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AN ESTIMATE OF THE ONE-DIMENSIONAL SPECTRAL WAVE CLIMATE WEST OF THE SHETLAND ISLES

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NATURAL ENVIRONMENT RESEARCH COUNCIL
INSTITUTE OF OCEANOGRAPHIC SCIENCES

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AN ESTIMATE OF THE ONE-DIMENSIONAL SPECTRAL WAVE CLIMATE WEST OF THE SHETLAND ISLES

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INTRODUCTION

This report refers to wave measurements made at the Foula site during 1977, 1978 and 1979 as part of a project sponsored by the United Kingdom Offshore Operators Association (UKOOA) Oceanographic Committee. In an attempt to synthesise the long term wave climate for the area a subset of 400 wave records has been selected from these data by consideration of long term wind data measured at Lerwick anemograph station. The method used follows that developed at IOS (described in Ref 2).

In addition the simultaneous wave measurements, which are now available from South Uist and Foula, have been studied and the degree of correlation between them assessed.

This report includes an index to the 400 one-dimensional spectra calculated from the selected records, and these spectra are available separately in computer compatible form to users requirements.

The work presented was carried out for the Department of Energy under contract E/5A/CON/1631/172/0100.

1. THE WAVE DATA

The data referred to in this report result from a wave measurement programme conducted to the west of the Shetland Isles and financed by the United Kingdom Offshore Operators Association Oceanographic Committee.

1.1 DATA COLLECTION

A Marex data buoy was moored at approximately 60° 10' N, 2° 55' W in a depth of about 160 m. This buoy measured the waves by monitoring the output of a Datawell heave sensor over a 1024 second sample period which ended on each hour. The output of the heave sensor was digitised at a rate of 2 Hz and an on-board microprocessor was used to calculate a statistical summary, consisting of 4 parameters, of the resulting 2048 point digital record. The summary was recorded internally and the digital wave record was discarded.

In addition, the buoy monitored and transmitted continuously the output of the heave sensor, in standard Datawell AM/FM format, using a Waverider modulator and transmitter.

A back-up Datawell Waverider buoy was moored within half a mile of the Marex buoy and transmitted information about its own heave continuously.

A receiving station was set up at South Ness on the southern tip of the island of Foula. A Datawell Warep receiver could receive data from either the data buoy <u>or</u> the Waverider. A digital system, using a digital magnetic tape data logger, was the primary data recording method, with an analogue (fm) magnetic tape data logger providing a back-up. To begin with the receiver was switched to the Marex data buoy channel as routine, but for one period, when the Marex buoy went adrift, the Waverider signal was used. Later in the project, however, as reception conditions deteriorated, it was decided to use the Waverider channel since it was usually substantially stronger than that from the data buoy.

Only the data digitally recorded at the shore site have been used in this study. The processed data recorded on board the Marex buoy were not accessed.

1.2 PRELIMINARY PROCESSING OF THE DATA

The wave information was received and recorded in regular samples consisting of 2088 values of the heave measured at ½ second intervals. These 1044 second wave records were taken every 3 hours at the intermediate synoptic hours (00, 03, 06, 09, ... hours GMT), with the recording period ending on the hour.

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 wave record to a number of tests to check for the presence of characteristics not normally associated with a wave record of this type. The tests were based on the assumption 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 (Ref 1).

It was found that the proportion of the records which failed the checking procedure was much higher in the case of the Foula data than for any other IOS Waverider site. This was almost entirely due to the very long range (about 50 km) to the deployment site which resulted in the data telemetry being susceptible to adjacent channel interference. This manifested itself as more or less isolated bursts of erroneous data which were often of short duration. In order to recover as much information as possible, it was decided to remove these 'spikes' from the wave records whenever it seemed reasonable to do so.

A special editing program was used which plotted each (rejected) wave record on a suitable visual display unit, and allowed the operator to specify and remove offending data values. As each erroneous section was removed, the data values on either side of the gap were closed together to form a continuous wave record. Thus the edited wave record was shorter than the normal length by the total number of erroneous values discarded. The operator ensured that the resulting wave record contained no spurious discontinuities in the wave elevation.

1.3 AVAILABLE DATA

Wave data have now been collected from the Foula site for the periods:

January 1977-May 1978

July 1978-November 1978

May 1979-October 1979

Considering only months in which data were collected the average monthly data return rate was 66% for 1977, 38% for 1978 and 35% for 1979. Each month of the year was adequately covered apart from November, which was badly represented in 1977 and 1978 and not at all in 1979.

A more detailed description of the available data and their processing is given in Ref 1.

1.4 CALCULATION OF THE SPECTRA

A Fast Fourier Transform was performed on 2000 points (1000 seconds) of the series and the spectrum was formed by averaging over 10 adjacent harmonics to give a final resolution of 0.01 Hz. The spectral estimates were adjusted to compensate for the frequency response of the heave sensor. The estimates are also susceptible to various other forms of noise which are discussed in more detail in Ref 1. The Foula spectra appear to have low noise levels at both high and low frequencies, but nevertheless it is recommended that the first two spectral estimates in the output files be disregarded.

In this way it should be possible to avoid the accidental inclusion of low frequency instrumental noise in subsequent analyses. The lowest frequency for which a valid estimate of spectral density exists should therefore be regarded as 0.0455 Hz.

2. SELECTION OF A SUBSET OF THE WAVE DATA

For a further study of the Foula wave climate a more manageable set of wave records was required. The selection procedure outlined below closely follows that described by Crabb (Ref 2). The aim of this procedure is to select 400 wave records from the available data which are more representative of the long term wave climate of the area.

In order to accomplish this, 400 wind records were chosen from those made during the wave measurement programme such that their frequency distribution approximated the long term distribution of wind speed and direction in the area. The wave records associated with each of these wind records constitute the climatically representative subset.

2.1 COLLECTION OF THE WIND DATA

Winds are recorded as hourly mean speeds and direction by the Meteorological Office at Lerwick anemograph station. These wind data were obtained on magnetic tape for the period January 1977-October 1979. Each month of data with a sufficient number of valid associated wave records was sorted into wind speed and direction classes. These months and their percentage valid wave data return figures are listed in Table 2.1.1. Tabulations of the sorted data (Table 2.1.2) were arranged chronologically in seasonal groups. Monthly and whole year hourly mean speed and direction wind distributions for the period 1970-1979, were also obtained. For each of these long term distributions the total number of records and the percentage frequency of records were given for each class (Table 2.1.3 and 2.1.4).

These long term tables, as supplied, included a number of records in each speed range for which the direction was listed as variable. These records, which were concentrated almost entirely in the 1-3 knots range, were redistributed among the 12 direction classes according to the original distribution of records in these classes.

2.2 DERIVING THE SUBSET DISTRIBUTION

The next stage was to derive a distribution of 400 wind records which reproduces the long term distribution as closely as possible. This was effected by multiplying all the percentage frequency figures in the long term annual distribution by 4 and rounding to the nearest integer, to yield the number of records required in each class.

Overall rounding errors resulted in a total of 398 instead of 400 in the subset distribution. Consideration of row and column totals, and detailed comparison of the exact and rounded distributions, led to the conclusion that the original distribution would be more closely matched if 2 more records were included in particular classes. The resultant distribution is shown in Table 2.2.1.

To ensure that the records selected for inclusion in the subset of 400, were chosen realistically from throughout the year the number of records required in each class was divided into 4 figures, as described below, reflecting the probabilities of measuring those winds in each season.

First, 4 seasonal percentage frequency distributions (Tables 2.2.2-2.2.5) were produced from the long term monthly distributions by taking the 3 relevant monthly figures for each class and dividing their total by the total number of records in that season. The 4 seasonal figures thus produced for each class, were then converted into whole numbers ensuring that their total was equal to the figure in that class in the sample distribution already derived.

The monthly groups for the seasons were taken to be: December, January and February - winter; June, July and August - summer; March, April and May - spring; September, October and November - autumn.

The final distribution (Table 2.2.6) derived above was treated as 4 separate seasonal distributions of wind speed and direction, and the records selected accordingly.

2.3 SELECTING THE RECORDS

The wind records, for each seasonal distribution, were chosen from the monthly wind data tabulations previously described. The months were consulted cyclically within each season, with the central month taken initially.

Wind speed and direction classes of the seasonal distributions, with at least one record to be chosen, were considered in turn. The wind data table for the correct class was consulted and the wind records covering the hour immediately preceding a wave recording period were numbered. If no appropriate winds were found in that table then the same class in the next month was consulted.

A random number table was then used to select a wind record from the number list and its associated wave record was checked for validity. If no valid wave record existed another wind record was selected.

If more records were required in that class then the same class in the next month of wind data was consulted.

All 4 seasonal distributions were worked through in this way until the complete set of wind records was obtained. The associated wave spectra were retrieved from magnetic tape and assembled on a disk to form the subset.

2.4 COMMENTS

On 4 occasions, in the selection of the records, it was necessary, due to a lack of valid wave data with associated winds in the appropriate class, to use wave records not directly associated with a selected wind record. In each of these cases the wave record was taken within 2 hours of the end of the wind record.

In addition to the wind speed and direction classes mentioned above a class of calm records was processed in the same manner.

The precision with which the sample distribution conforms to the annual and seasonal distributions is limited by the fact that each chosen record represents 0.25% of the total number of records in the sample and 1.00% of the total number of selected records in each season. This is particularly noticeable at the tails of the distributions where the wind speed is highest.

Hence, in considering the results presented, the inability of the procedure to accommodate extreme conditions should be borne in mind.

3. THE FOULA WAVE CLIMATE

In this section 3 summaries of the selected set are presented to give an indication of the wave climate to be expected at Foula. In addition the 400 spectra of the selected records have been plotted and are included at the back of this report with an index which is described in Section 6. The files from which these spectra were plotted (described in Section 3.2) are available separately.

3.1 SUMMARIES OF THE SUBSET

Figure 3.1.1 shows the mean power spectrum for the subset from which the peak wave period was calculated to be approximately the same as that for the South Uist Offshore subset (Ref 2) at about 13 seconds. The subset average power was calculated to be 45.5 kw/m.

A scatter diagram of significant wave height (Hs) with energy period (Te) is given in Fig 3.1.2. The figures in this diagram represent the number of wave records, in parts per thousand, having particular combinations of significant wave height and energy period.

Finally, Fig 3.1.3 shows the distribution of total measured wave energy with significant wave height and energy period. The figures, in this case, show the fraction of the total energy in parts per thousand for each class of significant wave height and energy period.

3.2 DESCRIPTION OF DATA SUPPLIED

Frequency spectra, calculated as previously described, for each of the 400 selected wave records may be supplied separately in computer compatible form to user's requirements.

The one dimensional spectra and certain quantities described below were written by Fortran computer program to individual files on the computer medium (usually magnetic tape). A sample listing of a spectrum file in the format described below, is given in Table 3.2.2.

3.2.1 PROPERTIES INCLUDED IN THE SPECTRAL FILES

Moments of each spectrum are defined by:

$$Mn = \int_{f_1}^{f_2} f^n \, S(f) \, df , \qquad f_1 = 0.0455 \text{ Hz}, \quad f_2 = 0.6755 \text{ Hz}$$

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, Hs, defined as $4\sqrt{M_o}$

(b) Energy period, Te, defined as $\frac{M_{-1}}{M_o}$

(c) Mean zero crossing period, Tz, defined as $\sqrt{M_o/M_2}$

(d) Goda (1970) peakedness factor, Qp, defined as $\frac{2}{M_o{}^2}\int_{f_1}^{f_2} f\, S^2(f)\, df$

3.2.2 SPECTRUM FILES - LOGICAL RECORD DESCRIPTION

Logical record 1 - Alpha-numeric file header (16 A1, I3) of form FOULA 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 (4I4) being, in order: year, day, hour and minute of the start of the wave recording period.

Logical record 3 - Significant wave height in metres, energy period and zero crossing period in seconds, written (3F6.2).

Logical record 4 - Wind direction in degrees, divided by 10, eg 28 $\equiv$ 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 Qp, 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.

Files are separated by an IBM compatible tape mark (Physical EOF). An example spectrum file is given in Table 3.2.2.

4. AN ESTIMATION OF BIAS IN THE SAMPLE

The data return rate from the Foula site was generally low but the only month not well represented in any of the 3 years, was November. This is unfortunate as November is often a month of high wave activity.

The data started to become more intermittent from early 1978, with progressively more of the day time and evening records being lost. This was primarily due to radio interference caused mainly by the increasing use of the Citizens Band, both in the immediately surrounding sea areas and more distantly.

Radio interference was most troublesome when the buoy signal was weak and since this often occurs in periods of high wave activity it is possible that some bias exists in the data. This section is an attempt to quantify any bias that may exist.

To estimate the bias caused by the missing data it was necessary to have some idea of the sea state during those periods. The most important wave direction is from the west and, as will be shown in the next section, the South Uist data have a good correlation with the Foula data for westerly wind and wave conditions for a lag of 6 hours, and the slope of the best fit line is close to unity. A subsidiary calculation further showed that the average wave power figures, calculated over the same two year period at each site were almost identical.

Hence for this purpose, wherever there was missing Foula data it was replaced by the corresponding South Uist data.

To discover if there was any significant difference between the Foula data and the replacement South Uist data, percentage frequency distributions of significant wave height were produced for the two sets of data and a chi-squared test was carried out on them. This test indicated to a high level of confidence that the data were from different populations, and in fact the distribution of the replacement South Uist data was, as expected, skewed to the higher values.

The next stage was to estimate the effect that the inclusion of the replacement data would have had on the selected set. A percentage frequency distribution of significant wave height was produced for the infilled Foula data set by combining the separate distributions of the Foula data and of the replacement South Uist data already calculated.

A distribution of significant wave height was calculated for the Foula subset and then modified, as described below, to produce the distribution which probably would have resulted had there been no missing Foula data. For each class of the subset distribution the number of records in that class was multiplied by the ratio of the percentage frequency figure from the combined data distribution to that figure from the distribution of the measured Foula data.

Finally, to evaluate the effect of including the South Uist replacement data, average power figures for the original selected subset and for the subset modified by the above procedure were calculated. For each significant wave height class of the original subset distribution the average power per record was calculated. The total power in that class for the modified subset was then estimated by multiplying that average power figure by the number of records in the modified subset distribution. The overall average power figures for each subset were then calculated by summing the totals for each class and dividing by 400.

These calculations gave an average power figure for the modified subset of 47.6 kW/m compared with 45.5 kW/m for the selected subset. The accuracy of this result depends upon the degree to which the South Uist data can actually represent the missing Foula data and this is not sufficient to be able to regard 47.6 kW/m as a corrected figure. However, it does indicate that the likely consequences of any bias induced by selective data loss would be relatively small.

5. INVESTIGATION INTO THE CORRELATION BETWEEN FOULA AND SOUTH UIST DATA

Waves have been measured by a Datawell Waverider buoy at a site approximately 11 miles south-west of Benbecula in the Outer Hebrides, since March 1976. The buoy was moored in a depth of 42 metres, whereas the buoy at the Foula site was in a depth of 160 metres. Details of the data collection system at South Uist are given in Ref 2. A map showing the relative positions of the Foula and South Uist sites is given in Fig 5.1.

There are now simultaneous measurements for Foula and South Uist for the inclusive periods January 1977 to March 1978 and July 1978 to October 1978. During 1977 both sites produced reasonable valid data return rates and these data have been used to investigate the correlation between conditions at the 2 sites.

The data were inspected for valid pairs of corresponding records and for each pair the total power was calculated for both records. These powers were calculated using the equation $0.49 \times Hs^2 \times Te$ which is a very good estimate of the power for the Foula site which is in deep water but is about 11% lower than the actual power at South Uist. The correlation coefficient was then calculated for the 2 sets of powers. These calculations were repeated for a range of lags from -24 hours to 24 hours (in steps of 3 hours) imposed on the Foula data.

Figure 5.2 shows the plot of correlation coefficient with lag which is discussed below.

Scatter plots showing joint frequency distributions of power at the 2 sites were also compiled and examples, at a number of different lags are shown in Figs 5.3-5.11. A scatter plot and correlation coefficient were calculated for a lag of 6 hours using the true powers as a test of the effect of using the approximate powers. This showed, as expected, that the scatter plots were slightly biased towards higher powers at Foula but the correlation coefficient was unaffected.

The correlation coefficients calculated are not very high, but nevertheless significant, especially in view of the ordered way in which they increase with increasing lag to a maximum value at about 6-9 hours and decrease thereafter.

This result implies, as seems reasonable, a general eastward movement of wave and weather systems.

The scatter plots are complicated, however, by the existence of a significant easterly fetch at Foula as well as a small arc (110^{o}-150^{o}) of exposure to swell propagating from the North Sea. Both of these contribute to wave energy at Foula but not at South Uist and, moreover, are not available to an array of westerly facing devices.

To attempt to remove these complicating factors the correlation coefficient were recalculated for a number of lags, this time for data from both 1977 and 1978 but restricted to cases when winds at South Uist lay between 225^{o} and 315^{o}. To do this hourly wind data measured at Benbecula anemograph station during 1977 and 1978 were obtained from the Meteorological Office.

The new correlation coefficient against lag graph (Fig 5.12) shows that the correlation coefficients were significantly increased. (A calculation of the correlation coefficient for data from 1977 fo 1978 at a 6 hour lag with no restrictions, showed that part of the increase was due to the inclusion of the extra data.)

The higher correlation is reflected in the appearance of the scatter plot, Fig 5.13, which is noticeably narrower with the number of occurrences of high power at Foula corresponding to low power at South Uist being much reduced.

The results are particularly significant since the chosen limits on wind, and thus wind sea, direction approximately coincide with the arc within which the vast majority of the swell power is to be found (Ref 3). Restricting wind directions in this way, therefore corresponds to selecting cases where total wave power approaches from within the chosen limits.

The calculations were also repeated for cases where the South Uist winds fell in the easterly quadrant (45^{o}-135^{o}) which ensures that any power observed at South Uist was due to swell. The effect at the Foula site is similar but less complete due to the greater exposure of this site. This is reflected in the scatter plot (Fig 5.14) which shows a greater incidence of high powers at Foula corresponding to low powers at South Uist.

The correlation coefficients (Fig 5.13) are lower than in the westerly case and are less well ordered with increasing lag. They are, however, generally higher at positive lags implying that the degree of correlation which does exist is primarily due to the general eastward movement of swell.

REFERENCES

1. PITT E G and FORTNUM B C H (1980). West of Shetland data buoy project Report on the Foula spectral wave data January 1977-November 1978. IOS Internal Document No 63, March 1980 (Confidential to UKOOA Oceanographic Committee Participants)

2. CRABB J A (1979). Report No 1 Selected wave records and one-dimensional spectra for South Uist. IOS Internal Document No 33, January 1978.

3. CRABB J A (1980). Synthesis of a directional wave climate. Power from sea waves. Academic Press and WESC (79) DA 90.

TABLE 2.1.1

PERCENTAGE VALID WAVE DATA RETURNS AND MONTHS OF WIND DATA TABULATED

		1977	1978	1979
WINTER	December	90	No Data	No Data
	January	48	46	No Data
	February	93	5	No Data
SPRING	March	80	30	No Data
	April	78	69	No Data
	May	86	42	38
SUMMER	June	63	No Data	35
	July	53	38	33
	August	55	69	50
AUTUMN	September	69	58	35
	October	74	18	19
	November	7	10	No Data

The months of wind data which were tabulated have their data return figures underlined.

(May 1979 was inadvertently excluded)

TABLE 2.1.2

EXAMPLE OF A PARTICULAR DIRECTION CLASS OF THE TABULATED WIND DATA
The hand-written symbols are those used during the selection procedure

MONTH SEPTEMBER 1977 DIRECTION CLASS 230 - 250

0 KTS	1-3 KTS	4-6 KTS	7-10 KTS	11-16 KTS	17-21 KTS	22-27 KTS
0 0 0 0 0 0	0 0 0 0 0 0	1 5 7 977 25 6	7 7 977 25 9	1 2 3 977 2512	22 2 977 2321	1 17 5 977 2326 ✗
0 0 0 0 0 0	0 0 0 0 0 0	15 9 977 23 6	8 7 977 2410	3 3 977 2411	1 23 2 977 2420	18 5 977 2326
0 0 0 0 0 0	0 0 0 0 0 0	327 977 23 6	14 9 977 25 8	2 5 3 977 2311	9 3 977 2417	19 5 977 2325
0 0 0 0 0 0	0 0 0 0 0 0	427 977 25 6	16 9 977 24 7	6 3 977 2413	10 3 977 2418	2 20 5 977 2326 ✗
0 0 0 0 0 0	0 0 0 0 0 0	2 527 977 25 5 ✓	2312 977 25 7	7 3 977 2416	2 11 3 977 2419	21 5 977 2325
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	013 977 23 7	3 8 3 977 2415 ✗	12 3 977 2419	22 5 977 2325
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	227 977 25 7	3 6 977 2516	13 3 977 2319	3 23 5 977 2424
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1730 977 24 9	4 6 977 2516	3 14 3 977 2319	0 6 977 2322
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1830 977 2310	9 6 977 2313	15 3 977 2319	1 6 977 2325
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	2130 977 25 7	10 6 977 2414	16 3 977 2318	15 8 977 2522
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	4 11 6 977 2514	4 17 3 977 2318	4 1413 977 2324
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	9 7 977 2314	5 2 6 977 2319	1513 977 2326
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	5 11 7 977 2316	13 7 977 2418	1928 977 2326
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	12 7 977 2316	6 14 7 977 2318	5 2028 977 2322
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	6 17 7 977 2316	15 7 977 2318	2228 977 2422
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	18 7 977 2316	16 7 977 2318	629 977 2526
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	19 7 977 2315	3 8 977 2417	729 977 2526
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	7 20 7 977 2415	7 5 8 977 2517 ✓	6 829 977 2526
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	21 7 977 2312	6 8 977 2517	929 977 2527
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	22 7 977 2316	7 8 977 2518	1029 977 2525
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	8 23 7 977 2315	8 8 8 977 2519	7 1129 977 2425 ✓
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 8 977 2312	9 8 977 2518	1829 977 2326
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1 8 977 2416	10 8 977 2520	1929 977 2425
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	9 2 8 977 2316 ✓	9 11 8 977 2520	8 2029 977 2427
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	4 8 977 2414	10 14 8 977 2520	2129 977 2425
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	613 977 2311	11 813 977 2317	2229 977 2423
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	713 977 2313	1013 977 2318	9 2329 977 2423
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	913 977 2316	12 1113 977 2319	030 977 2424
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1630 977 2512	1213 977 2319	130 977 2426
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1930 977 2315	2128 977 2319	10 230 977 2423
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1229 977 2421	330 977 2523
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1329 977 2320	11 1130 977 2522
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	1230 977 2521	0 0 0 0 0 0
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0

28-33 KTS	34-40 KTS	41-47 KTS	48-55 KTS	56-63 KTS	>63 KTS
1 11 5 977 2333 ✗	2113 977 2334	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
12 5 977 2332	2213 977 2434	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
13 5 977 2332	2313 977 2435	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
2 14 5 977 2331 ✗	1328 977 2335	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
15 5 977 2330	1428 977 2538	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
16 5 977 2328	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
014 977 2432	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
114 977 2530	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
3 214 977 2529 ✓	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
4 1728 977 2530	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
1828 977 2428	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
329 977 2529	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
429 977 2530	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
5 529 977 2428	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
6 1729 977 2328	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0
0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0	0 0 0 0 0 0

SYMBOLS: ✗ Selected wind record, but no associated valid wave record exists

✓ Selected wind record, included in the subset

1, 2, 3,.. Number of wind record for selection using random number table

Each wind record in the table consists of:

hour, day, month, year, $\frac{\text{direction,}}{10}$ speed

in the Fortran format (4I2, 1X, 2I2).

Note: Not every speed class in this table is used to select a record. In these cases other months of the season were used.

TABLE 2.1.3

PERCENTAGE FREQUENCY DISTRIBUTION OF SPEED AND DIRECTION FOR LERWICK WINDS DURING THE PERIOD 1970-1979

Mean Direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	Variable	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	-	1.36
1-3	0.35	0.39	0.31	0.26	0.27	0.49	0.61	0.85	0.44	0.32	0.40	0.65		5.34
4-6	0.76	0.70	0.59	0.45	0.56	1.27	1.33	1.23	0.95	0.97	1.07	1.10	0.01	10.98
7-10	1.66	1.48	0.90	0.68	1.17	2.31	2.99	1.93	2.16	2.23	2.11	1.97		21.59
11-16	2.47	2.11	1.17	0.66	1.45	2.84	4.16	2.74	3.99	3.10	2.46	2.60		29.75
17-21	1.04	0.94	0.50	0.38	0.79	1.60	1.91	1.72	2.73	1.87	0.97	1.08		15.55
22-27	0.46	0.52	0.24	0.18	0.49	1.21	1.38	1.42	2.22	1.37	0.37	0.36		10.22
28-33	0.10	0.17	0.06	0.03	0.18	0.48	0.57	0.66	0.82	0.52	0.13	0.11		3.83
34-40	0.02	0.04	0.01	0.01	0.04	0.11	0.17	0.21	0.30	0.19	0.03	0.02		1.14
41-47		0.02				0.02	0.01	0.02	0.05	0.03				0.14
48-55								0.01	0.02					0.03
56-63														
Over 63														
TOTALS	6.86	6.36	3.80	2.66	4.94	10.33	13.14	10.79	13.68	10.60	7.53	7.90	0.01	98.58

(1 kt or more)

Defective records 0.05

Total 99.99

TABLE 2.1.4

LONG TERM MONTHLY DISTRIBUTION OF SPEED AND DIRECTION FOR LERWICK WINDS DURING THE PERIOD 1970-1979 - JANUARY

Mean Direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	Variable	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	-	123
1-3	14	13	21	12	11	13	18	46	39	29	23	52		291
4-6	34	8	6	11	27	18	46	72	66	51	56	76	2	473
7-10	90	30	27	47	77	71	89	130	139	106	142	147		1095
11-16	120	45	90	49	107	213	253	241	215	117	156	187		1793
17-21	47	30	48	67	138	351	175	212	120	114	64	86		1452
22-27	33	48	18	11	78	353	232	221	175	109	34	38		1350
28-33	20	18	5		15	177	100	95	83	60	24	10		607
34-40	2	12	5		2	50	36	25	23	39	4	4		202
41-47	2	13				5		4	5	10				39
48-55								2	1	1				4
56-63								1						1
Over 63														
TOTALS	362	217	220	197	455	1251	949	1049	866	636	503	600	2	7307

(1 kt or more)

TOTAL 7430

Example of monthly long term wind distribution obtained from the Meteorological Office

TABLE 2.2.1 SPEED AND DIRECTION DISTRIBUTION OF WIND RECORDS TO BE SELECTED

Mean direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	5
1-3	1	2	1	1	1	2	3*	3	2	1	2	3	22
4-6	3	3	2	2	2	5	5	5	4	4	4	4	43
7-10	7	6	4	3	5	9	12	8	9	9	8	8	88
11-16	10	8	5	3	6	11	17	11	16	12	10	10	119
17-21	4	4	2	2	3	6	8	7	11	7	4	4	62
22-27	2	2	1	1	2	5	6	6	9	5	1	2*	42
28-33		1			1	2	2	3	3	2	1		15
34-40							1	1	1	1			4
41-47													
48-55													
56-63													
Over 63													
TOTALS (1 kt or more)	27	26	15	12	20	40	54	44	55	41	30	31	395
												TOTAL	400

*Classes with additional records included in trying to match annual long term distribution

TABLE 2.2.2 LONG TERM DISTRIBUTION OF WIND SPEED AND DIRECTION BY SEASON

Figures show percentage frequency of observations in each class for Winter 1970-1979

Mean direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	1.67
1-3	0.31	0.24	0.23	0.21	0.13	0.24	0.28	0.84	0.36	0.33	0.39	0.63	4.19
4-6	0.48	0.17	0.21	0.27	0.38	0.35	0.55	1.18	0.83	0.66	0.93	1.10	7.11
7-10	1.35	0.46	0.38	0.70	1.03	1.22	1.46	1.98	1.65	1.46	1.76	1.66	15.11
11-16	1.78	1.11	1.07	0.89	1.35	2.65	3.65	3.33	2.93	1.94	1.82	2.28	24.80
17-21	0.69	0.53	0.60	0.76	1.27	3.15	2.71	2.49	2.10	2.03	1.05	1.14	18.52
22-27	0.36	0.49	0.30	0.35	1.21	3.27	2.66	2.47	3.09	2.18	0.55	0.54	17.47
28-33	0.15	0.13	0.07	0.06	0.61	1.54	1.31	1.26	1.47	1.03	0.16	0.20	7.99
34-40	0.01	0.06	0.03	0.05	0.11	0.33	0.33	0.39	0.65	0.44	0.05	0.04	2.49
41-47	0.01	0.06		0.01		0.03		0.06	0.11	0.08			0.36
48-55								0.04	0.04	0.01			0.09
56-63													
Over 63													
TOTALS	5.14	3.25	2.89	3.30	6.09	12.78	12.95	14.04	13.23	10.16	6.71	7.59	98.13

(1 kt or more)

Total 99.80

TABLE 2.2.3 LONG TERM DISTRIBUTION OF WIND SPEED AND DIRECTION BY SEASON

Figures show percentage frequency of observations in each class for Spring 1970-1979

Mean direction (degrees true)

Mean speed (kts)

	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	1.20
1-3	0.29	0.46	0.31	0.24	0.26	0.44	0.47	0.85	0.42	0.27	0.47	0.68	5.16
4-6	0.60	0.89	0.85	0.65	0.67	1.46	0.94	1.07	0.84	0.91	1.02	1.03	10.93
7-10	1.46	2.30	1.34	0.89	1.59	2.99	2.68	1.48	1.83	1.67	1.49	1.79	21.51
11-16	3.18	3.19	1.89	0.76	2.35	3.83	4.26	2.37	3.09	2.38	2.30	2.89	32.49
17-21	2.37	1.59	0.76	0.44	0.73	1.41	2.20	1.50	2.29	1.55	1.00	1.52	17.36
22-27	0.50	0.81	0.44	0.22	0.22	0.58	1.53	1.07	1.56	0.84	0.31	0.48	8.56
28-33	0.06	0.27	0.06	0.01	0.01	0.11	0.57	0.52	0.50	0.19	0.16	0.08	2.54
34-40	0.02	0.05			0.04	0.03	0.25	0.10	0.23	0.05	0.04	0.01	0.82
41-47						0.01	0.01		0.05				0.07
48-55													
56-63													
Over 63													
TOTALS (1 kt or more)	8.48	9.56	5.65	3.21	5.87	10.86	12.91	8.96	10.81	7.86	6.79	8.48	99.44

Total 100.64

TABLE 2.2.4 LONG TERM DISTRIBUTION OF WIND SPEED AND DIRECTION BY SEASON

Figures show percentage frequency of observations in each class for Summer 1970-1979

Mean direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	1.33
1-3	0.45	0.58	0.46	0.39	0.50	0.88	1.11	0.91	0.49	0.37	0.33	0.44	6.91
4-6	1.13	1.23	0.98	0.58	0.86	2.44	2.70	1.43	1.31	1.37	1.02	0.96	16.01
7-10	1.73	2.48	1.33	0.73	1.14	3.34	5.25	2.11	3.29	3.57	2.45	2.08	29.50
11-16	2.54	3.13	0.92	0.56	0.68	1.75	4.28	2.33	5.53	4.63	3.11	2.39	31.85
17-21	0.78	1.65	0.17	0.10	0.05	0.15	0.59	1.22	3.07	1.68	0.78	0.66	10.90
22-27	0.23	0.43	0.10	0.02		0.01	0.15	0.54	1.15	0.57	0.25	0.13	3.58
28-33		0.06						0.10	0.12	0.07		0.01	0.36
34-40								0.01	0.01				0.02
41-47													
48-55													
56-63													
Over 63													
TOTALS (1 kt or more)	6.86	9.56	3.96	2.38	3.23	8.57	14.08	8.65	14.97	12.26	7.94	6.67	99.13

Total 100.46

TABLE 2.2.5 LONG TERM DISTRIBUTION OF WIND SPEED AND DIRECTION BY SEASON

Figures show percentage frequency of observations in each class for Autumn 1970-1979

Mean direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	TOTALS
Calm	-	-	-	-	-	-	-	-	-	-	-	-	1.25
1-3	0.36	0.26	0.20	0.19	0.18	0.38	0.52	0.81	0.36	0.31	0.45	0.84	4.86
4-6	0.83	0.45	0.29	0.29	0.30	0.76	1.07	1.22	0.81	0.90	1.30	1.33	9.55
7-10	2.08	0.60	0.53	0.39	0.90	1.61	2.47	2.16	1.83	2.17	2.74	2.35	19.83
11-16	2.35	0.89	0.78	0.45	1.40	3.13	4.43	2.99	4.38	3.41	2.59	2.85	29.65
17-21	1.04	0.51	0.50	0.24	1.16	1.78	2.21	1.72	3.48	2.24	1.05	1.00	16.93
22-27	0.75	0.36	0.14	0.12	0.57	1.10	1.25	1.64	3.14	1.99	0.39	0.30	11.75
28-33	0.18	0.21	0.11	0.03	0.13	0.32	0.45	0.81	1.23	0.84	0.20	0.16	4.67
34-40	0.03	0.05				0.08	0.10	0.34	0.32	0.30	0.04	0.04	1.30
41-47						0.02			0.05	0.04			0.11
48-55									0.02				0.02
56-63													
Over 63													
TOTALS (1 kt or more)	7.62	3.33	2.55	1.71	4.64	9.18	12.50	11.69	15.62	12.20	8.76	8.87	98.67

Total 99.92

TABLE 2.2.6 FINAL DISTRIBUTION OF SUBSET WINDS

Figures show number of wind records required in each class with their seasonal breakdown

Mean direction (degrees true)

Mean speed (kts)	350 -010	020 -040	050 -070	080 -100	110 -130	140 -160	170 -190	200 -220	230 -250	260 -280	290 -310	320 -340	
1-3	1 0 0 1 0	2 0 1 1 0	1 0 0 1 0	1 0 0 1 0	1 0 0 1 0	2 0 1 1 0	3 0 1 1 1	3 1 1 1 0	2 0 1 1 0	1 0 0 1 0	2 0 1 0 1	3 1 1 0 1	Winter Spring Summer Autumn
4-6	3 0 1 1 1	3 0 1 1 1	2 0 1 1 0	2 0 1 1 0	2 0 1 1 0	5 0 2 2 1	5 0 1 3 1	5 1 1 2 1	4 1 1 1 1	4 1 1 1 1	4 1 1 1 1	4 1 1 1 1	
7-10	7 1 2 2 2	6 0 2 3 1	4 1 1 1 1	3 1 1 1 0	5 1 2 1 1	9 1 3 3 2	12 1 3 5 3	8 2 2 2 2	9 2 2 3 2	9 1 2 4 2	8 2 1 2 3	8 2 2 2 2	
11-16	10 2 3 3 2	8 1 3 3 1	5 1 2 1 1	3 1 1 1 0	6 1 2 1 2	11 2 4 2 3	17 4 4 4 5	11 3 3 2 3	16 3 3 6 4	12 2 2 5 3	10 2 2 3 3	10 2 3 2 3	
17-21	4 0 2 1 1	4 0 2 2 0	2 1 1 0 0	2 1 1 0 0	3 1 1 0 1	6 3 1 0 2	8 3 2 1 2	7 2 2 1 2	11 2 2 3 4	7 2 1 2 2	4 1 1 1 1	4 1 1 1 1	
22-27	2 0 1 0 1	2 1 1 0 0	1 0 1 0 0	1 1 0 0 0	2 1 0 0 1	5 3 1 0 1	6 3 2 0 1	6 2 1 1 2	9 3 2 1 3	5 2 1 0 2	1 1 0 0 0	2 1 1 0 0	
28-33		1 0 1 0 0			1 1 0 0 0	2 2 0 0 0	2 1 1 0 0	3 1 1 0 1	3 1 1 0 1	2 1 0 0 1	1 0 0 0 1		
34-40							1 1 0 0 0	1 1 0 0 0	1 1 0 0 0	1 1 0 0 0			
Over 41													
Calm Records	5 2 1 1 1												

TABLE 3.2.2

AN EXAMPLE OF THE SPECTRUM FILES

```
 FOULA SPECTRUM  100
   79 238    9    0
    1.93  7.51  5.65
  213
  0.15130E 02
  0.17538E 01
  0.23356E 00
  0.37073E-01
  0.73054E-02
  0.18496E-02
  0.60273E-03
  0.15880E 01
0.0255     0.19422E-01
0.0355     0.80255E-02
0.0455     0.20205E-01
0.0555     0.21251E-01
0.0655     0.57200E-01
0.0755     0.62259E 00
0.0855     0.30118E 01
0.0955     0.23521E 01
0.1055     0.16190E 01
0.1155     0.88532E 00
0.1255     0.93358E 00
0.1355     0.96773E 00
0.1455     0.17619E 01
0.1555     0.20465E 01
0.1655     0.10775E 01
0.1755     0.14430E 01
0.1855     0.10235E 01
0.1955     0.92495E 00
0.2055     0.68131E 00
0.2155     0.60019E 00
0.2255     0.57920E 00
0.2355     0.32695E 00
0.2455     0.29453E 00
0.2555     0.30146E 00
0.2655     0.19265E 00
0.2755     0.19069E 00
0.2855     0.11101E 00
0.2955     0.61063E-01
0.3055     0.13612E 00
0.3155     0.10895E 00
0.3255     0.98044E-01
0.3355     0.10374E 00
0.3455     0.51845E-01
0.3555     0.76217E-01
0.3655     0.42060E-01
0.3755     0.84714E-01
0.3855     0.52024E-01
0.3955     0.49028E-01
0.4055     0.42744E-01
0.4155     0.44620E-01
0.4255     0.34815E-01
0.4355     0.11875E-01
0.4455     0.26080E-01
0.4555     0.27983E-01
0.4655     0.24108E-01
0.4755     0.13592E-01
0.4855     0.97958E-02
0.4955     0.20220E-01
0.5055     0.28702E-01
0.5155     0.14281E-01
0.5255     0.21412E-01
0.5355     0.15336E-01
0.5455     0.90734E-02
0.5555     0.12486E-01
0.5655     0.72923E-02
0.5755     0.58669E-02
0.5855     0.12901E-01
0.5955     0.11149E-01
0.6055     0.11121E-01
0.6155     0.92882E-02
0.6255     0.82851E-02
0.6355     0.48209E-02
0.6455     0.41449E-02
0.6555     0.81572E-02
```

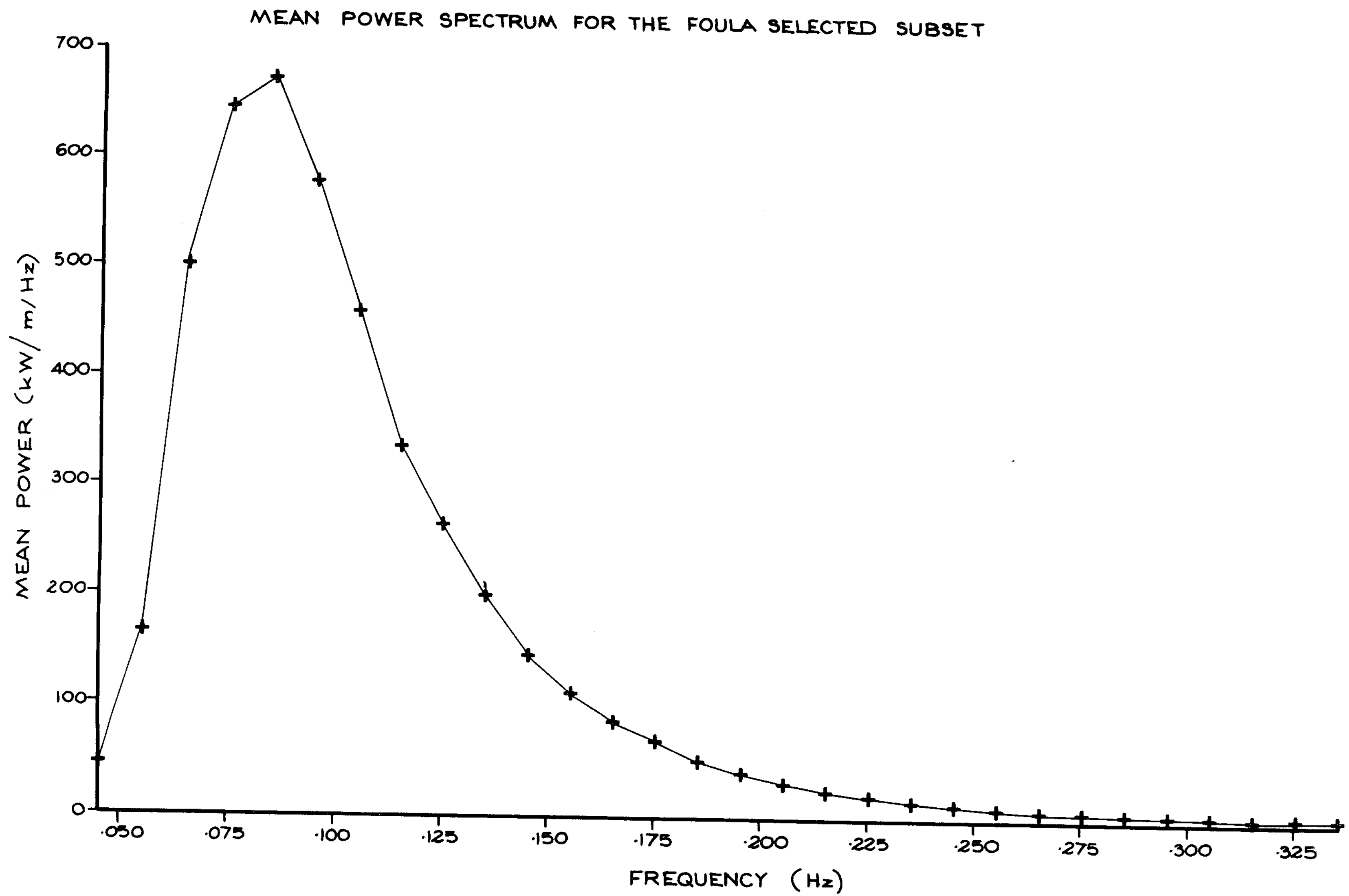
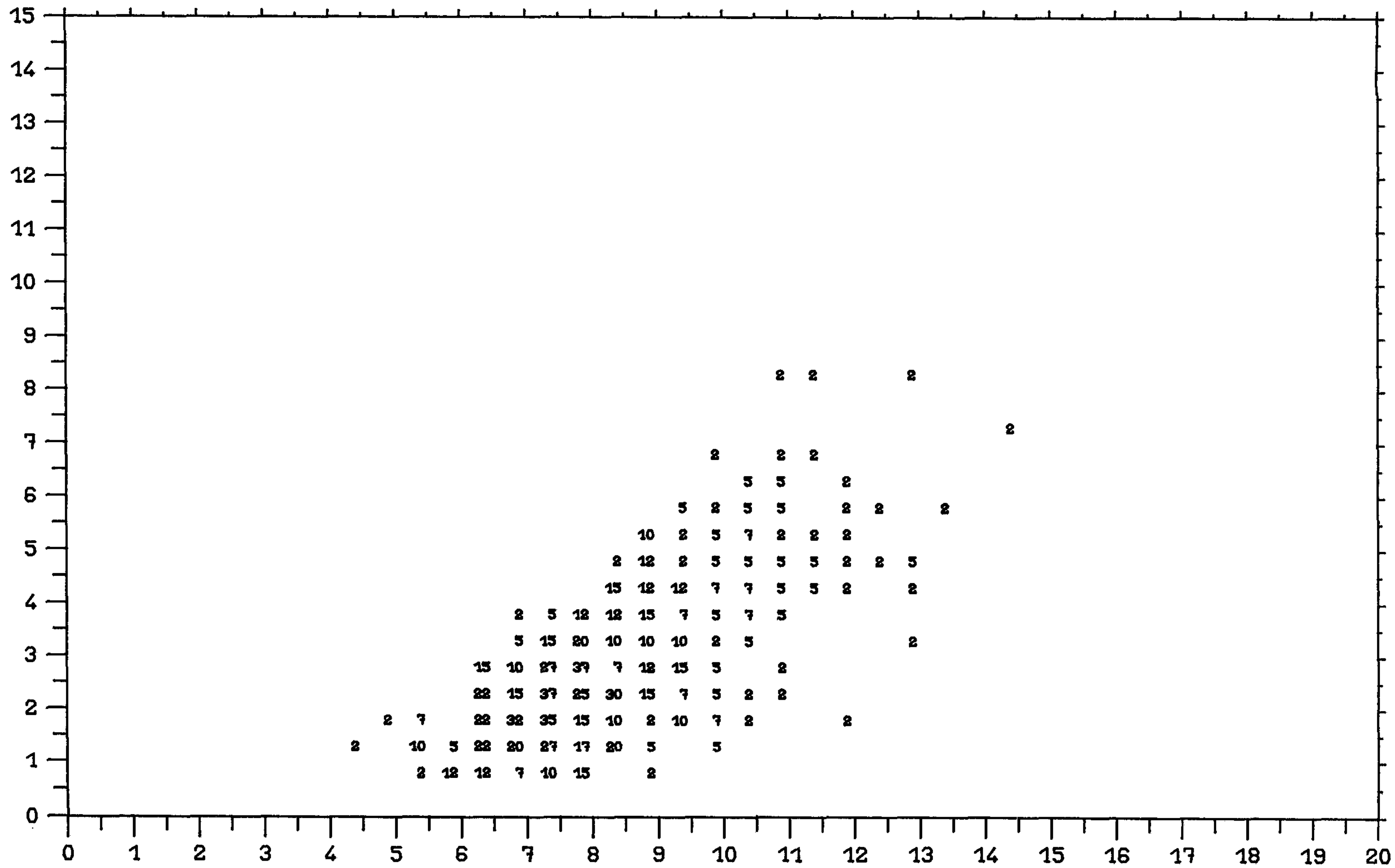

MEAN POWER SPECTRUM FOR THE FOULA SELECTED SUBSET
MEAN POWER (kW/m/Hz)
700
600
500
400
300
200
100
0
·050
·075
·100
·125
·150
·175
·200
·225
·250
·275
·300
·325
FREQUENCY (Hz)

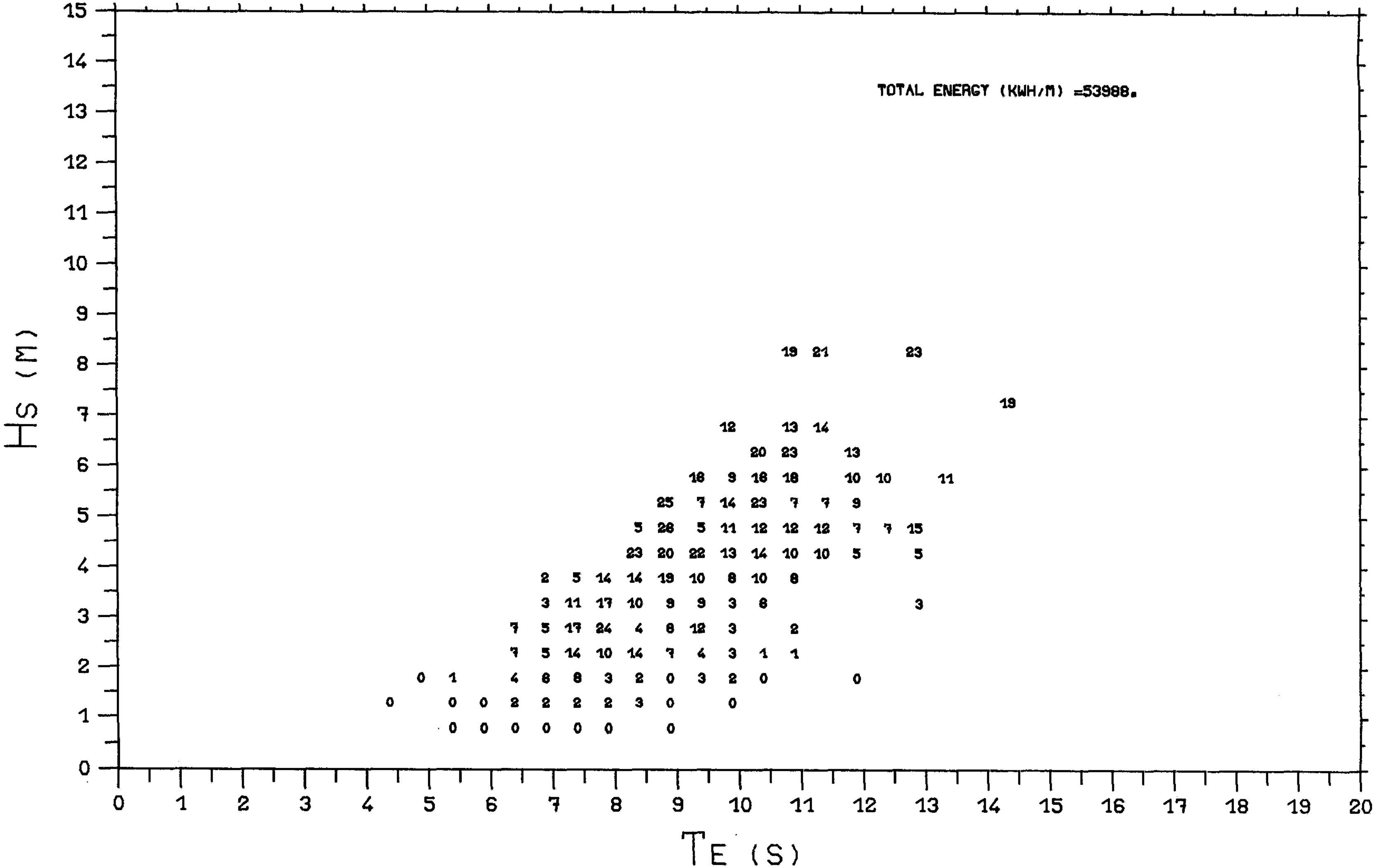
Fig 3.1.1



SCATTER DIAGRAM OF Hs AND TE (PPT)

FOULA SUBSET

Fig 3.1.2



DISTRIBUTION OF TOTAL MEASURED WAVE ENERGY
WITH Hs AND Te (FRACTION OF TOTAL IN PPT)

FOULA SUBSET

Fig 3.1.3

RELATIVE POSITIONS OF THE FOULA AND S.UIST SITES

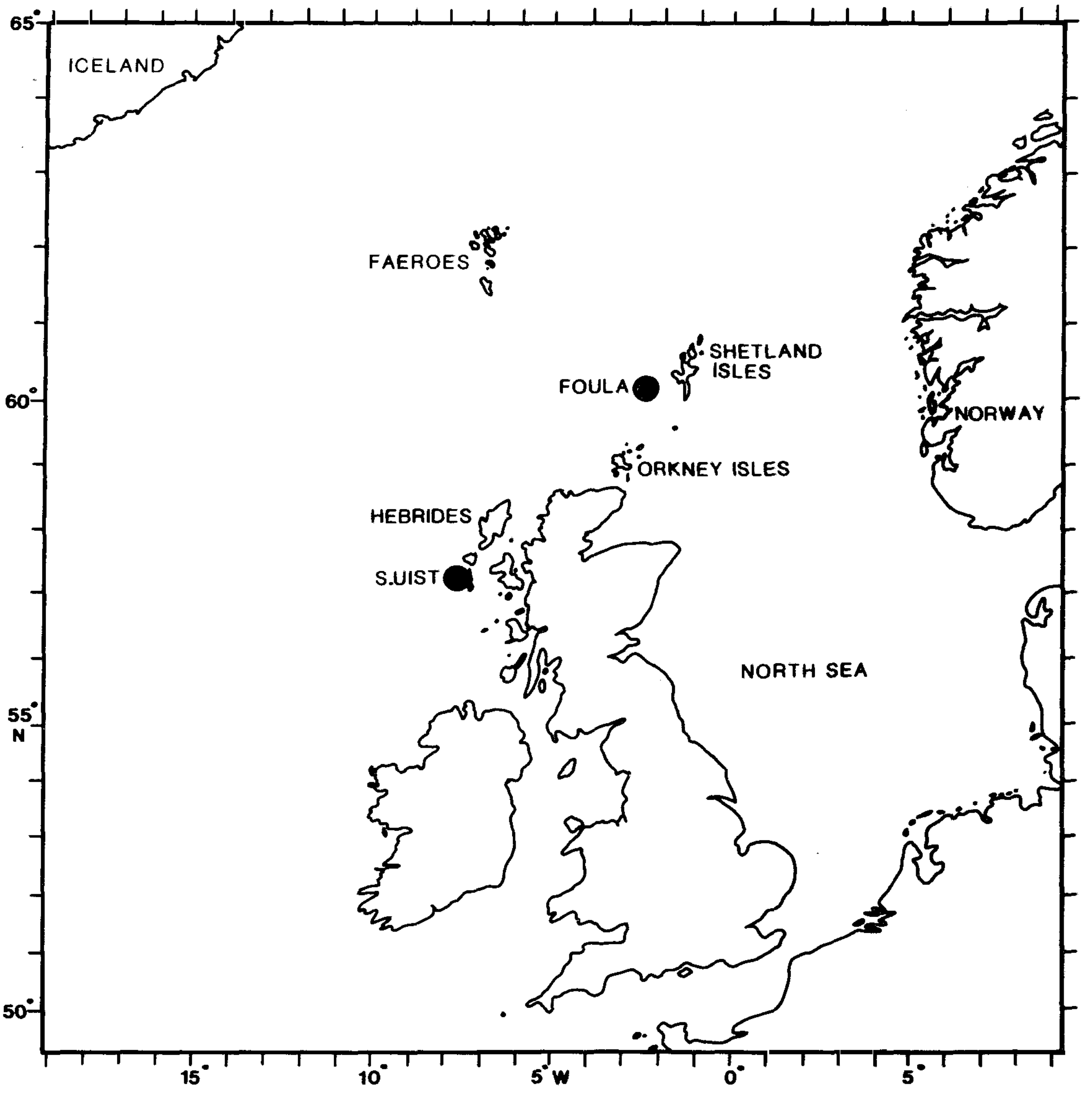


Fig 5.1

PLOT OF CORRELATION WITH LAG FOR THE COMPARISON OF FOULA AND SOUTH UIST OFFSHORE POWER.

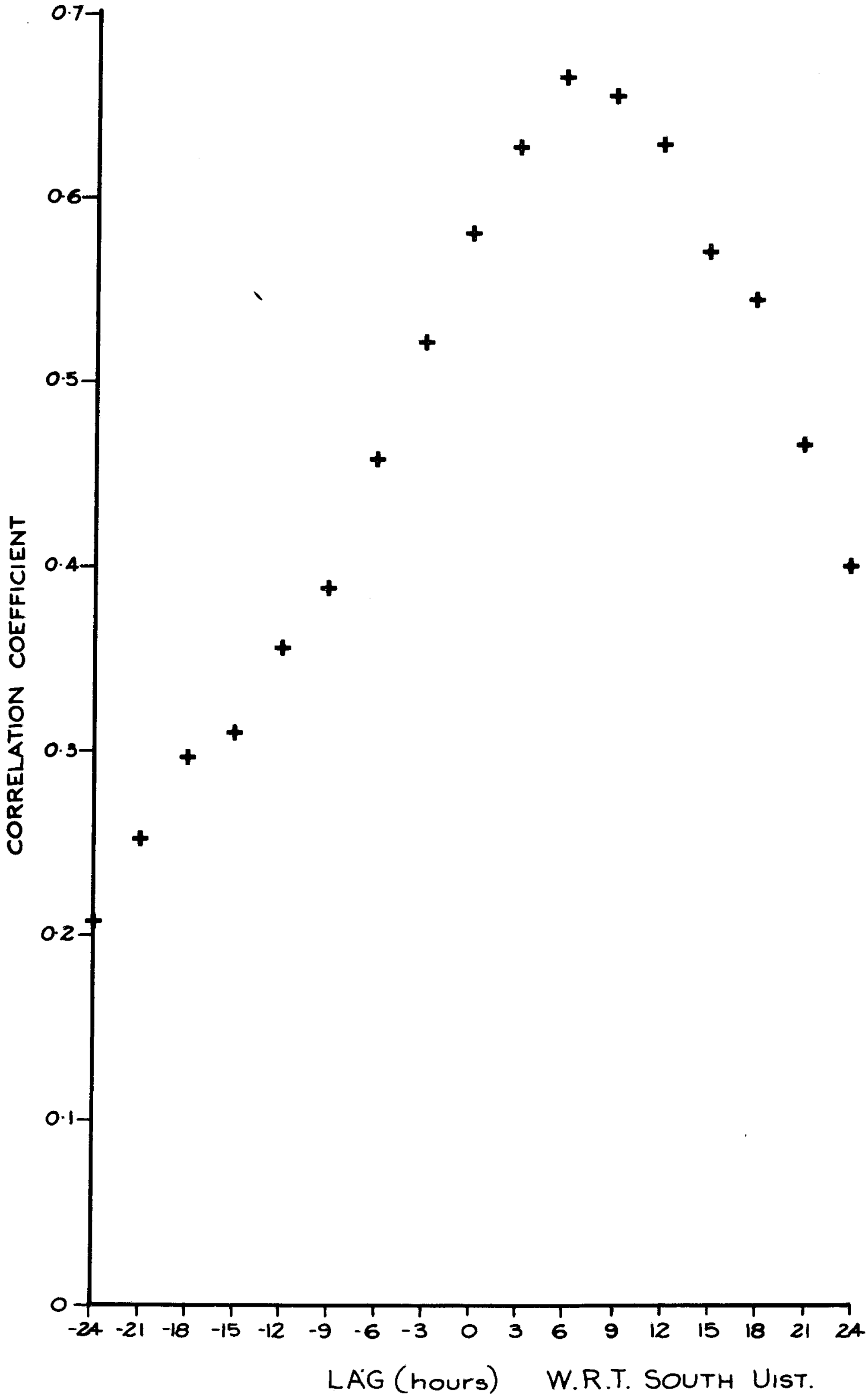
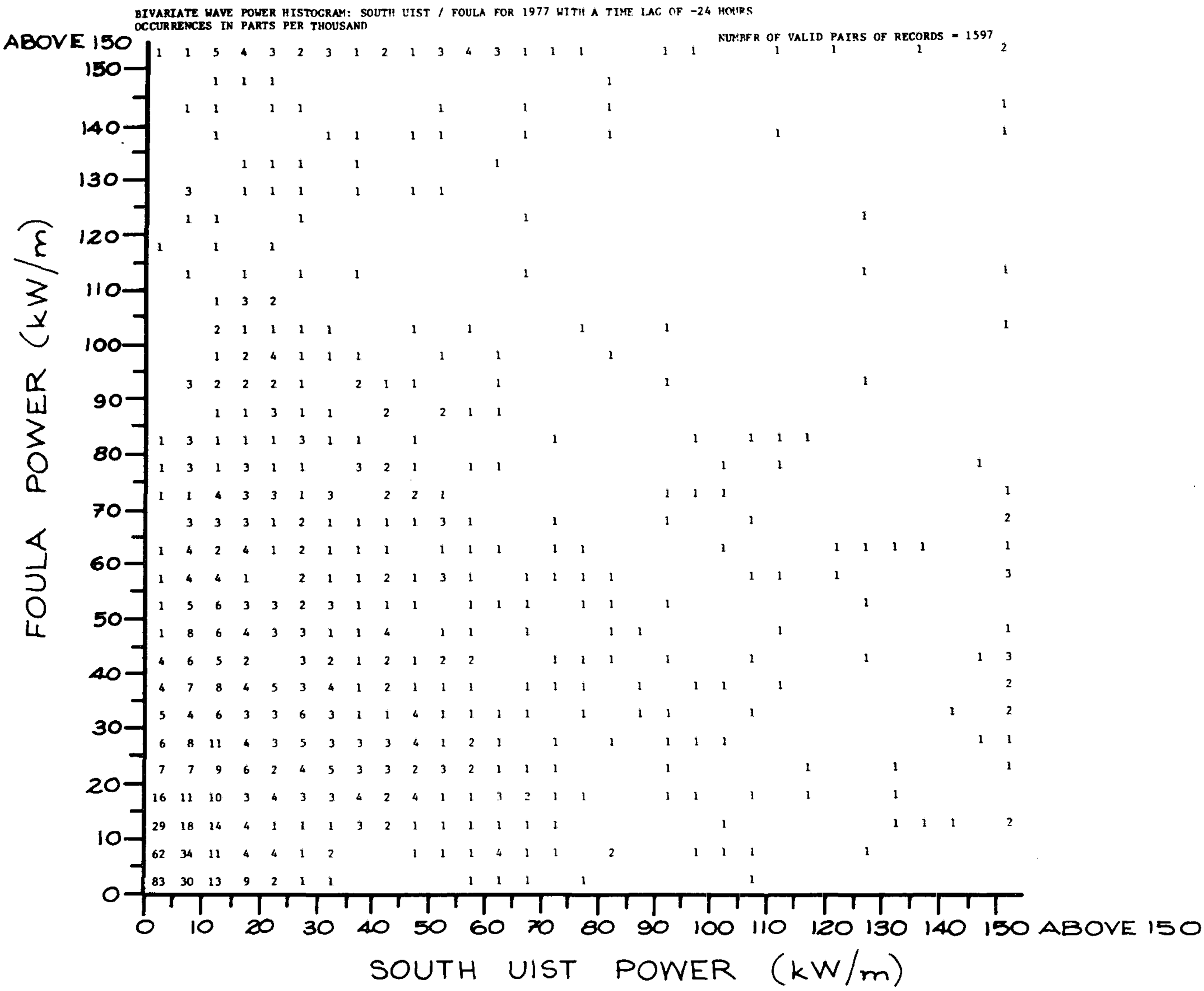


Fig 5.2

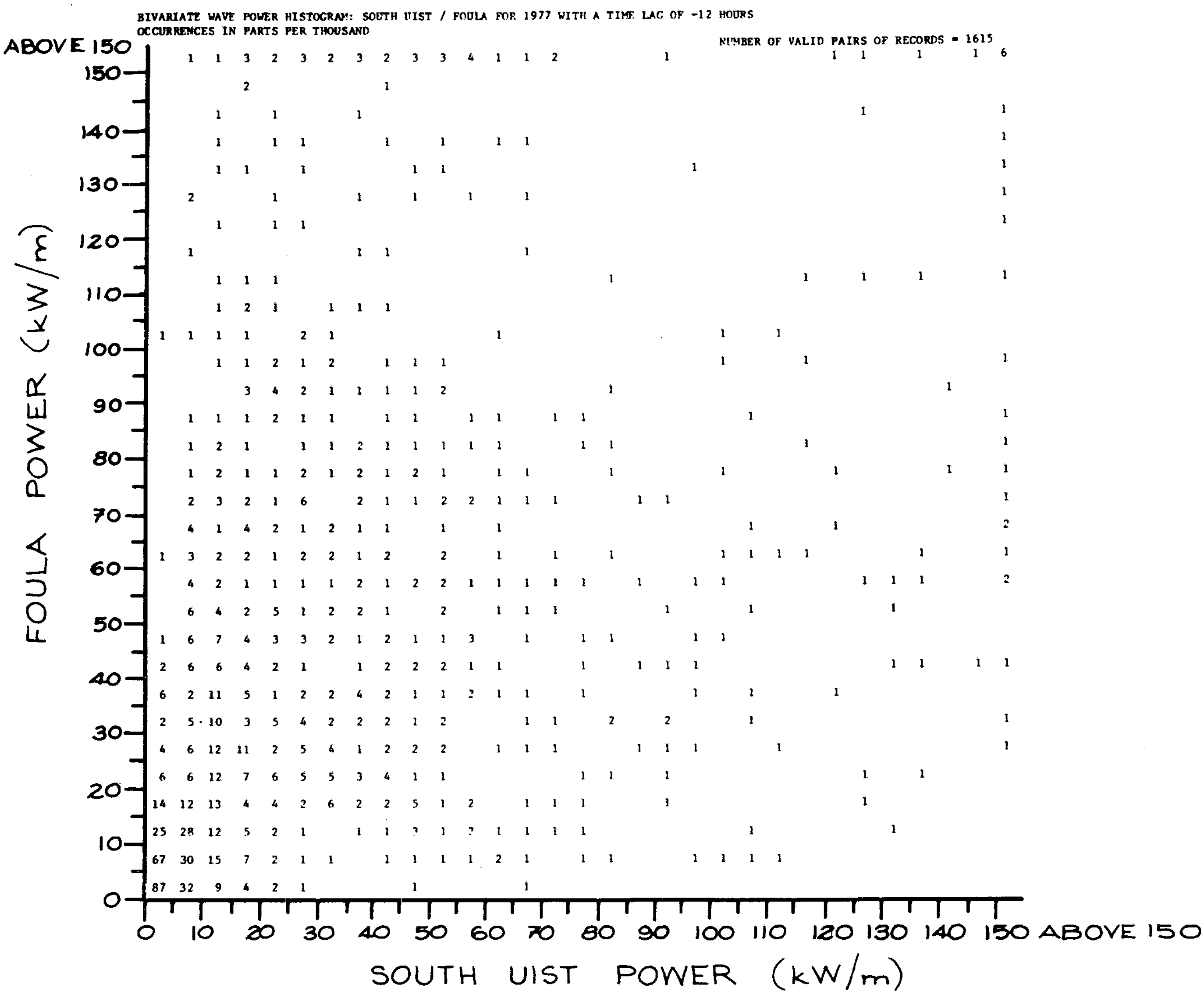


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG -24 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.3

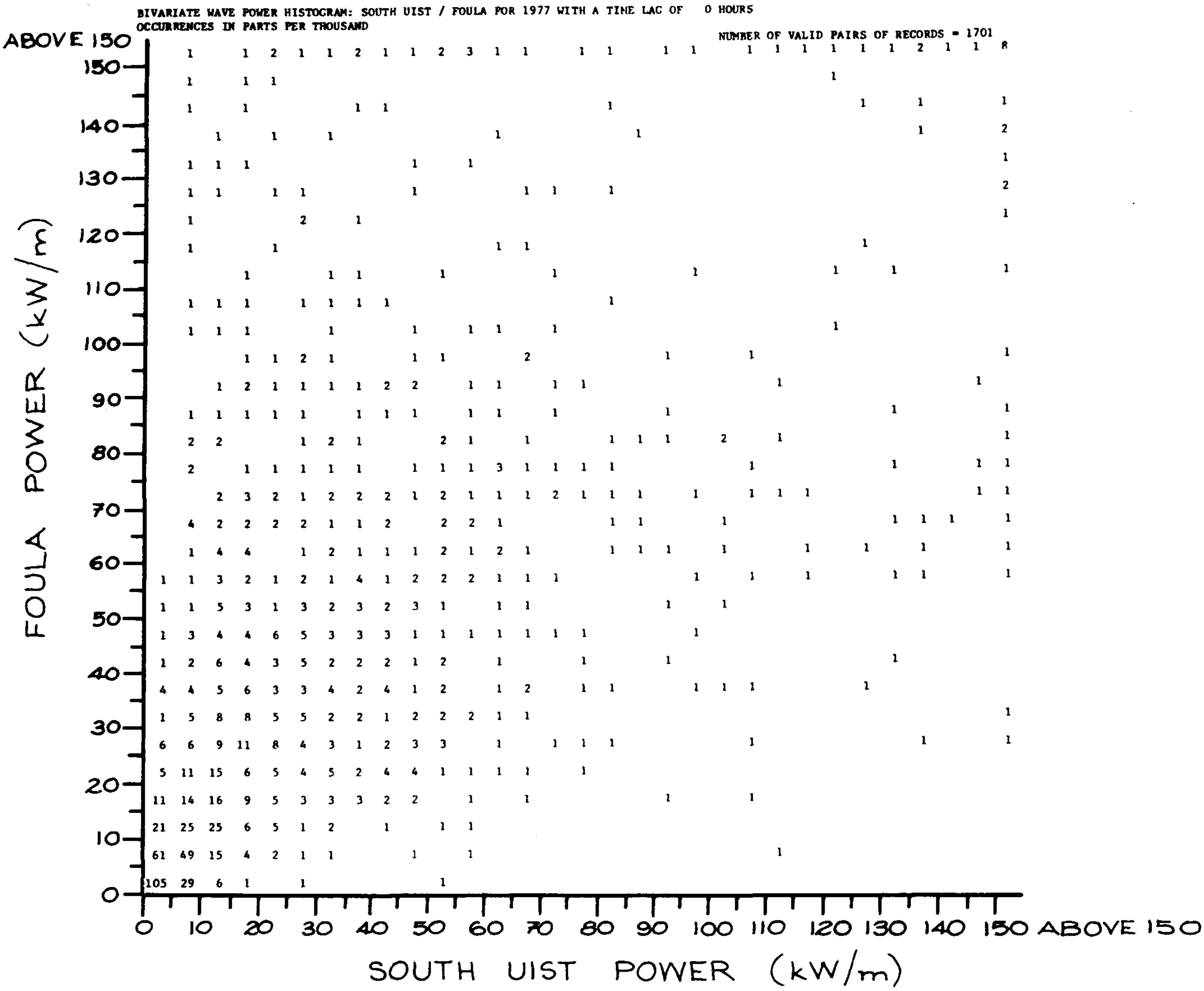


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG -12 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.4

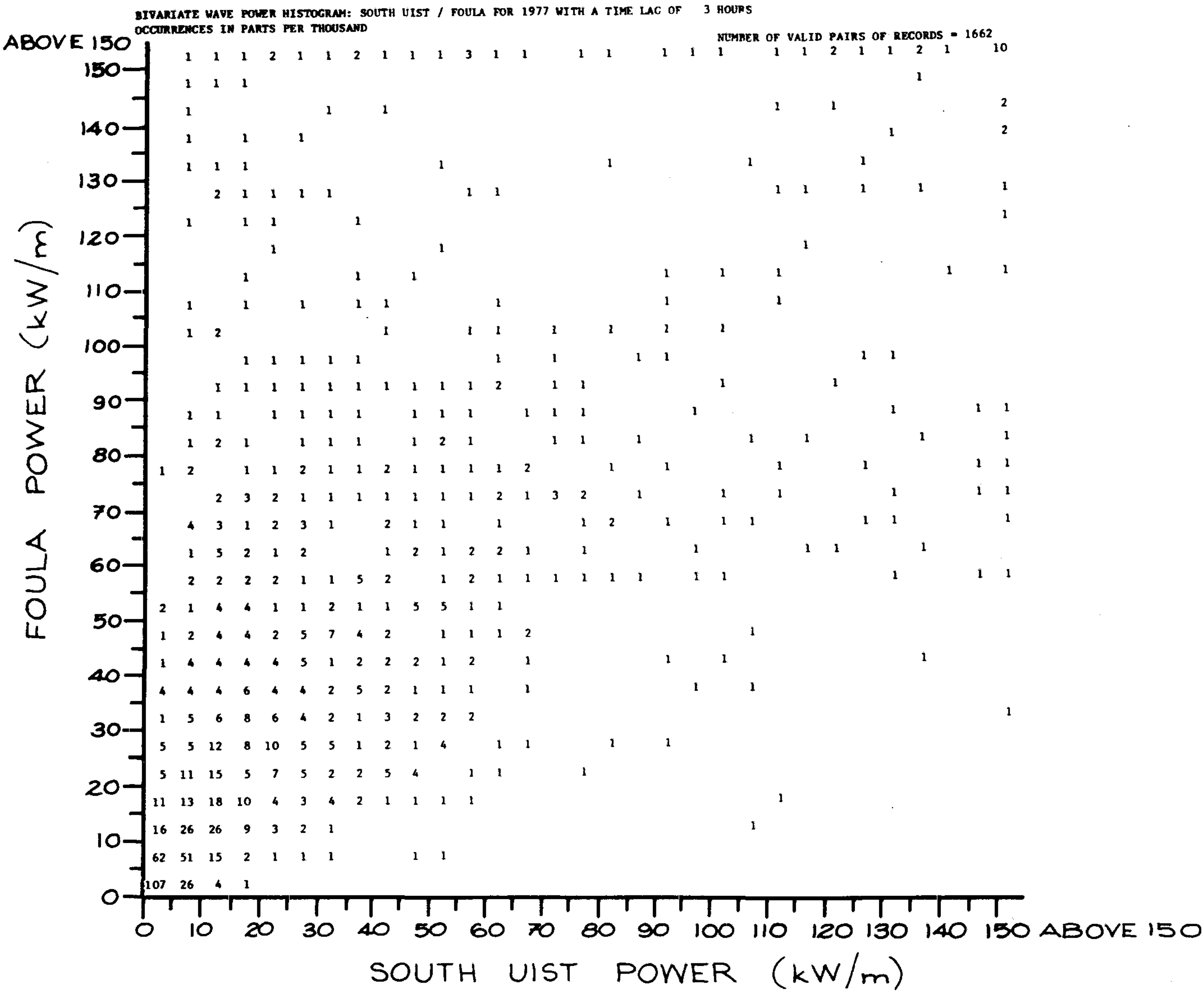


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 0 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.5

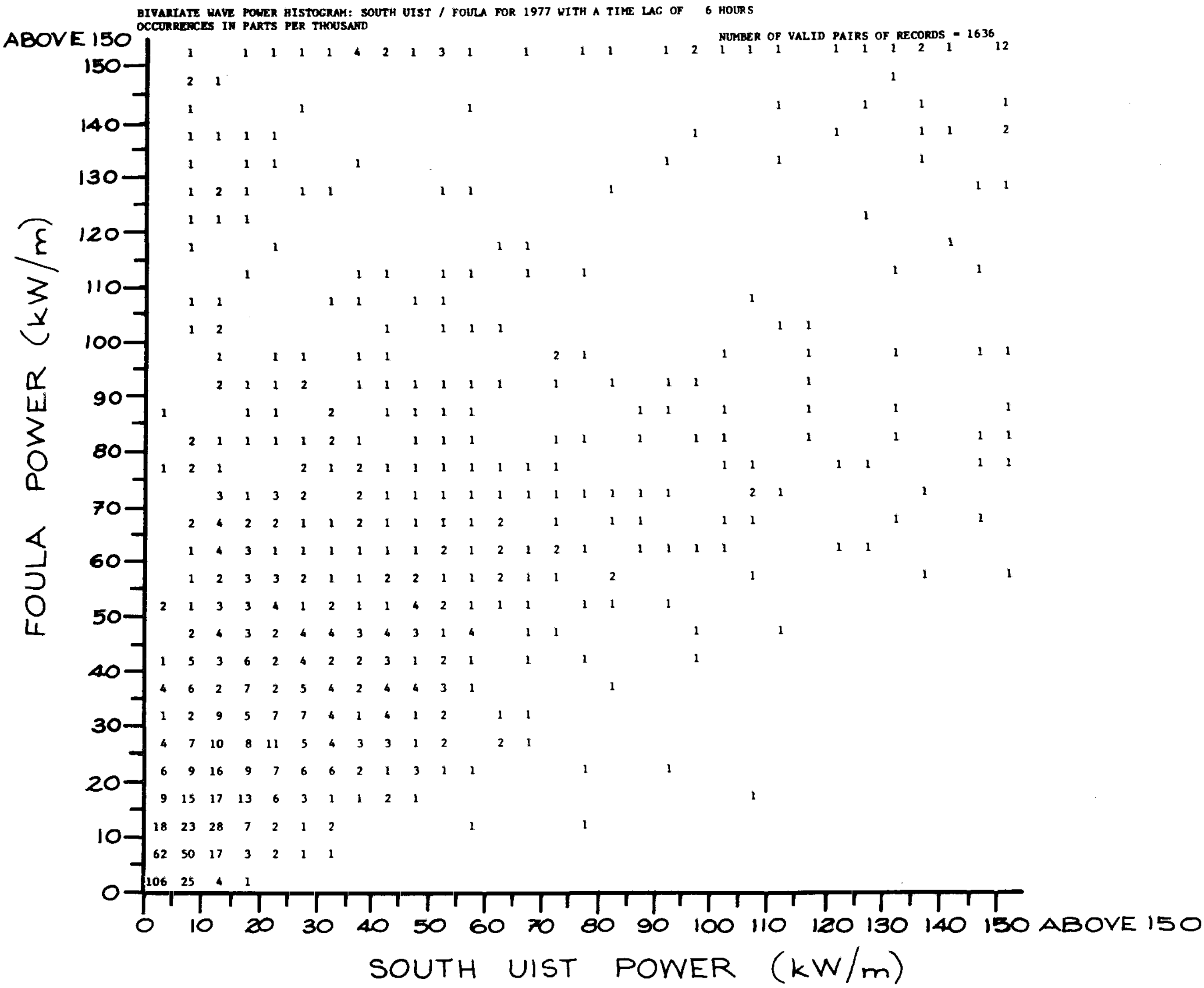


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 3 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.6

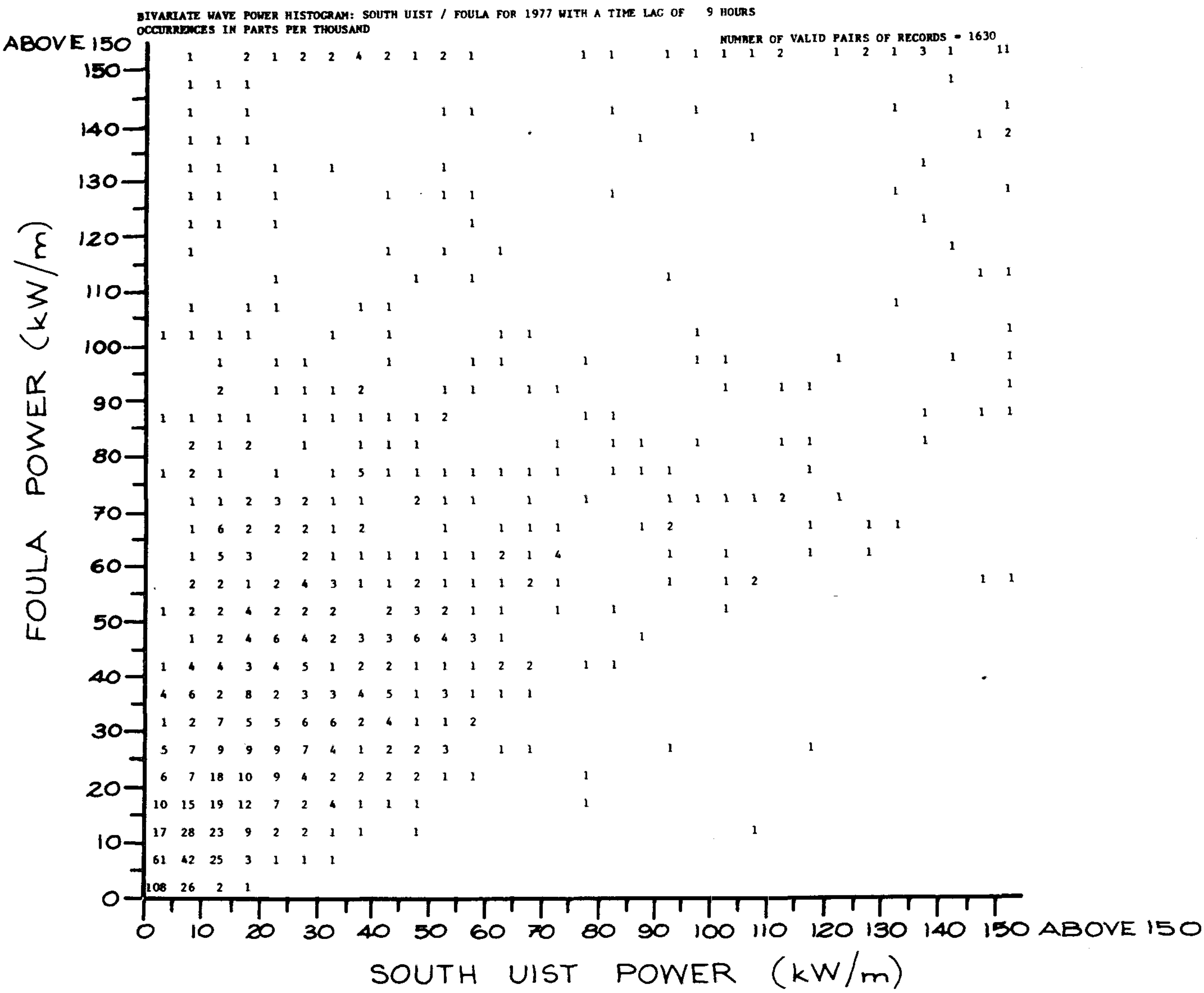


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 6 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.7

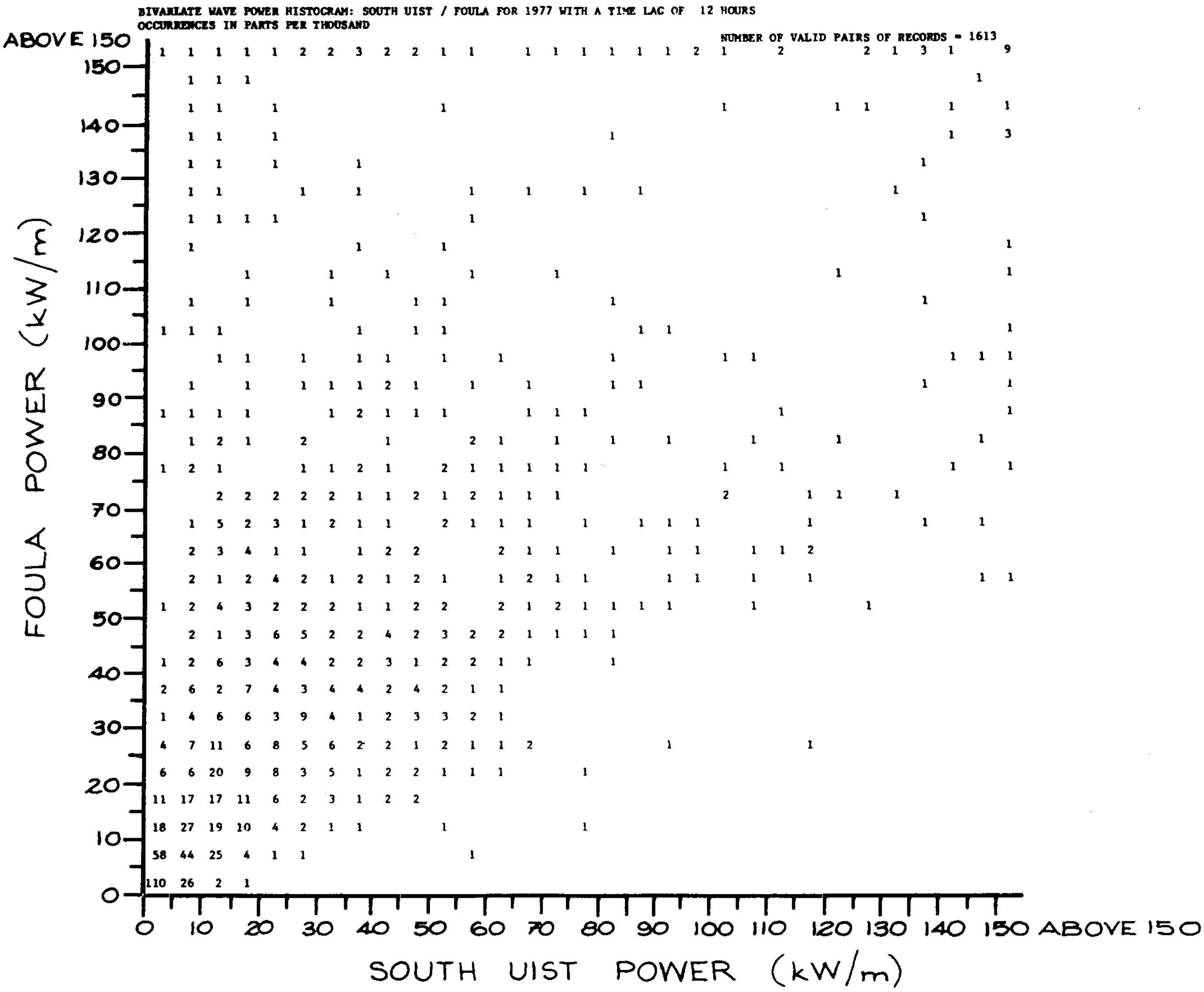


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 9 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.8

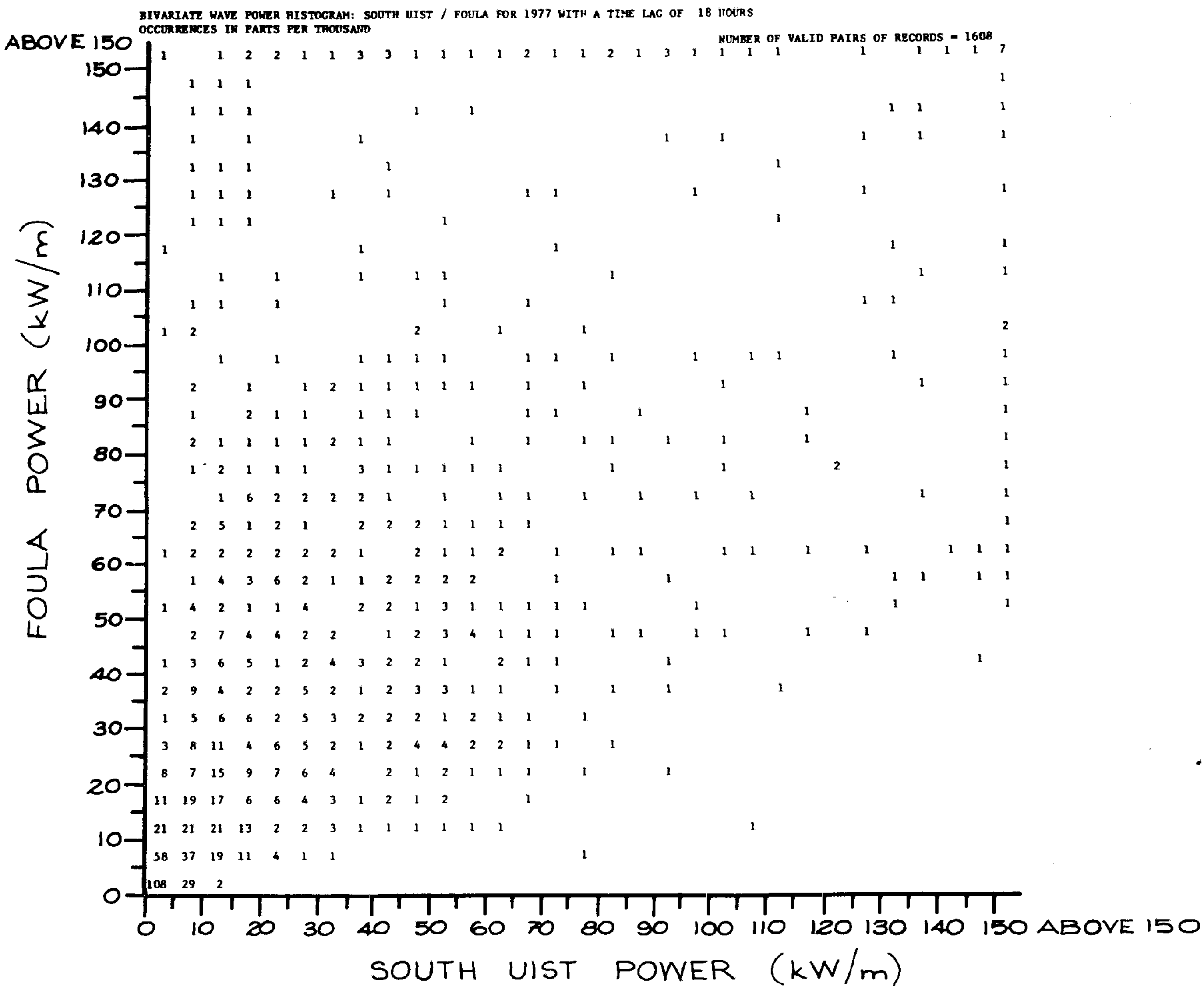


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 12 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.9

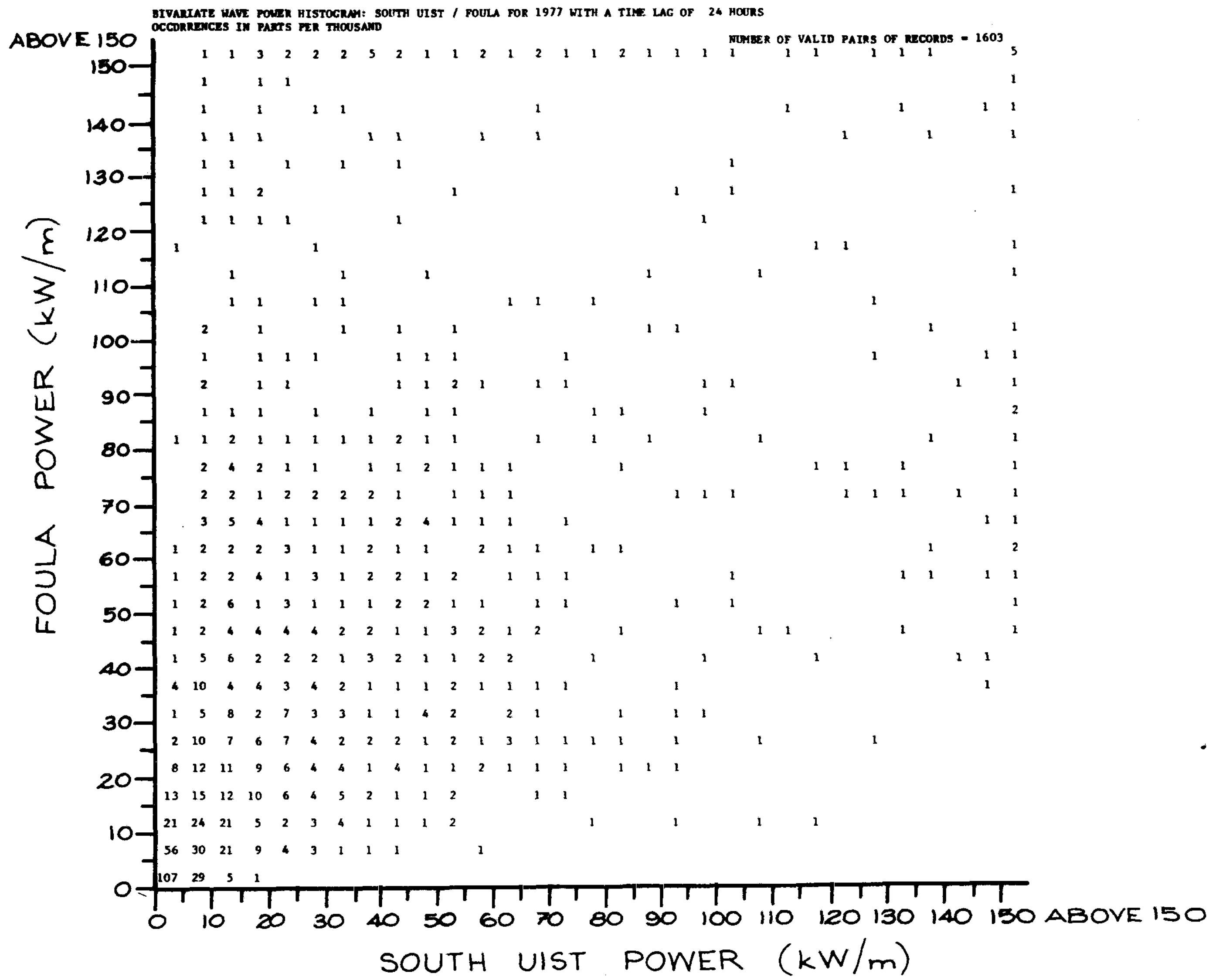


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 18 HOURS W.R.T. SOUTH UIST.

1977.

Fig 5.10

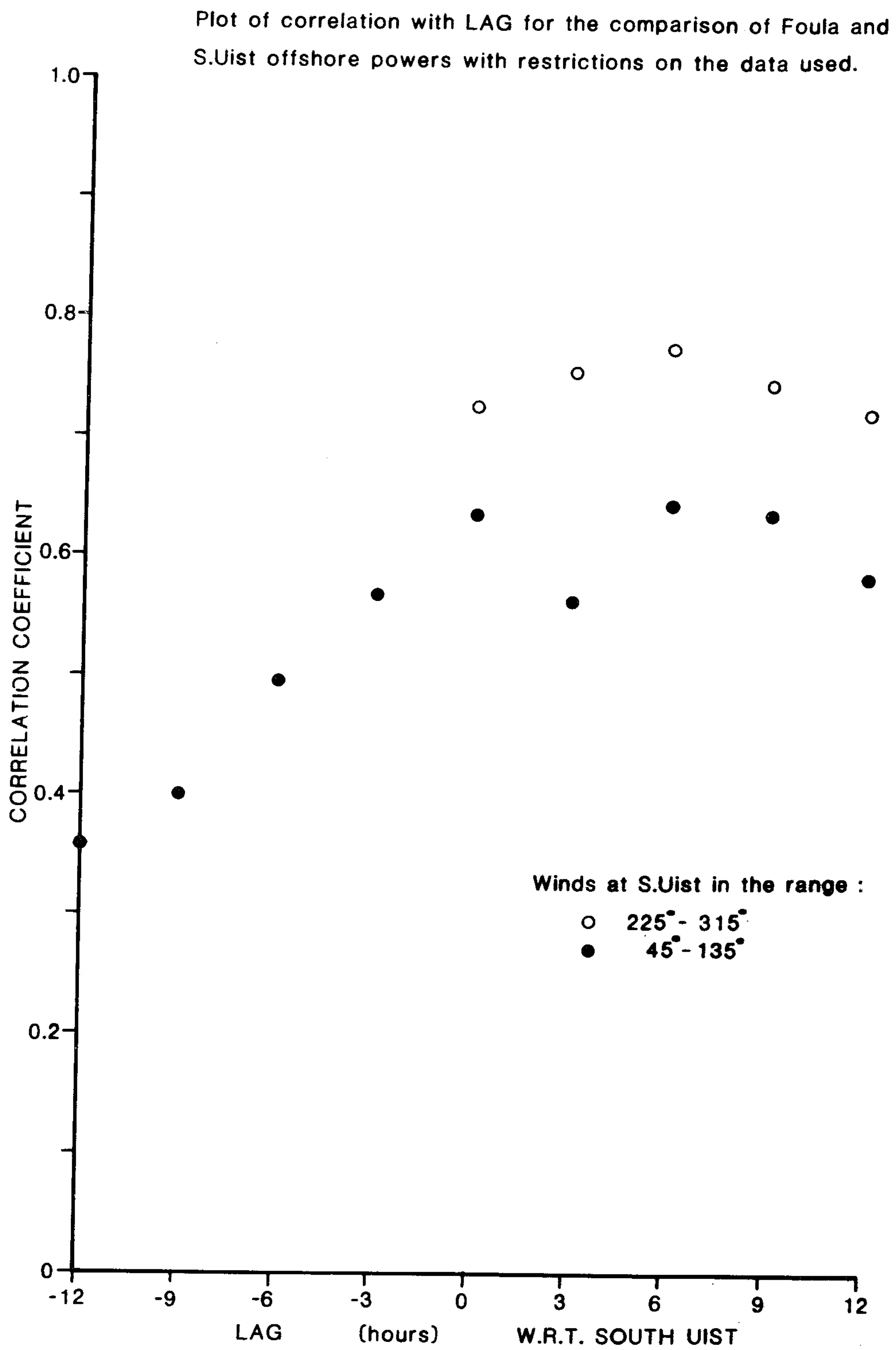


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 24 HOURS W.R.T. SOUTH UIST.

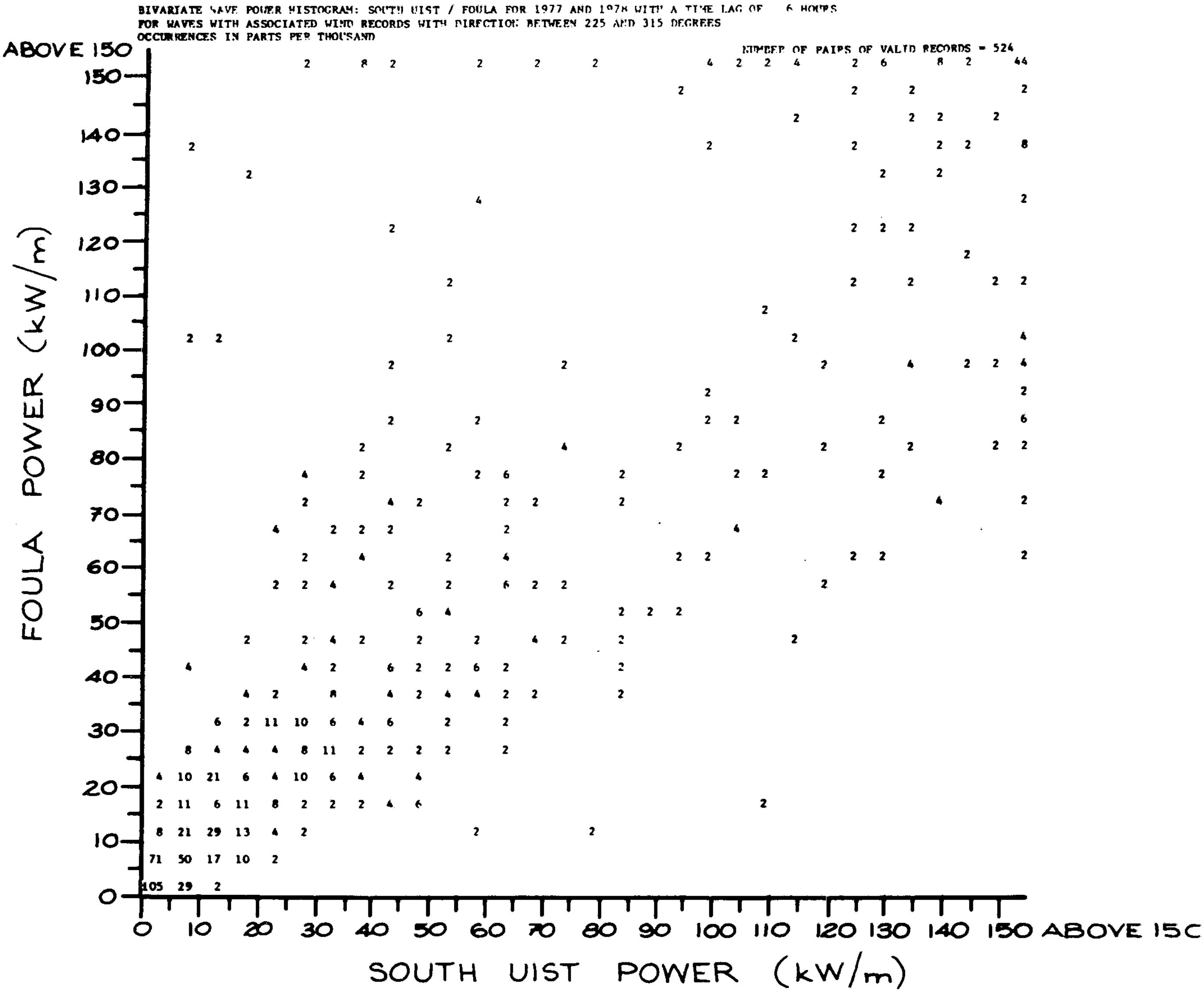
1977.

Fig 5.11



Plot of correlation with LAG for the comparison of Foula and
S.Uist offshore powers with restrictions on the data used.
1.0
0.8
0.6
0.4
0.2
0
CORRELATION COEFFICIENT
Winds at S.Uist in the range :
225°- 315°
45°- 135°
-12
-9
-6
-3
0
3
6
9
12
LAG (hours) W.R.T. SOUTH UIST

Fig 5.12

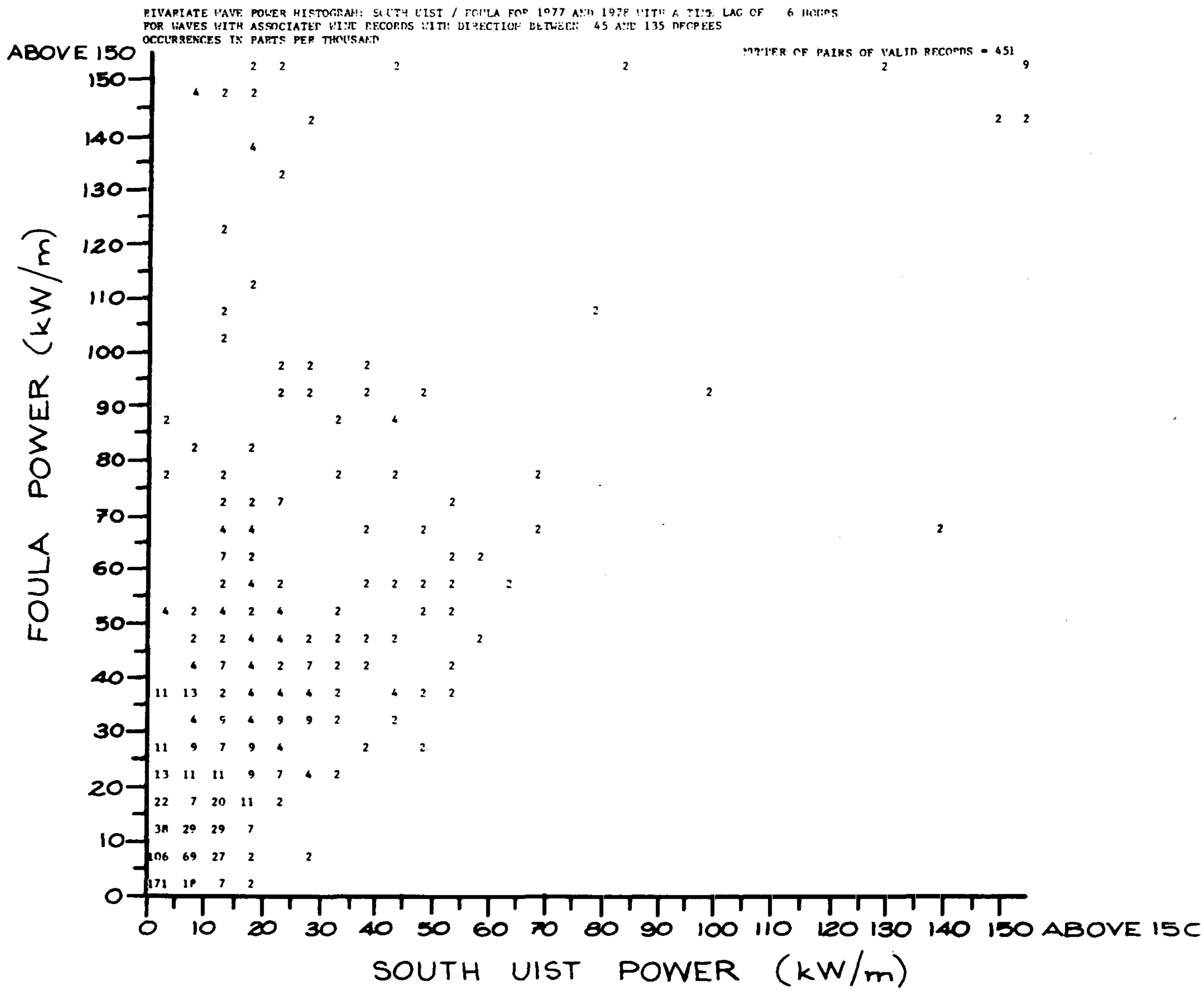


Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 6 HOURS W.R.T. SOUTH UIST.

1977 and 1978

Limited to cases with winds at S. Uist in the range 225°–315°



Scatter diagram of Foula power v S. Uist offshore power (PPT)

LAG 6 HOURS W.R.T. SOUTH UIST.

1977 and 1978

Limited to cases with winds at S. Uist in the range 45°–135°

5.14

6. INDEX TO WAVE SPECTRA

For the purpose of this index the data have been grouped into classes of significant wave height (Hs) 0.5 m in width, and the records have been arranged in descending order of energy period (Te) within each of these classes. The classes were then arranged in ascending order of significant wave height and the ordered records were allocated serial numbers from 1 to 400.

The index, then, comprises one line summaries including the serial number, Hs, Te, Tz, wind direction, wind speed and 7 spectral moments from M-2 to M4, for each of the 400 spectra.

(The moments are written in the index in Fortran E format: 0.9404E-01 being equivalent to 0.9404×10^{-1}.)

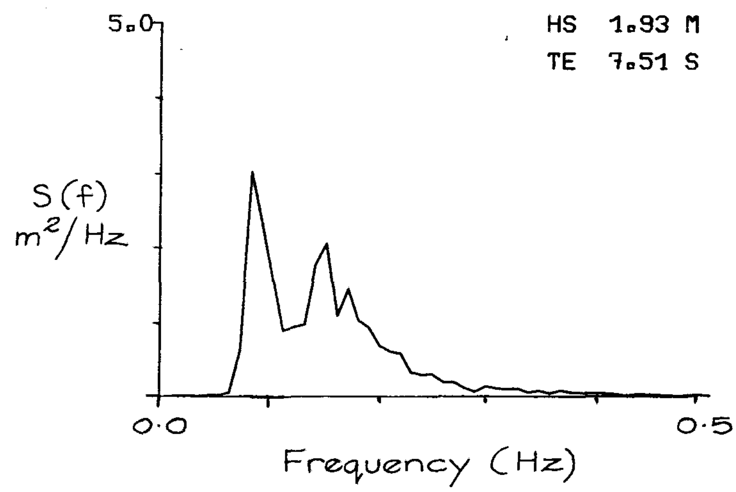
The files have been written to the computer compatible medium in index order.

As an adjunct to the index all the spectra have been plotted in index order, 8 to a page.

In each of these plots the ordinate is spectral density, S(f), plotted in units of metres^2/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	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
1	0.99	8.56	6.33	270	10	0.4876E 01	0.5215E 00	0.6092E-01	0.8328E-02	0.1520E-02	0.4082E-03	0.1496E-03
2	0.79	7.95	5.31	360	13	0.2787E 01	0.3116E 00	0.3918E-01	0.6150E-02	0.1389E-02	0.4639E-03	0.2015E-03
3	0.62	7.95	5.35	240	11	0.3110E 01	0.3379E 00	0.4250E-01	0.6708E-02	0.1467E-02	0.4737E-03	0.1948E-03
4	0.97	7.91	6.49	190	7	0.3957E 01	0.4647E 00	0.5872E-01	0.8280E-02	0.1395E-02	0.3082E-03	0.9385E-04
5	0.74	7.81	5.90	160	7	0.2326E 01	0.2687E 00	0.3442E-01	0.5178E-02	0.9897E-03	0.2519E-03	0.8256E-04
6	0.82	7.66	5.98	110	2	0.2678E 01	0.3182E 00	0.4154E-01	0.6228E-02	0.1160E-02	0.2910E-03	0.9602E-04
7	0.87	7.62	6.58	40	5	0.2949E 01	0.3648E 00	0.4785E-01	0.6815E-02	0.1106E-02	0.2201E-03	0.5729E-04
8	0.97	7.42	4.66	90	2	0.3799E 01	0.4366E 00	0.5886E-01	0.1053E-01	0.2710E-02	0.9443E-03	0.3962E-03
9	0.81	7.39	5.09	10	3	0.2539E 01	0.3009E 00	0.4073E-01	0.6830E-02	0.1570E-02	0.5099E-03	0.2155E-03
10	0.92	7.26	4.63	150	4	0.3242E 01	0.3839E 00	0.5289E-01	0.9503E-02	0.2463E-02	0.8891E-03	0.3949E-03
11	0.93	7.25	5.23	360	0	0.3227E 01	0.3950E 00	0.5445E-01	0.9109E-02	0.1989E-02	0.5689E-03	0.1965E-03
12	0.84	6.98	5.18	250	12	0.2450E 01	0.3063E 00	0.4388E-01	0.7548E-02	0.1633E-02	0.4491E-03	0.1514E-03
13	0.78	6.51	4.11	210	4	0.1983E 01	0.2505E 00	0.3845E-01	0.7957E-02	0.2282E-02	0.8254E-03	0.3380E-03
14	0.91	6.51	4.11	60	6	0.2703E 01	0.3403E 00	0.5226E-01	0.1079E-01	0.3093E-02	0.1155E-02	0.5131E-03
15	0.92	6.44	4.58	230	8	0.2548E 01	0.3388E 00	0.5263E-01	0.1007E-01	0.2513E-02	0.8270E-03	0.3406E-03
16	0.85	6.35	5.37	360	7	0.1958E 01	0.2861E 00	0.4508E-01	0.7838E-02	0.1561E-02	0.3708E-03	0.1074E-03
17	0.70	6.30	4.54	230	3	0.1450E 01	0.1934E 00	0.3072E-01	0.5968E-02	0.1493E-02	0.4921E-03	0.2046E-03
18	0.92	6.17	4.52	360	10	0.2369E 01	0.3272E 00	0.5301E-01	0.1049E-01	0.2592E-02	0.7864E-03	0.2804E-03
19	0.63	6.00	4.34	20	9	0.1080E 01	0.1490E 00	0.2483E-01	0.5098E-02	0.1316E-02	0.4284E-03	0.1705E-03
20	0.71	5.84	4.57	50	2	0.1209E 01	0.1815E 00	0.3107E-01	0.6194E-02	0.1490E-02	0.4474E-03	0.1675E-03
21	0.64	5.80	4.12	250	6	0.1036E 01	0.1473E 00	0.2539E-01	0.5469E-02	0.1494E-02	0.5056E-03	0.2021E-03
22	0.85	5.73	4.86	360	7	0.1671E 01	0.2592E 00	0.4482E-01	0.8678E-02	0.1894E-02	0.4675E-03	0.1306E-03
23	0.78	5.59	3.70	60	13	0.1616E 01	0.2125E 00	0.3800E-01	0.9209E-02	0.2769E-02	0.9477E-03	0.3525E-03
24	0.67	5.59	4.23	280	10	0.1000E 01	0.1569E 00	0.2807E-01	0.5939E-02	0.1571E-02	0.5321E-03	0.2220E-03
25	0.97	5.44	4.38	340	9	0.2007E 01	0.3201E 00	0.5883E-01	0.1245E-01	0.3067E-02	0.8832E-03	0.2947E-03

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
26	1.01	9.61	7.93	200	5	0.6303E 01	0.6171E 00	0.6420E-01	0.7401E-02	0.1021E-02	0.1872E-03	0.4858E-04
27	1.36	9.58	7.52	280	6	0.1177E 02	0.1108E 01	0.1156E 00	0.1390E-01	0.2044E-02	0.4001E-03	0.1100E-03
28	1.11	8.84	5.68	20	13	0.6684E 01	0.6832E 00	0.7728E-01	0.1102E-01	0.2396E-02	0.8133E-03	0.3605E-03
29	1.37	8.78	5.81	200	8	0.1003E 02	0.1028E 01	0.1171E 00	0.1677E-01	0.3470E-02	0.1023E-02	0.3735E-03
30	1.18	8.49	6.28	320	4	0.7043E 01	0.7423E 00	0.8746E-01	0.1228E-01	0.2218E-02	0.5396E-03	0.1713E-03
31	1.26	8.46	5.85	340	5	0.8215E 01	0.8394E 00	0.9921E-01	0.1470E-01	0.2896E-02	0.7468E-03	0.2359E-03
32	1.24	8.38	5.33	290	3	0.7938E 01	0.7997E 00	0.9544E-01	0.1511E-01	0.3355E-02	0.9763E-03	0.3365E-03
33	1.47	8.25	6.20	280	8	0.1007E 02	0.1109E 01	0.1343E 00	0.1906E-01	0.3498E-02	0.9071E-03	0.3263E-03
34	1.47	8.24	5.99	50	8	0.1012E 02	0.1108E 01	0.1345E 00	0.1946E-01	0.3752E-02	0.1037E-02	0.3909E-03
35	1.33	8.16	6.16	30	3	0.7911E 01	0.9015E 00	0.1104E 00	0.1559E-01	0.2910E-02	0.8074E-03	0.3122E-03
36	1.42	8.04	6.06	260	11	0.8856E 01	0.1011E 01	0.1257E 00	0.1813E-01	0.3418E-02	0.9400E-03	0.3636E-03
37	1.42	8.00	5.48	230	10	0.9691E 01	0.1014E 01	0.1267E 00	0.2016E-01	0.4220E-02	0.1141E-02	0.3830E-03
38	1.38	7.98	5.83	330	4	0.8246E 01	0.9484E 00	0.1189E 00	0.1757E-01	0.3504E-02	0.1033E-02	0.4174E-03
39	1.20	7.92	6.05	290	3	0.6421E 01	0.7183E 00	0.9074E-01	0.1345E-01	0.2477E-02	0.6067E-03	0.2014E-03
40	1.41	7.73	5.72	220	7	0.8276E 01	0.9582E 00	0.1240E 00	0.1903E-01	0.3793E-02	0.1050E-02	0.3896E-03
41	1.49	7.70	5.56	140	6	0.9266E 01	0.1065E 01	0.1383E 00	0.2186E-01	0.4472E-02	0.1180E-02	0.3775E-03
42	1.40	7.58	5.41	150	10	0.8103E 01	0.9258E 00	0.1221E 00	0.1987E-01	0.4178E-02	0.1115E-02	0.3562E-03
43	1.29	7.56	5.90	200	3	0.6536E 01	0.7899E 00	0.1045E 00	0.1585E-01	0.3000E-02	0.7754E-03	0.2734E-03
44	1.42	7.53	5.32	240	3	0.8046E 01	0.9538E 00	0.1267E 00	0.2045E-01	0.4474E-02	0.1364E-02	0.5292E-03
45	1.03	7.49	5.87	40	5	0.4252E 01	0.4945E 00	0.6606E-01	0.1031E-01	0.1916E-02	0.4345E-03	0.1219E-03
46	1.13	7.47	5.34	330	3	0.4967E 01	0.5967E 00	0.7990E-01	0.1291E-01	0.2804E-02	0.8604E-03	0.3466E-03
47	1.14	7.44	5.55	300	5	0.5092E 01	0.6044E 00	0.8121E-01	0.1301E-01	0.2640E-02	0.7001E-03	0.2374E-03
48	1.11	7.42	5.97	220	2	0.4834E 01	0.5725E 00	0.7714E-01	0.1195E-01	0.2163E-02	0.4686E-03	0.1251E-03
49	1.07	7.33	6.27	360	0	0.4082E 01	0.5222E 00	0.7127E-01	0.1063E-01	0.1815E-02	0.3784E-03	0.1024E-03
50	1.21	7.23	5.67	70	5	0.5343E 01	0.6669E 00	0.9219E-01	0.1468E-01	0.2870E-02	0.7310E-03	0.2443E-03
51	1.50	7.22	5.13	140	9	0.8759E 01	0.1020E 01	0.1414E 00	0.2448E-01	0.5382E-02	0.1464E-02	0.4731E-03
52	1.44	7.19	5.14	270	7	0.7687E 01	0.9328E 00	0.1296E 00	0.2214E-01	0.4898E-02	0.1389E-02	0.4756E-03
53	1.03	7.13	4.82	80	8	0.4075E 01	0.4763E 00	0.6677E-01	0.1209E-01	0.2876E-02	0.8497E-03	0.2904E-03
54	1.44	7.12	6.09	30	8	0.7030E 01	0.9270E 00	0.1302E 00	0.2000E-01	0.3510E-02	0.7390E-03	0.1929E-03
55	1.18	7.03	5.68	190	3	0.4600E 01	0.6094E 00	0.8672E-01	0.1384E-01	0.2688E-02	0.6992E-03	0.2489E-03
56	1.05	7.03	5.46	200	5	0.3740E 01	0.4877E 00	0.6933E-01	0.1130E-01	0.2329E-02	0.6745E-03	0.2729E-03
57	1.41	6.96	5.50	40	6	0.6697E 01	0.8684E 00	0.1248E 00	0.2060E-01	0.4125E-02	0.1055E-02	0.3478E-03
58	1.32	6.93	4.78	340	14	0.6407E 01	0.7589E 00	0.1094E 00	0.2019E-01	0.4786E-02	0.1401E-02	0.4838E-03
59	1.49	6.75	5.75	60	8	0.6712E 01	0.9363E 00	0.1387E 00	0.2247E-01	0.4193E-02	0.9558E-03	0.2730E-03
60	1.48	6.74	5.52	90	6	0.6888E 01	0.9256E 00	0.1374E 00	0.2302E-01	0.4505E-02	0.1076E-02	0.3237E-03
61	1.19	6.72	5.57	250	7	0.4321E 01	0.5966E 00	0.8878E-01	0.1469E-01	0.2862E-02	0.7056E-03	0.2289E-03
62	1.32	6.69	5.48	20	7	0.5296E 01	0.7232E 00	0.1081E 00	0.1821E-01	0.3599E-02	0.8673E-03	0.2568E-03
63	1.15	6.59	5.49	280	2	0.3908E 01	0.5451E 00	0.8270E-01	0.1399E-01	0.2747E-02	0.6525E-03	0.1903E-03
64	1.44	6.51	4.60	180	9	0.6652E 01	0.8422E 00	0.1294E 00	0.2505E-01	0.6128E-02	0.1858E-02	0.6794E-03
65	1.17	6.37	4.55	120	4	0.4074E 01	0.5465E 00	0.8581E-01	0.1675E-01	0.4153E-02	0.1260E-02	0.4427E-03
66	1.18	6.36	4.88	50	12	0.3872E 01	0.5571E 00	0.8764E-01	0.1605E-01	0.3673E-02	0.1072E-02	0.3787E-03
67	1.26	6.23	4.76	270	14	0.4405E 01	0.6235E 00	0.1000E 00	0.1896E-01	0.4408E-02	0.1264E-02	0.4347E-03
68	1.19	6.23	4.34	100	9	0.4265E 01	0.5503E 00	0.8830E-01	0.1811E-01	0.4695E-02	0.1496E-02	0.5670E-03
69	1.13	6.20	4.34	200	5	0.3838E 01	0.4993E 00	0.8051E-01	0.1661E-01	0.4281E-02	0.1310E-02	0.4556E-03
70	1.17	6.11	5.19	30	9	0.3421E 01	0.5208E 00	0.8528E-01	0.1539E-01	0.3172E-02	0.7759E-03	0.2294E-03
71	1.04	6.10	4.92	360	6	0.2809E 01	0.4091E 00	0.6709E-01	0.1257E-01	0.2766E-02	0.7308E-03	0.2303E-03
72	1.26	6.03	4.47	160	2	0.4123E 01	0.5992E 00	0.9943E-01	0.1993E-01	0.4982E-02	0.1516E-02	0.5305E-03
73	1.48	6.00	4.57	300	10	0.5573E 01	0.8178E 00	0.1362E 00	0.2673E-01	0.6512E-02	0.2034E-02	0.7963E-03
74	1.43	5.89	4.43	160	11	0.5447E 01	0.7479E 00	0.1270E 00	0.2635E-01	0.6474E-02	0.1830E-02	0.5833E-03
75	1.01	5.86	4.36	20	16	0.2546E 01	0.3717E 00	0.6341E-01	0.1304E-01	0.3339E-02	0.1071E-02	0.4178E-03

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
76	1.09	5.48	4.13	170	6	0.2672E 01	0.4108E 00	0.7490E-01	0.1639E-01	0.4397E-02	0.1464E-02	0.5919E-03
77	1.03	5.41	4.27	30	2	0.2182E 01	0.3582E 00	0.6615E-01	0.1411E-01	0.3629E-02	0.1158E-02	0.4514E-03
78	1.41	5.41	3.94	130	12	0.4389E 01	0.6752E 00	0.1249E 00	0.2834E-01	0.8043E-02	0.2835E-02	0.1194E-02
79	1.39	5.10	4.01	170	10	0.3644E 01	0.6155E 00	0.1208E 00	0.2770E-01	0.7518E-02	0.2433E-02	0.9318E-03
80	1.02	4.40	3.26	130	7	0.1611E 01	0.2865E 00	0.6505E-01	0.1829E-01	0.6107E-02	0.2346E-02	0.1015E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
81	1.72	11.85	9.21	350	7	0.2793E 02	0.2195E 01	0.1852E 00	0.1773E-01	0.2182E-02	0.4151E-03	0.1287E-03
82	1.66	10.47	7.83	280	6	0.2011E 02	0.1811E 01	0.1729E 00	0.1883E-01	0.2818E-02	0.7122E-03	0.2777E-03
83	1.59	9.61	6.44	280	9	0.1647E 02	0.1528E 01	0.1590E 00	0.2050E-01	0.3839E-02	0.1102E-02	0.4204E-03
84	1.63	9.57	6.61	30	14	0.1703E 02	0.1582E 01	0.1653E 00	0.2141E-01	0.3786E-02	0.9172E-03	0.2791E-03
85	1.90	9.50	6.92	160	2	0.2221E 02	0.2136E 01	0.2248E 00	0.2777E-01	0.4690E-02	0.1250E-02	0.4921E-03
86	1.76	9.49	7.13	290	11	0.1882E 02	0.1845E 01	0.1944E 00	0.2371E-01	0.3825E-02	0.9066E-03	0.2974E-03
87	1.74	9.36	6.99	170	3	0.1878E 02	0.1774E 01	0.1894E 00	0.2393E-01	0.3877E-02	0.8662E-03	0.2610E-03
88	1.83	9.27	7.50	350	4	0.1937E 02	0.1947E 01	0.2101E 00	0.2526E-01	0.3732E-02	0.7960E-03	0.2621E-03
89	1.66	9.02	5.53	60	18	0.1677E 02	0.1552E 01	0.1720E 00	0.2595E-01	0.5634E-02	0.1648E-02	0.5947E-03
90	1.64	8.90	6.13	220	15	0.1508E 02	0.1487E 01	0.1671E 00	0.2340E-01	0.4453E-02	0.1153E-02	0.3742E-03
91	1.93	8.18	6.60	140	4	0.1726E 02	0.1914E 01	0.2340E 00	0.3238E-01	0.5366E-02	0.1154E-02	0.3382E-03
92	1.75	8.11	5.35	180	16	0.1595E 02	0.1554E 01	0.1915E 00	0.3108E-01	0.6687E-02	0.1841E-02	0.6104E-03
93	1.93	8.11	6.63	360	0	0.1686E 02	0.1879E 01	0.2317E 00	0.3209E-01	0.5267E-02	0.1126E-02	0.3365E-03
94	1.73	8.03	6.49	180	3	0.1298E 02	0.1501E 01	0.1870E 00	0.2619E-01	0.4438E-02	0.9952E-03	0.3064E-03
95	1.58	7.96	6.42	170	9	0.1080E 02	0.1249E 01	0.1570E 00	0.2227E-01	0.3812E-02	0.8556E-03	0.2616E-03
96	1.66	7.94	5.80	20	16	0.1258E 02	0.1370E 01	0.1726E 00	0.2639E-01	0.5126E-02	0.1295E-02	0.4199E-03
97	1.77	7.82	5.97	280	5	0.1316E 02	0.1532E 01	0.1960E 00	0.2916E-01	0.5508E-02	0.1426E-02	0.5007E-03
98	1.84	7.78	5.46	200	13	0.1484E 02	0.1648E 01	0.2118E 00	0.3388E-01	0.7105E-02	0.1924E-02	0.6343E-03
99	1.78	7.61	6.20	30	7	0.1222E 02	0.1500E 01	0.1972E 00	0.2900E-01	0.5125E-02	0.1181E-02	0.3659E-03
100	1.93	7.51	5.65	20	13	0.1513E 02	0.1754E 01	0.2336E 00	0.3707E-01	0.7305E-02	0.1850E-02	0.6027E-03
101	1.69	7.44	6.14	280	13	0.1048E 02	0.1323E 01	0.1779E 00	0.2654E-01	0.4721E-02	0.1078E-02	0.3196E-03
102	1.64	7.42	5.50	300	9	0.1062E 02	0.1246E 01	0.1680E 00	0.2719E-01	0.5555E-02	0.1456E-02	0.4725E-03
103	2.00	7.39	5.75	180	9	0.1508E 02	0.1848E 01	0.2502E 00	0.3914E-01	0.7568E-02	0.1933E-02	0.6595E-03
104	1.84	7.38	5.44	110	11	0.1326E 02	0.1563E 01	0.2117E 00	0.3458E-01	0.7144E-02	0.1908E-02	0.6442E-03
105	1.65	7.36	5.79	200	14	0.1038E 02	0.1252E 01	0.1702E 00	0.2656E-01	0.5084E-02	0.1304E-02	0.4579E-03
106	1.66	7.36	5.39	140	7	0.1057E 02	0.1268E 01	0.1722E 00	0.2798E-01	0.5917E-02	0.1722E-02	0.6646E-03
107	1.94	7.30	5.10	70	11	0.1456E 02	0.1719E 01	0.2355E 00	0.4017E-01	0.9056E-02	0.2714E-02	0.1027E-02
108	1.65	7.28	5.77	170	4	0.9999E 01	0.1238E 01	0.1701E 00	0.2674E-01	0.5102E-02	0.1274E-02	0.4297E-03
109	1.66	7.20	5.35	240	11	0.9958E 01	0.1236E 01	0.1717E 00	0.2839E-01	0.5991E-02	0.1670E-02	0.5954E-03
110	1.58	7.20	6.23	330	2	0.8638E 01	0.1122E 01	0.1559E 00	0.2358E-01	0.4019E-02	0.8144E-03	0.2080E-03
111	1.57	7.18	5.60	200	7	0.8909E 01	0.1105E 01	0.1538E 00	0.2492E-01	0.4913E-02	0.1208E-02	0.3649E-03
112	1.99	7.08	5.21	290	11	0.1442E 02	0.1751E 01	0.2472E 00	0.4229E-01	0.9116E-02	0.2520E-02	0.8744E-03
113	1.70	7.03	4.79	230	7	0.1059E 02	0.1275E 01	0.1813E 00	0.3283E-01	0.7917E-02	0.2496E-02	0.9717E-03
114	1.90	7.03	5.26	330	13	0.1257E 02	0.1583E 01	0.2251E 00	0.3800E-01	0.8120E-02	0.2295E-02	0.8417E-03
115	1.67	6.97	5.58	180	12	0.9084E 01	0.1208E 01	0.1733E 00	0.2805E-01	0.5564E-02	0.1481E-02	0.5336E-03
116	1.52	6.95	4.59	220	12	0.8262E 01	0.1007E 01	0.1450E 00	0.2690E-01	0.6895E-02	0.2387E-02	0.1022E-02
117	1.72	6.88	4.53	150	8	0.1065E 02	0.1277E 01	0.1856E 00	0.3525E-01	0.9034E-02	0.3028E-02	0.1243E-02
118	1.75	6.86	5.59	60	10	0.9799E 01	0.1309E 01	0.1909E 00	0.3137E-01	0.6106E-02	0.1484E-02	0.4618E-03
119	1.70	6.86	5.07	260	18	0.9470E 01	0.1236E 01	0.1801E 00	0.3120E-01	0.7002E-02	0.2125E-02	0.6333E-03
120	2.00	6.86	5.23	110	8	0.1340E 02	0.1724E 01	0.2512E 00	0.4322E-01	0.9173E-02	0.2469E-02	0.8382E-03
121	1.56	6.84	5.64	80	6	0.7727E 01	0.1039E 01	0.1520E 00	0.2492E-01	0.4779E-02	0.1117E-02	0.3226E-03
122	1.91	6.84	5.26	220	14	0.1169E 02	0.1554E 01	0.2273E 00	0.3854E-01	0.8230E-02	0.2341E-02	0.8621E-03
123	1.80	6.80	5.24	170	10	0.1068E 02	0.1371E 01	0.2016E 00	0.3474E-01	0.7335E-02	0.1996E-02	0.7045E-03
124	1.87	6.78	5.23	260	16	0.1151E 02	0.1487E 01	0.2192E 00	0.3804E-01	0.8000E-02	0.2059E-02	0.6376E-03
125	1.53	6.76	4.81	130	9	0.8089E 01	0.9930E 00	0.1468E 00	0.2722E-01	0.6341E-02	0.1796E-02	0.5937E-03
126	1.74	6.74	4.97	180	17	0.9903E 01	0.1271E 01	0.1886E 00	0.3376E-01	0.7624E-02	0.2220E-02	0.8122E-03
127	1.60	6.62	5.24	60	12	0.7730E 01	0.1057E 01	0.1596E 00	0.2767E-01	0.5608E-02	0.1542E-02	0.5167E-03
128	1.61	6.52	5.01	170	11	0.7947E 01	0.1058E 01	0.1622E 00	0.2921E-01	0.6460E-02	0.1833E-02	0.6631E-03
129	1.88	6.47	5.12	360	10	0.1022E 02	0.1422E 01	0.2199E 00	0.3919E-01	0.8391E-02	0.2210E-02	0.7081E-03
130	1.88	6.47	5.06	250	23	0.1018E 02	0.1434E 01	0.2216E 00	0.3944E-01	0.8670E-02	0.2486E-02	0.9220E-03

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
131	1.74	6.46	5.25	260	10	0.8749E 01	0.1226E 01	0.1897E 00	0.3327E-01	0.6882E-02	0.1738E-02	0.5382E-03
132	1.72	6.43	5.01	10	10	0.8594E 01	0.1195E 01	0.1858E 00	0.3359E-01	0.7401E-02	0.2057E-02	0.7180E-03
133	1.85	6.43	4.93	300	12	0.9885E 01	0.1377E 01	0.2142E 00	0.3897E-01	0.8827E-02	0.2593E-02	0.9706E-03
134	1.70	6.20	4.82	150	9	0.8430E 01	0.1118E 01	0.1803E 00	0.3461E-01	0.7773E-02	0.2035E-02	0.6213E-03
135	1.72	6.07	4.67	140	4	0.7626E 01	0.1125E 01	0.1854E 00	0.3576E-01	0.8519E-02	0.2561E-02	0.9744E-03
136	1.62	6.06	4.33	110	16	0.7373E 01	0.9995E 00	0.1648E 00	0.3368E-01	0.8804E-02	0.2877E-02	0.1144E-02
137	1.86	6.01	5.02	360	12	0.8398E 01	0.1293E 01	0.2151E 00	0.3969E-01	0.8524E-02	0.2258E-02	0.7568E-03
138	1.75	5.27	4.40	20	20	0.5799E 01	0.1008E 01	0.1911E 00	0.4033E-01	0.9850E-02	0.2894E-02	0.1033E-02
139	1.85	5.26	4.45	80	16	0.6617E 01	0.1125E 01	0.2139E 00	0.4538E-01	0.1081E-01	0.2912E-02	0.8907E-03
140	1.51	5.20	4.36	270	16	0.4323E 01	0.7416E 00	0.1427E 00	0.3059E-01	0.7428E-02	0.2100E-02	0.7039E-03
141	1.68	4.97	4.10	200	8	0.4987E 01	0.6732E 00	0.1758E 00	0.4033E-01	0.1045E-01	0.3032E-02	0.9812E-03

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
142	2.08	10.69	7.71	20	18	0.3369E 02	0.2896E 01	0.2710E 00	0.3017E-01	0.4554E-02	0.9950E-03	0.2916E-03
143	2.03	10.00	7.35	160	13	0.2757E 02	0.2565E 01	0.2567E 00	0.2974E-01	0.4750E-02	0.1241E-02	0.4865E-03
144	2.48	9.89	7.42	310	8	0.4113E 02	0.3803E 01	0.3846E 00	0.4549E-01	0.6977E-02	0.1515E-02	0.4601E-03
145	2.48	9.66	7.39	360	0	0.3923E 02	0.3722E 01	0.3855E 00	0.4608E-01	0.7059E-02	0.1554E-02	0.4859E-03
146	2.50	9.55	7.45	130	6	0.3774E 02	0.3725E 01	0.3899E 00	0.4594E-01	0.7022E-02	0.1665E-02	0.6034E-03
147	2.44	9.35	6.53	240	7	0.3805E 02	0.3481E 01	0.3722E 00	0.4910E-01	0.8741E-02	0.2244E-02	0.7994E-03
148	2.37	9.34	6.77	230	10	0.3442E 02	0.3269E 01	0.3501E 00	0.4525E-01	0.7635E-02	0.1740E-02	0.5151E-03
149	2.33	9.24	6.28	200	15	0.3286E 02	0.3125E 01	0.3384E 00	0.4586E-01	0.8572E-02	0.2243E-02	0.7688E-03
150	2.06	8.89	6.49	170	4	0.2366E 02	0.2361E 01	0.2655E 00	0.3593E-01	0.6312E-02	0.1497E-02	0.4638E-03
151	2.23	8.88	6.08	200	9	0.2802E 02	0.2755E 01	0.3103E 00	0.4382E-01	0.8397E-02	0.2196E-02	0.7392E-03
152	2.24	8.87	6.77	170	9	0.2699E 02	0.2773E 01	0.3128E 00	0.4102E-01	0.6833E-02	0.1575E-02	0.5058E-03
153	2.03	8.79	6.86	260	14	0.2168E 02	0.2270E 01	0.2582E 00	0.3361E-01	0.5481E-02	0.1235E-02	0.3923E-03
154	2.32	8.69	7.33	290	11	0.2712E 02	0.2930E 01	0.3370E 00	0.4264E-01	0.6271E-02	0.1153E-02	0.2775E-03
155	2.44	8.52	6.87	300	5	0.2880E 02	0.3171E 01	0.3724E 00	0.4896E-01	0.7881E-02	0.1734E-02	0.5391E-03
156	2.37	8.46	6.34	170	11	0.2801E 02	0.2969E 01	0.3509E 00	0.4906E-01	0.8716E-02	0.2037E-02	0.6057E-03
157	2.34	8.45	6.35	340	8	0.2714E 02	0.2889E 01	0.3418E 00	0.4763E-01	0.8478E-02	0.2051E-02	0.6655E-03
158	2.32	8.43	6.84	110	7	0.2573E 02	0.2841E 01	0.3371E 00	0.4488E-01	0.7202E-02	0.1503E-02	0.4146E-03
159	2.49	8.42	6.73	290	6	0.2984E 02	0.3252E 01	0.3860E 00	0.5201E-01	0.8524E-02	0.1849E-02	0.5514E-03
160	2.40	8.37	6.73	180	8	0.2731E 02	0.3023E 01	0.3613E 00	0.4906E-01	0.7985E-02	0.1661E-02	0.4549E-03
161	2.01	8.32	5.75	160	13	0.1991E 02	0.2108E 01	0.2532E 00	0.3766E-01	0.7653E-02	0.2181E-02	0.8130E-03
162	2.17	8.23	6.50	160	8	0.2175E 02	0.2430E 01	0.2955E 00	0.4105E-01	0.6999E-02	0.1555E-02	0.4497E-03
163	2.46	8.22	6.38	340	13	0.2816E 02	0.3115E 01	0.3788E 00	0.5315E-01	0.9302E-02	0.2196E-02	0.7038E-03
164	2.11	8.22	6.40	290	12	0.2099E 02	0.2286E 01	0.2780E 00	0.3923E-01	0.6794E-02	0.1518E-02	0.4362E-03
165	2.25	8.09	6.05	160	15	0.2280E 02	0.2559E 01	0.3165E 00	0.4606E-01	0.8637E-02	0.2202E-02	0.7379E-03
166	2.40	8.09	5.50	140	13	0.2891E 02	0.2913E 01	0.3602E 00	0.5718E-01	0.1189E-01	0.3217E-02	0.1101E-02
167	2.21	8.08	6.34	310	10	0.2183E 02	0.2460E 01	0.3044E 00	0.4332E-01	0.7575E-02	0.1741E-02	0.5365E-03
168	2.48	7.96	6.10	80	18	0.2706E 02	0.3052E 01	0.3836E 00	0.5633E-01	0.1031E-01	0.2446E-02	0.7350E-03
169	2.49	7.96	6.18	130	17	0.2780E 02	0.3095E 01	0.3888E 00	0.5712E-01	0.1019E-01	0.2269E-02	0.6330E-03
170	2.30	7.94	6.06	350	14	0.2382E 02	0.2627E 01	0.3307E 00	0.4928E-01	0.9014E-02	0.2069E-02	0.5920E-03
171	2.29	7.93	5.40	160	10	0.2519E 02	0.2590E 01	0.3265E 00	0.5305E-01	0.1120E-01	0.3017E-02	0.1011E-02
172	2.02	7.86	6.14	360	6	0.1727E 02	0.2007E 01	0.2554E 00	0.3739E-01	0.6771E-02	0.1602E-02	0.4886E-03
173	2.18	7.59	5.71	350	12	0.1954E 02	0.2263E 01	0.2982E 00	0.4669E-01	0.9152E-02	0.2332E-02	0.7670E-03
174	2.30	7.57	6.37	330	8	0.2011E 02	0.2498E 01	0.3301E 00	0.4806E-01	0.8141E-02	0.1706E-02	0.4548E-03
175	2.45	7.57	5.98	210	20	0.2360E 02	0.2840E 01	0.3752E 00	0.5689E-01	0.1050E-01	0.2459E-02	0.7242E-03
176	2.08	7.53	5.44	240	15	0.1723E 02	0.2032E 01	0.2699E 00	0.4335E-01	0.9120E-02	0.2595E-02	0.9531E-03
177	2.11	7.53	5.94	240	15	0.1700E 02	0.2097E 01	0.2786E 00	0.4201E-01	0.7893E-02	0.2030E-02	0.7141E-03
178	2.12	7.48	5.73	190	13	0.1768E 02	0.2103E 01	0.2810E 00	0.4393E-01	0.8561E-02	0.2208E-02	0.7524E-03
179	2.13	7.45	6.11	240	8	0.1719E 02	0.2117E 01	0.2841E 00	0.4281E-01	0.7599E-02	0.1673E-02	0.4672E-03
180	2.33	7.43	5.44	170	16	0.2156E 02	0.2529E 01	0.3405E 00	0.5561E-01	0.1151E-01	0.3058E-02	0.1016E-02
181	2.18	7.40	5.60	250	20	0.1827E 02	0.2204E 01	0.2979E 00	0.4750E-01	0.9490E-02	0.2482E-02	0.8415E-03
182	2.25	7.35	5.69	140	14	0.1948E 02	0.2330E 01	0.3168E 00	0.5039E-01	0.9768E-02	0.2417E-02	0.7791E-03
183	2.19	7.34	5.63	170	13	0.1801E 02	0.2209E 01	0.3009E 00	0.4795E-01	0.9504E-02	0.2428E-02	0.7822E-03
184	2.42	7.34	5.56	310	12	0.2228E 02	0.2685E 01	0.3658E 00	0.5891E-01	0.1184E-01	0.3092E-02	0.1043E-02
185	2.15	7.22	5.29	190	16	0.1737E 02	0.2084E 01	0.2887E 00	0.4869E-01	0.1032E-01	0.2719E-02	0.8568E-03
186	2.36	7.14	5.47	260	11	0.2058E 02	0.2496E 01	0.3496E 00	0.5783E-01	0.1170E-01	0.2986E-02	0.9668E-03
187	2.41	7.08	5.29	240	13	0.2119E 02	0.2569E 01	0.3627E 00	0.6154E-01	0.1296E-01	0.3461E-02	0.1164E-02
188	2.12	7.03	5.55	200	7	0.1518E 02	0.1968E 01	0.2801E 00	0.4583E-01	0.9083E-02	0.2244E-02	0.6800E-03
189	2.49	7.02	5.65	160	12	0.2123E 02	0.2730E 01	0.3889E 00	0.6326E-01	0.1216E-01	0.2839E-02	0.8060E-03
190	2.10	7.02	5.66	260	17	0.1480E 02	0.1931E 01	0.2753E 00	0.4457E-01	0.8578E-02	0.2023E-02	0.5829E-03
191	2.13	7.02	5.55	180	18	0.1531E 02	0.1985E 01	0.2828E 00	0.4603E-01	0.9165E-02	0.2400E-02	0.8357E-03

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
192	2.18	6.99	5.44	170	12	0.1603E 02	0.2071E 01	0.2962E 00	0.4905E-01	0.1000E-01	0.2653E-02	0.9149E-03
193	2.37	6.97	5.74	180	23	0.1855E 02	0.2439E 01	0.3498E 00	0.5631E-01	0.1061E-01	0.2434E-02	0.6838E-03
194	2.34	6.88	5.48	180	12	0.1833E 02	0.2356E 01	0.3423E 00	0.5736E-01	0.1140E-01	0.2754E-02	0.8104E-03
195	2.01	6.68	5.35	100	17	0.1303E 02	0.1696E 01	0.2537E 00	0.4391E-01	0.8880E-02	0.2130E-02	0.6107E-03
196	2.01	6.56	5.08	230	17	0.1211E 02	0.1662E 01	0.2532E 00	0.4465E-01	0.9794E-02	0.2837E-02	0.1071E-02
197	2.01	6.49	4.71	110	8	0.1370E 02	0.1631E 01	0.2513E 00	0.4851E-01	0.1131E-01	0.3102E-02	0.9825E-03
198	2.30	6.47	5.14	170	13	0.1543E 02	0.2136E 01	0.3302E 00	0.5885E-01	0.1250E-01	0.3214E-02	0.9883E-03
199	2.17	6.45	4.97	200	22	0.1457E 02	0.1905E 01	0.2954E 00	0.5446E-01	0.1196E-01	0.3139E-02	0.9759E-03
200	2.15	6.42	5.13	230	14	0.1322E 02	0.1846E 01	0.2877E 00	0.5156E-01	0.1095E-01	0.2799E-02	0.8524E-03
201	2.20	6.39	5.26	350	10	0.1354E 02	0.1931E 01	0.3020E 00	0.5328E-01	0.1090E-01	0.2643E-02	0.7625E-03
202	2.31	6.25	5.44	360	21	0.1387E 02	0.2080E 01	0.3329E 00	0.5782E-01	0.1126E-01	0.2564E-02	0.7019E-03
203	2.30	6.15	4.93	250	17	0.1357E 02	0.2025E 01	0.3293E 00	0.6080E-01	0.1355E-01	0.3847E-02	0.1394E-02
204	2.41	6.08	5.13	140	16	0.1466E 02	0.2202E 01	0.3619E 00	0.6611E-01	0.1373E-01	0.3320E-02	0.9485E-03
205	2.02	6.03	5.06	140	15	0.1015E 02	0.1531E 01	0.2541E 00	0.4699E-01	0.9913E-02	0.2442E-02	0.7108E-03

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
206	2.80	10.64	7.78	200	6	0.6258E 02	0.5225E 01	0.4909E 00	0.5513E-01	0.8100E-02	0.1686E-02	0.4912E-03
207	2.95	9.91	7.24	180	6	0.5686E 02	0.5395E 01	0.5445E 00	0.6509E-01	0.1038E-01	0.2439E-02	0.8196E-03
208	2.78	9.47	7.10	180	13	0.4767E 02	0.4560E 01	0.4817E 00	0.5966E-01	0.9554E-02	0.2184E-02	0.7126E-03
209	2.99	9.39	7.21	140	11	0.5465E 02	0.5252E 01	0.5593E 00	0.6940E-01	0.1076E-01	0.2244E-02	0.6497E-03
210	2.88	9.26	6.57	210	10	0.5047E 02	0.4804E 01	0.5187E 00	0.6864E-01	0.1201E-01	0.2624E-02	0.8462E-03
211	2.94	9.25	7.31	260	7	0.5031E 02	0.4983E 01	0.5388E 00	0.6641E-01	0.1009E-01	0.2109E-02	0.6393E-03
212	2.82	9.10	6.90	200	6	0.4509E 02	0.4525E 01	0.4971E 00	0.6352E-01	0.1045E-01	0.2440E-02	0.8040E-03
213	2.72	9.09	7.42	140	5	0.4071E 02	0.4201E 01	0.4623E 00	0.5647E-01	0.8401E-02	0.1754E-02	0.5467E-03
214	2.56	8.97	6.74	240	6	0.3619E 02	0.3679E 01	0.4104E 00	0.5344E-01	0.9029E-02	0.2184E-02	0.7439E-03
215	2.71	8.77	7.00	170	7	0.3819E 02	0.4020E 01	0.4582E 00	0.5897E-01	0.9344E-02	0.2061E-02	0.6621E-03
216	2.64	8.74	7.04	210	2	0.3643E 02	0.3817E 01	0.4370E 00	0.5671E-01	0.8806E-02	0.1739E-02	0.4508E-03
217	2.96	8.63	6.25	210	13	0.4689E 02	0.4725E 01	0.5472E 00	0.7704E-01	0.1403E-01	0.3439E-02	0.1119E-02
218	2.65	8.61	6.61	170	12	0.3548E 02	0.3778E 01	0.4386E 00	0.5880E-01	0.1003E-01	0.2393E-02	0.7999E-03
219	2.53	8.38	6.27	150	17	0.3166E 02	0.3347E 01	0.3993E 00	0.5669E-01	0.1017E-01	0.2405E-02	0.7496E-03
220	2.66	8.26	6.40	260	7	0.3351E 02	0.3654E 01	0.4422E 00	0.6238E-01	0.1081E-01	0.2365E-02	0.6465E-03
221	2.55	8.02	6.49	340	4	0.2841E 02	0.3250E 01	0.4055E 00	0.5719E-01	0.9617E-02	0.2033E-02	0.5487E-03
222	2.87	7.99	6.39	30	13	0.3630E 02	0.4113E 01	0.5150E 00	0.7367E-01	0.1263E-01	0.2709E-02	0.7371E-03
223	2.88	7.96	6.70	250	5	0.3505E 02	0.4129E 01	0.5188E 00	0.7176E-01	0.1156E-01	0.2326E-02	0.6096E-03
224	2.54	7.96	6.27	320	14	0.2776E 02	0.3208E 01	0.4033E 00	0.5788E-01	0.1024E-01	0.2420E-02	0.7751E-03
225	2.78	7.91	6.15	300	11	0.3368E 02	0.3809E 01	0.4819E 00	0.7082E-01	0.1274E-01	0.2959E-02	0.9056E-03
226	2.71	7.84	6.11	280	14	0.3164E 02	0.3607E 01	0.4604E 00	0.6832E-01	0.1233E-01	0.2787E-02	0.7854E-03
227	2.87	7.82	6.27	140	10	0.3408E 02	0.4011E 01	0.5130E 00	0.7424E-01	0.1304E-01	0.3015E-02	0.9426E-03
228	2.96	7.81	6.07	250	18	0.3788E 02	0.4276E 01	0.5477E 00	0.8186E-01	0.1485E-01	0.3384E-02	0.9711E-03
229	2.82	7.72	6.05	290	8	0.3342E 02	0.3832E 01	0.4963E 00	0.7481E-01	0.1357E-01	0.3035E-02	0.8391E-03
230	2.72	7.67	5.76	220	14	0.3193E 02	0.3560E 01	0.4640E 00	0.7271E-01	0.1399E-01	0.3338E-02	0.9734E-03
231	2.97	7.67	5.98	240	16	0.3670E 02	0.4237E 01	0.5526E 00	0.8398E-01	0.1543E-01	0.3531E-02	0.1005E-02
232	2.52	7.66	6.01	250	19	0.2592E 02	0.3043E 01	0.3971E 00	0.6003E-01	0.1099E-01	0.2504E-02	0.7054E-03
233	2.55	7.63	5.33	180	13	0.2913E 02	0.3090E 01	0.4051E 00	0.6725E-01	0.1428E-01	0.3906E-02	0.1359E-02
234	2.72	7.60	6.09	30	20	0.2933E 02	0.3514E 01	0.4621E 00	0.6923E-01	0.1247E-01	0.2863E-02	0.8583E-03
235	2.88	7.56	6.02	250	19	0.3221E 02	0.3906E 01	0.5167E 00	0.7790E-01	0.1425E-01	0.3328E-02	0.9866E-03
236	2.67	7.55	5.79	260	17	0.2875E 02	0.3353E 01	0.4440E 00	0.6914E-01	0.1325E-01	0.3258E-02	0.1036E-02
237	2.58	7.48	6.02	10	11	0.2547E 02	0.3120E 01	0.4172E 00	0.6331E-01	0.1151E-01	0.2624E-02	0.7531E-03
238	2.73	7.42	5.68	120	13	0.2926E 02	0.3448E 01	0.4647E 00	0.7428E-01	0.1441E-01	0.3404E-02	0.9685E-03
239	2.75	7.41	5.81	210	16	0.2869E 02	0.3516E 01	0.4743E 00	0.7387E-01	0.1404E-01	0.3368E-02	0.1004E-02
240	2.97	7.40	5.93	190	20	0.3335E 02	0.4065E 01	0.5495E 00	0.8490E-01	0.1563E-01	0.3545E-02	0.9925E-03
241	2.71	7.35	5.94	190	8	0.2713E 02	0.3365E 01	0.4579E 00	0.7063E-01	0.1298E-01	0.3009E-02	0.9072E-03
242	2.63	7.32	5.75	230	16	0.2554E 02	0.3155E 01	0.4313E 00	0.6799E-01	0.1306E-01	0.3176E-02	0.9677E-03
243	2.76	7.22	5.54	230	14	0.2851E 02	0.3429E 01	0.4753E 00	0.7788E-01	0.1546E-01	0.3771E-02	0.1120E-02
244	2.93	7.22	5.75	250	17	0.3085E 02	0.3879E 01	0.5374E 00	0.8524E-01	0.1623E-01	0.3838E-02	0.1120E-02
245	2.95	7.18	5.67	190	23	0.3106E 02	0.3895E 01	0.5421E 00	0.8680E-01	0.1688E-01	0.4244E-02	0.1410E-02
246	2.68	7.16	5.82	170	15	0.2515E 02	0.3226E 01	0.4505E 00	0.7086E-01	0.1330E-01	0.3176E-02	0.9919E-03
247	2.98	7.10	5.78	10	21	0.3066E 02	0.3954E 01	0.5569E 00	0.8837E-01	0.1668E-01	0.3993E-02	0.1250E-02
248	2.80	6.93	5.64	10	22	0.2574E 02	0.3404E 01	0.4913E 00	0.7999E-01	0.1546E-01	0.3748E-02	0.1167E-02
249	2.93	6.88	5.53	320	16	0.2942E 02	0.3684E 01	0.5355E 00	0.8989E-01	0.1753E-01	0.4089E-02	0.1186E-02
250	2.70	6.85	5.69	360	15	0.2293E 02	0.3115E 01	0.4545E 00	0.7380E-01	0.1402E-01	0.3264E-02	0.9401E-03
251	2.73	6.82	5.30	80	14	0.2564E 02	0.3164E 01	0.4669E 00	0.8095E-01	0.1661E-01	0.4048E-02	0.1173E-02
252	2.53	6.49	5.36	160	21	0.1868E 02	0.2592E 01	0.3993E 00	0.6931E-01	0.1392E-01	0.3343E-02	0.9803E-03
253	2.52	6.43	5.07	210	19	0.1908E 02	0.2549E 01	0.3965E 00	0.7179E-01	0.1540E-01	0.4041E-02	0.1320E-02
254	2.98	6.43	5.36	180	21	0.2484E 02	0.3558E 01	0.5535E 00	0.9584E-01	0.1929E-01	0.4754E-02	0.1478E-02
255	2.87	6.39	5.41	140	20	0.2262E 02	0.3291E 01	0.5148E 00	0.8867E-01	0.1759E-01	0.4268E-02	0.1316E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
256	2. 57	6. 29	5. 34	110	17	0. 1759E 02	0. 2586E 01	0. 4114E 00	0. 7226E-01	0. 1444E-01	0. 3391E-02	0. 9504E-03
257	2. 97	6. 22	5. 27	60	25	0. 2327E 02	0. 3426E 01	0. 5510E 00	0. 9802E-01	0. 1986E-01	0. 4743E-02	0. 1364E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
258	3. 40	12. 55	8. 13	230	11	0. 1307E 03	0. 9079E 01	0. 7235E 00	0. 7366E-01	0. 1094E-01	0. 2516E-02	0. 8304E-03
259	3. 21	10. 16	7. 55	190	11	0. 7270E 02	0. 6563E 01	0. 6459E 00	0. 7451E-01	0. 1134E-01	0. 2533E-02	0. 8229E-03
260	3. 44	10. 09	7. 60	280	7	0. 8347E 02	0. 7467E 01	0. 7403E 00	0. 8581E-01	0. 1283E-01	0. 2770E-02	0. 8750E-03
261	3. 41	9. 96	7. 68	230	15	0. 7791E 02	0. 7220E 01	0. 7248E 00	0. 8368E-01	0. 1228E-01	0. 2521E-02	0. 7172E-03
262	3. 50	9. 42	7. 22	250	12	0. 7436E 02	0. 7210E 01	0. 7654E 00	0. 9436E-01	0. 1469E-01	0. 3094E-02	0. 8732E-03
263	3. 17	9. 35	8. 01	40	5	0. 5779E 02	0. 5678E 01	0. 6286E 00	0. 7296E-01	0. 9796E-02	0. 1683E-02	0. 3994E-03
264	3. 06	9. 14	7. 14	180	7	0. 5262E 02	0. 5331E 01	0. 5836E 00	0. 7304E-01	0. 1144E-01	0. 2423E-02	0. 6837E-03
265	3. 03	9. 11	6. 61	120	15	0. 5649E 02	0. 5223E 01	0. 5736E 00	0. 7764E-01	0. 1314E-01	0. 2775E-02	0. 7255E-03
266	3. 30	9. 04	6. 78	270	14	0. 6281E 02	0. 6171E 01	0. 6826E 00	0. 8943E-01	0. 1486E-01	0. 3320E-02	0. 9967E-03
267	3. 29	8. 96	6. 54	80	15	0. 6197E 02	0. 6075E 01	0. 6784E 00	0. 9153E-01	0. 1586E-01	0. 3676E-02	0. 1138E-02
268	3. 28	8. 85	6. 48	170	19	0. 6028E 02	0. 5933E 01	0. 6704E 00	0. 9145E-01	0. 1595E-01	0. 3711E-02	0. 1147E-02
269	3. 07	8. 78	7. 08	320	9	0. 4863E 02	0. 5174E 01	0. 5891E 00	0. 7522E-01	0. 1176E-01	0. 2522E-02	0. 7707E-03
270	3. 20	8. 57	6. 65	290	13	0. 5171E 02	0. 5504E 01	0. 6419E 00	0. 8625E-01	0. 1452E-01	0. 3356E-02	0. 1080E-02
271	3. 29	8. 49	6. 75	40	11	0. 5365E 02	0. 5750E 01	0. 6775E 00	0. 9152E-01	0. 1485E-01	0. 3003E-02	0. 7647E-03
272	3. 44	8. 33	6. 48	260	20	0. 5633E 02	0. 6154E 01	0. 7386E 00	0. 1024E 00	0. 1761E-01	0. 4022E-02	0. 1230E-02
273	3. 42	8. 16	6. 32	150	24	0. 5591E 02	0. 5951E 01	0. 7291E 00	0. 1046E 00	0. 1827E-01	0. 4105E-02	0. 1225E-02
274	3. 30	8. 05	6. 38	320	13	0. 4936E 02	0. 5491E 01	0. 6821E 00	0. 9753E-01	0. 1675E-01	0. 3618E-02	0. 1005E-02
275	3. 13	7. 92	6. 24	160	20	0. 4272E 02	0. 4846E 01	0. 6116E 00	0. 8886E-01	0. 1572E-01	0. 3618E-02	0. 1112E-02
276	3. 27	7. 83	6. 33	150	16	0. 4469E 02	0. 5222E 01	0. 6672E 00	0. 9628E-01	0. 1668E-01	0. 3751E-02	0. 1139E-02
277	3. 47	7. 81	6. 30	260	21	0. 5049E 02	0. 5887E 01	0. 7543E 00	0. 1096E 00	0. 1899E-01	0. 4151E-02	0. 1179E-02
278	3. 16	7. 80	6. 09	120	19	0. 4315E 02	0. 4857E 01	0. 6229E 00	0. 9302E-01	0. 1677E-01	0. 3616E-02	0. 1123E-02
279	3. 04	7. 72	6. 21	300	19	0. 3854E 02	0. 4463E 01	0. 5778E 00	0. 8557E-01	0. 1498E-01	0. 3222E-02	0. 8735E-03
280	3. 46	7. 66	6. 18	190	12	0. 4806E 02	0. 5719E 01	0. 7465E 00	0. 1108E 00	0. 1956E-01	0. 4279E-02	0. 1172E-02
281	3. 01	7. 63	6. 08	200	14	0. 3609E 02	0. 4316E 01	0. 5654E 00	0. 8422E-01	0. 1530E-01	0. 3682E-02	0. 1203E-02
282	3. 17	7. 57	6. 12	220	25	0. 3910E 02	0. 4745E 01	0. 6266E 00	0. 9359E-01	0. 1675E-01	0. 3816E-02	0. 1137E-02
283	3. 30	7. 47	6. 01	310	9	0. 4175E 02	0. 5098E 01	0. 6821E 00	0. 1036E 00	0. 1888E-01	0. 4385E-02	0. 1337E-02
284	3. 06	7. 47	6. 02	290	20	0. 3557E 02	0. 4377E 01	0. 5860E 00	0. 8864E-01	0. 1617E-01	0. 3835E-02	0. 1212E-02
285	3. 22	7. 42	6. 25	250	13	0. 3815E 02	0. 4815E 01	0. 6490E 00	0. 9634E-01	0. 1664E-01	0. 3608E-02	0. 1037E-02
286	3. 08	7. 40	6. 21	20	17	0. 3477E 02	0. 4383E 01	0. 5921E 00	0. 8845E-01	0. 1537E-01	0. 3301E-02	0. 9056E-03
287	3. 22	7. 31	6. 26	130	22	0. 3709E 02	0. 4727E 01	0. 6464E 00	0. 9687E-01	0. 1651E-01	0. 3362E-02	0. 8513E-03
288	3. 02	7. 15	5. 62	110	16	0. 3202E 02	0. 4077E 01	0. 5703E 00	0. 9169E-01	0. 1808E-01	0. 4623E-02	0. 1535E-02
289	3. 11	6. 64	5. 51	240	26	0. 2978E 02	0. 4021E 01	0. 6052E 00	0. 1022E 00	0. 1993E-01	0. 4697E-02	0. 1387E-02
290	3. 30	6. 63	5. 64	150	18	0. 3229E 02	0. 4502E 01	0. 6791E 00	0. 1126E 00	0. 2136E-01	0. 4926E-02	0. 1449E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
291	3.61	10.74	8.79	280	6	0.1013E 03	0.8734E 01	0.8129E 00	0.8464E-01	0.1052E-01	0.1723E-02	0.4043E-03
292	3.88	10.64	8.03	310	16	0.1161E 03	0.9994E 01	0.9396E 00	0.1028E 00	0.1459E-01	0.3014E-02	0.9176E-03
293	3.77	10.27	8.23	40	13	0.1012E 03	0.9103E 01	0.8861E 00	0.9742E-01	0.1309E-01	0.2381E-02	0.6106E-03
294	3.54	10.20	7.90	240	5	0.8914E 02	0.8004E 01	0.7846E 00	0.8850E-01	0.1256E-01	0.2501E-02	0.7305E-03
295	3.59	10.08	7.74	240	10	0.8810E 02	0.8118E 01	0.8057E 00	0.9163E-01	0.1346E-01	0.2921E-02	0.9384E-03
296	3.53	9.64	6.60	170	20	0.8735E 02	0.7499E 01	0.7779E 00	0.1031E 00	0.1786E-01	0.4001E-02	0.1130E-02
297	3.58	9.57	7.69	320	7	0.7948E 02	0.7676E 01	0.8021E 00	0.9483E-01	0.1358E-01	0.2551E-02	0.6590E-03
298	4.00	9.50	8.00	60	8	0.9612E 02	0.9490E 01	0.9985E 00	0.1155E 00	0.1562E-01	0.2712E-02	0.6488E-03
299	3.52	9.41	6.79	250	18	0.7658E 02	0.7284E 01	0.7743E 00	0.9874E-01	0.1679E-01	0.4111E-02	0.1401E-02
300	3.99	9.29	7.38	230	28	0.9385E 02	0.9255E 01	0.9963E 00	0.1223E 00	0.1832E-01	0.3597E-02	0.9421E-03
301	3.65	8.97	6.71	230	15	0.7447E 02	0.7486E 01	0.8346E 00	0.1095E 00	0.1853E-01	0.4367E-02	0.1424E-02
302	3.77	8.61	6.70	210	9	0.7261E 02	0.7640E 01	0.8875E 00	0.1194E 00	0.1975E-01	0.4213E-02	0.1158E-02
303	3.92	8.61	6.91	250	24	0.7727E 02	0.8253E 01	0.9582E 00	0.1261E 00	0.2005E-01	0.4113E-02	0.1109E-02
304	3.76	8.58	6.87	150	23	0.7063E 02	0.7587E 01	0.8841E 00	0.1167E 00	0.1876E-01	0.3992E-02	0.1172E-02
305	3.86	8.57	7.02	280	17	0.7371E 02	0.7995E 01	0.9327E 00	0.1216E 00	0.1893E-01	0.3826E-02	0.1055E-02
306	3.54	8.53	6.64	80	21	0.6400E 02	0.6694E 01	0.7847E 00	0.1070E 00	0.1781E-01	0.3799E-02	0.1062E-02
307	3.73	8.44	6.60	310	32	0.6860E 02	0.7353E 01	0.8717E 00	0.1191E 00	0.2004E-01	0.4477E-02	0.1372E-02
308	3.55	8.27	6.35	310	18	0.6035E 02	0.6510E 01	0.7873E 00	0.1115E 00	0.1950E-01	0.4373E-02	0.1255E-02
309	3.57	8.14	6.43	240	25	0.5791E 02	0.6463E 01	0.7944E 00	0.1118E 00	0.1919E-01	0.4291E-02	0.1280E-02
310	3.64	8.10	6.59	10	15	0.5924E 02	0.6697E 01	0.8269E 00	0.1152E 00	0.1904E-01	0.3925E-02	0.1032E-02
311	3.55	8.07	6.47	180	24	0.5591E 02	0.6372E 01	0.7894E 00	0.1106E 00	0.1886E-01	0.4274E-02	0.1332E-02
312	3.98	7.96	6.62	300	20	0.6707E 02	0.7881E 01	0.9903E 00	0.1376E 00	0.2260E-01	0.4818E-02	0.1419E-02
313	3.55	7.89	6.37	330	18	0.5408E 02	0.6225E 01	0.7887E 00	0.1133E 00	0.1946E-01	0.4308E-02	0.1285E-02
314	3.61	7.86	6.51	180	21	0.5574E 02	0.6398E 01	0.8141E 00	0.1165E 00	0.1923E-01	0.3808E-02	0.9380E-03
315	3.84	7.83	6.33	280	24	0.6212E 02	0.7221E 01	0.9219E 00	0.1333E 00	0.2300E-01	0.5028E-02	0.1437E-02
316	3.64	7.71	6.38	360	0	0.5289E 02	0.6380E 01	0.8280E 00	0.1197E 00	0.2032E-01	0.4279E-02	0.1143E-02
317	3.60	7.48	6.08	270	27	0.4969E 02	0.6044E 01	0.8079E 00	0.1219E 00	0.2182E-01	0.4918E-02	0.1446E-02
318	3.66	7.31	6.12	120	24	0.4835E 02	0.6123E 01	0.8377E 00	0.1269E 00	0.2237E-01	0.4926E-02	0.1431E-02
319	3.59	6.92	5.93	150	22	0.4189E 02	0.5586E 01	0.8067E 00	0.1279E 00	0.2292E-01	0.4847E-02	0.1250E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
320	4.07	12.82	8.81	180	9	0.1933E 03	0.1331E 02	0.1038E 01	0.9981E-01	0.1337E-01	0.2767E-02	0.8655E-03
321	4.09	11.71	9.66	100	10	0.1520E 03	0.1221E 02	0.1043E 01	0.9857E-01	0.1119E-01	0.1762E-02	0.4248E-03
322	4.25	11.08	8.87	10	13	0.1491E 03	0.1254E 02	0.1131E 01	0.1148E 00	0.1437E-01	0.2505E-02	0.6468E-03
323	4.08	11.07	8.71	320	10	0.1387E 03	0.1154E 02	0.1042E 01	0.1074E 00	0.1374E-01	0.2439E-02	0.6395E-03
324	4.31	10.62	8.32	200	12	0.1411E 03	0.1230E 02	0.1158E 01	0.1240E 00	0.1674E-01	0.3266E-02	0.9610E-03
325	4.20	10.54	8.42	300	4	0.1319E 03	0.1164E 02	0.1104E 01	0.1179E 00	0.1559E-01	0.2935E-02	0.8457E-03
326	4.24	10.36	7.86	290	10	0.1339E 03	0.1167E 02	0.1125E 01	0.1271E 00	0.1821E-01	0.3524E-02	0.9181E-03
327	4.03	10.23	7.59	250	17	0.1194E 03	0.1038E 02	0.1015E 01	0.1177E 00	0.1760E-01	0.3689E-02	0.1069E-02
328	4.20	10.19	7.83	220	17	0.1245E 03	0.1126E 02	0.1104E 01	0.1246E 00	0.1800E-01	0.3786E-02	0.1193E-02
329	4.39	9.86	6.95	160	18	0.1398E 03	0.1189E 02	0.1206E 01	0.1530E 00	0.2499E-01	0.5327E-02	0.1468E-02
330	4.07	9.60	7.36	260	15	0.1114E 03	0.1017E 02	0.1038E 01	0.1249E 00	0.1916E-01	0.4044E-02	0.1194E-02
331	4.23	9.45	7.38	250	18	0.1105E 03	0.1059E 02	0.1120E 01	0.1367E 00	0.2056E-01	0.4093E-02	0.1118E-02
332	4.26	9.40	7.12	330	9	0.1115E 03	0.1065E 02	0.1132E 01	0.1415E 00	0.2235E-01	0.4742E-02	0.1351E-02
333	4.03	9.15	7.23	70	15	0.9399E 02	0.9291E 01	0.1015E 01	0.1272E 00	0.1941E-01	0.3862E-02	0.1030E-02
334	4.46	9.15	7.23	230	25	0.1132E 03	0.1136E 02	0.1242E 01	0.1547E 00	0.2375E-01	0.4996E-02	0.1511E-02
335	4.06	9.12	7.00	220	22	0.9430E 02	0.9400E 01	0.1031E 01	0.1313E 00	0.2104E-01	0.4585E-02	0.1387E-02
336	4.19	8.94	6.46	100	23	0.1092E 03	0.9612E 01	0.1098E 01	0.1531E 00	0.2635E-01	0.5644E-02	0.1516E-02
337	4.15	8.90	7.33	320	13	0.9094E 02	0.9577E 01	0.1076E 01	0.1340E 00	0.2002E-01	0.4028E-02	0.1167E-02
338	4.25	8.74	7.10	260	23	0.9373E 02	0.9848E 01	0.1127E 01	0.1453E 00	0.2239E-01	0.4459E-02	0.1208E-02
339	4.22	8.60	6.87	350	18	0.9004E 02	0.9584E 01	0.1114E 01	0.1476E 00	0.2359E-01	0.4817E-02	0.1283E-02
340	4.14	8.54	6.73	200	31	0.8701E 02	0.9159E 01	0.1073E 01	0.1446E 00	0.2372E-01	0.5074E-02	0.1467E-02
341	4.31	8.34	6.93	340	19	0.8690E 02	0.9667E 01	0.1159E 01	0.1547E 00	0.2415E-01	0.4676E-02	0.1171E-02
342	4.15	8.15	6.70	30	24	0.7707E 02	0.8755E 01	0.1074E 01	0.1474E 00	0.2390E-01	0.4869E-02	0.1282E-02
343	4.15	8.13	6.73	190	34	0.7647E 02	0.8736E 01	0.1074E 01	0.1467E 00	0.2369E-01	0.4980E-02	0.1453E-02
344	4.25	8.11	6.63	270	27	0.8050E 02	0.9145E 01	0.1127E 01	0.1560E 00	0.2567E-01	0.5423E-02	0.1539E-02
345	4.34	8.01	6.61	170	26	0.8282E 02	0.9427E 01	0.1177E 01	0.1646E 00	0.2695E-01	0.5550E-02	0.1532E-02
346	4.04	8.00	6.48	190	23	0.7184E 02	0.8145E 01	0.1018E 01	0.1437E 00	0.2427E-01	0.5333E-02	0.1610E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
347	4.63	12.58	10.14	320	7	0.2286E 03	0.1687E 02	0.1341E 01	0.1196E 00	0.1304E-01	0.2021E-02	0.5003E-03
348	4.78	12.54	10.00	330	3	0.2414E 03	0.1790E 02	0.1427E 01	0.1285E 00	0.1426E-01	0.2222E-02	0.5322E-03
349	4.79	12.27	8.40	330	12	0.2465E 03	0.1760E 02	0.1435E 01	0.1459E 00	0.2036E-01	0.4072E-02	0.1129E-02
350	4.97	11.60	8.74	230	9	0.2316E 03	0.1794E 02	0.1547E 01	0.1570E 00	0.2023E-01	0.3531E-02	0.8403E-03
351	4.65	11.31	8.15	360	15	0.1996E 03	0.1531E 02	0.1353E 01	0.1454E 00	0.2036E-01	0.3972E-02	0.1098E-02
352	4.54	11.00	8.29	210	17	0.1719E 03	0.1415E 02	0.1286E 01	0.1368E 00	0.1873E-01	0.3672E-02	0.1061E-02
353	4.75	10.52	8.23	340	11	0.1694E 03	0.1486E 02	0.1413E 01	0.1537E 00	0.2087E-01	0.3860E-02	0.9806E-03
354	4.66	10.51	8.16	290	8	0.1630E 03	0.1428E 02	0.1359E 01	0.1484E 00	0.2041E-01	0.3886E-02	0.1032E-02
355	4.55	10.26	8.00	210	22	0.1481E 03	0.1325E 02	0.1291E 01	0.1443E 00	0.2018E-01	0.3924E-02	0.1099E-02
356	4.98	10.12	7.99	320	15	0.1721E 03	0.1571E 02	0.1553E 01	0.1748E 00	0.2433E-01	0.4599E-02	0.1228E-02
357	4.64	9.78	7.26	240	24	0.1428E 03	0.1315E 02	0.1345E 01	0.1625E 00	0.2549E-01	0.5630E-02	0.1744E-02
358	4.57	9.63	7.58	270	23	0.1334E 03	0.1259E 02	0.1307E 01	0.1556E 00	0.2273E-01	0.4469E-02	0.1240E-02
359	4.74	9.32	7.56	110	28	0.1323E 03	0.1306E 02	0.1402E 01	0.1697E 00	0.2452E-01	0.4530E-02	0.1110E-02
360	4.59	8.91	6.91	170	24	0.1183E 03	0.1176E 02	0.1319E 01	0.1731E 00	0.2765E-01	0.5586E-02	0.1441E-02
361	4.54	8.88	7.08	40	28	0.1124E 03	0.1144E 02	0.1288E 01	0.1655E 00	0.2567E-01	0.5208E-02	0.1453E-02
362	4.88	8.66	7.20	220	35	0.1191E 03	0.1289E 02	0.1489E 01	0.1901E 00	0.2875E-01	0.5706E-02	0.1592E-02
363	4.55	8.65	6.84	240	28	0.1069E 03	0.1116E 02	0.1291E 01	0.1712E 00	0.2757E-01	0.5714E-02	0.1545E-02
364	4.90	8.58	6.83	160	24	0.1213E 03	0.1286E 02	0.1500E 01	0.1990E 00	0.3211E-01	0.6832E-02	0.1981E-02
365	4.89	8.07	6.79	170	28	0.1042E 03	0.1205E 02	0.1494E 01	0.2039E 00	0.3237E-01	0.6514E-02	0.1795E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
366	5.42	11.80	9.09	260	16	0.2763E 03	0.2163E 02	0.1833E 01	0.1780E 00	0.2217E-01	0.4108E-02	0.1183E-02
367	5.06	11.31	8.16	190	33	0.2292E 03	0.1811E 02	0.1602E 01	0.1709E 00	0.2406E-01	0.4742E-02	0.1289E-02
368	5.19	10.64	8.18	230	22	0.2114E 03	0.1793E 02	0.1685E 01	0.1842E 00	0.2519E-01	0.4702E-02	0.1255E-02
369	5.26	10.35	8.39	260	14	0.1996E 03	0.1792E 02	0.1732E 01	0.1874E 00	0.2458E-01	0.4440E-02	0.1198E-02
370	5.48	10.09	7.86	290	14	0.2095E 03	0.1897E 02	0.1860E 01	0.2145E 00	0.3042E-01	0.5798E-02	0.1512E-02
371	5.31	10.06	8.18	240	25	0.1902E 03	0.1772E 02	0.1761E 01	0.1955E 00	0.2632E-01	0.4739E-02	0.1187E-02
372	5.09	9.93	7.94	70	17	0.1711E 03	0.1605E 02	0.1617E 01	0.1839E 00	0.2565E-01	0.4804E-02	0.1234E-02
373	5.17	9.67	7.72	270	21	0.1699E 03	0.1618E 02	0.1673E 01	0.1960E 00	0.2805E-01	0.5451E-02	0.1524E-02
374	5.31	9.31	7.64	340	24	0.1636E 03	0.1640E 02	0.1761E 01	0.2107E 00	0.3015E-01	0.5695E-02	0.1520E-02
375	5.22	8.99	7.34	270	28	0.1493E 03	0.1534E 02	0.1706E 01	0.2126E 00	0.3165E-01	0.6194E-02	0.1712E-02
376	5.39	8.95	7.54	10	24	0.1555E 03	0.1626E 02	0.1817E 01	0.2236E 00	0.3194E-01	0.5736E-02	0.1397E-02
377	5.11	8.74	7.35	150	27	0.1336E 03	0.1429E 02	0.1634E 01	0.2062E 00	0.3028E-01	0.5548E-02	0.1337E-02
378	5.04	8.57	7.00	220	24	0.1275E 03	0.1363E 02	0.1590E 01	0.2089E 00	0.3243E-01	0.6301E-02	0.1583E-02

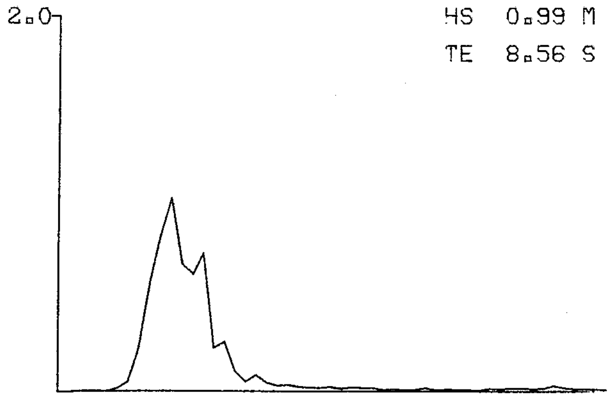
SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
379	5.73	13.24	9.91	230	14	0.3917E 03	0.2720E 02	0.2054E 01	0.1802E 00	0.2090E-01	0.3751E-02	0.1068E-02
380	5.65	12.27	8.95	200	19	0.3360E 03	0.2447E 02	0.1994E 01	0.1944E 00	0.2489E-01	0.4596E-02	0.1253E-02
381	5.65	11.84	8.71	190	17	0.3102E 03	0.2364E 02	0.1997E 01	0.2001E 00	0.2635E-01	0.5023E-02	0.1406E-02
382	5.84	10.76	9.04	10	12	0.2607E 03	0.2292E 02	0.2130E 01	0.2172E 00	0.2606E-01	0.4103E-02	0.9192E-03
383	5.51	10.56	7.98	140	32	0.2378E 03	0.2003E 02	0.1896E 01	0.2116E 00	0.2976E-01	0.5674E-02	0.1520E-02
384	5.71	10.42	7.95	220	30	0.2440E 03	0.2124E 02	0.2038E 01	0.2272E 00	0.3224E-01	0.6479E-02	0.1893E-02
385	5.76	10.23	7.99	250	19	0.2405E 03	0.2139E 02	0.2091E 01	0.2349E 00	0.3274E-01	0.6195E-02	0.1651E-02
386	5.87	9.95	8.22	150	28	0.2288E 03	0.2144E 02	0.2154E 01	0.2410E 00	0.3187E-01	0.5377E-02	0.1220E-02
387	5.94	9.03	7.80	330	22	0.1893E 03	0.1992E 02	0.2205E 01	0.2641E 00	0.3620E-01	0.6221E-02	0.1464E-02
388	5.56	9.03	7.55	240	34	0.1681E 03	0.1742E 02	0.1930E 01	0.2363E 00	0.3382E-01	0.6102E-02	0.1478E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
389	6. 48	11. 50	8. 79	210	20	0. 3796E 03	0. 3020E 02	0. 2626E 01	0. 2645E 00	0. 3402E-01	0. 6218E-02	0. 1645E-02
390	6. 32	10. 67	8. 53	220	27	0. 3067E 03	0. 2663E 02	0. 2497E 01	0. 2644E 00	0. 3433E-01	0. 6126E-02	0. 1614E-02
391	6. 41	10. 54	8. 53	240	24	0. 3079E 03	0. 2710E 02	0. 2571E 01	0. 2733E 00	0. 3534E-01	0. 6319E-02	0. 1687E-02
392	6. 11	10. 29	8. 30	250	29	0. 2667E 03	0. 2401E 02	0. 2333E 01	0. 2550E 00	0. 3388E-01	0. 6067E-02	0. 1542E-02
393	6. 13	10. 27	8. 31	20	22	0. 2681E 03	0. 2408E 02	0. 2345E 01	0. 2577E 00	0. 3397E-01	0. 5828E-02	0. 1382E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
394	6.81	11.49	8.97	340	21	0.4147E 03	0.3333E 02	0.2901E 01	0.2886E 00	0.3607E-01	0.6360E-02	0.1659E-02
395	6.72	10.98	8.89	330	21	0.3690E 03	0.3101E 02	0.2825E 01	0.2895E 00	0.3571E-01	0.5820E-02	0.1330E-02
396	6.82	9.98	8.31	200	31	0.3105E 03	0.2901E 02	0.2905E 01	0.3226E 00	0.4207E-01	0.6999E-02	0.1599E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
397	7.11	14.20	11.07	210	19	0.6803E 03	0.4491E 02	0.3163E 01	0.2518E 00	0.2581E-01	0.4125E-02	0.1097E-02

SERIAL NO.	HS METRES	TE SECS	TZ SECS	WIND DIR DEG	WIND SPEED KTS	MOMENT -2	MOMENT -1	MOMENT 0	MOMENT 1	MOMENT 2	MOMENT 3	MOMENT 4
398	8. 24	12. 71	9. 71	270	36	0. 7493E 03	0. 5397E 02	0. 4245E 01	0. 3860E 00	0. 4505E-01	0. 7737E-02	0. 2073E-02
399	8. 29	11. 23	9. 46	280	32	0. 5803E 03	0. 4827E 02	0. 4298E 01	0. 4216E 00	0. 4798E-01	0. 6965E-02	0. 1449E-02
400	8. 13	10. 89	9. 01	310	22	0. 5260E 03	0. 4499E 02	0. 4131E 01	0. 4217E 00	0. 5093E-01	0. 8010E-02	0. 1789E-02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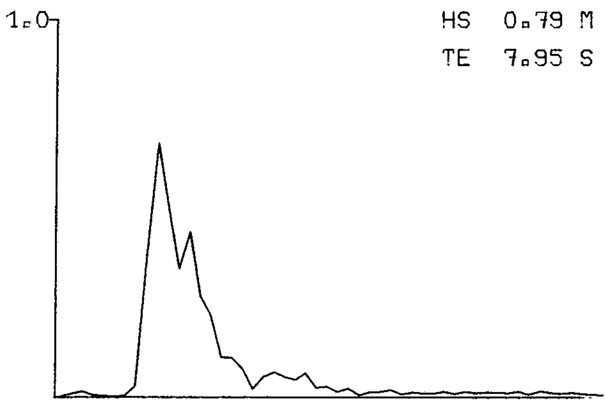
TE 8.56 S

1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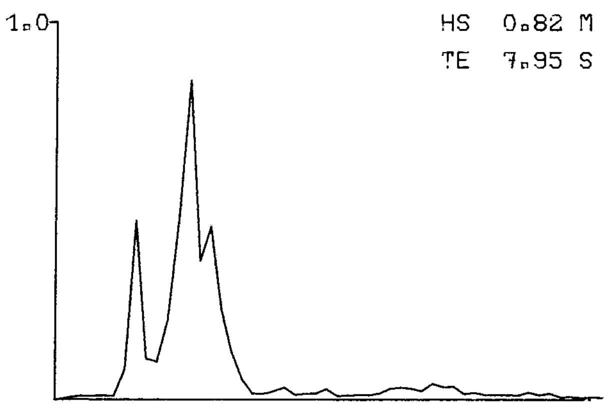
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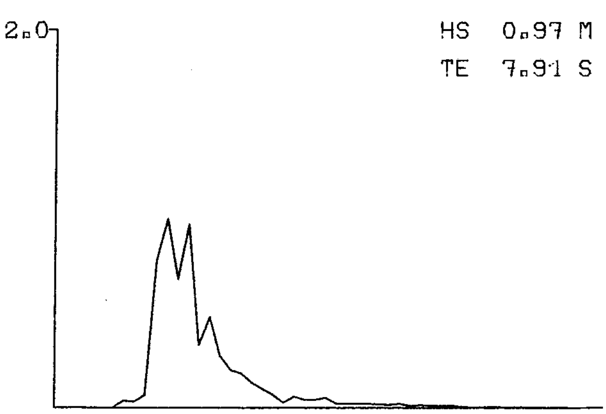
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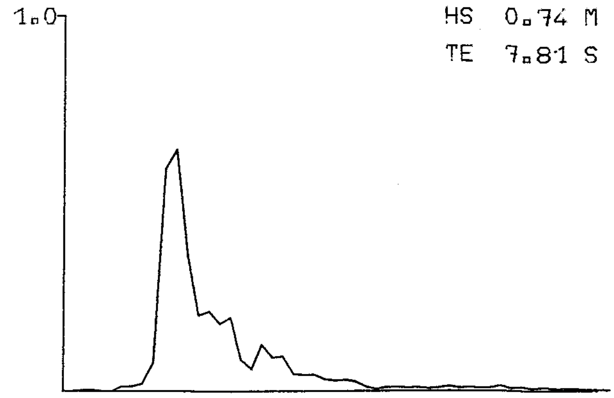
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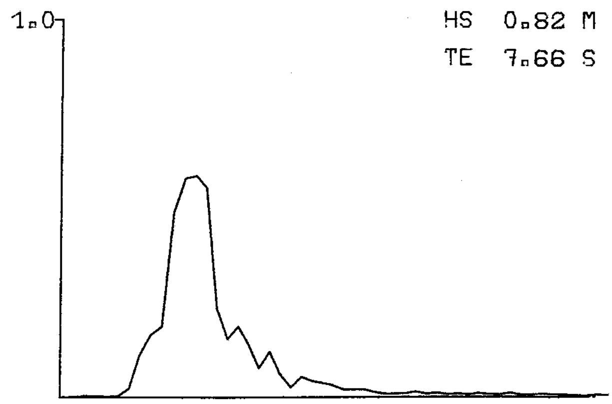
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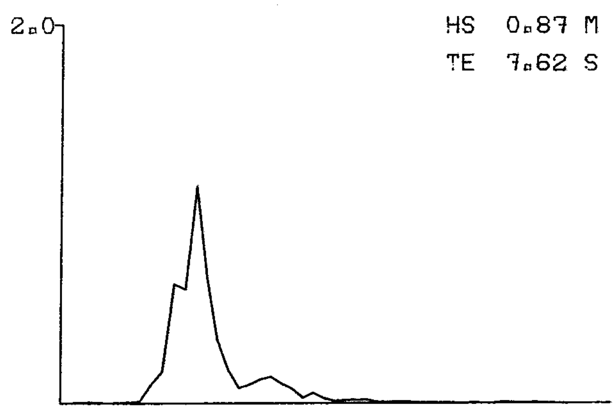
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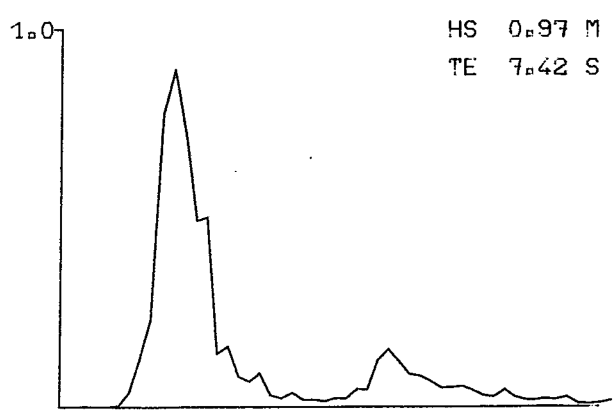
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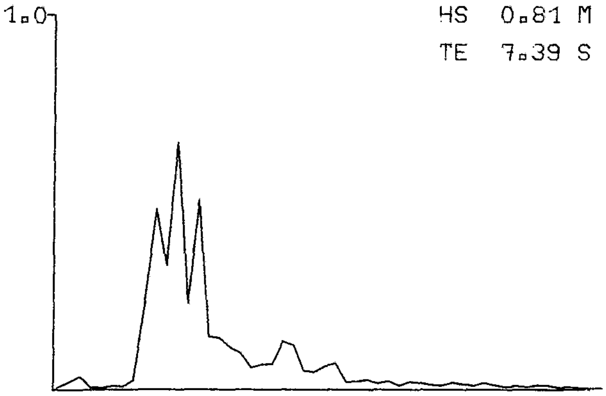

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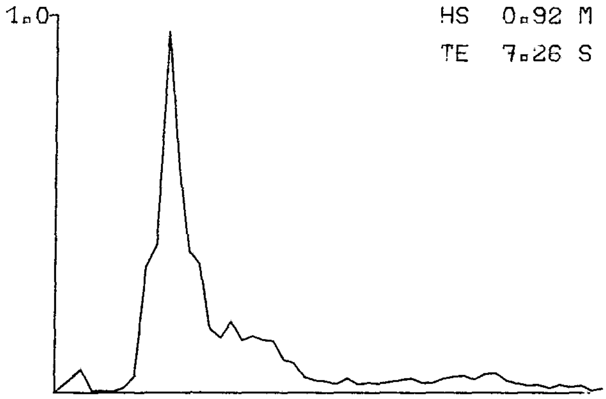

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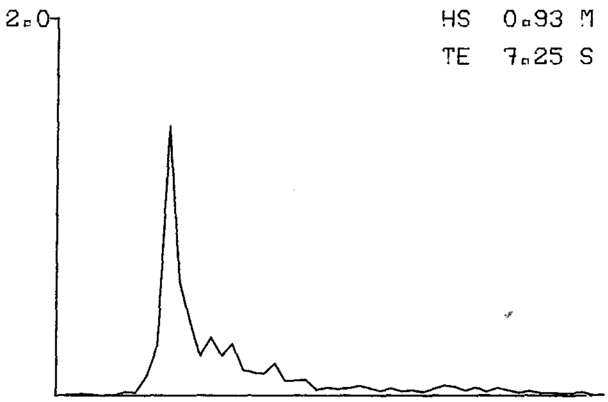

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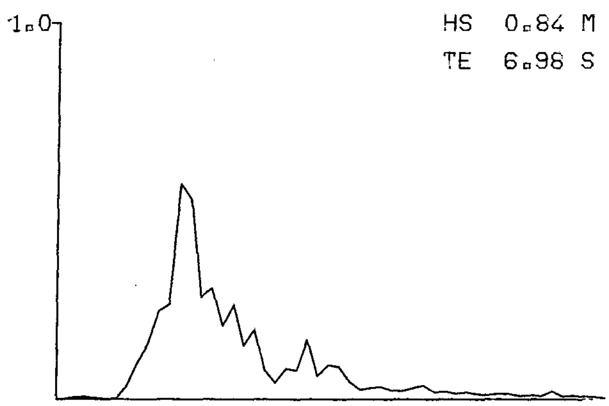

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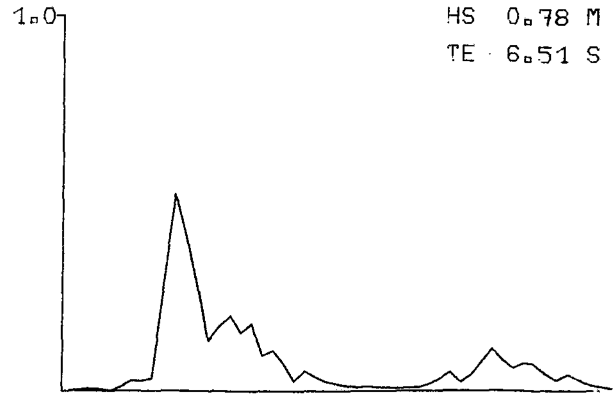

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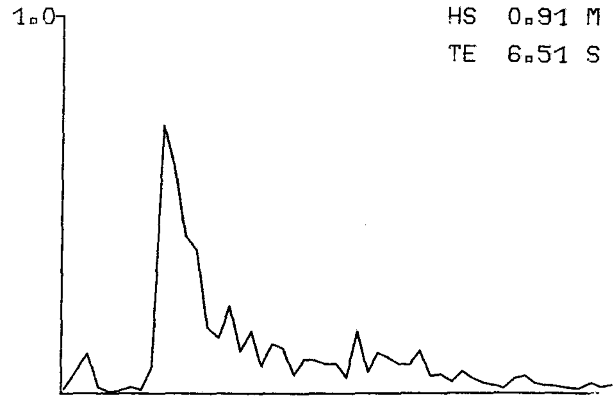

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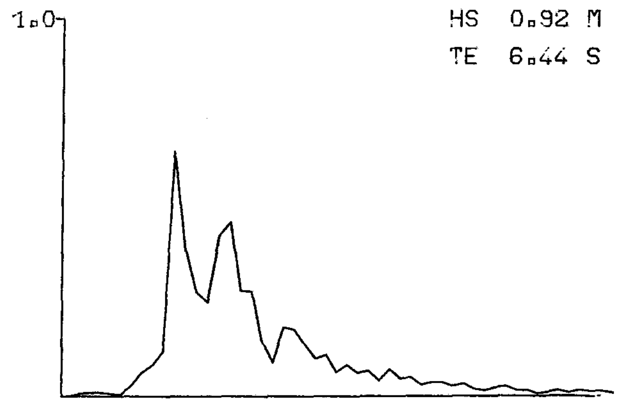

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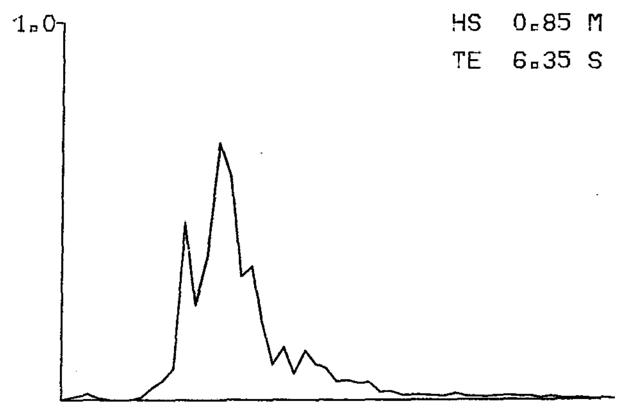

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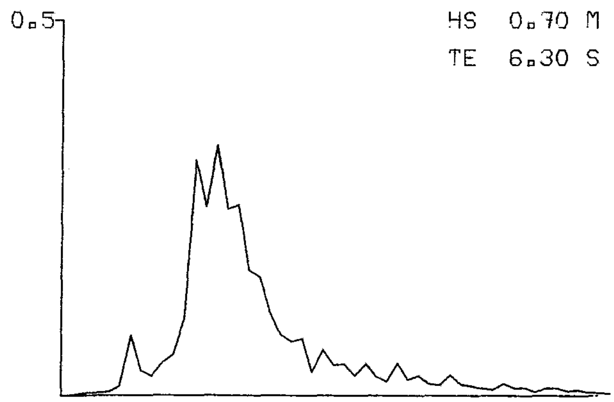

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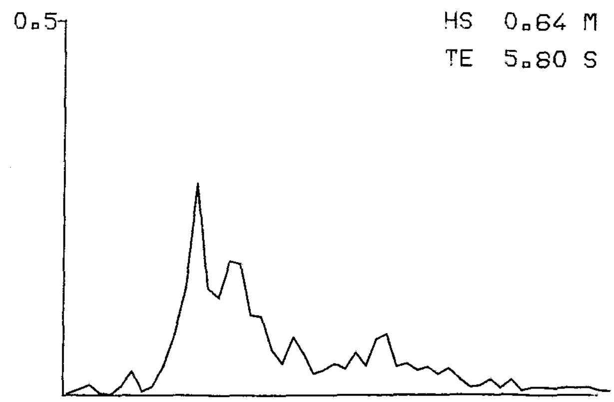

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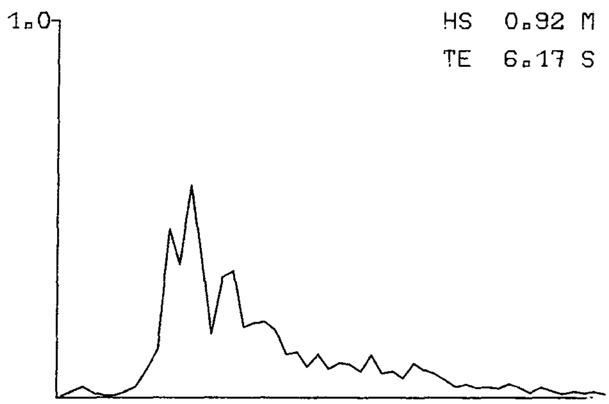

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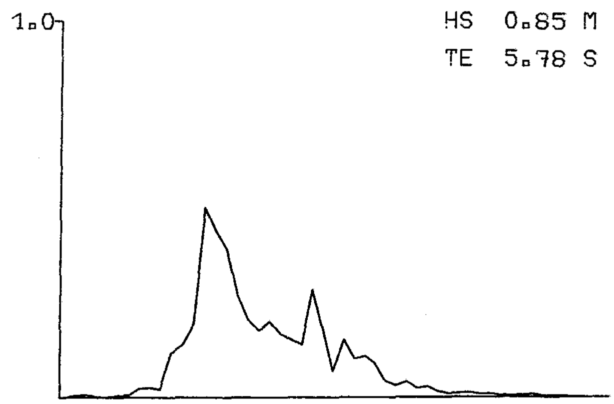

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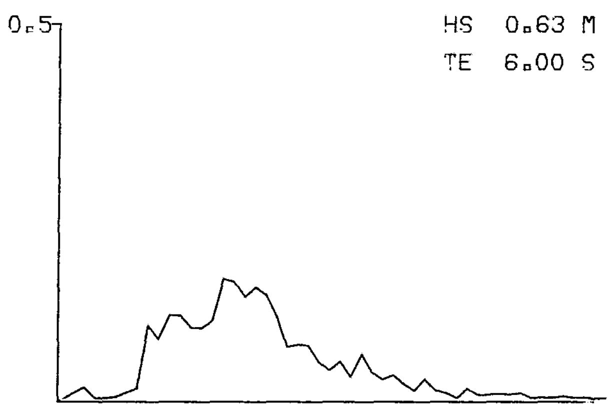

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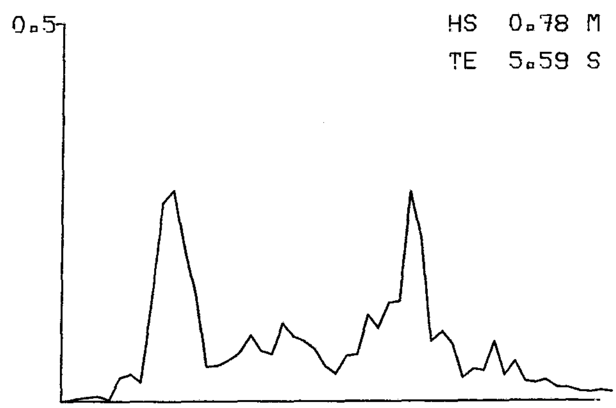

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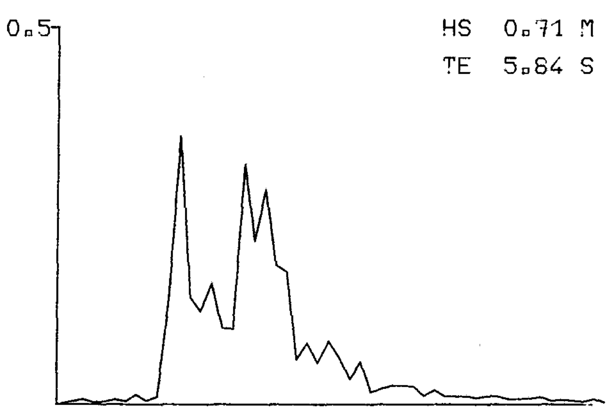

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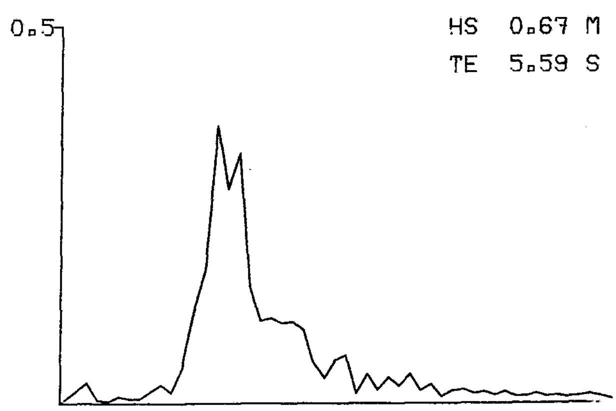

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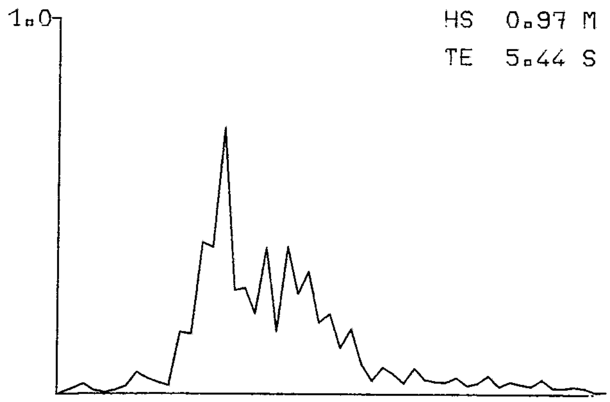

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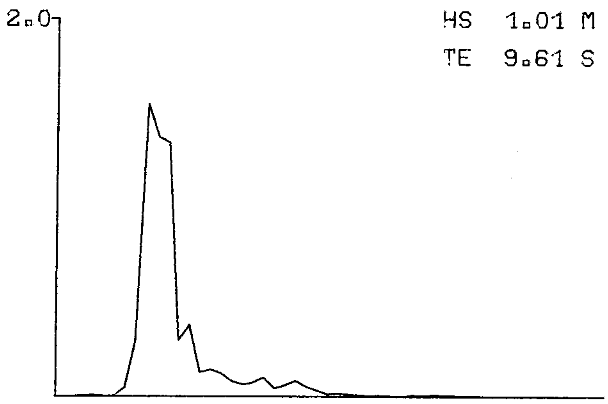

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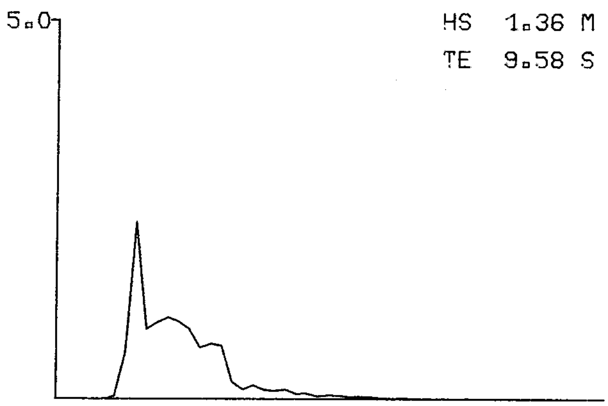

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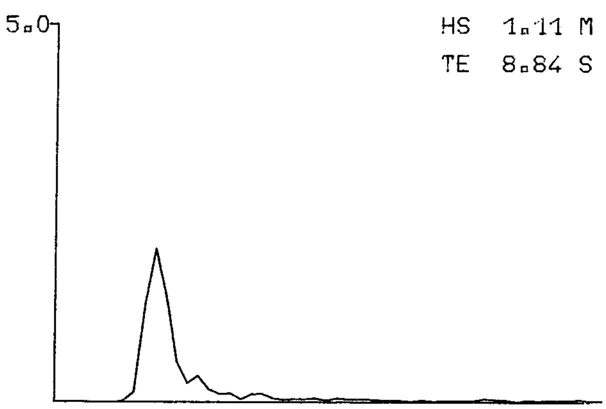

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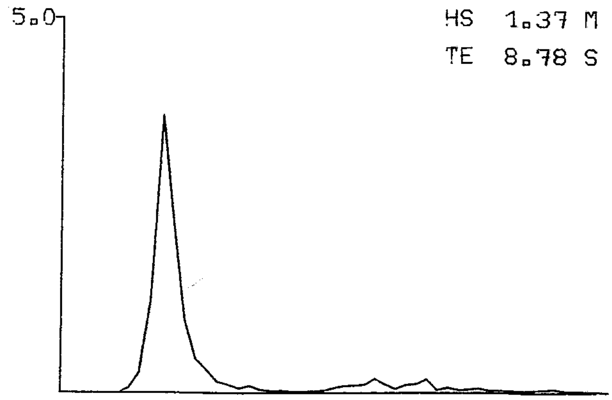

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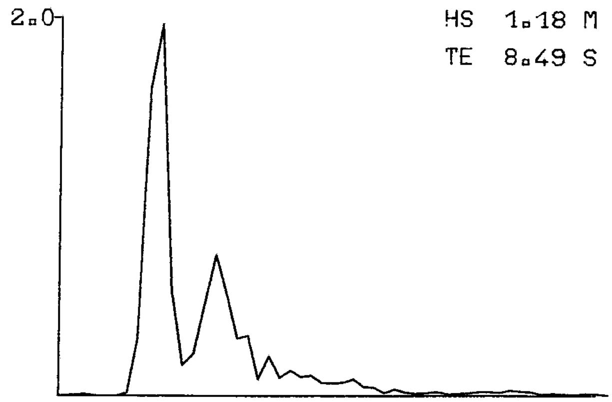

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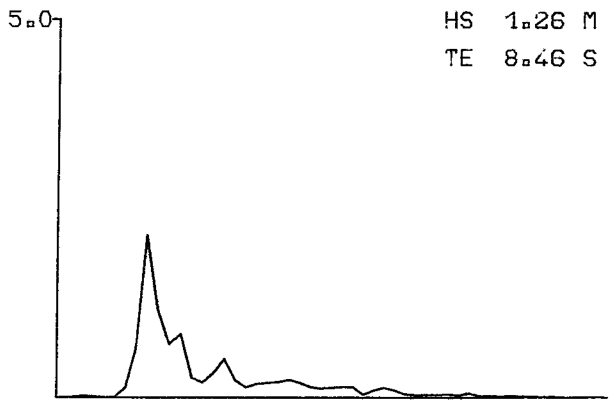

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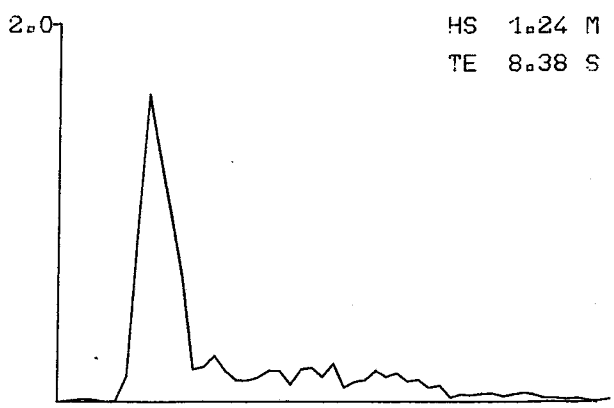

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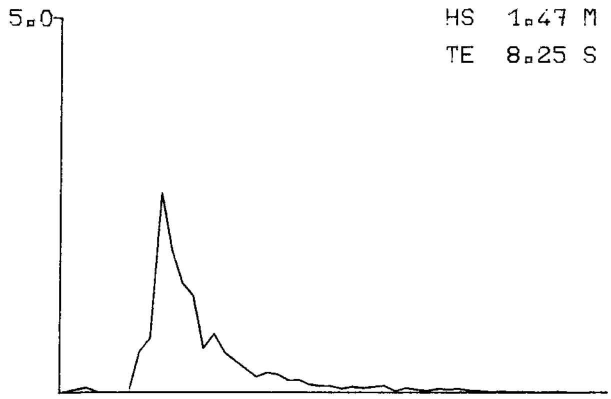

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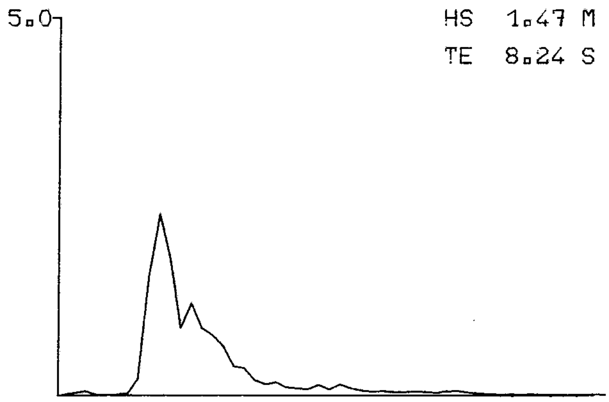

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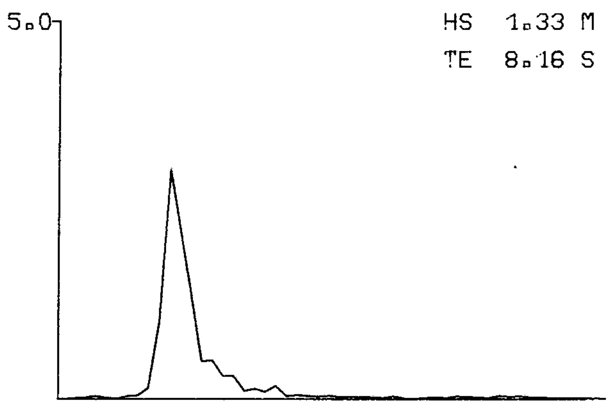

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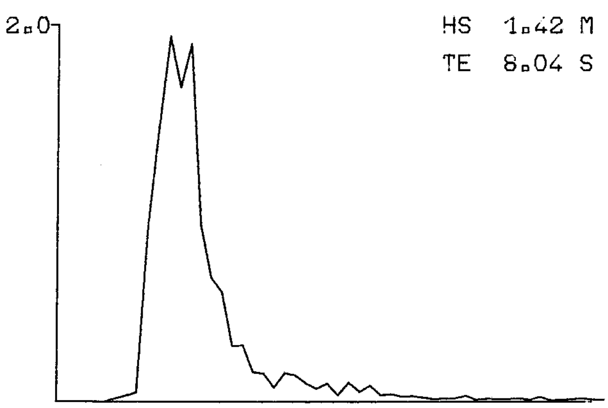

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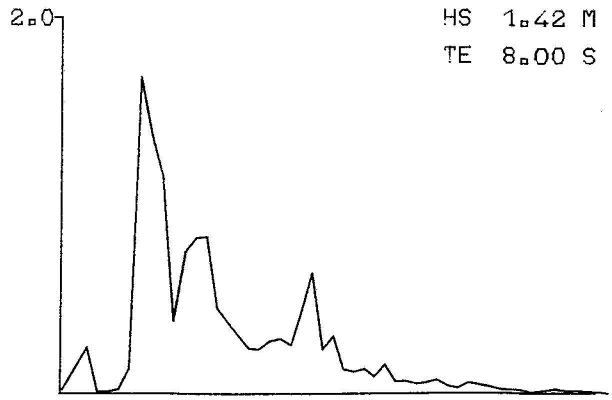

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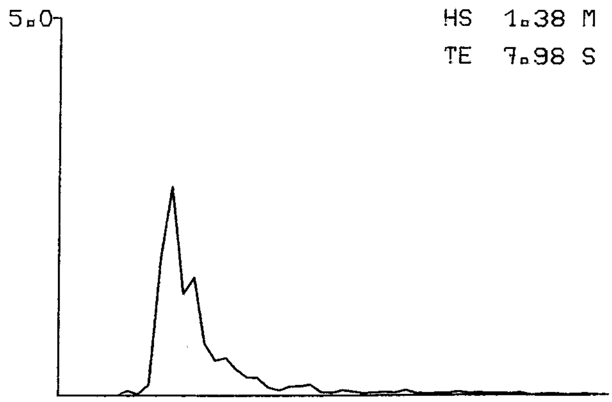

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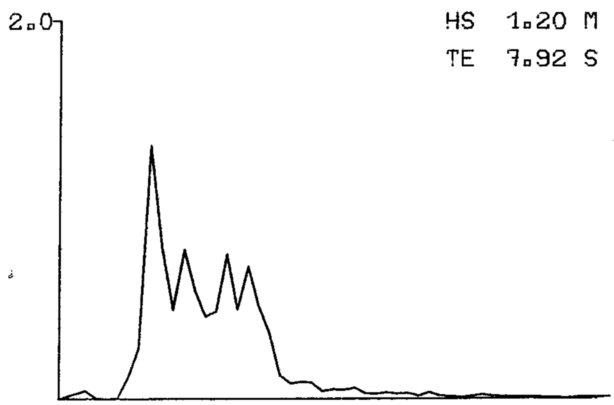

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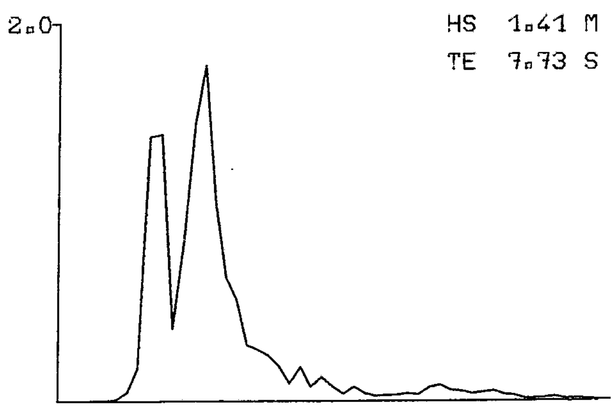

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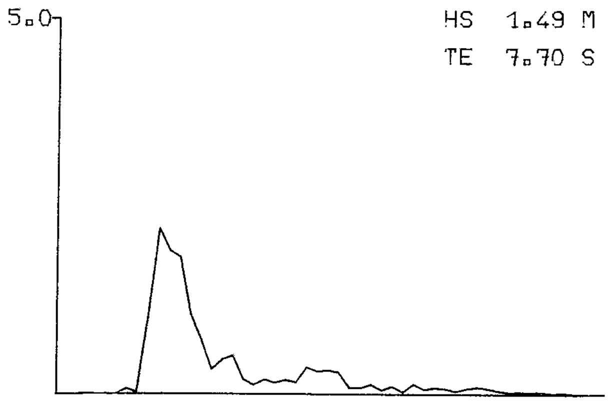

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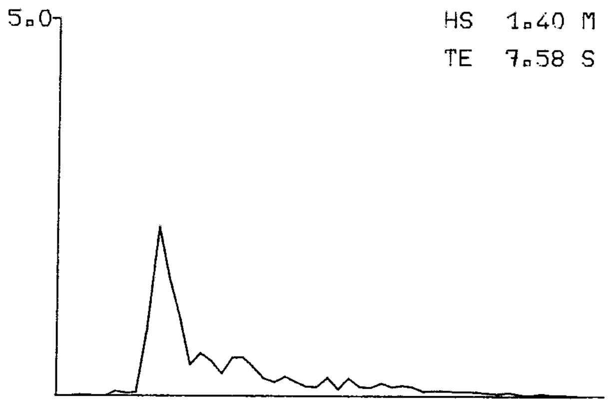

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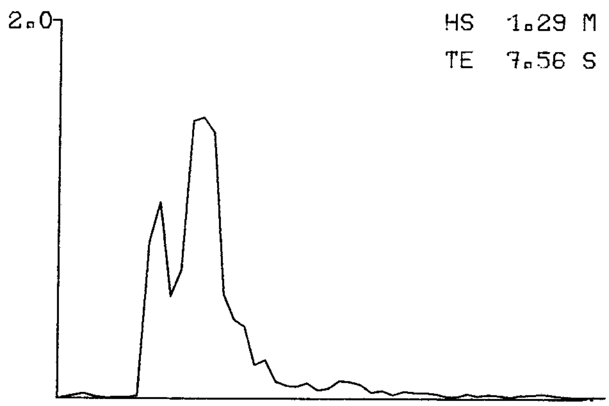

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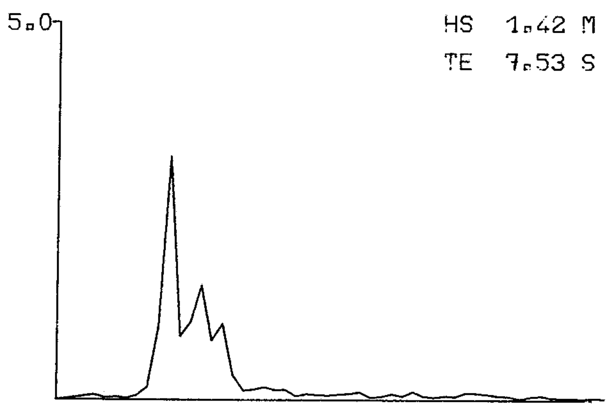

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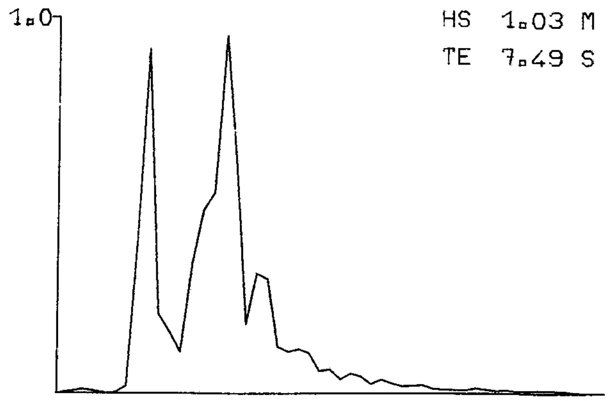

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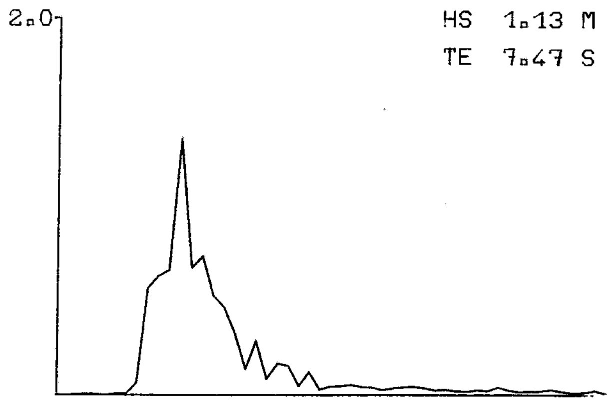

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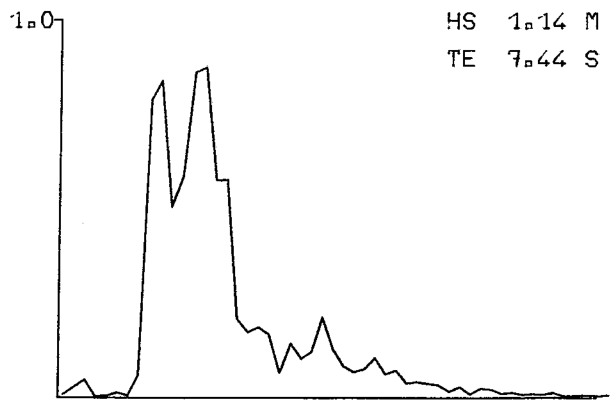

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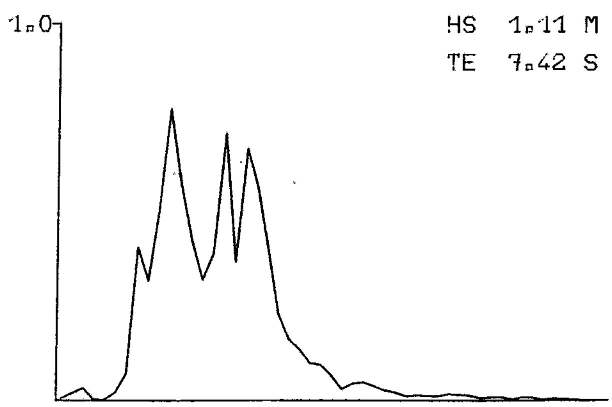

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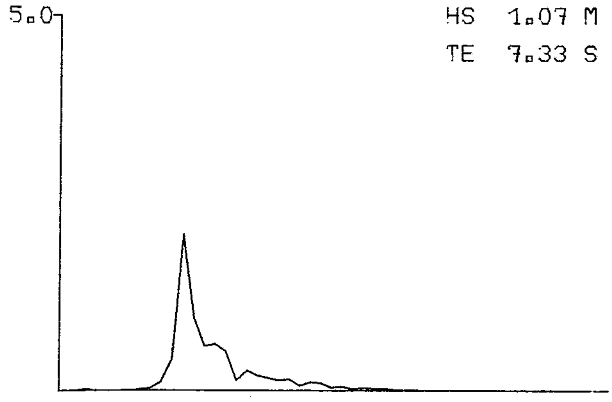

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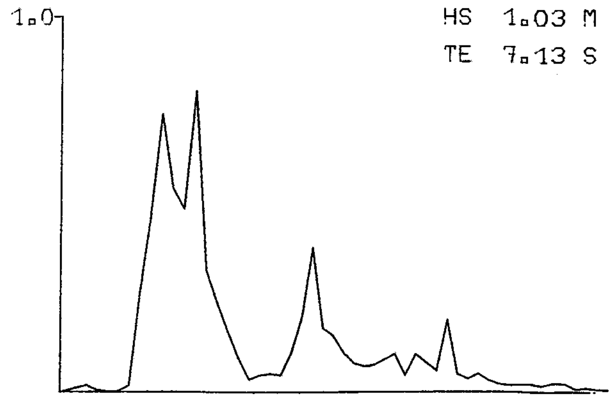

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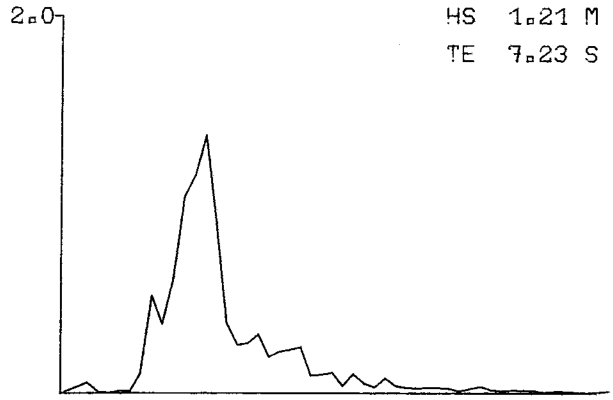

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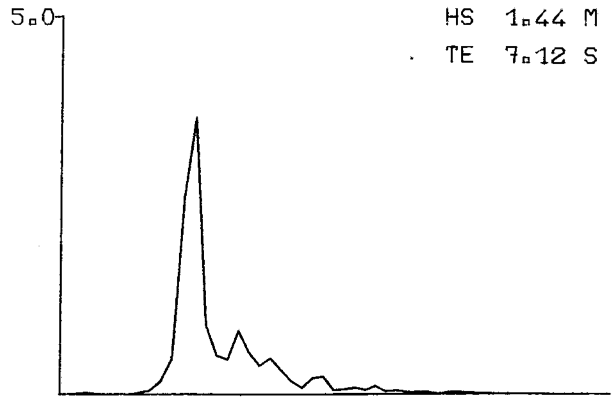

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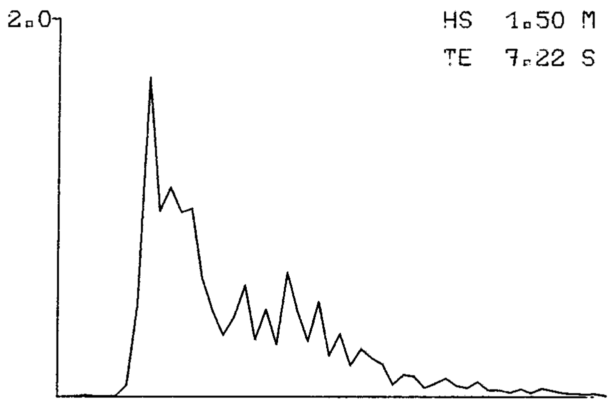

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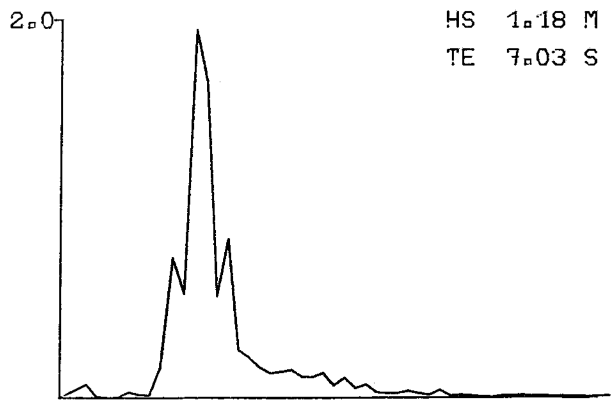

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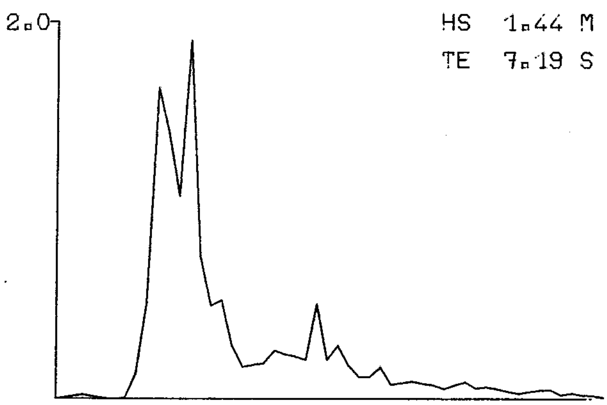

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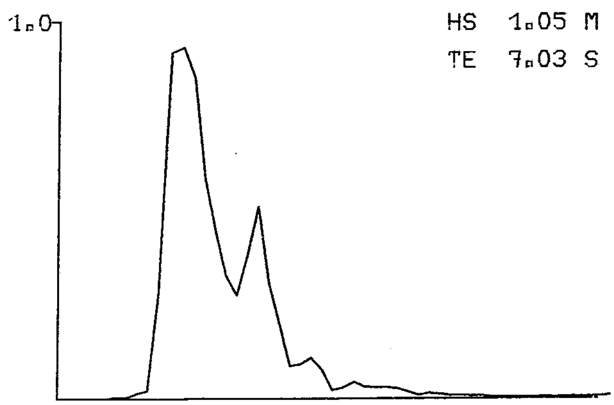

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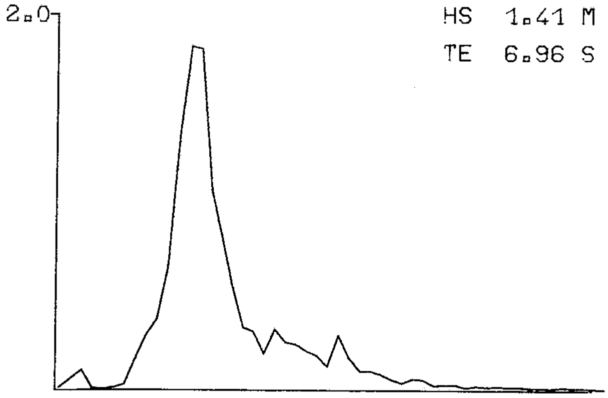

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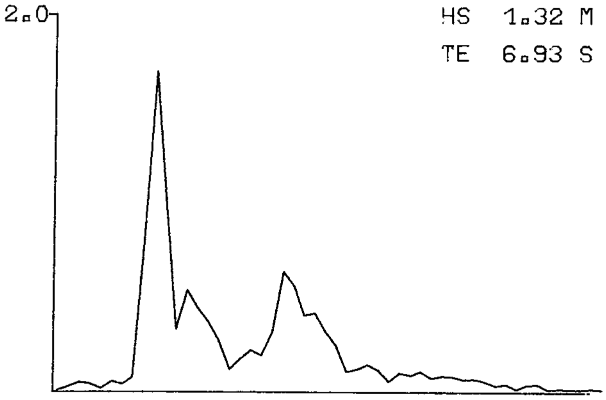

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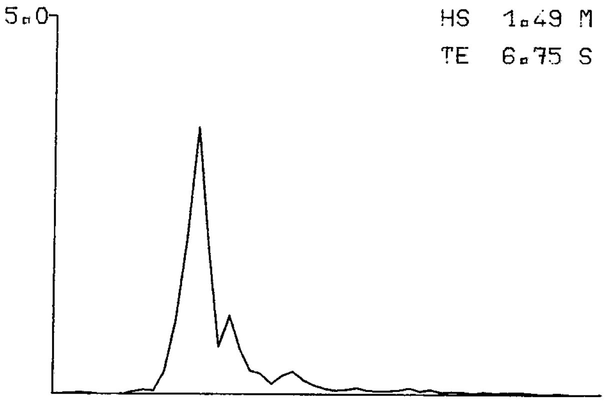

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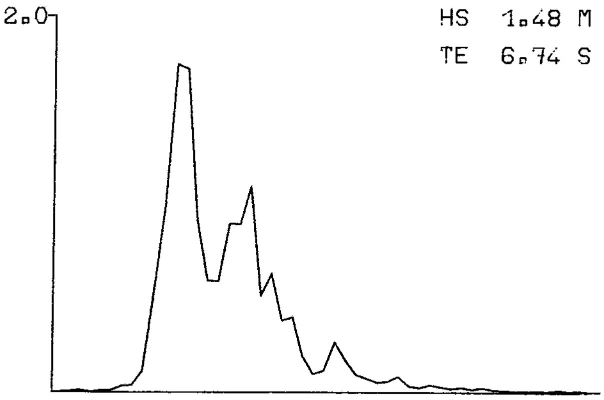

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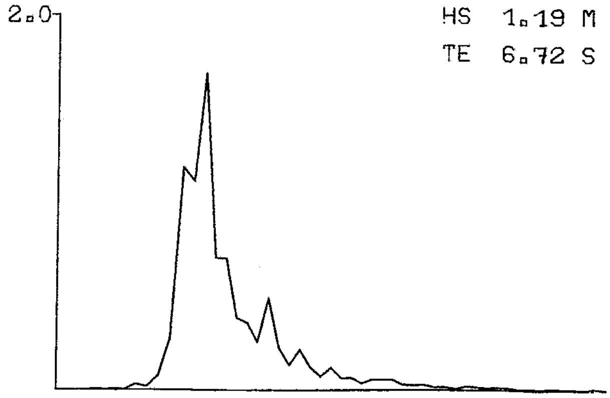

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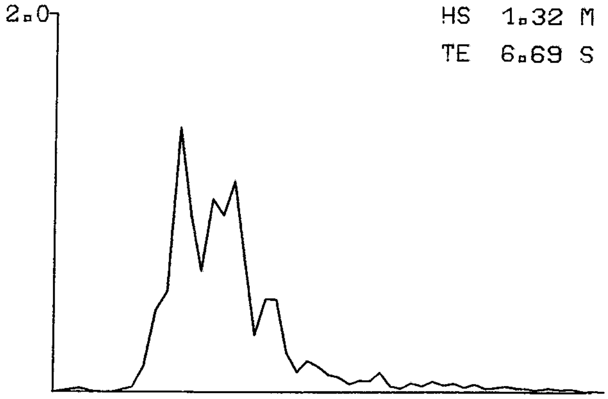

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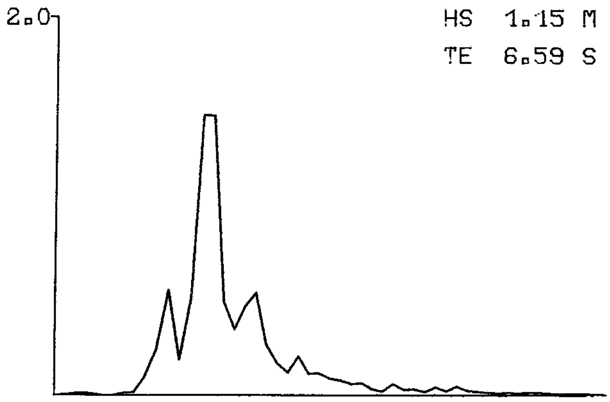

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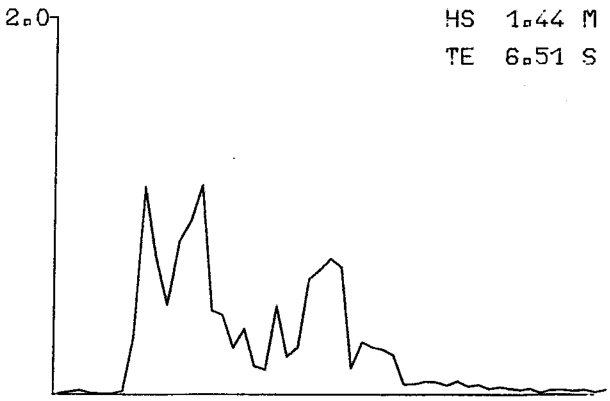

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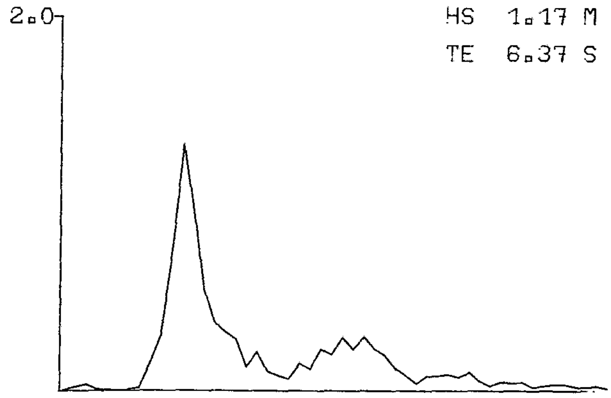

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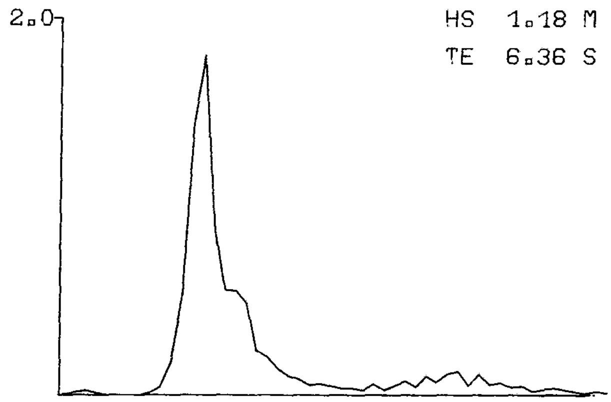

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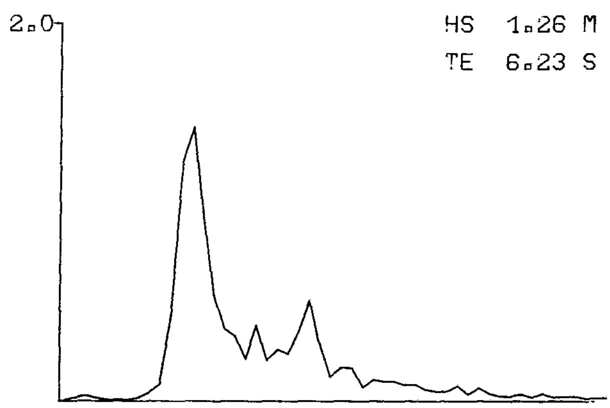

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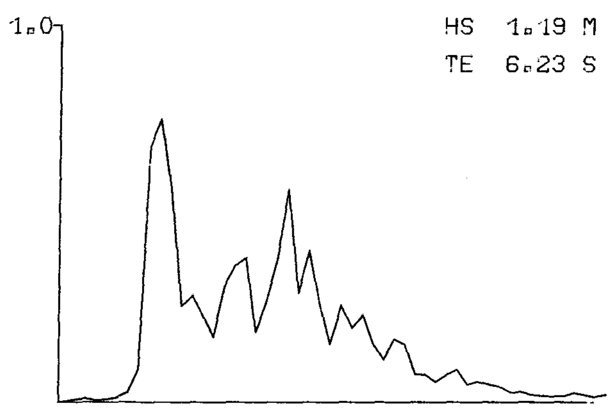

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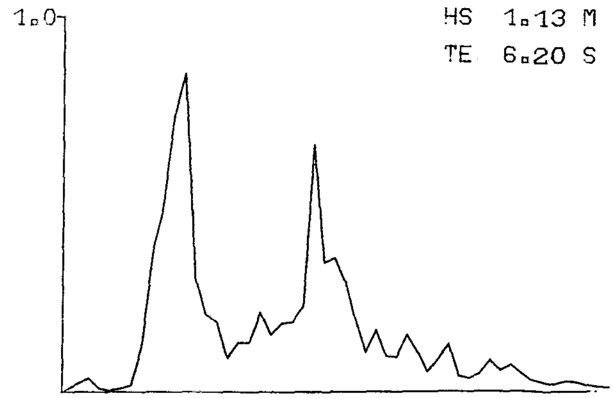

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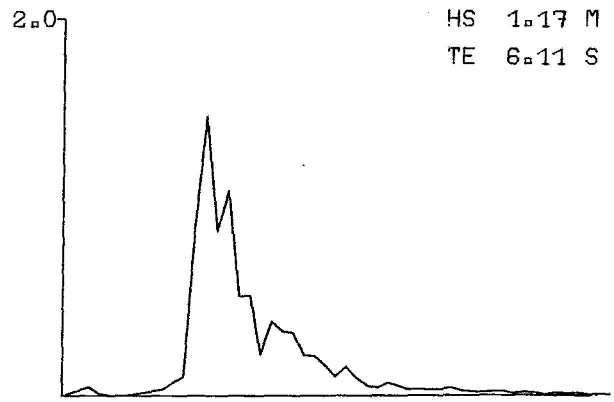

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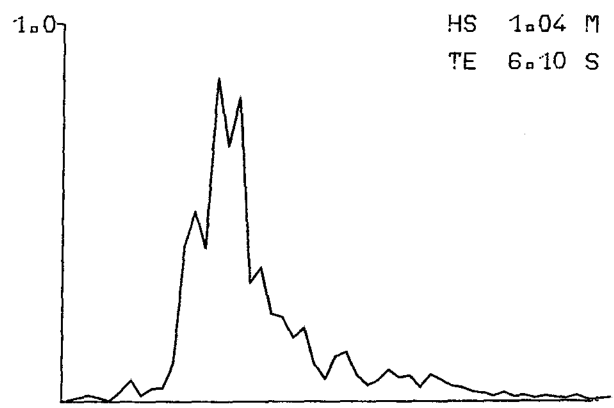

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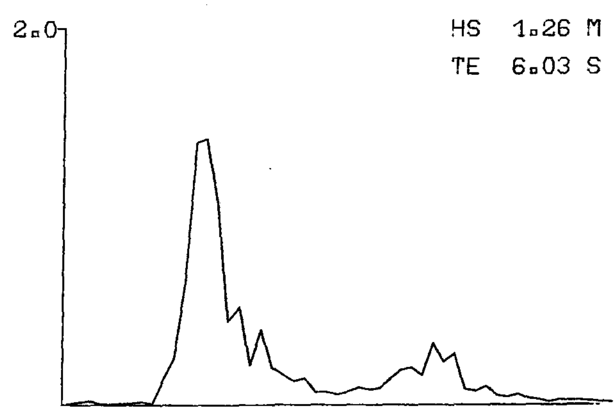

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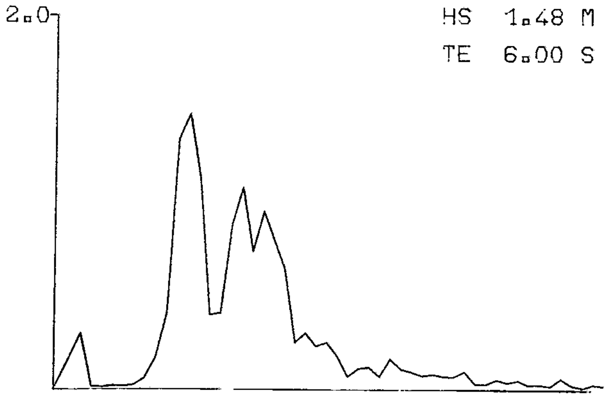

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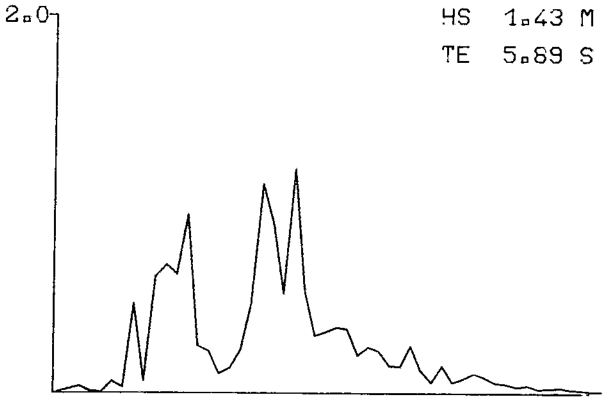

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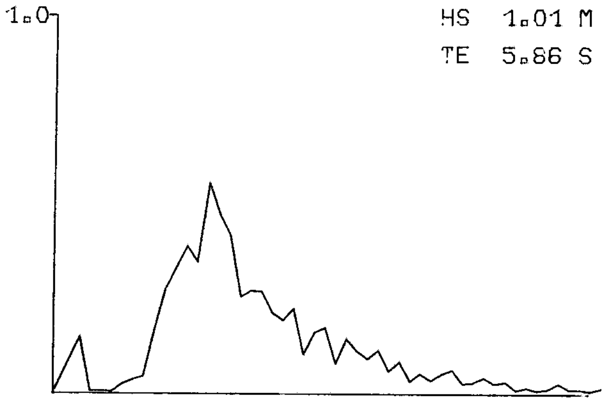

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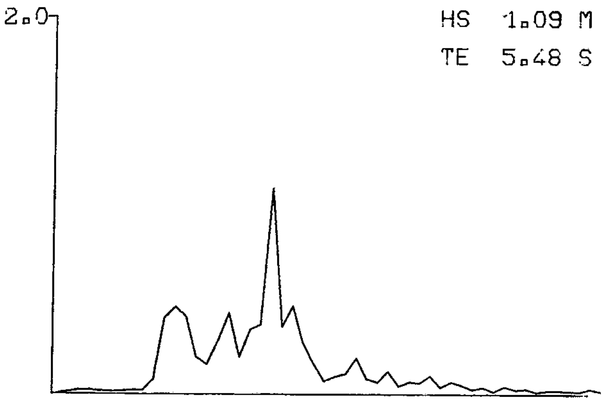

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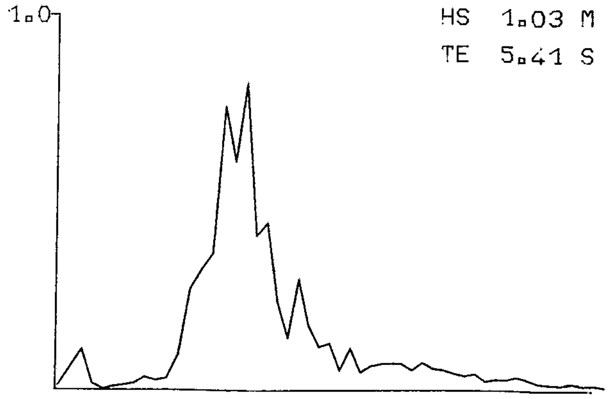

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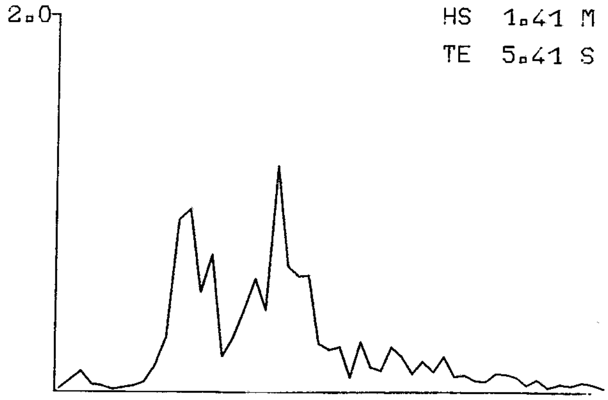

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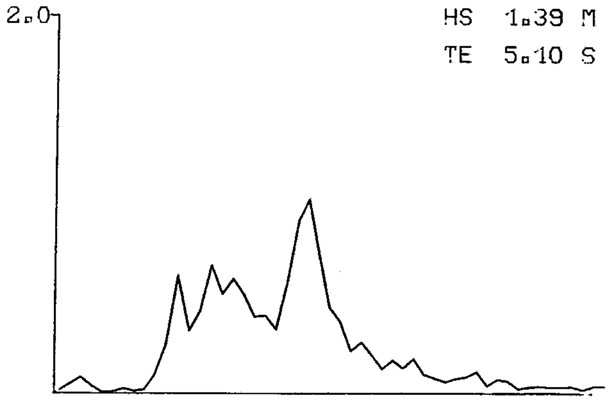

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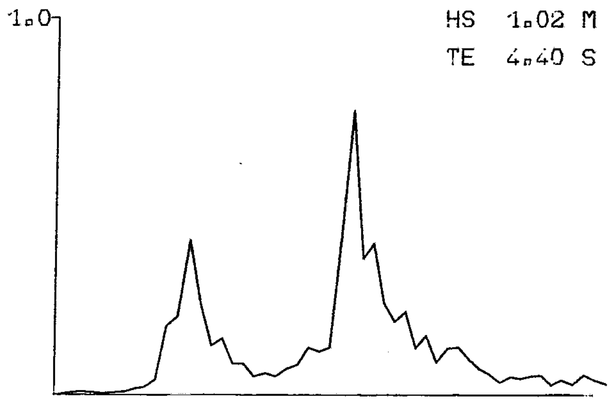

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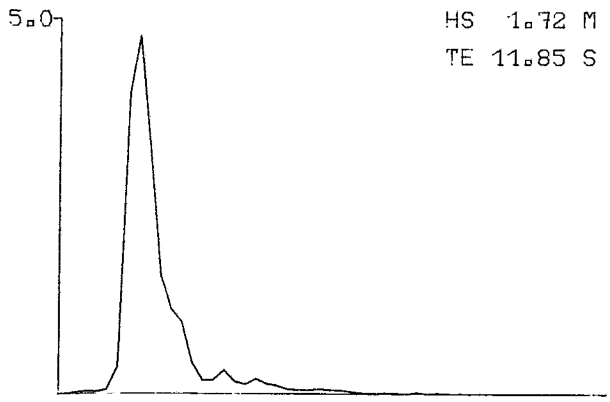

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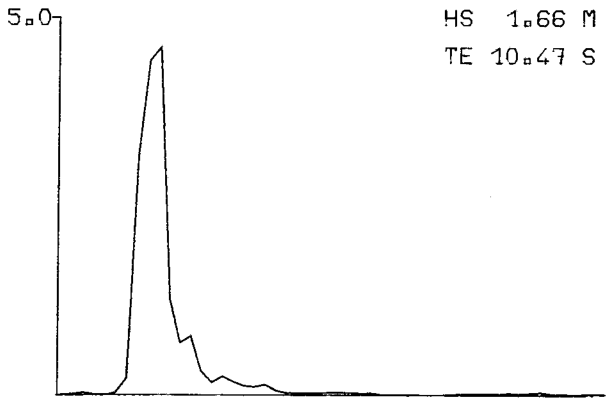

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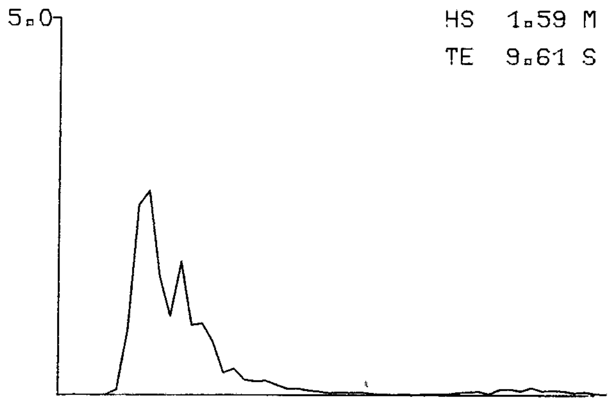

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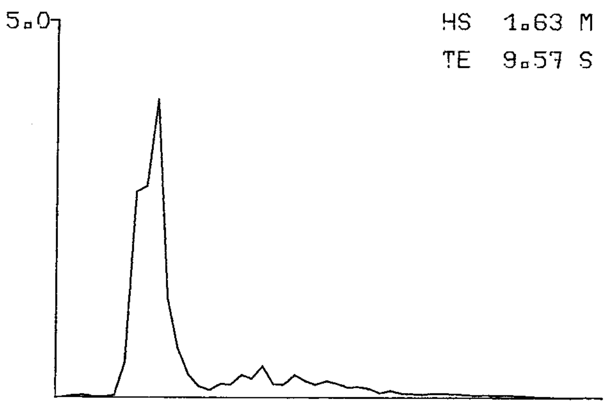

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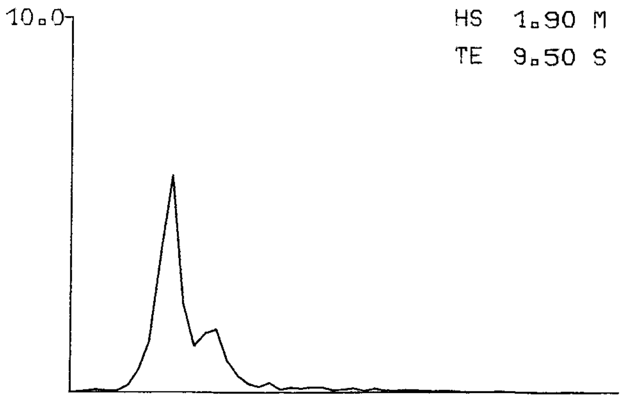

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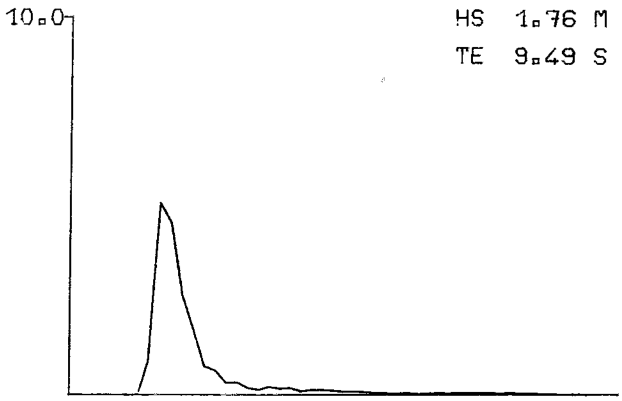

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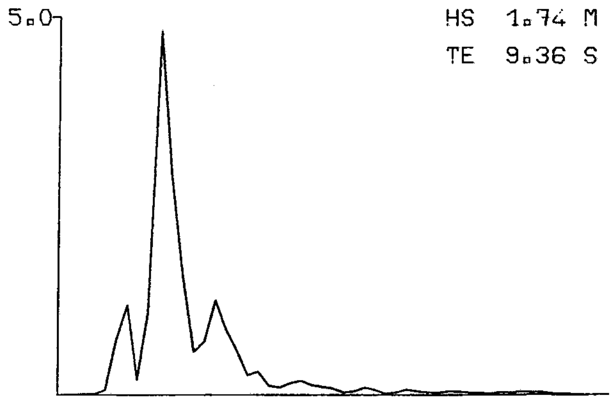

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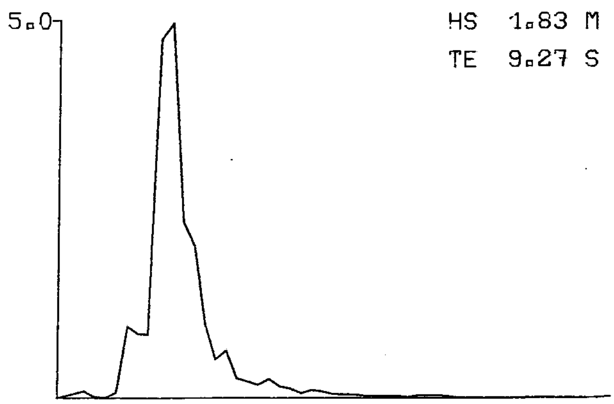

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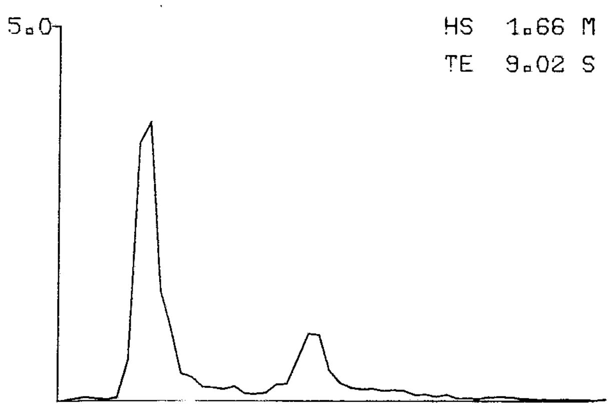

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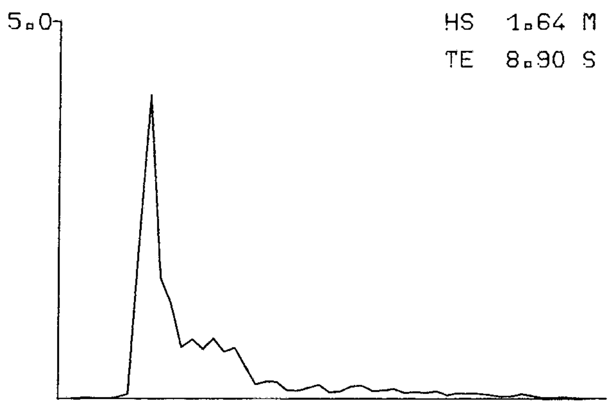

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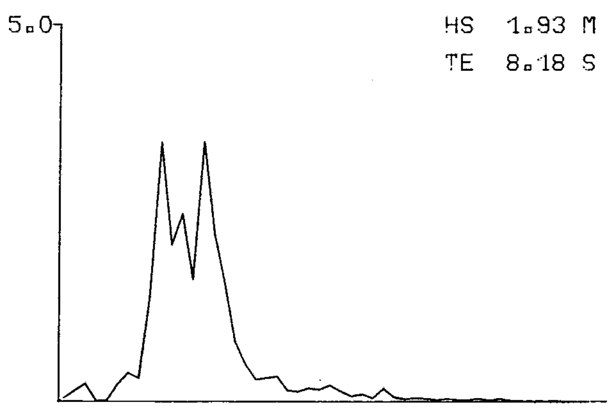

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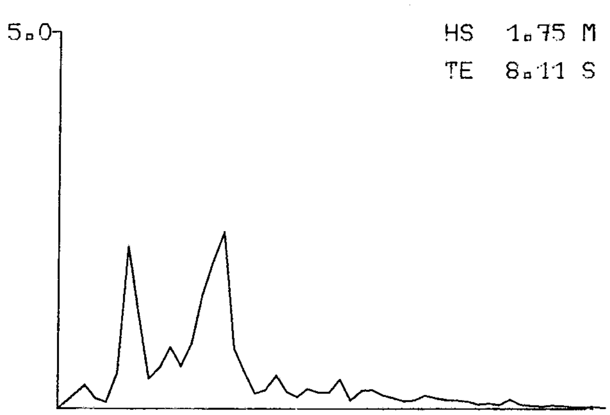

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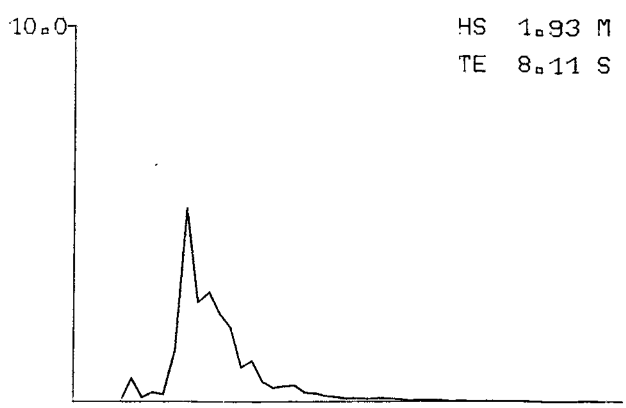

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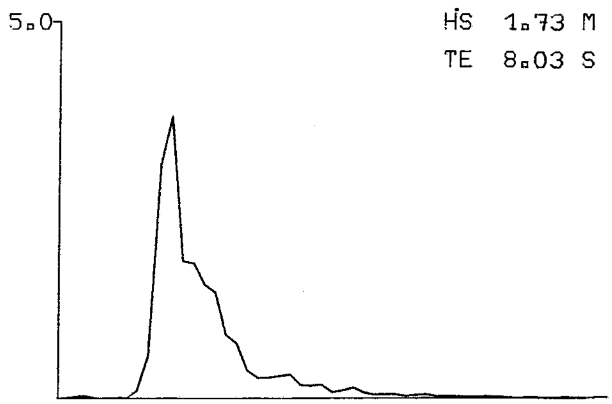

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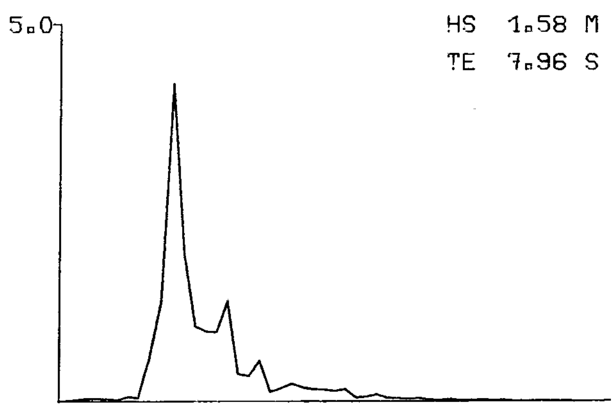

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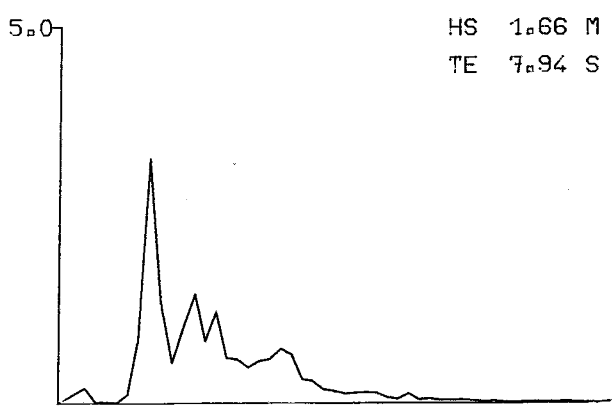

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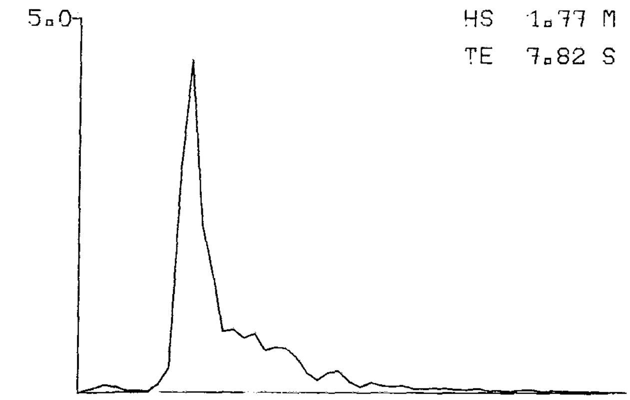

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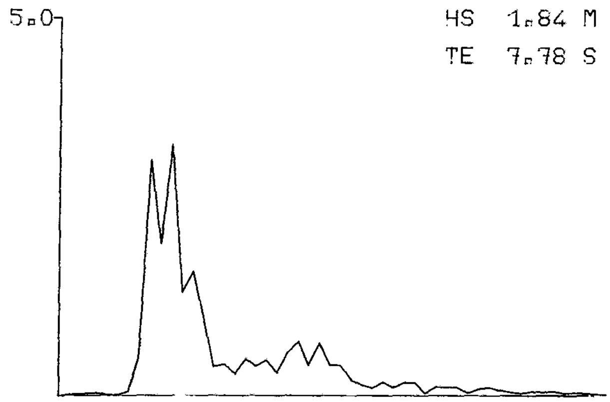

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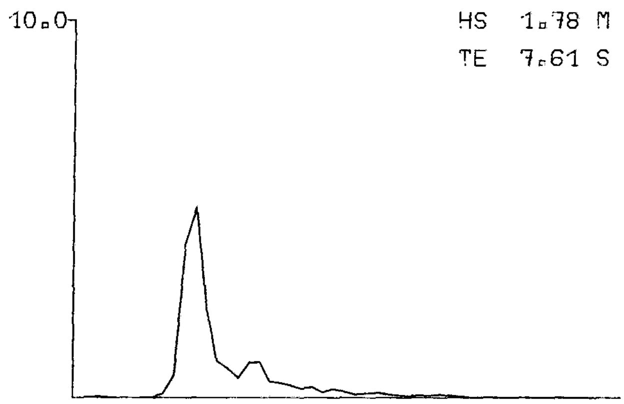

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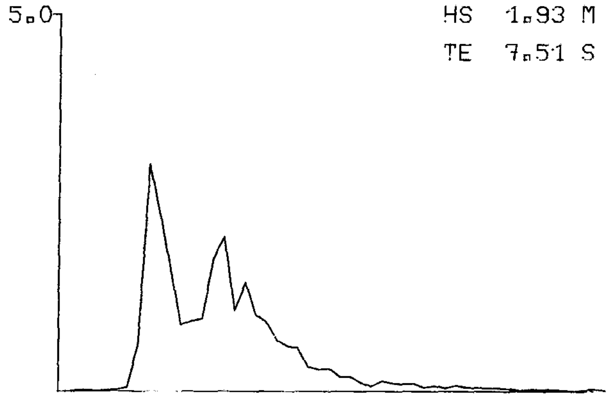

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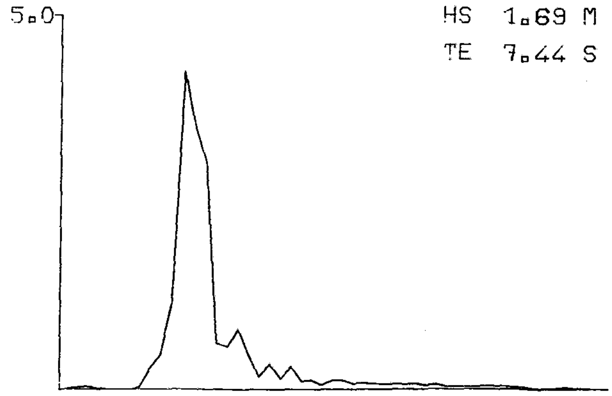

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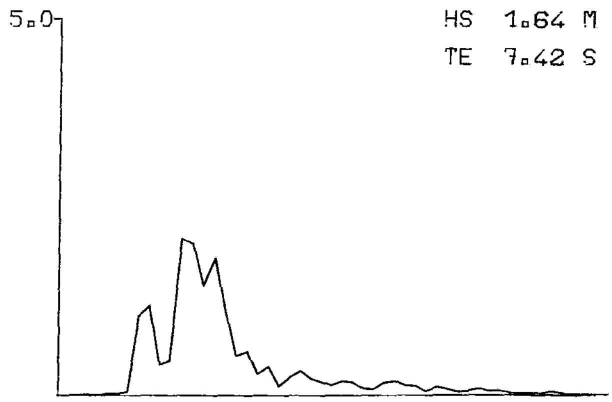

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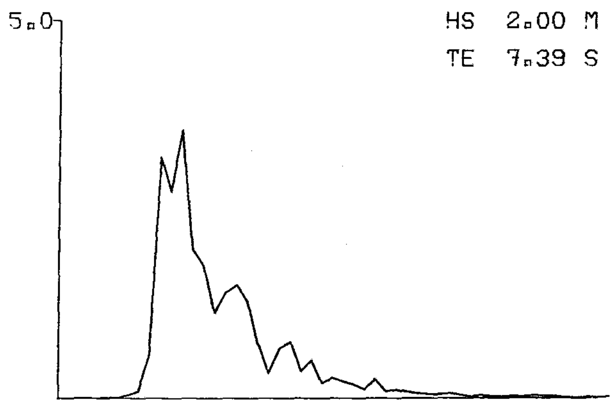

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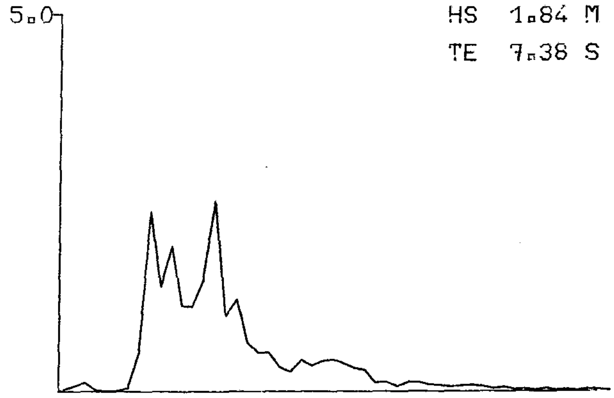

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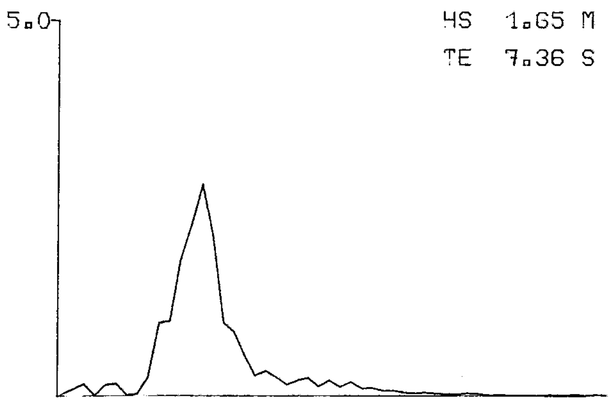

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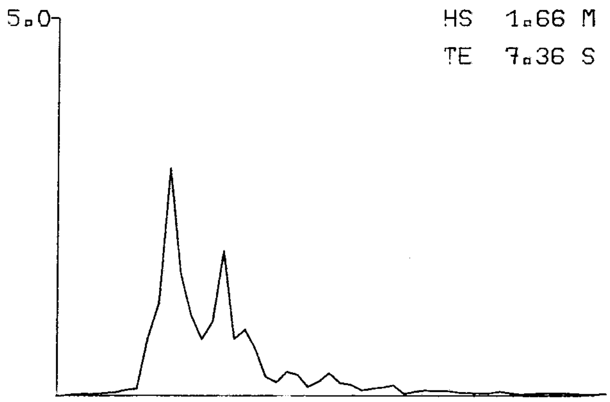

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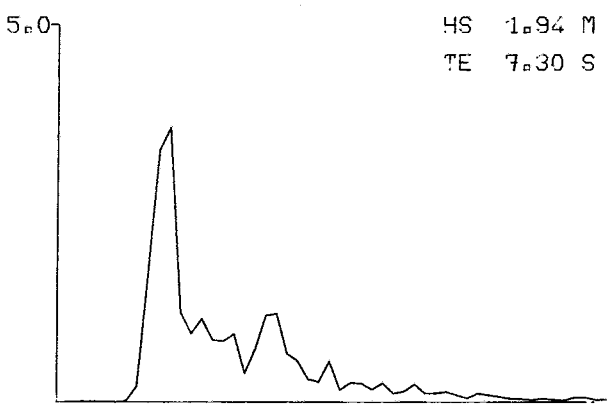

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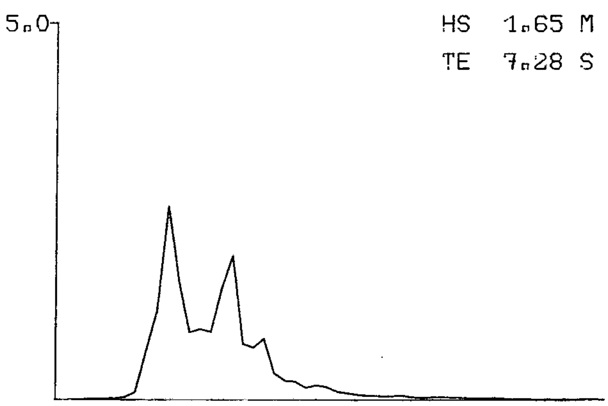

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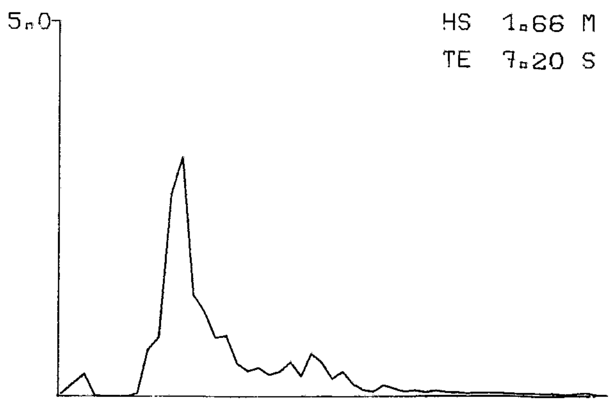

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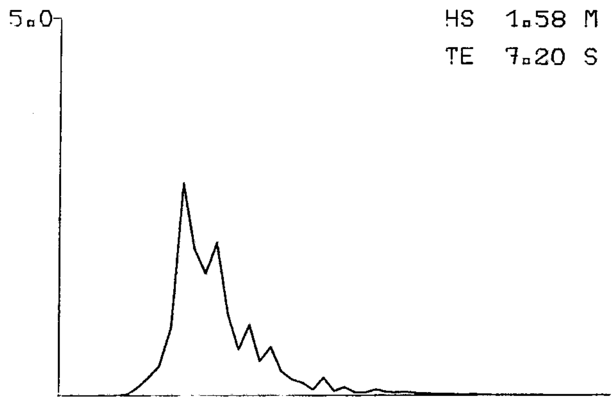

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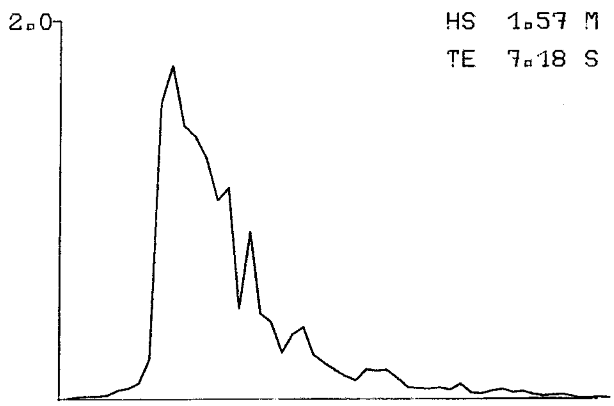

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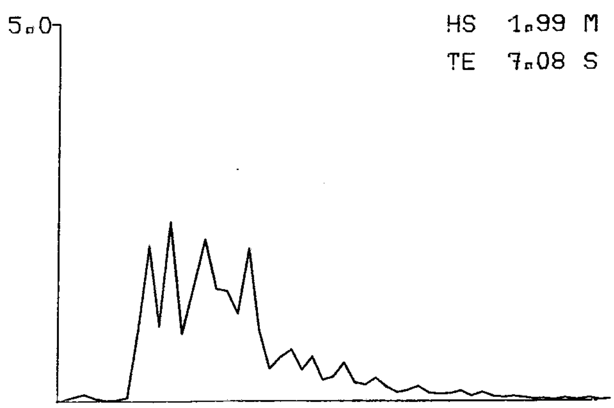

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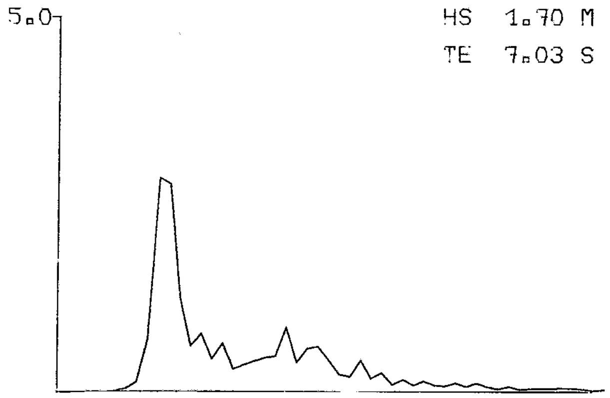

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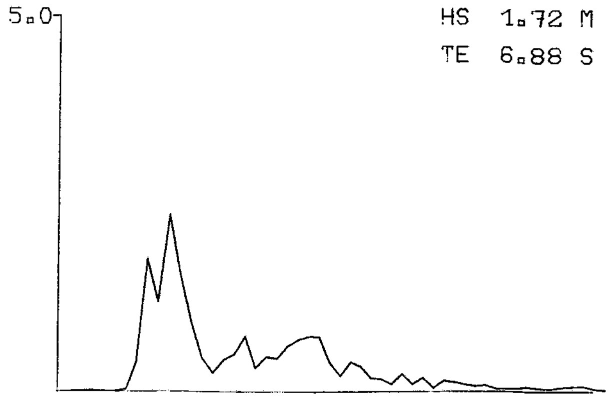

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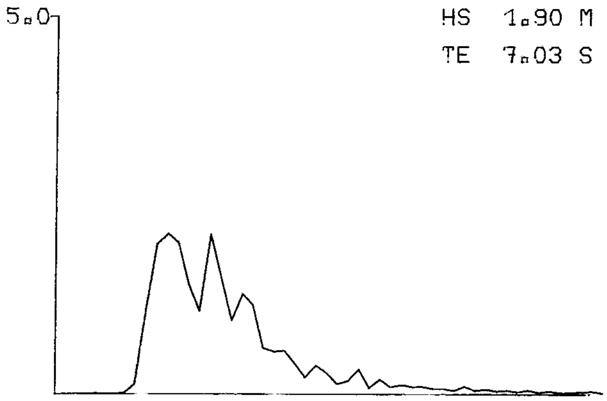

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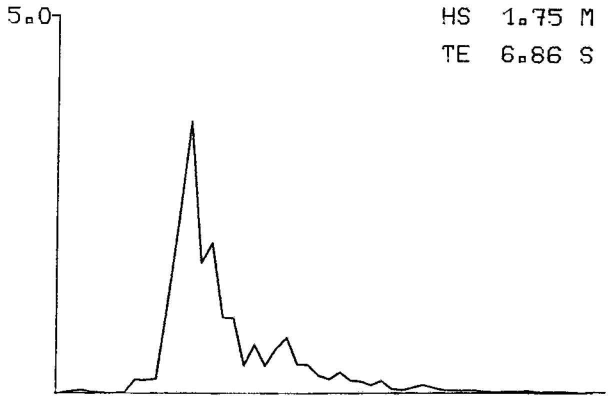

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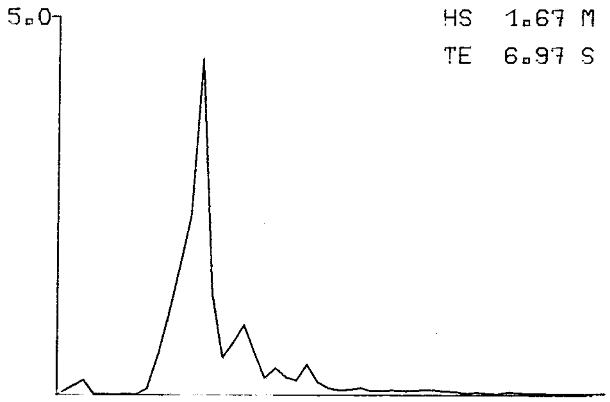

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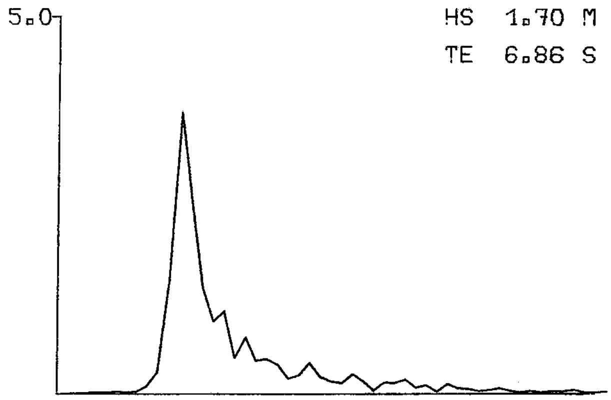

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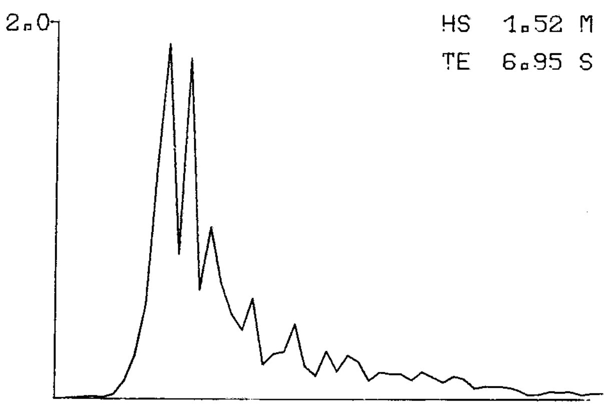

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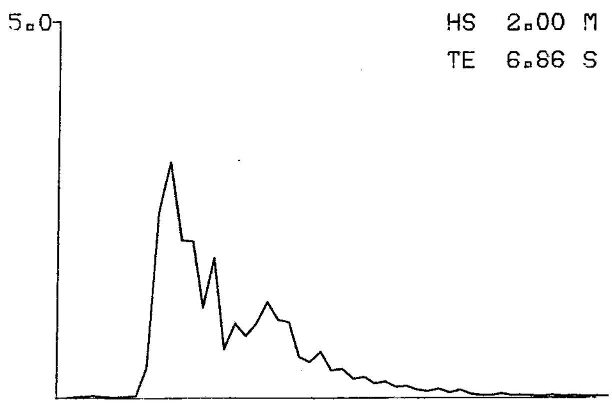

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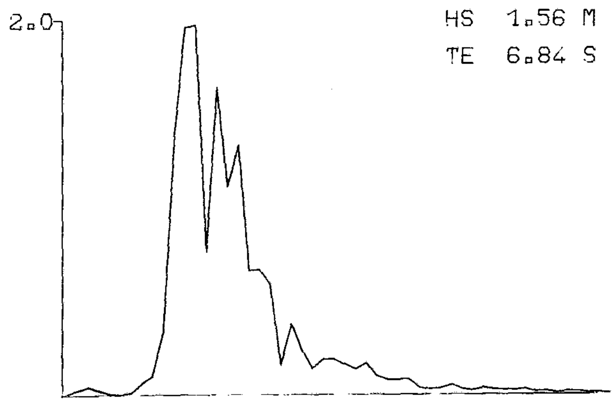

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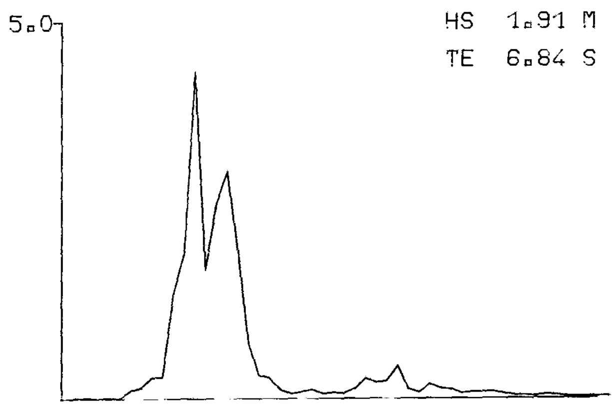

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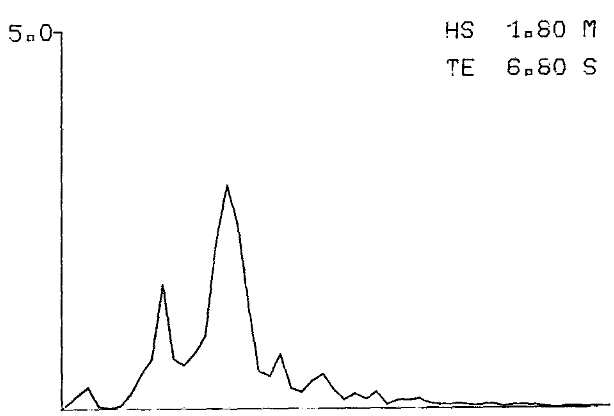

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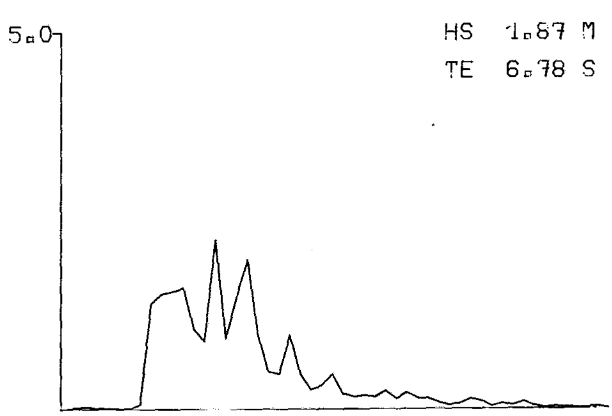

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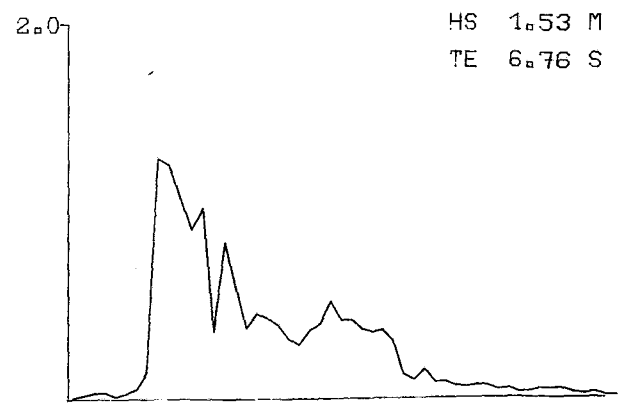

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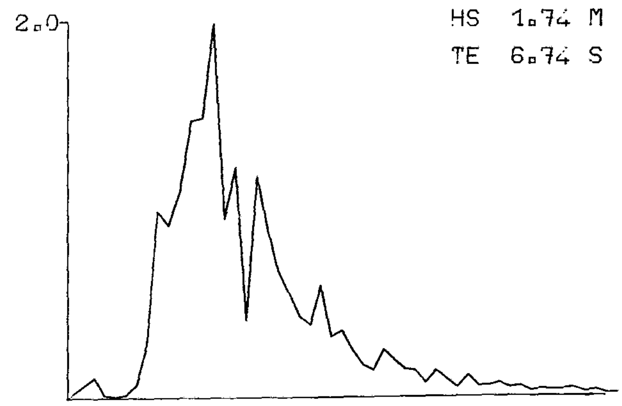

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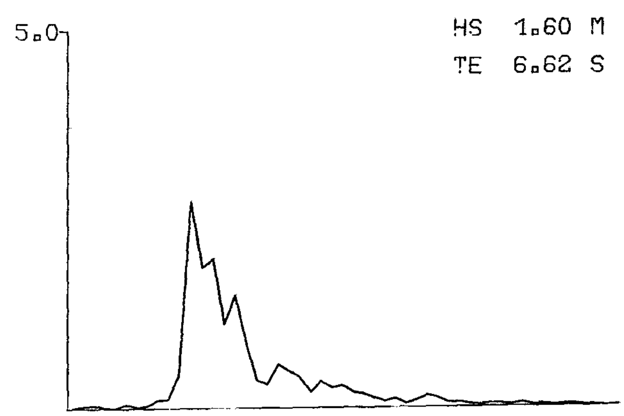

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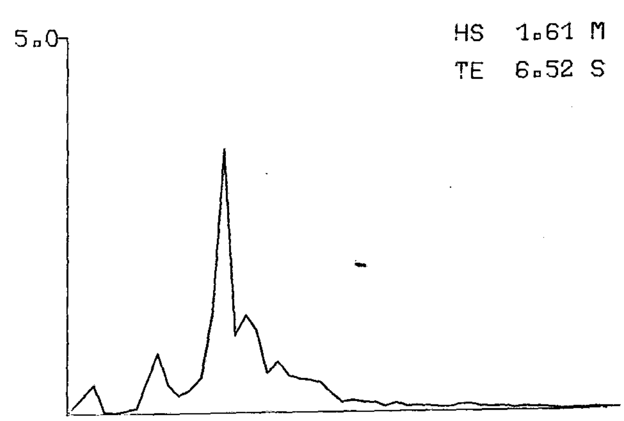

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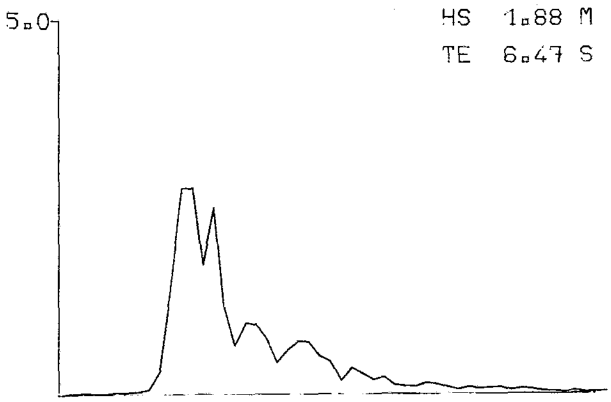

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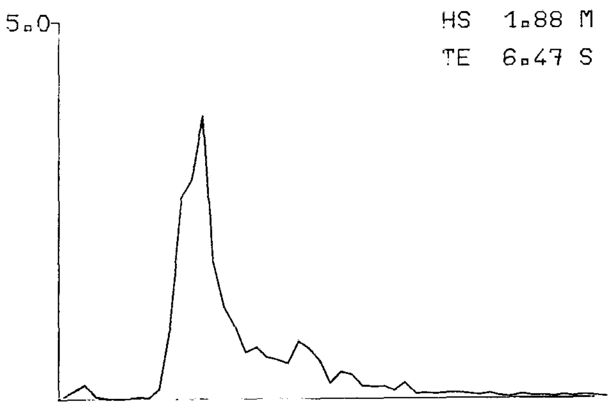

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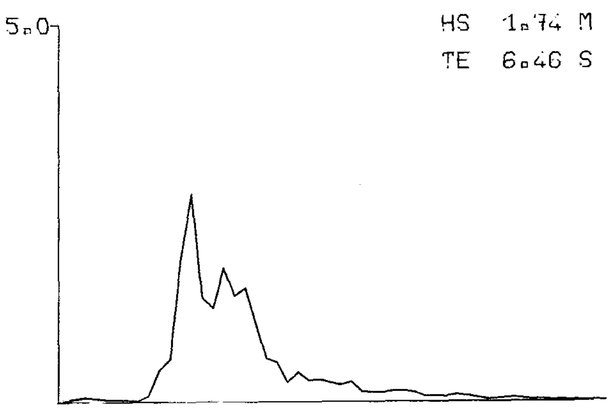

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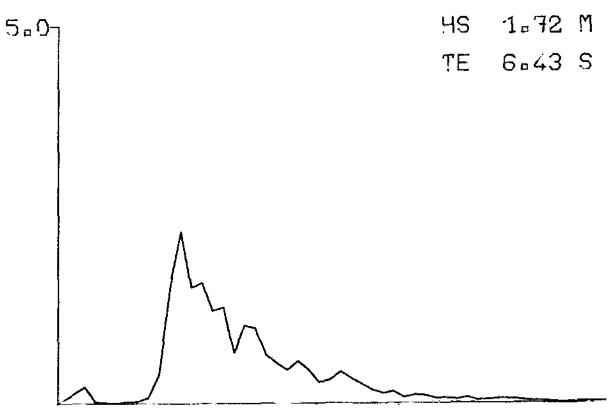

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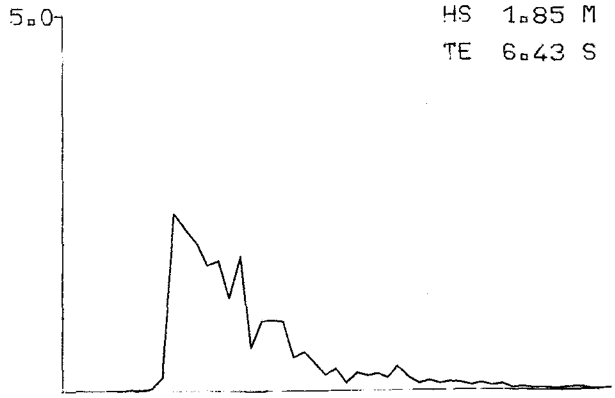

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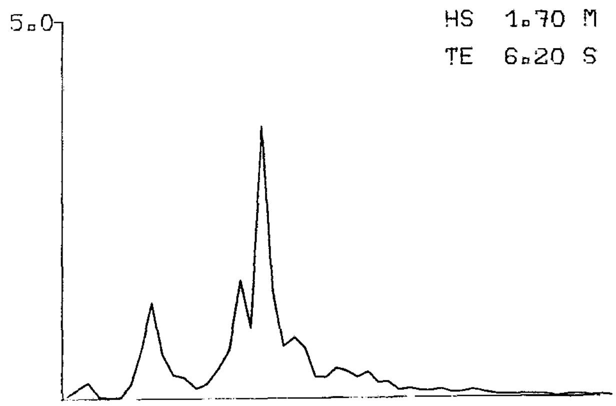

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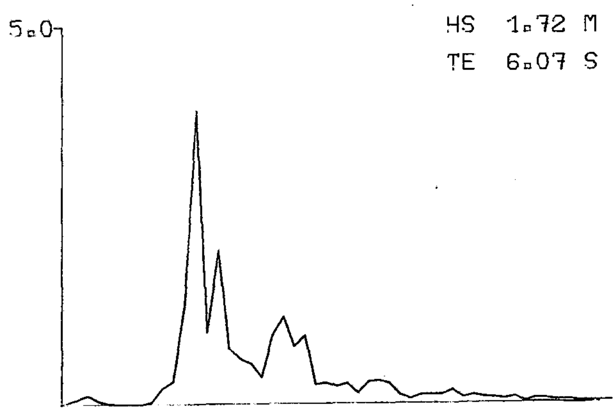

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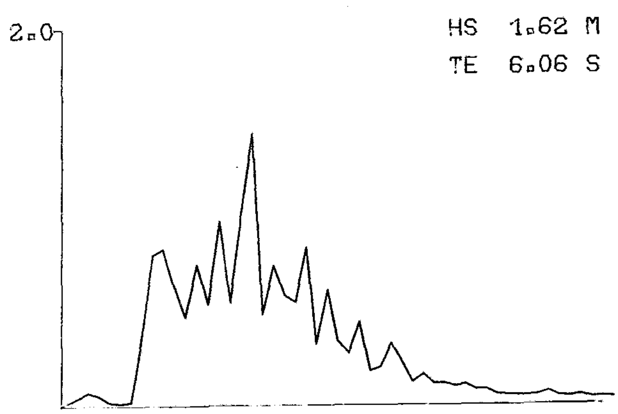

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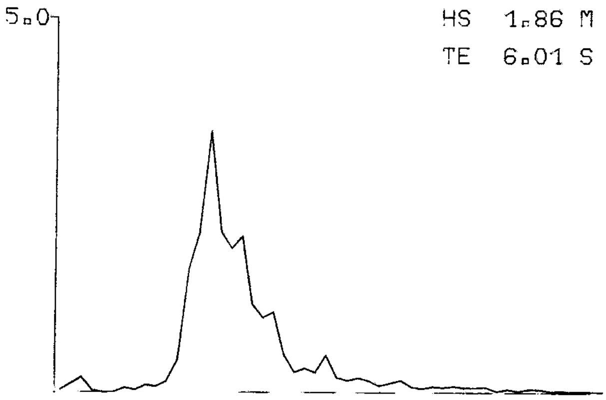

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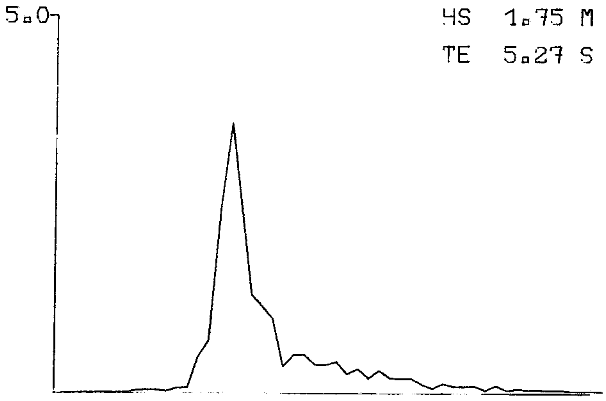

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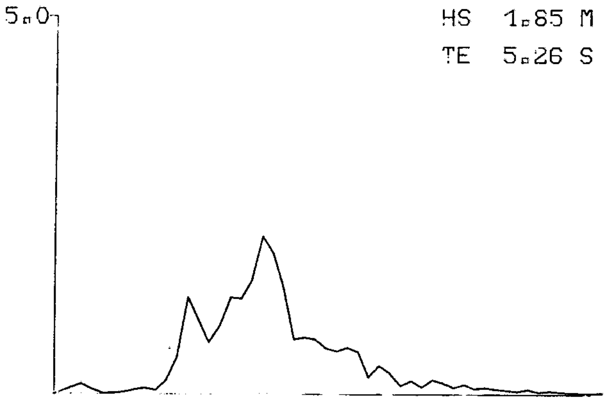

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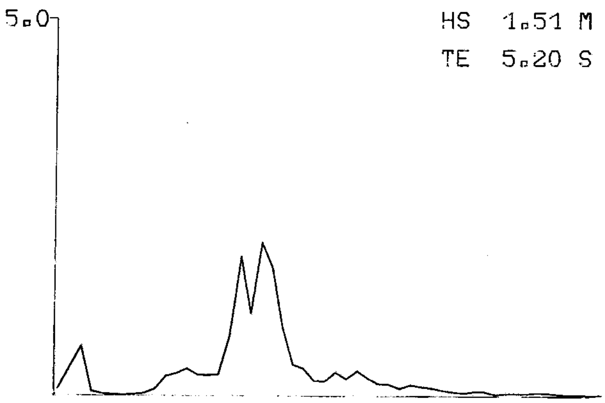

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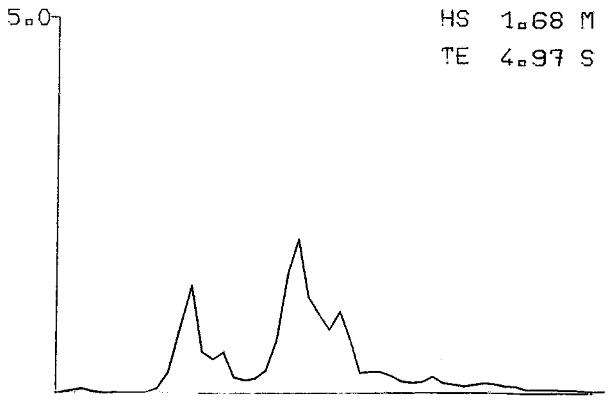

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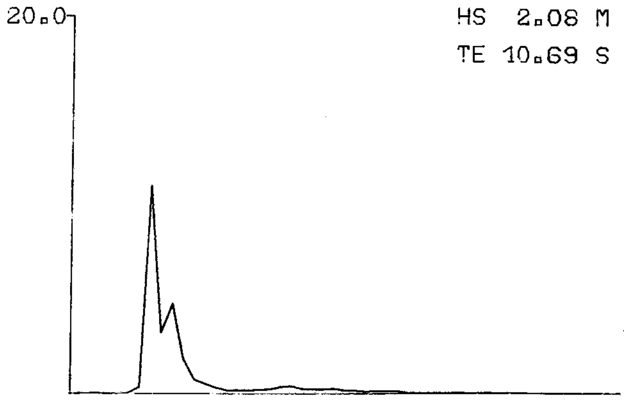

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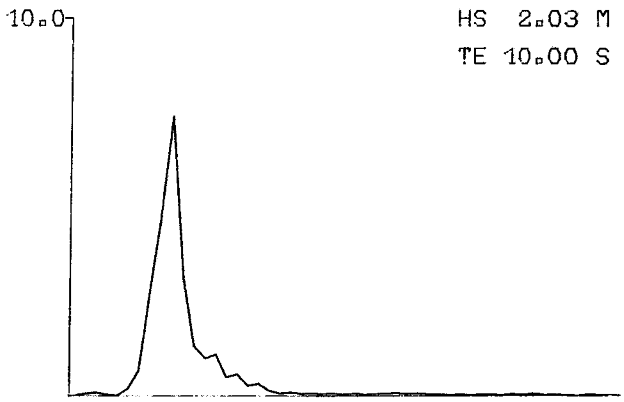

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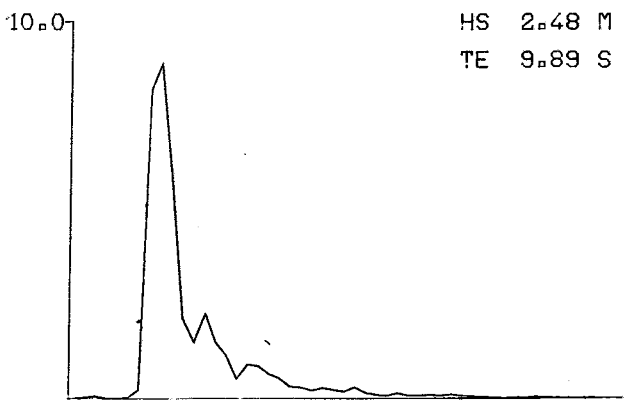

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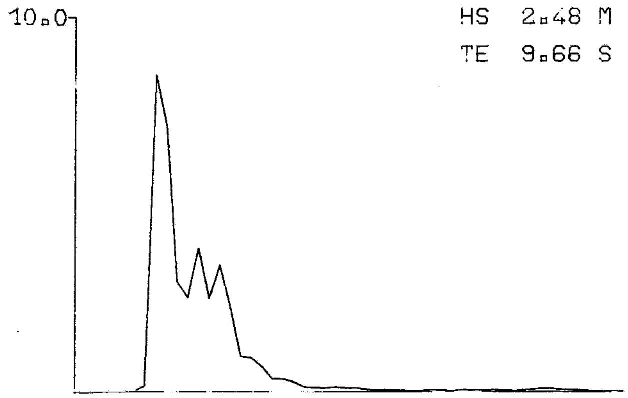

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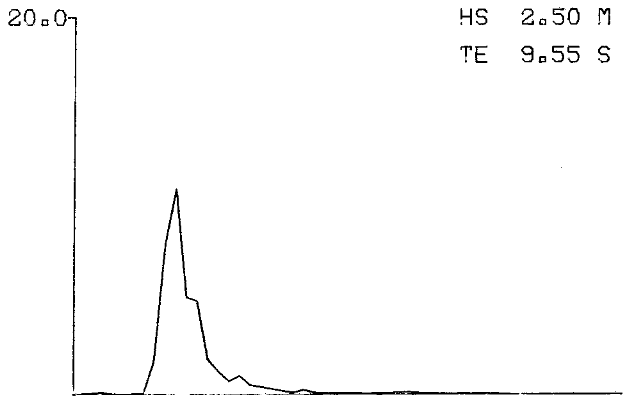

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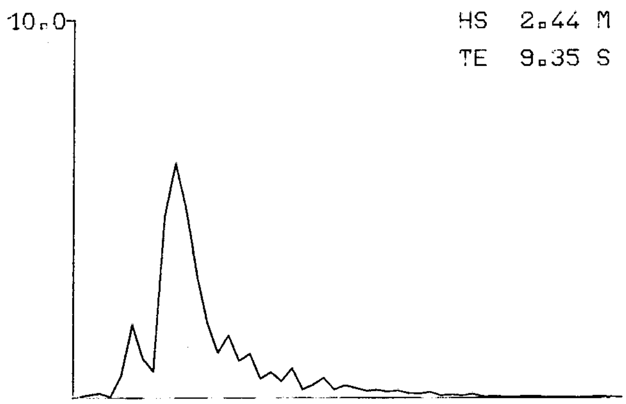

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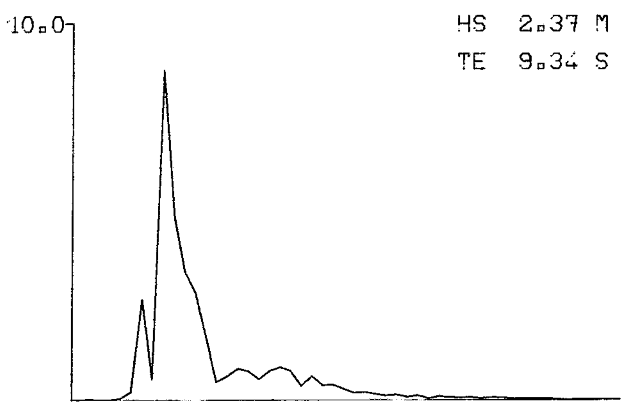

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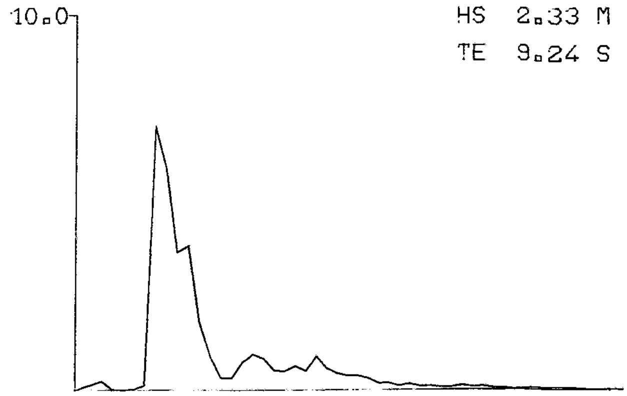

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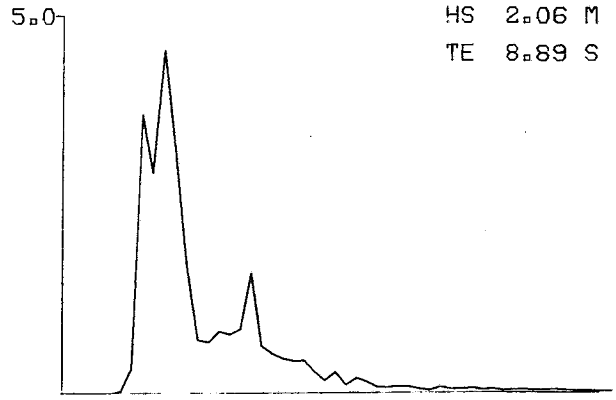

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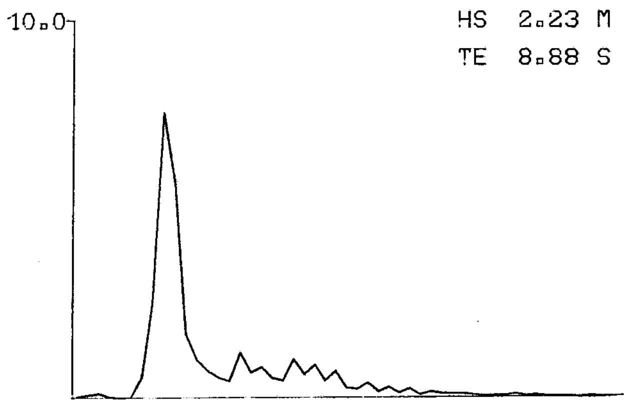

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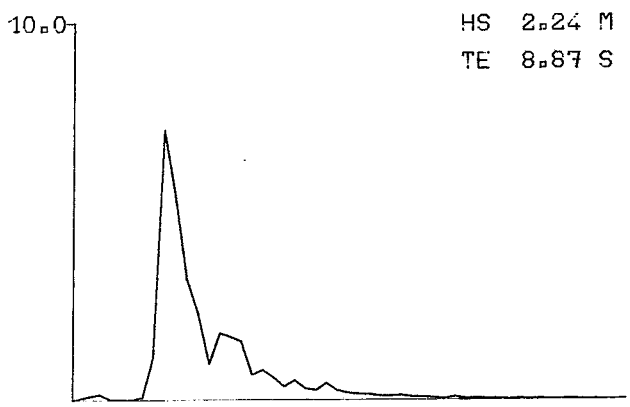

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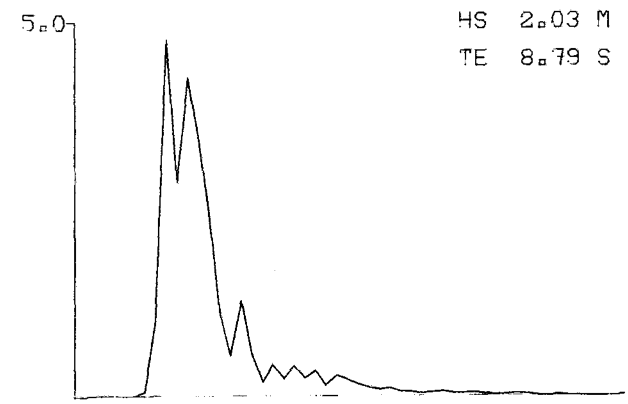

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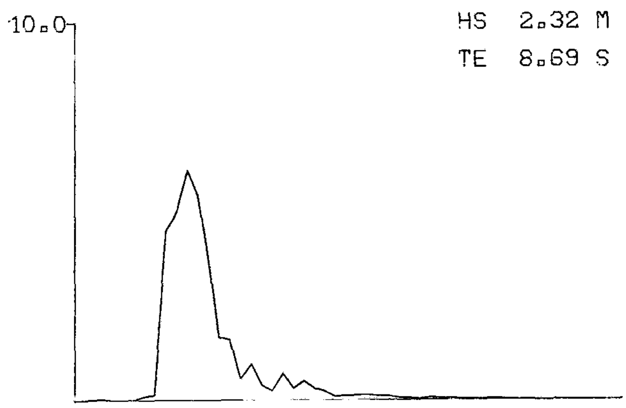

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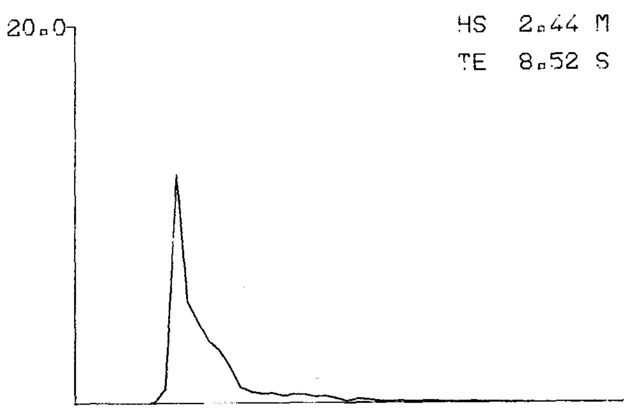

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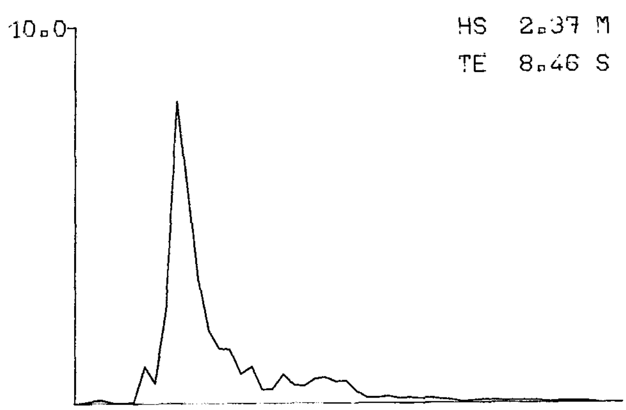

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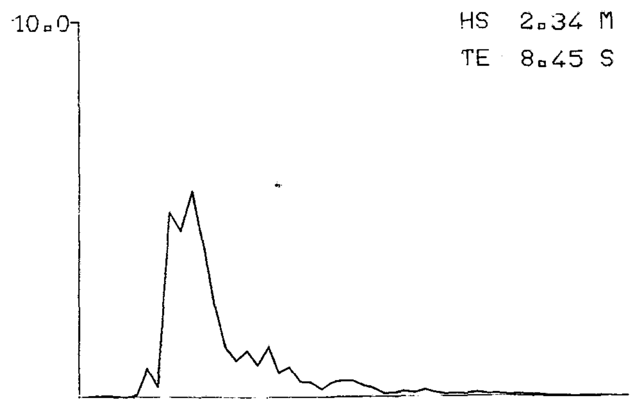

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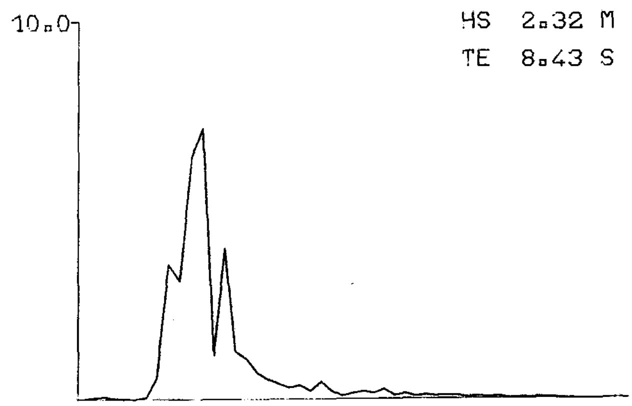

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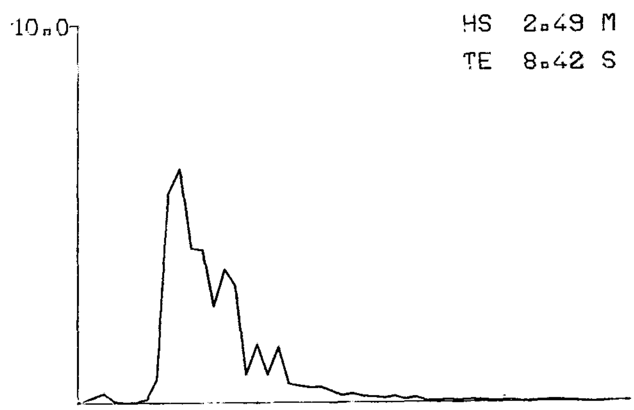

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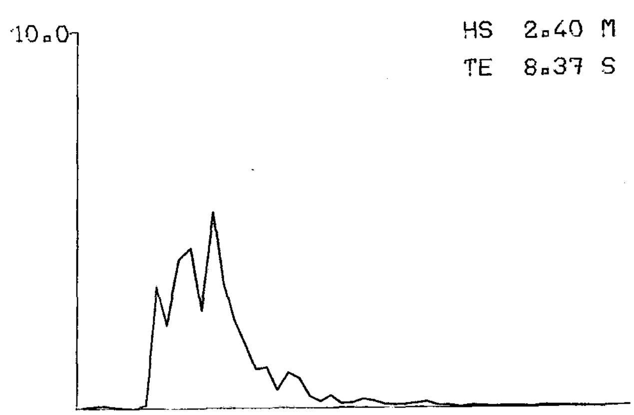

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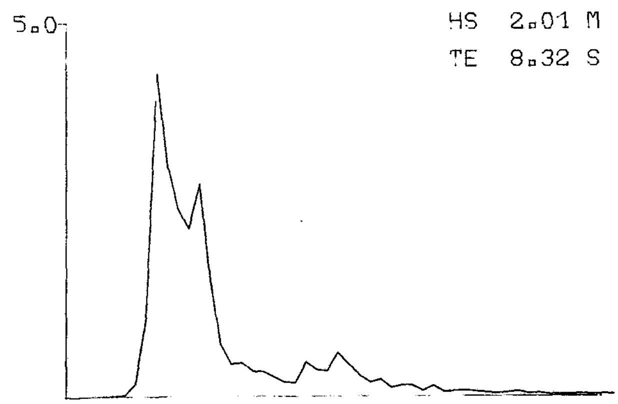

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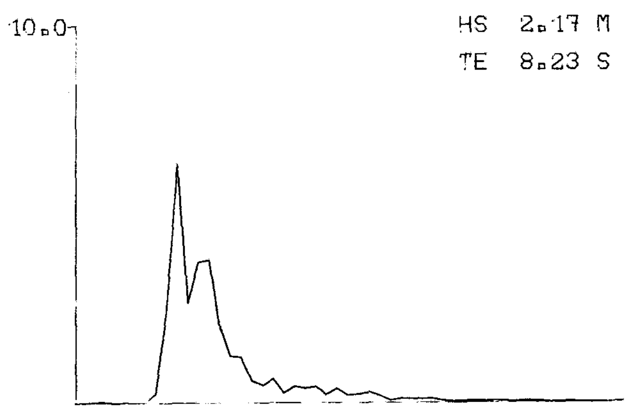

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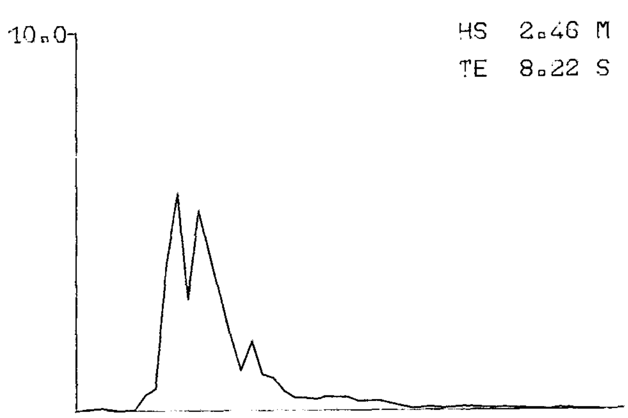

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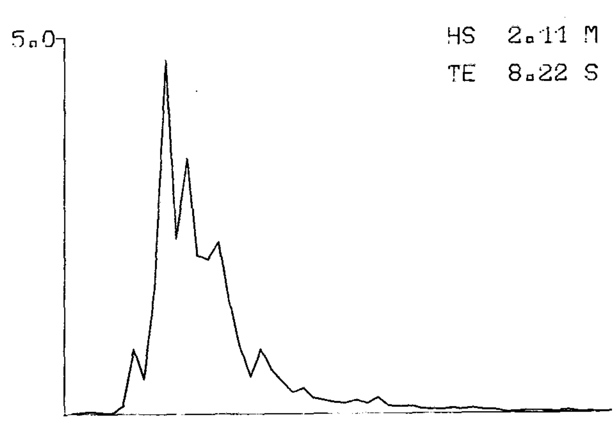

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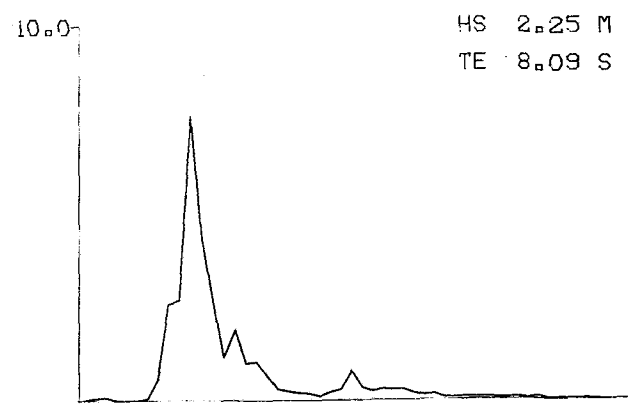

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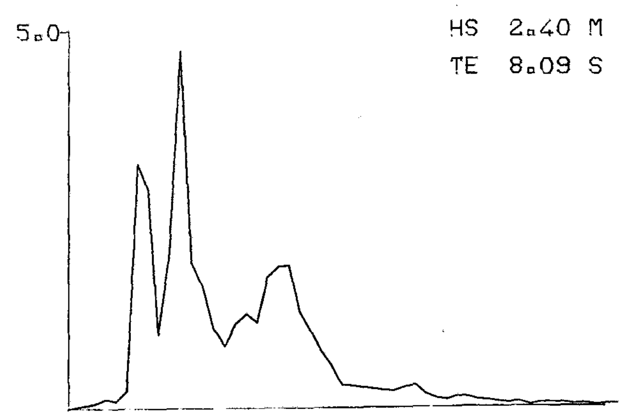

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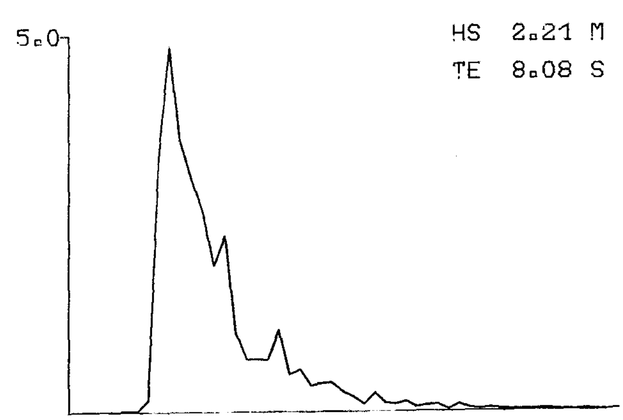

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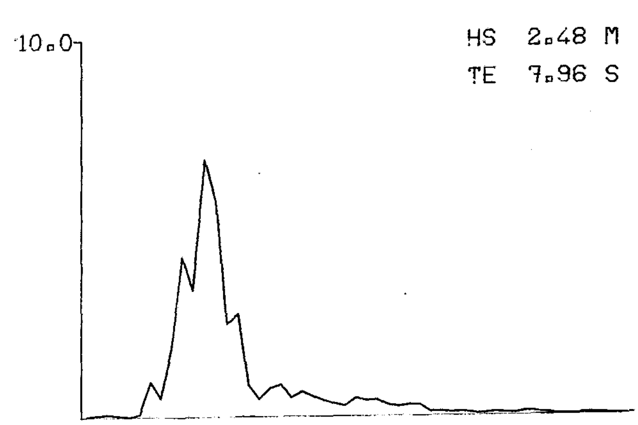

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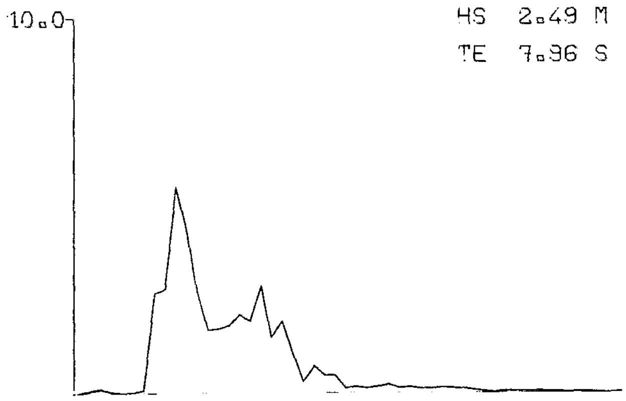

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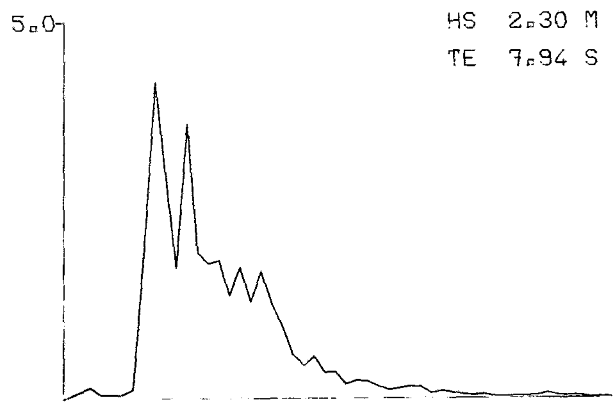

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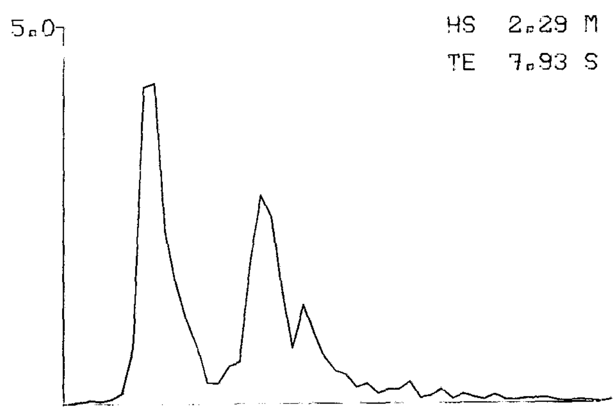

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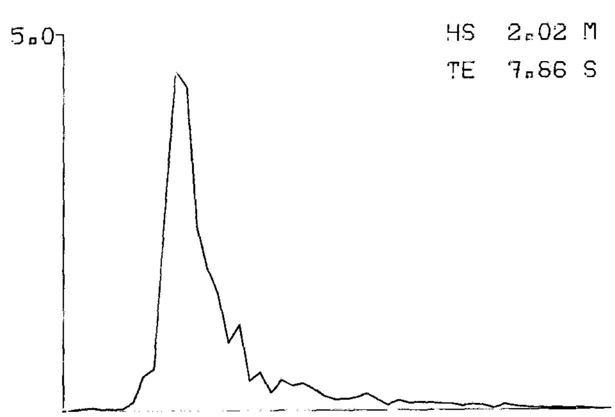

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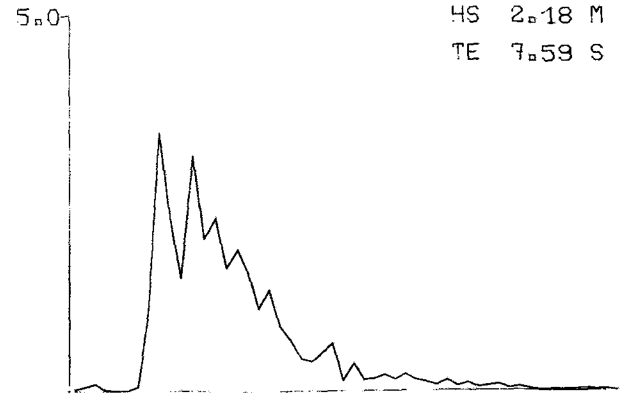

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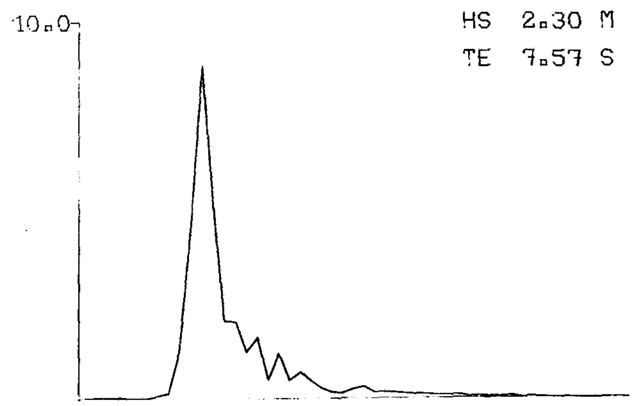

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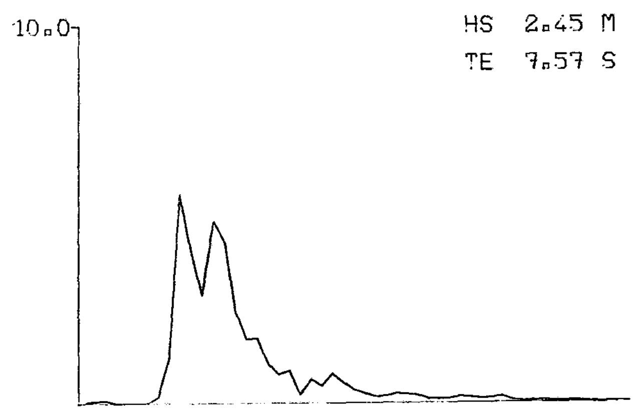

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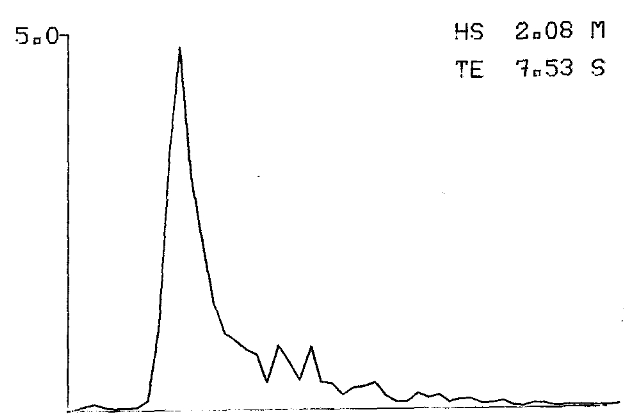

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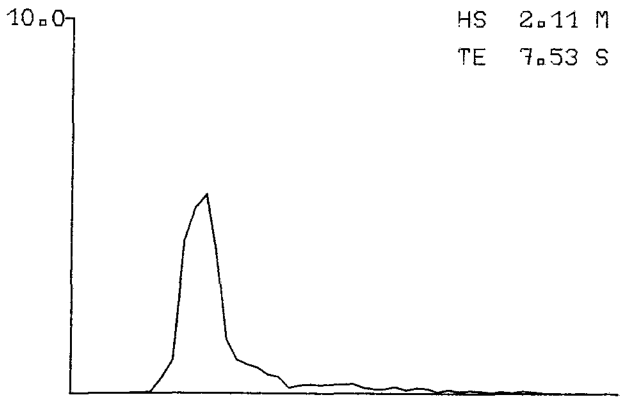

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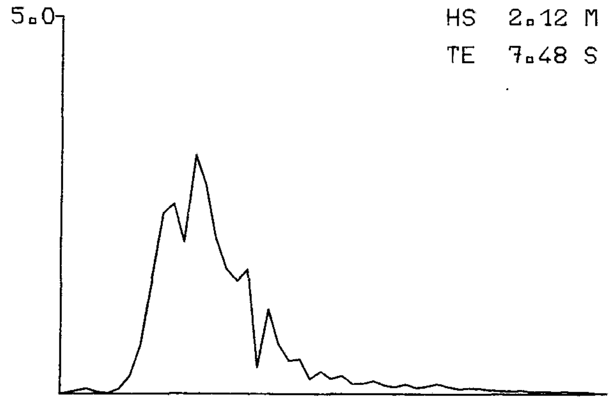

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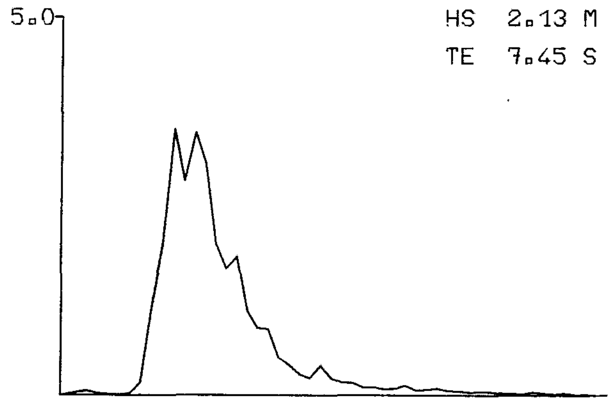

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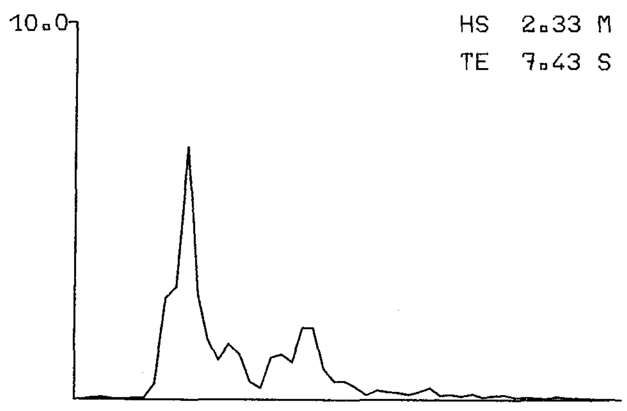

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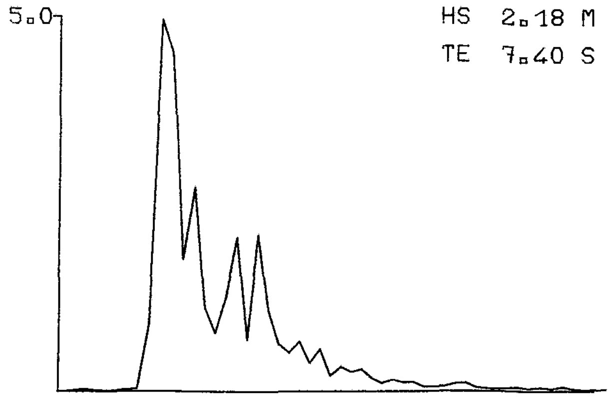

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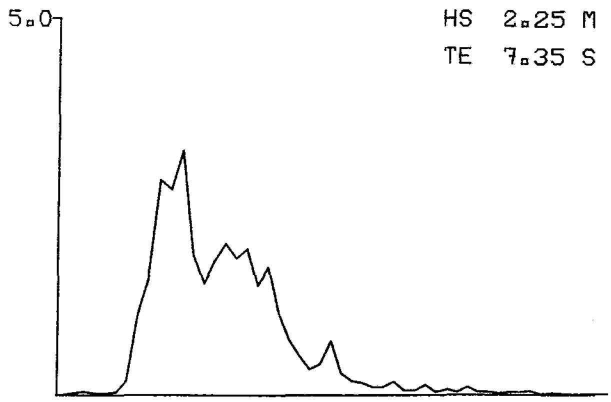

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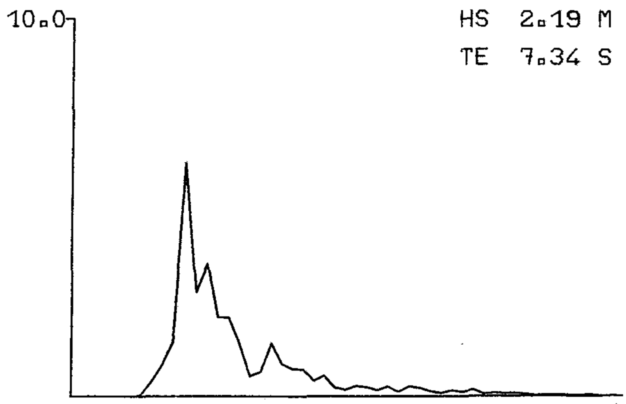

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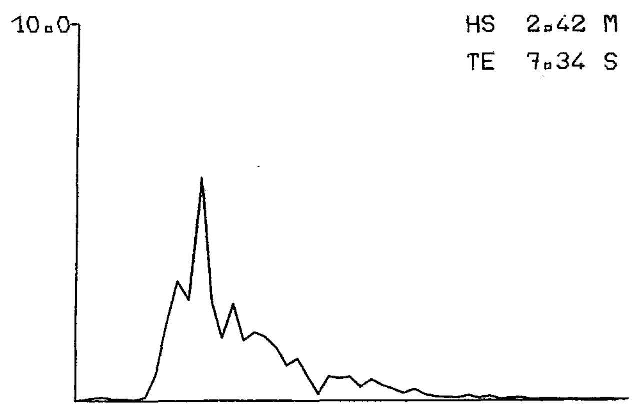

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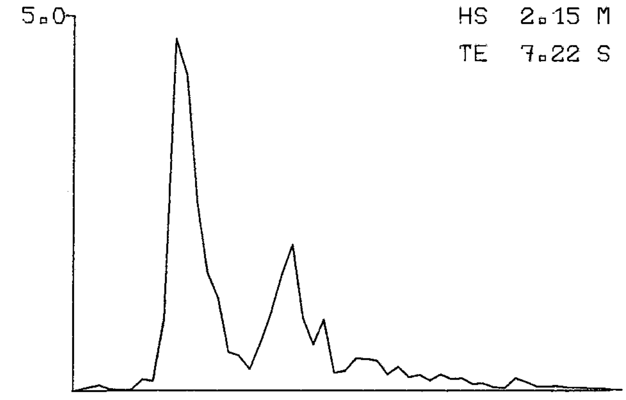

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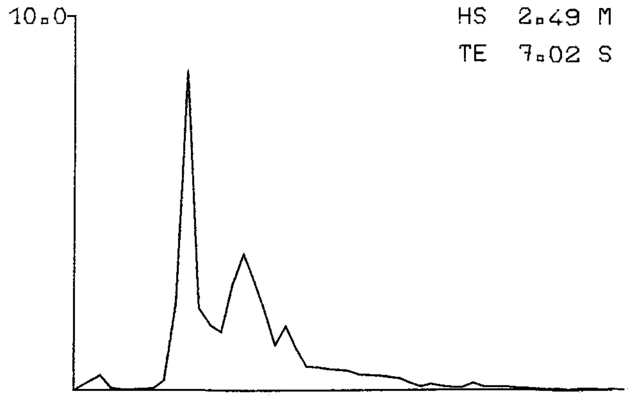

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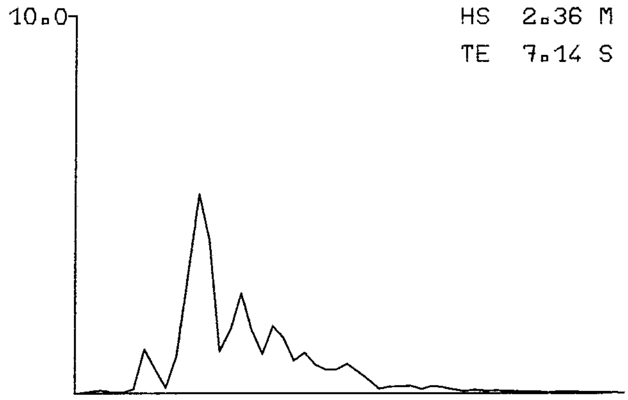

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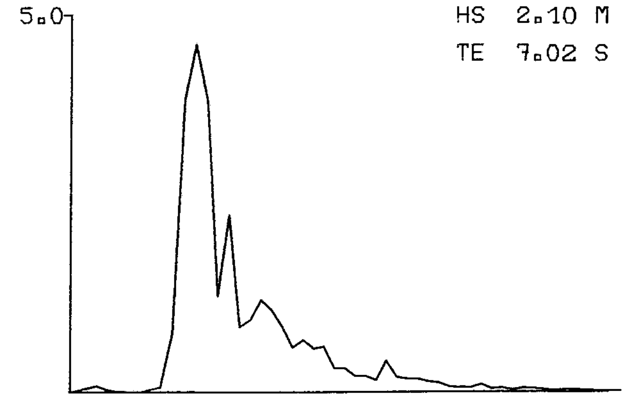

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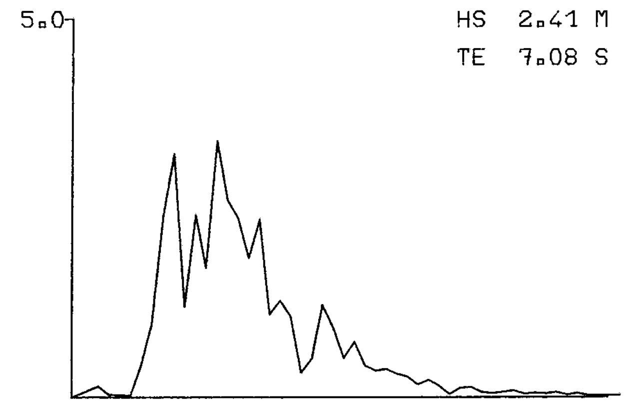

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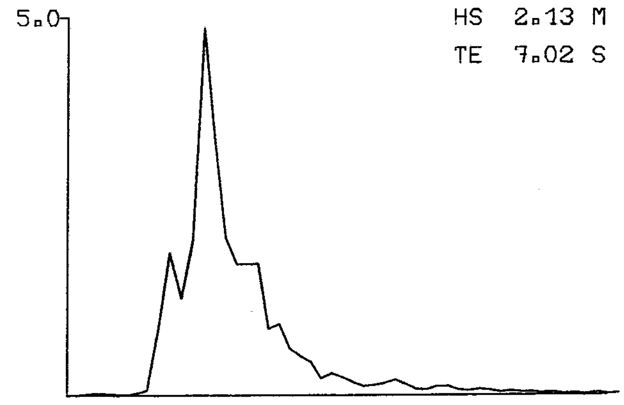

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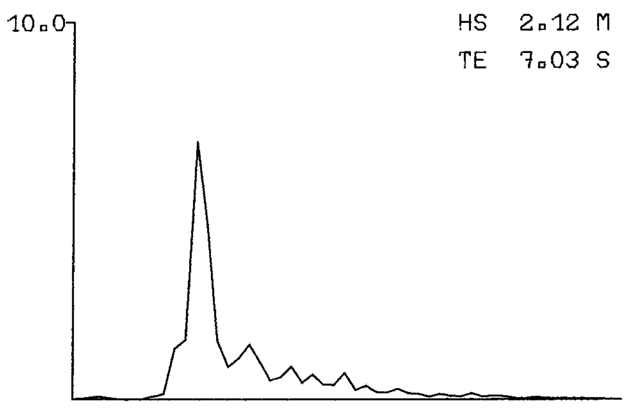

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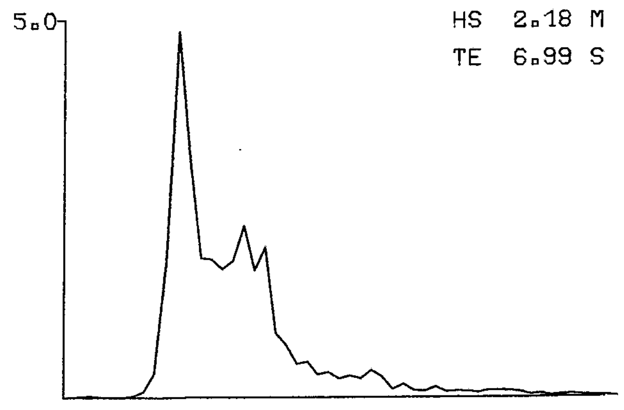

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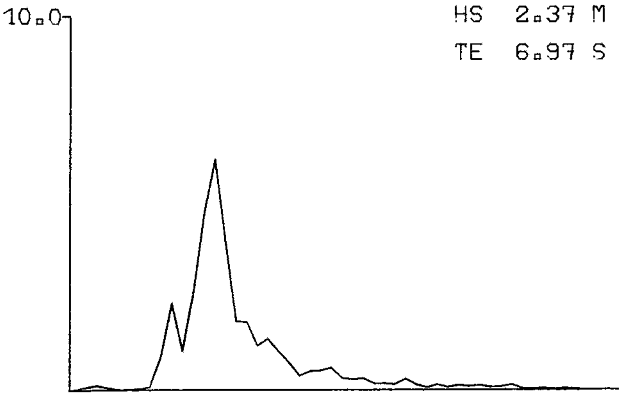

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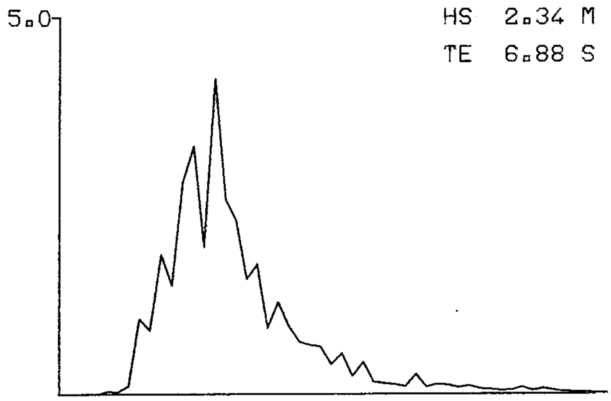

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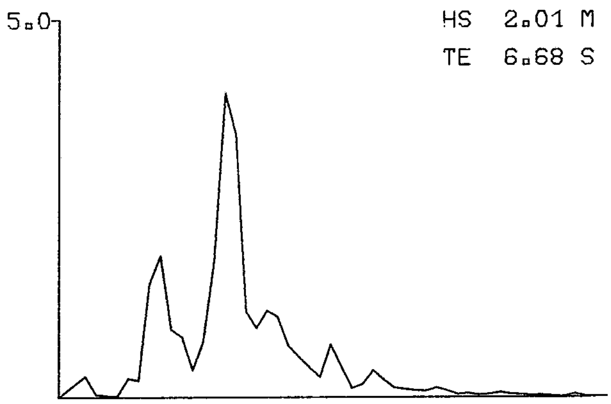

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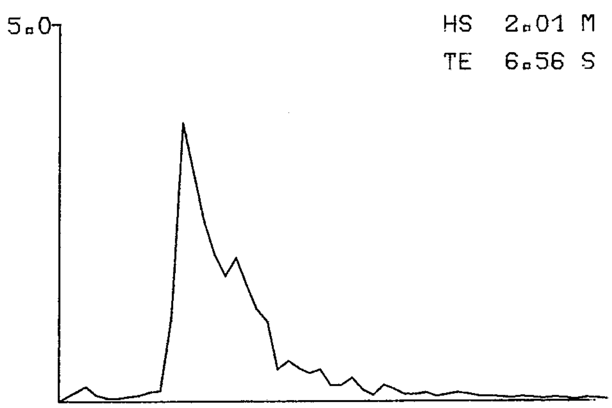

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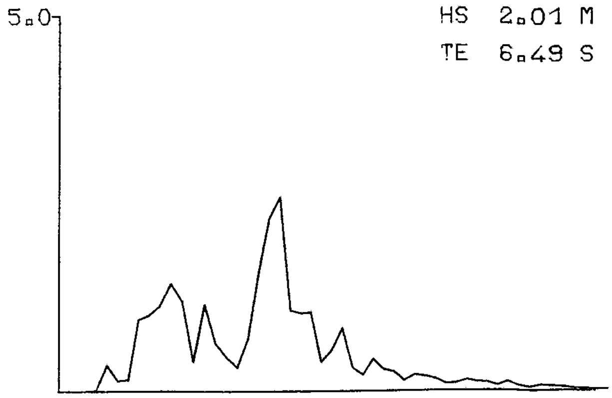

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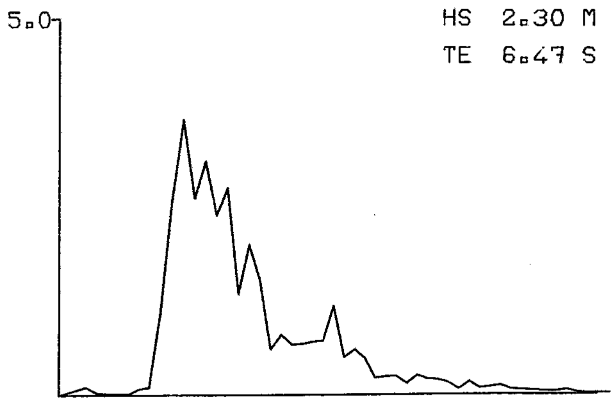

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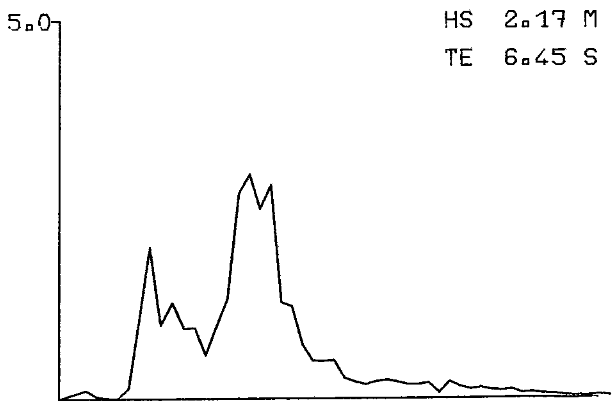

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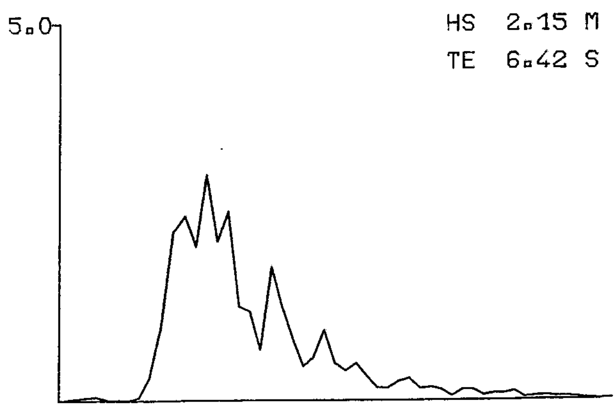

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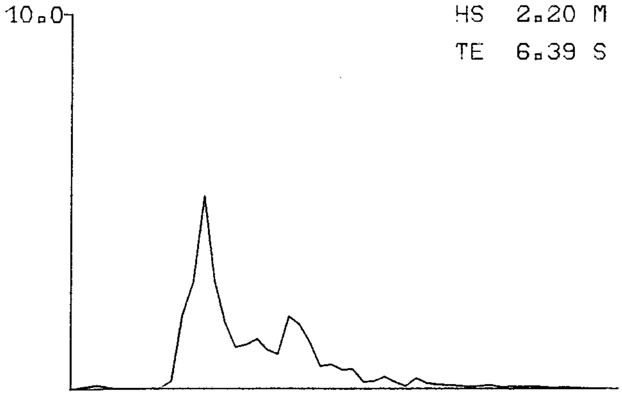

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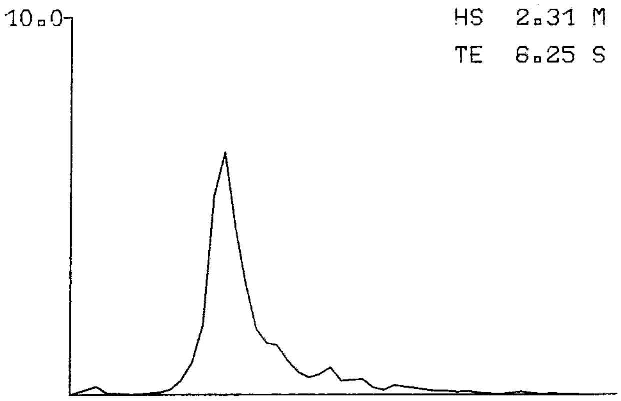

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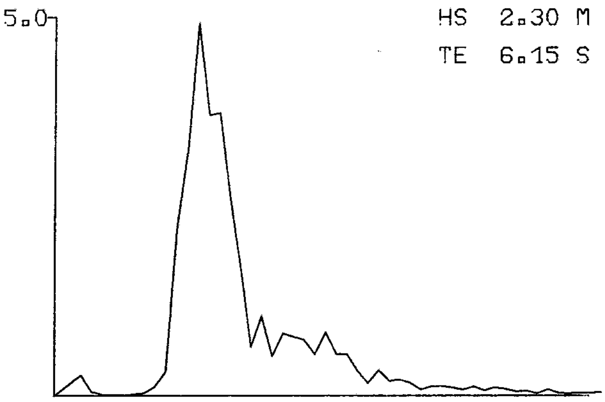

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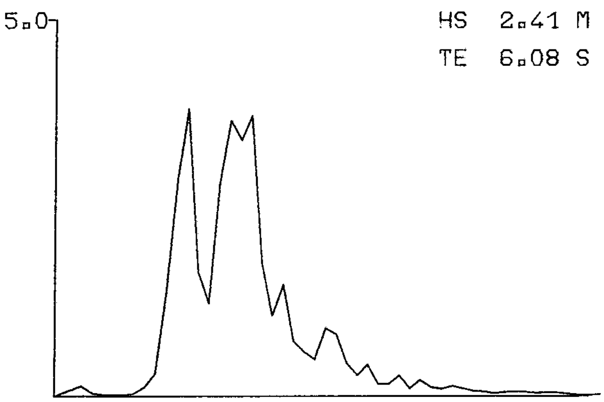

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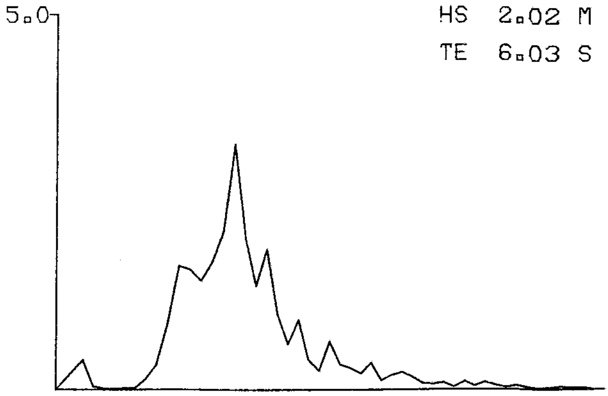

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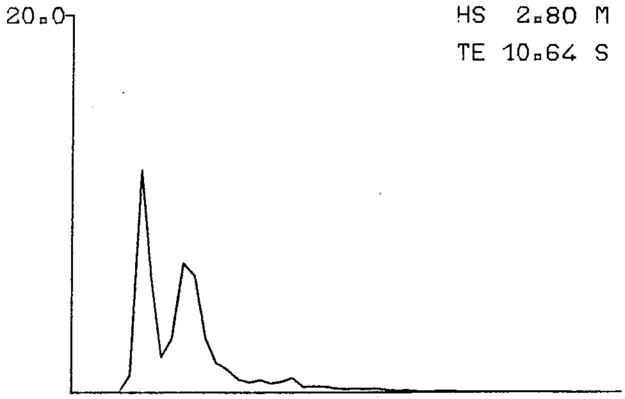

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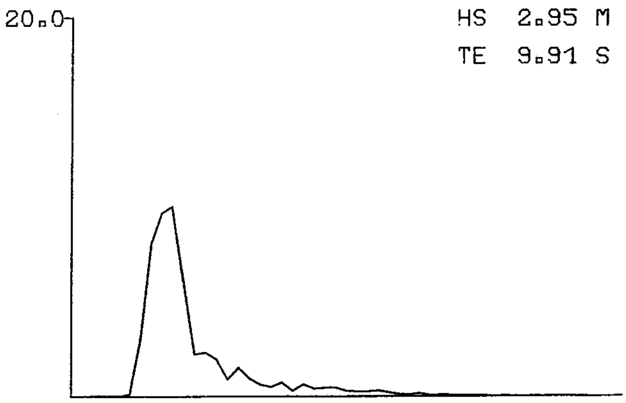

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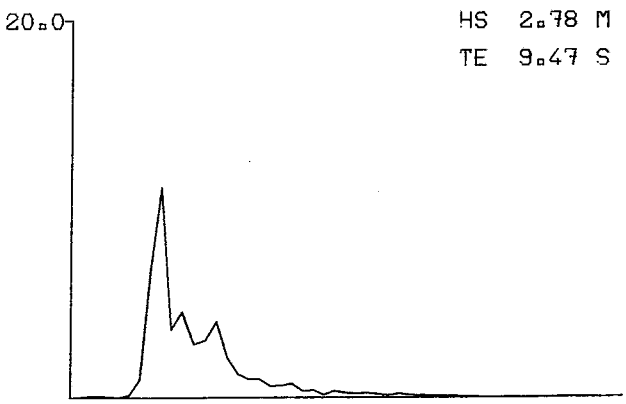

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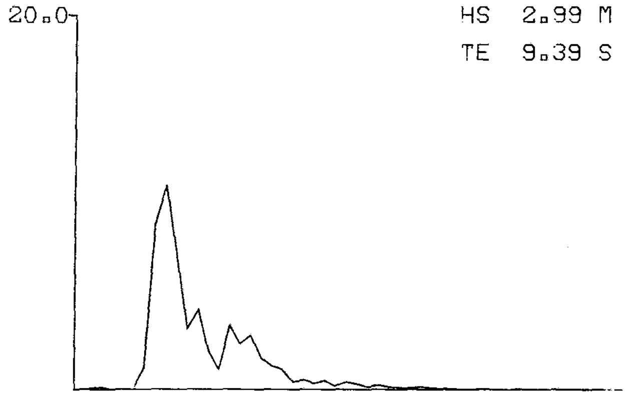

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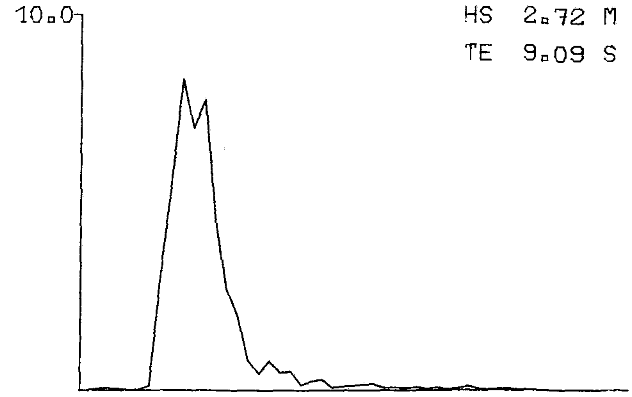

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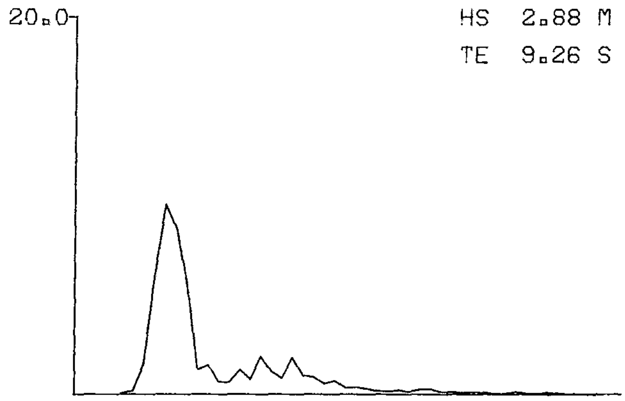

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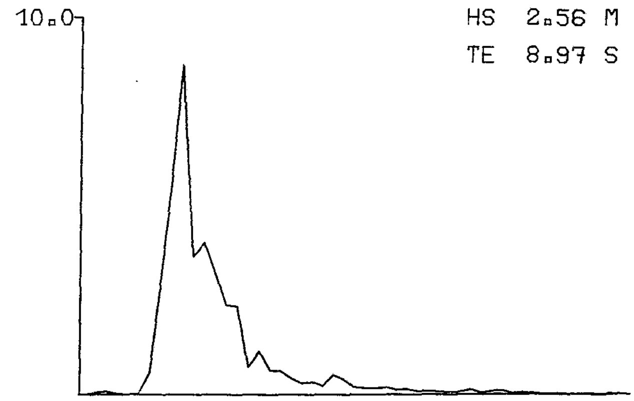

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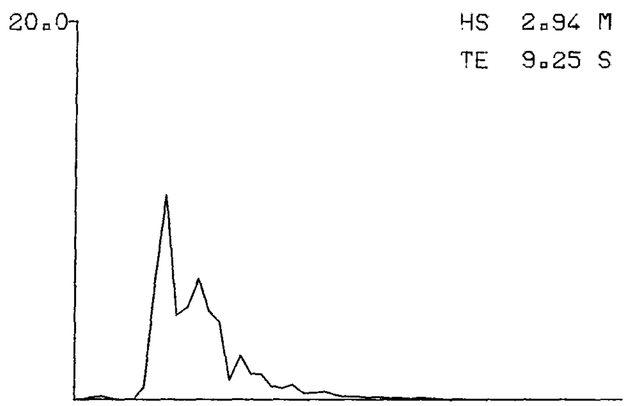

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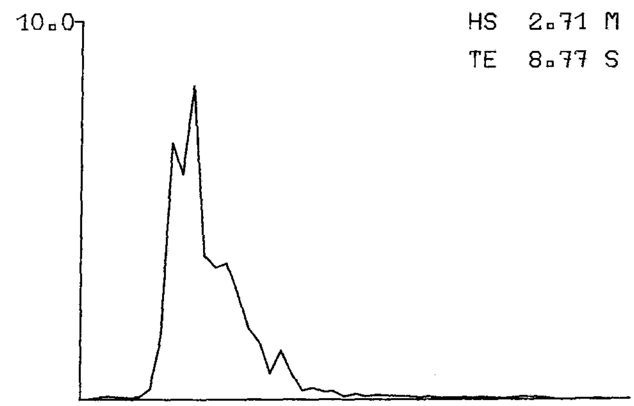

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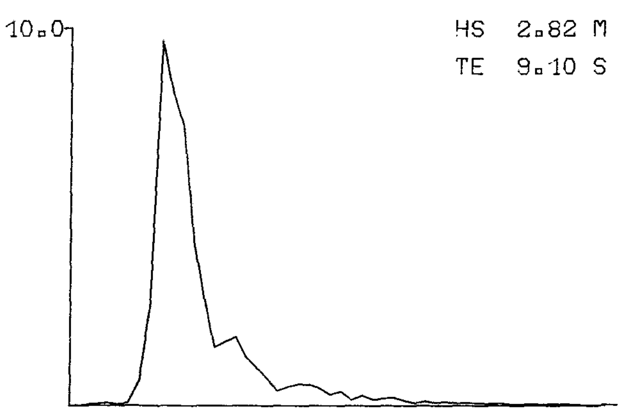

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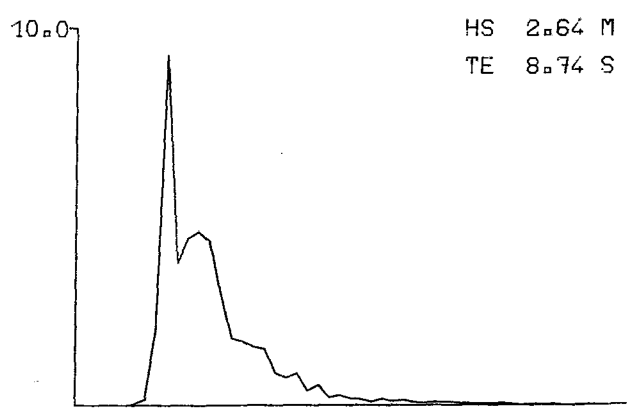

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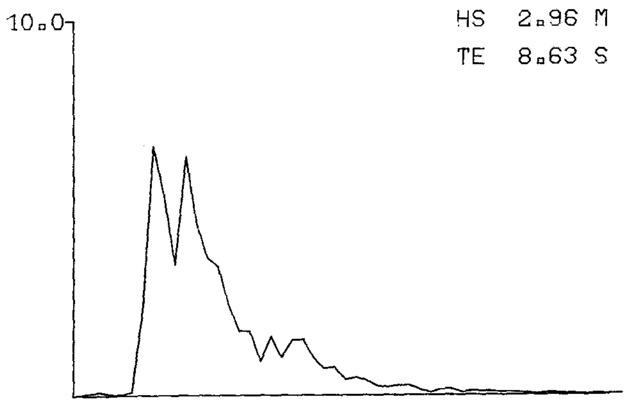

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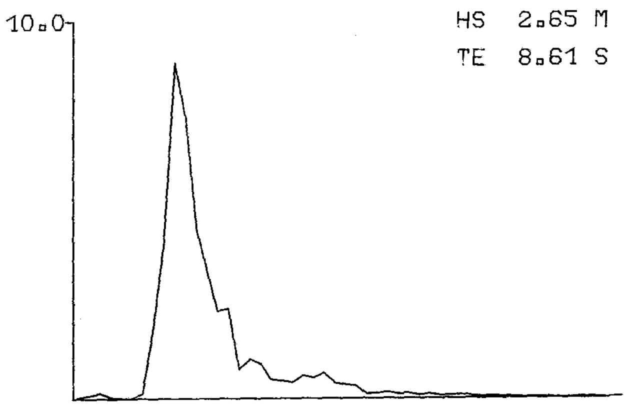

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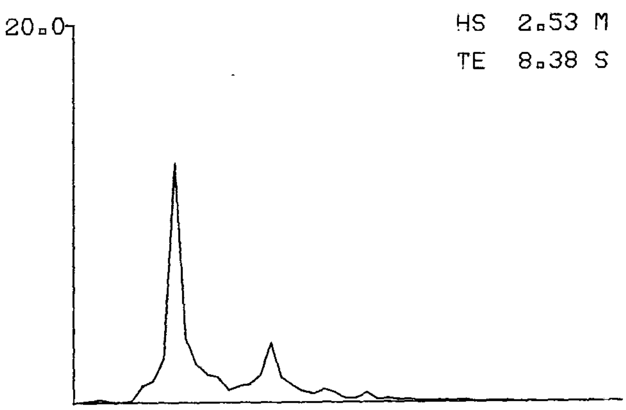

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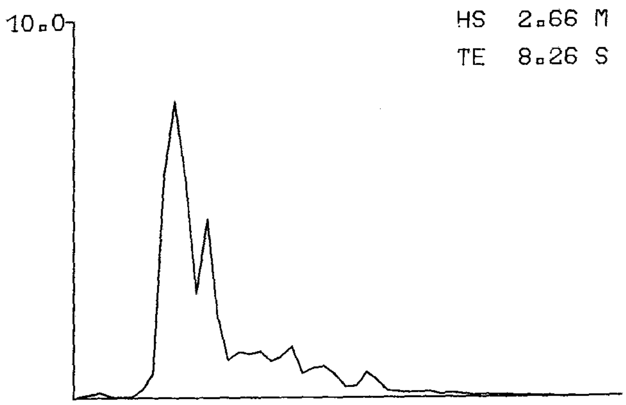

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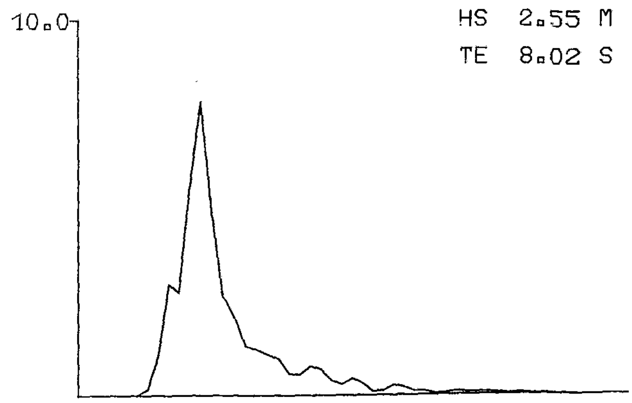

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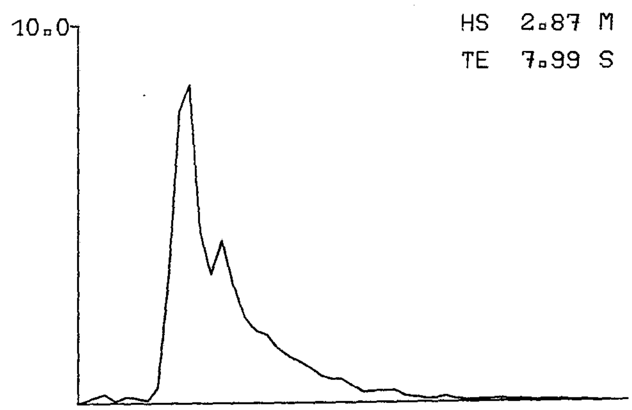

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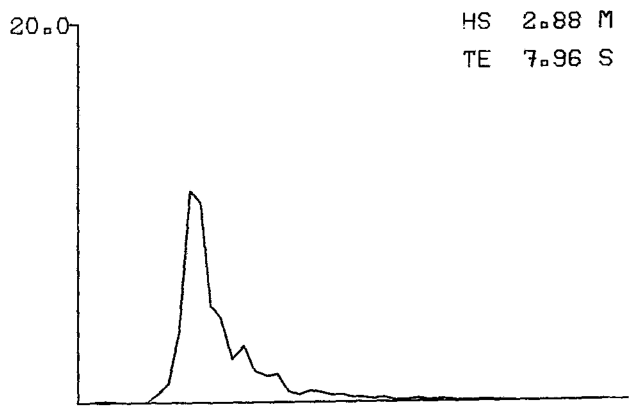

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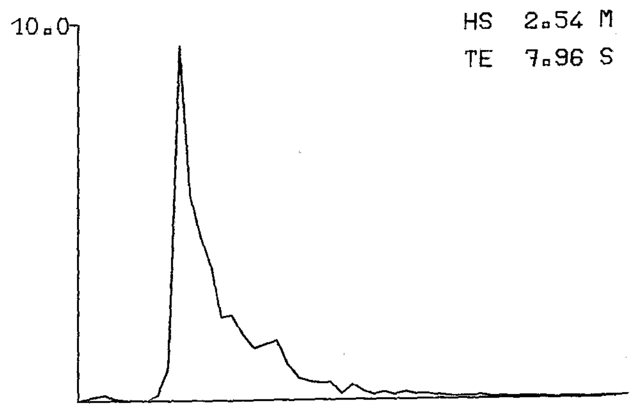

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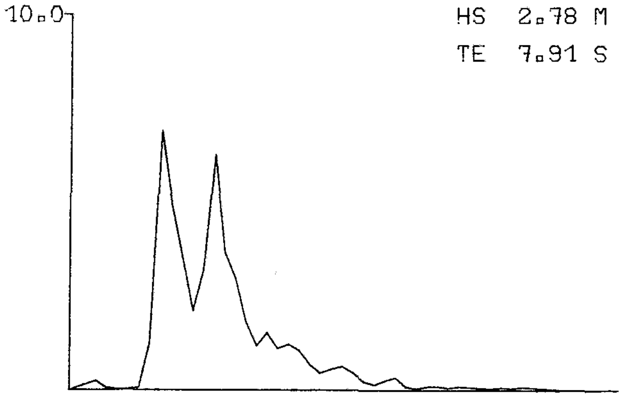

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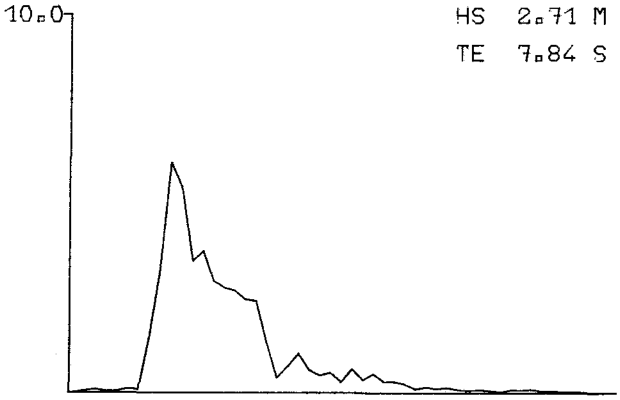

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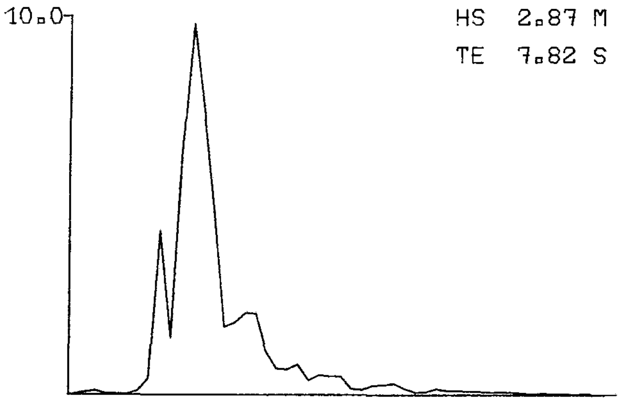

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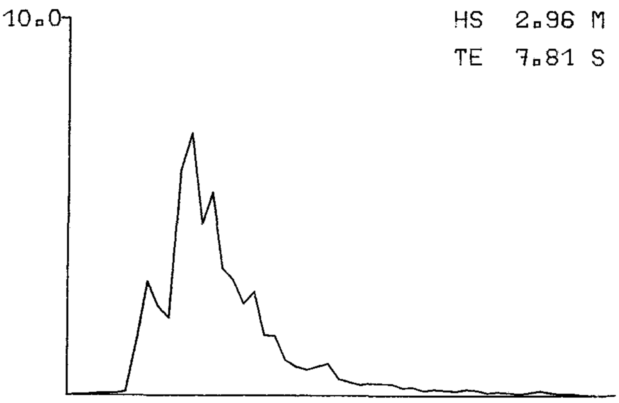

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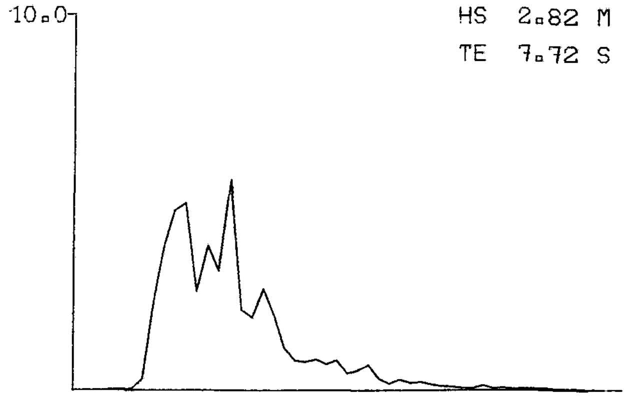

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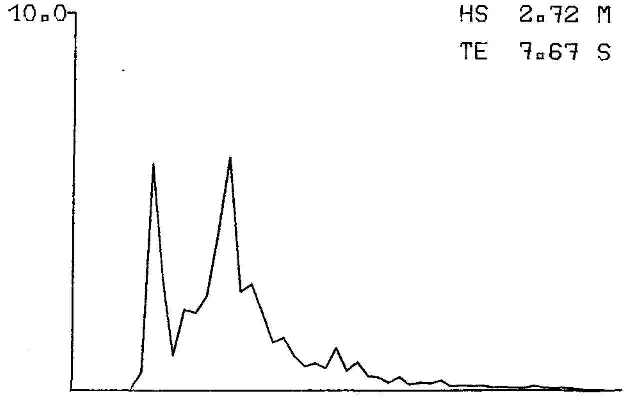

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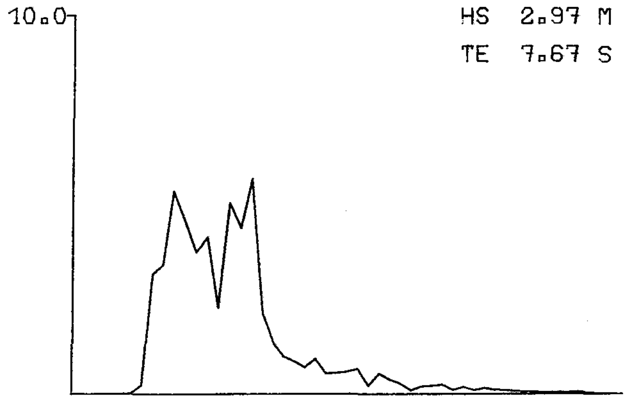

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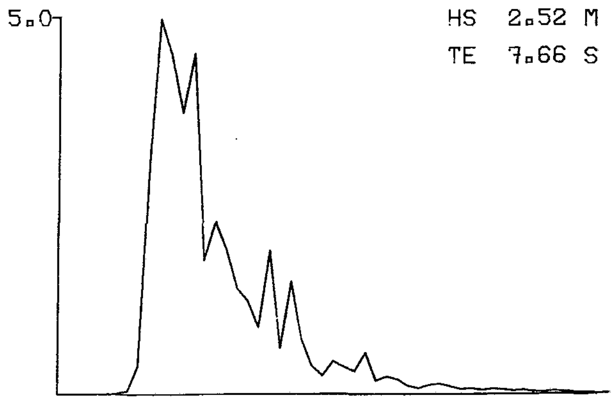

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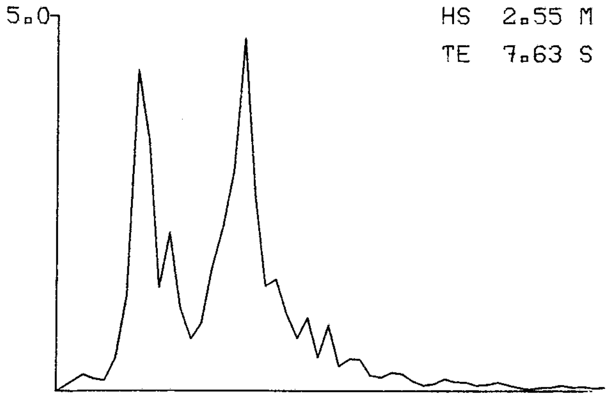

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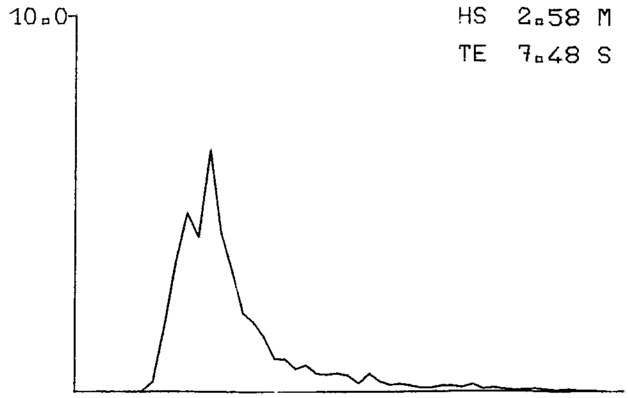

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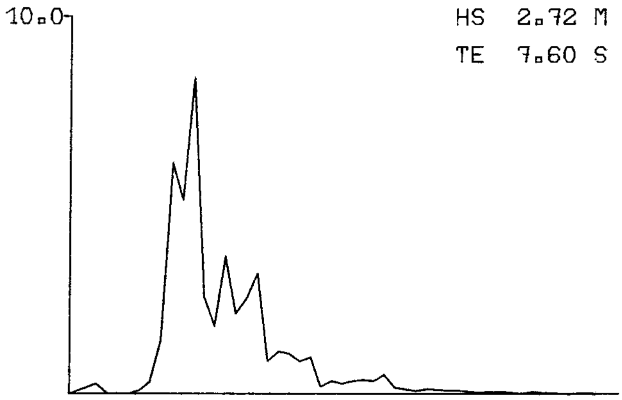

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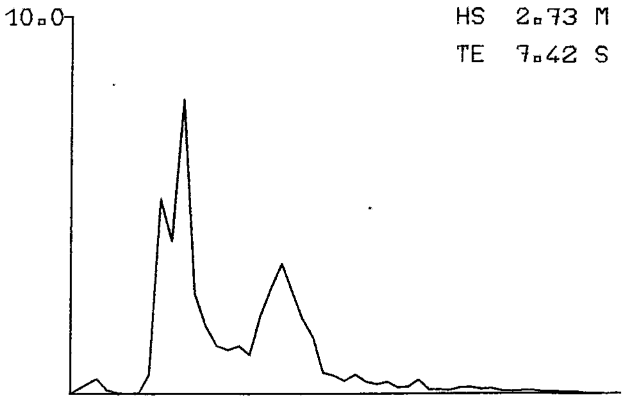

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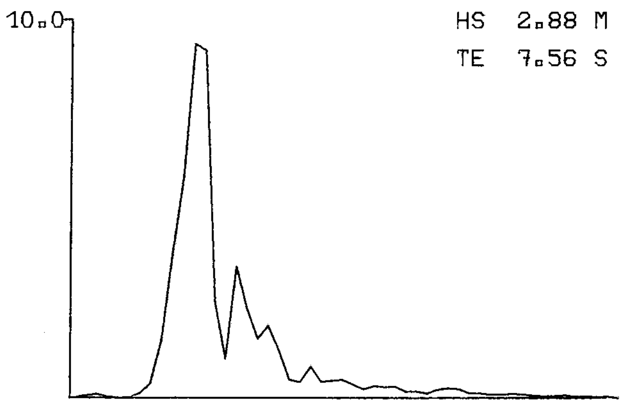

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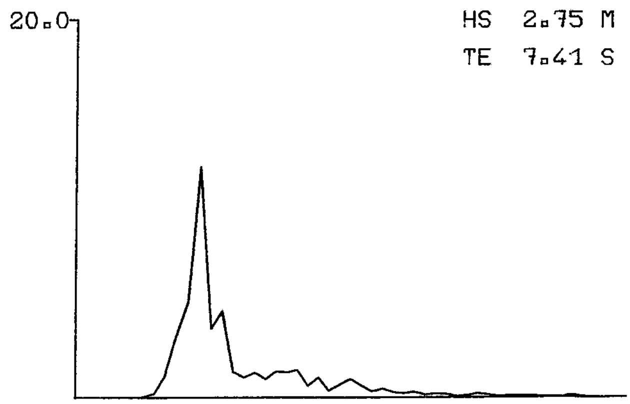

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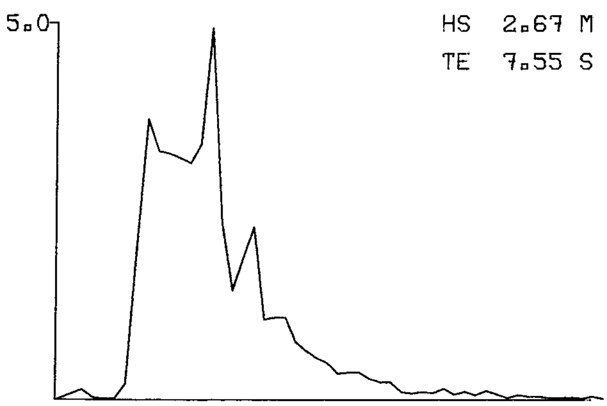

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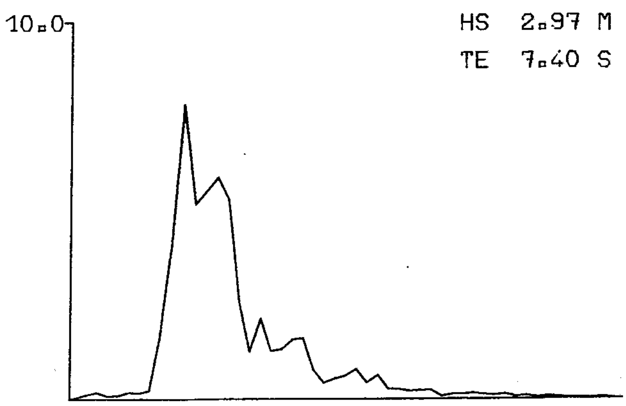

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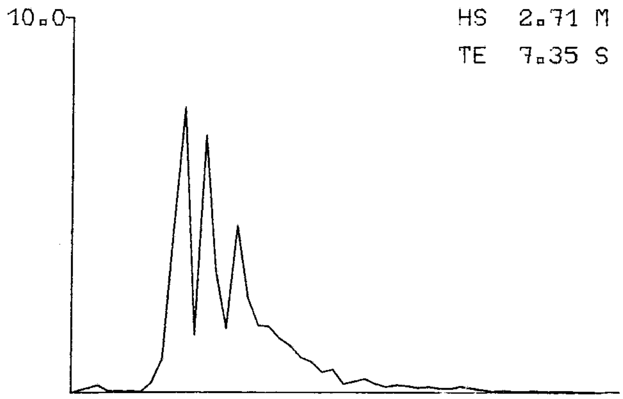

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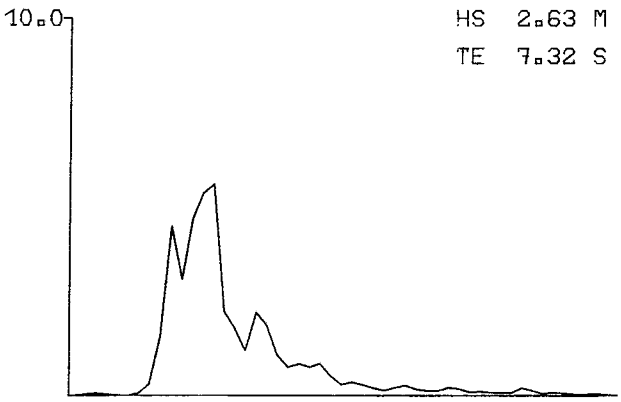

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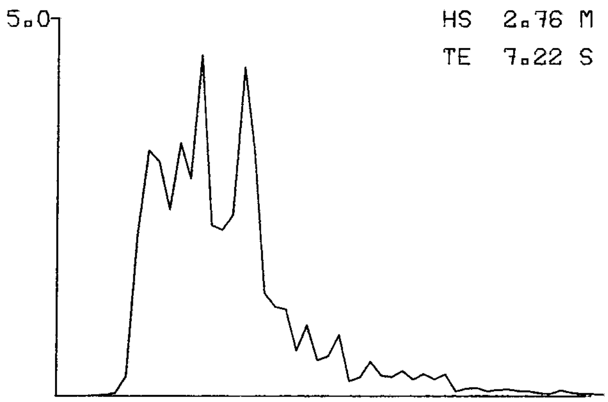

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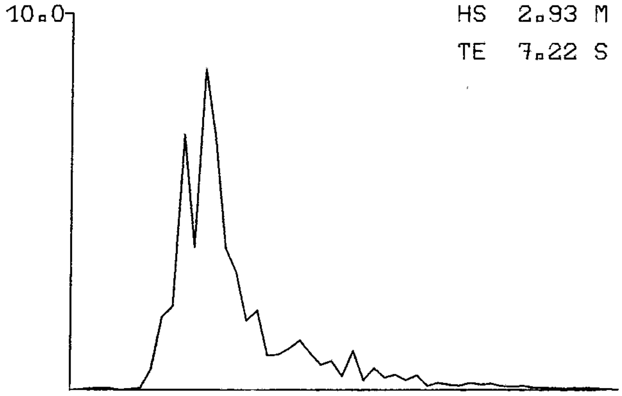

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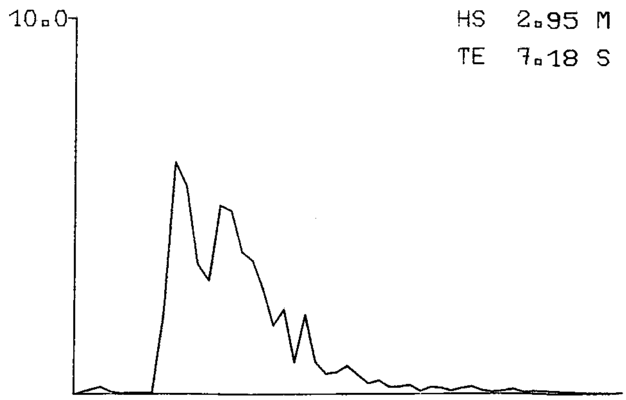

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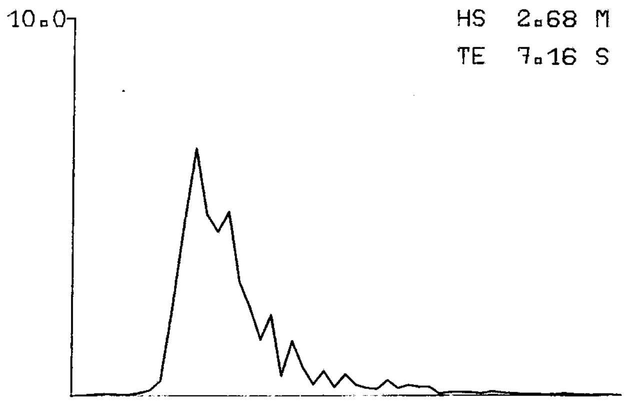

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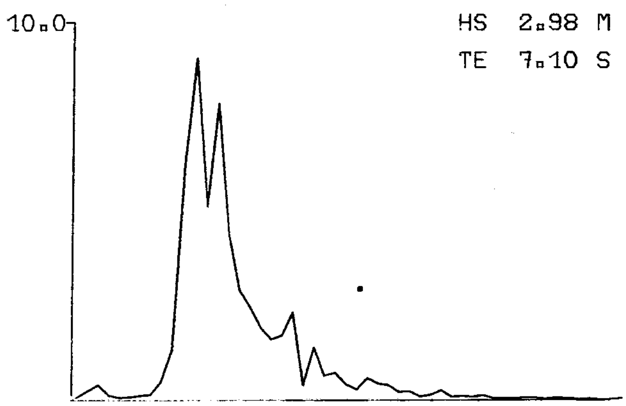

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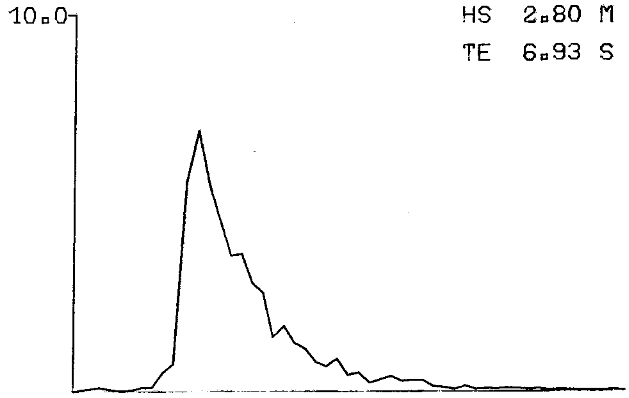

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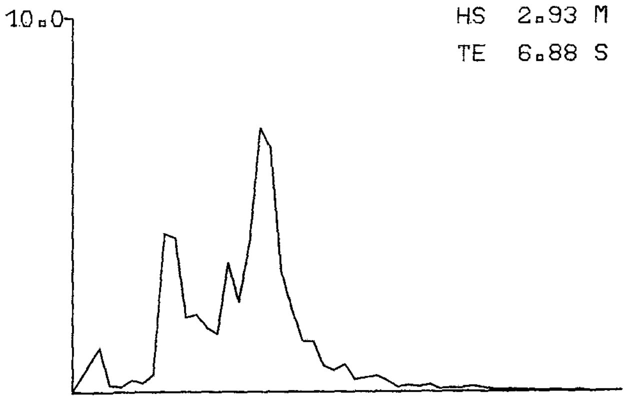

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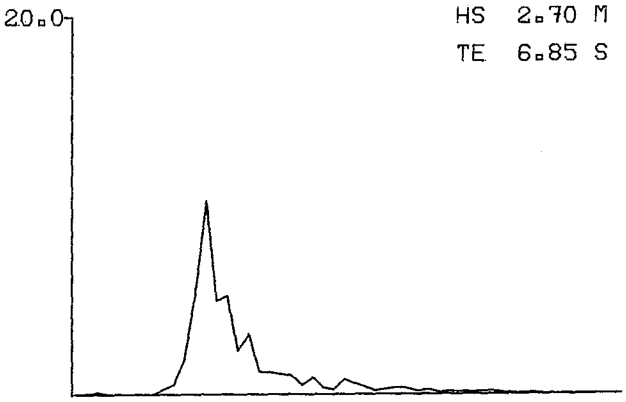

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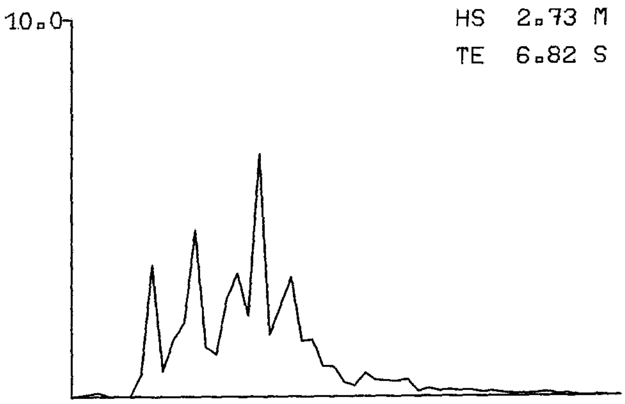

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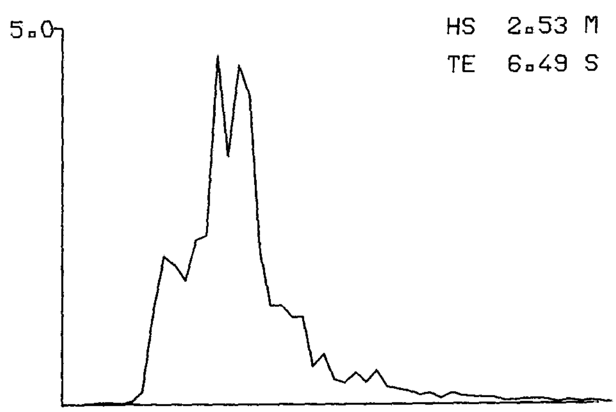

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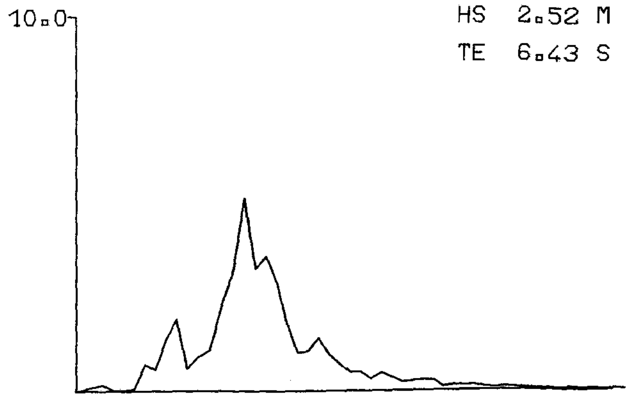

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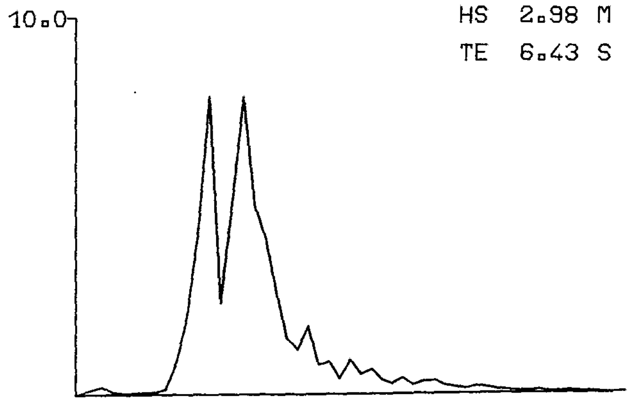

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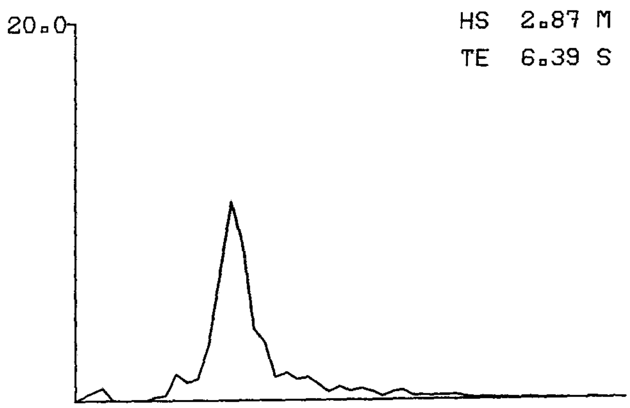

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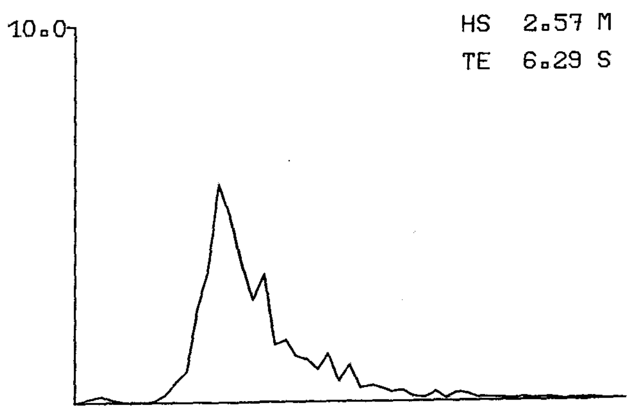

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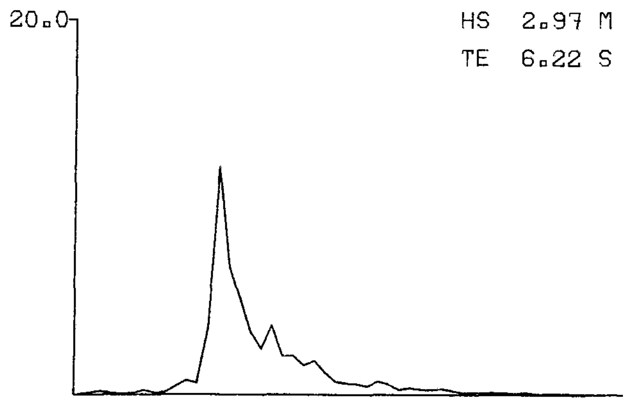

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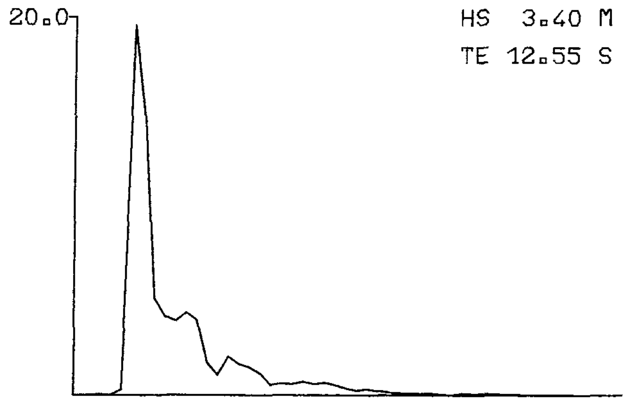

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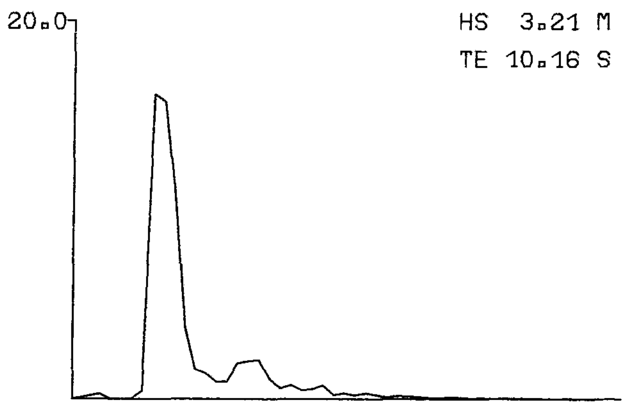

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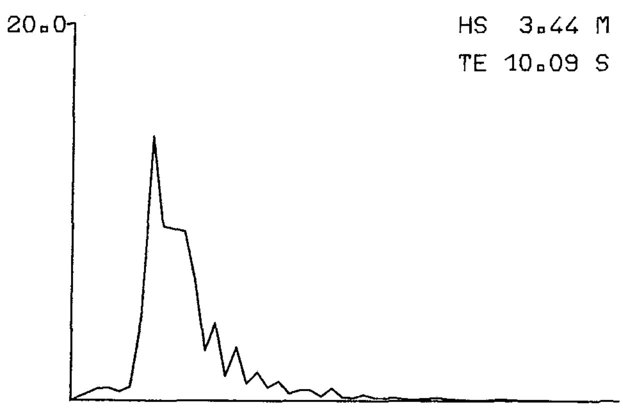

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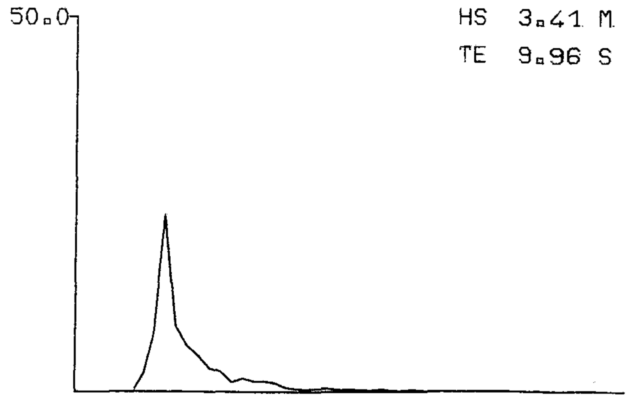

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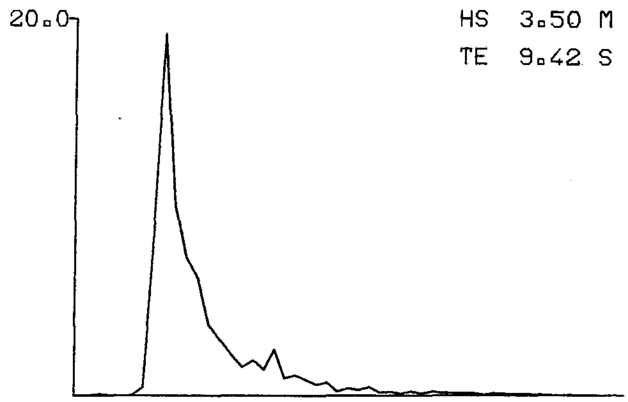

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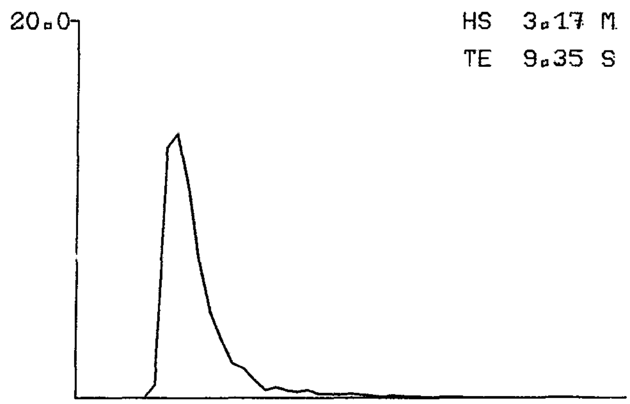

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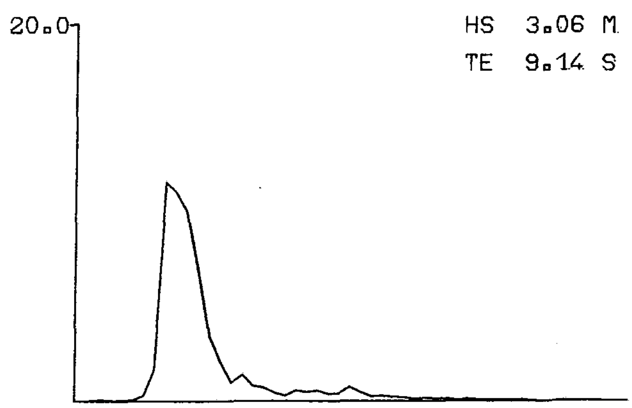

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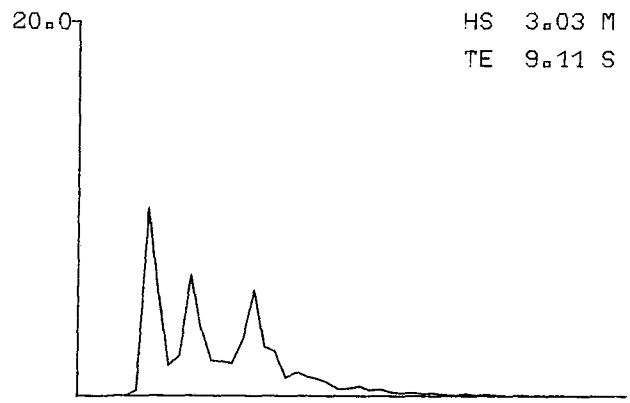

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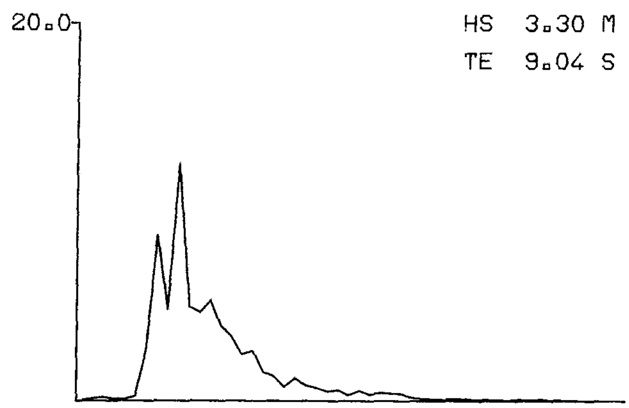

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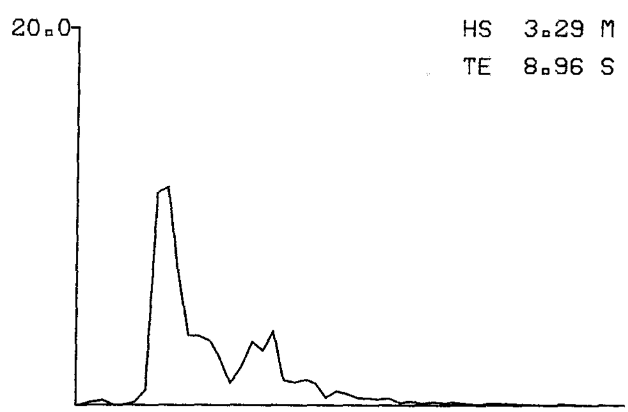

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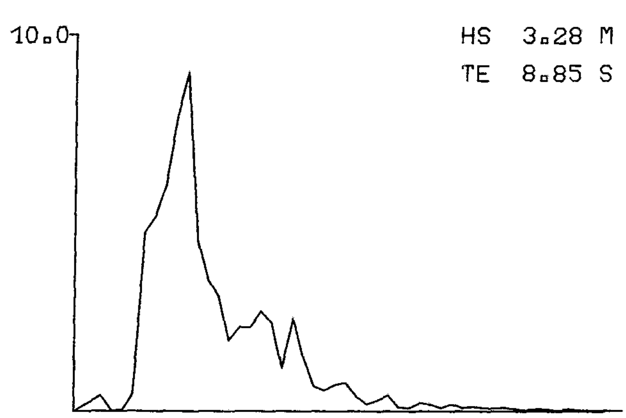

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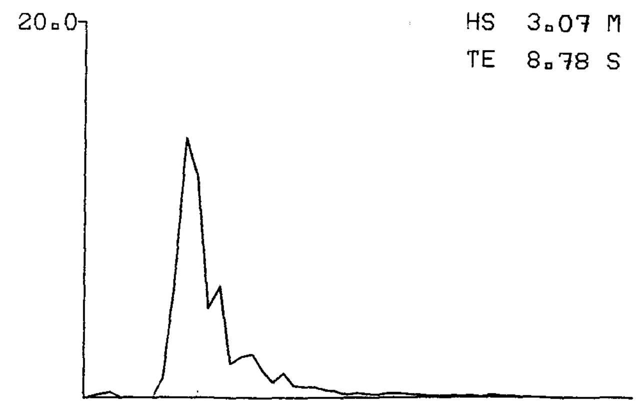

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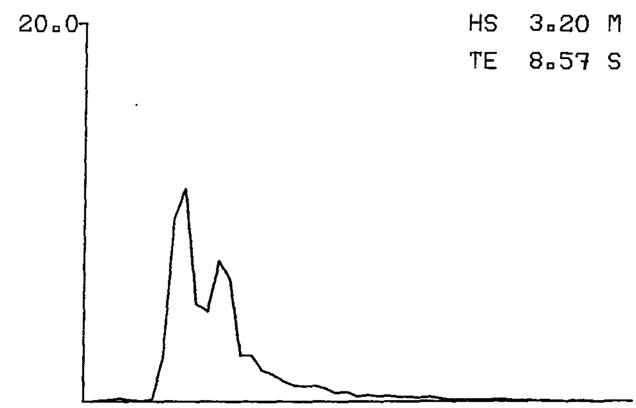

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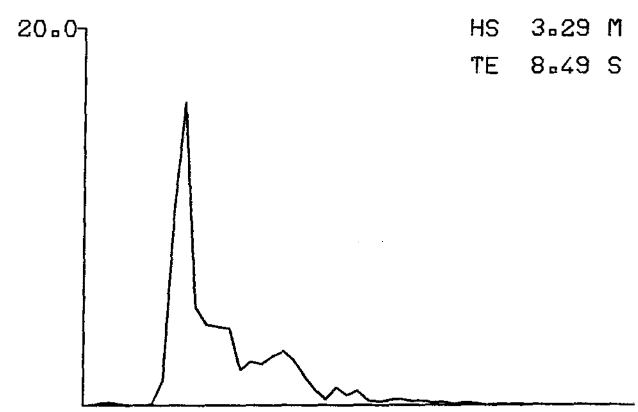

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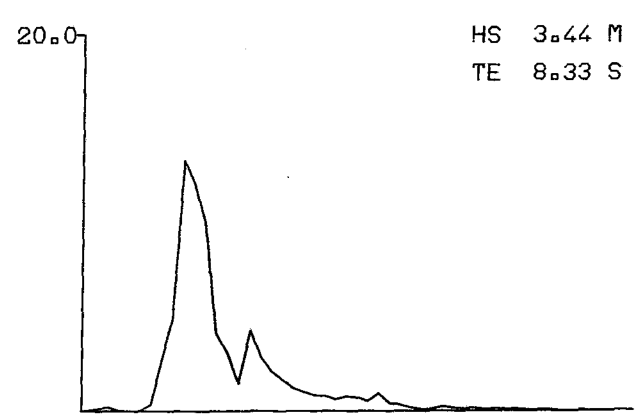

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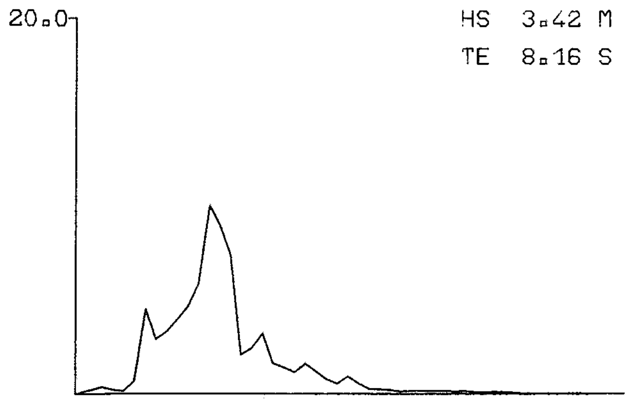

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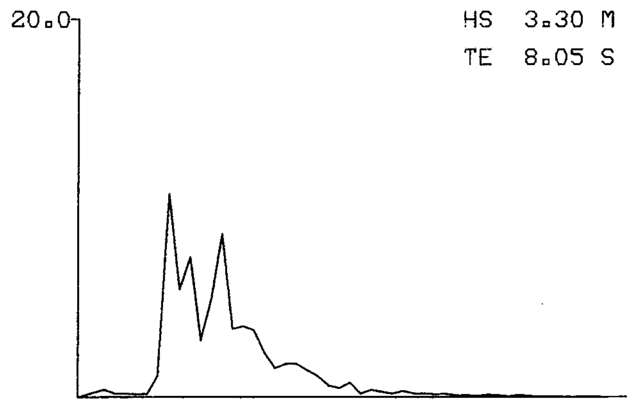

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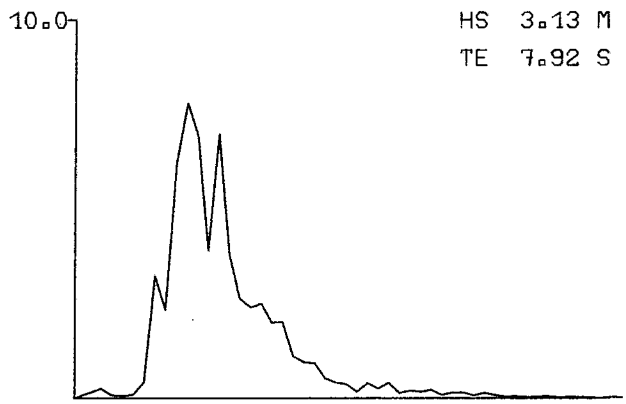

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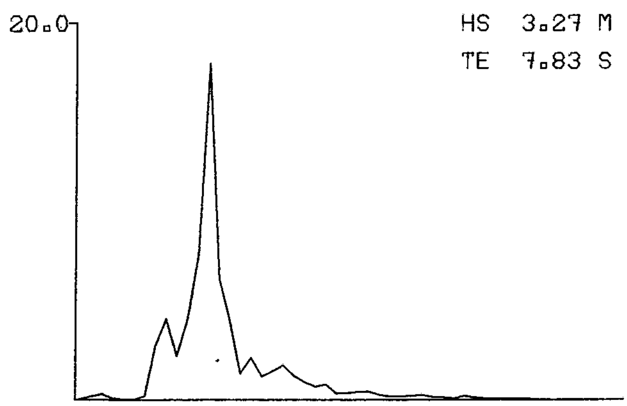

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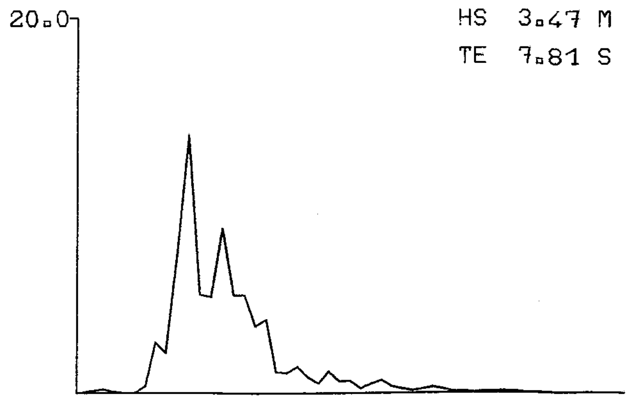

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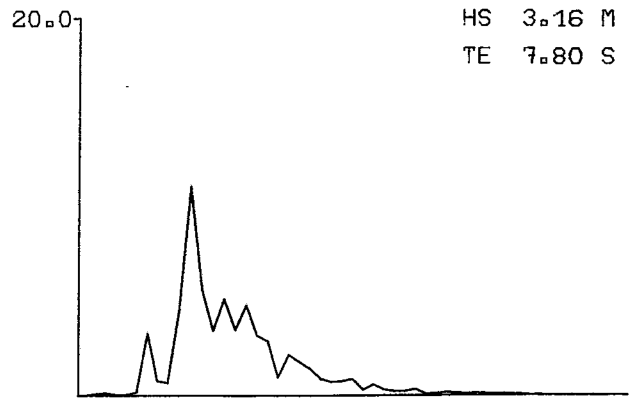

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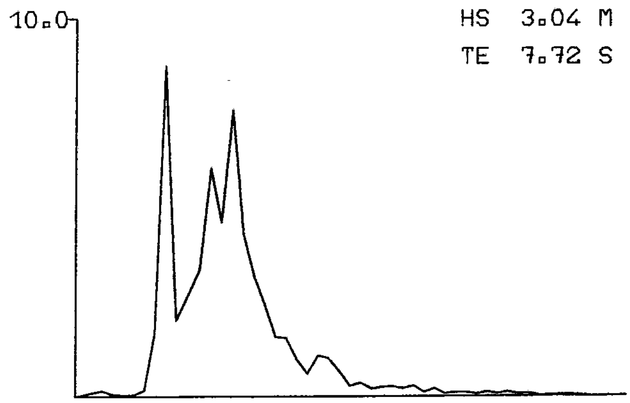

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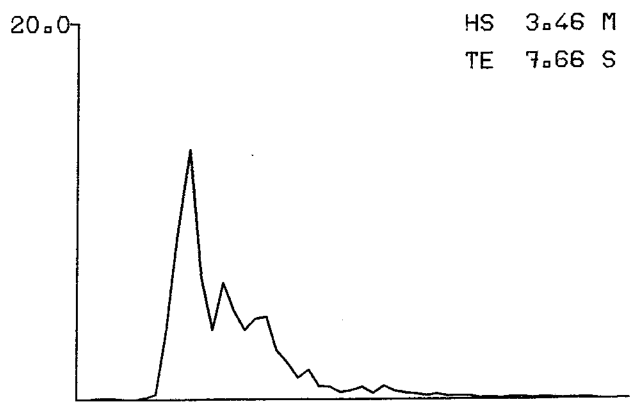

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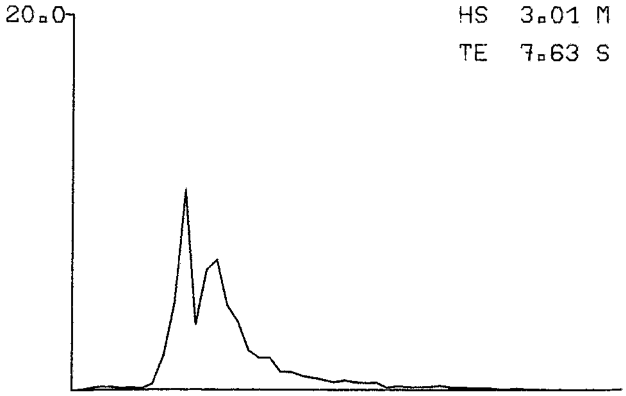

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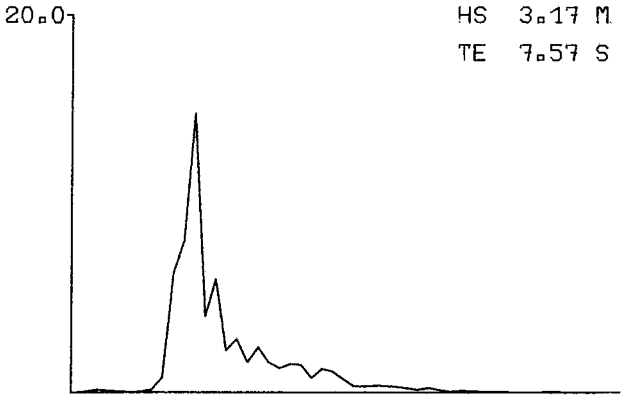

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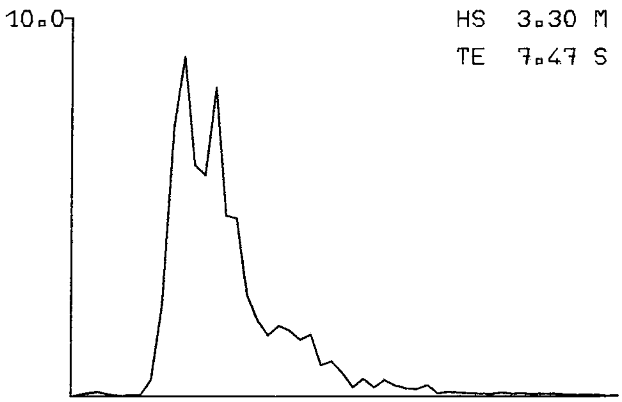

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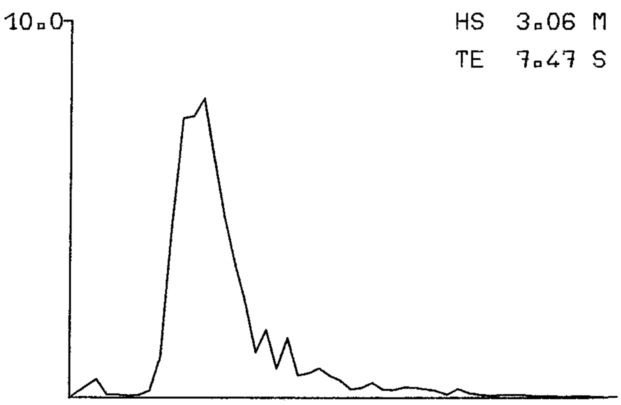

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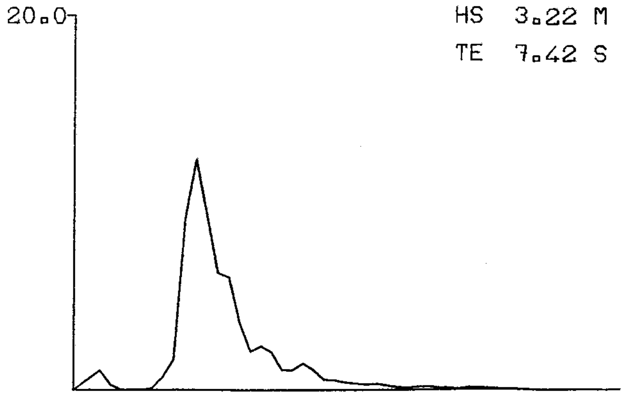

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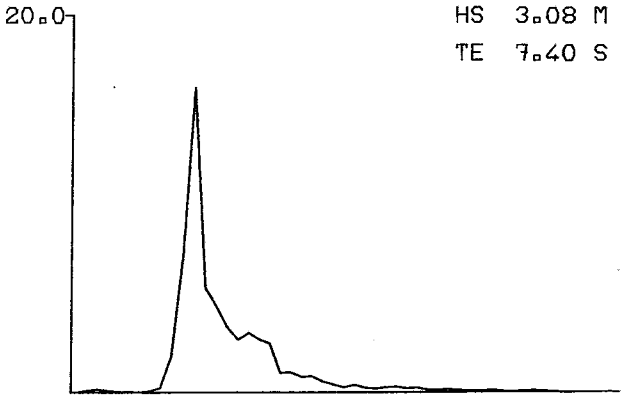

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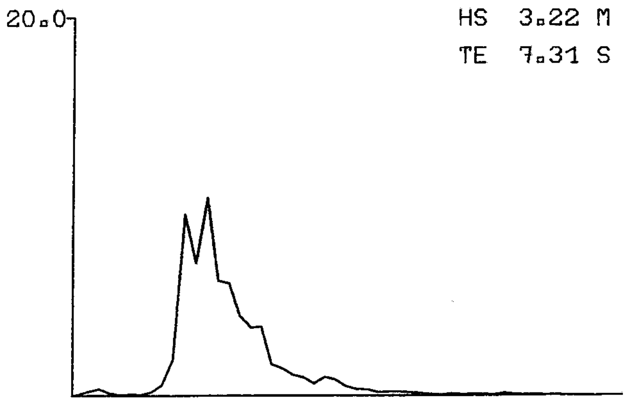

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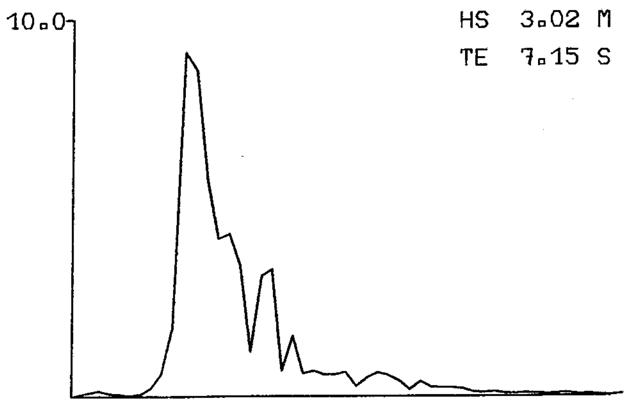

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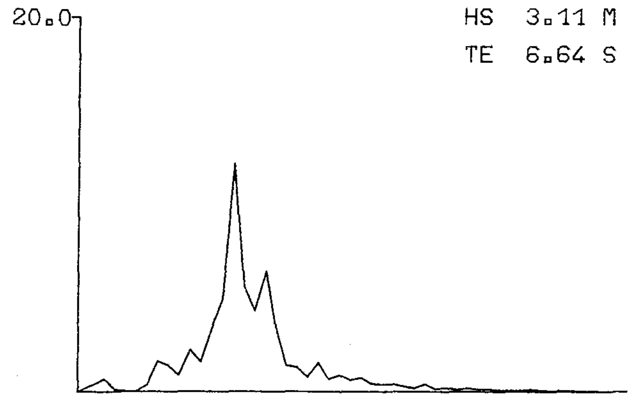

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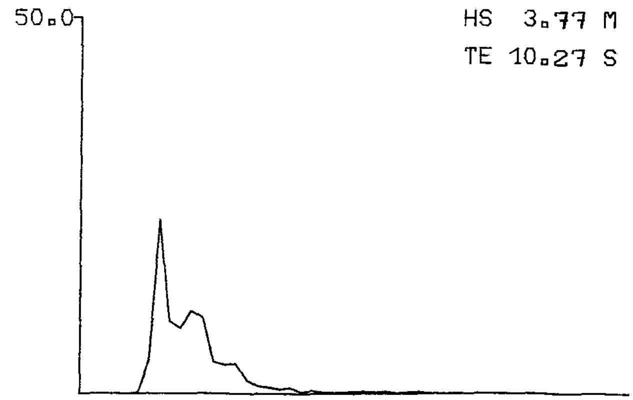

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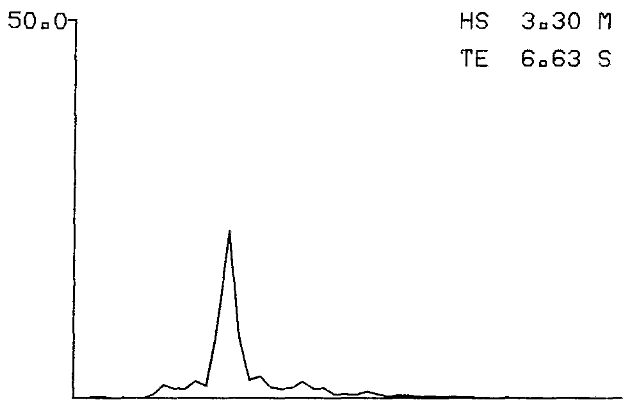

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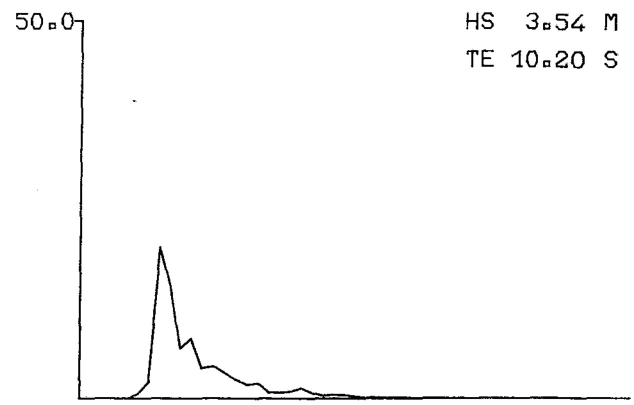

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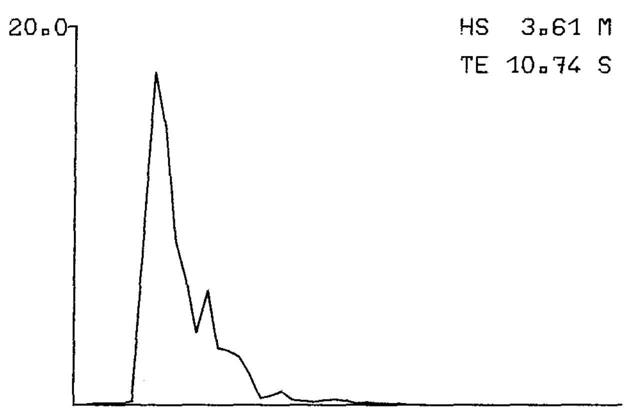

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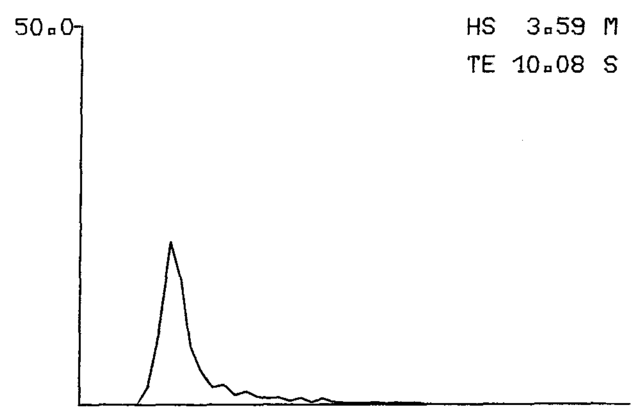

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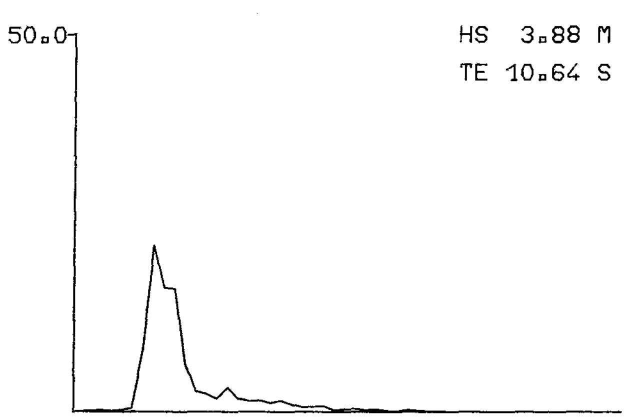

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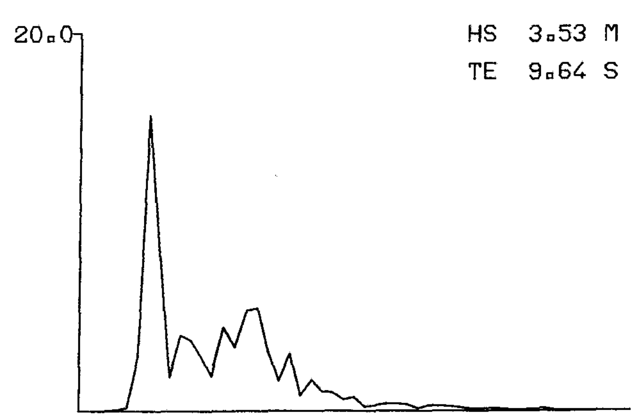

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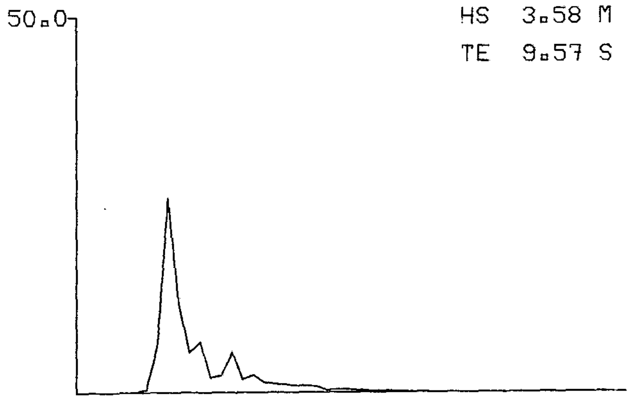

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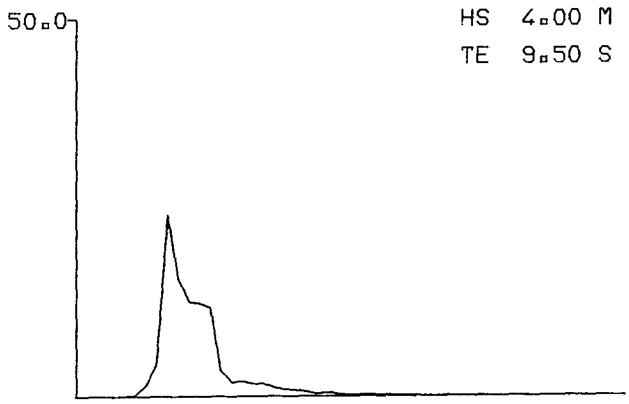

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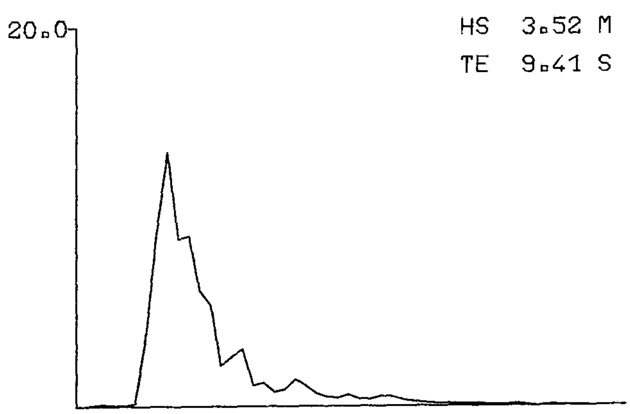

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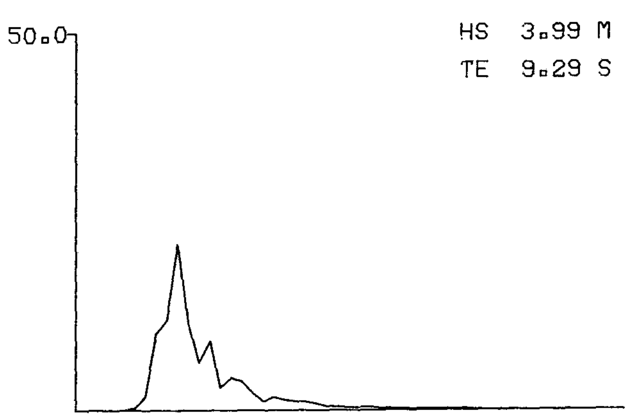

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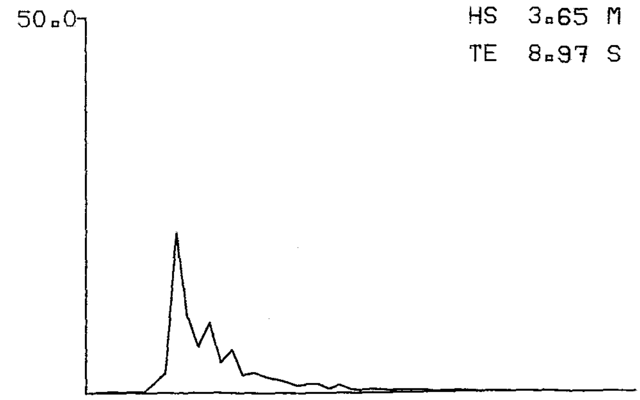

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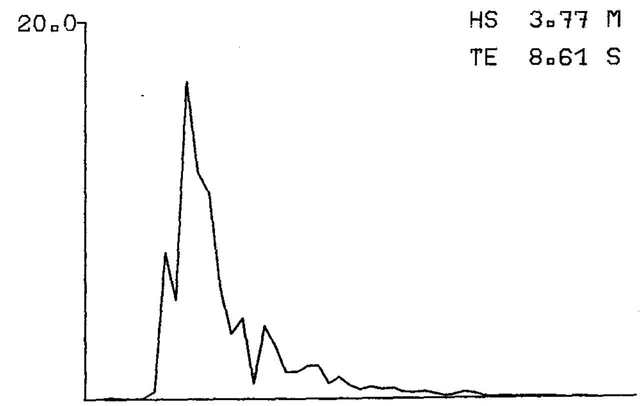

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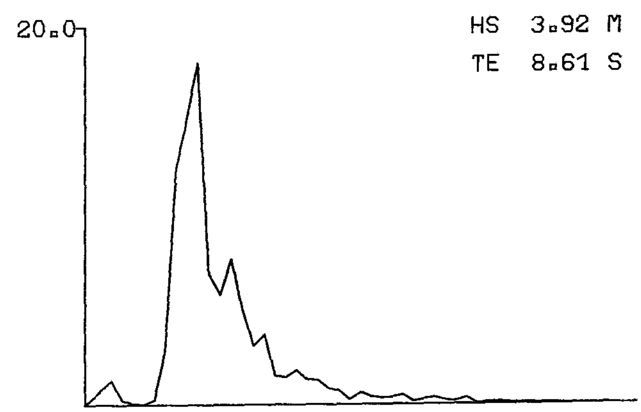

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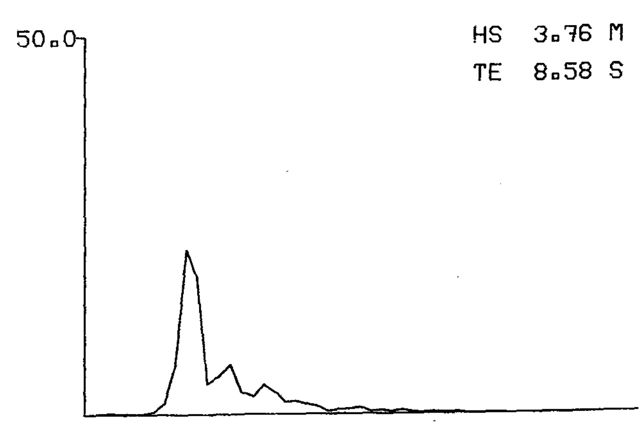

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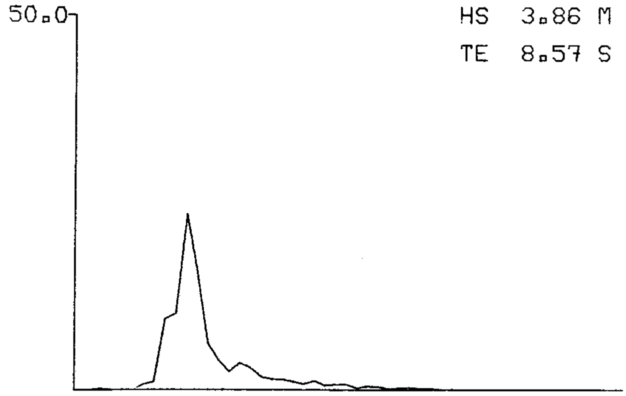

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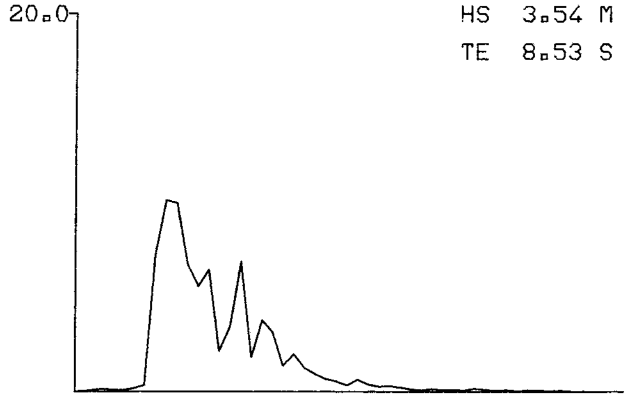

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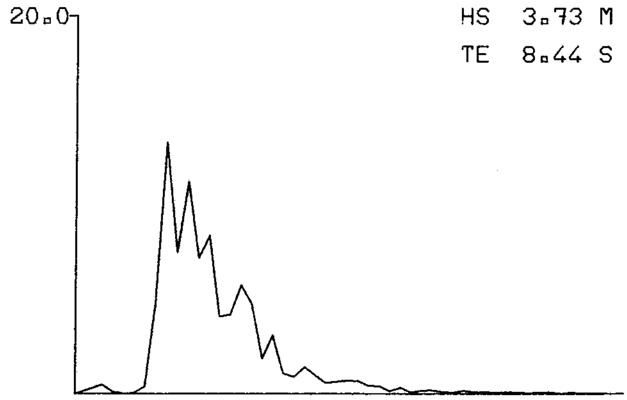

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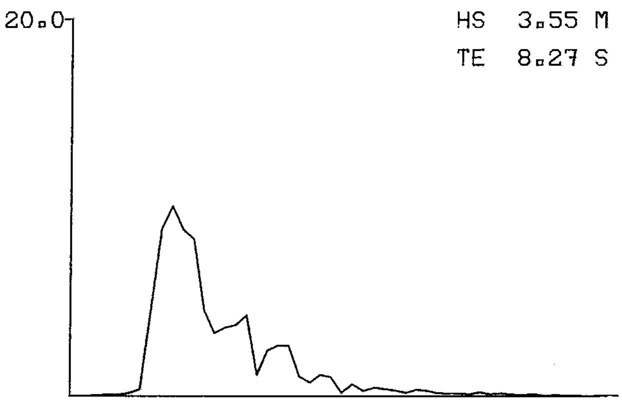

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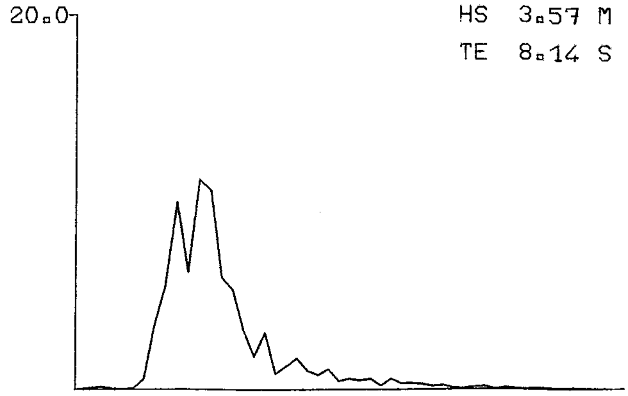

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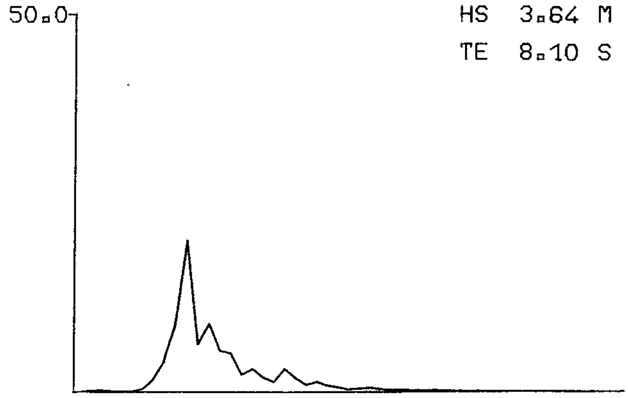

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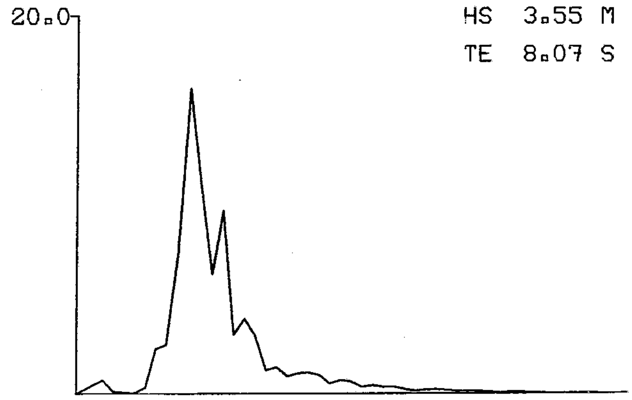

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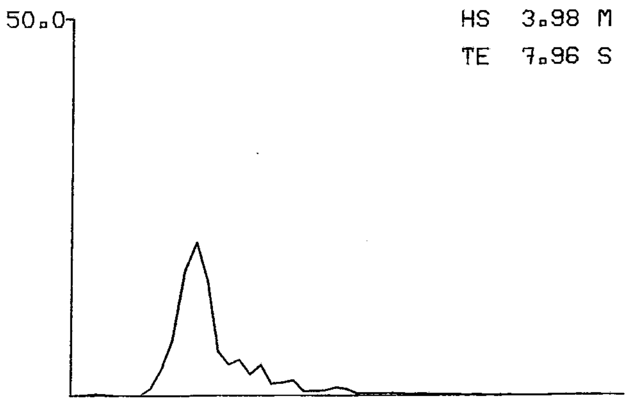

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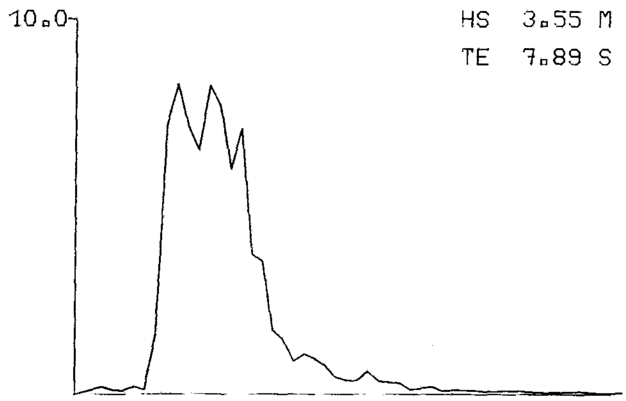

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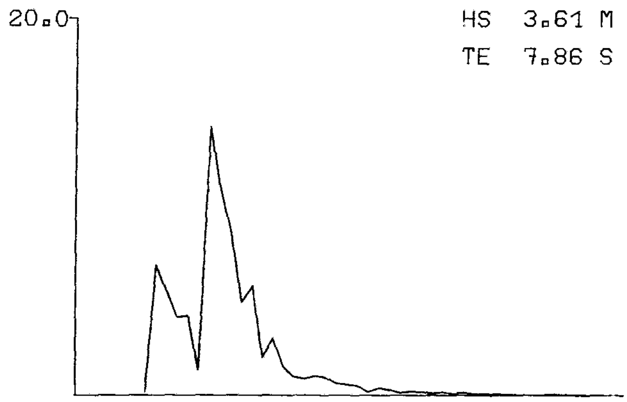

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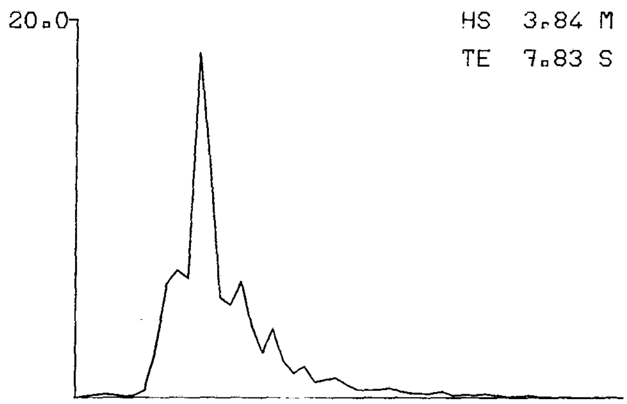

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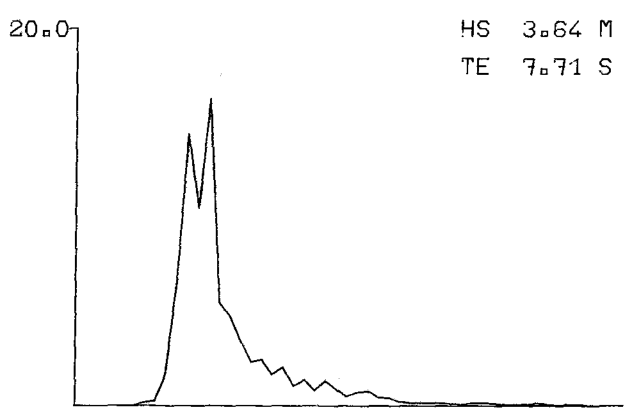

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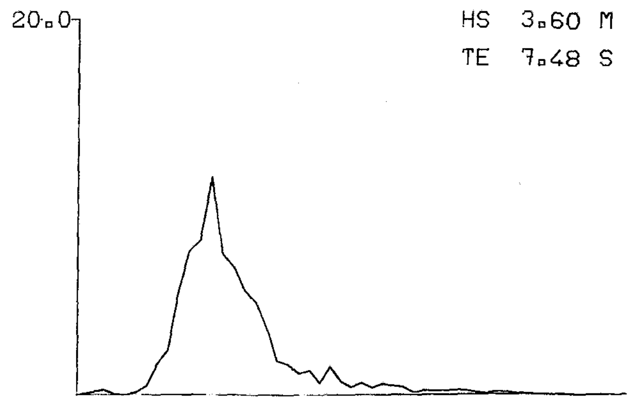

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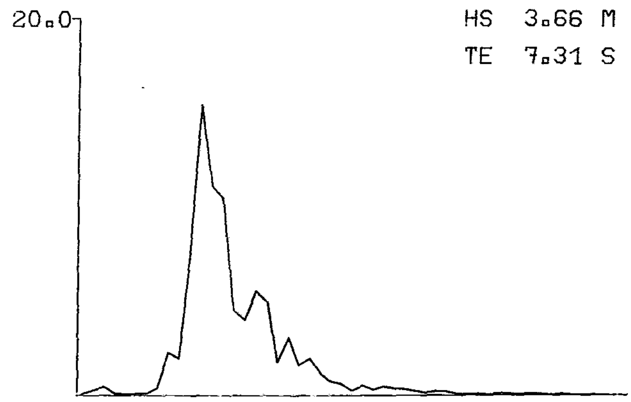

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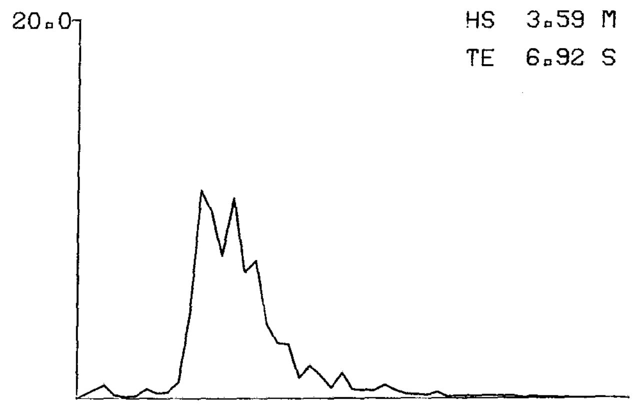

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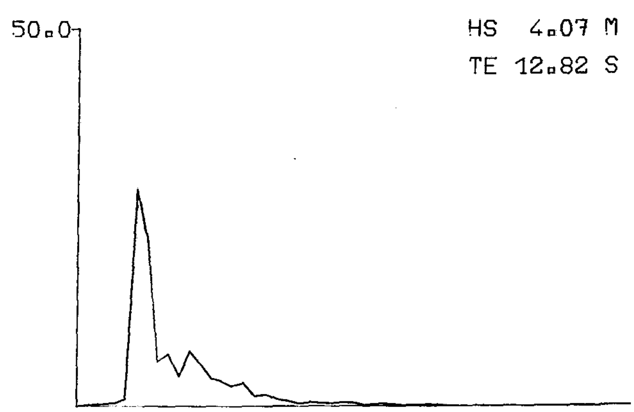

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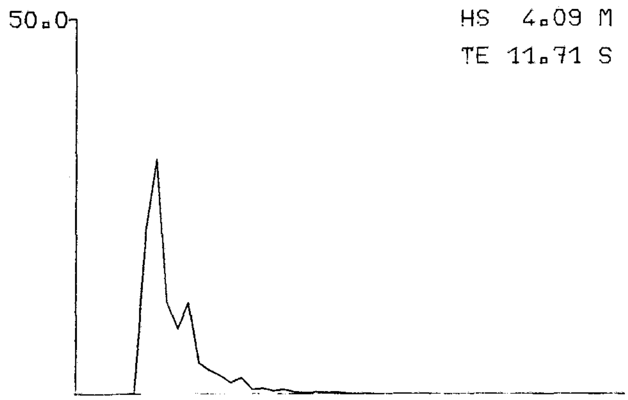

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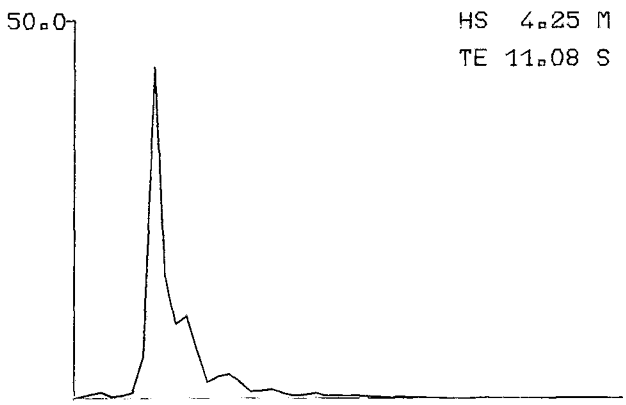

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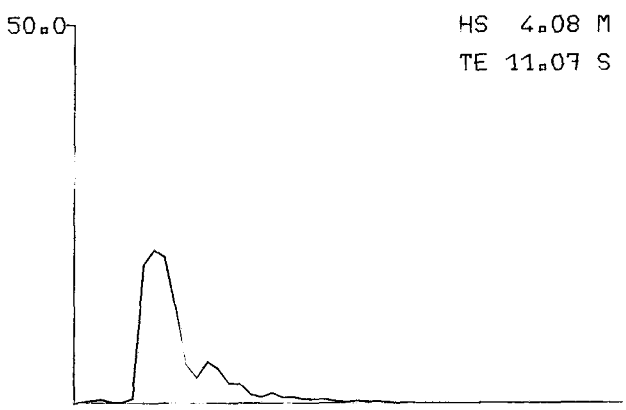

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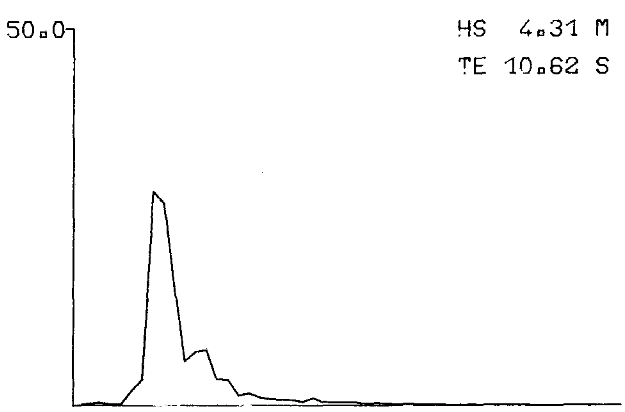

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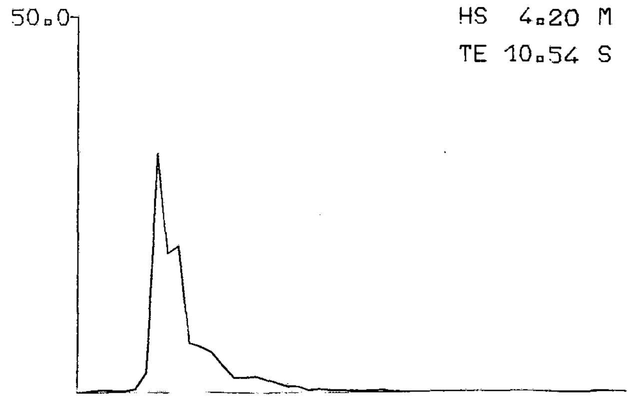

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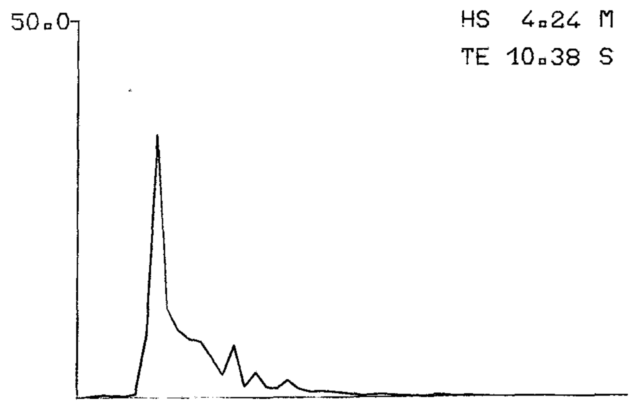

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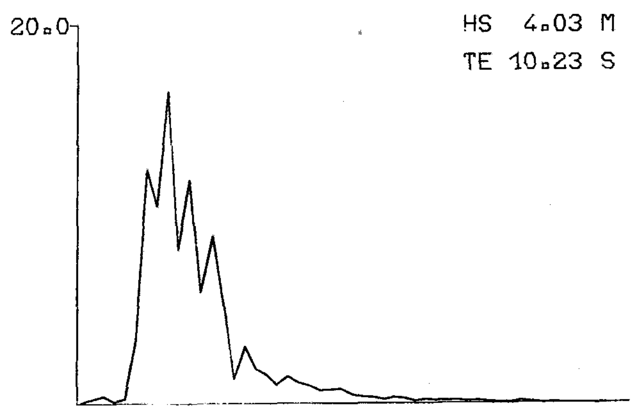

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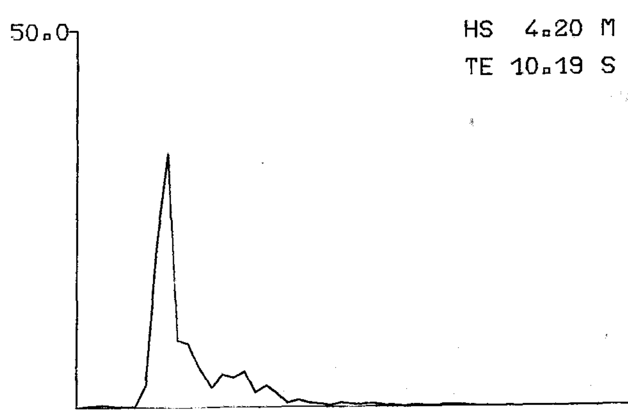

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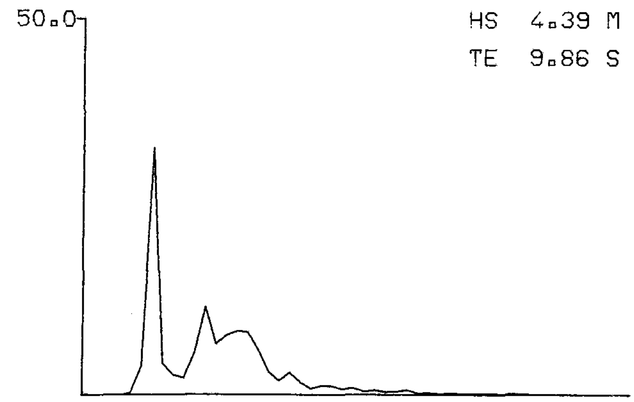

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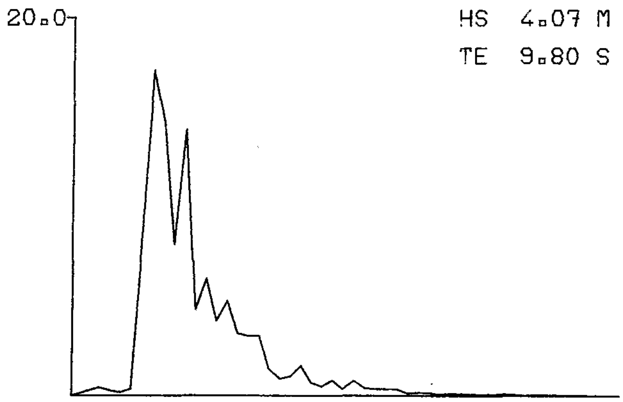

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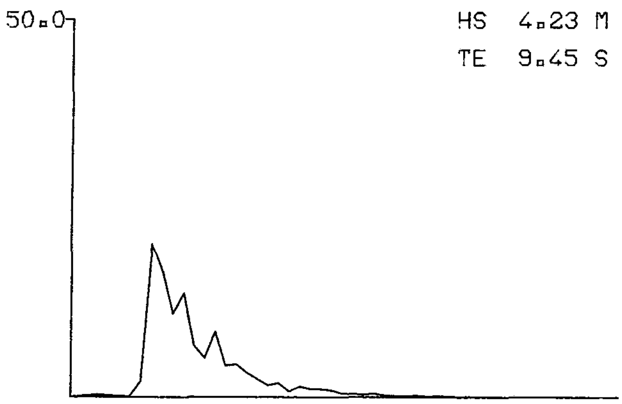

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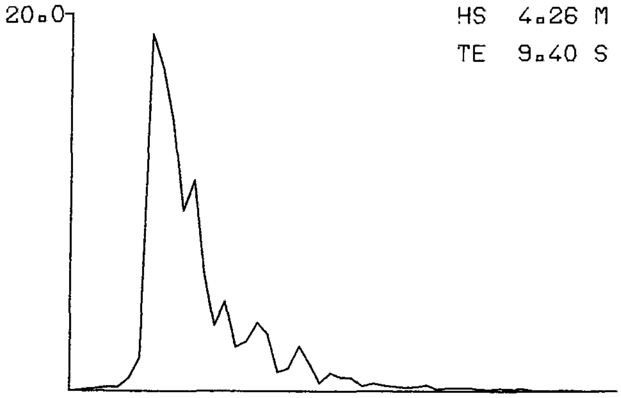

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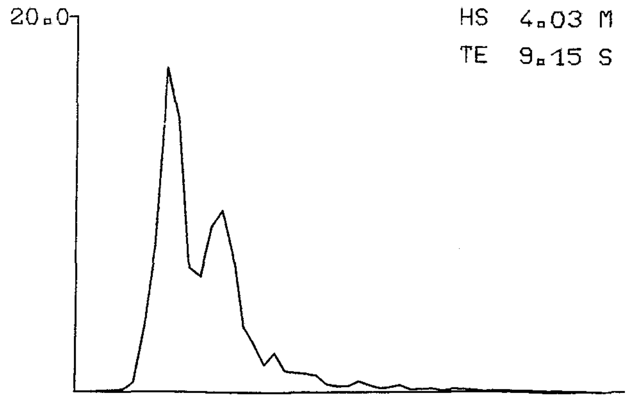

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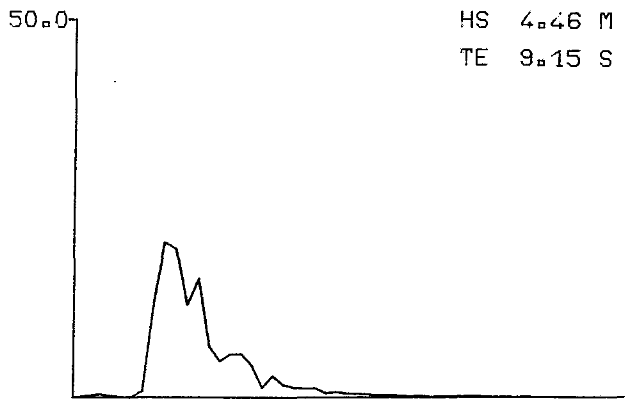

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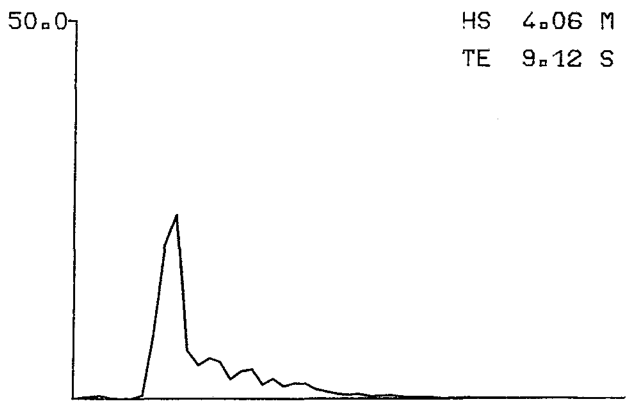

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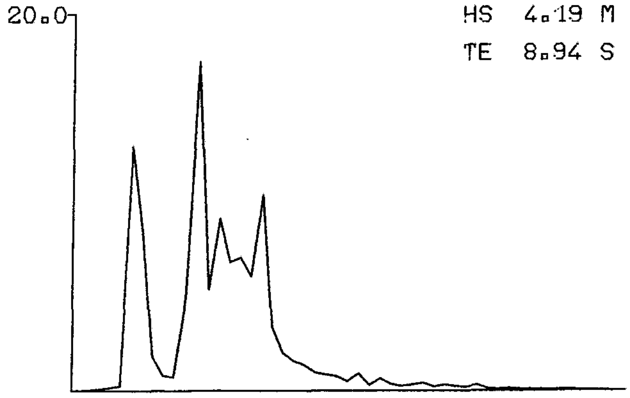

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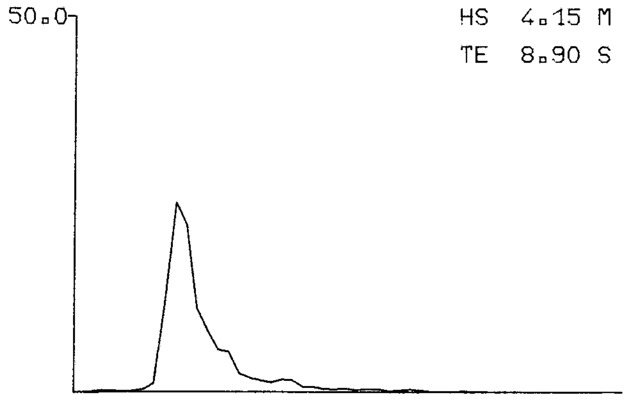

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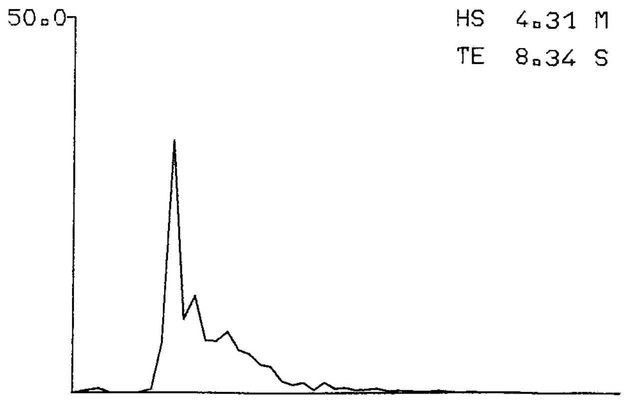

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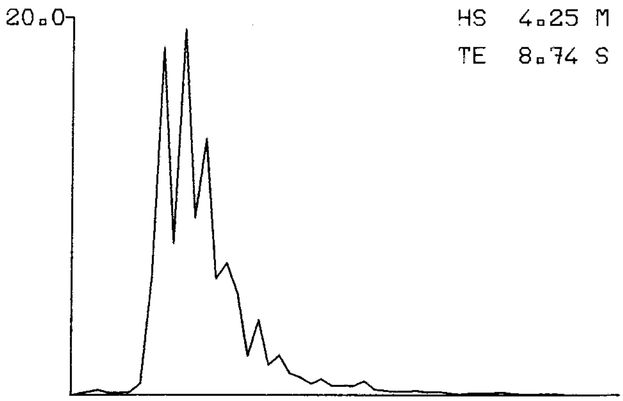

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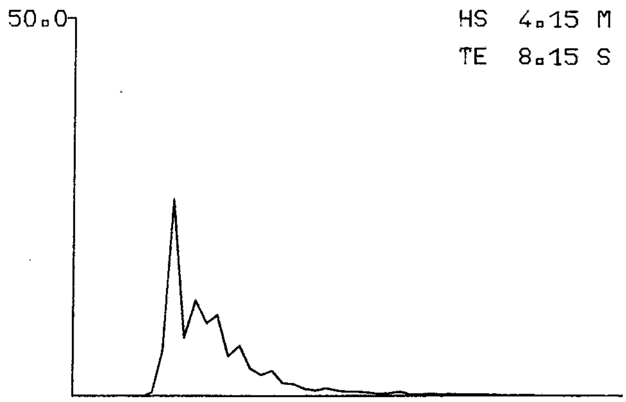

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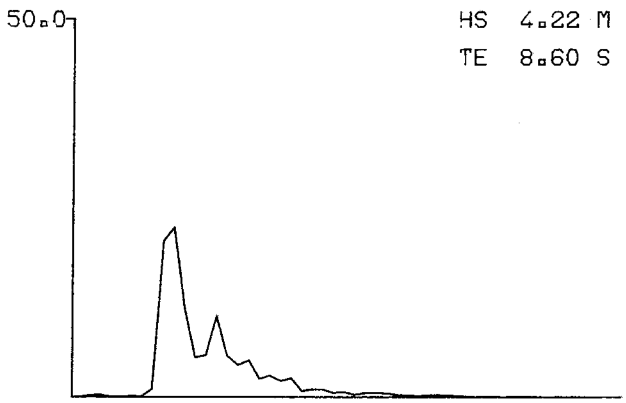

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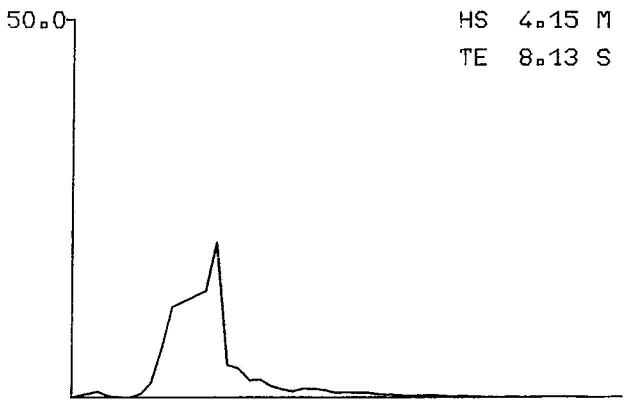

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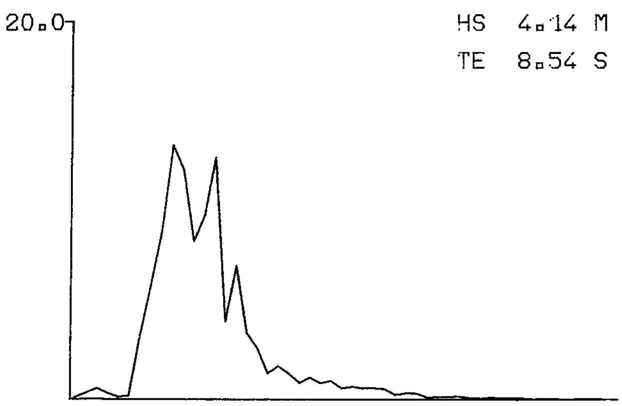

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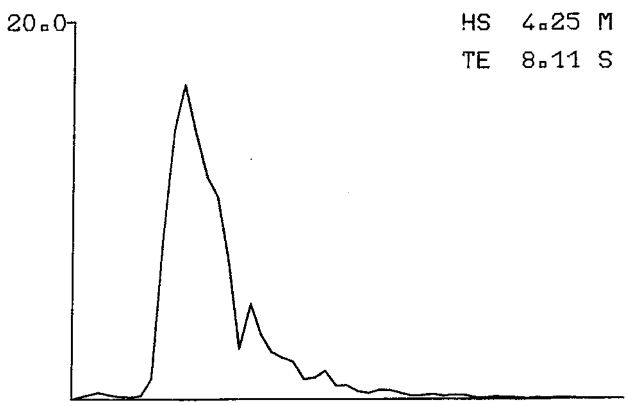

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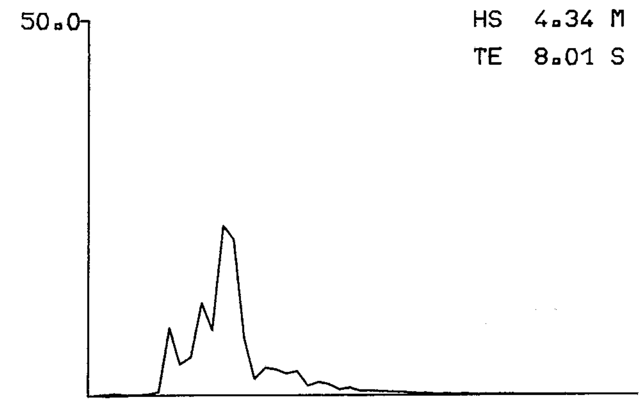

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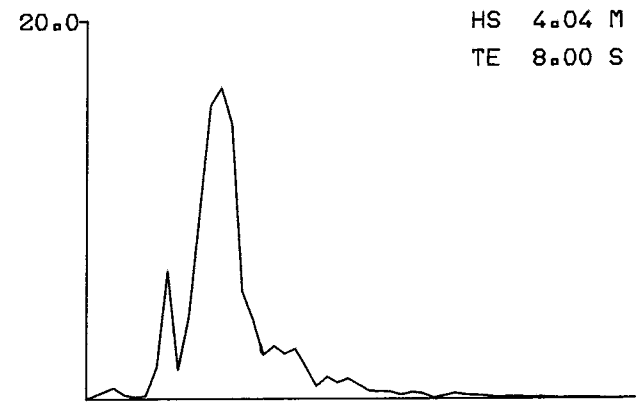

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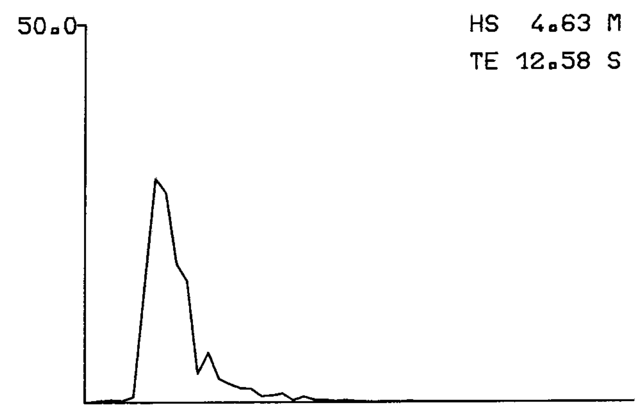

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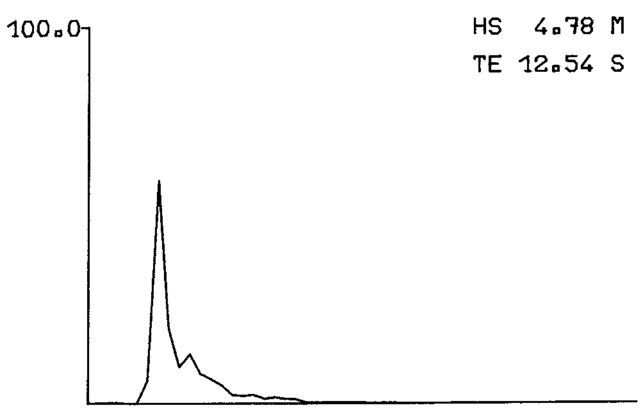

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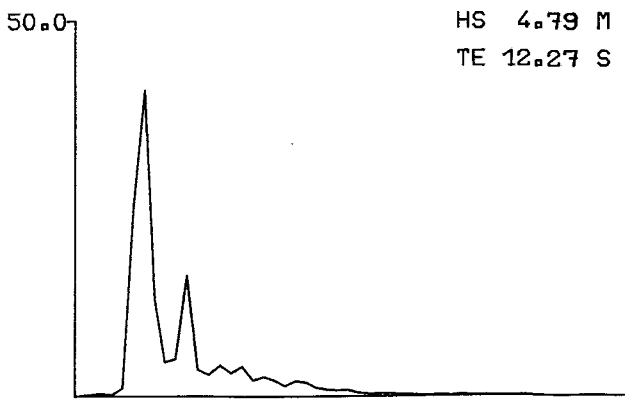

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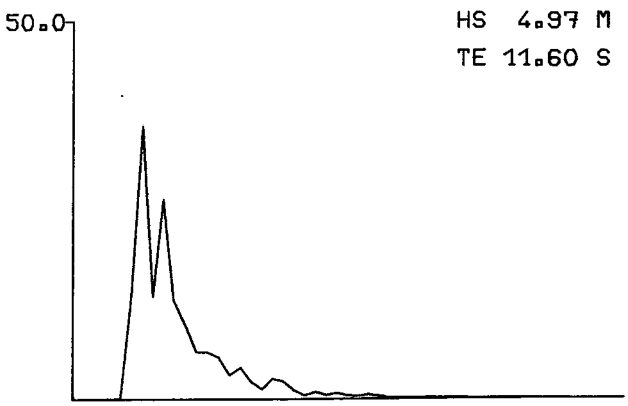

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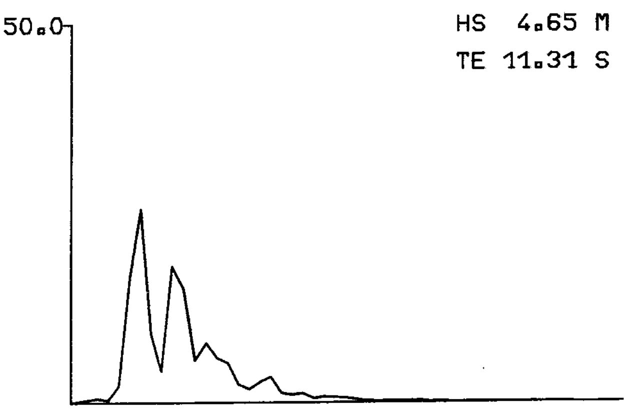

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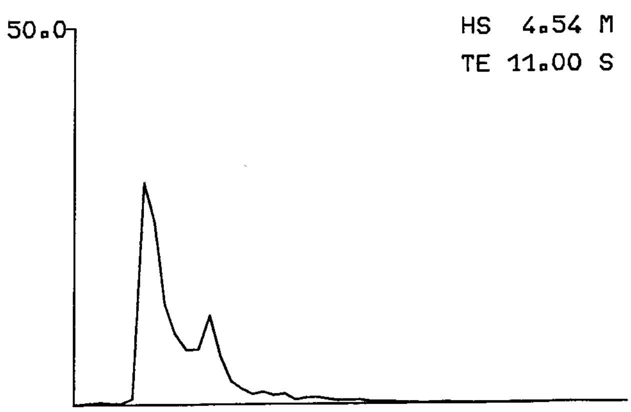

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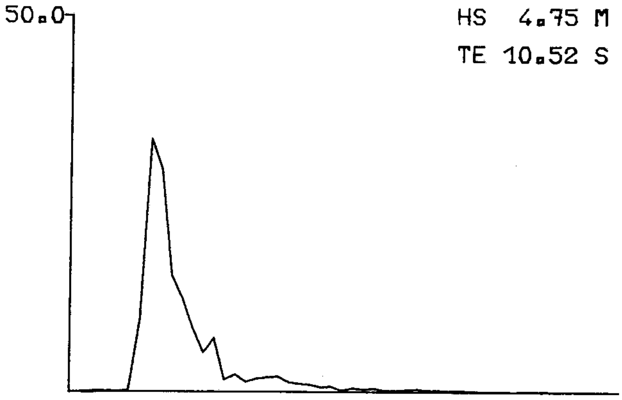

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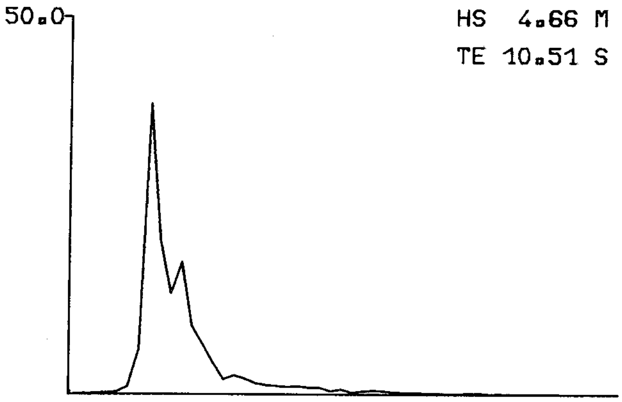

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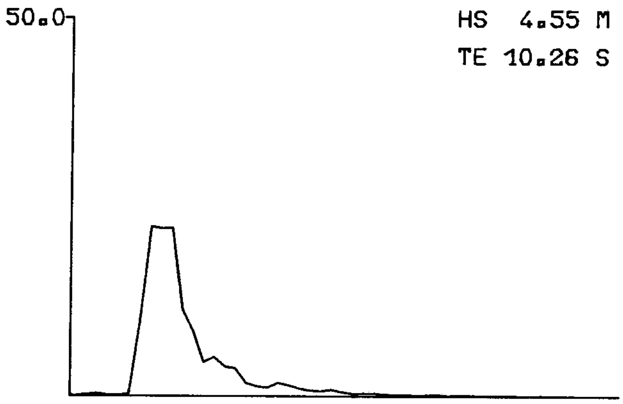

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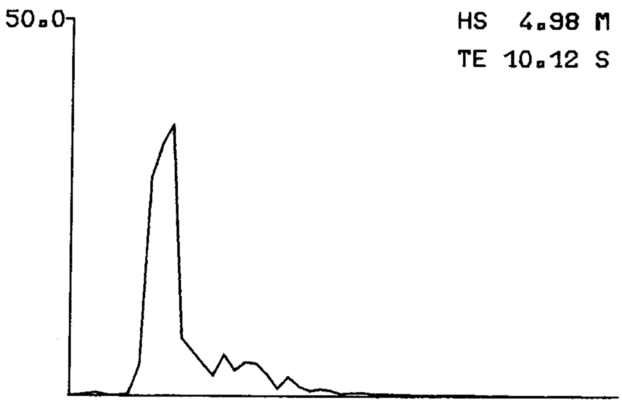

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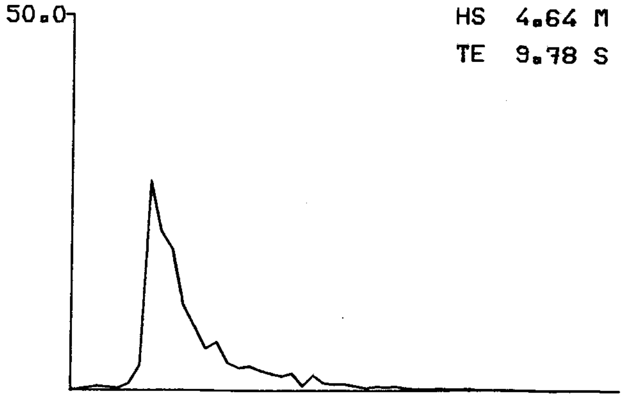

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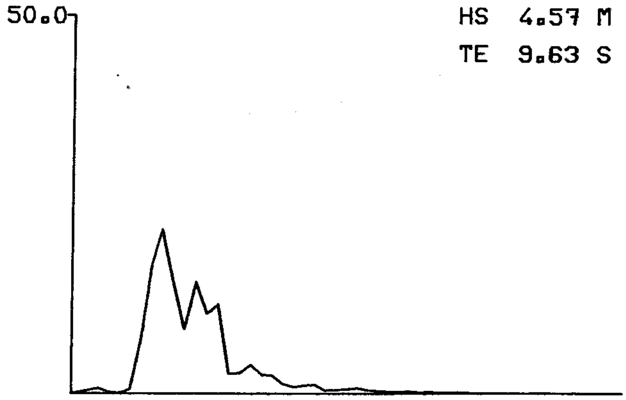

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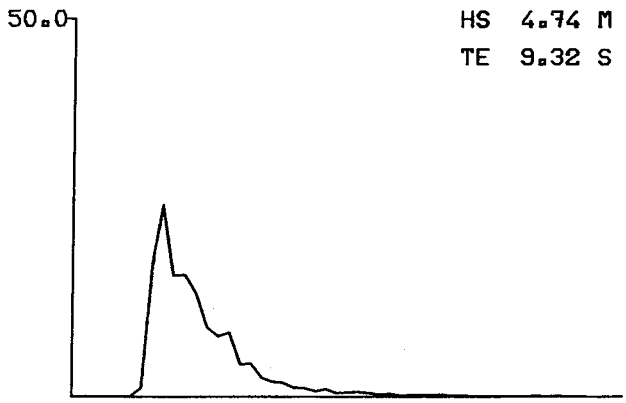

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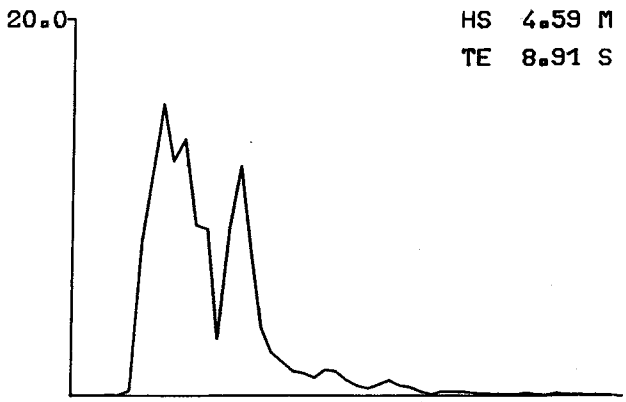

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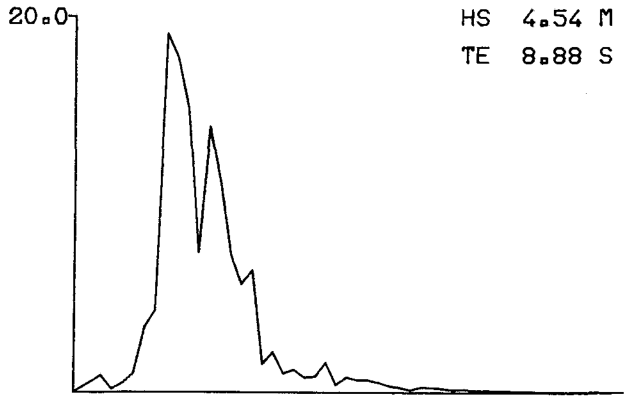

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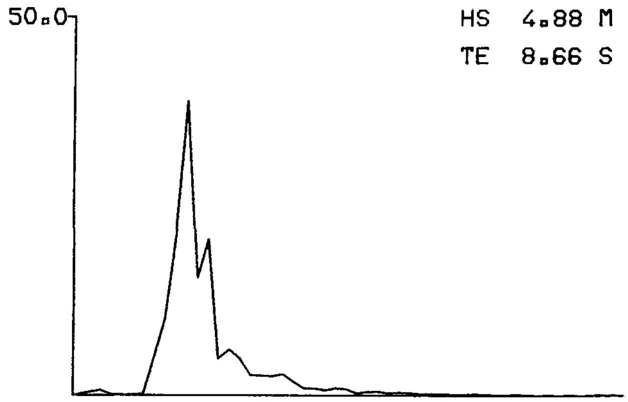

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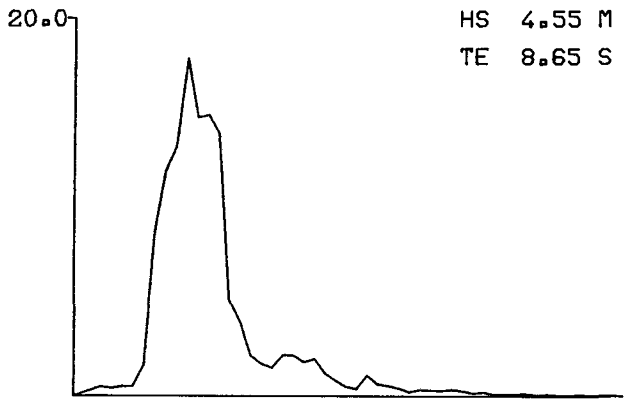

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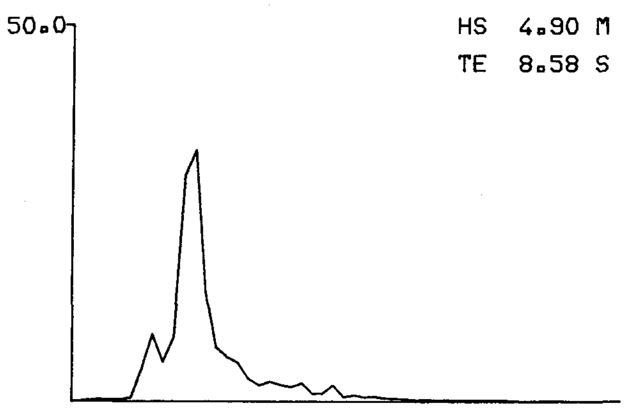

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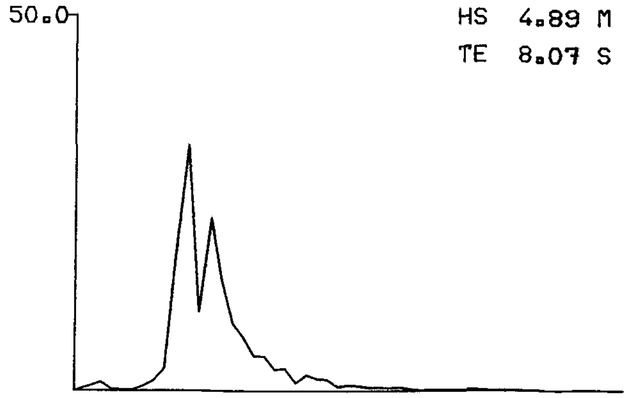

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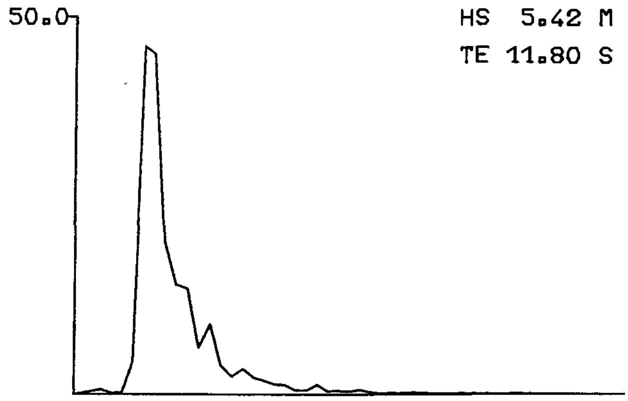

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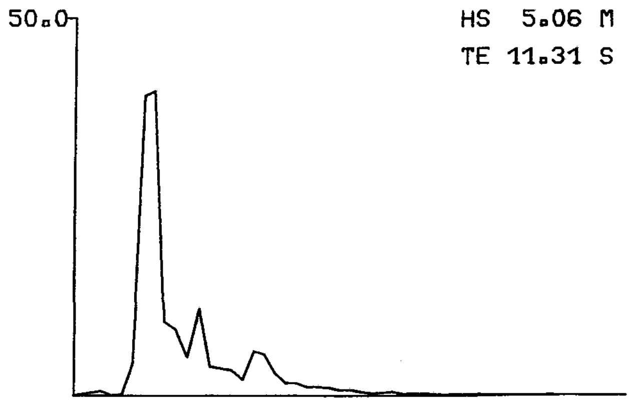

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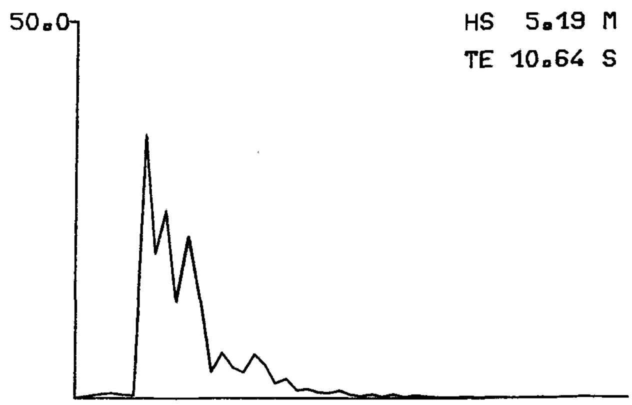

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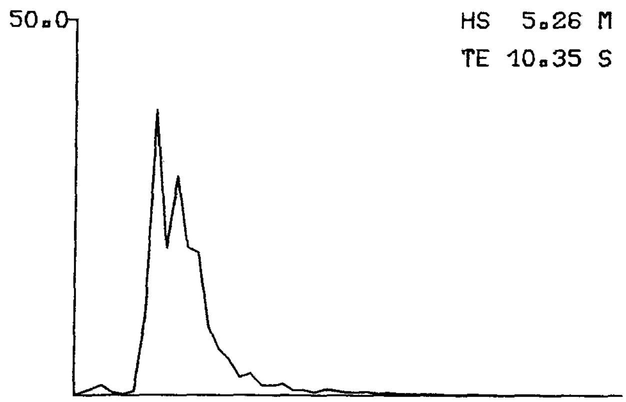

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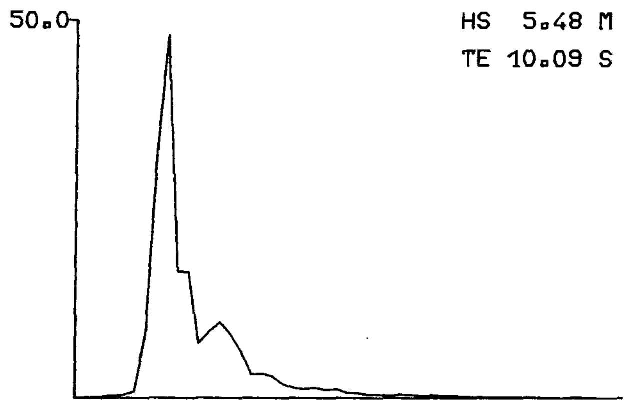

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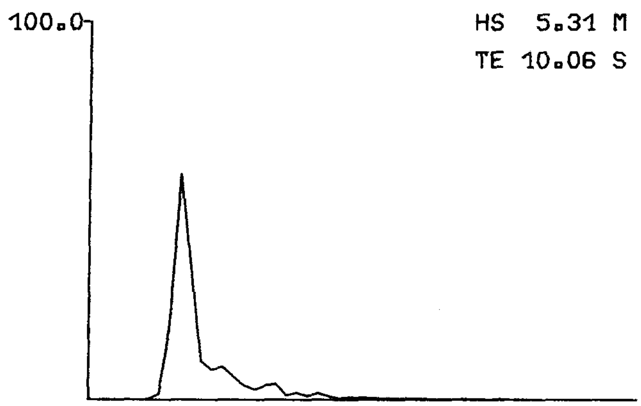

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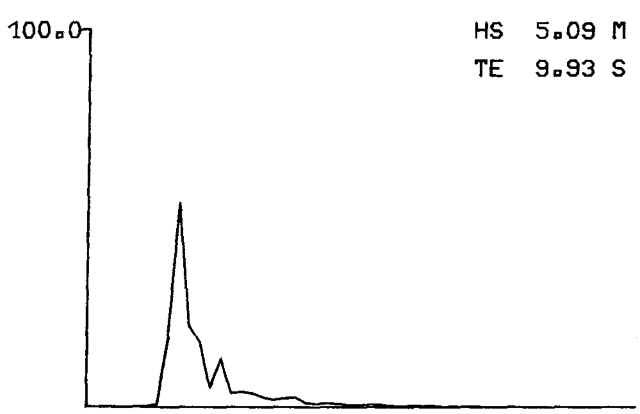

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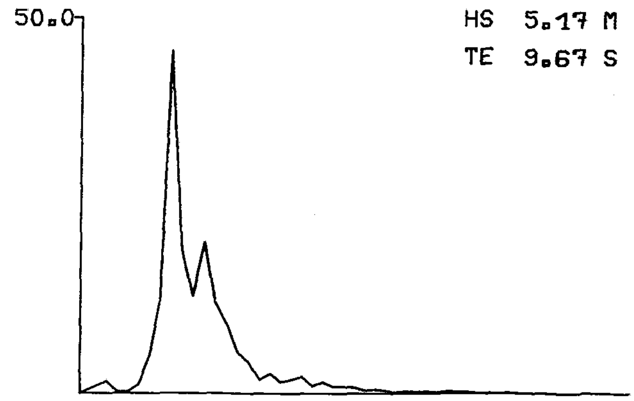

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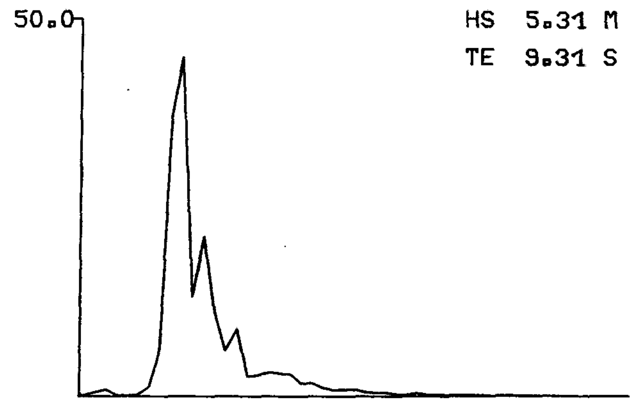

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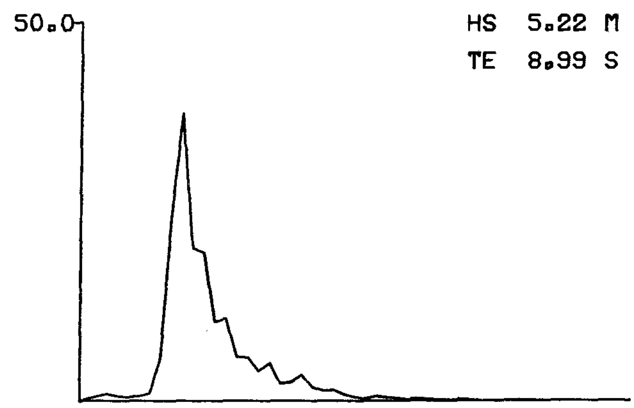

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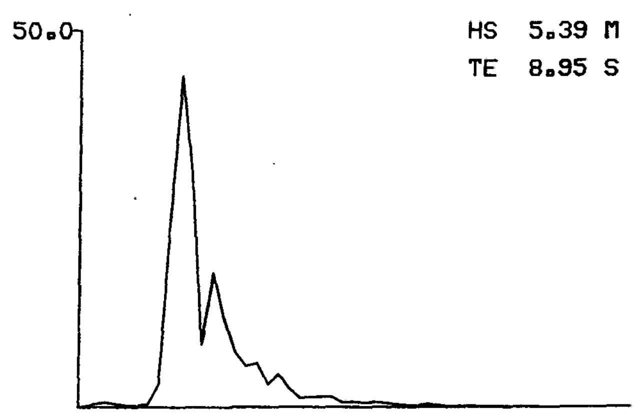

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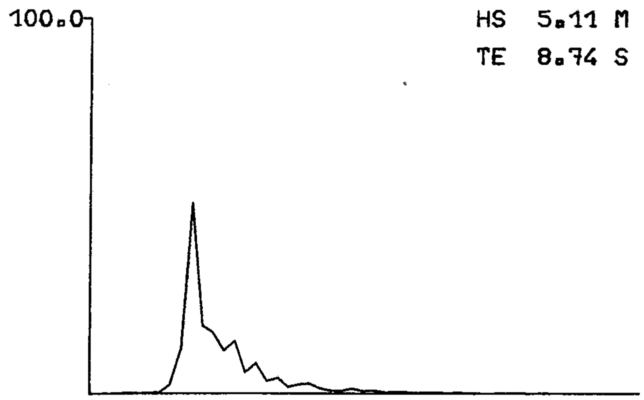

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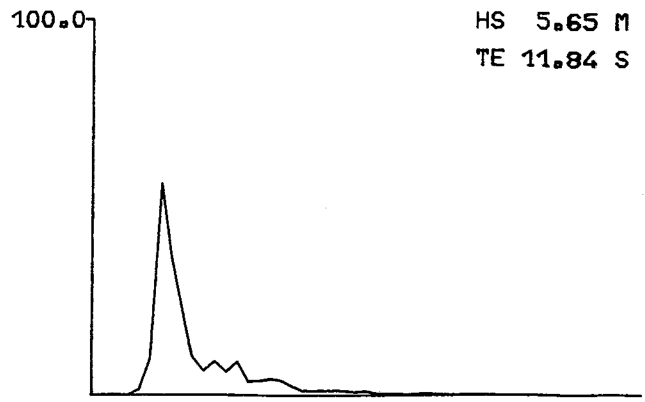

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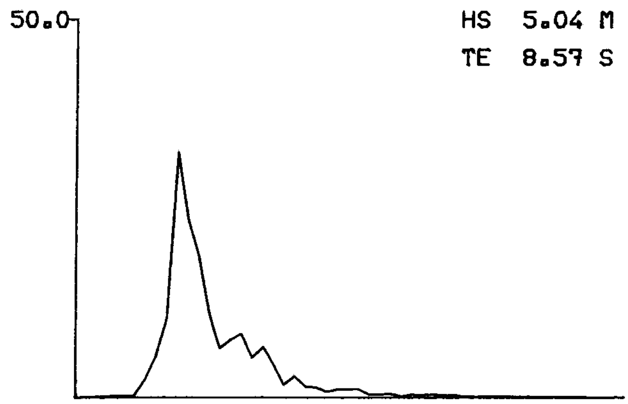

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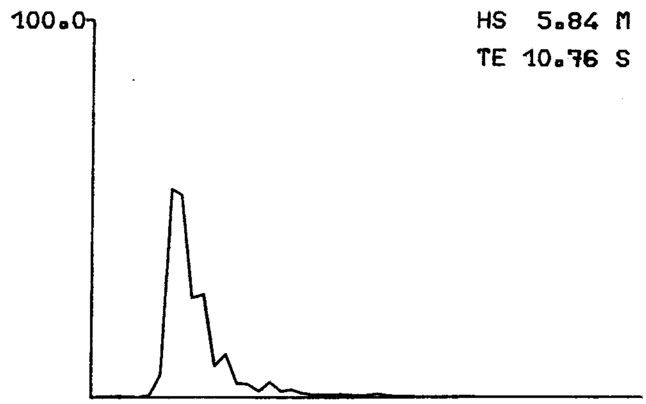

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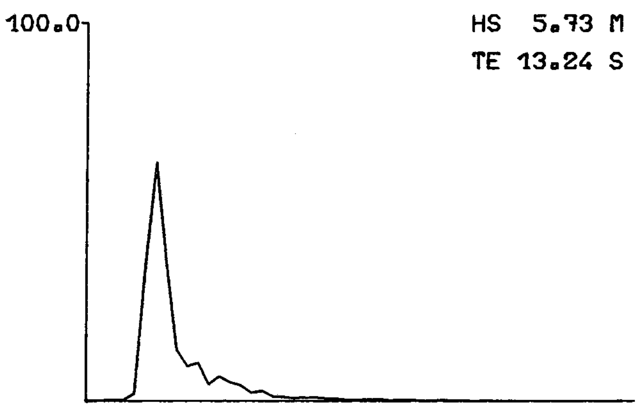

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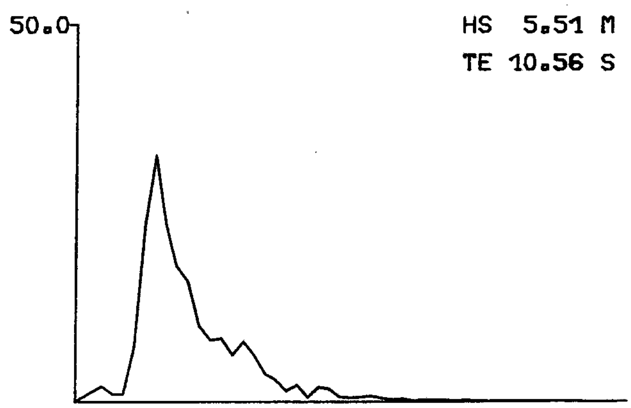

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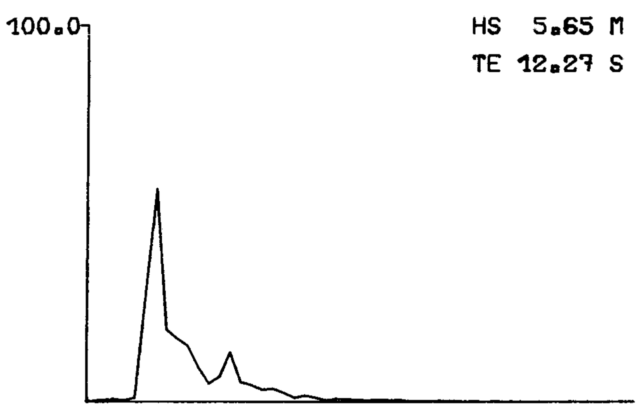

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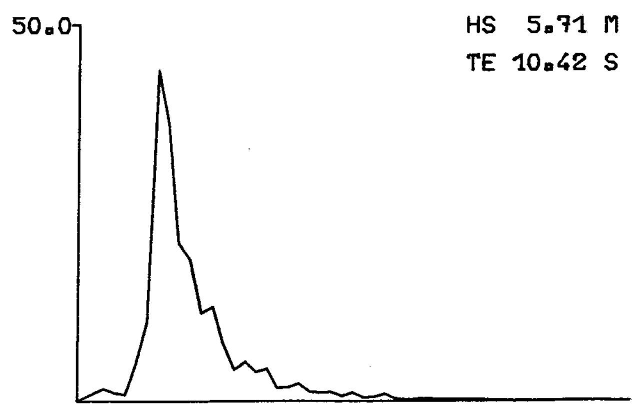

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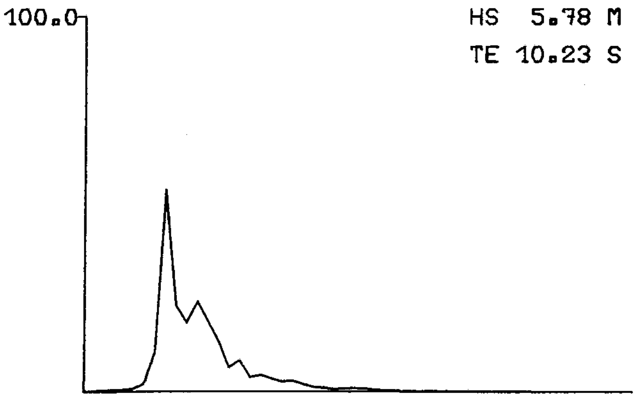

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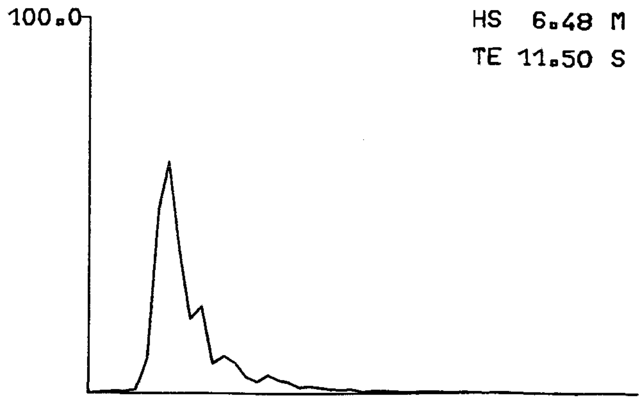

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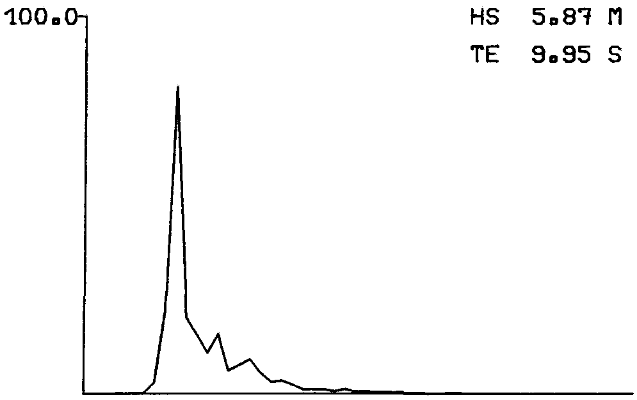

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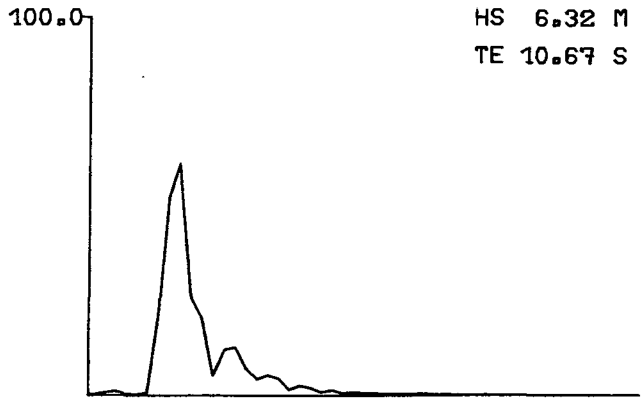

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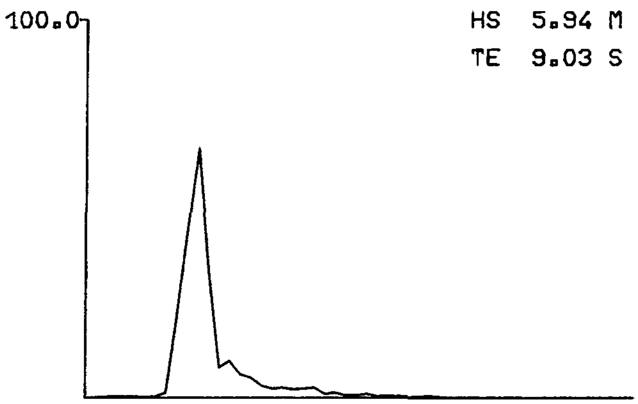

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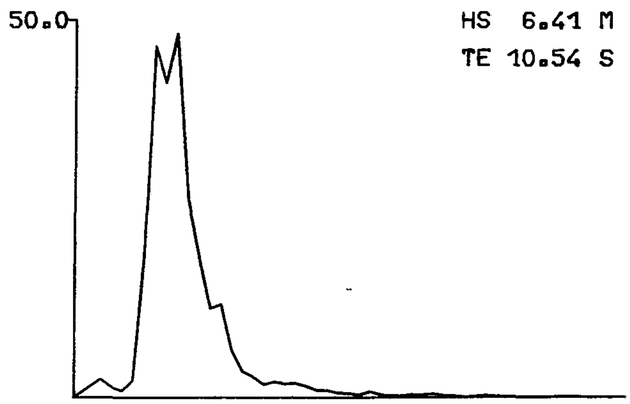

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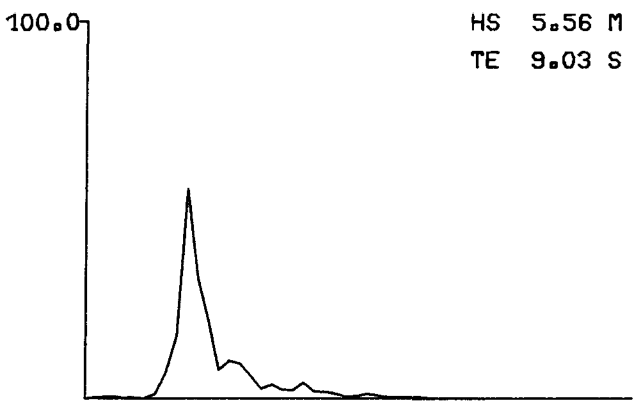

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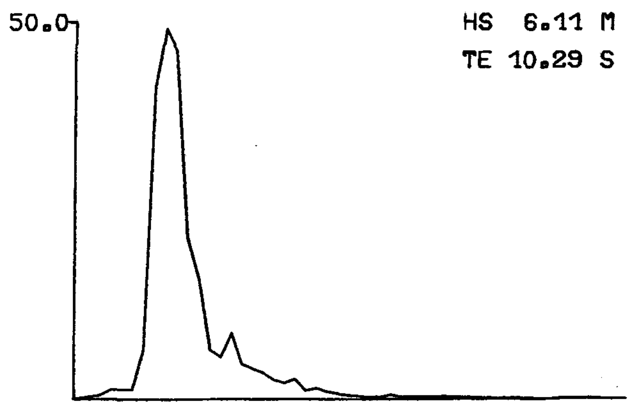

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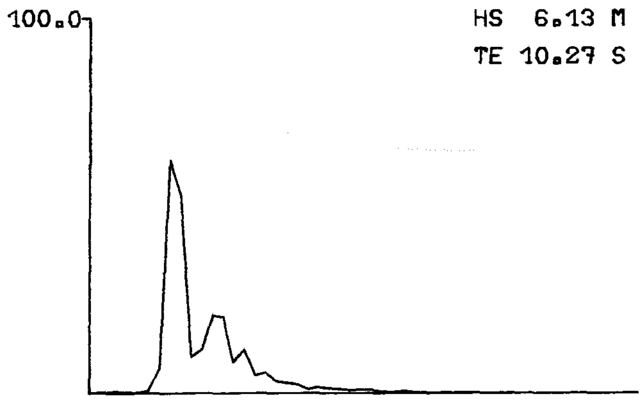

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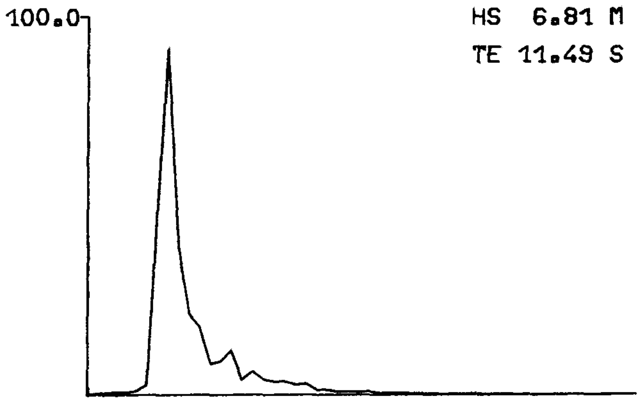

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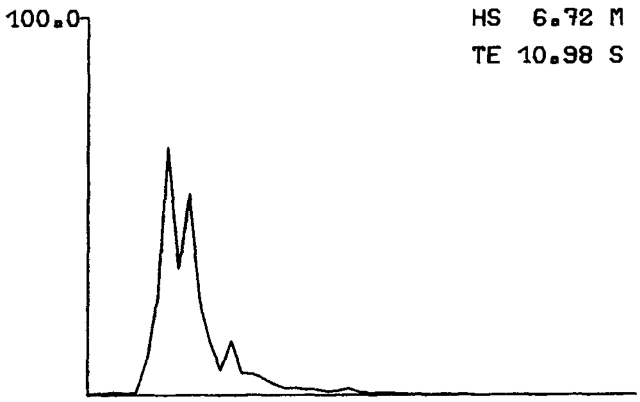

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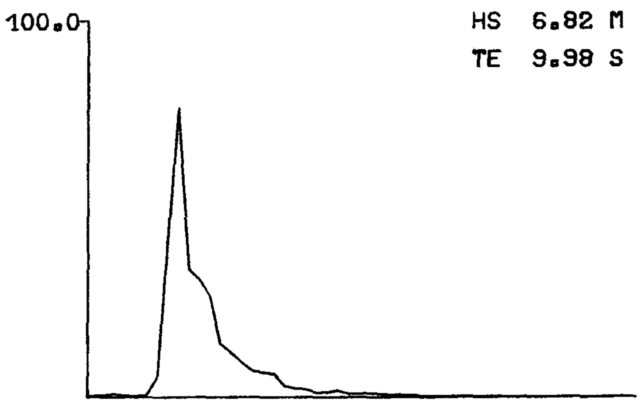

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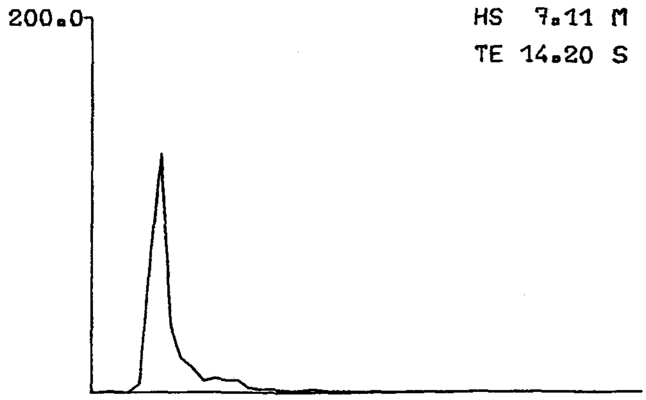

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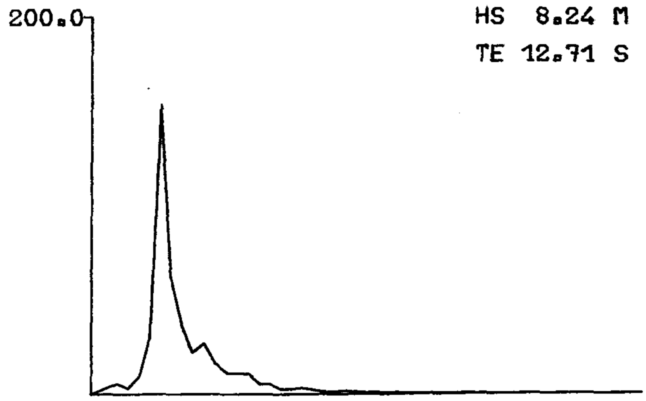

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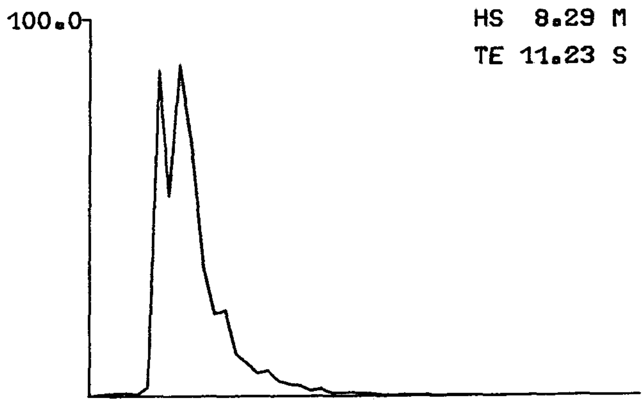

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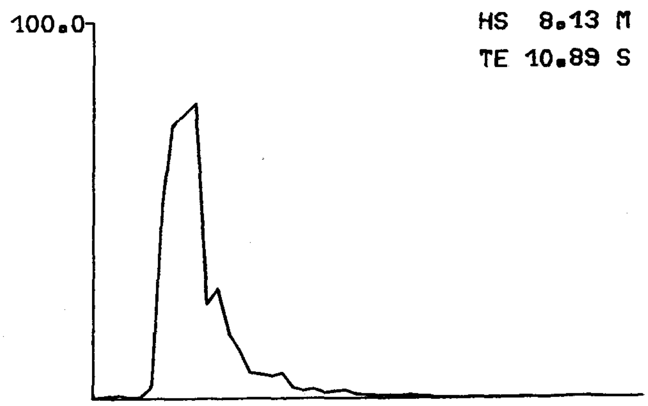

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