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OREGON STATE UNIVERSITY

A COMPILATION OF
OBSERVATIONS FROM MOORED
CURRENT METERS

Volume VII Oregon Continental Shelf
July-August 1973

by

R. D. Pillsbury, J. S. Bottero,
R. E. Still, W. E. Gilbert

Office for the International
Decade of Ocean Exploration
National Science Foundation
Grants GX-33502 and GX-28746

Data Report 58

Reference 74-7

March 1974

School of Oceanography
Oregon State University
Corvallis, OR 97331

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ABSTRACT

Aanderaa recording current meters, moored off the Oregon coast at fixed depths measured water temperature, current speed, current direction and for some meters, conductivity and pressure. In addition to these subsurface meters, surface meteorological buoys were installed to measure wind speed, wind direction, air and water temperature. Data from each current meter string are shown by means of pertinent statistics, real time plots of hourly values, progressive vector diagrams, and rotary spectra.

Introduction

The experiment called the Coastal Upwelling Experiment Phase II (CUE-II) was an extension of work done during CUE-I. This report is a companion volume to O.S.U. Data Report 57 (Pillsbury *et al.*, 1974). For details of the instruments and data reduction the reader should refer to that volume.

The basic array for CUE-II was placed north of that of CUE-I in hopes that the more simple bathymetry would simplify interpretation of the records. Figure 1 shows the location of the array.

One meter was lost from the CUE-II array when the mooring was disturbed by a fisherman. The percent of data recovery from the meters defined as:

$$\text{percent data recovery} = \frac{\text{days of data (speed and direction)}}{\text{days of potential data}} \times 100\%$$

was 87%. This was better than during CUE-I. The major contribution to the data loss was from the 300 meter instrument in the Forsythia mooring. Figure 2 gives the actual data returned from each instrument.

Description of Processed Data

The data from each string of current meters is presented separately. The header page gives the pertinent information about the location of the string, the data interval, and a general statement about the quality of the data. The depth of the instruments is given two ways. The intended depth is based on the mean pressure from the pressure sensor or on the actual water depth when there was no pressure sensor on the string.

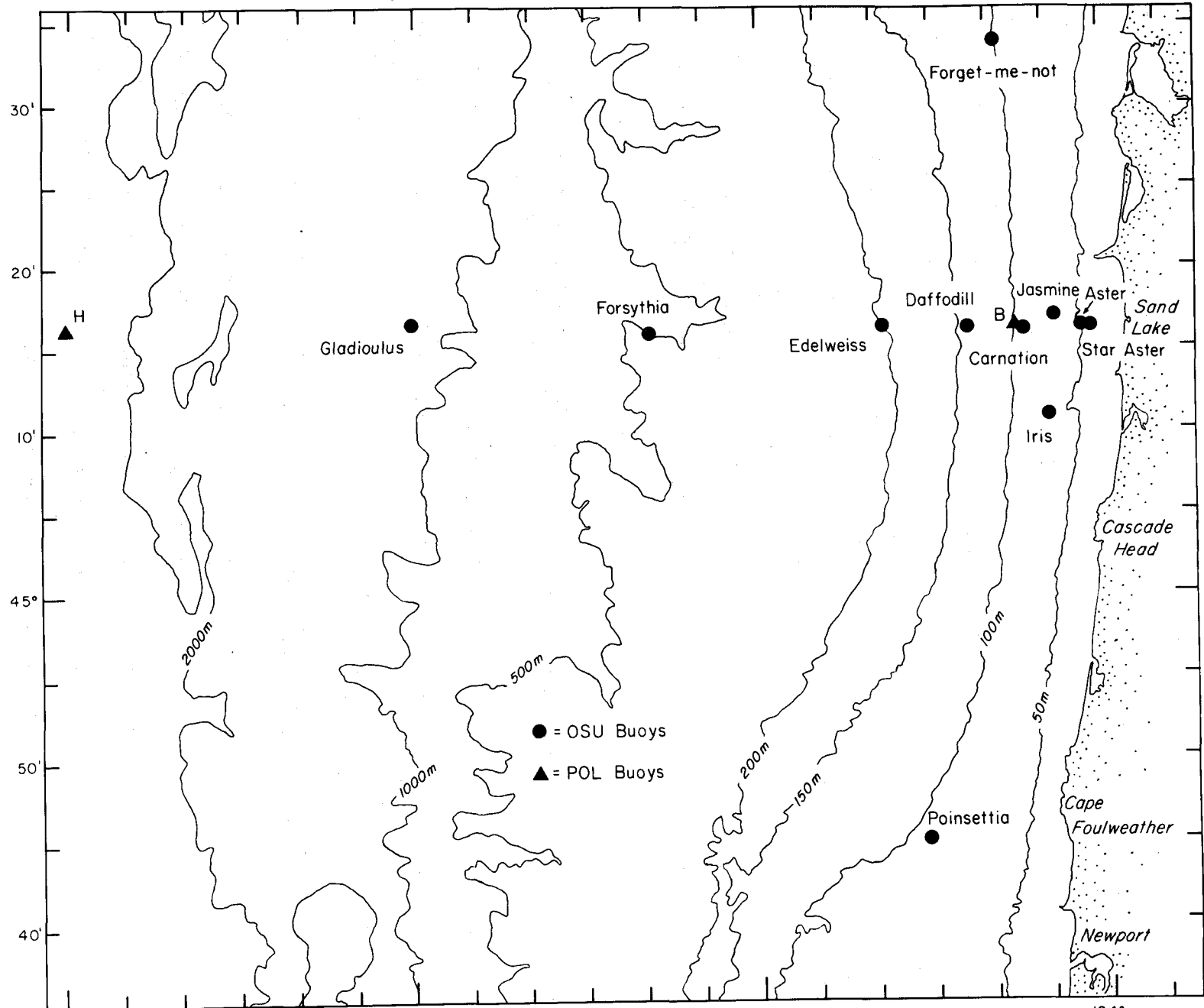
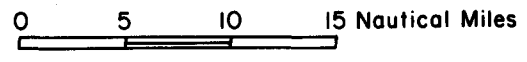
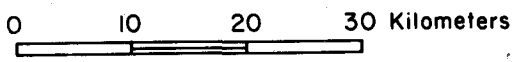


Figure 1. Meter array locations during 1973. Mooring by Pacific Marine Environmental Laboratory/NOAA is shown as POL.

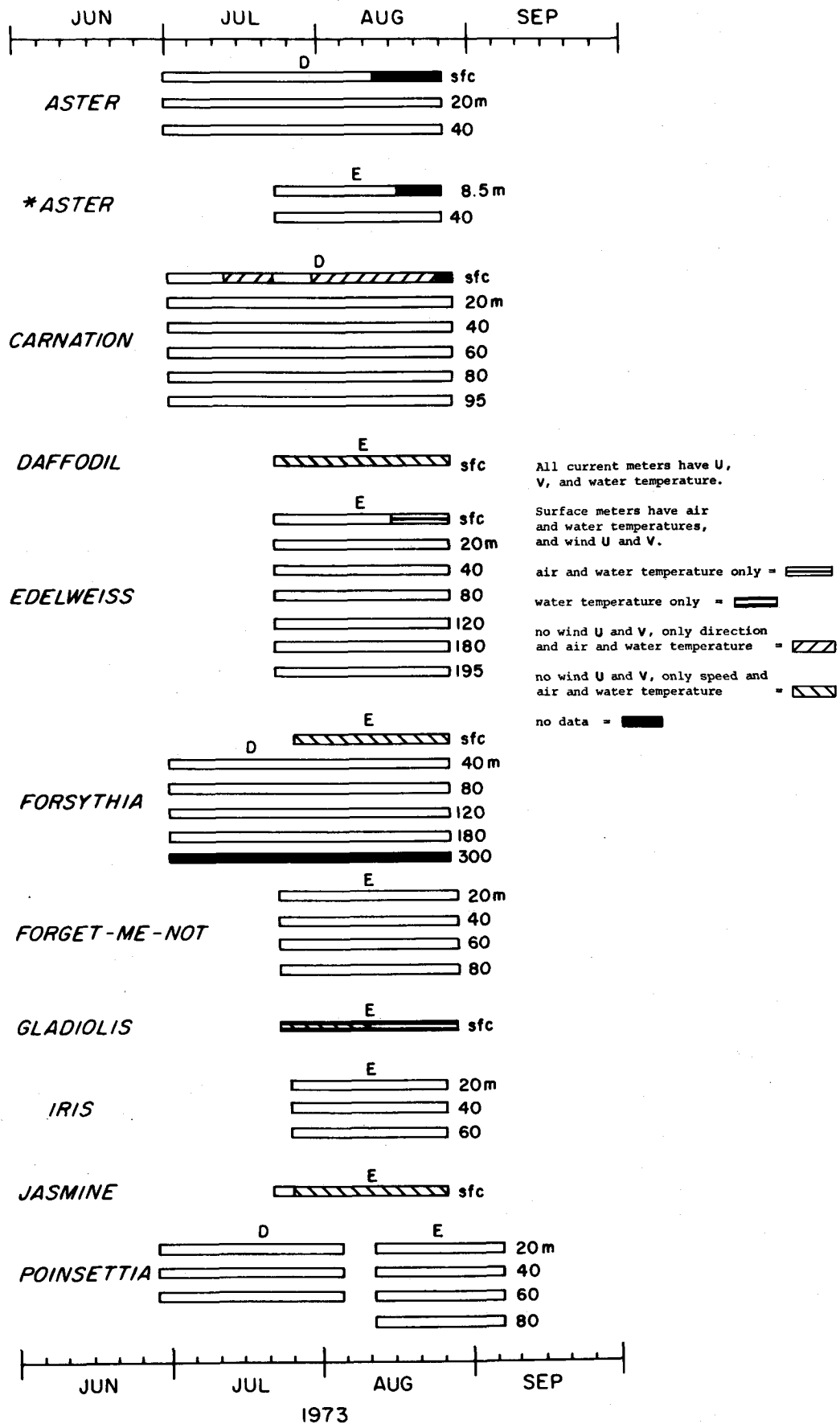


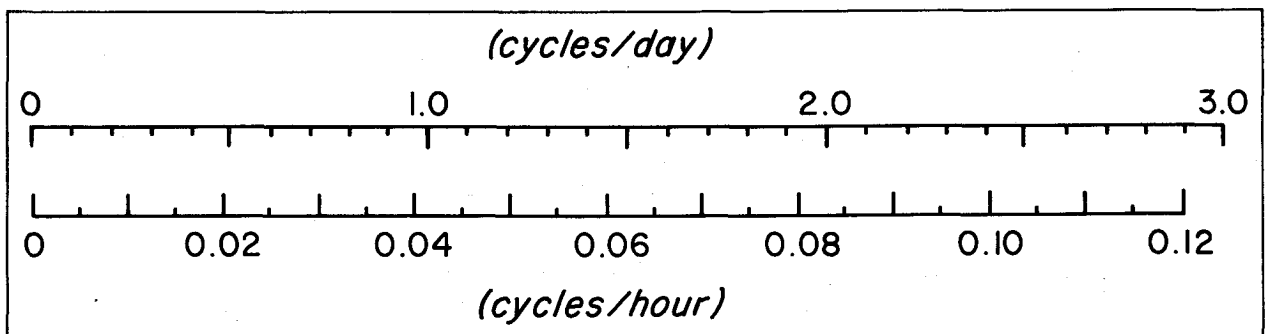
Figure 2. Length of time meters were in water and data recovered.

Each meter has a serial number assigned to it by the manufacturer. Each successive tape recorded by that machine is numbered with the serial number and the tape number. Thus, 485/10 indicates the tenth tape from machine number 485.

The table of statistics presented next gives the arithmetic mean, the standard deviation, the skewness, kurtosis, the maximum value, and the minimum value. Each meter record is identified in this table by intended meter depth.

Real time plots of the hourly values follow the table of statistics. (For a discussion of the filter used to produce these hourly values, see the Appendix 2 of Data Report 57 (Pillsbury et al. 1974.) For ease in comparison, the plots have been grouped by true east-west (U) components and true north-south (V) components where possible. Progressive vector diagrams (PVD's) are all scaled to page size, and all scale numbers are in kilometers. These plots represent a pseudotrajectory and each dot on the PVD is midnight of successive days. Spectra presented are rotary spectra as discussed by Mooers (1970) and Pillsbury (1972). Table 1 shows the conversion from cycles/hour to cycles/day.

Table 1



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- Pillsbury, R. D., R. L. Smith, and R. C. Tipper. 1969. A reliable low-cost mooring system for oceanographic instrumentation. *Limnology and Oceanography* 14 (2): 307-311.

ASTER

Position: 45°16.4'N, 124°01.5'W
 Depth of Water: 50 m
 Set at 1843 GMT, 29 June 1973 by R/V YAQUINA
 Retrieved at 2119 GMT, 26 August 1973 by R/V YAQUINA

Instrumentation

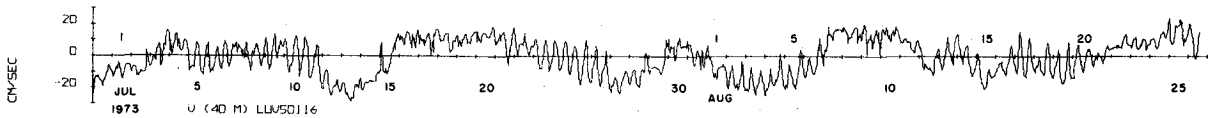
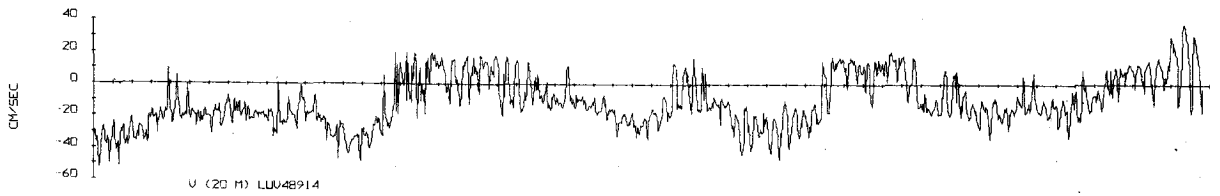
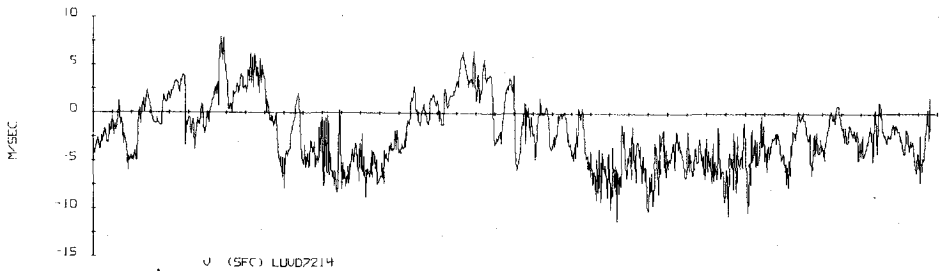
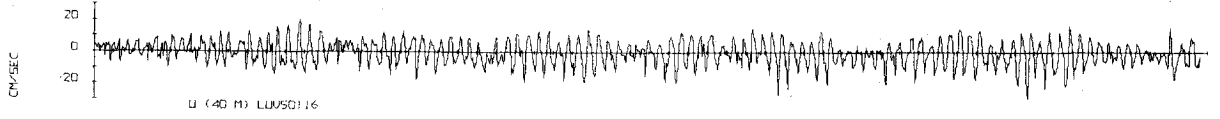
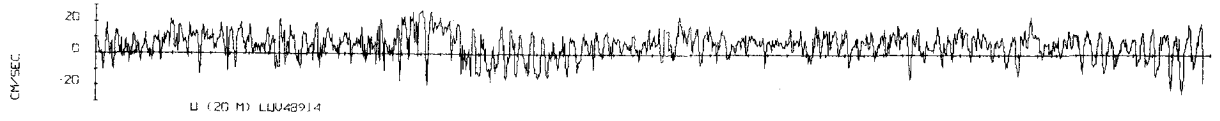
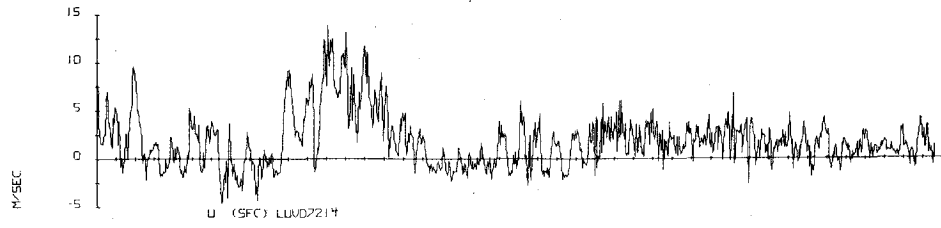
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0.0 m	D72/14	30 July - 12 August
20 m	21.8 m	489/14	30 July - 26 August
40 m	43.7 m	501/15	30 July - 26 August

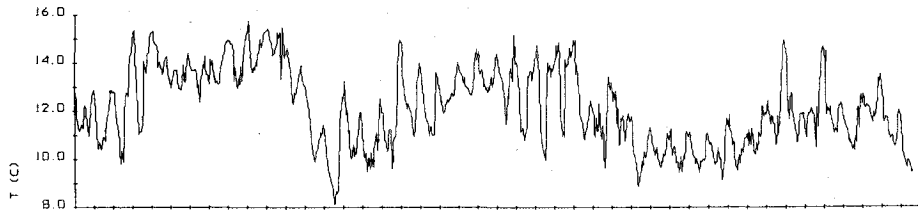
All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the deepest meter recorded pressure.

The surface meter broke loose about 13 August and was found on the beach.

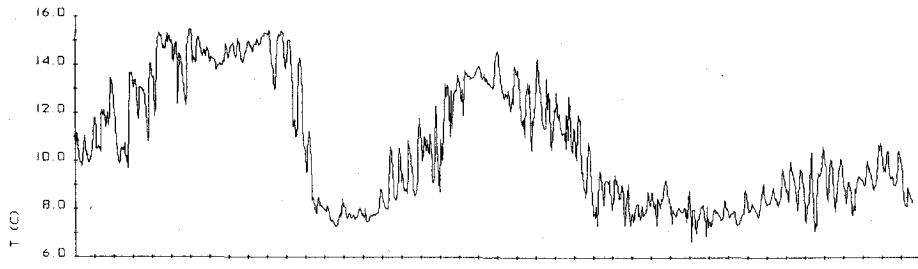
ASTER

	MEAN	S.D.	SKEW	KURT	MAX	MIN
			sfc			
S (m/sec)	4.4	2.7	1.0	3.7	15.9	0.2
U (m/sec)	1.8	2.8	1.1	5.0	13.9	-4.6
V (m/sec)	-2.2	3.4	0.3	2.8	8.0	-11.2
Air T (C)	12.15	1.58	0.11	2.10	15.75	8.13
Water T (C)	10.60	2.54	0.44	1.77	15.50	6.62
			20 m			
S (cm/sec)	20.2	7.9	1.0	4.1	53.0	1.5
U (cm/sec)	5.7	8.1	-0.5	3.2	26.8	-24.5
V (cm/sec)	-11.2	15.7	0.3	2.6	37.8	-53.0
T (C)	7.51	0.45	2.12	10.84	10.63	6.79
			40 m			
S (cm/sec)	12.3	4.8	0.6	3.0	29.4	1.4
U (cm/sec)	- 0.5	7.3	-0.3	2.9	20.3	-28.6
V (cm/sec)	- 0.7	10.9	-0.2	2.1	24.1	-29.0
T (C)	6.93	0.22	0.43	2.93	7.67	6.38
P(10^5 N/m ²)	4.37	0.06	-0.57	3.10	4.39	4.08

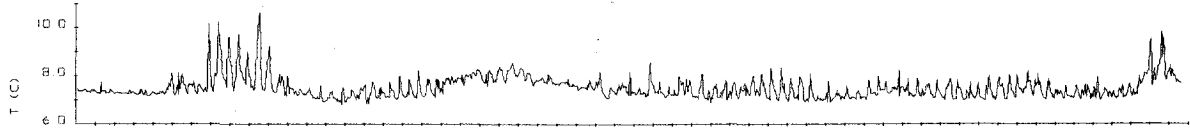




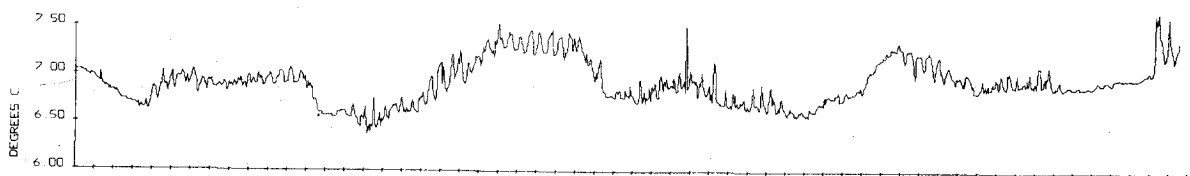
AIR TEMPERATURE LTD214



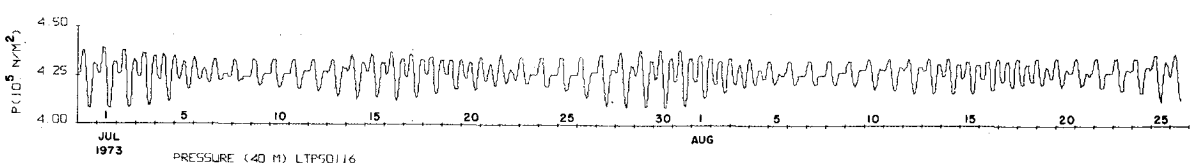
WATER TEMP. (SFC) LTD214



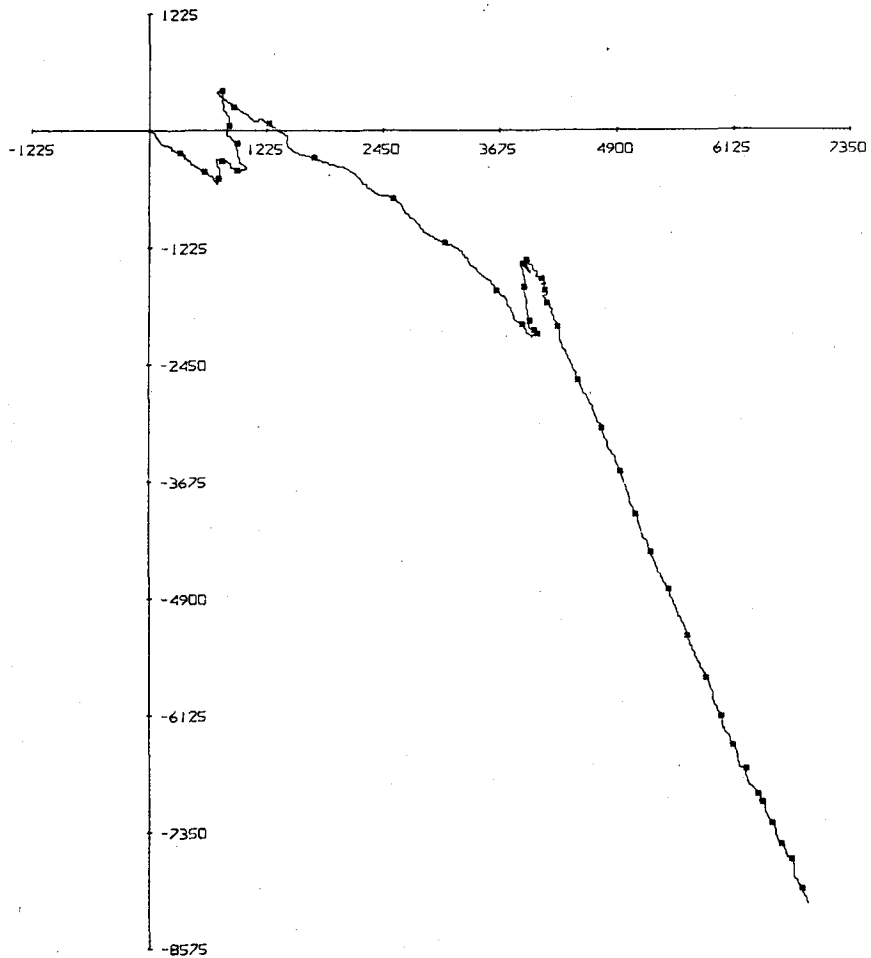
WATER TEMP. (20 M) LT48914



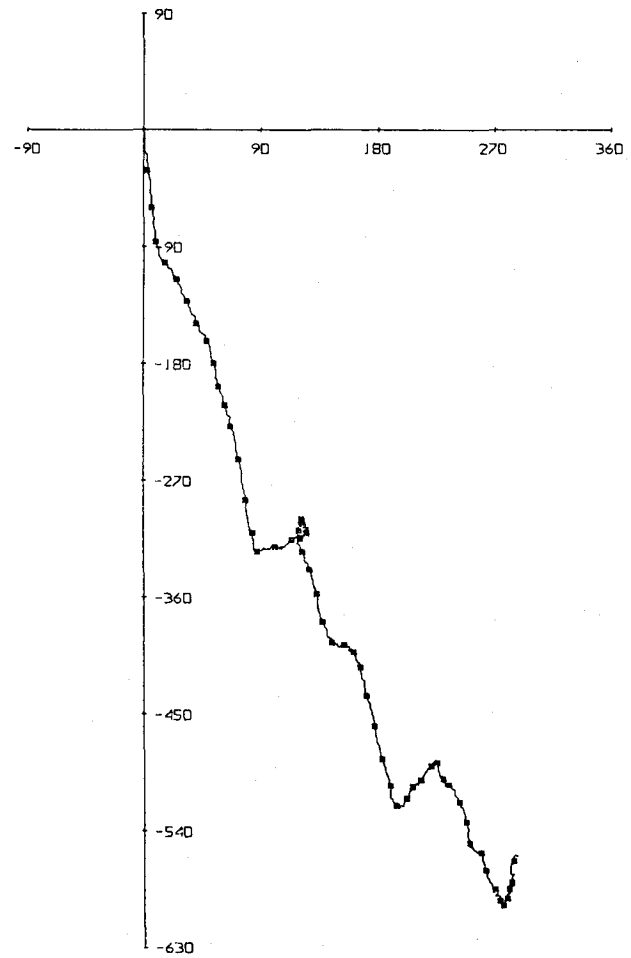
TEMP. (40 M) LTP50116



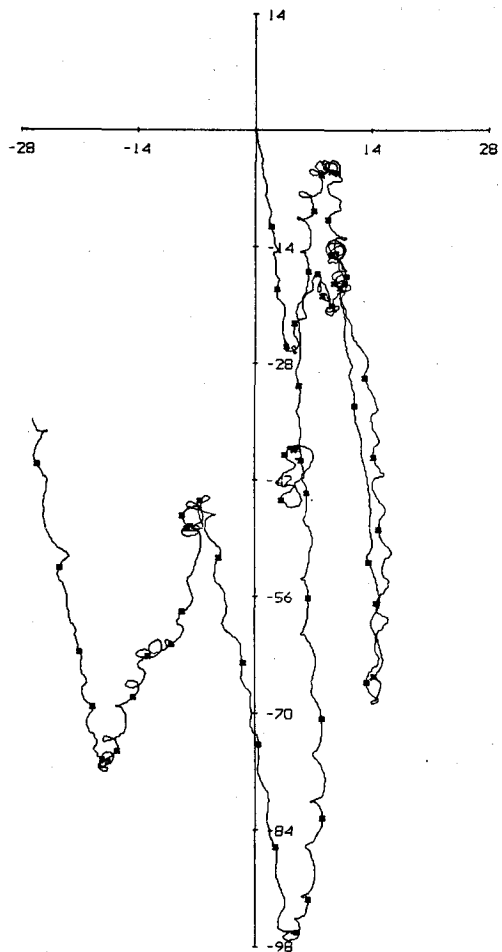
PRESSURE (40 M) LTP50116



WIND AT ASTER. 43.6 DAYS STARTING 0053 6/30/73

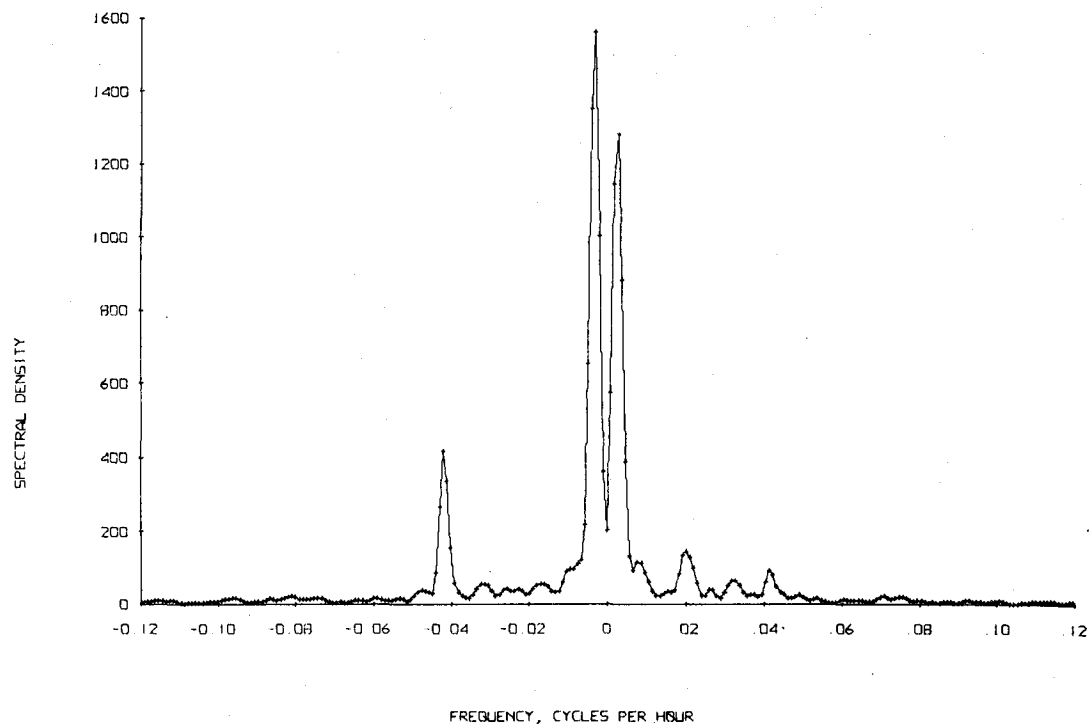


20 METERS AT ASTER. 57.6 DAYS STARTING 0100 6/30/73



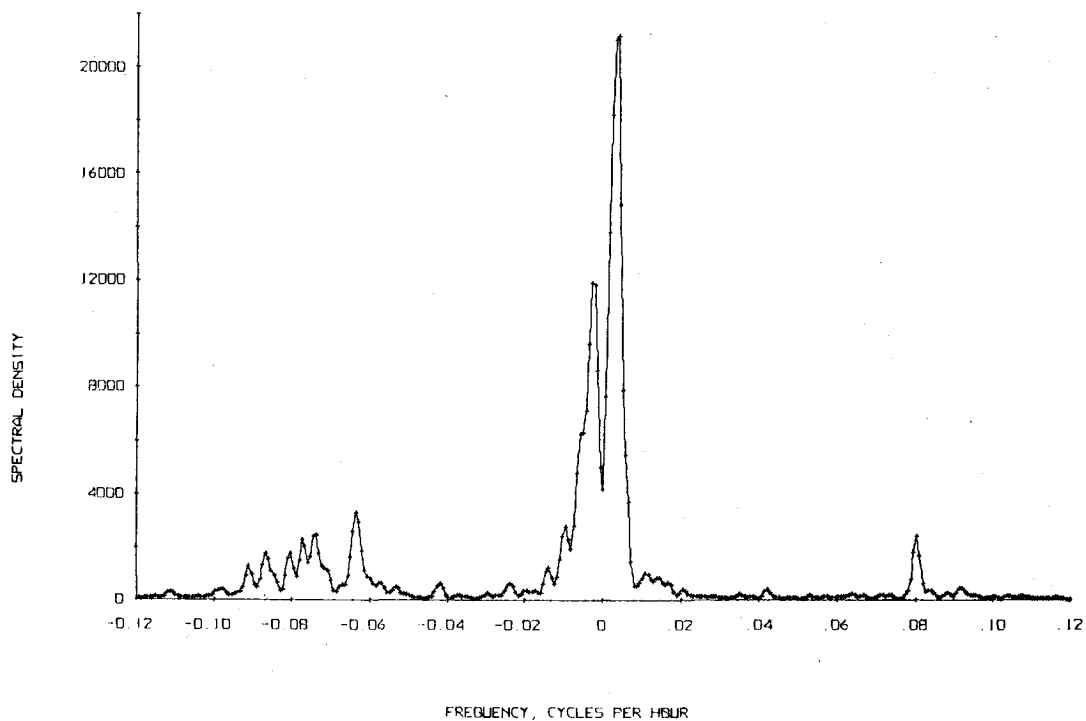
40 M AT ASTER. 57.6 DAYS STARTING 0042 30 JUNE 73 GMT

ROTARY SPECTRUM
WIND AT ASTER. 6/29/73 TO 8/12/73. TAPE D72/14



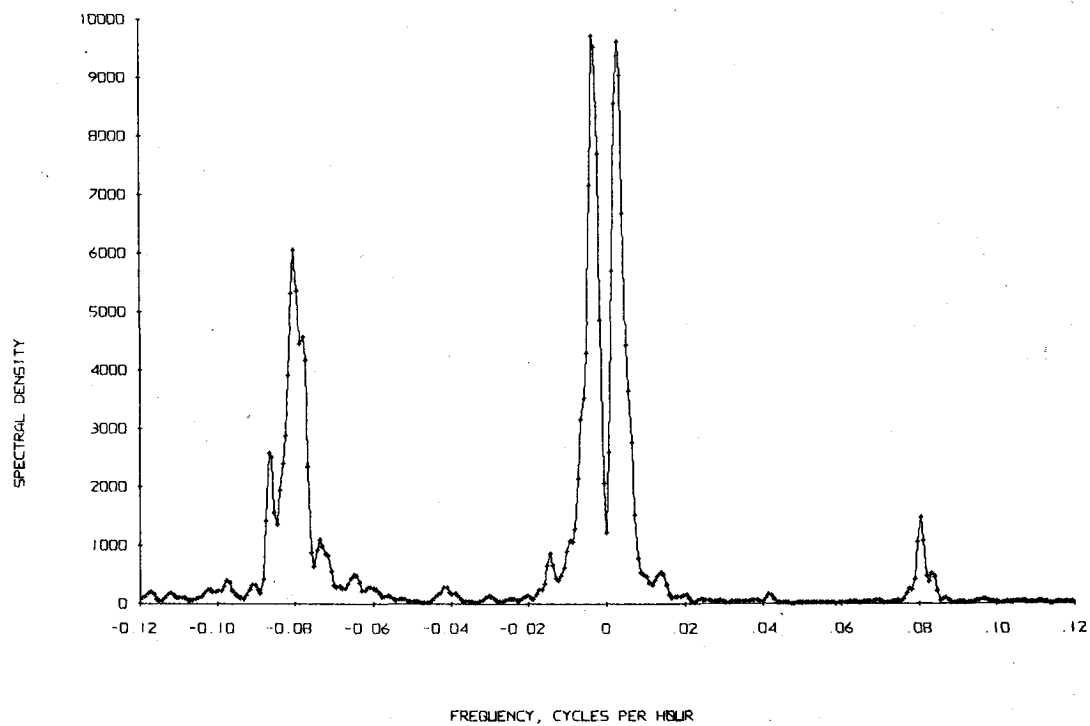
ROTARY SPECTRUM

20 METERS AT ASTER. 6/29/73 TO 8/26/73. TAPE 489/14



ROTARY SPECTRUM

40 METERS AT ASTER. 6/29/73 TO 8/26/73. TAPE 501/16



*ASTER

Position: 45°16.4'N, 124°01.4'W
 Depth of Water: 50 m
 Set at 2345 GMT, 22 July 1973 by R/V CAYUSE
 Retrieved at 0018 GMT, 27 August 1973 by R/V YAQUINA

Instrumentation

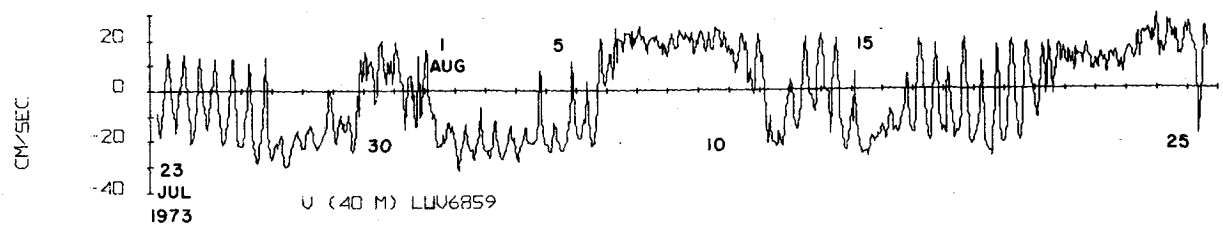
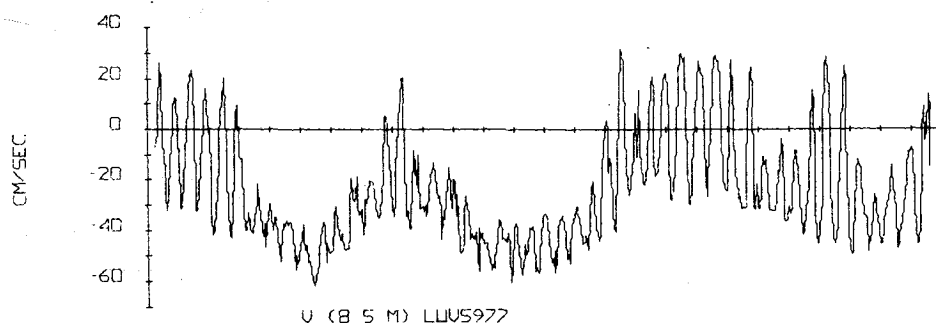
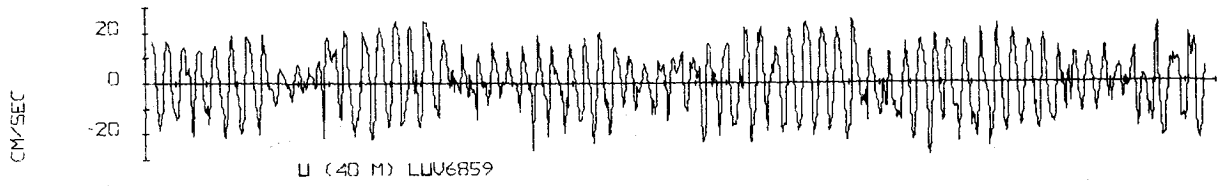
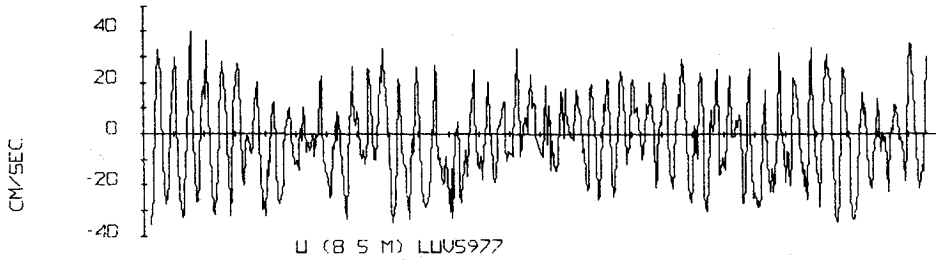
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
8.5 m	8.8 m	597/7	23 July - 17 August
40.0 m	41.6 m	685/9	23 July - 26 August

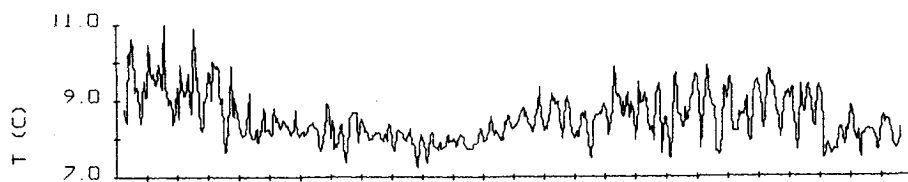
Both meters recorded temperature, current direction, current speed, and conductivity every 5 minutes. In addition, the deepest meter recorded pressure.

Speed and direction were unreadable after 18 August at 8.5 meters.

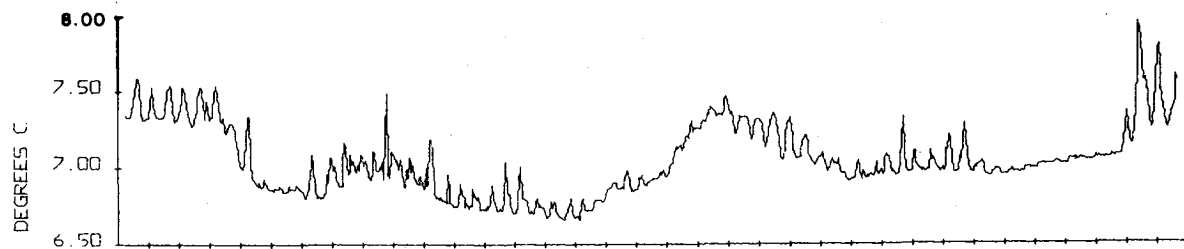
*ASTER

	MEAN	S.D.	SKEW	KURT	MAX	MIN
			8.5 m			
S (cm/sec)	34.6	10.8	0.0	2.7	66.6	3.4
U (cm/sec)	- 2.2	16.4	0.1	2.3	40.3	-35.3
V (cm/sec)	-24.0	21.6	0.8	2.8	31.6	-62.0
T (C)	8.51	0.62	0.78	3.50	11.01	7.25
Salinity (o/oo)	33.34	0.22	-0.32	3.13	33.80	32.48
			40 m			
S (cm/sec)	19.9	4.5	-0.4	3.6	32.6	2.2
U (cm/sec)	0.6	12.0	-0.1	2.1	25.0	-28.8
V (cm/sec)	-2.1	16.3	0.1	1.5	29.3	-31.5
T (C)	7.05	0.22	0.63	3.20	7.94	6.66
P (10^5 N/m ²)	4.16	0.07	0.09	2.30	4.34	3.97
Salinity (o/oo)	33.47	0.05	-1.93	8.66	33.55	33.24

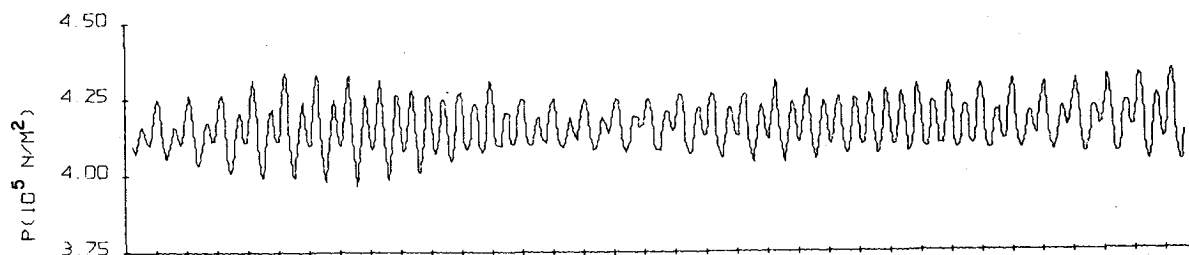




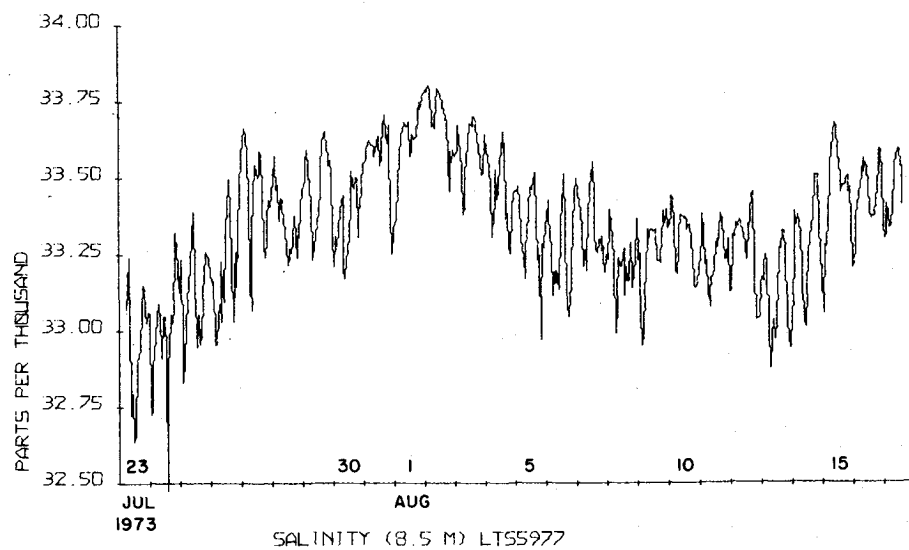
WATER TEMP. (8.5 M) LTSS977



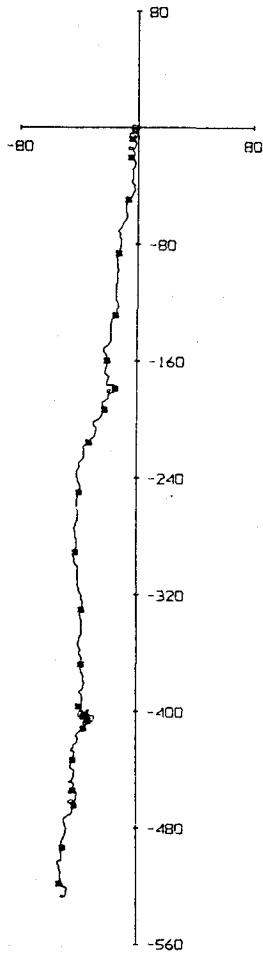
WATER TEMP (40 M) LTPS6859



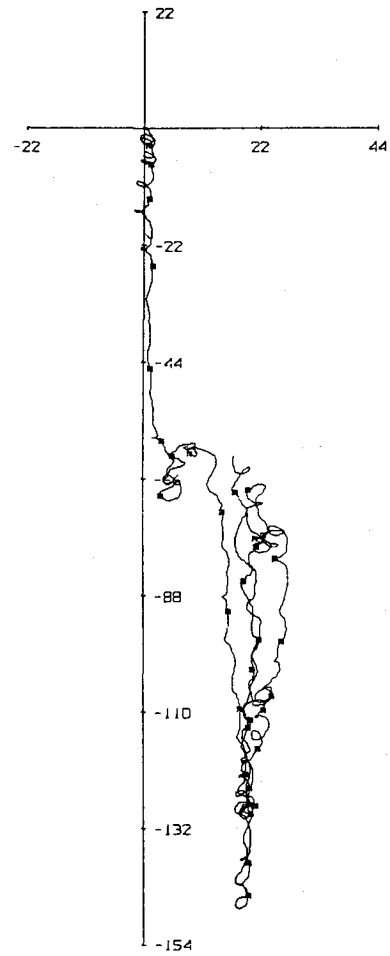
PRESSURE (40 M) LTPS6859



SALINITY (8.5 M) LTSS977

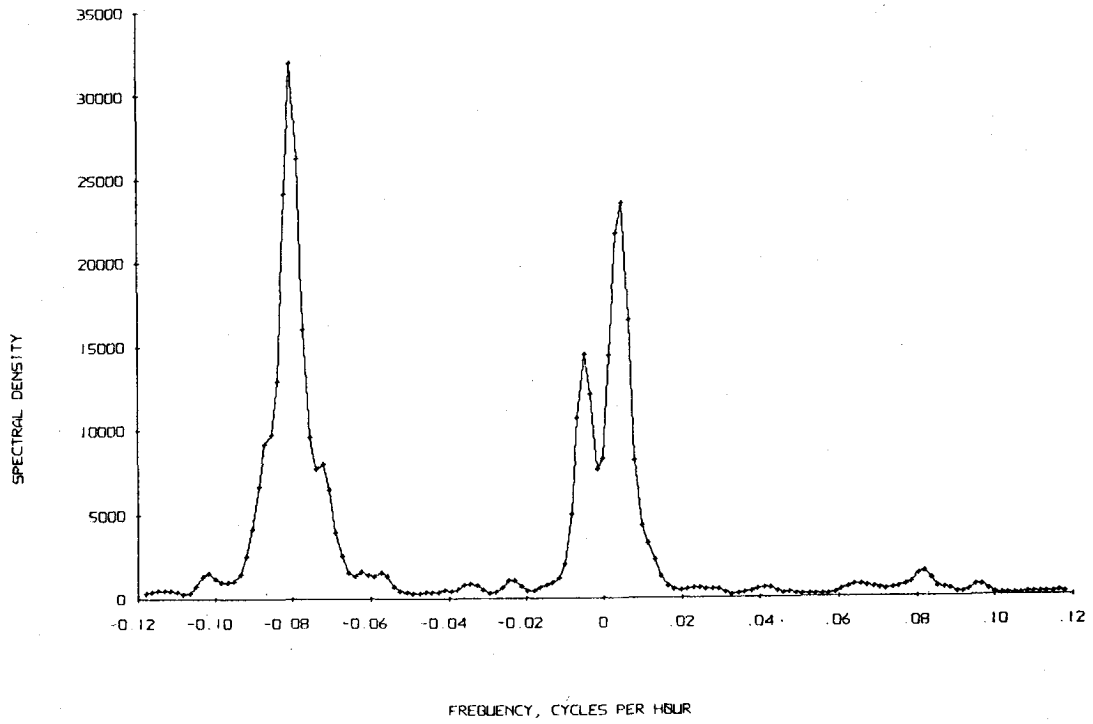


8.5 METERS AT STAR ASTER. 25.4 DAYS STARTING 0551 7/23/73

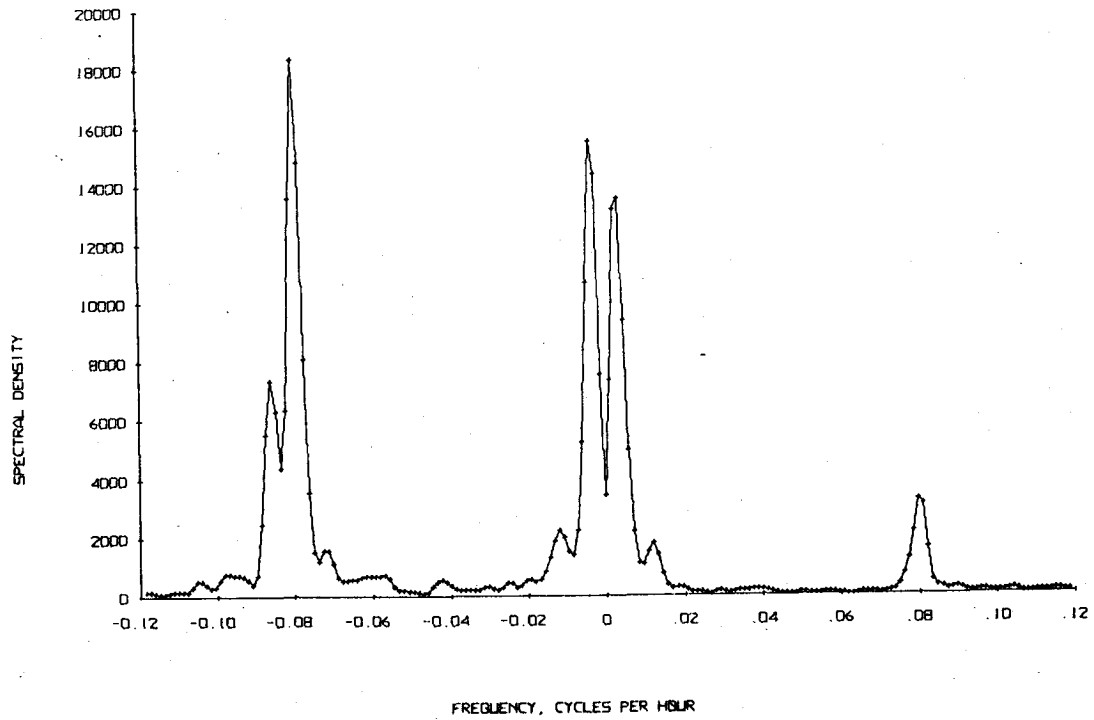


40 METERS AT STAR ASTER. 34.4 DAYS STARTING 0553 7/23/73

ROTARY SPECTRUM
 8.5 METERS AT STAR ASTER. 7/22/73 TO 8/17/73. TAPE 597/7



ROTARY SPECTRUM
 40 METERS AT STAR ASTER. 7/22/73 TO 8/26/73. TAPE 685/9



CARNATION

Position: 45°16.2'N, 124°06.9'W

Depth of Water: 100 m

Set at 1722 GMT, 30 June 1973 by R/V YAQUINA

Retrieved at 1535 GMT, 28 August 1973 by R/V YAQUINA

Instrumentation

<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0.0 m	D124/4	30 June - 25 August
20 m	20.2 m	455/20	30 June - 28 August
40 m	40.4 m	491/12	30 June - 28 August
60 m	60.6 m	442/13	30 June - 28 August
80 m	80.8 m	454/20	30 June - 28 August
95 m	95.9 m	503/14	30 June - 28 August

All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the deepest meter recorded pressure. The surface buoy recorded wind speed and direction, air temperature, and surface water temperature.

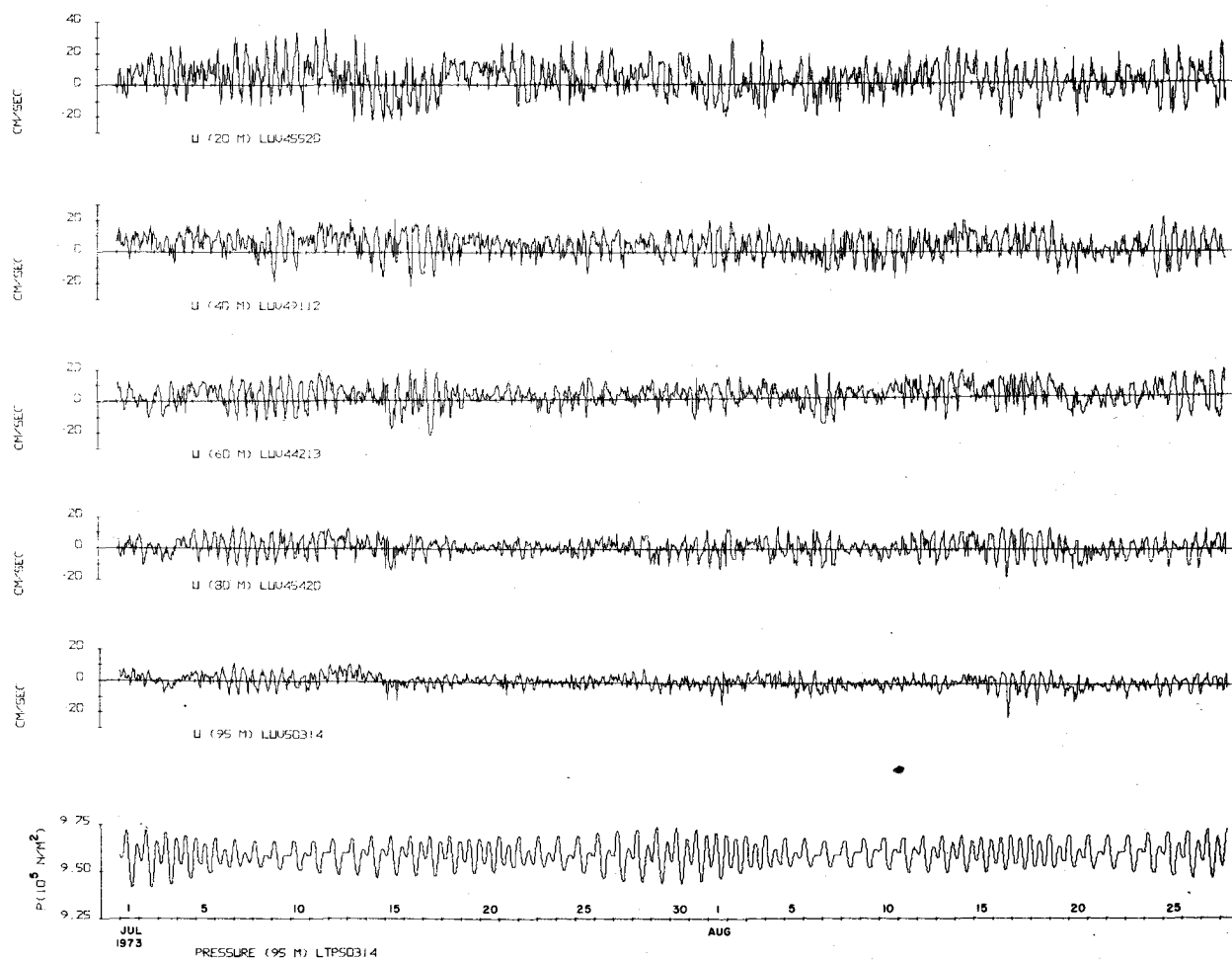
Surface speed was mostly of poor quality and was not used.

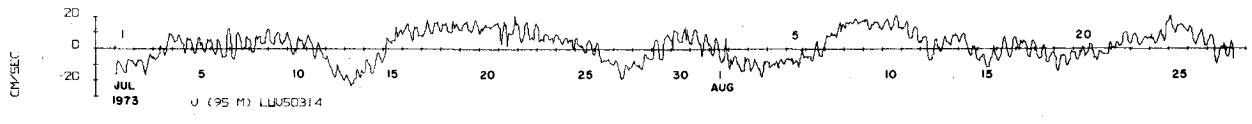
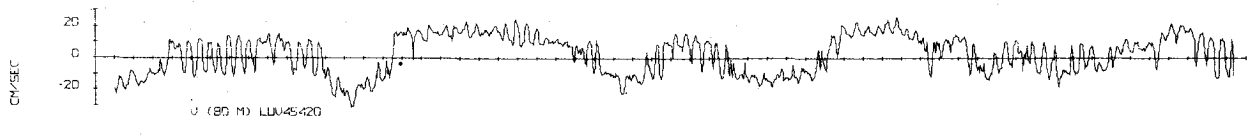
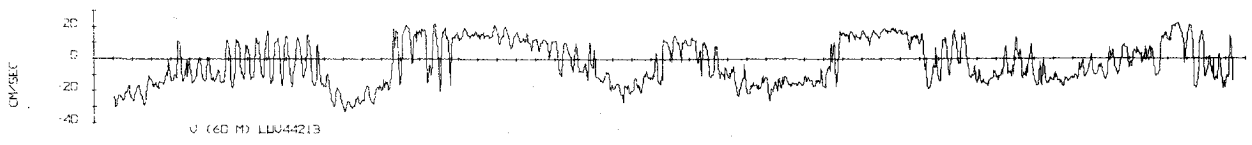
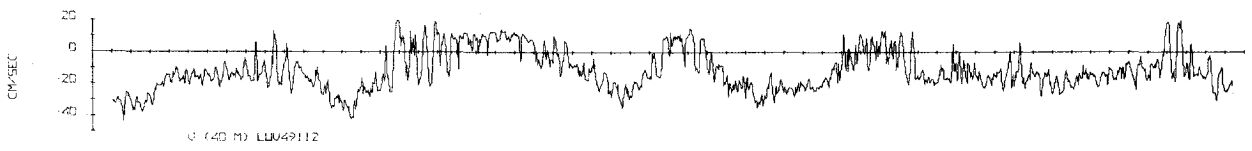
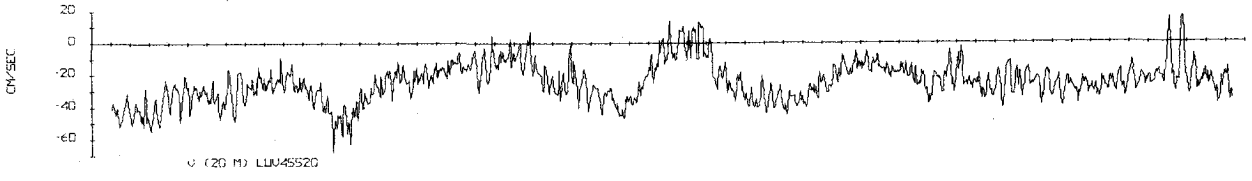
CARNATION

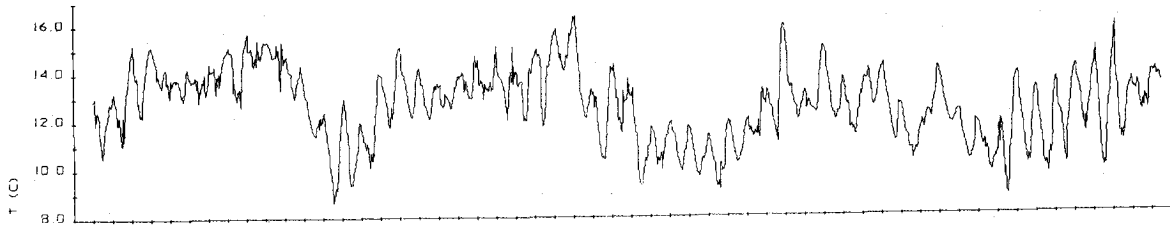
	MEAN	S.D.	SKEW	KURT	MAX	MIN
sfc						
Air T (C)	12.62	1.50	-0.17	2.43	16.34	8.65
Water T(C)	11.71	2.09	-0.32	1.98	15.11	7.01
20 m						
S (cm/sec)	27.8	9.9	0.4	3.1	69.5	4.1
U (cm/sec)	3.3	10.3	0.0	2.7	35.4	-23.4
V (cm/sec)	-24.7	12.1	0.3	3.7	16.0	-68.3
T (C)	8.49	0.92	1.24	4.34	12.46	7.20
40 m						
S (cm/sec)	18.1	46.8	0.8	3.7	44.8	3.6
U (cm/sec)	4.4	7.4	-0.4	2.8	21.9	-21.8
V (cm/sec)	-11.9	12.5	0.5	2.6	19.7	-43.8
T (C)	7.30	0.19	1.47	5.76	8.37	7.04
60 m						
S (cm/sec)	15.0	4.8	0.6	4.1	33.1	1.4
U (cm/sec)	2.6	7.1	-0.4	2.9	20.2	-21.9
V (cm/sec)	-2.8	13.5	0.1	1.8	22.3	-32.9
T (C)	7.12	0.11	-0.20	3.49	7.46	6.68

CARNATION (continued)

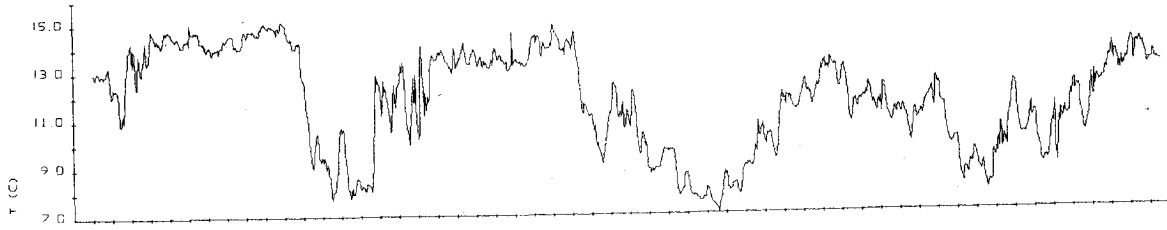
	MEAN	S.D.	SKEW	KURT	MAX	MIN
			80 m			
S (cm/sec)	12.9	4.3	0.7	3.8	30.9	0.4
U (cm/sec)	1.1	5.7	-0.1	2.6	14.6	-17.8
V (cm/sec)	2.4	12.0	-0.3	1.9	25.5	-30.8
T (C)	6.82	0.15	-0.21	3.40	7.22	6.31
			95 m			
S (cm/sec)	9.1	4.4	0.7	2.8	24.1	1.2
U (cm/sec)	0.7	3.9	-0.5	4.3	11.4	-21.8
V (cm/sec)	2.0	9.1	-0.2	2.3	20.8	-23.6
T (C)	6.73	0.18	-0.63	3.24	7.06	6.20
P (10^5 N/m ²)	9.59	0.06	-0.10	2.41	9.73	9.42



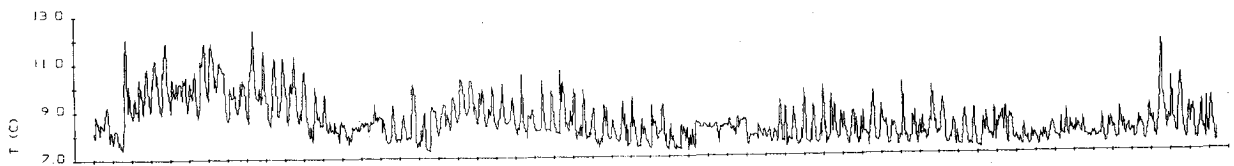




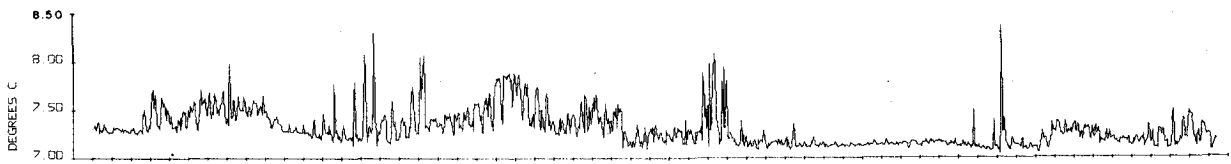
AIR TEMPERATURE LTD1244



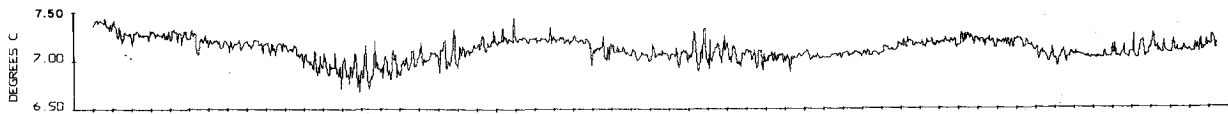
WATER TEMP (5FC) LTD 1244



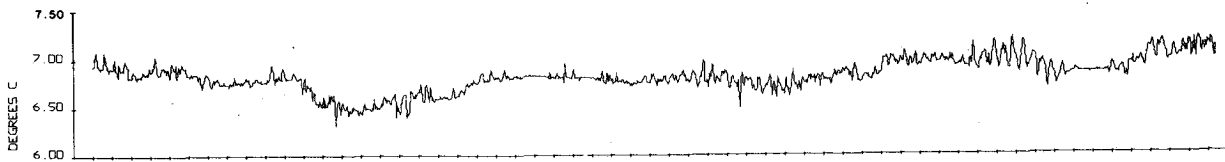
WATER TEMP (20 M) LT45520



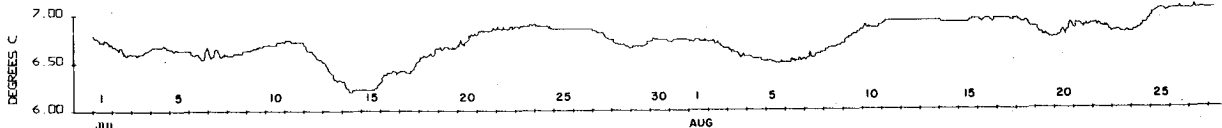
WATER TEMP (40 M) LT49112



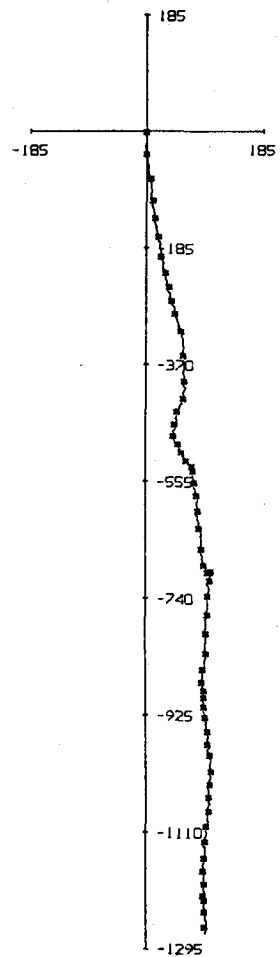
WATER TEMP (60 M) LT44213



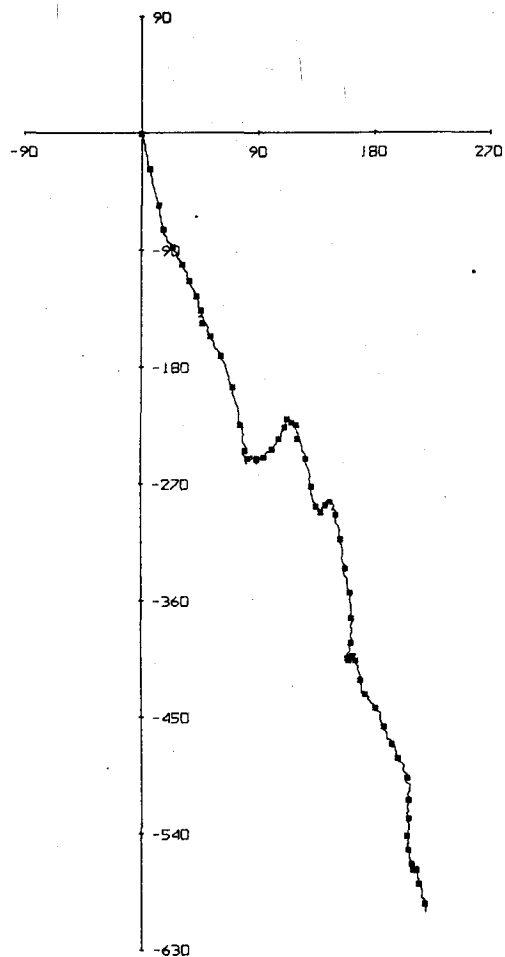
WATER TEMP (80 M) LT45420



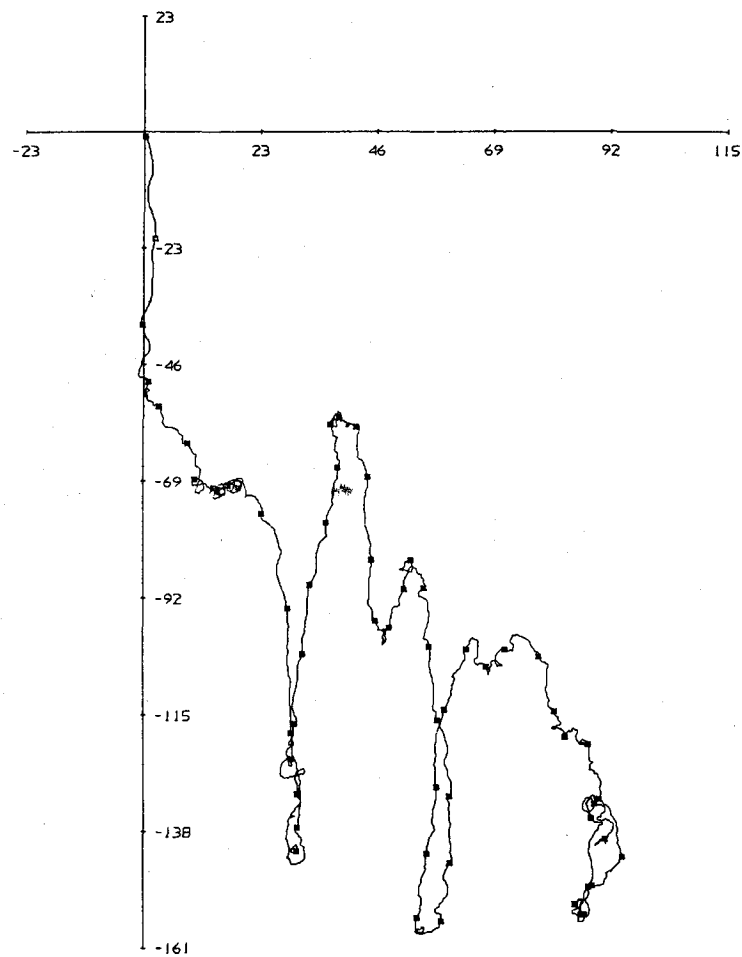
WATER TEMP (95 M) LTP50314



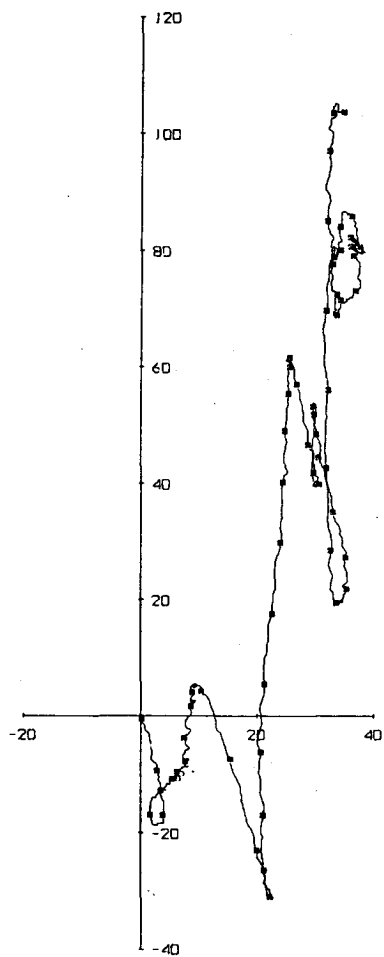
20 METERS AT CARNATION.
58.4 DAYS STARTING 2356 6/30/73



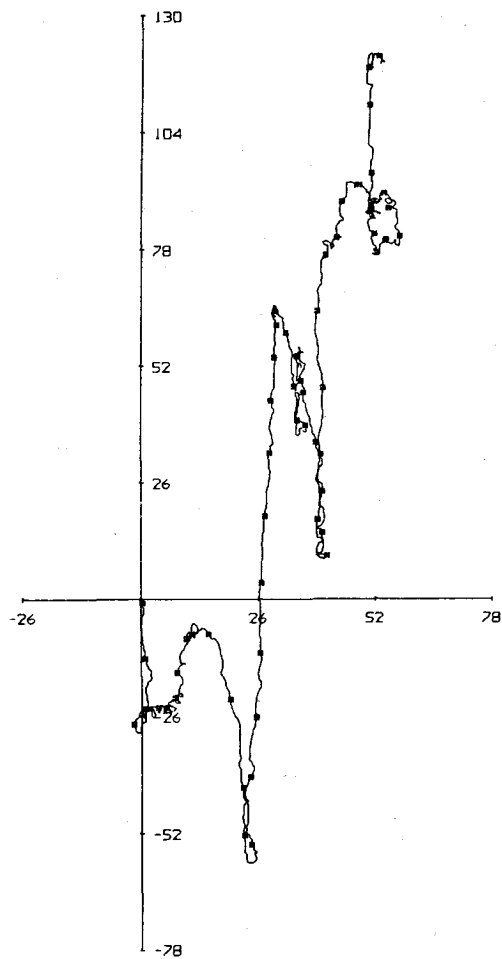
40 METERS AT CARNATION. 58.4 DAYS STARTING 2352 6/30/73



60 METERS AT CARNATION. 58.4 DAYS STARTING 2353 6/30/73

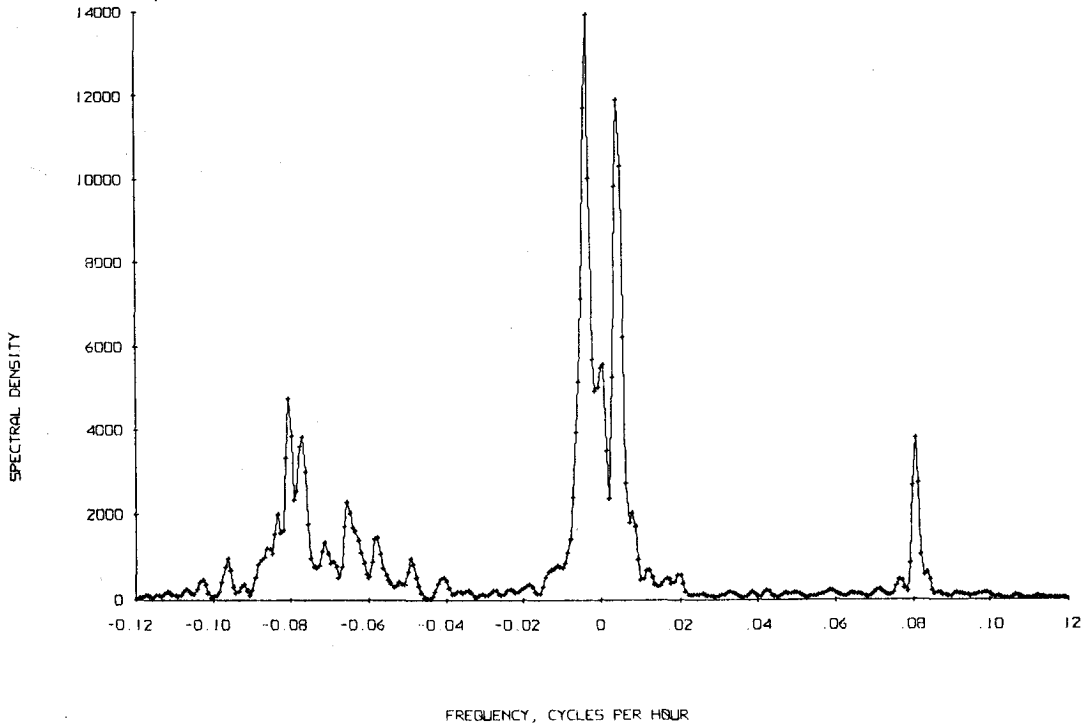


95 METERS AT CARNATION. 58.4 DAYS STARTING 2354 6/30/73

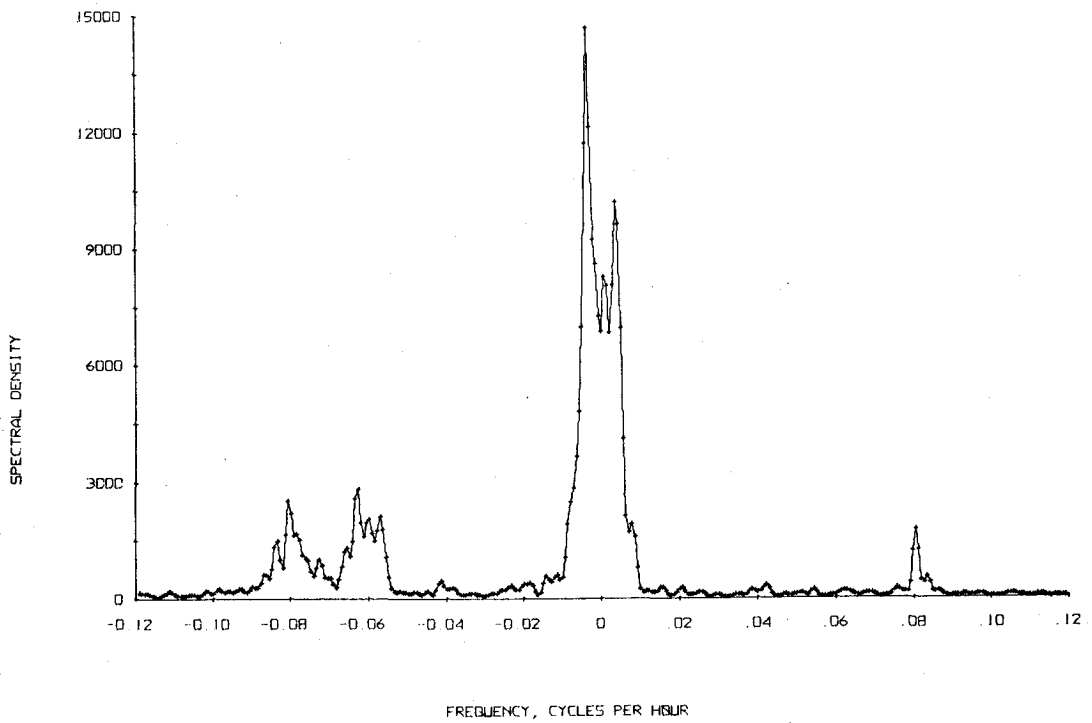


80 METERS AT CARNATION. 58.4 DAYS STARTING 2355 6/30/73

ROTARY SPECTRUM
20 METERS AT CARNATION. 6/30/73 TO 8/28/73. TAPE 455/20

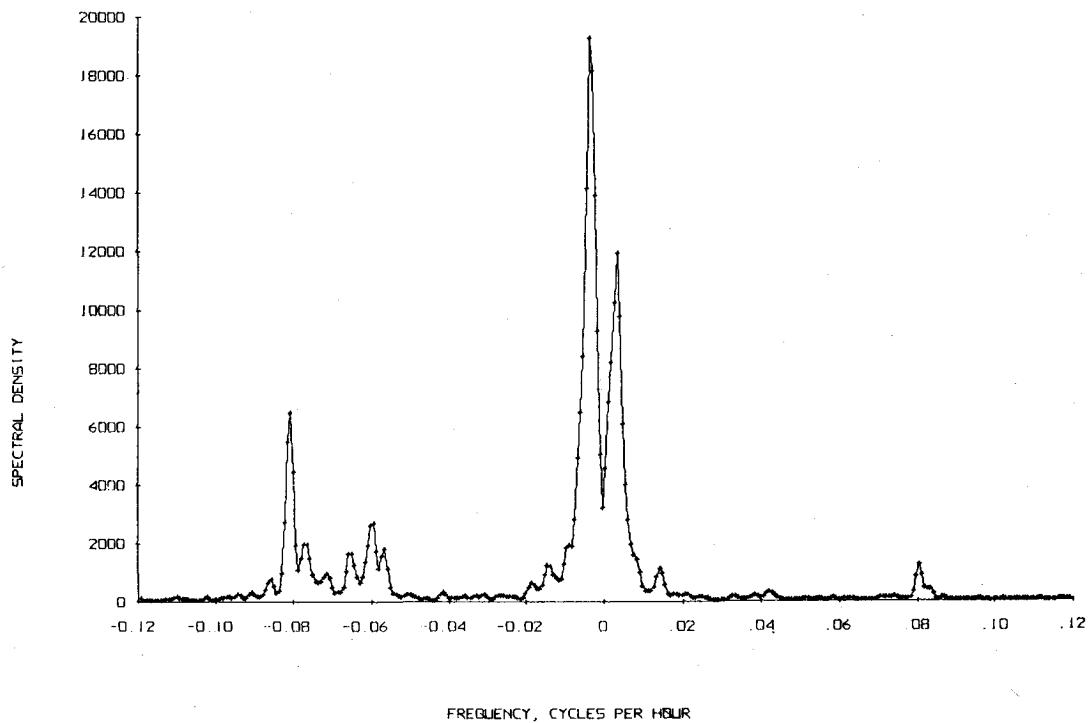


ROTARY SPECTRUM
40 METERS AT CARNATION. 6/30/73 TO 8/28/73. TAPE 491/12



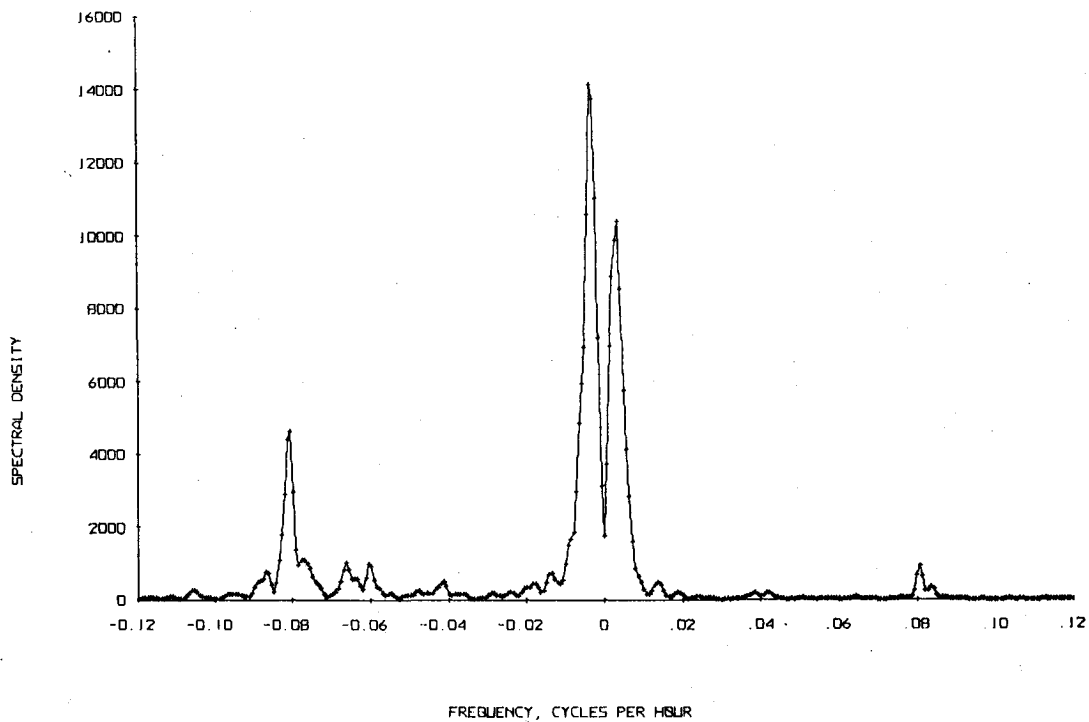
RSTARY SPECTRUM

60 METERS AT CARNATION. 6/30/73 TO 8/28/73. TAPE 442/13



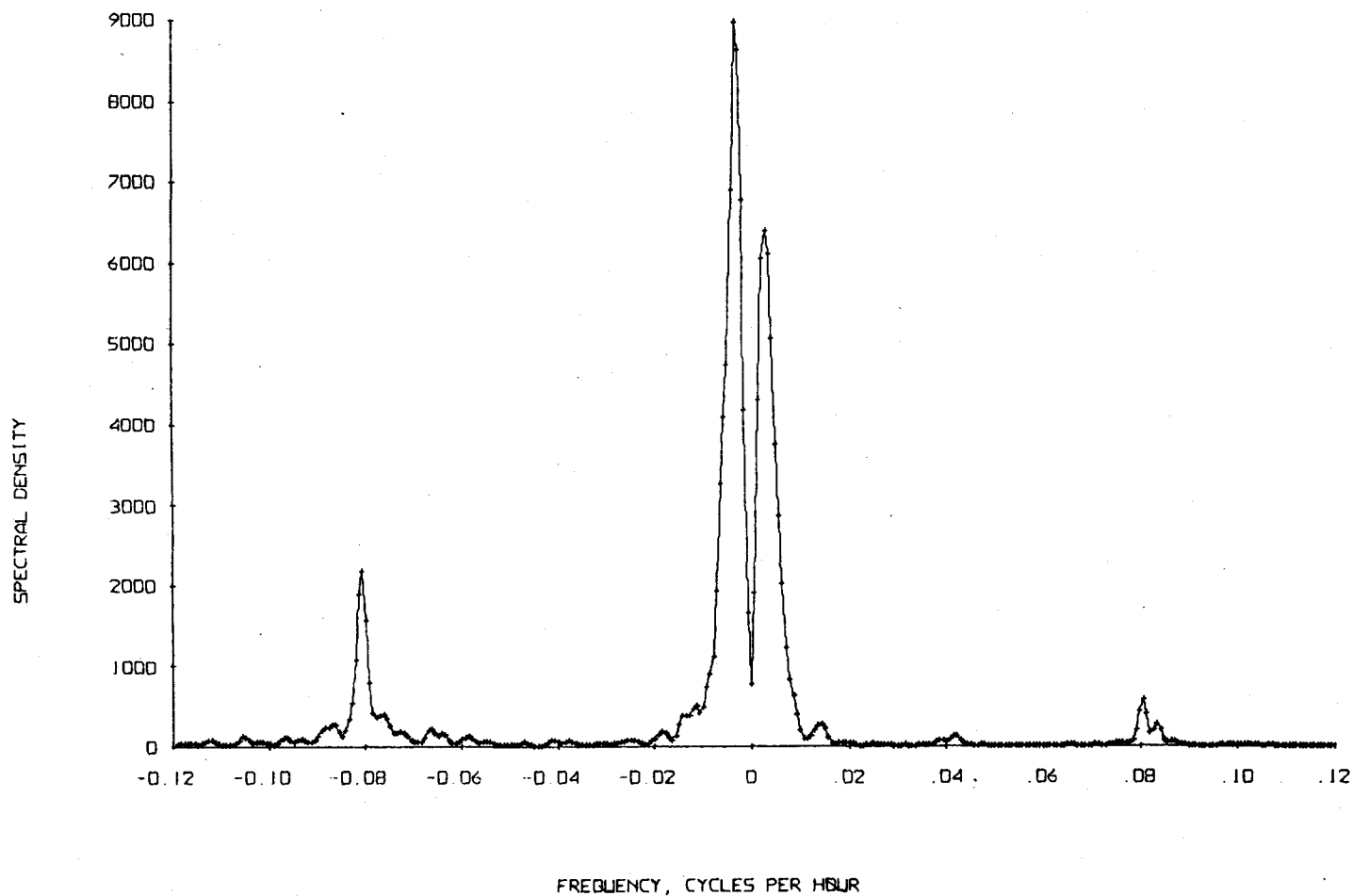
RSTARY SPECTRUM

80 METERS AT CARNATION. 6/30/73 TO 8/28/73. TAPE 454/20



ROTARY SPECTRUM

95 METERS AT CARNATION. 6/30/73 TO 8/28/73. TAPE 503/14



DAFFODIL

Position: 45°16.2'N, 124°11.9'W
Depth of Water: 140 m
Set at 1408 GMT, 23 July 1973 by R/V CAYUSE
Retrieved at 1510 GMT, 28 August 1973 by R/V YAQUINA

Instrumentation

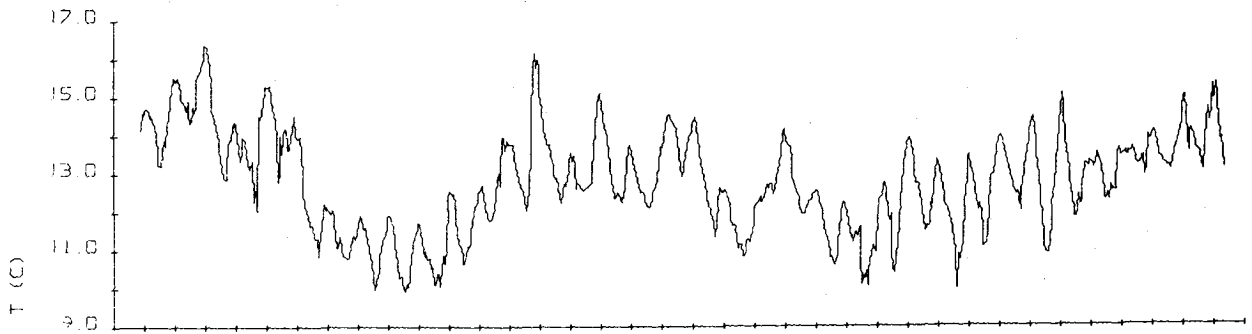
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0 m	D126/1	23 July - 28 August

The surface buoy recorded wind speed and direction, air temperature, and surface water temperature every 10 minutes.

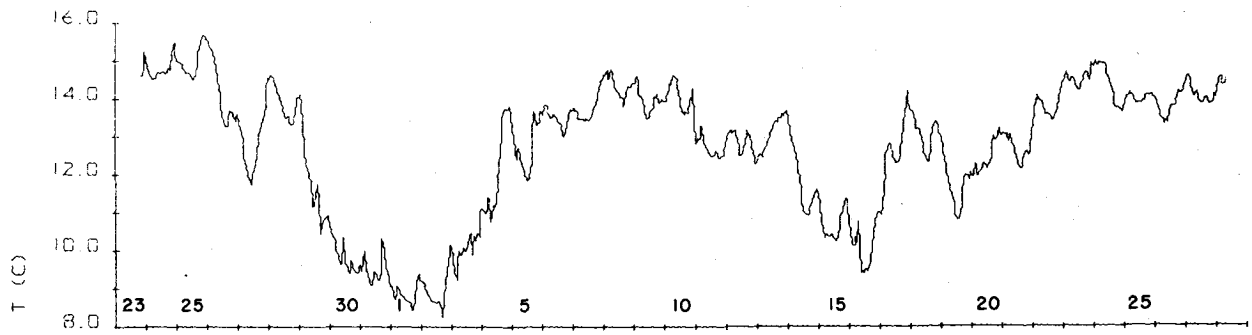
The buoy orientation sensor failed in this installation.

DAFFODIL

	MEAN	S.D.	SKEW	KURT	MAX	MIN
			sfc			
Air T (C)	12.79	1.30	0.08	2.53	16.37	9.90
Water T (C)	12.66	1.77	-0.75	2.51	15.68	8.23



AIR TEMPERATURE LTD(26)



WATER TEMP. (SFC) LTD(26)

EDELWEISS

Position: 45°16.2'N, 124°18.7'W
 Depth of Water: 200 m
 Set at 1904 GMT, 22 July 1973 by R/V CAYUSE
 Retrieved at 1316 GMT, 28 August 1973 by R/V YAQUINA

Instrumentation

<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0.0 m	D74/8	23 July - 28 August
20 m	19.3 m	688/9	23 July - 28 August
40 m	46.7 m	682/9	23 July - 28 August
80 m	81.0 m	456/22	23 July - 28 August
120 m	121.1 m	683/9	23 July - 28 August
180 m	181.3 m	487/10	23 July - 28 August
195 m	196.3 m	495/18	23 July - 28 August

All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the 20, 40, 120, and 195 m meters recorded conductivity. The surface buoy recorded wind speed and direction, air temperature, and surface water temperature.

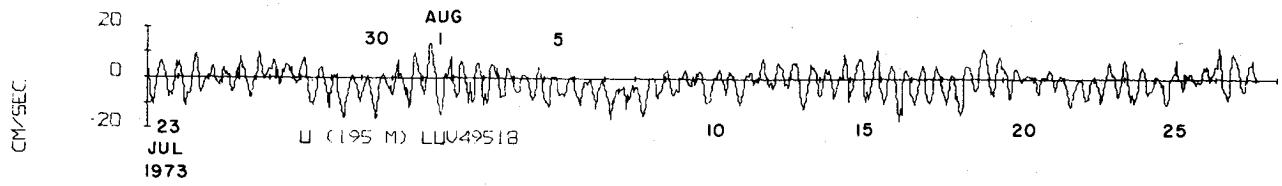
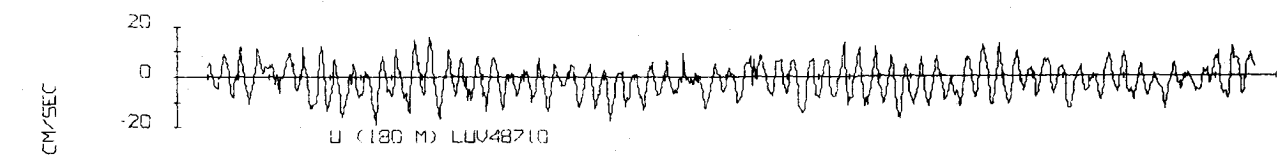
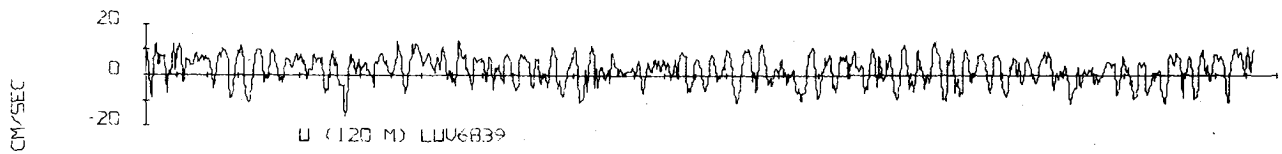
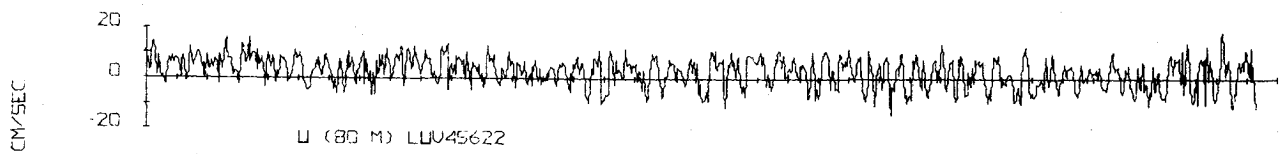
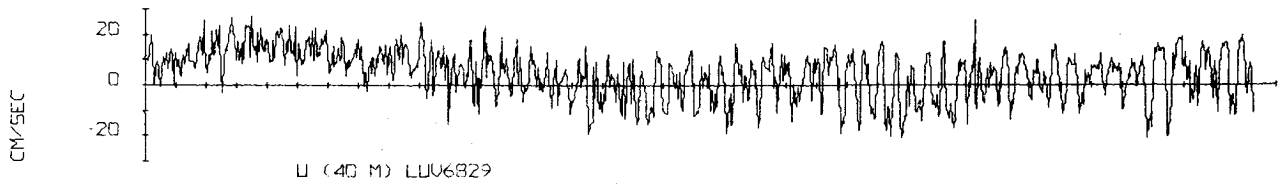
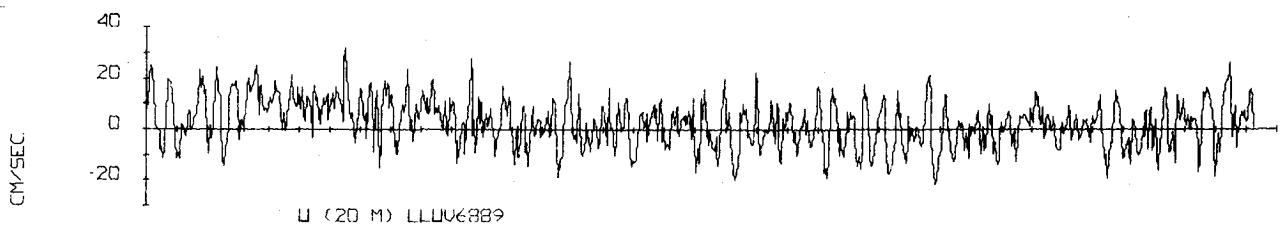
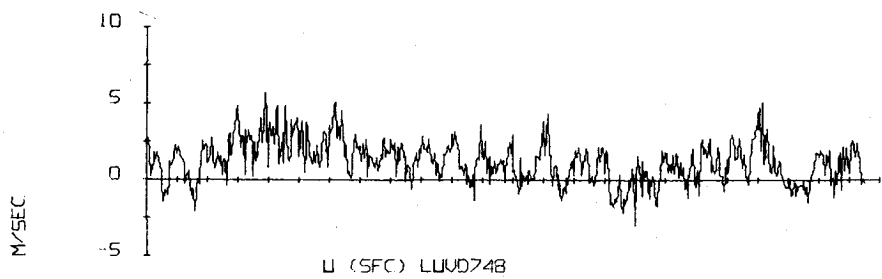
Wind direction sensor failed after 15 August. Wind speed sensor failed after 23 August.

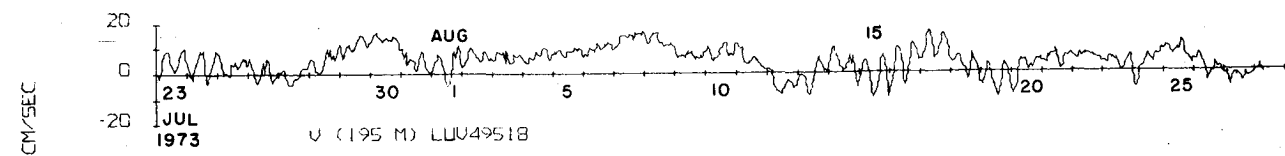
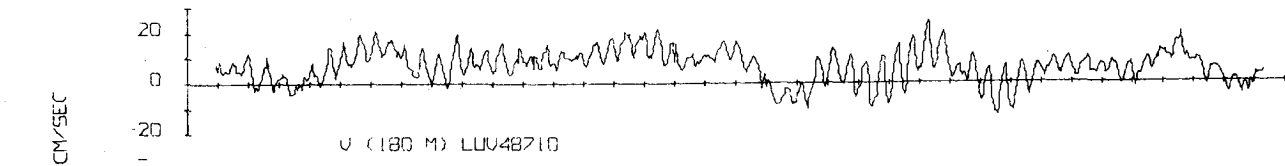
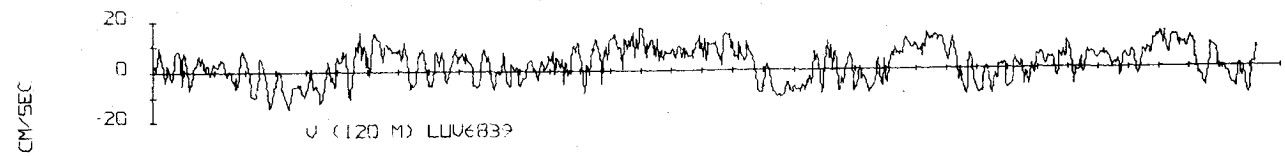
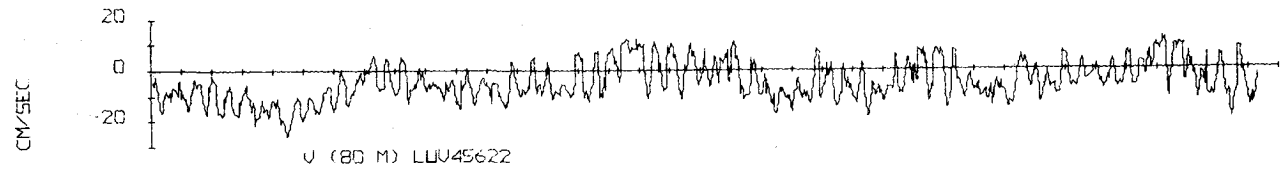
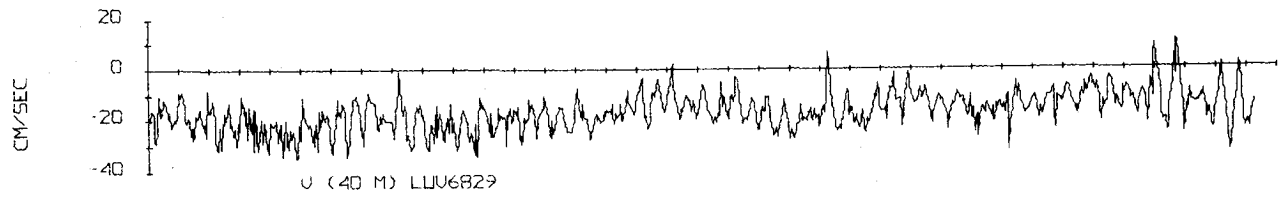
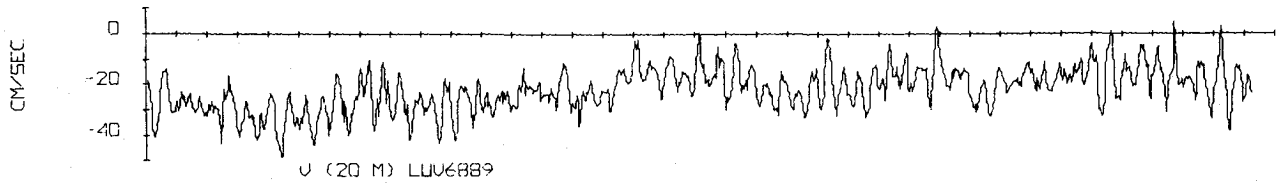
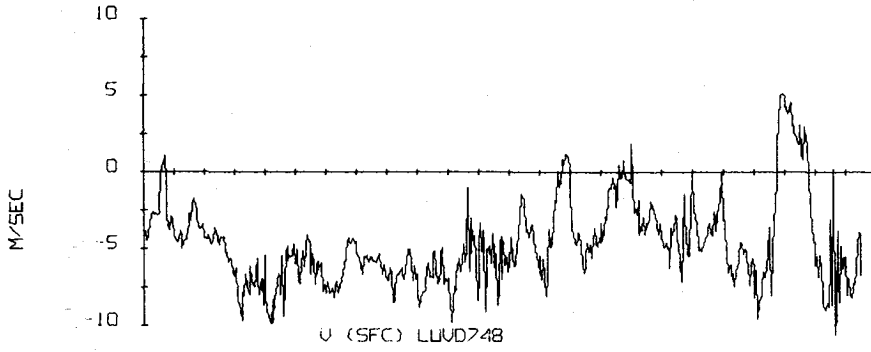
EDELWEISS

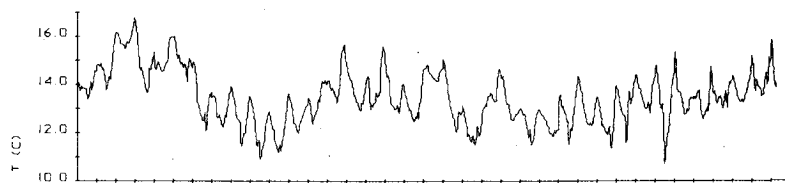
	MEAN	S.D.	SKEW	KURT	MAX	MIN
Sfc						
S (m/sec)	5.3	2.2	-0.1	2.5	10.7	0.3
U (m/sec)	1.2	1.4	0.2	3.1	5.7	-3.0
V (m/sec)	-4.7	2.8	1.0	4.3	5.1	-10.6
Air T(C)	13.48	1.09	0.31	2.82	16.79	10.72
Water T(C)	12.90	1.31	-0.29	2.68	15.76	9.10
20 m						
S (cm/sec)	24.1	8.1	0.4	2.9	48.9	2.9
U (cm/sec)	2.8	9.2	0.0	2.7	32.5	-21.7
V (cm/sec)	-21.9	8.6	0.0	3.1	4.6	-48.8
T (C)	9.12	0.89	0.80	3.19	12.38	7.72
P (10^5 N/m ²)	1.93	0.07	0.37	2.25	2.11	1.79
S (o/oo)	32.09	0.11	-0.48	2.68	32.39	31.73
40 m						
S (cm/sec)	20.1	6.4	0.4	2.9	39.0	3.3
U (cm/sec)	4.7	9.6	-0.4	2.6	27.9	-21.2
V (cm/sec)	-16.8	7.0	0.3	3.8	11.1	-34.6
T (C)	7.53	0.15	0.50	3.03	8.03	7.23
P (10^5 N/m ²)	4.67	0.07	-0.08	2.26	4.83	4.50
S (o/oo)	32.37	0.10	0.16	2.95	32.72	32.14

EDELWEISS (continued)

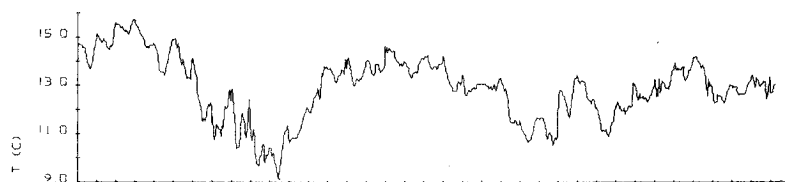
	MEAN	S.D.	SKEW	KURT	MAX	MIN
80 m						
S (cm/sec)	10.2	3.8	0.7	4.2	27.2	0.5
U (cm/sec)	2.8	5.7	-0.3	2.5	18.9	-14.1
V (cm/sec)	-4.9	7.4	0.3	2.6	12.8	-25.8
T (C)	7.35	0.14	0.60	2.43	7.68	7.15
120 m						
S (cm/sec)	8.7	3.0	0.2	2.8	18.2	1.0
U (cm/sec)	2.2	5.5	-0.4	2.5	13.8	-16.3
V (cm/sec)	2.4	6.6	-0.3	2.2	17.1	-14.8
T (C)	7.12	0.16	0.10	2.21	7.53	6.73
P (10^5 N/m ²)	12.11	0.02	1.07	4.31	12.36	11.96
S (o/oo)	33.69	0.03	-0.05	2.90	33.76	33.58
180 m						
S (cm/sec)	10.5	4.3	0.6	2.9	25.3	0.7
U (cm/sec)	-1.4	6.2	0.0	2.5	16.3	-19.4
V (cm/sec)	6.7	6.6	-0.3	3.0	24.4	-13.1
T (C)	6.46	0.20	-0.56	2.13	6.78	5.98
195 m						
S (cm/sec)	8.3	3.9	0.5	3.1	21.2	0.5
U (cm/sec)	-1.4	5.3	-0.2	2.8	13.6	-16.9
V (cm/sec)	5.0	5.5	-0.3	2.8	17.0	-10.3
T (C)	6.39	0.21	-0.39	2.05	6.77	5.91
P (10^5 N/m ²)	19.63	0.02	0.16	2.47	19.81	19.45



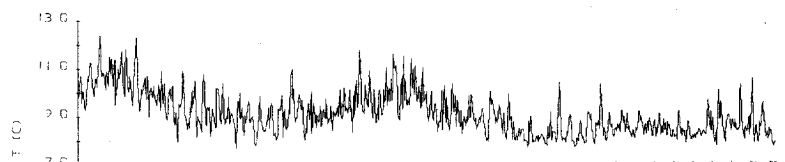




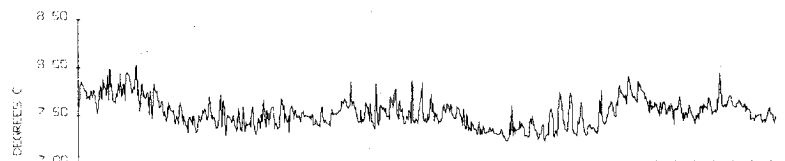
AIR TEMPERATURE LTD748



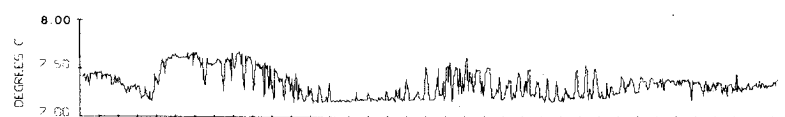
WATER TEMP (SFC) LTD748



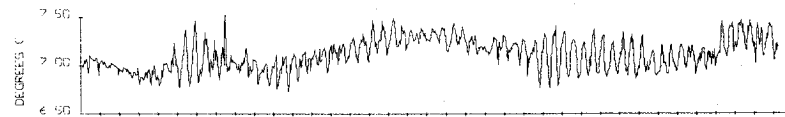
WATER TEMP (20 M) LTP56889



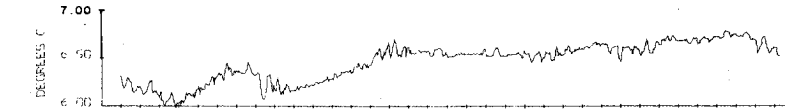
WATER TEMP (40 M) LTP56822



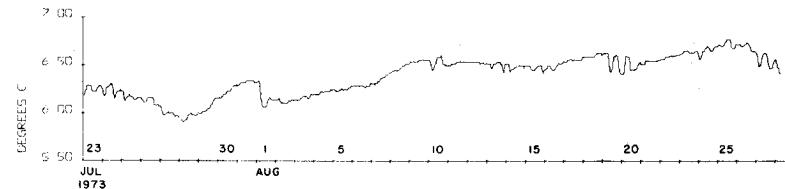
WATER TEMP (80 M) LTM5622



WATER TEMP (120 M) LTP56839



WATER TEMP (180 M) LT48710



WATER TEMP (195 M) LTP42513

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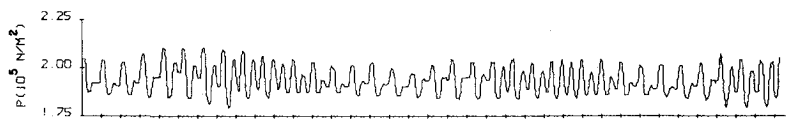
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10

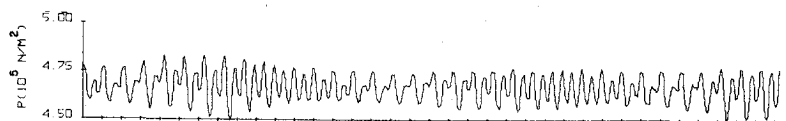
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20

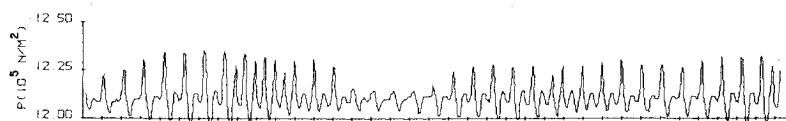
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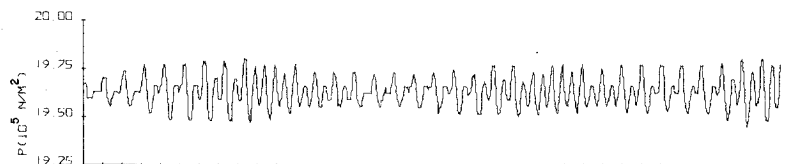
PRESSURE (20 M) LTP56889



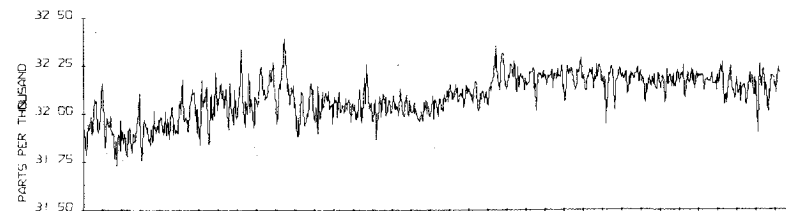
PRESSURE (40 M) LTP56829



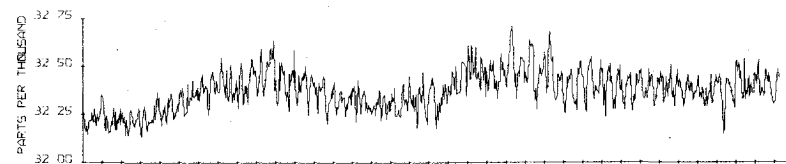
PRESSURE (120 M) LTP56839



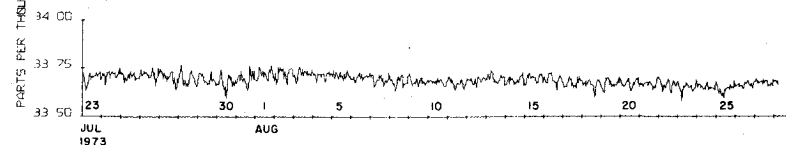
PRESSURE (195 M) LTP49518



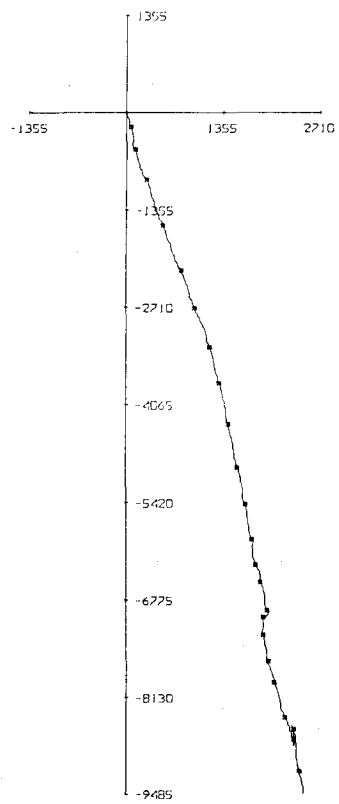
SALINITY (20 M) LTP56839



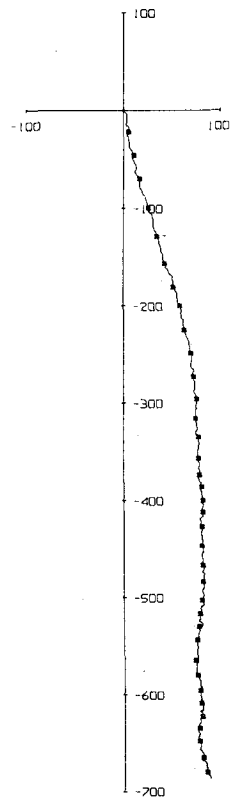
SALINITY (40 M) LTP56829



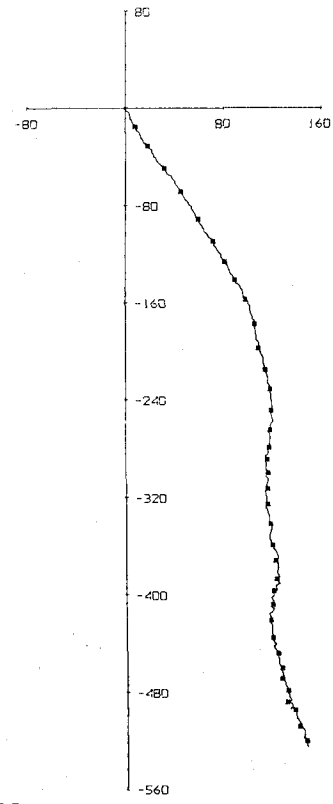
SALINITY (120 M) LTP56839



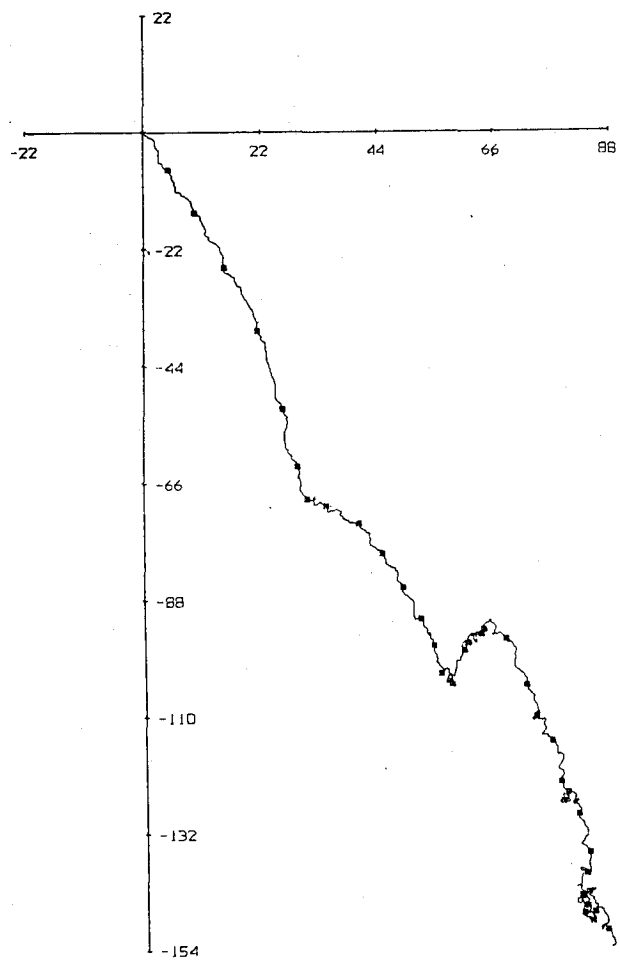
WIND AT EDELWEISS 36.5 DAYS STARTING 0120 23 JULY 73 GMT



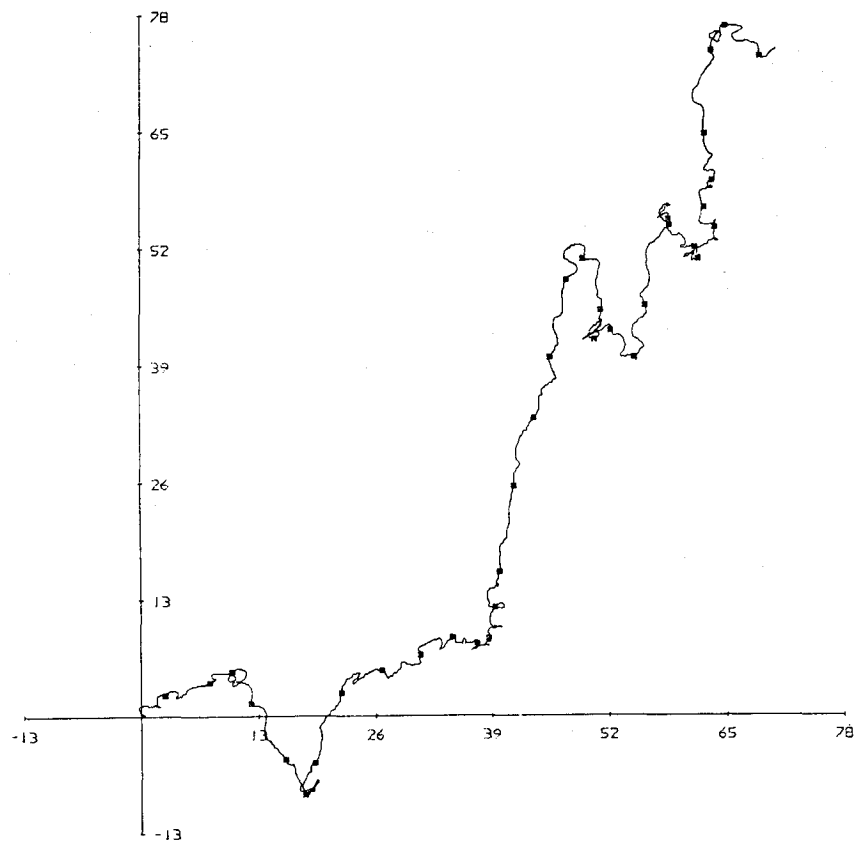
20 M AT EDELWEISS 36.3 DAYS STARTING 0119 23 JULY 73 GMT



40 M AT EDELWEISS 36.3 DAYS STARTING 0113 2/23/73 GMT



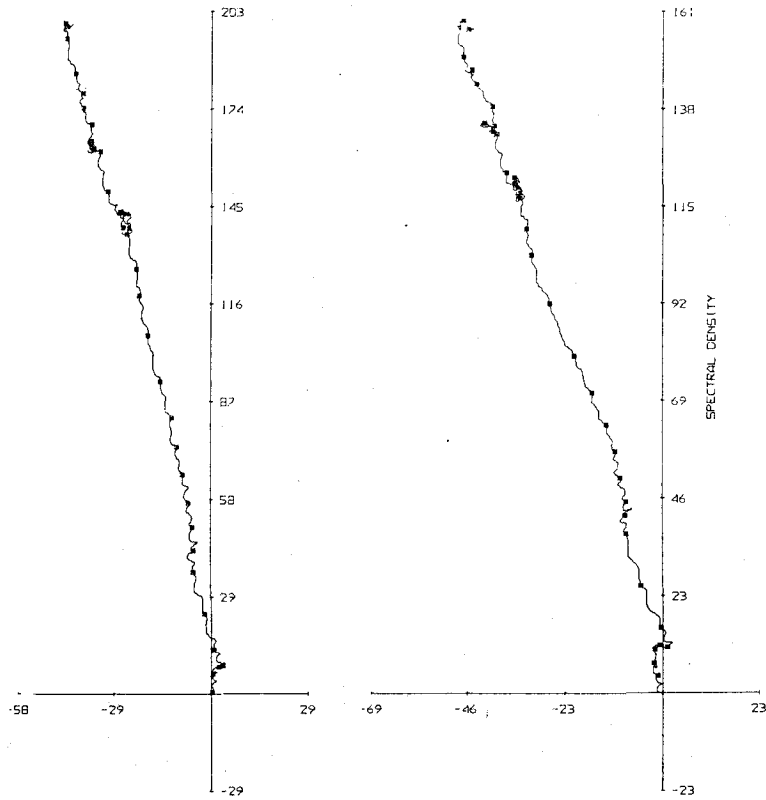
80 M AT EDELWEISS. 36.3 DAYS STARTING 0106 7/23/73 GMT



120 M AT EDELWEISS. 36.3 DAYS STARTING 0113 23 JULY 1973 GMT

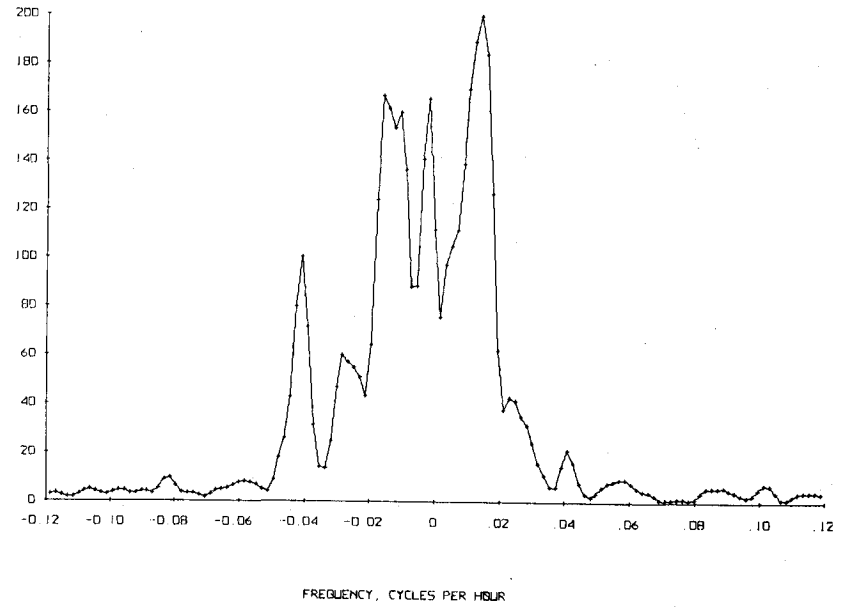
PRIMARY SPECTRUM

WIND AT EDELWEISS. 7/22/73 TO 8/15/73. TAPE D748

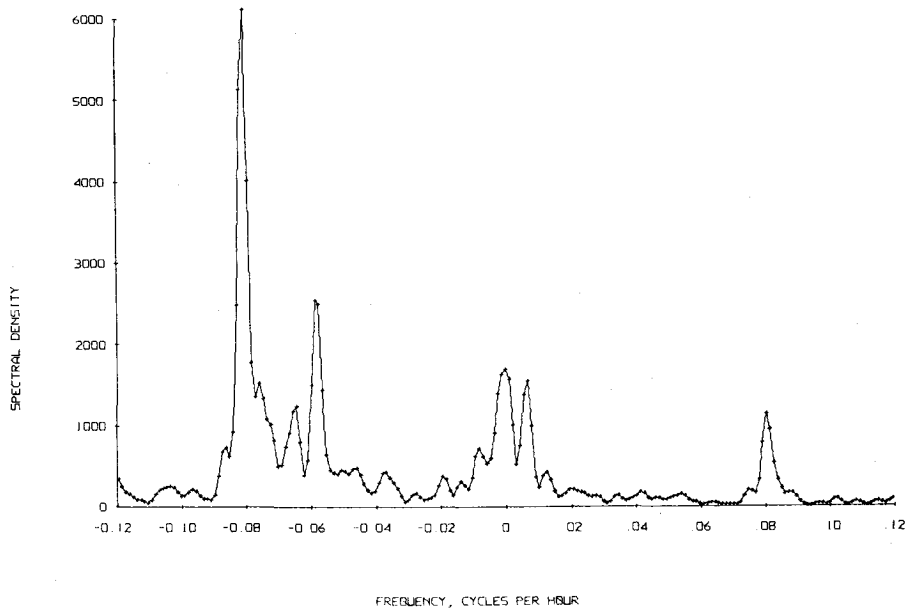


180 M AT EDELWEISS. 33 0 DAYS
STARTING 2257 7/24/73 GMT

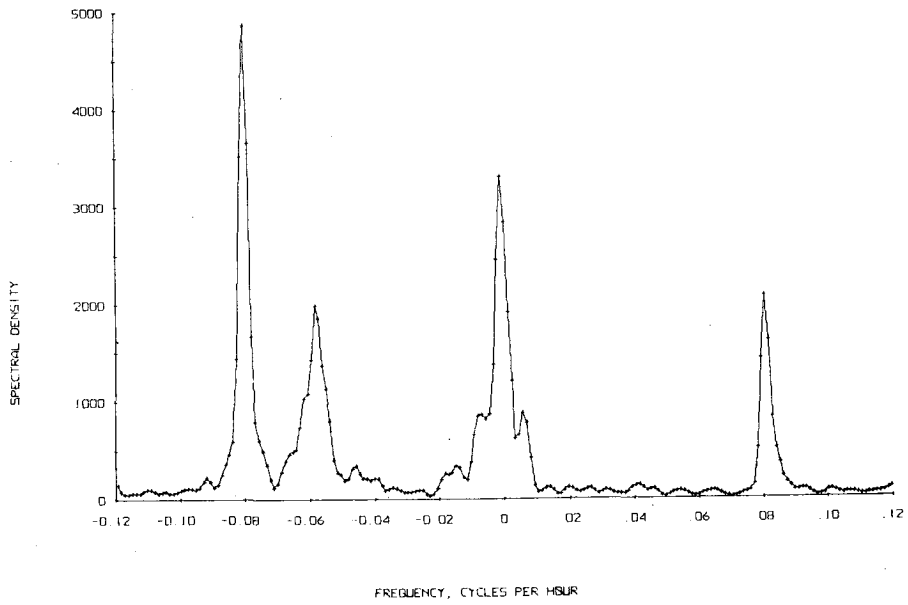
195 M AT EDELWEISS. 36 3 DAYS STARTING 0115 7/23/73 GMT



ROTARY SPECTRUM
20 M AT EDELWEISS 7/22/73 TO 8/28/73 TAPE 688/9

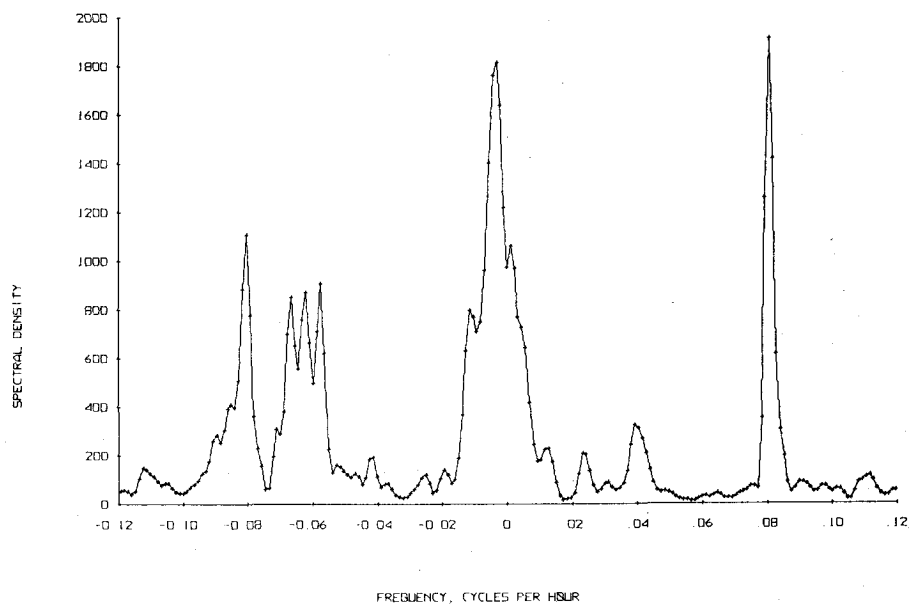


ROTARY SPECTRUM
40 M AT EDELWEISS 7/22/73 TO 8/28/73 TAPE 682/9



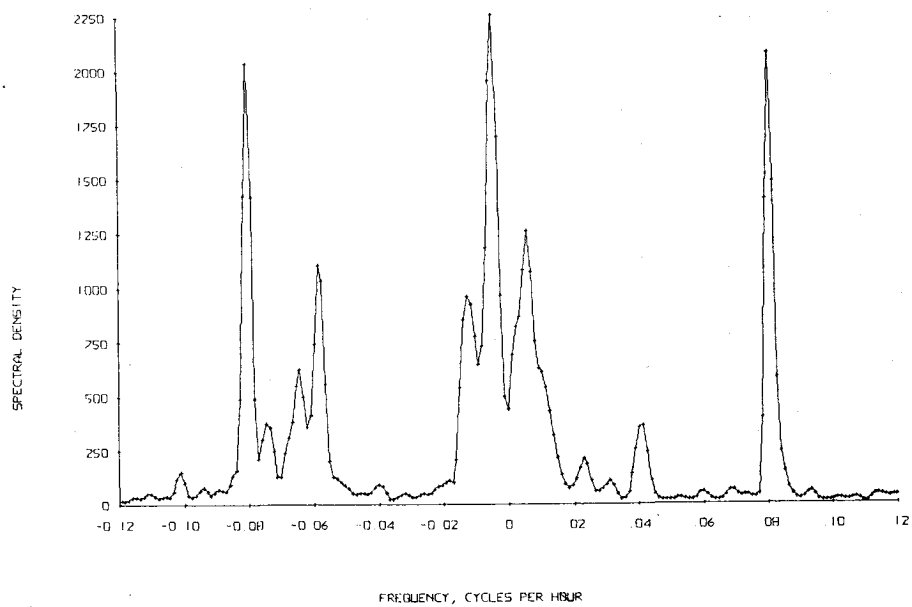
ROTARY SPECTRUM

80 M AT EDELWEISS, 7/22/73 TO 8/28/73, TAPE 456/22



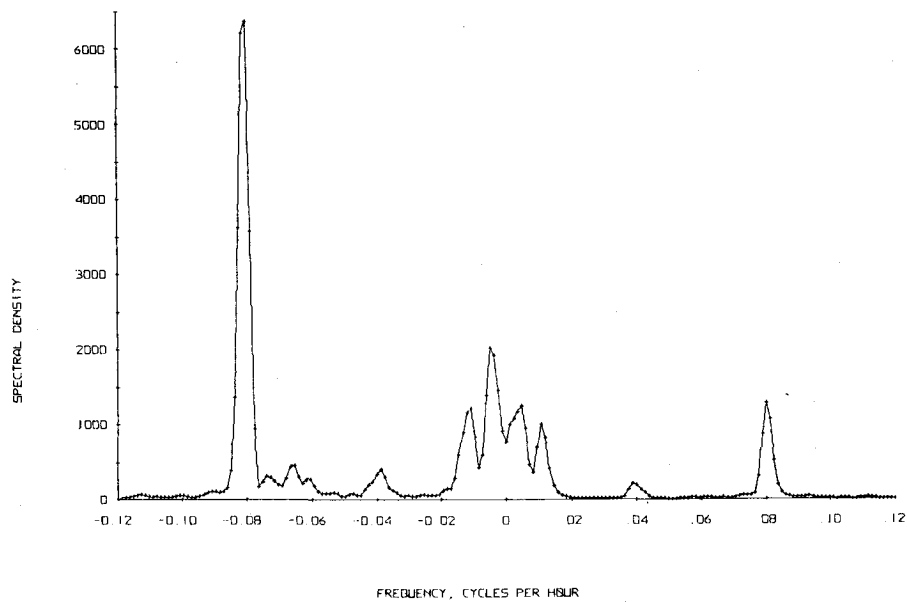
ROTARY SPECTRUM

120 M AT EDELWEISS, 7/22/73 TO 8/28/73, TAPE 683/9



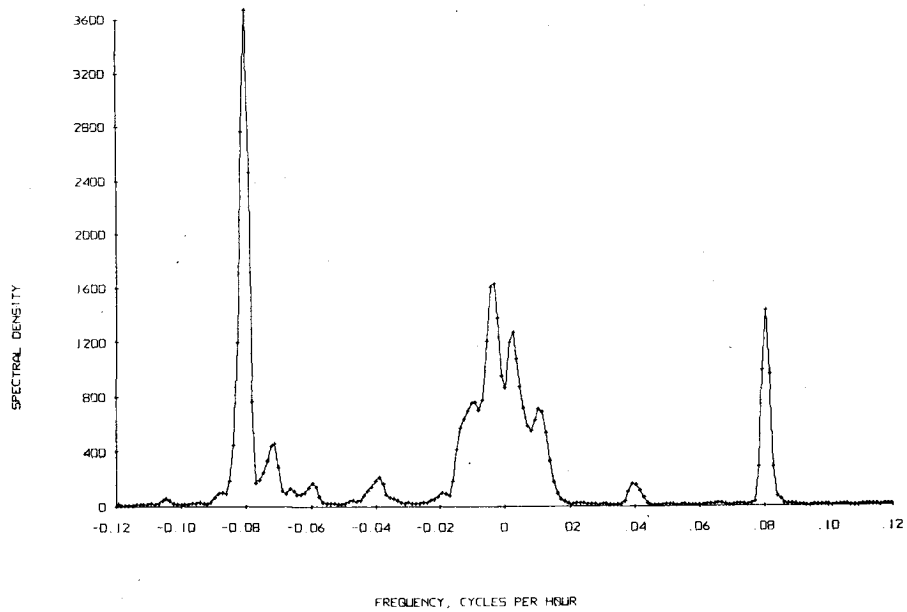
ROTARY SPECTRUM

180 M AT EDELWEISS. 7/24/73 TO 8/28/73. TAPE 487/10



ROTARY SPECTRUM

195 M AT EDELWEISS. 7/22/73 TO 8/28/73. TAPE 495/18



FORSYTHIA

Position: 45°16.8'N, 124°39.6'W

Depth of Water: 500 m

Surface meter set at 1917 GMT, 24 July 1973 by R/V YAQUINA

Remaining meters set at 2221 GMT, 30 June 1973 by R/V YAQUINA

Retrieved at 1655 GMT, 26 August 1973 by R/V YAQUINA

Instrumentation

<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0.0 m	D75/12	25 July - 26 August
40 m	44.0 m	440/18	1 July - 26 August
80 m	88.0 m	497/17	1 July - 26 August
120 m	127.0 m	502/15	1 July - 26 August
180 m	188.0 m	486/12	1 July - 26 August
300 m		453/22	1 July - 26 August

All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the 80 and 120 m meter recorded pressure. The surface buoy recorded wind speed and direction, air temperature, and surface water temperature.

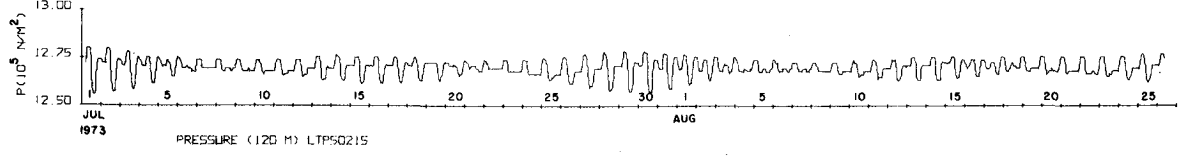
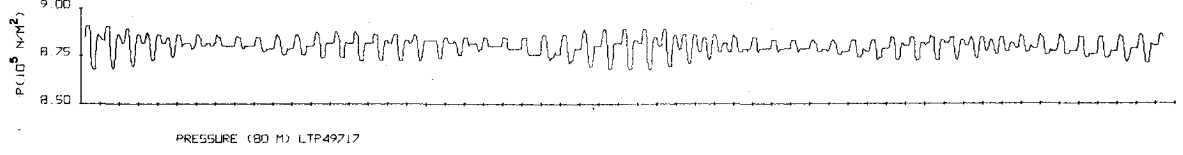
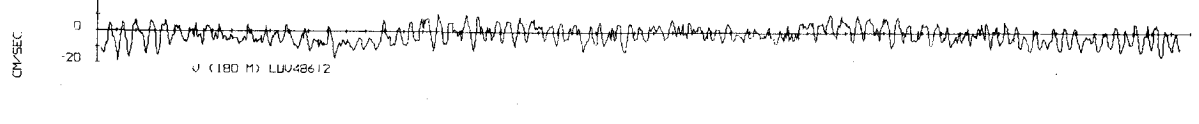
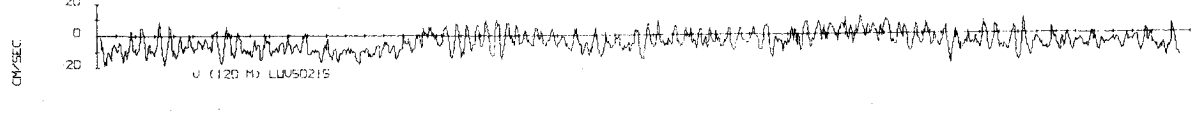
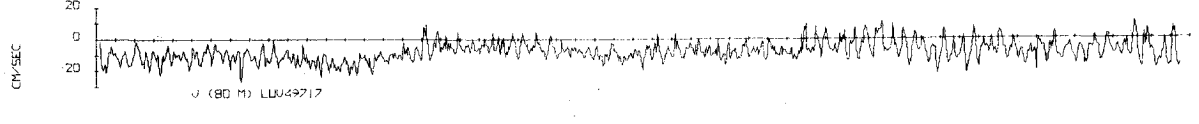
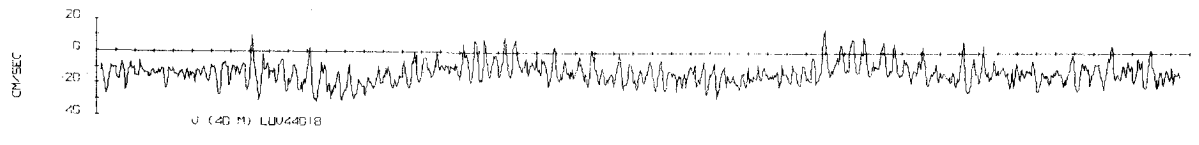
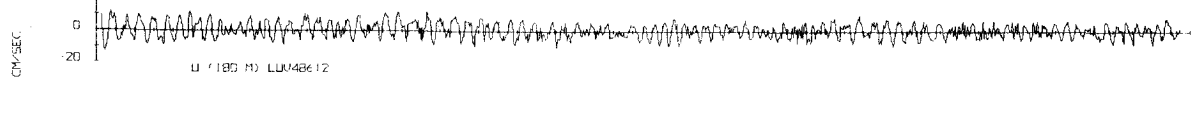
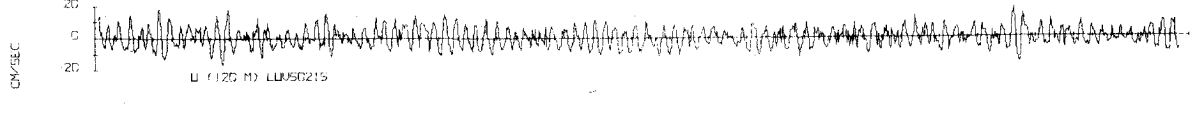
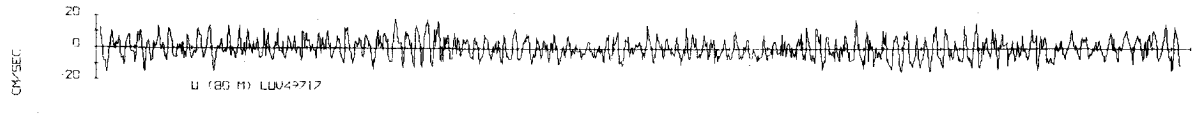
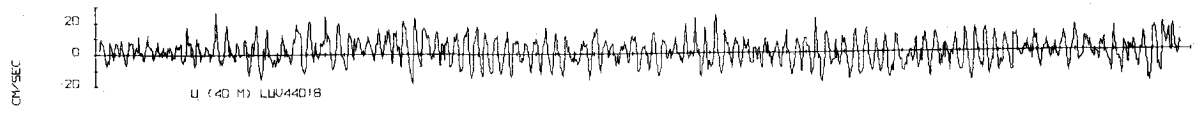
Buoy orientation sensor failed at surface. Surface speed record was poor but salvageable. Meter at 300 m had no readable data.

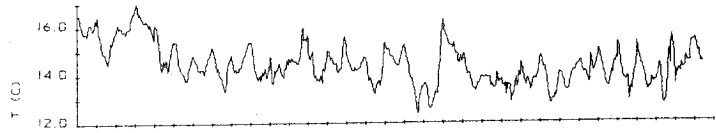
FORSYTHIA

	MEAN	S.D.	SKEW	KURT	MAX	MIN
sfc						
Air T (C)	14.43	0.85	0.48	2.93	16.99	12.35
Water T (C)	14.32	0.69	0.06	2.35	15.81	12.77
40 m						
S (cm/sec)	15.6	5.2	0.6	3.2	35.5	2.7
U (cm/sec)	1.1	8.0	0.0	2.6	26.7	-20.0
V (cm/sec)	-12.7	6.8	0.4	4.1	14.7	-31.7
T (C)	8.93	0.38	0.26	3.32	10.26	7.89
80 m						
S (cm/sec)	11.0	4.3	0.5	3.1	27.0	0.7
U (cm/sec)	0.2	6.2	0.2	2.5	18.5	-15.6
V (cm/sec)	-8.1	5.9	0.3	3.4	11.0	-26.9
T (C)	7.91	0.19	-0.67	2.58	8.23	7.43
P (10^5 N/m ²)	8.80	0.04	-0.32	2.77	8.90	8.68
120 m						
S (cm/sec)	8.6	3.5	0.7	3.4	22.0	0.8
U (cm/sec)	0.2	5.8	0.2	2.5	18.8	-16.3
V (cm/sec)	-4.5	5.7	0.3	2.6	11.4	-18.5
T (C)	7.80	0.10	-0.41	2.68	8.01	7.53
P (10^5 N/m ²)	12.70	0.04	-0.45	3.42	12.80	12.56

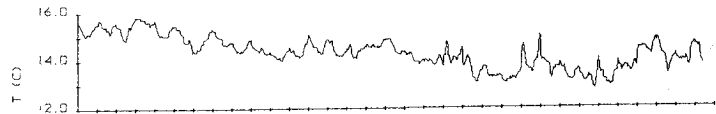
FORSYTHIA (continued)

	MEAN	S.D.	SKEW	KURT	MAX	MIN
			180 m			
S (cm/sec)	6.8	2.7	0.8	4.2	19.0	0.6
U (cm/sec)	0.7	4.5	0.0	2.3	12.1	-13.2
V (cm/sec)	-1.8	5.4	0.0	2.4	11.9	-18.9
T (C)	7.12	0.12	-0.27	2.91	7.46	6.76

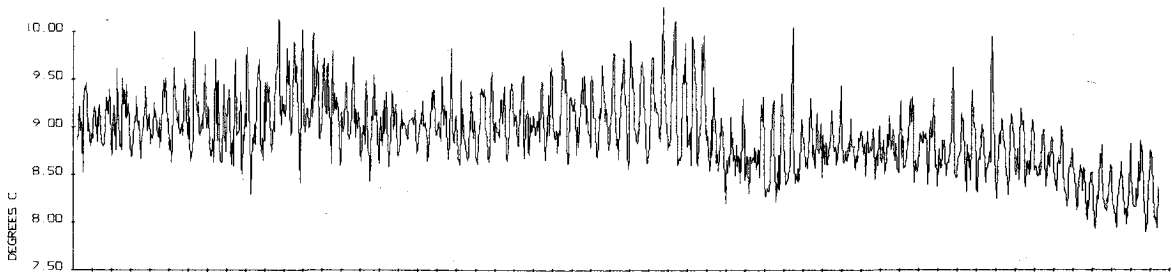




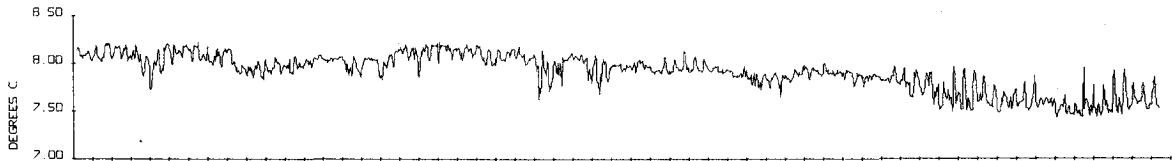
AIR TEMPERATURE LTD2512



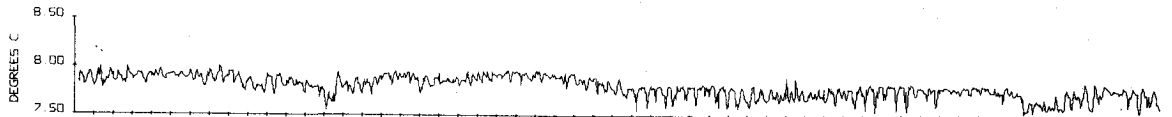
WATER TEMP (SFC) LTD2512



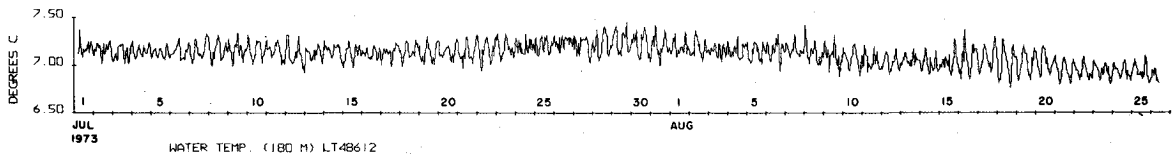
WATER TEMP (40 M) LT44D18



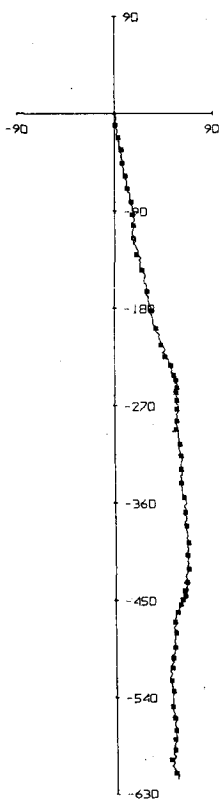
WATER TEMP (80 M) LUU49717



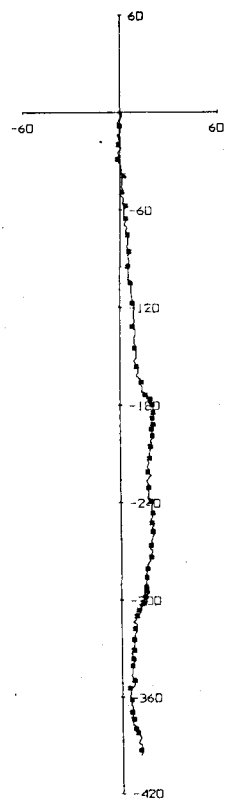
WATER TEMP (120 M) LTP50215



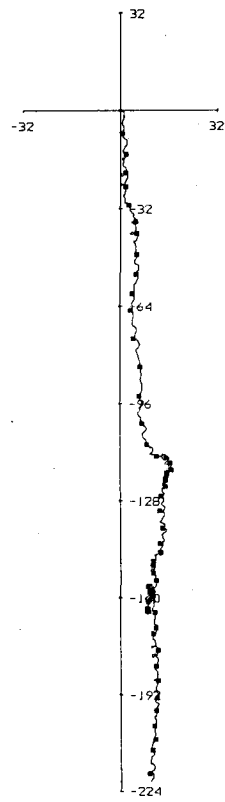
WATER TEMP (180 M) LT48612



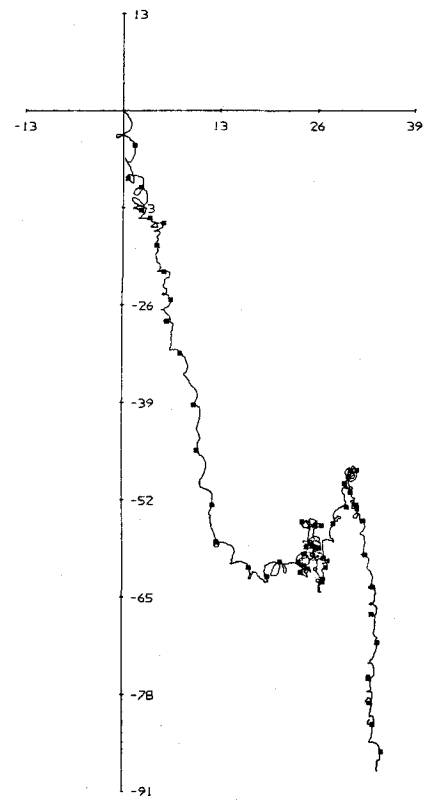
40 METERS AT FORSYTHIA
56 3 DAYS STARTING 0431 7/1/73



80 METERS AT FORSYTHIA
56 3 DAYS STARTING 0428 7/1/73



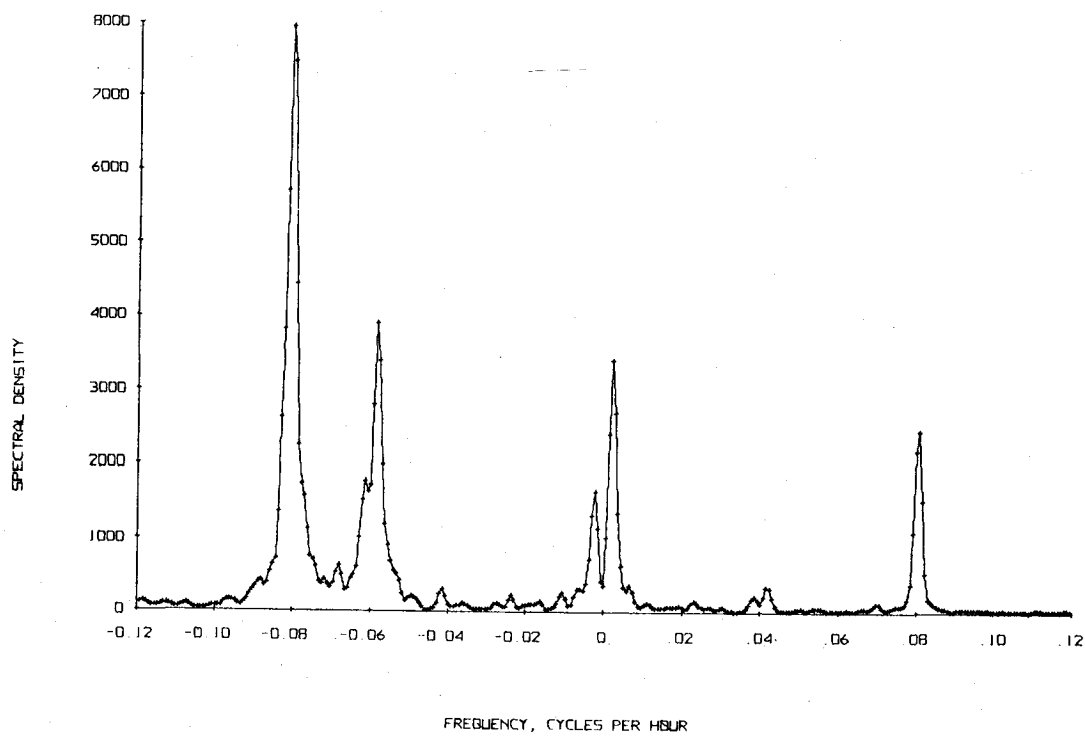
120 METERS AT FORSYTHIA
56 3 DAYS STARTING 0433 7/1/73



180 METERS AT FORSYTHIA. 56 3 DAYS STARTING 0437 7/1/73

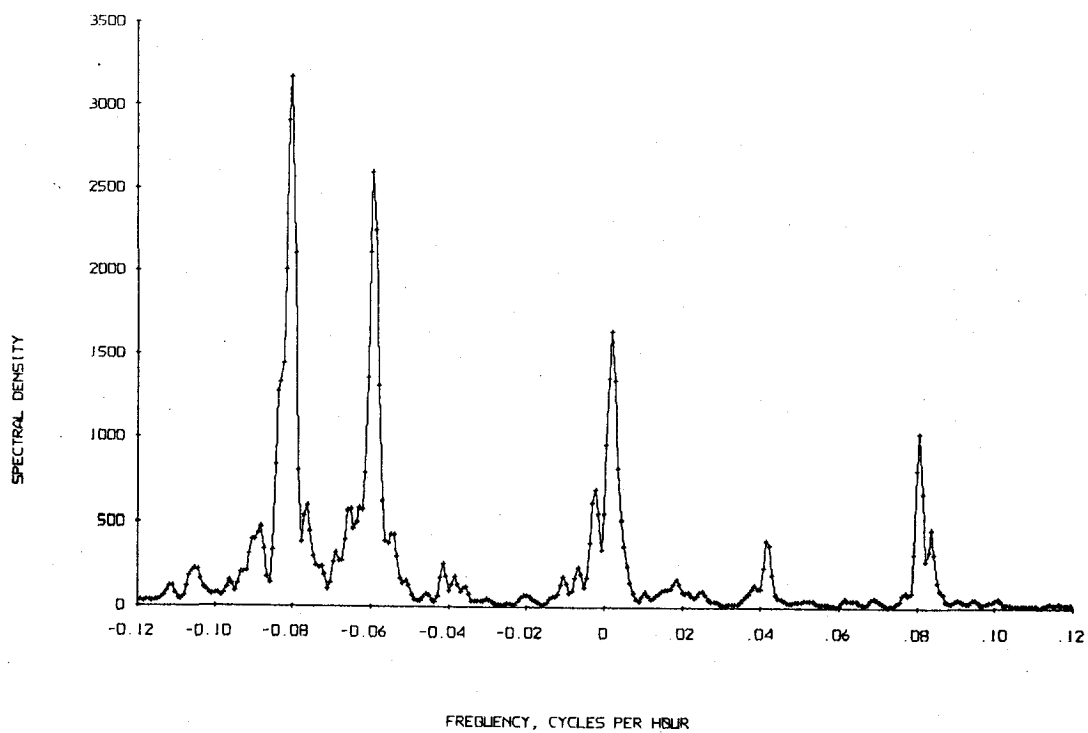
ROTARY SPECTRUM

40 METERS AT FORSYTHIA. 6/30/73 TB 8/26/73. TAPE 440/18

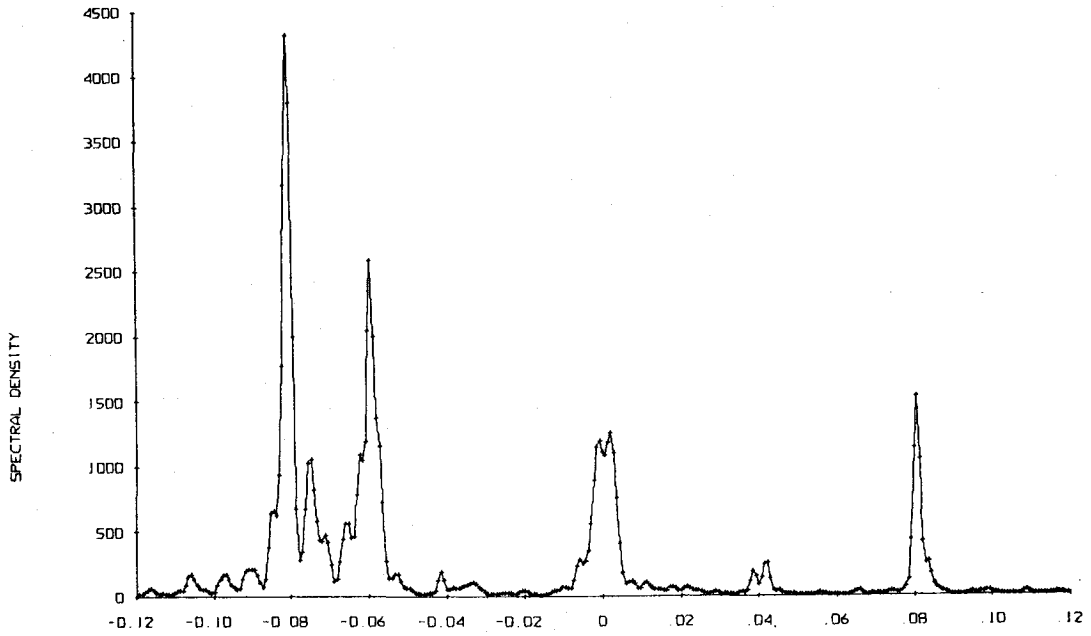


ROTARY SPECTRUM

80 METERS AT FORSYTHIA. 6/30/73 TB 8/26/73. TAPE 497/17

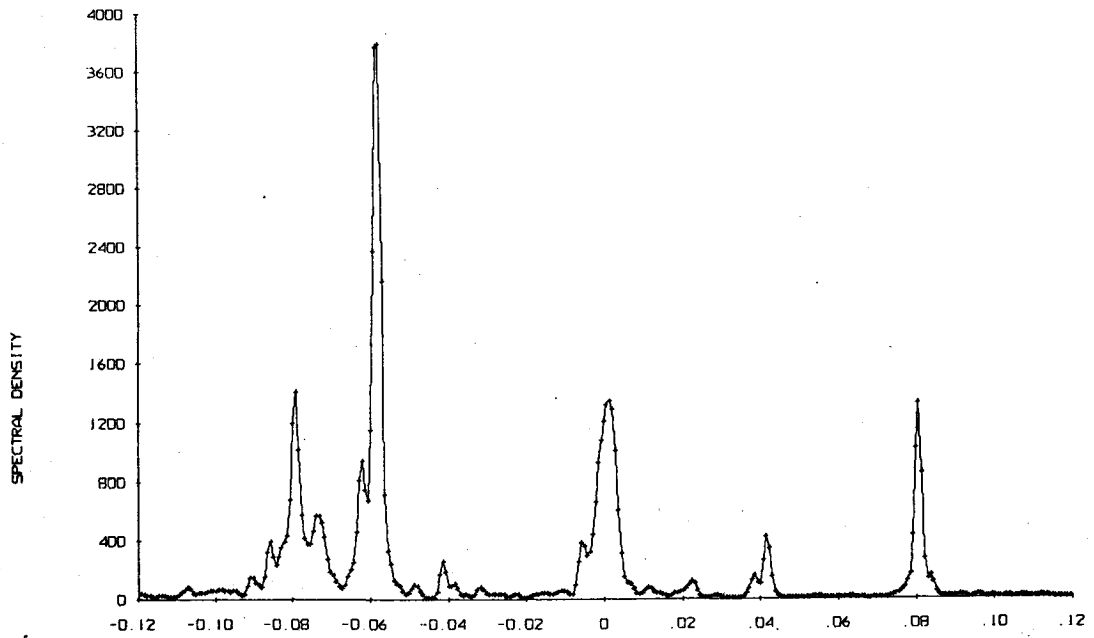


ROTARY SPECTRUM
 120 METERS AT FBRSYTHIA. 6/30/73 TB 8/26/73. TAPE 502/15



FREQUENCY, CYCLES PER HOUR

ROTARY SPECTRUM
 180 METERS AT FBRSYTHIA. 6/30/73 TB 8/26/73. TAPE 486/12



FREQUENCY, CYCLES PER HOUR

FORGET-ME-NOT

Position: 45°34.9'N, 124°08.9'W
 Depth of Water: 100 m
 Set at 1546 GMT, 22 July 1973 by R/V CAYUSE
 Retrieved at 1308 GMT, 27 August 1973 by R/V YAQUINA

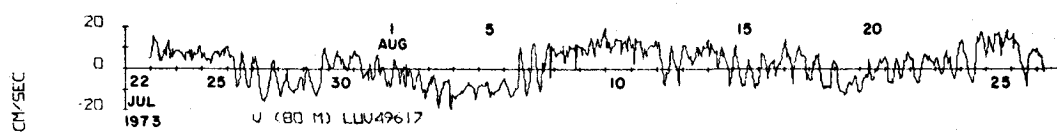
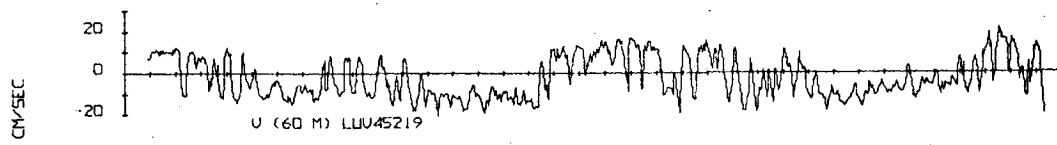
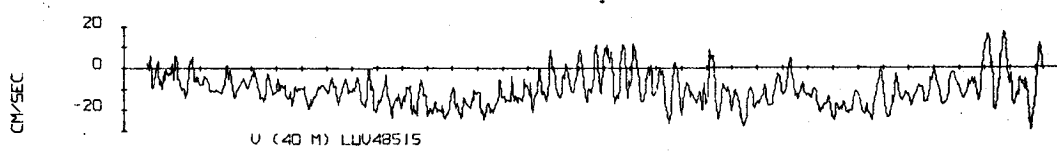
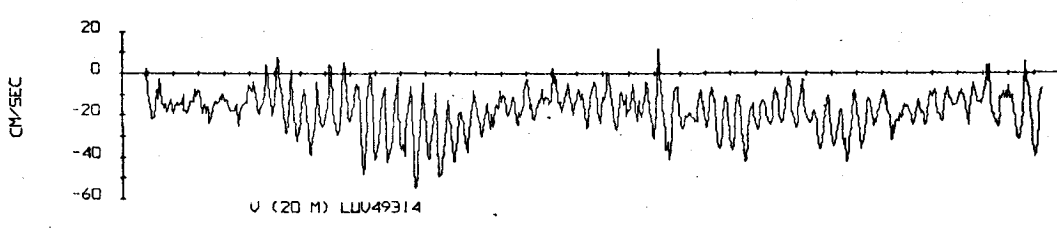
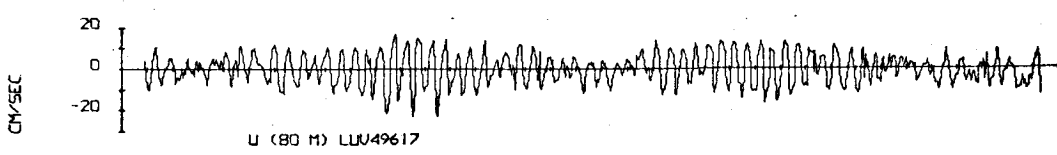
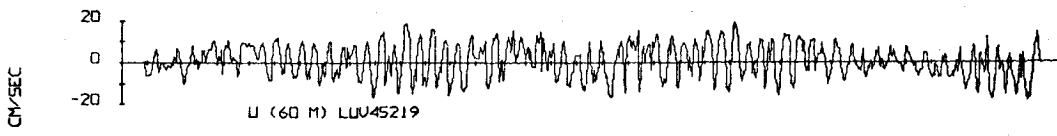
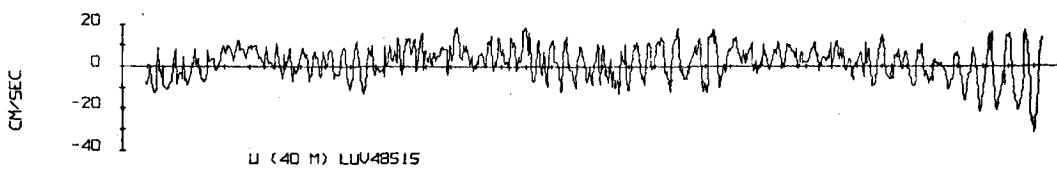
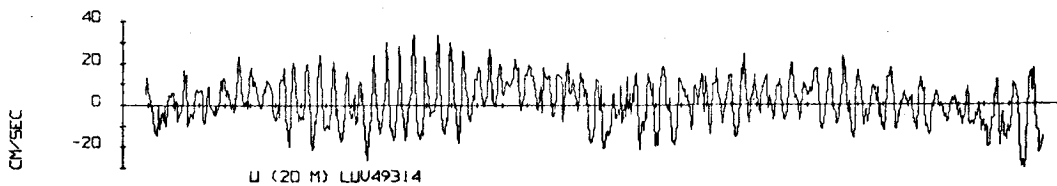
Instrumentation

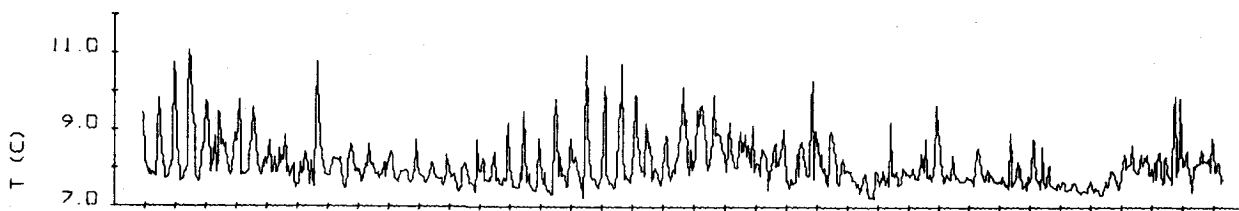
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
20 m	21.0 m	493/14	22 July - 27 August
40 m	42.0 m	485/15	22 July - 27 August
60 m	63.0 m	452/19	22 July - 27 August
80 m	84.0 m	496/17	22 July - 27 August

All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the deepest meter recorded pressure.

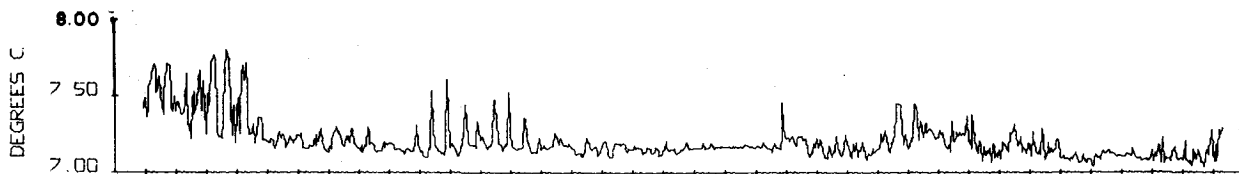
FORGET-ME-NOT

	MEAN	S.D.	SKEW	KURT	MAX	MIN
			20 m			
S (cm/sec)	21.3	8.7	0.9	3.9	56.0	3.9
U (cm/sec)	1.8	10.6	-0.1	2.7	33.9	-30.4
V (cm/sec)	-17.7	9.8	-0.5	3.7	11.9	-54.4
T (C)	8.10	0.59	1.78	7.00	11.07	7.25
			40 m			
S (cm/sec)	14.4	5.0	0.6	3.3	33.4	1.2
U (cm/sec)	1.9	7.8	-0.6	3.5	18.9	-31.6
V (cm/sec)	-10.3	7.8	0.7	3.8	17.4	-29.1
T (C)	7.21	0.13	2.23	8.42	7.80	7.03
			60 m			
S (cm/sec)	12.1	3.4	0.2	3.0	24.1	2.1
U (cm/sec)	1.0	7.8	-0.2	2.2	19.1	-17.9
V (cm/sec)	-2.3	9.5	0.4	1.9	21.7	-20.6
T (C)	7.12	0.10	1.18	5.49	7.71	6.82
			80 m			
S (cm/sec)	10.3	3.5	0.4	3.8	25.1	0.2
U (cm/sec)	-0.1	7.2	-0.2	2.4	16.7	-22.8
V (cm/sec)	1.6	8.1	-0.2	2.0	20.0	-19.2
T (C)	6.85	0.10	-0.11	2.29	7.08	6.59
P (10^5 N/m ²)	8.40	0.04	-0.34	3.39	8.50	8.27

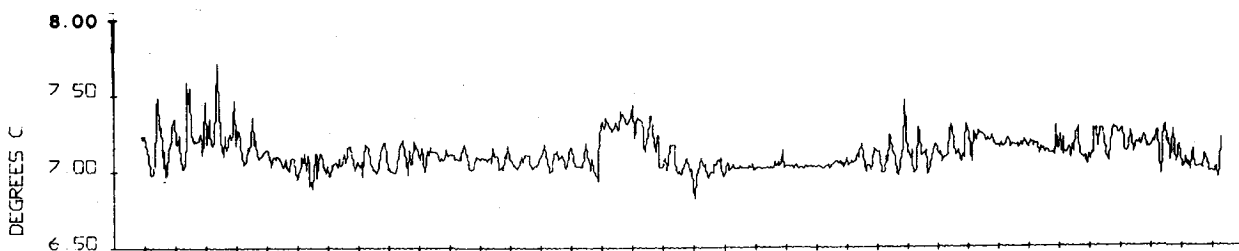




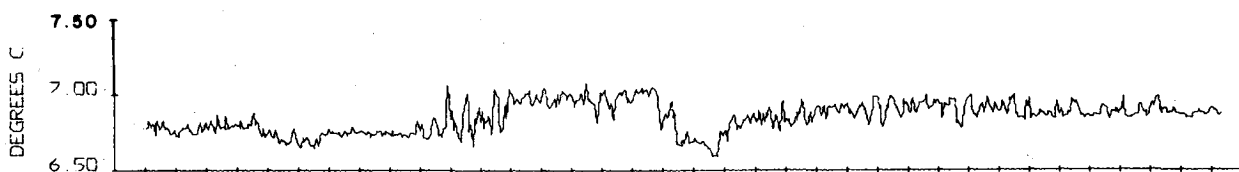
WATER TEMP (20 M) LT49314



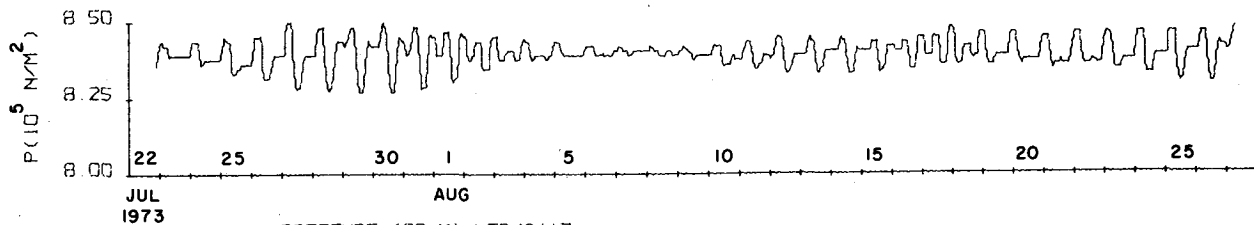
WATER TEMP (40 M) LT48515



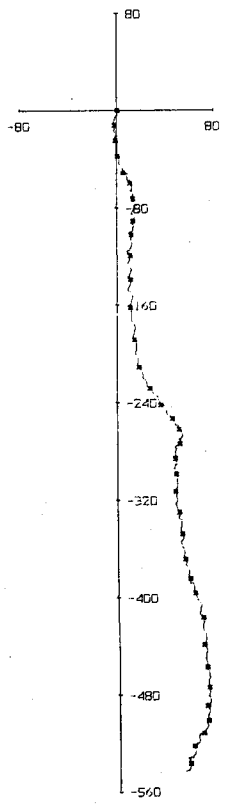
WATER TEMP (60 M) LT45219



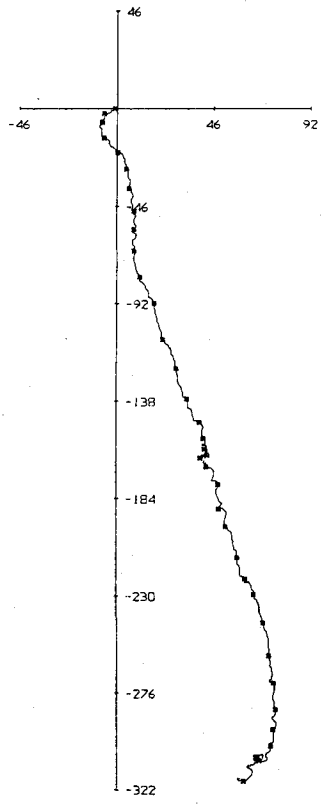
WATER TEMP (80 M) LTP49617



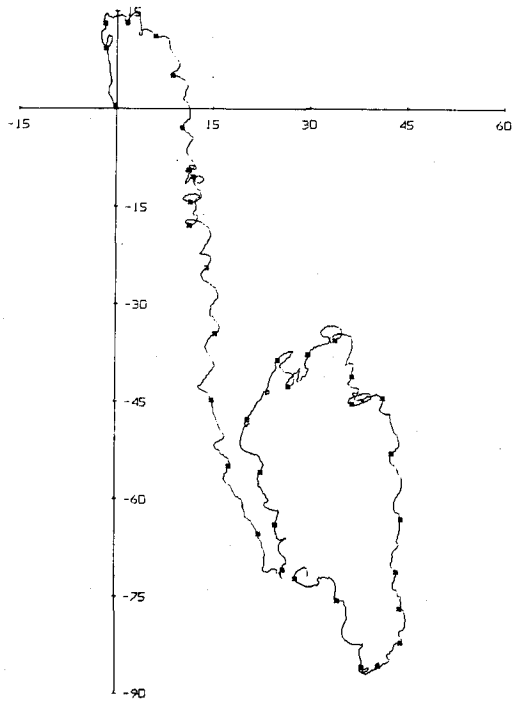
PRESSURE (80 M) LTP49617



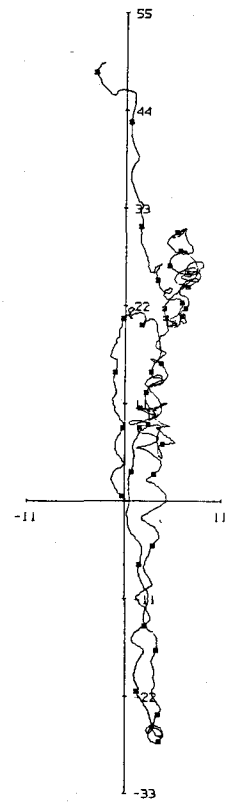
20 METERS AT FORGET-ME-NOT.
35.4 DAYS STARTING 2204 7/22/73



40 METERS AT FORGET-ME-NOT.
35.4 DAYS STARTING 2156 7/22/73



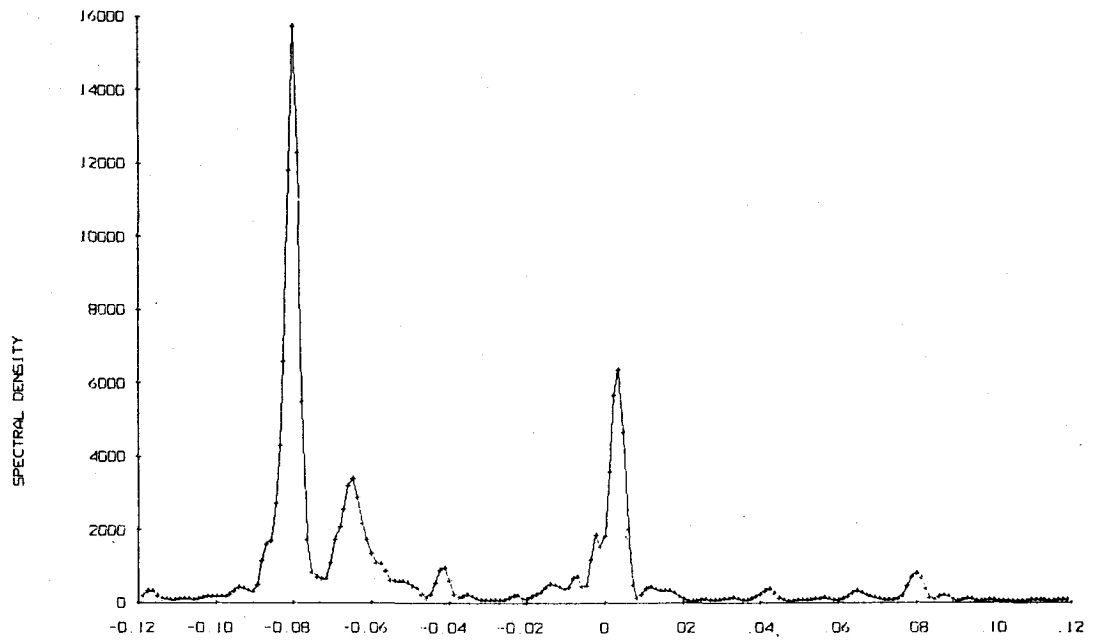
60 METERS AT FORGET-ME-NOT. 35.4 DAYS STARTING 2203 7/22/73



80 METERS AT FORGET-ME-NOT.
35.4 DAYS STARTING 2157 7/22/73

ROTARY SPECTRUM

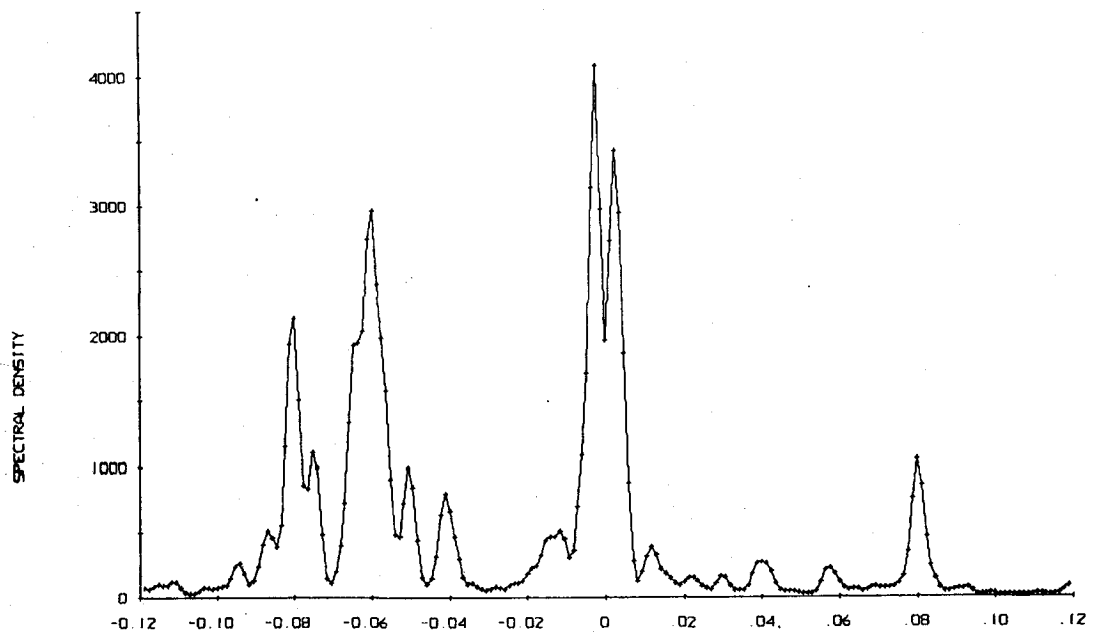
20 METERS AT FORGET-ME-NOT. 7/22/73 TO 8/27/73. TAPE 493/14



FREQUENCY, CYCLES PER HOUR

ROTARY SPECTRUM

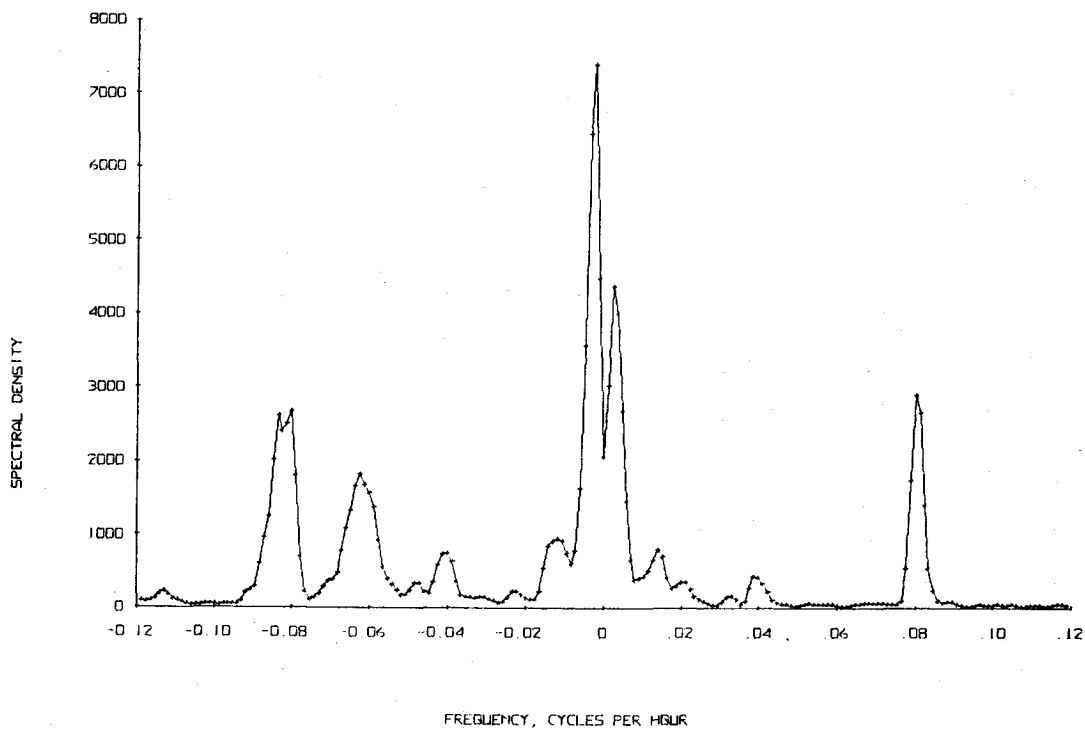
40 METERS AT FORGET-ME-NOT. 7/22/73 TO 8/27/73. TAPE 485/15



FREQUENCY, CYCLES PER HOUR

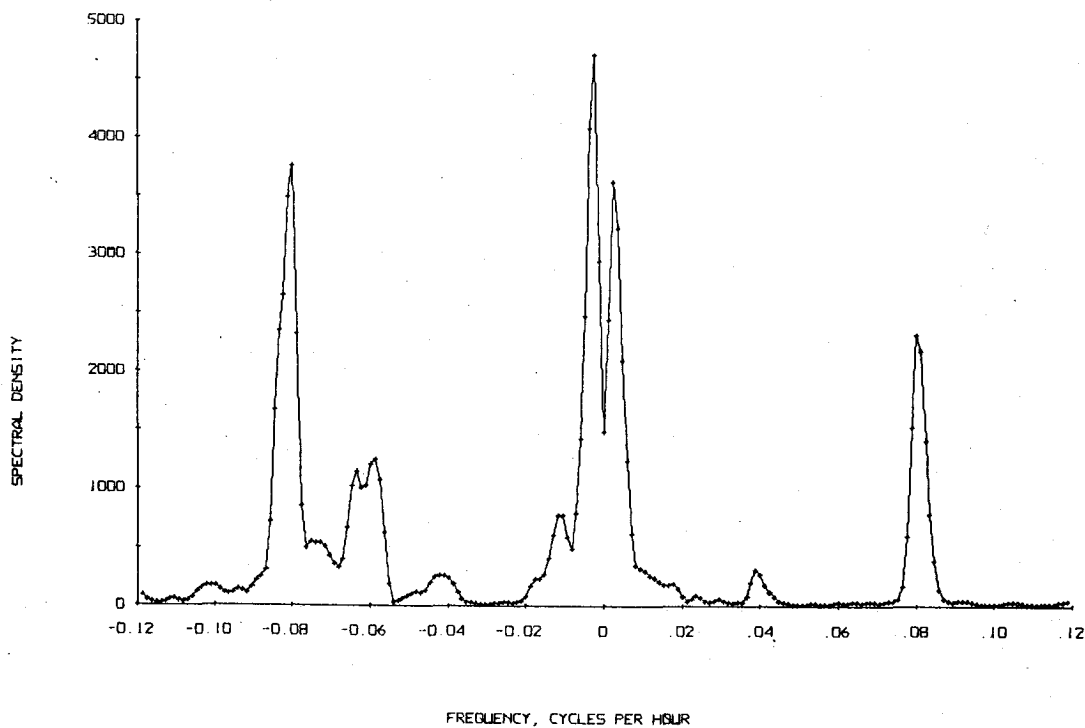
RSTARY SPECTRUM

60 METERS AT FORGET-ME-NOT. 7/22/73 TO 8/27/73. TAPE 452/19



RSTARY SPECTRUM

80 METERS AT FORGET-ME-NOT. 7/22/73 TO 8/27/73. TAPE 496/17



GLADIOLUS

Position: 45°16.6'N, 125°00.0'W
 Depth of Water: 1200 m
 Set at 1551 GMT, 24 July 1973 by R/V CAYUSE
 Retrieved at 1443 GMT, 26 August 1973 by R/V YAQUINA

Instrumentation

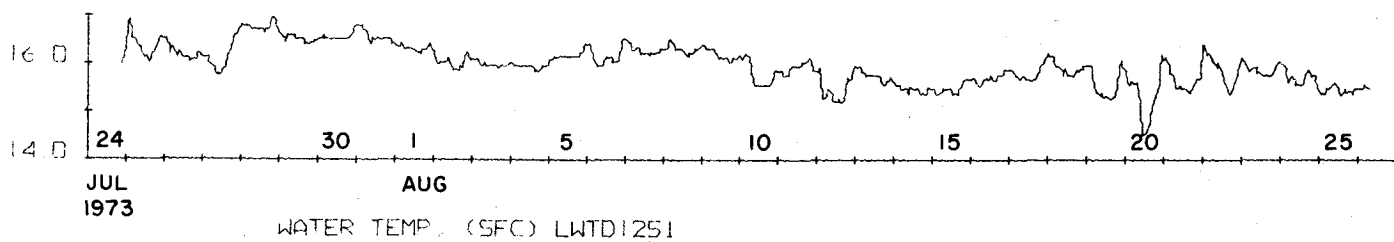
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0 m	D125/1	24 July - 26 August

The surface buoy recorded wind speed and direction, air temperature, and surface water temperature every 10 minutes.

The buoy orientation sensor and the air temperature sensor failed in this installation. Speed is bad after 10 August.

GLADIOLIS

	MEAN	S.D.	SKEW	KURT	MAX	MIN
Water T (C)	15.98	0.17	-0.11	2.83	16.96	14.51



IRIS

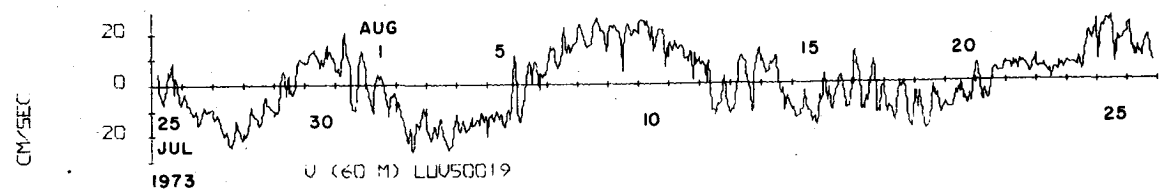
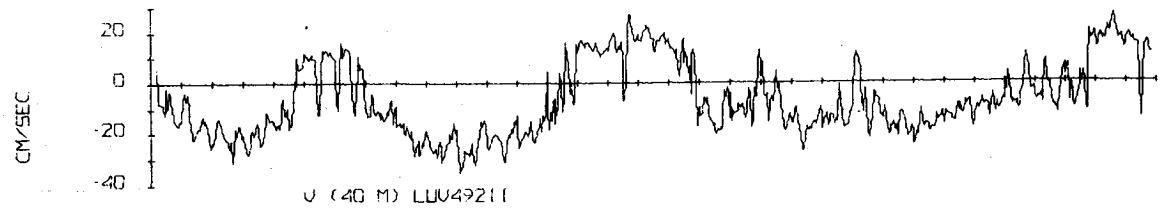
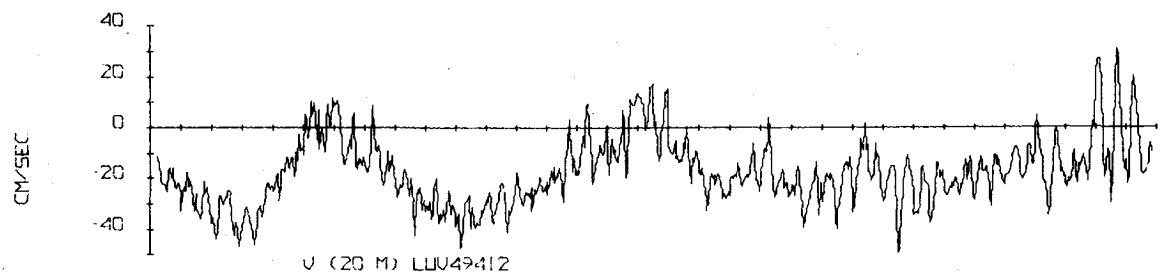
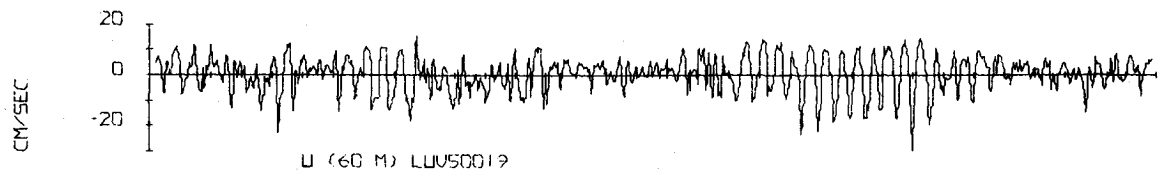
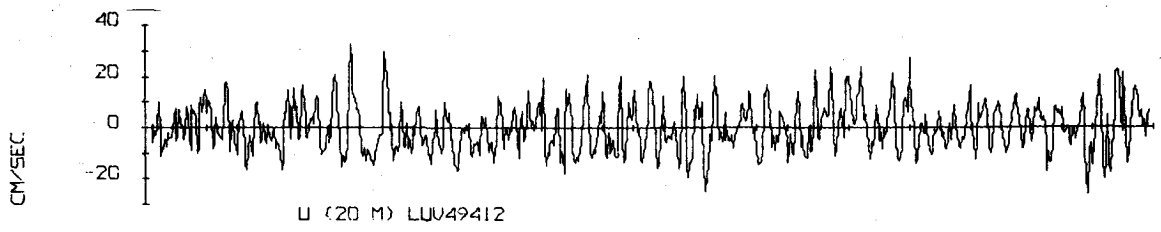
Position: 45°10.8'N, 124°04.9'W
Depth of Water: 75 m
Set at 2220 GMT, 24 July 1973 by R/V CAYUSE
Retrieved at 0255 GMT, 27 August 1973 by R/V YAQUINA

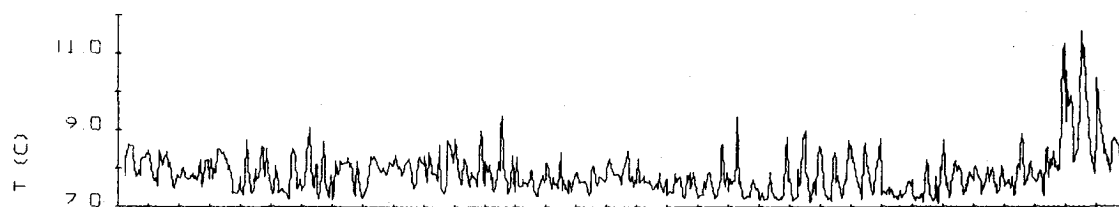
Instrumentation

<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
20 m	20.1 m	494/12	25 July - 26 August
40 m	40.3 m	492/11	25 July - 26 August
60 m	60.4 m	500/19	25 July - 26 August

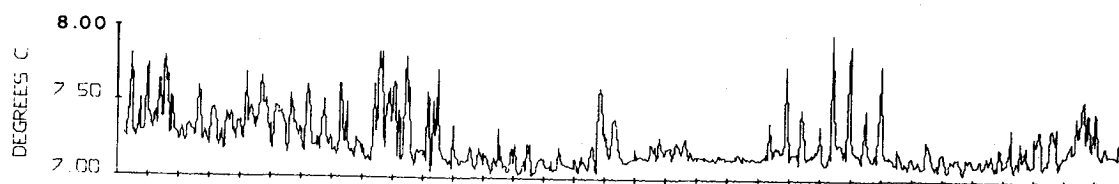
All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the deepest meter recorded pressure.

	IRIS					
	MEAN	S.D.	SKEW	KURT	MAX	MIN
	20 m					
S (cm/sec)	22.2	8.7	0.5	2.9	50.6	3.8
U (cm/sec)	-0.1	9.2	0.4	3.0	33.0	-26.5
V (cm/sec)	-17.6	13.2	0.7	3.8	31.4	-50.0
T (C)	7.88	0.57	2.29	12.17	11.59	7.09
	40 m					
S (cm/sec)	16.7	5.5	0.3	3.1	35.8	1.7
U (cm/sec)	2.0	7.6	-0.3	2.6	19.6	-20.7
V (cm/sec)	-6.9	14.1	0.5	2.2	26.9	-35.6
T (C)	7.23	0.15	1.59	5.61	7.96	7.02
	60 m					
S (cm/sec)	13.3	5.2	0.6	2.9	32.1	1.2
U (cm/sec)	0.4	7.1	-0.7	3.7	15.8	-29.9
V (cm/sec)	0.3	12.4	0.1	2.0	25.5	-26.4
T (C)	6.99	0.13	-0.20	2.75	7.42	6.60
P (10^5 N/m ²)	6.04	0.06	-0.10	2.50	6.16	5.89

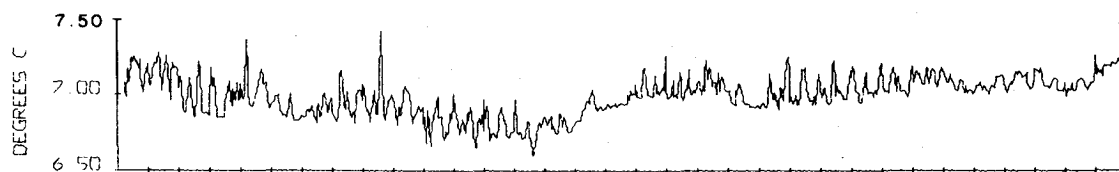




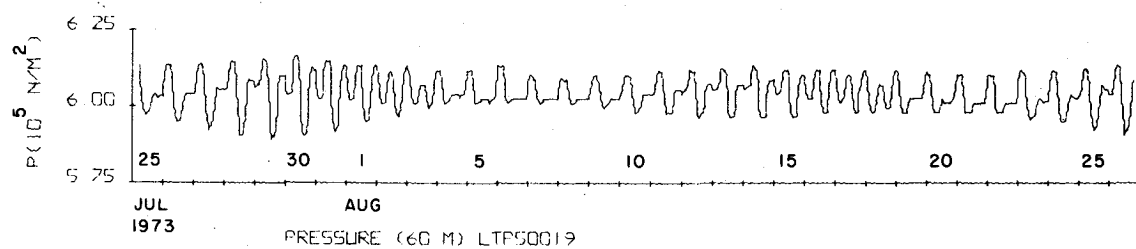
WATER TEMP (20 M) LT49412



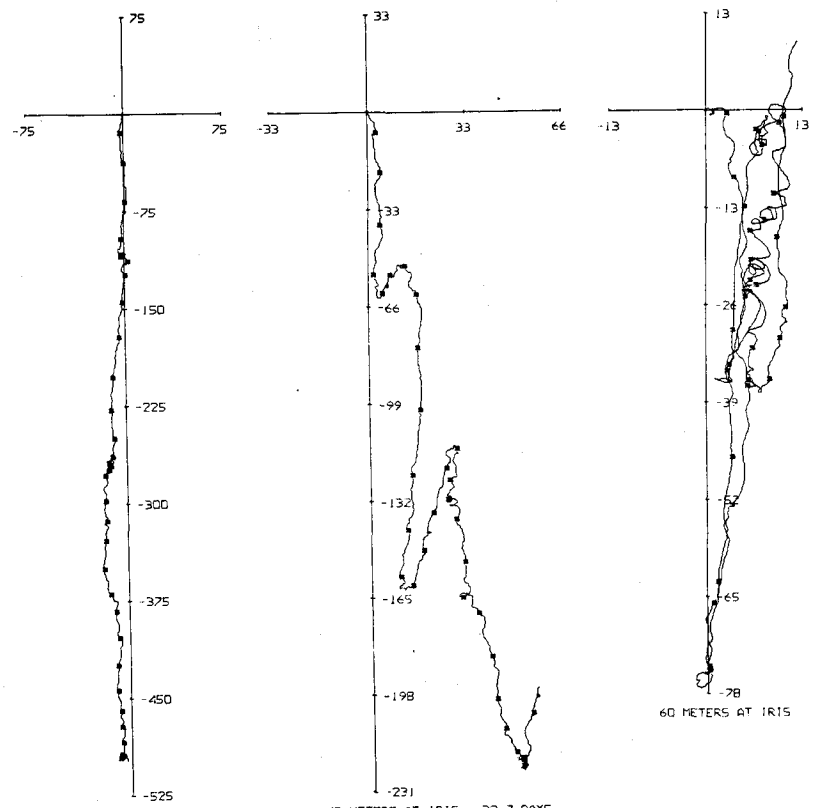
WATER TEMP (40 M) LT49211



WATER TEMP (60 M) LTP50019



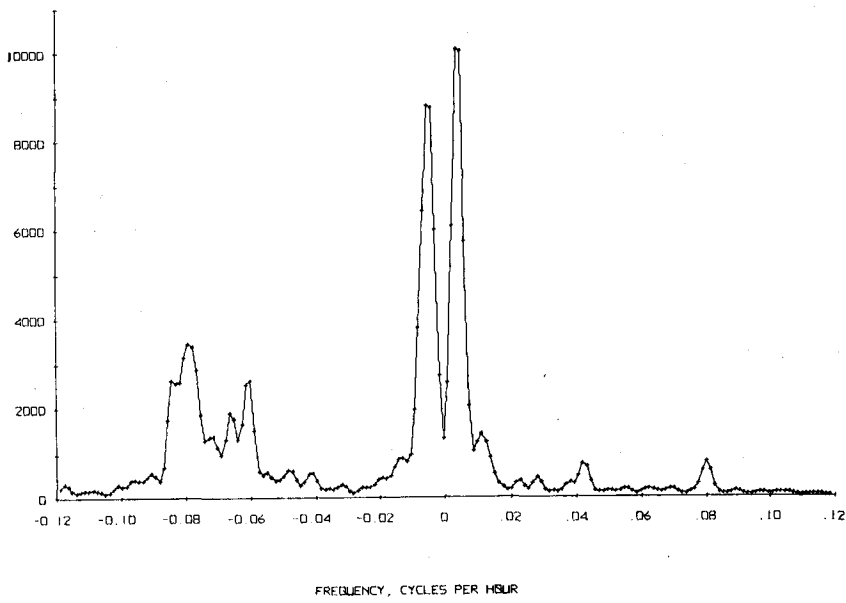
ROTARY SPECTRUM
 20 METERS AT IRIS 7/24/73 TO 8/27/73. TAPE 494/12



20 METERS AT IRIS
 32 7 DAYS STARTING 0435 7/25/73

40 METERS AT IRIS 32.7 DAYS
 STARTING 0433 7/25/73

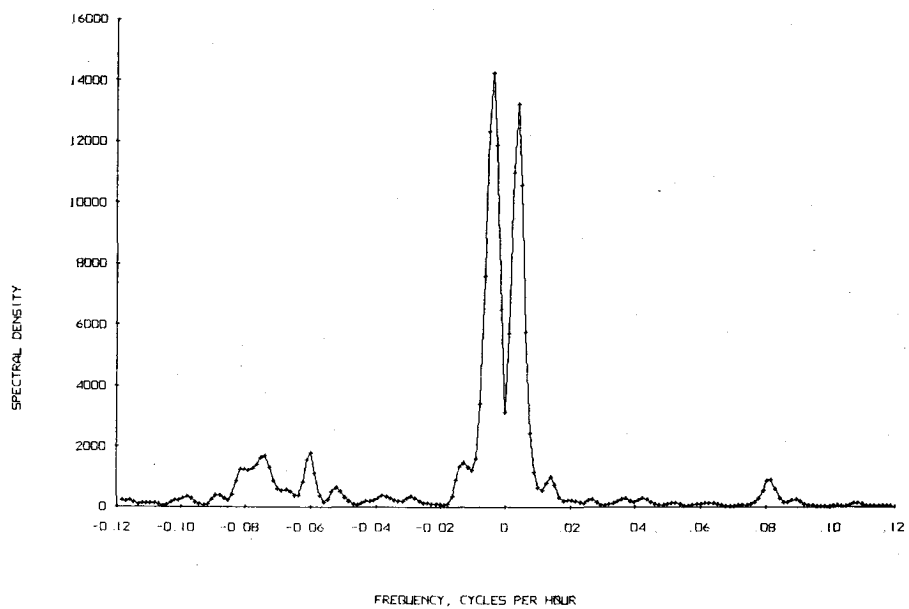
60 METERS AT IRIS 32.7 DAYS STARTING 0431 7/25/73



FREQUENCY, CYCLES PER HOUR

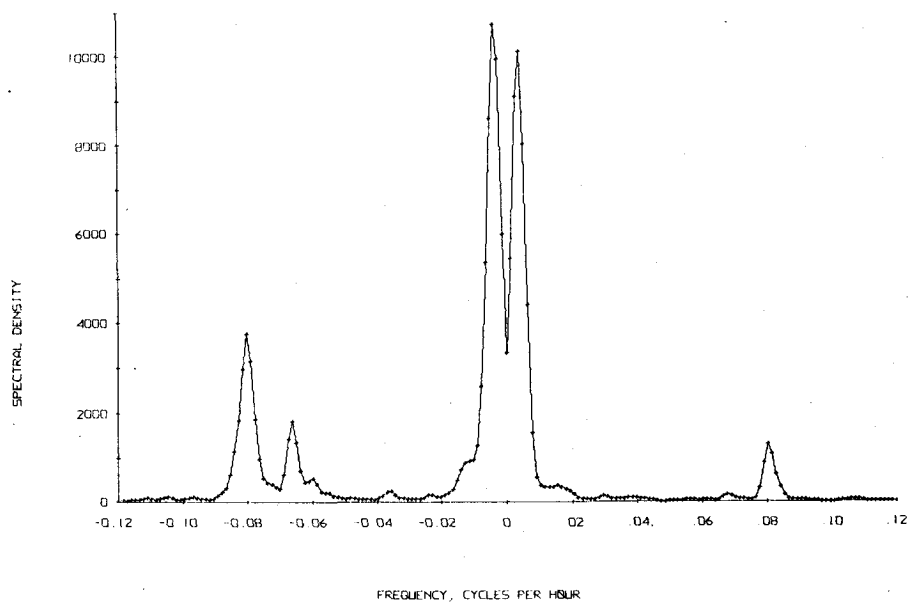
ROTARY SPECTRUM

40 METERS AT IRIS. 7/24/73 TO 8/27/73. TAPE 492/11



ROTARY SPECTRUM

60 METERS AT IRIS. 7/24/73 TO 8/27/73. TAPE 500/19



JASMINE

Position: 45°16.9'N, 124°04.0'W
Depth of Water: 70 m
Set at 1308 GMT, 23 July 1973 by R/V CAYUSE
Retrieved at 1627 GMT, 28 August 1973 by R/V YAQUINA

Instrumentation

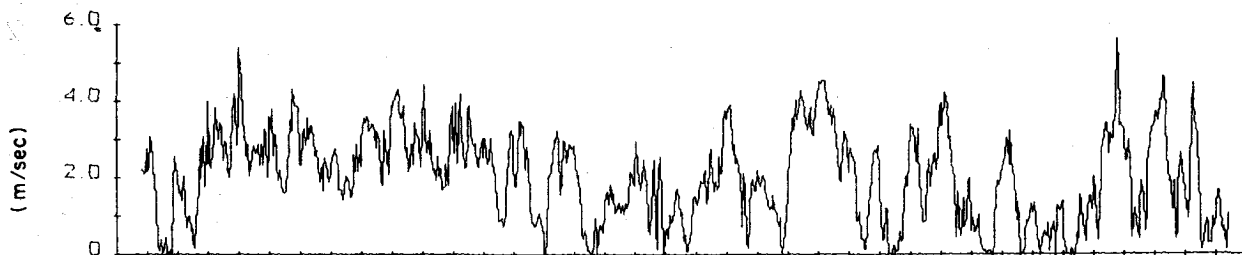
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
0 m	0 m	D129/2	23 July - 28 August

The surface buoy recorded wind speed and direction, air temperature, and surface water temperature every 10 minutes.

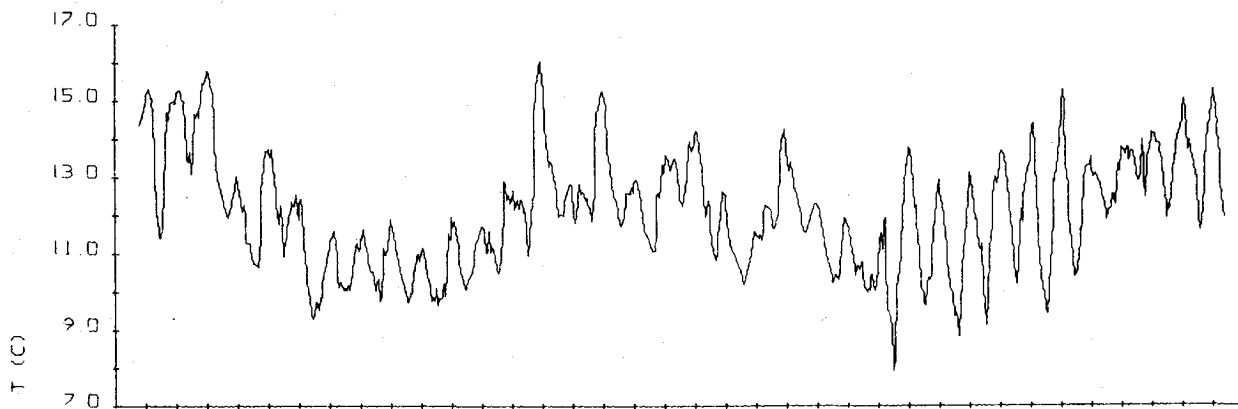
The buoy orientation sensor failed in this installation, and the speed rotor may have had a bad bearing.

JASMINE

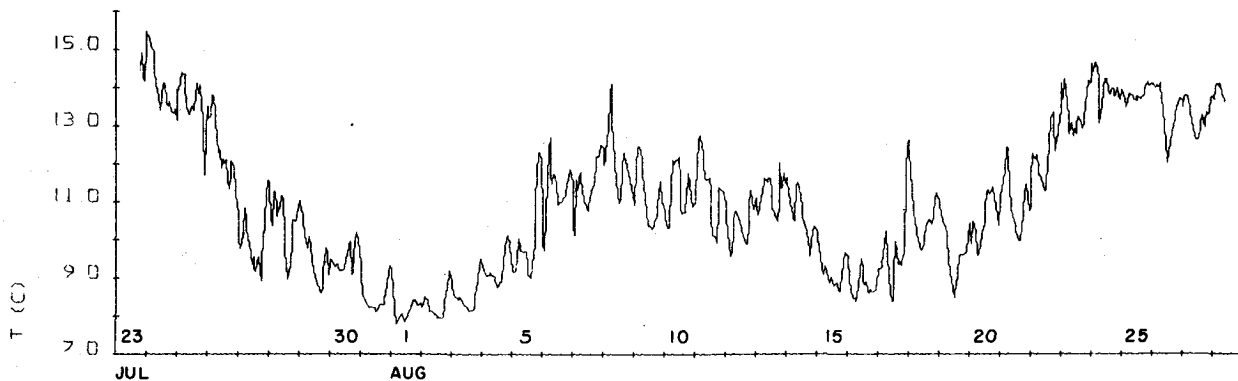
	MEAN	S.D.	SKEW	KURT	MAX	MIN
			SFC			
S (m/sec)	2.0	1.2	0.1	2.3	5.6	0.0
AIR T (C)	12.12	1.50	0.25	2.56	16.08	7.90
WATER T (C)	10.99	1.86	0.28	2.02	15.48	7.80



SPEED (SFC) LSD1292



AIR TEMPERATURE LTD1292



WATER TEMP (SFC) LTD1292

POINSETTIA (D)

Position: 44°45.0'N, 124°17.4'W
Depth of Water: 100 m
Set at 2226 GMT, 27 June 1973 by R/V YAQUINA
Retrieved by fisherman

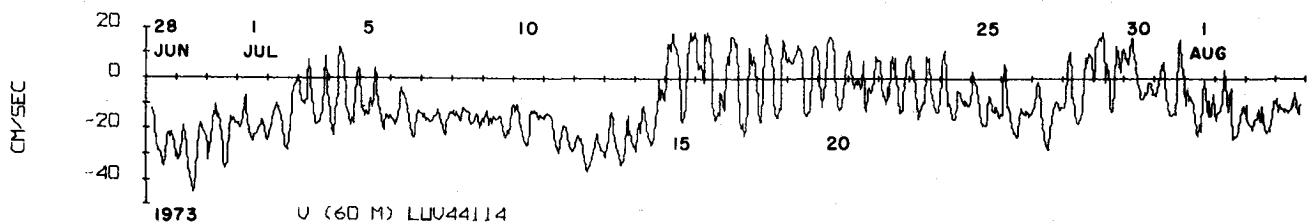
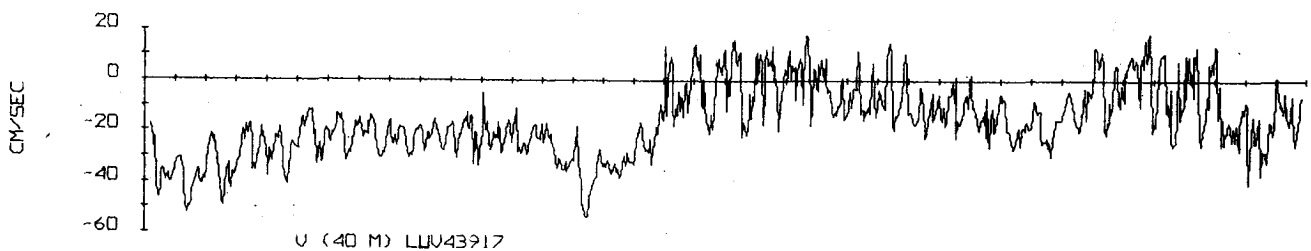
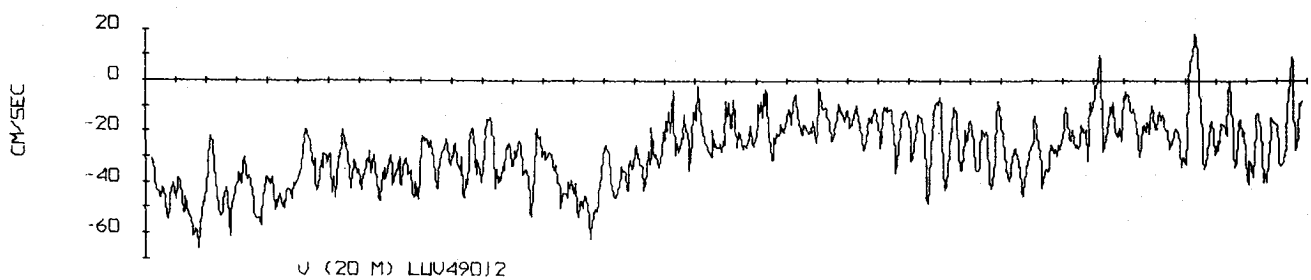
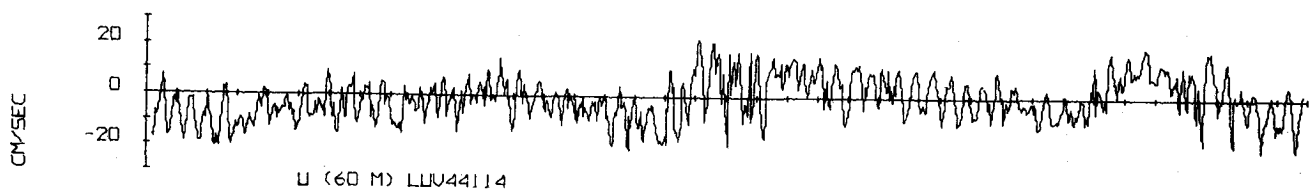
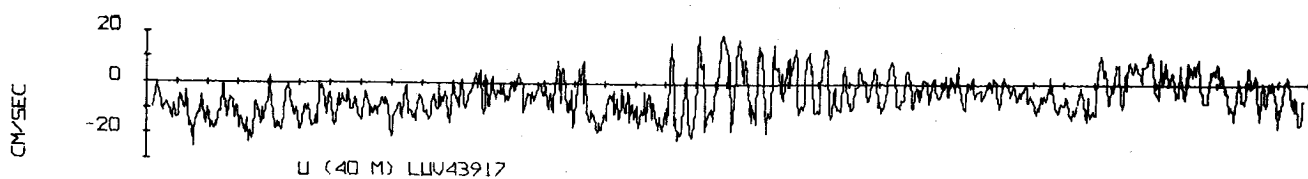
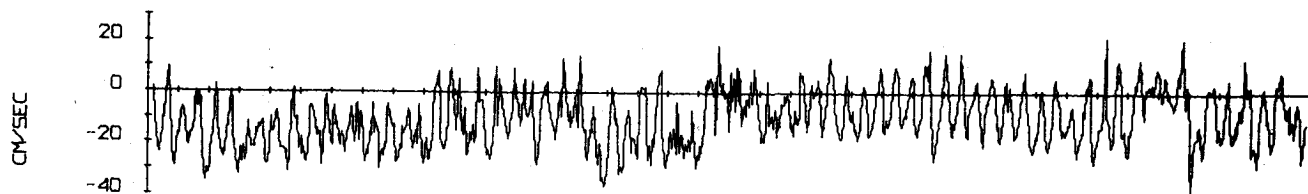
Instrumentation

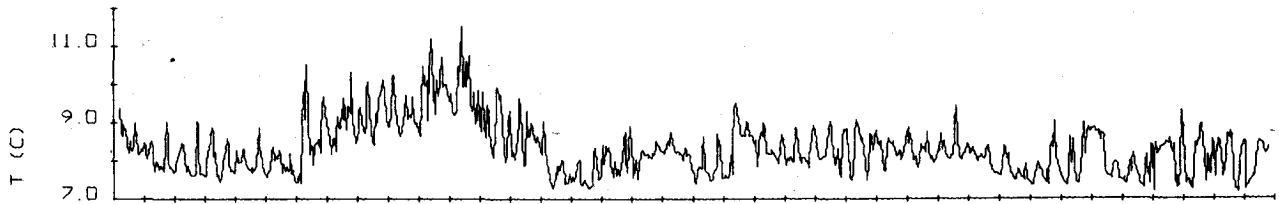
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
20 m	20 m	490/12	28 June - 4 August
40 m	40 m	439/17	28 June - 4 August
60 m	60 m	441/14	28 June - 4 August

All meters recorded temperature, current direction, and current speed every 10 minutes.

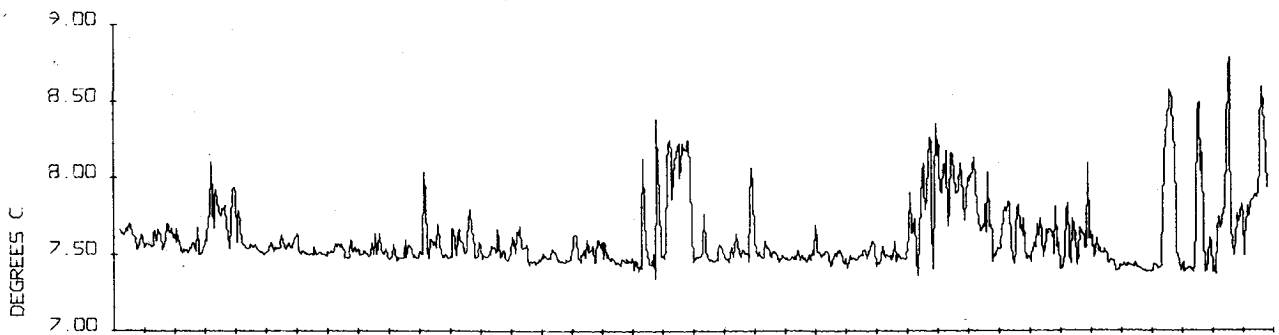
POINSETTIA (D)

	MEAN	S.D.	SKEW	KURT	MAX	MIN
20 m						
S (cm/sec)	31.8	12.1	0.3	2.4	66.3	6.5
U (cm/sec)	-10.1	10.6	0.2	2.5	21.3	-39.3
V (cm/sec)	-27.8	13.1	0.0	3.1	18.8	-66.2
T (C)	8.31	0.68	1.07	4.51	11.52	7.14
40 m						
S (cm/sec)	21.1	10.1	0.6	3.2	55.6	1.0
U (cm/sec)	-4.9	7.7	0.4	2.8	19.0	-25.5
V (cm/sec)	-16.4	14.1	0.2	2.8	18.7	-53.6
T (C)	7.61	0.22	2.20	8.18	8.79	7.34
60 m						
S (cm/sec)	17.1	6.5	0.9	4.2	44.8	2.0
U (cm/sec)	-1.0	8.7	0.2	2.6	23.0	-21.2
V (cm/sec)	-10.3	12.2	0.4	2.8	18.6	-44.7
T (C)	7.31	0.13	0.62	6.28	8.20	6.96

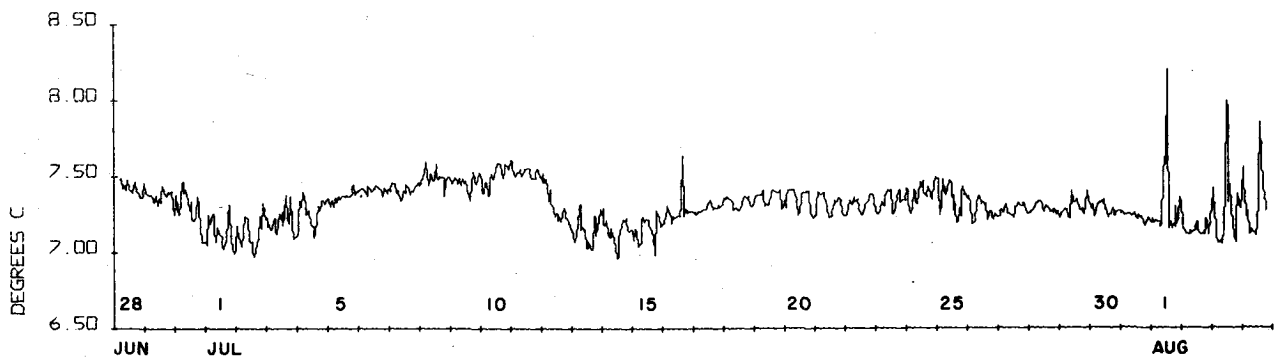




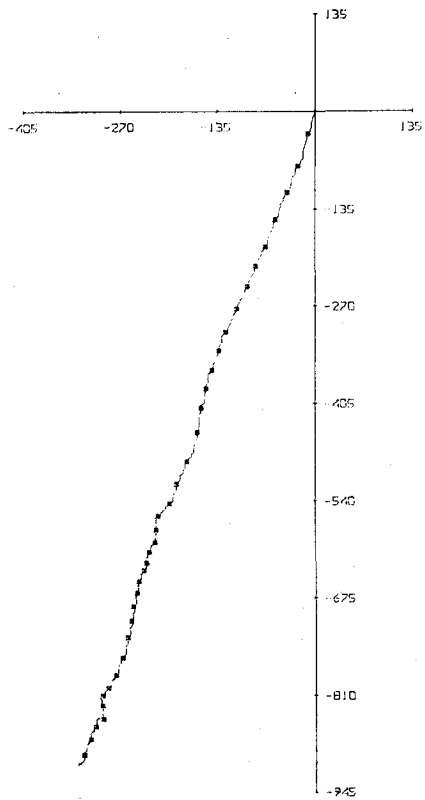
WATER TEMP. (20 M) LT49012



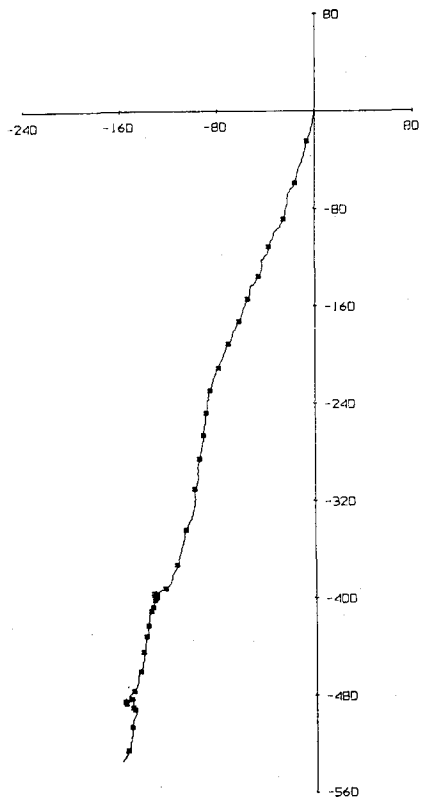
WATER TEMP. (40 M) LT43917



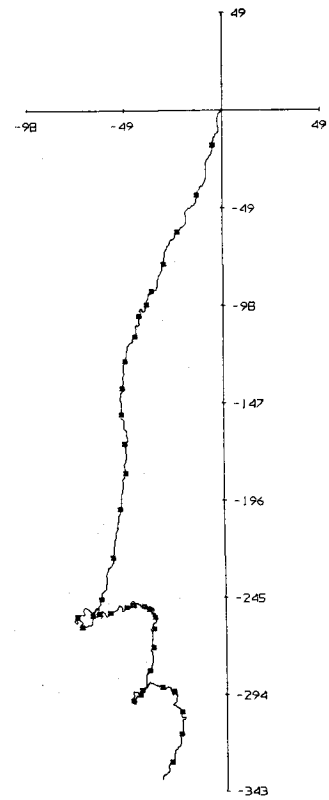
WATER TEMP. (60 M) LT44114



20 METERS AT PBINSETTIA. 37.7 DAYS STARTING 0441 6/28/73



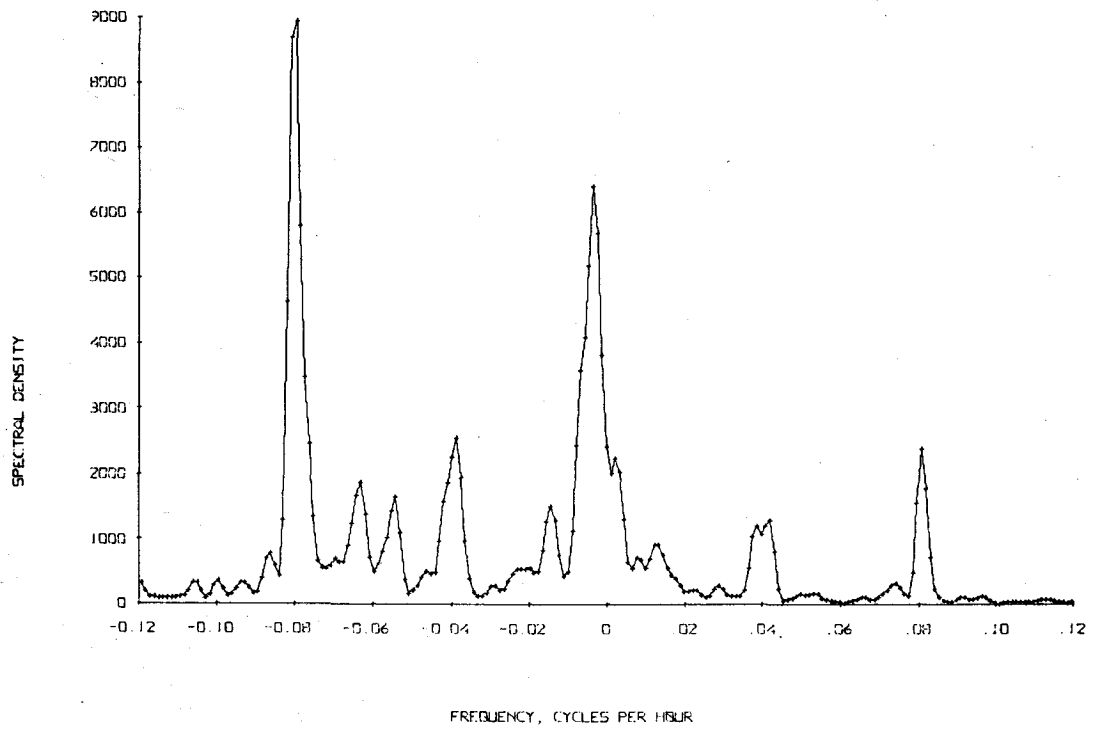
40 METERS AT PBINSETTIA. 37.7 DAYS STARTING 0440 6/28/73



60 METERS AT PBINSETTIA. 37.7 DAYS STARTING 0442 6/28/73

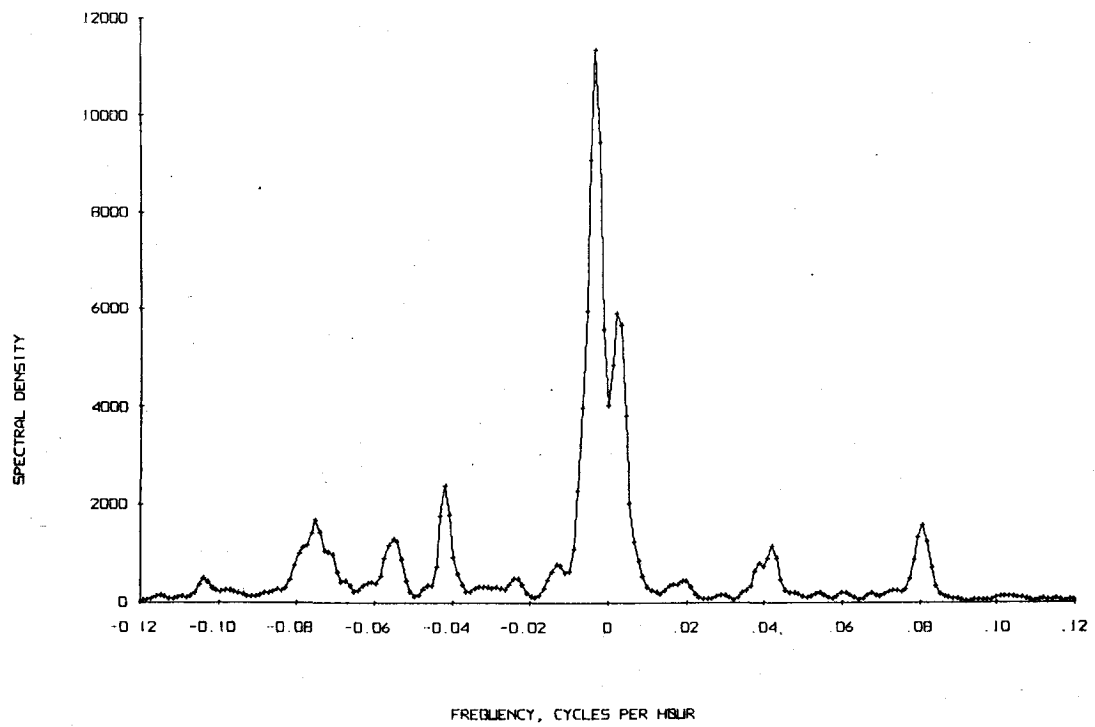
ROTARY SPECTRUM

20 METERS AT PBINSETTIA, 6/27/73 TO 8/5/73. TAPE 490/12

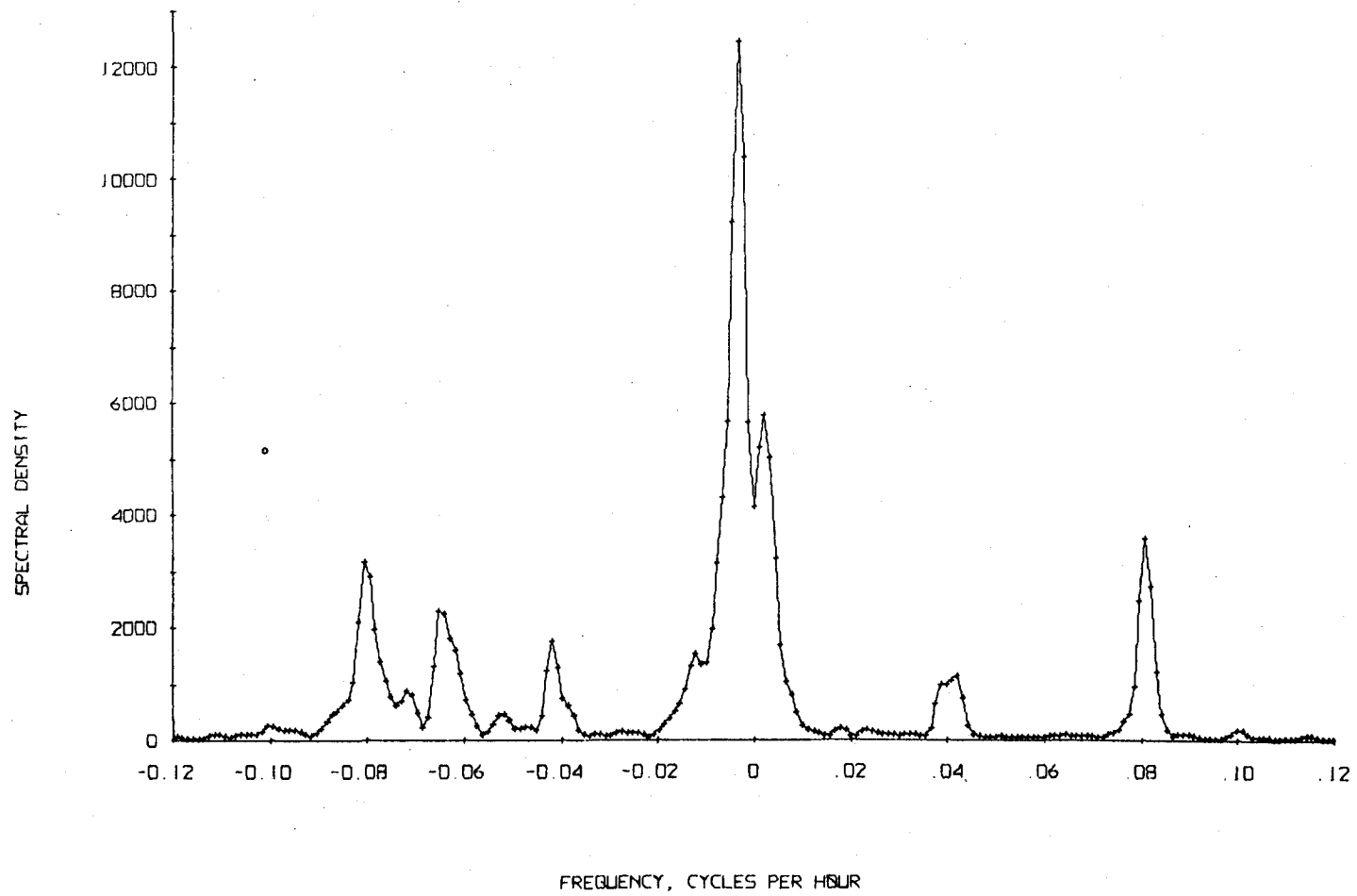


ROTARY SPECTRUM

40 METERS AT PBINSETTIA, 6/27/73 TO 8/5/73. TAPE 439/17



60 METERS AT PBJNSETTIA. 6/27/73 TO 8/5/73. TAPE 441/14



POINSETTIA (E)

Position: 44°45.5'N, 124°17.5'W

Depth of Water: 100 m

Set at 1708 GMT, 11 August 1973 by R/V CAYUSE

Retrieved at 2210 GMT, 6 September 1973 by R/V CAYUSE

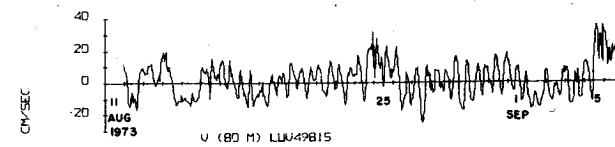
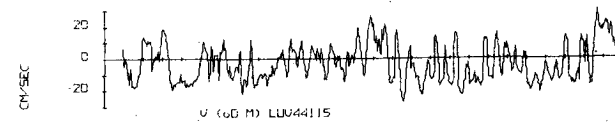
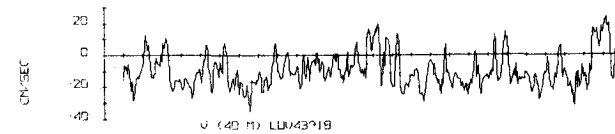
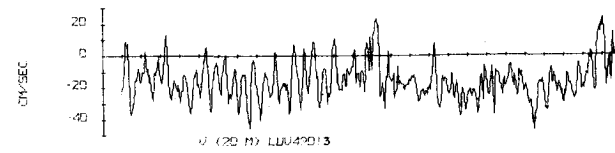
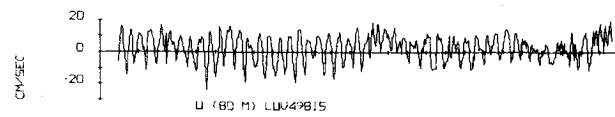
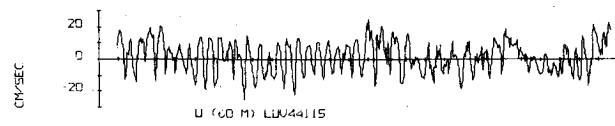
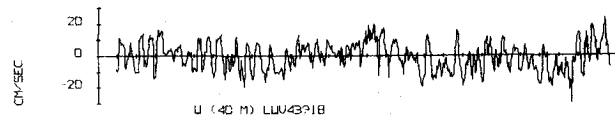
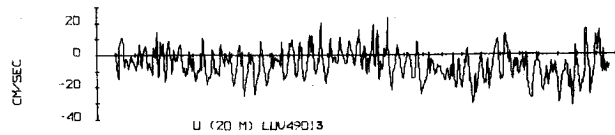
Instrumentation

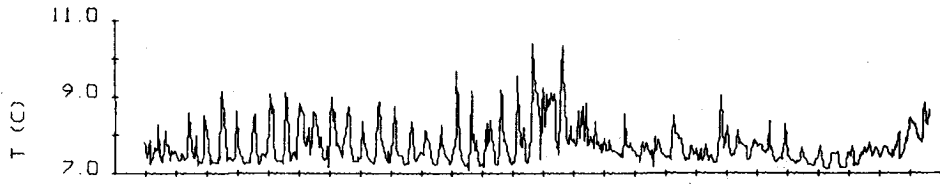
<u>Intended Depth</u>	<u>Actual Depth</u>	<u>RCM4 Serial No./ Tape No.</u>	<u>Data Interval</u>
20 m	20.7 m	490/13	11 August - 6 September
40 m	41.4 m	439/18	11 August - 6 September
60 m	62.2 m	441/15	11 August - 6 September
80 m	82.9 m	498/15	11 August - 6 September

All meters recorded temperature, current direction, and current speed every 10 minutes. In addition, the deepest meter recorded pressure.

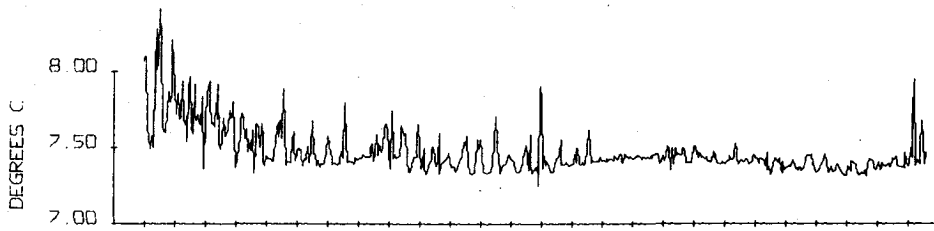
POINSETTIA (E)

	MEAN	S.D.	SKEW	KURT	MAX	MIN
20 m						
S (cm/sec)	20.6	8.3	0.6	3.3	49.9	1.0
U (cm/sec)	-5.9	9.2	0.1	2.9	23.8	-31.9
V (cm/sec)	-15.4	11.7	0.6	3.9	23.4	-46.6
T (C)	7.74	0.51	1.75	6.64	10.40	7.08
40 m						
S (cm/sec)	16.0	5.6	0.3	3.2	37.6	0.6
U (cm/sec)	-0.6	8.9	0.0	2.4	23.4	-30.0
V (cm/sec)	-9.8	10.6	0.9	3.4	24.0	-35.6
T (C)	7.47	0.15	2.42	10.27	8.41	7.25
60 m						
S (cm/sec)	14.5	4.6	0.6	4.3	33.8	0.3
U (cm/sec)	1.7	9.4	-0.1	2.2	25.4	-25.3
V (cm/sec)	-3.2	11.5	0.5	2.4	30.4	-27.2
T (C)	7.40	0.11	-0.30	2.08	7.64	7.15
80 m						
S (cm/sec)	12.5	5.1	1.7	7.9	37.2	1.3
U (cm/sec)	2.6	7.8	-0.4	2.5	20.0	-23.8
V (cm/sec)	1.6	10.6	0.3	2.8	35.7	-25.0
T (C)	7.13	0.10	0.63	3.86	7.46	6.94
P (10^5 N/m ²)	8.29	0.06	-0.02	2.03	8.40	8.15

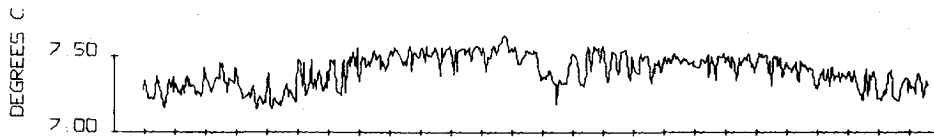




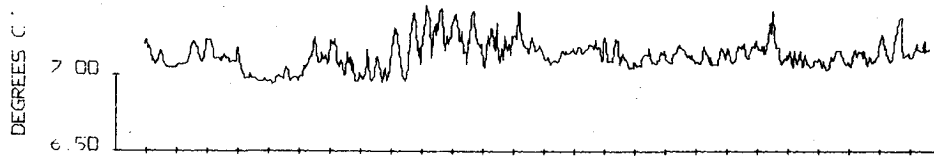
WATER TEMP. (20 M) LT49013



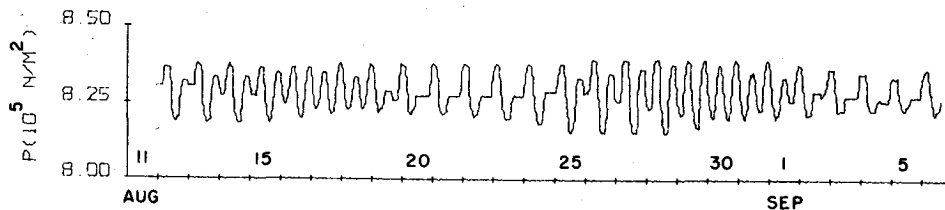
WATER TEMP. (40 M) LT43918



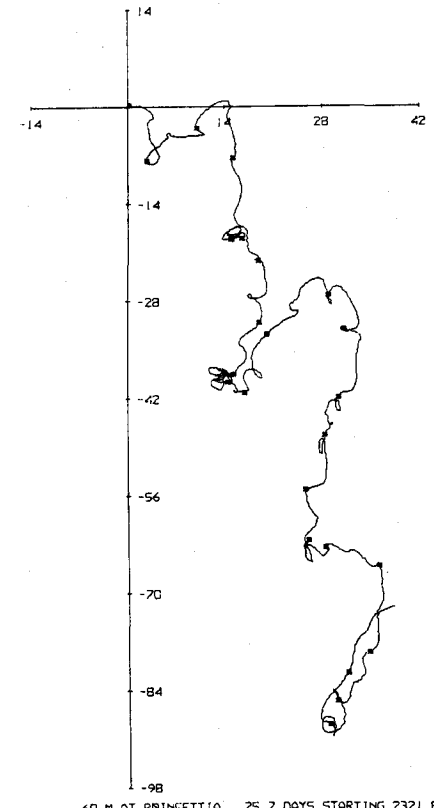
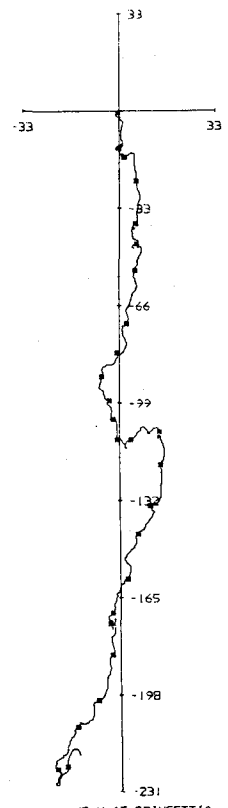
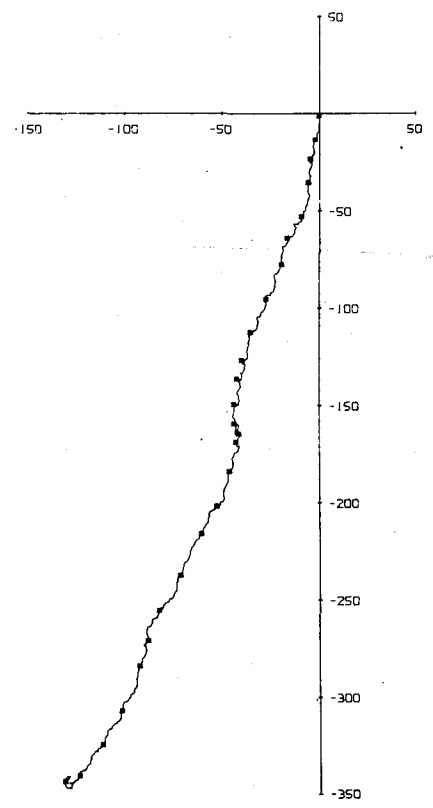
WATER TEMP (60 M) LT44115

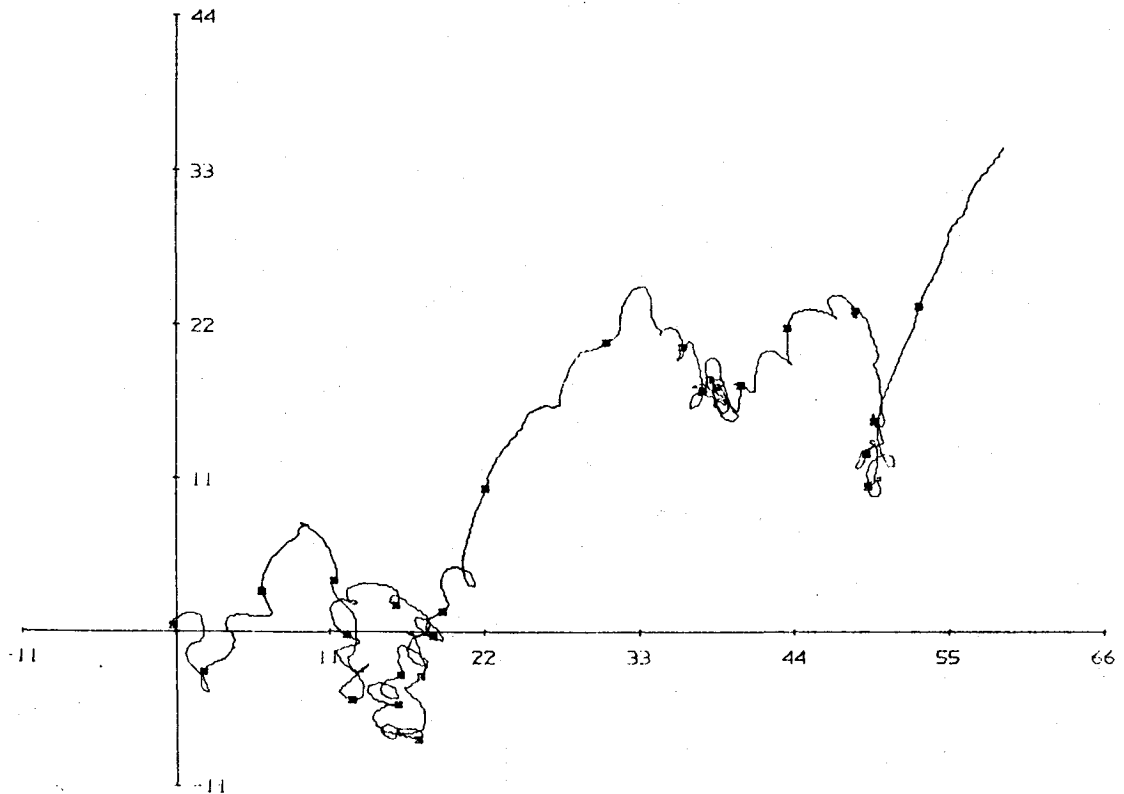


WATER TEMP (80 M) LTP49815



PRESSURE (80 M) LTP49815

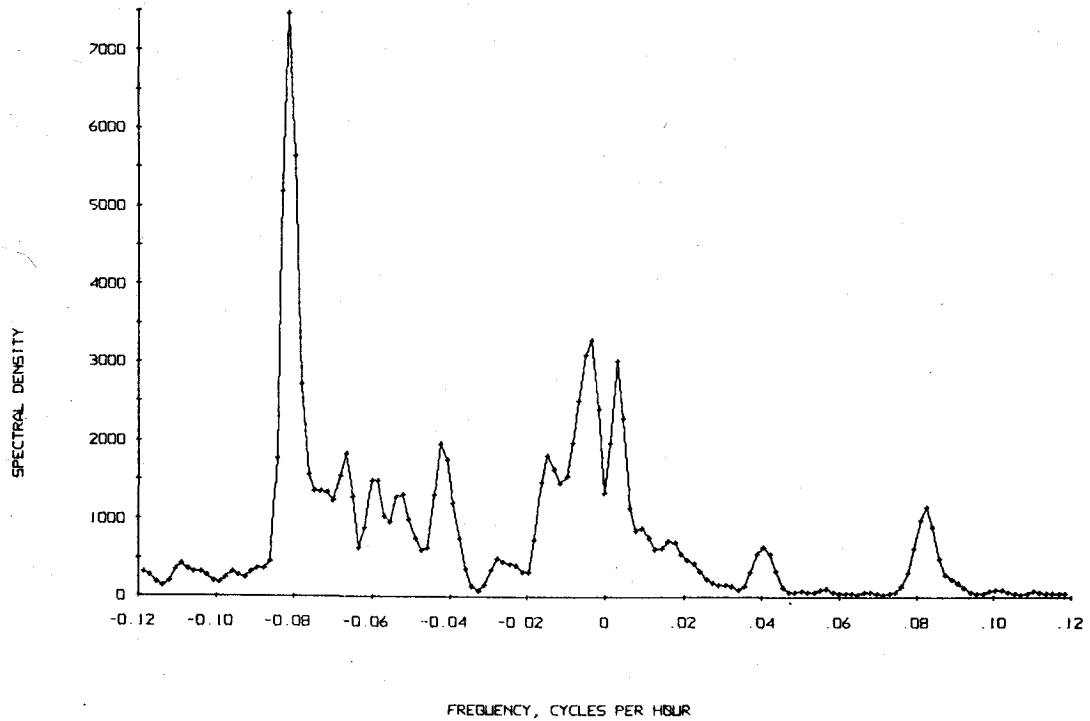




80 METERS AT PBINSETTIA. 25.7 DAYS STARTING 2318 8/11/73 GMT

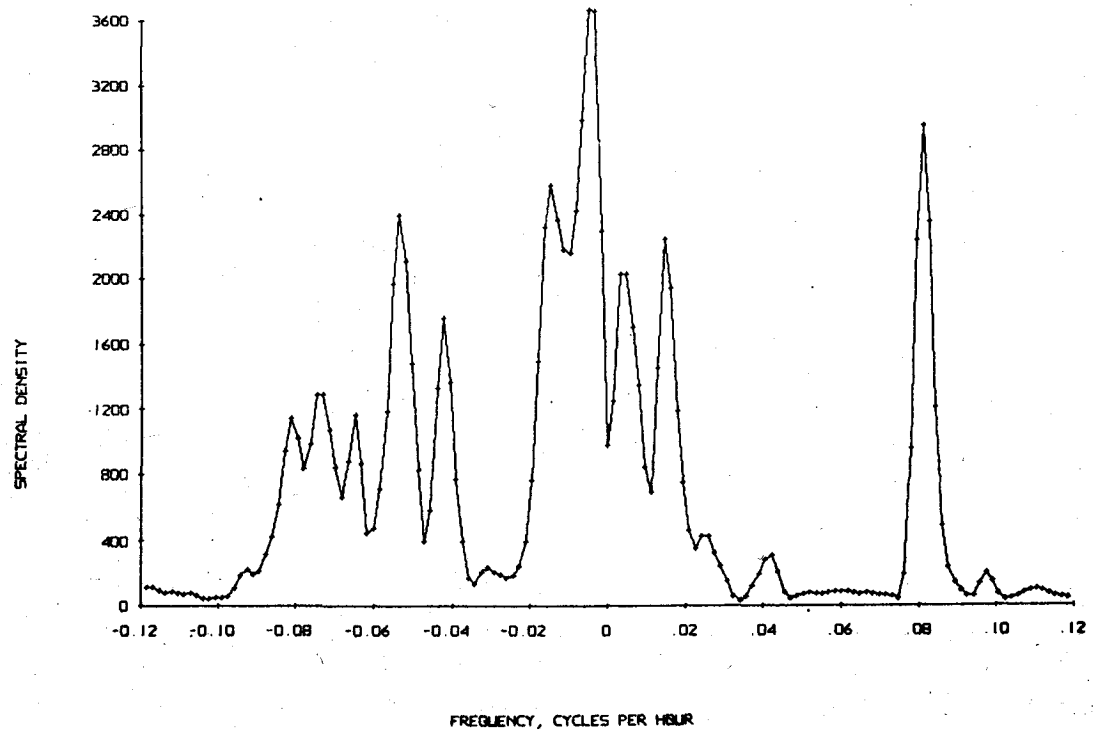
RSTARY SPECTRUM

20 M AT PSINSETTIA. 8/11/73 TO 9/6/73. TAPE 490/13



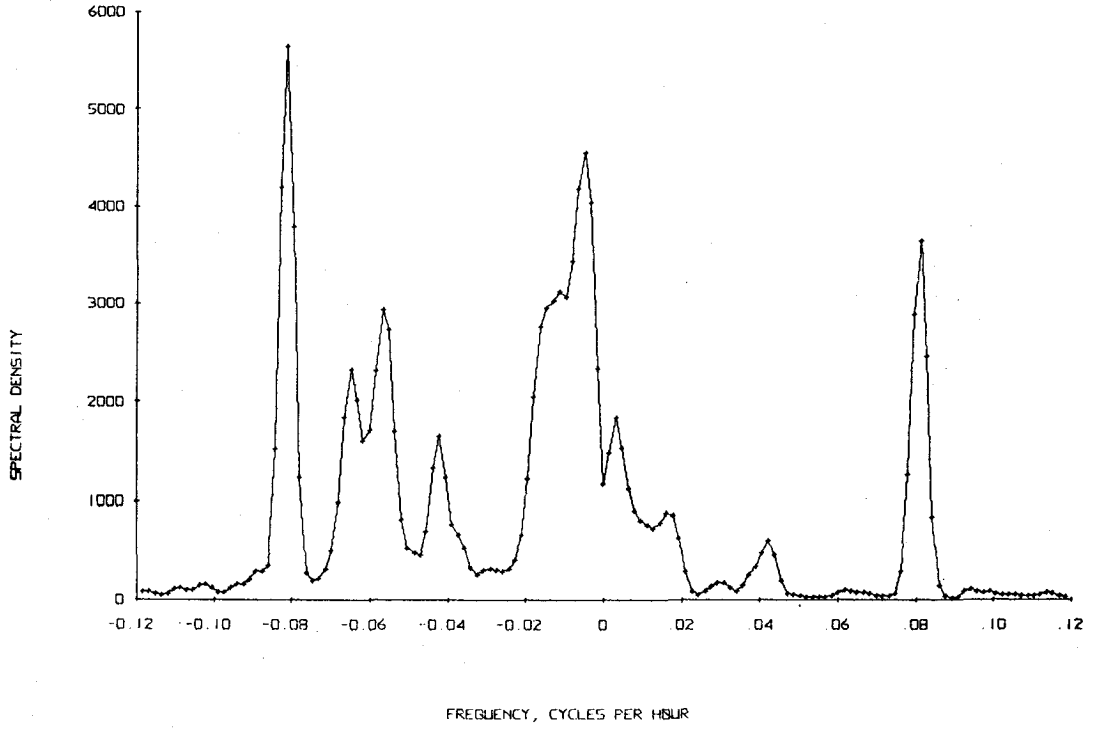
RSTARY SPECTRUM

40 M AT PSINSETTIA. 8/11/73 TO 9/6/73. TAPE 439/18



ROTARY SPECTRUM

60 M AT PBINSETTIA. 8/11/73 TO 9/2/73. TAPE 441/15



ROTARY SPECTRUM

80 M AT PBINSETTIA. 8/11/73 TO 9/2/73. TAPE 498/15

