NOAA Data Report ERL PMEL-7

VERTICAL SECTIONS OF TEMPERATURE, SALINITY, THERMOSTERIC ANOMALY, AND ZONAL GEOSTROPHIC VELOCITY FROM NORPAX SHUTTLE EXPERIMENT - PART 3

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NOTICE

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ABSTRACT. The NORPAX Hawaii-Tahiti Shuttle Experiment was carried out in the central Pacific (158°, 153°, 150°W) during the period February 1979-June 1980. This report covers CTD profiling data from legs 11-15 of the Shuttle (January 1980-June 1980). Vertical sections of temperature, salinity, thermosteric anomaly and zonal geostrophic velocity are presented. Meridional profiles of surface temperature, surface salinity, surface thermosteric anomaly and geostrophic volume transport relative to 1000 db are included.

1. INTRODUCTION

1.1 Description of field program

During the period February 1979-June 1980 a measurement program (Hawaii-Tahiti Shuttle Experiment) was carried out in the central Pacific to study the low frequency changes in the tropical current system. It was carried out by the NORPAX project as a component of the FGGE (First GARP (Global Atmospheric Research Program) Global Experiment) oceanographic program in the Pacific. Shipboard profile measurements were made along 158°, 153° and 150°W with conductivity/temperature/pressure/dissolved oxygen recorders (CTPO), expendable bathythermographs (XBT), and Düing Profiling Current Meters. Current meter moorings were located near the equator and satellite-tracked drift buoys were deployed between 0° and 10°N. A large-scale network of island sea level gauges was operated in the central and western Pacific. A preliminary analysis of the combined data set has been presented by Wyrtki, Firing, Halpern, Knox, McNally, Patzert, Stroup, Taft, and Williams (1981).

In this data report the temperature, salinity and specific volume observations from the final five legs are represented by a series of meridional vertical sections. The positions of the CTPO stations for each leg are shown in Figures 1, 2, and 3. The basic sampling plan was to profile to 1000 db at 1° intervals along the three meridians. In addition there were occasional stations along zonal sections connecting the meridians; they are not included in this report. Sections of temperature, salinity, thermosteric anomaly and zonal geostrophic velocity (relative to 1000 db) are shown for each meridian. Data from Legs 1-5 (February 1979-July 1979) and Legs 6-10 (July 1979-January 1980) have been presented in previous reports Taft and Kovala, 1981; Taft, Kovala and Cantos-Figuerola, 1982). Dissolved oxygen and nutrient data will be included in subsequent reports.

2. PREPARATION OF VERTICAL SECTIONS

2.1 Data processing

All data were obtained with a slightly modified Neil Brown Mark III CTP manufactured by Neil Brown Instrument Systems of Falmouth, Massachusetts. Several rosette-mounted Niskin bottles were tripped during each cast to provide discrete temperature, salinity, and oxygen data for calibration purposes.

A description of the CTP data processing as well as a listing of the data at 10-db intervals may be found in a series of five data reports published by Physical and Chemical Oceanographic Data Facility of the Scripps Institution of Oceanography (see references). Means and standard deviations of differences between the CTD and the Niskin bottle data for each leg are given in Table 1. These values were excerpted from the above reports. The error estimates represent upper bounds because they involve the comparison of values obtained during the descent of the instrument with bottle values obtained on the ascent.

2.2 Drawing of sections

The data were contoured with a linear interpolation program developed at the University of Washington, Seattle, Washington. Temperature and thermosteric anomaly contours were drawn from a field of block-averaged values at 2.5 db intervals; salinity data were smoothed a second time with a five-point binomial running average before contouring was done. Because of the complicated salinity structure in the thermocline, the salinity data are represented with an expanded scale (0-300 db) as well as the 0-1000 db scale which was used to represent all properties. The vertical exaggerations are: 0 to 300 db--5460; and 0 to 1000 db--2730. Occasional short gaps in the data, which were primarily due to tape reading problems, were filled by linear interpolation.

The average zonal geostrophic velocity was computed between stations 1° of latitude apart after a 3-point binomial filter was applied to the dynamic heights. At the ends of the sections individual station values were differenced to compute the velocity. Because of uncertainties in the geostrophic velocity computation as the equator is approached, no velocities were computed equatorward of 2°N(S).

Contour intervals, which are in some cases non-uniform are given in Table 2. The equivalence between thermosteric anomaly, *i.e.*, the specific volume anomaly at *in situ* temperature and salinity and atmospheric pressure, and the density anomaly at atmospheric pressure ($\sigma_t = 10^3(\rho_{S,T,p_a} - 1)$) is given in Table 3.

Table 1. Means and standard deviations of differences between temperature and salinity measured by the CTP and the measurements obtained by Niskin bottle. The shallow bottle (S) was in the pressure range 2-10 db, the middle (M) bottle was in the range 400-600 db and the deep (D) bottle was near 1000 db.

Leg		Temperature (°C)		Salinity (°/oo)	
		Mean	Standard Deviation	Mean	Standard Deviation
11	S	-0.0058	0.0097	0.0036	0.0058
	M	0.0063	0.0168	-0.0004	0.0038
	D	0.0006	0.0047	0.0003	0.0019
12	S	-0.0073	0.0090	0.0048	0.0041
	M	---	---	0.0002	0.0038
	D	0.0009	0.0058	-0.0007	0.0025
13	S	-0.0212	0.0107	0.0054	0.0034
	M	0.0115	0.0173	0.0021	0.0029
	D	0.0000	0.0051	-0.0001	0.0019
14	S	-0.0023	0.0102	0.0033	0.0037
	M	---	---	---	---
	D	0.0000	0.0067	0.0000	0.0019
15	S	-0.0142	0.0151	0.0046	0.0066
	M	0.0009	0.0148	0.0008	0.0041
	D	0.0005	0.0114	0.0006	0.0043

Table 2. Contour intervals used in vertical sections.

Variable	Range	Contour interval
Temperature	≧ 25°C	1°C
	14° ≦ T ≦ 24°C	2°C
	≦ 13°C	1°C
Salinity	Above 300 db	0.1°/oo
	Below 300 db, S ≧ 34.6°/oo	0.1°/oo
	S < 34.6°/oo	0.05°/oo
Thermosteric Anomaly	$\delta_T > 300 \times 10^5$ cm^3 g^{-1}	40×10^5 cm^3 g^{-1}
	$\delta_T \leq 300 \times 10^5$ cm^3 g^{-1}	20×10^5 cm^3 g^{-1}
Geostrophic Velocity	U > 10 cm s^{-1}	10 cm s^{-1}
	10 ≦ U ≦ 10 cm s^{-1}; 0 omitted	5 cm s^{-1}

Table 3. Values of σ_t for given thermosteric anomaly (δ_{S,T,p_a}). Data has been taken from the *Handbook of Oceanographic Tables*, U.S. Naval Oceanographic Office, 1966.

δ_{S,T,p_a} (10^{-5} cm ^{3} g^{-1})	σ_t (10^3 g cm^{-3})
580	22.032
540	22.450
500	22.868
460	23.287
420	23.706
380	24.125
340	24.545
300	24.965
280	25.175
260	25.385
240	25.596
220	25.806
200	26.017
180	26.227
160	26.438
140	26.649
120	26.860
100	27.070
80	27.281
60	27.493

3. ADDITIONAL MERIDIONAL PROFILES

3.1 Surface distributions

Plots of sea surface temperature, salinity, and thermosteric anomaly are given for each meridian on each leg (Figures 64-68).

3.2 Volume transport

The zonal geostrophic volume transport relative to 1000 db has been plotted for each meridian on each leg (Figures 69-73). The transports are the total westward and eastward (positive) transports at each mid-point (half-degree of latitude). All zonal components less than 5 cm sec^{-1} in magnitude have been excluded from the integration.

4. ACKNOWLEDGEMENTS

The field work and data analysis were funded by National Science Foundation grants to the University of Hawaii (OCE-78-20719) and the University of Washington (OCE-80-24913). The field measurements were done by the Physical and Chemical Oceanographic Data Facility at the Scripps Institution of Oceanography of the University of California at San Diego. The production of the sections was done by Virginia May, Joy Godfrey, and James Anderson of the Pacific Marine Environmental Laboratory. The excellent support of Captain Bruno Forester and the crew of the *R/V Wecoma* of the Oregon State University is gratefully acknowledged. Chief Scientists of the various legs (with affiliation at time of cruise) were: Leg 11 - G. Meyers of the Scripps Institution of Oceanography; Leg 12 - W. Dennis of NOAA/National Marine Fisheries, Monterey; Leg 13 - B. Taft of the University of Washington; Leg 14 - E. Firing of the University of Hawaii; and Leg 15 - L. Gordon of Oregon State University.

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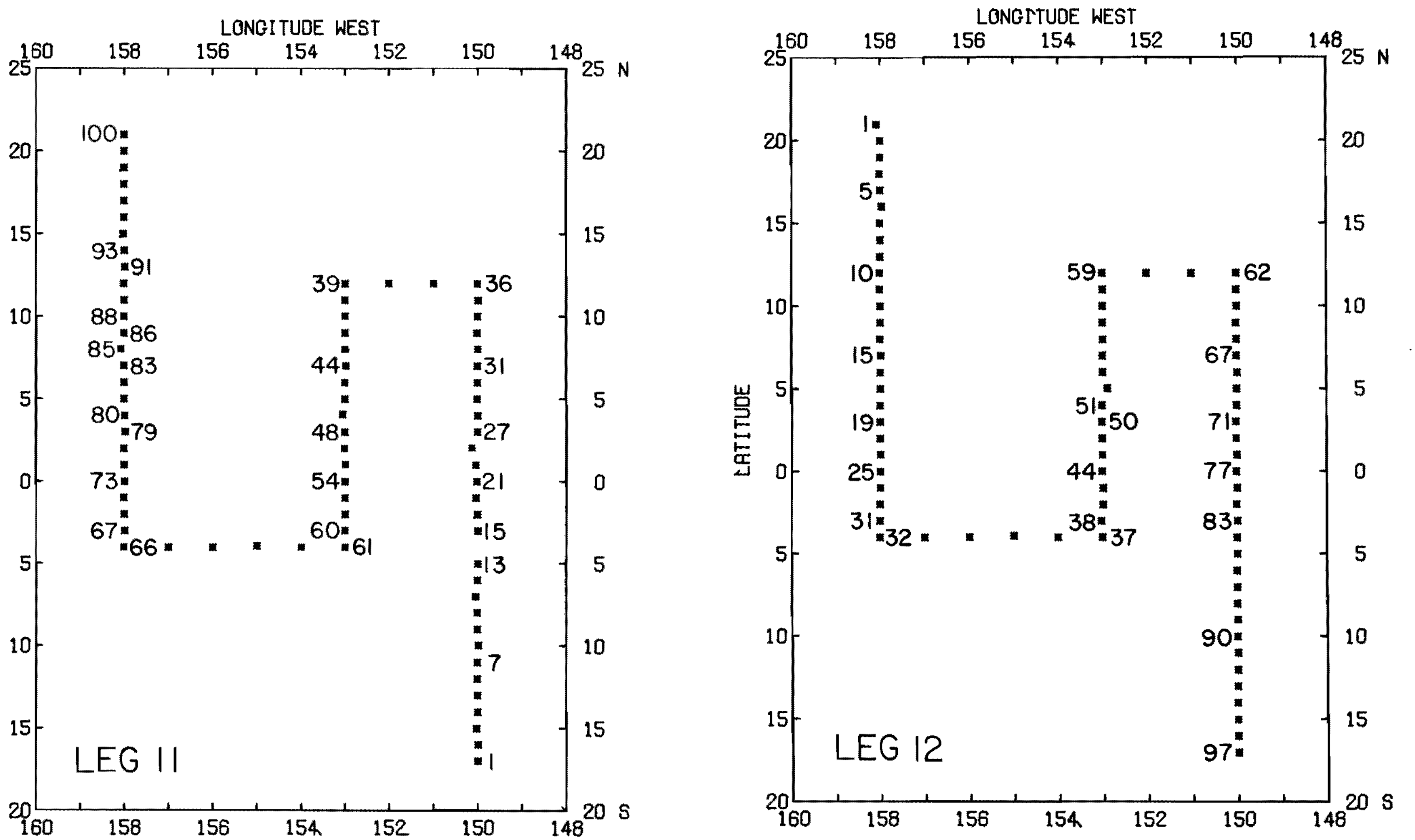

Figure 1.--CTP stations occupied during Leg 11 (8 January - 3 February 1980) and Leg 12 (15 February - 13 March 1980) of Hawaii-Tahiti Shuttle Experiment.

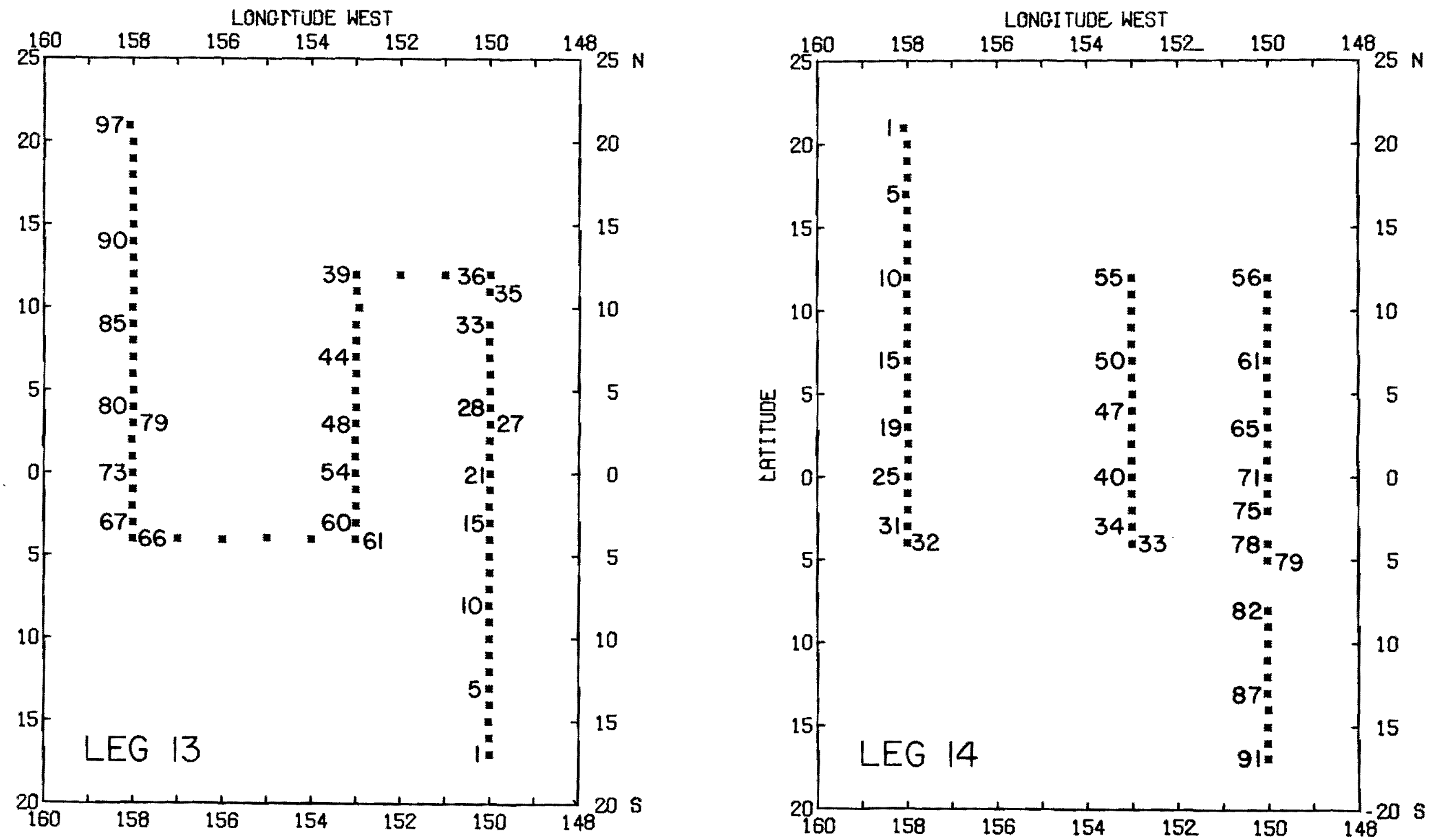

Figure 2.--CTP stations occupied during Leg 13 (18 March - 10 April 1980) and Leg 14 (21 April - 13 May 1980) of Hawaii-Tahiti Shuttle Experiment.

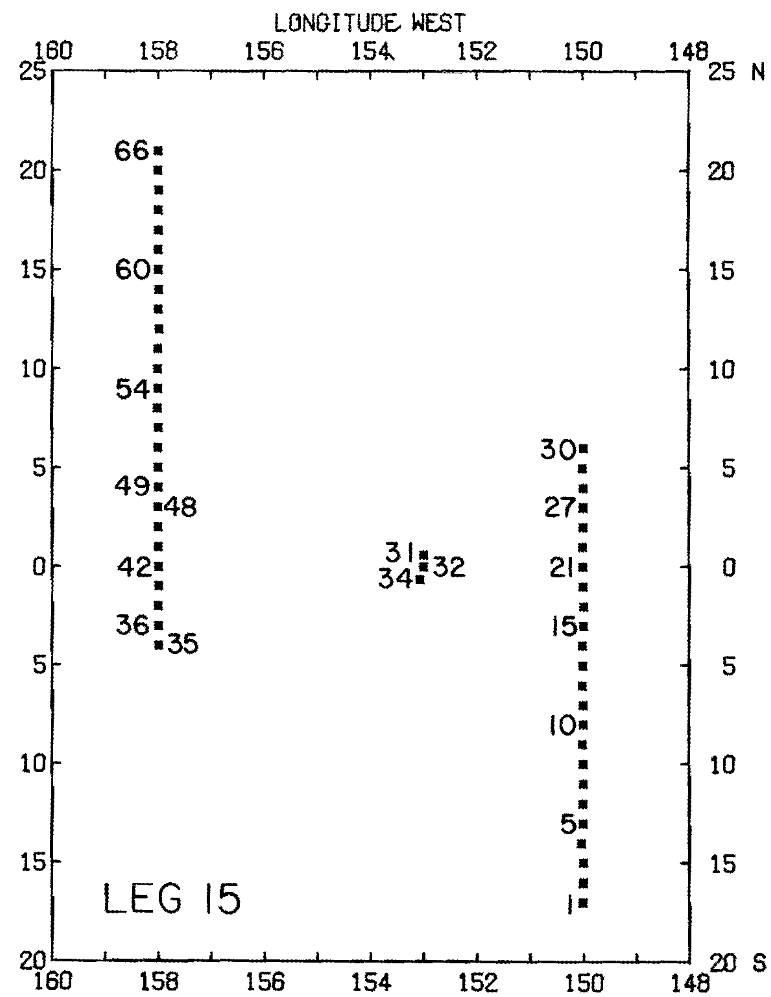

Figure 3.--CTP stations occupied during Leg 15 (18 May - 14 June 1980) of Hawaii-Tahiti Shuttle Experiment.

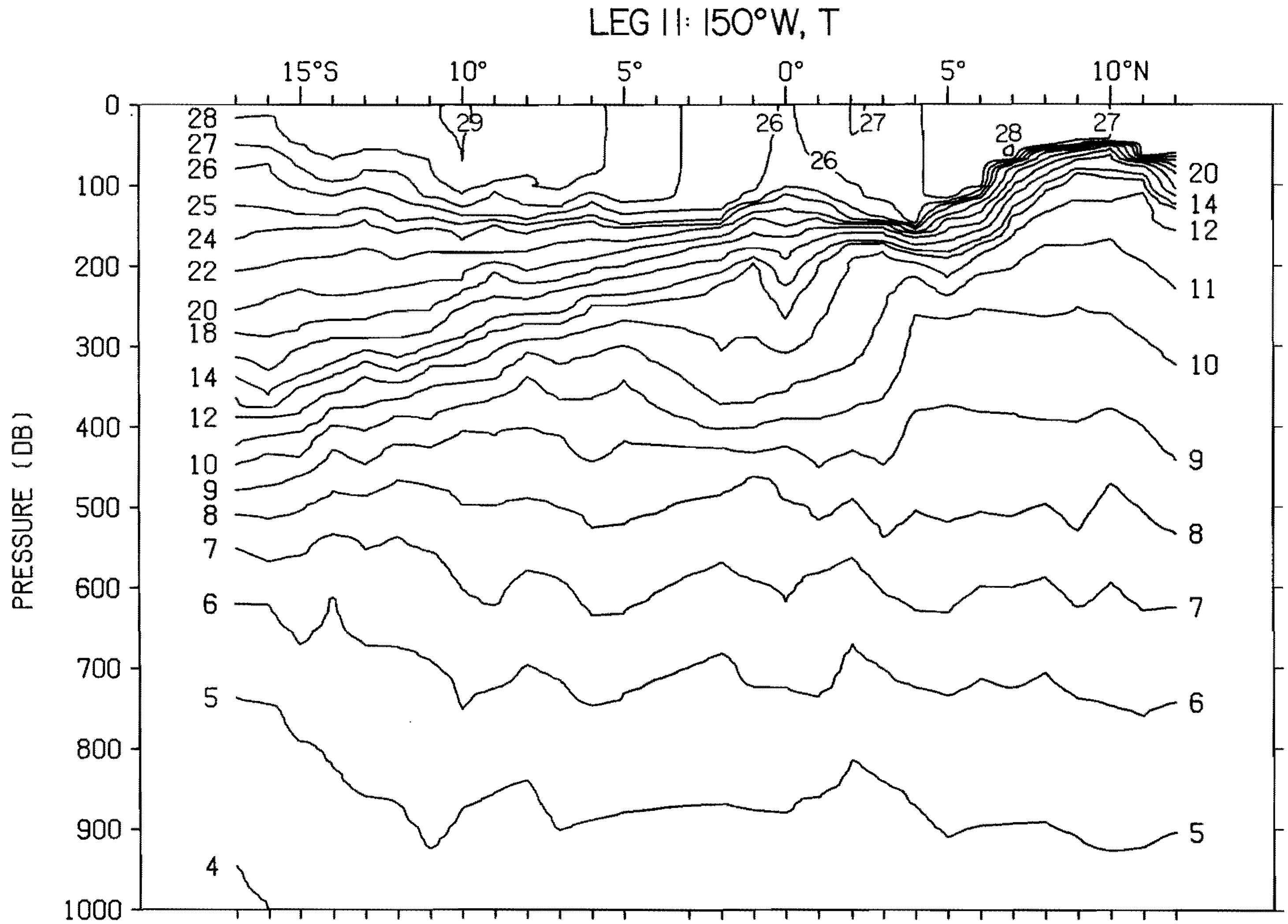

Figure 4.--Distribution of temperature (°C) along 150°W (Leg 11, 8 January - 18 January 1980). Station positions are given by tic marks along bottom of panel.

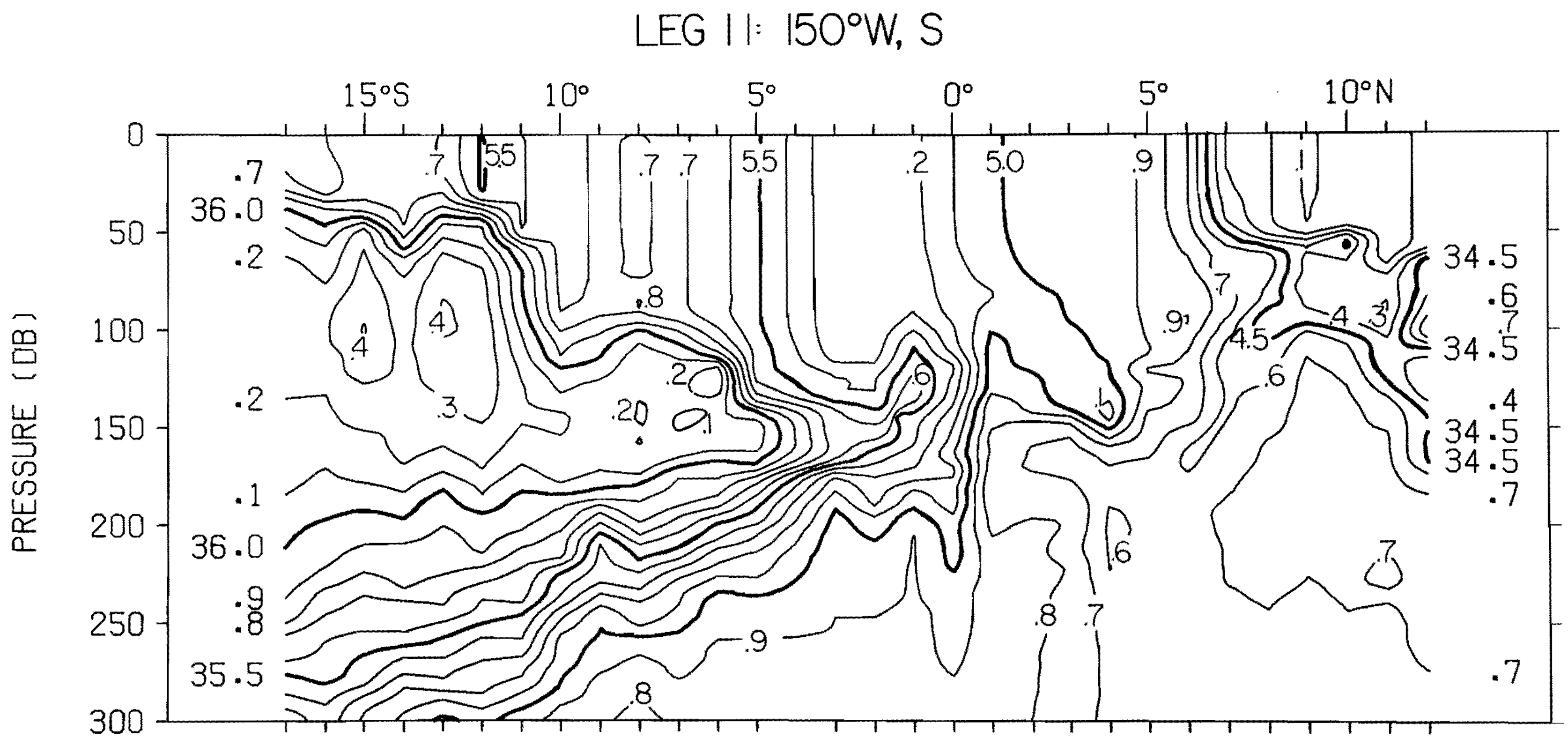

Figure 5S.--Distribution of salinity (°/∘∘) along 150°W (Leg 11, 8 January - 18 January 1980). Station positions are given by tic marks along bottom of panel.

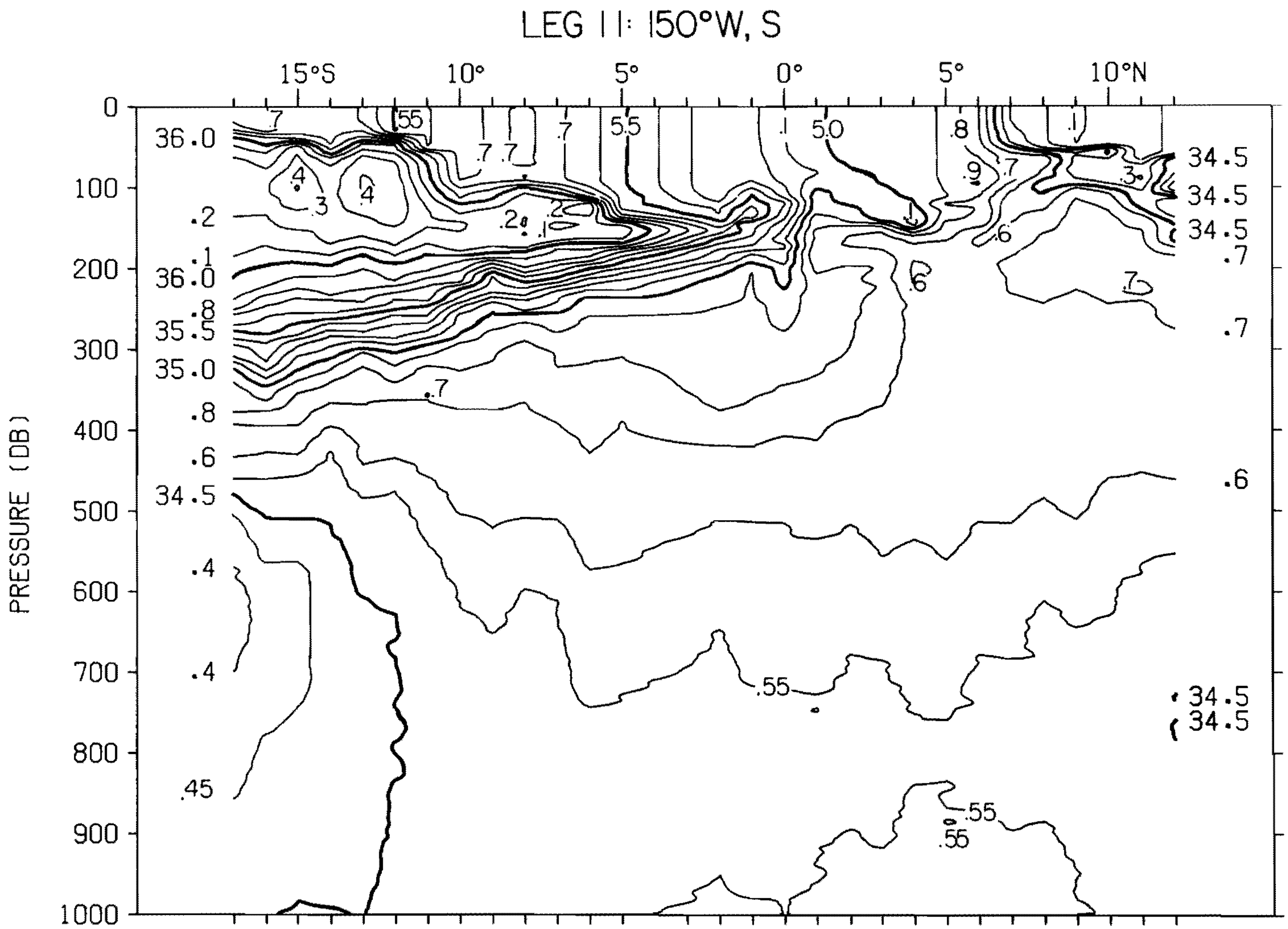

Figure 5D.--Distribution of salinity (°/₀₀) along 150°W (Leg 11, 8 January - 18 January 1980). Station positions are given by tic marks along bottom of panel.

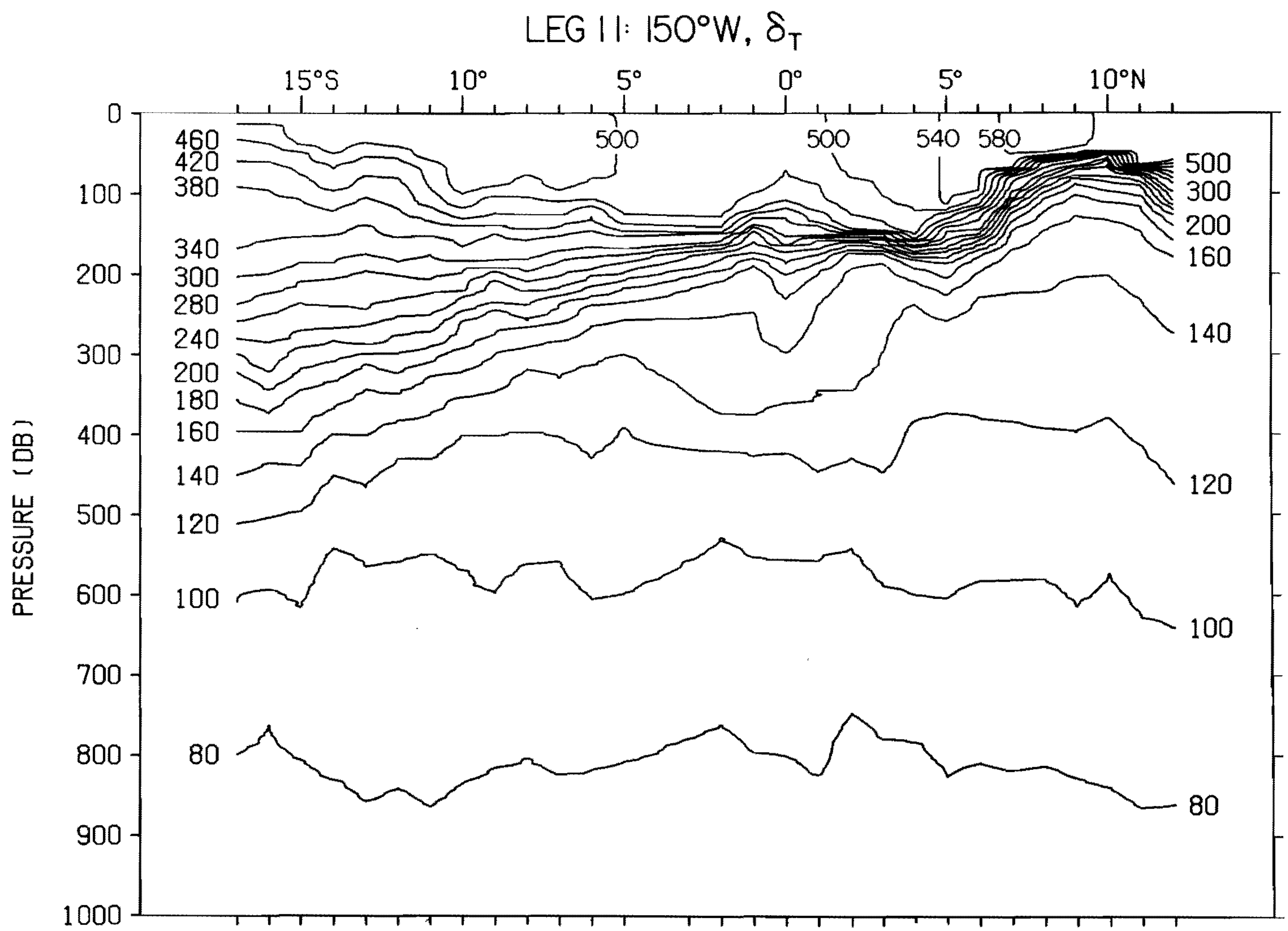

Figure 6.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 150°W (Leg 11, 8 January - 18 January 1980). Station positions are given by tic marks along bottom of panel.

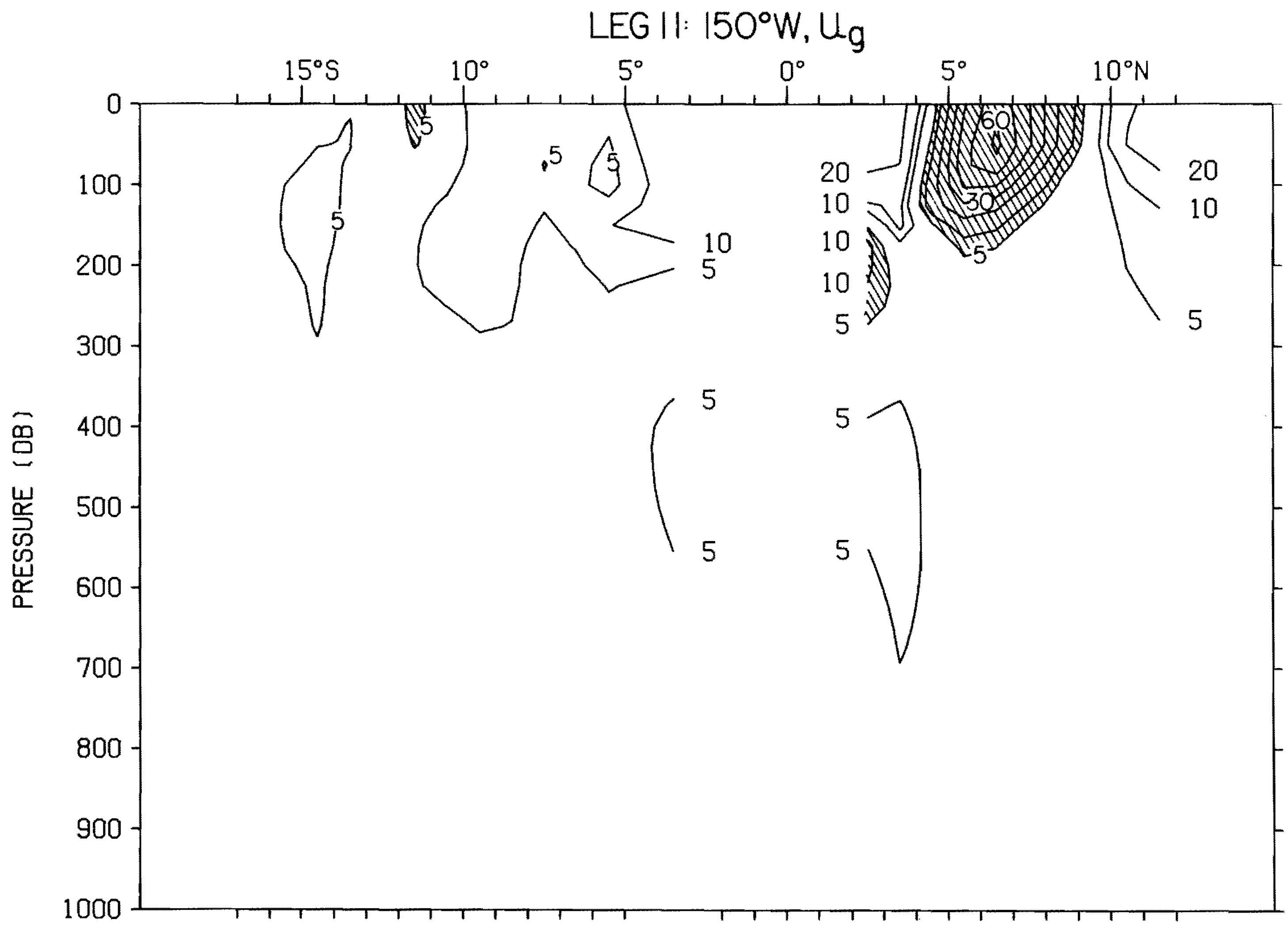

Figure 7.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 150°W (Leg 11, 8 January - 18 January 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

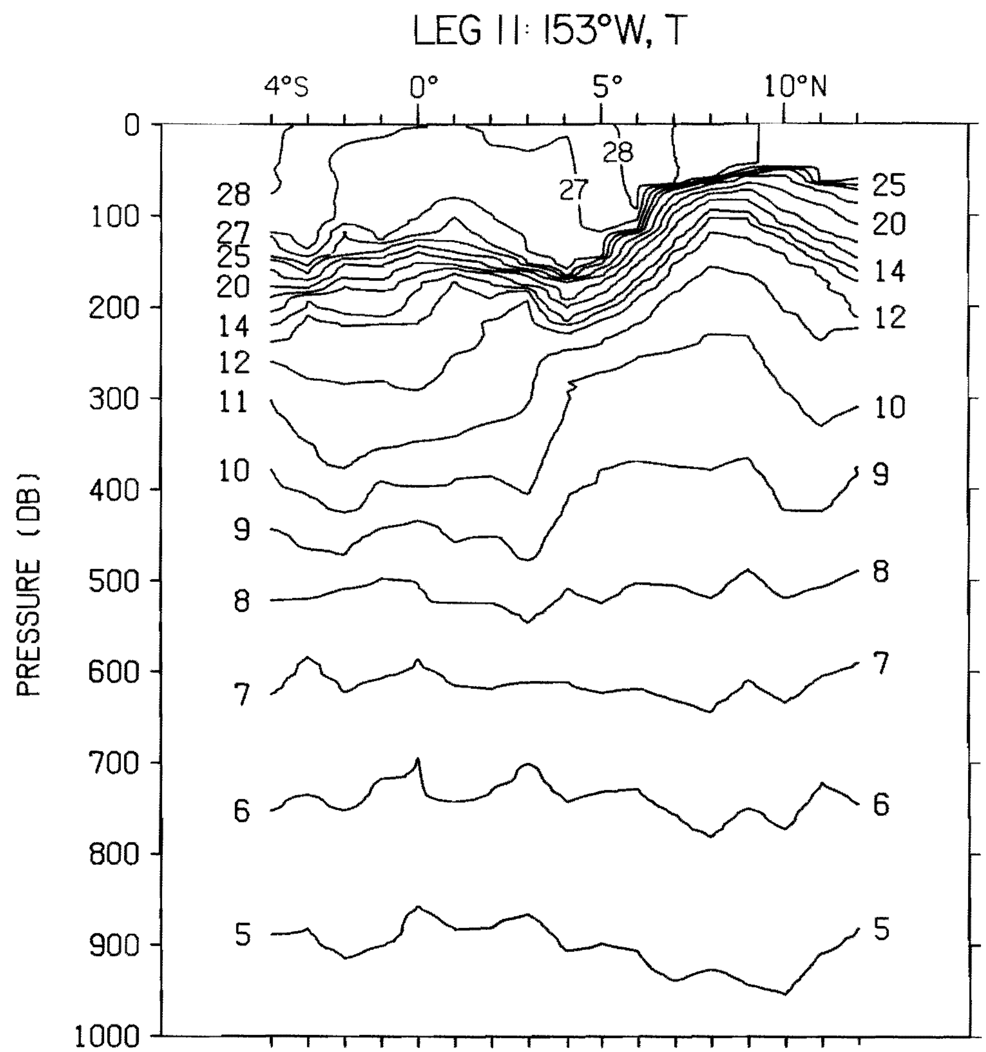

Figure 8.--Distribution of temperature (°C) along 153°W (Leg 11, 18 January - 24 January 1980). Station positions are given by tic marks along bottom of panel.

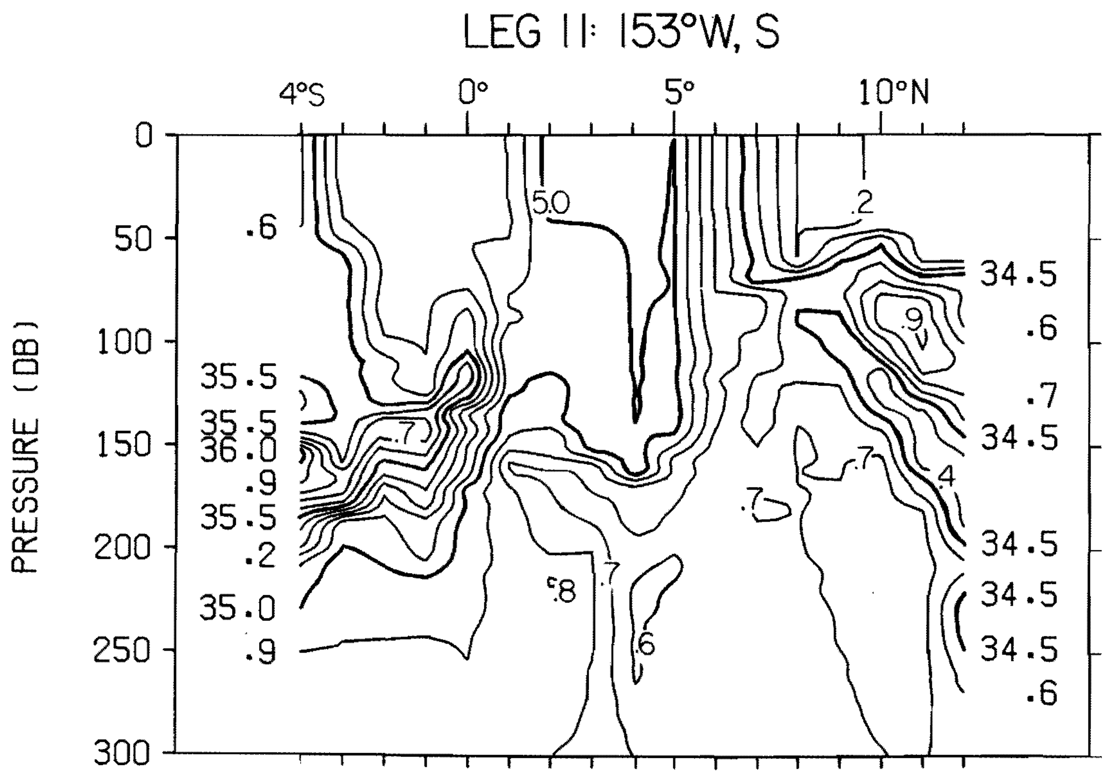

Figure 9S.--Distribution of salinity (°/∘∘) along 153°W (Leg 11, 18 January - 24 January 1980). Station positions are given by tic marks along bottom of panel.

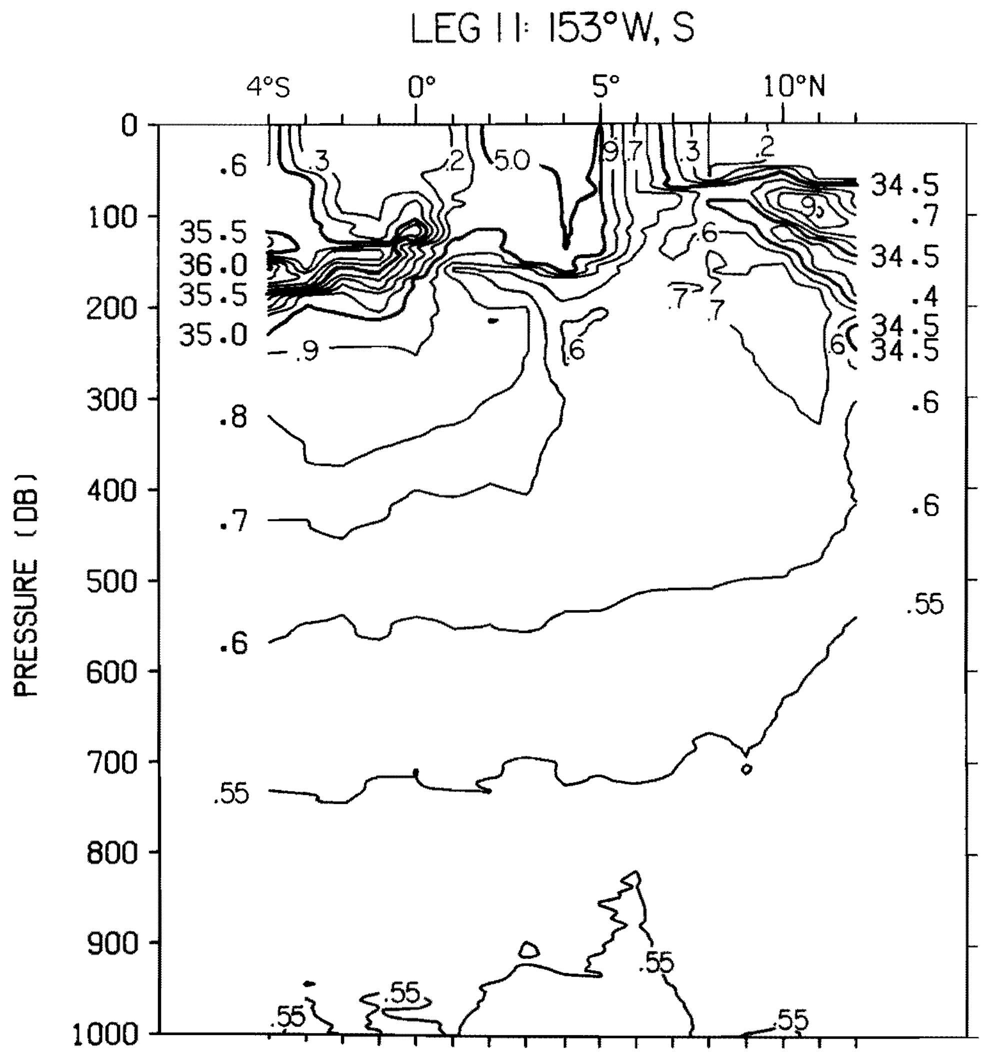

Figure 9D.--Distribution of salinity (°/。。) along 153°W (Leg 11, 18 January - 24 January 1980). Station positions are given by tic marks along bottom of panel.

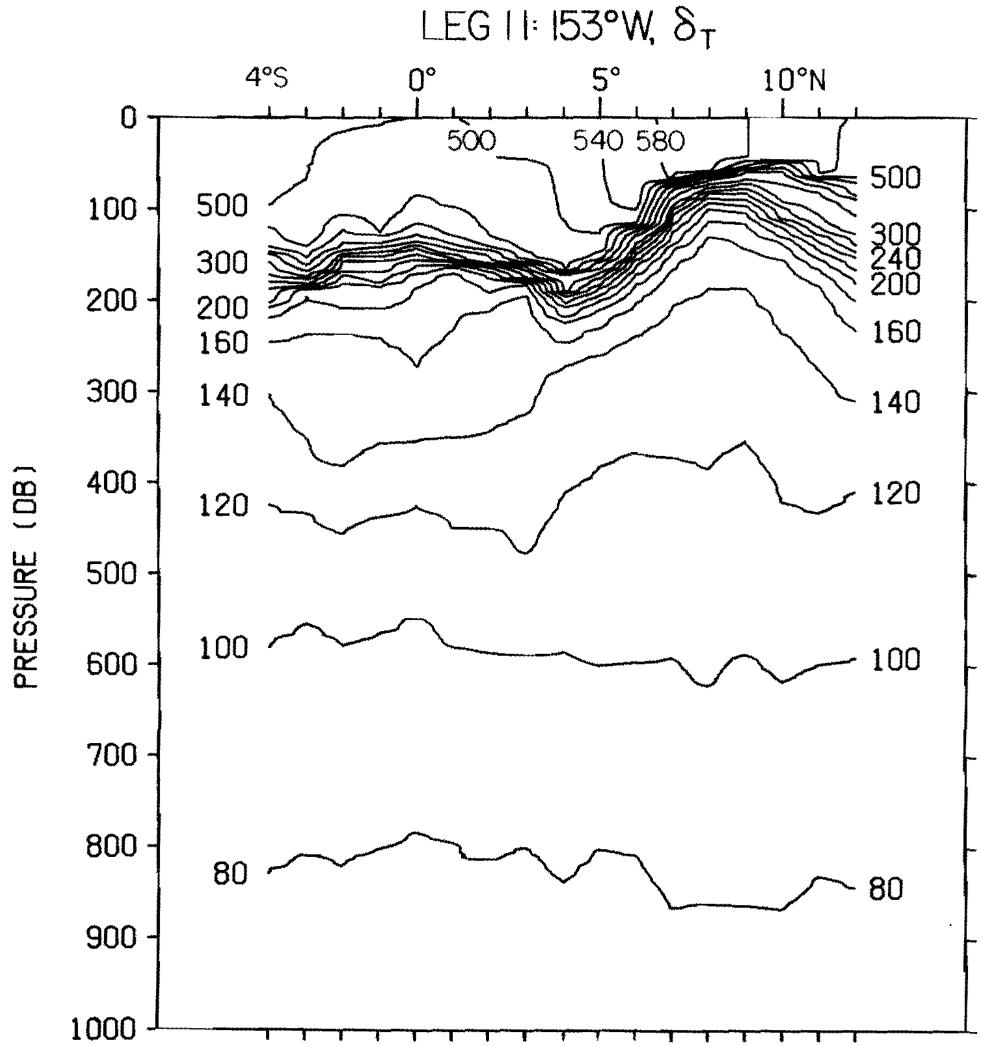

Figure 10.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 153°W (Leg 11, 18 January - 24 January 1980). Station positions are given by tic marks along bottom of panel.

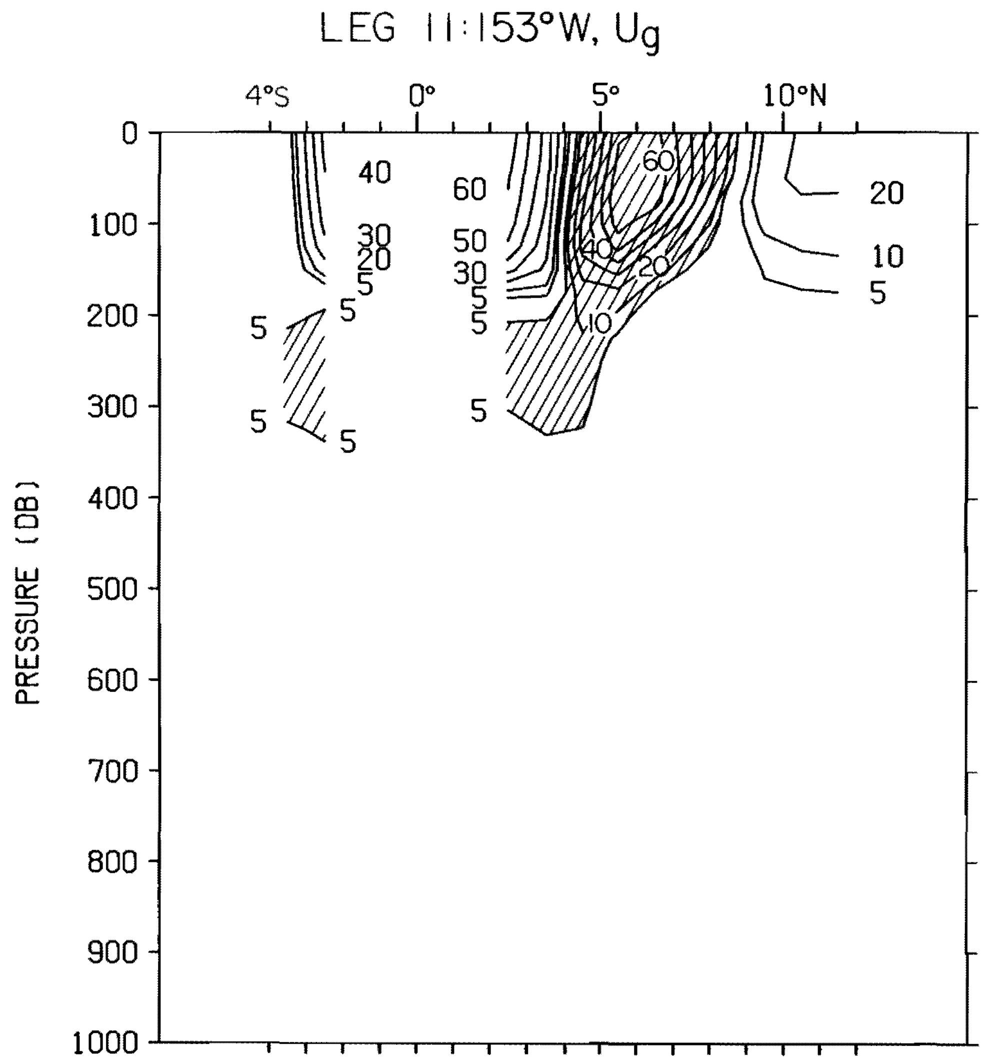

Figure 11.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 153°W (Leg 11, 18 January - 24 January 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

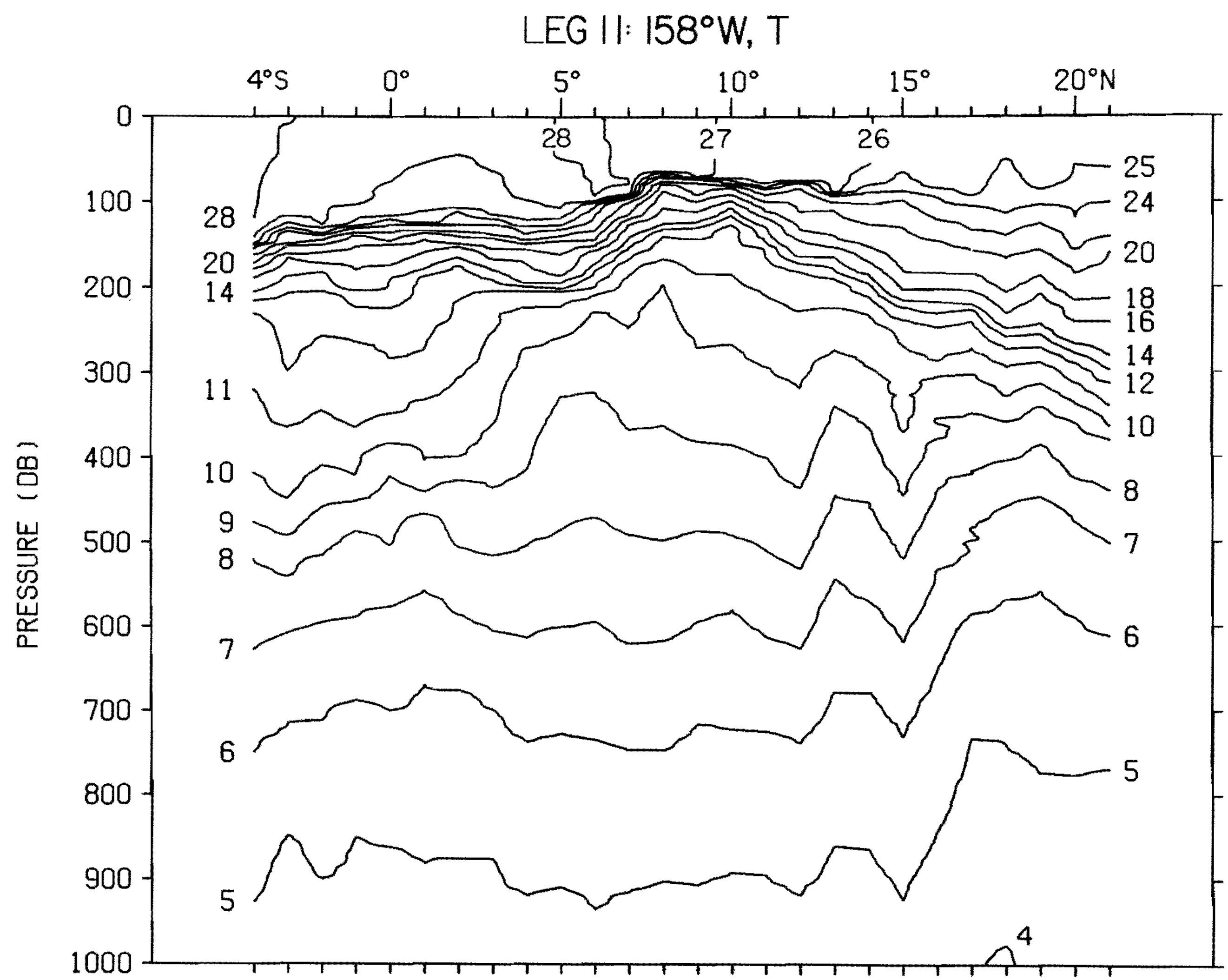

Figure 12.--Distribution of temperature (°C) along 158°W (Leg 11, 25 January - 3 February 1980). Station positions are given by tic marks along bottom of panel.

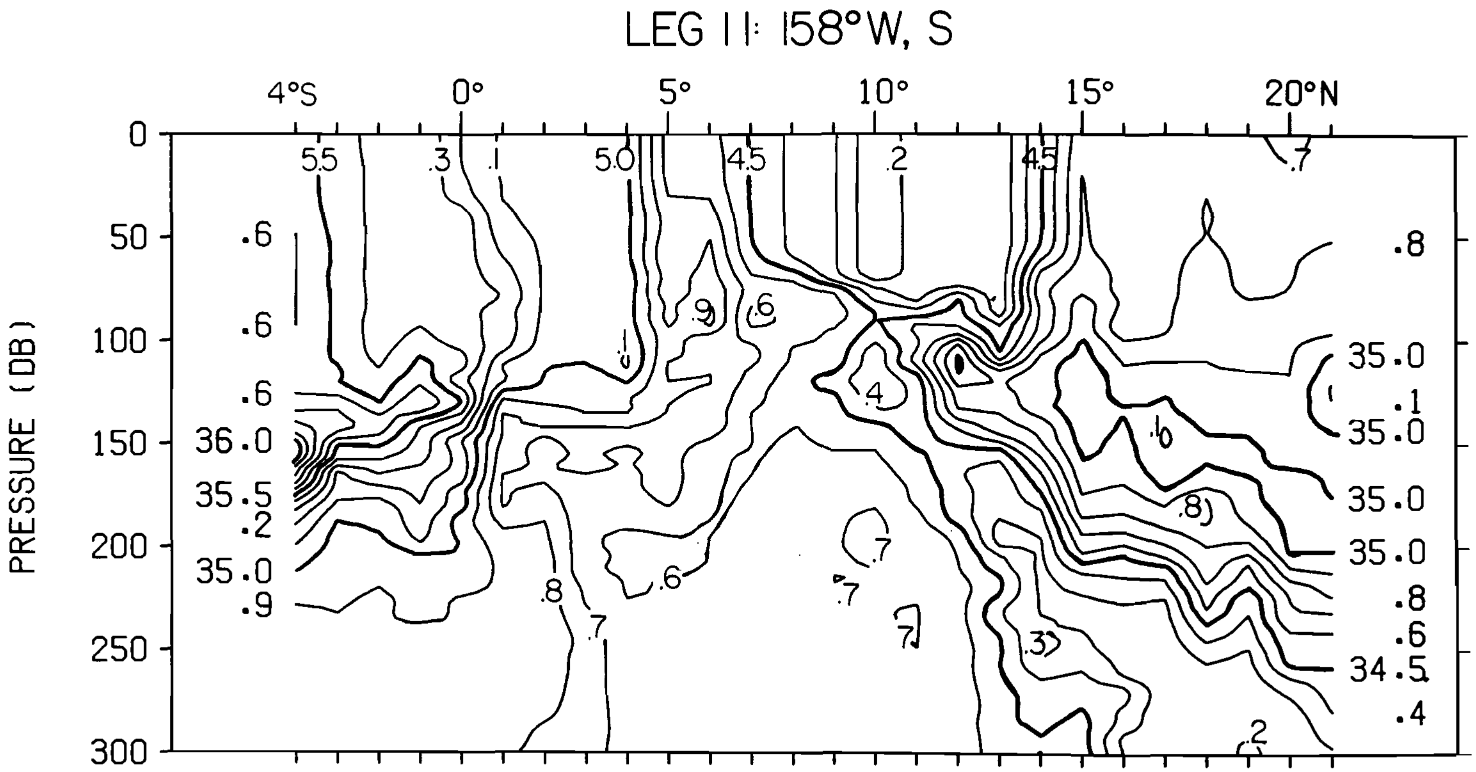

Figure 13S.--Distribution of salinity (°/∘∘) along 158°W (Leg 11, 25 January - 3 February 1980). Station positions are given by tic marks along bottom of panel.

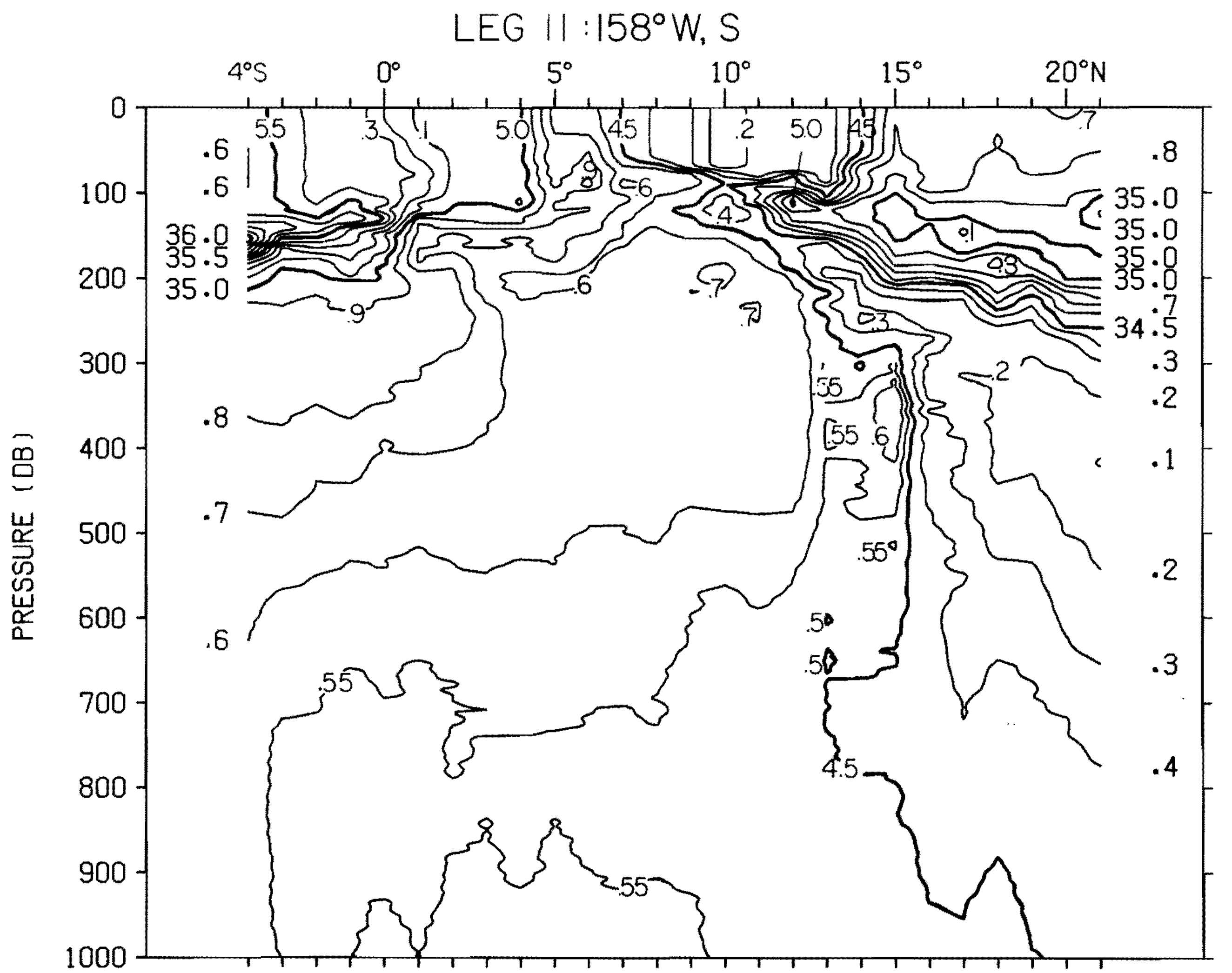

Figure 13D.--Distribution of salinity (°/₀₀) along 158°W (Leg 11, 25 January - 3 February 1980). Station positions are given by tic marks along bottom of panel.

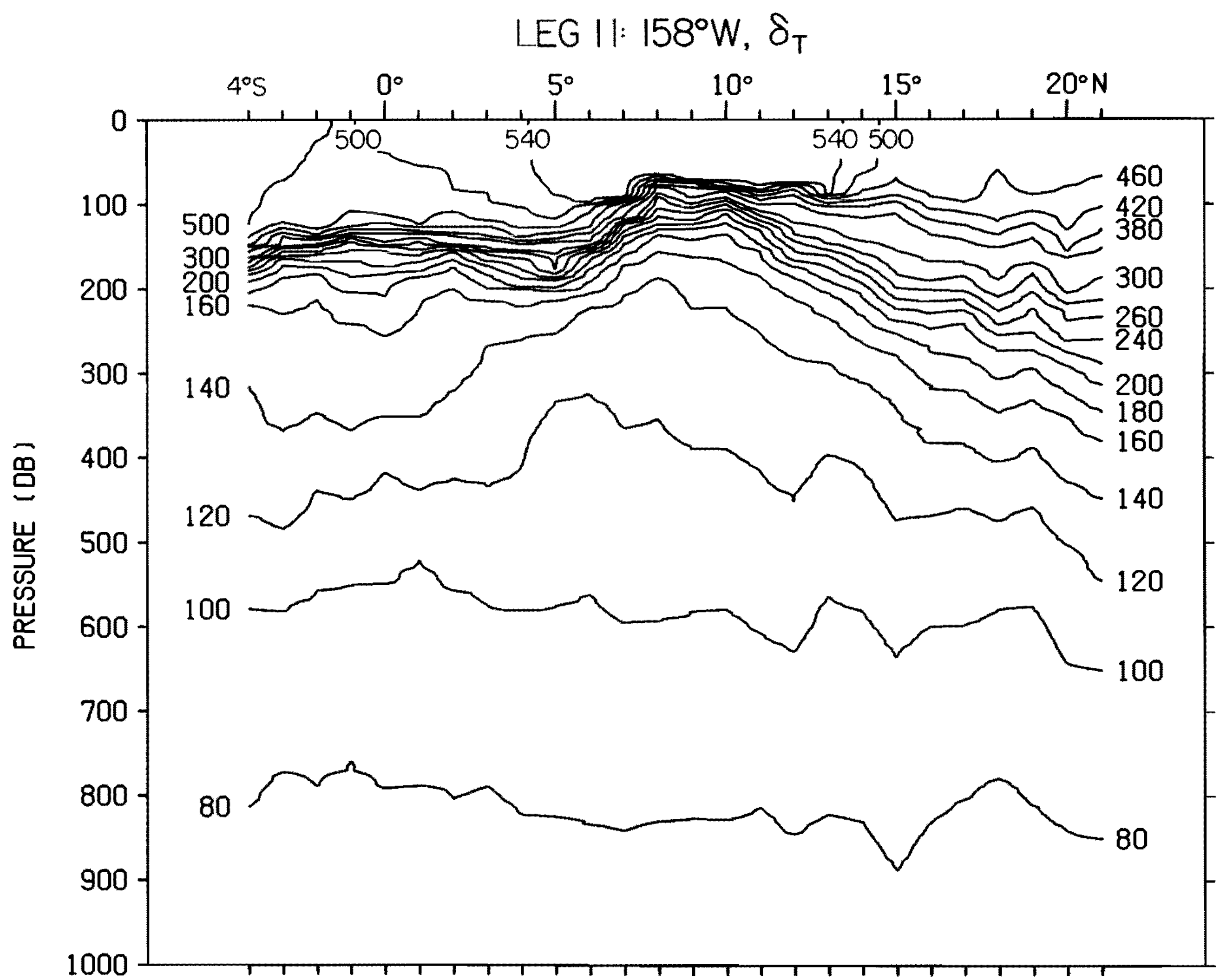

Figure 14.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 158°W (Leg 11, 25 January - 3 February 1980). Station positions are given by tic marks along bottom of panel.

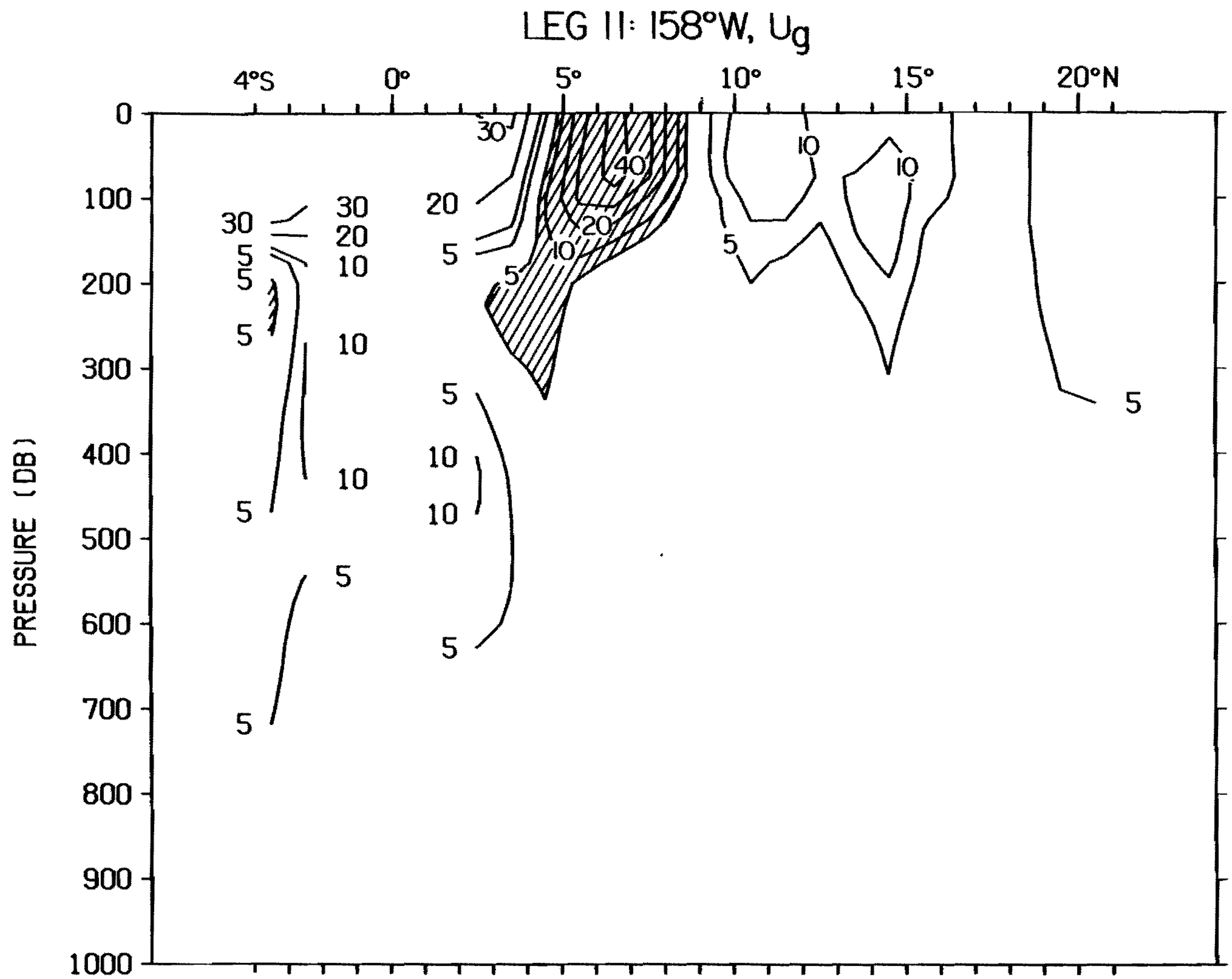

Figure 15.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 158°W (Leg 11, 25 January - 3 February 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

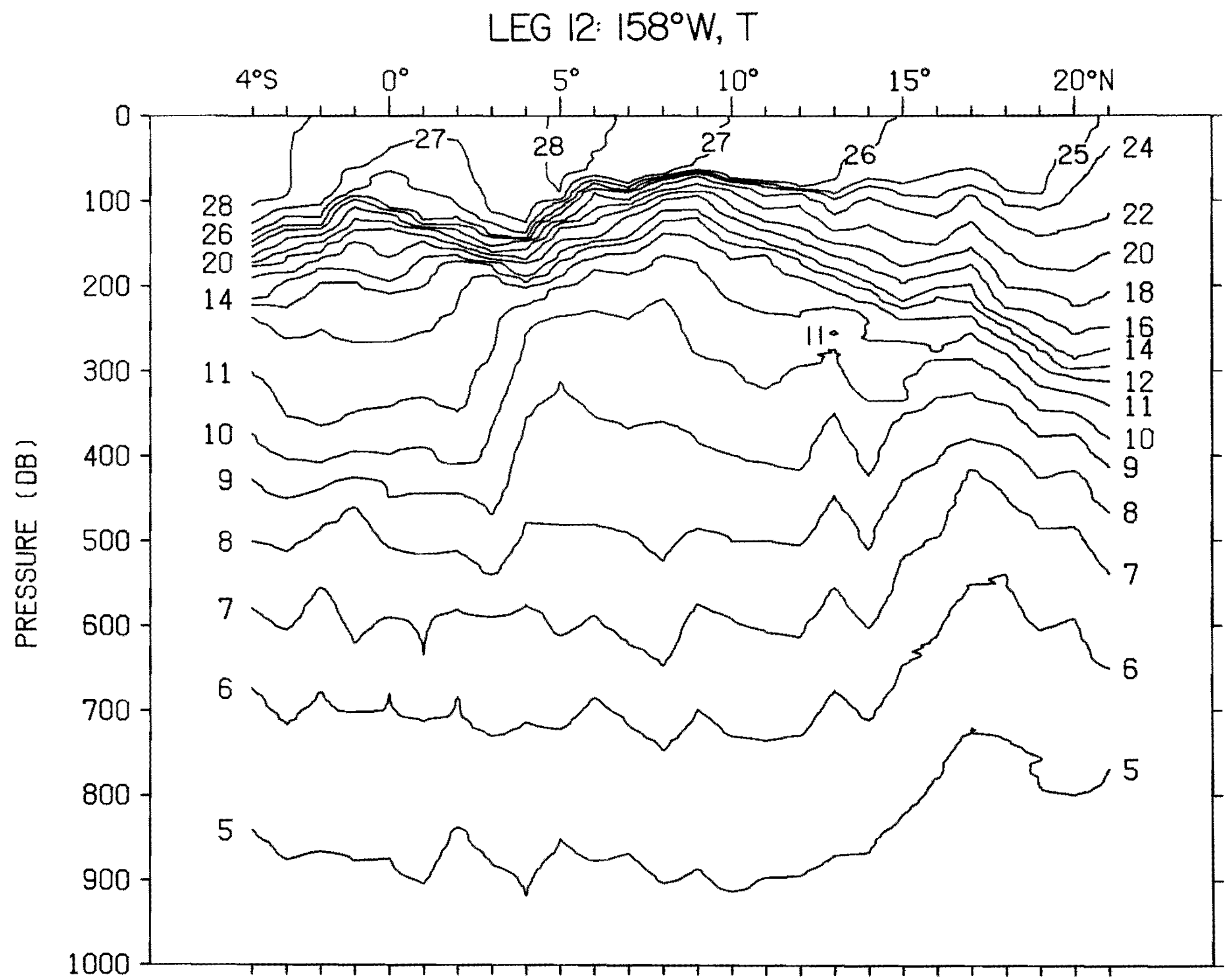

Figure 16.--Distribution of temperature (°C) along 158°W (Leg 12, 15 February - 26 February 1980). Station positions are given by tic marks along bottom of panel.

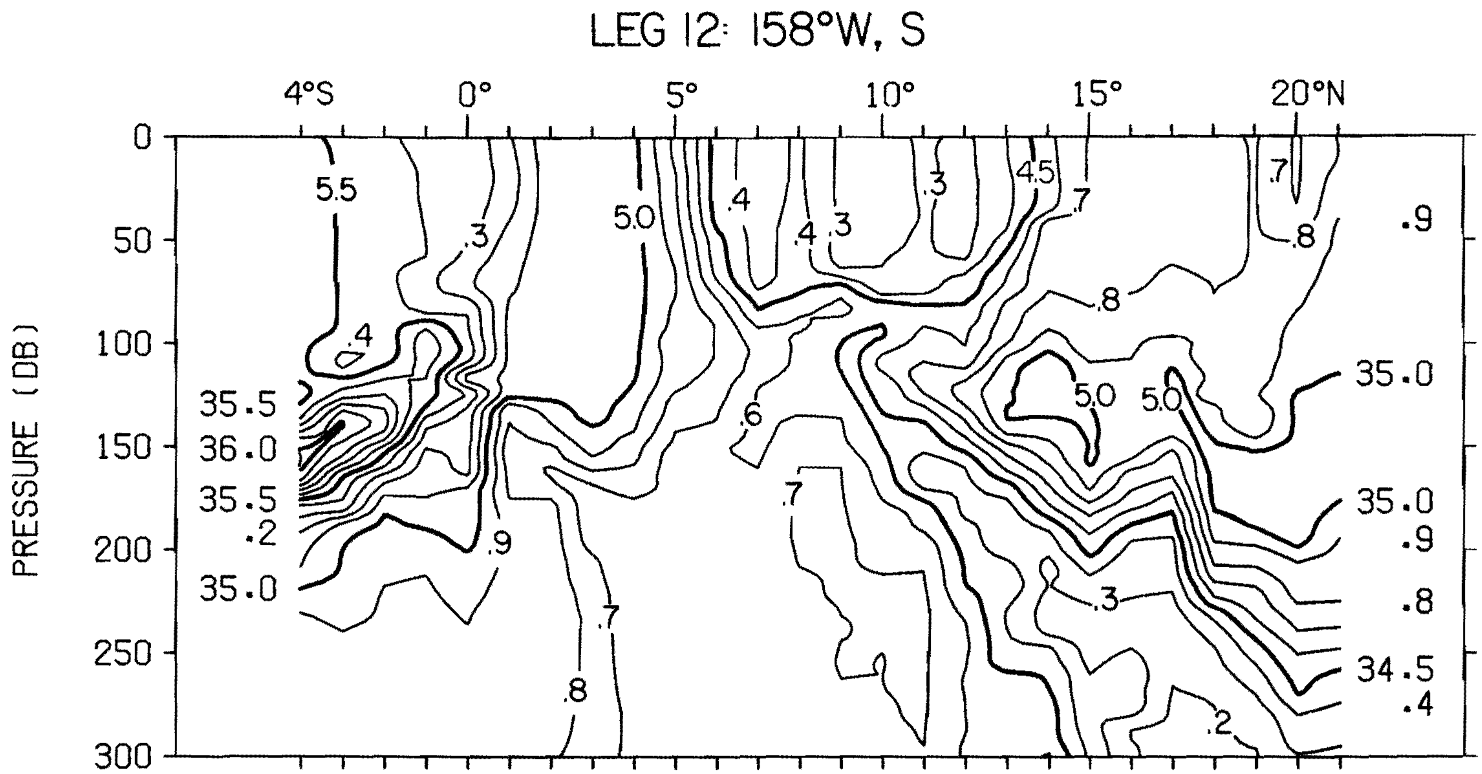

Figure 17S.--Distribution of salinity (°/₀₀) along 158°W (Leg 12, 15 February - 26 February 1980). Station positions are given by tic marks along bottom of panel.

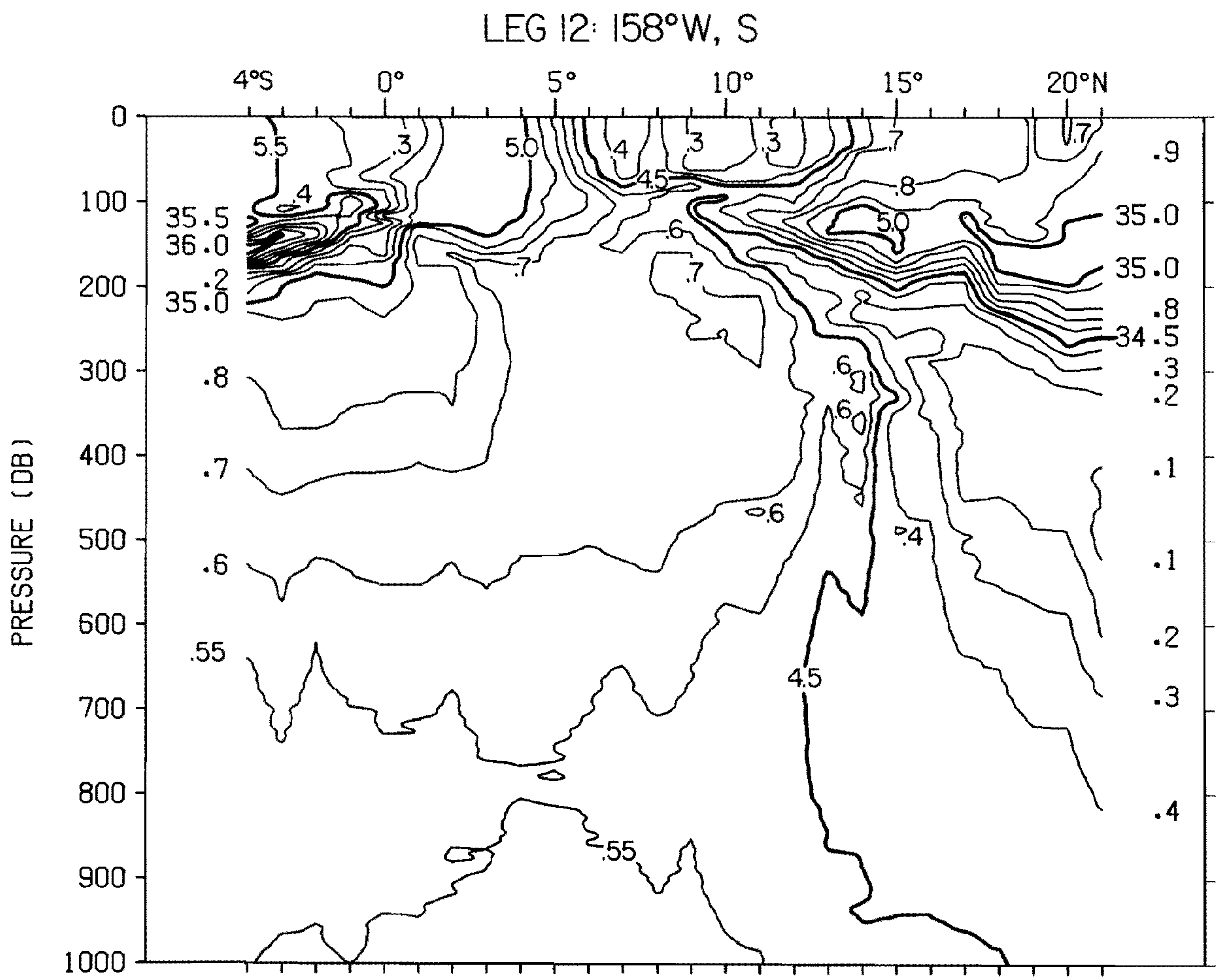

Figure 17D.--Distribution of salinity (°/₀₀) along 158°W (Leg 12, 15 February - 26 February 1980). Station positions are given by tic marks along bottom of panel.

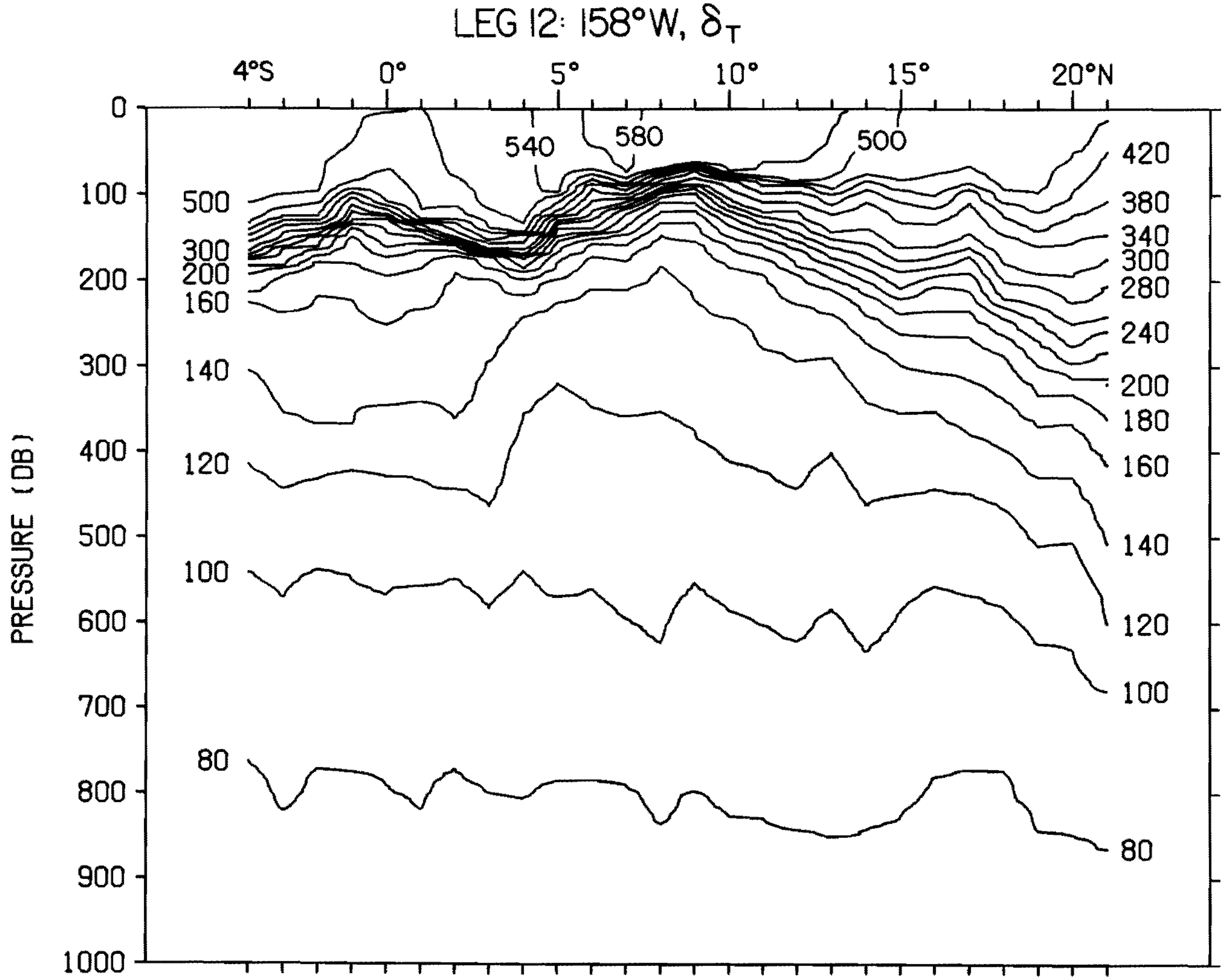

Figure 18.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 158°W (Leg 12, 15 February - 26 February 1980). Station positions are given by tic marks along bottom of panel.

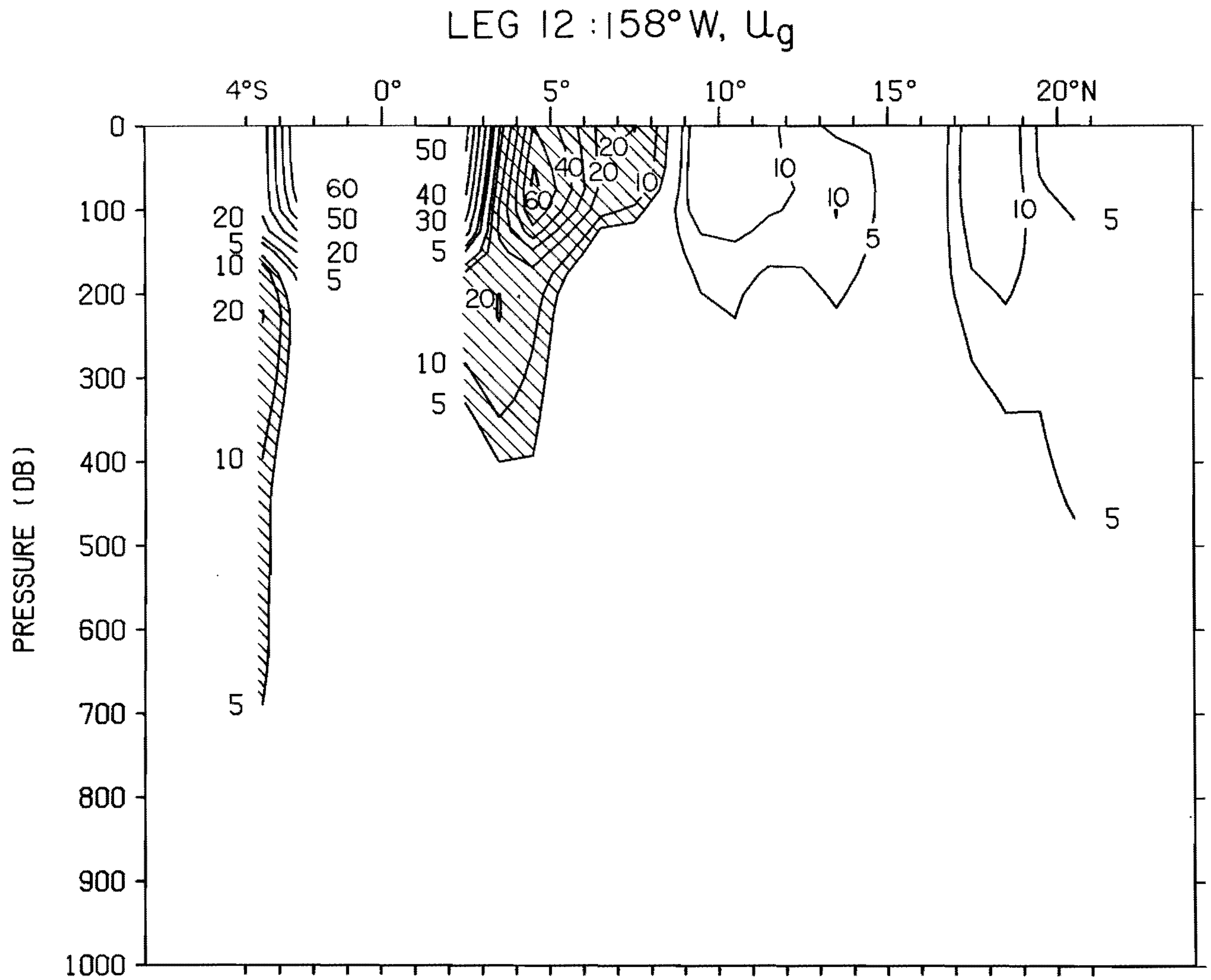

Figure 19.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 158°W (Leg 12, 15 February - 26 February 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

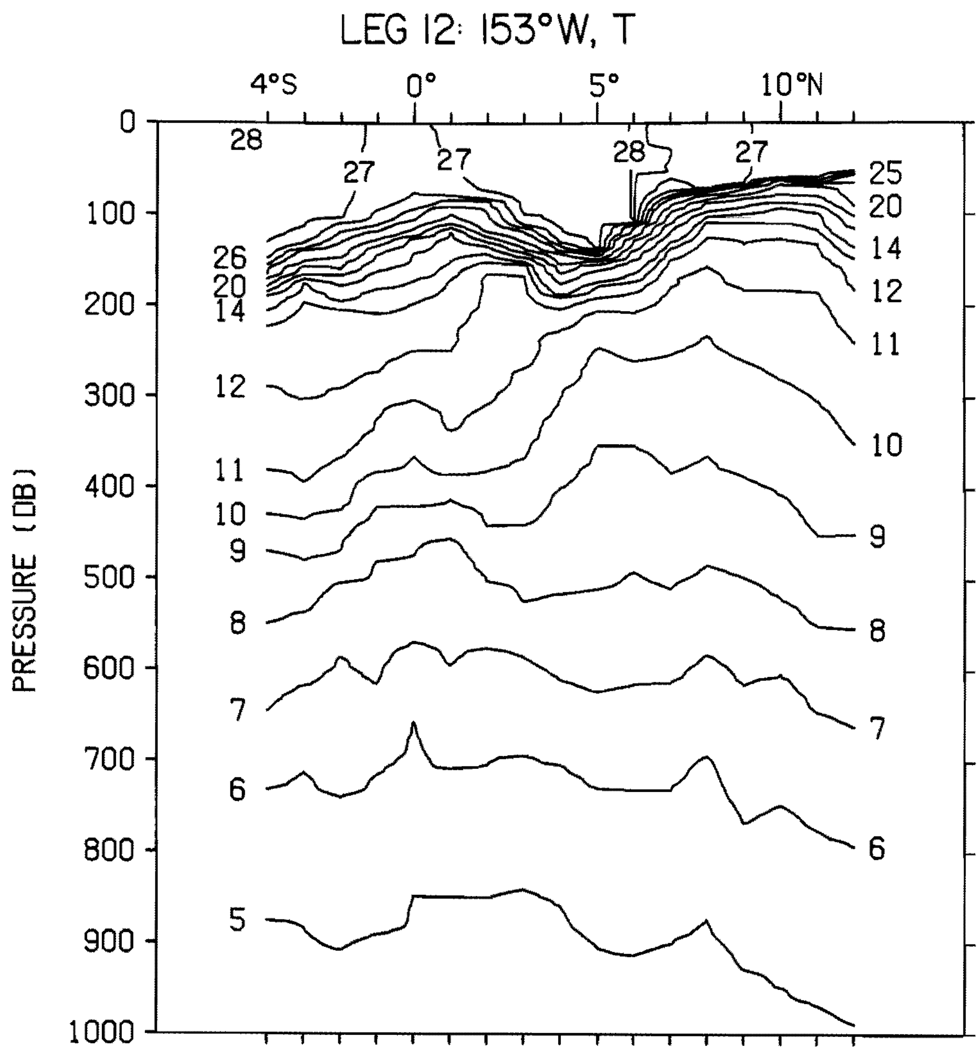

Figure 20.--Distribution of temperature (°C) along 153°W (Leg 12, 28 February - 4 March 1980). Station positions are given by tic marks along bottom of panel.

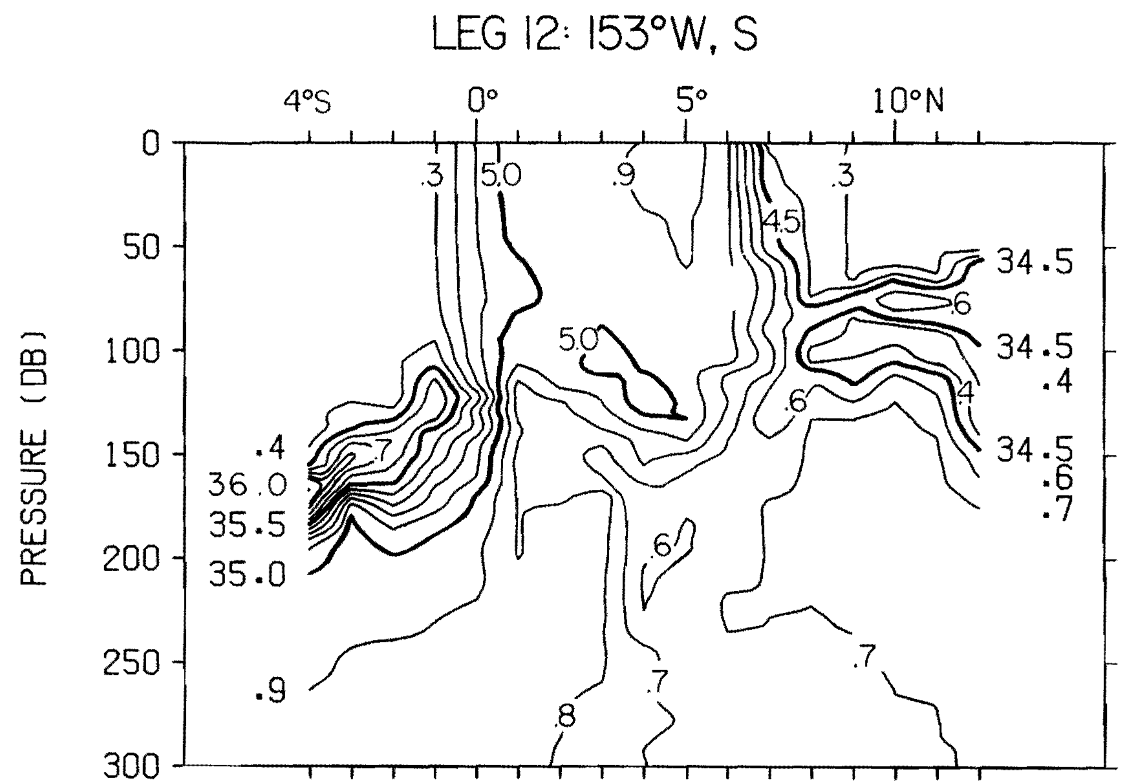

Figure 21S.--Distribution of salinity (°/₀₀) along 153°W (Leg 12, 28 February - 4 March 1980). Station positions are given by tic marks along bottom of panel.

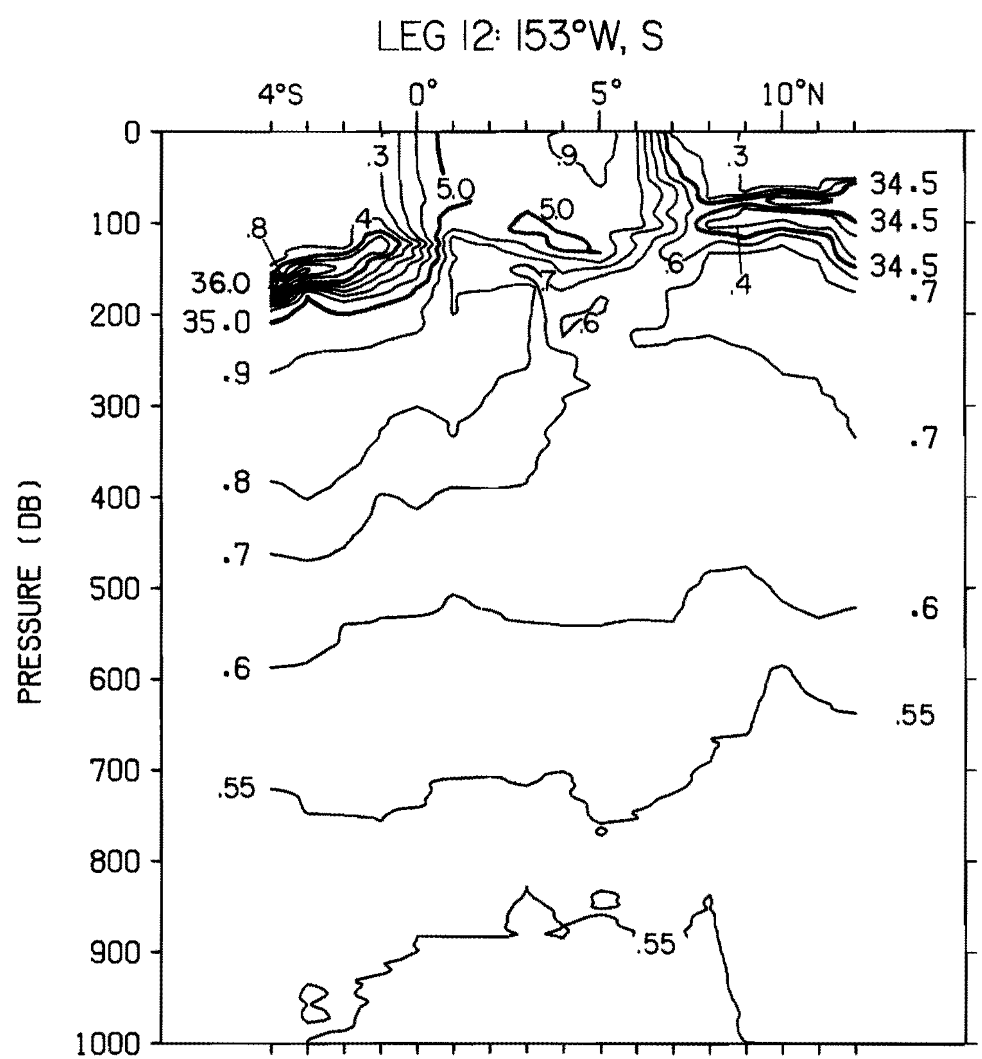

Figure 21D.--Distribution of salinity (°/₀₀) along 153°W (Leg 12, 28 February - 4 March 1980). Station positions are given by tic marks along bottom of panel.

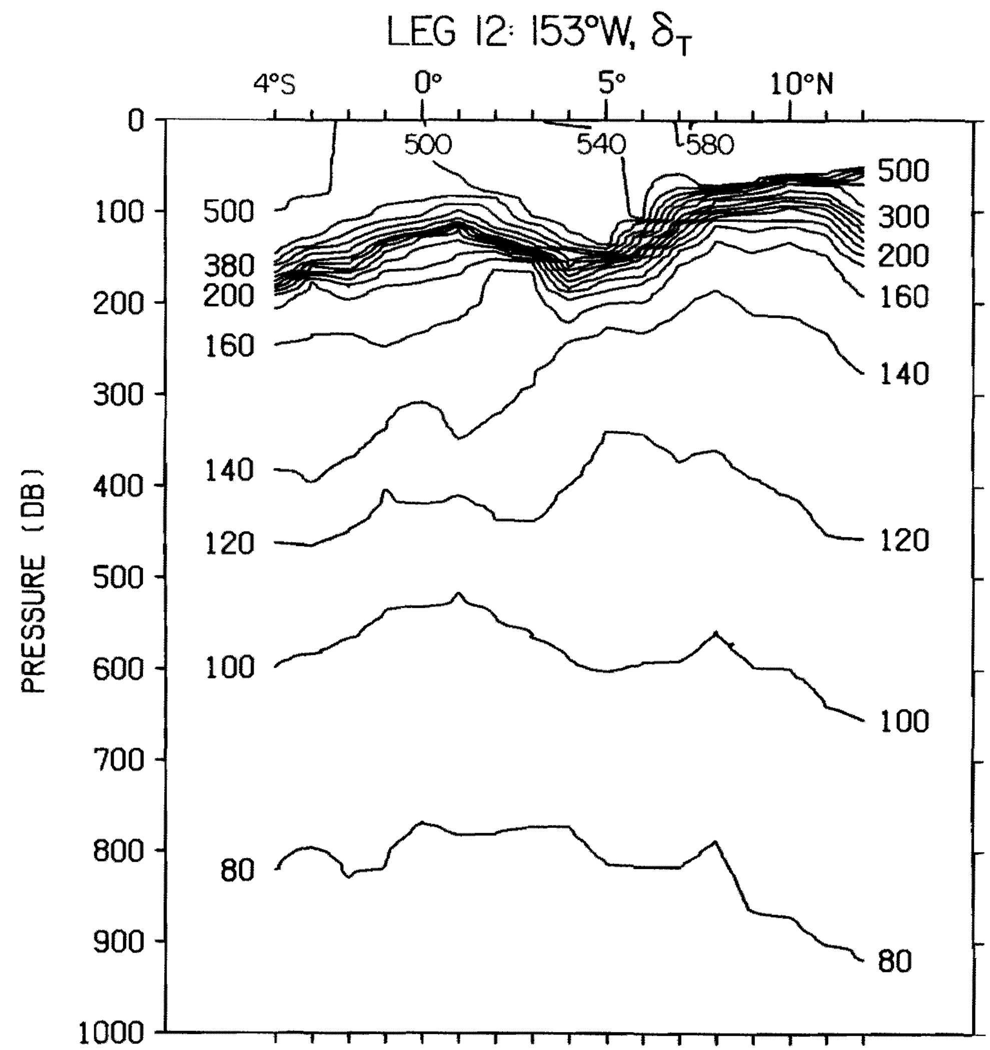

Figure 22.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 153°W (Leg 12, 28 February - 4 March 1980). Station positions are given by tic marks along bottom of panel.

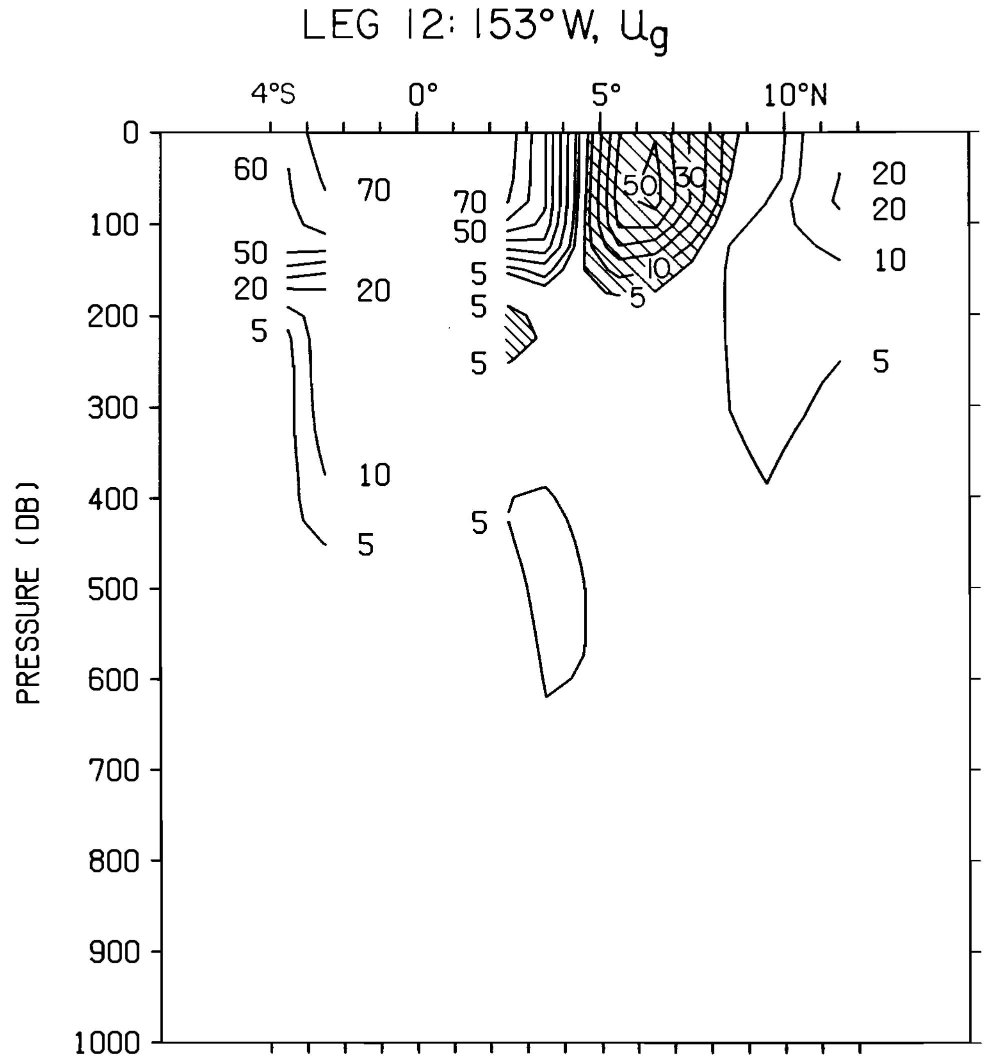

Figure 23.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 153°W (Leg 12, 28 February - 4 March 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

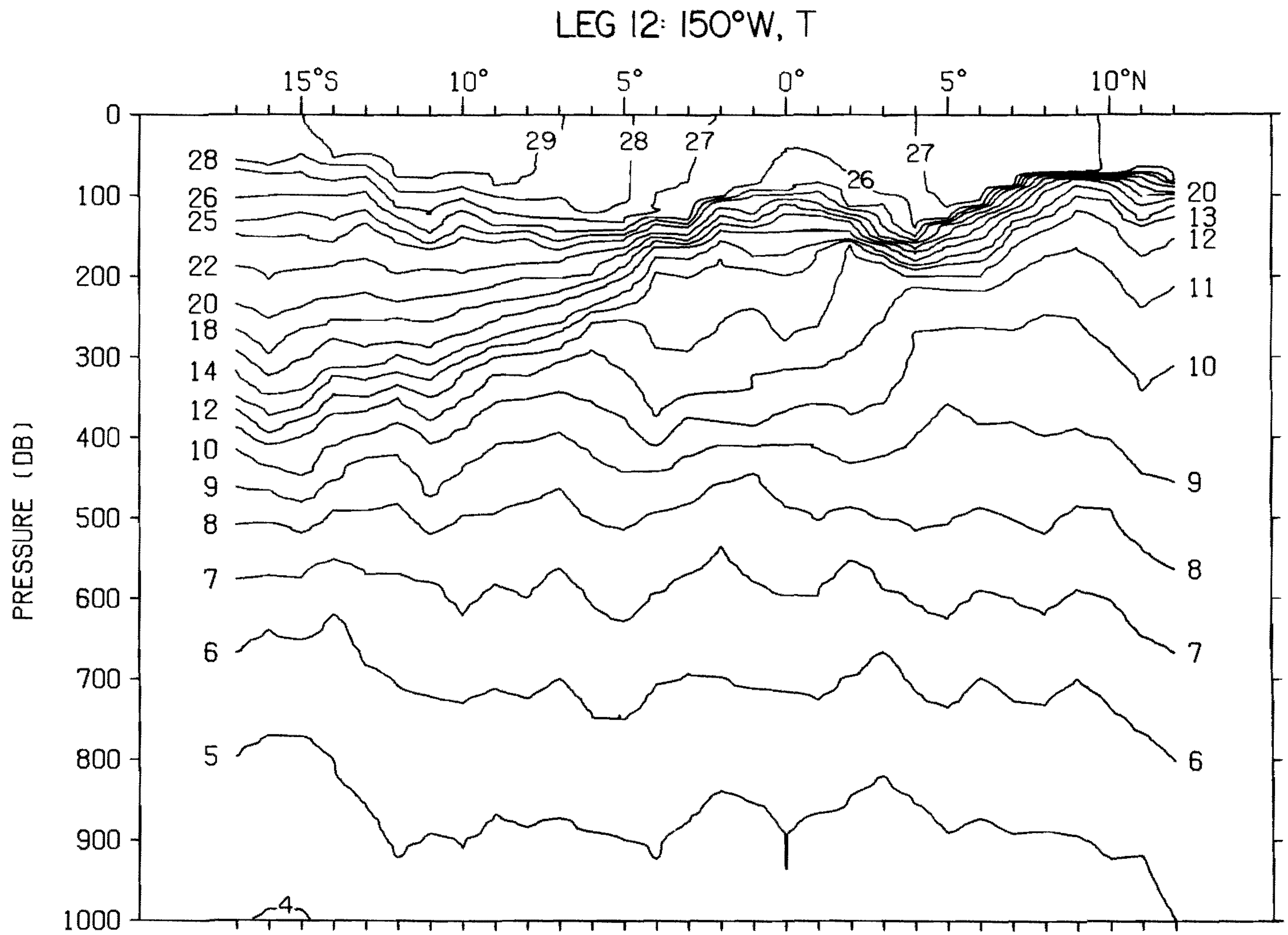

Figure 24.--Distribution of temperature (°C) along 150°W (Leg 12, 5 March - 13 March 1980). Station positions are given by tic marks along bottom of panel.

LEG 12: 150° W, S

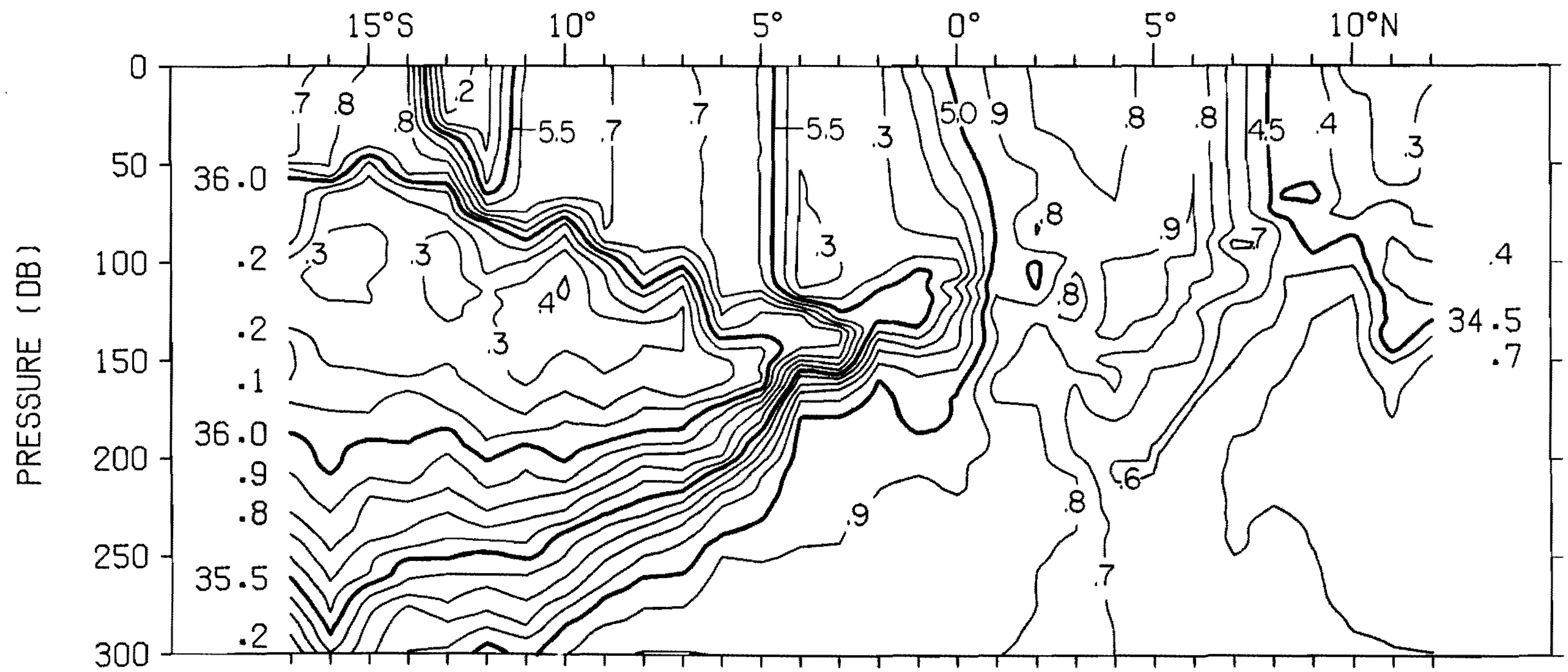

Figure 25S.--Distribution of salinity (°/₀₀) along 150°W (Leg 12, 5 March - 13 March 1980). Station positions are given by tic marks along bottom of panel.

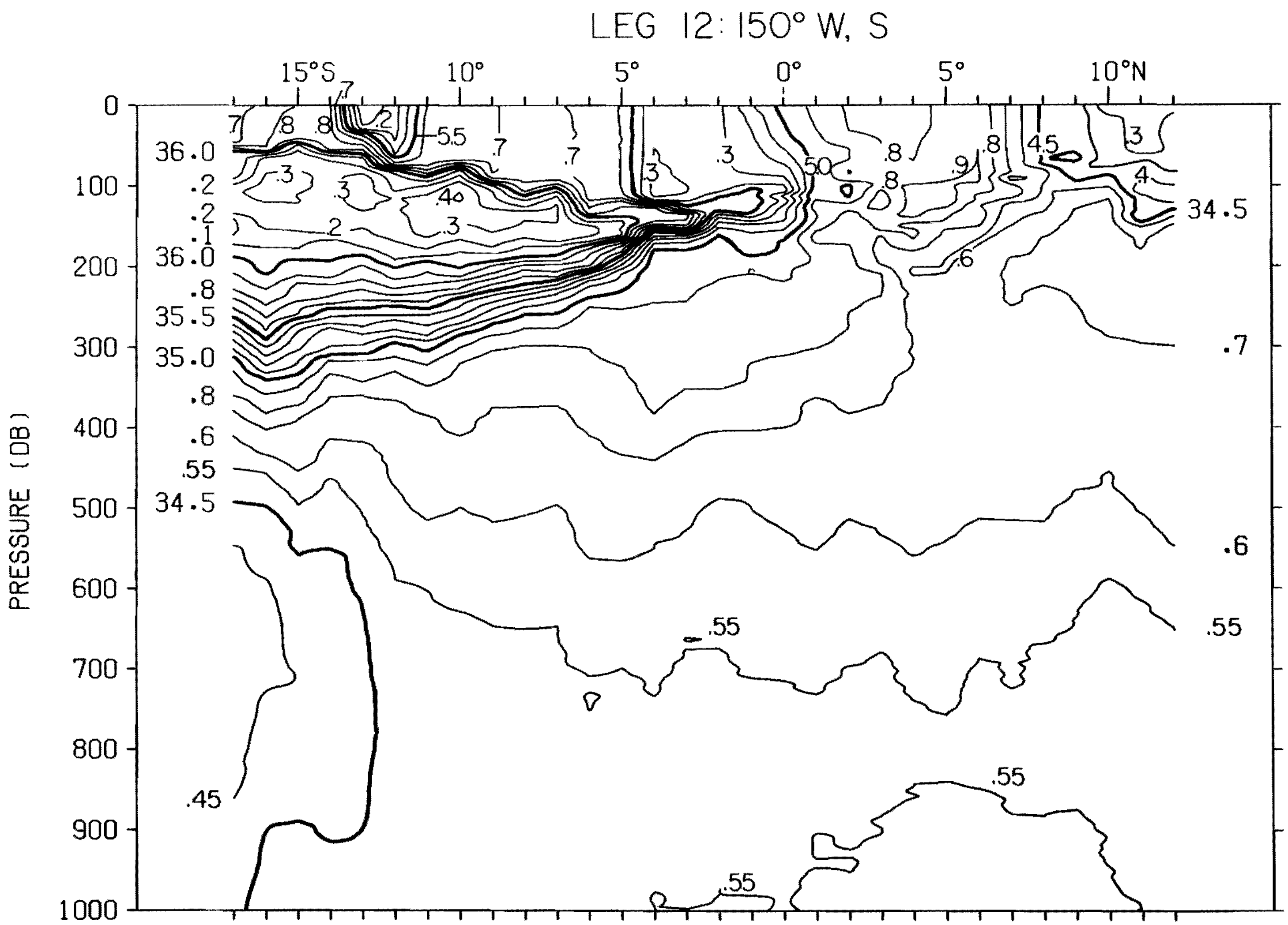

Figure 25D.--Distribution of salinity (°/₀₀) along 150°W (Leg 12, 5 March - 13 March 1980). Station positions are given by tic marks along bottom of panel.

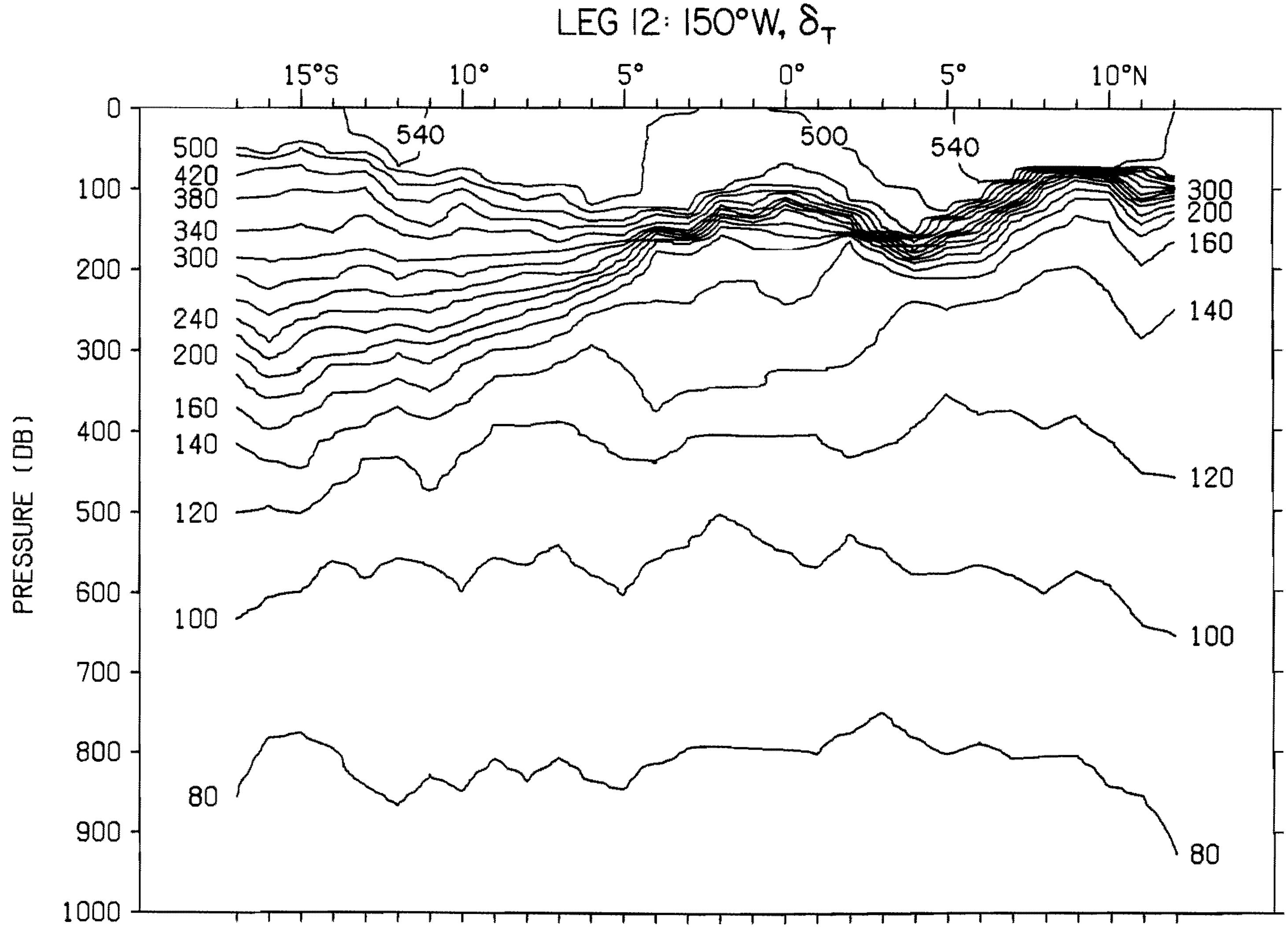

Figure 26.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 150°W (Leg 12, 5 March - 13 March 1980). Station positions are given by tic marks along bottom of panel.

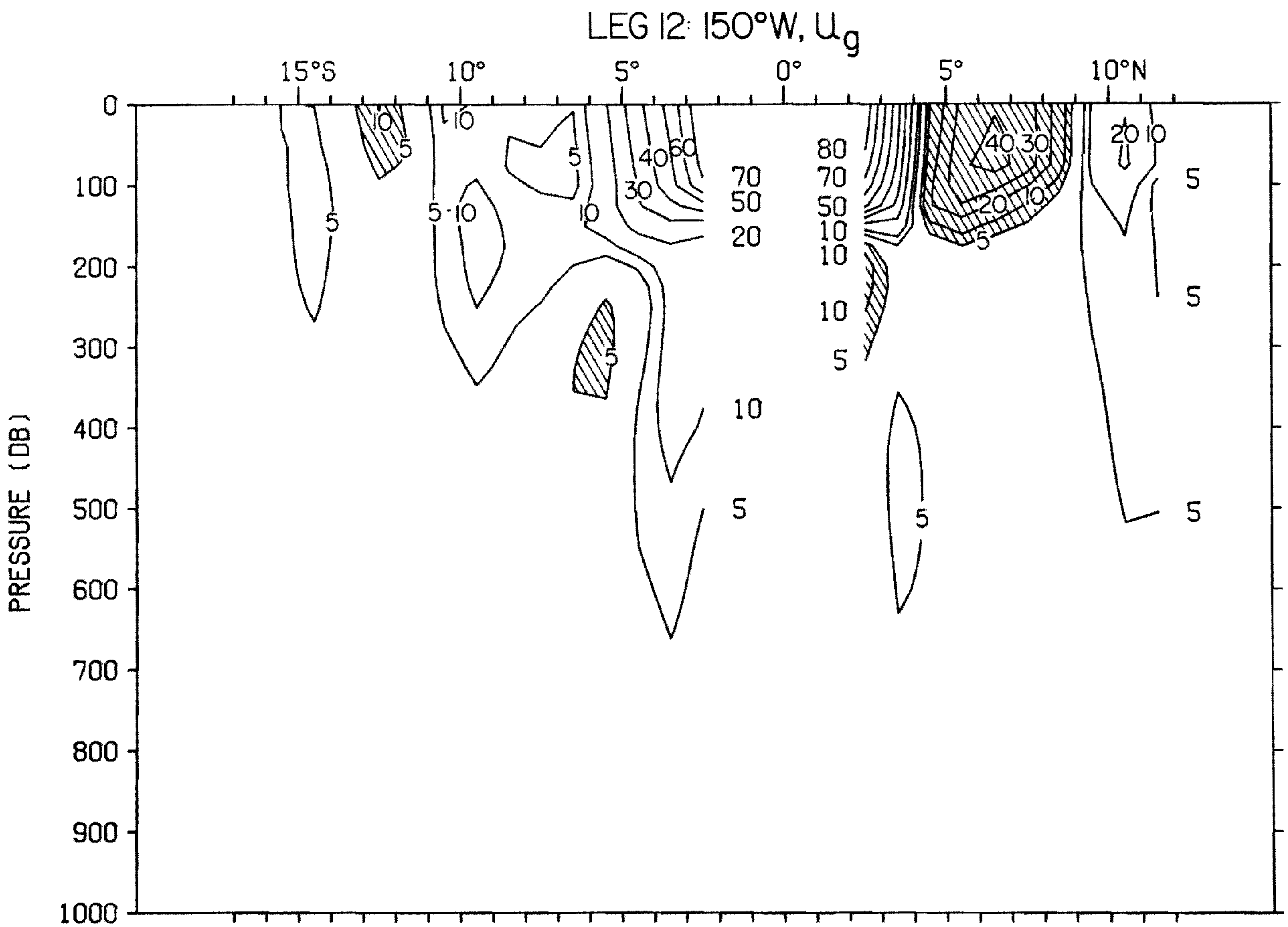

Figure 27.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 150°W (Leg 12, 5 March - 13 March 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

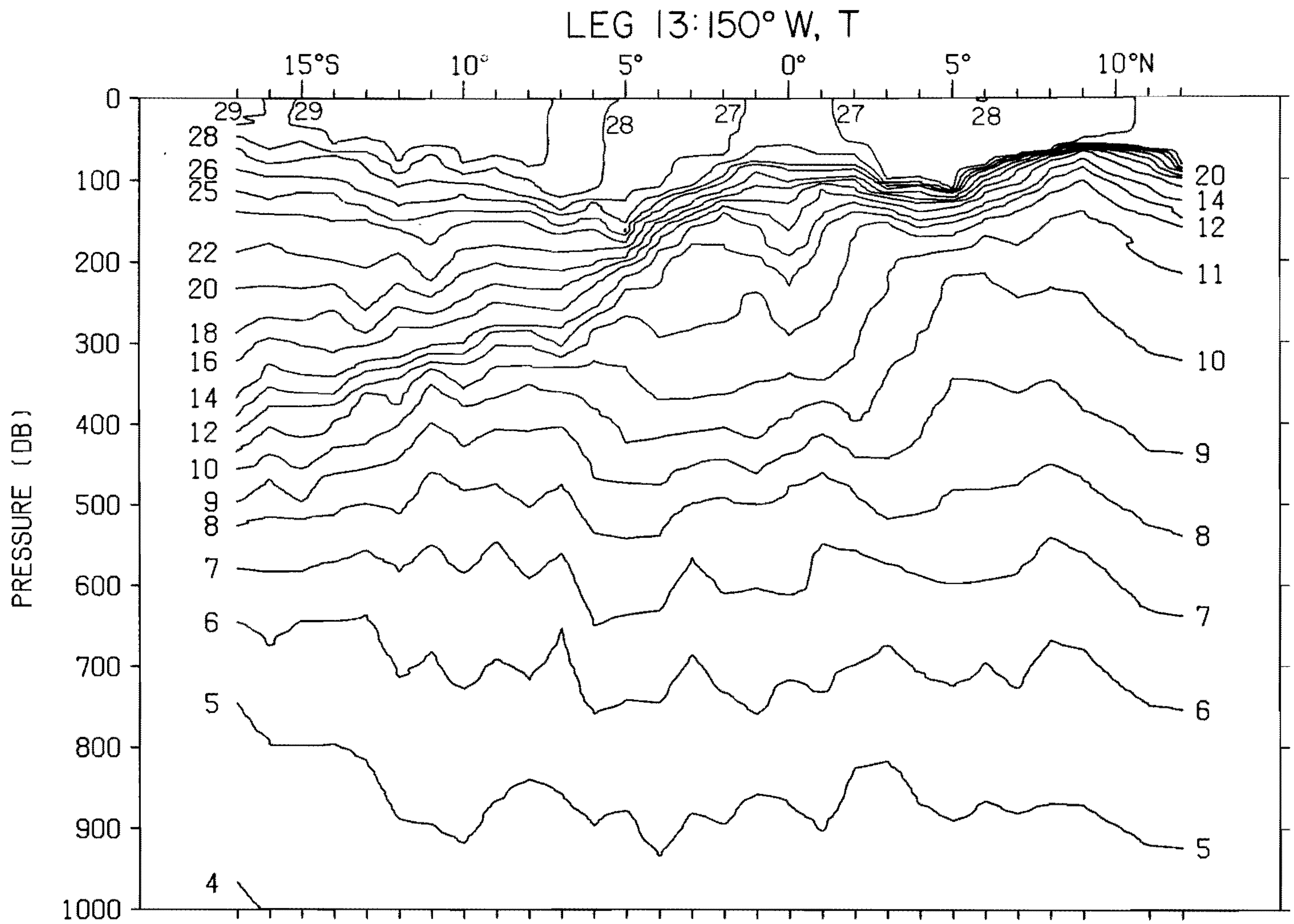

Figure 28.--Distribution of temperature (°C) along 150°W (Leg 13, 18 March - 26 March 1980). Station positions are given by tic marks along bottom of panel.

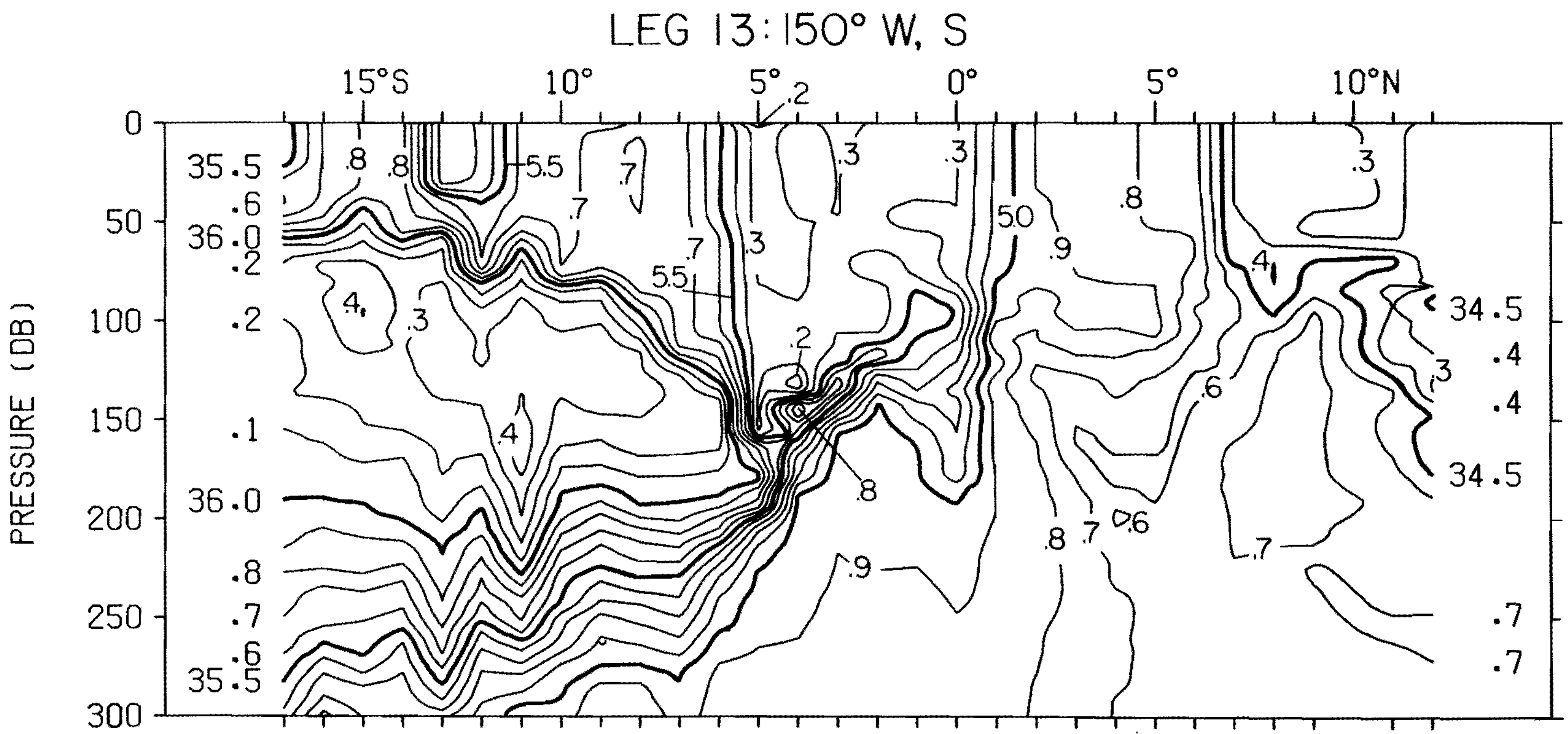

Figure 29S.--Distribution of salinity (°/₀₀) along 150°W (Leg 13, 18 March - 26 March 1980). Station positions are given by tic marks along bottom of panel.

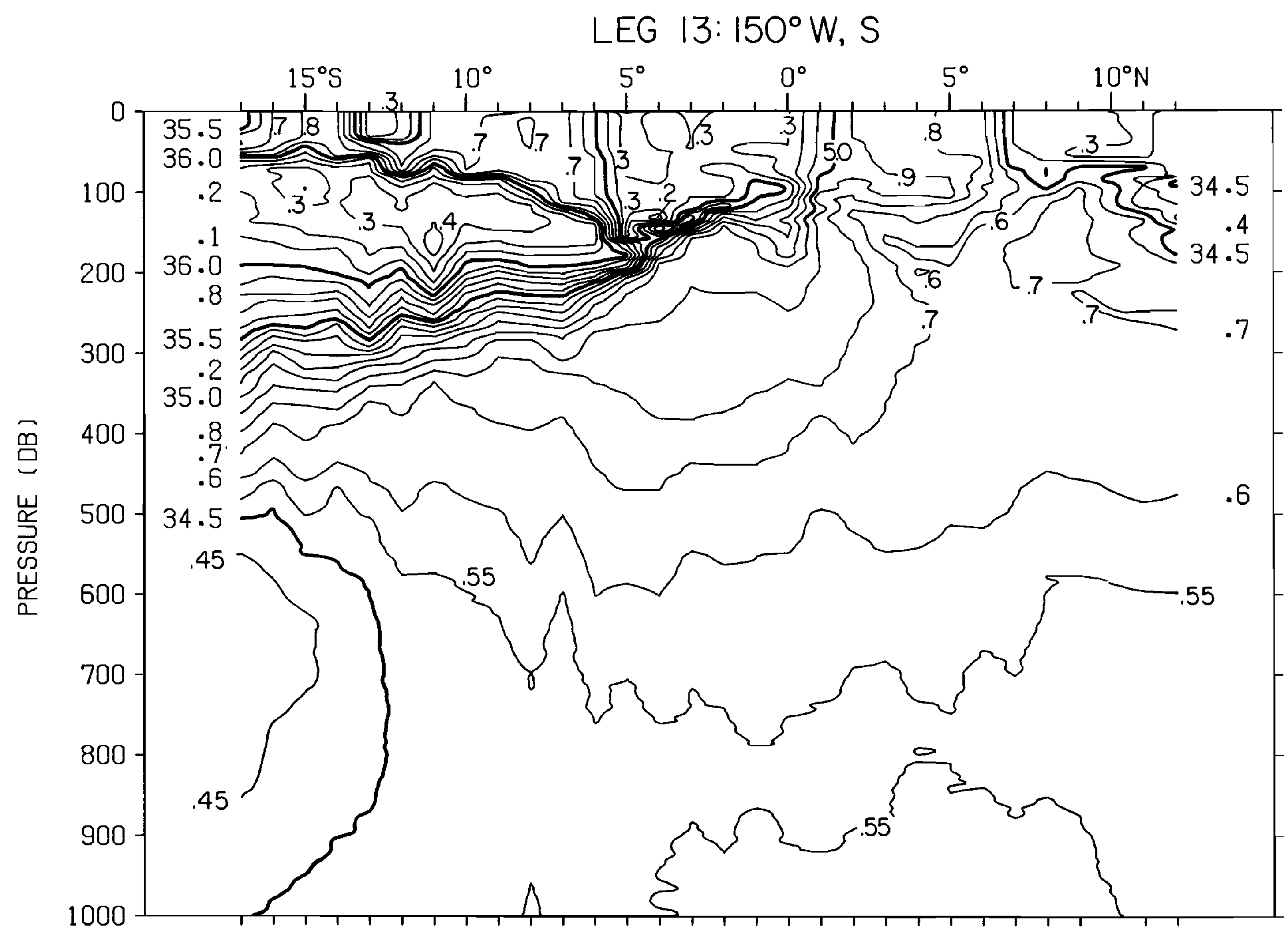

Figure 29D.--Distribution of salinity (°/₀₀) along 150°W (Leg 13, 18 March - 26 March 1980). Station positions are given by tic marks along bottom of panel.

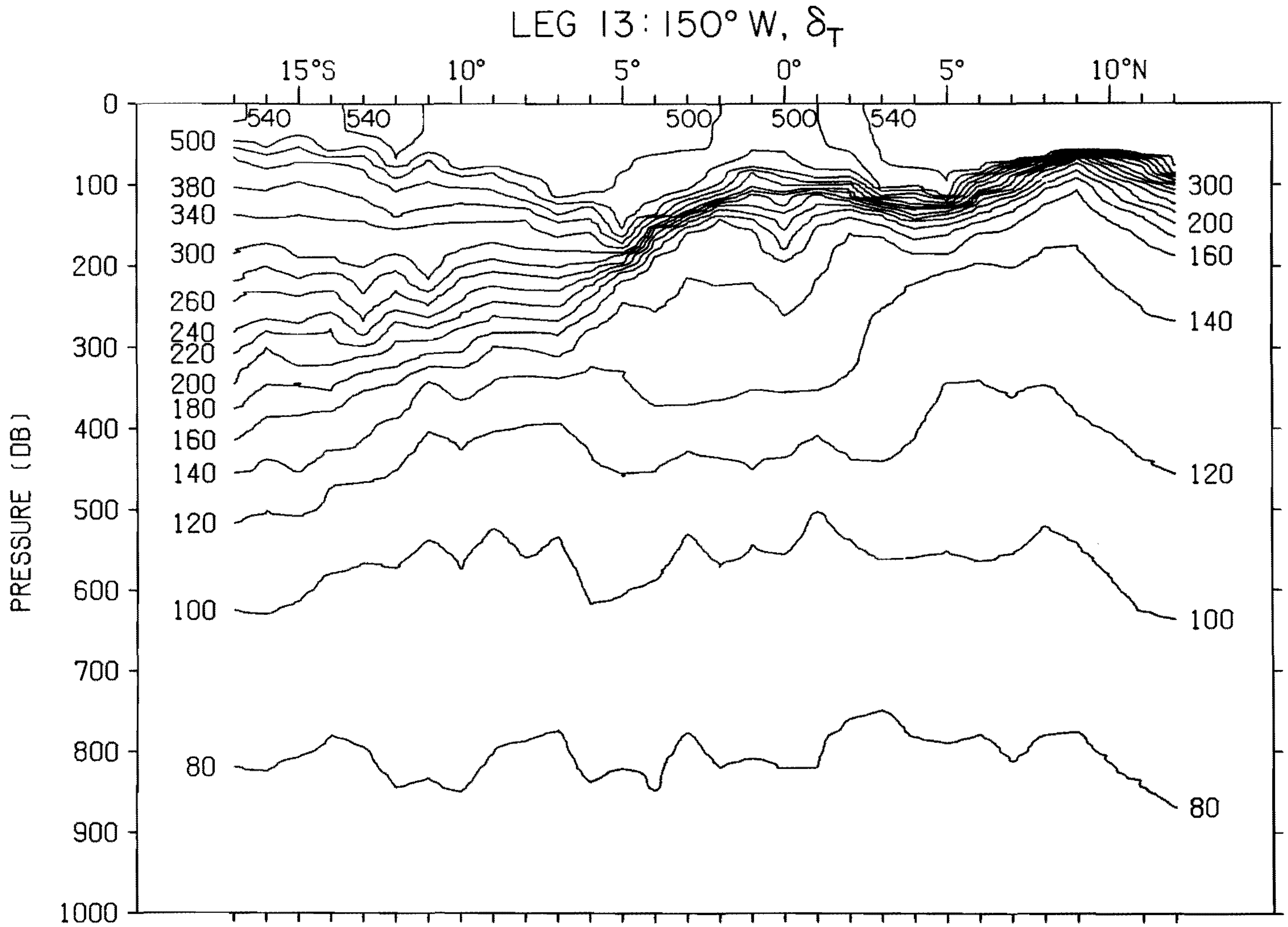

Figure 30.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 150°W (Leg 13, 18 March - 26 March 1980). Station positions are given by tic marks along bottom of panel.

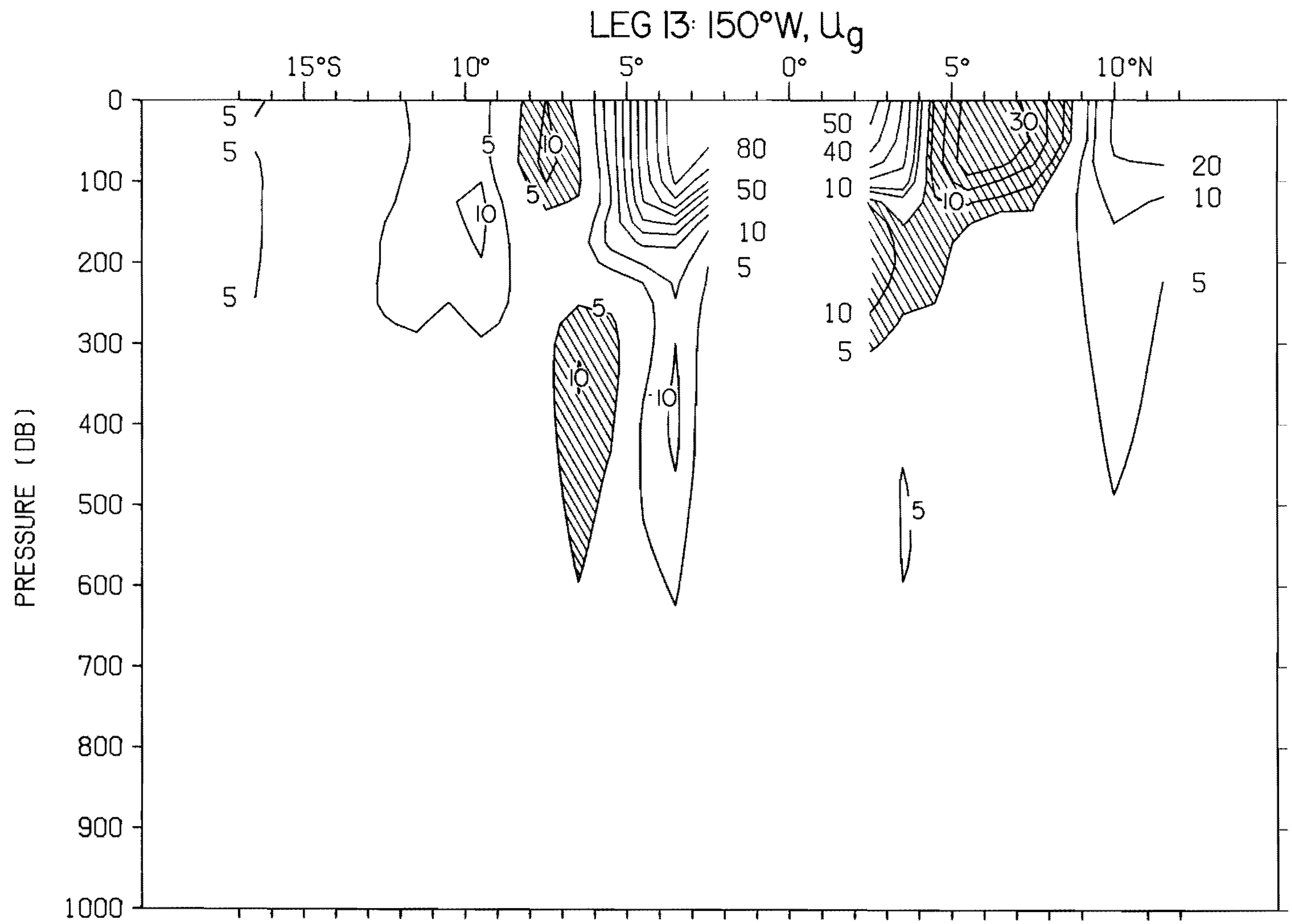

Figure 31.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 150°W (Leg 13, 18 March - 26 March 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

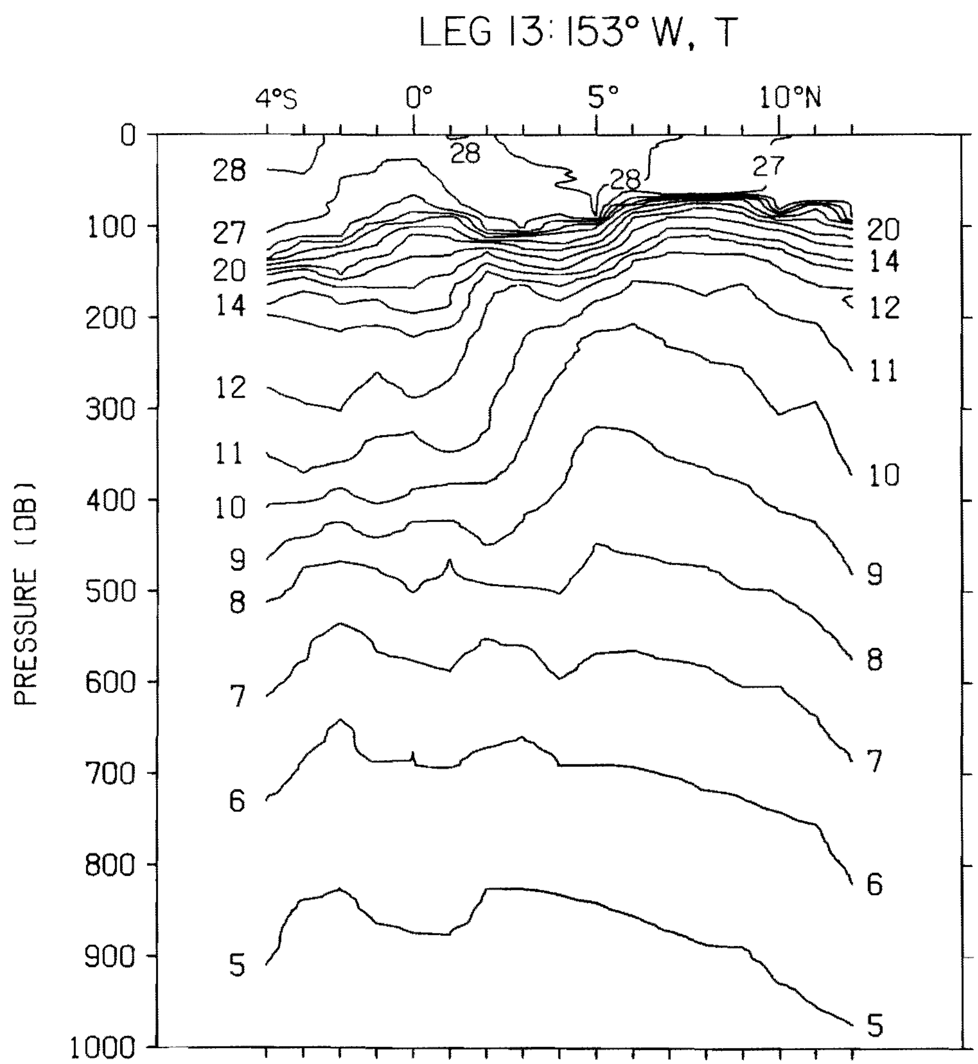

Figure 32.--Distribution of temperature (°C) along 153°W (Leg 13, 27 March - 2 April 1980). Station positions are given by tic marks along bottom of panel.

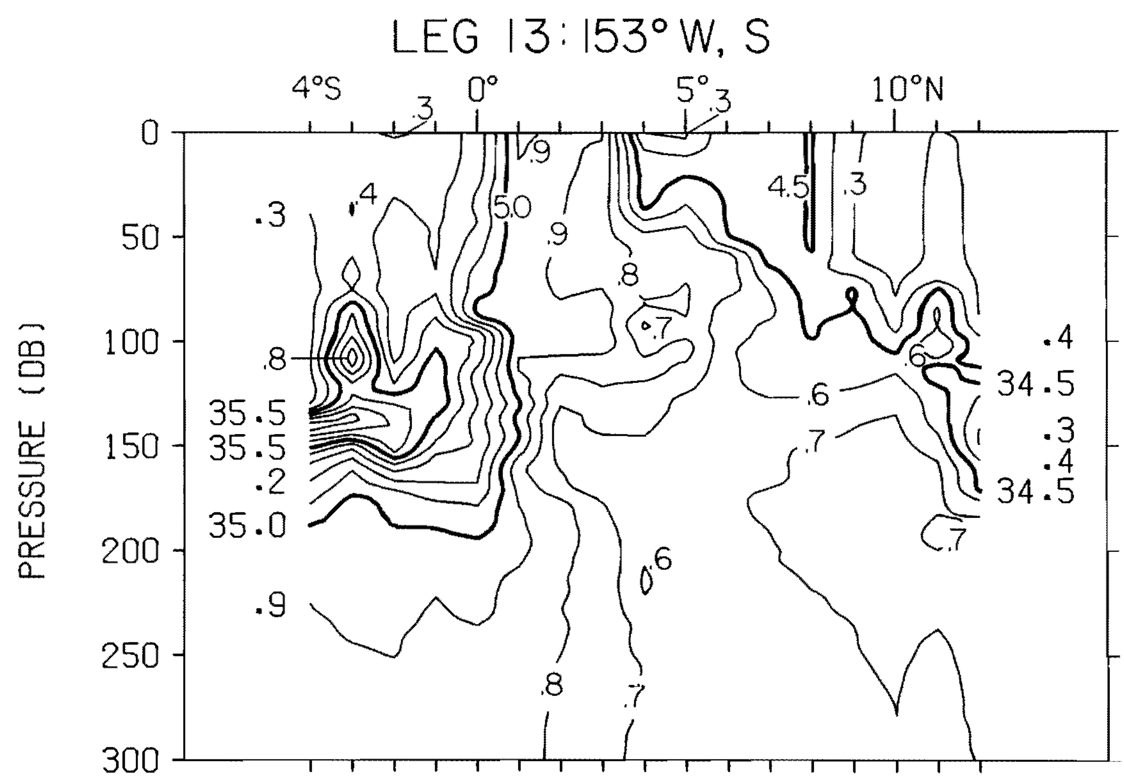

Figure 33S.--Distribution of salinity (°/₀₀) along 153°W (Leg 13, 27 March - 2 April 1980). Station positions are given by tic marks along bottom of panel.

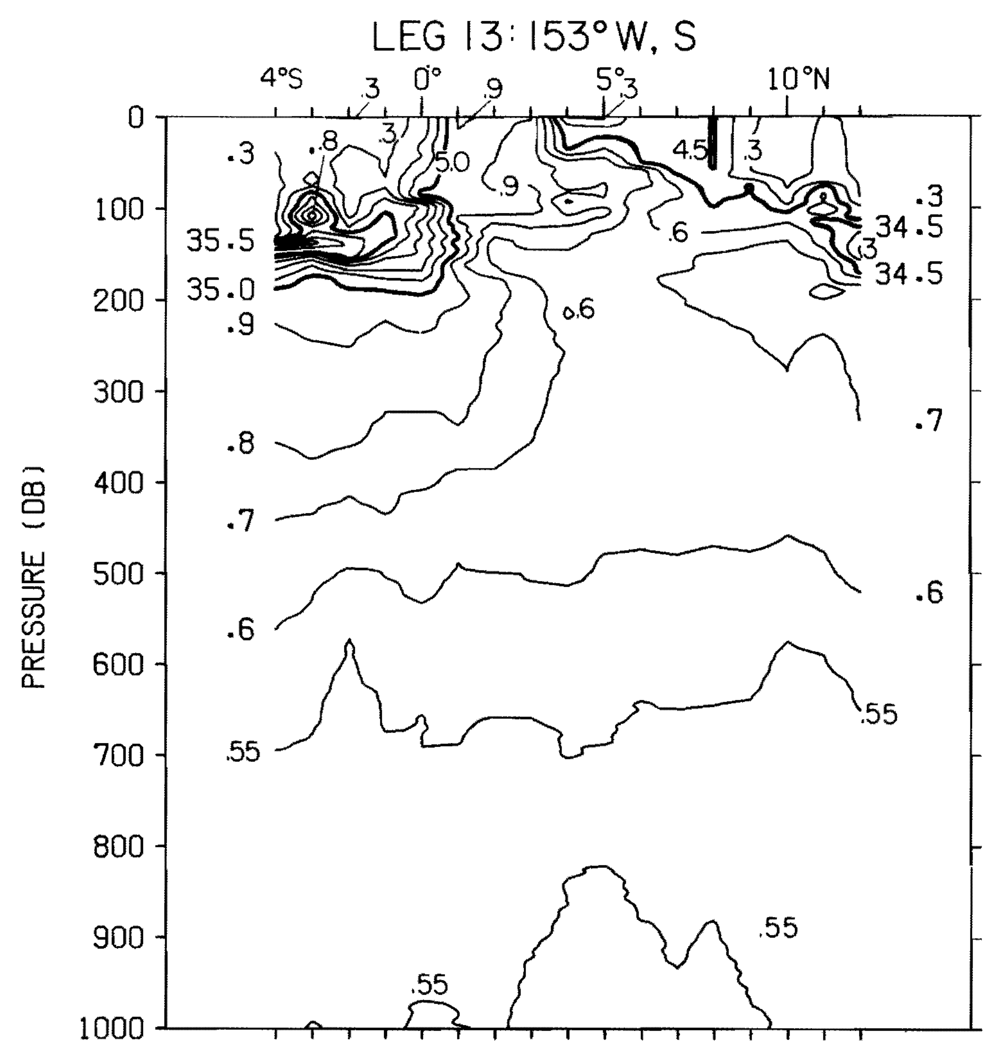

Figure 33D.--Distribution of salinity (°/₀₀) along 153°W (Leg 13, 27 March - 2 April 1980). Station positions are given by tic marks along bottom of panel.

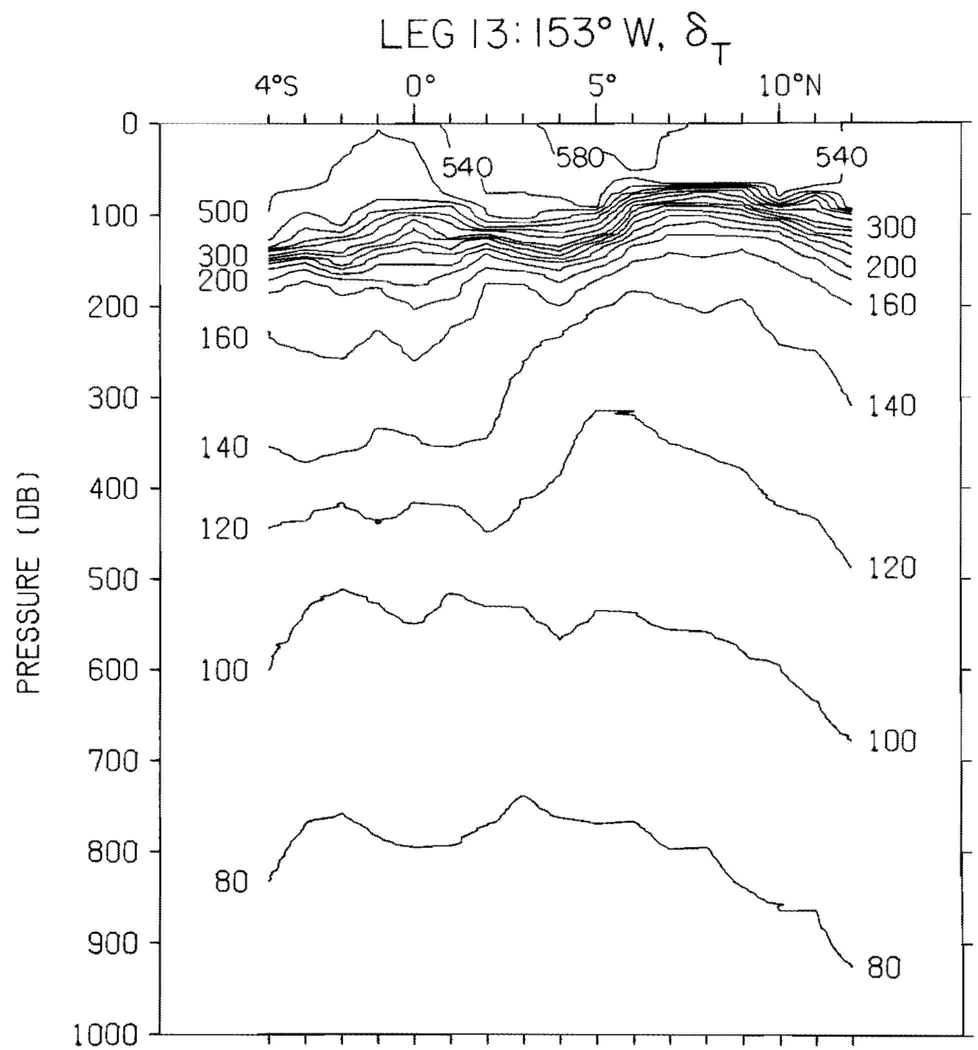

Figure 34.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 153°W (Leg 13, 27 March - 2 April 1980). Station positions are given by tic marks along bottom of panel.

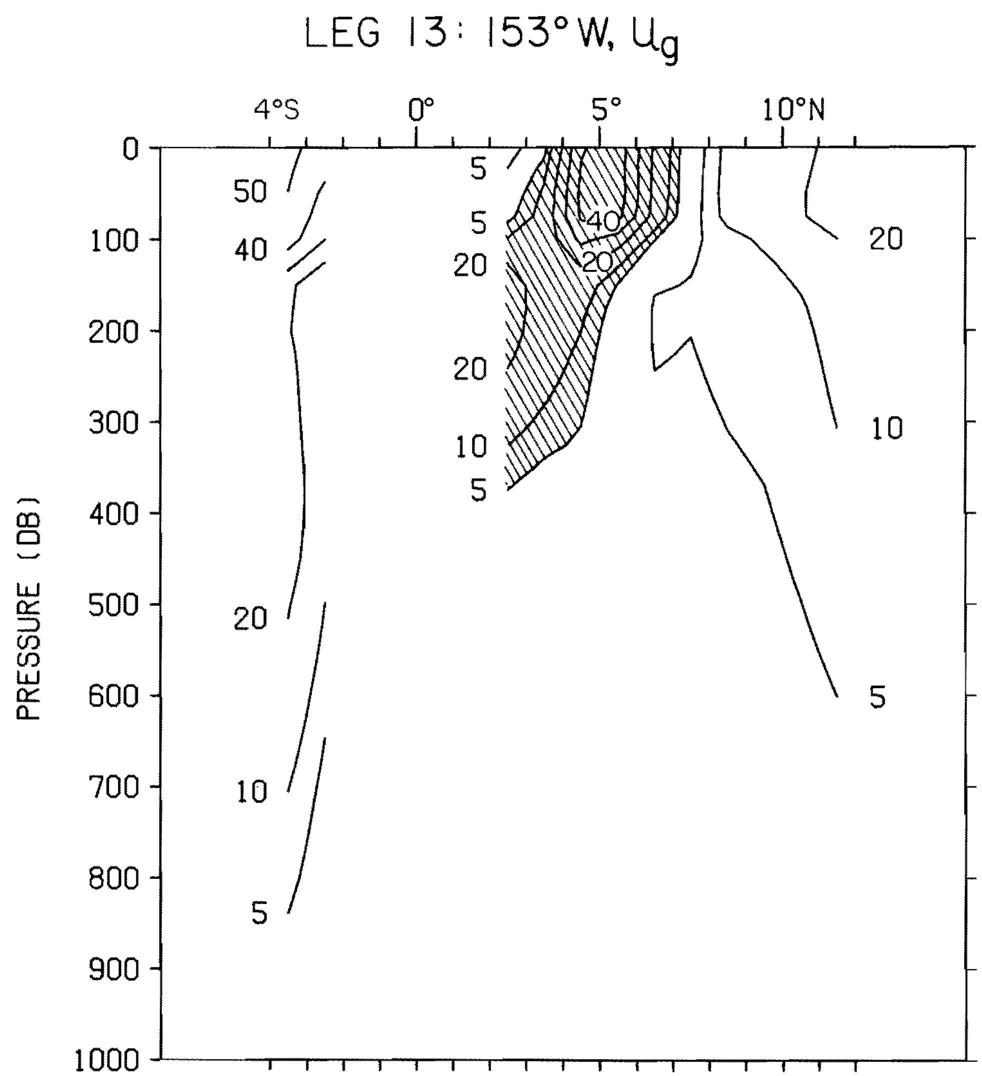

Figure 35.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 153°W (Leg 13, 27 March - 2 April 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

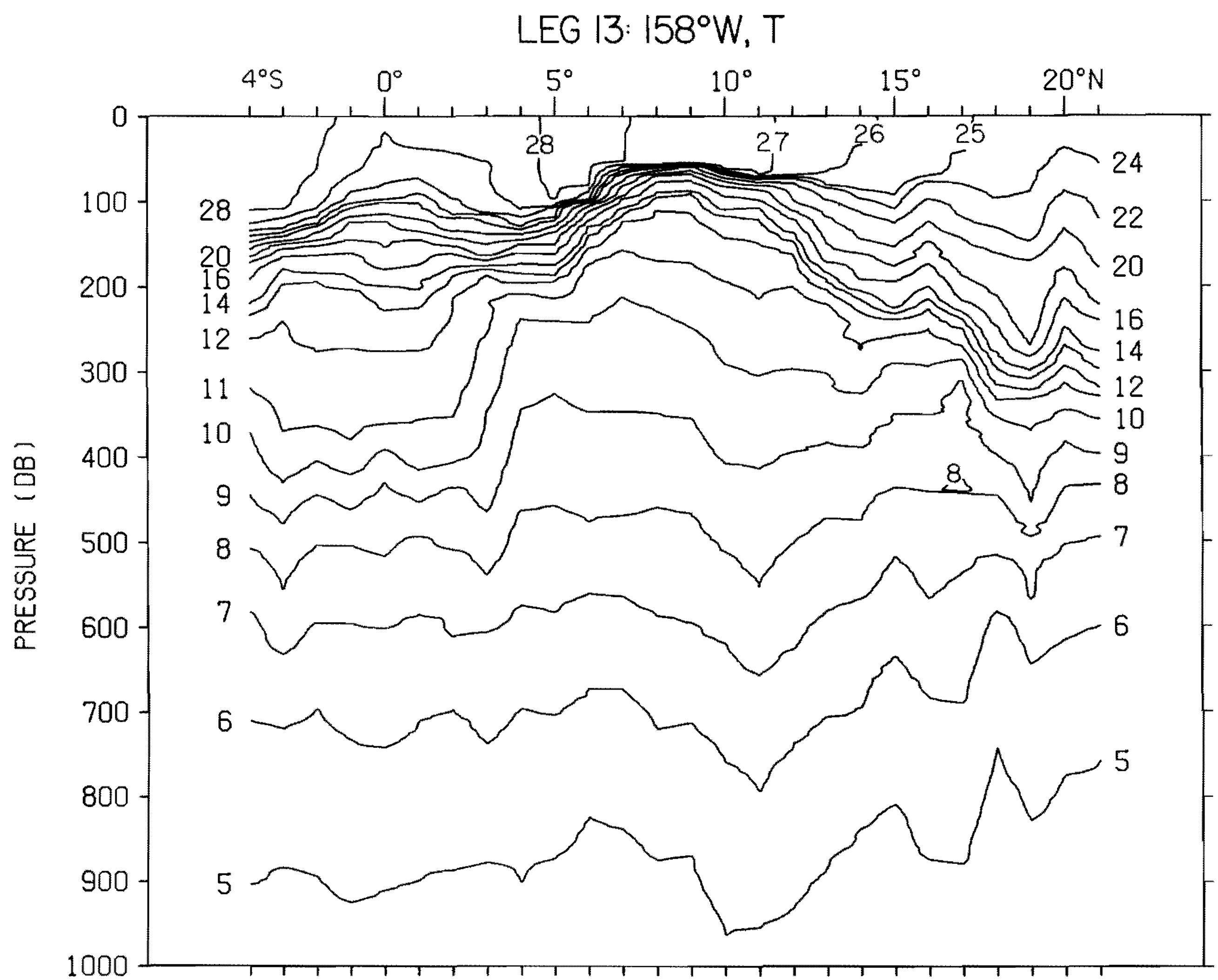

Figure 36.--Distribution of temperature (°C) along 158°W (Leg 13, 3 April - 10 April 1980). Station positions are given by tic marks along bottom of panel.

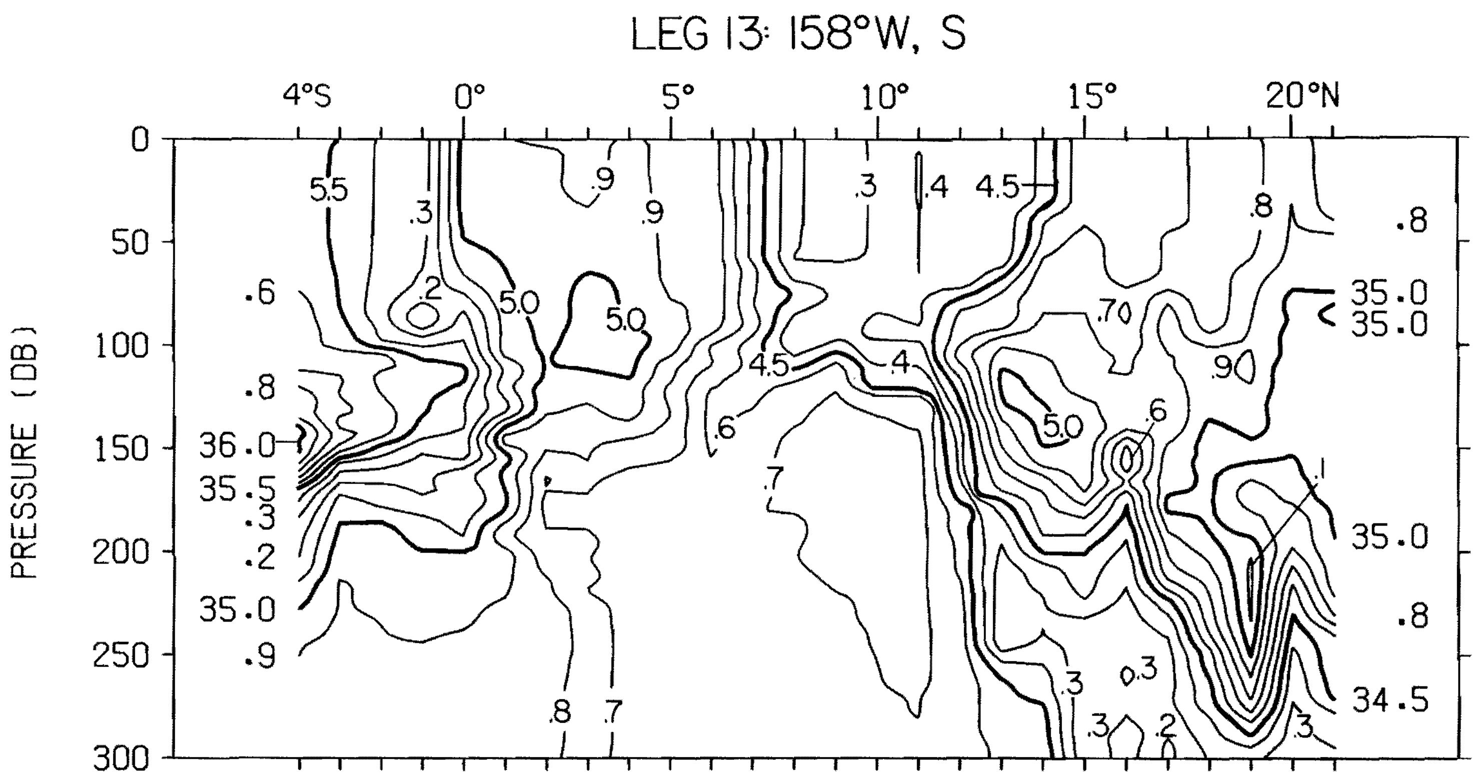

Figure 37S.--Distribution of salinity (°/∘∘) along 158°W (Leg 13, 3 April - 10 April 1980). Station positions are given by tic marks along bottom of panel.

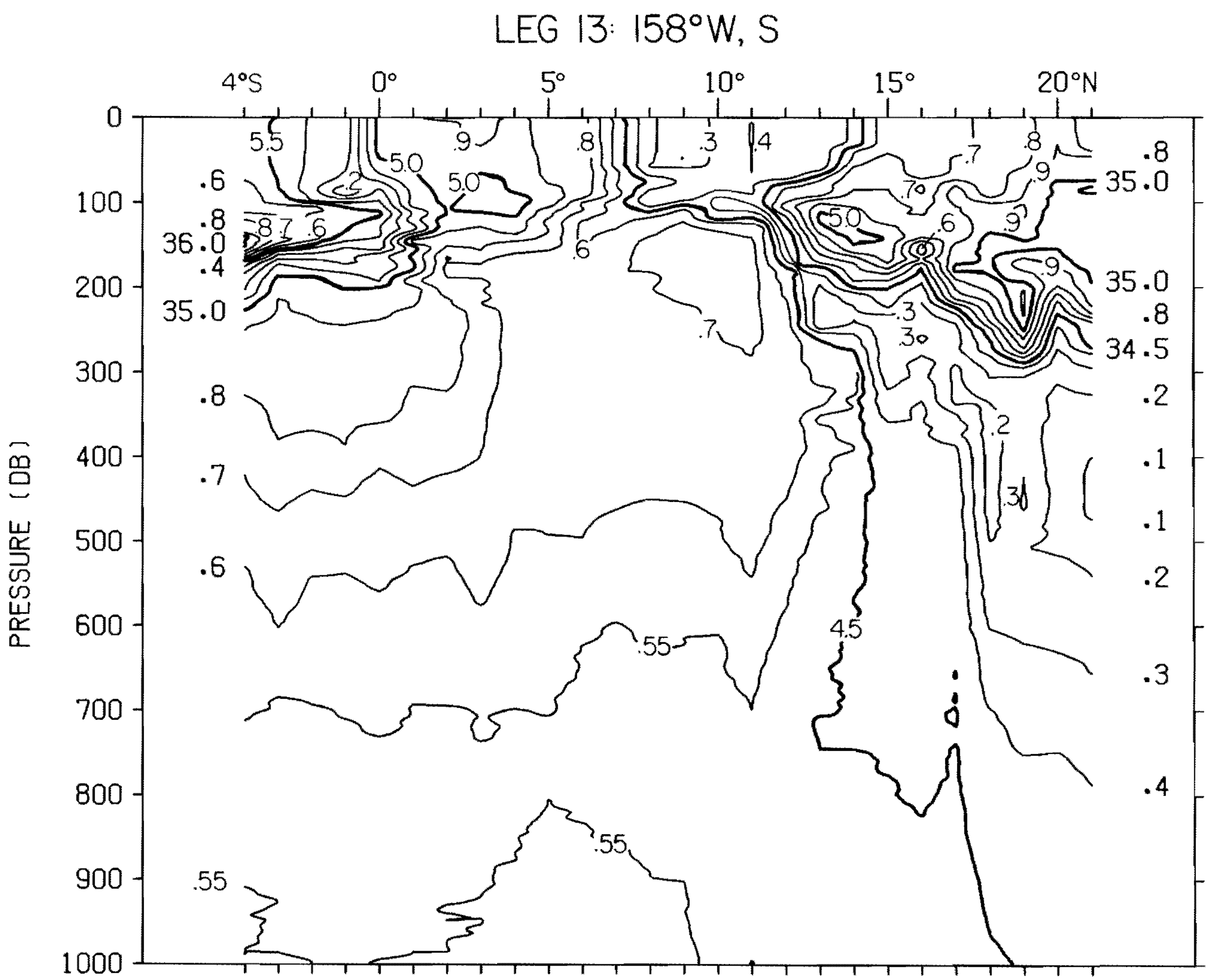

Figure 37D.--Distribution of salinity (°/₀₀) along 158°W (Leg 13, 3 April - 10 April 1980). Station positions are given by tic marks along bottom of panel.

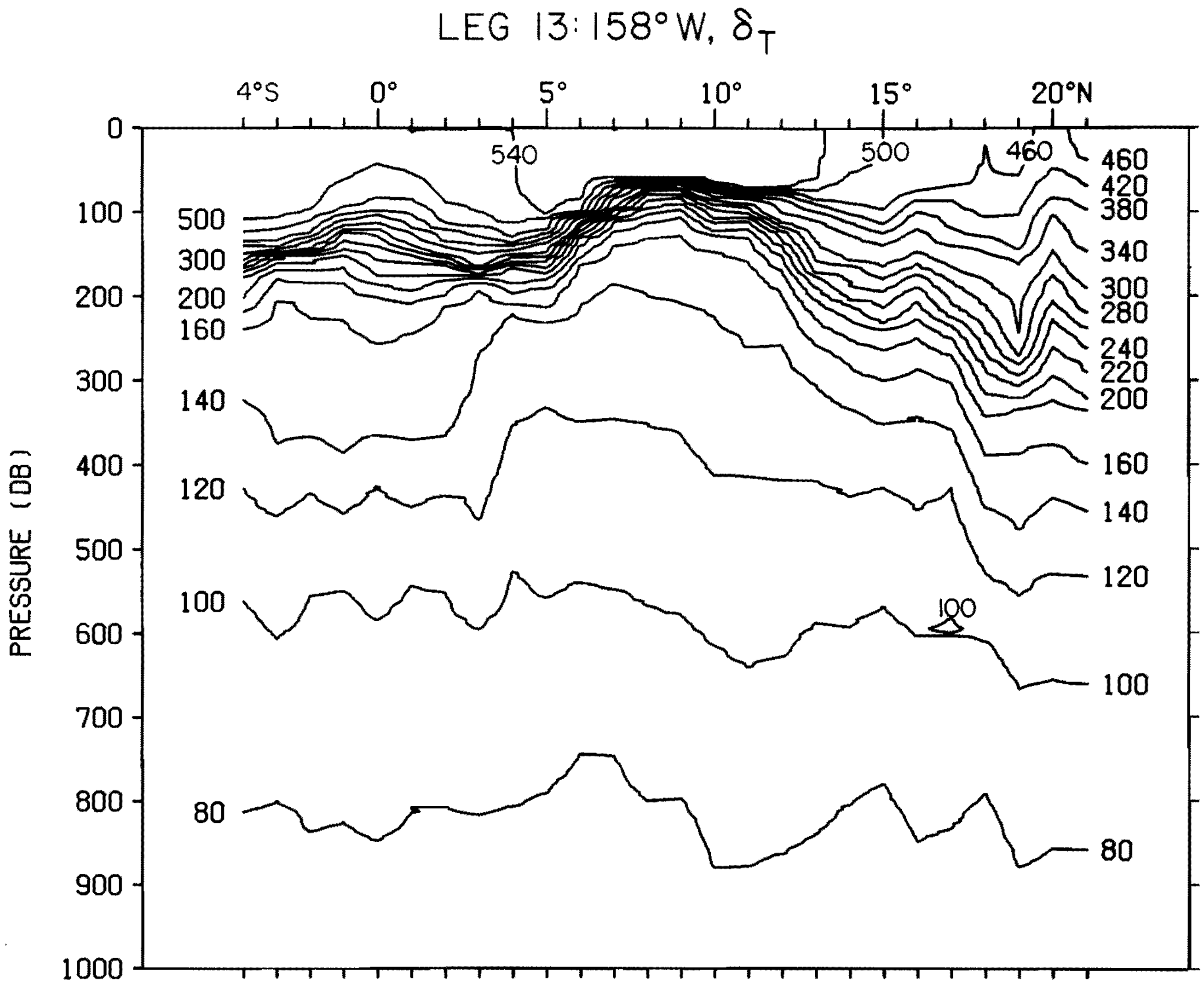

Figure 38.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 158°W (Leg 13, 3 April - 10 April 1980). Station positions are given by tic marks along bottom of panel.

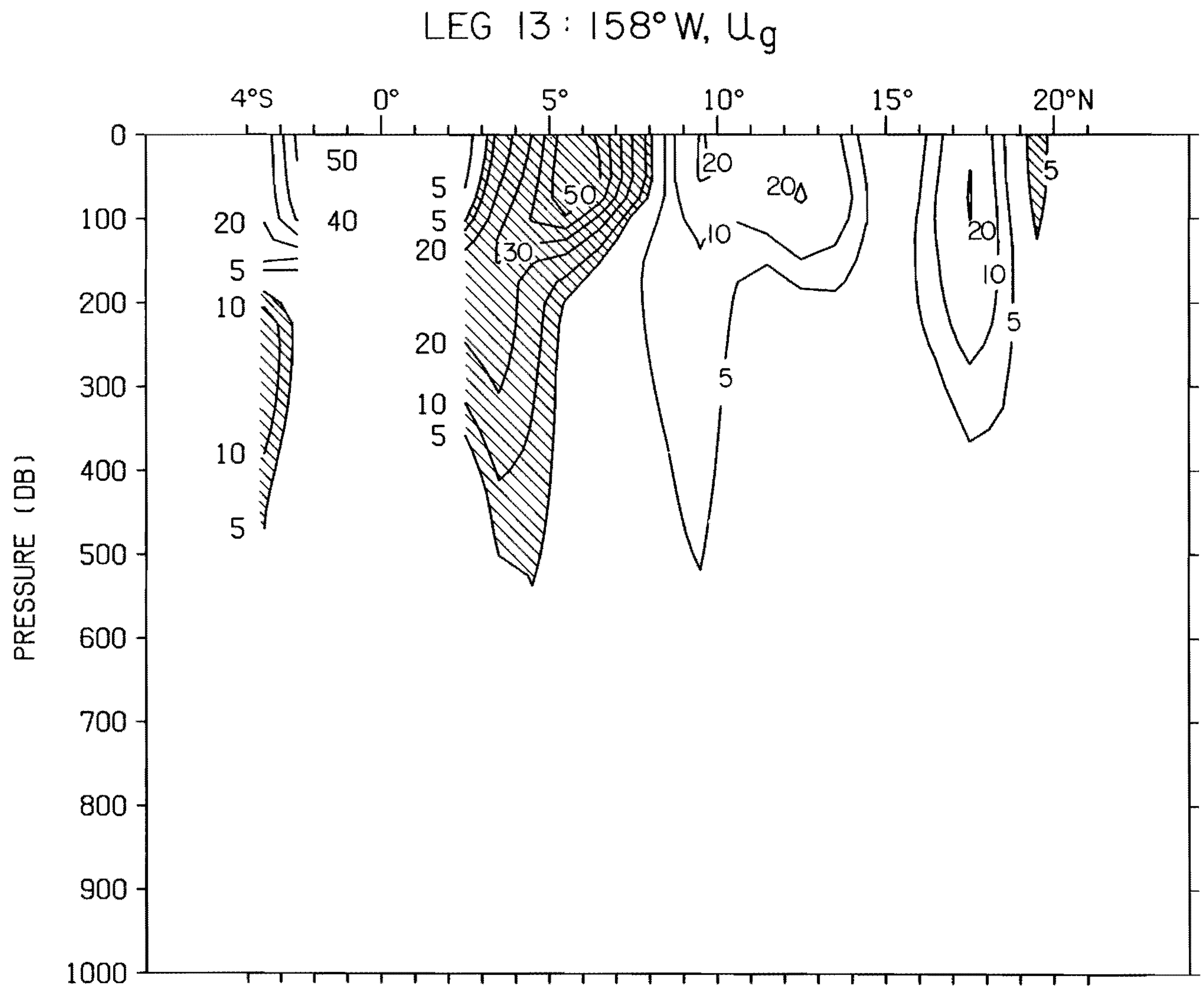

Figure 39.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 158°W (Leg 13, 3 April - 10 April 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

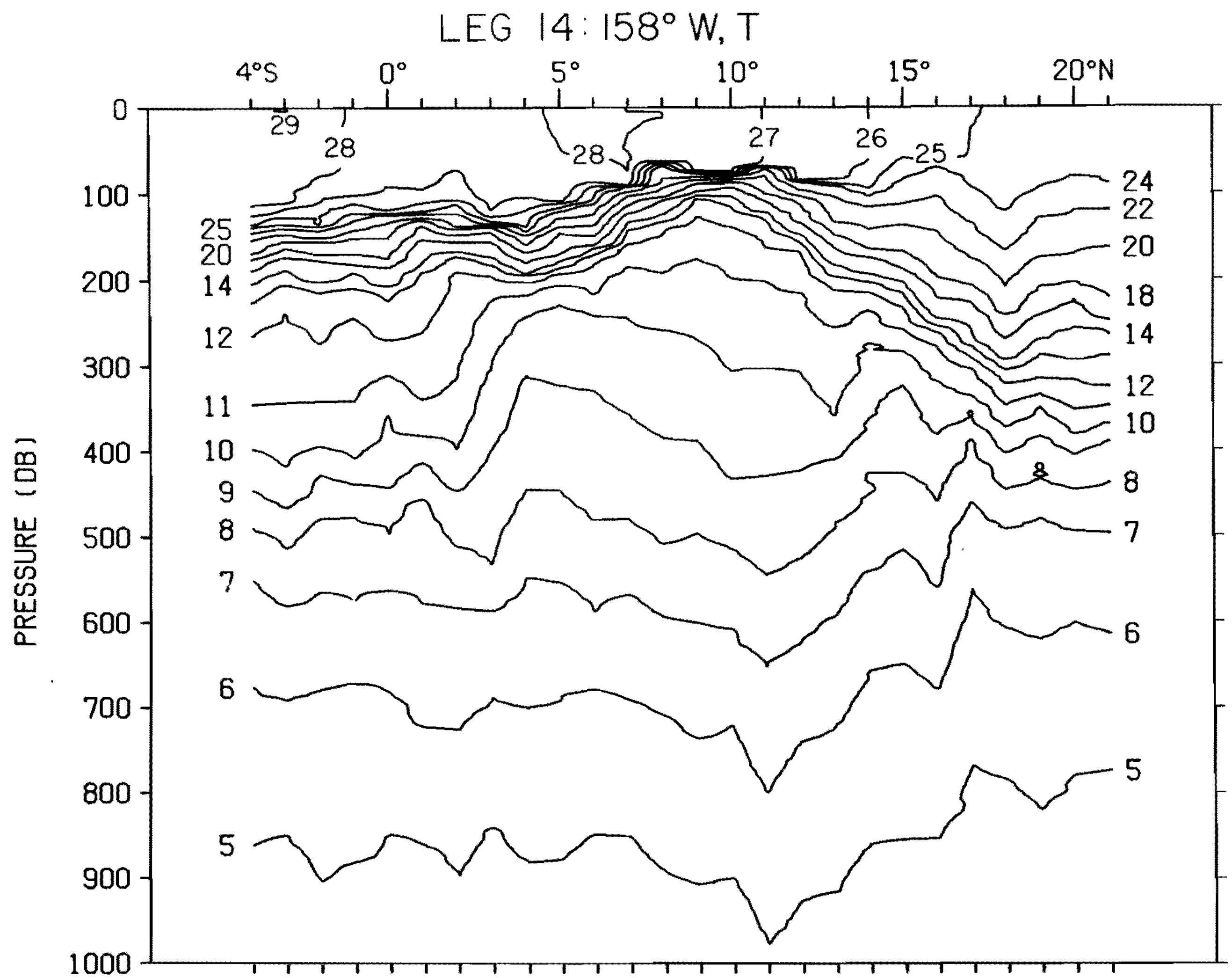

Figure 40.--Distribution of temperature (°C) along 158°W (Leg 14, 21 April - 28 April 1980). Station positions are given by tic marks along bottom of panel.

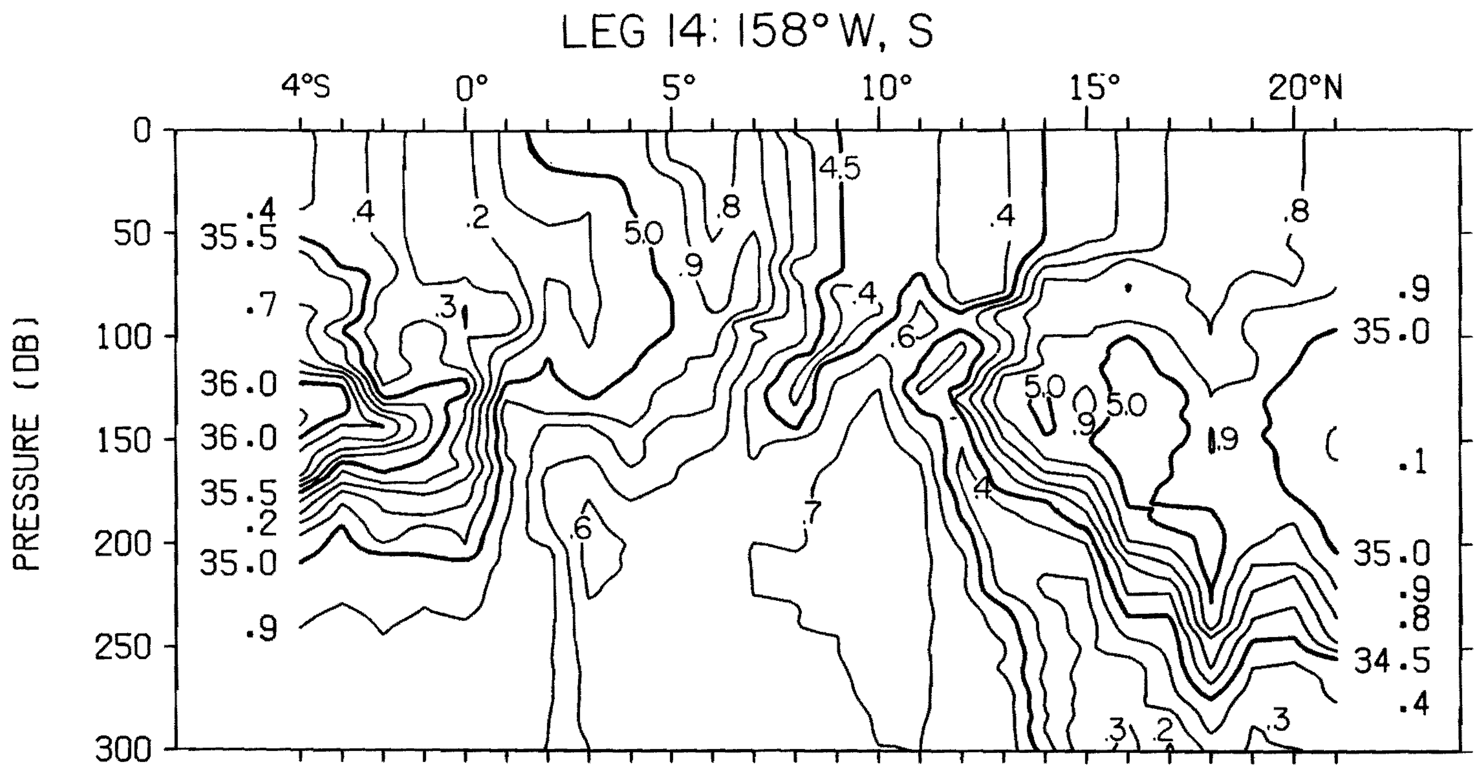

Figure 41S.--Distribution of salinity (°/₀₀) along 158°W (Leg 14, 21 April - 28 April 1980). Station positions are given by tic marks along bottom of panel.

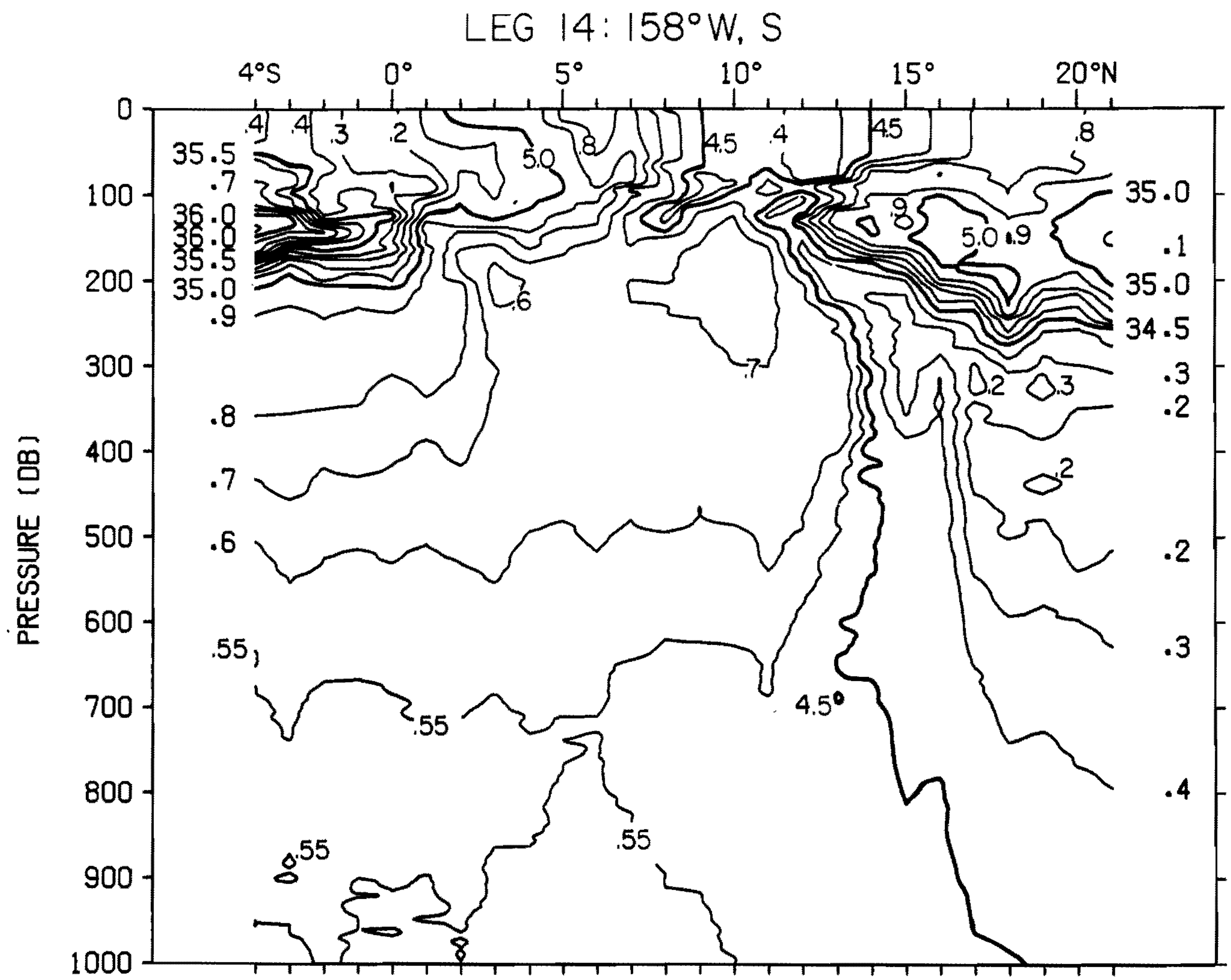

Figure 41D.--Distribution of salinity (°/₀₀) along 158°W (Leg 14, 21 April - 28 April 1980). Station positions are given by tic marks along bottom of panel.

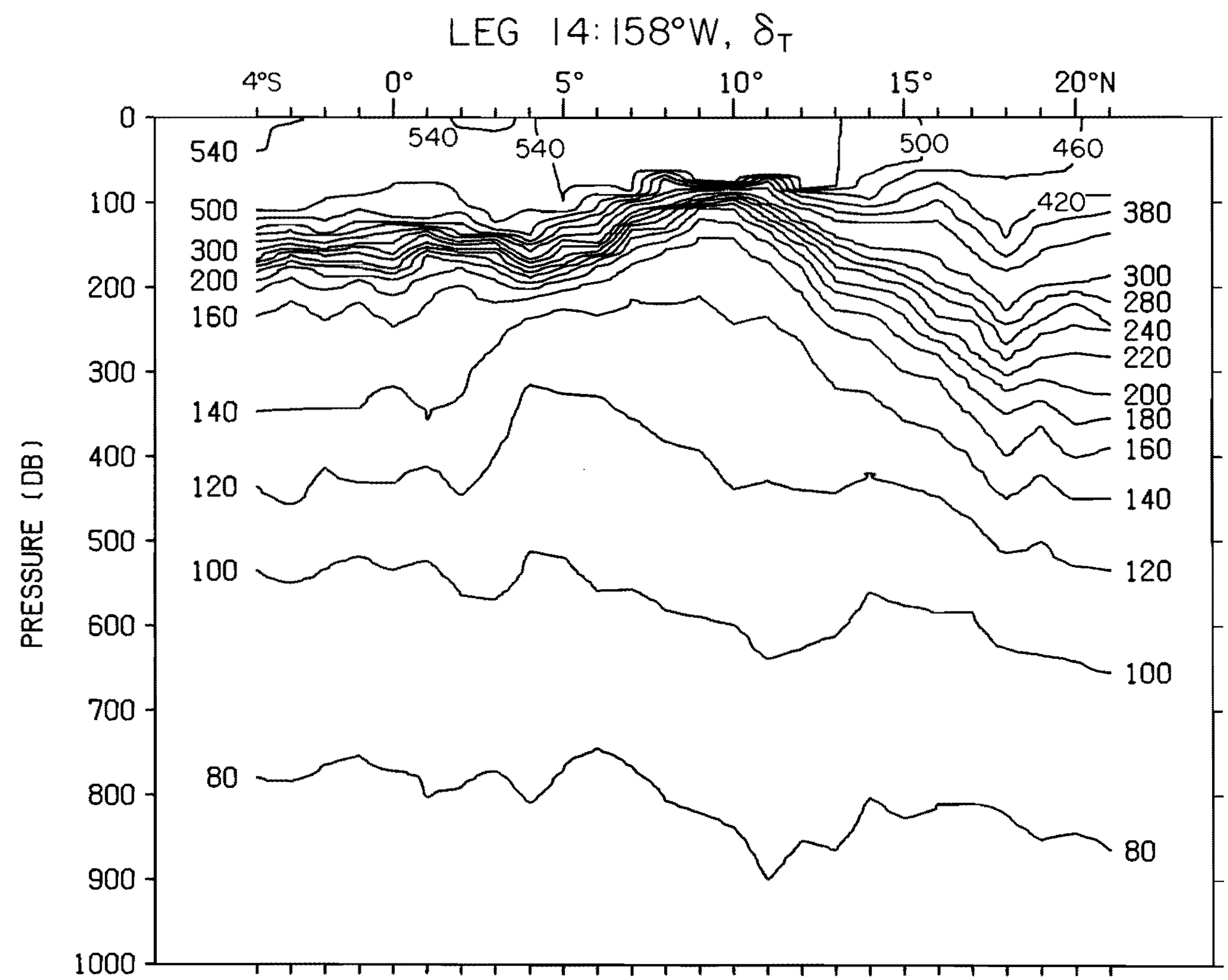

Figure 42.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 158°W (Leg 14, 21 April - 28 April 1980). Station positions are given by tic marks along bottom of panel.

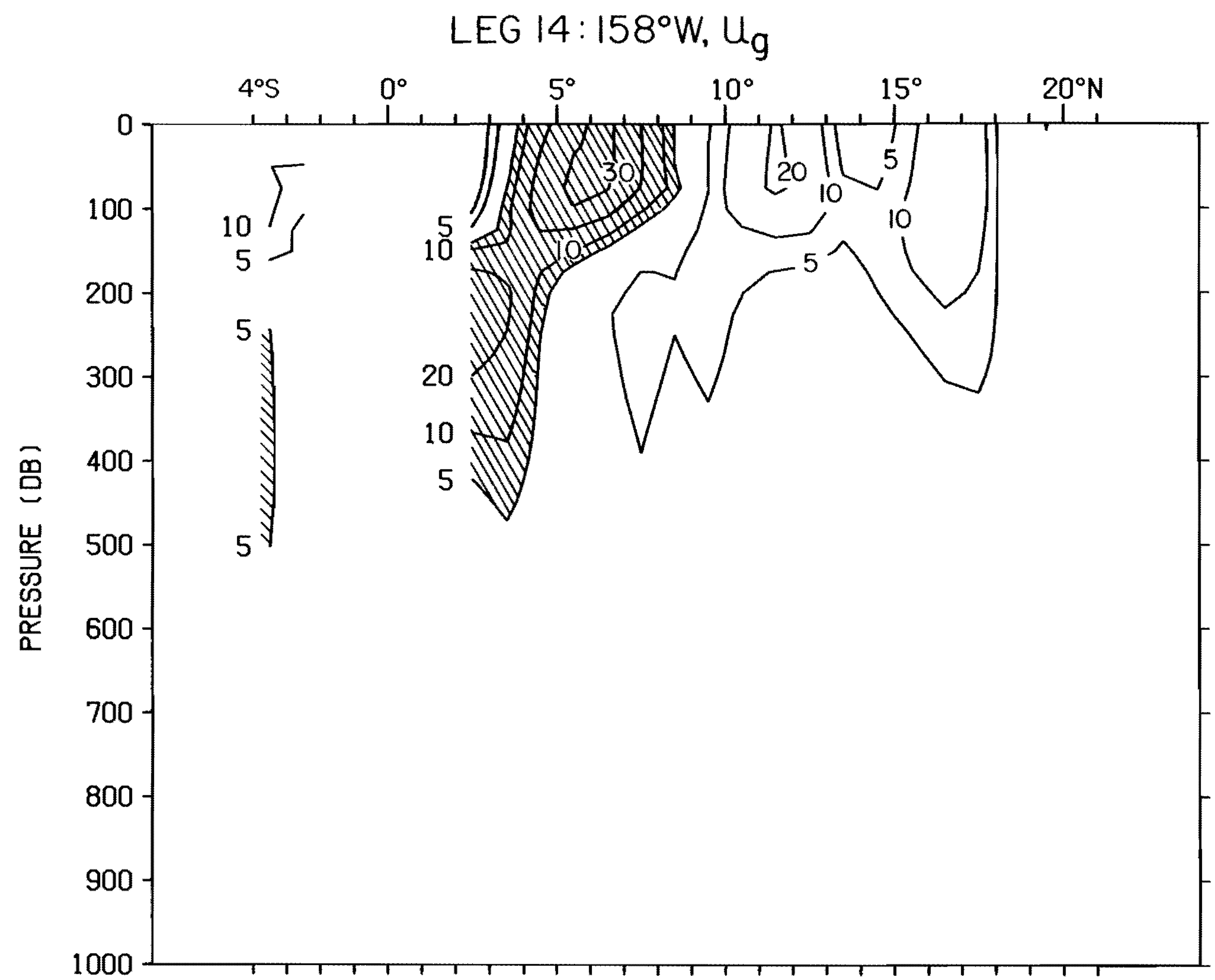

Figure 43.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 158°W (Leg 14, 21 April - 28 April 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

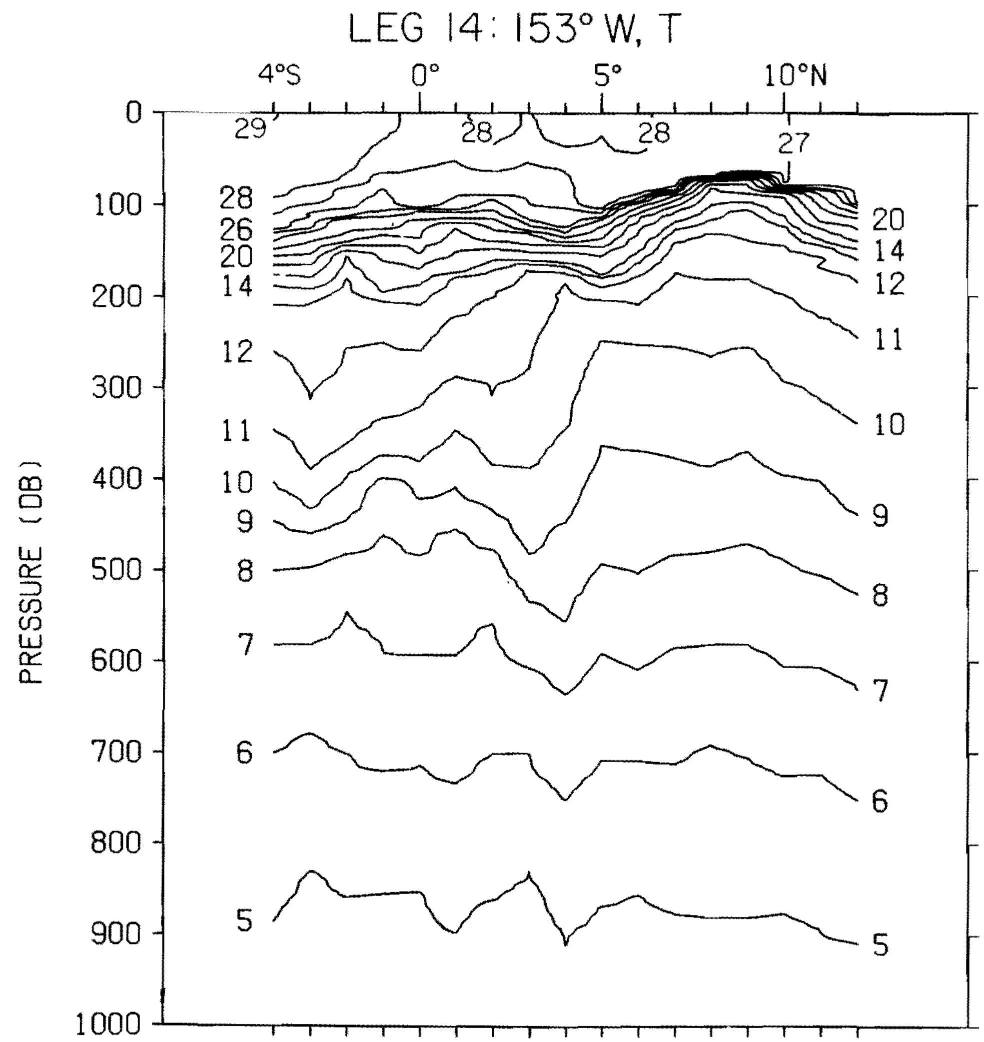

Figure 44.--Distribution of temperature (°C) along 153°W (Leg 14, 29 April - 4 May 1980). Station positions are given by tic marks along bottom of panel.

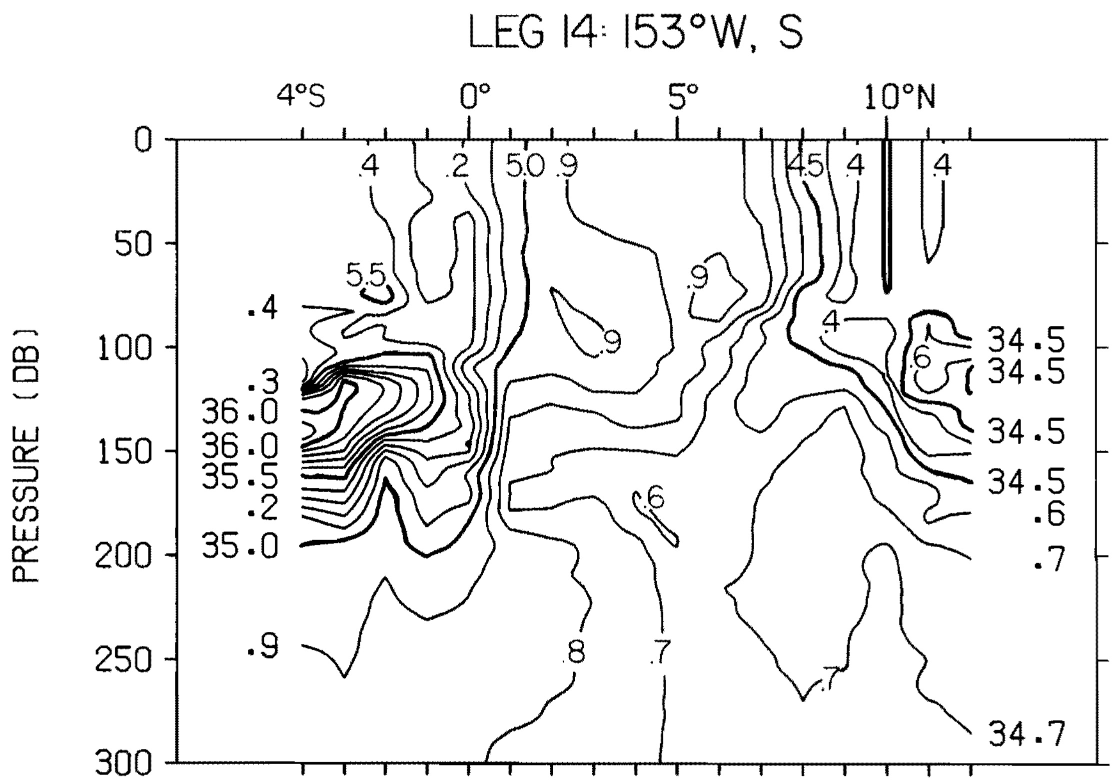

Figure 45S.--Distribution of salinity (°/₀₀) along 153°W (Leg 14, 29 April - 4 May 1980). Station positions are given by tic marks along bottom of panel.

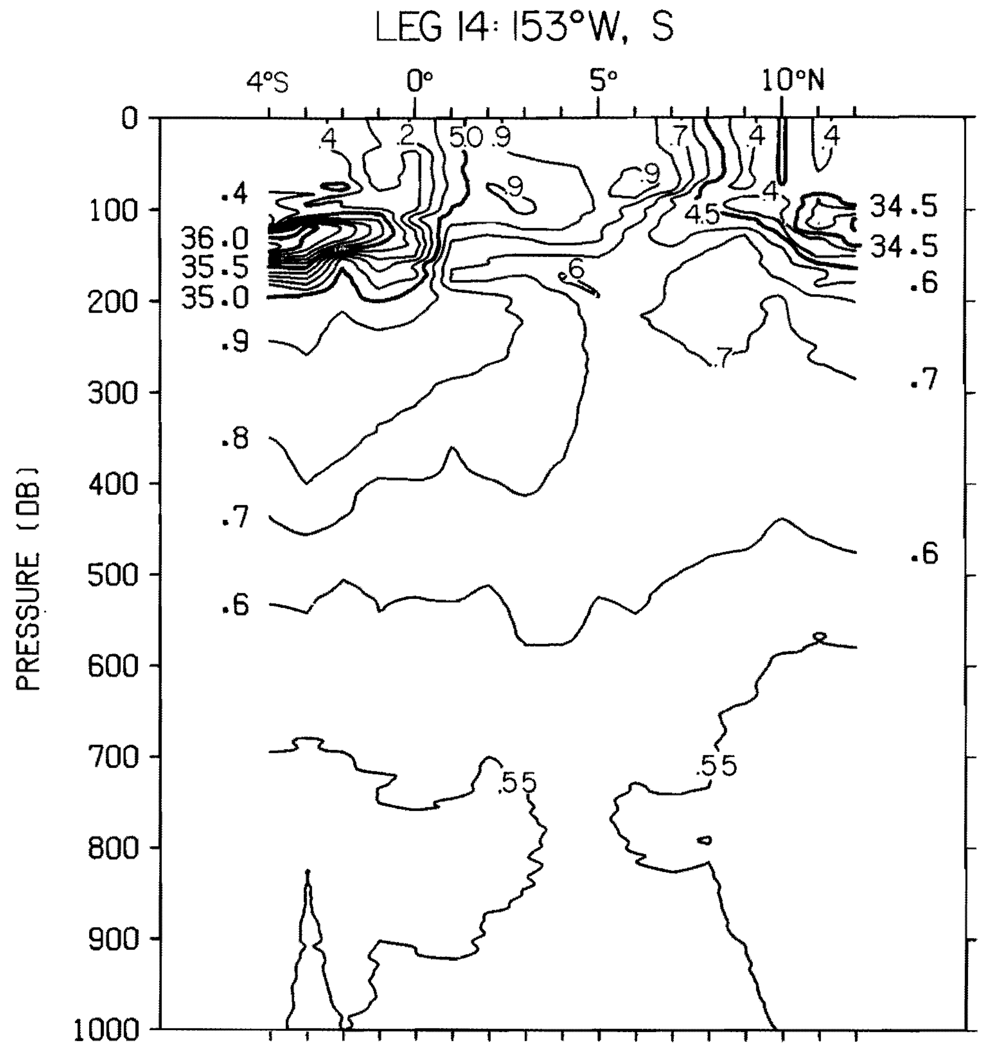

Figure 45D.--Distribution of salinity (°/₀₀) along 153°W (Leg 14, 29 April - 4 May 1980). Station positions are given by tic marks along bottom of panel.

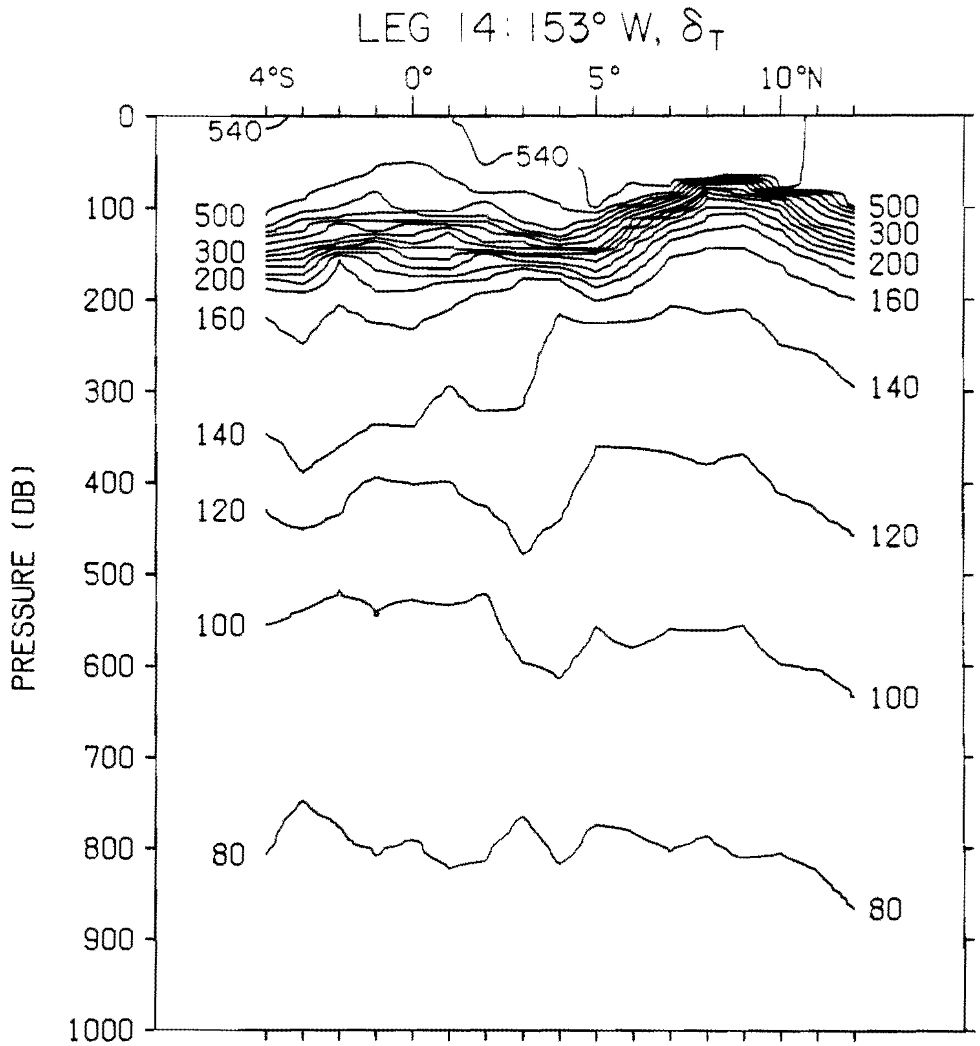

Figure 46.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 153°W (Leg 14, 29 April - 4 May 1980). Station positions are given by tic marks along bottom of panel.

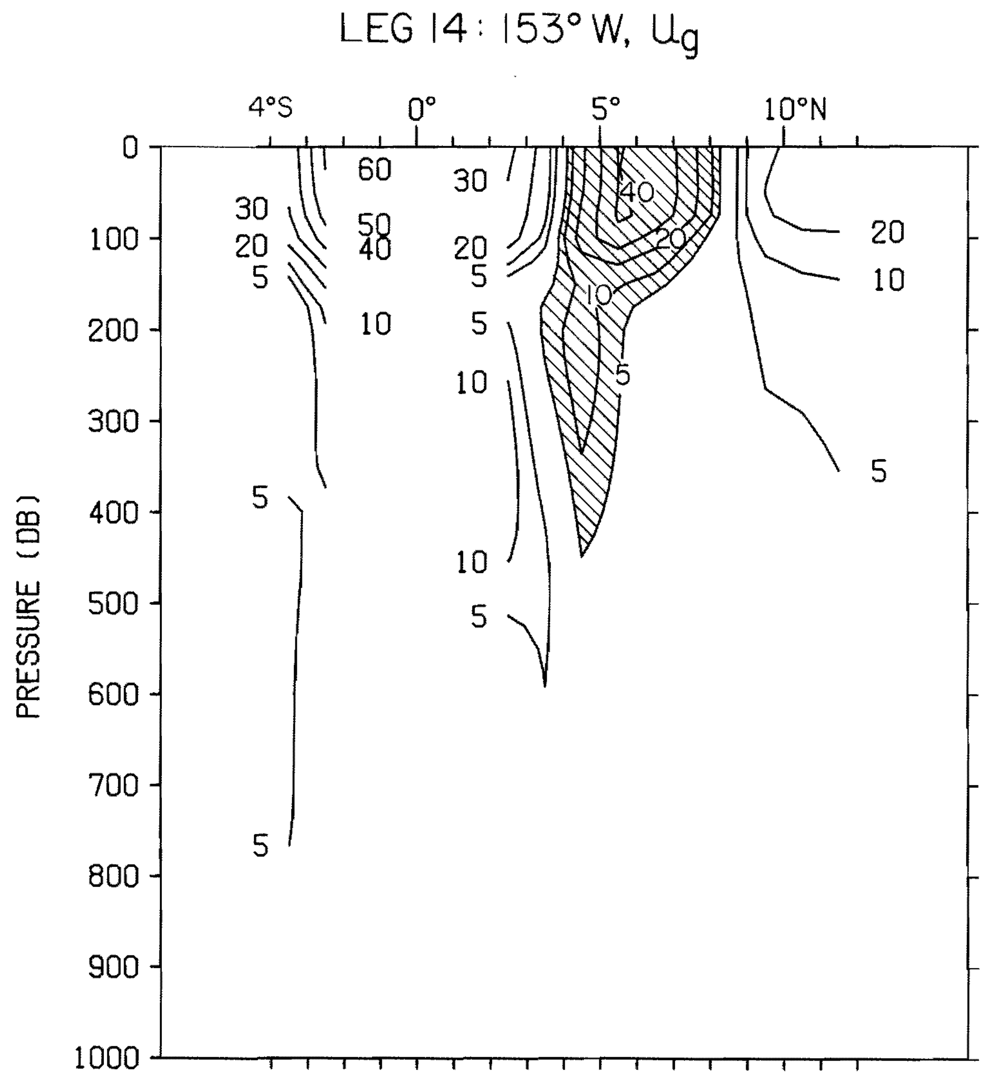

Figure 47.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 153°W (Leg 14, 29 April - 4 May 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

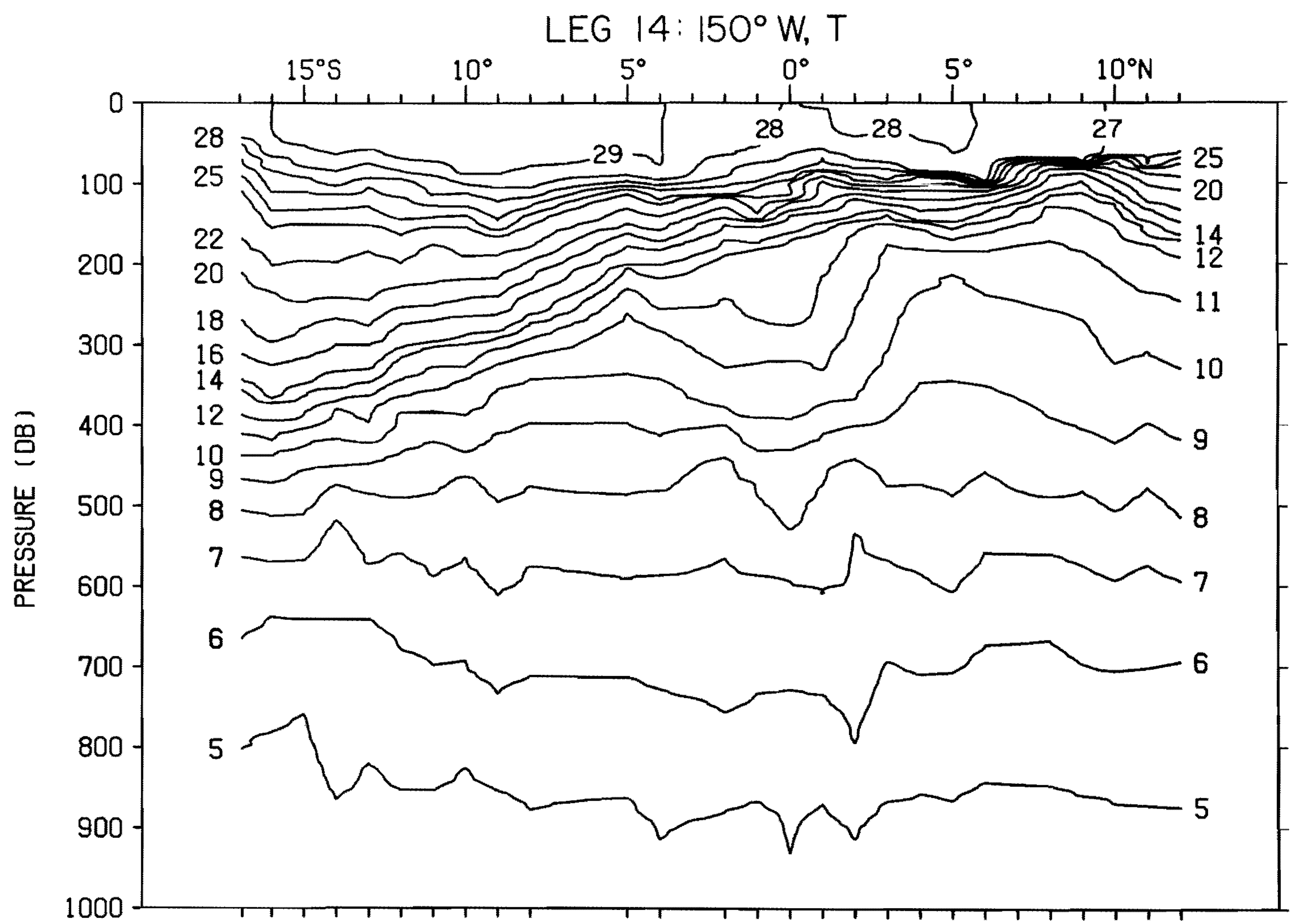

Figure 48.--Distribution of temperature (°C) along 150°W (Leg 14, 4 May - 13 May 1980). Station positions are given by tic marks along bottom of panel.

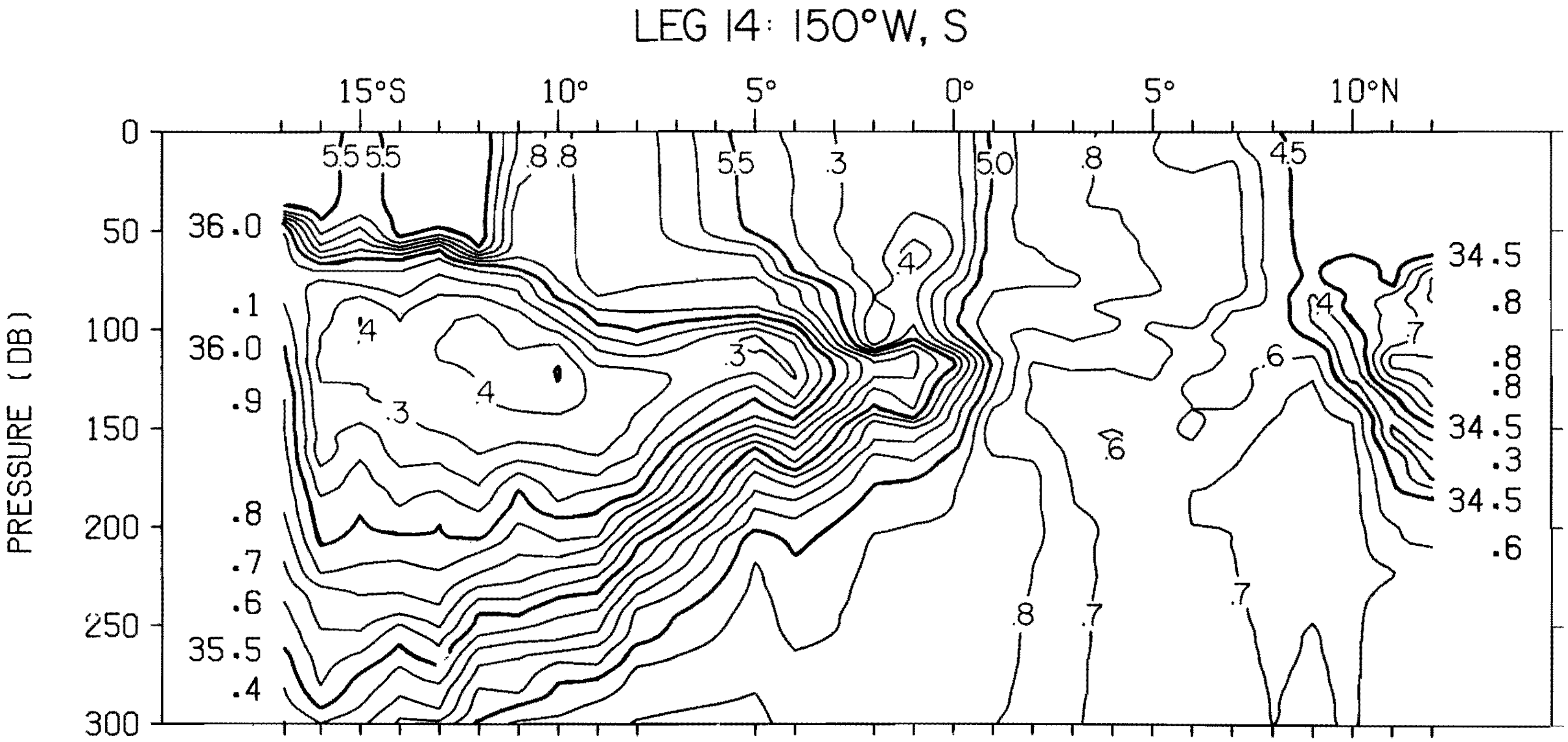

Figure 49S.--Distribution of salinity (°/₀₀) along 150°W (Leg 14, 4 May - 13 May 1980). Station positions are given by tic marks along bottom of panel.

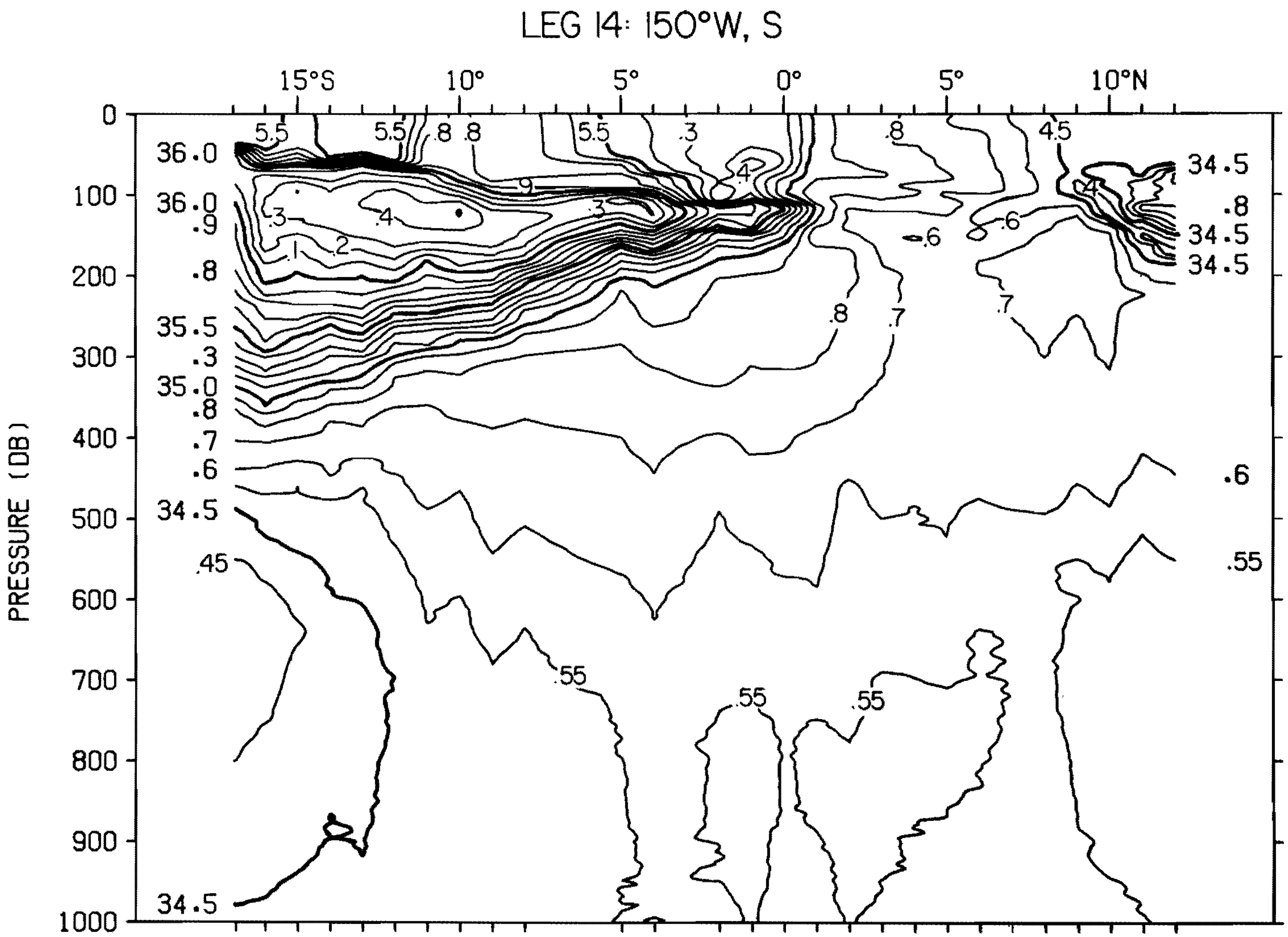

Figure 49D.--Distribution of salinity (°/₀₀) along 150°W (Leg 14, 4 May - 13 May 1980). Station positions are given by tic marks along bottom of panel.

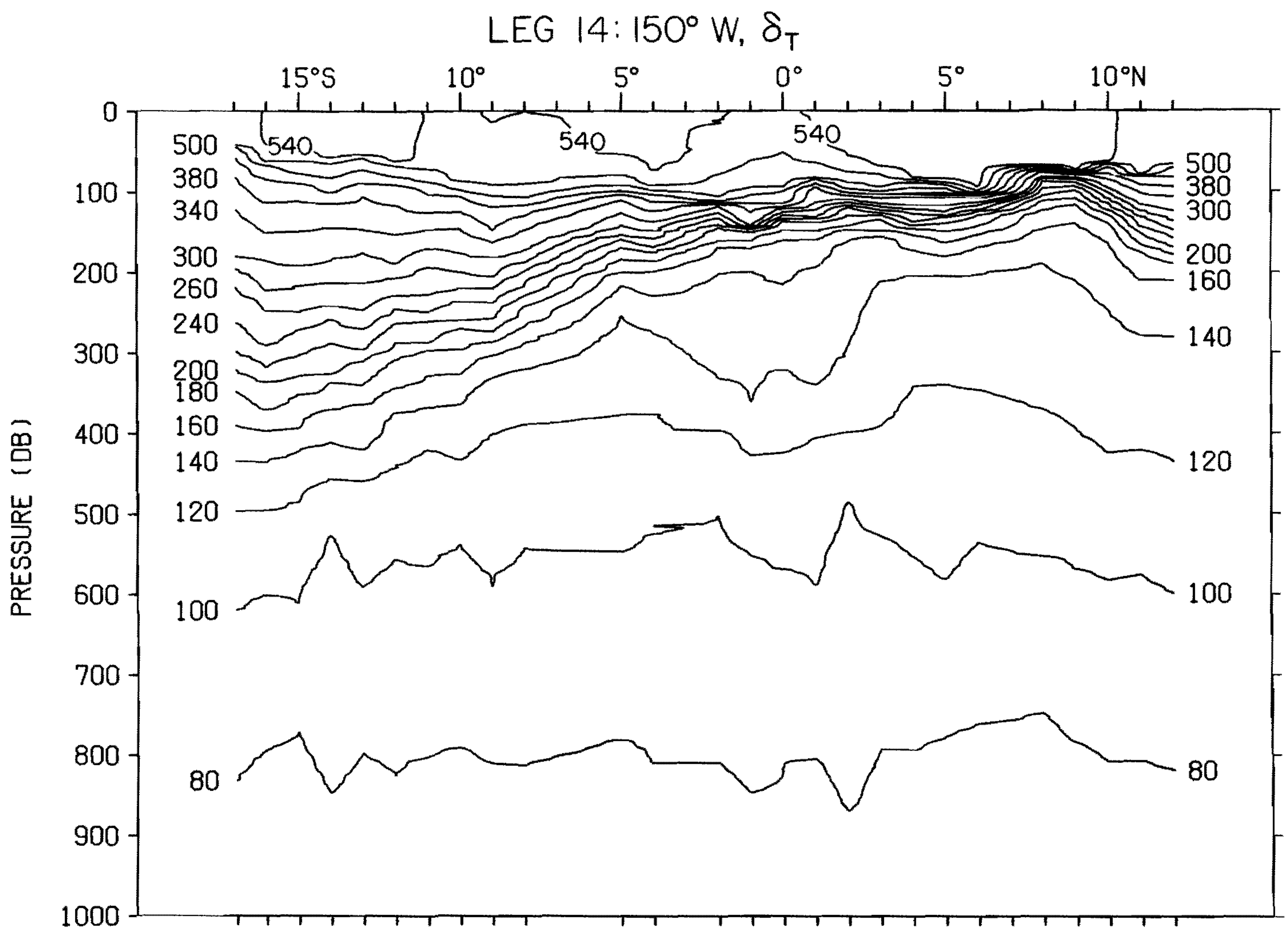

Figure 50.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 150°W (Leg 14, 4 May - 13 May 1980). Station positions are given by tic marks along bottom of panel.

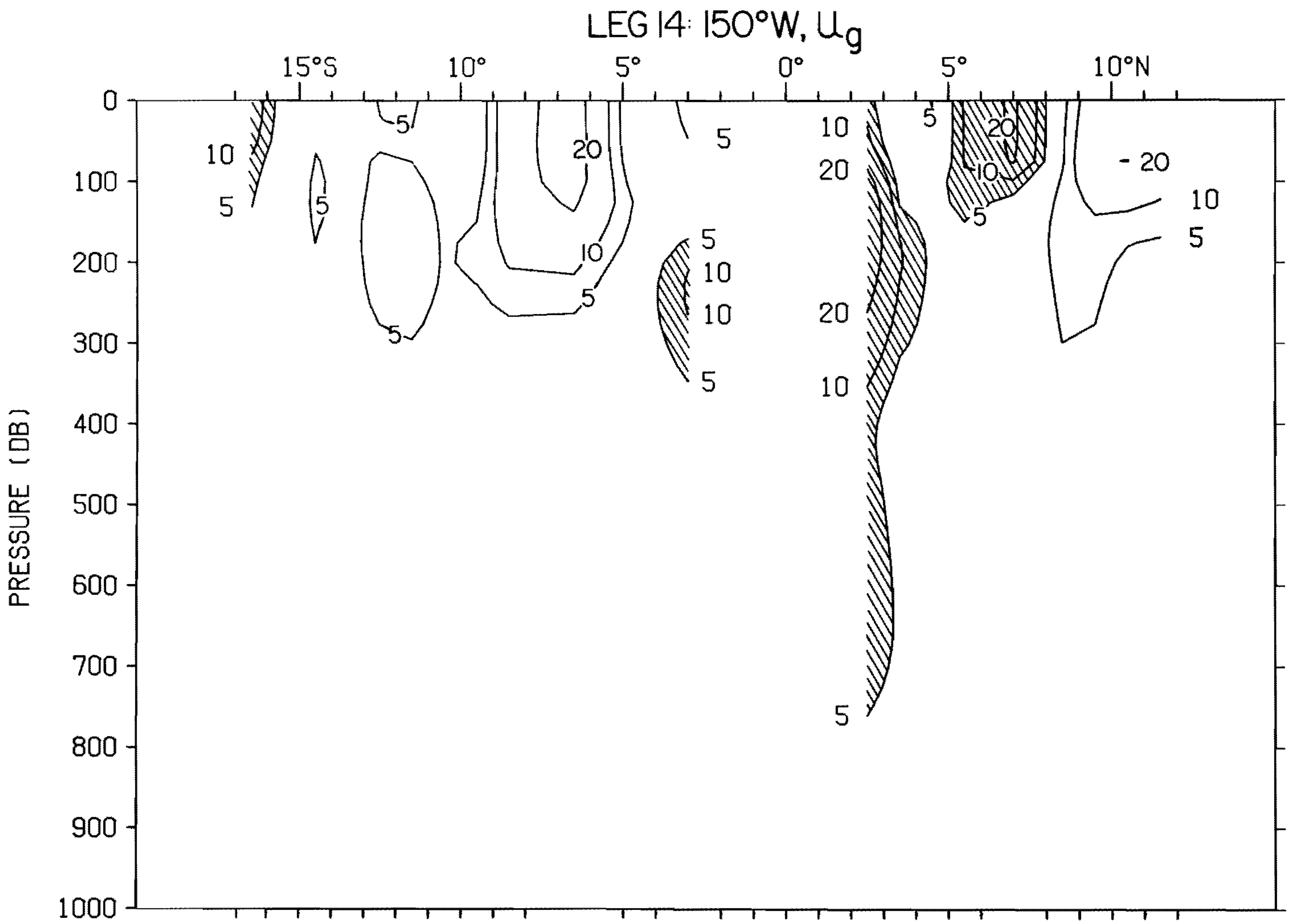

Figure 51.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 150°W (Leg 14, 4 May - 13 May 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

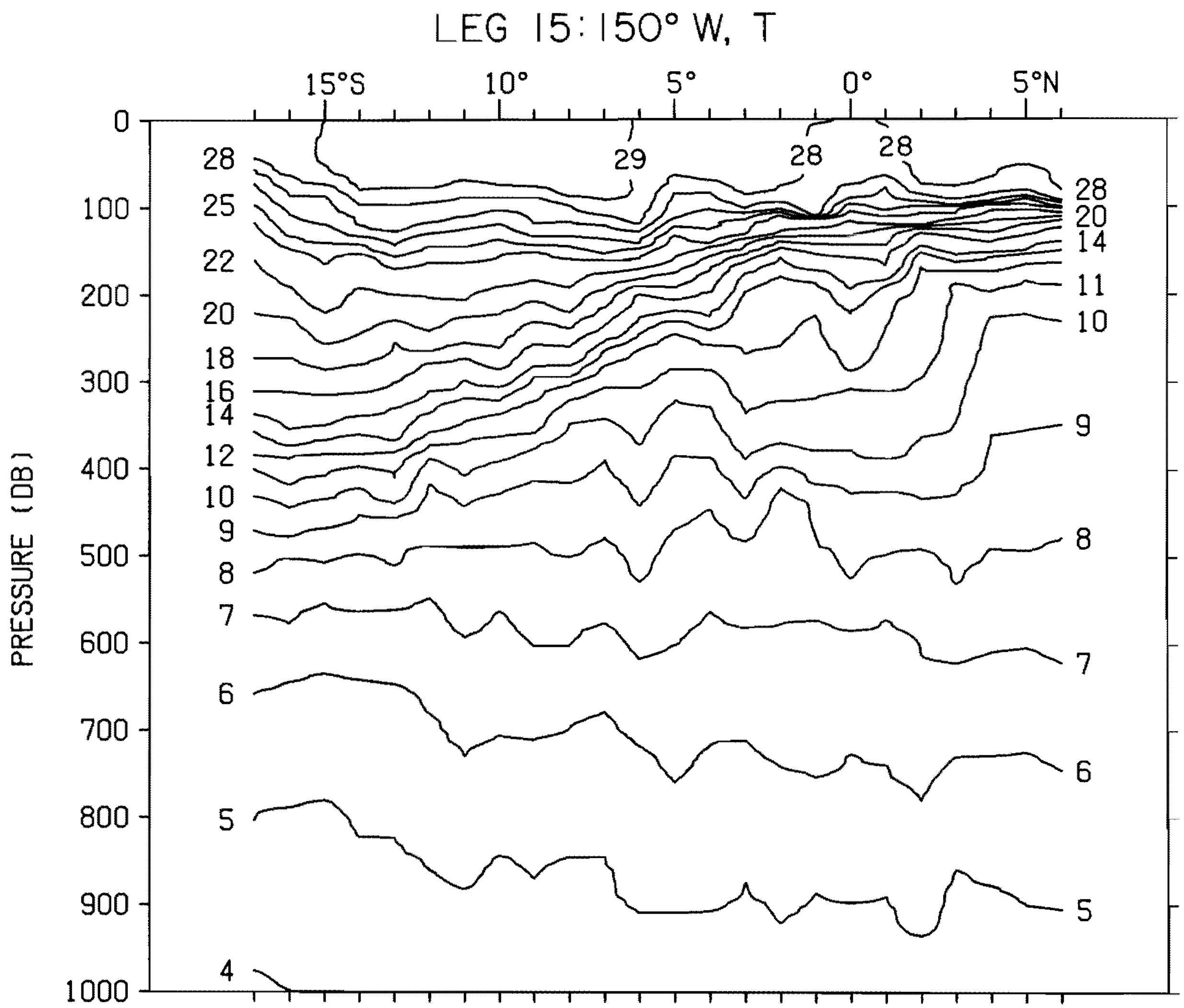

Figure 52.--Distribution of temperature (°C) along 150°W (Leg 15, 18 May - 25 May 1980). Station positions are given by tic marks along bottom of panel.

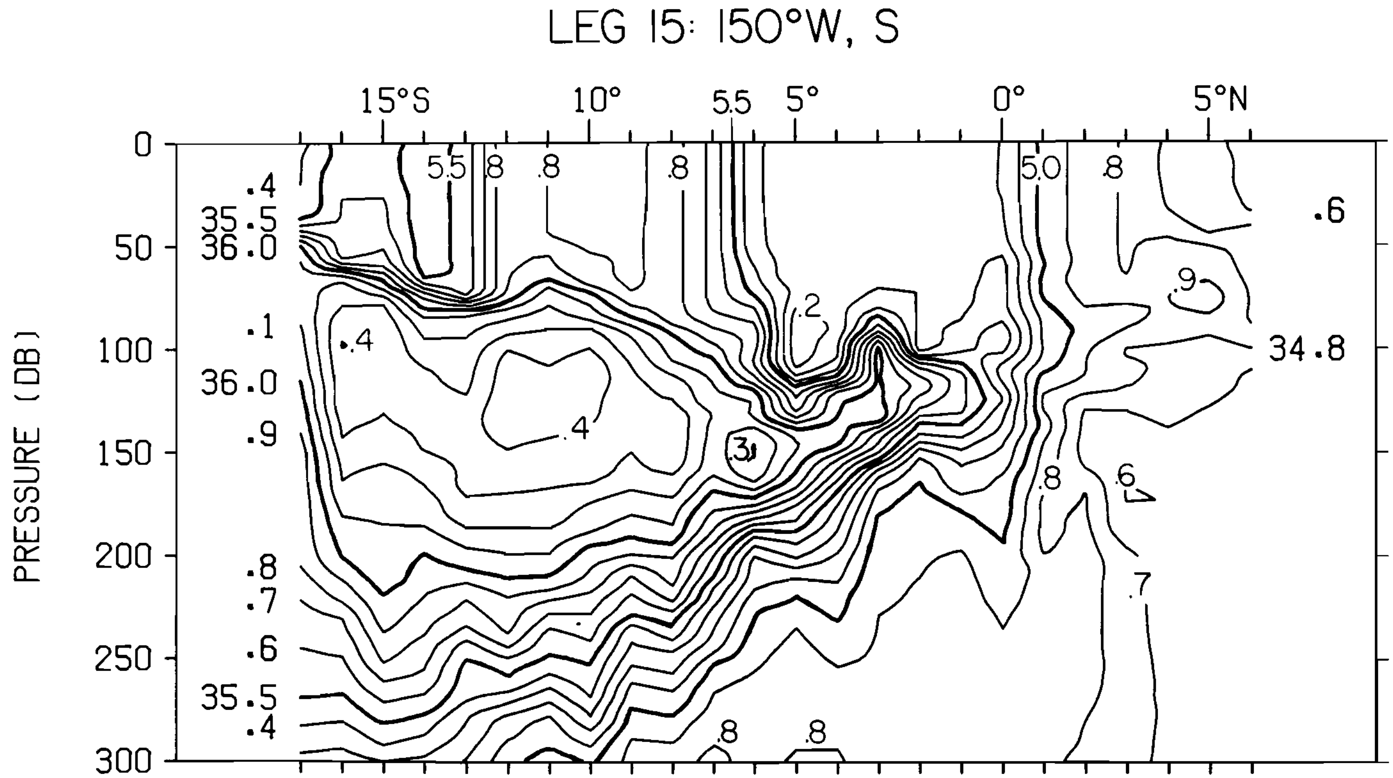

Figure 53S.--Distribution of salinity (°/₀₀) along 150°W (Leg 15, 18 May - 25 May 1980). Station positions are given by tic marks along bottom of panel.

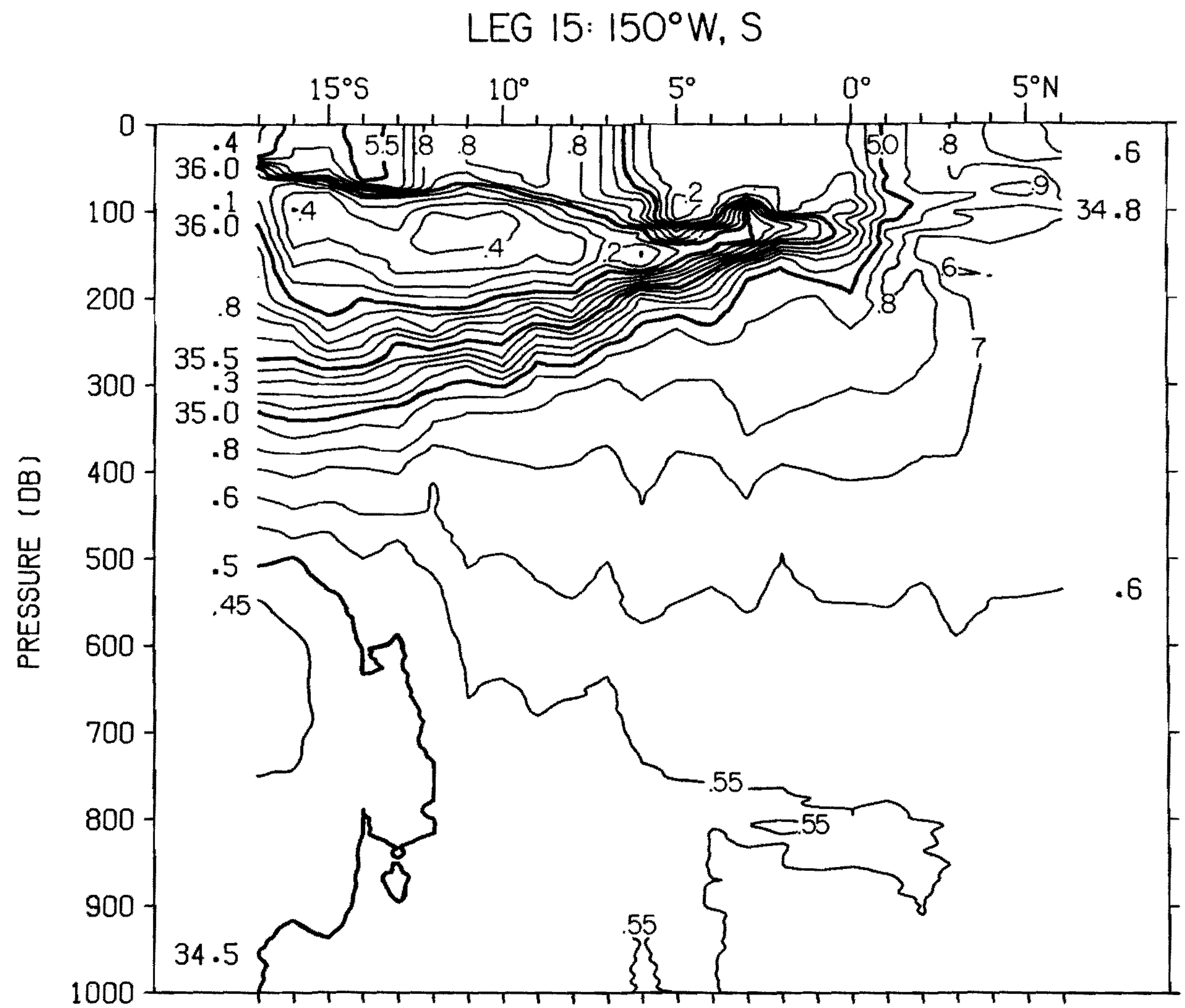

Figure 53D.--Distribution of salinity (°/₀₀) along 150°W (Leg 15, 18 May - 25 May 1980). Station positions are given by tic marks along bottom of panel.

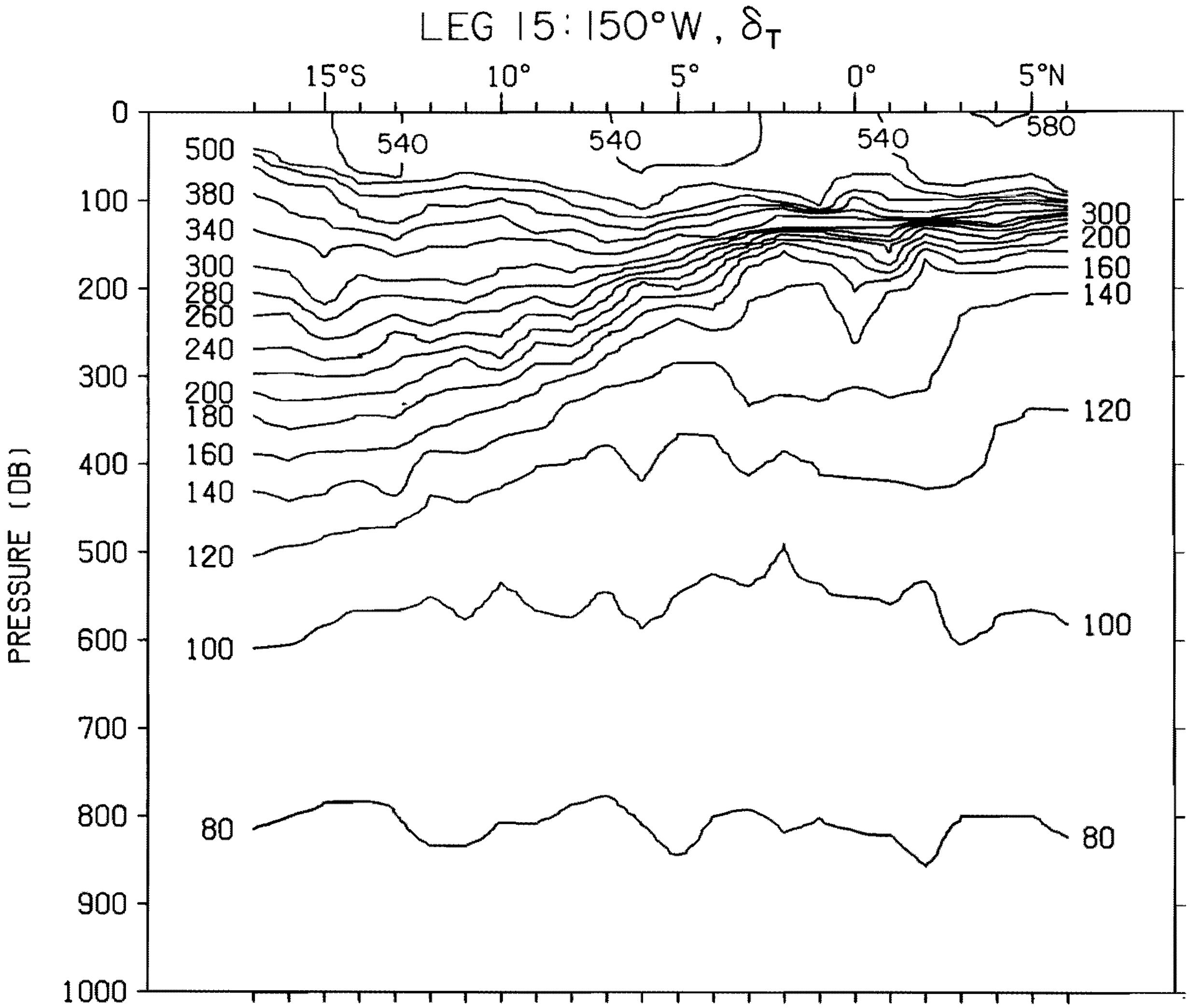

Figure 54.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 150°W (Leg 15, 18 May - 25 May 1980). Station positions are given by tic marks along bottom of panel.

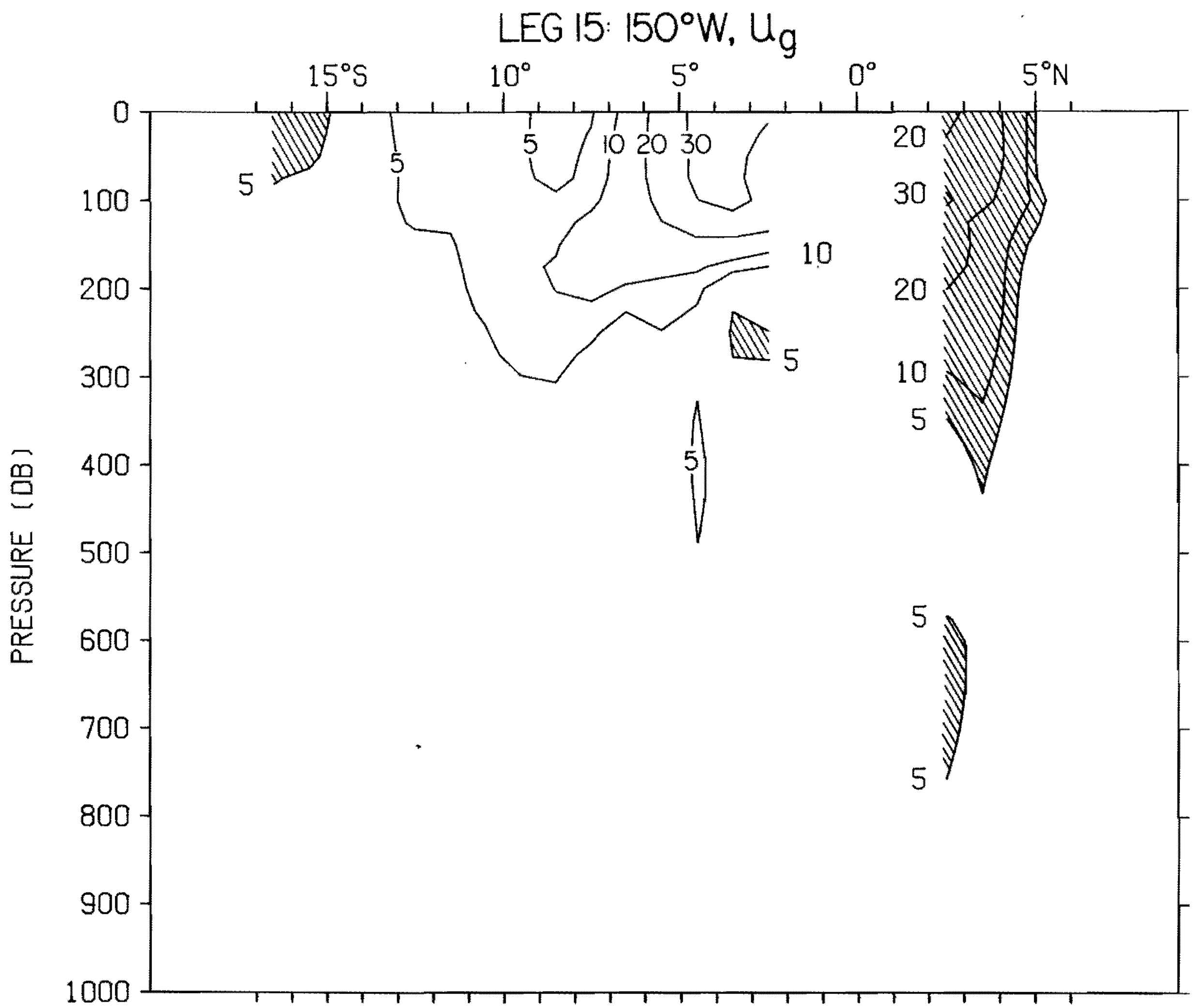

Figure 55.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 150°W (Leg 15, 18 May - 25 May 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

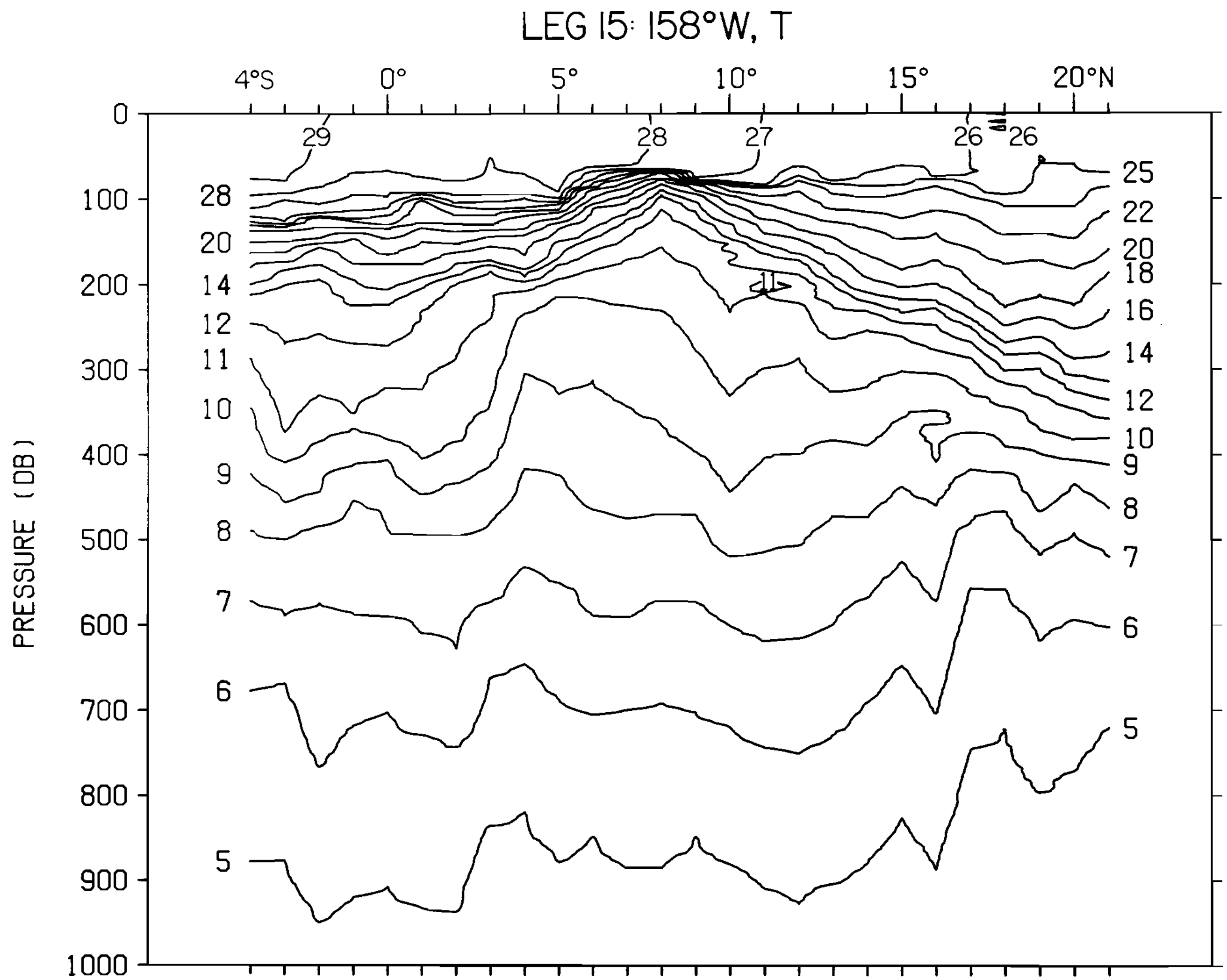

Figure 56.--Distribution of temperature (°C) along 158°W (Leg 15, 6 June - 14 June 1980). Station positions are given by tic marks along bottom of panel.

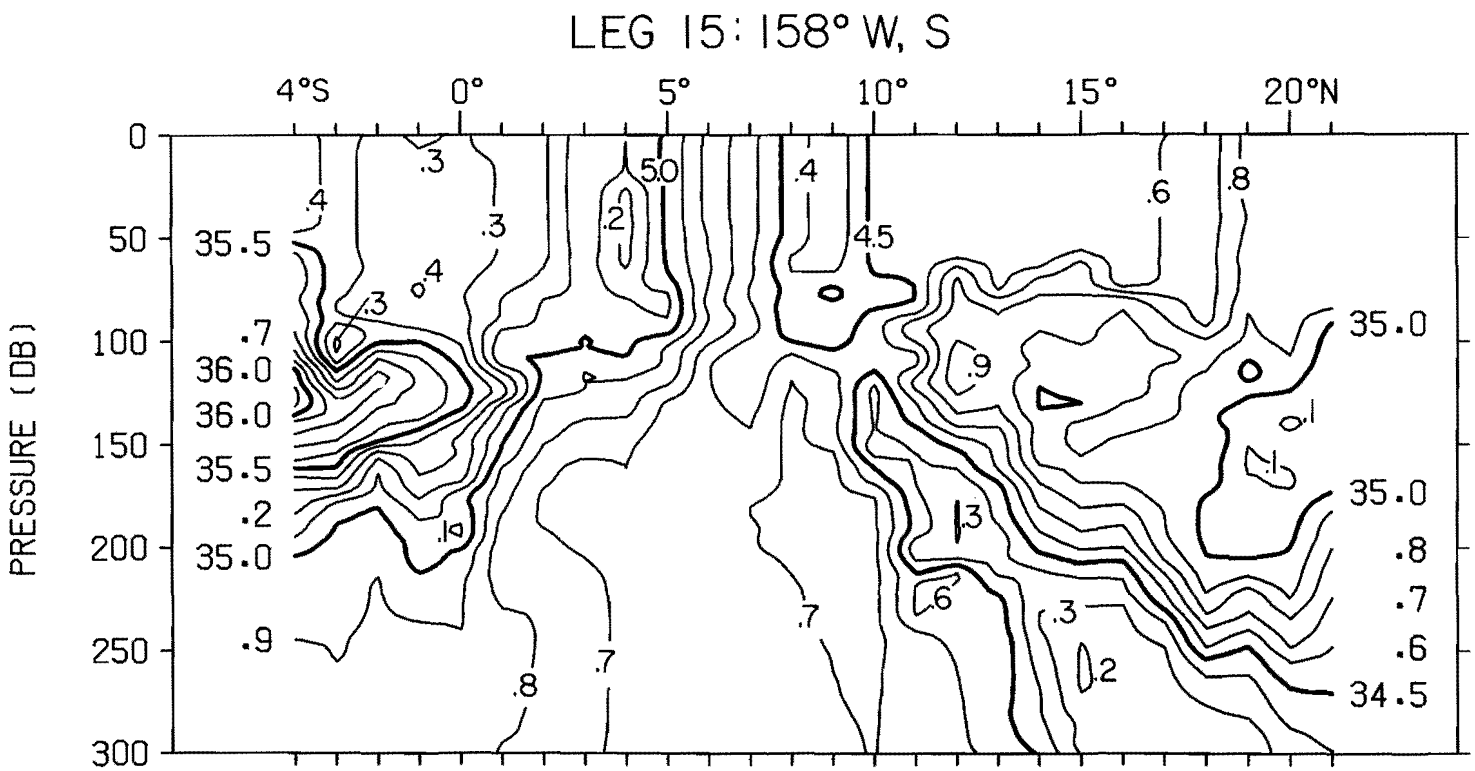

Figure 57S.--Distribution of salinity (°/∘∘) along 158°W (Leg 15, 6 June - 14 June 1980). Station positions are given by tic marks along bottom of panel.

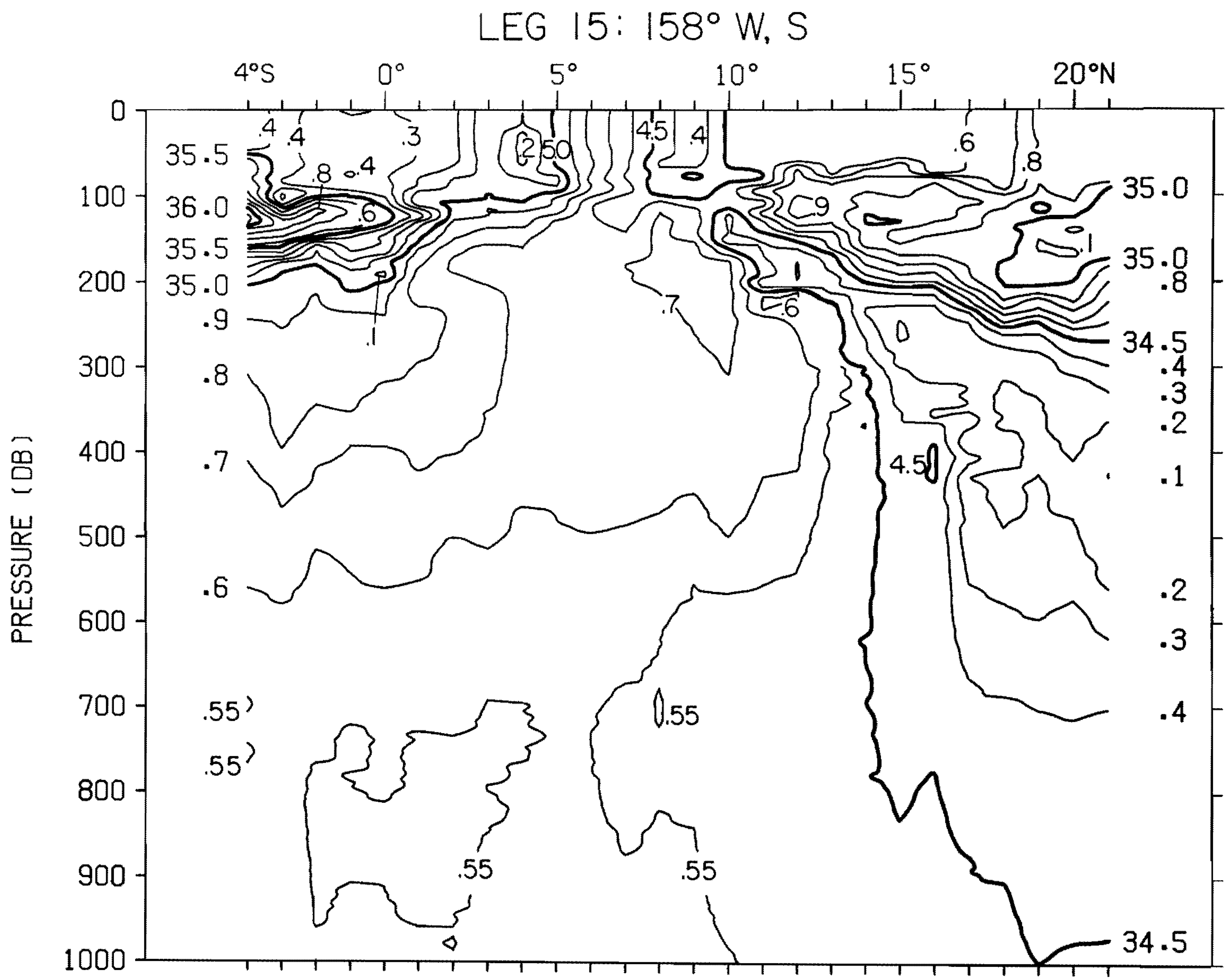

Figure 57D.--Distribution of salinity (°/°°) along 158°W (Leg 15, 6 June - 14 June 1980). Station positions are given by tic marks along bottom of panel.

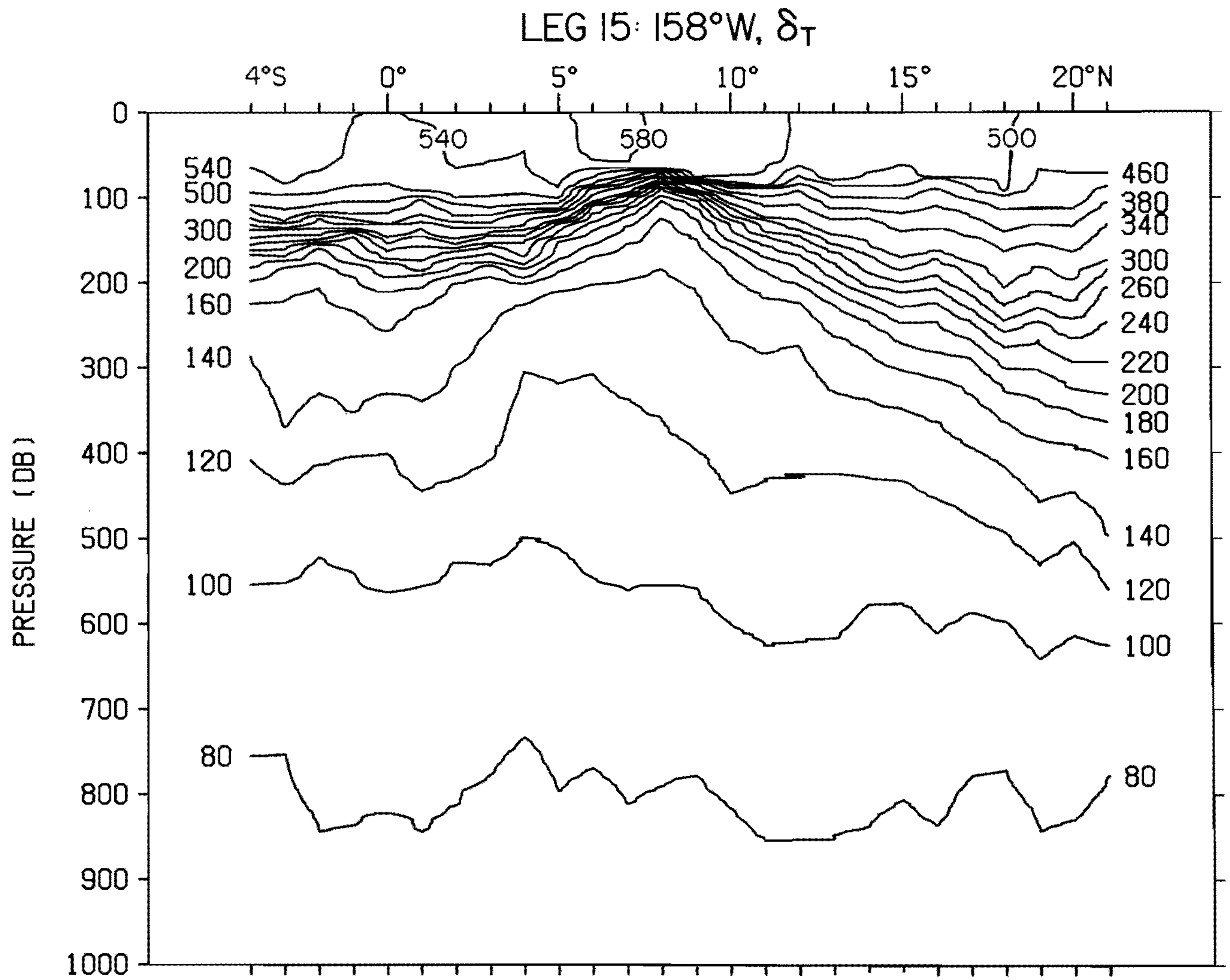

Figure 58.--Distribution of thermosteric anomaly (10^{-5} cm^3 g^{-1}) along 158°W (Leg 15, 6 June - 14 June 1980). Station positions are given by tic marks along bottom of panel.

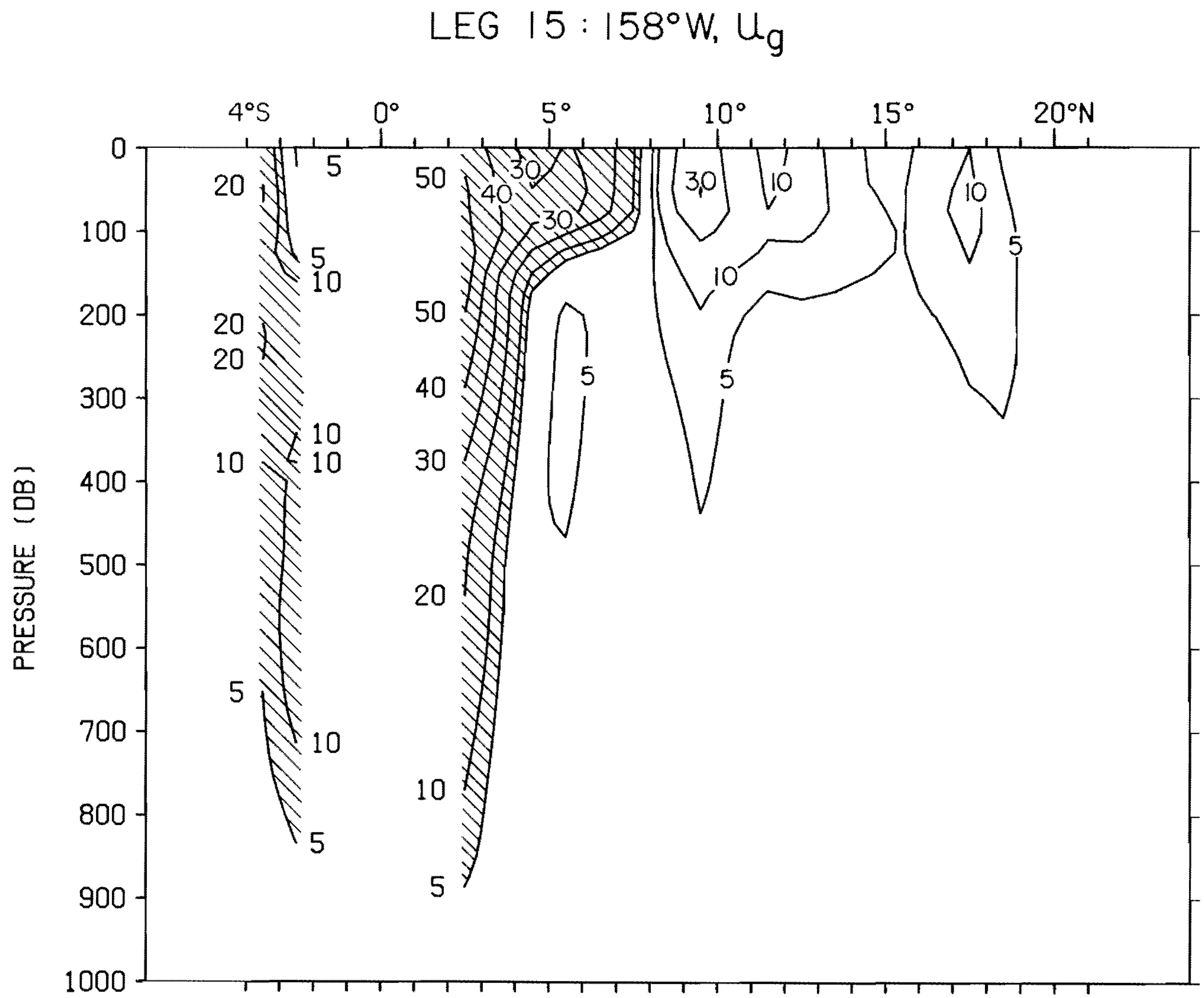

Figure 59.--Distribution of zonal geostrophic velocity component (cm s^{-1}) relative to 1000 db along 158°W (Leg 15, 6 June - 14 June 1980). Eastward components are shaded. Station positions are given by tic marks along bottom of panel.

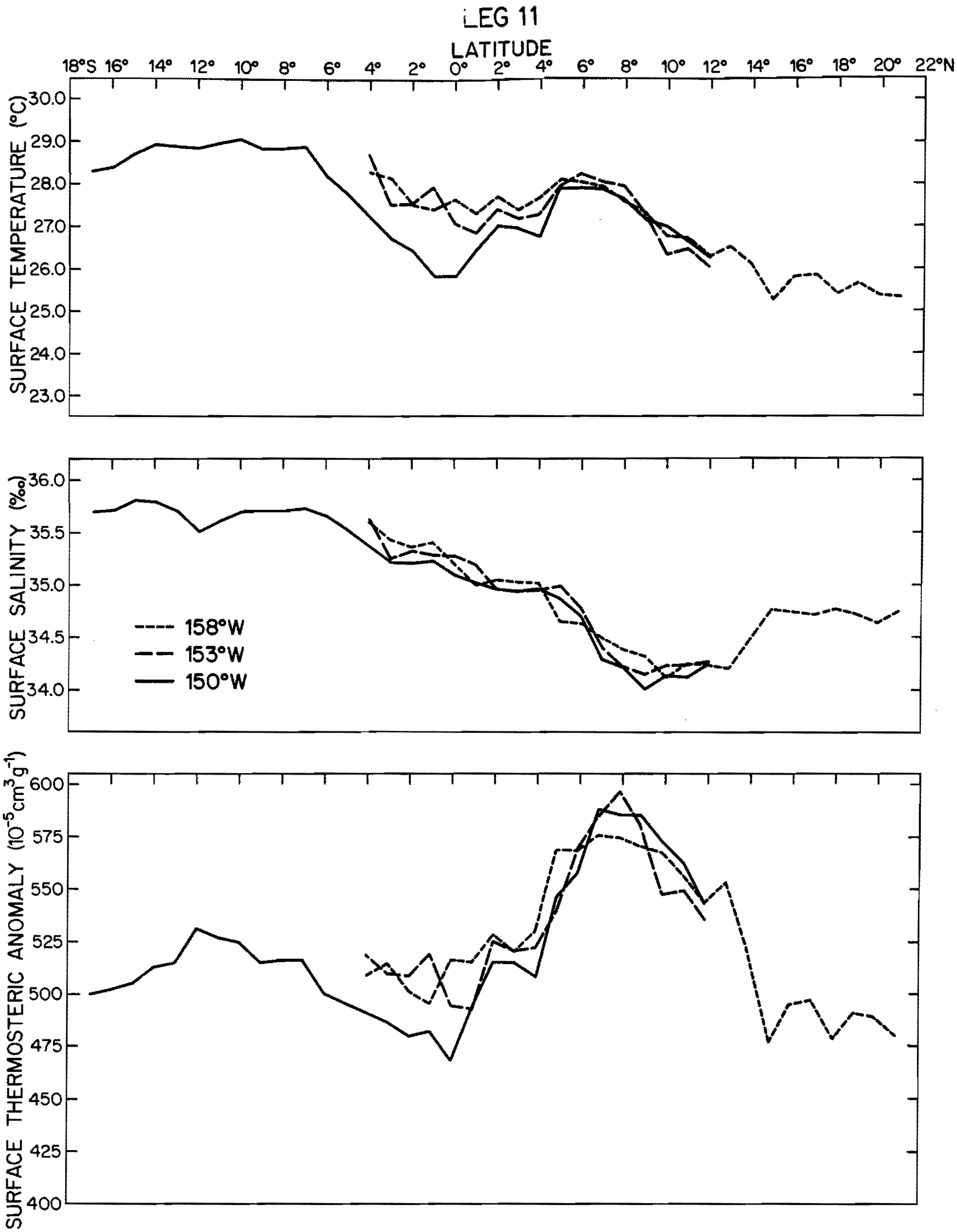

Figure 60.--Distributions of sea-surface temperature, salinity and thermosteric anomaly at 150°, 153° and 158°W on Leg 11. See middle panel for meridian key. Refer to individual sections for dates.

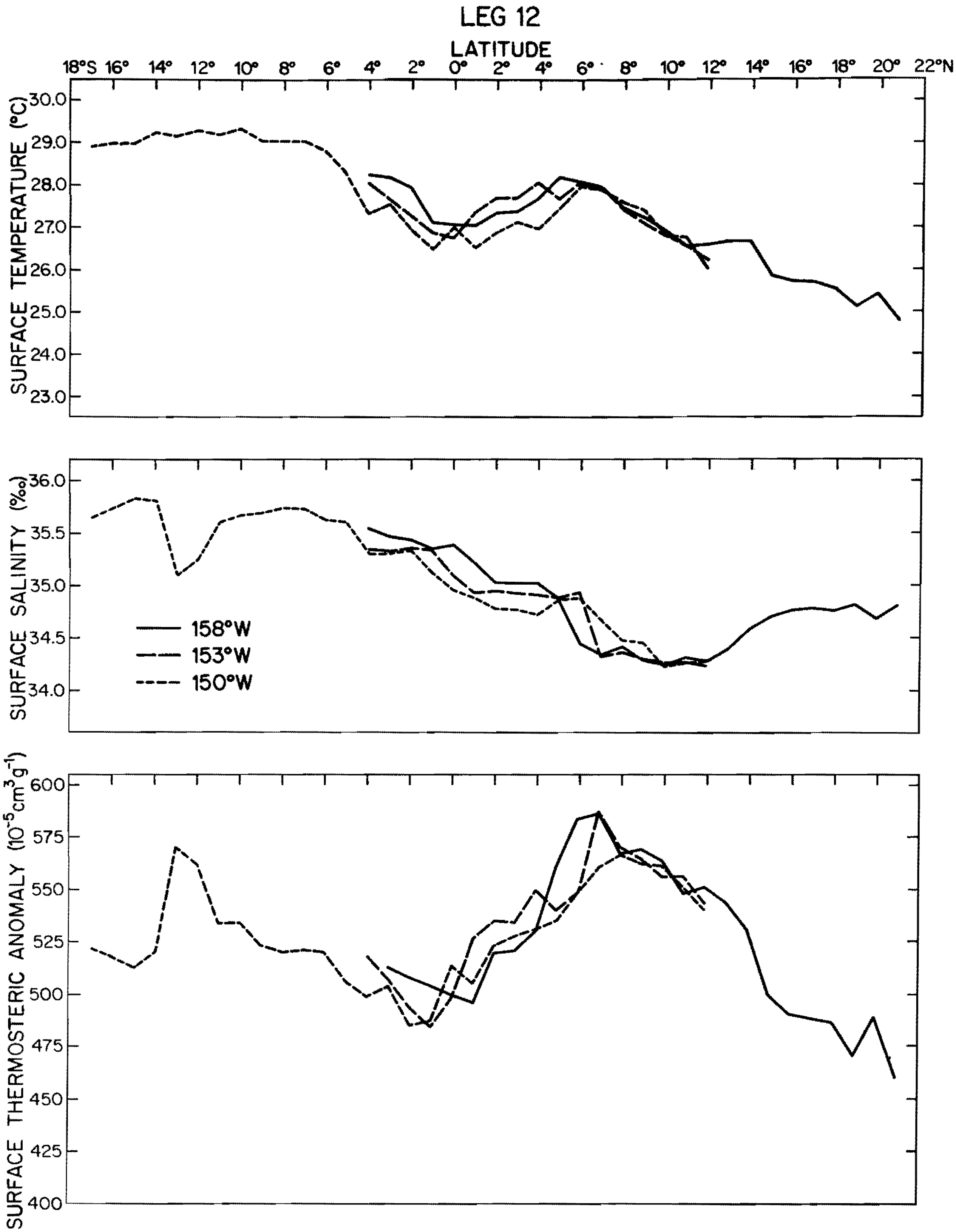

Figure 61.--Distributions of sea-surface temperature, salinity and thermosteric anomaly at 158°, 153° and 150°W on Leg 12. See middle panel for meridian key. Refer to individual sections for dates.

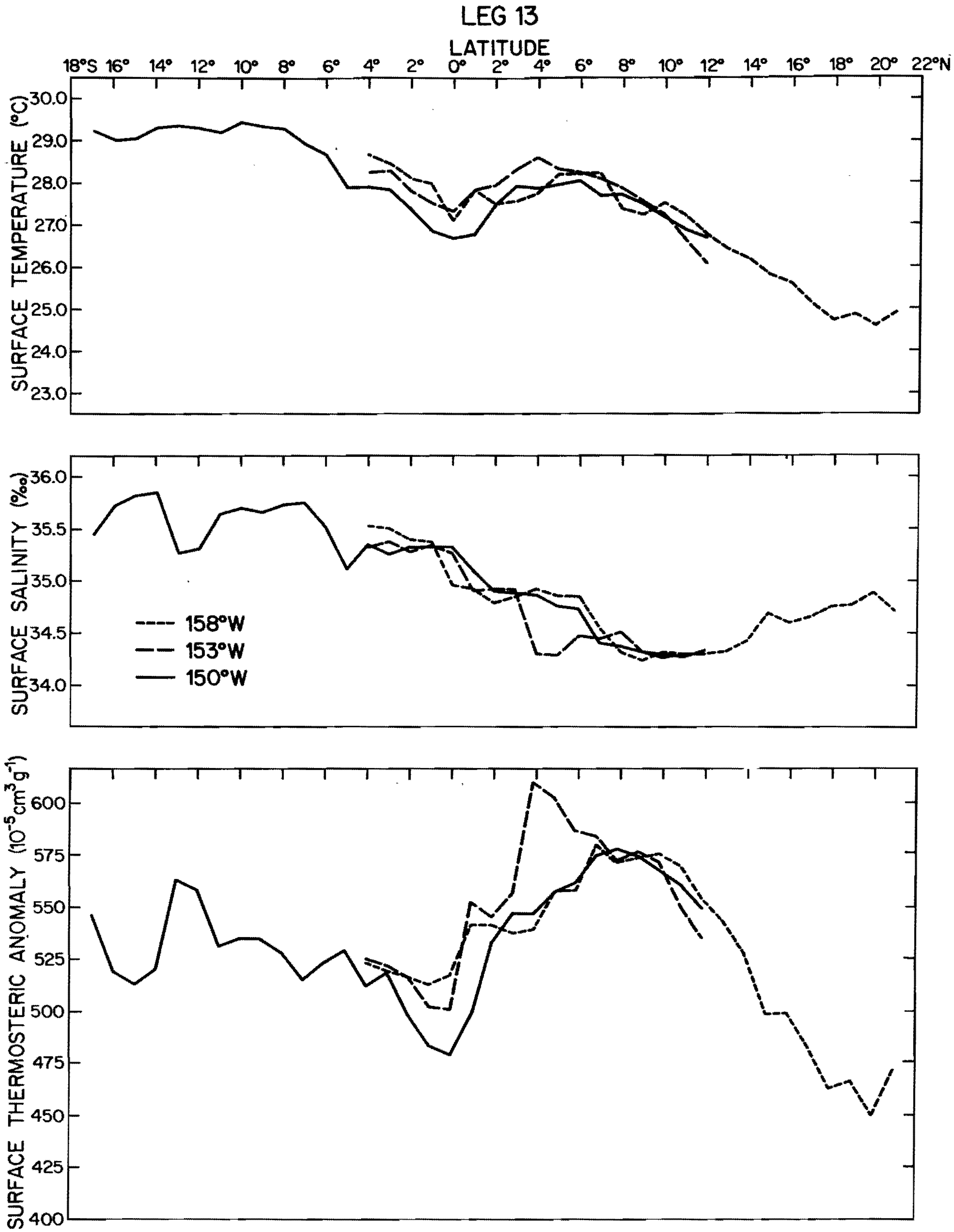

Figure 62.--Distributions of sea-surface temperature, salinity and thermosteric anomaly at 150°, 153° and 158°W on Leg 13. See middle panel for meridian key. Refer to individual sections for dates.

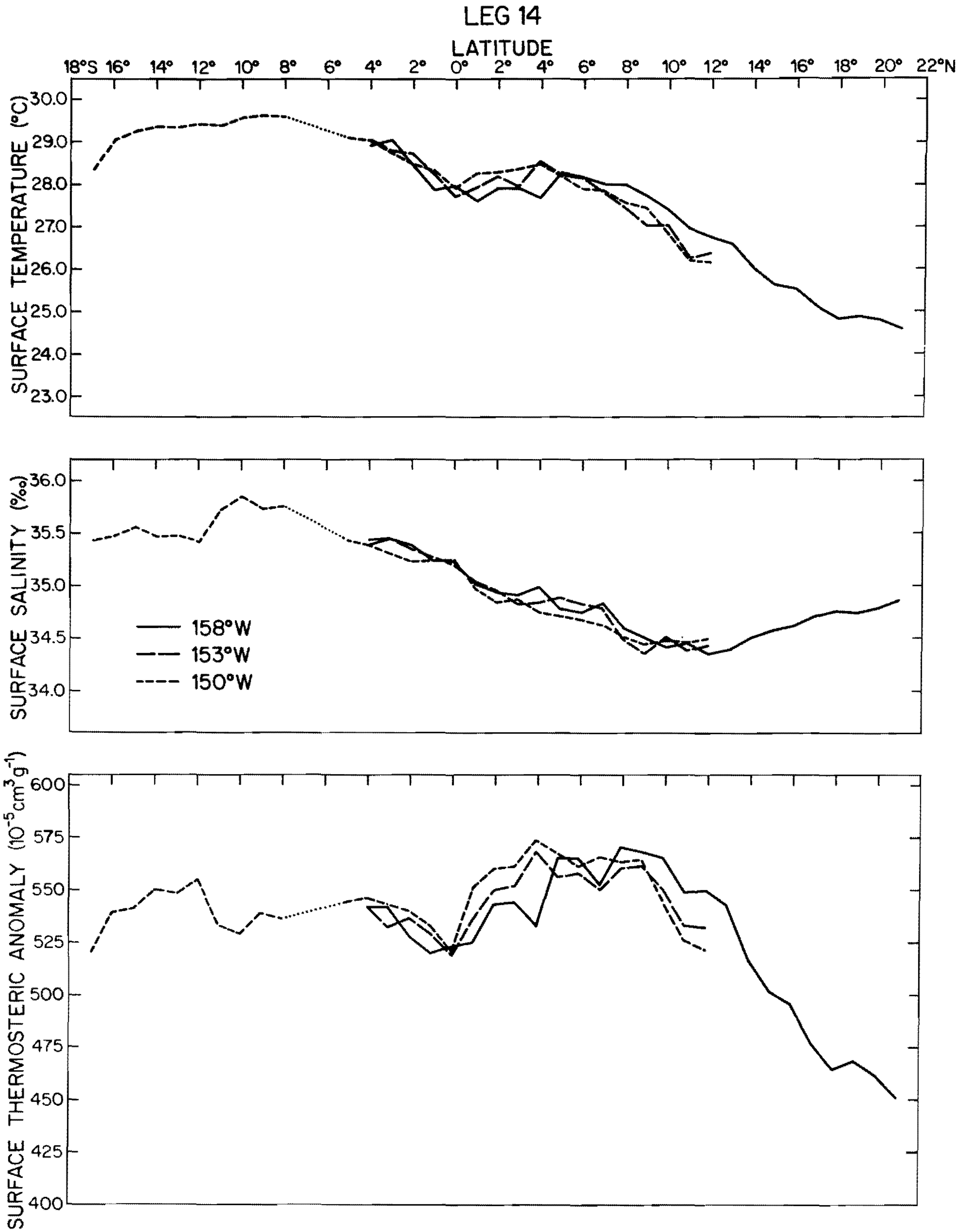

Figure 63.--Distributions of sea-surface temperature, salinity and thermosteric anomaly at 158°, 153° and 150°W on Leg 14. See middle panel for meridian key. Refer to individual sections for dates.

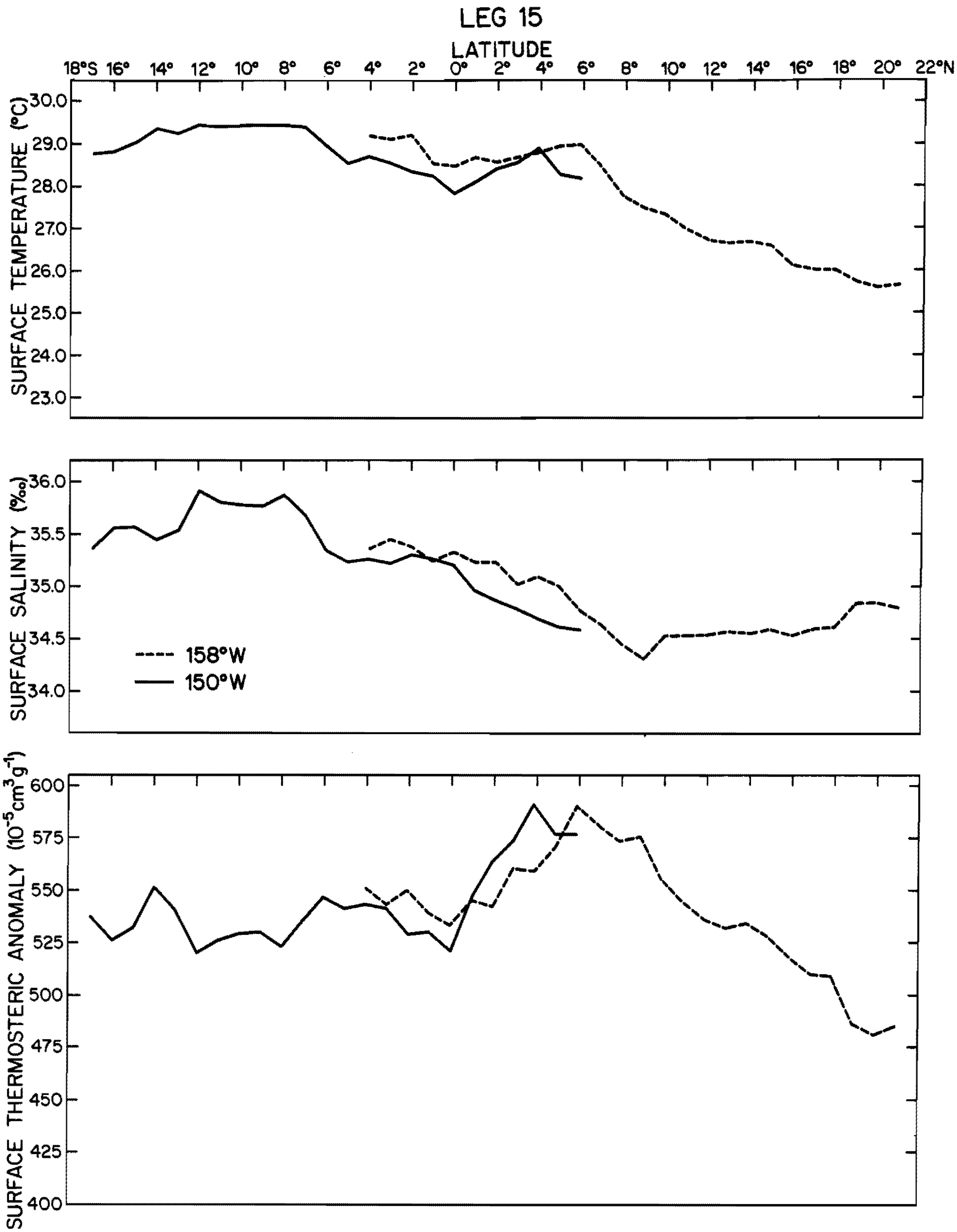

Figure 64.--Distributions of sea-surface temperature, salinity and thermosteric anomaly at 150° and 158°W on Leg 15. See middle panel for meridian key. Refer to individual sections for dates.

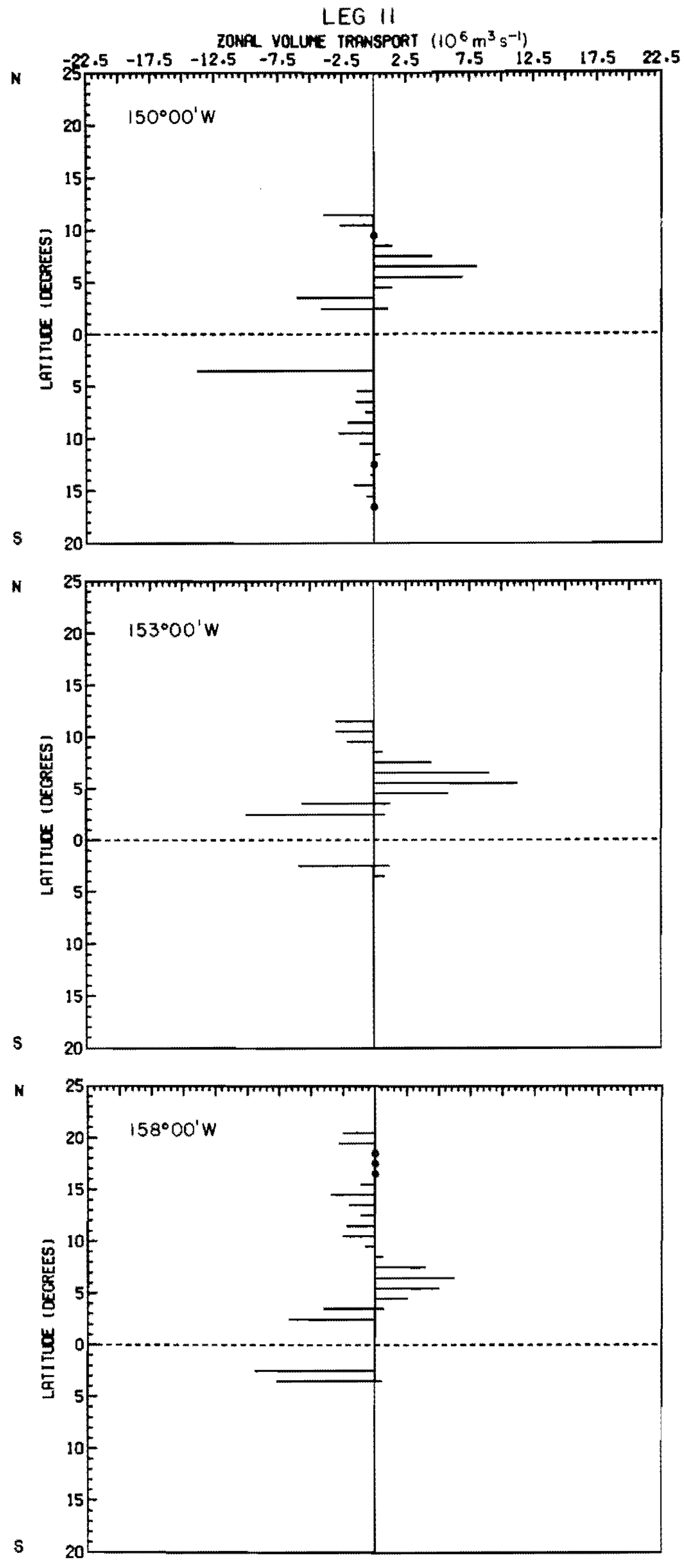

Figure 65.--Distributions of eastward (positive) and westward (negative) volume transport relative to 1000 db at 150°, 153° and 158°W on Leg 11. Refer to individual sections for dates. Circles indicate zero transport.

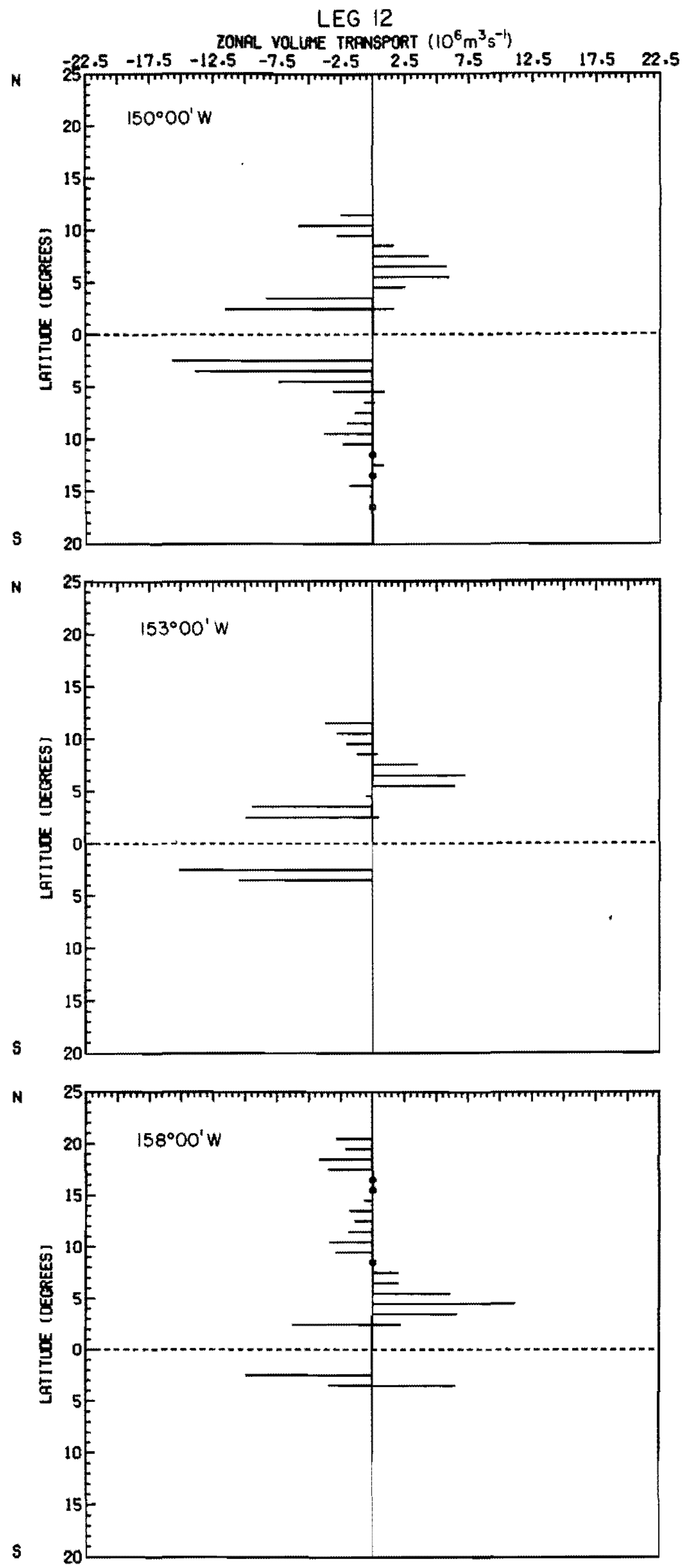

Figure 66.--Distributions of eastward (positive) and westward (negative) volume transport relative to 1000 db at 158°, 153° and 150°W on Leg 12. Refer to individual sections for dates. Circles indicate zero transport.

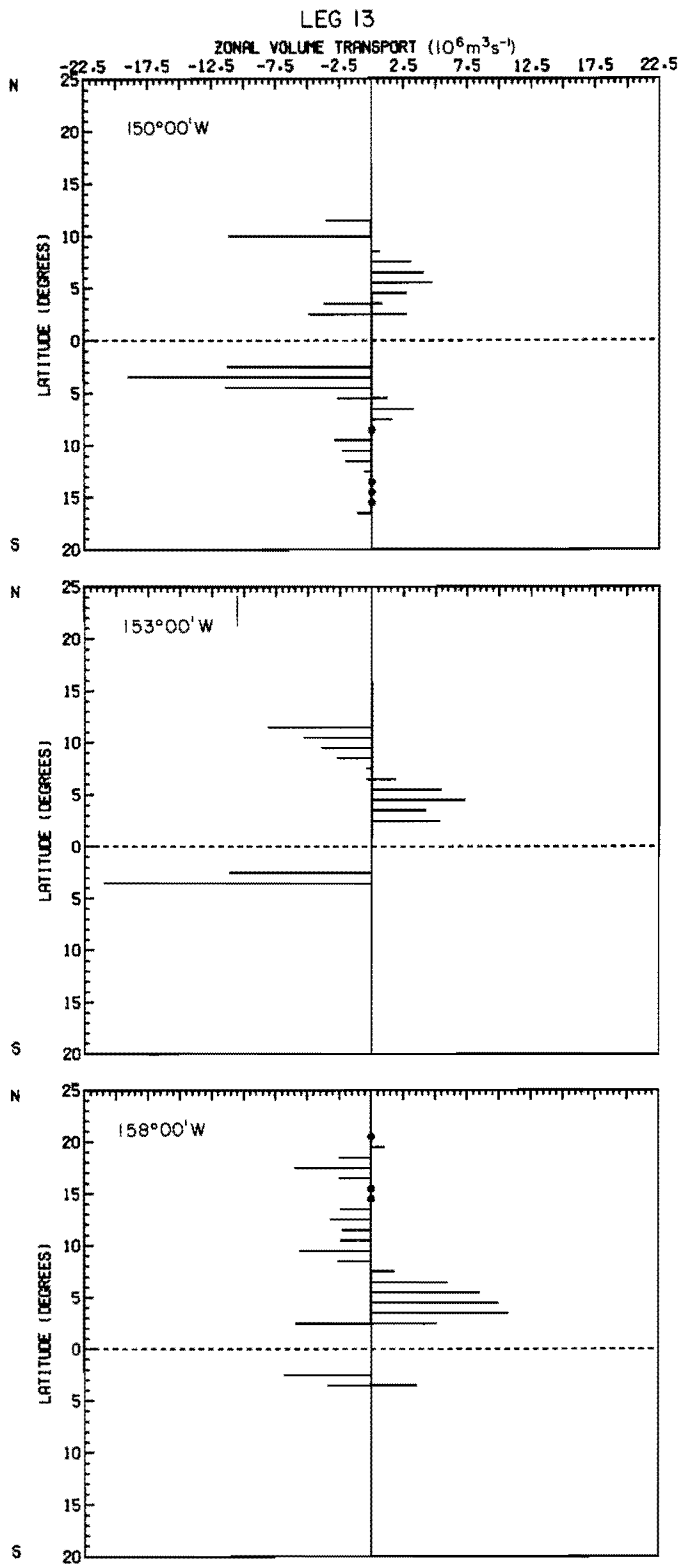

Figure 67.--Distributions of eastward (positive) and westward (negative) volume transport relative to 1000 db at 150°, 153° and 158°W on Leg 13. Refer to individual sections for dates. Circles indicate zero transport.

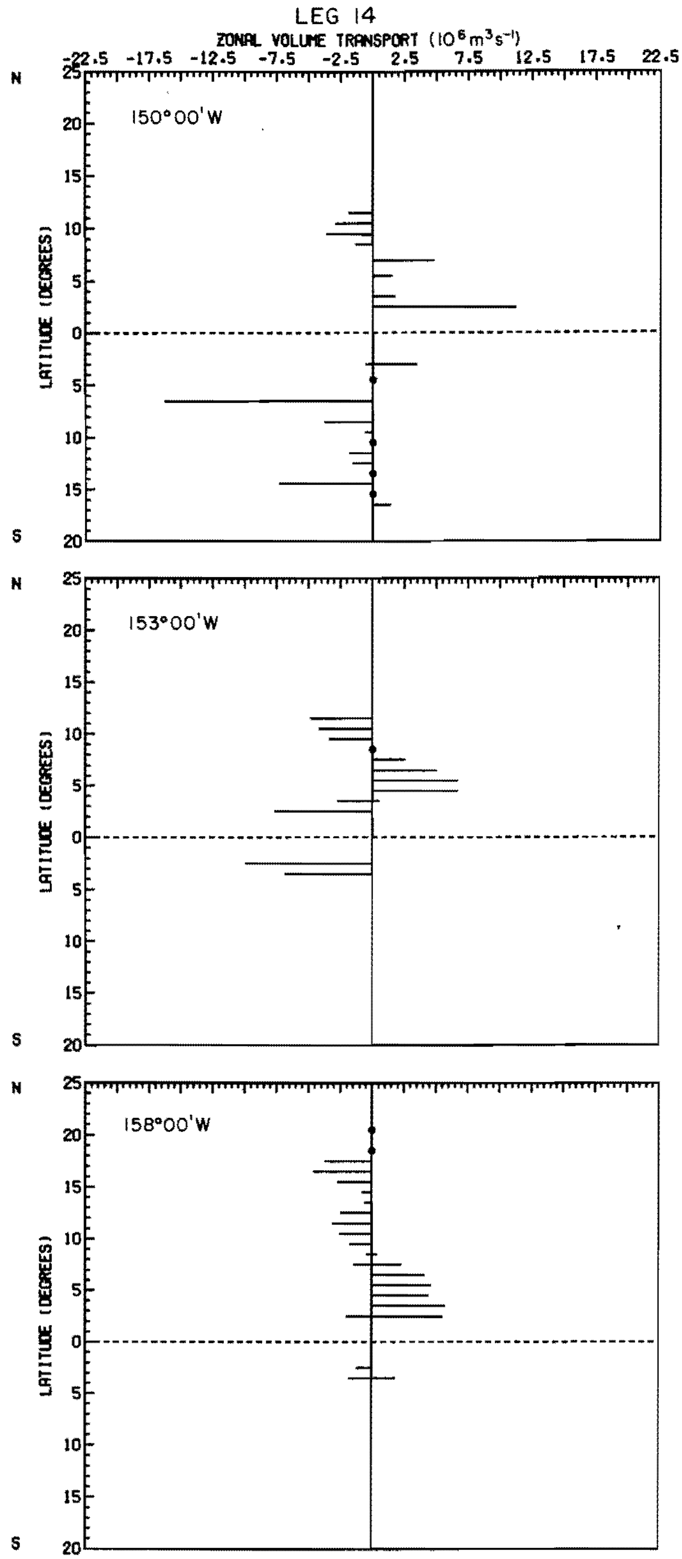

Figure 68.--Distributions of eastward (positive) and westward (negative) volume transport relative to 1000 db at 158°, 153° and 150°W on Leg 14. Refer to individual sections for dates. Circles indicate zero transport.

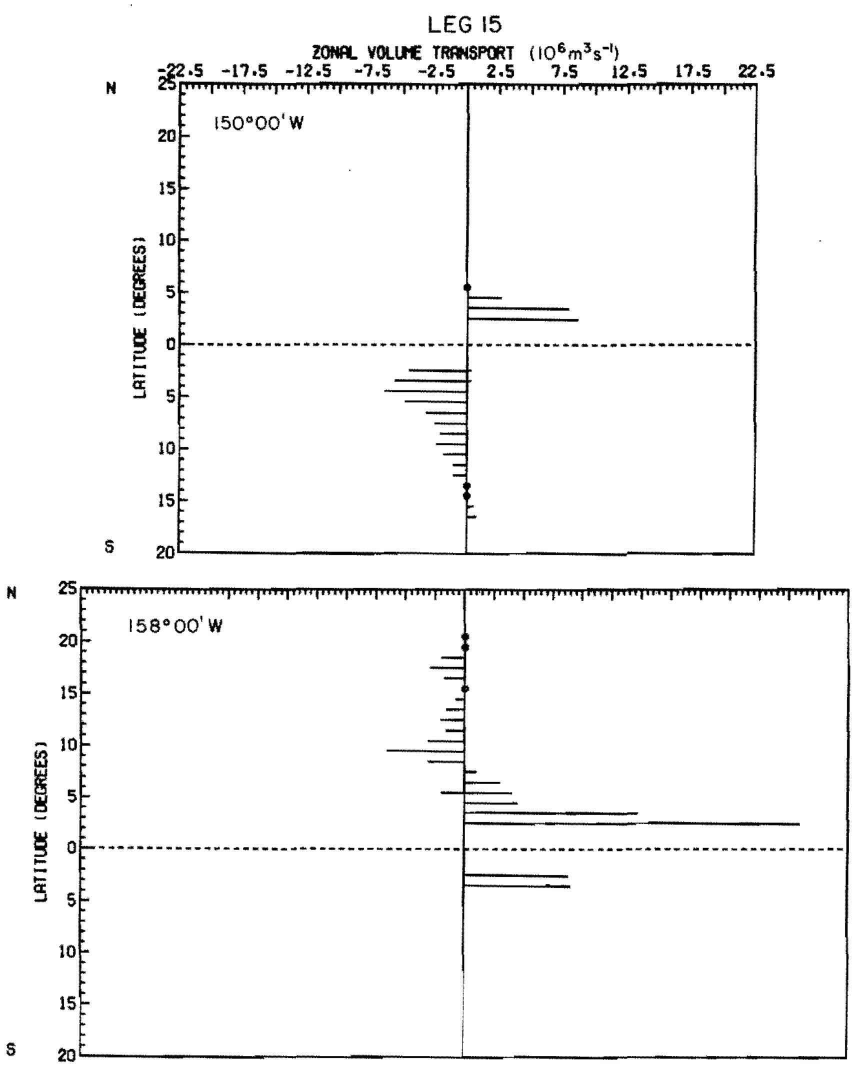

Figure 69.--Distributions of eastward (positive) and westward (negative) volume transport relative to 1000 db at 150° and 158°W on Leg 15. Refer to individual sections for dates. Circles indicate zero transport.

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Seamap deep-sea channel, Jan. 1969, 2 824 50 060, pre-NTIS.

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NTIS: PB192 065, PB192 066.

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