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A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)
JUN 77 S A TARBELL, A W WHITLATCH N00014-66-C-0241
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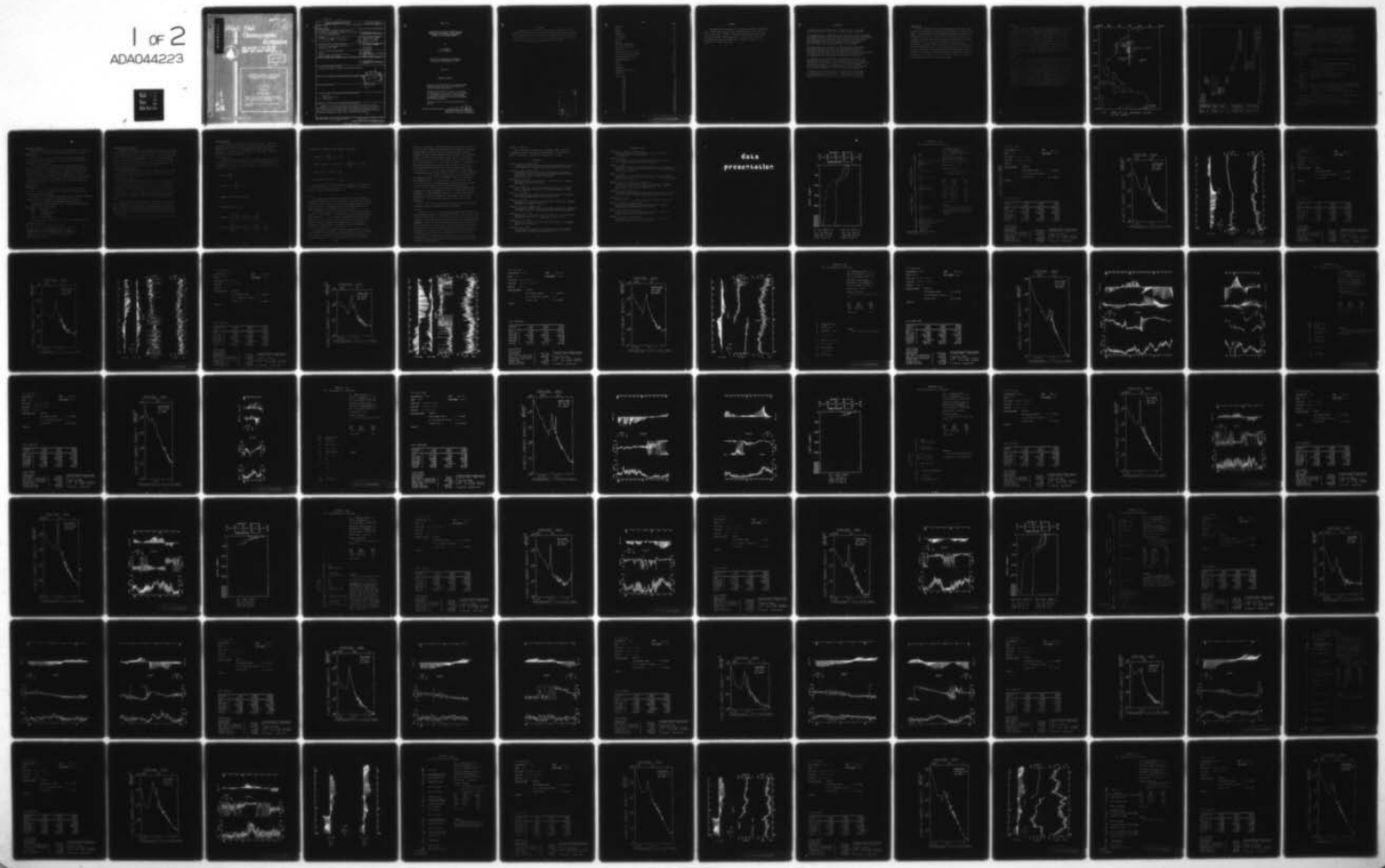

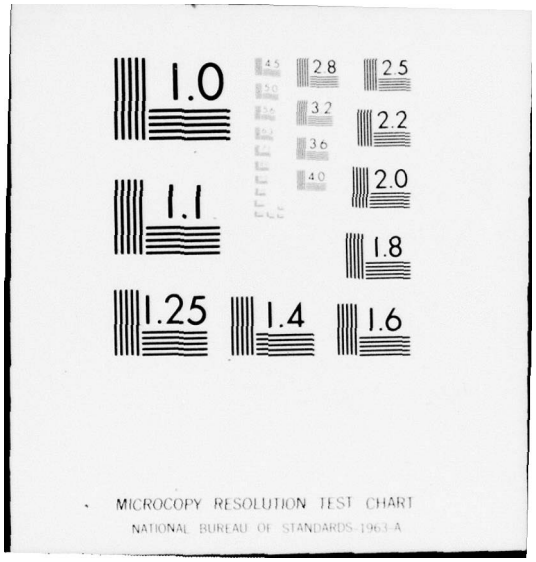
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Woods Hole Oceanographic Institution

A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPHIC OBSERVATIONS, VOLUME XIII (1970 MEASUREMENTS)

by

S. A. Tarbell
A. W. Whitlatch

June 1977

TECHNICAL REPORT

Prepared for the Office of Naval Research under Contracts N00014-66-C-0241; NR 083-004 and N00014-76-C-0197; NR 083-400.

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WOODS HOLE, MASSACHUSETTS 02543

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1 REPORT NUMBER: WHOI-77-18	2 GOVT ACCESSION NO. / 3 RECIPIENT'S CATALOG NUMBER
4 TITLE (and Subtitle): A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPHIC OBSERVATIONS, VOLUME XIII, (1970 MEASUREMENTS)	5 TYPE OF REPORT & PERIOD COVERED: Technical rept.; 6 PERFORMING ORG. REPORT NUMBER
7 AUTHOR(s): S. A. Tarbell and A. W. Whitlatch	8 CONTRACT OR GRANT NUMBER(s): N00014-66-C-0241, N00014-76-C-0197
9 PERFORMING ORGANIZATION NAME AND ADDRESS: Woods Hole Oceanographic Institution, Woods Hole, MA 02543	10 PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: NR 083-004, NR 083-400
11 CONTROLLING OFFICE NAME AND ADDRESS: NORDA, National Space Technology Laboratory, Bay St. Louis, MS 39529	12 REPORT DATE: June 1977; 13 NUMBER OF PAGES: 189 (12) 177p.
14 MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)	15 SECURITY CLASS. (of this report): Unclassified; 15a DECLASSIFICATION/DOWNGRADING SCHEDULE

16 DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17 DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18 SUPPLEMENTARY NOTES

19 KEY WORDS (Continue on reverse side if necessary and identify by block number)

1. Moorings
2. Current Meter Data
3. Gulf Stream

20 ABSTRACT (Continue on reverse side if necessary and identify by block number)

Summaries of moored current meter and associated hydrostation data collected in 1970 by the Woods Hole Oceanographic Institution are presented. The averaged current data are presented as Statistics, Spectral Diagrams, Vector and Scalar Plots versus Time. The associated hydrostation data are presented as temperature and salinity plotted versus depth.

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Valentine Worthington, Chairman
Department of Physical Oceanography

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INDEX

PREFACE

This volume is the thirteenth of a series of Data Reports presenting moored current meter and associated oceanographic data collected by the W.H.O.I. Buoy Group. Volumes I through XII present data from the years 1963-1969, and three array experiments: the 1970 Pollard array, the 1973 IWEX array and the 1973 MODE array. Volume XIII completes the presentation of 1970 current data.

RECOGNITION

In working toward our common cause, we faithful labor without pause
To fix the meters, splice the line, to reduce data in record time.

Our instrument section stands alone; we have the best right here at home.
Our skilled technicians twist and probe to maintain accurate time and strobe.
They modify where they think best, then send to sea for a working test.
The releases too receive much care for we depend on them down there.
Each instrument has a job to do towards the goal we all pursue,
And if each works well to the end the data is our dividend.

Our mooring guys pass every test; for they are always at their best,
With mooring wuzzles that come in, or shackles and a cotter pin.
The recovery and deployment too of moorings gives all much to do.
From Loran fixes which say "We're near" and releases beeping "I'm still here",
To a rotor spin at a certain time and hooking on the mooring line,
To hydrostations and all the rest of oceanography at its best.

Our data section is hard to beat; the scientists keep us on our feet,
As they dwell on every type of plot and argue this, or that, or not.
They give us plenty of work to do, computing and drafting and typing too,
To record our data for all to see and to indicate its integrity.
We've tried to present in our displays data in several different ways,
For those whose interest it is to see data from the changing sea.

In working toward our common cause we faithful labor without pause
To fix the meters, splice the line, to reduce data in record time.
And all these things we do with glee, courtesy O.N.R., so that we
Can process and plot, produce and plan to benefit our fellow man.

Introduction

The long term objectives of the Moored Array Project (Buoy Group) at W.H.O.I. are to measure and describe the distribution of energy in the ocean. In 1970 the effort was to determine the spatial structure of the velocity field at Site D (39° 10.0'N, 70° 00.0'W) and to examine the structure of currents under the Gulf Stream. The current data gathered throughout 1970 to measure these parameters are presented in two data reports. An earlier report, Volume VIII (Pollard and Tarbell, 1975) presents eighteen data series from a three mooring array set near Site D in 1970 to investigate the horizontal and vertical structure of the top 100 meters of the ocean. Volume XIII presents an additional thirty-six records set in six locations in the western North Atlantic and completes the presentation of good 1970 current meter data.

Moorings

A mooring report (Volkmann, 1973) contains diagrams of moorings set by the Buoy Group in 1970. Diagrams of twenty-two moorings associated with the presented data are included in this report. Four of these moorings are the new 'Intermediate' moorings which were designed to permit current measurements below the lower edge of the fish bite zone without contamination from surface motion (Heinmiller, 1976). Twelve are 'Bottom' moorings designed to collect data within a few hundred meters of the bottom. Three of the moorings are 'Subsurface' moorings and two are 'Surface' moorings. Both types have their principal flotation at the top of the mooring and are capable of measuring throughout the water column.

Arrays

Improvements in both mooring design and current meter reliability made feasible several array experiments in 1970. There was an array at Site D (39° 10'N, 70° 00'W) in July 1970 which is presented in a separate report (Pollard and Tarbell, 1975). The array areas for this report are shown in Figure 1 and the data duration with respect to depth and time is shown in Figure 2. Data from a two mooring array set as part of the Caribbean Inflow Study are discussed in Stalcup and Metcalf (1972). The Slope and Gulf Stream arrays collected near-bottom data which was used in Schmitz (1974) and Schmitz (1976). The latter paper is a general discussion of data from the western North Atlantic and includes data from Site L (30°N, 70°W) and the North/South array along 70°W.

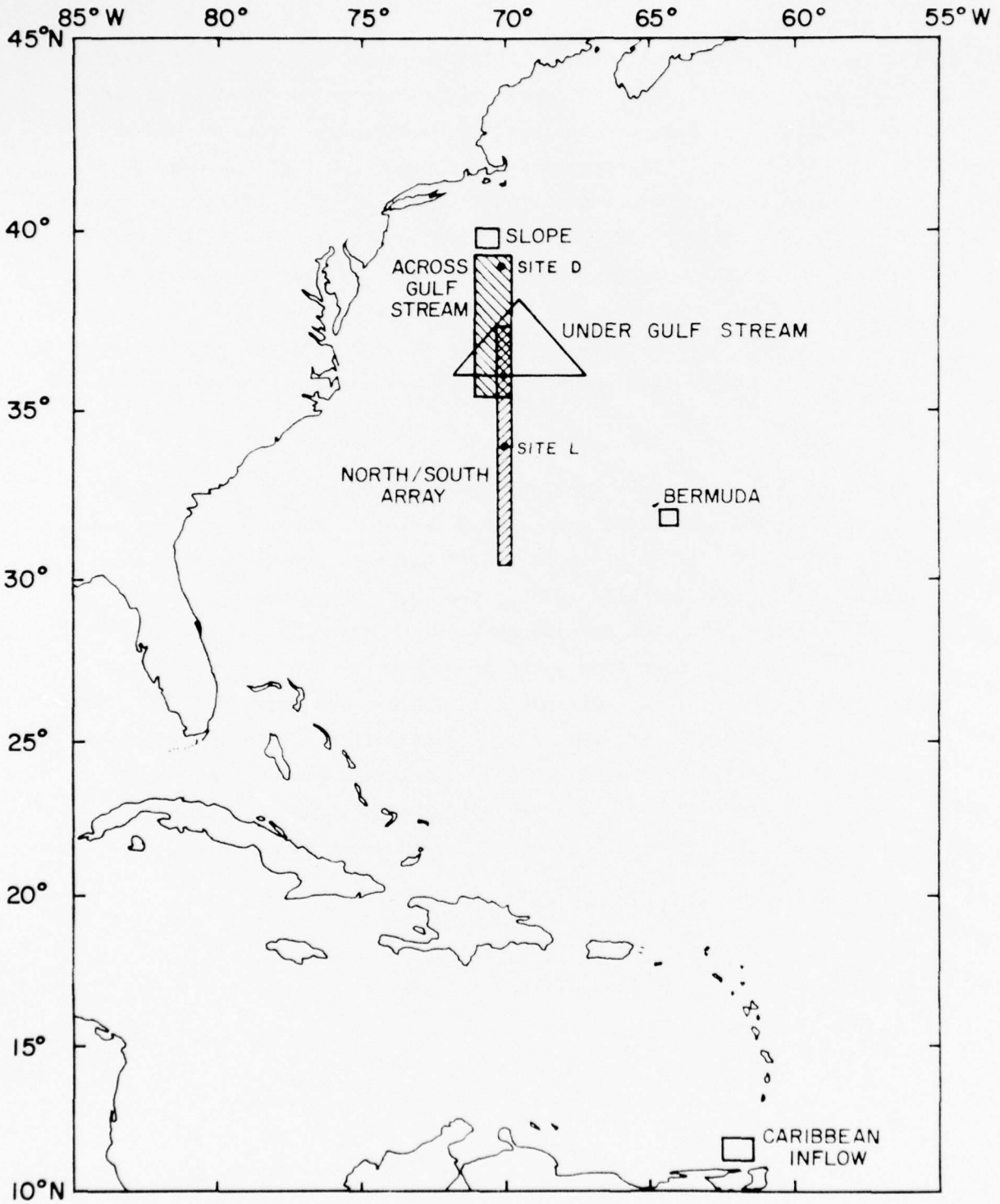

FIG. 1 AREAS OF THE EXPERIMENTS INCLUDED IN THIS REPORT

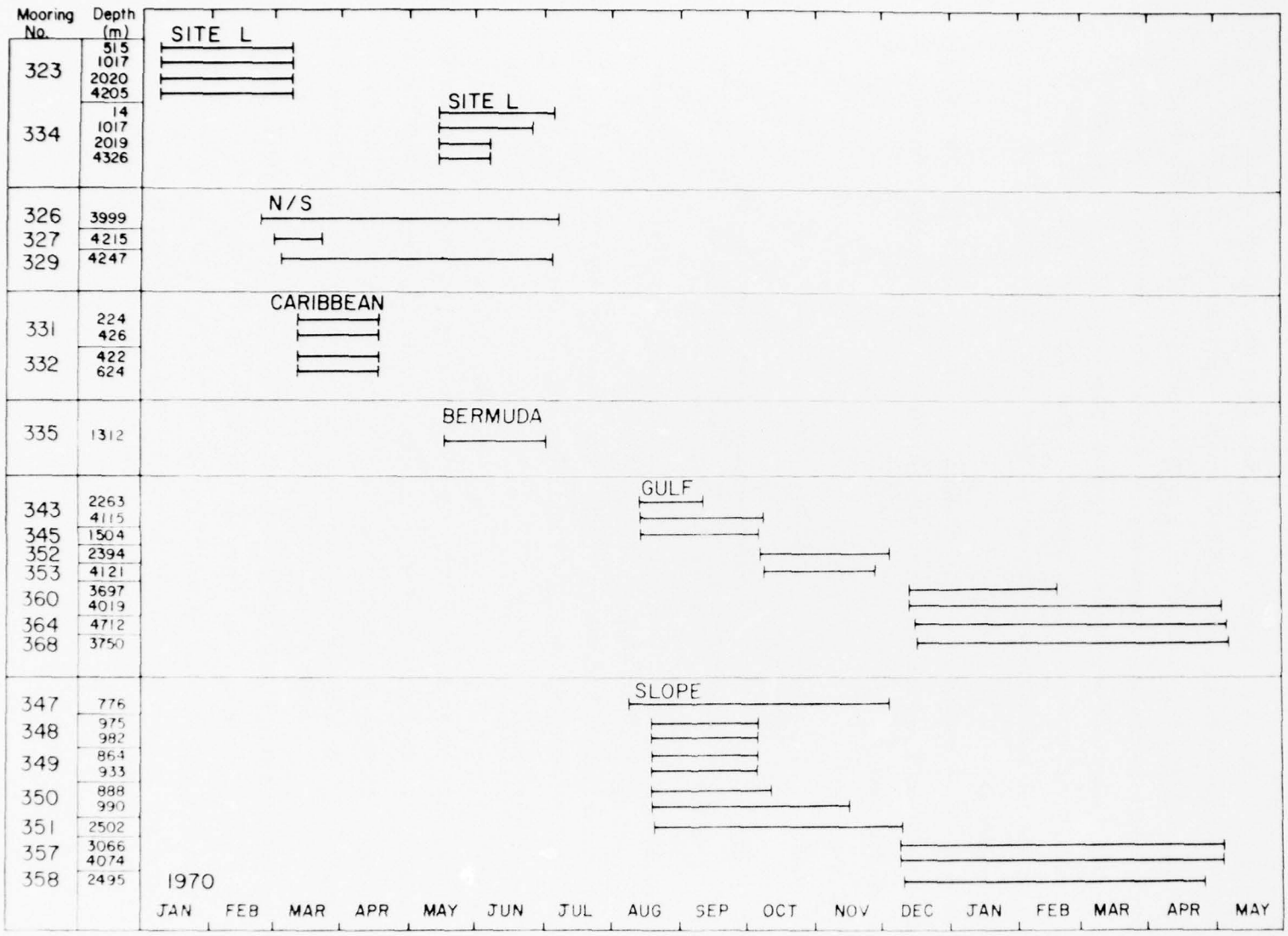

Fig 2. Presenting data duration by area, depth and time

Time Base Information

During 1970 the last current meters that used mechanical clocks were modified to use the more accurate crystal clock. Instead of two asynchronous cams and one R-C oscillator, a single quartz oscillator was used. The crystal, oscillating at a frequency of 74.5654 Khz, provides clocking pulses to the instrument and indicates time by placing a 14 bit time word at the beginning of each recording interval. The accuracy of the crystal clock is ±1 second per day while the accuracy of the mechanical clock is ±10 seconds per day.

To provide secondary time information, artificial events are placed in the rotor field both before and after the sea data. The procedure to do this is as follows:

For First Events,

Step 1. Turn the record circuit on (not to be turned off until recovery)

Step 2. a) Block the rotor to prevent it from turning
b) Allow instrument to record several data cycles with the rotor immobilized

Step 3. (t) Ten seconds after a recording interval starts, spin the rotor as fast as possible

Step 4. (t) In a successive record spin the rotor again

Step 5. Stop rotor again until just before launch

Step 6. (t) Free the rotor

For Last Events,

Step 1. (t) After recovery block rotor for several recording intervals

Step 2. (t) Ten seconds after a recording interval starts, spin the rotor

Step 3. (t) Spin the rotor again in a following record

Step 4. Stop rotor for several records before shutting off the record circuit.

The previous steps that are marked with a (t) are the most easily seen in the data and times should be noted using radio time signal.

The strobe rate reveals which clock was used in an instrument. The mechanical clock samples at 5 seconds, the crystal clock samples at 5.27 seconds.

Direction Corrections

Two causes of inaccuracy in direction were discovered in the Model 850 current meter in 1971. The data in this report have been corrected for both problems.

One problem was caused by a constant offset between the external vane and the internal vane follower. To correct this a constant value was added to each vane reading.

The second problem was caused by the horizontal component of the earth's magnetic field which deflected the vane follower slightly north of the proper direction. This northerly bias is greatest for magnetic East and West and decreases as the vane follower approaches North or South. A sine wave correction whose magnitude was determined by the local strength of the horizontal component of the magnetic field and the strength of the vane magnets was applied to the data. For Site D the general correction was ±7°, for Site L, ±9°.

Nomenclature

An * following the data name on a mooring page means that the data series is presented. Comments are included on the mooring page for current meter data not presented.

The magnetic tape recording current meters built by Geodyne Corporation, now part of EG&G are referred to as the Model 850 current meter.

R.V. AII is an abbreviation for Research Vessel ATLANTIS II.

A dummy current meter is really a test of the pressure case for the new vector averaging current meter.

Tens.	Tensiometer
Tel.	Telemetering device
Incl.	Inclinometer
Depth Rec.	Depth recorder

To insure that each data series has a unique and meaningful name the following is practiced:

The first three digits are the mooring number	323
The next digit is the instrument position on the mooring	3
Consecutive letters of the alphabet indicate successive modification of the data (editing stages, truncation, etc.)	D
Vector averaging interval: 900 (seconds), 1H (Hour), etc.	1800
Total data name 3233D1800	

Hydrostation Data Selection

Temperature and salinity data from Nansen bottle casts are presented if the station was taken near one of the moorings. The plot, where shown, is presented opposite the mooring description page. The first line of the legend at the bottom of the temperature - salinity plot describes the ship (e.g., AN = R. V. Atlantis II, CI = R. V. Chain, KN = R. V. Knorr), the cruise number, and the hydrostation number of the data shown. The position and date of the hydrocast are also included.

Current Meter Data Selection

Only good current meter data from 1970 are presented in this report. Good is defined to mean data time series which have no known errors or whose errors have been corrected.

Current Meter Processing

All of the current meter data presented in this report came from Geodyne (now part of EG&G) Model 850 current meters. These instruments burst-sample compass, vane and rotor values and store them plus time information on 1/4" two track magnetic tape cartirdges. The data were transcribed onto a nine track magnetic tape at W.H.O.I. using a specially designed reader. The data were then converted to the Maltais Format (Maltais, 1969) and stored as compass, vane, bearing, scalar speed and time.

Random erroneous values and systematic errors were edited from the burst sampled data, then a vector average was formed for each data burst. Next, an evenly spaced time series was created by interpolating through gaps in the data. The resulting basic vector series was used for input to other programs such as those producing statistics and a one-hour vector averaged series.

A low passed 1 hour vector series was used to create the stick plots.

Data Presentation

The current meter data are shown in numerical order. Associated hydrostation and mooring information precede the data from each mooring. Where hydrostation data are not available other data or plots may be substituted. The displays used to present each current meter series are described in succeeding paragraphs.

Statistics (STATS)

Standard statistical parameters are calculated for data in the time range given at the bottom of the table. Given n speed and direction or temperature values in a sample, we define $E_i = S_i \sin\theta_i$, $N_i = S_i \cos\theta_i$, then for A = E, N, and S.

$$\text{mean, } \bar{A} = \frac{1}{n}\sum_{i=1}^{n} A_i$$

$$\text{variance, } \sigma_A^2 = \frac{1}{n}\sum_{i=1}^{n} A_i^2 - \bar{A}^2$$

$$\text{standard error of the mean} = \frac{\sigma_A}{\sqrt{n}}$$

$$\text{standard deviation} = \sigma_A$$

$$\text{skewness} = \frac{1}{\sigma_A^3}\left[\frac{1}{n}\sum_{i=1}^{n} A_i^3 - \frac{3\bar{A}}{n}\sum_{i=1}^{n} A_i^2 + 2\bar{A}^3\right]$$

$$\text{kurtosis} = \frac{1}{\sigma_A^4}\left[\frac{1}{n}\sum_{i=1}^{n} A_i^4 - \frac{4A}{n}\sum_{i=1}^{n} A_i^3 + \frac{\overline{6A^2}}{n}\sum_{i=1}^{n} A_i^2 - 3\bar{A}^4\right]$$

The program also calculates "East and North" statistics,

$$\text{covariance, } M = \frac{1}{n}\sum_{i=1}^{n} E_i N_i - \bar{E}\,\bar{N}$$

$$\text{standard deviation of covariance, } \sigma_m = \frac{1}{n}\sum_{i=1}^{n} (E_i N_i)^2 - \overline{E_i N_i}^2$$

$$\text{standard error of covariance} = \frac{\sigma_m}{\sqrt{n}}$$

$$\text{correlation coefficient, } M' = \frac{M}{\sigma_E \sigma_N} .$$

The program also calculates parameters related to vector quantities: the scalar amplitude of the vector mean, $V_m = \sqrt{\bar{E}^2 + \bar{N}^2}$; vector variance, $V_v^2 = \frac{1}{2}(\sigma_E^2 + \sigma_N^2)$; standard deviation = V_v.

Spectra

The program TIMSAN (TIMe Series ANalysis) uses the Fast Fourier Transform algorithm of Singleton (1969) and is restricted to data segments of length N points, where N must be an even number which has no prime factor larger than 5, and must be less than 8000 points; data series longer than this must be broken into two or more pieces.

The number of degrees of freedom for the first 40 plotted points is given by $\nu = a\ m\ s$ where m is the number of adjacent frequency bands being averaged (8), s is the number of independent data pieces being averaged (1), and a should be two for Horizontal Kinetic Energy [HKE] spectra for which the EAST and NORTH components seem statistically independent. In the absence of information regarding NORTH-EAST correlation, one should use $a = 2$ to be safe.

On log-log plots the number of points averaged together increases with frequency. This eliminates the bunching together of points at high frequencies, increases the degrees of freedom of the high frequency estimates, and still permits low-frequency resolution. The averaging

practice is as follows: counting from the left of the plot, the first 40 plotted points represent data that have been averaged over 8 adjacent frequency bands; the data for the next 15 plotted points have been averaged over twice as many frequency bands; the next 6 over five times as many, the next 40 over ten times as many, the next 15 over twenty times as many, the next 6 over fifty times as many, the next 40 over 100 times as many and so on. In this way, for example, 7900 data points with no averaging would be plotted as only 176 points, and the last 14 estimates would be averaged over 200 basic frequency bands. The m in the formula $\nu = a\ m\ s$ for degrees of freedom is, in this example, 200 times larger at the highest frequencies than at the lowest frequencies.

For $\nu > 30$, the confidence limits for the spectral estimates are given approximately by $(1 - 2/9\nu \pm Z\sqrt{2/9\nu})^{1/3}$ where $Z = 1.28375$ for 80% confidence limits, $Z = 1.645$ for 90%, $Z = 1.96$ for 97% and $Z = 2.5757$ for 99%. In the example above, if the HKE spectral plot had 2 pieces and was averaged over 8 adjacent frequency bands then $\nu = 2 \times 2 \times 8 = 32$ for the lowest frequencies (assuming NORTH and EAST components are highly correlated) and $200 \times 32 = 6400$ for the highest frequencies. The 95% confidence intervals (i.e., 95% of the time one would expect the spectral estimates to vary no more than this much) would be (0.57, 1.55) at low frequencies, and (0.97, 1.03) at high frequencies.

For $\nu \leq 30$, one must obtain confidence intervals from Chi-Squared distribution tables in standard statistical references.

Stick Plot

The hourly U and V time series are filtered using a symmetrical running Gaussian filter with a half-width of 24 hours. The resultant series is 48 hours shorter than the input time series (the first and last 24 hours are lost). Three scales for the time axis were used. The short data were subsampled so that there were six points plotted per day, medium length data were plotted four points per day, and long data series were plotted two points per day. Vector direction usually follows normal direction conventions, i.e., north is up. Occasionally the plot will be rotated to show East up when the current flow is markedly easterly or westerly. A second type of stick presentation displays consecutive boxes for the array period in which daily averages of the filtered vectors are plotted according to mooring position.

Variable vs. Time Plot

This is a plot of any variable as a function of TIME. The plot is generated from the 1 hour vector averaged series. In some plots of speed it is possible to see the rotor threshold of 1.8 cm/sec.

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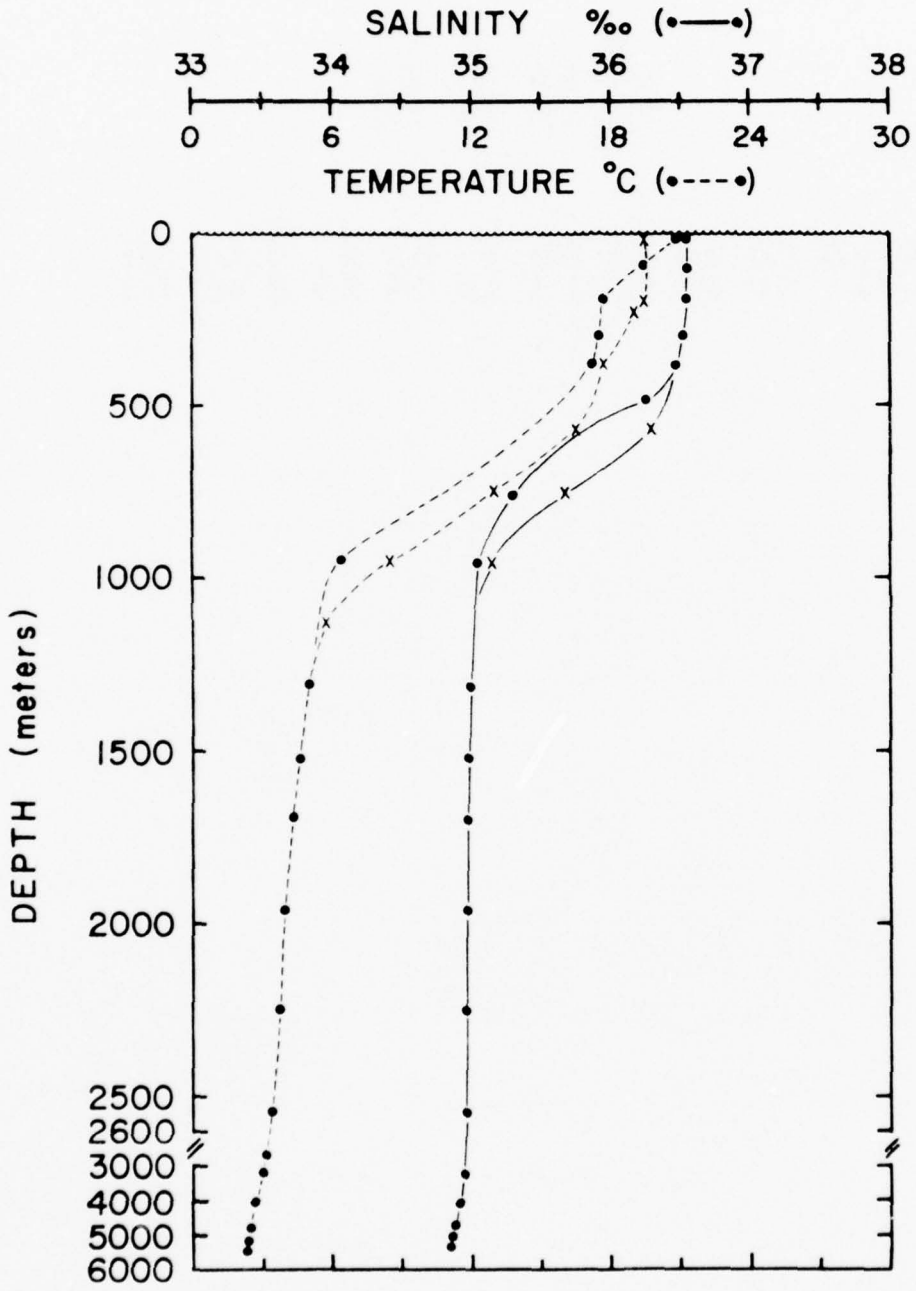
data presentation



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LAT. 33° 53.5' N
LONG. 70° 0.0' W
DATE 70-01-8

AN-57-1725 (•)
LAT. 33° 54.0' N
LONG. 69° 48.0' W
DATE 70-05-14

MOORING NO. 323

Lat. 33° 58.5'N Long. 69° 58.5'W

Set January 8, 1970

Set by R. Heinmiller

Ship R. V. Chain Cruise 97

Recovered May 13, 1970

Recovered by J. Gifford

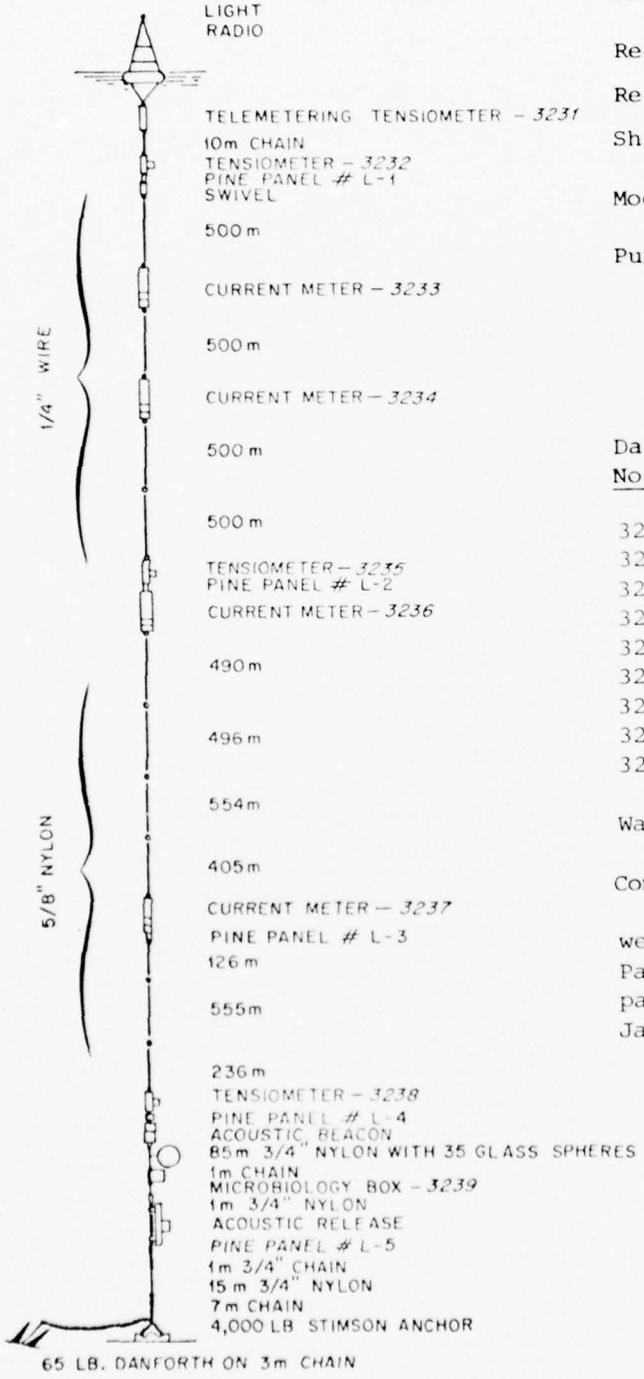
Ship R. V. AII Cruise 57

Mooring type - Surface

Purpose of mooring

A) Current measurement at Site L

B) Engineering wire test



Data No.	Instr. Type	Depth (m)
3231	Tel. Tens.	2
3232	Tens.	13
3233*	Model 850	515
3234*	Model 850	1017
3235	Tens.	2018
3236*	Model 850	2020
3237*	Model 850	4205
3238	Tens.	5236
3239	Bio pack	5333
Water depth		5365

Comments

Also included on this mooring were a biological fouling test for Paul Stimson and a microbiology package for Drs. Eimhjellen and Jannasch.

Data number 3233

Instrument No.: M-232 Type: Model 850

Depth: 515 m Water depth: 5365 m

Start time: 70-I-08 19.52.05

Stop time: 70-III-09 19.22.05

Duration: 59d 23h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 15

interval time =1800 seconds

COMMENTS:

DATA/ 3233,1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-120.768	-134.137	306.166
STD. ERR.	3.329	3.525	1.507
VARIANCE	31911.915	35785.448	6537.344
STD. DEV.	178.639	189.170	80.854
KURTOSIS	1.714	1.991	3.471
SKEWNESS	.245	.252	-.423
MINIMUM	-452.702	-507.388	7.000
MAXIMUM	395.144	299.596	516.000

EAST & NORTH

COVARIANCE	=	-26490.888
STD. ERR. OF COVARIANCE	=	622.082
STD. DEV. OF COVARIANCE	=	33384.410
CORRELATION COEFFICIENT	=	-.784
VECTOR MEAN	=	180.493
VECTOR VARIANCE	=	33848.682
VECTOR STD. DEV.	=	183.980

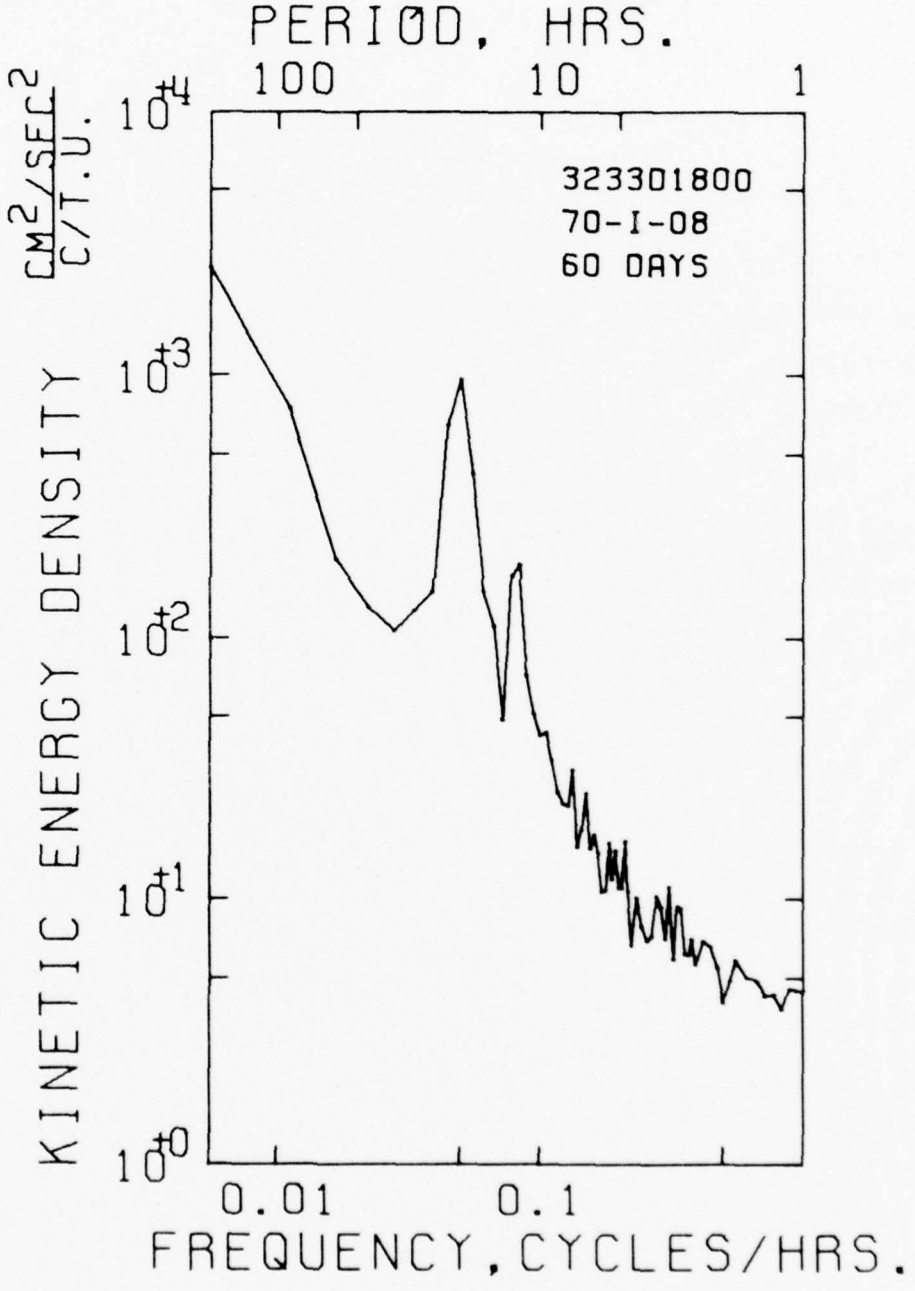
* SAMPLE SIZE = 2880 POINTS

* SPANNING RANGE

* FROM 70- I -08 19.52.05

* TO 70- III-09 19.22.05

* DURATION 59.98 DAYS


PERIØD, HRS.
100
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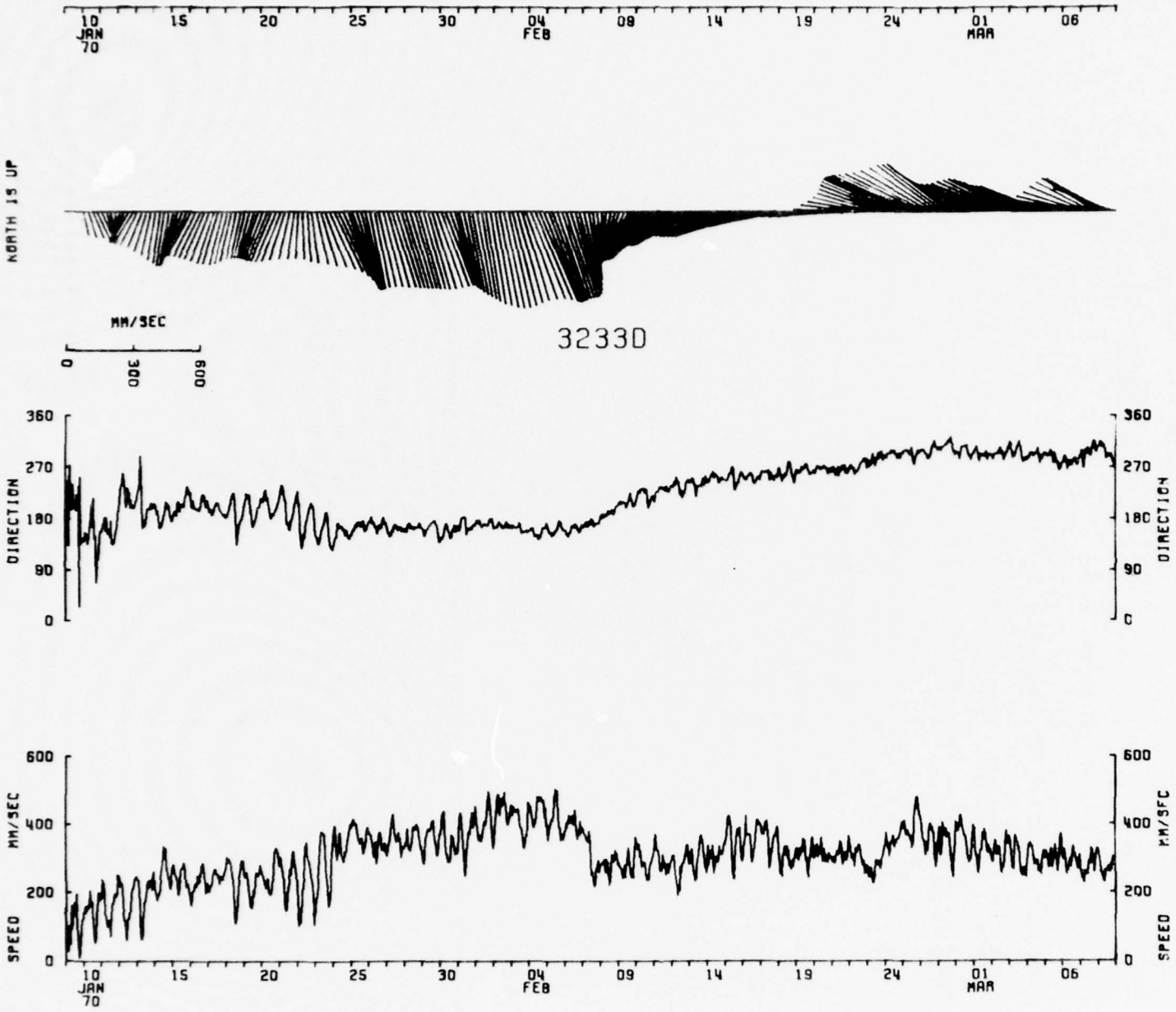
1
KINETIC ENERGY DENSITY $\frac{CM^2/SEC^2}{C/T.U.}$
10^4
10^3
10^2
10^1
10^0
323301800
70-I-08
60 DAYS
0.01
0.1
FREQUENCY, CYCLES/HRS.



Data number 3234

Instrument No.: M-226 Type: Model 850

Depth: 1017 m Water depth: 5365 m

Start time: 70-I-08 20.15.05

Stop time: 70-III-09 19.45.05

Duration: 59d 23h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 15

interval time =1800 seconds

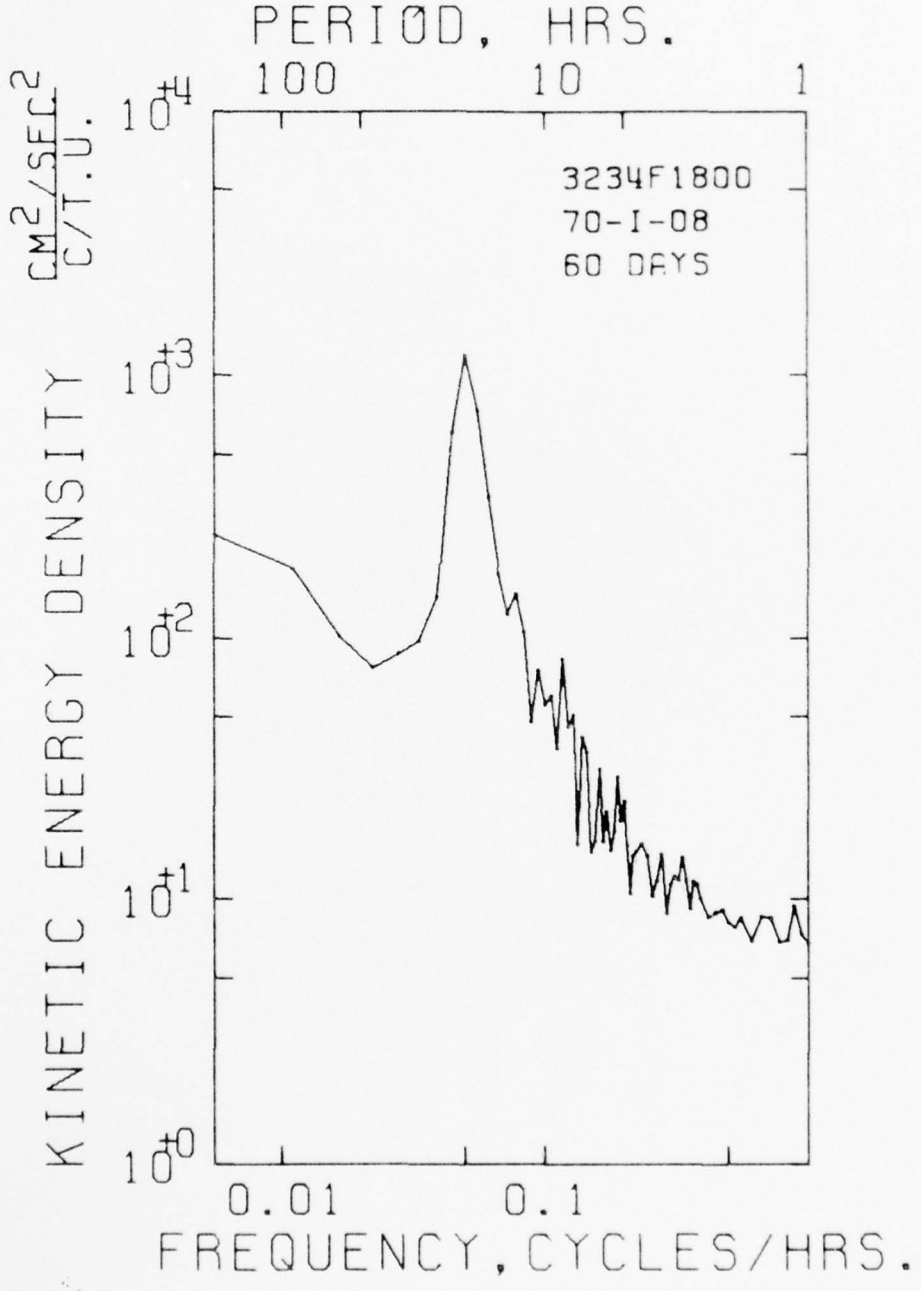
COMMENTS:

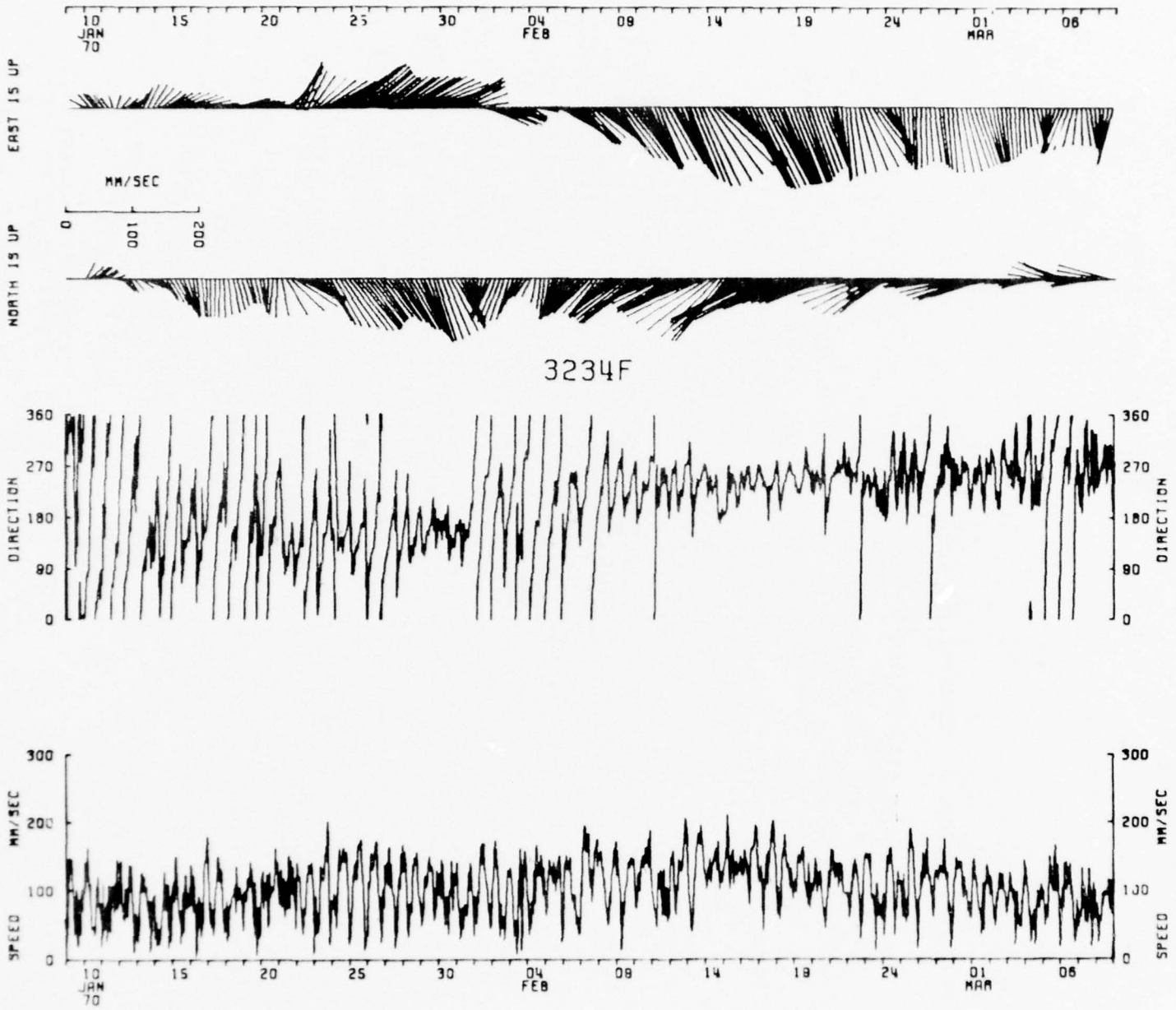
DATA/ 3234F1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN =	-35.077	-37.498	108.024
STD. ERR. =	1.478	1.226	.742
VARIANCE =	6201.375	4327.281	1586.061
STD. DEV. =	78.318	65.782	39.825
KURTOSIS =	2.208	2.594	2.488
SKEWNESS =	.321	.264	-.174
MINIMUM =	-221.000	-203.000	1.000
MAXIMUM =	170.138	162.215	221.000

EAST & NORTH

COVARIANCE =	-667.094	* SAMPLE SIZE = 2880 POINTS
STD. ERR. OF COVARIANCE =	101.417	*
STD. DEV. OF COVARIANCE =	5442.608	* SPANNING RANGE
CORRELATION COEFFICIENT =	-.128	* FROM 70- I -08 20.15.05
VECTOR MEAN =	51.347	* TO 70- III-09 19.45.05
VECTOR VARIANCE =	5309.328	*
VECTOR STD. DEV. =	72.865	* DURATION 59.98 DAYS


PERIØD, HRS.
100
10
1
3234F1800
70-I-08
60 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+4
10+3
10+2
10+1
10+0
0.01
0.1
FREQUENCY, CYCLES/HRS.



Data number 3236

Instrument No.: M-206 Type: Model 850

Depth: 2020 m Water depth: 5365 m

Start time: 70-I-08 20.01.55

Stop time: 70-III-09 20.01.55

Duration: 60d

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

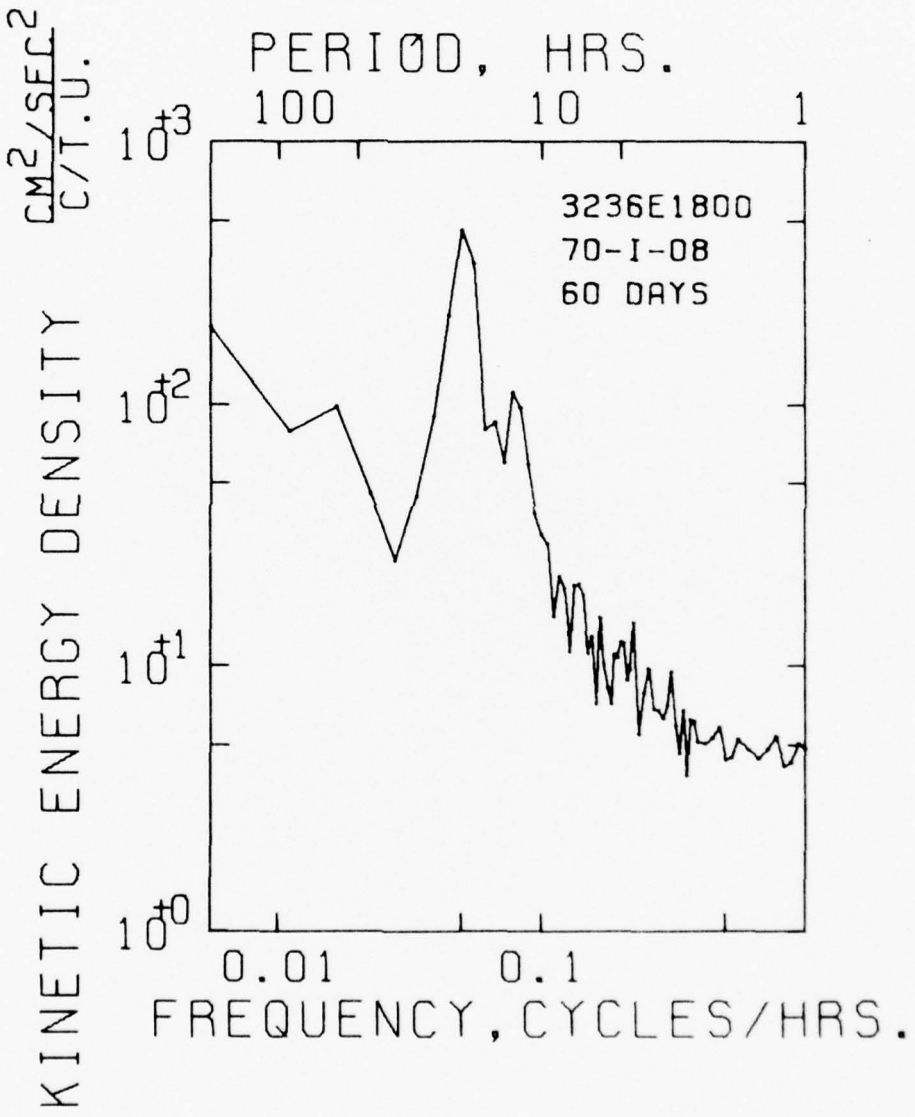
COMMENTS:

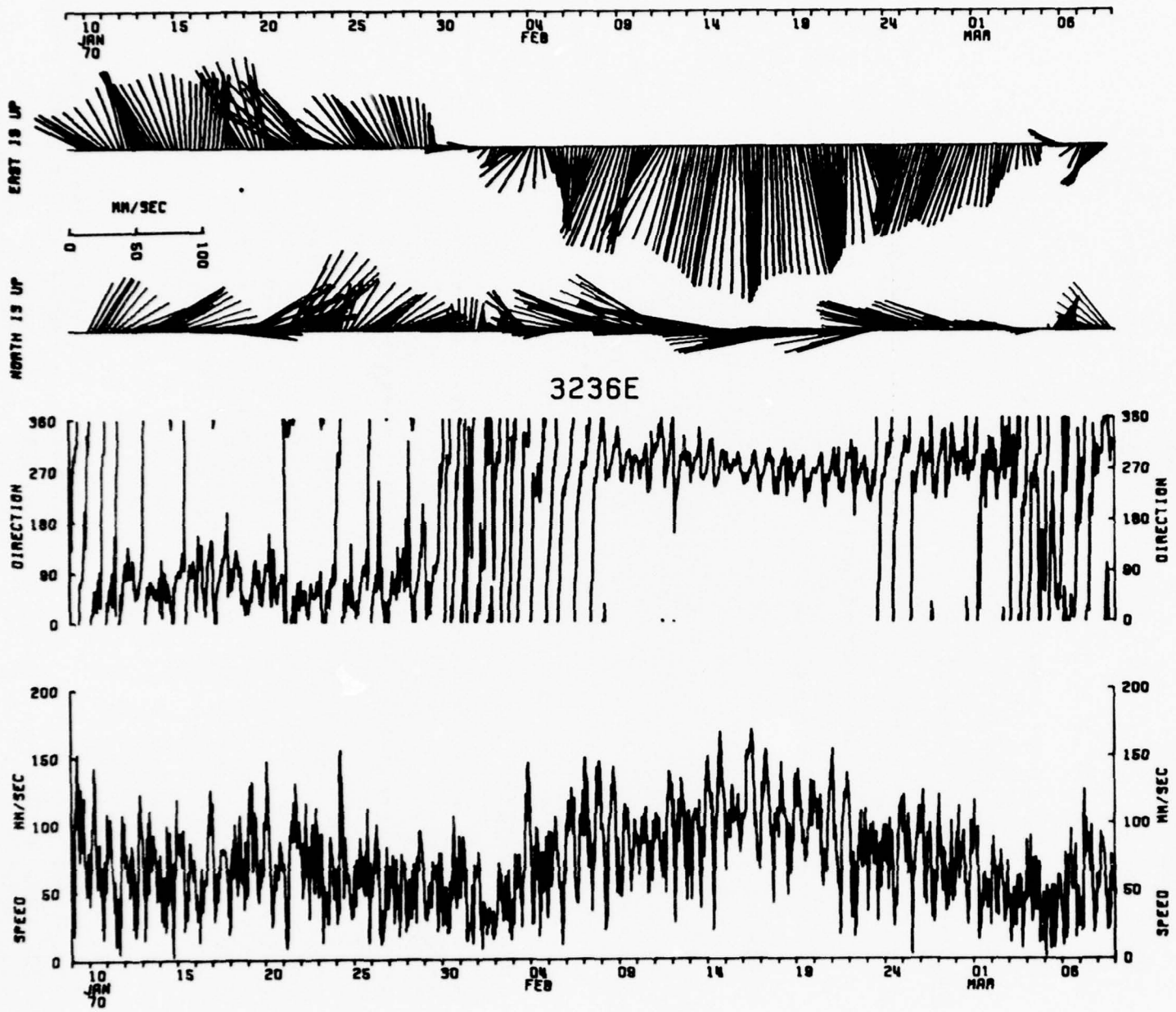
DATA/ 3236E1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-20.264	15.425	76.492
STD. ERR.	1.240	.808	.621
VARIANCE	4430.129	1882.533	1110.169
STD. DEV.	66.559	43.388	33.319
KURTOSIS	2.016	2.637	2.614
SKEWNESS	.305E-1	.958E-2	.242
MINIMUM	-174.000	-106.676	2.000
MAXIMUM	148.821	162.887	175.000

EAST & NORTH

COVARIANCE	279.536	SAMPLE SIZE	2881 POINTS
STD. ERR. OF COVARIANCE	54.488		
STD. DEV. OF COVARIANCE	2924.629	SPANNING RANGE	
CORRELATION COEFFICIENT	.368E-1	FROM 70- I -09	20.01.55
VECTOR MEAN	25.467	TO 70- III-09	20.01.55
VECTOR VARIANCE	3156.331		
VECTOR STD. DEV.	56.181	DURATION	60.00 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+3
10+2
10+1
10+0
3236E1800
70-I-08
60 DAYS
0.01
0.1
FREQUENCY, CYCLES/HRS.



Data number 3237

Instrument No.: M-227 Type: Model 850

Depth: 4205 m Water depth: 5365 m

Start time: 70-I-08 20.52.42

Stop time: 70-III-09 19.52.42

Duration: 59d 23m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

DATA/ 3237W1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	2.587	8.541	105.263
STD. ERR.	1.701	1.107	.546
VARIANCE	8334.995	3525.179	859.540
STD. DEV.	91.296	59.373	29.318
KURTOSIS	1.514	1.954	3.005
SKEWNESS	.284	-.122E-1	-.468
MINIMUM	-143.826	-119.327	7.000
MAXIMUM	166.000	181.019	183.000

EAST & NORTH

COVARIANCE	2989.138
STD. ERR. OF COVARIANCE	66.629
STD. DEV. OF COVARIANCE	3575.068
CORRELATION COEFFICIENT	.551
VECTOR MEAN	8.925
VECTOR VARIANCE	5930.087
VECTOR STD. DEV.	77.007

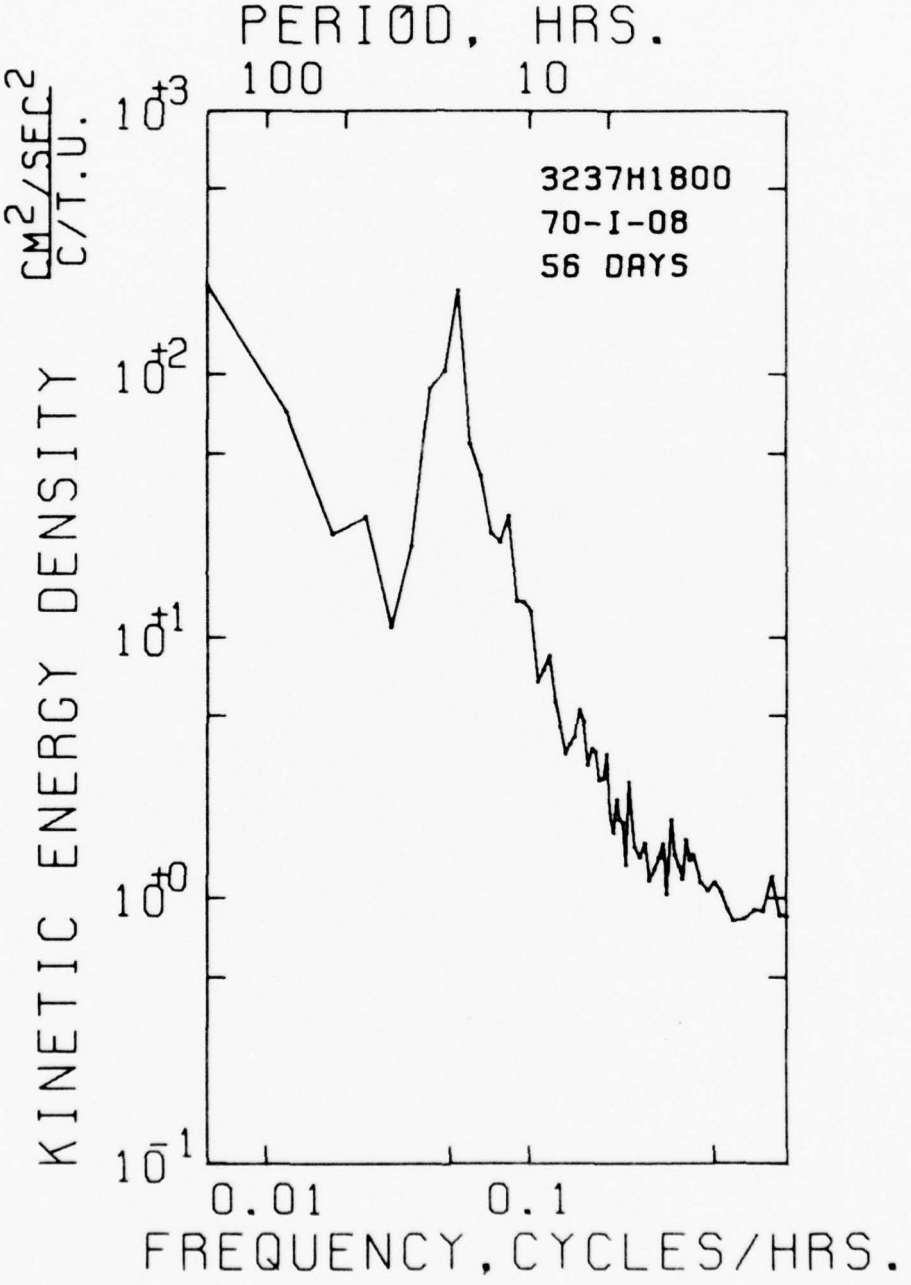
SAMPLE SIZE = 2879 POINTS

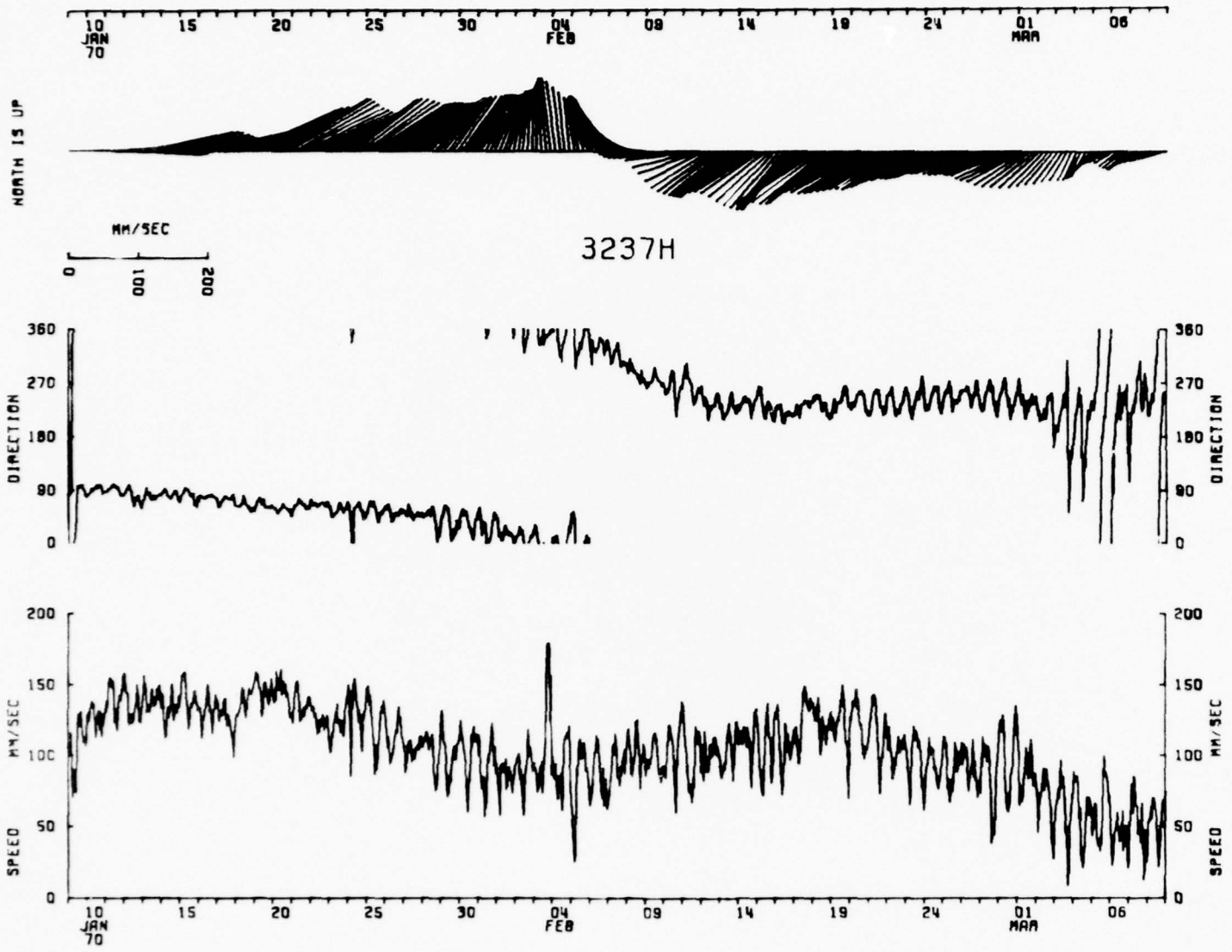
SPANNING RANGE

FROM 70- I -08 20.52.42

TO 70- III-09 19.52.42

DURATION 59.96 DAYS


PERIOD, HRS.
100
10
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+3
10+2
10+1
10+0
10-1
3237H1800
70-I-08
56 DAYS
0.01
0.1
FREQUENCY, CYCLES/HRS.



MOORING NO. 326

Lat. 37° 37.3'N Long. 70° 00.5'W

Set February 28, 1970

Set by A. Davidson

Ship R. V. Chain Cruise 98

Recovered July 8, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 5

Mooring type - Bottom

Purpose of mooring

N/S Array with moorings 327 and 329.

Data No.	Instr. Type	Depth (m)
3261*	Model 850	3999
3262	Model 850	4101
Water depth		4128

Comments

3262 - vane stuck entire record.

Data number 3261

Instrument No.: M-142 Type: Model 850

Depth: 3999 m Water depth: 4128 m

Start time: 70-II-28 17.30.34

Stop time: 70-VII-08 13.30.34

Duration: 129d 20h

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 16

interval time =1800 seconds

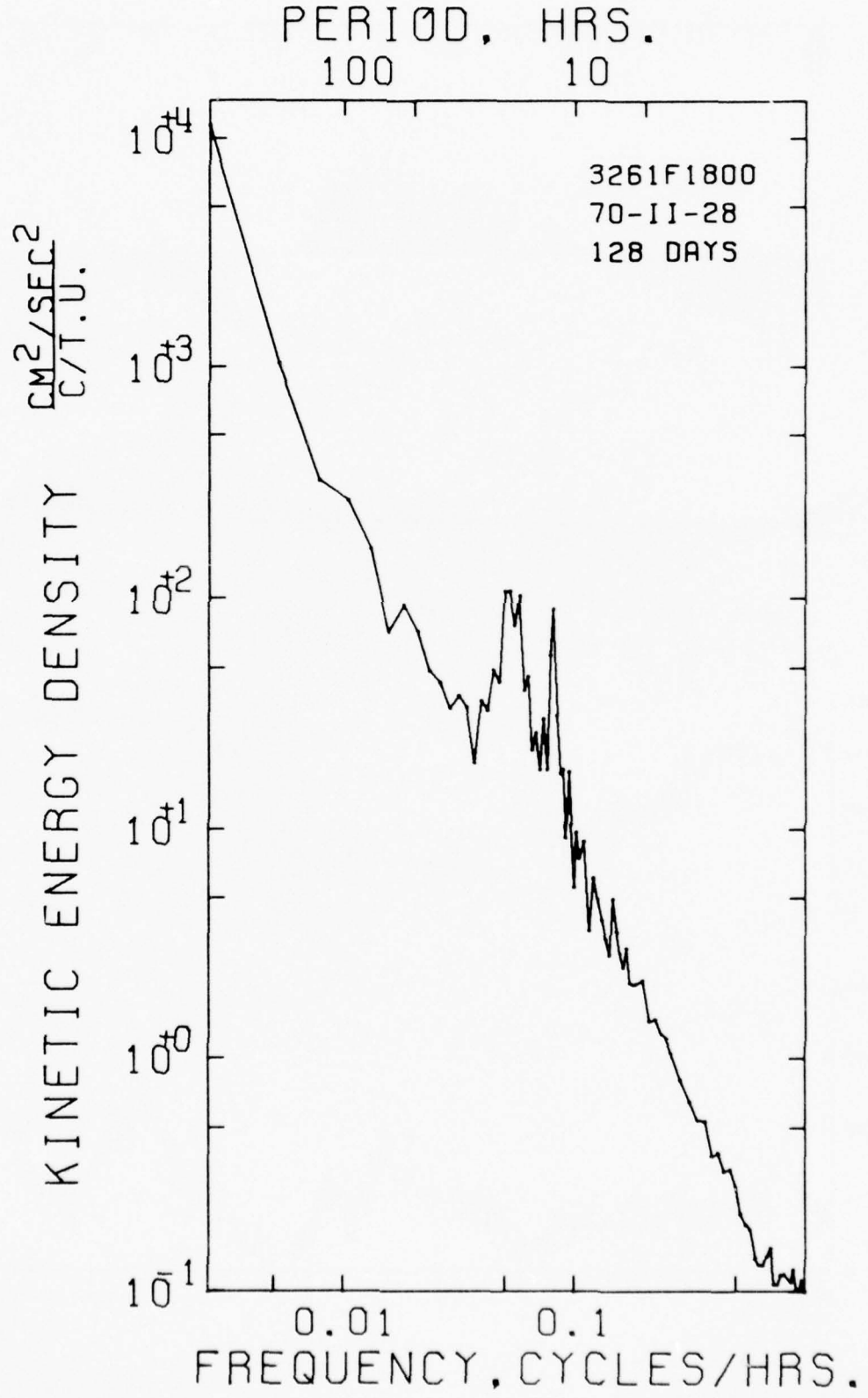
COMMENTS:

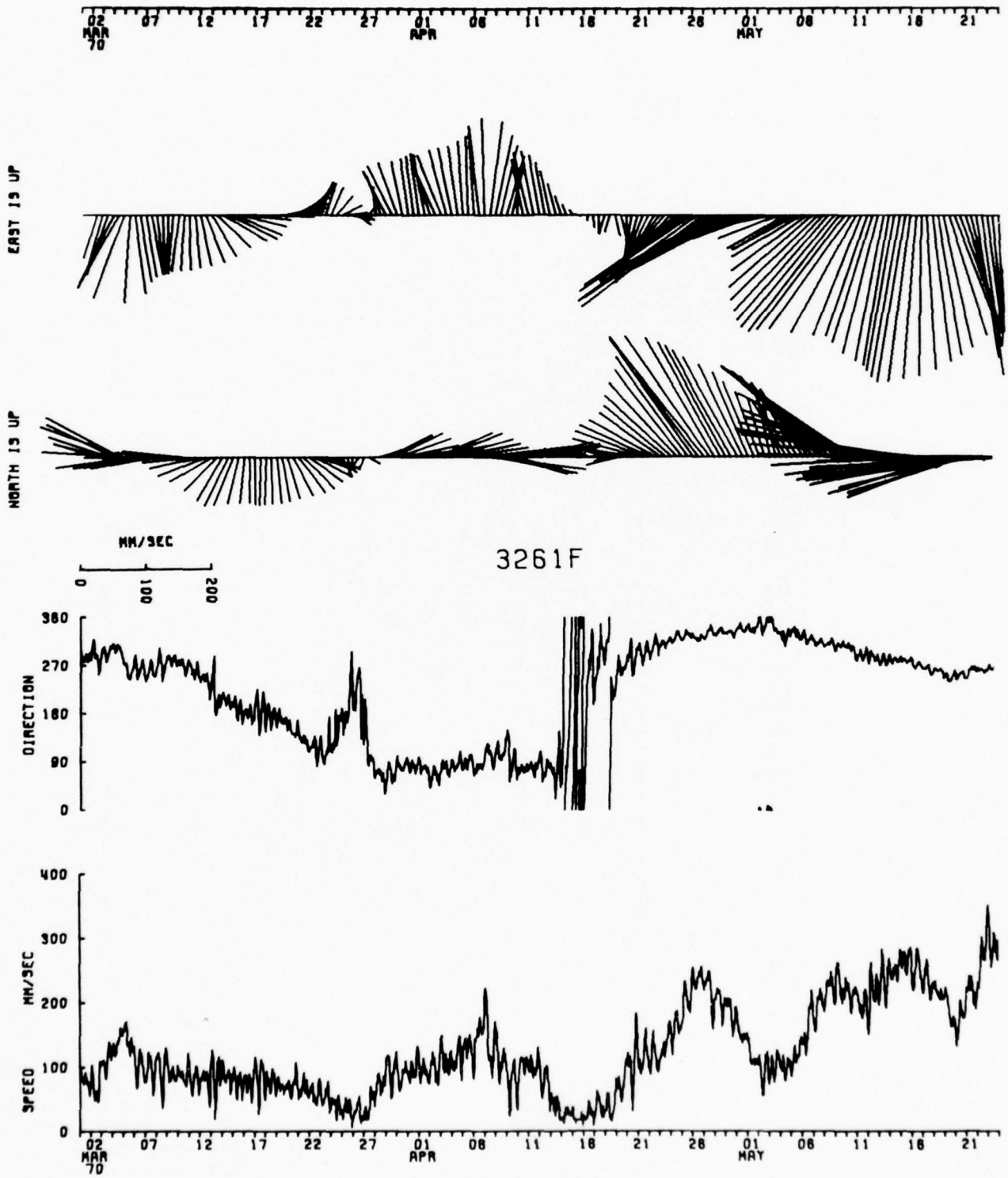
DATA/ 3261F1800

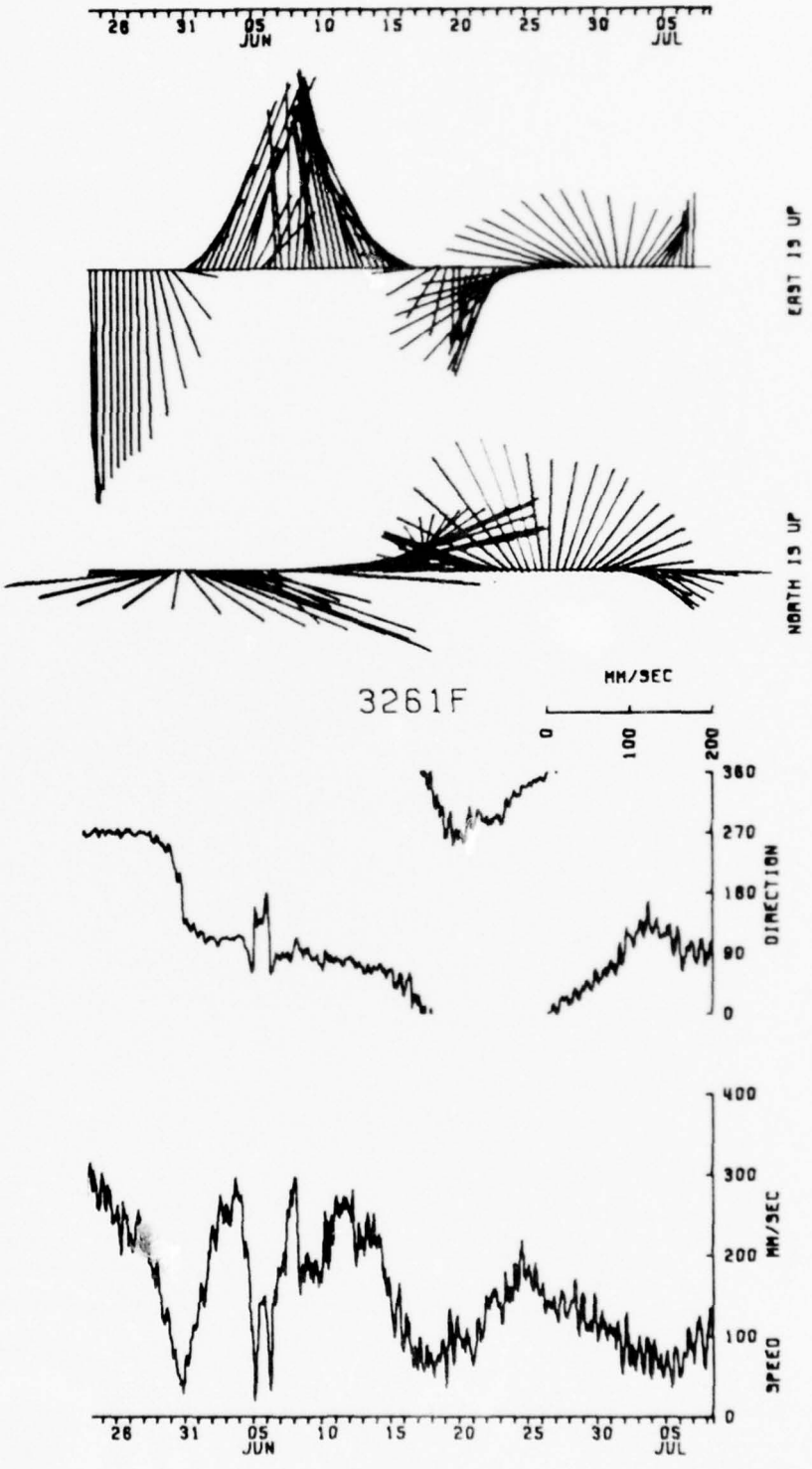
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-22.307	23.281	134.187
STD. ERR.	1.663	.877	.901
VARIANCE	17231.935	4790.808	5056.151
STD. DEV.	131.270	69.216	71.107
KURTOSIS	2.433	2.710	2.303
SKEWNESS	.224E-3	.480	.507
MINIMUM	-351.157	-130.444	18.000
MAXIMUM	295.764	228.198	355.000

EAST & NORTH

COVARIANCE	-1490.521	* SAMPLE SIZE = 6233 POINTS
STD. ERR. OF COVARIANCE	110.431	*
STD. DEV. OF COVARIANCE	8718.444	* SPANNING RANGE
CORRELATION COEFFICIENT	-.164	* FROM 70- II -28 17.30.34
VECTOR MEAN	32.243	* TO 70- VII-08 13.30.34
VECTOR VARIANCE	11011.371	*
VECTOR STD. DEV.	104.935	* DURATION 129.83 DAYS


PERIOD, HRS.
100
10
3261F1800
70-II-28
128 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.


02 07 12 17 22 27 01 06 11 16 21 26 01 06 11 16 21
MAR 70
APR
MAY
EAST IS UP
NORTH IS UP
MM/SEC
0
100
200
3261F
360
270
180
90
0
DIRECTION
400
300
200
100
0
SPEED MM/SEC
02 07 12 17 22 27 01 06 11 16 21 26 01 06 11 16 21
MAR 70
APR
MAY


26
31
05
JUN
10
15
20
25
30
05
JUL
EAST IS UP
NORTH IS UP
3261F
MM/SEC
0
100
200
360
270
180
90
0
DIRECTION
400
300
200
100
0
SPEED MM/SEC
26
31
05
JUN
10
15
20
25
30
05
JUL

MOORING NO. 327

Lat. 36° 46.2'N Long. 69° 59.0'W

Set February 28, 1970

Set by A. Davidson

Ship R. V. Chain Cruise 98

Recovered July 8, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 5

Mooring type - Bottom

Purpose of mooring

N/S Array with moorings 326 and 329.

Data No.	Instr. Type	Depth (m)
3271	Biopack	4204
3272*	Model 850	4215
Water depth		4417

Comments

A microbiology package was included on this mooring for Drs. Eimhjallen and Jannasch.

Data number 3272

Instrument No.: M-129 Type: Model 850

Depth: 4215 m Water depth: 4417 m

Start time: 70-III-01 00.00.34

Stop time: 70-III-23 08.00.34

Duration: 22d 08h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

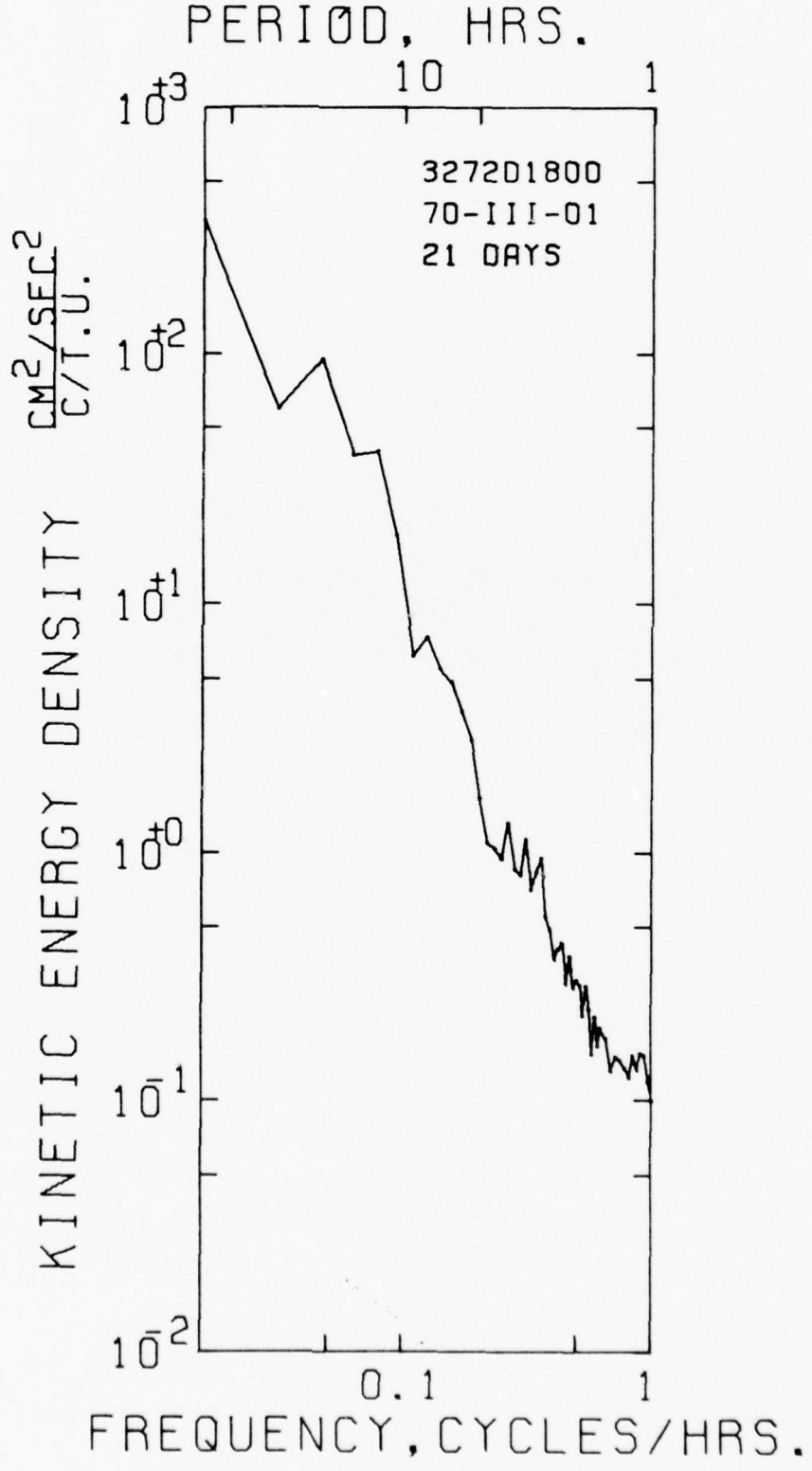
DATA/ 3272D1800

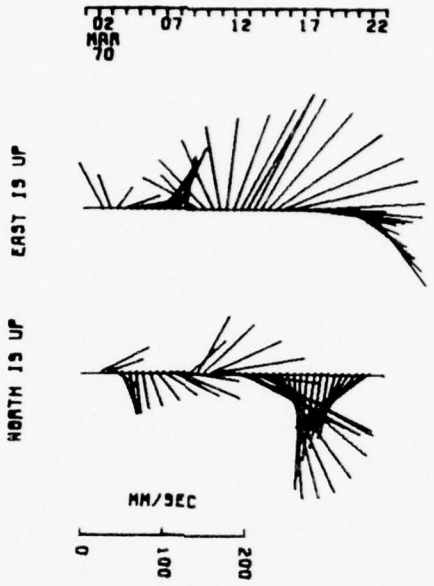
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	31.977	-49.139	101.212
STD. ERR.	2.136	1.896	1.347
VARIANCE	4896.891	3856.324	1946.609
STD. DEV.	69.978	62.099	44.120
KURTOSIS	2.948	2.719	2.266
SKEWNESS	-.265	.192	.384
MINIMUM	-161.723	-188.311	18.000
MAXIMUM	206.617	114.464	229.000

EAST & NORTH

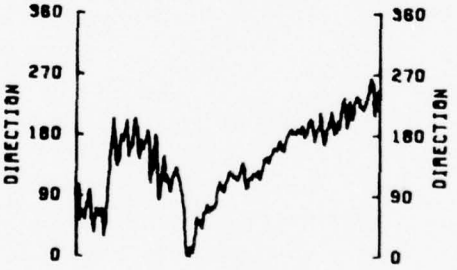
COVARIANCE	650.757
STD. ERR. OF COVARIANCE	169.309
STD. DEV. OF COVARIANCE	5545.995
CORRELATION COEFFICIENT	.150
VECTOR MEAN	58.627
VECTOR VARIANCE	4376.608
VECTOR STD. DEV.	66.156

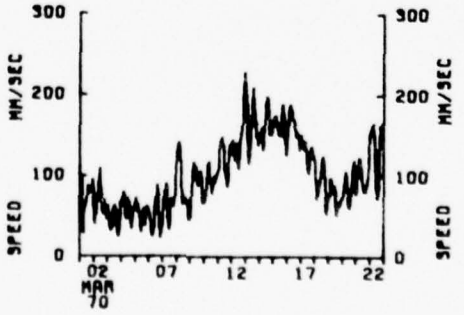
* SAMPLE SIZE = 1073 POINTS
*
* SPANNING RANGE
* FROM 70- III-01 00.00.3
* TO 70- III-23 08.00.34
*
* DURATION 22.33 DAYS


PERIOD, HRS.
10
1
10^{+3}
10^{+2}
10^{+1}
10^{0}
10^{-1}
10^{-2}
327201800
70-III-01
21 DAYS
KINETIC ENERGY DENSITY $\frac{CM^2/SEC^2}{C/T.U.}$
0.1
1
FREQUENCY, CYCLES/HRS.



32720





MOORING NO. 329

Lat. 31° 00.0'N Long. 70° 29.3'W

Set March 3, 1970

Set by A. Davidson

Ship R. V. Chain Cruise 98

Recovered July 5, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 5

Mooring type - Bottom

Purpose of mooring

N/S Array with moorings 326 and 327.

Data No.	Instr. Type	Depth (m)
3291*	Model 850	4247
Water depth		5424

GLASS FLOAT BUOY
WITH LIGHT & RADIO

1 m CHAIN

10 m 9/16" NYLON

CURRENT METER 3291

10 m 9/16" NYLON

ACOUSTIC RELEASE,
AMF TRANSPONDING

10 m 9/16" NYLON

50 m " "

100 m " "

500 m " "

500 m " "

3 m CHAIN

800 LB ANCHOR

Comments

Data number 3291

Instrument No.: M-223 Type: Model 850

Depth: 4247 m Water depth: 5424 m

Start time: 70-III-04 00.30.17

Stop time: 70-VII-05 09.00.17

Duration: 123d 08h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 15

interval time =1800 seconds

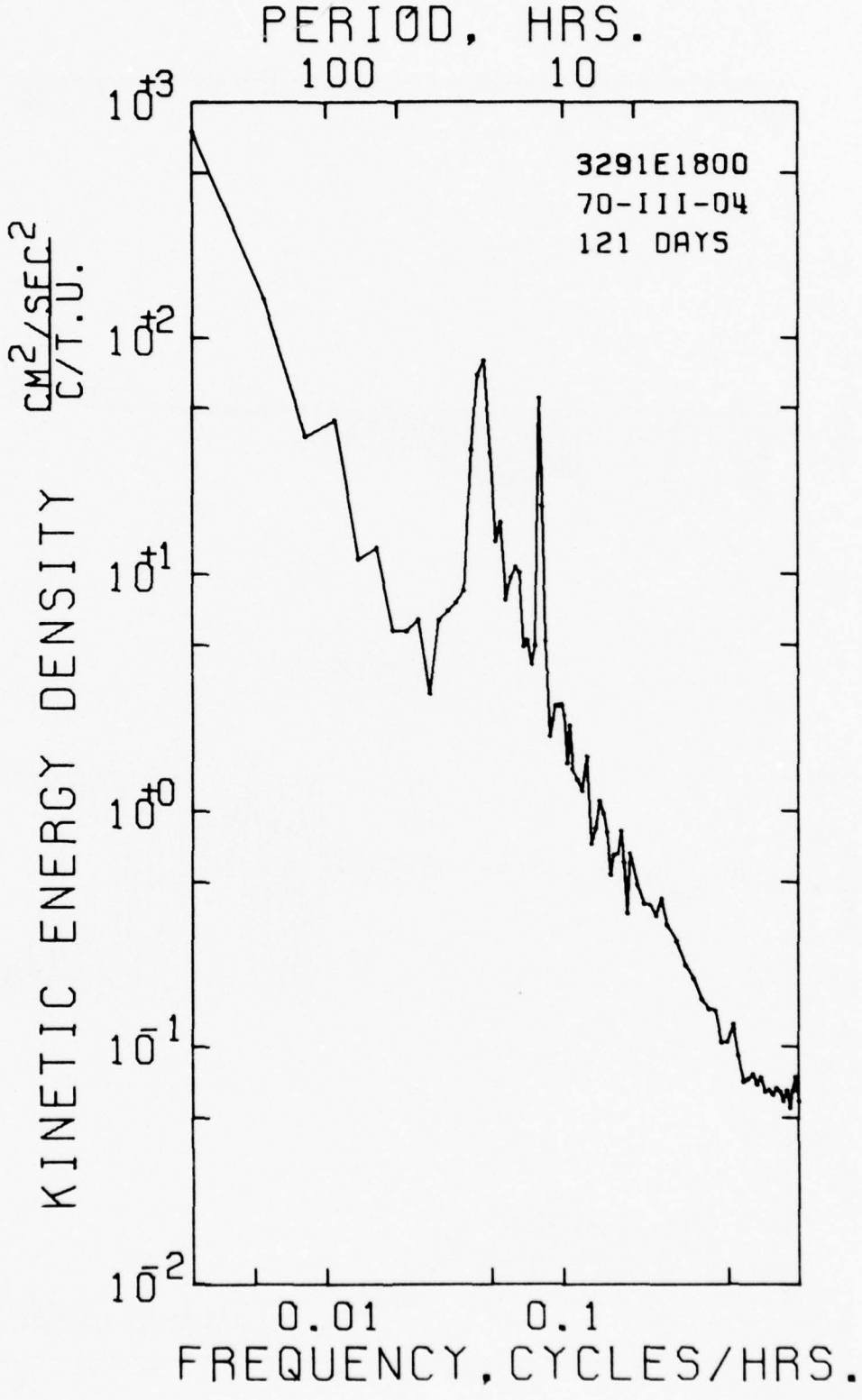
COMMENTS:

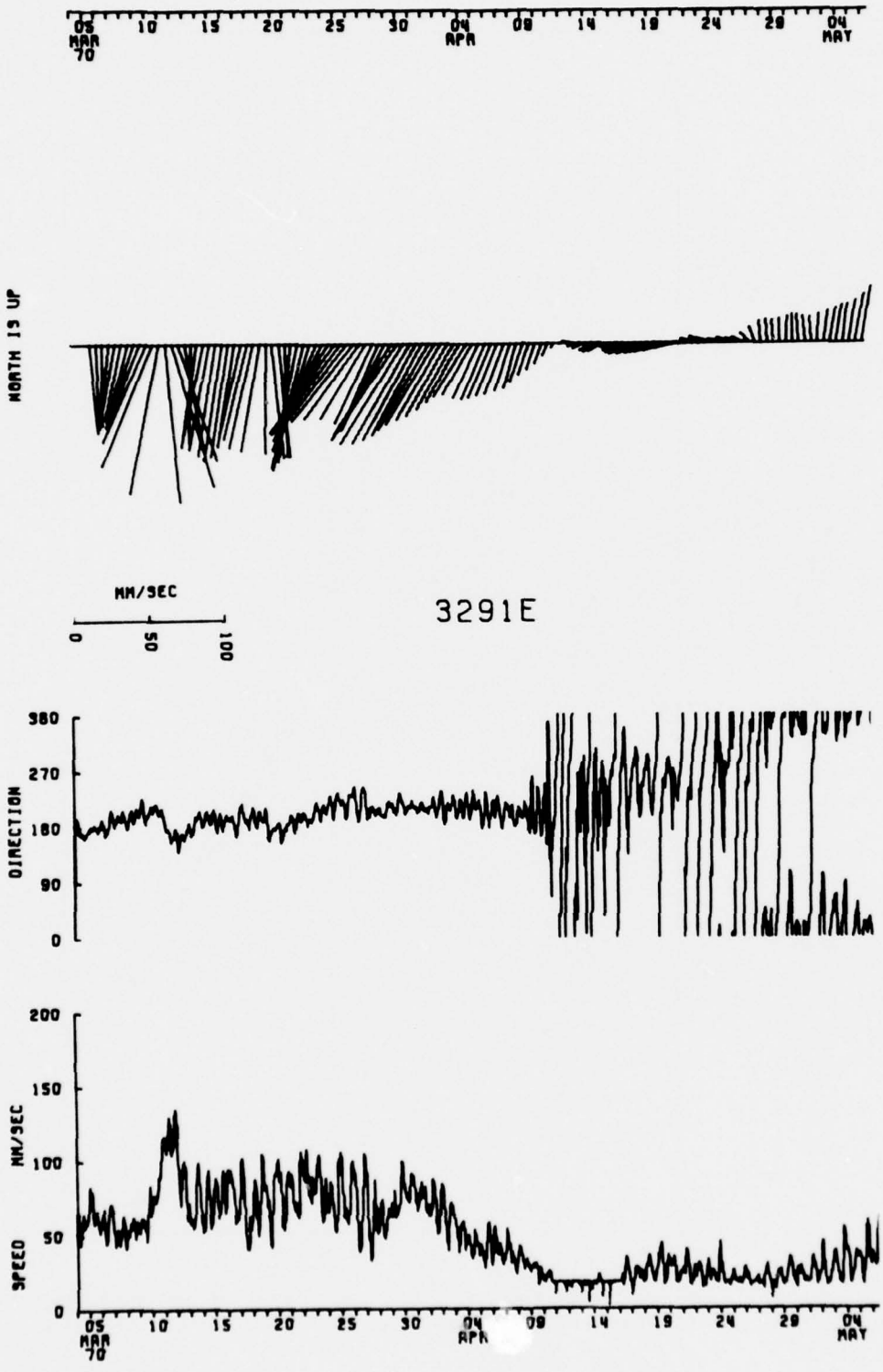
DATA/ 3291E1800

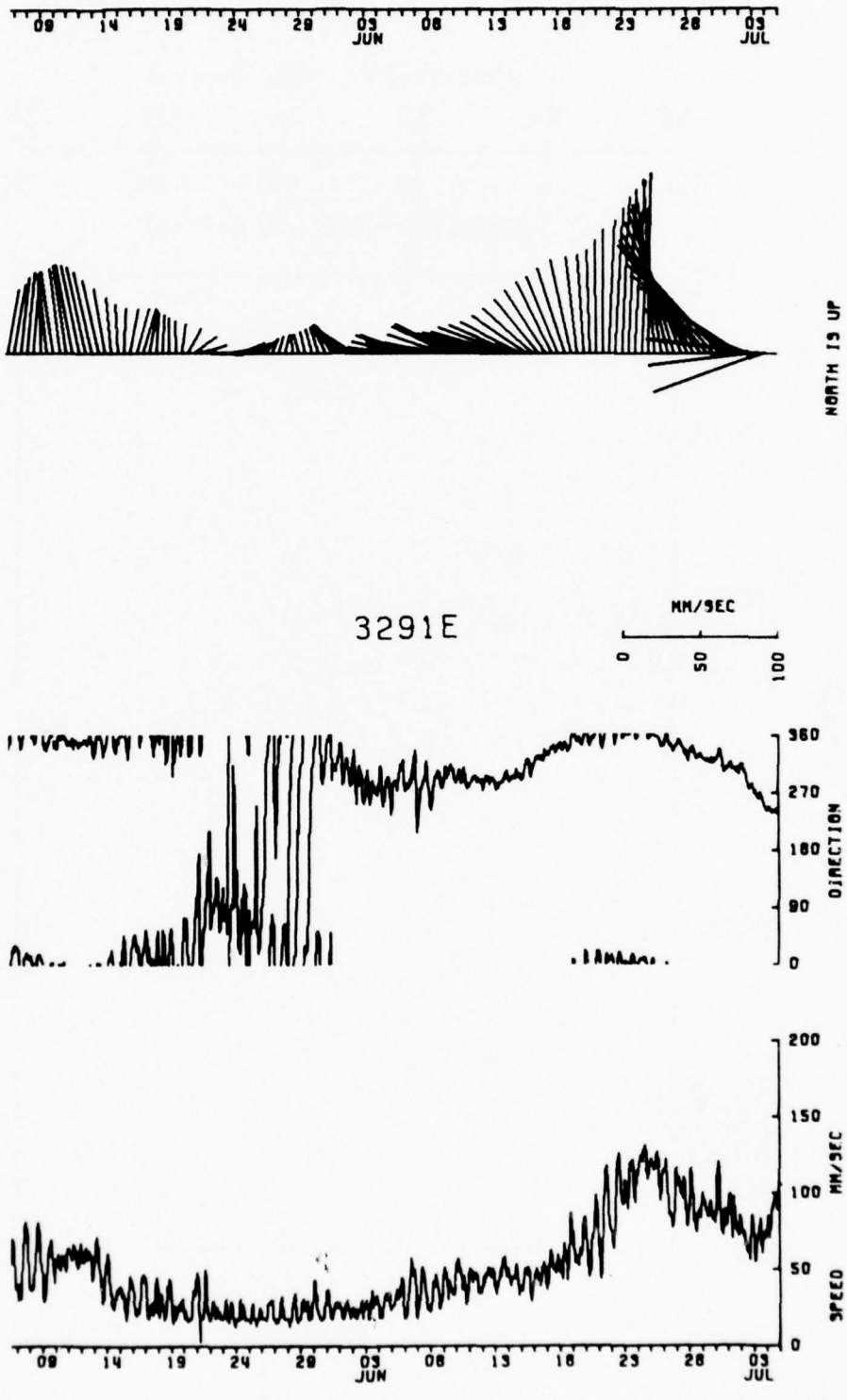
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-14.776	-.338	49.689
STD. ERR.	.306	.649	.367
VARIANCE	556.082	2492.551	798.048
STD. DEV.	23.581	49.925	28.250
KURTOSIS	3.260	2.676	2.626
SKEWNESS	-.359	.573E-1	.733
MINIMUM	-93.956	-130.571	12.000
MAXIMUM	62.455	131.561	136.000

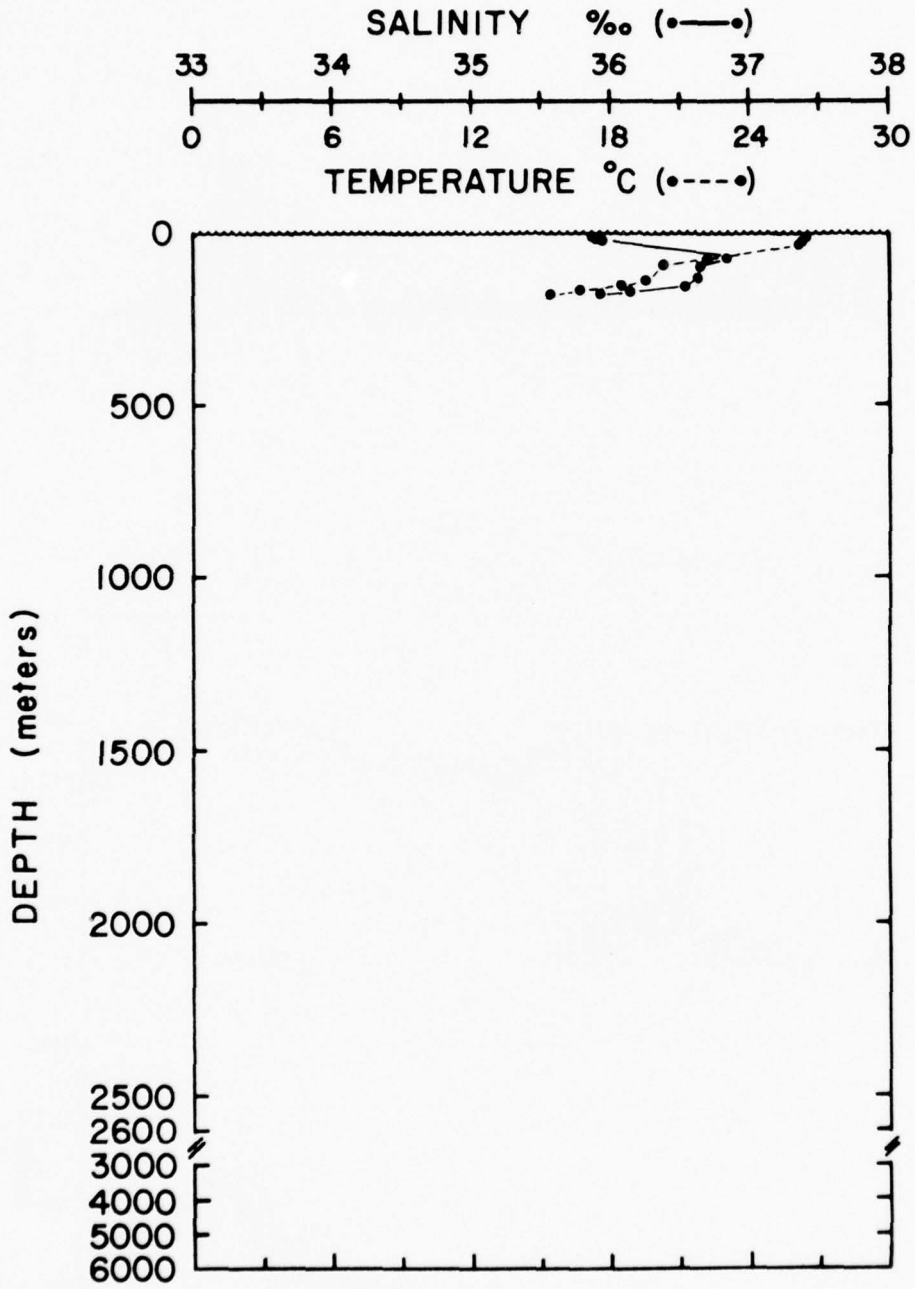
EAST & NORTH

COVARIANCE	78.019	SAMPLE SIZE = 5922 POINTS
STD. ERR. OF COVARIANCE	18.794	
STD. DEV. OF COVARIANCE	1446.295	SPANNING RANGE
CORRELATION COEFFICIENT	.663E-1	FROM 70- III-04 00.30.17
VECTOR MEAN	14.780	TO 70- VII-05 09.00.17
VECTOR VARIANCE	1524.317	
VECTOR STD. DEV.	39.042	DURATION 123.35 DAYS


PERIOD, HRS.
100
10
3291E1800
70-III-04
121 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10³
10²
10¹
10⁰
10⁻¹
10⁻²
0.01
0.1
FREQUENCY, CYCLES/HRS.


05 10 15 20 25 30 04 08 14 18 24 28 04
MAR '70
APR
MAY
NORTH IS UP
MM/SEC
0 50 100
3291E
DIRECTION
360 270 180 90 0
SPEED
MM/SEC
200 150 100 50 0
05 10 15 20 25 30 04 08 14 18 24 28 04
MAR '70
APR
MAY


09 14 19 24 28 03 08 13 18 23 28 03
JUN JUL
NORTH IS UP
3291E
MM/SEC
0 50 100
360 270 180 90 0
DIRECTION
200 150 100 50 0
SPEED MM/SEC
09 14 19 24 28 03 08 13 18 23 28 03
JUN JUL



AN - 056 - 1654
LAT. 11° 29.6' N
LONG. 61° 45.1' W
DATE 70-03-12

MOORING NO. 331

Lat. 11° 32.2'N Long. 61° 54.2'W

Set March 12, 1970

Set by J. Gifford

Ship R. V. AII Cruise 56

Recovered April 18, 1970

Recovered by C. Simmons

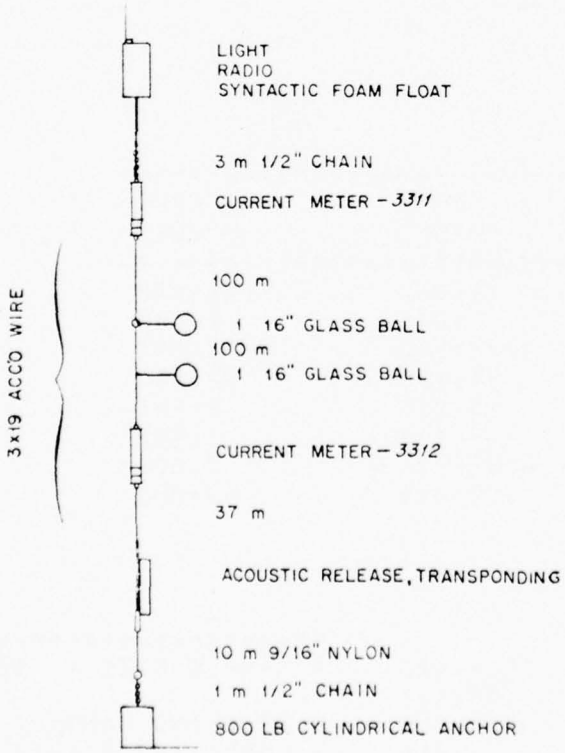
Ship R. V. AII Cruise 56

Mooring type - Subsurface

Purpose of mooring

Caribbean In Flow studies with mooring 332

Data No.	Instr. Type	Depth (m)
3311*	Model 850	224
3312*	Model 850	426
Water depth		477



Comments

See Stalcup and Metcalf (1972) for additional data information.

Data number 3311

Instrument No.: M-204 Type: Model 850

Depth: 224 m Water depth: 477 m

Start time: 70-III-12 18.45.40

Stop time: 70-IV-18 17.00.40

Duration: 36d 22h 15m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 33116900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	31.412	1.668	156.882
STD. ERR.	2.878	.976	1.605
VARIANCE	29377.246	3377.960	9132.645
STD. DEV.	171.398	58.120	95.565
KURTOSIS	2.594	3.215	2.501
SKEWNESS	-.271	-.172	.552
MINIMUM	-442.466	-197.711	9.000
MAXIMUM	404.512	197.835	443.000

EAST & NORTH

COVARIANCE	2104.420
STD. ERR. OF COVARIANCE	158.111
STD. DEV. OF COVARIANCE	9415.222
CORRELATION COEFFICIENT	.211
VECTOR MEAN	31.457
VECTOR VARIANCE	16377.603
VECTOR STD. DEV.	127.975

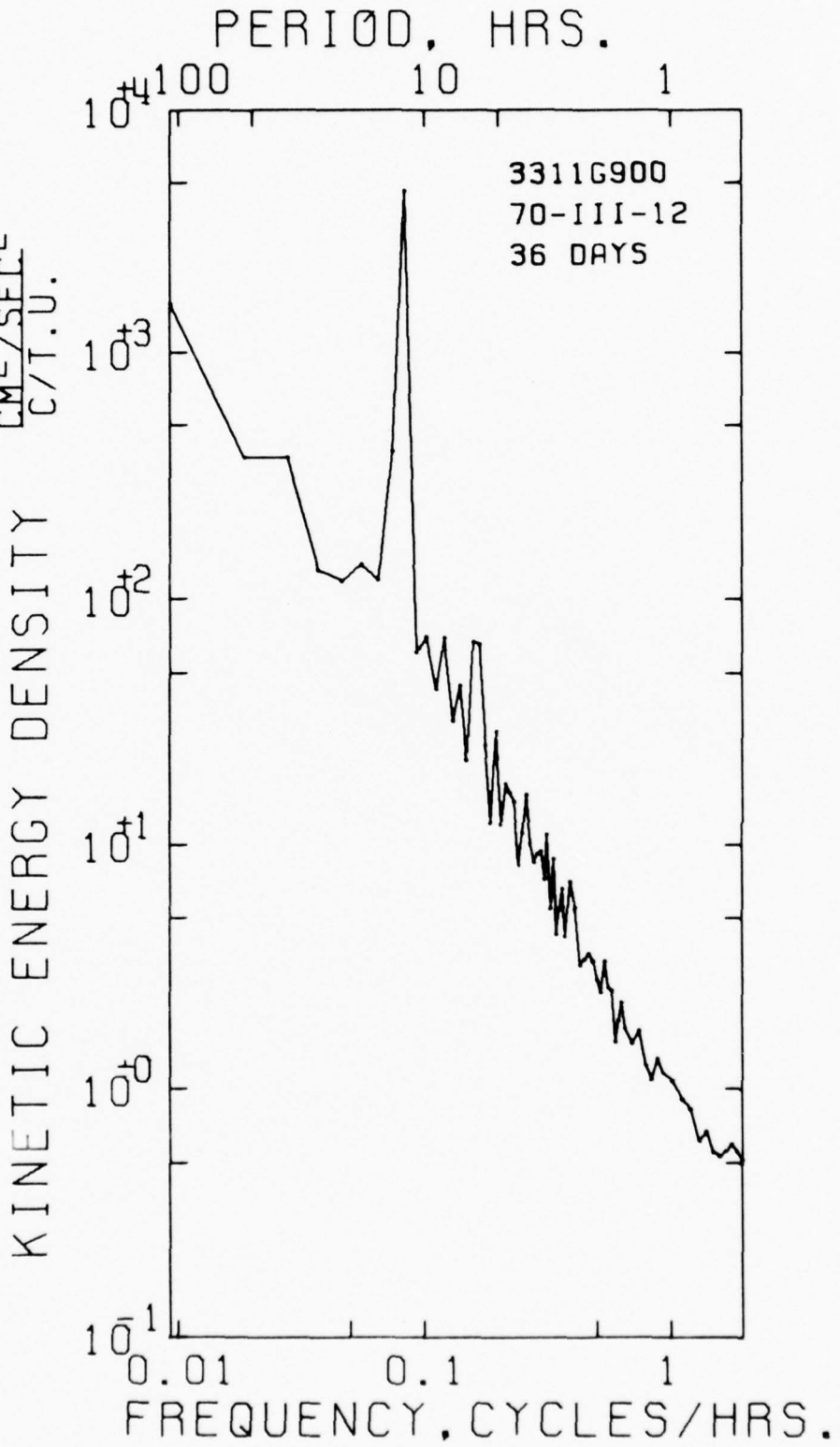
SAMPLE SIZE = 3546 POINTS

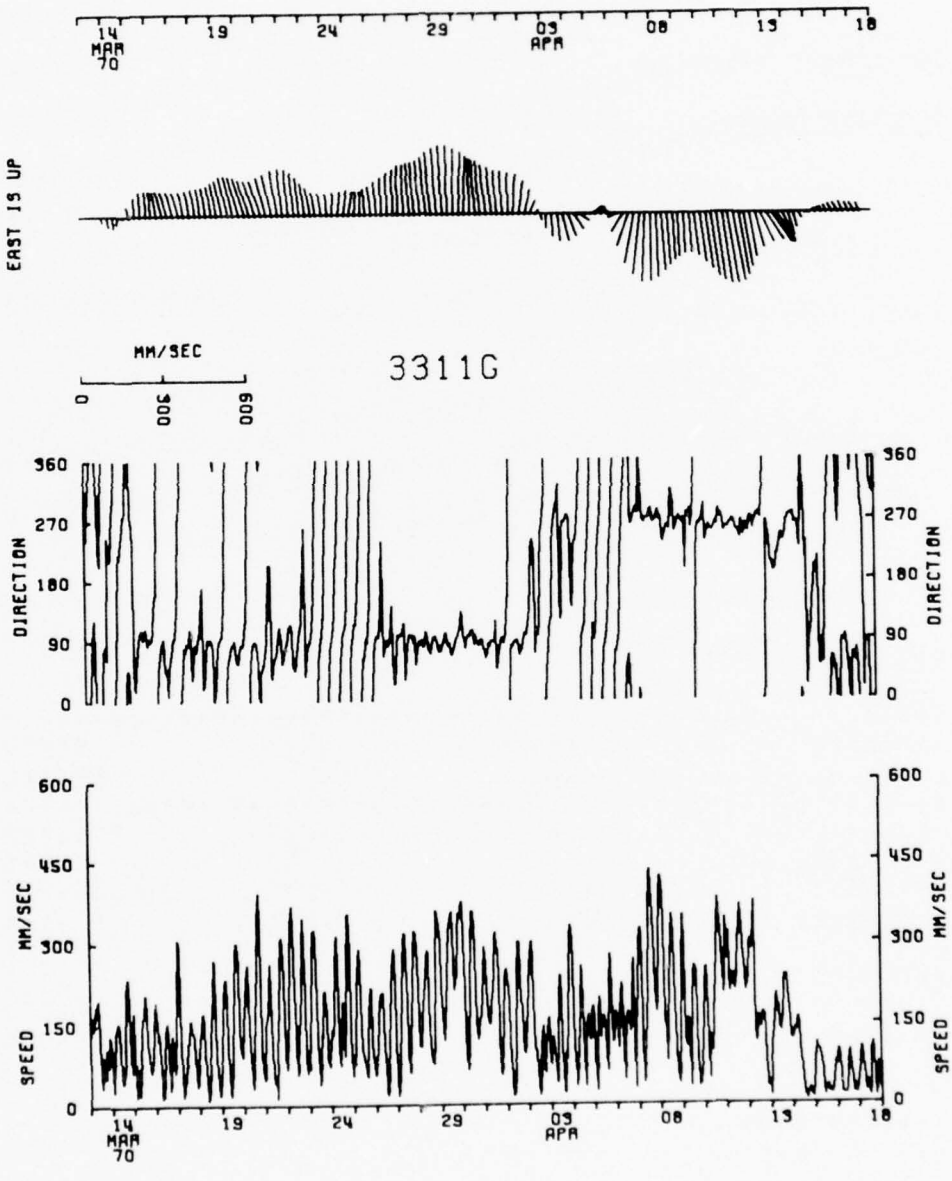
SPANNING RANGE

FROM 70- III-12 18.45.4

TO 70- IV -18 17.00.40

DURATION 36.93 DAYS


PERIOD, HRS.
100
10
1
10^{4}
10^{3}
10^{2}
10^{1}
10^{0}
10^{-1}
3311G900
70-III-12
36 DAYS
KINETIC ENERGY DENSITY $\frac{CM^2/SEC^2}{C/T.U.}$
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



Data number 3312

Instrument No.: M-209 Type: Model 850

Depth: 426 m Water depth: 477 m

Start time: 70-III-12 18.25.42

Stop time: 70-IV-18 17.25.42

Duration: 36d 23h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 3312F900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	97.859	40.795	216.482
STD. ERR.	2.970	2.153	1.849
VARIANCE	31313.316	16449.271	12138.722
STD. DEV.	176.956	128.255	110.176
KURTOSIS	2.666	2.486	2.151
SKEWNESS	-.260	.117	.228
MINIMUM	-426.000	-319.255	17.000
MAXIMUM	482.265	387.163	527.000

EAST & NORTH

COVARIANCE	2831.522
STD. ERR. OF COVARIANCE	424.221
STD. DEV. OF COVARIANCE	25272.295
CORRELATION COEFFICIENT	.125
VECTOR MEAN	106.022
VECTOR VARIANCE	23881.293
VECTOR STD. DEV.	154.536

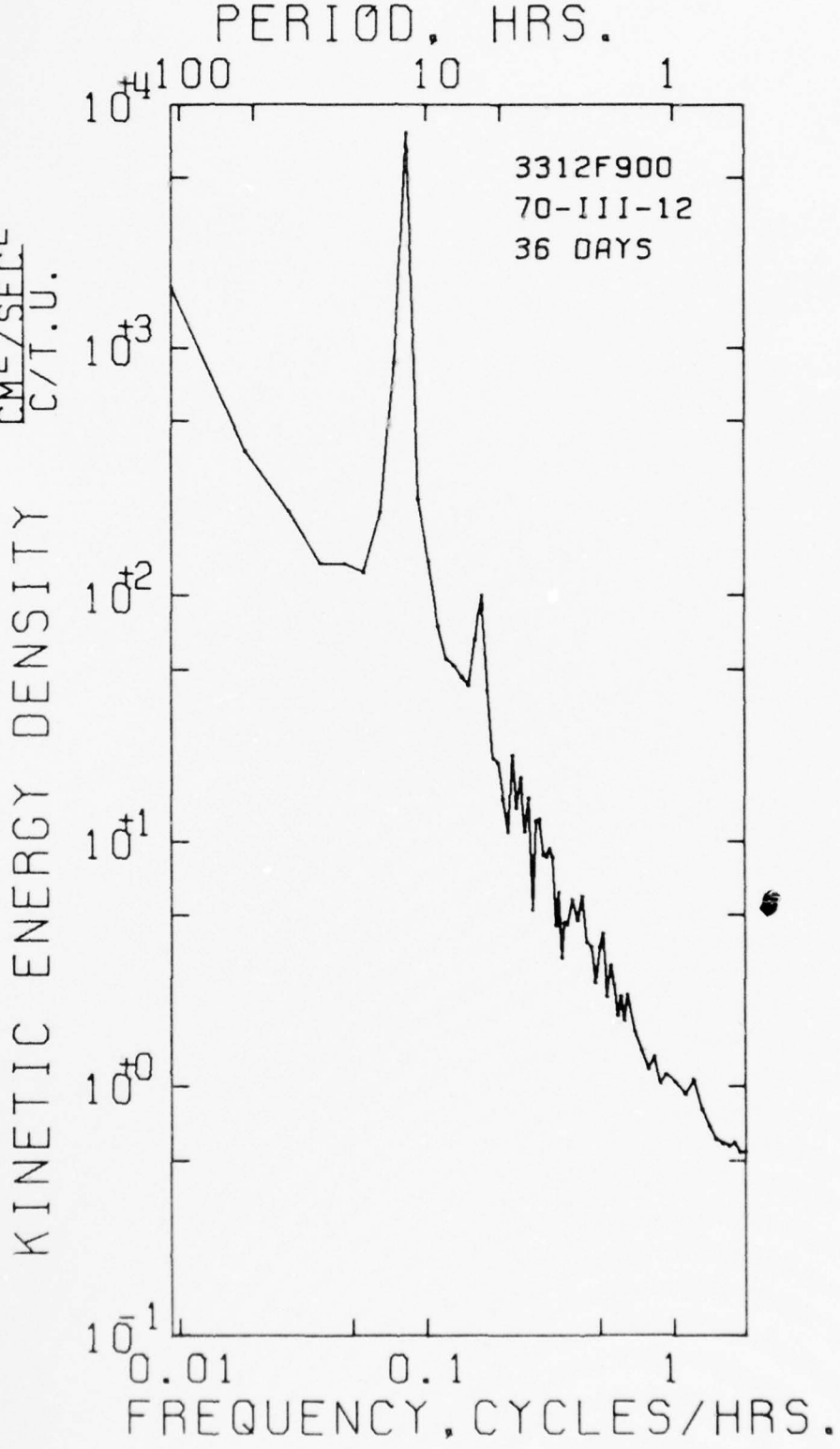
SAMPLE SIZE = 3549 POINTS

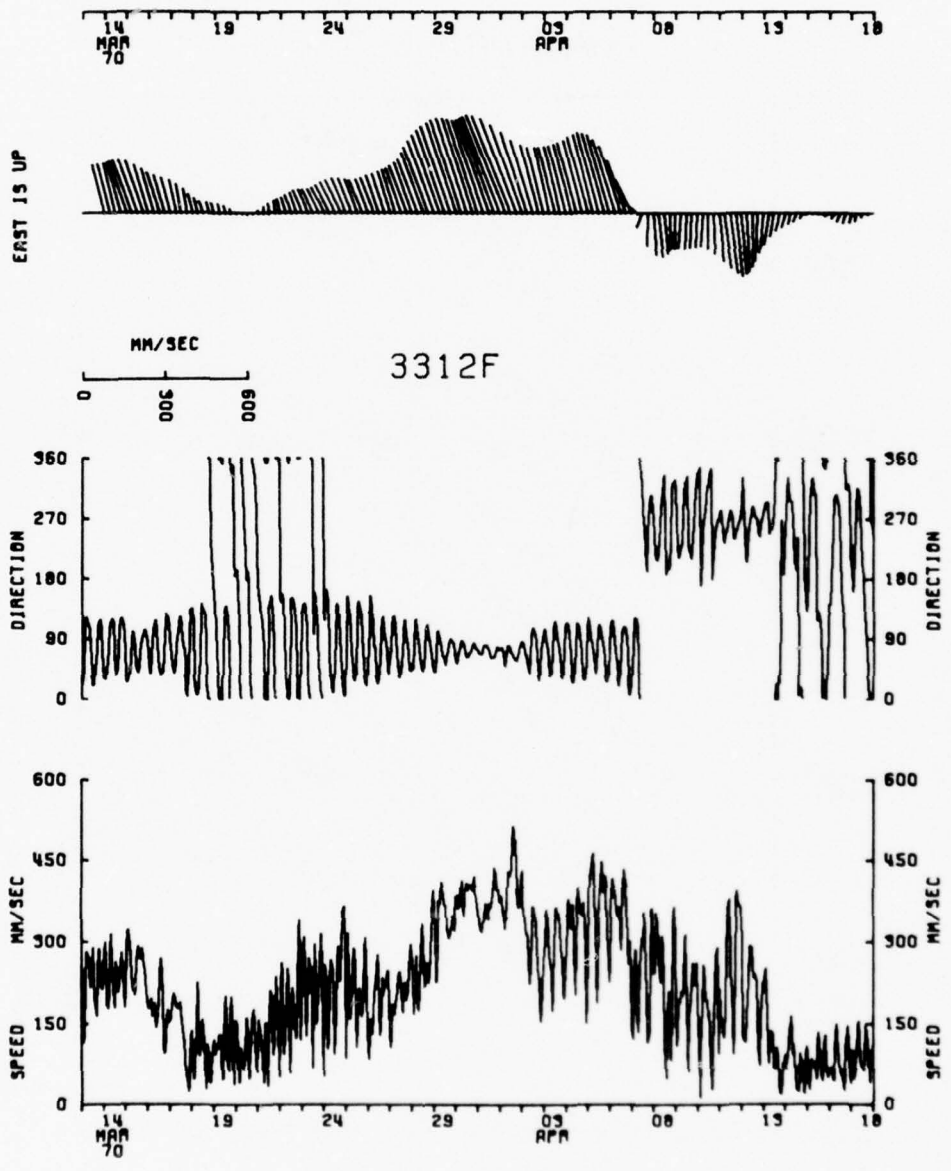
SPANNING RANGE

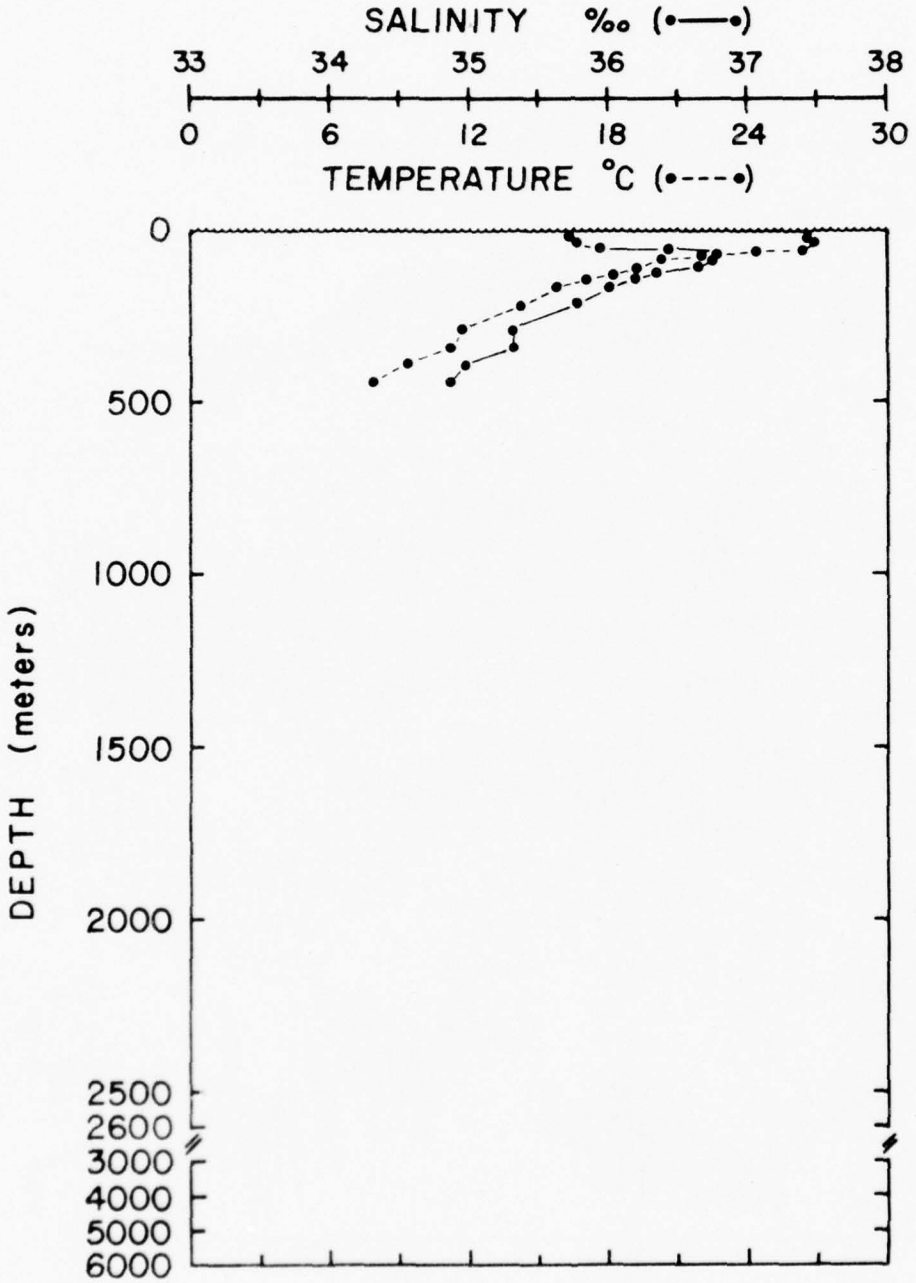
FROM 70- III-12 18.25.42

TO 70- IV -18 17.25.42

DURATION 36.96 DAYS


PERIOD, HRS.
100
10
1
3312F900
70-III-12
36 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
1
FREQUENCY, CYCLES/HRS.





AN 056 1655
LAT. 11° 34.5' N
LONG. 61° 46.0' W
DATE 70-03-12

MOORING NO. 332

Lat. 11° 39.0'N Long. 61° 54.2W

Set March 12, 1970

Set by J. Gifford

Ship R. V. AII Cruise 56

Recovered April 18, 1970

Recovered by C. Simmons

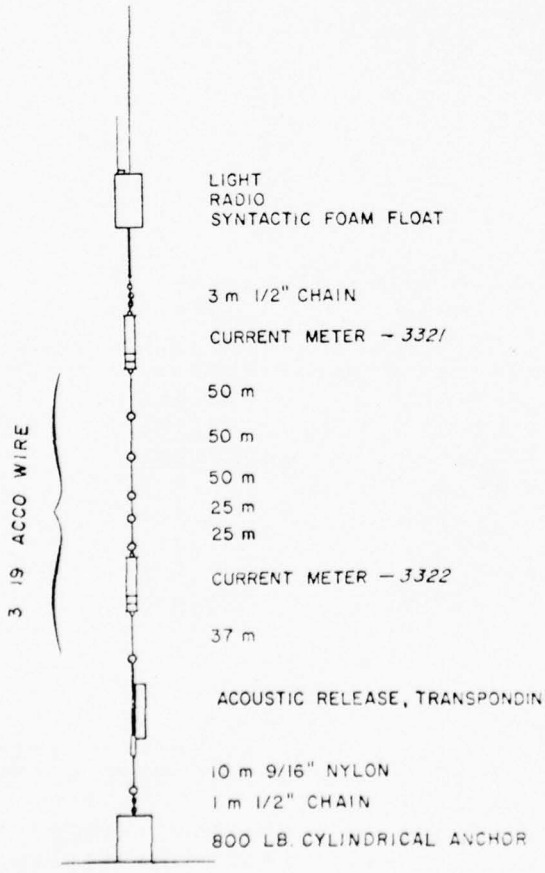
Ship R. V. AII Cruise 56

Mooring type - Subsurface

Purpose of mooring

Caribbean Inflow studies with mooring 331.

Data No.	Instr. Type	Depth (m)
3321*	Model 850	422
3322*	Model 850	624
Water depth		675



Comments

See Stalcup and Metcalf (1972) for additional data information.

Mooring 332 The oscillations of a non symmetrical subsurface syntatic foam float caused enough mooring motion to affect the data. Analysis of the current data from the meter directly under the float indicates that when the current speed exceeded 10 cm/sec the CM revolved 34 to 36 times before reversing direction of rotation. The rate of rotation was ∿ 6 rpm (Stalcup, Metcalf, 1972). The rotation of the current meter caused small errors in direction and speed which have not been edited out of this data. See Spectra.

Data number: 3321

Instrument No.: M-122 Type: Model 850

Depth: 422 m Water depth: 675 m

Start time: 70-III-12 20.40.42

Stop time: 70-IV-18 14.40.42

Duration: 36d 18h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

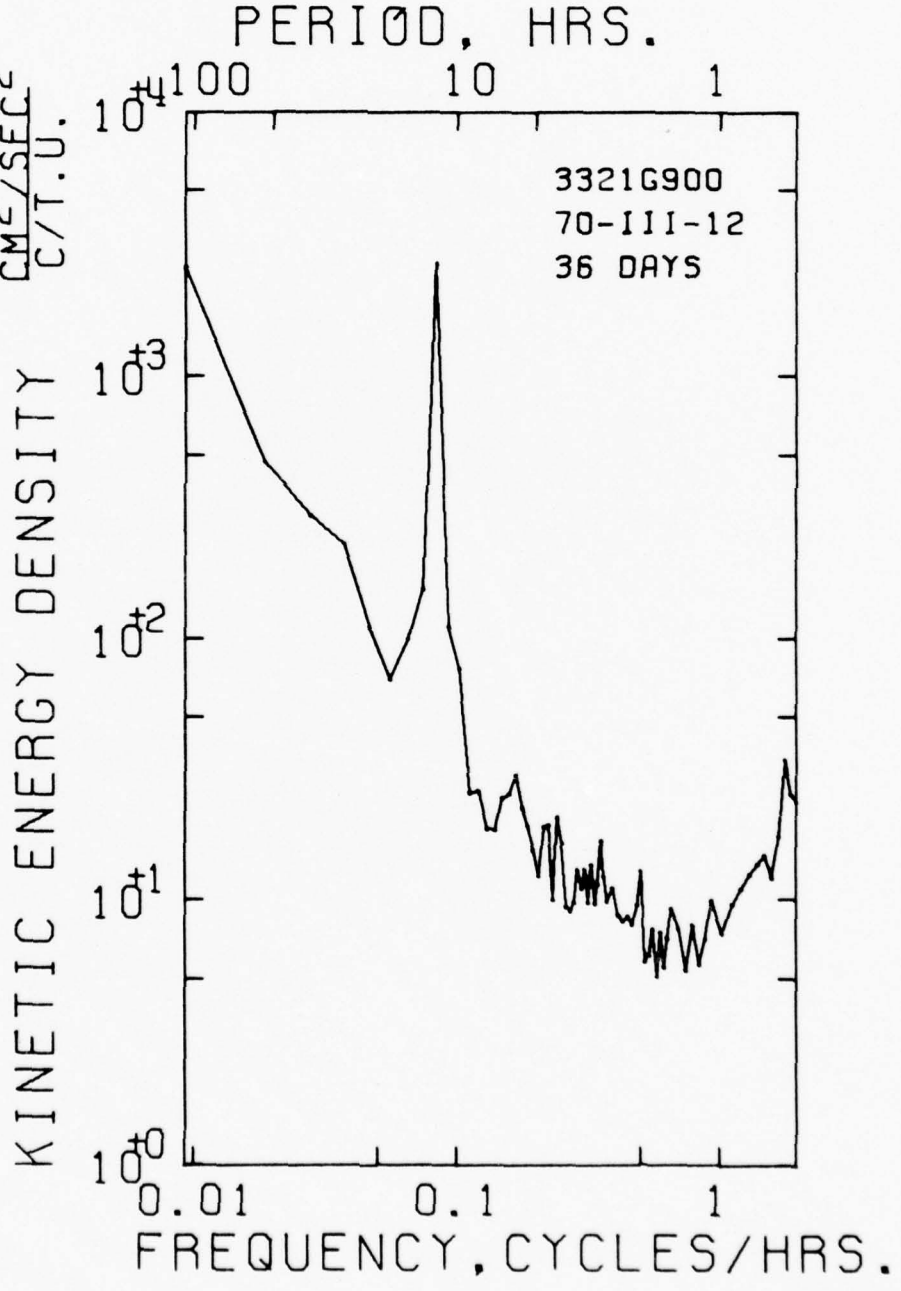
COMMENTS:

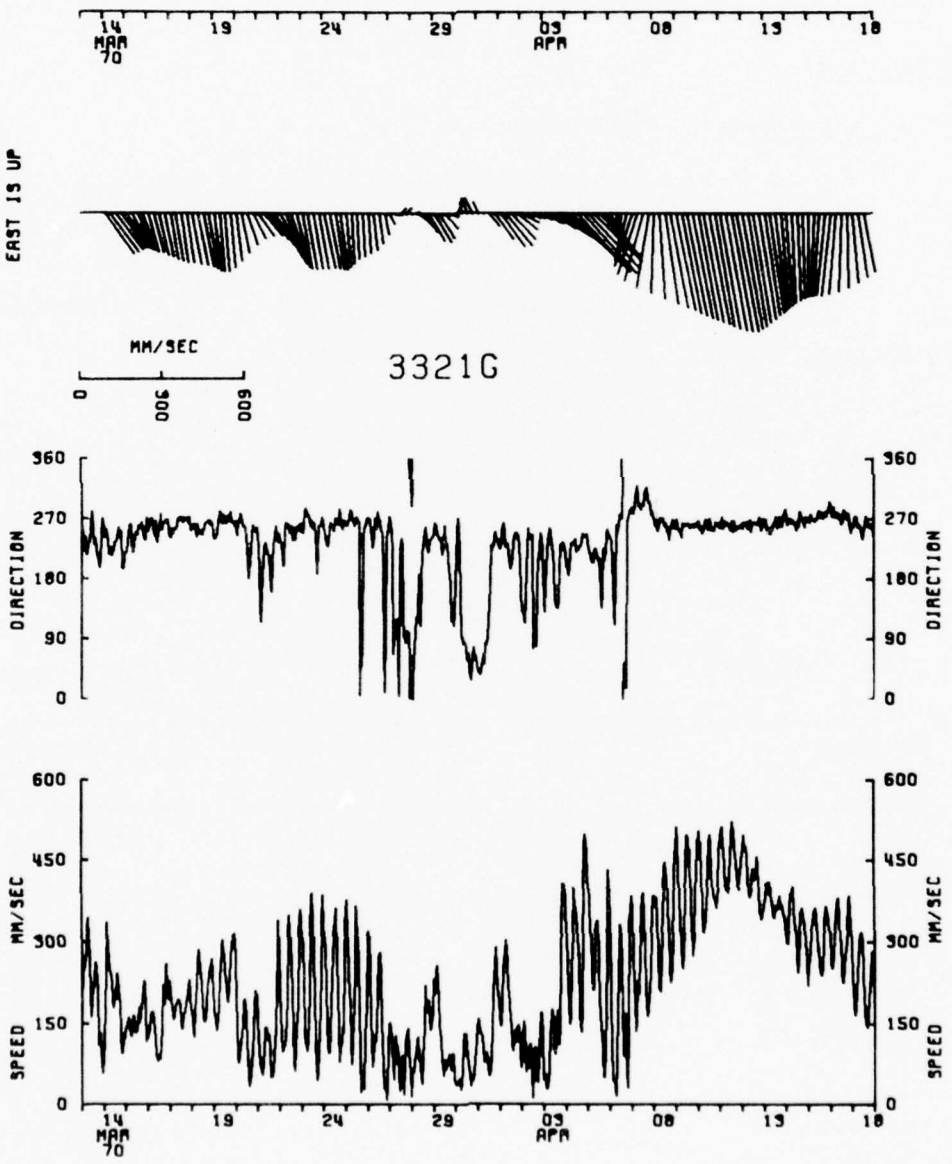
DATA/ 3321G900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-187.961	-48.031	228.519
STD. ERR.	2.536	1.530	2.154
VARIANCE	22688.421	8265.522	16369.504
STD. DEV.	150.627	90.915	127.943
KURTOSIS	2.443	4.083	2.324
SKEWNESS	.691E-2	-.406	.471
MINIMUM	-560.324	-469.171	17.000
MAXIMUM	180.030	294.155	563.000

EAST & NORTH

COVARIANCE	246.399	SAMPLE SIZE = 3529 POINTS
STD. ERR. OF COVARIANCE	453.890	
STD. DEV. OF COVARIANCE	26963.525	SPANNING RANGE
CORRELATION COEFFICIENT	.180E-1	FROM 70- III-12 20.40.42
VECTOR MEAN	194.001	TO 70- IV -18 14.40.42
VECTOR VARIANCE	15476.972	
VECTOR STD. DEV.	124.406	DURATION 36.75 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
3321G900
70-III-12
36 DAYS
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



Data number 3322

Instrument No.: M-215 Type: Model 850

Depth: 624 m Water depth: 675 m

Start time: 70-III-12 21.13.40

Stop time: 70-IV-18 13.58.40

Duration: 36d 16h 45m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 33221900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-115.588	109.280	199.404
STD. ERR.	1.907	2.177	2.066
VARIANCE	12810.348	16696.712	15047.886
STD. DEV.	113.183	129.216	122.670
KURTOSIS	2.159	2.151	1.718
SKEWNESS	-.966E-1	.573	.182
MINIMUM	-409.353	-127.215	14.000
MAXIMUM	156.290	431.202	477.000

EAST & NORTH

COVARIANCE	-5040.588
STD. ERR. OF COVARIANCE	395.224
STD. DEV. OF COVARIANCE	23461.812
CORRELATION COEFFICIENT	-.345
VECTOR MEAN	159.069
VECTOR VARIANCE	14753.530
VECTOR STD. DEV.	121.464

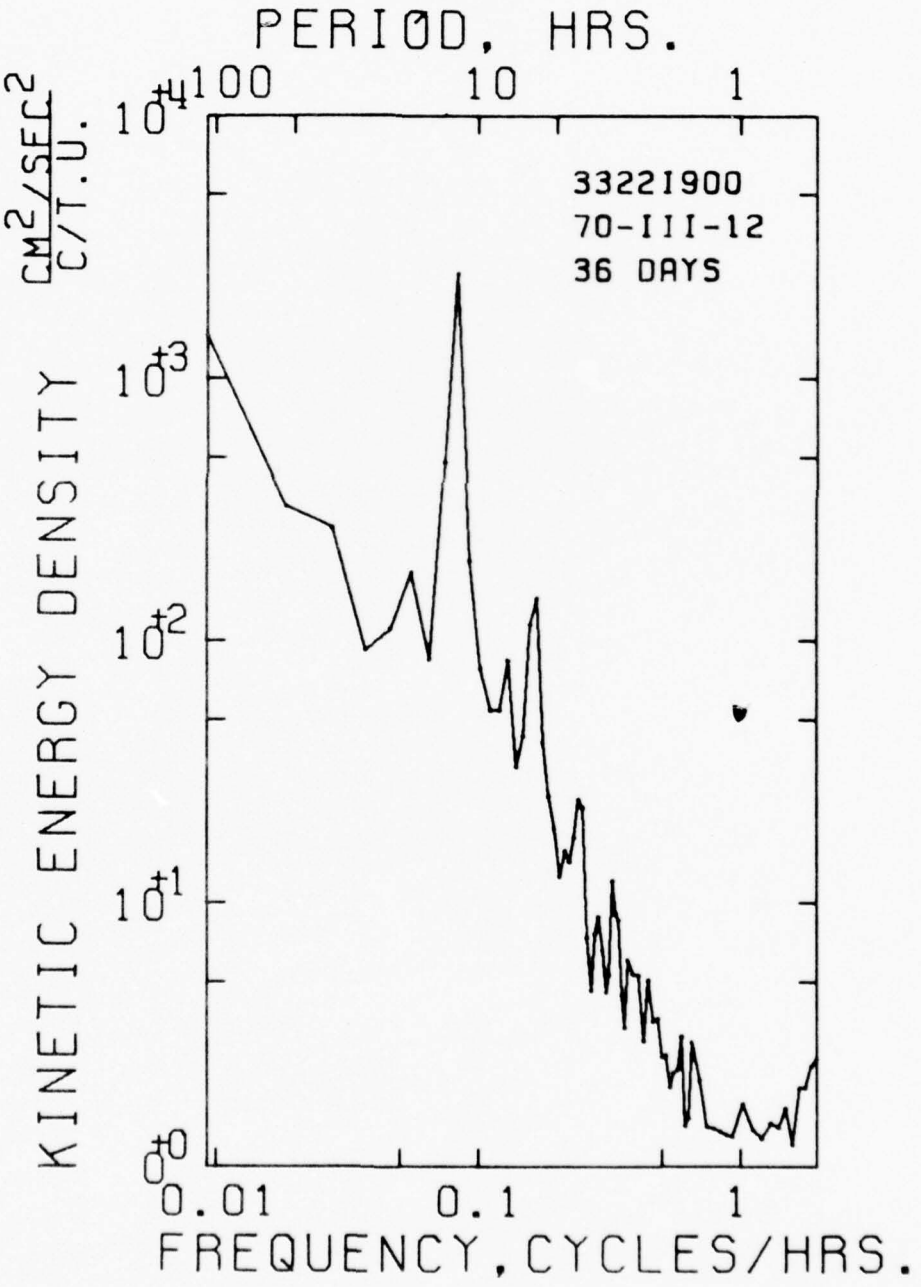
SAMPLE SIZE = 3524 POINTS

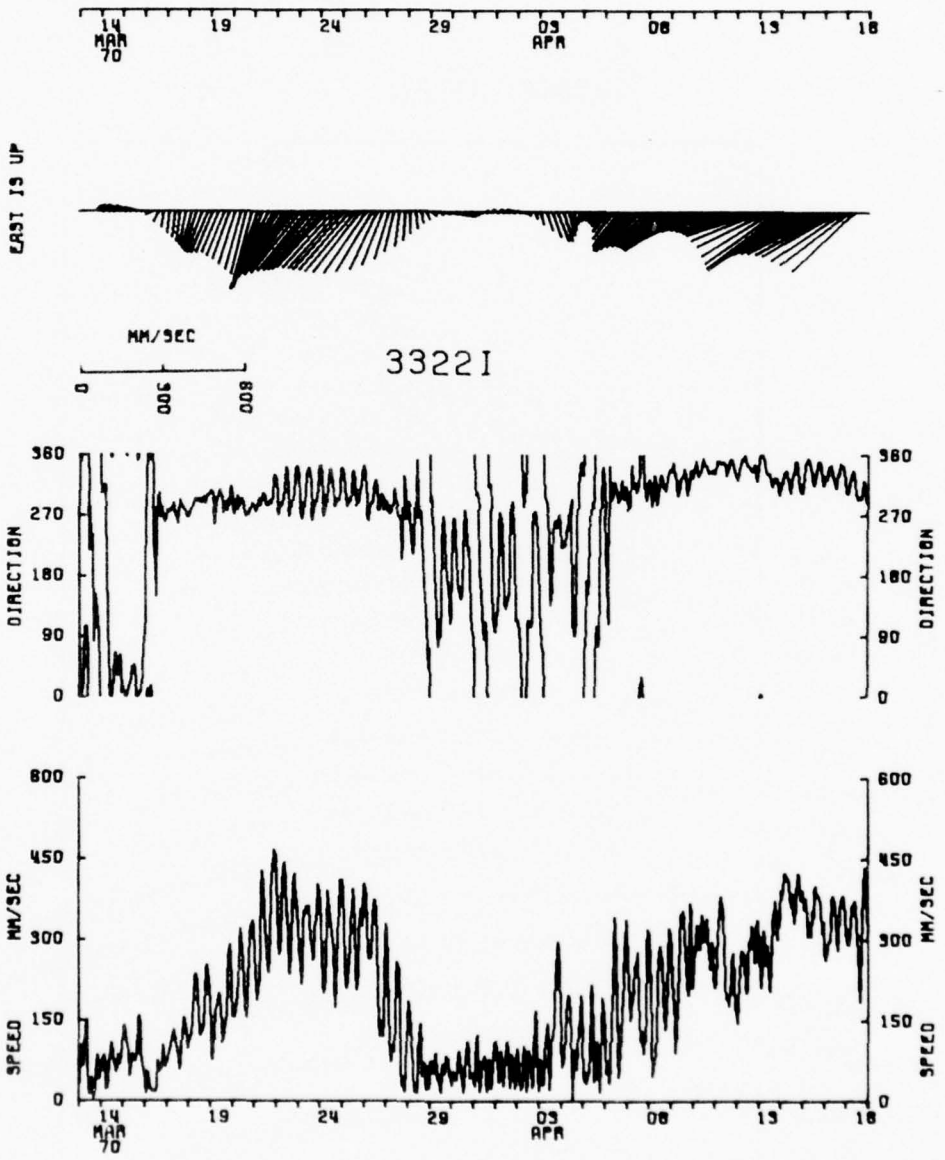
SPANNING RANGE

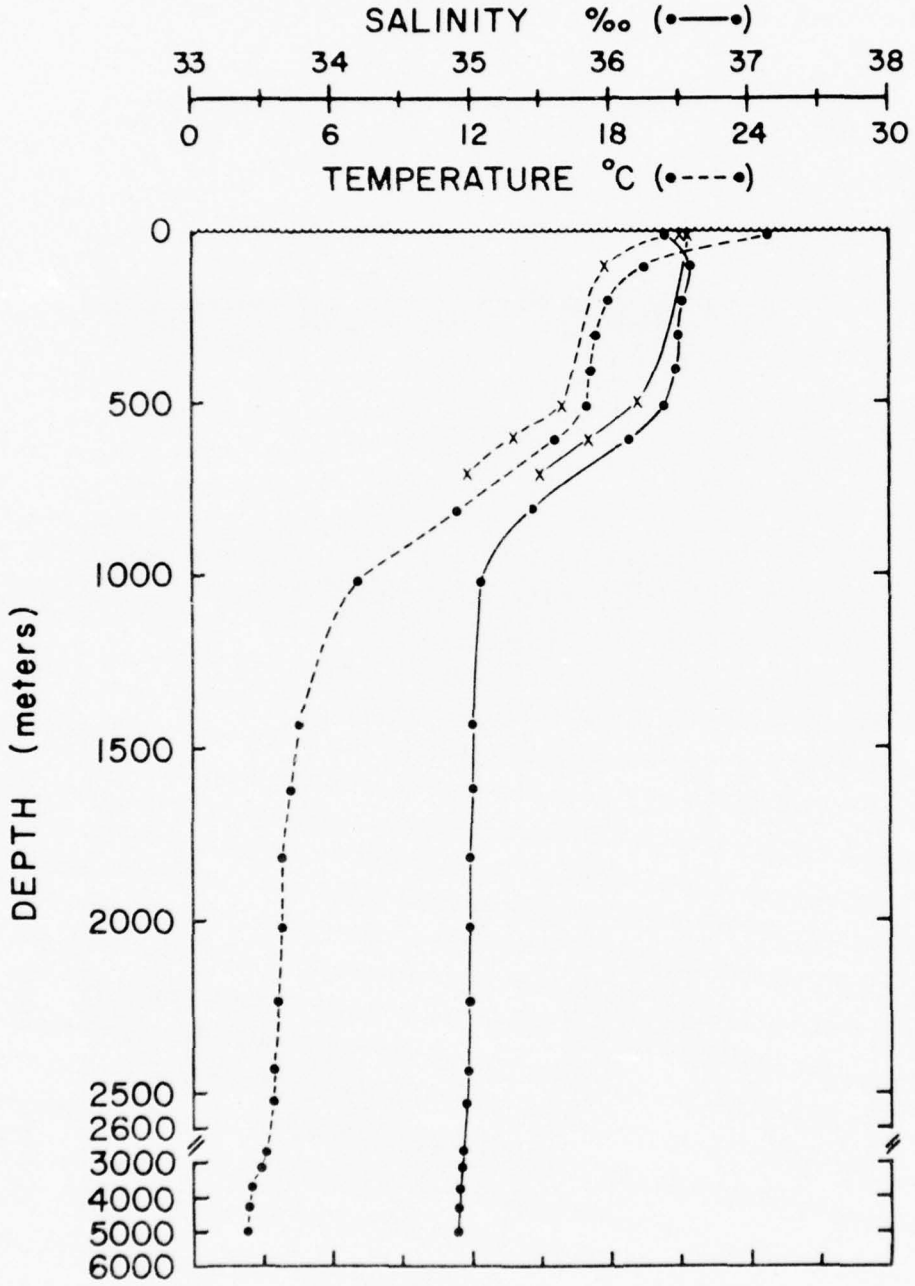
FROM 70- III-12 21.13.40

TO 70- IV -18 13.58.40

DURATION 36.70 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
33221900
70-III-12
36 DAYS
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



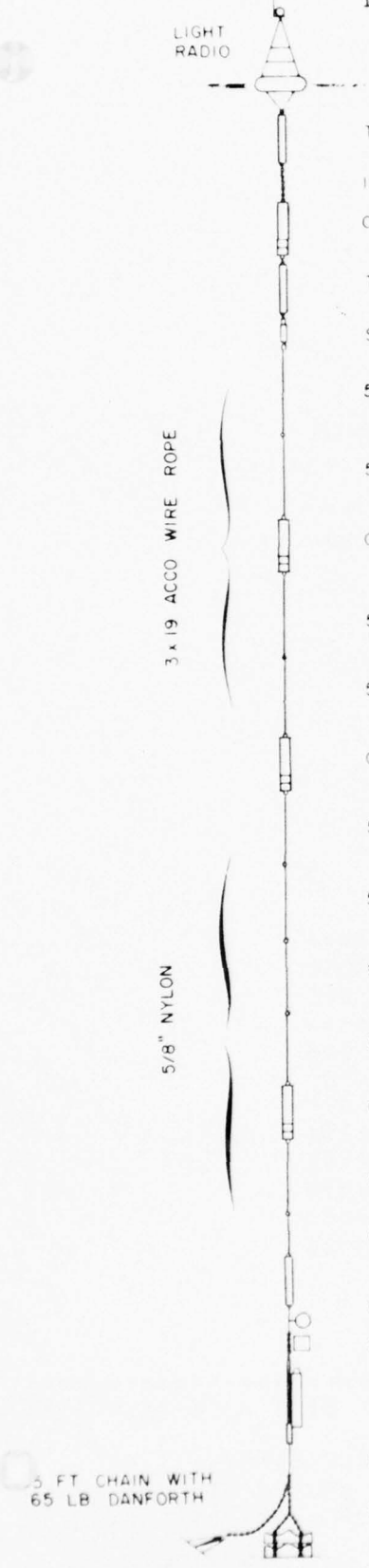


AN-057-1726 (x)
LAT. 33° 57.5' N
LONG. 69° 56.5' W
DATE 70-05-15

KN-005-006 (•)
LAT. 33° 55.0' N
LONG. 69° 51.0' W
DATE 70-07-6

MOORING NO. 334

Lat. 33° 58.0'N Long. 69° 56.0'W



Set May 14, 1970

Set by J. Gifford

Ship R. V. AII Cruise 57

Recovered July 6, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 5

Mooring type - Surface

Purpose of mooring

A) Current measurements at Site L

B) Engineering evaluation of mooring components

Data No.	Instr. Type	Depth (m)
3341	Tel. Tens.	2
3342*	Model 850	14
3343	Tens.	15
3344*	Model 850	1017
3345*	Model 850	2019
3346*	Model 850	4326
3347	Tens.	5233
3348	Biopack	5328
Water depth		5370

Comments

The biology package for Drs. Eimhjellen and Jannasch contained radioactive material. At recovery the package was removed from the mooring line and taken to the R. V. Gosnold by ship's Zodiak so that the R. V. Knorr could keep her 'clean' ship status.

Data number 3342

Instrument No.: M-238 Type: Model 850

Depth: 14 m Water depth: 5370 m

Start time: 70-V-14 21.15.55

Stop time: 70-VII-06 06.30.55

Duration: 52d 11h 15m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 23

interval time = 900 seconds

COMMENTS:

DATA/ 33420900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	258.231	-88.193	409.646
STD. ERR.	3.114	3.901	2.521
VARIANCE	48762.117	76553.200	31966.637
STD. DEV.	220.821	276.682	178.792
KURTOSIS	3.148	2.485	3.781
SKEWNESS	-.314E-1	-.192	.633
MINIMUM	-527.171	-970.273	4.000
MAXIMUM	953.387	530.607	1208.000

EAST & NORTH

COVARIANCE	3487.628
STD. ERR. OF COVARIANCE	1362.304
STD. DEV. OF COVARIANCE	96618.009
CORRELATION COEFFICIENT	.571E-1
VECTOR MEAN	272.876
VECTOR VARIANCE	62657.659
VECTOR STD. DEV.	250.315

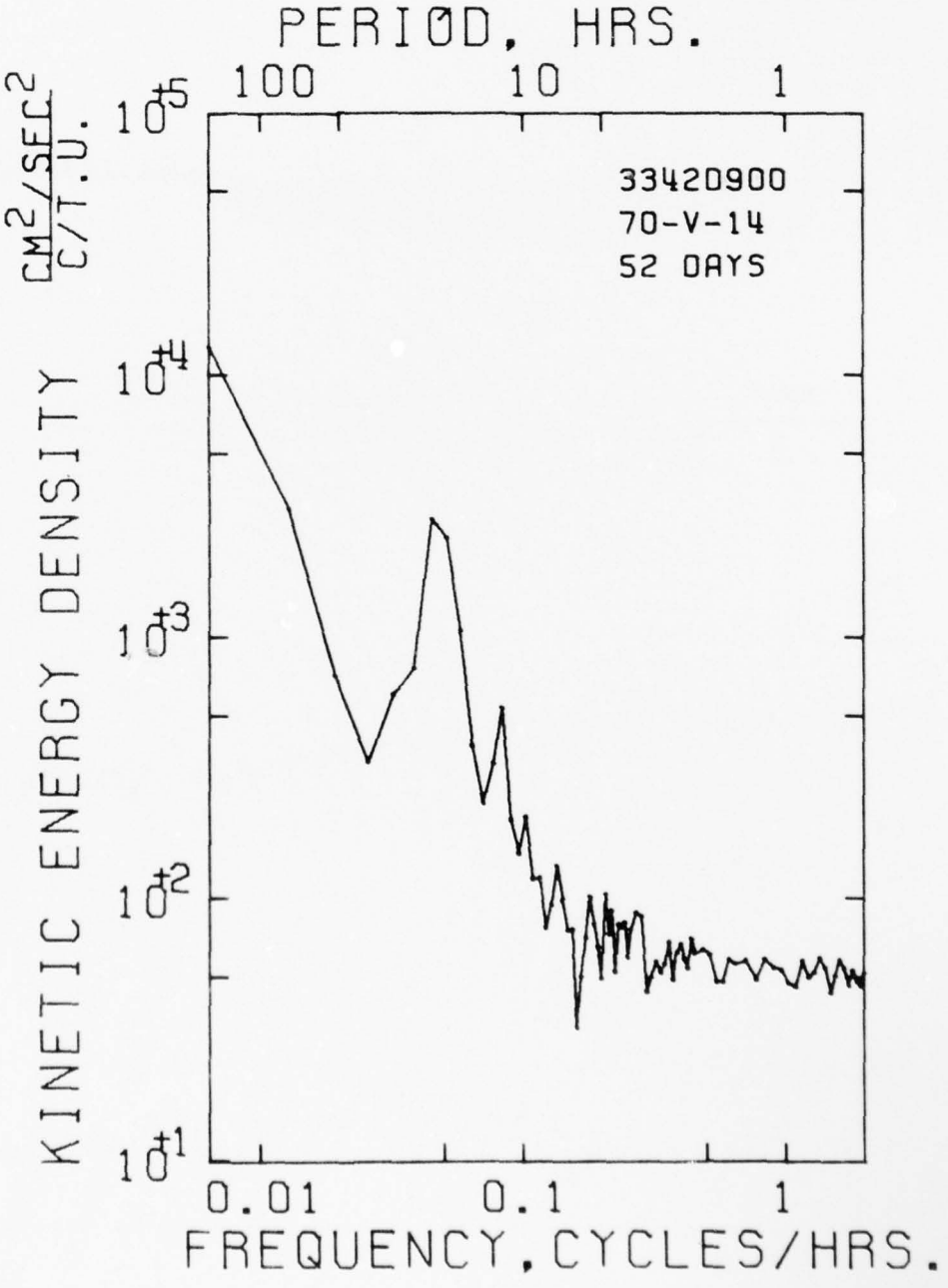
SAMPLE SIZE = 5030 POINTS

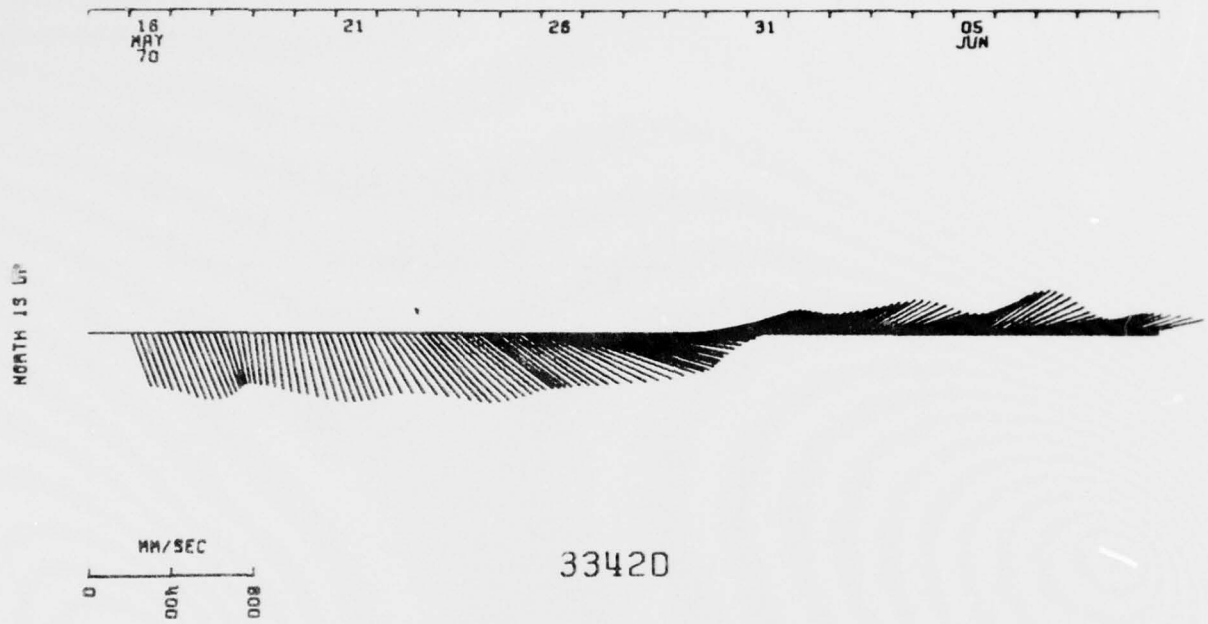
SPANNING RANGE

FROM 70- V -14 21.15.55

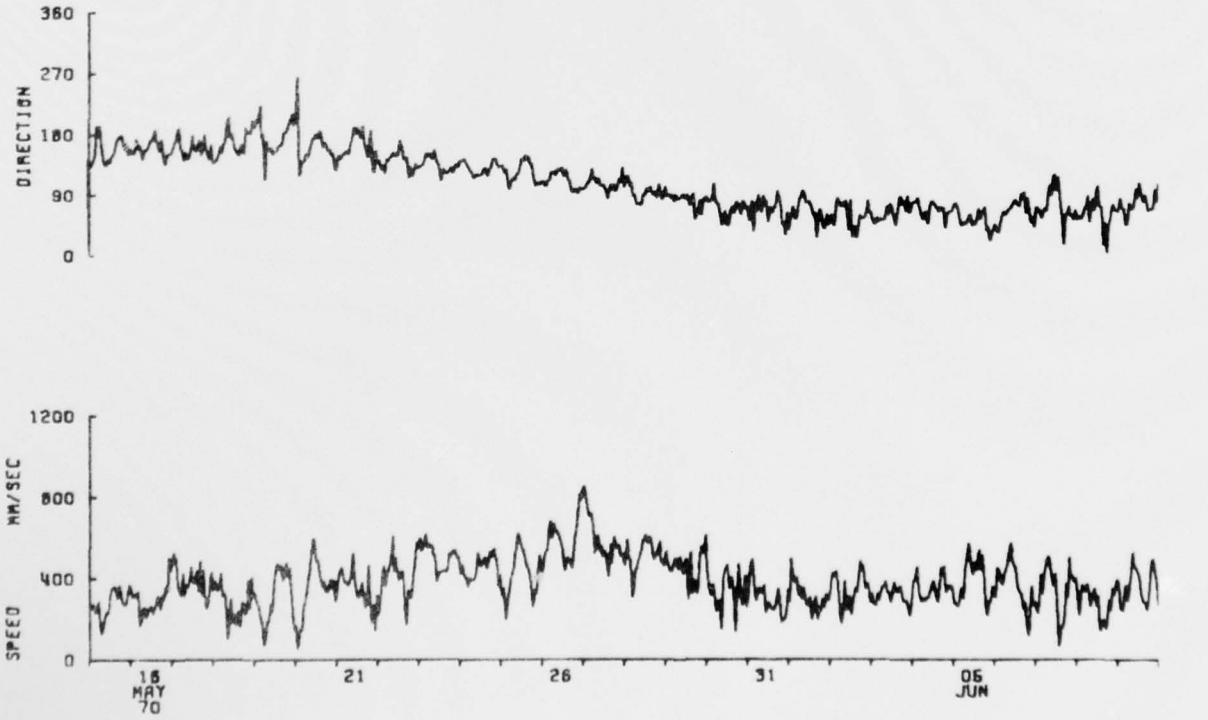
TO 70- VII-06 06.30.55

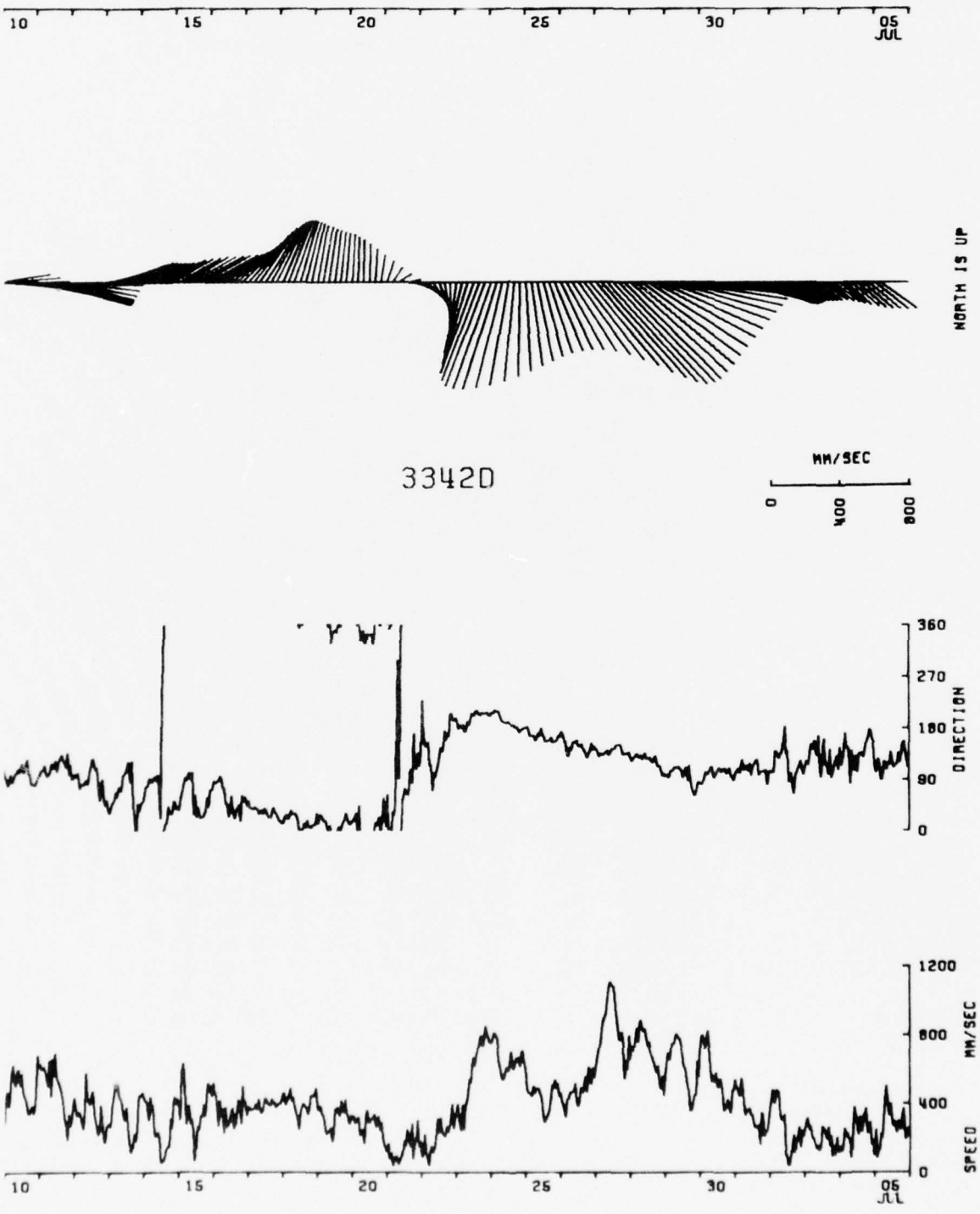
DURATION 52.39 DAYS


PERIOD, HRS.
100
10
1
33420900
70-V-14
52 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁵
10⁴
10³
10²
10¹
0.01
0.1
1
FREQUENCY, CYCLES/HRS.


18
MAY
70
21
26
31
05
JUN
NORTH IS UP
MM/SEC
0
400
800

33420


360
270
180
90
0
DIRECTION
1200
800
400
0
SPEED
MM/SEC
18
MAY
70
21
26
31
05
JUN


10
15
20
25
30
05
JUL
NORTH IS UP
33420
MM/SEC
0
400
800
360
270
180
90
0
DIRECTION
1200
800
400
0
SPEED MM/SEC
10
15
20
25
30
05
JUL

Data number 3344

Instrument No.: M-122 Type: Model 850

Depth: 1017 m Water depth: 5370 m

Start time: 70-V-14 21.00.55

Stop time: 70-VI-26 09.00.55

Duration: 42d 12h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

DATA/ 3344F900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	51.184	-12.424	124.543
STD. ERR.	1.264	1.358	.567
VARIANCE	6517.544	7529.324	1310.159
STD. DEV.	80.731	86.772	36.196
KURTOSIS	2.428	2.086	2.819
SKEWNESS	-.566	-.102E-1	-.864E-1
MINIMUM	-173.244	-217.111	9.000
MAXIMUM	215.640	209.984	235.000

EAST & NORTH

COVARIANCE	1497.300	
STD. ERR. OF COVARIANCE	103.121	
STD. DEV. OF COVARIANCE	6587.664	
CORRELATION COEFFICIENT	.214	
VECTOR MEAN	52.671	
VECTOR VARIANCE	7023.434	
VECTOR STD. DEV.	83.806	

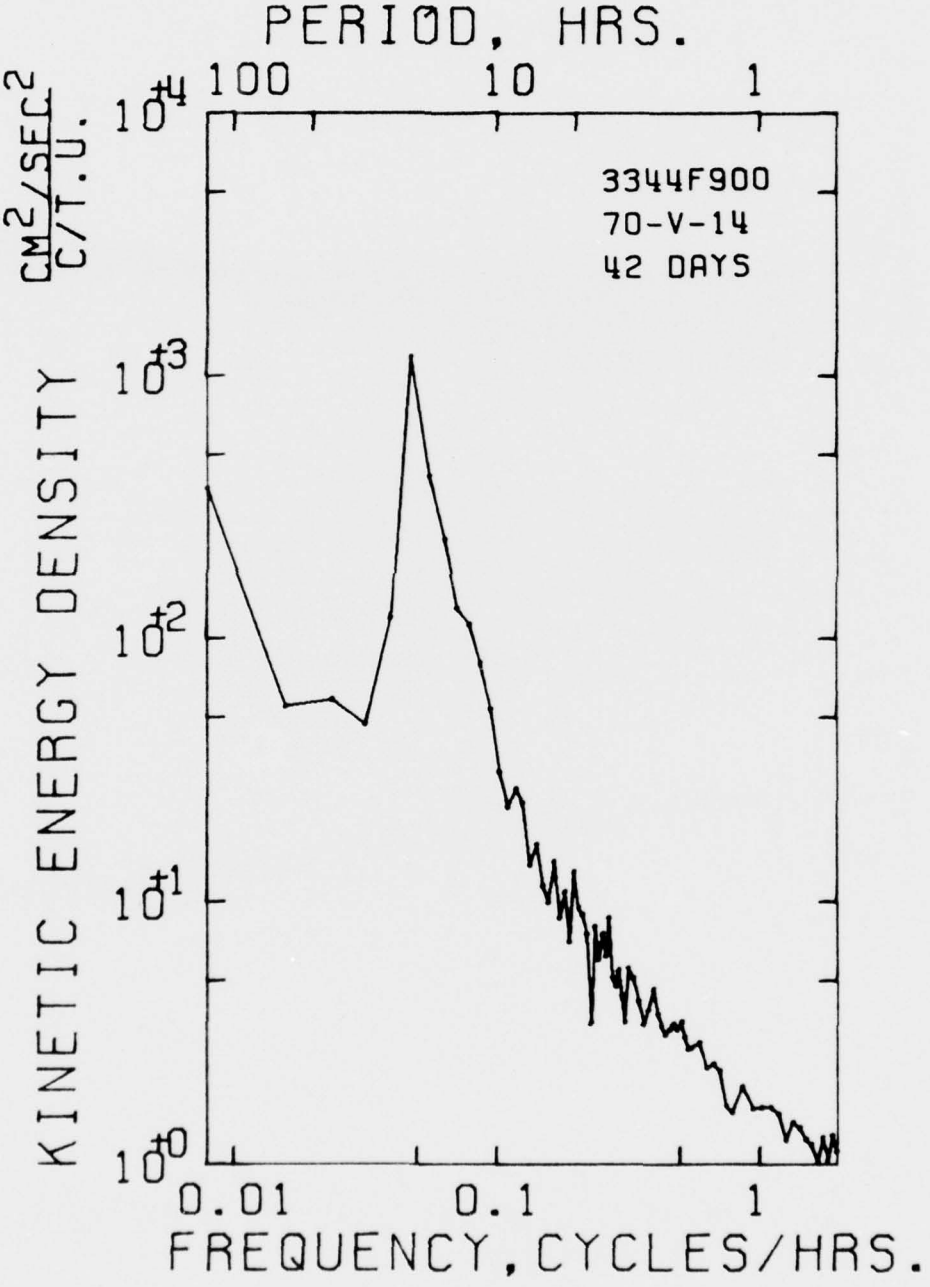
SAMPLE SIZE = 4081 POINTS

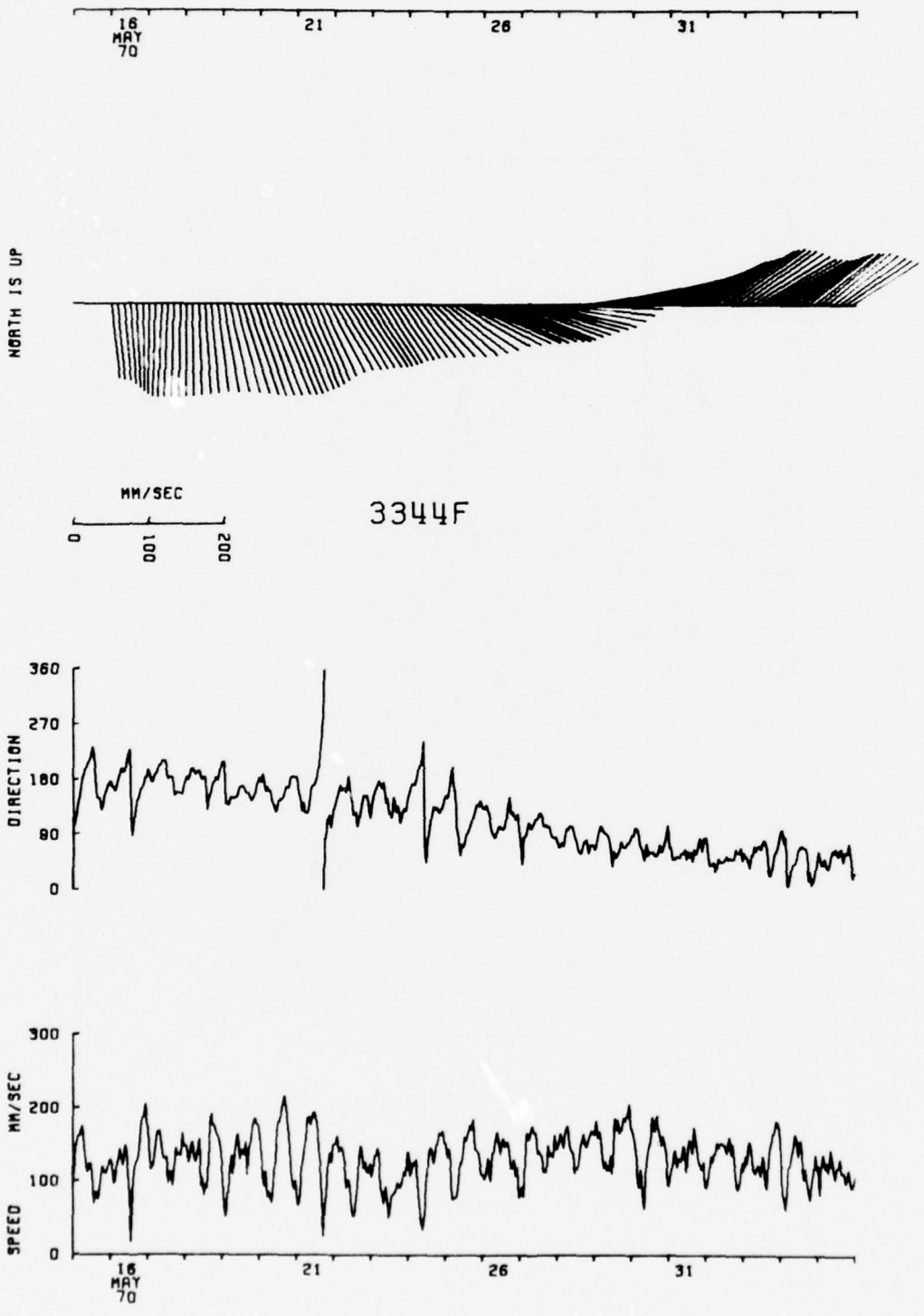
SPANNING RANGE

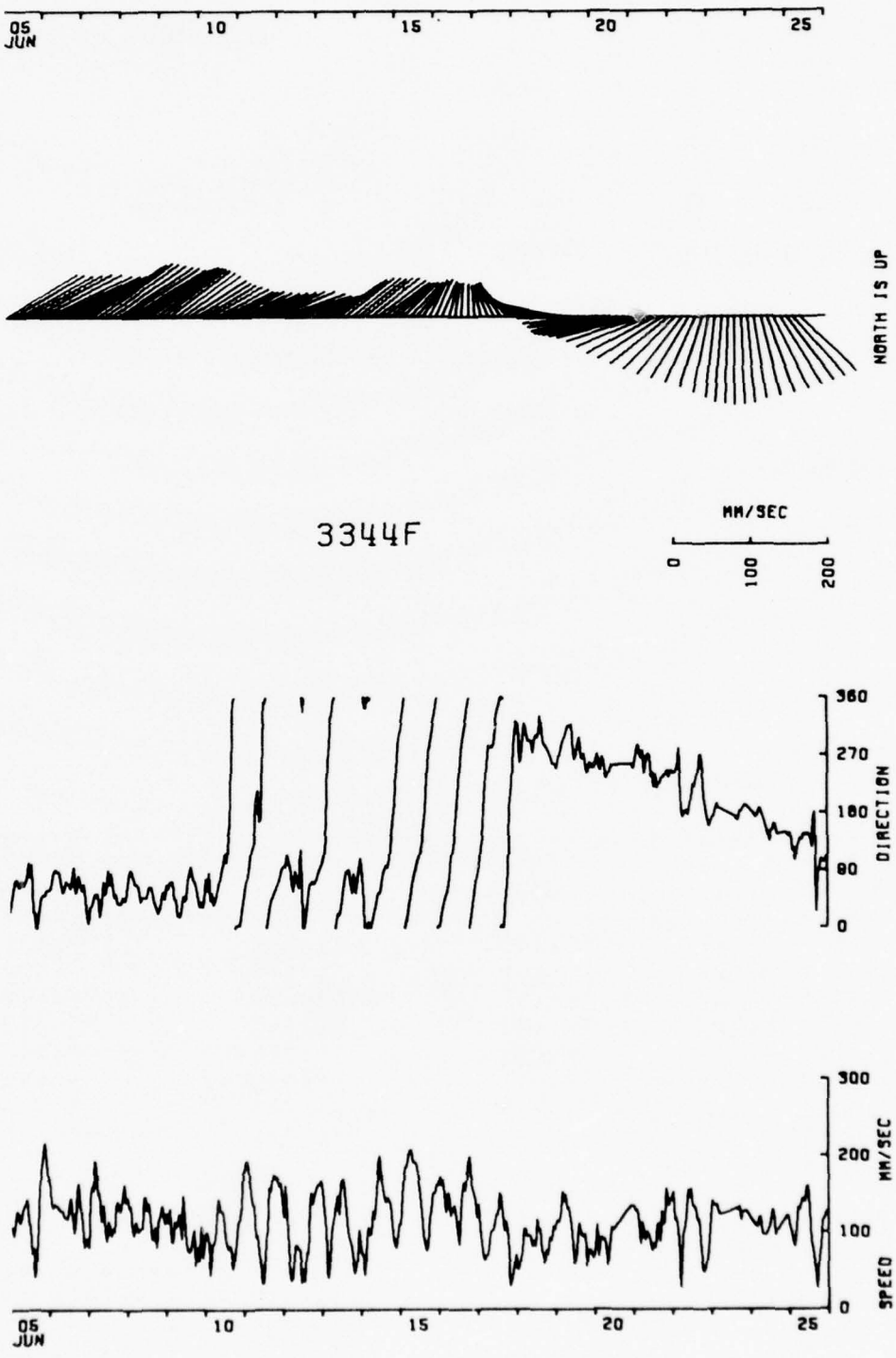
FROM 70- V -14 21.00.55

TO 70- VI -26 09.00.55

DURATION 42.50 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
3344F900
70-V-14
42 DAYS
0.01
0.1
1
FREQUENCY, CYCLES/HRS.


16
MAY
70
21
26
31
NORTH IS UP
MM/SEC
0
100
200
3344F
DIRECTION
360
270
180
90
0
SPEED
MM/SEC
300
200
100
0
16
MAY
70
21
26
31


05
JUN
10
15
20
25
NORTH IS UP
3344F
MM/SEC
0
100
200
360
270
180
90
0
DIRECTION
300
200
100
0
SPEED MM/SEC
05
JUN
10
15
20
25

Data number 3345

Instrument No.: M-191 Type: Model 850

Depth: 2019 m Water depth: 5370 m

Start time: 70-V-14 21.00.55

Stop time: 70-VI-08 07.45.55

Duration: 52d 10h 45m

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

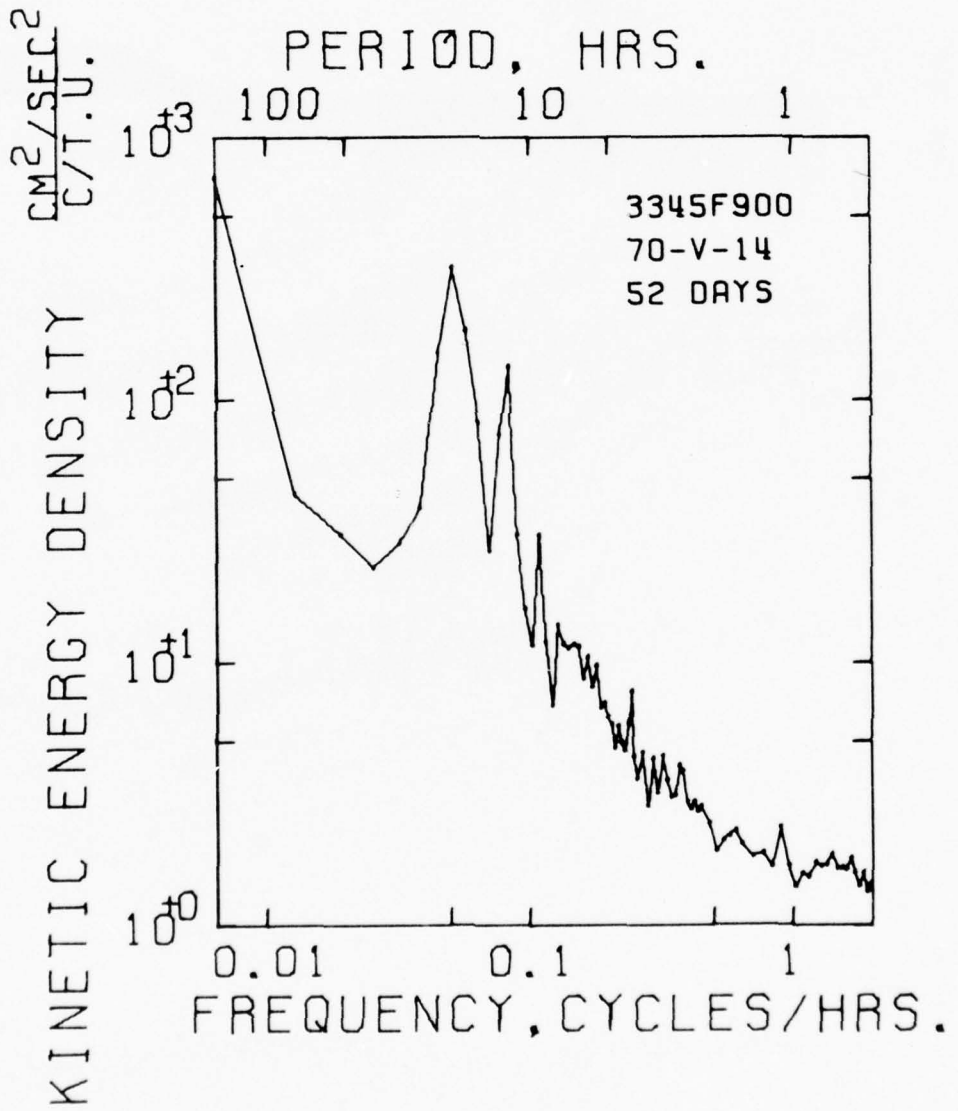
DATA/ 3345F900

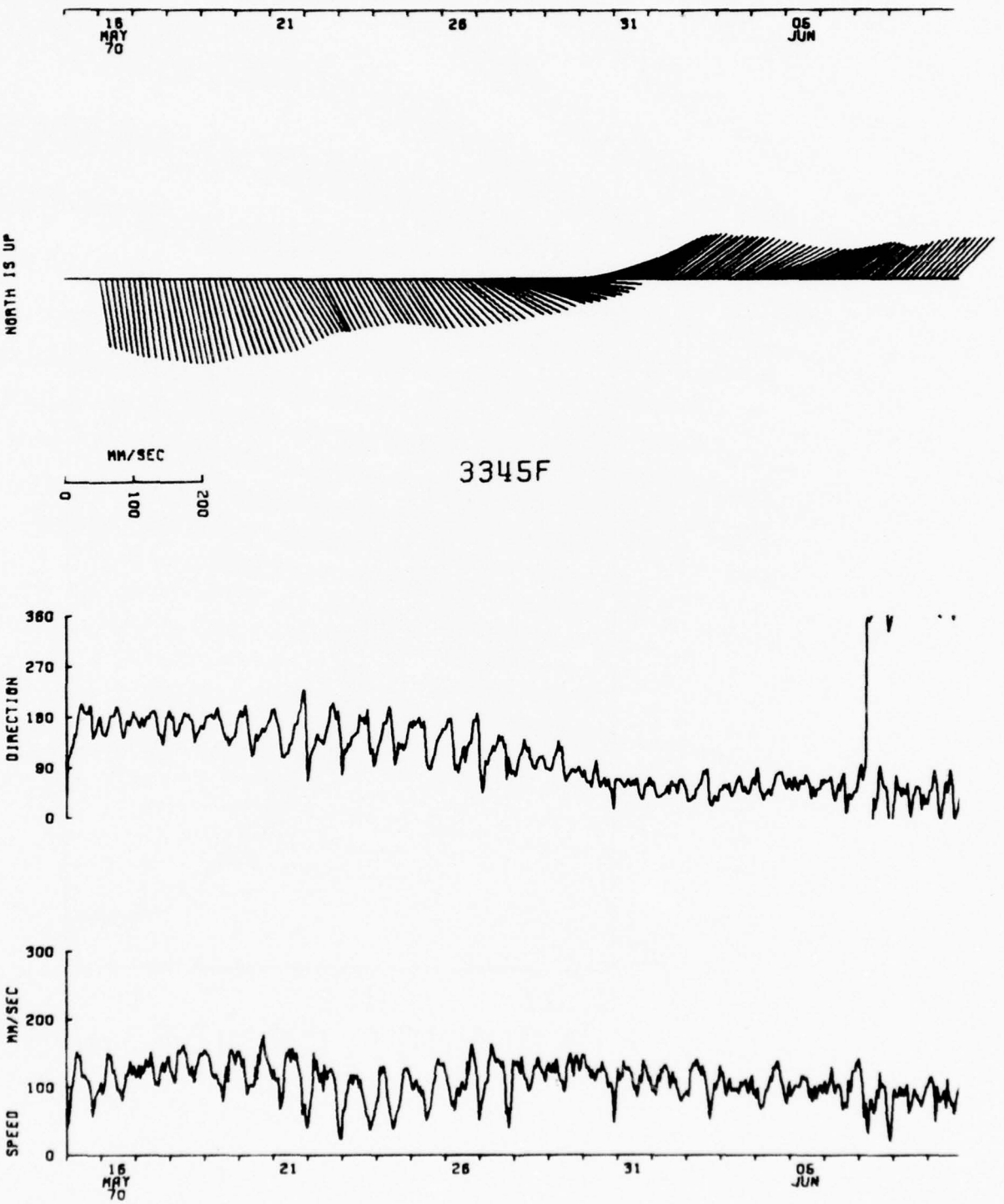
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	18.633	-27.865	107.431
STD. ERR.	1.007	1.143	.502
VARIANCE	5105.368	6583.692	1271.412
STD. DEV.	71.452	81.140	35.657
KURTOSIS	2.401	1.708	2.786
SKEWNESS	-.376	-.535E-2	-.283
MINIMUM	-193.215	-195.764	3.000
MAXIMUM	164.772	156.811	202.000

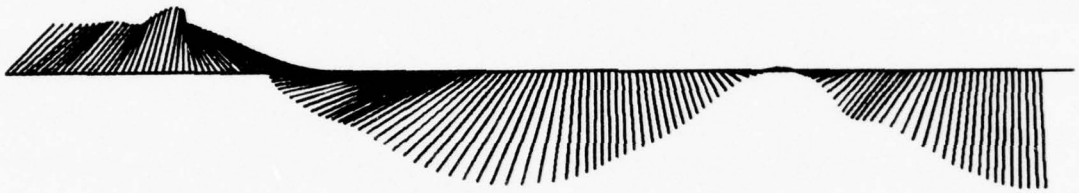
EAST & NORTH

COVARIANCE	1473.713
STD. ERR. OF COVARIANCE	70.237
STD. DEV. OF COVARIANCE	4984.378
CORRELATION COEFFICIENT	.254
VECTOR MEAN	33.521
VECTOR VARIANCE	5844.530
VECTOR STD. DEV.	76.450

* SAMPLE SIZE = 5036 POINTS
*
* SPANNING RANGE
* FROM 70- V -14 21.00.55
* TO 70- VII-06 07.45.55
*
* DURATION 52.45 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+3
10+2
10+1
10+0
3345F900
70-V-14
52 DAYS
0.01
0.1
1
FREQUENCY, CYCLES/HRS.

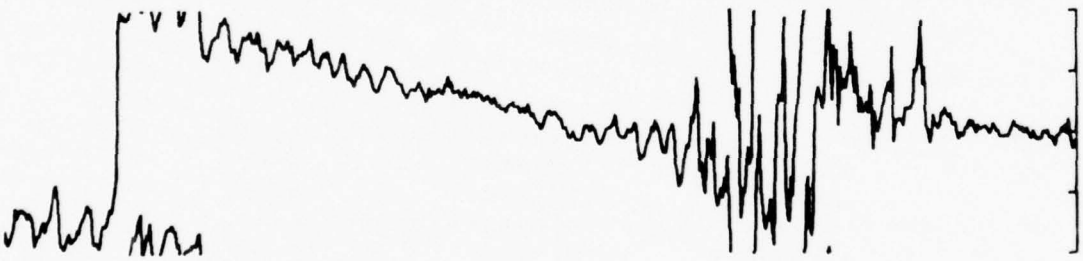

16
MAY
70
21
26
31
05
JUN
NORTH IS UP
MM/SEC
0
100
200
3345F
360
270
180
90
0
DIRECTION
300
200
100
0
SPEED
MM/SEC
16
MAY
70
21
26
31
05
JUN

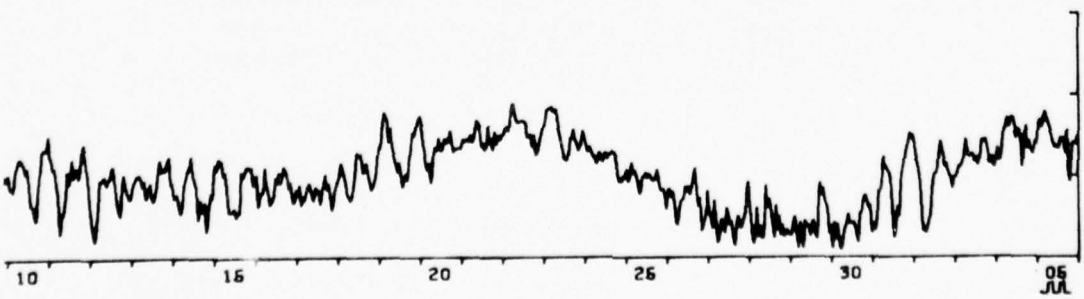


NORTH IS UP

3345F

MM/SEC
0
100
200





Data number 3346

Instrument No.: M-240 Type: Model 850

Depth: 4326 m Water depth: 5370 m

Start time: 70-V-14 21.00.55

Stop time: 70-VI-08 04.45.55

Duration: 24d 7h 45m

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 23

interval time = 900 seconds

COMMENTS:

DATA/ 3346F900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	38.192	-11.326	74.625
STD. ERR.	.721	1.164	.413
VARIANCE	1214.504	3166.699	399.258
STD. DEV.	34.850	56.273	19.981
KURTOSIS	1.907	1.617	2.740
SKEWNESS	-.211	-.117	-.426
MINIMUM	-65.812	-123.647	6.000
MAXIMUM	121.617	101.204	139.000

EAST & NORTH

COVARIANCE	1502.687	
STD. ERR. OF COVARIANCE	40.516	
STD. DEV. OF COVARIANCE	1958.248	
CORRELATION COEFFICIENT	.766	
VECTOR MEAN	39.836	
VECTOR VARIANCE	2190.601	
VECTOR STD. DEV.	46.804	

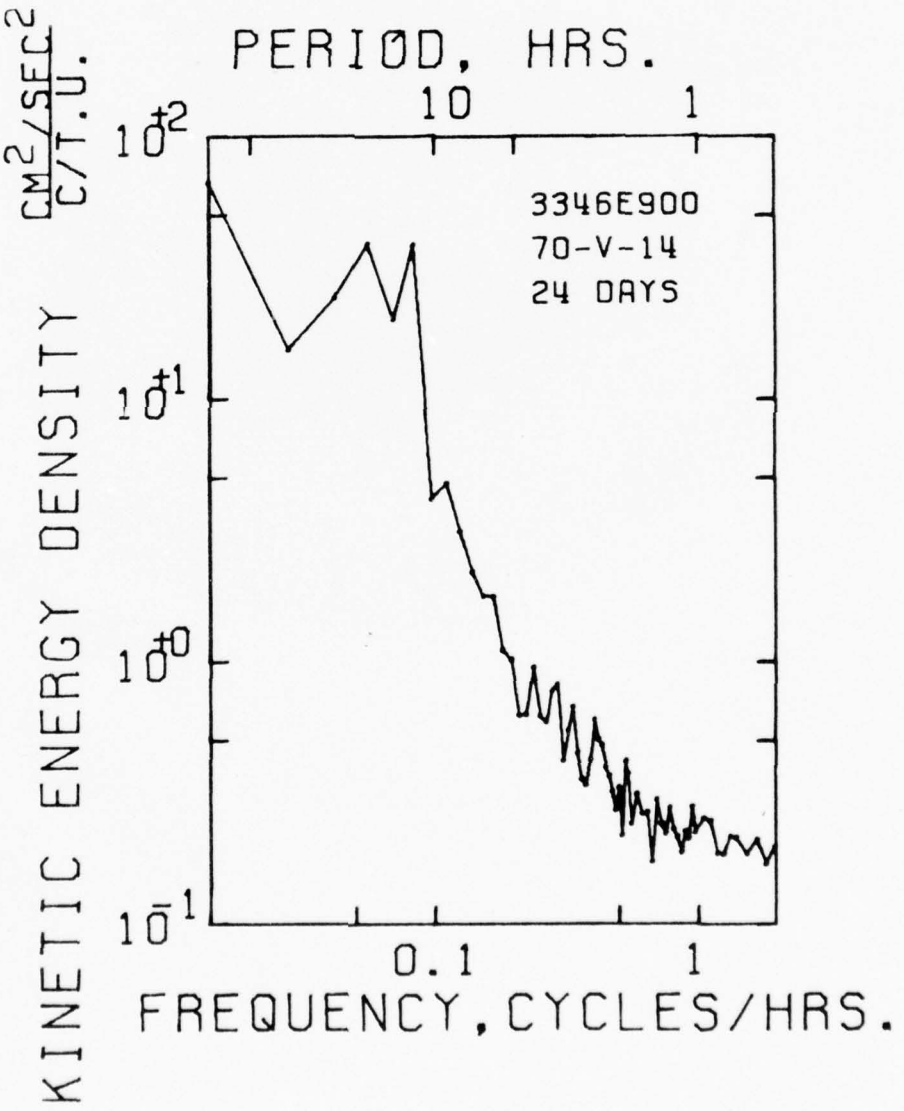
SAMPLE SIZE = 2336 POINTS

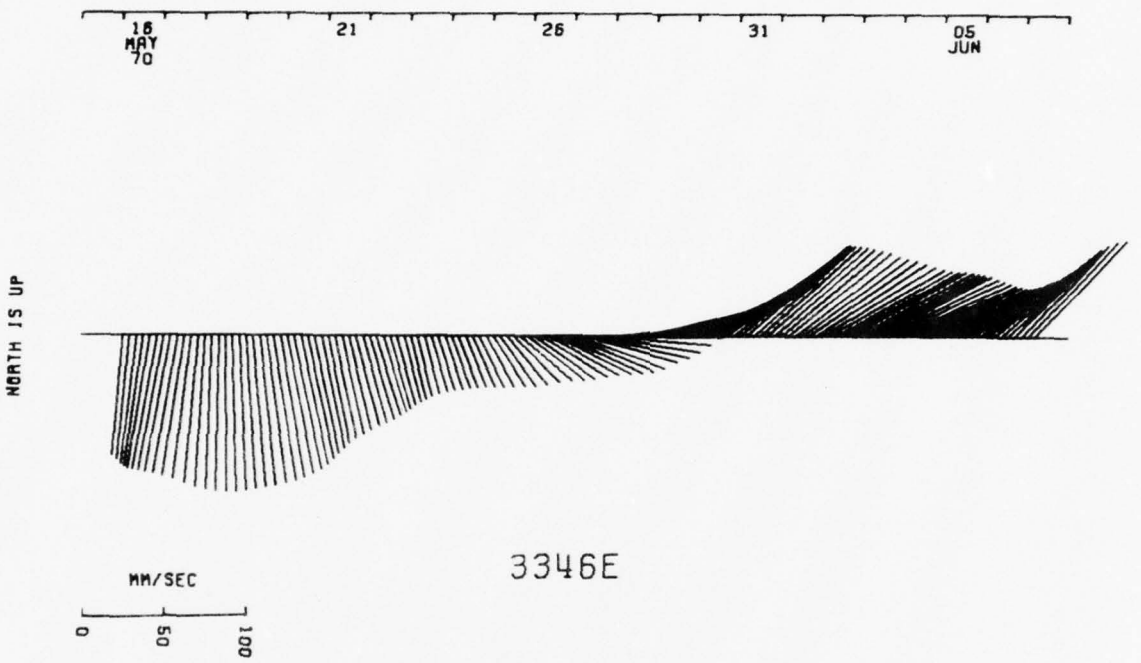
SPANNING RANGE

FROM 70- V -14 21.00.55

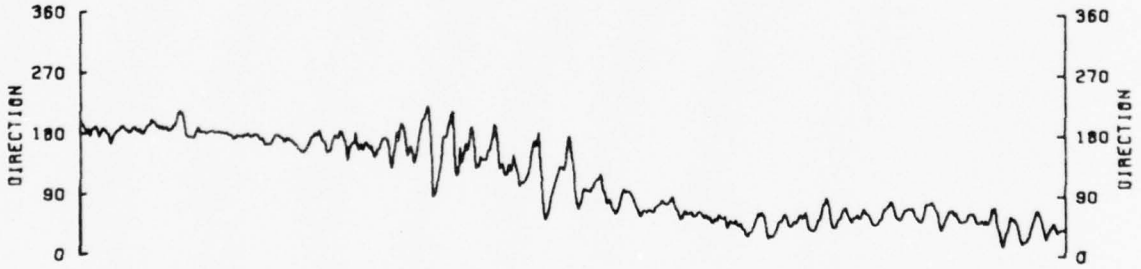
TO 70- VI -08 04.45.55

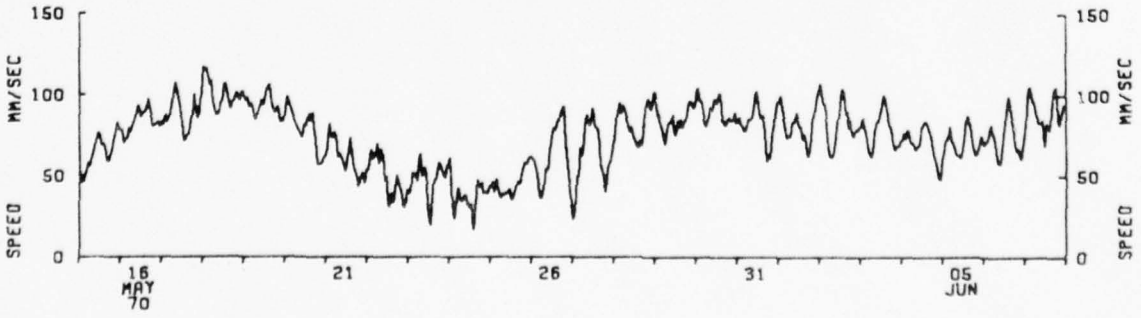
DURATION 24.32 DAYS


PERIOD, HRS.
10
1
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10^2
10^1
10^0
10^-1
3346E900
70-V-14
24 DAYS
0.1
1
FREQUENCY, CYCLES/HRS.



3346E





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MOORING NO. 335

Lat. 32° 08.0'N Long. 64° 07.5'W

FOAM FLOAT WITH RADIO

30 m WIRE ROPE

10 16" GLASS SPHERES IN PROTECTIVE "HARD HATS" ON 10 m CHAIN

CURRENT METER - *3351*

DEPTH RECORDER - *3352*

1,000 m 3/16" WIRE ROPE

INCLINOMETER - *3353*

14 16" GLASS SPHERES in nets ON 30 m OF 5/8" NYLON

CURRENT METER - *3354*

TENSIOMETER - *3355*

1,000 m 7/16" NYLON

792 m 7/16" NYLON

CURRENT METER - *3356*

ACOUSTIC RELEASE, TRANSPONDING

STIMSON ANCHOR, 1,500 LBS.

30 FT CHAIN WITH 65 LB DANFORTH

Set May 17, 1970

Set by J. Gifford

Ship R. V. AII Cruise 57

Recovered July 2, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 5

Mooring type - Intermediate

Purpose of mooring

A) Acoustic propagation test

B) Engineering test of intermediate type mooring

Data No.	Instr. Type	Depth (m)
3351*	Model 850	1312
3352	Depth Rec.	1313
3353	Incl.	2314
3354	Model 850	2346
3355	Tens.	2347
3356	Model 850	4298
Water depth		4400

Comments

3356 - instrument flooded.

Data number 3351

Instrument No.: M-175 Type: Model 850

Depth: 1312 m Water depth: 4400 m

Start time: 70-V-17 07.45.58

Stop time: 70-VII-02 08.45.58

Duration: 46d 1h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

DATA/ 3351G900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-31.077	2.118	64.409
STD. ERR.	.621	.785	.533
VARIANCE	1707.046	2727.542	1256.289
STD. DEV.	41.316	52.226	35.444
KURTOSIS	3.196	2.981	4.103
SKEWNESS	-.317	.293	1.026
MINIMUM	-189.838	-132.288	6.000
MAXIMUM	89.803	186.623	210.000

EAST & NORTH

COVARIANCE	-764.732	
STD. ERR. OF COVARIANCE	47.345	
STD. DEV. OF COVARIANCE	3147.978	
CORRELATION COEFFICIENT	-.354	
VECTOR MEAN	31.149	
VECTOR VARIANCE	2217.294	
VECTOR STD. DEV.	47.088	

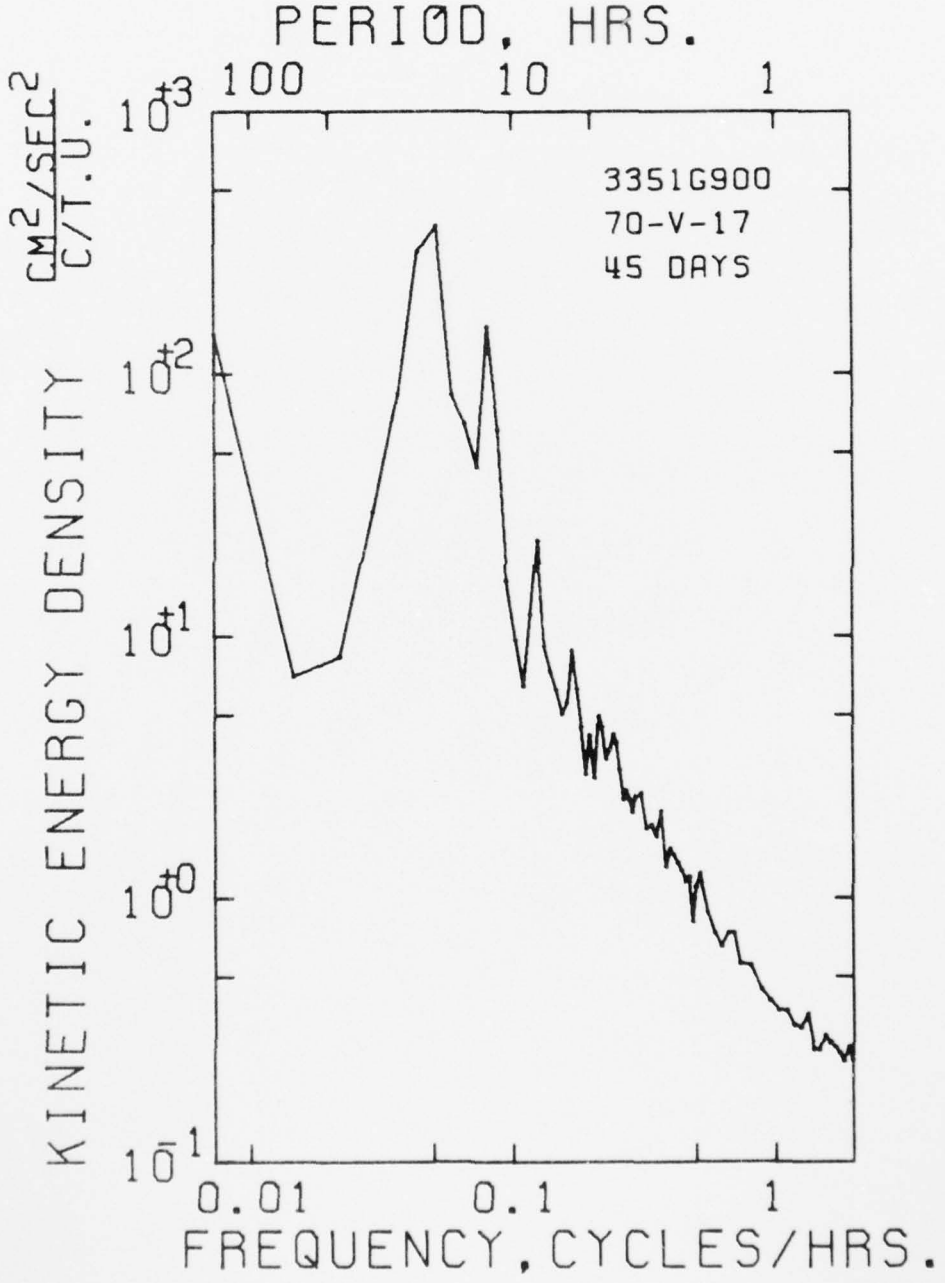
SAMPLE SIZE = 4421 POINTS

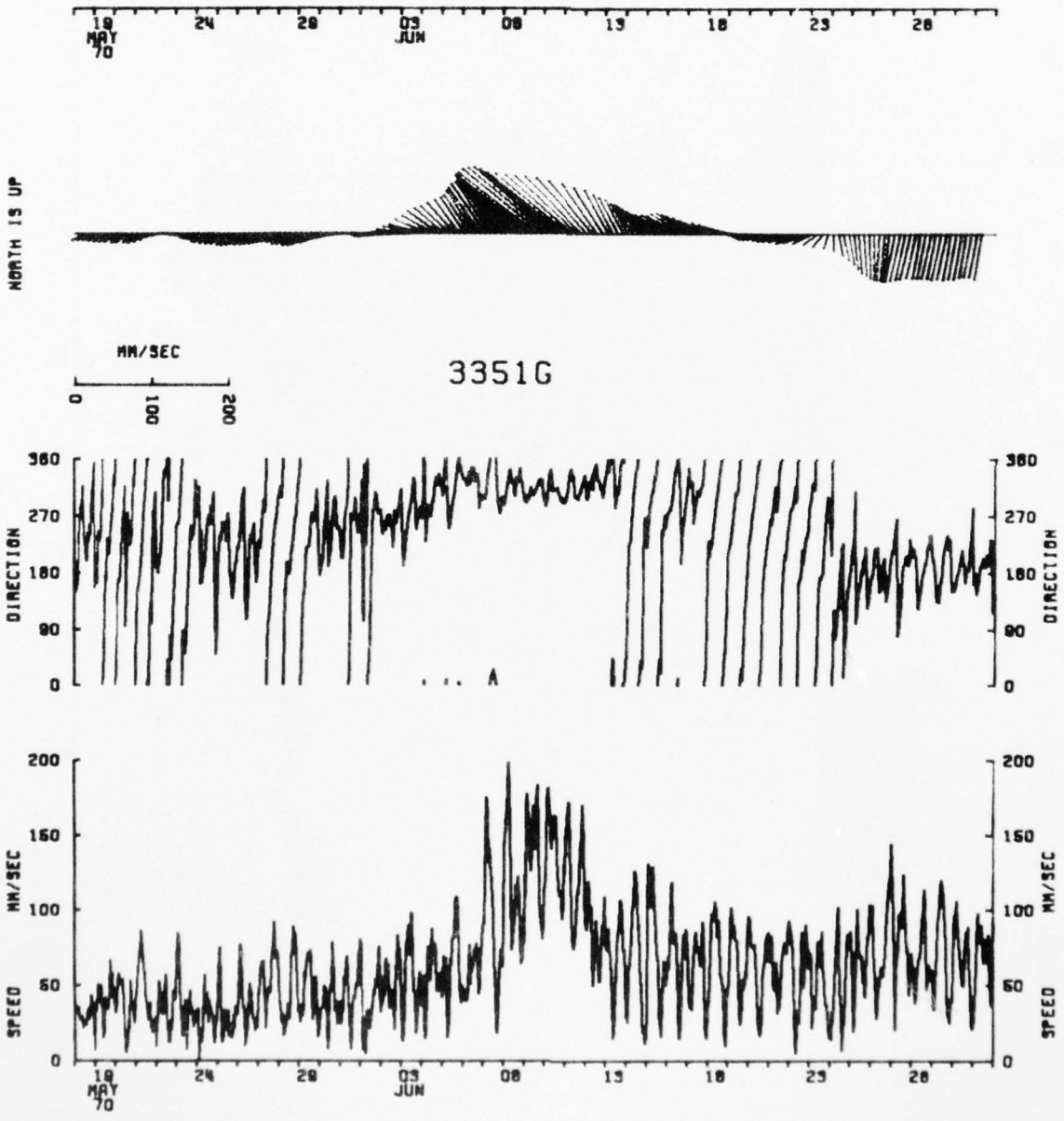
SPANNING RANGE

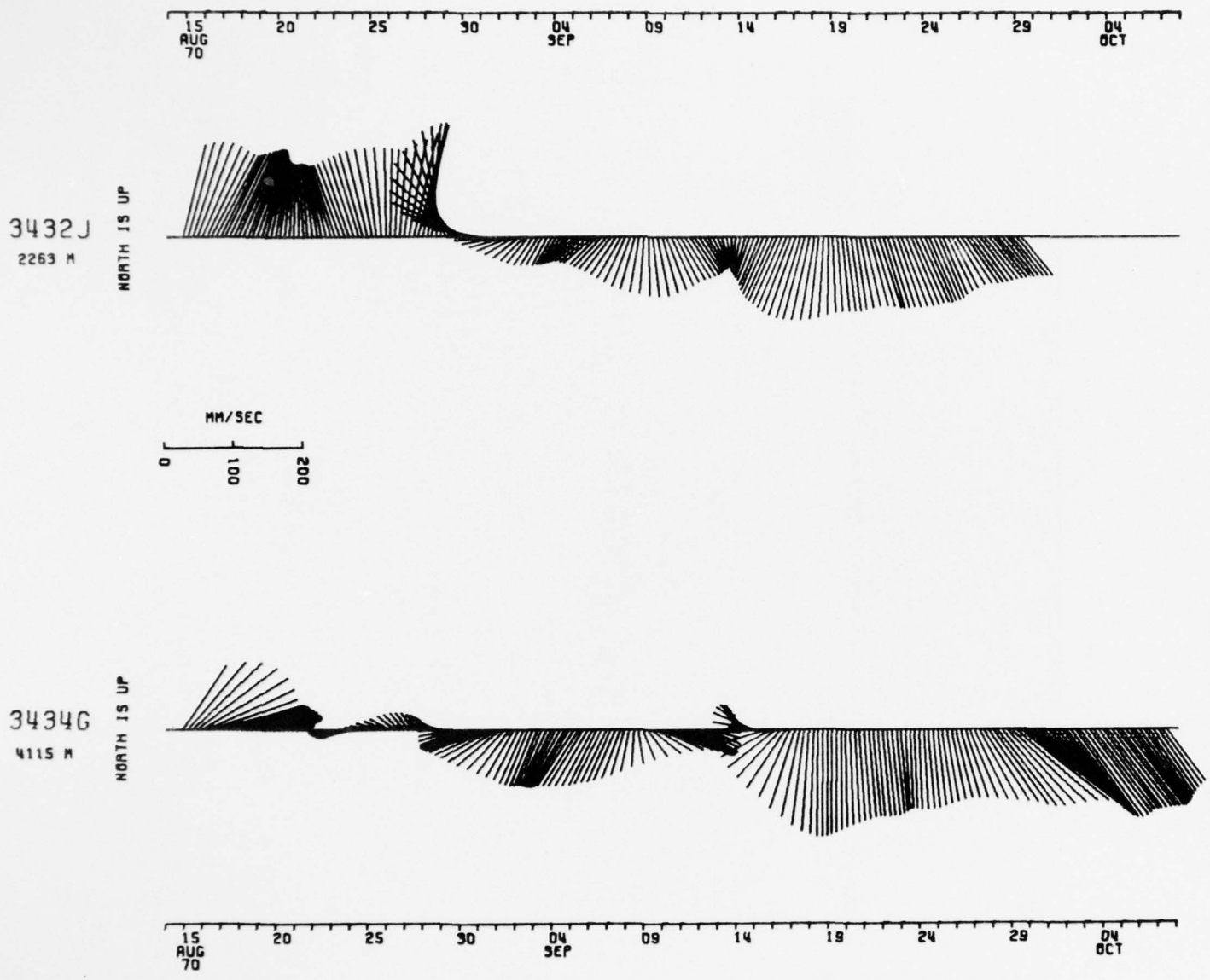
FROM 70- V -17 07.45.58

TO 70- VII-02 08.45.58

DURATION 46.04 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10+3
10+2
10+1
10+0
10-1
3351G900
70-V-17
45 DAYS
0.01
0.1
1
FREQUENCY, CYCLES/HRS.




15 AUG 70
20
25
30
04 SEP
09
14
19
24
29
04 OCT
3432J
2263 M
NORTH IS UP
MM/SEC
0
100
200
3434G
4115 M
NORTH IS UP
15 AUG 70
20
25
30
04 SEP
09
14
19
24
29
04 OCT

MOORING NO. 343

Lat. 35° 58.0'N Long. 70° 33.0'W

Set August 13, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 8, 1970

Recovered by D. Moller

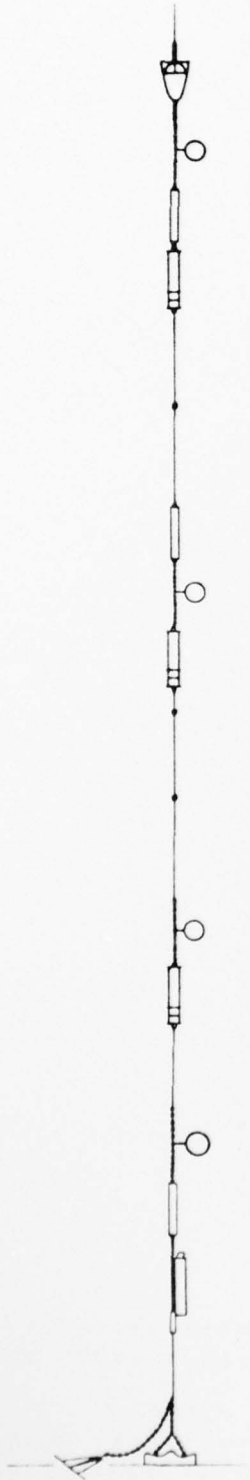
Ship R. V. Knorr Cruise 13

Mooring type - Intermediate

Purpose of mooring

A) Low frequency wave correlation across the Gulf Stream

B) Further test of intermediate type mooring



Data No.	Instr. Type	Depth (m)
3431	Depth Rec.	2261
3432*	Model 850	2263
3433	Incl.	3185
3434*	Model 850	4115
3435	Tens.	4412
Water depth		4444

Comments

The dummy current meter in the mooring line was a test of the re-designed pressure case for the new Vector Averaging Current Meters.

Data number 3432

Instrument No.: M-151 Type: Model 850

Depth: 2263 m Water depth: 4444 m

Start time: 70-VIII-13 15.30.37

Stop time: 70-IX-30 11.00.37

Duration: 47d 20h 30m

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 3432.J9.00

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	1.545	-.473	98.522
STD. ERR.	.663	1.424	.546
VARIANCE	3018.789	9055.380	1370.764
STD. DEV.	54.931	95.162	37.024
KURTOSIS	2.840	1.674	2.714
SKEWNESS	-.414	.424	.154
MINIMUM	-151.197	-169.000	17.000
MAXIMUM	119.532	226.987	234.000

EAST & NORTH

COVARIANCE	66.353	
STD. ERR. OF COVARIANCE	61.045	
STD. DEV. OF COVARIANCE	4136.201	
CORRELATION COEFFICIENT	.156E-1	
VECTOR MEAN	1.616	
VECTOR VARIANCE	5537.335	
VECTOR STD. DEV.	74.413	

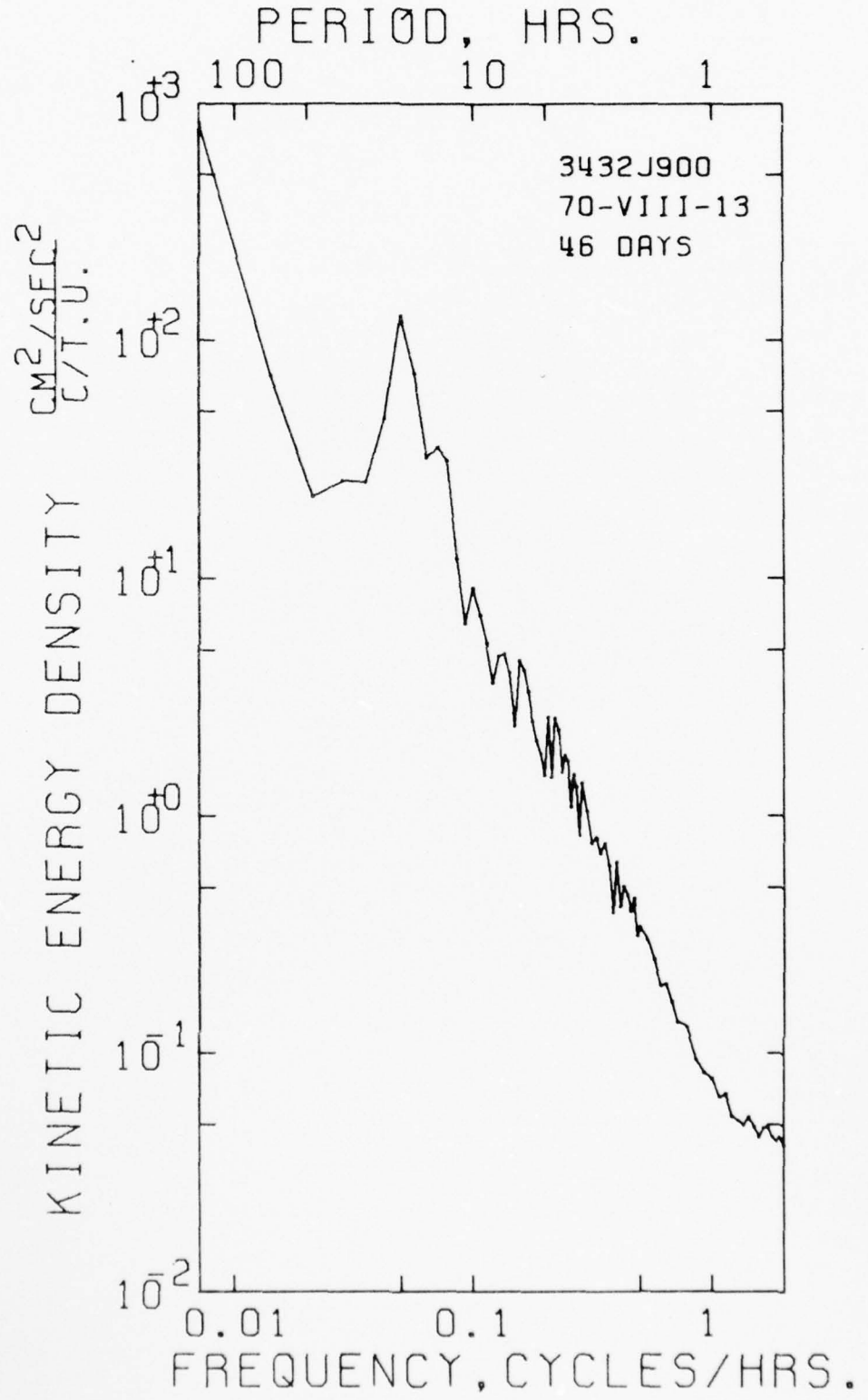
SAMPLE SIZE = 4591 POINTS

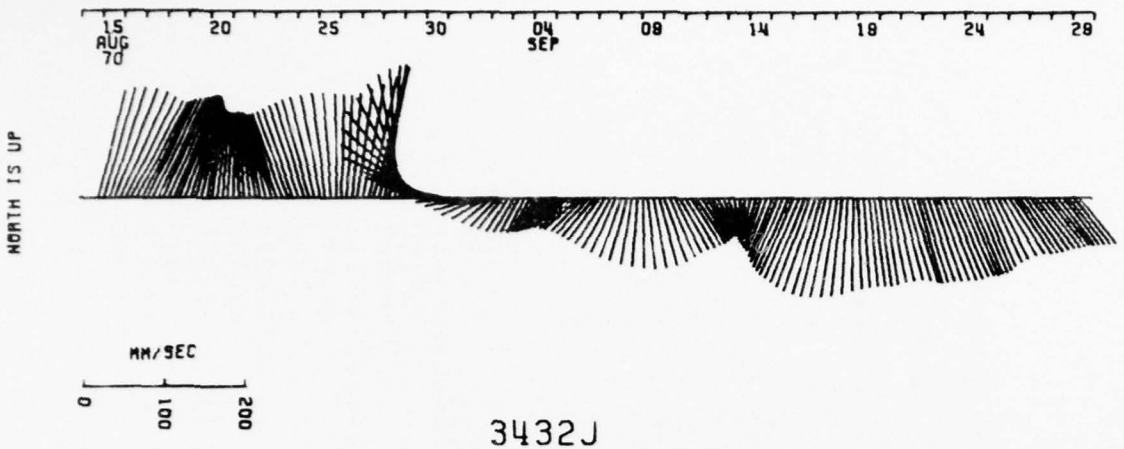
SPANNING RANGE

FROM 70-VIII-13 15.30.37

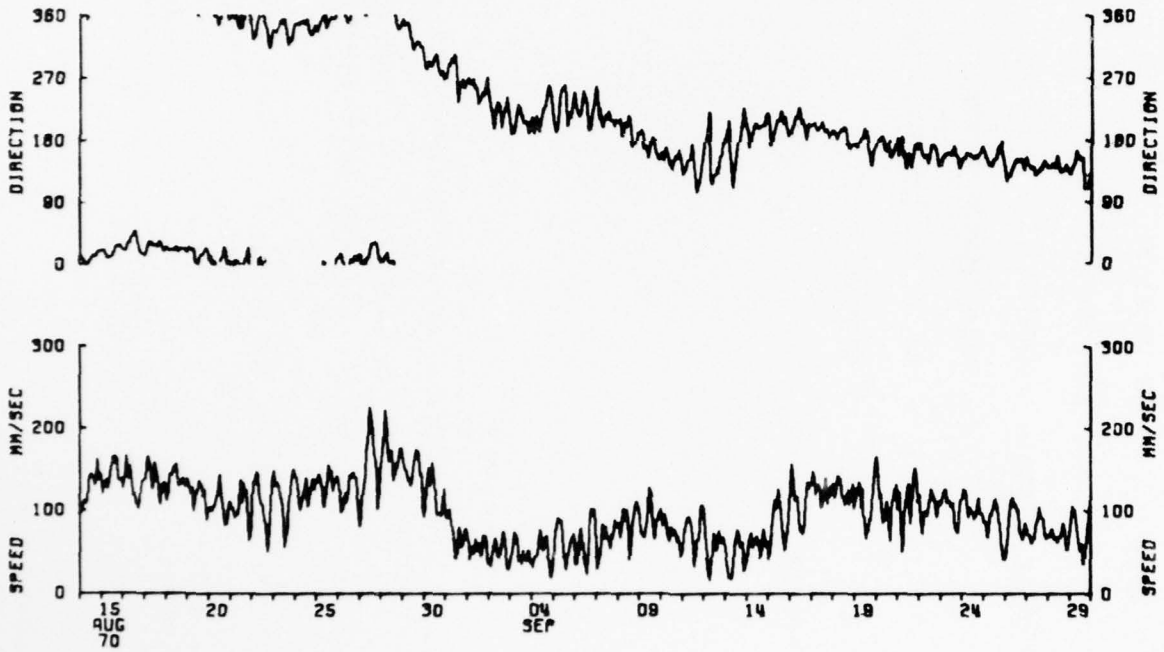
TO 70- IX -30 11.00.37

DURATION 47.81 DAYS


PERIØD, HRS.
100
10
1
3432J900
70-VIII-13
46 DAYS
KINETIC ENERGY DENSITY CM²/SEC²
C/T.U.
10+3
10+2
10+1
10+0
10-1
10-2
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



3432J



Data number 3434

Instrument No.: M-240 Type: Model 850

Depth: 4115 m Water depth: 4444 m

Start time: 70-VIII-13 15.30.37

Stop time: 70-X-08 13.45.37

Duration: 55d 22h 15m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

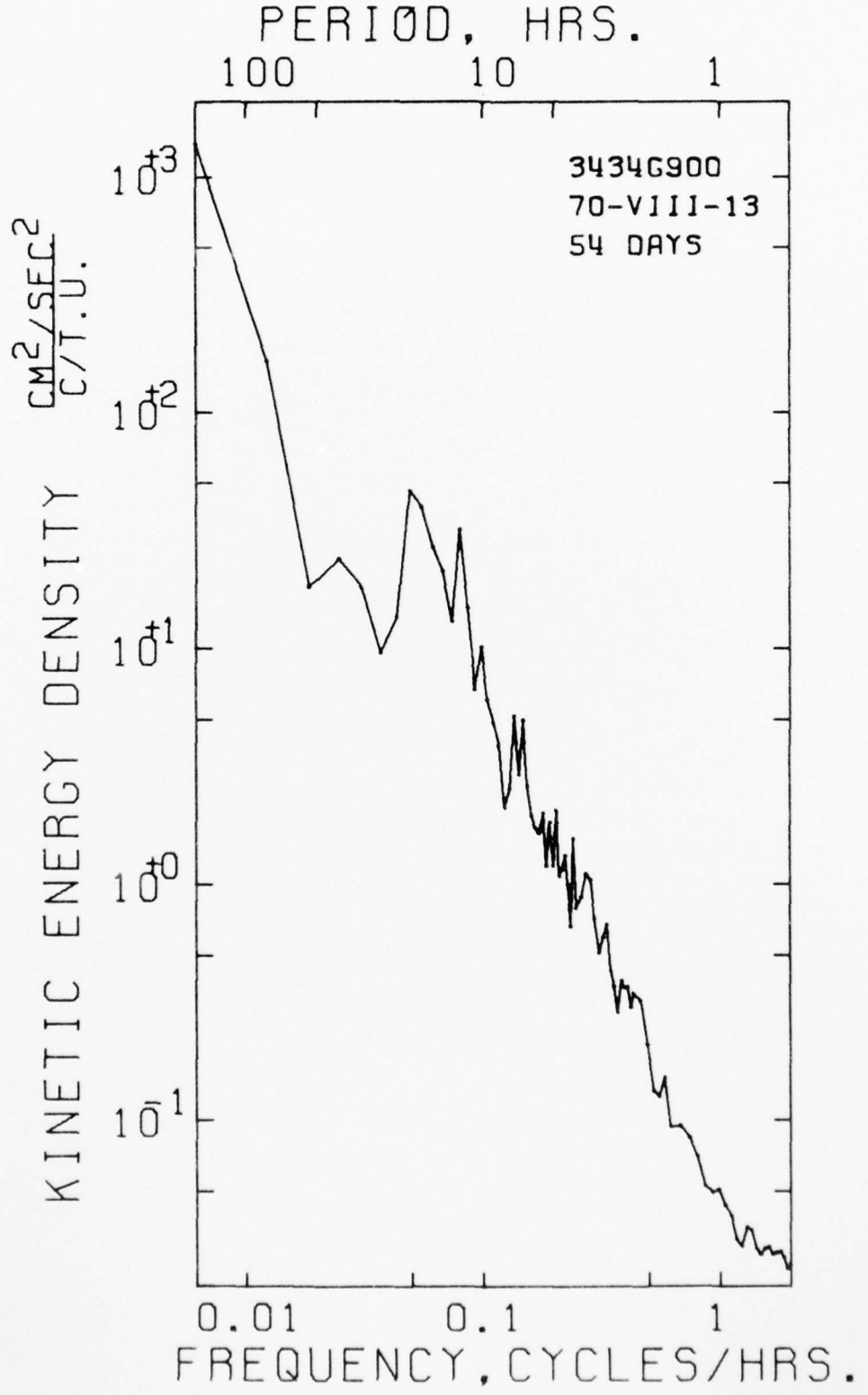
COMMENTS:

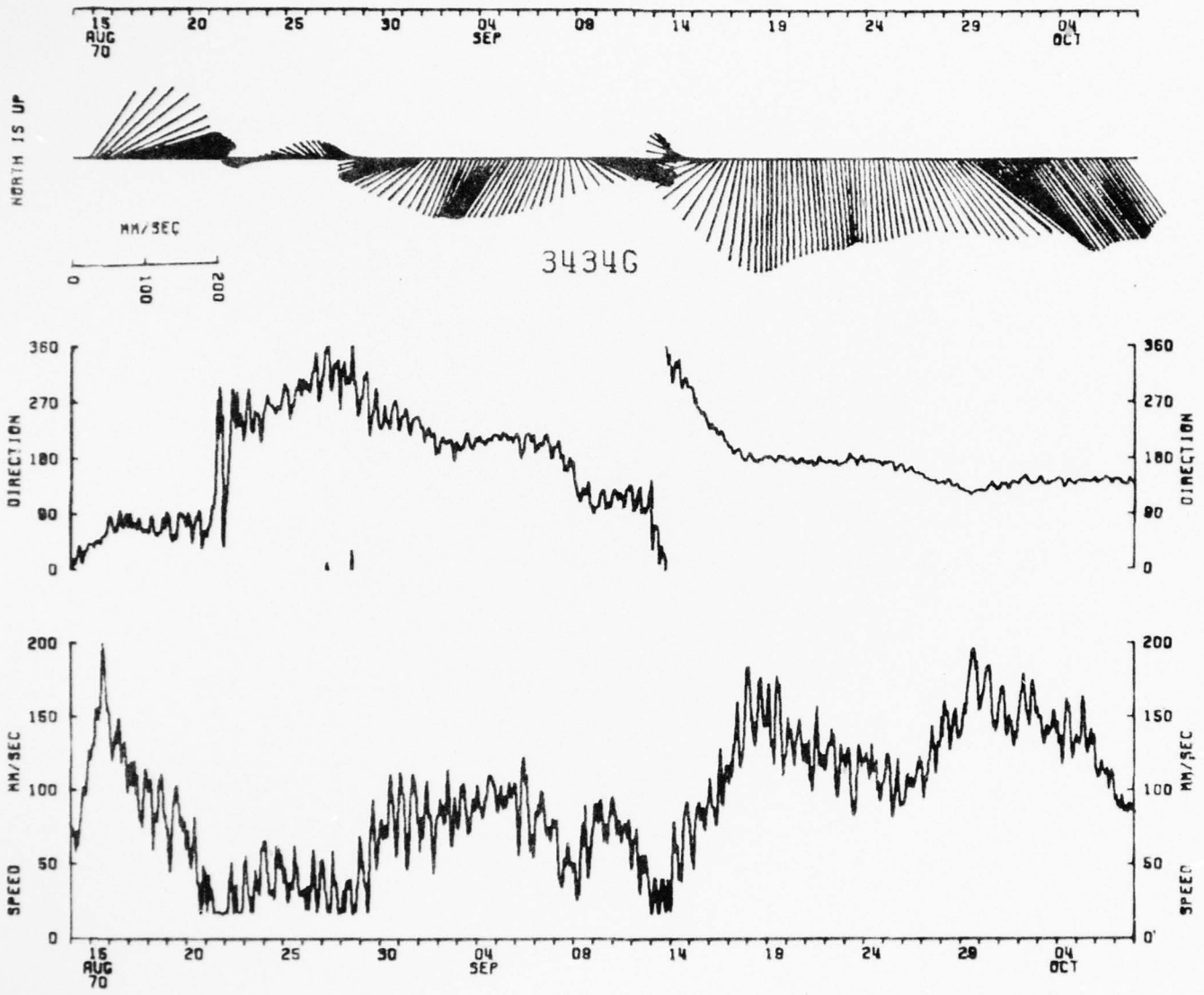
DATA/ 34346900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	18.226	-50.933	94.037
STD. ERR.	.819	.879	.584
VARIANCE	3600.020	4148.025	1831.364
STD. DEV.	60.000	64.405	42.794
KURTOSIS	2.066	2.278	2.274
SKEWNESS	.190	.363	.474E-1
MINIMUM	-109.614	-186.100	16.000
MAXIMUM	164.631	137.179	203.000

EAST & NORTH

COVARIANCE	-259.149	SAMPLE SIZE = 5370 POINTS
STD. ERR. OF COVARIANCE	70.759	
STD. DEV. OF COVARIANCE	5185.223	SPANNING RANGE
CORRELATION COEFFICIENT	-.671E-1	FROM 70-VIII-13 15.30.37
VECTOR MEAN	54.096	TO 70- X -08 13.45.37
VECTOR VARIANCE	3874.022	
VECTOR STD. DEV.	62.242	DURATION 55.93 DAYS


PERIØD, HRS.
100
10
1
3434G900
70-VIII-13
54 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10+3
10+2
10+1
10+0
10-1
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



MOORING NO. 345

Lat. 39° 23.5'N Long. 70° 58.6'W

Set August 18, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 6, 1970

Recovered by D. Moller

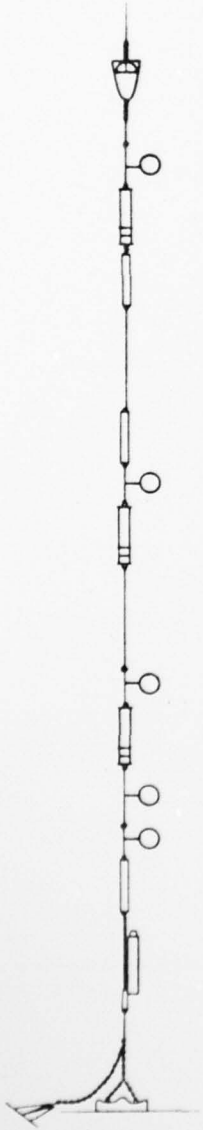
Ship R. V. Knorr Cruise 13

Mooring type - Intermediate

Purpose of mooring

A) Low frequency wave correlation across the Gulf Stream

B) Further test of intermediate mooring



Data No.	Instr. Type	Depth (m)
3451*	Model 850	1504
3452	Depth Rec.	1505
3453	Incl.	1960
3454	Model 850	2434
3455	Tens.	2495
Water depth		2527

Comments

3454 - no recoverable data

Data number 3451

Instrument No.: M-122 Type: Model 850

Depth: 1504 m Water depth: 2527 m

Start time: 70-VIII-19 00.00.37

Stop time: 70-X-06 17.15.37

Duration:

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

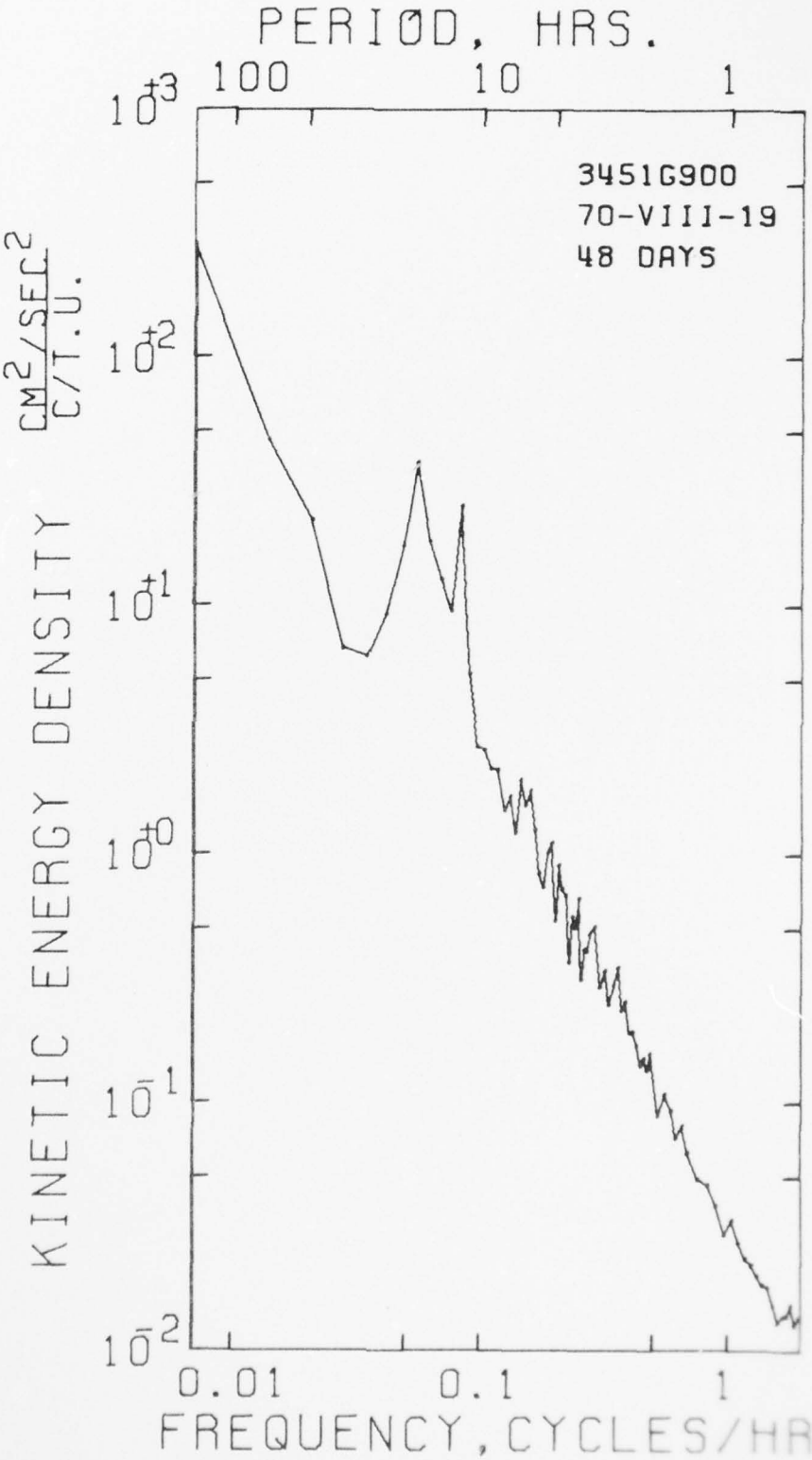
COMMENTS:

DATA/ 3451G900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-27.831	-4.702	41.839
STD. ERR.	.495	.312	.372
VARIANCE	1144.305	456.010	646.468
STD. DEV.	33.828	21.354	25.426
KURTOSIS	2.526	3.439	3.049
SKEWNESS	-.458	.695E-1	.940
MINIMUM	-129.793	-85.768	14.585
MAXIMUM	47.498	80.082	132.675

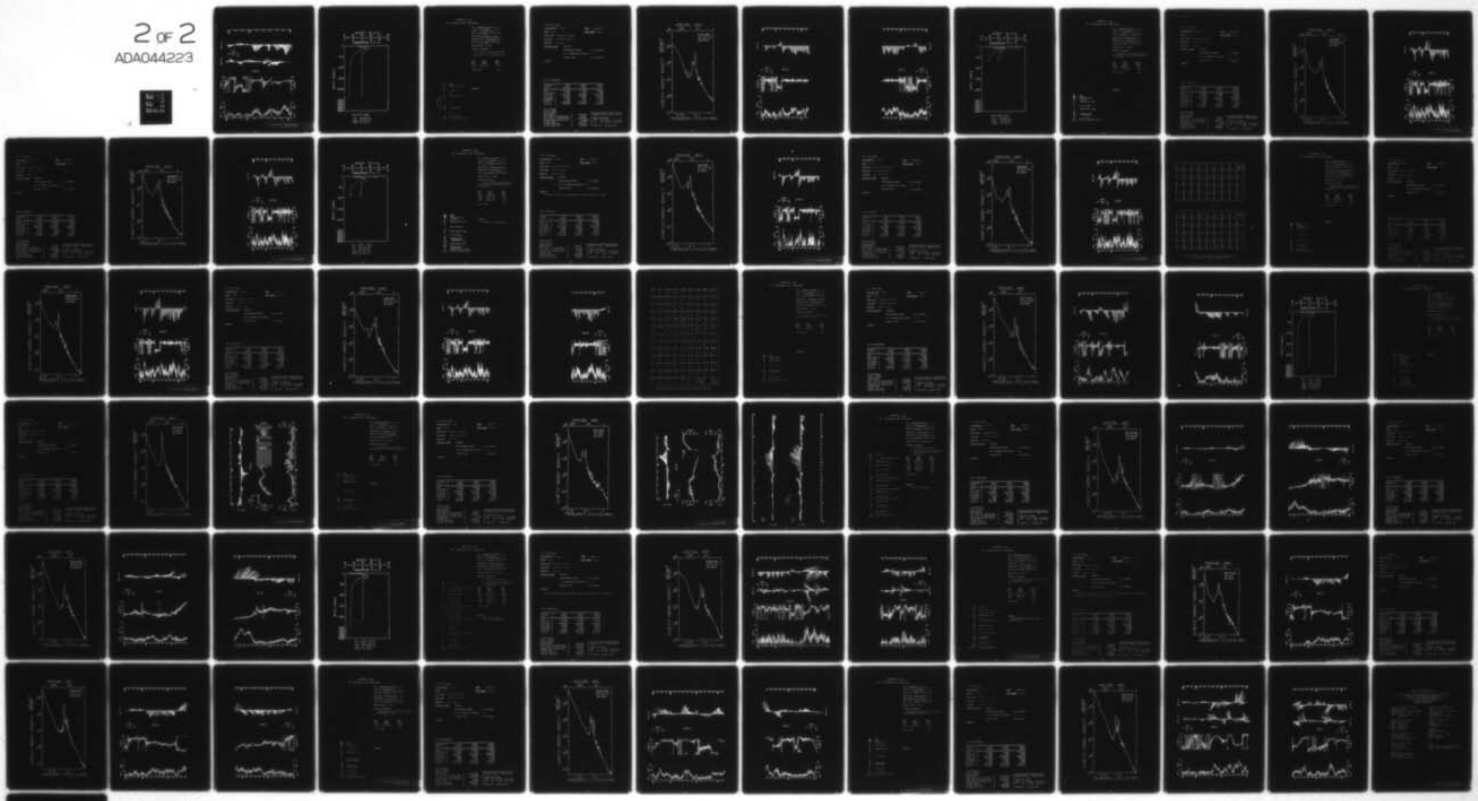
EAST & NORTH

COVARIANCE	52.821	SAMPLE SIZE = 4678 POINTS
STD. ERR. OF COVARIANCE	13.417	
STD. DEV. OF COVARIANCE	917.686	SPANNING RANGE
CORRELATION COEFFICIENT	.731E-1	FROM 70-VIII-19 00.00.37
VECTOR MEAN	28.225	TO 70- X -06 17.15.37
VECTOR VARIANCE	800.158	
VECTOR STD. DEV.	28.287	DURATION 48.72 DAYS

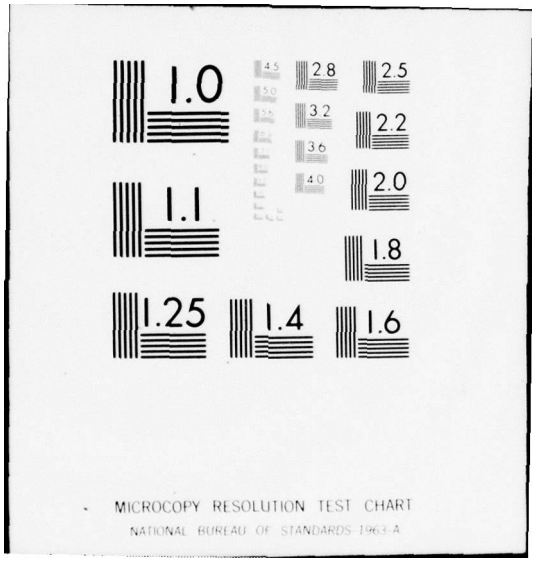

PERIOD, HRS.
100
10
1
3451G900
70-VIII-19
48 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10^3
10^2
10^1
10^0
10^-1
10^-2
0.01
0.1
1
FREQUENCY, CYCLES/HRS.

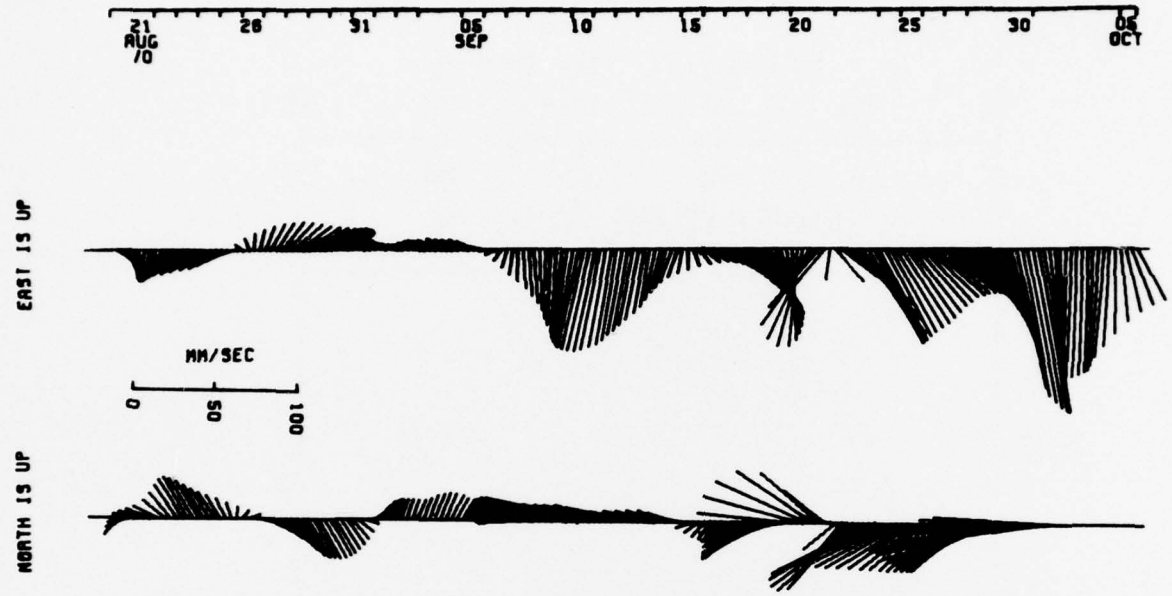
AD-A044 223 WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS F/G 8/3
A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)
JUN 77 S A TARBELL, A W WHITLATCH N00014-66-C-0241
UNCLASSIFIED WHOI-77-18 NL

2 OF 2
ADA044223

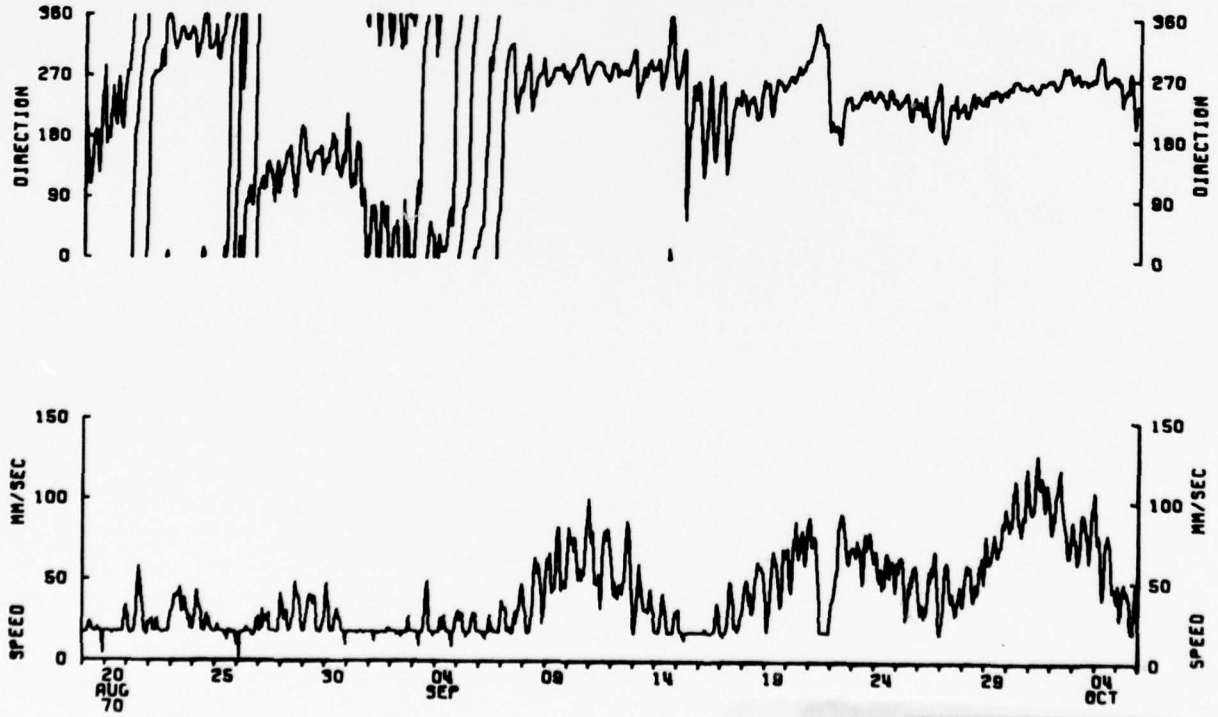


END
DATE FILMED
10-77
DDC

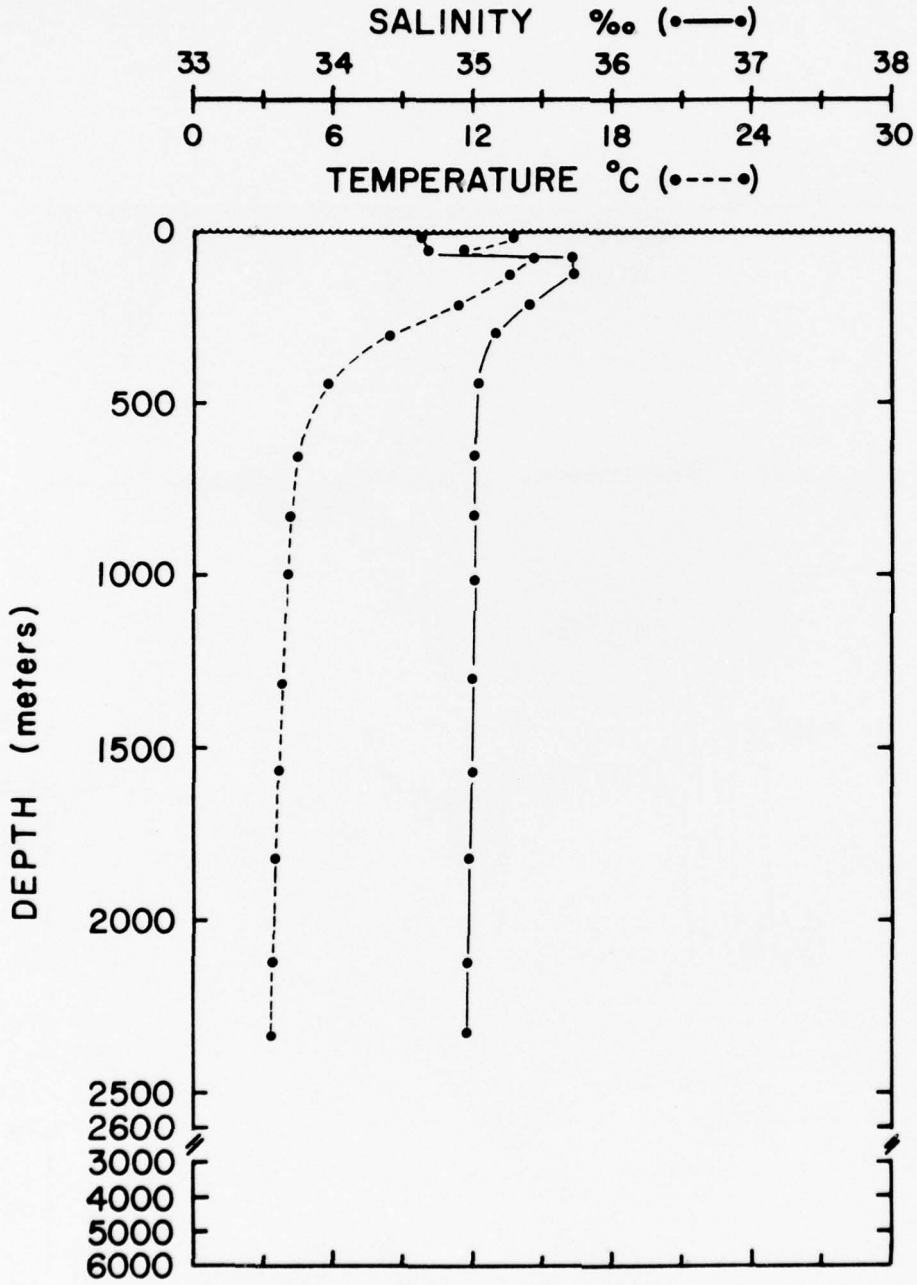

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A



3451G



PRECEDING PAGE BLANK-NOT FILMED



KN-017-046

LAT. 39° 09.4' N
LONG. 70°00.2' W
DATE 70-12-17

MOORING NO. 347

Lat. 39° 50.2'N Long. 70° 40.5'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered December 4, 1970

Recovered by R. Heinmiller

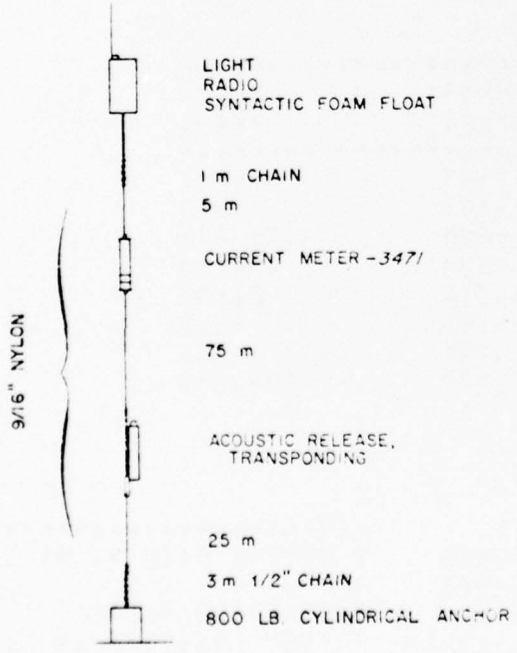
Ship R. V. Knorr Cruise 17

Mooring type - Bottom

Purpose of mooring

To study the topographical wave motion across the Continental Slope

Data No.	Instr. Type	Depth (m)
3471*	Model 850	776
Water depth		876



Comments

Data number 3471

Instrument No.: M-238 Type: Model 850

Depth: 776 m Water depth: 876 m

Start time: 70-VIII-19 14.00.37

Stop time: 70-XII-04 16.00.37

Duration: 107d 2h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 1800 seconds

COMMENTS:

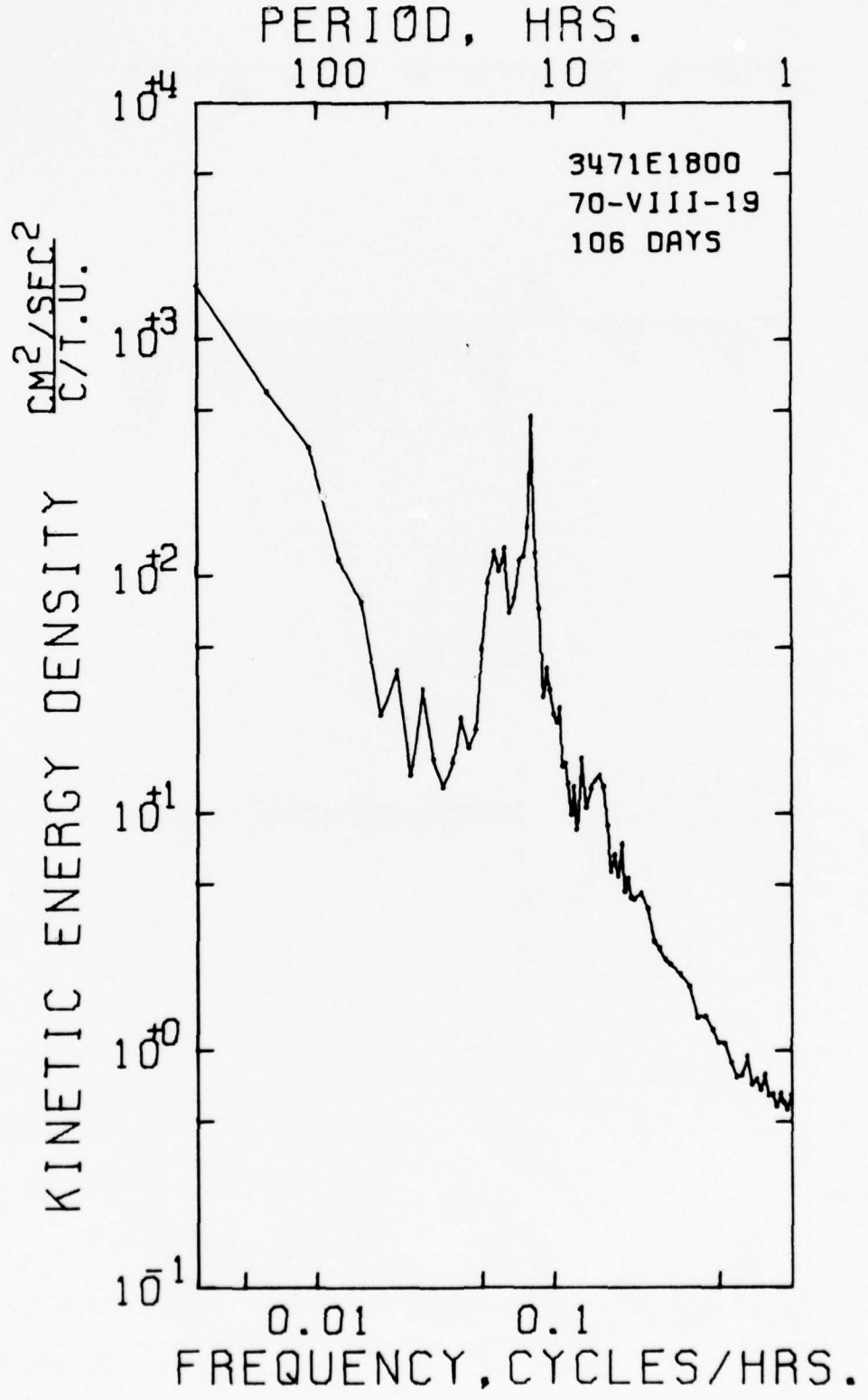
DATA/ 3471E1800

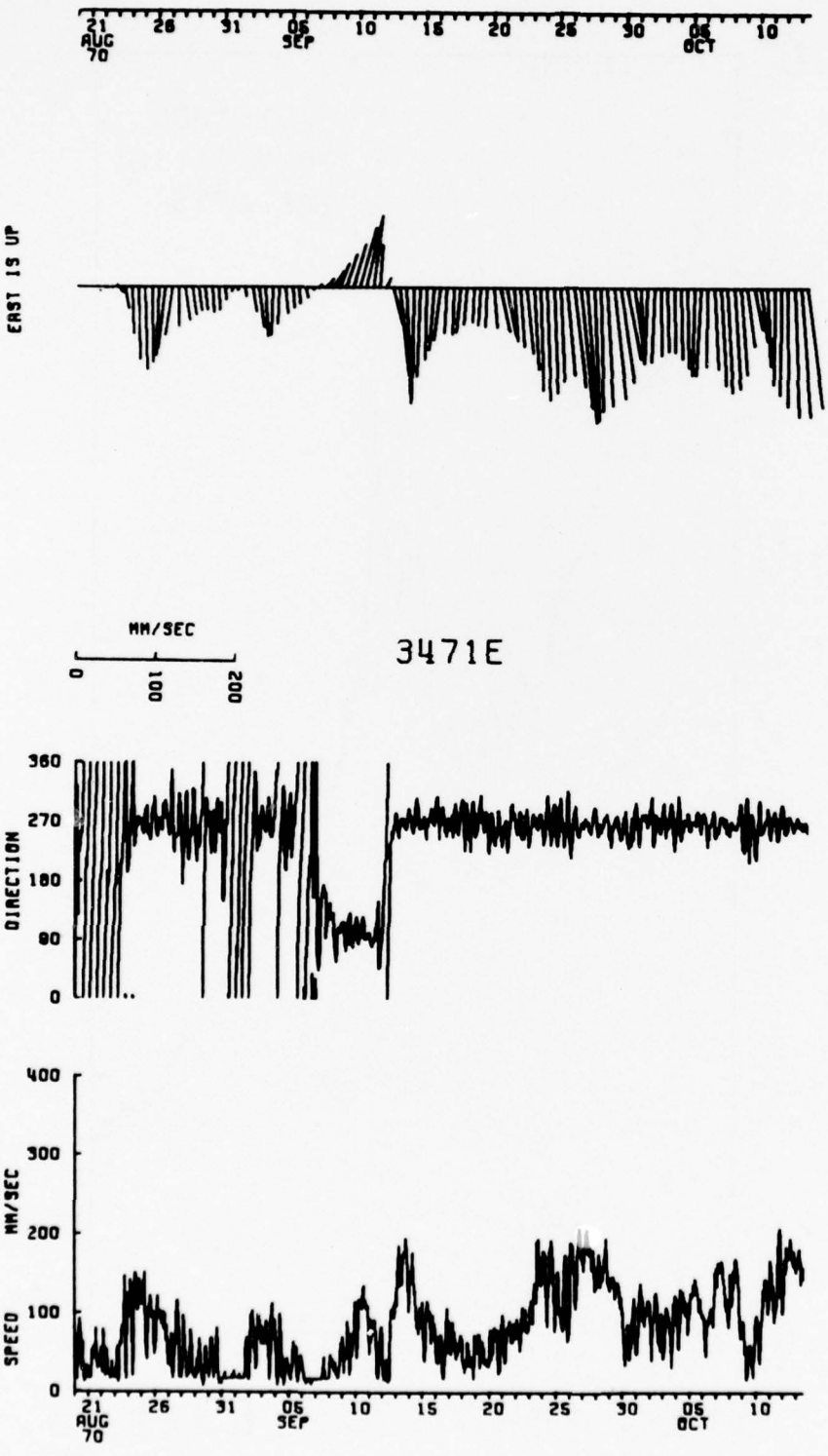
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-65.643	-1.439	88.207
STD. ERR.	.961	.481	.693
VARIANCE	4748.762	1191.605	2470.898
STD. DEV.	68.911	34.520	49.708
KURTOSIS	2.450	3.777	2.198
SKEWNESS	.254	.159	.312
MINIMUM	-234.260	-131.331	6.056
MAXIMUM	135.403	177.876	234.283

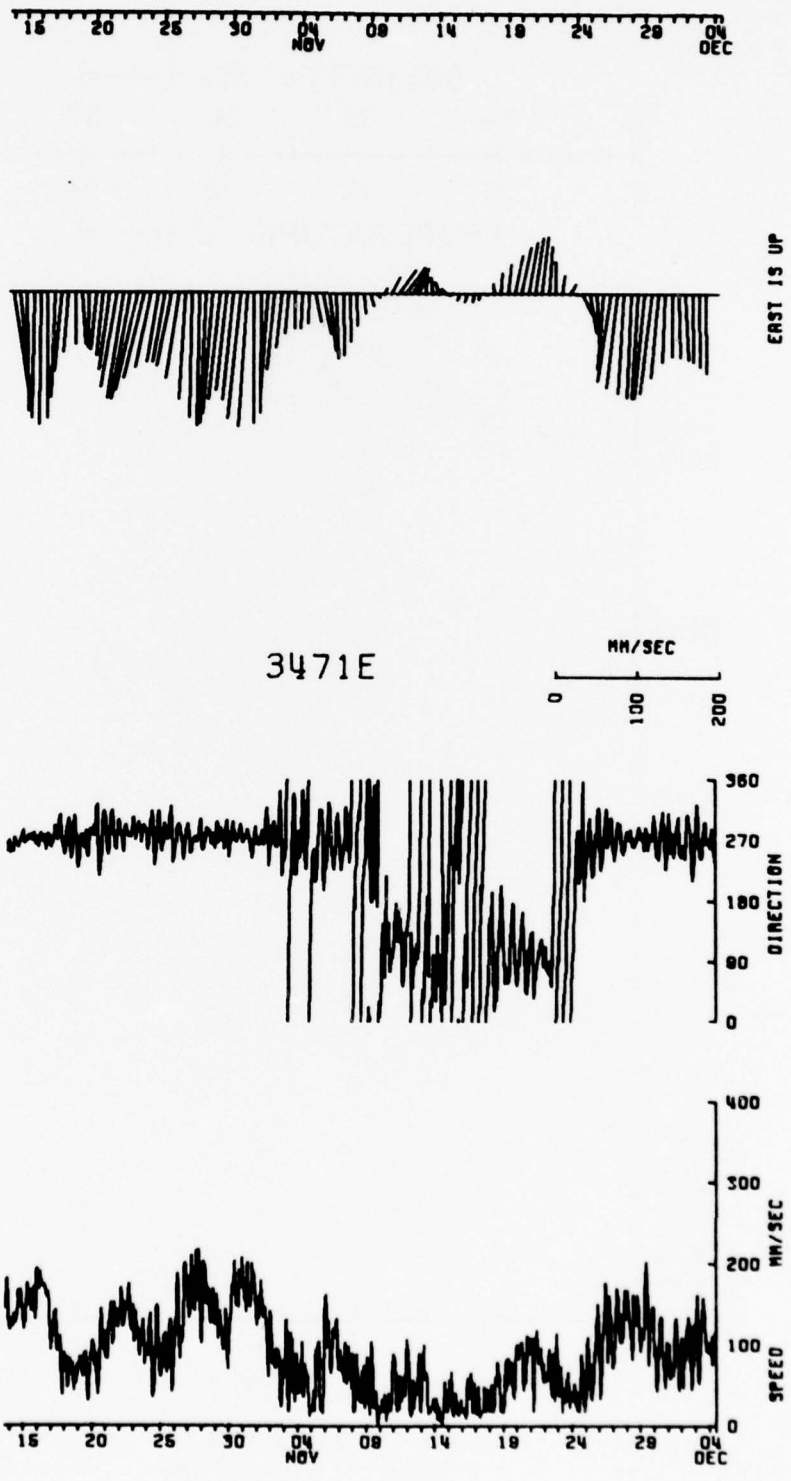
****
EAST & NORTH
****

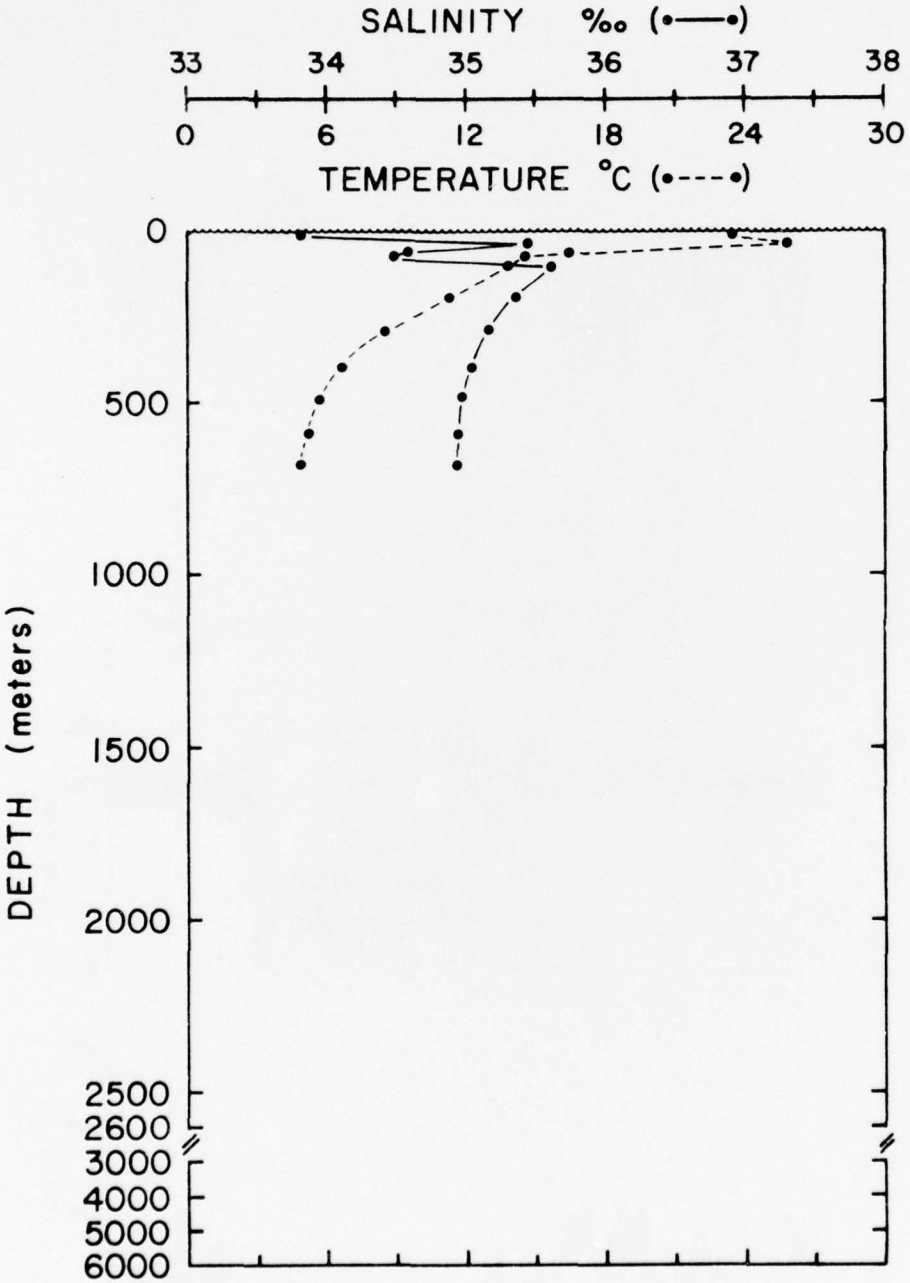
COVARIANCE	=	-163.986
STD. ERR. OF COVARIANCE	=	46.944
STD. DEV. OF COVARIANCE	=	3365.928
CORRELATION COEFFICIENT	=	-.689E-1
VECTOR MEAN	=	65.658
VECTOR VARIANCE	=	2970.183
VECTOR STD. DEV.	=	54.499

****
* SAMPLE SIZE = 5141 POINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 14.00.37
* TO 70- XII-04 16.00.37
*
* DURATION 107.08 DAYS


PERIOD, HRS.
100
10
1
3471E1800
70-VIII-19
106 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.


21 AUG 70
26
31
05 SEP
10
15
20
25
30
05 OCT
10
EAST IS UP
MM/SEC
0
100
200
3471E
360
270
180
90
0
DIRECTION
400
300
200
100
0
SPEED MM/SEC
21 AUG 70
26
31
05 SEP
10
15
20
25
30
05 OCT
10


15
20
25
30
04
NOV
09
14
19
24
29
04
DEC
EAST IS UP
3471E
MM/SEC
0
100
200
360
270
180
90
0
DIRECTION
400
300
200
100
0
MM/SEC
SPEED



KN-013-041
LAT. 39° 55.0' N
LONG. 71° 01.2' W
DATE 70-10-14

MOORING NO. 348

Lat. 39° 50.2'N Long. 70° 57.0'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 6, 1970

Recovered by D. Moller

Ship R. V. Knorr Cruise 13

Mooring type - Bottom

Purpose of mooring

Internal wave measurements across the continental slope with moorings 349 and 350

Data No.	Instr. Type	Depth (m)
3481*	Model 850	975
3482*	Model 850	982
Water depth		985

Comments

LIGHT
RADIO
GLASS BALL FLOAT
1 m CHAIN

CURRENT METER - *3481*

5 m 9/16 NYLON

CURRENT METER - *3482*

ACOUSTIC RELEASE,
TRANSPONDING

1m 1/2" CHAIN
800 LB. CYLINDRICAL ANCHOR

Data number 3481

Instrument No.: M-142 Type: Model 850

Depth: 975 m Water depth: 985 m

Start time: 70-VIII-19 18.15.37

Stop time: 70-X-06 12.15.37

Duration: 47d 18h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 34815900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-29.908	-11.829	75.068
STD. ERR.	.904	.680	.526
VARIANCE	3749.055	2120.250	1268.449
STD. DEV.	61.230	46.046	35.615
KURTOSIS	2.793	3.288	2.714
SKEWNESS	.466	-.141	.420
MINIMUM	-184.777	-176.461	15.000
MAXIMUM	163.791	155.218	201.000

EAST & NORTH

COVARIANCE	40.409	
STD. ERR. OF COVARIANCE	46.465	
STD. DEV. OF COVARIANCE	3146.266	
CORRELATION COEFFICIENT	.143E-1	
VECTOR MEAN	32.162	
VECTOR VARIANCE	2934.653	
VECTOR STD. DEV.	54.172	

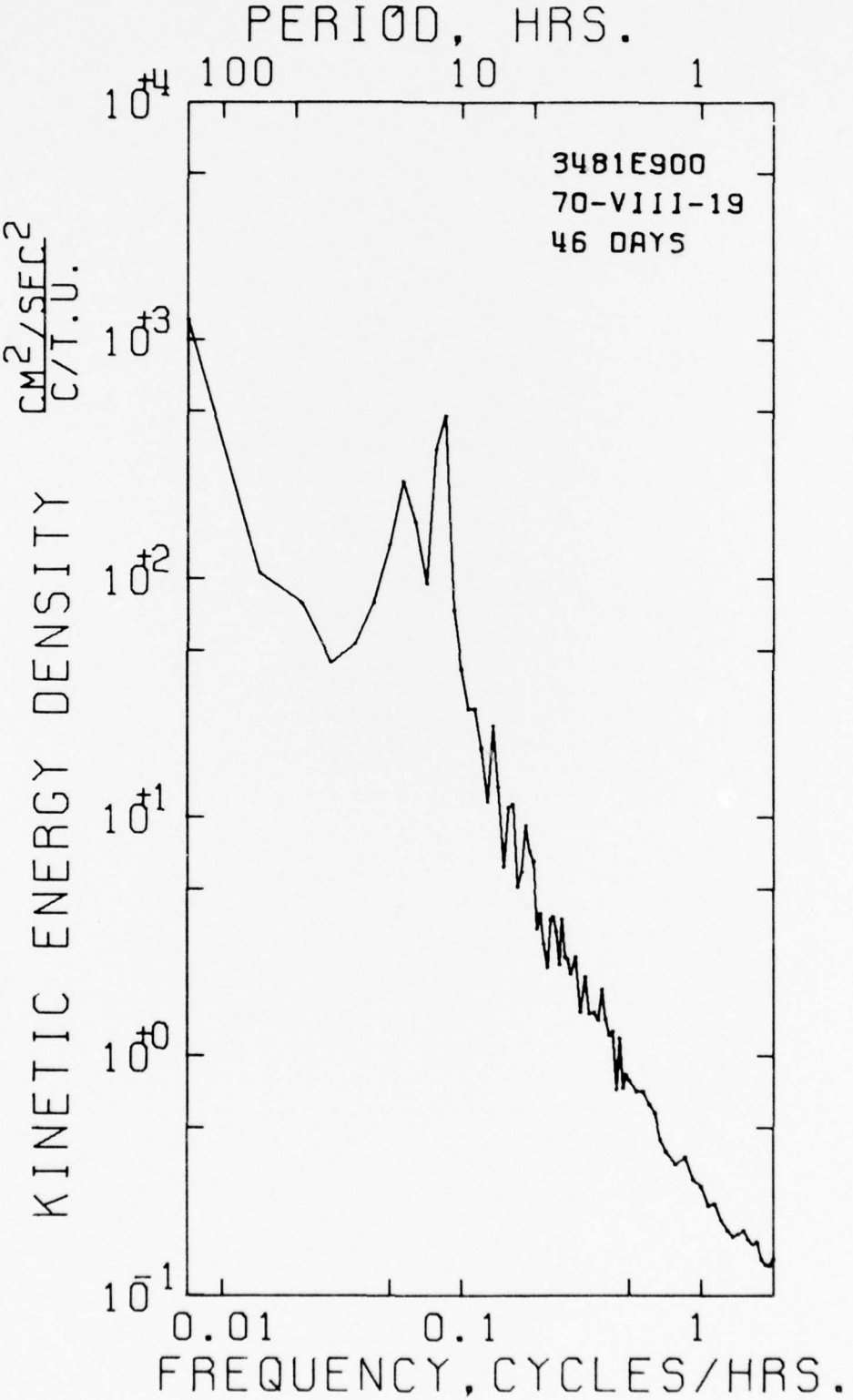
SAMPLE SIZE = 4585 POINTS

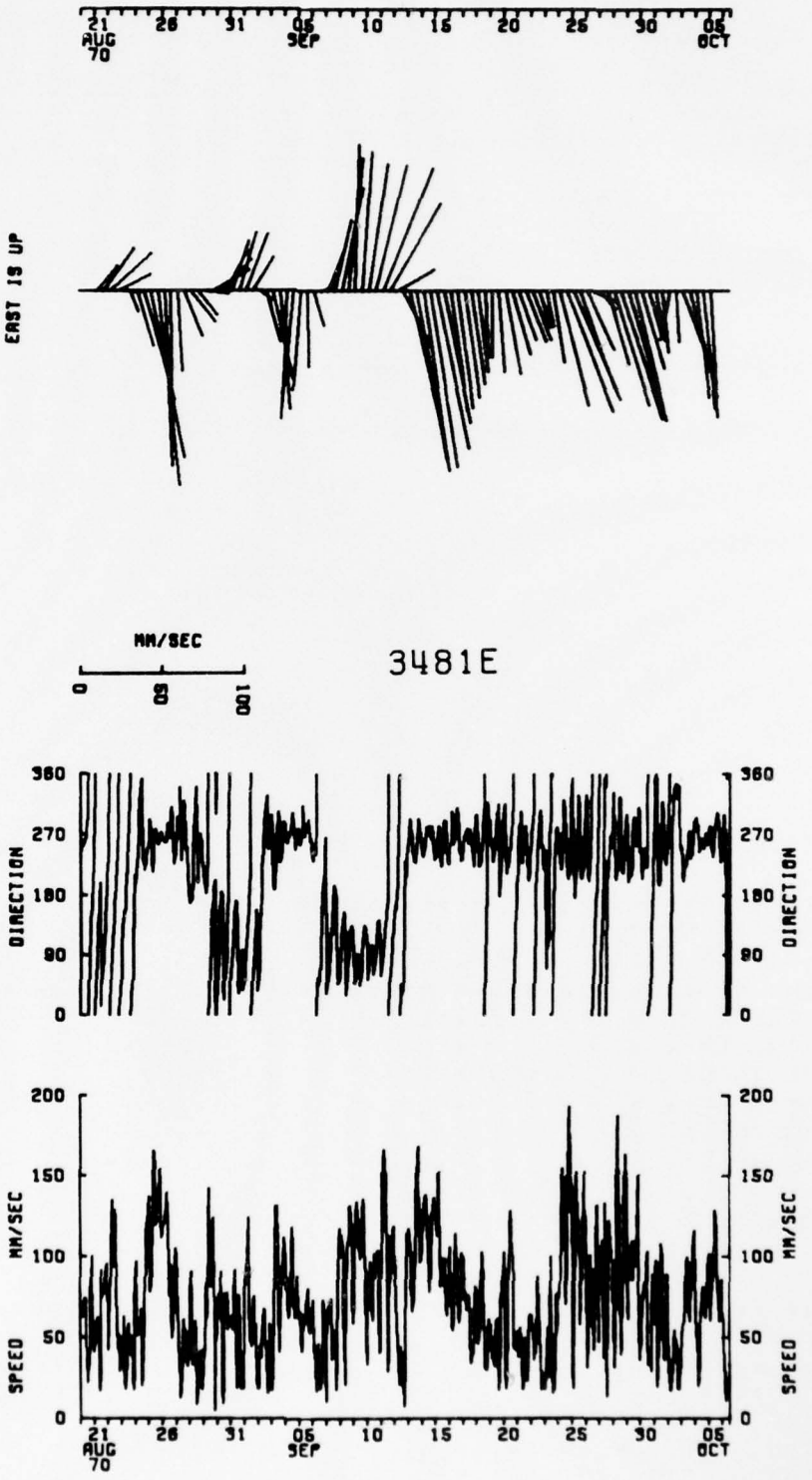
SPANNING RANGE

FROM 70-VIII-19 18.15.37

TO 70- X -06 12.15.37

DURATION 47.75 DAYS


PERIOD, HRS.
100
10
1
3481E900
70-VIII-19
46 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



Data number 3482

Instrument No.: M-191 Type: Model 850

Depth: 982 m Water depth: 985 m

Start time: 70-VIII-19 18.15.37

Stop time: 70-X-06 12.15.37

Duration: 47d 18h

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 3482G900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-27.118	-15.823	67.634
STD. ERR.	.808	.613	.496
VARIANCE	2992.932	1722.329	1126.654
STD. DEV.	54.708	41.501	33.566
KURTOSIS	2.724	3.386	2.646
SKEWNESS	.331	.515E-1	.397
MINIMUM	-174.143	-166.657	13.576
MAXIMUM	147.737	145.921	199.031

EAST & NORTH

COVARIANCE	89.692	
STD. ERR. OF COVARIANCE	39.079	
STD. DEV. OF COVARIANCE	2646.139	
CORRELATION COEFFICIENT	.395E-1	
VECTOR MEAN	31.397	
VECTOR VARIANCE	2357.630	
VECTOR STD. DEV.	48.555	

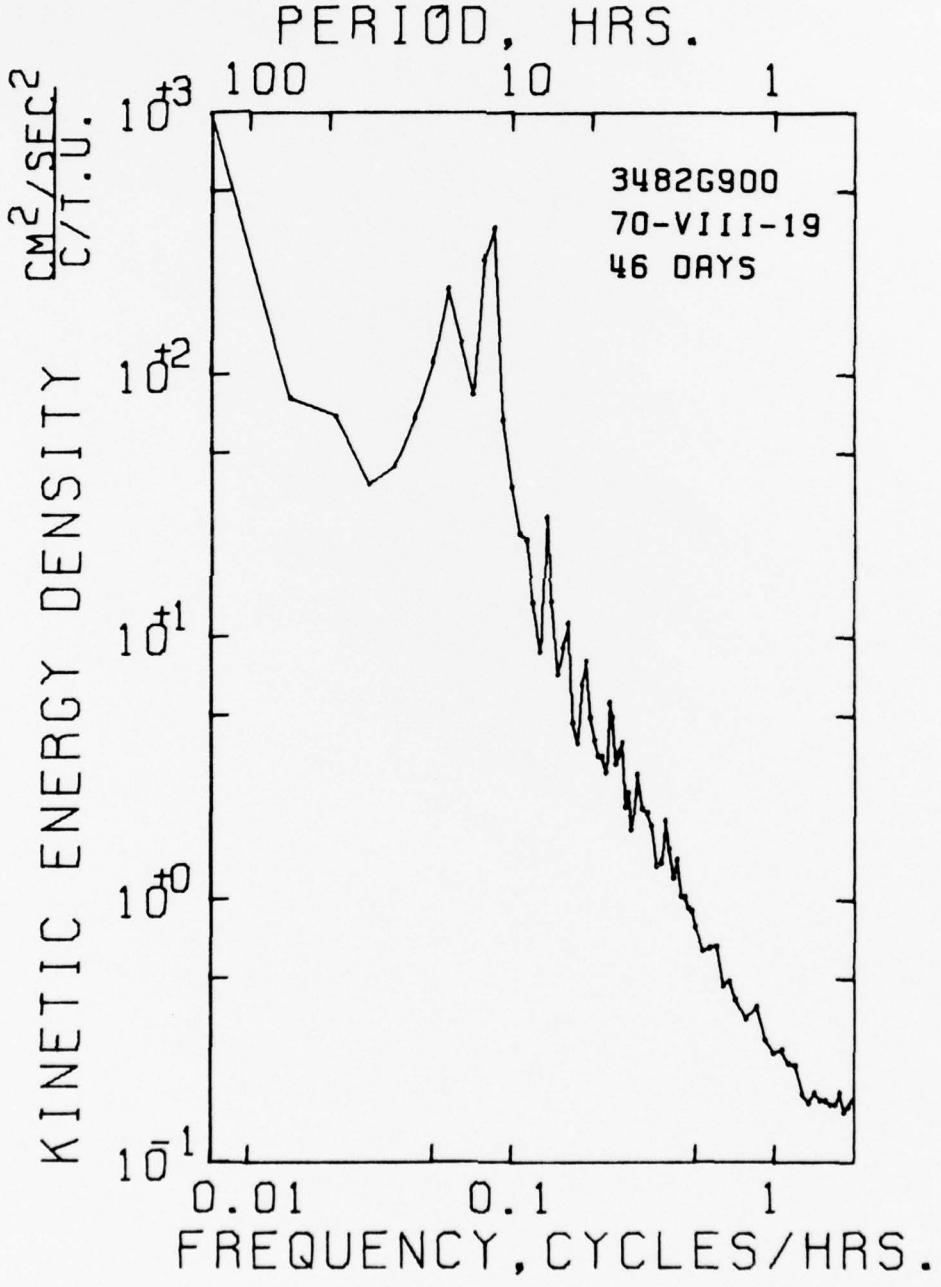
SAMPLE SIZE = 4585 POINTS

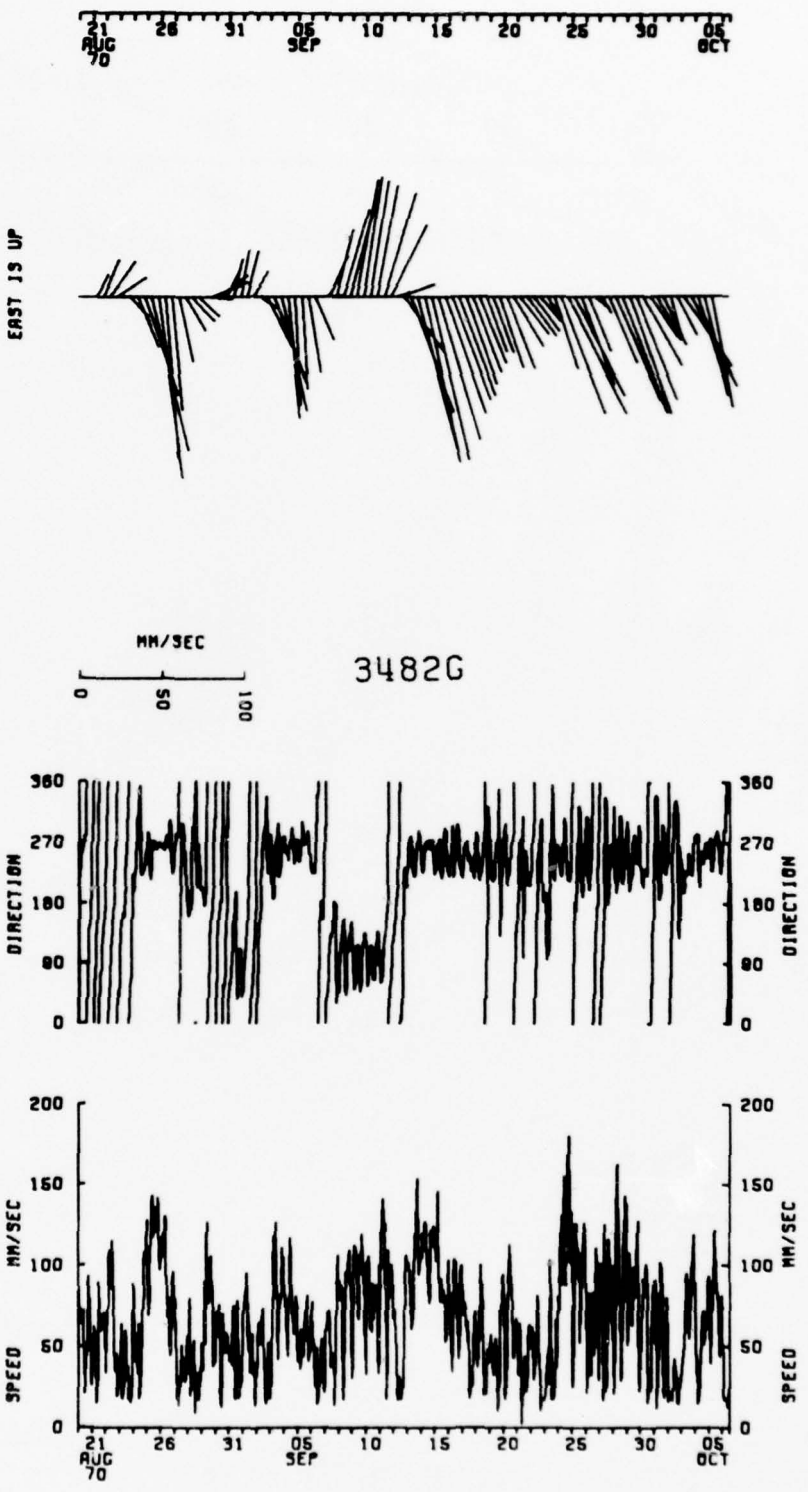
SPANNING RANGE

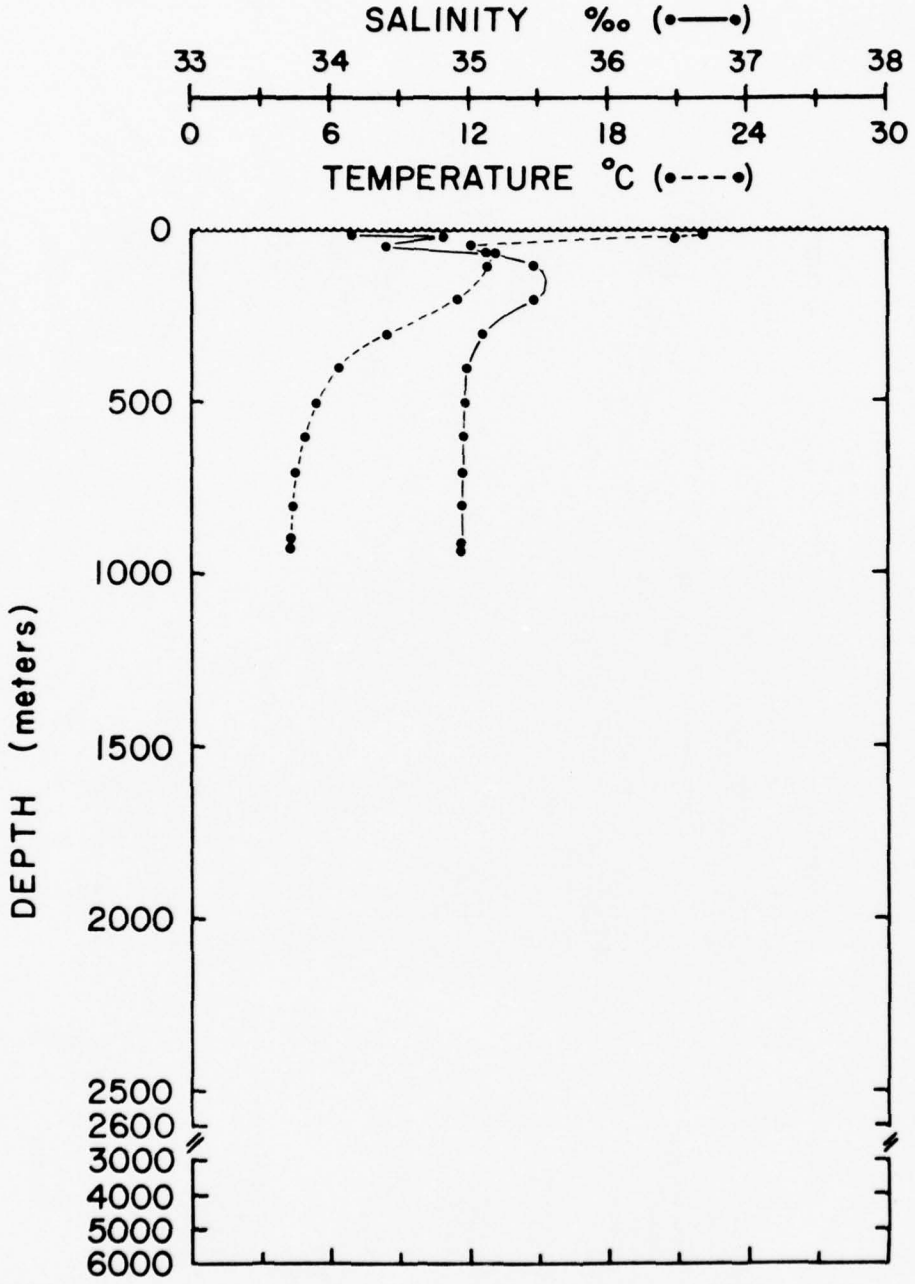
FROM 70-VIII-19 18.15.37

TO 70- X -06 12.15.37

DURATION 47.75 DAYS


PERIOD, HRS.
100
10
1
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10^3
10^2
10^1
10^0
10^-1
3482G900
70-VIII-19
46 DAYS
0.01
0.1
1
FREQUENCY, CYCLES/HRS.





KN - 008 - 020
LAT. 39° 50.3' N
LONG. 70° 00.7' W
DATE 70-08-17

MOORING NO. 349

Lat. 39° 50.6'N Long. 70° 56.2'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 6, 1970

Recovered by D. Moller

Ship R. V. Knorr Cruise 13

Mooring type - Bottom

Purpose of mooring

Internal wave measurements across the continental slope with moorings 348 and 350

Data No.	Instr. Type	Depth (m)
3491*	Model 850	846
3492*	Model 850	933
3493	Model 850	941
Water depth		943

LIGHT
RADIO
GLASS BALL FLOAT
1 m CHAIN

CURRENT METER - *3491*

85 m 9/16" NYLON

CURRENT METER – *3492*

5 m 9/16" NYLON

ACOUSTIC RELEASE,
TRANSPONDING
(ELECTRONICS ONLY)

CURRENT METER - *3493*

ACOUSTIC RELEASE,
TRANSPONDING
(RELEASE MECHANISM ONLY)

800 LB. CYLINDRICAL ANCHOR

Comments

3493 had a sticking vane.

Data number 3491

Instrument No.: M-175 Type: Model 850

Depth: 846 m Water depth: 943 m

Start time: 70-VIII-19 20.30.37

Stop time: 70-X-06 13.15.37

Duration: 47d 16h 45m

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

The speed value is at rotor threshold (1.8 mm/sec) part of the time.

DATA/ 3491F900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-21.609	1.851	43.249
STD. ERR.	.670	.341	.509
VARIANCE	2055.036	533.379	1188.299
STD. DEV.	45.333	23.095	34.472
KURTOSIS	3.981	6.420	4.652
SKEWNESS	-.326	.378	1.437
MINIMUM	-195.056	-129.984	16.000
MAXIMUM	123.194	130.119	200.000

EAST & NORTH

COVARIANCE	-266.767
STD. ERR. OF COVARIANCE	25.841
STD. DEV. OF COVARIANCE	1748.819
CORRELATION COEFFICIENT	-.255
VECTOR MEAN	21.688
VECTOR VARIANCE	1294.207
VECTOR STD. DEV.	35.975

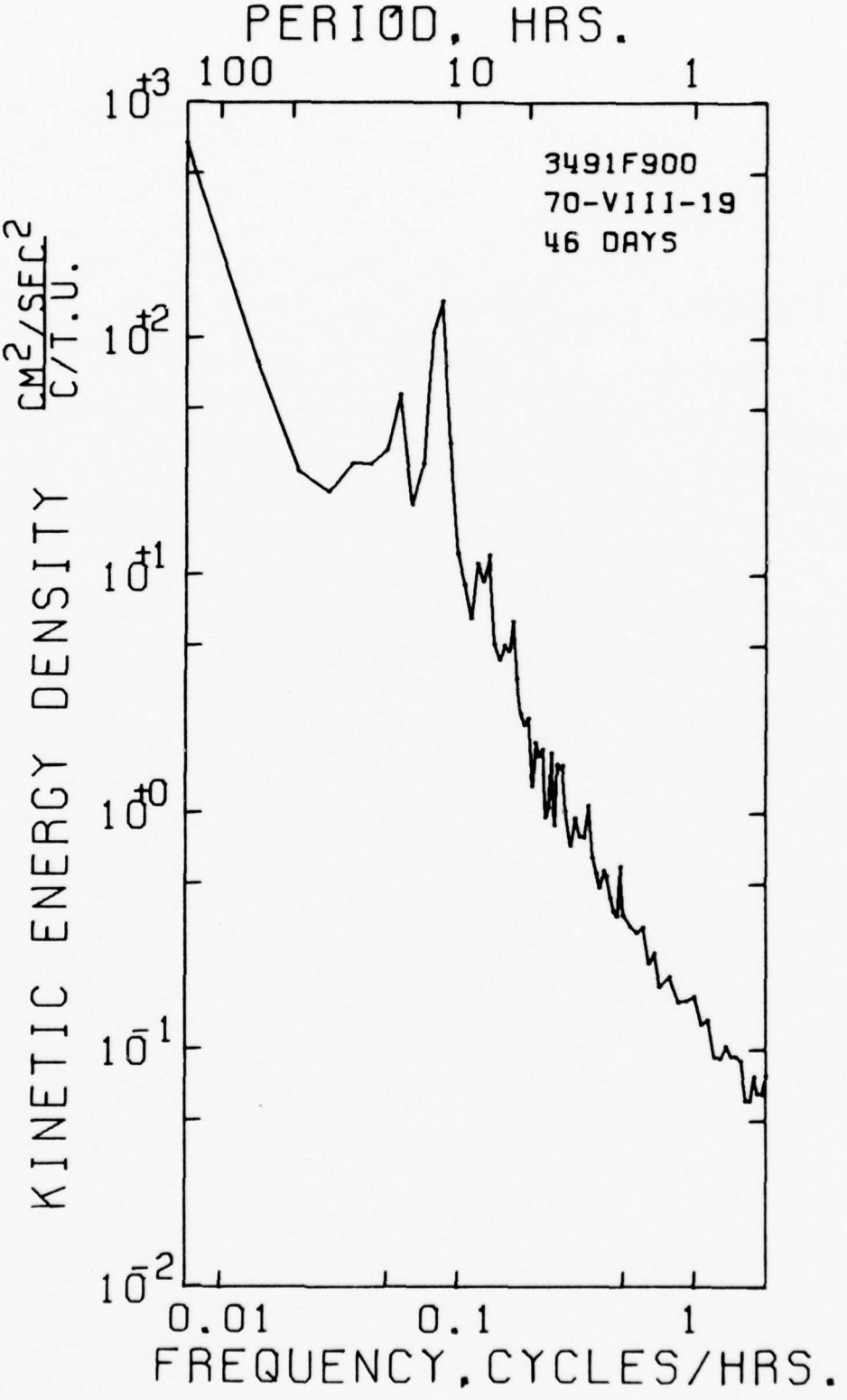
SAMPLE SIZE = 4580 POINTS

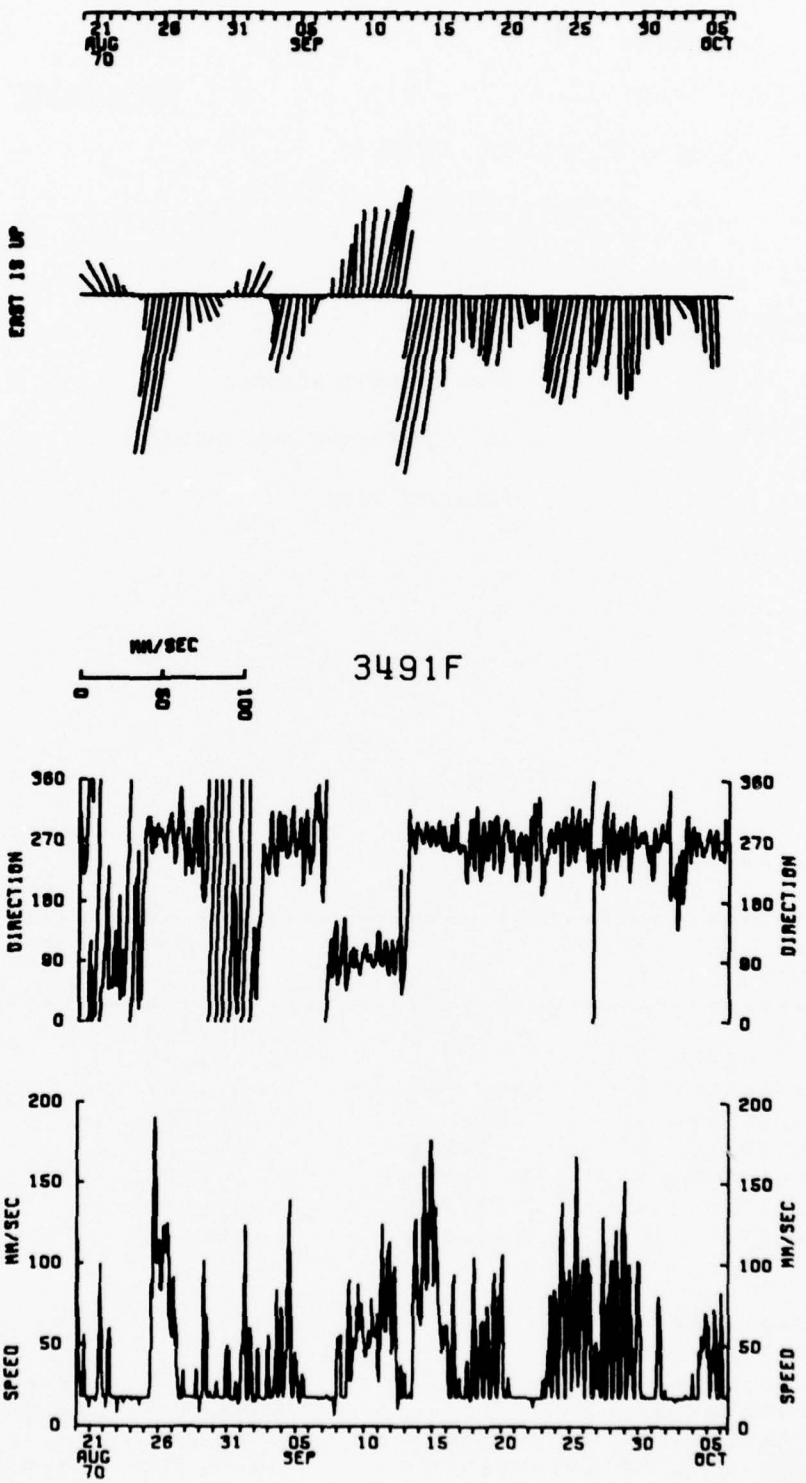
SPANNING RANGE

FROM 70-VIII-19 20.30.37

TO 70-X-06 13.15.37

DURATION 47.70 DAYS


PERIOD, HRS.
100
10
1
3491F900
70-VIII-19
46 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+3
10+2
10+1
10+0
10-1
10-2
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



Data number 3492

Instrument No.: M-145 Type: Model 850

Depth: 933 m Water depth: 943 m

Start time: 70-VIII-19 19.30.55

Stop time: 70-X-06 13.00.55

Duration: 47d 17h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

COMMENTS:

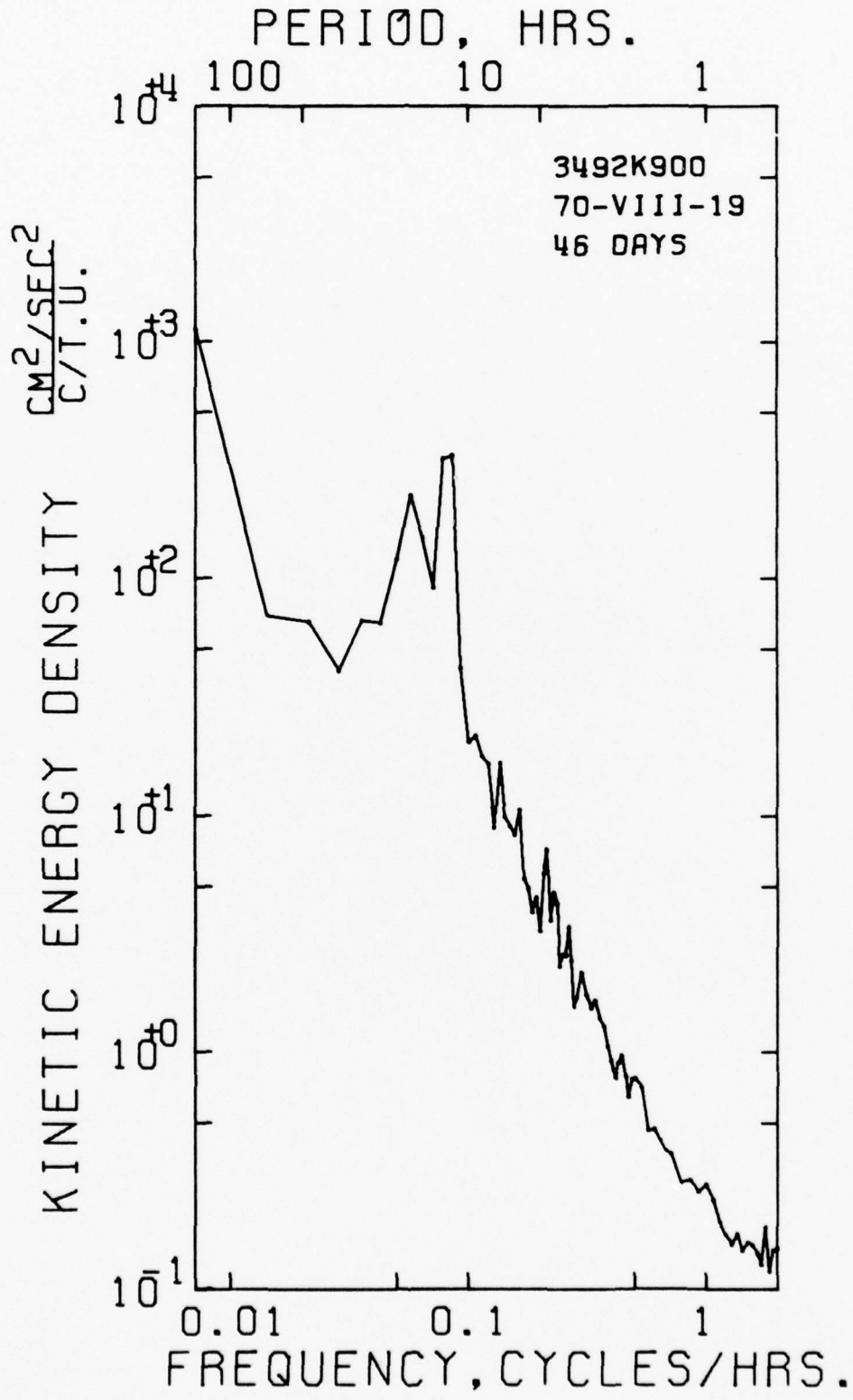
DATA/ 3492K900

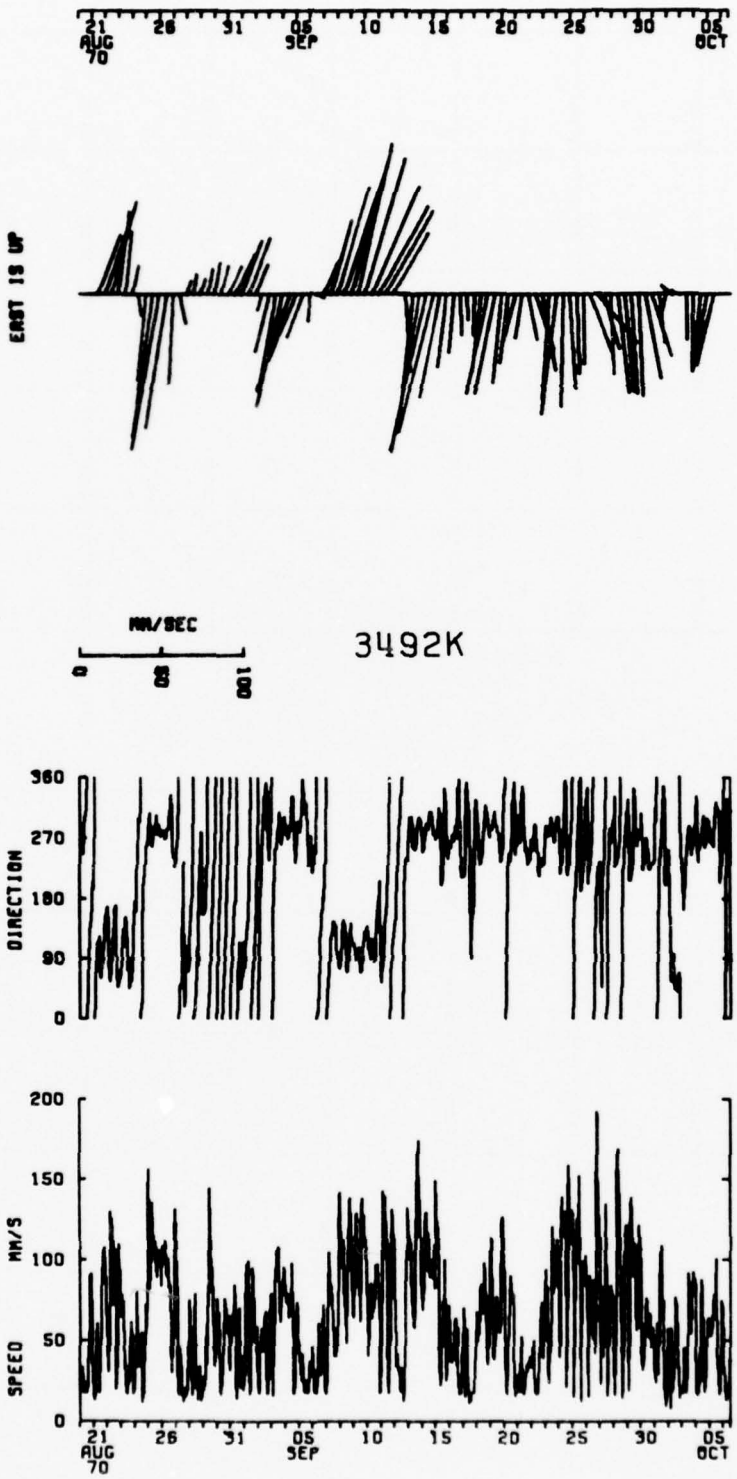
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/S	MM/S	MM/S
MEAN	-13.655	-1.700	44.237
STD. ERR.	.866	.603	.538
VARIANCE	3434.955	1665.466	1324.891
STD. DEV.	58.608	40.810	36.399
KURTOSIS	2.826	4.464	2.758
SKEWNESS	.323	-.178	.578
MINIMUM	-173.763	-221.620	5.426
MAXIMUM	150.613	179.608	232.993

EAST & NORTH

COVARIANCE	=	-258.512
STD. ERR. OF COVARIANCE	=	38.308
STD. DEV. OF COVARIANCE	=	2593.351
CORRELATION COEFFICIENT	=	-.108
VECTOR MEAN	=	18.733
VECTOR VARIANCE	=	2550.210
VECTOR STD. DEV.	=	50.500

* SAMPLE SIZE = 4533 POINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 19.30.55
* TO 70- X -06 13.00.55
*
* DURATION 47.73 DAYS


PERIOD, HRS.
100
10
1
3492K900
70-VIII-19
46 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



Consecutive daily vectors plotted by position from moorings
348, 349 and 350 for both instrument levels

MOORING NO. 350

Lat. 39° 49.6'N Long. 70° 56.0'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered December 4, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 17

Mooring type - Bottom

Purpose of mooring

Internal wave measurements across the continental slope with moorings 348 and 349

Data No.	Instr. Type	Depth (m)
3501*	Model 850	888
3502*	Model 850	990
Water depth		993

Comments

Data number 3501

Instrument No.: M-223 Type: Model 850

Depth: 888 m Water depth: 993 m

Start time: 70-VIII-19 20.45.37

Stop time: 70-X-12 13.15.37

Duration: 53d 16h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

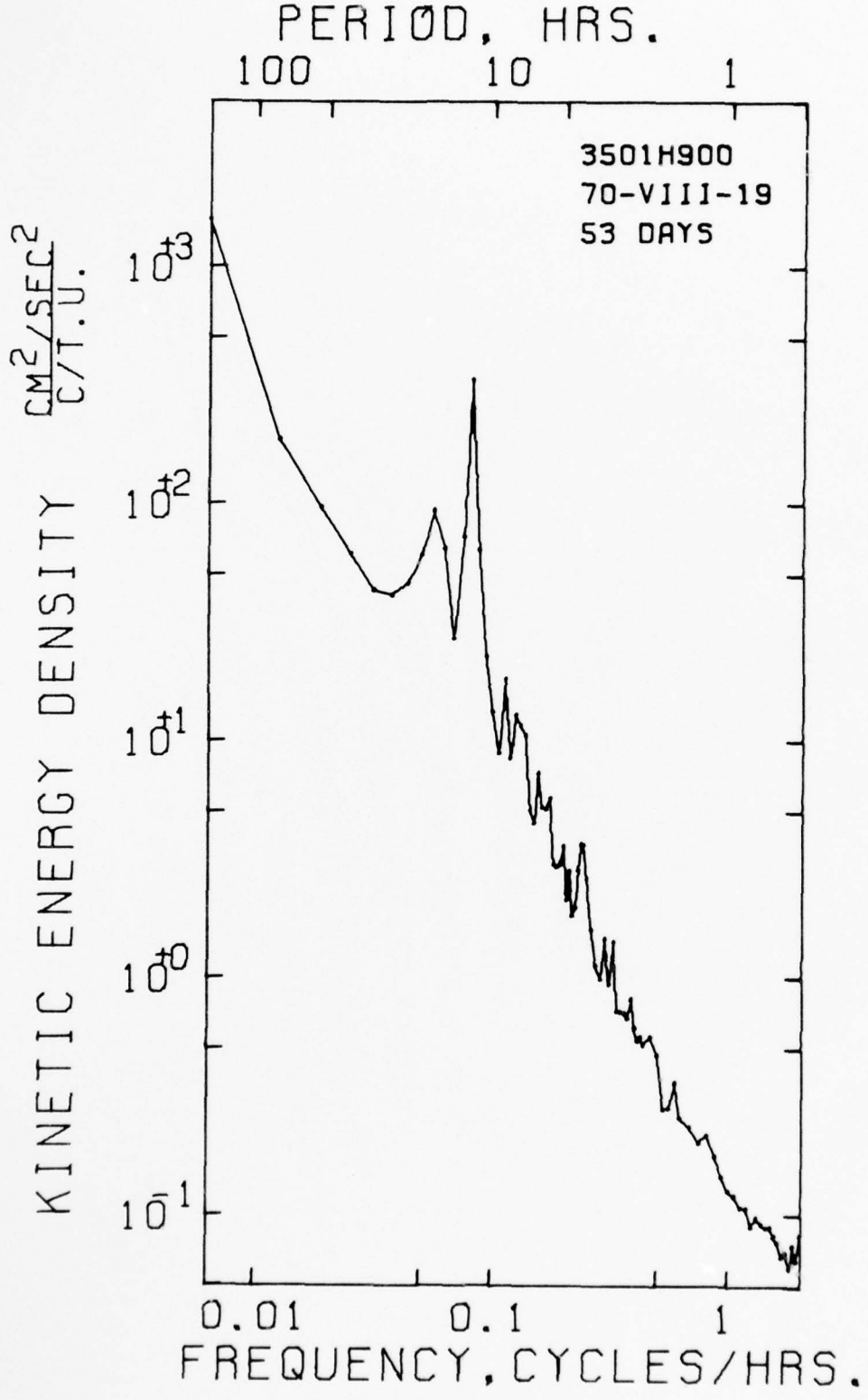
COMMENTS:

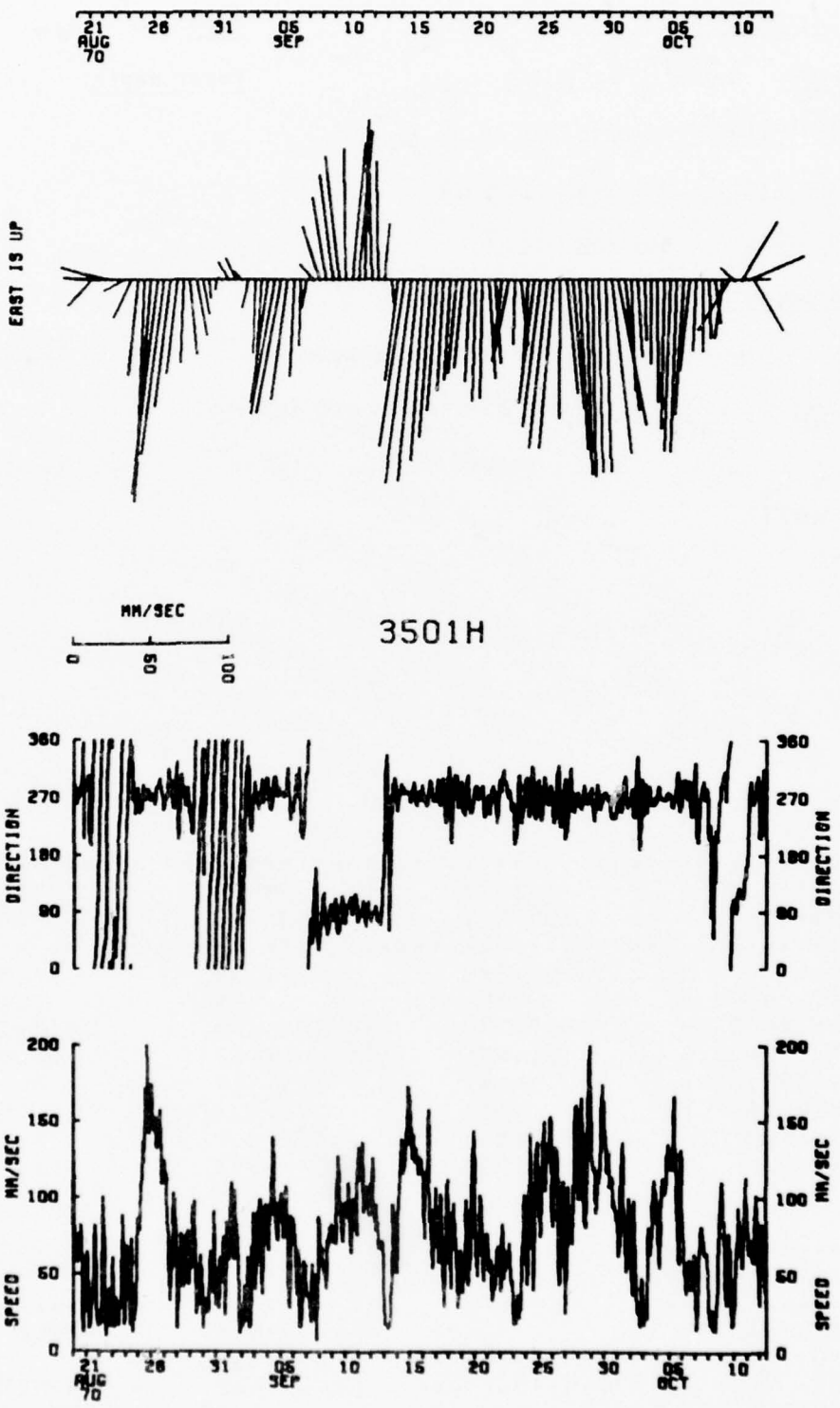
DATA: [illegible]

VARIABLE	*	EAST	NORTH	SPEED
UNITS	*	MM/SEC	MM/SEC	MM/SEC
MEAN	=	-46.779	3.505	77.692
STD. ERR.	=	.917	.441	.532
VARIANCE	=	[illegible]	1004.784	1439.266
STD. DEV.	=	65.497	31.699	38.200
KURTOSIS	=	2.893	3.343	2.746
SKEWNESS	=	.513	.381E-2	.429
MINIMUM	=	-218.941	-110.455	3.000
MAXIMUM	=	146.823	114.744	220.000

EAST & NORTH

COVARIANCE	=	-147.261	* SAMPLE SIZE = 5155 POINTS
STD. ERR. OF COVARIANCE	=	33.328	*
STD. DEV. OF COVARIANCE	=	2392.667	* SPANNING RANGE
CORRELATION COEFFICIENT	=	-.709E-1	* FROM 70-VIII-19 20.45.37
VECTOR MEAN	=	46.911	* TO 70- X -12 13.15.37
VECTOR VARIANCE	=	2647.338	*
VECTOR STD. DEV.	=	51.452	* DURATION 53.63 DAYS


PERIOD, HRS.
100
10
1
3501H900
70-VIII-19
53 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10+3
10+2
10+1
10+0
10-1
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



Data number 3502

Instrument No.: M-234 Type: Model 850

Depth: 990 m Water depth: 993 m

Start time: 70-VIII-19 20.45.37

Stop time: 70-XI-16 23.30.37

Duration: 89d 2h 45m

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

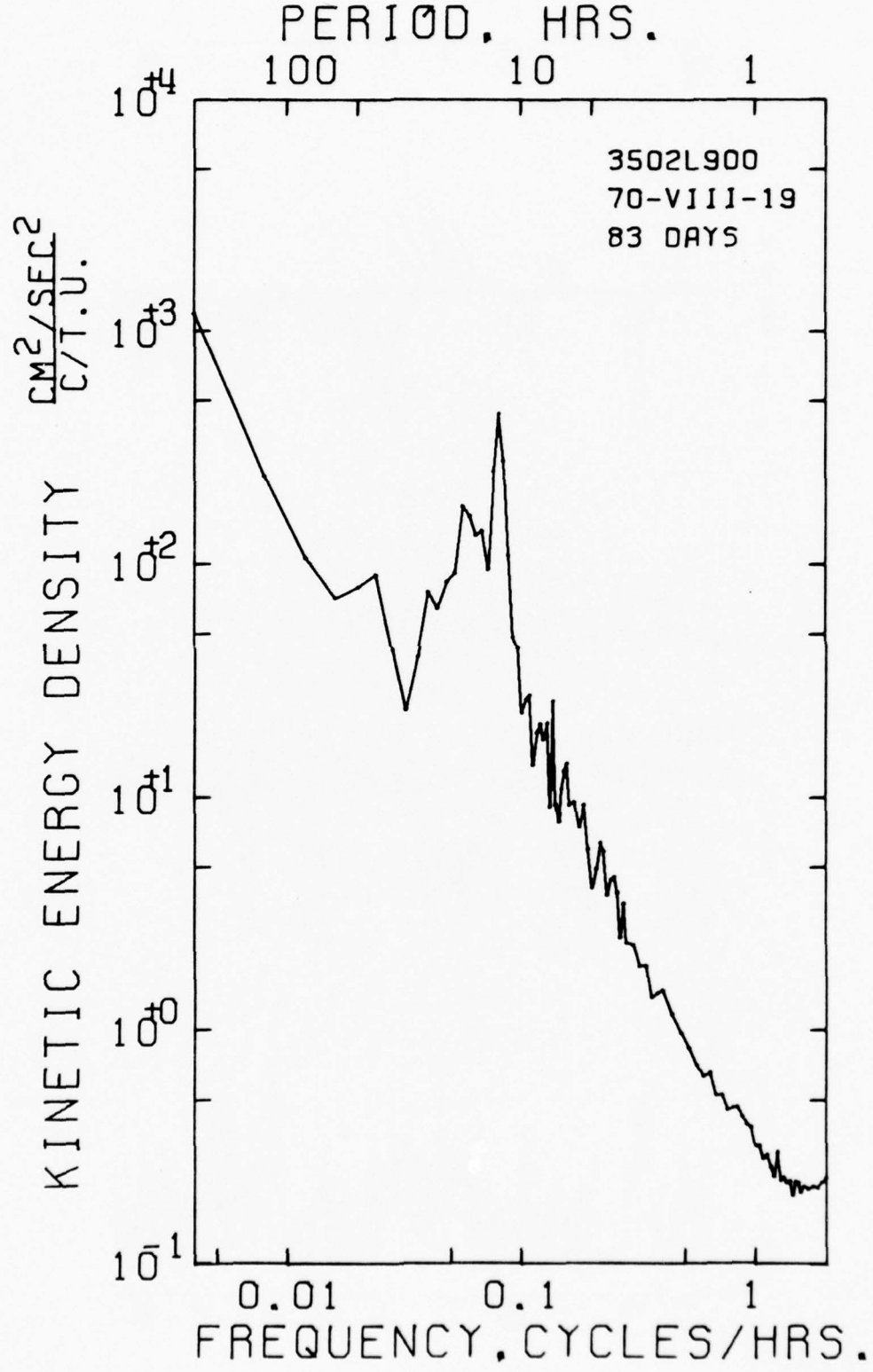
COMMENTS:

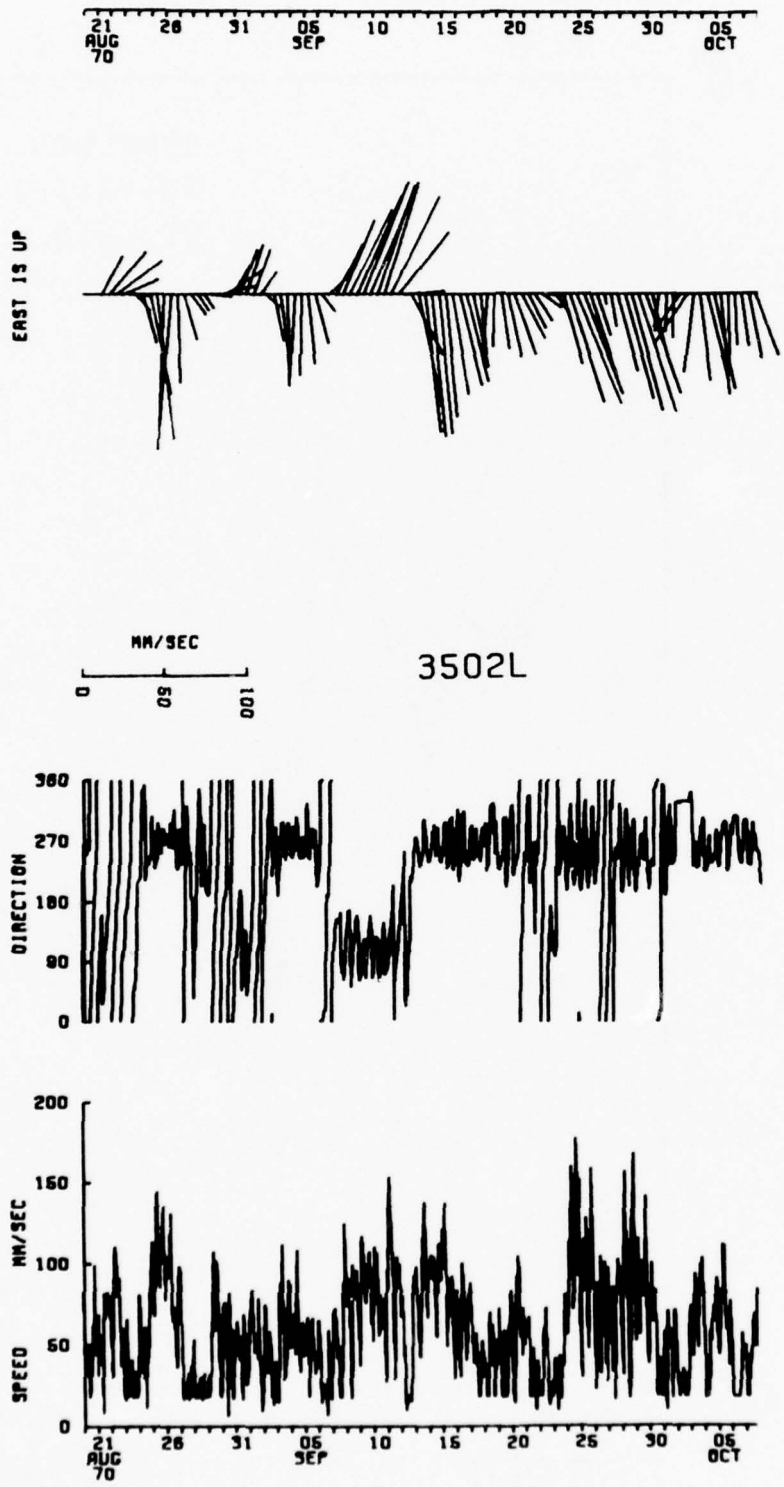
DATA/ 3502L900

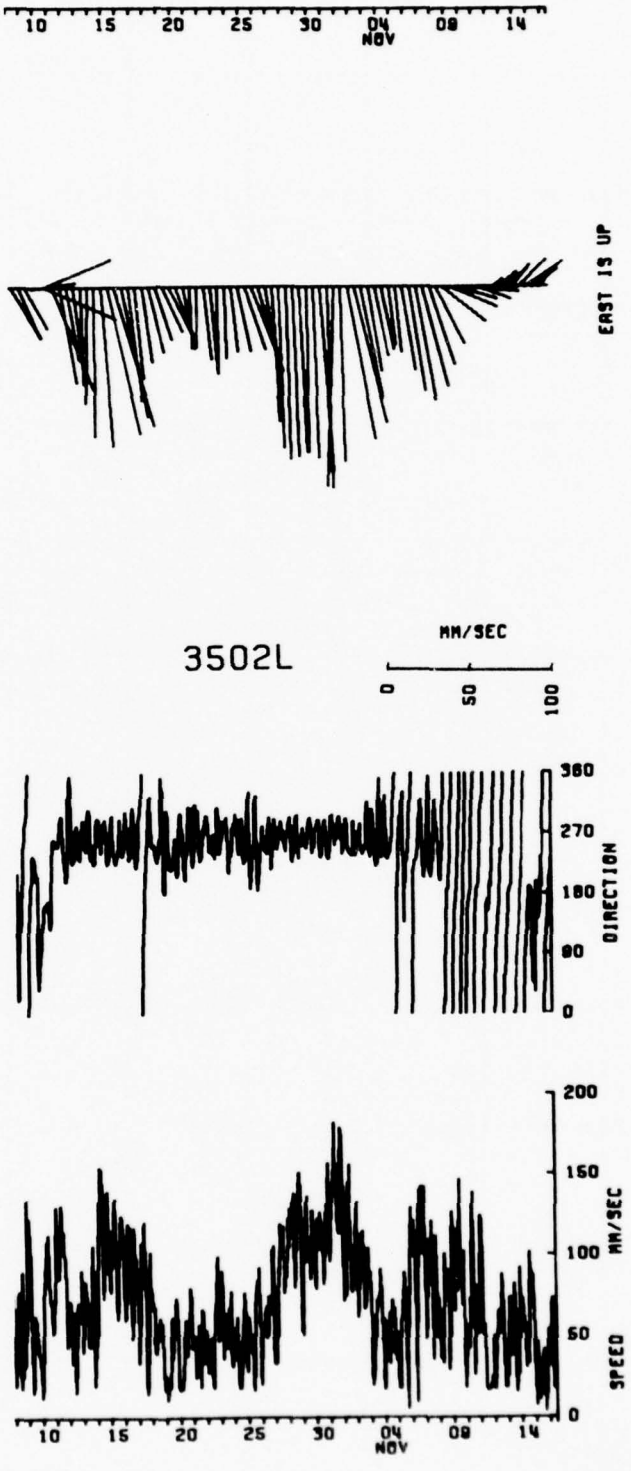
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-33.640	-11.135	66.381
STD. ERR.	.556	.449	.378
VARIANCE	2649.375	1721.135	1219.759
STD. DEV.	51.472	41.487	34.925
KURTOSIS	3.147	3.117	2.913
SKEWNESS	.273	.433E-2	.558
MINIMUM	-207.000	-152.000	15.000
MAXIMUM	166.000	144.956	215.000

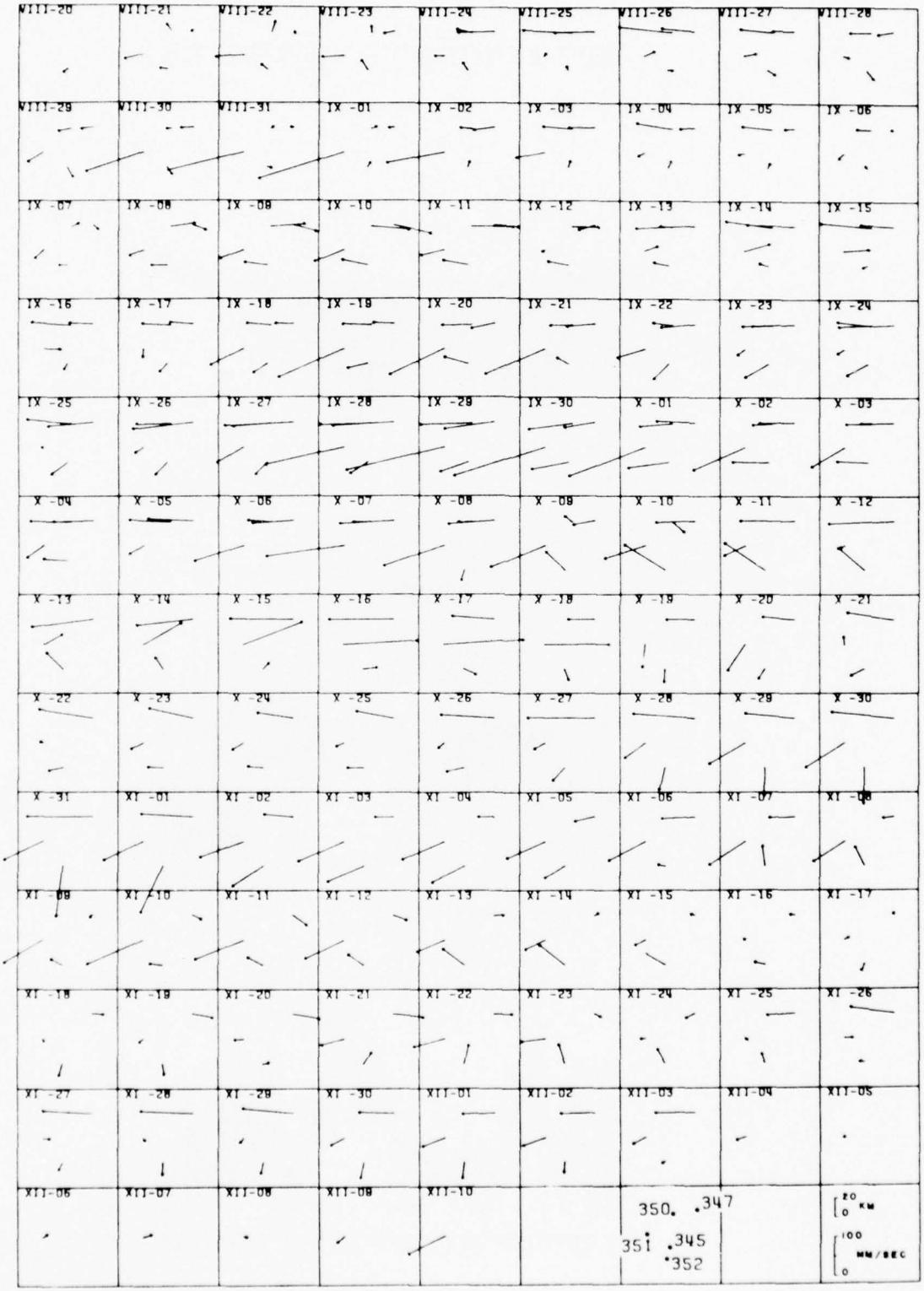
EAST & NORTH

COVARIANCE	-133.841	* SAMPLE SIZE = 8556 POINTS
STD. ERR. OF COVARIANCE	29.935	*
STD. DEV. OF COVARIANCE	2768.948	* SPANNING RANGE
CORRELATION COEFFICIENT	-.627E-1	* FROM 70-VIII-19 20.45.37
VECTOR MEAN	35.435	* TO 70-XI-16 23.30.37
VECTOR VARIANCE	2185.255	*
VECTOR STD. DEV.	46.747	* DURATION 89.11 DAYS


PERIOD, HRS.
100
10
1
3502L900
70-VIII-19
83 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
1
FREQUENCY, CYCLES/HRS.


21 AUG 70
26
31
05 SEP
10
15
20
25
30
05 OCT
EAST IS UP
MM/SEC
0
50
100
3502L
DIRECTION
360
270
180
90
0
SPEED MM/SEC
200
150
100
50
0
21 AUG 70
26
31
05 SEP
10
15
20
25
30
05 OCT


10
15
20
25
30
04
NOV
08
14
EAST IS UP
3502L
MM/SEC
0
50
100
360
270
180
90
0
DIRECTION
200
150
100
50
0
SPEED MM/SEC
10
15
20
25
30
04
NOV
08
14



Consecutive daily vectors plotted by position from moorings 345, 347, 350, 351 and 352 for the top instrument level only

MOORING NO. 351

Lat. 39° 36.6'N Long. 71° 15.0'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered December 11, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 17

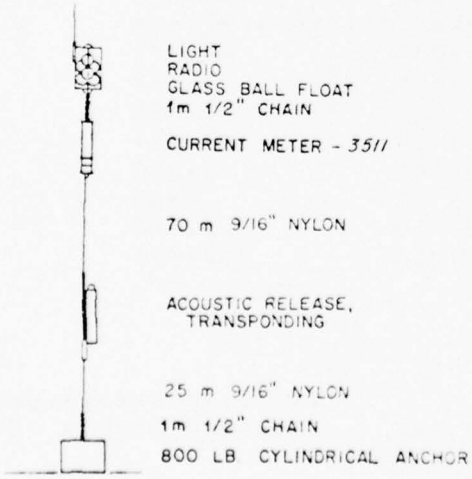
Mooring type - Bottom

Purpose of mooring

To study the topographical wave motion across the Slope

Data No.	Instr. Type	Depth (m)
3511*	Model 850	2052
Water depth		2150

Comments



Data number 3511

Instrument No.: M-215 Type: Model 850

Depth: 2052 m Water depth: 2150 m

Start time: 70-VIII-20 07.00.37

Stop time: 70-XII-11 13.30.37

Duration: 113d 6h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

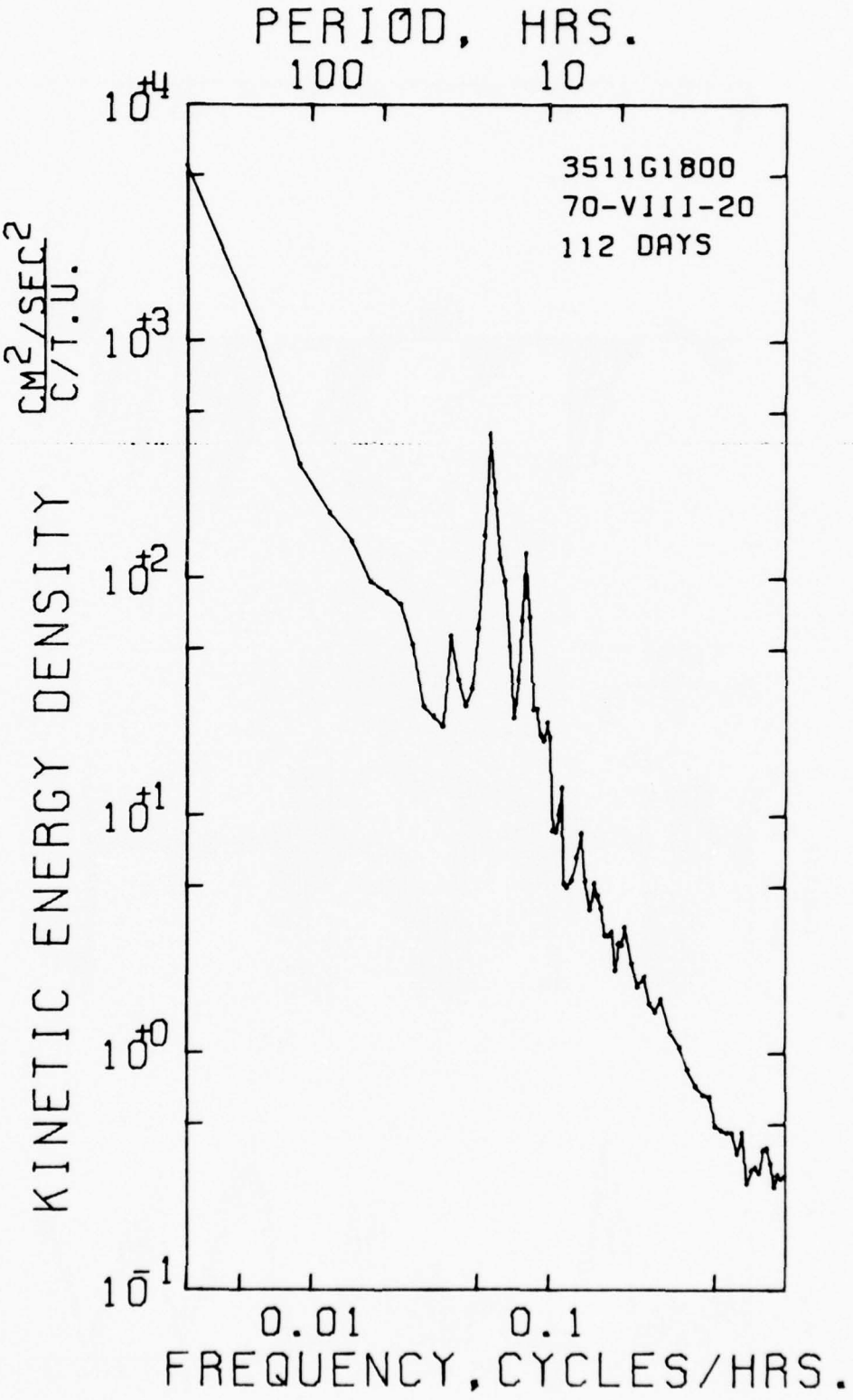
COMMENTS:

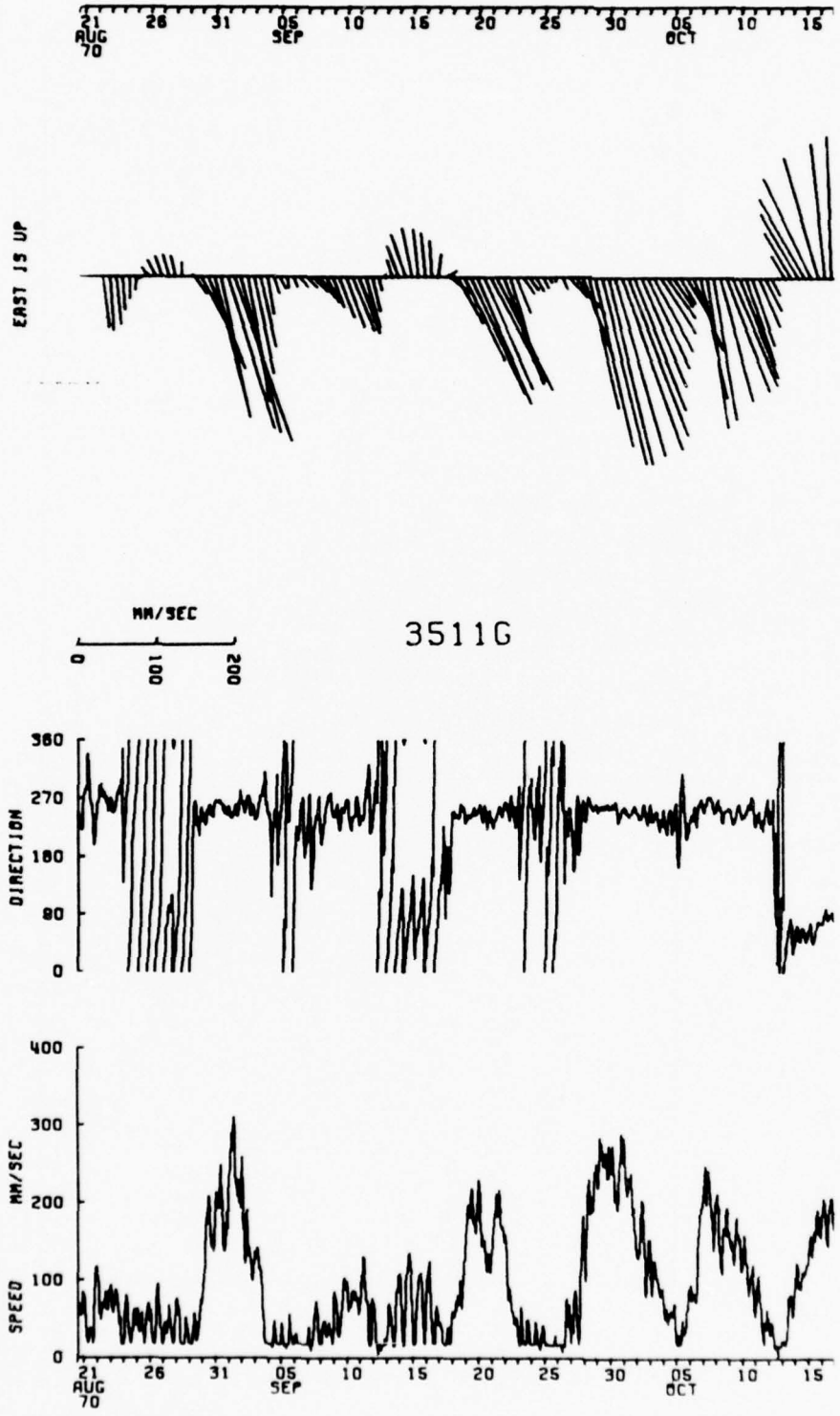
DATA/ 3511G1800

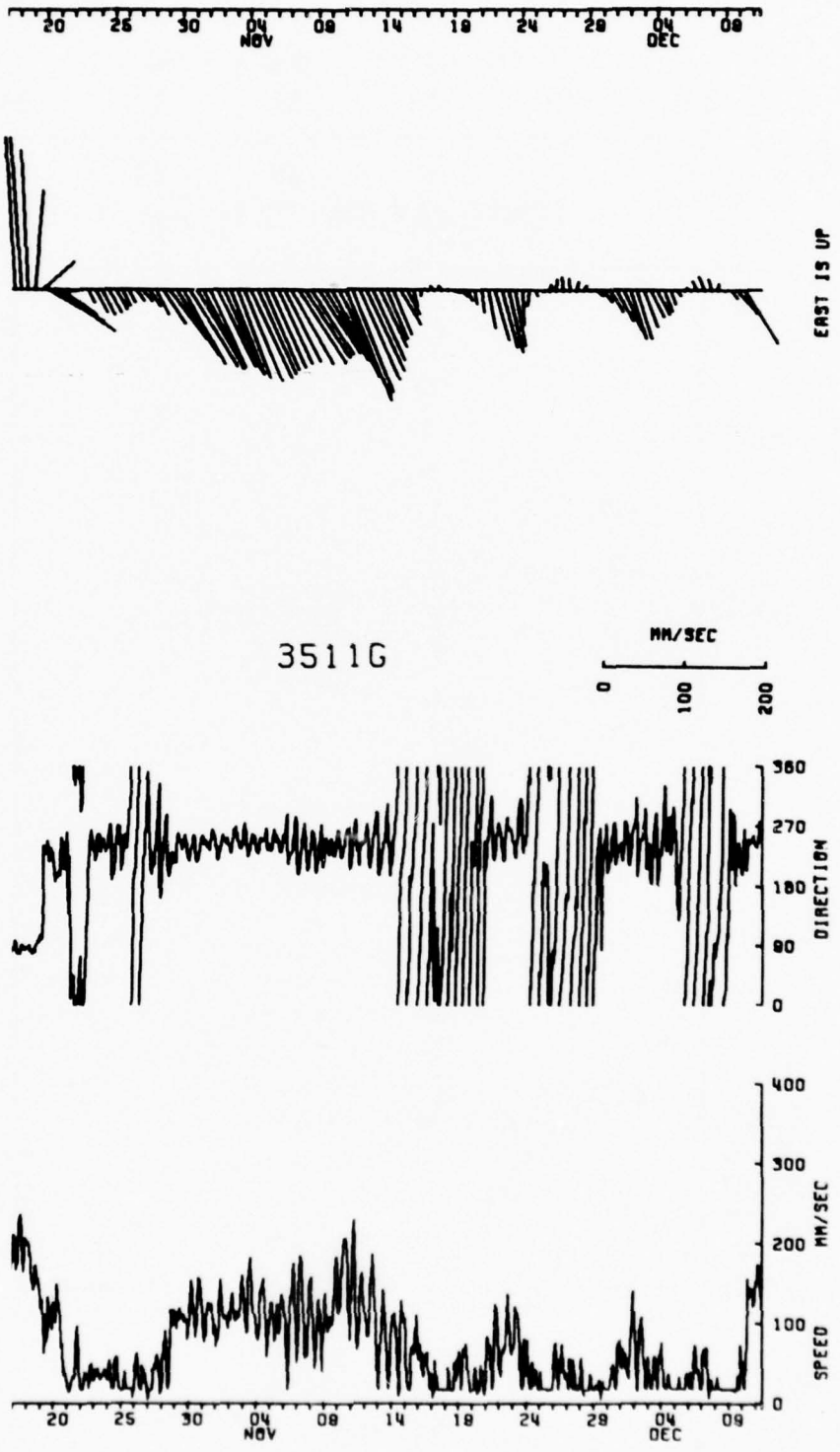
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-46.794	-21.038	83.677
STD. ERR.	1.131	.511	.859
VARIANCE	6955.685	1422.509	4008.632
STD. DEV.	83.401	37.716	63.314
KURTOSIS	3.998	3.581	3.200
SKEWNESS	.113	-.190	.949
MINIMUM	-303.136	-172.613	7.763
MAXIMUM	237.964	120.210	327.576

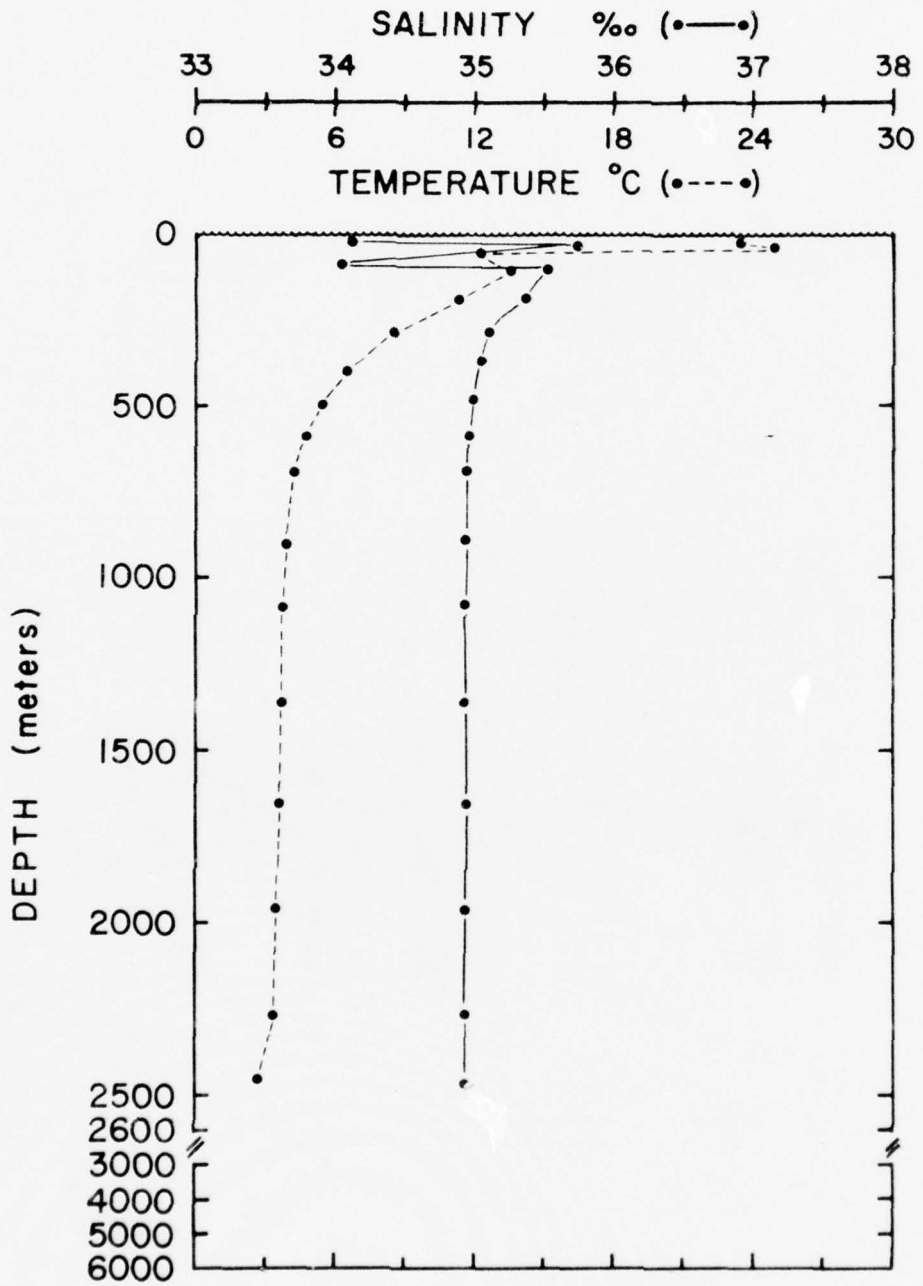
EAST & NORTH

COVARIANCE	1730.548	* SAMPLE SIZE = 5438 POINTS
STD. ERR. OF COVARIANCE	64.587	*
STD. DEV. OF COVARIANCE	4762.800	* SPANNING RANGE
CORRELATION COEFFICIENT	.550	* FROM 70-VIII-20 07.00.37
VECTOR MEAN	51.306	* TO 70-XII-11 13.30.37
VECTOR VARIANCE	4189.097	*
VECTOR STD. DEV.	64.723	* DURATION 113.27 DAYS


PERIOD, HRS.
100
10
3511G1800
70-VIII-20
112 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.


21 26 31 05 10 15 20 25 30 05 10 15
AUG 70
SEP
OCT
EAST IS UP
MM/SEC
0
100
200
3511G
360
270
180
90
0
DIRECTION
400
300
200
100
0
SPEED MM/SEC
21 26 31 05 10 15 20 25 30 05 10 15
AUG 70
SEP
OCT


20
25
30
04
NOV
08
14
18
24
28
04
DEC
08
EAST IS UP
3511G
MM/SEC
0
100
200
360
270
180
90
0
DIRECTION
400
300
200
100
0
SPEED MM/SEC
20
25
30
04
NOV
08
14
18
24
28
04
DEC
09



KN - 013 - 039

LAT. 39° 30.0' N

LONG. 71° 00.0' W

DATE 70-10-14

MOORING NO. 352

Lat. 39° 23.3'N Long. 71° 01.4'W

Set October 6, 1970

Set by D. Moller

Ship R. V. Knorr Cruise 13

Recovered December 11, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 17

Mooring type - Bottom

Purpose of mooring

Low frequency wave correlation across the Gulf Stream with mooring 353

Data No.	Instr. Type	Depth (m)
3521*	Model 850	2394
Water depth		2509

Comments

Data number 3521

Instrument No.: M-213 Type: Model 850

Depth: 2394 m Water depth: 2509 m

Start time: 70-X-06 22.45.57

Stop time: 70-XII-04 22.45.57

Duration: 59d

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

DATA/ 3521C900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-23.122	-5.339	67.647
STD. ERR.	.646	.763	.539
VARIANCE	2362.005	3295.639	1644.624
STD. DEV.	48.600	57.408	40.554
KURTOSIS	3.561	3.496	3.066
SKEWNESS	-.683E-1	.154	.816
MINIMUM	-190.770	-179.041	16.000
MAXIMUM	150.355	228.724	229.000

EAST & NORTH

COVARIANCE	-348.033	
STD. ERR. OF COVARIANCE	44.702	
STD. DEV. OF COVARIANCE	3364.562	
CORRELATION COEFFICIENT	-.125	
VECTOR MEAN	23.730	
VECTOR VARIANCE	2328.822	
VECTOR STD. DEV.	53.187	

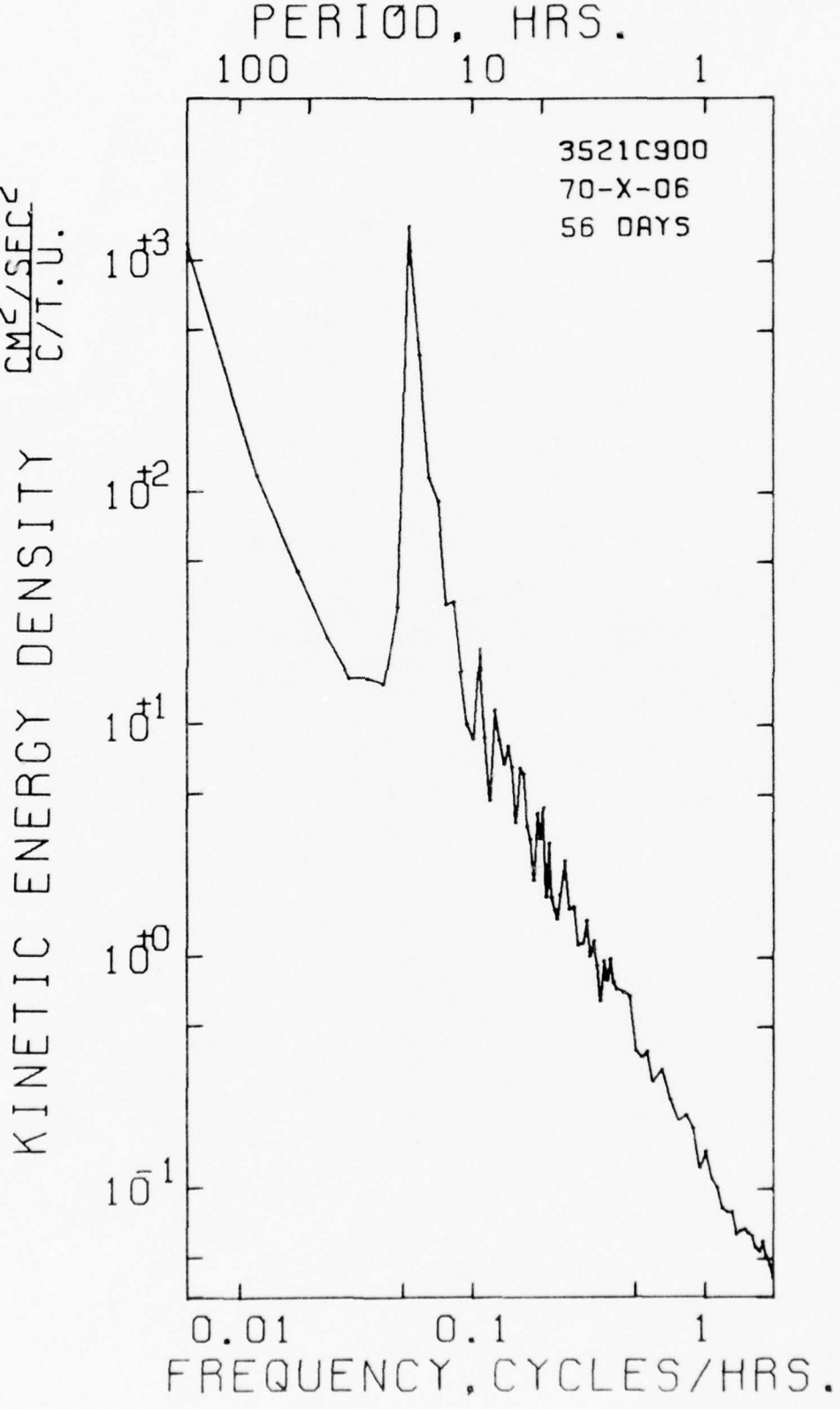
* SAMPLE SIZE = 5665 POINTS

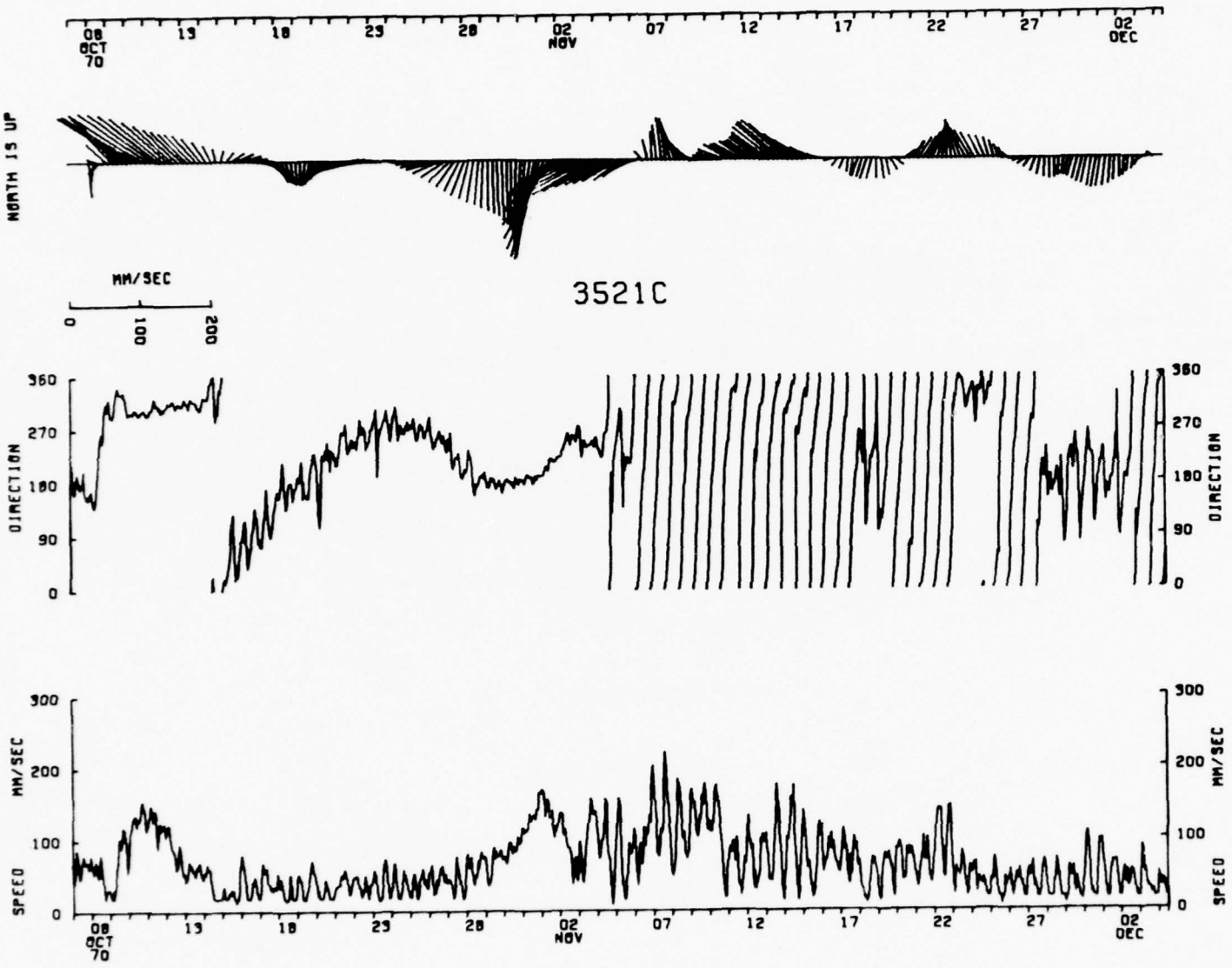
* SPANNING RANGE

* FROM 70- X -04 22.45.57

* TO 70- XII-04 22.45.57

* DURATION 59.00 DAYS


PERIØD, HRS.
100
10
1
3521C900
70-X-06
56 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+3
10+2
10+1
10+0
10-1
0.01
0.1
1
FREQUENCY, CYCLES/HRS.



MOORING NO. 353

Lat. 35° 58.0'N Long. 70° 35.0'W

Set October 8, 1970

Set by D. Moller

Ship R. V. Knorr Cruise 13

Recovered December 9, 1970

Recovered by R. Heinmiller

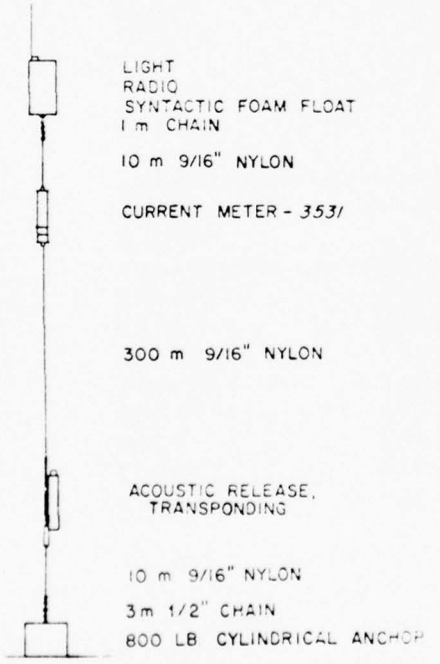
Ship R. V. Knorr Cruise 17

Mooring type - Subsurface

Purpose of mooring

Low frequency wave correlation across the Gulf Stream with mooring 352

Data No.	Instr. Type	Depth (m)
3531*	Model 850	4121
Water depth		4436



Comments

Data number 3531

Instrument No.: M-206 Type: Model 850

Depth: 4121 m Water depth: 4436 m

Start time: 70-X-08 13.30.58

Stop time: 70-XI-27 02.30.58

Duration: 49d 13h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

DATA/ 3531F900

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	16.936	15.828	69.847
STD. ERR.	.710	.839	.543
VARIANCE	2395.356	3350.257	1404.438
STD. DEV.	48.942	57.881	37.476
KURTOSIS	2.593	2.754	2.808
SKEWNESS	.497	.789	.762
MINIMUM	-93.000	-84.375	17.000
MAXIMUM	152.159	198.000	198.000

EAST & NORTH

COVARIANCE	40.127	
STD. ERR. OF COVARIANCE	36.591	
STD. DEV. OF COVARIANCE	2523.692	
CORRELATION COEFFICIENT	.1426-1	
VECTOR MEAN	23.181	
VECTOR VARIANCE	2872.806	
VECTOR STD. DEV.	53.599	

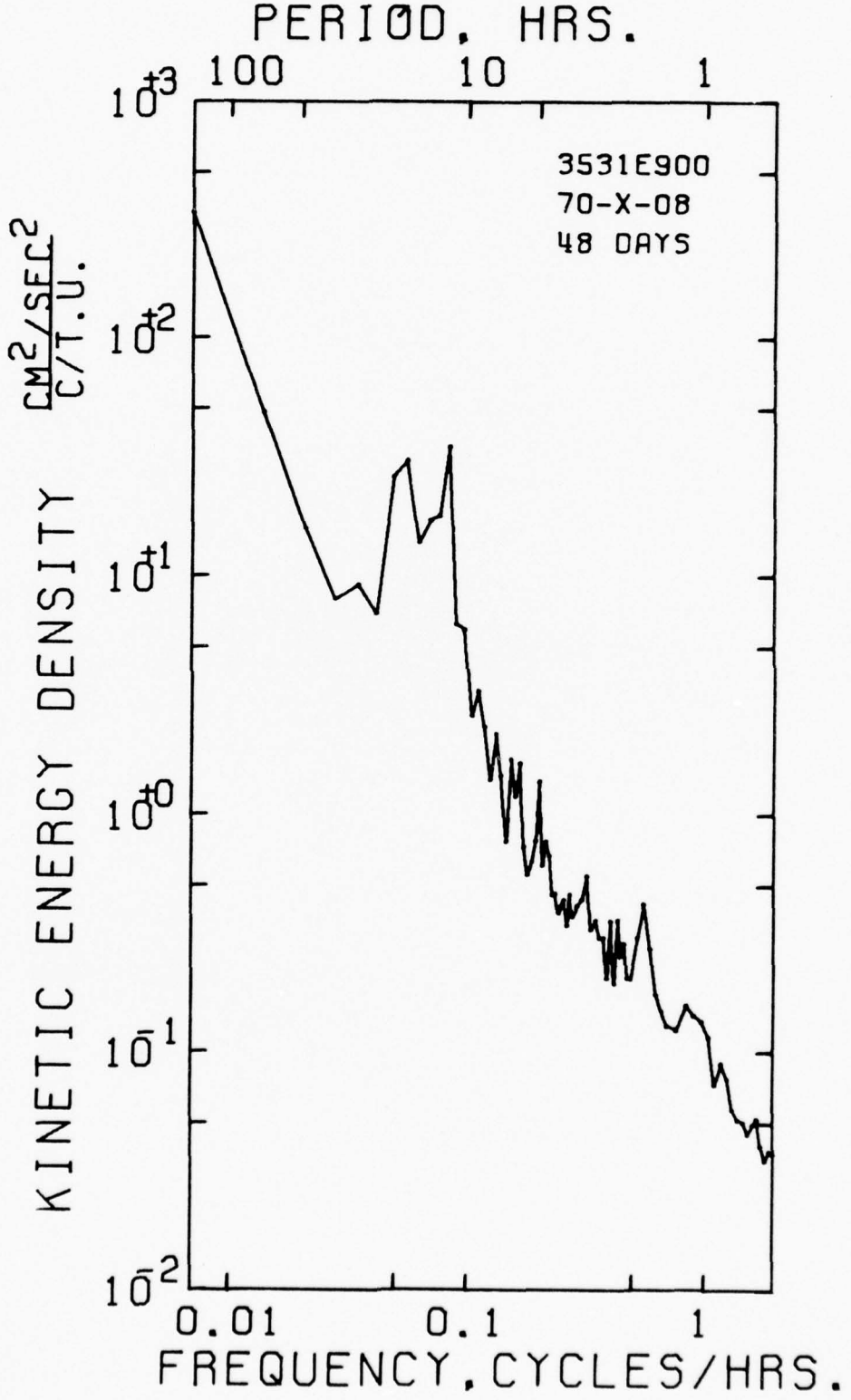
SAMPLE SIZE = 4757 POINTS

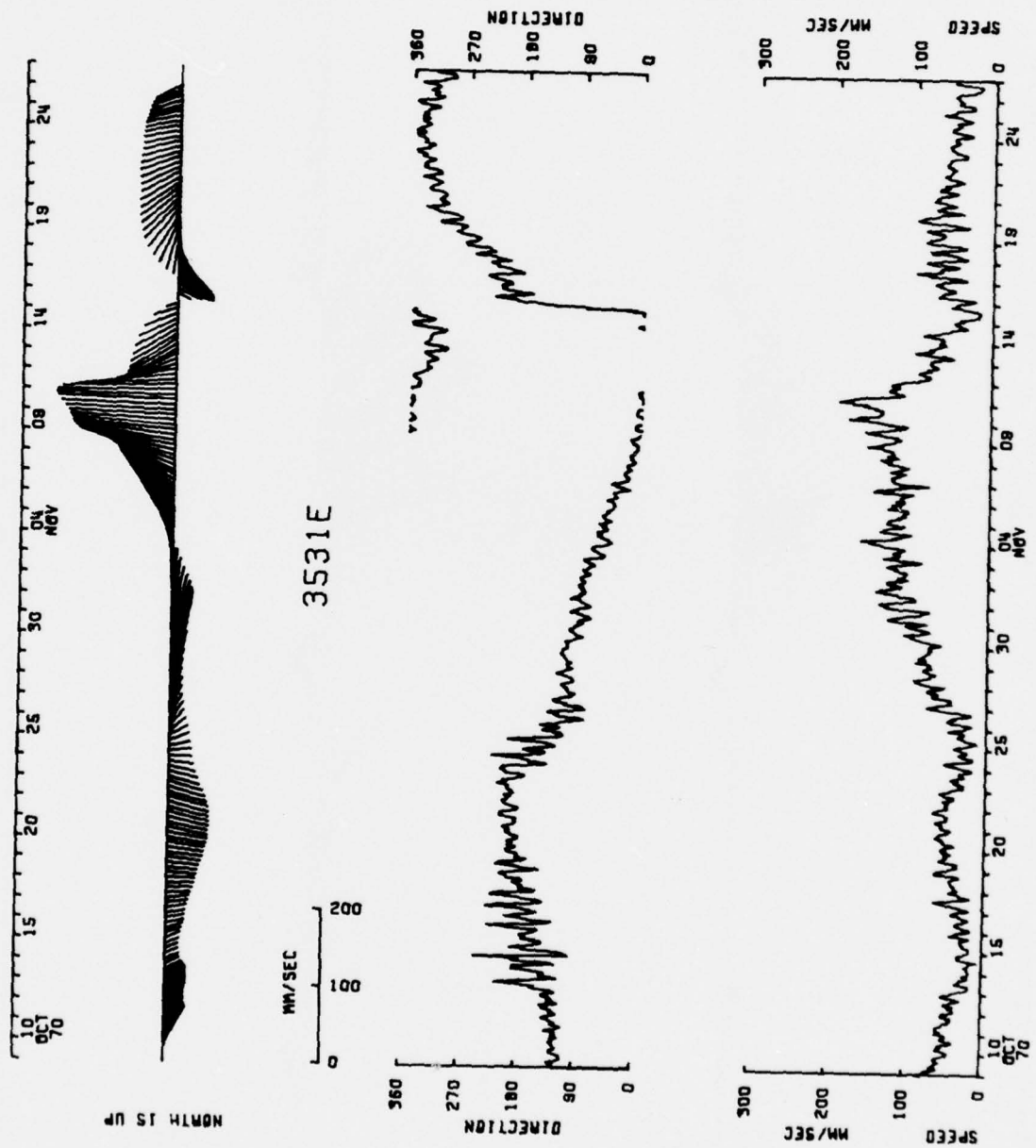
SPANNING RANGE

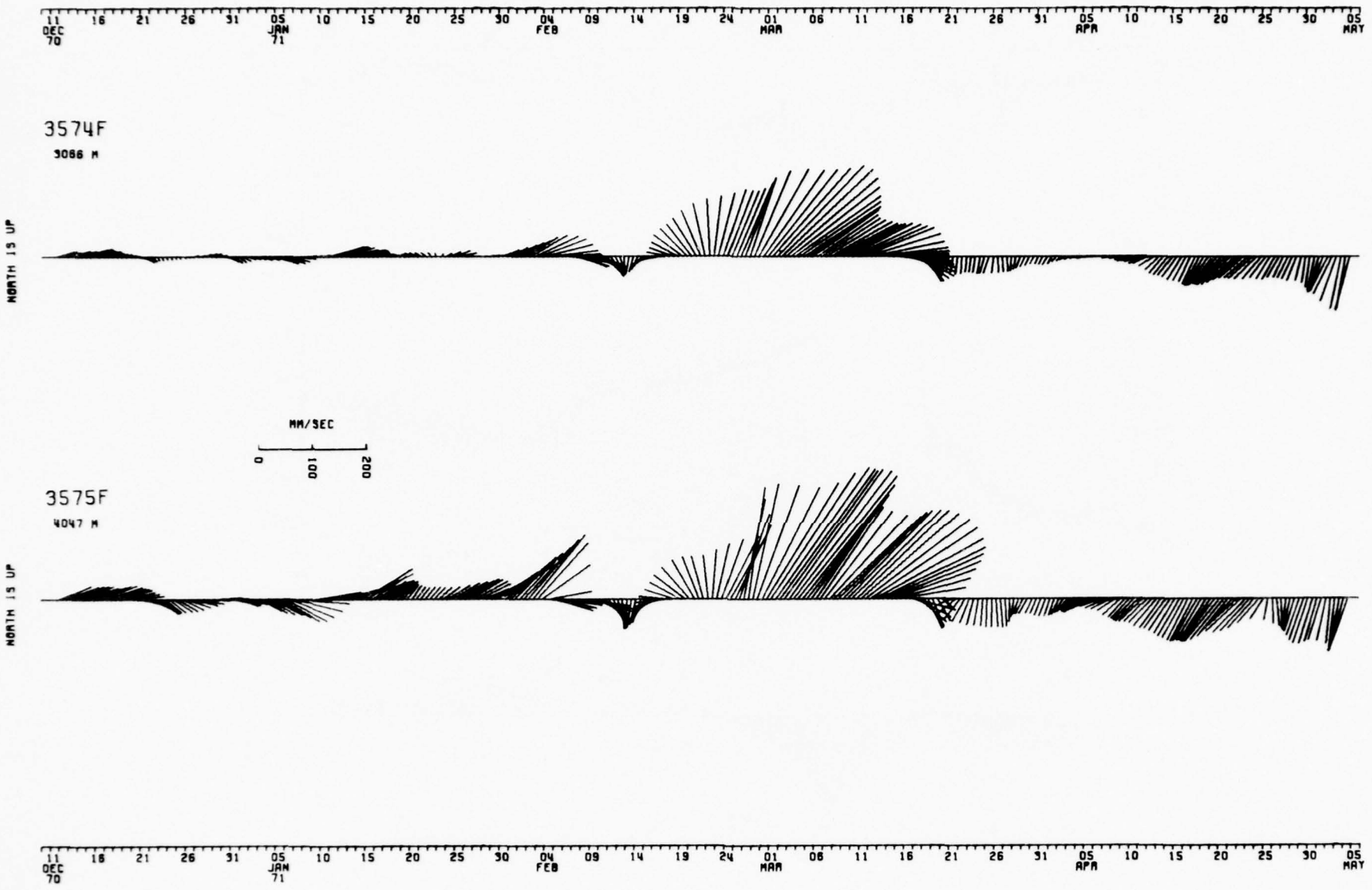
FROM 70- X -08 13.30.58

TO 70- XI -27 02.30.58

DURATION 49.54 DAYS


PERIOD, HRS.
100
10
1
3531E900
70-X-08
48 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10+3
10+2
10+1
10+0
10-1
10-2
0.01
0.1
1
FREQUENCY, CYCLES/HRS.




11 16 21 26 31 05 10 15 20 25 30 04 09 14 19 24 01 06 11 16 21 26 31 05 10 15 20 25 30 05
DEC 70
JAN 71
FEB
MAR
APR
MAY
3574F
3086 M
NORTH IS UP
MM/SEC
0
100
200
3575F
4047 M
NORTH IS UP
11 16 21 26 31 05 10 15 20 25 30 04 09 14 19 24 01 06 11 16 21 26 31 05 10 15 20 25 30 05
DEC 70
JAN 71
FEB
MAR
APR
MAY

MOORING NO. 357

Lat. 35° 58.9'N Long. 70° 36.8'W

Set December 9, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 6, 1971

Recovered by J. Gifford

Ship R. V. Knorr Cruise 20

Mooring type - Intermediate

Purpose of mooring

A) Measurements at Site J

B) Low frequency wave correlation across the Gulf Stream with mooring 358

Data No.	Instr. Type	Depth (m)
3571	Model 850	2056
3572	Depth Rec.	2057
3573	Incl.	3058
3574*	Model 850	3066
3575*	Model 850	4074
3576	Tens.	4391
Water depth		4425

Comments

3571 - stuck compass.

Data number 3574

Instrument No.: M-212 Type: Model 850

Depth: 3066 m Water depth: 4425 m

Start time: 70-XII-09 23.30.37

Stop time: 71-V- 06 05.30.37

Duration: 147d 6h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

DATA/ 3574F1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	21.842	3.278	61.745
STD. ERR.	.651	.614	.575
VARIANCE	2999.845	2661.451	2336.720
STD. DEV.	54.771	51.589	48.340
KURTOSIS	3.329	5.315	5.262
SKEWNESS	.693	1.142	1.449
MINIMUM	-101.885	-146.137	5.000
MAXIMUM	230.046	232.536	283.000

EAST & NORTH

COVARIANCE	1484.777
STD. ERR. OF COVARIANCE	55.592
STD. DEV. OF COVARIANCE	4674.014
CORRELATION COEFFICIENT	.525
VECTOR MEAN	22.086
VECTOR VARIANCE	2830.648
VECTOR STD. DEV.	53.204

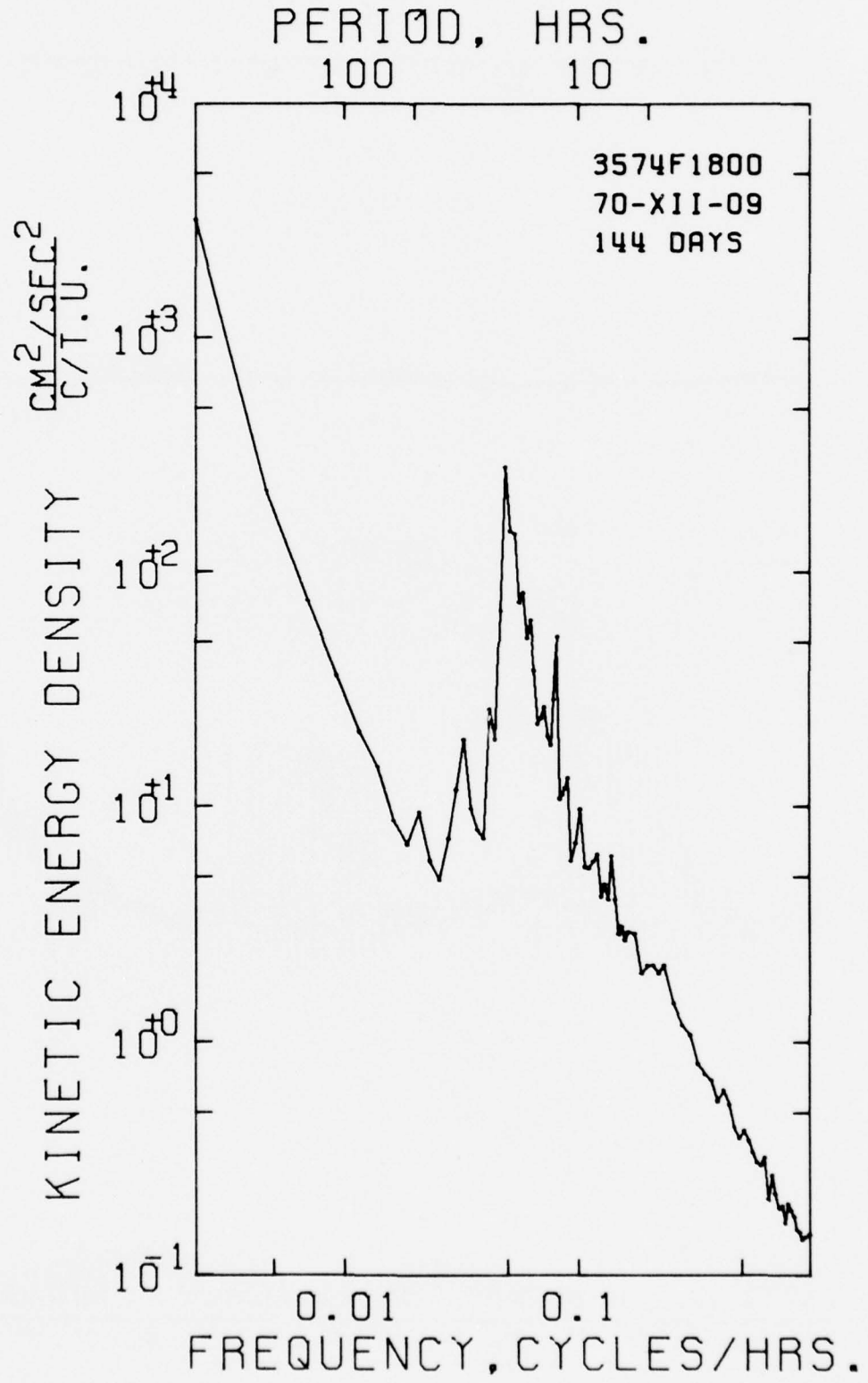
SAMPLE SIZE = 7069 POINTS

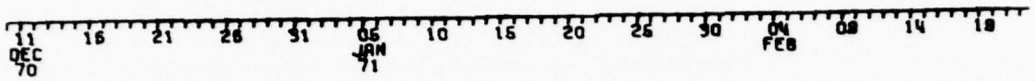
SPANNING RANGE

FROM 70- XII-09 23.30.37

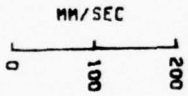
TO 71- V -06 05.30.37

DURATION 147.25 DAYS

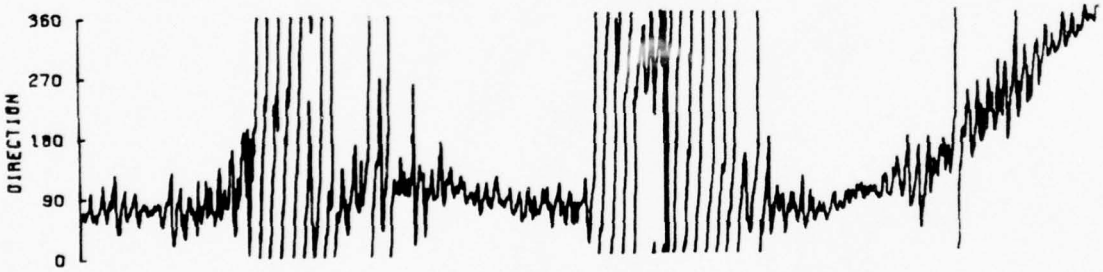

PERIOD, HRS.
100
10
3574F1800
70-XII-09
144 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.

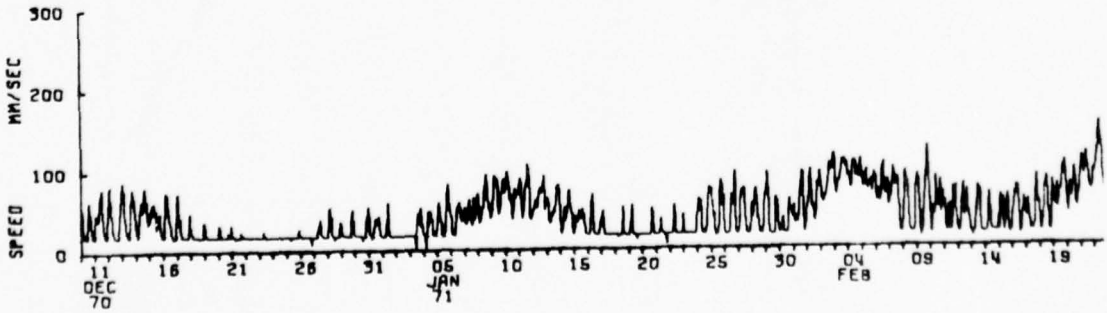

11
16
21
26
31
05
10
15
20
25
30
04
09
14
19
DEC
70
JAN
71
FEB

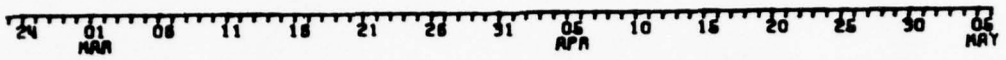

NORTH IS UP


MM/SEC
0
100
200

3574F

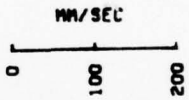

360
270
180
90
0
DIRECTION


300
200
100
0
MM/SEC
SPEED
11
16
21
26
31
05
10
15
20
25
30
04
09
14
19
DEC
70
JAN
71
FEB

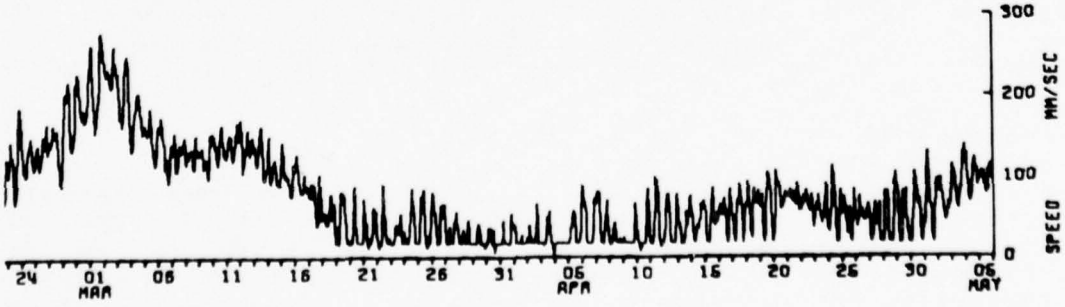

24
01
MAR
06
11
16
21
26
31
05
APR
10
15
20
25
30
05
MAY


NORTH IS UP

3574F


MM/SEC
0
100
200


360
270
180
90
0
DIRECTION


300
200
100
0
MM/SEC
SPEED
24
01
MAR
06
11
16
21
26
31
05
APR
10
15
20
25
30
05
MAY

Data number 3575

Instrument No.: M-227 Type: Model 850

Depth: 4074 m Water depth: 4425 m

Start time: 70-XII-10 08.30.37

Stop time: 71-V-06 06.30.37

Duration: 146d 22h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

DATA/ 3575F1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	36.286	11.106	91.354
STD. ERR.	.812	.926	.734
VARIANCE	4648.009	6052.928	3795.297
STD. DEV.	68.176	77.801	61.606
KURTOSIS	2.883	4.176	5.548
SKEWNESS	.459	1.185	1.707
MINIMUM	-107.216	-148.283	11.000
MAXIMUM	260.239	291.022	324.000

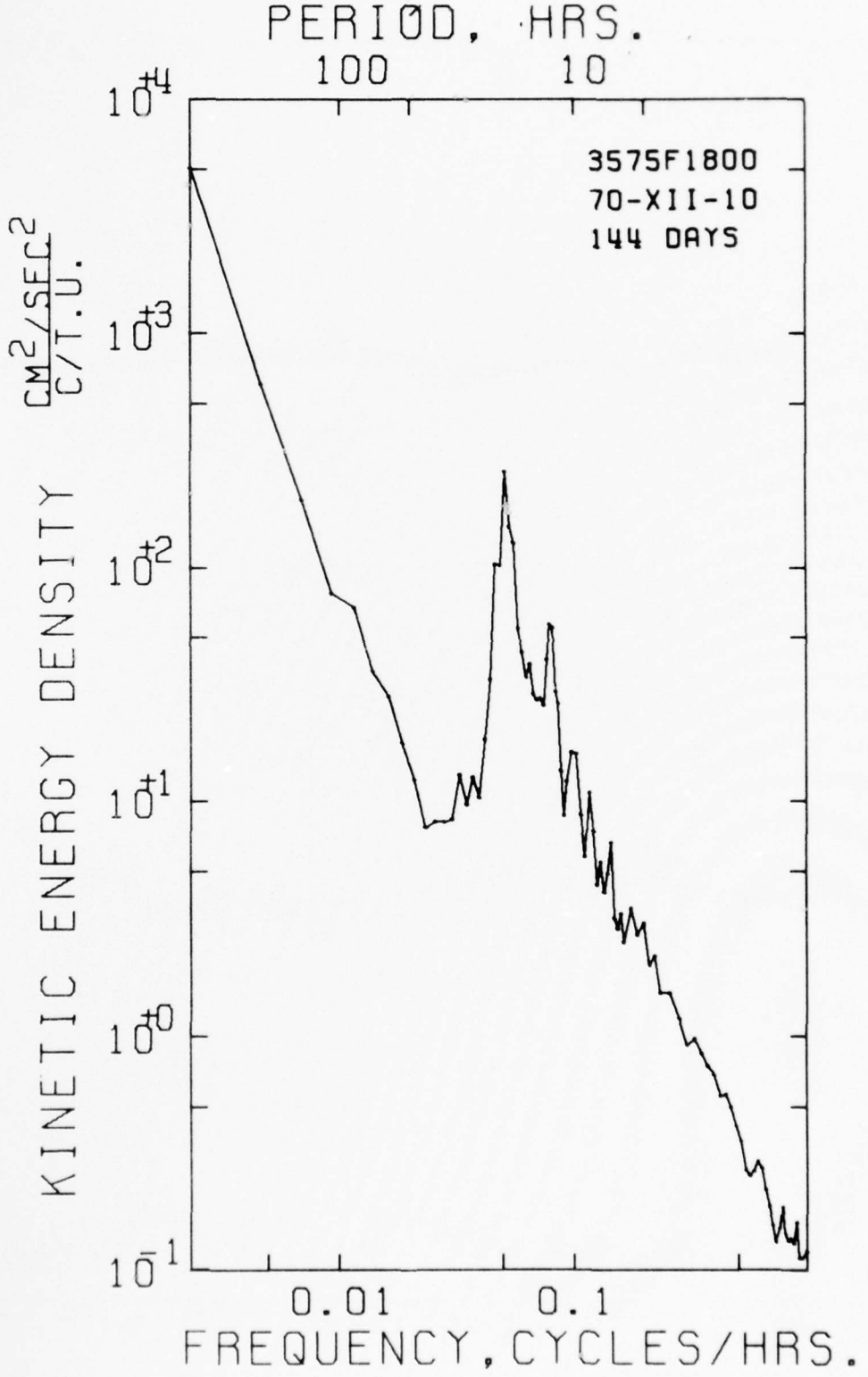
EAST & NORTH

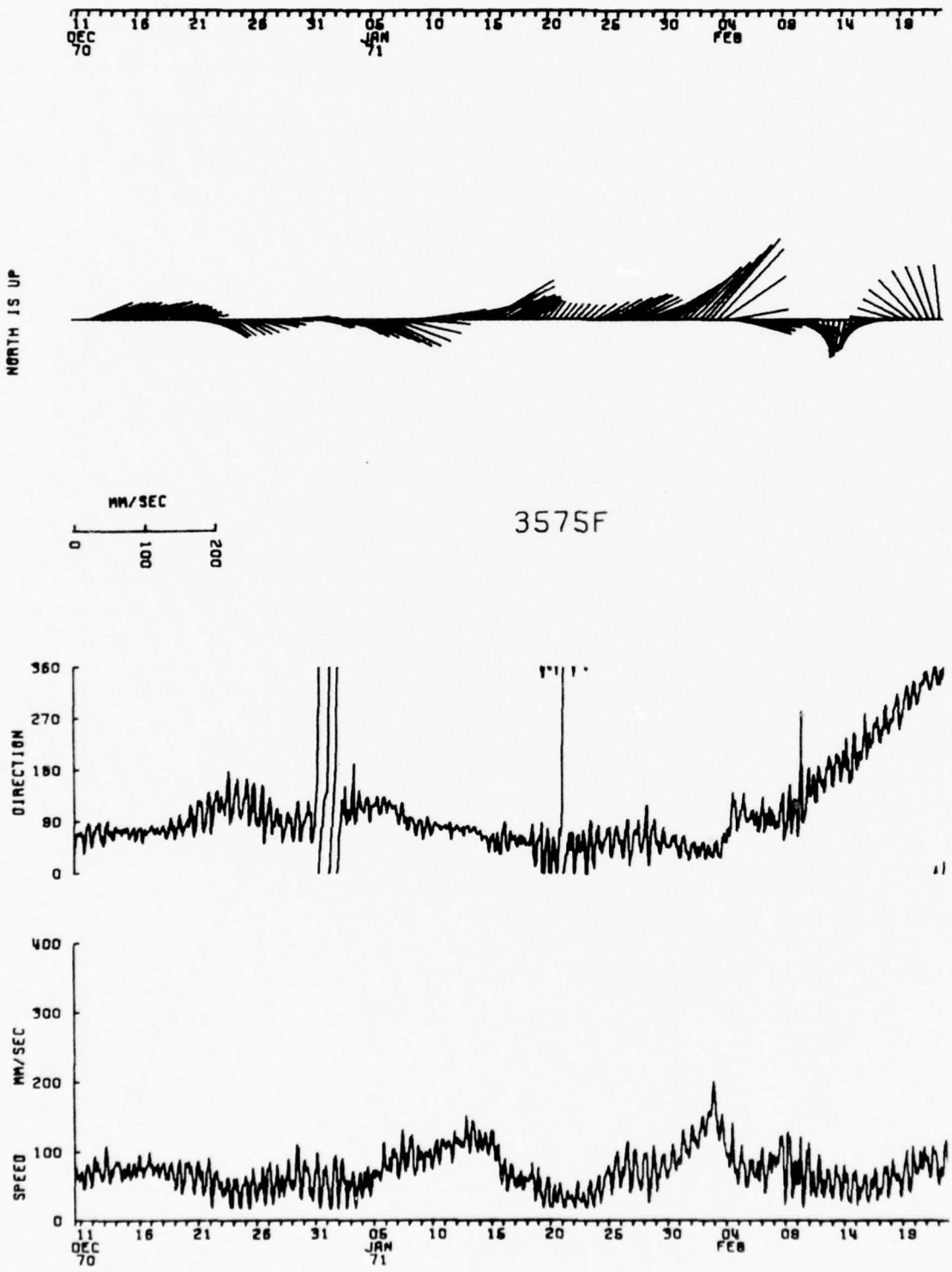
COVARIANCE	3434.686
STD. ERR. OF COVARIANCE	103.746
STD. DEV. OF COVARIANCE	8712.817
CORRELATION COEFFICIENT	.648
VECTOR MEAN	37.947
VECTOR VARIANCE	5350.468
VECTOR STD. DEV.	73.147

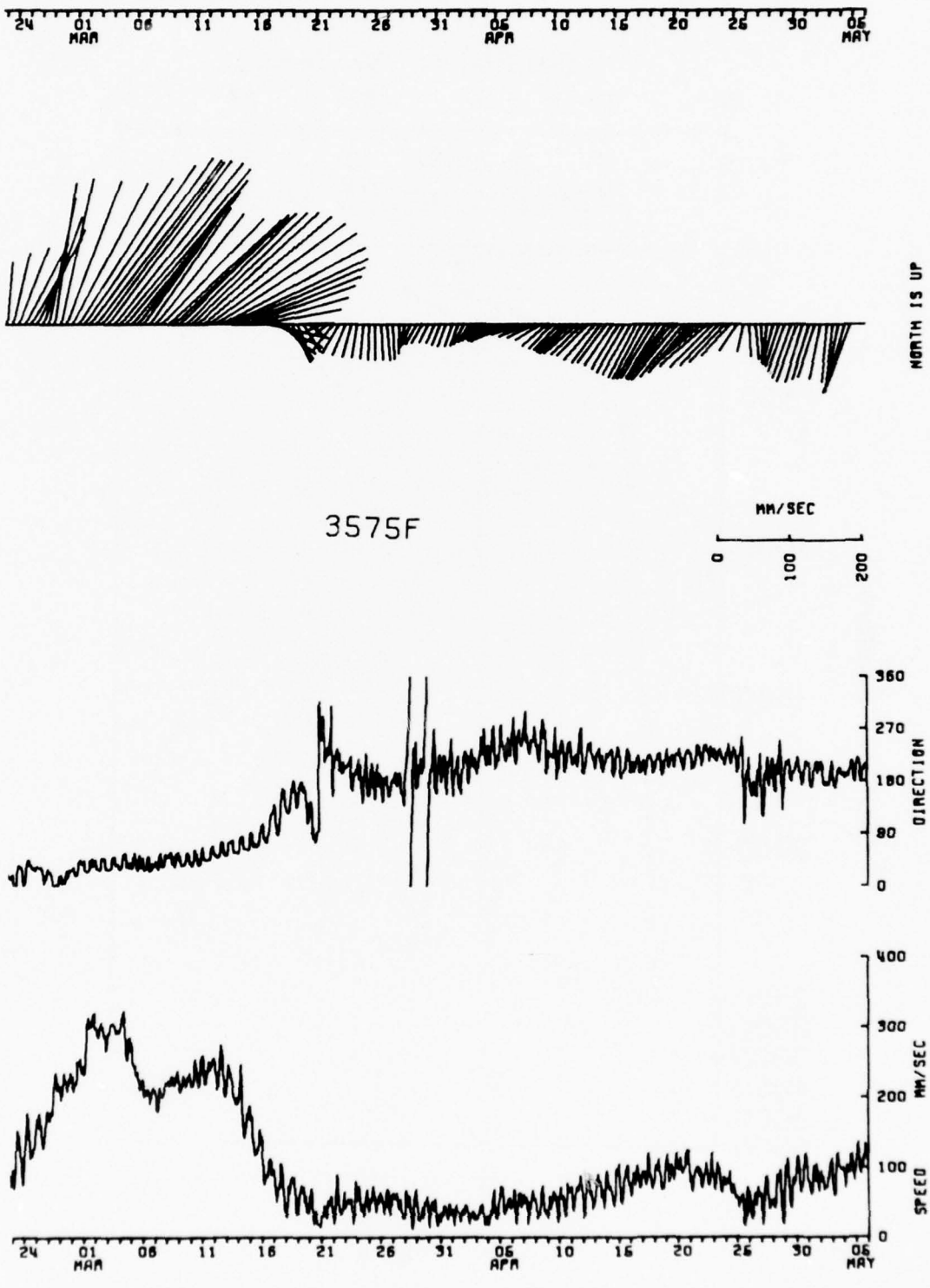
SAMPLE SIZE = 7053 POINTS

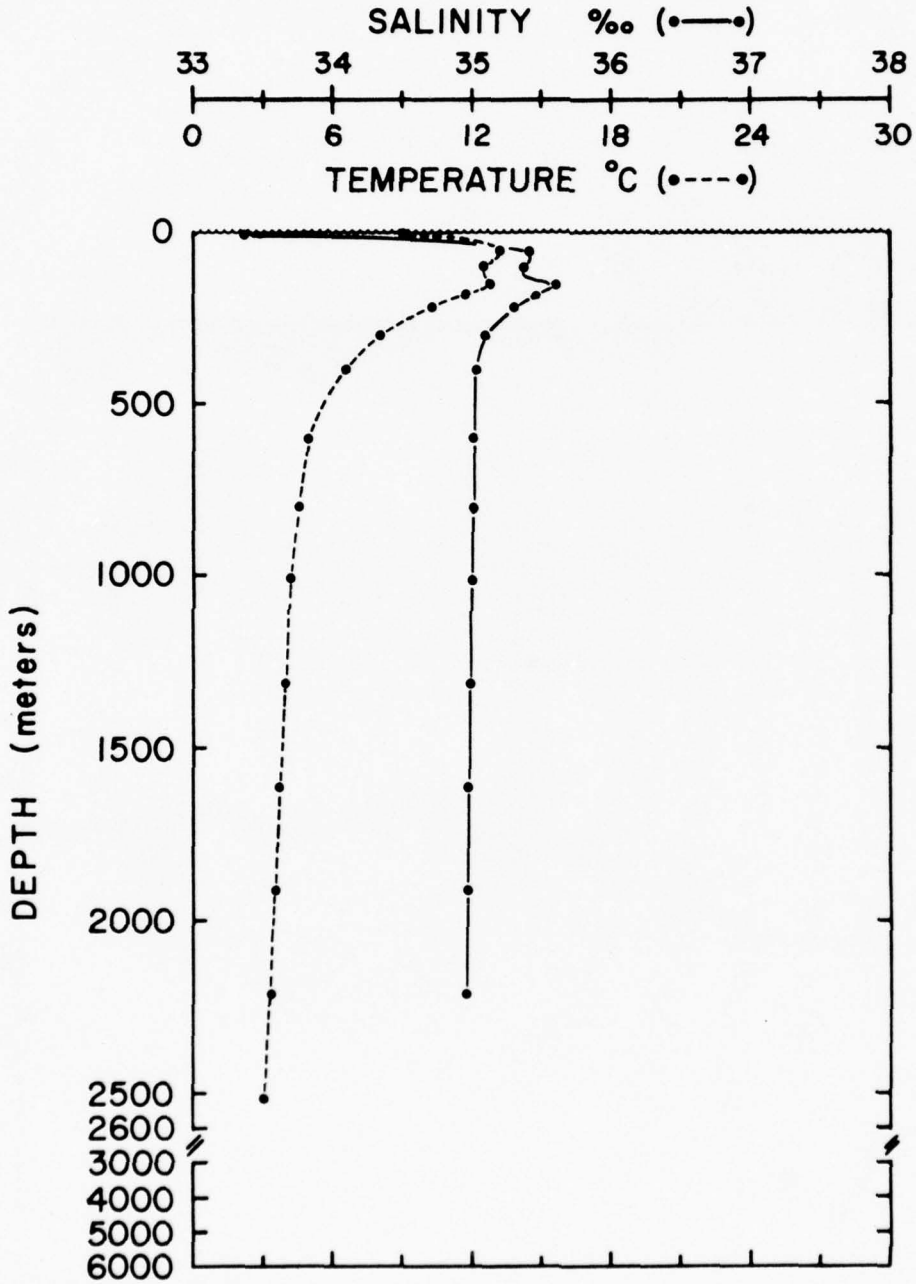
SPANNING RANGE
FROM 70- XII-10 08.30.37
TO 71- V -06 06.30.37

DURATION 146.92 DAYS


PERIØD, HRS.
100
10
3575F1800
70-XII-10
144 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.


11 16 21 26 31 05 10 15 20 25 30 04 08 14 18
DEC 70
JAN 71
FEB
NORTH IS UP
MM/SEC
0 100 200
3575F
360 270 180 90 0
DIRECTION
400 300 200 100 0
MM/SEC
SPEED
11 16 21 26 31 05 10 15 20 25 30 04 08 14 18
DEC 70
JAN 71
FEB


24 01 08 11 16 21 26 31 05 10 15 20 25 30 05
MAR
APR
MAY
NORTH IS UP
3575F
MM/SEC
0 100 200
360 270 180 90 0
DIRECTION
400 300 200 100 0
MM/SEC
SPEED
24 01 08 11 16 21 26 31 05 10 15 20 25 30 05
MAR
APR
MAY



KN - 020 - 070
LAT. 39° 06.8' N
LONG. 70° 00.4' W
DATE 71-05-9

MOORING NO. 358

Lat. 39° 07.4'N Long. 70° 03.0'W

Set December 11, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered April 27, 1971

Recovered by J. Gifford

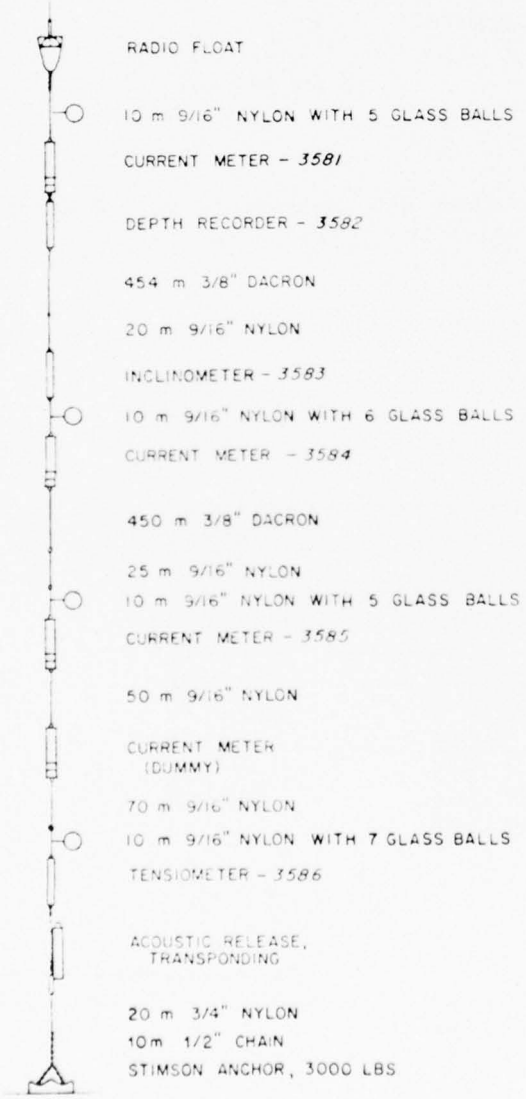
Ship R. V. Knorr Cruise 20

Mooring type - Intermediate

Purpose of mooring

A) Measurements at Site D

B) Low frequency wave correlation across the Gulf Stream with mooring 357



Data No.	Instr. Type	Depth (m)
3581	Model 850	1466
3582	Depth Rec.	1467
3583	Incl.	1964
3584	Model 850	1976
3585*	Model 850	2495
3586	Tens.	2647
Water depth		2680

Comments

3581 - bit problems.
3584 - timing problems.

Data number 3585

Instrument No.: M-205 Type: Model 850

Depth: 2495 m Water depth: 2680 m

Start time: 70-XII-12 03.30.37

Stop time: 71-IV-27 21.30.37

Duration: 136d 18h

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 16

interval time =1800 seconds

COMMENTS:

Note: The rotor threshold speed for Model 850 instruments is 1.8 mm/sec.

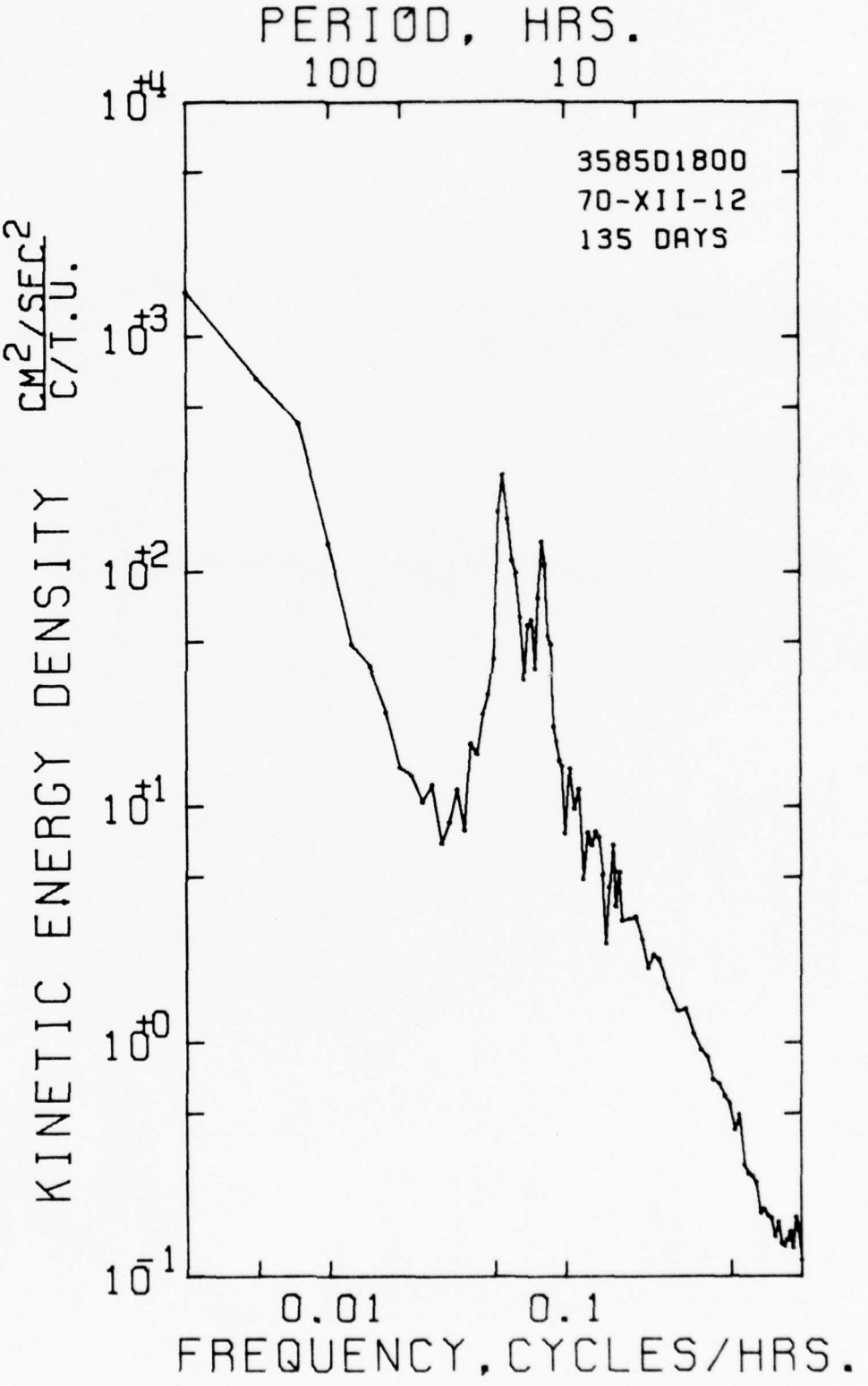
DATA/ 3585D1800

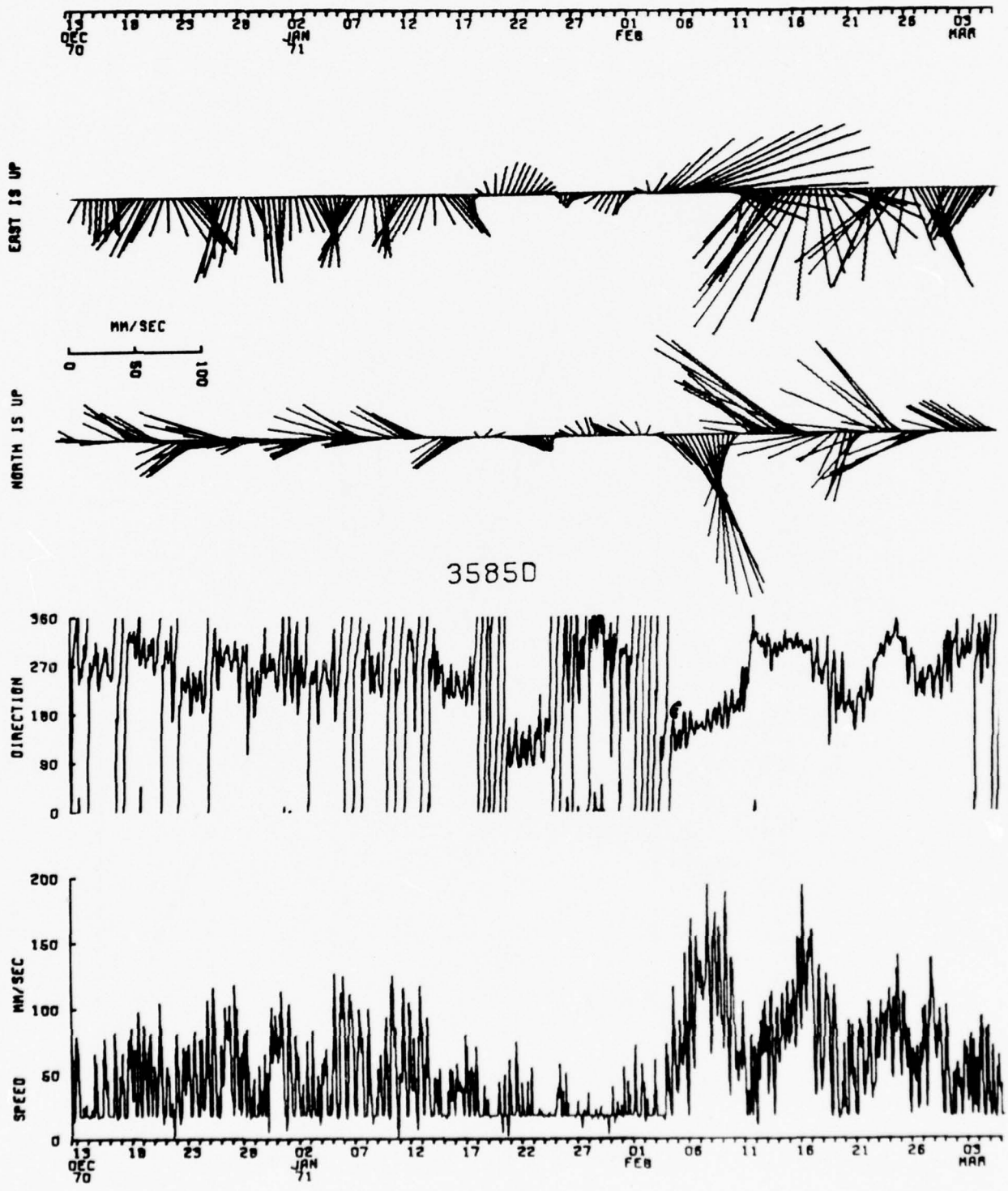
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-20.990	-2.230	49.005
STD. ERR.	.490	.481	.417
VARIANCE	1578.132	1518.780	1141.021
STD. DEV.	39.726	38.972	33.779
KURTASIS	3.154	5.544	3.883
SKEWNESS	-.166	-.546	1.114
MINIMUM	-163.826	-195.056	11.000
MAXIMUM	108.895	131.078	197.000

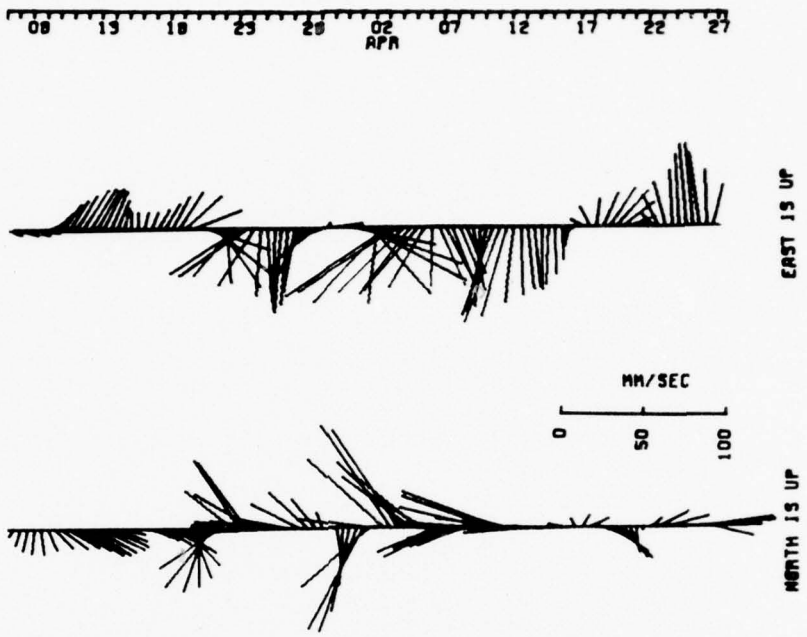
EAST & NORTH

COVARIANCE	-490.462
STD. ERR. OF COVARIANCE	26.288
STD. DEV. OF COVARIANCE	2129.978
CORRELATION COEFFICIENT	-.317
VECTOR MEAN	21.108
VECTOR VARIANCE	1548.456
VECTOR STD. DEV.	39.350

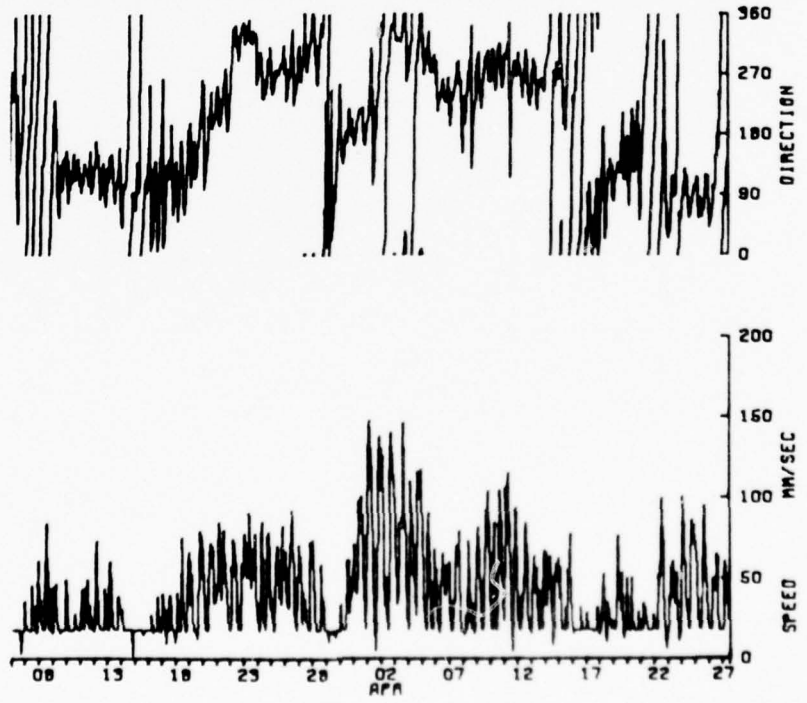
* SAMPLE SIZE = 6565 POINTS
*
* SPANNING RANGE
* FROM 70- XII-12 03.30.37
* TO 71- IV -27 21.30.37
*
* DURATION 136.75 DAYS


PERIOD, HRS.
100
10
10^4
10^3
10^2
10^1
10^0
10^{-1}
KINETIC ENERGY DENSITY $\frac{CM^2/SEC^2}{C/T.U.}$
358501800
70-XII-12
135 DAYS
0.01
0.1
FREQUENCY, CYCLES/HRS.


13 18 23 28 02 07 12 17 22 27 01 06 11 16 21 26 03
DEC 70
JAN 71
FEB
MAR
EAST IS UP
MM/SEC
0 50 100
NORTH IS UP
35850
DIRECTION
360
270
180
90
0
SPEED MM/SEC
200
150
100
50
0
13 18 23 28 02 07 12 17 22 27 01 06 11 16 21 26 03
DEC 70
JAN 71
FEB
MAR


08 13 18 23 28 02 07 12 17 22 27
APR
EAST IS UP
MM/SEC
0 50 100
NORTH IS UP

35850


360
270
180
90
0
DIRECTION
200
150
100
50
0
SPEED MM/SEC
08 13 18 23 28 02 07 12 17 22 27
APR

MOORING NO. 360

Lat. 36° 23.0'N Long. 71° 15.0'W

Set December 13, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 3, 1971

Recovered by J. Gifford

Ship R. V. Knorr Cruise 20

Mooring type - Bottom

Purpose of mooring

Measurements under the Gulf Stream with moorings 364 and 368

Data No.	Instr. Type	Depth (m)
3601*	Model 850	3697
3602*	Model 850	4019
3603	Incl.	4020
Water depth		4230

Comments

Data from this area were used in Luyten, 1977.

Data number 3601

Instrument No.: M-191 Type: Model 850

Depth: 3697 m Water depth: 4230 m

Start time: 70-XII-13 11.30.37

Stop time: 71-II-19 19.00.37

Duration: 68d 7h 30m

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 16

interval time =1800 seconds

COMMENTS:

The STATS and spectral displays use a start time of January 1, 1971 instead of December 13, 1970 (See Speed vs Time plot).

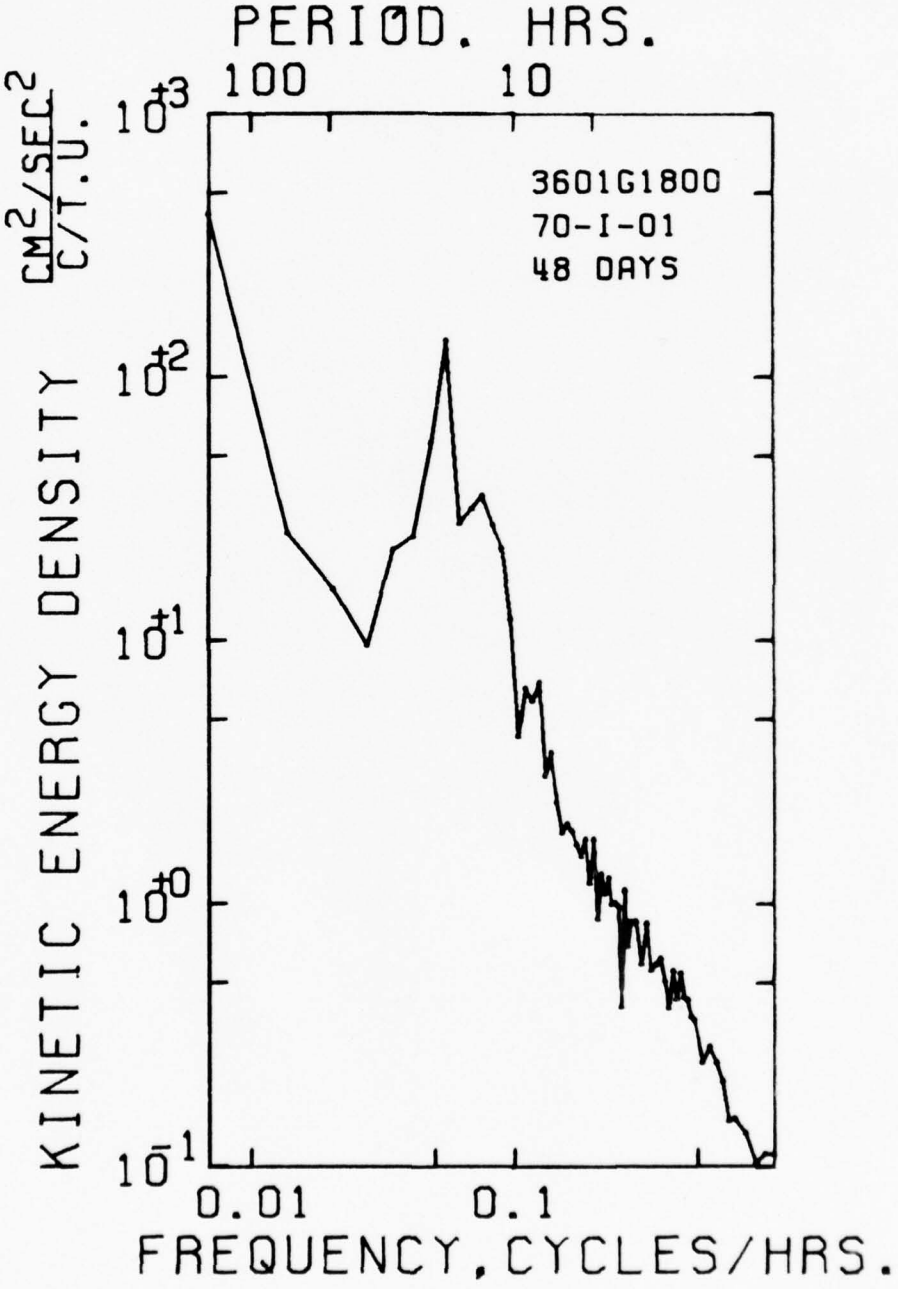
DATA/ 3601 61000

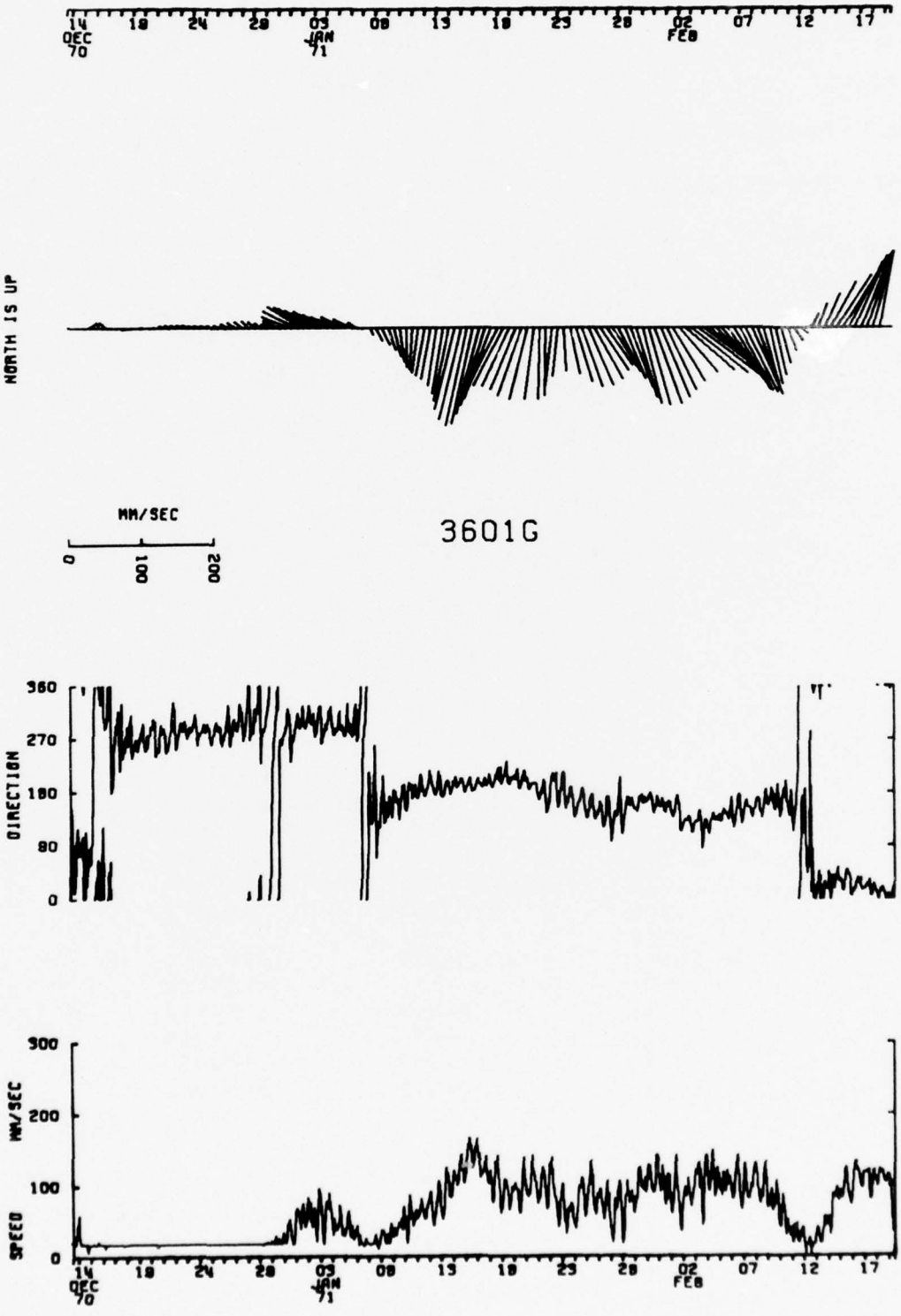
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	9.418	-41.255	81.582
STD. ERR.	.822	1.368	.716
VARIANCE	1613.084	4477.204	1227.316
STD. DEV.	40.188	66.912	35.033
KURTOSIS	2.534	2.708	2.168
SKEWNESS	.843E-1	.752	-.143
MINIMUM	-92.406	-171.070	17.957
MAXIMUM	127.848	128.723	173.994

EAST & NORTH

COVARIANCE	=	26.749
STD. ERR. OF COVARIANCE	=	66.142
STD. DEV. OF COVARIANCE	=	3234.186
CORRELATION COEFFICIENT	=	.995E-2
VECTOR MEAN	=	42.317
VECTOR VARIANCE	=	3046.144
VECTOR STD. DEV.	=	55.192

* SAMPLE SIZE = 2391 POINTS
*
* SPANNING RANGE
* FROM 71- I -01 00.00.37
* TO 71- II -19 19.00.37
*
* DURATION 49.79 DAYS


PERIOD. HRS.
100
10
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10³
10²
10¹
10⁰
10⁻¹
3601G1800
70-I-01
48 DAYS
0.01
0.1
FREQUENCY, CYCLES/HRS.



Data number 3602

Instrument No.: M-203 Type: Model 850

Depth: 4019 m Water depth: 4230 m

Start time: 70-XII-13 10.30.37

Stop time: 71-V-03 10.30.37

Duration: 141d

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 16

interval time =1800 seconds

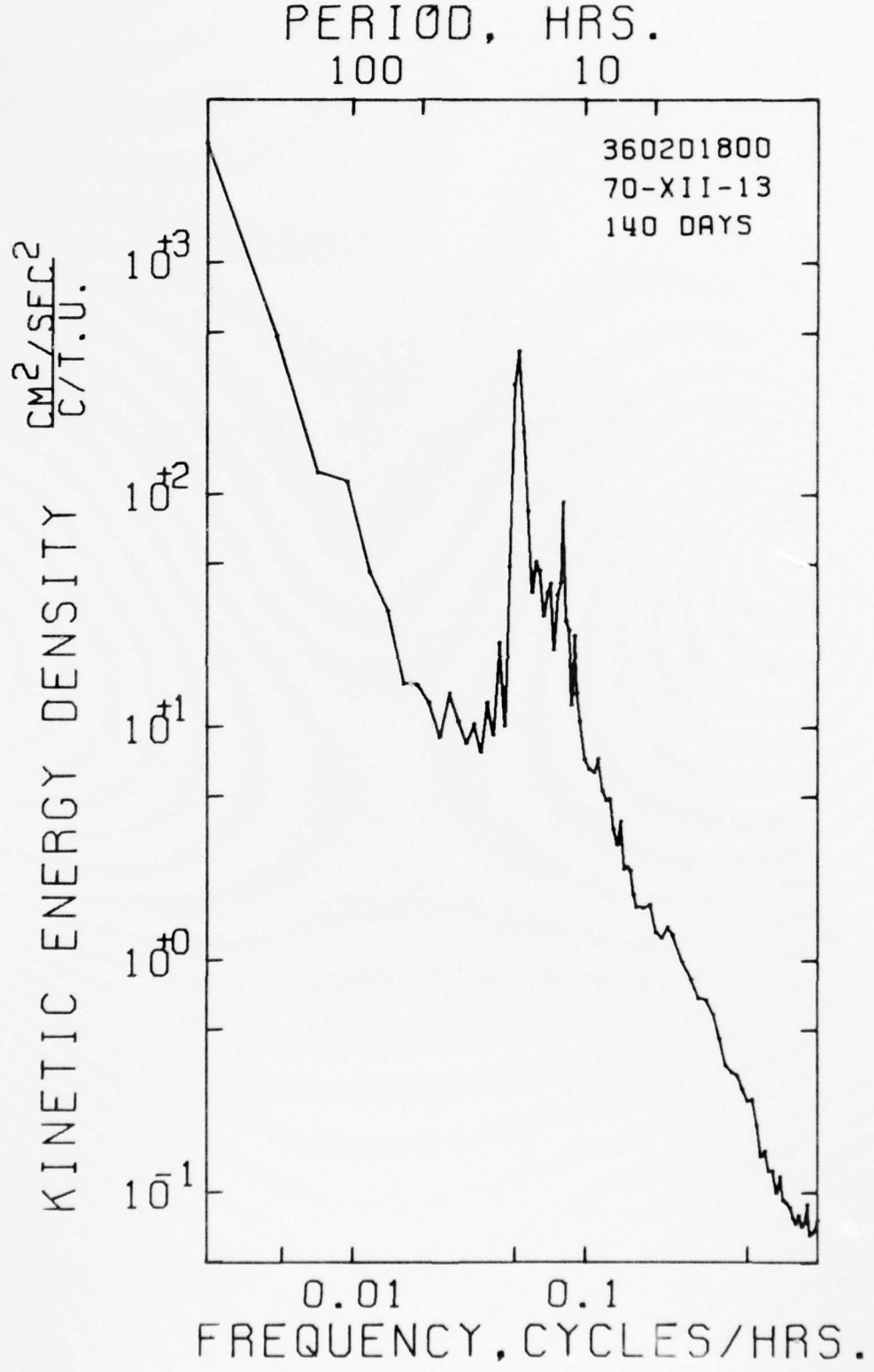
COMMENTS:

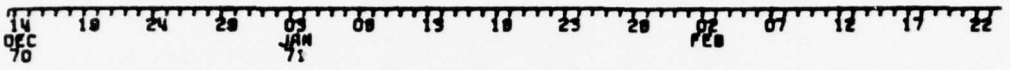
DATA/ 3602D1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	17.315	-31.163	80.992
STD. ERR.	.618	.821	.524
VARIANCE	2588.211	4560.395	1859.864
STD. DEV.	50.874	67.531	43.126
KURTOSIS	2.367	3.842	2.417
SKEWNESS	.217	.886	.314
MINIMUM	-121.254	-169.149	18.000
MAXIMUM	151.818	222.565	226.000

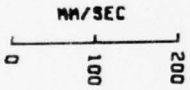
EAST & NORTH

COVARIANCE	-240.964	SAMPLE SIZE = 6769 POINTS
STD. ERR. OF COVARIANCE	51.261	
STD. DEV. OF COVARIANCE	4217.426	SPANNING RANGE
CORRELATION COEFFICIENT	-.701E-1	FROM 70- XII-13 10.30.37
VECTOR MEAN	35.650	TO 71- V -03 10.30.37
VECTOR VARIANCE	3574.303	
VECTOR STD. DEV.	59.785	DURATION 141.00 DAYS


PERIOD, HRS.
100
10
360201800
70-XII-13
140 DAYS
KINETIC ENERGY DENSITY CM²/SEC² C/T.U.
10+3
10+2
10+1
10+0
10-1
0.01
0.1
FREQUENCY, CYCLES/HRS.

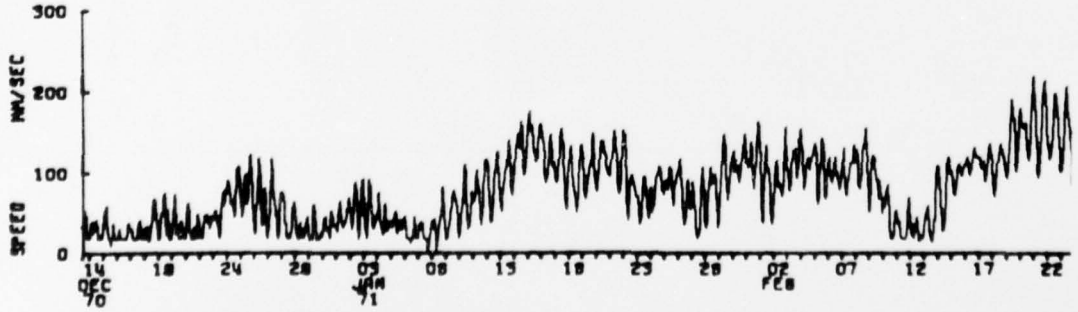

14 DEC 70
18
24
28
03 JAN 71
08
13
18
23
28
02 FEB
07
12
17
22

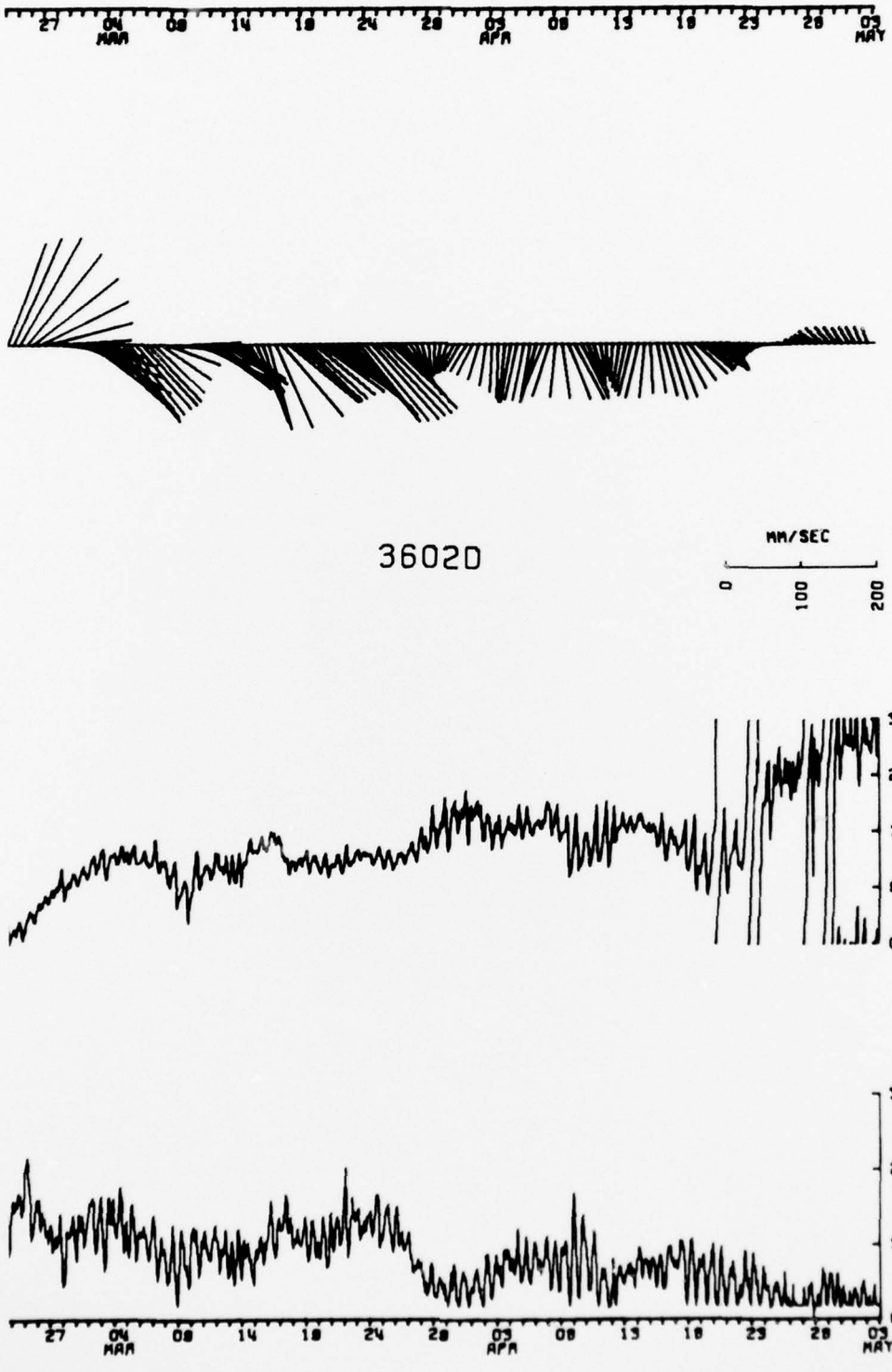

NORTH IS UP


MM/SEC
0
100
200

36020


360
270
180
90
0
DIRECTION


300
200
100
0
SPEED
MM/SEC
14 DEC 70
18
24
28
03 JAN 71
08
13
18
23
28
02 FEB
07
12
17
22


27
04
MAR
09
14
19
24
29
03
APR
08
13
18
23
28
03
MAY
NORTH IS UP
36020
MM/SEC
0
100
200
360
270
180
90
0
DIRECTION
300
200
100
0
SPEED
MM/SEC

MOORING NO. 364

Lat. 36° 57.5'N Long. 67° 53.2'W

Set December 14, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 7, 1971

Recovered by J. Gifford

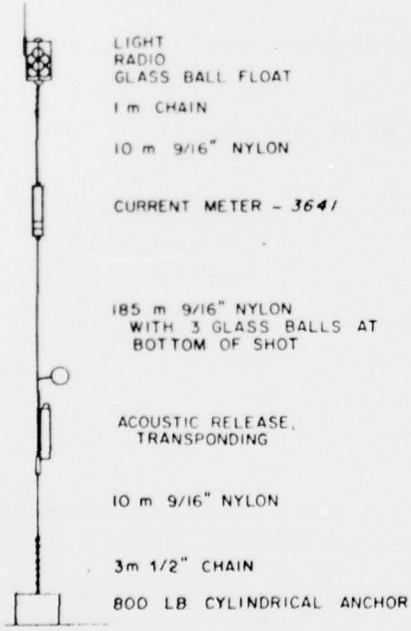
Ship R. V. Knorr Cruise 20

Mooring type - Bottom

Purpose of mooring

Measurements under the Gulf Stream with moorings 360 and 368

Data No.	Instr. Type	Depth (m)
3641*	Model 850	4712
Water depth		4915



Comments

Data number 3641

Instrument No.: M-249 **Type:** Model 850

Depth: 4712 m **Water depth:** 4915 m

Start time: 70-XII-15 06.00.36

Stop time: 71-V-07 20.00.36

Duration: 143 d 14h

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 15

interval time =1800 seconds

COMMENTS:

DATA/ 3641C1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-21.804	31.093	83.378
STD. ERR.	.690	.805	.570
VARIANCE	3278.817	4470.019	2239.098
STD. DEV.	57.261	66.858	47.319
KURTOSIS	3.864	3.017	3.048
SKEWNESS	.398	.181	.744
MINIMUM	-212.830	-218.716	17.000
MAXIMUM	209.705	249.298	257.000

EAST & NORTH

COVARIANCE	-1013.395
STD. ERR. OF COVARIANCE	53.259
STD. DEV. OF COVARIANCE	4421.774
CORRELATION COEFFICIENT	-.265
VECTOR MEAN	37.977
VECTOR VARIANCE	3874.418
VECTOR STD. DEV.	62.245

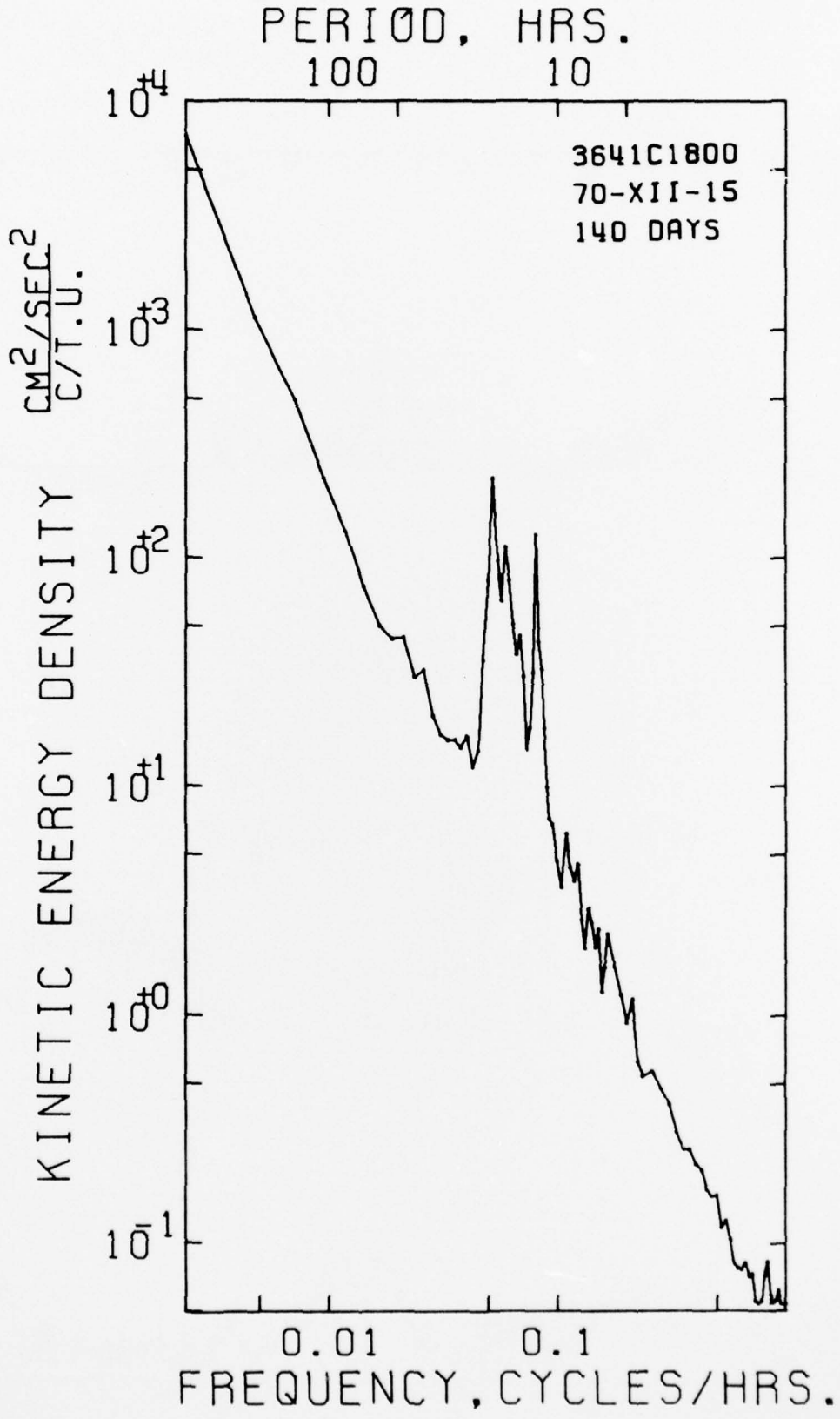
SAMPLE SIZE = 6893 POINTS

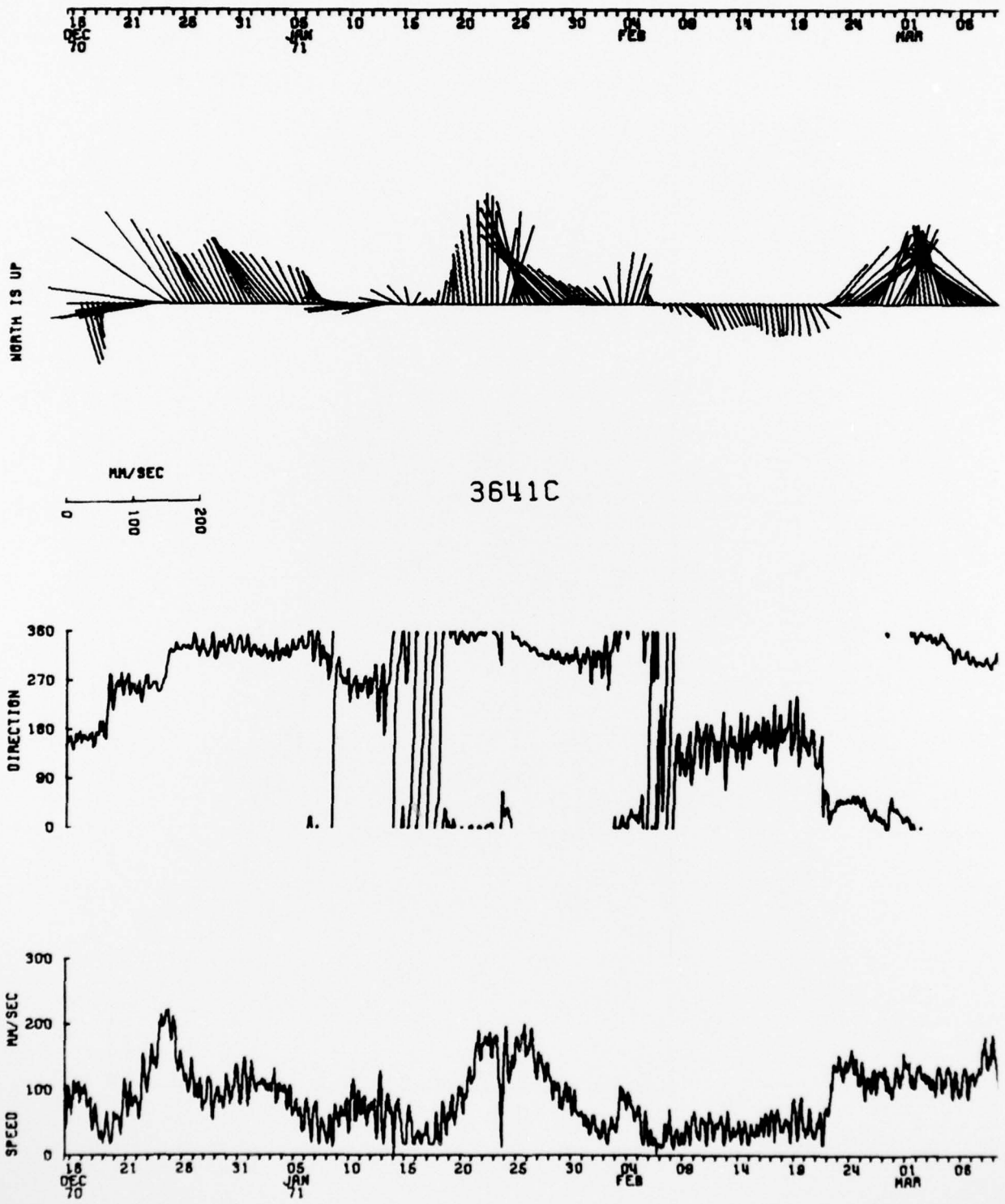
SPANNING RANGE

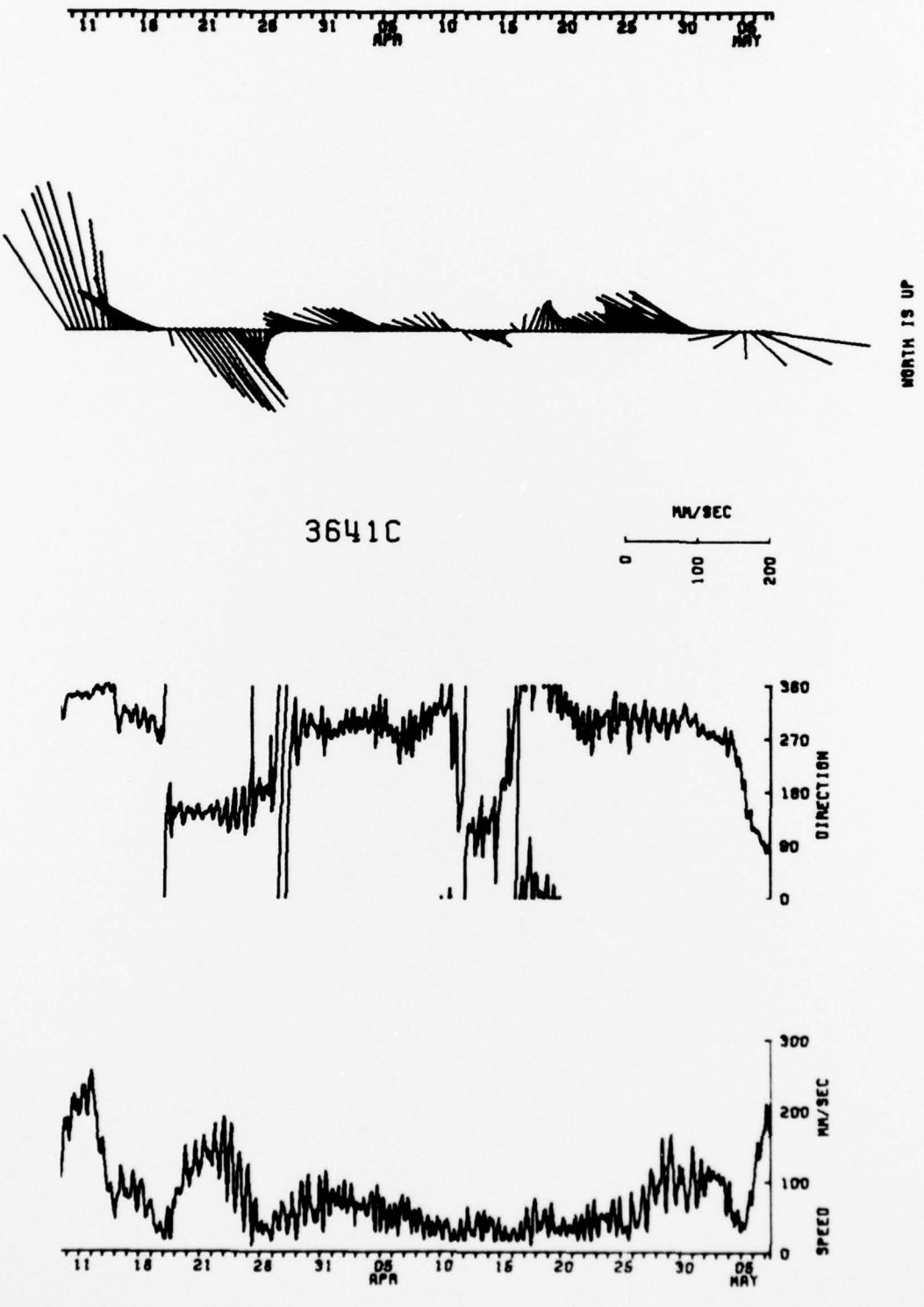
FROM 70- XII-15 06.00.36

TO 71- V -07 20.00.36

DURATION 143.58 DAYS


PERIOD, HRS.
100
10
3641C1800
70-XII-15
140 DAYS
KINETIC ENERGY DENSITY CM²/SEC²/C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.


18 21 28 31 05 10 15 20 25 30 04 09 14 19 24 01 06
DEC 70
JAN 71
FEB
MAR
NORTH IS UP
KM/SEC
0 100 200
3641C
360 270 180 90 0
DIRECTION
300 200 100 0
SPEED KM/SEC
18 21 28 31 05 10 15 20 25 30 04 09 14 19 24 01 06
DEC 70
JAN 71
FEB
MAR


11
16
21
26
31
05
APR
10
15
20
25
30
05
MAY
NORTH IS UP
3641C
KM/SEC
0
100
200
360
270
180
90
0
DIRECTION
300
200
100
0
SPEED
KM/SEC

MOORING NO. 368

Lat. 37° 57.6'N Long. 69° 27.5'W

Set December 16, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 8, 1971

Recovered by J. Gifford

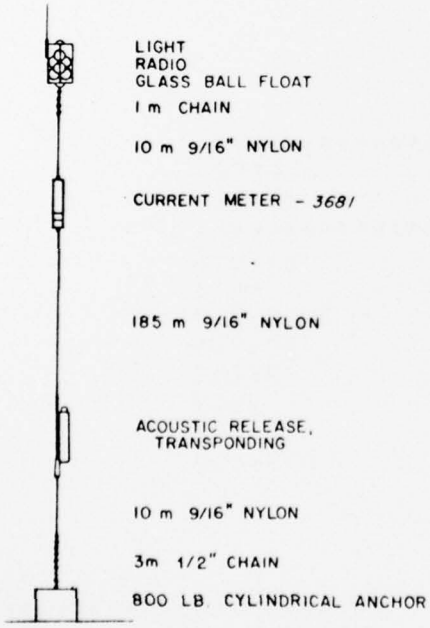
Ship R. V. Knorr Cruise 20

Mooring type - Bottom

Purpose of mooring

Measurements under the Gulf Stream with moorings 360 and 364

Data No.	Instr. Type	Depth (m)
3681*	Model 850	3750
Water depth		3955



Comments

Data number 3681

Instrument No.: M-127 Type: Model 850

Depth: 3750 m Water depth: 3955 m

Start time: 70-XII-16 20.30.37

Stop time: 71-V-08 12.30.37

Duration: 142d 16h

Sampling scheme: Interval

time between strobes =5.27 seconds

no. of strobes per interval = 16

interval time =1800 seconds

COMMENTS:

DATA/ 3681F1800

VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-6.872	8.880	86.029
STD. ERR.	.965	.766	.675
VARIANCE	6383.652	4014.965	3123.719
STD. DEV.	79.898	63.364	55.890
KURTOSIS	3.793	3.561	3.383
SKEWNESS	.351	.718	.963
MINIMUM	-259.866	-150.060	16.000
MAXIMUM	297.560	240.835	299.000

EAST & NORTH

COVARIANCE	-1906.723
STD. ERR. OF COVARIANCE	65.807
STD. DEV. OF COVARIANCE	5446.118
CORRELATION COEFFICIENT	-.377
VECTOR MEAN	11.228
VECTOR VARIANCE	5199.308
VECTOR STD. DEV.	72.106

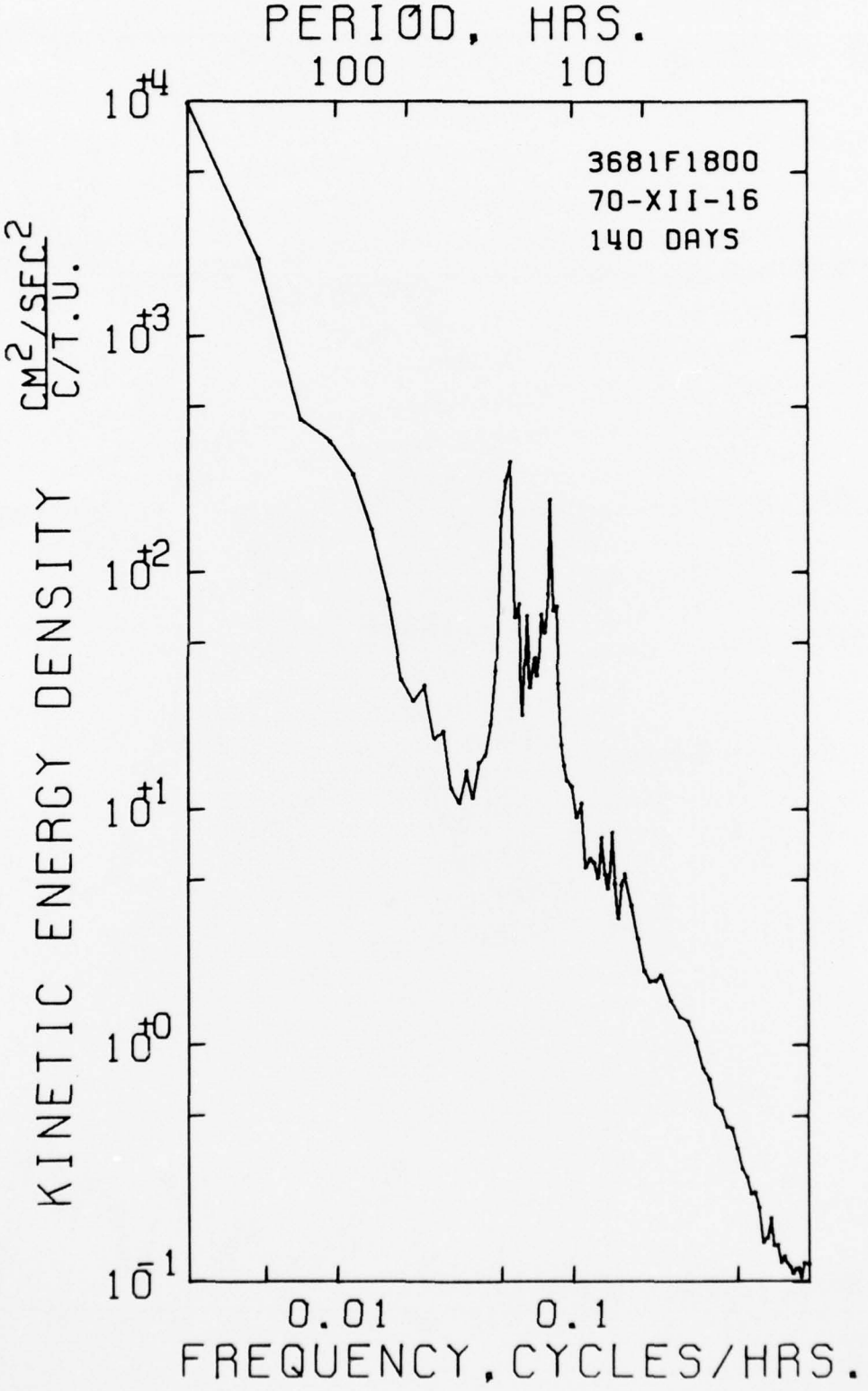
SAMPLE SIZE = 6849 POINTS

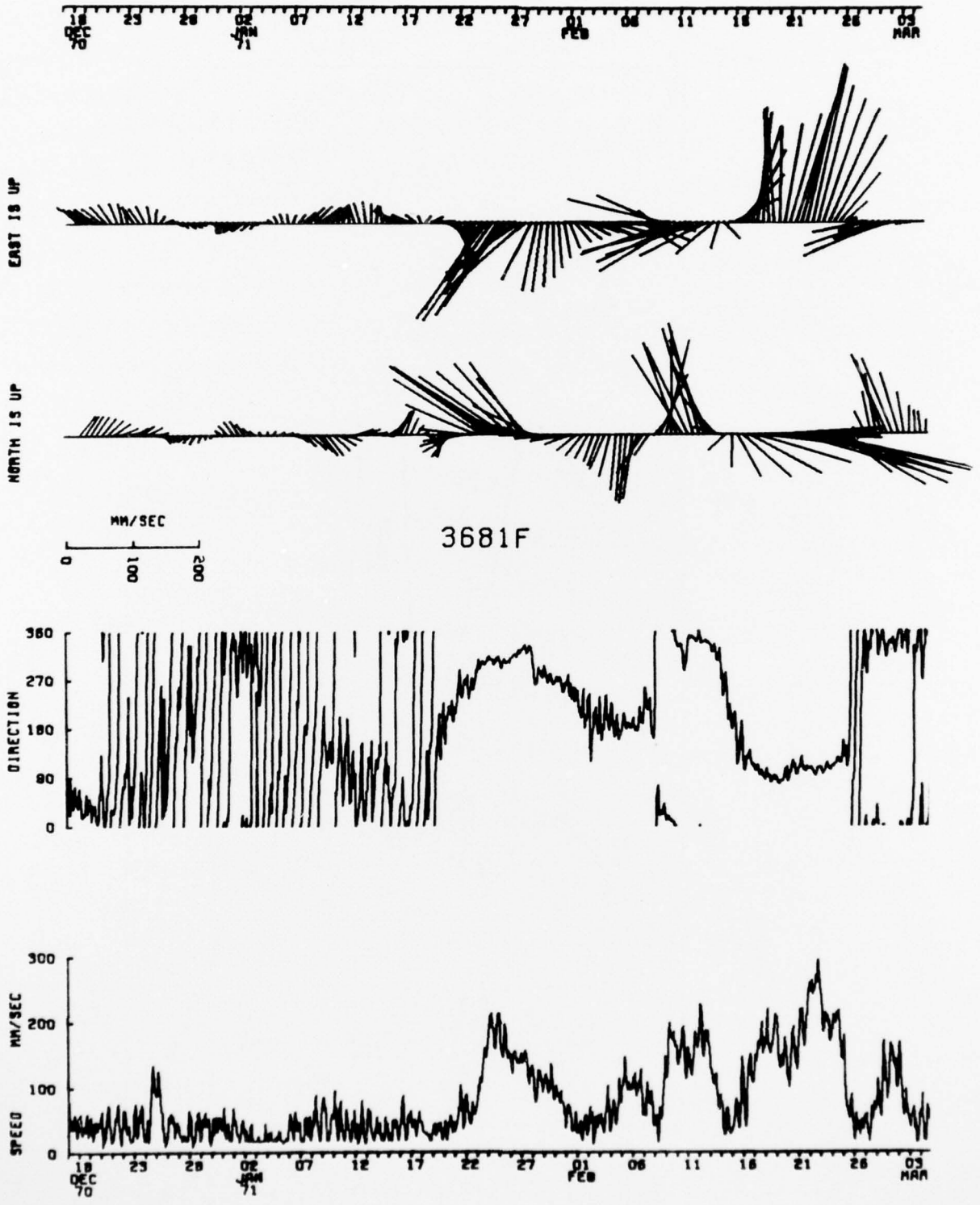
SPANNING RANGE

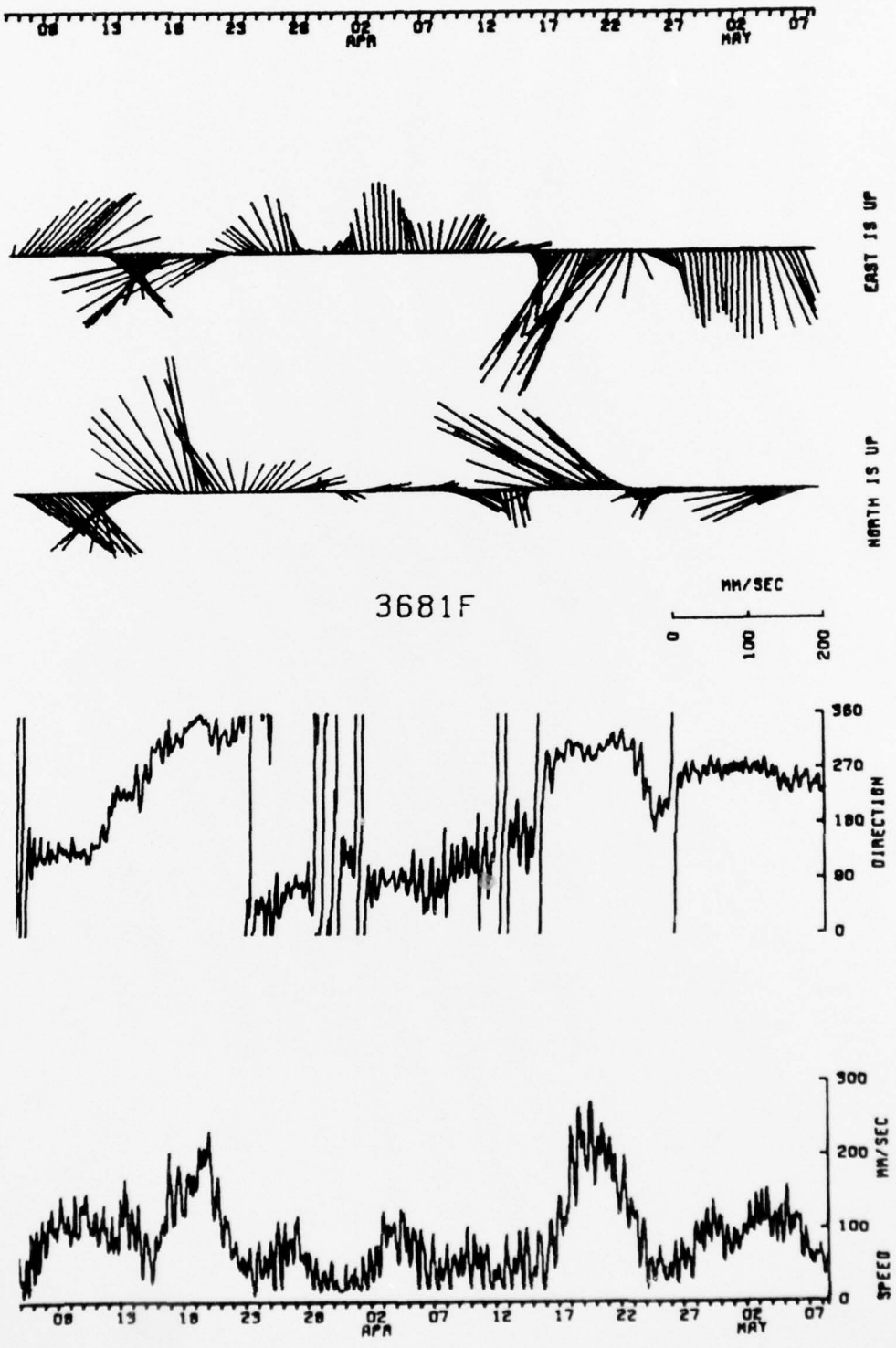
FROM 70- XII-16 20.30.37

TO 71- V -08 12.30.37

DURATION 142.67 DAYS


PERIØD, HRS.
100
10
3681F1800
70-XII-16
140 DAYS
KINETIC ENERGY DENSITY CM²/SEC² / C/T.U.
10⁴
10³
10²
10¹
10⁰
10⁻¹
0.01
0.1
FREQUENCY, CYCLES/HRS.


18 23 28 02 07 12 17 22 27 01 06 11 16 21 26 03
DEC 70
JAN 71
FEB
MAR
EAST IS UP
NORTH IS UP
MM/SEC
0
10
20
3681F
DIRECTION
360
270
180
90
0
SPEED MM/SEC
300
200
100
0
18 23 28 02 07 12 17 22 27 01 06 11 16 21 26 03
DEC 70
JAN 71
FEB
MAR


08
13
18
23
28
02
APR
07
12
17
22
27
02
MAY
07
EAST IS UP
NORTH IS UP
3681F
MM/SEC
0
100
200
360
270
180
90
0
DIRECTION
300
200
100
0
SPEED MM/SEC

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Summaries of moored current meter and associated hydrostation data collected in 1970 by the Woods Hole Oceanographic Institution are presented. The averaged current data are presented as Statistics, Spectral Diagrams, Vector and Scalar Plots versus Time. The associated hydrostation data are presented as temperature and salinity plotted versus depth.

1. Moorings
2. Current Meter Data
3. Gulf Stream

I. Tarbell, S. A.
II. Whitlatch, A. W.
III. N00014-66-C-0241; NR 083-004
IV. N00014-76-C-0197; NR 083-400

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