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1993-1995 Climatic Summary for the Network for Engineering Monitoring of the Ocean

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Final report

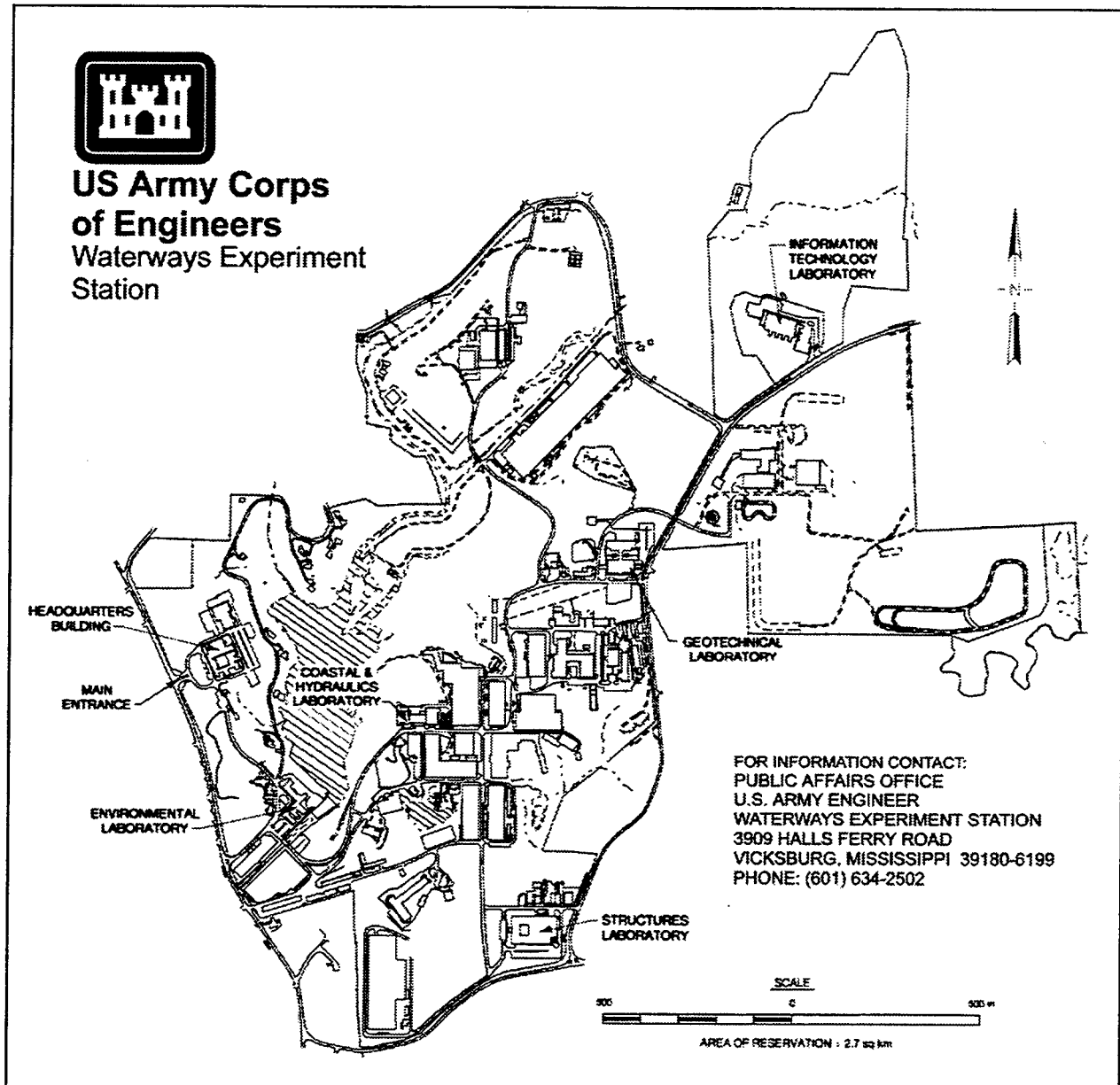
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Preface

This report was prepared in the Coastal and Hydraulics Laboratory (CHL), U.S. Army Engineer Waterways Experiment Station (WES). The CHL was formed in October 1996 with the merger of the WES Coastal Engineering Research Center and Hydraulics Laboratory. Dr. James R. Houston is the director of the CHL and Messrs. Richard A. Sager and Charles C. Calhoun, Jr., are Assistant Directors. This report is a product of: the Coastal Field Data Collection Program (CFDCP) Field Wave Gaging Program; U.S. Army Engineer District, Baltimore; U.S. Army Engineer District, Chicago; U.S. Army Engineer District, New York; U.S. Army Engineer District, Philadelphia; and Hawaii Department of Transportation. The CFDCP Manager is Ms. Carolyn Holmes. Program Monitor of the CFDCP at Headquarters, U.S. Army Corps of Engineers, is Mr. John H. Lockhart, Jr.

This report was prepared under the supervision of Mr. William L. Preslan, Chief of the Prototype Measurement and Analysis Branch (PMAB), CHL, and Mr. Thomas W. Richardson, Chief, Engineering Development Division, CHL. At the time of preparation of this report, Director of WES was Dr. Robert W. Whalin, and Commander was COL Bruce K. Howard, EN.

Wave data presented in this report are obtained from the Network for Engineering Monitoring of the Oceans (NEMO). NEMO is operated by PMAB team members. The content and format of the tables and plots were developed by Mr. William D. Corson, PMAB. This report was prepared by Ms. Margaret Sabol, PMAB.

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1 Introduction

This report, which uses a format established in an earlier report by Sabol and McGehee (1995)¹, has been prepared by the U.S. Army Engineer Waterways Experiment Station's Coastal and Hydraulics Laboratory, Prototype Measurement and Analysis Branch (PMAB). It contains summary information for ten wave gauges in operation during the period 1993 - 1995 along the continental U.S. coasts and in the Hawaiian Islands. One of the gauges is in Lake Michigan (Appendix A), six are along the U.S. Atlantic coast, (Appendix B), one is in the eastern Gulf of Mexico, (Appendix C), and two are off the island of Lanai in Hawaii (Appendix D). Names and locations of the gauges are listed in Table 1 and shown in Figures A1, B1, C1, and D1. These gauges are part of the Network for Engineering Monitoring of the Oceans (NEMO), operated by PMAB.

Table 1
NEMO Sites summarized in This Report

Site	Location	Depth, m	Latitude/Longitude deg
IL001	Chicago, IL	10	41.92 N 87.57 W
NY001	Westhampton, NY	10	40.79 N 72.62 W
NJ001	Long Branch, NJ	8	40.30 N 73.97 W
DE001	Dewey Beach, DE	9	38.70 N 75.06 W
MD001	Ocean City, MD	9	38.40 N 75.05 W
MD002	Ocean City, MD	9	38.34 N 75.07 W
VA001	Virginia Beach, VA	8	36.85 N 75.97 W
FL002	Sarasota, FL	7	27.30 N 82.59 W
HI001	Lanai, HI	21	20.79 N 156.99 W
HI002	Lanai, HI	6	20.79 N 156.98 W

¹ 1993 Annual Climatic Summary for the Network for Engineering Monitoring of the Ocean. (1995). Miscellaneous Paper CERC-95-7, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

2 Description of Parameters

The standard parameters reported in this document are wave height, period, and direction. These parameters are derived from a two-dimensional power density spectrum of the sea surface using spectral analysis of the sensors' output and linear wave theory. The parameters are defined as follows (see the *Shore Protection Manual*¹ for additional information):

- a. Wave height, H_{m0} : Spectrally derived wave height, in meters; equivalent to time-domain-derived significant wave height in deep water.
- b. Wave period, T_p : Peak spectral period, in seconds; inverse of the frequency of the peak (highest energy) of the one-dimensional power spectrum.
- c. Wave direction, D_p : Peak spectral direction, in degrees clockwise from true North; mean direction from which energy is coming at the peak of the one-dimensional power spectrum.
- d. Energy spectra: Directional wave spectra and nondirectional wave spectra, in M^2/Hz ; wave elevation variance as a function of wave direction (for directional gauges) and wave frequency. In this report, direction per frequency interval reported is the mean direction of the frequency interval.

Missing data and data that failed to pass quality control tests are excluded from the summaries.

¹ *Shore Protection Manual*. (1984). 4th ed., 2 Vols., U.S. Army Engineer Waterways Experiment Station, Coastal Engineering Research Center, U.S. Government Printing Office, Washington, DC.

3 Description of Products

Five types of data summary products are provided in this report:

- a. Number of records tables.
- b. Mean/max tables.
- c. Percent occurrence tables.
- d. Wave rose plots.
- e. Spectral density plots.

Descriptions and examples of each type of product will be presented in the sections of the report that follow.

Description of Data Collection Scheme

Data are collected every 4 hr at all sites. Data may be collected hourly during high wave events. High wave events are defined as H_{m0} greater than 1 m for sites in the Great Lakes and West Florida Coast and H_{m0} greater than 1.5 m for sites on the Atlantic Coast and in the Hawaiian Islands. Data may also be collected hourly during special testing or monitoring or by special request from the sponsor.

Number of Records

The number of records tables provide a monthly count of the number of records in each of three categories: records that have an H_{m0} , those that have an H_{m0} and T_p , and those that have an H_{m0} , T_p , and D_p . For this report, all records used have H_{m0} , at least. For data records that have an H_{m0} of less than 0.2 m, the T_p and D_p are not reported because the capabilities of the analysis and sensors become limited at extremely low wave heights. Directional data may be missing for any of several reasons. The

gauge may be nondirectional, the directional data may have been withheld for evaluation, or there may have been a sensor failure on one or two of the three sensors deployed. Data from the third sensor can be used to compute height and period.

There is often a difference in the number of records collected from different sites for a given time period. This may be due to hourly data collection or gauge malfunctions.

The number of records table for NJ001, Long Branch, NJ (Table B4), indicates that for June 1993, there are 257 records that have H_{m0} , 256 with H_{m0} and T_p , and 131 records with H_{m0} , T_p , and D_p .

Mean/Max Tables

The mean/max tables indicate mean and maximum H_{m0} by month for the year. A yearly mean H_{m0} is included. The other annual statistics listed in this table are mean T_p (in seconds), most frequent 22.5-deg direction band (in degrees azimuth), the standard deviation of H_{m0} and T_p , the largest H_{m0} along with its associated T_p , D_p , and the date of the occurrence. Directional bands are centered on 22.5-deg increments such as 0, 22.5, 45, etc.

The mean/max table for DE001, Dewey Beach, DE (Table B8) indicates that while the largest mean H_{m0} occurred in the month of February 1993, the largest H_{m0} , 4.2 m, occurred on March 3, 1994, at 500 hr Universal Coordinate Time (UTC), with an associated T_p of 10.7 sec and D_p of 41 deg.

Percent Occurrence Tables

Percent occurrence tables indicate the percent of the total number of records for a given site that have a specified H_{m0} and T_p . Two types of percent occurrence tables are provided: azimuth tables and tables for all directions. The azimuth tables give the percent occurrence by height and period of waves within a particular azimuth band. Height bands are 0.5-m increments; period bands are ten uneven increments from below 4.6 sec to above 18.3 sec (Table 2). Azimuth bands are centered on 22.5-deg increments such as 0, 22.5, 45, etc. (Table 3). All percent values in the azimuth tables are percent times 1,000 to provide for greater readability with preservation of accuracy. Totals of the height category are provided at the right of each height row. Totals for each period range are at the bottom of each period column. Results are in summary form at the bottom of the tables showing the mean H_{m0} and T_p , the largest H_{m0} and the number of

**Table 2
Frequency Ranges Used in Data Analysis**

Midband		Band Range for Period sec	Grouping for Percent Occurrence Tables sec
Frequency sec	Period sec		
0.320	3.1	$3.0 \leq T_p < 3.1$	3.0 - 4.6
.	.	.	
.	.	.	
.	.	.	
0.222	4.5	$4.4 \leq T_p < 4.6$	4.6 - 5.6
0.213	4.7	$4.6 \leq T_p < 4.8$	
0.203	4.9	$4.8 \leq T_p < 4.9$	
0.200	5.0	$4.9 \leq T_p < 5.1$	
0.187	5.3	$5.1 \leq T_p < 5.4$	
0.182	5.5	$5.4 \leq T_p < 5.6$	
0.175	5.7	$5.6 \leq T_p < 5.8$	
0.167	6.0	$5.8 \leq T_p < 6.1$	5.6 - 8.0
0.161	6.2	$6.1 \leq T_p < 6.4$	
0.152	6.6	$6.4 \leq T_p < 6.8$	
0.143	7.0	$6.8 \leq T_p < 7.1$	
0.137	7.3	$7.1 \leq T_p < 7.5$	
0.128	7.8	$7.5 \leq T_p < 8.0$	
0.120	8.3	$8.0 \leq T_p < 8.6$	8.0 - 10.6
0.111	9.0	$8.6 \leq T_p < 9.2$	
0.105	9.5	$9.2 \leq T_p < 9.8$	
0.097	10.3	$9.8 \leq T_p < 10.6$	10.6 - 11.6
0.091	11.0	$10.6 \leq T_p < 11.6$	
0.082	12.2	$11.6 \leq T_p < 12.8$	11.6 - 12.8
0.074	13.6	$12.8 \leq T_p < 14.1$	12.8 - 14.1
0.066	15.1	$14.1 \leq T_p < 15.9$	14.1 - 15.9
0.058	17.1	$15.9 \leq T_p < 18.3$	15.9 - 18.3
0.050	19.8	$18.3 \leq T_p < 21.3$	18.3 - longer
.	.	.	
.	.	.	
.	.	.	
0.027	36.4	$32.0 \leq T_p < 40.9$	

Table 3
Ranges for Direction Intervals in Percent Occurrence Tables

Midband, deg ¹	Range, deg
0.0	348.75 ≤ Dp < 11.25
22.5	11.25 ≤ Dp < 33.75
45.0	33.75 ≤ Dp < 56.25
67.5	56.25 ≤ Dp < 78.75
90.0	78.75 ≤ Dp < 101.25
112.5	101.25 ≤ Dp < 123.75
135.0	123.75 ≤ Dp < 146.25
157.5	146.25 ≤ Dp < 168.75
180.0	168.75 ≤ Dp < 191.25
202.5	194.25 ≤ Dp < 213.75
225.0	213.75 ≤ Dp < 236.25
247.5	236.25 ≤ Dp < 258.75
270.0	258.75 ≤ Dp < 281.25
292.5	281.25 ≤ Dp < 303.75
315.0	303.75 ≤ Dp < 326.25
337.5	326.25 ≤ Dp < 348.75

¹ From true north.

cases included in that particular azimuth band. Azimuth tables are provided for all directional wave gauge stations.

Calculations for the azimuthal percent occurrence tables used only waves for which direction was determined; i.e., those with H_{m0} greater than 0.2 m. Therefore, for Sarasota and Chicago, where nearly 50 percent of the wave records had H_{m0} less than 0.2 m, these tables give percentages which are considerably greater than if all waves were counted.

Tables that depict the heights and period occurrences irrespective of direction are provided for directional and nondirectional wave gauge stations. These tables give the percent (times 100) of waves by height and period without respect to direction. Each listed percent value reflects the percent occurrence of waves at a particular H_{m0} and T_p compared to all waves for which H_{m0} was computed. Totals are presented in the same line

and column as the azimuth-based table. The total number of occurrences of waves with H_{m0} less than 0.2 m, as well as the percent these waves comprise of the total number of waves, is listed below the table. The summary line appears at the bottom, with mean H_{m0} and T_p , largest H_{m0} , and total number of cases represented by the table.

In order to determine what percent of the wave records at NJ001, Long Branch, NJ, occur from the 101-124 deg azimuth with an H_{m0} of 2.0 to 2.4 m and a T_p of 8 to 10.6 sec, look at the percent occurrence table for that azimuth band (112.5) (Table B6). The value 334 is found where the 2.0- to 2.4-m height row intersects with the 8.0- to 10.6-sec period column. Divide this number by 1,000 to get the percent. Thus, one could expect 8- to 10.6-sec waves from 2 to 2.4 m only about 0.33 percent of the time.

Wave Rose Diagrams

The wave rose diagrams indicate mean H_{m0} and the compass direction from which the waves are coming. The scale of the rose is set so the outer edge will be slightly larger than the largest mean wave height for the given wave gauge station. Three evenly spaced concentric circles within the rose delineate lesser mean wave heights. The value indicated by the circles is differentiated through the use of distinct line types. The directional bands are centered on 22.5-deg increments such as 0, 22.5, 45, etc. Mean H_{m0} and percent of samples for each direction band are represented in the wedge-shaped portions of the rose plots. The length (or radius) of the wedge describes the mean H_{m0} while the shading of the wedge tells what percent of the samples comes from that direction. Only data records that have a D_p corresponding to an H_{m0} are included in the computation of the means. As with the azimuthal percent occurrence tables, percentages on the wave rose diagrams are based only on waves with H_{m0} greater than 0.2 m.

The wave rose diagram for NY001, Westhampton, NY (Figure B2) indicates a mean H_{m0} of 1.10 m for the azimuth band centered on 157.5 deg; and for 1993-1995, more than 15 percent of the D_p values are within the 157.5-deg azimuth band. It also tells at a glance that no waves of any size occurred from the west through the north.

Spectral Density Plots

Spectral density plots have been included for data received around the time of the maximum H_{m0} for the 3-year summary period. The plot shows energy density (M^2/Hz) on the y-axis and frequency (Hz) on the x-axis. A secondary axis indicating wave period (seconds) appears below the x-axis to allow rapid approximate conversion from frequency to period. Six data

records are graphed on each plot, two records before the maximum H_{m0} , the maximum itself, and three data records after. Each data record is plotted with a unique symbol at the coordinate locations. Symbols are connected with straight lines. Directional gauges have a second plot above the energy density plot showing the computed direction (from true north) associated with each plotted frequency. Marking symbols match those used in the energy density plot. Wide shifts in the direction values between adjacent frequency bins may be due to very low energy values which make it difficult to assign valid directions. Energy density and direction plots are stacked on the page to allow the reader to determine the direction associated with each energy density reading. For nondirectional gauges, the second plot shows only the axes and is marked "NONDIRECTIONAL GAGE." For display purposes, spectral plots for shallow-water gauges (<15 m) are limited to values calculated for wave energy of 4 sec and above up to 50 sec. The six data records that appear graphically are listed at the bottom of the page along with their associated symbol, timestamp (UTC), H_{m0} (M), T_p (seconds), D_p (degrees) (for directional gauges only), and depth (M).

The spectral density plot for IL001, Chicago, IL, (Figure A3) shows that the six records plotted are from 11 November 1995 from 7:00 through 12:00 UTC. The greatest amount of area exists under the curve for the 9:00 record with an H_{m0} of 2.61 m. The peak energy occurred in waves with a T_p of 9.1 sec coming from 40 deg. The depth at that time was 9.8 m.

4 Summary

The wave data summary products presented in this report are provided to aid in engineering design, assessment, operation, and maintenance of Corps coastal projects. As additional data are collected, more comprehensive summaries will be prepared. Also, work will continue on developing additional data summary products.

Requests for data summarized in the report can be addressed to:

U.S. Army Engineer Waterways Experiment Station
ATTN: CEWES-CD-P (Mr. William D. Corson)
3909 Halls Ferry Road
Vicksburg, MS 39180-6199
internet: corson@pmab.wes.army.mil

Appendix A

NEMO Site in the Great Lakes

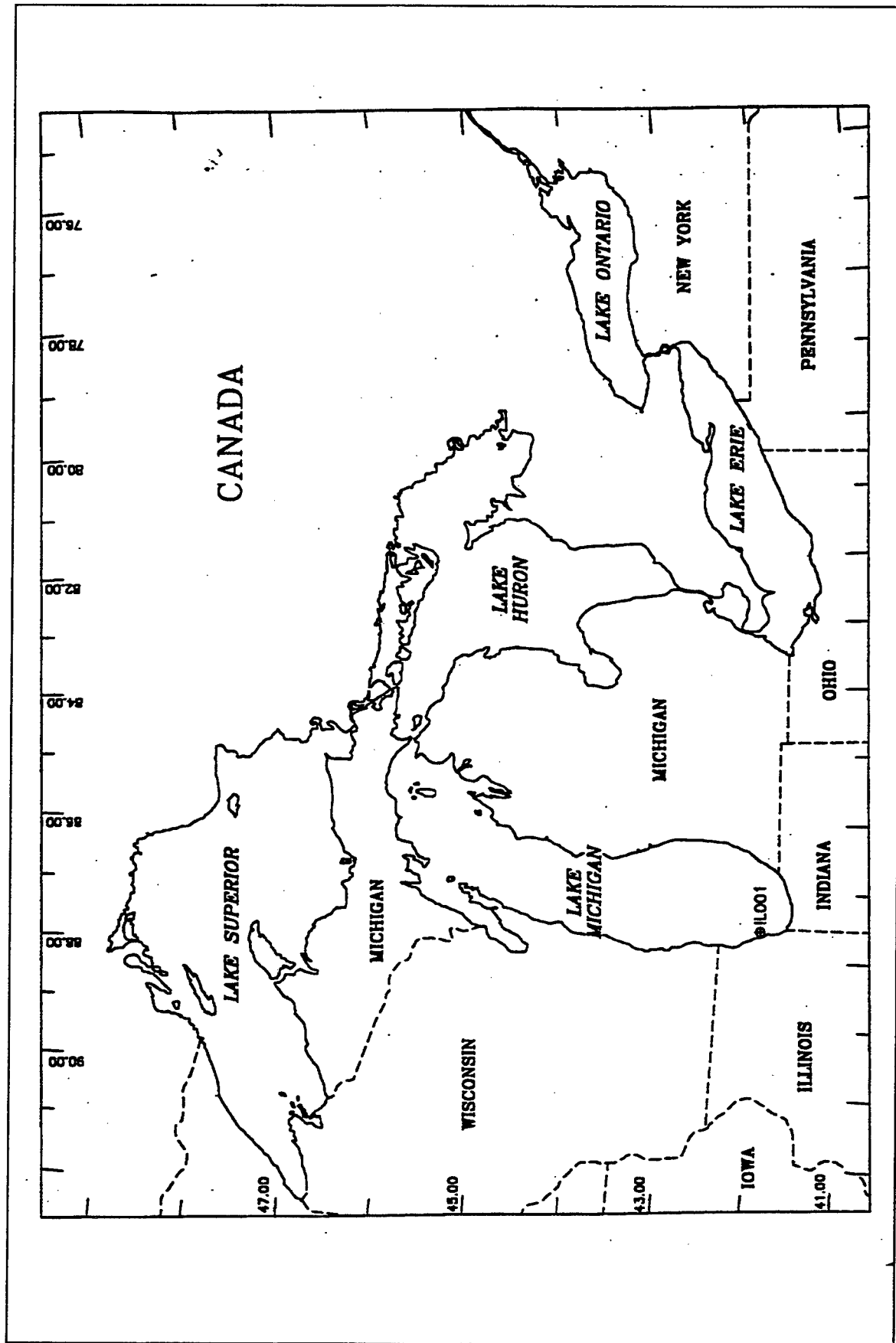


Figure A1. NEMO site in the Great Lakes

**Table A1
Number of Records for Chicago, IL (IL001)**

NEMO IL001, CHICAGO, ILLINOIS (41.92N 87.57W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	205	159	166	237	210	201	175	184	176	250	208	208	2379
1994	176	13	0	0	0	139	185	134	102	74	284	261	1368
1995	298	196	186	217	176	186	17	80	0	0	352	380	2088

NUMBER OF RECORDS WITH HM0 AND T_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	126	91	107	167	68	64	54	47	101	133	122	141	1221
1994	96	1	0	0	0	44	39	62	9	32	203	170	656
1995	222	131	109	146	62	26	9	5	0	0	298	277	1285

NUMBER OF RECORDS WITH HM0, T_p, AND D_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	126	91	107	167	68	64	54	47	101	133	122	141	1221
1994	96	1	0	0	0	44	39	62	9	32	203	170	656
1995	222	128	106	135	61	25	9	5	0	0	290	275	1256

Table A2
Mean/Max Values for Chicago, IL (IL001)

MEAN Hm0(METRES) BY MONTH AND YEAR
 IL001, CHICAGO, IL (41.92N 87.57W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	0.6	0.5	0.5	0.8	0.4	0.3	0.2	0.2	0.3	0.5	0.5	0.5	0.4
1994	0.4	0.1	.	.	.	0.3	0.2	0.4	0.1	0.4	0.7	0.5	0.4
1995	0.7	0.6	0.4	0.6	0.2	0.2	0.3	0.1	.	.	0.7	0.5	0.5
MEAN	0.6	0.5	0.4	0.7	0.3	0.2	0.2	0.2	0.3	0.4	0.6	0.5	

LARGEST Hm0(METRES) BY MONTH AND YEAR
 IL001, CHICAGO, IL (41.92N 87.57W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	2.0	1.7	2.2	2.4	2.4	1.7	0.8	1.4	1.4	1.8	1.5	1.8
1994	1.6	0.2	.	.	.	1.6	1.1	1.9	0.9	1.9	2.5	2.1
1995	1.8	1.6	1.0	1.9	1.0	1.6	0.6	0.3	.	.	2.6	2.1

3 YR. STATISTICS FOR IL001, CHICAGO, IL (41.92N 87.57W)

THE MEAN SIGNIFICANT WAVE HEIGHT(METRES) =	0.4
THE MEAN PEAK WAVE PERIOD (SECONDS) =	3.1
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	22.5
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.5
THE STANDARD DEVIATION OF TP (SECONDS) =	3.0
THE LARGEST Hm0 (METRES) =	2.6
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	9.1
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	39.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	95111109

**Table A3
Percent Occurrence for Chicago, IL (IL001)**

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 0.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	3574	1595	1053	.	.	.	.	.	.	.	6222
0.5-0.9	893	1532	2681	63	.	.	.	.	.	.	5169
1.0-1.4	127	510	1372	223	.	.	.	.	.	.	2232
1.5-1.9	.	31	255	223	.	.	.	.	.	.	509
2.0-2.4	.	.	63	127	.	.	.	.	.	.	190
2.5-2.9	.	.	.	31	.	.	.	.	.	.	31
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	4594	3668	5424	667	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 2.5 MEAN TP (SEC) = 5.3 NO. OF CASES = 450.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 22.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	3064	3957	3319	.	.	.	.	.	.	.	10340
0.5-0.9	734	2553	10373	925	.	.	.	.	.	.	14585
1.0-1.4	31	446	4787	1532	.	.	.	.	.	.	6796
1.5-1.9	.	.	1787	797	.	.	.	.	.	.	2584
2.0-2.4	.	.	255	925	159	.	.	.	.	.	1339
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	3829	6956	20521	4179	159	0	0	0	0	0	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 2.5 MEAN TP (SEC) = 6.2 NO. OF CASES = 1117.

(Sheet 1 of 9)

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 45.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	2553	1787	1340	31	.	.	.	.	.	.	5711
0.5-0.9	1053	1947	2585	319	.	.	.	.	.	.	5904
1.0-1.4	159	1085	1978	1212	.	.	.	.	.	.	4434
1.5-1.9	.	31	1851	446	.	.	.	.	.	.	2328
2.0-2.4	.	.	95	223	63	.	.	.	.	.	381
2.5-2.9	.	.	.	63	.	.	.	.	.	.	63
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	3765	4850	7849	2294	63	0	0	0	0	0	

MEAN Hm0 (M) = 0.9 LARGEST Hm0 (M) = 2.6 MEAN TP (SEC) = 5.8 NO. OF CASES= 590.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 67.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1755	1180	1085	31	.	.	.	.	.	.	4051
0.5-0.9	861	1149	3989	255	.	.	.	.	.	.	6254
1.0-1.4	.	287	2010	797	.	.	.	.	.	.	3094
1.5-1.9	.	31	606	223	.	.	.	.	.	.	860
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2616	2647	7690	1306	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 1.9 MEAN TP (SEC) = 5.9 NO. OF CASES = 447.

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 90.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1404	383	31	31	.	.	.	.	.	.	1849
0.5-0.9	606	861	446	.	.	.	.	.	.	.	1913
1.0-1.4	.	287	638	127	.	.	.	.	.	.	1052
1.5-1.9	.	31	95	.	.	.	.	.	.	.	126
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2010	1562	1210	158	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.6 MEAN TP (SEC) = 5.1 NO. OF CASES = 155.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) =112.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	989	31	.	.	.	.	.	.	.	.	1020
0.5-0.9	574	223	.	.	.	.	.	.	.	.	797
1.0-1.4	.	159	63	.	.	.	.	.	.	.	222
1.5-1.9	.	63	31	.	.	.	.	.	.	.	94
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1563	476	94	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.7 MEAN TP (SEC) = 4.2 NO. OF CASES = 67.

(Sheet 3 of 9)

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 135.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1180	.	.	.	.	.	.	.	.	.	1180
0.5-0.9	510	63	.	.	.	.	.	.	.	.	573
1.0-1.4	31	159	.	.	.	.	.	.	.	.	190
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1721	222	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.4 MEAN TP (SEC) = 4.0 NO. OF CASES= 61.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) =157.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1085	.	.	.	.	.	.	.	.	.	1085
0.5-0.9	383	.	.	.	.	.	.	.	.	.	383
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1468	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.9 MEAN TP (SEC) = 3.8 NO. OF CASES = 46.

(Sheet 4 of 9)

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) =180.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	766	31	.	.	.	.	.	.	.	.	797
0.5-0.9	383	63	.	.	.	.	.	.	.	.	446
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1149	94	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.9 MEAN TP (SEC) = 3.9 NO. OF CASES = 39.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) =202.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	606	.	.	.	.	.	.	.	.	.	606
0.5-0.9	127	.	.	.	.	.	.	.	.	.	127
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	733	0	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.7 MEAN TP (SEC) = 3.8 NO. OF CASES = 23.

(Sheet 5 of 9)

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) =225.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	63	.	.	.	.	.	.	.	.	.	63
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	63	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.2 LARGEST Hm0 (M) = 0.2 MEAN TP (SEC) = 3.8 NO. OF CASES = 2.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 247.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 270.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 292.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	31	.	.	.	.	.	.	.	.	.	31
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	31	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.2 LARGEST Hm0 (M) = 0.2 MEAN TP (SEC) = 3.9 NO. OF CASES = 1.

(Sheet 7 of 9)

Table A3 (Continued)

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 315.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	351	63	.	.	.	.	.	.	.	.	414
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	351	63	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 4.1 NO. OF CASES = 13.

IL001, CHICAGO, IL 41.92N 87.57W AZIMUTH (DEGREES) = 337.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1563	446	223	.	.	.	.	.	.	.	2232
0.5-0.9	319	383	702	.	.	.	.	.	.	.	1404
1.0-1.4	31	63	159	.	.	.	.	.	.	.	253
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1913	892	1084	.0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.5 MEAN TP (SEC) = 4.8 NO. OF CASES = 122.

(Sheet 8 of 9)

Table A3 (Concluded)

CHICAGO, IL 41.92N 87.57W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	1028	517	378	5	.	.	.	.	.	.	1928
0.5-0.9	353	476	1119	83	.	.	.	.	.	.	2031
1.0-1.4	20	166	596	210	.	.	.	.	.	.	992
1.5-1.9	10	253	90	.	.	.	.	.	.	.	353
2.0-2.4	.	.	22	68	11	.	.	.	.	.	101
2.5-2.9	.	.	.	5	.	.	.	.	.	.	5
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1401	1169	2368	461	11	0	0	0	0	0	

COUNT OF Hm0 LESS THAN .2 M = 2673.

PERCENT(X100) OF Hm0 LESS THAN .2 M = 4581.

MEAN Hm0 (M) = 0.4

LARGEST Hm0 (M) = 2.6

MEAN TP (SEC) = 3.1

TOTAL CASES = 5835.

(Sheet 9 of 9)

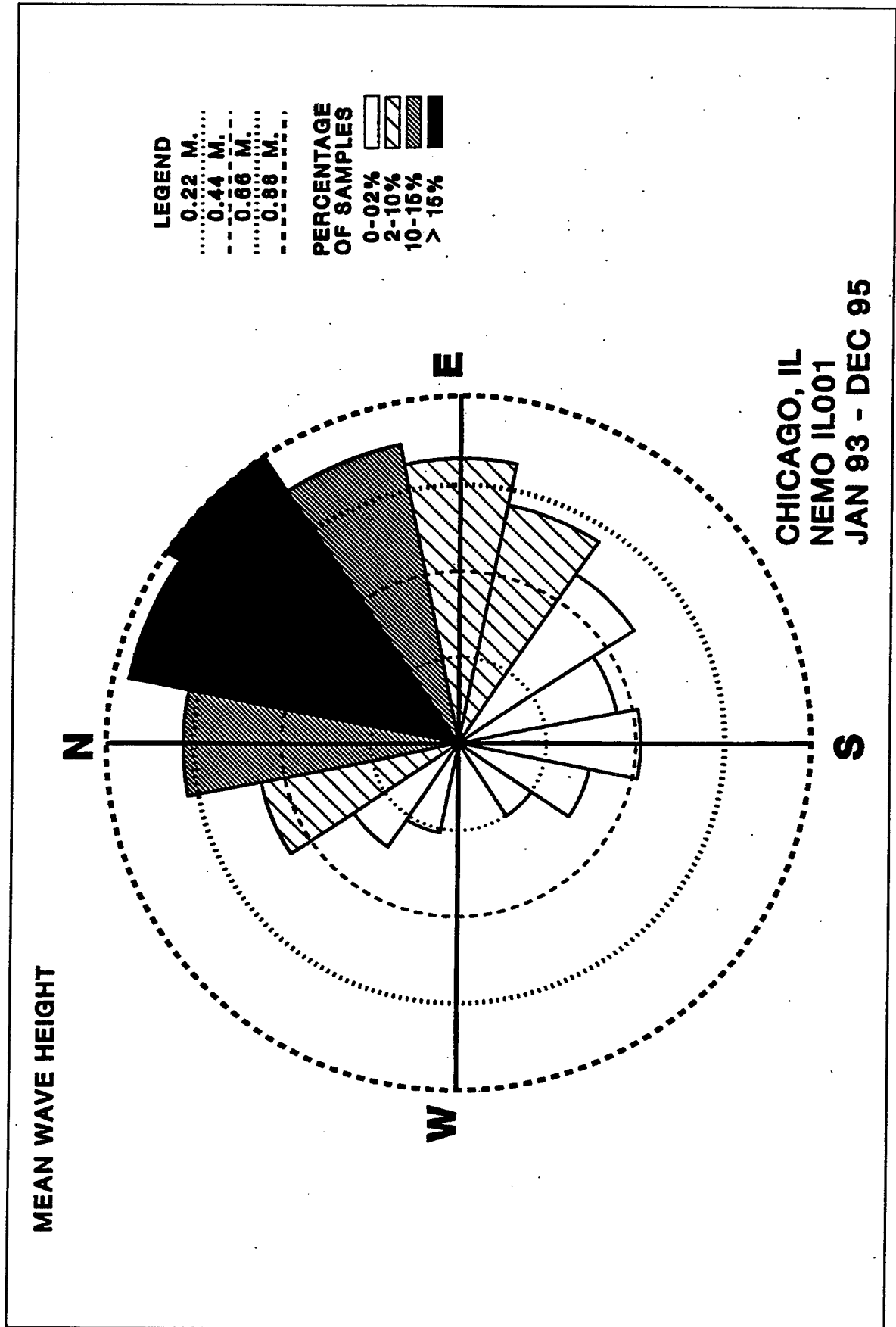


Figure A2. Wave rose for Chicago, IL (IL001)

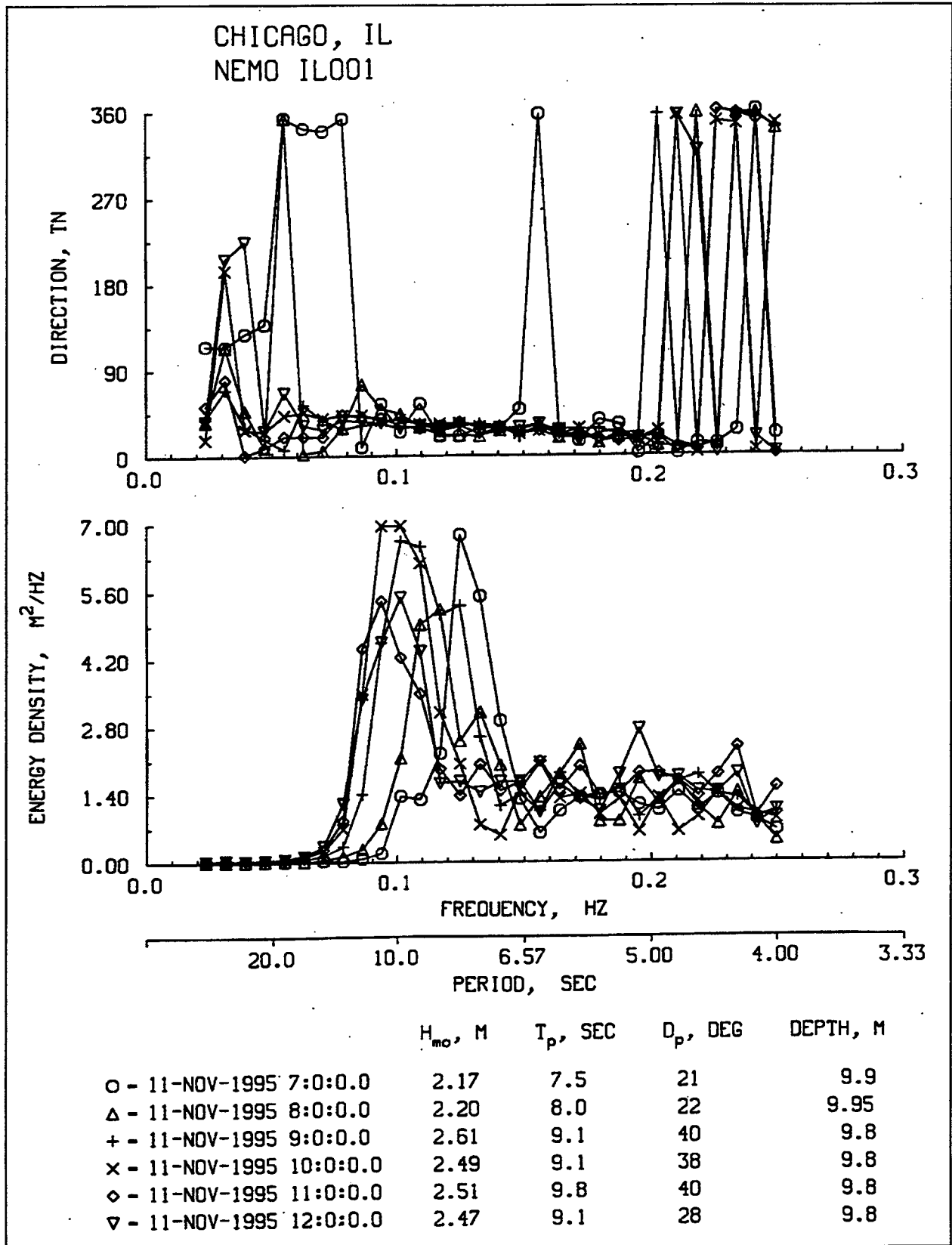


Figure A3. Wave spectra for Chicago, IL (ILO01)

Appendix B NEMO Sites in the Atlantic Ocean

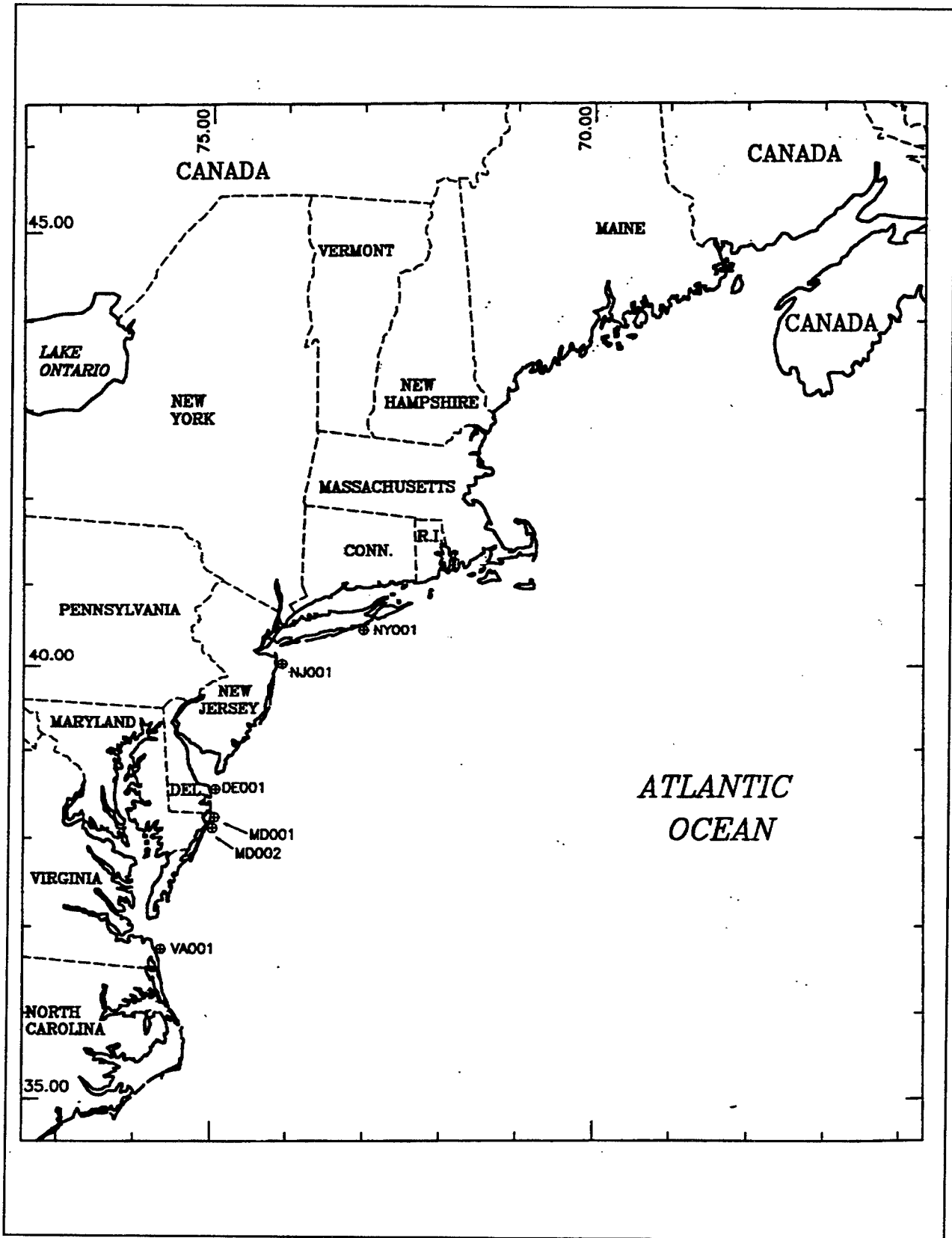


Figure B1. NEMO sites in the Atlantic Ocean

Westhampton, NY

Table B1
Number of Records for Westhampton, NY (NY001)

NEMO NY001, WESTHAMPTON, NY (40.79N 72.62W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	250	100	744	720	744	720	744	4022
1995	744	672	744	720	744	720	592	35	403	336	454	540	6704

NUMBER OF RECORDS WITH HM0 AND T_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	250	100	744	720	743	718	744	4019
1995	744	672	744	720	744	720	592	35	403	336	454	534	6698

NUMBER OF RECORDS WITH HM0, T_p, AND D_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	250	100	744	720	743	718	744	4019
1995	744	672	744	720	744	720	592	35	403	336	454	528	6692

Table B2
Mean/Max Values for Westhampton, NY (NY001)

MEAN Hm0(METRES) BY MONTH AND YEAR
 NY001, WESTHAMPTON, NY (40.79N 72.62W)

YEAR	MONTH												MEAN	
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1993	0.0
1994	.	.	.	.	.	0.6	1.1	0.7	0.7	0.6	1.2	1.0	0.8
1995	1.2	1.0	0.8	0.7	0.9	0.7	0.6	0.7	1.4	1.3	1.4	0.8	0.9	
MEAN	1.2	1.0	0.8	0.7	0.9	0.7	0.7	0.7	1.0	0.8	1.2	0.9		

LARGEST Hm0 (METRES) BY MONTH AND YEAR
 NY001, WESTHAMPTON, NY (40.79N 72.62W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	.	.	.	.	.	.	.	.	.
1994	.	.	.	.	.	1.7	2.0	2.0	3.7	2.1	4.1	4.2
1995	4.0	3.9	2.1	2.3	2.4	2.2	1.6	1.0	3.4	3.2	4.9	3.4

3 YR. STATISTICS FOR NY001, WESTHAMPTON, NY (40.79N 72.62W)

THE MEAN SIGNIFICANT WAVE HEIGHT(METRES) =	0.9
THE MEAN PEAK WAVE PERIOD (SECONDS) =	8.7
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	135.0
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.6
THE STANDARD DEVIATION OF TP (SECONDS) =	2.8
THE LARGEST Hm0 (METRES) =	4.9
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	12.8
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	169.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	95111208

Table B3
Percent Occurrence for Westhampton, NY (NY001)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 0.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 22.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	9	.	.	9
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	9	0	0

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.3 MEAN TP (SEC) = 16.0 NO. OF CASES = 1.

(Sheet 1 of 9)

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W , AZIMUTH (DEGREES) = 45.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)									TOTAL	
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2		18.3- LONGER
0.2-0.4	9	9	.	9	9	36
0.5-0.9	18	37	.	37	.	.	.	.	.	.	92
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	18	37	0	37	0	9	9	0	9	9	0

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.0 MEAN TP (SEC) = 8.8 NO. OF CASES = 14.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 67.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)									TOTAL	
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2		18.3- LONGER
0.2-0.4	121	.	.	.	.	.	9	9	.	9	148
0.5-0.9	.	.	37	18	9	.	.	.	.	.	64
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	121	0	37	18	9	0	9	9	0	9	0

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.9 MEAN TP (SEC) = 6.5 NO. OF CASES = 23.

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 90.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	308	252	65	9	18	65	130	37	18	9	911
0.5-0.9	261	252	242	121	9	18	9	9	9	.	930
1.0-1.4	.	140	224	.	.	.	.	.	.	.	364
1.5-1.9	.	.	18	.	.	.	.	.	.	.	18
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	569	644	549	130	27	83	139	46	27	9	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.7 MEAN TP (SEC) = 6.4 NO. OF CASES = 239.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 112.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	130	37	457	849	700	1484	1652	1204	308	46	6867
0.5-0.9	224	588	821	2203	1064	793	728	522	112	.	7055
1.0-1.4	28	168	980	662	261	326	224	102	.	.	2751
1.5-1.9	.	9	550	476	84	18	9	65	37	.	1248
2.0-2.4	.	.	130	102	9	.	.	37	18	.	296
2.5-2.9	.	.	37	18	.	.	.	.	.	.	55
3.0-3.4	.	.	.	28	.	.	.	.	.	.	28
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	382	802	2975	4338	2118	2621	2613	1930	475	46	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 3.4 MEAN TP (SEC) = 10.2 NO. OF CASES = 1962.

(Sheet 3 of 9)

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 135.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	74	84	1624	5527	812	868	1521	952	149	9	11620
0.5-0.9	102	308	2903	7823	1531	812	662	429	158	.	14728
1.0-1.4	.	177	756	2128	737	504	149	149	.	.	4600
1.5-1.9	.	.	280	690	476	429	205	140	56	.	2276
2.0-2.4	.	.	93	280	196	186	140	93	37	.	1025
2.5-2.9	.	.	37	168	130	205	65	9	.	.	614
3.0-3.4	.	.	.	93	28	65	56	28	9	.	279
3.5-3.9	.	.	.	56	28	.	65	74	.	.	223
4.0-4.4	.	.	.	18	9	.	9	28	28	.	92
4.5-4.9	.	.	.	9	9	.	.	.	.	.	18
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	176	569	5693	16792	3956	3069	2872	1902	437	9	

MEAN Hm0 (M) = 0.9 LARGEST Hm0 (M) = 4.7 MEAN TP (SEC) = 9.6 NO. OF CASES = 3802.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 157.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	65	214	1335	2044	336	130	112	65	9	.	4310
0.5-0.9	270	270	3678	3715	709	317	74	37	.	.	9070
1.0-1.4	37	130	1297	2530	420	270	102	74	65	.	4925
1.5-1.9	.	9	364	1708	205	130	140	205	140	.	2901
2.0-2.4	.	.	112	550	242	140	112	289	93	.	1538
2.5-2.9	.	.	28	140	121	158	37	18	93	28	623
3.0-3.4	.	.	.	112	74	102	37	9	18	46	398
3.5-3.9	.	.	.	18	.	56	18	.	.	.	92
4.0-4.4	.	.	.	.	9	9	.	.	.	.	18
4.5-4.9	.	.	.	9	18	18	9	.	.	.	54
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	372	623	6814	10826	2134	1330	641	697	418	74	

MEAN Hm0 (M) = 1.1 LARGEST Hm0 (M) = 4.9 MEAN TP (SEC) = 8.8 NO. OF CASES = 2566.

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 180.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	345	196	420	121	.	.	.	.	.	.	1082
0.5-0.9	737	2390	2222	317	18	9	.	.	.	.	5693
1.0-1.4	9	298	2100	336	56	.	.	.	.	.	2799
1.5-1.9	9	9	774	504	37	.	.	.	.	.	1333
2.0-2.4	.	.	214	233	18	28	9	.	.	.	502
2.5-2.9	.	.	28	214	.	.	.	.	9	.	251
3.0-3.4	.	.	.	56	.	.	9	.	.	.	65
3.5-3.9	.	.	.	56	.	.	9	.	.	.	65
4.0-4.4	.	.	.	28	.	18	9	.	.	.	55
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1100	2893	5758	1865	129	55	36	0	9	0	

MEAN Hm0 (M) = 1.1 LARGEST Hm0 (M) = 4.5 MEAN TP (SEC) = 6.4 NO. OF CASES = 1270.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 202.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	896	541	112	.	.	.	.	.	.	.	1549
0.5-0.9	1073	1381	830	.	.	.	.	.	.	.	3284
1.0-1.4	37	289	690	9	.	.	.	.	.	.	1025
1.5-1.9	.	18	298	.	.	.	.	.	.	.	316
2.0-2.4	.	.	65	9	.	.	.	.	.	.	74
2.5-2.9	.	.	9	18	.	.	.	.	.	.	27
3.0-3.4	.	.	.	18	.	.	.	.	.	.	18
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2006	2229	2004	54	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 3.1 MEAN TP (SEC) = 5.1 NO. OF CASES = 675.

(Sheet 5 of 9)

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 225.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	280	270	28	.	.	.	.	.	.	.	578
0.5-0.9	373	214	112	.	.	.	.	.	.	.	699
1.0-1.4	9	18	28	.	.	.	.	.	.	.	55
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	662	502	168	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.4 MEAN TP (SEC) = 4.5 NO. OF CASES = 143.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 247.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	65	.	.	.	.	.	.	.	.	.	65
0.5-0.9	84	.	.	.	.	.	.	.	.	.	84
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	149	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.0 MEAN TP (SEC) = 3.8 NO. OF CASES = 16.

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 270.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 292.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 7 of 9)

Table B3 (Continued)

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 315.0
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

NY001, WESTHAMPTON, NY 40.79N 72.62W AZIMUTH (DEGREES) = 337.5
 JUNE 1994 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

Table B3 (Concluded)

WESTHAMPTON, NY 40.79N 72.62W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	228	159	403	853	186	255	343	226	50	8	2711
0.5-0.9	314	543	1084	1421	333	194	147	99	27	.	4162
1.0-1.4	12	122	610	565	147	110	47	32	6	.	1651
1.5-1.9	.	4	229	337	80	57	35	41	23	.	806
2.0-2.4	.	.	61	117	46	35	26	41	14	.	340
2.5-2.9	.	.	13	55	25	36	10	2	10	2	153
3.0-3.4	.	.	.	30	10	16	10	3	2	4	75
3.5-3.9	.	.	.	13	2	5	9	7	.	.	36
4.0-4.4	.	.	.	4	1	2	1	2	2	.	12
4.5-4.9	.	.	.	1	2	1	.	.	.	.	4
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	554	828	2400	3396	832	711	628	453	134	14	

COUNT OF Hm0 LESS THAN .2 M = 9.

PERCENT (X100) OF Hm0 LESS THAN .2 M = 8.

MEAN Hm0 (M) = 0.9

LARGEST Hm0 (M) = 4.9

MEAN TP (SEC) = 8.7

TOTAL CASES = 10726.

(Sheet 9 of 9)

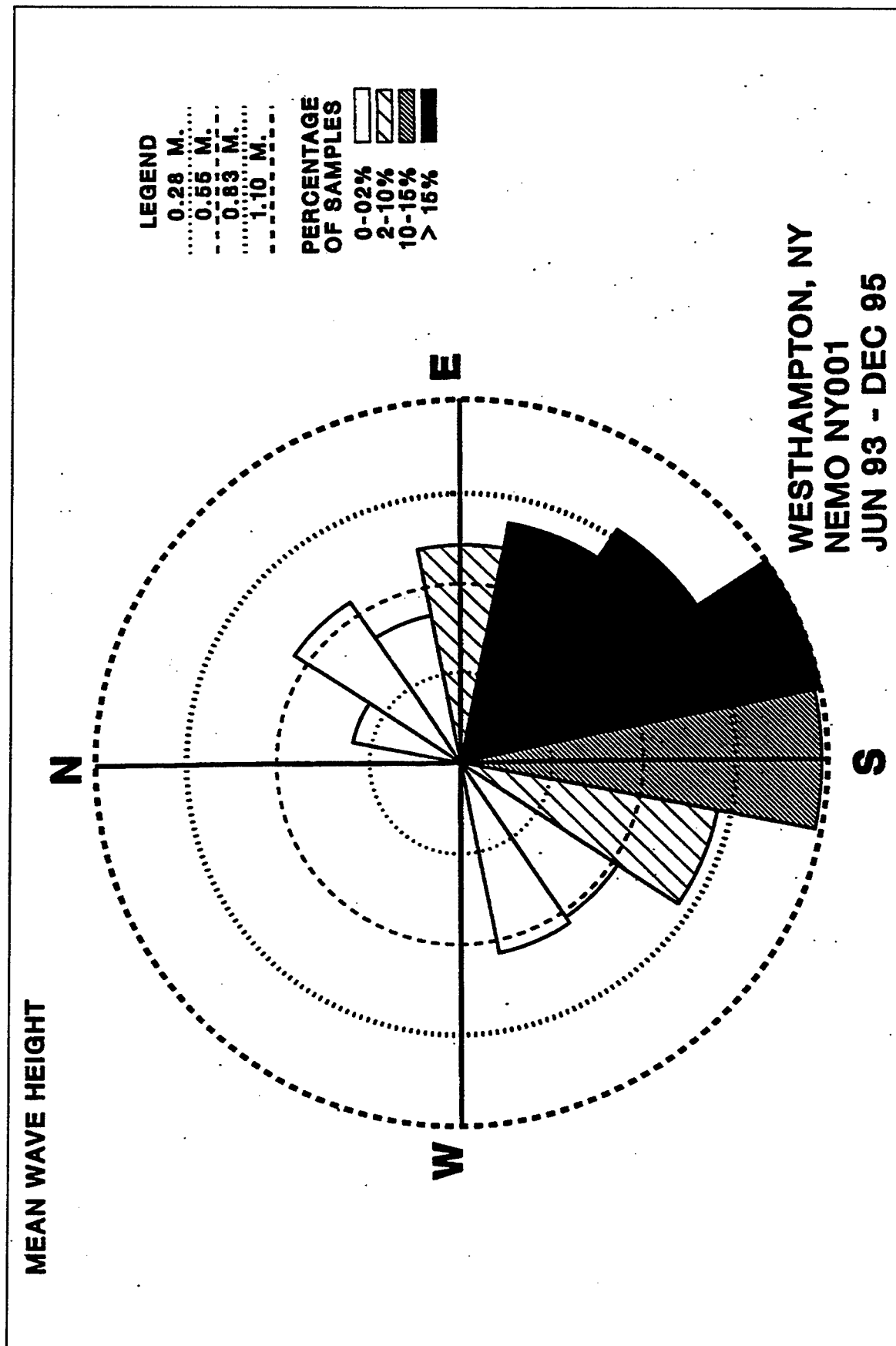


Figure B2. Wave rose for Westhampton, NY (NY001)

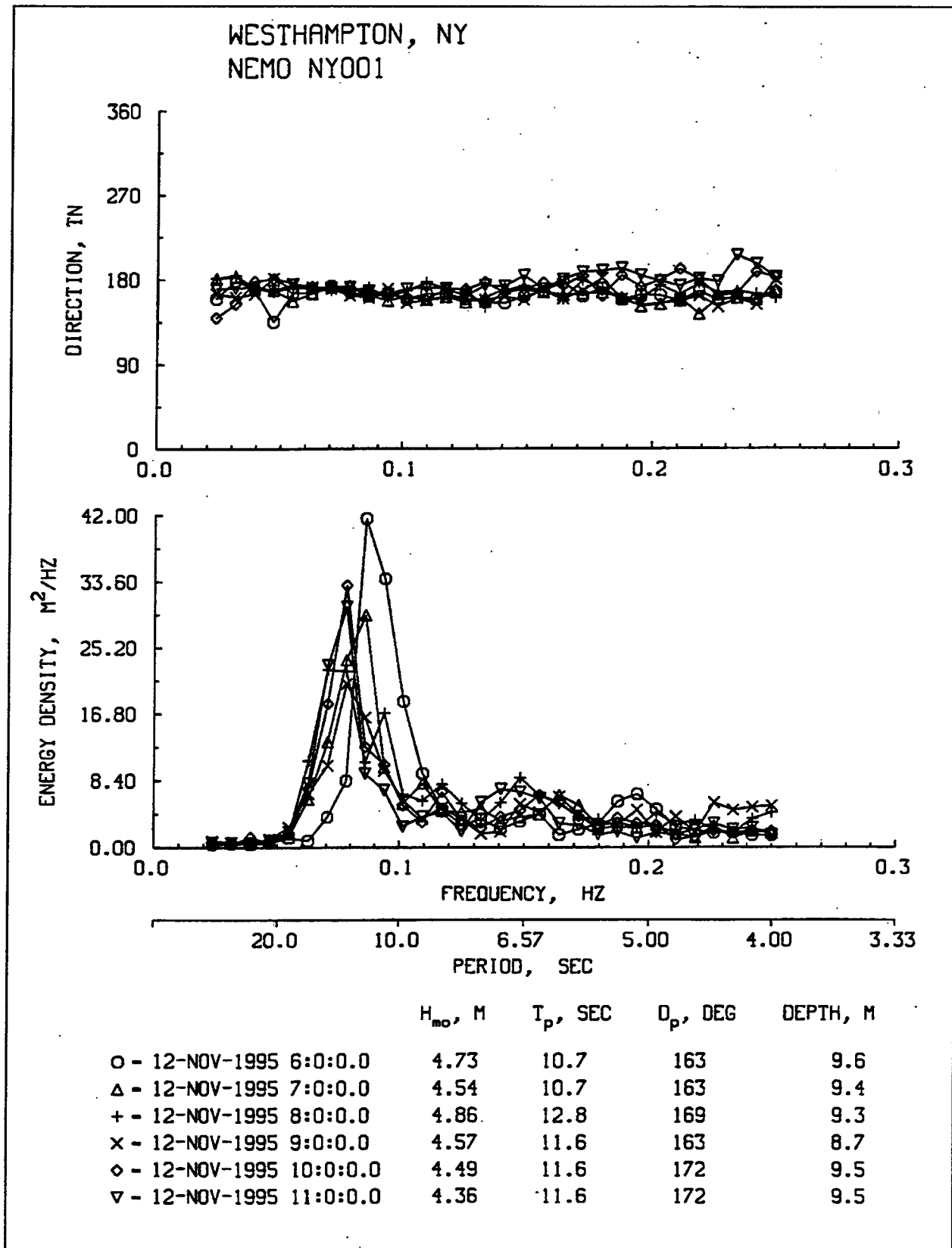


Figure B3. Wave spectra for Westhampton, NY (NY001)

Long Branch, NJ

**Table B4
Number of Records for Long Branch, NJ (NJ001)**

NEMO NJ001, LONG BRANCH, NEW JERSEY (40.30N 73.97W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	37	186	257	204	238	252	286	258	388	2106
1994	323	258	250	180	218	179	149	231	274	228	146	0	2436
1995	0	0	0	0	0	0	102	339	316	279	345	396	1777

NUMBER OF RECORDS WITH HM0 AND Tp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	36	186	256	191	238	247	286	256	372	2068
1994	298	241	238	179	216	179	149	231	263	219	144	0	2357
1995	0	0	0	0	0	0	102	339	316	279	331	284	1651

NUMBER OF RECORDS WITH HM0, Tp, AND Dp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	131	191	238	247	286	256	372	1721
1994	0	0	129	179	216	179	149	231	261	219	144	0	1707
1995	0	0	0	0	0	0	102	339	316	279	331	284	1651

**Table B5
Mean/Max Values for Long Branch, NJ (NJ001)**

MEAN Hm0 (METRES) BY MONTH AND YEAR
NJ001, LONG BRANCH, NJ (40.30N 73.97W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	.	.	.	1.0	0.5	0.5	0.5	0.7	0.7	1.1	1.0	0.7	0.7
1994	1.0	1.0	0.9	0.6	0.7	0.6	0.6	0.7	0.8	0.6	1.0	.	0.8
1995	.	.	.	.	.	.	0.6	1.1	1.0	0.8	0.9	0.5	0.8
MEAN	1.0	1.0	0.9	0.7	0.6	0.5	0.5	0.9	0.9	0.9	0.9	0.6	

LARGEST Hm0 (METRES) BY MONTH AND YEAR
NJ001, LONG BRANCH, NJ (40.30N 73.97W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	1.6	1.0	1.1	1.6	1.8	2.2	2.4	3.2	2.2
1994	3.8	3.1	4.1	1.3	1.7	1.8	1.1	1.9	3.5	2.1	2.4	.
1995	.	.	.	.	.	.	1.0	1.9	1.8	2.0	4.2	2.5

3 YR. STATISTICS FOR NJ001, LONG BRANCH, NJ (40.30N 73.97W)

THE MEAN SIGNIFICANT WAVE HEIGHT(METRES) =	0.8
THE MEAN PEAK WAVE PERIOD (SECONDS) =	7.9
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	112.5
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.6
THE STANDARD DEVIATION OF TP (SECONDS) =	2.8
THE LARGEST Hm0 (METRES) =	4.2
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	10.7
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	101.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	95111501

Table B6
Percent Occurrence for Long Branch, NJ (NJ001)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 0.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	19	.	.	.	.	.	.	.	.	.	19
0.5-0.9	.	.	.	.	.	.	.	.	.	.	0
1.0-1.4	19	.	.	.	.	.	.	.	.	.	19
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	38	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.1 MEAN TP (SEC) = 3.8 NO. OF CASES = 2.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 22.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	295	.	.	.	.	.	.	.	.	.	295
0.5-0.9	19	.	.	.	.	.	.	.	.	.	19
1.0-1.4	19	.	.	.	.	.	.	.	.	.	19
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	333	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 1.1 MEAN TP (SEC) = 3.8 NO. OF CASES = 17.

(Sheet 1 of 9)

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 45.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	315	19	.	.	.	.	.	.	.	.	334
0.5-0.9	59	.	.	.	.	.	.	.	.	.	59
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	374	19	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.7 MEAN TP (SEC) = 3.7 NO. OF CASES = 20.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 67.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	196	19	.	19	.	19	19	.	.	.	272
0.5-0.9	374	78	19	19	.	.	.	.	.	.	490
1.0-1.4	118	98	.	.	.	.	.	.	.	.	216
1.5-1.9	.	19	.	.	.	.	.	.	.	.	19
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	688	214	19	38	0	19	19	0	0	0	0

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.5 MEAN TP (SEC) = 4.7 NO. OF CASES = 51.

(Sheet 2 of 9)

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 90.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	452	137	511	1673	374	590	728	610	.	.	5075
0.5-0.9	708	767	1693	1732	315	354	177	19	.	.	5765
1.0-1.4	98	374	2067	1082	157	59	.	.	.	.	3837
1.5-1.9	.	.	1535	1023	.	39	.	.	.	.	2597
2.0-2.4	.	.	649	374	.	.	.	.	.	.	1023
2.5-2.9	.	.	78	39	.	.	.	.	.	.	117
3.0-3.4	.	.	.	19	.	19	.	.	.	.	38
3.5-3.9	.	.	.	39	19	.	.	.	.	.	58
4.0-4.4	.	.	.	.	19	.	.	.	.	.	19
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1258	1278	6533	5981	884	1061	905	629	0	0	

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 4.2 MEAN TP (SEC) = 8.1 NO. OF CASES = 942.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 112.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	118	98	1949	6713	1043	767	590	374	39	.	11691
0.5-0.9	334	649	3327	5256	1260	1023	570	413	98	.	12930
1.0-1.4	39	334	2362	2146	610	492	295	511	157	.	6946
1.5-1.9	.	.	1122	1023	216	177	98	19	59	.	2714
2.0-2.4	.	.	413	334	59	19	19	.	.	.	844
2.5-2.9	.	.	39	39	19	39	.	.	.	.	136
3.0-3.4	.	.	39	98	19	.	.	.	.	.	156
3.5-3.9	.	.	.	59	.	19	.	.	.	.	78
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	491	1081	9251	15668	3226	2536	1572	1317	353	0	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 3.8 MEAN TP (SEC) = 9.0 NO. OF CASES = 1804.

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 135.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	374	196	3347	7914	807	236	118	78	.	.	13070
0.5-0.9	295	748	5099	6792	787	393	315	393	78	.	14900
1.0-1.4	.	295	1043	1456	.	354	275	334	157	19	3933
1.5-1.9	.	39	570	807	196	236	255	19	39	.	2161
2.0-2.4	.	.	196	216	39	19	.	.	.	.	470
2.5-2.9	.	.	59	39	39	.	.	.	.	.	137
3.0-3.4	.	.	.	59	39	.	.	.	.	.	98
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	19	.	.	.	.	.	.	19
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	669	1278	10314	17302	1907	1238	963	824	274	19	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 4.1 MEAN TP (SEC) = 8.5 NO. OF CASES = 1768.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 157.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1299	551	1141	59	39	.	19	.	.	.	3108
0.5-0.9	1201	1319	2283	118	.	.	.	.	.	.	4921
1.0-1.4	.	78	216	19	.	.	.	.	.	.	313
1.5-1.9	.	.	19	.	.	.	.	.	.	.	19
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2500	1948	3659	196	39	0	19	0	0	0	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.8 MEAN TP (SEC) = 5.4 NO. OF CASES = 425.

(Sheet 4 of 9)

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 180.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	570	39	19	.	.	.	.	.	.	.	628
0.5-0.9	196	137	.	.	.	.	.	.	.	.	333
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	766	176	19	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.9 MEAN TP (SEC) = 4.1 NO. OF CASES = 49.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 202.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 5 of 9)

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 225.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 247.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 6 of 9)

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 270.0

JANUARY 1993 - DECEMBER 1995

PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 292.5

JANUARY 1993 - DECEMBER 1995

PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 7 of 9)

Table B6 (Continued)

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 315.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	19	.	.	.	.	.	.	.	.	.	19
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	19	0	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.2 LARGEST Hm0 (M) = 0.2 MEAN TP (SEC) = 4.1 NO. OF CASES = 1.

NJ001, LONG BRANCH, NJ 40.30N 73.97W AZIMUTH (DEGREES) = 337.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

Table B6 (Concluded)

LONG BRANCH, NJ 40.30N 73.97W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	333	101	721	1598	240	153	123	94	3	.	3366
0.5-0.9	286	351	1122	1321	232	166	90	66	14	.	3648
1.0-1.4	25	112	534	444	79	87	49	69	25	1	1425
1.5-1.9	.	4	327	314	37	49	36	3	7	.	777
2.0-2.4	.	.	117	107	9	6	3	.	.	.	242
2.5-2.9	.	.	18	37	4	4	.	.	.	.	63
3.0-3.4	.	.	4	22	6	1	1	.	.	.	34
3.5-3.9	.	.	.	15	4	4	3	.	.	.	26
4.0-4.4	.	.	.	3	1	1	1	.	.	.	6
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	644	568	2843	3861	612	471	306	232	49	1	

COUNT OF Hm0 LESS THAN .2 M = 243. PERCENT (X100) OF Hm0 LESS THAN .2 M = 385.

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 4.2 MEAN TP (SEC) = 7.9 TOTAL CASES = 6319.

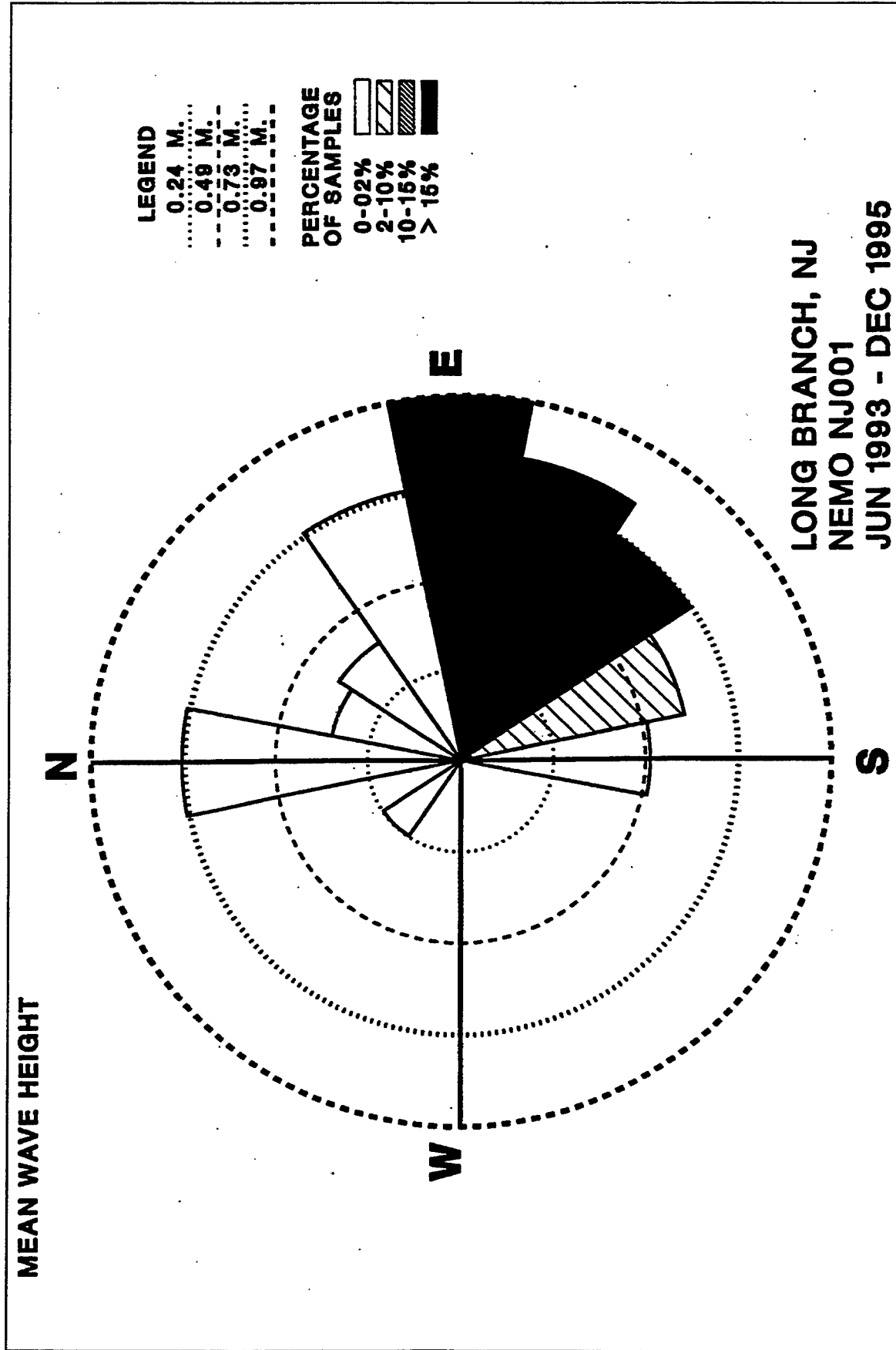


Figure B4. Wave rose for Long Branch, NJ (NJ001)

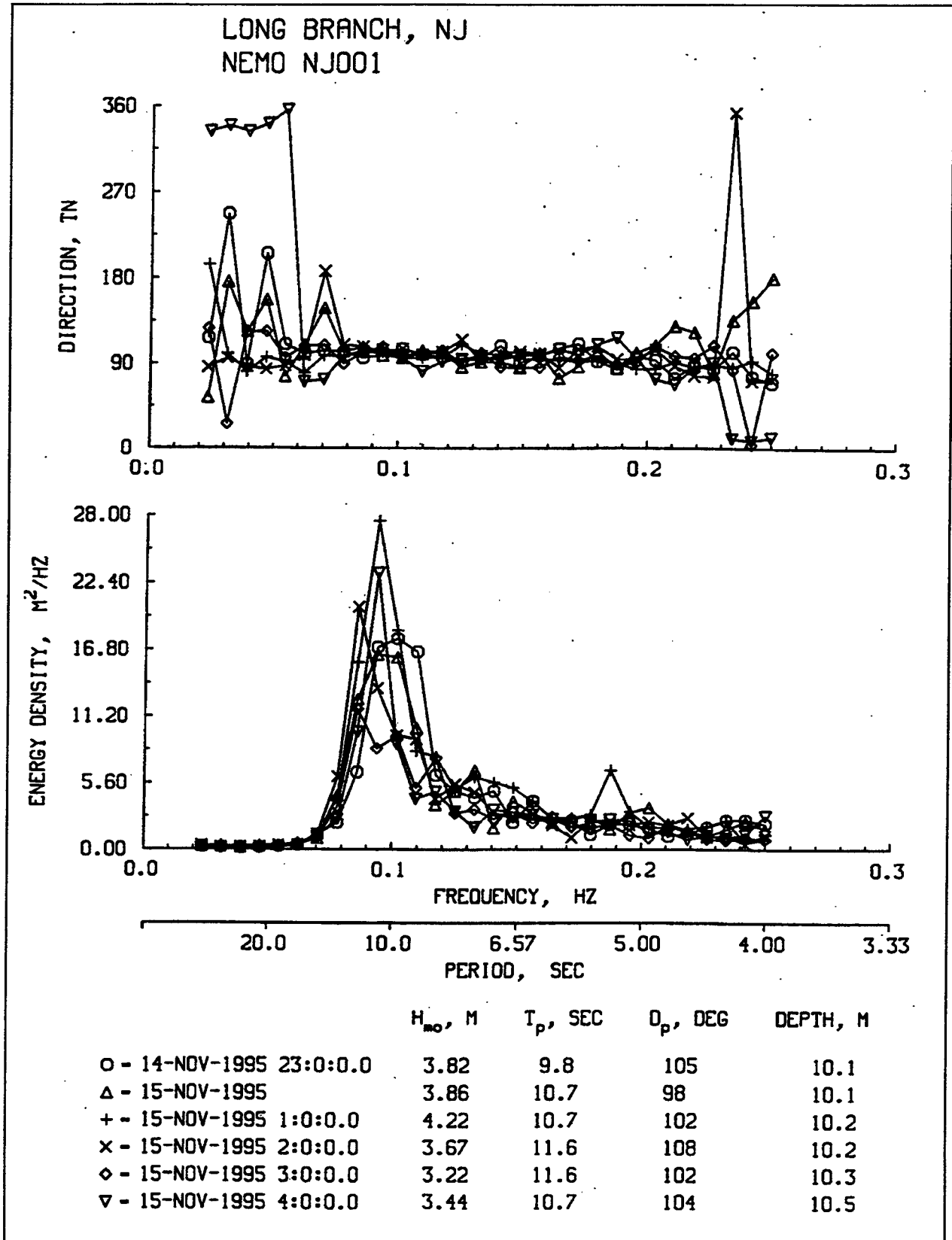


Figure B5. Wave spectra for Long Branch, NJ (NJ001)

Dewey Beach, DE

Table B7
Number of Records for Dewey Beach, DE (DE001)

NEMO DE001, DEWEY BEACH, DE (38.70N 75.06W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	234	310	323	223	186	175	186	172	194	212	239	385	2839
1994	319	257	173	179	220	175	185	196	279	0	7	278	2268
1995	200	212	199	180	47	0	0	0	0	0	0	0	838

NUMBER OF RECORDS WITH HM0 AND Tp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	229	310	323	223	186	175	185	172	193	212	234	376	2818
1994	311	254	158	179	217	175	185	196	276	0	7	277	2235
1995	192	203	199	176	47	0	0	0	0	0	0	0	817

NUMBER OF RECORDS WITH HM0, Tp, AND Dp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	229	310	323	223	186	175	185	172	193	212	234	376	2818
1994	311	254	158	179	217	175	185	196	276	0	7	277	2235
1995	192	201	199	176	47	0	0	0	0	0	0	0	815

Table B8
Mean/Max Values for Dewey Beach, DE (DE001)

MEAN Hm0 (METRES) BY MONTH AND YEAR
 DE001, DEWEY BEACH, DE (38.70N 75.06W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	1.0	1.1	1.0	1.0	0.5	0.5	0.4	0.6	0.6	0.7	0.8	0.7	0.8
1994	0.8	0.8	0.9	0.5	0.7	0.5	0.4	0.5	0.7	.	0.4	1.0	0.7
1995	0.6	0.5	0.7	0.5	0.8	.	.	.	.	.	.	.	0.6
MEAN	0.8	0.8	0.9	0.7	0.6	0.5	0.4	0.5	0.7	0.7	0.8	0.8	

LARGEST Hm0 (METRES) BY MONTH AND YEAR
 DE001, DEWEY BEACH, DE (38.70N 75.06W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	2.8	3.0	3.8	2.6	1.3	0.9	1.0	2.1	1.3	2.1	2.3	2.0
1994	2.8	2.3	4.2	1.0	2.4	1.1	0.8	1.0	3.3	.	0.6	2.3
1995	1.5	1.6	1.6	1.4	1.5	.	.	.	.	.	.	.

3 YR. STATISTICS FOR DE001, DEWEY BEACH, DE (38.70N 75.06W)

THE MEAN SIGNIFICANT WAVE HEIGHT (METRES) =	0.7
THE MEAN PEAK WAVE PERIOD (SECONDS) =	8.3
THE MOST FREQUENT 22.5(CENTER) DIRECTION BAND (DEGREES) =	90.0
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.5
THE STANDARD DEVIATION OF TP (SECONDS) =	3.0
THE LARGEST Hm0 (METRES) =	4.2
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	10.7
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	92.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94030305

Table B9
Percent Occurrence for Dewey Beach, DE (DE001)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 0.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	715	153	17	.	.	34	.	17	.	.	936
0.5-0.9	357	153	34	.	.	.	.	.	.	.	544
1.0-1.4	17	85	17	.	.	.	.	.	.	.	119
1.5-1.9	17	.	17	.	.	.	.	.	.	.	34
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1106	391	85	0	0	34	0	17	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.8 MEAN TP (SEC) = 4.5 NO. OF CASES = 96.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 22.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1124	630	136	391	204	85	119	17	51	17	2774
0.5-0.9	766	494	511	238	17	51	68	.	.	.	2145
1.0-1.4	85	374	340	187	51	68	.	.	.	.	1105
1.5-1.9	.	102	460	187	34	.	.	.	.	.	783
2.0-2.4	17	.	153	119	.	.	.	.	.	.	289
2.5-2.9	.	.	.	17	.	.	.	.	.	.	17
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1992	1600	1600	1139	306	204	187	17	51	17	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 2.7 MEAN TP (SEC) = 6.4 NO. OF CASES = 418.

(Sheet 1 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 45.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	408	136	68	1976	1175	647	528	255	255	17	5465
0.5-0.9	374	170	391	1806	749	511	408	272	17	.	4698
1.0-1.4	51	136	630	715	255	272	289	17	.	.	2365
1.5-1.9	17	17	272	460	102	221	85	.	.	.	1174
2.0-2.4	.	17	34	153	34	17	.	.	.	.	255
2.5-2.9	.	.	.	51	17	.	.	.	.	.	68
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	850	476	1395	5161	2332	1668	1310	544	272	17	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 2.8 MEAN TP (SEC) = 9.7 NO. OF CASES = 824.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 67.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	545	426	800	1244	545	255	136	306	119	34	4410
0.5-0.9	391	732	1261	1175	289	119	136	51	.	.	4154
1.0-1.4	85	460	511	323	85	.	68	17	.	.	1549
1.5-1.9	17	119	426	238	34	17	.	.	.	.	851
2.0-2.4	.	34	340	119	17	.	17	.	.	.	527
2.5-2.9	.	.	68	102	34	.	.	.	.	.	204
3.0-3.4	.	.	.	17	.	.	.	.	.	.	17
3.5-3.9	.	.	17	.	.	.	.	.	.	.	17
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1038	1771	3423	3218	1004	391	357	374	119	34	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 3.5 MEAN TP (SEC) = 7.8 NO. OF CASES = 689.

(Sheet 2 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 90.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	477	511	2215	6305	1312	1346	1244	1005	357	153	14925
0.5-0.9	391	903	3135	4925	1857	1226	783	698	51	.	13969
1.0-1.4	68	136	647	1601	937	715	391	238	68	.	4801
1.5-1.9	.	17	494	954	374	306	170	153	34	.	2502
2.0-2.4	.	.	272	545	221	119	34	102	.	.	1293
2.5-2.9	.	.	136	374	51	51	17	34	.	.	663
3.0-3.4	.	.	.	85	.	.	.	.	.	.	85
3.5-3.9	.	.	.	85	.	.	.	.	.	.	85
4.0-4.4	.	.	.	.	17	.	.	.	.	.	17
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	936	1567	6899	14874	4769	3763	2639	2230	510	153	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 4.2 MEAN TP (SEC) = 9.5 NO. OF CASES = 2251.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 112.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	119	187	2862	3357	340	477	255	357	187	51	8192
0.5-0.9	272	391	3118	2232	306	221	68	51	17	.	6676
1.0-1.4	34	136	221	187	119	51	68	34	.	.	850
1.5-1.9	.	.	.	119	17	17	51	34	.	.	238
2.0-2.4	.	.	.	17	17	.	34	17	.	.	85
2.5-2.9	.	.	.	17	.	.	17	.	.	.	34
3.0-3.4	.	.	.	17	17	.	17	.	.	.	51
3.5-3.9	.	.	.	.	.	.	17	.	.	.	17
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	425	714	6201	5946	816	766	527	493	204	51	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 3.6 MEAN TP (SEC) = 8.4 NO. OF CASES = 948.

(Sheet 3 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 135.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	596	869	2096	408	34	68	102	85	51	17	4326
0.5-0.9	783	852	1772	51	.	.	.	.	.	.	3458
1.0-1.4	.	85	17	.	.	.	.	.	.	.	102
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1379	1806	3885	459	34	68	102	85	51	17	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.3 MEAN TP (SEC) = 6.1 NO. OF CASES = 463.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 157.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	511	187	153	102	34	.	34	.	17	.	1038
0.5-0.9	272	17	17	.	.	.	.	.	.	.	306
1.0-1.4	.	.	17	.	.	.	.	.	.	.	17
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	783	204	187	102	34	0	34	0	17	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.1 MEAN TP (SEC) = 5.3 NO. OF CASES = 80.

(Sheet 4 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 180.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	.	.	.	17	.	.	.	17	.	.	34
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	17	0	0	0	17	0	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.4 MEAN TP (SEC) = 11.4 NO. OF CASES = 2.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 202.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	17	17	.	.	34
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	17	17	0	0	

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.4 MEAN TP (SEC) = 13.5 NO. OF CASES = 2.

(Sheet 5 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 225.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	17	.	.	.	.	.	17
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	17	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.4 MEAN TP (SEC) = 10.7 NO. OF CASES = 1.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 247.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 6 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 270.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 292.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	17	.	.	17
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	17	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.4 MEAN TP (SEC) = 14.2 NO. OF CASES = 1.

(Sheet 7 of 9)

Table B9 (Continued)

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 315.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	221	238	34	.	.	.	.	.	.	.	493
0.5-0.9	68	51	.	.	.	.	.	.	.	.	119
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	289	289	34	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.0 MEAN TP(SEC) = 4.6 NO. OF CASES = 36.

DEWEY BEACH, DE 38.70N 75.06W AZIMUTH (DEGREES) = 337.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	340	272	34	.	17	.	.	.	.	.	663
0.5-0.9	102	102	85	.	.	.	.	.	.	.	289
1.0-1.4	.	.	17	.	.	.	.	.	.	.	17
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	442	374	136	0	17	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.0 MEAN TP (SEC) = 4.7 NO. OF CASES = 57.

Table B9 (Concluded)

DEWEY BEACH, DE 38.70N 75.06W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	499	356	830	1362	363	287	240	206	104	30	4277
0.5-0.9	373	381	1019	1029	317	210	144	105	8	.	3586
1.0-1.4	33	139	238	297	142	109	80	30	6	.	1074
1.5-1.9	5	25	164	193	55	55	30	18	3	.	548
2.0-2.4	1	5	79	94	28	13	8	11	.	.	239
2.5-2.9	.	.	20	55	10	5	3	3	.	.	96
3.0-3.4	.	.	.	11	1	.	1	.	.	.	13
3.5-3.9	.	.	1	8	.	.	1	.	.	.	10
4.0-4.4	.	.	.	.	1	.	.	.	.	.	1
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	911	906	2351	3049	917	679	507	373	121	30	

COUNT OF Hm0 LESS THAN .2 M = 75.

PERCENT (X100) OF Hm0 LESS THAN .2 M = 126.

MEAN Hm0 (M) = 0.7

LARGEST Hm0 (M) = 4.2

MEAN TP (SEC) = 8.3

TOTAL CASES = 5945.

(Sheet 9 of 9)

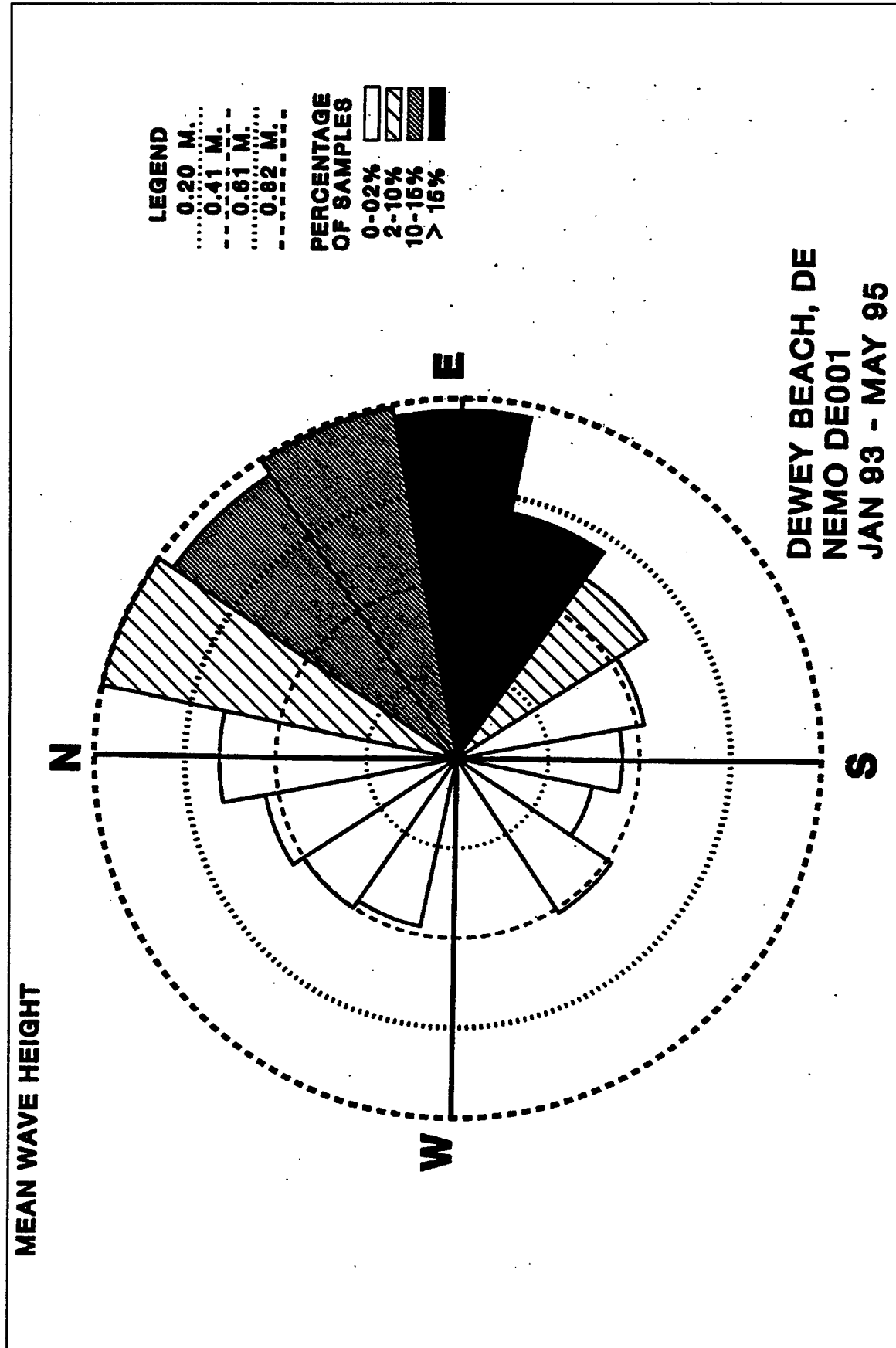


Figure B6. Wave rose for Dewey Beach, DE (DE001)

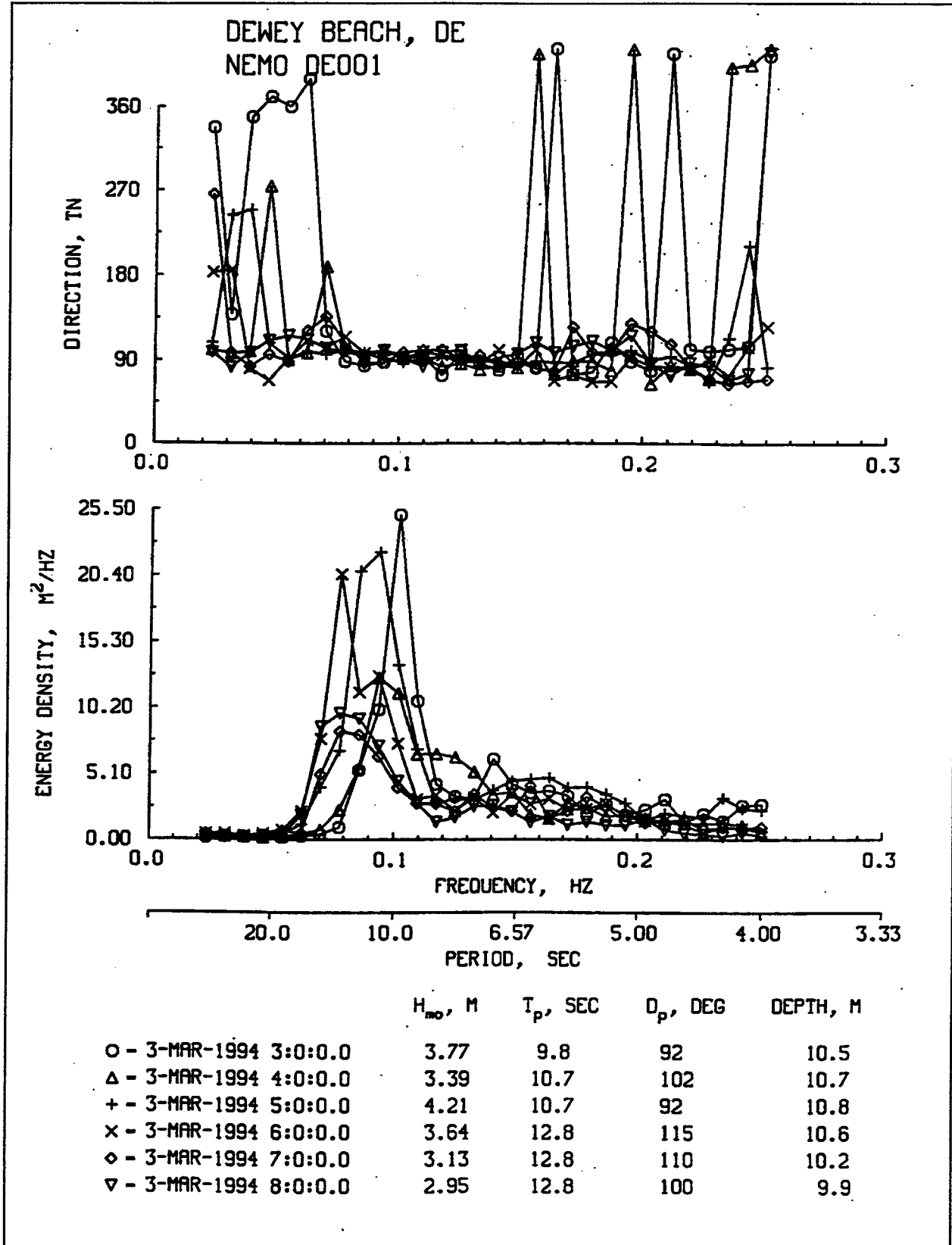


Figure B7. Wave spectra for Dewey Beach, DE (DE001)

Ocean City, MD

**Table B10
Number of Records for Ocean City, MD (MD001)**

NEMO MD001, OCEAN CITY,MD SITE 1 (38.40N 75.05W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	259	271	401	931
1994	315	257	131	180	230	179	185	221	288	235	392	334	2947
1995	308	207	249	195	220	203	186	338	224	0	290	383	2803

NUMBER OF RECORDS WITH HM0 AND T_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	259	271	400	930
1994	315	257	131	180	230	179	185	221	288	235	392	334	2947
1995	307	207	249	195	220	203	186	338	224	0	290	383	2802

NUMBER OF RECORDS WITH HM0, T_p, AND D_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	259	271	400	930
1994	315	257	131	180	230	179	185	221	287	235	392	334	2946
1995	307	207	249	195	220	203	186	338	224	0	290	383	2802

Table B11
Mean/Max Values for Ocean City, MD (MD001)

MEAN Hm0 (METRES) BY MONTH AND YEAR
 OCEAN CITY, MD (38.40N 75.05W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	.	.	.	.	.	.	.	.	.	1.1	1.2	0.9	1.0
1994	1.0	1.0	1.3	0.6	0.9	0.6	0.6	0.7	1.0	1.0	1.2	1.4	1.0
1995	1.1	0.7	1.0	0.8	0.9	0.8	0.5	1.3	1.0	.	0.8	0.5	0.9
MEAN	1.1	0.9	1.1	0.7	0.9	0.7	0.6	1.1	1.0	1.0	1.1	0.9	

LARGEST Hm0 (METRES) BY MONTH AND YEAR
 OCEAN CITY, MD (38.40N 75.05W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	.	.	.	.	.	.	3.0	3.4	2.5
1994	2.9	2.3	3.8	1.4	3.2	1.7	1.0	1.5	3.1	2.8	3.4	3.1
1995	2.4	1.8	1.8	1.8	2.0	1.7	1.1	2.8	1.7	.	3.1	1.9

3 YR. STATISTICS FOR OCEAN CITY, MD (38.40N 75.05W)

THE MEAN SIGNIFICANT WAVE HEIGHT(METRES) =	0.9
THE MEAN PEAK WAVE PERIOD (SECONDS) =	9.2
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	90.0
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.6
THE STANDARD DEVIATION OF TP (SECONDS) =	2.9
THE LARGEST Hm0 (METRES) =	3.8
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	10.7
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	104.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94030304

Table B12
Percent Occurrence for Ocean City, MD (MD001)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 0.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	89	.	.	.	.	.	.	14	.	.	103
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	89	0	0	0	0	0	0	14	0	0	

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.3 MEAN TP (SEC) = 5.0 NO. OF CASES = 7.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 22.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	509	134	.	.	14	14	29	74	14	.	788
0.5-0.9	194	29	14	.	14	.	.	14	.	.	265
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	703	163	14	0	28	14	29	88	14	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.9 MEAN TP (SEC) = 5.6 NO. OF CASES = 71.

(Sheet 1 of 9)

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 45.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	434	344	59	74	29	224	314	299	164	14	1955
0.5-0.9	868	1512	419	239	59	224	194	14	.	.	3529
1.0-1.4	14	254	224	104	59	29	.	.	.	.	684
1.5-1.9	.	44	89	.	14	.	.	.	.	.	147
2.0-2.4	.	.	.	.	.	.	14	.	.	.	14
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1316	2154	791	417	161	477	522	313	164	14	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 2.0 MEAN TP (SEC) = 7.2 NO. OF CASES = 424.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 67.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	74	119	239	1153	688	628	883	808	344	29	4965
0.5-0.9	344	718	1452	1692	808	763	554	239	74	29	6673
1.0-1.4	29	628	1407	1796	778	419	164	89	14	.	5324
1.5-1.9	.	119	1108	1737	449	179	119	.	14	.	3725
2.0-2.4	.	.	254	598	254	119	119	.	.	.	1344
2.5-2.9	.	.	29	149	29	.	.	14	.	.	221
3.0-3.4	.	.	.	29	.	.	.	.	.	.	29
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	447	1584	4489	7154	3006	2108	1839	1150	446	58	

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 3.1 MEAN TP (SEC) = 9.4 NO. OF CASES = 1490.

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 90.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	14	29	284	2710	1197	733	748	793	404	59	6971
0.5-0.9	134	239	1422	4522	1602	1482	1392	643	314	14	11764
1.0-1.4	44	149	913	1841	628	643	449	419	194	.	5280
1.5-1.9	.	89	868	1437	494	569	314	254	104	.	4129
2.0-2.4	.	.	329	823	269	224	179	89	14	.	1927
2.5-2.9	.	.	29	658	104	89	29	119	44	.	1072
3.0-3.4	.	.	.	104	29	29	29	14	.	.	205
3.5-3.9	.	.	.	14	14	14	.	.	.	.	42
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	192	506	3845	12109	4337	3783	3140	2331	1074	73	0

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 3.8 MEAN TP (SEC) = 10.3 NO. OF CASES = 2099.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 112.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	29	59	703	3099	584	404	389	164	89	.	5520
0.5-0.9	164	134	1901	6259	1063	643	359	374	134	29	11060
1.0-1.4	14	29	524	1781	554	509	119	344	269	14	4157
1.5-1.9	.	14	254	673	479	209	299	179	119	14	2240
2.0-2.4	.	.	29	389	209	224	209	59	.	.	1119
2.5-2.9	.	.	29	164	44	104	224	74	29	.	668
3.0-3.4	.	.	.	.	44	29	134	134	.	.	341
3.5-3.9	.	.	.	.	14	.	.	.	.	.	14
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	207	236	3440	12365	2991	2122	1733	1328	640	57	0

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 3.8 MEAN TP (SEC) = 9.8 NO. OF CASES = 1680.

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 135.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	209	74	509	584	14	.	89	29	14	.	1522
0.5-0.9	164	688	4582	1392	59	14	.	14	.	14	6927
1.0-1.4	.	59	598	389	44	29	29	.	.	.	1148
1.5-1.9	.	.	59	194	59	.	.	14	14	.	340
2.0-2.4	.	.	.	14	.	.	.	.	.	.	14
2.5-2.9	.	.	.	.	.	.	.	14	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	373	821	5748	2573	176	43	118	71	28	14	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 2.8 MEAN TP (SEC) = 7.2 NO. OF CASES = 667.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 157.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	404	299	119	14	.	.	.	.	.	.	836
0.5-0.9	898	1063	389	.	.	.	.	.	.	.	2350
1.0-1.4	.	59	29	.	.	.	.	.	.	.	88
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1302	1421	537	14	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.4 MEAN TP (SEC) = 4.7 NO. OF CASES = 219.

(Sheet 4 of 9)

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 180.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	134	.	.	.	.	.	.	.	.	.	134
0.5-0.9	74	59	.	.	.	.	.	.	.	.	133
1.0-1.4	.	14	14	.	.	.	.	.	.	.	28
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	208	73	14	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.1 MEAN TP (SEC) = 4.1 NO. OF CASES = 20.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 202.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	14	.	.	.	.	.	.	.	.	.	14
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	14	0	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 3.2 NO. OF CASES = 1.

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 225.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 247.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 270.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 292.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 7 of 9)

Table B12 (Continued)

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 315.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

OCEAN CITY, MD 38.40N 75.05W AZIMUTH (DEGREES) = 337.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

Table B12 (Concluded)

OCEAN CITY, MD 38.40N 75.05W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	190	106	191	763	252	200	246	218	103	10	2279
0.5-0.9	285	444	1017	1409	360	312	249	130	52	8	4266
1.0-1.4	10	119	371	591	206	163	76	85	47	1	1669
1.5-1.9	.	26	237	404	149	95	73	44	25	1	1054
2.0-2.4	.	.	61	182	73	56	52	14	1	.	439
2.5-2.9	.	.	8	97	17	19	25	22	7	.	195
3.0-3.4	.	.	.	13	7	5	16	14	.	.	55
3.5-3.9	.	.	.	1	2	1	.	.	.	.	4
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	485	695	1885	3460	1066	851	737	527	235	20	

COUNT OF Hm0 LESS THAN .2 M = 2.

PERCENT (X100) OF Hm0 LESS THAN .2 M = 3.

MEAN Hm0 (M) = 0.9

LARGEST Hm0 (M) = 3.8

MEAN TP (SEC) = 9.2

TOTAL CASES = 6681.

(Sheet 9 of 9)

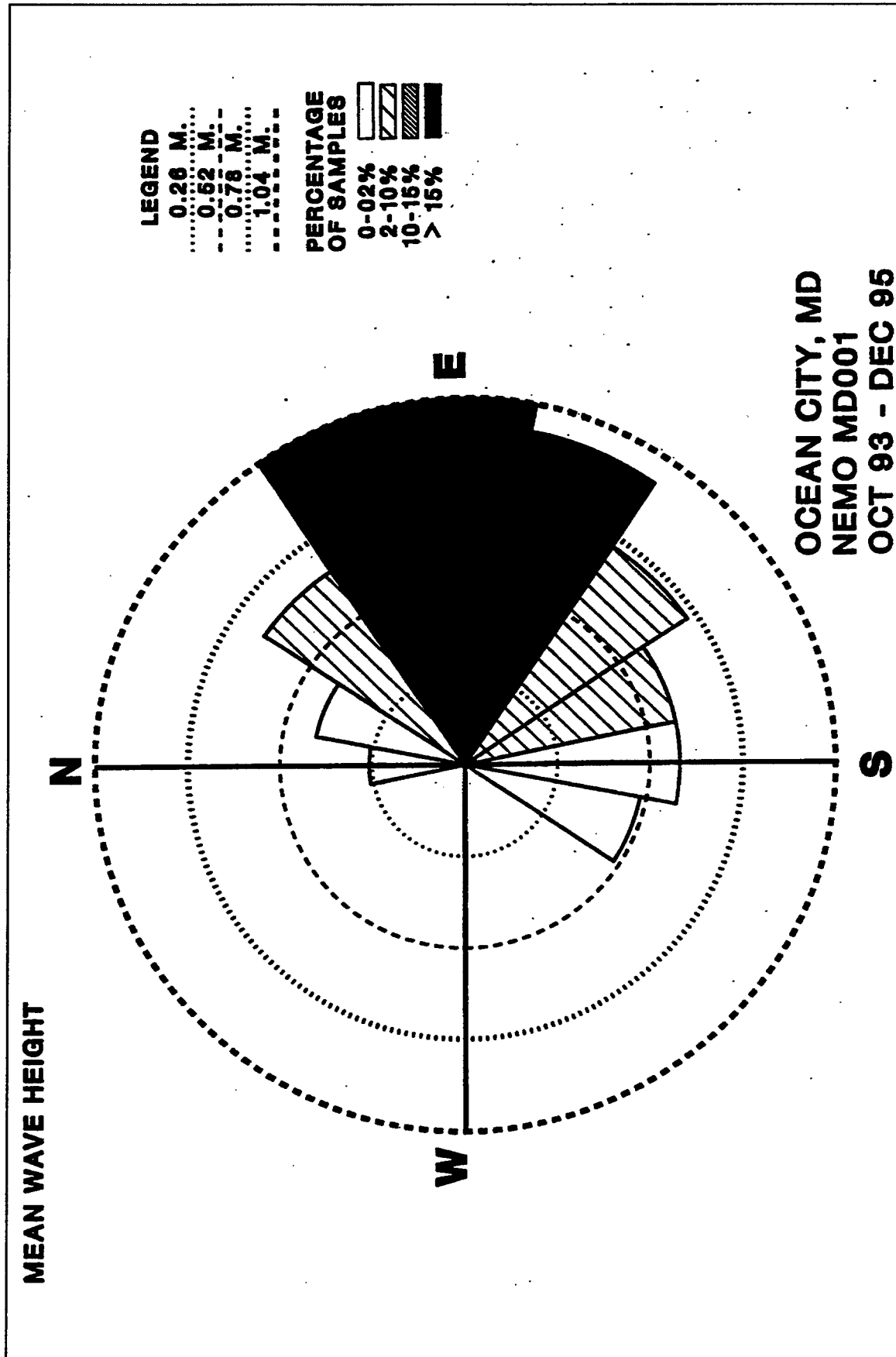
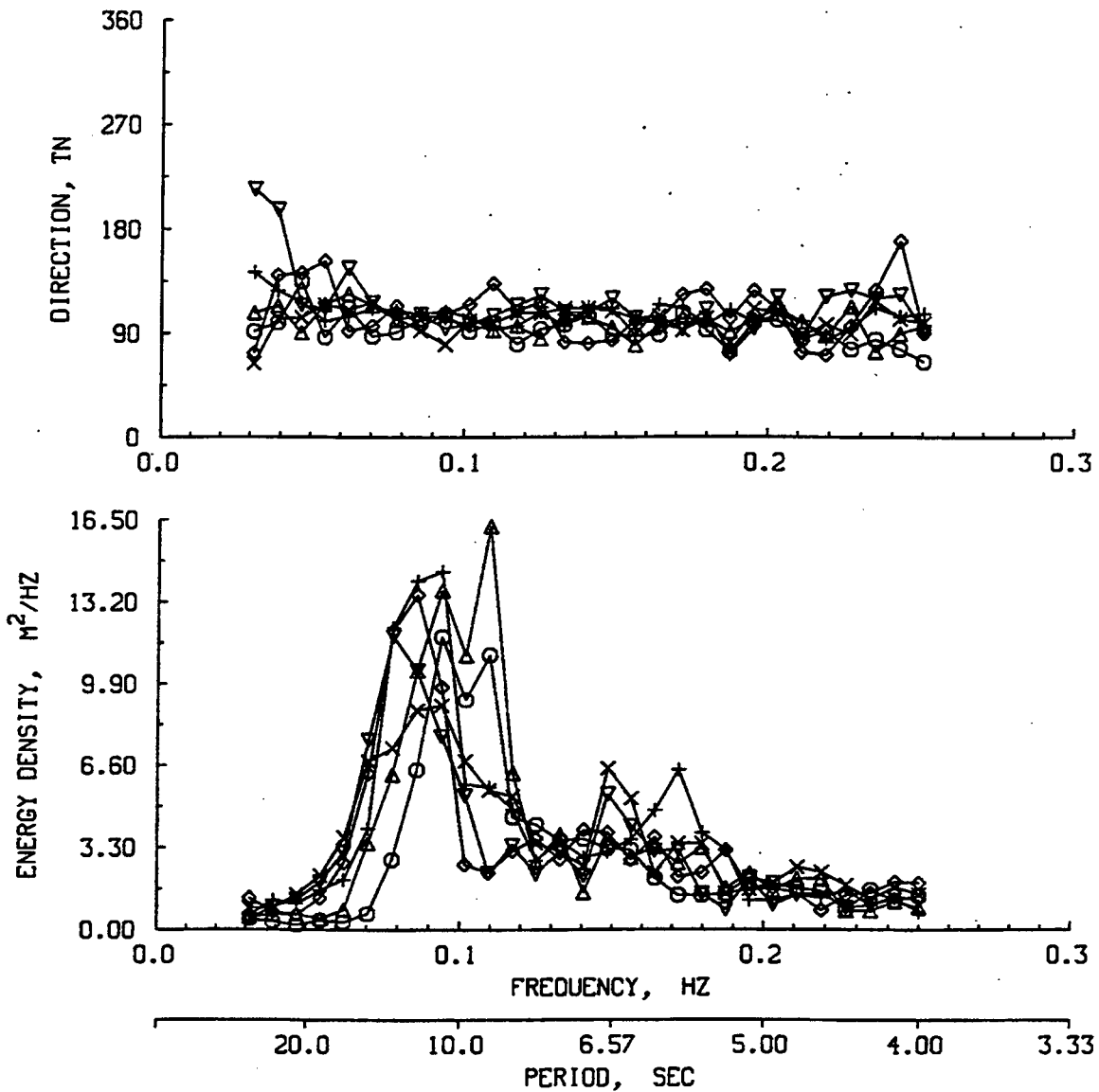


Figure B8. Wave rose for Ocean City, MD (MD001)

OCEAN CITY, MD SITE 1
NEMO M0001



	H_{m0} , M	T_p , SEC	D_p , DEG	DEPTH, M
○ - 3-MAR-1994 2:0:0.0	3.35	10.7	106	9.0
△ - 3-MAR-1994 3:0:0.0	3.73	9.1	93	9.2
+ - 3-MAR-1994 4:0:0.0	3.84	10.7	104	9.4
× - 3-MAR-1994 5:0:0.0	3.75	10.7	81	9.2
◇ - 3-MAR-1994 6:0:0.0	3.60	11.6	96	9.0
▽ - 3-MAR-1994 7:0:0.0	3.47	12.8	102	8.7

Figure B9. Wave spectra for Ocean City, MD (MD001)

**Table B13
Number of Records for Ocean City, MD (MD002)**

NEMO MD002, OCEAN CITY, MD SITE 2 (38.34N 75.07W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	218	265	402	885
1994	318	261	225	119	183	175	186	220	59	215	385	342	2688
1995	323	123	245	144	217	213	186	169	256	246	317	373	2812

NUMBER OF RECORDS WITH HM0 AND T_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	218	265	402	885
1994	318	261	224	119	183	175	186	220	59	215	385	342	2687
1995	320	123	245	144	217	213	186	169	256	246	317	372	2808

NUMBER OF RECORDS WITH HM0, T_p, AND D_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	215	385	342	942
1995	320	123	245	144	217	213	186	169	256	246	317	372	2808

**Table B14
Mean/Max Values for Ocean City, MD (MD002)**

MEAN Hm0 (METRES) BY MONTH AND YEAR
OCEAN CITY, MD (38.34N 75.07W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	.	.	.	.	.	.	.	.	.	1.0	1.2	0.9	1.0
1994	1.1	1.0	1.0	0.7	0.8	0.5	0.5	0.6	0.6	1.0	1.2	1.4	0.9
1995	1.0	0.7	0.9	0.7	0.9	0.8	0.5	1.3	1.1	0.9	0.8	0.5	0.8
MEAN	1.1	0.9	1.0	0.7	0.8	0.7	0.5	0.9	1.0	0.9	1.1	0.9	

LARGEST Hm0 (METRES) BY MONTH AND YEAR
OCEAN CITY, MD (38.34N 75.07W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	.	.	.	.	.	.	3.1	3.3	2.5
1994	3.2	2.2	3.7	1.8	1.9	1.5	0.9	1.5	1.7	2.8	3.3	2.9
1995	2.5	1.5	1.9	1.8	2.1	1.9	1.3	2.5	2.1	2.0	3.2	2.2

3 YR. STATISTICS FOR OCEAN CITY, MD (38.34N 75.07W)

THE MEAN SIGNIFICANT WAVE HEIGHT (METRES) =	0.9
THE MEAN PEAK WAVE PERIOD (SECONDS) =	8.6
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	90.0
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.6
THE STANDARD DEVIATION OF TP (SECONDS) =	3.0
THE LARGEST Hm0 (METRES) =	3.7
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	11.6
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	****
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94030304

Table B15
Percent Occurrence for Ocean City, MD (MD002)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 0.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	186	.	.	26	.	80	53	26	.	.	371
0.5-0.9	53	.	.	.	.	.	53	.	.	.	106
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	239	0	0	26	0	80	106	26	0	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.7 MEAN TP (SEC) = 8.0 NO. OF CASES = 18.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 22.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	960	320	.	213	133	186	80	.	26	.	1918
0.5-0.9	533	266	133	26	53	26	26	.	.	.	1063
1.0-1.4	26	53	53	.	.	.	.	.	.	.	132
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1519	639	186	239	186	212	106	0	26	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.4 MEAN TP (SEC) = 6.0 NO. OF CASES = 117.

(Sheet 1 of 9)

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 45.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	720	373	160	320	160	213	160	53	80	26	2265
0.5-0.9	800	1226	693	160	26	.	26	26	.	.	2957
1.0-1.4	160	346	240	26	53	.	.	.	.	.	825
1.5-1.9	.	80	213	53	.	.	.	.	.	.	346
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1680	2025	1306	559	239	213	186	79	80	26	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.9 MEAN TP (SEC) = 6.3 NO. OF CASES = 240.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 67.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	320	80	293	1173	320	586	640	560	160	53	4185
0.5-0.9	506	613	1840	1546	613	560	400	266	26	.	6370
1.0-1.4	186	533	1493	1413	453	106	26	133	53	.	4396
1.5-1.9	.	106	1360	1040	133	53	80	.	26	.	2798
2.0-2.4	.	.	426	373	.	.	.	.	26	.	825
2.5-2.9	.	.	.	160	.	.	.	.	.	.	160
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1012	1332	5412	5705	1519	1305	1146	959	291	53	

MEAN Hm0(M) = 1.0 LARGEST Hm0 (M) = 2.8 MEAN TP (SEC) = 8.7 NO. OF CASES = 703.

(Sheet 2 of 9)

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 90.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	266	.	533	2746	1333	1146	1786	1306	853	80	10049
0.5-0.9	293	240	1306	4346	2053	1280	1013	480	106	26	11143
1.0-1.4	.	293	1146	3760	1520	1146	186	666	453	.	9170
1.5-1.9	.	53	1173	1546	400	480	453	400	53	.	4558
2.0-2.4	.	.	80	933	80	186	426	53	26	.	1784
2.5-2.9	.	.	26	533	133	160	266	240	.	.	1358
3.0-3.4	.	.	.	106	26	.	80	53	.	.	265
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	559	586	4264	13970	5545	4398	4210	3198	1491	106	

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 3.3 MEAN TP (SEC) = 10.4 NO. OF CASES = 1438.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 112.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	160	80	346	1626	533	346	240	80	80	26	3517
0.5-0.9	293	106	1413	2906	640	666	160	160	26	.	6370
1.0-1.4	.	133	640	1146	560	373	293	453	213	53	3864
1.5-1.9	.	.	106	1173	186	213	133	80	213	.	2104
2.0-2.4	.	.	.	133	80	293	186	133	53	.	878
2.5-2.9	.	.	26	26	.	26	80	80	.	.	238
3.0-3.4	.	.	.	.	.	26	26	26	26	.	104
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	453	319	2531	7010	1999	1943	1118	1012	611	79	

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 3.2 MEAN TP (SEC) = 9.8 NO. OF CASES = 641.

(Sheet 3 of 9)

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 135.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	506	266	586	213	80	80	53	26	.	.	1810
0.5-0.9	453	373	2853	1146	80	106	26	53	53	.	5143
1.0-1.4	.	160	1013	266	.	26	160	53	80	.	1758
1.5-1.9	.	.	106	186	26	80	26	80	106	26	636
2.0-2.4	.	.	.	80	26	26	26	.	26	.	184
2.5-2.9	.	.	.	.	26	.	.	.	.	.	26
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	959	799	4558	1891	238	318	291	212	265	26	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 2.5 MEAN TP (SEC) = 7.6 NO. OF CASES = 359.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 157.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	613	160	160	106	.	.	.	.	.	.	1039
0.5-0.9	426	986	1066	213	26	.	.	.	.	.	2717
1.0-1.4	.	133	293	.	.	.	.	.	.	.	426
1.5-1.9	.	.	160	.	.	.	.	.	.	.	160
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1039	1279	1679	319	26	0	0	0	0	0	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.9 MEAN TP (SEC) = 5.6 NO. OF CASES = 163.

(Sheet 4 of 9)

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 180.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	213	53	106	26	.	26	26	.	26	.	476
0.5-0.9	53	133	133	.	.	.	.	.	.	.	319
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	266	186	239	26	0	26	26	0	26	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.7 MEAN TP (SEC) = 6.0 NO. OF CASES = 30.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 202.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	133	.	53	.	.	.	.	.	.	.	186
0.5-0.9	.	26	.	.	.	.	26	.	.	.	52
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	133	26	53	0	0	0	0	26	0	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.6 MEAN TP (SEC) = 5.7 NO. OF CASES = 9.

(Sheet 5 of 9)

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 225.0

JANUARY 1993 - DECEMBER 1995

PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	106	.	.	.	26	.	.	.	.	.	132
0.5-0.9	26	.	.	.	.	.	.	.	.	.	26
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	132	0	0	0	26	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 5.0 NO. OF CASES = 6.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 247.5

JANUARY 1993 - DECEMBER 1995

PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	26	.	.	.	26	.	.	.	26	.	78
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	26	0	0	0	26	0	0	0	26	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 10.1 NO. OF CASES = 3.

(Sheet 6 of 9)

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 270.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	26	.	.	26	.	.	.	.	.	.	52
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	26	0	0	26	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 6.5 NO. OF CASES = 2.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 292.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	53	.	.	26	.	.	26	.	.	.	105
0.5-0.9	26	.	.	26
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	53	0	0	26	0	0	26	26	0	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.6 MEAN TP (SEC) = 8.7 NO. OF CASES = 5.

Table B15 (Continued)

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 315.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	26	.	.	.	26
0.5-0.9	53	.	.	53
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	26	53	0	0	0

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.6 MEAN TP (SEC) = 13.7 NO. OF CASES = 3.

MD002, OCEAN CITY, MD 38.34N 75.07W AZIMUTH (DEGREES) = 337.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	186	.	26	26	53	26	26	.	.	.	343
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	186	0	26	26	53	26	26	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 6.9 NO. OF CASES = 13.

(Sheet 8 of 9)

Table B15 (Concluded)

OCEAN CITY, MD 38.34N 75.07W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	570	148	366	812	261	216	206	144	84	10	2817
0.5-0.9	404	404	1052	1174	339	227	159	92	14	1	3866
1.0-1.4	36	129	402	599	214	140	59	87	46	3	1715
1.5-1.9	3	20	305	341	57	70	59	36	23	1	915
2.0-2.4	.	1	70	191	39	43	43	12	7	.	406
2.5-2.9	.	.	7	87	21	23	32	23	.	.	193
3.0-3.4	.	.	.	17	4	10	9	4	1	.	45
3.5-3.9	.	.	.	.	.	3	.	.	.	.	3
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1013	702	2202	3221	935	732	567	398	175	15	

COUNT OF Hm0 LESS THAN .2 M = 5.

PERCENT (X100) OF Hm0 LESS THAN .2 M = 8.

MEAN Hm0 (M) = 0.9

LARGEST Hm0 (M) = 3.7

MEAN TP (SEC) = 8.6

TOTAL CASES = 6385.

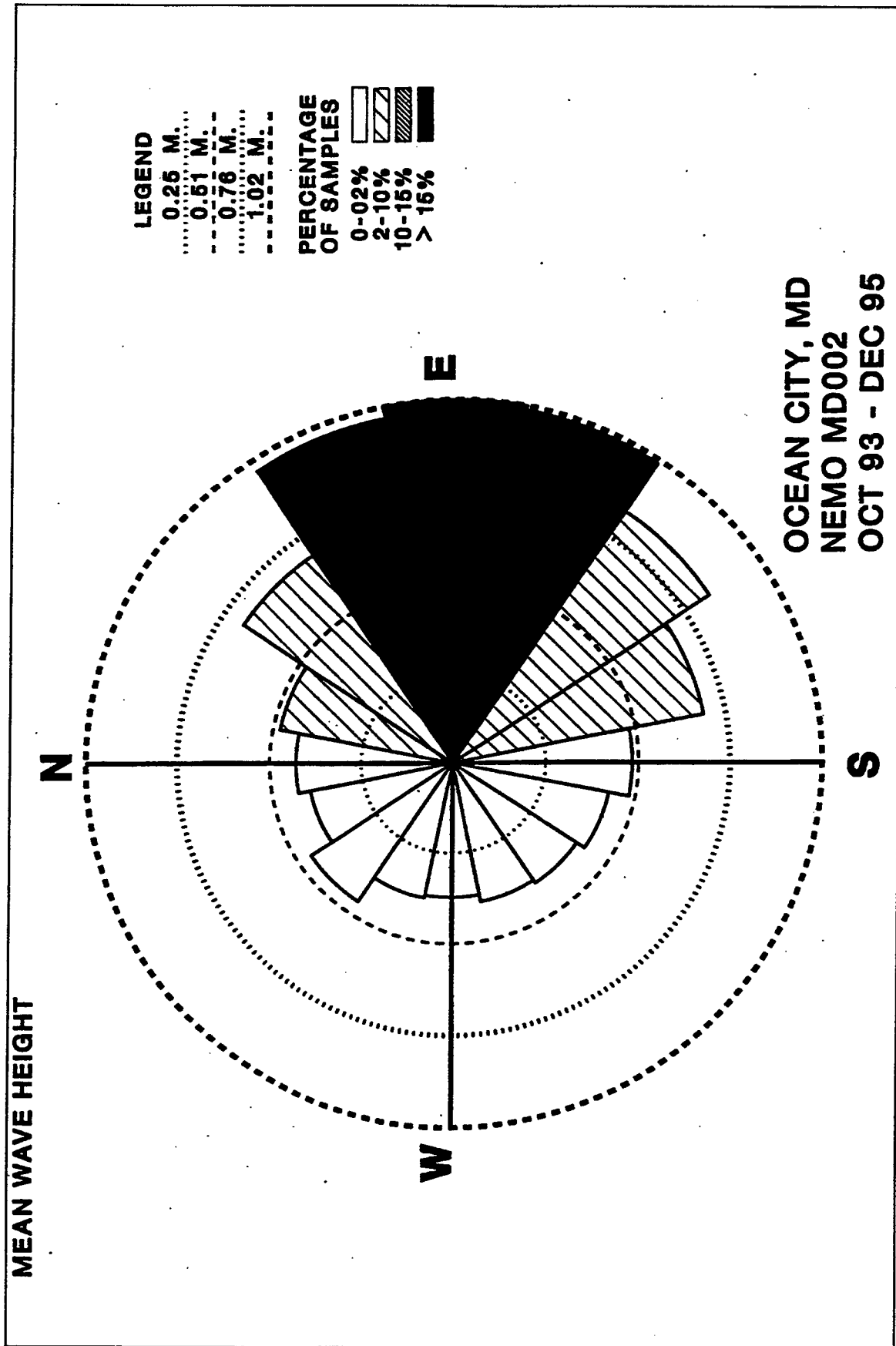
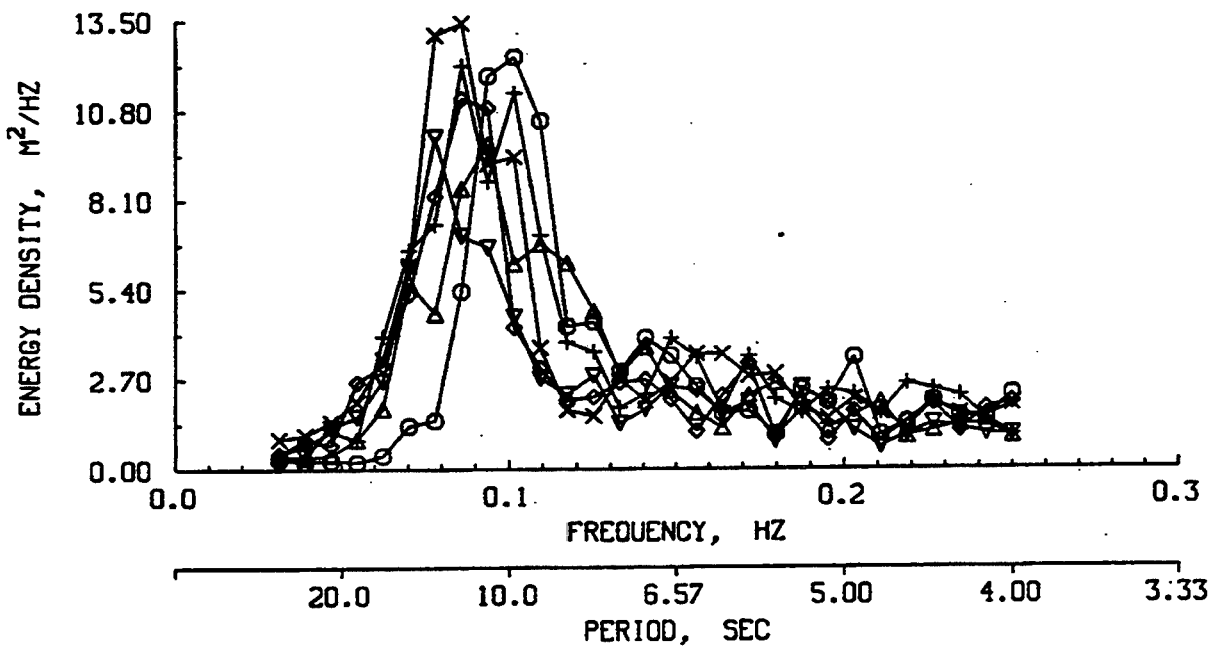
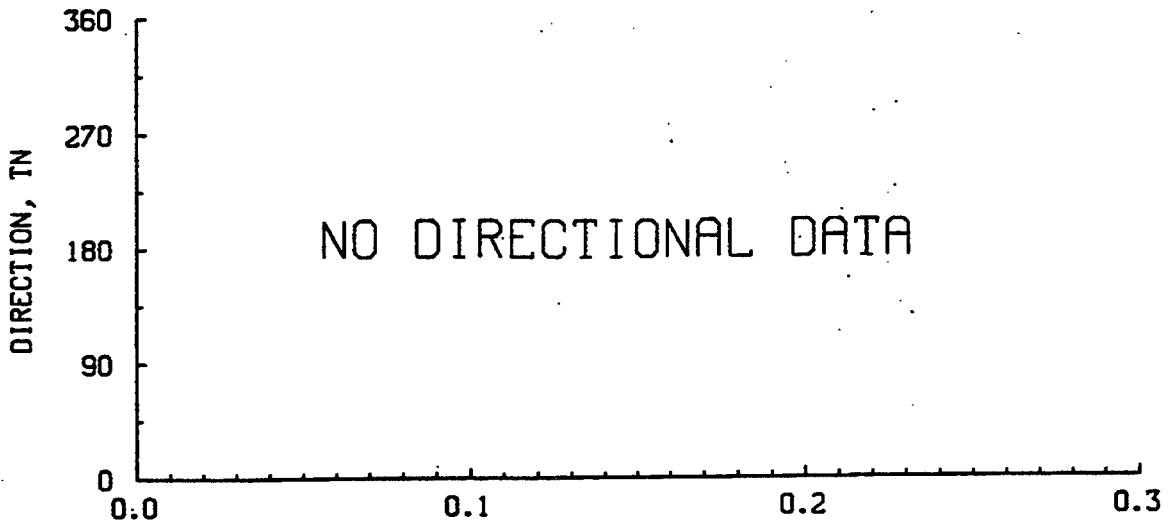


Figure B10. Wave rose for Ocean city, MD (MD002)

OCEAN CITY, MD SITE 2
NEMO M0002



	H_{m0} , M	T_p , SEC	D_p , DEG	DEPTH, M
○ - 3-MAR-1994 2:0:0.0	3.40	9.8	*****	10.6
△ - 3-MAR-1994 3:0:0.0	3.37	10.7	*****	10.9
+ - 3-MAR-1994 4:0:0.0	3.72	11.6	*****	11.2
× - 3-MAR-1994 5:0:0.0	3.71	11.6	*****	10.9
◇ - 3-MAR-1994 6:0:0.0	3.45	11.6	*****	10.7
▽ - 3-MAR-1994 7:0:0.0	3.09	12.8	*****	10.4

Figure B11. Wave spectra for Ocean City, MD (MD002)

Virginia Beach, VA

Table B16
Number of Records for Virginia Beach, VA (VA001)

NEMO VA001, VIRGINIA BEACH, VIRGINIA (36.85N 75.97W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	230	308	303	215	185	172	172	138	190	259	256	219	2647
1994	205	168	229	163	278	148	150	214	299	233	324	256	2667
1995	0	439	744	720	744	720	744	744	720	744	720	744	7783

NUMBER OF RECORDS WITH HM0 AND T_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	230	308	302	215	185	172	171	138	190	259	254	219	2643
1994	205	168	229	163	278	148	150	214	299	230	322	256	2662
1995	0	439	744	720	744	720	744	744	720	744	720	741	7780

NUMBER OF RECORDS WITH HM0, T_p, AND D_p BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	230	308	302	215	185	172	171	138	190	259	254	219	2643
1994	205	168	229	163	0	50	150	214	6	0	11	236	1432
1995	0	439	744	720	744	720	744	744	720	744	720	741	7780

Table B17
Mean/Max Values for Virginia Beach, VA (VA001)

MEAN Hm0 (METRES) BY MONTH AND YEAR
 VIRGINIA BEACH, VA (36.85N 75.97W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	1.0	1.0	0.9	0.9	0.5	0.5	0.4	0.6	0.6	0.9	1.0	1.0	0.8
1994	0.9	0.7	0.8	0.5	0.9	0.5	0.4	0.5	0.7	0.8	0.9	0.9	0.7
1995	.	0.6	0.7	0.6	0.6	0.6	0.5	0.9	0.9	0.7	0.6	0.5	0.6
MEAN	1.0	0.7	0.7	0.6	0.6	0.6	0.5	0.8	0.8	0.7	0.8	0.7	

LARGEST Hm0 (METRES) BY MONTH AND YEAR
 VIRGINIA BEACH, VA (36.85N 75.97W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	2.6	2.6	3.0	2.8	1.0	1.2	1.0	1.8	2.4	2.7	2.8	2.1
1994	2.0	1.6	2.9	1.3	2.8	0.9	0.7	1.1	2.3	2.2	3.2	2.1
1995	.	1.2	1.7	1.9	1.8	1.6	0.8	2.4	1.7	1.7	2.4	1.5

3 YR. STATISTICS FOR VIRGINIA BEACH, VA (36.85N 75.97W)

THE MEAN SIGNIFICANT WAVE HEIGHT (METRES) =	0.7
THE MEAN PEAK WAVE PERIOD (SECONDS) =	8.3
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	90.0
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.4
THE STANDARD DEVIATION OF TP (SECONDS) =	2.8
THE LARGEST Hm0 (METRES) =	3.2
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	14.2
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	****
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94111812

Table B18
Percent Occurrence for Virginia Beach, VA (VA001)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 0.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	354	50	.	25	.	8	.	.	.	.	437
0.5-0.9	286	59	.	.	.	.	.	.	.	.	345
1.0-1.4	16	.	.	.	.	.	.	.	.	.	16
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	656	109	0	25	0	8	0	0	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.1 MEAN TP (SEC) = 4.2 NO. OF CASES = 95.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 22.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	700	33	16	16	.	.	.	.	.	.	765
0.5-0.9	1096	151	.	.	.	.	.	.	.	.	1247
1.0-1.4	227	244	.	.	.	.	.	.	.	.	471
1.5-1.9	.	33	.	.	.	.	.	.	.	.	33
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2023	461	16	16	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.7 LARGEST Hm0 (M) = 1.9 MEAN TP (SEC) = 4.1 NO. OF CASES = 299.

(Sheet 1 of 9)

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 45.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	522	286	75	16	.	16	.	.	.	.	915
0.5-0.9	1307	885	126	.	.	.	.	.	.	.	2318
1.0-1.4	202	421	151	8	.	.	.	.	.	.	782
1.5-1.9	16	33	151	8	.	8	.	8	.	.	224
2.0-2.4	.	.	25	.	.	.	.	.	.	.	25
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2047	1625	528	32	0	24	0	8	0	0	

MEAN Hm0 (M) = 0.8 LARGEST Hm0 (M) = 2.3 MEAN TP (SEC) = 4.7 NO. OF CASES = 507.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 67.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	447	565	1239	388	177	219	253	50	16	16	3370
0.5-0.9	657	1771	3677	1037	506	354	126	59	.	8	8195
1.0-1.4	33	851	2260	809	278	286	177	92	8	.	4794
1.5-1.9	.	126	1476	337	134	118	33	42	.	.	2266
2.0-2.4	.	.	261	345	33	25	.	.	.	.	664
2.5-2.9	.	.	16	50	.	8	.	.	.	.	74
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1137	3313	8929	2966	1128	1010	589	243	24	24	

MEAN Hm0 (M) = 1.0 LARGEST Hm0 (M) = 2.7 MEAN TP (SEC) = 7.3 NO. OF CASES = 2298.

(Sheet 2 of 9)

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 90.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	295	210	1670	7692	2935	2353	1872	970	354	50	18401
0.5-0.9	362	632	3315	7684	2226	1695	1442	725	126	8	18215
1.0-1.4	33	160	911	1088	261	236	261	236	59	.	3245
1.5-1.9	.	8	210	320	59	84	118	75	.	.	874
2.0-2.4	.	.	25	67	25	8	67	118	16	.	326
2.5-2.9	.	.	.	67	16	.	8	25	.	.	116
3.0-3.4	.	.	.	.	.	.	8	.	.	.	8
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	690	1010	6131	16918	5522	4376	3776	2149	555	58	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 3.0 MEAN TP (SEC) = 9.7 NO. OF CASES = 4885.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 112.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	371	531	3517	5854	784	320	219	126	84	33	11839
0.5-0.9	253	497	4757	5482	1003	632	227	514	185	8	13558
1.0-1.4	.	25	388	253	59	42	75	177	160	8	1187
1.5-1.9	.	.	25	126	50	16	8	16	.	.	241
2.0-2.4	.	.	.	33	33	.	59	8	.	.	133
2.5-2.9	.	.	.	25	50	33	25	.	.	.	133
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	624	1053	8687	11773	1979	1043	613	841	429	49	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 2.9 MEAN TP (SEC) = 8.6 NO. OF CASES = 3214.

(Sheet 3 of 9)

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 135.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	615	480	860	345	42	.	.	8	.	.	2350
0.5-0.9	700	421	877	67	.	.	.	.	8	.	2073
1.0-1.4	33	8	25	.	.	.	.	.	.	.	66
1.5-1.9	8	.	8	.	.	.	.	.	.	.	16
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1356	909	1770	412	42	0	0	8	8	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 1.5 MEAN TP (SEC) = 5.6 NO. OF CASES = 535.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 157.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	25	8	16	8	.	.	.	.	.	.	57
0.5-0.9	92	.	.	.	.	.	.	.	.	.	92
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	117	8	16	8	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 0.9 MEAN TP (SEC) = 4.5 NO. OF CASES = 18.

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 180.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 202.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 5 of 9)

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 225.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	8	.	.	.	.	.	.	.	.	.	8
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	8	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 3.3 NO. OF CASES = 1.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 247.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 270.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 292.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	8	.	.	.	.	.	.	.	.	.	8
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	8	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 0.6 MEAN TP (SEC) = 3.3 NO. OF CASES = 1.

(Sheet 7 of 9)

Table B18 (Continued)

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 315.0
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

VIRGINIA BEACH, VA 36.85N 75.97W AZIMUTH (DEGREES) = 337.5
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	8	.	.	8	.	.	.	.	.	.	16
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	8	0	0	8	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.4 MEAN TP (SEC) = 6.2 NO. OF CASES = 2.

(Sheet 8 of 9)

Table B18 (Concluded)

VIRGINIA BEACH, VA 36.85N 75.97W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	318	205	735	1493	374	284	241	119	47	9	3825
0.5-0.9	446	437	1259	1406	359	262	168	121	29	2	4489
1.0-1.4	54	164	393	228	62	61	48	45	20	.	1075
1.5-1.9	2	19	202	96	26	23	18	13	.	.	399
2.0-2.4	.	.	35	57	12	6	12	13	1	.	136
2.5-2.9	.	.	1	19	6	3	6	5	.	.	40
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	820	825	2625	3299	839	639	493	316	97	11	

COUNT OF Hm0 LESS THAN .2 M = 12.

PERCENT(X100) OF Hm0 LESS THAN .2 M = 9.

MEAN Hm0 (M) = 0.7

LARGEST Hm0 (M) = 3.2

MEAN TP (SEC) = 8.3

TOTAL CASES = 13097.

(Sheet 9 of 9)

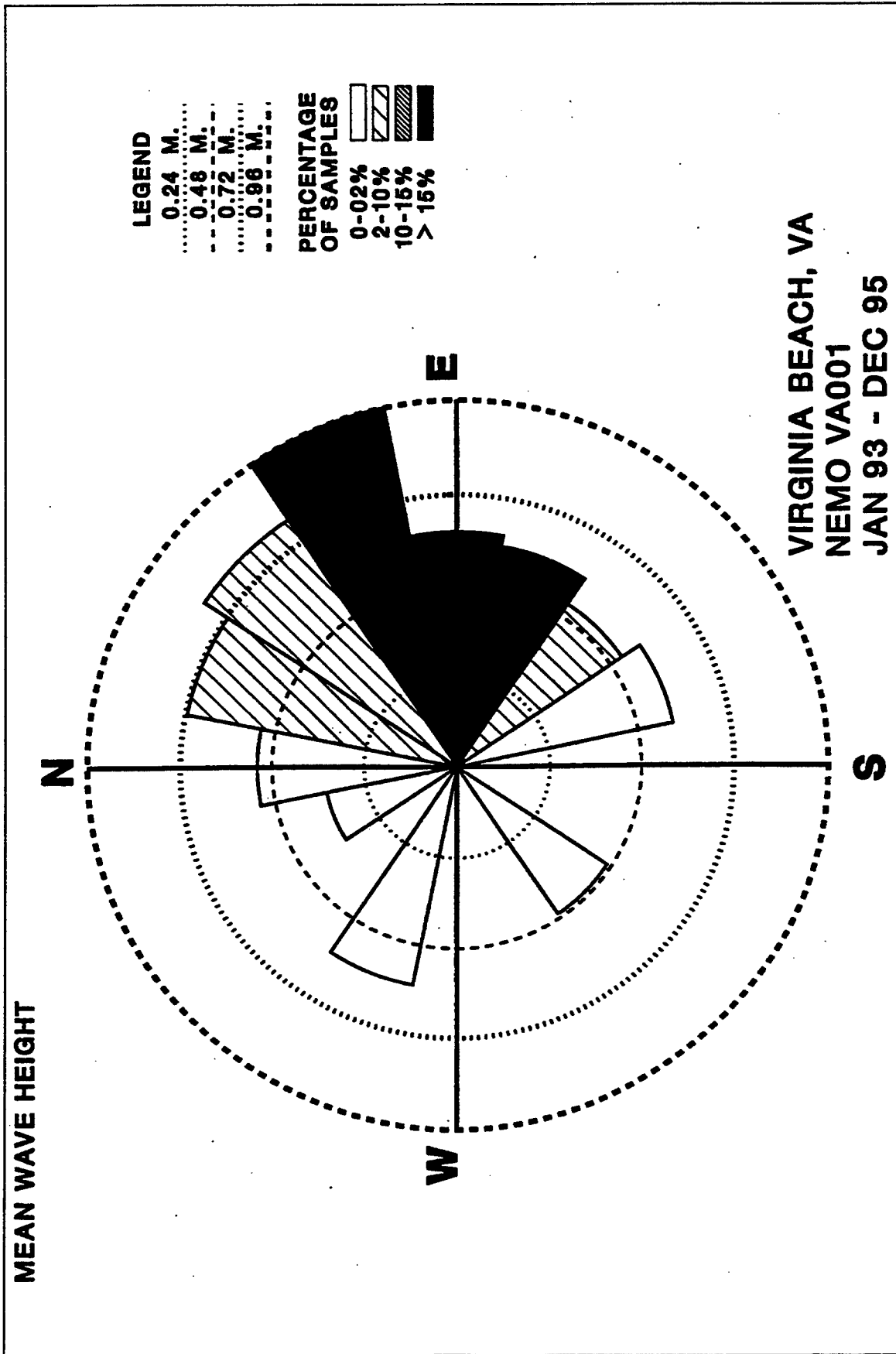
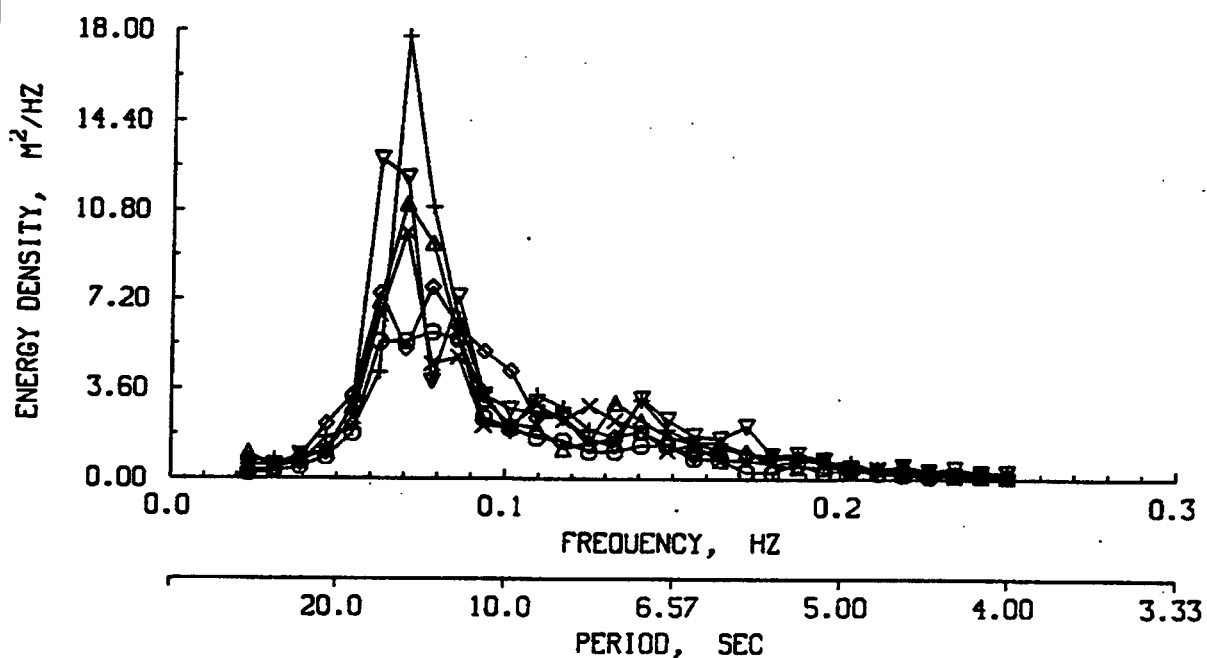
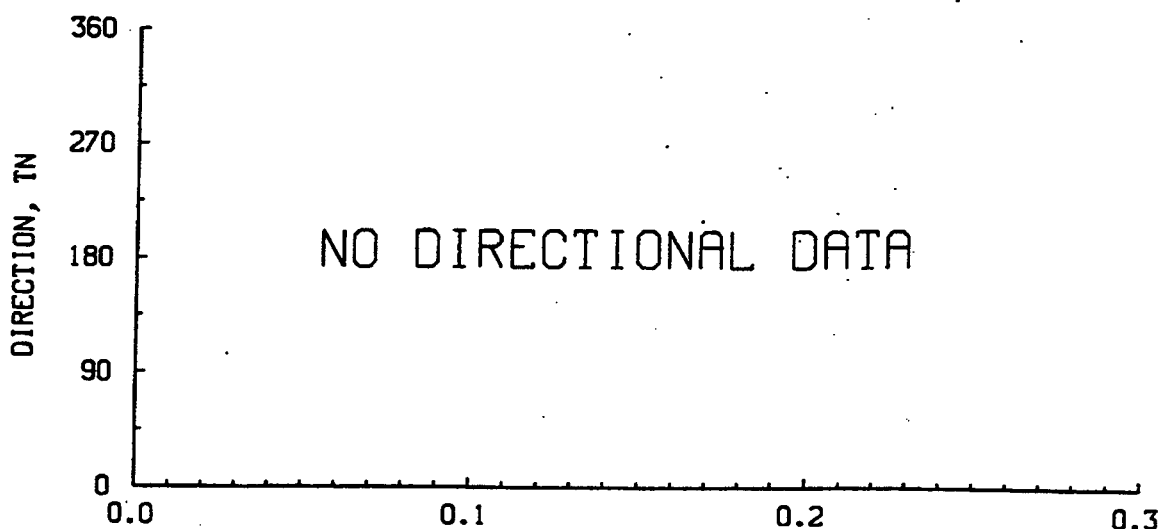


Figure B12. Wave rose for Virginia Beach, VA (VA001)

VIRGINIA BEACH, VA
NEMO VA001



	H_{mo} , M	T_p , SEC	D_p , DEG	DEPTH, M
○ - 18-NOV-1994 10:0:0.0	2.35	12.8	*****	5.6
△ - 18-NOV-1994 11:0:0.0	2.88	14.2	*****	5.8
+ - 18-NOV-1994 12:0:0.0	3.18	14.2	*****	5.9
× - 18-NOV-1994 13:0:0.0	2.68	14.2	*****	5.9
◇ - 18-NOV-1994 14:0:0.0	2.86	12.8	*****	5.7
▽ - 18-NOV-1994 15:0:0.0	3.09	16.0	*****	5.5

Figure B13. Wave spectra for Virginia Beach, VA (VA001)

Appendix C NEMO Site in the Gulf of Mexico

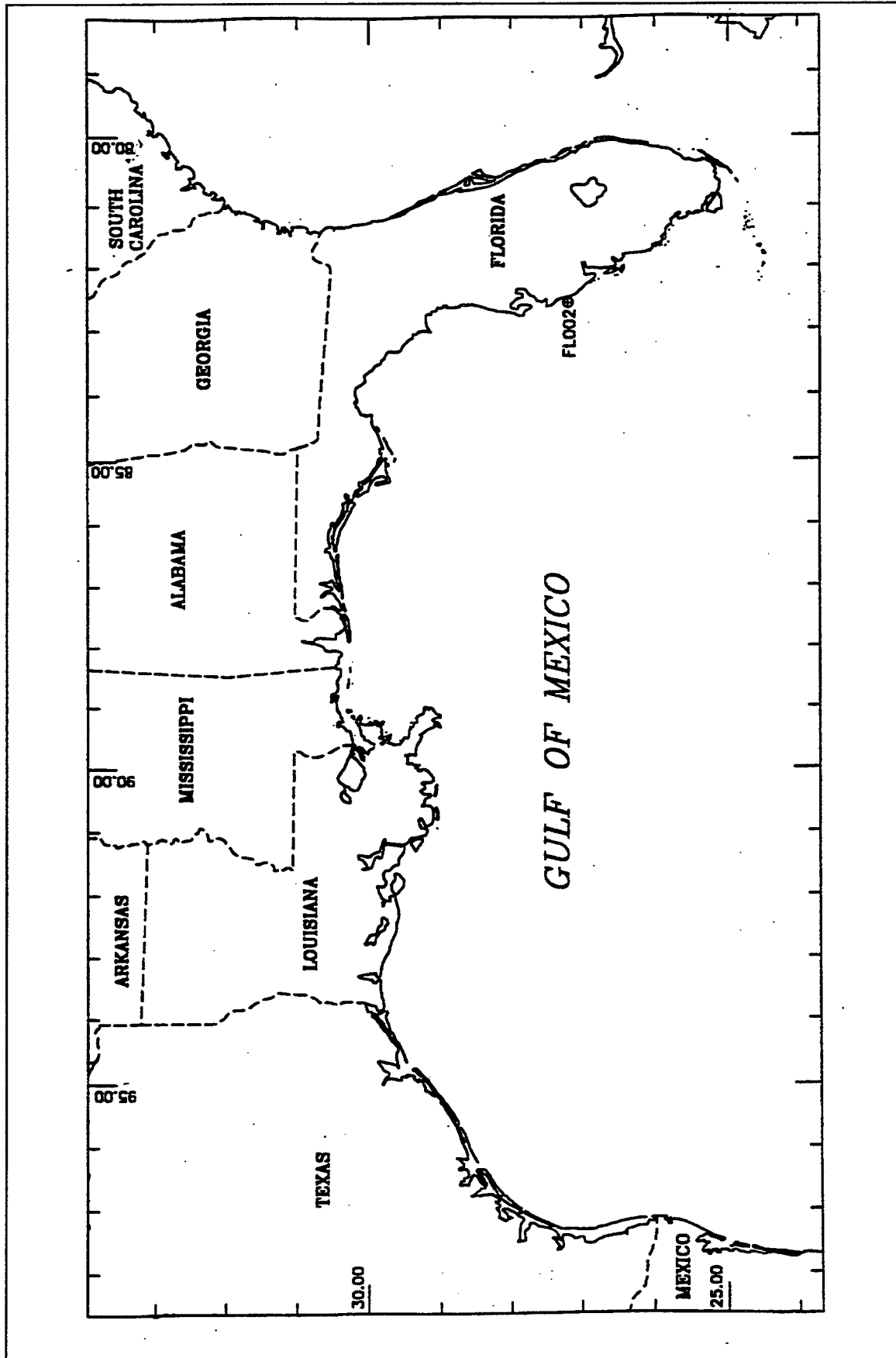


Figure C1. NEMO sites in the Gulf of Mexico

**Table C1
Number of Records for Sarasota, FL (FL002)**

NEMO FL002, SARASOTA, FL (27.30N 82.59W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	216	144	172	174	181	690	343	1920
1994	676	655	727	380	185	217	165	279	357	234	217	280	4372
1995	308	253	210	188	178	202	0	124	237	200	277	400	2577

NUMBER OF RECORDS WITH HM0 AND Tp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	68	49	87	88	73	461	194	1020
1994	414	321	453	153	38	89	67	136	212	154	137	190	2364
1995	248	212	146	127	91	162	0	59	150	160	188	294	1837

NUMBER OF RECORDS WITH HM0, Tp, AND Dp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	68	49	86	88	73	461	194	1019
1994	414	321	453	153	38	89	67	136	212	154	137	190	2364
1995	248	212	146	127	91	162	0	59	150	160	188	294	1837

Table C2
Mean/Max Values for Sarasota, FL (FL002)

MEAN Hm0 (METRES) BY MONTH AND YEAR
 FL002, SARASOTA, FL (27.30N 82.59W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	.	.	.	.	.	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.3
1994	0.4	0.2	0.4	0.2	0.2	0.2	0.2	0.3	0.3	0.5	0.3	0.5	0.3
1995	0.7	0.6	0.4	0.4	0.3	0.6	.	0.3	0.3	0.7	0.4	0.4	0.5
MEAN	0.5	0.4	0.4	0.3	0.2	0.3	0.2	0.3	0.3	0.5	0.3	0.4	

LARGEST Hm0 (METRES) BY MONTH AND YEAR
 FL002, SARASOTA, FL (27.30N 82.59W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	.	.	0.5	0.6	0.6	0.4	1.8	1.4	1.5
1994	2.3	0.8	1.9	0.8	0.5	0.9	0.9	1.5	0.8	1.7	1.2	1.5
1995	1.7	2.1	1.1	1.0	1.0	1.9	.	1.2	0.8	2.2	1.3	1.7

3 YR. STATISTICS FOR FL002, SARASOTA, FL (27.30N 82.59W)

THE MEAN SIGNIFICANT WAVE HEIGHT (METRES) =	0.4
THE MEAN PEAK WAVE PERIOD (SECONDS) =	3.5
THE MOST FREQUENT 22.5 (CENTER) DIRECTION BAND (DEGREES) =	225.0
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.3
THE STANDARD DEVIATION OF TP (SECONDS) =	3.2
THE LARGEST Hm0 (METRES) =	2.3
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	9.8
THE PEAK DIRECTION (DEGREES) ASSOC. WITH THE LARGEST Hm0 =	201.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94010404

Table C3
Percent Occurrence for Sarasota, FL (FL002)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 0.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 22.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

(Sheet 1 of 9)

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 45.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 67.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	19	.	.	.	.	.	.	.	.	.	19
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	19	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 0.4 MEAN TP (SEC) = 3.8 NO. OF CASES = 1.

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 90.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	0
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.0 LARGEST Hm0 (M) = 0.0 MEAN TP (SEC) = 0.0 NO. OF CASES = 0.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 112.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	249	.	.	.	.	.	.	.	.	.	249
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	249	0	0	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.2 LARGEST Hm0 (M) = 0.3 MEAN TP (SEC) = 4.0 NO. OF CASES = 13.

(Sheet 3 of 9)

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 135.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	2528	766	19	.	.	.	.	.	.	.	3313
0.5-0.9	249	306	19	.	.	.	.	.	.	.	574
1.0-1.4	.	38	19	.	.	.	.	.	.	.	57
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2777	1110	57	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 1.1 MEAN TP (SEC) = 4.3 NO. OF CASES = 206.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 157.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	1187	574	996	517	.	.	.	.	.	.	3274
0.5-0.9	76	593	249	19	.	.	.	.	.	.	937
1.0-1.4	.	38	191	19	.	.	.	.	.	.	248
1.5-1.9	.	.	57	.	.	.	.	.	.	.	57
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1263	1205	1493	555	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.8 MEAN TP (SEC) = 5.7 NO. OF CASES = 236.

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 180.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	2681	1283	5574	1302	.	.	.	.	.	.	10840
0.5-0.9	210	498	1819	613	.	.	.	.	.	.	3140
1.0-1.4	.	19	249	57	.	.	.	.	.	.	325
1.5-1.9	.	.	19	114	.	.	.	.	.	.	133
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2891	1800	7661	2086	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.8 MEAN TP (SEC) = 6.1 NO. OF CASES = 754.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 202.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	3237	2394	3486	555	.	.	.	.	.	.	9672
0.5-0.9	689	593	2835	1360	.	.	.	.	.	.	5477
1.0-1.4	.	95	402	689	19	19	.	.	.	.	1224
1.5-1.9	.	.	191	249	153	38	.	.	.	.	631
2.0-2.4	.	.	.	38	57	19	.	.	.	.	114
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	3926	3082	6914	2891	229	76	0	0	0	0	0

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 2.3 MEAN TP (SEC) = 6.1 NO. OF CASES = 894.

(Sheet 5 of 9)

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 225.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	1973	4348	10249	402	.	.	.	.	.	.	16972
0.5-0.9	536	1283	4252	1053	.	.	.	.	.	.	7124
1.0-1.4	38	191	823	306	.	.	.	.	.	.	1358
1.5-1.9	.	38	325	287	38	19	.	.	.	.	707
2.0-2.4	.	.	.	114	38	19	.	.	.	.	171
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2547	5860	15649	2162	76	38	0	0	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 2.2 MEAN TP (SEC) = 6.1 NO. OF CASES = 1375.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 247.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	2145	1570	1973	421	19	.	.	.	.	.	6128
0.5-0.9	689	383	1781	919	19	.	.	.	.	.	3791
1.0-1.4	38	229	383	670	19	.	.	.	.	.	1339
1.5-1.9	.	.	172	249	38	.	95	.	.	.	554
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2872	2182	4309	2259	95	0	95	0	0	0	

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 1.9 MEAN TP (SEC) = 6.1 NO. OF CASES = 617.

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 270.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	344	1494	4272	38	.	.	.	.	.	.	6148
0.5-0.9	114	402	4176	1417	.	.	.	.	.	.	6109
1.0-1.4	57	287	727	881	.	.	.	.	.	.	1952
1.5-1.9	.	19	76	191	.	.	.	.	.	.	286
2.0-2.4	.	.	19	19	.	.	.	.	.	.	38
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	515	2202	9270	2546	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.6 LARGEST Hm0 (M) = 2.1 MEAN TP (SEC) = 6.5 NO. OF CASES = 759.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 292.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	1762	1455	804	.	.	.	.	.	.	.	4021
0.5-0.9	325	498	363	.	.	.	.	.	.	.	1186
1.0-1.4	95	210	38	.	.	.	.	.	.	.	343
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2182	2163	1205	0	0	0	0	0	0	0	0

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.4 MEAN TP (SEC) = 4.7 NO. OF CASES = 290.

Table C3 (Continued)

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 315.0
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	1168	.	19	.	.	.	.	.	.	.	1187
0.5-0.9	229	.	.	.	.	.	.	.	.	.	229
1.0-1.4	.	.	.	.	.	.	.	.	.	.	0
1.5-1.9	.	.	.	.	.	.	.	.	.	.	0
2.0-2.4	.	.	.	.	.	.	.	.	.	.	0
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1397	0	19	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.3 LARGEST Hm0 (M) = 0.7 MEAN TP (SEC) = 3.4 NO. OF CASES = 74.

FL002, SARASOTA, FL 27.30N 82.59 AZIMUTH (DEGREES) = 337.5
 JUNE 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	19	.	.	.	.	.	.	.	.	.	19
0.5-0.9	0
1.0-1.4	0
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	19	0	0	0	0	0	0	0	0	0	

MEAN Hm0 (M) = 0.5 LARGEST Hm0 (M) = 0.5 MEAN TP (SEC) = 3.3 NO. OF CASES = 1.

Table C3 (Concluded)

SARASOTA, FL 27.30N 82.59W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.2-0.4	1020	817	1612	190	1	.	.	.	.	.	3640
0.5-0.9	183	268	912	316	1	.	.	.	.	.	1680
1.0-1.4	13	65	166	154	2	1	.	.	.	.	401
1.5-1.9	.	3	49	64	13	3	5	.	.	.	137
2.0-2.4	.	.	1	10	5	2	.	.	.	.	18
2.5-2.9	.	.	.	.	.	.	.	.	.	.	0
3.0-3.4	.	.	.	.	.	.	.	.	.	.	0
3.5-3.9	.	.	.	.	.	.	.	.	.	.	0
4.0-4.4	.	.	.	.	.	.	.	.	.	.	0
4.5-4.9	.	.	.	.	.	.	.	.	.	.	0
5.0+	.	.	.	.	.	.	.	.	.	.	0
TOTAL	1216	1153	2740	734	22	6	5	0	0	0	

COUNT OF Hm0 LESS THAN .2 M = 3644. PERCENT(X100) OF Hm0 LESS THAN .2 M = 4109.

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 2.3 MEAN TP (SEC) = 3.5 TOTAL CASES = 8869.

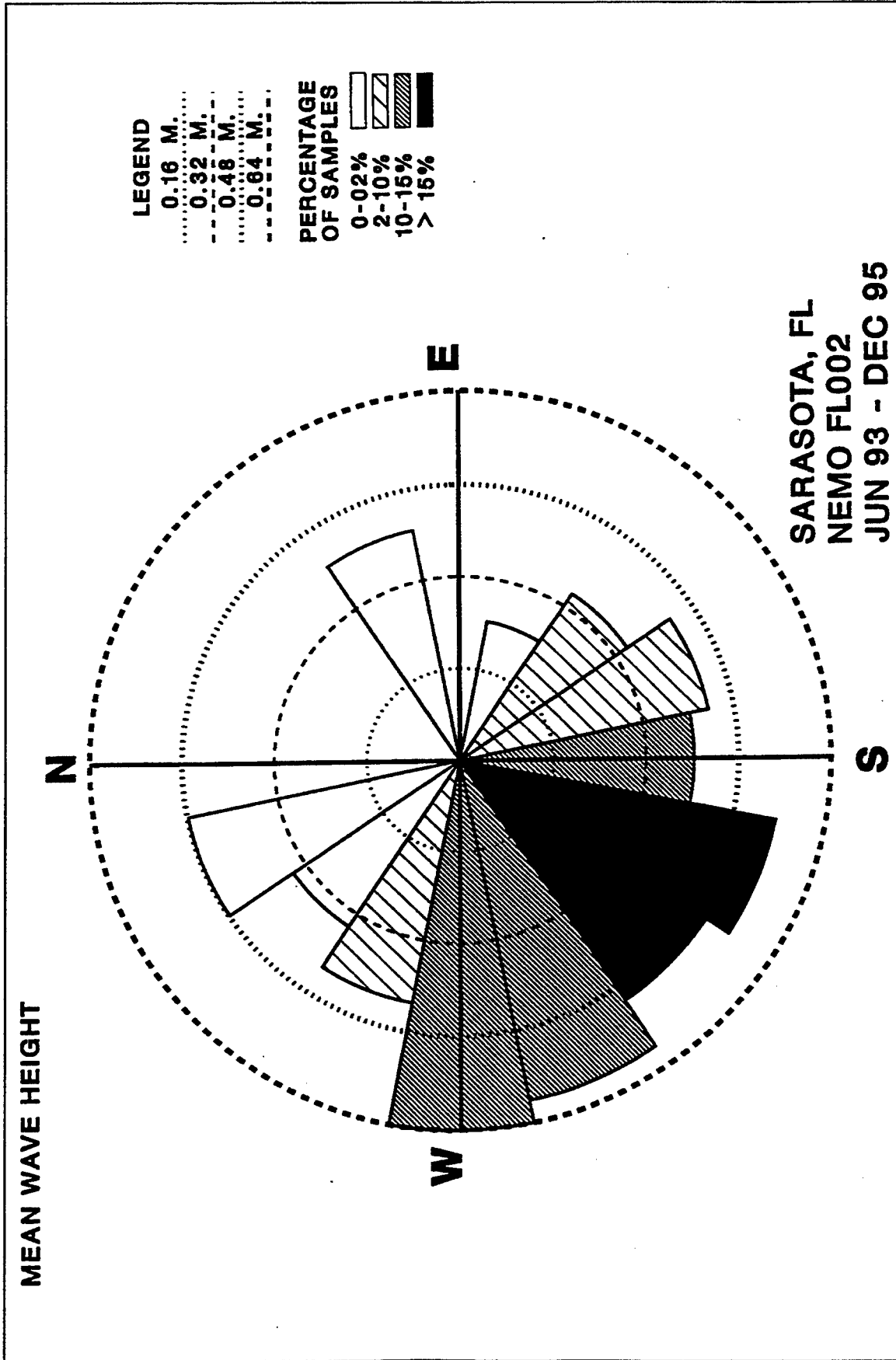


Figure C2. Wave rose for Sarasota, FL (FL002)

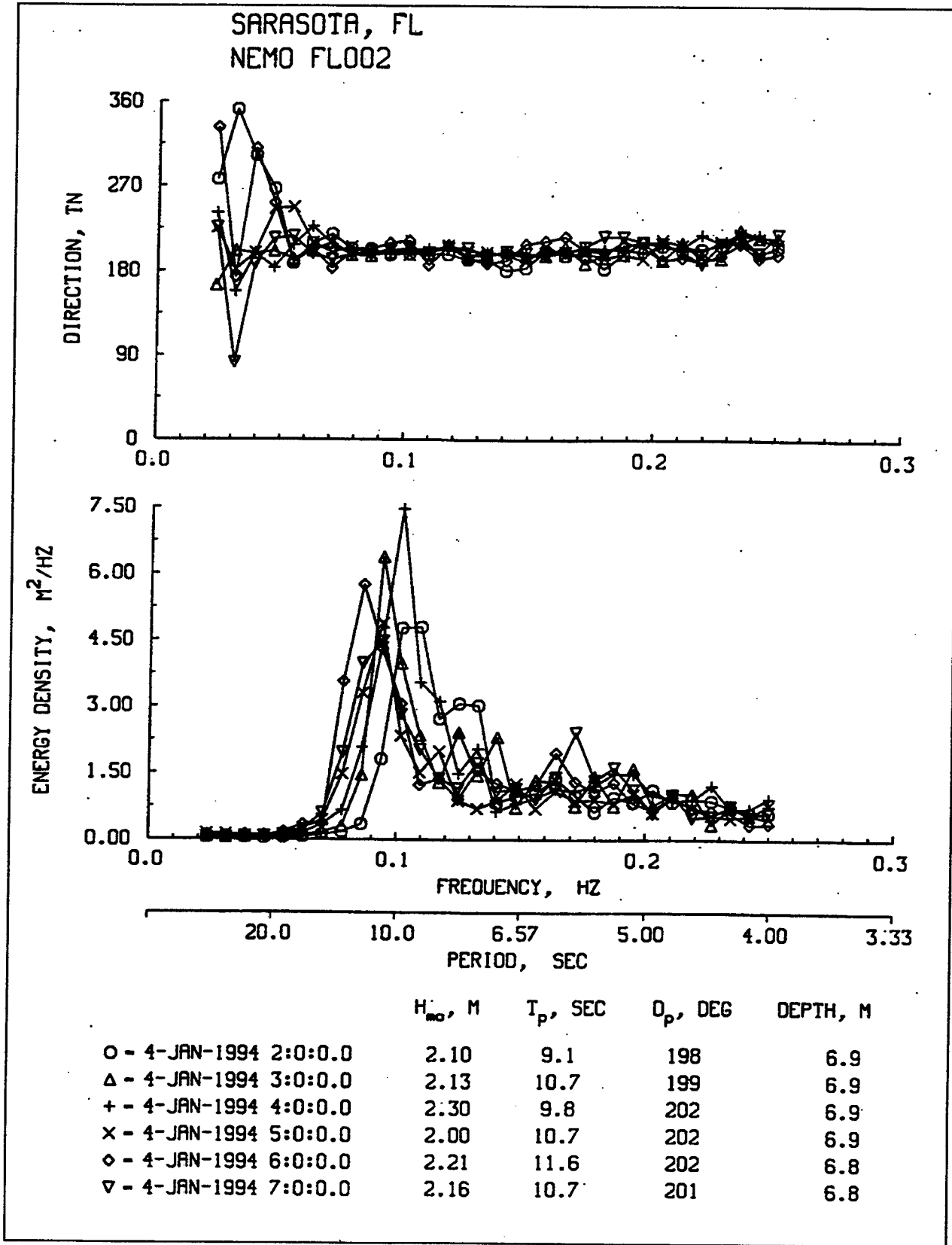


Figure C3. Wave spectra for Sarasota, FL (FL002)

Appendix D

NEMO Sites in the Hawaiian Islands

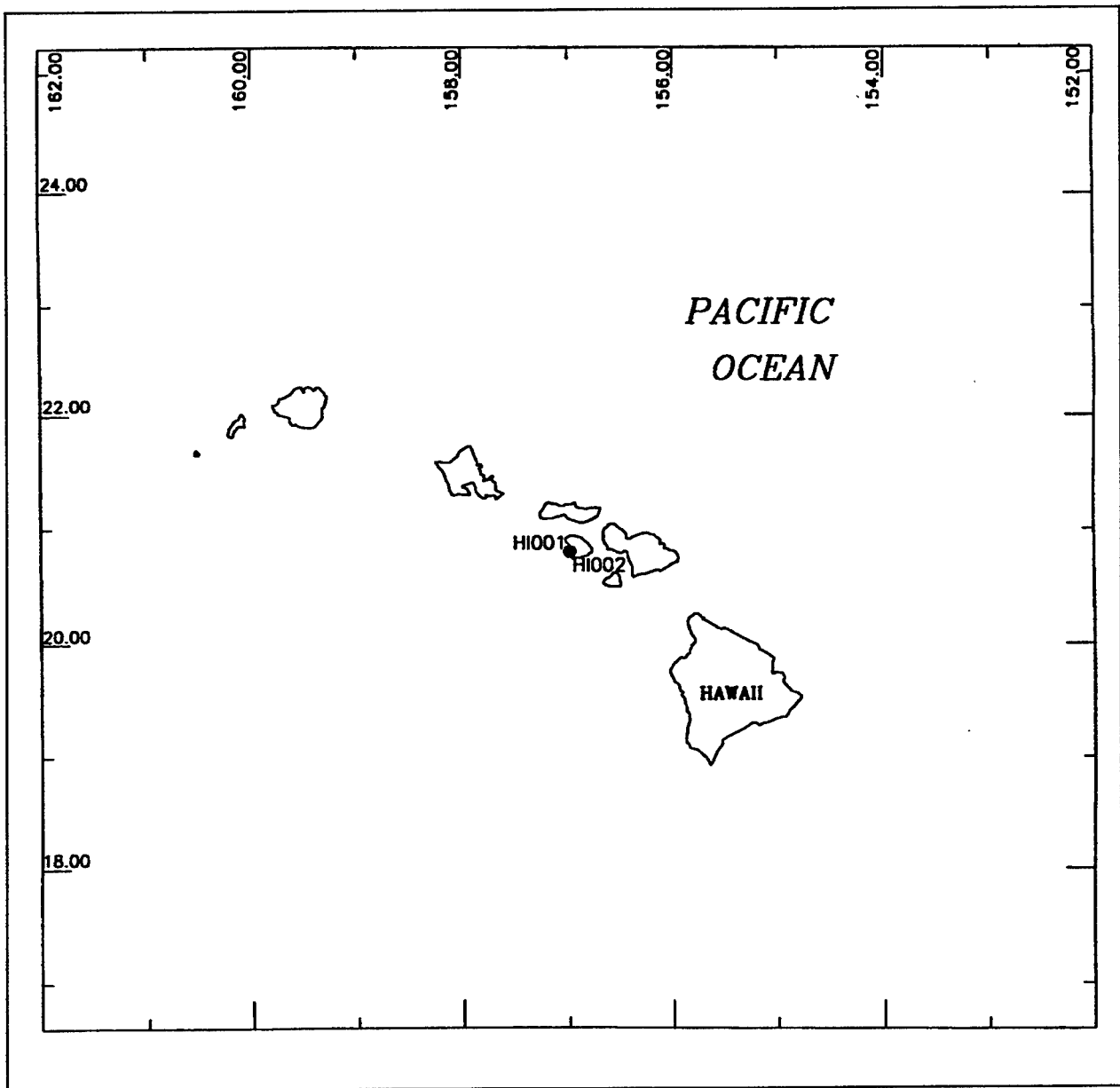


Figure D1. NEMO sites in the Hawaiian Islands

**Table D1
Number of Records for Lanai, HI (HI001)**

NEMO HI001, LANAI, HI (20.79N 156.99W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	94	168	173	13	184	176	177	186	166	177	207	46	1767
1995	0	0	0	0	0	0	0	0	0	0	0	0	0

NUMBER OF RECORDS WITH HM0 AND Tp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	94	168	173	13	184	176	177	186	166	177	207	46	1767
1995	0	0	0	0	0	0	0	0	0	0	0	0	0

NUMBER OF RECORDS WITH HM0, Tp, AND Dp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D2
Mean/Max Values for Lanai, HI (HI001)

MEAN Hm0 (METRES) BY MONTH AND YEAR
 HI001, LANAI, HI (20.79N 156.99W)

YEAR	MONTH												MEAN
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
1993	.	.	.	.	.	.	.	.	.	.	.	.	0.0
1994	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.7	0.6	0.4	0.5
1995	.	.	.	.	.	.	.	.	.	.	.	.	0.0

LARGEST Hm0 (METRES) BY MONTH AND YEAR
 HI001, LANAI, HI (20.79N 156.99W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	.	.	.	.	.	.	.	.	.
1994	1.5	1.1	1.1	0.6	0.9	0.6	0.8	1.3	0.8	1.5	1.4	0.7
1995	.	.	.	.	.	.	.	.	.	.	.	.

3 YR. STATISTICS FOR HI001, LANAI, HI (20.79N 156.99W)

THE MEAN SIGNIFICANT WAVE HEIGHT (METRES) =	0.5
THE MEAN PEAK WAVE PERIOD (SECONDS) =	13.8
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.2
THE STANDARD DEVIATION OF TP (SECONDS) =	2.2
THE LARGEST Hm0 (METRES) =	1.5
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	16.0
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94103107

Table D3
Percent Occurrence for Lanai, HI (HI001)

HI001, LANAI, HI 20.79N 156.99W IRRESPECTIVE OF DIRECTION

JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	.	90	62	124	277	673	1556	1748	305	62	4897
0.5-0.9	.	16	50	147	265	356	1267	2065	356	56	4578
1.0-1.4	.	.	5	5	16	22	16	322	107	11	504
1.5-1.9	5	.	5
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	0	106	117	276	558	1051	2839	4135	773	129	

MEAN Hm0 (M) = 0.5

LARGEST Hm0 (M) = 1.5

MEAN TP (SEC) = 13.8

TOTAL CASES = 1767.

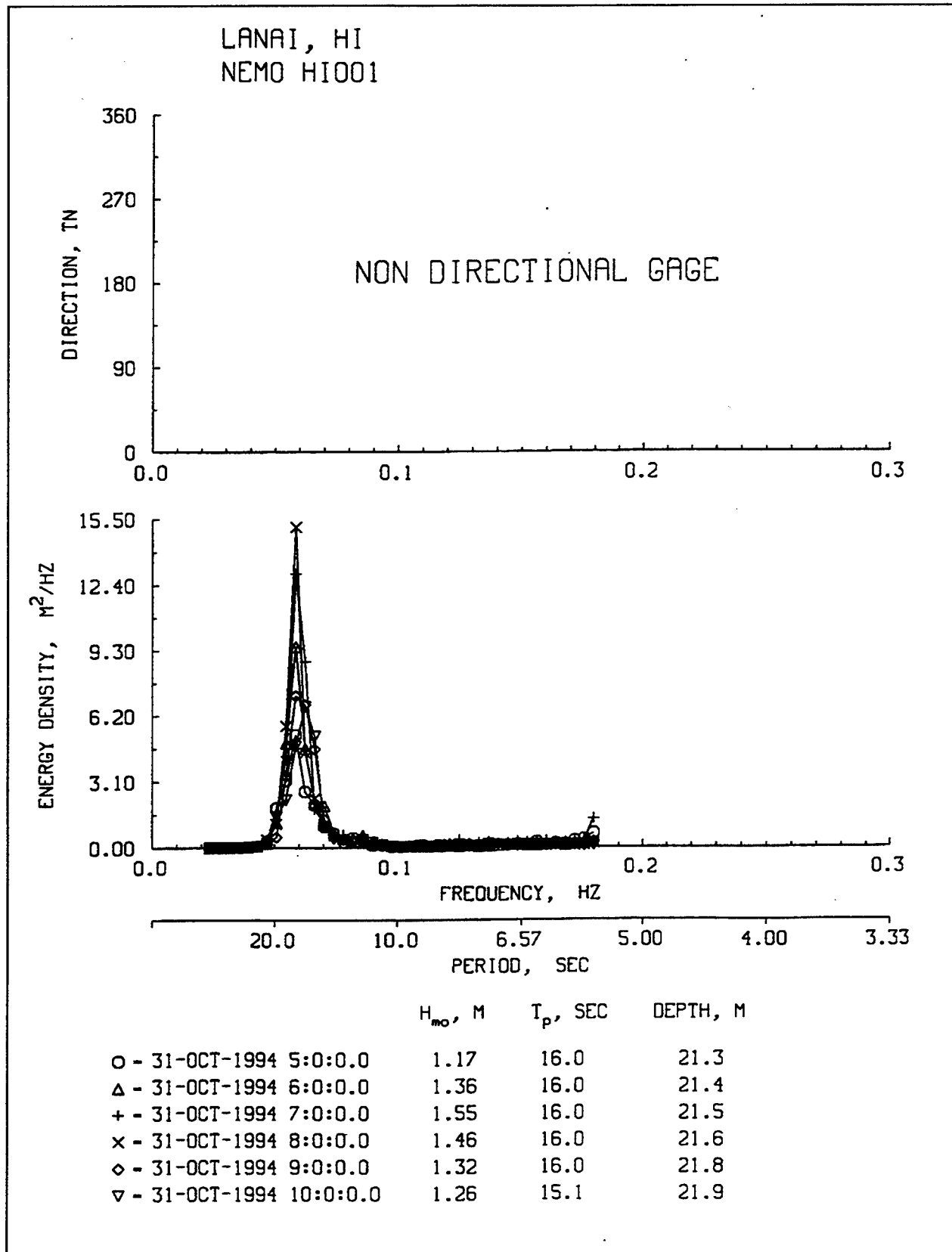


Figure D2. Wave spectra for Lanai, HI (HI001)

**Table D4
Number of Records for Lanai, HI (HI002)**

NEMO HI002, INSIDE HARBOR (20.79N 156.98W)

NUMBER OF RECORDS WITH HM0 BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	94	168	173	130	184	176	177	186	166	177	207	82	1920
1995	0	0	0	0	0	0	0	0	0	0	0	0	0

NUMBER OF RECORDS WITH HM0 AND Tp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	93	168	171	130	183	174	176	186	166	177	207	80	1911
1995	0	0	0	0	0	0	0	0	0	0	0	0	0

NUMBER OF RECORDS WITH HM0, Tp, AND Dp BY MONTH FOR 1993 - 1995

YEAR	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
1993	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0

**Table D5
Mean/Max Values for Lanai, HI (HI002)**

MEAN Hm0 (METRES) BY MONTH AND YEAR
HI002, LANAI, HI (20.79N 156.98W)

YEAR	MONTH												MEAN	
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		
1993	.	.	.	.	.	.	.	.	.	.	.	.	.	0.0
1994	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.4	0.3	0.4	
1995	.	.	.	.	.	.	.	.	.	.	.	.	.	0.0

LARGEST Hm0 (METRES) BY MONTH AND YEAR
HI002, LANAI, HI (20.79N 156.98W)

YEAR	MONTH											
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1993	.	.	.	.	.	.	.	.	.	.	.	.
1994	1.1	1.0	0.8	0.6	0.8	0.6	0.8	1.2	0.6	1.0	0.9	0.4
1995	.	.	.	.	.	.	.	.	.	.	.	.

3 YR. STATISTICS FOR HI002, LANAI, HI (20.79N 156.98W)

THE MEAN SIGNIFICANT WAVE HEIGHT (METRES) =	0.4
THE MEAN PEAK WAVE PERIOD (SECONDS) =	14.8
THE STANDARD DEVIATION OF Hm0 (METRES) =	0.1
THE STANDARD DEVIATION OF TP (SECONDS) =	2.4
THE LARGEST Hm0 (METRES) =	1.2
THE TP (SECONDS) ASSOC. WITH THE LARGEST Hm0 =	11.1
THE DATE OF LARGEST Hm0 OCCURRENCE IS	94082420

Table D6
Percent Occurrence for Lanai, HI (HI002)

LANAI, HI 20.79N 156.98W IRRESPECTIVE OF DIRECTION
 JANUARY 1993 - DECEMBER 1995
 PERCENT OCCURRENCE (X100) OF HEIGHT AND PERIOD

HEIGHT (METRES)	PEAK PERIOD (SECONDS)										TOTAL
	SHORTER- 4.5	4.6- 5.5	5.6- 7.9	8.0- 10.6	10.7- 11.5	11.6- 12.7	12.8- 14.1	14.2- 15.9	16.0- 18.2	18.3- LONGER	
0.0-0.4	15	.	5	145	677	619	776	2848	1427	901	7413
0.5-0.9	.	.	.	98	109	93	156	953	750	343	2502
1.0-1.4	5	.	.	5	15	5	30
1.5-1.9	0
2.0-2.4	0
2.5-2.9	0
3.0-3.4	0
3.5-3.9	0
4.0-4.4	0
4.5-4.9	0
5.0+	0
TOTAL	15	0	5	243	791	712	932	3806	2192	1249	

COUNT OF Hm0 LESS THAN .2 M = 9. PERCENT (X100) OF Hm0 LESS THAN .2 M = 47.

MEAN Hm0 (M) = 0.4 LARGEST Hm0 (M) = 1.2 MEAN TP (SEC) = 14.8 TOTAL CASES = 1920.

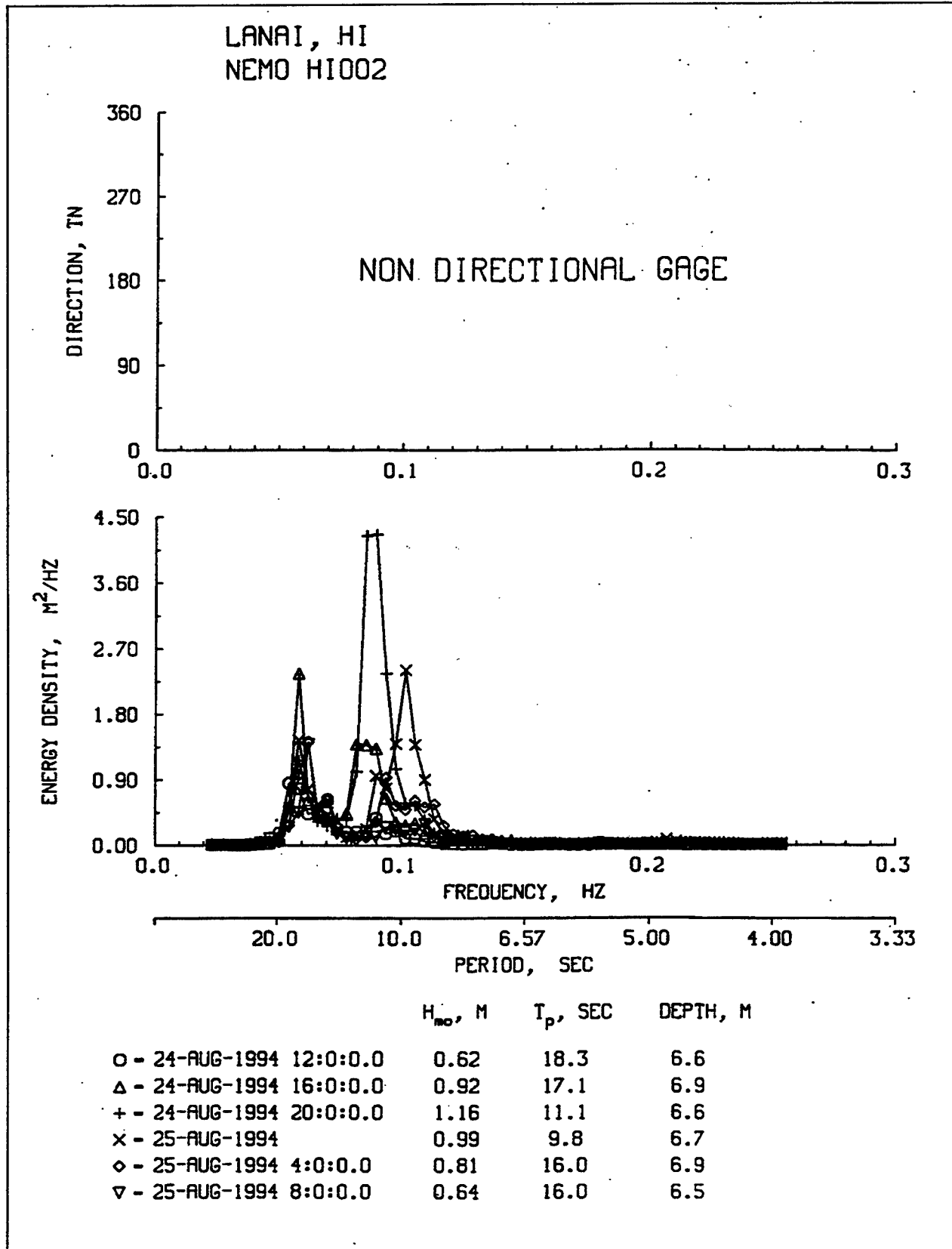


Figure D3. Wave spectra for Lanai, HI (H1002)

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