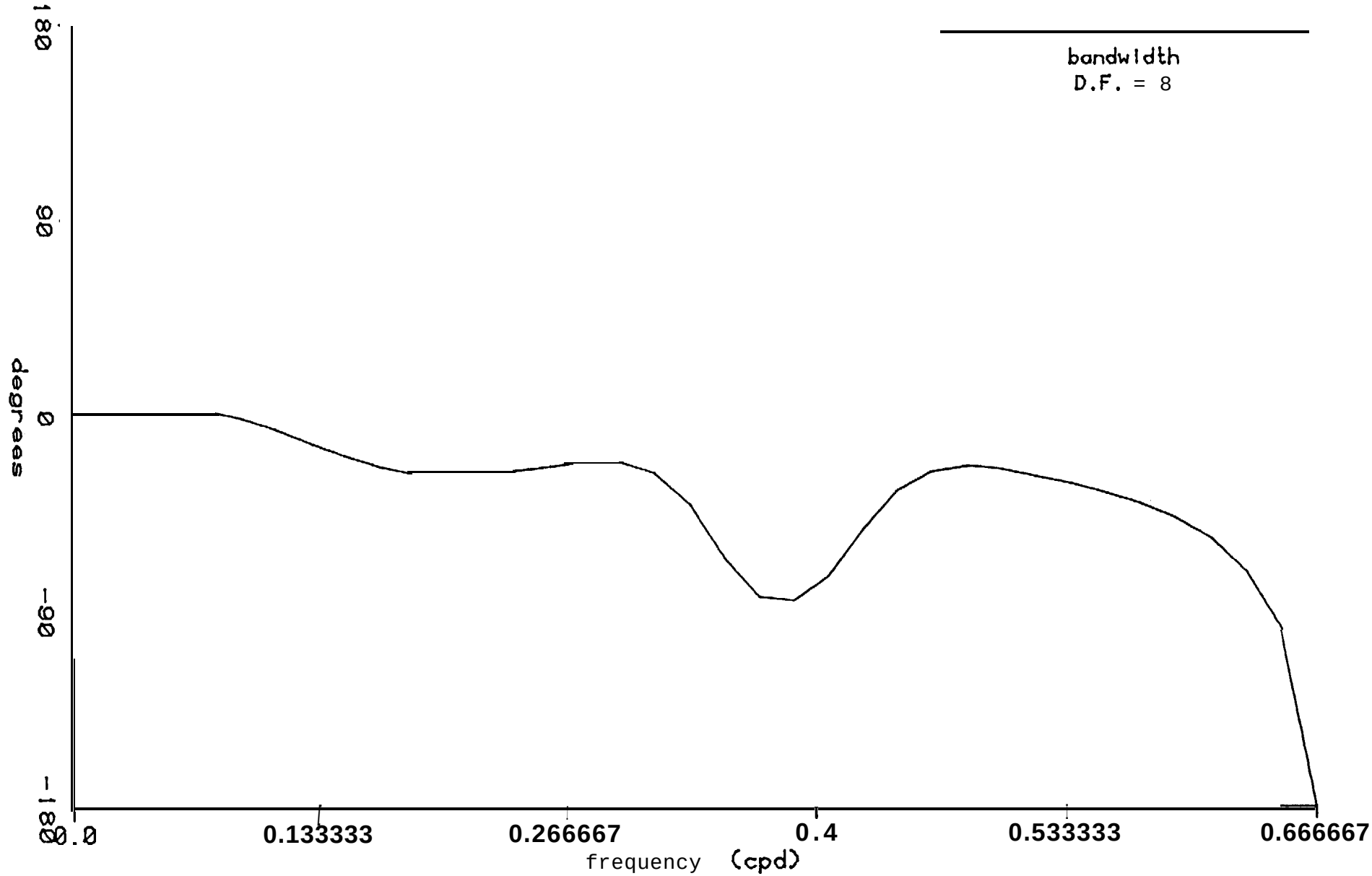


FIGURE 43. PHASE SPECTRUM
WAINWRIGHT WIND (33.7 DEGREE COMPONENT} VS. INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEGREE COMP.)
1751 12 AUG 1981 - 1751 1 SEPT 1981

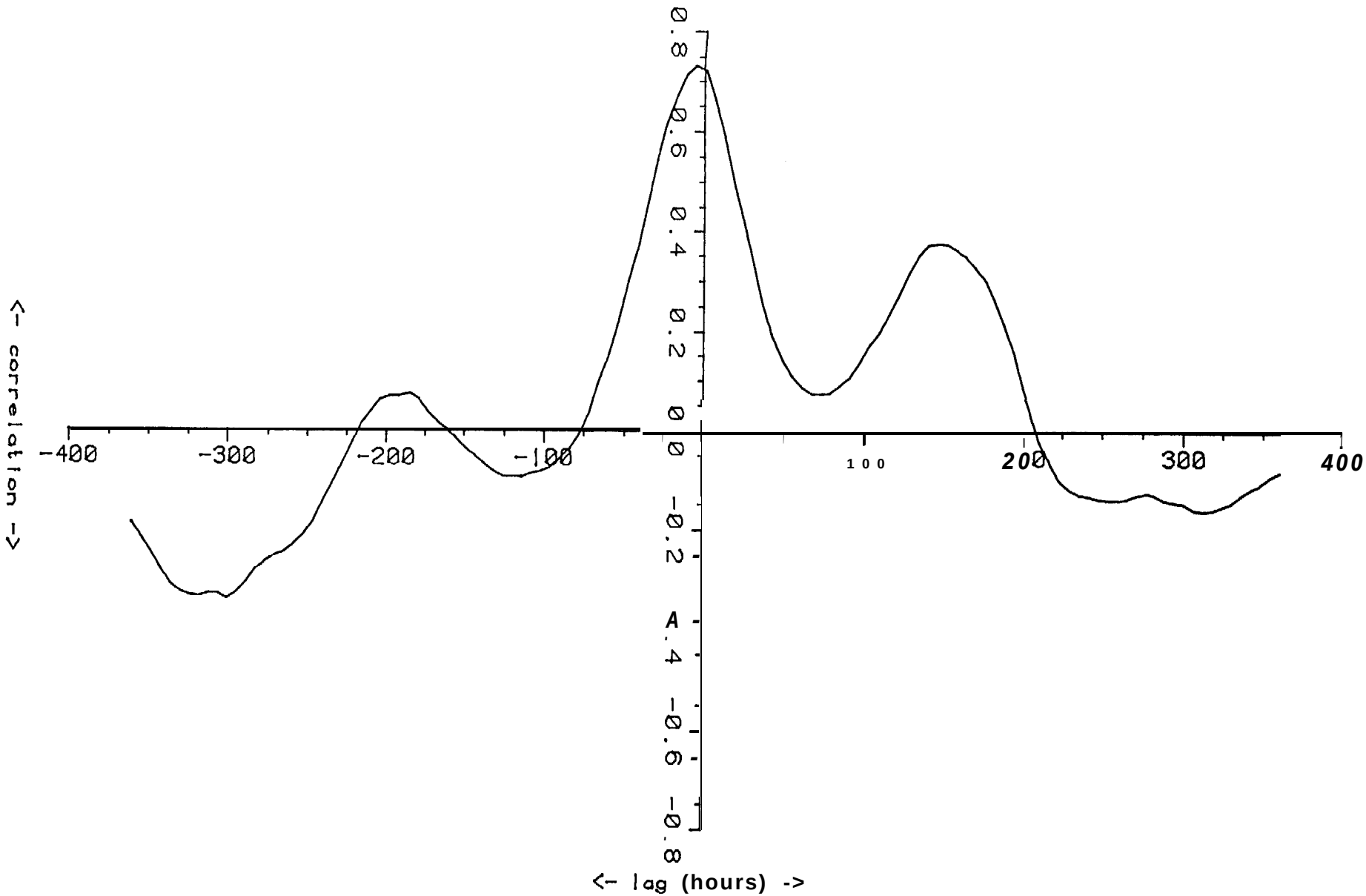


FIGURE 44. CROSS CORRELATIONS
PT. BARROW WIND (35.9 DEGREE COMPONENT) VS. LAGGED INSHORE BARROW <BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0700 8 AUG 1981 -1300 6 SEPT 1981

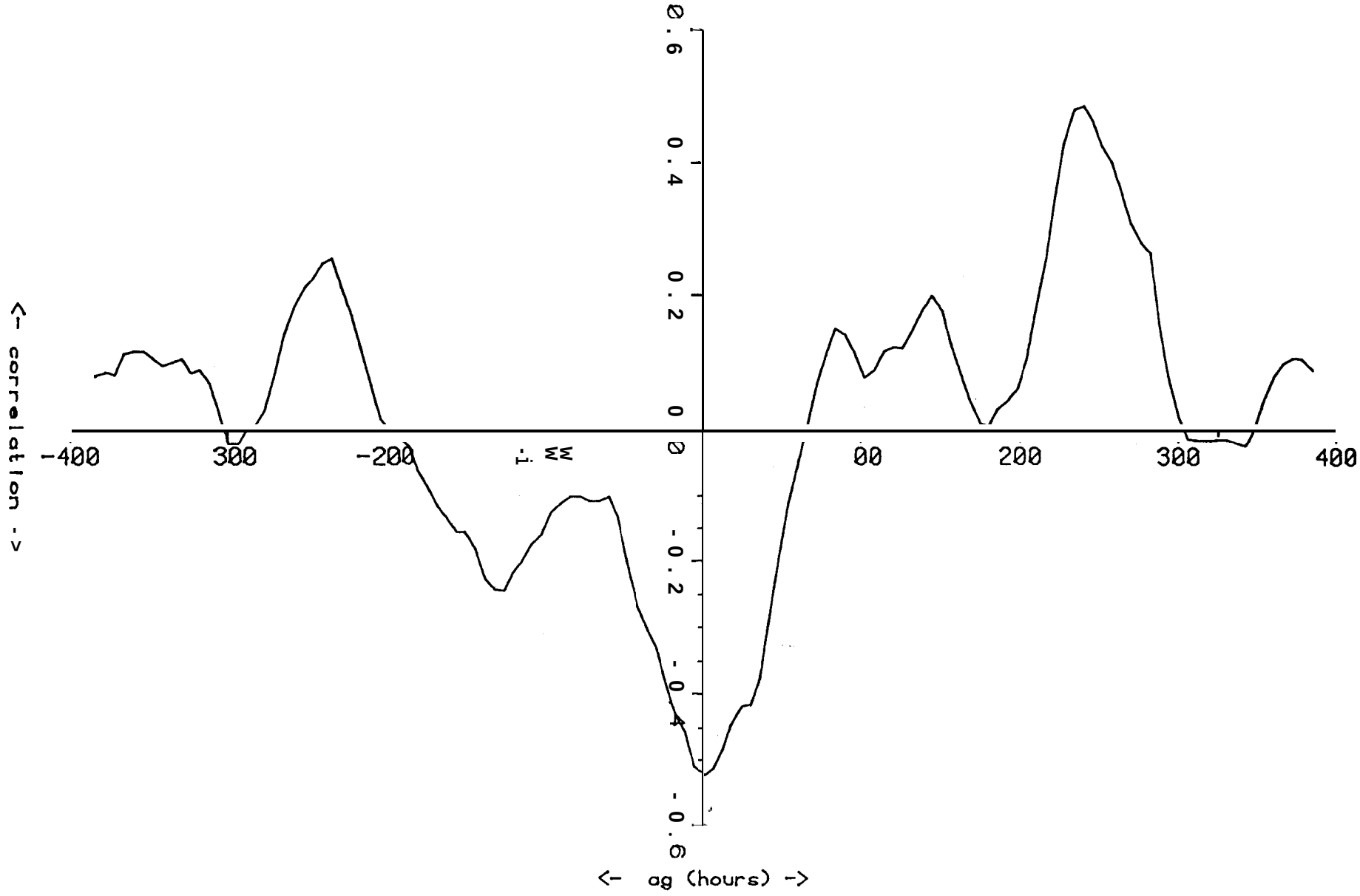


FIGURE 45. CROSS CORRELATIONS
PT. BARROW - CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
VS. LAGGED WAINWRIGHT WINDS
2359 3 AUG 1981 - 1759 4 SEPT 98

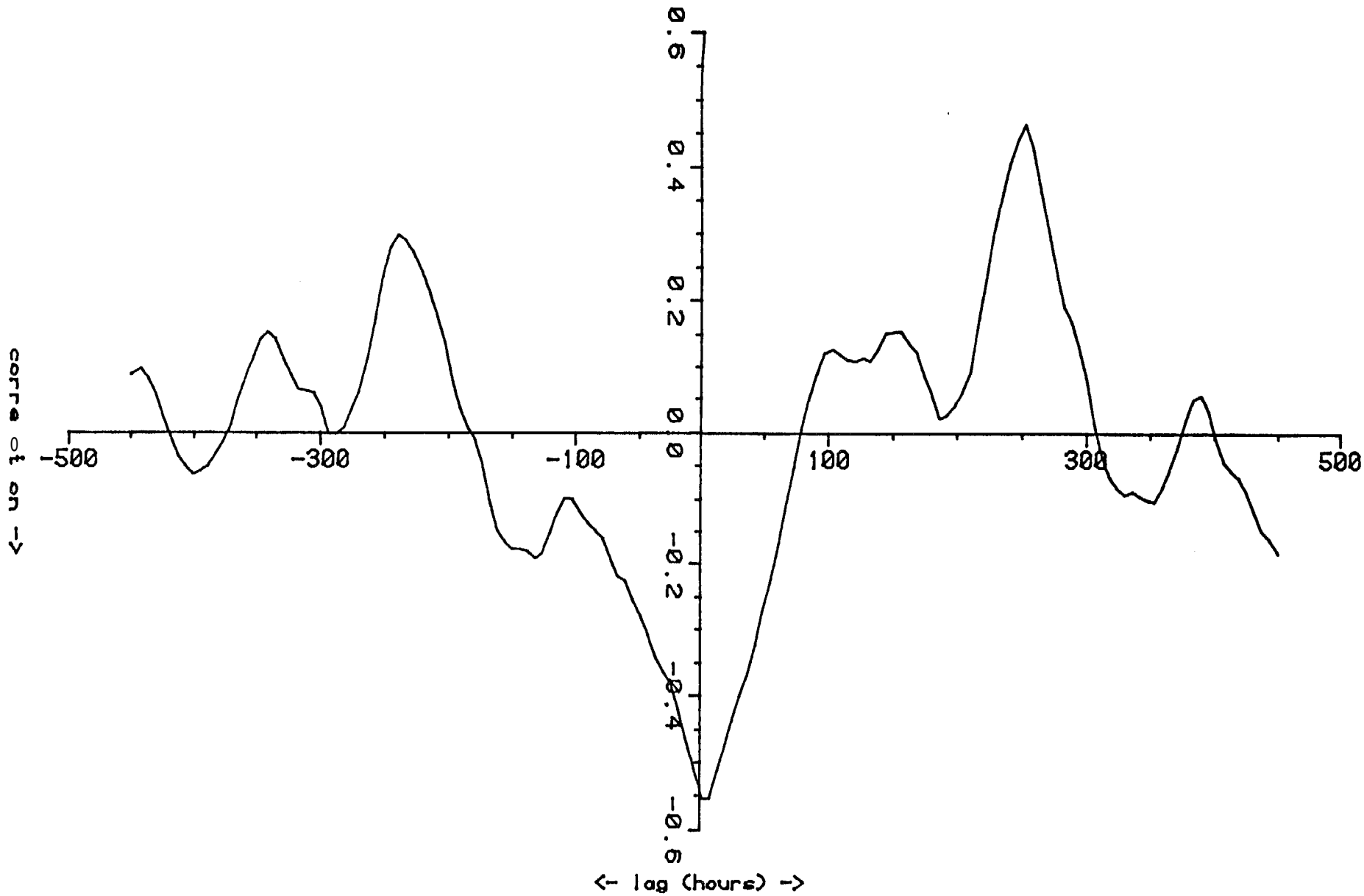


FIGURE 46. CROSS CORRELATIONS
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS. LAGGED PT. BARROW WIND (35.9 DEGREE COMPONENT)
0158 1 AUG 1981 - 1358 4 SEPT 1981

The vertical profiles included in the appendix generally show pycnoclines varying between 5 to 10 meters depth inshore and deepening to about 15 meters depth further offshore. The hydrographic section plots (Figures 12 through 18) generally indicate cooler, more saline water upwelling close to shore, though not all transects are consistent. No apparent correlation exists in these limited number of transects with the simultaneous upcoast or downcoast flow regimes during which sampling took place. With reference to Figures 12 through 18, downcoast flow regimes were prevalent during the Pt. Barrow and Skull Cliffs transects; transitory flow during the Pt. Belcher transect; upcoast flow during the Pingorarok Pass, Akunik Pass, and Icy Cape transects; and downcoast flow again during the Wainwright transect.

Comparisons of the salinity/temperature time series obtained for the Pt. Barrow moorings are shown in Figure 47 along with the respective current records. Temperatures and salinities obtained from individual meters are clearly related; however, the records from the different meters at other depths and locations are not closely similar. Also consistent variations of the temperature/salinity with respective current regimes are not present in these records.

The inshore record indicates that wide variations of temperature and salinity occur in this shallow water. Temperatures during this month of record vary from about +6°C to -1.5°C. Corresponding salinities varied from 26 to 34 o/oo (parts per thousand). The existence of sharp fronts are also indicated, not correlating in time however, with variations in measured currents. The offshore records indicate similar temporal variations, though of somewhat lesser amplitudes (particularly for salinity) in the deeper locations.

Thus the available temperature/salinity data for this Chukchi Sea coastal area indicate temporal and spatial patchiness in water masses, probably due to variable contributions of ice melt, upwelling, wind mixing, solar heating, and freshwater inputs, moved by atmospherically forced current events.

Drogue Dispersion Data

The twelve current drogues tracked by means of the MiniRanger III system on 20 August off Wainwright moved downcoast to the southwest and spread as shown in Figure 20 above. A comparison of the movement of the centroid of these drogues with the currents measured by means of the moored meters at Wainwright is included in Table 6.

The overall movement of the drogues was downcoast parellel to the bathymetry, though the weather and coastal currents were in the process of changing. The current meter

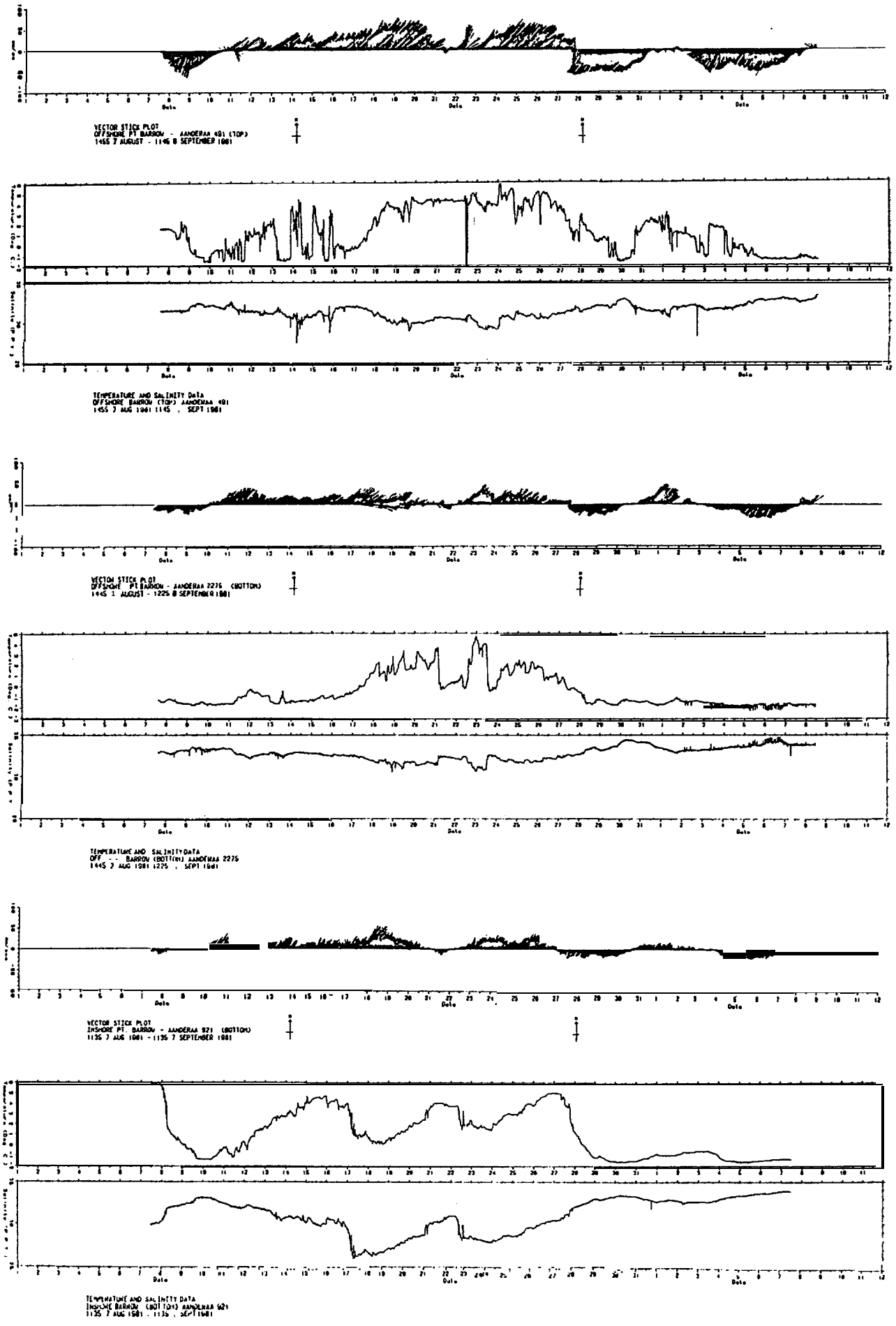


Figure 47. Comparisons of Temperature/Salinity Time Series and Current Records

Table 6. Analysis of Wainwright Current Drogue Trajectories.

Time	Mean Wind		Mean Drogue Movement		Mean Current Movements					
					Inshore (13m)		Offshore (9.7m)		Offshore (29m)	
	Speed cm/sec	Direction 'True	Speed cm/sec	Direction True	Speed cm/sec	Direction "True	Speed cm/sec	Direction "True	Speed cm/sec	Direction "True
1336-1438	257	120	4.9	S	17	200	12.5	90	18	100
1438-1536	77	115	6.4	Sw	17	200	10.0	90	18	120
1536-1636	0		5.1	S	17	195	12.5	90	17	140
1636-1735	206	90	9.4	S	15	195	12.5	100	15	140
1735-1835	103	135	11.6	S	17	190	12.5	110	13	150
1835-1938	206	100	16.2	Sws	18	190	12.5	120	8	140
1938-2038	230	136	22.7	Sw	19	195	10.0	150	7	160
2038-2205	257	175	77.8	Sw	20	195	12.5	180	5	180
2205-2255	No data		23.5	Sw	21	190	12.5	200	6	180
2255-2323	No data		18.2	W	23	195	12.5	210	6	180

records (Table 6) illustrate that the downcoast flow still predominated during the time of the drogue tracking experiment. Overall mean drogue speeds of approximately 13 cm/sec were close to the speeds indicated by the top offshore current meter.

Dispersion statistics for the spread of the drogues about the centroid have been presented above in Table 3. Variances about the centroid for both the minor and major axis are graphed in Figure 21 . Associated diffusivities of about 9 x $10^4 cm^2/sec$ are about one half those measured in Prudhoe Bay previously, but about an order of magnitude higher than those measured in Harrison Bay in one experiment in 1979 (Wilson et al. 1981).

CONCLUSIONS

Coastal Currents

Coastal currents measured at Point Barrow and at Wainwright along the Chukchi Sea coast show both northeast (upcoast) and southwest (downcoast) flows. Speeds ranged up to 50 cm/sec (1 knot), but with up to 100 cm/sec being measured offshore Point Barrow in the vicinity of the Barrow submarine canyon. Although upcoast flow was predominant? downcoast flows occurred from 33 to 47 percent of the time in these different current records.

All current records taken inshore and offshore, at both Point Barrow and Wainwright, showed close similarities in directions, magnitudes, and other features such as in the times of change and in the shapes of the current vector plots. These similarities were very consistent throughout the records. Statistical cross correlations of these current meter time series yielded a correlation coefficient at zero lag of 0.90 for inshore records taken at Point Barrow and at Wainwright.

Meteorological Forcing

Visual comparisons of the current meter time series data with similar plots of atmospheric pressure differences between Point Barrow - Cape Lisburne (also Pt. Barrow - Nome) show strong correlations. High pressure at Point Barrow relative to the southern stations is strongly correlated with downcoast flow. Conversely, low or negative pressure differences are strongly associated with upcoast flow.

Cross correlations of these time series current data with the pressure difference series (Pt. Barrow - Cape Lisburne) indicate high negative correlation coefficients of -0.81 and -0.85 for the Wainwright and Pt. Barrow current data respectively, confirming the similarities observed visually.

Visual cross correlations of the local winds with the currents were not quite as evident as with the atmospheric pressures. Cross correlation coefficients of 0.65 and 0.72 were obtained for the Wainwright and Point Barrow cases respectively. Correlation coefficients of the local winds with the pressure differences were only 0.52 and 0.56 for Wainwright and Point Barrow.

Thus the high correlations between the individual current records, plus the high correlations of these currents with the atmospheric pressure difference along the coast, indicates that these shallow, nearcoast currents- are driven by the same atmospheric pressure forcing function all along this stretch of coast.

Hydrographic Transects

The hydrographic transect data, along with temperature\ salinity time series data show highly variable temperature and salinity conditions in this nearshore area. Pycnoclines are evident between 5 and 10 meters depth inshore, deepening offshore to 10-15 meters. Hydrographic section plots generally indicate cooler, more saline water upwelling close to shore, though not always consistent or correlated with upcoast or downcoast flow regimes. Temperatures varied from below -1.5°C up to +6°C, salinities from 34°/00 down to 26°/oo. Features of sharp fronts are also evident in the time series data. The temporal and spatial patchiness in water masses is probably due to variable contributions of ice melt, upwelling, wind mixing, solar heating, and freshwater inputs modifying the source waters of the Chukchi Sea, and transported by currents driven by atmospheric pressure forcing.

Drogue Dispersions

Twelve current drogues released off Wainwright drifted downcoast parallel to the shoreline and in general agreement with measured coastal currents. Diffusivity values, derived from spreading of the drogues about the centroid, ranged up to 9×10^3 cm^2/sec.

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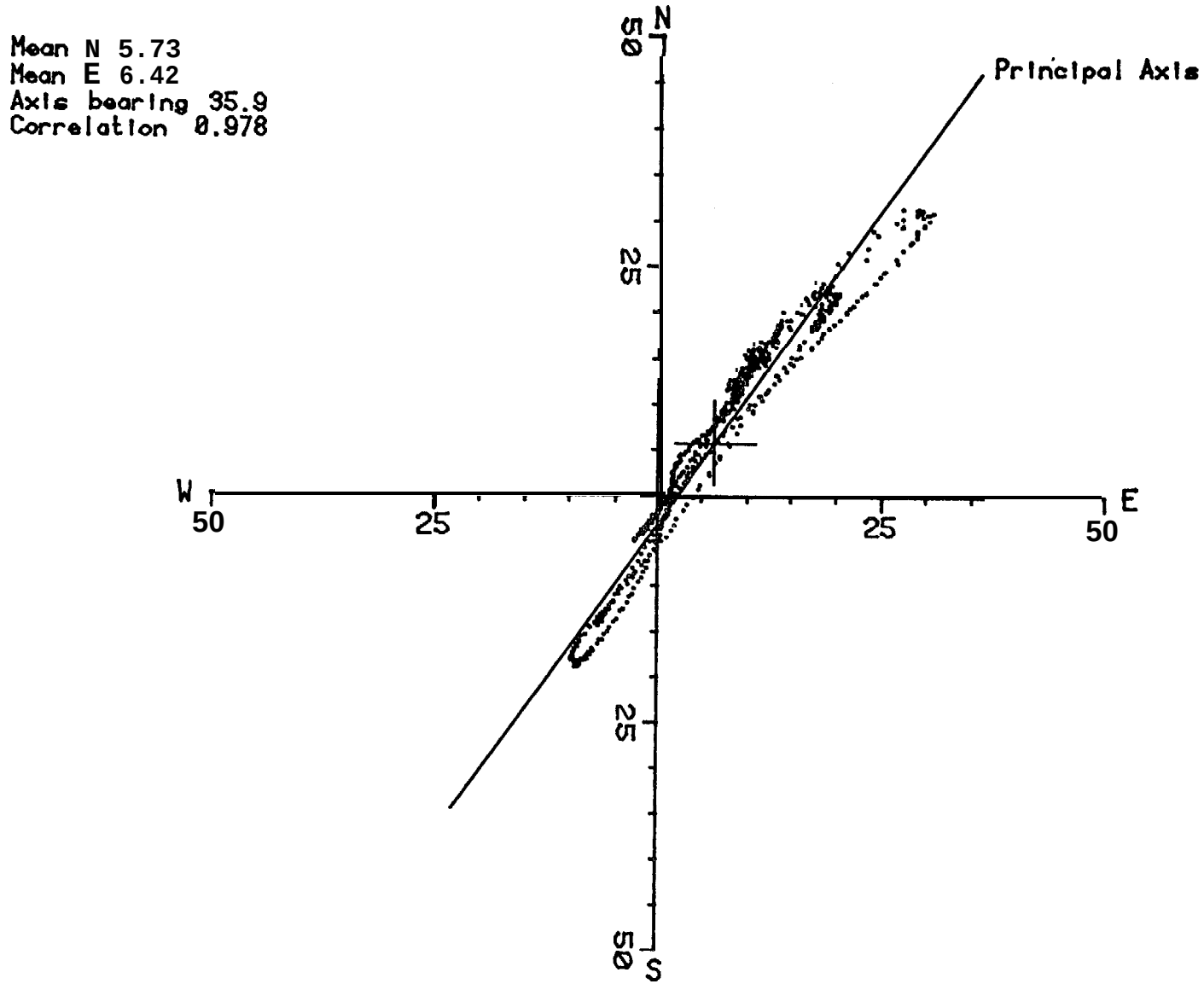
APPENDIX A

Current Meter Data

Principal Axis and

Progressive Vector Plots

Barrow



(Speeds in cm/see>

FIGURE A-1 POLAR PLOT – SPEED AND DIRECTION DATA
INSHORE BARROW <BOTTOM) DRIFT CURRENT
0700 8 AUG 1981 - 1600 6 SEPT 1981

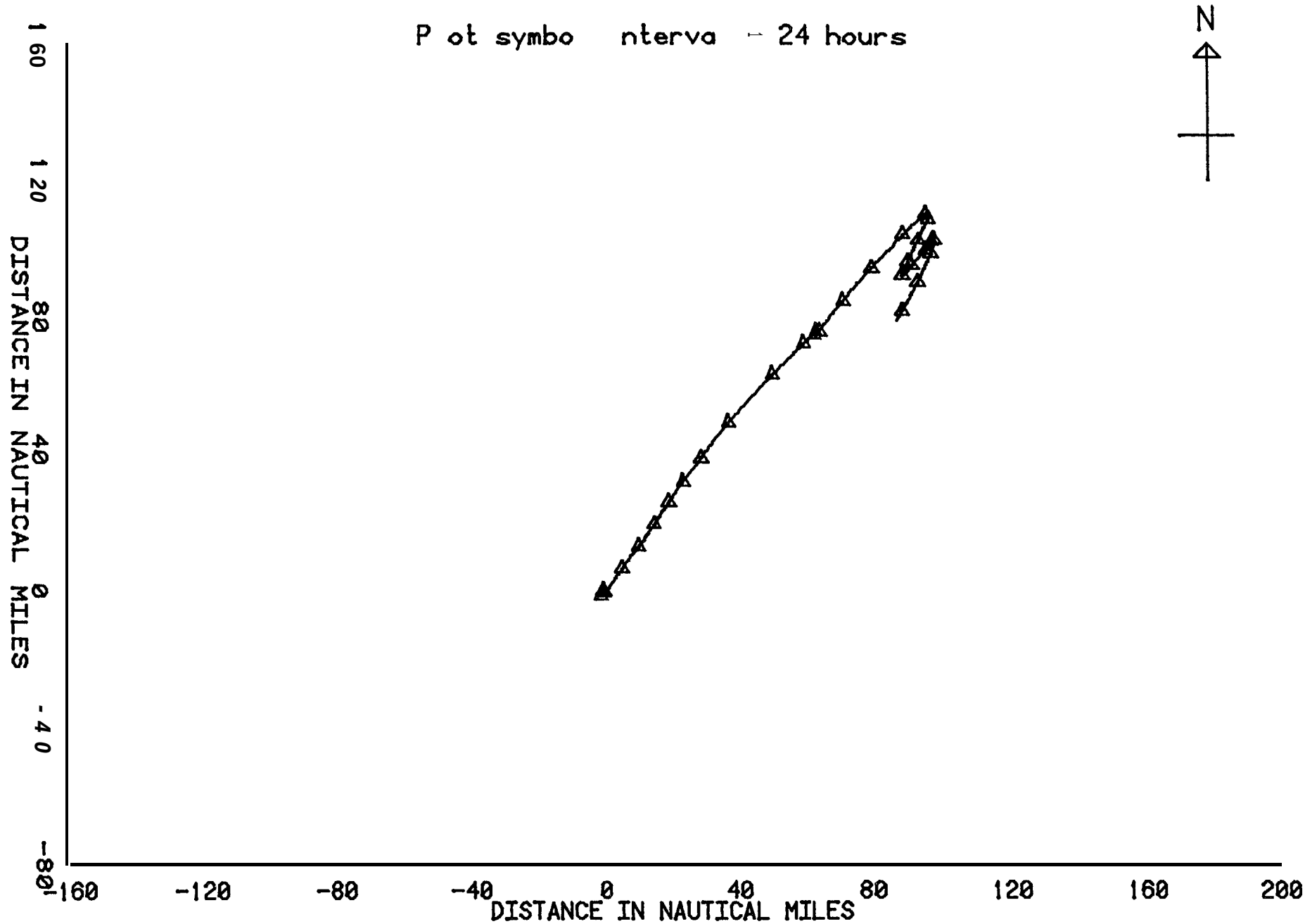
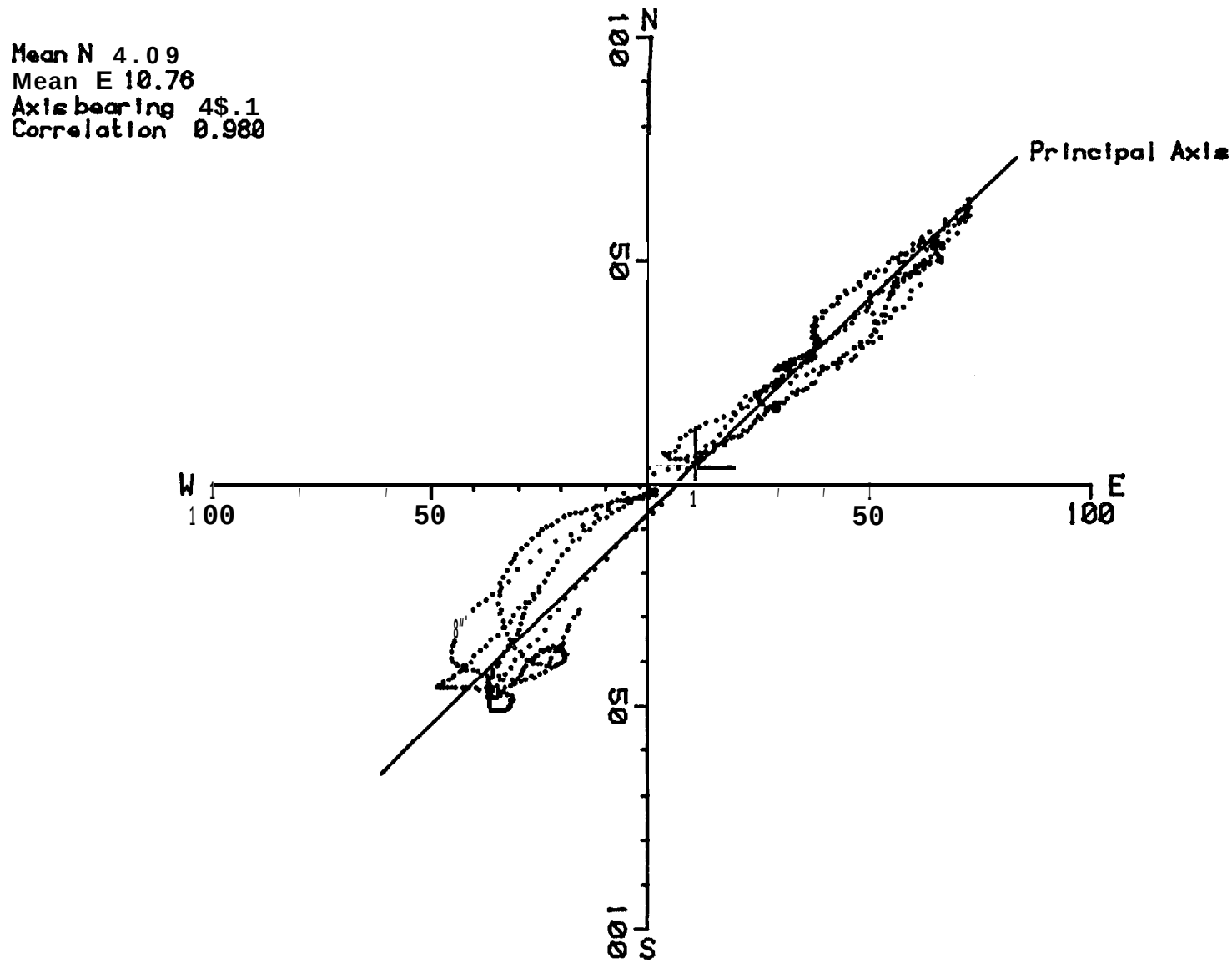


FIGURE A-2 PROGRESSIVE VECTOR DIAGRAM
INSHORE BARROW (BOTTOM) DRIFT CURRENT
0700 8 AUG 1981 - 1600 6 SEPT 1981



<Speeds in cm/see)

FIGURE A-3 POLAR PLOT - SPEED ANI) DIRECTION DATA
OFFSHORE BARROW <TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7SEPT 1981

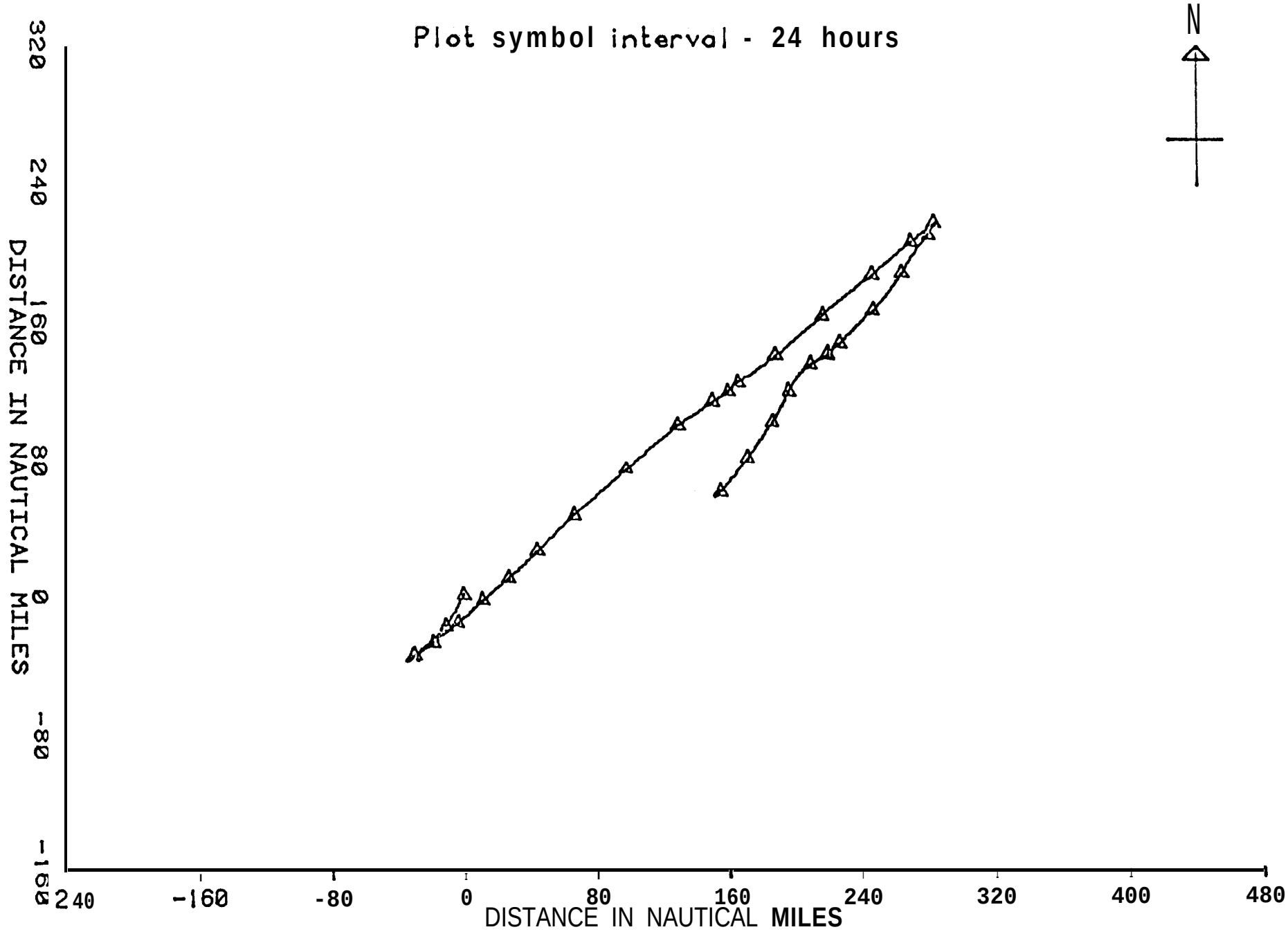
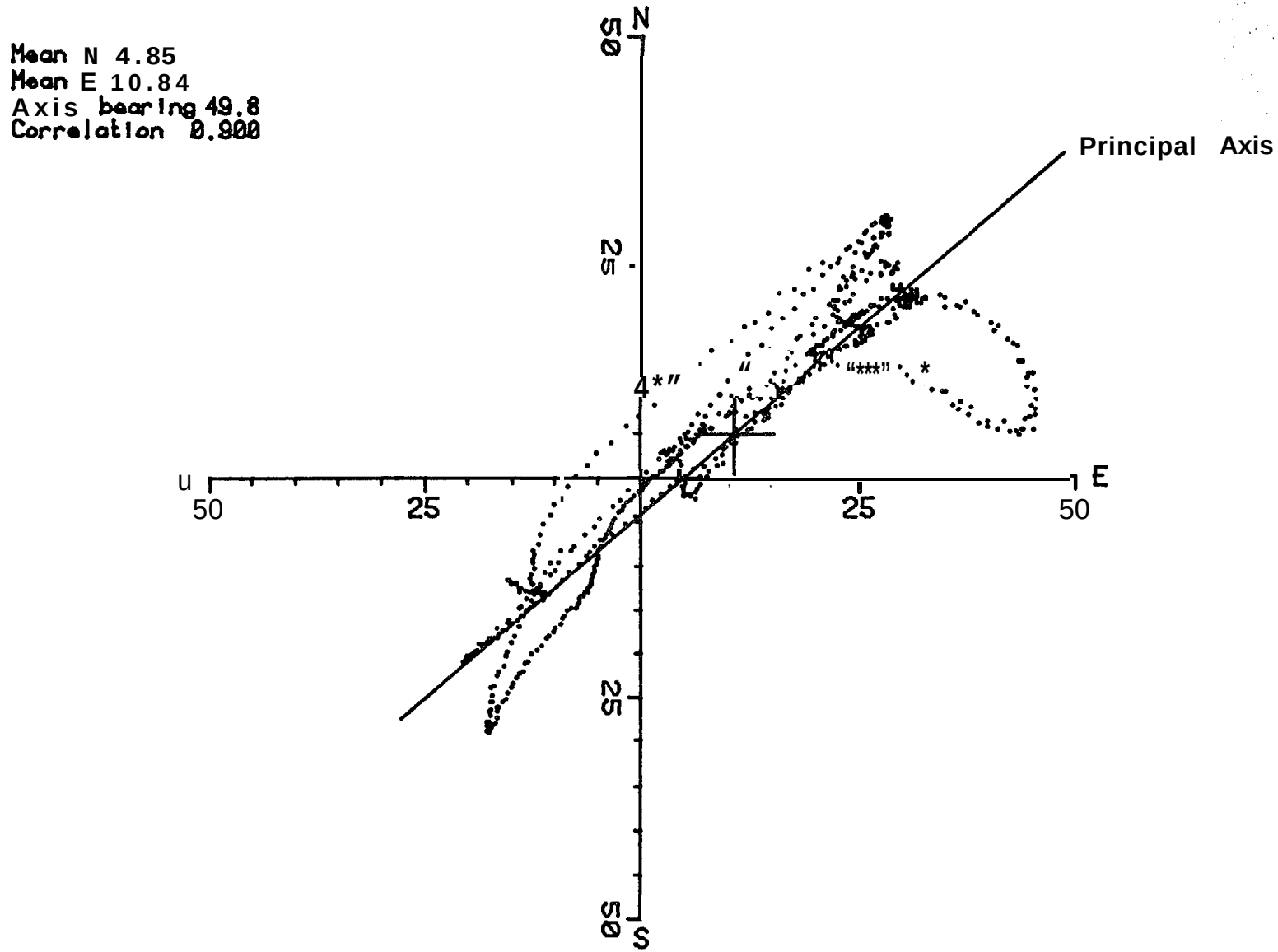


FIGURE A-4 PROGRESSIVE VECTOR DIAGRAM
OFFSHORE BARROW (TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981



<speeds in cm/see)

FIGURE A-5 POLAR PLOT - SPEED AND DIRECTION DATA
OFFSHORE BARROW <BOTTOM> DRIFT CURRENT
10108 AUG 1981 - 16107 SEPT 1981

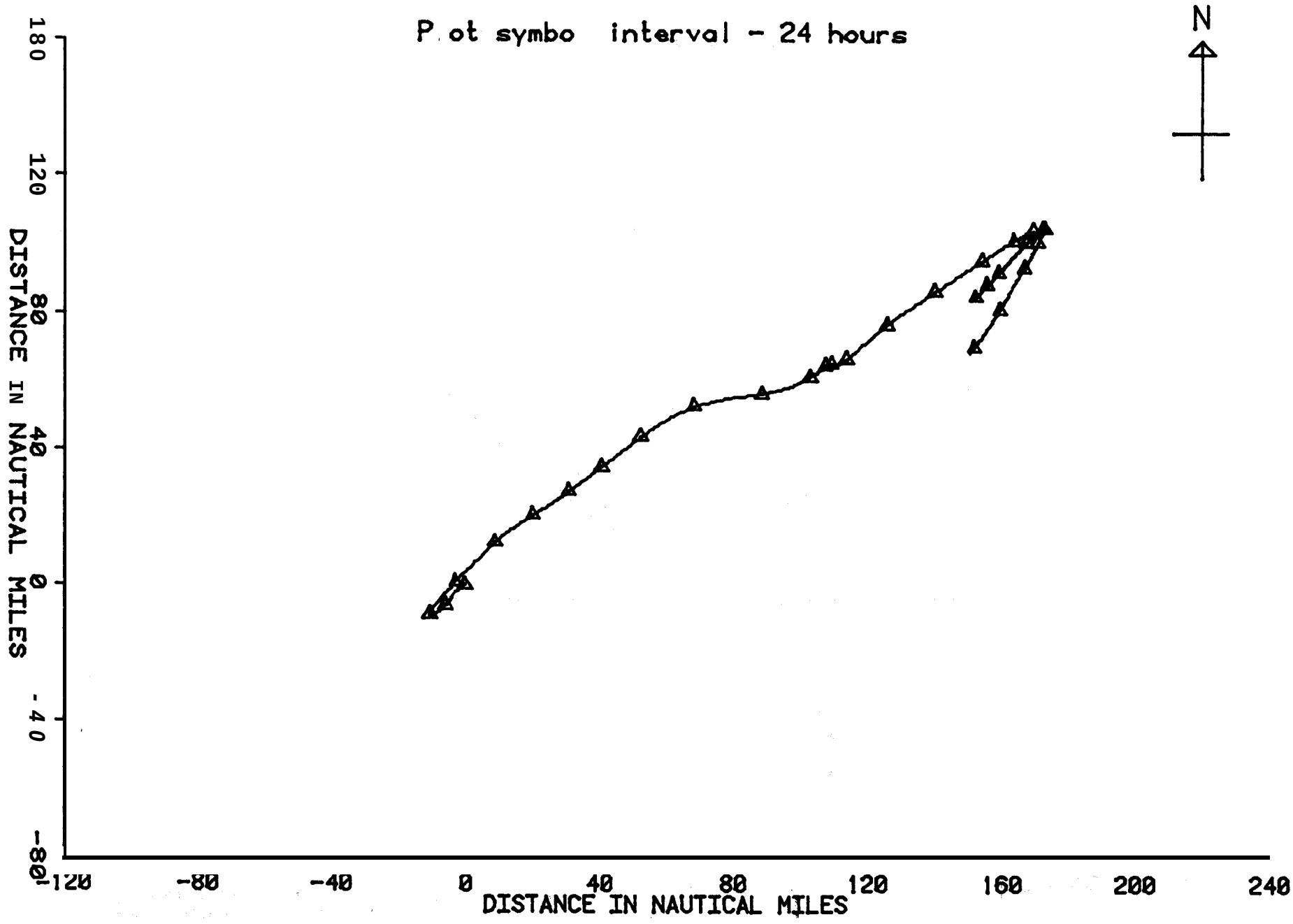
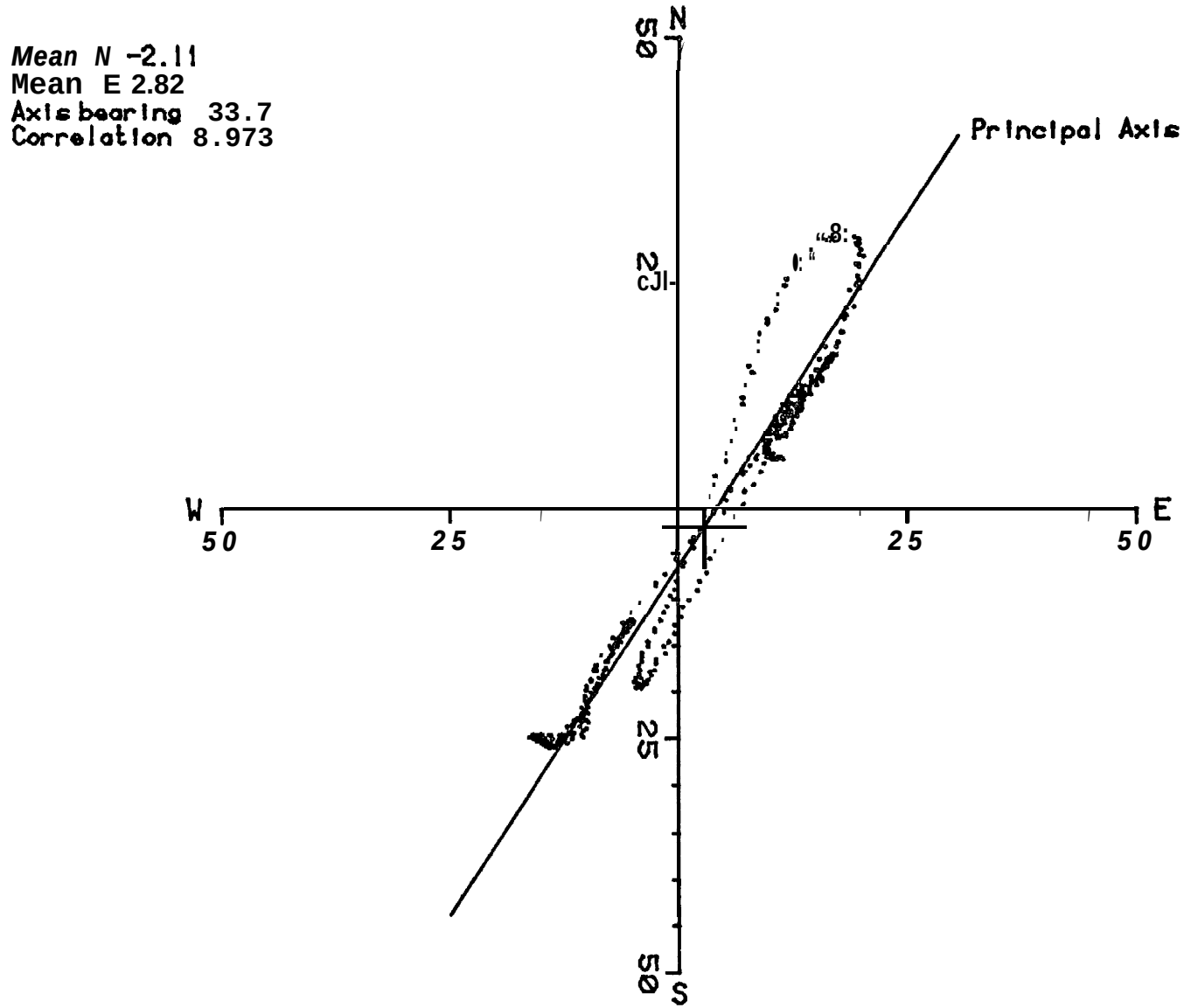


FIGURE A-6 PROGRESSIVE VECTOR DIAGRAM
OFFSHORE BARROW (BOTTOM) DRIFT CURRENT
1010 8 AUG 1981 - 1610 7 SEPT 1981

Principal Axis and Progressive Vector Plot. Wainwright



(Speeds in cm/sec)

FIGURE 4-7 POLAR PLOT - SPEED AND DIRECTION DATA
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1342 12 AUG 1981 - 1742 1 SEPT 1981

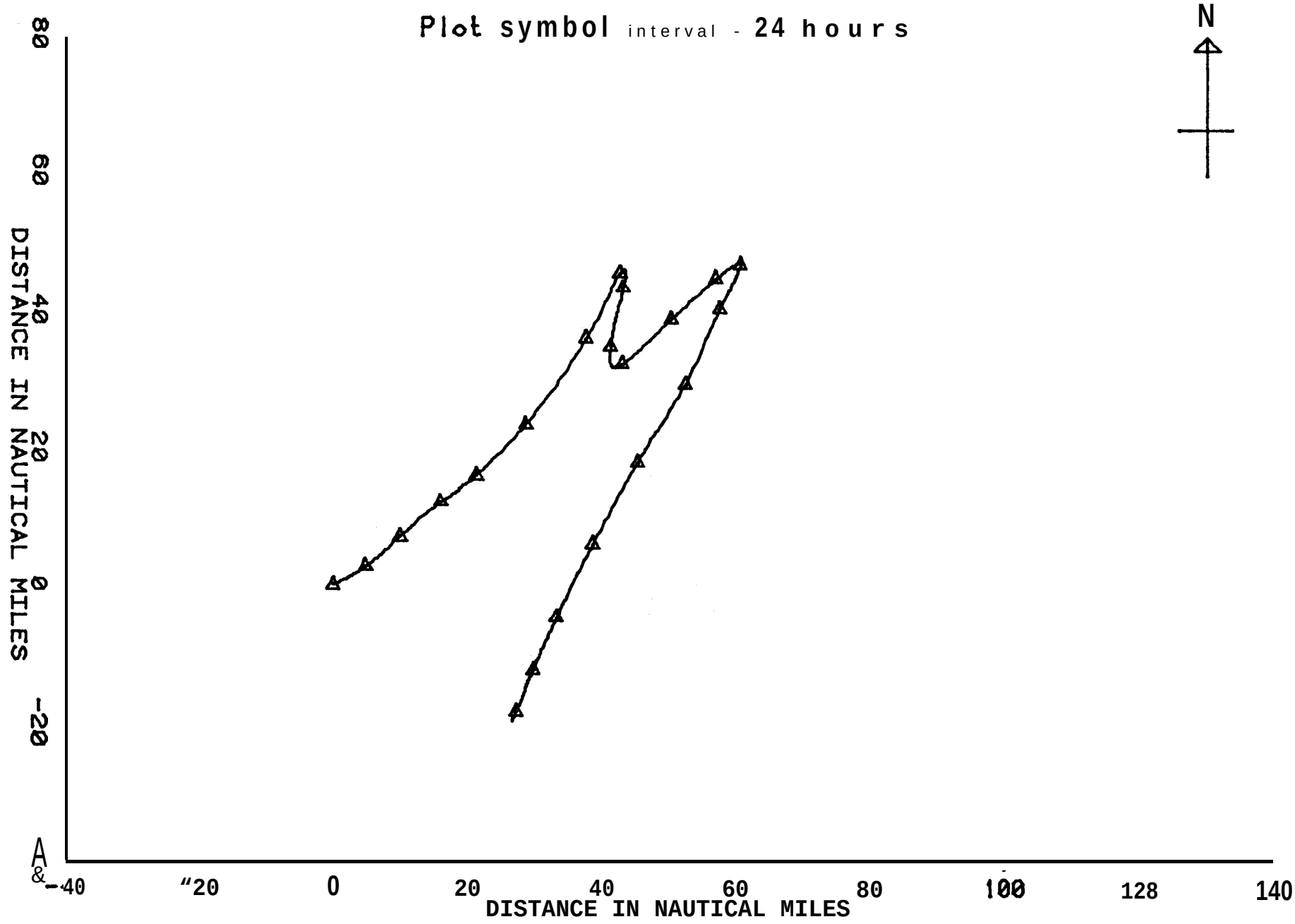


FIGURE A-8 PROGRESSIVE VECTOR DIAGRAM
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT "
1342 12 AUG 1981 - 1742 1 SEPT 1981

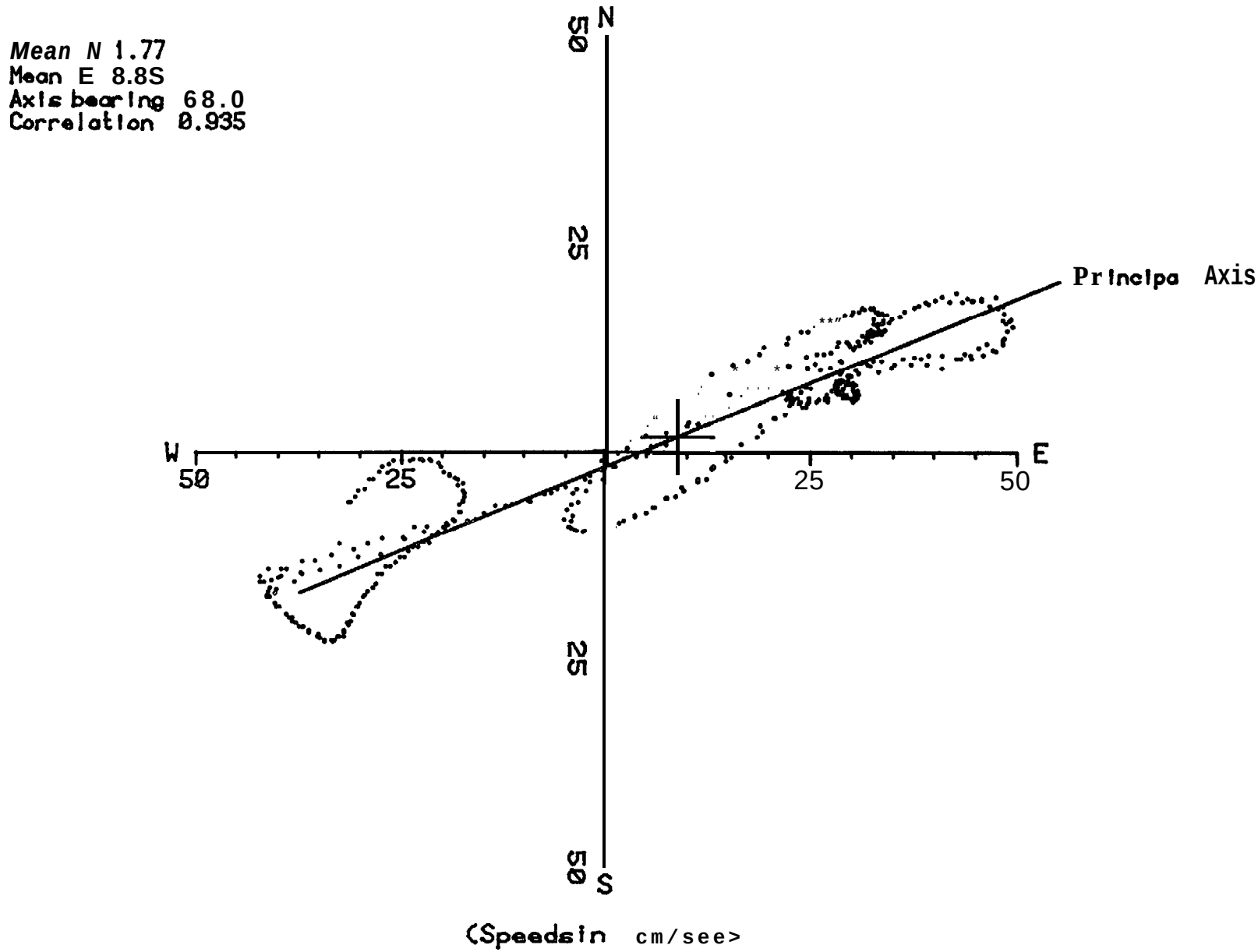


FIGURE A-9 POLAR PLOT - SPEED AND DIRECTION DATA
OFFSHORE WAINWRIGHT (TOP) DRIFT CURRENT
1553 12 AUG 1981 - 1953 1 SEPT 1981

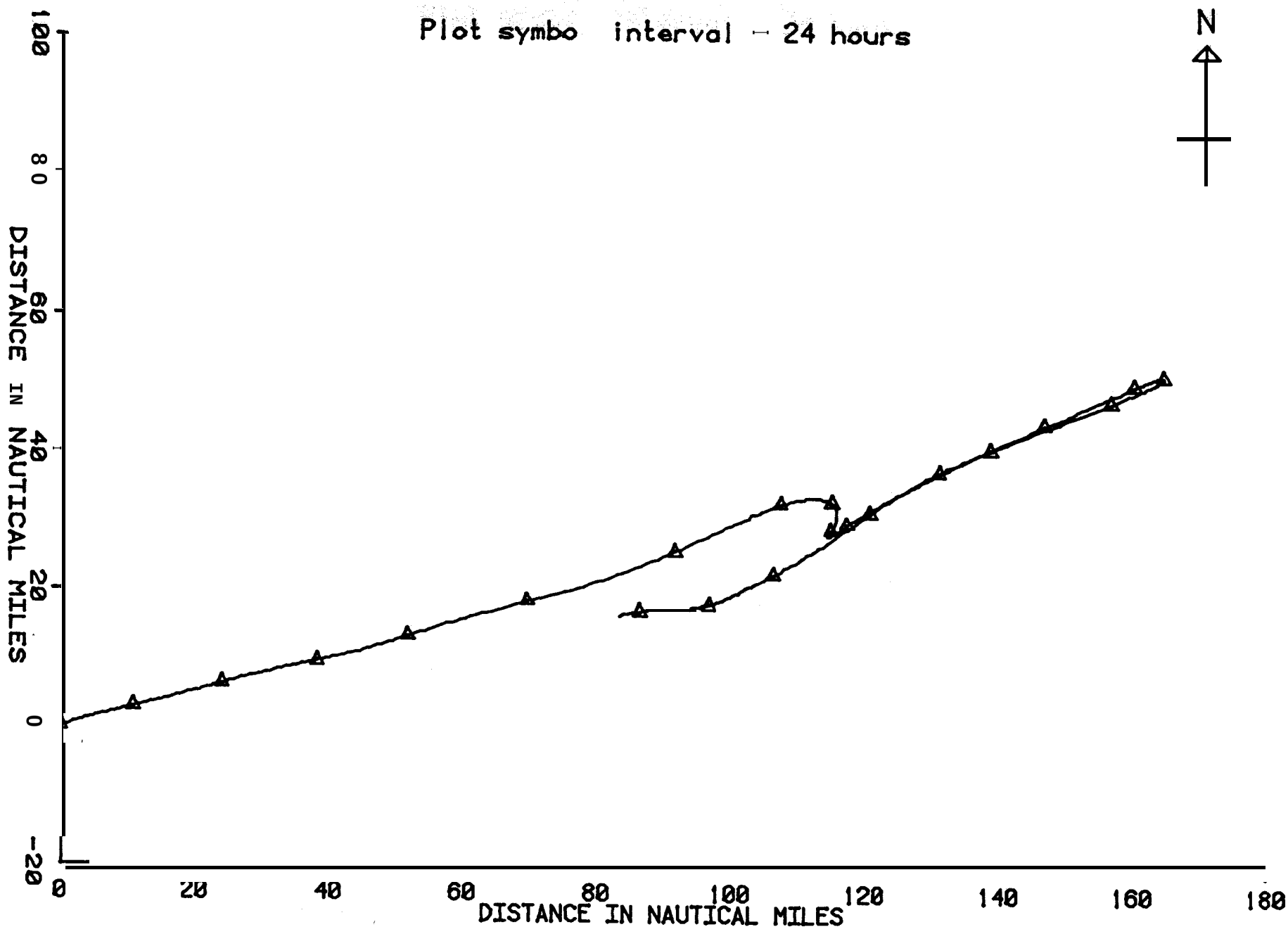


FIGURE A-10 PROGRESSIVE VECTOR DIAGRAM
OFFSHORE WAINWRIGH' (TOP) DRIFT CURRENT
1553 12 AUG 1981 - 1953 1 SEPT 981

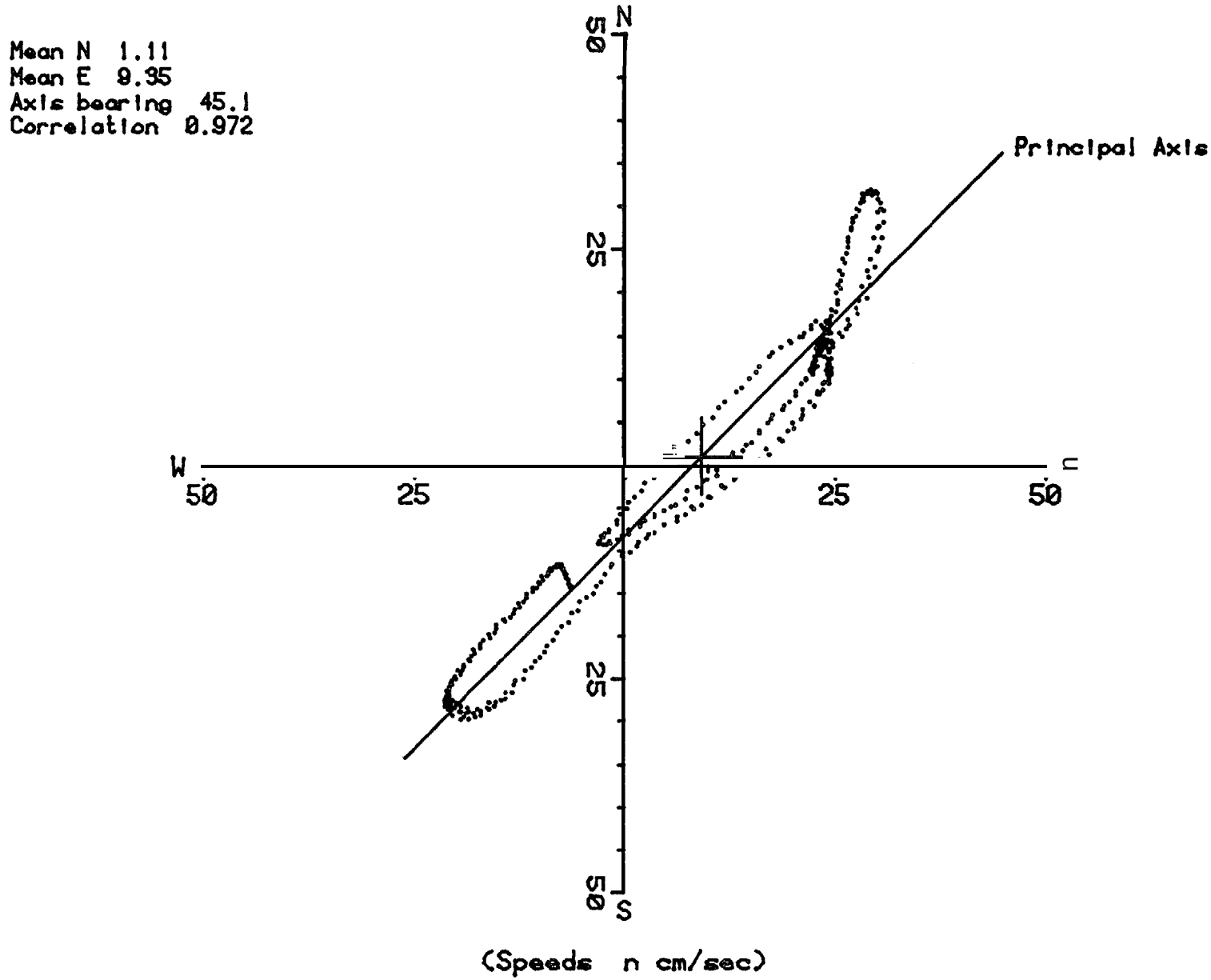


FIGURE A-11 POLAR PLOT - SPEED AND DIRECTION DATA
OFFSHORE WAINWRIGH' (BOTTOM) DRIFT CURRENT
1513 12 AUG 1981 - 2013 1 SEPT 1981

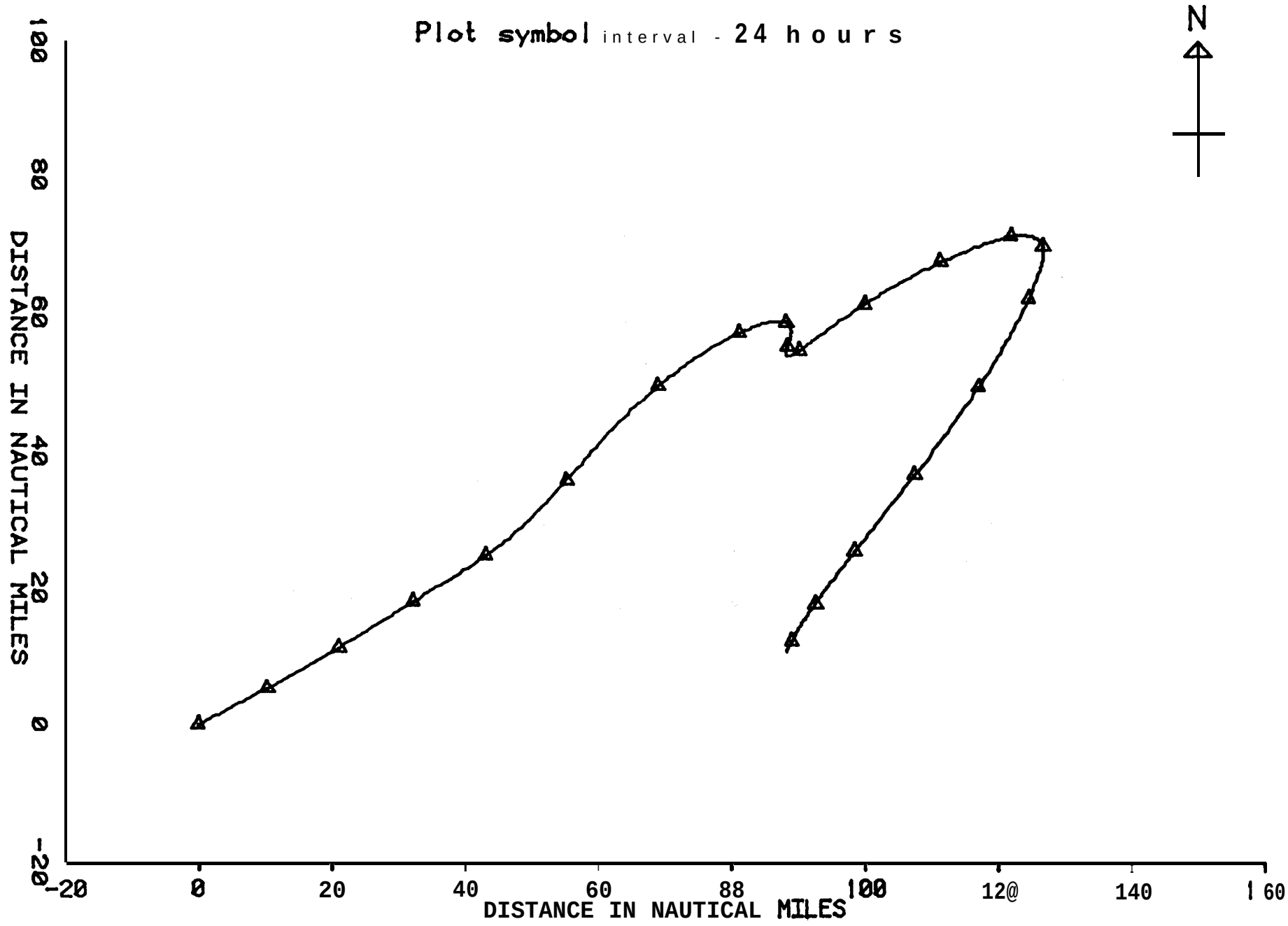


FIGURE A-12 PROGRESSIVE VECTOR DIAGRAM
OFFSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT '
1513 12 AUG 1981 -2013 1 SEPT 1981

Current Correlations

Barrow/Wainwright

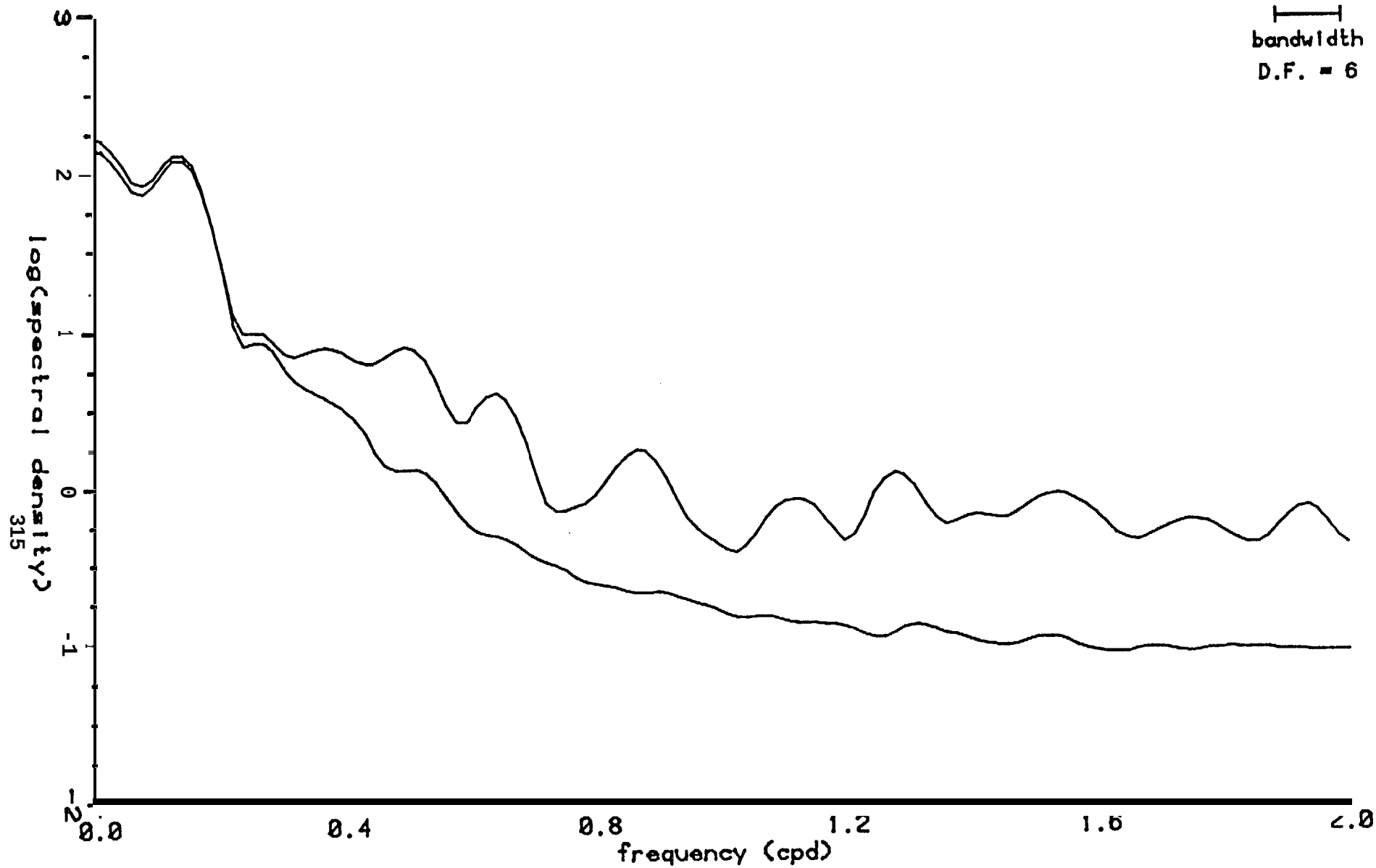


FIGURE A-13 SPECTRAL DENSITY
A) INSHORE BARROW (BOTTOM) DRIFT CURRENT - 35.9 DEGREE COMP.
B) INSHORE BARROW (BOTTOM) CURRENT - 35.9 DEGREE COMP.
0703 8 AUG 1981 - 30⁰ 6 SEPT 1981

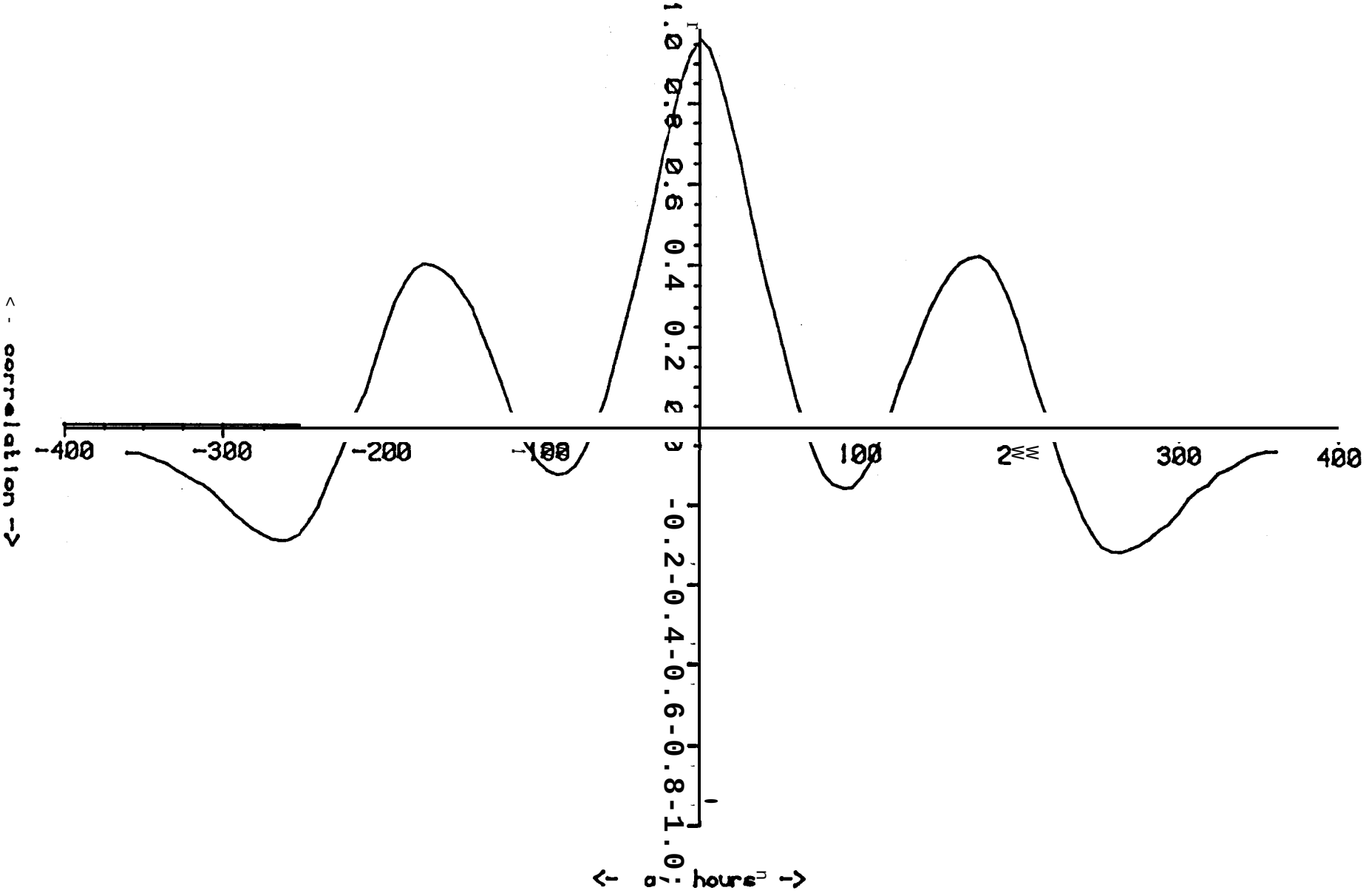


FIGURE A-14 CROSS CORRELATIONS
INSHORE BARROW (BOTTOM) DRIFT CURRENT VS. LAGGED INSHORE BARROW (BOTTOM) CURRENT (35.9 DEGREE COMPONENTS)
0703 8 AUG 1981 - 1303 6 SEPT 1981

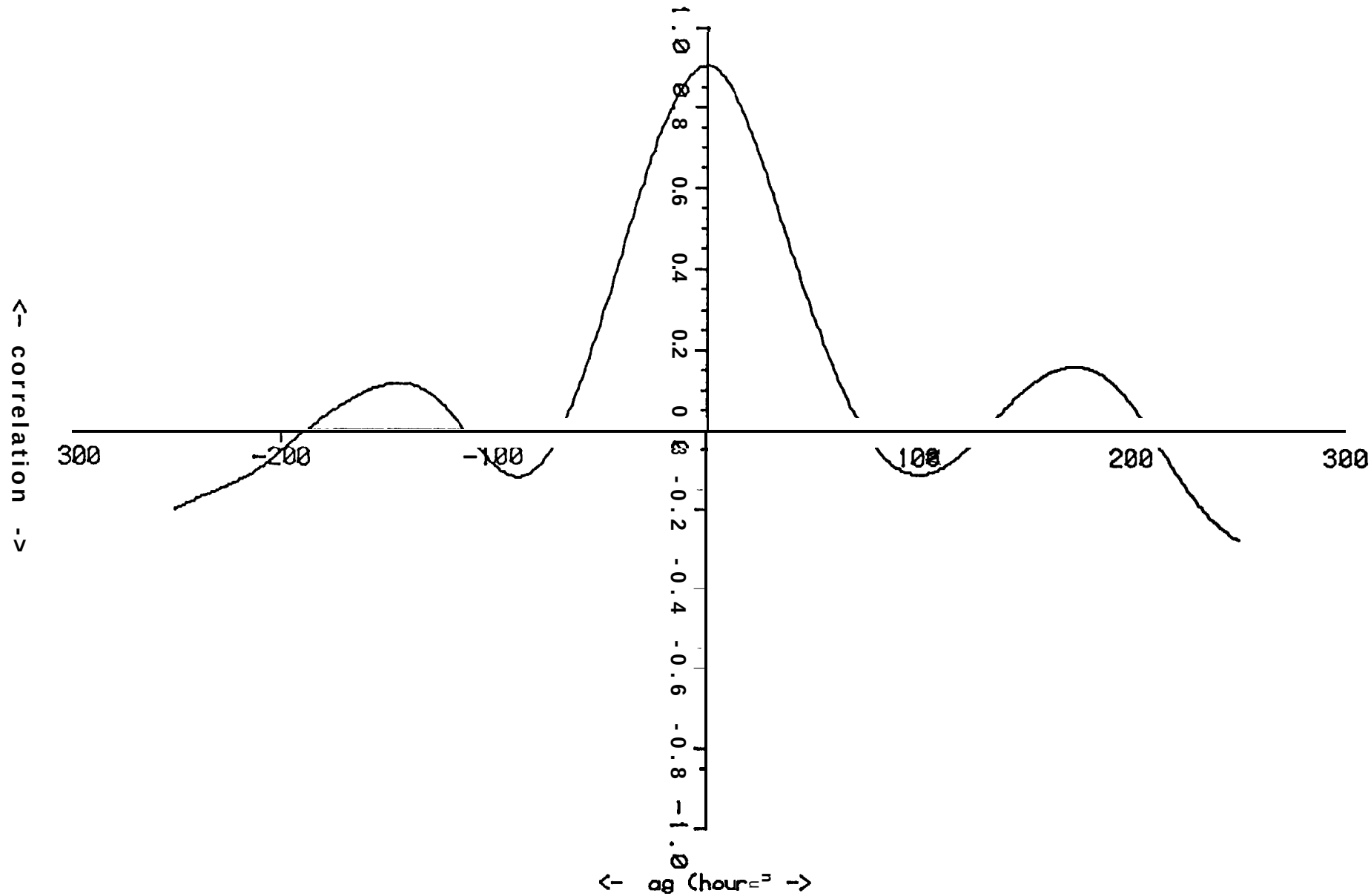


FIGURE A-15 CROSS CORRELATIONS
INSHORE BARROW DRIFT CURRENT (35.9 DEGREE COMPONENT) VS.
LAGGED INSHORE WAINWRIGHT DRIFT CURRENT (33.7 DEG. COMP.)
1251 12 AUG '98 - 175 1 SEPT 98

Pressure vs. Current

Inshore Barrow

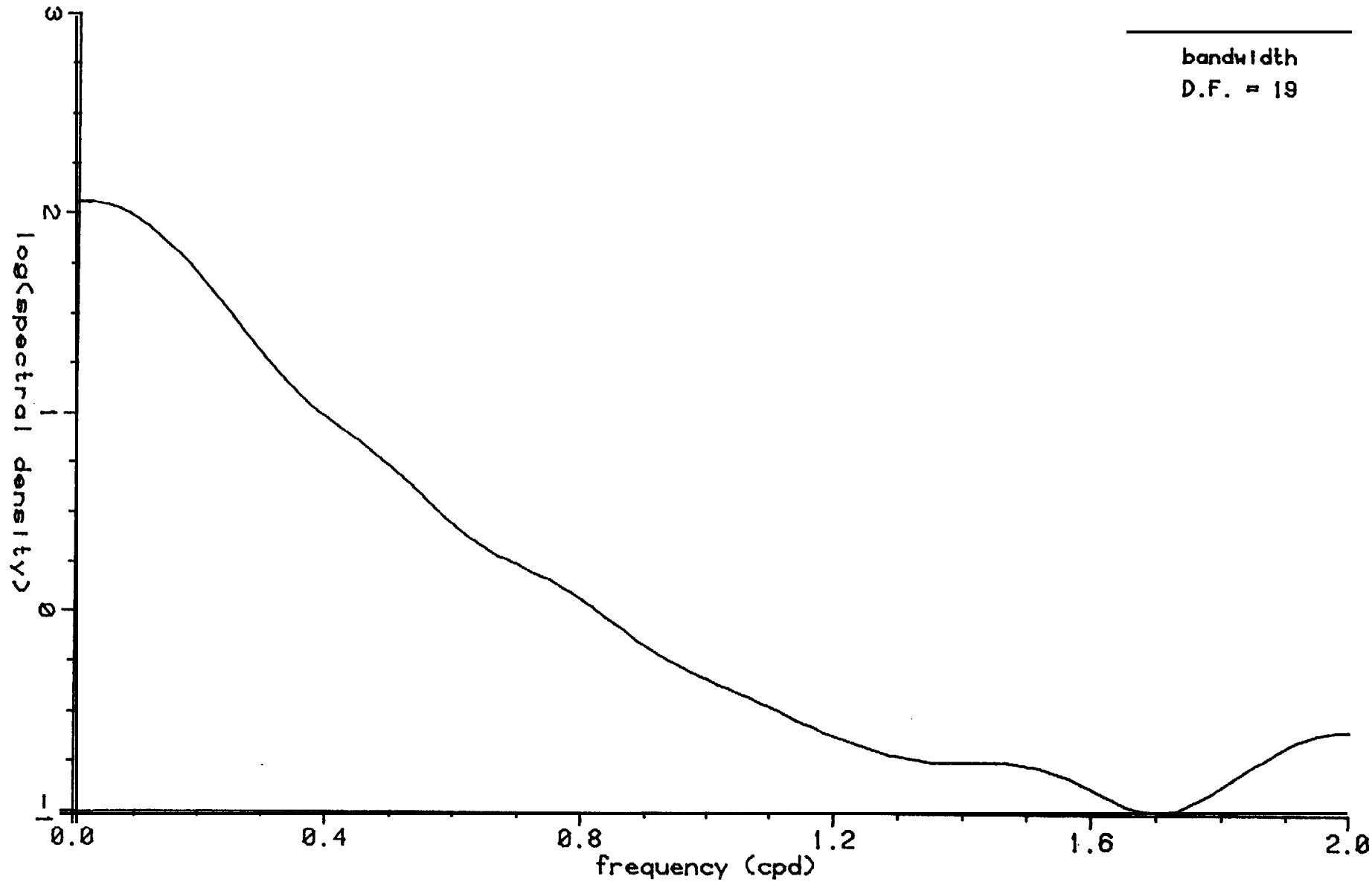


FIGURE A-16 SPECTRAL DENSITY
PT. BARROW - CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
0659 8 AUG 1981 - 1859 4 SEPT 1981

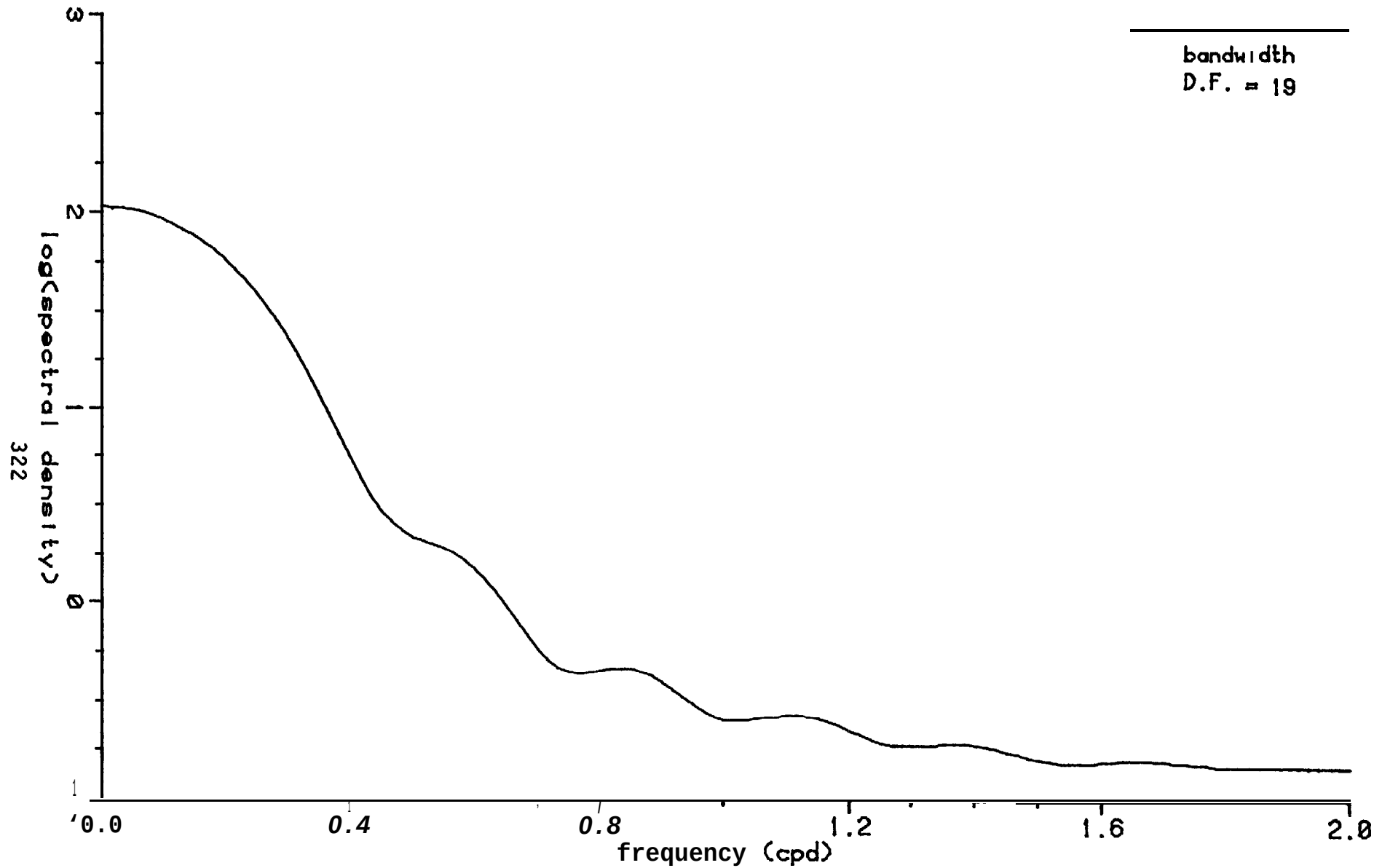


FIGURE A-17 SPECTRAL DENSITY
INSHORE BARROW <BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 1859 4 SEPT 1981

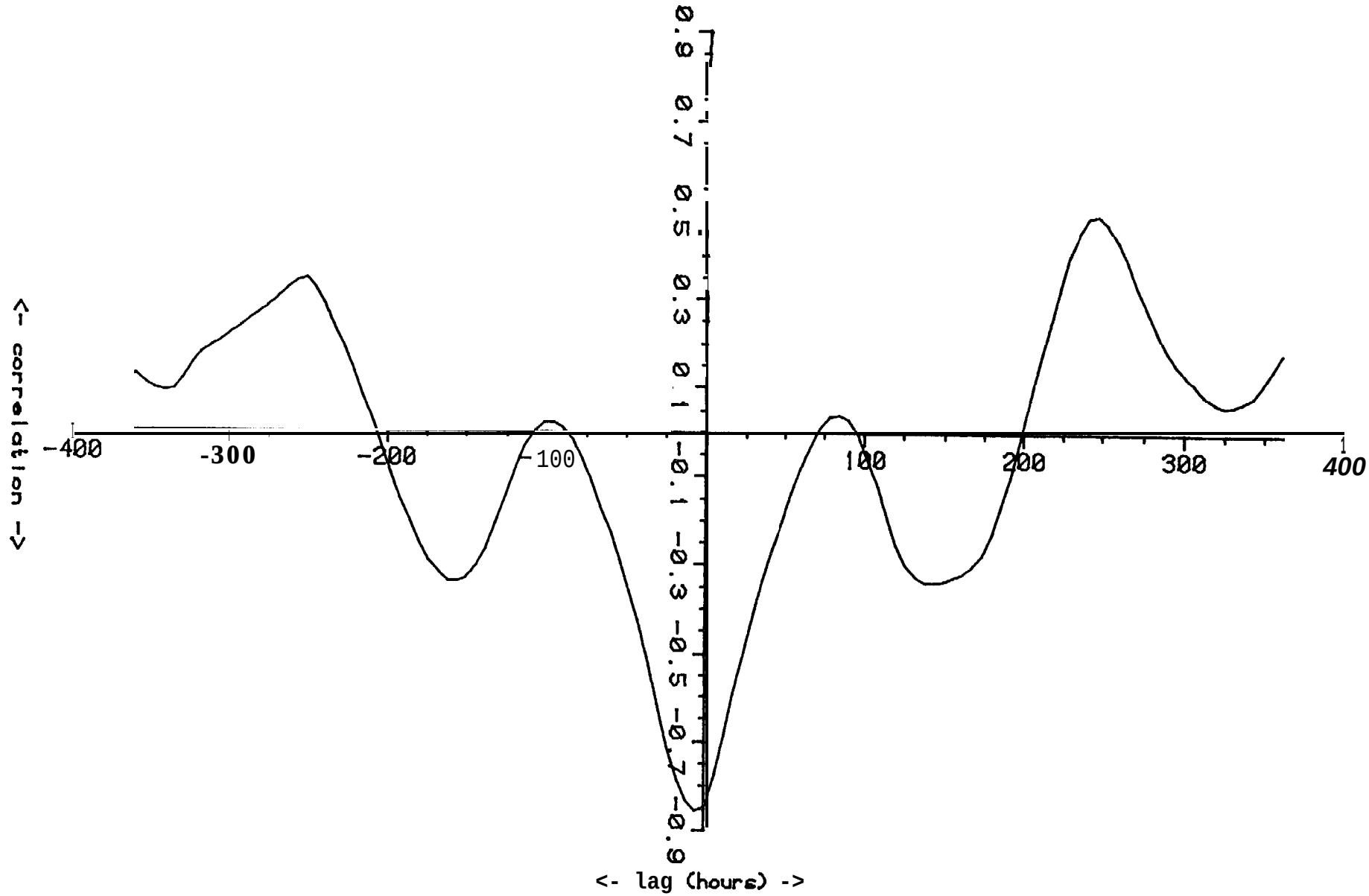


FIGURE '18 CROSS CORRELATIONS
PT. BARROW - CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
VS. LAGGED INSHORE BARROW DRIFT CURRENT (35.9 DEGREE COMP.)
0659 8 **AUG 1981** - 1859 4 SEPT 198!

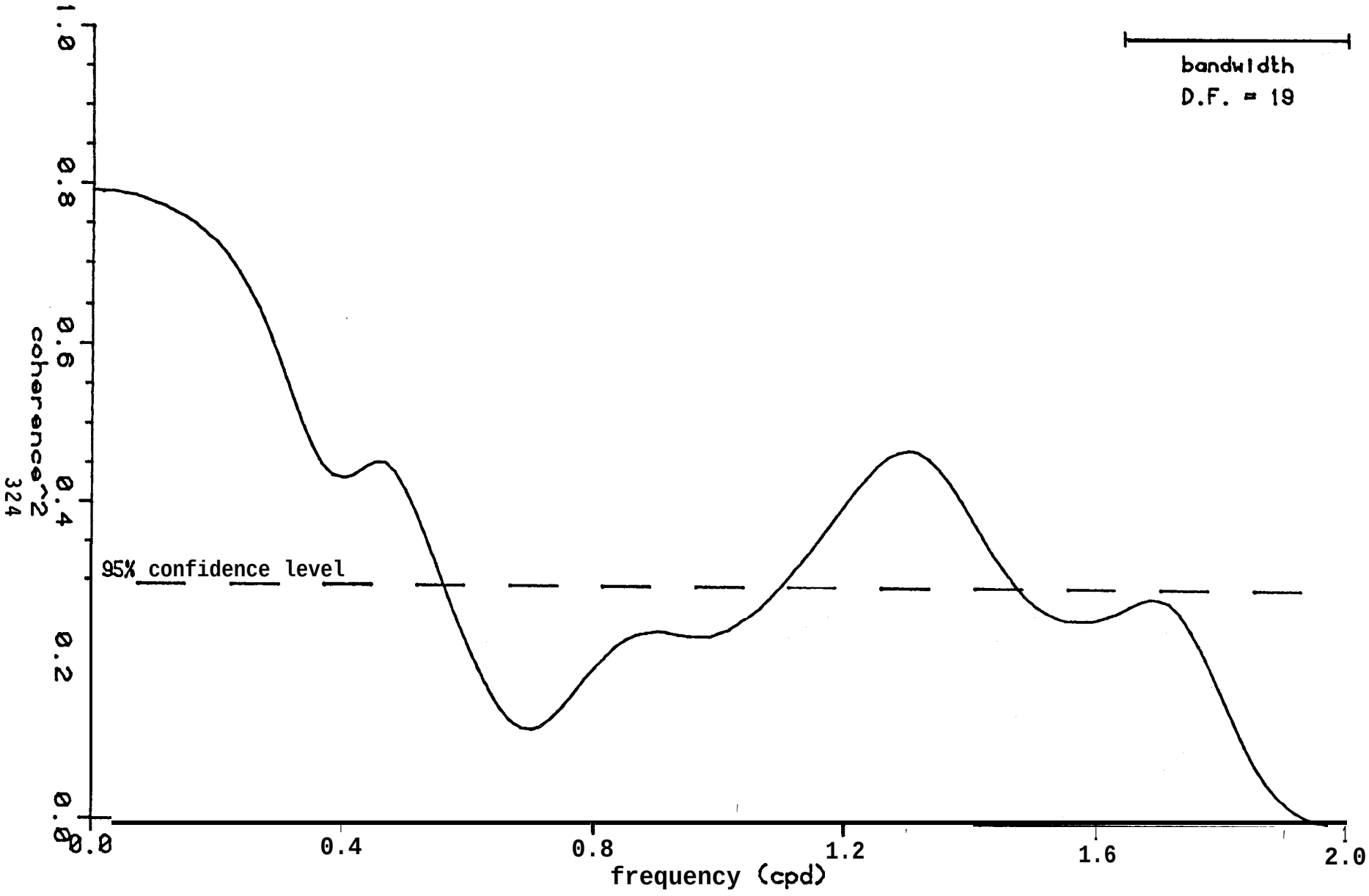


FIGURE A-19

SQUARED COHERENCE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 1859 4 SEPT 1981

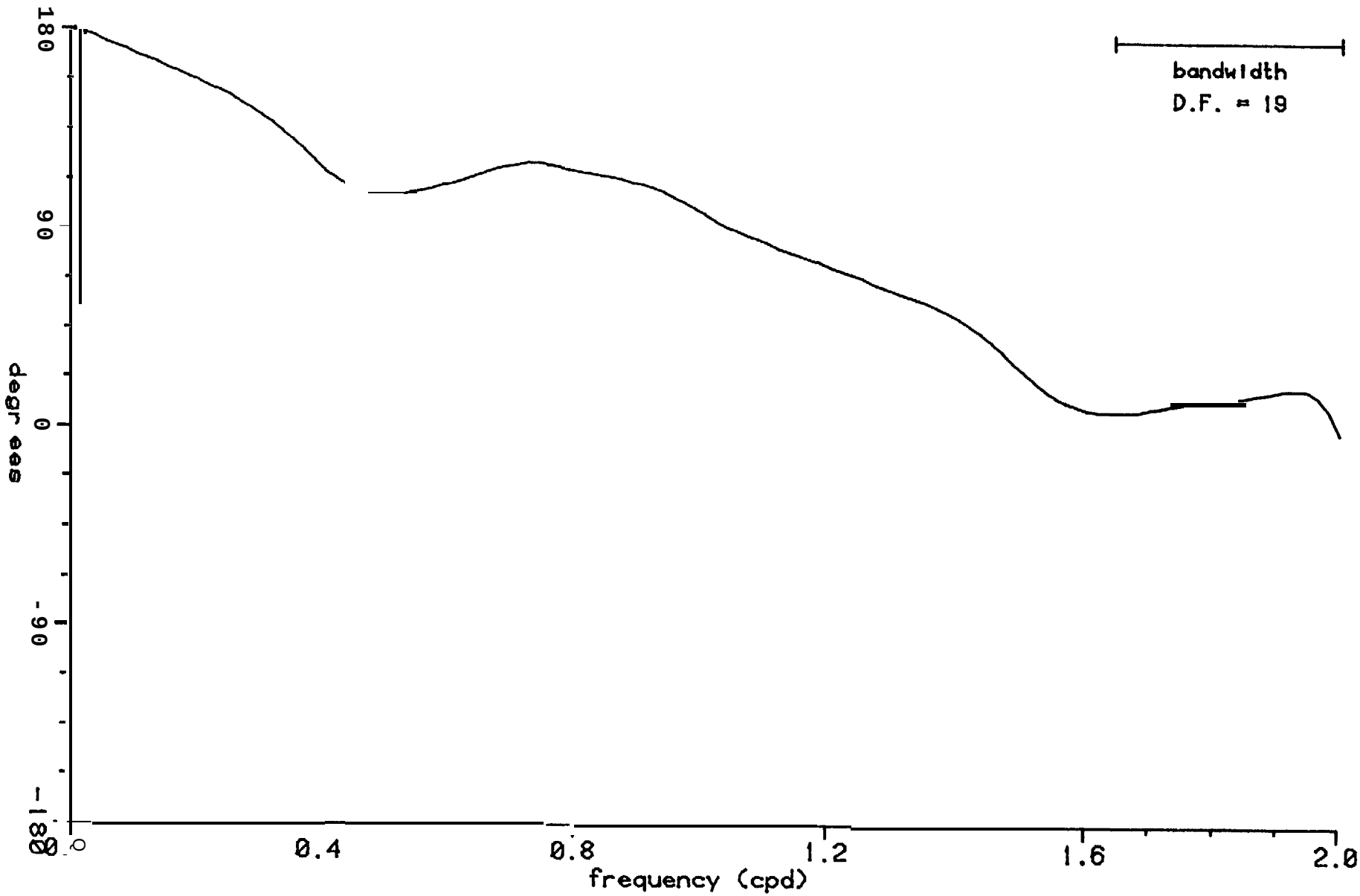


FIGURE A-20 PHASE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 1859 4 SEPT 1981

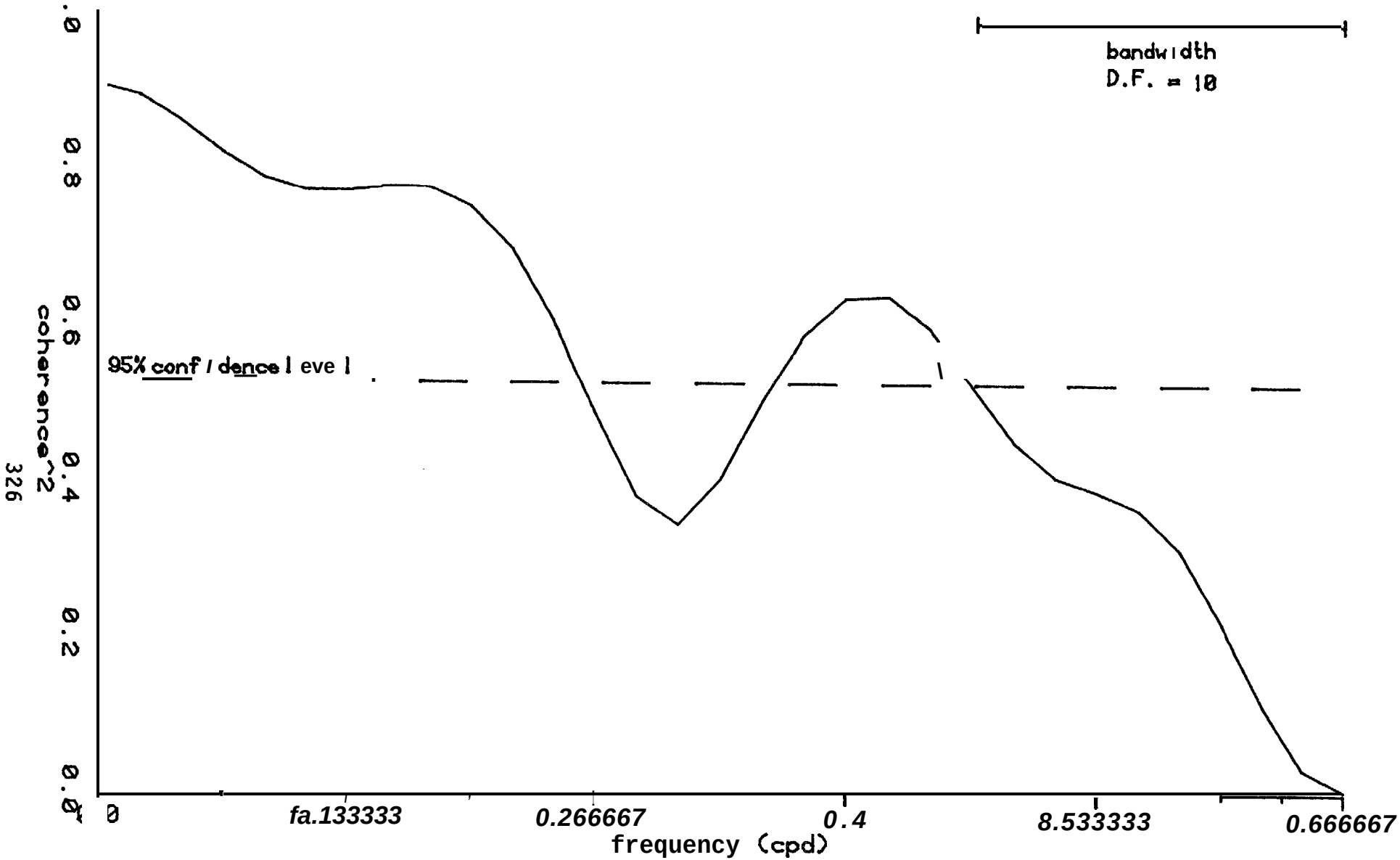


FIGURE A-21 SQUARED COHERENCE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT>
0659 8 AUG 1981 - 0659 4 SEPT 1981

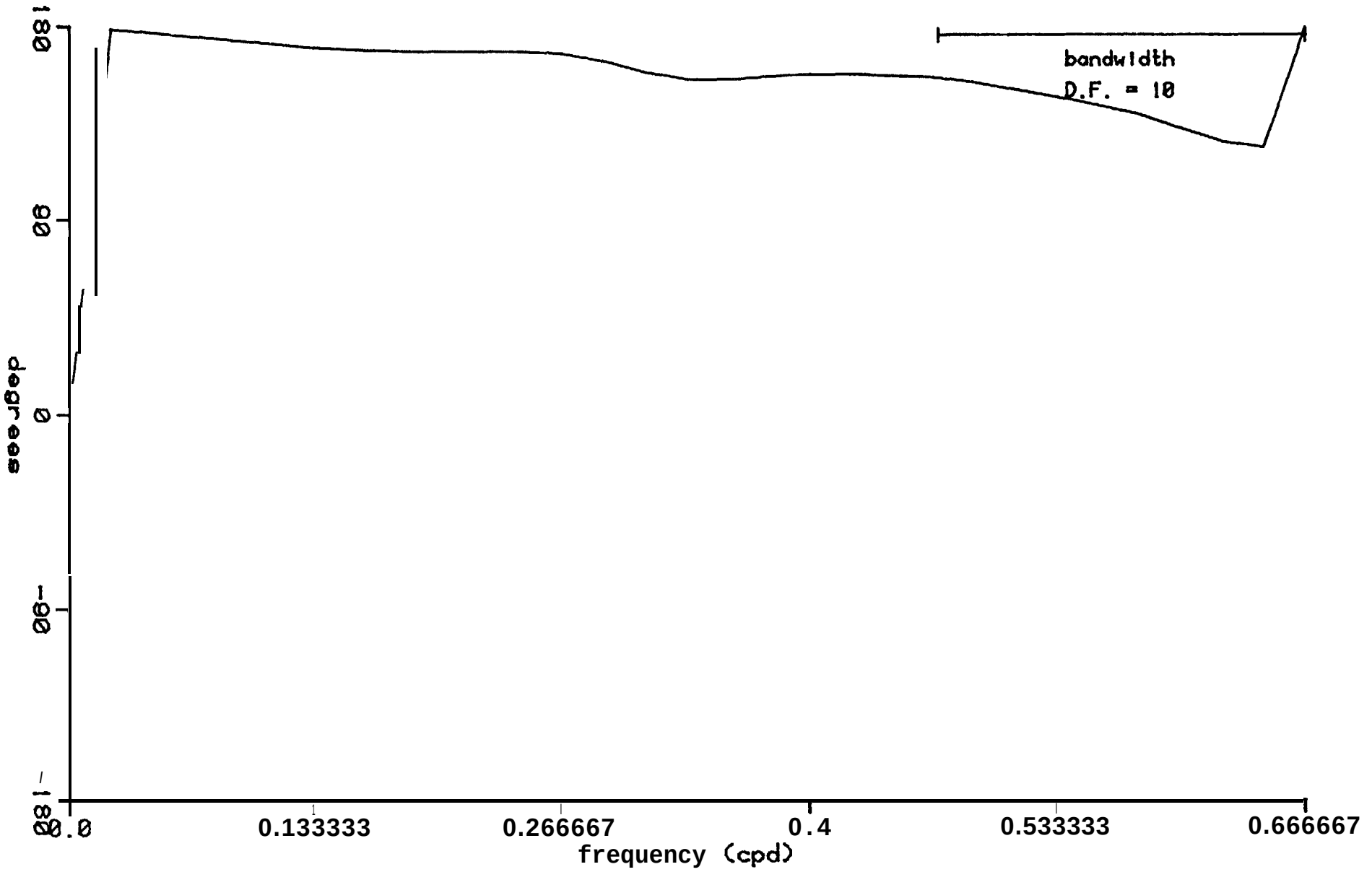


FIGURE A-22 PHASE SPECTRUM
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0659 8 AUG 1981 - 0659 4 SEPT 1981

Pressure vs. Current

Inshore Wainwright

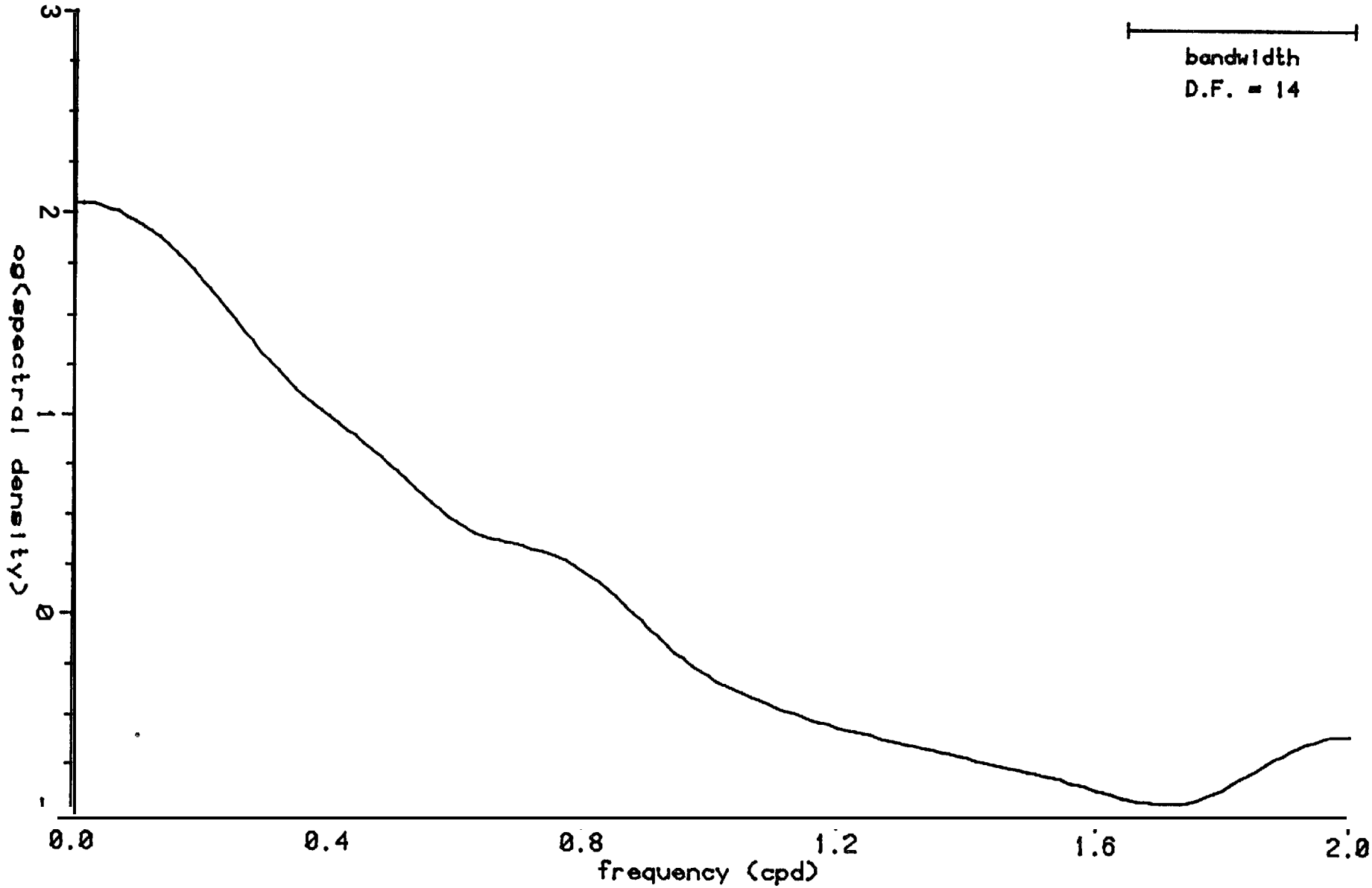


FIGURE A-23 SPECTRAL DENSITY
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
1350 12 AUG 1981 - 1350 SEPT 1981

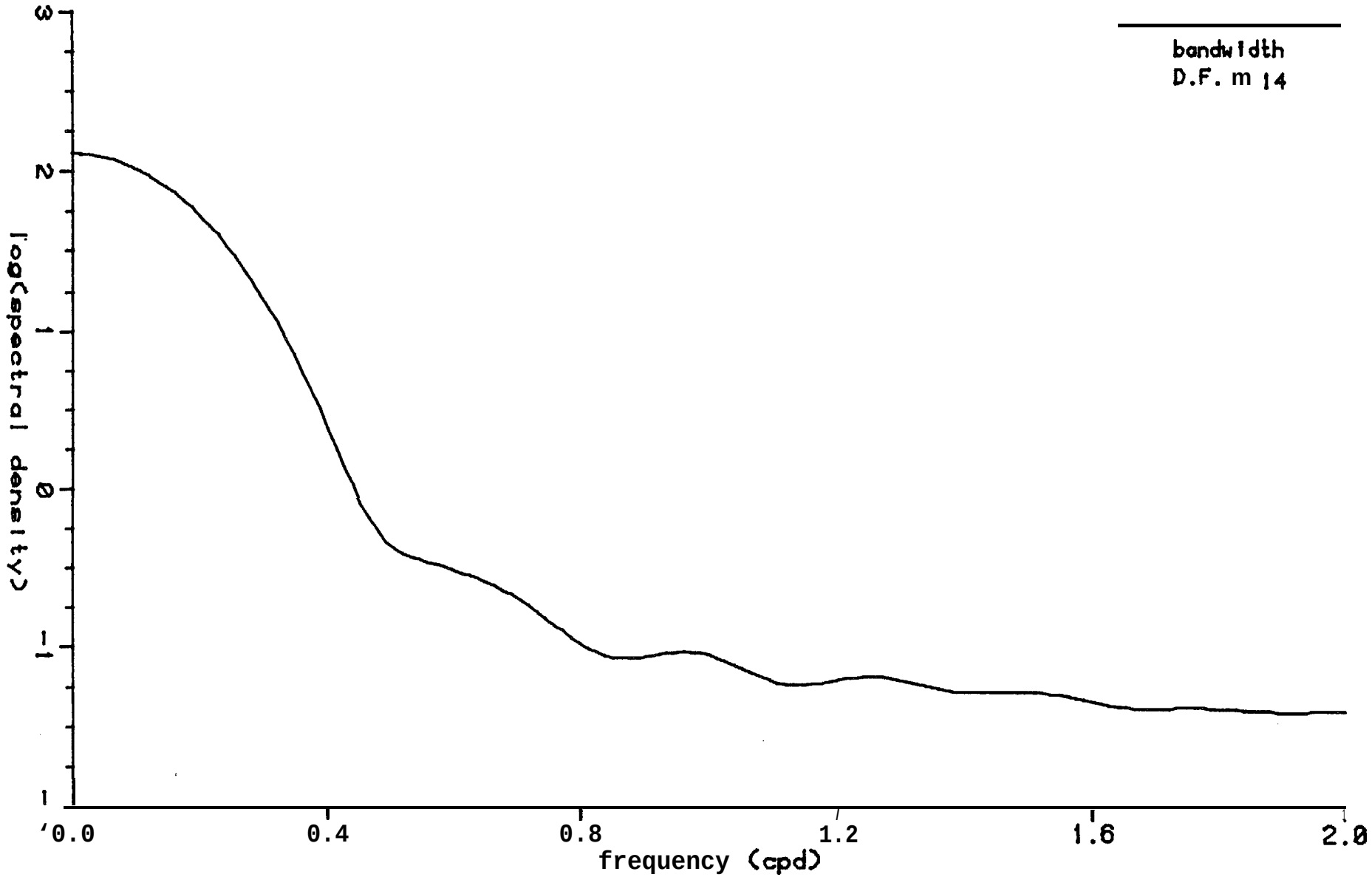


FIGURE A-24 SPECTRAL DENSITY
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT <33.7 DEGREE COMPONENT
1350 12 AUG 1981 - 13501 SEPT 1981

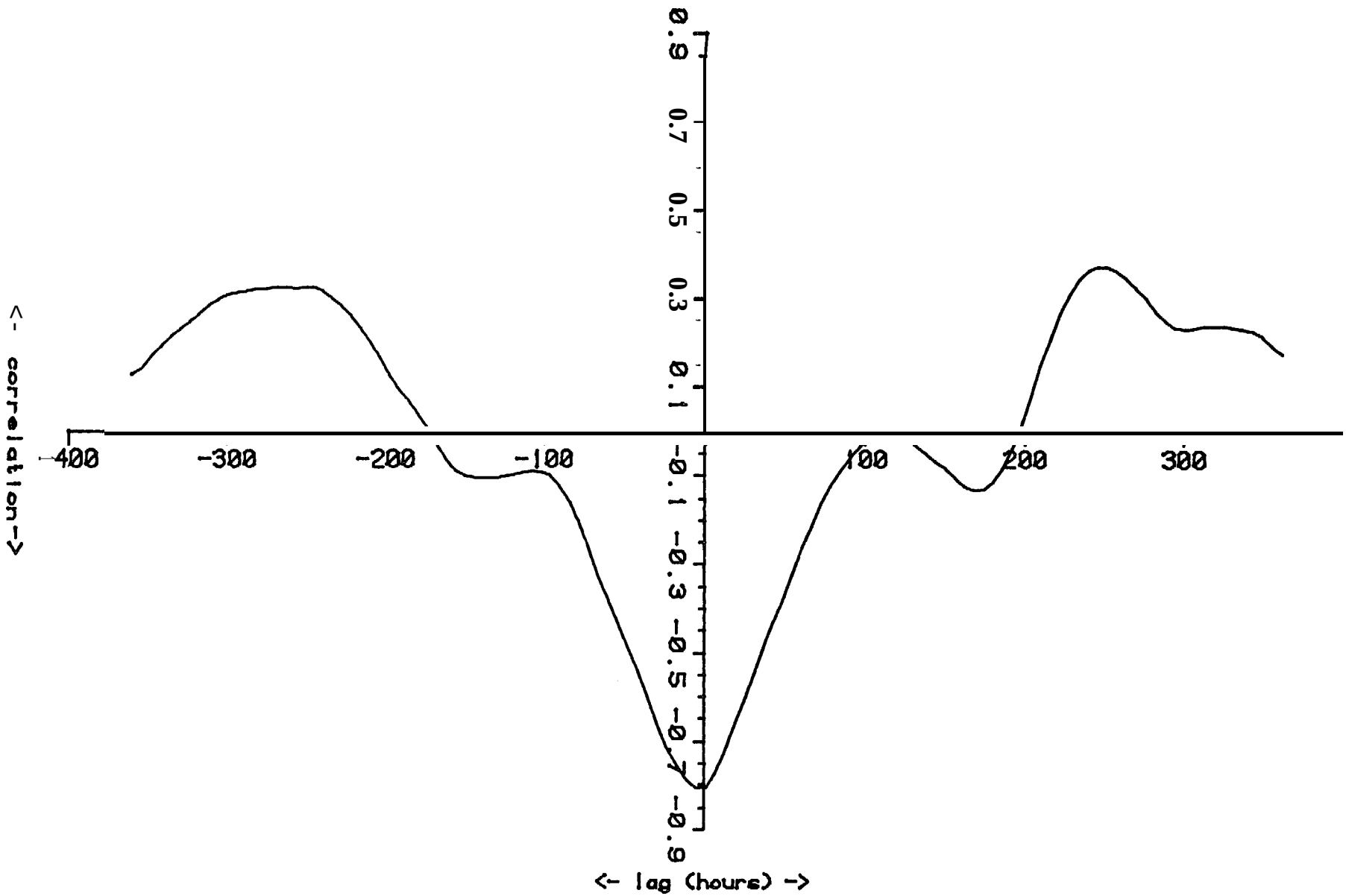


FIGURE A-25 CROSS CORRELATIONS
BARROW-LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS. LAGGED INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEG. COMP.)
1350 12 AUG 1981 - 1350 1 SEPT 1981

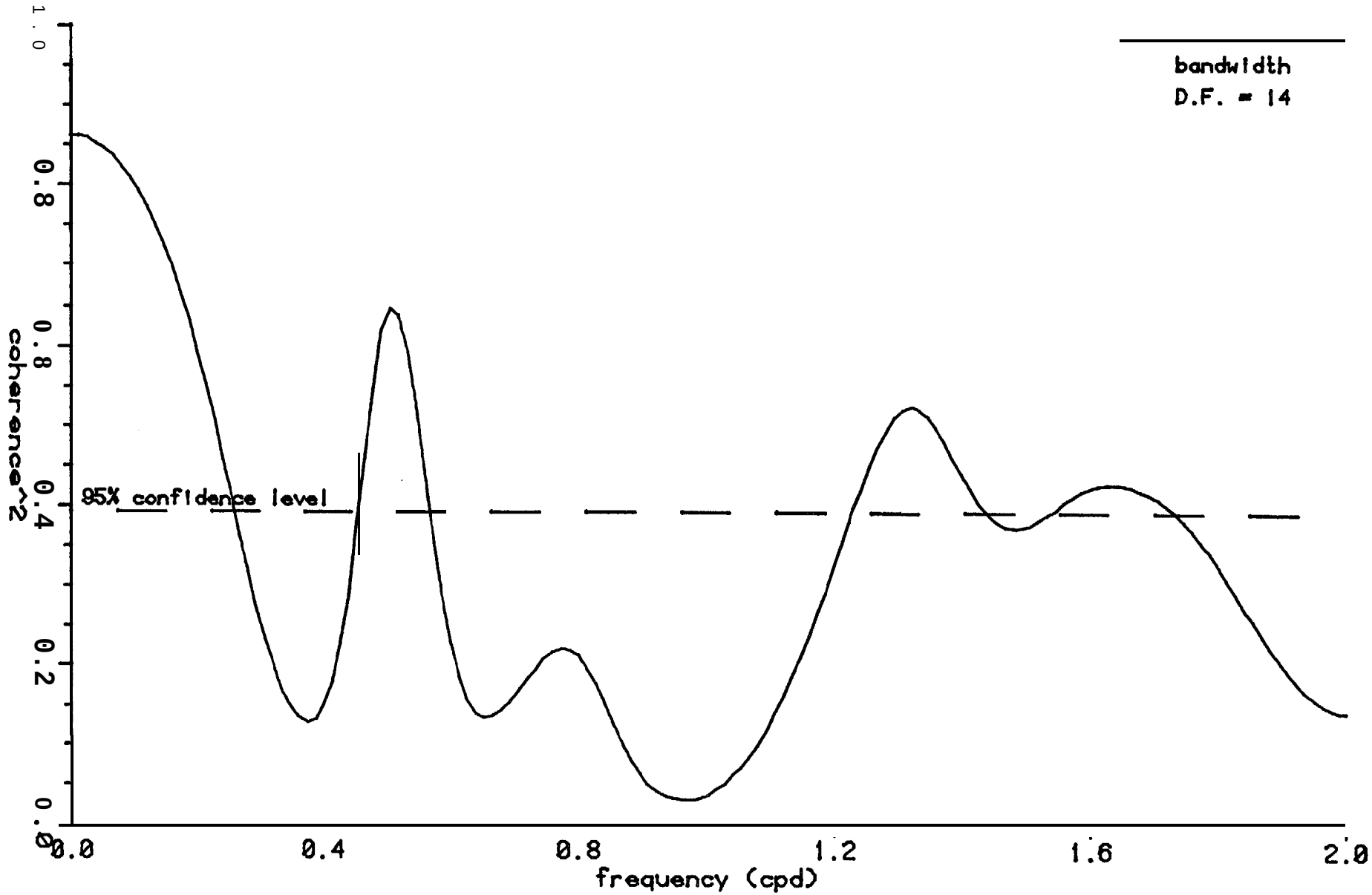


FIGURE A-26 SQUARED COHERENCE SPECTRUM
BARROW-LISBURNE PRESSURE DIFFERENCES VS. INSHORE WAINWRIGHT
(BOTTOM) DRIFT CURRENT (33.7 DEGREE COMPONENT)
1350 12 AUG 1981 - 1350 1 SEPT 1981

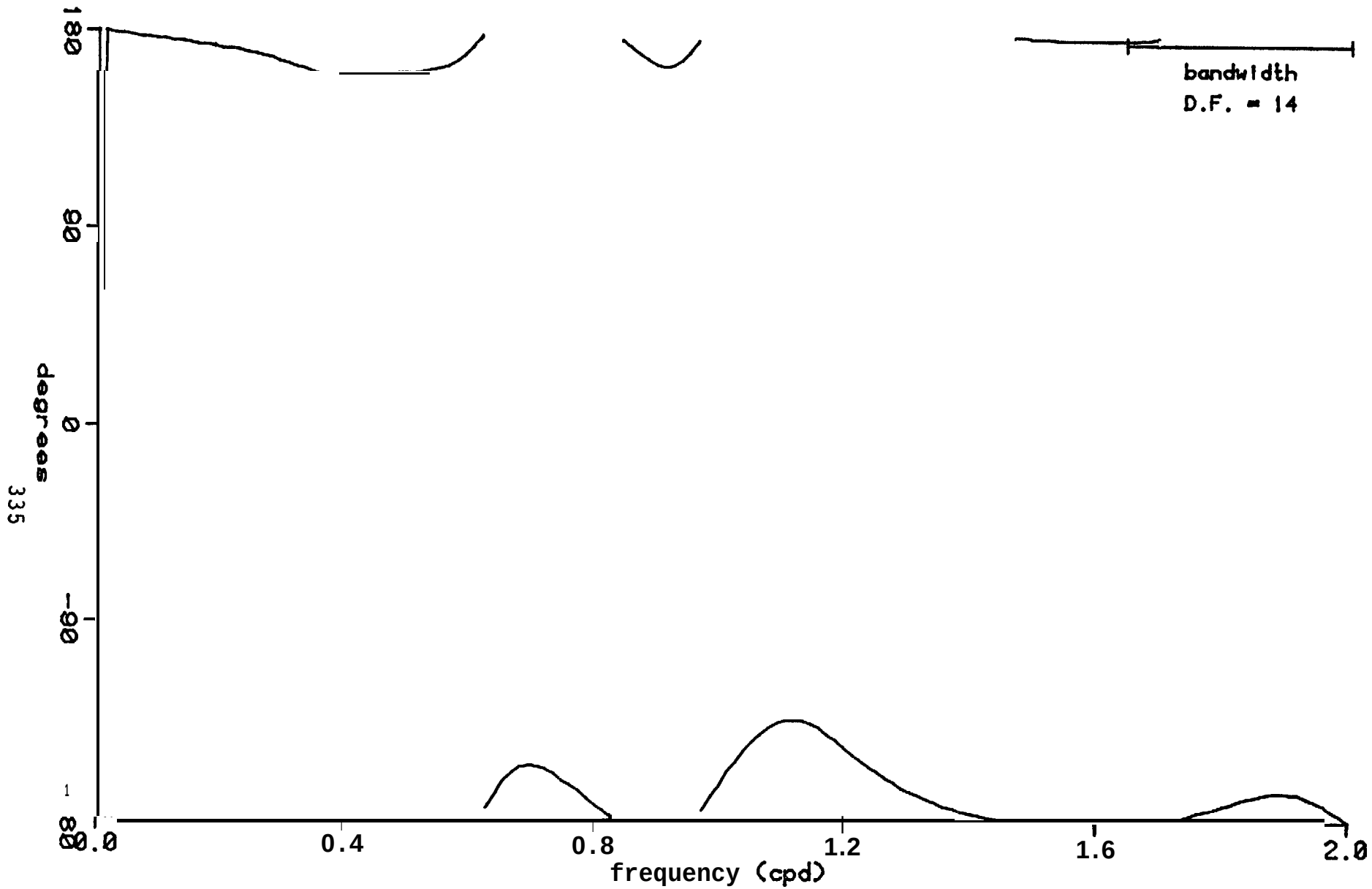


FIGURE A-27 PHASE SPECTRUM
BARROW-LISBURNE PRESSURE DIFFERENCES VS. INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEGREE COMPONENT)
1350 12 AUG 1981 - 1350 1 SEPT 1981

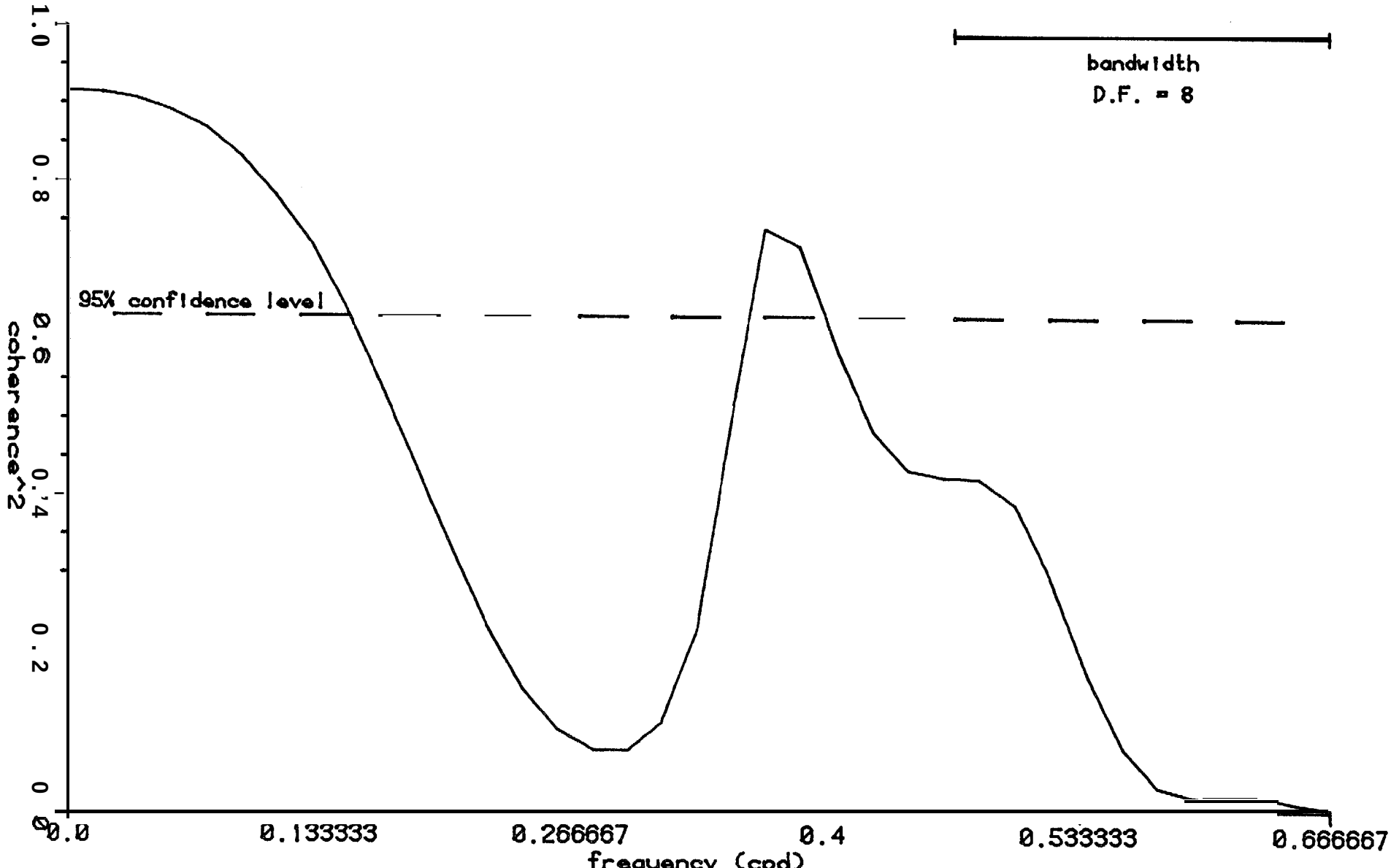


FIGURE A-28 SQUARED COHERENCE SPECTRUM
BARROW-LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEGREE COMP.)
1350 12 AUG 1981 - 0150 1 SEPT 1981

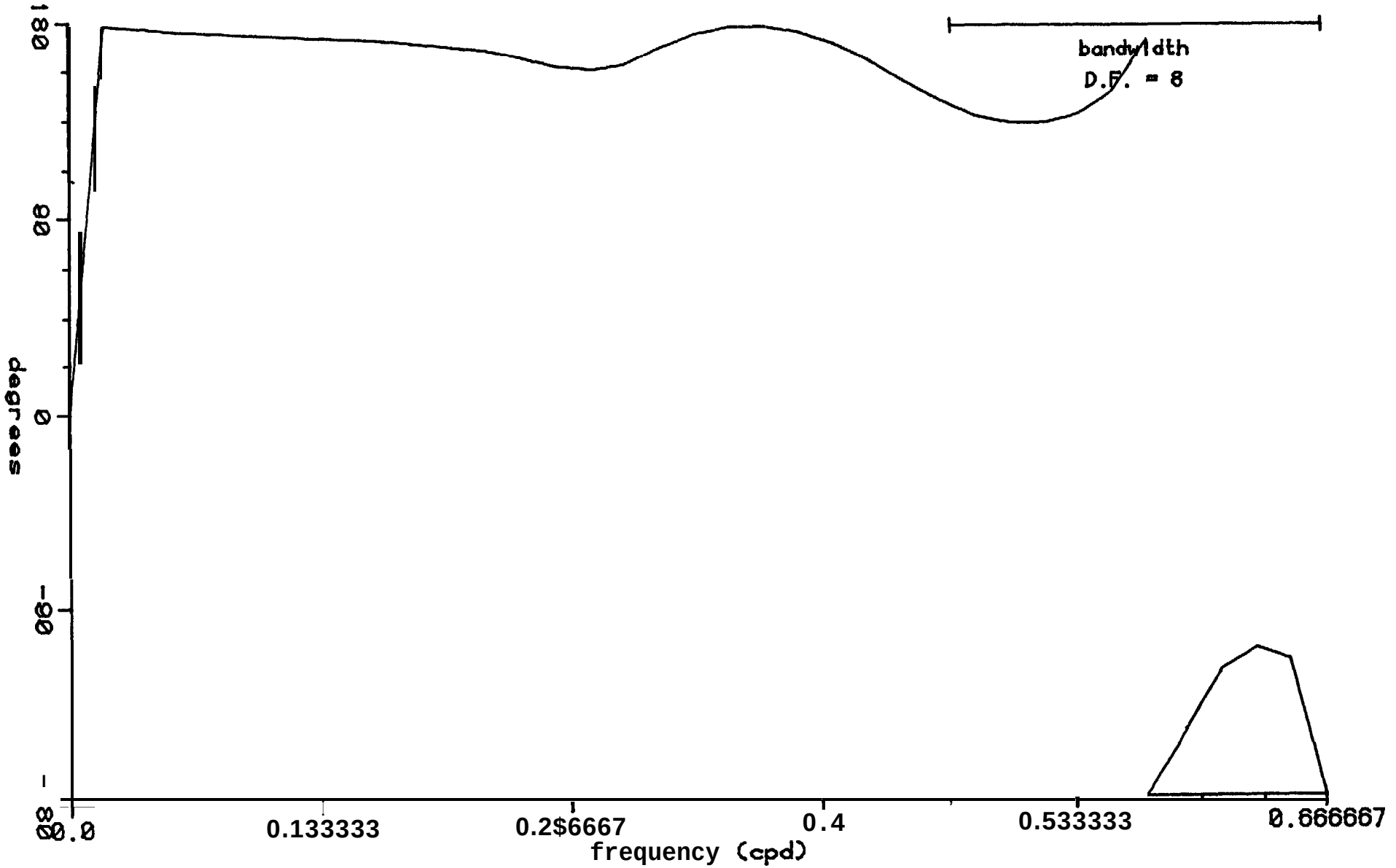


FIGURE A-29 PHASE SPECTRUM
BARROW-LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 DEGREE COMP.)
1350 12 AUG 1981 - 0150 1 SEPT 1981

Wind versus Current

Inshore Barrow

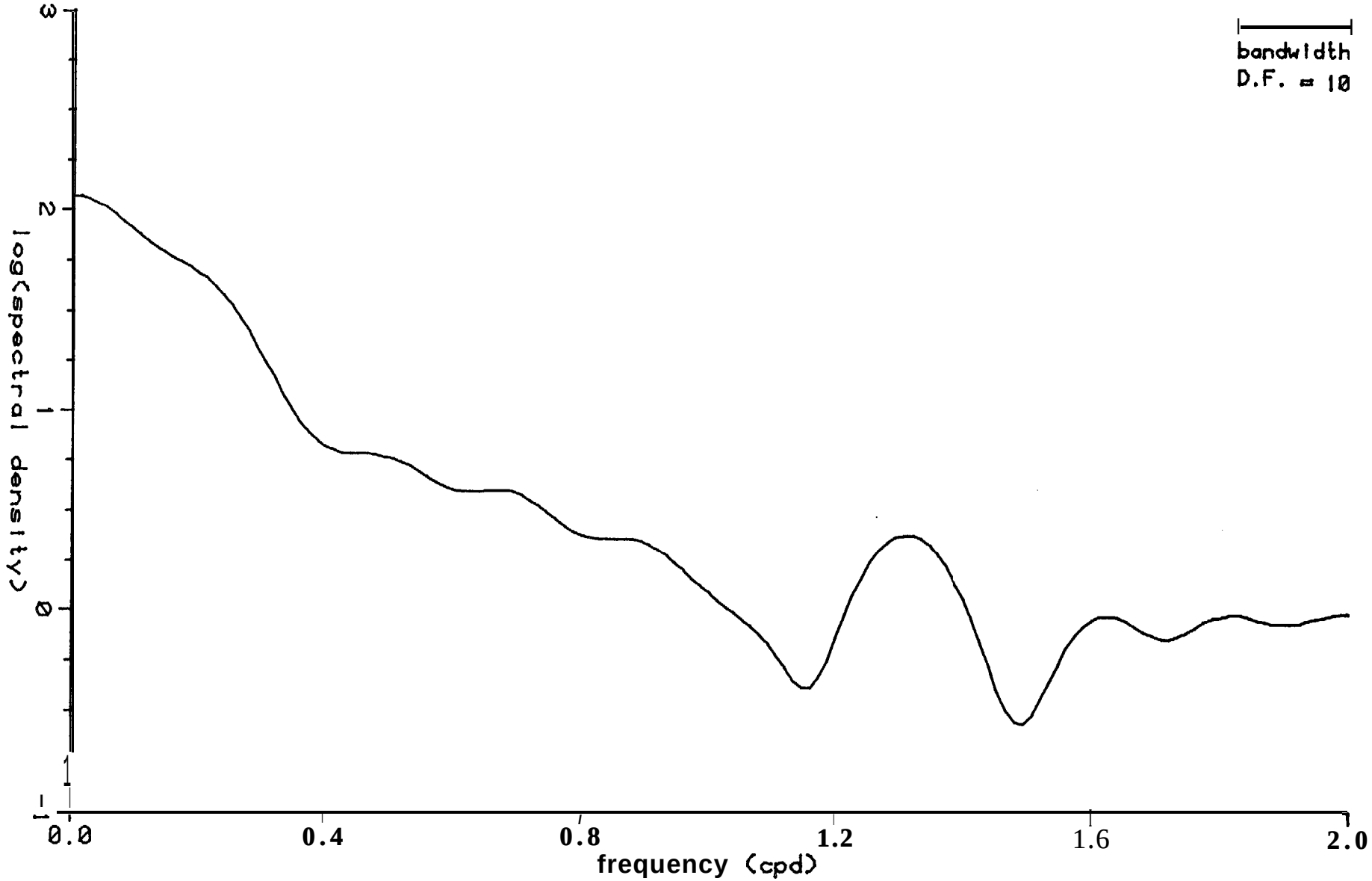


FIGURE A-30 SPECTRAL DENSITY
PT. BARROW WIND (35.9 DEGREE COMPONENT)
0700 8 AUG 1981 -1300 6 SEPT 1981

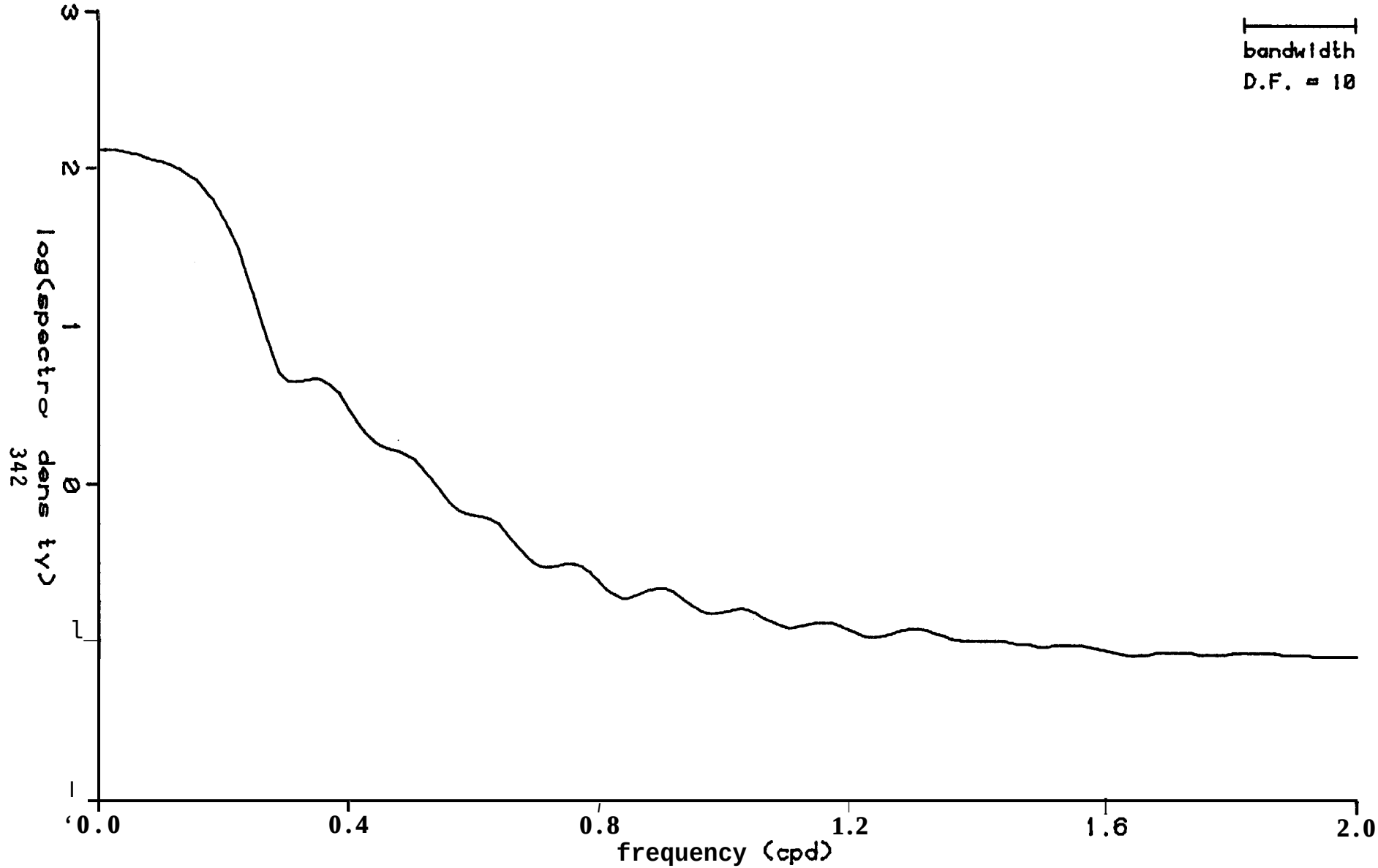


FIGURE A-31 SPECTRAL DENSITY
INSHORE BARROW <BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0700 8 AUG 1981 - 1300 6 SEPT 1981

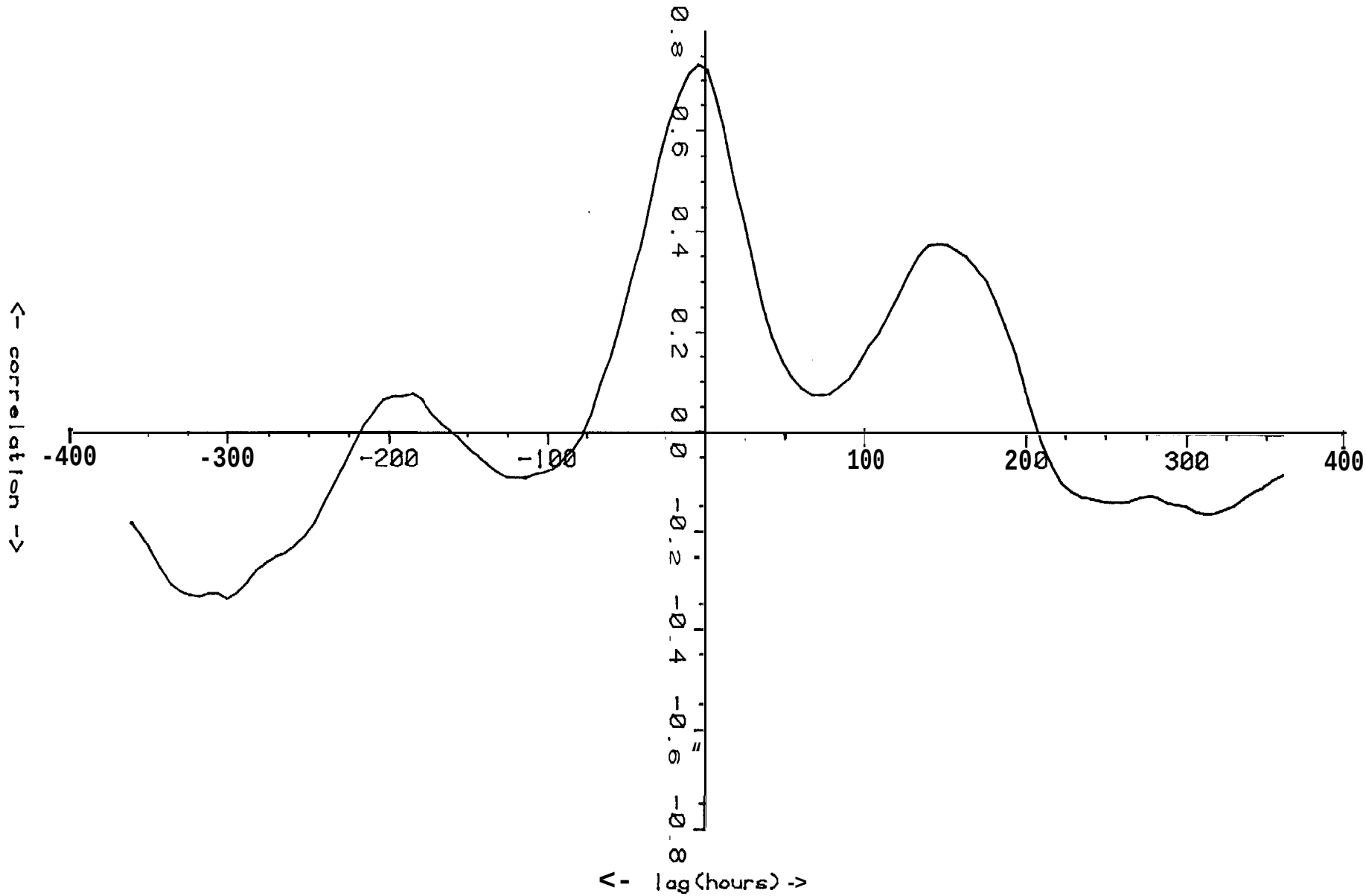


FIGURE A-32 CROSS CORRELATIONS
PT. BARROW WIND (35.9 DEGREE COMPONENT> VS. LAGGED INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0700 8 AUG 1981 - 1300 6 SEPT 1981

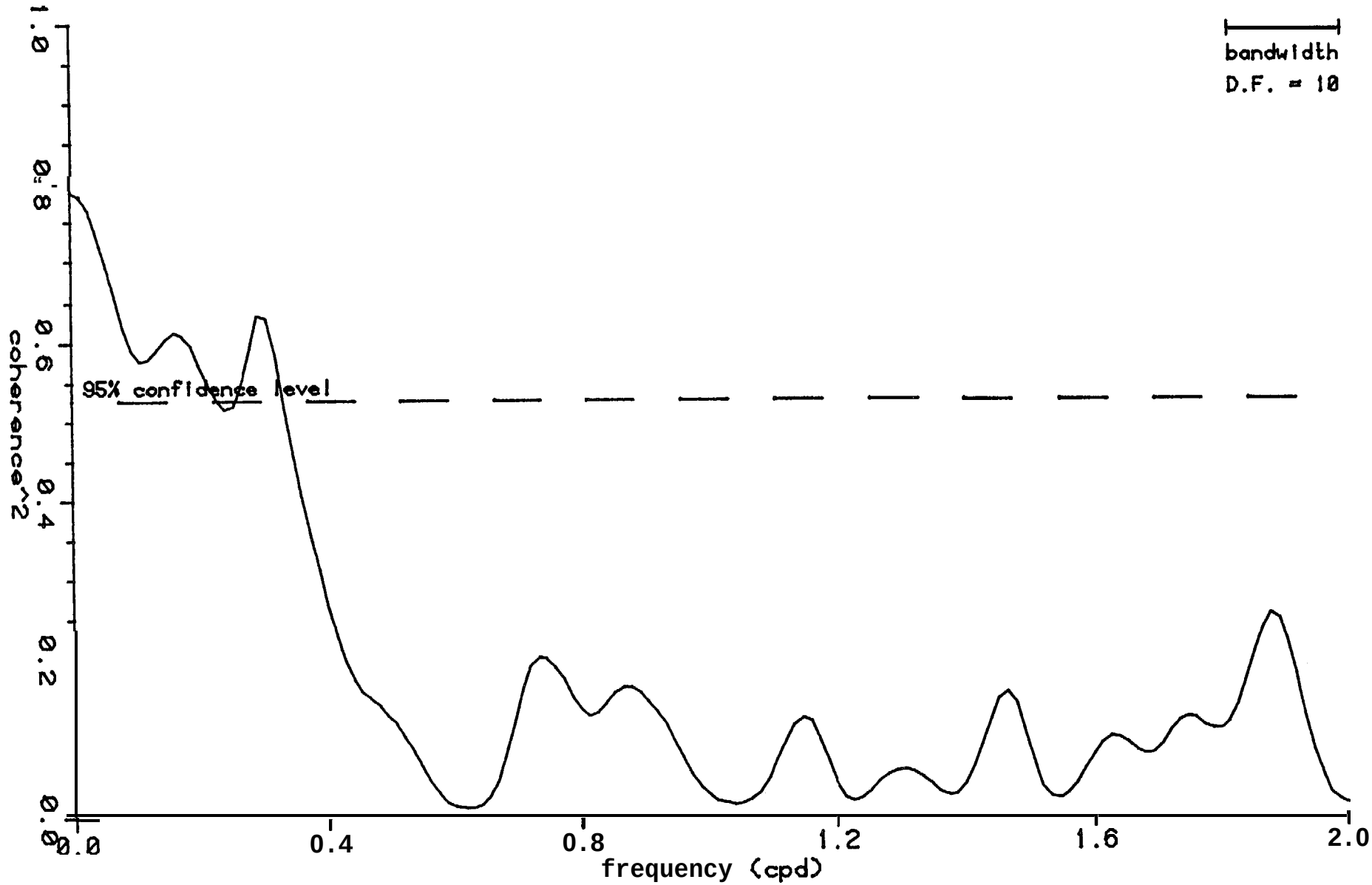


FIGURE A-33 SQUARED COHERENCE SPECTRUM
PT. BARROW WIND (35.9 DEGREE COMPONENT) VS. INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0700 8 AUG 1981 - 1300 6 SEPT 1981

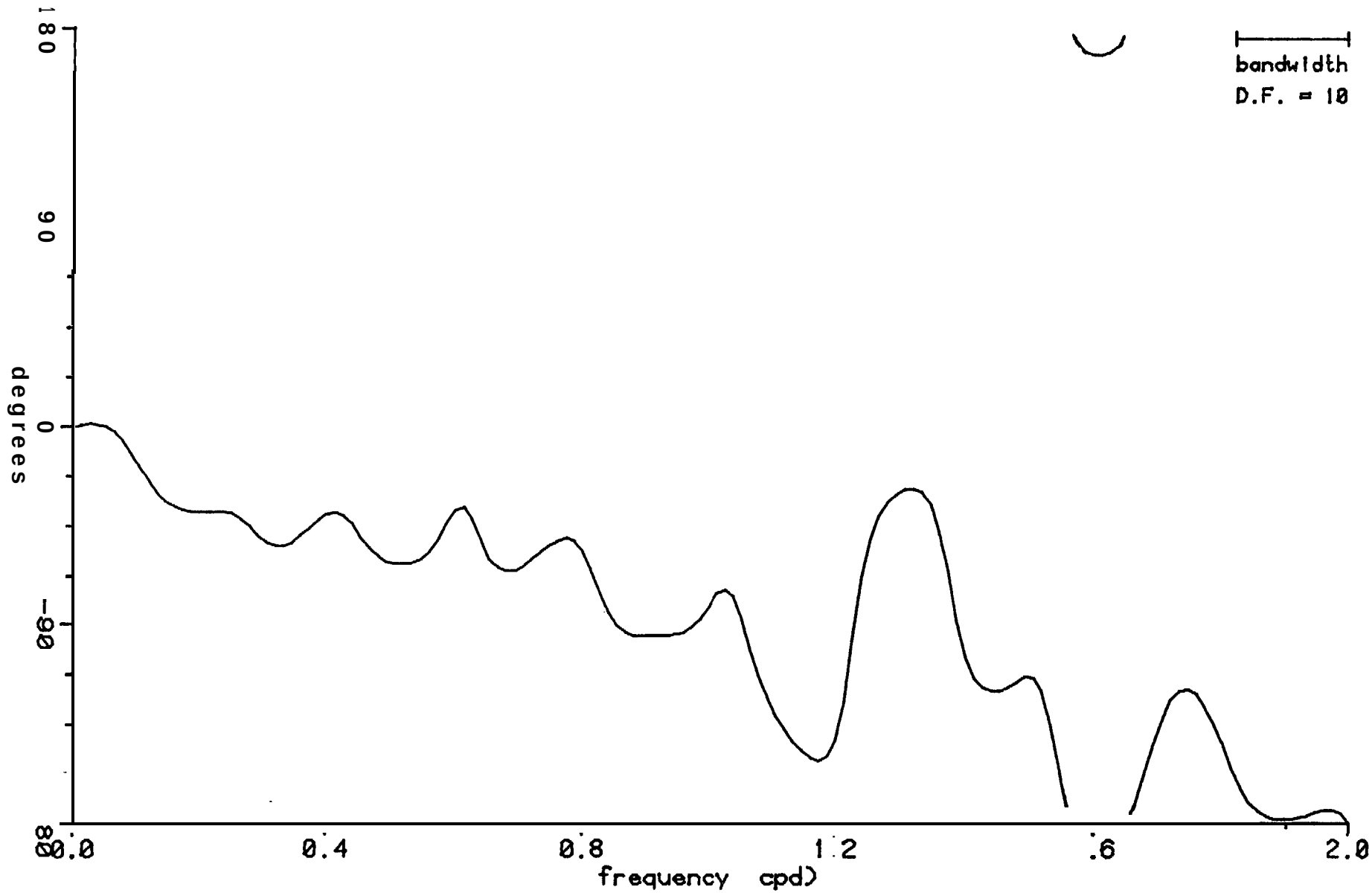


FIGURE A-34 PHASE SPECTRUM
PT. BARROW WIND (35.9 DEGREE COMPONENT) VS. INSHORE BARROW (BOTTOM) DRIFT CURRENT 35.9 DEGREE COMPONENT)
0700 8 AUG 198 - 300 6 SEPT 98

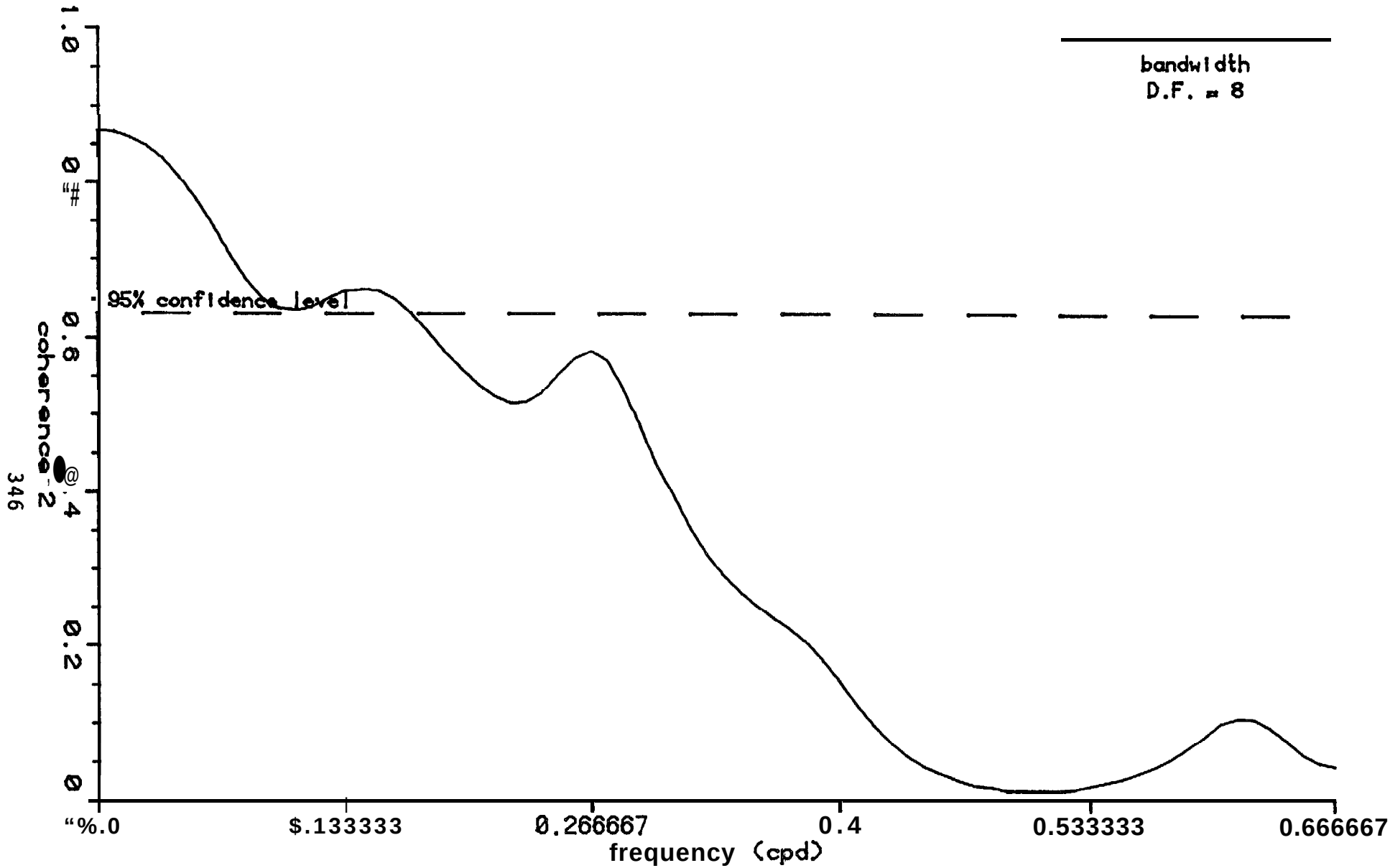


FIGURE A-35 SQUARED COHERENCE SPECTRUM
PT. BARROW WIND (35.9 DEGREE COMPONENT) VS. INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
07008 AUG 1981 - 13006 SEPT 1981

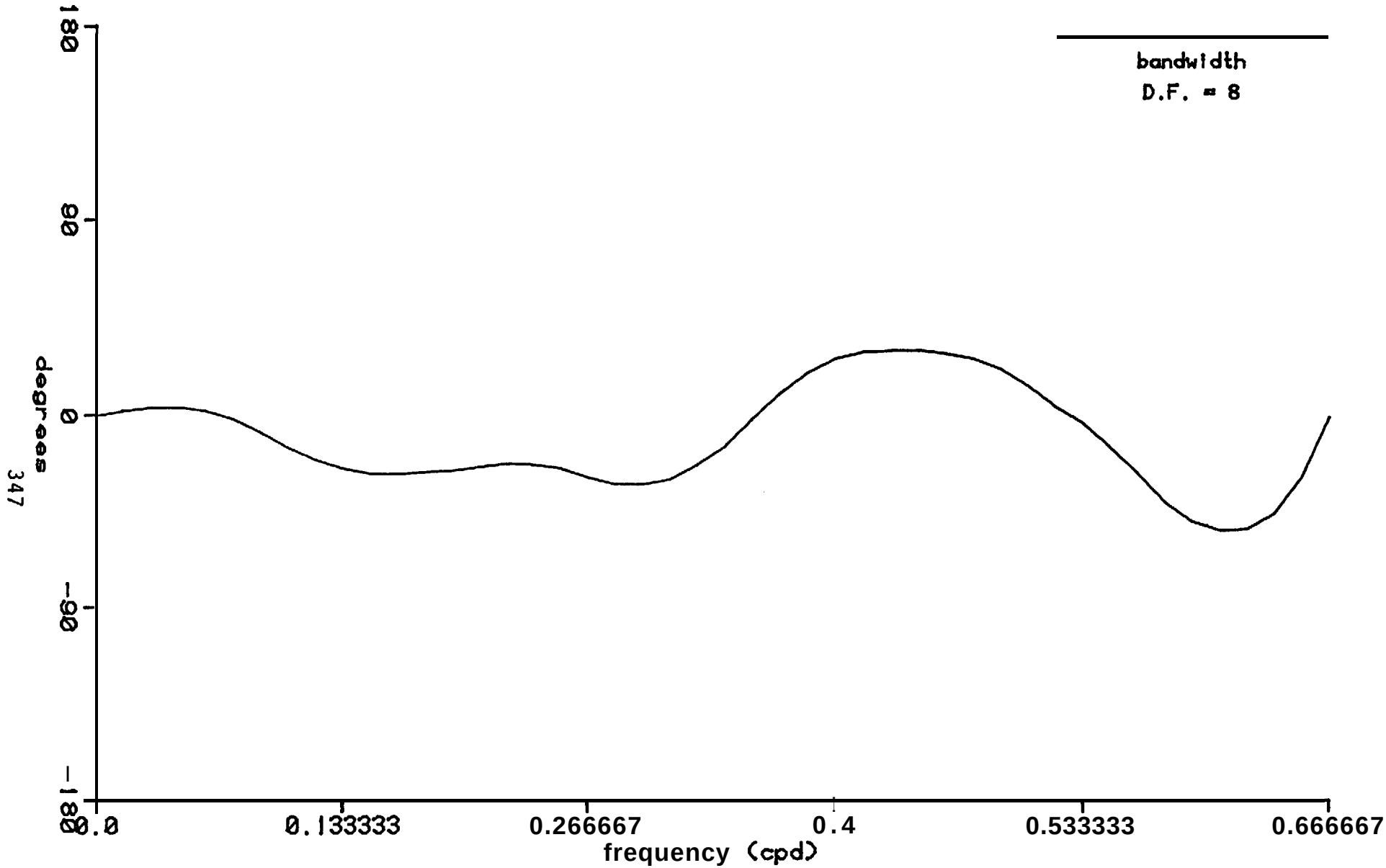


FIGURE A-36 PHASE SPECTRUM
PT. BARROW WIND (35.9 DEGREE COMPONENT) VS. INSHORE BARROW (BOTTOM) DRIFT CURRENT (35.9 DEGREE COMPONENT)
0700 8 AUG 1981 - 1300 6 SEPT 1981

Wind vs. Current

Inshore Wainwright

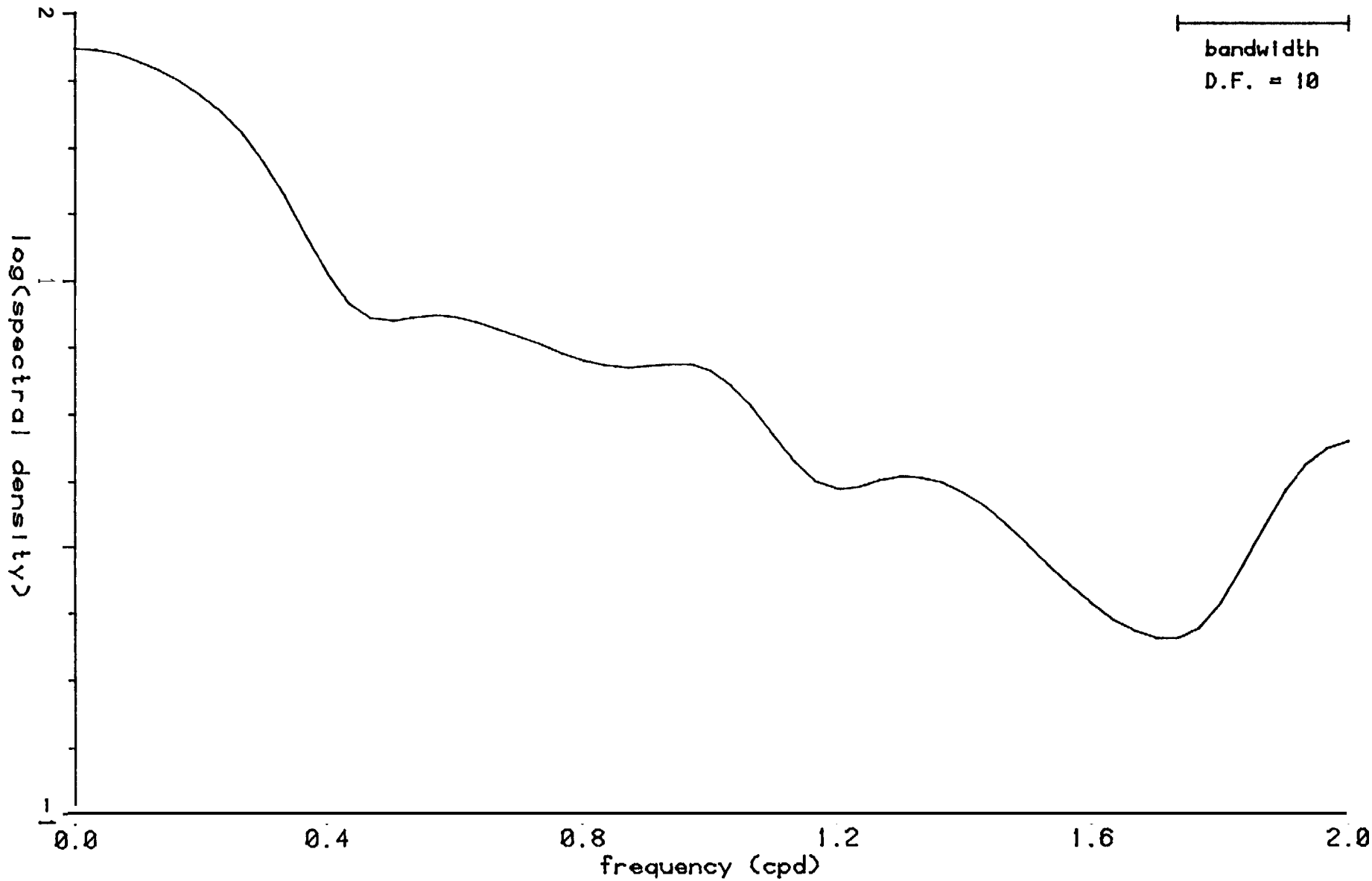


FIGURE A-37 SPECTRAL DENSITY
WAINWRIGHT WIND (33.7 DEGREE COMPONENT)
75 2 AUG 98 - 75 SEPT 198

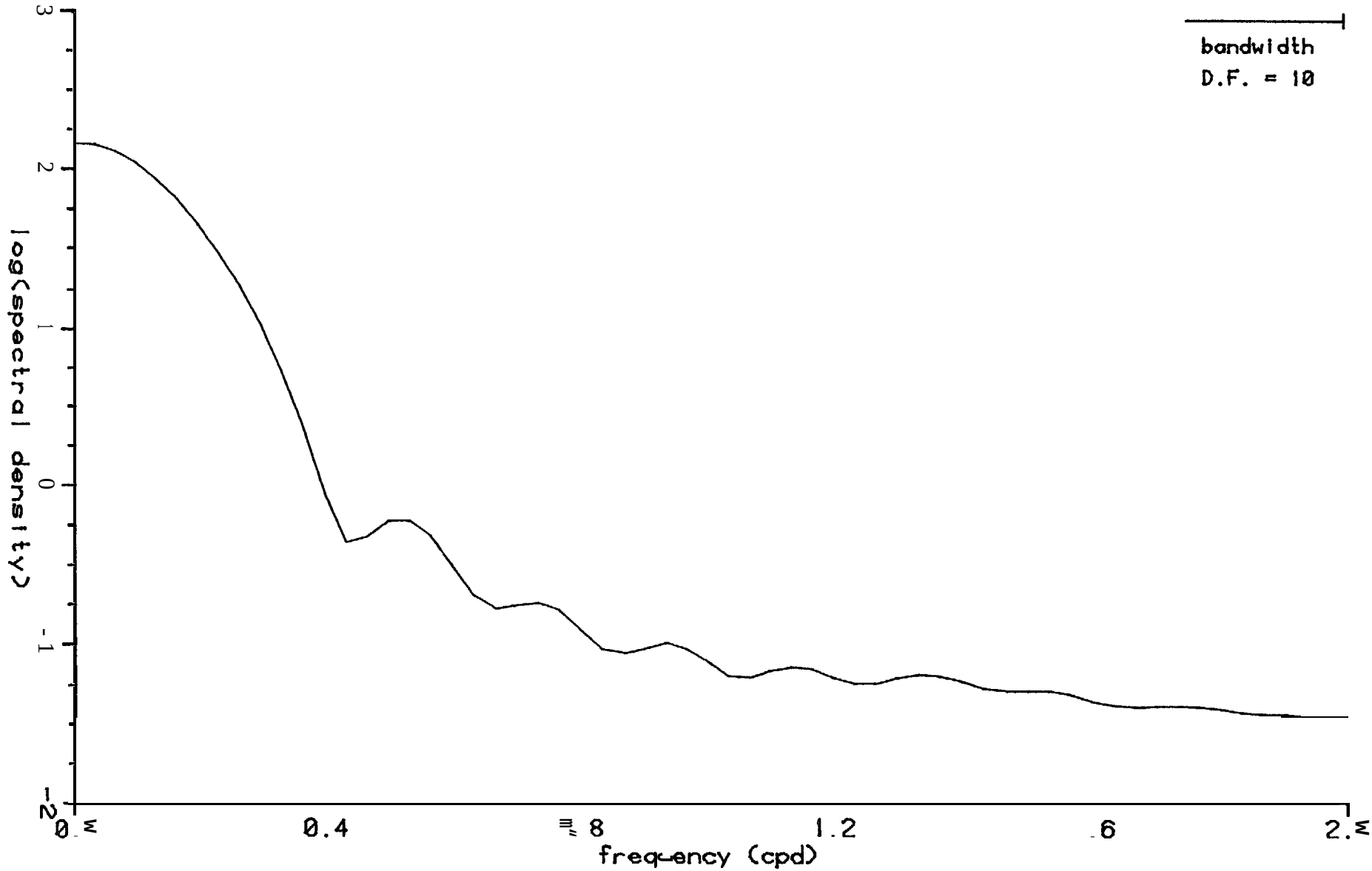


FIGURE A-38 SPECTRAL DENSITY
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
(33.7 DEGREES COMPONENT)
1751 12 AUG 1981 - 1751 1 SEPT 1981

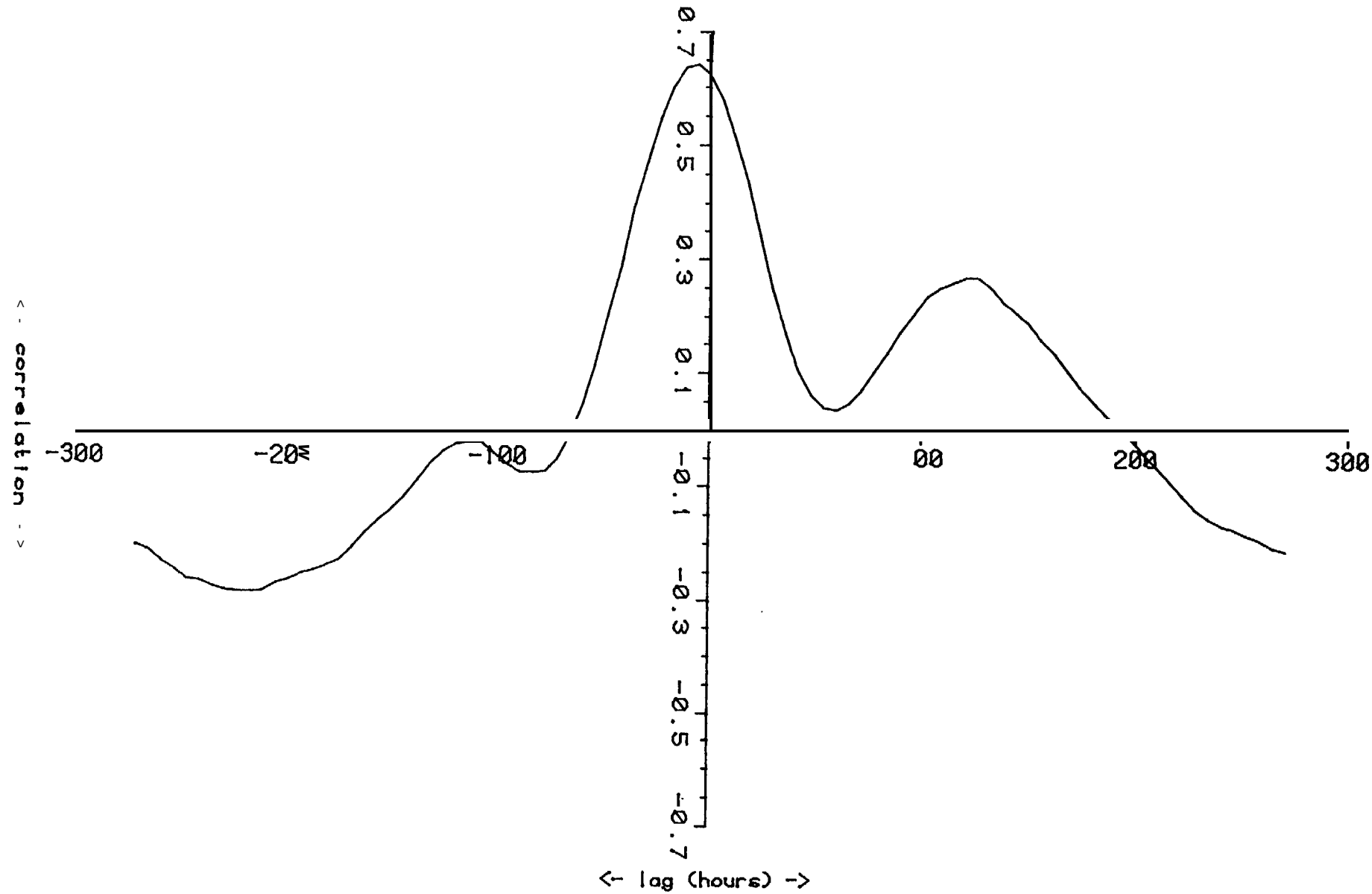


FIGURE A-39 CROSS CORRELATIONS
WAINWRIGHT WIND (33.7 DEGREE COMPONENT) VS. LAGGED INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT (33.7 D.)
1751 12 AUG 1981 - 1751 1 SEPT 1981

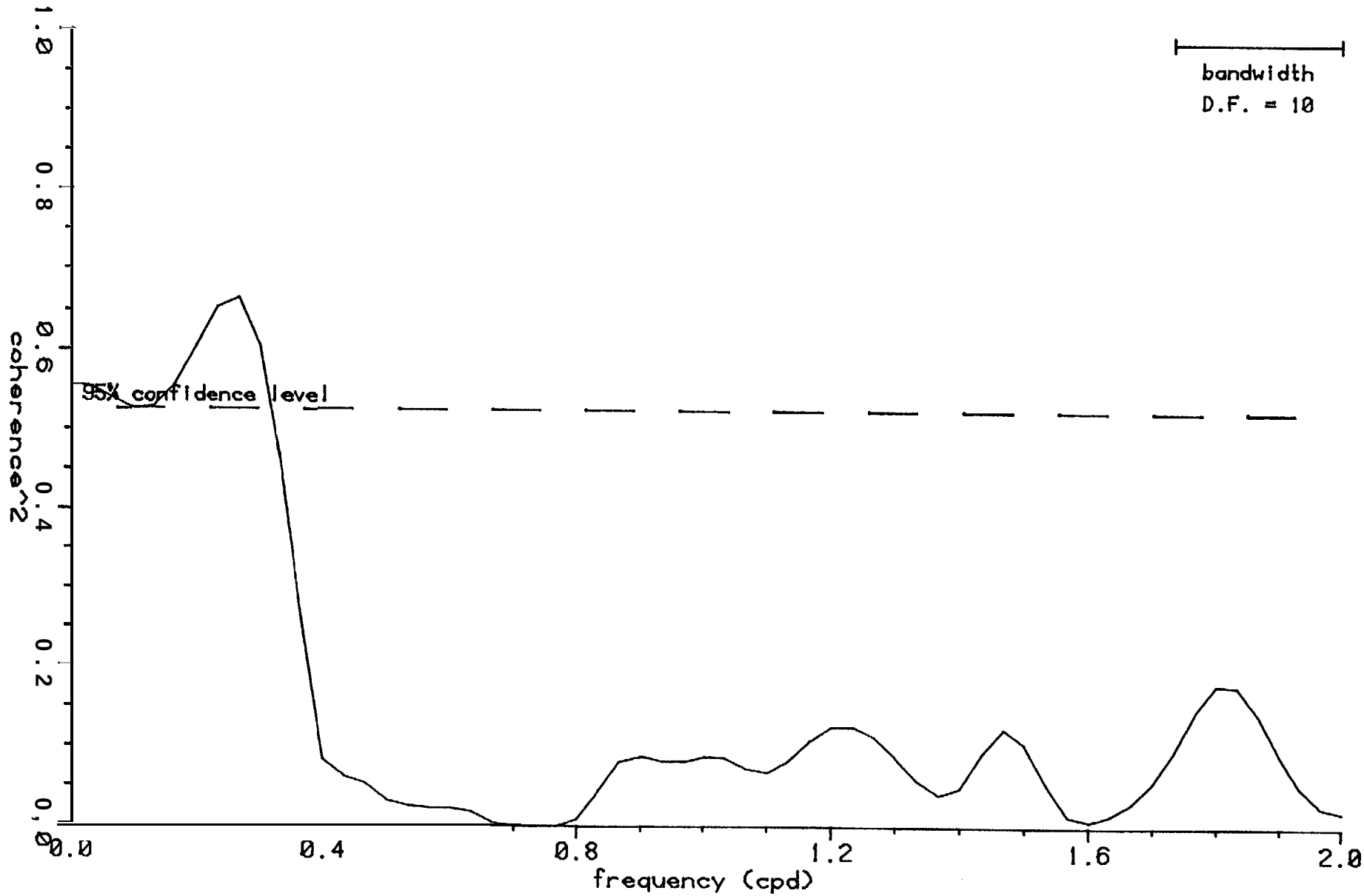


FIGURE A-40 SQUARED COHERENCE SPECTRUM
WAINWRIGHT WIND (33.7 DEGREE COMPONENT) VS. INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT =33.7 DEGREE COMP.=
175 2 AUG 981 - 175 SEPT 981

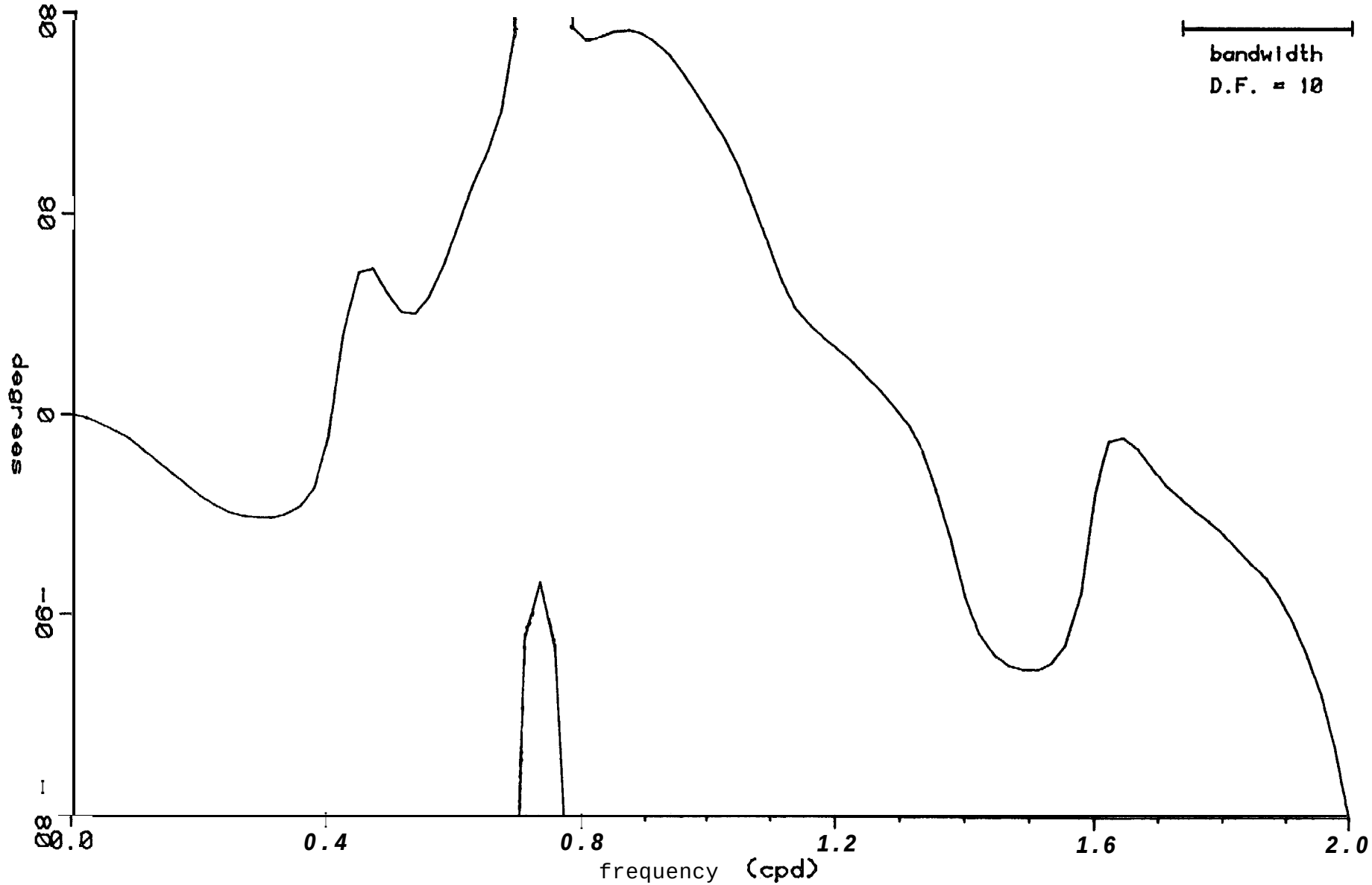


FIGURE A-4 1 PHASE SPECTRUM
WAINWRIGHT WINI) <33.7 DEGREE COMPONENT) VS. INSHORE
WAINWRIGHT (BOTTOM> DRIFT CURRENT (33.7 DEGREE COMP.)
1751 12 AUG 1981 - 1751 1 SEPT 1981

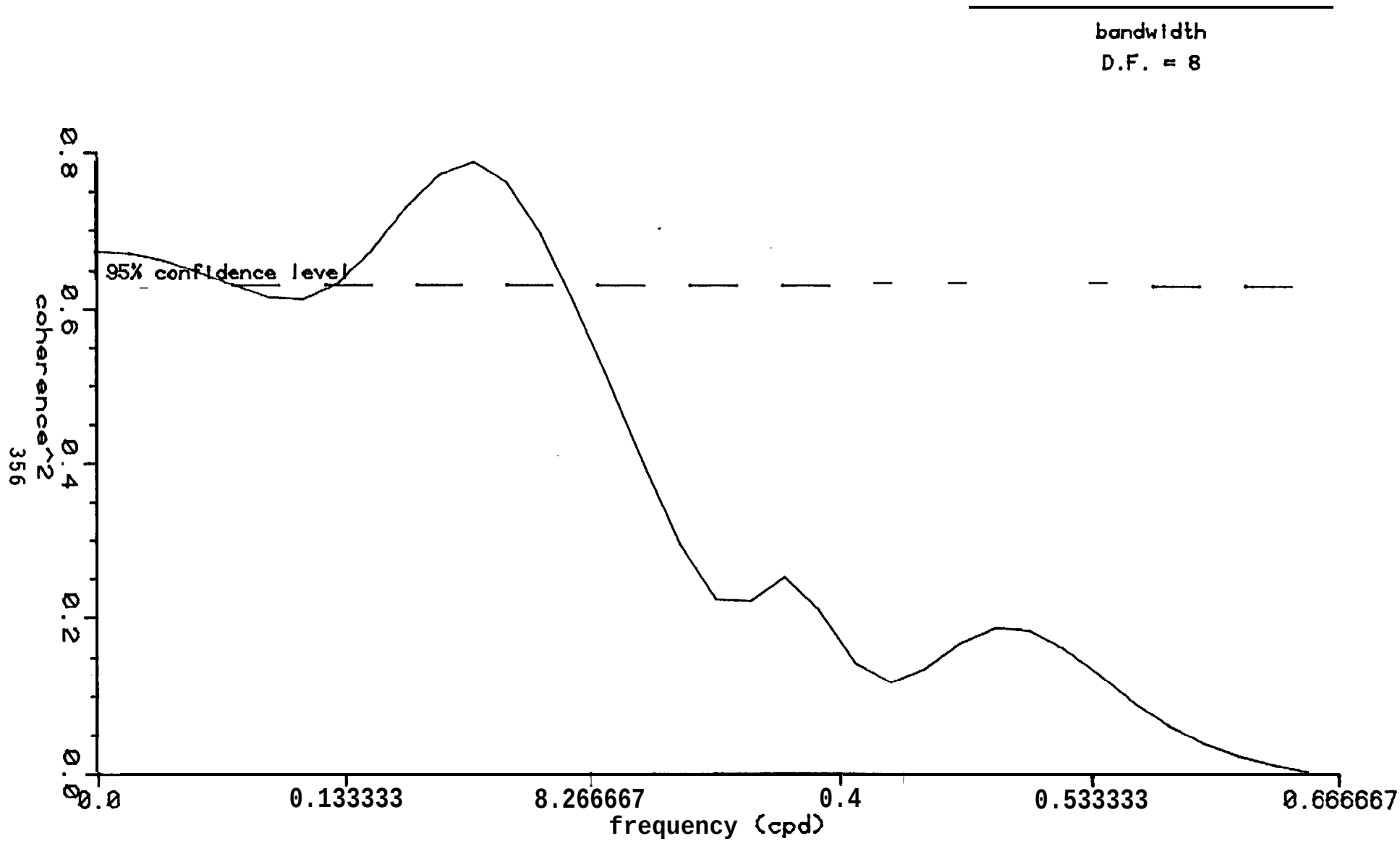


FIGURE 42 SQUARED COHERENCE SPECTRUM
WAINWRIGHT WIND (33.7 DEGREE COMPONENT) VS. INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT <33.7 DEGREE COMP.)
1751 12 AUG 1981 - 1751 1 SEPT 1981

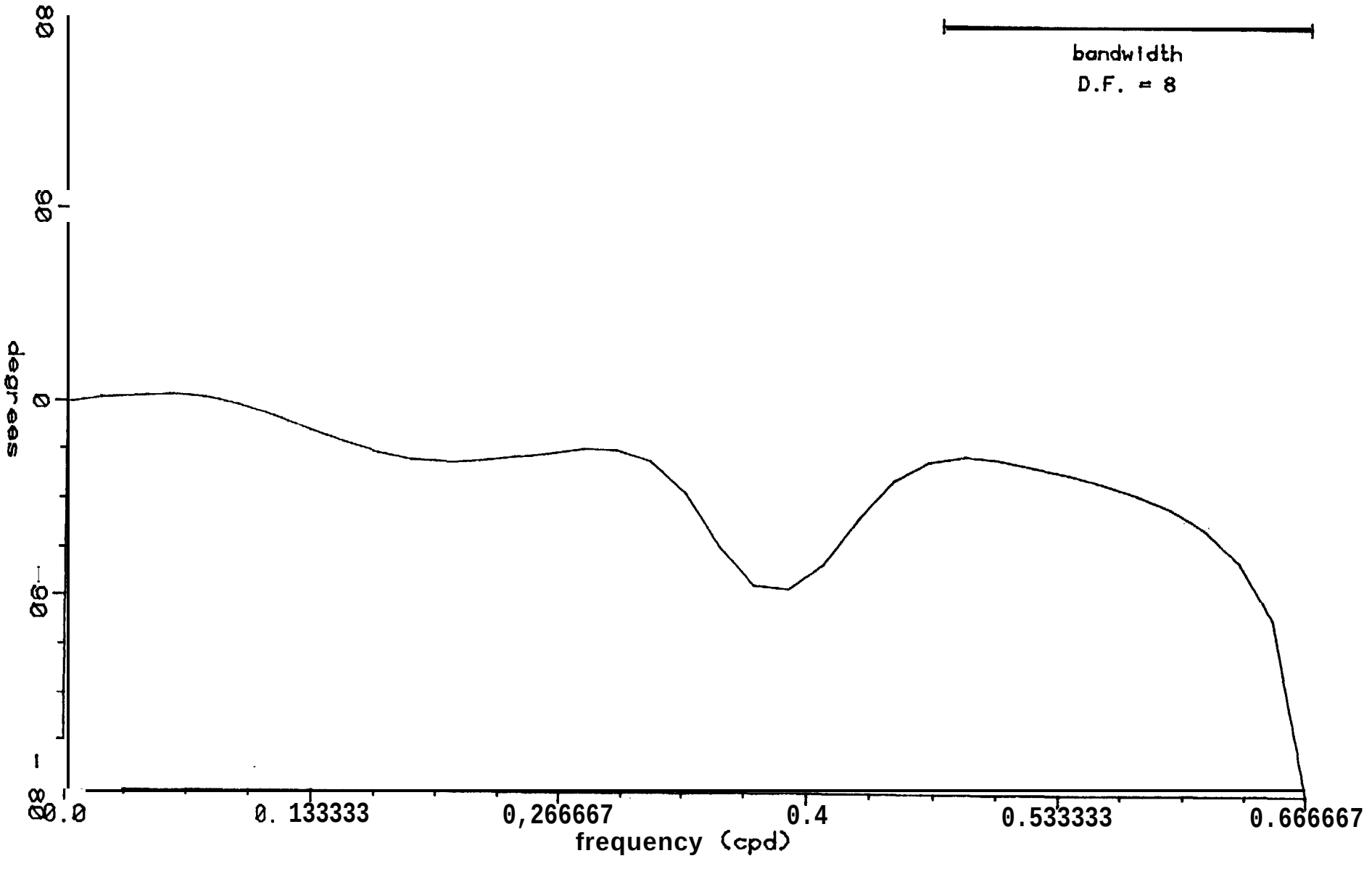


FIGURE A-43 PHASE SPECTRUM
WAINWRIGHT WIND {33.7 DEGREE COMPONENT) VS. INSHORE
WAINWRIGHT (BOTTOM) DRIFT CURRENT <33.7 DEGREE COMP.)
1751 12 AUG 1981 - 17511 SEPT 1981

Pressure versus Wind

Pt. Barrow and Wainwright

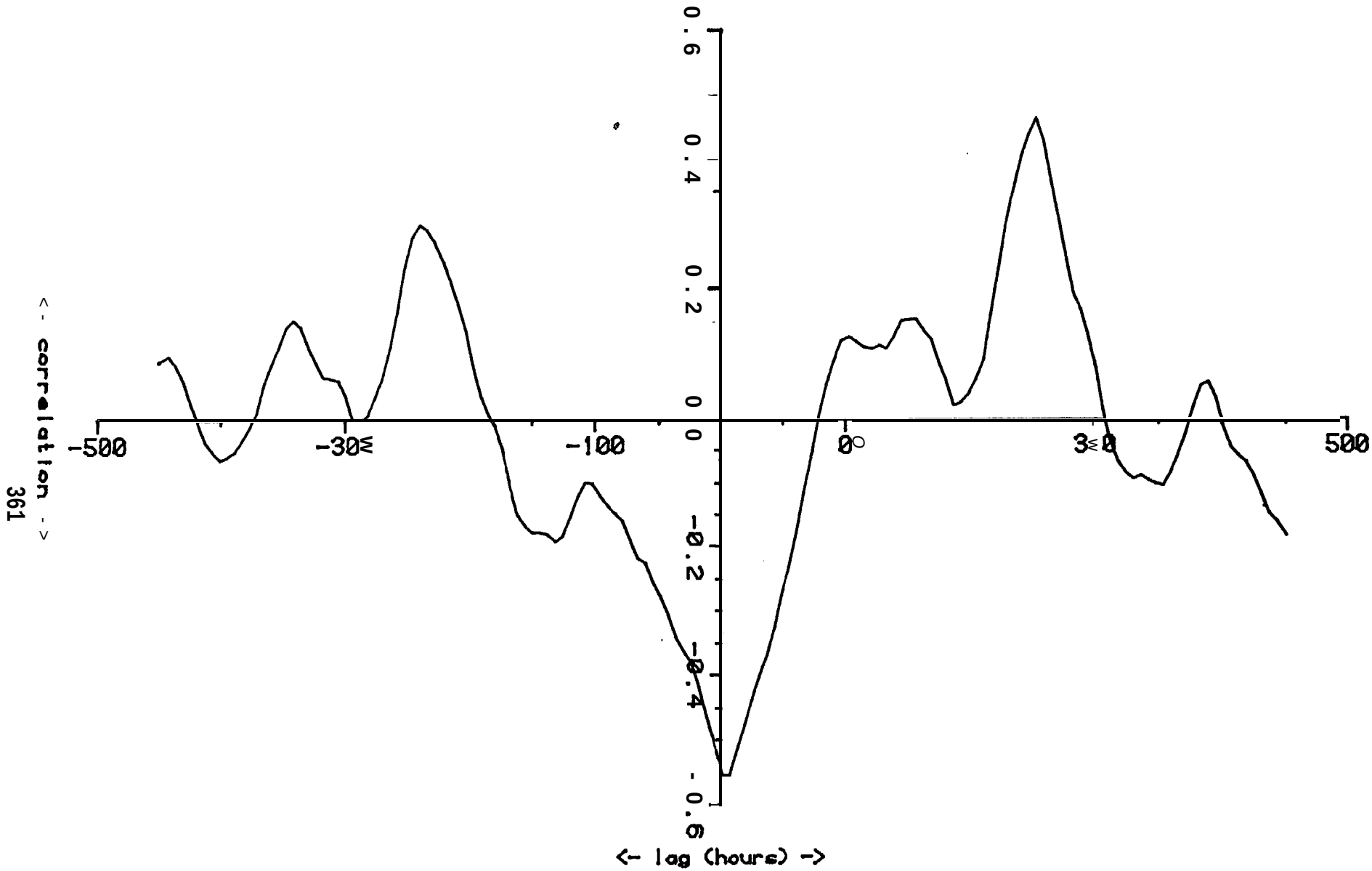


FIGURE A-44 CROSS CORRELATIONS
PT. BARROW-CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES VS.
LAGGED PT. BARROW WIND (35.9 DEGREE COMPONENT)
0158 AUG 981 - 1358 4 SEPT 1981

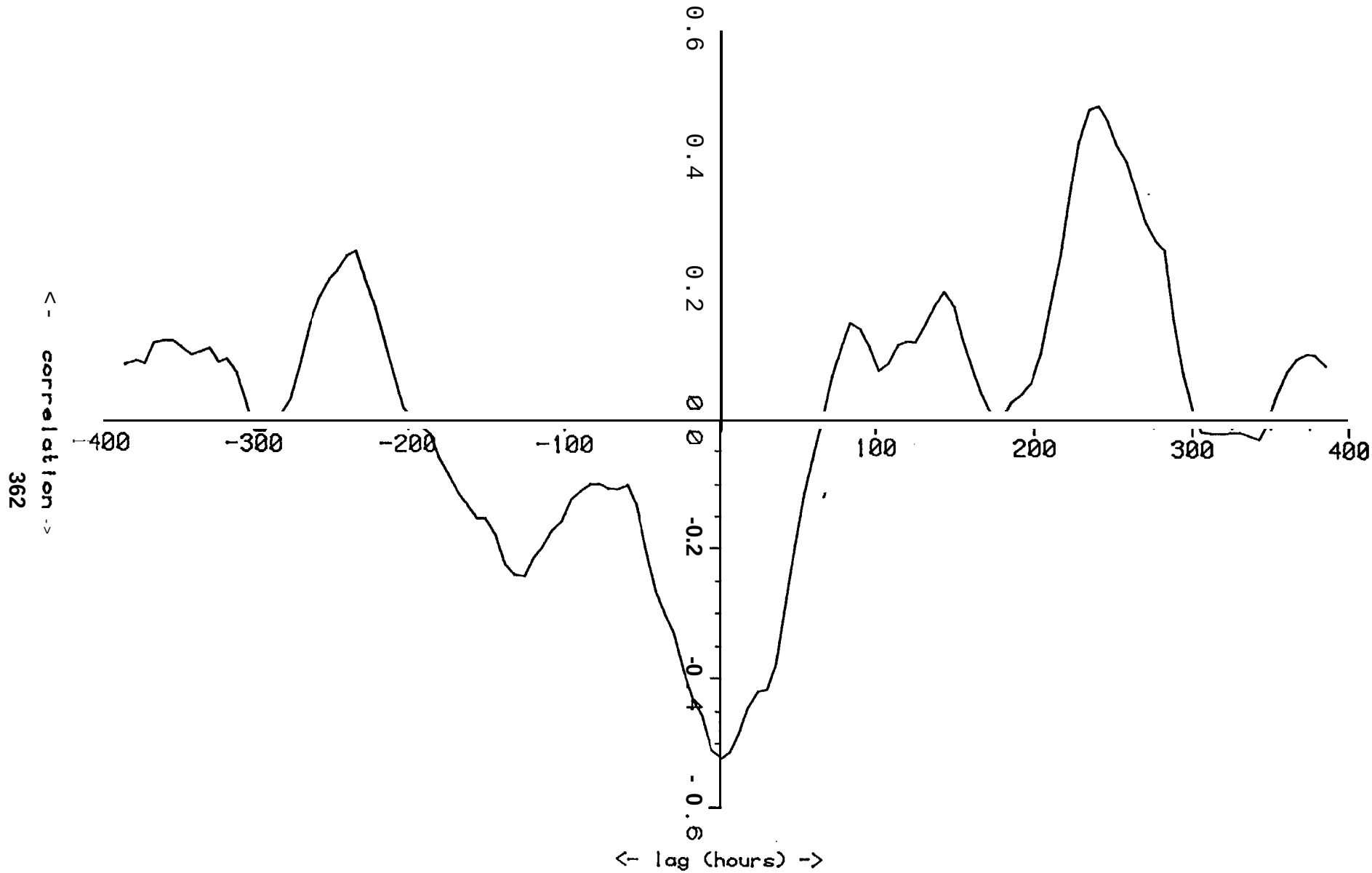


FIGURE A-45 CROSS CORRELATIONS
PT. BARROW - CAPE LISBURNE BAROMETRIC PRESSURE DIFFERENCES
VS. LAGGED WAINWRIGHT WINDS
2359 3 AUG 1981 - 1759 4 SEPT 1981

Statistical

Cross Tabulations

of Current Data

Table A-1
INSHORE BARROW (BOTTOM) DRIFT CURRENT
0700 8 AUG 1981 - 1600 6 SEPT 1981

Frequencies:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	o	0	0	0	0	0	0
15- 30	6	0	0	0	0	0	6
30- 45	112	212	24	0	0	0	348
45- 60	41	28	20	0	0	0	89
60- 75	13	0	0	0	0	0	13
75- 90	6	0	0	0	0	0	6
90-105	5	0	0	0	0	0	5
105-120	4	0	0	0	0	0	4
120-135	3	0	0	0	0	0	3
135-150	7	0	0	0	0	0	7
150-165	6	0	0	0	0	0	6
165-180	15	0	0	0	0	0	15
180-195	32	0	0	0	0	0	32
195-210	96	76	0	0	0	0	172
210-225	0	0	0	0	0	0	0
225-240	0	0	0	0	0	0	0
240-255	0	0	0	0	0	0	0
255-270	0	0	0	0	0	0	0
270-285	0	0	0	0	0	0	0
285-300	0	0	0	0	0	0	0
300-315	0	0	0	0	0	0	0
315-330	0	0	0	0	0	0	0
330-345	0	0	0	0	0	0	0
345-360	0	0	0	0	0	0	0
total	346	316	44	0	0	0	706

Table A-2

INSHORE BARROW (BOTTOM) DRIFT CURRENT
0700 8 AUG 1981 - 1600 6 SEPT 1981

Percentages:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	O*O	0.0
15- 30	0.8	0.0	0.0	0.0	0.0	0.0	0.8
30- 45	15.9	30.0	3.4	0.0	0.0	0.0	49.3
45- 60	5.8	4.0	2.8	0.0	0.0	0.0	12.6
60- 75	1.8	0.0	0.0	0.0	0.0	0.0	1.8
75- 90	0.8	0.0	0.0	0.0	0.0	0.0	0.8
90-105	0.7	O*O	0.0	0.0	0.0	0.0	0.7
105-120	0.6	0.0	0.0	0.0	0.0	0.0	0.6
120-135	0.4	0.0	0.0	0.0	0.0	0.0	0.4
135-150	1.0	0.0	0.0	0.0	0.0	0.0	1.0
150-165	0.8	0.0	0.0	0.0	0.0	0.0	0.8
165-180	2.1	0.0	0.0	0.0	0.0	0.0	2.1
180-195	4.5	0.0	0.0	0.0	0.0	0.0	4.5
195-210	13.6	10.8	0.0	0.0	0.0	0.0	24.4
210-225	0.()	0.0	0.0	0.0	0.0	0.0	0.0
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0'	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	49.0	44.8	6.2	0.0	0.0	0.0	100.0

largest screened speed = 43.45 cm/sec
total time period spanned (hours) = 705
sample interval (hours) = 1
total possible observations =. 706
actual observations = 706

Table A-3
INSHORE BARROW (BOTTOM) DRIFT CURRENT
0700 8 AUG 1981 - 1600 6 SEPT 1981

Row Percents:

Bearing Range	Speed Range (crn/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	100.0	0.0	0.0	0.0	0.0	0.0	100.0
30- 45	32.2	60.9	6.9	0.0	0.0	0.0	100.0
45- 60	46.1	31.5	22.5	0.0	0.0	0.0	100.0
60- 75	100.0	0.0	0.0	0.0	0.0	0.0	100.0
75- 90	100.0	0.0	0.0	0.0	0.0	0.0	100.0
90-105	100.0	0.0	0.0	0.0	0.0	0.0	100.0
105-120	100.0	0.0	0.0	0.0	0.0	0.0	100.0
120-135	100.0	0.0	0.0	0.0	0.0	0.0	100.0
135-150	100.0	0.0	0.0	0.0	0.0	0.0	100.0
150-165	100.0	0.0	0.0	0.0	0.0	0.0	100.0
165-180	100.0	0.0	0.0	0.0	0.0	0.0	100.0
180-195	100.0	0.0	0.0	0.0	0.0	0.0	100.0
195-210	55.8	44.2	0.0	0.0	0.0	0.0	100.0
210-225	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	49.0	44.8	6.2	0.0	0.0	0.0	100.0

Table A-4

INSHORE BARROW (BOTTOM) DRIFT CURRENT
0700 8 AUG 1981 - 1600 6 SEPT 1981

Column Percents:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	0.()	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	1.7	0.0	0.0	0.0	0.0	0.0	0.8
30- 45	32.4	67.1	54.5	0.0	0.0	0.0	49.3
45- 60	11.8	8.9	45.5	0.0	0.0	0.0	12.6
60- 75	3.8	0.0	0.0	0.0	0.0	0.0	1.8
75- 90	1.7	0.0	0.0	0.0	0.0	0.0	0.8
90-105	1.4	0.0	0.0	0.0	0.0	0.0	0.7
105-120	1.2	0.0	0.0	0.0	0.0	0.0	0.6
120-135	0.9	0.0	0.0	0.0	0.0	0.0	0.4
135-150	2.0	0.0	0.0	0.0	0.0	0.0	1.0
150-165	1.7	0.0	0.0	0.0	0.0	0.0	0.8
165-180	4.3	0.0	0.0	0.0	0.0	0.0	2.1
180-195	9.2	0.0	0.0	0.0	0.0	0.0	4.5
195-210	27.7	24.1	0.0	0.0	0.0	0.0	24.4
210-225	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	O*O	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	100.0	100.0	100.0	0.0	0.0	0.0	100.0

largest screened speed = 43.45 cm/sec
total time period spanned (hours] = 705
sample interval (hours) = 1
total possible observations = 706
actual observations = 706

Table A-5

OFFSHORE BARROW (TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981

Frequencies:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	o	0	0	0	0	0	0
15- 30	2	0	0	0	0	0	2
30- 45	9	3	0	0	0	0	12
45- 60	8	18	99	90	55	91	365
60- 75	7	14	1	0	0	0	22
75- 90	1	0	0	0	G	0	1
90-105	0	0	0	0	o	0	0
105-120	1	0	0	0	0	0	1
120-135	2	0	0	0	0	0	2
135-150	5	0	0	0	0	0	5
150-165	2	0	0	0	0	0	2
165-180	4	0	0	0	0	0	4
180-195	4	0	0	0	0	0	4
195-210	6	2	25	10	G	0	43
210-225	4	3	17	104	19	0	147
225-240	12	13	26	25	16	0	92
240-255	8	11	5	0	0	0	24
255-270	1	0	0	0	o	0	t
270-285	0	0	0	0	0	0	o
285-300	0	0	0	0	0	0	0
300-315	0	0	0	0	0	0	0
315-330	0	0	0	0	0	0	0
330-345	0	0	0	0	0	0	0
345-360	0	0	0	0	0	0	0
total	76	64	173	229	94	91	727

Table A-6
OFFSHORE BARROW (TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981

Percentages:

Bearing Range	Speed Range (crn/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.3	0.0	0.0	0.0	0.0	0.0	0.3
30- 45	1.2	0.4	0.0	0.0	0.0	0.0	1.7
45- 60	1.1	2.5	13.6	12.4	8.1	12.5	50.2
60- 75	1.0	1.9	0.1	0.0	0.0	O*o	3.0
75- 90	0.1	0.0	0.0	0.0	0.0	0.0	0.1
90-105	0.0	0.0	0.0	0.0	0.0	0.o	0.0
105-120	0.1	0.0	0.0	0.0	0.0	0.0	0.1
120-135	0.3	0.0	0.0	0.0	0.0	0.0	0.3
135-150	0.7	0.0	0.0	0.0	0.0	0.0	0.7
150-165	0.3	0.0	0.0	0.0	0.0	0.0	0.3
165-180	0.6	0.0	0.0	0.0	0.0	0.0	0.6
180-195	0.6	0.0	0.0	0.0	0.0	0.0	0.6
195-210	0.8	0.3	3.4	1.4	0.0	0.0	5.9
210-225	0.6	0.4	2.3	14.3	2.6	0.0	20.2
225-240	1.7	1.8	3.6	3.4	2.2	0.0	12.7
240-255	1.1	1.5	0.7	0.0	0.0	0.0	3.3
255-270	0.1	0.0	0.0	0.0	0.0	0.0	0.1
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	“0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	10.5	8.8	23.8	31.5	12.9	12.5	100.0

largest screened speed = 96.2 cm/sec
total time period spanned (hours) = 726
sample interval {hours] = 1
total possible observations = 727
actual observations = 727

Table A-7
OFFSHORE BARROW (TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981

Row Percents:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	100.0	0.0	0.0	0.0	0.0	0.0	100.0
30- 45	75.0	25.0	0.0	0.0	0.0	0.0	100.0
45- 60	2.2	4.9	27.1	24.7	16.2	24.9	100.0
60- 75	31.8	63.6	4.5	0.0	0.0	0.0	100.0
75 90	100.0	0.0	0.0	0.0	0.0	0.0	100.0
90-105	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105-120	100.0	0.0	0.0	0.0	0.0	0.0	100.0
120-135	100.0	0.0	0.0	0.0	0.0	0.0	100.0
135-150	100.0	0.0	0.0	0.0	0.0	0.0	100.0
150-165	100.0	0.0	0.0	0.0	0.0	0.0	100.0
165-180	100.0	0.0	0.0	0.0	0.0	0.0	100.0
180-195	100.0	0.0	0.0	0.0	0.0	0.0	100.0
195-210	14.0	4.7	58.1	23.3	0.0	0.0	100.0
210-225	2.7	2.0	11.6	70.7	12.9	0.0	100.0
225-240	13.0	14.1	28.3	27.2	17.4	0.0	100.0
240-255	33.3	45.8	20.8	0.0	0.0	0.0	100.0
255-270	100.0	0.0	0.0	0.0	0.0	0.0	100.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.00	0.0	0.0	0.0		0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	10.5	8.8	23.8	31.5	12.9	12.5	100.0

Table A-8
OFFSHORE BARROW (TOP) DRIFT CURRENT
1020 8 AUG 1981 - 1620 7 SEPT 1981

Column Percents:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	2.6	0.0	0.0	0.0	0.0	0.0	0.3
30- 45	11.8	4.7	0.0	0.0	0.0	0.0	1.7
45- 60	10.5	28.1	57.2	39.3	62.8	100.0	50.2
60- 75	9.2	21.9	0.6	0.0	0.0	0.0	3.0
75- 90	1.3	0.0	0.0	0.0	0.0	0.0	0.1
90-105	0.0	0.0	0.0	0.0	0.0	0.0	0.0
105-120	1.3	0.0	0.0	0.0	0.0	0.0	0.1
120-135	2.6	0.0	0.0	0.0	0.0	0.0	0.3
135-150	6.6	0.0	0.0	0.0	0.0	0.0	0.7
150-165	2.6	0.0	0.0	0.0	0.0	0.0	0.3
165-180	5.3	0.0	0.0	0.0	0.0	0.0	0.6
180-195	5.3	0.0	0.0	0.0	0.0	0.0	0.6
195-210	7.9	3.1	14.5	4.4	0.0	0.0	5.9
210-225	5.3	4.7	9.8	45.4	20.2	0.0	20.2
225-240	15.8	20.3	15.0	10.9	17.0	0.0	12.7
240-255	10.5	17.2	2.9	0.0	0.0	0.0	3.3
255-270	1.3	0.0	0.0	0.0	0.0	0.0	0.1
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

largest screened speed = 96.2 cm/sec
total time period spanned (hours) = 726
sample interval (hours) = 1
total possible observations = 727
actual observations = 727

Table A-9
OFFSHORE BARROW (BOTTOM) DRIFT CURRENTS
1010 8 AUG 1981 - 1610 7 SEPT 1981

Frequencies:

Bearing Range	Speed Range (cu/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	1	0	0	0	0	0	1
15- 30	3	1	0	0	0	0	4
30- 45	14	14	35	0	0	0	63
45- 60	43	112	143	0	0	0	298
60- 75	23	17	19	4	0	0	63
75- 90	15	0	16	12	0	0	43
90-105	9	0	0	0	0	0	9
105-120	11	0	0	0	0	0	11
120-135	1	0	0	0	0	0	1
135-150	1	0	0	0	0	0	1
150-165	1	0	0	0	0	0	1
165-180	2	0	0	0	0	0	2
180-195	2	0	0	0	0	0	2
195-210	23	10	0	0	0	0	33
210-225	30	99	27	0	0	0	156
225-240	7	20	0	0	o	0	27
240-255	4	0	0	0	0	0	4
255-270	2	0	0	0	0	0	2
270-285	2	0	0	0	0	0	2
285-300	0	0	0	0	0	0	0
300-315	1	0	0	0	0	0	1
315-330	1	0	0	0	0	0	1
330-345	1	0	0	0	0	0	1
345-360	1	0	0	0	G	0	1
total	198	273	240	16	o	0	727

Table A-10
OFFSHORE BARROW (BOTTOM) DRIFT CURRENTS
1010 8 AUG 1981 - 1610 7 SEPT 1981

Percentages:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.1	0.0	0.0	0.0	0.0	0.0	0.1
15- 30	0.4	0.1	0.0	0.0	0.0	0.0	0.6
30- 45	1.9	1.9	4.8	0.0	0.0	0.0	8.7
45- 60	5.9	15.4	19.7	0.0	0.0	0.0	41.0
60- 75	3.2	2.3	2.6	0.6	0.0	0.0	8.7
75- 90	2.1	0.0	2.2	1.7	0.0	0.0	5.9
90-105	1.2	0.0	0.0	0.0	0.0	0.0	1.2
105-120	1.5	0.0	0.0	0.0	0.0	0.0	1.5
120-135	0.1	0.0	0.0	0.0	0.0	0.0	0.1
135-150	0.1	0.0	0.0	0.0	0.0	0.0	0.1
150-165	0.1	0.0	0.0	0.0	0.0	0.0	0.1
165-180	0.3	0.0	0.0	0.0	0.0	0.0	0.3
180-195	0.3	0.0	0.0	0.0	0.0	0.0	0.3
195-210	3.2	1.4	0.0	0.0	0.0	0.0	4.5
210-225	4.1	13.6	3.7	0.0	0.0	0.0	21.5
225-240	1.0	2.8	0.0	0.0	0.0	0.0	3.7
240-255	0.6	0.0	0.0	0.0	0.0	0.0	0.6
255-270	0.3	0.0	0.0	0.0	0.0	0.0	O*3
270-285	0.3	0.0	0.0	0.0	0.0	0.0	0.3
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.1	0.0	0.0	0.0	0.0	0.0	0.1
315-330	0.1	0.0	0.0	0.0	0.0	0.0	0.1
330-345	0.1	0.0	0.0	0.0	O*O	0.0	0.1
345-360	0.1	0.0	0.0	0.0	0.0	0.0	0.1
total	27.2	37.6	33.0	2.2	0.0	0.0	100*O

largest screened speed = 46.55 **cm/sec**
total time period spanned (hours) = 726
sample interval **(hours)** = 1
total possible observations = 727
actual observations = 727

Table A-II
OFFSHORE BARROW (BOTTOM) DRIFT CURRENTS
1010 8 AUG 1981 - 1610 7 SEPT 1981

Row Percents:

Bearing Range	Speed Range {cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	100.0	0.0	0.0	0.0	0.0	0.0	100.0
15- 30	75.0	25.0	0.0	0.0	0.0	0.0	100.0
30- 45	22.2	22.2	55.6	0.0	0.0	0.0	100.0
45- 60	14.4	37.6	48.0	0.0	0.0	0.0	100.0
60- 75	36.5	27.0	30.2	6.3	0.0	0.0	100.0
75- 90	34.9	0.0	37.2	27.9	0.0	0.0	100.0
90-105	10C.O	0.0	0.0	0.0	0.0	0.0	100.0
105-120	100.0	0.0	0.0	0.0	0.0	0.0	100.0
120-135	100.0	0.0	0.0	0.0	0.0	0.0	100.0
135-150	100.0	0.0	0.0	0.0	0.0	0.0	100.0
150-165	100.0	0.0	0.0	0.0	0.0	0.0	100.0
165-180	100.0	0.0	0.0	0.0	0.0	0.0	100.0
180-195	100.C	0.0	0.0	0.0	0.0	0.0	100.0
195-210	69.7	30.3	0.0	0.0	0.0	0.0	100.0
210-225	19.2	63.5	17.3	0.0	0.0	0.0	100.0
225-240	25.9	74.1	0.0	0.0	0.0	0.0	100.0
240-255	10C.C	0.0	0.0	0.0	0.0	0.0	100.0
255-270	100.0	0.0	0.0	0.0	0.0	0.0	100.0
270-285	100.0	0.0	0.0	0.0	0.0	0.0	100.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	100.0	0.0	0.0	0.0	0.0	0.0	100.0
315-330	100.0	0.0	0.0	0.0	0.0	0.0	100.0
330-345	100.0	C.0	0.0	0.0	0.0	0.0	100.0
345-360	100.0	0.0	0.0	0.0	0.0	0.0	100.0
total	27.2	37.6	33.0	2.2	0.0	0.0	100.0

Table A-12
OFFSHORE BARROW (BOTTOM) DRIFT CURRENTS
1010 8 AUG 1981 - 1610 7 SEPT 1981

Column Percents:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	0.5	0.0	0.0	0.0	0.0	0.0	0.1
15- 30	1.5	0.4	0.0	0.0	0.0	0.0	0.6
30- 45	7.1	5.1	14.6	0.0	0.0	0.0	8.7
45- 60	21.7	41.0	59.6	0.0	0.0	0.0	41.0
60- 75	11.6	6.2	7.9	25.0	0.0	0.0	8.7
75- 90	7.6	0.0	6.7	75.0	0.0	0.0	5.9
90-105	4.5	0.0	0.0	0.0	0.0	0.0	1.2
105-120	5.6	0.0	0.0	0.0	0.0	0.0	1.5
120-135	0.5	0.0	0.0	0.0	0.0	0.0	0.1
135-150	0.5	0.0	0.0	0.0	0.0	0.0	0.1
150-165	0.5	0.0	0.0	0.0	0.0	0.0	0.1
165-180	1.0	0.0	0.0	0.0	0.0	0.0	0.3
180-195	1.0	0.0	0.0	0.0	0.0	0.0	0.3
195-210	11.6	3.7	0.0	0.0	0.0	0.0	4.5
210-225	15.2	36.3	11.3	0.0	0.0	0.0	21.5
225-240	3.5	7.3	0.0	0.0	0.0	0.0	3.7
240-255	2.0	0.0	0.0	0.0	0.0	0.0	0.6
255-270	1.0	0.0	0.0	0.0	0.0	0.0	0.3
270-285	1.0	0.0	0.0	0.0	0.0	0.0	0.3
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.5	0.0	0.0	0.0	0.0	0.0	0.1
315-330	0.5	0.0	0.0	0.0	0.0	0.0	0.1
330-345	0.5	0.0	0.0	0.0	0.0	0.0	0.1
345-360	0.5	0.0	0.0	0.0	0.0	0.0	0.1
total	100.0	100.0	100.0	100.0	0.0	0.0	100.0

largest screened speed = 46.55 cm/sec
total time period spanned (hours) = 726
sample interval (hours) = 1
total possible observations = 727
actual observations = 727

Table A-13
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1342 12 AUG 1981 - 1742 1 SEPT 1981

Frequencies:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0	0	0	0	0	0	0
15- 30	1	16	4	0	0	0	21
30- 45	6	10	23	0	0	0	39
45- 60	59	101	0	0	0	0	160
60- 75	26	0	0	0	0	0	26
75- 90	3	0	0	0	0	0	3
90-105	4	0	0	0	0	0	4
105-120	2	0	0	0	0	0	2
120-135	1	0	0	0	0	0	1
135-150	4	0	0	0	0	0	4
150-165	6	0	0	0	0	0	6
165-180	6	0	0	0	0	0	6
180-195	15	28	0	0	0	0	43
195-210	31	112	0	0	0	0	143
210-225	0	27	0	0	0	0	27
225-240	0	0	0	0	0	0	0
240-255	0	0	0	0	0	0	0
255-270	0	0	0	0	0	0	0
270-285	0	0	0	0	0	0	0
285-300	0	0	0	0	0	0	0
300-315	0	0	0	0	0	0	0
315-330	0	0	0	0	0	0	0
330-345	0	0	0	0	0	0	0
345-360	0	0	0	0	0	0	0
total	164	294	27	0	0	0	485

Table A-14
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1342 12 AUG 1981 - 1742 1 SEPT 1981

Percentages:

Bearing Range	Speed Range [cm/see] 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.2	3.3	0.8	0.0	0.0	0.0	4.3
30- 45	1.2	2.1	4.7	0.0	0.0	0.0	8.0
45- 60	12.2	20.8	0.0	0.0	0.0	0.0	33* 0
60- 75	5*4	0.0	0.0	0.0	0.0	0.0	5.4
75- 90	0.6	0.0	0.0	0.0	0.0	0.0	0.6
90-105	0.8	0.0	0.0	0.0	0.0	0.0	0.8
105-120	0.4	0.0	0.0	0.0	0.0	0.0	0. 4
120-135	0.2	0.0	0.0	0.0	0.0	0.o	0.2
135-150	0.8	0.0	0.0	0.0	0.0	0.0	0.8
150-165	1.2	0.0	0.0	0.0	0.0	0.0	1.2
165-180	1.2	0.0	0.0	0.0	0.0	0.0	1.2
180-195	3.1	5.8	0.0	0.0	0.0	0.0	8.9
195-210	6.4	23.1	0.0	0.0	0.0	0.0	29.5
210-225	0.0	5.6	0.0	0.0	0.0	0.0	5.6
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	O*O	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	O*o	0.0	0.0	0.0	0.o	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	O*O	0.0	0.0	0.0	0.0	0.0
total	33.8	60.6	5.6	0.0	0.0	0.0	100.0

largest screened speed = 34.66 cm/sec
total time period spanned (hours) = 484
sample interval {hours] = 1
total possible observations = 485
actual observations = 485

Table A-15
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1342 12 AUG 1981 - 1742 1 SEPT 1981

Row Percents:

Bearing Range	Speed Range [crn/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 1 5]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30]	4.8	76.2	19.0	0.0	0.0	0.0	100.0
30- 45]	15.4	25.6	59.0	0.0	0.0	0.0	100.0
45- 60]	36.9	63.1	0.0	0.0	0.0	0.0	100.0
60- 75]	100.0	0.0	0.0	0.0	0.0	0.0	100.C
75- 90]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
90-105]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
105-120]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
120-135]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
135-150]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
150-165]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
165-180]	100.0	0.0	0.0	0.0	0.0	0.0	100.0
180-195]	34.9	65.1	0.0	0.0	0.0	0.0	100.0
195-210]	21.7	78.3	0.0	0.0	0.0	0.0	100.0
210-225]	0.0	100.0	0.0	0.0	0.0	0.0	100.0
225-240]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300]	0.0	0.0	0.0	O*O	0.0	0.0	0.0
300-315]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360]	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total]	33.8	60.6	5.6	0.0	0.0	0.0	100.0

Table A-16
INSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1342 12 AUG 1981 - 1742 1 SEPT 1981

Column Percents:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	0.0	O*O	0-0	0.0	0.0	0.0	0.0
15- 30	0.6	5.4	14.8	0.0	0.0	0.0	4.3
30- 45	3.7	3.4	85.2	0.0	0.0	0.0	8.0
45- 60	36.0	34.4	0.0	O*O	0.0	0.0	33.0
60- 75	15.9	0.0	0.0	0.0	0.0	0.0	5.4
75- 90	1.8	0.0	0.0	0.0	0.0	0.0	0.6
90-105	2.4	0.0	0.0	0.0	0.0	0.0	0.8
105-120	1.2	0.0	0.0	0.0	0.0	0.0	0.4
120-135	0.6	0.0	0.0	0.0	0.0	0.0	0.2
135-150	2.4	0.0	0.0	O*O	0.0	0.0	0.8
150-165	3.7	0.0	0.0	0.0	0.0	0.0	1.2
165-180	3.7	0.0	0.0	0.0	0.0	0.0	1.2
180-195	9.1	9.5	0.0	0.0	0.0	0.0	8.9
195-210	18.9	38.1	0.0	0.0	0.0	0.0	29.5
210-225	0.0	9.2	0.0	0.0	0.0	0.0	5.6
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	O*O	0.0	0.0	O*O
345-360	0.0	0.0	0.0	0.0	0.0	0.0	().0
total	100.0	100.0	100.0	0.0	0.0	0.0	100.0

largest screened speed = 34.66 cm/sec
total time period spanned (hours) = 484
sample interval (hours) = 1
total possible observations = 485
actual observations = 485

Table A-17
OFFSHORE WAINWRIGHT (TOP) DRIFT CURRENT
1553 12 AUG 1981 - 1953 1 SEPT 1981

Frequencies:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0	0	0	0	0	0	0
15- 30	0	0	0	0	0	0	0
30- 45	0	0	0	0	0	0	0
45- 60	6	11	1	0	0	0	18
60- 75	9	44	109	26	0	0	188
75- 90	3	38	30	5	0	0	76
90-105	7	1	0	0	0	0	8
105-120	6	0	0	0	o	0	6
120-135	3	0	0	0	0	0	3
135-150	4	0	0	0	0	0	4
150-165	4	0	0	0	0	0	4
165-180	2	0	0	0	0	0	2
180-195	8	0	0	0	0	0	8
195-210	12	0	0	0	0	0	12
210-225	8	0	0	0	0	0	8
225-240	6	0	25	0	0	0	31
240-255	2	37	50	0	0	0	89
255-270	0	24	3	0	0	0	27
270-285	0	0	0	0	0	0	0
285-300	0	0	0	0	0	0	0
300-315	0	0	0	0	0	0	c
315-330	0	0	0	0	0	0	o
330-345	0	0	0	0	0	0	0
345-360	0	0	0	0	o	0	0
total	80	155	218	31	0	0	484

Table A-18
OFFSHORE WAINWRIGHT (TOP) DRIFT CURRENT
1553 12 AUG 1981 - 1953 1 SEPT 1981

Percentages:

Bearing Range	Speed Range (cm/see] 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
o 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30- 45	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45- 60	1.2	2.3	0.2	0.0	0.0	0.0	3.7
60- 75	1.9	9.1	22.5	5.4	0.0	0.0	38.8
75- 90	0.6	7.9	6.2	1.0	0.0	0.0	15.7
90-105	1.4	0.2	0.0	0.0	0.0	0.0	1.7'
105-120	1.2	0.0	0.0	0.0	0.0	0.0	1.2
120-135	0.6	0.0	0.0	0.0	0.0	0.0	0.6
135-150	0.8	0.0	0.0	0.0	0.0	0.0	0.8
150-165	0.8	0.0	0.0	0.0	0.0	0.0	0.8
165-180	0.4	0.0	0.0	0.0	0.0	0.0	0.4
180-195	1.7	0.0	0.0	0.0	0.0	0.0	1.7
195-210	2.5	0.0	0.0	0.0	0.0	0.0	2.5
210-225	1.7	0.0	0.0	0.0	0.0	0.0	1.7
225-240	1.2	0.0	5.2	0.0	0.0	0.0	6.4
240-255	0.4	7.6	10.3	0.0	0.0	0.0	18.4
255-270	0.0	5.0	0.6	0.0	0.0	0.0	5.6
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	O*O	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	O*O	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	16.5	32.0	45.0	6.4	0.0	0.0	100.0

largest screened speed = 51.81 cm/sec
total time period spanned (hours) = 483
sample interval (hours) = 1
total possible observations = 484
actual observations = 484

Table A-19
OFFSHORE WAINWRIGHT (TOP) DRIFT CURRENT
1553 12 AUG 1981 - 1953 1 SEPT 1981

Row Percents:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30- 45	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45- 60	33.3	61.1	5.6	0.0	0.0	0.0	100.0
60- 75	4.8	23.4	58.0	13.8	0.0	0.0	100.0
75- 90	3.9	50.0	39.5	6.6	0.0	0.0	100.0
90-105	87.5	12.5	0.0	0.0	0.0	0.0	100.0
105-120	10C.O	0.0	0.0	0.0	0.0	0.0	100.0
120-135	100.0	0.0	0.0	0.0	0.0	0.0	100.0
135-150	100.0	0.0	0.0	0.0	0.0	0.0	100.0
150-165	100.0	0.0	0.0	0.0	0.0	0.0	100.0
165-180	100.0	0.0	0.0	0.0	0.0	0.0	100.0
180-195	100.0	0.0	0.0	0.0	0.0	0.0	100.0
195-210	100.0	0.0	0.0	0.0	0.0	0.0	100.0
210-225	100.0	0.0	0.0	0.0	0.0	0.0	100.0
225-240	19.4	0.0	80.6	0.0	0.0	0.0	100.0
240-255	2.2	41.6	56.2	0.0	0.0	0.0	100.0
255-270	0.0	88.9	11.1	0.0	0*0	0.0	100.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	o* o	0.0	0.0	0.0	0.0	0.0
total	16.5	32.0	45.0	6.4	0.0	0.0	100.0

Table A-20
OFFSHORE WAINWRIGHT (TOP) DRIFT CURRENT
1553 12 AUG 1981 - 1953 1 SEPT 1981

Column Percents:

Bearing Range	Speed Range {cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	75.00 >	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.0	0-0	0.0	0.0	0.0	0.0	0.0
30- 45	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45- 60	7.5	7.1	0.5	0.0	0.0	0.0	3.7
60- 75	11.3	28.4	50.0	83.9	0.0	0.0	38.8
75- 90	3.8	24.5	13.8	16.1	0.0	0.0	15.7
90-105	8.8	0.6	0.0	0.0	0.0	0.0	1.7
105-120	7.5	0.0	0.0	0.0	0.0	0.0	1.2
120-135	3.8	0.0	O*O	0.0	0.0	0.0	0.6
135-150	5.0	0.0	0.0	0.0	0.0	0.0	0.8
150-165	5.0	0.0	0.0	0.0	0.0	0.0	0.8
165-180	2.5	0.0	0.0	0.0	0.0	0.0	0.4
180-195	10.0	0.0	0.0	0.0	0.0	0.0	1.7
195-210	15.0	0.0	0.0	0.0	0.0	0.0	2.5
210-225	10.0	0.0	0.0	0.0	0.0	0.0	1.7
225-240	7.5	0.0	11.5	0.0	0.0	0.0	6.4
240-255	2.5	23.9	22.9	0.0	0.0	0.0	18.4
255-270	0.0	15.5	1.4	0.0	0.0	0.0	5.6
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	100.0	100.0	100.0	100.0	0.0	0.0	100.0.

largest screened speed = 51.81 cm/sec
total time period spanned (hours) = 483
sample interval (hours) = 1
total possible observations = 484
actual observations = 484

Table A-21
OFFSHORE WA INW RIGHT (BOTTOM) DRIFT CURRENT
1513 12 AUG 1981 '- 2013 1 SEPT 1981

Frequencies:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	o	0	0	0	0	0	0
15- 30	0	0	0	0	0	0	0
30- 45	0	0	21	0	0	0	21
45- 60	2	87	39	0	0	0	128
60- 75	5	99	0	0	0	0	104
75- 90	7	13	0	0	0	0	20
90-105	10	1	0	0	0	0	11
105-120	8	0	0	0	o	0	8
120-135	7	0	0	0	0	0	7
135-150	6	0	0	0	0	0	6
150-165	6	0	0	0	0	0	6
165-180	8	0	0	0	0	0	8
180-195	19	1	0	0	0	0	20
195-210	13	24	7	0	0	0	44
210-225	17	34	52	0	0	0	103
225-240	0	0	0	0	0	0	0
240-255	0	0	0	0	0	0	0
255-270	0	0	0	0	0	0	0
270-285	0	0	0	0	0	0	0
285-300	0	0	0	0	0	0	0
300-315	0	0	0	0	0	0	0
315-330	0	0	0	0	0	0	0
330-345	0	0	0	0	0	0	0
345-360	0	0	0	0	0	0	0
total	108	259	119	0	0	0	486

Table A-22
OFFSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1513 12 AUG 1981 - 2013 1 SEPT 1981

Percentages:

Bearing Range	Speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30- 45	0.0	0.0	4.3	0.0	0.0	0.0	4.3
45- 60	0.4	17.9	8.0	0.0	0.0	0.0	26.3
60- 75	1.0	20.4	0.0	0.0	0.0	0.0	21.4
75- 90	1.4	2.7	0.0	0.0	0.0	0.0	4.1
90-105	2.1	0.2	0.0	0.0	0.0	0.0	2.3
105-120	1.6	0.0	0.0	0.0	0.0	0.0	1.6
120-135	1.4	0.0	0.0	0.0	0.0	0.0	1.4
135-150	1.2	0.0	0.0	0.0	0.0	0.0	1.2
150-165	1.2	0.0	0.0	0.0	0.0	0.0	1.2
165-180	1.6	0.0	0.0	0.0	0.0	0.0	1.6
180-195	3.9	0.2	0.0	0.0	0.0	0.0	4.1
195-210	2.7	4.9	1.4	0.0	0.0	0.0	9.1
210-225	3*5	7.0	10.7	0.0	0.0	0.0	21.2
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	22.2	53.3	24.5	0.0	0.0	0.0	100.0

largest screened speed = 43.57 cm/sec
total time period spanned (hours) = 485
sample interval (hours) = 1
total possible observations = 486
actual observations = 486

Table A-23

OFFSHCRE W AINWRIGHT (BOTTOM] DRIFT CURRENT
1513 12 AUG 1981 - 2013 1 SEPT 1981

Row Percents:

Bearing Range	Speed Range {cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30- 45	0.0	0.0	100.0	0.0	0.0	0.0	100.0
45- 60	1.6	68.0	30.5	0.0	0.0	0.0	100.0
60- 75	4.8	95.2	0.0	0.0	0.0	0.0	100.0
75- 90	35.0	65.0	0.0	0.0	0.0	0.0	100.0
90-105	90.9	9.1	0.0	0.0	0.0	0.0	100.0
105-120	100.0	0.0	0.0	0.0	0.0	0.0	100.0
120-135	100.0	0.0	0.0	0.0	0.0	0.0	100.0
135-150	100.0	0.0	0.0	0.0	0.0	0.0	100.0
150-165	100.0	0.0	0.0	0.0	0.0	0.0	100.0
165-180	100.0	0.0	0.0	0.0	0.0	0.0	100.0
180-195	95.0	5.0	0.0	0.0	0.0	0.0	100.0
195-210	29.5	54.5	15.9	0.0	0.0	0.0	100.0
210-225	16.5	33.0	50.5	0.0	0.0	0.0	100.0
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	22.2	53.3	24.5	0.0	0.0	0.0	100.0

Table A-24
OFFSHORE WAINWRIGHT (BOTTOM) DRIFT CURRENT
1513 12 AUG 1981 - 2013 1 SEPT 1981

Column Percents:

Bearing Range	speed Range (cm/see) 0.00 15.00	15.00 30.00	30.00 45.00	45.00 60.00	60.00 75.00	> 75.00	total
0 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15- 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30- 45	0.0	0.0	17.6	0.0	0.0	0.0	4.3
45- 60	1.9	33.6	32.8	0.0	0.0	0.0	26.3
60- 75	4.6	38.2	0.0	0.0	0.0	0.0	21.4
75- 90	6.5	5.0	0.0	0.0	0.0	0.0	4.1
90-105	9.3	0.4	0.0	0.0	0.0	0.0	2.3
105-120	7.4	0.0	0.0	0.0	0.0	0.0	1.6
120-135	6.5	0.0	0.0	0.0	0.0	0.0	1.4
135-150	5.6	0.0	0.0	0.0	0.0	0.0	1.2
150-165	5.6	0.0	0.0	0.0	0.0	0.0	1.2
165-180	7.4	0.0	0.0	0.0	0.0	0.0	1.6
180-195	17.6	0.4	0.0	0.0	0.0	0.0	4.1
195-210	12.0	9.3	5.9	0.0	0.0	0.0	9.1
210-225	15.7	13.1	43.7	0.0	0.o	0.0	21.2
225-240	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240-255	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255-270	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270-285	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285-300	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300-315	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315-330	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330-345	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345-360	0.0	0.0	0.0	0.0	0.0	0.0	0.0
total	100.0	100.0	100.0	0.0	0.0	0.0	100.0

largest screened speed = 43.57 cm/sec
total time period spanned (hours) = 485
sample interval {hours) = 1
total possible observations = 486
actual observations = 486

APPENDIX B

Meteorological Data

Wind Data

Table B-1 Barrow Wind Data.

Calendar Day	Julian Day	Time (GMT)	Direction (“True)	Speed (knots)
Aug 01	213	0059	290	10
		0359	300	13
		0654	290	10
		0954	300	11
		1257	270	14
		1556	280	11
		1858	290	12
		2154	320	13
Aug 02	214	0054	320	13
		0353	320	12
		0655	340	11
		0955	280	06
		1258	290	09
		1553	280	09
		1856	240	06
		2156	230	06
Aug 03	215	0054	220	06
		0353	180	07
		0652	200	13
		0954	230	11
		1255	220	08
		1557	210	13
		1857	200	11
		2159	180	09
Aug 04	216	0053	200	08
		0354	240	08
		0651	250	10
		0958	230	10
		1257	250	08
		1559	240	09
		1853	250	09
		2156	180	06
Aug 05	217	0057	180	03
		0353	180	08
		0651	230	06
		0955	310	07
		1258	290	03
		1559	320	06
		1857	340	07
		2158	360	08

Table B-z (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 06	218	0057	360	13
		0353	360	12
		0652	360	11
		0953	360	08
		1258	340	10
		1558	340	08
		1853	340	08
		2155	330	06
Aug 07	219	0055	330	08
		0353	350	07
		0652	340	04
		0957	310	06
		1258	320	04
		1554	320	08
		1854	040	05
		2152	020	05
Aug 08	220	0055	050	07
		0354	070	10
		0650	060	08
		0956	070	10
		1258	060	12
		1552	080	10
		1852	080	11
		2154	050	12
Aug 09	221	0054	060	11
		0358	050	11
		0650	060	12
		0953	050	11
		1258	050	08
		1554	060	10
		1852	070	14
		2153	070	12
Aug 10	222	0057	070	09
		0357	090	07
		0650	070	06
		0954	020	07
		1258	010	07
		1553	360	06
		1852	060	07
		2153	050	06

TableB-3 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 11	223	0056	080	07
		0354	080	06
		0651	080	10
		0958	080	10
		1252	080	11
		1553	090	13
		1852	100	14
		2153	090	12
Aug 12	224	0055	080	12
		0356	060	12
		0653	090	12
		0955	060	13
		1251	060	10
		1554	050	10
		1851	020	08
		2156	360	11
Aug 13	225	0057	010	06
		0356	320	05
		0652	250	09
		0954	240	11
		1253"	230	08
		1556	270	07
		1850	300	06
		2156	350	03
Aug 14	226	0058	350	05
		0358	320	03
		0656	290	06
		0954	280	05
		1255	310	05
		1551	290	07
		1858	300	06
		2155	330	03
Aug 15	227	0057	140	03
		0357	330	04
		0653	360	04
		0953	010	05
		1252	035	08
		1557	330	06
		1857	020	07
		2156	020	08

Table B-4 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ('True)	Speed (knots)
Aug 16	228	0056	350	09
		0354	340	10
		0653	330	10
		0953	300	13
		1257	270	13
		1553	270	11
		1800	260	14
		2151	250	12
Aug 17	229	0055	250	16
		0352	240	13
		0651	260	14
		0953	240	13
		1256	240	14
		1557	230	14
		1858	330	23
		2158	240	14
Aug 18	230	0058	250	14
		0353	250	13
		0651	240	13
		0953	250	13
		1256	250	14
		1555	250	14
		1854	270	11
		2156	250	12
Aug 19	231	0058	270	10
		0334	250	09
		0652	290	06
		0957	300	07
		1257	340	07
		1558	350	10
		1857	350	08
		2157	350	08
Aug 20	232	0057	360	08
		0352	340	08
		0650	010	07
		0954	350	05
		1257	330	07
		1558	040	07
		1856	060	07
		2153	070	07

Table B-5 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 21	233	0053	100	06
		0353	120	08
		0653	120	07
		0951	120	06
		1258	170	08
		1554	350	04
		1854	350	03
		2154	160	09
Aug 22	234	0057	200	08
		0351	210	12
		0657	230	10
		0955	250	11
		1258	260	15
		1554	240	14
		1853	250	15
		2158	250	14
Aug 23	235	0058	240	10
		0357	240	08
		0652	240	08
		0957	230	15
		1255	240	13
		1553	250	14
		1853	310	06
		2153	350	05
Aug 24	236	0055	090	03
		0358	120	06
		0653	120	09
		0955	130	10
		1258	060	06
		1554	230	05
		1854	270	05
		2153	230	05
Aug 25	237	0057	250	09
		0357	300	10
		0657	350	13
		0957	010	09
		1253	020	09
		1554	020	08
		1854	070	10
		2153	050	10

Table B-6 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 26	238	0058	080	09
		0359	070	09
		0655	050	10
		0958	070	14
		1254	080	10
		1554	060	09
		1853	040	10
		2154	060	12
Aug 27	239	0058	060	07
		0357	070	09
		0654	060	08
		0952	070	08
		1254	040	10
		1557	050	09
		1857	050	11
		2158	040	08
Aug 28	240	0056	070	09
		0358	080	08
		0657	070	08
		0953	060	11
		1254	040	08
		1553	040	08
		1858	070	09
		2157	070	07
Aug 29	241	0057	100	08
		0354	100	08
		0654	100	09
		0957	090	08
		1252	090	07
		1557	080	06
		1858	070	06
		2157	340	08
Aug 30	242	0056	340	05
		0357	320	10
		0653	280	12
		0953	280	17
		1257	320	14
		1555	340	13
		1858	330	10
		2156	350	13

Table B-7 (continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 31	243	0052	320	06
		0356	310	08
		0651	310	11
		0955	310	11
		1251	310	12
		1553	330	08
		1857	320	09
		2156	330	10
Sep 01	244	0058	350	07
		0353	010	08
		0651	020	07
		0951	040	06
		1255	010	10
		1555	350	07
		1854	020	06
		2154	060	05
Sep 02	245	0058	040	03
		0352	040	04
		0652	- - -	00
		0950	290	05
		1256	320	04
		1556	010	07
		1856	360	07
		2154	060	07
Sep 03	246	0056	060	08
		0353	100	08
		0652	090	11
		0954	080	12
		1255	090	16
		1558	070	12
		1857	070	17
		2154	080	13
Sep 04	247	0052	070	15
		0353	070	14
		0654	060	14
		0958	060	13
		1257	070	10
		1558	070	12
		1854	070	12
		2158	060	15

Table B-8 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (°True)	Speed (knots)
Sep 05	248	0050	070	15
		0355	050	13
		0651	040	13
		0958	050	15
		1251	040	14
		1553	080	17
		1854	070	15
		2157	070	14
Sep 06	249	0055	070	12
		0350	060	12
		0650	070	15
		0956	070	12
		1257	080	14
		1559	080	12
		1857	080	13
		2156	080	08
Sep 07	250	0052	070	08
		0351	070	10
		0651	070	11
		0958	070	10
		1255	060	13
		1557	050	10
		1857	080	10
		2158	020	10

Table B-9 Wainwright Wind Data

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 04	216	0000	180	10
		0600	170	03
		1200	260	04
		1800	190	04
Aug 05	217	0000	270	10
		0600	250	04
		1200	150	05
		1800	220	02
Aug 06	218	0000	280	08
		0600	330	06
		1200	010	08
		1800	030	10
Aug 07	219	0000	040	10
		0600	020	09
		1200	050	05
		1800	030	04
Aug 08	220	0000	020	05
		0600	050	07
		1200	070	09
		1800	070	10
Aug 09	221	0000	060	10
		0600	060	10
		1200	070	10
		1800	070	10
Aug 10	222	0000	070	10
		0600	060	06
		1200	050	05
		1800	040	03
Aug 11	223	0000	010	04
		0600	050	07
		1200	060	06
		1800	070	05
Aug 12	224	0000	090	05
		0600	100	07
		1200	060	07
		1800	050	10

Table B-10 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 13	225	0000	030	10
		0600	040	10
		1200	010	03
		1800	- - -	00
Aug 14	226	0000	270	03
		0600	320	02
		1200	- - -	00
		1800	- - -	00
Aug 15	227	0000	360	03
		0600	050	05
		1200	040	03
		1800	030	05
Aug 16	228	0000	010	06
		0600	360	04
		1200	010	10
		1800	350	08
Aug 17	229	0000	290	12
		0600	300	08
		1200	300	10
		1800	270	14
Aug 18	230	0000	250	20
		0600	250	20
		1200	280	16
		1800	300	14
Aug 19	231	0000	290	12
		0600	300	10
		1200	- - -	00
		1800	300	04
Aug 20	232	0000	340	06
		0600	030	06
		1200	020	06
		1800	060	02
Aug 21	233	0000	---	00
		0600	---	00
		1200	100	02
		1800	140	03

Table B-11 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 22	234	0000	190	07
		0600	180	06
		1200	240	07
		1800	280	06
Aug 23	235	0000	270	14
		0600	250	10
		1200	240	10
		1800	250	08
Aug 24	236	0000	260	06
		0600	350	04
		1200	070	04
		1800	090	05
Aug 25	237	0000	---	00
		0600	320	04
		1200	290	05
		1800	020	07
Aug 26	238	0000	060	12
		0600	060	10
		1200	070	10
		1800	070	08
Aug 27	239	0000	070	10
		0600	060	12
		1200	070	12
		1800	080	12
Aug 28	240	0000	070	10
		0600	060	12
		1200	090	10
		1800	100	12
Aug 29	241	0000	090	10
		0600	080	14
		1200	110	10
		1800	090	10
Aug 30	242	0000	090	12
		0600	070	08
		1200	050	04
		1800	360	03

Table B12 **(Continued)**

Calendar Day	**Julian** Day	Time (GMT)	Direction ('True)	Speed (knots)
Aug 31	243	0000	300	10
		0600	020	07
		1200	010	02
		1800	- - -	00
Sep 01	244	0000	360	05
		0600	030	06
		1200	090	03
		1800	060	04
Sep 02	245	0000	070	07
		0600	070	08
		1200	080	05
		1800	120	04
Sep 03	246	0000	070	06
		0600	060	05
		1200	090	06
		1800	100	08
Sep 04	247	0000	090	13
		0600	090	15
		1200	090	16
		1800	090	10

TableBl [3] Point Lay Wind Data

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 08	220	0000	020	15
		0600	030	16
		1200	020	12
		1800	030	15
Aug 09	221	0000	020	18
		0600	050	14
		1200	040	05
		1800	030	12
Aug 10	222	0000	030	12
		0600	360	08
		1200	020	04
		1800	010	03
Aug 11	223	0000	360	03
		0600	360	05
		1200	---	00
		1800	350	04
Aug 12	224	0000	340	05
		0600	350	04
		1200	330	14
		1800	300	04
Aug 13	225	0000	---	00
		0600	240	04
		1200	240	02
		1800	240	06
Aug 14	226	0000	240	04
		0600	010	02
		1200	040	04
		1800	090	05
Aug 15	227	0000	340	04
		0600	010	08
		1200	030	05
		1800	020	03
Aug 16	228	0000	330	10
		0600	300	05
		1200	---	00
		1800	330	05

Table B14 (continued)

Calendar Day	Julian Day	Time (GMT)	Direction (“True)	Speed (knots)
Aug 17	229	0000	300	05
		0600	250	13
		1200	240	12
		1800	240	12
Aug 18	230	0000	230	20
		0600	220	25
		1200	240	24
		1800	250	20
Aug 19	231	0000	270	12
		0600	270	20
		1200	260	17
		1800	360	16
Aug 20	232	0000	330	10
		0600	360	10
		1200	- - -	00
		1800	- - -	00
Aug 21	233	0000	---	00
		0600	050	03
		1200	- - -	00
		1800	090	04
Aug 22	234	0000	---	00
		0600	200	04
		1200	250	07
		1800	250	12
Aug 23	235	0000	250	10
		0600	220	03
		1200	240	03
		1800	- - -	00
Aug 24	236	0000	---	00
		0600	030	02
		1200	- - -	00
		1800	-- -	00
Aug 25	237	0000	---	00
		0600	330	02
		1200	- - -	00
		1800	- - -	00

Table B1 5 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 26	238	0000	020	10
		0600	030	16
		1200	030	06
		1800	030	15
Aug 27	239	0000	060	15
		0600	040	16
		1200	050	16
		1800	040	15
Aug 28	240	0000	040	15
		0600	040	20
		1200	050	20
		1800	050	20
Aug 29	241	0000	050	20
		0600	050	20
		1200	050	15
		1800	050	20
Aug 30	242	0000	050	20
		0600	040	18
		1200	- - -	00
		1800	020	10
Aug 31	243	0000	360	08
		0600	010	03
		1200	- - -	00
		1800	---	00
Sep 01	244	0000	---	00
		0600	020	10
		1200	---	00
		1800	030	05
Sep 02	245	0000	050	14
		0600	040	18
		1200	030	10
		1800	030	15
Sep 03	246	0000	060	18
		0600	050	18
		1200	030	15
		1800	030	15

Table B16 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (“True)	Speed (knots)
Sep 04	247	0000	050	18
		0600	050	15
		1200	050	05
		1800	060	20

Table B17 Cape Lisburne Wind Data

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 01	213	0055	350	11
		0355	360	11
		0655	340	10
		0957	340	12
		1255	330	11
		1559	340	09
		1856	350	09
		2157	360	06
Aug 02	214	0056	010	03
		0355	---	00
		0655	090	07
		0955	090	07
		1255	100	09
		1557	110	08
		1855	140	03
		2156	130	03
Aug 03	215	0057	---	00
		0355	---	00
		0656	350	05
		0956	240	17
		1257	230	17
		1558	230	16
		1856	220	10
		2157	230	19
Aug 04	216	0056	220	23
		0355	220	19
		0656	220	12
		0958	240	27
		1258	230	26
		1555	230	22
		1856	190	10
		2155	220	10
Aug 05	217	0055	---	00
		0356	---	00
		0657	080	04
		0955	090	05
		1255	080	02
		1555	---	00
		1855	050	04
		2155	080	11

Table B18 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (°True)	Speed (knots)
Aug 06	218	0056	060	12
		0355	050	14
		0656	060	14
		0956	060	13
		1255	060	11
		1556	060	13
		1855	070	15
		2156	060	12
Aug 07	219	0056	070	13
		0357	070	12
		0655	060	10
		0958	070	10
		1256	060	10
		1555	060	13
		1855	060	15
		2155	070	18
Aug 08	220	0056	060	17
		0356	060	16
		0658	070	15
		0955	070	14
		1259	060	16
		1555	060	17
		1855	060	15
		2155	070	14
Aug 09	221	0055	070	14
		0355	070	17
		0655	070	13
		0956	070	14
		1257	070	13
		1555	050	10
		1855	040	11
		2155	040	12
Aug 10	222	0055	050	11
		0357	030	12
		0655	030	09
		0955	030	06
		1255	040	06
		1556	030	06
		1855	050	04
		2156	020	05

Table B19 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (“True)	Speed (knots)
Aug 11	223	0055	040	02
		0356	010	05
		0656	040	06
		0955	010	04
		1255	060	07
		1556	050	09
		1855	040	08
		2155	020	05
Aug 12	224	0055	010	04
		0358	030	05
		0656	010	03
		0956	330	06
		1255	350	04
		1555	320	03
		1856	320	08
		2157	290	04
Aug 13	225	0055	260	03
		0357	300	05
		0658	230	10
		0958	210	09
		1255	230	06
		1555	130	05
		1855	150	02
		2155	120	04
Aug 14	226	0055	160	08
		0355	111	12
		0655	120	09
		0956	100	10
		1255	080	10
		1555	100	04
		1855	180	03
		2158	050	06
Aug 15	227	0055	---	00
		0359	---	00
		0656	050	08
		0959	030	04
		1258	360	09
		1555	350	06
		1855	350	03
		2155	020	07

Table B20 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (*True)	Speed (knots)
Aug 16	228	0055	020	04
		0355	030	08
		0655	040	05
		0955	030	03
		1255	360	05
		1555	330	08
		1855	280	02
		2155	260	02
Aug 17	229	0055	280	05
		0356	310	10
		0655	300	06
		0955	300	15
		1255	300	15
		1555	300	18
		1856	300	19
		2155	300	17
Aug 18	230	0055	290	13
		0358	290	10
		0657	300	09
		0957	310	10
		1255	310	09
		1555	320	10
		1855	270	07
		2155	320	11
Aug 19	231	0055	330	07
		0358	350	06
		0657	340	09
		0955	030	11
		1255	360	12
		1555	360	13
		1855	020	14
		2155	040	09
Aug 20	232	0057	050	09
		0357	040	08
		0655	050	09
		0955	070	08
		1 2 5 5	090	08
		1555	080	07
		1856	100	06
		2155	150	03

Table B21 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction ("True)	Speed (knots)
Aug 21	233	0055	160	04
		0355	150	03
		0655	080	02
		0957	070	03
		1255	---	00
		1555	230	18
		1855	230	22
		2155	290	07
Aug 22	234	0055	310	08
		0355	290	12
		0655	340	06
		0955	140	02
		1255	360	04
		1555	---	00
		1855	180	03
		2155	---	00
Aug 23	235	0055	200	02
		0355	110	03
		0655	100	05
		0955	090	06
		1255	100	07
		1555	100	06
		1855	130	03
		2155	150	03
Aug 24	236	0055	---	00
		0356	090	03
		0655	090	05
		0955	090	05
		1255	090	04
		1555	090	03
		1855	---	00
		2155	100	04
Aug 25	237	0055	100	02
		0357	100	03
		0655	100	06
		0955	080	11
		1255	090	11
		1555	090	11
		1855	080	12
		2155	080	10

Table B22 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (“True)	Speed (knots)
Aug 26	238	0055	090	10
		0358	090	10
		0655	100	09
		0955	100	08
		1255	100	09
		1555	100	09
		1855	090	11
		2155	090	10
Aug 27	239	0055	090	13
		0356	090	12
		0655	100	16
		0956	100	20
		1255	100	17
		1555	100	17
		1855	100	20
		2155	100	20
Aug 28	240	0055	100	20
		0355	100	18
		0655	100	20
		0956	110	15
		1255	120	10
		1555	120	14
		1855	100	17
		2155	100	15
Au9 29	241	0055	100	13
		0356	090	13
		0655	090	13
		0955	100	09
		1255	100	11
		1555	100	11
		1855	100	12
		2155	090	11
Aug 30	242	0056	100	11
		0355	100	14
		0655	080	14
		0955	080	13
		1255	090	13
		1555	100	11
		1855	100	10
		2155	090	09

Table B23 (Continued)

Calendar Day	Julian Day	Time (GMT)	Direction (“True)	Speed (knots)
Aug 31	243	0055	090	12
		0356	100	11
		0656	100	10
		0955	100	10
		1255	100	10
		1555	100	11
		1855	090	14
		2155	090	12
Sep 01	244	0055	110	10
		0355	090	12
		0655	100	09
		0956	110	14
		1255	100	12
		1555	100	13
		1855	100	12
		2155	100	11
Sep 02	245	0055	140	06
		0355	150	06
		0655	090	08
		0957	090	06
		1255	090	05
		1555	140	03
		1855	140	04
		2155	100	11
Sep 03	246	0055	100	10
		0355	100	11
		0655	100	08
		0955	090	07
		1255	120	04
		1555	100	08
		1855	090	11
		2155	090	12
Sep 04	247	0055	090	16
		0355	100	17
		0655	090	20
		0956	090	20
		1255	080	24
		1555	090	24
		1855	090	23

Atmospheric Pressure Data

Table B24 Atmospheric Pressure

Day	Pressure (mb-Hg) Nome	Barrow
Aug 5	1006.1	1008.1
6	1005.8	1014.6
7	1011.8	1021.2
8	1001.6	1015.2
9	999.8	1011.2
10	1000.9	1011.2
11	1009.9	1013.9
12	1007.3	1008.7
13	999.7	998.9
14	1001.4	997.3
15	1003.5	1004.6
16	1012.9	1009.7
17	1016.8	1012.7
18	1012.4	1000.0
19	1008.0	1000.7
20	1006.1	1009.0
21	1005.1	1010.2
22	1008.9	1003.2
23	1008.5	1009.8
24	1003.6	1013.4
25	1006.6	1017.8
26	1012.6	1023.6
27	1011.6	1030.5
28	1013.6	1033.4
29	1009.2	1028.3
30	1006.8	1019.6
31	1010.6	1018.5

APPENDIX C

Hydrographic Data

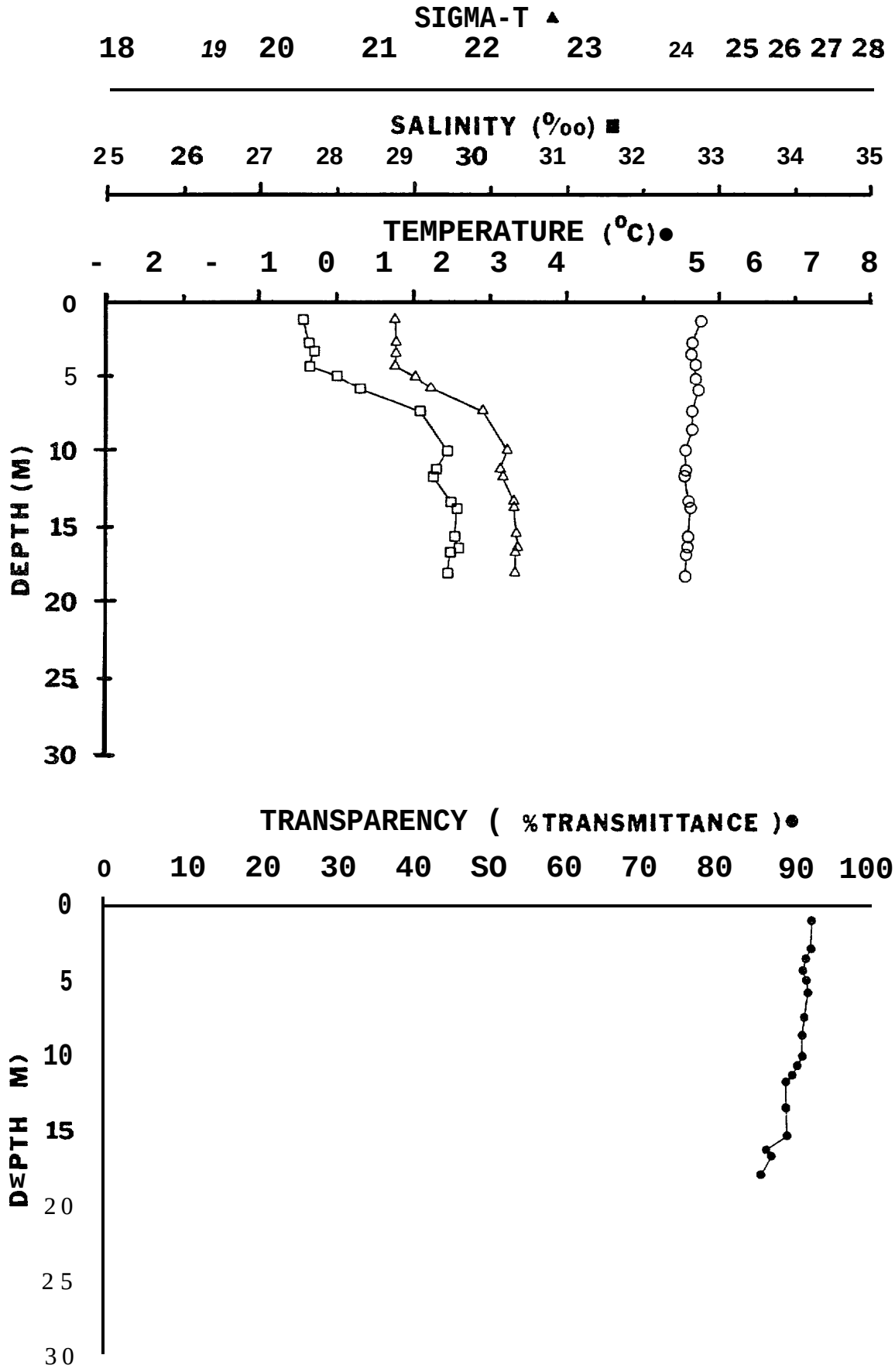


Figure C-1. Hydrographic Profiles for Station Barrow-1

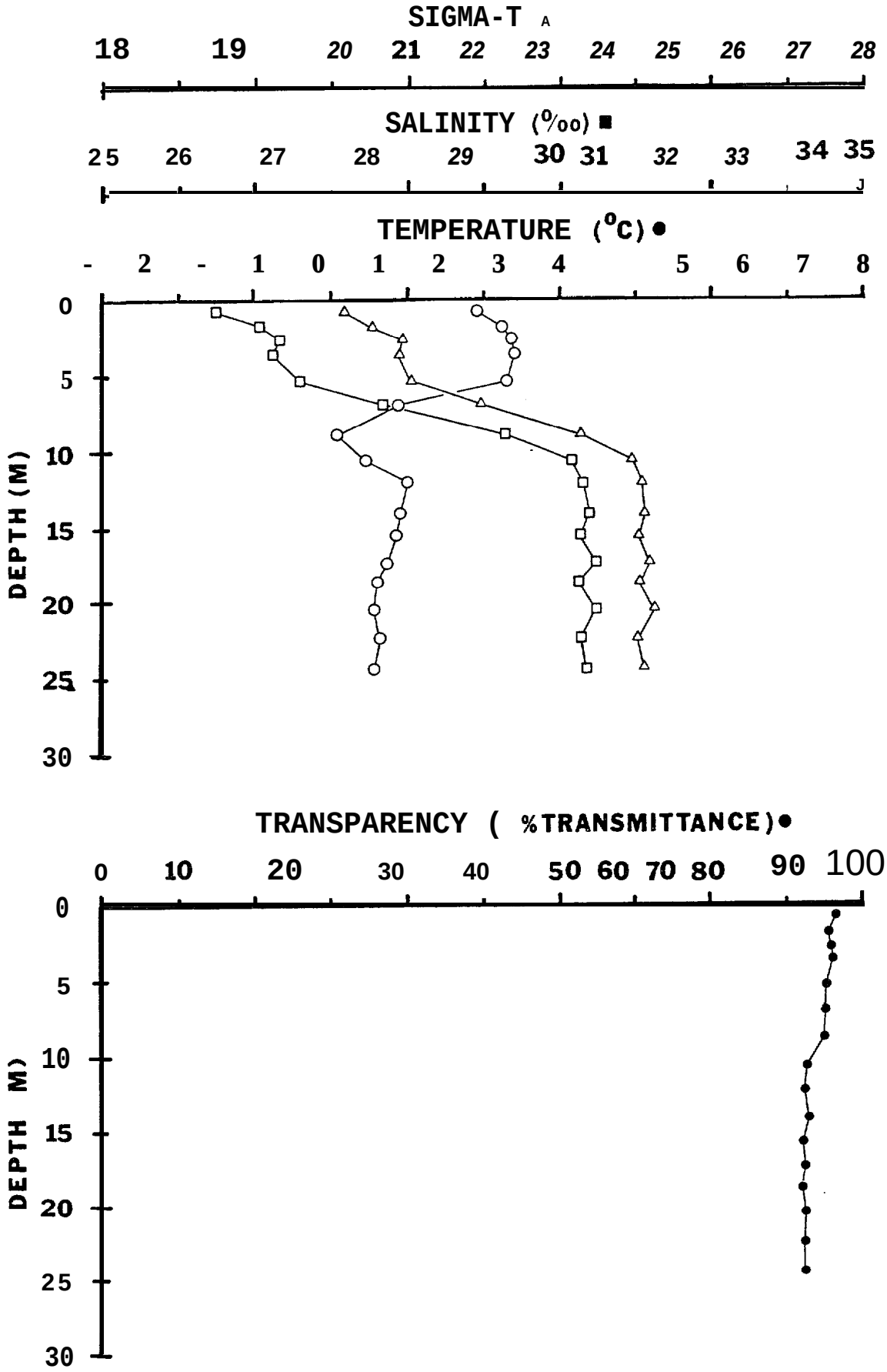


Figure C-2. Hydrographic Profiles for Station Barrow-2

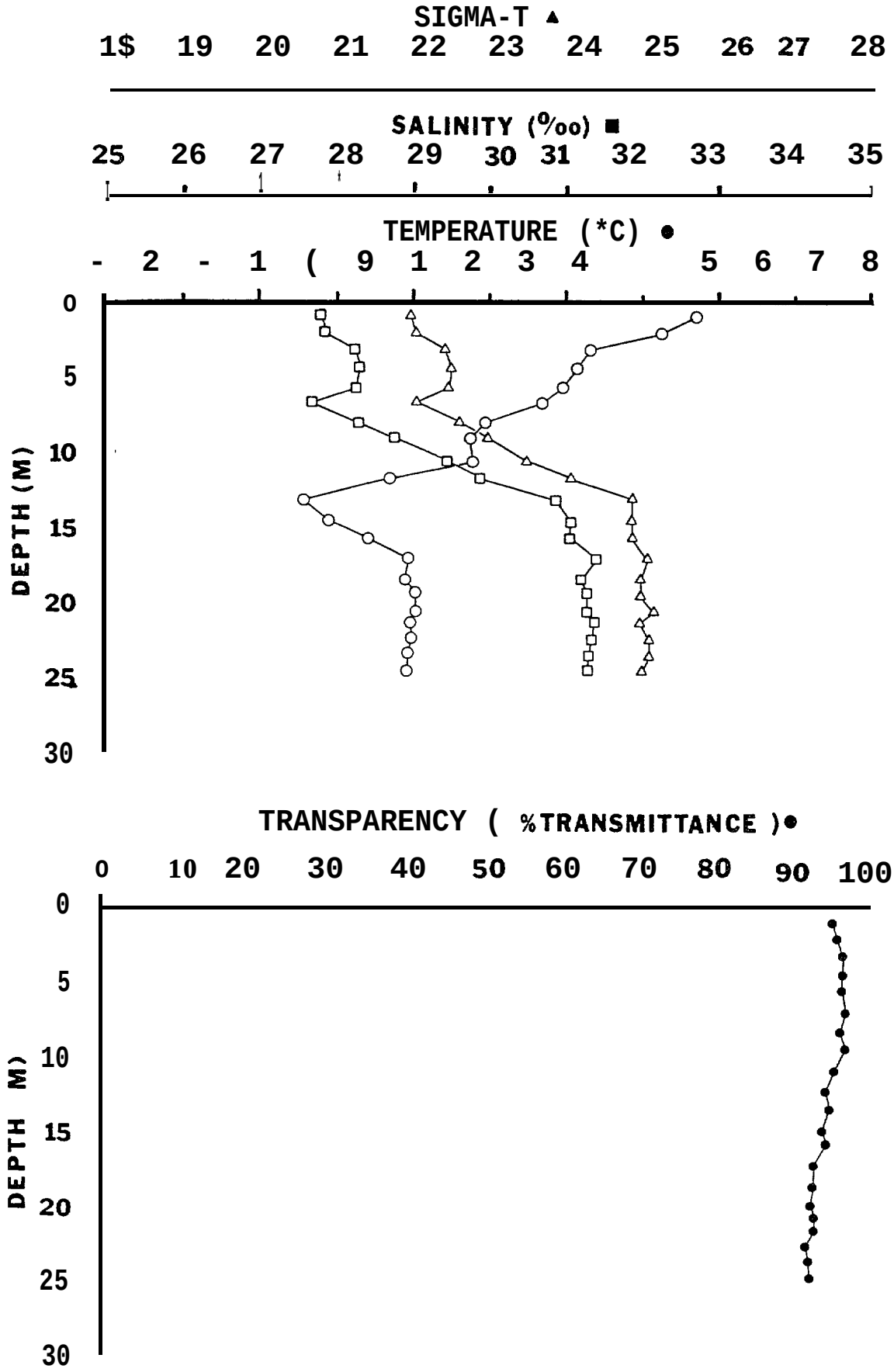


Figure C-3. Hydrographic Profiles for Station Barrow-3

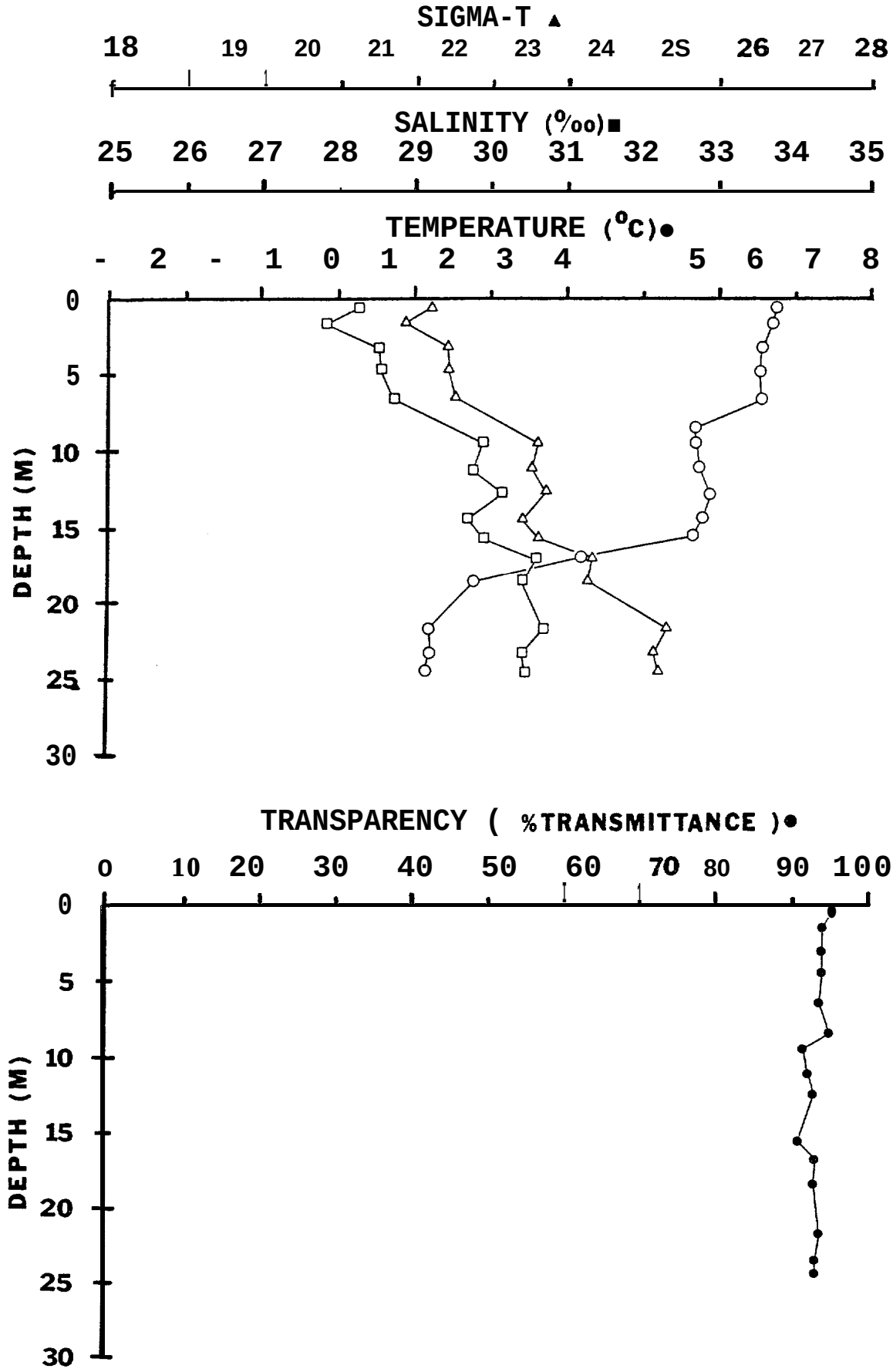


Figure C-4. Hydrographic Profiles for Station Barrow-4

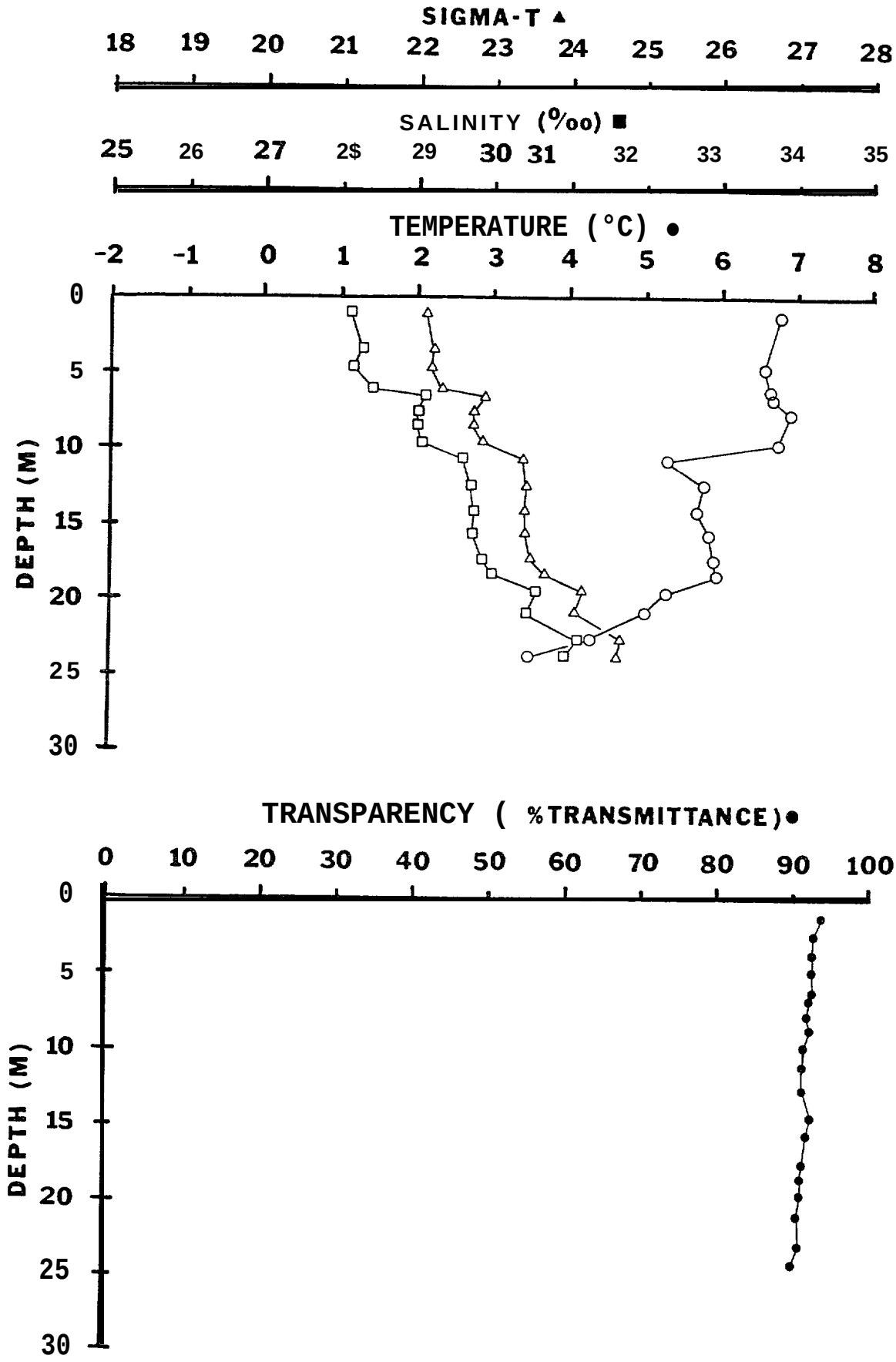


Figure C-5. Hydrographic Profiles for Station Barrow-5

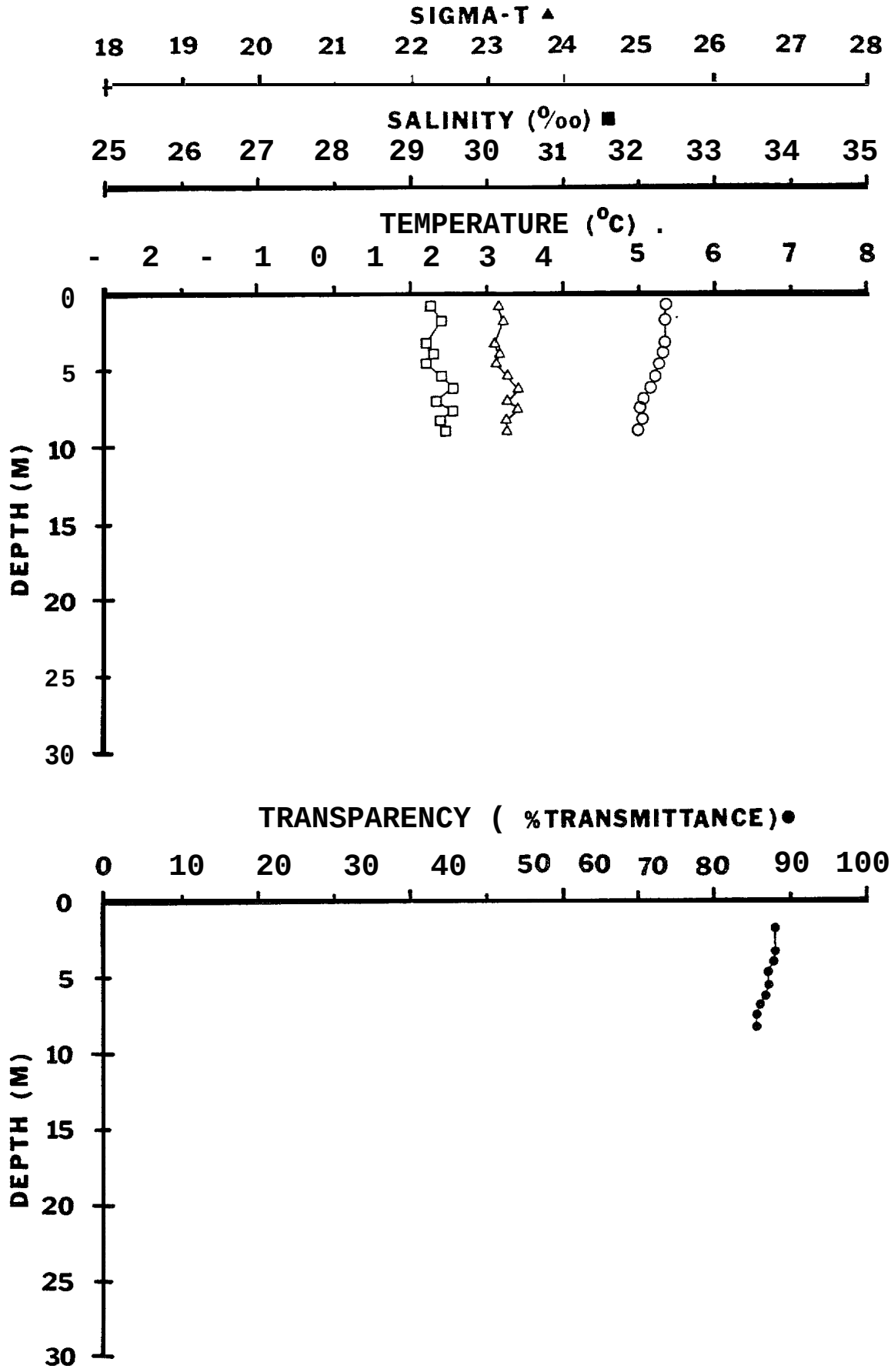


Figure c-6. Hydrographic Profiles for Station Skull Cliffs-6

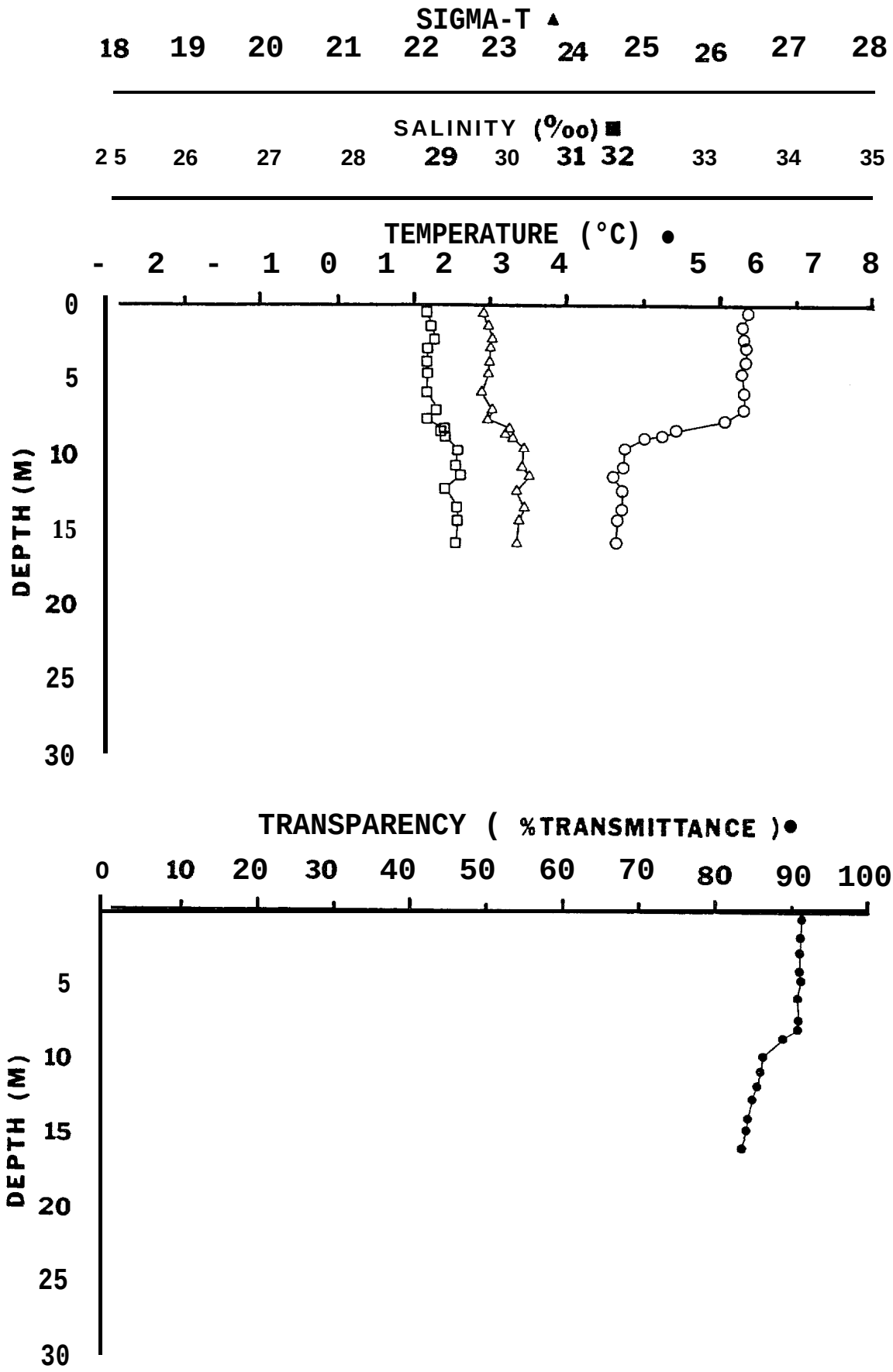


Figure C-7 Hydrophic Profiles for Station Skull Cliffs-7

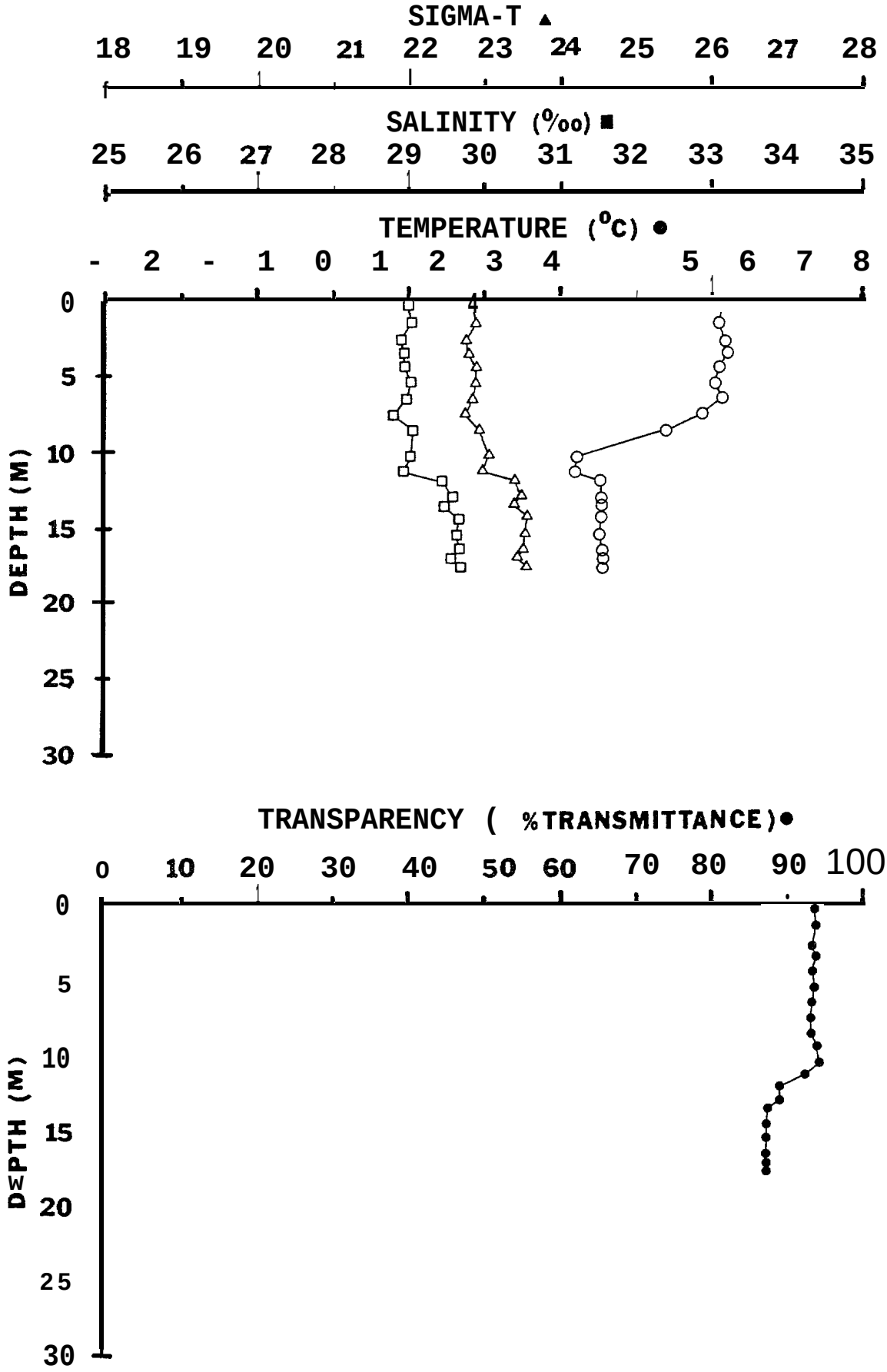


Figure C-8. Hydrographic Profiles for Station Skull Cliffs-8

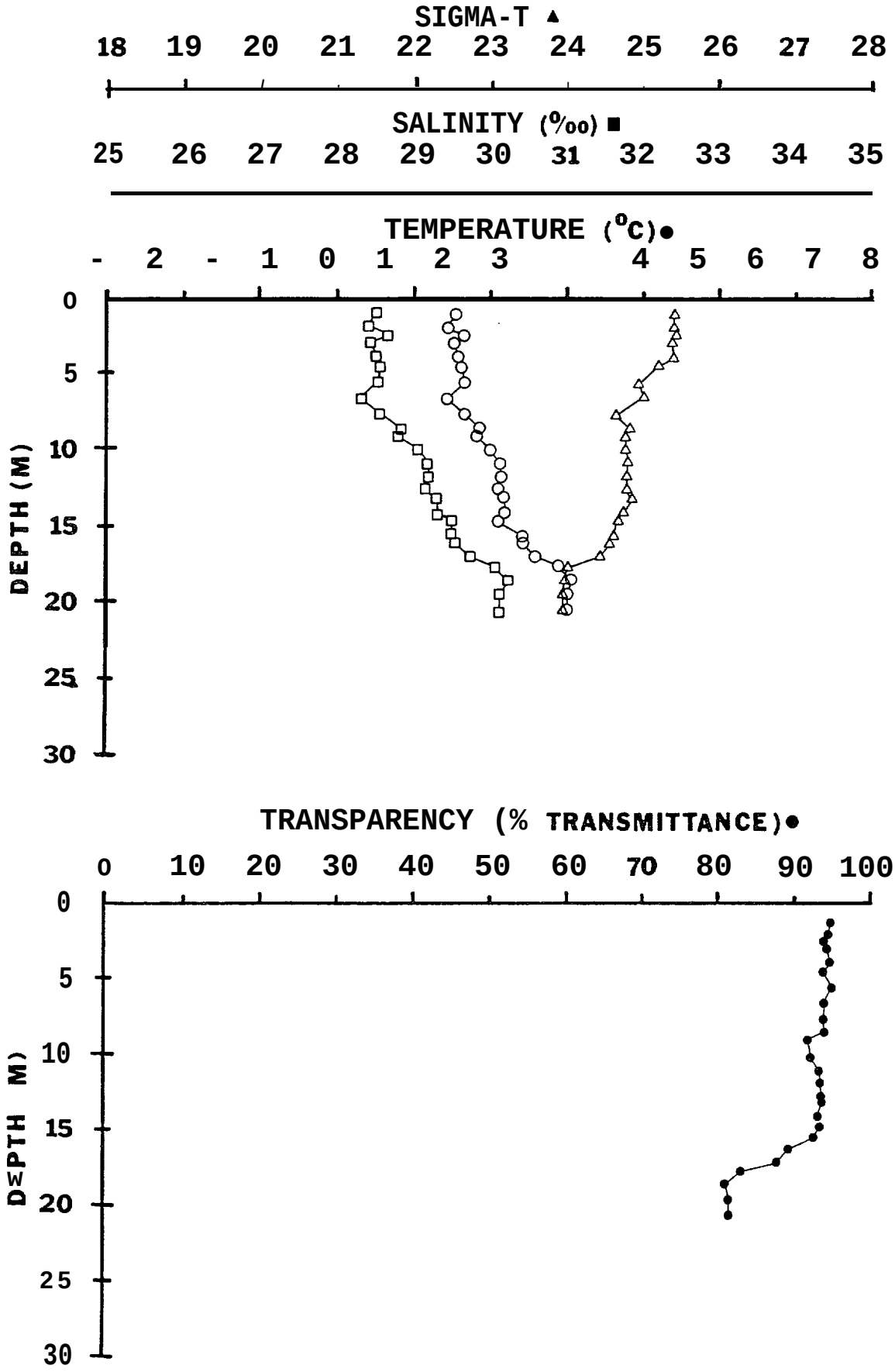


Figure C-9. Hydrographic Profiles for Station Skull Cliffs-9

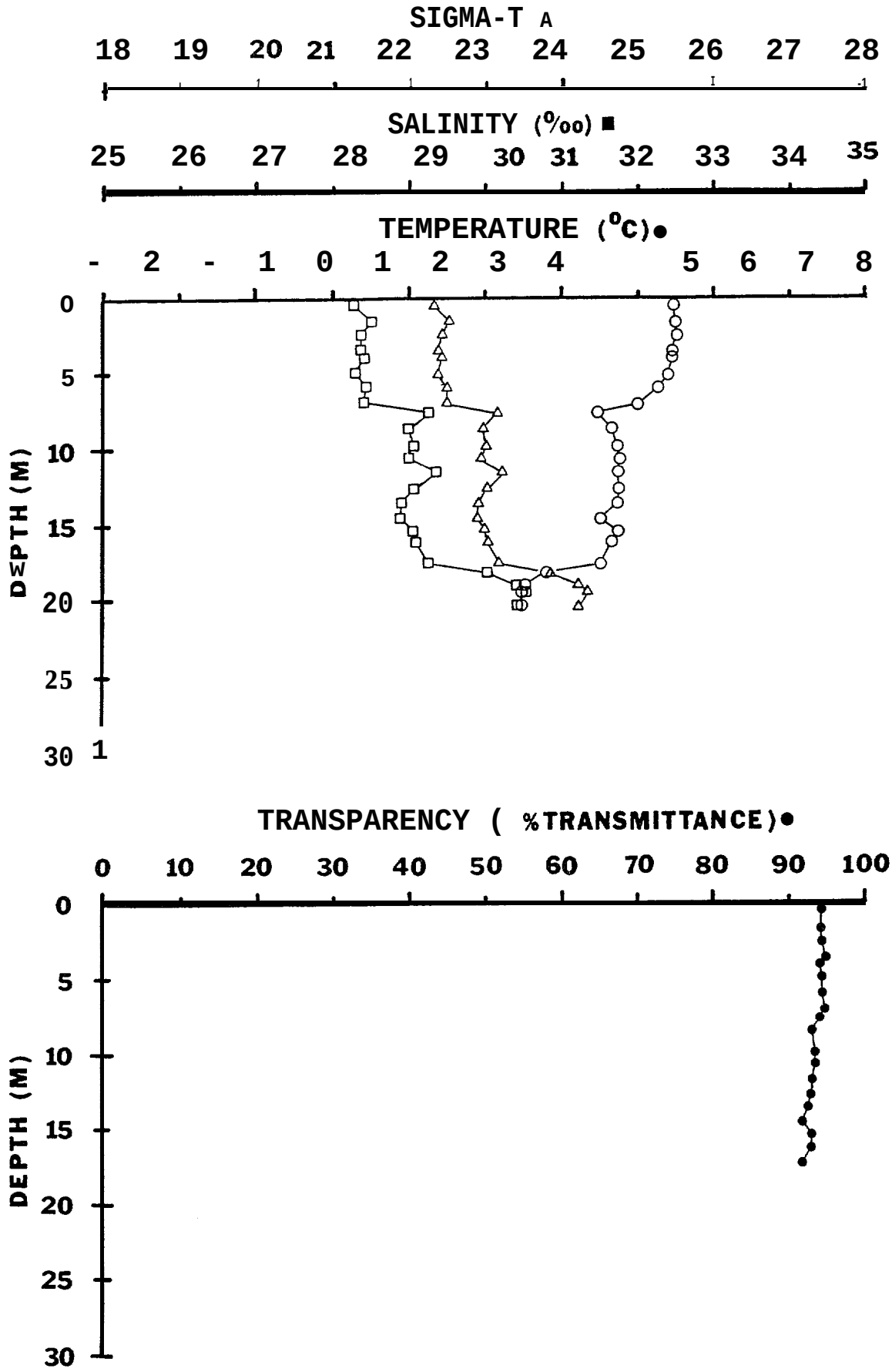
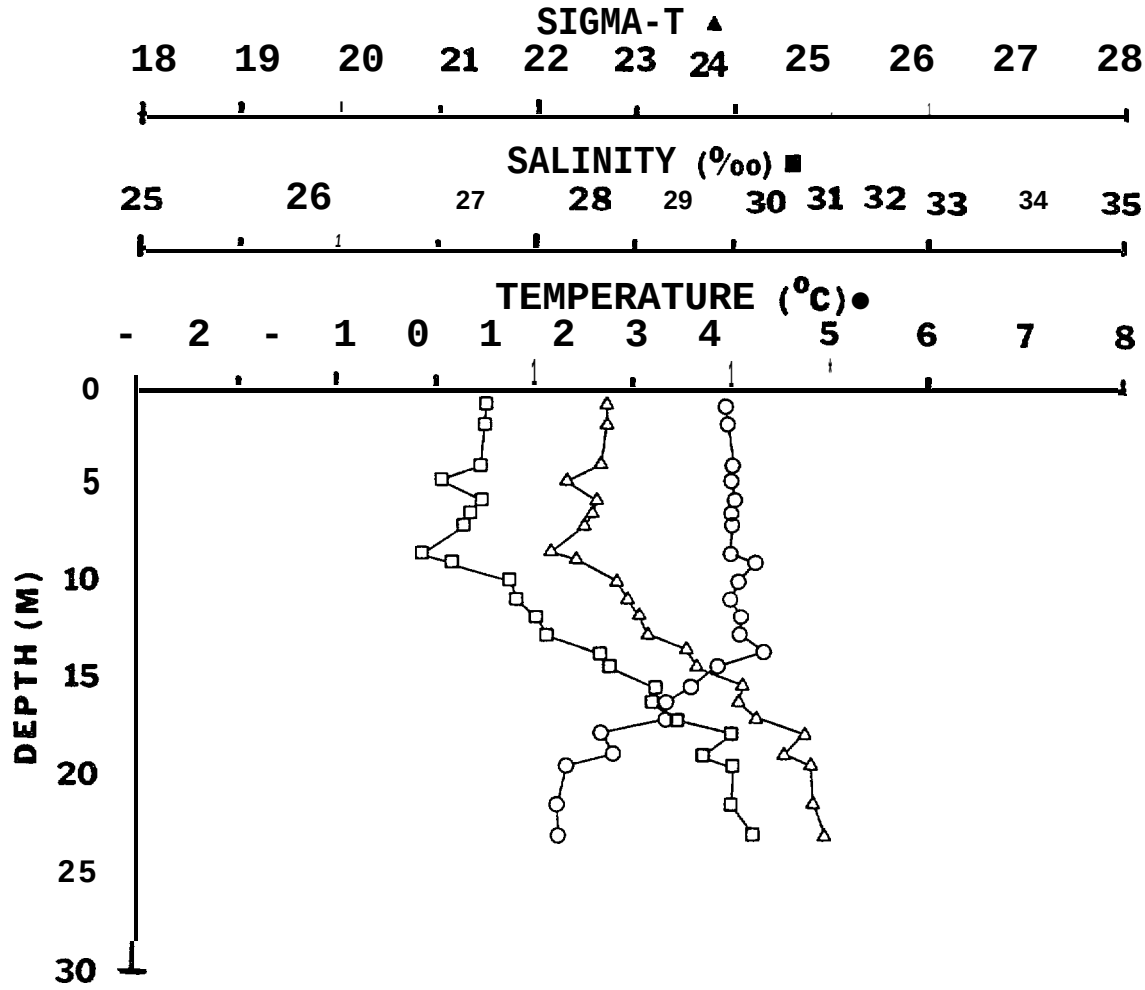


Figure C-10. Hydrographic Profiles for Station Skull Cliffs-10



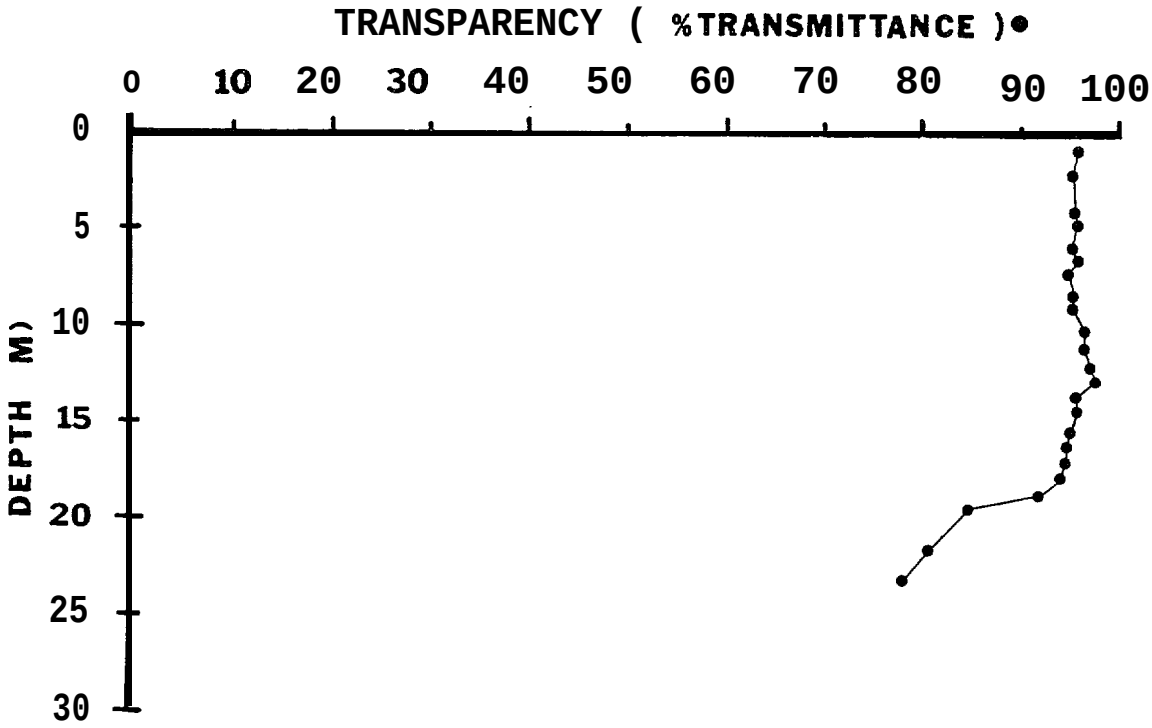


Figure C-II. Hydrographic Profiles for Station Sun Cliffs-n

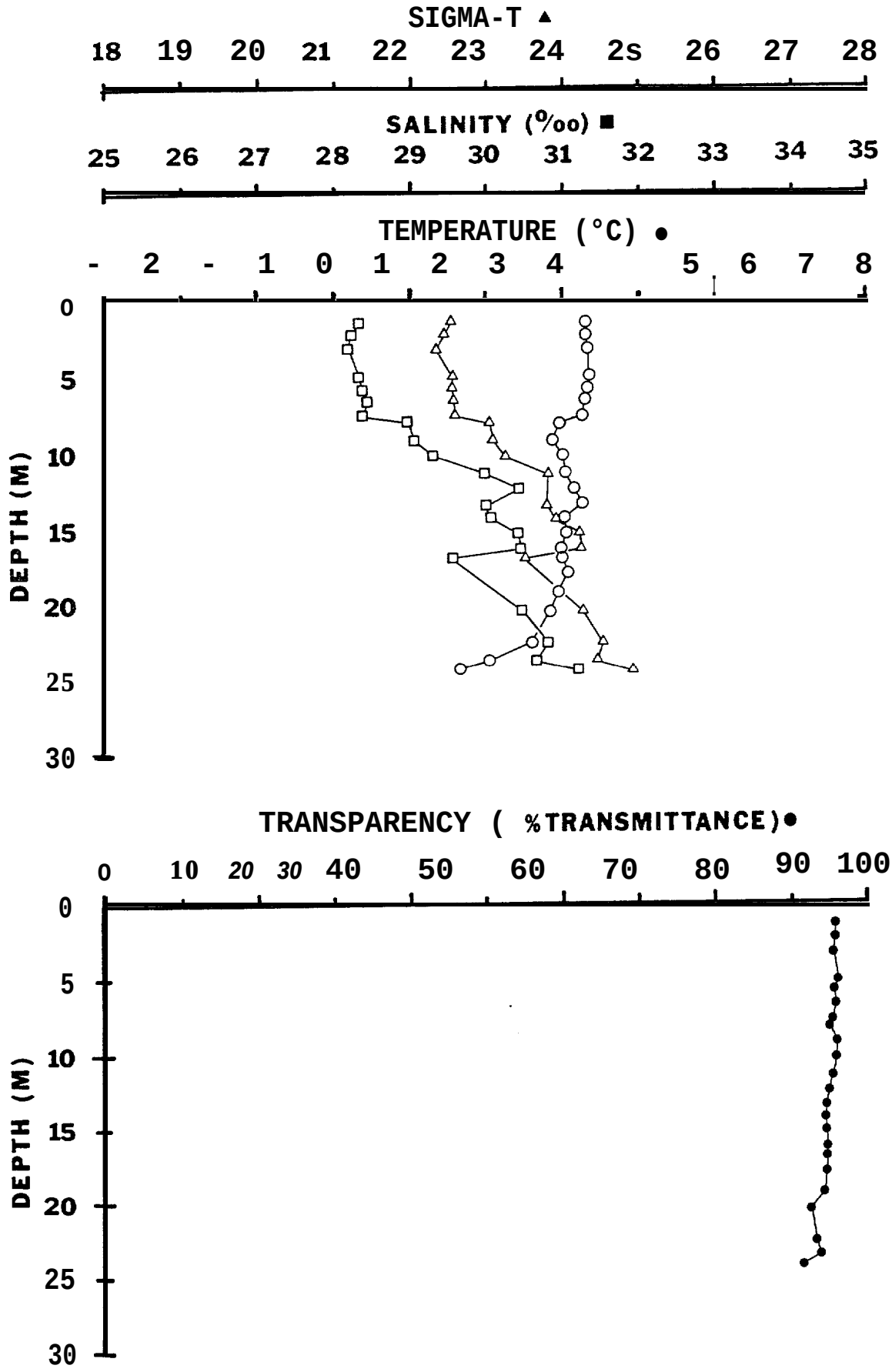


Figure C-12. Hydrographic Profiles for Station Skull Cliffs-12

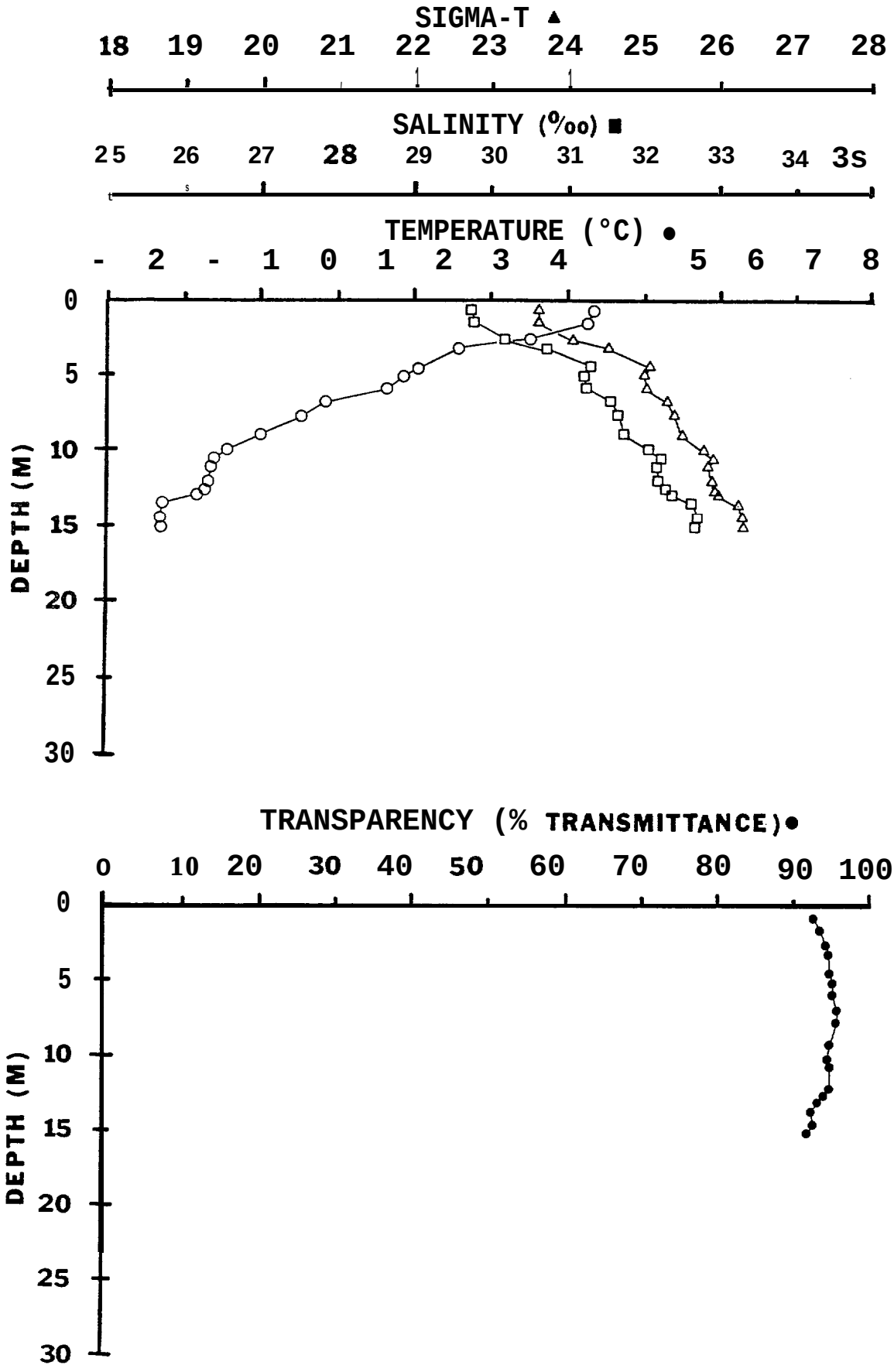


Figure C-13. hydrographic Profiles for Station Point Belcher-13

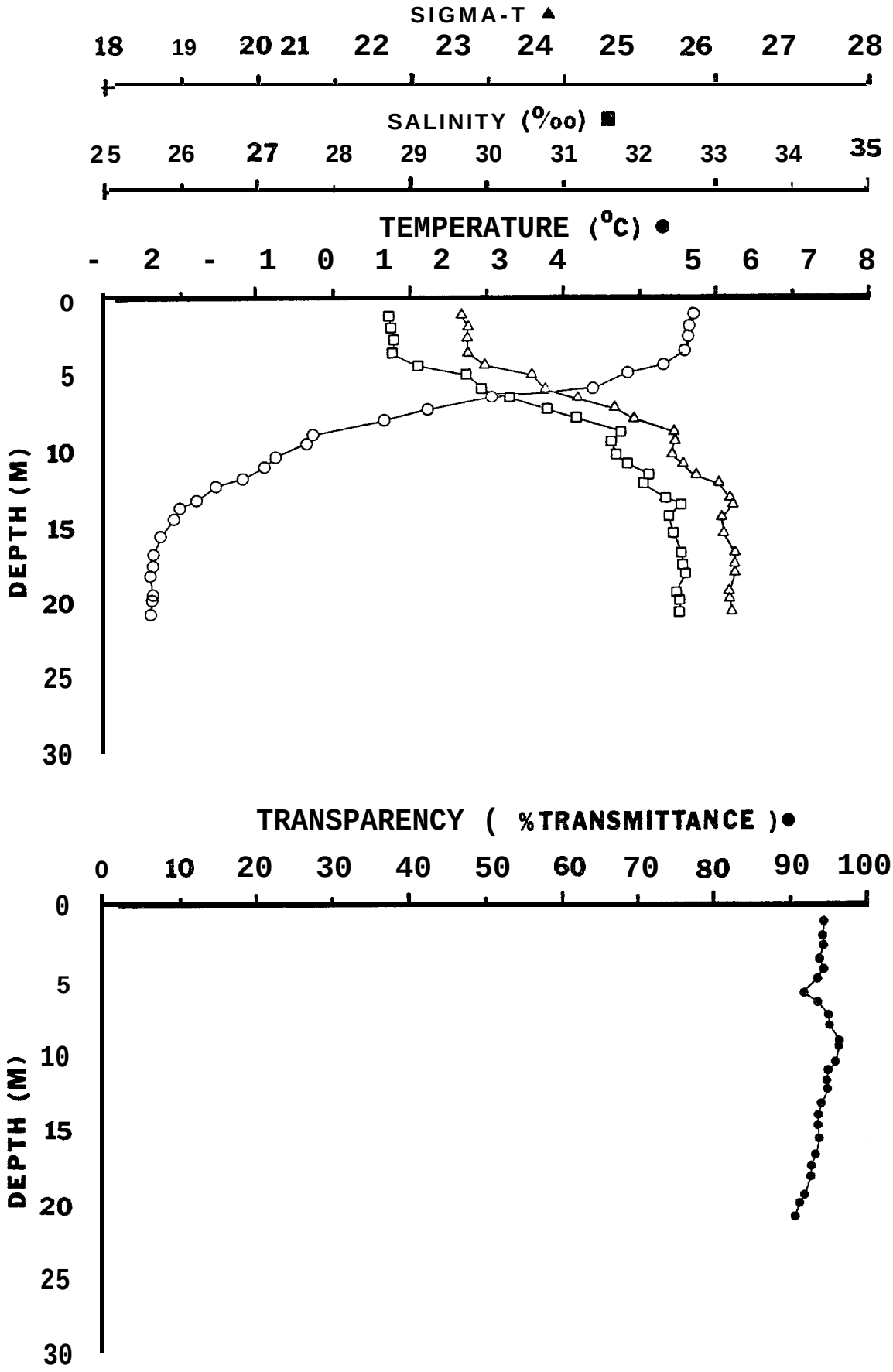


Figure C-14 Hydrographic Profiles for Station Pt. Belcher-14

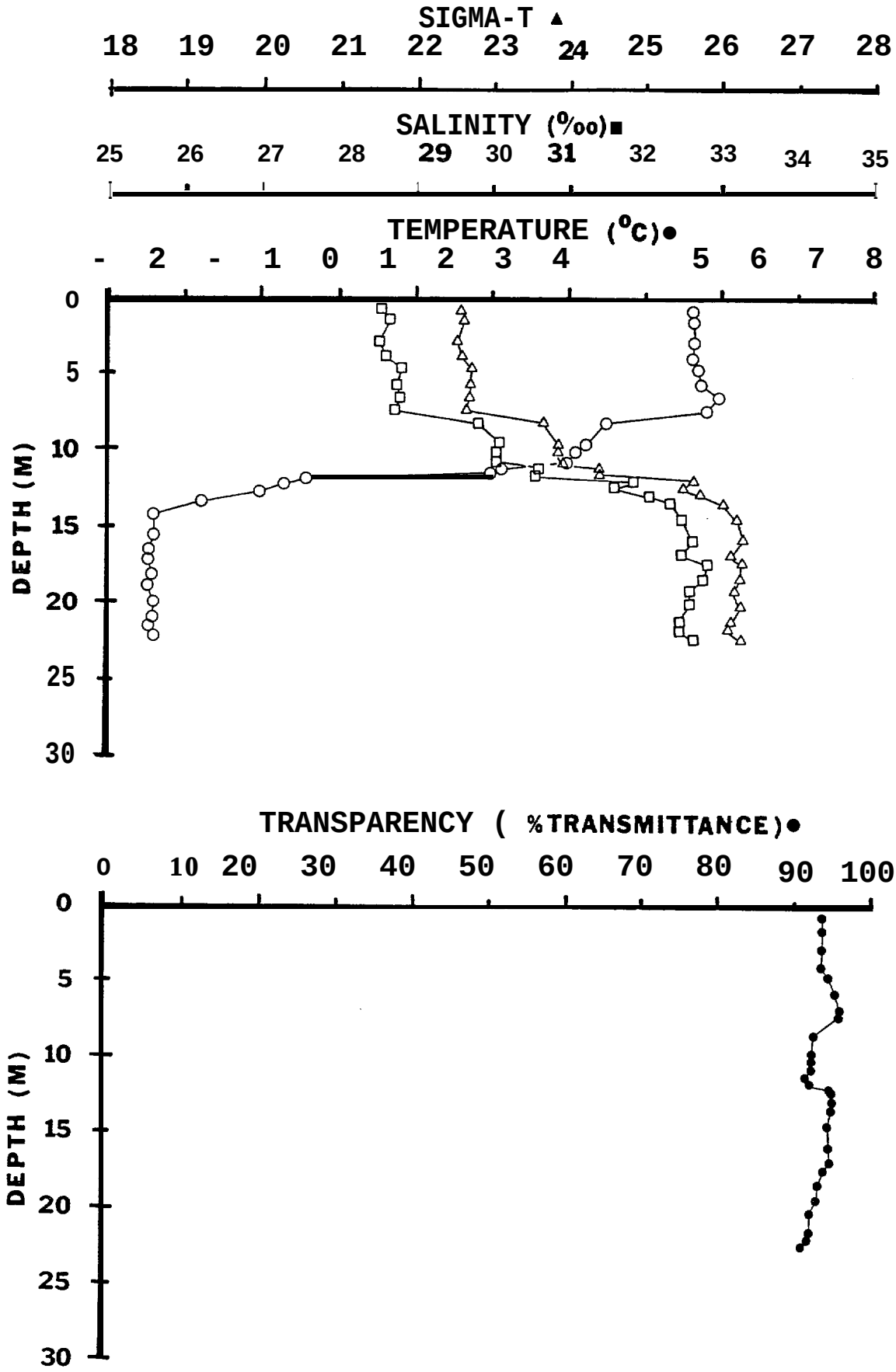


Figure C-15. Hydrographic Profiles for Station Pt. Belcher-15

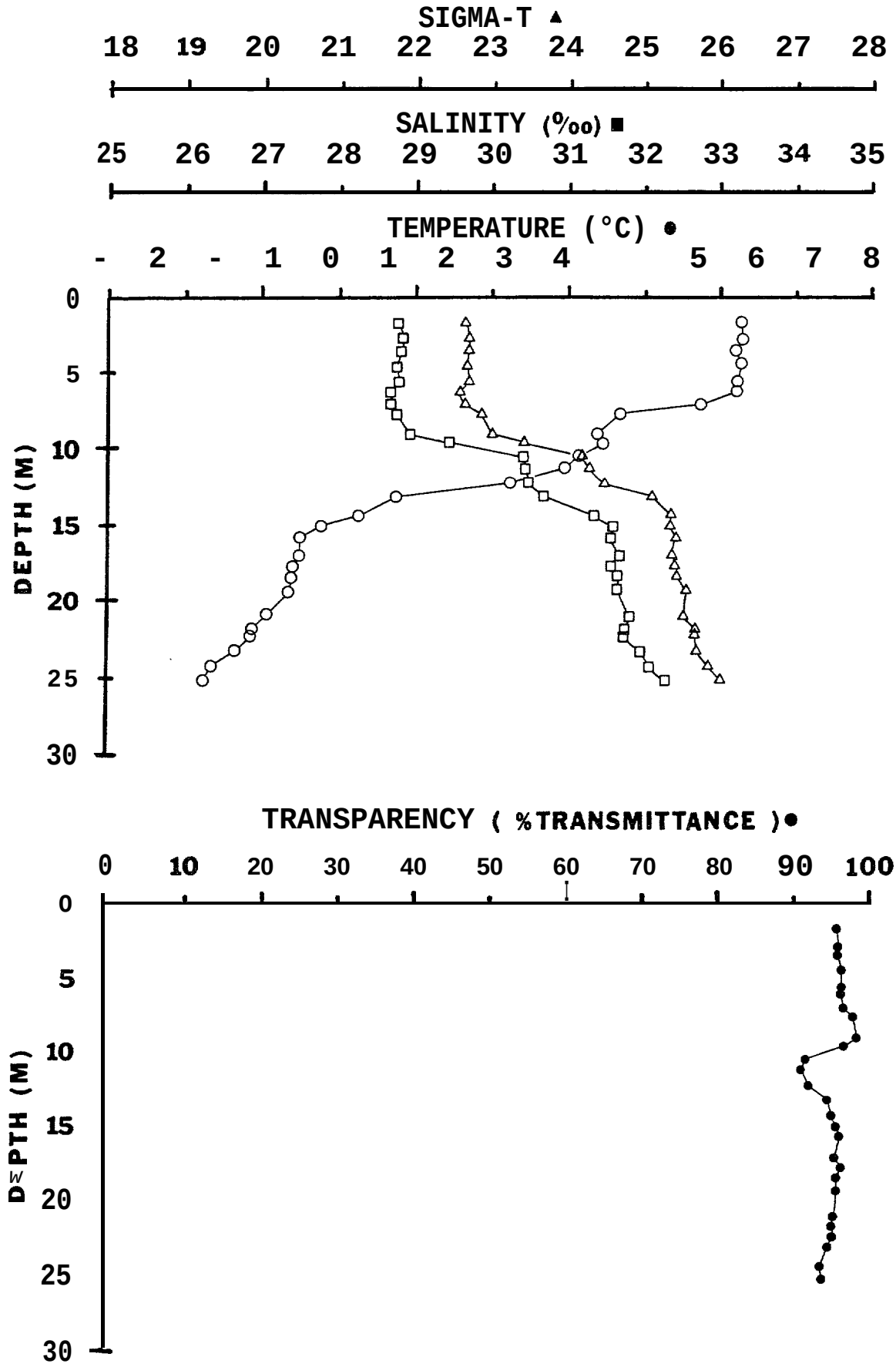


Figure C-16. Hydrographic Profiles for Station Pt. Belcher-16

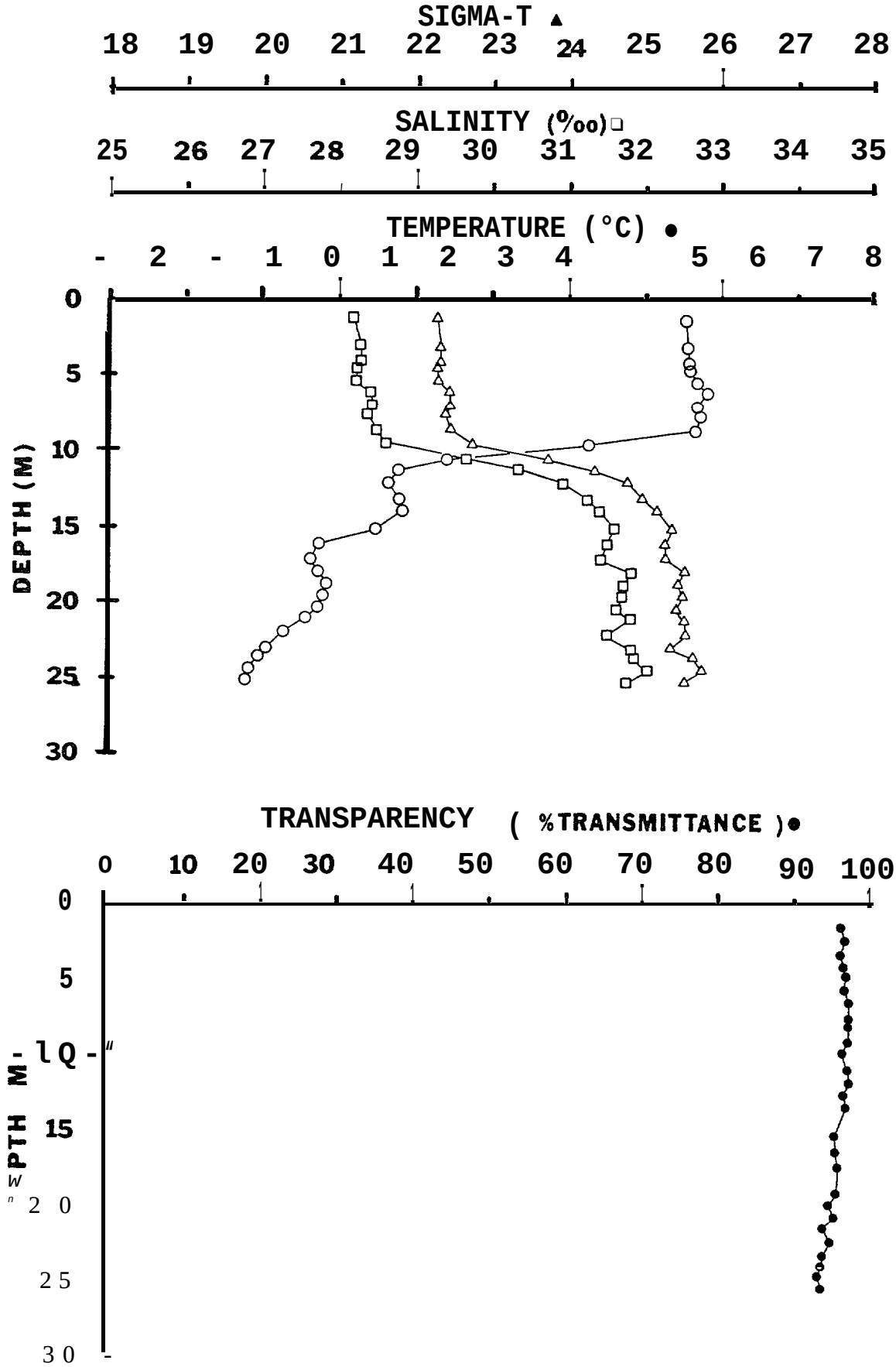


Figure C-17. Hydrographic Profiles for Station Pt. Belcher-17

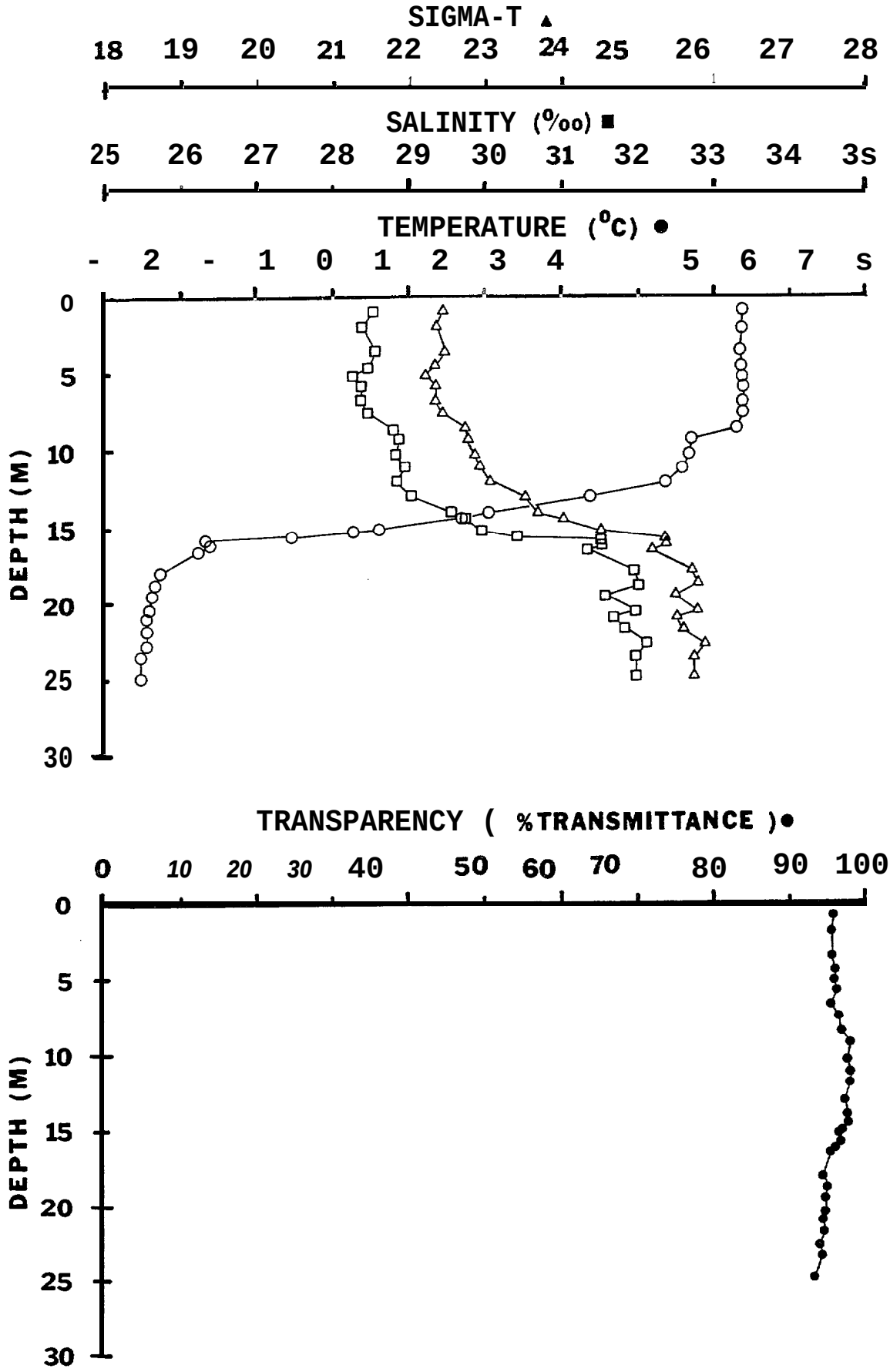


Figure C-18. Hydrographic Profiles for Station Pt. Belcher-18

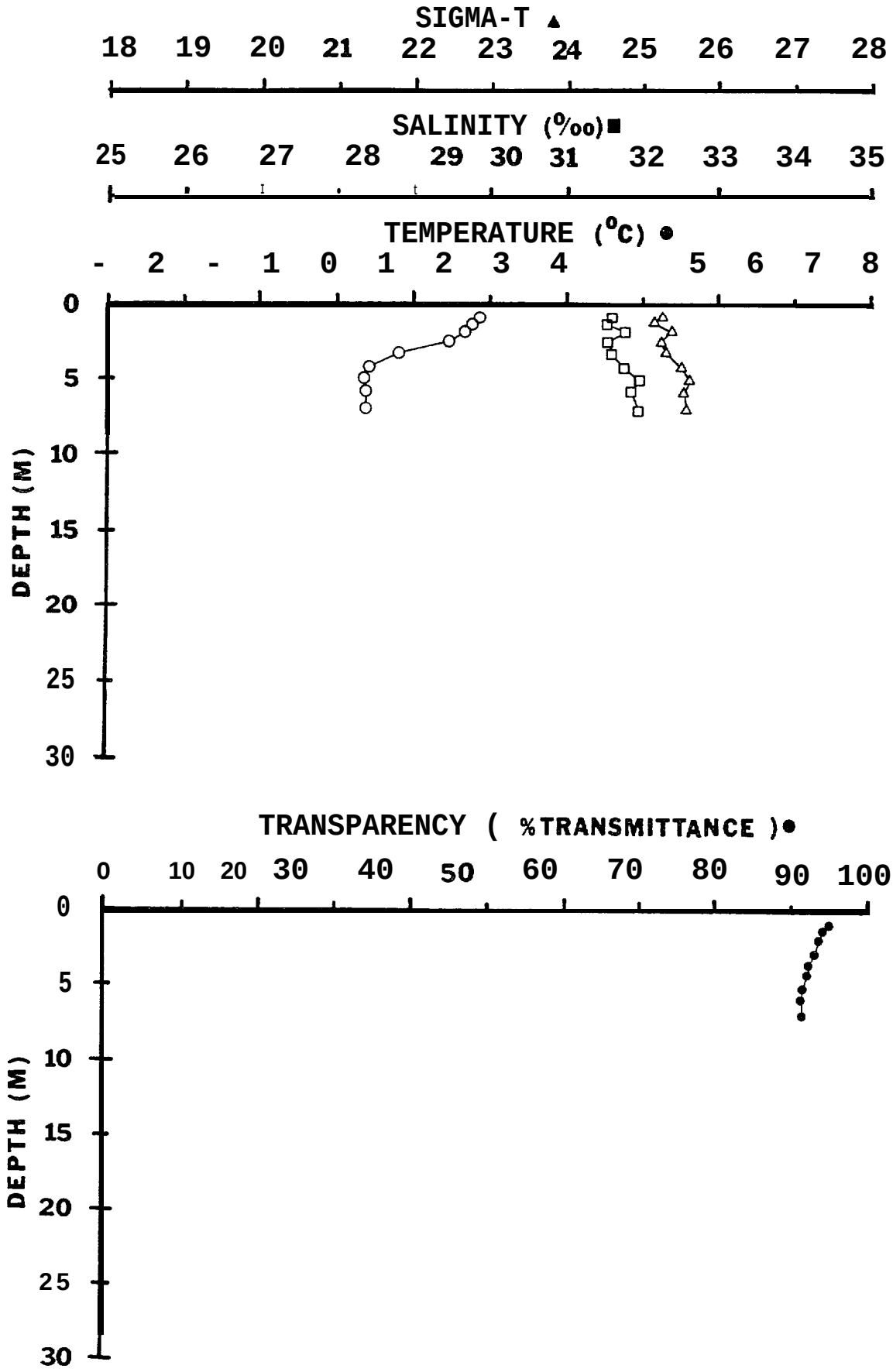


Figure C-19. Hydrographic Profiles for Station Pingorarok Pass-19

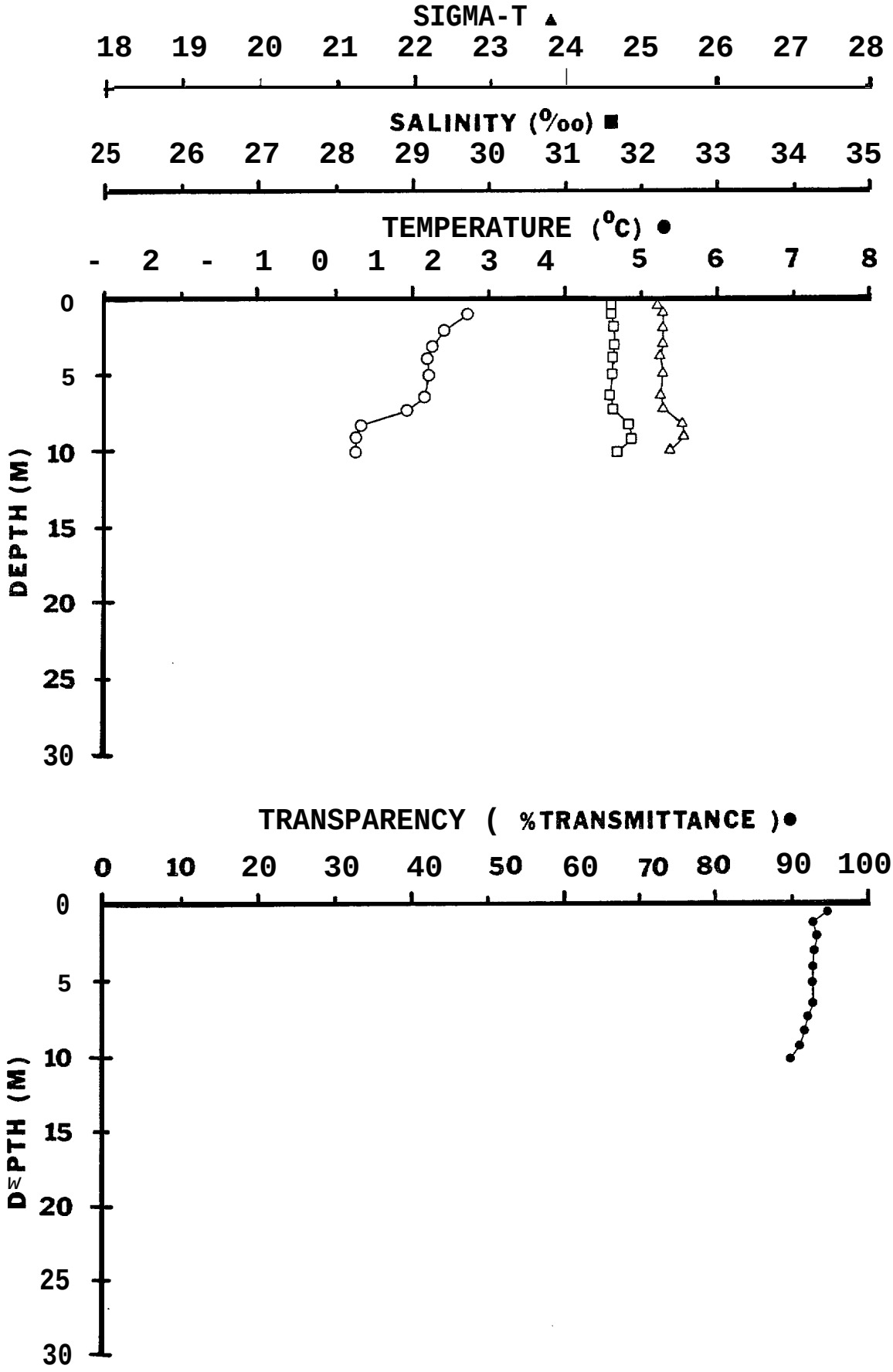


Figure C-20. Hydrographic Profiles for Station Pingorarok Pass-20

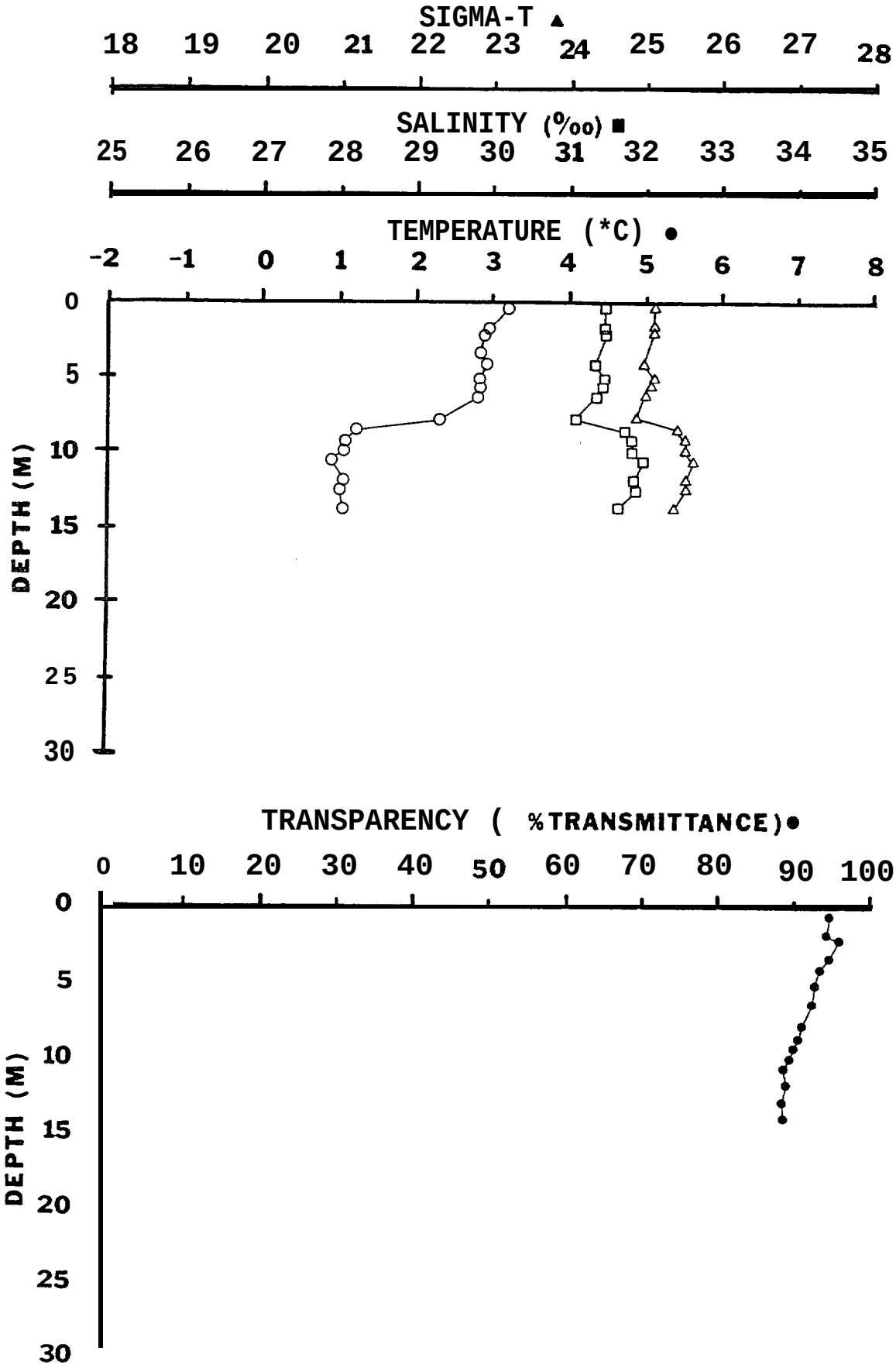


Figure C-21 . Hydrographic Profiles for Station Pingorarok Pass-21

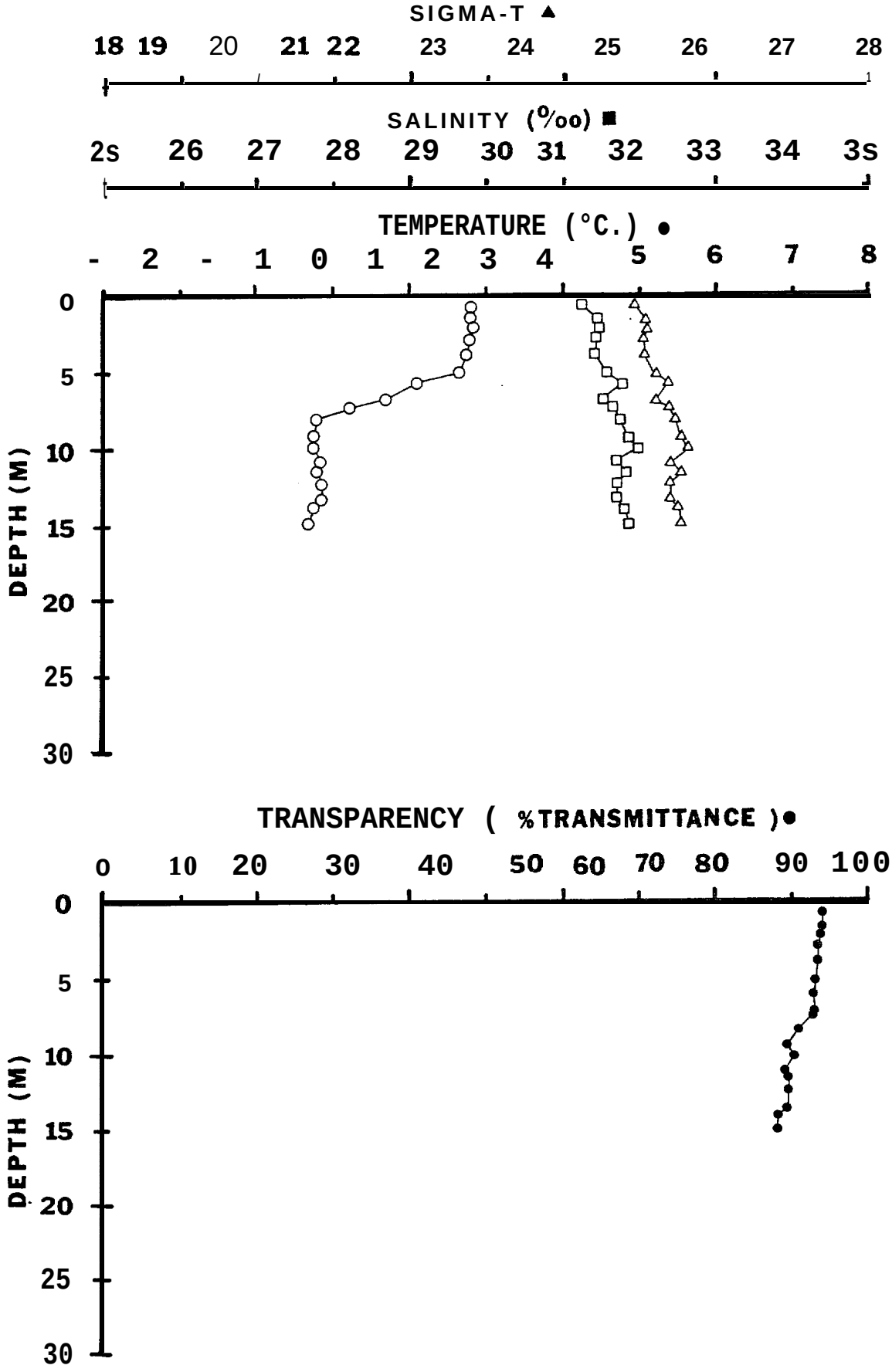


Figure C-22. Hydrographic Profiles for Station Pingorarok Pass-22

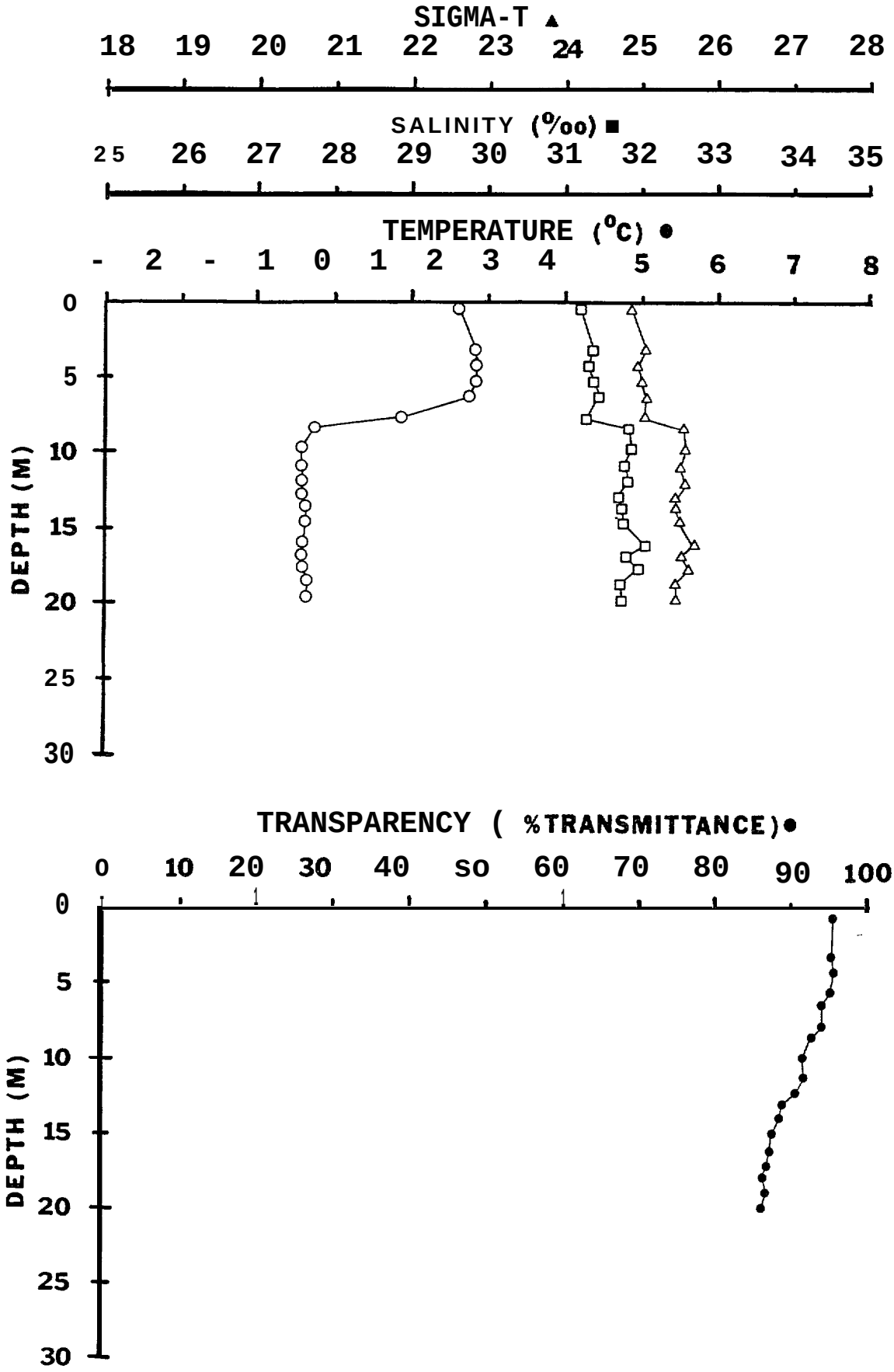


Figure C-23. Hydrographic Profiles for Station Pingorarok pass-23

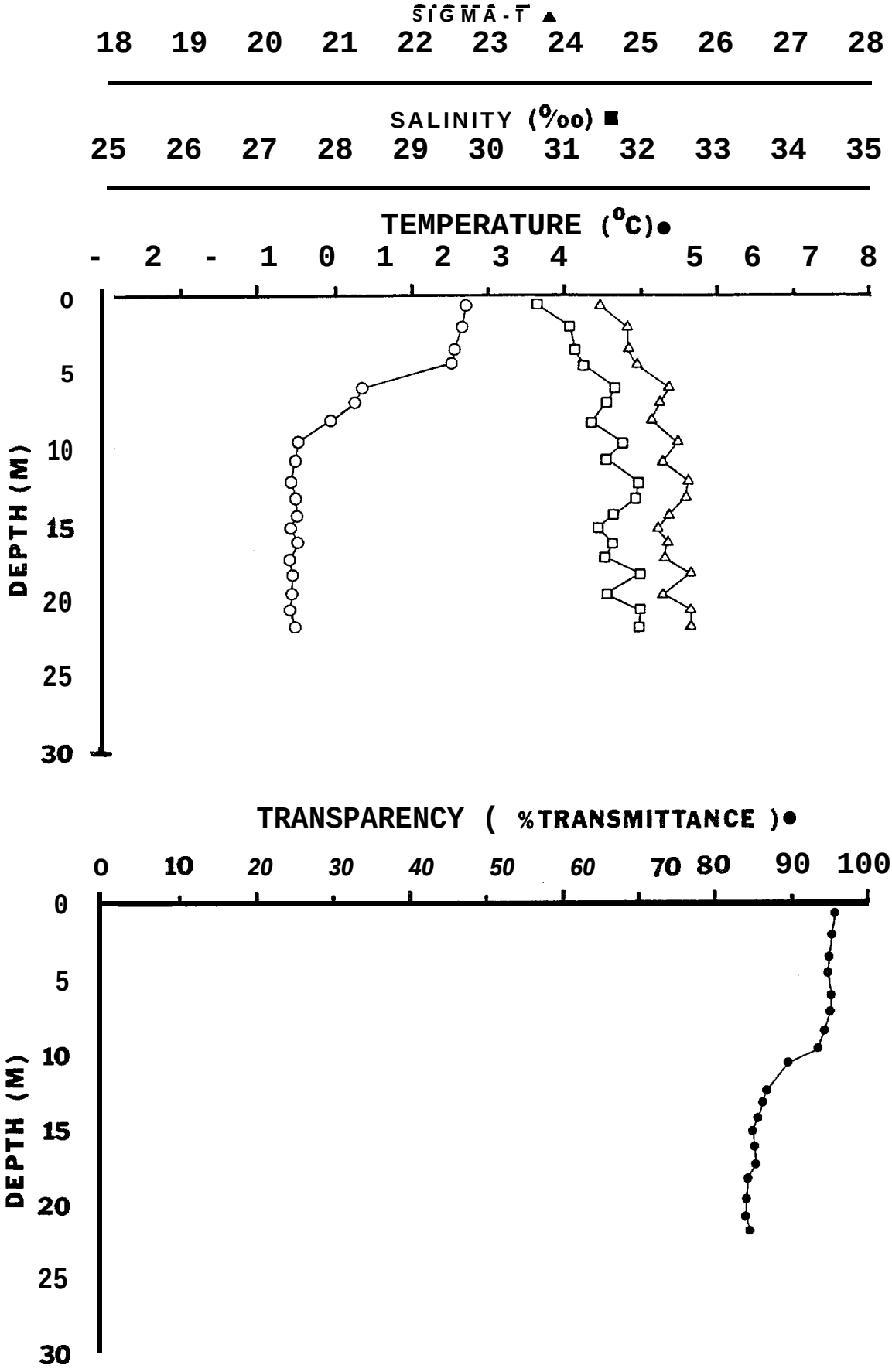


Figure C-24. Hydrographic Profiles for Station Pingorarok Pass-24

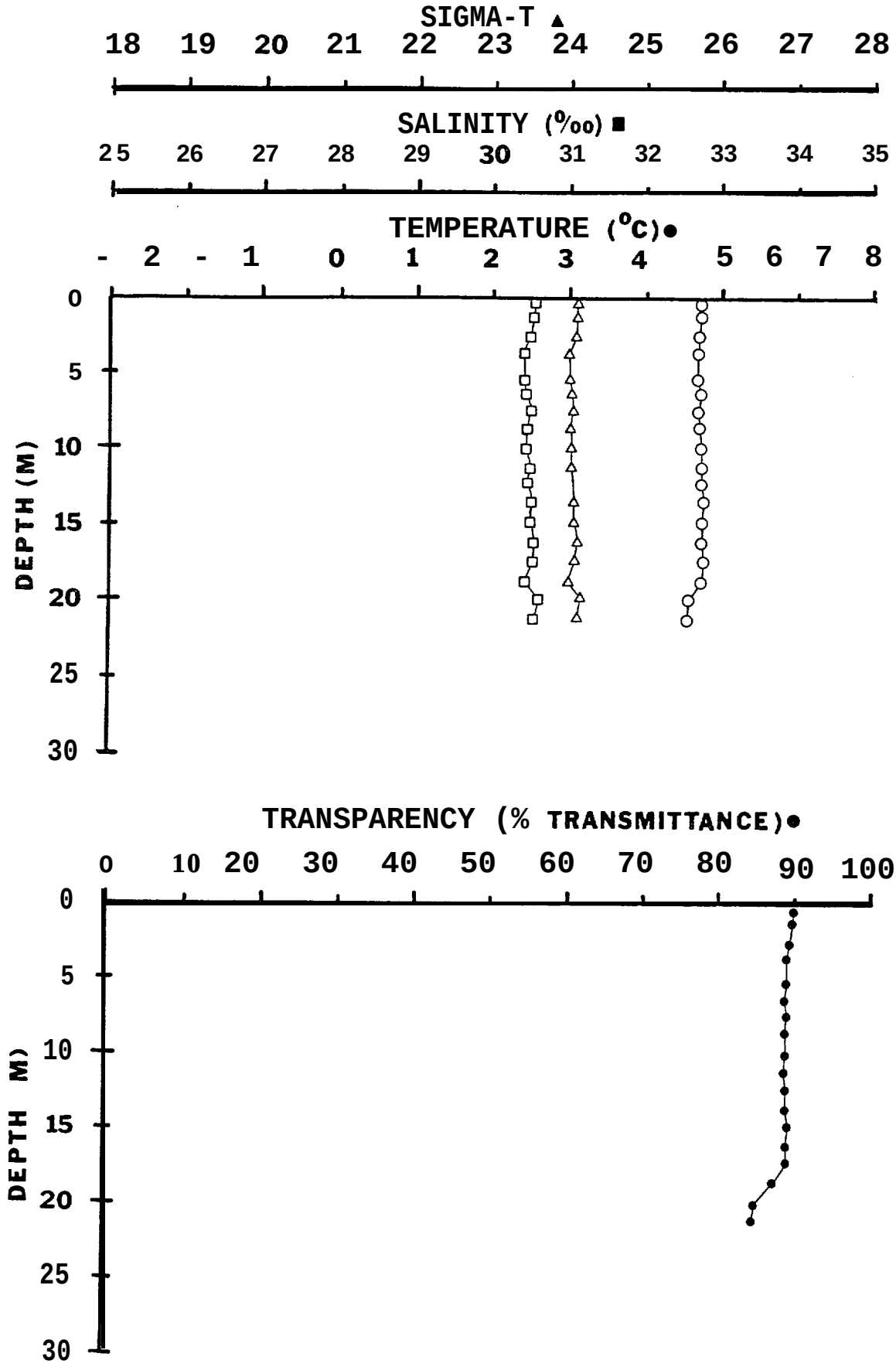


Figure C-25. Hydrographic Profile for Station Wainwright-36

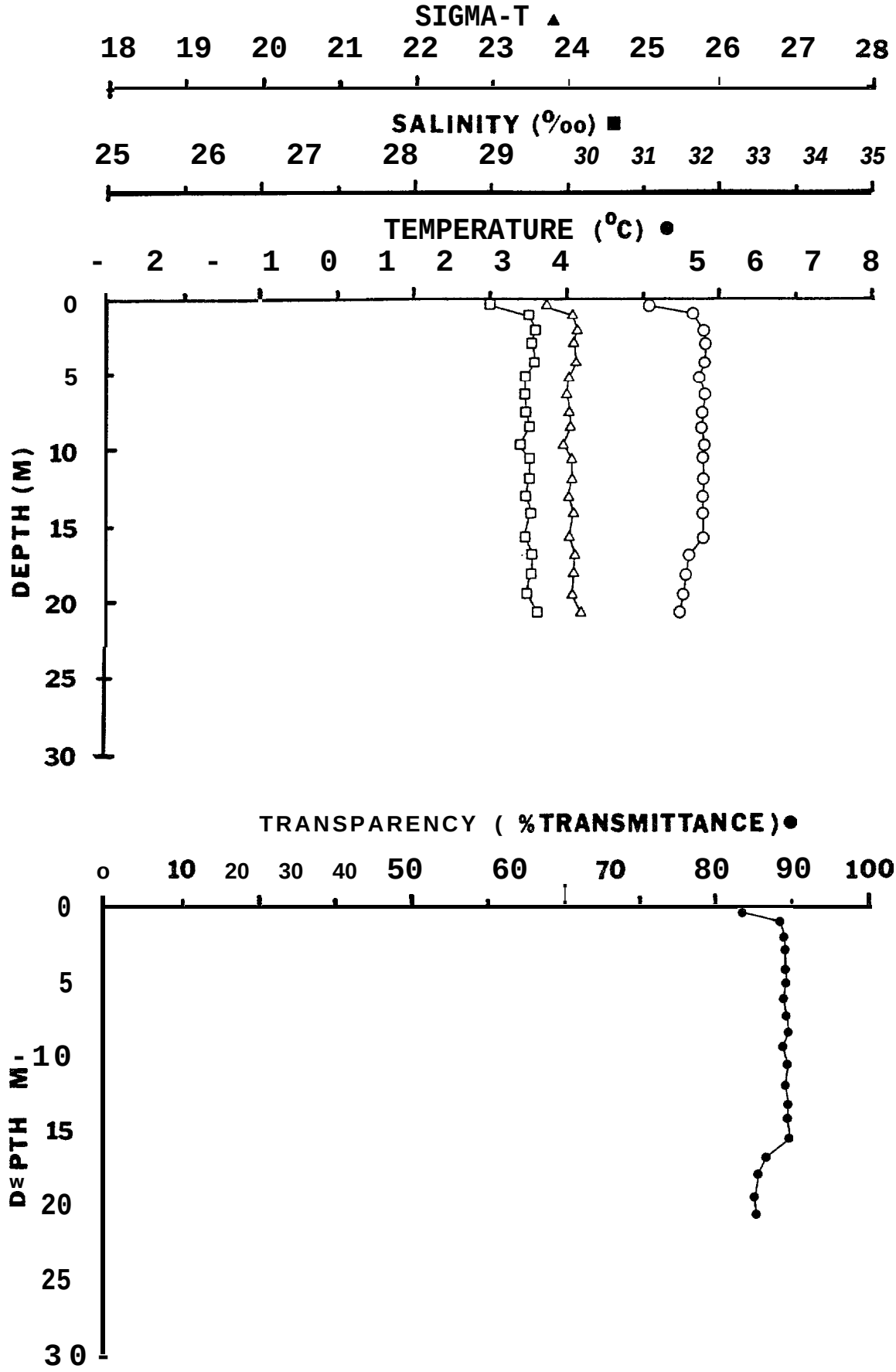
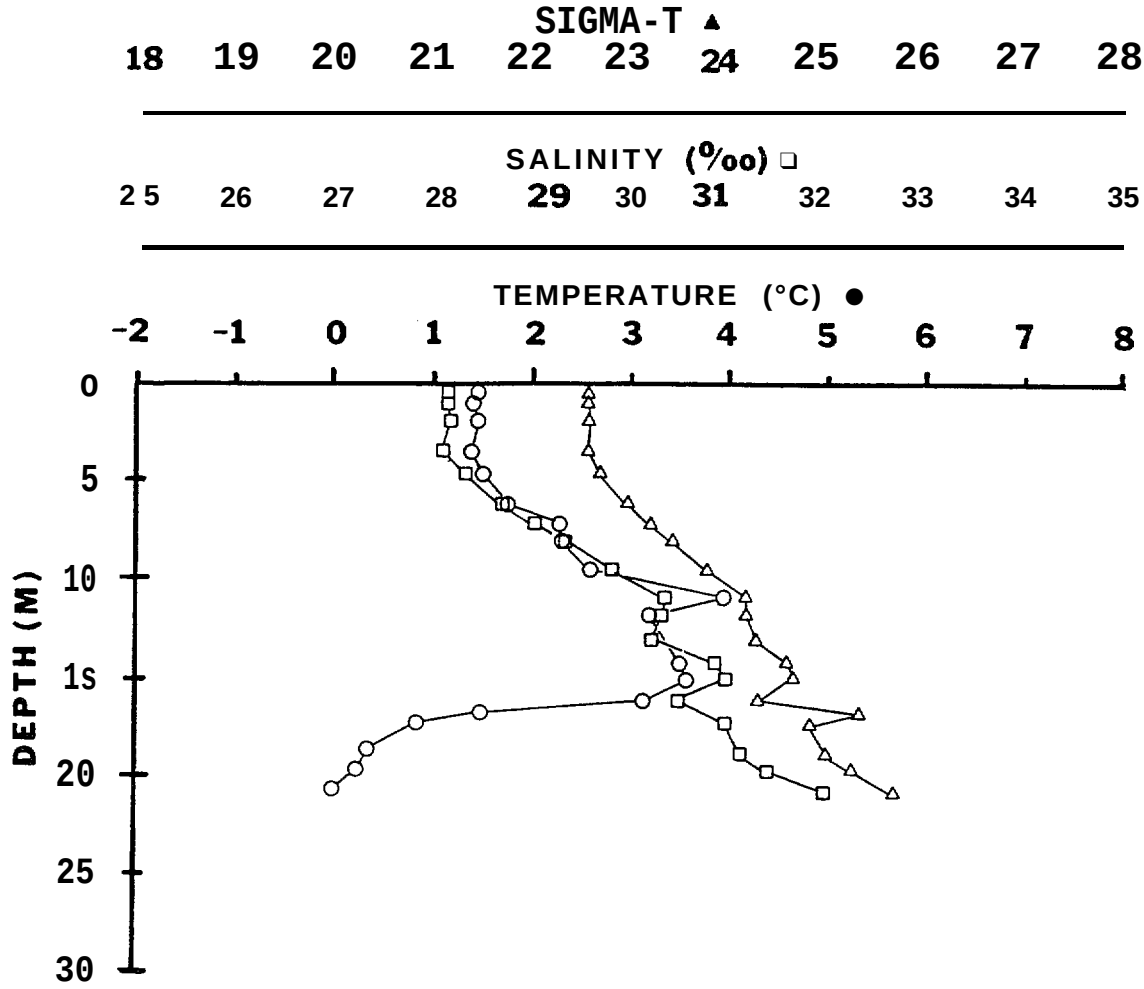


Figure C-26. Hydrographic Profiles for Station Wainwright-37



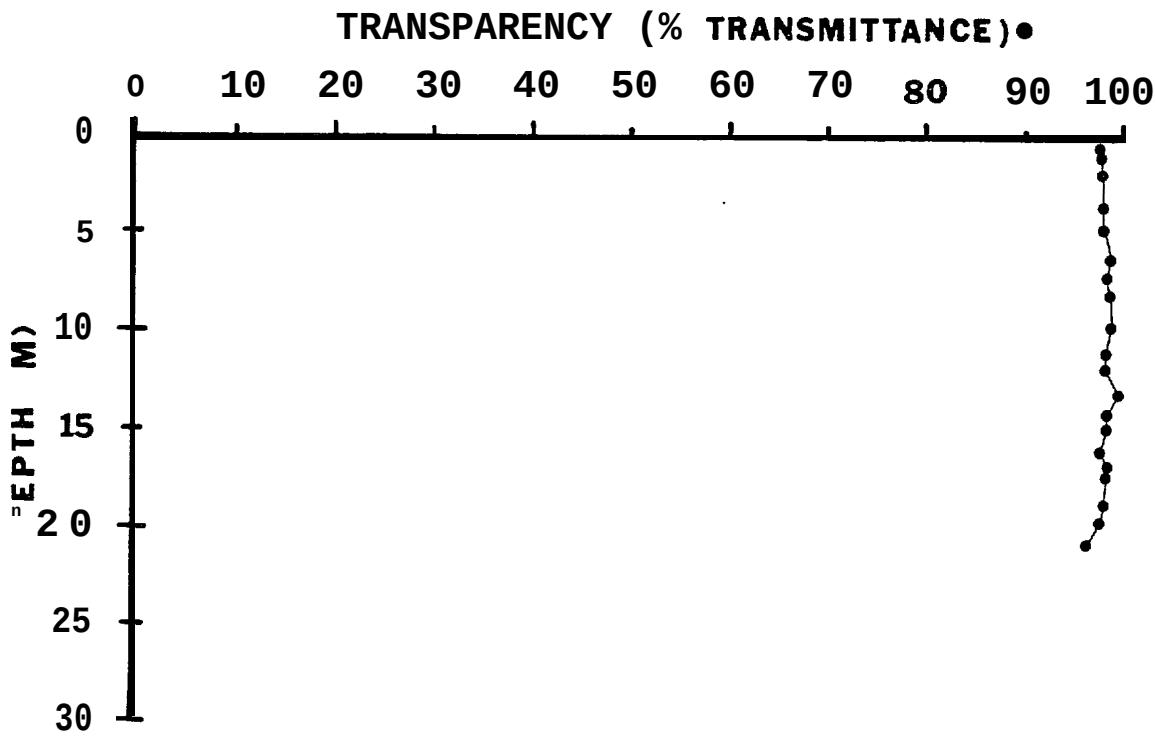


Figure C-27. Hydrographic Profiles for Station Wainwright-39

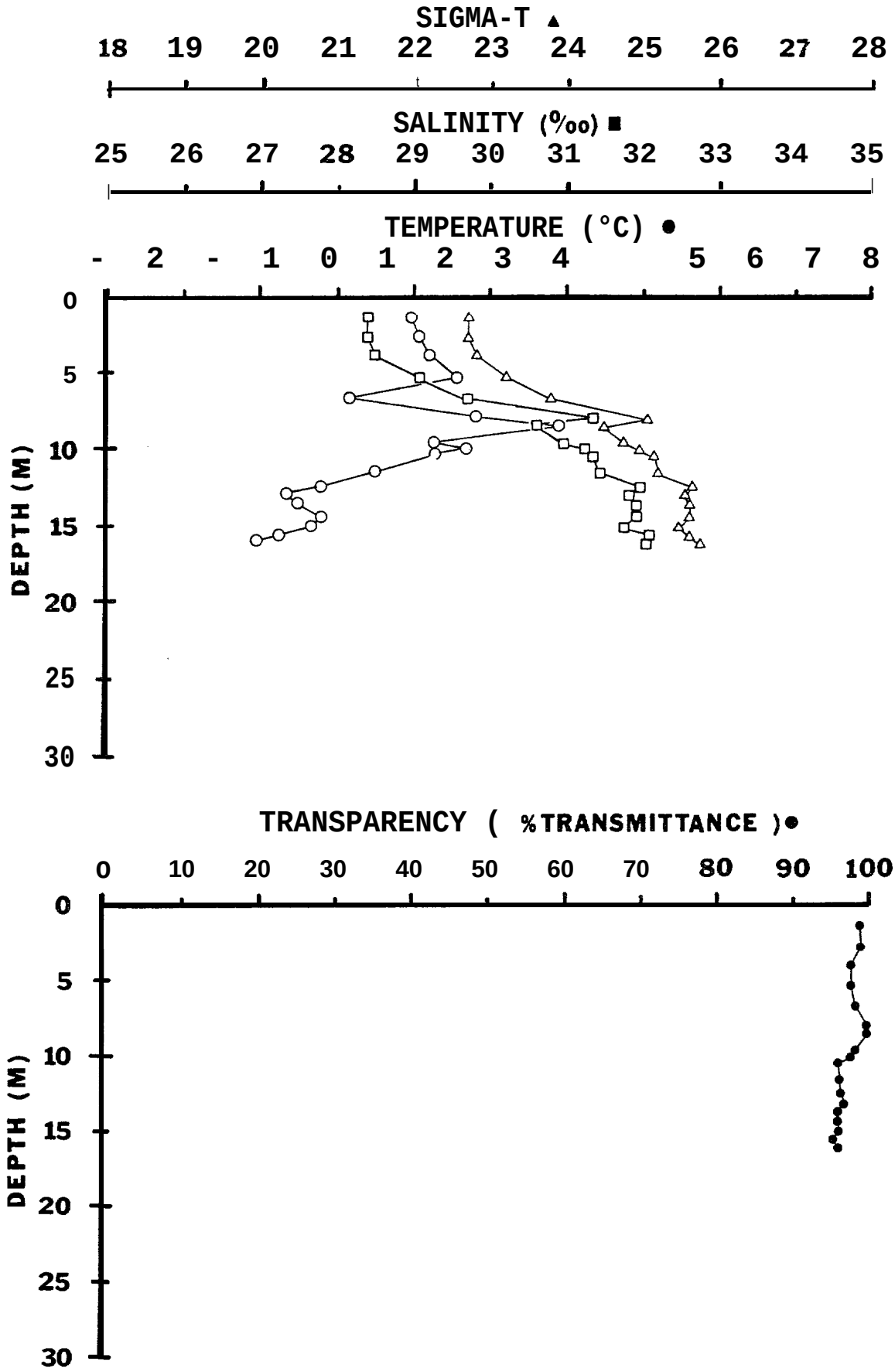


Figure C-28. Hydrographic Profiles for Station Wainwright-40

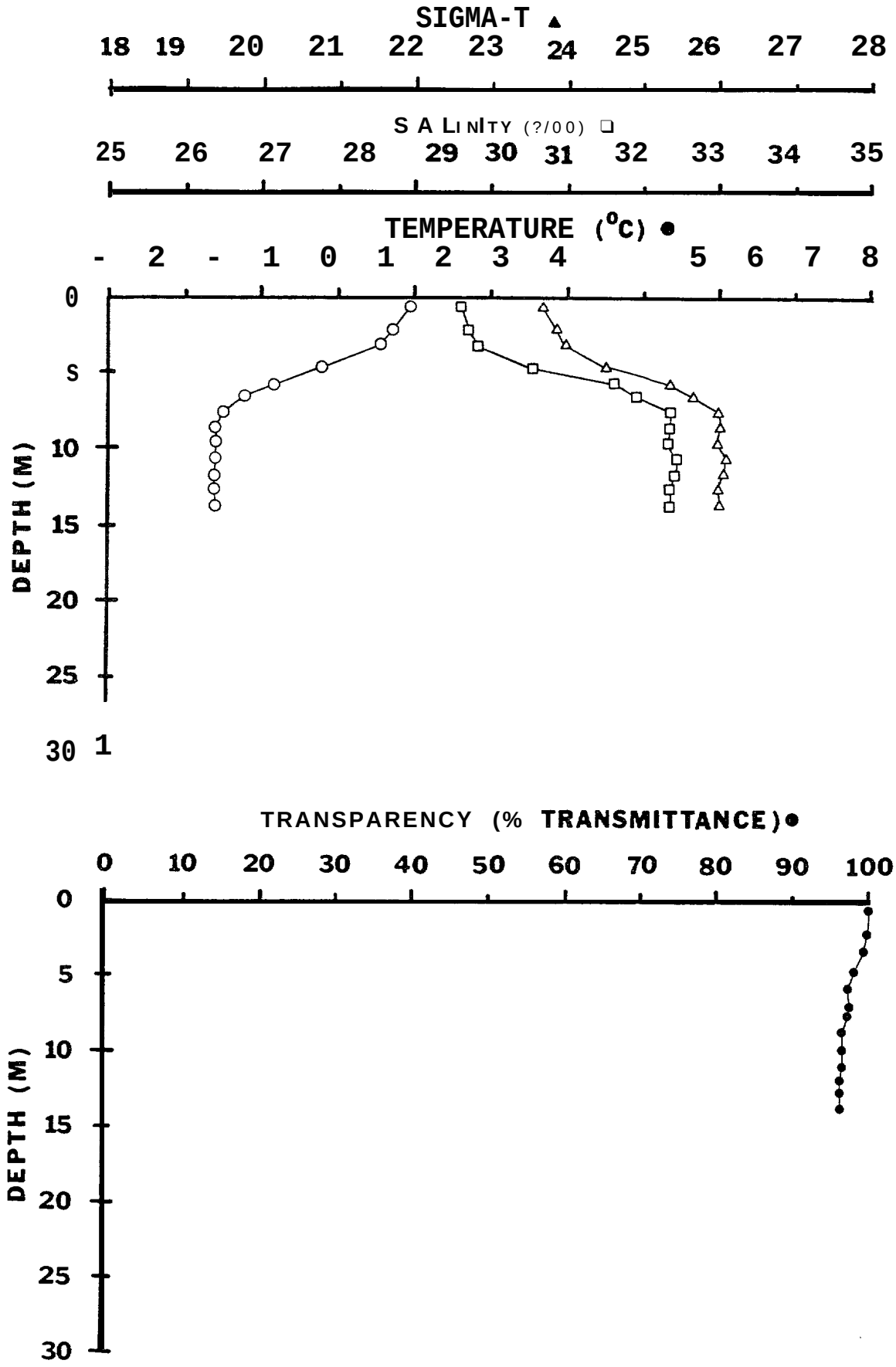


Figure C-29. Hydrographic Profiles for Station Wainwright-41

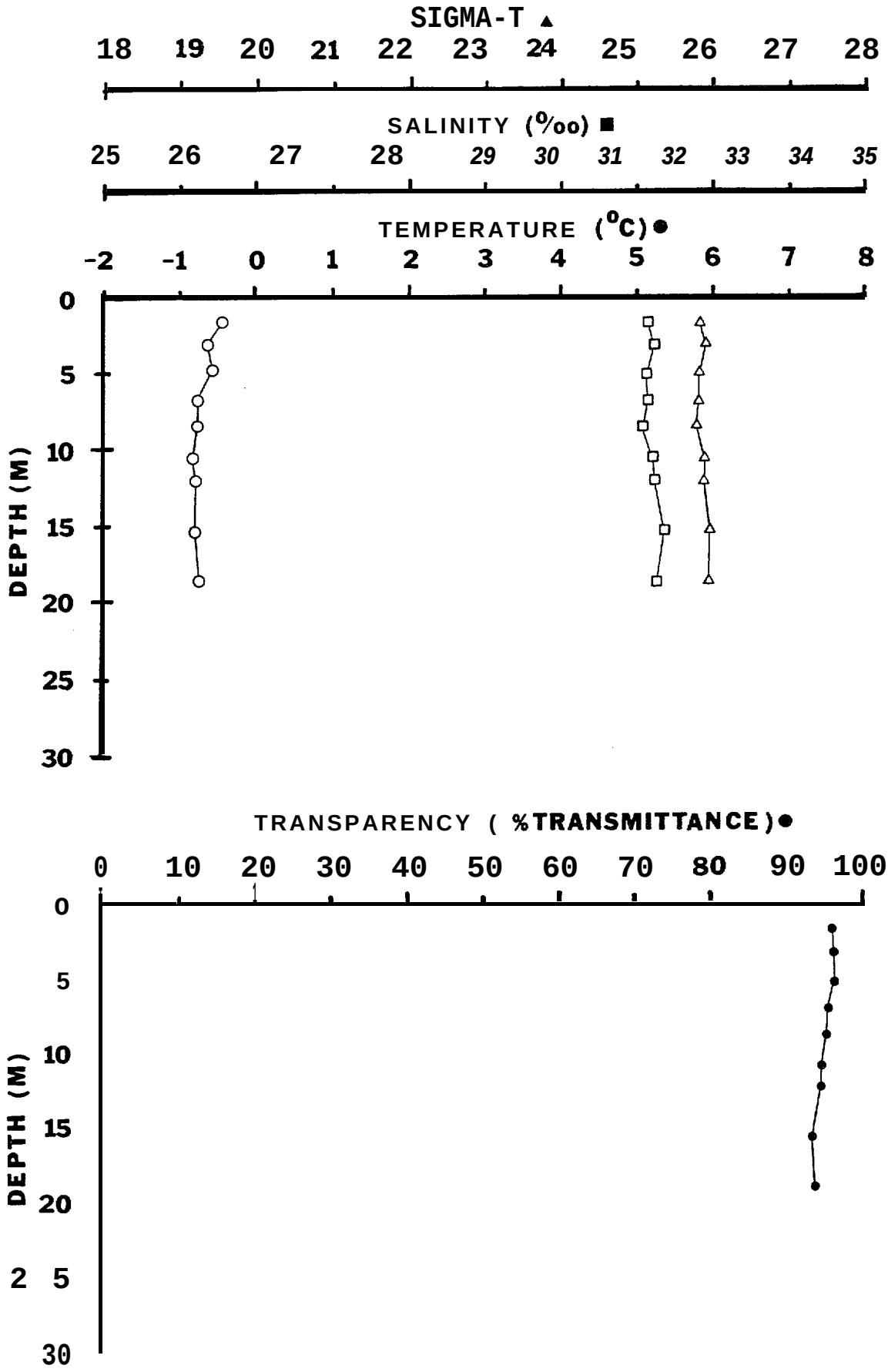


Figure C-30. Hydrographies Profiles for Station Wainwright-42

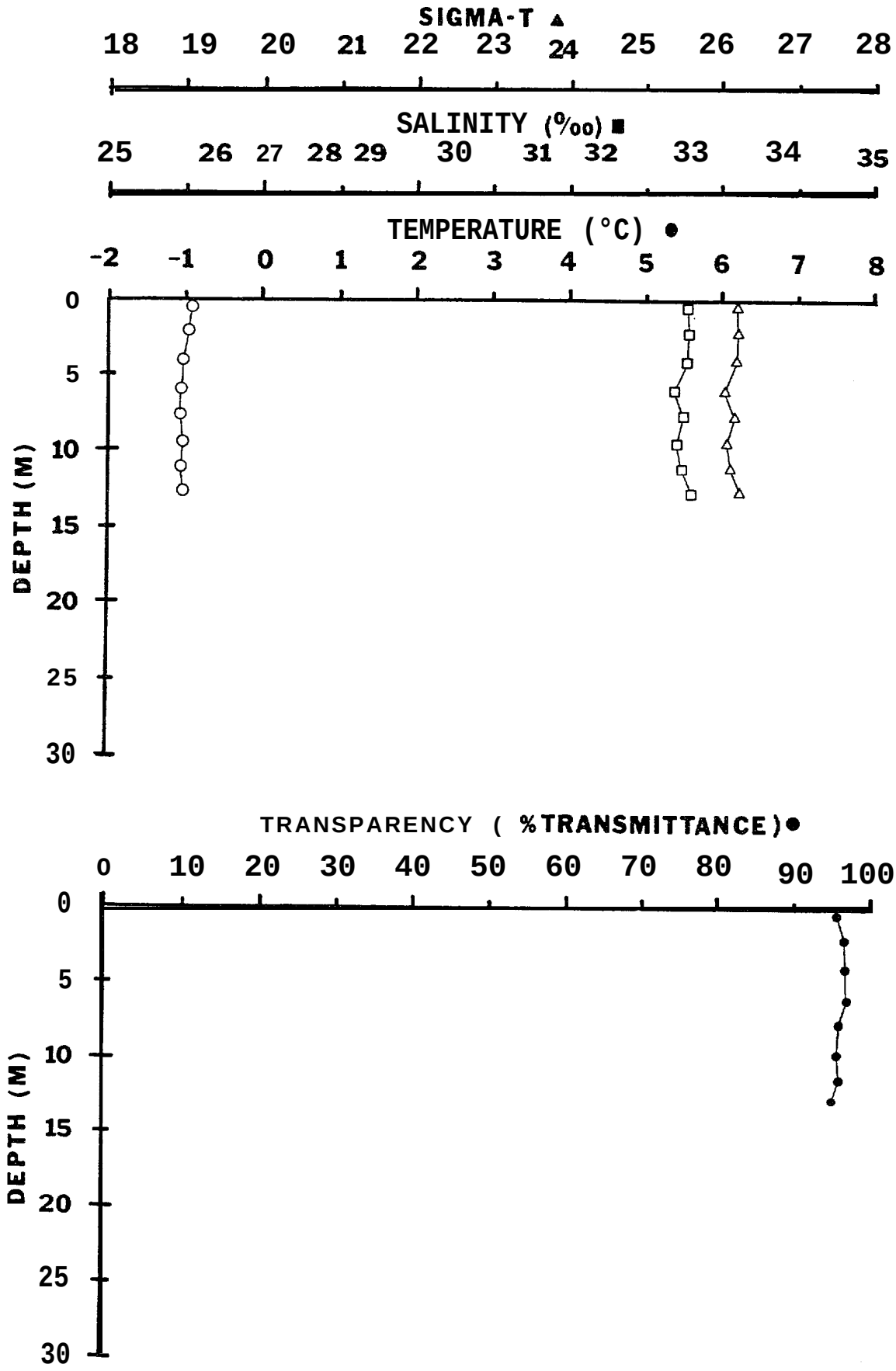


Figure C-31. Hydrographic Profiles for Station Wainwright-43

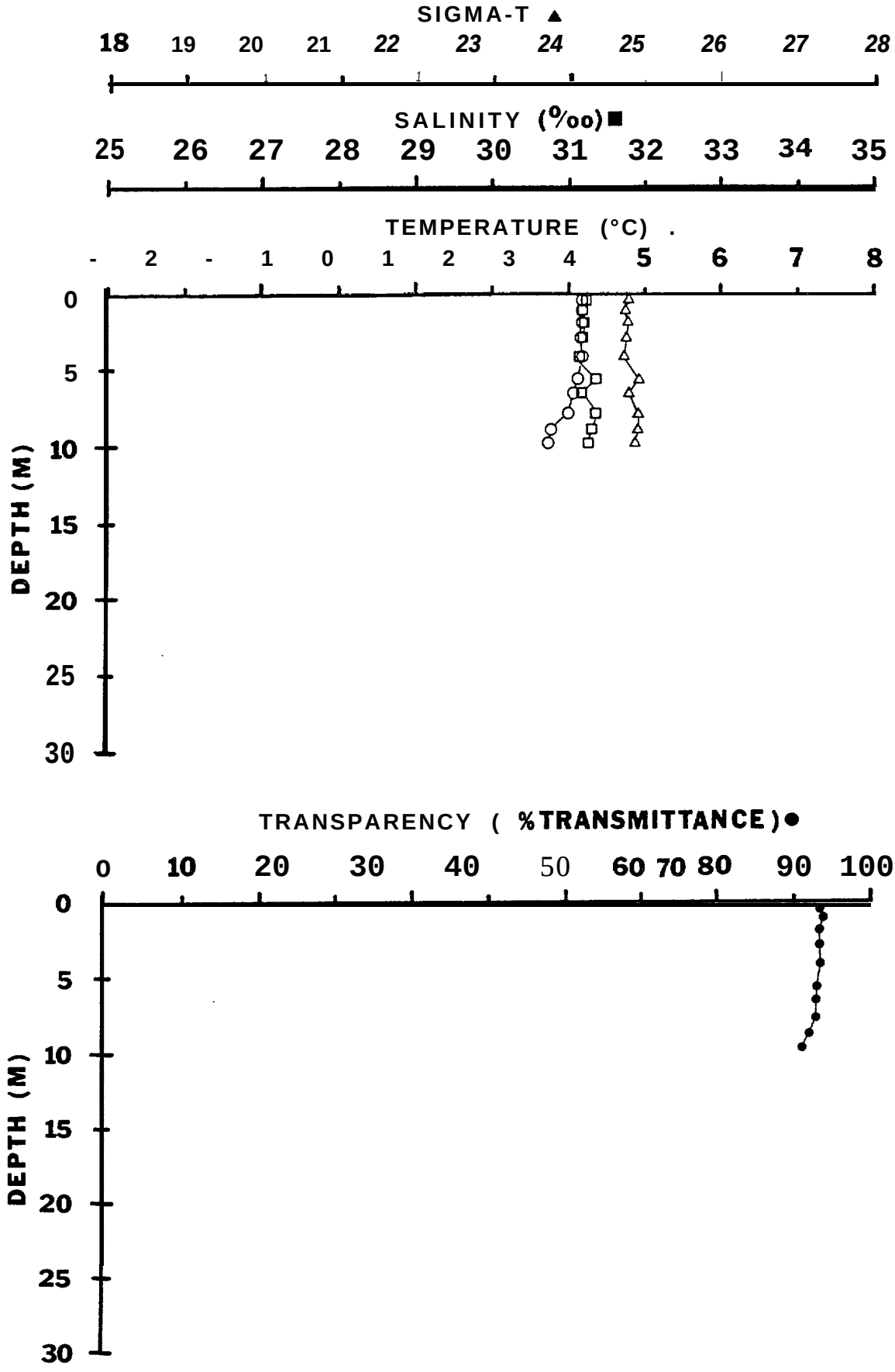
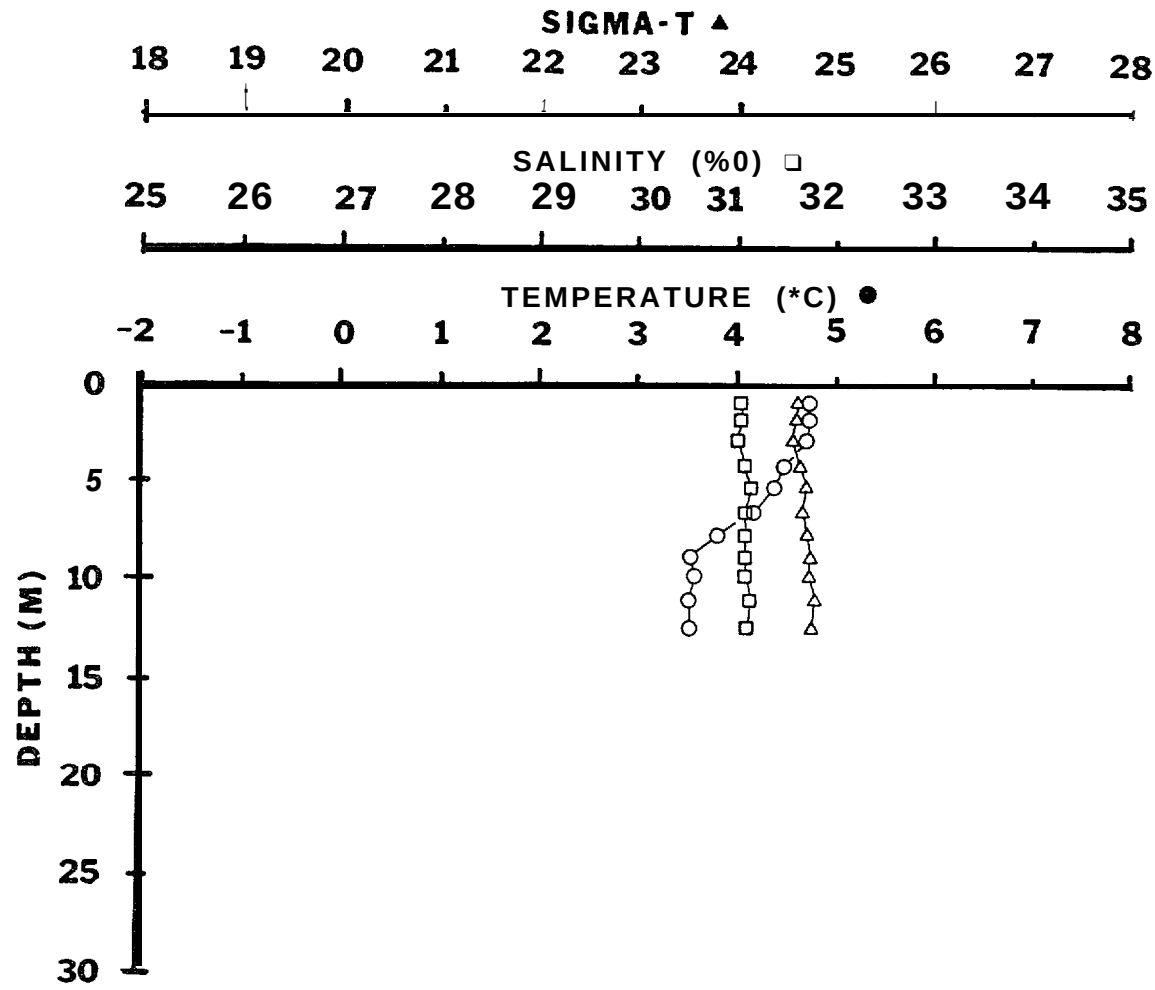


Figure c-32. Hydrographic Profiles for Station Icy Cape-30



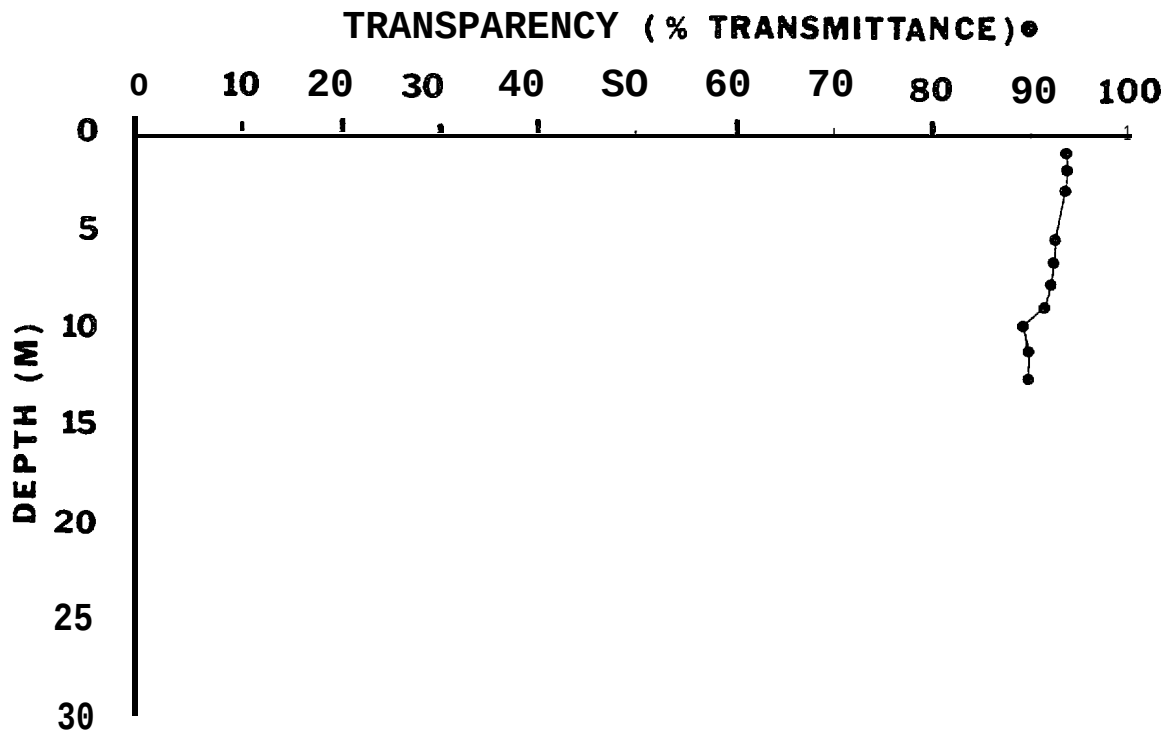


Figure C-33. Hydrographic Profiles for Station Icy Cape-31

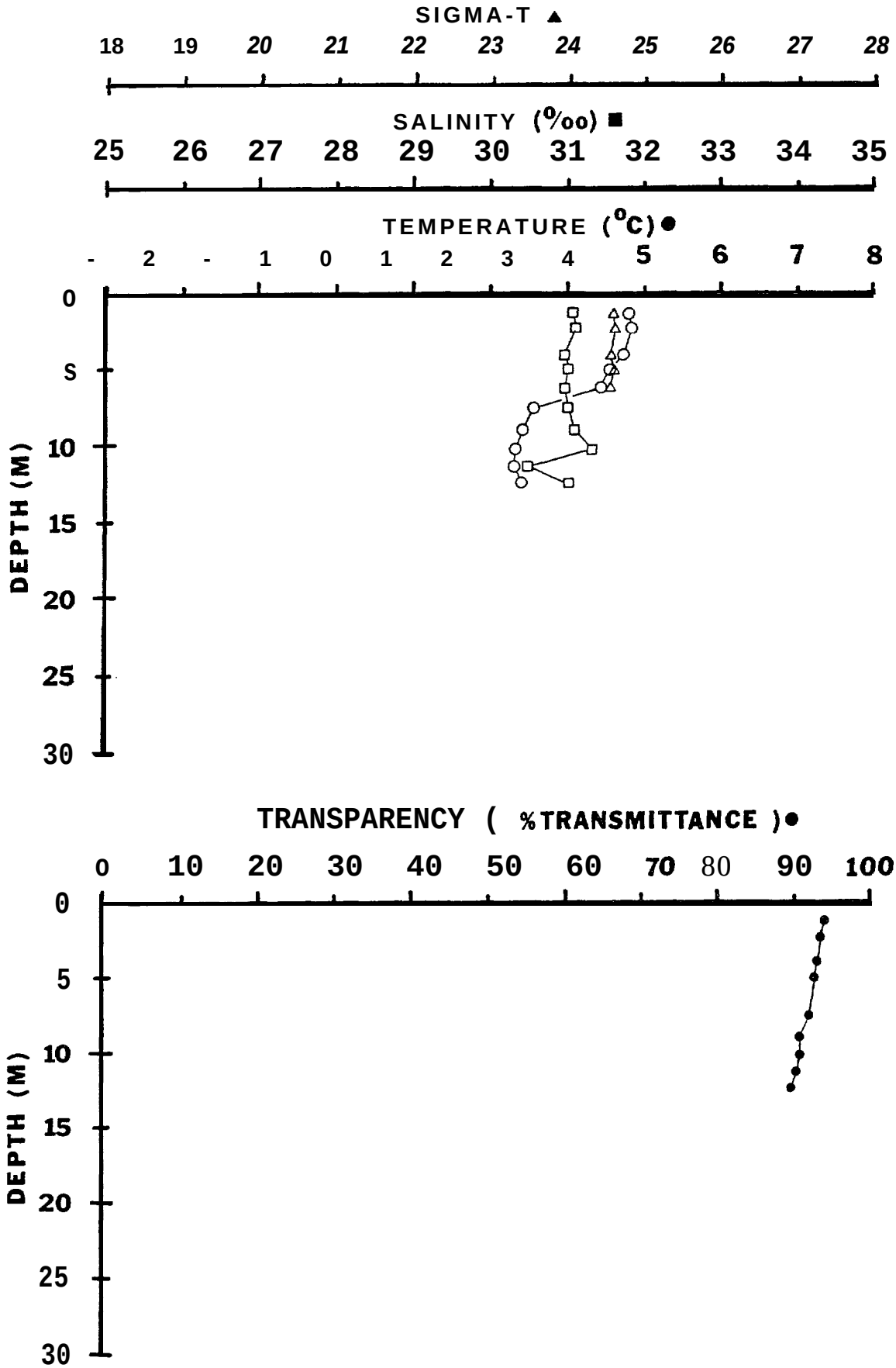


Figure C-34. Hydrographic Profiles for Station Icy Cape-32

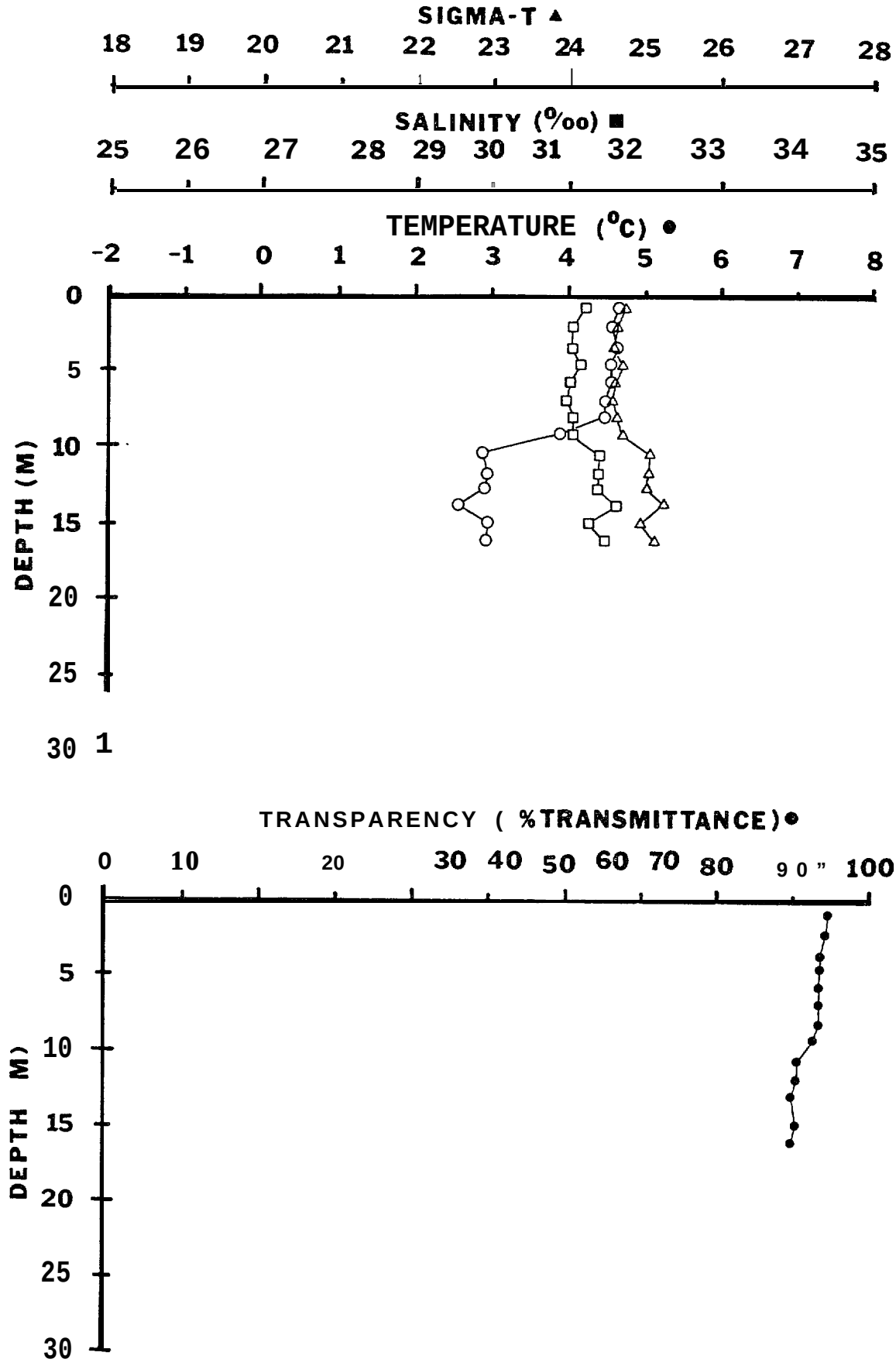


Figure C-35. Hydrographic Profiles for Station Icy Cape-33

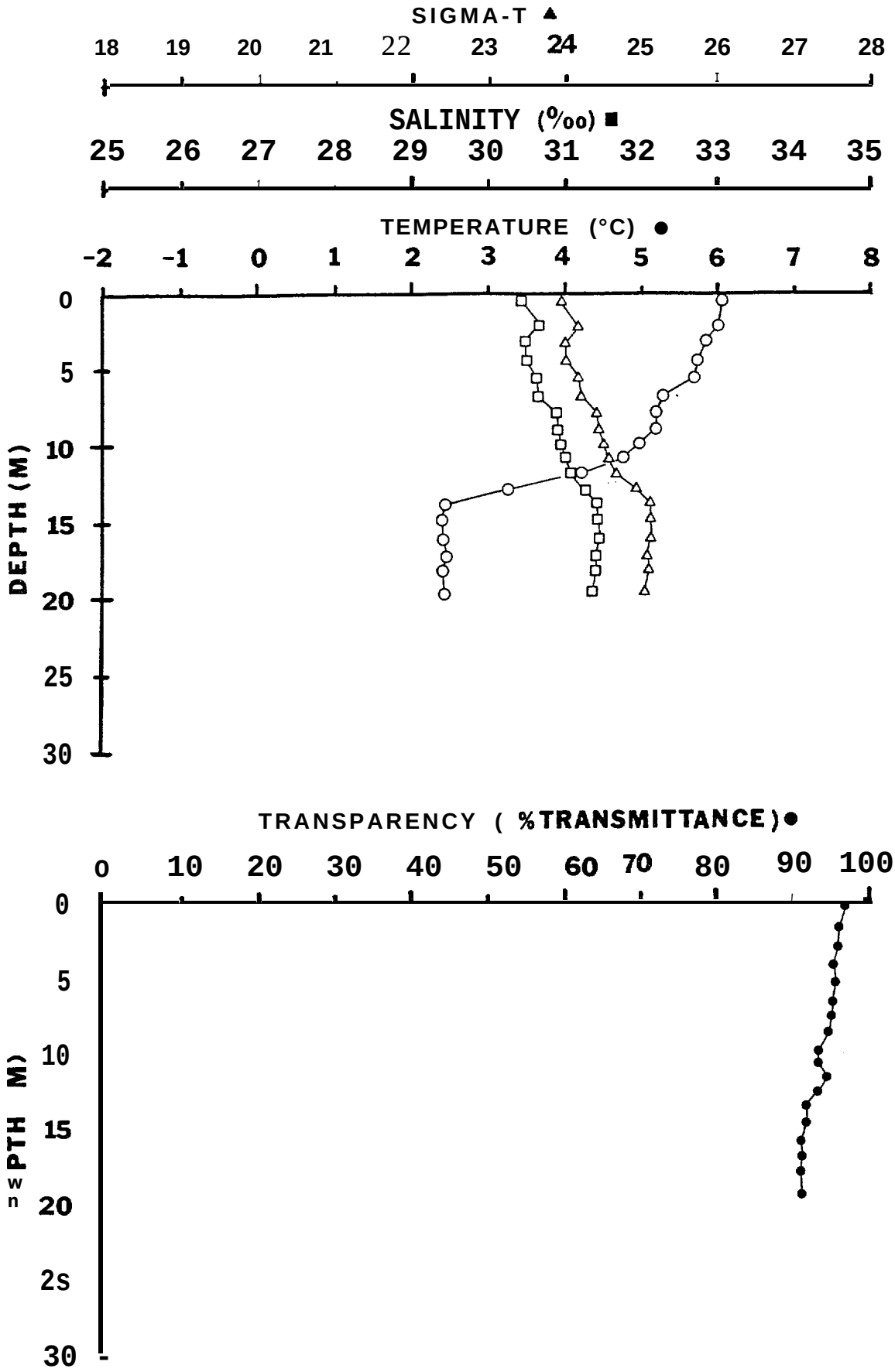


Figure C-36. Hydrographic Profiles for Station Icy Cape-34

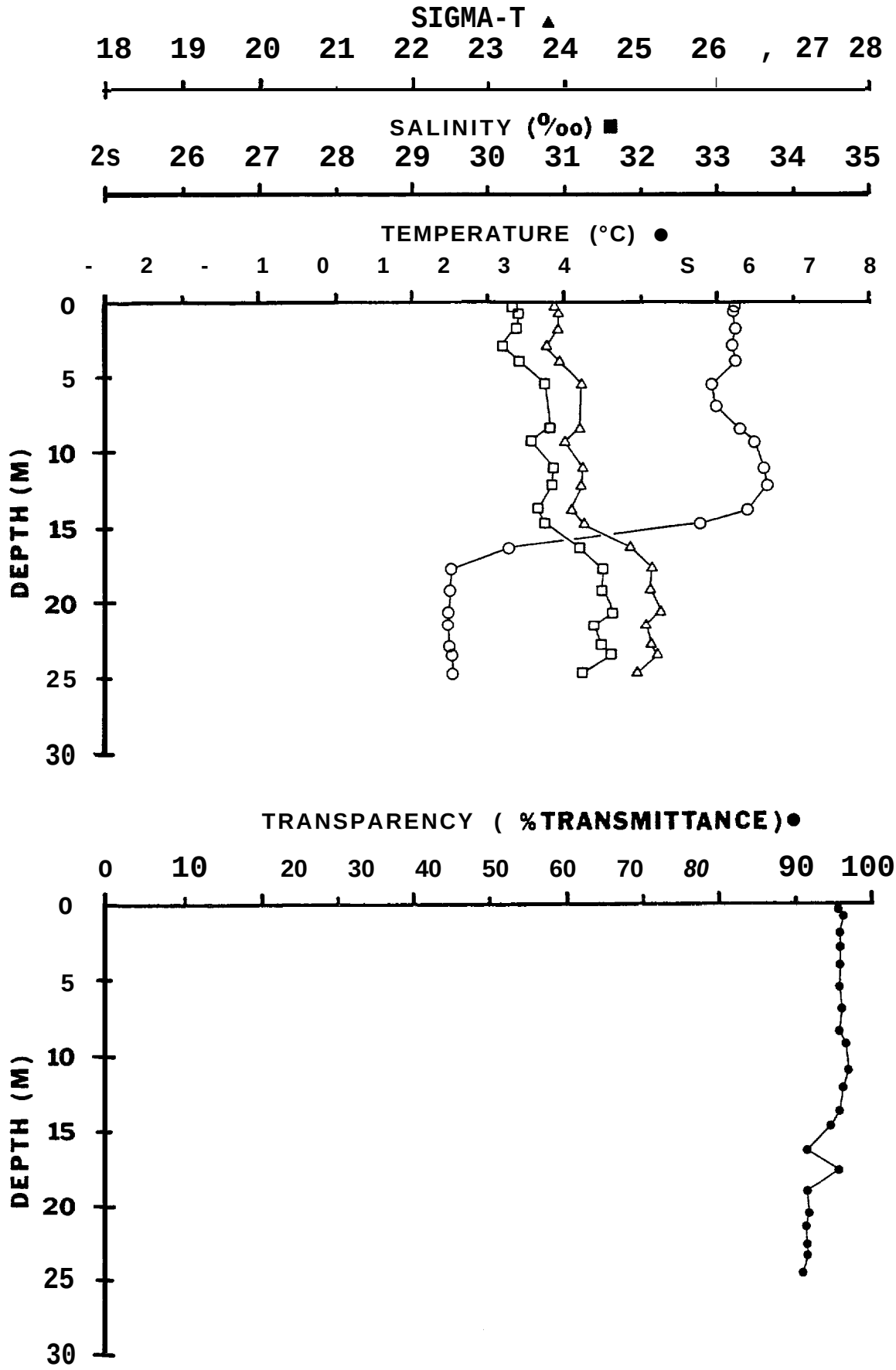


Figure C-37. Hydrographic Prophiles for Station Icy Cape-35

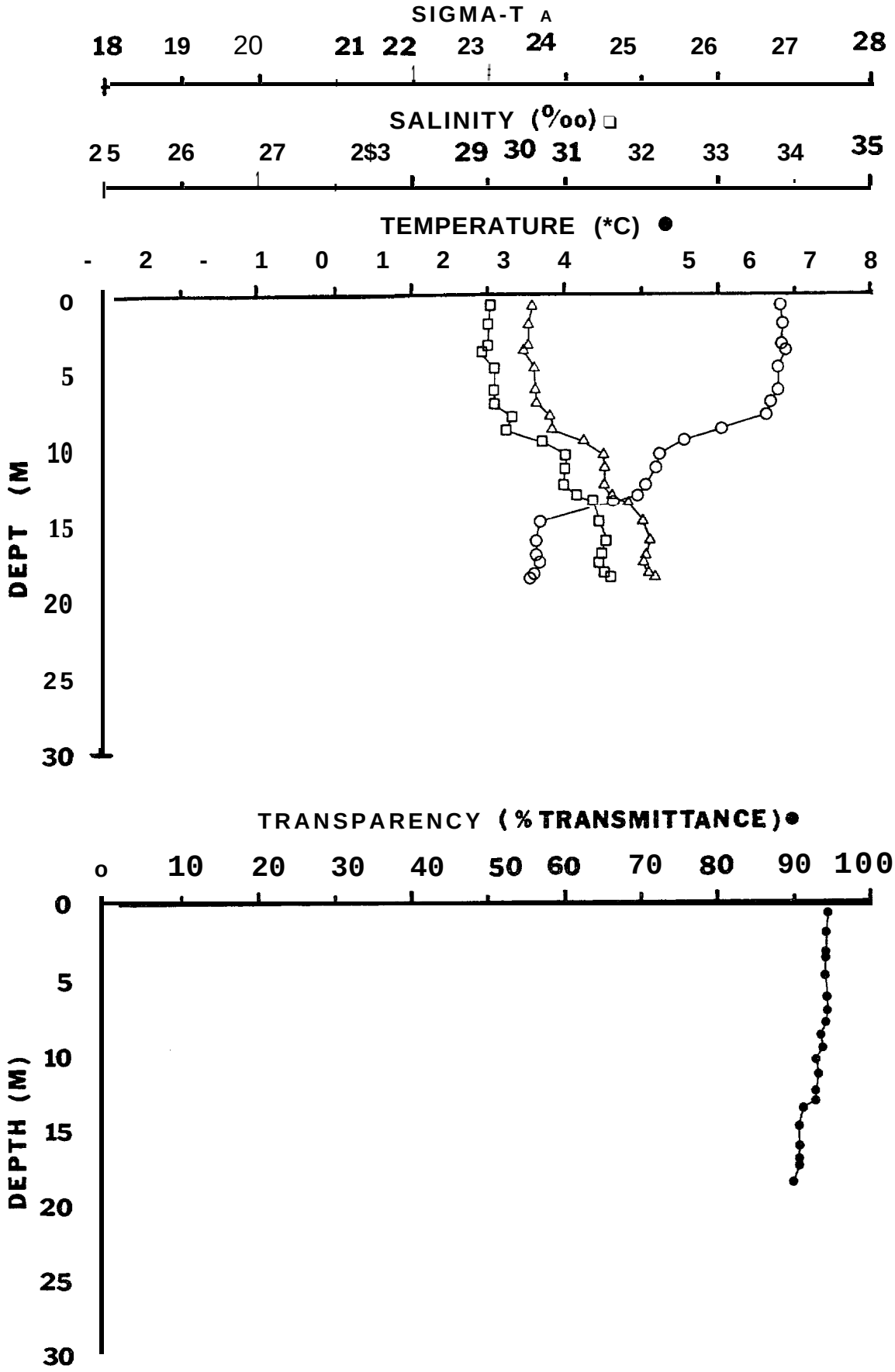


Figure C-38. Hydrographic Profiles for Station Akunik-25

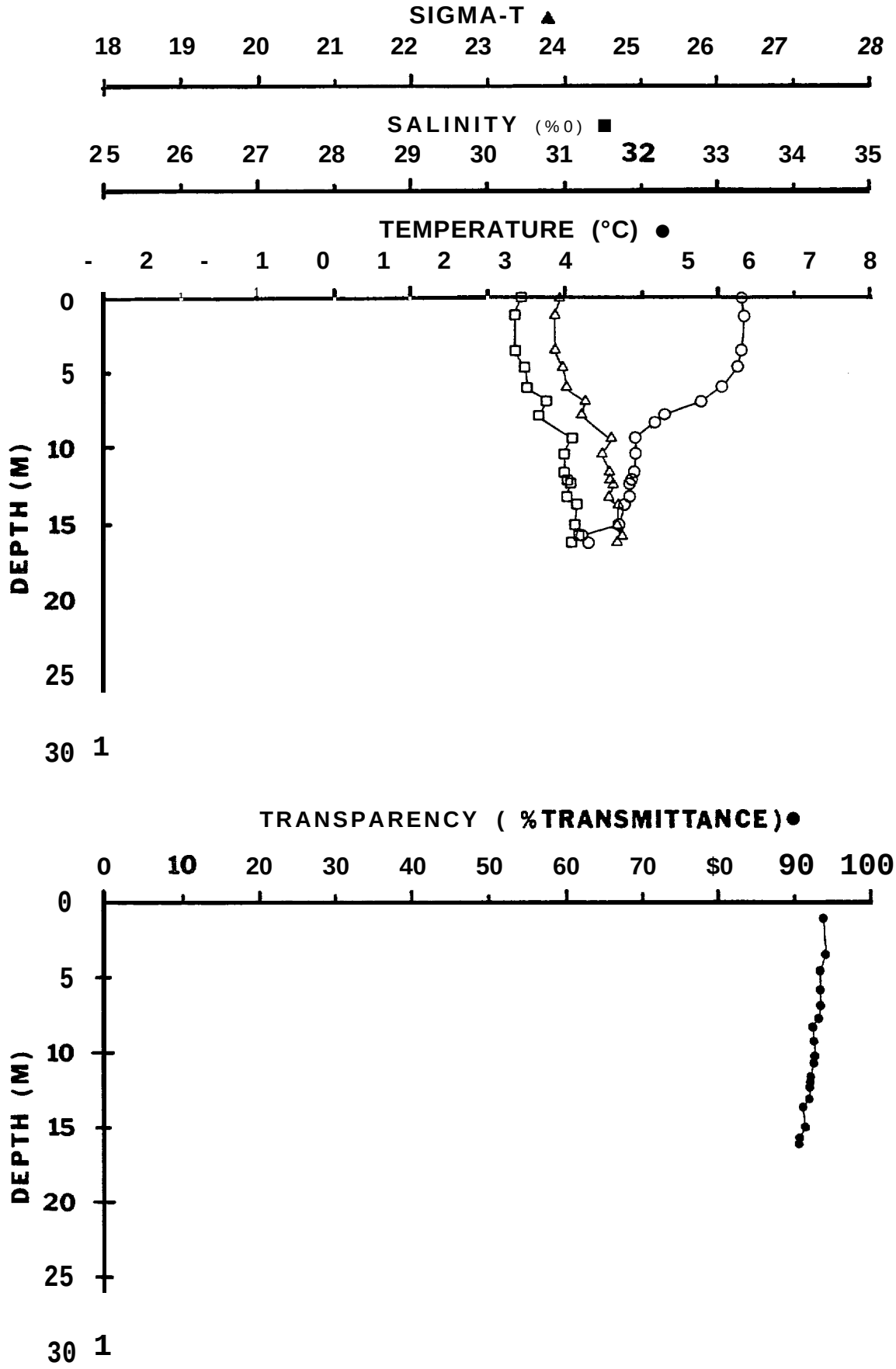


Figure C-39. I-iydrografic Profiles for Station Akunik-26

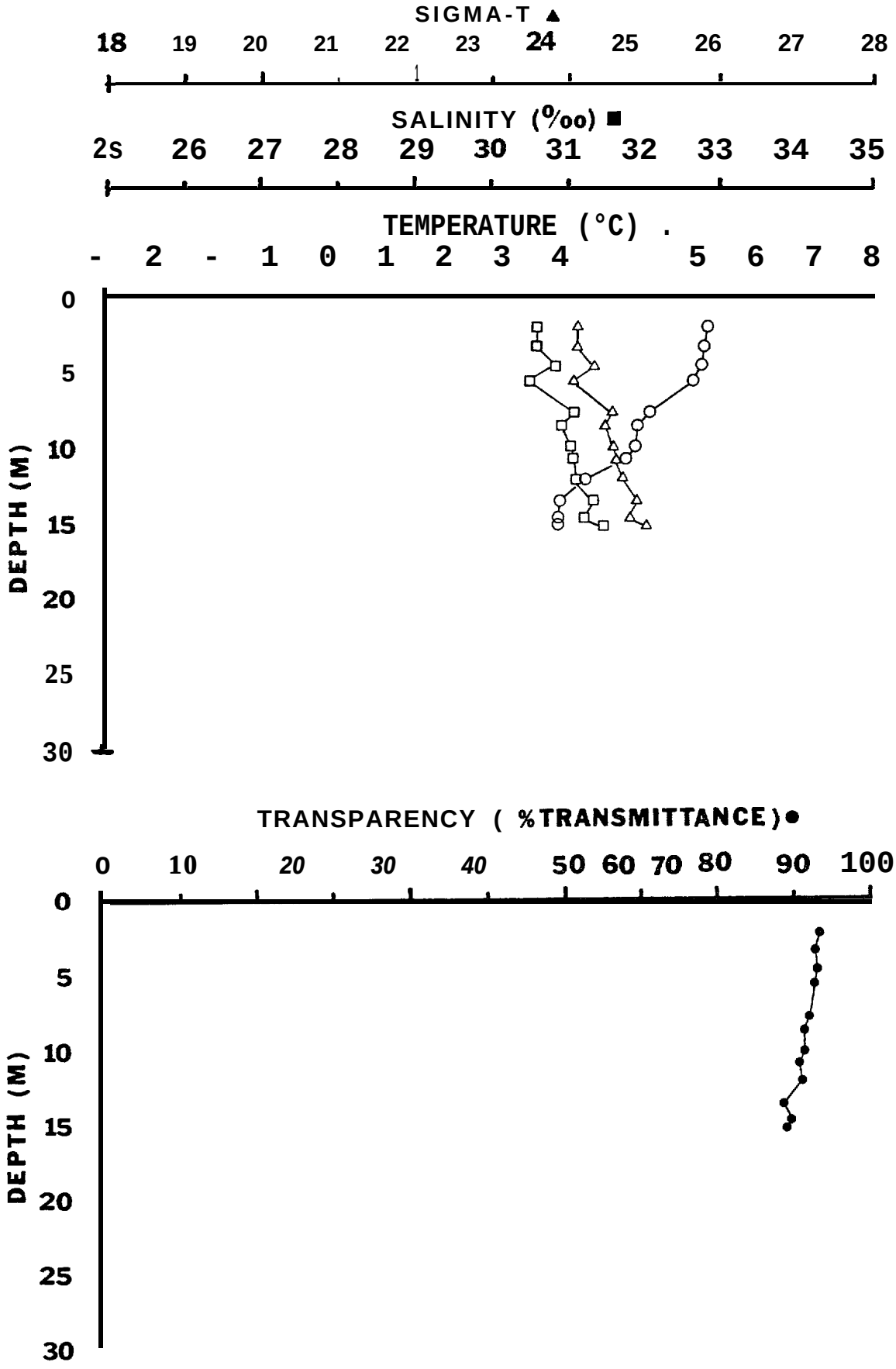


Figure C-40. Hydrographic Profiles for Station Akunik-27

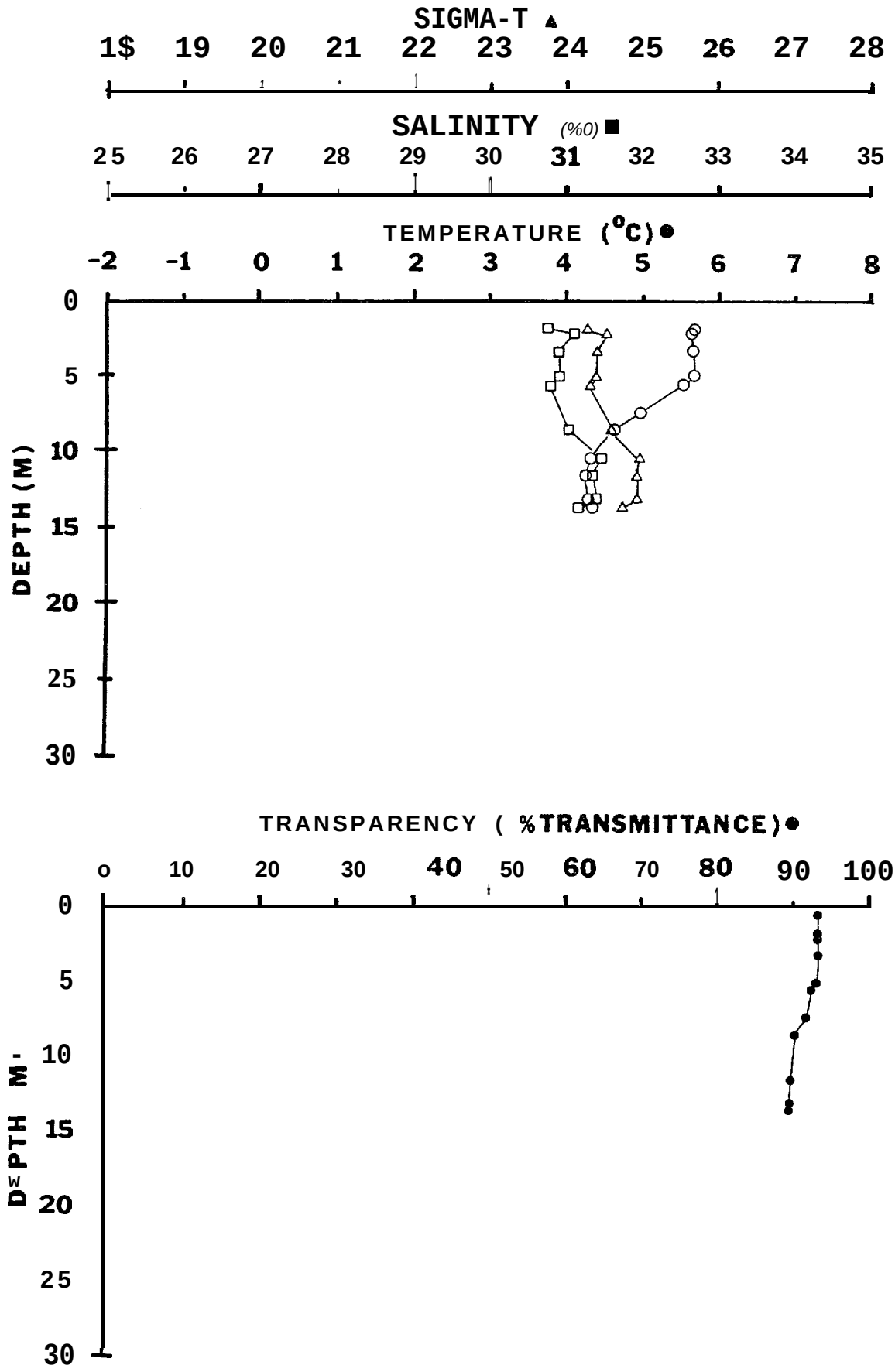


Figure C-41. Hydrographic Profiles for Station Akunik-28

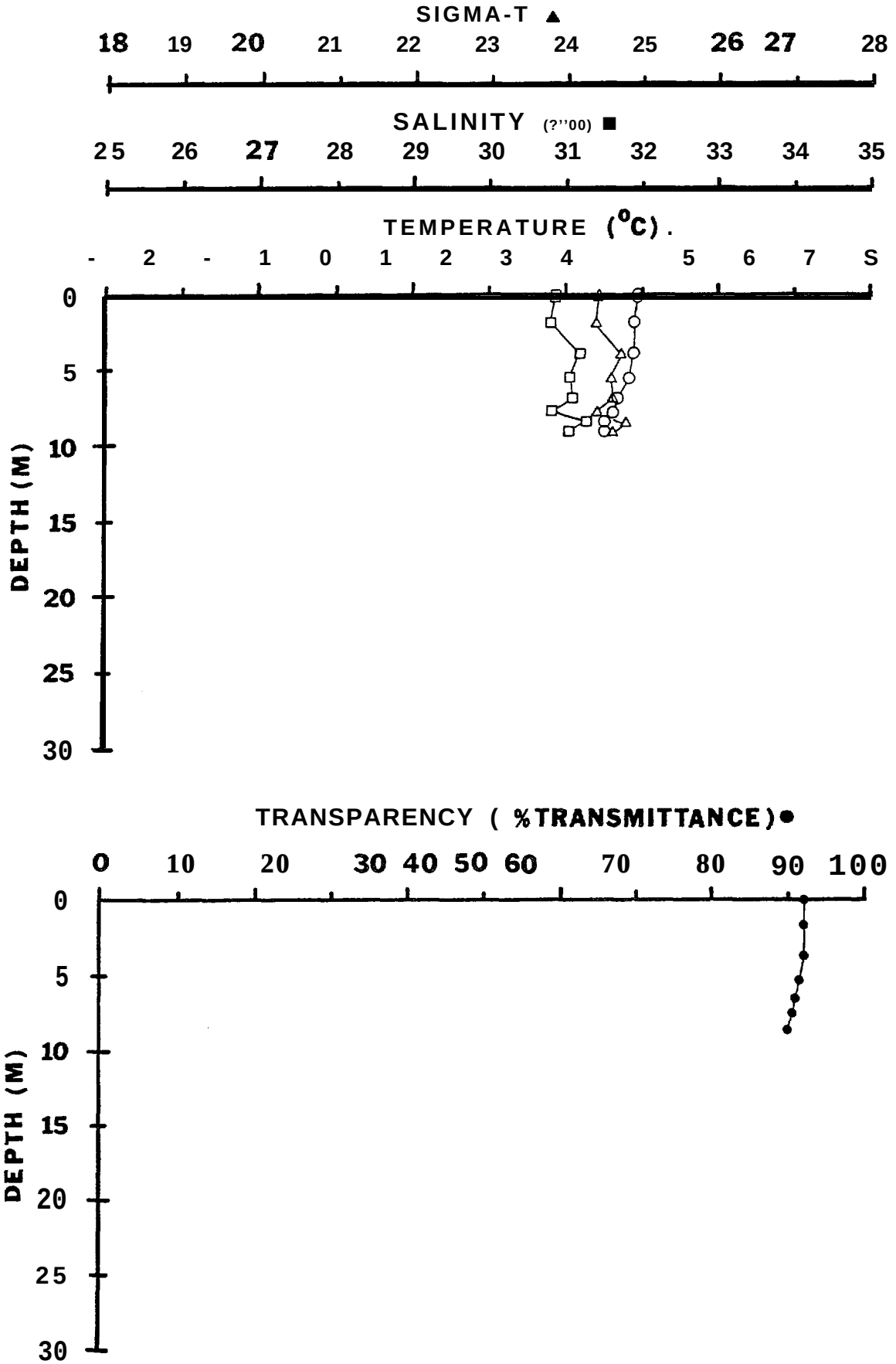


Figure C-42. Hydrographic Profiles for Station Akunik-29

Table: C-1
Study: NOAA 1981

Station: Barrow-1

Date: 7 Aug 81 Time: 1140 CAT Depth: 17m

Latitude: 71°19'27"N Longitude: 156°45'25"W

Depth (m)	Temperature (“c)	Salinity (°/00)	Sigma-t	Transparency (%)
1.0	5.77	27.59	21.76	92.7
2.7	6.43	27.65	21.74	92.4
3.3	6.53	27.71	21.78	92.5
4.3	6.60	27.63	21.71	92.2
5.0	6.71	28.05	22.02	91.7
5.8	6.84	28.33	22.23	91.0
7.6	6.60	29.13	22.88	91.5
8.7	6.52			91.7
10.0	5.78	29.44	23.22	91.2
11.3	5.75	29.31	23.12	90.8
11.7	5.78	29.52	23.28	90.8
13.5	6.01	29.55	23.28	89.5
13.7	6.03	29.53	23.27	89.0
15.4	5.96	29.63	23.35	89.4
16.3	5.90	29.65	23.37	89.3
16.6	5.89	29.55	23.29	86.5
16.6	5.94	29.49	23.24	87.3
18.1	5.94	29.52	23.27	86.0

Table: C-2
Study: NOAA 1981

Station: Barrow-2

Date: 7 Aug 81 Time: 1445 CAT Depth: 76m

Latitude: 71°23'28"N Longitude: 156°50'54"W

Depth (m)	Temperature (cc)	Salinity (‰)	Sigma-t	Transparency (%)
0.1	2.80	26.55	21.20	96.5
0.2	2.54	22.81	18.24	96.4
0.2	2.65	25.17	20.11	96.9
0.8	2.89	26.50	21.15	96.3
1.8	3.26	27.03	21.55	96.0
2.6	3.33	27.37	21.82	95.7
3.8	3.48	27.27	21.72	95.8
5.3	3.22	27.59	22.00	95.7
7.0	1.87	28.65	22.93	95.2
8.9	1.11	30.25	24.26	95.1
10.7	1.45	31.18	24.98	92.6
12.2	1.99	31.33	25.07	92.2
14.1	1.91	31.43	25.14	92.6
15.5	1.79	31.27	25.03	92.2
17.3	1.69	31.48	25.20	92.3
18.8	1.59	31.31	25.07	92.1
20.6	1.53	31.55	25.27	92.4
22.3	1.57	31.26	25.04	92.6
24.3	1.53	31.63	25.33	92.0
24.3	1.55	31.37	25.13	93.1

Table: C-3
Study: NOAA 1981

Station: Barrow-3

Date: 7 Aug 81 Time: 1520 CAT Depth: 51m

Latitude: 71°22'35"N Longitude: 156°48'54"W

Depth (m)	Temperature (°c)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.9	5.71	27.81	21.95	95.6
2.0	5.26	27.89	22.05	96.0
3.1	4.35	28.24	22.42	96.7
4.4	4.16	28.30	22.48	96.8
5.5	4.00	28.26	22.46	96.8
6.8	3.76	27.73	22.07	97.1
7.9	3.03	28.23	22.52	96.9
7.9	3.00	28.55	22.77	96.4
9.1	2.86	28.82	23.00	96.8
9.2	2.84	28.76	22.96	96.7
10.6	2.90	29.60	23.61	95.7
10.6	2.84	29.40	23.46	95.4
11.8	2.36	29.77	23.79	94.8
11.8	1.75	30.13	24.12	94.9
13.1	0.70	30.85	24.75	95.2
13.1	0.48	31.13	24.99	95.0
14.6	0.94	31.01	24.87	94.3
14.6	0.95	31.10	24.94	94.4
15.7	1.43	31.09	24.91	94.3
16.9	1.96	31.34	25.07	93.6
17.0	2.00	31.58	25.27	93.4
18.4	1.97	31.24	24.99	93.3
19.5	2.13	31.28	25.01	92.9
20.6	2.16	31.70	25.34	93.1
20.7	2.13	31.32	25.04	93.1
21.2	2.12	31.35	25.07	93.1
22.3	2.10	31.36	25.08	92.5
22.3	2.04	31.46	25.16	92.2
23.3	2.00	31.30	25.04	92.1
23.3	2.02	31.48	25.18	92.8
24.4	1.95	31.37	25.10	92.6
24.4	2.02	31.25	25.00	92.1

Table: C-4
Study: NOAA 1981

Station: Barrow-4

Date: 7 Aug **81** Time: 1540 CAT Depth: 55m

Latitude: **71°21'44"N** **Longitude:** **156°47'37"W**

Depth (m)	Temperature (°C)	Salinity (‰)	Sigma-t	Transparency (%)
0.3	6.76	**28.27**	**22.19**	94.8
1.7	6.71	**27.81**	**21.84**	93.6
3.0	6.58	**28.53**	**22.41**	93.5
4.8	6.56	**28.58**	**22.45**	93.6
6.5	6.57	**28.72**	**22.56**	93.2
8.3	5.72			94.0
9.5	5.72	**29.89**	**23.58**	91.2
10.9	5.79	**29.78**	**23.49**	91.7
12.6	5.91	**30.12**	**23.74**	92.7
14.3	5.84	**29.67**	**23.39**	
15.6	5.65	**29.89**	**23.59**	90.2
16.9	4.16	**30.62**	**24.32**	92.6
18.4	2.78	**30.43**	**24.29**	92.5
21.6	2.21	**31.68**	**25.33**	93.1
23.1	2.21	**31.47**	**25.16**	92.6
24.2	2.17	**31.55**	**25.23**	92.5

Table: C-5
Study : NOAA 1981

Station: Barrow-5

Date: 7 Aug 81 Time: 1610 CAT Depth: 4 0m

Latitude: 71°20'47"N Longitude: 156°45'54"W

Depth (m)	Temperature (*C)	Salinity (‰)	Sigma-t	Transparency (%)
1.0	6.72	28.11	22.07	93.4
2.2				92.7
3.4	6.56	28.25	22.20	92.8
4.7	6.48	28.15	22.13	92.4
5.9	6.66	28.43	22.32	92.6
6.5	6.76	29.11	22.85	92.3
7.4	6*88	29.02	22.76	92.2
8.3	6.85	29.02	22.76	92.2
9.7	6.81	29.20	22.91	91.8
9.7	6.56	28.97	22.76	91.7
10.7	5.27	29.60	23.40	91.5
12.3	5.78	29.78	23.48	90.4
13.9	5.76	29.75	23.47	90.7
14.0	5.72	29.74	23.46	91.0
15.2	5.84	29.78	23.48	92.7
15.6	5.85	29.68	23.40	92.7
16.9	5.93	30.00	23.64	92.1
17.0	5.95	29.71	23.42	92.2
17.1	5.88	29.83	23.52	91.6
17.9	5.85	30.10	23.74	91.3
19.2	5.28	30.59	24.18	91.1
20.7	5.09	30.47	24.11	91.1
20.8	4.98	30.42	24.08	90.8
22.4	4.17	31.13	24.73	90.3
23.7	3.47	30.92	24.62	90.7

Table: C-6
Study : NOAA 1981

Station: Skull Cliffs-6

Date: 8 Aug 81 Time: 1400 CAT Depth: 9m

Latitude: 70°55'36"N Longitude: 157°39'36"W

Depth (m)	Temperature (*C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.7	5.34	29.27	23.13	
1.7	5.35	29.40	23.24	87.9
1.8	5.35	29.48	23.30	87.9
1.9	5.34	29.27	23.13	87.8
2.1	5.34	29.45	23.27	88.0
	5.34	29.30	23.16	87.3
3.3	5.37	29.22	23.09	87.8
4.1	5.30	29.29	23.15	87.4
4.7	5.27	29.24	23.12	87.0
5.6	5.21	29.41	23.26	87.0
6.2	5.14	29.57	23.39	86.4
6.9	5.06	29.38	23.25	
7..6	5.02	29.58	23.41	86.0
8.3	5.07	29.40	23.27	85.5
9.1	5.00	29.55	23.39	85.6
9.2	4.98	29.41	23.29	85.4

Table: C-7
Study: NOAA 1981

Station: Skull Cliffs-7

Date: 8 Aug 81 Time: 1425 CAT Depth: 15m

Latitude: 70°56'23"N Longitude: 157°41'18"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.3	6.33	29.13	22.91	91.2
1.4	6.28	29.19	22.96	91.2
2.2	6.29	29.22	22.99	91.1
2.8	6.31	29.17	22.95	91.0
3.7	6.30	29.16	22.94	91.1
4.5	6.31	29.15	22.93	91.0
4.7	6.24	29.15	22.94	91.2
5.6	6.29	29.03	22.84	91.3
5.9	6.30	29.22	22.99	91.3
6.9	6.27	29.27	23.03	90.8
7.7	6.04	29.13	22.95	90.6
8.3	5.39	29.39	23.22	89.1
8.5	5.22	29.35	23.21	88.5
8.6	4.97	29.39	23.27	87.3
9.3	4.73	29.54	23.41	86.5
9.8	4.76	29.59	23.44	86.0
10.8	4.73	29.54	23.41	85.5
11.5	4.61	29.63	23.49	85.4
12.1	4.71	29.40	23.30	
12.4	4.74	29.41	23.31	85.5
12.6	4.69	29.53	23.41	84.7
13.6	4.70	29.55	23.42	83.8
14.2	4.66	29.61	23.47	83.9
14.5	4.71	29.44	23.33	83.8
15.4	4.66	29.48	23.37	83.5

Table: C-8

Study : NOAA 1981

Station: Skull Cliffs-8

Date: 8 Aug 81 Time: 1445 CAT Depth: 18m

Latitude: 70°57'09"N Longitude: 157°43'06"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.2	6.12	29.00	22.84	93.5
1.3	6.10	29.05	22.88	93.6
2.8	6.16	28.91	22.76	93.3
3.5	6.17	28.94	22.78	93.6
4.5	6.16	29.01	22.84	93.3
4.5	6.05	29.14	22.95	93.4
5.6	6.03	29.06	22.89	93.4
6.5	6.14	29.00	22.83	93.2
7.6	5.89	28.83	22.72	93.1
8.7	5.39	29.04	22.95	93.0
9.6				93.5
10.4	4.21	29.04	23.06	93.6
11.3	4.20	28.95	23.00	92.2
11.4	4.18	28.94	22.99	92.1
11.9	4.52	29.48	23.38	88.9
13.0	4.55	29.60	23.48	88.7
13.6	4.56	29.51	23.40	87.7
14.5	4.56	29.72	23.57	87.4
15.4	4.53	29.69	23.55	87.6
16.5	4.57	29.66	23.52	87.2
17.0	4.56	29.57	23.45	87.2
17.6	4.54	29.69	23.55	87.0

Table: C-9

Study: NOAA 1981

Station: Skull Cliffs-9

Date: 8 Aug 81 Time: 1505 CAT Depth: 20m

Latitude: 70°58'00"N Longitude: 157°44'53"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
1.0	5.41	28.49	22.51	94.2
1.8	5.41	28.40	22.44	94.0
2.3	5.42	28.65	22.64	93.3
3.0	5.38	28.45	22.48	93.9
3.9	5.38	28.49	22.52	94.1
4.5	5.19	28.57	22.60	93.6
5.4	4.94	28.56	22.62	94.5
6.7	4.99	28.36	22.45	93.6
7.8	4.67	28.56	22.64	93.7
8.5	4.81	28.86	22.86	93.0
9.2	4.78	28.83	22.84	91.5
10.1	4.78	29.05	23.02	91.9
10.8	4.81	29.17	23.11	92.9
11.7	4.82	29.18	23.12	93.1
12.5	4.81	29.14	23.09	93.1
13.0	4.84	29.25	23.17	93.3
13.9	4.74	29.36	23.27	92.7
14.1	4.78	29.25	23.17	93.1
14.7	4.72	29.15	23.10	92.2
15.4	4.66	29.54	23.42	
16.0	4.57	29.53	23.42	89.3
16.9	4.43	29.73	23.59	87.3
17.6	4.03	30.11	23.93	82.7
18.4	3.98	30.25	24.04	80.7
19.5	3.98	30.17	23.98	81.1
20.5	3.98	30.18	23.99	81.0

Table: C-10
Study: NOAA 1981

Station: Skull Cliffs-10

Date: 8 Aug 81 Time: 1525 CAT Depth: 20m

Latitude: 70°58'46"N Longitude: 157°46'44"W

Depth (m)	Temperature (°C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.3	5.44	28.27	22.34	94.6
1.3	5.46	28.51	22.52	94.5
2.3	5.48	28.40	22.43	94.6
3.3	5.45	28.33	22.38	94.9
3.8	5.45	28.39	22.43	94.3
4.9	5.38	28.30	22.37	94.2
5.9	5.26	28.47	22.51	94.2
6.8	5.00	28.43	22.51	94.7
7.6	4.50	29.23	23.19	94.1
8.8	4.67	28.98	22.97	92.8
9.8	4.76	29.07	23.04	93.3
10.4	4.79	28.99	22.97	93.5
11.5	4.78	29.36	23.26	93.2
12.6	4.79	29.08	23.04	93.6
13.5	4.74	28.95	22.94	93.2
14.3	4.52	28.93	22.95	92.0
15.2	4.72	29.04	23.01	93.7
15.9	4.69	29.09	23.06	92.9
17.4	4.55	29.26	23.20	91.8
17.8	3.82	30.06	23.90	85.0
18.7	3.54	30.47	24.26	82.7
19.1	3.51	30.57	24.34	81.9
20.2	3.51	30.47	24.26	82.2

Table: C-11
Study: NOAA 1981

Station: Skull Cliffs-n

Date: 8 Aug 81 Time: 1600 CAT Depth: 23m

Latitude: 71°00'26"N Longitude: 157°50'12"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.8	3.94	28.52	22.68	95.6
1.8	3.98	28.53	22.68	95.0
3.1				95.2
4.0	3.98	28.45	22.62	95.4
4.7	3.98	28.03	22.29	95.1
5.8	4.02	28.44	22.61	95.3
6.5	3.96	28.35	22.54	94.4
7.2	3.97	28.25	22.46	95.2
8.4	4.05	27.82	22.12	94.9
8.9	4.23	28.18	22.38	95.0
10.0	4.08	28.74	22.83	96.2
11.0	4.00	28.82	22.91	96.2
12.0	4.08	29.00	23.05	96.3
12.8	4.10	29.11	23.13	96.4
13.7	4.34	29.66	23.55	95.2
14.4	3.88	29.74	23.65	95.5
15.3	3.59	30.26	24.08	94.9
16.1	3.36	30.19	24.05	94.4
16.9	3.35	30.43	24.24	94.1
17.8	2.71	31.05	24.78	93.8
18.8	2.81	30.73	24.52	91.2
19.4	2.32	31.05	24.81	82.5
19.5	2.40	31.09	24.84	86.8
21.4	2.20	30.98	24.77	80.5
22.9	2.27	31.25	24.98	78.5
22.9	2.26	31.25	24.98	77.0

Table: C-12
Study: NOAA 1981

Station: Skull Cliffs-12

Date: 8 Aug 81 Time: 1620 CAT Depth: 29m

Latitude: 71°01'58"N Longitude: 157°53'55"W

Depth (m)	Temperature (°c)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.1	4.29	28.15	22.35	95.4
1.2	4.28	28.34	22.51	95.5
2.2	4.30	28.27	22.44	95.4
3.1	4.31	28.17	22.36	95.2
3.2	4.33	28.20	22.39	95.4
4.9	4.36	28.38	22.53	95.3
5.7	4.34	28.41	22.55	95.3
6.5	4.32	28.41	22,56	95.2
7.5	4.31	28.41	22.56	95.1
8.0	4.00	28.98	23.04	96.0
9.2	3.89	29.03	23.09	95.8
10.2	4.03	29.30	23.29	96.1
11.3	4.06	29.99	23.83	95.4
12.3	4.17	30.47	24.20	95.0
13.3	4.26	30.00	23.82	94.8
14.1	4.04	30.10	23.92	94.4
15.1	4.06	30.47	24.21	94.5
16.1	4.02	30.50	24.24	94.5
16.7	4.03	29.61	23.53	94.4
17.8	4.08			94.5
19.0	3.97			94.1
20.3	3.84	30.52	24.27	92.7
	3.78	31.01	24.67	92.9
22.4	3.61	30.85	24.56	93.1
23.4	3.06	30.70	24.48	93.4
24.1	2.70	31.25	24.95	91.2

Table: C-13
Study: NOAA 1981

Station: Pt. Belcher-13

Date: 10 Aug 81 **Time: 1330** CAT Depth: 20m

Latitude: 71″49′10″N Longitude: 159°38'00"W

Depth (m)	Temperature ('C)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.8	4.33	29.74	23.61	92.9
1.5	4.23	29.76	23.63	92.7
2.5	3.50	30.16	24.02	94.2
3.2	2.60	30.70	24.52	94.2
4.4	2.03	31.28	25.02	95.0
5.0	1.87	31.19	24.96	95.2
5.8	1.58	31.34	25.10	95*5
5.9	1.68	31.20	24.98	95.1
6.8	0.83	31.54	25.30	96.0
7.6	0.55	31.64	25.40	96.1
8.9	0.03	31.76	25.52	95.5
9.0	0.00	31.70	25.47	95.5
9.8	-0.43	32.10	25.81	95.0
10.4	-0.61	32.19	25.89	94.6
10.4	-0.57	32.24	25.93	95.0
10.9	-0.67	32.14	25.85	94.8
11.8	-0.68	32.19	25.89	94.6
12.0	-0.74	32.18	25.88	94.8
12.3	-0.76	32.25	25.94	94.9
12.4	-0.77	32.25	25.94	94.1
12.7	-0.81	32.30	25.99	94.4
12.8	-0.88	32.39	26.06	93.7
12.9	-0.79	32.32	26.00	94.4
13.5	-1.23	32.60	26.24	92.3
14.3	-1.27	32.68	26.31	92.3
14.7	-1.25	32.59	26.23	91.9
14.8	-1.29	32.73	26.35	92.2

Table: :C-14

Study: NOAA 1981

Station: Pt. Belcher-14

Date: 10 Aug 81 Time: 1410 CAT Depth: 30m

Latitude: 70°50'00"N Longitude: 159°39'20"W

Depth (m)	Temperature (°C)	Salinity (‰)	Sigma-t	Transparency (%)
1.2	5.71	28.72	22.66	94.1
2.0	5.68	28.77	22.71	94.1
2.6	5.67	28.80	22.73	94.1
3.6	5.61	28.79	22.72	93.9
4.4	5.32	29.08	22.99	94.4
4.9	4.84	29.77	23.58	93.6
5.9	4.40	29.93	23.75	91.7
6.5	3.17	30.39	24.22	93.2
6.5	3.00	30.27	24.14	93.9
7.3	2.22	30.87	24.68	94.9
7.4	2.30	30.84	24.65	95.0
8.1	1.70	31.15	24.94	94.9
8.9	0.77	31.71	25.45	96.3
9.5	0.69	31.80	25.52	96.2
9.6	0.67	31.55	25.32	96.1
10.4	0.29	31.64	25.41	95.8
11.0	0.12	31.84	25.58	95.1
11.7	-0.18	31.84	25.59	94.8
11.8	-0.17	32.07	25.77	94.7
11.9	-0.21	32.13	25.83	94.6
12.2	-0.52	32.04	25.76	94.0
13.3	-0.79	32.35	26.03	93.8
13.8	-0.98	32.54	26.19	
14.4	-1.09	32.40	26.08	93.3
15.6	-1.22	32.53	26.18	93.2
15.6	-1.30	32.43	25.98	93.0
16.6	-1.35	32.53	26.19	92.4
16.8	-1.34	32.67	26.30	92.3
17.1	-1.35	32.58	26.23	92.4
17.6	-1.37	32.73	26.35	92.1
?8.1	-1.33	32.68	26.31	91.7
18.4	-1.37	32.63	26.27	91.4
19.4	-1.34	32.48	26.15	91.2
19.8	-1.35	32.52	26.18	90.8
20.7	-1.38	32.55	26.21	90.3
20.9	-1.36	32.53	26.19	90.1

Table: C-15
Study: NOAA 1981

Station: Pt. Belcher-15

Date: 10 Aug 81 **Time:** 1432 CAT Depth: 32m

Latitude: 70°50'55"N Longitude: 159°40'15"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.4	5.61	28.57	22.56	93.2
1.3	5.63	28.65	22.61	93.3
2.7	5.62	28.51	22.51	93.3
3.7	5.59	28.60	22.58	93.4
4.4	5.70	28.80	22.72	94.2
5.5	5.73	28.76	22.69	95.4
6.5	5.97	28.78	22.68	96.0
7.3	5.87	28.72	22.64	96.0
7.4	5.73	28.82	22.74	96.2
8.2	4.50	29.81	23.64	92.5
9.4	4.21	30.08	23.89	91.3
9.4	4.23	30.03	23.85	92.2
9.9	4.08	30.05	23.88	91.4
10.1	4.10	30.11	23.92	90.8
10.5	3.99	30.09	23.91	91.2
11.0	3.11	30.60	24.40	90.6
11.3	2.99	30.58	24.39	91.6
11.8	0.44	31.97	25.66	94.4
11.8	0.74	31.67	25.41	94.5
12.2	0.56	31.62	25.38	
12.3	-0.07	32.00	25.72	94.5
12.6	0.22	31.66	25.43	94.9
12.6	0.00	32.01	25.72	94.5
13.2	-0.72	32.29	25.97	94.5
13.2	-0.82	32.38	26.05	94.5
13.4	-0.77	32.38	26.05	94.8
14.2	-1.39	32.47	26.14	94.1
14.3	-1.39	32.58	26.23	94.6
15.3	-1.40	32.71	26.34	95.4
15.4	-1.38	32.61	26.25	94.2
16.5	-1.41	32.49	26.16	94.3
17.2	-1.45	32.85	26.45	93.2
18.2	-1.42	32.80	26.41	93.5
18.9	-1.42	32.63	26.27	93.3
19.3	-1.45	32.59	26.24	92.6
19.8	-1.39	32.52	26.18	92.9
20.2	-1.42	32.64	26.28	92.3
20.9	-1.39	32.47	26.14	92.3
21.4	-1.44	32.45	26.13	91.8
22.0	-1.41	32.64	26.28	90.8
22.2	-1.39	32.62	26.26	91.8
22.2	-1.40	32.80	26.40	90.8

Table: C-16
Study: NOAA 1981

Station: Pt. Belcher-16

Date: 10 Aug 81 Time: 1500 CAT Depth: 44m

Latitude: 70°52'20"N Longitude: 159°43'20"W

Depth (m)	Temperature (°C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.1	6.18			96.0
1.6	6.22	28.73	22.61	95.8
2.8	6.23	28.78	22.65	95.9
3.5	6.18	28.77	22.64	95.9
4.5	6.23	28.75	22.62	96.1
5.4	6.21	28.77	22.65	96.2
6.1	6.20	28.60	22.51	96.1
6.1	6.17	28.68	22.57	95.7
6.9	5.71	28.63	22.59	96.4
7.7	4.68	28.78	22.81	97.8
9.0	4.38	28.96	22.98	97.9
9.5	4.42	29.42	23.34	96.1
10.3	4.10	30.41	24.16	91.2
10.4	4.12	30.45	24.19	91.3
11.1	3.93	30.48	24.23	90.9
12.2	3.24	30.69	24.46	92.1
13.1	1.71	31.32	25.08	94".5
14.3	1.23	31.58	25.31	94.9
14.8	0.73	31.52	25.30	95.6
15.7	0.48	31.65	25.41	95.9
16.9	0.44	31.56	25.34	95.5
17.4	0.39	31.61	25.38	95.9
18.2	0.39	31.63	25.40	95.7
18.3	0.36			95.6
19.2	0.26	31.79	25.53	95.4
19.2	0.36	31.83	25.56	95.7
19.3	0.34	31.89	25.61	95.7
20.9	0.05	31.74	25.50	95.2
21.6	-0.13	31.93	25.66	94.9
22.2	-0.14	31.94	25.67	94.7
22.9	-0.46	31.97	25.71	94.0
22.9	-0.29	31.91	25.66	94.5
24.1	-0.77			92.7
24.2	-0.69	32.03	25.76	93.6
24.5	-0.82	32.14	25.86	93.1
24.8	-0.79	32.30	25.98	93.1

Table: C-17
Study: NOAA 1981

Station: Pt. Belcher-17

Date: 10 Aug 81 Time: 1530 CAT Depth: 51m

Latitude: 70°54'30"N Longitude: 159°46'00"W

Depth (m)	Temperature (“C)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.1	5.49	28.16	22.25	96.2
1.3	5.51	28.18	22.26	96.0
2.2				96.3
2.9	5.56	28.24	22.30	96.2
3.9	5.57	28.23	22.29	96.4
4.4	5.56	28.21	22.27	96.7
5.2	5.63	28.21	22.27	96.8
6.1	5.76	28.39	22.40	97.0
7.0	5.68	28.39	22.41	97.2
7.6	5.70	28.34	22.37	97.0
8.6	5.65	28.45	22.46	96.9
9.5	4.24	28.59	22.70	96.5
10.4	2.39	29.67	23.71	97.1
11.2	1.77	30.37	24.31	97.2
12.0	1.67	30.91	24.75	96.3
12.9	1.73	31.22	24.99	
12.9	1.77	31.31	25.07	96.3
13.8	1.80	31.42	25.15	95.5
15.0	1.47	31.61	25.33	95.3
16.0	0.73	31.46	25.24	95.4
16.9	0.67	31.46	25.24	95.9
17.7	0.71	31.80	25.52	
18.8	0.88	31.73	25.45	95.2
19.4	0.80	31.77	25.49	94.6
20.3	0.73	31.67	25.41	95.0
20.9	0.57	31.82	25.54	94.5
21.7	0.29	31.52	25.31	94.0
22.6	0.08	31.70	25.47	93.9
22.7	0.08	31.83	25.57	93.6
22.7	0.09	31.89	25.62	94.3
23.5	0.00	31.89	25.62	93.4
24.2	-0.12	32.03	25.74	93.4
24.7	-0.14	31.78	25.54	93.6

Table: C-18
Study: NOAA 1981

Station: Pt. Belcher-18

Date: 10 Aug 81 Time: 1605 CAT Depth: 56m

Latitude: 70°56'20"N Longitude: 159°48'40"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.1	6.33	28.56	22.47	95.6
0.9	6.37	28.53	22.44	95.6
2.0	6.35	28.45	22.37	95.6
2.6				95.8
3.4	6.32	28.40	22.34	96.0
4.4	6.33	28.54	22.45	96.0
5.2	6.35	28.43	22.36	96.3
5.8	6.36	28.23	22.20	95.7
6.7	6.35	28.36	22.31	96.4
7.4	6.32	28.33	22.29	96.6
7.6	6.34	28.38	‘-” 22.32	96.8
8.3	6.09	28.50	22.45	97.3
8.4	6.24	28.47	22.41	97.1
9.2	5.70	28.80	22.72	97.8
10.2	5.65	28.84	22.76	97.5
10.9	5.58	28.96	22.86	97.9
12.0	5.33	28.86	22.81	97.8
13.0	4.33	29.04	23.05	97.5
13.9	3.08	29.56	23.57	97.3
14.4	2.64	29.83	23.82	97.4
14.6	2.79	29.65	23.67	98.4
14.6	2.85	28.96	23.11	98.0
15.0	1.28	30.10	24.12	96.4
15.0	1.92	29.86	23.90	96.7
15.1	1.25	29.98	24.03	96.4
15.2	1.81	29.63	23.72	96.9
15.6	0.47	30.41	24.41	96.3
15.8	-0.64	31.49	25.33	97.5
15.8	-0.62	31.55	25.38	96.8
16.0	-0.60	31.53	25.36	96.8
16.4	-0.78	31.32	25.19	96.0
17.9	-1.28	31.97	25.73	95.6
18.7	–1.32	31.50	25.36	94.3
19.5	-1.35	31.38	25.26	95.0
20.3	-1.38	32.02	25.77	94.7
20.4	-1.42	31.66	25.49	94.6
21.0	-1.42	31.97	25.73	94.2
21.8	-1.41	31.67	25.49	94.1
22.6	-1.42	31.80	25.60	94.0
23.5	-1.50	32.16	25.89	94.3
24.2	-1.45			93.3
24.8	–1 .50	31.97	25.74	93.7
24.9	-1.47			93.6
25.0	-1.50	31.95	25.73	93.0

Table: C-19
Study: NOAA 1981

Station: Pingorarok Pass-19

Date: 13 Aug 81 Time: 1150 CAT Depth: 7m

Latitude: 70°23'30"N Longitude: 160°48'00"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.1	2.81	31.51	25.14	94.3
0.7	2.82	31.61	25.22	94.9
0.9	2.73	31.51	25.15	93.8
0.9	2.75	31.51	25.15	94.1
1.5	2.66	31.73	25.33	93.4
2.3	2.44	31.55	25.21	92.9
3.1	1.79	31.58	25.28	92.2
4.0	1.39	31.82	25.50	92.1
4.8	1.34	31.94	25.59	91.3
5.6	1.36	31.83	25.50	90.8
5.6	1.38	31.88	25.55	91.2
6.7	1.37	31.97	25.62	91.1
6.7	1.38	31.88	25.55	91.0

Table: C-20
Study: NOAA 1981

Station: Pingorarok Pass-20

Date: 13 Aug 81 Time: 1210 CAT Depth: 11m

Latitude: 70°24'20"N Longitude: 160°49'40"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.2	2.64	31.59	25.22	93.6
0.6	2.86	31.53	25.16	94.3
0.6	2.72	31.62	25.24	94.2
1.1	2.38			92.7
2.1	2.23	31.63	25.28	93.1
3.1	2.19	31.63	25.29	92.7
4.1	2.20	31.59	25.26	92.7
5.2	2.18	31.61	25.28	92.4
6.4	2.13	31.59	25.26	92.2
7.3	2.01	31.60	25.28	91.8
7.3	1.81	31.60	25.29	91.7
8.3	1.31	31.83	25.51	91.4
9.2	1.24	31.89	25.56	90.8
10.2	1.24	31.68	25.39	90.0
10.2	1.23	31.68	25.39	89.8

Table: C-21
Study: NOAA 1981

Station: Pingorarok Pass-21

Date: 13 Aug 81 Time: 1305 CAT Depth: 14m

Latitude: 70°25'12"N Longitude: 160°51'00"W

Depth (m)	Temperature (“C)	Salinity (°/ 0 0)	Sigma-t	Transparency (%)
0.1	3.11	31.48	25.10	94.5
0.2	3.30	31.57	25.15	94.5
1.5	2.97	31.47	25.10	94.2
2.0	2.91	31.47	25.10	95.9
3.2	2.88			94.5
3.9	2.92	31.33	24.99	94.0
4.9	2.88	31.46	25.10	93.6
5.7	2.86	31.42	25.07	92.8
6.3	2.82	31.33	25.00	92.2
7.6	2.32	31.08	24.84	91.0
8.5	1.22	31.70	25.41	90.6
9.1	1.09	31.81	25.51	90.0
9.8	1.09	31.82	25.52	89.6
10.5	0.90	31.97	25.64	88.2
11.6	1.04	31.81	25.51	89.0
12.6	1.01	31.87	25.56	88.4
13.6	1.04	31.68	25.41	87.9
13.7	1.06	31.60	25.34	88.6

Table: C-22
Study: NOAA 1981

Station: Pingorarok Pass-22

Date: 13 Aug 81 Time: 1325 CAT Depth: 17m

Latitude: 70°27'00"N Longitude: 160°54'00"W

Depth (m)	Temperature (°C)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.1	2.76	31.48	25.13	94.5
0.5	2.80	31.26	24.95	94.1
1.5	2.82	31.45	25.10	94.0
2.1	2.83	31.47	25.12	94.1
2.7	2.81	31.45	25.09	93.5
3.7	2.74	31.43	25.09	93.4
4.9	2.66	31.62	25.24	93.1
5.6	2.11	31.80	25.43	92.7
6.6	1.70	31.53	25.25	93.1
7.1	1.19	31.71	25.42	92.8
8.1	0.79	31.79	25.50	90.8
9.3	0.76	31.89	25.59	89.6
9.8	0.77	32.00	25.67	90.2
10.7	0.85	31.75	25.47	89.4
11*4	0.83	31.87	25.57	89.8
12.2	0.87	31.74	25.46	89.8
13.1	0.85	31.72	25.45	89.7
13.7	0.75	31.90	25.60	88.6
13.8	0.74	31.77	25.49	88.6
14.6	0.66	31.91	25.61	88.6
14.7	0.71	31.85	25.56	88.6

Table: C-23
Study: NOAA 1981

Station: Pingorarok Pass-23

Date: 13 Aug 81 Time: 1350 CAT Depth: 20m

Latitude: 70°38'40"N Longitude: 160°56'40"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.3	2.89	31.17	24.87	95.6
0.3	2.83	31.31	24.98	95.5
0.3	3.12	31.11	24.80	95.4
2.0				95.2
3.0	2.83	31.35	25.02	95.4
4.2	2.85	31.29	24.96	95.6
5.2	2.85	31.33	25.00	95.0
6.2	2.78	31.41	25.07	94.1
7.4	1.86	31.27	25.03	94.0
8.3	0.71	31.85	25.56	92.8
9.6	0.55	31.86	25.58	91.7
10.7	0.56	31.79	25.52	91.5
11.8	0.56	31.85	25.57	90.4
12.7	0.59	31.69	25.44	88.9
13.5	0.58	31.72	25.46	88.5
14.5	0.61	31.78	25.50	87.7
15.8	0.57	32.03	25.71	87.2
16.7	0.57	31.82	25.54	87.0
17.5	0.57	31.93	25.63	87.1
18.5	0.61	31.73	25.46	86.9
19.3	0.61	31.74	25.47	86.3

Table: C-24
Study: NOAA 1981

Station: Pingorarok Pass-24

Date: 13 Aug 81 Time: 1410 CAT Depth: 23m

Latitude: 70°30'30"N Longitude: 160°59'30"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.1	2.70	30.65	24.47	95.7
2.0	2.67	31.07	24.81	95.3
3.4	2.54	31.13	24.86	95.0
4.6	2.51	31.25	24.96	94.9
5.9	1.32	31.67	25.38	95.1
7.0	1.23	31.53	25.27	95.0
8.3	0.93	31.36	25.15	94.5
9.5	0.54	31.78	25.51	93.6
10.6	0.50	31.55	25.33	89.4
11.9	0.46	31.97	25.67	86.9
12.9	0.50	31.93	25.63	86.3
14.0	0.51	31.65	25.40	85.5
15.0	0.46	31.45	25.25	85.0
15.9	0.52	31.62	25.39	85.2
16.9	0.45	31.58	25.35	85.1
18.1	0.45	31.93	25.63	84.4
18.2	0.45	32.07	25.75	84.3
19.4	0.46	31.57	25.34	83.9
20.6	0.46	32.00	25.69	83.8
21.6	0.47	31.83	25.55	84.2
21.6	0.48	32.18	25.84	84.4

Table: C-25
Study: NOAA 1981

Station: Icy Cape-30

Date: 15 Aug 81 Time: 1428 CAT Depth: 11m

Latitude: 70°18'40"N Longitude: 162°00'40"W

Depth (m)	Temperature (“c)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.1	4.17	31.22	24.79	93.4
0.8	4.17	31.17	24.75	94.0
1.7	4.18	31.20	24.77	93.5
2.8	4.15	31.18	24.76	93.4
4.0	4.20	31.15	24.74	93.5
5.5	4.12	31.39	24.94	93.2
6.4	4.07	31.21	24.79	93.1
7.7	4.00	31.36	24.92	92.9
8.8	3.76	31.33	24.92	92.0
8.9	3.76	31.27	24.87	91.1
9.6	3.73	31.23	24.84	91.1
9.7	3.72	31.34	24.93	91.1
9.7	3.74	31.26	24.87	91.2
9.8	3.74	31.25	24.86	91.3
10.0	3.78	31.28	24.88	91.4

Table: C-26
Study: NOAA 1981

Station: Icy Cape-31

Date: 15 Aug 81 Time: 1445 CAT Depth: 13m

Latitude: 70°19'35"N Longitude: 162°02'20"W

Depth (m)	Temperature (“c)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.8	4.73	31.05	24.60	93.6
1.7	4.73	31.05	24.60	93.9
2.8	4.69	31.02	24.58	93.6
4.1	4.47	31.07	24.65	
5.2	4.38	31.16	24.72	92.7
6.5	4.18	31.09	24.69	92.6
7.7	3.82	31.09	24.73	92.2
8.9	3.55	31.10	24.76	91.7
9.8	3.58	31.10	24.75	89.3
11.0	3.51	31.15	24.80	90.8
11.0	3.54	31.22	24.85	90.0
12.2	3.55	30.97	24.65	90.2
12.4	3.54	31.11	24.77	89.9

Table: C-27
Study: NOAA 1981

Station: Icy Cape-32

Date: 15 Aug 81 Time: 1510 CAT Depth: 14m

Latitude: 70°21'12"N Longitude: 162°06'00"W

Depth (m)	Temperature (°C)	Salinity (°/00)	Sigma-t	Transparency (%)
1.2	4.80	31.05	24.60	94.1
2.2	4.82	31.09	24.63	93.6
4.0	4.72	30.97	24.54	93.1
5.0	4.57	31.00	24.58	92.7
6.2	4.44	30.96	24.56	
7.6	3.56	31.01	23.89	91.9
9.0	3.42	31.08	24.75	90.7
10.2	3.35	31.32	24.95	90.8
10.2	3.35	31.32	24.95	90.8
11.4	3.35	30.45	24.25	90.4
12.5	3.41	31.02	24.71	89.7

Table: C-28
Study: NOAA 1981

Station: Icy Cape-33

Date: 15 Aug 81 Time: 1537 CAT Depth: 16m .

Latitude: 70°22'50"N Longitude: 162°09'30"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.7	4.65	31.20	24.73	94.5
2.0	4.56	31.05	24.62	94.3
3.3	4.63	31.04	24.60	93.7
4.4	4.53	31.15	24.71	93.6
5.6	4.54	31.02	24.60	93.5
6.8	4.46	30.97	24.56	93.5
8.0	4.45	31.03	24.62	93.4
9.1	3.89	31.05	24.69	92.5
10.4	2.88	31.40	25.05	90.6
11.7	2.95	31.38	25.03	90.4
12.7	2.91	31.36	25.02	89.8
13.7	2.55	31.62	25.25	
14.7	2.95	31.25	24.93	90.3
15.8	2.94	31.46	25.10	89.9

Table: c-29
Study : NOAA 1981

Station: Icy Cape-34

Date: 15 Aug 81 Time: 1600 CAT Depth: 21m

Latitude: 70°24'24"N Longitude: 162°13'20"W

Depth (m)	Temperature (°C)	Salinity (°/oo)	Sigma-t	Transparency (%)
0.3	6.05	29.14	22.95	96.9
0.3	6.06	30.44	23.97	
2.0	6.01	30.67	24.16	96.1
3.1	5.85	30.47	24.02	96.0
4.4	5.73	30.47	24.04	95.5
5.5	5.70	30.63	24.17	95.7
6.8	5.28	30.64	24.22	95.2
7.8	5.18	30.88	24.42	95.0
8.9	5.18	30.89	24.43	94.6
10.0	4.96	30.94	24.49	93.4
10.9	4.74	30.99	24.56	94.5
11.0	4.70	30.80	24.41	93.4
11.9	4.19	31.07	24.67	93.2
13.0	3.25	31.26	24.91	
13.9	2.43	31.42	25.10	91.6
14.9	2.41	31.42	25.11	91.6
16.1	2.42	31.44	25.12	91.1
17.1	2.36	31.34	25.04	91.1
17.2	2.46	31.37	25.07	91.1
18.1	2.41	31.39	25.08	91.0
19.6	2.42	31.34	25.04	91.2

Table: C-30
Study: NOAA 1981

Station: Icy Cape-35

Date: 15 Aug 81 Time: **1625** CAT Depth: 27m

Latitude: 70°25'30"N **Longitude: 162°17'00"W**

Depth (m)	Temperature (°C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.1	6.24	30.32	23.86	95.5
0.5	6.21	30.39	23.92	96.4
1.7	6.22	30.37	23.90	95.6
2.8	6.19	30.19	23.76	95.7
3.9	6.22	30.42	23.94	95.7
5.4	5.91	30.73	24.22	95.6
7.0	5.98			95.9
8.4	6.32	30.77	24.20	95.6
9.3	6.51	30.55	24.01	96.4
11.0	6.61	30.84	24.22	96.6
12.2	6.67	30.81	24.20	96.1
13.8	6.40	30.63	24.08	95.5
14.8	5.75	30.73	24.24	94.4
16.3	3.26	31.19	24.85	91.3
17.6	2.53	31.48	25.14	95.5
19.1	2.49	31.44	25.12	91.2
20.6	2.48	31.59	25.23	91.4
21.5	2.48	31.34	25.04	91.0
22.8	2.49	31.44	25.12	91.1
23.5	2.53	31.56	25.21	91.1
24.7	2.53	31.20	24.92	90.3

Table: C-31

Study: **NOAA 1981**

Station: **Wainwright-36**

Date: **20 Aug 81** Time: 1351 CAT Depth: 23m

Latitude: 70°39'24"N Longitude: 160°17'15"W

Depth (m)	Temperature (°c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.3	5.71	30.55	24.10	89.9
1.2	5.73	30.52	24.08	89.8
2.5	5.70	30.49	24.06	89.4
3.6	5.69	30.40	23.99	88.9
5.3	5.69	30.40	23.99	89.0
6.4	5.72	30.45	24.03	88.9
7.5	5.68	30.49	24.06	89.0
8.6	5.71	30.44	24.02	88.9
8.7	5.73	30.40	23.98	89.4
10.0	5.75	30.44	24.01	89.0
10.0	5.72	30.54	24.10	89.2
11.2	5.74	30.49	24.05	88.9
12.4	5.74	30.47	24.04	88.9
13.6	5.76	30.51	24.06	89.0
13.6	5.76	30.49	24.05	88.9
14.9	5.74	30.49	24.05	89.3
16.1	5.74	30.55	24.10	88.8
16.2	5.75	30.54	24.09	89.1
17.4	5.77	30.52	24.07	89.0
18.6	5.74	30.43	24.00	87.3
20.0	5.56	30.60	24.16	84.7
21.1	5.55	30.52	24.10	84.6
21.2	5.60	30.63	24.18	84.9

Table: c-32
Study: NOAA 1981

Station: Wainwright-37

Date: 20 Aug **81** Time: 2109 CAT Depth: 22m

Latitude: 70°38'13"N Longitude: 160°19'19"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.4	5.06	29.98	23.72	83.7
0.9	5.66	30.49	24.06	88.4
2.0	5.79	30.58	24.12	88.9
2.9	5.82	30.53	24.08	89.1
4.2	5.81	30.59	24.12	89.2
5.2	5.74	30.45	24.02	89.3
6.4	5.81	30.45	24.01	89.0
7.5	5.78	30.47	24.03	89.3
8.6	5.78	30.50	24.06	89.5
8.7	5.80	30.49	24.05	88.9
9.7	5.82	30.40	23.97	89.0
10.6	5.79	30.53	24.07	89.8
10.7	5.81	30.49	24.04	89.4
12.0	5.79	30.51	24.07	89.3
13.2	5.80	30.47	24.03	89.7
14.2	5.80	30.55	24.09	89.4
15.6	5.81	30.47	24.03	89.6
16.9	5.62	30.56	24.12	86.5
18.1	5.57	30.53	24.11	85.6
19.5	5.55	30.50	24.08	85.1
20.7	5.50	30.64	24.20	85.2
	5.52	30.52	24.10	85.1

Table: C-33
Study: NOAA 1981

Station: Wainwright---

Date: 2 Sep 81 Time: 1720 CAT Depth: 37m

Latitude: -- -- -- -- -N Longitude: ----- --- -- w

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
		Missing data tape		

Table: **C-34**
Study: **NOAA 1981**

Station: Wainwright-39

Date: 2 Sep 81 Time: 1750 CAT Depth: 29m

Latitude: 70″39′57″N Longitude: 160°23'33"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.4	1.42	28.13	22.54	97.5
0.8	1.39	28.12	22.53	97.7
1.7	1.40	28.13	22.54	97.8
3.4	1.36	28.11	22.53	97.9
4.6	1.48	28.31	22.68	97.9
6.1	1.73	28.69	22.97	98.8
7.1	2.25	29.01	23.19	98.3
8.0	2.29	29.30	23.42	98.7
9.3	2.52	30.05	24.00	99.3
9.6	2.73	29.58	23.62	98.8
10.8	3*94	30.34	24.12	98.3
11.6	3.19	30.31	24.16	98.2
12.9				99.5
14.0	3.49	30.87	24.58	98.5
14.7	3.57	30.96	24.65	98.3
15.9	3.11	30.47	24.29	97.7
16.6	1.48	31.61	25.32	98.5
17.0	0.83	30.96	24.84	98.3
18.6	0.32	31.10	24.97	98.1
19.5	0.24	31.42	25.23	97.5
20.5	0.00	31.95	25.68	96.4
20.6	0.01	32.05	25.75	96.4
20.7	0.03	31.87	25.61	96.2

Table: C-37

Study: NOAA 1981

Station: Wainwright-42

Date: 2 Sep 81 Time: **1930 CAT** **Depth: 18m**

Latitude: 70°36'51"N Longitude: 160°15'09"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.1	-0.36	32.08	25.79	96.8
1.4	-0.43	32.10	25.81	95.9
3.1	-0.61	32.20	25.90	96.1
4.9	-0.58	32.09	25.81	96.1
6.7	-0.76	32.08	25.80	95.6
8.6	-0.76	32.03	25.77	95.1
10.4	-0.83	32.22	25.92	94.7
12.1	-0.79	32.26	25.95	94.4
15.2	-0.80	32.35	26.02	93.6
18.6	-0.72	32.27	25.96	93.8

Table: C-36
Study: NOAA 1981

Station: Wainwright-41

Date: 2 Sep 81 Time: 1840 CAT Depth: 21m

Latitude: 70″37′39″N Longitude: 160°17'23"W

Depth (m)	Temperature (“c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.4	1.91	29.60	23.69	99.8
2.0	1.70	29.77	23.84	100.0
3.1	1.52	29.88	23.94	99.7
4.3	0.79	30.54	24.50	97.8
5.7	0.17	31.59	25.38	97.1
6.7	-0.21	31.89	25.64	97.3
7.7	-0.50	32.33	26.00	97.1
8.8	-0.58	32.37	26.03	96.6
9.8	-0.56	32.32	25.99	96.6
10.6	-0.57	32.44	26.09	96.4
11.5	-0.63	32.39	26.06	96.1
12.4	-0.63	32.35	26.02	96.1
13.5	-0.61	32.36	26.03	96.1

Table: C-41
Study: NOAA 1981

Station: Akunik Pass-27

Date: 14 Aug 81 **Time: 1742** CAT Depth: **16m**

Latitude: 69°56'12"N Longitude: 163°02'38"W

Depth (m)	Temperature (“C)	Salinity (0/00)	Sigma-t	Transparency (%)
2.1	*5.84*	30.63	24.15	93.1
3.3	*5.79*	30.59	24.13	92.7
4.5	*5.76*	30.87	24.35	93.1
5.5	*5.64*	30.51	24.07	92.7
	5.24	30.84	24.38	92.3
7.7	*5.08*	31.08	24.59	91.9
8.6	*4.91*	30.94	24.50	91.4
10.0	*4.89*	31.05	24.59	91.3
10.7	*4.75*	31.09	24.63	90.8
10.8	*4.76*	30.93	24.50	91.0
12.0	*4.25*	31.14	24.72	91.2
13.5	*3.91*	31.35	24.92	88.5
14.7	*3.87*	31.25	24.84	89.7
15.0	*3.88*	31.47	25.02	89.1

Table: C-40
Study: **NOAA 1981**

Station: Akunik Pass-26

Date: 14 Aug 81 Time: 1710 CAT Depth: 18m

Latitude: 69°58'09"N Longitude: 163°05'54"W

Depth (m)	Temperature (°C)	Salinity (0/00)	Sigma-t	Transparency (%)
0.0	6.34	30.46	23.96	
1.1	6.36	30.36	23.87	93.9
	6.37	30.38	23.89	93.8
3.5	6.31	30.35	23.87	94.1
4.6	6.27	30.48	23.98	93.6
5.9	6.05	30.51	24.03	93.6
6.9	5.78	30.78	24.28	93.6
7.8	5.31	30.67	24.24	93.2
8.3	5.16			92.5
9.4	4.91	31.12	24.64	92.6
9.5	4.92	31.02	24.56	92.6
10.4	4.93	31.00	24.54	92.7
10.8				92.6
11.6	4.90	31.02	24.56	92.0
12.0	4.87	31.04	24.58	92.1
	4.91	31.13	24.65	92.6
12.2	4.84	31.07	24.61	92.0
13.1	4.83	31.03	24.57	92.0
13.6	4.77	31.17	24.70	90.9
15.0	4.69	31.14	24.68	91.5
15.8	4.24	31.17	24.75	90.4
16.1	4.34	31.09	24.68	90.3

Table: C-43
Study: NOAA 1981

Station: Akunik Pass-29

Date: 14 Aug **81** Time: 1830 CAT Depth: 9m

Latitude: 69°53'03"N Longitude: 162"56'10"W

Depth (m)	Temperature ("c)	Salinity (0/00)	Sigma-t	Transparency (%)
0.0	4.94	30.87	24.44	92.0
1.6	4.91	30.81	24.40	92.0
	4.95	31.17	24.68	91.8
3.6	4.87	31.20	24.71	91.9
5.2	4.82	31.06	24.60	91.4
6.5	4.66	31.08	24.63	90.7
7.5	4.61	30.81	24.43	90.3
8.2	4.52	31.28	24.81	
8.7	4.52	31.05	24.62	90.0

APPENDIX D

Drogue Data

Table: D-1

Wainwright Drogue Dispersion Study, 20 Aug 81

Time (LST)	Drogue #	Distance (m) Site A	Site B
1213	10	10037	10655
1218	1	10105	10710
1222	2	10198	10770
1228	6	10327	10852
1235	7	10417	10925
1241	11	10501	11001
1256	4	10262	10792
1300	12	10257	10856
1305	5	10257	10943
1312	3	10345	10616
1317	9	10377	10530
1325	8	10419	10451
1329	10	10073	10410
1331	1	10155	10511
1332	2	10288	10612
1333	6	10405	10710
1333	7	10518	10835
1334	11	10612	10921
1336	4	10355	10736
1336	12	10310	10793
1337	5	10285	10869
1340	3	10422	10602
1341	9	10438	10509
1342	8	10468	10436
1431	10	10184	10276
1433	1	10255	10400
1434	2	10394	10526
1435	6	10540	10646
1436	7	10626	10768
1437	11	10745	10841
1438	4	10475	10679
1439	12	10416	10720
1440	5	10432	10801
1442	3	10566	10557
1443	9	10575	10480
1444	8	10578	10416
1529	10	10306	10175
1530	1	10402	10323
1531	2	10537	10472
1532	6	10661	10592
1533	7	10745	10709

Table: D-2
Wainwright Drogue Dispersion Study (Continued)

Time (LST)	Drogue #	Distance (m) Site A	Site B
1534	11	10873	10845
1536	4	10619	10607
1537	12	10560	10651
1538	5	10575	10730
1540	3	10675	10529
1541	9	10654	10451
1542	8	10646	10387
1630	10	10376	10043
1631	1	10428	10203
1632	2	10540	10375
1634	7	10807	10586
1635	11	10944	10797
1636	5	10713	10649
1637	12	10653	10550
1638	4	10669	10474
1639	6	10736	10457
1640	3	10748	10423
1641	9	10730	10347
1642	8	10718	10261
1730	10	10390	9751
1731	1	10488	9974
1732	2	10643	10165
1733	6	10786	10286
1734	7	10894	10425
1735	11	11050	10632
1736	5	10888	10517
1737	12	10777	10368
1738	4	10798	10317
1738	3	10759	10242
1739	9	10715	10137
1740	8	10641	10012
1829	10	10504	9432
1832	1	10499	9661
1833	2	10609	9839
1834	6	10850	9980
1836	7	10968	10186
1837	11	10999	10366
1838	5	10920	10288
1839	12	10824	10140
1840	4	10893	10077
1840	3	10853	9968
1841	9	10870	9871
1842	8	10806	9671

Table: D-3
Wainwright Drogue Dispersion Study (Continued)

Time (LST)	Drogue #	Distance (m) Site A	Site B
1931	10	10943	9189
1934	1	10764	9358
1935	2	10883	9547
1938	12	11088	9912
1939	11	11246	10121
1940	5	11245	10073
1941	7	11340	10013
1942	4	11255	9894
1942	3	11230	9776
1943	6	11277	9758
1944	9	11295	9704
1945	8	11285	9495
2031	10	11601	9101
2034	1	11282	9207
2035	2	11394	9390
2037	12	11567	9750
2039	11	11741	9989
2040	5	11778	9968
2041	7	11879	9949
2042	4	11802	9823
2043	3	11789	9691
2043	6	11848	9694
2044	9	11872	9640
2045	8	11923	9446
2200	1	12326	9318
2201	2	12375	9441
2203	12	12471	9723
2204	11	12623	9996
2205	5	12717	10008
2206	7	12816	10029
2207	4	12745	9901
2207	3	12745	9972
2208	6	12837	9823
2209	9	12842	9735
2210	8	12880	9616
2211	10	12829	9419
2247	8	13309	9819
2252	1	12979	9641
2253	2	13039	9710
2254	12	13125	9873
2256	11	13277	10209
2258	7	13423	10280
2258	5	13360	10242
2259	4	13339	10163
2259	6	13379	10091

Table: D-4

Wainwright Drogue Dispersion Study (Continued)

Time (LST)	Drogue #	Distance (m) Site A	Site B
2300	3	13270	10034
2303	9	13443	9990
2306	10	13453	9697
2311	1	13124	9741
2313	2	13238	9832
2316	12	13297	9954
2320	11	13498	10332
2321	5	13592	10362
2322	7	13692	10405
2325	5	13617	10383
2325	4	13603	10305
2326	3	13541	10173
2328	6	13703	10246
2331	9	13779	10116
2335	8	13890	10055

Table: D-5

wainwright drogues
dispersion statistics for wind-corrected drogue data

grp no.	mean time (hrs)	relative mean time [t*) (hrs)	log (t*)	centroid position latitude (degrees)	longitude (degrees)	principal axes major axis (δ_x) [Meters)	minor axis (δ_y) (meters)	bearing of major axis (θ) (deg. true)
1	12.794	C.0000	0.0000	70.6586	-160.2801	375.7	244.9	175.95
2	13.589	0.7945	-0.0999	70.6571	-160.2815	368.9	294.1	177.52
3	14.628	1.8334	0.2633	70.6553	-160.2836	364.9	295.1	158.72
4	15.588	2.7931	0.4461	70.6540	-160.2068	363.9	215.8	142.93
5	16.604	3.8098	0.5809	70.6524	-160.2875	420.4	205.5	140.02
6	17.588	4.7931	0.6806	70.6497	-160.2887	509.6	89.6	135.08
7	18.613	5.8181	0.7648	70.6460	-160.2895	577.2	188.7	148.11
8	19.658	6.8639	0.8366	7o.6u1O	-160.2967	623.9	275.7	156.01
9	20.658	7.8639	0.8956	70.6351	-760.3094	652.5	323.0	161.88
10	22.099	9.3042	0.9687	70.6269	-160.3320	591.7	307.5	165.15
11	22.951	10-1570	1.0068	70.6229	-360.3474	531.0	257.6	161.61
12	23.379	10.5808	1.02117	70.6223	-160.3551	585.8	324.2	155.66

diffusion statistics - wind-corrected drogue data

no.	relative time [s]	centroid velocity X (m/s)	Y (m/s)	speed (m/s)	direction (d. true)	horizontal divergence (lo-5 s-1)	relative vorticity [10-5 s-1)	stretching deformation rate [10-5 s-1)	shearing deformation rate [10-5 s-1)
2	2860.20	-0.0177	-0.0611	O.0636	196.1661	o.00000	0.00000	0.00000	0.CC000
3	6600.24	-0.0208	-0.0512	0.0552	202.1232	-1.23292	-14.39336	9.15968	-11.17090
4	10055.16	-0.0348	-0.0442	0.0563	218.2107	7.06533	-14.96743	16.20787	3.35382
5	13715-28	-0.0070	-0.0484	0.0489	18o.1784	-106.83603	32. 34707	-111-62153	0.55107
6	17255.16	-0-0125	-0.0854	0.0863	188-3160	24.72574	81.83278	0.26883	85.48622
7	20945.16	-0.0080	-0-1103	0.1105	184.1.265	-5.32969	05.74384	-21.5U1OY	83.51665
8	24710.04	-0-0708	-0-1481	0-1642	205.5581	30.36982	2.92501	16.78757	25.47663
9	28310.04	-0.1310	-0.1842	0.2261	215.4209	18.20386	-1.42129	7.31665	16.72924
10	33495.12	-O. 1610	-0.1767	0.2390	222.3425	2.76153	-4. 17805	4.41589	2.36264
11	36565.20	-0.1859	-0.1441	0.2352	232.2251	-2. 99439	-11.34366	11.73202	-0.06897
12	3U105.2LI	-0.1856	-0.0468	0.1916	255.6576	-134.89640	-33-86603	134.83771	-34.C9893

variance vs. relative time regression results:

statistic	variance X**2	Y**2	X*Y
slope	1.71612	0.18970	0.67737
intercept	31684.58647	13245.90275	18606.52748
correlation	0.82725	C. 32992	0.69696
F ratio	21.68050	1.22145	9.44571
diffusivity	0.85806	0.09485	0.33868

error degrees of freedom . 1C

note: diffusivities measured in square meters per second

Table: D-6

wainwright d rogues
dispersion statistics for raw drogue data

grp. no.	mean time (hrs)	relative mean time (t*) (hrs)	log (t*)	centroid position latitude (degrees)	centroid position longitude (degrees)	principal axes major axis (δ_x) (meters)	principal axes minor axis (δ_y) (meters)	bearing of major axis (θ) (deg. true)
1	12.794	0.0000	0.0000	70.6587	-160.2805	451.5	248.2	199.02
2	13.589	0.7945	-0.0999	70.6572	-160.2826	375.7	300.5	186.21
3	14.628	1.8333	0.2632	70.6557	-160.2661	359. U	307.0	159.85
4	15.588	2.7931	0.4461	70.6544	-160.2896	378.8	223.6	141.69
5	16.604	3.8097	0.5809	70.6527	'160.2915	411.9	221.7	140.13
6	17.588	4.7931	C.6806	70.6502	-160.2932	498-8	102.1	133.95
7	18.613	5.8181	0.7648	70.6($67	-160.2945	556.3	221.6	146.52
8	19. 658	6.8639	0.8366	70.6418	-160.3025	598.7	338.3	153.82
9	20.658	7.8639	0.8956	70.6363	-160.3158	628.5	393.9	159.52
10	22.099	9.3042	0-9687	70.6289	-160.3387	600.9	381.9	171.39
11	22.9S1	10.1569	1.0068	70.6257	-160.3531	532.2	308.7	162.52
12	23.379	10-5847	1.0247	70.6251	-160.3600	505.7	439.1	191.38

diffusion statistics - raw drogue data

no.	relative time (s)	centroid velocity X (m/s)	centroid velocity Y (m/s)	centroid velocity speed (m/s)	direction (d. true)	horizontal divergence (lo-5 s-1)	relative vorticity (10-5 s-1)	stretching deformation rate (lo-5 s-1)	shearing deformation rate (10-5 s-1)
2	2860.20	-0.0281	-0.0573	O. 0638	206.1284	0.00000	0.00000	0.00000	0.00000
3	6600.24	-0.0347	-0.0447	0.0566	217.8114	-2.37131	-13.60342	12-58857	-5.67485
4	10055.16	-0.0369	-0. 0435	0.0570	220-3368	0.84778	'2.46334	2.56817	0.43737
5	13715. .?8	-0.0192	-C. 0498	0. 053U	201.0933	-21.61134	18.76800	-28.61677	-0.60666
6	17255.16	'0.0 176	-0.0809	O. 0828	192.2620	8.26331	50.38790	-13-43124	49.26281
7	20945.16	-0.0131	-0.1055	0.1060	187.0974	-2.90497	51.93344	-15.55140	49.63543
8	2U710. OU	-0.0828	-0.1462	0.1680	209.5277	29.72554	O. 37408	14.96428	25.66693
9	28310.04	-0.1333	-0.1675	0.2140	218.5080	14.05576	-3.92718	6.98483	12.81402
10	33495.12	-0.1630	-0.1598	0.2263	225.5759	2.59118	-4.50407	U.45107	2.08120
11	36>65.20	-0.1745	-0.1177	0.2105	235.9898	-9.50217	-11.01698	13-77267	-4.68811
12	38105.28	-0.1665	-0.0445	0.1723	255.0190	-109.75113	-16.91623	103.53203	-40.15705

variance vs. relative time regression results:

statistic	variance X**2	variance Y**2	variance X*Y
slope	1.30873	0.62354	0-90328
intercept	37711.68292	11002.70123	18976.61367
correlation	0.73407	0.62013	0.74932
F ratio	11.68546	6. 24854	11.36354
diffusivity	O. 65436	0.31177	0.45164

error degrees of freedom = 10

note: diffusivities measured in square aeters per second

APPENDIX E

Index of Digital Data Tapes

INDEX - Digital Data Tapes (Tape File Documentation bound separately)

Files on tape RU531:

Sequence/Name	NODC File Type	Description
01) INBRWB	015	Current meter data from Inshore Point Barrow, bottom meter.
02) OFBRWB	015	Current meter data from Offshore Point Barrow, bottom meter.
03) OFBRWT	015	Current meter data from Offshore Point Barrow, top meter.
04) INWNTB	015	Current meter data from Inshore Wainwright, bottom meter.
05) OFWNTB	015	Current meter data from Offshore Wainwright, bottom meter.
06) OFWNTT	015	Current meter data from Offshore Wainwright, top meter.
07) PEARDB	015	Current meter data from Peard Bay. (salinity and temperature only.)
08) AKUNIK	022	STD data from Akunik Pass.
09) BARROW	022	STD data from Point Barrow.
10) ICYCAP	022	STD data from Icy Cape.
11) PINGOR	022	STD data from Pingora Pass.
12) PTBELC	022	STD data from Point Belcher.
13) SKULLCL	022	STD data from Skull Cliffs.
14) WAINWR	022	STD data from Wainwright.
15) BEAUD1	056	Drogue experiment data from the Beaufort Sea (#1).
16) BEAUD2	056	Drogue experiment data from the Beaufort Sea (#2).
17) BEAUD3	056	Drogue experiment data from the Beaufort Sea (#3).
18) PRDDRG	056	Drogue experiment data from Prudhoe Bay.
19) HARDRG	056	Drogue experiment data from Harrison Bay.
20) WNTDRG	056	Drogue experiment data from Wainwright.

File type is in columns 1-3 of each record of each file.
File name is in columns 4-9 of each record of each file.