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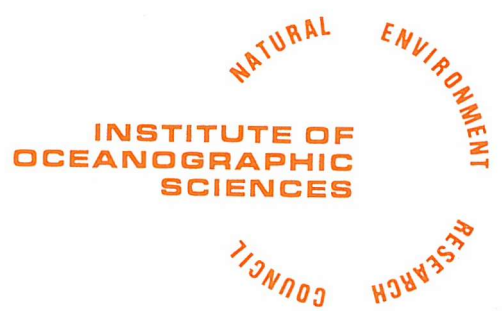
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INTERNAL DOCUMENT

I.O.S.

Technical Advisory Group 2
to the
Wave Energy Steering Committee
Contract E/5A/CON/1516

Report No. 1
Selected wave records
and one-dimensional spectra for
SOUTH UIST



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INTRODUCTION

This report describes work completed on the first stage of a study of wave conditions at South Uist, carried out for the Wave Energy Steering Committee of the Department of Energy under the auspices of Technical Advisory Group 2 (Wave Data).

Wave data collected during the year March 1976 to February 1977 at a point approximately eleven miles to the west of Benbecula on the Isle of South Uist in the Outer Hebrides, form the data set from which 399 records have been selected for further study.

The records chosen are such that the frequency distribution of their associated wind records, as measured at Benbecula anemograph station, approximates the long term distribution of winds in the area, in both speed and direction.

For each of these wave records a one-dimensional energy spectrum has been calculated. All of the selected digital wave records and the spectra calculated from them are available separately in computer compatible form to users requirements. The report contains an index to these records.

1. Data Collection and Preliminary Processing

Measurements have been made of the variation with time of sea surface elevation at a point.

The measuring instrument, a Datawell Waverider buoy, was positioned approximately eleven miles to the west of Benbecula at

057°18.2'N

007°38.3'W

The depth of water was approximately 42 metres.

Data from the buoy were continuously telemetered to an onshore receiving station located in the control building at the Royal Artillery Range, Hebrides, and comprising a Datawell Warep receiver interfaced to a Rapco digital data logger.

Data were recorded on a sample basis, one 1044 second sample being recorded every three hours. Each sample consisted of 2088 measurements of the wave elevation taken at 0.5 second intervals. Hereafter, a sample as just described is referred to as a (digital) wave record.

Magnetic tapes from the logger were returned to the laboratory each month where they were translated and processed by a computer program designed to check for timing or tape formatting errors. In addition the program subjected each (1044 second) wave record to a number of tests to check for characteristics not normally associated with wave records of this type. The tests were based on the assumptions that a wave record should display certain simple properties consistent with the behaviour of a random process with an approximately normal distribution, and that the water surface should conform to certain well established steepness criteria.

The tests were for the following fault conditions:

- (1) Test for lost data points due to format errors or telemetry failure (indicated by a special signal derived from the receiver).
- (2) Check for the occurrence of ten consecutive points of equal value (instrument failure test).
- (3) Check for an interval between successive up-crossings of the record mean level of greater than twenty five seconds (wandering mean test).
- (4) Comparison of the difference in magnitude between successive data points with a test value based on maximum probable water slope.

- (5) Comparison of absolute magnitude of data points with a test value equal to four times the record standard deviation.

Actions taken by the program were:

Single lost data points, up to a maximum number of fifteen per record, identified by the first test were replaced by the average value of the two neighbouring points. Two or more adjacent lost points caused the record to be rejected.

Failure of either test (2) or (3) caused the record to be rejected.

Faulty points, up to a maximum number of five, identified by test (4), were replaced by the average value of the two neighbouring points. Two or more adjacent faulty points caused the record to be rejected.

No alterations to the record were made on failures of test (5). Six failures, up to three of which could be consecutive, were allowed before rejecting the record.

All test failures were recorded whether or not the record was rejected.

All of the records chosen for further study were passed as acceptable by this procedure. Very few, in fact, had failed any of the tests, those which had were individually plotted and inspected by eye. In some cases the cause of the failure had been successfully corrected by the program and the record was then kept in the sub-set, but where the record had to be finally rejected it was replaced by another with similar associated wind characteristics.

A further simple check on the quality of the data was performed after the calculation of the spectra. The test was designed to reveal abnormal quantities of high or low frequency energy in the spectrum. A record whose spectrum failed this test was replaced: there were again very few of these.

The results of calibrations carried out on the buoy and the receiving and recording systems were used to enable the sampled wave signal values (volts) to be converted to wave heights (metres). The data were then stored on magnetic tape.

The above check procedures were in fact applied to all the records obtained during the first year of operation, and of the 2,920 records which might have been obtained during the year, 2,722 (93.2%) were finally stored on magnetic tape as valid data.

Data collection at this site is continuing.

2. Selection of Wave Records

The procedure described here represents an attempt to extract from those wave records available a smaller, and thus more manageable sub-set which is at the same time more representative of the long-term wave climate.

Winds are measured and recorded as hourly mean speeds and directions by the Meteorological Office at the nearby Benbecula anemograph station. There exists, therefore, a wind observation associated with each wave recording made during the year March 1976 to February 1977.

The wave records selected for inclusion in the sub-set were such that the distribution of their associated wind speeds and directions matched the long-term distribution of winds in the area.

The first stage in the selection of the wave record sub-set was, then, the selection of a sub-set of wind observations from all those made at Benbecula during the year. For this purpose a long term bivariate frequency histogram describing the distribution of hourly mean wind speed and direction was derived for the area.

This was done by combining three such distributions obtained from the Meteorological Office which were based on measurements made over different periods at the Benbecula and Tiree anemograph stations.

The periods of the measurements from which these distributions were derived were:

Tiree	(56°30'N, 06°53'W)	1950-1959	(10 years)
Benbecula	(57°28'N, 07°22'W)	1957-1960	(4 years)
Benbecula	(" ")	1960-1969	(10 years)

The method employed to combine the distributions was to convert the frequencies of occurrence, tabulated under each wind speed and direction class, in all three distributions into actual numbers of observations in those classes. Then, treating these as observations relevant to the area as a whole, to compile a frequency histogram showing the percentage of the total number of observations made over all three periods which fell in each of the wind speed and direction classes.

The final histogram is shown below:

Direction degrees Speed kts	350- 10	20- 40	50- 70	80- 100	110- 130	140- 160	170- 190	200- 220	230- 250	260- 280	290- 310	320- 340	Totals
0													2.28
1-3	.47	.74	.75	.61	.58	.69	.54	.44	.35	.32	.39	.38	6.26
4-6	.97	.80	.80	.74	.74	.84	.89	.67	.66	.61	.67	.65	9.04
7-10	1.98	1.41	1.30	1.24	1.48	1.88	1.95	1.62	1.61	1.38	1.41	1.35	18.61
11-16	2.95	1.44	1.65	1.26	1.96	3.07	3.50	3.61	3.27	2.59	2.18	2.22	29.70
17-21	1.48	.57	.76	.51	1.05	2.04	2.32	2.29	1.84	1.69	1.25	1.11	16.91
22-27	.83	.30	.35	.21	.71	1.61	1.78	1.41	1.26	1.15	.96	.73	11.30
28-33	.22	.10	.09	.06	.24	.70	.59	.46	.38	.43	.38	.30	3.95
34-40	.06	.02	.01		.01	.27	.21	.17	.13	.20	.15	.10	1.42
41-47	.02					.03	.04	.02	.02	.06	.05	.03	.27
48-55							.01			.01	.01		.03
56-63													
Totals	8.98	5.38	5.71	4.63	6.86	11.13	11.83	10.69	9.52	8.44	7.45	6.87	99.77

1. Wind speeds and directions (hourly means) - percentage frequencies of occurrence

It had been decided previously that a sub-set of 400 observations was required. The number of observations from the sub-set needed in each wind speed and direction class was therefore determined by dividing the percentage frequencies of occurrence, tabulated above, by 0.25, and rounding up or down to the nearest integer.

The distribution of all the winds measured at Benbecula during the year March 1976 to February 1977 was such that it was generally possible to find sufficient wind observations in each class. Difficulty was, however, experienced at the upper end of the wind speed range (> 28 knots), since there were relatively few such observations in the year. This necessitated some departure from the distribution determined above.

The final distribution for the sub-set winds is shown below.

Direction degrees Speed kts	350- 10	20- 40	50- 70	80- 100	110- 130	140- 160	170- 190	200- 220	230- 250	260- 280	290- 310	320- 340	Totals
0													2.25
1-3	.50	.75	.75	.50	.50	.75	.50	.50	.25	.25	.50	.50	6.25
4-6	1.00	.75	.75	.75	.75	.75	1.00	.75	.75	.50	.75	.75	9.25
7-10	2.00	1.50	1.25	1.25	1.50	2.00	2.00	1.50	1.50	1.50	1.50	1.25	18.75
11-16	3.00	1.50	1.75	1.25	2.00	3.00	3.50	3.50	3.25	2.50	2.25	2.25	29.75
17-21	1.50	.50	.75	.50	1.00	2.00	2.25	2.25	1.75	1.75	1.25	1.00	16.50
22-27	.75	.25	.25	.25	.75	1.50	1.75	1.50	1.25	1.25	1.00	.75	11.25
28-33	.50				.25	.75	.50	.50	.50	.50	.25	.25	4.00
34-40						.25	.25	.50	.50		.25		1.75
41-47													
48-55													
56-63													
Totals	9.25	5.25	5.50	4.50	6.75	11.00	11.75	11.00	9.75	8.25	7.75	6.75	99.75

2. Sub-set wind speeds and direction (hourly means) - percentage frequencies of occurrence

Having thus decided the number of sub-set observations required in each class, it is next desirable to select observations for inclusion in each class in such a way as to reflect the probabilities of measuring winds in that class in each of the four seasons. We would expect, for example, that the majority of westerly winds with speeds greater than 28 knots measured during the year would be measured during the winter months, and the records chosen for inclusion in that class of the sub-set distribution should reflect this fact.

To this end four seasonal distributions of wind speed and direction were compiled using the distributions of winds, tabulated month by month, published for the three long term series previously detailed.

Seasons were defined as follows:

Spring	March, April, May
Summer	June, July, August
Autumn	September, October, November
Winter	December, January, February

By reference to these seasonal distributions a further four percentage of occurrence figures were obtained for each of the distribution classes, showing the relative likelihood of winds in a particular class being measured in each season. These figures were used in deciding from which seasons the wind observations required to fill a given class would be drawn.

As an illustrative example, the procedure employed in selecting wind observations for a particular speed and direction class is described in detail below. It should first be appreciated that whilst approximately 9,000 wind observations were made at Benbecula in the year March 1976 to February 1977, only one third of these were eligible for selection, and they were those observations pertaining to the hour immediately preceding each wave recording period.

Example

For the class of wind direction between Θ and $\Theta + \Delta\Theta$ degrees, and wind speed between V and $V + \Delta V$ knots, a total of four records, say, is required, and the seasonal distributions may indicate that two observations selected from the summer months and one each from spring and autumn best reflect the seasonal distribution of winds in that class.

Tabulations of the wind observations for each month of the year March 1976 to February 1977 were compiled and arranged in speed and direction classes.

To select the summer observations required, the wind tabulations for June 1976 would first be consulted. It may be found that twenty observations were made in that month of winds with directions in the range Θ to $\Theta + \Delta\Theta$ degrees, and speeds in the range V to $V + \Delta V$ knots, of which eight pertained to hours immediately preceding a wave recording period. Each of these eight would then be allocated a serial number from one to eight and a table of random digits consulted to decide which one of the eight eligible records should be included. The second summer observation would then be selected from the month of July 1976 in the same manner, summer observations required for other classes in the distribution being selected one at a time from each of the three summer months in rotation.

A similar procedure was used to select observations from the other seasons.

A wind observation was only finally included in the sub-set if reference to the results of the wave record validation for the month indicated that a valid associated wave record existed.

Summary

Efforts were made, therefore, to ensure that the wind observations chosen conformed to both the annual and seasonal distributions of winds measured over

an extended period in the area. Since, however, each observation represents 0.25% of the total number of observations in the complete sub-set, and 1.0% of the total in each of the four seasons represented in the sub-set, the precision with which the sub-set conforms to these distributions is limited. This was especially so for the 'tails' of the long term distributions, and for the seasonal distributions overall.

The wave records associated with each of the wind observations selected constitute the sub-set of wave records to be studied in detail.

3. Calculation of Spectra

Each wave elevation time series was multiplied by a window function of the form $\frac{1}{2} \left(1 - \cos \frac{2\pi \cdot t}{T} \right)$ where T is length of record analyzed and t elapsed time, and a Fast Fourier Transform performed on 2048 points of the series. The spectra thus calculated were smoothed by averaging over ten adjacent harmonics to give a final resolution of 0.0098 Hz.

The individual smoothed spectral estimates were multiplied by a factor to restore the energy removed in the windowing process. This factor was calculated separately for each spectrum and ensured that the variance of the record, calculated as the zeroth moment of the spectrum, was the same as that calculated from the wave elevation time series. The estimates were also adjusted to compensate for the overall frequency response of the buoy, receiving and recording systems.

Whilst this compensation process yields a frequency response which is approximately flat over the frequency range of interest, it should be noted that the natural frequency of oscillation of the accelerometer platform within the buoy is approximately 40 seconds, and this can give rise to large amplitude low frequency noise. For this reason it is recommended that the first two smoothed spectral estimates of each spectrum supplied be disregarded, and in this way it should be possible to avoid the accidental inclusion of any spurious instrumental noise. The lowest frequency for which a valid estimate of spectral density exists should therefore be regarded as 0.0444 Hz.

4. Description of Data Supplied

The data to which this report refers are supplied separately in computer compatible form to users requirements.

The data comprise 399 digital wave records, and the one-dimensional spectra calculated for each. (The cumulative effect of rounding errors in seeking to match the wind distribution resulted in 399 rather than 400 records being selected.)

Sample listings of both a wave record and a spectrum file are included in this section. Files were written by Fortran computer program and the formats used are described below.

4.1 Wave Records

Wave elevations are expressed in metres and the interval between data points is 0.5 seconds. There are a total of 2088 data points in each record.

Wave records were written separately to individual files on the computer compatible medium (usually magnetic tape).

4.1.1. Wave record files - logical record description

- Logical record 1 - Alpha-numeric file header (20A1, I3) of the form: S UIST WAVE RECORD NNN
NNN is the wave record serial number and the record is referred to by this number in the index.
- Logical record 2 - Five integer numbers (5I4) being, in order: number of data points in the record, year, day, hour and minute of the start of the wave recording period.
- Logical records 3 to 176 - Successive data values, each record written (12F6.2)

Each logical record is 72 characters long, records are padded with space characters where necessary.

~~Logical records are terminated by a carriage return and a line feed character.~~
Files are separated by an IBM compatible tape mark (Physical EOF).

S. UIST WAVE RECORD 5

2088 76 238 17 59

-0.33	-0.27	-0.24	-0.17	-0.12	-0.14	-0.17	-0.22	-0.20	-0.20	-0.24	-0.21
-0.17	-0.11	-0.03	0.08	0.20	0.20	0.12	0.04	-0.06	-0.24	-0.36	-0.46
-0.55	-0.59	-0.56	-0.50	-0.36	-0.26	-0.17	-0.04	0.00	0.09	0.10	0.08
0.12	0.08	0.00	-0.11	-0.17	-0.28	-0.41	-0.43	-0.38	-0.34	-0.26	-0.12
-0.03	-0.07	-0.04	-0.13	-0.17	-0.19	-0.35	-0.36	-0.24	-0.19	-0.09	0.03
0.04	0.00	-0.06	-0.14	-0.26	-0.31	-0.27	-0.24	-0.18	-0.09	-0.10	-0.08
0.12	-0.23	-0.30	-0.32	-0.28	-0.24	-0.22	-0.15	-0.10	-0.08	-0.08	-0.10
-0.06	-0.04	-0.03	-0.08	-0.08	-0.11	-0.24	-0.33	-0.39	-0.44	-0.43	-0.33
0.20	-0.15	-0.09	-0.03	0.02	0.00	-0.01	0.00	0.00	-0.06	-0.17	-0.22
0.24	-0.31	-0.31	-0.33	-0.32	-0.24	-0.20	-0.20	-0.17	-0.17	-0.18	-0.17
0.17	-0.14	-0.07	-0.04	-0.08	-0.10	-0.10	-0.06	0.00	-0.02	-0.10	-0.15
0.24	-0.28	-0.30	-0.23	-0.23	-0.39	-0.41	-0.34	-0.31	-0.30	-0.26	-0.15
0.03	0.03	0.12	0.25	0.26	0.10	0.03	-0.07	-0.18	-0.29	-0.40	-0.49
0.52	-0.47	-0.42	-0.34	-0.26	-0.20	-0.12	-0.09	-0.07	-0.05	-0.12	-0.18
0.15	-0.12	-0.10	-0.10	-0.04	0.01	0.07	0.10	0.06	0.00	-0.08	-0.14
0.24	-0.33	-0.36	-0.51	-0.67	-0.74	-0.70	-0.64	-0.52	-0.30	-0.03	0.18
0.38	0.60	0.56	0.40	0.28	0.08	-0.10	-0.26	-0.44	-0.63	-0.63	-0.59
0.55	-0.42	-0.26	-0.19	-0.18	-0.19	-0.26	-0.27	-0.20	-0.19	-0.17	-0.10
-0.04	0.00	0.02	0.03	0.07	0.04	-0.01	0.00	-0.04	-0.14	-0.20	-0.24
-0.33	-0.39	-0.43	-0.42	-0.37	-0.34	-0.33	-0.33	-0.33	-0.32	-0.23	-0.15
-0.06	0.04	0.17	0.31	0.24	0.20	0.12	-0.06	-0.23	-0.33	-0.39	-0.41
-0.40	-0.39	-0.39	-0.36	-0.28	-0.24	-0.27	-0.18	-0.08	-0.08	-0.12	-0.08
-0.07	-0.06	-0.08	-0.10	-0.10	-0.17	-0.18	-0.21	-0.22	-0.18	-0.18	-0.17
-0.18	-0.14	-0.06	-0.08	-0.06	-0.04	-0.15	-0.29	-0.33	-0.38	-0.46	-0.49
-0.42	-0.33	-0.17	0.03	0.18	0.27	0.23	0.17	0.04	-0.14	-0.33	-0.40
-0.38	-0.44	-0.47	-0.36	-0.24	-0.18	-0.17	-0.14	-0.17	-0.15	-0.07	-0.04
0.07	-0.06	-0.14	-0.27	-0.24	-0.24	-0.26	-0.19	-0.14	-0.11	-0.08	-0.08
0.06	-0.01	-0.01	-0.04	-0.08	-0.19	-0.23	-0.33	-0.44	-0.46	-0.40	-0.40
0.33	-0.19	-0.15	-0.07	0.05	0.07	0.00	0.06	0.02	-0.07	-0.06	-0.06
0.08	-0.12	-0.12	-0.17	-0.33	-0.43	-0.47	-0.44	-0.36	-0.31	-0.26	-0.20
0.17	-0.14	-0.12	-0.14	-0.16	-0.12	-0.10	-0.10	-0.02	0.07	0.11	0.07
0.02	-0.04	-0.15	-0.24	-0.33	-0.46	-0.51	-0.44	-0.40	-0.34	-0.27	-0.24
0.20	-0.17	-0.14	-0.12	-0.10	-0.06	0.03	0.08	0.08	0.06	-0.01	-0.06
0.12	-0.20	-0.28	-0.34	-0.33	-0.28	-0.27	-0.28	-0.24	-0.19	-0.20	-0.20
0.20	-0.23	-0.26	-0.20	-0.19	-0.22	-0.17	-0.08	0.00	0.04	0.02	-0.01
0.12	-0.22	-0.27	-0.24	-0.20	-0.11	-0.03	-0.06	-0.11	-0.15	-0.22	-0.33
0.42	-0.47	-0.45	-0.41	-0.32	-0.22	-0.09	0.03	0.10	0.15	0.04	-0.02
0.03	-0.09	-0.12	-0.17	-0.26	-0.34	-0.36	-0.35	-0.34	-0.27	-0.17	-0.09
0.12	-0.08	-0.07	-0.10	-0.04	-0.08	-0.23	-0.30	-0.33	-0.38	-0.37	-0.30
0.20	-0.10	-0.02	0.07	0.15	0.12	0.03	-0.08	-0.21	-0.23	-0.30	-0.36
0.36	-0.40	-0.31	-0.20	-0.23	-0.22	-0.18	-0.17	-0.17	-0.15	-0.08	-0.04
0.08	-0.11	-0.10	-0.16	-0.20	-0.19	-0.20	-0.17	-0.10	-0.08	-0.04	0.00
0.04	-0.15	-0.19	-0.20	-0.26	-0.30	-0.31	-0.32	-0.36	-0.42	-0.38	-0.35
0.27	-0.17	-0.10	0.00	0.02	0.02	0.04	0.03	0.00	-0.04	-0.09	-0.08
0.07	-0.15	-0.17	-0.20	-0.24	-0.31	-0.39	-0.49	-0.53	-0.42	-0.28	-0.18
0.04	0.04	0.08	0.01	-0.12	-0.26	-0.34	-0.34	-0.24	-0.11	0.00	0.07
0.04	0.00	-0.02	-0.07	-0.12	-0.19	-0.31	-0.38	-0.35	-0.36	-0.39	-0.34
-0.28	-0.30	-0.24	-0.18	-0.12	0.00	-0.03	-0.08	-0.07	-0.12	-0.14	-0.07
0.01	0.02	0.07	0.00	-0.10	-0.22	-0.35	-0.40	-0.40	-0.35	-0.38	-0.30
0.24	-0.18	-0.18	-0.20	-0.20	-0.20	-0.15	-0.04	0.00	-0.03	-0.04	-0.08
0.14	-0.22	-0.22	-0.17	-0.19	-0.15	-0.08	-0.05	-0.07	-0.17	-0.28	-0.28
0.33	-0.33	-0.31	-0.35	-0.28	-0.15	-0.08	-0.02	0.08	0.06	-0.07	-0.11
0.14	-0.26	-0.30	-0.30	-0.28	-0.24	-0.19	-0.16	-0.12	-0.12	-0.15	-0.14
0.12	-0.08	-0.12	-0.12	-0.18	-0.22	-0.22	-0.34	-0.35	-0.28	-0.24	-0.11
0.01	0.01	-0.02	-0.03	-0.03	-0.17	-0.30	-0.43	-0.43	-0.38	-0.34	-0.24
0.08	0.03	0.06	0.06	0.08	-0.02	-0.12	-0.15	-0.28	-0.38	-0.36	-0.36
0.35	-0.22	-0.14	-0.14	-0.02	0.04	0.08	-0.11	-0.15	-0.26	-0.28	-0.24
0.24	-0.28	-0.28	-0.24	-0.20	-0.12	0.04	0.00	0.01	0.06	0.01	-0.04

-0.06	0.14	-0.23	-0.36	-0.42	-0.43	-0.54	-0.56	-0.47	-0.35	-0.24	-0.06
0.12	0.28	0.34	0.28	0.17	0.00	-0.24	-0.40	-0.44	-0.54	-0.50	-0.36
-0.30	-0.24	-0.12	0.00	0.07	0.08	0.04	-0.03	-0.14	-0.24	-0.34	-0.40
-0.44	-0.46	-0.38	-0.28	-0.18	-0.04	0.00	0.04	0.02	0.03	0.02	-0.03
-0.15	-0.26	-0.23	-0.28	-0.33	-0.26	-0.23	-0.28	-0.33	-0.22	-0.20	-0.22
-0.12	0.00	0.00	-0.01	-0.08	-0.15	-0.12	-0.15	-0.24	-0.20	-0.20	-0.34
-0.38	-0.33	-0.22	-0.18	-0.13	-0.07	-0.05	0.00	0.02	-0.02	-0.04	-0.07
-0.15	-0.27	-0.28	-0.28	-0.33	-0.34	-0.29	-0.24	-0.27	-0.24	-0.17	-0.12
-0.14	-0.12	-0.11	-0.06	-0.06	-0.14	-0.11	-0.02	-0.04	-0.07	-0.03	-0.04
-0.12	-0.27	-0.34	-0.39	-0.42	-0.39	-0.36	-0.34	-0.28	-0.18	-0.06	0.00
0.02	-0.07	-0.08	-0.07	-0.06	-0.11	-0.11	-0.08	-0.10	-0.17	-0.20	-0.20
0.28	-0.26	-0.19	-0.20	-0.24	-0.20	-0.16	-0.19	-0.20	-0.24	-0.30	-0.31
-0.33	-0.32	-0.24	-0.11	0.01	0.11	0.18	0.18	0.12	0.00	-0.11	-0.20
-0.35	-0.47	-0.46	-0.44	-0.44	-0.39	-0.26	-0.18	-0.17	-0.07	-0.01	-0.04
0.04	-0.02	0.00	-0.03	-0.12	-0.08	-0.17	-0.24	-0.23	-0.26	-0.28	-0.29
-0.30	-0.31	-0.22	-0.17	-0.18	-0.13	-0.08	-0.08	-0.10	-0.10	-0.08	-0.10
-0.12	-0.08	-0.08	-0.18	-0.20	-0.14	-0.15	-0.14	-0.11	-0.12	-0.22	-0.31
-0.34	-0.40	-0.42	-0.35	-0.33	-0.27	-0.14	-0.10	-0.03	0.01	0.02	0.04
0.04	0.03	-0.01	-0.04	-0.08	-0.17	-0.27	-0.33	-0.35	-0.40	-0.44	-0.42
-0.34	-0.24	-0.22	-0.19	-0.12	-0.12	-0.15	-0.08	-0.06	-0.03	0.00	0.00
-0.02	-0.02	-0.04	-0.08	-0.11	-0.17	-0.30	-0.40	-0.47	-0.40	-0.31	-0.27
-0.22	-0.20	-0.23	-0.18	-0.10	-0.10	-0.10	-0.05	0.00	0.00	0.01	0.06
0.03	-0.08	-0.20	-0.28	-0.35	-0.44	-0.44	-0.40	-0.35	-0.30	-0.28	-0.22
-0.12	-0.07	-0.06	0.02	0.11	0.12	0.02	-0.03	-0.06	-0.21	-0.33	-0.36
-0.38	-0.36	-0.35	-0.28	-0.17	-0.08	-0.08	-0.04	-0.01	-0.11	-0.19	-0.24
-0.33	-0.33	-0.30	-0.24	-0.12	-0.07	-0.07	-0.01	0.00	-0.01	0.00	-0.06
-0.18	-0.20	-0.20	-0.27	-0.36	-0.40	-0.43	-0.38	-0.31	-0.28	-0.17	-0.03
0.01	0.02	-0.02	-0.04	-0.04	-0.14	-0.22	-0.20	-0.21	-0.24	-0.20	-0.18
0.14	-0.06	-0.04	-0.07	-0.11	-0.22	-0.28	-0.35	-0.38	-0.34	-0.28	-0.18
0.14	-0.13	-0.08	-0.06	-0.08	-0.12	-0.15	-0.19	-0.22	-0.20	-0.17	-0.04
0.00	0.00	0.00	-0.06	-0.20	-0.34	-0.47	-0.47	-0.34	-0.33	-0.33	-0.17
0.00	0.03	-0.01	-0.04	-0.08	-0.17	-0.23	-0.24	-0.22	-0.20	-0.20	-0.17
0.15	-0.19	-0.17	-0.07	-0.07	-0.06	-0.03	-0.08	-0.20	-0.24	-0.30	-0.31
-0.36	-0.43	-0.34	-0.24	-0.24	-0.18	-0.06	0.04	0.04	0.02	0.00	-0.03
0.12	0.24	-0.26	-0.22	-0.23	0.20	-0.12	-0.10	-0.07	-0.08	-0.22	-0.30
-0.33	-0.38	-0.43	-0.40	-0.35	0.24	-0.12	0.01	0.10	0.12	0.03	-0.06
0.07	0.14	-0.17	-0.17	-0.24	-0.23	-0.24	-0.27	-0.22	-0.20	-0.15	-0.20
-0.24	-0.27	-0.28	-0.30	-0.23	-0.14	-0.14	-0.10	-0.11	-0.14	-0.17	-0.18
0.13	-0.08	-0.05	-0.02	0.00	-0.02	-0.08	-0.11	-0.19	-0.30	-0.26	-0.27
-0.33	-0.31	-0.36	-0.47	-0.44	-0.36	-0.23	-0.08	0.12	0.27	0.33	0.28
0.19	0.04	-0.18	-0.30	-0.44	-0.58	-0.65	-0.62	-0.56	-0.46	-0.24	-0.04
0.04	0.12	0.16	0.17	0.04	-0.08	-0.10	-0.17	-0.28	-0.26	-0.22	-0.22
-0.18	-0.21	-0.33	-0.31	-0.17	-0.15	-0.19	-0.19	-0.23	-0.28	-0.34	-0.39
-0.34	-0.17	-0.07	0.04	0.15	0.17	0.20	0.11	-0.02	-0.11	-0.21	-0.29
-0.40	-0.49	-0.49	-0.46	-0.35	-0.27	-0.23	-0.12	0.00	0.04	0.00	-0.10
-0.20	-0.30	-0.36	-0.32	-0.20	-0.12	0.00	0.10	0.18	0.18	0.04	-0.06
-0.18	-0.38	-0.45	-0.49	-0.49	-0.40	-0.36	-0.31	-0.24	-0.15	-0.07	-0.01
0.02	0.00	-0.04	-0.14	-0.18	-0.14	-0.12	-0.17	-0.18	-0.14	-0.08	-0.11
-0.24	-0.32	-0.28	-0.28	-0.30	-0.26	-0.28	-0.28	-0.17	-0.08	-0.08	-0.06
0.02	0.12	0.06	-0.01	-0.08	-0.18	-0.24	-0.33	-0.40	-0.40	-0.40	-0.33
-0.28	-0.25	-0.15	-0.06	0.01	0.00	-0.10	-0.17	-0.22	-0.20	-0.17	-0.14
0.08	0.00	0.06	0.00	-0.11	-0.20	-0.24	-0.35	-0.46	-0.45	-0.36	-0.40
-0.34	-0.18	-0.10	-0.03	0.00	-0.04	-0.06	-0.08	-0.08	-0.14	-0.10	-0.03
-0.11	-0.12	-0.04	-0.02	-0.11	-0.12	-0.18	-0.33	-0.43	-0.51	-0.49	-0.42
-0.38	-0.28	-0.20	-0.20	-0.15	-0.04	0.02	0.08	0.10	0.14	0.10	0.00
-0.04	-0.12	-0.28	-0.30	-0.24	-0.33	-0.33	-0.31	-0.33	-0.33	-0.36	-0.37
-0.33	-0.28	-0.23	-0.15	0.02	0.08	0.06	0.06	0.03	-0.07	-0.15	-0.17
0.14	0.12	-0.17	-0.22	-0.20	-0.20	-0.26	-0.30	-0.32	-0.33	-0.34	-0.30
-0.24	-0.22	-0.14	-0.14	-0.14	-0.04	-0.04	-0.07	-0.07	-0.02	0.00	0.00
-0.01	-0.08	-0.10	-0.14	-0.23	-0.29	-0.42	-0.52	-0.48	-0.38	-0.34	-0.24

-0.22	-0.14	0.04	0.08	0.06	0.04	-0.02	-0.13	-0.22	-0.23	-0.20	-0.20
-0.22	-0.18	-0.17	-0.17	-0.13	-0.14	-0.17	-0.17	-0.12	-0.12	-0.20	-0.28
-0.35	-0.31	-0.28	-0.28	-0.26	-0.20	-0.17	-0.12	-0.07	-0.10	-0.12	-0.03
0.00	0.00	-0.03	-0.08	-0.12	-0.12	-0.18	-0.26	-0.30	-0.34	-0.34	-0.37
0.36	-0.28	-0.26	-0.20	-0.04	0.00	-0.06	-0.08	-0.10	-0.11	-0.19	-0.22
-0.19	-0.14	-0.14	-0.17	-0.12	-0.08	-0.04	-0.04	-0.08	-0.07	-0.08	-0.12
0.24	-0.36	-0.40	-0.49	-0.55	-0.52	-0.39	-0.28	-0.15	0.00	0.11	0.20
0.22	0.22	0.15	0.08	-0.03	-0.23	-0.33	-0.43	-0.51	-0.51	-0.42	-0.30
0.20	-0.15	-0.12	-0.11	-0.12	-0.17	-0.20	-0.21	-0.19	-0.17	-0.12	-0.08
0.10	-0.09	-0.10	-0.11	-0.06	0.00	-0.02	-0.03	-0.07	-0.08	-0.20	-0.28
0.38	-0.49	-0.54	-0.54	-0.44	-0.33	-0.18	-0.06	0.08	0.20	0.15	0.07
0.01	-0.06	-0.17	-0.23	-0.22	-0.24	-0.23	-0.17	-0.17	-0.20	-0.27	-0.28
-0.27	-0.27	-0.24	-0.20	-0.20	-0.23	-0.24	-0.20	-0.20	-0.19	-0.12	-0.08
-0.08	-0.04	0.00	0.01	-0.06	-0.12	-0.18	-0.20	-0.24	-0.28	-0.24	-0.17
-0.18	-0.26	-0.22	-0.15	-0.18	-0.26	-0.24	-0.23	-0.24	-0.24	-0.24	-0.18
0.14	-0.07	0.05	0.06	0.00	-0.02	-0.12	-0.23	-0.26	-0.28	-0.26	-0.19
-0.17	-0.18	-0.20	-0.22	-0.20	-0.17	-0.12	-0.13	-0.12	-0.15	-0.20	-0.20
-0.17	-0.22	-0.27	-0.24	-0.31	-0.28	-0.24	-0.20	-0.12	-0.06	0.04	0.12
0.14	0.04	-0.04	-0.08	-0.19	-0.27	-0.34	-0.38	-0.38	-0.40	-0.44	-0.43
0.36	-0.24	-0.12	0.00	0.17	0.20	0.12	0.02	-0.17	-0.30	-0.40	-0.44
0.40	-0.36	-0.20	-0.06	0.02	0.11	0.17	0.08	-0.03	-0.17	-0.31	-0.42
0.44	-0.44	-0.44	-0.40	-0.34	-0.19	-0.10	-0.02	0.00	0.00	0.00	-0.07
-0.20	-0.22	-0.20	-0.20	-0.15	-0.04	0.00	0.00	0.00	-0.02	-0.08	-0.17
0.28	-0.40	-0.43	-0.45	-0.44	-0.35	-0.24	-0.12	0.06	-0.04	-0.04	-0.10
0.15	-0.14	-0.18	-0.20	-0.17	-0.19	-0.12	-0.06	-0.02	0.06	0.06	0.02
0.04	-0.17	-0.28	-0.36	-0.43	-0.46	-0.44	0.33	-0.28	-0.27	-0.20	-0.15
0.14	-0.20	-0.14	-0.06	-0.06	-0.02	0.00	0.00	0.02	0.00	-0.06	-0.10
0.11	-0.15	-0.27	-0.33	-0.36	-0.42	-0.39	-0.35	-0.33	-0.23	-0.22	-0.28
0.17	-0.04	-0.01	0.01	0.03	-0.02	0.00	-0.15	-0.22	-0.28	-0.22	-0.12
0.08	-0.04	0.01	0.01	-0.08	-0.24	-0.40	-0.50	-0.56	-0.56	-0.42	-0.20
0.10	-0.06	-0.04	0.00	0.03	0.04	0.00	0.04	0.00	-0.08	-0.17	-0.26
0.34	-0.39	-0.40	-0.40	-0.33	-0.24	-0.17	-0.03	-0.12	-0.19	-0.18	-0.17
0.12	-0.11	-0.10	-0.12	-0.12	-0.14	-0.20	-0.22	-0.20	-0.15	-0.12	-0.04
0.02	-0.11	-0.15	-0.15	-0.18	-0.24	-0.33	-0.36	0.40	-0.40	-0.34	-0.22
0.08	0.00	0.03	0.03	0.01	-0.03	-0.08	-0.14	-0.15	-0.14	-0.18	-0.20
0.20	-0.27	-0.34	-0.40	-0.42	-0.36	-0.20	-0.12	-0.08	0.00	0.00	-0.08
0.12	-0.15	-0.20	-0.28	-0.28	-0.20	-0.14	-0.03	-0.01	-0.08	-0.12	-0.14
-0.18	-0.22	-0.26	-0.27	-0.22	-0.20	-0.23	-0.24	-0.24	-0.24	-0.22	-0.19
0.18	-0.27	-0.27	-0.23	-0.17	-0.10	-0.07	0.02	0.05	0.10	0.12	0.04
-0.03	-0.12	-0.22	-0.36	-0.51	-0.58	-0.56	-0.46	-0.42	-0.34	-0.20	-0.07
0.03	0.12	0.17	0.15	0.00	-0.10	-0.15	-0.23	-0.30	-0.28	-0.28	-0.26
0.15	-0.10	-0.14	-0.07	-0.06	-0.15	-0.20	-0.23	-0.22	-0.31	-0.38	-0.39
-0.40	-0.36	-0.33	-0.26	-0.12	-0.01	0.12	0.17	0.08	0.06	0.00	-0.03
-0.06	-0.19	-0.27	-0.24	-0.22	-0.26	-0.30	-0.33	-0.39	-0.43	-0.40	-0.38
0.28	-0.17	-0.06	-0.01	0.07	0.08	-0.02	-0.17	-0.26	-0.24	-0.24	-0.24
0.18	-0.06	0.08	0.14	0.03	0.00	-0.06	-0.15	-0.28	-0.44	-0.55	-0.54
0.56	-0.44	-0.35	-0.28	-0.14	-0.04	0.03	0.04	0.02	0.04	0.12	0.12
0.02	-0.04	-0.19	-0.30	-0.39	-0.44	-0.40	-0.43	-0.36	-0.24	-0.03	0.08
0.10	0.11	0.06	-0.07	-0.19	-0.33	-0.46	-0.52	-0.50	-0.36	-0.22	-0.11
0.02	0.10	0.12	0.11	0.00	-0.12	-0.24	-0.36	-0.39	-0.36	-0.23	-0.12
0.04	-0.01	-0.02	-0.08	-0.14	-0.14	-0.20	-0.24	-0.29	-0.34	-0.34	-0.33
0.23	-0.20	-0.21	-0.10	-0.07	-0.06	-0.04	-0.10	-0.15	-0.15	-0.10	-0.08
0.06	-0.06	-0.08	-0.11	-0.13	-0.15	-0.20	-0.24	-0.26	-0.23	-0.23	-0.27
0.30	-0.30	-0.24	-0.24	-0.23	-0.23	-0.20	-0.07	-0.04	-0.03	-0.03	-0.07
0.06	-0.04	-0.04	-0.08	-0.08	-0.08	-0.17	-0.17	-0.14	-0.23	-0.34	-0.36
0.40	-0.38	-0.39	-0.43	-0.33	-0.22	-0.15	-0.01	0.04	0.08	0.12	0.11

4.2 Spectra

A frequency spectrum, $S(f)$ has been calculated, in the manner previously described, for each of the chosen wave records. Spectra were written separately to individual files.

Moments of each spectrum are defined:

$$M_n = \int_{f_1}^{f_2} f^n \cdot S(f) \cdot df$$

$f_1 = 0.0444 \text{ Hz}$
 $f_2 = 0.6792 \text{ Hz}$

where f is frequency

Moments from M_{-2} to M_4 have been calculated and are included in the files. Each file also contains certain quantities which have been calculated as functions of these moments. These are:

- (a) Significant wave height, H_s , defined as $4\sqrt{M_0}$
- (b) Mean zero crossing period, T_z , defined as $\sqrt{M_0/M_2}$
- (c) Goda (1970) peakiness factor, Q_p , defined as $\frac{2}{M_0} \int_{f_1}^{f_2} f \cdot S^2(f) \cdot df$

4.2.1 Spectrum files - logical record description

- Logical record 1 - Alpha numeric file header (16 A1, I3) of form
S UIST SPECTRUM NNN
NNN is the spectrum serial number and the spectrum is referred to by this number in the index.
- Logical record 2 - Four integer numbers (414) being, in order: year, day, hour and minute of the start of the wave recording period.
- Logical record 3 - Significant wave height in metres and zero crossing period in seconds, written (2F6.2).
- Logical record 4 - Wind direction in degrees, divided by ten, eg 28 = 280 degrees, and wind speed in knots, written (2I2).
- Logical records 5
to 11 - Spectral moments M_{-2} to M_4 , written (E12.6)
- Logical record 12 - Goda's Q_p , written (E12.6)
- Logical records 13
to 76 - Component frequency, Hz, and corresponding spectral density, metres 2 /Hz, each record written as (F6.4, 3X, E12.6).

Each logical record is 21 characters long, records are padded with space characters where necessary.

~~Logical records are terminated by a carriage return and a line feed character.~~

Files are separated by an IBM compatible tape mark (Physical EOF).

S. UIST SPECTRUM 5

76 238 17 59

0.65 7.06

28 3

0.22176E 01	
0.23315E 00	
0.26626E-01	
0.34176E-02	
0.53435E-03	
0.11687E-03	
0.38261E-04	
0.25831E 01	
0.0249	0.30228E-03
0.0347	0.65734E-03
0.0444	0.33959E-03
0.0542	0.10860E-02
0.0640	0.63905E-02
0.0737	0.74352E-01
0.0835	0.49733E 00
0.0933	0.41636E 00
0.1030	0.39674E-01
0.1128	0.18896E 00
0.1226	0.21117E 00
0.1323	0.44332E 00
0.1421	0.14922E 00
0.1519	0.31057E 00
0.1616	0.66940E-01
0.1714	0.52130E-01
0.1812	0.70462E-01
0.1909	0.32773E-01
0.2007	0.19029E-01
0.2104	0.13775E-01
0.2202	0.67863E-02
0.2300	0.21190E-01
0.2397	0.35784E-02
0.2495	0.55868E-02
0.2593	0.27151E-02
0.2690	0.47953E-02
0.2788	0.35742E-02
0.2886	0.32155E-02
0.2983	0.21669E-02
0.3081	0.25826E-02
0.3179	0.83193E-03
0.3276	0.53302E-03
0.3374	0.23023E-02
0.3472	0.15191E-02
0.3569	0.81471E-03
0.3667	0.13127E-02
0.3765	0.15337E-02
0.3862	0.61061E-03
0.3960	0.20032E-02
0.4058	0.14020E-02
0.4155	0.19406E-02
0.4253	0.15536E-02
0.4351	0.27602E-03

0. 4440	0. 12529E-02
0. 4546	0. 01479E-02
0. 4644	0. 10099E-02
0. 4741	0. 21372E-02
0. 4839	0. 17478E-02
0. 4937	0. 25954E-02
0. 5034	0. 01487E-02
0. 5132	0. 11109E-02
0. 5229	0. 19552E-02
0. 5327	0. 10596E-02
0. 5425	0. 66381E-03
0. 5522	0. 11181E-02
0. 5620	0. 11118E-02
0. 5718	0. 27998E-02
0. 5815	0. 14250E-02
0. 5913	0. 61676E-03
0. 6011	0. 17165E-02
0. 6108	0. 66292E-03
0. 6206	0. 37653E-03
0. 6304	0. 14725E-02
0. 6401	0. 84815E-03

5. Discussion of Data Characteristics

As will be described in the next section, the spectra were sorted into classes of significant wave height, each 0.5 metres in width, and placed in descending order of zero crossing period within those classes.

The most striking feature of the spectra is the high number containing a significant proportion of swell energy.

Within each significant wave height class those with the longer zero crossing periods appear to be, in general, almost pure swell, and those with increasingly shorter zero crossing periods contain increasing amounts of wind sea energy. This interpretation is supported by the fairly regular increase in wind speeds associated with records of decreasing zero crossing period. Since swell is a feature of the majority of spectra, the increased proportion of wind sea energy serves, in general, to broaden the spectra. Those spectra with the shortest zero crossing periods often display well defined separate swell and wind sea peaks of similar magnitude.

These trends are most clearly shown amongst spectra in the classes of lower significant wave height, and decreasingly so for spectra of higher energy where it is difficult to draw any obvious distinction between swell and wind sea.

In order to illustrate these general characteristics a number of spectra have been plotted for each significant wave height class. For each of the lower Hs classes the spectrum with the longest zero crossing period in each class, and that with the shortest have been plotted, as well as a number at intervals between these two extremes for classes containing large numbers of records. Only one spectrum has been plotted for each of the classes with Hs exceeding six metres, except for the highest class where both the spectra it contains have been plotted.

It is stressed that the spectra plotted here have been chosen without prior inspection, solely on the strength of their position in the index list. They have not been chosen to illustrate 'typical' spectral forms, except in as far as they demonstrate the wide range of spectral form to be expected.

Note on mean zero crossing period

As stated previously, the quantity $T_z = \sqrt{M_0/M_2}$ has been calculated from the spectra of the digital wave records.

This quantity, calculated for a small number of spectra collected at a different site, has been compared with the mean zero crossing period measured directly from the digital wave records. The results of this separate study show that the two quantities are, within narrow limits, identical.

When this same T_z , however, is compared with the mean zero crossing period measured from the wave record as recorded on a paper chart recorder, the agreement is not good.

The reason for this discrepancy is the subject of a study shortly to be undertaken at IOS. It seems probable, however, that the difference in the frequency responses of the two recording systems may be the cause.

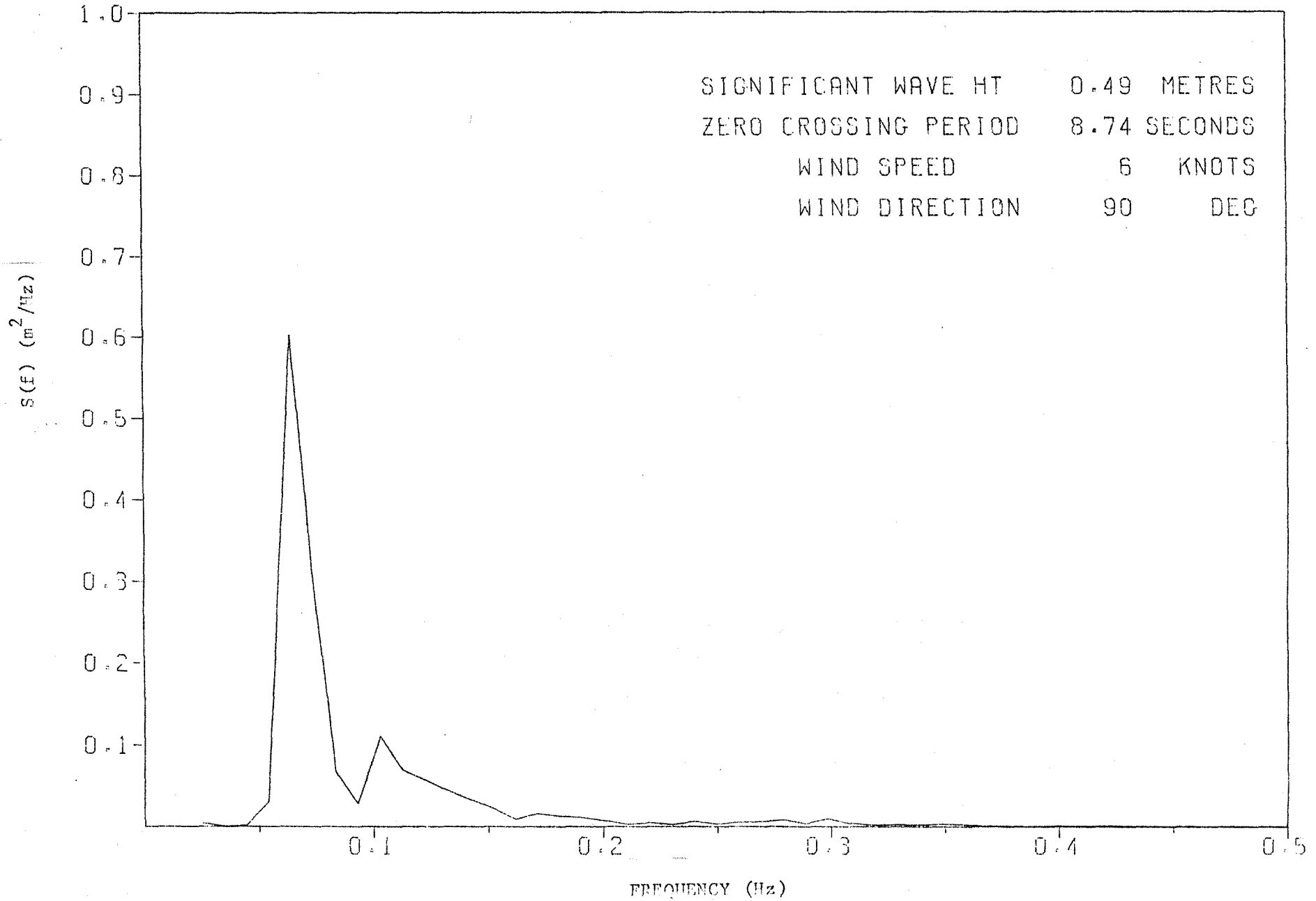
It is important to note that data presented in this report are probably amongst the first 'climatic' data based on measurements made with a digital recording system. At present, therefore, the mean zero crossing periods presented here are probably not comparable with those presented in previous IOS data reports where T_z 's have been estimated from paper chart records.

It is hoped that it will eventually be possible to quantify any discrepancy which may exist. Until that time it would seem prudent to refrain from using the T_z 's presented here in the scaling of any of the available standard spectral forms, but to regard them as properties of the spectra presented and consistent only within this set.

Hs 0.01 to 0.50 metres

S.U.I.S.T SPECTRUM 1

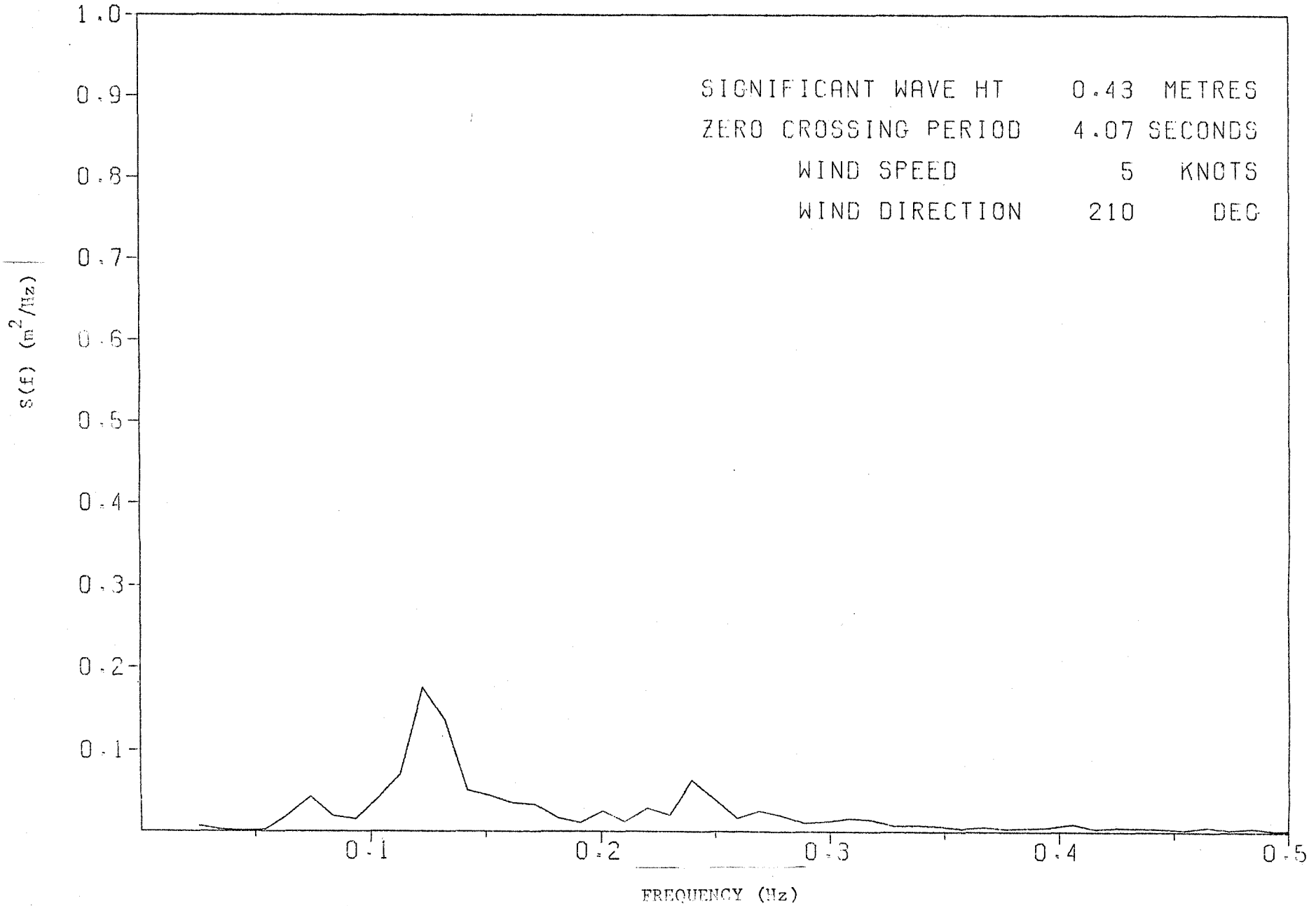
76 275 14 59



S.U.I.S.T SPECTRUM 4

76 186 2 59

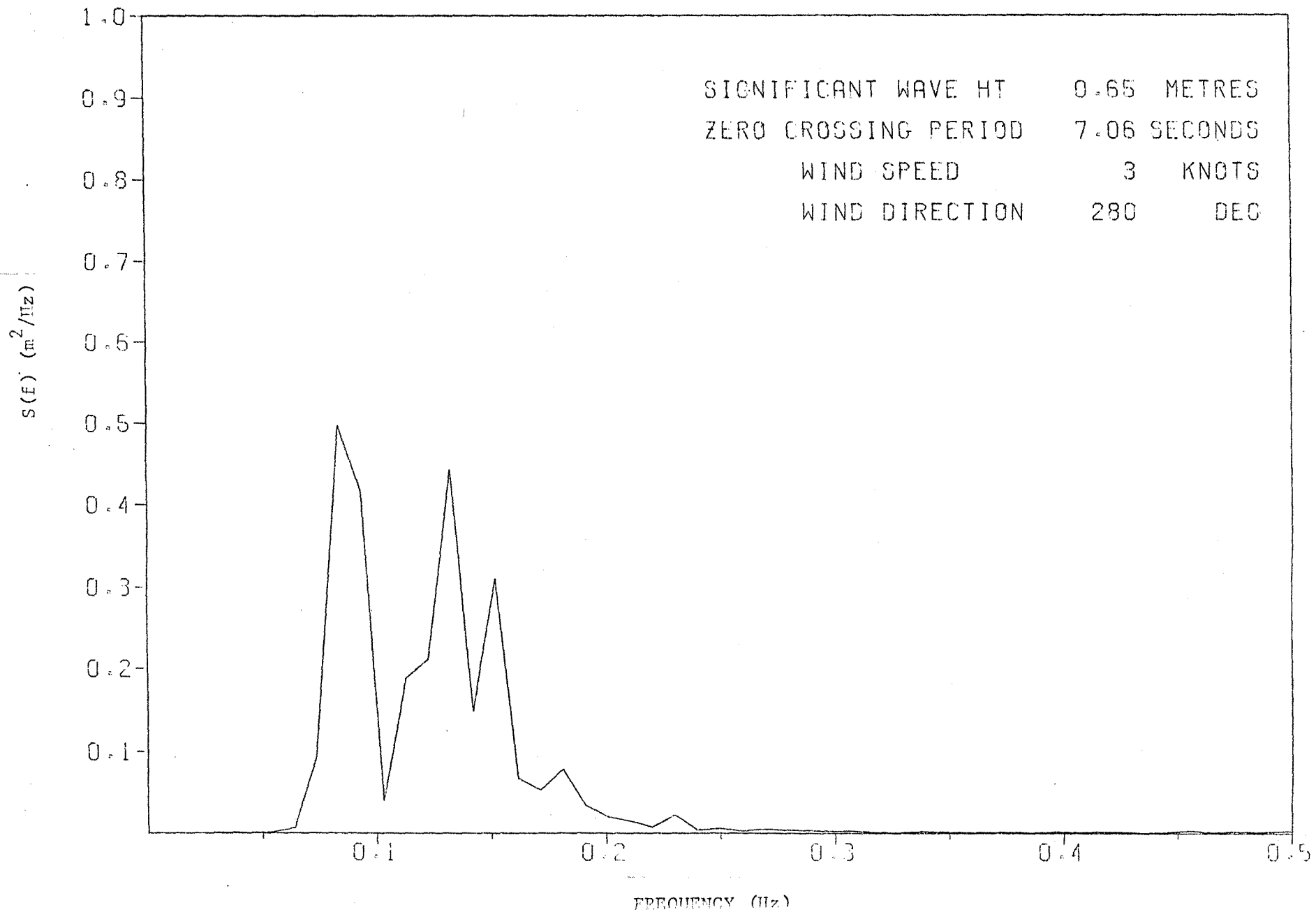
SIGNIFICANT WAVE HT 0.43 METRES
ZERO CROSSING PERIOD 4.07 SECONDS
WIND SPEED 5 KNOTS
WIND DIRECTION 210 DEG



Hs 0.51 to 1.00 metres

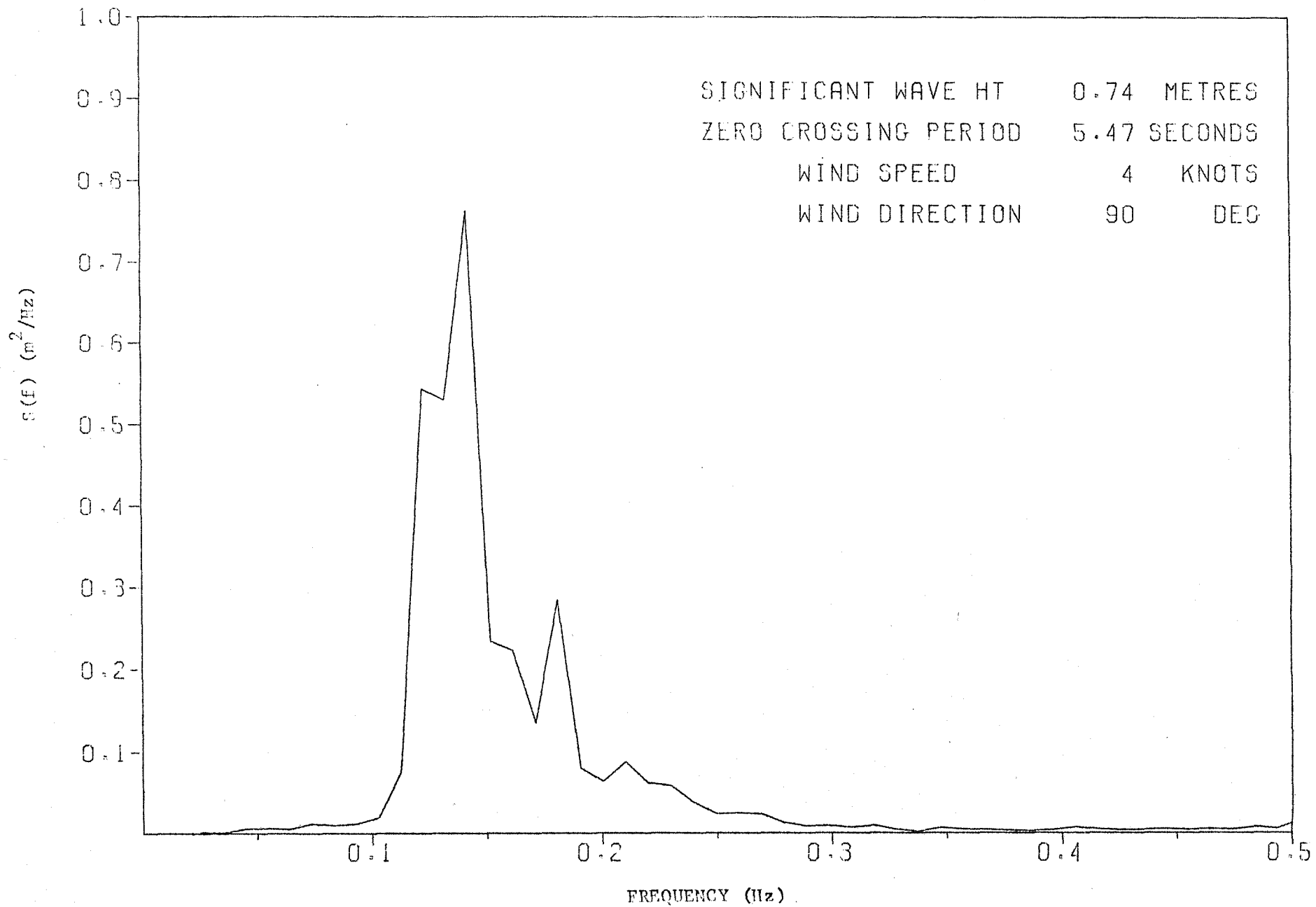
S.U.I.S.T SPECTRUM 5

76 238 17 59



S.U.I.S.T SPECTRUM 13

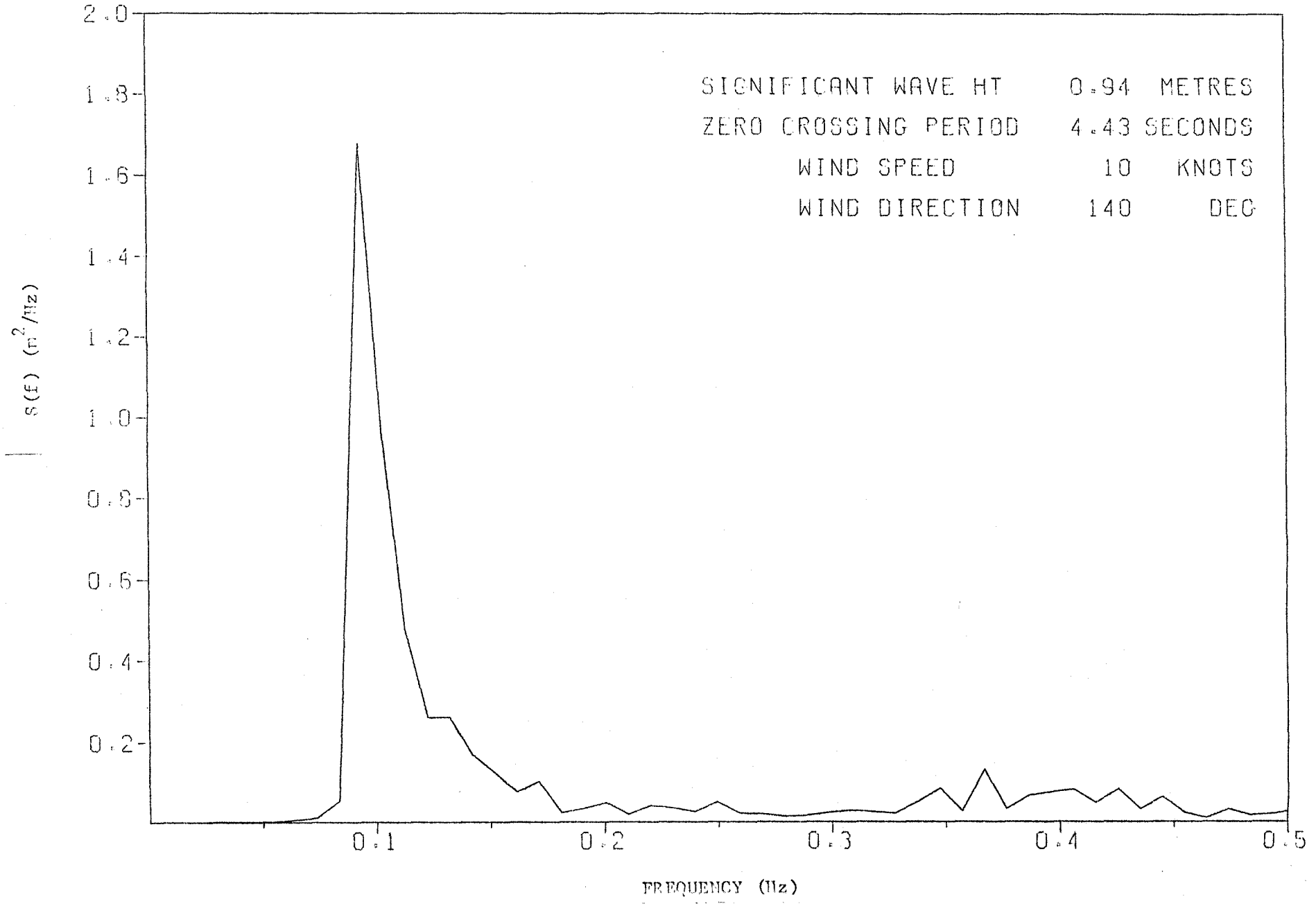
76 189 14 59



S-UIST SPECTRUM 23

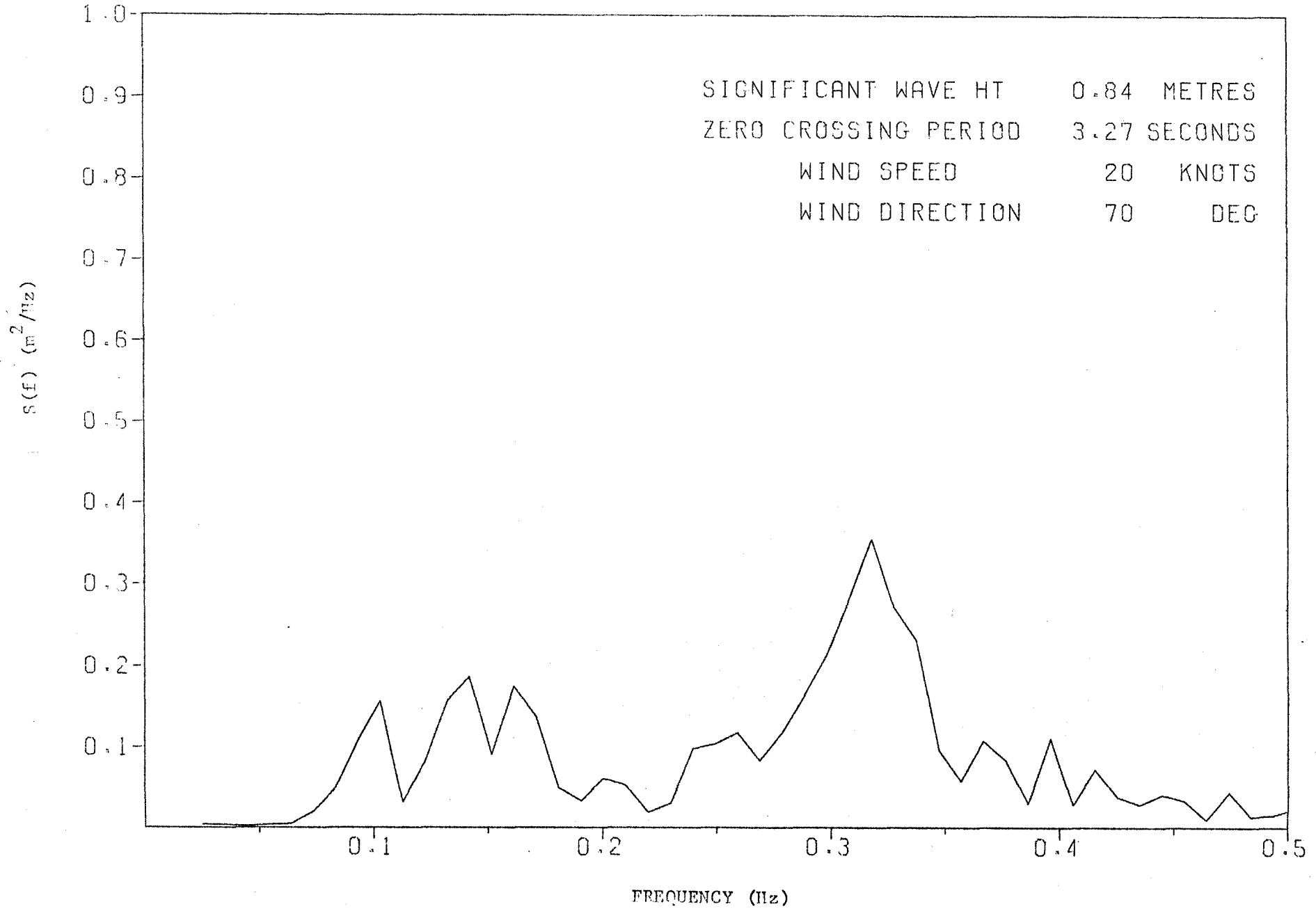
76 235 23 59

SIGNIFICANT WAVE HT 0.94 METRES
ZERO CROSSING PERIOD 4.43 SECONDS
WIND SPEED 10 KNOTS
WIND DIRECTION 140 DEG



S.U.I.S.T SPECTRUM 30

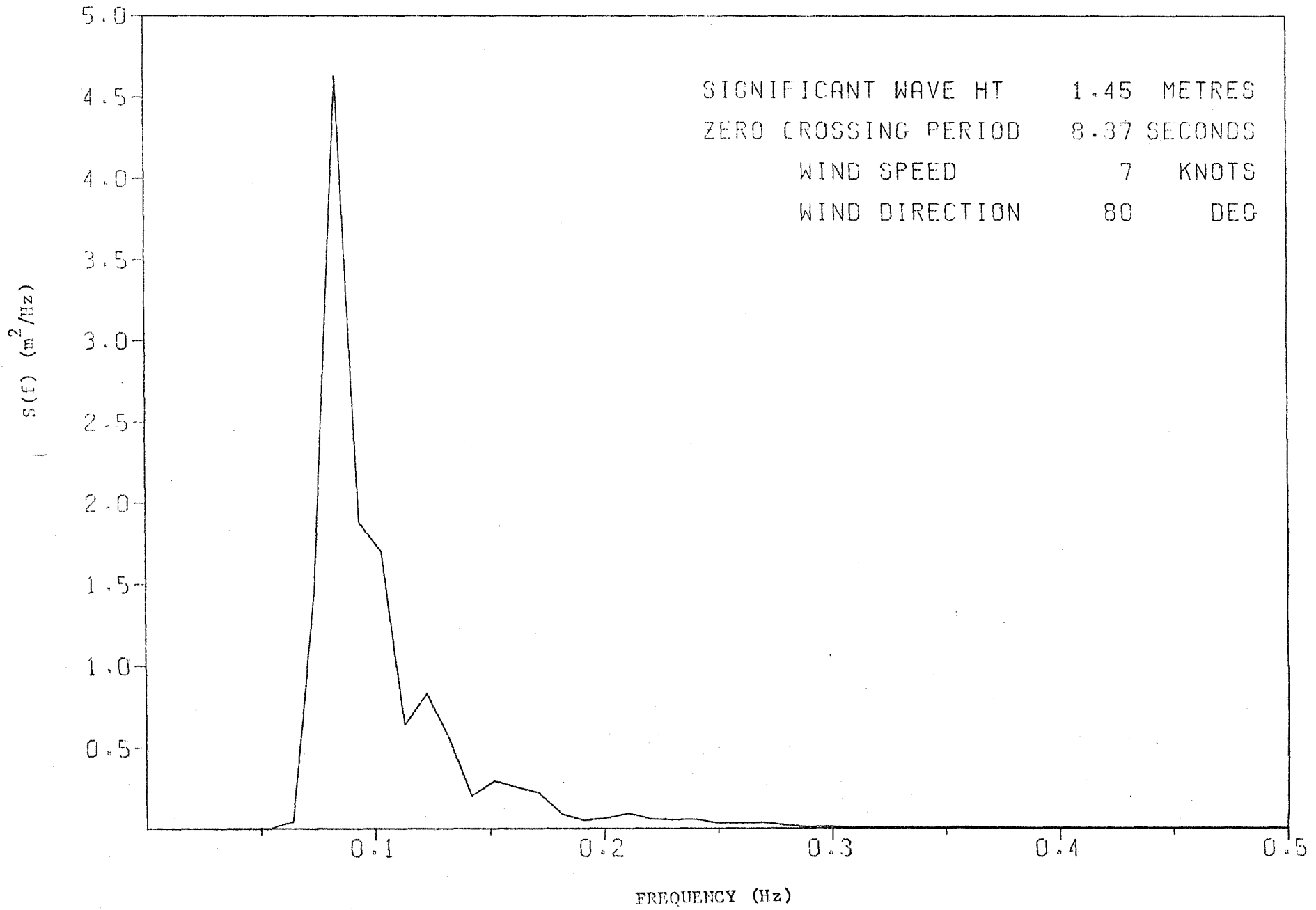
76 269 14 59



Hs 1.01 to 1.50 metres

SQUIST SPECTRUM 31

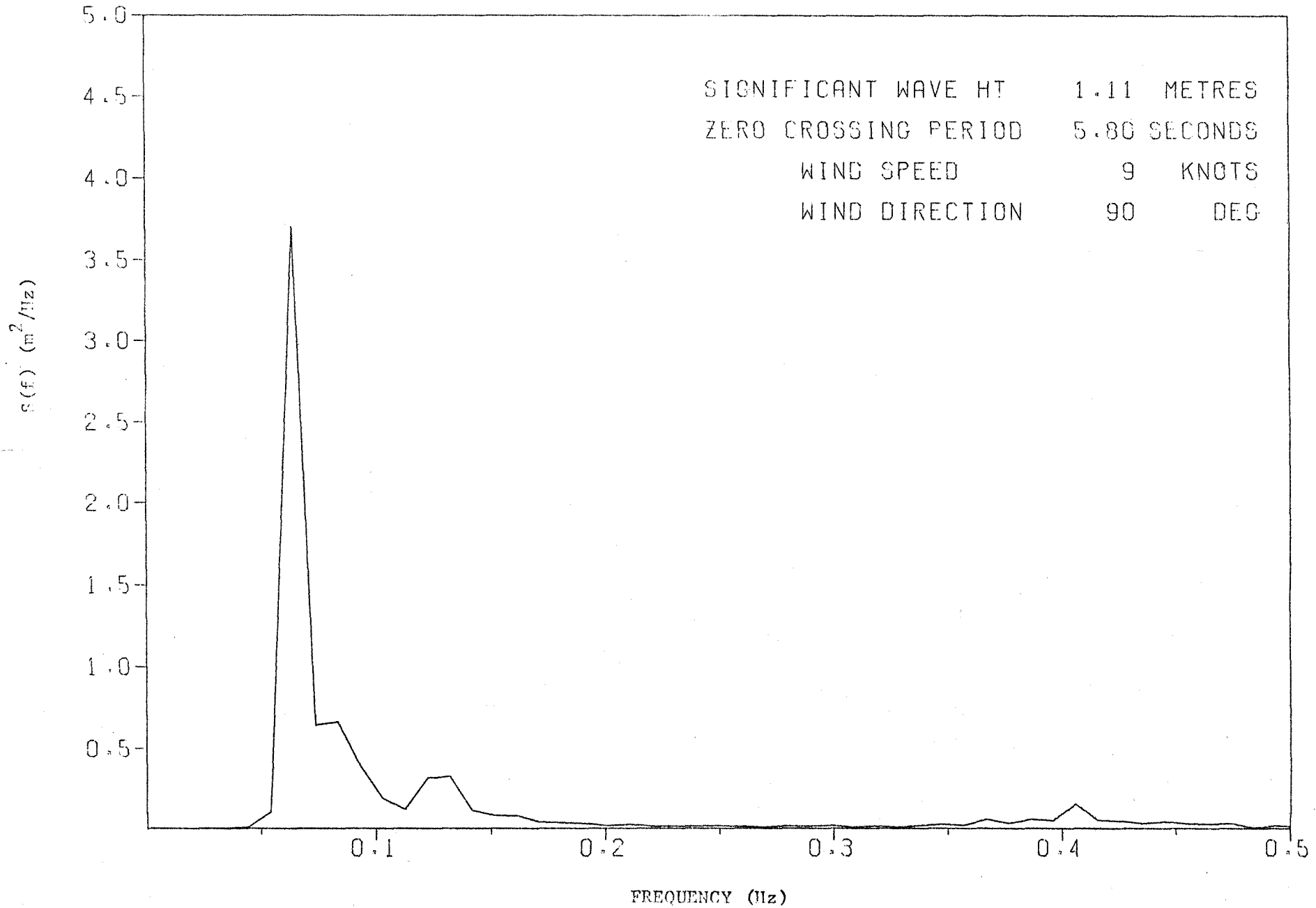
76 316 20 59



S.U.I.S.T SPECTRUM 49

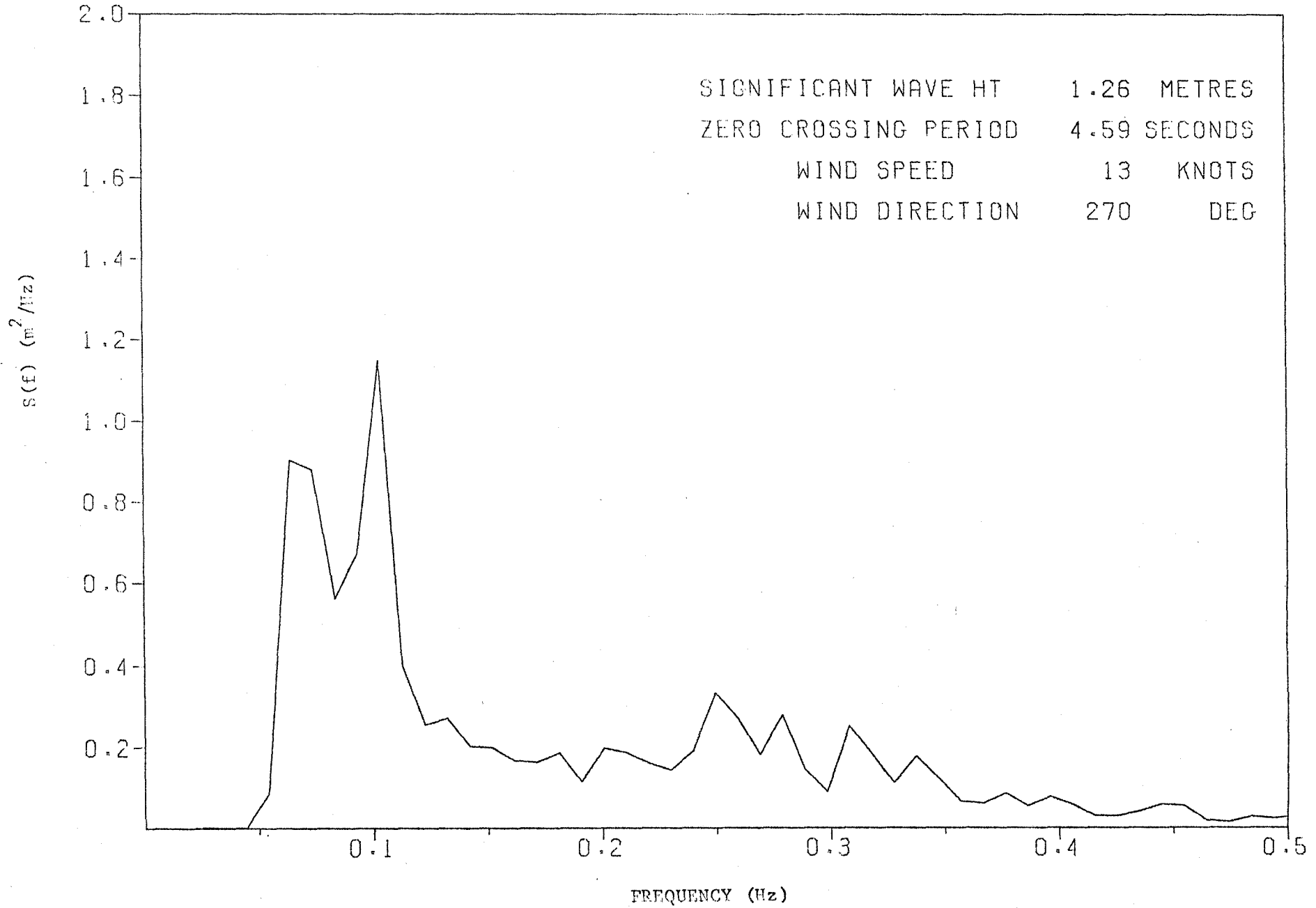
77 57 23 59

SIGNIFICANT WAVE HT 1.11 METRES
ZERO CROSSING PERIOD 5.80 SECONDS
WIND SPEED 9 KNOTS
WIND DIRECTION 90 DEG



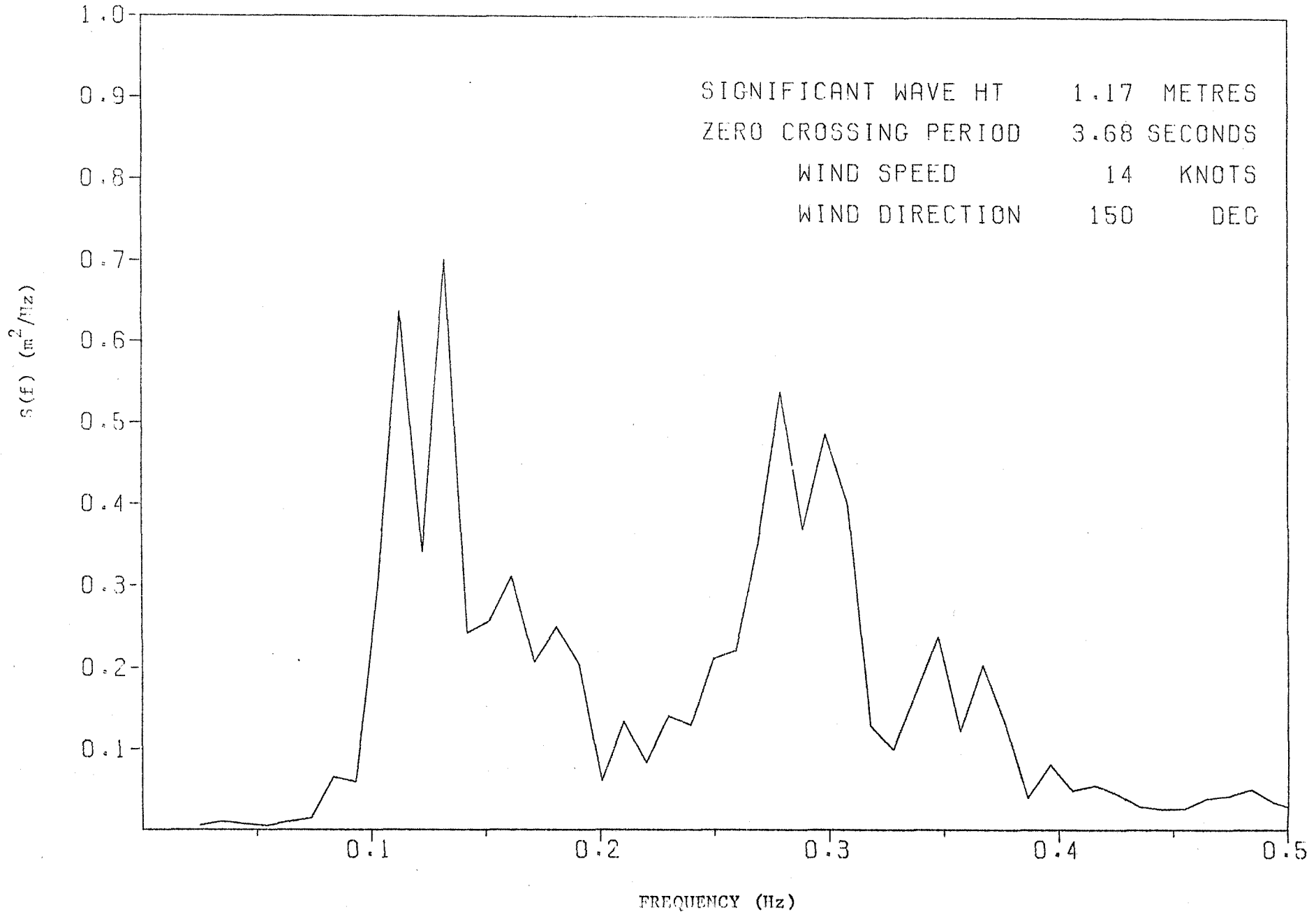
S.U.I.S.T SPECTRUM 69

76 361 14 59



S.UIST SPECTRUM 86

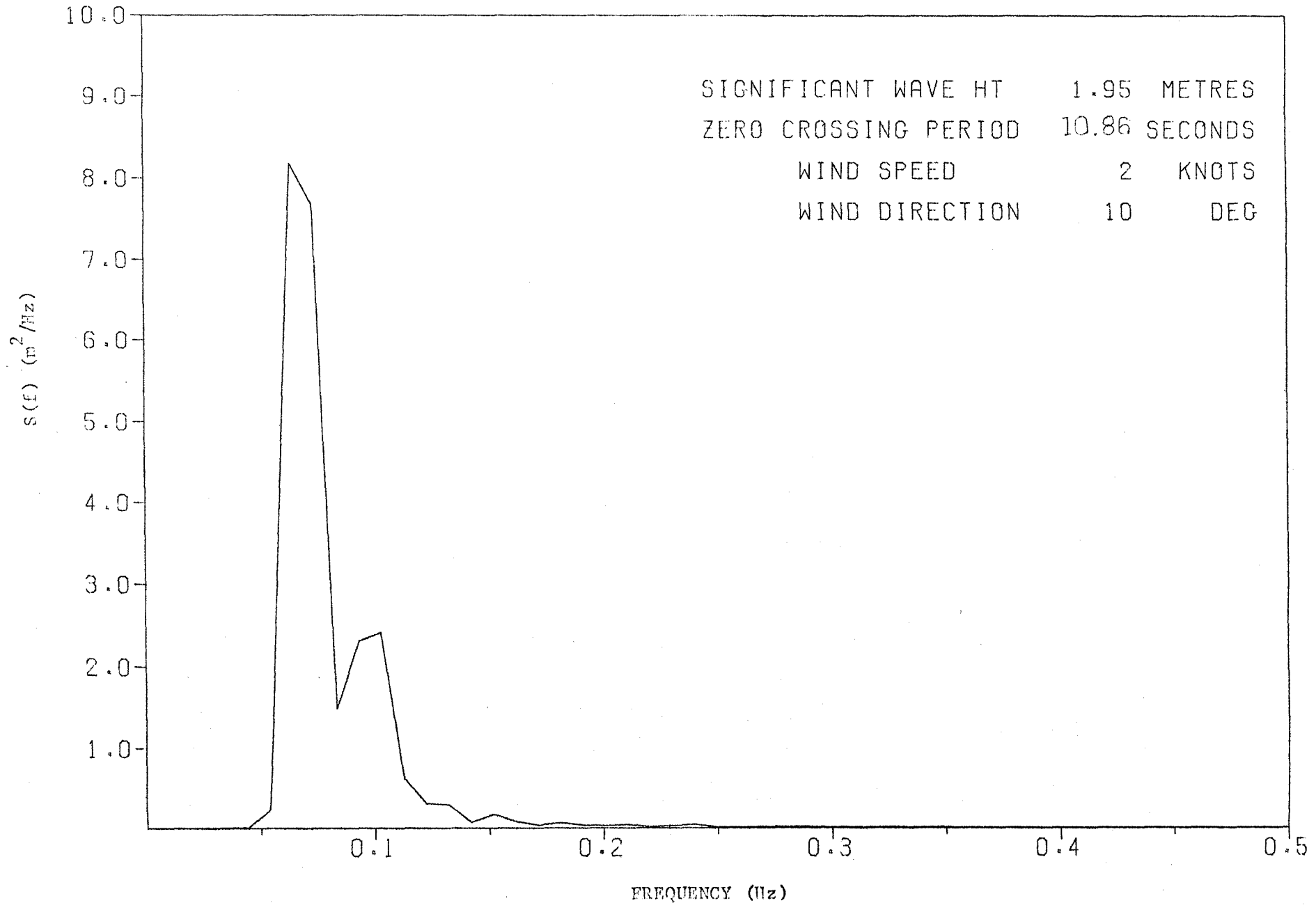
76 173 14 58



Hs 1.51 to 2.00 metres

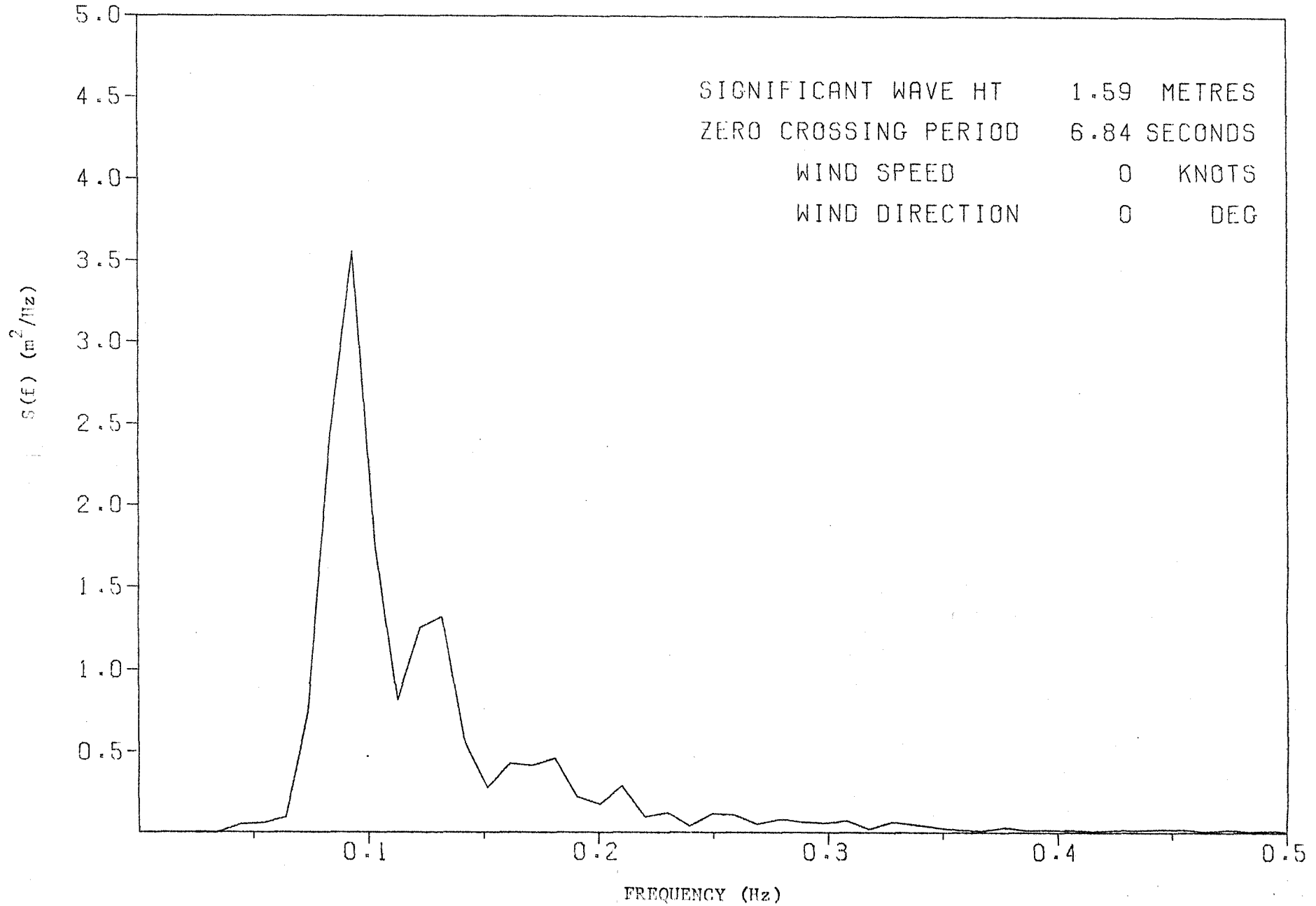
S.U.I.S.T SPECTRUM 87

76 318 2 59



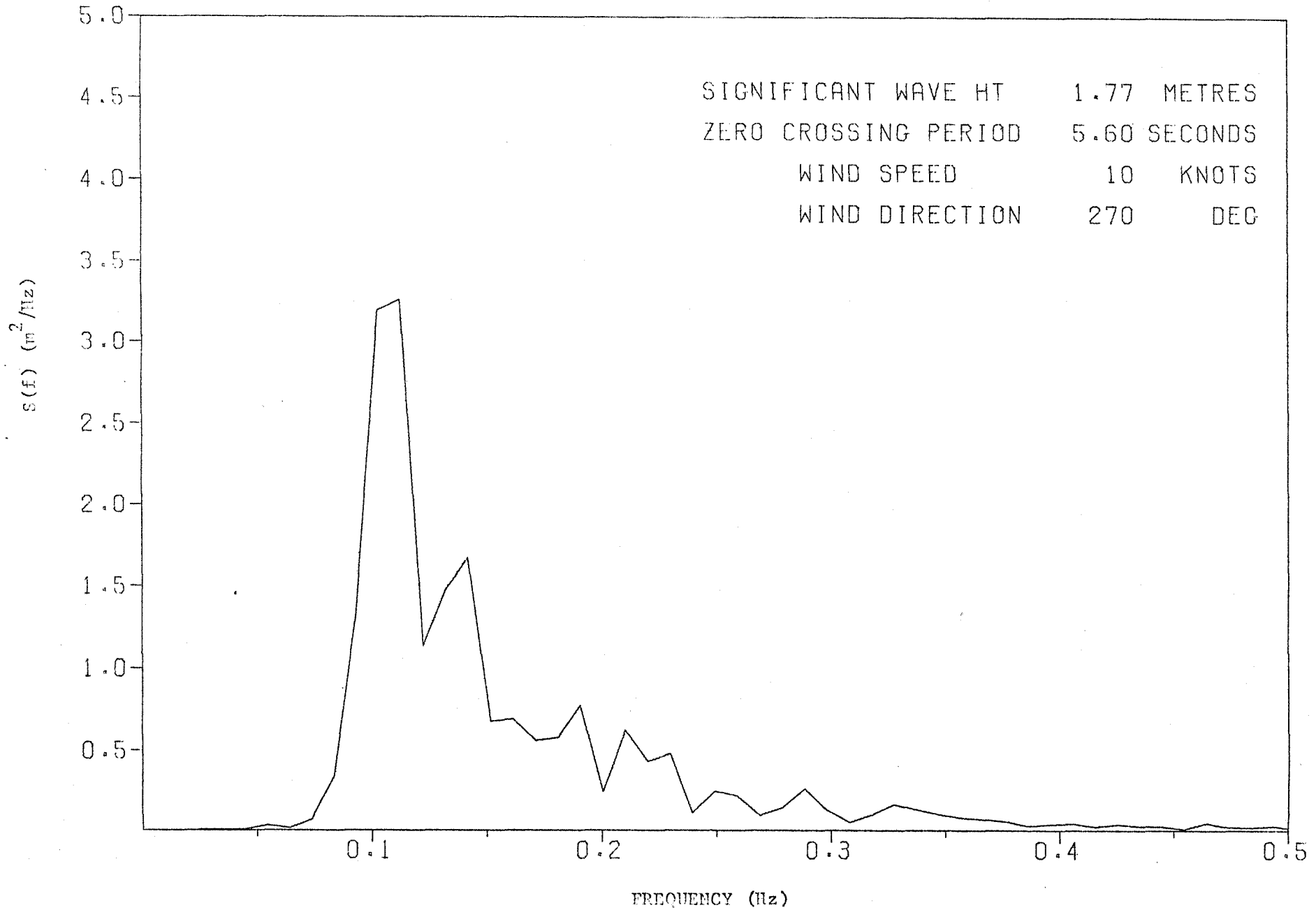
S.U.I.S.T SPECTRUM 99

77 16 17 59



S-UIST SPECTRUM 117

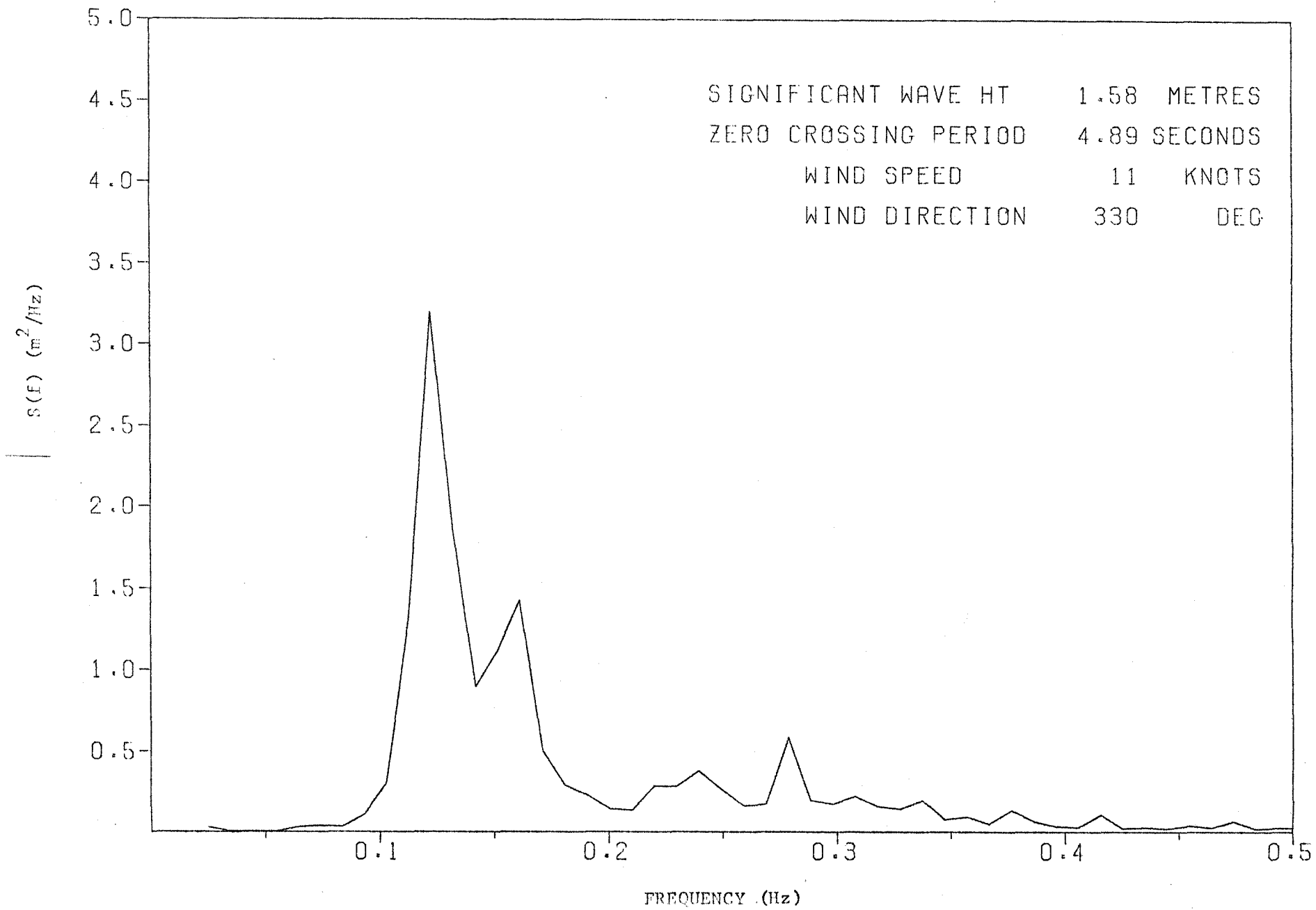
76 249 5 59



S.U.IST SPECTRUM 134

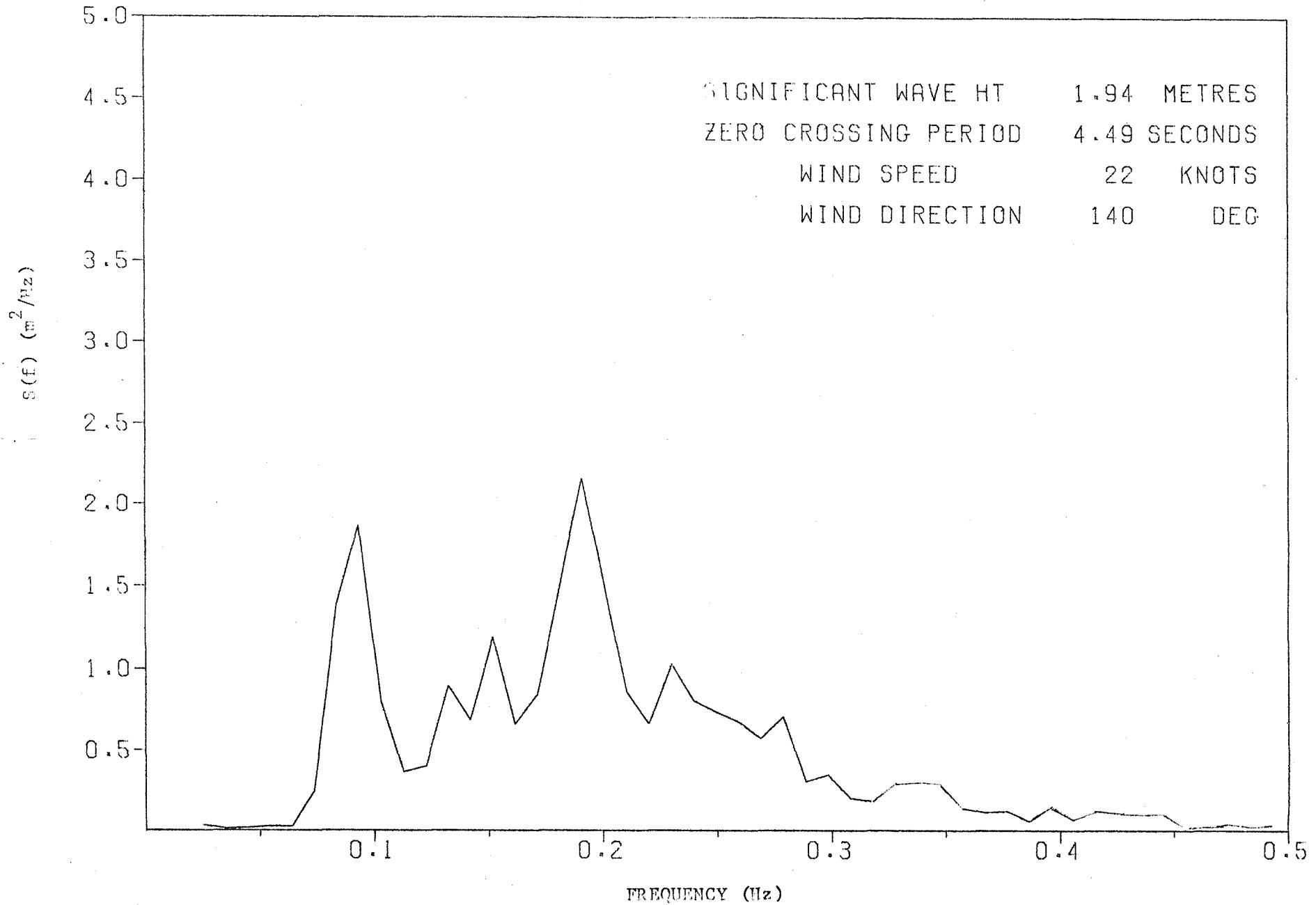
76 213 8 59

SIGNIFICANT WAVE HT 1.58 METRES
ZERO CROSSING PERIOD 4.89 SECONDS
WIND SPEED 11 KNOTS
WIND DIRECTION 330 DEG



S.U.I.S.T SPECTRUM 147

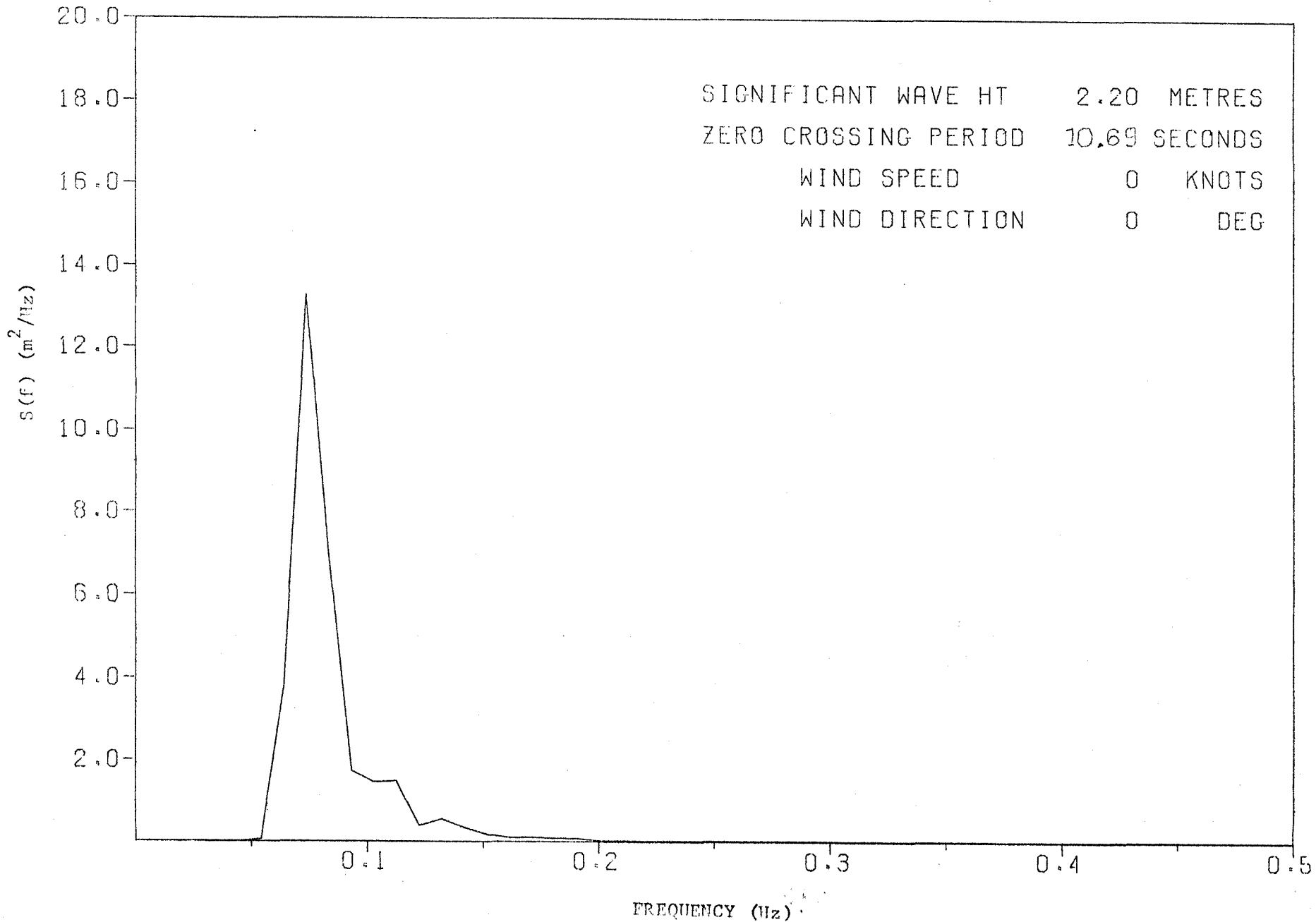
76 263 17 59



Hs 2.01 to 2.50 metres

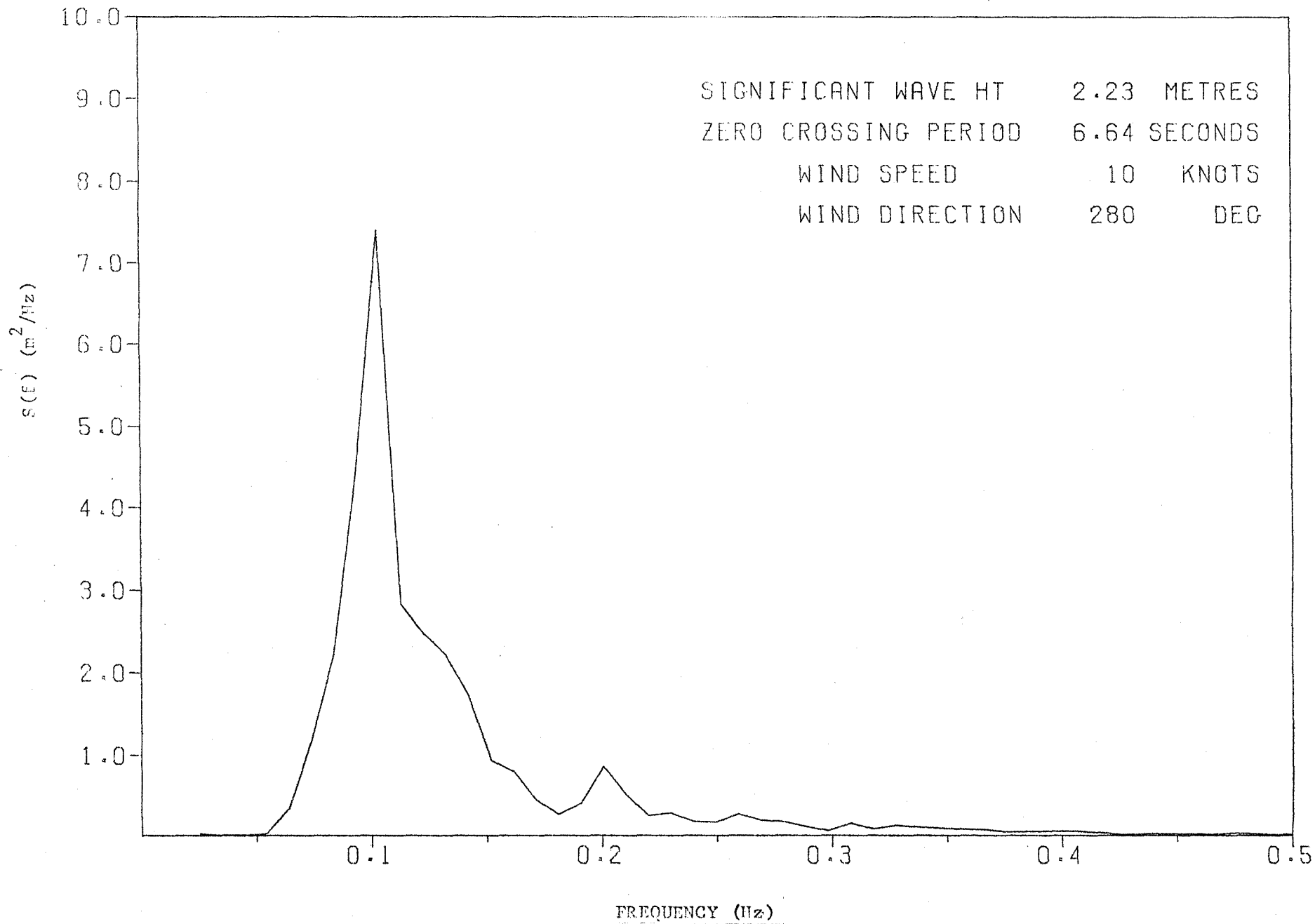
S-UIST SPECTRUM 148

76 318 8 59



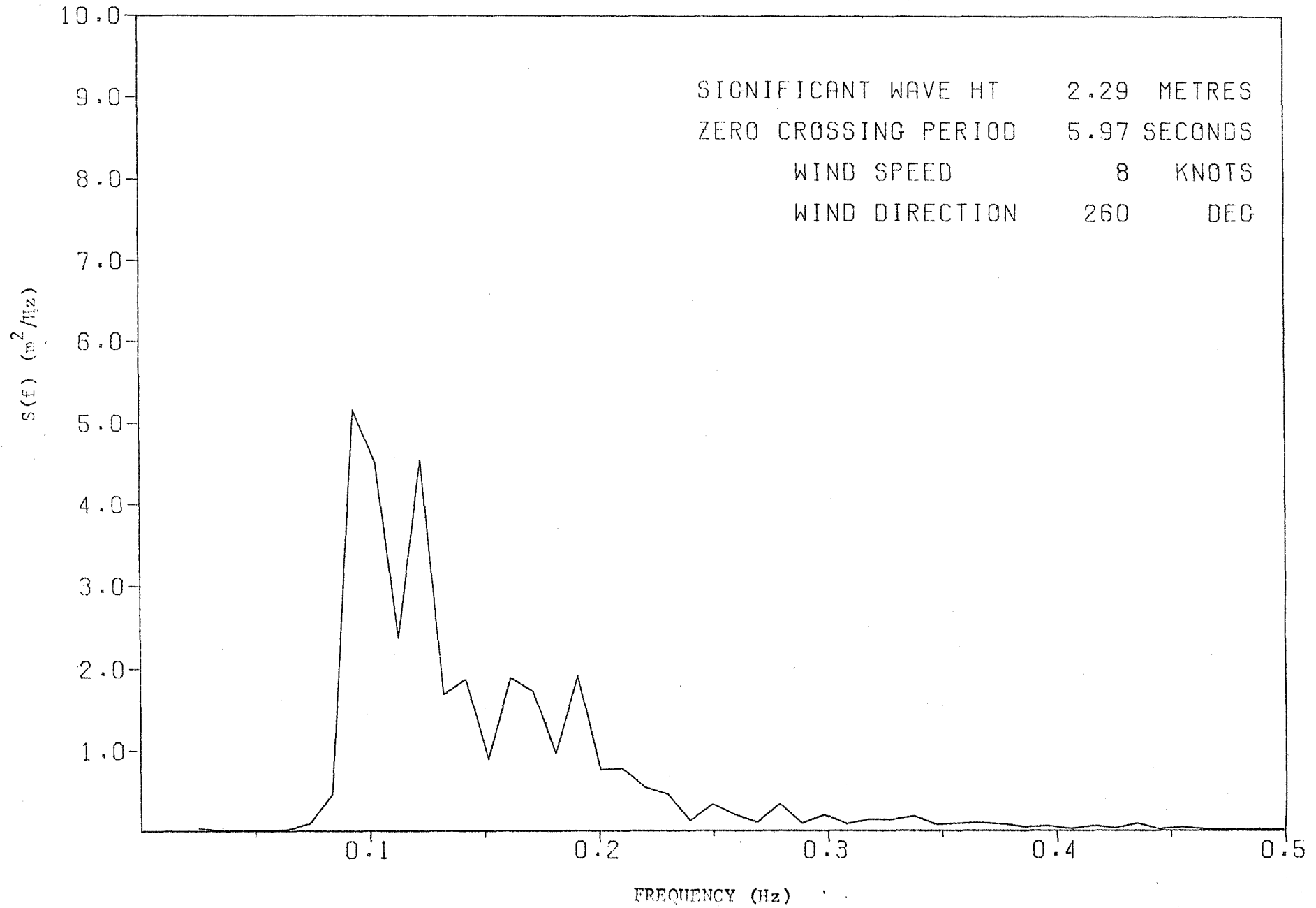
S-UIST SPECTRUM 168

76 290 8 59



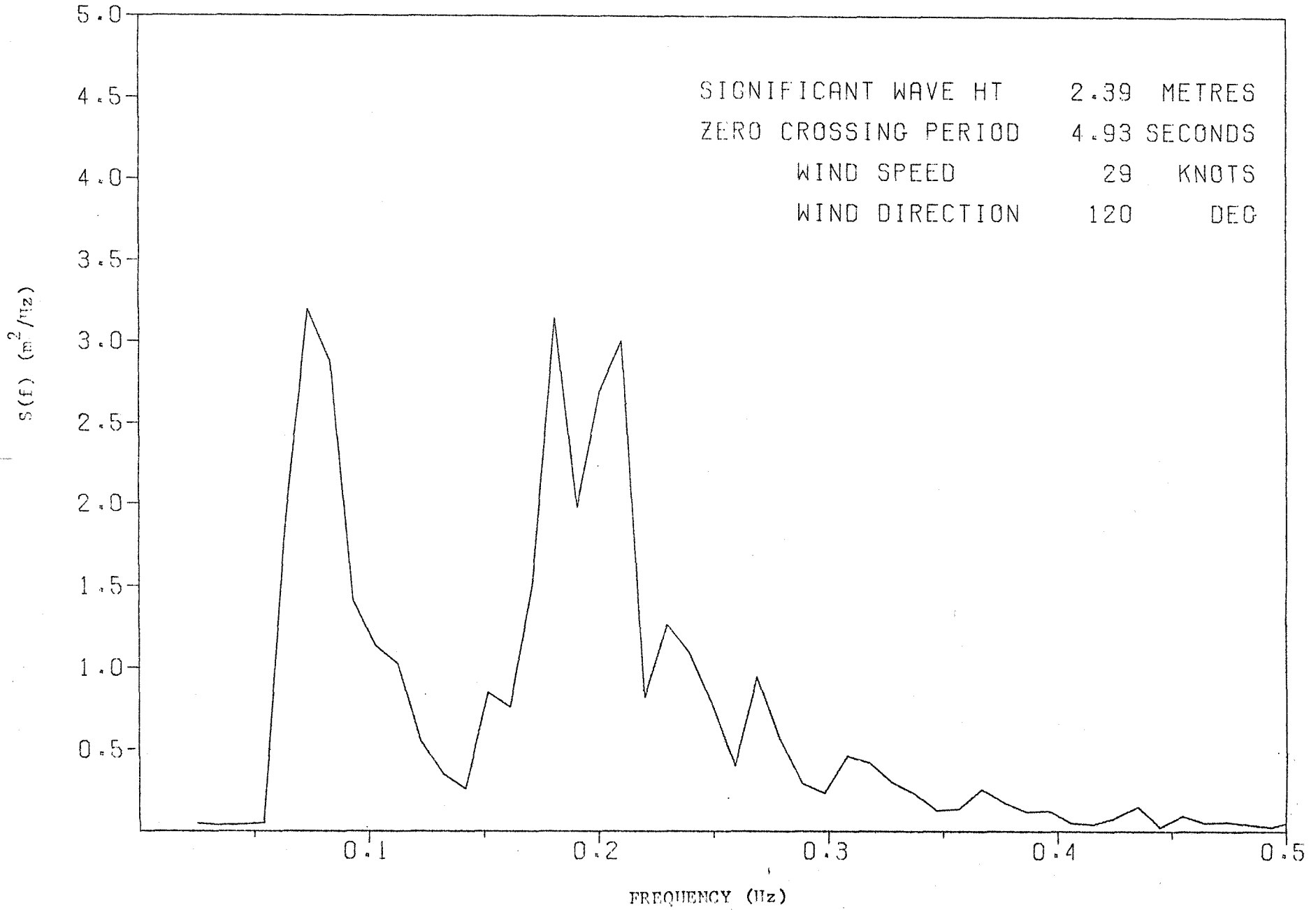
S.U.I.S.T SPECTRUM 191

76 147 4 59



S.U.I.S.T SPECTRUM 218

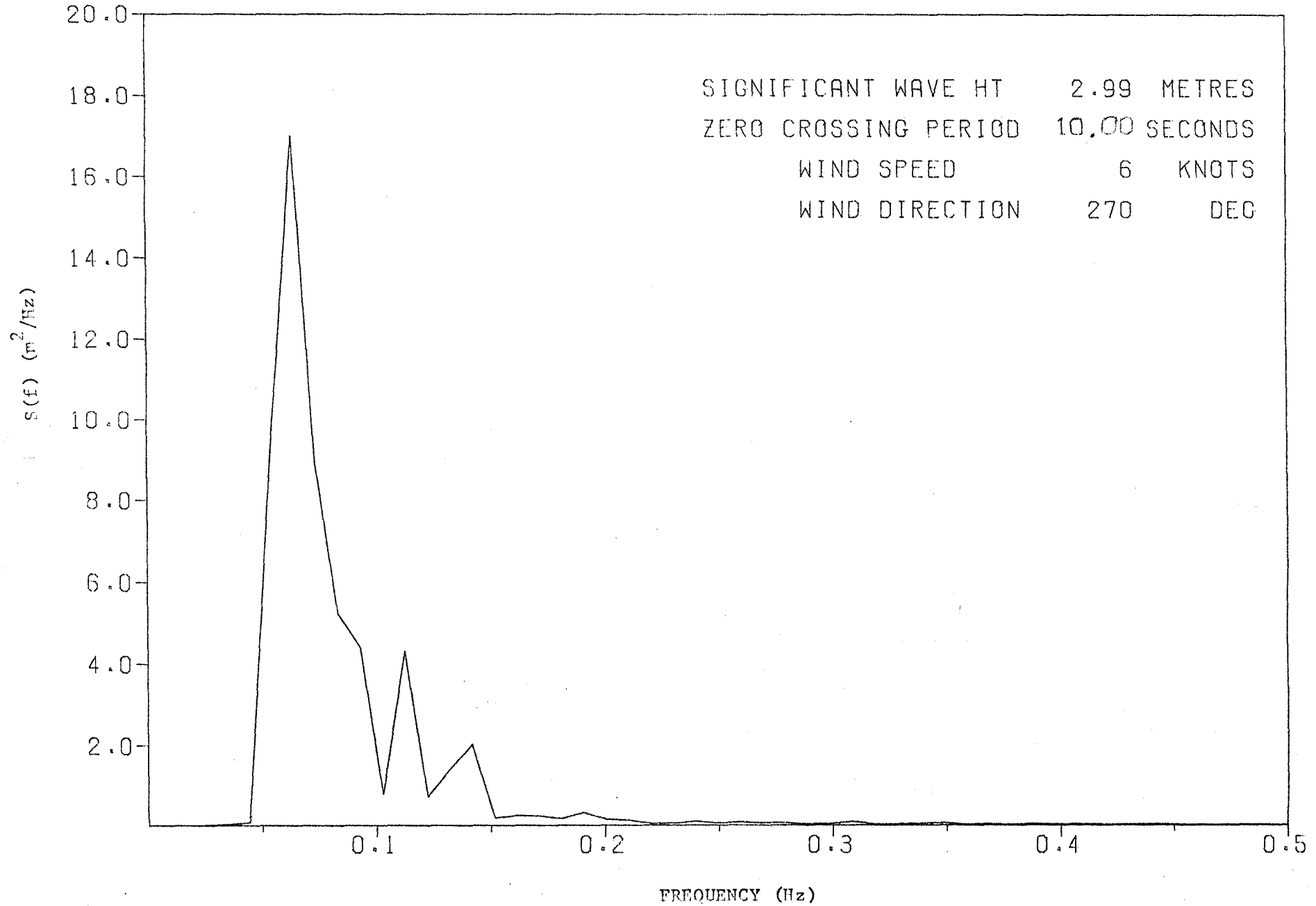
77 21 11 59



Hs 2.51 to 3.00 metres

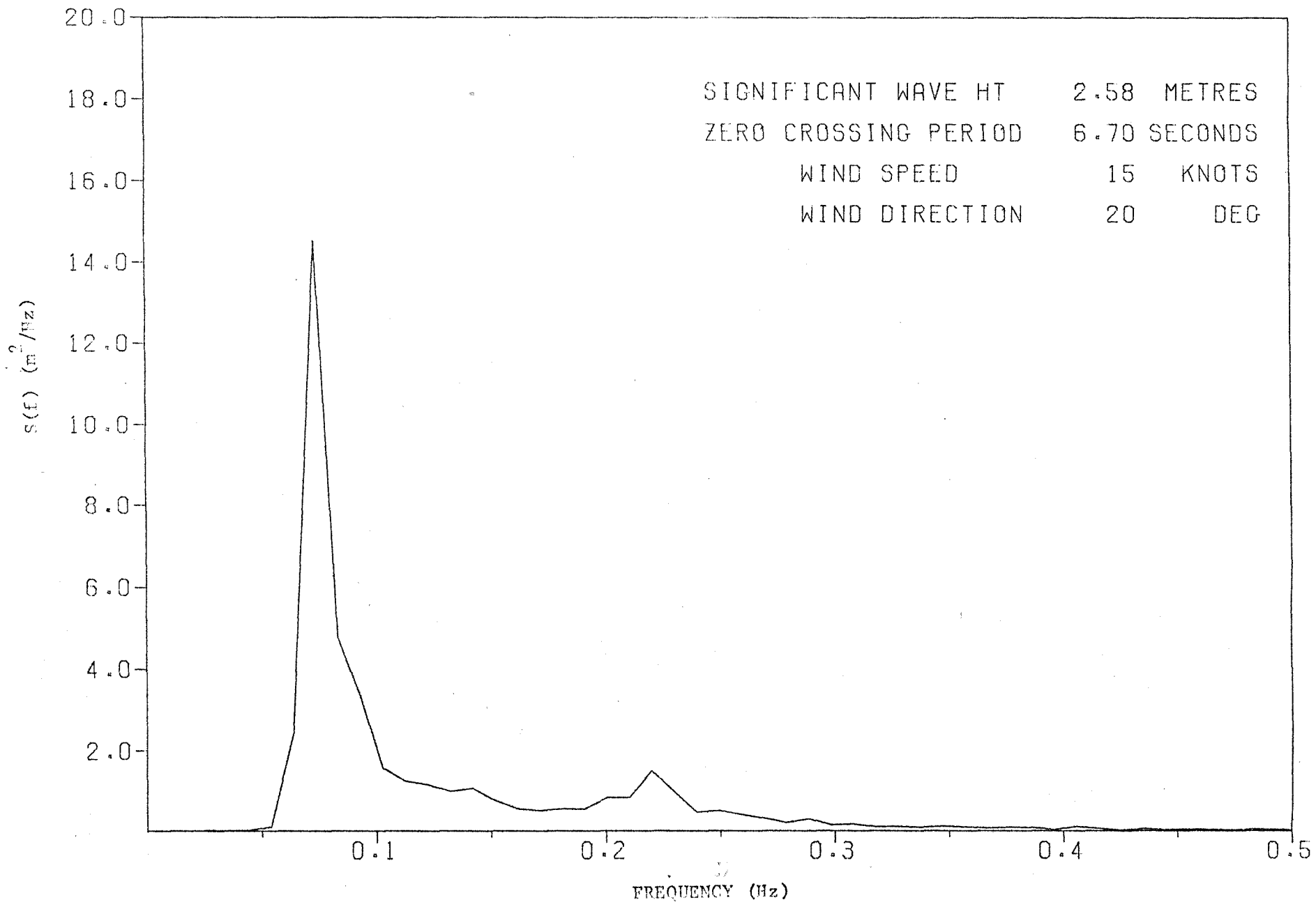
S.UIST SPECTRUM 219

76 168 17 58



S.UIST SPECTRUM 236

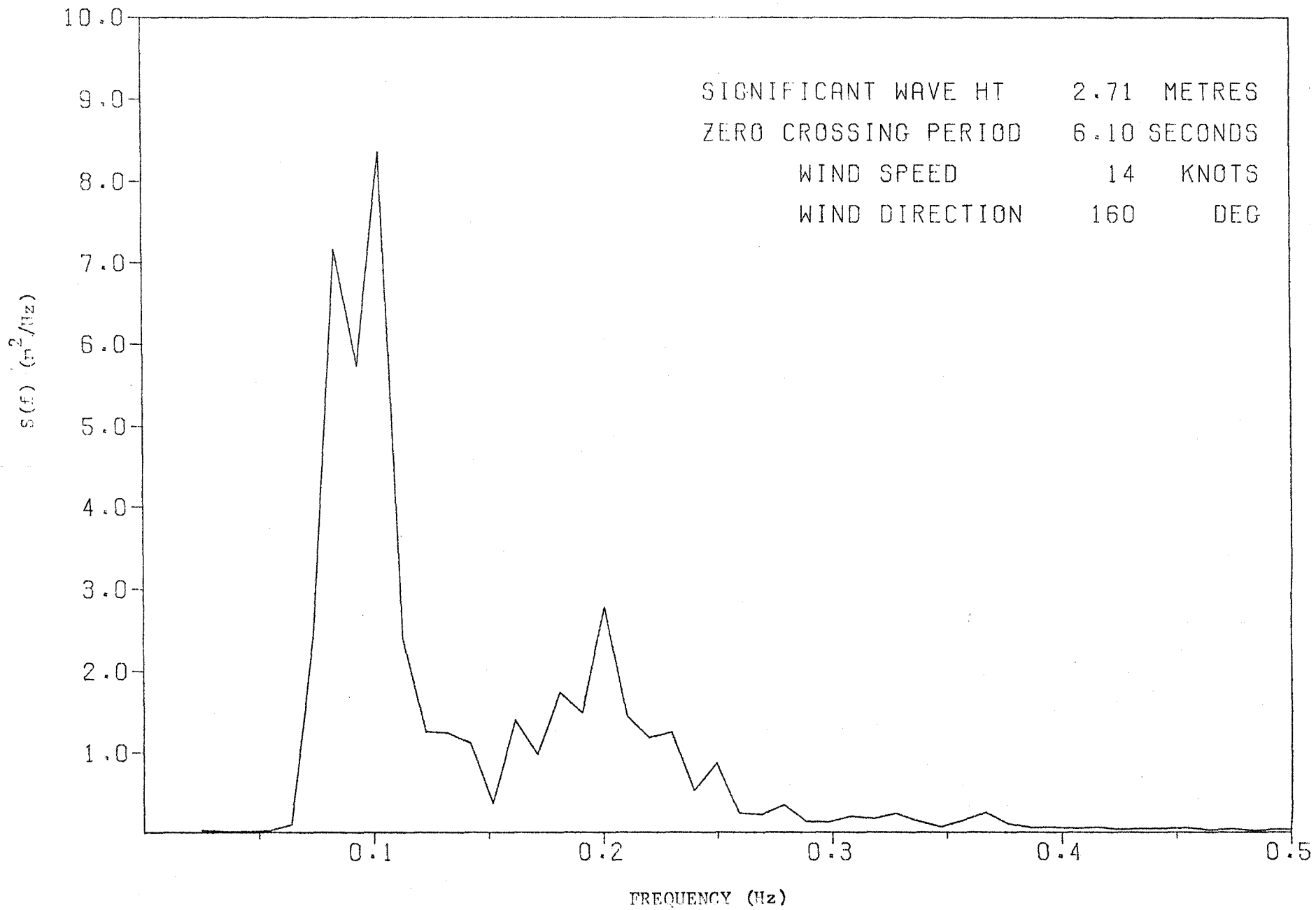
76 255 5 59



S.U.I.S.T SPECTRUM 251

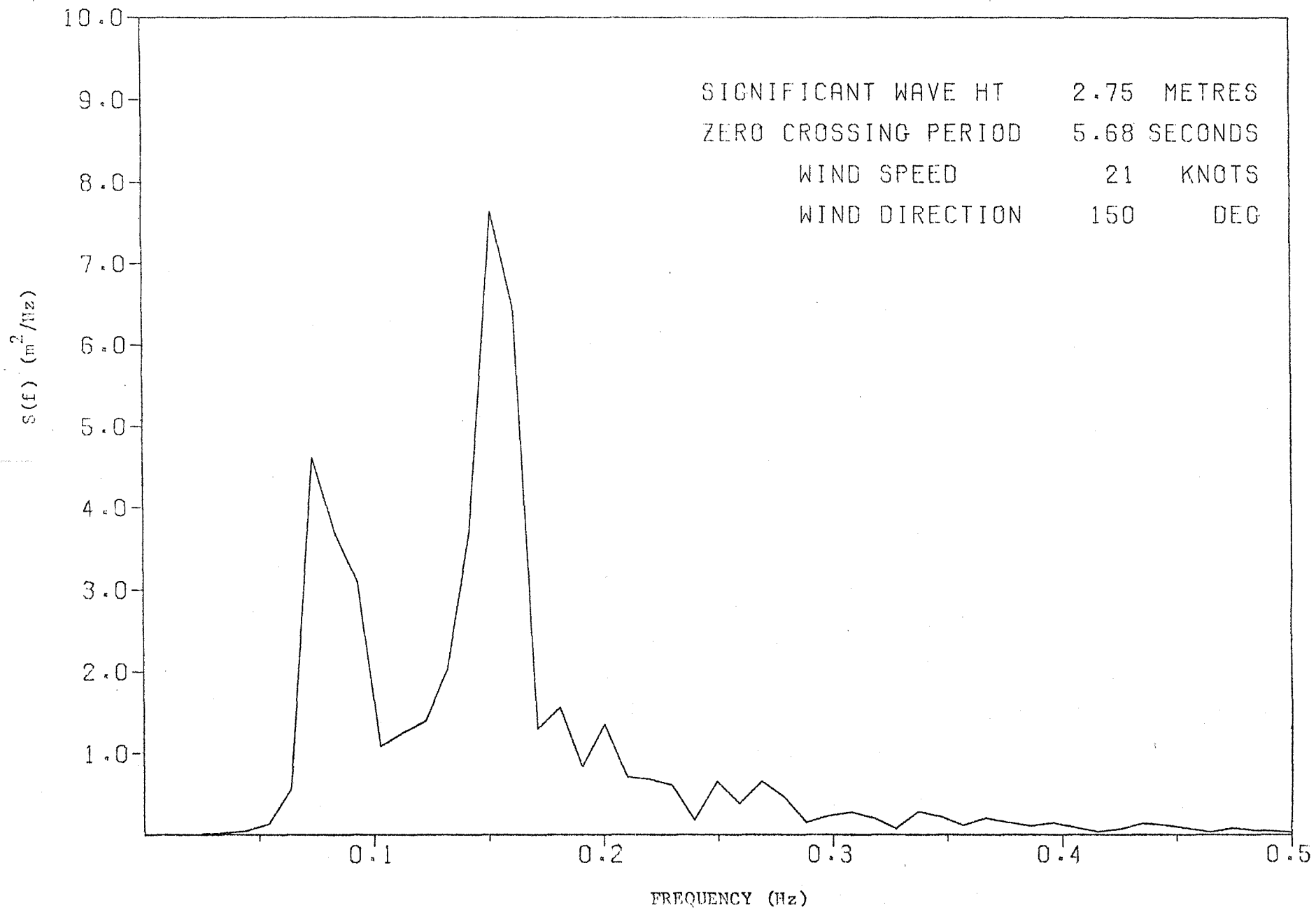
76 322 8 59

SIGNIFICANT WAVE HT	2.71	METRES
ZERO CROSSING PERIOD	6.10	SECONDS
WIND SPEED	14	KNOTS
WIND DIRECTION	160	DEG



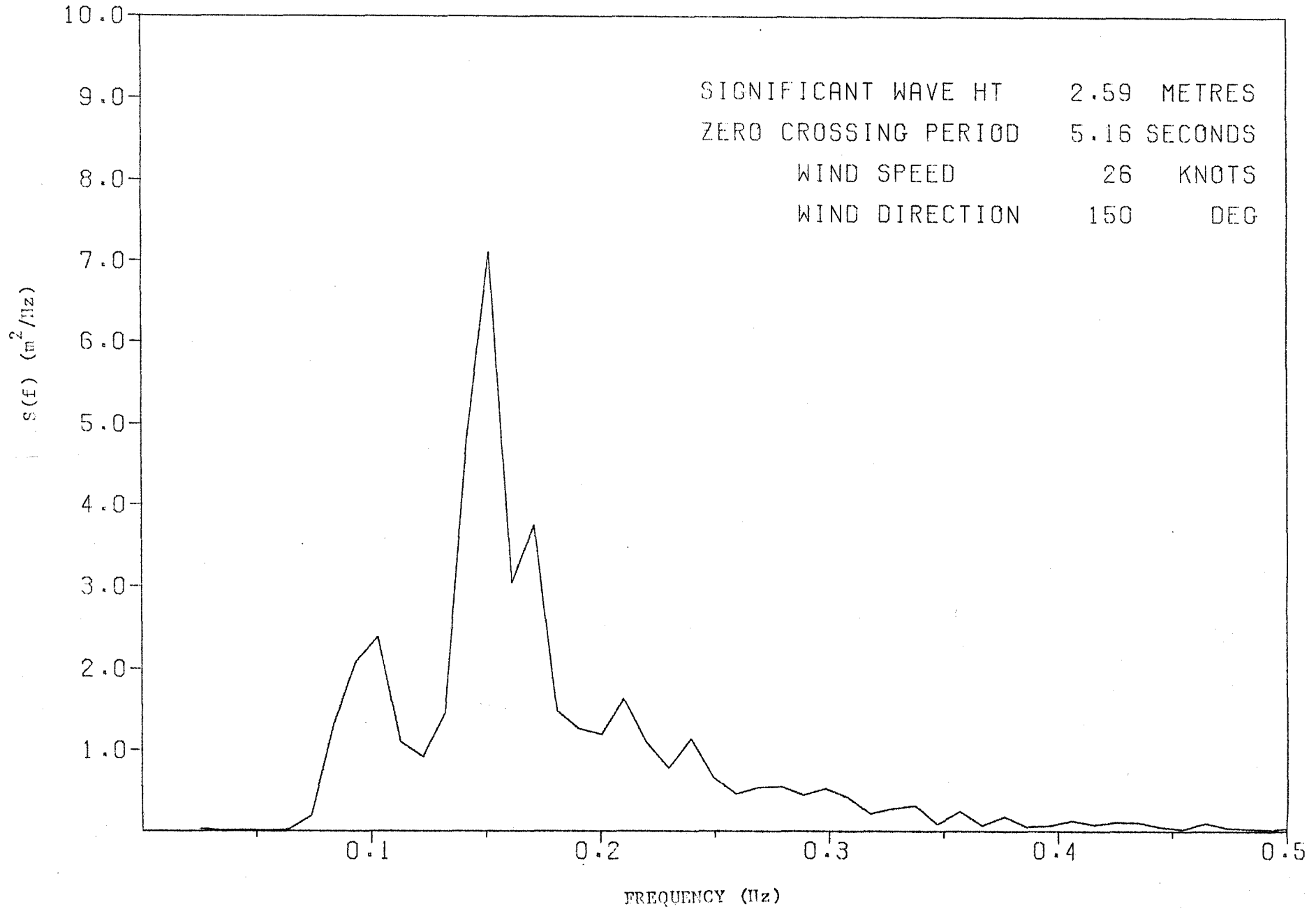
S.U.I.S.T SPECTRUM 265

76 319 2 59



S.U.I.S.T SPECTRUM 285

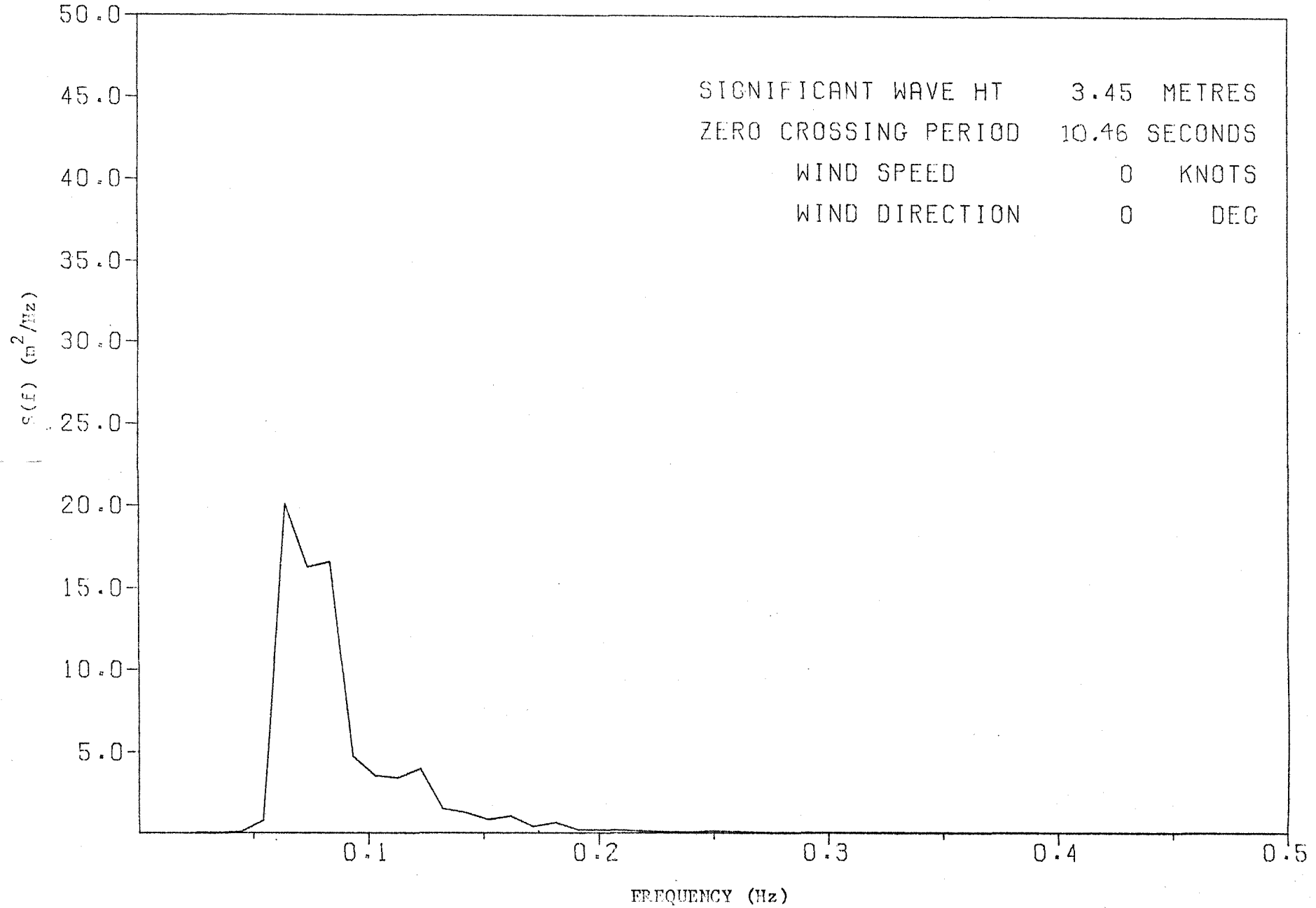
77 32 23 59



Hs 3.01 to 3.50 metres

S.U.I.S.T SPECTRUM 286

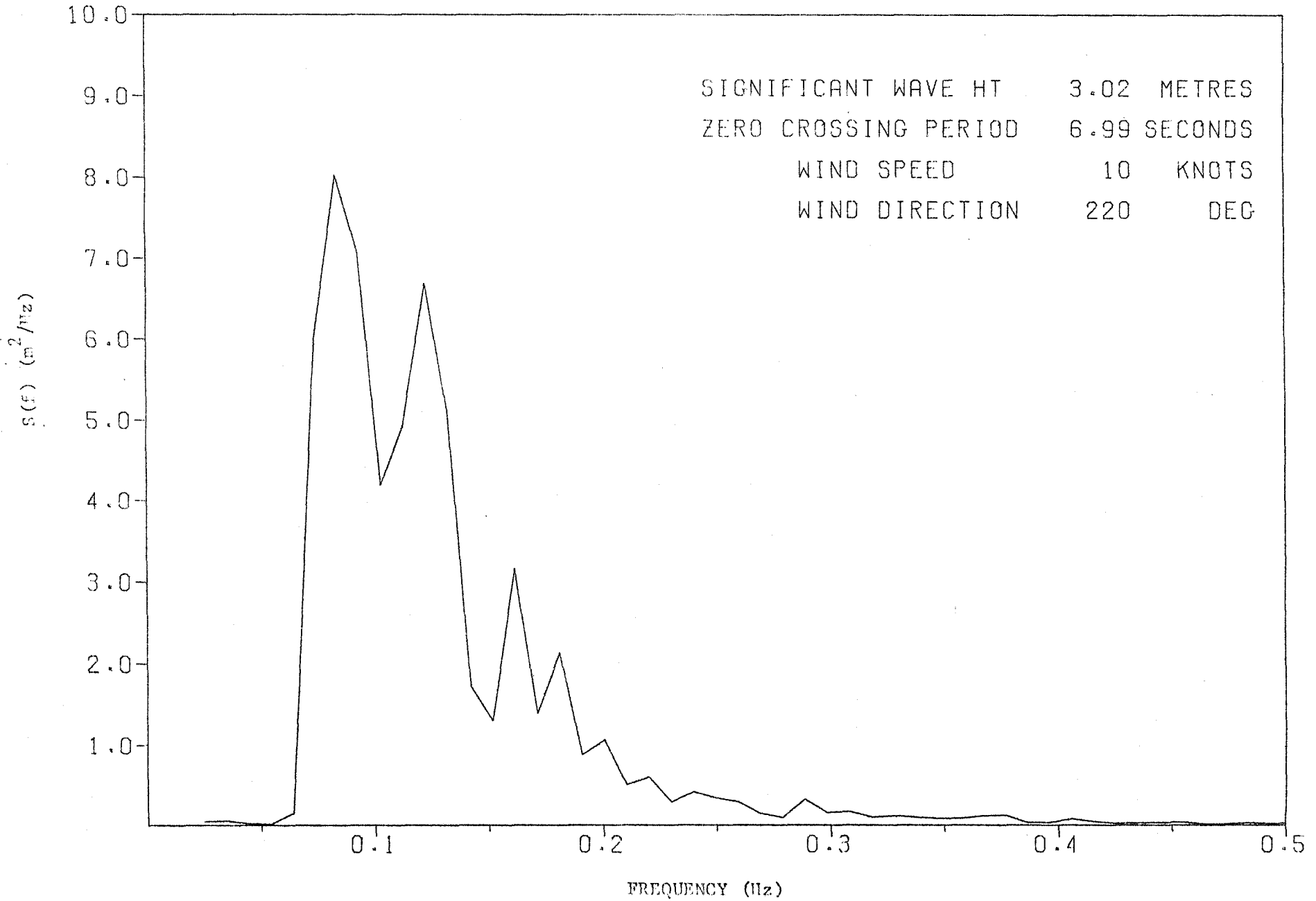
76 338 11 59



S.U.I.S.T SPECTRUM 299

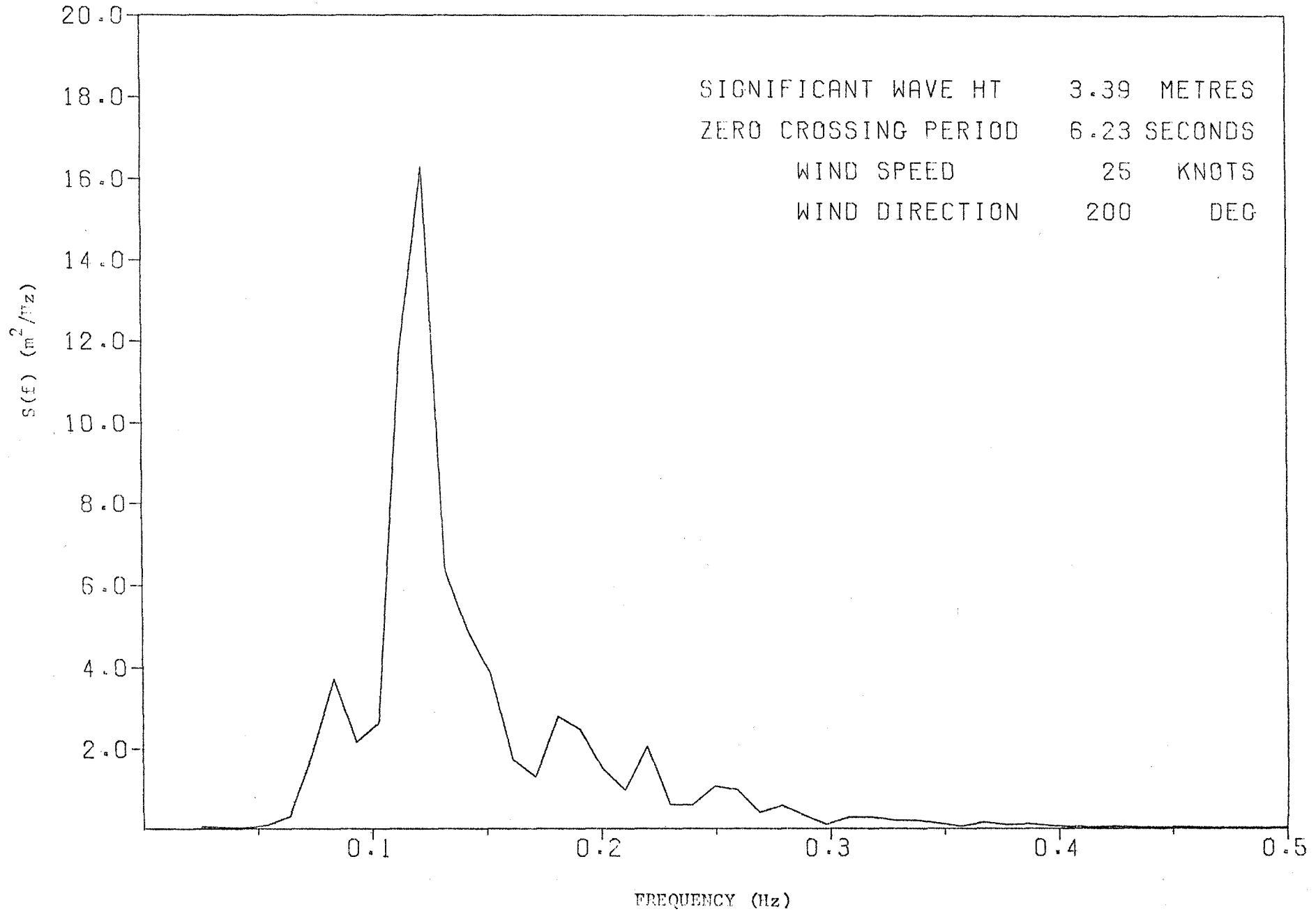
76 166 23 58

SIGNIFICANT WAVE HT 3.02 METRES
ZERO CROSSING PERIOD 6.99 SECONDS
WIND SPEED 10 KNOTS
WIND DIRECTION 220 DEG



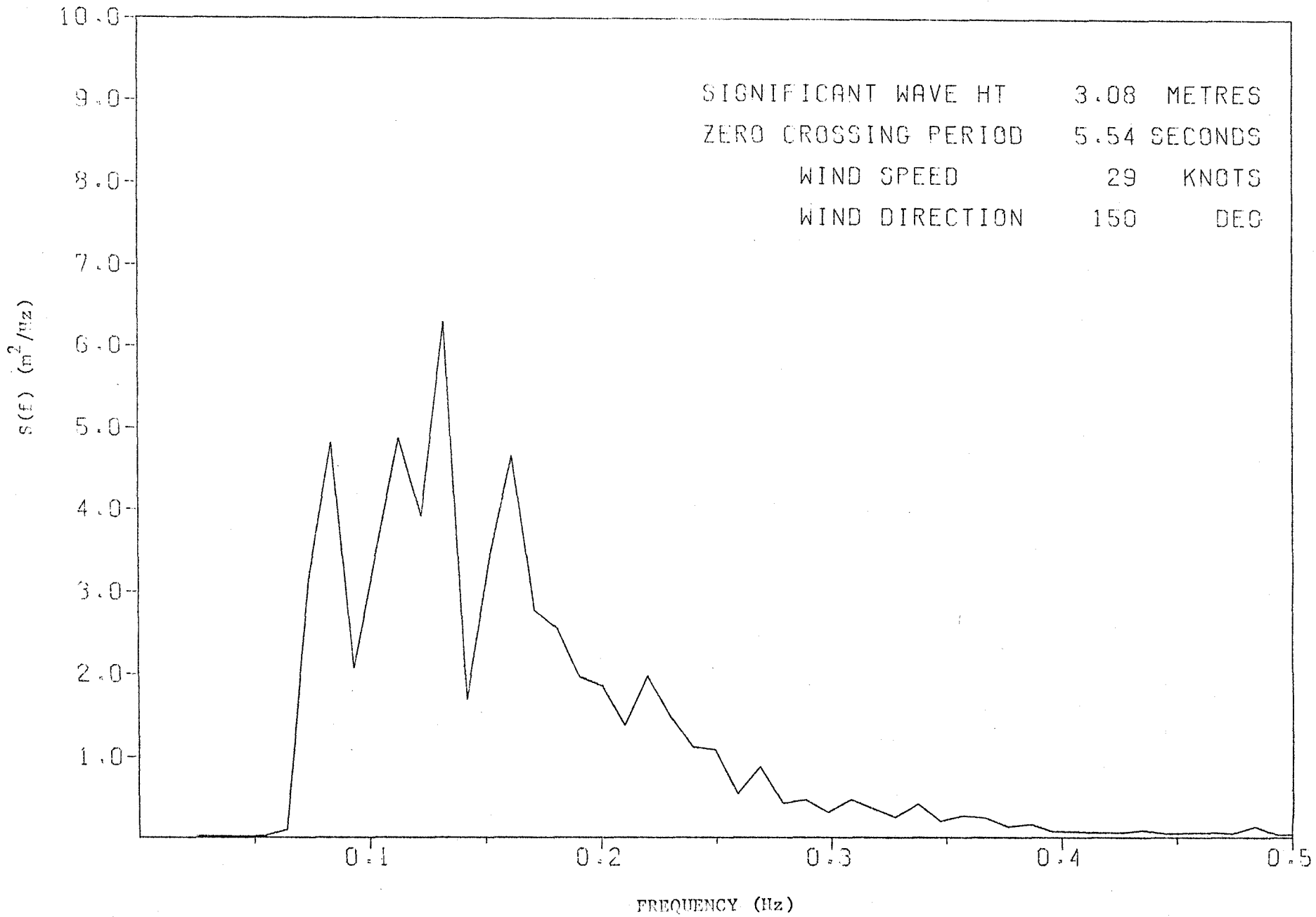
S.UIST SPECTRUM 313

76 298 8 59



S.U.I.S.T SPECTRUM 320

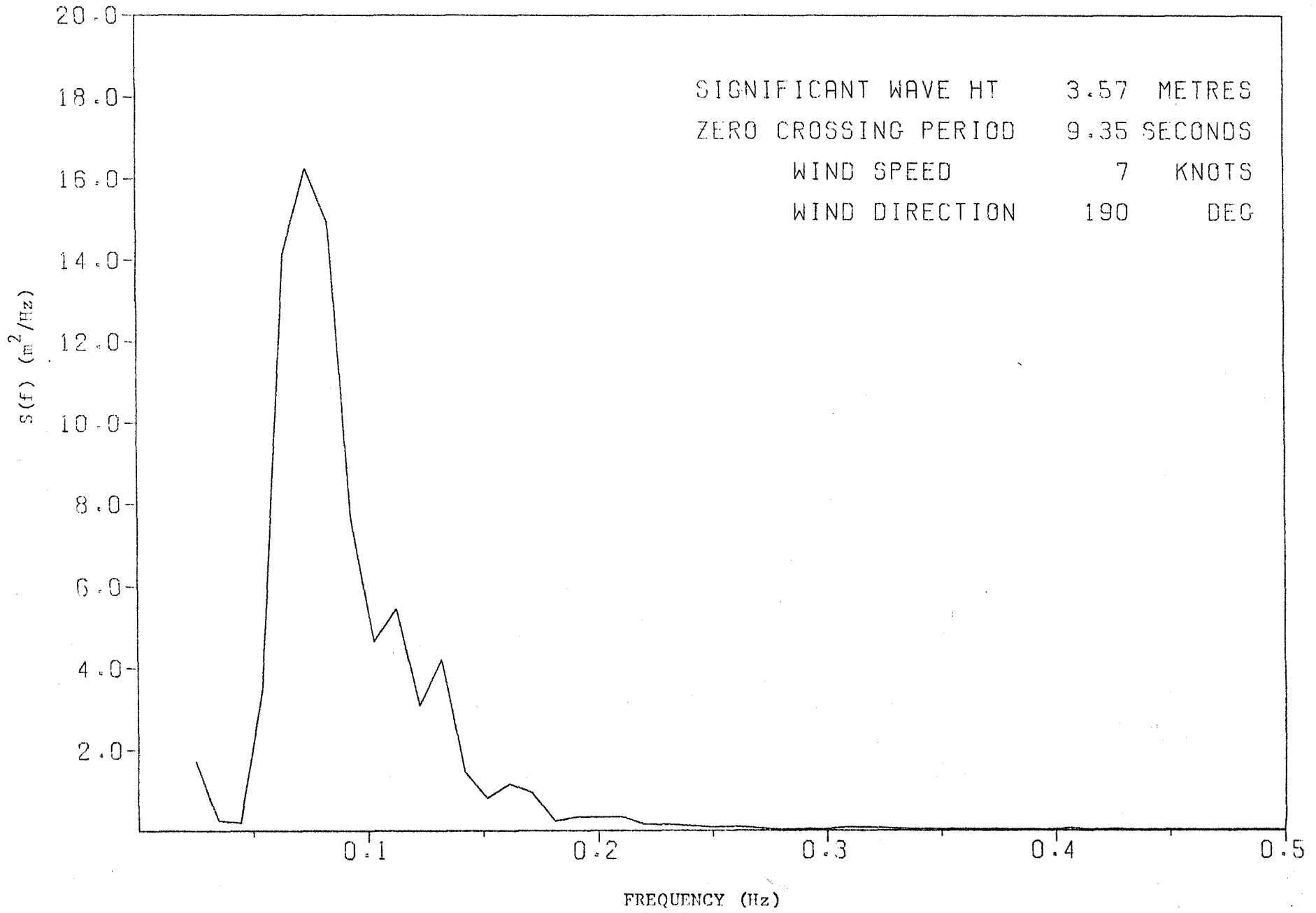
76 305 20 59



Hs 3.51 to 4.00 metres

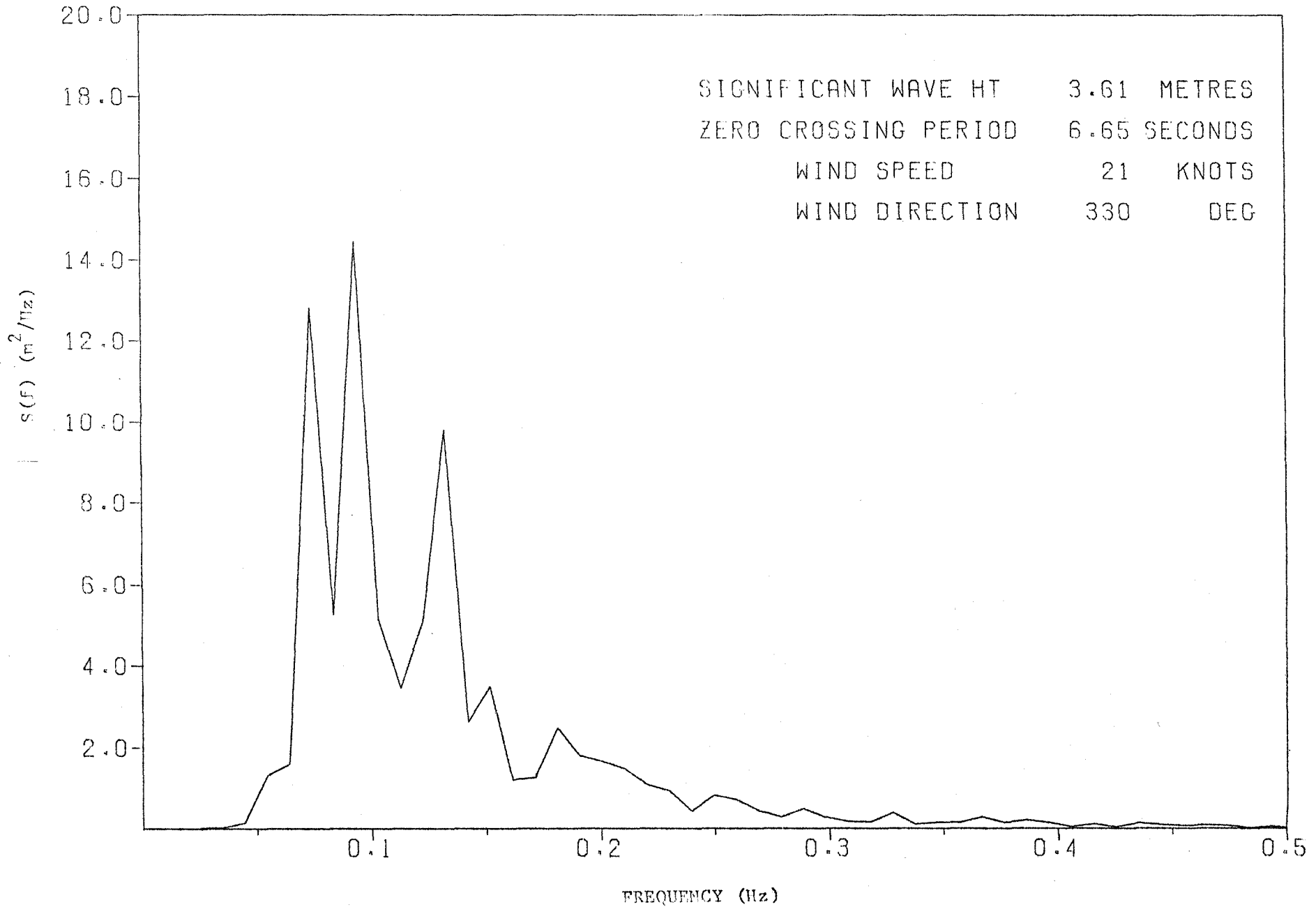
S.U.I.S.T SPECTRUM 321

76 338 8 59



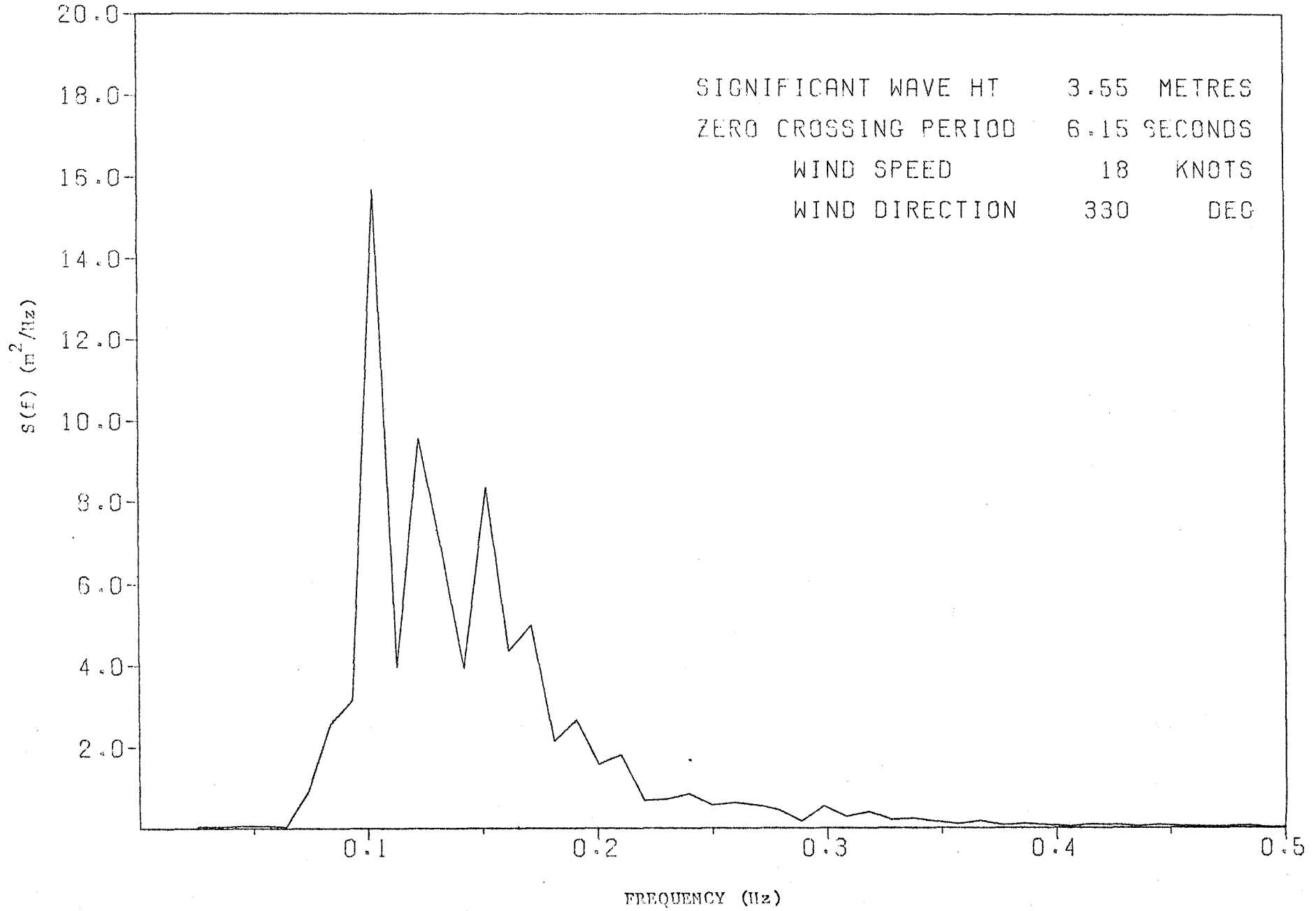
S.U.I.S.T SPECTRUM 328

76 343 5 59



S.U.I.S.T SPECTRUM 334

76 252 17 59

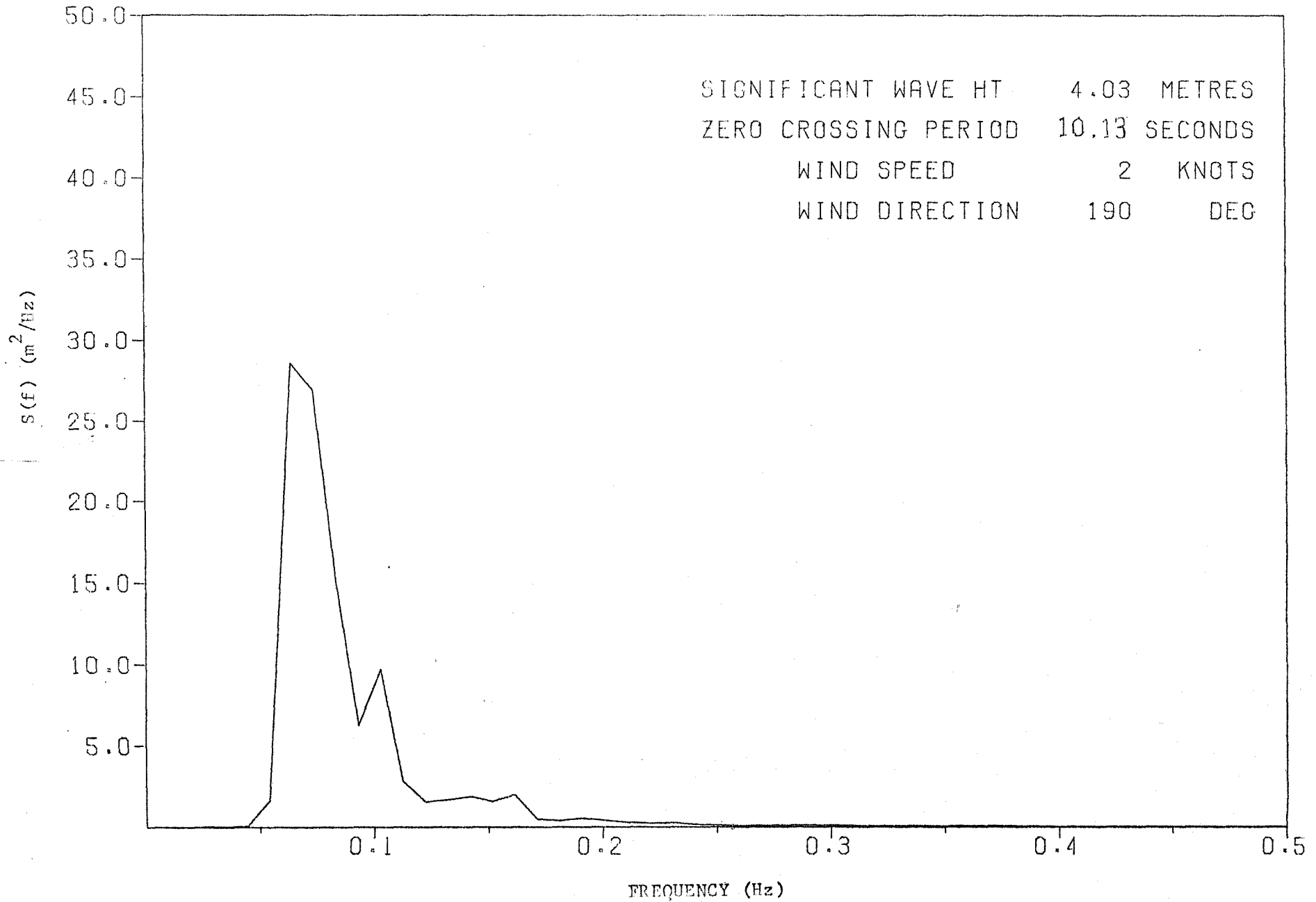


Hs 4.01 to 4.50 metres

S.U.I.S.T SPECTRUM 335

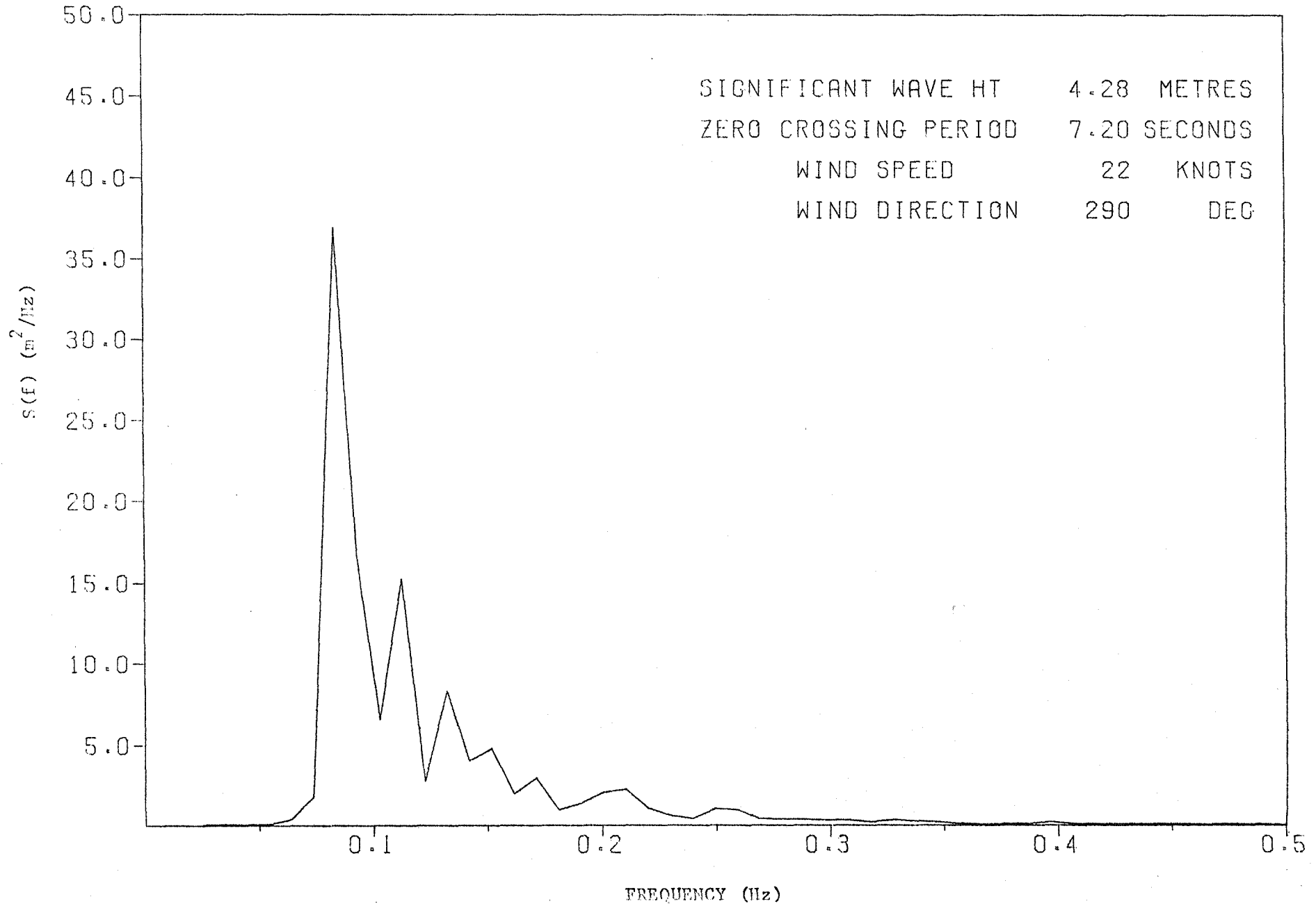
77 39 2 59

SIGNIFICANT WAVE HT 4.03 METRES
ZERO CROSSING PERIOD 10.13 SECONDS
WIND SPEED 2 KNOTS
WIND DIRECTION 190 DEG



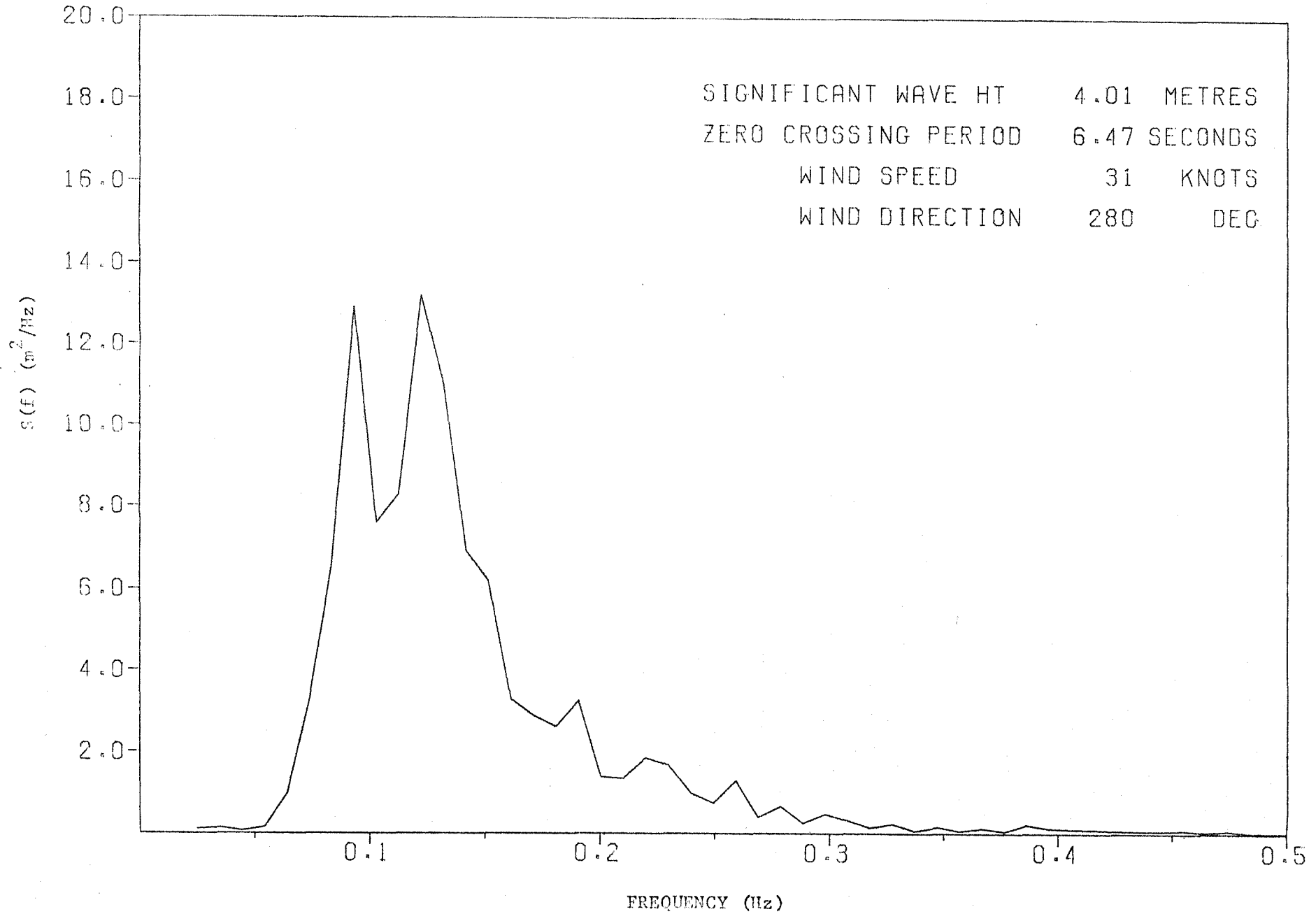
S.U.I.S.T SPECTRUM 348

76 344 11 59



S.U.I.S.T SPECTRUM 355

77 34 20 59

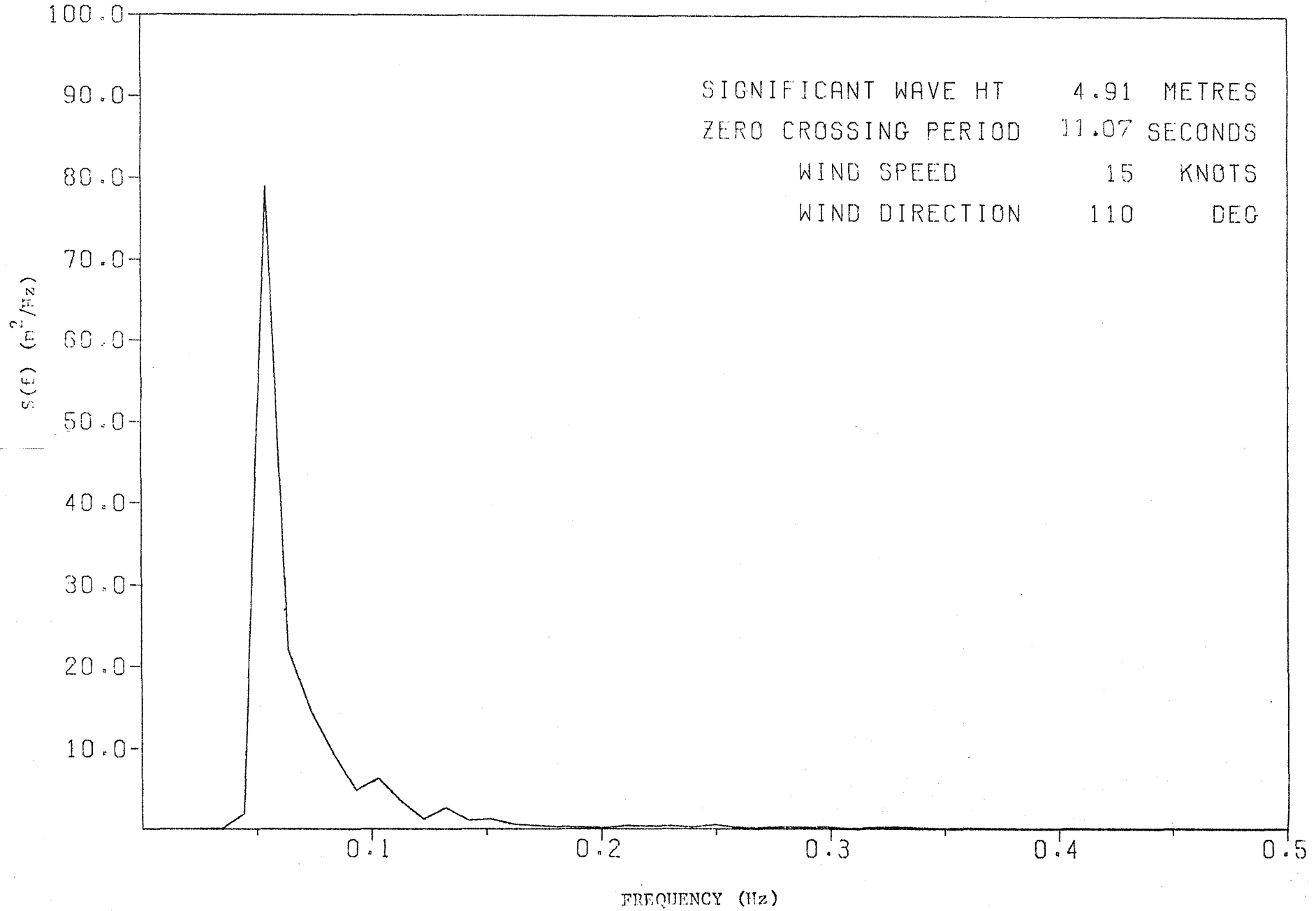


Hs 4.51 to 5.00 metres

S.UIST SPECTRUM 356

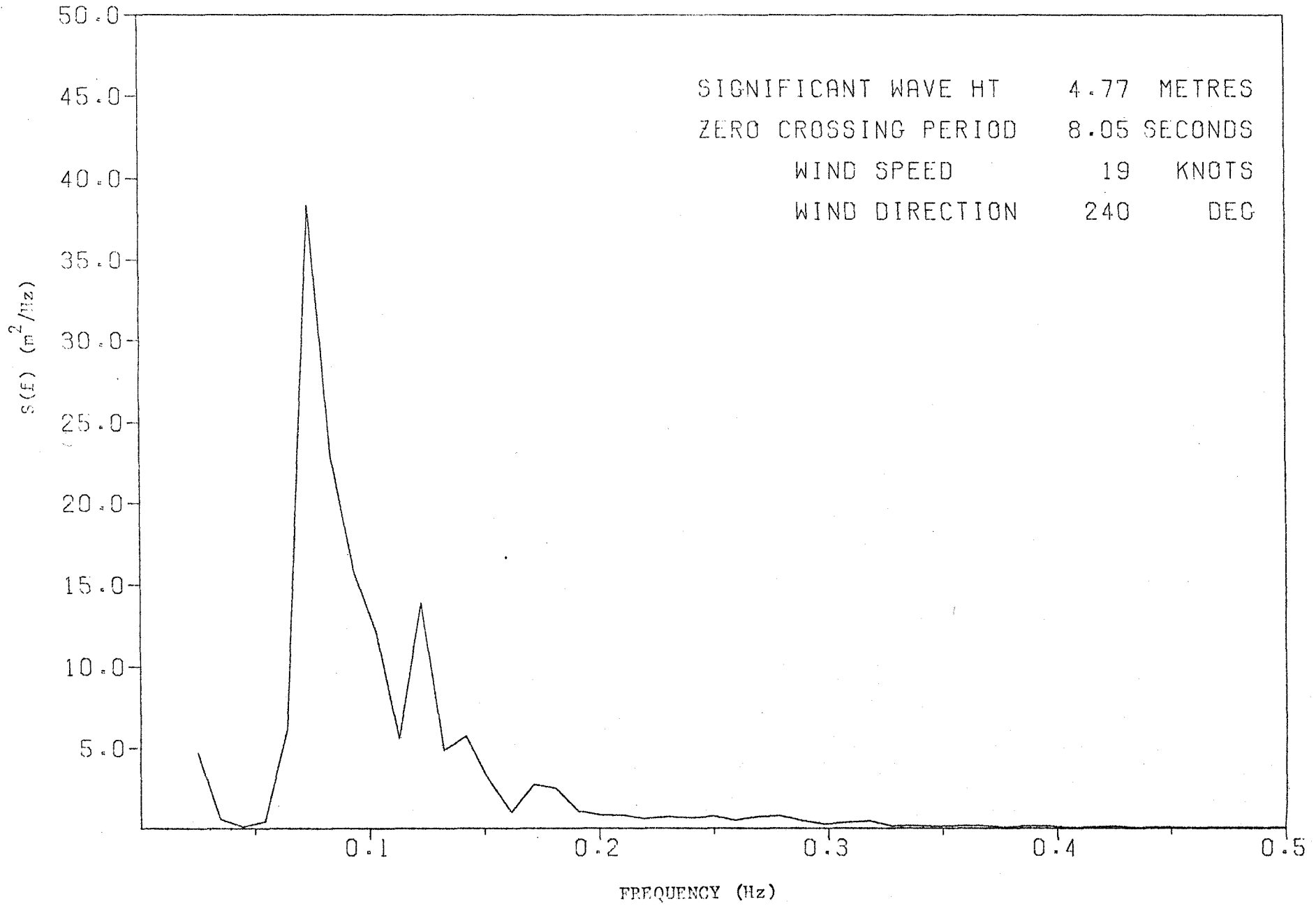
76 75 14 59

SIGNIFICANT WAVE HT 4.91 METRES
ZERO CROSSING PERIOD 11.07 SECONDS
WIND SPEED 15 KNOTS
WIND DIRECTION 110 DEG



S.UIST SPECTRUM 363

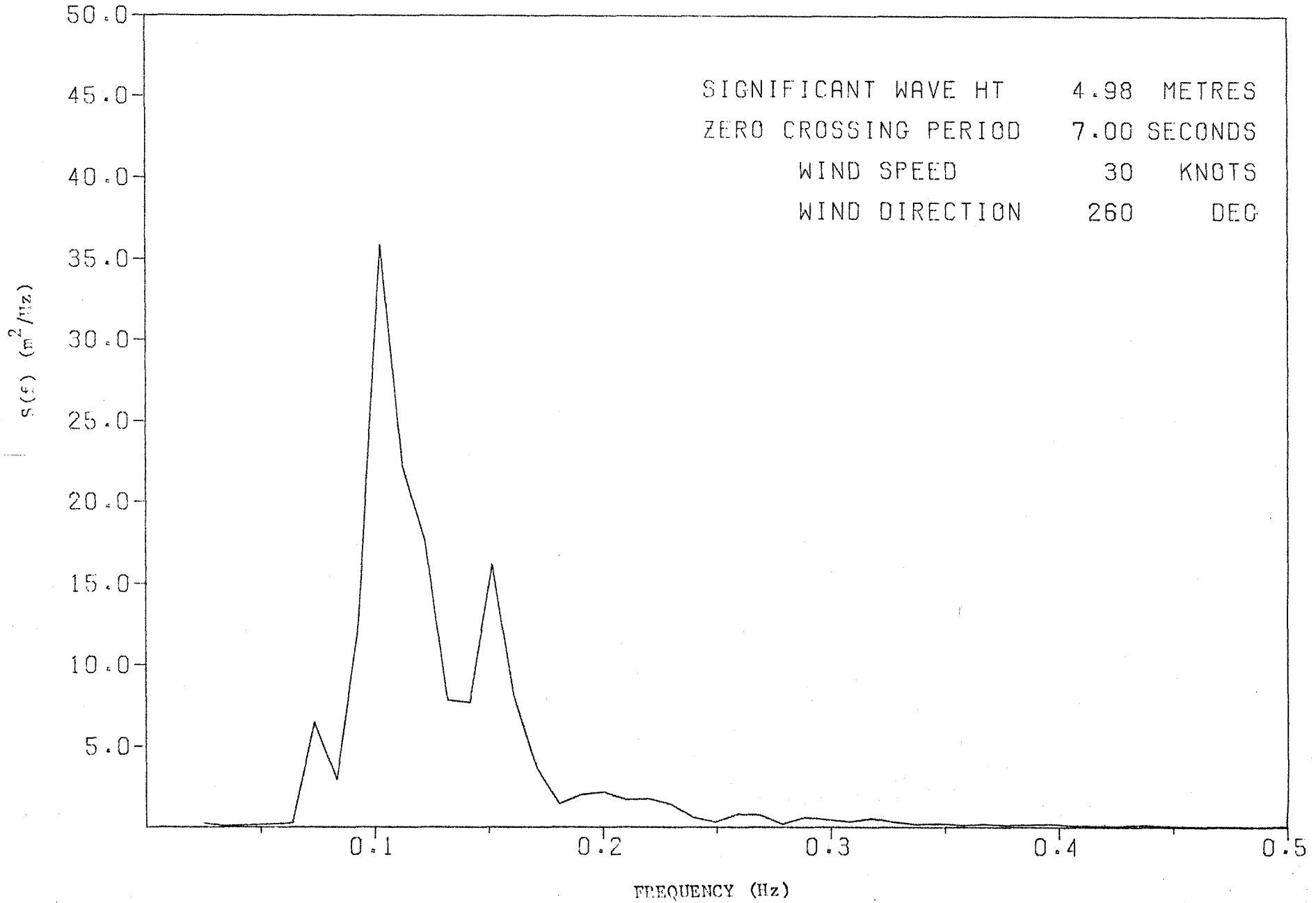
76 281 2 59



S.U.I.S.T SPECTRUM 369

76 91 13 59

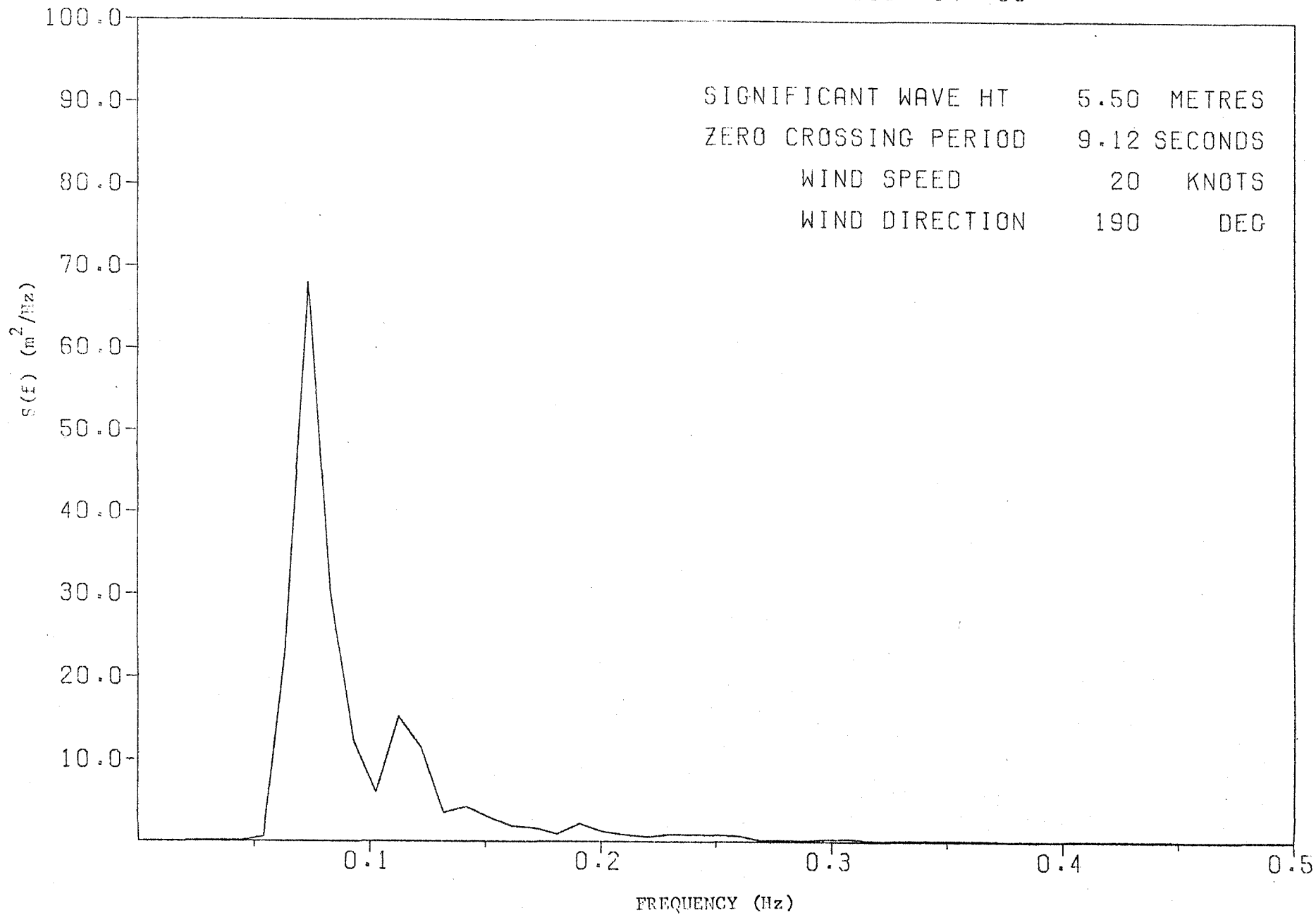
SIGNIFICANT WAVE HT 4.98 METRES
ZERO CROSSING PERIOD 7.00 SECONDS
WIND SPEED 30 KNOTS
WIND DIRECTION 260 DEG



Hs 5.01 to 5.50 metres

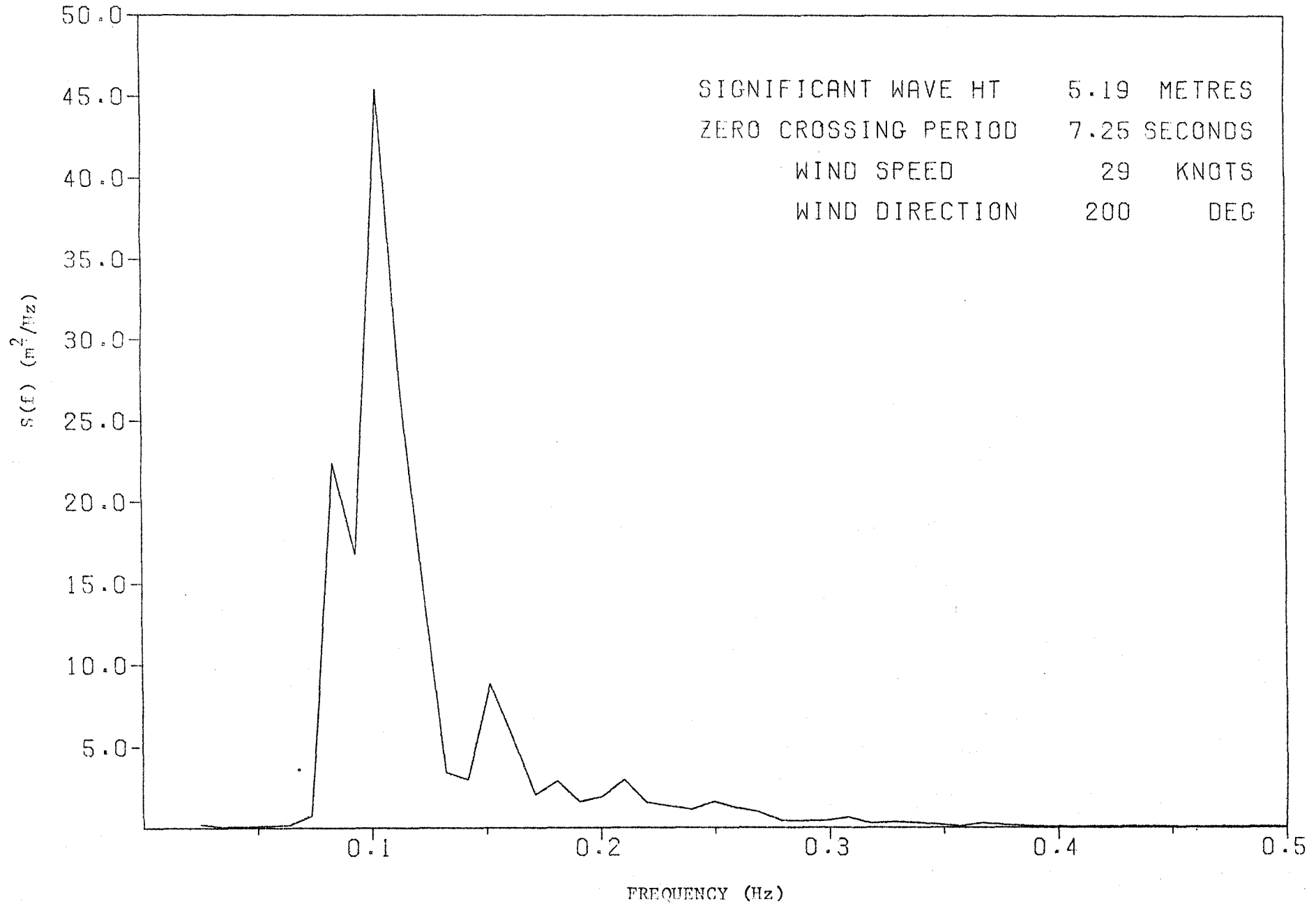
S.U.I.S.T SPECTRUM 370

76 306 14 59



S.UIST SPECTRUM 380

76 280 8 59

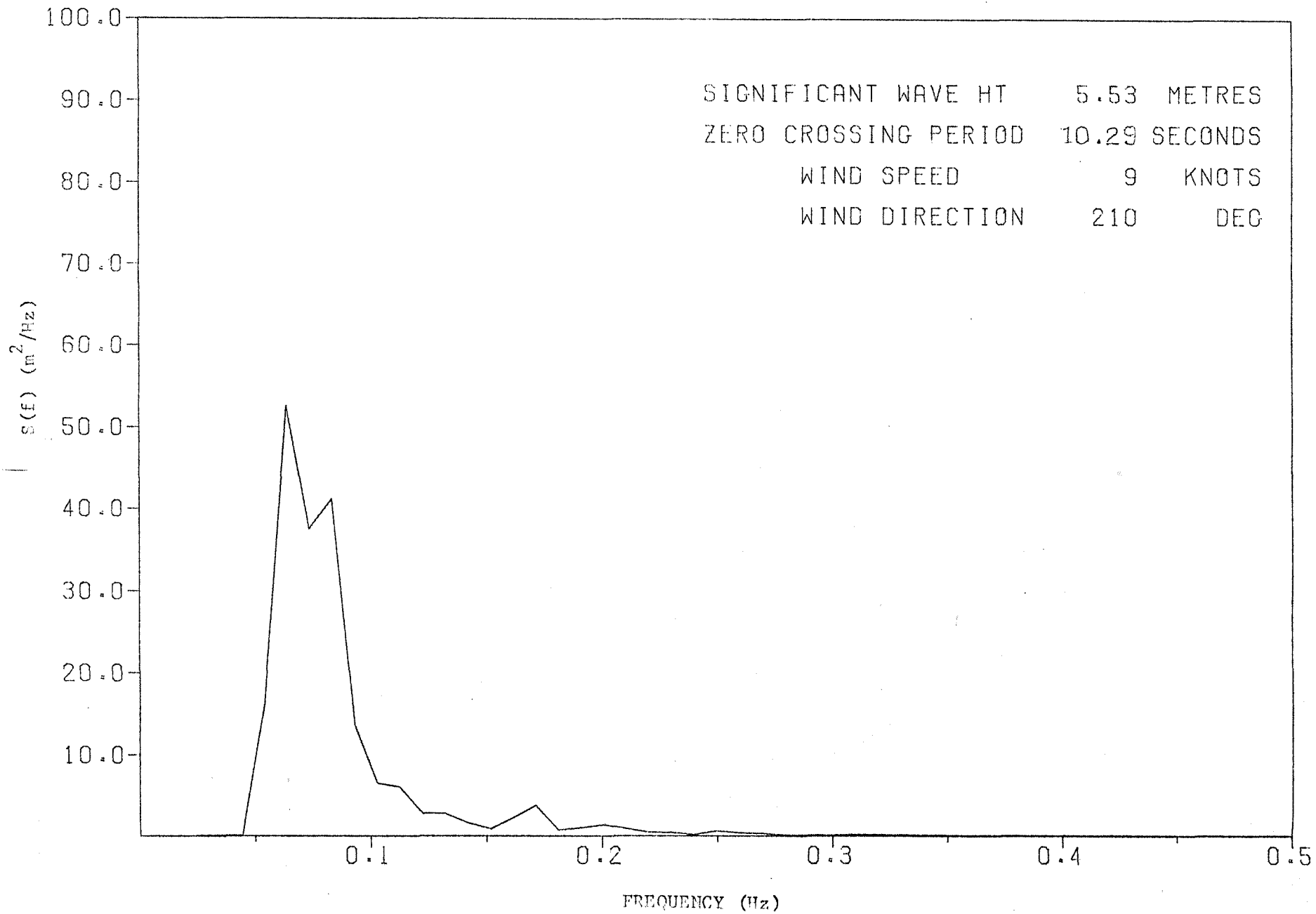


Hs 5.51 to 6.00 metres

S.UIST SPECTRUM 381

76 81 14 59

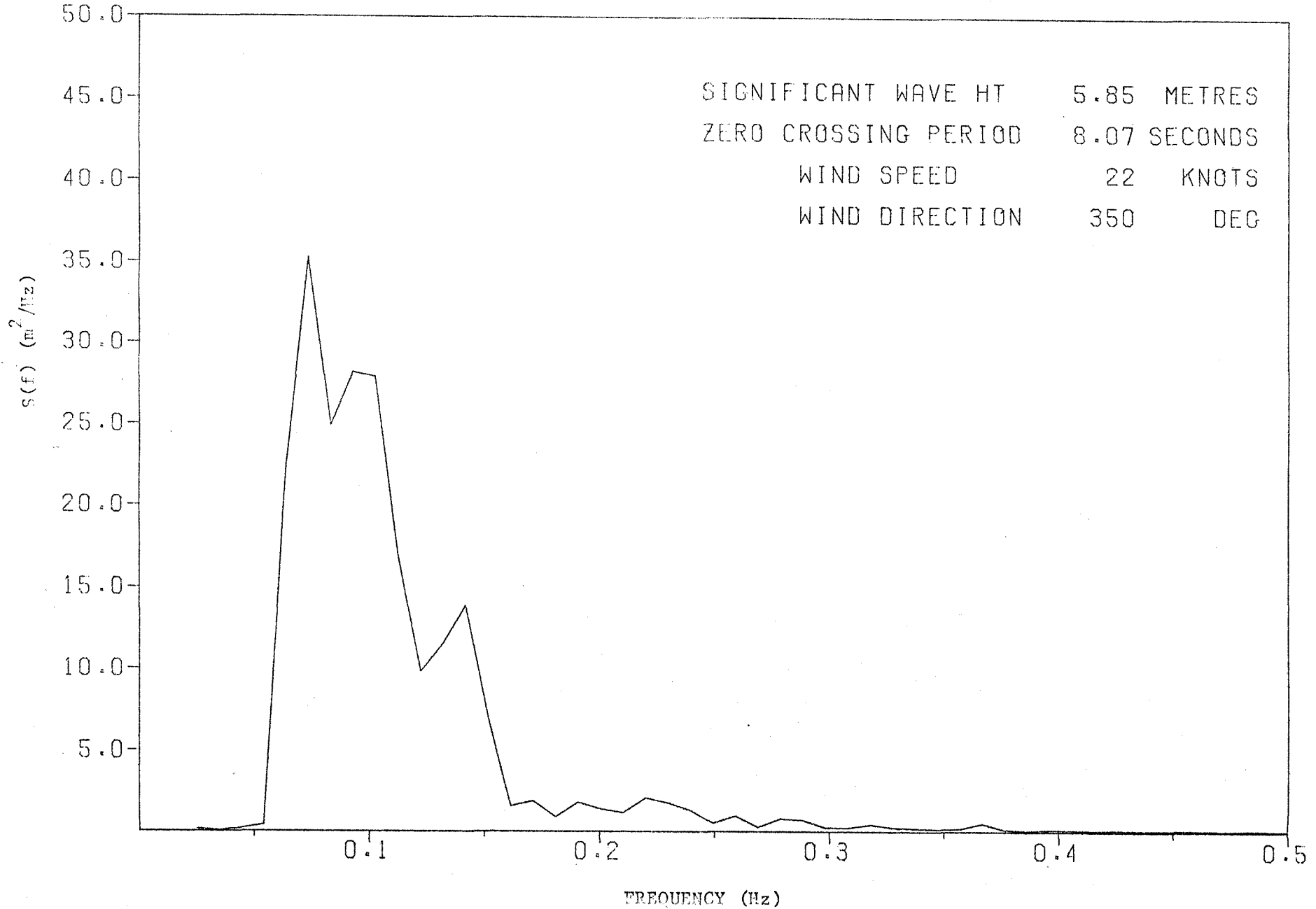
SIGNIFICANT WAVE HT 5.53 METRES
ZERO CROSSING PERIOD 10.29 SECONDS
WIND SPEED 9 KNOTS
WIND DIRECTION 210 DEG



S.U.I.S.T SPECTRUM 387

76 105 13 59

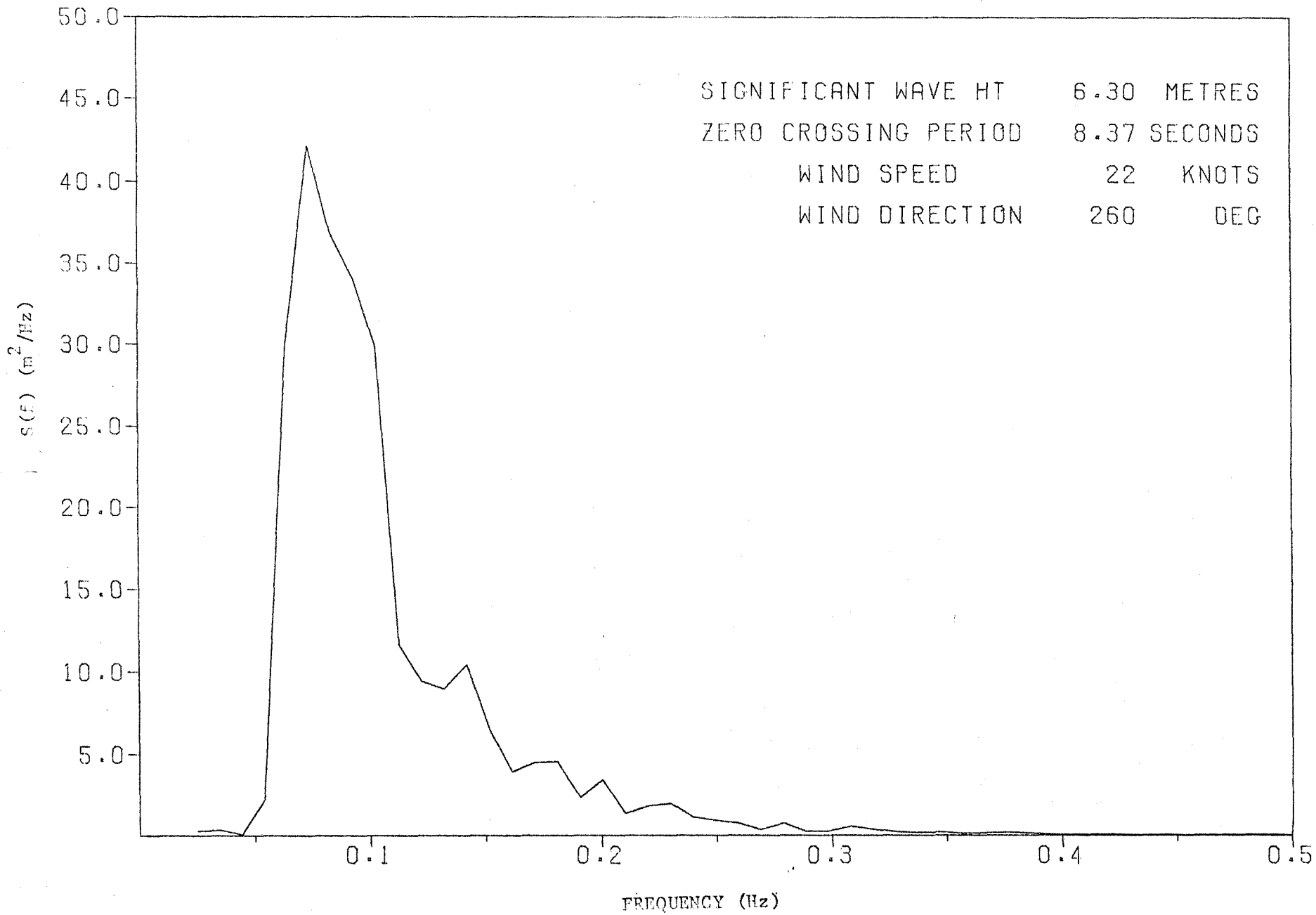
SIGNIFICANT WAVE HT 5.85 METRES
ZERO CROSSING PERIOD 8.07 SECONDS
WIND SPEED 22 KNOTS
WIND DIRECTION 350 DEG



Hs 6.01 to 6.50 metres

S.UIST SPECTRUM 390

76 89 2 59

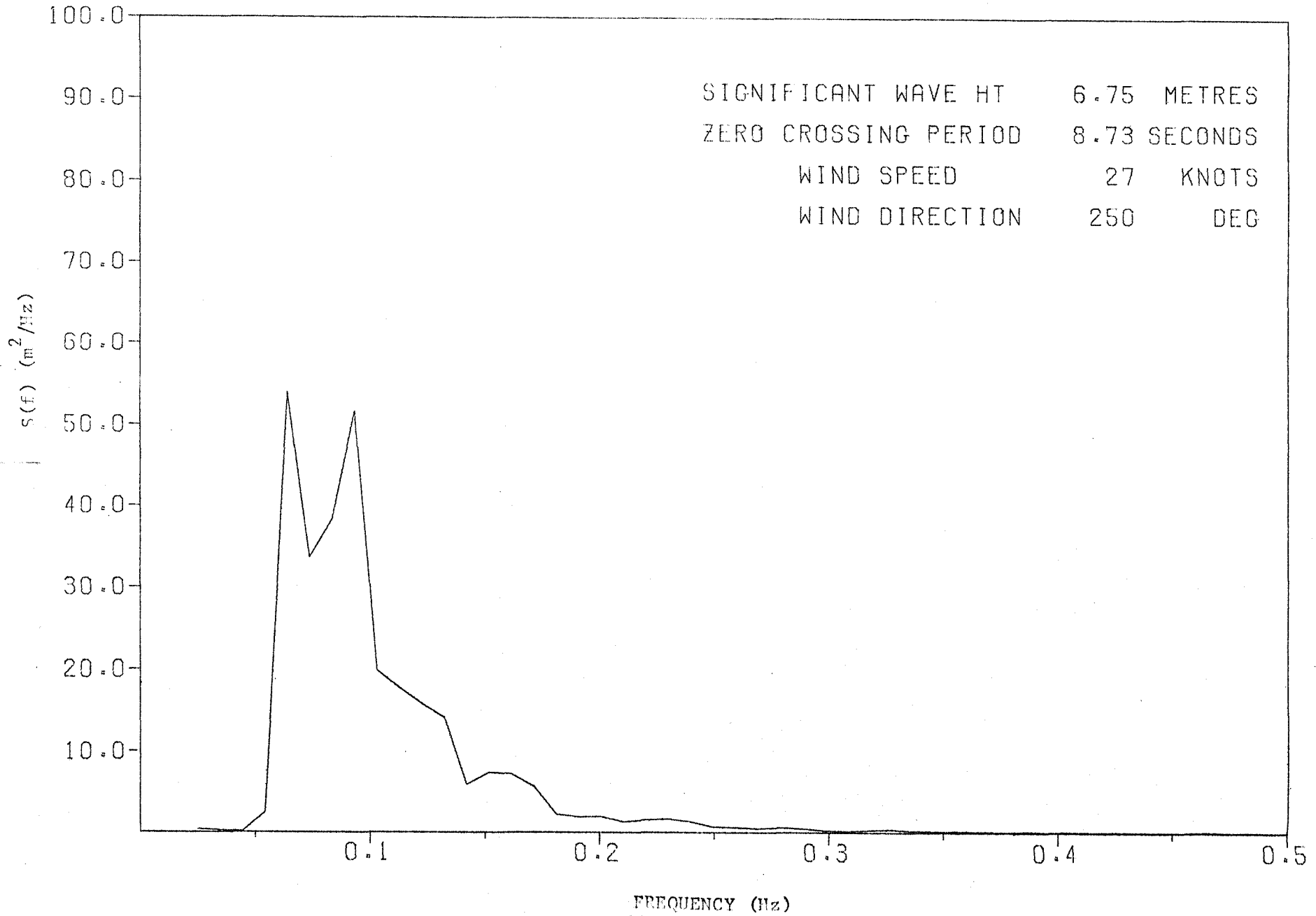


Hs 6.51 to 7.00 metres

S.U.I.S.T SPECTRUM 393

76 334 2 59

SIGNIFICANT WAVE HT 6.75 METRES
ZERO CROSSING PERIOD 8.73 SECONDS
WIND SPEED 27 KNOTS
WIND DIRECTION 250 DEG

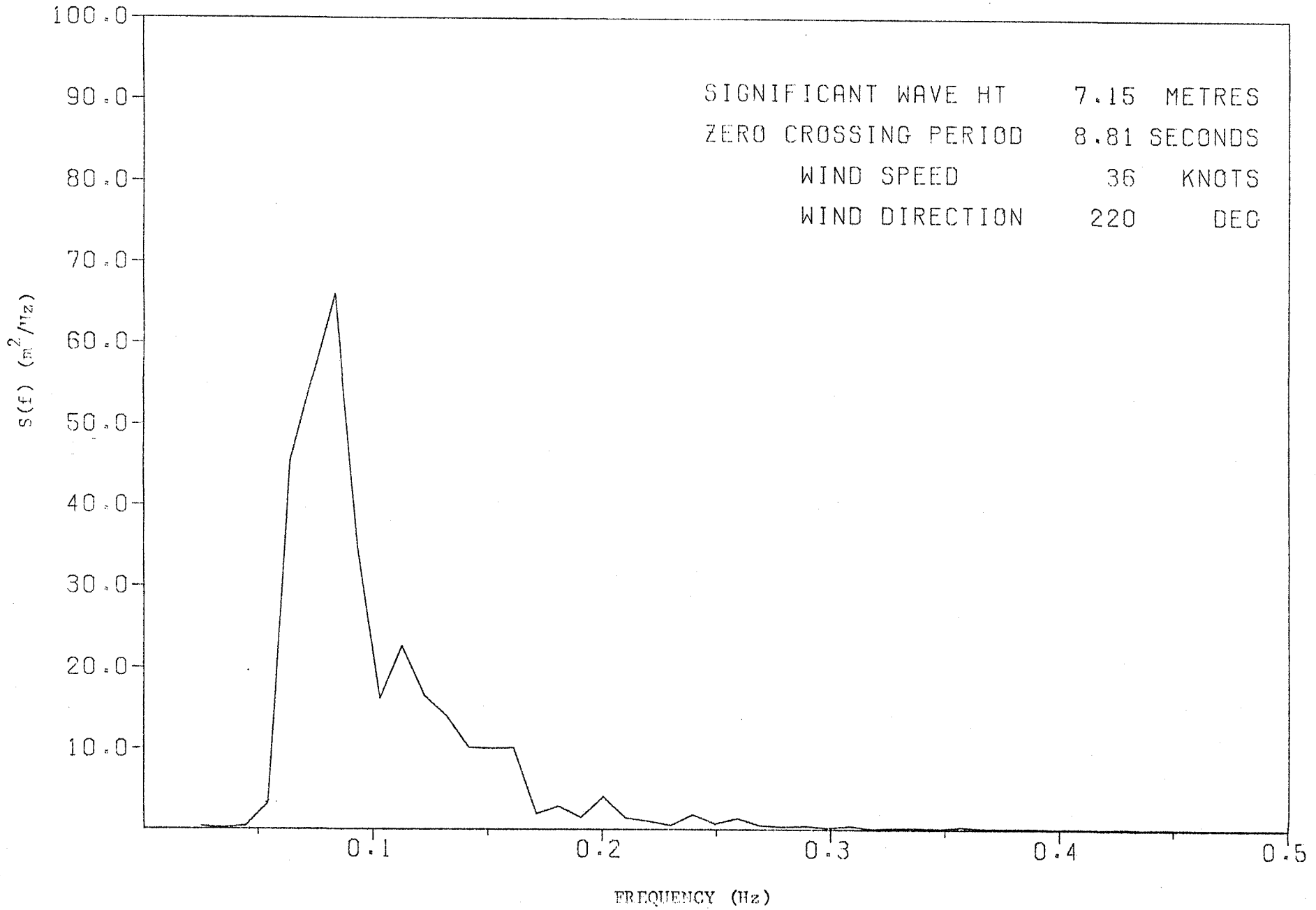


Hs 7.01 to 7.50 metres

S.UIST SPECTRUM 395

76 280 14 59

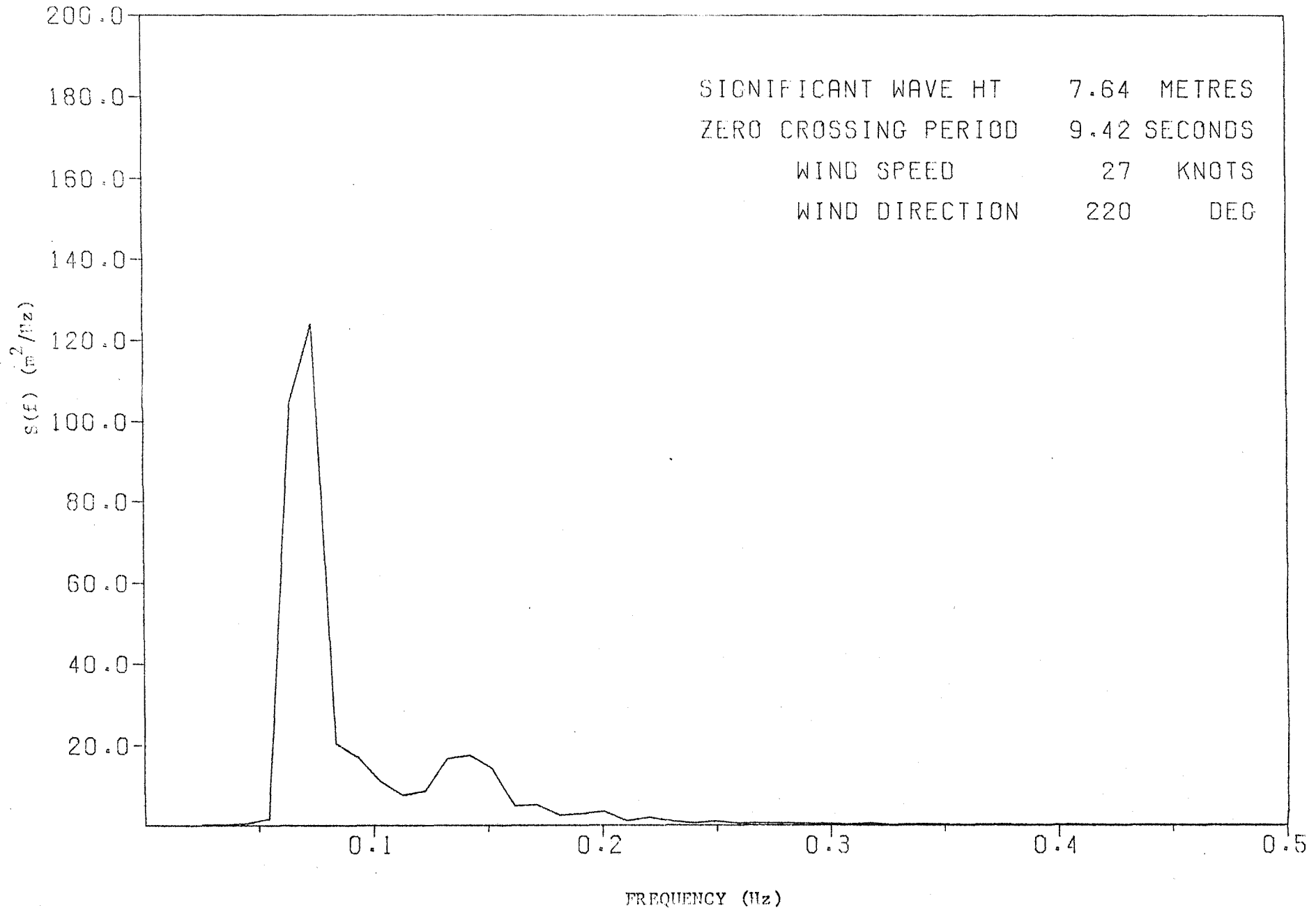
SIGNIFICANT WAVE HT 7.15 METRES
ZERO CROSSING PERIOD 8.81 SECONDS
WIND SPEED 36 KNOTS
WIND DIRECTION 220 DEG



Hs 7.51 to 8.00 metres

S.U.I.S.T SPECTRUM 397

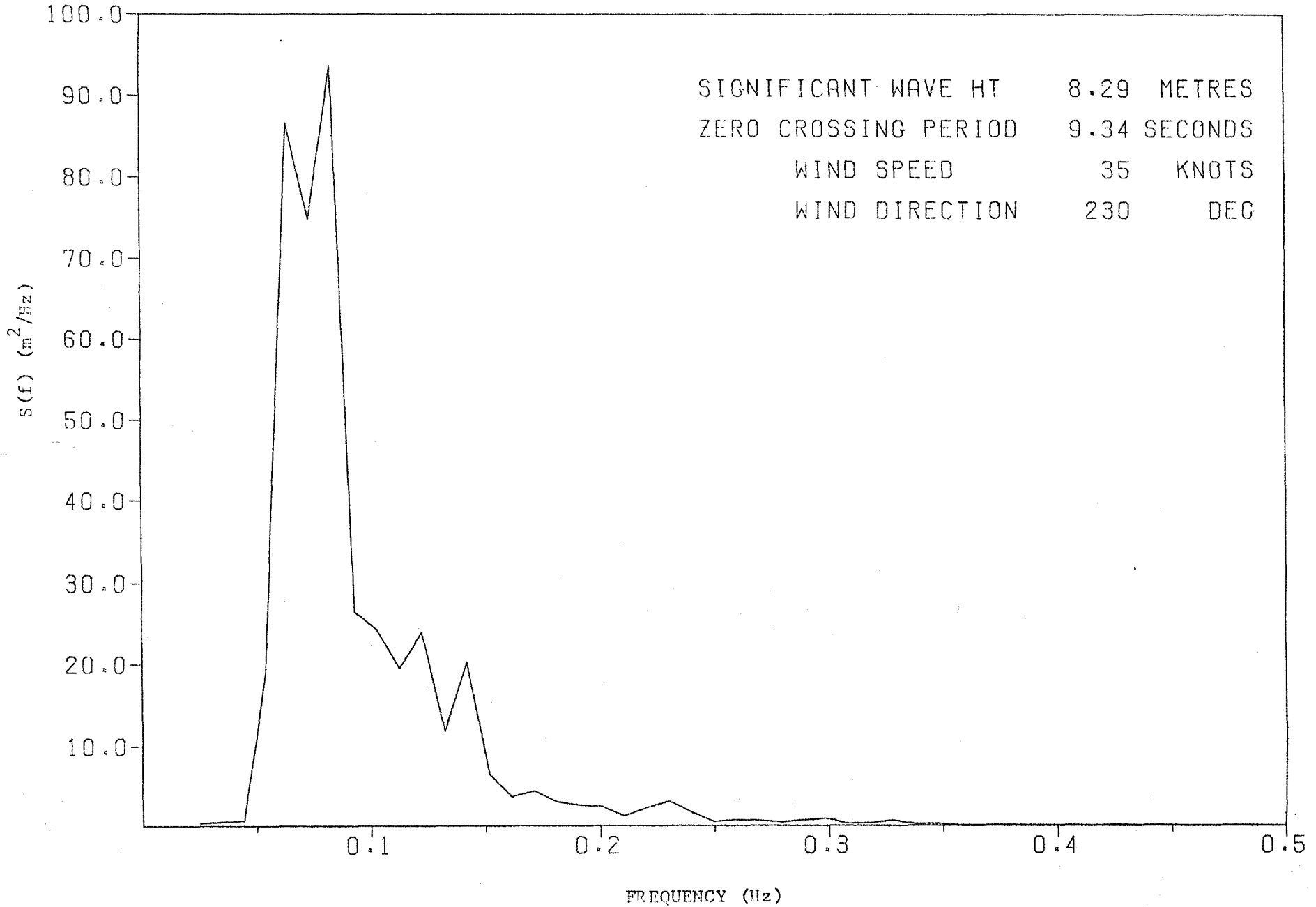
76 88 5 59



Hs 8.01 to 8.50 metres

S.U.I.S.T SPECTRUM 398

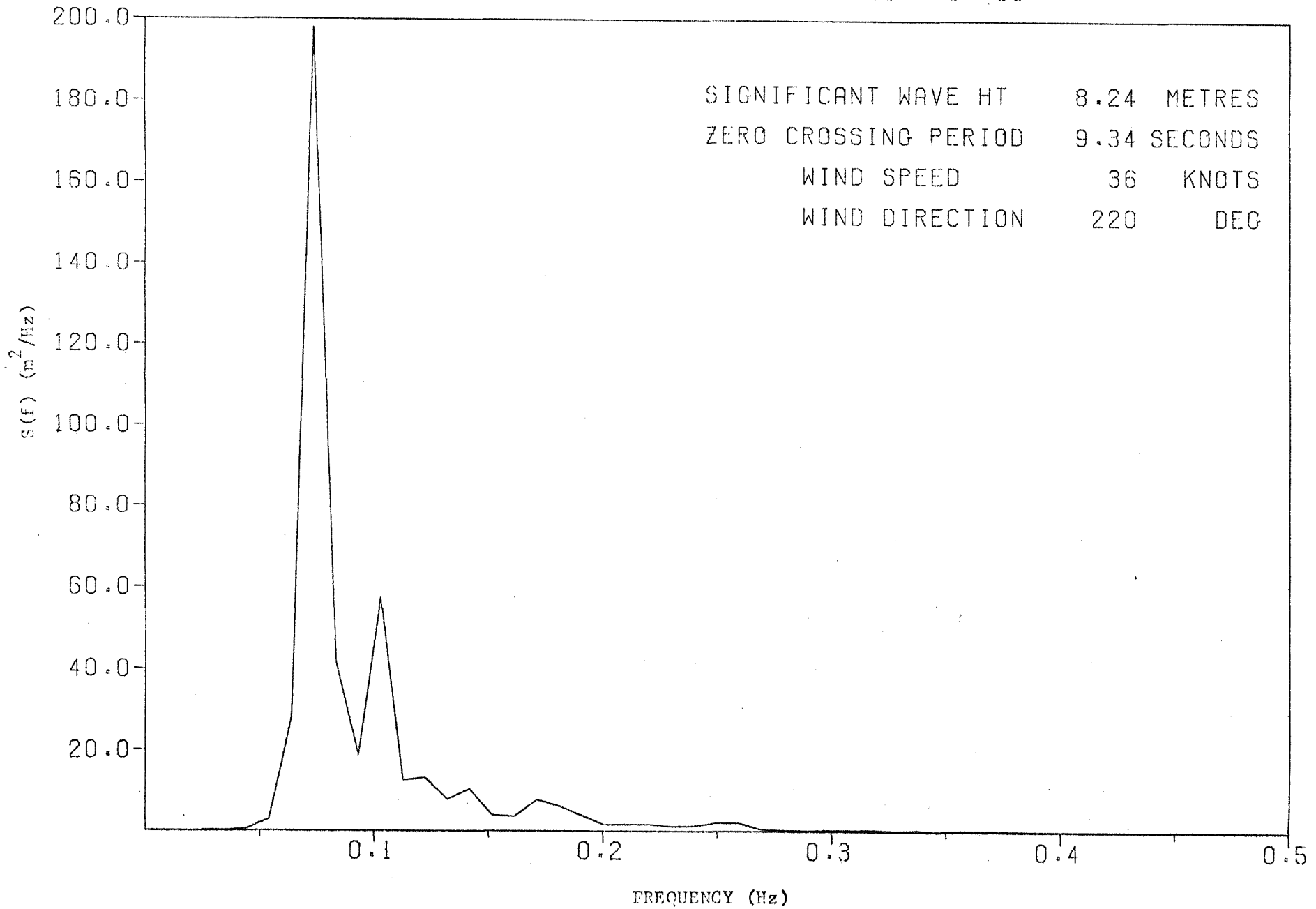
76 333 8 59



S.U.I.S.T SPECTRUM 399

76 333 5 59

SIGNIFICANT WAVE HT 8.24 METRES
ZERO CROSSING PERIOD 9.34 SECONDS
WIND SPEED 36 KNOTS
WIND DIRECTION 220 DEG



Index to Wave Spectra

6. Index to Wave Spectra

For the purpose of this index the data have been grouped into classes of significant wave height (H_s) each 0.5m in width, and the records have been arranged in descending order of zero crossing period (T_z) within each of these significant wave height classes.

The index, then, comprises one line summaries of each of the 399 spectra listed in ascending order of significant wave height class and descending order of zero crossing period within each class. The summaries include H_s , T_z , wind direction, wind speed and seven spectral moments from $M-2$ to M_4 , (these last are written in the index in Fortran E format form: 0.9404E-01 being equivalent to 0.9404×10^{-1}).

Each spectrum has been allocated a serial number from 1 to 399, by virtue of its position in the index list. Each wave record has the same serial number as the spectrum calculated from it, this serial number appears in both the wave record and the spectrum file.

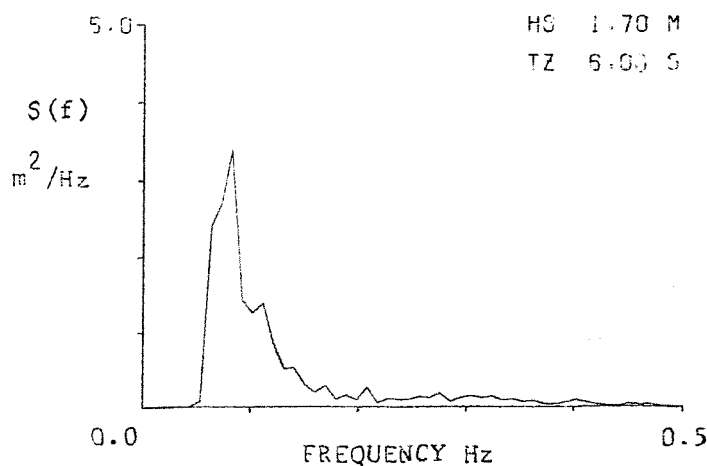
The files have been written to the computer compatible medium in two groups, one of wave records and the other of spectra. Files are in index order within each of these two groups.

As an adjunct to the index all the spectra have been plotted in index order, eight to a page.

In each of these plots the ordinate is spectral density, $S(f)$, plotted in units of metres²/Hz and the abscissa is frequency in Hz.

For economy in plotting the axes are unlabelled except for an indication of the ordinate full scale value; the frequency range of the abscissa is from 0.0 to 0.5 Hz.

These points are illustrated in the following example:



SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
1	0.49	8.74	90	6	0.2496E 01	0.1833E 00	0.1476E-01	0.1425E-02	0.1933E-03	0.4146E-04	0.1309E-04
2	0.33	6.17	0	0	0.6945E 00	0.6281E-01	0.6635E-02	0.9034E-03	0.1742E-03	0.4705E-04	0.1607E-04
3	0.48	5.64	300	2	0.8153E 00	0.1041E 00	0.1469E-01	0.2362E-02	0.4614E-03	0.1175E-03	0.3924E-04
4	0.43	4.07	210	5	0.5900E 00	0.7380E-01	0.1144E-01	0.2376E-02	0.6913E-03	0.2665E-03	0.1226E-03

Hs 0.01 to 0.50 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
5	0.65	7.06	280	3	0.2218E 01	0.2332E 00	0.2643E-01	0.3418E-02	0.5343E-03	0.1169E-03	0.3826E-04
6	0.58	6.60	30	7	0.1443E 01	0.1664E 00	0.2114E-01	0.2979E-02	0.4858E-03	0.9907E-04	0.2693E-04
7	0.96	6.53	90	2	0.4239E 01	0.4675E 00	0.5807E-01	0.8205E-02	0.1363E-02	0.2827E-03	0.7758E-04
8	0.94	6.35	70	5	0.4429E 01	0.4782E 00	0.5497E-01	0.7335E-02	0.1362E-02	0.4006E-03	0.1642E-03
9	0.57	6.24	340	2	0.1607E 01	0.1709E 00	0.2061E-01	0.2922E-02	0.5294E-03	0.1379E-03	0.5227E-04
10	0.53	6.22	290	3	0.1117E 01	0.1340E 00	0.1726E-01	0.2500E-02	0.4461E-03	0.1081E-03	0.3571E-04
11	0.77	6.20	0	0	0.2704E 01	0.2987E 00	0.3661E-01	0.5236E-02	0.9539E-03	0.2395E-03	0.8138E-04
12	0.57	5.81	30	3	0.1702E 01	0.1767E 00	0.2034E-01	0.2887E-02	0.6018E-03	0.1960E-03	0.8523E-04
13	0.74	5.47	90	4	0.1618E 01	0.2269E 00	0.3423E-01	0.5722E-02	0.1142E-02	0.2995E-03	0.1054E-03
14	0.99	5.37	190	2	0.3376E 01	0.4289E 00	0.6118E-01	0.1017E-01	0.2124E-02	0.5934E-03	0.2170E-03
15	0.81	5.32	210	3	0.2856E 01	0.3185E 00	0.4101E-01	0.6600E-02	0.1449E-02	0.4375E-03	0.1663E-03
16	0.78	5.29	140	2	0.2053E 01	0.2599E 00	0.3781E-01	0.6459E-02	0.1352E-02	0.3608E-03	0.1227E-03
17	0.66	4.93	80	11	0.3557E 01	0.2788E 00	0.2754E-01	0.4222E-02	0.1132E-02	0.4452E-03	0.2084E-03
18	0.62	4.91	20	2	0.2220E 01	0.2135E 00	0.2391E-01	0.3754E-02	0.9922E-03	0.3978E-03	0.1938E-03
19	0.83	4.79	60	11	0.3536E 01	0.3647E 00	0.4323E-01	0.7080E-02	0.1888E-02	0.7312E-03	0.3361E-03
20	0.66	4.56	30	7	0.1815E 01	0.2079E 00	0.2697E-01	0.4673E-02	0.1297E-02	0.5309E-03	0.2600E-03
21	0.82	4.53	350	7	0.2722E 01	0.3120E 00	0.4211E-01	0.7667E-02	0.2052E-02	0.7416E-03	0.3161E-03
22	0.59	4.49	310	7	0.1271E 01	0.1526E 00	0.2178E-01	0.4068E-02	0.1081E-02	0.3919E-03	0.1719E-03
23	0.94	4.43	140	10	0.3898E 01	0.4302E 00	0.5578E-01	0.1012E-01	0.2839E-02	0.1084E-02	0.4804E-03
24	0.67	4.27	50	2	0.1469E 01	0.1883E 00	0.2843E-01	0.5603E-02	0.1556E-02	0.5787E-03	0.2563E-03
25	0.51	4.18	70	6	0.9931E 00	0.1153E 00	0.1620E-01	0.3155E-02	0.9288E-03	0.3761E-03	0.1800E-03
26	0.98	4.00	160	7	0.2187E 01	0.3355E 00	0.6017E-01	0.1333E-01	0.3761E-02	0.1316E-02	0.5379E-03
27	0.95	3.90	80	12	0.2992E 01	0.3577E 00	0.5651E-01	0.1261E-01	0.3722E-02	0.1315E-02	0.5233E-03
28	0.73	3.65	350	11	0.1652E 01	0.2245E 00	0.3819E-01	0.8926E-02	0.2868E-02	0.1149E-02	0.5233E-03
29	0.87	3.54	80	11	0.1613E 01	0.2467E 00	0.4778E-01	0.1204E-01	0.3808E-02	0.1420E-02	0.5936E-03
30	0.84	3.27	70	20	0.1147E 01	0.1969E 00	0.4431E-01	0.1250E-01	0.4149E-02	0.1551E-02	0.6377E-03

Hs 0.51 to 1.00 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR	WIND DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
31	1.45	8.37	80		7	0.1479E 02	0.1857E 01	0.1319E 00	0.1420E -01	0.1884E -02	0.3705E -03	0.1184E -03
32	1.30	7.97	170		6	0.1275E 02	0.1135E 01	0.1055E 00	0.1112E -01	0.1662E -02	0.4375E -03	0.1735E -03
33	1.30	7.19	70		2	0.7416E 01	0.8209E 00	0.1057E 00	0.1393E -01	0.2047E -02	0.3627E -03	0.8541E -04
34	1.07	7.10	290		5	0.6045E 01	0.6398E 00	0.7182E -01	0.9126E -02	0.1426E -02	0.3084E -03	0.9594E -04
35	1.25	7.09	280		7	0.6668E 01	0.7857E 00	0.7787E 00	0.1306E -01	0.1944E -02	0.3452E -03	0.8045E -04
36	1.24	6.07	0		0	0.7854E 01	0.8154E 00	0.9614E -01	0.1258E -01	0.1925E -02	0.3735E -03	0.9797E -04
37	1.32	6.88	350		3	0.6811E 01	0.8438E 00	0.1059E 00	0.1514E -01	0.2317E -02	0.4257E -03	0.1050E -03
38	1.01	6.72	90		7	0.5498E 01	0.5740E 00	0.6548E -01	0.8037E -02	0.1404E -02	0.4032E -03	0.1694E -03
39	1.42	6.60	320		9	0.9006E 01	0.1025E 01	0.1256E 00	0.1730E -01	0.2884E -02	0.6451E -03	0.2023E -03
40	1.25	6.43	230		6	0.6111E 01	0.7484E 00	0.9723E -01	0.1398E -01	0.2313E -02	0.4708E -03	0.1249E -03
41	1.27	6.43	100		6	0.6387E 01	0.7762E 00	0.1007E 00	0.1439E -01	0.2436E -02	0.5263E -03	0.1529E -03
42	1.40	6.41	150		5	0.1157E 02	0.1104E 01	0.1218E 00	0.1639E -01	0.2964E -02	0.8019E -03	0.3151E -03
43	1.36	6.27	30		11	0.1099E 02	0.1083E 01	0.1162E 00	0.1501E -01	0.2960E -02	0.9959E -03	0.4598E -03
44	1.27	6.27	60		6	0.6669E 02	0.7959E 00	0.1009E 00	0.1434E -01	0.2567E -02	0.6615E -03	0.2410E -03
45	1.41	6.23	10		9	0.1455E 01	0.1235E 01	0.1235E 00	0.1570E -01	0.3184E -02	0.5049E -03	0.4239E -03
46	1.11	5.84	150		4	0.3681E 01	0.5257E 00	0.7635E -01	0.1219E -01	0.2239E -02	0.5049E -03	0.1463E -03
47	1.37	5.83	130		6	0.6450E 01	0.8394E 00	0.1178E 00	0.1845E -01	0.3469E -02	0.8212E -03	0.3070E -03
48	1.35	5.80	280		6	0.6380E 01	0.8174E 00	0.8394E 00	0.1845E -01	0.3469E -02	0.8212E -03	0.2798E -03
49	1.11	5.80	90		9	0.1265E 02	0.9189E 00	0.7705E -01	0.9587E -02	0.2293E -02	0.8717E -03	0.3969E -03
50	1.37	5.71	360		4	0.7530E 01	0.8845E 00	0.8845E 00	0.1810E -01	0.3571E -02	0.9383E -03	0.3193E -03
51	1.29	5.67	120		2	0.5808E 01	0.7149E 00	0.1045E 00	0.1705E -01	0.3250E -02	0.7625E -03	0.2264E -03
52	1.18	5.61	30		8	0.7559E 01	0.7495E 00	0.8708E -01	0.1255E -01	0.2766E -02	0.9268E -03	0.3942E -03
53	1.44	5.49	310		7	0.6926E 01	0.9073E 00	0.1292E 00	0.2098E -01	0.4155E -02	0.1058E -02	0.3444E -03
54	1.28	5.49	140		9	0.5421E 01	0.7089E 00	0.1026E 00	0.1702E -01	0.3409E -02	0.8732E -03	0.2902E -03
55	1.16	5.40	30		5	0.4853E 01	0.6096E 00	0.8369E -01	0.1353E -01	0.2870E -02	0.8433E -03	0.4930E -03
56	1.42	5.36	200		10	0.8906E 01	0.9813E 00	0.1656E 00	0.2032E -01	0.4406E -02	0.1307E -02	0.4930E -03
57	1.05	5.35	20		9	0.7466E 01	0.6648E 00	0.6921E -01	0.1006E -01	0.2421E -02	0.8753E -03	0.3871E -03
58	1.03	5.26	70		7	0.5792E 01	0.6952E 00	0.9172E -01	0.1467E -01	0.3263E -02	0.1059E -02	0.4448E -03
59	1.14	5.14	290		6	0.4063E 01	0.4852E 00	0.6443E -01	0.1108E -01	0.2401E -02	0.6917E -03	0.2538E -03
60	1.12	5.07	40		12	0.4526E 01	0.5780E 00	0.8657E -01	0.1388E -01	0.3052E -02	0.1015E -02	0.4384E -03
61	1.46	4.96	100		11	0.6905E 01	0.6770E 00	0.7851E -01	0.1258E -01	0.3049E -02	0.1010E -02	0.3974E -03
62	1.41	4.86	110		11	0.1027E 02	0.1678E 01	0.1324E 00	0.2224E -01	0.5387E -02	0.1747E -02	0.6794E -03
63	1.34	4.85	140		10	0.8577E 01	0.9417E 00	0.1237E 00	0.2152E -01	0.5228E -02	0.1682E -02	0.6538E -03
64	1.38	4.72	330		9	0.7547E 01	0.8347E 00	0.1115E 00	0.1966E -01	0.4731E -02	0.1484E -02	0.5633E -03
65	1.40	4.68	220		10	0.6507E 01	0.8096E 00	0.1198E 00	0.1966E -01	0.4731E -02	0.1484E -02	0.6224E -03
66	1.40	4.65	130		8	0.5050E 01	0.5923E 00	0.8885E -01	0.1536E -01	0.5613E -02	0.1693E -02	0.6313E -03
67	1.17	4.65	130		11	0.4715E 01	0.5923E 00	0.8885E -01	0.1536E -01	0.5613E -02	0.1693E -02	0.6313E -03
68	1.26	4.59	270		13	0.8138E 01	0.8494E 00	0.1595E 00	0.1937E -01	0.3917E -02	0.1385E -02	0.5990E -03
69	1.46	4.55	20		12	0.5493E 01	0.7837E 00	0.7837E 00	0.1817E -01	0.4717E -02	0.1872E -02	0.7112E -03
70	1.44	4.49	260		13	0.8138E 01	0.8494E 00	0.1595E 00	0.1937E -01	0.3917E -02	0.1385E -02	0.6009E -03
71	1.11	4.45	70		9	0.3053E 01	0.4613E 00	0.7761E -01	0.1542E -01	0.4472E -02	0.1229E -02	0.6815E -03
72	1.16	4.43	150		10	0.7450E 01	0.6952E 00	0.8423E -01	0.1552E -01	0.4263E -02	0.1503E -02	0.6084E -03
73	1.07	4.43	150		11	0.4338E 01	0.5087E 00	0.7155E -01	0.1362E -01	0.3640E -02	0.1262E -02	0.5147E -03
74	1.49	4.40	40		16	0.6668E 01	0.8793E 00	0.1395E 00	0.2800E -01	0.7192E -02	0.2283E -02	0.8557E -03
75	1.36	4.39	260		13	0.4313E 01	0.6601E 00	0.6601E 00	0.1902E -01	0.4948E -02	0.1858E -02	0.6944E -03
76	1.23	4.36	220		11	0.4358E 01	0.5810E 00	0.9404E -01	0.2390E -01	0.5998E -02	0.1858E -02	0.6944E -03
77	1.40	4.33	30		10	0.5306E 01	0.7475E 00	0.1297E 00	0.2503E -01	0.4561E -02	0.2173E -02	0.8613E -03
78	1.16	4.32	150		17	0.5241E 01	0.5994E 00	0.4999E 00	0.1626E -01	0.4493E -02	0.1609E -02	0.6725E -03
79	1.13	4.24	120		12	0.3535E 01	0.4949E 00	0.8384E -01	0.1620E -01	0.4440E -02	0.1591E -02	0.6745E -03
80	1.19	4.15	190		19	0.2683E 01	0.4664E 00	0.4664E 00	0.1985E -01	0.5168E -02	0.1583E -02	0.5699E -03
81	1.11	3.97	190		11	0.2608E 01	0.4052E 00	0.8908E -01	0.1753E -01	0.4856E -02	0.1601E -02	0.6127E -03
82	1.08	3.85	130		9	0.2796E 01	0.4049E 00	0.7582E -01	0.1707E -01	0.4949E -02	0.1702E -02	0.6642E -03
83	1.17	3.79	60		20	0.2241E 01	0.4010E 00	0.6519E -01	0.2093E -01	0.5917E -02	0.1909E -02	0.7040E -03
84	1.11	3.76	230		12	0.3490E 01	0.4739E 00	0.7956E -01	0.1712E -01	0.5487E -02	0.2325E -02	0.1137E -02
85	1.39	3.74	60		27	0.2702E 01	0.4739E 00	0.1210E 00	0.3049E -01	0.8638E -02	0.2792E -02	0.1040E -02
86	1.17	3.68	150		14	0.2724E 01	0.4739E 00	0.1210E 00	0.3049E -01	0.8638E -02	0.2792E -02	0.1040E -02

SERIAL NO.	HS METRES	TZ SECS	WIND DIR	WIND DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
87	1.95	10.86		10	2	0.4215E 02	0.3103E 01	0.2388E 00	0.1926E 01	0.2024E 02	0.3207E 03	0.9347E 04
88	1.57	8.73		60	2	0.1465E 02	0.1478E 01	0.1535E 00	0.1672E 01	0.2014E 02	0.3072E 03	0.7444E 04
89	1.59	8.51		340	2	0.1668E 02	0.1541E 01	0.1580E 00	0.1737E 01	0.2184E 02	0.3544E 03	0.8367E 04
90	1.86	8.14		330	5	0.2223E 02	0.2127E 01	0.2183E 00	0.2418E 01	0.3244E 02	0.6430E 03	0.2080E 03
91	1.76	8.12		140	2	0.1975E 02	0.1887E 01	0.1928E 00	0.2185E 01	0.2921E 02	0.5042E 03	0.1206E 03
92	1.95	7.98		50	8	0.3111E 02	0.2615E 01	0.2973E 00	0.2516E 01	0.3728E 02	0.9082E 03	0.3220E 03
93	1.56	7.65		130	2	0.1633E 02	0.1511E 01	0.1550E 00	0.1756E 01	0.2595E 02	0.5589E 03	0.1765E 03
94	1.53	7.65		140	3	0.2387E 02	0.1742E 01	0.1466E 00	0.1611E 01	0.2508E 02	0.6080E 03	0.2225E 03
95	1.91	7.32		30	5	0.2014E 02	0.2068E 01	0.2279E 00	0.2819E 01	0.4256E 02	0.8791E 03	0.2606E 03
96	1.85	7.30		320	7	0.1913E 02	0.1965E 01	0.2139E 00	0.2591E 01	0.4014E 02	0.9586E 03	0.3512E 03
97	1.88	7.11		150	4	0.1754E 02	0.1913E 01	0.2209E 00	0.2814E 01	0.4374E 02	0.9680E 03	0.3206E 03
98	1.77	6.93		250	6	0.1535E 02	0.1672E 01	0.1918E 00	0.2545E 01	0.4059E 02	0.8792E 03	0.2676E 03
99	1.59	6.84		0	0	0.1433E 02	0.1431E 01	0.1579E 00	0.2036E 01	0.3372E 02	0.7838E 03	0.2536E 03
100	1.69	6.78		250	4	0.1193E 02	0.1416E 01	0.1730E 00	0.2442E 01	0.3875E 02	0.7780E 03	0.2118E 03
101	1.74	6.66		320	4	0.1207E 02	0.1476E 01	0.1901E 00	0.2660E 01	0.4289E 02	0.8699E 03	0.2373E 03
102	1.81	6.52		70	12	0.3044E 02	0.2344E 01	0.1684E 00	0.1718E 01	0.4204E 02	0.1015E 02	0.3338E 03
103	1.66	6.39		130	6	0.1493E 02	0.1494E 01	0.1718E 00	0.2344E 01	0.4165E 02	0.1051E 02	0.3664E 03
104	1.64	6.36		50	9	0.1205E 02	0.1375E 01	0.1684E 00	0.2344E 01	0.4165E 02	0.1051E 02	0.3664E 03
105	1.97	6.33		300	14	0.2186E 02	0.2185E 01	0.2040E 00	0.1738E 01	0.5008E 02	0.1533E 02	0.5945E 03
106	2.00	6.22		60	10	0.2941E 02	0.2524E 01	0.2488E 00	0.2444E 01	0.6037E 02	0.1628E 02	0.5797E 03
107	1.70	6.05		230	13	0.2108E 02	0.1812E 01	0.1809E 00	0.2266E 01	0.6211E 02	0.1877E 02	0.6946E 03
108	1.86	6.03		30	27	0.1625E 02	0.1750E 01	0.2167E 00	0.2189E 01	0.4934E 02	0.1500E 02	0.5796E 03
109	1.79	6.00		360	10	0.2140E 02	0.1921E 01	0.2003E 00	0.2731E 01	0.5566E 02	0.1479E 02	0.6434E 03
110	1.99	5.96		180	10	0.1739E 02	0.1970E 01	0.2457E 00	0.3643E 01	0.6942E 02	0.1804E 02	0.6151E 03
111	1.92	5.91		240	10	0.1594E 02	0.1821E 01	0.2297E 00	0.3419E 01	0.6586E 02	0.1738E 02	0.6042E 03
112	1.67	5.89		130	7	0.2141E 02	0.1761E 01	0.1738E 00	0.2378E 01	0.5008E 02	0.1533E 02	0.5945E 03
113	1.82	5.80		180	12	0.1487E 02	0.1641E 01	0.2040E 00	0.3063E 01	0.6138E 02	0.1756E 02	0.6662E 03
114	1.84	5.77		170	8	0.1293E 02	0.1575E 01	0.2127E 00	0.3315E 01	0.6398E 02	0.1639E 02	0.5565E 03
115	1.97	5.77		290	15	0.1975E 02	0.2014E 01	0.2428E 00	0.3663E 01	0.7283E 02	0.1929E 02	0.6520E 03
116	1.65	5.76		20	10	0.1808E 02	0.1601E 01	0.1697E 00	0.2431E 01	0.5122E 02	0.1509E 02	0.5938E 03
117	1.77	5.60		270	10	0.1185E 02	0.1455E 01	0.1963E 00	0.249E 01	0.6355E 02	0.1634E 02	0.5471E 03
118	1.93	5.53		160	10	0.1540E 02	0.1772E 01	0.2338E 00	0.3701E 01	0.7602E 02	0.2080E 02	0.7312E 03
119	1.95	5.43		200	6	0.9660E 01	0.1117E 01	0.1508E 00	0.2466E 01	0.5124E 02	0.1395E 02	0.4864E 03
120	1.69	5.38		90	11	0.1659E 02	0.1580E 01	0.1732E 00	0.2466E 01	0.6167E 02	0.1926E 02	0.7338E 03
121	1.53	5.26		210	13	0.8261E 01	0.1042E 01	0.1502E 00	0.2510E 01	0.5438E 02	0.1589E 02	0.5909E 03
122	1.82	5.24		120	2	0.1190E 02	0.1485E 01	0.2074E 00	0.3475E 01	0.7599E 02	0.2187E 02	0.7977E 03
123	1.70	5.19		160	12	0.1243E 02	0.1395E 01	0.1812E 00	0.2974E 01	0.6732E 02	0.2009E 02	0.7334E 03
124	1.59	5.18		40	19	0.1365E 02	0.1322E 01	0.1594E 00	0.2546E 01	0.5909E 02	0.1837E 02	0.6923E 03
125	1.81	5.15		160	10	0.1410E 02	0.1506E 01	0.2031E 00	0.3573E 01	0.7728E 02	0.2166E 02	0.7549E 03
126	1.96	5.12		270	17	0.1522E 02	0.1722E 01	0.2022E 00	0.3390E 01	0.9147E 02	0.2614E 02	0.9277E 03
127	1.96	5.09		170	8	0.1369E 02	0.1545E 01	0.1899E 00	0.3070E 01	0.7807E 02	0.2384E 02	0.8939E 03
128	1.87	5.04		170	14	0.1234E 02	0.1545E 01	0.2479E 00	0.3993E 01	0.8604E 02	0.2560E 02	0.9402E 03
129	1.99	5.02		300	12	0.1090E 02	0.1564E 01	0.2479E 00	0.3931E 01	0.9331E 02	0.2689E 02	0.9174E 03
130	1.55	5.02		130	15	0.1132E 02	0.1172E 01	0.1474E 00	0.2544E 01	0.5925E 02	0.1771E 02	0.6341E 03
131	1.82	5.02		220	8	0.9535E 01	0.1333E 01	0.2074E 00	0.3538E 01	0.8222E 02	0.2365E 02	0.7918E 03
132	1.57	4.90		210	15	0.9409E 01	0.1101E 01	0.1535E 00	0.2766E 01	0.6383E 02	0.1917E 02	0.6959E 03
133	1.76	4.90		340	15	0.1007E 02	0.1295E 01	0.1945E 00	0.3559E 01	0.8101E 02	0.2351E 02	0.8437E 03
134	1.53	4.89		330	11	0.7070E 01	0.9924E 00	0.1945E 00	0.3559E 01	0.8101E 02	0.2351E 02	0.8437E 03
135	1.71	4.87		170	12	0.1072E 02	0.1277E 01	0.1818E 00	0.3284E 01	0.6505E 02	0.1864E 02	0.6519E 03
136	1.77	4.83		30	21	0.1181E 02	0.1375E 01	0.1938E 00	0.3577E 01	0.7679E 02	0.2269E 02	0.8091E 03
137	1.79	4.80		260	14	0.7672E 01	0.1184E 01	0.2008E 00	0.3854E 01	0.8705E 02	0.2391E 02	0.8009E 03
138	1.77	4.79		140	12	0.1056E 02	0.1307E 01	0.191E 00	0.3650E 01	0.8508E 02	0.2514E 02	0.9029E 03
139	1.86	4.78		160	16	0.1055E 02	0.1415E 01	0.2154E 00	0.4436E 01	0.9436E 02	0.2882E 02	0.1070E 02
140	1.90	4.75		40	26	0.1340E 02	0.1560E 01	0.2232E 00	0.4191E 01	0.9788E 02	0.2935E 02	0.1028E 02
141	1.81	4.73		120	19	0.1280E 02	0.1458E 01	0.2040E 00	0.3750E 01	0.9105E 02	0.2781E 02	0.1010E 02
142	1.83	4.71		160	24	0.9052E 01	0.1290E 01	0.2101E 00	0.4063E 01	0.9467E 02	0.2726E 02	0.9480E 03

Hs 1.51 to 2.00 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
143	1.80	4.62	150	18	0.8425E 01	0.1225E 01	0.2034E 00	0.3998E-01	0.9539E-02	0.2771E-02	0.9598E-03
144	1.74	4.62	170	14	0.1085E 02	0.1281E 01	0.1890E 00	0.3608E-01	0.8839E-02	0.2690E-02	0.9801E-03
145	1.59	4.58	150	18	0.7984E 01	0.1030E 01	0.1583E 00	0.3046E-01	0.7534E-02	0.2366E-02	0.8984E-03
146	1.73	4.52	10	17	0.7864E 01	0.1121E 01	0.1863E 00	0.3713E-01	0.9103E-02	0.2765E-02	0.1018E-02
147	1.94	4.49	140	22	0.1056E 02	0.1428E 01	0.2357E 00	0.4771E-01	0.1171E-01	0.3442E-02	0.1195E-02

Hs 1.51 to 2.00 metres (cont.)

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
148	2.20	10.69	0	0	0.4830E 02	0.3750E 01	0.3019E 01	0.2598E-01	0.2642E-02	0.4122E-03	0.1209E-03
149	2.40	9.72	130	14	0.5744E 02	0.4398E 01	0.3605E 00	0.3324E-01	0.3814E-02	0.6374E-03	0.1672E-03
150	2.06	8.98	0	0	0.3645E 02	0.2999E 01	0.2651E 00	0.2657E-01	0.3290E-02	0.5626E-03	0.1401E-03
151	2.32	8.78	120	8	0.4971E 02	0.4007E 01	0.3378E 00	0.3224E-01	0.4379E-02	0.1083E-02	0.4181E-03
152	2.13	8.18	0	0	0.3747E 02	0.3079E 01	0.2827E 00	0.3054E-01	0.4229E-02	0.8265E-03	0.2335E-03
153	2.11	7.93	180	5	0.2954E 02	0.2770E 01	0.2774E 00	0.3121E-01	0.4411E-02	0.9238E-03	0.2793E-03
154	2.05	7.54	100	8	0.2977E 02	0.2688E 01	0.2620E 00	0.2977E-01	0.4581E-02	0.1088E-02	0.3751E-03
155	2.43	7.49	10	2	0.3046E 02	0.3257E 01	0.3706E 00	0.4612E-01	0.6611E-02	0.1175E-02	0.2759E-03
156	2.30	7.28	320	11	0.3072E 02	0.3080E 01	0.3312E 00	0.4050E-01	0.6249E-02	0.1339E-02	0.4192E-03
157	2.25	7.23	10	6	0.2911E 02	0.2921E 01	0.3170E 00	0.3911E-01	0.6056E-02	0.1338E-02	0.4316E-03
158	2.41	7.17	350	7	0.2934E 02	0.3161E 01	0.3629E 00	0.4623E-01	0.7064E-02	0.1449E-02	0.4240E-03
159	2.32	7.13	240	9	0.2841E 02	0.2988E 01	0.3369E 00	0.4275E-01	0.6627E-02	0.1376E-02	0.3940E-03
160	2.46	7.05	360	7	0.3745E 02	0.3601E 01	0.3778E 00	0.4657E-01	0.7607E-02	0.1808E-02	0.6001E-03
161	2.36	7.02	240	7	0.2811E 02	0.3002E 01	0.3492E 00	0.4563E-01	0.7087E-02	0.1420E-02	0.3883E-03
162	2.40	7.01	170	8	0.3454E 02	0.3394E 01	0.3600E 00	0.4437E-01	0.7334E-02	0.1833E-02	0.6470E-03
163	2.28	6.93	180	10	0.2697E 02	0.2841E 01	0.3236E 00	0.4190E-01	0.5747E-02	0.1494E-02	0.4620E-03
164	2.03	6.81	60	14	0.3547E 02	0.2863E 01	0.2581E 00	0.3006E-01	0.5567E-02	0.1634E-02	0.6227E-03
165	2.39	6.79	180	11	0.4529E 02	0.3661E 01	0.3558E 00	0.4472E-01	0.7723E-02	0.1872E-02	0.6111E-03
166	2.05	6.77	50	14	0.2778E 02	0.2570E 01	0.2638E 00	0.3297E-01	0.5753E-02	0.1491E-02	0.5241E-03
167	2.20	6.76	120	12	0.4498E 02	0.3478E 01	0.3033E 00	0.3528E-01	0.6642E-02	0.1928E-02	0.7121E-03
168	2.23	6.64	280	10	0.2545E 02	0.2691E 01	0.3115E 00	0.4170E-01	0.7062E-02	0.1647E-02	0.5274E-03
169	2.47	6.62	350	9	0.2957E 02	0.3225E 01	0.3814E 00	0.5160E-01	0.8695E-02	0.1975E-02	0.6047E-03
170	2.09	6.60	70	17	0.2866E 02	0.2653E 01	0.2739E 00	0.3479E-01	0.6292E-02	0.1712E-02	0.6250E-03
171	2.25	6.58	60	13	0.2517E 02	0.2723E 01	0.3175E 00	0.4247E-01	0.7329E-02	0.1814E-02	0.6227E-03
172	2.12	6.52	50	16	0.3599E 02	0.2984E 01	0.2815E 00	0.3483E-01	0.6615E-02	0.1941E-02	0.7382E-03
173	2.32	6.48	210	8	0.3092E 02	0.3050E 01	0.3350E 00	0.4454E-01	0.7974E-02	0.2019E-02	0.6818E-03
174	2.05	6.46	210	11	0.2058E 02	0.2230E 01	0.2615E 00	0.3549E-01	0.6270E-02	0.1596E-02	0.5632E-03
175	2.36	6.46	180	10	0.2737E 02	0.2953E 01	0.3474E 00	0.4757E-01	0.8334E-02	0.1998E-02	0.6388E-03
176	2.01	6.43	180	5	0.2152E 02	0.2208E 01	0.2536E 00	0.3464E-01	0.6127E-02	0.1509E-02	0.5109E-03
177	2.08	6.41	60	12	0.1985E 02	0.2227E 01	0.2699E 00	0.3746E-01	0.6579E-02	0.1606E-02	0.5370E-03
178	2.05	6.39	300	8	0.1577E 02	0.1979E 01	0.2624E 00	0.3806E-01	0.6428E-02	0.1349E-02	0.3852E-03
179	2.37	6.33	300	14	0.2528E 02	0.2850E 01	0.3520E 00	0.4995E-01	0.8782E-02	0.2066E-02	0.6565E-03
180	2.05	6.32	240	3	0.1828E 02	0.2092E 01	0.2620E 00	0.3755E-01	0.6560E-02	0.1486E-02	0.4418E-03
181	2.50	6.28	360	14	0.2647E 02	0.3100E 01	0.3894E 00	0.5548E-01	0.9887E-02	0.2427E-02	0.8173E-03
182	2.27	6.23	350	15	0.2240E 02	0.2594E 01	0.3230E 00	0.4603E-01	0.8332E-02	0.2093E-02	0.7116E-03
183	2.01	6.20	250	11	0.1687E 02	0.1985E 01	0.2529E 00	0.3671E-01	0.6589E-02	0.1584E-02	0.5128E-03
184	2.27	6.19	300	14	0.2547E 02	0.2717E 01	0.3234E 00	0.4588E-01	0.8445E-02	0.2121E-02	0.7016E-03
185	2.47	6.13	10	8	0.2710E 02	0.3076E 01	0.3816E 00	0.5501E-01	0.1016E-01	0.2602E-02	0.8989E-03
186	2.07	6.12	340	14	0.2476E 02	0.2387E 01	0.2666E 00	0.3728E-01	0.7107E-02	0.1891E-02	0.6591E-03
187	2.28	6.08	140	16	0.3578E 02	0.3158E 01	0.3240E 00	0.4395E-01	0.8753E-02	0.2482E-02	0.8980E-03
188	2.24	6.01	150	15	0.2346E 02	0.2580E 01	0.3135E 00	0.4535E-01	0.8675E-02	0.2323E-02	0.8226E-03
189	2.30	6.00	170	14	0.2858E 02	0.2895E 01	0.3298E 00	0.4670E-01	0.9175E-02	0.2537E-02	0.9010E-03
190	2.19	6.00	250	10	0.2294E 02	0.2451E 01	0.2987E 00	0.4402E-01	0.8311E-02	0.2062E-02	0.6561E-03
191	2.29	5.97	260	8	0.2082E 02	0.2492E 01	0.3284E 00	0.4981E-01	0.9224E-02	0.2202E-02	0.6819E-03
192	2.17	5.96	230	12	0.2234E 02	0.2394E 01	0.2931E 00	0.4328E-01	0.8257E-02	0.2115E-02	0.7028E-03
193	2.45	5.92	10	15	0.2314E 02	0.2835E 01	0.3760E 00	0.5704E-01	0.1075E-01	0.2689E-02	0.8835E-03
194	2.10	5.88	260	13	0.1810E 02	0.2106E 01	0.2752E 00	0.4191E-01	0.7965E-02	0.2016E-02	0.6755E-03
195	2.02	5.81	350	12	0.2635E 02	0.2398E 01	0.2548E 00	0.3593E-01	0.7545E-02	0.2282E-02	0.8748E-03
196	2.02	5.73	310	12	0.1372E 02	0.1805E 01	0.2550E 00	0.4042E-01	0.7765E-02	0.1954E-02	0.6491E-03
197	2.14	5.73	30	16	0.4094E 02	0.3074E 01	0.2868E 00	0.3969E-01	0.8721E-02	0.2673E-02	0.1001E-02
198	2.46	5.66	130	17	0.4558E 02	0.3796E 01	0.3793E 00	0.5390E-01	0.1186E-01	0.3674E-02	0.1395E-02
199	2.14	5.60	250	12	0.1830E 02	0.2126E 01	0.2850E 00	0.4553E-01	0.9103E-02	0.2369E-02	0.7951E-03
200	2.16	5.54	10	13	0.2221E 02	0.2366E 01	0.2916E 00	0.4521E-01	0.9516E-02	0.2721E-02	0.9810E-03
201	2.33	5.53	170	15	0.2079E 02	0.2464E 01	0.3366E 00	0.5531E-01	0.1106E-01	0.2779E-02	0.8809E-03
202	2.36	5.51	210	14	0.1784E 02	0.2390E 01	0.3469E 00	0.5716E-01	0.1144E-01	0.2936E-02	0.9669E-03
203	2.21	5.48	250	19	0.1895E 02	0.2265E 01	0.3058E 00	0.4952E-01	0.1017E-01	0.2693E-02	0.8875E-03

Hs 2.01 to 2.50 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
204	2.33	5.47	330	12	0.2082E 02	0.2477E 01	0.3383E 00	0.5507E-01	0.1129E-01	0.3026E-02	0.1039E-02
205	2.38	5.42	350	19	0.2180E 02	0.2594E 01	0.3553E 00	0.5868E-01	0.1210E-01	0.3132E-02	0.9966E-03
206	2.25	5.38	260	18	0.2395E 02	0.2454E 01	0.1154E 00	0.5187E-01	0.1091E-01	0.2916E-02	0.9673E-03
207	2.07	5.27	350	17	0.1445E 02	0.1861E 01	0.2671E 00	0.4524E-01	0.9622E-02	0.2637E-02	0.9011E-03
208	2.44	5.26	150	21	0.2258E 02	0.2695E 01	0.3729E 00	0.6297E-01	0.1349E-01	0.3676E-02	0.1229E-02
209	2.30	5.23	190	20	0.1574E 02	0.2184E 01	0.3310E 00	0.5734E-01	0.1208E-01	0.3242E-02	0.1100E-02
210	2.18	5.19	170	14	0.1761E 02	0.2120E 01	0.2979E 00	0.5124E-01	0.1106E-01	0.2976E-02	0.9741E-03
211	2.27	5.17	10	20	0.1747E 02	0.2223E 01	0.3206E 00	0.5532E-01	0.1200E-01	0.3333E-02	0.1156E-02
212	2.50	5.15	180	19	0.1834E 02	0.2519E 01	0.3895E 00	0.6930E-01	0.1466E-01	0.3802E-02	0.1215E-02
213	2.08	5.08	200	17	0.1501E 02	0.1864E 01	0.2704E 00	0.4761E-01	0.1049E-01	0.2908E-02	0.9905E-03
214	2.10	5.07	310	18	0.1389E 02	0.1821E 01	0.2752E 00	0.4906E-01	0.1070E-01	0.2930E-02	0.9973E-03
215	2.27	4.99	210	14	0.1354E 02	0.1994E 01	0.3210E 00	0.5872E-01	0.1290E-01	0.3569E-02	0.1243E-02
216	2.28	4.95	220	17	0.1302E 02	0.1967E 01	0.3256E 00	0.6071E-01	0.1329E-01	0.3548E-02	0.1161E-02
217	2.30	4.92	230	19	0.1514E 02	0.2072E 01	0.3300E 00	0.6158E-01	0.1362E-01	0.3620E-02	0.1158E-02
218	2.39	4.93	120	29	0.2401E 02	0.2573E 01	0.3568E 00	0.6465E-01	0.1471E-01	0.4040E-02	0.1312E-02

Hs 2.01 to 2.50 (cont.)

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
219	2.99	10.00	270	6	0.1071E 03	0.7419E 01	0.5569E 00	0.4820E-01	0.5565E-02	0.1059E-02	0.3367E-03
220	2.91	9.11	290	7	0.7054E 02	0.5937E 01	0.5292E 00	0.5240E-01	0.6373E-02	0.1105E-02	0.2922E-03
221	2.96	8.76	360	7	0.6614E 02	0.5864E 01	0.5487E 00	0.5666E-01	0.7144E-02	0.1288E-02	0.3562E-03
222	2.70	8.64	350	5	0.5766E 02	0.4966E 01	0.4563E 00	0.4751E-01	0.6113E-02	0.1105E-02	0.2990E-03
223	2.64	7.86	210	11	0.4868E 02	0.4425E 01	0.4348E 00	0.4886E-01	0.7031E-02	0.1490E-02	0.4706E-03
224	2.75	7.79	80	18	0.1044E 03	0.6642E 01	0.4737E 00	0.4595E-01	0.7814E-02	0.2184E-02	0.7875E-03
225	2.52	7.77	20	4	0.3910E 02	0.3809E 01	0.3967E 00	0.4618E-01	0.6575E-02	0.1300E-02	0.3767E-03
226	2.74	7.72	210	6	0.4412E 02	0.4413E 01	0.4703E 00	0.5564E-01	0.7901E-02	0.1509E-02	0.4141E-03
227	2.94	7.64	10	6	0.5042E 02	0.5070E 01	0.5391E 00	0.6354E-01	0.9243E-02	0.1936E-02	0.6065E-03
228	2.76	7.24	340	11	0.3980E 02	0.4211E 01	0.4755E 00	0.5962E-01	0.9060E-02	0.1910E-02	0.5932E-03
229	2.66	7.20	10	11	0.4049E 02	0.4091E 01	0.4433E 00	0.5454E-01	0.8562E-02	0.1962E-02	0.6530E-03
230	2.55	7.05	340	6	0.3363E 02	0.3571E 01	0.4052E 00	0.5172E-01	0.8165E-02	0.1781E-02	0.5474E-03
231	2.69	6.97	160	7	0.4128E 02	0.4136E 01	0.4528E 00	0.5748E-01	0.9330E-02	0.2131E-02	0.6807E-03
232	2.83	6.84	130	19	0.7083E 02	0.5548E 01	0.4989E 00	0.5932E-01	0.1067E-01	0.2813E-02	0.9544E-03
233	2.99	6.79	230	13	0.5508E 02	0.5214E 01	0.5584E 00	0.7198E-01	0.1211E-01	0.2814E-02	0.8855E-03
234	2.67	6.77	330	9	0.3768E 02	0.3910E 01	0.4441E 00	0.5834E-01	0.9694E-02	0.2224E-02	0.7021E-03
235	2.58	6.71	90	19	0.8056E 02	0.5393E 01	0.4146E 00	0.4595E-01	0.9215E-02	0.2896E-02	0.1126E-02
236	2.58	6.70	20	15	0.4952E 02	0.4225E 01	0.4145E 00	0.5213E-01	0.9244E-02	0.2303E-02	0.7463E-03
237	2.94	6.58	250	9	0.4451E 02	0.4673E 01	0.5417E 00	0.7318E-01	0.1251E-01	0.2923E-02	0.9294E-03
238	2.90	6.56	170	23	0.5158E 02	0.4886E 01	0.5255E 00	0.6923E-01	0.1219E-01	0.2988E-02	0.9713E-03
239	2.84	6.56	340	22	0.4747E 02	0.4626E 01	0.5050E 00	0.6665E-01	0.1174E-01	0.2904E-02	0.9619E-03
240	2.55	6.51	280	12	0.3232E 02	0.3425E 01	0.4060E 00	0.5585E-01	0.9574E-02	0.2218E-02	0.7055E-03
241	2.68	6.50	10	15	0.3867E 02	0.3956E 01	0.4503E 00	0.6096E-01	0.1065E-01	0.2532E-02	0.8011E-03
242	2.57	6.48	90	24	0.7492E 02	0.5146E 01	0.4126E 00	0.4826E-01	0.9829E-02	0.3009E-02	0.1136E-02
243	3.00	6.34	210	12	0.4528E 02	0.4768E 01	0.5641E 00	0.7913E-01	0.1405E-01	0.3319E-02	0.1033E-02
244	2.85	6.33	230	13	0.4056E 02	0.4291E 01	0.5094E 00	0.7150E-01	0.1271E-01	0.3003E-02	0.9309E-03
245	2.61	6.31	180	15	0.3176E 02	0.3521E 01	0.4269E 00	0.6020E-01	0.1072E-01	0.2558E-02	0.8047E-03
246	2.97	6.30	160	22	0.4532E 02	0.4723E 01	0.5521E 00	0.7718E-01	0.1389E-01	0.3352E-02	0.1054E-02
247	2.96	6.28	210	17	0.3360E 02	0.4136E 01	0.5463E 00	0.8015E-01	0.1387E-01	0.3046E-02	0.8832E-03
248	2.78	6.27	350	13	0.3331E 02	0.3865E 01	0.4822E 00	0.6851E-01	0.1225E-01	0.3016E-02	0.1002E-02
249	2.86	6.16	140	17	0.4060E 02	0.4294E 01	0.5104E 00	0.7270E-01	0.1346E-01	0.3383E-02	0.1118E-02
250	2.63	6.14	350	12	0.3465E 02	0.3663E 01	0.4324E 00	0.6129E-01	0.1148E-01	0.2976E-02	0.1015E-02
251	2.71	6.10	160	14	0.3668E 02	0.3840E 01	0.4588E 00	0.6553E-01	0.1234E-01	0.2970E-02	0.9085E-03
252	2.63	6.09	10	12	0.2758E 02	0.3307E 01	0.4321E 00	0.6438E-01	0.1166E-01	0.2715E-02	0.8161E-03
253	2.83	6.03	10	19	0.3314E 02	0.3872E 01	0.4995E 00	0.7457E-01	0.1374E-01	0.3290E-02	0.1023E-02
254	2.79	5.99	230	13	0.3405E 02	0.3854E 01	0.4860E 00	0.7220E-01	0.1356E-01	0.3361E-02	0.1077E-02
255	2.65	5.95	230	15	0.2560E 02	0.3218E 01	0.4378E 00	0.6713E-01	0.1238E-01	0.2938E-02	0.9135E-03
256	2.82	5.94	350	22	0.3469E 02	0.3895E 01	0.4979E 00	0.7547E-01	0.1413E-01	0.3355E-02	0.1003E-02
257	2.60	5.87	320	17	0.2471E 02	0.3089E 01	0.4227E 00	0.6588E-01	0.1227E-01	0.2929E-02	0.9072E-03
258	2.51	5.84	300	19	0.2869E 02	0.3144E 01	0.3929E 00	0.5940E-01	0.1153E-01	0.2943E-02	0.9595E-03
259	2.73	5.79	190	24	0.2900E 02	0.3480E 01	0.4649E 00	0.7235E-01	0.1385E-01	0.3404E-02	0.1071E-02
260	2.66	5.79	170	18	0.3068E 02	0.3422E 01	0.4431E 00	0.6867E-01	0.1323E-01	0.3266E-02	0.1031E-02
261	2.58	5.73	220	14	0.2297E 02	0.2964E 01	0.4171E 00	0.6641E-01	0.1269E-01	0.3091E-02	0.9718E-03
262	2.57	5.72	190	14	0.2279E 02	0.2945E 01	0.4138E 00	0.6580E-01	0.1264E-01	0.3135E-02	0.1011E-02
263	2.72	5.71	140	16	0.3032E 02	0.3518E 01	0.4616E 00	0.7219E-01	0.1414E-01	0.3529E-02	0.1097E-02
264	2.70	5.71	170	23	0.3981E 02	0.3793E 01	0.4549E 00	0.7037E-01	0.1394E-01	0.3498E-02	0.1097E-02
265	2.75	5.68	150	21	0.3283E 02	0.3624E 01	0.4711E 00	0.7413E-01	0.1460E-01	0.3698E-02	0.1194E-02
266	2.72	5.67	230	13	0.2644E 02	0.3327E 01	0.4630E 00	0.7408E-01	0.1439E-01	0.3566E-02	0.1139E-02
267	2.80	5.67	110	22	0.3680E 02	0.3933E 01	0.4902E 00	0.7594E-01	0.1522E-01	0.3937E-02	0.1270E-02
268	2.76	5.66	250	15	0.2823E 02	0.3472E 01	0.4775E 00	0.7654E-01	0.1493E-01	0.3640E-02	0.1106E-02
269	2.72	5.65	250	14	0.2780E 02	0.3408E 01	0.4632E 00	0.7353E-01	0.1452E-01	0.3707E-02	0.1204E-02
270	2.69	5.56	340	14	0.2395E 02	0.3137E 01	0.4513E 00	0.7411E-01	0.1461E-01	0.3599E-02	0.1113E-02
271	2.57	5.51	190	16	0.2438E 02	0.2976E 01	0.4114E 00	0.6707E-01	0.1354E-01	0.3508E-02	0.1155E-02
272	2.81	5.49	300	21	0.2339E 02	0.3257E 01	0.4936E 00	0.8341E-01	0.1635E-01	0.3899E-02	0.1163E-02
273	2.51	5.47	210	21	0.2904E 02	0.3071E 01	0.3952E 00	0.6397E-01	0.1321E-01	0.3486E-02	0.1157E-02
274	2.90	5.46	200	22	0.2537E 02	0.3498E 01	0.5242E 00	0.8836E-01	0.1759E-01	0.4335E-02	0.1344E-02

Hs 2.51 to 3.00 metres

SERIAL NO.	Hs METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
275	2.64	5.45	130	24	0.2794E 02	0.3233E 01	0.4364E 00	0.7133E-01	0.1467E-01	0.3865E-02	0.1278E-02
276	2.55	5.43	130	26	0.2329E 02	0.2896E 01	0.4051E 00	0.6697E-01	0.1372E-01	0.3563E-02	0.1151E-02
277	2.86	5.41	150	29	0.2688E 02	0.3538E 01	0.5115E 00	0.8694E-01	0.1748E-01	0.4236E-02	0.1258E-02
278	2.51	5.41	270	20	0.2290E 02	0.2736E 01	0.3923E 00	0.6659E-01	0.1338E-01	0.3255E-02	0.9797E-03
279	3.00	5.39	230	15	0.3053E 02	0.3941E 01	0.5623E 00	0.9343E-01	0.1936E-01	0.5264E-02	0.1848E-02
280	2.79	5.34	270	18	0.2035E 02	0.3046E 01	0.4879E 00	0.8550E-01	0.1714E-01	0.4173E-02	0.1282E-02
281	2.52	5.33	140	20	0.2325E 02	0.2840E 01	0.3971E 00	0.6667E-01	0.1397E-01	0.3710E-02	0.1226E-02
282	2.93	5.33	240	20	0.2454E 02	0.3480E 01	0.5374E 00	0.9310E-01	0.1894E-01	0.4731E-02	0.1474E-02
283	2.62	5.33	270	14	0.2523E 02	0.3074E 01	0.4296E 00	0.7212E-01	0.1512E-01	0.3992E-02	0.1295E-02
284	2.52	5.19	190	17	0.1832E 02	0.2565E 01	0.3954E 00	0.6955E-01	0.1466E-01	0.3858E-02	0.1269E-02
285	2.59	5.16	150	26	0.1956E 02	0.2698E 01	0.4194E 00	0.7482E-01	0.1575E-01	0.4016E-02	0.1252E-02

Hs 2.51 to 3.00metres (cont)

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
286	3.45	10.46	0	0	0.1196E 03	0.9161E 01	0.7440E 00	0.6602E-01	0.6804E-02	0.9228E-03	0.1936E-03
287	3.35	9.30	140	12	0.1451E 03	0.9625E 01	0.7000E 00	0.6192E-01	0.8097E-02	0.1779E-02	0.5795E-03
288	3.03	8.71	120	7	0.5750E 02	0.5625E 01	0.3724E 00	0.6199E-01	0.7544E-02	0.1157E-02	0.2600E-03
289	3.48	8.53	290	10	0.9852E 02	0.8348E 01	0.7565E 00	0.7802E-01	0.1039E-01	0.2087E-02	0.6372E-03
290	3.29	8.51	170	11	0.1166E 03	0.8475E 01	0.6758E 00	0.6576E-01	0.9324E-02	0.1332E-02	0.7064E-03
291	3.43	8.40	170	10	0.1319E 03	0.9283E 01	0.7342E 00	0.7245E-01	0.1040E-01	0.2369E-02	0.7840E-03
292	3.32	8.17	90	8	0.7140E 02	0.6797E 01	0.6873E 00	0.7685E-01	0.1029E-01	0.1858E-02	0.4855E-03
293	3.13	7.47	220	3	0.5428E 02	0.5565E 01	0.6121E 00	0.7502E-01	0.1097E-01	0.2101E-02	0.5577E-03
294	3.49	7.44	270	8	0.6743E 02	0.6915E 01	0.7632E 00	0.9404E-01	0.1380E-01	0.2638E-02	0.6989E-03
295	3.22	7.39	160	15	0.1164E 03	0.8023E 01	0.6481E 00	0.7058E-01	0.1188E-01	0.3046E-02	0.1043E-02
296	3.04	7.23	0	0	0.4616E 02	0.5011E 01	0.5779E 00	0.7329E-01	0.1106E-01	0.2251E-02	0.6624E-03
297	3.47	7.02	170	17	0.7796E 02	0.7253E 01	0.7516E 00	0.9328E-01	0.1525E-01	0.3494E-02	0.1091E-02
298	3.03	7.01	300	6	0.4531E 02	0.4915E 01	0.5734E 00	0.7470E-01	0.1166E-01	0.2417E-02	0.7063E-03
299	3.02	6.99	220	10	0.4999E 02	0.5079E 01	0.5699E 00	0.7361E-01	0.1165E-01	0.2422E-02	0.6795E-03
300	3.13	6.89	130	14	0.6886E 02	0.6055E 01	0.6116E 00	0.7628E-01	0.1290E-01	0.3098E-02	0.9969E-03
301	3.23	6.82	270	19	0.5289E 02	0.5621E 01	0.6518E 00	0.8623E-01	0.1402E-01	0.3047E-02	0.9036E-03
302	3.27	6.80	200	14	0.5725E 02	0.5911E 01	0.6688E 00	0.8757E-01	0.1445E-01	0.3233E-02	0.9801E-03
303	3.04	6.78	130	16	0.7774E 02	0.6284E 01	0.5790E 00	0.6945E-01	0.1261E-01	0.3445E-02	0.1232E-02
304	3.17	6.76	170	13	0.5466E 02	0.5577E 01	0.6285E 00	0.8267E-01	0.1376E-01	0.3104E-02	0.9439E-03
305	3.26	6.70	290	17	0.5422E 02	0.5726E 01	0.6646E 00	0.8907E-01	0.1480E-01	0.3264E-02	0.9651E-03
306	3.33	6.69	230	13	0.5482E 02	0.5994E 01	0.7119E 00	0.9632E-01	0.1590E-01	0.3426E-02	0.9807E-03
307	3.40	6.65	130	17	0.7152E 02	0.6752E 01	0.7244E 00	0.9473E-01	0.1636E-01	0.3839E-02	0.1177E-02
308	3.29	6.55	260	20	0.5211E 02	0.5653E 01	0.6764E 00	0.9321E-01	0.1576E-01	0.3493E-02	0.1034E-02
309	3.01	6.52	140	20	0.7098E 02	0.5796E 01	0.5645E 00	0.7286E-01	0.1328E-01	0.3343E-02	0.1090E-02
310	3.01	6.37	260	16	0.4184E 02	0.4637E 01	0.5673E 00	0.8020E-01	0.1400E-01	0.3217E-02	0.9864E-03
311	3.43	6.34	170	22	0.4984E 02	0.5845E 01	0.7430E 00	0.1067E 00	0.1850E-01	0.4165E-02	0.1244E-02
312	3.50	6.25	350	26	0.4781E 02	0.5817E 01	0.7649E 00	0.1126E 00	0.1959E-01	0.4290E-02	0.1216E-02
313	3.39	6.23	200	25	0.4608E 02	0.5491E 01	0.7186E 00	0.1062E 00	0.1850E-01	0.4010E-02	0.1113E-02
314	3.45	6.18	270	17	0.4911E 02	0.5759E 01	0.7427E 00	0.1094E 00	0.1946E-01	0.4432E-02	0.1311E-02
315	3.36	6.13	290	24	0.4589E 02	0.5394E 01	0.7055E 00	0.1054E 00	0.1877E-01	0.4197E-02	0.1213E-02
316	3.10	5.89	340	27	0.3848E 02	0.4510E 01	0.6016E 00	0.9313E-01	0.1735E-01	0.4066E-02	0.1226E-02
317	3.30	5.86	360	28	0.4332E 02	0.5126E 01	0.6821E 00	0.1057E 00	0.1989E-01	0.4721E-02	0.1421E-02
318	3.10	5.70	210	22	0.3580E 02	0.4338E 01	0.6018E 00	0.9688E-01	0.1854E-01	0.4347E-02	0.1267E-02
319	3.30	5.68	200	23	0.3856E 02	0.4831E 01	0.6787E 00	0.1095E 00	0.2106E-01	0.5034E-02	0.1520E-02
320	3.08	5.54	150	29	0.3667E 02	0.4340E 01	0.5942E 00	0.9699E-01	0.1939E-01	0.4834E-02	0.1494E-02

Hs 3.01 to 3.50 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
321	3.57	9.35	190	7	0.1202E 03	0.9393E 01	0.7946E 00	0.7599E-01	0.9094E-02	0.1623E-02	0.4686E-03
322	3.73	9.18	150	7	0.1312E 03	0.1037E 02	0.8709E 00	0.8281E-01	0.1034E-01	0.2062E-02	0.6530E-03
323	3.63	8.04	120	14	0.1323E 03	0.9985E 01	0.8253E 00	0.8403E-01	0.1276E-01	0.3129E-02	0.1071E-02
324	3.72	7.95	290	10	0.1016E 03	0.8959E 01	0.8642E 00	0.9640E-01	0.1368E-01	0.2759E-02	0.8094E-03
325	3.57	7.36	190	17	0.9316E 02	0.8087E 01	0.7956E 00	0.9464E-01	0.1468E-01	0.3141E-02	0.9208E-03
326	3.53	7.01	220	15	0.8731E 02	0.7657E 01	0.7797E 00	0.9749E-01	0.1585E-01	0.3462E-02	0.1002E-02
327	3.88	6.66	250	19	0.7498E 02	0.7978E 01	0.9426E 00	0.1284E 00	0.2127E-01	0.4535E-02	0.1268E-02
328	3.61	6.65	330	21	0.7827E 02	0.7465E 01	0.8138E 00	0.1073E 00	0.1841E-01	0.4330E-02	0.1368E-02
329	3.64	6.63	160	22	0.7062E 02	0.7238E 01	0.8281E 00	0.1114E 00	0.1886E-01	0.4239E-02	0.1260E-02
330	3.87	6.45	170	25	0.6116E 02	0.7277E 01	0.9341E 00	0.1335E 00	0.2243E-01	0.4744E-02	0.1317E-02
331	3.75	6.41	180	19	0.6635E 02	0.7272E 01	0.8778E 00	0.1227E 00	0.2134E-01	0.4930E-02	0.1524E-02
332	3.83	6.33	210	28	0.5794E 02	0.6967E 01	0.9152E 00	0.1340E 00	0.2287E-01	0.4881E-02	0.1369E-02
333	3.56	6.19	360	28	0.5725E 02	0.6381E 01	0.7933E 00	0.1153E 00	0.2069E-01	0.4798E-02	0.1443E-02
334	3.55	6.15	330	18	0.4878E 02	0.5925E 01	0.7873E 00	0.1178E 00	0.2079E-01	0.4603E-02	0.1331E-02

Hs 3.51 to 4.00 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
335	4.03	10.13	190	2	0.1669E 03	0.1261E 02	0.1015E 01	0.9088E-01	0.9898E-02	0.1515E-02	0.3579E-03
336	4.42	9.28	280	12	0.1953E 03	0.1483E 02	0.1224E 01	0.1163E 00	0.1420E-01	0.2556E-02	0.6962E-03
337	4.36	8.75	80	5	0.1704E 03	0.1353E 02	0.1190E 01	0.1214E 00	0.1554E-01	0.2761E-02	0.7160E-03
338	4.36	8.61	210	12	0.1619E 03	0.1327E 02	0.1190E 01	0.1230E 00	0.1605E-01	0.2971E-02	0.8077E-03
339	4.25	8.34	320	13	0.1343E 03	0.1192E 02	0.1130E 01	0.1208E 00	0.1615E-01	0.3051E-02	0.8397E-03
340	4.44	8.12	270	16	0.1371E 03	0.1247E 02	0.1233E 01	0.1381E 00	0.1872E-01	0.3349E-02	0.8363E-03
341	4.05	8.01	300	15	0.1112E 03	0.1033E 02	0.1025E 01	0.1147E 00	0.1596E-01	0.3105E-02	0.8716E-03
342	4.13	7.86	270	11	0.1181E 03	0.1073E 02	0.1064E 01	0.1210E 00	0.1720E-01	0.3405E-02	0.9752E-03
343	4.38	7.80	290	14	0.1570E 03	0.1290E 02	0.1200E 01	0.1343E 00	0.1970E-01	0.4082E-02	0.1186E-02
344	4.30	7.53	280	22	0.1408E 03	0.1202E 02	0.1158E 01	0.1342E 00	0.2039E-01	0.4318E-02	0.1248E-02
345	4.04	7.37	290	23	0.1135E 03	0.1011E 02	0.1018E 01	0.1225E 00	0.1877E-01	0.3846E-02	0.1061E-02
346	4.22	7.24	150	25	0.1243E 03	0.1097E 02	0.1112E 01	0.1360E 00	0.2121E-01	0.4412E-02	0.1235E-02
347	4.23	7.22	320	17	0.9196E 02	0.9807E 01	0.1116E 01	0.1411E 00	0.2142E-01	0.4285E-02	0.1179E-02
348	4.28	7.20	290	22	0.1074E 03	0.1063E 02	0.1146E 01	0.1422E 00	0.2210E-01	0.4666E-02	0.1352E-02
349	4.35	7.05	210	20	0.1008E 03	0.1043E 02	0.1181E 01	0.1523E 00	0.2374E-01	0.4818E-02	0.1325E-02
350	4.45	7.02	280	22	0.1089E 03	0.1103E 02	0.1235E 01	0.1593E 00	0.2509E-01	0.5141E-02	0.1403E-02
351	4.32	6.98	210	21	0.8719E 02	0.9765E 01	0.1167E 01	0.1542E 00	0.2398E-01	0.4784E-02	0.1289E-02
352	4.27	6.81	150	28	0.1174E 03	0.1085E 02	0.1142E 01	0.1466E 00	0.2460E-01	0.5572E-02	0.1661E-02
353	4.24	6.79	190	27	0.9250E 02	0.9727E 01	0.1122E 01	0.1489E 00	0.2433E-01	0.5182E-02	0.1451E-02
354	4.05	6.59	280	25	0.7268E 02	0.8277E 01	0.1025E 01	0.1426E 00	0.2358E-01	0.4937E-02	0.1345E-02
355	4.01	6.47	280	31	0.7286E 02	0.8128E 01	0.1005E 01	0.1420E 00	0.2401E-01	0.5131E-02	0.1430E-02

Hs 4.01 to 4.50 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
356	4.91	11.07	110	15	0.3827E 03	0.2319E 02	0.1508E 01	0.1143E 00	0.1231E-01	0.2346E-02	0.7339E-03
357	4.54	9.61	170	5	0.1960E 03	0.1541E 02	0.1288E 01	0.1203E 00	0.1395E-01	0.2365E-02	0.6322E-03
358	4.67	9.55	250	7	0.2293E 03	0.1693E 02	0.1361E 01	0.1259E 00	0.1491E-01	0.2597E-02	0.6968E-03
359	4.95	8.72	360	19	0.1949E 03	0.1675E 02	0.1532E 01	0.1571E 00	0.2014E-01	0.3743E-02	0.1053E-02
360	4.98	8.28	220	17	0.2034E 03	0.1697E 02	0.1550E 01	0.1649E 00	0.2259E-01	0.4421E-02	0.1253E-02
361	4.74	8.24	310	19	0.1742E 03	0.1501E 02	0.1402E 01	0.1510E 00	0.2065E-01	0.3943E-02	0.1062E-02
362	4.98	8.21	220	17	0.1907E 03	0.1647E 02	0.1553E 01	0.1686E 00	0.2306E-01	0.4384E-02	0.1187E-02
363	4.77	8.05	240	19	0.1701E 03	0.1487E 02	0.1421E 01	0.1568E 00	0.2191E-01	0.4271E-02	0.1176E-02
364	4.72	7.94	210	17	0.1837E 03	0.1509E 02	0.1391E 01	0.1534E 00	0.2207E-01	0.4461E-02	0.1257E-02
365	4.63	7.49	310	36	0.1257E 03	0.1245E 02	0.1339E 01	0.1625E 00	0.2389E-01	0.4666E-02	0.1265E-02
366	4.58	7.36	250	17	0.1378E 03	0.1271E 02	0.1309E 01	0.1586E 00	0.2414E-01	0.4874E-02	0.1318E-02
367	4.99	7.33	190	27	0.1393E 03	0.1412E 02	0.1559E 01	0.1945E 00	0.2901E-01	0.5540E-02	0.1415E-02
368	4.97	7.33	170	30	0.1697E 03	0.1517E 02	0.1542E 01	0.1870E 00	0.2867E-01	0.5876E-02	0.1632E-02
369	4.98	7.00	260	30	0.1156E 03	0.1290E 02	0.1549E 01	0.2055E 00	0.3158E-01	0.6033E-02	0.1521E-02

Hs 4.51 to 5.00 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
370	5.50	9.12	190	20	0.2713E 03	0.2185E 02	0.1890E 01	0.1853E 00	0.2271E-01	0.3945E-02	0.1036E-02
371	5.39	8.98	220	14	0.2769E 03	0.2139E 02	0.1816E 01	0.1790E 00	0.2253E-01	0.4050E-02	0.1079E-02
372	5.38	8.16	290	27	0.1944E 03	0.1816E 02	0.1807E 01	0.2007E 00	0.2715E-01	0.5015E-02	0.1325E-02
373	5.49	8.07	160	35	0.2671E 03	0.2082E 02	0.1885E 01	0.2071E 00	0.2896E-01	0.5434E-02	0.1408E-02
374	5.40	7.78	320	22	0.1976E 03	0.1813E 02	0.1823E 01	0.2108E 00	0.3012E-01	0.5751E-02	0.1514E-02
375	5.50	7.66	310	28	0.1847E 03	0.1793E 02	0.1889E 01	0.2247E 00	0.3216E-01	0.5982E-02	0.1513E-02
376	5.03	7.62	280	23	0.1555E 03	0.1506E 02	0.1579E 01	0.1879E 00	0.2722E-01	0.5206E-02	0.1366E-02
377	5.28	7.59	270	32	0.1488E 03	0.1545E 02	0.1742E 01	0.2125E 00	0.3021E-01	0.5468E-02	0.1346E-02
378	5.21	7.45	170	34	0.1389E 03	0.1491E 02	0.1699E 01	0.2120E 00	0.3081E-01	0.5552E-02	0.1355E-02
379	5.25	7.39	190	33	0.1246E 03	0.1434E 02	0.1721E 01	0.2201E 00	0.3148E-01	0.5492E-02	0.1292E-02
380	5.19	7.25	200	29	0.1394E 03	0.1481E 02	0.1686E 01	0.2136E 00	0.3210E-01	0.6169E-02	0.1580E-02

Hs 5.01 to 5.50 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
381	5.53	10.29	210	9	0.3389E 03	0.2440E 02	0.1910E 01	0.1665E 00	0.1804E-01	0.2825E-02	0.6944E-03
382	5.84	10.25	160	8	0.3659E 03	0.2698E 02	0.2130E 01	0.1878E 00	0.2028E-01	0.3134E-02	0.7620E-03
383	5.51	8.93	330	15	0.2412E 03	0.2067E 02	0.1895E 01	0.1932E 00	0.2376E-01	0.4000E-02	0.1003E-02
384	5.91	8.79	230	17	0.3337E 03	0.2552E 02	0.2183E 01	0.2201E 00	0.2828E-01	0.5075E-02	0.1322E-02
385	5.66	8.26	240	23	0.2611E 03	0.2177E 02	0.1999E 01	0.2146E 00	0.2930E-01	0.5515E-02	0.1458E-02
386	5.83	8.25	250	24	0.2497E 03	0.2200E 02	0.2127E 01	0.2342E 00	0.3127E-01	0.5512E-02	0.1360E-02
387	5.85	8.07	350	22	0.2510E 03	0.2211E 02	0.2139E 01	0.2377E 00	0.3284E-01	0.6221E-02	0.1679E-02

Hs 5.51 to 6.00 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
388	6.44	9.06	240	25	0.3566E 03	0.2916E 02	0.2589E 01	0.2599E 00	0.3154E-01	0.5094E-02	0.1172E-02
389	6.01	8.58	220	24	0.2980E 03	0.2490E 02	0.2257E 01	0.2346E 00	0.3063E-01	0.5516E-02	0.1397E-02
390	6.30	8.37	260	22	0.3082E 03	0.2636E 02	0.2477E 01	0.2672E 00	0.3535E-01	0.6192E-02	0.1502E-02
391	6.48	8.24	240	33	0.3198E 03	0.2749E 02	0.2624E 01	0.2887E 00	0.3862E-01	0.6732E-02	0.1612E-02

Hs 6.01 to 6.50 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
392	6.56	9.01	240	27	0.4121E 03	0.3163E 02	0.2686E 01	0.2663E 00	0.3311E-01	0.5571E-02	0.1318E-02
393	6.75	8.73	250	27	0.3742E 03	0.3121E 02	0.2851E 01	0.2966E 00	0.3739E-01	0.6195E-02	0.1429E-02
394	6.88	8.45	240	31	0.3793E 03	0.3191E 02	0.2958E 01	0.3157E 00	0.4139E-01	0.7179E-02	0.1711E-02

Hs 6.51 to 7.00 metres

SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
395	7.15	8.81	220	36	0.4218E 03	0.3517E 02	0.3198E 01	0.3301E 00	0.4122E-01	0.6782E-02	0.1564E-02
396	7.07	8.43	240	33	0.4038E 03	0.3361E 02	0.3121E 01	0.3355E 00	0.4392E-01	0.7463E-02	0.1725E-02

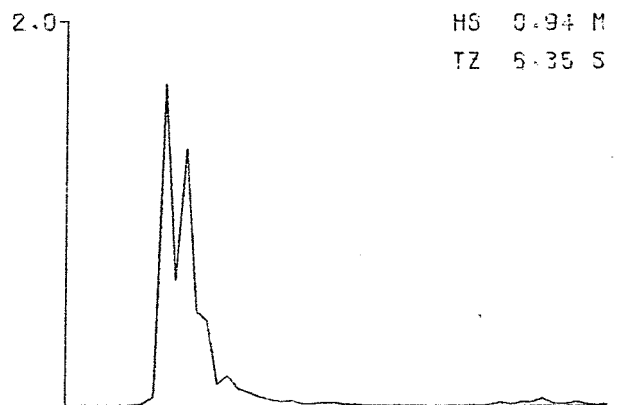
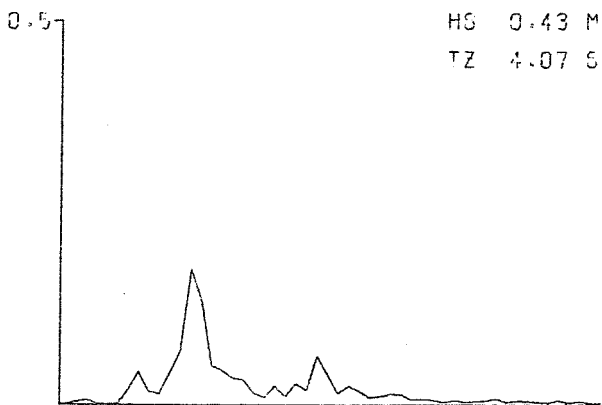
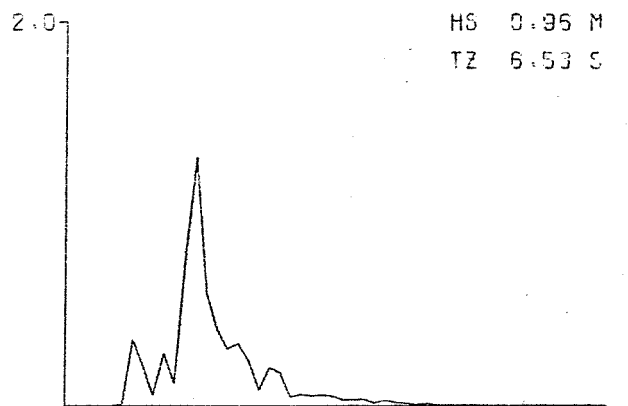
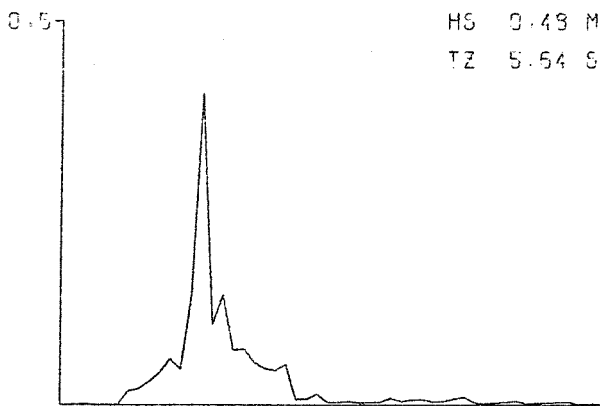
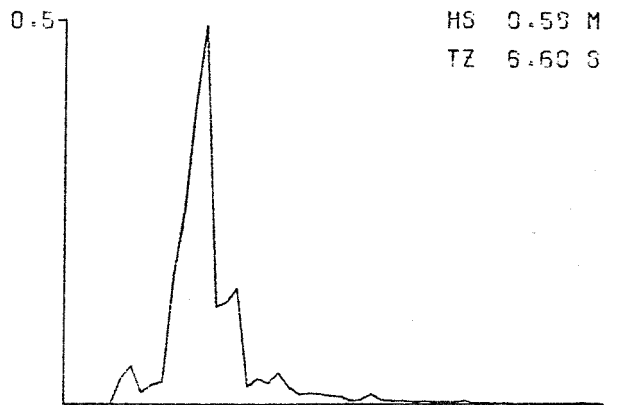
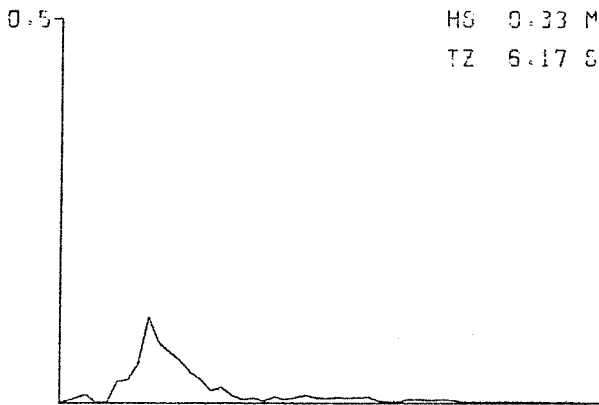
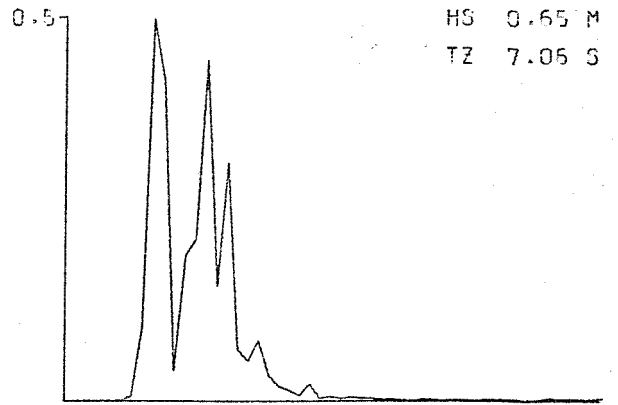
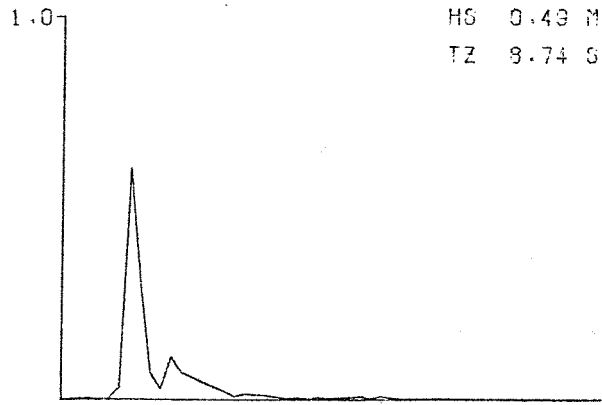
Hs 7.01 to 7.50 metres

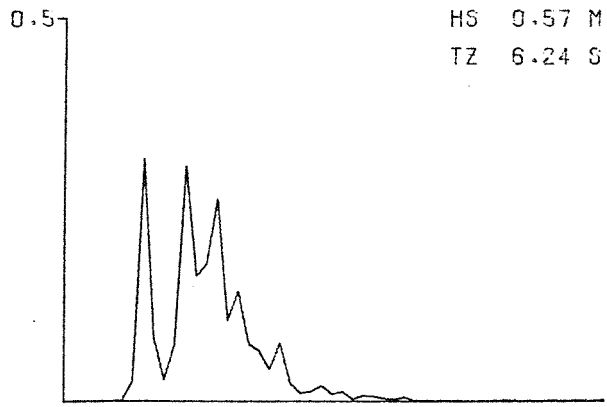
SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
397	7.64	9.42	220	27	0.5812E 03	0.4417E 02	0.3647E 01	0.3462E 00	0.4106E-01	0.6687E-02	0.1575E-02

Hs 7.51 to 8.00 metres

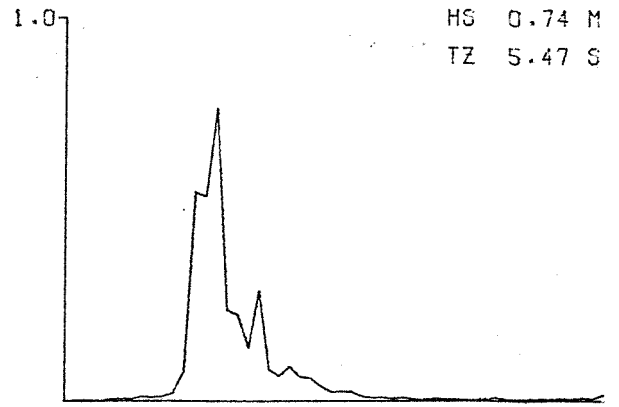
SERIAL NO.	HS METRES	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
398	8.29	9.34	230	35	0.6484E 03	0.5053E 02	0.4292E 01	0.4153E 00	0.4916E-01	0.7779E-02	0.1734E-02
399	8.24	9.34	220	36	0.6068E 03	0.4904E 02	0.4242E 01	0.4117E 00	0.4862E-01	0.7731E-02	0.1748E-02

Hs 8.01 to 8.50 metres

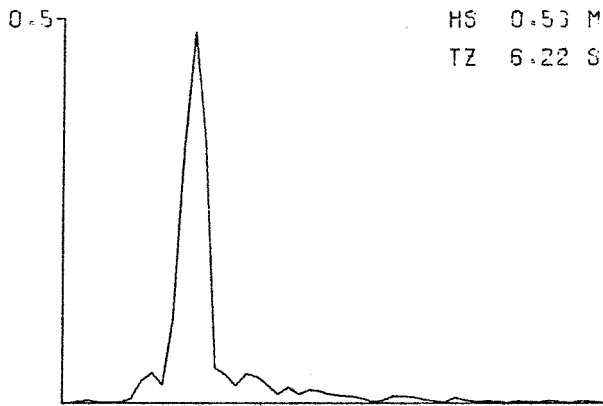




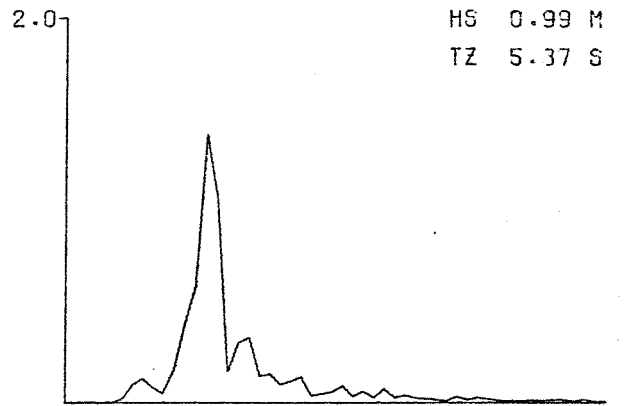
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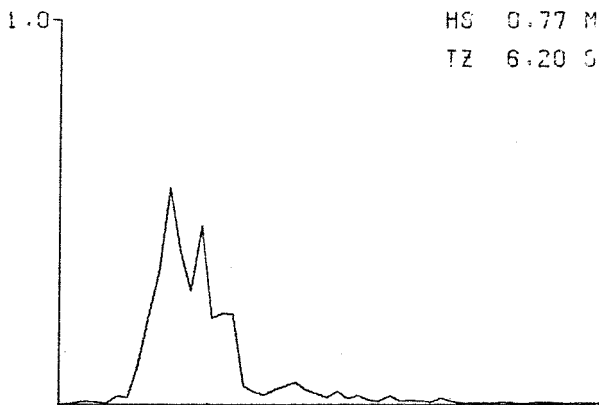
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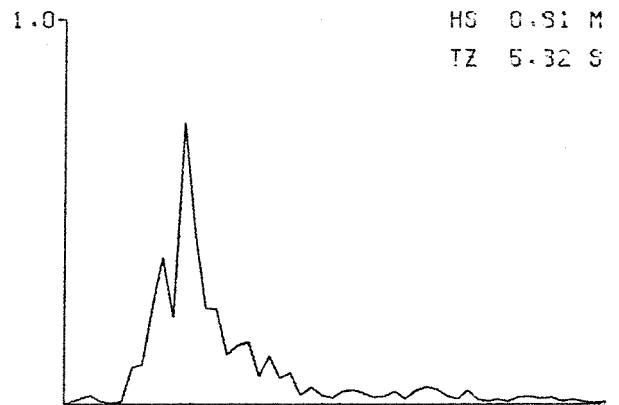
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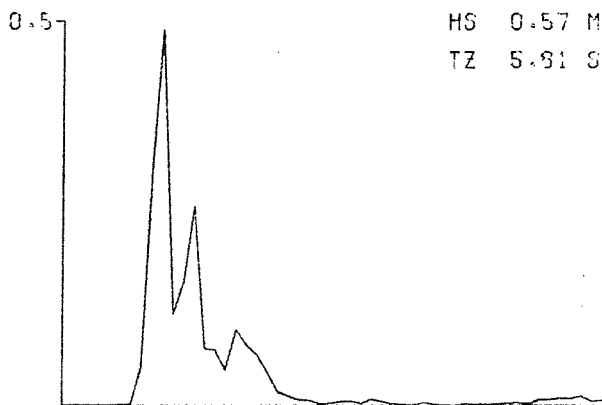
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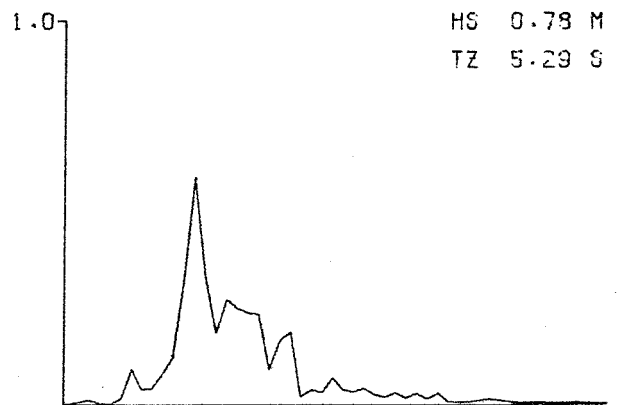
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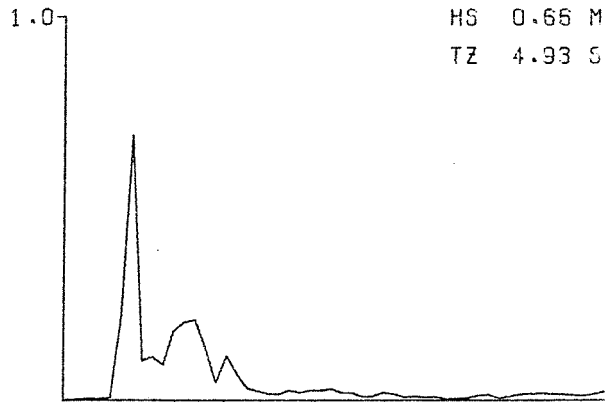
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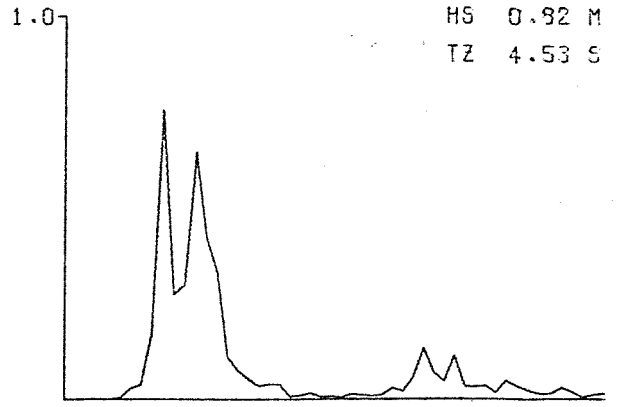
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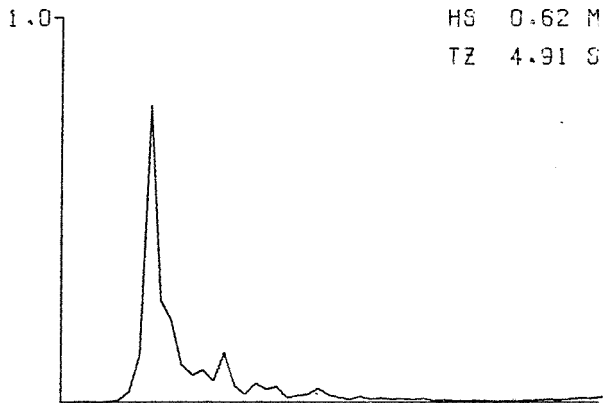
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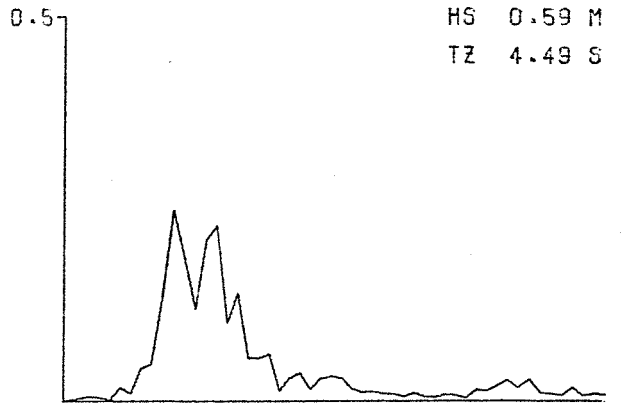
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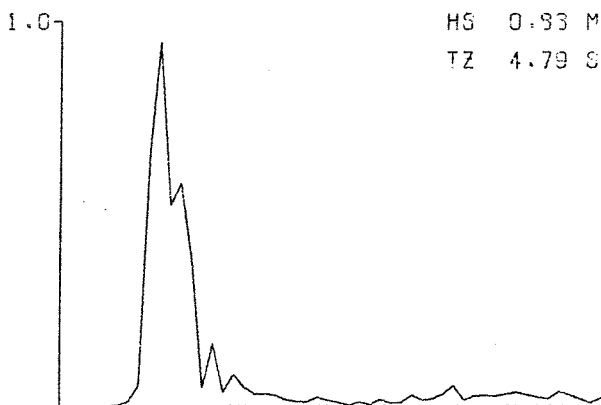
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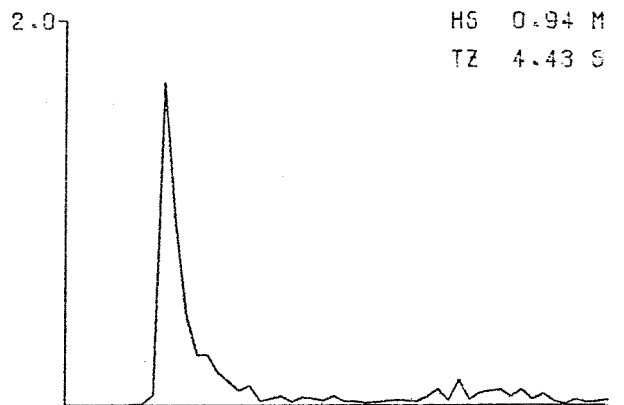
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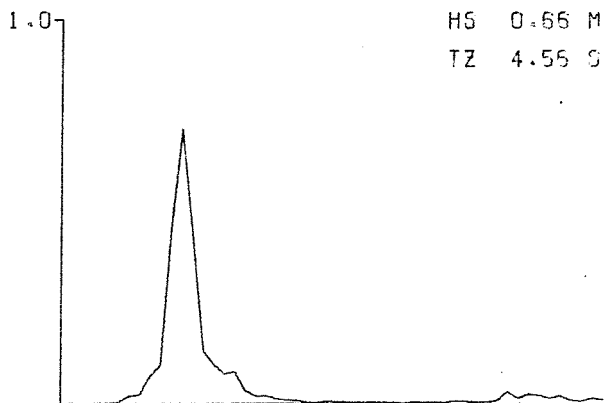
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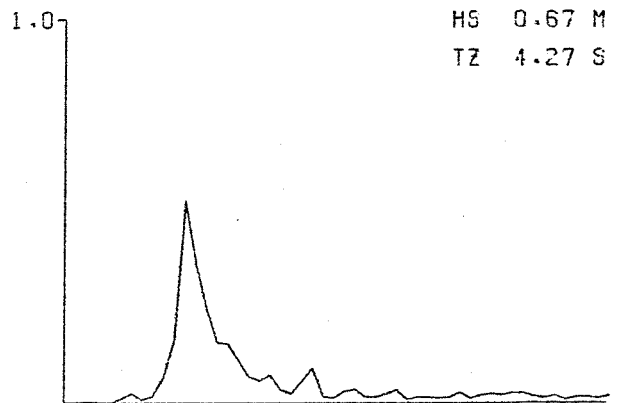
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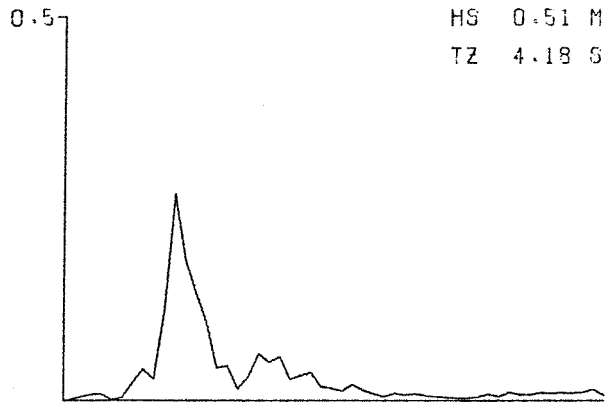
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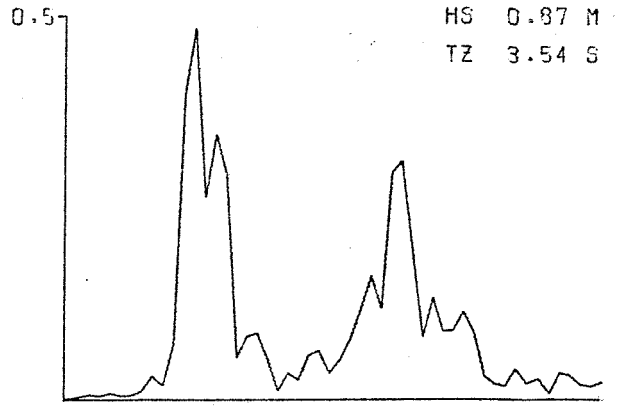
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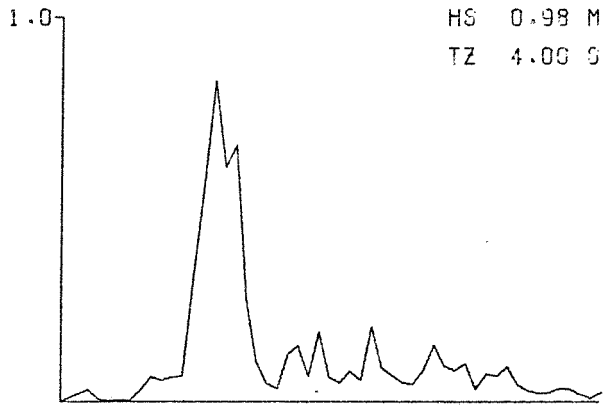
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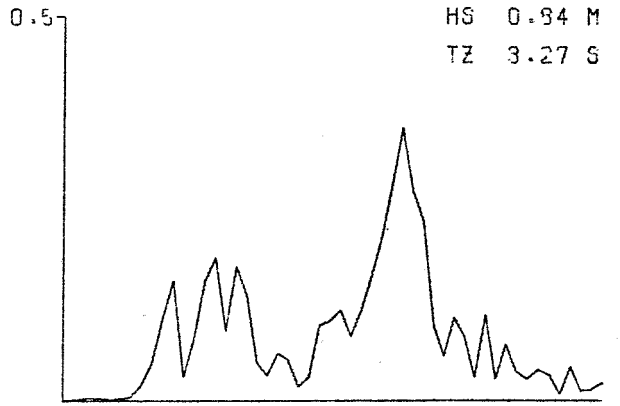
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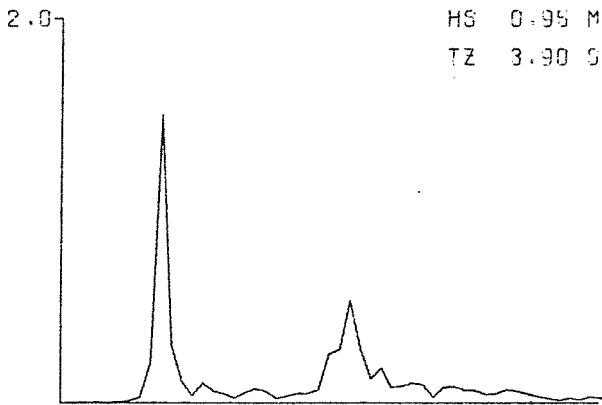
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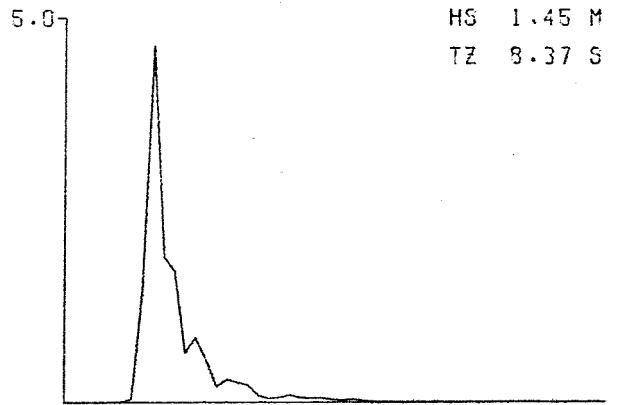
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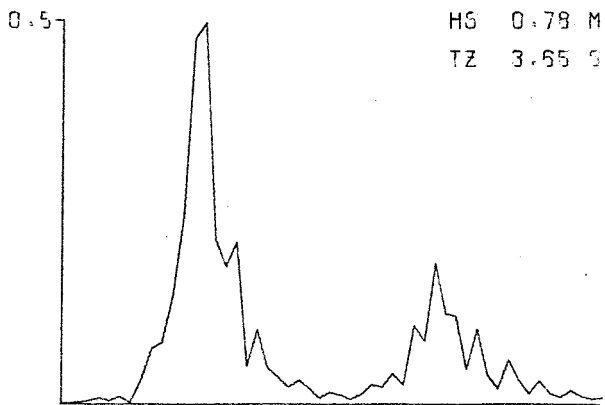
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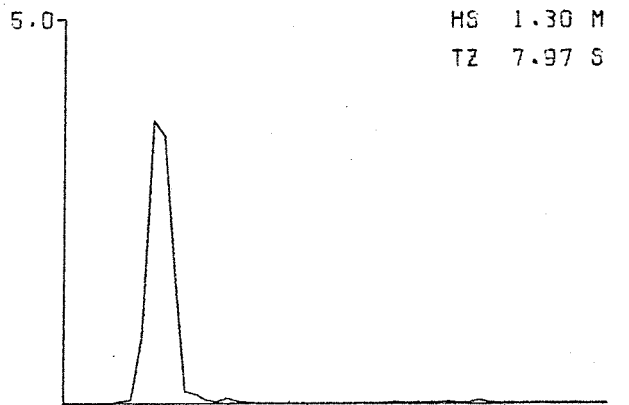
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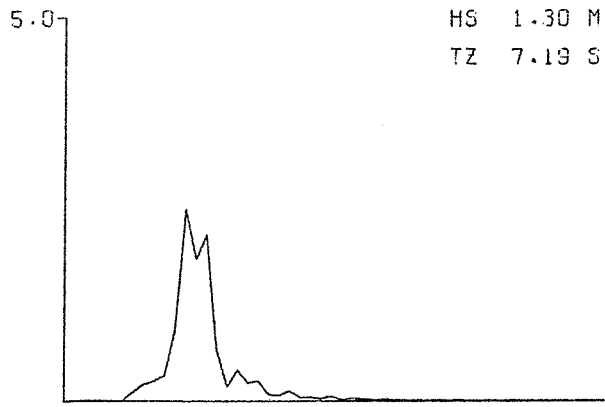
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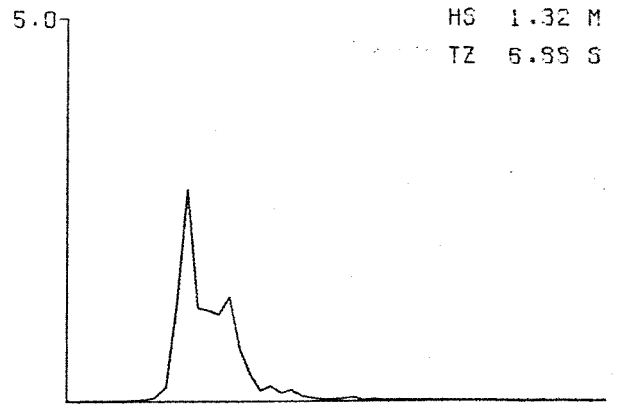
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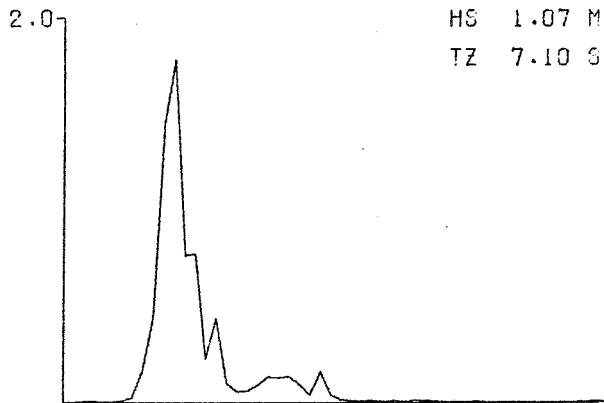
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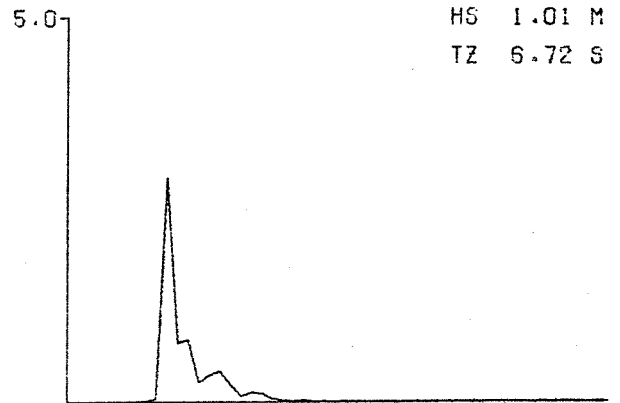
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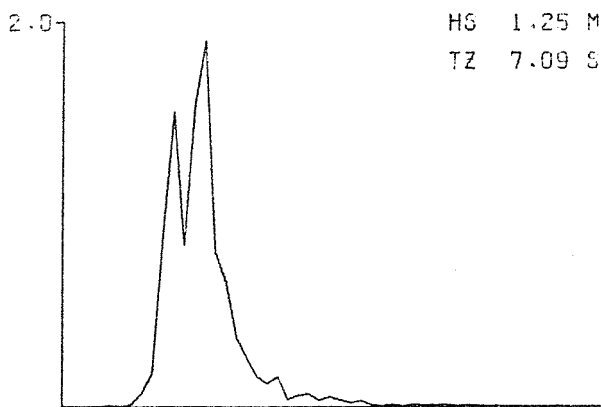
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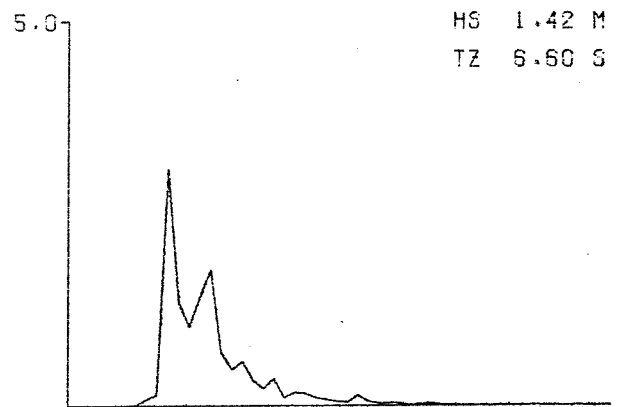
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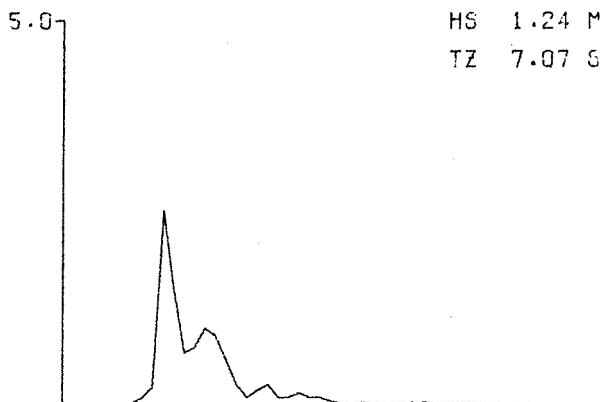
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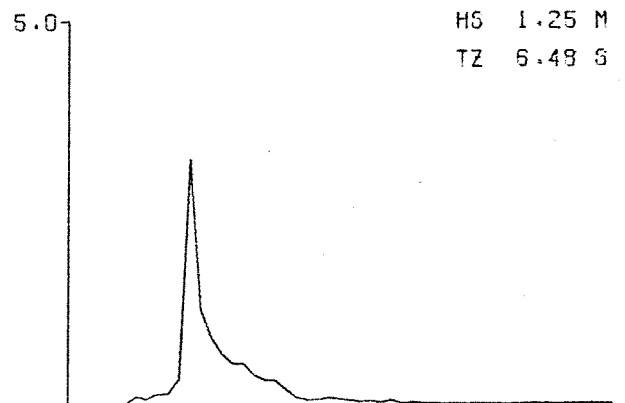
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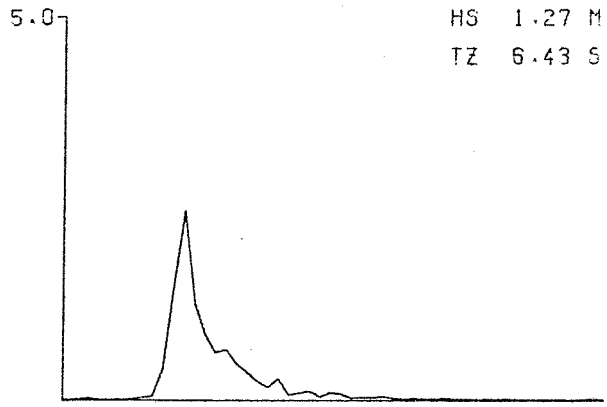
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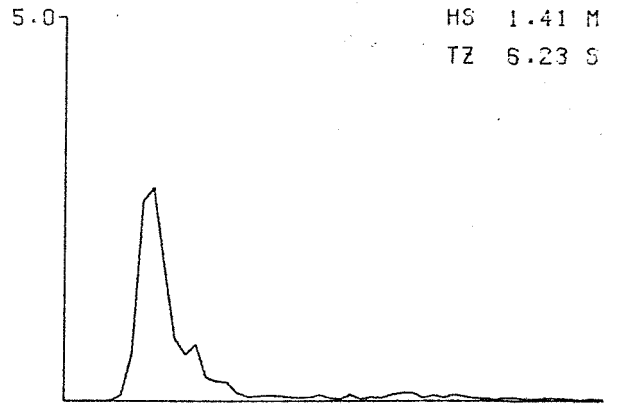
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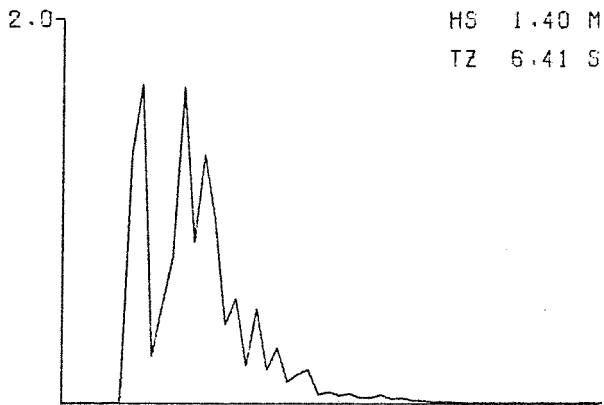
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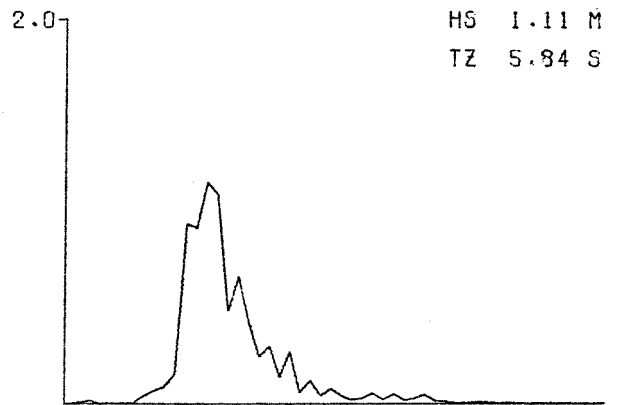
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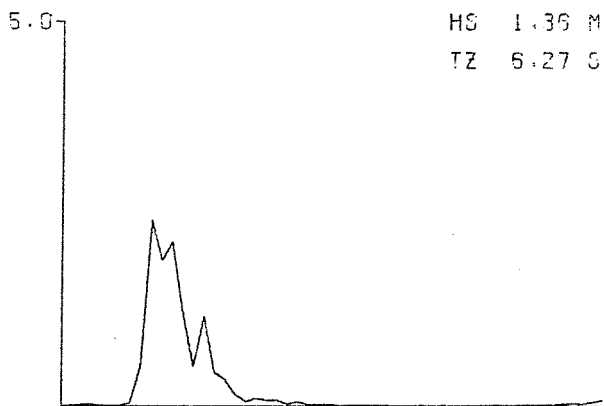
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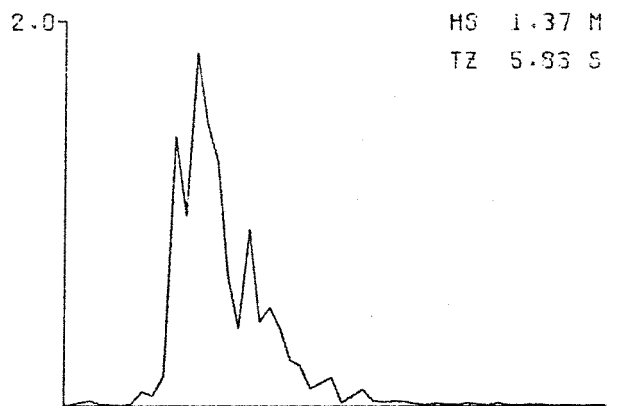
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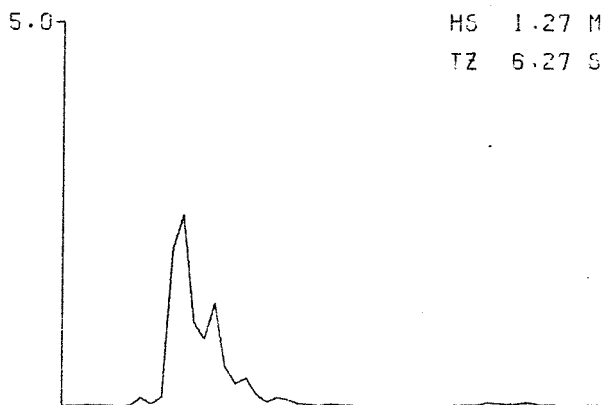
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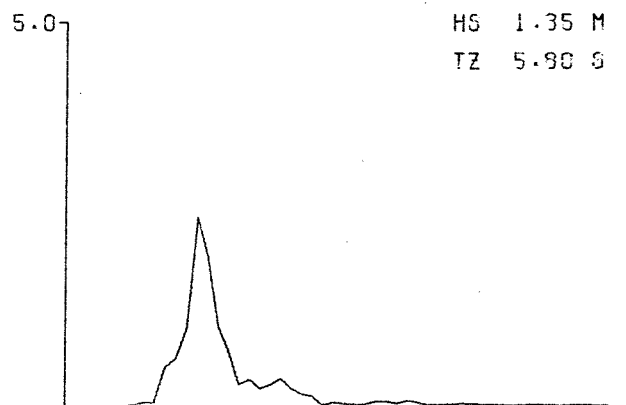
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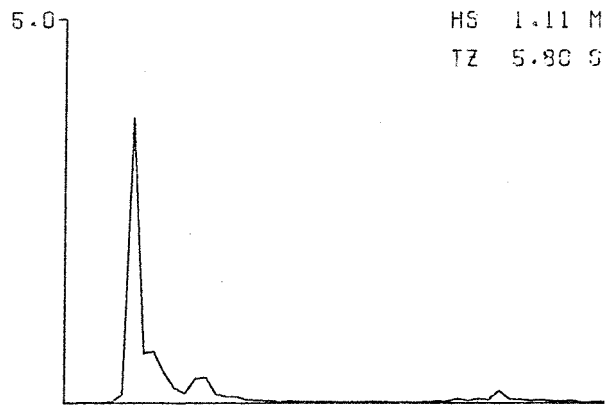
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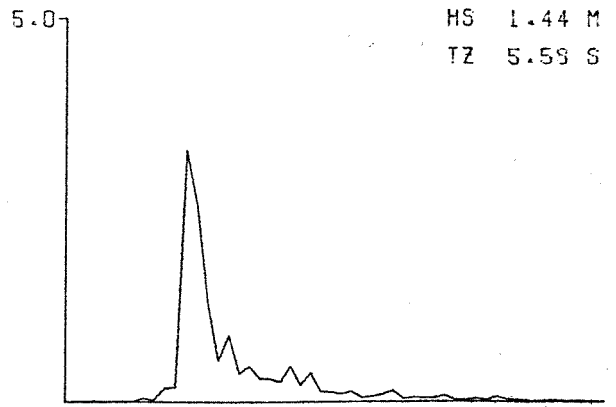
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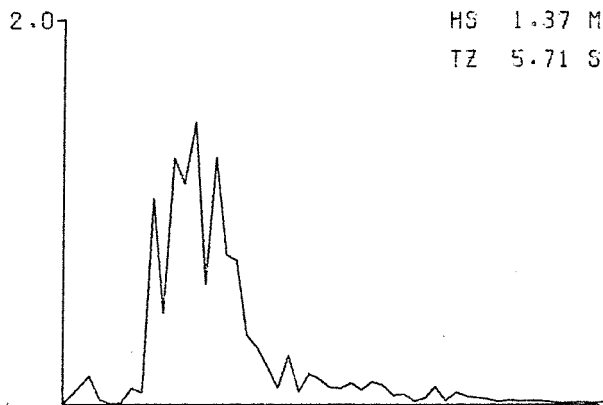
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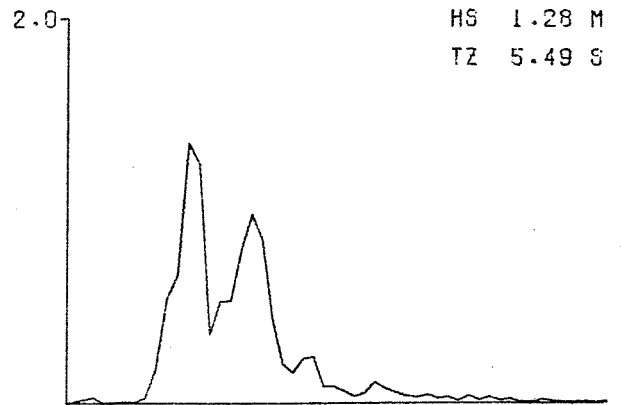
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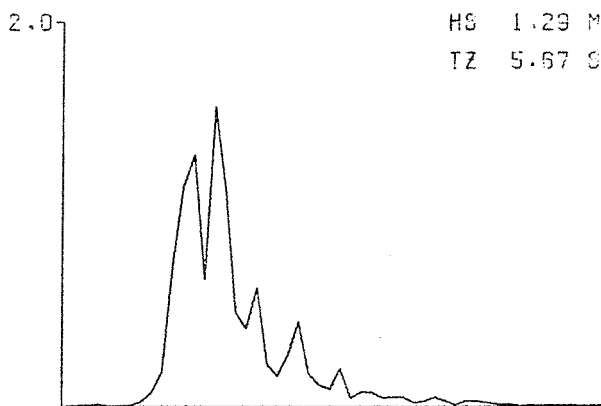
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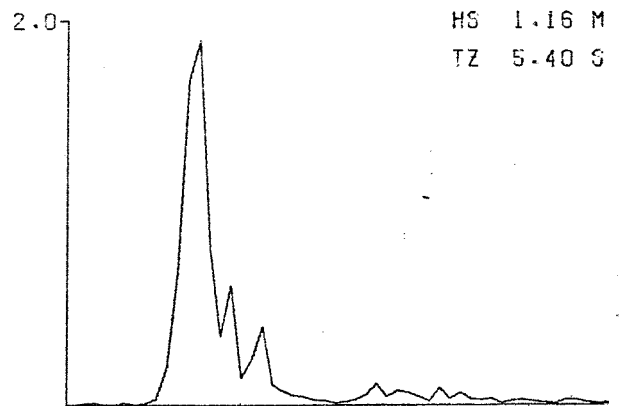
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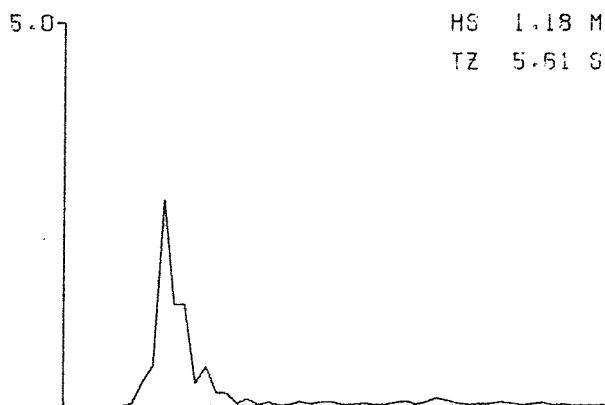
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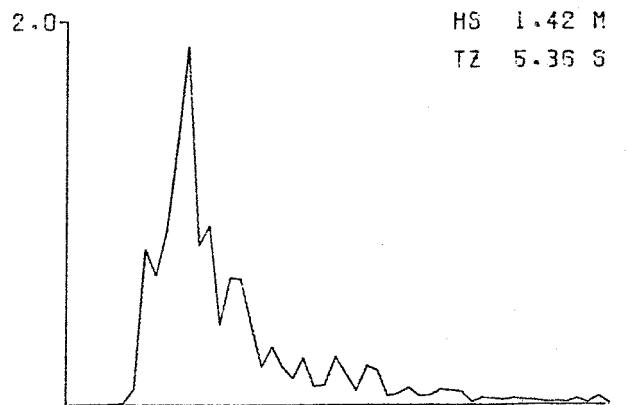
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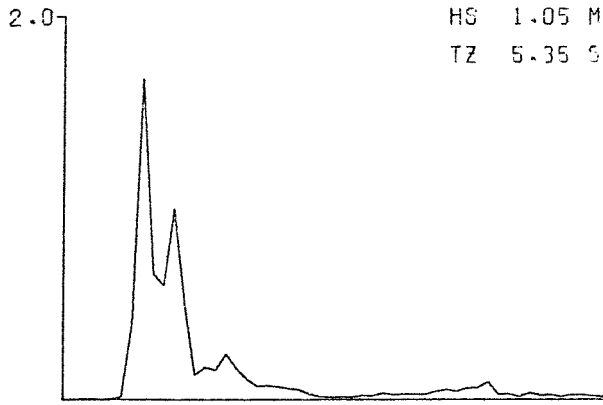
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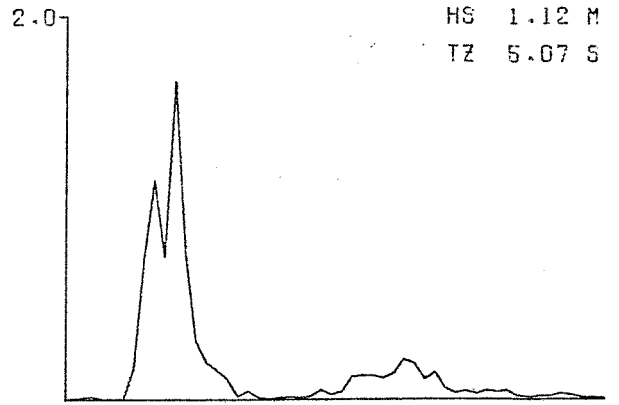
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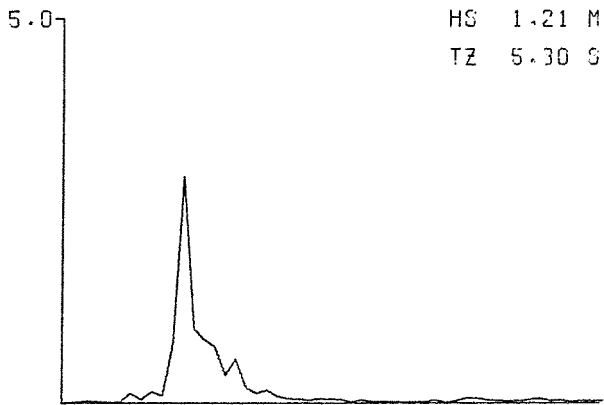
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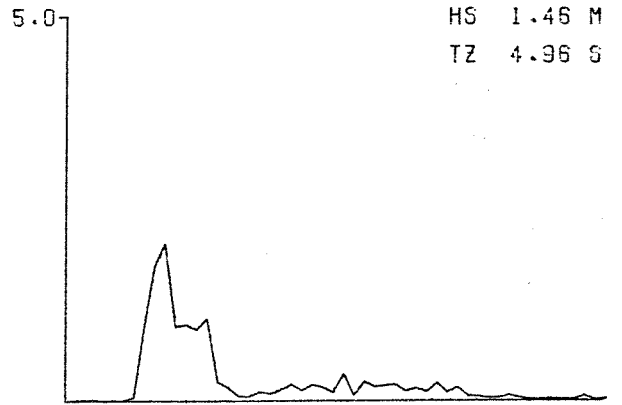
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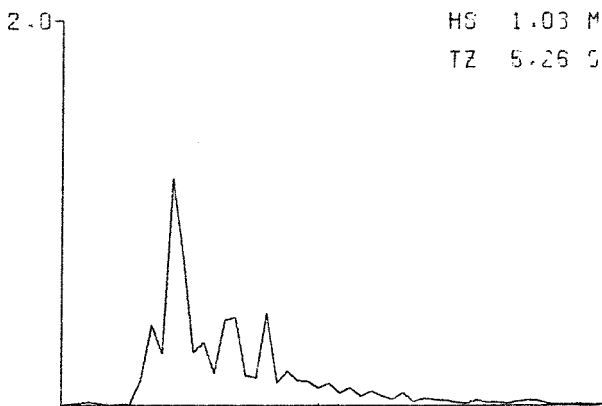
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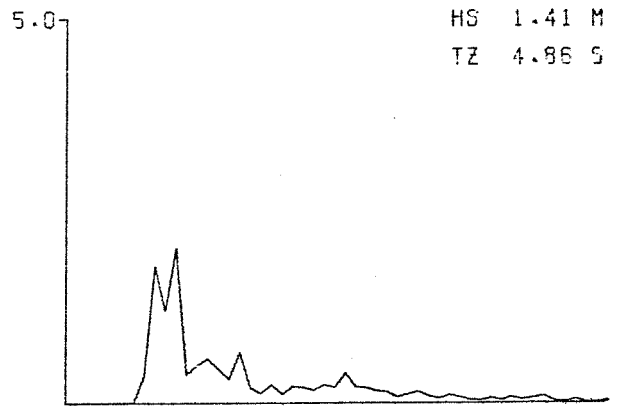
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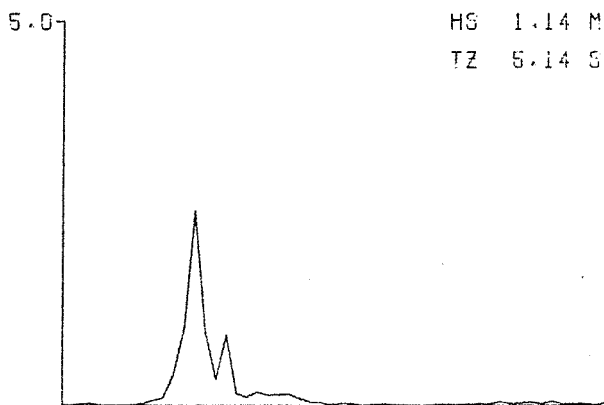
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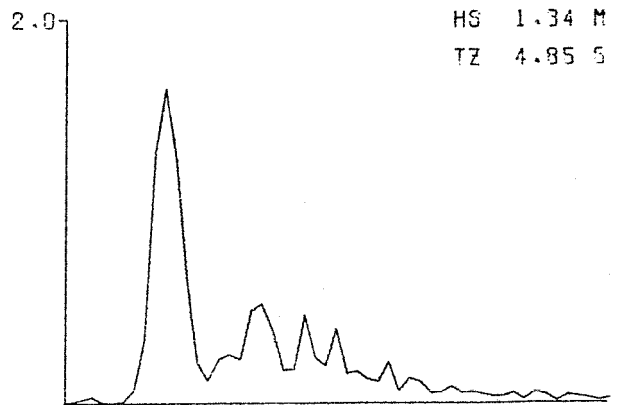
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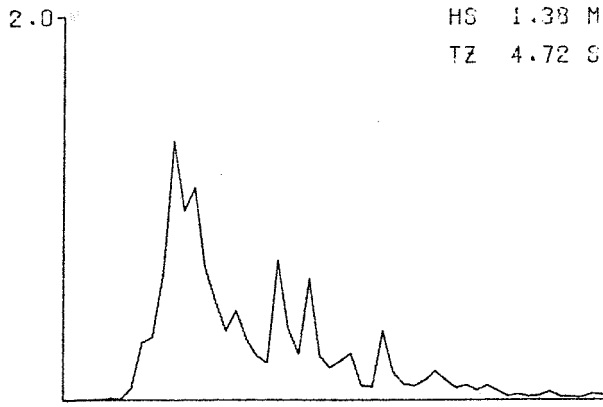
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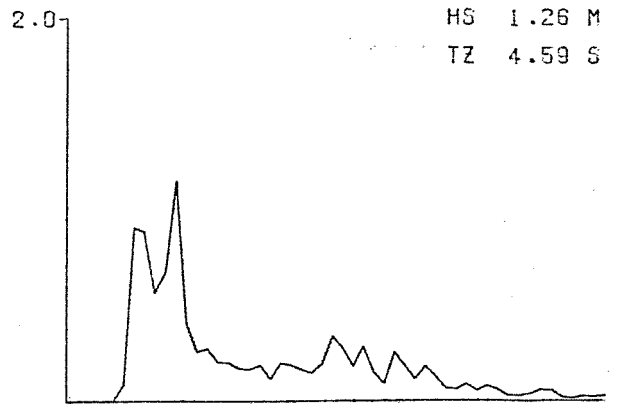
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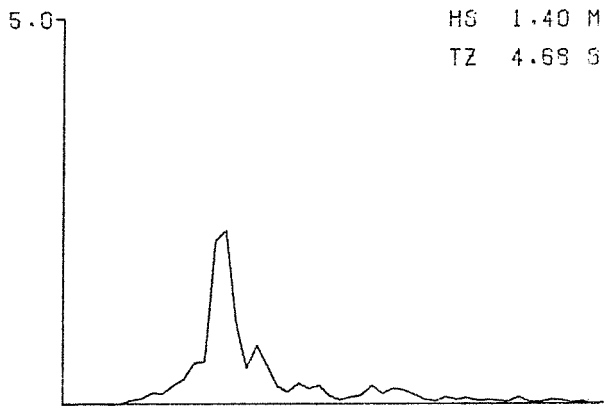
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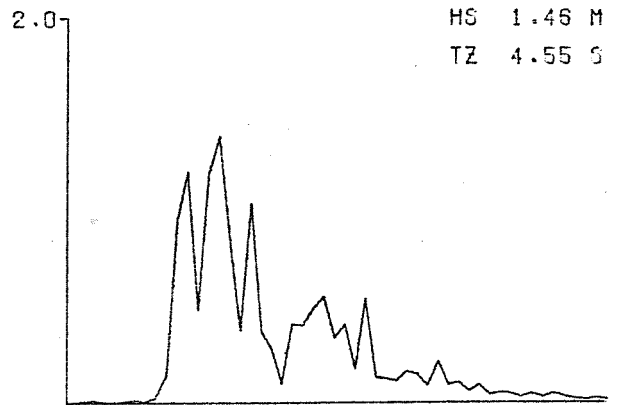
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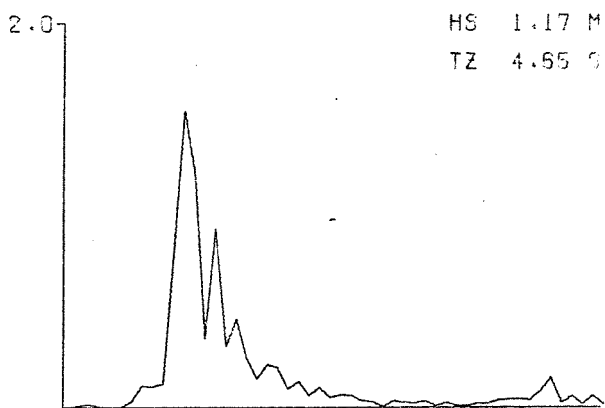
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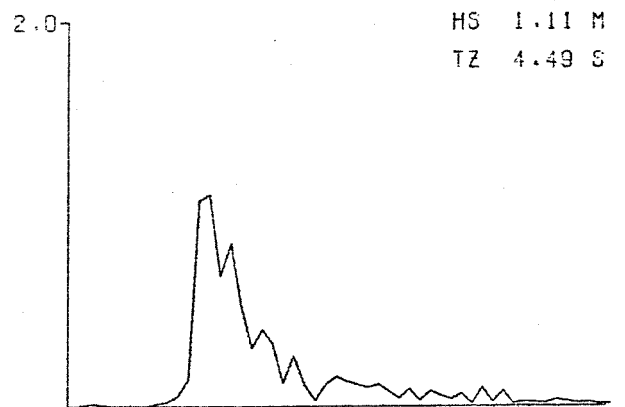
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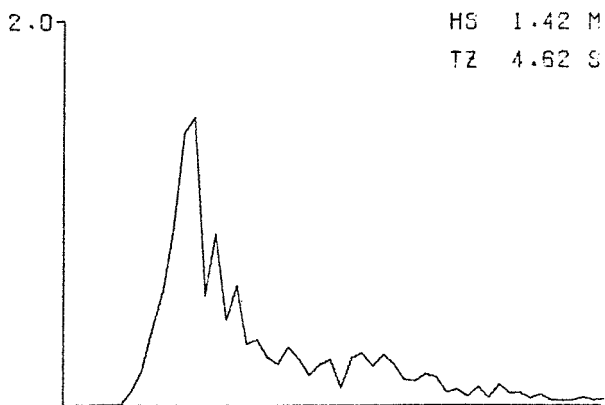
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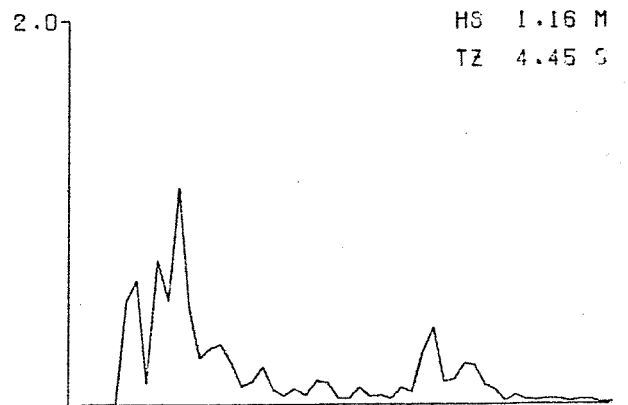
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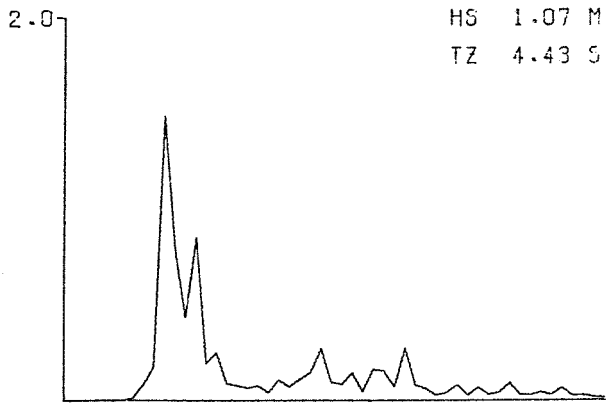
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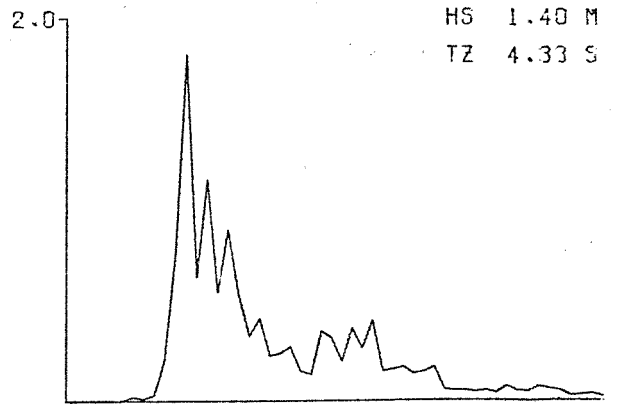
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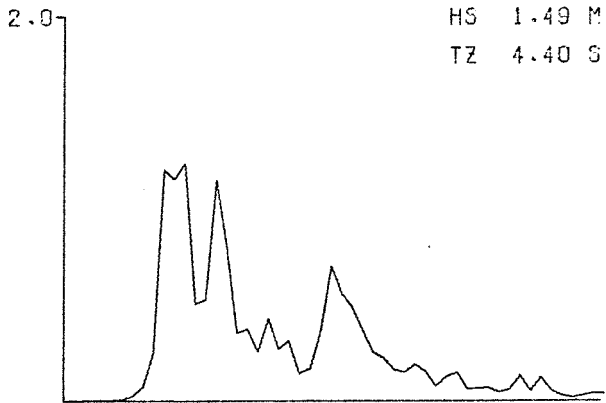
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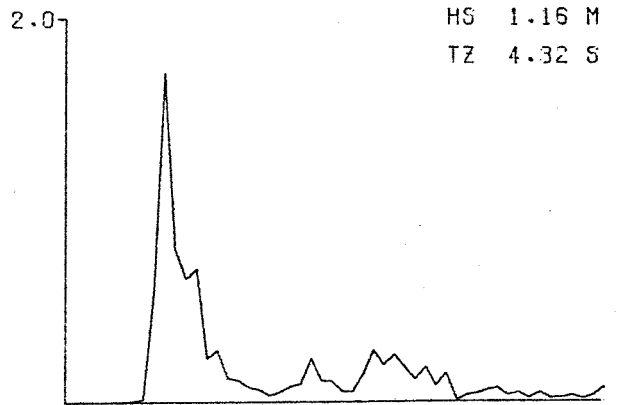
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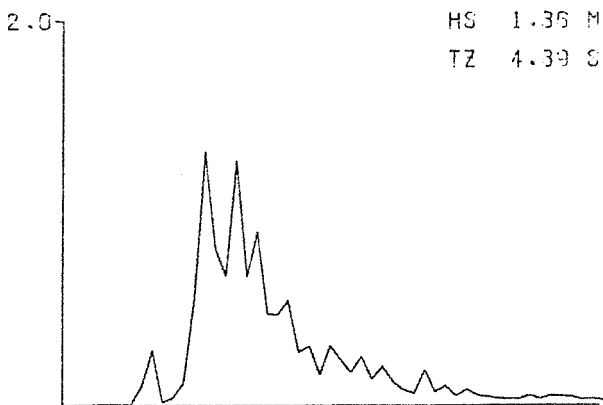
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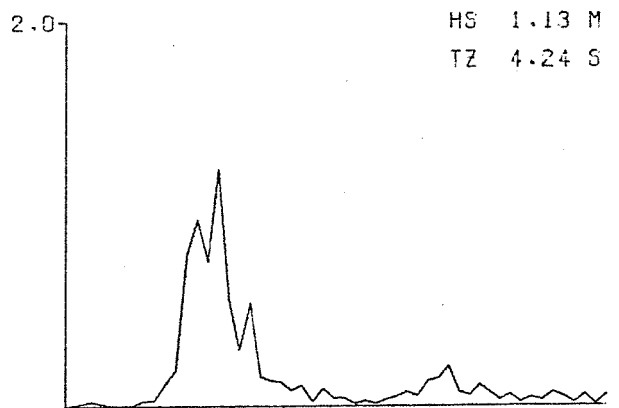
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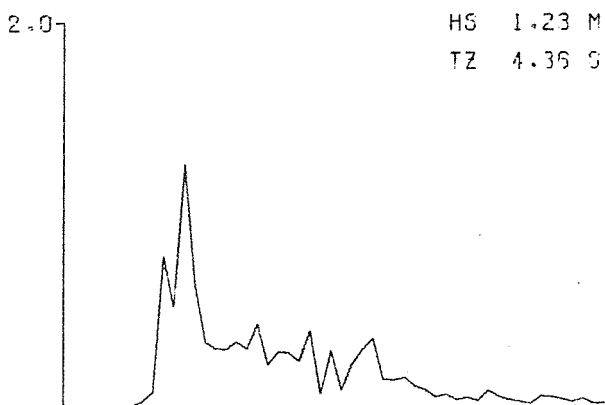
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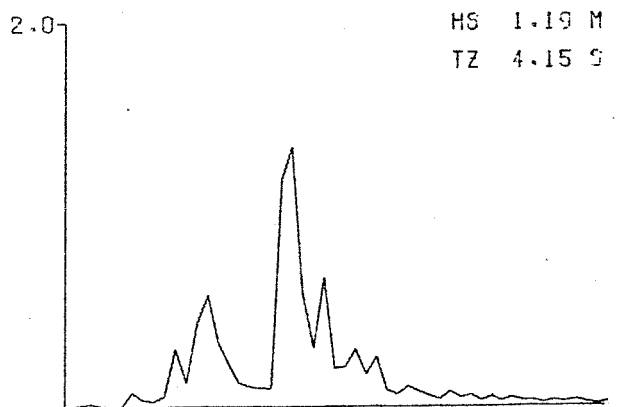
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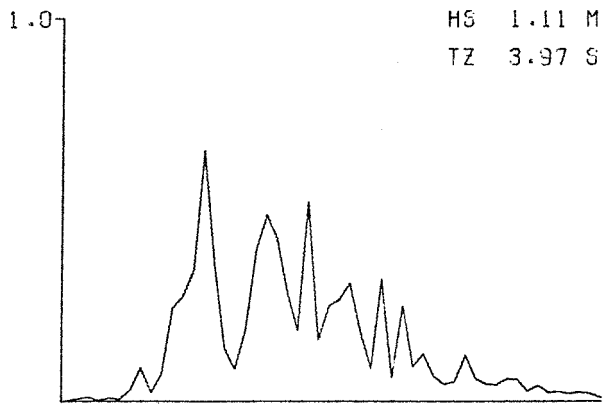
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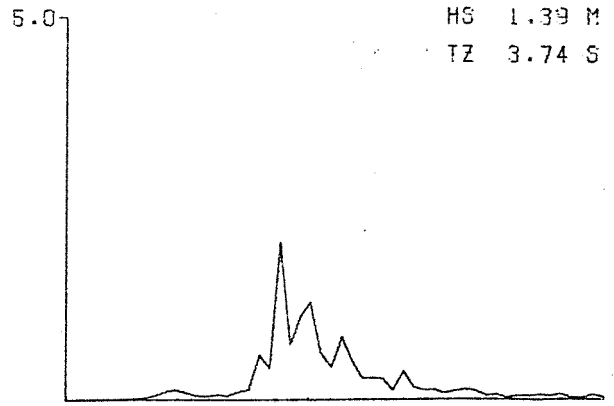
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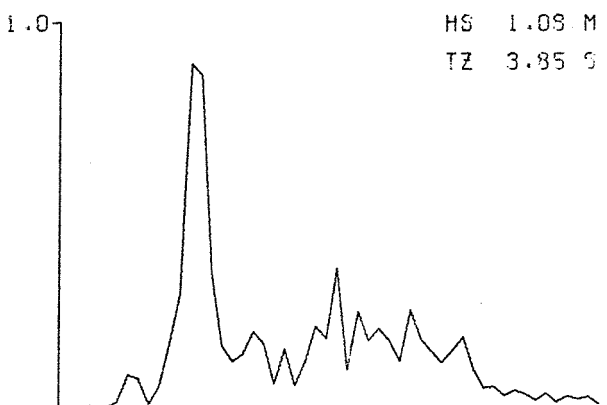
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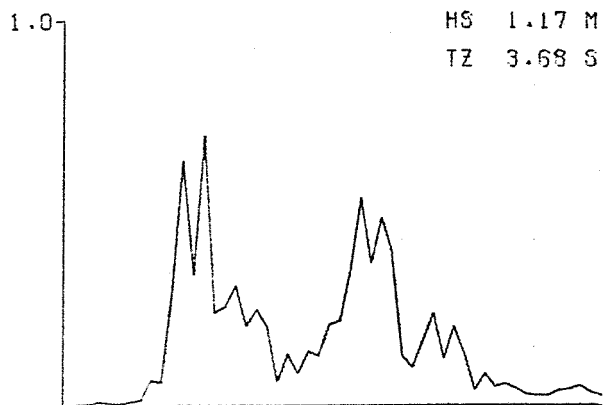
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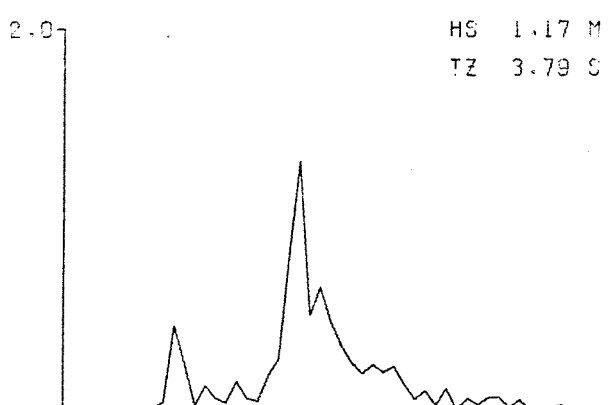
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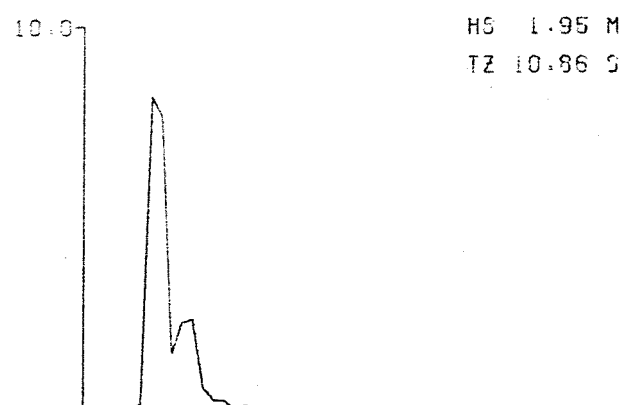
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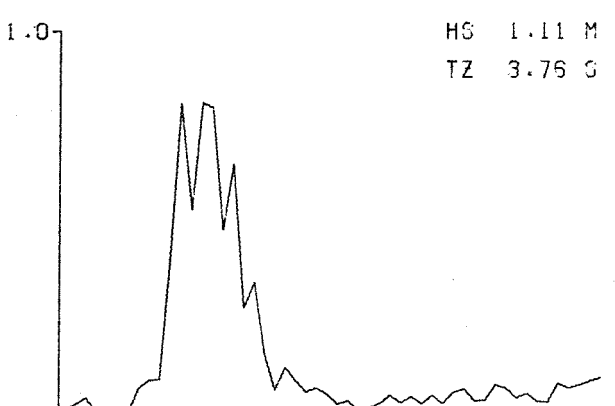
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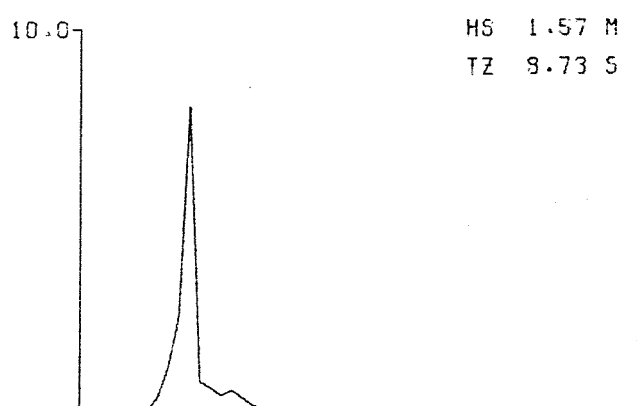
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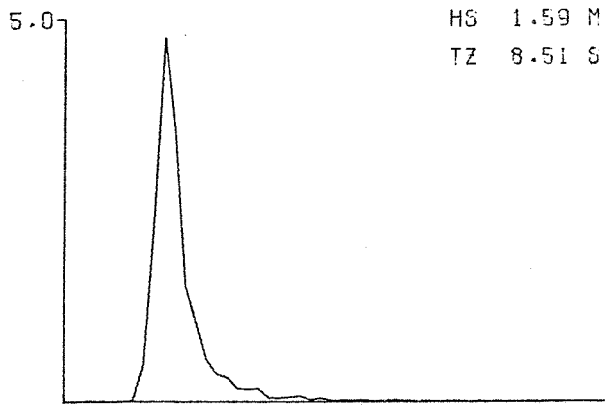
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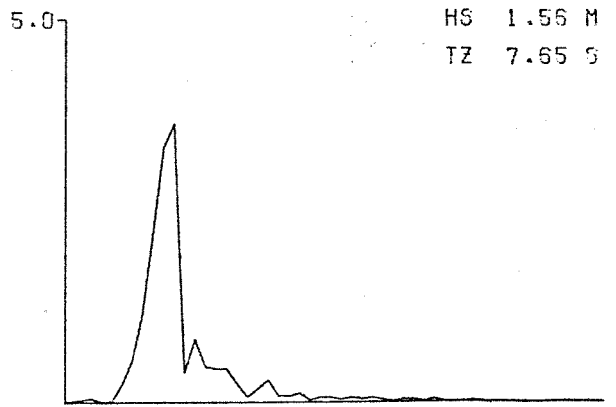
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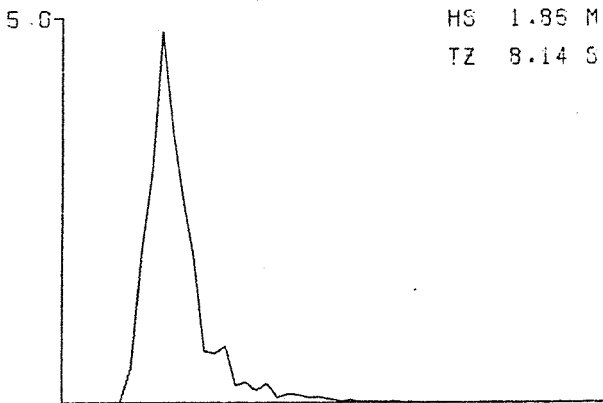
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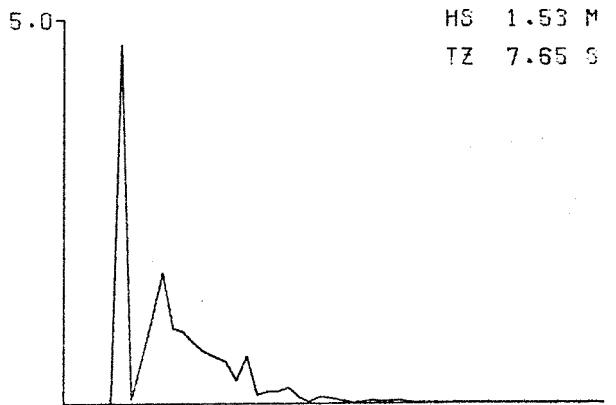
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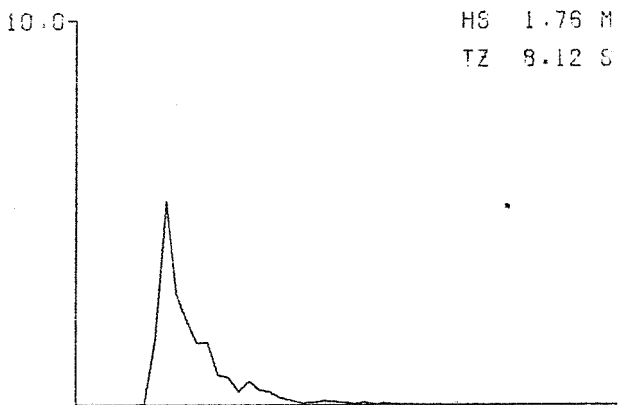
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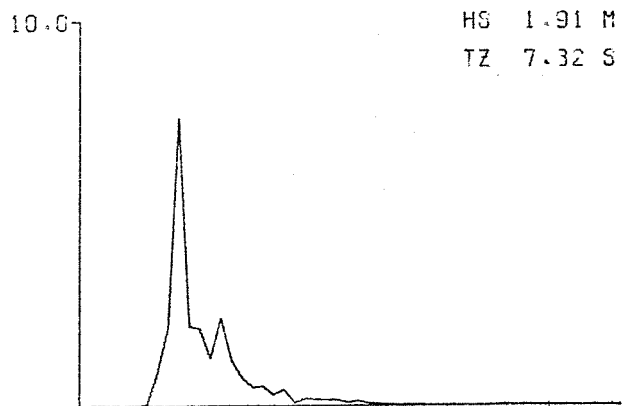
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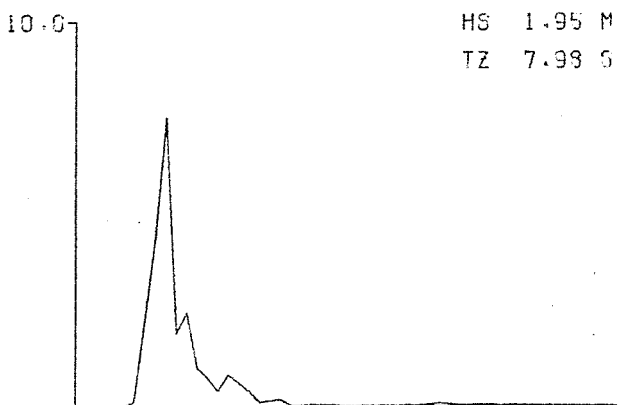
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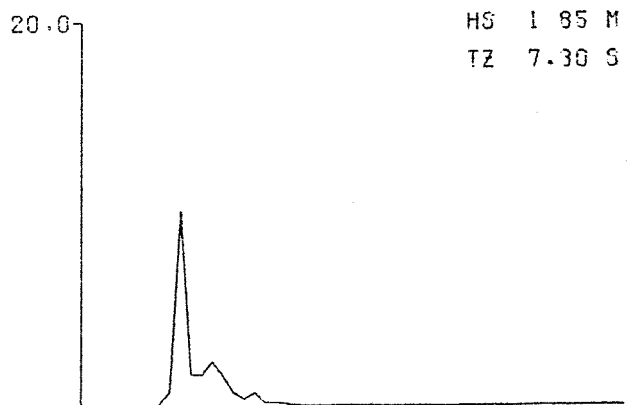
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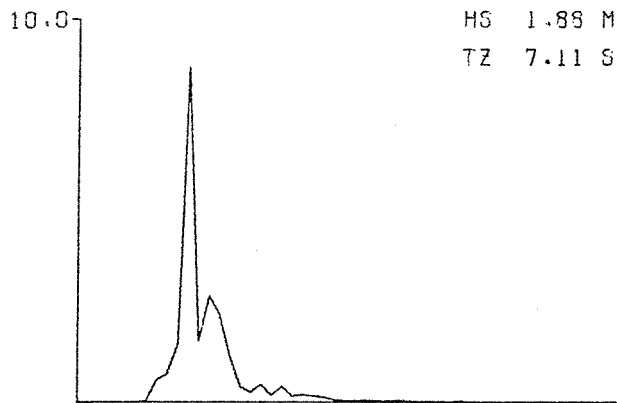
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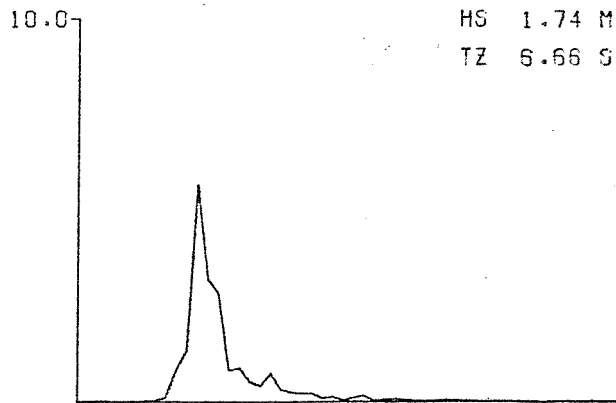
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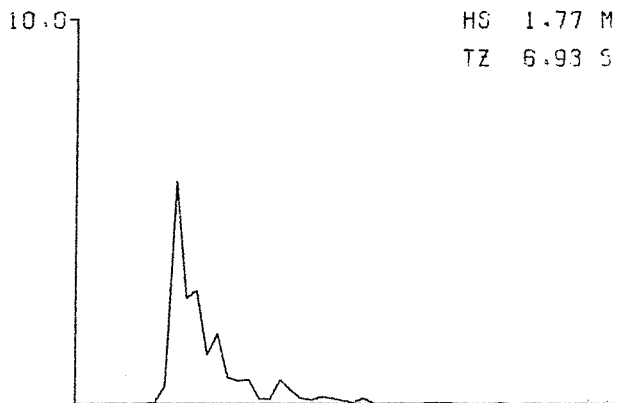
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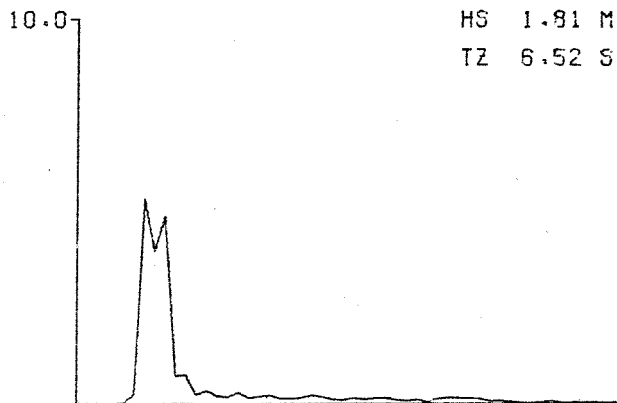
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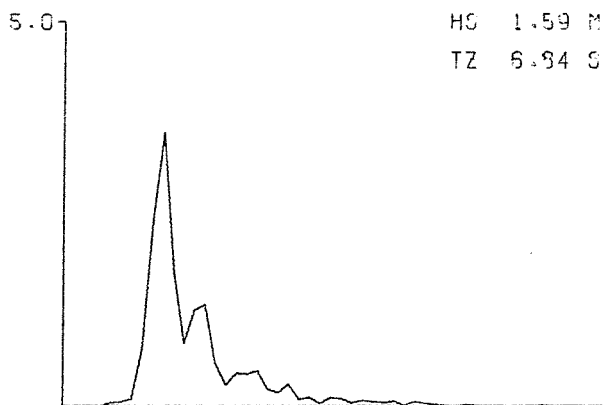
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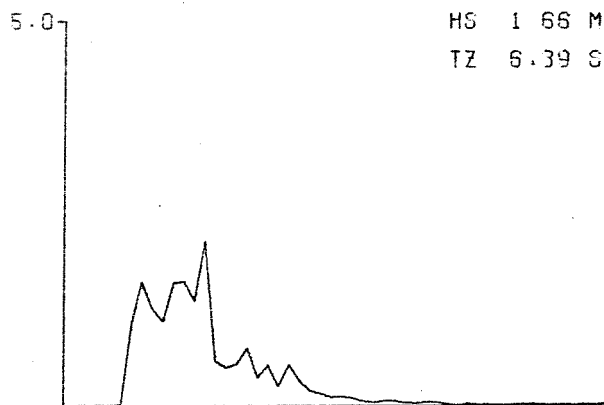
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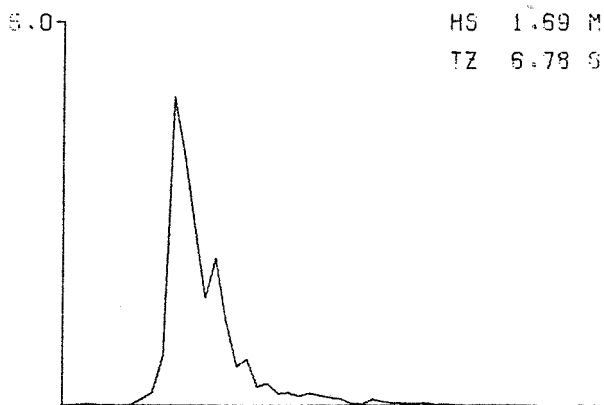
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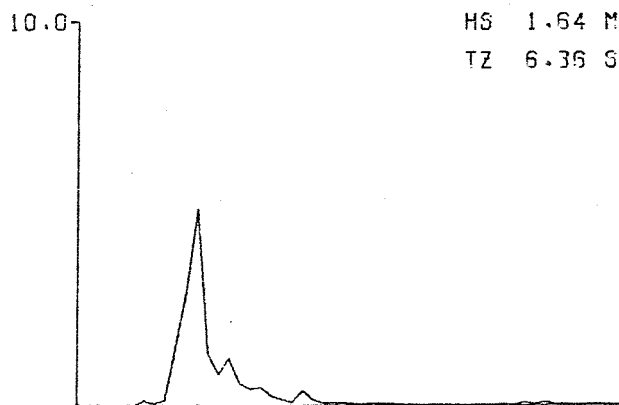
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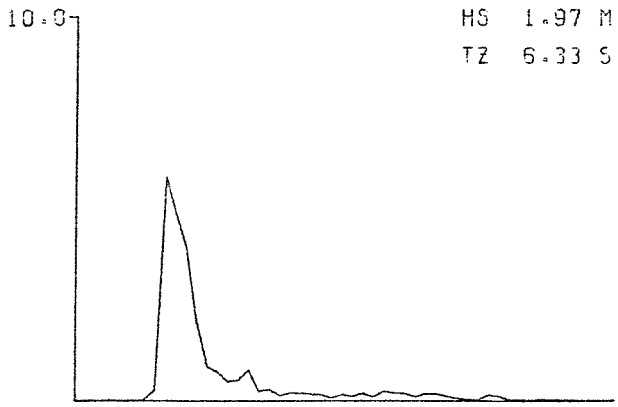
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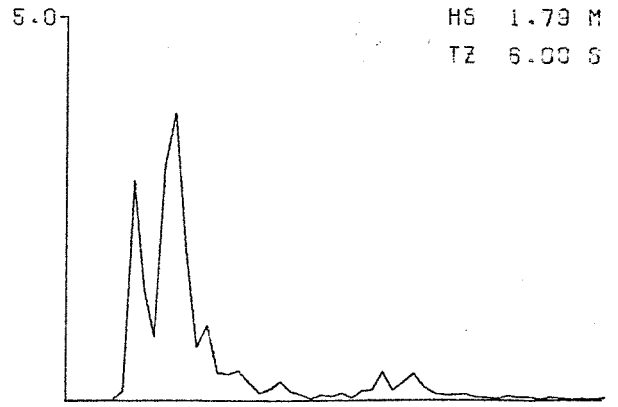
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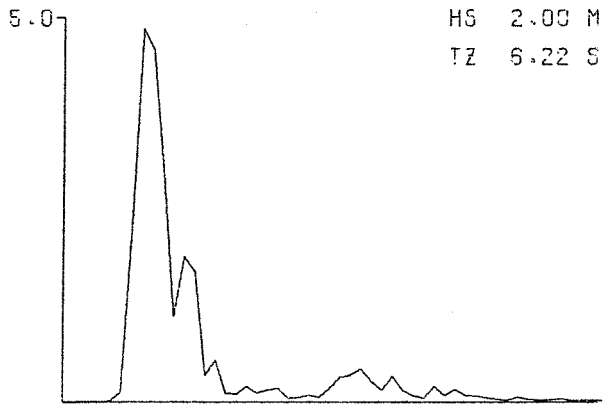
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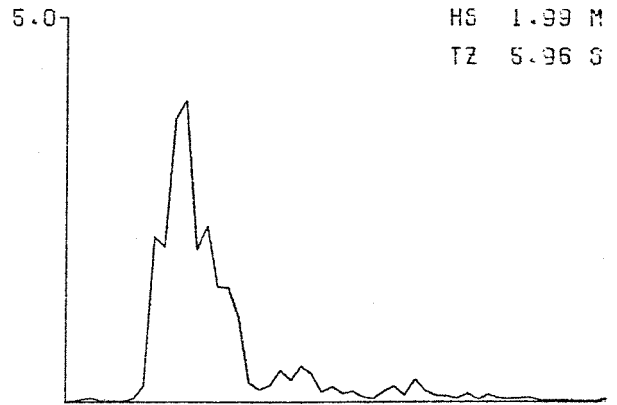
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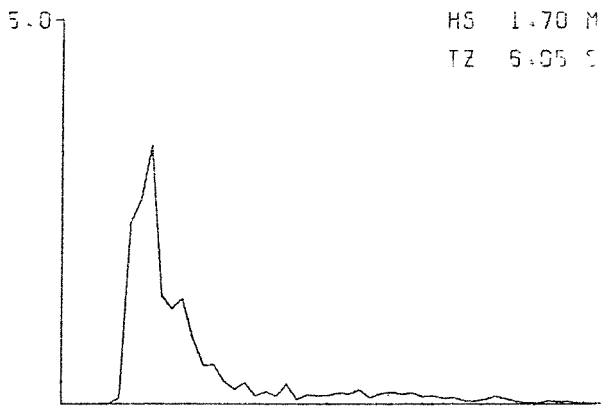
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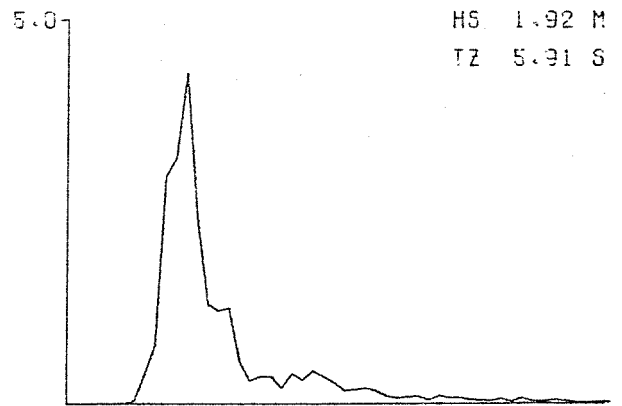
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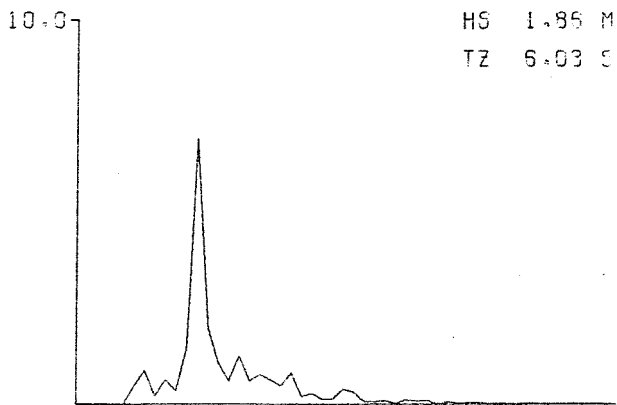
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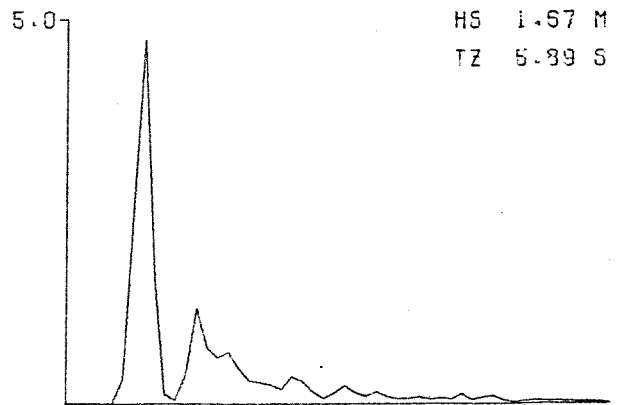
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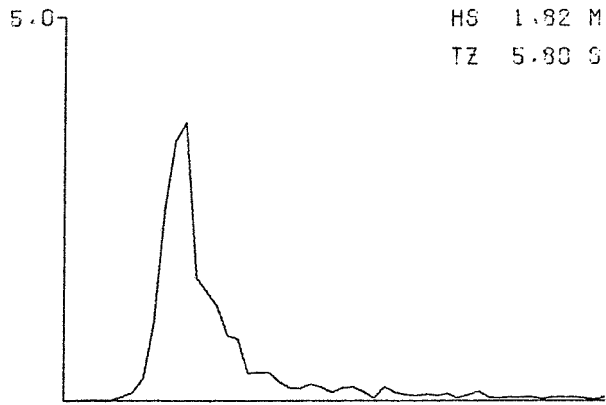
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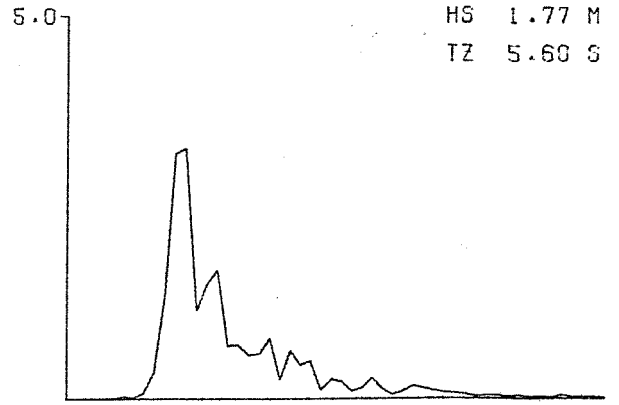
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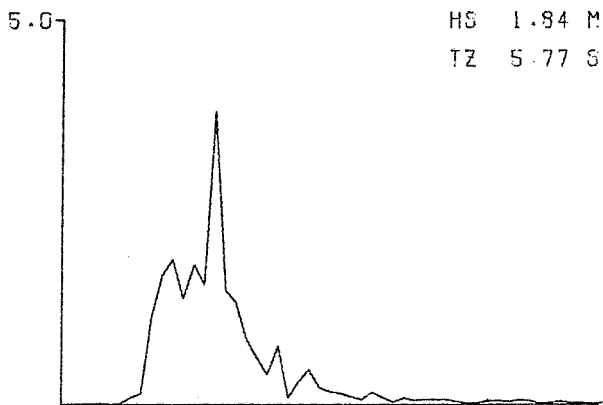
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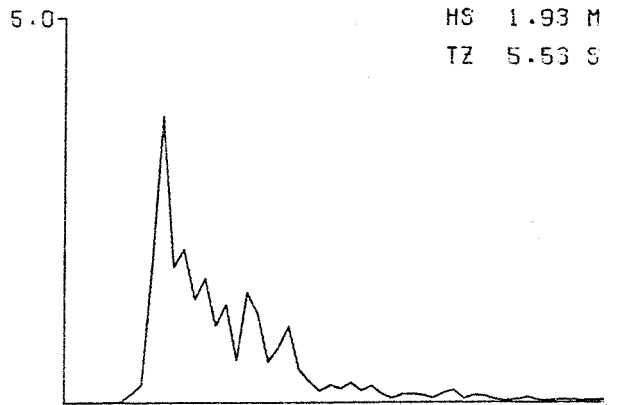
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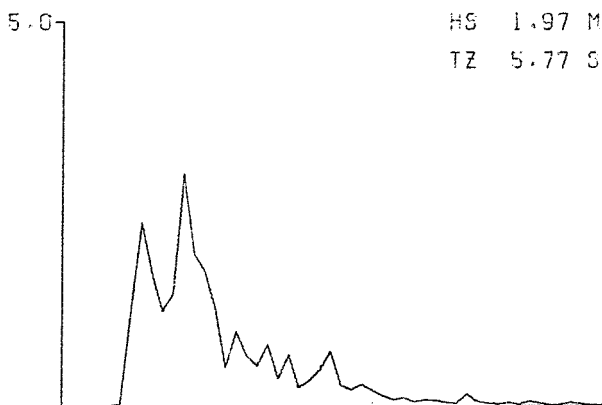
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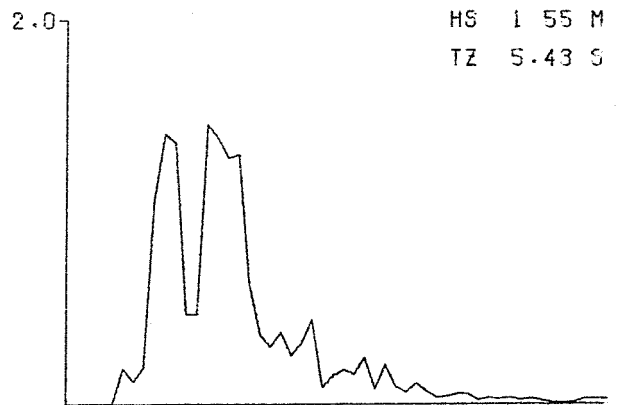
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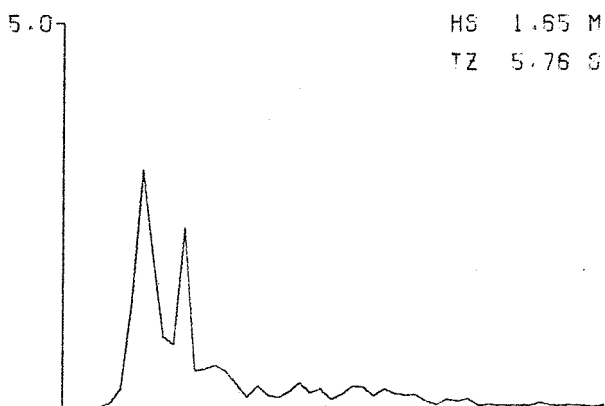
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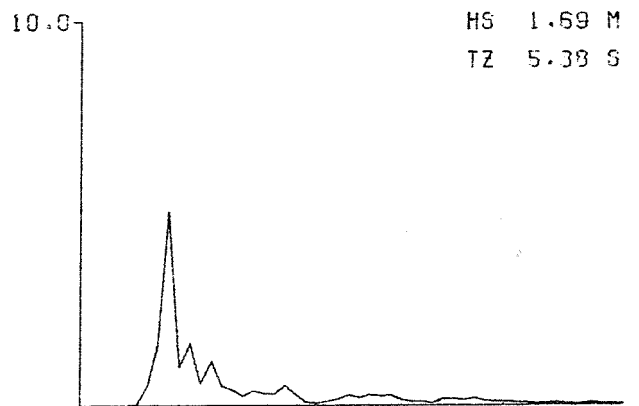
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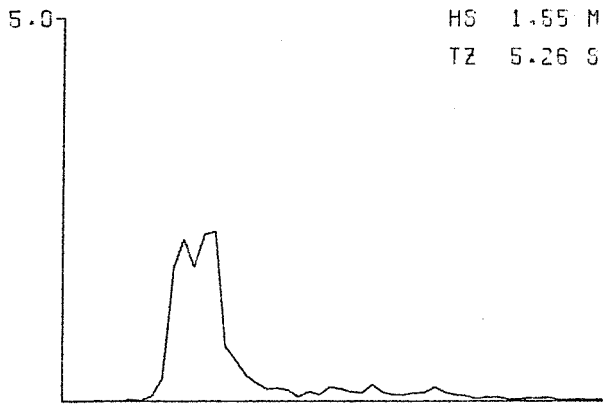
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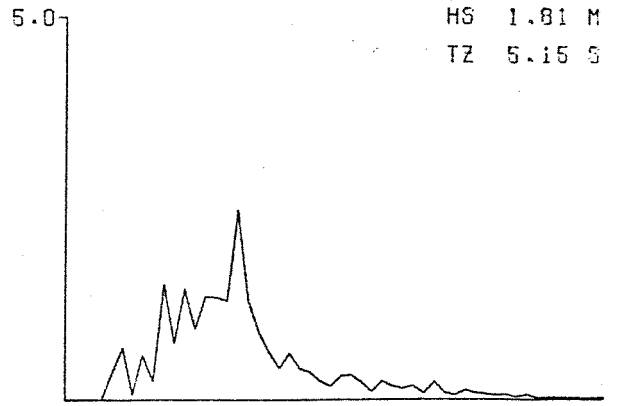
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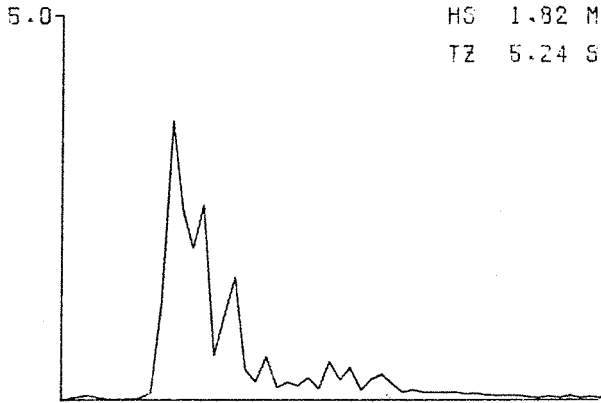
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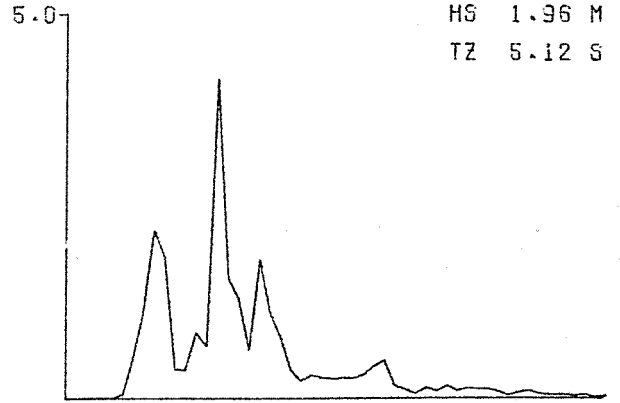
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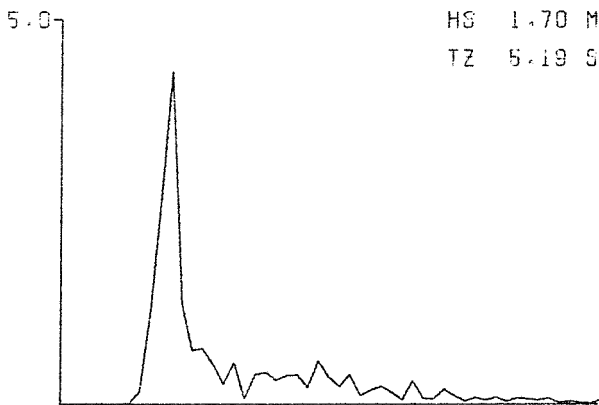
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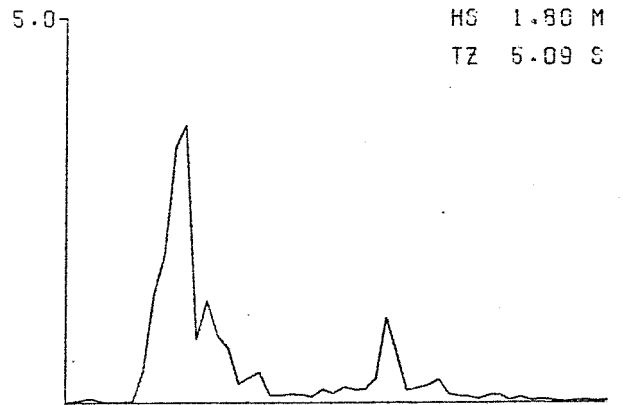
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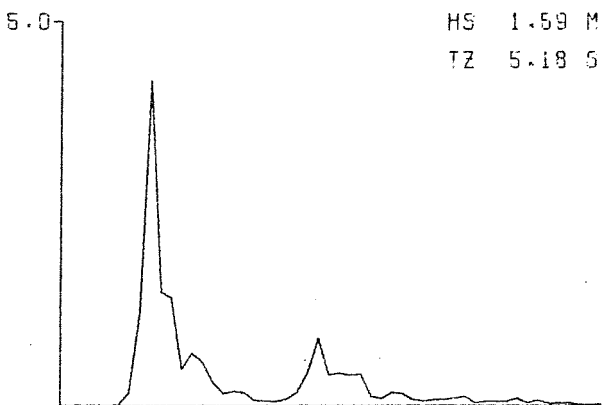
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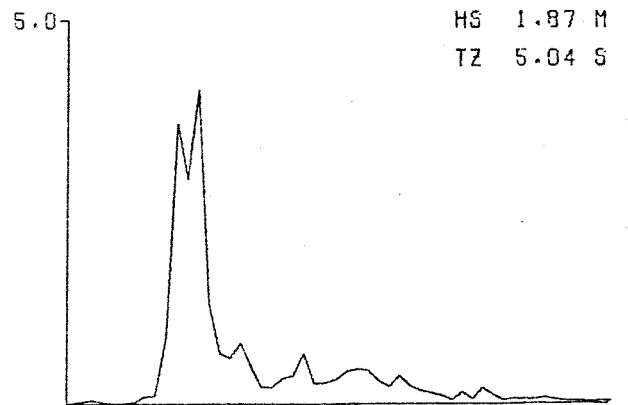
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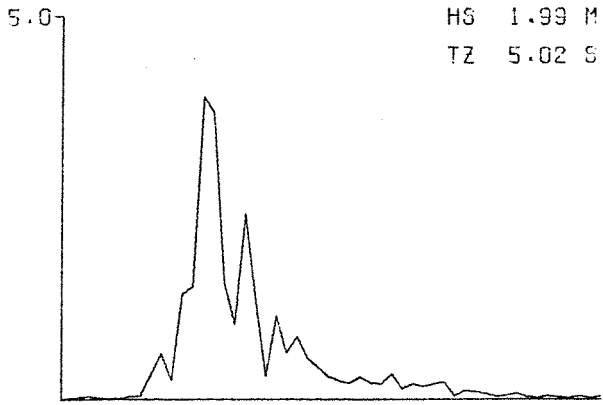
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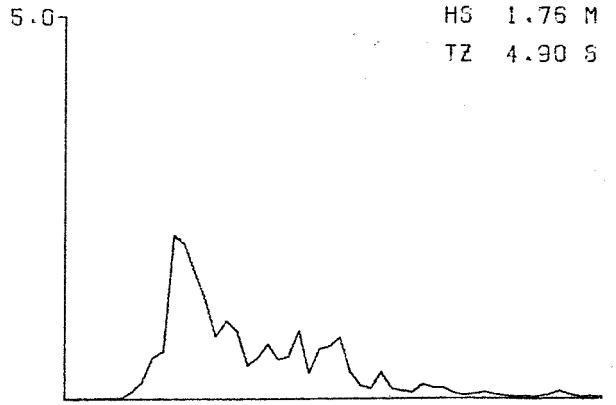
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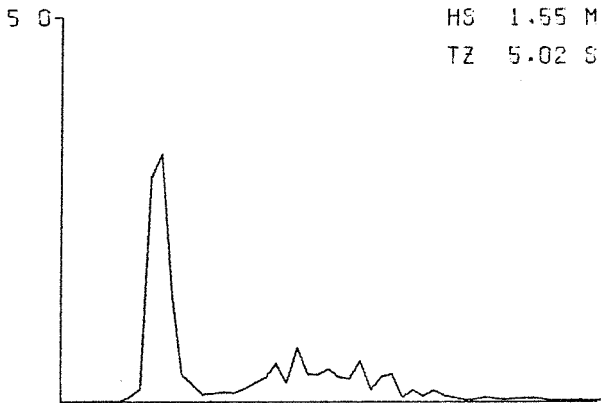
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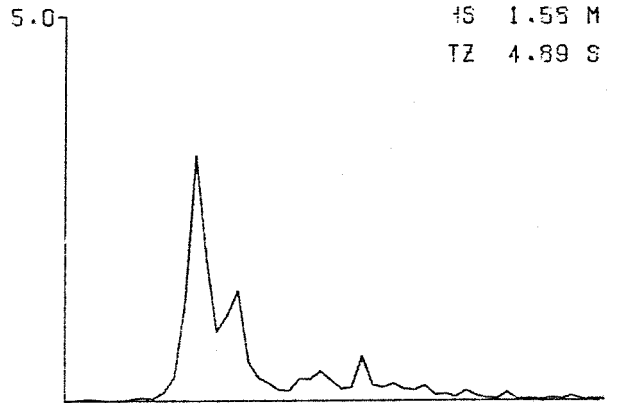
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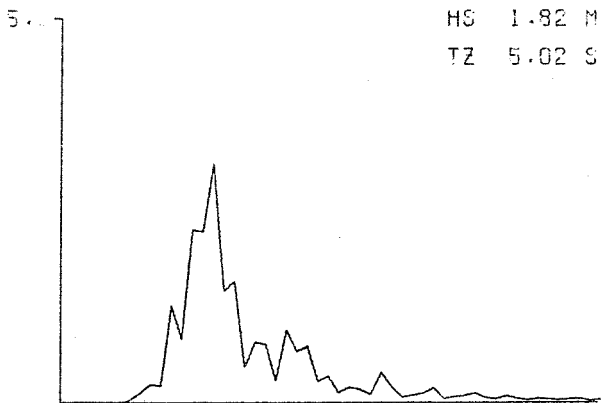
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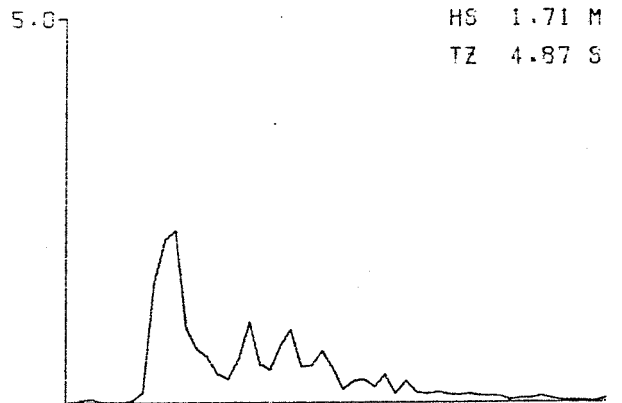
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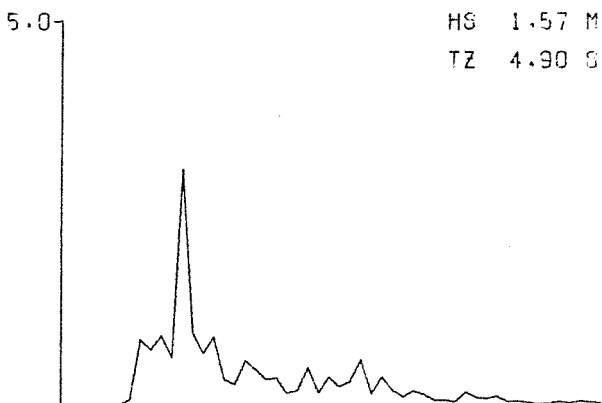
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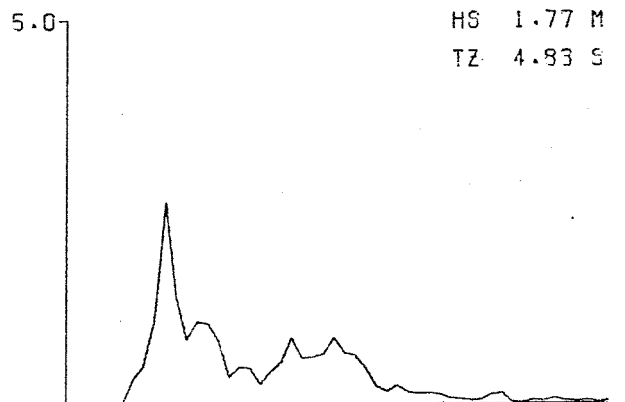
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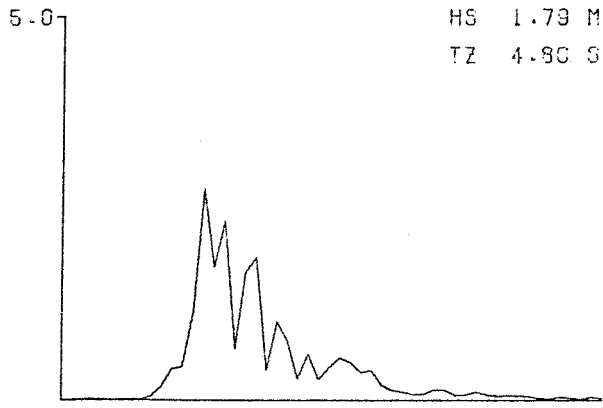
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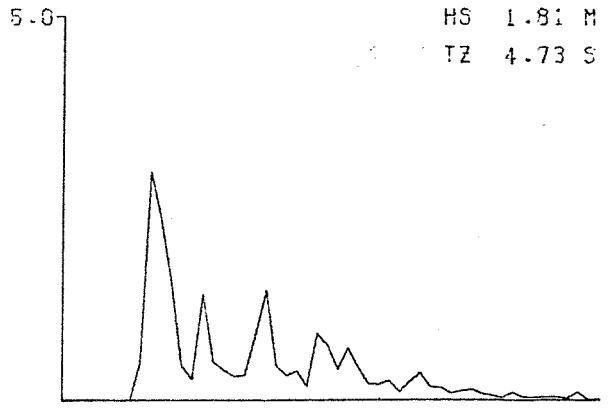
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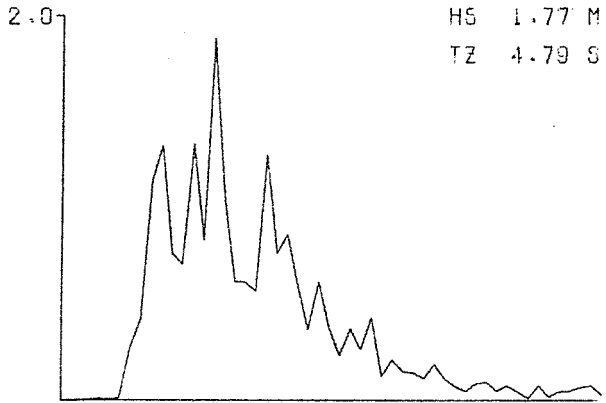
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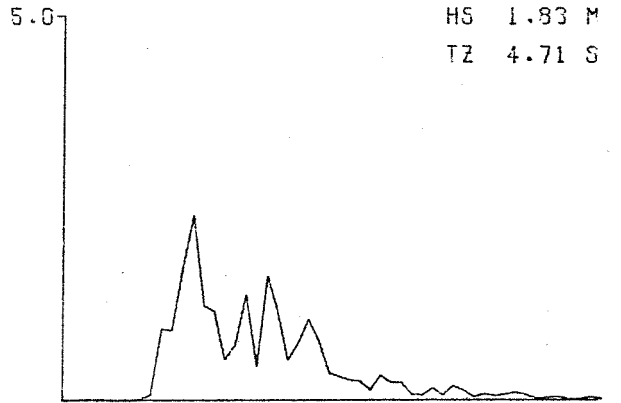
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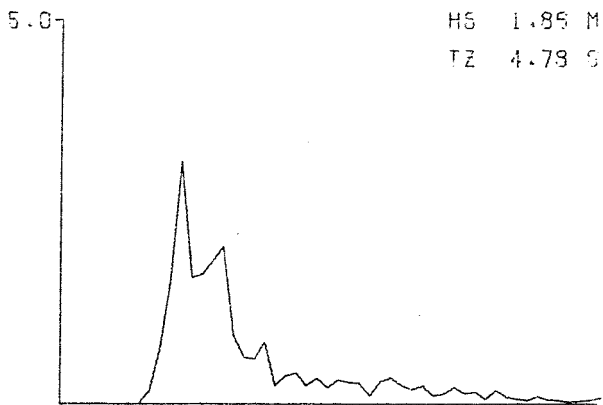
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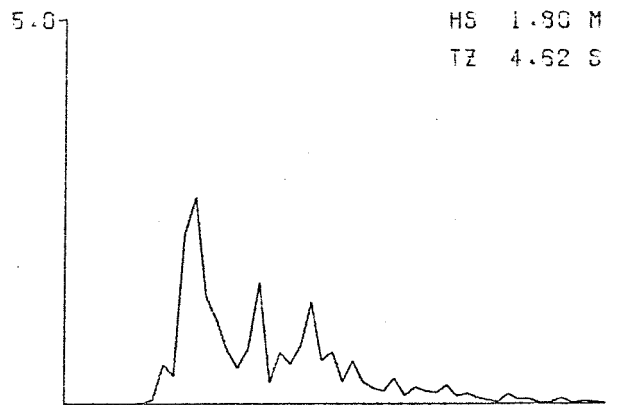
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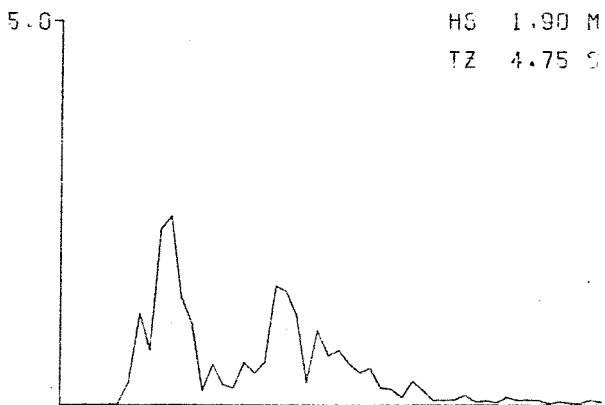
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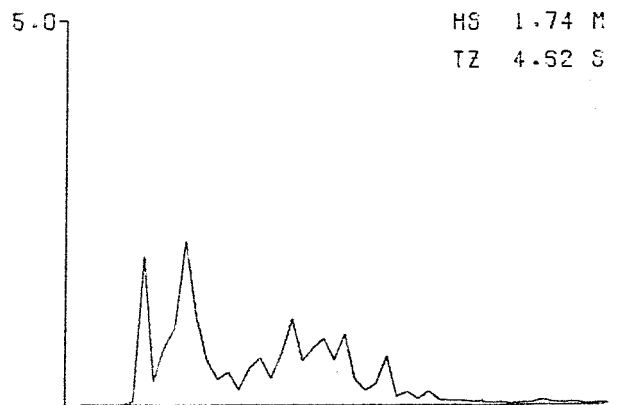
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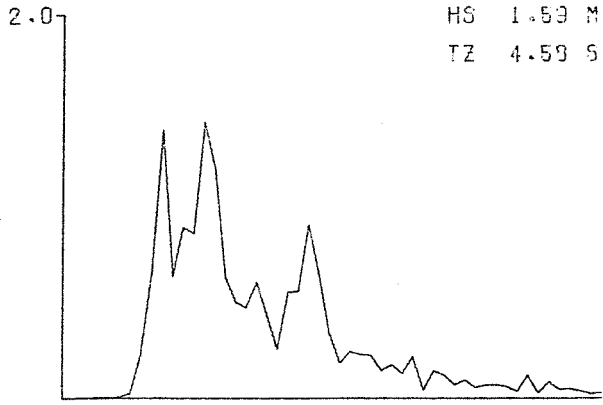
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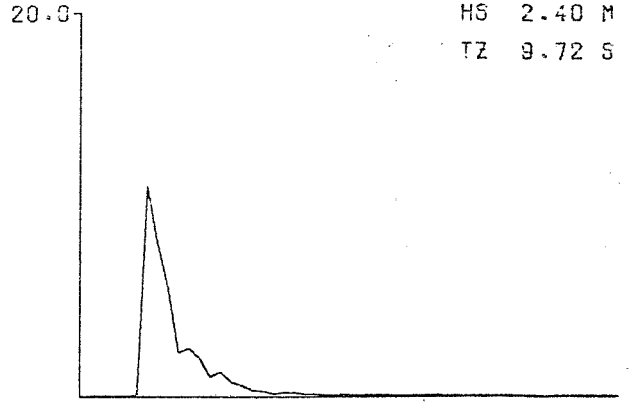
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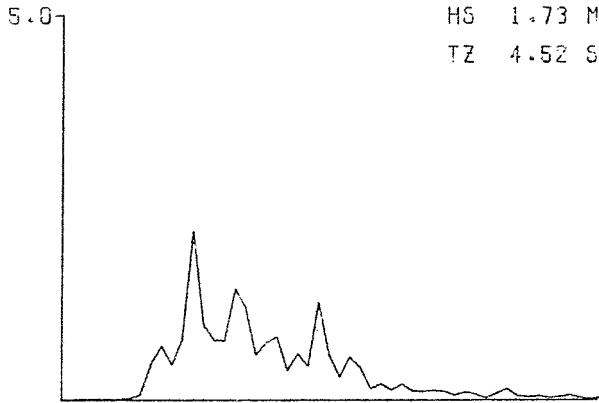
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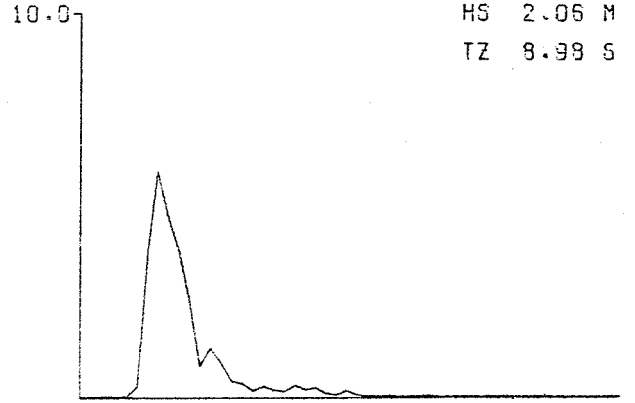
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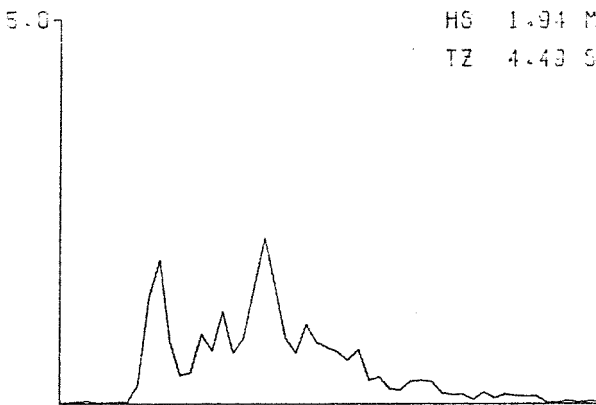
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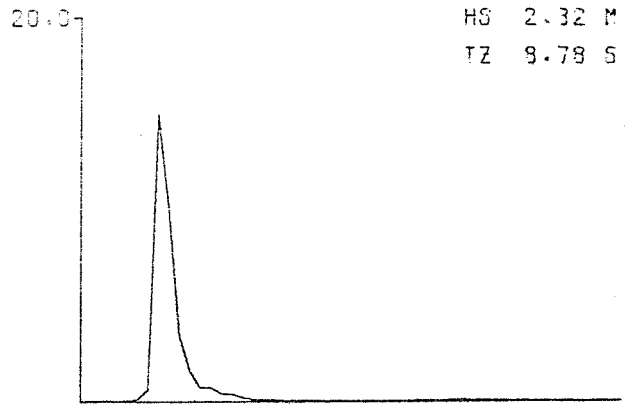
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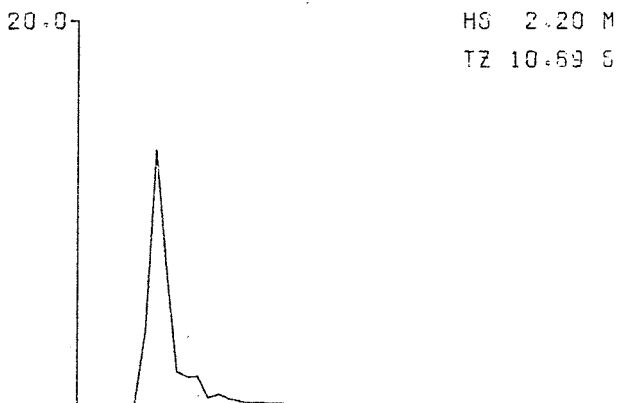
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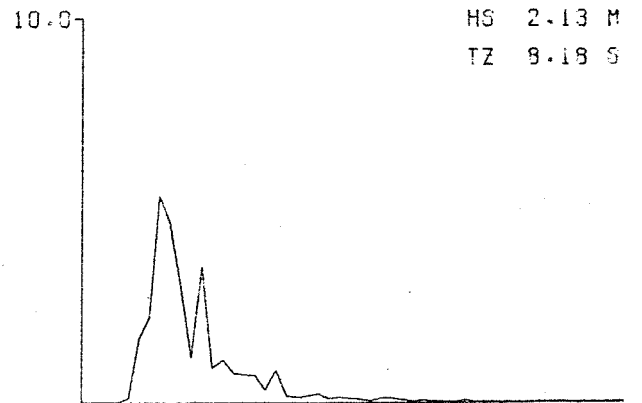
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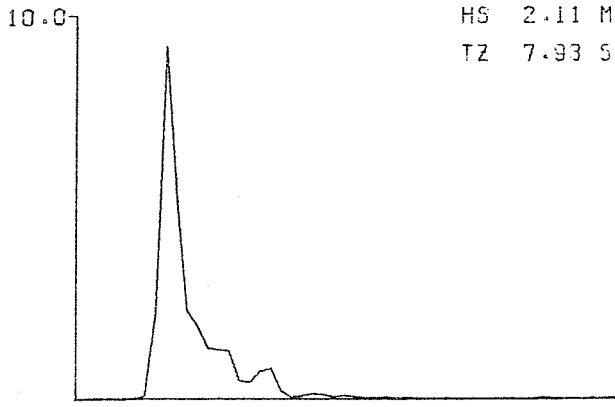
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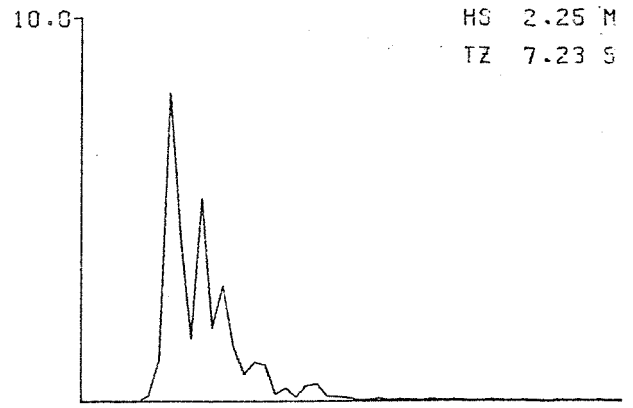
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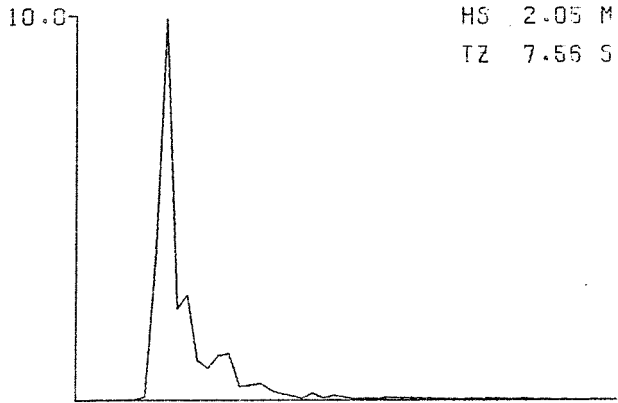
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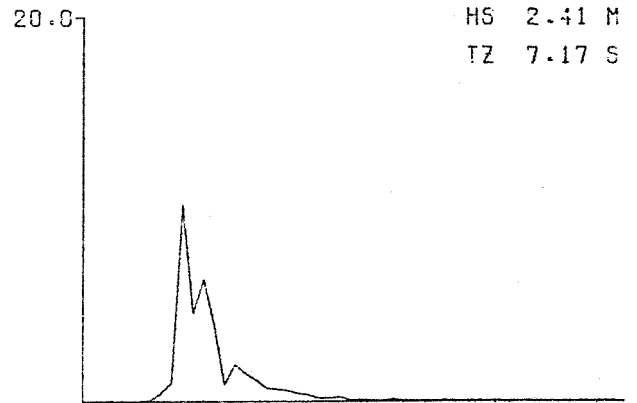
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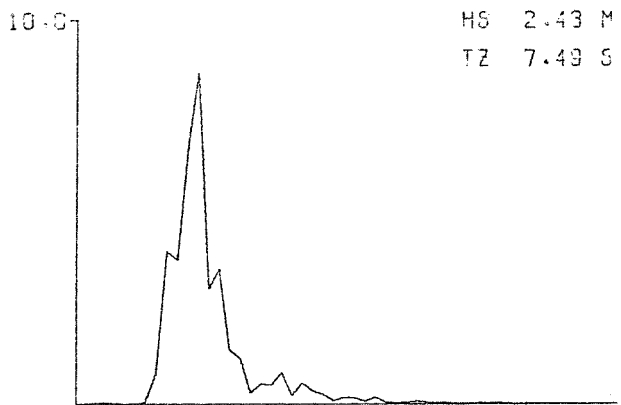
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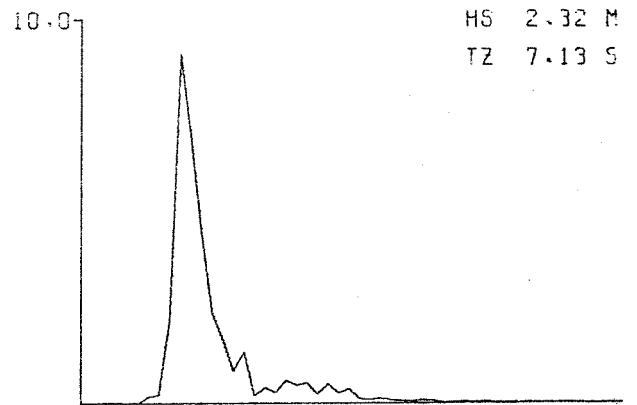
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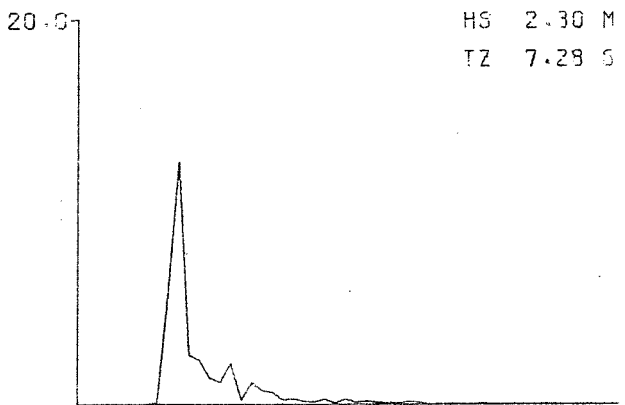
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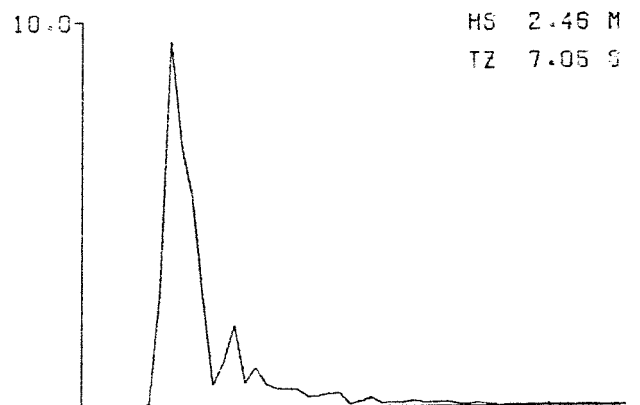
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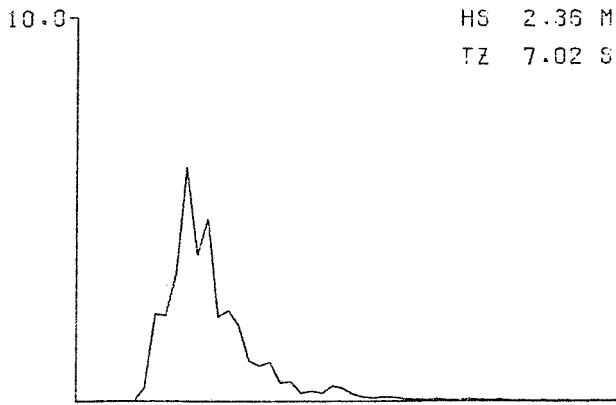
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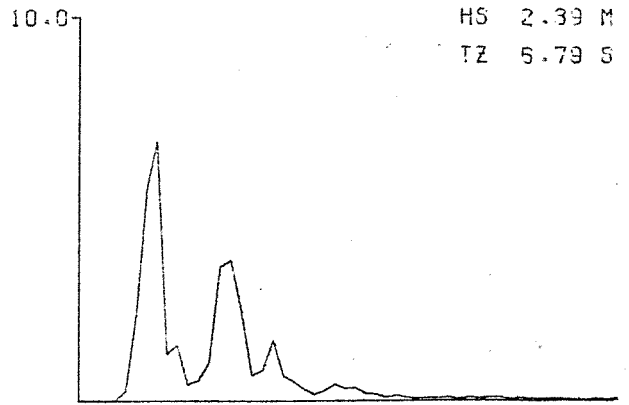
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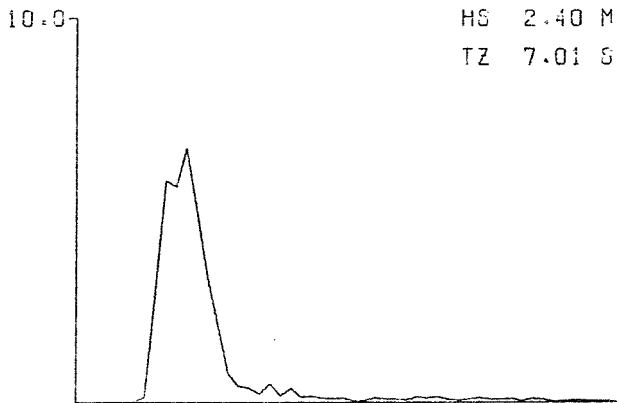
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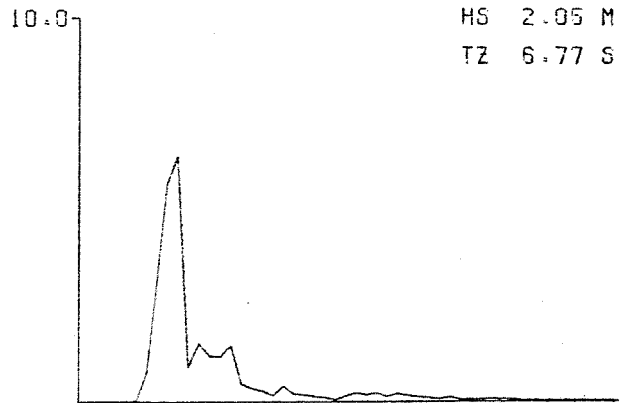
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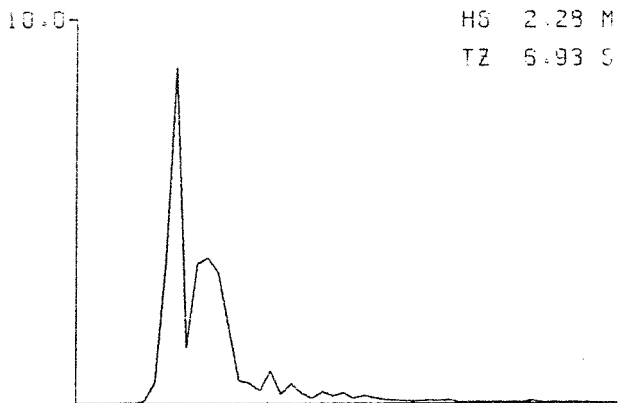
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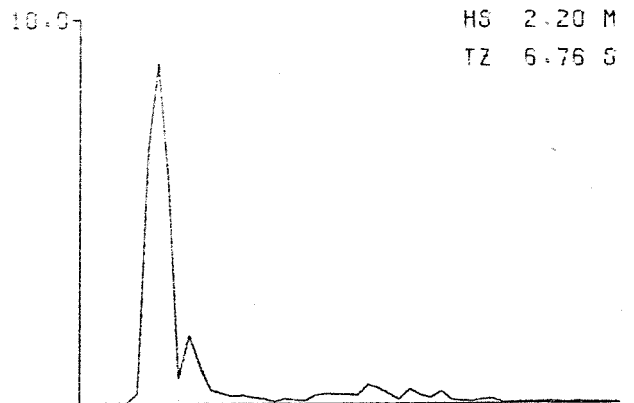
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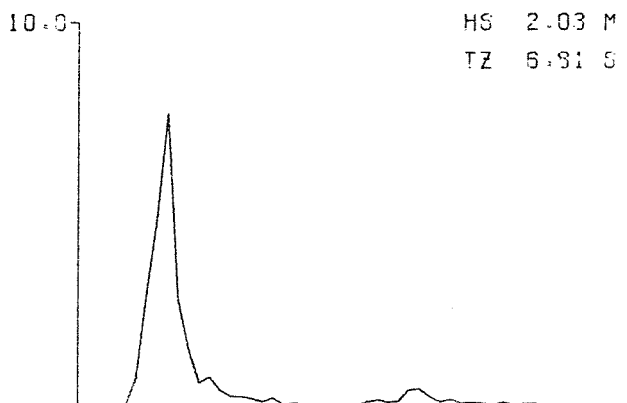
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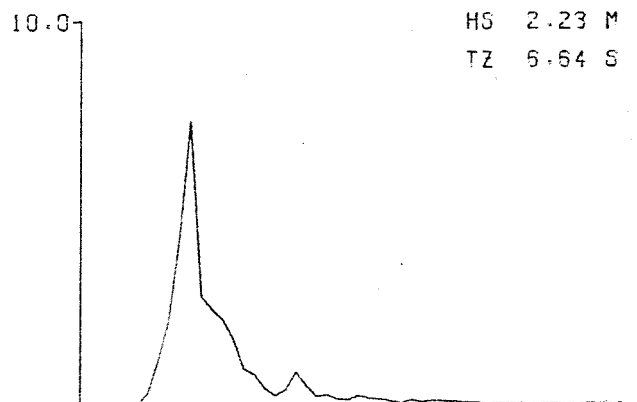
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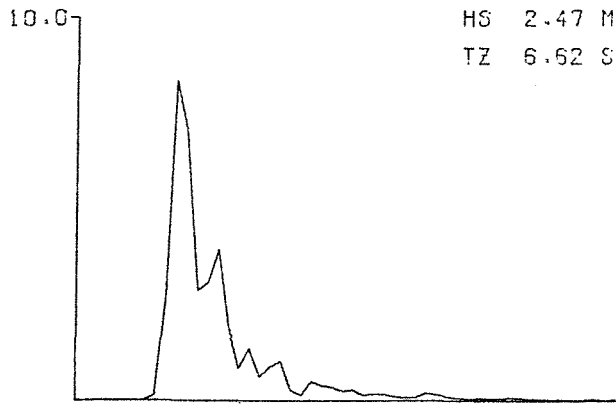
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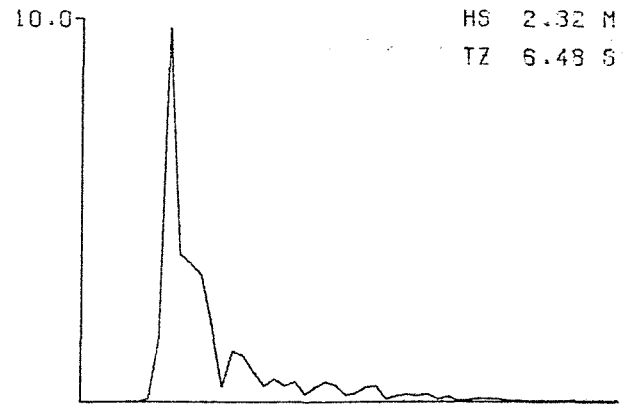
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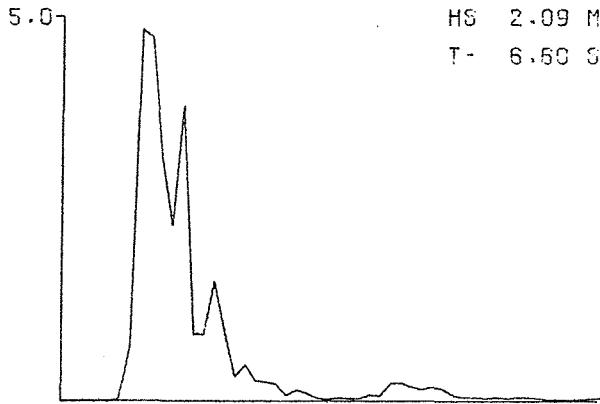
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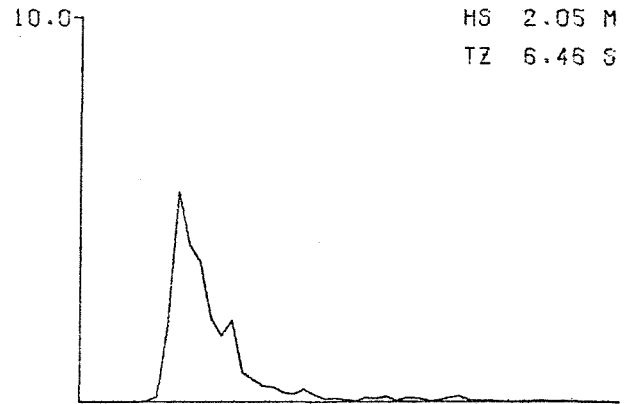
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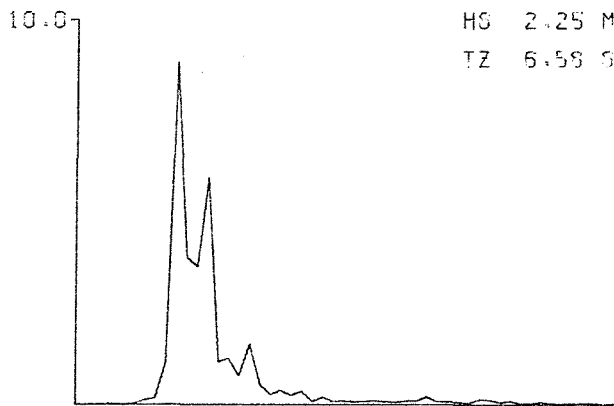
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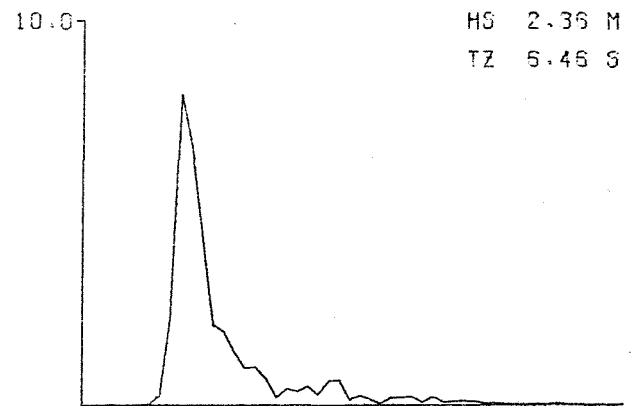
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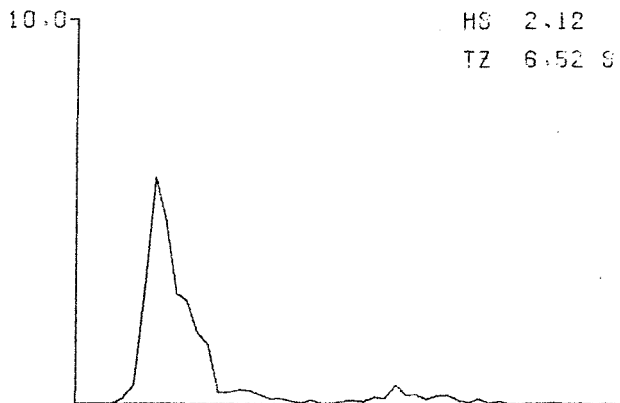
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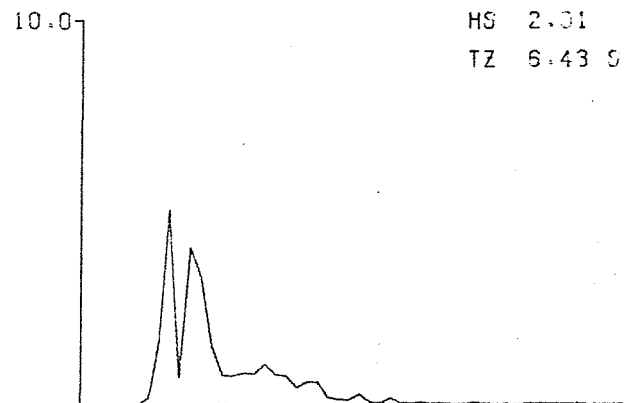
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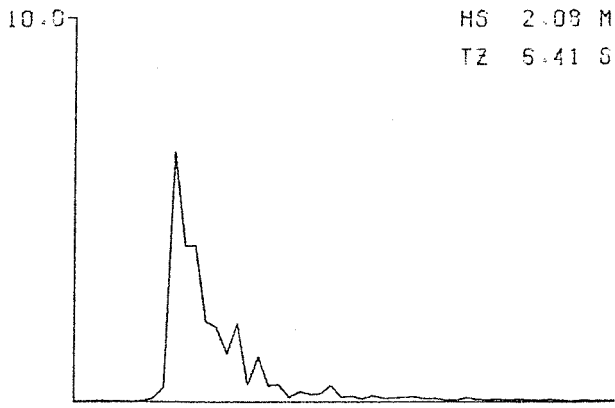
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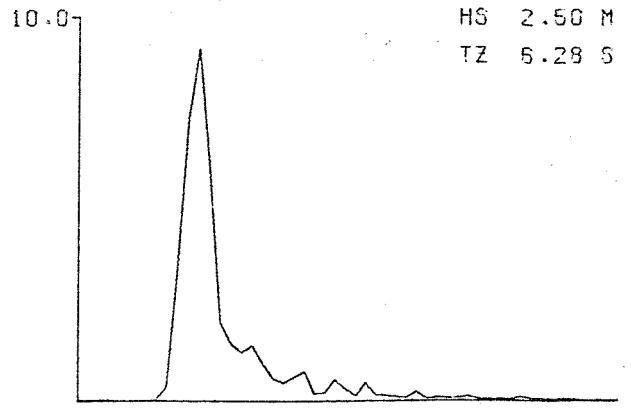
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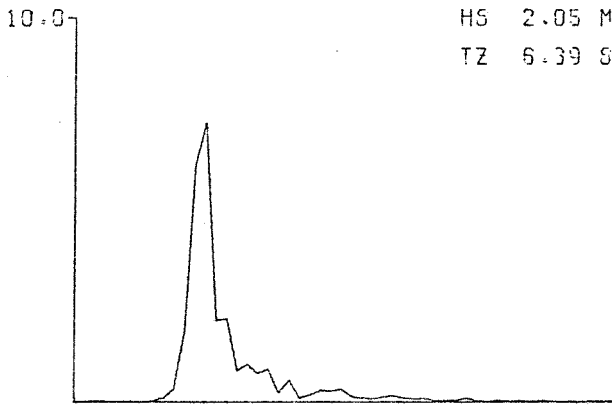
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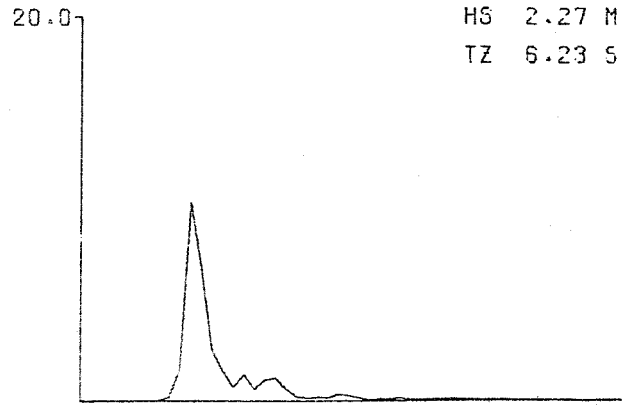
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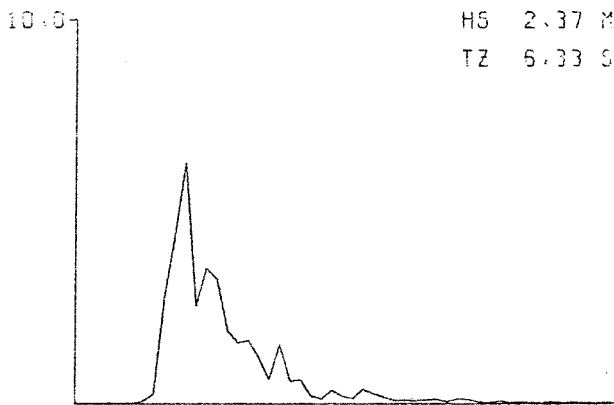
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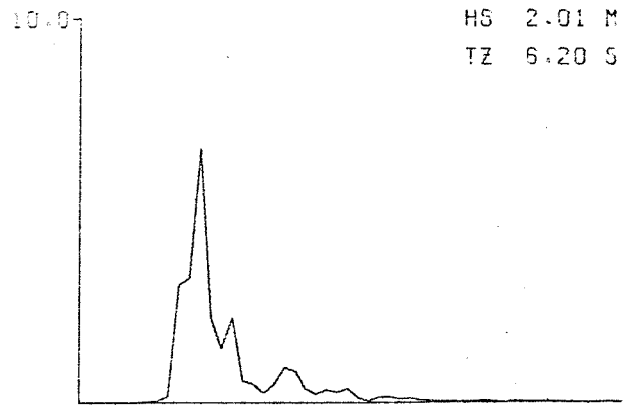
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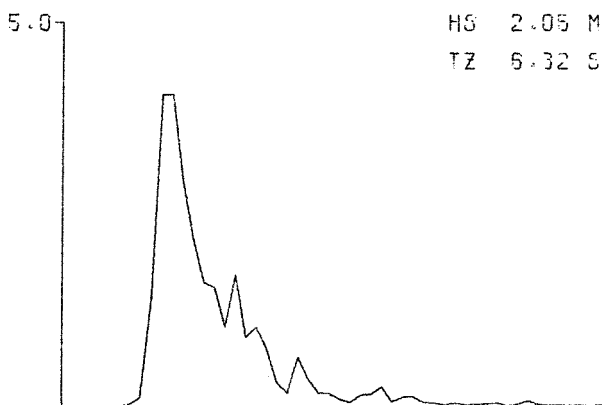
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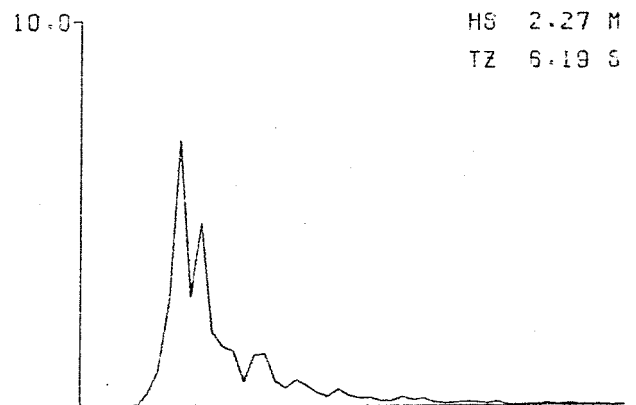
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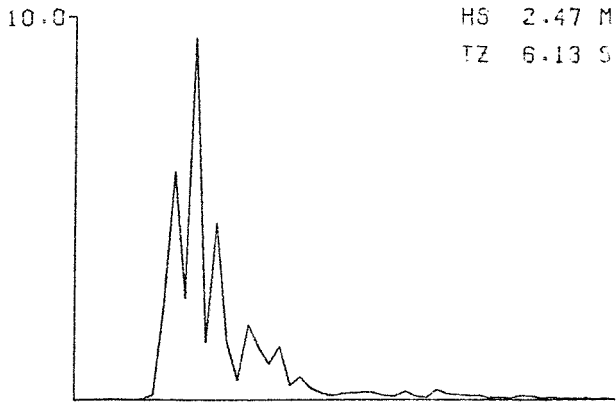
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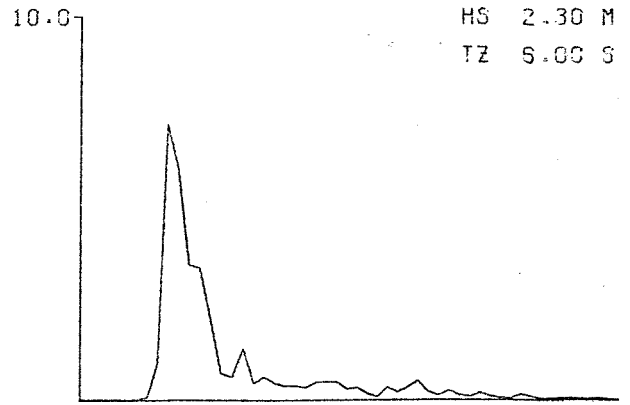
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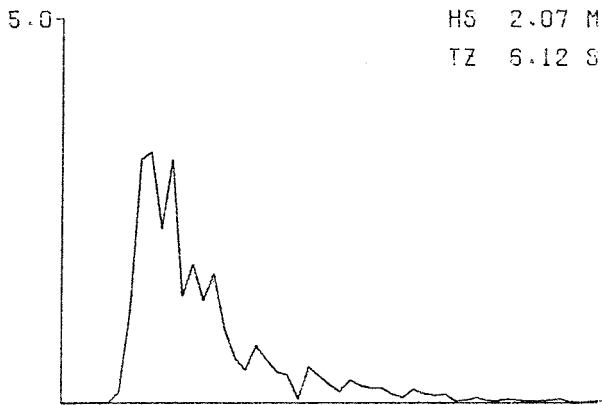
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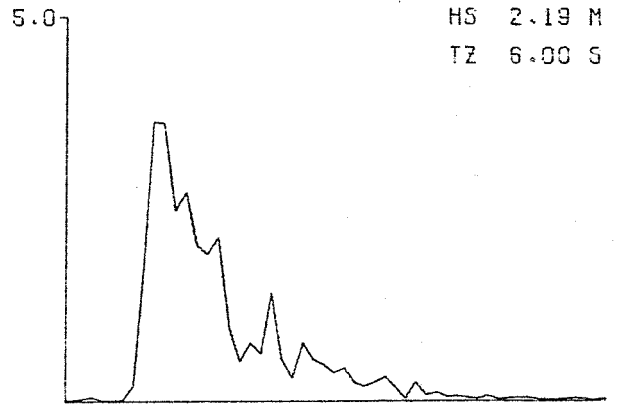
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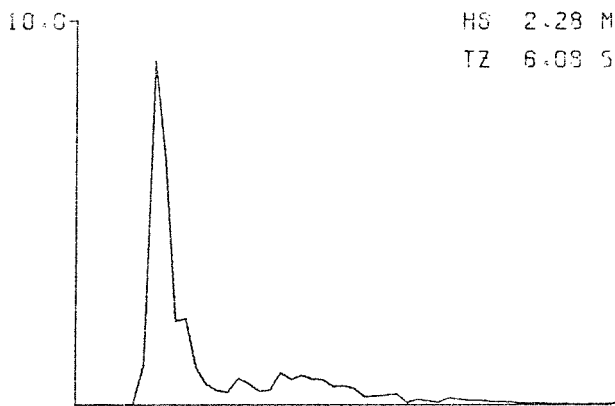
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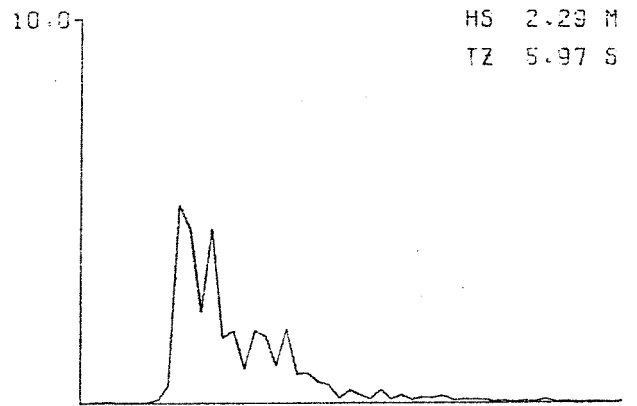
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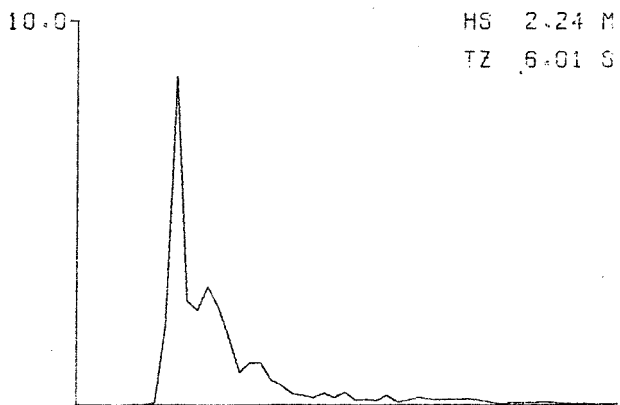
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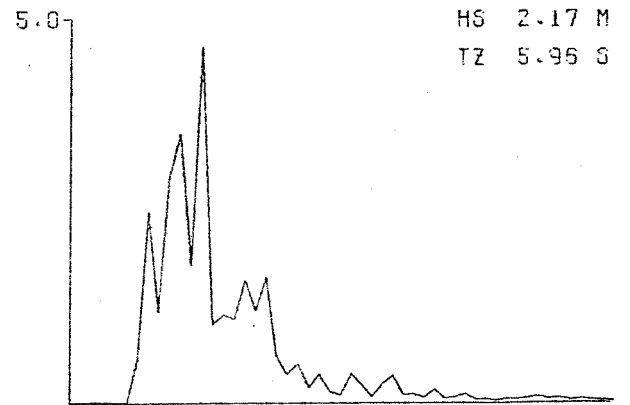
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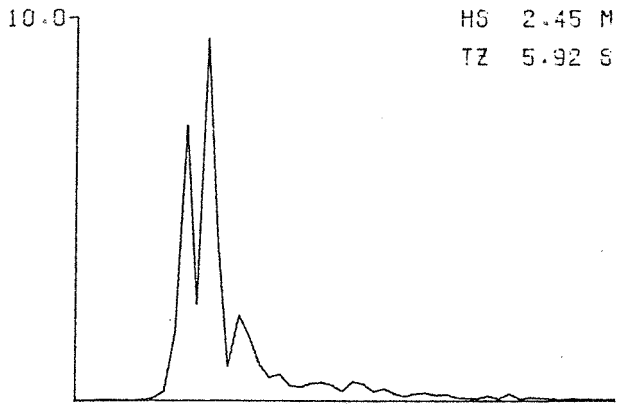
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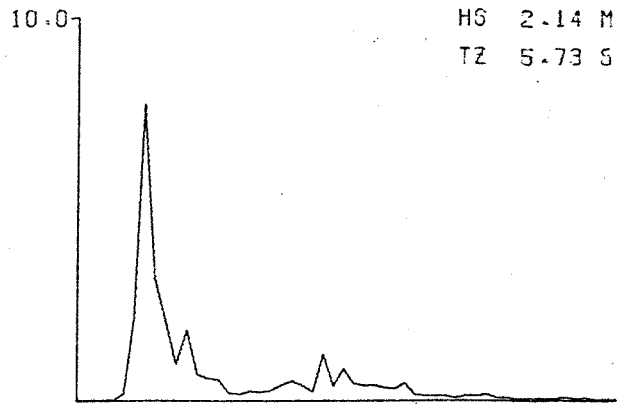
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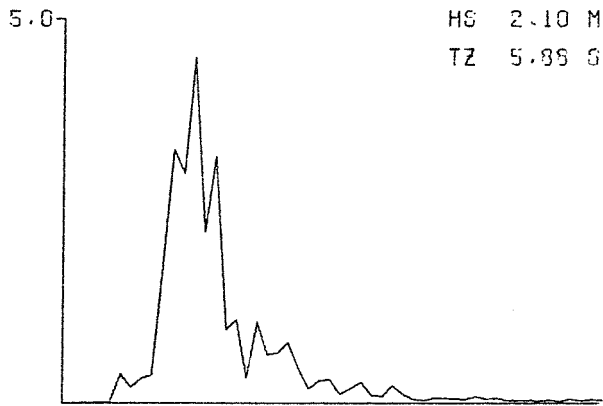
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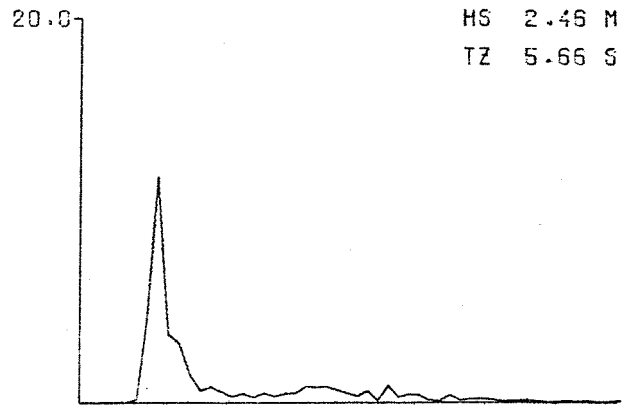
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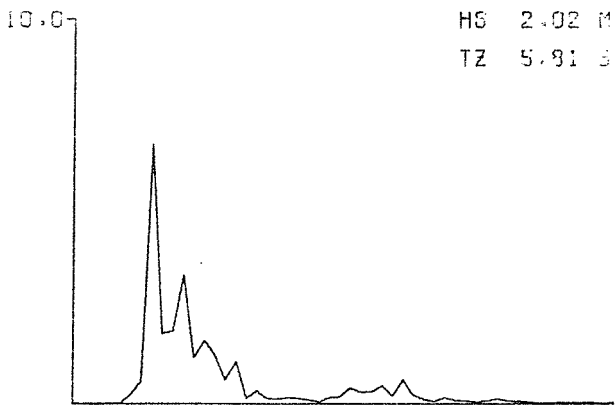
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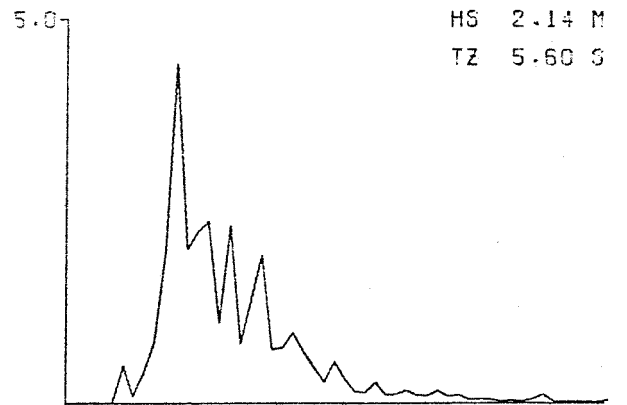
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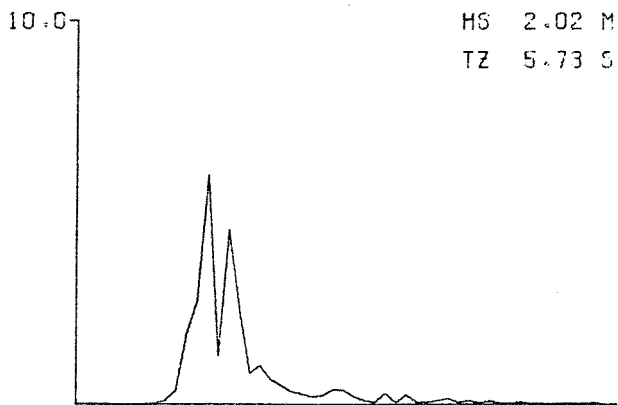
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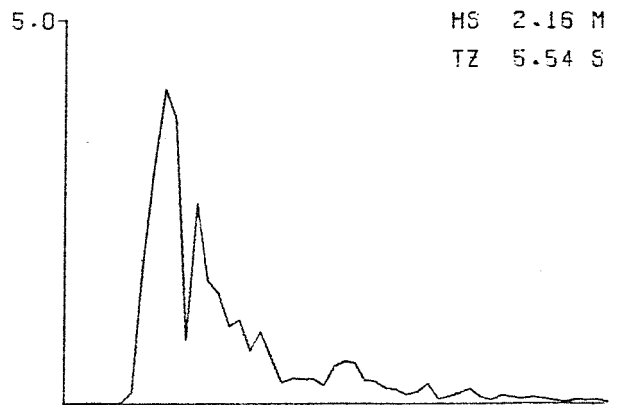
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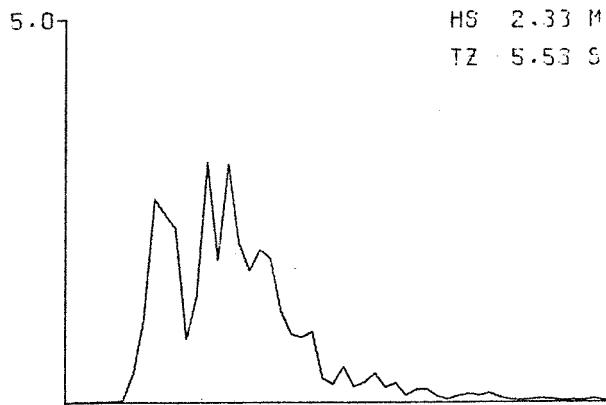
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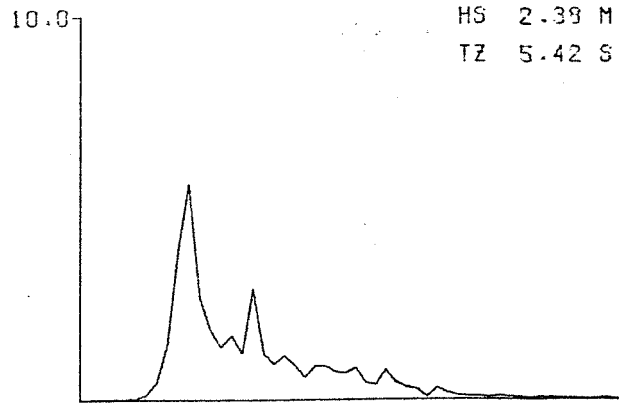
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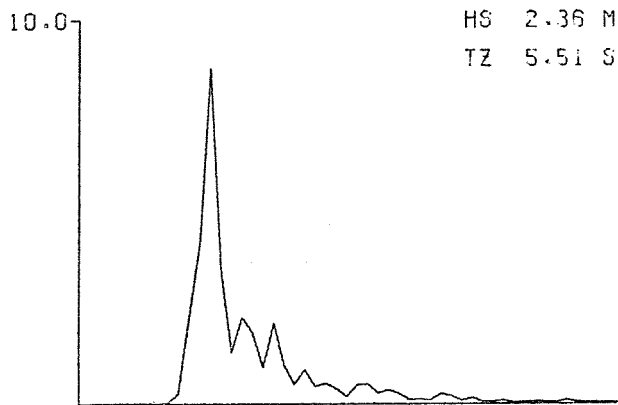
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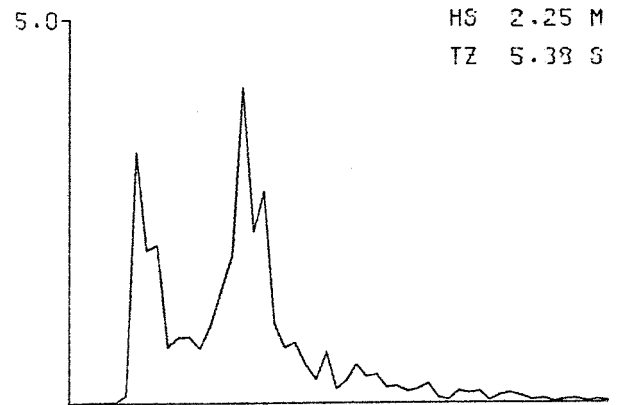
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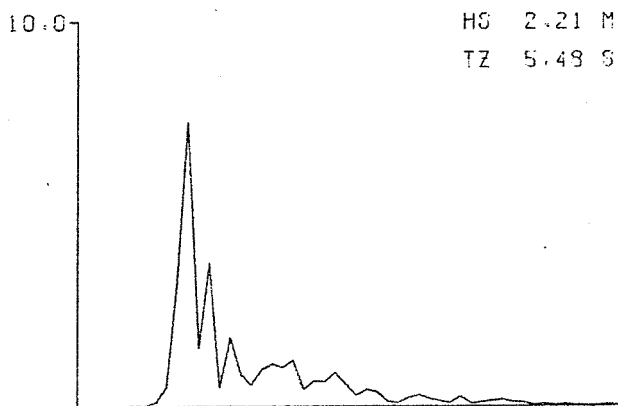
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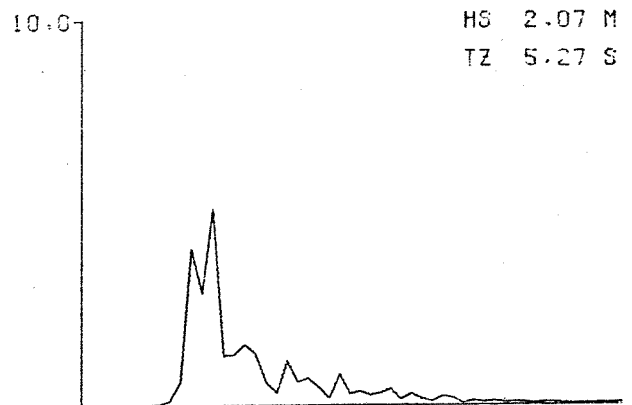
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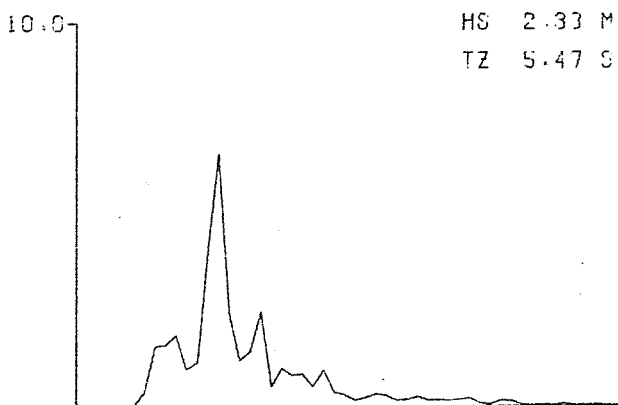
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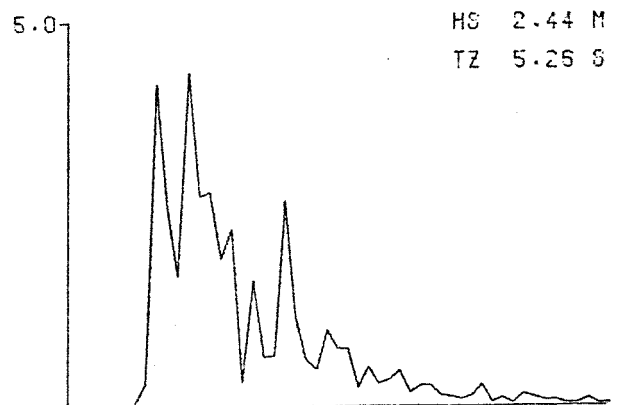
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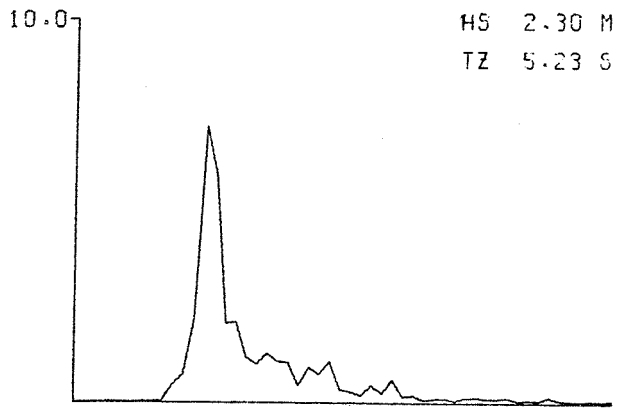
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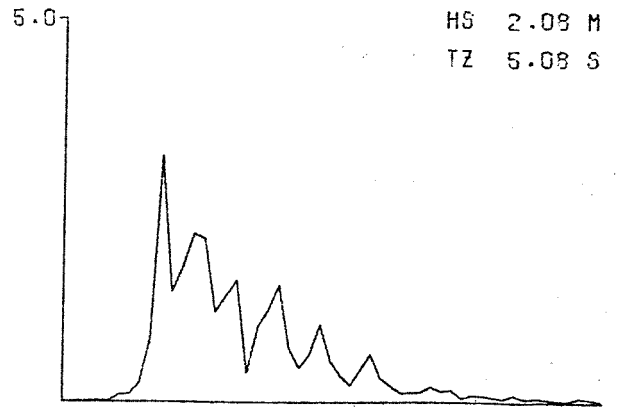
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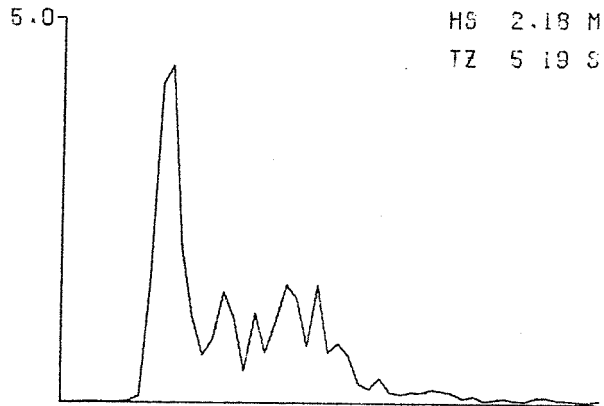
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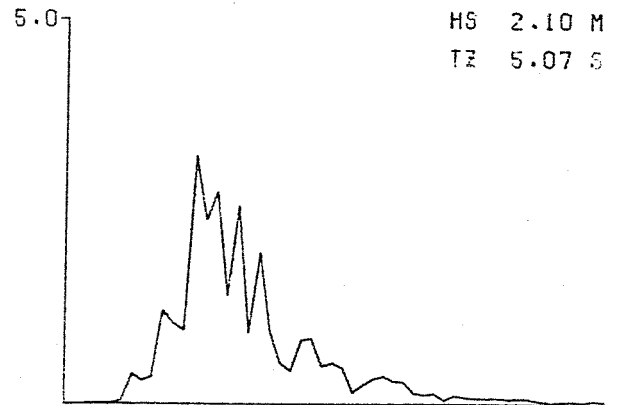
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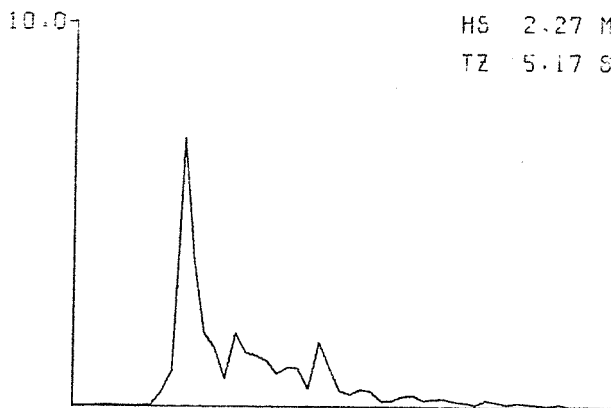
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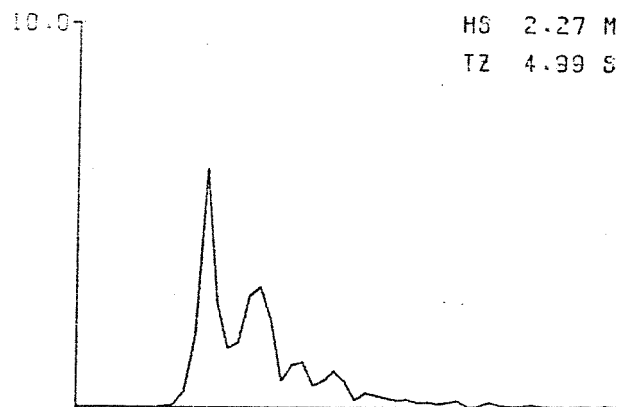
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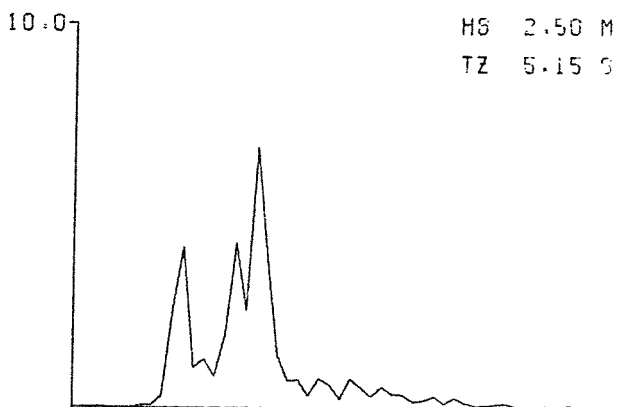
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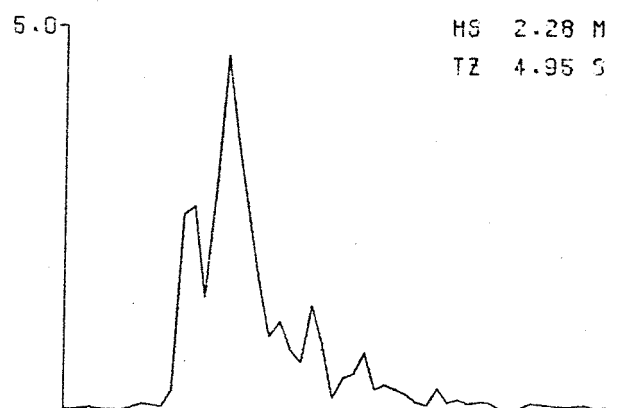
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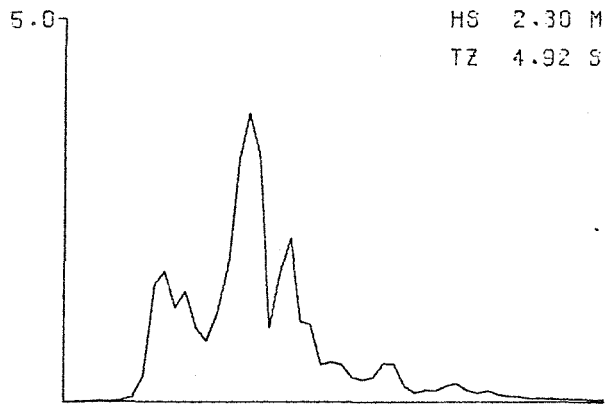
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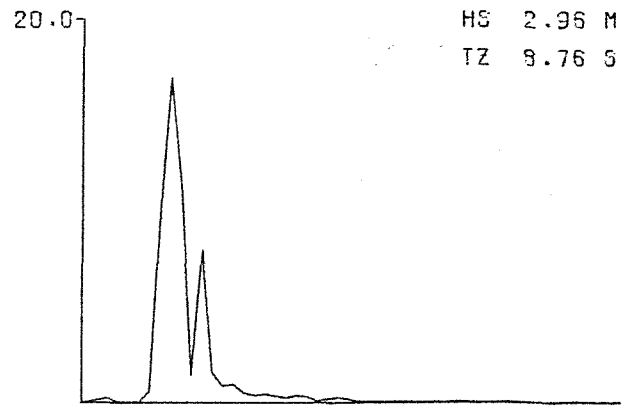
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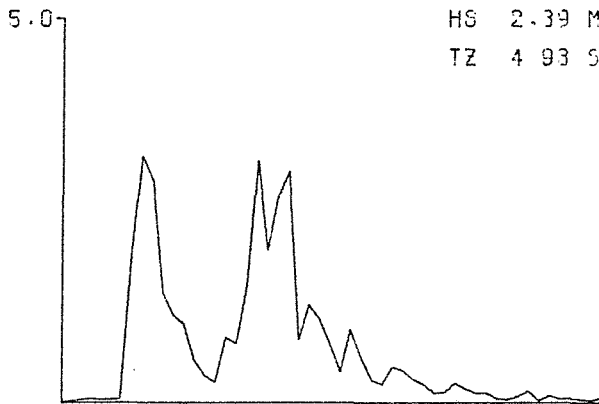
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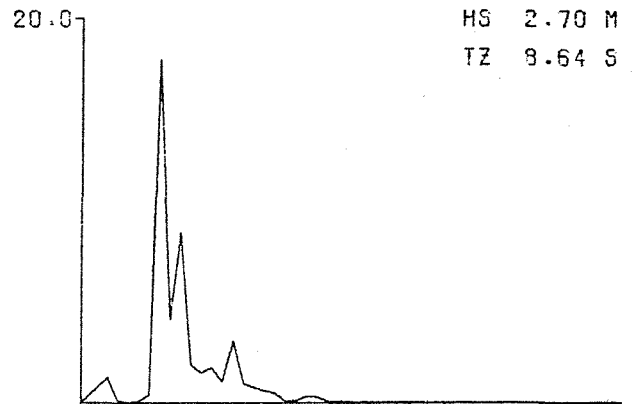
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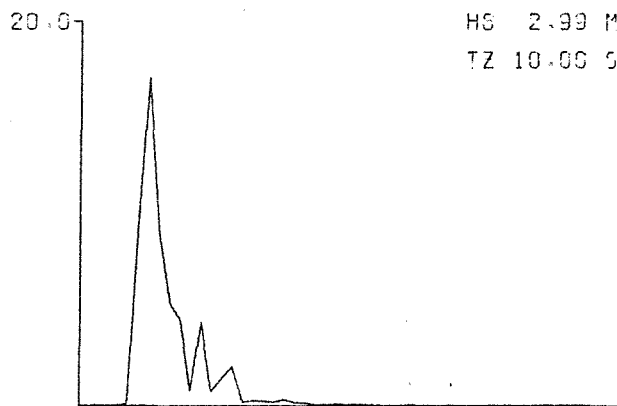
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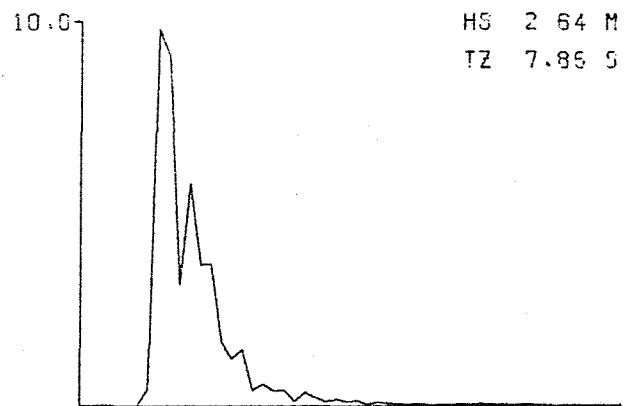
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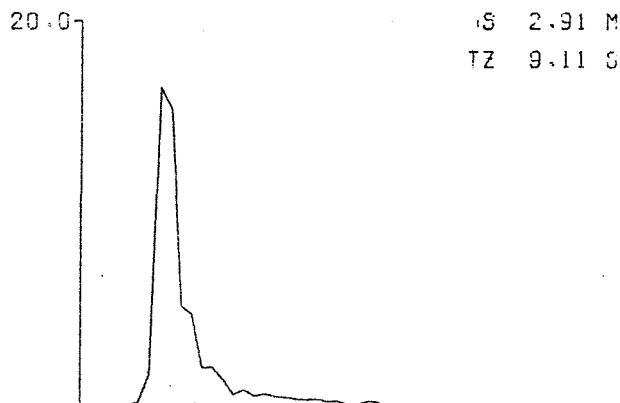
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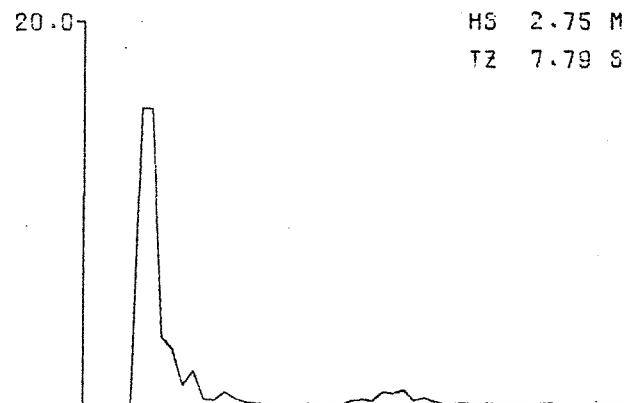
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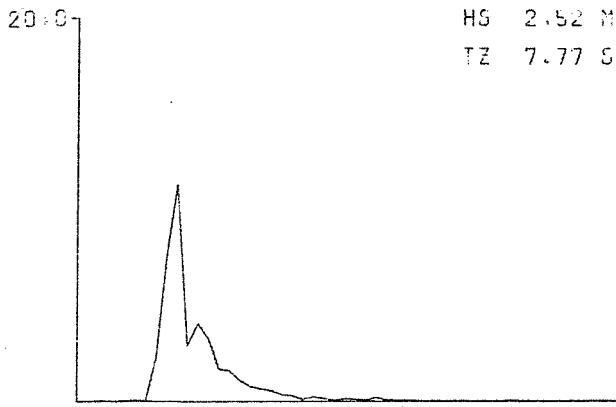
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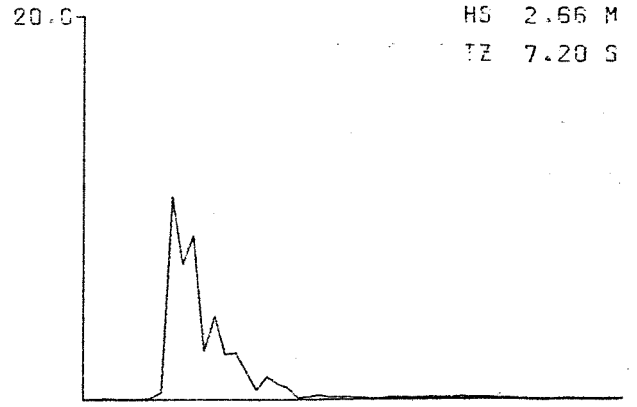
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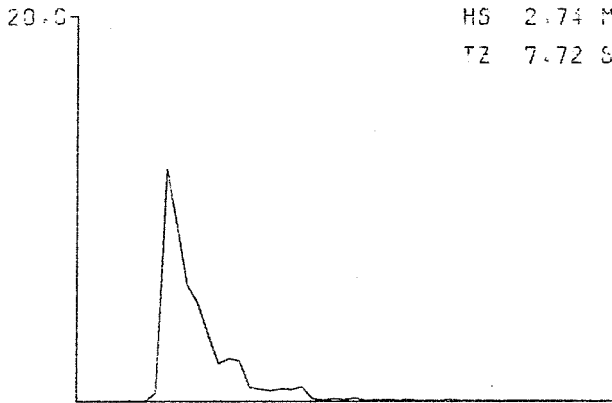
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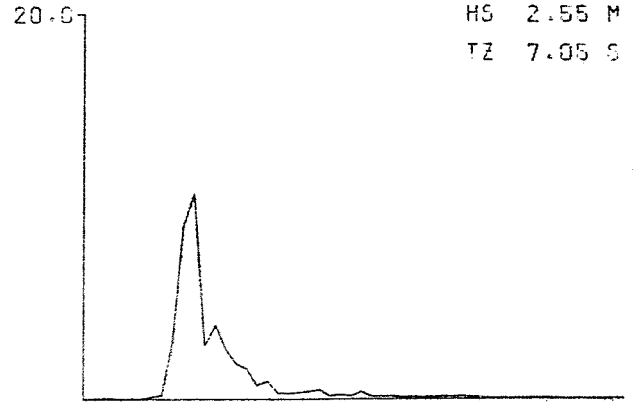
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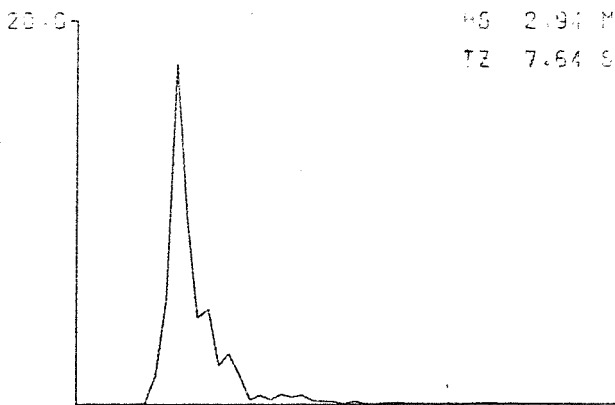
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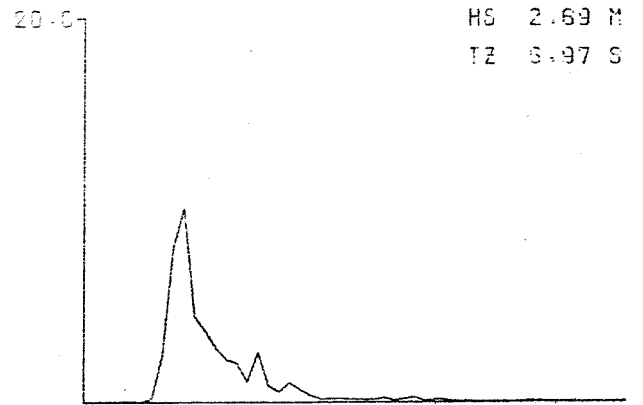
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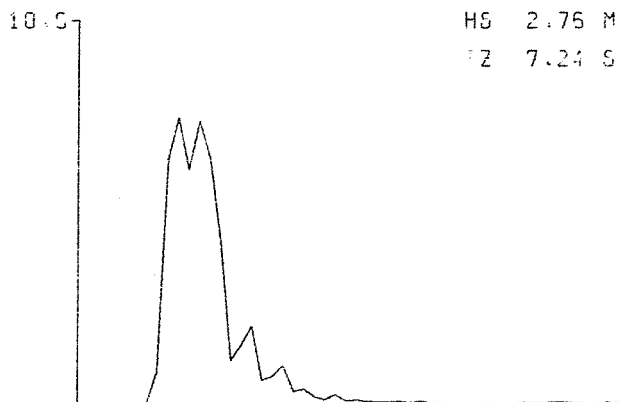
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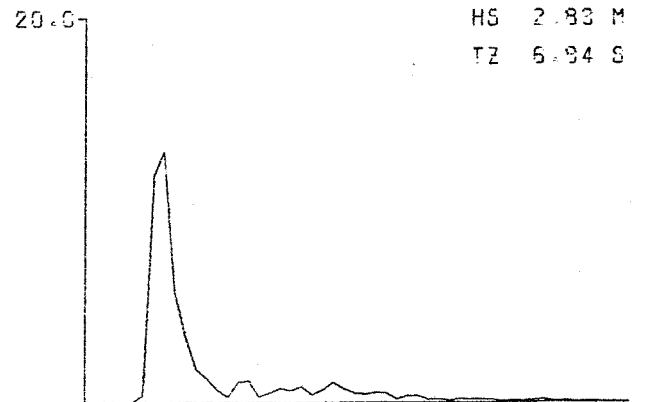
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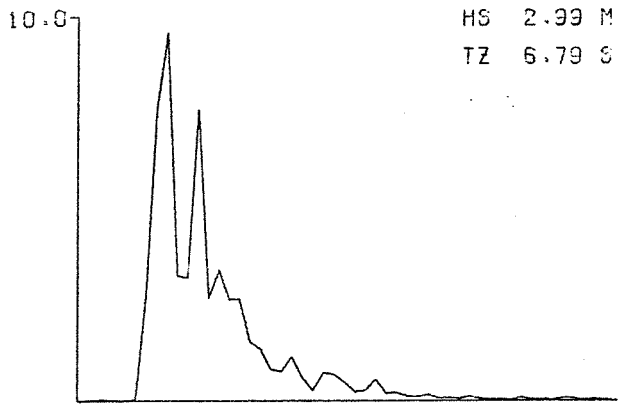
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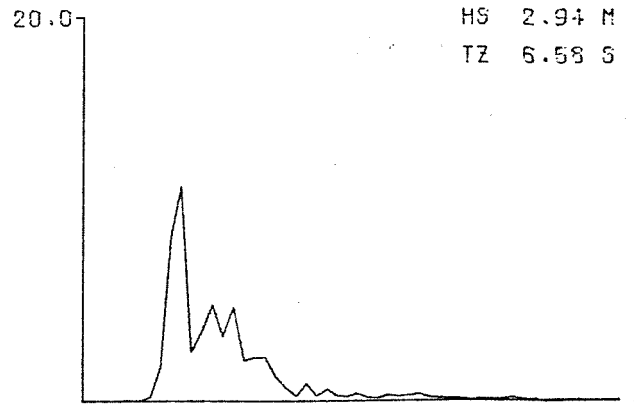
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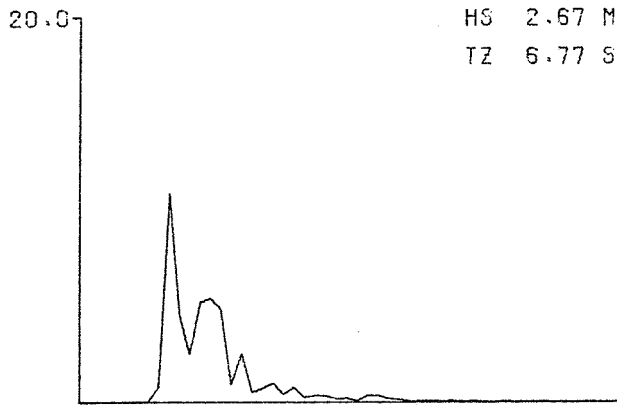
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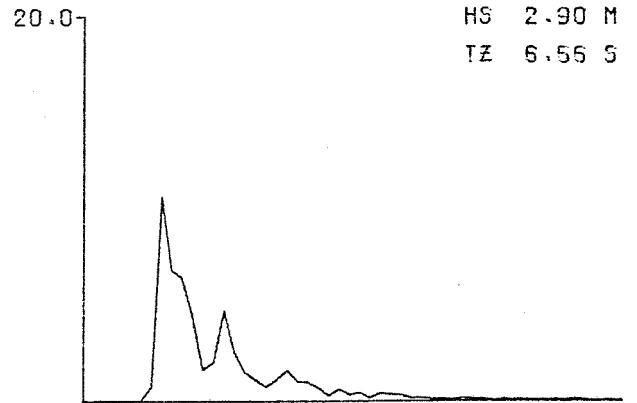
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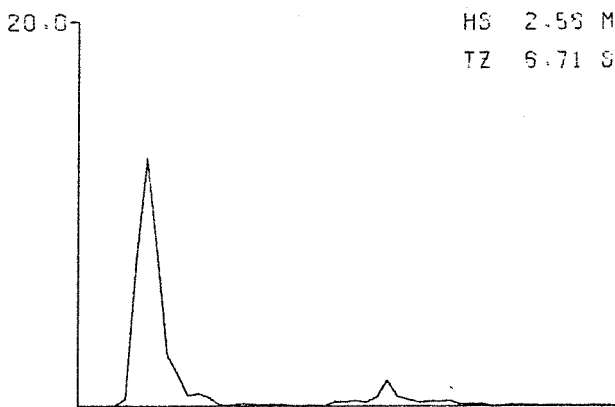
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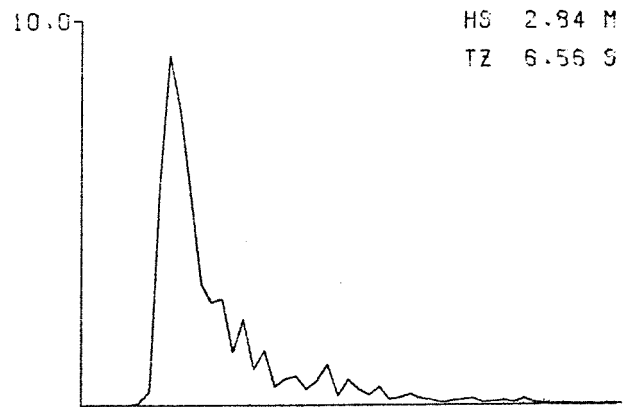
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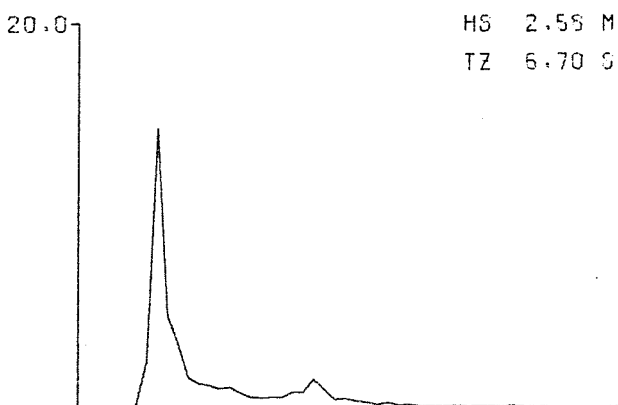
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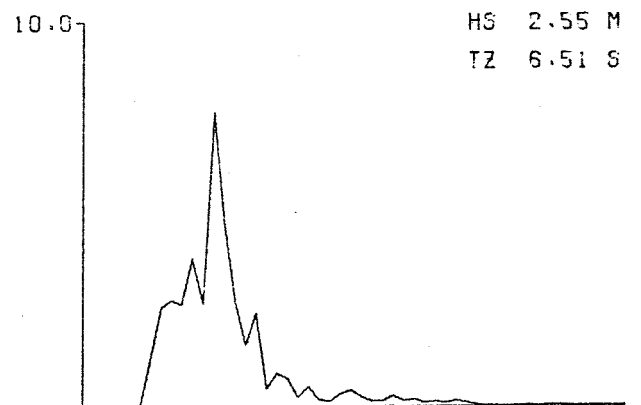
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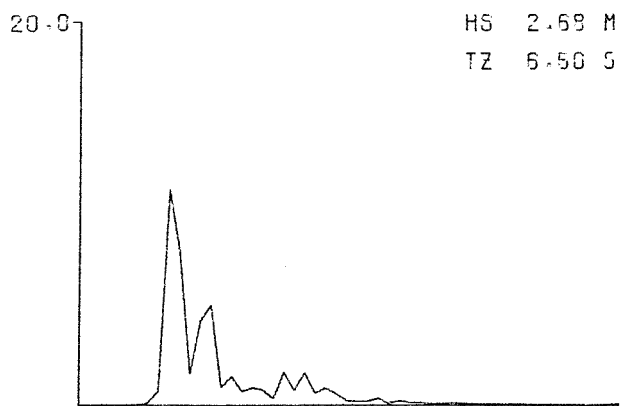
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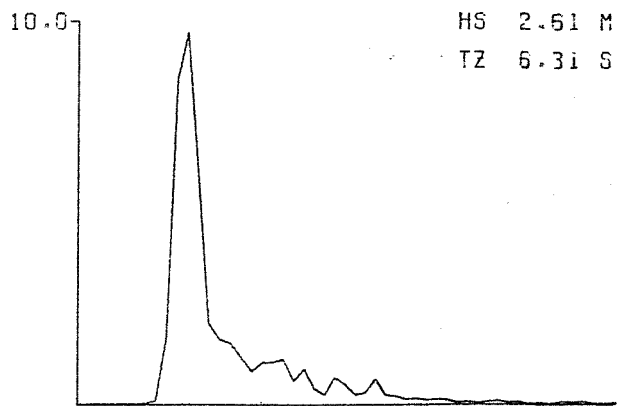
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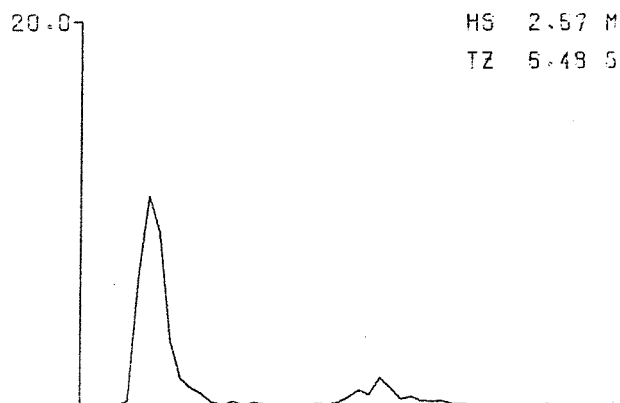
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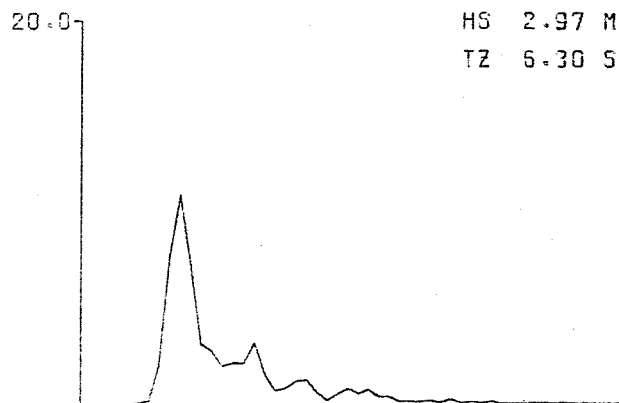
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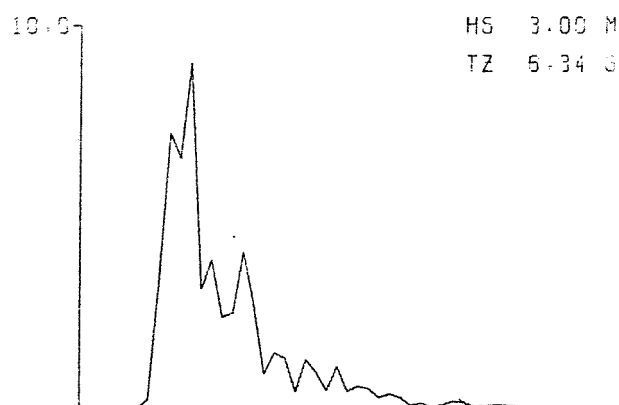
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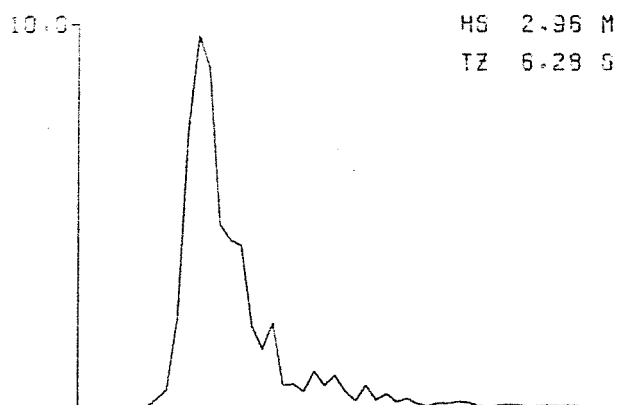
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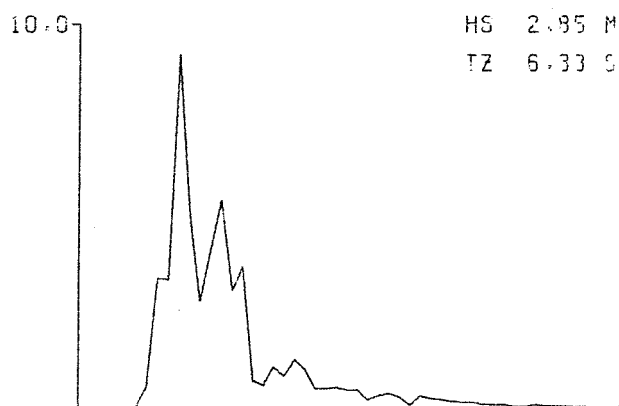
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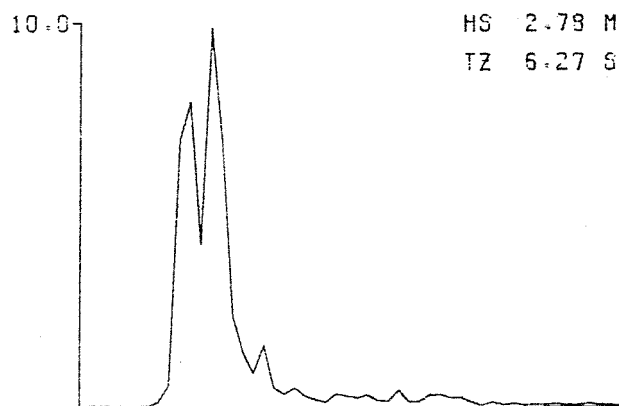
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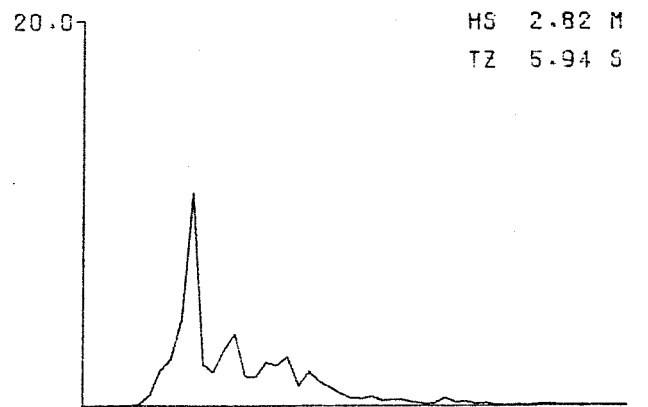
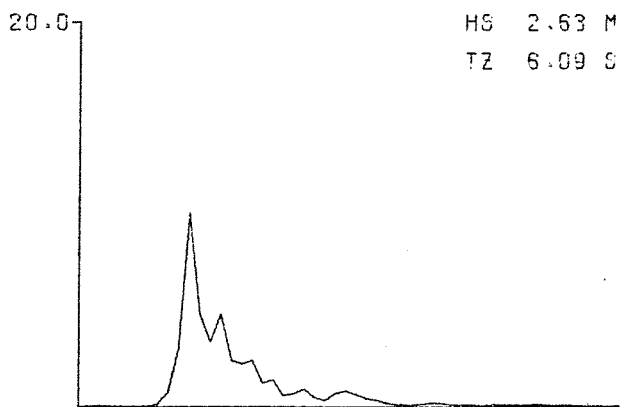
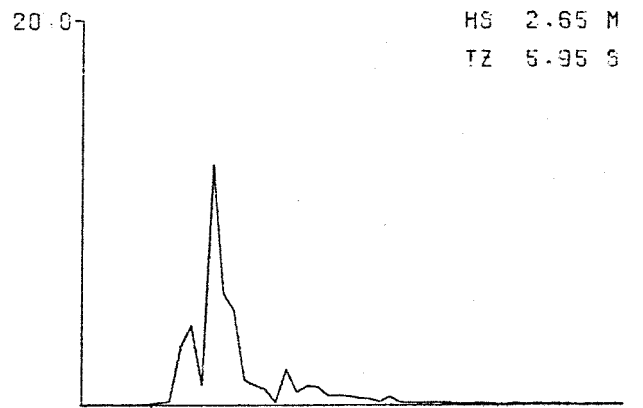
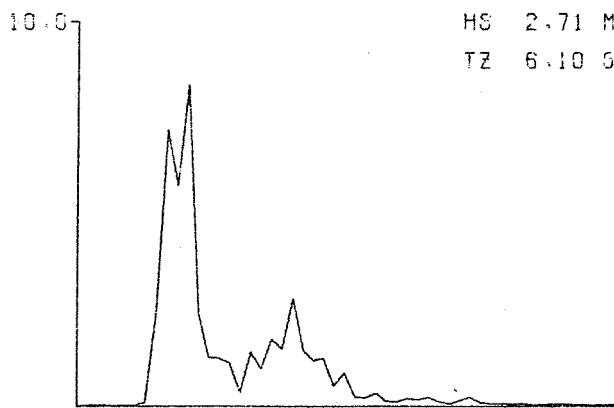
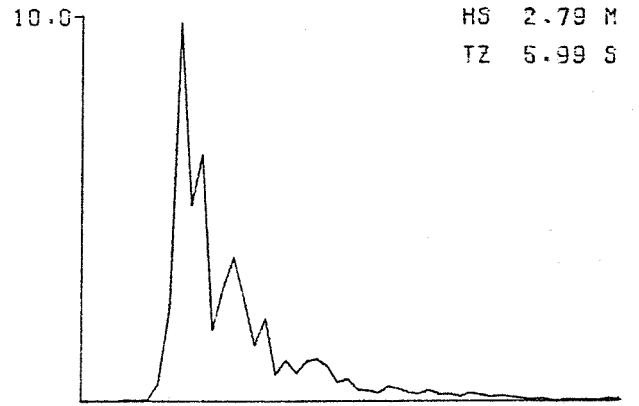
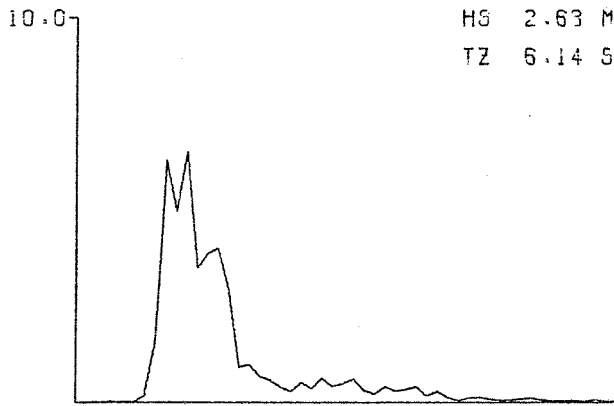
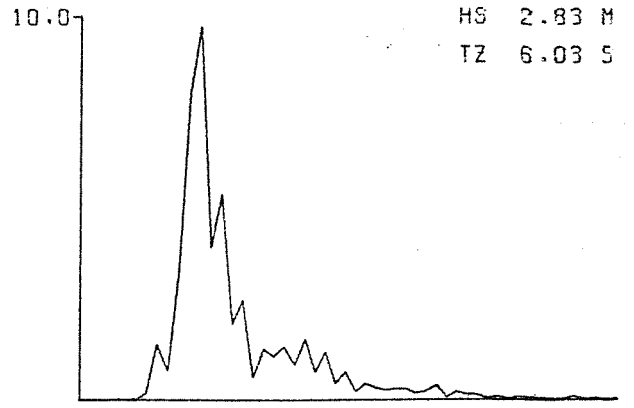
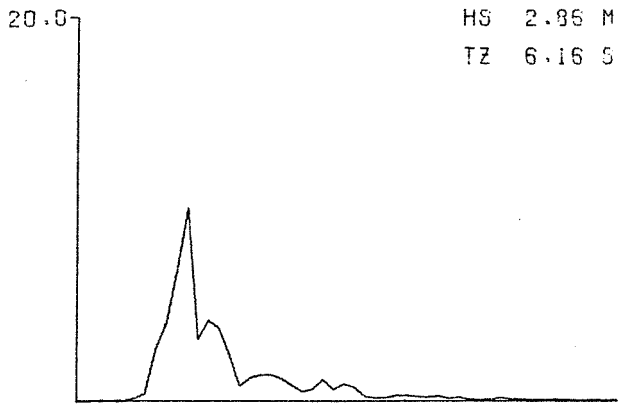
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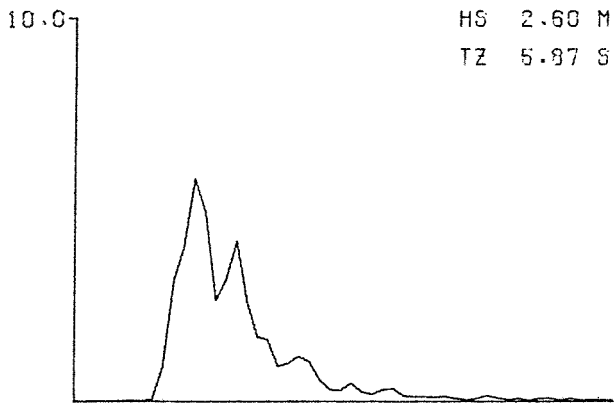


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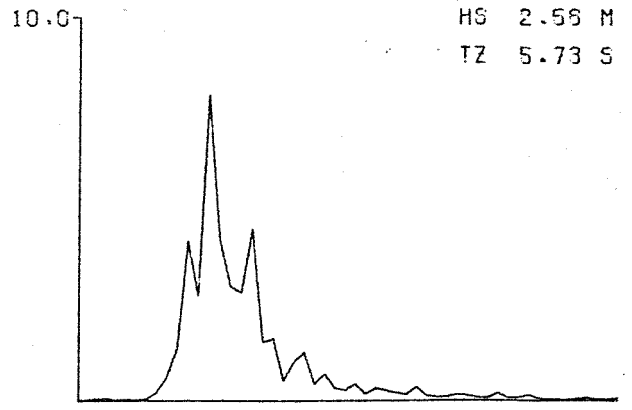


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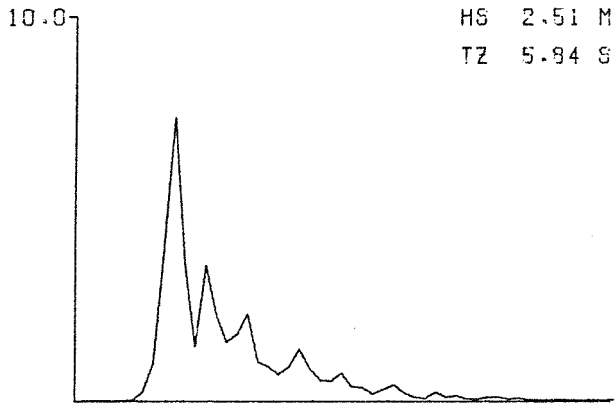




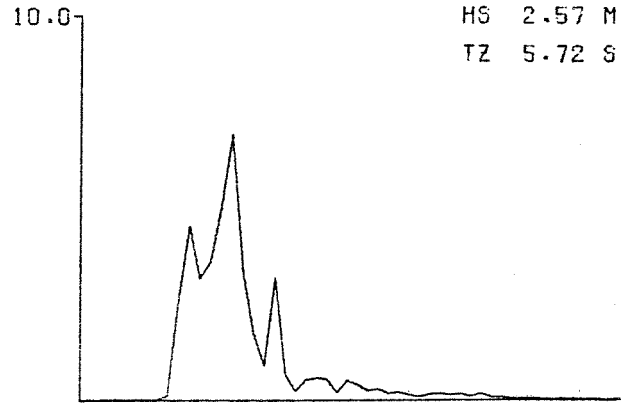
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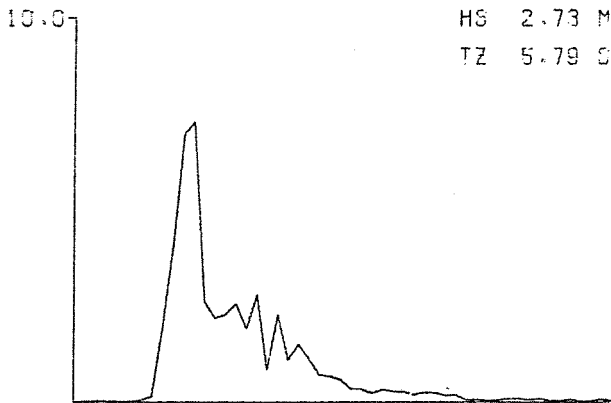
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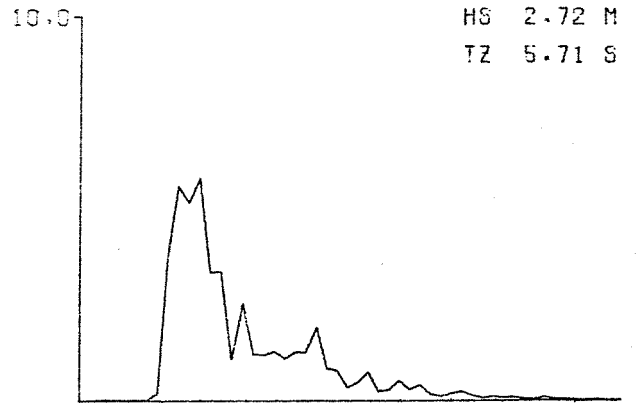
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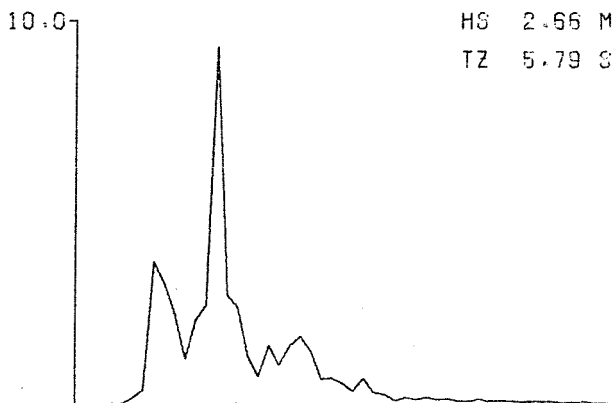
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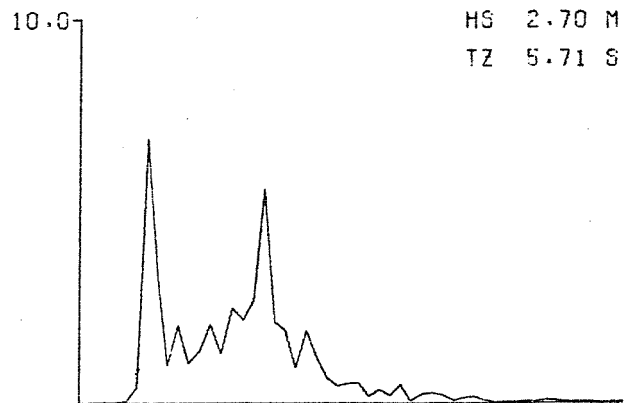
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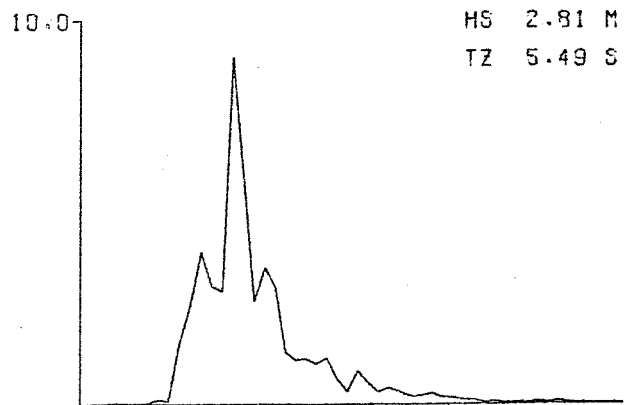
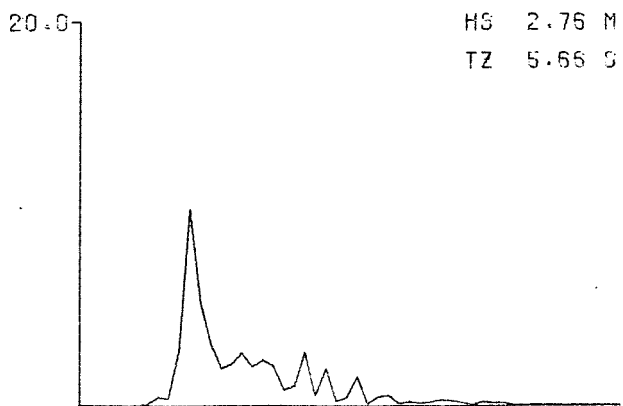
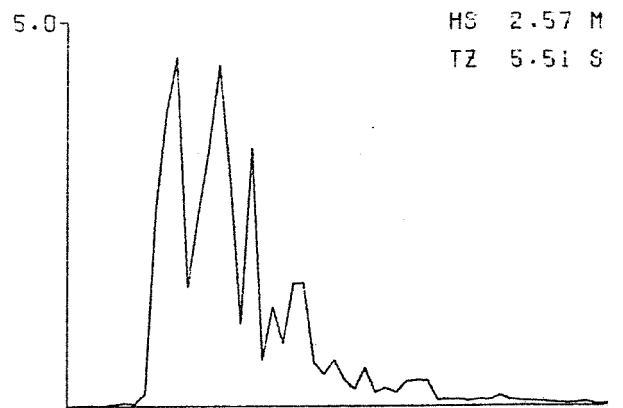
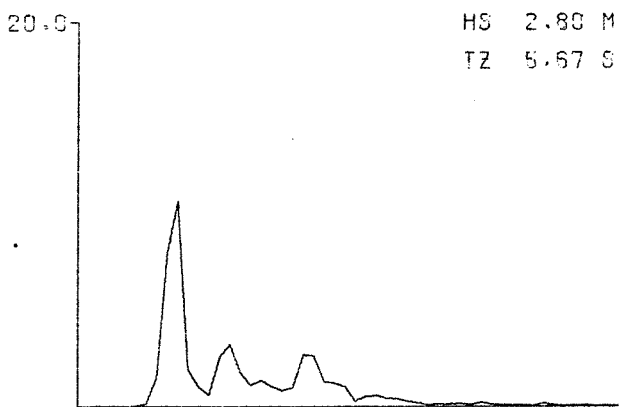
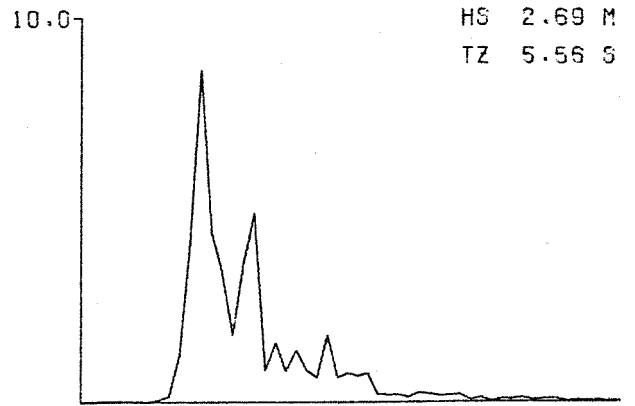
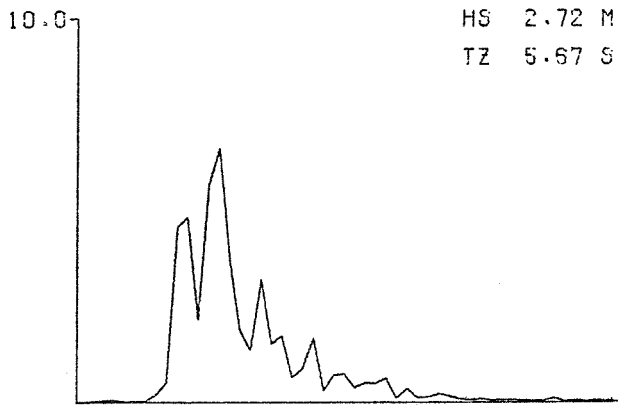
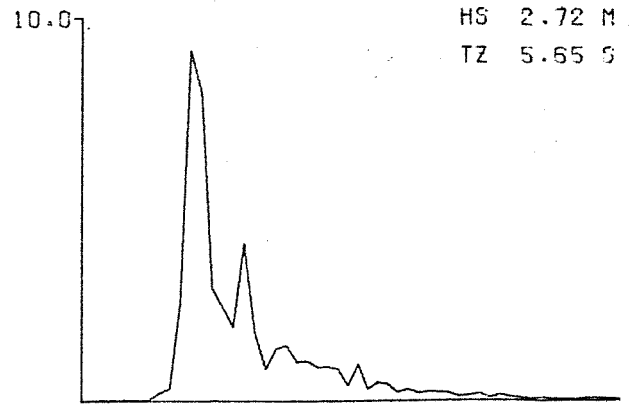
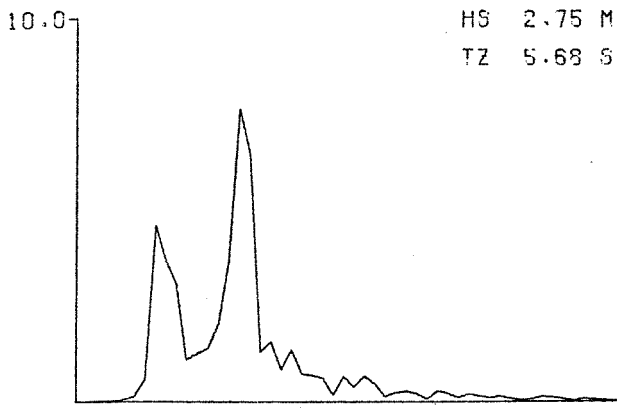
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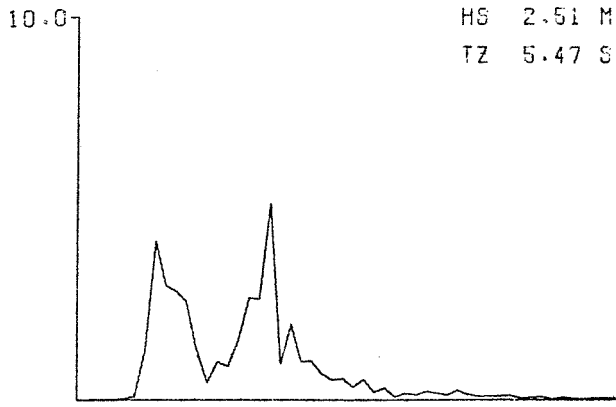


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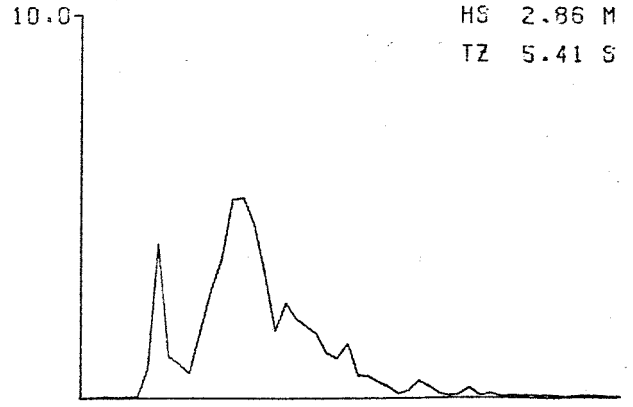


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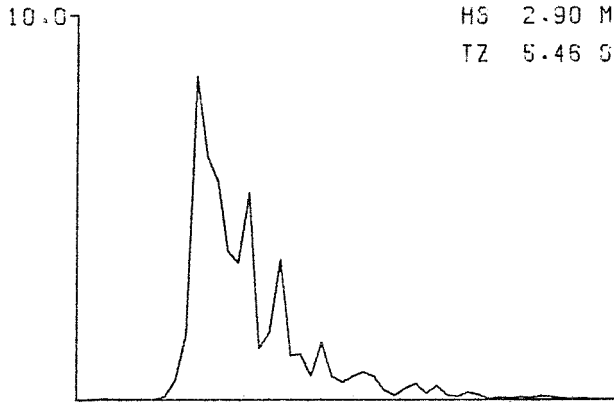




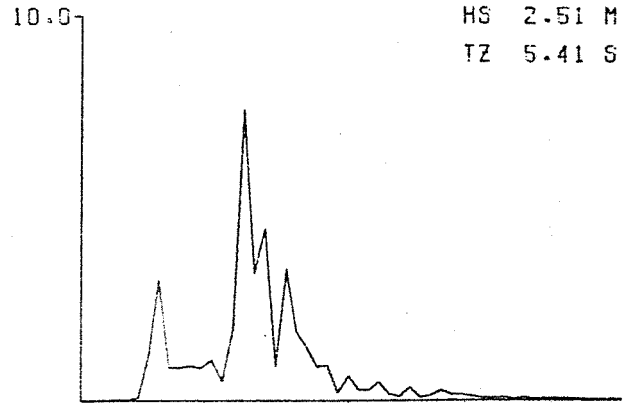
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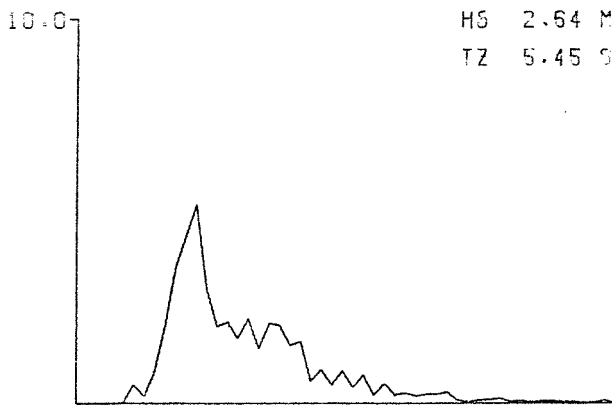
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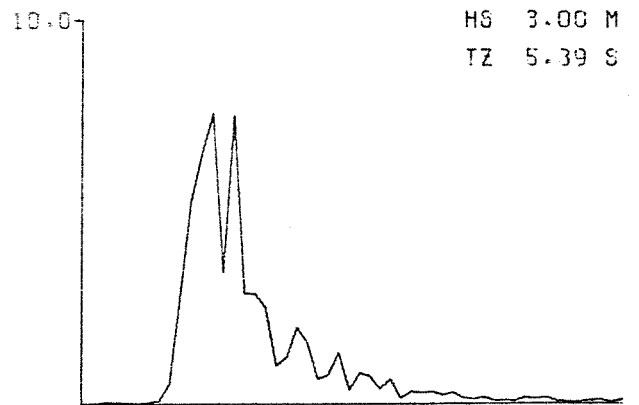
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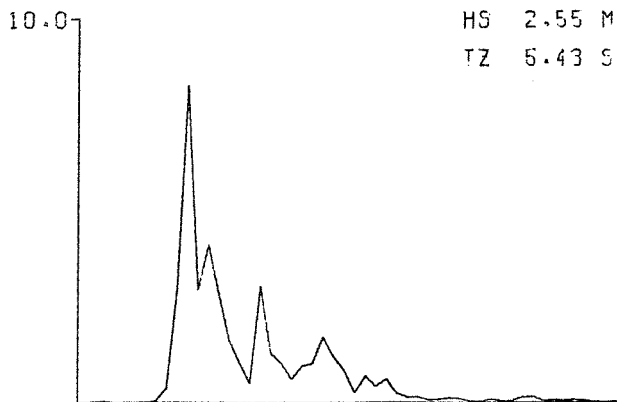
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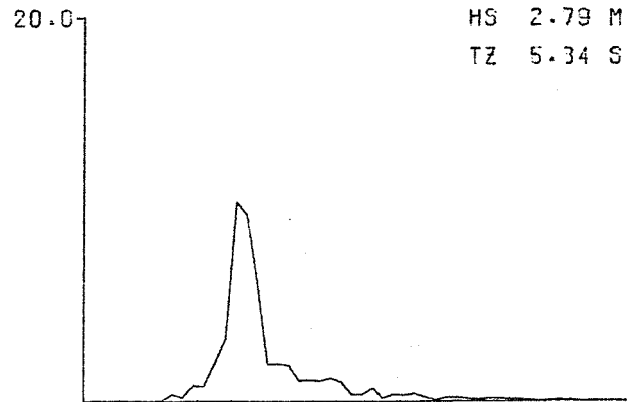
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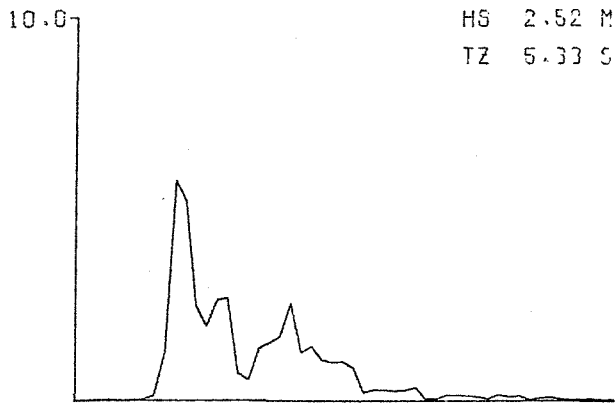
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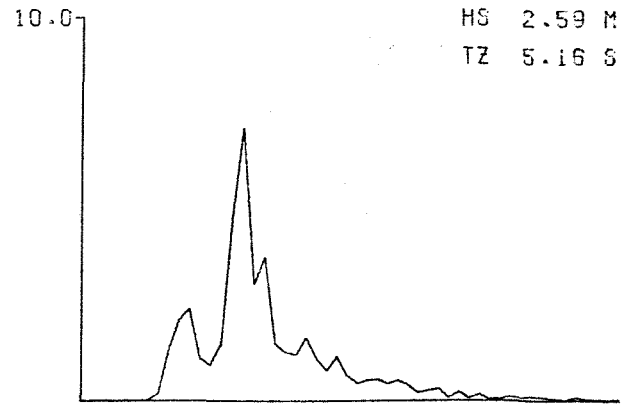
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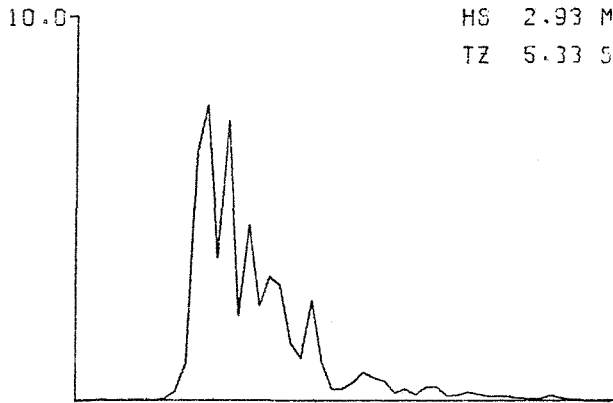
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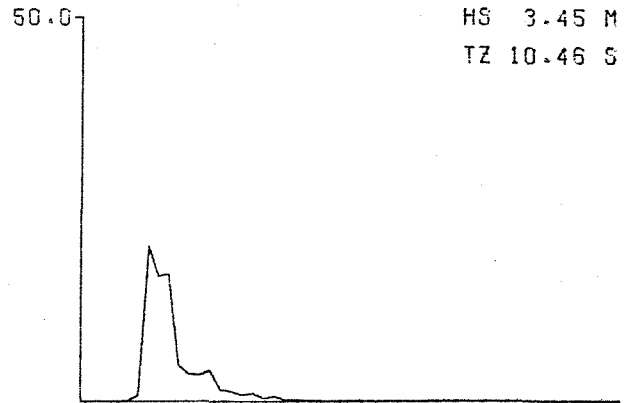
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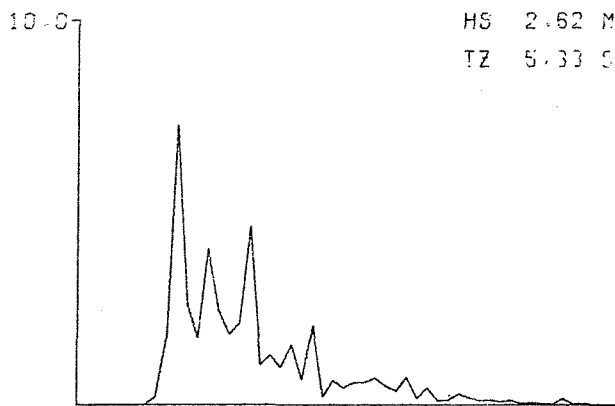
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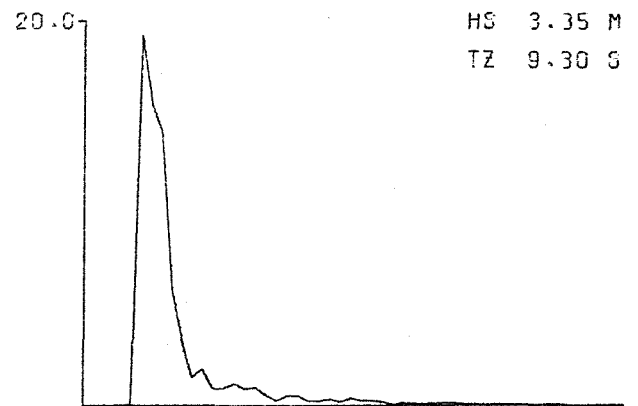
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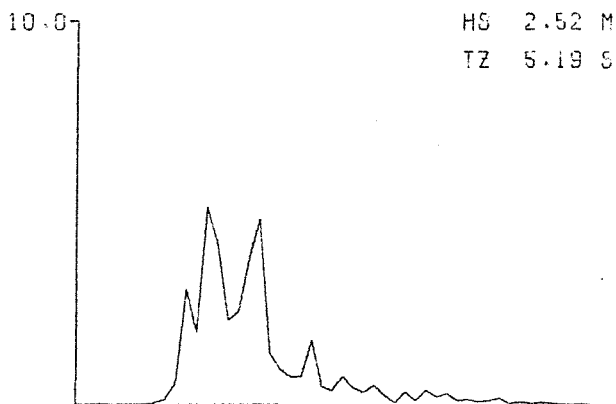
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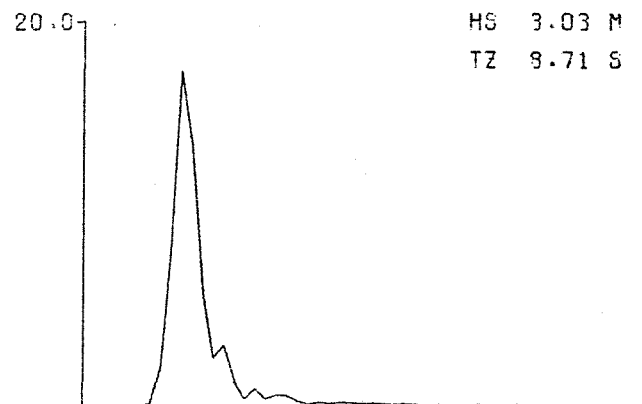
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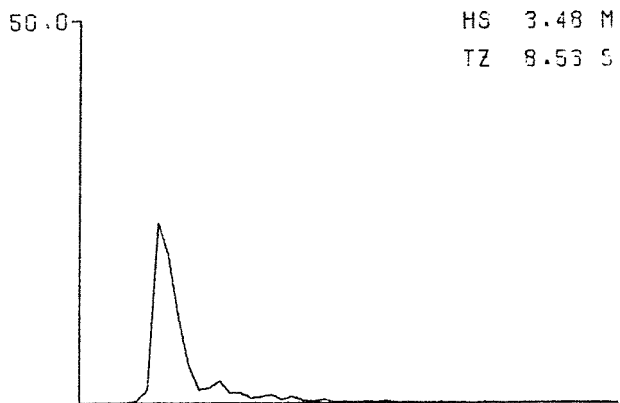
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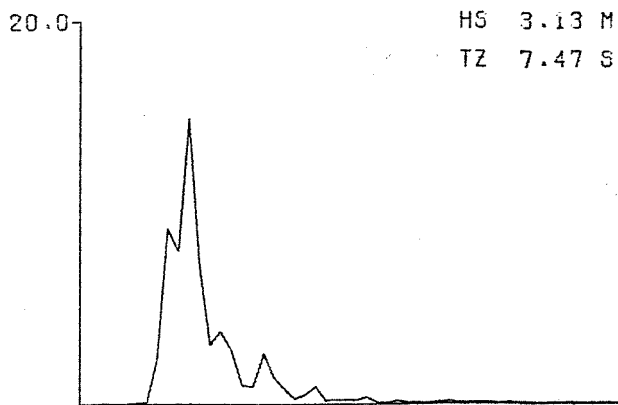
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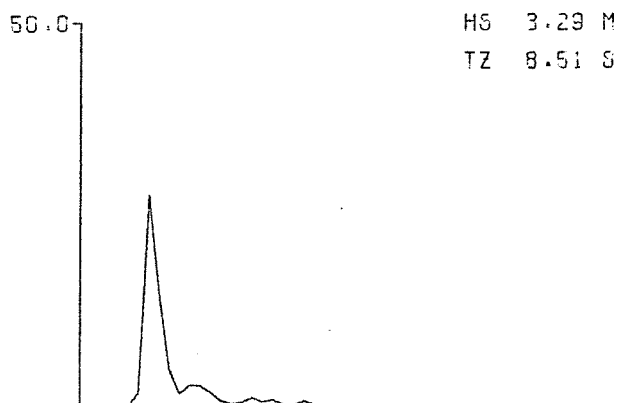
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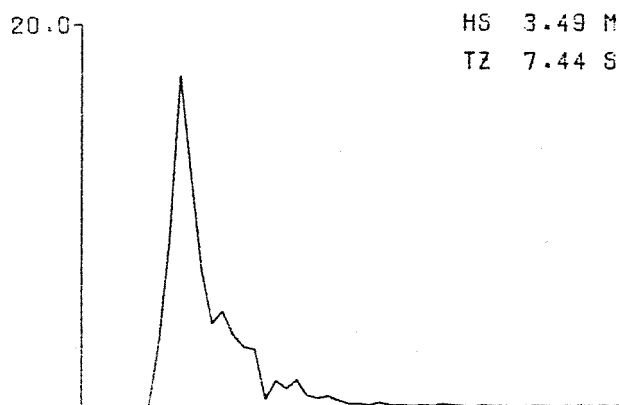
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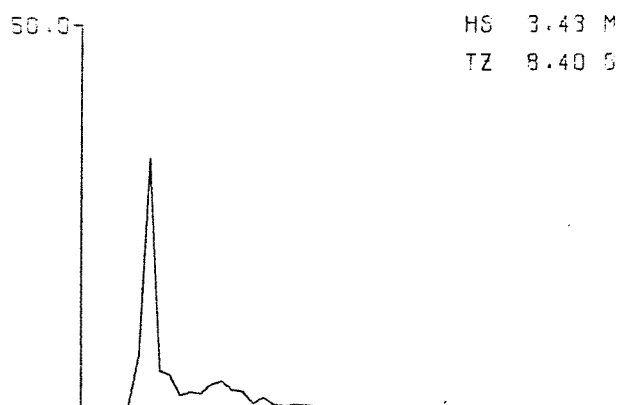
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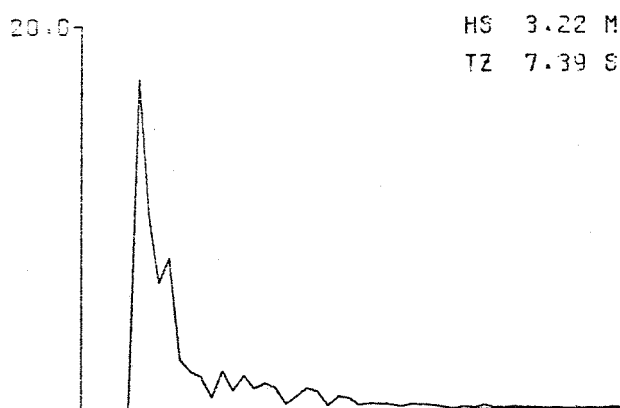
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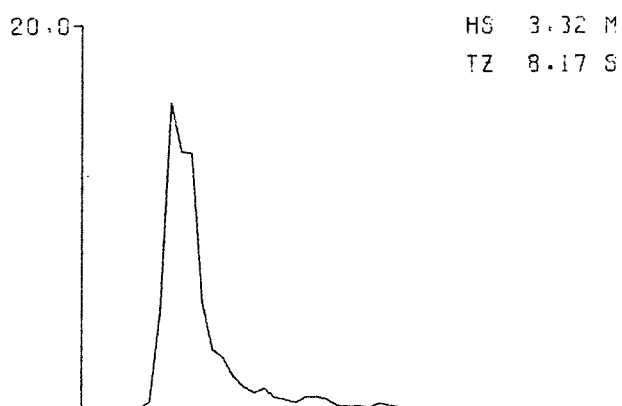
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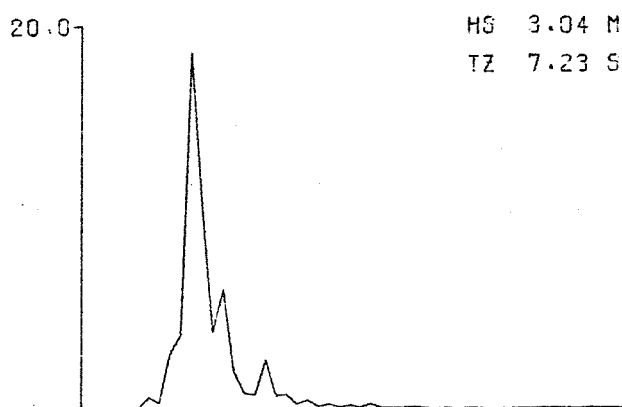
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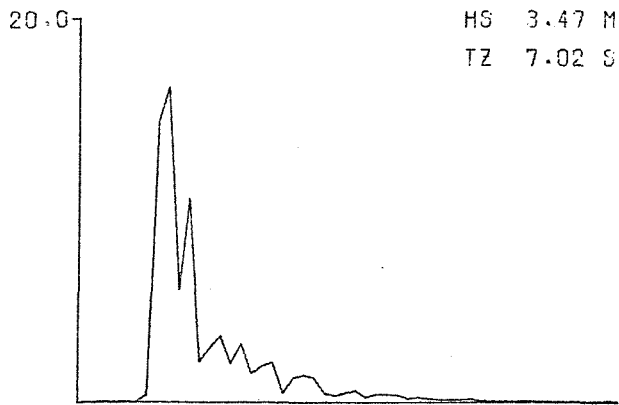
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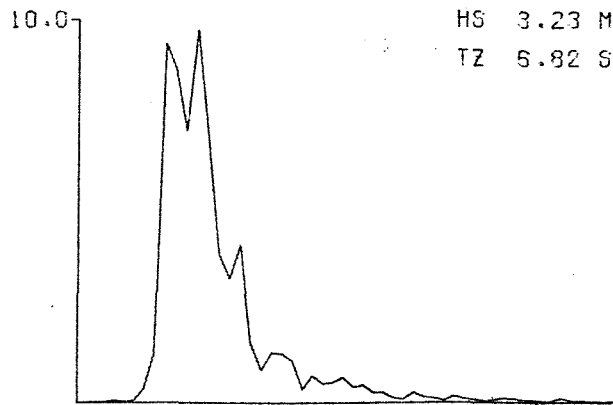
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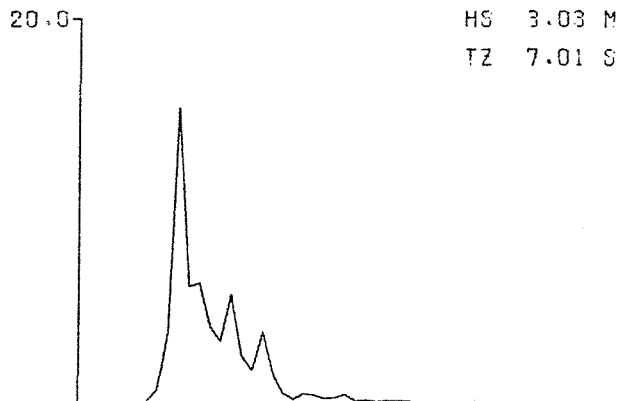
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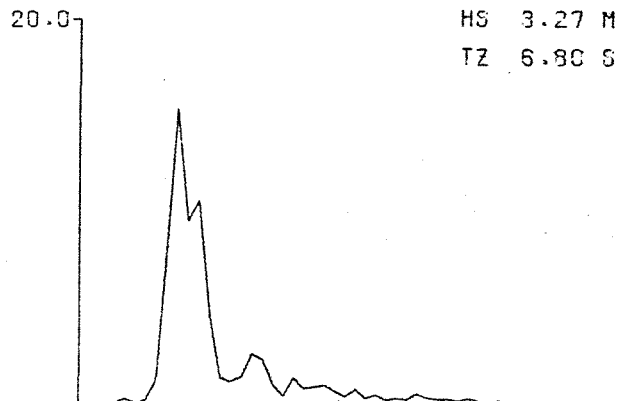
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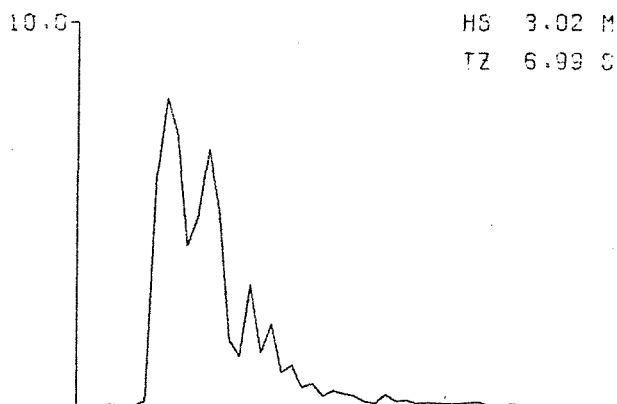
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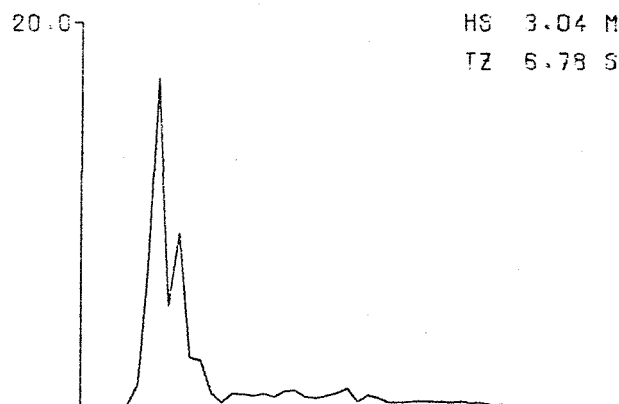
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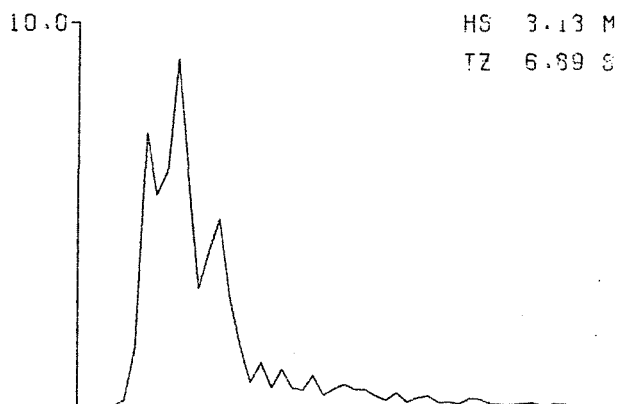
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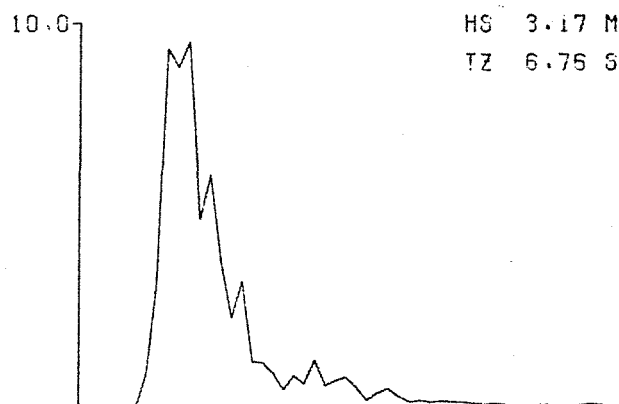
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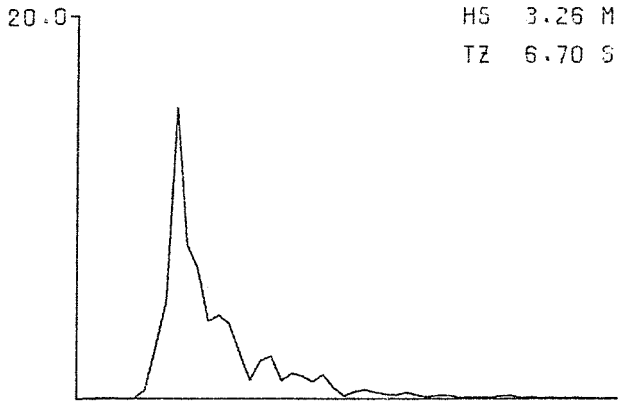
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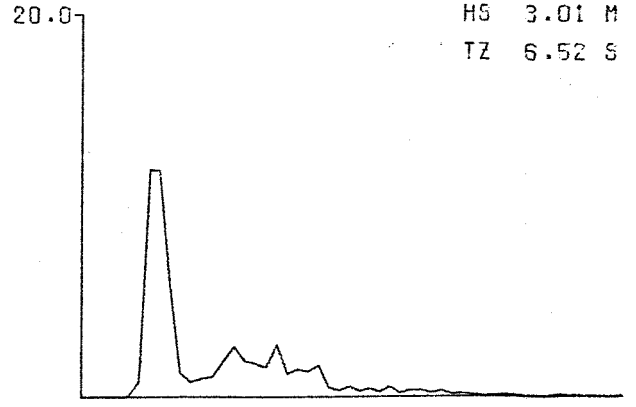
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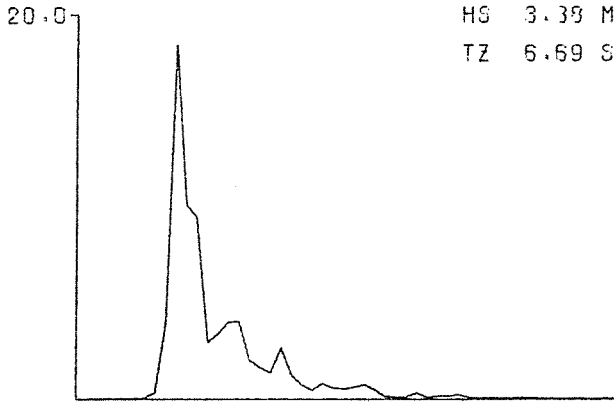
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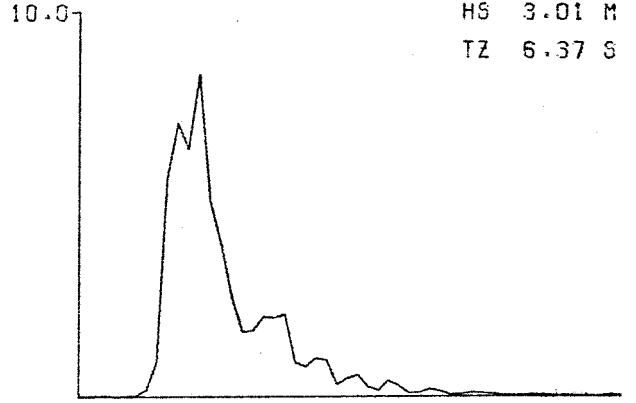
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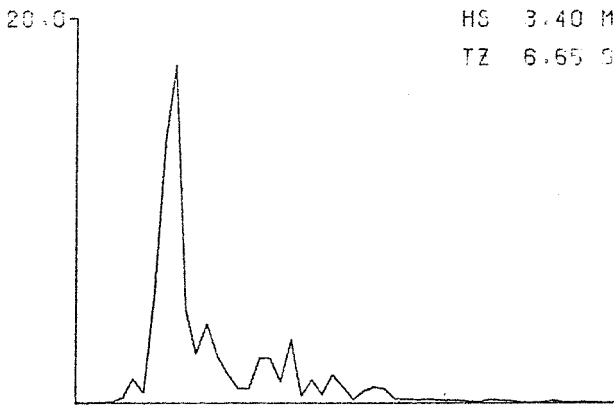
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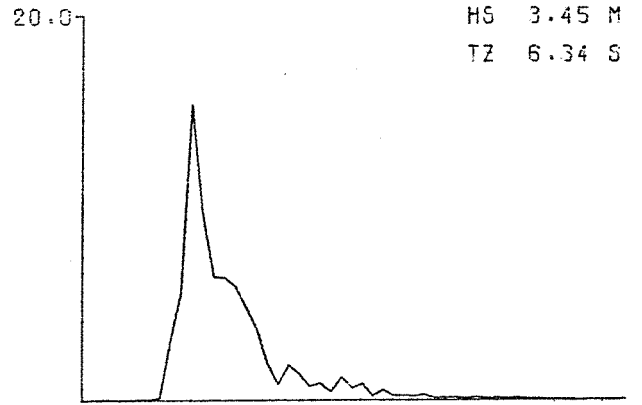
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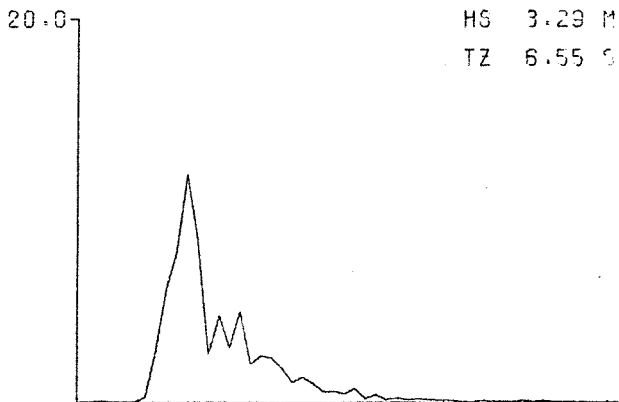
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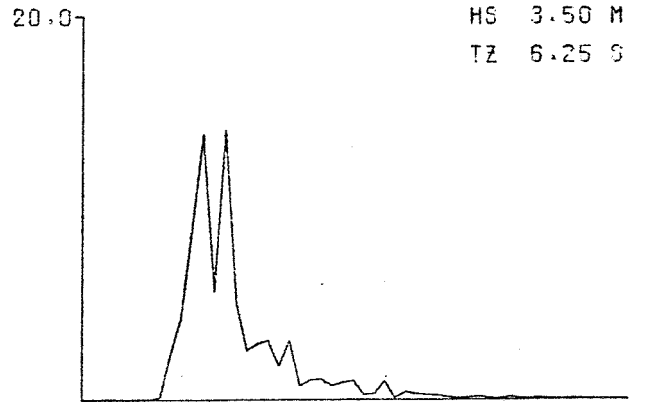
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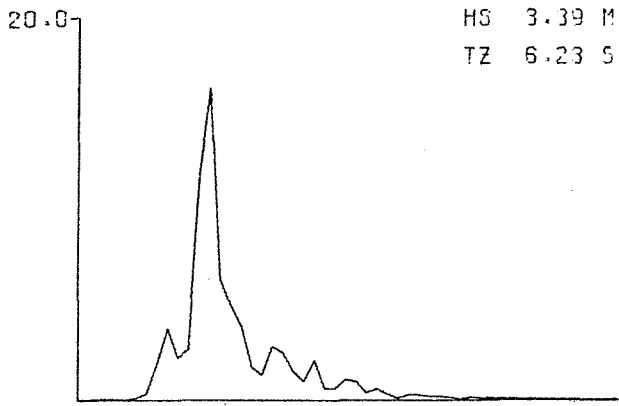
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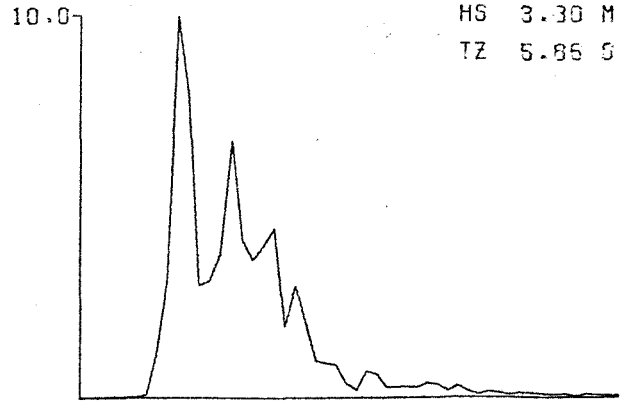


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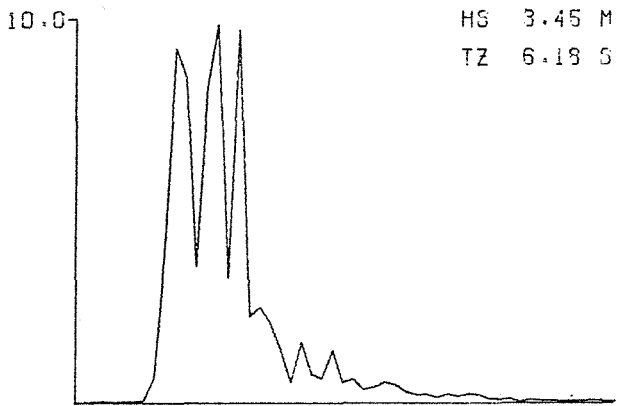
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TZ 6.23 S

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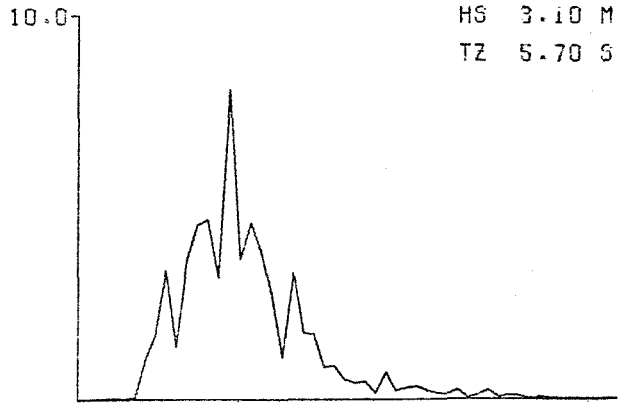
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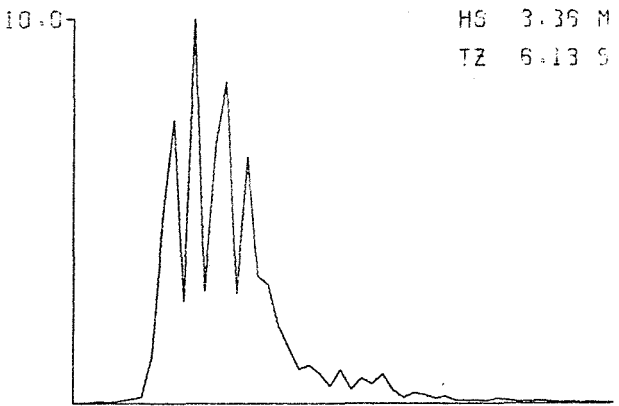
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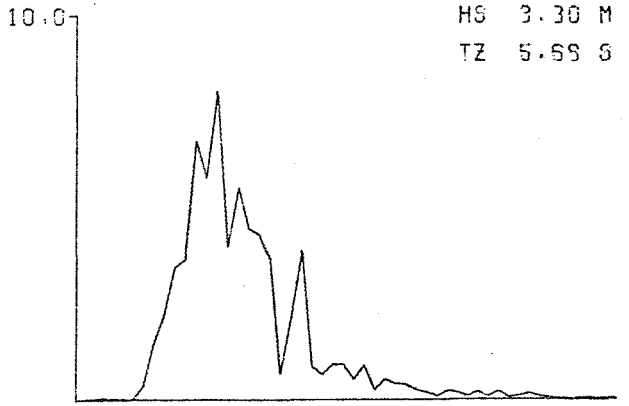
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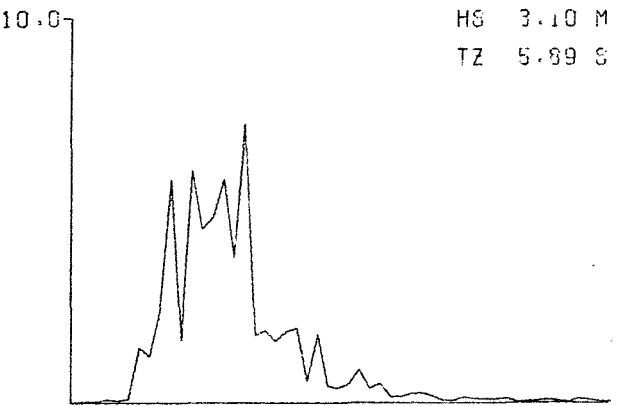
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TZ 6.13 S

315



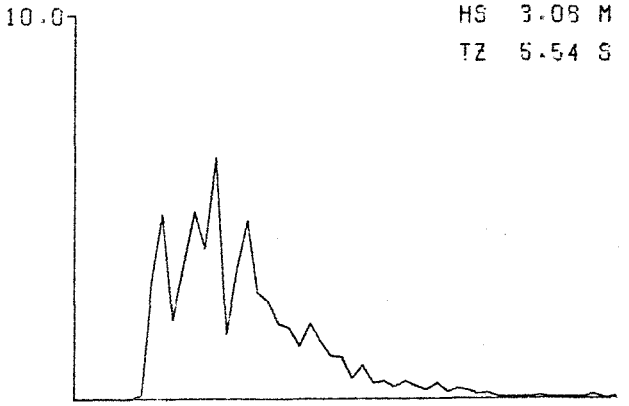
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TZ 5.55 S

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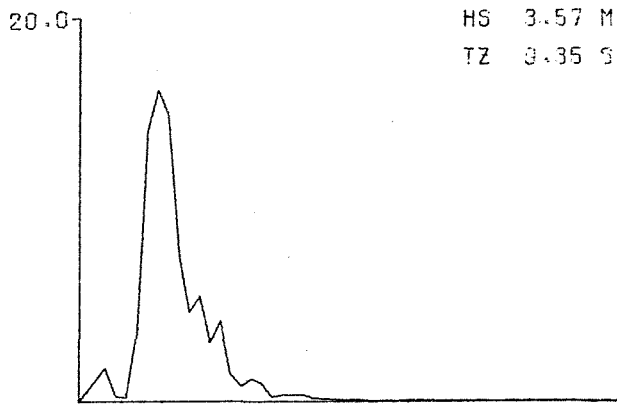
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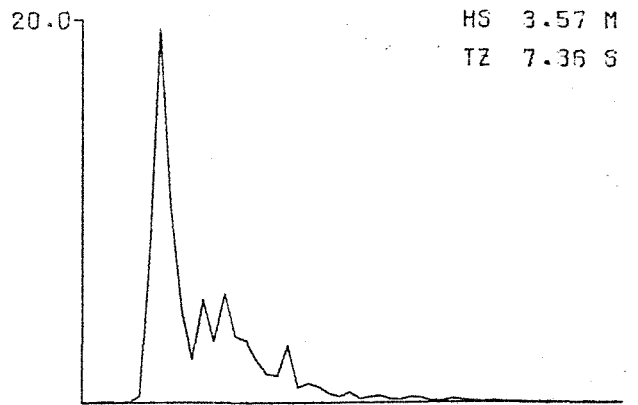


HS 3.08 M
TZ 5.54 S

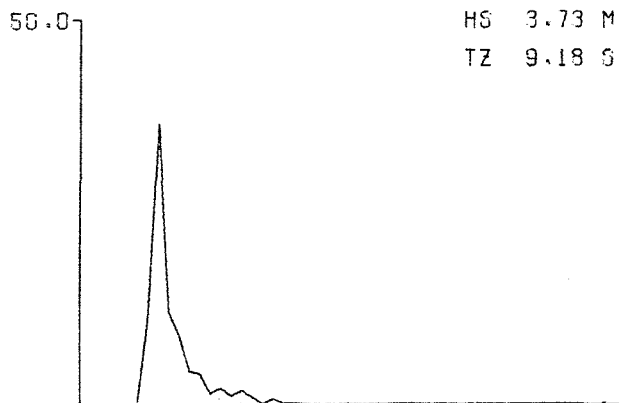
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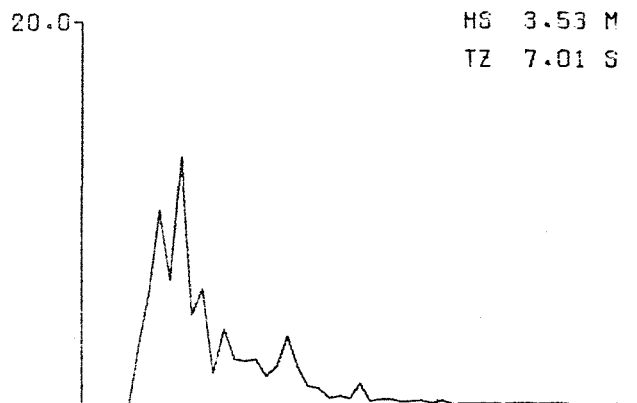
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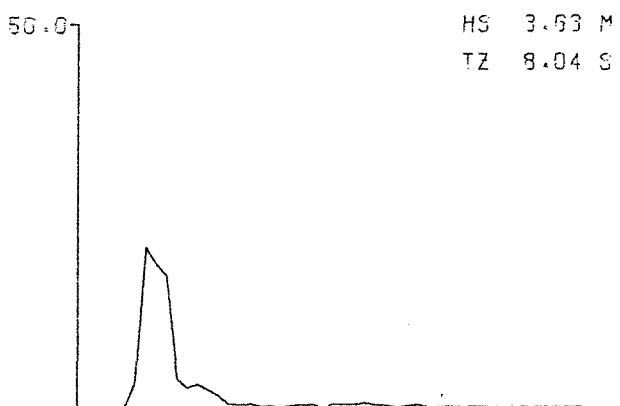
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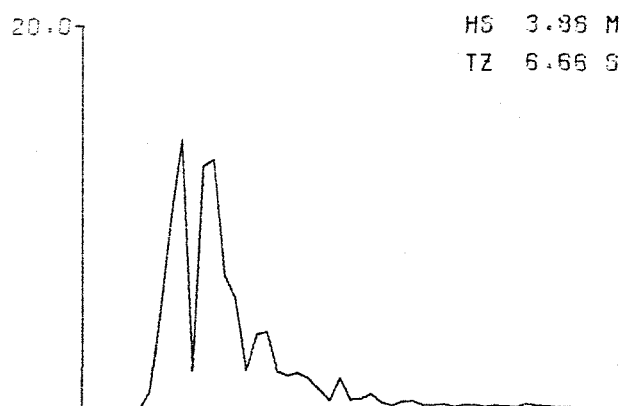
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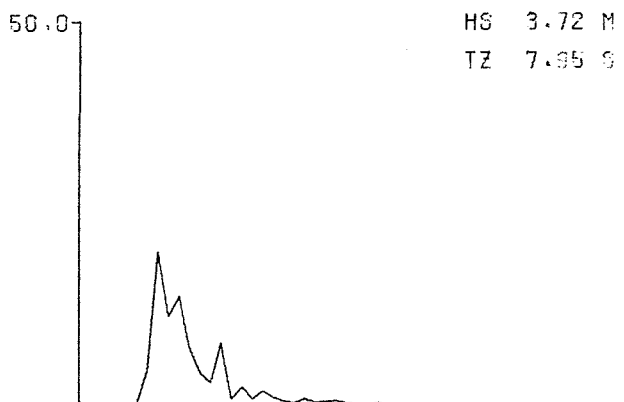
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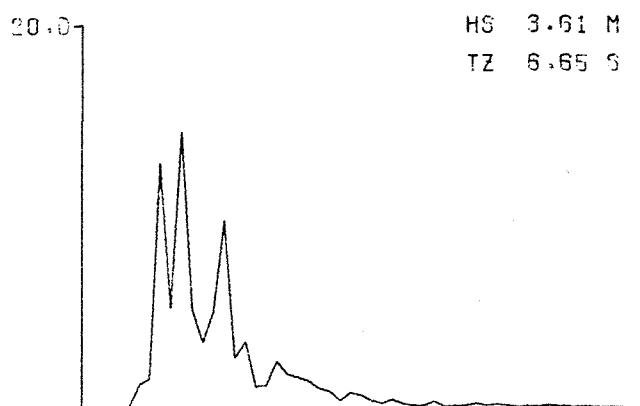
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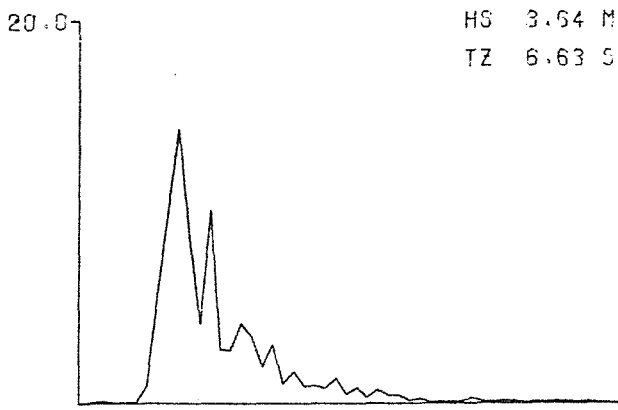
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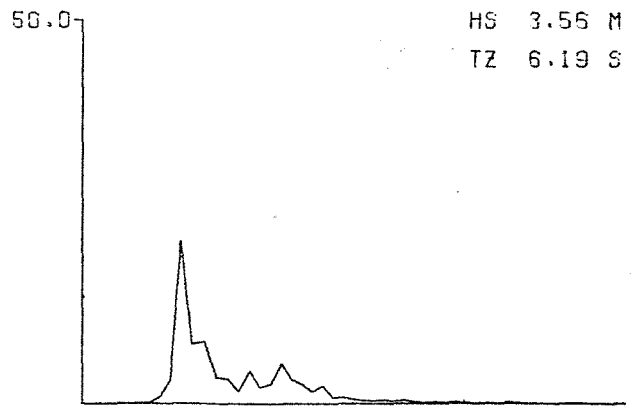
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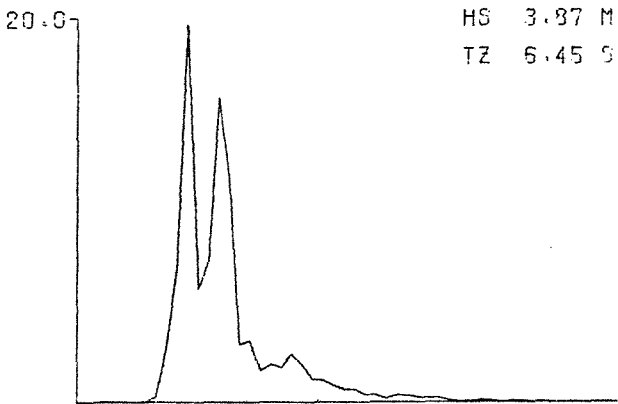
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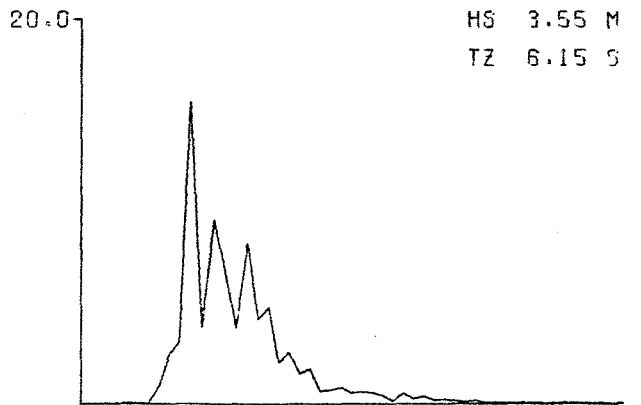
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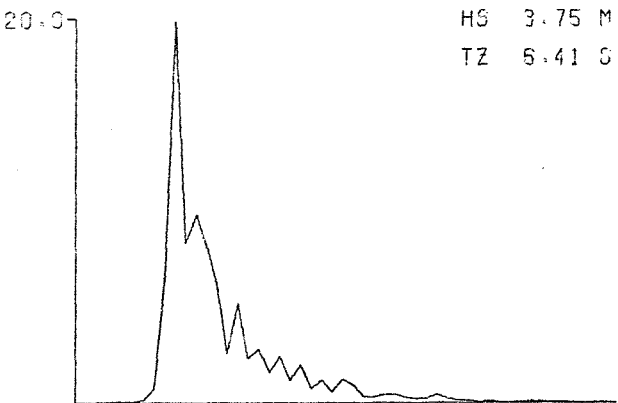
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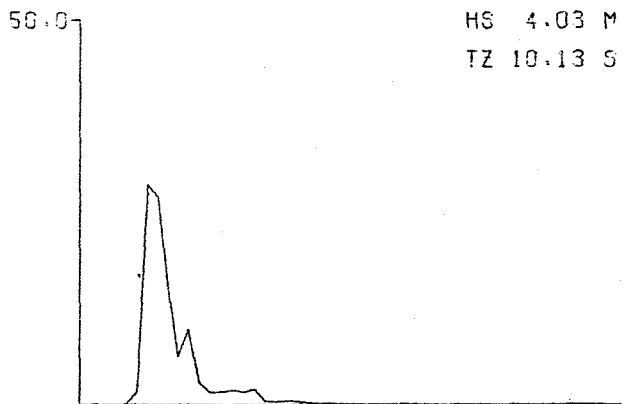
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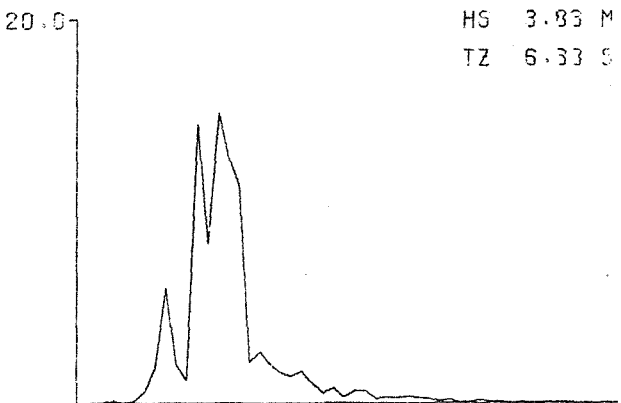
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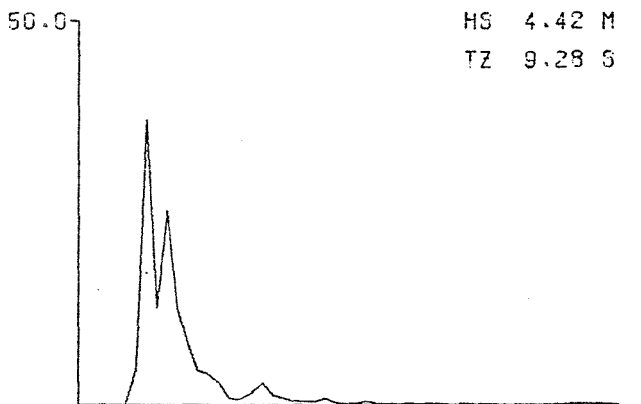
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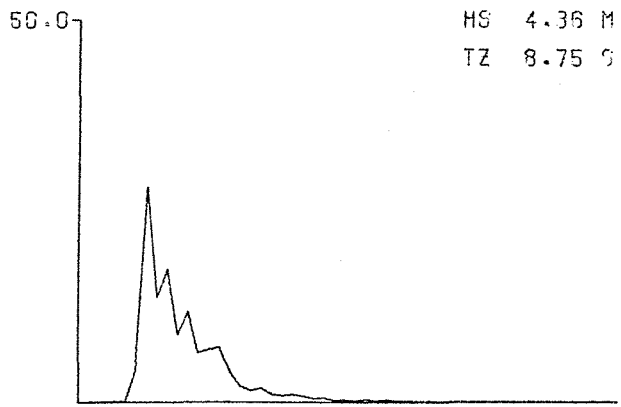
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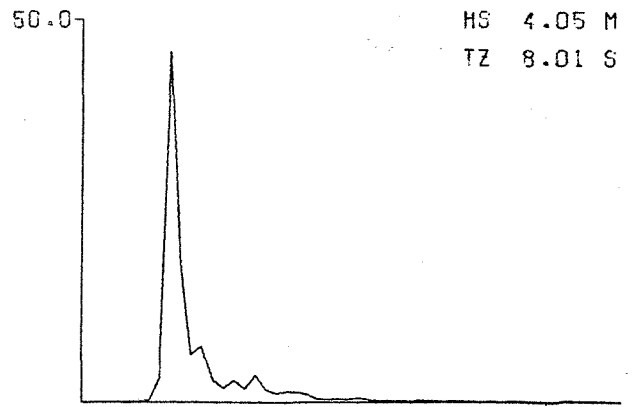
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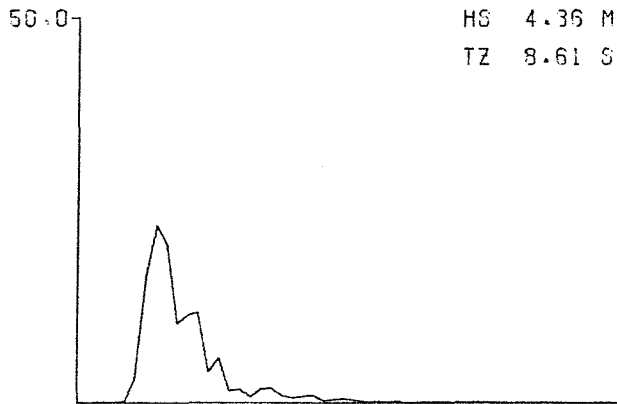
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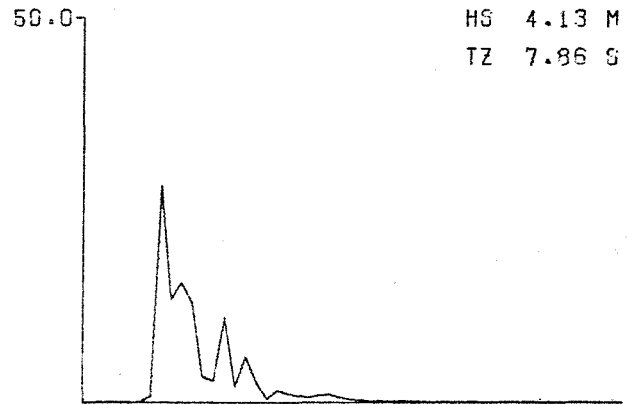
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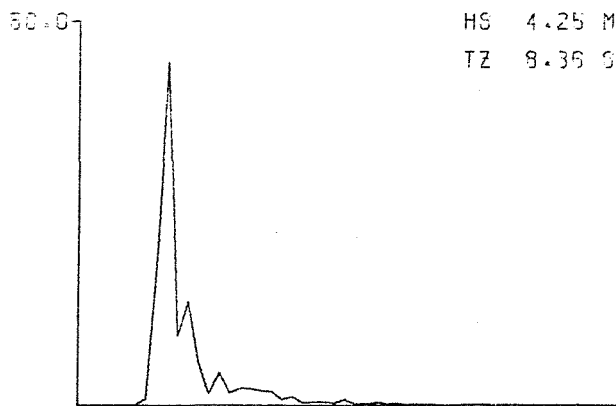
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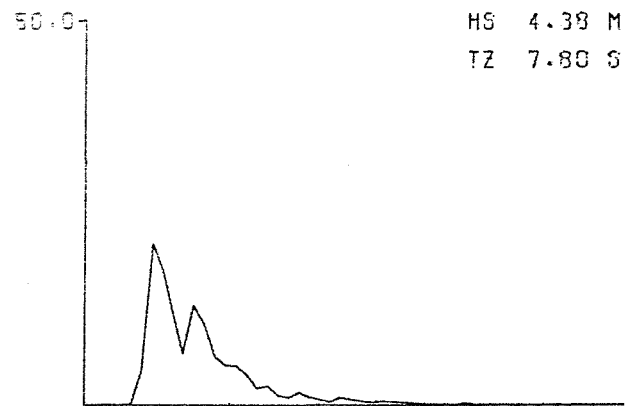
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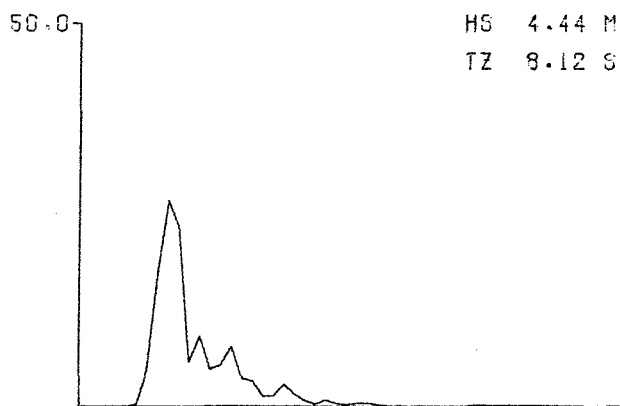
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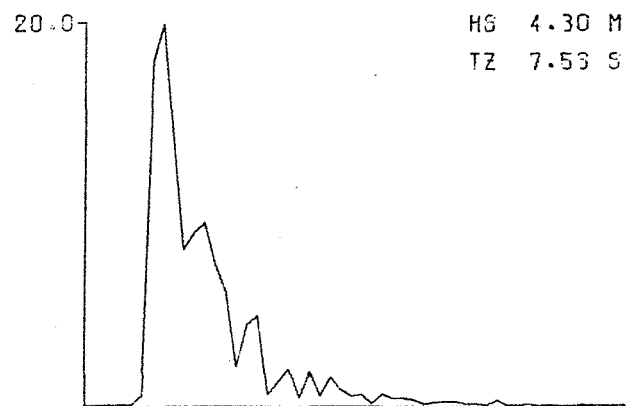
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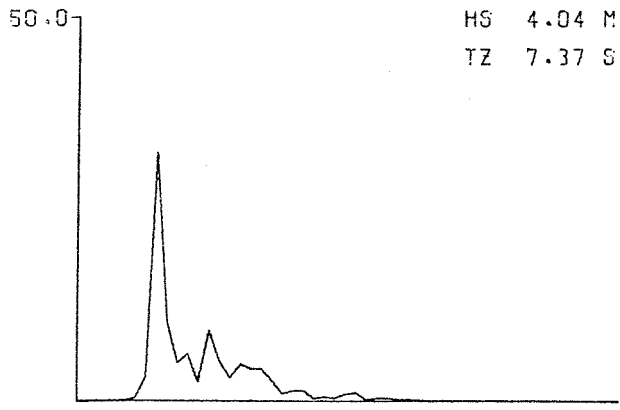
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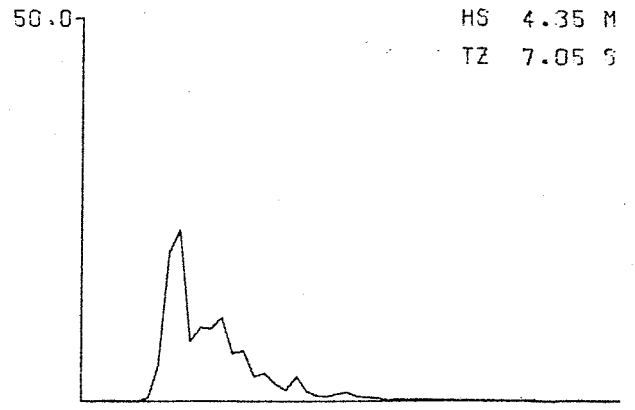
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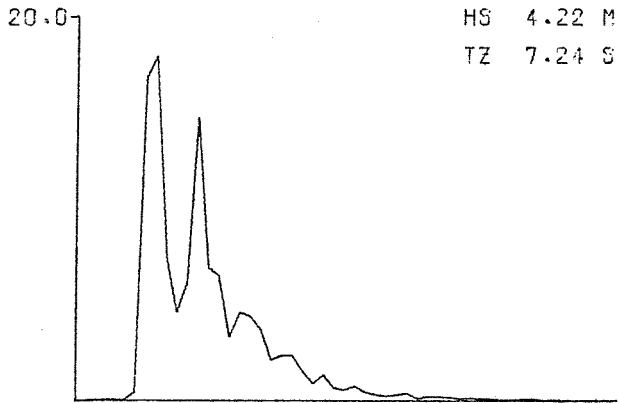
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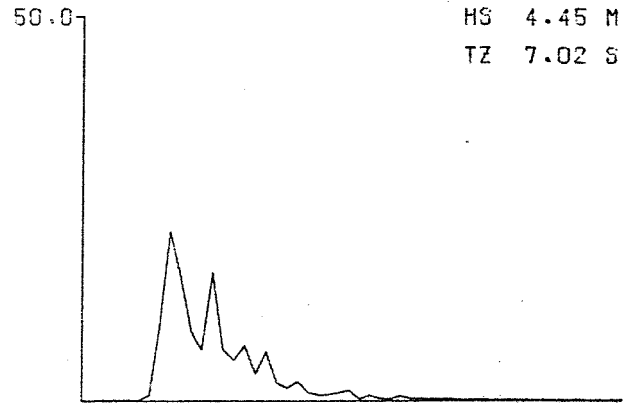
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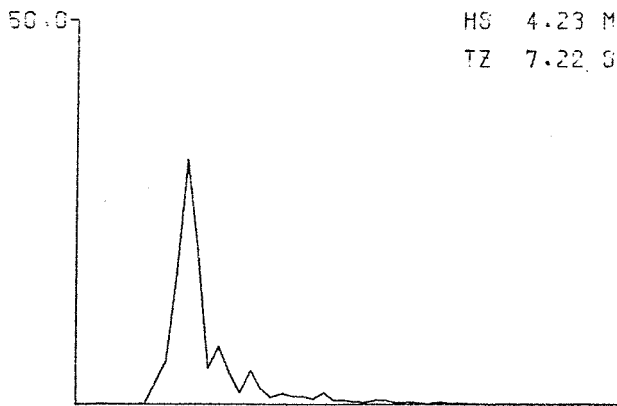
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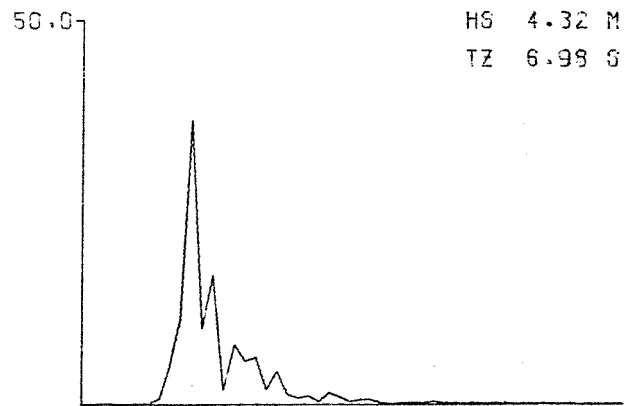
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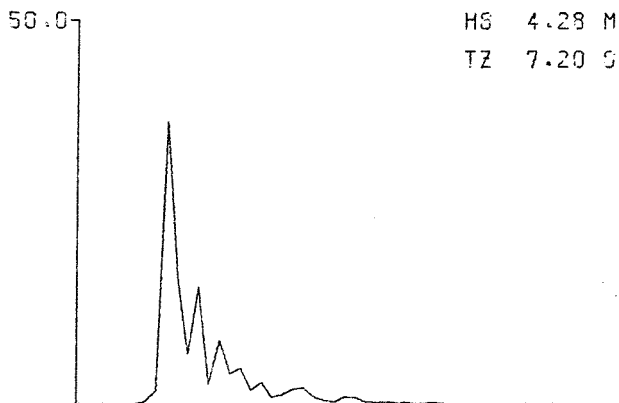
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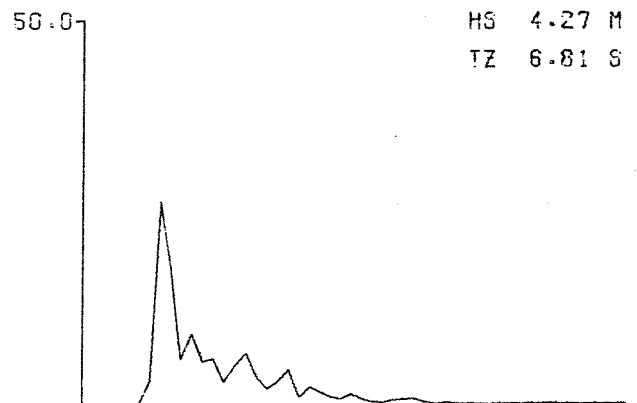
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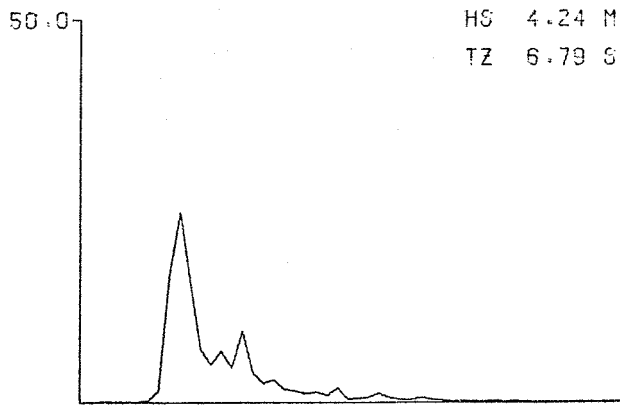
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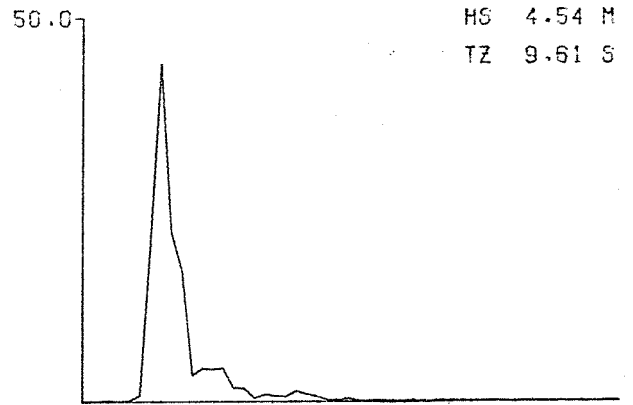
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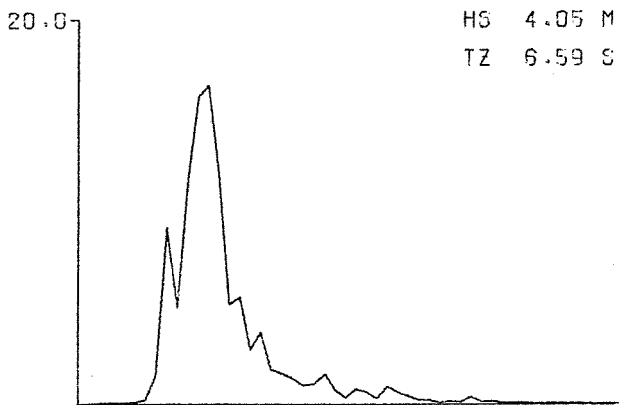
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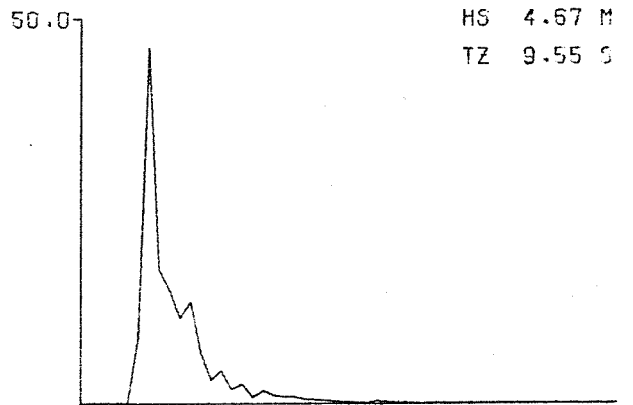
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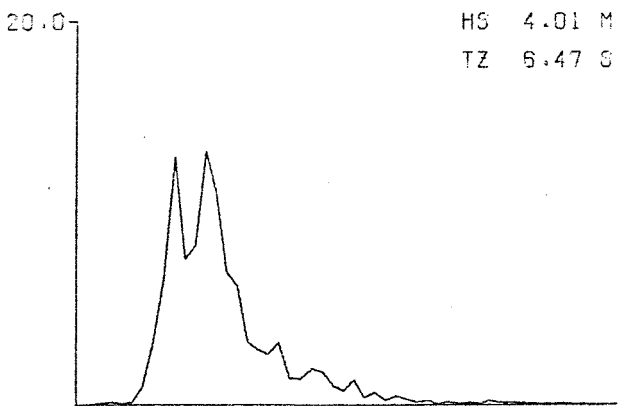
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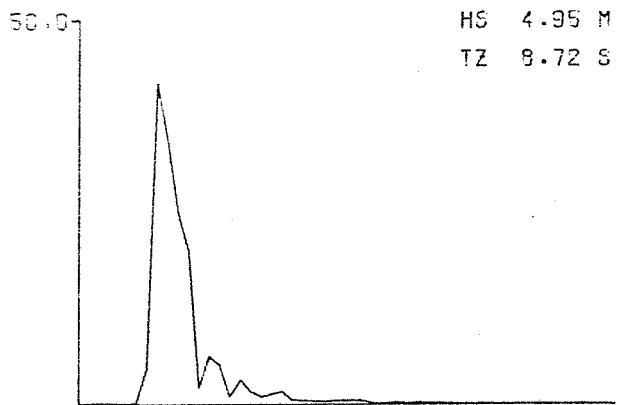
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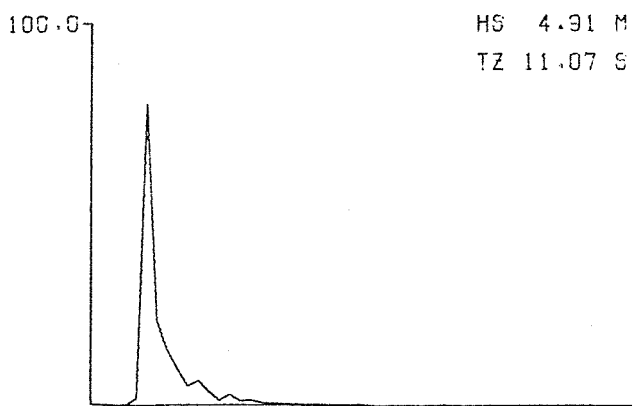
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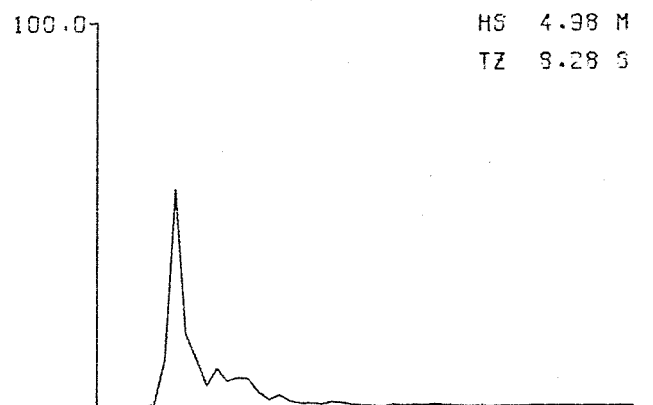
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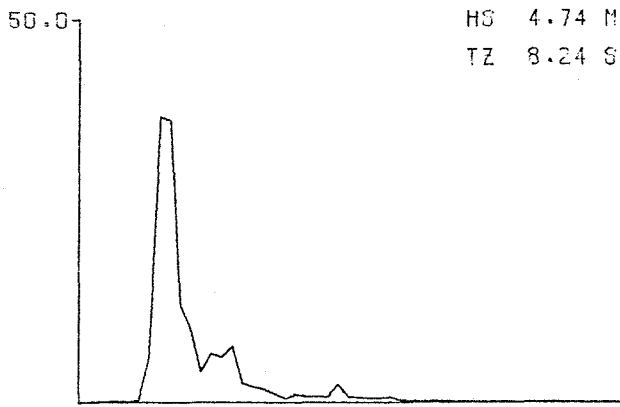
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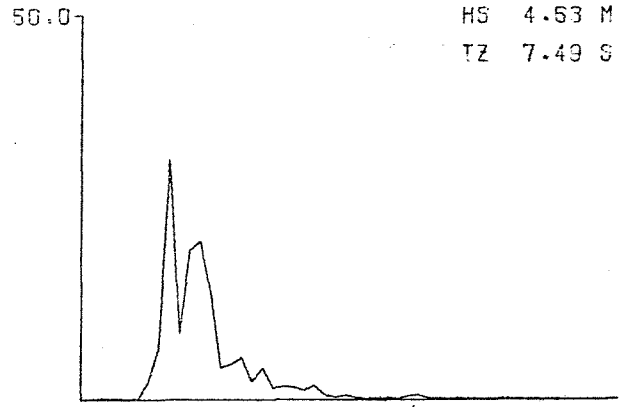
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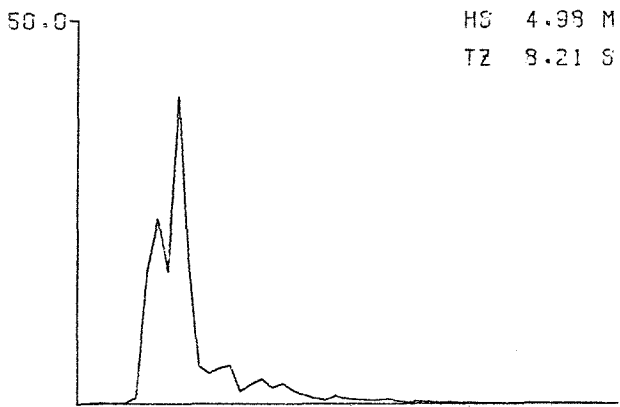
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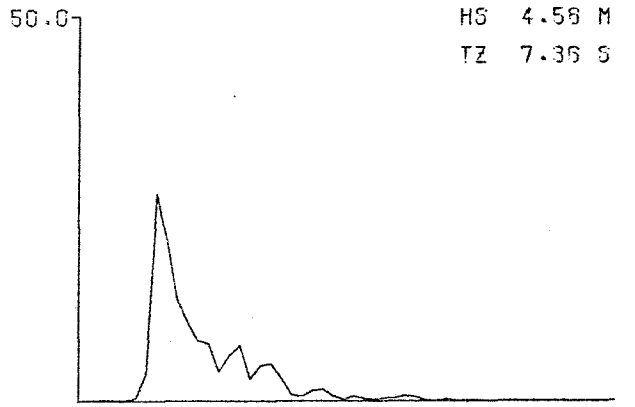
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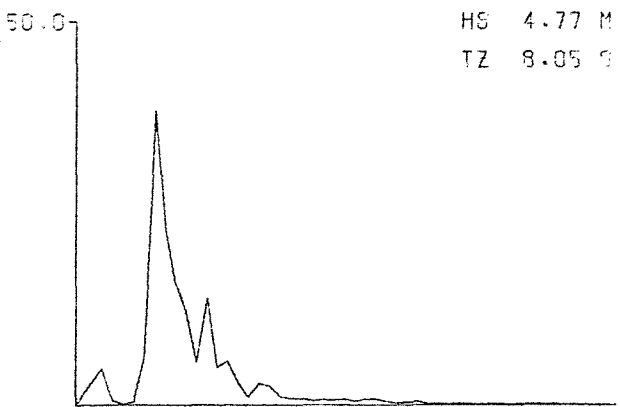
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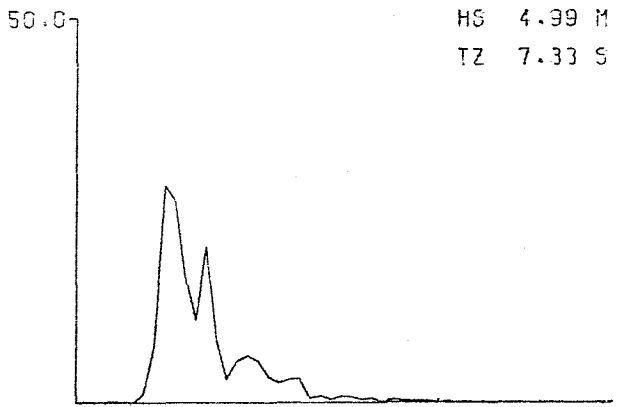
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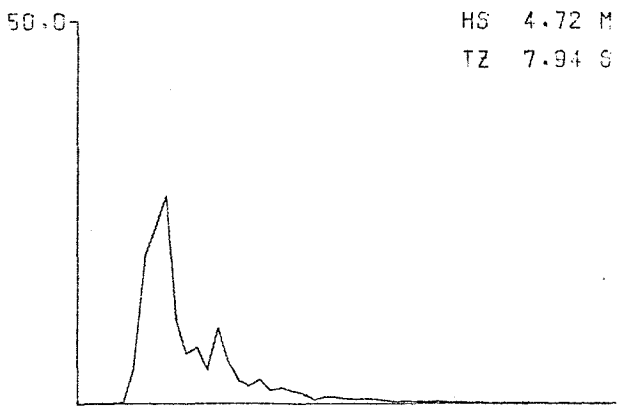
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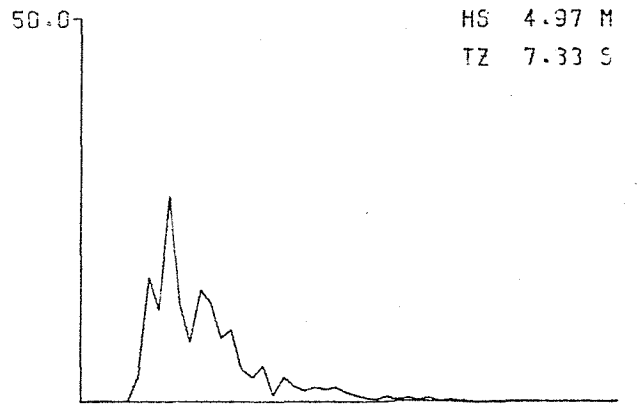
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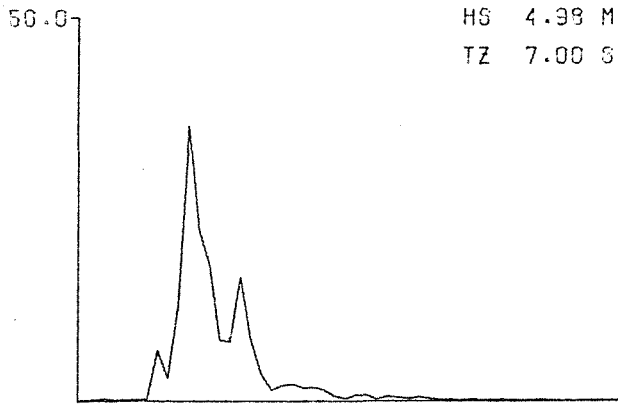
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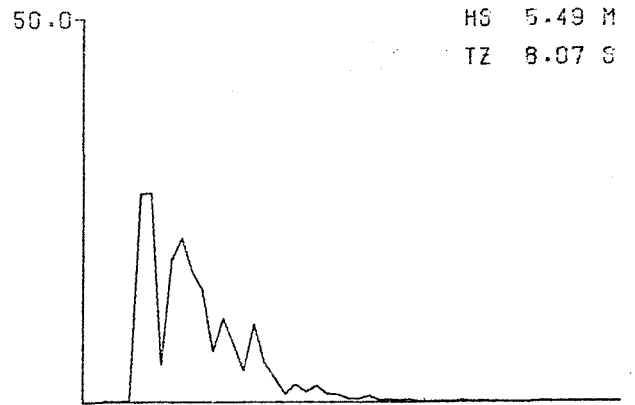
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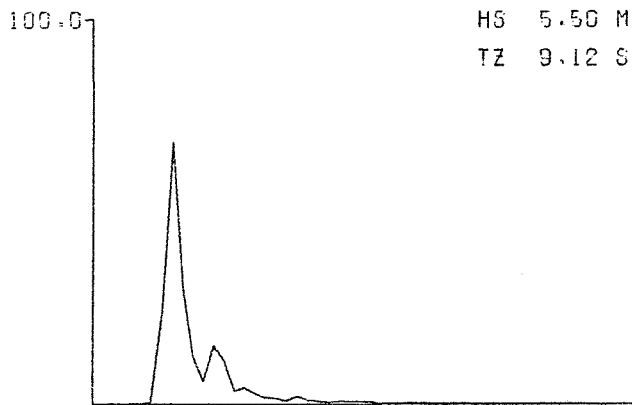
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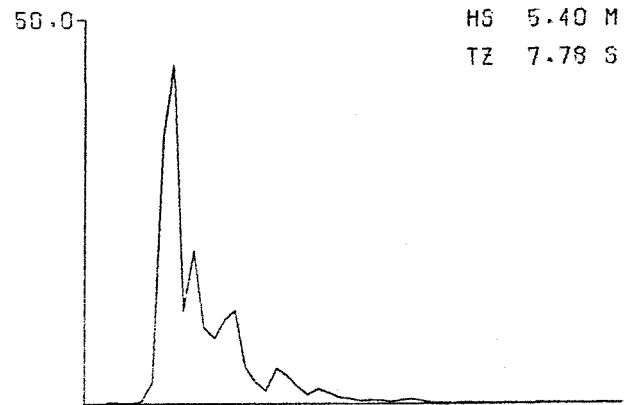
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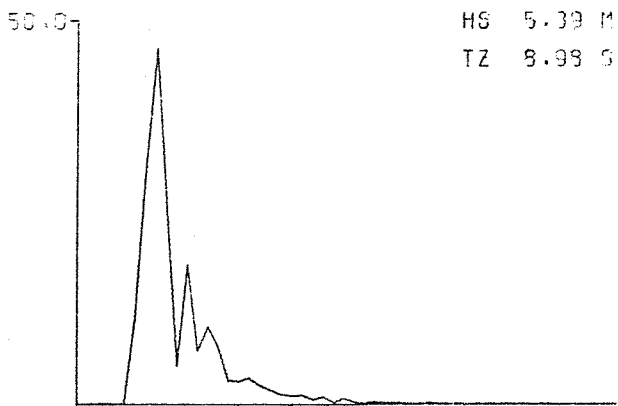
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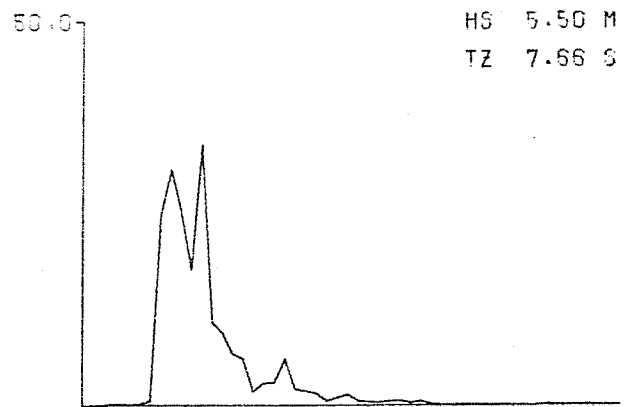
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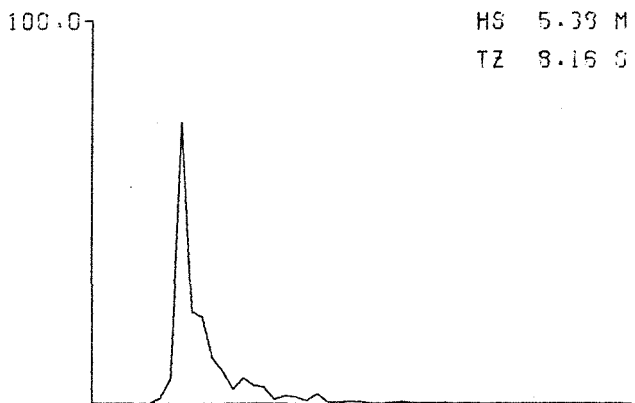
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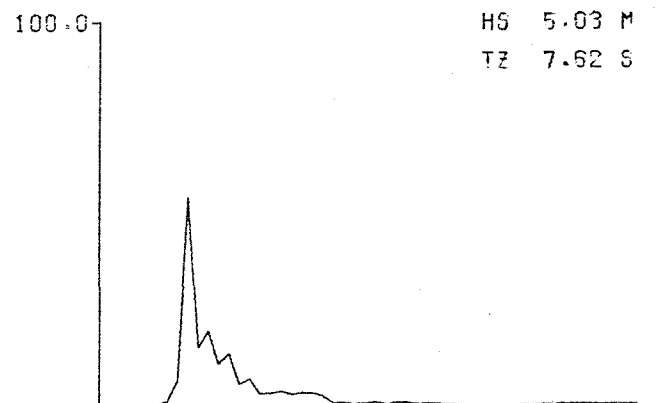
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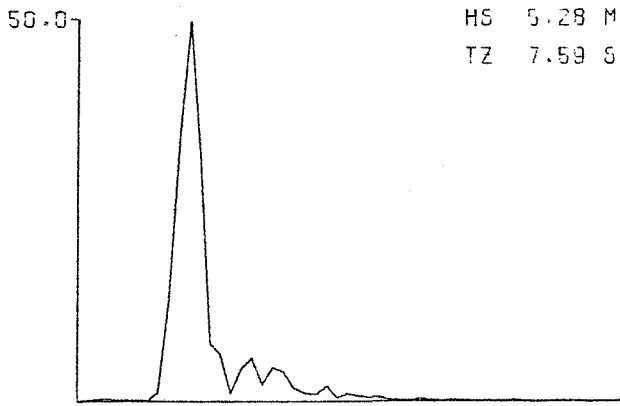
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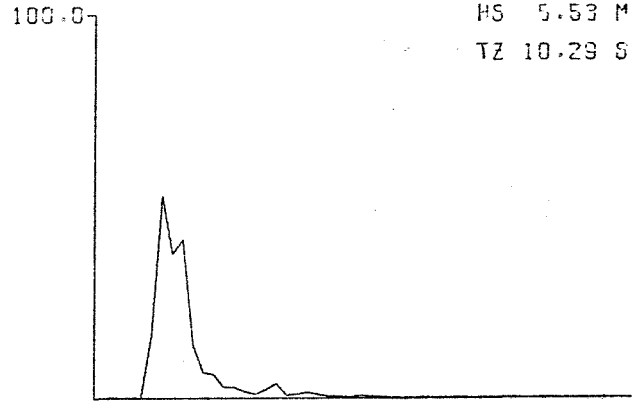


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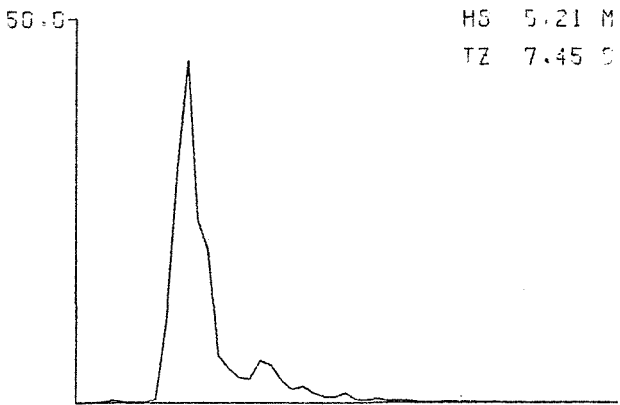
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TZ 7.59 S

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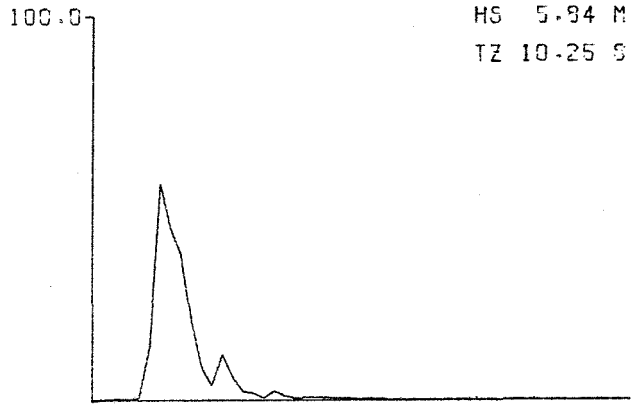
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TZ 10.29 S

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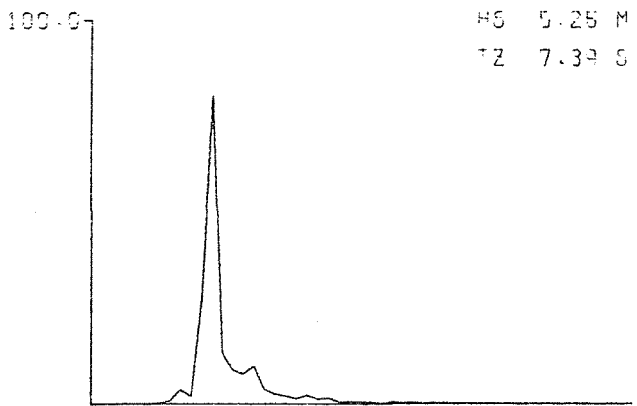
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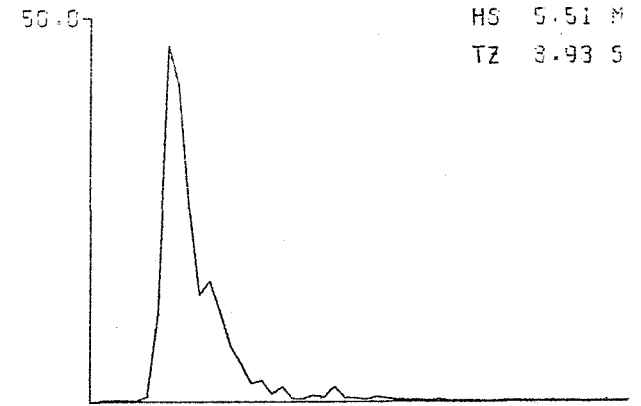
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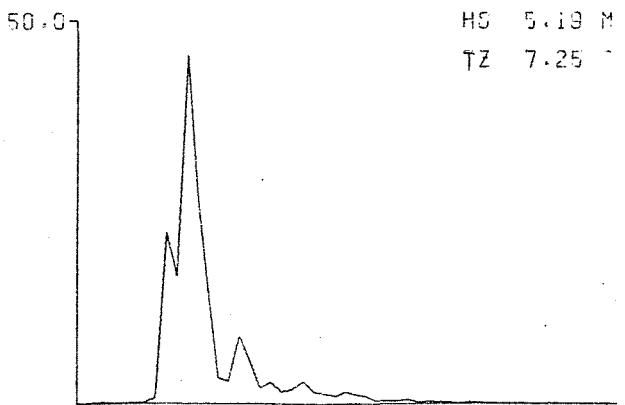
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TZ 7.39 S

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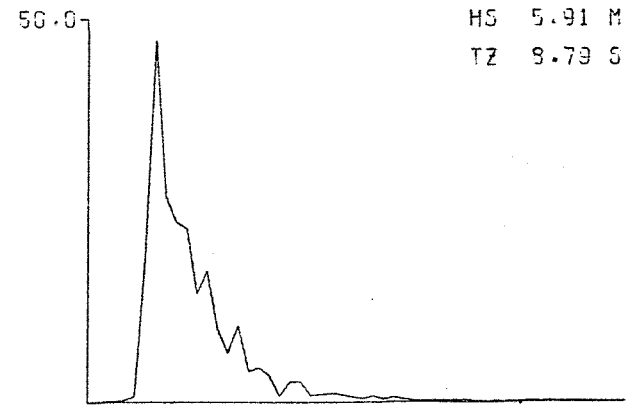
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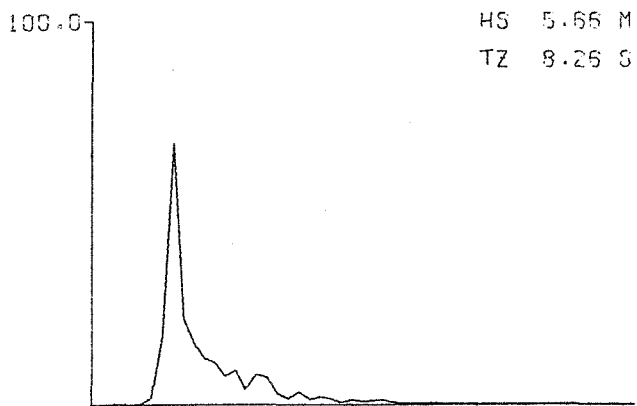
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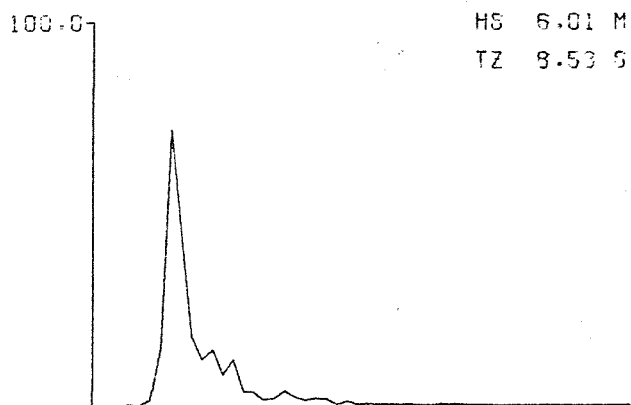


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TZ 9.79 S

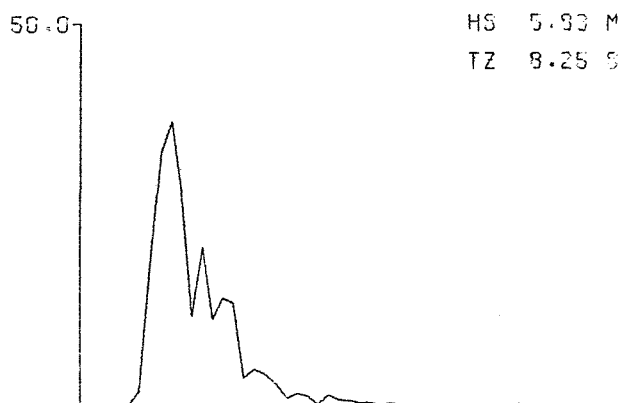
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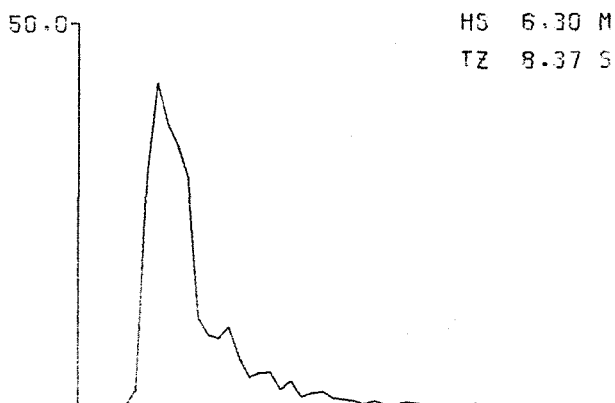
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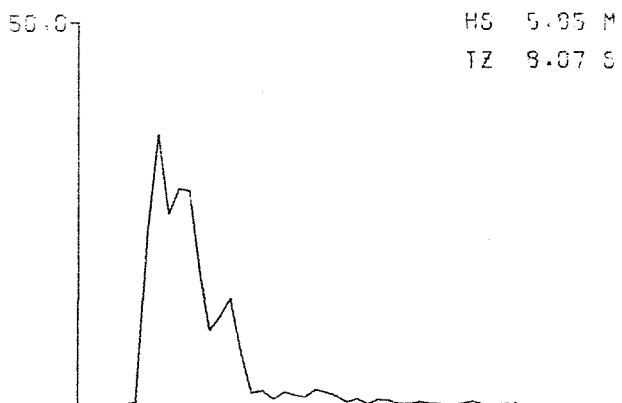
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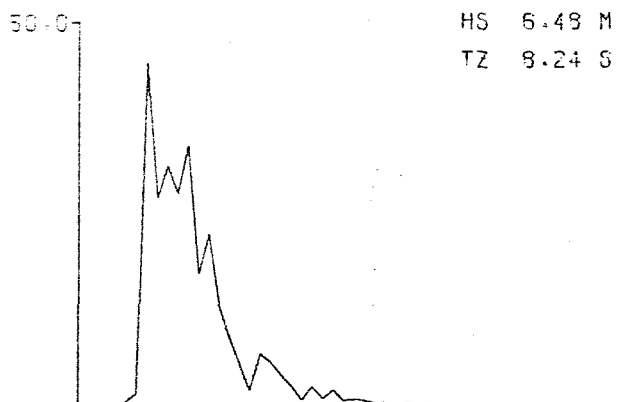
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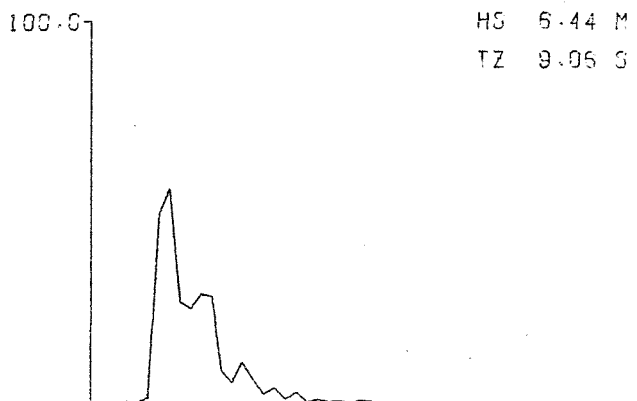
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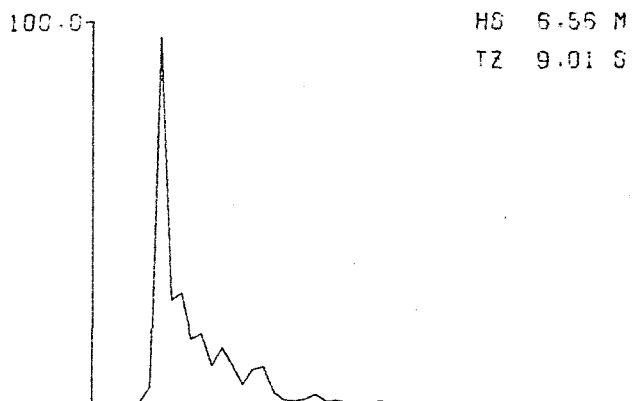
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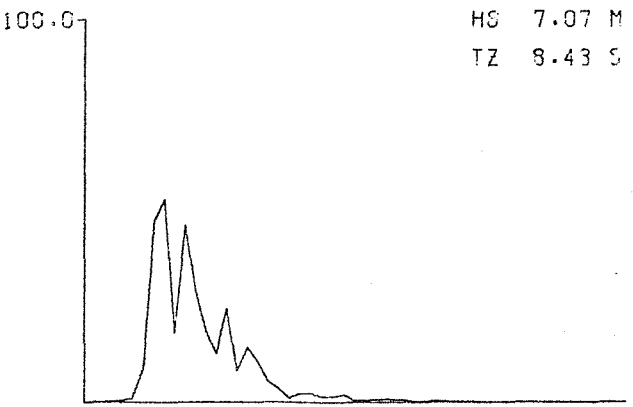
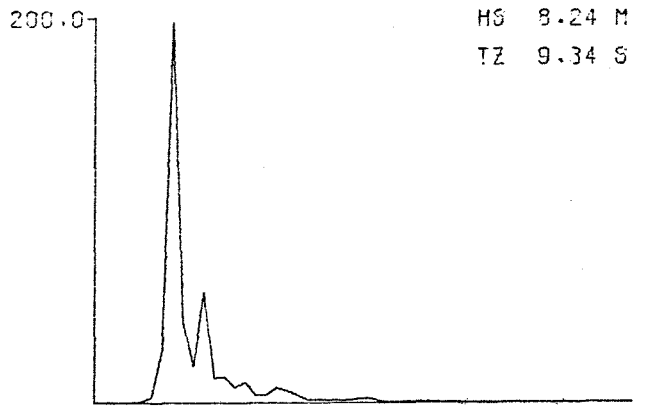
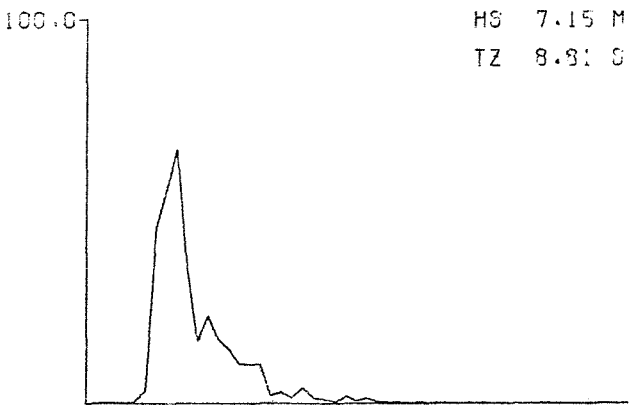
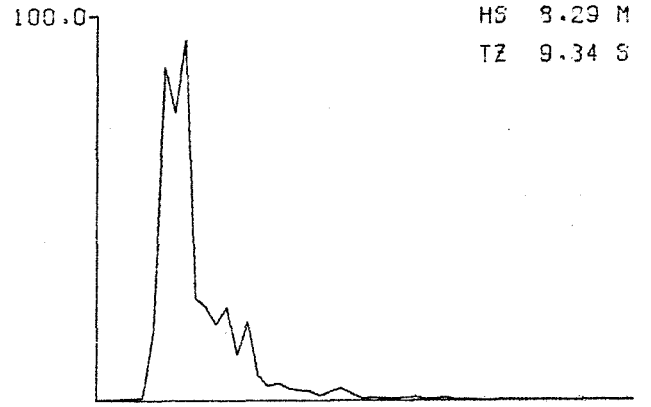
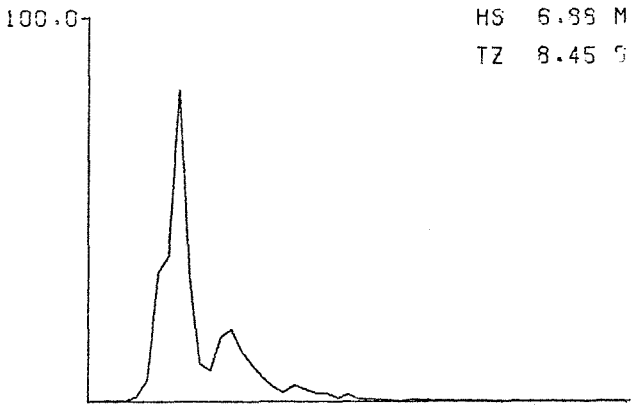
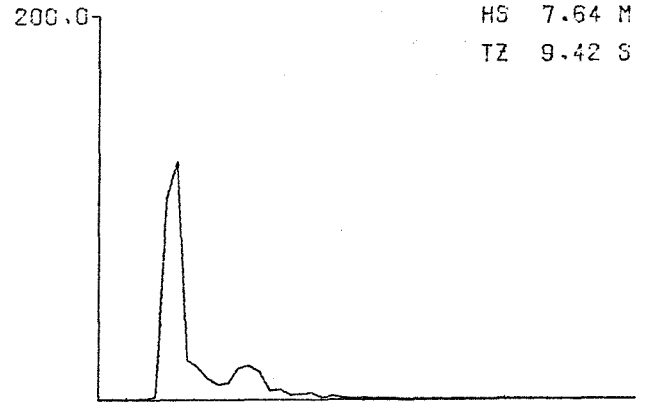
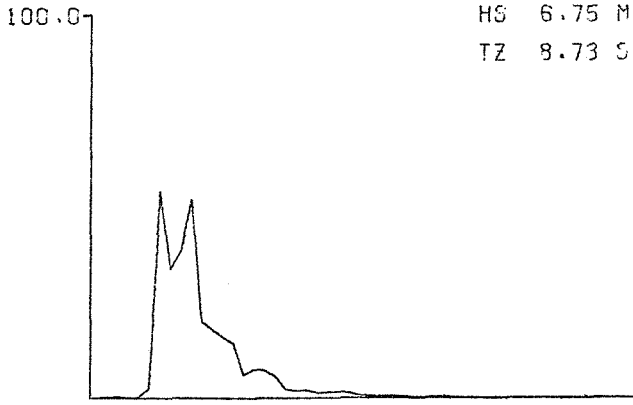
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7. References

Goda Y, 1970. Numerical Experiments on Wave statistics with spectral simulation. Port and Harbour Research Inst. Report 9, No 3.

