

NEARSHORE WAVE TRANSFORMATION STUDY OF SITES NEAR PORT
CANAVERAL INLET FLORIDA(U) COASTAL ENGINEERING RESEARCH
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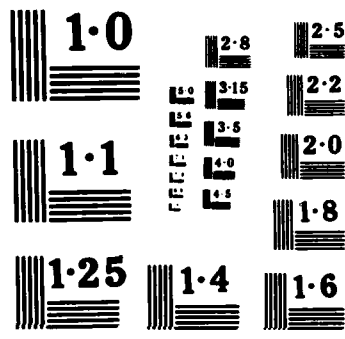
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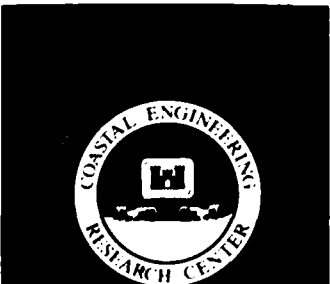
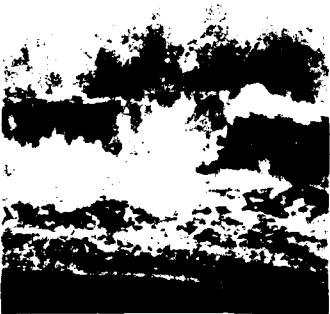
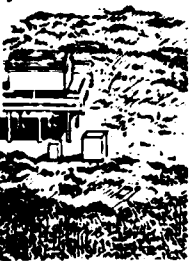
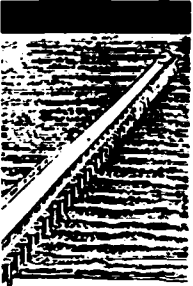
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NEARSHORE WAVE TRANSFORMATION STUDY OF SITES NEAR PORT CANAVERAL INLET, FLORIDA

by

Willie Ann Brown, Rebecca M. Brooks, Edward F. Thompson

Coastal Engineering Research Center

DEPARTMENT OF THE ARMY
Waterways Experiment Station, Corps of Engineers
PO Box 631, Vicksburg, Mississippi 39180-0631



September 1987

Final Report

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19 ABSTRACT (Continue on reverse if necessary and identify by block number) This report describes a 20-year summary of nearshore wave estimates of shoaling and transformation of waves in the vicinity of Cape Canaveral. The objective of this study was to obtain data which could be used in determining sediment transport in the Port Canaveral Inlet. These data consisted of breaking wave conditions at five different sites along the coastline near Port Canaveral Inlet.					
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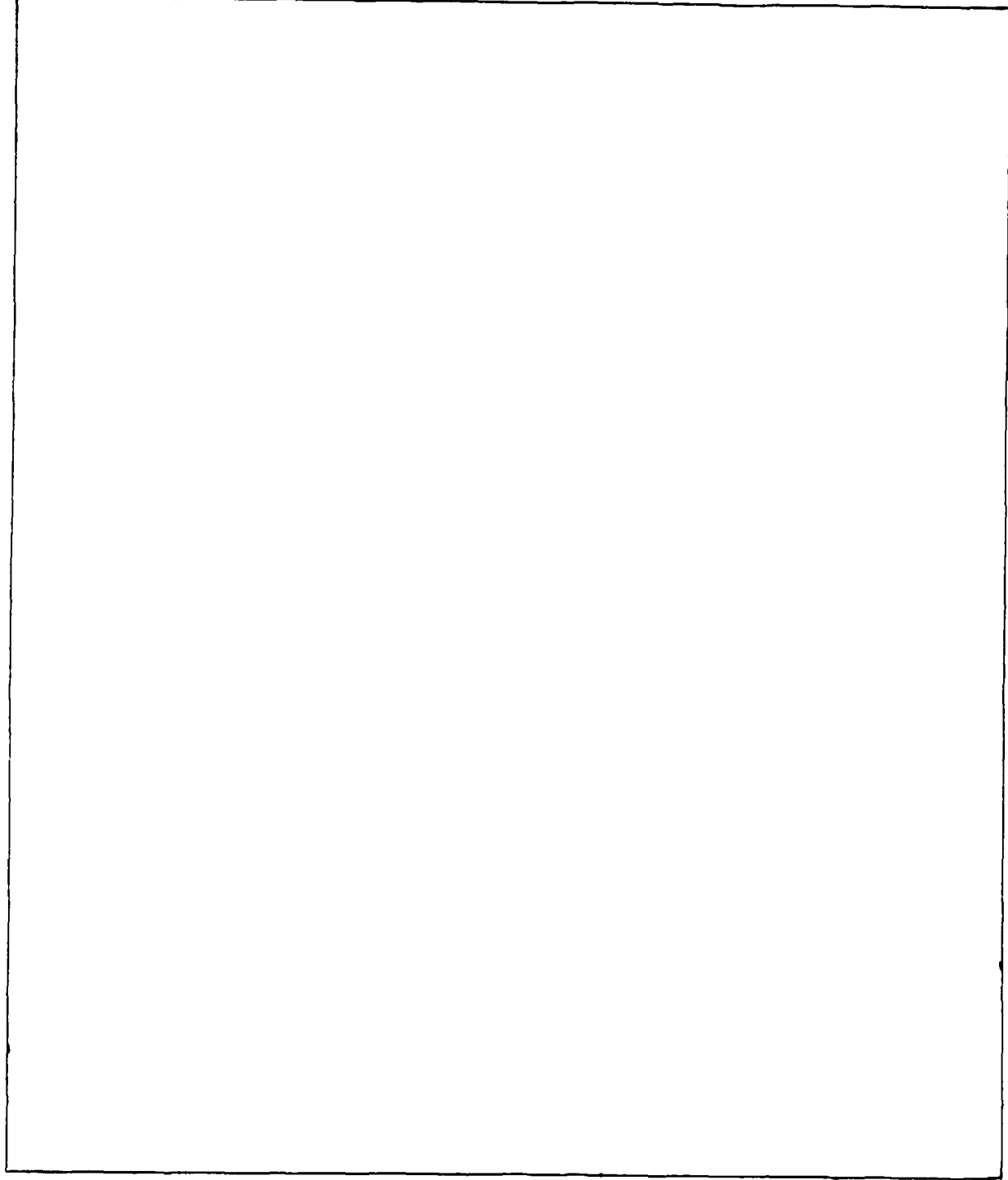
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PREFACE

This report describes a study of the shoaling and transformation of waves in the vicinity of Cape Canaveral and Port Canaveral Inlet, Fla. The study was funded by the US Army Engineer District, Jacksonville (SAJ), Jacksonville, Fla. Mr. Earl Howard and Ms. Mary Ann Gerber, SAJ, were Technical Monitors during the conduct of this study.

The report was prepared by Mses. Willie Ann Brown and Rebecca M. Brooks, Coastal Oceanography Branch (CR-O), and Dr. Edward F. Thompson, Chief, CR-O, Research Division (CR), Coastal Engineering Research Center (CERC), under direct supervision of Mr. H. Lee Butler, Chief, CR; and under general supervision of Mr. Charles C. Calhoun, Jr., Assistant Chief, and Dr. James R. Houston, Chief, CERC, US Army Engineer Waterways Experiment Station (WES). The assistance of Mses. Mary A. Cialone, Panola Rivers, and Odia R. Winston, and Messrs. William D. Corson and Bruce A. Ebersole and Dr. Robert E. Jensen is acknowledged.

Commander and Director of WES during this study was COL Dwayne G. Lee, CE. Technical Director was Dr. Robert W. Whalin.

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NEARSHORE WAVE TRANSFORMATION STUDY OF SITES NEAR
PORT CANAVERAL INLET, FLORIDA

PART I: INTRODUCTION

1. The purpose of this study is to provide a 20-year time series of breaking wave conditions at 3-hour intervals for three sites north and two sites south of Port Canaveral Inlet, Fl. An orientation map is given in Figure 1. The study was funded by the US Army Engineer District, Jacksonville (SAJ).

2. The study was divided into three parts: (a) transformation of 20 years of hindcast wave data into conditions at a 60-ft depth; (b) refraction calculations to bring representative waves from deep water to shore, by application of the Regional Coastal Processes Numerical Model (RCPWAVE); (c) generation of a 20-year time series of breaking wave conditions for five different sites. The three parts of the study are described in the final section of the report. Appendices A and B contain supplementary tables giving wave statistics for deep water and breaking waves, respectively.

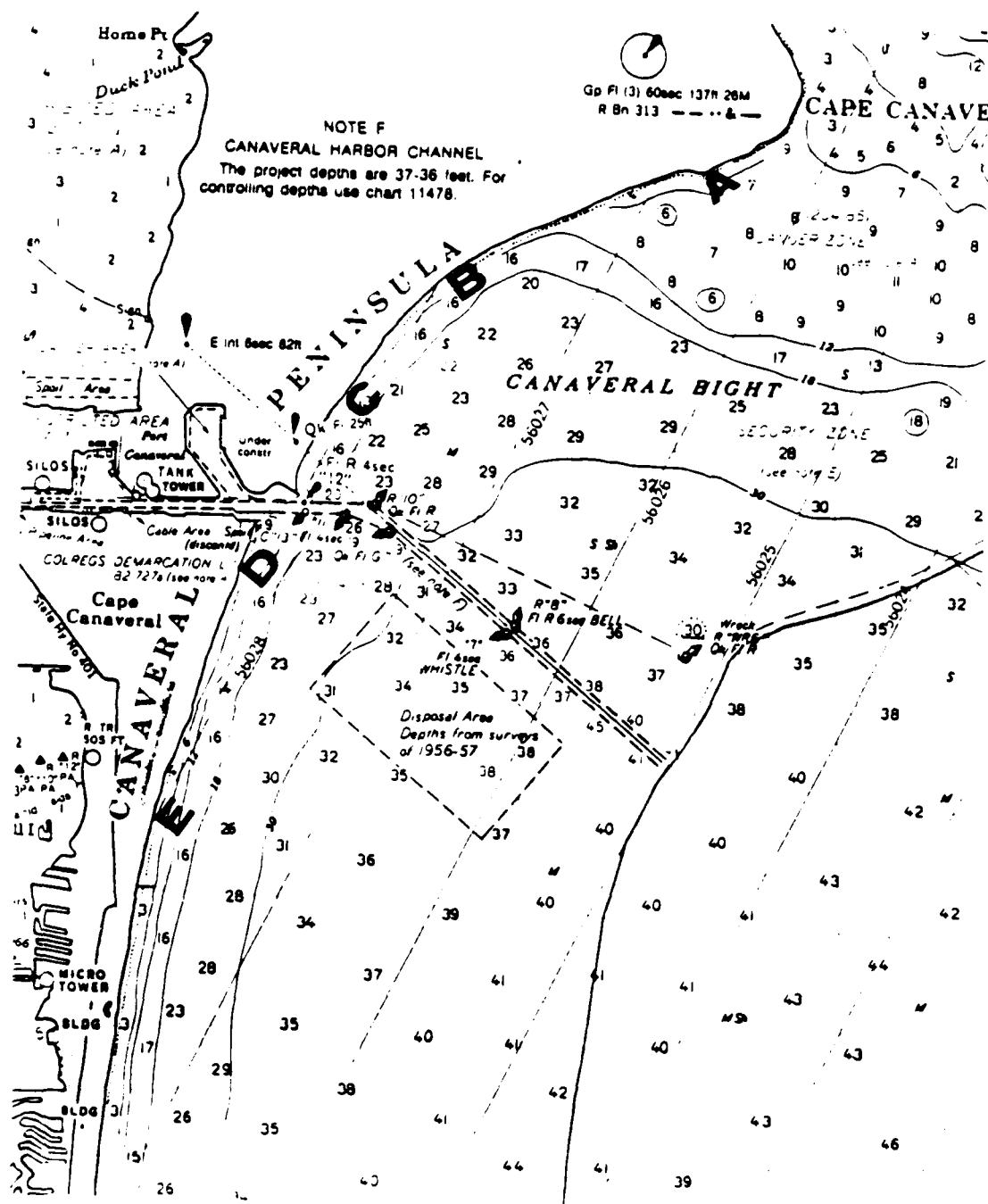


Figure 1. Orientation map for Port Canaveral

PART II: METHODOLOGY AND RESULTS

Offshore Wave Transformations

3. The Wave Information Study (WIS) makes available a 20-year hindcast for the Atlantic Ocean coast for the period 1956-1975. Phase II of the WIS hindcast includes a 20-year time series of wave height, wave direction, and wave period at 3-hour intervals for both sea and swell components at a location offshore of Port Canaveral. Hurricane wave data are not yet available from WIS and the effect of the Gulf Stream was not included in the wave hindcast or transformations. The WIS Phase II location (Station 64) used in this study is shown in Figure 2. For the purpose of the present study, information at this point was used as wave input to the WIS Phase III transformation technique (Jensen, 1983). The calculation involves the transformation of the offshore wave conditions to a water depth of 60 ft, assuming refraction and shoaling over straight and parallel bottom contours. This approach is reasonable for wave transformation over the bottom contours seaward of a 60-ft depth in the area. The transformation was halted at the 60-ft depth because the technique would not adequately treat wave transformation expected over the irregular nearshore bathymetry. Information at the 60-ft depth was used as input to a model for wave refraction over complex bathymetry as described later.

4. Twenty-year statistical summaries of the transformed Phase II wave data were produced. Appendix A contains summaries for each of the eight approach angle bands (one angle band = 22.5 deg), as well as a 20-year summary of all directions. The designation "Station 147" in Appendix A is used as a reference for the wave summaries at a 60-ft depth in the vicinity of WIS Phase III, Station 147. Data from Station 147 in the standard WIS reports and SEAS data base differ from the present study in that they are transformed to a 33-ft depth rather than 60 ft. These tables give the joint probability of wave height and wave period. Figure 3 illustrates the eight angle bands relative to the shoreline, and True North for the WIS hindcast wave statistics. The angles in parentheses are relative to the True North and the other angles are relative to shore normal, where shore normal is designated as 0 deg, anything north of shore normal is positive, and anything south of shore normal is

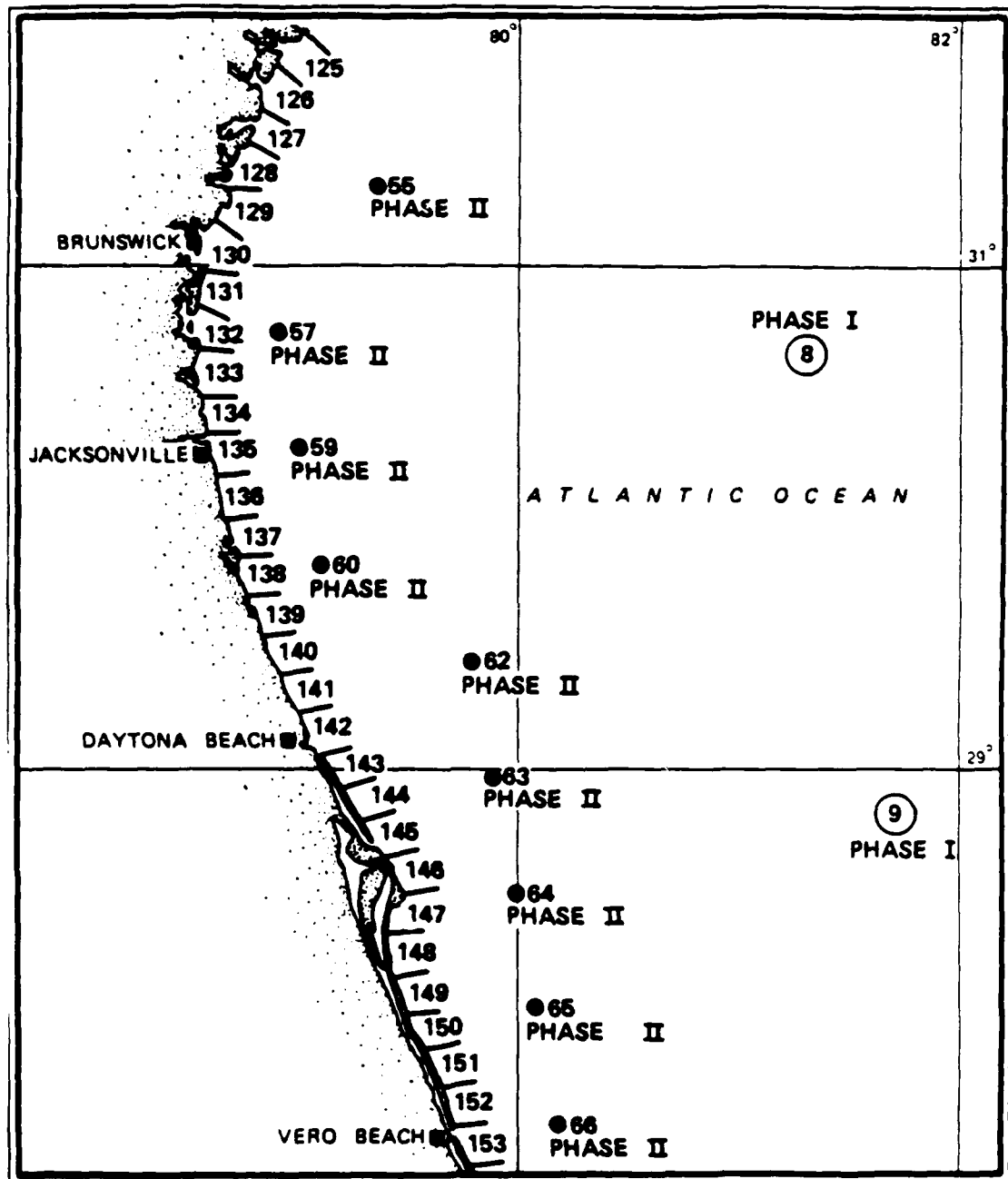


Figure 2. WIS Phase II point (Station 64)

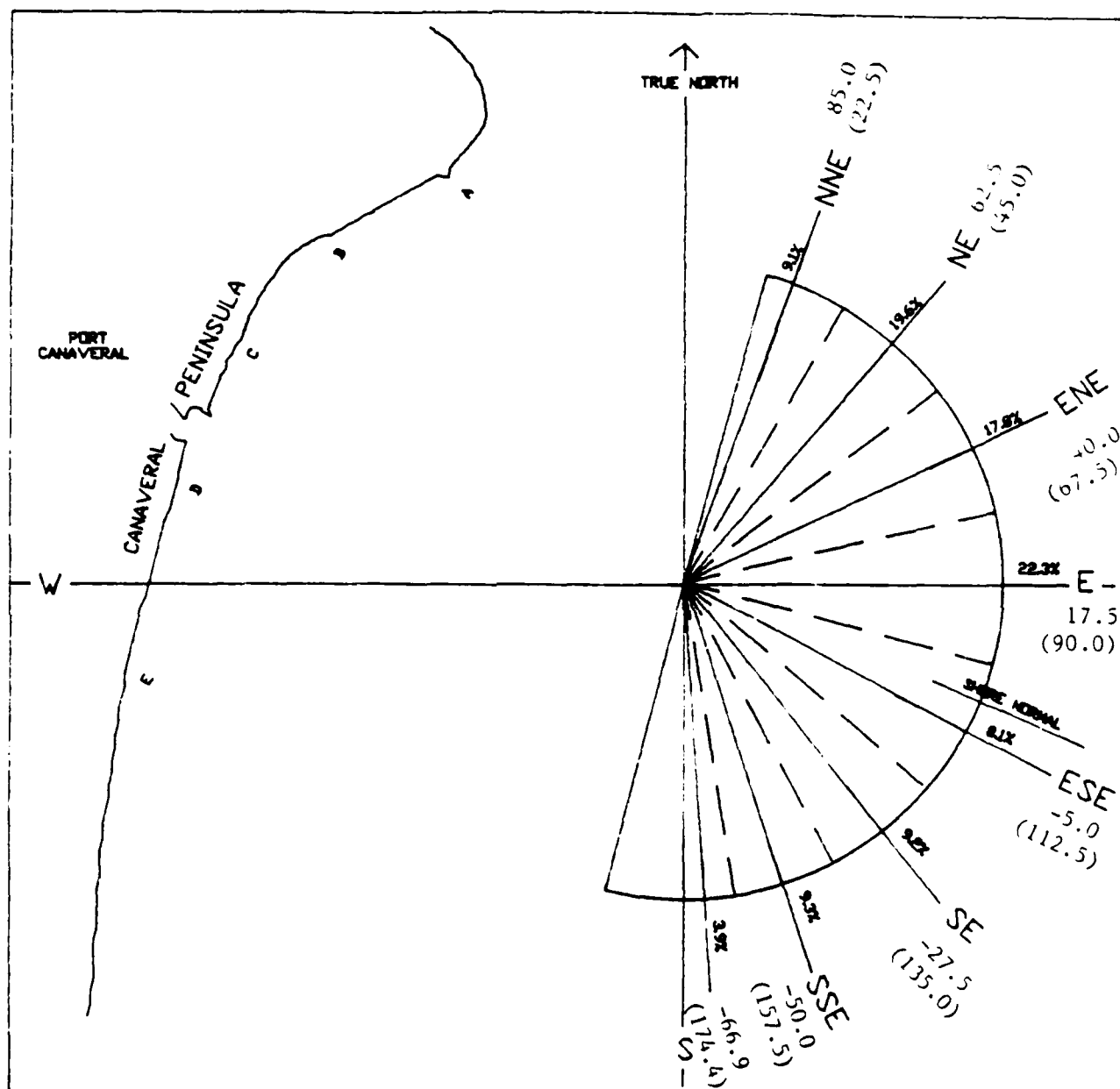


Figure 3. Eight wave angle bands defined by WIS relative to True North and shorenormal at Port Canaveral

negative. The numbers in each angle band are derived from the summary tables in Appendix A, where the first two angle bands are combined. The percentage values denote the percentage of wave cases approaching from the particular angle band. Table 1 gives a brief summary of selected wave statistics of the hindcast waves for each ocean sector of the compass, compiled from the data in Appendix A.

5. Table 1 and Figure 3 show the majority of the waves coming from the east (22.3%), east-northeast (17.8%), and northeast (19.6%), with fewer wave conditions coming from the outer directions. The wave height is less than 0.5 m 33% of the time and between 0.5 m and 0.99 m 33.8% of the time. The period is between 6.0 and 7.9 sec 27.9% of the time and between 4.0 and 5.9 sec 25.5% of the time.

6. Off the coast of Florida near Port Canaveral are two wave gages (US Army Corps of Engineers). The first ($28^{\circ}20'24''\text{N}$, $80^{\circ}25'12''\text{W}$) is a directional (PUV) gage which was first installed in 1983. It is located offshore in about 17 m of water and has been functional 75% of the time. The second ($28^{\circ}24'42''\text{N}$, $80^{\circ}34'36''\text{W}$) is a nondirectional (pressure) gage and was first installed in 1977. It is located nearshore in about 8 m of water and has been functional 48% of the time. Data from these gages show a general consistency between the measurements and WIS results.

Detailed Nearshore Wave Transformations

7. The refraction model RCPWAVE (Ebersole, Prater, and Cialone 1985) employs an interactive, finite-difference scheme including full refraction and diffraction effects produced by an irregular sea bottom. basic assumptions are:

- a. Gentle bottom slopes.
- b. Linear, monochromatic and irrotational waves.
- c. Negligible energy reflection.
- d. Negligible energy loss due to bottom friction or wave breaking outside the surf zone.
- e. Negligible wave and current interaction.

Table 1
Summary of Wave Statistics from WIS Hindcast

	<u>S</u>	<u>SSE</u>	<u>SE</u>	<u>ESE</u>	<u>E</u>	<u>ENE</u>	<u>NE</u>	<u>NNE</u>
Percent Occurrence	3.90	9.30	9.20	8.10	22.30	17.80	19.60	9.10
Average HS* (m)	0.23	0.69	0.63	0.76	1.01	1.05	0.99	1.00
Largest HS* (m)	0.82	2.58	3.25	3.49	4.38	5.58	4.13	2.71

* Denotes significant wave height.

8. Runs were made for 173 period and direction combinations. The runs chosen were determined by the WIS percent occurrence tables. The grid extended approximately 9 mi offshore and 11 mi alongshore with a cell size of 600 ft and 600 ft, respectively. Near breaking wave conditions were obtained from the output of RCPWAVE for the five different sites as shown in Figure 1.

Time Series of Breaking Wave Conditions

9. To create time series information the 20-year time series from Station 147 (60-ft depth) was processed by the following procedure. A dominant condition was chosen from the sea and swell WIS data at each time, and the dominant period determined. The WIS wave condition was then transformed to a near breaking condition using transformation coefficients as described in the previous section. A breaking wave condition was then generated by assuming straight parallel contours over the small remaining travel distance and using a breaking criterion of $H_b = 0.6 d$. This step produced a more refined breaking wave estimate than could have been obtained from points on the RCPWAVE grid. Tables 2-6 give a brief summary of selected wave statistics of the breaking conditions for each ocean sector of the compass, compiled from the data in Appendix B.

Digital Output

10. The time series output of breaking wave conditions for the five different sites was written to tape and sent to SAJ under separate cover. A separate tape was prepared for each site. The output consisted of 20 years of data for the five sites. A sample output is shown in Table 7.

Table 2
Summary of Wave Statistics from Breaking Wave Conditions
Station A

	<u>S</u>	<u>SSE</u>	<u>SE</u>	<u>ESE</u>	<u>E</u>	<u>ENE</u>	<u>NE</u>	<u>NNE</u>
Percent Occurrence	0.00	0.00	2.60	58.00	7.70	2.30	26.60	0.80
Average HS* (m)	----	----	0.12	0.45	0.45	0.26	0.36	0.45
Largest HS* (m)	----	----	0.40	1.02	1.13	0.40	1.37	1.10

* Denotes significant wave height.

Table 3
Summary of Wave Statistics from Breaking Wave Conditions
Station B

	<u>S</u>	<u>SSE</u>	<u>SE</u>	<u>ESE</u>	<u>E</u>	<u>ENE</u>	<u>NE</u>	<u>NNE</u>
Percent Occurrence	0.00	0.10	2.40	1.90	13.70	33.90	40.30	7.60
Average HS* (m)	----	0.11	0.19	0.26	0.44	0.43	0.23	0.36
Largest HS* (m)	----	0.11	0.64	0.69	0.91	1.86	1.90	1.63

* Denotes significant wave height.

Table 4
Summary of Wave Statistics from Breaking Wave Conditions
Station C

	<u>S</u>	<u>SSE</u>	<u>SE</u>	<u>ESE</u>	<u>E</u>	<u>ENE</u>	<u>NE</u>	<u>NNE</u>
Percent Occurrence	0.00	0.00	2.60	13.50	50.60	29.00	4.40	0.00
Average HS* (m)	----	----	0.17	0.26	0.39	0.38	0.31	----
Largest HS* (m)	----	----	0.46	0.73	1.30	1.94	1.60	----

* Denotes significant wave height.

Table 5
Summary of Wave Statistics from Breaking Wave Conditions
Station D

	<u>S</u>	<u>SSE</u>	<u>SE</u>	<u>ESE</u>	<u>E</u>	<u>ENE</u>	<u>NE</u>	<u>NNE</u>
Percent Occurrence	0.00	0.00	2.60	27.40	47.20	9.30	13.50	0.00
Average HS* (m)	----	----	0.13	0.49	0.41	0.37	0.30	----
Largest HS* (m)	----	----	0.67	1.90	2.23	1.94	1.65	----

* Denotes significant wave height.

Table 6
Summary of Wave Statistics from Breaking Wave Conditions
Station E

	<u>S</u>	<u>SSE</u>	<u>SE</u>	<u>ESE</u>	<u>E</u>	<u>ENE</u>	<u>NE</u>	<u>NNE</u>
Percent Occurrence	0.00	0.10	4.30	46.60	26.20	11.40	11.40	0.00
Average HS* (m)	----	0.08	0.19	0.45	0.54	0.40	0.24	----
Largest HS* (m)	----	0.08	0.70	2.19	3.08	1.92	1.01	----

* Denotes significant wave height.

Table 7
Sample Output

<u>Date</u>	<u>Depth (ft)</u>	<u>Period (sec)</u>	<u>Direction (deg)</u>
56010100	.45	2.00	39.00
56010103	.45	4.00	39.00
56010106	.40	4.00	0.00
56010109	.70	4.00	9.00
56010112	.70	4.00	9.00
56010115	.70	4.00	9.00
56010118	.70	4.00	9.00
56010121	.40	4.00	0.00
56010200	.45	3.00	39.00
56010203	.45	3.00	39.00
56010206	.45	2.00	39.00
56010209	.45	2.00	39.00
56010212	.45	2.00	23.00
56010215	.30	2.00	-51.00
56010218	.30	1.00	-50.00
56010221	.30	1.00	-50.00

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Jensen, R. E. 1983. "Methodology for the Calculation of a Shallow Water Wave Climate," US Army Engineer Waterways Experiment Station. Coastal Engineering Research Center, Wave Information Study, Report 8.

Ebersole, B. A., Prater, M. A., and Cialone, M. A. 1985. "Regional Coastal Processes Numerical Modeling System: Report 1, RCPWAVE - A Linear Wave Propagation Model for Field Use," US Army Engineer Waterways Experiment Station," Coastal Engineering Research Center, CERC Technical Report.

Corps of Engineers. 1984. "Wave Data Report (Special Issue)," University of Florida Coastal Data Network, US Army Corps of Engineers, State of Florida, US Navy, US Nuclear Regulatory Commission.

APPENDIX A: WAVE SUMMARIES IN 60-FT DEPTH

STATION 147 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 0. - 11.24
WAVE APPROACH ANGLE(S) RELATIVE TO TRUE NORTH
WATER DEPTH = 18.29 METERS
PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.0- LONGER	
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28.0-28.49	.	.	.	.	.	.	.	.	.	.	0
28.5-28.99	.	.	.	.	.	.	.	.	.	.	0
29.0-29.49	.	.	.	.	.	.	.	.	.	.	0
29.5-29.99	.	.	.	.	.	.	.	.	.	.	0
30.0-30.49	.	.	.	.	.	.	.	.	.	.	0
30.5-30.99	.	.	.	.	.	.	.	.	.	.	0
31.0-31.49	.	.	.	.	.	.	.	.	.	.	0
31.5-31.99	.	.	.	.	.	.	.	.	.	.	0
32.0-32.49	.	.	.	.	.	.	.	.	.	.	0
32.5-32.99	.	.	.	.	.	.	.	.	.	.	0
33.0-33.49	.	.	.	.	.	.	.	.	.	.	0
33.5-33.99	.	.	.	.	.	.	.	.	.	.	0
34.0-34.49	.	.	.	.	.	.	.	.	.	.	0
34.5-34.99	.	.	.	.	.	.	.	.	.	.	0
35.0-35.49	.	.	.	.	.	.	.	.	.	.	0
35.5-35.99	.	.	.	.	.	.	.	.	.	.	0
36.0-36.49	.	.	.	.	.	.	.	.	.	.	0
36.5-36.99	.	.	.	.	.	.	.	.	.	.	0
37.0-37.49	.	.	.	.	.	.	.	.	.	.	0
37.5-37.99	.	.	.	.	.	.	.	.	.	.	0
38.0-38.49	.	.	.	.	.	.	.	.	.	.	0
38.5-38.99	.	.	.	.	.	.	.	.	.	.	0
39.0-39.49	.	.	.	.	.	.	.	.	.	.	0
39.5-39.99	.	.	.	.	.	.	.	.	.	.	0
40.0-40.49	.	.	.	.	.	.	.	.	.	.	0
40.5-40.99	.	.	.	.	.	.	.	.	.	.	0
41.0-41.49	.	.	.	.	.	.	.	.	.	.	0
41.5-41.99	.	.	.	.	.	.	.	.	.	.	0
42.0-42.49	.	.	.	.	.	.	.	.	.	.	0
42.5-42.99	.	.	.	.	.	.	.	.	.	.	0
43.0-43.49	.	.	.	.	.	.	.	.	.	.	0
43.5-43.99	.	.	.	.	.	.	.	.	.	.	0
44.0-44.49	.	.	.	.	.	.	.	.	.	.	0
44.5-44.99	.	.	.	.	.	.	.	.	.	.	0
45.0-45.49	.	.	.	.	.	.	.	.	.	.	0
45.5-45.99	.	.	.	.	.	.	.	.	.	.	0
46.0-46.49	.	.	.	.	.	.	.	.	.	.	0
46.5-46.99	.	.	.	.	.	.	.	.	.	.	0
47.0-47.49	.	.	.	.	.	.	.	.	.	.	0
47.5-47.99	.	.	.	.	.	.	.	.	.	.	0
48.0-48.49	.	.	.	.	.	.	.	.	.	.	0
48.5-48.99	.	.	.	.	.	.	.	.	.	.	0
49.0-49.49	.	.	.	.	.	.	.	.	.	.	0
49.5-49.99	.	.	.	.	.	.	.	.	.	.	0
50.0-50.49	.	.	.	.	.	.	.	.	.	.	0
50.5-50.99	.	.	.	.	.	.	.	.	.	.	0
51.0-51.49	.	.	.	.	.	.	.	.	.	.	0
51.5-51.99	.	.	.	.	.	.	.	.	.	.	0
52.0-52.49	.	.	.	.	.	.	.	.	.	.	0
52.5-52.99	.	.	.	.	.	.	.	.	.	.	0
53.0-53.49	.	.	.	.	.	.	.	.	.	.	0
53.5-53.99	.	.	.	.	.	.	.	.	.	.	0
54.0-54.49	.	.	.	.	.	.	.	.	.	.	0
54.5-54.99	.	.	.	.	.	.	.	.	.	.	0
55.0-55.49	.	.	.	.	.	.	.	.	.	.	0
55.5-55.99	.	.	.	.	.	.	.	.	.	.	0
56.0-56.49	.	.	.	.	.	.	.	.	.	.	0
56.5-56.99	.	.	.	.	.	.	.	.	.	.	0
57.0-57.49	.	.	.	.	.	.	.	.	.	.	0
57.5-57.99	.	.	.	.	.	.	.	.	.	.	0
58.0-58.49	.	.	.	.	.	.	.	.	.	.	0
58.5-58.99	.	.	.	.	.	.	.	.	.	.	0
59.0-59.49	.	.	.	.	.	.	.	.	.	.	0
59.5-59.99	.	.	.	.	.	.	.	.	.	.	0
60.0-60.49	.	.	.	.	.	.	.	.	.	.	0
60.5-60.99	.	.	.	.	.	.	.	.	.	.	0
61.0-61.49	.	.	.	.	.	.	.	.	.	.	0
61.5-61.99	.	.	.	.	.	.	.	.	.	.	0
62.0-62.49	.	.	.	.	.	.	.	.	.	.	0
62.5-62.99	.	.	.	.	.	.	.	.	.	.	0
63.0-63.49	.	.	.	.	.	.	.	.	.	.	0
63.5-63.99	.	.	.	.	.	.	.	.	.	.	0
64.0-64.49	.	.	.	.	.	.	.	.	.	.	0
64.5-64.99	.	.	.	.	.	.	.	.	.	.	0
65.0-65.49	.	.	.	.	.	.	.	.	.	.	0
65.5-65.99	.	.	.	.	.	.	.	.	.	.	0
66.0-66.49	.	.	.	.	.	.	.	.	.	.	0
66.5-66.99	.	.	.	.	.	.	.	.	.	.	0
67.0-67.49	.	.	.	.	.	.	.	.	.	.	0
67.5-67.99	.	.	.	.	.	.	.	.	.	.	0
68.0-68.49	.	.	.	.	.	.	.	.	.	.	0
68.5-68.99	.	.	.	.	.	.	.	.	.	.	0
69.0-69.49	.	.	.	.	.	.	.	.	.	.	0
69.5-69.99	.	.	.	.	.	.	.	.	.	.	0
70.0-70.49	.	.	.	.	.	.	.	.	.	.	0
70.5-70.99	.	.	.	.	.	.	.	.	.	.	0
71.0-71.49	.	.	.	.	.	.	.	.	.	.	0
71.5-71.99	.	.	.	.	.	.	.	.	.	.	0
72.0-72.49	.	.	.	.	.	.	.	.	.	.	0
72.5-72.99	.	.	.	.	.	.	.	.	.	.	0
73.0-73.49	.	.	.	.	.	.	.	.	.	.	0
73.5-73.99	.	.	.	.	.	.	.	.	.	.	0
74.0-74.49	.	.	.	.	.	.	.	.	.	.	0
74.5-74.99	.	.	.	.	.	.	.	.	.	.	0
75.0-75.49	.	.	.	.	.	.	.	.	.	.	0
75.5-75.99	.	.	.	.	.	.	.	.	.	.	0
76.0-76.49	.	.	.	.	.	.	.	.	.	.	0
76.5-76.99	.	.	.	.	.	.	.	.	.	.	0
77.0-77.49	.	.	.	.	.	.	.	.	.	.	0
77.5-77.99	.	.	.	.	.	.	.	.	.	.	0
78.0-78.49	.	.	.	.	.	.	.	.	.	.	0
78.5-78.99	.	.	.	.	.	.	.	.	.	.	0
79.0-79.49	.	.	.	.	.	.	.	.	.	.	0
79.5-79.99	.	.	.	.	.	.	.	.	.	.	0
80.0-80.49	.	.	.	.	.	.	.	.	.	.	0
80.5-80.99	.	.	.	.	.	.	.	.	.	.	0
81.0-81.49	.	.	.	.	.	.	.	.	.	.	0
81.5-81.99	.	.	.	.	.	.	.	.	.	.	0
82.0-82.49	.	.	.	.	.	.	.	.	.	.	0
82.5-82.99	.	.	.	.	.	.	.	.	.	.	0
83.0-83.49	.	.	.	.	.	.	.	.	.	.	0
83.5-83.99	.	.	.	.	.	.	.	.	.	.	0
84.0-84.49	.	.	.	.	.	.	.	.	.	.	0
84.5-84.99	.	.	.	.	.	.	.	.	.	.	0
85.0-85.49	.	.	.	.	.	.	.	.	.	.	0
85.5-85.99	.	.	.	.	.	.	.	.	.	.	0
86.0-86.49	.	.	.	.	.	.	.	.	.	.	0
86.5-86.99	.	.	.	.	.	.	.	.	.	.	0
87.0-87.49	.	.	.	.	.	.	.	.	.	.	0
87.5-87.99	.	.	.	.	.	.	.	.	.	.	0
88.0-88.49	.	.	.	.	.	.	.	.	.	.	0
88.5-88.99	.	.	.	.	.	.	.	.	.	.	0
89.0-89.49	.	.	.								

STATION 147 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 56.25 - 78.74
 WAVE APPROACH ANGLE(S) RELATIVE TO TRUE NORTH
 WATER DEPTH = 18.3 METERS
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-19.9	LONGER	
0.0-0.49	27	980	1533	1173	513	1131	1415	.	.	.	.	2100
0.50-0.99	.	879	1414	1083	1317	1475	1235	.	.	.	.	2100
1.00-1.49	.	3	15	331	444	194	1010	.	.	.	.	2100
1.50-1.99	.	.	13	607	1779	1533	1131	.	.	.	.	2100
2.00-2.49	.	.	.	738	1031	1475	1235	.	.	.	.	2100
2.50-2.99	.	.	.	645	1031	1475	1235	.	.	.	.	2100
3.00-3.49	.	.	.	77	231	1031	1475	.	.	.	.	2100
3.50-3.99	.	.	.	1	33	1031	1475	.	.	.	.	2100
4.00-4.49	.	.	.	.	3	1031	1475	.	.	.	.	2100
4.50-4.99	.	.	.	.	.	1031	1475	.	.	.	.	2100
5.00-5.49	.	.	.	.	.	.	1031	.	.	.	.	2100
5.50-5.99	.	.	.	.	.	.	.	.	.	.	.	2100
6.00-6.49	.	.	.	.	.	.	.	.	.	.	.	2100
6.50-6.99	.	.	.	.	.	.	.	.	.	.	.	2100
7.00-7.49	.	.	.	.	.	.	.	.	.	.	.	2100
7.50-7.99	.	.	.	.	.	.	.	.	.	.	.	2100
8.00-8.49	.	.	.	.	.	.	.	.	.	.	.	2100
8.50-8.99	.	.	.	.	.	.	.	.	.	.	.	2100
9.00-9.49	.	.	.	.	.	.	.	.	.	.	.	2100
9.50-9.99	.	.	.	.	.	.	.	.	.	.	.	2100
10.00-10.49	.	.	.	.	.	.	.	.	.	.	.	2100
10.50-10.99	.	.	.	.	.	.	.	.	.	.	.	2100
11.00-11.49	.	.	.	.	.	.	.	.	.	.	.	2100
11.50-11.99	.	.	.	.	.	.	.	.	.	.	.	2100
12.00-12.49	.	.	.	.	.	.	.	.	.	.	.	2100
12.50-12.99	.	.	.	.	.	.	.	.	.	.	.	2100
13.00-13.49	.	.	.	.	.	.	.	.	.	.	.	2100
13.50-13.99	.	.	.	.	.	.	.	.	.	.	.	2100
14.00-14.49	.	.	.	.	.	.	.	.	.	.	.	2100
14.50-14.99	.	.	.	.	.	.	.	.	.	.	.	2100
15.00-15.49	.	.	.	.	.	.	.	.	.	.	.	2100
15.50-15.99	.	.	.	.	.	.	.	.	.	.	.	2100
16.00-16.49	.	.	.	.	.	.	.	.	.	.	.	2100
16.50-16.99	.	.	.	.	.	.	.	.	.	.	.	2100
17.00-17.49	.	.	.	.	.	.	.	.	.	.	.	2100
17.50-17.99	.	.	.	.	.	.	.	.	.	.	.	2100
18.00-18.49	.	.	.	.	.	.	.	.	.	.	.	2100
18.50-18.99	.	.	.	.	.	.	.	.	.	.	.	2100
19.00-19.49	.	.	.	.	.	.	.	.	.	.	.	2100
19.50-19.99	.	.	.	.	.	.	.	.	.	.	.	2100
20.00-20.49	.	.	.	.	.	.	.	.	.	.	.	2100
20.50-20.99	.	.	.	.	.	.	.	.	.	.	.	2100
21.00-21.49	.	.	.	.	.	.	.	.	.	.	.	2100
21.50-21.99	.	.	.	.	.	.	.	.	.	.	.	2100
22.00-22.49	.	.	.	.	.	.	.	.	.	.	.	2100
22.50-22.99	.	.	.	.	.	.	.	.	.	.	.	2100
23.00-23.49	.	.	.	.	.	.	.	.	.	.	.	2100
23.50-23.99	.	.	.	.	.	.	.	.	.	.	.	2100
24.00-24.49	.	.	.	.	.	.	.	.	.	.	.	2100
24.50-24.99	.	.	.	.	.	.	.	.	.	.	.	2100
25.00-25.49	.	.	.	.	.	.	.	.	.	.	.	2100
25.50-25.99	.	.	.	.	.	.	.	.	.	.	.	2100
26.00-26.49	.	.	.	.	.	.	.	.	.	.	.	2100
26.50-26.99	.	.	.	.	.	.	.	.	.	.	.	2100
27.00-27.49	.	.	.	.	.	.	.	.	.	.	.	2100
27.50-27.99	.	.	.	.	.	.	.	.	.	.	.	2100
28.00-28.49	.	.	.	.	.	.	.	.	.	.	.	2100
28.50-28.99	.	.	.	.	.	.	.	.	.	.	.	2100
29.00-29.49	.	.	.	.	.	.	.	.	.	.	.	2100
29.50-29.99	.	.	.	.	.	.	.	.	.	.	.	2100
30.00-30.49	.	.	.	.	.	.	.	.	.	.	.	2100
30.50-30.99	.	.	.	.	.	.	.	.	.	.	.	2100
31.00-31.49	.	.	.	.	.	.	.	.	.	.	.	2100
31.50-31.99	.	.	.	.	.	.	.	.	.	.	.	2100
32.00-32.49	.	.	.	.	.	.	.	.	.	.	.	2100
32.50-32.99	.	.	.	.	.	.	.	.	.	.	.	2100
33.00-33.49	.	.	.	.	.	.	.	.	.	.	.	2100
33.50-33.99	.	.	.	.	.	.	.	.	.	.	.	2100
34.00-34.49	.	.	.	.	.	.	.	.	.	.	.	2100
34.50-34.99	.	.	.	.	.	.	.	.	.	.	.	2100
35.00-35.49	.	.	.	.	.	.	.	.	.	.	.	2100
35.50-35.99	.	.	.	.	.	.	.	.	.	.	.	2100
36.00-36.49	.	.	.	.	.	.	.	.	.	.	.	2100
36.50-36.99	.	.	.	.	.	.	.	.	.	.	.	2100
37.00-37.49	.	.	.	.	.	.	.	.	.	.	.	2100
37.50-37.99	.	.	.	.	.	.	.	.	.	.	.	2100
38.00-38.49	.	.	.	.	.	.	.	.	.	.	.	2100
38.50-38.99	.	.	.	.	.	.	.	.	.	.	.	2100
39.00-39.49	.	.	.	.	.	.	.	.	.	.	.	2100
39.50-39.99	.	.	.	.	.	.	.	.	.	.	.	2100
40.00-40.49	.	.	.	.	.	.	.	.	.	.	.	2100
40.50-40.99	.	.	.	.	.	.	.	.	.	.	.	2100
41.00-41.49	.	.	.	.	.	.	.	.	.	.	.	2100
41.50-41.99	.	.	.	.	.	.	.	.	.	.	.	2100
42.00-42.49	.	.	.	.	.	.	.	.	.	.	.	2100
42.50-42.99	.	.	.	.	.	.	.	.	.	.	.	2100
43.00-43.49	.	.	.	.	.	.	.	.	.	.	.	2100
43.50-43.99	.	.	.	.	.	.	.	.	.	.	.	2100
44.00-44.49	.	.	.	.	.	.	.	.	.	.	.	2100
44.50-44.99	.	.	.	.	.	.	.	.	.	.	.	2100
45.00-45.49	.	.	.	.	.	.	.	.	.	.	.	2100
45.50-45.99	.	.	.	.	.	.	.	.	.	.	.	2100
46.00-46.49	.	.	.	.	.	.	.	.	.	.	.	2100
46.50-46.99	.	.	.	.	.	.	.	.	.	.	.	2100
47.00-47.49	.	.	.	.	.	.	.	.	.	.	.	2100
47.50-47.99	.	.	.	.	.	.	.	.	.	.	.	2100
48.00-48.49	.	.	.	.	.	.	.	.	.	.	.	2100
48.50-48.99	.	.	.	.	.	.	.	.	.	.	.	2100
49.00-49.49	.	.	.	.	.	.	.	.	.	.	.	2100
49.50-49.99	.	.	.	.	.	.	.	.	.	.	.	2100
50.00-50.49	.	.	.	.	.	.	.	.	.	.	.	2100
50.50-50.99	.	.	.	.	.	.	.	.	.	.	.	2100
51.00-51.49	.	.	.	.	.	.	.	.	.	.	.	2100
51.50-51.99	.	.	.	.	.	.	.	.	.	.	.	2100
52.00-52.49	.	.	.	.	.	.	.	.	.	.	.	2100
52.50-52.99	.	.	.	.	.	.	.	.	.	.	.	2100
53.00-53.49	.	.	.	.	.	.	.	.	.	.	.	2100
53.50-53.99	.	.	.	.	.	.	.	.	.	.	.	2100
54.00-54.49	.	.	.	.	.	.	.	.	.	.	.	2100
54.50-54.99	.	.	.	.	.	.	.	.	.	.	.	2100
55.00-55.49	.	.	.	.	.	.	.	.	.	.	.	2100
55.50-55.99	.	.	.	.	.	.	.	.	.	.	.	2100
56.00-56.49	.	.	.	.	.	.	.	.	.	.	.	2100
56.50-56.99	.	.	.	.	.	.	.	.	.	.	.	2100
57.00-57.49	.	.	.	.	.	.	.	.	.	.	.	2100
57.50-57.99	.	.	.	.	.	.	.	.	.	.	.	2100
58.00-58.49	.	.	.	.	.	.	.	.	.	.	.	2100
58.50-58.99	.	.	.	.	.	.	.	.	.	.	.	2100
59.00-59.49	.	.	.	.	.	.	.	.	.	.	.	2100
59.50-59.99	.	.	.	.	.	.	.	.	.	.	.	2100
60.00-60.49	.	.	.	.	.	.	.	.	.	.	.	2100
60.50-60.99	.	.	.	.	.	.	.	.	.	.	.	2100
61.00-61.49	.	.	.	.	.	.	.	.	.	.	.	2100
61.50-61.99	.	.	.	.	.	.	.	.	.	.	.	2100
62.00-62.49	.	.	.	.	.	.	.	.	.	.	.	2100
62.50-62.99	.	.	.	.	.	.	.	.	.	.	.	2100
63.00-63.49	.	.	.	.	.	.	.	.	.	.	.	2100
63.50-63.99	.	.	.	.	.	.	.	.	.	.	.	2100
64.00-64.49	.	.	.	.	.	.	.	.	.	.	.	2100
64.50-64.99	.	.	.	.	.	.	.	.	.	.	.	2100
65.00-65.49	.	.	.	.	.	.	.	.	.	.	.	2100
65.50-65.99	.	.	.	.	.	.	.	.	.	.	.	2100
66.00-66.49	.	.	.	.	.	.	.	.	.	.	.	2100
66.50-66.99	.	.	.	.	.	.	.	.	.	.	.	2100
67.00-67.49	.	.	.	.	.	.	.	.	.	.	.	2100
67.50-67.99	.	.	.	.	.	.	.	.	.	.	.	2100
68.00-68.49	.	.	.	.	.	.	.	.	.	.	.	2100
68.50-68.99	.	.	.	.	.	.	.	.	.	.	.	2100
69.00-69.49	.	.	.	.	.	.	.	.	.	.	.	2100
69.50-69.99	.	.	.	.	.	.	.	.	.	.	.	2100
70.00-70.49	.	.	.	.	.	.	.	.	.	.	.	2100
70.50-70.99	.	.	.	.	.	.	.	.	.	.	.	2100
71.00-71.49	.	.	.	.	.	.	.	.	.	.	.	2100
71.50-71.99	.	.	.	.	.	.	.	.	.	.	.	2100
72.00-72.49	.	.	.	.	.	.	.	.	.	.	.	2100
72.50-72.99	.	.	.	.	.	.	.	.	.	.	.	2100
73.00-73.49	.	.	.	.	.	.	.	.	.	.	.	2100
73.50-73.99	.	.	.	.	.	.	.	.	.	.	.	2100
74.00-74.49	.	.	.	.	.	.	.	.	.	.	.	2100
74.50-74.99	.	.	.	.	.	.	.	.	.	.	.	2100
75.00-75.49	.	.	.	.	.	.	.	.	.	.	.	2100
75.50-75.99	.	.	.	.	.	.	.	.	.	.	.	2100
76.00-76.49	.	.	.	.	.	.	.	.	.	.	.	2100
76.50-76.99	.	.	.	.	.	.	.	.	.	.	.	2100
77.00-77.49	.	.	.	.	.	.	.	.	.	.	.	2100
77.50-77.99	.	.	.	.	.	.	.	.	.	.	.	2100
78.00-78.49	.	.	.	.	.	.	.	.	.	.	.	2100
78.50-78.99	.											

STATION 1447 20 YEARS 5065 LEAVE APPROACH ANGLE(DEGREES) = 123.75 - 145.24
 1448 5066 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2

HEIGHT(METERS)		PERIOD(SECONDS)										TOTAL
		0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-LONGER	
0.0-0.49	61	1129			3588	5					4	
0.5-0.99		797			682	15					15	
1.0-1.49				1243	2071	1					2	
1.5-1.99				1113	213						3	
2.0-2.49					46						1	
2.5-2.99						3					0	
3.0-3.49											0	
3.5-3.99											0	
4.0-4.49											0	
4.5-4.99											0	
5.0-5.49											0	
5.5-5.99											0	
6.0-6.49											0	
6.5-6.99											0	
7.0-7.49											0	
7.5-7.99											0	
8.0-8.49											0	
8.5-8.99											0	
9.0-9.49											0	
9.5-9.99											0	
10.0-10.49											0	
10.5-10.99											0	
11.0-11.49											0	
11.5-11.99											0	
12.0-12.49											0	
12.5-12.99											0	
13.0-13.49											0	
13.5-13.99											0	
14.0-14.49											0	
14.5-14.99											0	
15.0-15.49											0	
15.5-15.99											0	
16.0-16.49											0	
16.5-16.99											0	
17.0-17.49											0	
17.5-17.99											0	
18.0-18.49											0	
18.5-18.99											0	
19.0-19.49											0	
19.5-19.99											0	
20.0-20.49											0	
20.5-20.99											0	
21.0-21.49											0	
21.5-21.99											0	
22.0-22.49											0	
22.5-22.99											0	
23.0-23.49											0	
23.5-23.99											0	
24.0-24.49												

STATION 147 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 146.25 - 168.74
WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
WATER DEPTH = 18.29 METERS
PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

[illegible]

STATION 147 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 168.75 - 180.00
WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
WATER DEPTH = 18.23 METERS
PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)		PERIOD(SECONDS)										TOTAL
		0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-LONGER	
0.0-0.49	0	75	1617	1028	65	.	.	.	.	.	365	
0.5-0.99	0	.	.	188	10	.	.	.	.	.	185	
1.0-1.49	0	.	.	.	.	.	.	.	.	.	0	
1.5-1.99	0	.	.	.	.	.	.	.	.	.	0	
2.0-2.49	0	.	.	.	.	.	.	.	.	.	0	
2.5-2.99	0	.	.	.	.	.	.	.	.	.	0	
3.0-3.49	0	.	.	.	.	.	.	.	.	.	0	
3.5-3.99	0	.	.	.	.	.	.	.	.	.	0	
4.0-4.49	0	.	.	.	.	.	.	.	.	.	0	
4.5-4.99	0	.	.	.	.	.	.	.	.	.	0	
5.0-5.49	0	.	.	.	.	.	.	.	.	.	0	
5.5-5.99	0	.	.	.	.	.	.	.	.	.	0	
6.0-6.49	0	.	.	.	.	.	.	.	.	.	0	
6.5-6.99	0	.	.	.	.	.	.	.	.	.	0	
7.0-7.49	0	.	.	.	.	.	.	.	.	.	0	
7.5-7.99	0	.	.	.	.	.	.	.	.	.	0	
8.0-8.49	0	.	.	.	.	.	.	.	.	.	0	
8.5-8.99	0	.	.	.	.	.	.	.	.	.	0	
9.0-9.49	0	.	.	.	.	.	.	.	.	.	0	
9.5-9.99	0	.	.	.	.	.	.	.	.	.	0	
10.0-10.49	0	.	.	.	.	.	.	.	.	.	0	
10.5-10.99	0	.	.	.	.	.	.	.	.	.	0	
11.0-11.49	0	.	.	.	.	.	.	.	.	.	0	
11.5-11.99	0	.	.	.	.	.	.	.	.	.	0	
12.0-12.49	0	.	.	.	.	.	.	.	.	.	0	
12.5-12.99	0	.	.	.	.	.	.	.	.	.	0	
13.0-13.49	0	.	.	.	.	.	.	.	.	.	0	
13.5-13.99	0	.	.	.	.	.	.	.	.	.	0	
14.0-14.49	0	.	.	.	.	.	.	.	.	.	0	
14.5-14.99	0	.	.	.	.	.	.	.	.	.	0	
15.0-15.49	0	.	.	.	.	.	.	.	.	.	0	
15.5-15.99	0	.	.	.	.	.	.	.	.	.	0	
16.0-16.49	0	.	.	.	.	.	.	.	.	.	0	
16.5-16.99	0	.	.	.	.	.	.	.	.	.	0	
17.0-17.49	0	.	.	.	.	.	.	.	.	.	0	
17.5-17.99	0	.	.	.	.	.	.	.	.	.	0	
18.0-18.49	0	.	.	.	.	.	.	.	.	.	0	
18.5-18.99	0	.	.	.	.	.	.	.	.	.	0	
19.0-19.49	0	.	.	.	.	.	.	.	.	.	0	
19.5-19.99	0	.	.	.	.	.	.	.	.	.	0	
20.0-20.49	0	.	.	.	.	.	.	.	.	.	0	
20.5-20.99	0	.	.	.	.	.	.	.	.	.	0	
21.0-21.49	0	.	.	.	.	.	.	.	.	.	0	
21.5-21.99	0	.	.	.	.	.	.	.	.	.	0	
22.0-22.49	0	.	.	.	.	.	.	.	.	.	0	
22.5-22.99	0	.	.	.	.	.	.	.	.	.	0	
23.0-23.49	0	.	.	.	.	.	.	.	.	.	0	
23.5-23.99	0	.	.	.								

* Note these data represent data from WIS Station 147 which have been transformed to 60-ft water depths.

HEIGHT (METERS)		PERIOD (SECONDS)										TOTAL
		0.0-1.9	2.0-3.9	4.0-5.9	6.0-7.9	8.0-9.9	10.0-11.9	12.0-13.9	14.0-15.9	16.0-17.9	18.0-LONGER	
WAVE PERIOD (M)	0	48	1033	405	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	1	.	513	1333	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	2	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	3	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	4	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	5	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	6	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	7	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	8	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	9	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	10	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	11	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	12	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	13	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	14	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	15	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	16	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	17	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	18	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	19	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	20	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	21	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	22	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	23	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	24	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	25	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	26	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	27	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	28	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	29	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	30	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	31	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	32	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	33	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	34	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	35	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	36	.	.	1513	1077	38	1304	149	.	.	33	
WAVE PERIOD (M)	37	.	.	1513	1077	38	1304	149	.	.	33	

A5

APPENDIX B: BREAKING WAVE SUMMARIES

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 0.00 - 11.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 11.25 - 33.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	48	.	.	.	.	.	49
0.50 - 0.99	.	.	.	32	1	.	.	.	.	.	33
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	32	49	0	0	0	0	0	

AVERAGE HS(M) = 0.45 LARGEST HS(M) = 1.10 ANGLE CLASS % = 0.8

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 33.75 - 56.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	32	673	818	563	57	1	.	.	.	.	2146
0.50 - 0.99	.	.	286	100	10	.	.	.	.	.	396
1.00 - 1.49	.	.	40	75	1	.	.	.	.	.	117
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	32	673	1145	738	68	1	0	0	0	0	

AVERAGE HS(M) = 0.36 LARGEST HS(M) = 1.37 ANGLE CLASS % = 26.6

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 56.25 - 78.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	6	225	.	.	.	.	.	.	.	.	231
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	225	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.26 LARGEST HS(M) = 0.40 ANGLE CLASS % = 2.3

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 78.75 - 101.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	6	246	.	.	.	87	189	.	.	.	528
0.50 - 0.99	.	.	.	.	.	43	183	.	.	.	227
1.00 - 1.49	.	.	.	.	.	7	5	.	.	.	13
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	246	0	0	0	138	378	0	0	0	

AVERAGE HS(M) = 0.45 LARGEST HS(M) = 1.13 ANGLE CLASS % = 7.7

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 101.25 - 123.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	3	186	813	1063	747	308	168	.	.	.	3291
0.50 - 0.99	.	.	617	852	631	245	13	2	.	.	2361
1.00 - 1.49	.	.	.	.	.	147	.	.	.	.	147
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	3	186	1430	1915	1379	701	181	2	0	0	

AVERAGE HS(M) = 0.45 LARGEST HS(M) = 1.02 ANGLE CLASS % = 58.0

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 123.75 - 146.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	17	240	.	.	.	.	.	.	.	.	257
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	17	240	0	0	0	0	0	0	0	0	0

AVERAGE HS(M) = 0.12 LARGEST HS(M) = 0.40 ANGLE CLASS % = 2.6

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 146.25 - 168.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION A 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 168.75 - 180.00
WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION A
WAVE APPROACH ANGLE RELATIVE TO TRUE NORTH
PERCENT OCCURRENCE(X100) OF HEIGHT AND PERIOD FOR ALL DIRECTIONS

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	65	1571	1632	1626	853	397	357	.	.	.	6504
0.50 - 0.99	.	.	903	984	642	289	196	2	.	.	3019
1.00 - 1.49	.	.	40	75	1	155	5	.	.	.	278
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	65	1571	2575	2687	1497	841	560	2	0	0	

Ave HS(M) = 0.41 LARGEST HS(M) = 1.37 TOTAL CASES = 58440

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 0.00 - 11.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 11.25 - 33.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	.	.	550	106	.	.	.	.	.	.	.	656
0.50 - 0.99	.	.	.	63	.	.	.	.	.	.	.	63
1.00 - 1.49	.	.	.	41	.	.	.	.	.	.	.	41
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	550	211	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.36 LARGEST HS(M) = 1.63 ANGLE CLASS % = 7.6

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 33.75 - 56.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-	
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER	
0.00 - 0.49	32	481	122	793	888	831	554	.	.	.	3703
0.50 - 0.99	.	.	177	66	13	10	6	2	.	.	277
1.00 - 1.49	.	.	12	31	1	.	.	.	.	.	45
1.50 - 1.99	.	.	.	5	.	.	.	.	.	.	6
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	32	481	312	897	903	841	560	2	0	0	

AVERAGE HS(M) = 0.23 LARGEST HS(M) = 1.90 ANGLE CLASS % = 40.3

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 56.25 - 78.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-	
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER	
0.00 - 0.49	6	192	615	1282	408	.	.	.	.	.	2504
0.50 - 0.99	.	.	176	212	122	.	.	.	.	.	510
1.00 - 1.49	.	.	34	117	150	.	.	.	.	.	302
1.50 - 1.99	.	.	.	74	.	.	.	.	.	.	74
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	192	825	1686	681	0	0	0	0	0	

AVERAGE HS(M) = 0.43 LARGEST HS(M) = 1.86 ANGLE CLASS % = 33.9

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 78.75 - 101.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	6	471	455	.	.	.	.	.	.	.	933	
0.50 - 0.99	.	.	432	.	.	.	.	.	.	.	432	
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0	
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0	
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0	
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0	
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0	
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0	
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0	
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0	
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0	
TOTAL	6	471	887	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.44 LARGEST HS(M) = 0.91 ANGLE CLASS % = 13.7

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 101.25 - 123.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	3	186	.	.	.	.	.	.	.	.	189	
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0	
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0	
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0	
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0	
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0	
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0	
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0	
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0	
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0	
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0	
TOTAL	3	186	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.26 LARGEST HS(M) = 0.69 ANGLE CLASS % = 1.9

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 123.75 - 146.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	2	239	.	.	.	.	.	.	.	.	242
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2	240	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.19 LARGEST HS(M) = 0.64 ANGLE CLASS % = 2.4

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 146.25 - 168.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	14	.	.	.	.	.	.	.	.	.	14
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	14	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.11 LARGEST HS(M) = 0.11 ANGLE CLASS % = 0.1

STATION B 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 168.75 - 180.00
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION B
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X100) OF HEIGHT AND PERIOD FOR ALL DIRECTIONS

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	65	1570	1743	2181	1296	831	554	.	.	.	8243	
0.50 - 0.99	.	1	785	342	136	10	6	2	.	.	1284	
1.00 - 1.49	.	.	46	191	152	.	.	.	.	.	389	
1.50 - 1.99	.	.	.	80	.	.	.	.	.	.	81	
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0	
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0	
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0	
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0	
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0	
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0	
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0	
TOTAL	65	1571	2575	2796	1585	841	560	2	0	0		

AVE HS(M) = 0.34 LARGEST HS(M) = 1.90 TOTAL CASES = 58440

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 0.00 - 11.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 11.25 - 33.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 33.75 - 56.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	32	481	550	106	.	.	.	.	.	.	1169
0.50 - 0.99	.	.	75	63	.	.	.	.	.	.	139
1.00 - 1.49	.	.	.	41	.	.	.	.	.	.	41
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	32	481	625	211	0	0	0	0	0	0	

AVERAGE HS(M) = 0.31 LARGEST HS(M) = 1.60 ANGLE CLASS Z = 13.5

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 56.25 - 78.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	6	192	268	1114	1216	448	366	.	.	.	3613
0.50 - 0.99	.	.	213	160	269	382	187	.	.	.	1213
1.00 - 1.49	.	.	37	57	96	8	6	.	.	.	208
1.50 - 1.99	.	.	.	16	2	.	.	1	.	.	20
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	192	519	1348	1585	840	560	2	0	0	

AVERAGE HS(M) = 0.78 LARGEST HS(M) = 1.94 ANGLE CLASS Z = 50.6

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 78.75 - 101.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-		
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER		
0.00 - 0.49	6	225	1193	711	.	1	.	.	.	.		2137
0.50 - 0.99	.	.	192	349	.	.	.	.	.	.		541
1.00 - 1.49	.	.	45	174	.	.	.	.	.	.		219
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.		0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.		0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.		0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.		0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.		0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.		0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.		0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.		0
TOTAL	6	225	1430	1235	0	1	0	0	0	0		

AVERAGE HS(M) = 0.39 LARGEST HS(M) = 1.30 ANGLE CLASS % = 29.0

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 101.25 - 123.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-		
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER		
0.00 - 0.49	3	432	.	.	.	.	.	.	.	.		435
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.		0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.		0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.		0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.		0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.		0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.		0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.		0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.		0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.		0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.		0
TOTAL	3	432	0	0	0	0	0	0	0	0		

AVERAGE HS(M) = 0.26 LARGEST HS(M) = 0.73 ANGLE CLASS % = 4.4

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 123.75 - 146.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-	
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER	
0.00 - 0.49	17	240	.	.	.	.	.	.	.	.	257
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	17	240	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.17 LARGEST HS(M) = 0.46 ANGLE CLASS % = 2.6

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 146.25 - 168.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-	
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION C 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 168.75 - 180.00
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION C
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X100) OF HEIGHT AND PERIOD FOR ALL DIRECTIONS

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	65	1571	2011	1931	1216	450	366	.	.	.	7613
0.50 - 0.99	.	.	481	573	269	382	187	.	.	.	1895
1.00 - 1.49	.	.	82	274	96	8	6	.	.	.	469
1.50 - 1.99	.	.	.	16	2	.	.	1	.	.	20
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	65	1571	2575	2796	1585	841	560	2	0	0	

AVE HS(M) = 0.36 LARGEST HS(M) = 1.94 TOTAL CASES = 58440

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 0.00 - 11.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 11.25 - 33.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 33.75 - 56.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	32	481	550	106	.	.	.	.	.	.	1169
0.50 - 0.99	.	.	72	96	.	.	.	.	.	.	169
1.00 - 1.49	.	.	2	9	.	.	.	.	.	.	11
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	32	481	625	211	0	0	0	0	0	0	

AVERAGE HS(M) = 0.30 LARGEST HS(M) = 1.65 ANGLE CLASS Z = 13.5

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 56.25 - 78.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	6	192	122	424	7	.	.	.	.	.	753
0.50 - 0.99	.	.	114	28	1	.	.	.	.	.	144
1.00 - 1.49	.	.	.	21	1	.	.	.	.	.	22
1.50 - 1.99	.	.	.	5	.	.	.	.	.	.	6
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	192	237	479	10	0	0	0	0	0	

AVERAGE HS(M) = 0.37 LARGEST HS(M) = 1.94 ANGLE CLASS Z = 9.3

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 78.75 - 101.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METERS)	PERIOD (SECONDS)											TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER		
0.00 - 0.49	6	225	320	642	1292	425	363	.	.	.	3275	
0.50 - 0.99	.	.	296	126	235	362	187	.	.	.	1228	
1.00 - 1.49	.	.	25	90	18	52	8	.	.	.	195	
1.50 - 1.99	.	.	.	10	6	1	.	.	.	.	19	
2.00 - 2.49	.	.	.	.	.	.	.	1	.	.	2	
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0	
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0	
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0	
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0	
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0	
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0	
TOTAL	6	225	642	869	1573	841	560	2	0	0		

AVERAGE HS(M) = 0.41 LARGEST HS(M) = 2.23 ANGLE CLASS % = 47.2

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 101.25 - 123.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT (METERS)	PERIOD (SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	3	432	638	711	.	.	.	.	.	.	1785
0.50 - 0.99	.	.	429	345	.	.	.	.	.	.	775
1.00 - 1.49	.	.	2	135	.	.	.	.	.	.	137
1.50 - 1.99	.	.	.	43	.	.	.	.	.	.	43
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	3	432	1070	1235	0	0	0	0	0	0	

AVERAGE HS(M) = 0.49 LARGEST HS(M) = 1.90 ANGLE CLASS % = 27.4

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 123.75 - 146.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-		
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER		
0.00 - 0.49	17	239	.	.	.	.	.	.	.	.	.	256
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	.	0
TOTAL	17	240	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.13 LARGEST HS(M) = 0.67 ANGLE CLASS % = 2.6

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 146.25 - 168.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)											TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-		
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER		
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION D 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 168.75 - 180.00
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS Z = 0.0

STATION D
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X100) OF HEIGHT AND PERIOD FOR ALL DIRECTIONS

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	65	1570	1632	1883	1300	425	363	.	.	.	7241
0.50 - 0.99	.	1	913	596	257	362	187	.	.	.	2318
1.00 - 1.49	.	.	30	256	19	52	8	.	.	.	367
1.50 - 1.99	.	.	.	39	6	1	.	.	.	.	68
2.00 - 2.49	.	.	.	.	.	.	.	1	.	.	2
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	65	1571	2575	2796	1584	841	560	2	0	0	

AVE HS(M) = 0.40 LARGEST HS(M) = 2.23 TOTAL CASES = 58440

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 0.00 - 11.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 11.25 - 33.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 33.75 - 56.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	32	481	550	.	.	.	.	.	.	.	1063
0.50 - 0.99	.	.	72	.	.	.	.	.	.	.	72
1.00 - 1.49	.	.	2	.	.	.	.	.	.	.	2
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	32	481	623	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.24 LARGEST HS(M) = 1.01 ANGLE CLASS % = 11.4

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 56.25 - 78.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	6	192	122	530	7	.	.	.	.	.	859
0.50 - 0.99	.	.	114	92	1	.	.	.	.	.	208
1.00 - 1.49	.	.	.	62	1	.	.	.	.	.	64
1.50 - 1.99	.	.	.	6	.	.	.	.	.	.	6
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	192	237	691	10	0	0	0	0	0	

AVERAGE HS(M) = 0.40 LARGEST HS(M) = 1.92 ANGLE CLASS % = 11.4

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 78.75 - 101.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	6	225	145	265	336	242	357	.	.	.	1578
0.50 - 0.99	.	.	136	70	112	331	189	.	.	.	840
1.00 - 1.49	.	.	.	45	36	42	9	.	.	.	133
1.50 - 1.99	.	.	.	36	8	8	3	.	.	.	57
2.00 - 2.49	.	.	.	.	1	.	.	.	.	.	2
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	1	.	.	1
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	6	225	282	417	495	624	560	2	0	0	

AVERAGE HS(M) = 0.54 LARGEST HS(M) = 3.08 ANGLE CLASS % = 26.2

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 101.25 - 123.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	3	246	813	970	819	155	.	.	.	.	3007
0.50 - 0.99	.	.	613	528	183	45	.	.	.	.	1371
1.00 - 1.49	.	.	3	188	62	7	.	.	.	.	260
1.50 - 1.99	.	.	.	.	13	8	.	.	.	.	21
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	3	246	1430	1686	1078	216	0	0	0	0	

AVERAGE HS(M) = 0.45 LARGEST HS(M) = 2.19 ANGLE CLASS % = 46.6

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 123.75 - 146.24
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	2	425	.	.	.	.	.	.	.	.	428
0.50 - 0.99	.	1	.	.	.	.	.	.	.	.	1
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	2	426	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.19 LARGEST HS(M) = 0.70 ANGLE CLASS % = 4.3

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 146.25 - 168.74
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0- 1.9	2.0- 3.9	4.0- 5.9	6.0- 7.9	8.0- 9.9	10.0- 11.9	12.0- 13.9	14.0- 15.9	16.0- 17.9	18.0- LONGER	
0.00 - 0.49	14	.	.	.	.	.	.	.	.	.	14
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	14	0	0	0	0	0	0	0	0	0	

AVERAGE HS(M) = 0.08 LARGEST HS(M) = 0.08 ANGLE CLASS % = 0.1

STATION E 20 YEARS WAVE APPROACH ANGLE(DEGREES)= 168.75 - 180.00
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X1000) OF HEIGHT AND PERIOD BY DIRECTION

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-	
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER	
0.00 - 0.49	.	.	.	.	.	.	.	.	.	.	0
0.50 - 0.99	.	.	.	.	.	.	.	.	.	.	0
1.00 - 1.49	.	.	.	.	.	.	.	.	.	.	0
1.50 - 1.99	.	.	.	.	.	.	.	.	.	.	0
2.00 - 2.49	.	.	.	.	.	.	.	.	.	.	0
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	.	.	.	0
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0

AVERAGE HS(M) = 0.00 LARGEST HS(M) = 0.00 ANGLE CLASS % = 0.0

STATION E
 WAVE APPROACH ANGLES RELATIVE TO TRUE NORTH
 PERCENT OCCURRENCE(X100) OF HEIGHT AND PERIOD FOR ALL DIRECTIONS

HEIGHT(METERS)	PERIOD(SECONDS)										TOTAL
	0.0-	2.0-	4.0-	6.0-	8.0-	10.0-	12.0-	14.0-	16.0-	18.0-	
	1.9	3.9	5.9	7.9	9.9	11.9	13.9	15.9	17.9	LONGER	
0.00 - 0.49	65	1570	1632	1766	1163	397	357	.	.	.	6953
0.50 - 0.99	.	1	937	691	297	376	189	.	.	.	2494
1.00 - 1.49	.	.	5	296	100	49	9	.	.	.	461
1.50 - 1.99	.	.	.	42	22	17	3	.	.	.	85
2.00 - 2.49	.	.	.	.	1	.	.	.	.	.	2
2.50 - 2.99	.	.	.	.	.	.	.	.	.	.	0
3.00 - 3.49	.	.	.	.	.	.	.	1	.	.	1
3.50 - 3.99	.	.	.	.	.	.	.	.	.	.	0
4.00 - 4.49	.	.	.	.	.	.	.	.	.	.	0
4.50 - 4.99	.	.	.	.	.	.	.	.	.	.	0
5.00 - GREATER	.	.	.	.	.	.	.	.	.	.	0
TOTAL	65	1571	2573	2796	1584	841	560	2	0	0	

AVE HS(M) = 0.43 LARGEST HS(M) = 3.08 TOTAL CASES = 58440

END

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